



HEATING, VENTILATION AND AIR CONDITIONING



CATALOGUE
2021

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CARRIER

Carrier is a world leader in HVAC, Refrigeration, Fire & Security solutions. For over a century, we have been developing innovative products and services that have changed the way people live and work. That drive for innovation continues today with a renewed focus on creating solutions that will change the world for the better. At Carrier, we see possibilities in everything.

04

COOLING

Whether air conditioning is needed for a new building or a refurbishment project, for a commercial center, an office application or an industrial process, Carrier offers a wide range of solutions: air cooled, water cooled and absorption units, with scroll, rotary, screw and centrifugal compressors from 8 to 10,500 kW cooling capacity.

49

HEATING

Carrier offers a vast range of heating solutions from air-to-water heat pumps to water-to-water heat pumps, with heating only or reversible capability, with scroll and screw compressors from 5 to 1,980 kW heating capacity. Carrier's heating machines are designed to deliver up to 85°C hot water temperature.

449

AIR TREATMENT

An important aspect of any HVAC system is the correct supply of treated fresh air to the building occupants, improving indoor air quality (IAQ) levels. Carrier offers a vast range of close control units and packaged units, as well as standard and customized air handling solutions to ensure the best match to the requirements. Carrier also proposes a range of hybrid terminal, cassette, cabinet, concealed, ducted terminals to match any application requirements and installation criteria: in the room, in the ceiling, above a false ceiling, in a central plant room, and many more.

706

CONTROLS

Carrier equipment and system controls are available for standard system applications and customized, tailor made projects. Carrier offers a wide range of control solutions covering all HVAC applications.

1044

CARRIER

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Creating solutions that matter for people and our planet



Innovation is in our DNA

At Carrier, we have a proud history of pioneering industries through innovation. Our leading world-class brands are the legacy of our founders, who invented technologies to meet real needs, turned them into businesses, and then innovated to lead entire industries.



A Leading Legacy

Carrier was built on a legacy of innovation – beginning with our founders. We are innovators at heart and inventors by heritage. From the start, we've led in pioneering new technologies and in enabling entirely new industries that have changed the world. Today, building on our history of firsts, we're boldly advancing the industries we created to make a difference in people's lives.



DISCOVER CARRIER ON

www.carrier.com/commercial/en/eu

STRENGTH THROUGH VALUES

The values that we hold high at Carrier underscore how we will serve our customers and shareholders to position the company for future growth. We are committed to always operating with integrity in everything we do. We will continue to be innovators and deliver industry-leading products. We are committed to excellence, for our customers and shareholders. We are a global company that fosters an inclusive environment for all. We will achieve our goals by leveraging our diverse talents and perspectives.

Vision

Our aspiration; why we come to work every day.

Creating solutions that matter for people and our planet.

Values

Our absolutes; always do the right thing.

Respect Integrity Inclusion Innovation Excellence

Culture

Our behaviors; how we work and win together, while never compromising our values.

Passion for Customers

We win when our customers win.

Play to Win

We strive to be #1 in everything we do.

Choose Speed

We focus and move with a bias for action.

Achieve Results

We perform, with integrity.

Dare to Disrupt

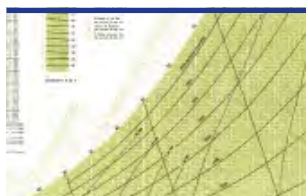
We innovate and pursue sustainable solutions.

Build Best Teams

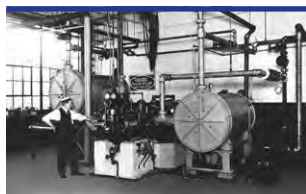
We develop diverse teams, and empower to move faster.

CARRIER'S HERITAGE: THE INVENTION THAT CHANGED THE WORLD

On July 17, 1902, Willis Carrier designed the first modern air-conditioning system to solve a problem at the Sackett & Wilhelms printing plant in Brooklyn, New York City, launching an industry that would fundamentally improve the way we live, work and play.



Willis Carrier writes a "Rational Psychrometric Formulae" for the calculation of the wet temperature that quickly becomes the predecessor of the charts used today. He becomes internationally recognized.



Carrier unveiled the first centrifugal chiller, which opened the door to large-scale comfort air-conditioning.



Carrier takes the seas, with the M.V. Victoria, the first vessel to make its maiden voyage equipped with air conditioning.



The OptiClean™ Dual-Mode Air Scrubber & Negative Air Machine was named as one of TIME's 100 Best Inventions of 2020.

1904

Willis Carrier applied for a patent on his invention, an "Apparatus for Treating Air"; he had invented the world's first spray-type air conditioning equipment, able to both wash and humidify or dehumidify air. Modern air conditioning now had its fundamental building block.

1917

Carrier hires America's first woman air-conditioning engineer, right around the time that the decision to allow U.S. women the right to vote was being debated by lawmakers.

1926

Carrier introduces the first home air conditioner.

1931

1998

Willis Carrier is named one of Time magazine's "100 Most Influential People of the Century."

2016

Carrier launches the first high temperature water-to-water heat pumps using the next generation of refrigerants: HFO.

2018

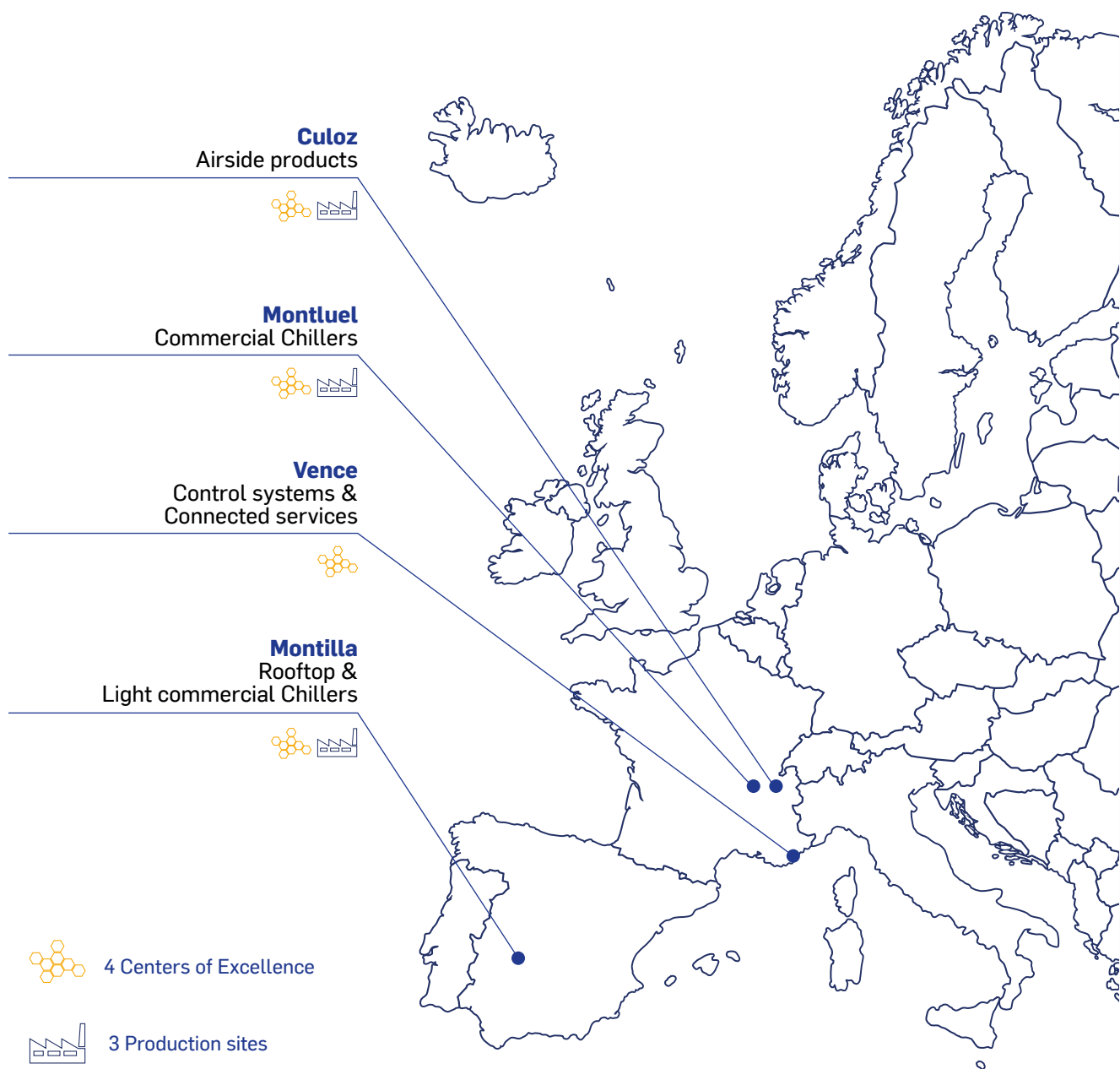
Carrier opens its new world headquarters, the Center for Intelligent Buildings

2020



WORLD-CLASS OPERATIONS TO BRING BEST-IN-CLASS SOLUTIONS

Our European Centers of Excellence and HVAC production sites are all world-class facilities in their own right. Each site focuses on its specific field of expertise.



MONTLUEL CENTER OF EXCELLENCE: at the forefront of chiller and heat pump technologies

Our Montluel site is Carrier' European Center of Excellence for chillers and heat pumps. Located close to Lyon, France, the research and design center and laboratory are able to draw on fifty-plus years of world-class expertise.



Modeling Analysis Simulation & Computation (MASC)

The center's numerical simulation platform capabilities include Model-Based Definition (MBD), Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA) and 3-D design.

Customization

The research and design center and laboratory has a dedicated customization team specializing in bespoke solutions to meet the chiller and heat pump needs of individual customers. This includes applied engineering in fields such as seismic, nuclear, marine or offshore applications.

Prototypes & Tests

The Montluel Center of Excellence carries out prototyping for internal development teams, and testing for costumers, acting as a third-party laboratory in compliance with ISO 17025 and COFRAC certification 1-0108.

15 Test Rooms

- Thermal, performance, endurance and acoustic tests
- A/C and W/C Chillers, as well as terminal units
- Ambient control from **-25°C to +55°C** with humidity conditions of **5% to 95%**

- **1,200** measurement sensors
- **3,600 kW** maximum water-cooled unit test capacity
- **1,800 kW** maximum air-cooled unit test capacity
- **6 MW** total test capacity
- Ability to reach and maintain stable conditions
- High-precision method for acoustic measurement
- Specific tests on request

Remote Testing

The Center of Excellence in Montluel (France) offers you the possibility of witnessing the test from your office or home. We connect with you digitally, creating an environment where you feel that you are really with us in the laboratory.

An easy Process:

- 1: Connect with the lab test team through a video conference app over the Internet.
- 2: View your test. Testing is witnessed in real-time using cameras to see your test unit mounted and connected for testing. Three meetings are set in one day: test presentation and real-time test, first results' check and discussion, review of the test report and conclusion.
- 3: Receive the signed test report and the necessary certificates at the end of the day.

CERTIFICATIONS

Quality Management System	ISO 9001:2008 PED N° 97/23/EC	Approved by Lloyd's Register Quality Assurance Approved by Bureau Veritas
Environmental Management System Performances	ISO 14001:2004 EUROVENT	Approved by Lloyd's Register Quality Assurance Approved by Eurovent Certifications, European reference label of the energy performance of air conditioning and refrigeration equipments
Test activities	ISO 17025:2005	Approved by Comité Français d'Accréditation
Quality System & case-by-case	Marine Application	Approved by Lloyd's Register, Det Norske Veritas (DNV) & Germanischer Lloyd's (GL).
Air-cooled & water-cooled performance	AHRI	Approved by AHRI, America reference label of the energy performance of air conditioning and refrigeration equipments

CULOZ CENTER OF EXCELLENCE: cutting-edge airside expertise

The research and design center and laboratory have seven innovation platforms, equipped with state-of-the-art test and measurement tools, fully dedicated to airside applications.



Modeling Analysis Simulation & Computation (MASC)

The numerical simulation platform focuses on Computational Fluid Dynamic (CFD) and indoor comfort simulation.

Indoor Environmental Quality

- Acoustic platforms
- Comfort test platform (Units and air diffusers according to EN ISO 7730 and EN 15726)
- Indoor Air Quality platform



Dry Coolers

- Thermal rating up to **2,000 kW**
- Acoustic and adiabatic cooling
- Possible to test water to water heat exchangers

Air Handling Units

- Mechanical performance tests
- Aerodynamic tests up to 35,000 m³/h

Thermal Units

- AHU and Rooftop thermal performance testing
- 2 Climatic chambers up to 200 KW / 23,000 m³/h
- Range of controlled environment = -15°C to +40°C

Reliability Tests

- 24/7 corrosion tests
- Static, cycling or burst hydraulic pressure tests up to 250 Bar
- Vibration tests with a maximum force of 2000 N
- Endurance testing of fan coil units

Heat recovery system and coils test platform

- Heat recovery efficiency and thermal capacity test
- Airflow capacity up to 30,000 m³/h
- Thermal capacity up to 300 kW

CERTIFICATIONS

Quality Management System

ISO 9001: 2015
2014/68/EC
DAP 08.D /DAP 13.C
NF 414 rev. 9

Approved by Lloyd's Register Quality Assurance

Certified by Apave & Bureau Veritas

Certified by Efectis

Certified by Certita

Environmental Management System

Iso 14001: 2015

Approved by Lloyd's Register Quality Assurance

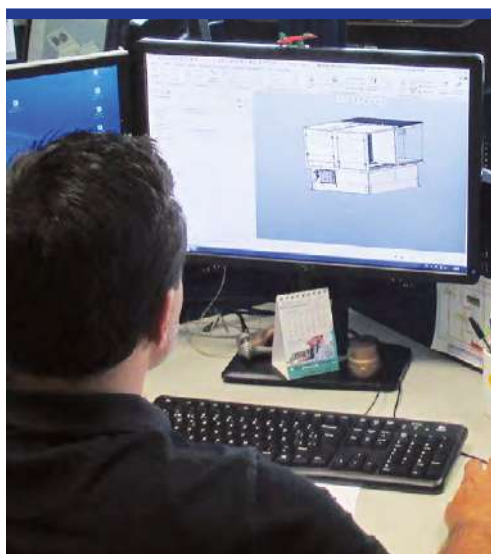
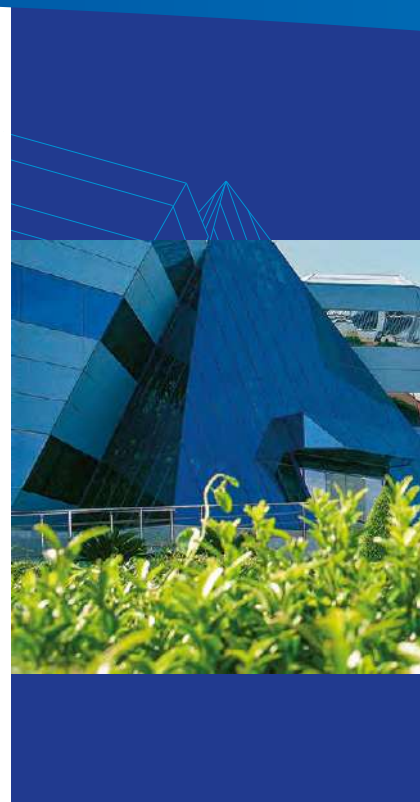
Safety Management System

ISO 45001: 2018

Approved by Lloyd's Register Quality Assurance

MONTILLA CENTER OF EXCELLENCE: experts in rooftops and light commercial chilled

Our teams in Montilla, southern Spain have in-depth expertise in rooftop, packaged, preconditioned air (PCA) for aircraft and dehumidifier units. The center houses the largest HVAC factory in Spain and offers specialized laboratories, as well as Europe's biggest aircraft preconditioner air units laboratory.



Modeling Analysis Simulation & Computation (MASC)

The Montilla Center of Excellence offers numerical simulation capabilities in Model-Based Definition (MBD), Computational Fluid Dynamics (CFD) and 3-D design.

Customization

The Montilla Center of Excellence has an engineering team specifically dedicated to customization projects. It can also mobilize its specialized commissioning PCA team worldwide and offers technical data acquisition for technical documentation, as well as remote test supervision for special on-site applications.

Prototypes & Tests

The Montilla Center of Excellence carries out prototyping and testing for our development team. It performs thermal, acoustic and vibration tests (2 test rooms), ambient control tests from -15°C to +55°C and specific tests for preconditioned air for aircraft and swimming pool dehumidification units.

CERTIFICATIONS

Performances	EUROVENT	Approved by Eurovent Certifications, European reference label of the energy performance of air conditioning and refrigeration equipments
Pressurized Equipment Directive	PED 2014/68/EU-Module H	Approved by Bureau Veritas
Quality Management System	ISO 9001	Approved by IQNET and AENOR
Environmental Management System	ISO 14001	Approved by LRQA
Health & Safety Management System	ISO 45001 : 2018	Approved by LRQA

VENCE CENTER OF EXCELLENCE: control systems and connected services

Developing customized control solutions and smart services for HVAC systems and plant room is the key activity at the Vence Center of Excellence.



Connected services & energy measurements

Our engineers focus on developing and offering technical support for smart energy services. We bring technical support during the design & engineering phase on plant room and thermal energy storage projects. The team is also in charge of monitoring solutions, with more than 1,300 connected equipments. Their know-how is unique and proven with dual cooling/ heating and automation in-depth knowledge.

Test platform

The Vence Center of Excellence has several test platforms, designed specifically for the development of innovative solutions for HVAC systems. Simulations are performed in real operating conditions and allow our engineers to check the efficiency of control systems.

Thermal Energy Storage (TES)

By storing the thermal energy during the night and releasing it during the day, the cutting-edge TES solution allows using the electricity at the lowest prices and avoids the peaks. By spreading the thermal energy production over 24 hours, TES can reduce the capacity of the chillers by 30% to 70%. 100% smart grid compatible, it is suited for HVAC systems with a peak cooling demand higher than ~500 kW. Our engineers optimize the design, adapt the hydraulic layout and the operation of your installation for each application.

R&D connections

The Vence Center of Excellence works closely with Europe's leading Science Park, located in Sophia-Antipolis in Southern France. Our teams are frequently involved in major European research and innovation projects.



+ 1,300
Connected appliances



+ 3,000
Customers



+ 500 MW
Electricity saved



+ 6,000,000 KWH
Daily transfer

COMMITTED TO WHAT MATTERS

As the leading global provider of healthy, safe and sustainable building and cold chain solutions, Carrier is committed to making the world safer, sustainable and more comfortable for generations to come.

Building on our vision to create solutions that matter for people and our planet, Carrier is targeting carbon neutrality across our operations by 2030 and aiming to reduce our customers' carbon footprint by more than 1 gigaton over the same period. These targets will be supported by planned investments of more than \$2 billion over the next 10 years toward the development of healthier, safer and more sustainable solutions.



High performance design

The impact of the machines on global warming is mainly due to the primary energy used for their operation. Carrier designs products that achieve optimized energy performance throughout the year and limit the indirect release of CO₂ associated with the consumption of electricity.



Minimized refrigerant charge

Since 2011, a new generation of microchannel is available:

Novation® Microchannel.

- Up to 50% refrigerant charge reduction vs. traditional Cu/Al (copper/aluminium) coils*
- Better thermal performance, better efficiency and lower air pressure drop vs. Cu/Al coils*

Carrier continues to work towards the reduction of refrigerant charge in its products and includes this as a key performance indicator for all new product developments.



Equipment lifetime approach

Carrier products are extensively tested and maintained to a very high level, thanks to an extended service offering to ensure the best performance during the equipment's entire lifetime.

Advanced monitoring solutions continuously collect information from equipment to anticipate and prevent loss of performance or any damage, optimizing the lifetime of the equipment.

▶ Follow us on Twitter @CarrierGreen

THE CARRIER CO2NSERVATION METER

Introduced in 2010, the Carrier CO2NSERVATION Meter calculates avoided greenhouse gas emissions as a result of the installation of high-efficiency Carrier air conditioning, heating and refrigeration systems by customers around the world since 2000. In 2020, the Carrier CO2NSERVATION Meter reached 290 million metric tons of greenhouse gases saved, the equivalent of:



Approximately 60,000,000 vehicles removed from the road for one year*



Saved the electricity consumed by approximately 40,000,000 homes during one year*

* According to the United States Environmental Protection Agency Green Power Equivalency Calculator. The model compares the projected GHG emissions from select Carrier products to emissions from comparable baseline products, with the difference representing the avoided emissions. The meter also incorporates energy savings as measured from energy service contracts. Learn more on <http://naturalleader.com/>

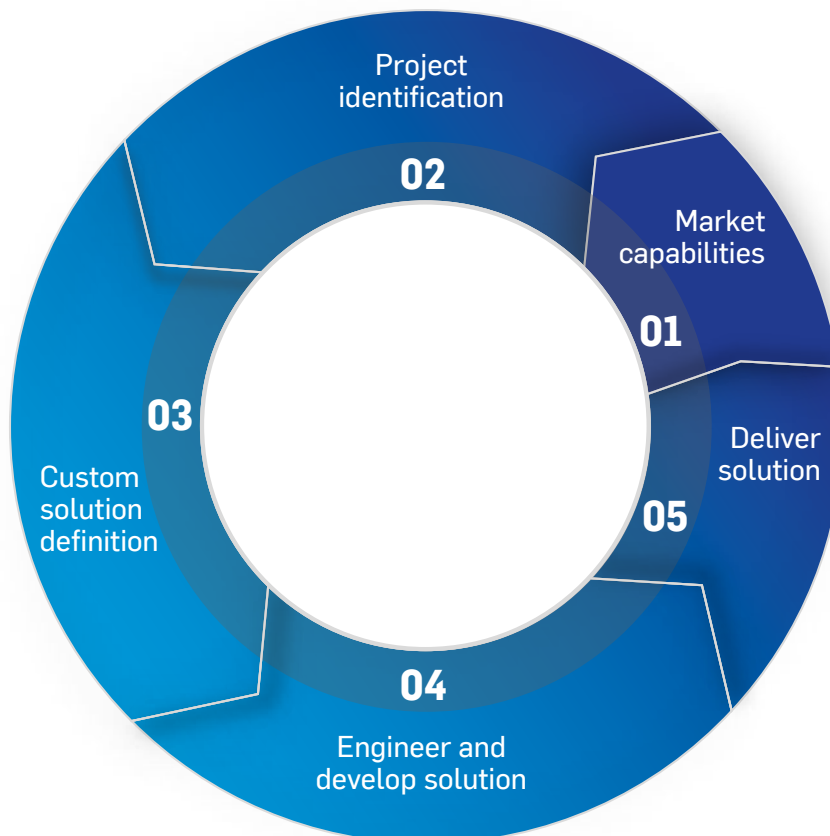
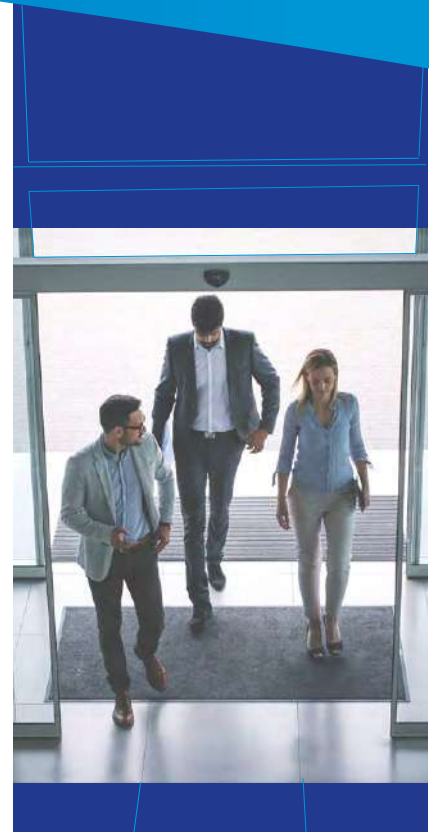
ADVANTEC

Our AdvanTEC experts work with customers to design, develop and deliver innovative building solutions to make buildings more efficient, improve user experiences and enhance occupant safety and security.

Our global AdvanTEC team provides consultation and solution design to help enterprises solve their most complex building problems. Comprized of highly qualified engineers with wide range of building applications experience, our group of experts fully understand the challenge in designing and maintaining customer facilities, has in-depth knowledge of HVAC, fire & security and building automation

solutions, in addition to industry-leading modelling tools and unique research facilities.

By working directly with customers to understand their specific business and application needs, our AdvanTEC team can address the specific challenges facing each customer which may also have worldwide benefits for many others.

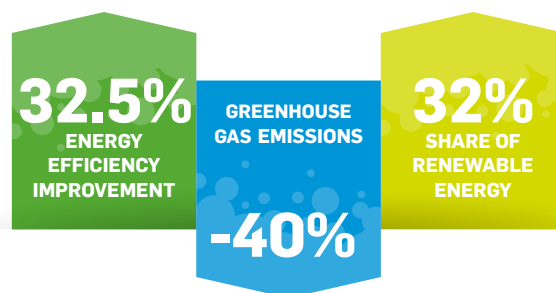


CARRIER, MEETING THE CHALLENGE OF REGULATORY CHANGES

Carrier is committed to limiting the environmental impact of its products and solutions and reducing energy consumption. This commitment is in line with the targets of the European climate and energy package for 2030.

The energy efficiency improvement target strongly influences the HVAC market. Indeed buildings are the largest consumers of energy today and, of that consumption, HVAC systems account for considerably more than other equipment. Providing its customers with energy efficient solutions is therefore now a key sustainable development opportunity for the HVAC industry.

In order to achieve these objectives, the European Union has developed a regulation to reduce energy consumption in buildings: **Ecodesign**.



Regulation 1253/2014

has been setting energy efficiency requirements since 2016 for **ventilation units** equipped with filters, energy recovery devices, fans and motors. The requirements were reinforced in January 2018.

Regulation 2016/2281

sets new energy efficiency requirements for **chillers of up to 2000 kW used in air conditioning applications for comfort cooling**. It came into force in January 2018. It also set new energy efficiency requirements for **industrial process cooling chillers of up to 2000 kW** with a positive leaving water temperature.

In addition, the regulation has set new energy efficiency requirements and informative requirements for **air conditioners, rooftops and packaged units in comfort cooling and space heating applications**. It came into force in January 2018 and has been reinforced in January 2021.

Regulation 2015/2281

has introduced energy efficiency requirements in 2016 for **industrial process cooling chillers** with negative leaving temperatures and has been reinforced in July 2018.

Under regulation 813/2013

air- and water-to-water heat pumps up to 400 kW must comply with higher energy efficiency requirements as from September 2017. **Heat pumps up to 70 kW must also carry Energy Labelling** in line with regulation 811/2013 from September 2015 onwards.

Air Handling Units : overall product improvement

Since 2016, the AHU must comply with Ecodesign technical and minimum efficiency requirements as well:



ENERGY EFFICIENCY / SPECIFIC FAN POWER

A ventilation unit with higher energy efficiency (less absorbed energy per m³ of air treated): higher fan efficiency, lower internal drop in pressure.



ENERGY RECOVERY

More efficient heat recovery, lower drop in pressure



INDOOR AIR QUALITY

Better filtration for better air quality and energy efficiency



INFORMATION

Reinforced product information

Chillers, heat pumps, roof-tops and air conditioners: New metrics because seasonal efficiency matters

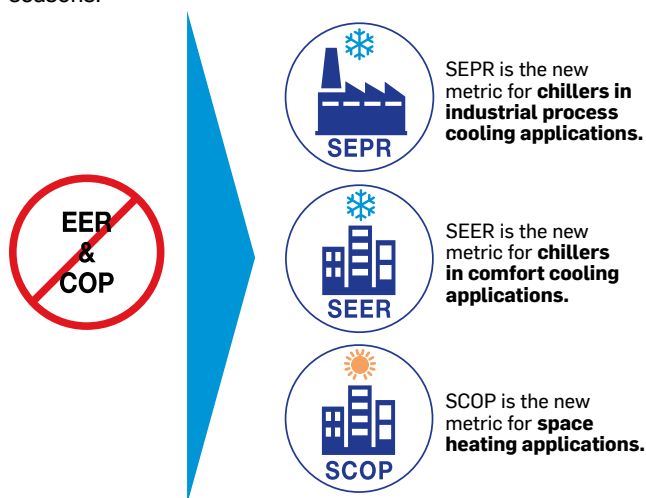
With all new construction to be nearly zero energy building from January 2021 onwards, the HVAC industry needs new accurate indicators to express the energy efficiency of equipment. These indicators must be representative of actual operations throughout the year, measuring the performance of equipment on a seasonal basis.

EER & COP belong to the past. Now and in the future, the focus is on seasonal efficiency. With a broad new product range, Carrier is fully engaged to take up the challenge of energy efficiency.

Compliance with the Ecodesign regulations therefore involves the use of new, more meaningful seasonal efficiency metrics. The Seasonal Energy Efficiency Ratio (**SEER**), Seasonal Energy Performance Ratio (**SEPR**) and Seasonal Coefficient of Performance (**SCOP**) all ensure precise evaluation of the energy actually consumed by chillers and heat pumps, by including seasonal variations in their measurements. Previous metrics (EER & COP) measured operations only at a single point, at full thermal load, and were therefore less representative of consumption over entire heating and cooling seasons.



**FOR MORE
INFORMATION VISIT**
www.ecodesign.hvac.carrier.com



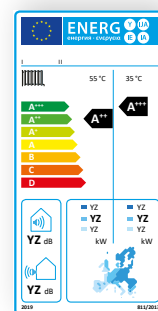
Etas (η_s):

In order to **compare the energy efficiency of products using different sources of energy**, the Ecodesign regulation introduces a new measurement expressed in primary energy: η_{sc} is the equivalent of SEER for comfort cooling applications and η_{sh} is the equivalent of SCOP for space heating.

These new seasonal performance metrics are now the key indicator used for all product ranges, in all applications. They are calculated according to technical standard EN 14825 and compliance is mandatory for a product to obtain CE marking.

Energy Labelling

In addition; European Energy Labelling regulation 811/2013 classifies heat pumps up to 70 kW from D to A+++, according to their energy efficiency. This enhanced consumer information drives the market towards more energy-efficient products.



ECODESIGN

Ecodesign is an approach to product design that encourages manufacturers to consider the environmental impact of the product over its entire lifecycle.

In the European Union, the Ecodesign Directive 2009/125/EC establishes a framework for the setting of mandatory energy efficiency requirements for all energy-related products (ERPs).

CARRIER, LEADING INNOVATION

Carrier constantly builds upon its history of proven innovation with new solutions in air conditioning, building controls and energy services, setting the standard for performance, energy efficiency and sustainability.

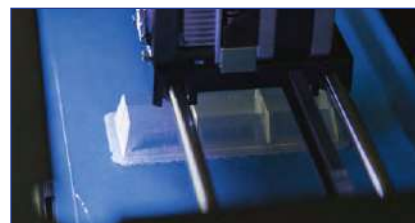


Ideas for an inspired tomorrow

HVAC challenges aren't always as common as you might expect, and our engineers work to ensure we can all take reliable, efficient environmental control for granted—from cultural heritage preservation to heat recovery application for district heating, with the next generation heating, cooling and technologies. Evaluating and applying advanced refrigerants and developing control algorithms to optimize performance isn't taken for granted here, and our engineers work provides security to everyday living.

Ultra modern laboratories

Carrier's laboratories, among the largest such facilities dedicated to HVAC in Europe, and Research & Development teams, are an important part of what makes the company a natural leader. Carrier benefits from unique facilities, both in terms of cooling coverage, air treatment capacities and measurement accuracy.



Innovative projects throughout Europe



MuCEM, Marseille, France June 2013

Seawater application

Carrier's expertise in seawater heating and cooling systems helped the national Museum of European and Mediterranean Civilisations (MuCEM) to meet its environmental goals for an energy efficient and sustainable solution.



© Bahnhof - www.bahnhof.net

Bahnhof, Stockholm, Sweden January 2014

District heating, heat recovery application in three data centers

Carrier AdvanTE3C engineers, working closely with the Swedish Internet service provider Bahnhof and hydraulic specialists have helped to optimize an innovative cooling & heating solution turning data centers into heat sources for local district heating systems.



CADZIPLO, Geneva, Switzerland, August 2015

Europe's first screw water-to-water heat pumps using HFO

Carrier has set a new milestone with Europe's first district heating project based on screw water-to-water heat pumps using low Global Warming Potential PUREtec™ refrigerant: HFO R1234ze(E).

▶ Discover the story of CADZIPLO project on <https://youtu.be/kLJgLeBD8uQ>

CARRIER AT THE FOREFRONT OF INNOVATIVE TECHNOLOGY

The challenge raised by the European Union's F-gas regulation drives the entire industry to move to a new generation of refrigerants. It will not only protect the ozone layer but also have a very low impact on global warming. Carrier is facing this challenge head on.

PUREtec™ family of long-term refrigerant solutions

Carrier is continuously working on selecting the right refrigerant for the dedicated application.

With PUREtec, Carrier offers a range of long-term sustainable and efficient solutions using a refrigerant with zero impact on the ozone layer and nearly zero effect on global warming: HFO R-1234ze for screw units and R-1233zd for centrifugal units.



Leading the way to a sustainable future

Four years after the first HFO water-cooled screw chiller installed in Europe, Carrier's AquaForce® chiller units with PUREtec refrigerant have been installed in more than 500 projects across the region, in multiple applications such as industry, data centers, district heating and healthcare.

Building on its success, the PUREtec family has grown from the Carrier AquaForce PUREtec 61XWHZE high-temperature heat pumps range, to the AquaEdge™ 19DV centrifugal chillers and now to the new generation of AquaForce PUREtec 30KAV/P-ZE and 30XB/P-ZE premium air-cooled screw chillers.

30KAV/P-ZE



Air-cooled
variable-speed screw chiller

30XB/P-ZE



Air-cooled fixed-speed
screw chiller

30XWHP-ZE



Water-cooled fixed-speed
screw heat pump

30XWHV-ZE



Water-cooled variable-speed
screw heat pump

61XWH-ZE



High-temperature
water-sourced
screw heat pump

19DV



Water-cooled
centrifugal chiller

* GWP according to AR5 from the IPCC (International Panel on Climate Change)

CARRIER HEALTHY BUILDINGS PROGRAM

As a founding member of both the U.S. Green Building Council® and the International WELL Building Institute, Carrier has long been an industry leader in enhancing building health to promote personal health. Now, it is essential that the world have the solutions and services that enable healthy indoor environments.

The science of healthy buildings

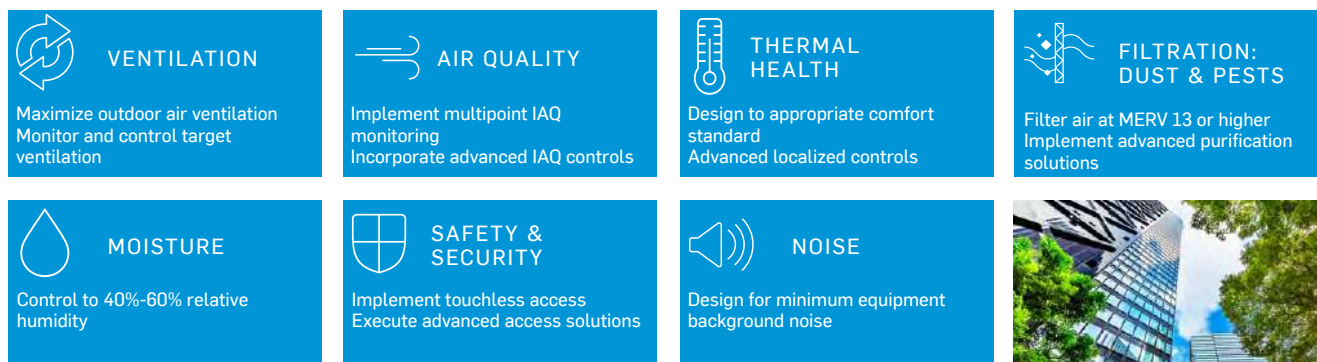
As humans, we spend 90% of our time indoors. Consequently, buildings play a significant role in our lives and directly impact our health. Through the COGfx Study, research has shown that healthy buildings can significantly improve cognitive function. In addition, healthy buildings can impact the bottom line for a business – from reducing energy waste and the related costs to increasing worker productivity.



HEALTHYBUILDINGS

Building on foundations

Healthy Buildings focus on addressing foundational aspects of the indoor environment to positively impact the people inside. Dr. Joseph Allen and a multidisciplinary team of experts from the Healthy Buildings Program at the Harvard T.H. Chan School of Public Health have identified these key areas as "The 9 Foundations of a Healthy Building." Based on the 9 Foundations, we've outlined actions building owners and operators can take to make their building a healthy building.



Carrier's Approach to Healthy Buildings

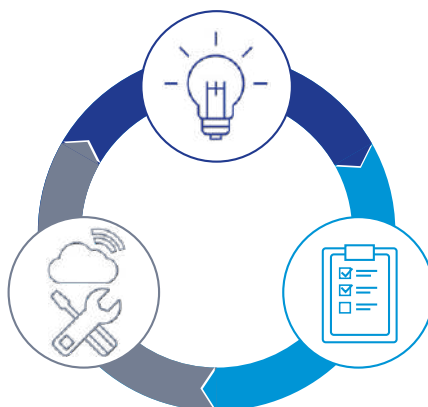
Carrier's Healthy Buildings Program provides an expanded suite of advanced solutions to help deliver healthier, safer, more efficient and productive indoor environments across key verticals including commercial offices, healthcare, hospitality, education, and retail. From products to improve indoor air quality and remote services to manage ventilation in buildings to touchless solutions in public spaces, Carrier is redefining the spaces of the future, today.

Expertise

Leveraging more than 100 years of experience creating optimal indoor environments; partnering with academic researchers and global experts, we build on our expertise to lead the way to a healthier future for all buildings.

Optimization

Through advanced controls and digital solutions and services, we optimize buildings to protect the people inside, enabling continuous improvements to air quality and overall health while reducing energy costs.



Assessment & Implementation

With products that improve ventilation, comfort, air quality and access, we make the solutions that make healthy buildings possible in all types of environments, from new builds to modernizations and retrofits.

Contact your local Carrier expert
 to learn more about the solutions and services that will help improve the air quality, ventilation, and overall health in your buildings.

SPECIFIC APPROACH DEDICATED TO BUILDING PERFORMANCE

With an array of technologies and skills around building systems, Carrier has the opportunity to create the next step of innovation in intelligent building technologies. In accordance with this dynamic, Carrier provides sustainable and energy saving solutions for the entire building lifecycle.

Pioneer in green building



As the first founding company of the U.S. Green Building Council® (USGBC), Carrier has been a leader from the beginning. Carrier serves as a consultant on some of the world's most advanced Green Building projects and offers Green Building training and education services to customers and employees across the globe, through the Carrier University Institute for Sustainability. Carrier is also USGBC's largest LEED® education provider.

**LEED, or Leadership in Energy & Environmental Design, is a green building certification program that recognizes best-in-class building strategies and practices. To receive LEED certification, building projects must satisfy prerequisites and earn points to achieve different levels of certification.*

Proven expertise



Whether retrofitting an existing structure or designing and constructing a record setting skyscraper, today's buildings demand sustainable solutions.

For more than a century, Carrier has been leading the industry with a whole building approach that leverages its technological and engineering expertise.

Sustainable design



Carrier building solutions are designed to meet the requirements of a variety of building types and applications. Carrier solutions deliver industry leading performance with less energy and lower environmental impact.

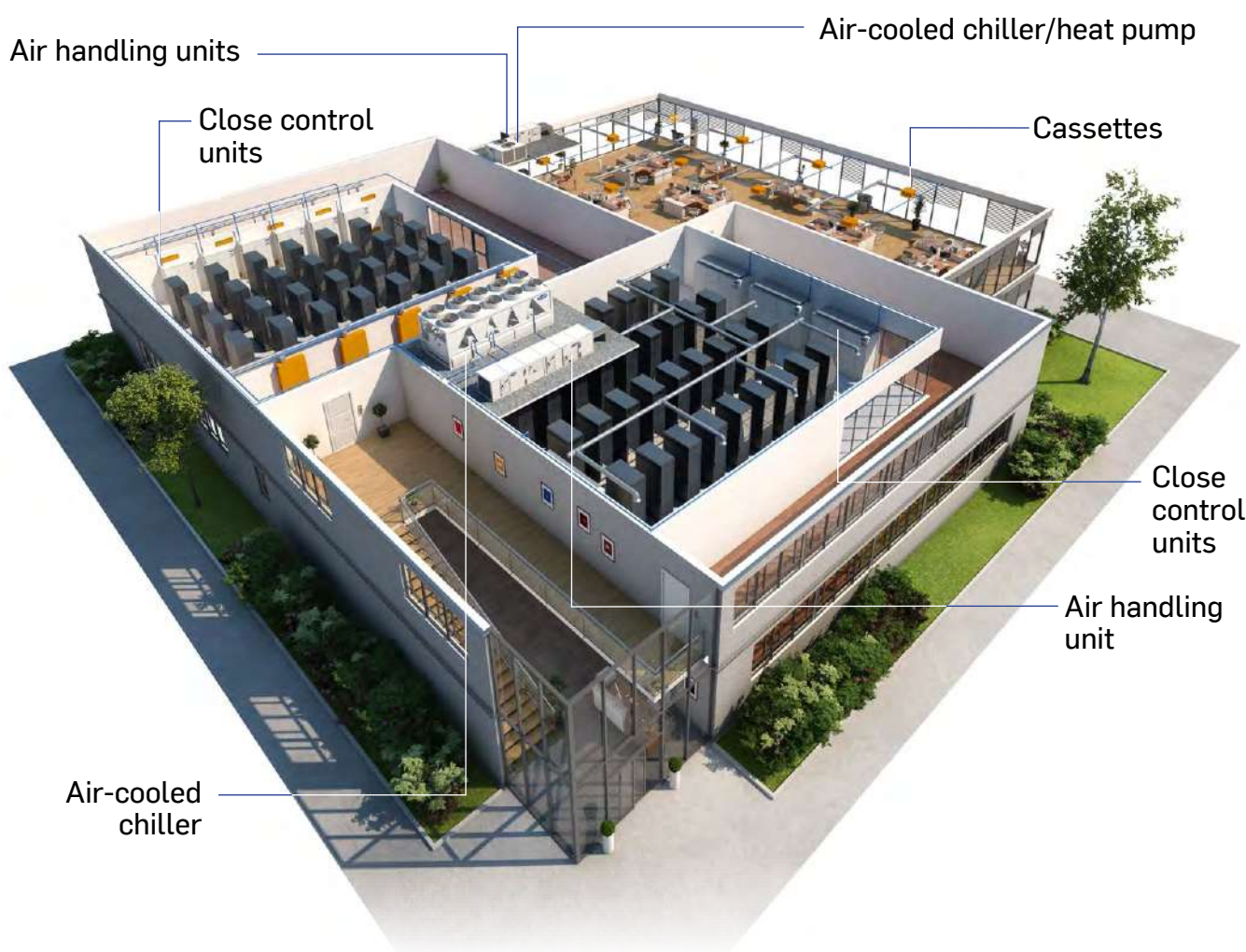
Smart energy management



Carrier understands that efficient building control, operations and maintenance can help manage costs and maintain high standards for energy efficiency, and provides the services needed for optimal performance.

These include automated building systems, vibration testing, thermal imaging and operational monitoring.

DATA CENTER



KEY ADVANTAGES

Fast capacity recovery

Maximum uptime is a priority for data center applications. To meet this challenge, the IT cooling system must be reliable and able to respond to unexpected variations. Carrier developed its dedicated fast capacity recovery feature, offering significant reduction of recovery time in case of power failure.

Reliability

Products undergo extensive tests before they are shipped to the customer and are also certified by internal organisations to ensure the highest levels of safety and quality.

Total free cooling

Air- or water-based free cooling systems are popular for data center applications

where the climate is suitable, resulting in energy savings through reduced use of the number of compressor running hours during the cold season. Carrier offers airside free cooling options on air handling units and hydraulic free cooling options for chiller systems, either with Carrier patented DX free cooling integrated system or using non-integrated systems using dry coolers or towers.

Smart energy management

Advanced control solutions such as Carrier PlantCTRL™ allow facility managers to control the HVAC system and to optimize it as a whole for maximum availability and minimized energy consumption.

PUE optimized

OFFICE



KEY ADVANTAGES

Green building approach

Carrier solutions not only offer efficiency to reduce the overall building energy consumption but are also designed for easy system integration: variable-speed pumps for efficient operation, time-scheduling, double-set-point; night-mode operation to optimize the chiller operation according to the requirements of the building; several communication protocols and remote

monitoring to secure consistent efficiency through the entire lifetime of the equipment.

Partial free cooling

For applications with moderate cooling demand throughout the entire year including the cold season, units can be equipped with a patented Carrier DX free cooling system with a dedicated pump by-passing the compressor on one or both refrigerant circuits during winter operation. Operating

without glycol, no extra free cooling coil. This results in significant energy savings.

Hybrid terminal

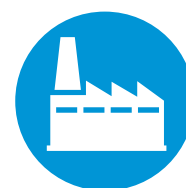
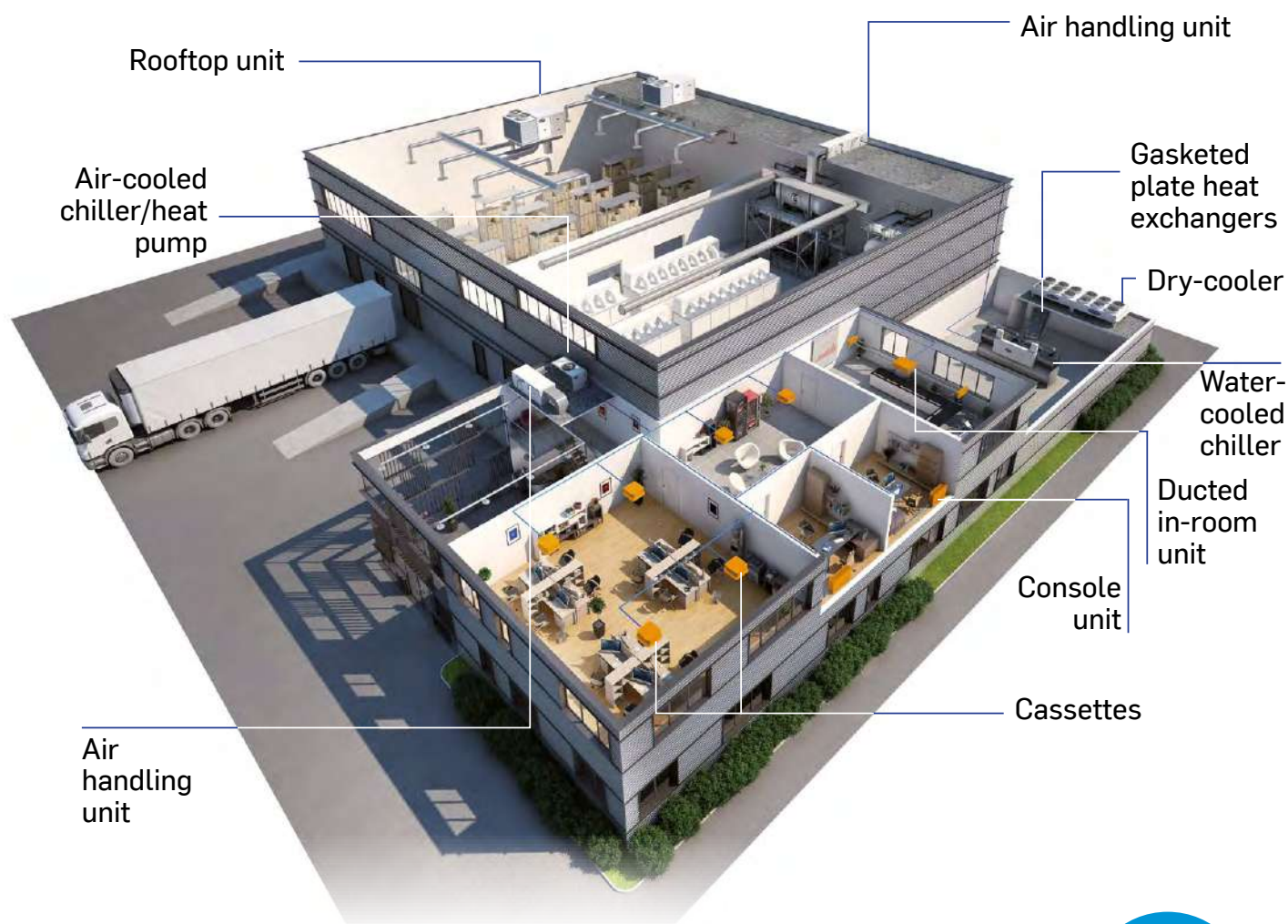
The 36XB Hybrid terminal combines the advantages of both chilled beams and fan coils: energy efficiency, high levels of comfort, extremely low noise and high indoor air quality. The primary ventilation air volume can be controlled based on CO₂ levels in rooms to maximize comfort and minimize

system energy consumption.

Comfort management

From open space to individual offices, comfort can be personalized and controlled according to occupancy. The Aquasmart® system manages building zoning, occupancy and room temperature in accordance with needs. The system offers a remote access (WebCTRL®) and records historical data of the HVAC equipment.

INDUSTRIAL



KEY ADVANTAGES

Chilled water production down to -15°C

Low temperature chilled water production down to -6°C (medium) or to -12°C (low) covers specific applications such as ice storage and industrial process cooling.

High efficiency at full and partial load

An inverter-driven machine usually offered very high

efficiency at partial load, but achieving high efficiency at partial load often means sacrificing efficiency at full load. Thanks to AquaForce® with Greenspeed® intelligence, you can have both.

Proximity and proactivity to ensure no downtime

Advanced monitoring service offering continuously collects information from equipment to anticipate and prevent loss of

performances or any damage. This solution enables users to track and monitor their HVAC system performance and to take preventive and corrective actions remotely, optimizing the lifetime of the equipment.

Smart energy management

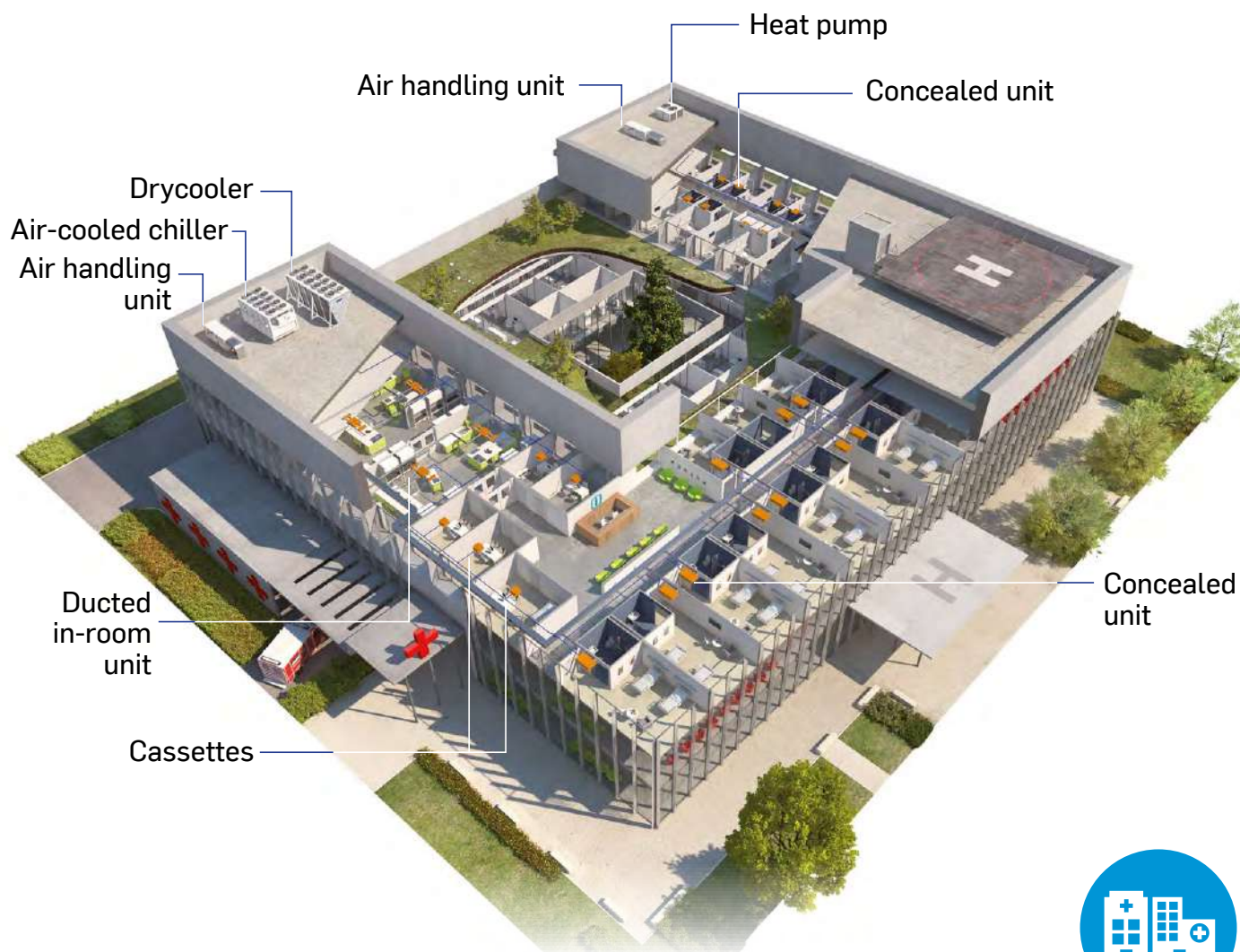
Advanced control solutions such as Carrier® PlantCTRL™ allow to control the HVAC system and to optimize it as a whole for maximum

availability and minimized energy consumption.

In addition, Carrier designs, engineers and implements custom-made Thermal Energy Storage (TES) solutions for HVAC systems with peak cooling demand > 500 kW.

100% smart grid compatible, the TES solution reduces the capacity of the chillers by 30% to 70%, secures the cooling production and optimizes occupants' comfort.

HOSPITAL



KEY ADVANTAGES

Air quality

Carrier solutions can help to ensure and maintain a highly controlled microclimate, regulating the temperature and humidity levels, as well as ensuring optimal indoor air quality (filtration efficiency levels, management of CO₂ levels).

Free cooling

For healthcare applications with 24/7 operations, a cooling demand may exist throughout the entire year. Units equipped

with a patented Carrier DX free cooling can offer significant energy savings without need for the use of glycol or extra free cooling coils and controls.

Heat recovery

Carrier offers a range of heat recovery options, including high efficiency heat recovery on air handling units and desuperheaters or heat recovery condensers on chiller systems to contribute to reduced heating energy usage.

System control

Hospitals often have dedicated control rooms to monitor the proper operation of all equipment in the entire building. Thanks to the availability of open protocol communication interfaces, Carrier equipment can be easily integrated in the building management system on site and, thanks to Carrier® PlantCTRL™, owners and plant managers may benefit from optimized control of the HVAC system plant room to reduce

energy consumption and ensure continued delivery of comfort and air quality.

In addition, Carrier designs, engineers and implements custom-made Thermal Energy Storage (TES) solutions for HVAC systems with peak cooling demand > 500 kW. 100% smart grid compatible, the TES solution reduces the capacity of the chillers by 30% to 70%, secures the cooling production and optimizes occupants' comfort.

HOTEL



KEY ADVANTAGES

Low noise features (night mode)

Air conditioning, ventilation and heating (depending on the region and season) are among the first things guests experience. Carrier terminal solutions and diffusion capabilities offer the low noise performance that guests require in a relaxing environment.

Advanced temperature controls

Personalising a guest's stay is vital to building a

relationship that will keep them coming back. Carrier's easy-to-use, aesthetically pleasing user interfaces supported by energy management systems, from Aquasmart® to WebCTRL®, make providing individualized climate settings cost effective and intuitive. User interfaces are available in a wide variety of options in Carrier's range.

Large range of heat pumps (5-5,000 kW)

Carrier has introduced dedicated heat pumps

designed for heating applications. They deliver superior energy efficiency both during cooling and heating operation whatever the external weather conditions: from -20 to 46°C outdoor air temperature.

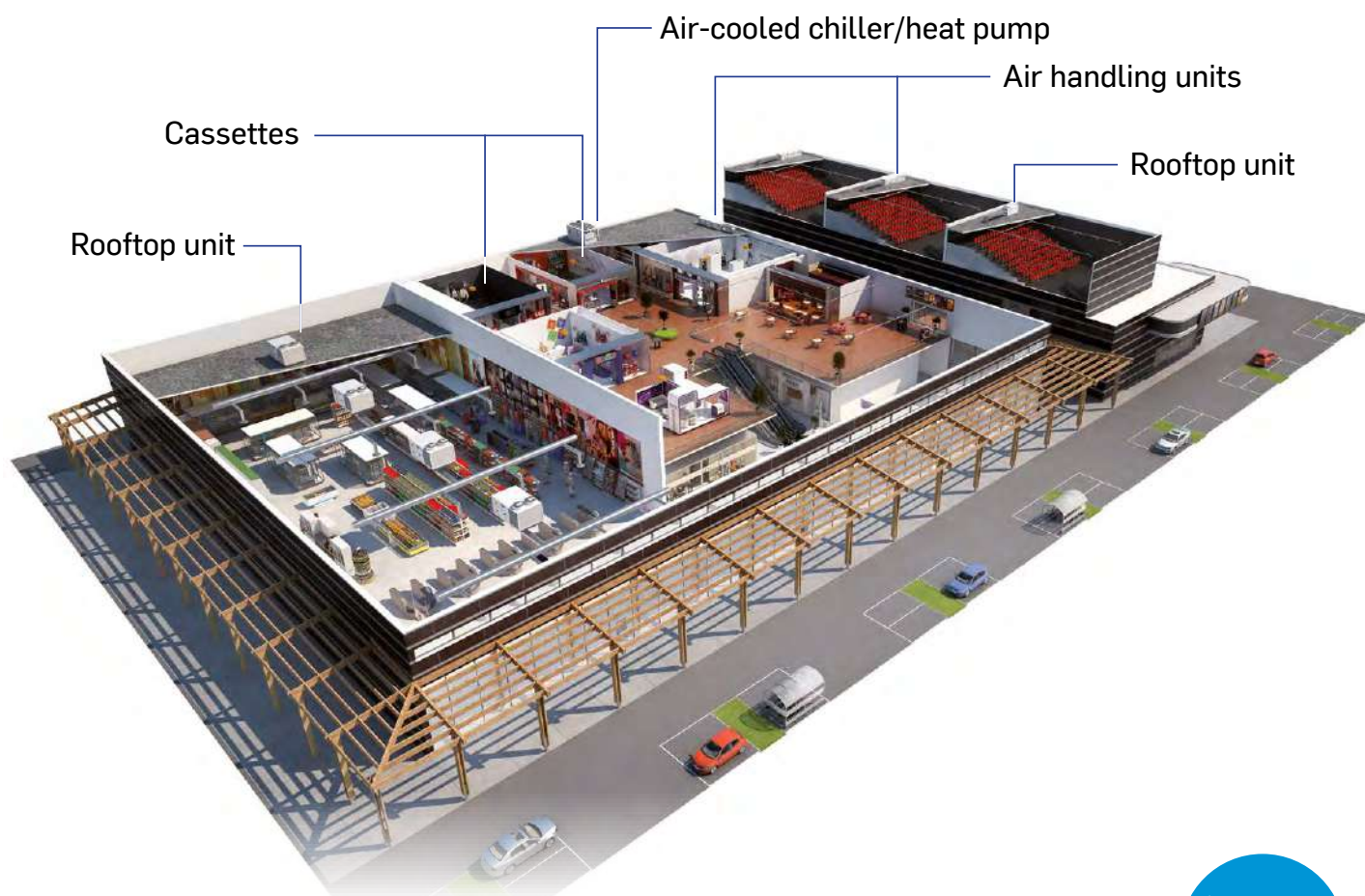
Heat recovery

Carrier offers a range of heat recovery options, including high efficiency heat recovery on air handling units and desuperheaters or heat recovery condensers on chiller systems to contribute to reduced heating energy usage.

Sanitary hot water

Hotels require a constant supply of sanitary hot water for various areas. Heat recovery at very high temperature is possible for many Carrier chillers offering energy to pre-heat the hot storage tank normally heated by traditional boilers. Furthermore dedicated high temperature heat pumps capable of hot water production up to 68°C offer further opportunities to reduce energy consumption of the system.

COMMERCIAL CENTER



KEY ADVANTAGES

For small/medium individual needs

Cost-effective self-contained air conditioning solutions for retail applications and/or warehouses are rooftop units. Designed for outside installation, these systems provide an easy, versatile solution for both new and retrofitted buildings. A range of types and options provide cooling, heating and ventilation and allow a variety of system designs from constant volume to variable volume designs.

For larger centers

Centralized chiller systems and air handling units distribute chilled water and treated ventilation air to the shopping complex. Individual shops select the most appropriate chilled water terminals or packaged air treatment solutions for their comfort needs and to suit interior design.

Heat recovery

Carrier offers a range of heat recovery options, including high efficiency heat recovery

solutions on rooftop and air handling units. These can contribute to reduced heating energy usage or in some cases replace components that use alternative fuels.

Indoor air quality

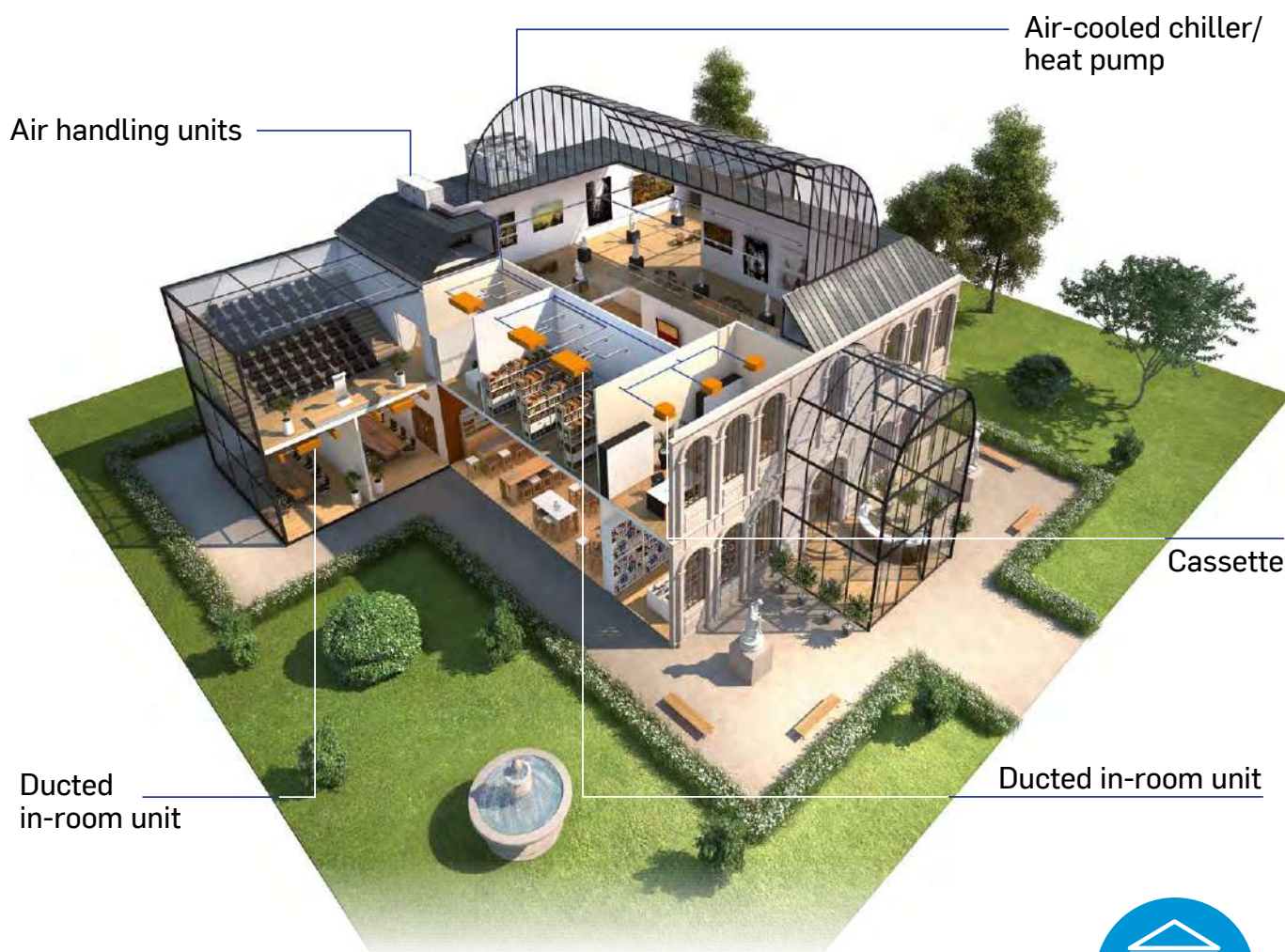
Carrier solutions can help to ensure and maintain a highly controlled microclimate, regulating the temperature and humidity levels, as well as ensuring optimal indoor air quality (filtration efficiency levels, CO₂ levels management).

Climate control systems

Carrier designs, engineers and implements custom-made Thermal Energy Storage (TES) solutions for HVAC systems with peak cooling demand > 500 kW.

100% smart grid compatible, the TES solution reduces the capacity of the chillers by 30% to 70%, secures the cooling production and optimizes occupants' comfort.

CULTURAL HERITAGE



KEY ADVANTAGES

Low noise emission

Carrier units have dedicated low noise options to be virtually unnoticeable and to respect the need for "church-quiet" noise levels.

Precise adaptability to load variation

Conditions inside buildings change as a result of many factors including the local climate, the time of the day and the number of visitors. Carrier solutions equipped with

precise electronic capacity controls and variable-speed motors adapt to meet load variations in just a few seconds, assuring exceptional comfort and in turn ensuring minimum energy consumption.

Indoor air quality

Carrier solutions can help to ensure and maintain a highly controlled microclimate necessary to protect the works of art, regulating the temperature and humidity levels, as well as ensuring

optimal airflow quality and velocity.

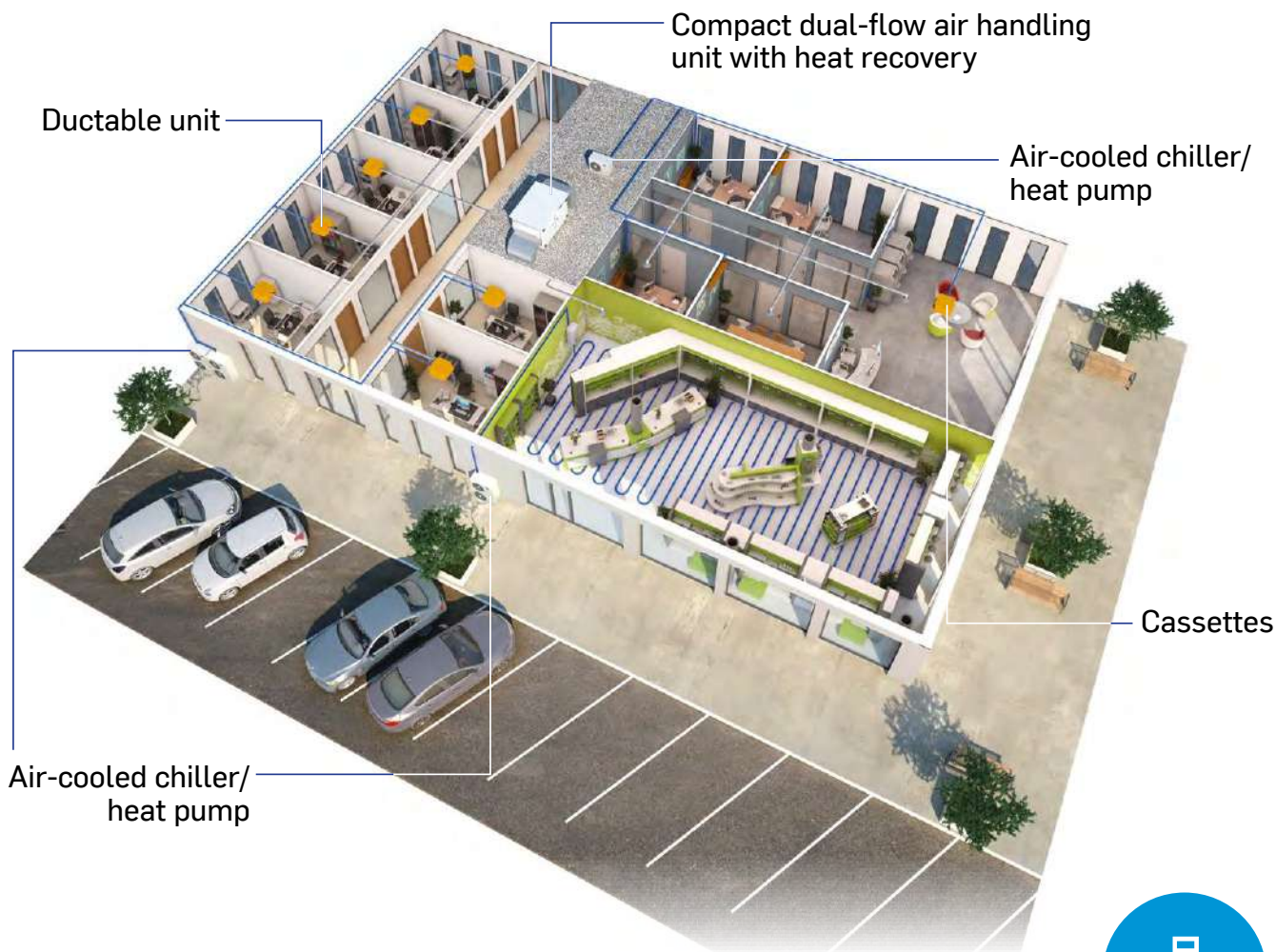
Smart energy management

Night-mode operation, time-scheduling and precise room temperature control are key features for any cooling or heating device operating in a museum. Thanks to advanced control systems such as Aquasmart® and Carrier® PlantCTRL™, the HVAC system can be controlled and optimized as a whole for

maximum comfort and minimized energy consumption.

In addition, Carrier designs, engineers and implements custom-made Thermal Energy Storage (TES) solutions for HVAC systems with peak cooling demand > 500 kW. 100% smart grid compatible, the TES solution reduces the capacity of the chillers by 30% to 70%, secures the cooling production and optimizes occupants' comfort.

LIGHT COMMERCIAL



KEY ADVANTAGES

Indoor air quality

Carrier solutions can help to ensure and maintain a controlled microclimate, regulating the temperature and humidity levels, as well as ensuring optimal indoor air quality.

Large range of heat pumps

Carrier has introduced dedicated heat pumps designed for heating

applications. They deliver superior energy efficiency both during cooling and heating operation whatever the external weather conditions: from -20 to 46°C outdoor air temperature.

Energy savings

With a Seasonal Coefficient of Performance (SCOP) up to 4.7, AquaSnap 30AWH is the best value for air conditioning and heating solution in light commercial applications: the Heating Optimized

technologies improve significantly the heating capacity at low temperature, while the EnergySoft innovative defrosting technology improve the energy efficiency.

Plug and play compact solutions

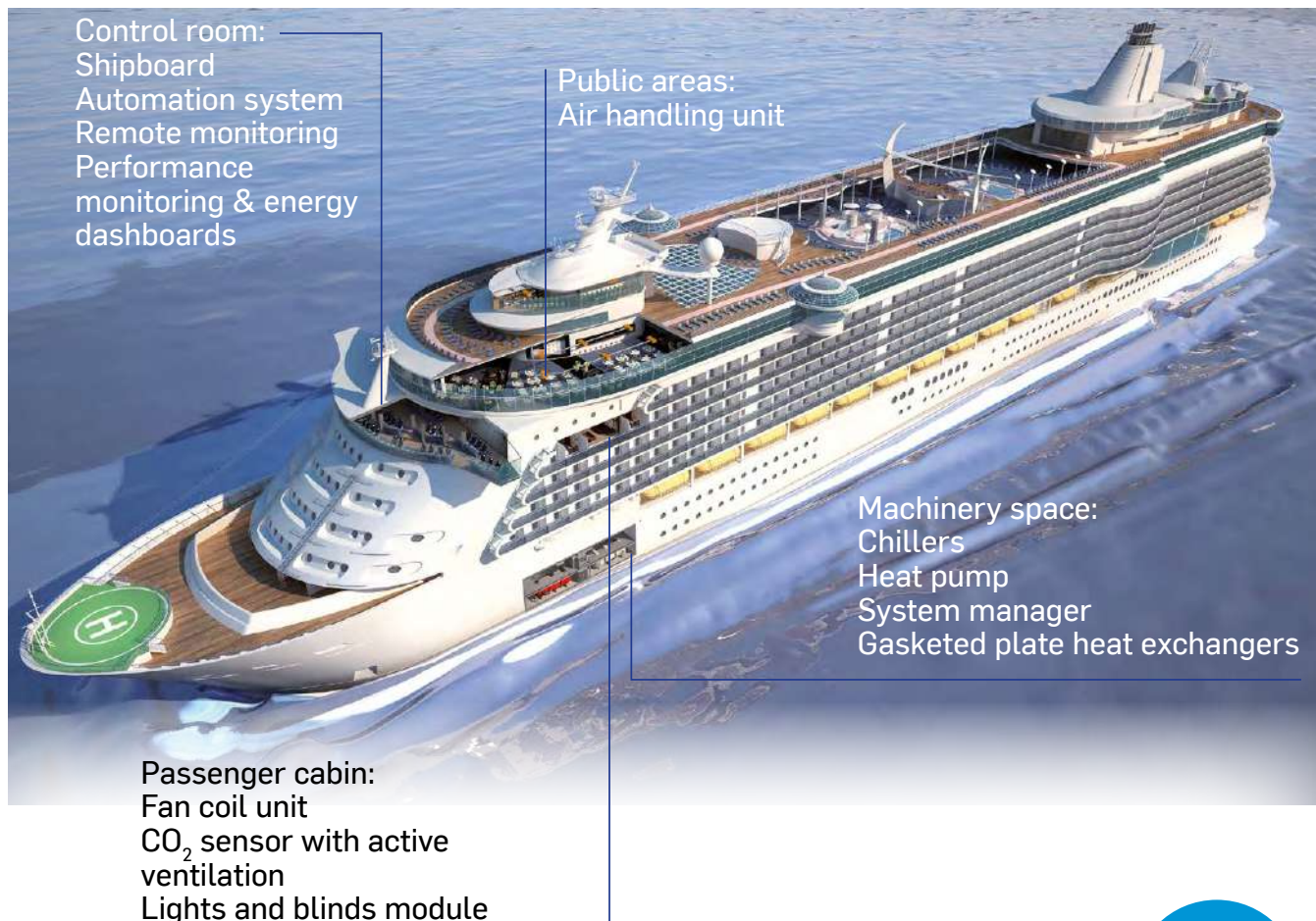
With complete factory wiring, easy handling features, factory-installed options and intuitive interface, the AquaSnap 30AWH and 30RQV set up is fast and

straightforward. Their compact size allows easy integration for small offices and shops.

Advanced control

The new generation of control, NHC, perfectly meets the thermal needs of commercial buildings while insuring the Energy efficiency optimisation. NHC integrates master-slave configuration up to 4 units, with JBUS connection.

MARINE



KEY ADVANTAGES



Machinery space

- AquaEdge™ two-stage chillers
- AquaForce® 30XWHV water-to-water heat pump
- PlantCTRL™ system manager
- 10TE gasketed plate heat exchangers



Passenger cabin

- 42MS passenger cabin fan coil
- 36XH hybrid terminal
- WTC controller
- Room controller
- CO₂ sensor with active ventilation
- Lights and blinds module



Public areas

- 39CQ compact air handling unit
- 39HQ AiroVision air handling unit
- 39CZ AiroVision air handling unit



YOUR SERVICE PARTNER

Your daily challenge is a complex balance between maintaining optimal comfort levels, maximising system uptimes and minimising cost of ownership. BluEdge service teams are committed to ensuring your peace of mind and supporting your business objectives throughout the lifecycle of your equipment.

We can help you create a customized program that is suited to your specific goals and needs.



Customer needs come first

Proximity & Responsiveness

BluEdge service expert technicians are there to take action, quickly. Comprehensive and highly efficient maintenance processes mean your equipment works at peak performance level.

If necessary, you can rely on Carrier Rental Systems and readily available spare parts to avoid extended downtime.

Expertise & Consultancy

The BluEdge service platform has experienced teams, an extensive network of branches, top grade logistics and powerful information systems. These industry-leading resources come together to deliver a best-in-class service.

Your BluEdge service experts will help you to find the right balance between enhancing energy efficiency and maximising your investments.

Proactivity

As your preferred partner, Carrier designs tailored maintenance programs to meet your goals and optimize your business performance.

Worldwide-recognized experts

Asset Management

- Advise on fast-moving regulatory environment.
- Guidance for energy optimization solution.
- Information on EH&S guidance.
- Providing educational sessions.

Technical expertise

BluEdge service technicians benefit from a multifaceted training program based on 115 years of industry experience to bring you top level, up-to-date service.

- Technical training to ensure the teams remain familiar with all equipment types.
- Environmental, Health and Safety (EH&S) training to ensure the highest standards of ongoing safety.

Present
in more than
60
countries

24/7
on-site
availability

More than
115
years
of experience

A COMPREHENSIVE SERVICE RANGE TO BEST FIT CUSTOMER NEEDS



MAINTENANCE

- Reduced, tightly controlled running costs
- Maximized equipment lifetime
- Full F-gas compliance for chillers

Carrier offers a comprehensive range of service agreements for all brands of chillers, rooftops, split and VRF (Variable Refrigerant Flow) air conditioning, air handling units, controls and accessories, from preventive to predictive maintenance.



REPAIR

- Minimized downtime and losses
- Increased occupant satisfaction
- Emergency Repair Kits available on site

Carrier's factory-trained technicians fix your systems expertly and efficiently. For quick and easy repairs, Carrier designed repairs kit solutions. All around Europe, our customers benefit from a dense network of experts to get the efficient support for all application and business needs.



SPARE PARTS

- State-of-the-art logistics with reliable next day deliveries
- Facilitated parts selection, and order on line: www.store-eu.carrier.com
- Comprehensive parts solutions for all equipment

Carrier's powerful supply chain provides you with genuine manufacture parts and consumables with high service levels. The dedicated expert team facilitates your selection.



MODERNISATION

- Compliance with new regulations
- Refrigerant conversion for chillers
- Improved reliability and optimized performance

Carrier experts support you all along the lifecycle of your building, HVAC plant and equipment. We propose turnkey solutions to replace and enhance equipment & systems. The flexibility & full support of these solutions based on your specific needs, secure and guarantee the performance of your cooling and heating production.



RENTAL

- Ready on-site temperature control or pump solution
- Secured production and optimal comfort
- Alternative to asset investments

Whenever you need a temporary cooling or heating solution, Carrier Rental Systems organization provides tailored solutions from design through installation to decommissioning. (For seasonal capacity requirement, emergency, planned service work, facility refurbishment, event, contingency planning...)



CONSULTANCY & REGULATION

- HVAC expertise & recommendations
- Guidance for understanding & complying with energy regulations
- Educational sessions for your asset management

As an expert on its equipment, Carrier offers you consultancy services on how to manage & optimize your energy consumptions and your maintenance costs. We help you to understand the fast-moving regulatory environment and to comply with it by taking into account your activity needs.



CONTROL & MONITORING

- Equipment, plant & system management
- Easy and fully secure access to your HVAC system
- BMS compatibility

Advanced control and monitoring services allow you to track and monitor your HVAC system performance & energy consumptions and take preventive and corrective actions remotely.



ANALYSIS & OPTIMISATION

- Actionable analysis by nearby experts
- Analyse plant operating data to maximize equipment lifetime
- Saving opportunities & optimize performance

We innovate constantly to find the best solution for analysing and optimising your installation. Our HVAC experts provide you with diagnostics to help you save on maintenance costs and to analyze the data of your systems and their energy consumption.



ENERGY STORAGE

- Turnkey system solutions for all HVAC applications
- For peak cooling systems >500 kW
- Shift your electricity consumptions from peak to off peak hours

Reducing electricity costs with continuous air conditioning throughout the year is a strong challenge for cities and customers. Installing a Thermal Energy Storage solution optimizes the design and the operation of your HVAC installation.

EUROPEAN PARTS CENTER: BUILDING SERVICE EXCELLENCE FOR CUSTOMER

Thanks to our dedicated ERCD (EMEA Replacement Components Division) team and our factories located throughout Europe, Carrier is able to deliver 250 orders daily and ship efficiently more than 1,600 shipments per week around the world.



A robust supply chain

Dedicated team & expert advices

An experienced and attentive team will support you throughout the process of spare parts procurement: parts selection, management orders follow-up and logistics until delivery.

Our powerful purchasing negotiations ensures optimized pricing and lead-times. Thanks to our manufacturing expertise, we provide advice to help you find the best service solution to meet your specific needs.

- State-of-the art logistics with reliable next day delivery for Europe
- Storage permanently adjusted according to customer demand
- Accessible and reactive contacts
- Dedicated online shop to facilitate the selection of parts

A comprehensive parts offering

High added value parts solutions

With more than 10,000 items in stock, we propose a comprehensive parts offering including compressors, universal parts and manufactured components.

- Factory Authorized & Proprietary and universal spare parts
- Parts kits solutions
- Consultancy services
- Dedicated solutions for railways, mining & marine business

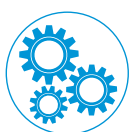
Quality & reliability

The quality and the reliability of Carrier are integrated and guaranteed for all products & systems and extended to every spare part.

Discover our new e-commerce website dedicated to spare parts!

Visit: **www.store-eu.carrier.com to get your access!**

- Order online with total autonomy
- Consult technical information & pictures of our parts
- Simplify your technical selection thanks to exploded views of end products
- Stay tuned to discover future contents!



+90,000
Managed part numbers*



98%
Deliveries on time*



6/7
Customer satisfaction*

*2018 Carrier data

CARRIER RENTAL SYSTEMS: TAILOR MADE HIRE SOLUTIONS FOR COOLING & HEATING

Specialized in temperature control, pumps and power solutions, Carrier Rental Systems operates around Europe providing comfortable, efficient, healthy, safe and secure environments for many critical and diverse applications: industry, events, data centers, hospitals, retail, offices.

Turnkey solutions

Carrier Rental Systems provides temporary short-, medium- and long-term cooling and heating solutions for customer needs including seasonal capacity requirements, breakdown emergencies, planned service work, facility refurbishment, special events and contingency planning.

With tailored systems for commercial and industrial applications, the Carrier Rental team is committed to ensuring on-time and on-budget delivery, from system design to installation and decommissioning.

Customized solutions

Meet changing needs throughout the year to suit fluctuations in demand or seasonal temperature changes

Inclusive 24/7 call out

Dedicated technicians to support your daily business

Testing before buying

Trial the equipment before buying with Carrier Rental Systems

New premises & short term leases

Provide the time to install a new air-conditioning system until you have expanded or refurbished your installation

Fixed monthly costs

Constant rental prices

No extra charges

Price maintenance included with the rental fee

No need for capital expenditure

Contract based on a temporary plant basis

Tax relief

100% allowable against corporation tax



Industry:

Cooling solutions for industrial petrochemical, pharmaceutical, logistics...



Hospital:

Heating and air-conditioning rentals for hospitals and their clinic's.



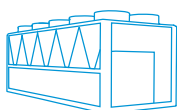
Event:

Rentals for heating and cooling units (Red bull crashed ice in Belfast).

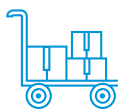


Hotel:

Cooling unit rentals following a system failure (Royal Garden hotel in London).



+8,000
Available models



+40
Depots



24/7
Include call out

AIR-COOLED CHILLERS

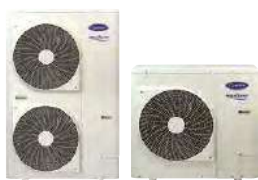
Air-cooled rotary & scroll chillers



30RBV — Page 51

- Easy and fast installation
- Superior reliability
- Hydraulic module available

15-18 kW



30RB — Page 69

- Easy and fast installation
- Compact, reliable and efficient

16-41 kW



30RBY — Page 59

- Superior reliability
- Economical operation

16-32 kW



30RB — Page 107

- High efficiency
- Compact design
- Superior reliability

40-160 kW



30RBS/38RBS — Page 95/129

- Compact design
- Quiet operation
- Commercial and industrial applications

40-160 kW



30RBSY — Page 79

- Compact design
- Variable speed fans
- Variable water flow

40-153 kW



AIR-COOLED CHILLERS

Air-cooled scroll chillers



R-32

30RB/30RBP — Page 159

- High efficiency
- Sustainable
- Easy and fast installation
- Compact, reliable and efficient

170-940 kW



30RBM/30RBP — Page 139

- Superior reliability
- Low sound level
- Low refrigerant charge

164-528 kW



Air-cooled screw chillers



R-1234ze
HFO

30KAV/P-ZE — Page 281

- Outstanding performance
- Intelligence and connectivity

372-836 kW



R-1234ze
HFO

30XB/P-ZE — Page 223

- Very economical operation
- Ease-of-use
- Exceptional reliability

493-1,079 kW



30KAV/P — Page 249

- Outstanding performance
- Intelligence and connectivity

210-1,160 kW



30XB/P — Page 191

- Low sound levels
- Environmentally responsible
- Exceptional reliability

267-1,682 kW



WATER-COOLED CHILLERS

Water-cooled screw chillers



30XW-VZE — Page 375

- Low energy consumption
- High reliability
- Environmentally responsible

448-1,243 kW



30XW-PZE — Page 361

- Easy and fast installation
- Environmentally responsible

269-1,110 kW



30XW-V — Page 349

- Designed to support green building design

587-1,741 kW



30XW/30XWP — Page 321

- High reliability
- Easy and fast installation
- Environmentally responsible

273-1,756 kW



WATER-COOLED CHILLERS

Water-cooled centrifugal chillers



19DV — Page 399

- Industry leading energy efficiency
- Advanced back-to-back two stage compressor
- Acoustic comfort

1,400-3,500 kW



19XR/XRV (1 stage) - Page 405

- Single stage compressor
- Wide application
- Low sound level

1,000-5,300 kW



19XR/XRV (Dual stage) Page 409

- Two stage compressor
- Stable operation
- Small footprint

2,800-10,500 kW



19PV — Page 387

- Energy excellence
- Compact and reliable
- Magnetic levitation centrifugal compressor

550-1,600 kW



Air-cooled drycoolers



09PE — Page 413

- Flexibility
- Energy optimization

10-1,100 kW



09VE — Page 419

- Compact
- Acoustic comfort

100-1,870 kW



Absorption chillers



16TJ (Single effect) — Page 429

- Complete range 350 to 2500 kW
- Steam supply pressure 50 to 100 kPa

352-2461 kW



16LJ — Page 423

- Complete range 350 to 2500 kW
- Hot water source from COPr up to 0.78

83-3,956 kW



16NK (Double effect) — Page 439

- Super absorption

345-4,652 kW



Gasketed plate heat exchanger



10TE — Page 443

- Economic conception
- High reliability

0-800 m³/h



AIR-TO-WATER HEAT PUMPS

Rotary compressors



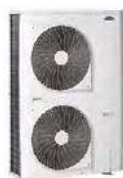
30AWH — Page 451

- Monobloc inverter
- Compact, reliable and efficient

4-17 kW



4-15 kW



30AWHHO — Page 459

- Monobloc inverter
- Compact, reliable and efficient

5-17 kW



4-15 kW



61AF014-019 — Page 469

- High energy efficiency level
- Superior reliability

14-20 kW



30RQV — Page 477

- Easy and fast installation
- Hydraulic module available

15-18 kW



17-21 kW



30RQ — Page 485

- Easy and fast installation
- Hydraulic module available

16-39 kW



17-41 kW



AIR-TO-WATER HEAT PUMPS

Scroll air-to-water heat pumps



30RQS — Page 505

- Commercial and industrial applications
- Partial heat reclaim

38-148 kW



42-150 kW



30RQSY — Page 517

- Compact design
- Quiet operation
- Variable speed fan

37-147 kW



42-151 kW



61AF-022-105 — Page 495

- 61AF optimized for heating
- Compact design
- Plug & play approach

21-102 kW



R-32

30RQ/30RQP — Page 551

- High efficiency, low operating cost
- Compact and simple to install
- Superior reliability

160-520 kW



170-520 kW



30RQM/30RQP — Page 533

- Compact and simple to install
- Low sound level
- Superior reliability

154-510 kW



179-434 kW



WATER-TO-WATER HEAT PUMPS

Water-to-water scroll heat pumps



61WG — Page 575

- High temperature
- Plug-and-play approach
- High efficiency

29-230 kW



30WG/30WGA — Page 595

- 30WG optimized for cooling
- Compact design

25-190 kW



29-230 kW



30WI — Page 311

- High energy efficiency
- Compact design
- Broad field of applications

220-720 kW



250-830 kW



WATER-TO-WATER HEAT PUMPS

Water-to-water screw heat pumps



R-1234ze
HFO

61XWH-ZE — Page 695

- Multiple applications
 - . district heating
 - . space heating
 - . process heating

200-2,500 kW



R-1234ze
HFO

30XWHV-ZE — Page 683

- Low energy consumption
- Environmentally responsible

448-1,243 kW



524-1,485 kW



R-1234ze
HFO

30XWHP-ZE — Page 669

- Low energy consumption
- High reliability
- Safe design

269-1,110 kW



319-1,296 kW



30XWHV — Page 657

- Easy and fast installation
- Environmentally responsible

587-1,741 kW



648-1,932 kW



30XWH/30XWHP — Page 629

- Low operating sound system
- Environmentally responsible
- Low energy consumption

273-1,756 kW



317-1,989 kW



FAN COIL UNITS

Ducted terminal fan coil units



42GR — Page 875

- High efficiency
- Extremely low sound level
- Quick installation

1.3-3.4 kW



2.9-3.5 kW



42BJ — Page 863

- All-in-one offer
- Minimal installation costs
- Very low sound level

0.5-6 kW



0.5 - 12.2 kW



42EP — Page 843

- Optimised energy consumption level
- Managed comfort

0.4-4.2 kW



0.5-5 kW



42NH — Page 791

- Modular horizontal ducted unit
- Low energy consumption

0.6-12 kW



0.8-17 kW



Concealed terminal fan coil units



42NL — Page 791

- Extremely quiet operation
- Flexibility for simplified installation

0.6-12 kW



0.8 - 17 kW



42ET — Page 775

- Ducted unit for suspended ceiling application
- Easy installation and maintenance

0.7-6.98 kW



0.88-7.63 kW



42ND — Page 761

- Energy and ecodesign performance
- Improved occupant comfort

0.7 - 8.7 kW



1.3-11.6 kW



FAN COIL UNITS

Console and cassette fan coil units



42NC — Page 761

- Energy and Ecodesign performance
- Very low sound level

0.7-8.6 kW



1.3-11.6 kW



42GW — Page 735

- Easy installation
- Centralised diffusion
- Optimised comfort

1.5-8.6 kW



1.3-11.6 kW



42KY — Page 749

- Optimised Coanda
- Effect diffusion
- Air quality
- Design

1-6 kW



2-10 kW



42SI — Page 895

- Compact design
- Available in 4 models

0.43-3.7 kW



0.8-4.8 kW



36XB/XH — Page 707/711

- Thermal and acoustical comfort
- Energy savings
- Improved indoor air quality

0.27-2 kW



0.25-8 kW



Air heater



42AM — Page 715

- Ensures buildings warm up ultra fast
- Available with low consumption EC motor

5.4-97 kW



AIR TREATMENT SYSTEMS

Air handling units



39CP — Page 919

- AHU for all application
- Designed to conform to standards

1,000-30,000 m³/h



39HQ — Page 931

- Extremely quiet operation
- Flexibility for simplified installation

5,000-130,000 m³/h



39CZ — Page 935

- The effective solution for service sector, industry and healthcare applications

1,000-61,000 m³/h



39CQ — Page 905

- Modular Ultra-Slim AHU
- Ideal for a compact installation

1,000-6,000 m³/h



39HX — Page 911

- Plug & play unit
- High-efficiency heat recovery unit
- High performance plug fan

300-18,000 m³/h



AIR TREATMENT SYSTEMS

Close control units



50CJ — Page 949

- Compact footprint
- Dual-Wall construction
- PLC control

5-55 kW



4.5-41 kW



50CO — Page 959

- Optimised Coanda
- Effect diffusion
- Air quality

40-130 kW



36-73 kW



Rooftops



50FF/FC — Page 965

- High efficiency
- Superior reliability
- Energy recovery

22-90 kW



22-90 kW



50FC 100-280 — Page 995

- High efficiency
- Energy savings
- Improve air quality

100-280 kW



100-308 kW







Cooling

49

Type		Range	Refrigerant	Cooling capacity, kW	Page
Air-cooled units					
With screw compressors		30RBV	R-410A	15-18	51
		30RBY 017-033	R-410A	16-32	59
		30RB 017-040	R-410A	16-41	69
		30RBSY 039-160	R-410A	40-153	7
		30RBS 039-160	R-410A	40-156	95
	NEW	30RB 040R-160R	R-32	40-160	107
		38RBS	R-410A	40-160	129
		30RBM/30RBP 160-520	R-410A	164-528	139
	NEW	30RB/30RBP 170R-950R	R-32	170-940	159
	NEW	30XBE/30XBP	R-134a	277-1684	191
	NEW	30XBE-ZE/30XBP-ZE	R-1234ze	210-1170	223
	NEW	30KAV/30KAVP	R-134a	493-1079	249
	NEW	30KAVZE/KAVPZE	R-1234ze	493-1079	281
Water-cooled units					
With scroll compressors		30WI	R-410A	220-700	311
With screw compressors		30XW/30XWP 254-1752	R-134a	273-1756	321
		30XW-V 580-1710	R-134a	587-1741	349
		30XW-PZE 301-1101	R-1234ze	269-1110	361
		30XW-VZE 451-1301	R-1234ze	448-1243	375
With centrifugal compressors		19PV	R-134a	550-1600	387
		19DV	R-1233zd	1400-3500	399
		19XR/XRV single stage	R-134A/R513a	1000-5300	405
		19XR/XRV double stage	R-134A/R513a	2800-10500	409
Air-cooled drycoolers					
With axial fan		09PE	-	10-1100	413
		09VE	-	180-1870	419
Absorption chillers					
Single-effect					
Hot water-fired absorption chillers	NEW	16LJ-F	-	83-3956	423
Steam-fired absorption chillers		16TJ	-	352-2461	429
Double-effect					
Steam-fire absorption chillers		16NK	-	345-4652	439
Gasketed plate heat exchangers					
		10TE	-	5-5000	443

INVERTER AIR-COOLED LIQUID CHILLERS



Easy and fast installation
Hydraulic module available
Inverter technology
compressor and fans
Superior reliability

30RBV

AQUASNAP greenspeed

Nominal cooling capacity 15-18 kW

The AquaSnap Greenspeed® liquid chiller/heat pump range was designed for commercial applications such as the air conditioning of offices, hotels and large residential houses. The units integrate the latest technological innovations: Non-ozone depleting refrigerant R410A, DC inverter twin-rotary compressors, low-noise variable speed fans and microprocessor control.

With exceptional energy efficiency values the inverter chillers qualify for local tax reductions and incentive plans in all EU countries.

For added flexibility the AquaSnap Greenspeed® units are available with or without hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

The AquaSnap Greenspeed® heat pump systems can be used with a wide choice of Carrier terminal fan coil units - cassettes, low, medium and high-pressure satellite units, console units, underceiling units and high-wall units.

Ecodesign is the European Directive that sets mandatory requirements for Energy related Products (ErP) to improve their energy efficiency. Carrier supports initiatives to reduce the environmental impact of its products.

Quiet operation

- Compressors
 - Low-noise INVERTER Twin rotary compressor with low vibration levels
 - Advanced technology providing maximum energy-efficiency with high capacity available at peak conditions and optimised efficiency at low and mid compressor speeds. The AquaSnap Greenspeed® heat pump DC inverter uses Intelligent Power Drive Unit (IPDU) hybrid inverter technology. An electronic management logic is used to optimised compressor operation in all conditions, minimised temperature fluctuation to give a perfect individual comfort control with significant reduction of energy consumption :
 - PWM: pulse width modulation of the direct current controls the compressor at partial load conditions, adjusting the frequency at fixed voltage. The compressor speed is fine-tuned and the system provides high-level comfort (no temperature fluctuations) at exceptionally efficient working conditions.



Compressor frequency is increased continuously up to the maximum level. This ensures that there are no current draw peaks in the start-up phase. Inverter ramp-up speed makes soft starts unnecessary and ensures immediate maximum power.

- The two rotary compression cylinders, offset from each other by 180°, and the DC brushless motor with the shaft in perfect balance ensure reduced vibration and noise, even at very low operating speeds. This results in an extremely wide range between minimum and maximum capacity with continuous operation, guaranteeing that the system is always optimised and provides maximum comfort at exceptionally high efficiency levels.
- Twin-rotary cylinders, low vibrations and low load to the shaft ensure highest compressor reliability and a long trouble-free operating life.
- All DC brushless twin-rotary compressors are equipped with internal system to secure the motor against oil issues due to colder climate.
- A double compressor shield for acoustic insulation further reduces noise levels.

- Air heat exchanger section
 - Vertical air heat exchanger coils
 - The latest-generation low-noise fans are now even quieter and do not generate intrusive low-frequency noise
 - Rigid fan installation for reduced start-up noise.

Easy and fast installation

- Integrated hydraulic module (option)
 - Fixed speed water pump or variable speed circulator
 - Water filter protecting the water pump against circulating debris
 - High-capacity membrane expansion tank ensures pressurisation of the water circuit (option)
 - Overpressure valve, set to 3 bar
 - Thermal insulation and frost protection down to -20°C, using an electric resistance heater and pump cycling.
 - Integrated water fill system to ensure correct water pressure (option)

No additional buffer tank required, simplifying and speeding up the installation process (to be checked with the water volume of installation).

- Physical features
 - Advanced circuit design and component selection has resulted in a compact unit with an exceptionally small footprint that is easy to transport even through narrow doors.

Reduced operating weight and a handle on the unit panels to facilitate transport.

- The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- A neutral color (RAL 7035) to facilitate the integration in residential area
- Simplified electrical connections
 - Main disconnect switch with high trip capacity (option)
 - Transformer for safe 24 V control circuit supply included
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Increased seasonal efficiency
 - In accordance with EN 14825:2013, Average Climate, energy label reach A+ (see Physical data RQV units). The exceptionally high energy efficiency of the AquaSnap Greenspeed® unit is the result of a long qualification and optimisation process.
- Reduced maintenance costs
 - Maintenance-free twin rotary compressors
 - Fast diagnosis of possible incidents and their history via the user interface WUI
 - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Non-ozone depleting R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

FEATURES

Superior reliability

- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table.

NHC Control

NHC control associate with compressor and fan variable frequency driver combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressor, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

- Ease-of-use
 - NHC control can be associated with a new User interface (WUI) which allow an easy access to the configuration parameters (frequency compressor, refrigerant circuit temperature, sets points, air temp, entering water temp, alarm report...).
 - This user interface is also very intuitive in its use. It allows reading and easy selection of the operating mode. The functions are represented by icons on the LCD backlit screen.
 - To facilitate the use of this interface, 3 levels of access are available: end user, installer and factory.



- Key features
 - Heating and cooling mode
 - Domestic hot water
 - Master/slave control of 4 units operating in parallel with operating time equalisation and automatic changeover in case of a unit fault (need Master slave sensor in accessory).
 - Scheduling period
- Choice of control product
 - 3 options are available to drive the 30 RBV 17-21:
 - Dry contact
 - User interface WUI
 - ModBus protocol

User Interface WUI



- This interface can be installed up to 50 m away. It is connected to the NHC board with a 4 wires cable.
- 2 installation possibilities:
 - Inside the room (with remote interface accessory) : IAT sensor is an accessory, it is not mandatory to operate in remote user interface, because WUI has an internal sensor to measure the room temperature take with the internal sensor, set-point selected is air temperature.
 - On the HP/chiller (with local user interface option) : set-point is on water temperature are water temperature



Local User Interface configuration

- ModBus
 - Direct access with Modbus connection to set, configure and monitor the 30 RBV
- Input remote contact :
 - Remote On/Off Contact
 - Remote Heat/Cool Contact: This switch is used to select the Cooling Mode (contact opened) or the Heating Mode (contact closed).
 - Remote Economic Contact: This switch is used to select the regular Home Mode when contact is opened or the Economic Away Mode when contact is closed.
 - Safety Input Contact: This switch is normally closed type, according to configuration it is used either to stop the unit, to ban the Heating Mode or to ban the Cooling Mode when contact is opened.

FEATURES

■ Large choice of Input Contacts

Several functions can be configured by the installer. They allow to adapt to the environment of the machine:

- Power Limitation / Night Mode: This switch is used to reduce the compressor maximum frequency to avoid noise.
- Off Peak: If the General Purpose Contact, configured to "Off Peak", is closed then the Electric Heat Stages are not allowed.
- Loadshed Request: If the General Purpose Contact, configured to "Loadshed Request", is closed then unit shall be stopped as soon as possible.
- Solar Input: If the General Purpose Contact, configured to "Solar Input", is closed then the unit is not allowed to run in Heating or DHW Mode because hot water is produced from a solar source.
- DHW Request Switch from tank : When this input is closed, the Domestic Hot Water production is requested (need DHW sensor delivered in accessory).
- DHW Priority : When this input is closed, the unit is switching to Domestic Hot Water production regardless of the Space Heating demand and the current DHW schedule (need DHW sensor delivered in accessory).

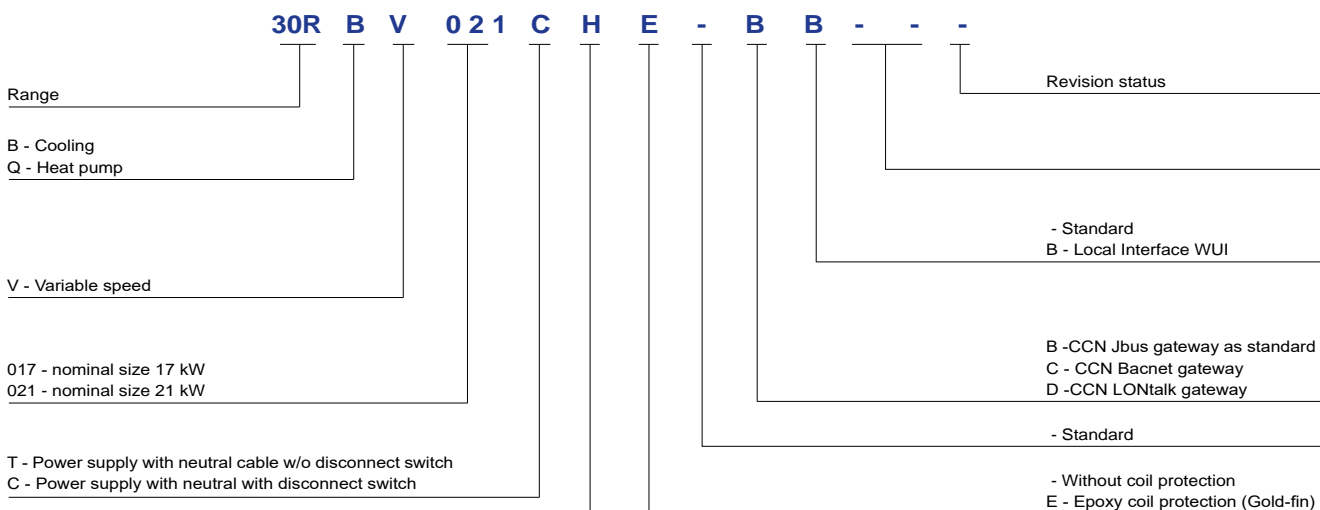
- Anti-Legionella Cycle Request : When this input is closed, the Domestic Hot Water production is requested with the Anti-Legionella set-point.
- Summer Switch : This switch is used to select the Winter (contact opened) or the Summer Mode (contact closed).
- Energy Meter Input : This input is used to count the number of pulses received from an external energy meter (not supplied)
- External Alarm Indication Input : When this input is opened, alarm is tripped. This alarm is for information only, it does not affect the unit operation.

■ Output remote contact available

2 Output contacts could be chosen on the NHC board, upon configuration for the following purposes:

alert, alarm , Standby, running (Cool, Heat, DHW or Defrost Modes), IAT Reached, electrical Heat Stage 2, electrical Heat Stage 3

TYPE KEY



- X - Without hydraulic module
- H - With hydraulic module with expansion tank
- F - With hydraulic module with expansion tank and water filling system
- R - With hydraulic and without expansion tank*
- Z - With hydraulic, w/o expansion tank and with water filling system
- M - With variable speed circulator with expansion tank
- N - With variable speed circulator with expansion tank and water filling system
- P - With variable speed circulator without expansion tank
- Q - With variable speed circulator, w/o expansion tank and with water filling system

Accessories

- Remote User Interface (00PSG002521900A)
- DHW sensor (00PSG002501300A)
- Master /slave sensor (00PSG000596400A)
- Additional OAT sensor (00PSG002522000A)

PHYSICAL DATA, 30RBV UNITS

30RBV				17		21					
Cooling											
Standard unit Full load performances*		CA1	Nominal capacity		kW		15,6		18,6		
			EER		kW/kW		3,3		3,1		
			Eurovent class				A		A		
		CA2	Nominal capacity		kW		21,6		25,5		
			EER		kW/kW		4,0		3,9		
				Eurovent class				A		A	
Seasonal energy efficiency			SEER ^{12/7°C}		kWh/kWh		4,52		4,56		
			Comfort low temp.								
			I _{js cool} ^{12/7°C}		%		178		180		
Sound levels											
Standard unit											
Sound power level ⁽¹⁾					dB(A)		71		74		
Sound pressure level at 10 m ⁽²⁾					dB(A)		40		43		
Dimensions - Standard unit											
Length ⁽³⁾					mm		1109		1109		
Width					mm		584		584		
Height					mm		1579		1579		
Operating Weight ⁽⁴⁾											
Standard unit					kg		168,9		176,9		
Compressors					Rotary compressor		1		1		
Refrigerant					R410A						
Charge ⁽⁴⁾					kg		6,25		6,25		
Capacity control											
Minimum capacity ⁽⁵⁾					%		33 %		41 %		
Condenser							Grooved copper tubes, aluminium fins				
Fans - Standard unit							Axial type fan				
Quantity							2		2		
Maximum total air flow					l/s		2000		2400		
Maximum rotational speed					rps		14		16		
Evaporator							Brazed plate heat exchanger				
Water volume					l		1,52		1,9		
Max water-side operating pressure without hydraulic module					kPa		1000		1000		
Hydraulic module (option)							Pump, relief valve, paddle flow switch, expansion tank (option)				
Pump							Centrifugal pump				
Expansion tank volume					l		8		8		
Max. water-side operating pressure with hydraulic module ⁽⁶⁾					kPa		300		300		
Water connections (Without Hydraulic Module)											
Inlet diameter (MPT GAS)					inch		1		1		
Outlet diameter (MPT GAS)					inch		1		1		
Water connections (With Hydraulic Module)											
Inlet diameter (MPT GAS)					inch		1-1/4		1-1/4		
Outlet diameter (MPT GAS)					inch		1		1		
Water Filling System (Option)											
Diameter (MPT GAS)					inch		1/2		1/2		
Chassis paint colour					Colour code:		RAL 7035		RAL 7035		

- * In accordance with standard EN14511-3:2013.
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
- CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
- I_{js cool}_{12/7°C} & SEER_{12/7°C}** **Applicable Ecodesign regulation: (EU) No 2016/2281**
- (1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20 µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
- (3) Length = 1141 mm if main disconnect switch
- (4) Values are guidelines only. Refer to the unit nameplate.
- (5) Cooling Eurovent condition
- (6) Min. water-side operating pressure with fixed speed hydraulic module is 50 kPa and with variable speed hydraulic module is 40 kPa.



Eurovent certified values

PHYSICAL DATA, 30RBV UNITS

30RBV				17	21
Heating					
Standard unit Full load performances*	HA1	Nominal capacity	kW	17,1	21,1
		COP	kW/kW	4,1	4,1
	HA2	Nominal capacity	kW	16,2	20,0
		COP	kW/kW	3,4	3,3
	HA3	Nominal capacity	kW	15,3	19,1
		COP	kW/kW	2,7	2,7
Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,68	3,56
		IJs heat _{30/35°C}	%	144	139
		SCOP _{47/55°C}	kWh/kWh	3,1	2,9
	HA3	IJs heat _{47/55°C}	%	121	113
		P _{rated}	kW	9,5	15,43
		Energy labelling		A+	A+
	Cooling				
Standard unit Full load performances*	CA1	Nominal capacity	kW	14,9	18,6
		EER	kW/kW	3,0	3,1
		Eurovent class		B	A
	CA2	Nominal capacity	kW	19,8	25,8
		EER	kW/kW	3,9	3,8
		Eurovent class		A	A
Seasonal energy efficiency		SEER _{12/7°C} Comfort low temp.	kWh/kWh	151	149
Sound levels					
Standard unit					
Sound power level ⁽¹⁾			dB(A)	71	74
Sound pressure level at 10 m ⁽²⁾			dB(A)	40	43
Dimensions - Standard unit					
Length ⁽³⁾			mm	1109	1109
Width			mm	584	584
Height			mm	1579	1579
Operating Weight ⁽⁴⁾					
Standard unit			kg	190,9	199,4
Compressors			Rotary compressor	1	1
Refrigerant			R410A		
Charge ⁽⁴⁾			kg	8	8
Capacity control					
Minimum capacity ⁽⁵⁾			%	33 %	41 %
Air heat exchanger				Grooved copper tubes, aluminium fins	
Fans - Standard unit				Axial type fan	
Quantity				2	2
Maximum total air flow			l/s	2000	2400
Maximum rotational speed			rps	14	16
Water heat exchanger				Brazed plate heat exchanger	
Water volume			l	1,52	1,9
Max water-side operating pressure without hydraulic module			kPa	1000	1000

* In accordance with standard EN 14511-3:2013

** In accordance with standard EN 14825:2013, Average climate

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

I_s heat_{30/35°C} & SCOP_{30/35°C} Applicable Ecodesign regulation: (EU) No 813/2013

I_s heat_{47/55°C} & SCOP_{47/55°C} Applicable Ecodesign regulation: (EU) No 813/2013

SEER_{12/7°C} Applicable Ecodesign regulation: (EU) No 2016/2281

(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20 µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Length = 1141 mm if main disconnect switch

(4) Values are guidelines only. Refer to the unit nameplate.



Eurovent certified values

PHYSICAL DATA, 30RBV UNITS

30RBV		17	21
Hydraulic module (option)		Pump, relief valve, paddle flow switch, expansion tank (option)	
Pump		Centrifugal pump	
Expansion tank volume	l	8	8
Max. water-side operating pressure with hydraulic module ⁽⁶⁾	kPa	300	300
Water connections (Without Hydraulic Module)			
Inlet diameter (MPT GAS)	inch	1	1
Outlet diameter (MPT GAS)	inch	1	1
Water connections (With Hydraulic Module)			
Inlet diameter (MPT GAS)	inch	1-1/4	1-1/4
Outlet diameter (MPT GAS)	inch	1	1
Water Filling System (Option)			
Diameter (MPT GAS)	inch	1/2	1/2
Chassis paint colour	Colour code:	RAL 7035	RAL 7035

(6) Min. water-side operating pressure with fixed speed hydraulic module is 50 kPa and with variable speed hydraulic module is 40 kPa.

ELECTRICAL DATA, 30RBV UNITS

30RBV (full options)		17	21
Power circuit			
Nominal power supply	V-ph-Hz	400-3+N-50	400-3+N-50
Voltage range	V	360-440	360-440
Control circuit supply		24V AC via internal transformer	
Nominal unit current drawn (Un) *	A	12,5	14,3
Maximum unit power input (Un) **	kW	10,8	12,4
Cos Phi unit at maximum power **		0,93	0,93
Maximum unit current drawn (Un-10%)***	A	18,5	21,2
Maximum unit current drawn (Un) ****	A	16,7	19,2
Maximum Start-up current, standard unit †	A	Not Applicable (less than the operating current)	

* Conditions equivalent to the standardised Eurovent conditions (evaporator water entering-leaving temperature = 12 °C/7 °C, outside air temperature = 35 °C).

** Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15 °C, saturated condensing temperature 68.3 °C) and nominal voltage of 400 V (data given on the unit nameplate).

*** Maximum unit operating current at maximum unit power input and at 360 V.

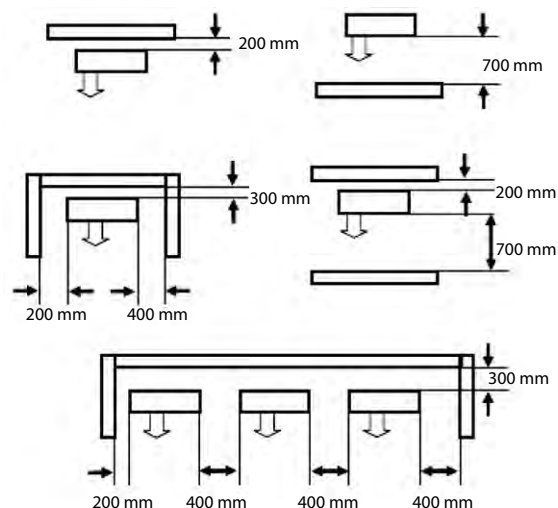
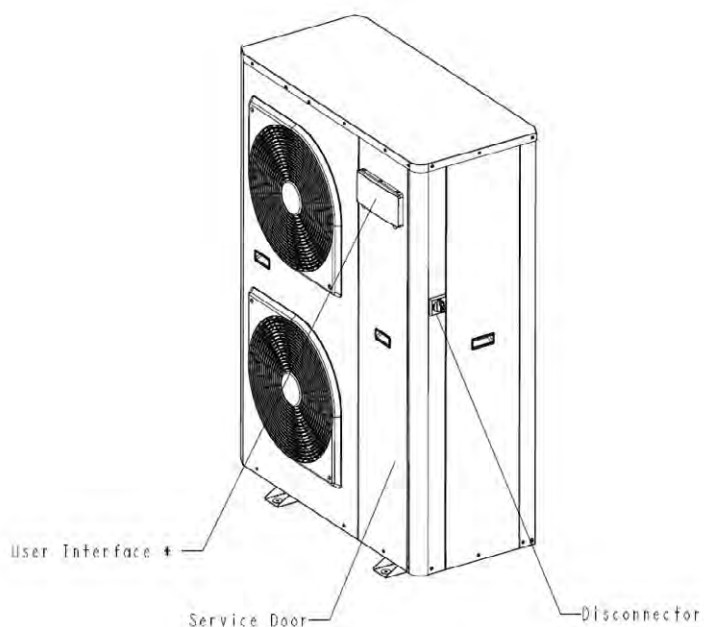
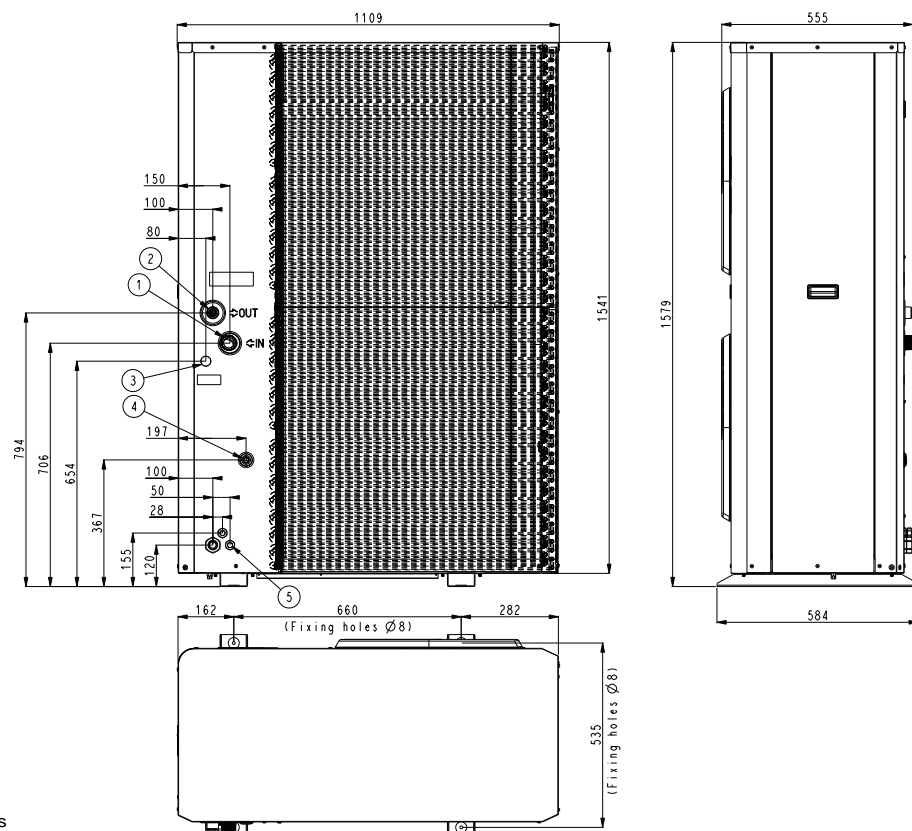
**** Maximum unit operating current at maximum unit power input and at 400 V (values given on the unit nameplate).

† Maximum instantaneous start-up current at operating limits (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

Fan motor electrical data: at Eurovent equivalent conditions and motor ambient air temperature of 50 °C at 400 V: 3.8 A, start-up current 20 A, power input 1.75 kW

DIMENSIONS/CLEARANCES

30RBV 017-021



DUCTABLE AIR-COOLED LIQUID CHILLERS



Easy and fast installation
Hydraulic module available
Economical operation
Superior reliability

30RBY 017-033 A

AQUASNAP®

Nominal cooling capacity 30RBY: 16-32 kW

The Aquasnap liquid chiller/heat pump range was designed for commercial applications such as the air conditioning of offices and hotels etc.

The new Aquasnap units integrate the latest technological innovations:

- Ozone-friendly refrigerant R410A
- Scroll compressors
- Low-noise fans
- Auto-adaptive microprocessor control

The Aquasnap units are equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration levels
 - The compressor assembly is supported by anti-vibration mountings
- Air heat exchanger section
 - Vertical air heat exchanger coils
 - The latest-generation low-noise fans are now even quieter and do not generate intrusive low-frequency noise
 - Rigid fan installation for reduced start-up noise.

Access panels, 30RBY 017-021



Easy and fast installation

- Integrated hydraulic module
 - Fixed speed circulator
 - Water filter protecting the water pump against circulating debris
 - High-capacity membrane expansion tank ensures pressurisation of the water circuit
 - Overpressure valve, set to 4 bar
 - Automatic purge valve positioned at the highest point of the hydraulic module to remove air from the system.
 - Thermal insulation and frost protection down to -10°C, using an electric resistance heater and pump cycling.
 - Integrated water fill system to ensure correct water pressure (option)
- Physical features
 - With its small footprint the unit blends in with any architectural styles.
 - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Simplified electrical connections
 - A single power supply point (power supply without neutral available as an option and in standard for units size 40kW)
 - Main disconnect switch with high trip capacity
 - Transformer for safe 24 V control circuit supply included
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors.
- Easy duct connection (30RBY version only)
 - Rectangular discharge air connection.
 - Fan with 80 Pa available pressure. Centrifugal fan for sizes 017 and 021, and axial fan for sizes 026 and 033.
 - Rectangular suction and filter connection option (sizes 017 and 021 only).

Inlet filters, RBY 017-021



FEATURES

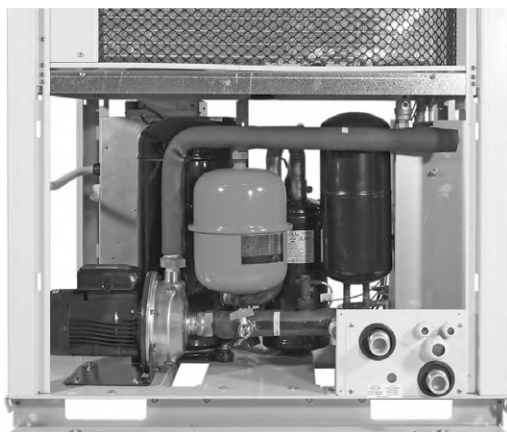
Economical operation

- Increased energy efficiency at part load
 - Specific Free Defrost algorithm is present to optimise performance and comfort even during defrost period.
- Reduced maintenance costs
 - Maintenance-free scroll compressors
 - Fast diagnosis of possible incidents and their history via the Pro-Dialog+ control
 - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Ozone-friendly R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Hydraulic module, sizes 026-040



Superior reliability

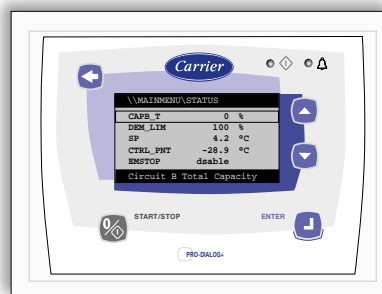
- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)

- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table.

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

Pro-Dialog+ interface



- Energy management
 - Seven-day internal time schedule clock: Permits unit on/off control and operation at a second set point
 - Set point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T
 - Master/slave control of two units operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
 - Change-over based on the outside air temperature
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
- Ease-of-use
 - The new backlit LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
 - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier)
 - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet navigators. They are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set point, air temperature, entering/leaving water temperature.

FEATURES

Remote operating mode with volt-free contacts (standard)

A simple two-wire communication bus between the RS485 port of the Aquasnap and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.

- Start/stop: Opening of this contact will shut down the unit
- Dual set point: Closing of this contact activates a second set point (example: Unoccupied mode)
- Alert indication: This volt-free contact indicates the presence of a minor fault
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of the unit
- User safety: This contact can be used for any customer safety loop, closing of the contact generates a specific alarm
- Out of service: This signal indicates that the unit is completely out of service
- Unit capacity: This analogue output (0-10 V) gives an immediate indication of the unit capacity
- Compressor operation: This contact signals that the compressor is in operation

Remote interface (option)

This interface allows access to the same menus as the unit interface and can be installed up to 300 m away. It includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24V transformer supplied.

Interface access, sizes 026-040



TYPE KEY

30R	B	Y	021	C	H	E	-	B	A	--	-
Range											Revision status
B - Cooling											Not used
Q - Heat pump											
- - Standard											- - Standard
Y - High static fan											A - Remote user Interface HMI (As accessory)
017 - nominal size 17 kW											- - Without gateway
021 - nominal size 21 kW											B - CCN JBus gateway
026 - nominal size 26 kW											C - CCN Bacnet gateway
033 - nominal size 33 kW											D - CCN LONtalk gateway
040 - nominal size 40 kW											- - Standard
C - Power supply with neutral cable (only sizes 017-033)											- - Without coil protection
D - Power supply without neutral											E - Epoxy coil protection (Gold-fin)
X - Without hydraulic module											
H - With hydraulic module with expansion tank											
F - With hydraulic module with expansion tank and water filling system											
R - With hydraulic and without expansion tank											
Z - With hydraulic, w/o expansion tank and with water filling system											

PHYSICAL DATA, 30RBY UNITS

30RBY			017	021	026	033	
Cooling							
Standard unit	Nominal capacity	kW	15,7	20,3	27,0	32,3	
Full load performances*	CA1	EER	kW/kW	2,65	2,60	2,88	3,05
		Eurovent class		B	B	A	A
	CA2	Nominal capacity	kW	19,9	24,8	36,1	42,3
EER		kW/kW	3,07	2,85	3,49	3,67	
Eurovent class		E	E	D	B		
Standard unit	SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	2,61	2,64	2,62	2,61	
Seasonal energy efficiency**	SEPR ^{12/7°C} Process high temp.	kWh/kWh	4,17	4,03	4,29	4,06	
	SEER ^{12/7°C} Comfort low temp.	kWh/kWh	2,76	2,72	2,86	3,08	
	SEER ^{23/18°C} Comfort medium temp.	kWh/kWh	3,10	3,05	3,28	3,52	
Integrated Part Load Value	IPLV.SI	kW/kW	3,340	3,300	3,490	3,690	
Operating weight ⁽¹⁾							
Standard unit, with hydraulic module		kg	209	228	255	280	
Standard unit, without hydraulic module		kg	193	213	237	262	
Sound pressure level ⁽²⁾		dB(A)	50	50	53	53	
Sound power level radiated from the unit ⁽³⁾		dB(A)	82	82	85	85	
Sound power level at unit discharge ⁽³⁾		dB(A)	80	80	91	91	
Dimensions							
Length		mm	1135	1135	1002	1002	
Depth		mm	584	584	824	824	
Height		mm	1608	1608	1829	1829	
Compressor			One hermetic scroll compressor				
Refrigerant charge R-410A	kg		5,5	6,4	5,8	8,6	
	teqCO ₂		11,5	13,4	12,1	18,0	
Control			Pro-Dialog+				
Fans			Two 2-speed centrifugal fans, 5 backward-curved		One 2-speed axial fan, 7 blades		
Diameter		mm	454	454	630	630	
Number of blades			5	5	7	7	
Available static pressure		Pa	80	80	80	80	
Air flow		l/s	1640	1640	3472	3472	
Speed		r/s	20,5	20,5	21,5	21,5	
Water heat exchanger			One plate heat exchanger				
Water volume		l	1,52	1,90	2,28	2,85	
Maximum operating pressure		kPa	1000	1000	1000	1000	

*	In accordance with standard EN14511-3:2013
**	In accordance with standard EN14825:2016, average climate
***	With EG 30%
CA1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m ² .K/W
CA2	Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m ² .K/W
SEPR _{-2/-8°C}	Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application
SEER _{12/7°C} & SEPR _{12/7°C}	Values calculated in accordance with EN14825:2016
SEER _{23/18°C}	Values calculated in accordance with EN14825:2016
IPLV.SI	Calculations according to standard performances AHRI 551-591 (SI)
(1)	Weight shown is a guideline only. Please refer to the unit nameplate
(2)	For information, calculated from the sound power level Lw(A)
(3)	In accordance with ISO 9614 (10 ⁻¹² W)



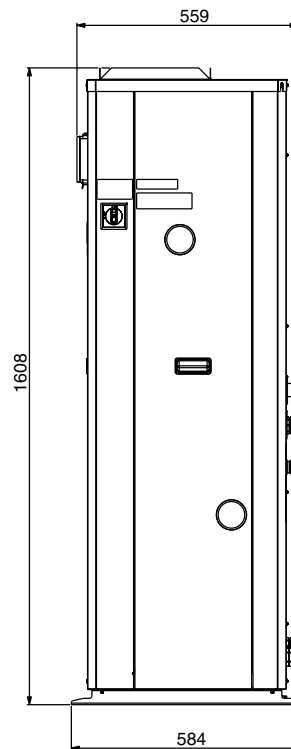
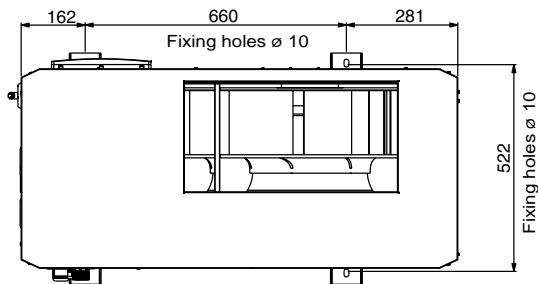
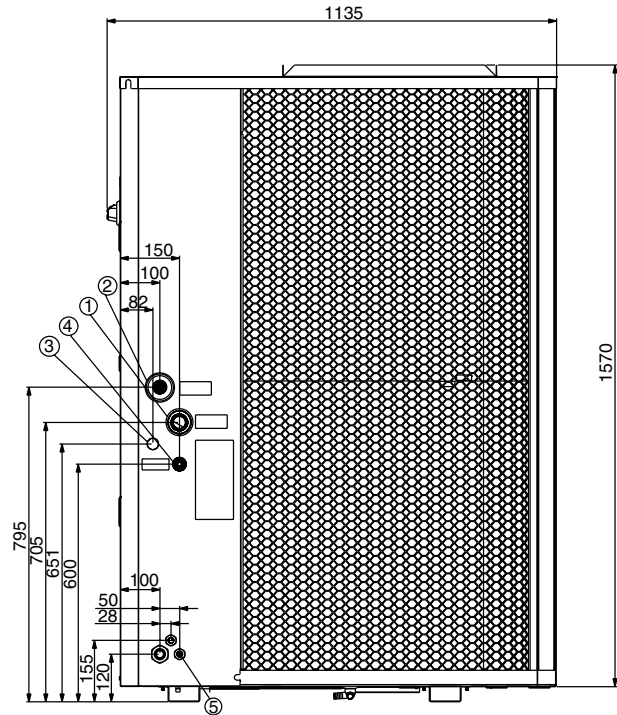
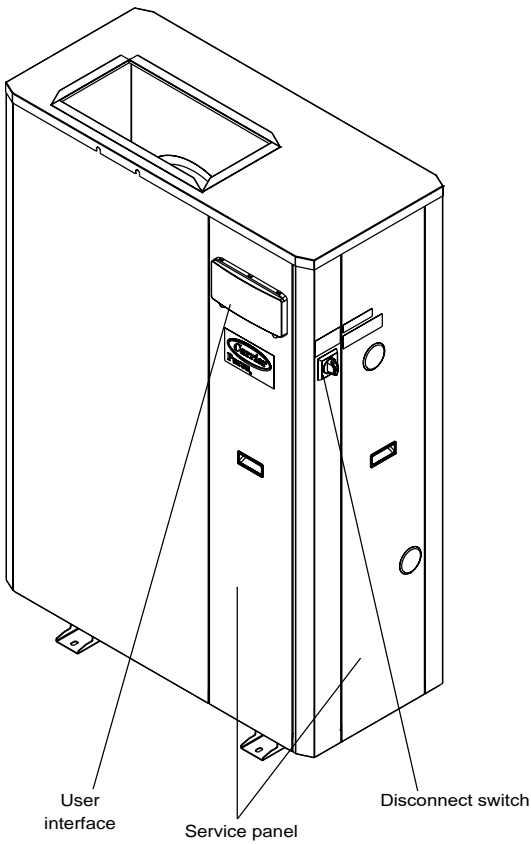
Eurovent certified values

PHYSICAL DATA, 30RBY UNITS

30RBY		017	021	026	033
Air heat exchanger		Copper tubes and aluminum fins			
Pipe diameter	in	3/8	3/8	3/8	3/8
Number of rows		2	2	2	3
Number of pipes per row		60	60	60	60
Fin spacing	mm	1,69	1,69	1,69	1,69
Standard unit					
Water connections (MPT gas)	in	1	1	1-1/4	1-1/4
Unit with hydraulic module		Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic air purge valve, relief valve, water circuit drain valve			
Pump		One single-speed pump, maximum water-side operating pressure 400 kPa			
Expansion tank capacity	l	5	5	8	8
Entering water connection	in	1-1/4	1-1/4	1-1/4	1-1/4
Leaving water connection	in	1	1	1-1/4	1-1/4
Chassis paint colour		Colour code: RAL 7035			

DIMENSIONS/CLEARANCES

30RBY 017-021 - standard units



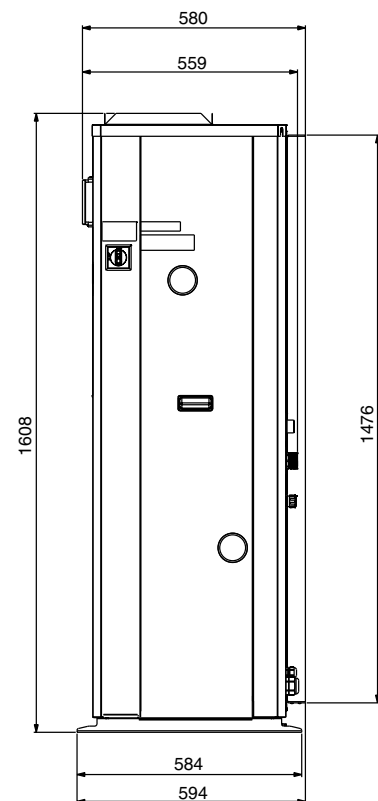
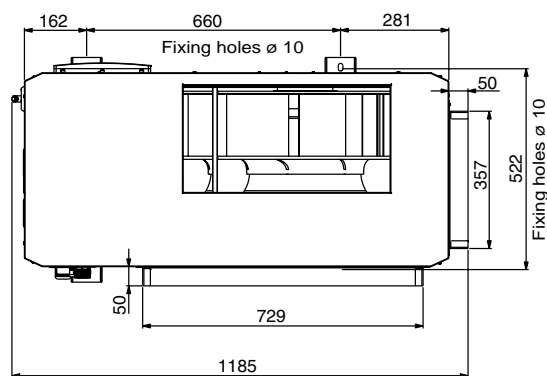
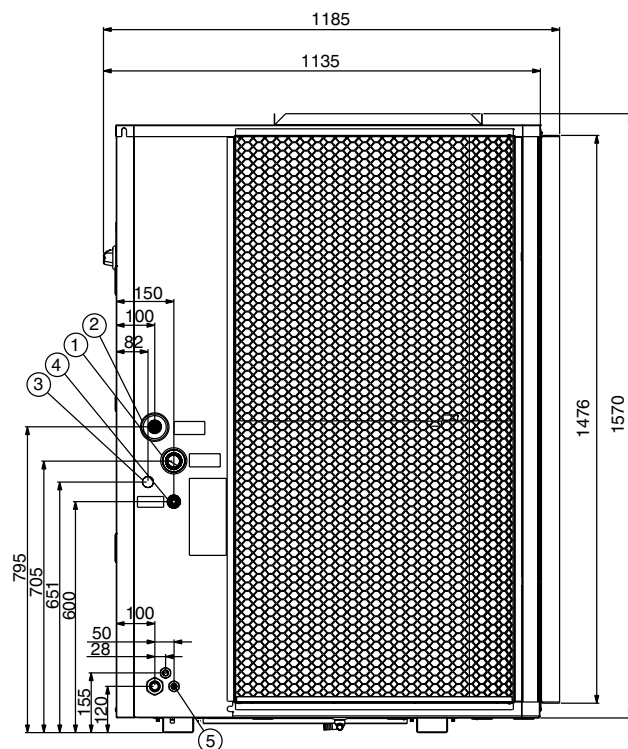
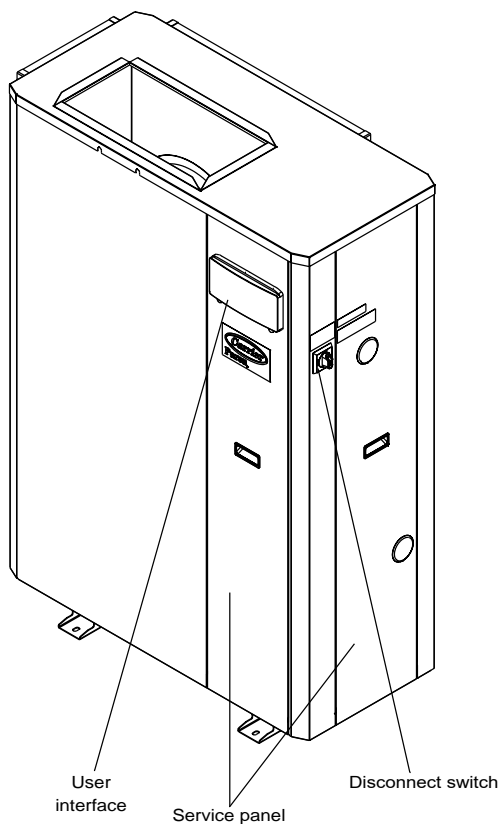
Legend

All dimensions are in mm

1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Relief valve
5. Power connections

DIMENSIONS/CLEARANCES

30RBY 017-021 - units with return air ducts



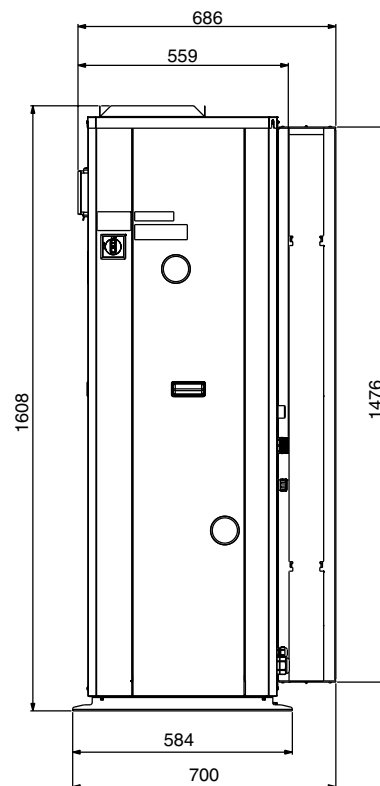
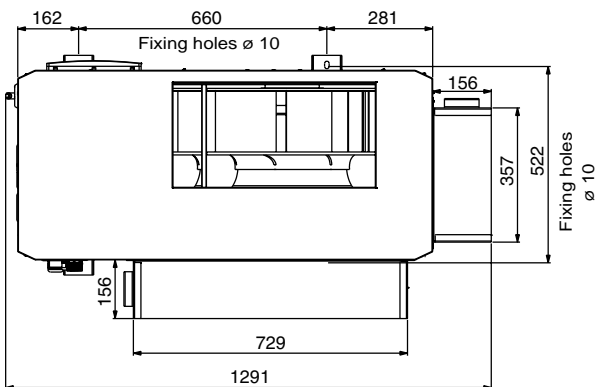
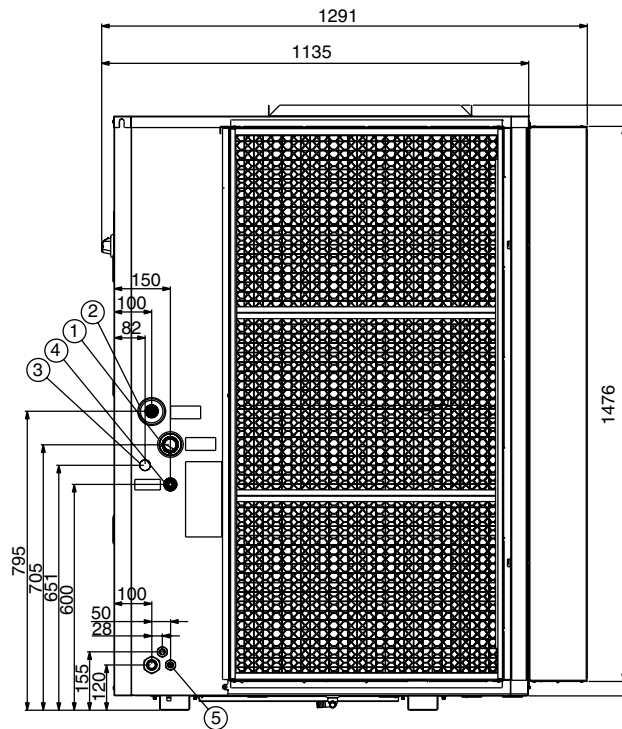
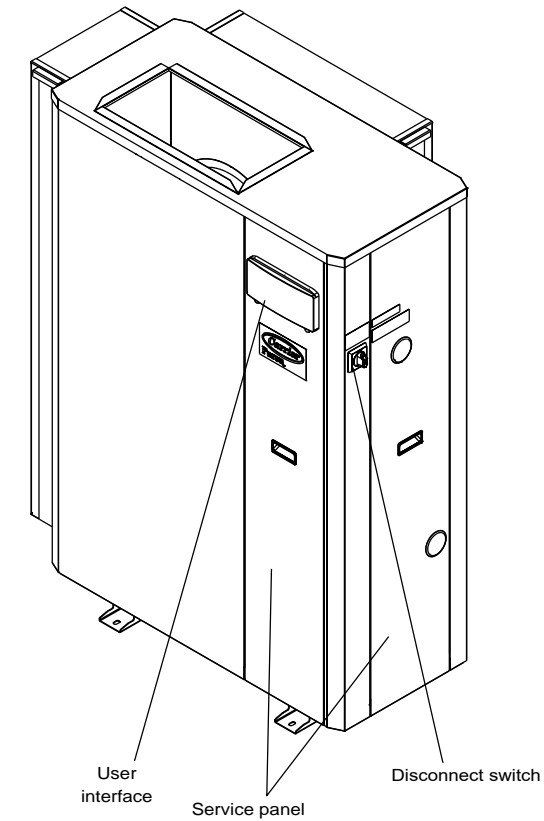
Legend

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DIMENSIONS/CLEARANCES

30RBY 017-021 - units with filter frame on the return air side



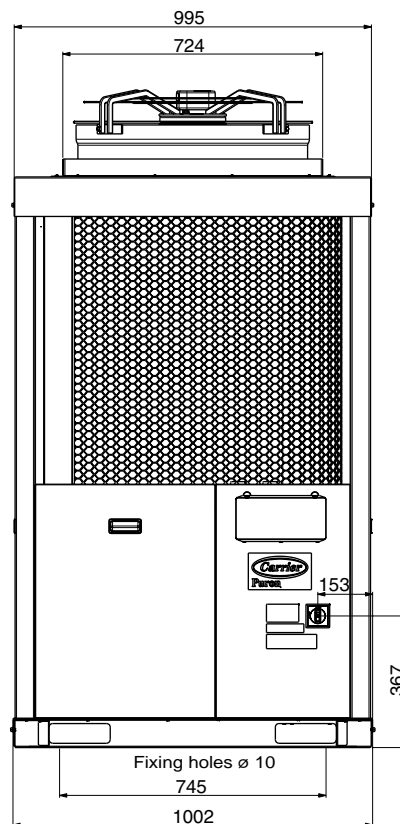
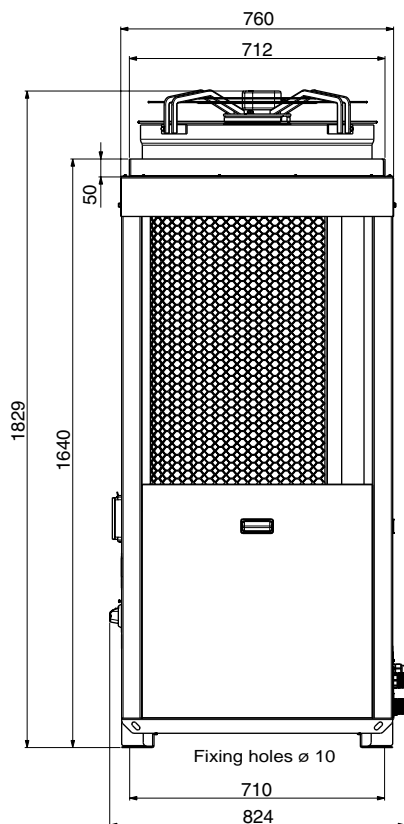
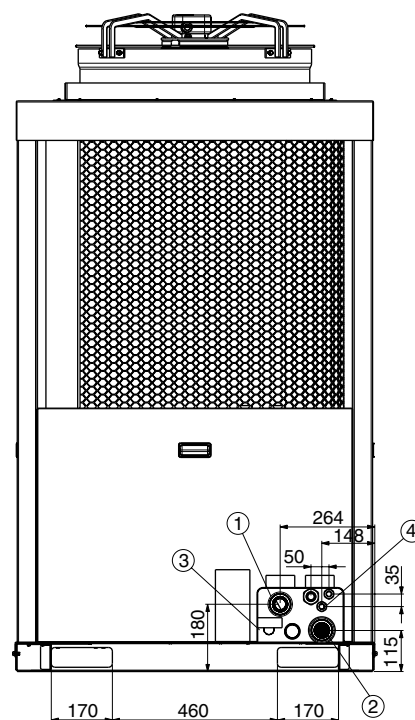
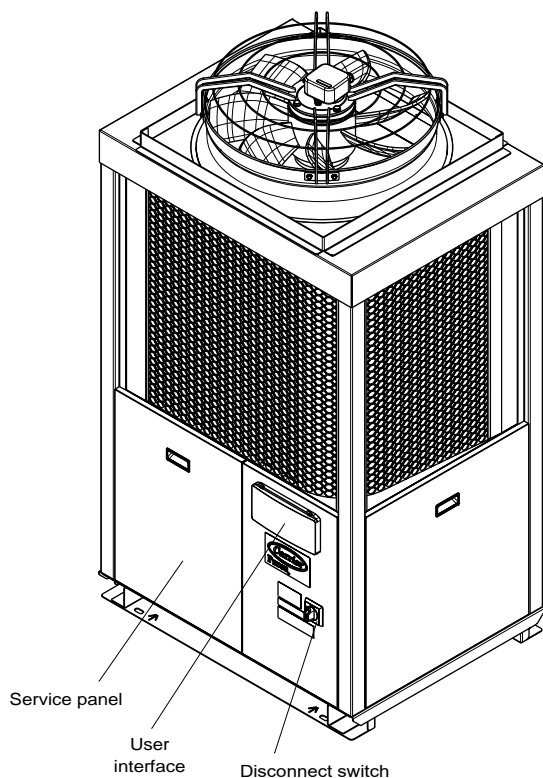
Legend

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4. Relief valve
5. Power connections

DIMENSIONS/CLEARANCES

30RBY 026-033



Legend

All dimensions are in mm

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2. Water outlet
3. Water fill kit connection (option)
4. Power connections

AIR-COOLED LIQUID CHILLERS



Easy and fast installation
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Economical operation
Superior reliability

30RB 017-040 A

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FEATURES

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 - Vertical air heat exchanger coils
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Access panels, 30RB 017-021



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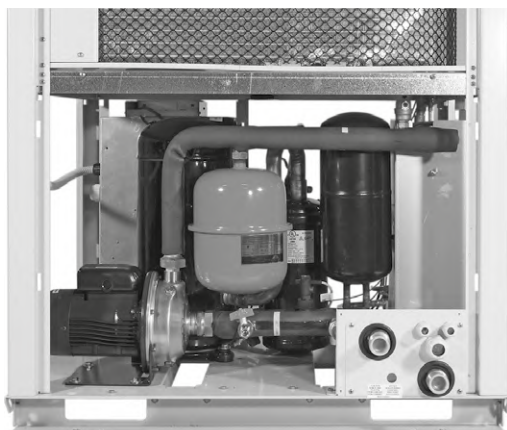
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Hydraulic module, sizes 026-040



Superior reliability

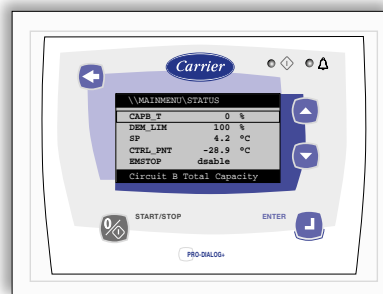
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FEATURES

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Remote interface (option)

This interface allows access to the same menus as the unit interface and can be installed up to 300 m away. It includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24V transformer supplied.

Interface access, sizes 026-040



TYPE KEY

30R	B	-	021	C	H	E	-	B	A	--	-
Range											Revision status
B - Cooling											Not used
Q - Heat pump											
- - Standard											- - Standard
Y - High static fan											A - Remote user Interface HMI (As accessory)
017 - nominal size 17 kW											- - Without gateway
021 - nominal size 21 kW											B - CCN JBus gateway
026 - nominal size 26 kW											C - CCN Bacnet gateway
033 - nominal size 33 kW											D - CCN LONtalk gateway
040 - nominal size 40 kW											- - Standard
C - Power supply with neutral cable (only sizes 017-033)											- - Without coil protection
D - Power supply without neutral											E - Epoxy coil protection (Gold-fin)
X - Without hydraulic module											
H - With hydraulic module with expansion tank											
F - With hydraulic module with expansion tank and water filling system											
R - With hydraulic and without expansion tank											
Z - With hydraulic, w/o expansion tank and with water filling system											

PHYSICAL DATA, 30RB UNITS

30RB		017	021	026	033	040	
Cooling							
Standard unit	Nominal capacity	kW	16,4	21,4	27,3	33,3	41,4
Full load performances* CA1	EER	kW/kW	3,04	3,11	3,08	3,28	2,96
	Eurovent class		B	A	B	A	B
	Nominal capacity	kW	22,7	29,5	38,6	45,8	56,9
CA2	EER	kW/kW	3,80	3,86	4,01	4,11	3,52
	Eurovent class		A	A	A	A	C
Standard unit	SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	2,99	3,03	3,16	3,02	3,07
Seasonal energy efficiency**	SEPR _{12/7°C} Process high temp.	kWh/kWh	5,29	5,28	5,13	5,16	5,13
	SEER _{12/7°C} Comfort low temp.	kWh/kWh	3,37	3,37	3,30	3,51	3,44
	SEER _{23/18°C} Comfort medium temp.	kWh/kWh	3,99	3,92	3,92	4,04	3,95
Integrated Part Load Value	IPLV.SI	kW/kW	4,350	4,340	4,340	4,540	4,030
Operating weight ⁽¹⁾							
Standard unit, with hydraulic module		kg	189	208	255	280	291
Standard unit, without hydraulic module		kg	173	93	237	262	273
Sound power level ⁽²⁾		dB(A)	72	74	78	78	80
Sound pressure level at 10 m ⁽³⁾		dB(A)	40	42	46	46	48
Dimensions							
Length		mm	1136		1002		
Depth		mm	584		824		
Height		mm	1579		1790		
Compressor		One hermetic scroll compressor					
Refrigerant charge R-410A	kg	5,5	6,4	5,8	8,6	8,8	
	teqCO ₂	11,5	13,4	12,1	18,0	18,4	
Control		Pro-Dialog+					
Fans		Two twin-speed axial fans, 3 blades		One twin-speed axial fan, 7 blades			
Diameter		mm	495	495	710	710	710
Air flow		l/s	2212	2212	3530	3530	3530
Speed		r/s	14,5	14,5	15	15	15
Water heat exchanger		Plate heat exchanger, maximum operating pressure 1000 kPa					
Water volume		l	1,52	1,9	2,28	2,85	3,8
Air heat exchanger		Copper tubes and aluminum fins					
Pipe diameter		in	3/8	3/8	3/8	3/8	3/8
Number of rows			2	2	2	3	3
Number of pipes per row			60	60	60	60	60
Fin spacing		mm	1,69	1,69	1,69	1,69	1,69

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2016, average climate

*** With EG 30%

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/WCA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W**SEPR _{-2/-8°C}** **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**SEER _{12/7°C} & SEPR _{12/7°C} Values calculated in accordance with EN14825:2016SEER _{23/18°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI)

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(3) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).



Eurovent certified values

PHYSICAL DATA, 30RB UNITS

30RB		017	021	026	033	040
Standard unit						
Water connections (MPT gas)	in	1	1	1-1/4	1-1/4	1-1/4
Unit with hydraulic module		Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic air purge valve, relief valve				
Pump		One single-speed pump, maximum water-side operating pressure 400 kPa				
Expansion tank capacity	l	5	5	8	8	8
Entering water connection	in	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4
Leaving water connection	in	1	1	1-1/4	1-1/4	1-1/4
Nominal operating current	A	1,3	1,4	2,4	2,6	2,8
Chassis paint colour		Beige				

ELECTRICAL DATA, 30RB UNITS

30RB		017	021	026	033	040
Power circuit						
Nominal power supply	V-ph-Hz	400-3+N-50 (power supply option C) or 400-3-50 (power supply option D)				400-3-50 (STD - no option)
Voltage range	V	340-460				360-440
Control circuit supply		24 V via internal transformer				
Maximum start-up current (Un)*	A	75	95	118	118	176
Unit power factor at nominal capacity**		0.84	0.79	0.77	0.81	0.9
Maximum operating power input**	kW	7.8	9.1	11	13.8	17.5
Nominal current drawn***	A	8	12	16	17	25
Maximum operating current draw (Un)****	A	13	16	20	24	30
Maximum operating current draw (Un-15%)†	A	15	18	23	27	36

* Maximum instantaneous start-up current (locked rotor current of the compressor).

* Power input, compressors and fans, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).

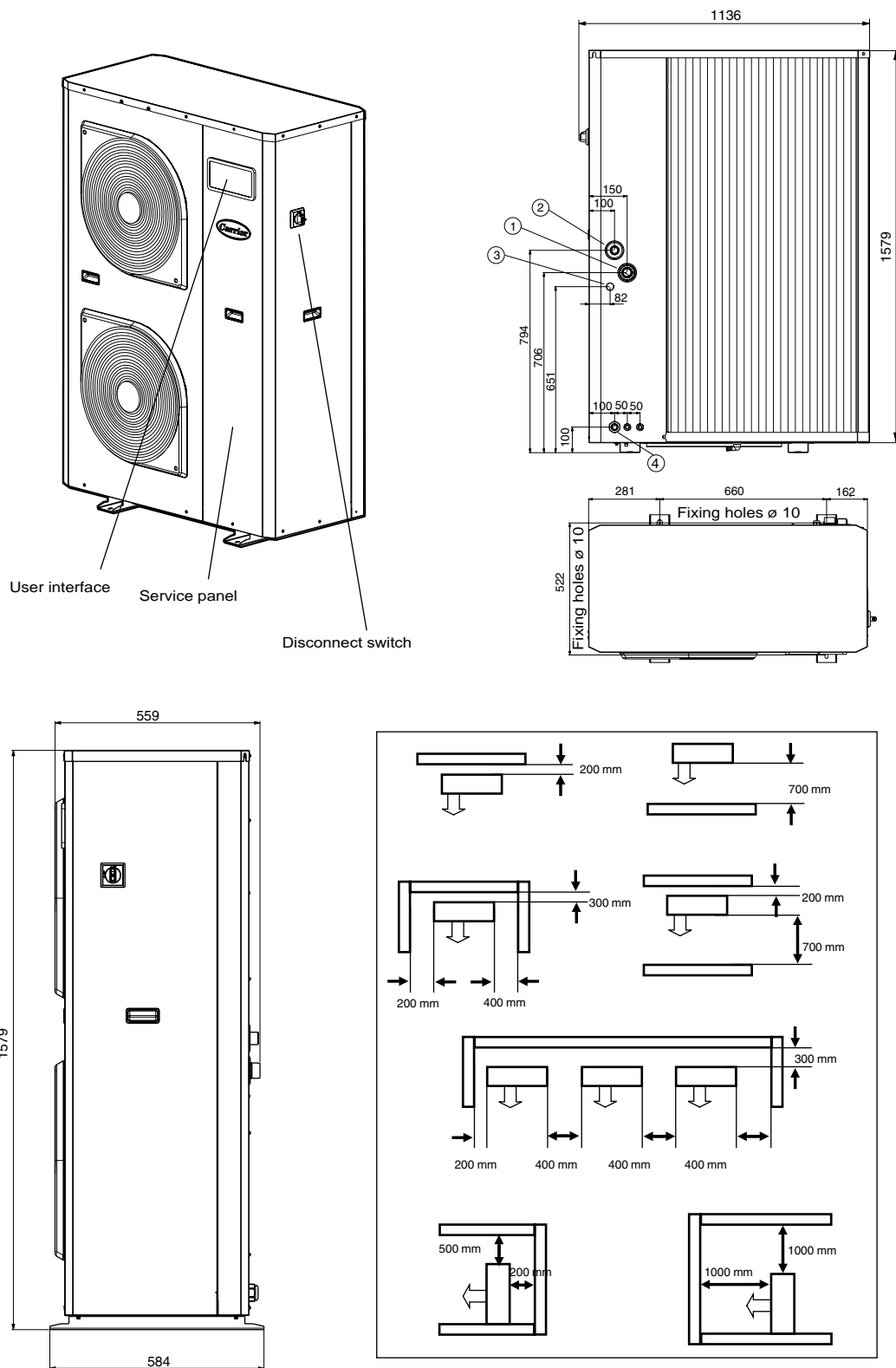
*** Standardised Eurovent conditions: Water heat exchanger entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

**** Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).

† Maximum unit operating current at maximum unit power input and 340-460V for sizes 017 to 033 or 360-440V for size 040.

DIMENSIONS/CLEARANCES

30RB 017-021



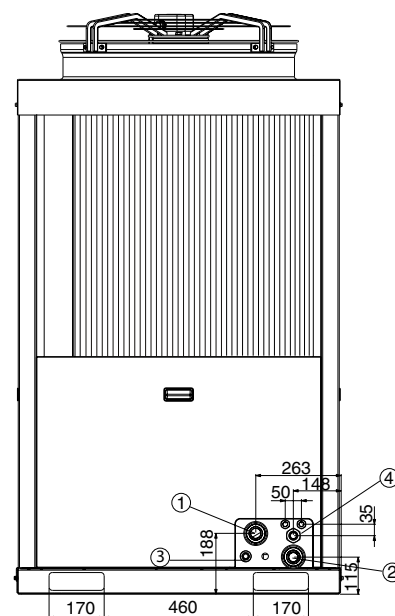
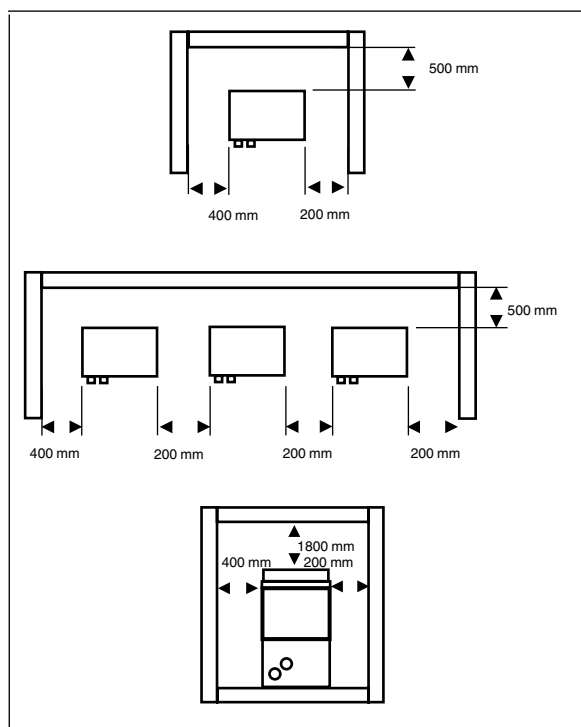
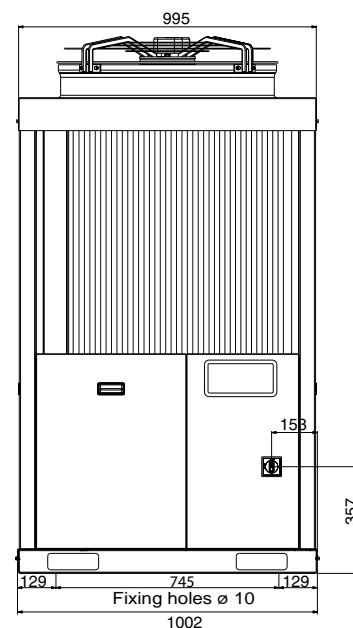
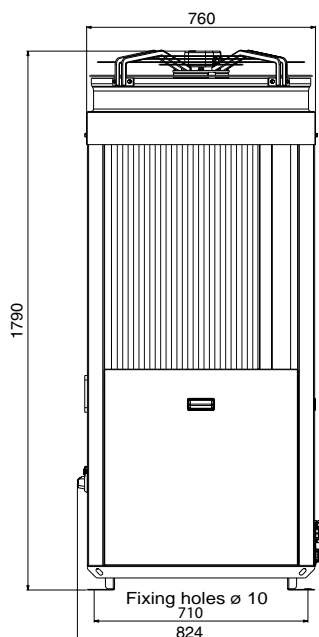
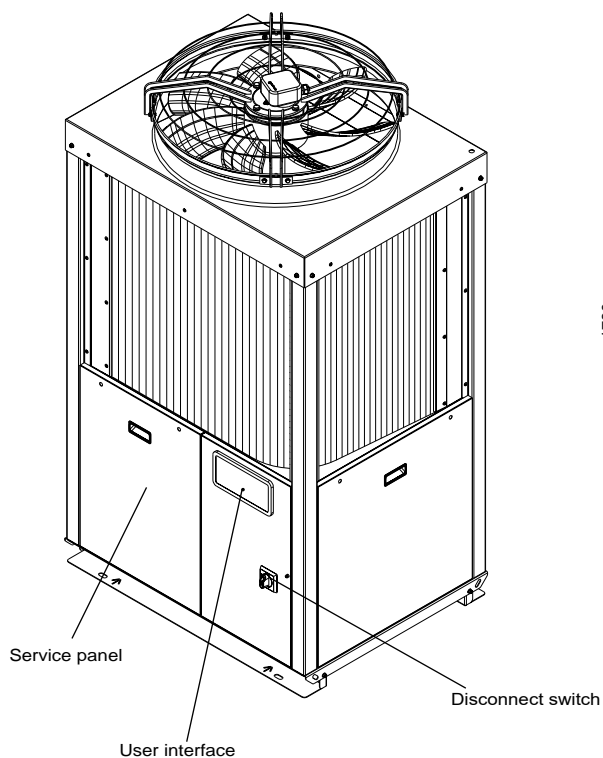
Legend

All dimensions are in mm

1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Power connections

DIMENSIONS/CLEARANCES

30RB 026-040



Legend

All dimensions are in mm

1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Power connections

DUCTABLE REVERSIBLE AIR-TO-WATER



Compact design
High static available pressure
Quiet operation
Variable speed fans
Variable water flow

30RBSY 039-160 C

AQUASNAP

Nominal cooling capacity 30RBSY: 40-153 kW

The Aquasnap liquid chiller/heat pump range was designed for commercial (air conditioning of offices, hotels etc.) or industrial (low-temperature process units etc.) applications.

It integrates the latest technological innovations:

- Ozone-friendly refrigerant R410A
- All-aluminium microchannel heat exchangers for the cooling only units (30RBSY)
- Scroll compressors
- Low-noise fans made of a composite material
- Auto-adaptive microprocessor control
- Electronic expansion valve
- Variable-speed pump (option)

The Aquasnap can be equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the chilled water supply and return piping.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
- Condenser (30RBSY)/air evaporator section
 - Vertical condenser coils
 - Anti-vibration mountings and optional grilles to protect the heat exchanger against possible shocks.
 - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
 - Fan motor controlled by a variable-frequency controller, to allow adjustment of the fan speed in accordance with the ducting for optimised efficiency.
 - Rigid fan installation for reduced start-up noise (Carrier patent)

Easy and fast installation

- Physical features
 - Flying Bird IV fans controlled by a variable-frequency controller to provide up to 240 Pa available pressure (depending on the size) at nominal flow rate
 - Flow control in accordance with the ducting for optimised efficiency with the possibility to program a maximum supply air flow.
 - Supply air duct connection frame.
 - Suction air connection frame standard for sizes 30RBSY 039-080
 - Suction air filters optional (30RBSY 039-080 only)
 - Small unit footprint with a low height (1371 mm) for easy installation in most buildings
 - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Integrated hydraulic module (option)
 - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation.

Hydraulic module



- Single or dual water pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
- Water filter protects the water pump against circulating debris
- Pressure measurement, using two pressure transducers and allowing indication of water flow rate, water pressure and lack of water.
- High-capacity membrane expansion tank ensures pressurisation of the water circuit
- Overpressure valve, set to 4 bar
- Speed variator on the pumps (option) to ensure the correct flow rate, based on the system requirements
- Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch (option 70) with high trip capacity
 - Transformer for safe 24 V control circuit supply included
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors

Economical operation

- Variable-speed pump (option)
 - The control algorithm adjusts the water flow rate in accordance with the actual system requirements. This saves energy and makes the flow control valve unnecessary.
- Variable-speed fan
 - Variable-speed ventilation permits adjustment to any duct type and variation of the air flow rate for maximised unit performances under any operating conditions.
- Increased energy efficiency at part load
 - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.
 - The electronic expansion device (EXV) allows operation at a lower condensing pressure (SEER and SCOP seasonal performances optimisation).
 - Dynamic superheat management for better utilisation of the water heat exchanger surface.
- Reduced maintenance costs
 - Maintenance-free scroll compressors
 - Fast diagnosis of possible incidents and their history via the SmartVu™ control
 - R410A refrigerant is easier to use than other refrigerant blends

FEATURES

Environmental care

- Ozone-friendly R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient - gives an increased energy efficiency ratio
 - 50% reduction in the refrigerant charge through the use of micro-channel heat exchangers for the cooling only units (30RBSY)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Reduction of leaks due to reduced vibration levels and elimination of capillary tubes (TXVs)
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Supply air connection frame



Superior reliability

- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
 - All aluminium micro-channel heat exchanger (MCHE) on cooling only units (30RBSY), offers increased corrosion resistance compared to traditional coils. The all-aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
 - Hydraulic module with integrated pressure transducers allowing measurement of the water pressure at two points, as well as measurement of the water flow rate and detection of lack of water and pressure. This considerably reduces the risk of problems such as frost accumulation on the water heat exchanger.
 - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) Aquasnap continues to operate, but at reduced capacity.

- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table.

SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: Controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
 - Storage of maintenance manual, wiring diagram and spare parts list
 - Display of trend curves for the main values
 - Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
 - Blackbox memory

FEATURES

■ 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

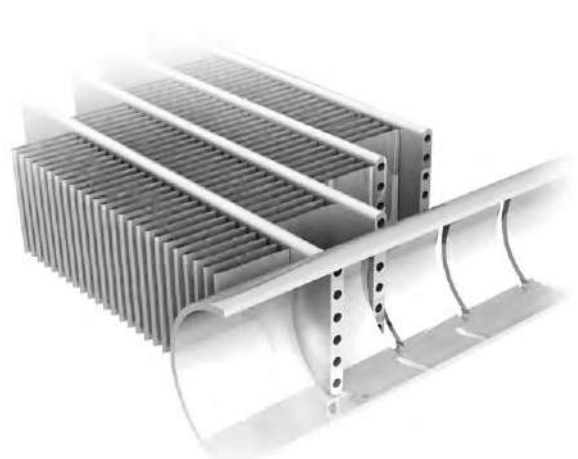
A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: Closing of this contact activates a second setpoint (e.g. unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.
- Setpoint adjustable via 4-20 mA signal

Variable fan speed controller*



All-aluminium micro-channel heat exchanger (MCHE)



Already utilised in the automobile and aeronautical industries for many years, the MCHE micro-channel heat exchanger is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers.

As an option, the Enviro-Shield and Super Enviro-Shield anti-corrosion protections have been developed to increase the application range of the MCHE coil from medium to very corrosive environments. With Enviro-Shield protection, corrosion resistance of the MCHE coil is doubled without any impact on heat exchange.

With Super Enviro-Shield protection corrosion resistance of the MCHE coil is multiplied by four, and allows use in very corrosive industrial or marine environments

The MCHE heat exchanger allows a reduction in chiller refrigerant charge by up to 50%.

The low thickness of the MCHE reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHE heat exchanger is very fast using a dry air jet or a high-pressure washer, while observing the usage precautions.

OPTIONS

Options	No.	Description	Advantages	Use
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBSY 039-160
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBSY 039-160
Very low noise level	15LS	Acoustic compressor enclosure	Compressor noise emission reduction	30RBSY 039-160
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	30RBSY 039-160
Suction filter	23B	Washable G2 efficiency filter in accordance with EN 779	Prevents pollution of the air-heat exchanger	30RBSY 039-80
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RBSY 039-160
Hydraulic module frost protection	42	Electric heater on the hydraulic module	hydraulic module frost protection at low outside temperatures down to -20°C	30RBSY 039-160
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit.	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RBSY 039-160
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	30RBSY 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RBSY 039-160
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RBSY 039-160 Brine only 039-160
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter(expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBSY 039-160 Brine only 039-160
HP evap. variable-speed single-pump	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter(expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RBSY 039-160
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RBSY 039-160
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RBSY 039-160

OPTIONS

Options	No.	Description	Advantages	Use
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RBSY 039-160
ModBus over IP and RS485 communication gateway	149B	Bi-directional high-speed communication using the ModBus over Ethernet network (IP) protocol	Easy, quick connection via Ethernet line to a building technical management system. Allows access to several unit parameters.	30RBSY 039-160
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30RBSY 039-160
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30RBSY 039-160
Evaporator screw connection sleeves (kit)	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30RBSY 039-160
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RBSY 039-160
Reinforced ECM filtration for fan VFD	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RBSY 039-160
Reinforced ECM filtration for pump VFD	282B	Pump variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RBSY 039-160 with option 116V or 116W
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RBSY 039-160
Set point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy management, allow to adjust set point by a 4-20mA external signal	30RBSY 039-160
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, Extended control capabilities to a drycooler used in Free Cooling mode	30RBSY 039-160
Plastic tarp	331	Plastic tarp covering the unit with straps and held down on a wooden pallet.	Prevents dust and external soiling on the machine during storage and transportation.	30RBSY 039-160

PHYSICAL DATA, 30RBSY

30RBSY				39	45	50	60	70	80	90	100	120	140	160
Cooling														
Standard unit Full load performances*	CA1	Nominal capacity	kW	41	44	51	58	67	78	87	97	115	133	154
		EER	kW/kW	3,09	2,85	2,72	2,73	2,71	2,67	2,76	2,76	2,71	2,69	2,62
	CA2	Nominal capacity	kW	53	59	69	81	84	98	115	127	152	170	193
		EER	kW/kW	3,55	3,41	3,17	3,39	2,95	3,02	3,21	3,13	3,15	2,97	2,97
Standard unit Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.		kWh/ kWh	4,19	4,33	4,28	4,20	4,04	4,05	4,36	4,36	4,29	4,17	4,34
	ηs cool _{12/7°C}		%	165	170	168	165	158	159	171	171	169	164	170
	SEPR _{12/7°C} Process high temp.		kWh/ kWh	6,42	6,09	5,80	5,61	5,44	5,49	5,20	5,42	5,90	5,39	5,33
Unit with option 6B Seasonal energy efficiency**	SEPR _{-2/-8°C} Process medium temp.		kWh/ kWh	3,62	3,96	3,49	3,56	3,69	3,29	3,59	3,76	3,62	3,63	3,52
Integrated Part Load Value	IPLV.SI		kW/kW	3,690	3,890	3,990	3,950	3,660	3,780	3,520	3,610	3,760	3,690	4,000
Sound levels														
Standard unit - for 160 Pa external static pressure														
Sound power level at discharge ⁽¹⁾			dB(A)	84	84	84	84	87	87	87	87	87	90	90
Sound power level radiated ⁽¹⁾				84	84	84	84	87	87	87	87	87	90	90
Sound pressure level at 10 m ⁽²⁾			dB(A)	53	53	53	53	55	55	56	56	56	58	58
Dimensions				If two values are shown the first one is for standard units and the second one for units with option 23B										
Length	mm		2142/ 2307	2142/ 2307	2142/ 2307	2142/ 2307	2142/ 2307	2142/ 2307	2273	2273	2273	2273	2273	2273
Width	mm		1132/ 1297	1132/ 1297	1132/ 1297	1132/ 1297	1132/ 1297	1132/ 1297	2122	2122	2122	2122	2122	2122
Height	mm		1371	1371	1371	1371	1371	1371	1371	1371	1371	1371	1371	1371
Operating weight with MCHE coil ⁽³⁾														
Standard unit without hydraulic module			kg	436	443	449	464	461	480	771	780	793	901	932
Standard unit with hydraulic module														
Single high-pressure pump			kg	466	473	479	494	491	510	803	812	829	940	971
Dual high-pressure pump			kg	491	499	504	520	517	536	848	857	877	977	1008
Compressors				Hermetic scroll compressors, 48,3 r/s										
Circuit A			2	2	2	2	2	2	3	3	3	2	2	
Circuit B			-	-	-	-	-	-	-	-	-	-	2	2
No of control stages			2	2	2	2	2	2	3	3	3	4	4	
Refrigerant charge with MCHE coil ⁽³⁾				R-410A, GWP=2088 following AR14										
Circuit A	kg		4,7	5,3	5,9	6,7	6,2	7,3	10,7	10,8	11,4	6,5	7,4	
	teqCO ₂		9,8	11,1	12,3	14,0	12,9	15,2	22,3	22,6	23,8	13,6	15,5	
Circuit B	kg		-	-	-	-	-	-	-	-	-	6,5	7,4	
	teqCO ₂		-	-	-	-	-	-	-	-	-	13,6	15,5	

- * In accordance with standard EN14511-3:2013
- ** In accordance with standard EN14825:2016, average climate
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
- CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
- η_{s cool} 12/7°C & SEER 12/7°C Bold Values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application
- SEPR 12/7°C Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application
- SEPR -2/-8°C Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application
- IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).
- (1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
- (3) Values shown are a guideline only. Please refer to the unit nameplate



Eurovent certified values

PHYSICAL DATA, 30RBSY

30RBSY		39	45	50	60	70	80	90	100	120	140	160
Capacity control		SmartVu™										
Minimum capacity	%	50	50	50	50	50	50	33	33	33	25	25
Condensers		All aluminium microchannel heat exchanger (MCHE)										
Fans		Axial Flying Bird IV with rotating shroud										
Quantity		1	1	1	1	1	1	2	2	2	2	2
Maximum total air flow	l/s	3885	3883	3687	3908	4982	5267	6940	6936	7370	9958	10534
Maximum rotation speed	r/s	16	16	16	16	18	18	16	16	16	18	18
Evaporator		Direct expansion, plate heat exchanger										
Water volume	l	2,6	3	3,3	4	4,8	5,6	8,7	9,9	11,3	12,4	14,7
Without hydraulic module (option)												
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
With hydraulic module (option)												
Single or dual pump (as selected)		Pump, Victaulic screen filter, relief valve, expansion tank, purge valves (water + air), pressure sensors										
Expansion tank volume	l	12	12	12	12	12	12	35	35	35	35	35
Expansion tank pressure ⁽⁴⁾	bar	1	1	1	1	1	1	1,5	1,5	1,5	1,5	1,5
Max. water-side operating pressure	kPa	400	400	400	400	400	400	400	400	400	400	400
Water connections with/without hydraulic module		Victaulic										
Diameter	in	2	2	2	2	2	2	2	2	2	2	2
Outside tube diameter	mm	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3
Chassis paint colour		Colour code: RAL7035										

(4) When delivered, the standard pre-inflation of the tank is not necessarily the optimal value for the system. To permit changing the water volume, change the inflation pressure to a pressure that is close to the static head of the system. Fill the system with water (purging the air) to a pressure value that is 10 to 20 kPa higher than the pressure in the tank

ELECTRICAL DATA, 30RBSY

30RBSY without hydraulic module		039	045	050	060	070	080	090	100	120	140	160
Power/ circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V via internal transformer										
Maximum start-up current (Un)⁽¹⁾												
Standard unit	A	116	137	145	148	176	213	179	213	253	244	287
Unit with electronic starter option	A	75	87	94	96	114	140	130	155	181	186	215
Unit power factor at maximum capacity⁽²⁾		0,83	0,81	0,81	0,83	0,81	0,78	0,83	0,81	0,79	0,81	0,78
Maximum operating power input⁽²⁾	kW	21	24	26	30	32	36	46	49	56	64	73
Nominal unit operating current draw⁽³⁾	A	28	32	36	39	43	53	61	67	83	86	106
Maximum operating current draw (Un)⁽⁴⁾	A	37	47	49	55	67	73	86	104	113	135	147
Maximum operating current draw (Un-10%)[†]	A	41	52	54	61	75	80	94	116	123	150	160
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table 9,1										

(1) Maximum instantaneous start-up current at operating limit value (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

(2) Power input, at the unit permanent maximum operating conditions (data given on the unit nameplate)

(3) Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

(4) Maximum unit current at 400 V, non permanent operating conditions (values given on the unit nameplate).

† Maximum unit operating current at 360 V, non permanent operating conditions.

Short-circuit stability current (TN system⁽¹⁾)

30RBSY	039	045	050	060	070	080
Value with unspecified upstream protection						
Short-term current at 1s - I _{cs} - kA rms	3,36	3,36	3,36	3,36	3,36	3,36
Admissible peak current - I _{pk} - kA pk	20	20	20	20	20	15
Max. value with upstream protection by circuit breaker						
Conditional short-circuit current I _{cc} - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H
Reference No. ⁽²⁾	29670	29670	29670	29670	29670	29670

30RBSY	090	100	120	140	160
Value with unspecified upstream protection					
Short-term current at 1s - I _{cs} - kA rms	5,62	5,62	5,62	5,62	5,62
Admissible peak current - I _{pk} - kA pk	20	20	15	20	15
Max. value with upstream protection by circuit breaker					
Conditional short-circuit current I _{cc} - kA rms	40	40	40	30	30
Schneider circuit breaker - Compact series	NS100H	NS160H	NS160H	NS250H	NS250H
Reference No. ⁽²⁾	29670	30670	30670	31671	31671

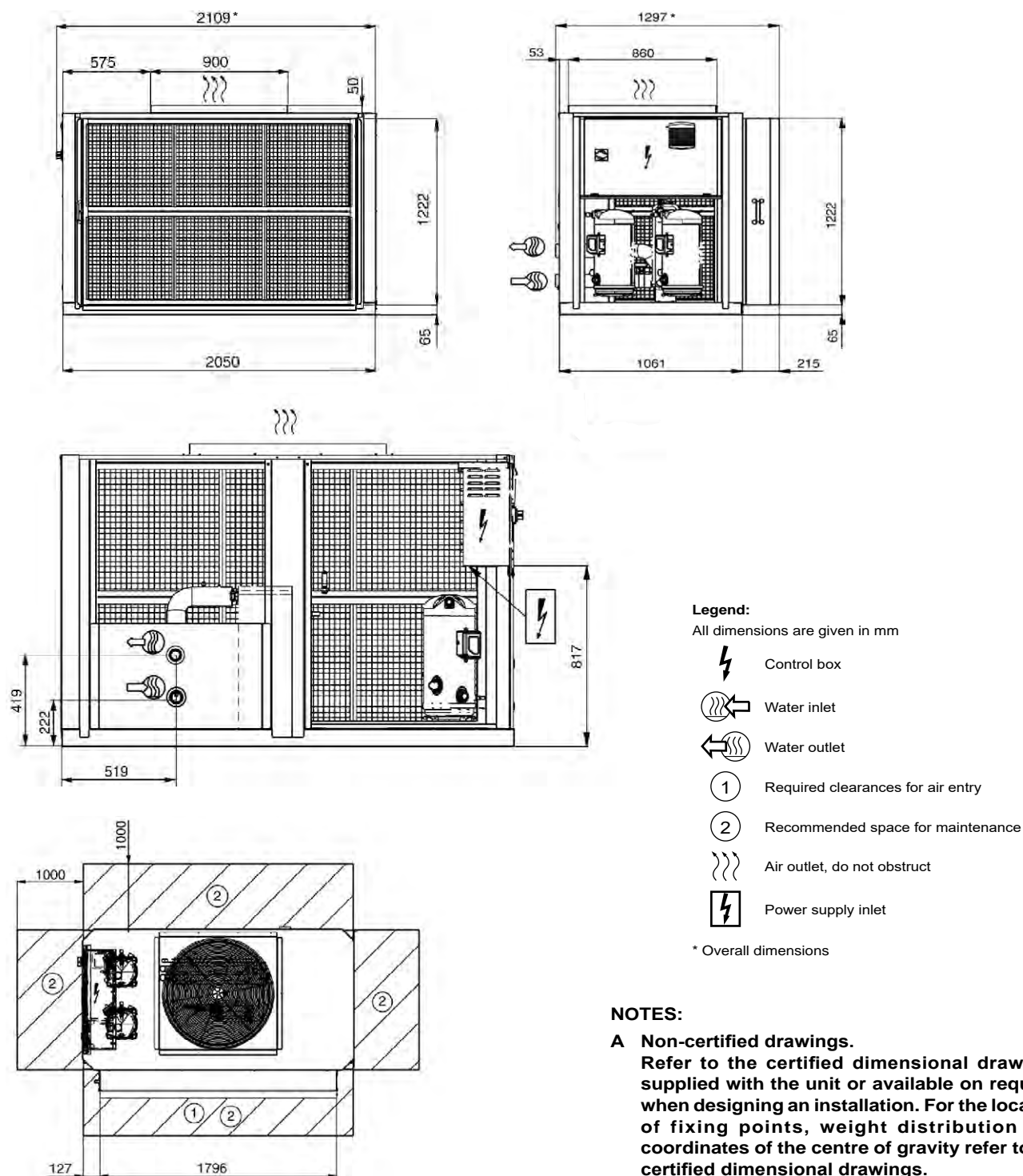
(1) Earthing system type

(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.

The short-circuit stability current values above are suitable with the TN system.

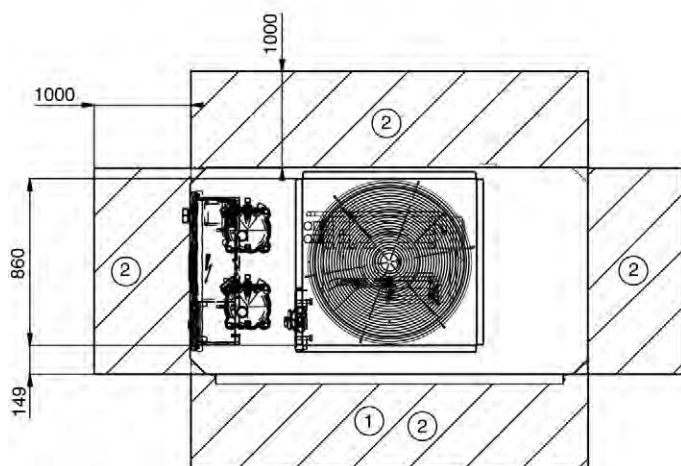
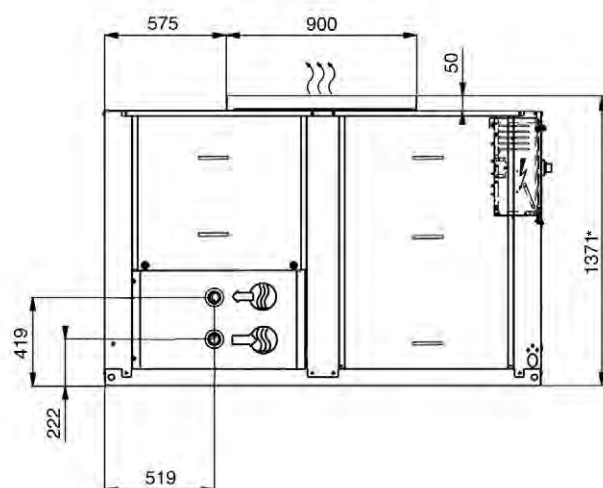
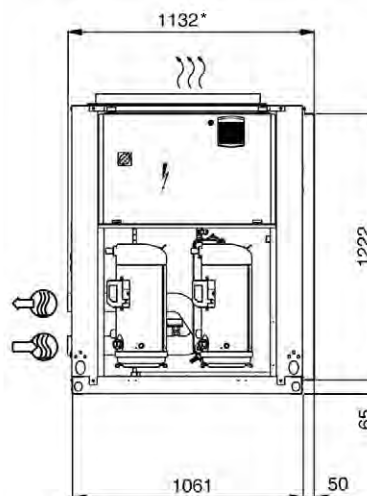
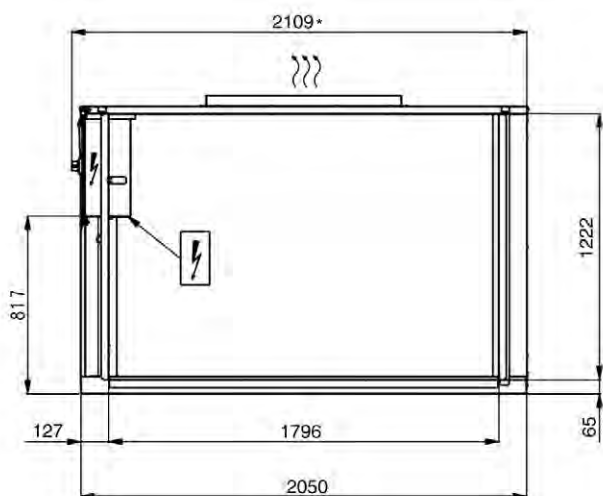
DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 039-050 and 070, units with and without hydraulic module, without filter frame



DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 039-050 and 070, option 23B, units with and without hydraulic module, with filter frame



Legend:

All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- Required clearances for air entry
- Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

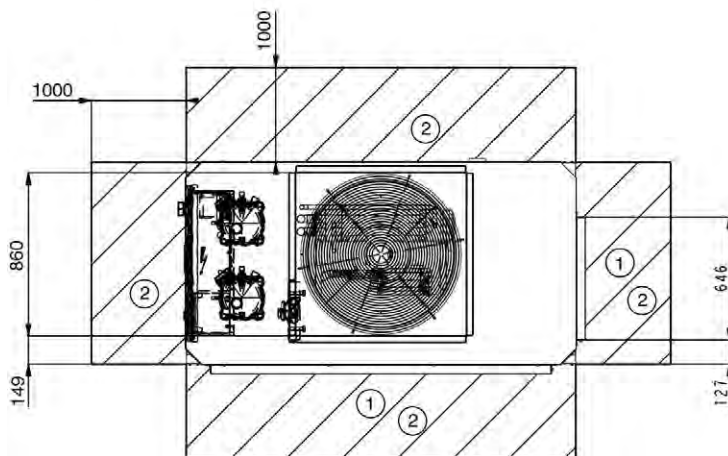
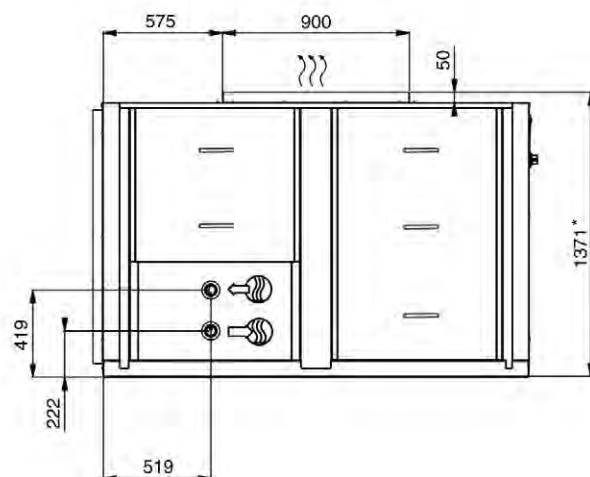
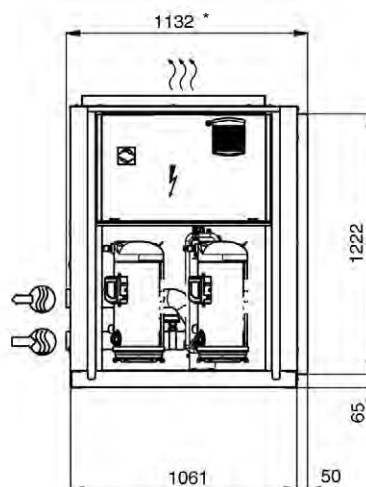
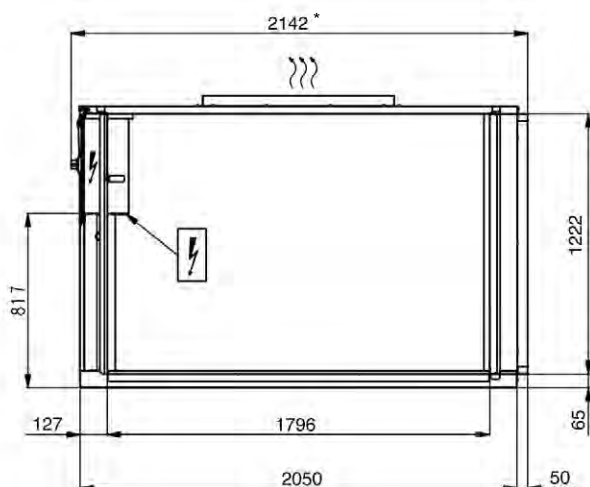
* Overall dimensions

NOTES:

- A Non-certified drawings.**
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.
- B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RBSY 039-080).**
- C The unit must be installed level (less than 2 mm per metre deviation in both axes).**
- D Units 30RBSY 039-080 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.**

DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 060 and 080, units with and without hydraulic module, without filter frame



Legend:

All dimensions are given in mm



Control box



Water inlet



Water outlet



Required clearances for air entry



Recommended space for maintenance



Air outlet, do not obstruct



Power supply inlet

* Overall dimensions

NOTES:

A Non-certified drawings.

Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

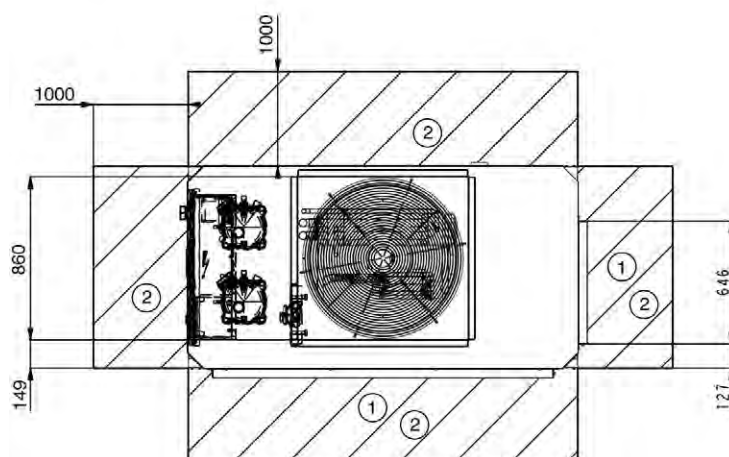
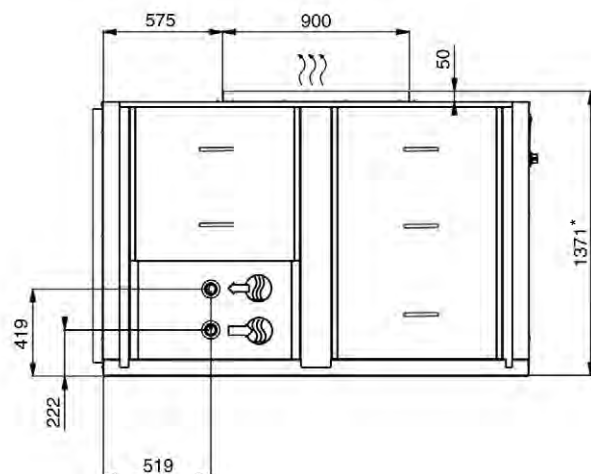
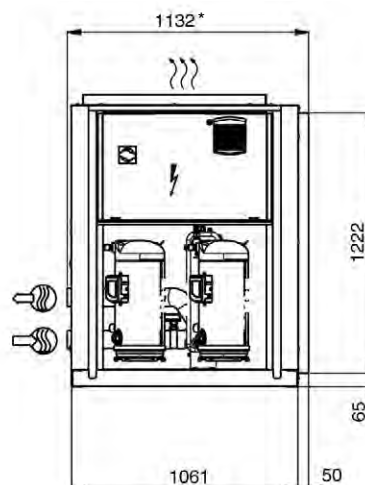
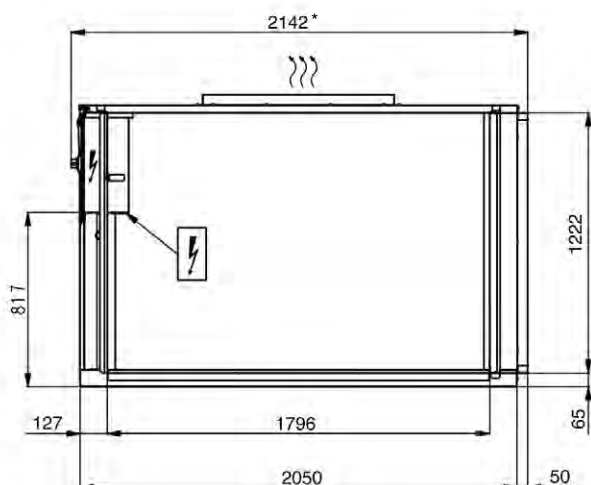
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RBSY 039-080).

C The unit must be installed level (less than 2 mm per metre deviation in both axes).

D Units 30RBSY 039-080 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 060 and 080, option 23B, units with and without hydraulic module, with filter frame



Legend:

All dimensions are given in mm



Control box



Water inlet



Water outlet



Required clearances for air entry



Recommended space for maintenance



Air outlet, do not obstruct



Power supply inlet

* Overall dimensions

NOTES:

NOTES:

A Non-certified drawings.

Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

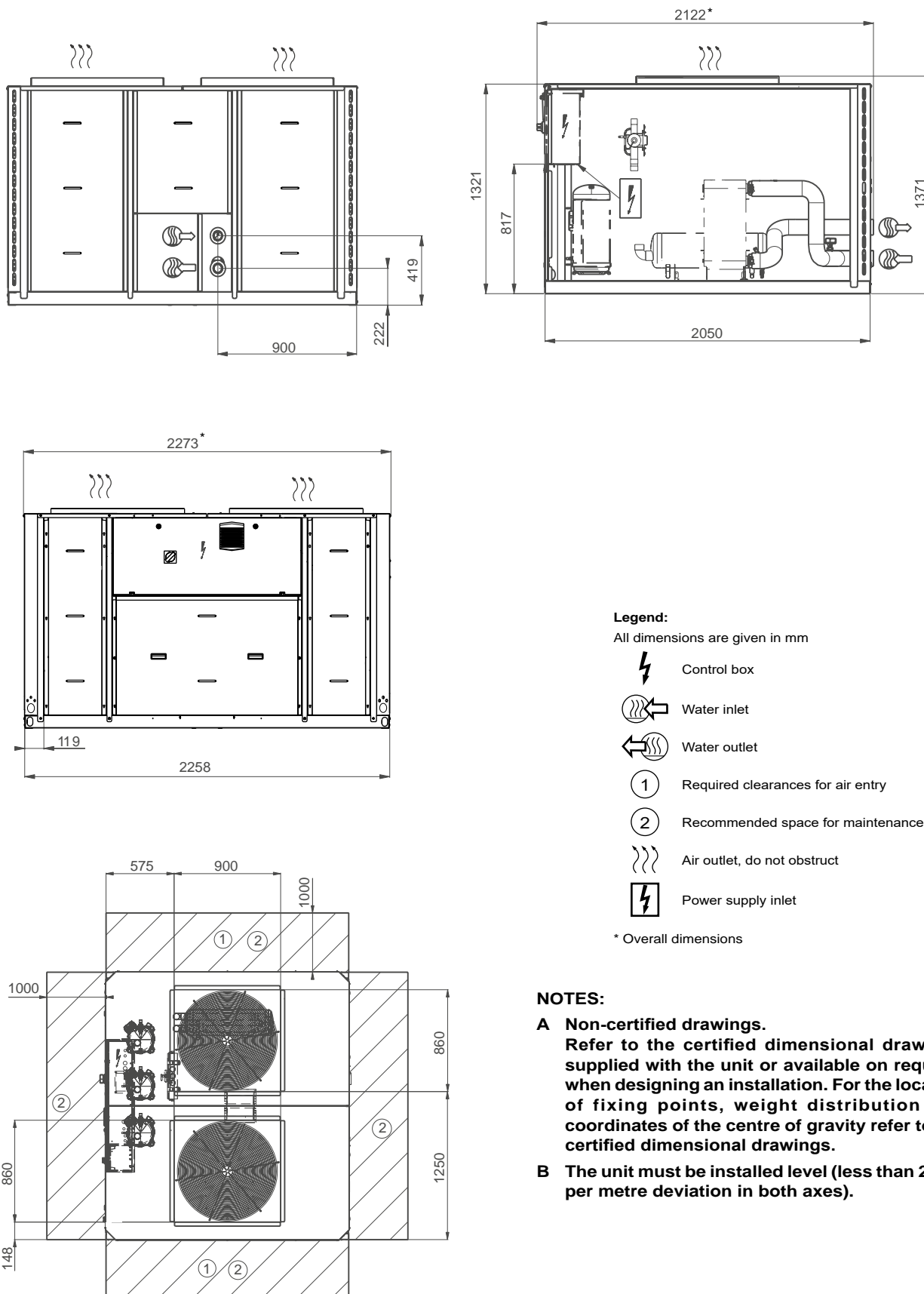
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RBSY 039-080).

C The unit must be installed level (less than 2 mm per metre deviation in both axes).

D Units 30RBSY 039-080 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

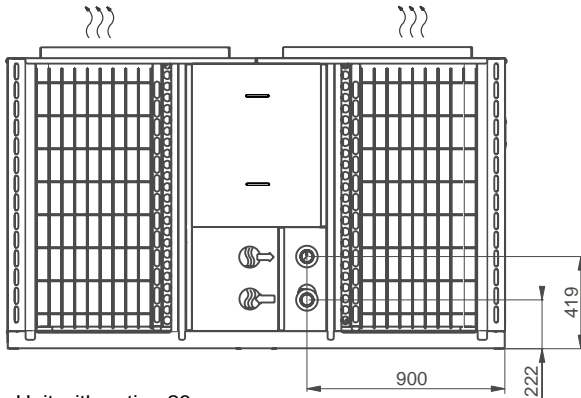
DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 090-120, units with and without hydraulic module

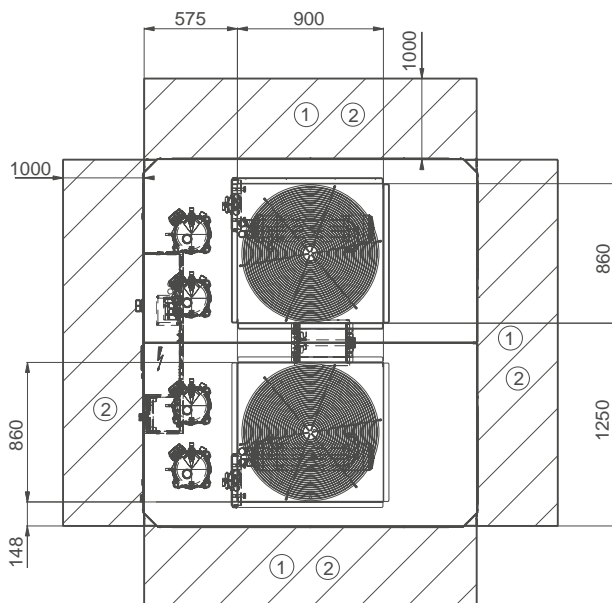
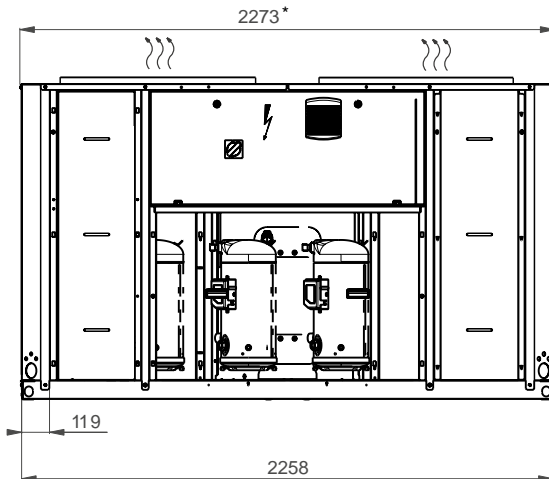
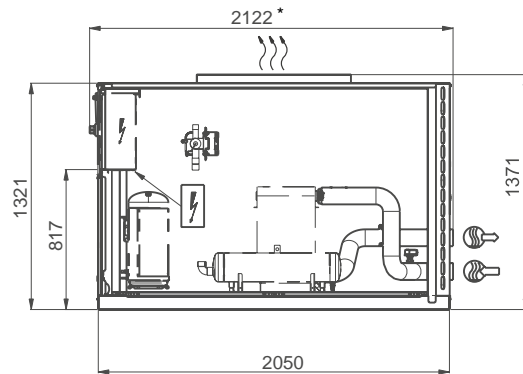


DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 140-160, units with and without hydraulic module



Unit with option 23



Legend:

All dimensions are given in mm



Control box



Water inlet



Water outlet



Required clearances for air entry



Recommended space for maintenance



Air outlet, do not obstruct



Power supply inlet

* Overall dimensions

NOTES:

A Non-certified drawings.

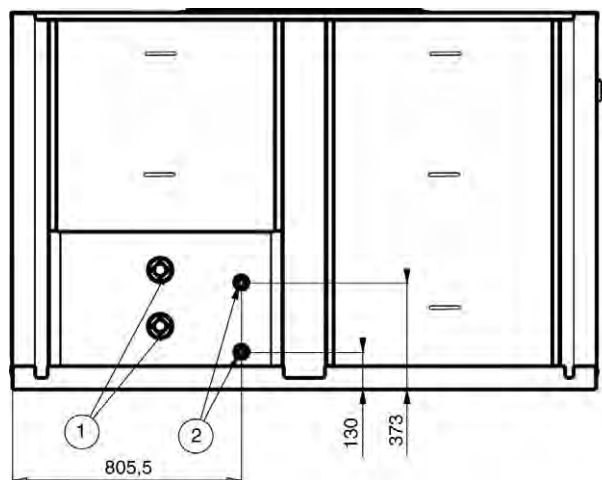
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

B The unit must be installed level (less than 2 mm per metre deviation in both axes).

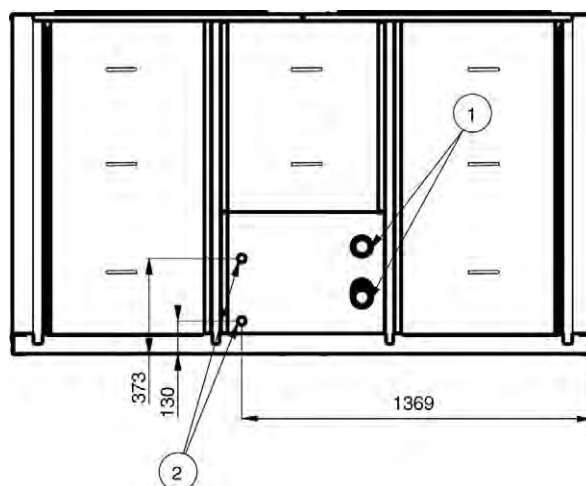
DIMENSIONS/CLEARANCES FOR 30RBSY UNITS WITH OPTION 49

Position of the desuperheater inlets and outlets

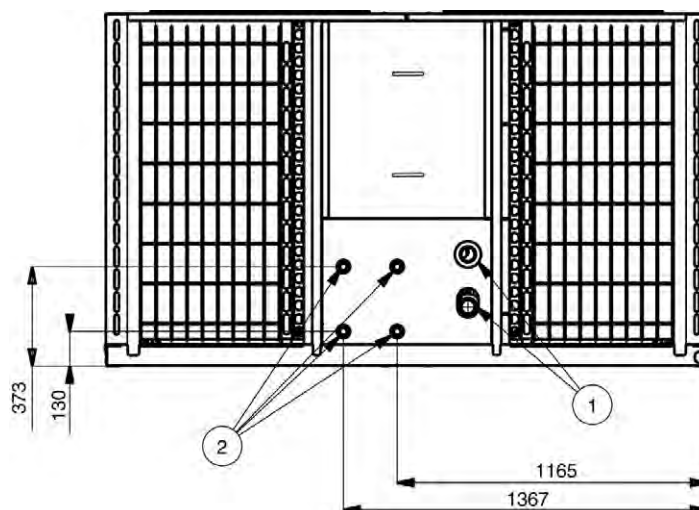
30RBSY 039-080



30RBSY 090-120



30RBSY 140-160



Unit with option 23

- ① Unit water inlet and outlet
- ② Water inlet and outlet, unit with option 49

AIR-COOLED LIQUID CHILLERS



Commercial and industrial applications

Compact design

Quiet operation

Variable water flow

Partial heat reclaim

30RBS 039-160 C



Nominal cooling capacity 30RBS: 40-156 kW

The Aquasnap range of liquid chillers/air-to-water heat pumps was designed for commercial (air conditioning of offices, hotels etc.) or industrial (low-temperature process units etc.) applications.

The Aquasnap integrates the latest technological innovations:

- Ozone-friendly refrigerant R410A
- All-aluminium microchannel heat exchangers for the cooling only units (30RBS)
- Scroll compressors
- Low-noise fans made of a composite material
- Auto-adaptive microprocessor control
- Electronic expansion valve
- Variable-speed pump (option)

The Aquasnap can be equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the chilled water supply and return piping.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent).
- Condenser (30RBS) / air evaporator section
 - Vertical condenser coils
 - Anti-vibration mountings and optional grilles to protect the heat exchanger against possible shocks.
 - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
 - Rigid fan installation for reduced start-up noise (Carrier patent).

Easy and fast installation

- Integrated hydraulic module (option)
 - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation

Hydraulic module



- Single or dual water pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
- Water filter protects the pump against circulating debris
- Pressure measurement, using two pressure transducers and allowing indication of water flow rate, water pressure and lack of water.
- High-capacity membrane expansion tank ensures pressurisation of the water circuit
- Overpressure valve, set to 4 bar
- Speed variator on the pumps (option) to ensure the correct flow rate, based on the system requirements
- Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)
- Physical features
 - The unit has a small footprint and a low height (1330 mm) allowing it to blend in with any architectural styles.
 - The unit is enclosed by easily removable panels, covering all components (except air heat exchangers and fans).
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch (option 70) with high trip capacity
 - Transformer for safe 24 V control circuit supply included

- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Optional variable-speed pump for economical operation
- The control algorithm adjusts the water flow rate based on the actual system requirements and obsoletes the need for the control valve at the unit outlet.
- Increased energy efficiency at part load
 - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.
 - The electronic expansion device (EXV) allows operation at a lower condensing pressure (SEER Seasonal performances optimisation).
 - Dynamic superheat management for better utilisation of the water heat exchanger surface.
- Reduced maintenance costs
 - Maintenance-free scroll compressors
 - Fast diagnosis of possible incidents and their history via the SmartVu™ control
 - R410A refrigerant is easier to use than other refrigerant blends.

Environmental care

- Ozone-friendly R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient - gives an increased energy efficiency ratio
 - 50% reduction in the refrigerant charge through the use of micro-channel heat exchangers for the cooling only units (30RBS)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Reduction of leaks due to reduced vibration levels and elimination of capillary tubes (TXVs)
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.

Partial view of the hydraulic circuit



FEATURES

Superior reliability

- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
 - All aluminium micro-channel heat exchanger (MCHE) on cooling only units (30RBS), offers increased corrosion resistance compared to traditional coils. The all-aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
 - Hydraulic module with integrated pressure transducers allowing measurement of the water pressure at two points, as well as measurement of the water flow rate and detection of lack of water and pressure. This considerably reduces the risk of problems such as frost accumulation on the water heat exchanger.
 - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) Aquasnap continues to operate, but at reduced capacity.
- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table.

SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: Controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
 - Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation

- Storage of maintenance manual, wiring diagram and spare parts list
- Display of trend curves for the main values
- Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
- Blackbox memory

■ 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

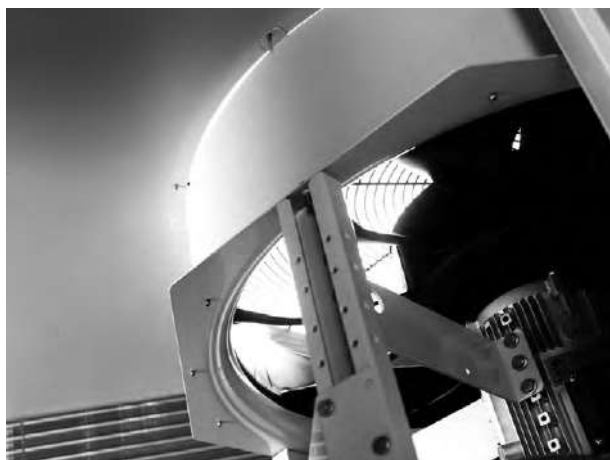
The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

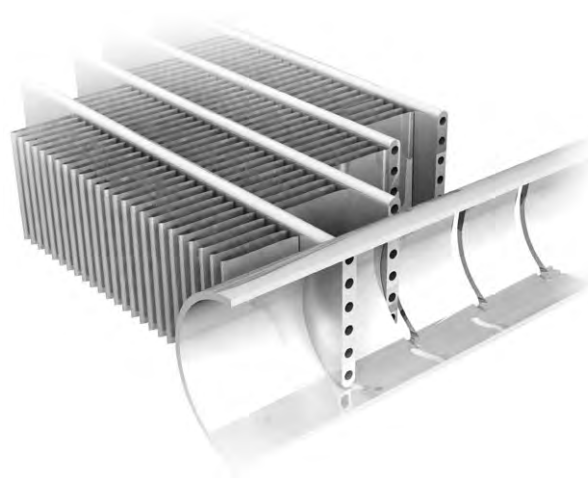
- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: Closing of this contact activates a second setpoint (e.g. unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.
- Setpoint adjustable via 4-20 mA signal

FEATURES

Flying Bird IV fan



All-aluminium micro-channel heat exchanger (MCHE)



Already utilised in the automobile and aeronautical industries for many years, the MCHE micro-channel heat exchanger is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers.

As an option, the Enviro-Shield and Super Enviro-Shield anti-corrosion protections have been developed to increase the application range of the MCHE coil from medium to very corrosive environments. With Enviro-Shield protection, corrosion resistance of the MCHE coil is doubled without any impact on heat exchange.

With Super Enviro-Shield protection corrosion resistance of the MCHE coil is multiplied by four, and allows use in very corrosive industrial or marine environments

The MCHE heat exchanger allows a reduction in chiller refrigerant charge by up to 50%.

The low thickness of the MCHE reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHE heat exchanger is very fast using a dry air jet or a high-pressure washer, while observing the usage precautions.

OPTIONS

Options	No.	Description	Advantages	Use
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBS 039-160
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBS 039-160
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise emission reduction at reduces fan speed	30RBS 039-160
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	30RBS 039-160
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RBS 039-160
Winter operation down to -20°C	28	Fan speed control via frequency converter	Stable unit operation when the air temperature is between -10°C and -20°C.	30RBS 039-160
Frost protection down to -20°C	42	Electric heater on the hydraulic module	Hydraulic module frost protection at low outside temperatures	30RBS 039-160
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit.	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RBS 039-160
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30RBS 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RBS 039-160
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RBS (Brine only) 039-160
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBS (Brine only) 039-160
HP variable-speed single-pump hydraulic mod.	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RBS 039-160

OPTIONS

Options	No.	Description	Advantages	Use
HP variable-speed dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), water filter, electronic flow switch, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RBS 039-160
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RBS 039-160
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RBS 039-160
ModBus over IP and RS485 communication gateway	149B	Bi-directional high-speed communication using the ModBus over Ethernet network (IP) protocol	Easy, quick connection via Ethernet line to a building technical management system. Allows access to several unit parameters.	30RBS 039-160
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30RBS 039-160
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30RBS 039-160
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30RBS 039-160
Evaporator screw connection sleeves	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30RBS 039-160
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RBS 039-160
Reinforced ECM filtration for fan VFD	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RBS 039-160 with option 5B, 6B or 28
Reinforced ECM filtration for pump VFD	282B	Pump variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RBS 039-160 with option 116V or 116W
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (require option 116)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RBS 039-160
Set point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy management, allow to adjust set point by a 4-20mA external signal	30RBS 039-160
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system managment, Extended control capabilities to a dryccoler used in Free Cooling mode	30RBS 039-160
Plastic tarp	331	Plastic tarp covering the unit with straps and held down on a wooden pallet.	Prevents dust and external soiling on the machine during storage and transportation.	30RBS 039-160

PHYSICAL DATA, 30RBS

30RBS		039	045	050	060	070	080	090	100	120	140	160
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Cooling

Standard unit Full load performances*	CA1	Nominal capacity	kW	40	44	51	58	69	79	89	97	115	138	156
		EER	kW/kW	2,89	2,78	2,69	2,68	2,84	2,71	2,85	2,74	2,68	2,82	2,66
	CA2	Nominal capacity	kW	53	59	69	81	85	99	115	127	152	172	196
		EER	kW/kW	3,47	3,34	3,14	3,34	2,98	3,08	3,19	3,11	3,12	3,01	3,03
Standard unit Seasonal energy efficiency**	SEER _{12/7°C} Comfort low temp.		kWh/ kWh	3,90	4,07	4,12	4,00	3,83	3,91	4,21	4,20	4,10	3,95	4,19
	$\eta_{s\ cool}$ _{12/7°C}		%	153	160	162	157	150	154	165	165	161	155	164
	SEPR _{12/7°C} Process high temp.		kWh/ kWh	5,32	5,35	5,28	5,12	5,12	5,18	5,16	5,15	5,52	5,10	5,33
Unit with option 6B Seasonal energy efficiency**	SEPR _{-2/-8°C} Process medium temp.		kWh/ kWh	2,88	3,21	2,91	3,09	3,04	2,75	2,97	3,12	3,10	3,07	3,02
Integrated Part Load Value	IPLV.SI		kW/kW	4,540	4,710	4,810	4,580	4,260	4,390	4,550	4,530	4,550	4,290	4,640

Sound levels

Standard unit														
Sound power level ⁽¹⁾		dB(A)	80	81	81	81	87	87	84	84	84	90	90	
Sound pressure level at 10 m ⁽²⁾		dB(A)	49	49	49	49	55	55	52	52	52	58	58	
Unit with option 15LS														
Sound power level ⁽¹⁾		dB(A)	79	80	80	80	80	80	83	83	83	83	83	
Sound pressure level at 10 m ⁽²⁾		dB(A)	48	48	48	48	48	48	51	51	51	51	51	

Dimensions

Length	mm	1061	1061	1061	1061	1061	1061	1061	2258	2258	2258	2258	2258	
Width	mm	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	
Height	mm	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	

Operating weight with MCHE coil⁽³⁾

Standard unit without hydraulic module	kg	429	436	442	454	454	471	766	776	789	896	928		
Standard unit with hydraulic module														
Single high-pressure pump	kg	459	466	472	484	484	501	798	808	825	935	967		
Dual high-pressure pump	kg	484	492	497	510	510	527	843	853	873	972	1004		

Compressors

Hermetic scroll compressors, 48,3 r/s														
Circuit A	2	2	2	2	2	2	3	3	3	3	2	2		
Circuit B	-	-	-	-	-	-	-	-	-	-	-	2	2	
No of control stages	2	2	2	2	2	2	3	3	3	3	4	4		

Refrigerant charge with MCHE coil⁽³⁾

R-410A, GWP=2088 following ARI4														
Circuit A	kg	4,7	5,3	5,9	6,7	6,2	7,3	10,7	10,8	11,4	6,5	7,4		
	teqCO ₂	9,8	11,1	12,3	14,0	12,9	15,2	22,3	22,6	23,8	13,6	15,5		
Circuit B	kg	-	-	-	-	-	-	-	-	-	6,5	7,4		
	teqCO ₂	-	-	-	-	-	-	-	-	-	13,6	15,5		

- * In accordance with standard EN14511-3:2013
- ** In accordance with standard EN14825:2016, average climate
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
- CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
- $\eta_{s\ cool}$ _{12/7°C} & SEER _{12/7°C} Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application
- SEPR _{12/7°C} Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application
- SEPR _{-2/-8°C} Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application
- IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).
- (1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
- (3) Values shown are a guideline only. Please refer to the unit nameplate



Eurovent certified values

PHYSICAL DATA, 30RBS

30RBS		039	045	050	060	070	080	090	100	120	140	160
Capacity control		SmartVu™										
Minimum capacity	%	50	50	50	50	50	50	33	33	33	25	25
Condensers		All-aluminium microchannel heat exchanger (MCHE)										
Fans		Axial Flying Bird IV with rotating shroud										
Quantity		1	1	1	1	1	1	2	2	2	2	2
Maximum total air flow	l/s	3885	3883	3687	3908	5013	5278	6940	6936	7370	10026	10556
Maximum rotation speed	r/s	12	12	12	12	16	16	12	12	12	16	16
Evaporator		Direct expansion, plate heat exchanger										
Water volume	l	2,6	3,0	3,3	4,0	4,8	5,6	8,7	9,9	11,3	12,4	14,7
Without hydraulic module (option)												
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
With hydraulic module (option)												
Single or dual pump (as selected)		Pump, Victaulic screen filter, relief valve, expansion tank, purge valves (water + air), pressure sensors										
Expansion tank volume	l	12	12	12	12	12	12	35	35	35	35	35
Expansion tank pressure ⁽⁴⁾	bar	1	1	1	1	1	1	1,5	1,5	1,5	1,5	1,5
Max. water-side operating pressure	kPa	400	400	400	400	400	400	400	400	400	400	400
Water connections with/without hydraulic module		Victaulic										
Diameter	in	2	2	2	2	2	2	2	2	2	2	2
Outside tube diameter	mm	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3
Chassis paint colour		Colour code: RAL7035										

(4) When delivered, the standard pre-inflation of the tank is not necessarily the optimal value for the system. To permit changing the water volume, change the inflation pressure to a pressure that is close to the static head of the system. Fill the system with water (purging the air) to a pressure value that is 10 to 20 kPa higher than the pressure in the tank.

ELECTRICAL DATA, 30RBS

30RBS without hydraulic module		039	045	050	060	070	080	090	100	120	140	160
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V via internal transformer										
Maximum start-up current (Un) ⁽¹⁾												
Standard unit	A	114	135	143	146	176	213	174	208	248	243	286
Unit with electronic starter option	A	75	87	94	96	114	140	125	150	176	186	215
Unit power factor at maximum capacity ⁽²⁾		0,83	0,81	0,81	0,83	0,81	0,78	0,83	0,81	0,79	0,81	0,78
Maximum operating power input ⁽²⁾	kW	20	22	25	28	31	36	42	46	53	62	72
Nominal unit operating current draw ⁽³⁾	A	26	29	33	36	42	53	55	62	77	85	106
Maximum operating current draw (Un) ⁽⁴⁾	A	35	45	47	53	67	73	81	99	108	134	146
Maximum operating current draw (Un-10%)†	A	38	49	51	58	75	80	89	110	118	150	159
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table 9.1										

(1) Maximum instantaneous start-up current at operating limit value (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

(2) Power input, at the unit permanent maximum operating conditions (data given on the unit nameplate)

(3) Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

(4) Maximum unit current at 400 V, non permanent operating conditions (values given on the unit nameplate).

† Maximum unit operating current at 360 V, non permanent operating conditions.

Short-circuit stability current (TN system⁽¹⁾)

30RBS	039	045	050	060	070	080
Value without upstream protection						
Short-term current at 1s - I _{cs} - kA rms	3,36	3,36	3,36	3,36	3,36	3,36
Admissible peak current - I _{pk} - kA pk	20	20	20	20	20	15
Value with upstream protection by circuit breaker						
Conditional short-circuit current I _{cc} - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H
Reference No. ⁽²⁾	29670	29670	29670	29670	29670	29670

30RBS	090	100	120	140	160
Value without upstream protection					
Short-term current at 1s - I _{cs} - kA rms	5,62	5,62	5,62	5,62	5,62
Admissible peak current - I _{pk} - kA pk	20	20	15	20	15
Value with upstream protection by circuit breaker					
Conditional short-circuit current I _{cc} - kA rms	40	40	40	30	30
Schneider circuit breaker - Compact series	NS100H	NS160H	NS160H	NS250H	NS250H
Reference No. ⁽²⁾	29670	30670	30670	31671	31671

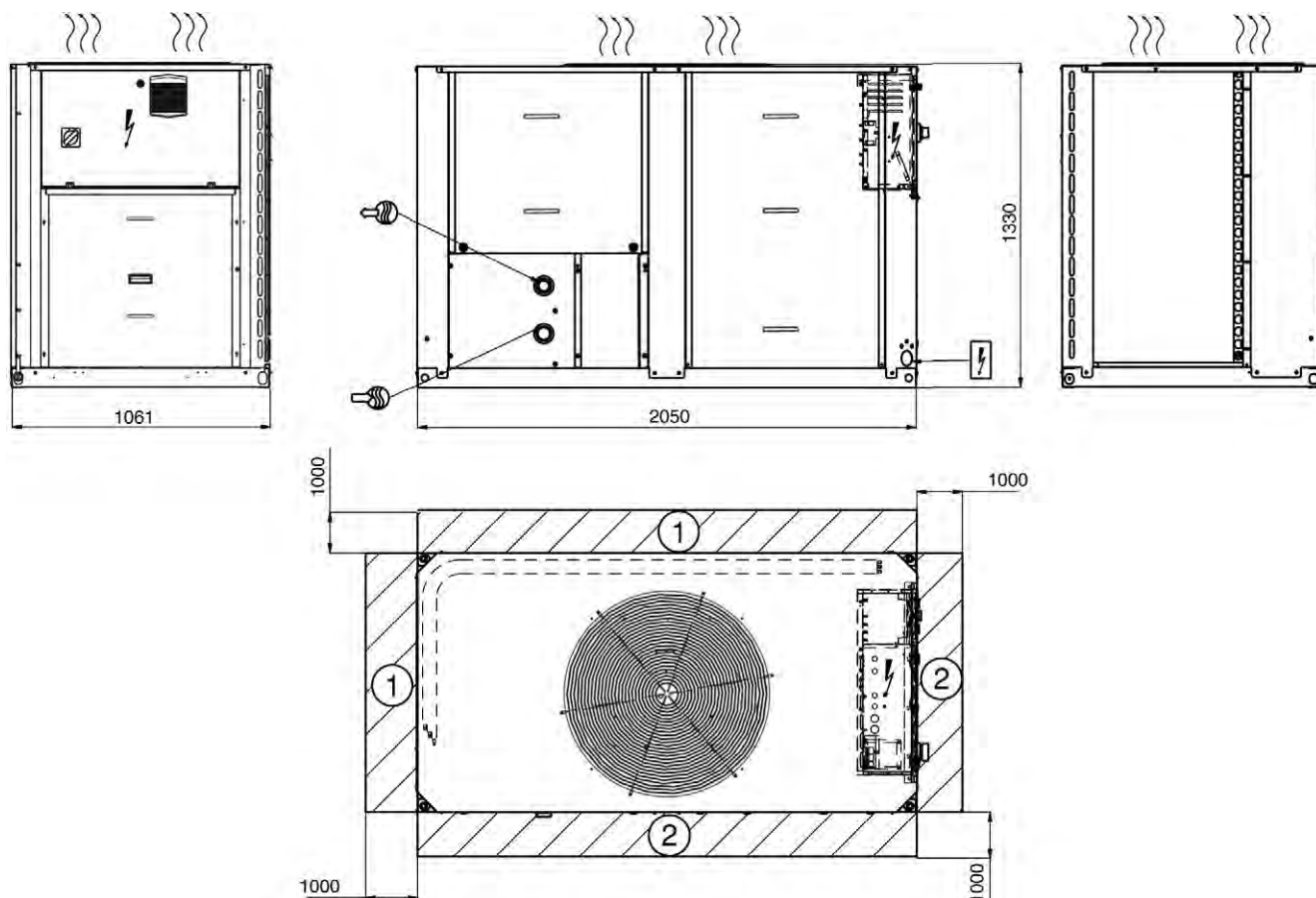
(1) Earthing system type

(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.

The short-circuit stability current values above are suitable with the TN system.





DIMENSIONS/CLEARANCES, 30RBS

30RBS 039-080, units with and without hydraulic module



Legend:

All dimensions are given in mm

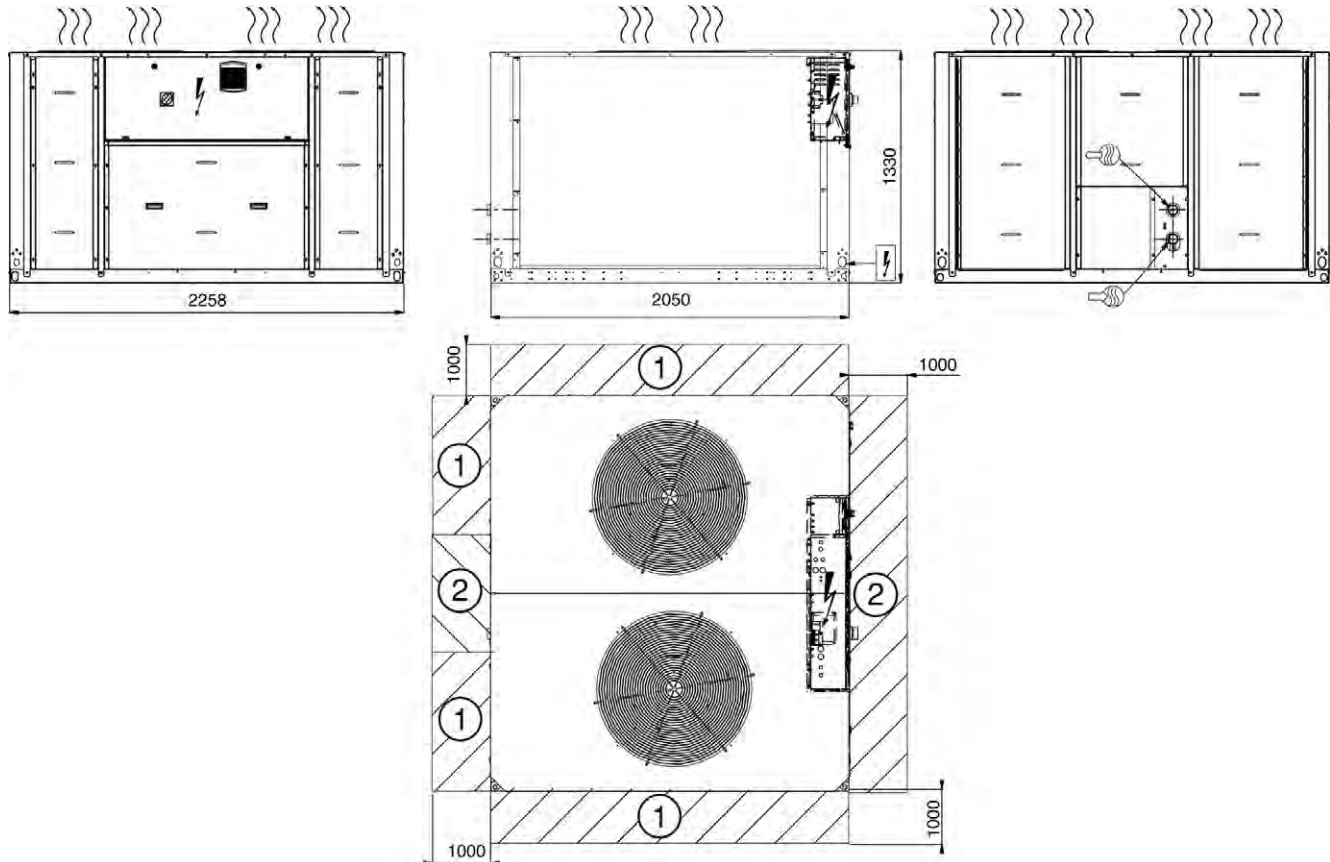
-  Control box
-  Water inlet
-  Water outlet
- ① Required clearances for air entry
- ② Recommended space for maintenance
-))) Air outlet, do not obstruct
-  Power supply inlet

NOTES:

- A Non-certified drawings.**
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.
- B In multiple-chiller installations (maximum four units),** the side clearance between the units should be increased from 1000 to 2000 mm.
- C The height of the solid surface must not exceed 2 m.**






DIMENSIONS/CLEARANCES, 30RBS

30RBS 090-160, units with and without hydraulic module



Legend:

All dimensions are given in mm

-  Control box
-  Water inlet
-  Water outlet
- ① Required clearances for air entry
- ② Recommended space for maintenance
-  Air outlet, do not obstruct
-  Power supply inlet

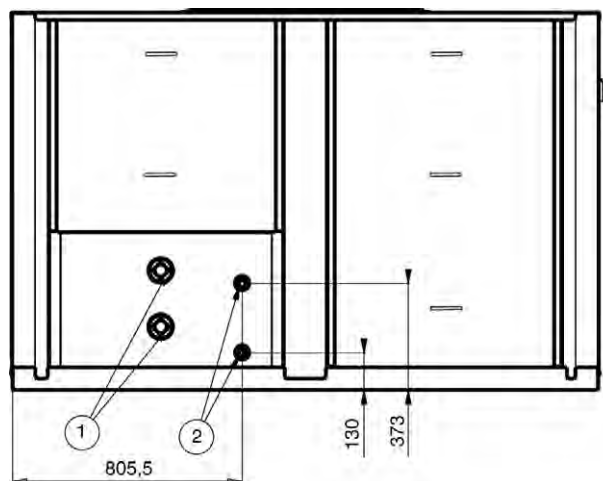
NOTES:

- A Non-certified drawings.**
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.
- B In multiple-chiller installations (maximum four units),** the side clearance between the units should be increased from 1000 to 2000 mm.
- C The height of the solid surface must not exceed 2 m.**

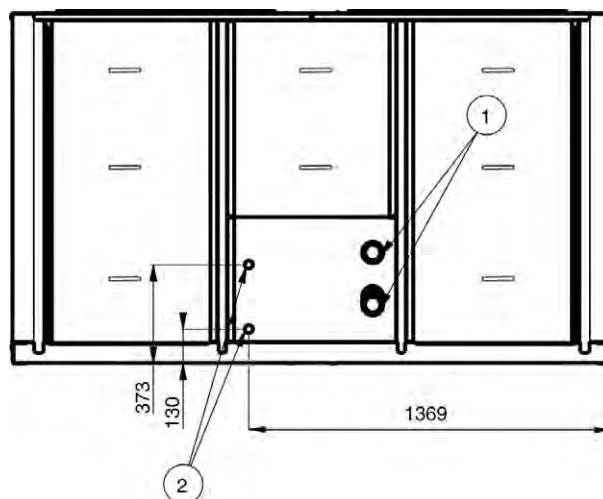
DIMENSIONS/CLEARANCES FOR 30RBS UNITS WITH OPTION 49

Position of the desuperheater inlets and outlets

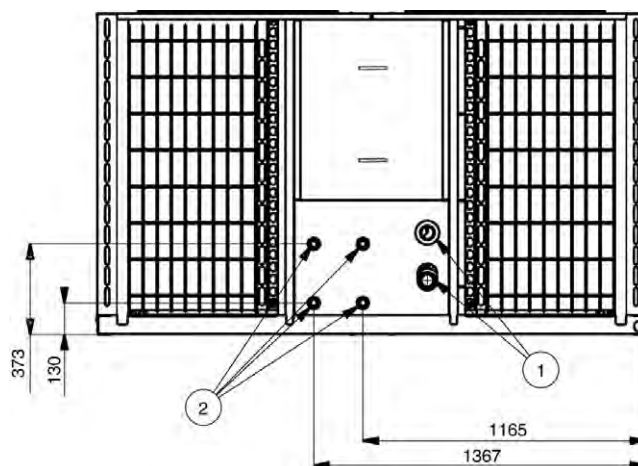
30RBS 039-080



30RBS 090-120



30RBS 140-160



Unit with option 23

- ① Unit water inlet and outlet
- ② Water inlet and outlet, unit with option 49

NEW

AIR-COOLED SCROLL CHILLERS WITH GREENSPEED® INTELLIGENCE



Low environmental impact

High full and part load efficiency

Compact and simple to install

Low refrigerant charge

Superior reliability

30RB 040R-160R

Cooling capacity 40-160 kW



Aquasnap® liquid chillers and heat pumps are the best solution for commercial and industrial applications where installers, engineering and design departments and building owners require reduced installation costs, optimal performances and maximum quality.

- AquaSnap® (30RB) is a compact all-in-one package optimised for applications where reduced investment and installation cost (low CapEx) is required.
- The large options panel allows for configurations that suit user requirements.
- The pump and variable-speed fan options with Greenspeed® intelligence Carrier control logic makes it a product optimised for part load applications where a high SEER, SEPR or IPLV value is required.

In this configuration AquaSnap® offers a premium part load efficiency to reduce maintenance costs over the lifespan of the chiller. In addition, the sound levels achieved under the part load conditions are particularly low. Besides operating efficiently and quietly, the AquaSnap® range with Greenspeed® intelligence operates from -20 °C up to +46 °C as standard.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

R-32: THE BEST SOLUTION FOR SCROLL LIQUID CHILLERS AND HEAT PUMPS



Carrier was the first to introduce the R-1234ze HFO with ultra-low GWP in screw chillers, as far back as early 2016. Today, having examined its main properties, Carrier has chosen R-32 refrigerant to replace high-GWP R-410A refrigerant in its Scroll liquid chillers and heat pumps, for its lower environmental impact, high energy efficiency, good availability and ease of use.

R-32 is currently the ideal refrigeration solution for units equipped with Scroll compressors. By using R-32 refrigerants, Carrier has reduced the carbon footprint of its AquaSnap® range of liquid chillers and heat pumps by 80%. This is the result of a much lower GWP and a significant reduction in the system's cooling charge compared to the previous generation that used R-410A.

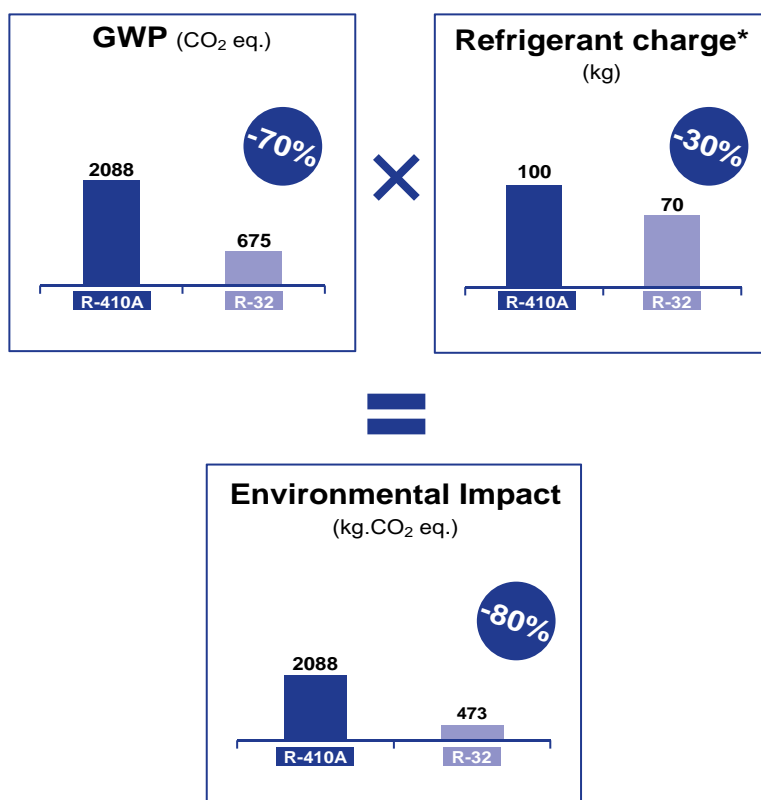
R-32 is also the right choice economically, reducing the locally imposed tax burden on HFCs based on the CO₂ impact.



CO₂ FOOTPRINT
REDUCED BY UP TO 80%

Lower environmental impact (-80% compared to R410A)

- R-32 has zero ozone depletion potential (ODP)
- The Global Warming Potential (GWP) of R-32 is 675, i.e. approximately one third of that of R-410A (PRP 2088)
- The AquaSnap® R-32 cooling charge is reduced by 30% compared to the previous version using R-410A*
- The carbon footprint of AquaSnap® R-32 is therefore 473 (675 x 0.7), i.e. 80 % lower than the version using R-410A (2088 x 1)



* Reduced refrigerant charge in Carrier heat pumps thanks to the use of R-32 and a new coil design.

R-32: THE BEST SOLUTION FOR SCROLL LIQUID CHILLERS AND HEAT PUMPS

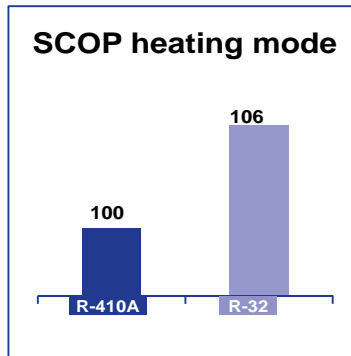
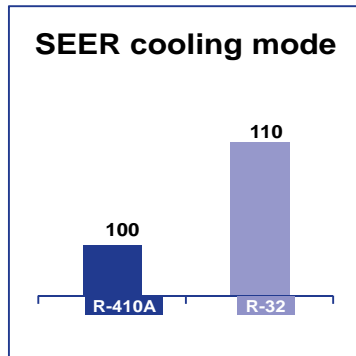


SEER up to +10%
SCOP up to +6%

High energy efficiency

The seasonal efficiency of AquaSnap® R-32 is higher than that of the previous R-410A version by:

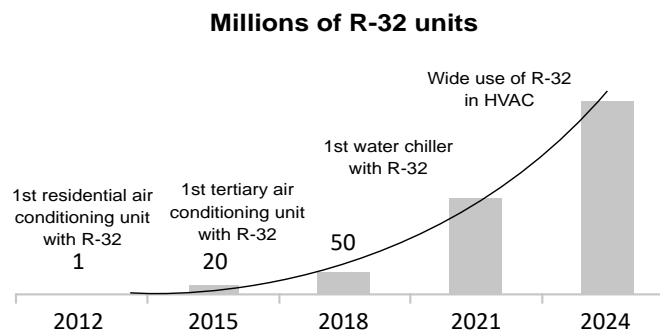
- approximately 10% in cooling mode
- approximately 6% in heating mode



SIMPLICITY

Widely available and easy to use

More than 50 million R-32 air conditioning units are in circulation on the global market. While R-32 has been used for some time in residential and commercial air conditioning units, most manufacturers now use R-32 in VRF systems, liquid chillers and heat pumps, which means R-32 is widely available around the world.



R-32 has been widely available for over 15 years, as it comprises 50% of the composition of R-410A.

R-32 is easy to use: It is a pure refrigerant, therefore it is not necessary to drain the entire circuit in the event of a leak.



SAFETY

R-32 is an A2L classified refrigerant thanks to its low flammability.

- **No specific safety requirements** for transporting chillers by road or for outdoor installation.
- The service tools must be **certified** for **A2L** refrigerants in accordance with standard ISO 817 or EN378.
- Service technicians **must be qualified for brazing components** on PED 2 fluid units.

AQUASNAP® - CUSTOMER BENEFITS

■ Outstanding performance

Equipped with variable-speed fans (VSD or EC optional) and optional variable-speed pumps, Carrier's AquaSnap® 30RB range with Greenspeed® intelligence automatically adjusts the cooling capacity and water flow to perfectly adapt to the building's requirements or load variations. The result is optimum operation at both full load and part load (SEER up to 4.6). The 30RB offers energy efficiency up to 10% higher than the previous range with the same or a smaller footprint.

The range is already fully compliant with the 2021 Ecodesign regulations.

■ Intelligence and connectivity

The advanced SmartVu™ intelligent control system displays operating parameters in real time, making it intuitive and particularly user-friendly. The AquaSnap® 30RB range is also characterised by a brand new smart energy monitoring function which provides users with smart data such as electrical energy consumption in real time, supplied cooling and heating energy and instantaneous and average seasonal energy efficiency values. For even greater energy savings, the AquaSnap® 30RB can be monitored remotely by Carrier experts to further optimise the energy consumption level.



SEER up to 4.6



SMART ENERGY
MONITORING

■ Extensive field of application

The AquaSnap® range is suitable for a very wide range of applications from tertiary to industrial processes. The range can operate at outdoor temperatures from -20 °C to +44 °C (Optional 46 °C) and with negative water temperatures (-8 °C). From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaSnap® 30RB units meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate or application.

■ Easy installation & maintenance

Thanks to the variable-speed pumps, automatic adjustment of the nominal water flow rate via electronic control and automatic measurement of the unit's energy performance under real conditions, pumping energy consumption is reduced by almost two thirds: These new features guarantee peace of mind for installers and maintenance companies and lower energy bills for users.



BETWEEN
-20 °C
and 46 °C



Pumping energy
reduced by
up to 66%

AQUASNAP® - CUSTOMER BENEFITS

AquaSnap® liquid chillers and heat pumps are designed to meet current and future Ecodesign and F-Gas European regulation requirements in terms of energy efficiency and reduced CO₂ emissions. They use the best technologies available today:

- Reduced refrigerant charge of non-ozone depleting R-32A refrigerant with low GWP
- Scroll compressors
- Greenspeed® variable-speed fans (optional)
- NOVATION™ micro-channel heat exchangers with a new aluminium alloy (30RB)
- Brazed-plate heat exchangers with reduced pressure drops
- Self-regulating microprocessor control with Greenspeed® intelligence
- Colour touch screen with web connectivity options

AquaSnap® can be equipped with a built-in hydraulic module, limiting the installation to conventional operations such as connection of the power supply and the supply and return piping (plug & play), according to the dimensions of the standard unit.

Recommended by Carrier, the AquaSnap® can be equipped with one or two Greenspeed® variable-speed pumps to significantly reduce energy costs linked to pumping (reduction of more than two-thirds), ensure optimum water flow rate control, and improve overall system reliability.



Very economical operation

- High unit full- and part-load energy efficiency and efficient design of the water side:
 - SEER_{12/7°C} up to 4.6 in line with the new Ecodesign 2016/2281 regulations.
 - Multiple scroll compressors equipped with a high-efficiency motor which can exactly match the cooling capacity to the load required
 - Electronic expansion valve enabling operation at a lower condensing pressure and improved use of the evaporator heat exchange surface (superheat control)
 - Condenser with high-efficiency NOVATION™ (30RB) aluminium micro-channel heat exchangers and Greenspeed® variable-speed fans (optional)
 - Low pressure drop brazed plate heat exchangers (< 45 kPa under Eurovent conditions).

- Specific control functions to reduce unit cooling energy use during occupied and unoccupied periods:
 - Internal timer: Switches the chiller on/off and controls operation at a second setpoint
 - Setpoint automatically offset based on the outdoor air temperature or room air temperature (via an option)
 - Floating high pressure (HP) management
 - Variable-speed fan control
 - Cooling demand limitation.

Refer to the control chapter for more information.

- Greenspeed® variable-speed pump to reduce pumping energy consumption by up to two-thirds (option recommended by Carrier):
 - Eliminate energy losses through the water flow rate control valve by electronically setting the nominal water flow rate
 - Save energy during stand-by periods or part-load operation by automatically reducing the water pump speed. The energy consumption of the pump motor varies according to the cube of the speed, so that a reduction in speed of just 40% can reduce energy consumption by 80%
 - Improved unit part-load performance (increased SEER/SCOP value with variable water flow according to standard EN14825).

Refer to the hydraulic option chapter for more information.

- Extra energy savings through multiple options:
 - Carrier drycooler Free cooling mode management
 - Partial heat recovery.
- Reduced maintenance costs:
 - Fast diagnosis of possible incidents and their history via the control
 - Programmable maintenance alert
 - Programmable F-Gas leak monitoring alert

AQUASNAP® - CUSTOMER BENEFITS

Low noise level

- Condenser with fixed-speed fans (30RB):
 - Optional low-speed and variable-speed fans (700 rpm) and compressor enclosure to reduce full-load noise level by up to -9 dB(A)
 - Low noise 6th generation Flying Bird™ fans, made of a composite material (Carrier patent)
 - Rigid fan installation for reduced noise (Carrier patent).
- Condenser with Greenspeed® variable-speed fans (optional) recommended by Carrier for even quieter operation:
 - Optional factory setting of the fan at low speed, with compressor enclosure to reduce full-load noise level by up to -9 dB(A)
 - Exceptional acoustic signature during part-load operation through smooth fan speed variation.
- Specific control functions or features to reduce noise level during the night or unoccupied periods:
 - Night-time sound control with cooling capacity and fan speed limitation
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by flexible anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
 - Acoustic compressor enclosure, reducing radiated noise emissions (optional).

Easy and fast installation

- Compact design:
 - AquaSnap® units are designed with compact dimensions for easy installation.
 - With a length of approximately 4.8 m for 550 kW and a width of 2.25 m, the units require minimal floor space.
- Integrated hydraulic module (optional):
 - Low or high-pressure water pump (as required)
 - Single or dual pump (as required) with runtime balancing and automatic changeover to the back-up pump if a fault develops

- Integrated variable-speed pumps with automatic adjustment of nominal water flow rate via the electronic control on the user's screen.
- Water filter protects the water pump against circulating debris
- Pressure sensors for direct numerical display of the water flow rate and water pressures
- Thermal insulation and frost protection down to -20 °C, using a heater (optional)
- High-capacity membrane expansion tank (optional).
- Built-in hydraulic module with Greenspeed® variable-speed pump (option recommended by Carrier):
 - Quick and easy electronic setting of the nominal water flow rate when the unit is commissioned, thus eliminating the need to adjust the water flow rate control valve
 - Automatic control of the pump speed based on constant speed, constant pressure difference or constant temperature difference.
- Simplified electrical connections
 - A single power connection point without neutral
 - Main disconnect switch with high trip capacity
 - 24 V control circuit using an integrated transformer.
- Simplified hydraulic connections:
 - Victaulic type couplings on the exchanger;
 - clearly identified and practical reference marks for entering and leaving water connections;
- Fast unit commissioning
 - Systematic factory test before shipment
 - Quick-test function for step-by-step verification of the sensors, electrical components and motors.

Reduced installation costs

- Optional Greenspeed® variable-speed pump with hydraulic module (option recommended by Carrier)
 - Cut costs relating to the water flow control valve
 - The design of the water system with variable primary flow (VPF) can provide significant installation cost savings compared with traditional constant primary systems with variable secondary circuits; elimination of the secondary distribution pump, etc.
 - Water system design with fan coils fitted with 2-way valves instead of 3-way valves.
- No buffer tank required thanks to Carrier's advanced control algorithm
 - Minimum water loop volume reduced to 2.5 l/kW.

AQUASNAP® - CUSTOMER BENEFITS

Environmental responsibility

AquaSnap® liquid chillers with Greenspeed® intelligence (With optional variable-speed fans and pumps) are a boost for green cities and contribute to a sustainable future. Combining a refrigerant charge up to 30% lower, with R-32 refrigerant with a GWP 70% lower than that of the previous version using R410A, and exceptional energy efficiency, this chiller significantly reduces energy consumption while reducing carbon dioxide emissions throughout its life cycle.

- Pumping energy consumption can be reduced by up to 2/3 using Greenspeed® variable-speed pumps
- 40% lower refrigerant charge: The micro-channel technology used for condenser coils optimises heat transfer while minimising the refrigerant volume.
- Sealed refrigerant circuits:
 - Reduction of leaks thanks to the absence of capillary tubes and the use of flare connections
 - verification of pressure transducers and temperature sensors without transferring refrigerant charge;
 - discharge line shut-off valve and liquid line service valve for simplified maintenance
 - Qualified Carrier maintenance personnel to provide refrigerant servicing
 - ISO 14001 production plant

Superior reliability

- State-of-the-art concept
 - Two independent refrigerant circuits; the second one automatically takes over if the first one develops a fault, maintaining partial cooling in all circumstances
 - All compressor components are easily accessible on site, minimising downtime
 - All-aluminium Novation™ micro-channel heat exchanger (MCHE) (30RB) with higher corrosion resistance than a conventional coil. The all-aluminium construction eliminates the formation of galvanic currents between aluminium and copper which can corrode the coil in saline or corrosive atmospheres
 - V-coil design to protect the coils against hail impact

- Optional Enviro-shield® anti-corrosion coil coating for use in moderately corrosive environments. Coating applied through conversion process which modifies the surface of the aluminium producing a coating that is integral to the coil. Immersion in a bath to ensure 100% coverage. No heat transfer variation, tested for 4000 hours in salt spray per ASTM B117
- Optional Super Enviro-shield® anti-corrosion coil coating for use in extremely corrosive environments. Extremely durable and flexible epoxy polymer coating applied on micro-channel heat exchangers by electro coating process with a final UV protective topcoat. Minimal heat transfer variation, tested for 6000 hours in salt spray per ASTM B117, superior impact resistance per ASTM D2794
- Electronic flow switch. Auto-setting according to cooler size and fluid type.
- Self-regulating control
 - The control algorithm prevents excessive compressor cycling and reduces the quantity of water in the water loop (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure
 - Automatic fan speed adjustment in case of coil fouling (30RB models)
 - Smooth fan start to increase unit lifetime (optionals include variable-speed fans).
- Exceptional endurance tests:
 - To design critical components and sub-assemblies to minimise the risk of failure on site, Carrier uses specialised laboratories and advanced dynamic simulation tools.
 - To ensure that the units reach customer sites in the same condition as they are when tested in the factory, Carrier tests the machine behaviour during transportation over 250 km. The road test is based on a military standard and is the equivalent to 5000 km by truck on a normal road.
 - To guarantee the coil corrosion resistance, salt spray corrosion resistance tests are performed in the group's laboratory.
 - In addition, to maintain the unit's performance throughout its operating life whilst minimising maintenance costs, end users can access the "Connected Services" remote monitoring service.

AQUASNAP® - CUSTOMER BENEFITS

Designed to support Green Building Design

A green building is a building that is environmentally sustainable and is designed, constructed and operated to minimise the total impact on the environment.

The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

The air conditioning system can use between 30 and 40% of the annual building energy consumption. Choosing the right air conditioning system is one of the main considerations when designing a green building. For buildings with a load that varies throughout the year, the AquaSnap® 30RB unit offers a solution to this important challenge.

A number of green building certification programmes exist in the market and offer third-party assessment of green building measures for a wide variety of building types.

The following example looks at how Carrier's new AquaSnap® range helps customers affected by LEED® building certification.

Energy saving certificate

The AquaSnap® 30RB unit is eligible for energy saving certificates in France (CEE) in comfort, industrial and agriculture applications:

- Floating High pressure control (by modulating the air flow through fan activation and speed)
- Floating Low pressure control
- Variable speed on asynchronous fan motor (optional)
- Variable speed on asynchronous pump motor (optional)

For more details about financial incentives in France, please refer to the "CEE product sheet".

The AquaSnap® range and LEED® certification

The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

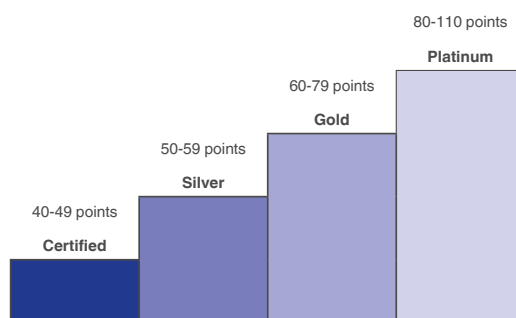
- sustainable Sites (SS)
- water efficiency (WE)
- energy and atmosphere (EA)
- materials and resources (MR)
- indoor environmental quality (IEQ)
- innovation in design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain the same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points



The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impact of each component or sub-system on the building as a whole.

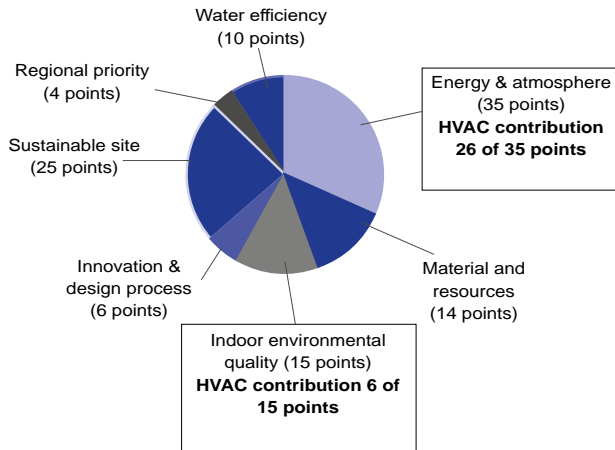
While the LEED® green building certification programmes do not certify products or services, choosing the right products, systems or service programmes is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

AQUASNAP® - CUSTOMER BENEFITS

Designed to support Green Building Design

Overview of LEED® for new construction and major renovations



The new AquaSnap® units from Carrier can help building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- EA prerequisite 2: Minimum energy performance
- 30RB units exceed the energy efficiency requirements of ASHRAE 90.1-2007; therefore they satisfy the prerequisites.
- EA prerequisite 3: Fundamental refrigerant management
30RB units do not use chlorofluorocarbon (CFC) refrigerants, thus satisfying the prerequisites.
- EA credit 1: Optimise energy performance (1 to 19 points)
Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90.1-2007 reference. 30RB units, which are designed for high performance especially during part load operation, help to reduce the building's energy consumption and therefore to gain points for this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used to analyse energy. It meets the modelling requirements for this credit and produces reports which can be easily transferred to LEED® charts.
- EA credit 4: Enhanced refrigerant management (2 points)
With this credit, LEED® awards systems that minimise the installed system's Ozone Depletion Potential (ODP) and Global Warming Potential (GWP). 30RB units use a reduced R-32 charge and therefore help satisfy the requirements of this LEED® credit.

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30RB units. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the HVAC system as a whole.

i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: fundamental commissioning of energy management systems;
- EA credit 3: enhanced commissioning (2 points);
- EA credit 5: measurements and verification (3 points).

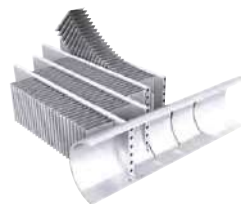
NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

30RB TECHNICAL OVERVIEW



SIXTH GENERATION FLYING BIRD™ FIXED-SPEED FANS

- Exclusive Carrier design
- Fan blade design inspired by nature
- High efficiency version with AC motor technology
- Variable speed option:
 - Patented algorithm to control the fan speed.
 - Dedicated variator or EC type motor.
 - Night mode operation.



NOVATION™ SECOND GENERATION MICRO CHANNEL HEAT EXCHANGERS (30RB)

- Increased reliability with new aluminium alloy
- Significantly reduces the refrigerant charge (-40% compared to Cu/Al coils)
- Improved thermal performance, improved efficiency and lower pressure drops compared to Cu/Al coils
- Enviro-Shield® coating for mildly corrosive environments
- Super Enviro-Shield® coating for highly corrosive environments (industrial or marine applications)
- Easy cleaning with high pressure air or water washer



SmartVu™ control

- 6 languages available
- 4.3" user-friendly touch screen
- All main parameters displayed on one screen
- Direct access to the unit's technical drawings and the main service documents
- Very easy online monitoring
- Easy and secure access to unit parameters
- Optional Bacnet, J-Bus or LON communication interfaces



SCROLL COMPRESSORS



REDUCED REFRIGERANT CHARGE



HIGH-EFFICIENCY BRAZED PLATE HEAT EXCHANGER

- Latest generation asymmetrical type (unit with 2 circuits)
- Low pressure drop



VARIABLE-SPEED PUMP

- Water flow electronic control and reading
- Automatic protection of the pump against low pressure
- Multiple control options:
 - constant flow with low speed mode on standby
 - variable flow based on pressure difference or constant temperature

PUMP SPEED REGULATOR



TECHNICAL INSIGHTS

SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: Controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
 - Storage of maintenance manual, wiring diagram and spare parts list
 - Display of trend curves for the main values
 - Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
 - Blackbox memory

■ 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: Closing of this contact activates a second setpoint (e.g. unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.
- Setpoint adjustable via 4-20 mA signal

TECHNICAL INSIGHTS

Novation™ heat exchangers with microchannel coil technology

Already used in the automotive and aeronautical industries for many years, the Novation™ micro-channel heat exchanger (MCHE) used in the AquaSnap® 30RB-30RBP liquid chillers is made entirely of aluminum. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminum) come into contact in traditional heat exchangers.

- From an energy efficiency point of view, Novation™ heat exchangers are approximately 10% more efficient than traditional coils and micro-channel coil technology enables a 40% reduction in the amount of refrigerant used in the chiller.
- The reduced depth of the Novation™ MCHE reduces air pressure losses by 50% and makes it much less susceptible to fouling (e.g. by sand). The Novation™ MCHE heat exchanger can be cleaned quickly using a high-pressure washer.
- To further enhance long-term performance and protect coils against premature deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.
 - The Novation™ MCHE with Enviro-Shield® protection (option 262) is recommended for installations in moderately corrosive environments. The Enviro-Shield® protection uses corrosion inhibitors which actively arrest oxidation in case of mechanical damage.
 - The Novation™ MCHE with exclusive Super Enviro-Shield® protection (option 263) is recommended for installations in corrosive environments. Super Enviro-Shield® protection comprises an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.
- After more than 7000 hours of testing based on various standards in Carrier group laboratories, the Novation™ MCHE with Super Enviro-shield® coating emerged as the best customer choice to minimise the harmful effects of corrosive atmospheres and ensure a long equipment life:
 - best corrosion resistance per the ASTM B117/D610 test;
 - best heat transfer performance per the Carrier Marine 1 test;
 - proven reliability per the ASTM B117 test.



Coil Types (ranked by performance)	Visual Corrosion Evaluation	Heat Transfer Performance Degradation	Time to Failure	Test Campaign Conclusions
Super Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Very good	No coil leak	Very good
Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Very good
Al/Al coil	Very good	Good	No coil leak	Very good
Novation™ MCHE	Good	Very good	No coil leak	Good
Cu/Cu coil	Good	Good	Leak	Acceptable
Blygold® Cu/Al coil	Good	Good	No coil leak	Acceptable
Precoat Cu/Al coil	Bad	Bad	No coil leak	Bad
Cu/Al coil	Bad	Bad	No coil leak	Bad

TECHNICAL INSIGHTS

New generation of Flying Bird VI™ fans with AC or EC motors (optional)



The 30RB unit uses Carrier's sixth generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and a wide operating range. The fans use Carrier patented rotating shroud technology and back-swept blades with a wave-serration trailing edge inspired by nature.

It was designed and optimised for the 30RB air management system configuration and heat exchanger technology.

The fans and their impellers use Carrier's robust and proven injection moulded composite thermoplastic construction.

On the 30RB with option 17, the fans are driven by an EC motor, also known as brushless DC, with dedicated electronics to manage commutation. This offers high precision for fans that require higher efficiency and variable speed. The fans meet the latest European Ecodesign requirements for fan efficiency.

EC motor (option 17)



OPTIONS

Options	No.	Description	Advantages	AquaSnap 30RB- (R32)
Low-temperature brine solution	6B	Low temperature chilled water production down to -8 °C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	040-160
High static fans	12	Unit equipped with high static variable-speed fans (maximum 200 Pa), each fan being equipped with a connection flange allowing the connection to the ducting system.	Ducted fan discharge, optimised temperature control, based on the operating conditions and system characteristics	040-160
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise level reduction in sensitive environments	040-160
High ambient temperature	16	Unit equipped with a higher speed fan	Unit operating range extended to higher ambient temperatures	040-160
EC fans	17	Unit equipped with EC fans	Improves the unit's energy efficiency	040-160
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	040-160
Electronic starter per compressor	25	Electronic starter on each compressor	Reduced start-up current	040-160
Winter operation down to -20 °C	28	Fan speed control via frequency converter	Stable unit operation when the air temperature is between -10 °C and -20 °C	040-160
Water exchanger frost protection	41	Electric heater on the water type heat exchanger and the water piping	Water type heat exchanger module frost protection between 0 °C and -20 °C outdoor air temperature	040-160
Hydraulic module frost protection	42	Electric heater on the hydraulic module	Hydraulic module frost protection at low outside temperatures down to -20 °C	040-160
Exchanger & hydraulic frost protection	42B	Electric heaters on the water type heat exchanger, the hydraulic module, the optional expansion vessel and the buffer tank	Water type heat exchanger and hydraulic module frost protection down to an outdoor air temperature of -20 °C	040-160
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with runtime balancing	040-160
HP evap. single-pump	116R	Evaporator hydraulic module equipped with high pressure fixed-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in hydraulic safety components available.)	Quick and easy installation (plug & play)	040-160
HP dual-pump hydraulic module	116S	Dual high pressure water pump, water filter, electronic water flow rate control, pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in hydraulic safety components available)	Quick and easy installation (plug & play)	040-160
Variable-speed single HP pump	116V	Single high pressure water pump with variable speed drive, water filter, electronic water flow control, pressure sensors. Multiple variable water flow control options. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in hydraulic safety components available)	Quick and easy installation (plug & play), significant reduction in pumping energy consumption level (more than two-thirds), precise water flow control, improved system reliability	040-160
HP variable-speed dual pump	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more information, refer to the dedicated chapter.	Quick and easy installation (plug & play), significant reduction in pumping energy consumption level (more than two-thirds), precise water flow control, improved system reliability	040-160
LP variable-speed single pump	116X	Variable-speed single pump. For more details, refer to the dedicated chapter (expansion tank not included)	Quick and easy installation (plug & play), significant reduction in pumping energy consumption level (more than two-thirds), precise water flow control, improved system reliability	040-160
LP variable-speed dual pump	116Y	Evaporator hydraulic module equipped with low -pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in safety hydraulic components available.)	Quick and easy installation (plug & play), significant reduction in pumping energy consumption level (more than two-thirds), precise water flow control, improved system reliability	040-160

OPTIONS

Options	No.	Description	Advantages	AquaSnap 30RB- (R32)
LP single pump hydraulic module	116T	Single low pressure water pump, water filter, electronic water flow rate control, pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in hydraulic safety components available)	Quick and easy installation (plug & play)	040-160
LP dual pump hydraulic module	116U	Dual low pressure water pump, water filter, electronic water flow control, pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in hydraulic safety components available)	Quick and easy installation (plug & play)	040-160
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	040-160
Bacnet over IP	149	Two-directional high-speed communication using Bacnet protocol over Ethernet network (IP)	Easy and high-speed connection by Ethernet line to a BMS. Allows access to multiple unit parameters	040-160
ModBus over IP and RS485 communication gateway	149B	Bi-directional high-speed communication using the ModBus over Ethernet network (IP) protocol	Easy, quick connection via Ethernet line to a building technical management system. Allows access to several unit parameters.	040-160
Compliance with Russian regulations	199	EAC certification	Compliance with Russian regulations	040-160
Insulation of the evaporator inlet/outlet refrigerant lines	256	Thermal insulation of the evaporator inlet/outlet refrigerant lines, with flexible and UV-resistant insulation	Prevents condensation on the evaporator inlet/outlet refrigerant lines	040-160
Enviro-Shield anti-corrosion protection	262	Coating applied using a conversion process which modifies the surface of the aluminium producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested to withstand more than 4000 hours of salt spray as per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	040-160
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro-channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested to withstand more than 6000 hours of constant neutral salt spray as per ASTM B117, improved impact resistance as per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	040-160
Evaporator sleeve kit (to be screwed)	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	040-160
Evaporator sleeve kit (to be welded)	266	Victaulic piping connections with welded joints	Easy installation	040-160
Reinforced ECM filtration for fan VFD	282A	Fan frequency inverter compliance with IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	040-160
Reinforced ECM filtration for pump VFD	282B	Pump frequency inverter compliance with IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	040-160
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & protection of closed water systems from excessive pressure	040-160
Water buffer tank module	307	Built-in water buffer tank module	Avoids short cycle on compressors and ensures stable water in the loop	040-160
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with FC control box option	Easy system management, control capabilities extended to a drycooler used in Free Cooling mode	040-160
Installation or application process outside Europe	326	Specific management of option compatibility	Permits non-standard option compatibility for HVAC application in the EU	040-160
Compliance with Moroccan regulations	327	Specific regulatory documentation	Compliance with Moroccan regulations	040-160
Plastic tarp	331	Plastic tarp covering the unit with straps and held down on a wooden pallet.	Prevents dust and external soiling on the machine during storage and transportation.	040-160

PHYSICAL DATA, SIZES 040R TO 160R

30RB				040R	045R	050R	055R	060R	070R	080R	090R	100R	120R	140R	160R
Cooling															
Standard unit Full load performances*	CA1	Nominal capacity	kW	41,8	47,3	52,9	56,1	63,6	71,2	81,2	93,4	107	124	140	160
		EER	kW/kW	2,95	2,94	2,93	2,97	2,89	2,90	2,78	2,97	2,83	2,85	2,87	2,76
	CA2	Nominal capacity	kW	54,6	62,7	69,4	74,3	84,6	93,0	103	126	142	163	183	203
		EER	kW/kW	3,60	3,61	3,51	3,61	3,63	3,49	3,22	3,72	3,48	3,40	3,48	3,21
Seasonal energy efficiency**		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,41	4,48	4,50	4,62	4,41	4,31	4,24	4,38	4,51	4,57	4,46	4,37
		ηs cool ^{12/7°C}	%	173	176	177	182	174	169	167	172	177	180	176	172
		SEER ^{23/18°C} Comfort medium temp.	kWh/kWh	5,74	5,76	5,71	5,83	5,38	5,41	5,19	5,31	5,62	5,59	5,53	5,27
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	6,30	6,23	6,23	6,21	5,92	5,46	5,21	5,45	5,19	5,25	5,37	5,15
		SEPR ^{-2/-8°C} Process medium temp.	kWh/kWh	Awaiting data											
Part Load integrated values	IPLV.SI	kW/kW		4,972	5,047	5,216	5,298	5,369	4,630	4,630	4,904	4,953	4,997	4,707	4,680
Sound levels															
Standard unit															
Sound power ⁽¹⁾			dB(A)	81,5	82,0	83,5	83,5	89,0	89,0	89,0	91,5	91,5	92,0	92,0	92,0
Sound pressure at 10 m ⁽²⁾			dB(A)	50,0	50,5	52,0	52,0	57,5	57,5	57,5	60,0	60,0	60,5	60,5	60,5
Unit + option 15LS⁽³⁾															
Sound power ⁽¹⁾			dB(A)	78,5	79,0	80,0	80,0	80,0	80,0	80,0	83,0	83,0	83,0	83,0	83,0
Sound pressure at 10 m ⁽²⁾			dB(A)	47,0	47,5	48,5	48,5	48,5	48,5	48,5	51,5	51,5	51,5	51,5	51,5
Dimensions															
Standard unit															
Length			mm	1061	1061	1061	1061	1061	1061	1061	2258	2258	2258	2258	2258
Width			mm	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050
Height			mm	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330
Unit height (option 12)			mm	1341	1341	1341	1341	1341	1341	1341	1341	1341	1341	1341	1341
Unit height (option 307)			mm	1930	1930	1930	1930	1930	1930	1930	1930	1930	1930	1930	1930
Unit height (option 12+ 307)			mm	1972	1972	1972	1972	1972	1972	1972	1972	1972	1972	1972	1972

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2013, average climate conditions

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². kWCA2 Cooling mode conditions: evaporator water inlet/outlet temperature 23 °C/18 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². kW**ηs cool^{12/7°C} & SEER ^{12/7°C}** Values in bold comply with Ecodesign Regulation (EU) No. 2016/2281 for Comfort applications**SEER ^{23/18 °C}** Values in bold comply with Ecodesign Regulation (EU) No. 2016/2281 for Comfort applications**SEPR ^{-2/-8 °C}** Values calculated in accordance with EN14825:2016

IPLV.SI Calculated as per AHRI standard 551-591.

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dual-number noise emission value in accordance with ISO 4871 with an uncertainty of +/-3 dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20 μPa, (A) weighting. Declared dual-number noise emission value in accordance with ISO 4871 with an uncertainty of +/-3 dB(A). For information, calculated from the sound power level Lw(A).

(3) Options: 15LS = Very low noise level, 116W = Variable-speed high pressure dual-pump hydraulic module, 307 = Water buffer tank module



Eurovent certified values

PHYSICAL DATA, SIZES 040R TO 160R

30RB		040R	045R	050R	055R	060R	070R	080R	090R	100R	120R	140R	160R
Operating weight⁽⁴⁾													
Standard unit	kg	404	405	424	424	430	439	447	665	725	733	848	863
Unit + high pressure single pump option	kg	425	426	444	444	450	460	467	684	745	758	874	888
Unit + high pressure dual pump option	kg	451	453	471	471	477	487	494	711	772	791	906	921
Unit + high pressure single pump and buffer tank options	kg	776	778	796	796	802	812	819	1102	1163	1176	1292	1306
Unit + high pressure dual pump and buffer tank options	kg	803	805	823	823	829	838	846	1129	1190	1209	1324	1339
Compressors		Hermetic Scroll 48.3 r/s											
Circuit A		2	2	2	2	2	2	2	2	3	3	2	2
Circuit B												2	2
No. of power stages		2	2	2	2	2	2	2	2	3	3	4	4
Refrigerant⁽⁴⁾		R-32/A2L											
Circuit A	kg	3,72	3,92	4,15	4,60	4,70	4,87	4,94	7,75	7,95	9,00	4,87	4,94
	tCO ₂ e	2,5	2,6	2,8	3,1	3,2	3,3	3,3	5,2	5,4	6,1	3,3	3,3
Circuit B	kg											4,87	4,94
	tCO ₂ e											3,3	3,3
Oil													
Circuit A	l	6,00	6,00	6,60	6,60	6,60	7,20	7,20	7,20	10,80	10,80	7,20	7,20
Circuit B	l											7,20	7,20
Capacity control		SmartVu™											
Minimum capacity	%	50	50	50	50	50	50	50	50	33	33	25	25
PED category		III											
Condenser		All-aluminium micro-channel coils (MCHE)											
Fans		Axial Flying Bird 6 with rotating shroud											
Standard unit													
Quantity		1	1	1	1	1	1	1	2	2	2	2	2
Maximum total air flow	l/s	3882	3802	4058	3900	5484	5452	5414	10568	10512	10974	10904	10827
Maximum rotation speed	r/s	12	12	12	12	18	18	18	18	18	18	18	18
Evaporator		Direct expansion brazed-plate heat exchanger											
Water volume	l	3,55	4	4,44	4,44	5,18	6,07	6,96	7,4	8,44	9,92	12,69	14,31
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (optional)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (optional)											
Pump		Centrifugal pump, monocell, 48.3 r/s, low or high pressure (as required), single or dual (as required)											
Expansion tank volume	l	12	12	12	12	12	12	12	35	35	35	35	35
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Hydraulic connections with/without hydraulic module		Victaulic® type											
Connections	inches	2	2	2	2	2	2	2	2	2	2	2	2
External diameter	mm	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3
Casing paint colour		Colour code RAL 7035											

(3) Options: 15LS = Very low noise level, 116W = Variable-speed high pressure dual-pump hydraulic module, 307 = Water buffer tank module

(4) Values are guidelines only. Refer to the unit name plate.

ELECTRICAL DATA

30RB		040R	045R	050R	055R	060R	070R	080R	090R	100R	120R	140R	160R
Power circuit supply													
Nominal voltage	V-ph-Hz	400 - 3 -50											
Voltage range	V	360 - 440											
Control circuit supply		24 V via internal transformer											
Maximum operating input power^{(1) or (2)}													
Circuit A&B	kW	19	21	24	24	28	31	36	41	48	55	63	71
Power factor at maximum power^{(1) or (2)}													
Standard unit power factor		0,81	0,82	0,82	0,82	0,84	0,84	0,85	0,82	0,84	0,85	0,84	0,85
Nominal unit current draw⁽⁴⁾													
Standard unit	A	26	29	35	35	36	46	52	59	71	81	91	104
Maximum operating current draw (Un)^{(1) or (2)}													
Standard unit	A	34	37	42	42	48	54	60	72	84	93	108	121
Maximum current (Un-10%)^{(1) or (2)}													
Standard unit	A	37	39	44	44	51	58	65	77	89	99	115	129
Maximum start-up current (Un)^{(2) + (3)}													
Standard unit	A	116	118	165	165	169	177	191	238	206	223	231	251

Short-circuit withstand current (TN system)⁽¹⁾

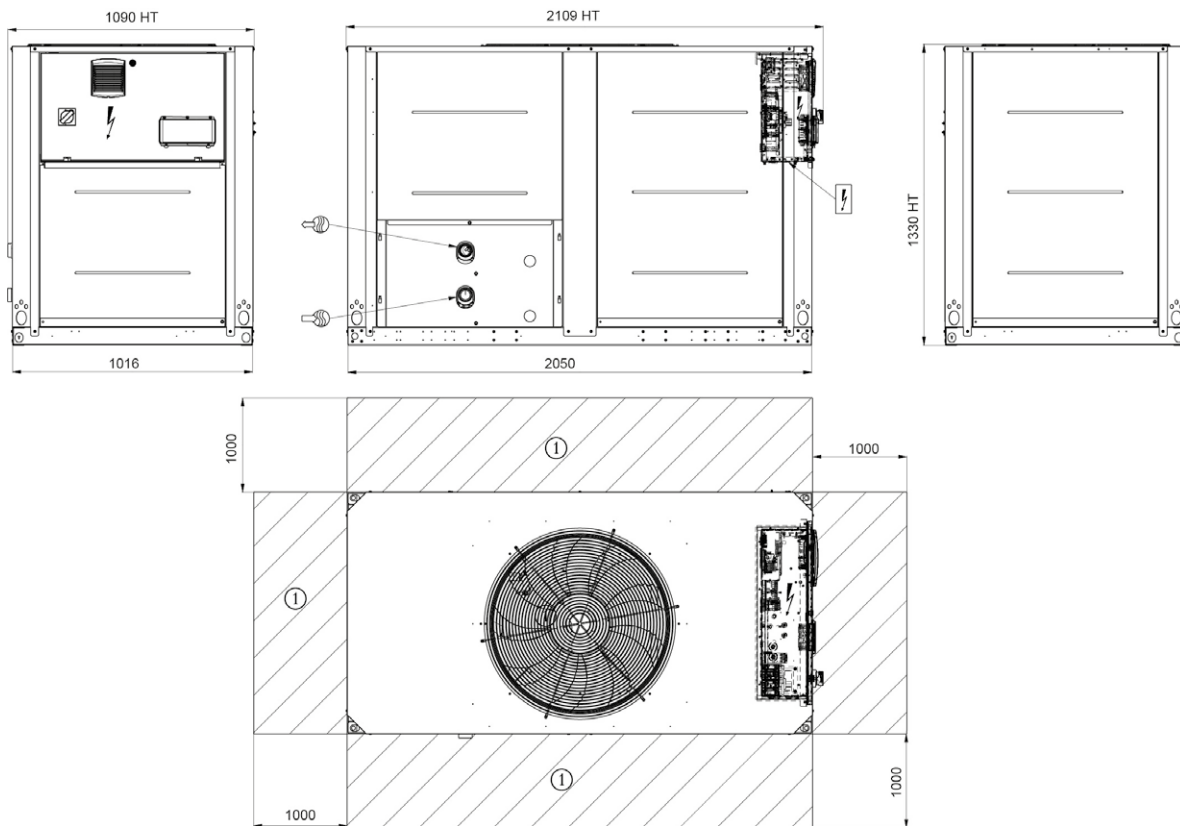
30RB		040R	045R	050R	055R	060R	070R	080R	090R	100R	120R	140R	160R
Rated short-circuit withstand currents													
Short time (1s) assigned current - I _{cw}	kA eff	3,36	3,36	3,36	3,36	3,36	3,36	5,62	5,62	5,62	5,62	5,62	5,62
Rated peak current - I _{pk}	kA pk	20	20	20	20	20	20	15	20	20	15	20	15
Value with upstream electrical protection⁽¹⁾													
Conditional short circuit assigned current I _{cc}	kA eff	40	40	40	40	40	40	40	40	40	40	30	30
Associated protection - type/supplier		Circuit breaker/Schneider											
Associated protection - rating/reference		NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS160H	NS160H	NS250H	NS250H

(1) If another current limitation protection device is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended protection.

Note: The short circuit current withstand capability values above are suitable with the TN system.

DIMENSIONS/CLEARANCES

30RB 040R-080R, units with and without hydraulic module



Key:

All dimensions are given in mm.

- ① Clearances required for maintenance and air flow
- ② Clearance recommended for coil removal
- ⊕ Water inlet
- ⊖ Water outlet
- ⋈ Air outlet, do not obstruct
- ⚡ Control box

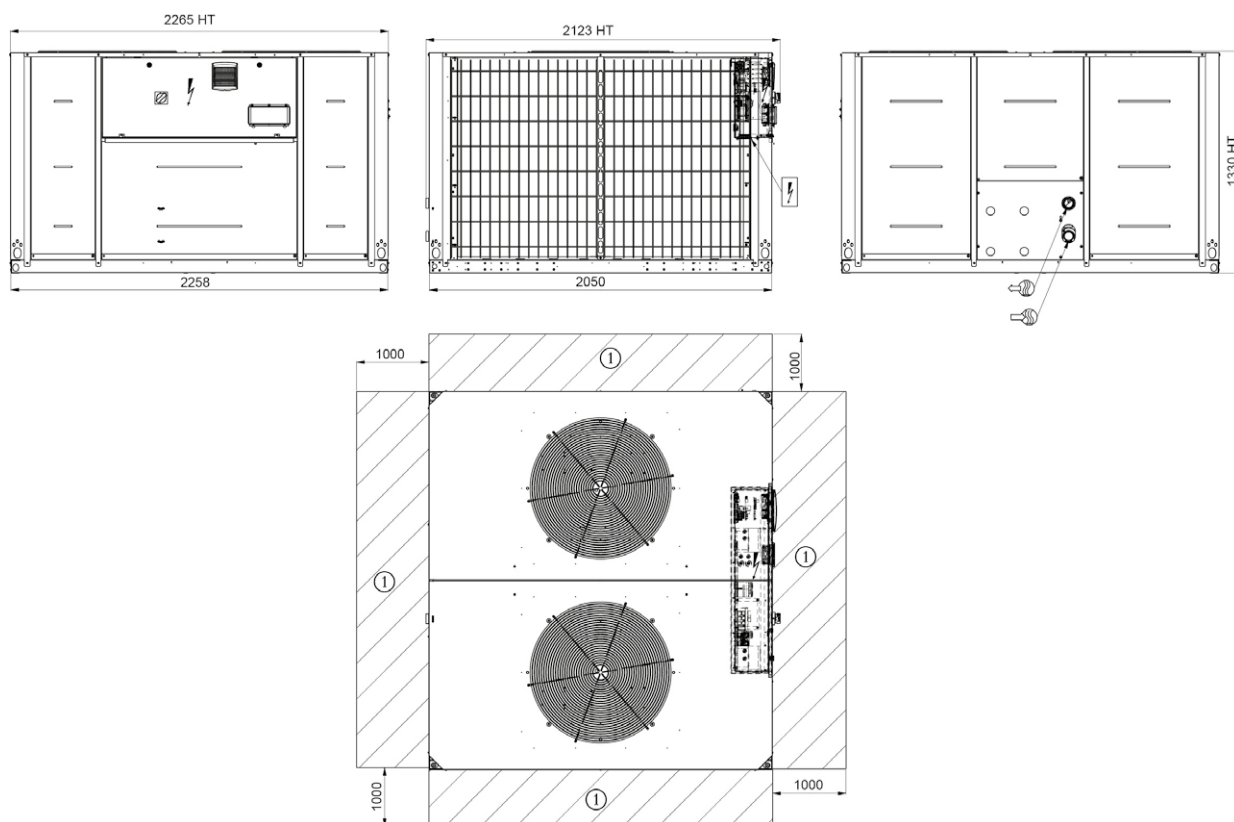
NOTE: Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity, hydraulic and electrical connections.

DIMENSIONS/CLEARANCES

30RB 090R-160R, units with and without hydraulic module



Key:

All dimensions are given in mm.

- ① Clearances required for maintenance and air flow
- ② Clearance recommended for coil removal
- ⊕ Water inlet
- ⊖ Water outlet
- ⋯ Air outlet, do not obstruct
- ⚡ Control box

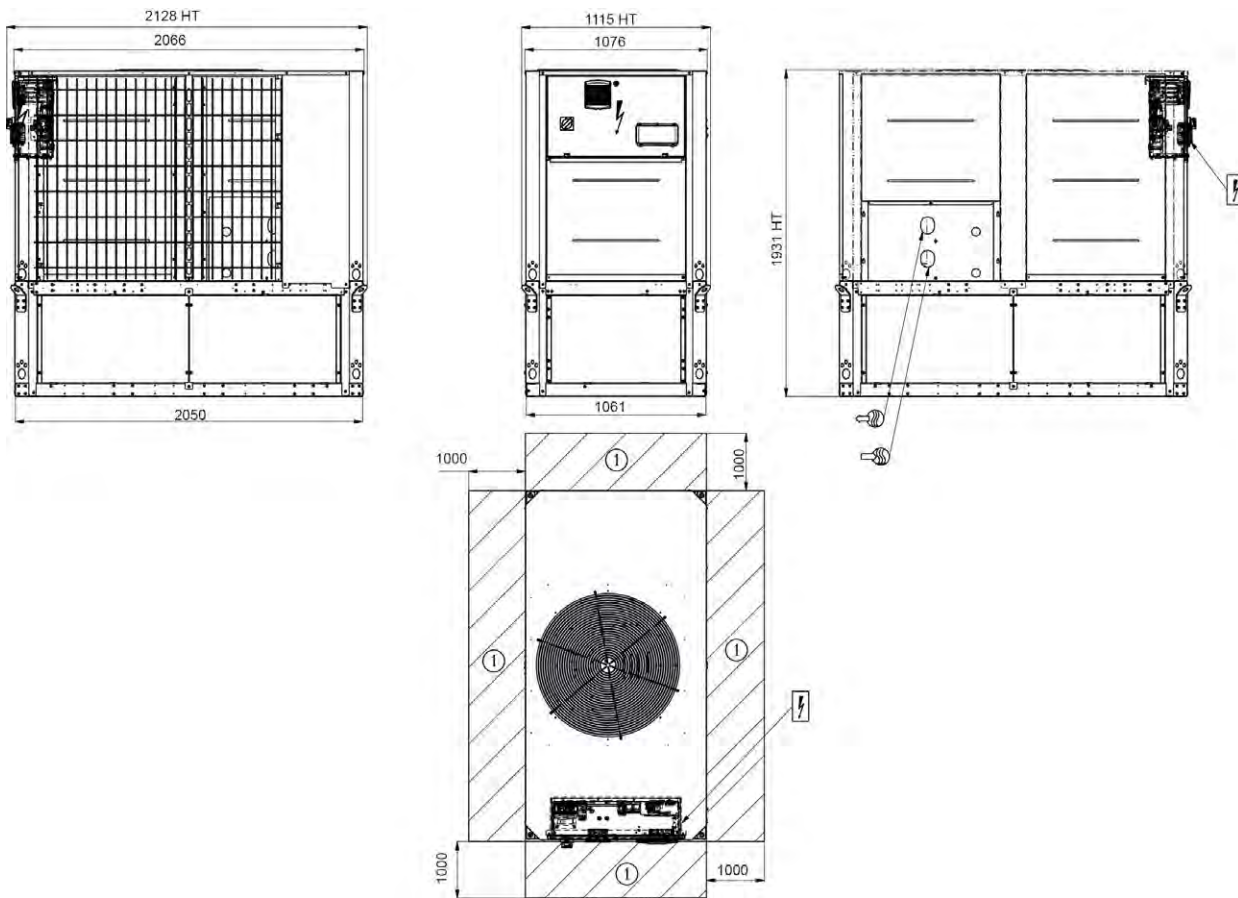
NOTE: Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity, hydraulic and electrical connections.

DIMENSIONS/CLEARANCES

30RB 040R-080R, units with water buffer tank module



Key:

All dimensions are given in mm.

- ① Clearances required for maintenance and air flow
- ② Clearance recommended for coil removal
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Control box

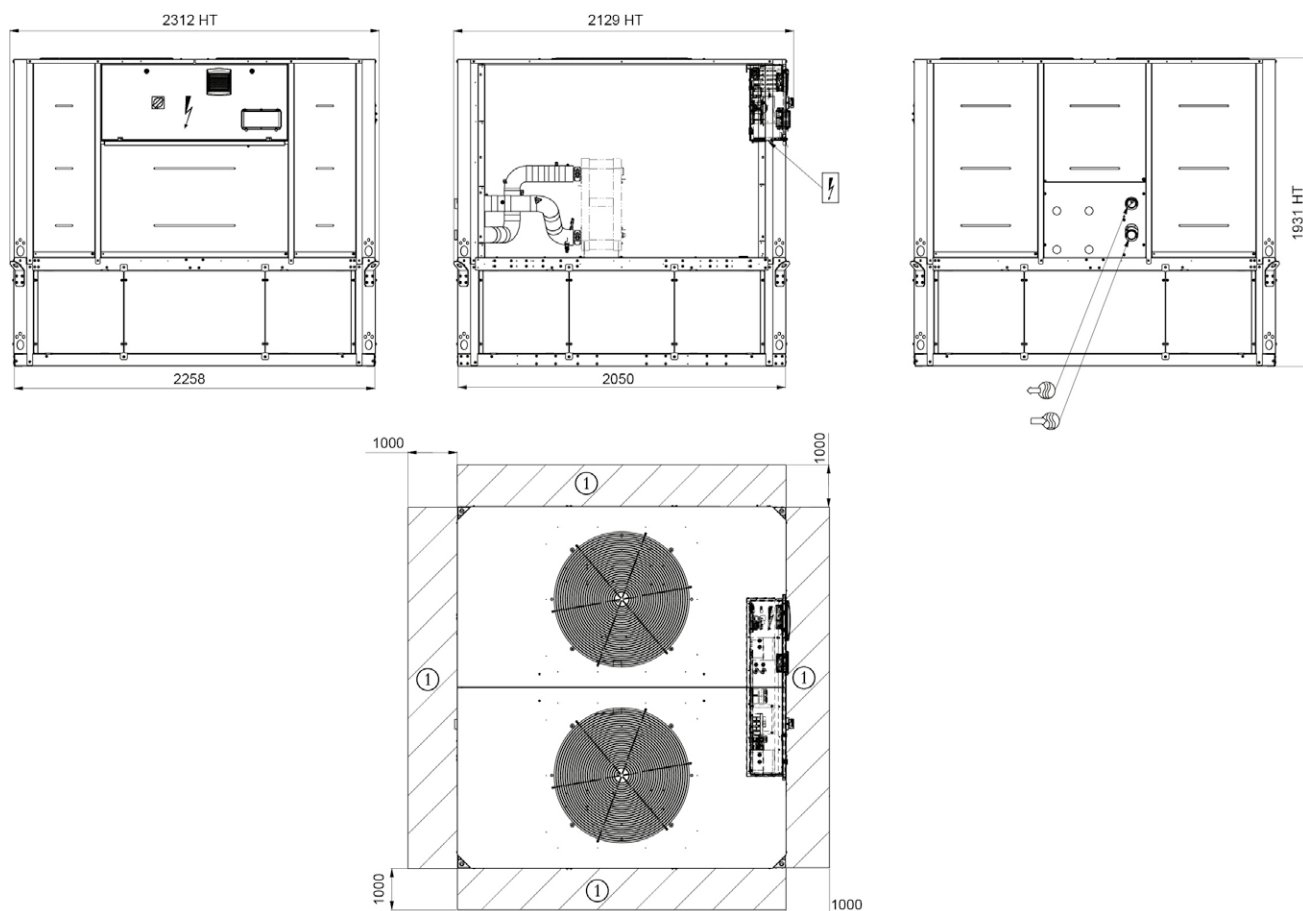
NOTE: Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity, hydraulic and electrical connections.

DIMENSIONS/CLEARANCES

30RB 090R-160R, units with water buffer tank module



Key:

All dimensions are given in mm.

- ① Clearances required for maintenance and air flow
- ② Clearance recommended for coil removal
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Control box

NOTE: Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity, hydraulic and electrical connections.

AIR-COOLED CONDENSING UNITS



Commercial and industrial applications

Compact design

Quiet operation

38RBS



Nominal cooling capacity 40-160 kW

The 38RBS condensing unit range was designed for commercial (air conditioning of offices, hotels etc.).

The units integrate the latest technological innovations:

- non-ozone depleting refrigerant R410A
- scroll compressors
- low-noise fans made of a composite material
- auto-adaptive microprocessor control

FEATURES AND BENEFITS

Features

- Compressors
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
- Condenser section
 - Vertical condenser coils
 - Anti-vibration mountings and optional grilles to protect the heat exchanger against possible shocks.
 - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
 - Fan motor controlled by a variable-frequency controller, to allow reduction of the fan speed, if the extra low noise option 15LS is selected.
 - Rigid fan installation for reduced start-up noise (Carrier patent)
- The refrigerant circuit includes all components for easy connection to a direct-expansion air handling unit: filter drier, moisture sight glass, high and low pressure switch, as well as solenoid valves for pumpdown (to be installed on the evaporator). All pipes and the refrigeration components are welded. From size 38RBS 140 onwards, two independent refrigerant circuits ensure partial cooling capacity in all circumstances, and more flexible operation at part load.
- Year-round operation

The 38RBS units are designed for year-round operation, and operate without the use of accessories down to -10°C. A control algorithm intelligently manages operation of the fans. Option 28 allows stable unit operation at air temperatures below -10°C and down to -20°C.

Easy and fast installation

- Physical features
 - Small unit footprint with a low height (1371 mm) for easy installation in any application.
 - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch (option 70) with high trip capacity
- The control circuit of the 38RBS units is equipped with a standard low-voltage transformer (24 V). This transformer can also supply the other electrical components of the air conditioning system: room thermostat and pumpdown solenoid valves.
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors

Economical operation

- Increased energy efficiency at part load

The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.

- Reduced maintenance costs
 - Maintenance-free scroll compressors
 - Fast diagnosis of possible incidents and their history via the Pro-Dialog+ control
 - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Non-ozone depleting R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness (factory nitrogen charge)
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Superior reliability

- State-of-the-art concept

Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control

Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) the condensing unit continues to operate, but at reduced capacity.
- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table.

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors and fans for optimum energy efficiency.

- Energy management
 - Seven-day internal time schedule clock: permits unit on/off control and operation at a second set-point
 - Set-point reset by the user via a room sensor (option).
- Integrated features
 - Night mode: capacity and fan speed limitation for reduced noise level
 - Solenoid valve control for evaporator pumpdown (valves supplied as a kit with the unit).

Carrier Comfort Network (CCN) operating mode

A simple two-wire communication bus between the RS485 port and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.

FEATURES AND BENEFITS

Remote operating mode with volt-free contacts (standard)

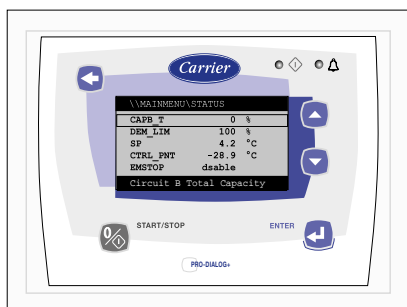
- Start/stop: opening of this contact will shut down the unit
- Alarm indication using an LED: availability of a volt-free contact that indicates the presence of a major fault that has led to the shut-down of one or two refrigerant circuits.
- User safety: this contact can be used for any customer safety loop, opening of the contact generates a specific alarm.

Remote Pro-Dialog+ interface (option)

This interface can be installed up to 300 m away. It includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24 V transformer supplied.

- Ease-of-use
 - Backlit LCD interface (option) includes a manual control potentiometer to ensure legibility under any lighting conditions.
 - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier)
 - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet navigators. They are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set-point, air temperature.

Pro-Dialog+ interface



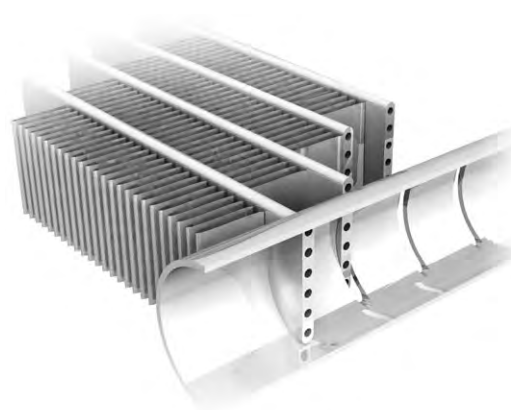
Room temperature and supply air temperature sensors for capacity control (option)

- The room temperature sensor permits temperature adjustment using a potentiometer.
- The supply air temperature sensor must be installed in the air handling unit air flow to control the minimum supply air temperature (adjustable via the remote Pro-Dialog+ interface).

Adjustable room temperature sensor (option)



All-aluminium micro-channel heat exchanger (MCHE)



Already utilised in the automobile and aeronautical industries for many years, the MCHE micro-channel heat exchanger is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers.

As an option, the Enviro-Shield and Super Enviro-Shield anti-corrosion protections have been developed to increase the application range of the MCHE coil from medium to very corrosive environments. With Enviro-Shield protection, corrosion resistance of the MCHE coil is doubled without any impact on heat exchange.

With Super Enviro-Shield protection corrosion resistance of the MCHE coil is multiplied by four, and allows use in very corrosive industrial or marine environments

The MCHE heat exchanger allows a reduction in chiller refrigerant charge by up to 50%.

The low thickness of the MCHE reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHE heat exchanger is very fast using a dry air jet or a high-pressure washer, while observing the usage precautions.

OPTIONS

Options	No.	Description	Advantages	Use
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise emission reduction at reduced fan speed	38RBS 039-160
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	38RBS 039-160
Soft starter	25	Electronic compressor starter	Reduced compressor start-up current	38RBS 039-080
Winter operation	28	Fan speed control by frequency variator	Stable unit operation, when the air temperature is between -10°C and -20°C	38RBS 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	38RBS 039-160
Suction and liquid line valves	92B	Ball valves on the suction and liquid line	Unit isolation from the rest of the refrigerant circuit	38RBS 039-160
JBus gateway	148B	Two-directional communications board, complies with JBus protocol	Easy connection by communication bus to a building management system	38RBS 039-160
Bacnet gateway	148C	Two-directional communications board, complies with Bacnet protocol	Easy connection by communication bus to a building management system	38RBS 039-160
LonTalk gateway	148D	Two-directional communications board, complies with LonTalk protocol	Easy connection by communication bus to a building management system	38RBS 039-160
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	38RBS 039-160
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	38RBS 039-160
Remote Pro-Dialog+ user interface	275	Pro-Dialog+ user interface for remote installation	Remote control of the unit and its operating parameters	38RBS 039-160
Replaceable filter drier	277	Filter drier with cartridge to replace hermetic filter	Easy filter replacement without emptying the refrigerant circuit	38RBS 039-160
Temperature sensor kit	278	Room temperature sensor with adjustable set-point and supply air sensor for installation in the air handling unit for capacity control	Optimisation of the unit capacity control, based on the usage conditions	38RBS 039-160
Reinforced ECM filtration for fan VFD*	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	38RBS 039-160

* 38RBS 039-160 with option 28

PHYSICAL DATA

38RBS		039	045	050	060	070	080	090	100	120	140	160
Nominal cooling capacity, standard unit*	kW	40,4	45,9	52,4	58,5	66,7	77,9	90,4	100,9	119,4	139,6	161,7
Power input	kW	13,8	16,3	19,0	21,2	24,4	28,8	31,8	36,0	43,6	50,2	58,7
EER	kW/kW	2,92	2,81	2,75	2,76	2,74	2,7	2,84	2,81	2,74	2,78	2,75
Sound levels												
Standard unit												
Sound power level ⁽¹⁾	dB(A)	80	81	81	81	87	87	84	84	84	90	90
Sound pressure level at 10 m ⁽²⁾	dB(A)	49	49	49	49	55	55	52	52	52	58	58
Standard Unit + option 15LS ⁽³⁾												
Sound power level ⁽¹⁾	dB(A)	79	80	80	80	80	80	83	83	83	83	83
Sound pressure level at 10 m ⁽²⁾	dB(A)	48	48	48	48	48	48	51	51	51	51	51
Operating weight ⁽⁴⁾												
Standard unit	kg	371	380	381	396	396	407	641	644	671	736	750
Compressors		Hermetic scroll compressor 48,3 r/s										
Circuit A		2	2	2	2	2	2	3	3	3	2	2
Circuit B		-	-	-	-	-	-	-	-	-	2	2
No of control stages		2	2	2	2	2	2	3	3	3	4	4
Refrigerant		R-410A										
Capacity Control		Pro-Dialog+										
Minimum capacity	%	50	50	50	50	50	50	33	33	33	25	25
Capacity splits, circuits A/B	%	100/0	100/0	100/0	100/0	100/0	100/0	100/0	100/0	100/0	50/50	50/50
Condensers		All-aluminium microchannel heat exchanger (MCHE)										
Fans		Axial FLYING-BIRD IV with rotating shroud										
Quantity		1	1	1	1	1	1	2	2	2	2	2
Maximum total air flow	l/s	3885	3883	3687	3908	5013	5278	6940	6936	7370	10026	10556
Maximum rotation speed	r/s	12	12	12	12	16	16	12	12	12	16	16
Refrigerant connections												
Suction line diameter	inch	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	1 5/8
Liquid line diameter	inch	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Chassis paint colour		Colour code: RAL 7035										

* Nominal evaporating temperature condition: 5°C, outdoor air temperature 35°C, superheat 5 K, 15 m equivalent length

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 15LS= Very low noise

(4) Weight shown is a guideline only. Please refer to the unit nameplate.

ELECTRICAL DATA

38RBS		039	045	050	060	070	080	090	100	120	140	160	
Power circuit													
Nominal power supply	V-ph-Hz	400-3-50											
Voltage range	V	360-440											
Control circuit supply		24 V, via internal transformer											
Maximum start-up current (Un)⁽¹⁾													
Standard unit	A	114,2	132,4	141,3	143,7	170,4	209,4	169,4	196,4	240,4	226,2	275,2	
Unit with electronic starter option	A	74,7	86,5	93,8	96,2	114,4	139,8	-	-	-	-	-	
Unit power factor at maximum capacity⁽²⁾		0,83	0,81	0,81	0,83	0,81	0,78	0,83	0,81	0,79	0,81	0,78	
Maximum unit power input⁽²⁾		kW	19,5	22,3	24,5	27,9	31,2	35,8	42,3	45,6	52,5	62,4	71,6
Nominal unit current draw⁽³⁾		A	26,2	30,4	34,6	37,6	44,2	53,8	57,8	64,4	78,8	88,4	107,6
Maximum unit current draw (Un)⁽⁴⁾		A	35,6	40,0	43,8	48,6	55,8	65,8	74,3	81,8	96,8	11,6	131,6
Maximum unit current draw (Un-10%)*		A	38,0	49,0	51,2	57,8	73,2	79,8	88,1	107,9	117,9	146,4	159,6
Customer-side unit power reserve		kW	Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table "Short-circuit stability current" below											

(1) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

(2) Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).

(3) Nominal conditions: suction temperature 5°C, outside air temperature 35°C.

(4) Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).

* Maximum unit operating current at maximum unit power input and 360 V.

Short-circuit stability current (TN system⁽¹⁾)

38RBS	039	045	050	060	070	080	090	100	120	140	160
Value with unspecified upstream protection											
Short-term current at 1 s - I _{cw} - kA rms	3,36	3,36	3,36	3,36	3,36	3,36	5,62	5,62	5,62	5,62	5,62
Admissible peak current - I _{pk} - kA pk	20	20	20	20	20	15	20	20	15	20	15
Max, value with upstream protection (circuit breaker)											
Conditional short-circuit current I _{cc} - kA rms	40	40	40	40	40	40	40	40	40	30	30
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS160H	NS160H	NS250H	NS250H
Reference number ⁽²⁾	29670	29670	29670	29670	29670	29670	29670	30670	30670	31671	31671

(1) Earthing system type

(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.

The short-circuit stability current values above are suitable with the TN system.

Electrical data and operating conditions notes

- 38RBS 039-160 units have a single power connection point located immediately upstream of the field power connections.
- The control box includes the following standard features:
 - starter and motor protection devices for each compressor, the fans and the pump,
 - the control devices.
 - A main disconnect switch can be installed within the box with the option 70.
- Field connections:
 - All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The 38RBS units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical equipment⁽¹⁾.
- An auxiliary contactor is available with the QF breaker allowing a safety channel installation to ensure a feedback output about heater and board power supply status and then prevent evaporator from frosting when heaters and boards are off.

NOTES:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

• The operating environment for the 38RBS units is specified below:

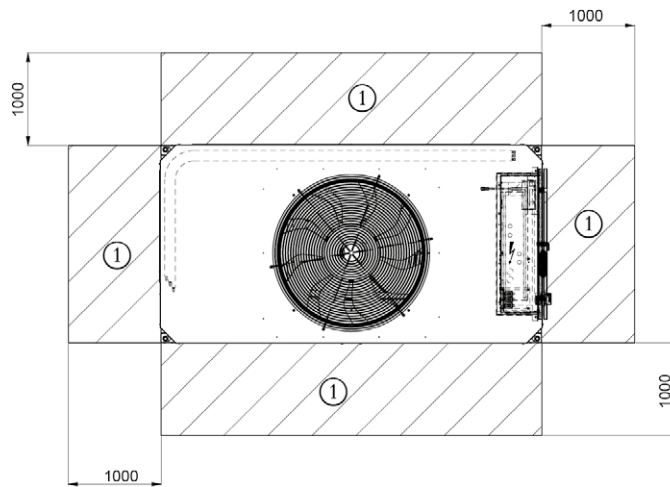
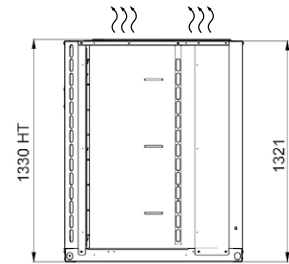
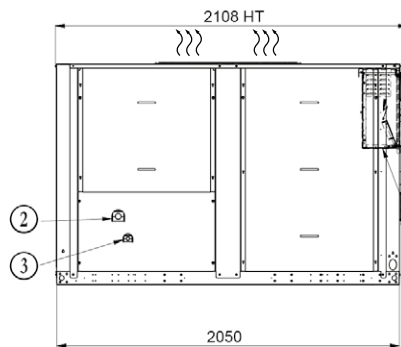
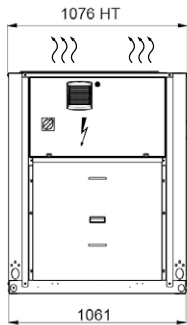
- Environment⁽²⁾ - Environment as classified in EN 60721 (corresponds to IEC 60721):
 - outdoor installation⁽²⁾
 - ambient temperature range: -10°C to +48°C, class 4K4H
 - altitude: ≤ 2000 m
 - presence of hard solids, class 4S2 (no significant dust present)
 - presence of corrosive and polluting substances, class 4C2 (negligible)
- Power supply frequency variation: ± 2 Hz.
- The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
- Overcurrent protection of the power supply conductors is not provided with the unit.
- The factory-installed disconnect switch (option 70) is of a type suitable for power interruption in accordance with EN 60947.
- The units are designed for connection to TN(S) networks (IEC 60364). For IT networks the earth connection must not be at the network earth. Provide a local earth, consult competent local organisations to complete the electrical installation.

Caution: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

- The absence of main power disconnect switch on standard machines is an exception that must be taken in account at field installation level.
- The required protection level for this class is IP43BW (according to reference document IEC 60529). All 38RBS units are protected to IP44CW and fulfil this protection condition.
 - Closed electrical box is IP44CW
 - Open electrical box (when accessing to interface) is IPxxB

DIMENSIONS/CLEARANCES

38RBS 039-080



Legend

All dimensions are given in mm.

- ① Required space for maintenance
- ② Refrigerant inlet
- ③ Refrigerant outlet
- Power wiring connection
- Power supply
- }}} Air outlet, do not obstruct

NOTES:

A Non-certified drawings.

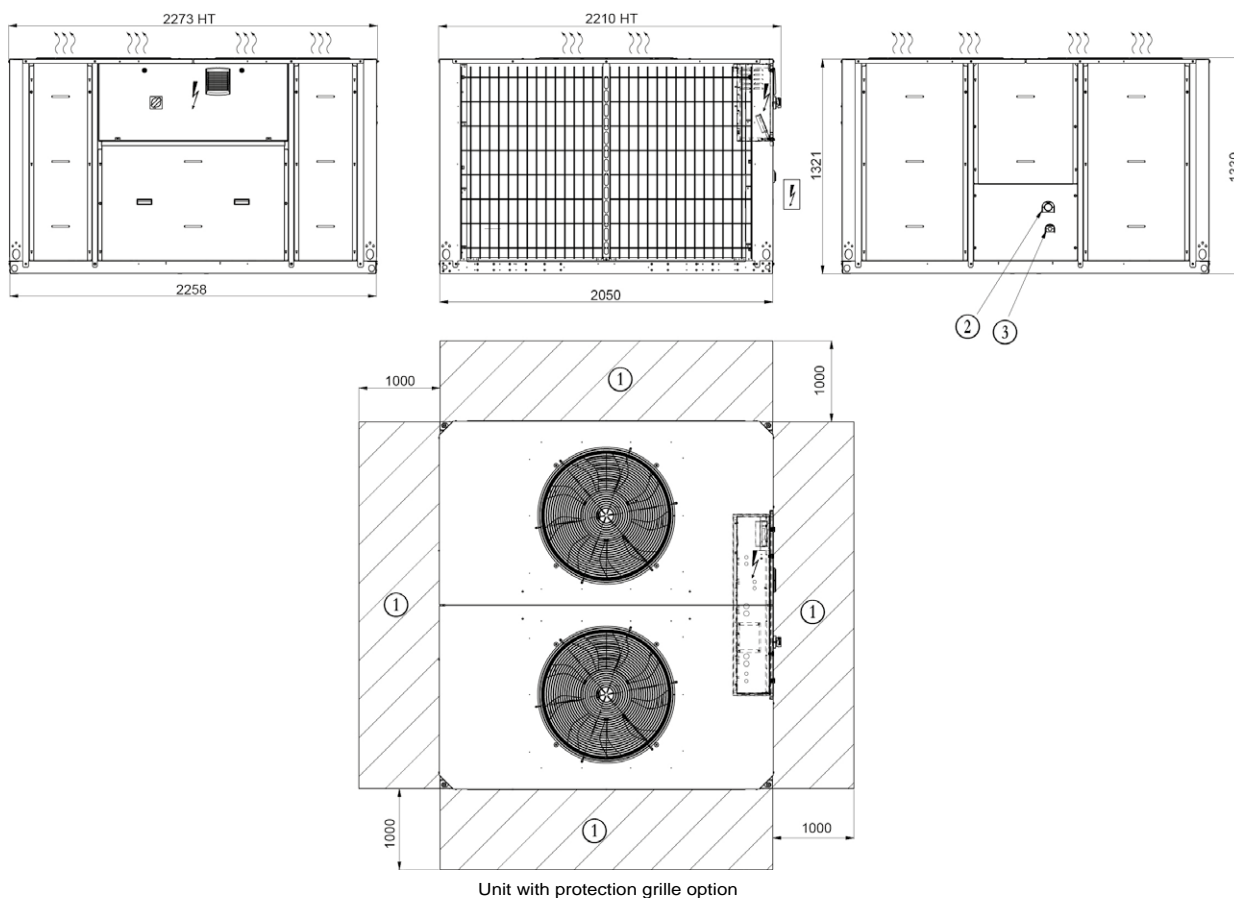
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

DIMENSIONS/CLEARANCES

38RBS 090-120



Legend

All dimensions are given in mm.

- ① Required space for maintenance
- ② Refrigerant inlet
- ③ Refrigerant outlet
- Power wiring connection
- Power supply
-))) Air outlet, do not obstruct

NOTES:

A Non-certified drawings.

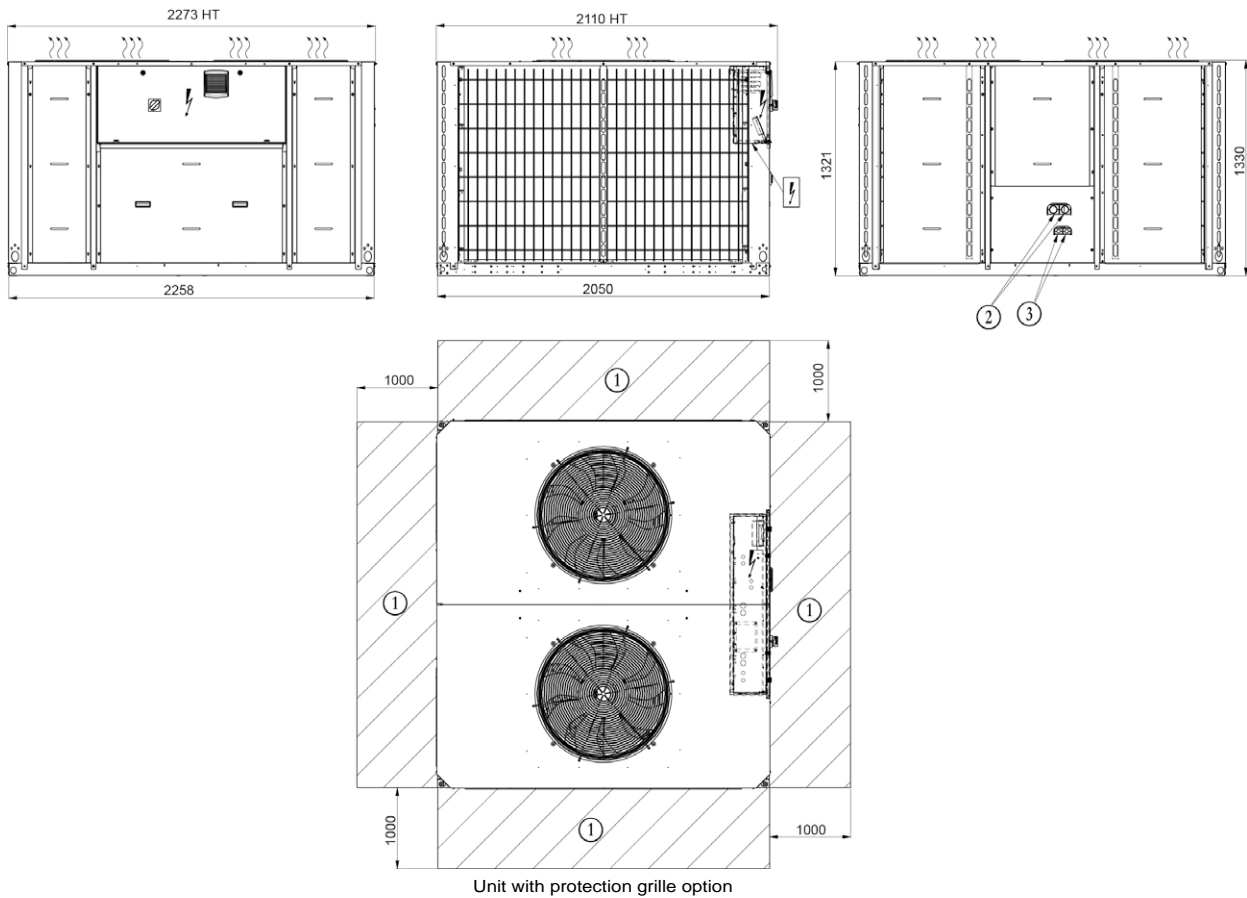
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

DIMENSIONS/CLEARANCES

38RBS 140-160



Legend

All dimensions are given in mm.

- ① Required space for maintenance
- ② Refrigerant inlet
- ③ Refrigerant outlet
- Power wiring connection
- Power supply
- }}} Air outlet, do not obstruct

NOTES:

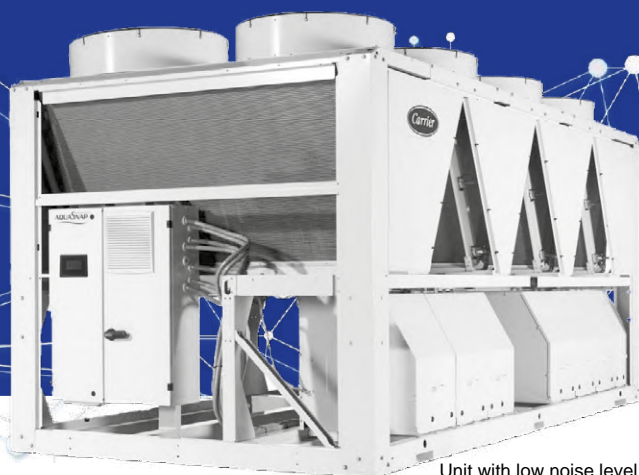
A Non-certified drawings.

Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

AIR-COOLED SCROLL CHILLERS WITH GREENSPEED® INTELLIGENCE



Unit with low noise level option

High full-load and part-load efficiency

Compact and simple to install

Low sound level

Low refrigerant charge

Superior reliability

30RBM/30RBP 160-520

AQUASnap greenspeed

Nominal cooling capacity 164-528 kW

AquaSnap® liquid chillers are the best solution for commercial and industrial applications where installers, engineering and design departments and building owners require reduced installation costs, optimal performance and the highest quality.

The new generation of AquaSnap liquid chillers feature two new versions:

- The AquaSnap (30RBM) version features a compact all-in-one package optimised for full-load applications where reduced investment cost (low CapEx) is required. For cold or hot climates, the AquaSnap can be equipped with specific options to operate from -20°C up to +52°C.
- The AquaSnap Greenspeed® (30RBP) version is a compact all-in-one package optimised for part-load applications where high ESEER, SEPR and IPLV are required. The AquaSnap Greenspeed®, equipped with a variable speed pump and fans, provides premium part-load efficiency to reduce maintenance costs over the lifespan of the chiller. Additionally, the low sounds levels achieved at part load conditions can be very beneficial for sensitive acoustic applications. Besides operating efficiently and quietly, the AquaSnap Greenspeed® operates from -20°C up to +48°C as standard.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

AQUASNAP WITH GREENSPEED INTELLIGENCE

SIMPLICITY

The simplicity of AquaSnap, tried and trusted

■ Experience

With more than 60,000 units installed since 1998, AquaSnap is the **reference standard in “plug & play”** air conditioning solutions. Compact and simple to install, the new AquaSnap with Greenspeed intelligence combines trusted reliability with even more innovation.

■ Easy installation

AquaSnap integrates an hydronic module with pressure transducers for digital water flow rate display on the user interface and pump protection against low hydraulic pressure.

The **variable-speed pump allows easy and fast installation start-up** thanks to the electronic setting of the nominal water flow.

■ Adaptability

The AquaSnap can operate in all climates from -20°C to +52°C. Thanks to special coil coatings and reinforced electrical protections, the AquaSnap can withstand operation **in corrosive and dusty environments**. To match specific industrial or commercial application requirements, the unit can be equipped with **multiple options**.

REFERENCE IN
«PLUG & PLAY»
AIR CONDITIONING
SOLUTIONS

UP TO 15% MORE
EFFICIENCY WITH THE SAME
DIMENSIONS AS PREVIOUS
GENERATION

ONE PRODUCT
FOR MANY
APPLICATIONS

&

INTELLIGENCE

Greenspeed intelligence: the smart innovation

■ Smart efficiency

The new generation of AquaSnap chillers delivers on the energy savings and reduced carbon footprint required by the latest European regulations. AquaSnap with Greenspeed intelligence offers Class A or B energy efficiency ratings and Eurovent **Seasonal Energy Efficiency (SEER) of up to 4.53**, making it the best value air conditioning solution in commercial and industrial applications.

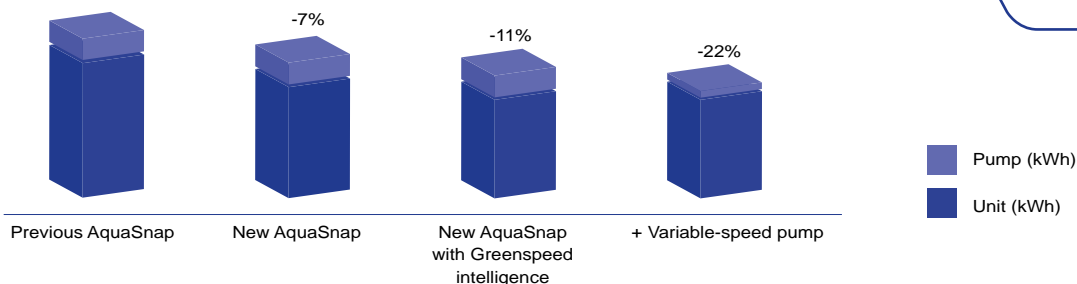
■ Acoustic comfort

Thanks to the variable-speed fans, AquaSnap with Greenspeed intelligence offers **smooth fan speed variation during partial load operation**. For noise sensitive environments during night and day, the AquaSnap noise level can be automatically factory-set or tuned on-site.

■ Advanced control

An advanced control algorithm calculates the energy efficiency and **readjusts in real-time** the fan speed to reduce the cooling energy use. For further energy savings, the water flow rate can be **electronically controlled** to meet real application needs and thus reduce significantly the pumping energy use during night and day.

LIFETIME ENERGY SAVINGS



15-year energy savings calculations comparing a 400kW AquaSnap unit of the previous generation to a new AquaSnap unit, a new AquaSnap Greenspeed unit with variable speed pump at an office building in an average European climate, 1500 running hours and 500 stand-by hours per year. This information is intended as an example for comparison purposes only.

30RBM TECHNICAL INSIGHT

AquaSnap scroll chillers 30RBM



**FIXED-SPEED
FLYING BIRD® FAN**



NOVATION® MICROCHANNEL

- Up to 50% refrigerant charge reduction vs. traditional Cu/Al coils*
- Better thermal performance, better efficiency and lower air pressure drop vs. Cu/Al coils
- Enviro-Shield® and Super Enviro-Shield® coatings, as options, for mild and severe corrosive environments



SmartVu™ CONTROL

- 4.3" user-friendly touch screen
- All main parameters displayed on one screen
- Direct access to the unit's technical drawings and main service documents
- Easy remote monitoring via the internet
- Easy and secured access to unit parameters



**SCROLL
COMPRESSORS**

**REDUCED REFRIGERANT
CHARGE**

**HIGH EFFICIENCY
BRAZED PLATE
HEAT EXCHANGER**



30RBP TECHNICAL INSIGHT

AquaSnap scroll chillers with Greenspeed intelligence 30RBP



**FAN
VARIABLE-SPEED
DRIVE**



**VARIABLE-SPEED
FLYING BIRD® FAN**

- Carrier-designed fan blades
- Proprietary algorithm to control fan speed
- Dedicated drive
- Night-mode operation

**VARIABLE-SPEED PUMP
(OPTION)**

- Water flow electronic setting & readings
- Automatic pump protection against low water pressure
- Multiple pump control capabilities:
 - fixed-speed
 - variable-speed based on constant pressure or constant temperature



**PUMP
VARIABLE-SPEED
DRIVE**



FEATURES AND BENEFITS

AquaSnap liquid chillers are designed to meet current and future Ecodesign and F-Gas European regulation requirements in terms of energy efficiency and reduced CO₂ emissions.

They use the best technologies available today:

- Reduced refrigerant charge of ozone-friendly refrigerant R-410A
- Scroll compressors
- Greenspeed® variable-speed fans (30RBP models)
- Novation® micro-channel heat exchangers with a new aluminium alloy
- Brazed-plate heat exchangers with reduced pressure drops
- Auto-adaptive microprocessor control with Greenspeed® intelligence
- Colour touch screen with web connectivity options
- Extra energy savings through multiple options: direct-expansion free-cooling system on one or two circuits, partial heat recovery.

Both Aquasnap versions can be equipped with a built-in hydraulic module, limiting the installation to conventional operations such as connection of the power supply and the supply and return piping (plug & play), according to the dimensions of the standard unit.

Recommended by Carrier, Aquasnap can be equipped with one or two Greenspeed® variable-speed pumps to significantly reduce energy costs linked to pumping (reduction of more than two-thirds), ensure optimum water flow rate control, and improve overall system reliability.

For use in the harshest environments combining high temperatures, dust and sand, the AquaSnap (30RBM) can be equipped with an optional IP54 electrical box and cabinet fan enabling it to operate at outdoor air temperatures of up to 52°C.



Very economical operation

- High unit full- and part-load energy efficiency and efficient design of the water side:
 - Eurovent energy efficiency class A or B
 - SEER_{12/7°C} of up to 4.7 (30RBP version) in line with the new Ecodesign 2016/2281 regulations
 - Multiple scroll compressors equipped with a high-efficiency motor which can exactly match the cooling capacity to the load required
 - Electronic expansion valve permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control)

- Condenser with high-efficiency Novation® aluminium micro-channel heat exchangers and Greenspeed® variable-speed fans (30RBP version)
- Low pressure drop brazed plate heat exchangers (< 45 kPa under Eurovent conditions).

- Specific control functions to reduce unit cooling energy use during occupied and unoccupied periods:
 - Internal timer: switches the chiller on/off and controls operation at a second setpoint
 - Setpoint automatically offset based on the outside air temperature or room air temperature (via an option)
 - Floating high pressure management
 - Variable-speed fan control
 - Cooling demand limitation.

Refer to control chapter for more information.

- Greenspeed® variable-speed pump to reduce pumping energy consumption by up to two-thirds (option recommended by Carrier):
 - Eliminate energy losses through the water flow control valve by electronically setting the nominal water flow
 - Save energy during stand-by periods or part-load operation by automatically reducing the water pump speed. The energy consumption of the pump motor varies according to the cube of the speed, so that a reduction in speed of just 40% can reduce energy consumption by 80%
 - Improved unit part-load performance (Increased SEER value with variable water flow according to EN14825 standard).

Refer to the hydraulic option chapter for more information.



- Extra energy savings through multiple options:
 - Direct expansion free-cooling without glycol (Carrier patented) on one or two refrigerating circuits
 - Partial heat recovery.
- Reduced maintenance costs:
 - Fast diagnosis of possible incidents and their history via the control
 - R-410A refrigerant is easier to use than other refrigerant blends.

FEATURES AND BENEFITS

Low sound level

- Condenser with fixed-speed fans (30RBM models):
 - Optional low-speed fans (700 rpm) and compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
 - Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
 - Low-noise 4th generation Flying Bird fans, made of a composite material (Carrier patent)
 - Rigid fan installation for reduced noise (Carrier patent).
- Condenser with Greenspeed® variable-speed fans (30RBP models recommended by Carrier for even quieter operation):
 - Optional factory setting of the fan to low speed, with compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
 - Exceptional acoustic signature during part-load operation through smooth fan speed variation.
- Specific control functions or features to reduce noise level during the night or unoccupied periods:
 - Night-time sound control with cooling capacity and fan speed limitation
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by flexible anti-vibration mounts
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
 - Acoustic compressor enclosure, reducing noise emissions (optional).



Quick and easy installation

- Compact design:
 - AquaSnap units are designed with compact dimensions for easy installation.
 - With a length of approximately 4.8 m for 520 kW and a width of 2.25 m, the units require minimal floor space.
- Integrated hydronic module (optional):
 - Low or high-pressure water pump (as required)
 - Single or dual pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops

- Water filter protects the water pump against circulating debris
- Pressure transducers for direct numerical display of the water flow rate and water pressures
- Thermal insulation and frost protection down to -20°C, using a heater (optional)
- High-capacity membrane expansion tank (option).

- Built-in hydraulic module with Greenspeed® variable-speed pump (option recommended by Carrier):
 - Quick and easy electronic setting of the nominal water flow rate when the unit is commissioned, thus eliminating the need to adjust the water flow rate control valve
 - Automatic control of the pump speed based on constant speed, constant pressure difference or constant temperature difference.
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch with high trip capacity
 - 24 V control circuit using an integrated transformer.
- Fast unit commissioning
 - Systematic factory test before shipment
 - Quick-test function for step-by-step verification of the sensors, electrical components and motors.

Reduced installation costs

- Optional Greenspeed® variable-speed pump with hydronic module (option recommended by Carrier)
 - Cut costs relating to the water flow control valve
 - The design of the water system with variable primary flow (VPF) can provide significant installation cost savings compared with traditional constant primary systems with variable secondary circuits; elimination of the secondary distribution pump, etc.
 - Water system design with fan coils fitted with 2-way valves instead of 3-way valves.
- No buffer tank required thanks to Carrier's advanced control algorithm
 - Minimum water loop volume reduced to 2.5 l/kW.

Environmentally responsible

- R-410A ozone-friendly refrigerant.
- Reduced direct warming potential (10% of total equivalent warming impact):
 - Low R410-A refrigerant charge, below 0.14 kg/kW, through the use of Novation® micro-channel heat exchangers
 - Leak-tight refrigerant circuit with minimum brazed connections
 - Qualified Carrier maintenance personnel carry out refrigerant servicing operations
 - ISO14001-certified site of manufacture.
- Reduced indirect warming potential (90% of total equivalent warming impact):
 - Reduced unit energy use (high full- and part-load efficiency)
 - Pumping energy consumption can be reduced by up to 2/3 using Greenspeed® variable-speed pumps.

FEATURES AND BENEFITS

Superior reliability

- State-of-the-art concept
 - Two independent refrigerant circuits; the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances
 - All compressor components are easily accessible on site minimising down-time
 - All-aluminum Novation® micro-channel heat exchanger (MCHE) with higher corrosion resistance than a conventional coil. The all-aluminum construction eliminates the formation of galvanic currents between aluminum and copper that are responsible for the coil corrosion in saline or corrosive atmospheres.
 - V-coil design to protect the coils against hail impact
 - Optional Enviro-shield anti-corrosion coil coating for use in moderately corrosive environments. Coating applied through conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117.
 - Optional Super Enviro-shield anti-corrosion coil coating for use in extremely corrosive environments. Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process with a final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794.
 - Optional IP54 protection level of compressor control boxes and cabinet fan to guarantee safe operation in hot, dusty, sandy environments
 - Electronic flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the water loop (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure
 - Automatic fan speed adjustment in case of coil fouling (30RBP models)
 - Smooth fan start to increase unit lifetime (30RBP models).
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components
 - Transport simulation test on an endurance circuit based on a military standard.

SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP), and a user-friendly and intuitive user interface with 5-inch colour touch screen.

- Energy management configuration
 - Internal timer: controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outside air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - Innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling capacity, and instantaneous and average seasonal energy efficiency ratios.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydronic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
- 4"3-inch SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

FEATURES AND BENEFITS

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The Aquasnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The Aquasnap also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows remote control of the Aquasnap unit by wired cable:

- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: closing of this contact activates a second setpoint (e.g.: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.
- Pump control: 0/10V signal to control external variable speed pump

Energy management module (optional)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: enables the setpoint to be reset based on the indoor air temperature of the building (with Carrier thermostat).
- Setpoint reset: the cooling setpoint is reset based on a 4-20 mA signal.
- Demand limit: Enables the maximum chiller power to be limited based on a 4-20 mA signal.
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller power or current to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: when ice storage has finished, this input is used to return to the second setpoint (unoccupied mode).
- Timer override: closing of this contact cancels the effects of the timer.
- Out of service: This signal indicates that the chiller is completely out of service.
- Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Boiler control: this on/off output controls an independent boiler to provide hot water.

Novation® Aluminium micro-channel heat exchanger



The Novation® is the latest generation of Carrier Micro-Channel Heat Exchanger (MCHE) with a new, extra-resistant aluminium alloy. Already used in the automotive and aeronautical industries for many years, the micro-channel heat exchanger (MCHE) on the AquaSnap is made entirely of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in conventional heat exchangers. Unlike traditional heat exchangers, MCHEs can be used in moderate marine and urban environments.

In terms of energy efficiency, MCHEs are approximately 10% more efficient than a traditional coil and enable a 40% reduction in the amount of refrigerant used in the chiller. The slim design of the MCHE reduces air pressure losses by 50% and, compared to a traditional coil, makes it less susceptible to fouling (e.g. by sand). The MCHE can be cleaned very quickly using a high-pressure washer.

OPTIONS

Options	No.	Description	Advantages	Use
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBM/30RBP 160-520
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBM/P 160-400 for chilled water down to -15°C
High pressure static fans	12	Unit equipped with high pressure static variable-speed fans (maximum 200 Pa), each fan being equipped with a connection flange for connection to the ducting system.	Ducted fan discharge, optimised condensing temperature (or evaporating temperature on Heat pump version) control, based on the operating conditions and system characteristics	30RBP160-520
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction by 1 to 2 dB(A)	30RBM/30RBP 160-520
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise level reduction by 6 to 7 dB(A)	30RBM/30RBP 160-520
High ambient temperature	16	Unit equipped with electrical panel cooling fan	Extended unit part-load operation up to 52°C ambient temperature	30RBM 160-520
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the control panel from dust, water and sand. As a rule, this option is recommended for installations located in polluted environments	30RBM/30RBP 160-520
Grilles and enclosure panels	23	Metal grilles on the 4 sides of the unit, plus side enclosure panels at each end of the coil	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30RBM/30RBP 160-520
Enclosure panels	23A	Side enclosure panels at each end of the coil	Improved aesthetics, coil and piping protection against impacts.	30RBM/30RBP 160-520
Soft starter	25	Electronic starter on each compressor	Reduced start-up current	30RBM/30RBP 160-520
Winter operation down to -20°C	28	Fan speed control of lead fan for each circuit using a variable frequency drive	Stable unit operation for outside air temperatures from 0°C down to -20°C in cooling mode	30RBM 160-520
Winter operation down to -10°C	28B	Two-speed lead fan for each circuit	Stable unit operation for outside air temperature from 0°C down to -10°C	30RBM 160-520
Winter operation down to -10°C low speed	28C	Two Low speed fans on lead fan on each circuit	Reduces the noise level and enables stable unit operation for outside air temperatures down to -10°C	30RBM 160-520
Water exchanger frost protection	41	Electric heater on the water exchanger and the water piping	Water exchanger module frost protection between 0°C and -20°C outside air temperature	30RBM/30RBP 160-520
Exchanger & hydraulic frost protection	42A	Electric heater on the water exchanger hydraulic module and optional expansion tank	Water exchanger and hydraulic module frost protection between 0°C and -20°C outside air temperature	30RBM/30RBP 160-520
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RBM/30RBP 160-520
Shell and tube evaporator aluminium insulation	88	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30 RBM/RBP 160-260
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	30RBM/30RBP 160-520
Compressor suction and discharge valves	92A	Shut-off valves on the compressor suction and discharge piping	Simplified maintenance. Possibility to store the refrigerant charge in the cooler or condenser side during servicing	30RBM/30RBP 160-520
Compressor discharge valves	93A	Shut-off valves on the compressor common discharge piping	Simplified maintenance. Possibility to store the refrigerant charge in the condenser side during servicing	30RBM/30RBP 160-520
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included; Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RBM/30RBP 160-400

OPTIONS

Options	No.	Description	Advantages	Use
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included); Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBM/30RBP 160-400
LP single-pump hydronic module	116T	Single low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included); Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBM/30RBP 160-400
LP dual-pump hydraulic module	116U	Dual low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included); Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBM/30RBP 160-400
HP evap. variable-speed single-pump	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included; Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	30RBM/30RBP 160-520
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), water filter, electronic flow switch, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included; Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings, tighter water flow control, improved system reliability	30RBM/30RBP 160-520
DX Free-cooling system on two circuits	118A	Patented Carrier free-cooling system with cooling micro-pump on both refrigerant circuits. Operation without glycol, no extra free-cooling coil. See DX Free-cooling option chapter	Energy savings for applications with cooling demand throughout the entire year	30RBM/30RBP 220-520
DX Free-cooling system on one circuit	118B	Patented Carrier free-cooling system with cooling micro-pump on one refrigerant circuit. Operation without glycol, no extra free-cooling coil. See DX Free-cooling option chapter	Energy savings for applications with reduced demand for cooling in winter (e.g. offices with a computer room, meeting rooms etc.)	30RBM/30RBP 160-520 Not available on 30RBP 360/400
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a centralised building management system	30RBM/30RBP 160-520
BACnet/IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RBM/30RBP 160-520
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RBM/30RBP 160-520
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30RBM/30RBP 160-520
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	30RBM/RBP 160-520
Compliance with Russian regulations	199	EAC certification	Compliance with Russian regulations	30RBM/30RBP 160-519
Power factor correction	231	Capacitors for automatic regulation of power factor (cos phi) value to 0.95.	Reduction of the apparent electrical power, compliance with minimum power factor limit set by utilities	30RBM/30RBP 160-520
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminium producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, salt spray resistance test for 4000 hours (ASTM B117)	Improved corrosion resistance, recommended for use in moderately corrosive environments	30RBM/30RBP 160-520

OPTIONS

Options	No.	Description	Advantages	Use
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30RBM/30RBP 160-520
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RBM/30RBP 160-520
Shell and tubes heat exchanger	280	Brazed plate heat exchanger replaced by shell & tube heat exchanger	Extension of the water flow rate range, improved resistance to fouling	30RBM/RBP 160-260
230 V electric plug	284	230 VAC power supply source provided with plug socket and transformer (180 VA, 0.8 A)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30RBM/30RBP 160-520
Expansion tank	293	6-bar expansion tank integrated into the hydronic module (option 116 required)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RBM/30RBP 160-520
Screwed water connection sleeve kit for DSH	303	DSH connections with screw connection sleeves	Easy installation. Allows unit connection to a screw connector	30RBM/30RBP 160-520
Welded water connection kit for DSH	304	DSH inlet/outlet welded connection sleeves	Easy installation	30RBM/30RBP 160-520
Set point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy management, allow to adjust set point by a 4-20mA external signal	30RBM/30RBP 160-520
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, Extended control capabilities to a drycooler used in Free Cooling mode	30RBM/30RBP 160-520

PHYSICAL DATA, SIZES 160 TO 400

30RBM				160	180	200	220	260	300	330	360	400
Cooling												
Standard unit Full load performances*	CA1	Nominal capacity	kW	168	181	198	216	261	300	331	365	397
		EER	kW/kW	3,04	3,12	2,98	2,97	2,90	2,97	2,92	2,95	2,90
	CA2	Nominal capacity	kW	216	247	263	297	336	393	428	475	510
		EER	kW/kW	3,6	3,89	3,59	3,7	3,37	3,53	3,4	3,47	3,37
Standard unit Seasonal energy efficiency**	SEER _{12/7°C} Comfort low temp.		kWh/kWh	4,15	4,18	4,10	4,09	4,10	4,15	4,19	4,21	4,16
	ηs cool _{12/7°C}		%	163	164	161	161	161	163	165	165	163
	SEPR _{12/7°C} Process high temp.		kWh/kWh	4,77	4,71	4,29	4,76	4,33	4,56	4,46	4,67	4,50
Unit + option 6 Seasonal energy efficiency**	SEPR _{-2/-8°C} Process medium temp. ***		kWh/kWh	2,81	3,08	3,14	2,99	3,13	3,05	3,04	2,76	3,23
Part Load integrated values	IPLV.SI		kW/kW	4,566	4,570	4,538	4,508	4,500	4,610	4,612	4,690	4,579
Sound levels												
Standard unit												
Sound power ⁽³⁾			dB(A)	91	92	92	92	92	93	93	93	93
Sound pressure level at 10 m ⁽⁴⁾			dB(A)	59	60	60	60	60	60	60	61	61
Standard unit + option 15 ⁽¹⁾												
Sound power ⁽³⁾			dB(A)	89	90	90	90	90	91	91	92	92
Sound pressure at 10 m ⁽⁴⁾			dB(A)	57	58	58	58	58	59	59	60	60
Standard unit + option 15LS ⁽¹⁾												
Sound power ⁽³⁾			dB(A)	85	85	85	86	86	86	86	87	87
Sound pressure at 10 m ⁽⁴⁾			dB(A)	53	53	53	54	54	54	54	55	55
Dimensions - standard unit												
Length			mm	2410					3604			
Width			mm	2253					2253			
Height			mm	2322					2322			
Lenght, unit with water buffer tank option			mm	3604					4798			
Operating weight ⁽²⁾												
Standard unit			kg	1204	1241	1242	1372	1393	1846	1882	2046	2102
Standard unit + option 15 ⁽¹⁾			kg	1287	1324	1324	1480	1501	1972	2007	2189	2246
Standard unit + option 15 + option 116W ⁽¹⁾			kg	1426	1464	1464	1619	1655	2131	2212	2393	2449
Standard unit + option 15 + option 116W + water buffer tank option			kg	2374	2407	2408	2562	2599	3071	3151	3329	3385
Compressors				Hermetic scroll 48,3 tr/s								
Circuit A				1	1	1	2	2	2	2	3	3
Circuit B				2	2	2	2	2	3	3	3	3
No. of control stages				3	3	3	4	4	5	5	6	6

- * In accordance with standard EN14511-3:2013.
 ** In accordance with standard EN14825:2016
 *** With EG 30%
 CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². k/W
 CA2 Cooling mode conditions: evaporator water inlet/outlet temperature 23 °C/18 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². k/W
 ηs cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
 SEPR_{12/7°C} Values calculated in accordance with EN14825:2016
 SEPR_{-2/-8°C} **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
 NA Not Authorised for the specific application for the CEE market
 IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).
 (1) Options: 15 = Low noise level, 15LS = Very Low Noise level, 116S = High pressure dual-pump hydraulic module
 (2) Weights are guidelines only. Refer to the unit name plate.
 (3) In dB ref=10⁻¹² W, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent
 (4) In dB ref 20μPa, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information, calculated from the sound power Lw(A).



Valeurs certifiées Eurovent

PHYSICAL DATA, SIZES 160 TO 400

30RBM		160	180	200	220	260	300	330	360	400
Refrigerant⁽²⁾ - Standard unit		R410A GWP= 2088 (following ARI4)								
Circuit A	kg	8,40	10,90	10,90	12,60	13,10	14,70	15,40	20,30	21,10
	tCO ₂ e	17,5	22,8	22,8	26,3	27,4	30,7	32,2	42,4	44,1
Circuit B	kg	12,25	12,60	12,60	12,70	13,10	20,20	20,20	20,40	22,20
	tCO ₂ e	25,6	26,3	26,3	26,5	27,4	42,2	42,2	42,6	46,4
Capacity control		SmartVu™ Control								
Minimum capacity	%	33	33	33	25	25	20	20	17	17
Condensers		Aluminium micro-channel coils (MCHE)								
Fans - Standard unit		FLYING BIRD 4 axial fans with rotating impeller								
Quantity		3	4	4	4	4	5	5	6	6
Maximum total air flow	l/s	13542	18056	18056	18056	18056	22569	22569	27083	27083
Maximum rotation speed	rps	16	16	16	16	16	16	16	16	16
Evaporator		Dual-circuit plate heat exchanger								
Water volume	l	15	15	15	15	19	27	35	33	42
Max. water-side operating pressure without hydronic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)								
Pump		Centrifugal pump, monocell, 48,3 rps, low or high pressure (as required), single or dual (as required)								
Expansion tank volume	l	50	50	50	50	50	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module		Victaulic type								
Diameter	inch	3	3	3	3	3	4	4	4	4
External diameter	mm	88,9	88,9	88,9	88,9	88,9	114,3	114,3	114,3	114,3
Casing paintwork		Colour code RAL 7035								

(2) Weights are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 160 TO 520

30RBP				160	180	200	220	260	300	330	360	400	430	470	520
Cooling															
Standard unit Full load performances*	CA1	Nominal capacity	kW	168	180	197	216	261	300	331	365	397	430	464	523
		EER	kW/kW	3,04	3,12	2,98	2,97	2,90	2,97	2,92	2,95	2,90	2,94	2,90	2,90
	CA2	Nominal capacity	kW	216	247	263	297	336	393	428	475	510	556	593	676
		EER	kW/kW	3,6	3,89	3,59	3,7	3,37	3,53	3,4	3,47	3,37	3,45	3,34	3,38
Standard unit Seasonal energy efficiency**	SEER ^{12/7°C} Comfort low temp.		kWh/kWh	4,32	4,29	4,18	4,25	4,20	4,52	4,40	4,52	4,37	4,67	4,70	4,65
	ηs cool ^{12/7°C}		%	170	169	164	167	165	178	173	178	172	184	185	183
	SEPR ^{12/7°C} Process high temp.		kWh/kWh	5,43	5,61	5,32	5,56	5,16	5,60	5,24	5,62	5,32	5,50	5,38	5,26
Unit + option 6 Seasonal energy efficiency**	SEPR ^{-2/-8°C} Process medium temp. ***		kWh/kWh	3,03	3,40	3,38	3,33	3,22	3,40	3,06	3,47	3,42	NA	NA	NA
Part Load integrated values	IPLV.SI		kW/kW	4,758	4,855	4,733	4,849	4,749	4,999	4,833	5,004	4,815	4,925	4,999	4,839
Sound levels															
Standard unit															
Sound power ⁽³⁾			dB(A)	91	92	92	92	92	93	93	93	93	94	94	94
Sound pressure level at 10 m ⁽⁴⁾			dB(A)	59	60	60	60	60	60	60	61	61	62	62	62
Standard unit + option 15 ⁽¹⁾															
Sound power ⁽³⁾			dB(A)	89	90	90	90	90	91	91	92	92	93	93	93
Sound pressure at 10 m ⁽⁴⁾			dB(A)	57	58	58	58	58	59	59	60	60	61	61	61
Standard unit + option 15LS ⁽¹⁾															
Sound power ⁽³⁾			dB(A)	85	85	85	86	86	86	86	87	87	88	88	88
Sound pressure at 10 m ⁽⁴⁾			dB(A)	53	53	53	54	54	54	54	55	55	55	55	56
Dimensions - standard unit															
Length			mm	2410					3604				4797		
Width			mm	2253					2253				2253		
Height			mm	2322					2322				2322		
Lenght, unit with water buffer tank option			mm	3604					4798				5991		
Operating weight ⁽²⁾															
Standard unit			kg	1240	1278	1278	1407	1429	1882	1918	2082	2139	2576	2594	2796
Standard unit + option 15 ⁽¹⁾			kg	1323	1361	1361	1515	1537	2008	2044	2226	2283	2738	2756	2976
Standard unit + option 15 + option 116W ⁽¹⁾			kg	1462	1500	1500	1655	1692	2168	2248	2429	2486	2980	2997	3257
Standard unit + option 15 + option 116W + water buffer tank option			kg	2409	2444	2444	2599	2635	3108	3188	3365	3422	3912	3929	4185

- * In accordance with standard EN14511-3:2013.
 ** In accordance with standard EN14825:2016
 *** With EG 30%
 CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². k/W
 CA2 Cooling mode conditions: evaporator water inlet/outlet temperature 23 °C/18 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². k/W
 ηs cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
 SEPR_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application**
 SEPR_{-2/-8°C} **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
 NA Not Authorised for the specific application for the CEE market
 IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).
 (1) Options: 15 = Low noise level, 15LS = Very Low Noise level, 116S = High pressure dual-pump hydraulic module
 (2) Weights are guidelines only. Refer to the unit name plate.
 (3) In dB ref=10⁻¹² W, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent
 (4) In dB ref 20μPa, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information, calculated from the sound power Lw(A).



Valeurs certifiées Eurovent

PHYSICAL DATA, SIZES 160 TO 520

30RBP		160	180	200	220	260	300	330	360	400	430	470	520
Compressors		Hermetic scroll 48,3 tr/s											
Circuit A		1	1	1	2	2	2	2	3	3	3	3	4
Circuit B		2	2	2	2	2	3	3	3	3	4	4	4
No. of control stages		3	3	3	4	4	5	5	6	6	7	7	8
Refrigerant⁽²⁾ - Standard unit		R410A GWP= 2088 (following ARI4)											
Circuit A	kg	8,40	10,90	10,90	12,60	13,10	14,70	15,40	20,30	21,10	23,50	23,50	26,75
	tCO ₂ e	17,5	22,8	22,8	26,3	27,4	30,7	32,2	42,4	44,1	49,1	49,1	55,9
Circuit B	kg	12,25	12,60	12,60	12,70	13,10	20,20	20,20	20,40	22,20	26,70	26,80	26,95
	tCO ₂ e	25,6	26,3	26,3	26,5	27,4	42,2	42,2	42,6	46,4	55,7	56,0	56,3
Capacity control		SmartVu™ Control											
Minimum capacity	%	33	33	33	25	25	20	20	17	17	14	14	13
Condensers		Aluminium micro-channel coils (MCHE)											
Fans - Standard unit		FLYING BIRD 4 axial fans with rotating impeller											
Quantity		3	4	4	4	4	5	5	6	6	7	7	8
Maximum total air flow	l/s	13542	18056	18056	18056	18056	22569	22569	27083	27083	31597	31597	36111
Maximum rotation speed	rps	16	16	16	16	16	16	16	16	16	16	16	16
Evaporator		Dual-circuit plate heat exchanger											
Water volume	l	15	15	15	15	19	27	35	33	42	44	47	53
Max. water-side operating pressure without hydronic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)											
Pump		Centrifugal pump, monocell, 48,3 r/s, low- or high-pressure (as required), single or dual (as required)											
Expansion tank volume	l	50	50	50	50	50	80	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with/without hydraulic module		Victaulic type											
Diameter	inch	3	3	3	3	3	4	4	4	4	4	4	4
External diameter	mm	88,9	88,9	88,9	88,9	88,9	114,3	114,3	114,3	114,3	114,3	114,3	114,3
Casing paintwork		Colour code RAL 7035											

(2) Weights are guidelines only. Refer to the unit name plate.

ELECTRICAL SPECIFICATIONS

30RBM		160	180	200	220	260	300	330	360	400
Power circuit										
Nominal voltage	V-ph-Hz	400 - 3 - 50								
Voltage range	V	360 - 440								
Control circuit supply		24 V via internal transformer								
Nominal unit current draw⁽¹⁾										
Circuit A&B	A	100	110	124	133	161	180	201	221	242
Max. operating input power⁽²⁾										
Circuit A&B	kW	80	88	99	107	129	145	161	177	194
Cosine Phi unit at maximum power⁽²⁾		0,88	0,87	0,87	0,88	0,88	0,88	0,88	0,88	0,88
Maximum unit current draw (Un-10%)⁽³⁾										
Circuit A&B	A	144	158	176	192	230	259	288	317	345
Maximum unit current draw (Un)⁽⁴⁾										
Circuit A&B - Standard Unit	A	133	146	163	177	212	239	266	292	319
Circuit A&B - Unit with option 231	A	100	110	125	133	163	181	204	222	244
Maximum start-up current, standard unit (Un)†										
Circuit A&B	A	307	356	374	352	423	450	476	503	529
Max. start-up current, unit with soft starter (Un)†										
Circuit A&B	A	261	283	300	305	349	376	403	429	456

(1) Conditions equivalent to the standardised Eurovent conditions (evaporator water input-output temperature = 12 °C/7 °C, outside air temperature = 35 °C)

(2) Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15°C, saturated condensing temperature 68.3°C) and nominal voltage of 400 V (data given on the unit nameplate).

(3) Maximum unit operating current at maximum unit input power and 360 V.

(4) Maximum unit operating current at maximum unit input power and 400 V (values given on the unit's nameplate).

† Maximum instantaneous start-up current at operating limits (maximum operating current of the smallest compressor(s) + current of the fan(s) + locked rotor current of the largest compressor).

Fan motor electrical data reported upstream the variable speed drive at Eurovent equivalent conditions and motor ambient air temperature of 50°C at 400 V: Current 3.8 A; In-rush current 20 A; Power input: 1.75 kW.

30RBP		160	180	200	220	260	300	330	360	400	430	470	520
Power circuit													
Nominal voltage	V-ph-Hz	400 - 3 - 50											
Voltage range	V	360 - 440											
Control circuit supply		24 V via internal transformer											
Nominal unit current draw⁽¹⁾													
Circuit A&B	A	97	107	121	130	158	176	197	216	237	255	276	316
Cosine Phi unit at maximum power⁽²⁾													
Circuit A&B	kW	81	88	99	108	129	145	162	178	194	210	226	259
Cosine Phi unit at maximum power⁽²⁾		0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88
Maximum unit current draw (Un-10%)⁽³⁾													
Circuit A&B	A	142	154	173	189	227	255	284	312	340	369	397	454
Maximum unit current draw (Un)⁽⁴⁾													
Circuit A&B - Standard Unit	A	131	142	160	174	209	235	262	287	314	340	366	419
Circuit A&B - Unit with option 231	A	98	108	123	131	161	178	201	219	241	259	281	321
Maximum start-up current, standard unit (Un)†													
Circuit A&B	A	305	353	371	349	420	446	472	498	525	550	577	629
Max. start-up current, unit with soft starter (Un)†													
Circuit A&B	A	259	279	297	302	346	372	399	424	451	477	503	556

(1) Conditions equivalent to the standardised Eurovent conditions (evaporator water input-output temperature = 12 °C/7 °C, outside air temperature = 35 °C)

(2) Input power, compressors + fans, at the unit operating limits (saturated suction temperature: 15°C, saturated condensing temperature: 68.3°C) and nominal voltage of 400 V (data given on the unit nameplate).

(3) Maximum unit operating current at maximum unit input power and 360 V.

(4) Maximum unit operating current at maximum unit input power and 400 V (values given on the unit's nameplate).

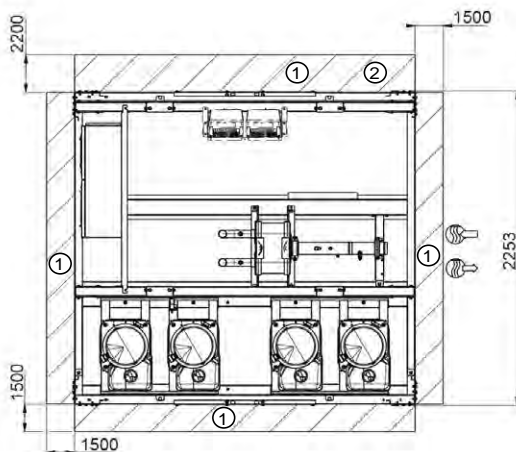
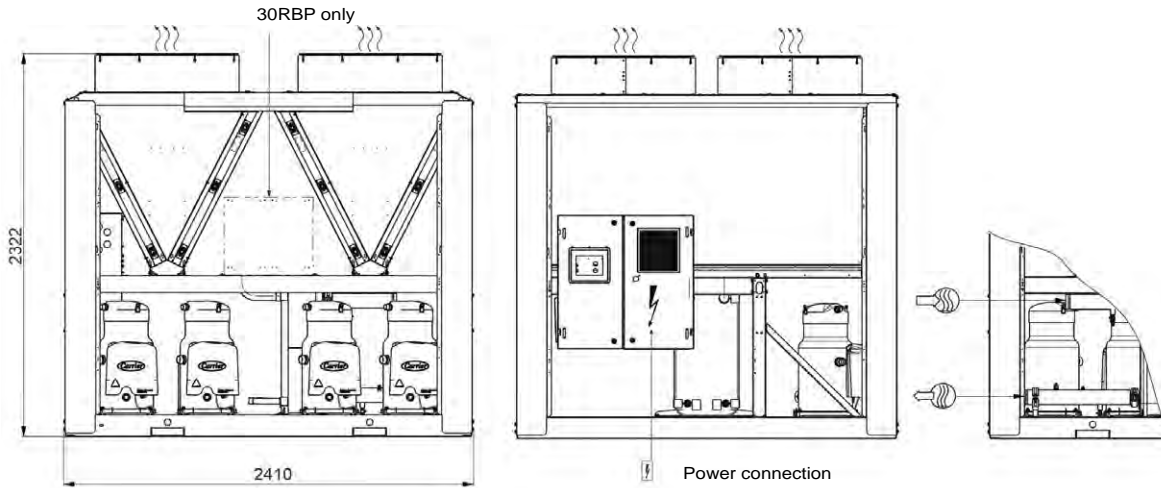
† Maximum instantaneous start-up current at operating limits (maximum operating current of the smallest compressor(s) + current of the fan(s) + locked rotor current of the largest compressor).

Fan motor electrical data reported upstream the variable drive at Eurovent equivalent conditions and motor ambient air temperature of 50°C at 400 V: Current 3.0 A; Start-up current 20 A; Power input: 1.75 kW.

DIMENSIONS/CLEARANCES

30RBM/30RBP 160-260 (with/without hydraulic module)

Without hydraulic module



Key:

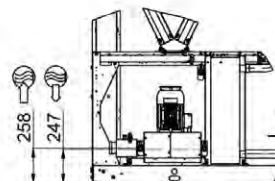
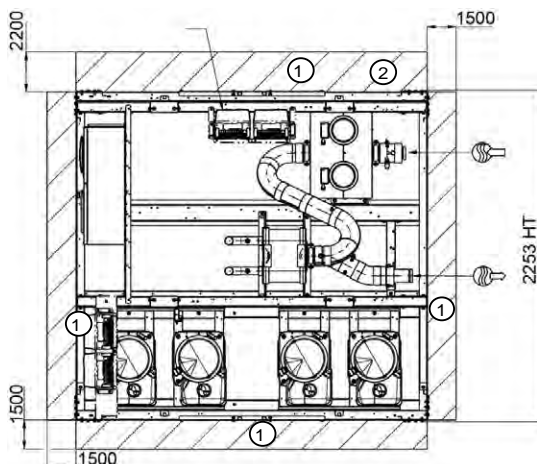
All dimensions are in mm.

- ① Clearances required for maintenance and air flow
- ② Clearance recommended for coil removal
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

For the location of fixing points, weight distribution and coordinates of the centre of gravity, refer to the certified dimensional drawings.

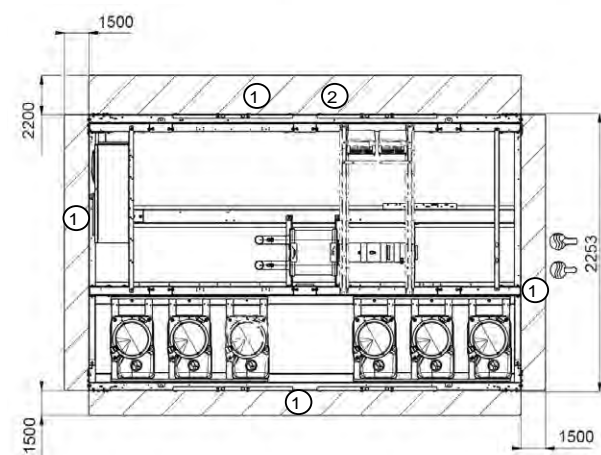
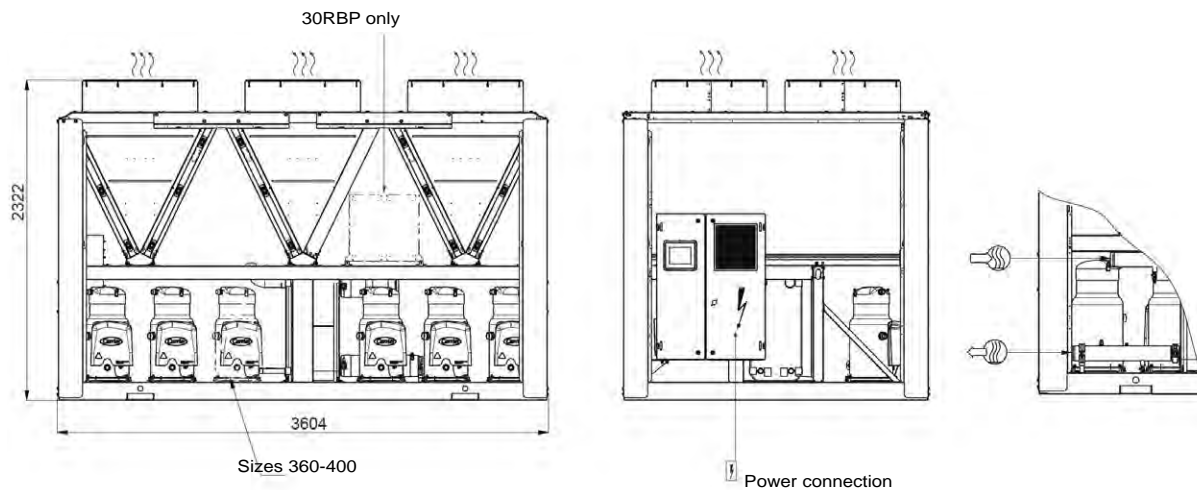
With hydraulic module



DIMENSIONS/CLEARANCES

30RBM/30RBP 300-400 (with and without hydraulic module)

Without hydraulic module



Key:

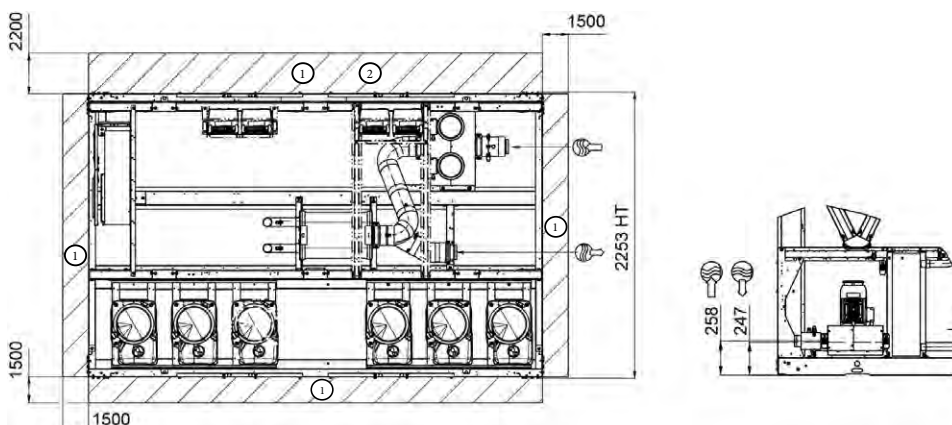
All dimensions are in mm.

- 1 Clearances required for maintenance and air flow
- 2 Clearance recommended for coil removal
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

For the location of fixing points, weight distribution and coordinates of the centre of gravity, refer to the certified dimensional drawings.

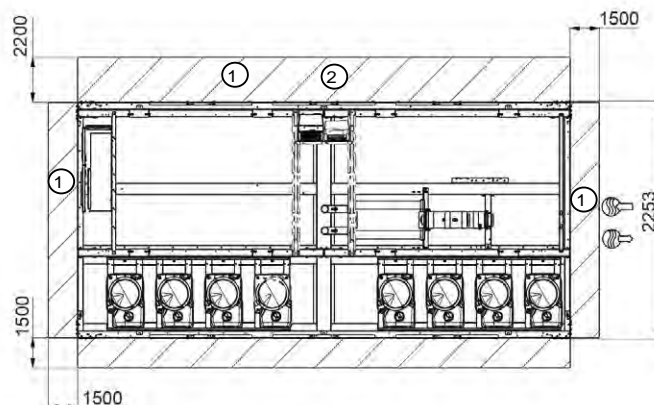
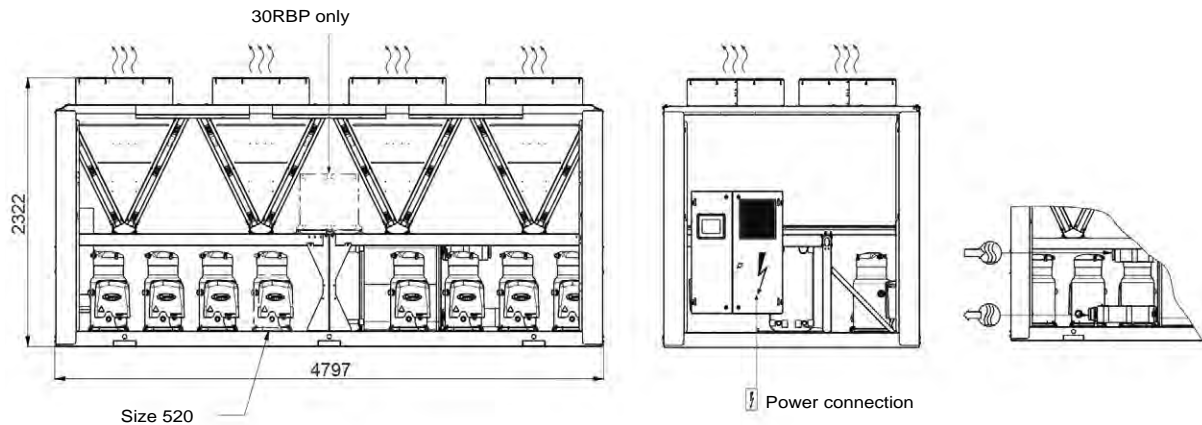
With hydraulic module



DIMENSIONS/CLEARANCES

30RBP 430-520 (with and without hydraulic module)

Without hydraulic module



Key:

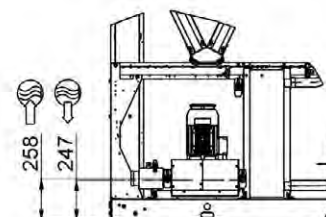
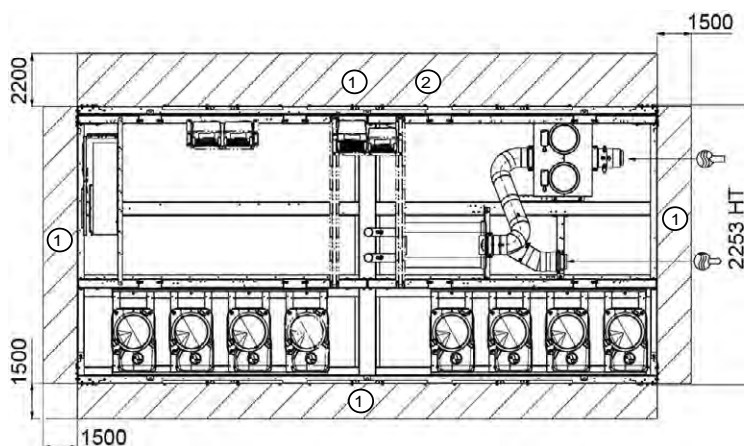
All dimensions are in mm.

- ① Clearances required for maintenance and air flow
- ② Clearance recommended for coil removal
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

For the location of fixing points, weight distribution and coordinates of the centre of gravity, refer to the certified dimensional drawings.

With hydraulic module



NEW

AIR-COOLED SCROLL CHILLERS



Unit with low noise level option

Low environmental impact

High full and part load efficiency

Compact and simple to install

Low refrigerant charge

Superior reliability

30RB/30RBP 170R-950R

Rated cooling capacity 170-940 kW



Aquasnap® heat pumps are the best solution for commercial and industrial applications where installers, engineering and design departments and building owners require reduced installation costs, optimal performances and maximum quality.

The latest generation AquaSnap® is available in two versions:

- The AquaSnap® (30RB) version is a compact all-in-one package optimised for full-load applications where reduced investment cost (low CapEx) is required.
- The premium AquaSnap® version with Greenspeed® intelligence (30RBP) is optimised for part load applications where a high SEER, SEPR or IPLV value is required. This version is equipped with a variable speed pump and fans, providing premium part load efficiency to reduce maintenance costs over the lifespan of the chiller. In addition, the sound levels achieved under the part load conditions are particularly low. Besides operating efficiently and quietly, the AquaSnap® range with Greenspeed® intelligence operates from -20 °C up to +48 °C as standard.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

R-32: THE BEST SOLUTION FOR SCROLL LIQUID CHILLERS

Carrier was the first to introduce the R-1234ze HFO with ultra-low GWP in screw chillers, as far back as early 2016. Today, having examined its main properties, Carrier has chosen R-32 refrigerant to replace high-GWP R-410A refrigerant in its Scroll liquid chillers, for its lower environmental impact, high energy efficiency, good availability and ease of use.

R-32 is currently the ideal refrigeration solution for units equipped with Scroll compressors. By using R-32 refrigerants, Carrier has reduced the carbon footprint of its AquaSnap® range of liquid chillers and heat pumps by 80%. This is the result of a much lower GWP and a significant reduction in the system's cooling charge compared to the previous generation that used R-410A.

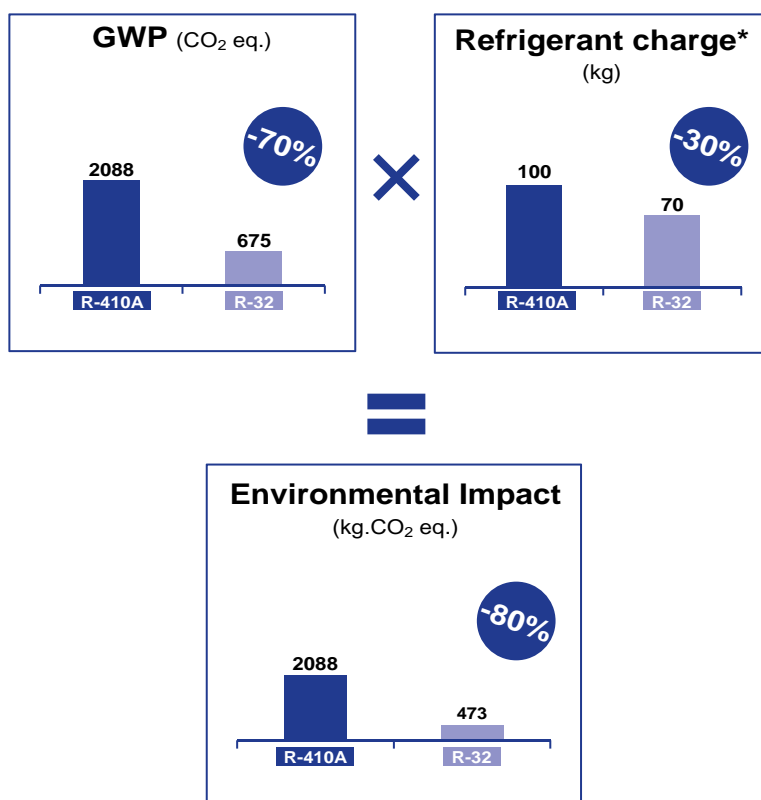
R-32 is also the right choice economically, reducing the locally imposed tax burden on HFCs based on the CO₂ impact.



CO₂ FOOTPRINT
REDUCED BY UP TO 80%

Lower environmental impact (-80% compared to R410A)

- R-32 has zero ozone depletion potential (ODP)
- The Global Warming Potential (GWP) of R-32 is 675, i.e. approximately one third of that of R-410A (PRP 2088)
- The AquaSnap® R-32 cooling charge is reduced by 30% compared to the previous version using R-410A*
- The carbon footprint of AquaSnap® R-32 is therefore 473 (675 x 0.7), i.e. 80 % lower than the version using R-410A (2088 x 1)



* Reduced refrigerant charge in Carrier heat pumps thanks to the use of R-32 and a new coil design.

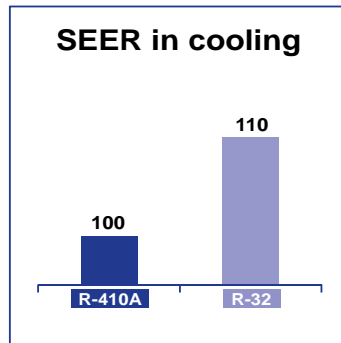
R-32: THE BEST SOLUTION FOR SCROLL LIQUID CHILLERS



SEER up to +10%

High energy efficiency

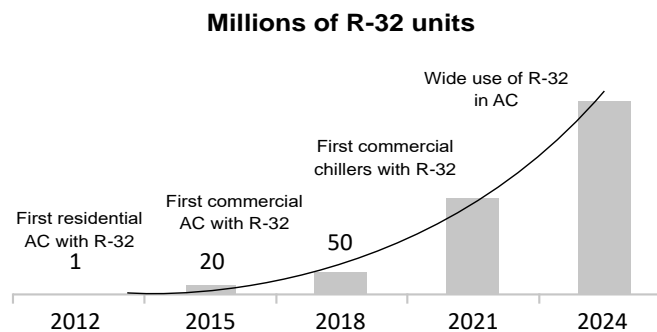
The seasonal efficiency of AquaSnap® R-32 is higher than that of the previous R-410A version by:
- approximately 10% in cooling mode



SIMPLICITY

Widely available and easy to use

More than 50 million R-32 air conditioning units are in circulation on the global market. While R-32 has been used for some time in residential and commercial air conditioning units, most manufacturers now use R-32 in VRF systems, liquid chillers, which means R-32 is widely available around the world.



R-32 has been widely available for over 15 years, as it comprises 50% of the composition of R-410A.

R-32 is easy to use: it is a pure refrigerant, therefore it is not necessary to drain the entire circuit in the event of a leak.



SAFETY

R-32 is an A2L classified refrigerant thanks to its low flammability.

- **No specific safety requirements** for transporting chillers by road or for outdoor installation.
- The service tools must be **certified** for **A2L** refrigerants in accordance with standard ISO 817 or EN378.
- Service technicians **must be qualified for brazing components** on PED 2 fluid units.

AQUASNAP® - CUSTOMER BENEFITS

■ Outstanding performance

Equipped with variable-speed fans (VSD as standard and EC optional) and optional variable-speed pumps, Carrier's AquaSnap® 30RBP range with Greenspeed® intelligence automatically adjusts the cooling capacity and water flow to perfectly adapt to the building's requirements or load variations. The result is optimal operation at both full load and part load (up to 5.4 SEER). The 30RBP offers energy efficiency up to 10% higher than the previous range with the same or a smaller footprint.

The range is already fully compliant with the 2021 Ecodesign regulations.



SEER up to 5.4

■ Intelligence and connectivity

The advanced SmartVu™ control system displays operating parameters in real time, making it intuitive and particularly user-friendly. The AquaSnap® 30RBP range is also characterised by a brand new smart energy monitoring function which provides users with smart data such as electrical energy consumption in real time, supplied cooling and heating energy and instantaneous and average seasonal energy efficiency values. For even greater energy savings, the AquaSnap® 30RBP can be monitored remotely by Carrier experts to further optimise the energy consumption level.



SMART ENERGY
MONITORING

■ Extensive scope

The AquaSnap® range is suitable for a very wide range of applications from tertiary to industrial processes. The range can operate at outdoor temperatures from -20 °C to +48 °C and with negative water temperatures (-8 °C). From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaSnap® 30RBP units meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate or application.



BETWEEN
-20 °C
and 48 °C

■ Easy installation & maintenance

Thanks to the variable-speed pumps up to 950 kW, automatic adjustment of the nominal water flow rate via electronic control and automatic measurement of the unit's energy performance under real conditions, the pumping energy consumption is reduced by almost two thirds: these new features guarantee peace of mind for installers and maintenance companies and lower energy bills for users.



Pumping energy
reduced by
up to 66%

AQUASNAP® - CUSTOMER BENEFITS

AquaSnap® liquid chillers are designed to meet current and future Ecodesign and F-Gas European regulation requirements in terms of energy efficiency and reduced CO₂ emissions. They use the best technologies available today:

- Reduced refrigerant charge of non-ozone depleting R-32A refrigerant with low GWP
- Scroll compressors
- Greenspeed® variable-speed fans (30RBP model)
- NOVATION™ micro-channel heat exchangers with a new aluminium alloy (30RB/RBP)
- Brazed-plate heat exchangers with reduced pressure drops
- Self-regulating microprocessor control with Greenspeed® intelligence
- Colour touch screen with web connectivity options

Both AquaSnap® versions can be equipped with a built-in hydraulic module, limiting the installation to conventional operations such as connection of the power supply and the supply and return piping (plug & play), according to the dimensions of the standard unit.

Recommended by Carrier, the AquaSnap® can be equipped with one or two Greenspeed® variable-speed pumps to significantly reduce energy costs linked to pumping (reduction of more than two-thirds), ensure optimum water flow rate control, and improve overall system reliability.



Very economical operation

- High unit full- and part-load energy efficiency and efficient design of the water side:
 - SEER_{12/7°C} up to 5.4 (30RBP version) in accordance with the new Ecodesign 2016/2281 regulations.
 - Multiple scroll compressors equipped with a high-efficiency motor which can exactly match the cooling capacity to the load required
 - Electronic expansion valve enabling operation at a lower condensing pressure and improved use of the evaporator heat exchange surface (superheat control)
 - Condenser with high-efficiency NOVATION™ (30RB/RBP) aluminium micro-channel heat exchangers and Greenspeed® variable-speed fans (30RBP version)
 - Low pressure drop brazed plate heat exchangers (< 45 kPa under Eurovent conditions).

- Specific control functions to reduce unit cooling energy use during occupied and unoccupied periods:
 - Internal timer: switches the chiller on/off and controls operation at a second setpoint
 - Setpoint automatically offset based on the outdoor air temperature or room air temperature (via an option)
 - Floating high pressure (HP) management
 - Variable-speed fan control
 - Cooling demand limitation.

Refer to the control section for more information.

- Greenspeed® variable-speed pump to reduce pumping energy consumption by up to two-thirds (option recommended by Carrier):
 - Eliminate energy losses through the water flow rate control valve by electronically setting the nominal water flow rate
 - Save energy during stand-by periods or part-load operation by automatically reducing the water pump speed. The energy consumption of the pump motor varies according to the cube of the speed, so that a reduction in speed of just 40% can reduce energy consumption by 80%
 - Improved unit part-load performance (increased SEER value with variable water flow according to standard EN14825).

Refer to the hydraulic option section for more information.



- Extra energy savings through multiple options:
 - Carrier drycooler Free cooling mode management
 - Partial heat recovery.
- Reduced maintenance costs:
 - Fast diagnosis of possible incidents and their history via the control
 - Programmable maintenance alert
 - Programmable F-Gas leak monitoring alert

AQUASNAP® - CUSTOMER BENEFITS

Low noise level

- Condenser with fixed-speed fans (30RB):
 - Optional low-speed fans (700 rpm) and compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
 - Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
 - Low noise 6th generation Flying Bird™ fans, made of a composite material (Carrier patent)
 - Rigid fan installation for reduced noise (Carrier patent).
- Condenser with Greenspeed® variable-speed fans (30RBP) recommended by Carrier for even quieter operation):
 - Optional factory setting of the fan at low speed, with compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
 - Exceptional acoustic signature during part-load operation through smooth fan speed variation.
- Specific control functions or features to reduce noise level during the night or unoccupied periods:
 - Night-time sound control with cooling capacity and fan speed limitation
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by flexible anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
 - Acoustic compressor enclosure, reducing radiated noise emissions (option).



Quick and easy installation

- Compact design:
 - AquaSnap® units are designed with compact dimensions for easy installation.
 - With a length of approximately 4.8 m for 550 kW and a width of 2.25 m, the units require minimal floor space.
- Integrated hydraulic module (option):
 - Low or high-pressure water pump (as required)
 - Single or dual pump (as required) with runtime balancing and automatic changeover to the back-up pump if a fault develops

- Built-in variable-speed pumps with automatic nominal water flow adjustment via electronic control on the user display.
- Water filter protects the water pump against circulating debris
- Pressure sensors for direct numerical display of the water flow rate and water pressures
- Thermal insulation and frost protection down to -20 °C, using a heater (option)
- High-capacity membrane expansion tank (option).
- Built-in hydraulic module with Greenspeed® variable-speed pump (option recommended by Carrier):
 - Quick and easy electronic setting of the nominal water flow rate when the unit is commissioned, thus eliminating the need to adjust the water flow rate control valve
 - Automatic control of the pump speed based on constant speed, constant pressure difference or constant temperature difference.
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch with high trip capacity
 - 24 V control circuit using an integrated transformer.
- Simplified hydraulic connections:
 - Victaulic type couplings on the exchanger;
 - clearly identified and practical reference marks for entering and leaving water connections;
- Fast unit commissioning
 - Systematic factory test before shipment
 - Quick-test function for step-by-step verification of the sensors, electrical components and motors.

Reduced installation costs

- Optional Greenspeed® variable-speed pump with hydraulic module (option recommended by Carrier)
 - Cut costs relating to the water flow control valve
 - The design of the water system with variable primary flow (VPF) can provide significant installation cost savings compared with traditional constant primary systems with variable secondary circuits; elimination of the secondary distribution pump, etc.
 - Water system design with fan coils fitted with 2-way valves instead of 3-way valves.
- No buffer tank required thanks to Carrier's advanced control algorithm
 - Minimum water loop volume reduced to 2.5 l/kW.

AQUASNAP® - CUSTOMER BENEFITS

Environmental responsibility

AquaSnap® liquid chillers with Greenspeed® intelligence are a boost for green cities and contribute to a sustainable future. Combining a refrigerant charge up to 30% lower, along with R-32 refrigerant with a GWP 70% lower than that of the previous version using R410A, and exceptional energy efficiency, this chiller significantly reduces energy consumption while reducing carbon dioxide emissions by throughout its life cycle.

- The AquaSnap® liquid chiller is equipped with an automatic energy meter that indicates the instantaneous and overall cooling energy at the outlet, the instantaneous and overall electrical energy consumption, the instantaneous and average seasonal energy efficiency for monitoring and a unit performance check.
- Pumping energy consumption can be reduced by up to two thirds using Greenspeed® variable-speed pumps
- 40% lower refrigerant charge: the micro-channel technology used for condenser coils optimises heat transfer while minimising the refrigerant volume.
- Sealed refrigerant circuits:
 - reduction of leaks thanks to the absence of capillary tubes and the use of flare connections
 - verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - discharge line shut-off valve and liquid line service valve for simplified maintenance
 - qualified Carrier maintenance personnel to provide refrigerant servicing
 - ISO 14001 production plant
- Refrigerant leak detection: available as an option, this additional dry contact allows reporting of possible leaks. The leak detector (supplied externally) should be mounted in the most likely leak location.

Superior reliability

- State-of-the-art concept
 - Two independent refrigerant circuits; the second one automatically takes over if the first one develops a fault, maintaining partial cooling in all circumstances
 - All compressor components are easily accessible on site, minimising downtime
 - All-aluminium Novation™ micro-channel heat exchanger (MCHE) (30RB-30RBP) with higher corrosion resistance than a conventional coil. The all-aluminium construction eliminates the formation of galvanic currents between aluminium and copper which can corrode the coil in saline or corrosive atmospheres
 - V-coil design to protect the coils against hail impact

- Optional Enviro-shield® anti-corrosion coil coating for use in moderately corrosive environments. The coating is applied using an electroless conversion process which modifies the surface of the aluminium producing a coating that is integral to the coil. Immersion in a bath to ensure 100% coverage. No heat transfer variation, tested for 4000 hours in salt spray per ASTM B117
- Optional Super Enviro-shield® anti-corrosion coil coating for use in extremely corrosive environments. Extremely durable and flexible epoxy polymer coating applied on micro-channel heat exchangers by electro coating process with a final UV protective topcoat. Minimal heat transfer variation, tested for 6000 hours in salt spray per ASTM B117, superior impact resistance per ASTM D2794
- Electronic flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - The control algorithm prevents excessive compressor cycling and reduces the quantity of water in the water loop (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure
 - Automatic fan speed adjustment in case of coil fouling (30RBP model)
 - Soft fan start to increase unit lifetime (30RBP model).
- Exceptional endurance tests:
 - To design critical components and sub-assemblies to minimise the risk of failure on site, Carrier uses specialised laboratories and advanced dynamic simulation tools.
 - To ensure that the units reach customer sites in the same condition as they are when tested in the factory, Carrier tests the machine behaviour during transportation over 250 km. The road test is based on a military standard and is the equivalent to 5000 km by truck on a normal road.
 - To guarantee the coil corrosion resistance, salt spray corrosion resistance tests are performed in the group's laboratory.
 - In addition, to maintain the unit's performance throughout its operating life whilst minimising maintenance costs, end users can access the "Connected Services" remote monitoring service.

AQUASNAP® - CUSTOMER BENEFITS

Designed to support Green Building Design

A green building is a building that is environmentally sustainable and is designed, constructed and operated to minimise the total impact on the environment.

The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

The air conditioning system can use between 30 and 40% of the annual building energy consumption. Choosing the right air conditioning system is one of the main considerations when designing a green building. For buildings with a load that varies throughout the year, the AquaSnap® 30RBP unit offers a solution to this important challenge.

A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.

The following example looks at how Carrier's new AquaSnap® range helps customers affected by LEED® building certification.

Energy saving certificate

The AquaSnap® 30RBP unit is eligible for energy saving certificates in France (CEE) in comfort, industrial and agriculture applications:

- Floating High pressure control (by modulating the air flow through fan activation and speed)
- Floating Low pressure control
- Variable speed on asynchronous fan motor
- Variable speed on asynchronous pump motor

For more details about financial incentives in France, please refer to the "CEE product sheet".

The AquaSnap® range and LEED® certification

The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

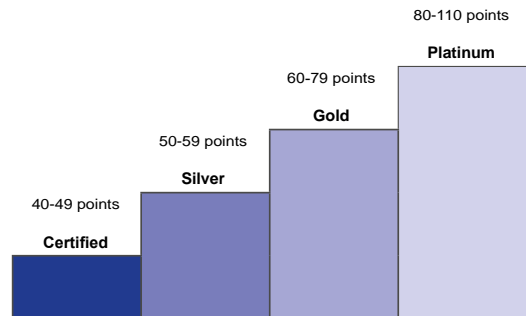
- sustainable Sites (SS)
- water efficiency (WE)
- energy and atmosphere (EA)
- materials and resources (MR)
- indoor environmental quality (IEQ)
- innovation in design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain the same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points



The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impact of each component or sub-system on the building as a whole.

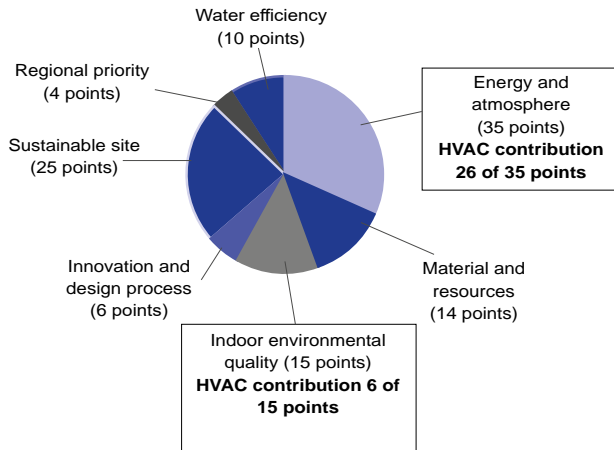
While the LEED® green building certification programs do not certify products or services, choosing the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points

AQUASNAP® - CUSTOMER BENEFITS

Designed to support Green Building Design

Overview of LEED® for new construction and major renovations



The new AquaSnap® units from Carrier can help building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- EA prerequisite 2: minimum energy performance
- 30RBP units exceed the energy efficiency requirements of ASHRAE 90.1-2007; therefore they satisfy the prerequisites.
- EA prerequisite 3: fundamental refrigerant management
30RBP units do not use chlorofluorocarbon (CFC) refrigerants, thus satisfying the prerequisites.
- EA credit 1: Optimise energy performance (1 to 19 points):
Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90.1-2007 reference. 30RBP units, which are designed for high performance especially during part load operation, help to reduce the building's energy consumption and therefore to gain points for this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used to analyse energy. It meets the modelling requirements for this credit and produces reports which can be easily transferred to LEED® charts.
- EA credit 4: enhanced refrigerant management (2 points)
With this credit, LEED® awards systems that minimise the installed system's Ozone Depletion Potential (ODP) and Global Warming Potential (GWP). 30RBP units use a reduced R-32 charge and therefore help satisfy the requirements of this LEED® credit.

NOTE: This section describes the prerequisites and credit requirements in LEED® for new construction and is directly related to 30RBP units. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the HVAC system as a whole.

i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: fundamental commissioning of energy management systems;
- EA credit 3: enhanced commissioning (2 points);
- EA credit 5: measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

30RB TECHNICAL OVERVIEW



NOVATION™ SECOND GENERATION MICRO CHANNEL HEAT EXCHANGERS (30RB)

- Increased reliability with new aluminum alloy
- Significantly reduces the refrigerant charge (~40% compared to Cu/Al coils)
- Improved thermal performance, improved efficiency and lower pressure drops compared to Cu/Al coils
- Enviro-Shield® coating for mildly corrosive environments
- Super Enviro-shield® coating for highly corrosive environments (industrial or marine applications)
- Easy cleaning with high pressure air or water washer



SIXTH GENERATION FLYING BIRD™ FIXED-SPEED FANS

- Exclusive Carrier design
- Fan blade design inspired by nature
- High efficiency version with AC motor technology



SmartVu™ control

- 9 languages available
- 4.3" user-friendly touch screen
- All main parameters displayed on one screen
- Direct access to the unit's technical drawings and the main service documents
- Very easy online monitoring
- Easy and secure access to unit parameters
- Optional BACnet, J-Bus or LON communication interfaces



SCROLL COMPRESSORS



REDUCED REFRIGERANT CHARGE



HIGH-EFFICIENCY BRAZED PLATE HEAT EXCHANGER

- Latest generation asymmetrical type
- Low pressure drop

SMART ENERGY CONSUMPTION MONITORING

- Real time energy consumption estimation (kWh)
- Estimation of the supplied cooling/heating energy (kWh)
- Instantaneous and average energy efficiency values under real operating conditions
- Remote monitoring with "Connected service"

30RBP TECHNICAL OVERVIEW



FAN SPEED REGULATOR



SIXTH GENERATION FLYING BIRD™ VARIABLE-SPEED FANS

- Carrier fan blade design inspired by nature
- Patented algorithm to control the fan speed
- Dedicated variator or EC type motor
- Night mode operation



VARIABLE-SPEED PUMP

- Water flow electronic control and reading
- Automatic protection of the pump against low pressure
- Multiple control options:
 - constant flow with low speed mode on standby
 - variable flow based on pressure difference or constant temperature

PUMP SPEED REGULATOR



TECHNICAL INNOVATIONS

SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - Innovative smart energy monitoring, providing users with smart data such as real-time electrical energy consumption and cooling capacity, and instantaneous and average energy efficiency values.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
 - Display of trend curves for the main values
 - Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
 - Blackbox memory

■ 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: closing of this contact activates a second setpoint (e.g.: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

TECHNICAL INNOVATIONS

Energy management module (option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: enables the setpoint to be reset based on the indoor air temperature of the building (with Carrier thermostat).
- Setpoint reset: the cooling setpoint is reset based on a 4-20 mA signal.
- Demand limit: Enables the maximum chiller power to be limited based on a 4-20 mA signal.
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller power or current to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: when ice storage has finished, this input is used to return to the second setpoint (unoccupied mode).
- Time schedule override: closing of this contact cancels the effects of the time schedule.
- Out of service: This signal indicates that the chiller is completely out of service.
- Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
- Alert indication: this volt-free contact indicates the need to carry out a maintenance operation or the presence of a minor fault.
- Boiler control: this on/off output controls an independent boiler to provide hot water.

TECHNICAL INNOVATIONS

Novation™ heat exchangers with microchannel coil technology

Already used in the automotive and aeronautical industries for many years, the Novation™ micro-channel heat exchanger (MCHE) used in the AquaSnap® 30RB-30RBP liquid chillers is made entirely of aluminum. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminum) come into contact in traditional heat exchangers.

- From an energy efficiency point of view, Novation™ heat exchangers are approximately 10% more efficient than traditional coils and micro-channel coil technology enables a 40% reduction in the amount of refrigerant used in the chiller.
- The reduced depth of the Novation™ MCHE reduces air pressure losses by 50% and makes it much less susceptible to fouling (e.g. by sand). The Novation™ MCHE heat exchanger can be cleaned quickly using a high-pressure washer.
- To further enhance long-term performance and protect coils against premature deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.
 - The Novation™ MCHE with Enviro-Shield® protection (option 262) is recommended for installations in moderately corrosive environments. The Enviro-Shield® protection uses corrosion inhibitors which actively arrest oxidation in case of mechanical damage.
 - The Novation™ MCHE with exclusive Super Enviro-Shield® protection (option 263) is recommended for installations in corrosive environments. Super Enviro-Shield® protection comprises an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.
- After more than 7000 hours of testing based on various standards in Carrier group laboratories, the Novation™ MCHE with Super Enviro-shield® coating emerged as the best customer choice to minimise the harmful effects of corrosive atmospheres and ensure a long equipment life:
 - best corrosion resistance per the ASTM B117/D610 test;
 - best heat transfer performance per the Carrier Marine 1 test;
 - proven reliability per the ASTM B117 test.



Coil Types (ranked by performance)	Visual Corrosion Evaluation	Heat Transfer Performance Degradation	Time to Failure	Test Campaign Conclusions
Super Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Very good	No coil leak	Very good
Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Very good
Al/Al coil	Very good	Good	No coil leak	Very good
Novation™ MCHE	Good	Very good	No coil leak	Good
Cu/Cu coil	Good	Good	Leak	Acceptable
Blygold® Cu/Al coil	Good	Good	No coil leak	Acceptable
Precoat Cu/Al coil	Bad	Bad	No coil leak	Bad
Cu/Al coil	Bad	Bad	No coil leak	Bad

TECHNICAL INNOVATIONS

New generation of Flying Bird™ VI fans with AC or EC motors (option)



The 30RB-RBP unit uses Carrier's sixth generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and a wide operating range. The fans use Carrier patented rotating shroud technology and back-swept blades with a wave-serration trailing edge inspired by nature.

They were designed and optimised for the 30RB-RBP unit's air management system configuration and heat exchanger technology.

The fans and their shrouds use Carrier's robust and proven injection moulded composite thermoplastic construction.

On the 30RBP with option 17, the fans are driven by an EC motor, also known as brushless DC, with dedicated electronics to manage commutation. This offers high precision for fans that require higher efficiency and variable speed. The fans meet the latest European Ecodesign requirements for fan efficiency.

EC motor (option 17)



OPTIONS

Options	No.	Description	Advantages	30RB/RBP 170R-950R
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminum (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	No
Low-temperature brine solution	6B	Low temperature chilled water production down to -8 °C with ethylene or propylene glycol	Covers specific applications such as ice storage and industrial processes	170R-950R
High static fans	12	Unit equipped with high static variable-speed fans (maximum 200Pa), each fan being equipped with a connection flange allowing the connection to the ducting system.	Ducted fan discharge, optimised temperature control, based on the operating conditions and system characteristics	30RBP 170R-950R
Very low noise level	15LS	Aesthetic and sound absorbing compressor enclosure associated with low-speed fans	Noise level reduction in sensitive environments	170R-950R
EC fans	17	Unit equipped with EC fans	Enhances the unit energy efficiency	30RBP 170R-950R
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	170R-950R
Circuit Soft Starter	25E	Electronic starter on each circuit	Cost effective reduction of start-up current	170R-950R
Compressor Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	170R-410R
Water exchanger frost protection	41	Electric heater on the water exchanger and the water piping	Water exchanger module frost protection between 0°C and -20°C outside air temperature	170R-950R
Exchanger & hydraulic frost protection	42A	Electrical heaters on the water type heat exchanger, water pipes, hydraulic module and expansion tank	Water type heat exchanger and hydraulic module frost protection down to an outdoor air temperature of -20 °C	170R-950R
Exchanger & hydraulic frost protection	42B	Electric heater on the water exchanger hydraulic module and optional expansion tank & water buffer tank	Water type heat exchanger and hydraulic module frost protection down to an outdoor air temperature of -20 °C	170R-950R
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Production of free high-temperature hot water simultaneously with chilled water production (or hot water for heat pump)	170R-950R
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	170R-950R
Compressor suction and discharge valves	92A	Shut-off valves on the compressor suction and discharge piping	Simplified maintenance. Possibility to store the refrigerant charge in the cooler or condenser side during servicing	170R-950R
HP single-pump hydraulic module	116R	Single high-pressure water pump, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RB 170R-380R 30RBP 170R-550R
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RB 170R-380R 30RBP 170R-550R
LP single-pump hydraulic module	116T	Single low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RB 170R-380R 30RBP 170R-550R
LP dual-pump hydraulic module	116U	Dual low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RB 170R-380R 30RBP 170R-550R

OPTIONS

Options	No.	Description	Advantages	30RB/RBP 170R-950
Variable-speed single HP pump	116V	Single high pressure water pump with variable speed drive, water filter, electronic water flow control, pressure sensors. Multiple variable water flow control options. For more details, refer to the dedicated section (expansion tank not included; option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy savings (more than two-thirds), tighter water flow control, improved system reliability	170R-550R
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive, pressure sensors. Multiple variable water flow control options. For more details, refer to the dedicated section (expansion tank not included; option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy savings (more than two-thirds), tighter water flow control, improved system reliability	170R-950R
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	170R-950R
ModBus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	170R-950R
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	170R-950R
Energy management module	156	Control board with additional inputs/outputs. See Contacts available in option on control description.	Extended remote control capabilities (setpoint reset, ice storage end, demand limits, boiler on/off command, etc.)	170R-950R
Input contact for refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	170R-950R
Compliance with Russian regulations	199	EAC certification	Compliance with Russian regulations	170R-950R
Coil defrost resistance heaters	252	Electric heaters under the coils and the condensate pans	Prevents frost formation on the coils; compulsory in heating mode, if the outdoor temperature is below 0 °C	No
Insulation of the evaporator entering/leaving refrigerant lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/leaving refrigerant lines	170R-950R
Enviro-Shield anti-corrosion protection®	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	170R-950R
Super Enviro-Shield anti-corrosion protection®	263	Extremely durable and flexible epoxy polymer coating applied on micro-channel heat exchangers by electro coating process, final UV protective topcoat. Minimal thermal transfer variation, tested to withstand more than 6000 hours of constant neutral salt spray as per ASTM B117, improved impact resistance as per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	170R-950R
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	170R-950R
Compressor enclosure	279a	Compressor enclosure	Improved aesthetics, compressor protection against external elements (dust, sand, water, etc.)	170R-950R
230 V electrical plug	284	230 VAC power supply source provided with plug socket and transformer (180 VA, 0.8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	170R-950R

OPTIONS

Options	No.	Description	Advantages	30RB/RBP 170R-950R
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play) and Protection of closed water systems from excessive pressure	170R-950R
Screwed water connection kit for DSH	303	DSH connections with screw connection sleeves	Easy installation. Allows unit connection to a screw connector	170R-950R
Welded water connection kit for DSH	304	DSH inlet/outlet welded connection sleeves	Easy installation	170R-950R
Water buffer tank module	307	Built-in water buffer tank	Avoids short cycle on compressors and ensures stable water in the loop	170R-950R
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, control capabilities extended to a drycooler used in Free Cooling mode	170R-950R
Compliance with UAE regulations	318	Additional label on the unit with rated power input, rated current and EER in accordance with AHRI 550/590	Compliance with ESMA standard UAE 5010-5:2016.	170R-950R
Compliance with Qatar regulations	319	Specific name plate on the unit with 415 V+/-6% power supply	Compliance with KAHRAMAA regulations in Qatar.	170R-950R
Process application or Out Europe installation	326	Specific option compatibility management	Allow options compatibility not available in standard due to Ecodesign compliance	30RB 170R-380R 30RBP 170R-950R
Compliance with Moroccan regulations	327	Specific regulatory documentation	Compliance with Moroccan regulations	170R-950R

PHYSICAL DATA, SIZES 170R TO 380R

30RB				170R	190R	210R	230R	270R	310R	340R	380R	
Cooling												
Standard unit Full load performances*		CA1	Nominal capacity	kW	172	188	207	227	270	311	346	380
			EER	kW/kW	3,20	3,31	3,17	3,17	3,03	3,15	3,09	3,14
Seasonal energy efficiency**			SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,28	4,35	4,28	4,24	4,26	4,43	4,44	4,25
			ηs cool _{12/7°C}	%	168	171	168	167	167	174	175	167
			SEER _{23/18°C} Comfort medium temp.	kWh/kWh	5,17	5,32	5,13	5,07	4,97	5,31	5,29	5,12
			SEPR _{12/7°C} Process high temp.	kWh/kWh	5,21	5,25	5,19	5,10	5,10	5,32	5,37	5,39
			SEPR _{-2/-8°C} Process medium temp.	kWh/kWh	Data coming soon							
Unit + option 15LS Full load performance*		CA1	Nominal capacity	kW	165	180	198	217	256	296	328	361
			EER	kW/kW	3,05	3,24	3,04	3,02	2,81	2,96	2,86	2,94
Seasonal energy efficiency**			SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,49	4,64	4,45	4,47	4,35	4,70	4,67	4,62
			ηs cool _{12/7°C}	%	177	183	175	176	171	185	184	182
			SEER _{23/18°C} Comfort medium temp.	kWh/kWh	5,27	5,52	5,22	5,26	4,99	5,66	5,55	5,43
			SEPR _{12/7°C} Process high temp.	kWh/kWh	5,27	5,42	5,34	5,19	5,14	5,44	5,47	5,60
			SEPR _{-2/-8°C} Process medium temp.	kWh/kWh	Data coming soon							
Part Load integrated values			IPLV.SI	kW/kW	4,83	4,95	4,82	4,84	4,81	4,97	4,98	4,89
Sound levels												
Standard unit												
Sound power ⁽¹⁾			dB(A)	91,0	91,5	91,5	92,0	92,0	93,0	93,0	93,5	
Sound pressure at 10 m ⁽²⁾			dB(A)	58,5	59,5	59,5	60,0	60,0	60,5	60,5	61,0	
Unit + option 15LS ⁽³⁾												
Sound power ⁽¹⁾			dB(A)	85,5	85,5	85,5	86,5	86,5	87,5	87,5	88,0	
Sound pressure at 10 m ⁽²⁾			dB(A)	53,0	53,5	53,5	54,5	54,5	55,5	55,5	55,5	
Dimensions - standard unit												
Standard unit												
Length			mm	2410	2410	2410	2410	2410	3604	3604	3604	
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	
Height			mm	2324	2324	2324	2324	2324	2324	2324	2324	
Unit + option 307 ⁽³⁾												
Length			mm	3604	3604	3604	3604	3604	4798	4798	4798	

- * In accordance with standard EN14511-3:2013. *
- * In accordance with standard EN14825:2013, average climate
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
- ηs cool_{12/7°C} & SEER_{12/7°C}** **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
- SEER_{23/18°C}** **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
- SEPR_{12/7°C} Values calculated in accordance with EN14825:2016
- SEPR_{-2/-8°C} Values calculated in accordance with EN14825:2016
- IPLV.SI Calculations according to standard performances AHRI 551-591.
- (1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
- (3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module



Eurovent certified values

PHYSICAL DATA, SIZES 170R TO 380R

30RB		170R	190R	210R	230R	270R	310R	340R	380R
Operating weight⁽⁴⁾									
Standard unit	kg	1349	1397	1397	1521	1556	1995	2049	2211
Unit + option 15LS ⁽³⁾	kg	1432	1480	1480	1630	1665	2122	2176	2356
Unit + option 15LS + option 116W ⁽³⁾	kg	1567	1615	1615	1765	1811	2271	2371	2551
Unit + option 15LS + option 116W + option 307 ⁽³⁾	kg	2550	2598	2598	2748	2794	3258	3357	3537
Compressors		Scroll hermetic 48,3 r/s							
Circuit A		1	1	1	2	2	2	2	3
Circuit B		2	2	2	2	2	3	3	3
Number of control stages		3	3	3	4	4	5	5	6
System PED Category		III	III	III	III	III	III	III	III
Refrigerant⁽⁴⁾		R32/A2L							
Circuit A	kg	6,40	9,70	9,70	11,40	11,80	12,50	13,30	18,10
	teqCO ₂	4,3	6,5	6,5	7,7	8,0	8,4	9,0	12,2
Circuit B	kg	11,40	11,40	11,40	11,40	11,80	17,50	18,30	18,10
	teqCO ₂	7,7	7,7	7,7	7,7	8,0	11,8	12,4	12,2
Oil									
Circuit A	l	6,60	6,60	6,60	13,20	13,20	13,20	13,20	19,80
Circuit B	l	13,20	13,20	13,20	13,20	13,20	19,80	19,80	19,80
Capacity control		SmartVu™							
Minimum capacity	%	33	33	25	25	25	20	20	17
Air heat exchanger		Aluminum micro-channel coils (MCHE)							
Fans		FLYING-BIRD 6, axial fan with rotating impeller							
Standard unit									
Quantity		3	4	4	4	4	5	5	6
Maximum total air flow	l/s	14460	19280	19280	19280	19280	24100	24100	28920
Maximum rotation speed	tr/s	16	16	16	16	16	16	16	16
Water heat exchanger		Direct expansion brazed-plate heat exchanger							
Water volume	l	15	15	15	19	27	27	35	44
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)							
Pump		Centrifugal pump, monocell, 48.3 r/s, low or high pressure (as required), single or dual (as required)							
Expansion vessel volume	l	50	50	50	50	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module		Victaulic® type							
Connections	inch	3	3	3	3	4	4	4	4
External parameter	mm	88,9	88,9	88,9	88,9	114,3	114,3	114,3	114,3
Casing paint		Colour code RAL 7035							

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 170R TO 410R

30RBP				170R	190R	210R	230R	270R	310R	340R	380R	410R
Cooling												
Standard unit												
Full load performances*	CA1	Nominal capacity	kW	172	187	206	227	270	311	346	380	416
		EER	kW/kW	3,20	3,36	3,21	3,16	3,03	3,15	3,09	3,14	3,09
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,82	5,02	4,84	4,94	4,79	5,25	5,15	5,09	5,11
		ηs cool_{12/7°C}	%	190	198	191	195	189	207	203	201	201
		SEER _{23/18°C} Comfort medium temp.	kWh/kWh	5,98	6,23	5,93	5,99	5,69	6,35	6,17	6,13	6,07
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,30	6,61	6,42	6,13	5,97	6,30	6,24	6,36	6,31
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh	Data coming soon								
Unit + option 15LS												
Full load performance*	CA1	Nominal capacity	kW	165	180	198	217	256	296	328	361	394
		EER	kW/kW	3,05	3,24	3,04	3,02	2,81	2,96	2,85	2,94	2,86
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,80	5,00	4,81	4,90	4,73	5,20	5,08	5,11	5,09
		ηs cool_{12/7°C}	%	189	197	189	193	186	205	200	201	201
		SEER _{23/18°C} Comfort medium temp.	kWh/kWh	5,95	6,18	5,83	5,98	5,58	6,36	6,13	6,03	5,95
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,24	6,66	6,49	6,12	5,88	6,34	6,25	6,42	6,34
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh	Data coming soon								
Part Load integrated values		IPLV,SI	kW/kW	5,37	5,73	5,31	5,51	5,37	5,61	5,56	5,50	5,47
Sound levels												
Standard unit												
Sound power ⁽¹⁾		dB(A)		91,0	90,5	90,5	92,0	92,0	93,0	93,0	93,5	93,5
Sound pressure at 10 m ⁽²⁾		dB(A)		58,5	58,5	58,5	60,0	60,0	60,5	60,5	61,0	61,5
Unit + option 15LS⁽³⁾												
Sound power ⁽¹⁾		dB(A)		85,5	85,5	85,5	86,5	86,5	87,5	87,5	88,0	88,0
Sound pressure at 10 m ⁽²⁾		dB(A)		53,0	53,5	53,5	54,5	54,5	55,5	55,5	55,5	56,0
Dimensions												
Standard unit												
Length		mm		2410	2410	2410	2410	2410	3604	3604	3604	3604
Width		mm		2253	2253	2253	2253	2253	2253	2253	2253	2253
Height		mm		2324	2324	2324	2324	2324	2324	2324	2324	2324
Unit + option 307												
Length		mm		3604	3604	3604	3604	3604	4798	4798	4798	4798

- * In accordance with standard EN14511-3:2013.
- * In accordance with standard EN14825:2013, average climate
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
- $\eta_{\text{s cool}}$ $_{12/7^{\circ}\text{C}}$ & SEER $_{12/7^{\circ}\text{C}}$ **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
- SEER $_{23/18^{\circ}\text{C}}$ **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
- SEPR $_{12/7^{\circ}\text{C}}$ Values calculated in accordance with EN14825:2016
- SEPR $_{-2/-8^{\circ}\text{C}}$ Values calculated in accordance with EN14825:2016
- IPLV.SI Calculations according to standard performances AHRI 551-591.
- (1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
- (3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module



Eurovent certified values

PHYSICAL DATA, SIZES 170R TO 410R

30RBP		170R	190R	210R	230R	270R	310R	340R	380R	410R
Operating weight⁽⁴⁾										
Unité standard	kg	1349	1397	1397	1521	1556	1995	2049	2211	2269
Unit + option 15LS ⁽³⁾	kg	1432	1480	1480	1630	1665	2122	2176	2356	2414
Unit + option 15LS + option 116W ⁽³⁾	kg	1567	1615	1615	1765	1811	2271	2371	2551	2609
Unit + option 15LS + option 116W + option 307 ⁽³⁾	kg	2550	2598	2598	2748	2794	3258	3357	3537	3594
Compressors		Scroll hermetic 48,3 r/s								
Circuit A		1	1	1	2	2	2	2	3	3
Circuit B		2	2	2	2	2	3	3	3	3
Number of control stages		3	3	3	4	4	5	5	6	6
System PED Category		III	III	III	III	III	III	III	III	III
Refrigerant⁽⁴⁾		R32/A2L								
Circuit A	kg	6,40	9,70	9,70	11,40	11,80	12,50	13,30	18,10	18,90
	teqCO ₂	4,3	6,5	6,5	7,7	8,0	8,4	9,0	12,2	12,8
Circuit B	kg	11,40	11,40	11,40	11,40	11,80	17,50	18,30	18,10	18,90
	teqCO ₂	7,7	7,7	7,7	7,7	8,0	11,8	12,4	12,2	12,8
Oil										
Circuit A	l	6,6	6,6	6,6	13,2	13,2	13,2	13,2	19,8	19,8
Circuit B	l	13,2	13,2	13,2	13,2	13,2	19,8	19,8	19,8	19,8
Capacity control		SmartVu™								
Minimum capacity	%	33	33	25	25	25	20	20	17	17
Air heat exchanger		Aluminum micro-channel coils (MCHE)								
Fans		FLYING-BIRD 6, axial fan with rotating impeller								
Standard unit										
Quantity		3	4	4	4	4	5	5	6	6
Maximum total air flow	l/s	14460	19280	19280	19280	19280	24100	24100	28920	28920
Maximum rotation speed	tr/s	16	16	16	16	16	16	16	16	16
Water heat exchanger		Direct-expansion welded plate heat exchanger								
Water volume	l	15	15	15	19	27	27	35	44	44
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)								
Pump		Centrifugal pump, monocoil, 48,3r/s, low or high pressure (as required), single or dual (as required)								
Expansion vessel volume	l	50	50	50	50	50	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module		Victaulic® type								
Connections	inch	3	3	3	3	4	4	4	4	4
External parameter	mm	88,9	88,9	88,9	88,9	114,3	114,3	114,3	114,3	114,3
Casing paint		Colour code RAL 7035								

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 450R TO 950R

30RBP				450R	480R	550R	610R	670R	720R	770R	800R	870R	950R
Cooling													
Standard unit Full load performances*	CA1	Nominal capacity	kW	451	484	553	616	677	726	782	807	882	944
		EER	kW/kW	3,14	3,09	3,08	3,15	3,14	3,06	3,07	3,04	3,00	2,92
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,28	5,24	5,29	5,32	5,32	5,20	5,33	5,30	5,31	5,18
		ηs cool _{12/7°C}	%	208	207	209	210	210	205	210	209	209	204
		SEER _{23/18°C} Comfort medium temp.	kWh/kWh	6,33	6,23	6,32	6,56	6,51	6,28	6,54	6,47	6,56	6,32
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,41	6,32	6,27	6,27	6,33	6,14	6,25	6,18	6,07	5,88
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh	Data coming soon									
Unit + option 15LS Full load performance*	CA1	Nominal capacity	kW	428	458	523	586	645	688	743	765	836	890
		EER	kW/kW	2,93	2,85	2,85	2,94	2,93	2,83	2,85	2,81	2,77	2,66
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,37	5,30	5,21	5,24	5,35	5,20	5,43	5,38	5,22	5,07
		ηs cool _{12/7°C}	%	212	209	205	207	211	205	214	212	206	200
		SEER _{23/18°C} Comfort medium temp.	kWh/kWh	6,25	6,12	6,25	6,41	6,59	6,33	6,69	6,60	6,34	6,06
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,38	6,29	6,24	6,26	6,32	6,11	6,17	6,10	6,03	5,79
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh	Data coming soon									
Part Load integrated values		IPLV.SI	kW/kW	5,63	5,59	5,58	5,69	5,64	5,52	5,68	5,65	5,62	5,51
Sound levels													
Standard unit													
Sound power ⁽¹⁾			dB(A)	94,0	94,0	94,5	97,5	97,5	98,0	98,0	98,5	98,5	99,0
Sound pressure at 10 m ⁽²⁾			dB(A)	61,5	61,5	62,0	65,0	65,0	66,0	65,0	66,0	66,0	66,5
Unit + option 15LS ⁽³⁾													
Sound power ⁽¹⁾			dB(A)	88,5	88,5	89,0	92,5	92,5	93,0	93,0	93,5	93,5	94,5
Sound pressure at 10 m ⁽²⁾			dB(A)	56,0	56,5	57,0	60,5	60,0	60,5	60,0	61,0	60,5	61,5
Dimensions													
Standard unit													
Length			mm	4798	4798	4798	5992	5992	5992	7186	7186	7186	7186
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2324	2324	2324	2324	2324	2324	2324	2324	2324	2324
Unit + option 307													
Length			mm	5992	5992	5992	7186	7186	7186	8380	8380	8380	8380

* In accordance with standard EN14511-3:2013.

* In accordance with standard EN14825:2013, average climate

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

η_{s cool}_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEER_{23/18°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

SEPR_{-2/-8°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module



Eurovent certified values

PHYSICAL DATA, SIZES 450R TO 950R

30RBP		450R	480R	550R	610R	670R	720R	770R	800R	870R	950R
Operating weight⁽⁴⁾											
Unité standard	kg	2697	2722	2927	3265	3511	3511	4042	4042	4291	4291
Unit + option 15LS ⁽³⁾	kg	2860	2885	3108	3398	3664	3664	4216	4216	4485	4485
Unit + option 15LS + option 116W ⁽³⁾	kg	3094	3119	3379	3708	3974	3974	4605	4605	4874	4874
Unit + option 15LS + option 116W + option 307 ⁽³⁾	kg	4086	4111	4371	4715	4981	4981	5626	5626	5895	5895
Compressors		Scroll hermetic 48,3 r/s									
Circuit A		3	3	4	2	3	3	3	3	4	4
Circuit B		4	4	4	3	3	3	4	4	4	4
Number of control stages		7	7	8	5	6	6	7	7	8	8
System PED Category		IV	IV	IV	III	III	III	IV	IV	IV	IV
Refrigerant⁽⁴⁾		R32/A2L									
Circuit A	kg	19,20	19,50	25,00	24	25,50	25,50	27,40	27,40	32,40	32,40
	teqCO ₂	13,0	13,2	16,9	15,9	17,2	17,2	18,5	18,5	21,9	21,9
Circuit B	kg	24,10	24,50	25,00	25,50	25,50	25,50	32,40	32,40	32,40	32,40
	teqCO ₂	16,3	16,5	16,9	17,2	17,2	17,2	21,9	21,9	21,9	21,9
Oil											
Circuit A	l	19,8	19,8	26,4	13,2	19,8	19,8	19,8	19,8	26,4	26,4
Circuit B	l	26,4	26,4	26,4	19,8	19,8	19,8	26,4	26,4	26,4	26,4
Capacity control		SmartVu™									
Minimum capacity	%	14	14	13	20	17	17	14	14	13	13
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit											
Quantity		7	7	8	9	10	10	11	11	12	12
Maximum total air flow	l/s	33740	33740	38560	43380	48200	48200	53020	53020	57840	57840
Maximum rotation speed	tr/s	16	16	16	16	16	16	16	16	16	16
Water heat exchanger		Direct-expansion welded plate heat exchanger									
Water volume	l	44	47	53	73	73	73	84	84	84	84
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)									
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)									
Expansion vessel volume	l	80	80	80	80	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module		Victaulic® type									
Connections	inch	4	4	4	5	5	5	5	5	5	5
External parameter	mm	114,3	114,3	114,3	139,7	139,7	139,7	139,7	139,7	139,7	139,7
Casing paint		Colour code RAL 7035									

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module

(4) Values are guidelines only. Refer to the unit name plate.

ELECTRICAL DATA

30RB		170R	190R	210R	230R	270R	310R	340R	380R
Power circuit supply									
Nominal voltage	V-ph-Hz	400 - 3 - 50							
Voltage range	V	360 - 440							
Control circuit supply		24 V via internal transformer							
Maximum operating input power ^{(1) or (2)}									
Circuit A&B	kW	74,6	81,2	90,8	99,4	118,6	133,9	148,3	163,5
Power factor at maximum power ^{(1) or (2)}									
Cosine phi standard unit		0,83	0,83	0,83	0,83	0,83	0,83	0,83	0,83
Nominal operating current draw ⁽⁴⁾									
Standard unit	A	100,8	110,9	123,3	134,4	159,2	180,4	199	220,2
Maximum operating current draw (Un) ^{(1) or (2)}									
Standard unit	A	129,0	141,2	157,8	172,0	205,2	231,6	256,5	282,9
Maximum current (Un-10%) ^{(1) or (2)}									
Standard unit	A	137,7	150,6	168,6	183,6	219,6	247,5	274,5	302,4
Maximum start-up current(Un) ^{(2) + (3)}									
Standard unit	A	305	354	370	348	418	444	469	496
Unit + option 25/25E	A	262	302	318	305	366	392	417	444

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

(3) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA

30RBP		170R	190R	210R	230R	270R	310R	340R	380R	410R
Power circuit supply										
Nominal voltage	V-ph-Hz	400 - 3 - 50								
Voltage range	V	360 - 440								
Control circuit supply		24 V via internal transformer								
Maximum operating input power ^{(1) or (2)}										
Circuit A&B	kW	74,8	81,5	91,1	99,8	118,9	134,3	148,7	164	178,4
Power factor at maximum power ^{(1) or (2)}										
Cosine phi standard unit		0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85
Nominal operating current draw ⁽⁴⁾										
Standard unit	A	98,1	107,73	119,7	130,8	155,6	175,9	194,5	214,8	233,4
Maximum operating current draw (Un) ^{(1) or (2)}										
Standard unit	A	126,3	137,6	154,2	168,4	201,6	227,1	252,0	277,5	302,4
Maximum current (Un-10%) ^{(1) or (2)}										
Standard unit	A	135	147	165	180	216	243	270	297	324
Maximum start-up current(Un) ^{(2) + (3)}										
Standard unit	A	302	350	367	344	414	440	465	490	515
Unit + option 25/25E	A	259	298	315	301	362	388	413	438	463

30RBP		450R	480R	550R	610R	670R	720R	770R	800R	870R	950R
Power circuit supply											
Nominal voltage	V-ph-Hz	400 - 3 - 50									
Voltage range	V	360 - 440									
Control circuit supply		24 V via internal transformer									
Maximum operating input power ^{(1) or (2)}											
Circuit A&B	kW	193,7	208,1	237,8	256,4	282,7	306,1	328,5	340,2	374,4	405,6
Power factor at maximum power ^{(1) or (2)}											
Cosine phi standard unit		0,85	0,85	0,85	0,84	0,84	0,84	0,84	0,84	0,84	0,84
Nominal operating current draw ⁽⁴⁾											
Standard unit	A	253,7	272,3	311,2	332,5	371,4	396,6	431,3	443,9	491,2	524,8
Maximum operating current draw (Un) ^{(1) or (2)}											
Standard unit	A	327,9	352,8	403,2	439,5	486,0	525,0	565,0	584,5	644,0	696,0
Maximum current (Un-10%) ^{(1) or (2)}											
Standard unit	A	351	378	432	472	522	564	607	628	692	748
Maximum start-up current(Un) ^{(2) + (3)}											
Standard unit	A	541	565	616	770	823	856	902	915	981	1027
Unit + option 25/25E	A	489	513	564	687	740	773	819	832	898	944

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

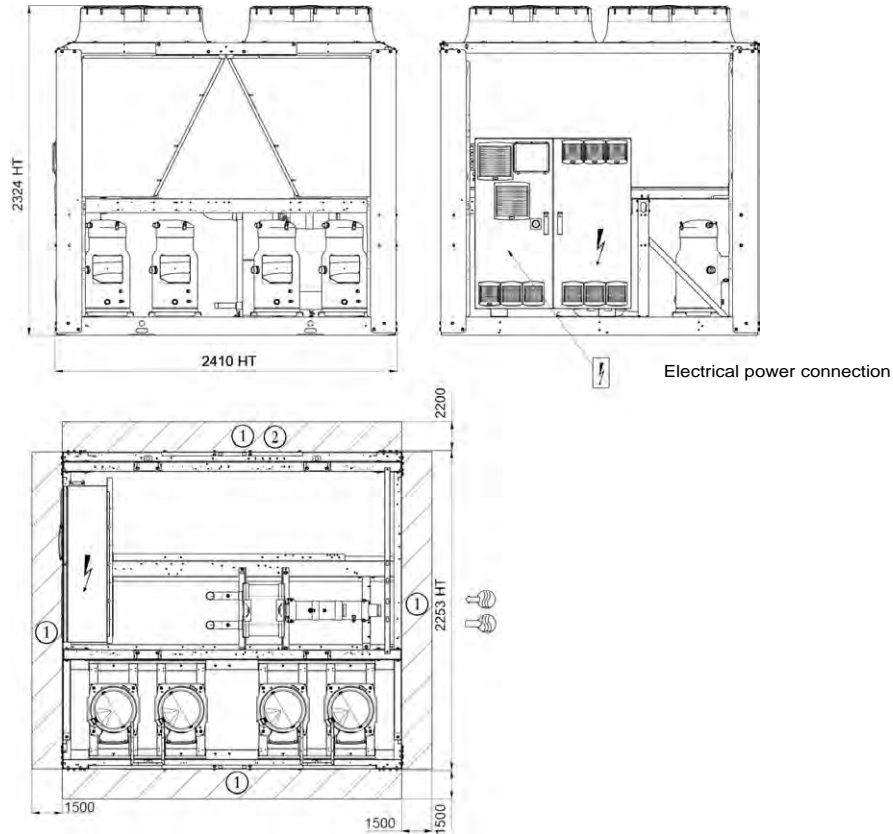
(3) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

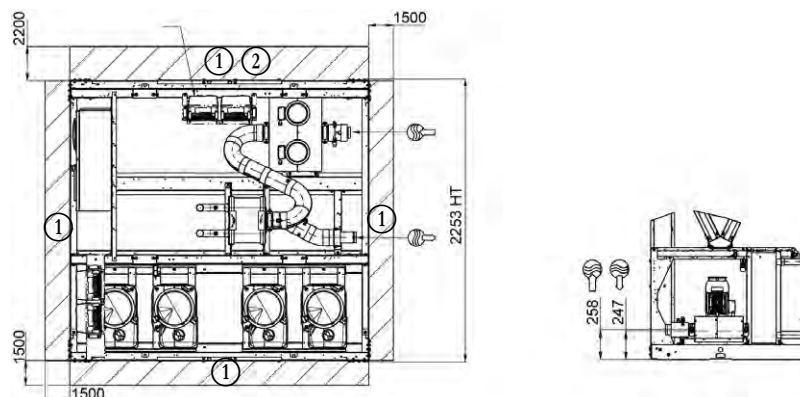
DIMENSIONS/CLEARANCES

30RB/30RBP 170R-270R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

Water inlet

Water outlet

Air outlet, do not obstruct

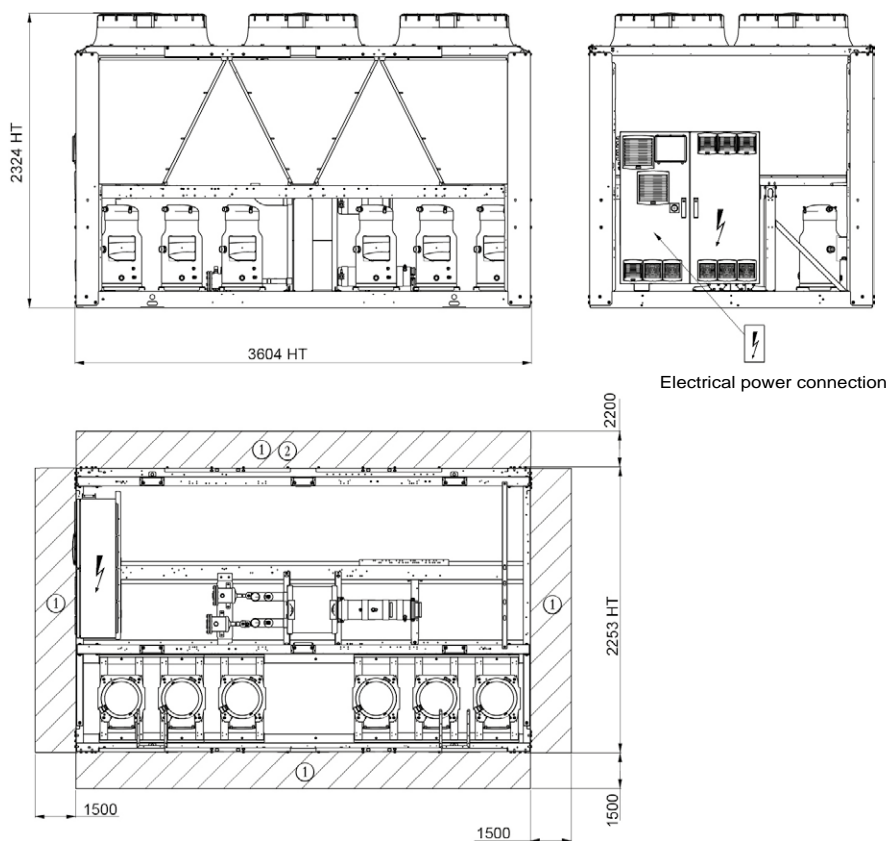
Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

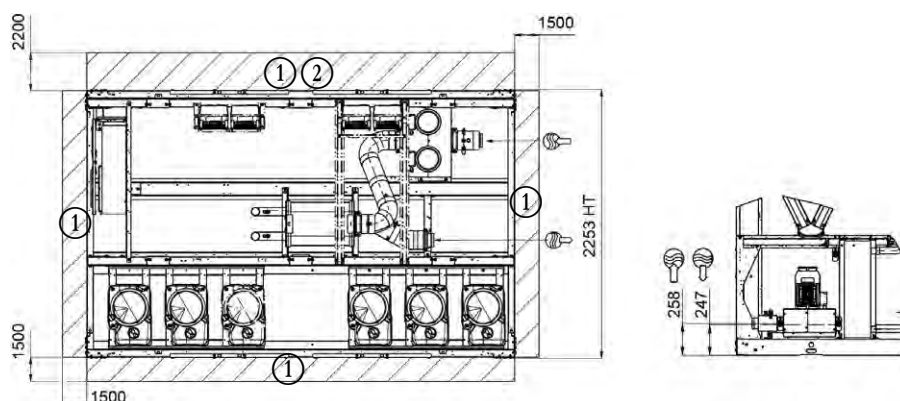
DIMENSIONS/CLEARANCES

30RB/30RBP 310R-410R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

Water inlet

Water outlet

Air outlet, do not obstruct

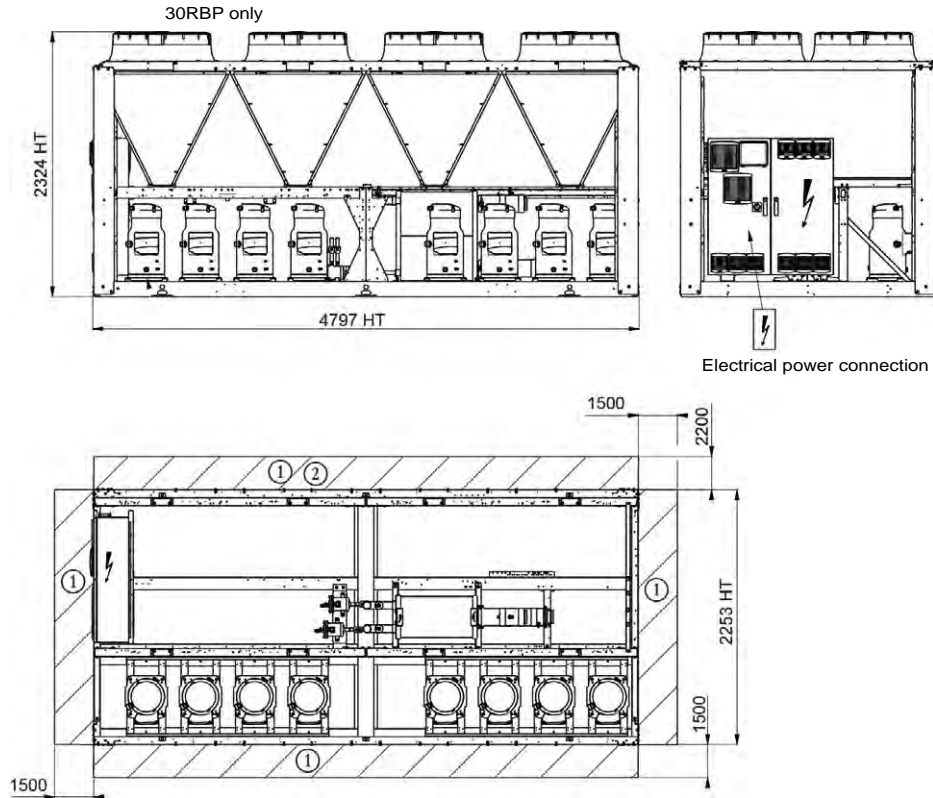
Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

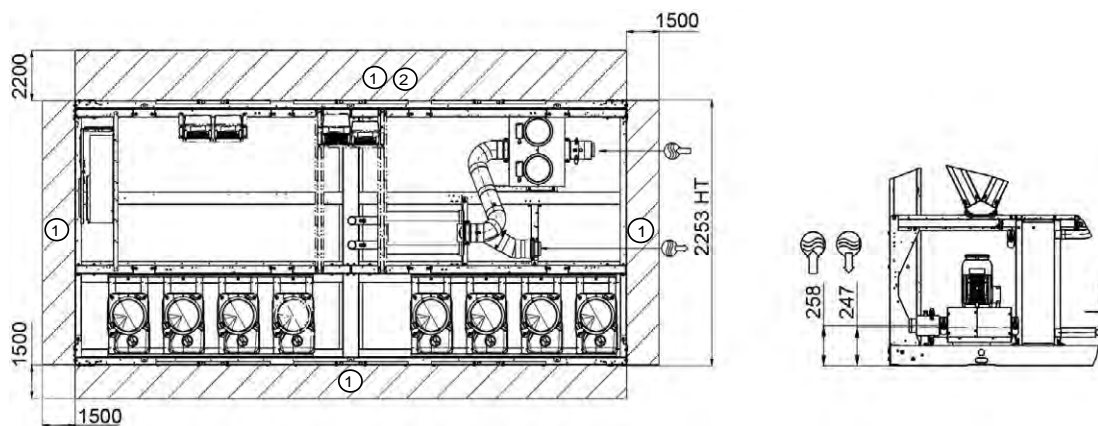
DIMENSIONS/CLEARANCES

30RB/30RBP 450R-550R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

Water inlet

Water outlet

Air outlet, do not obstruct

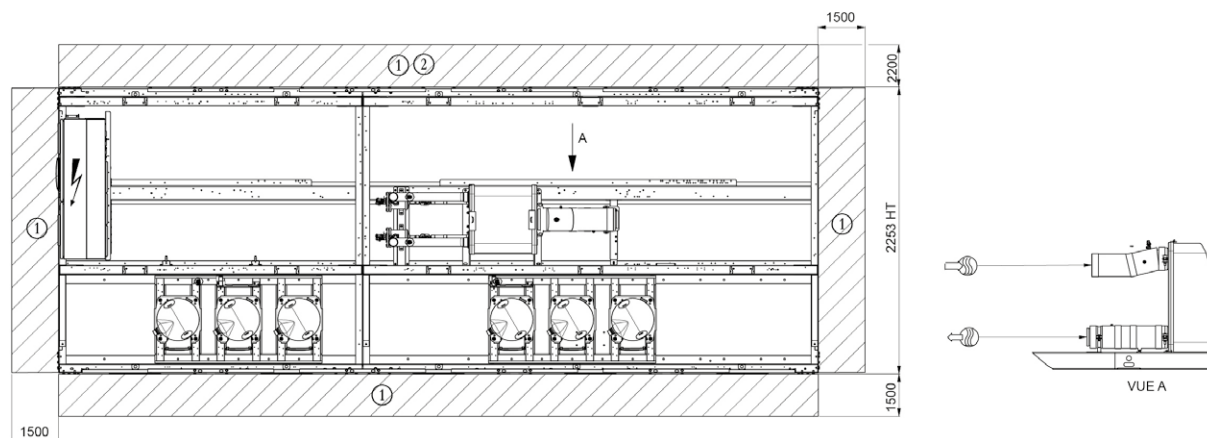
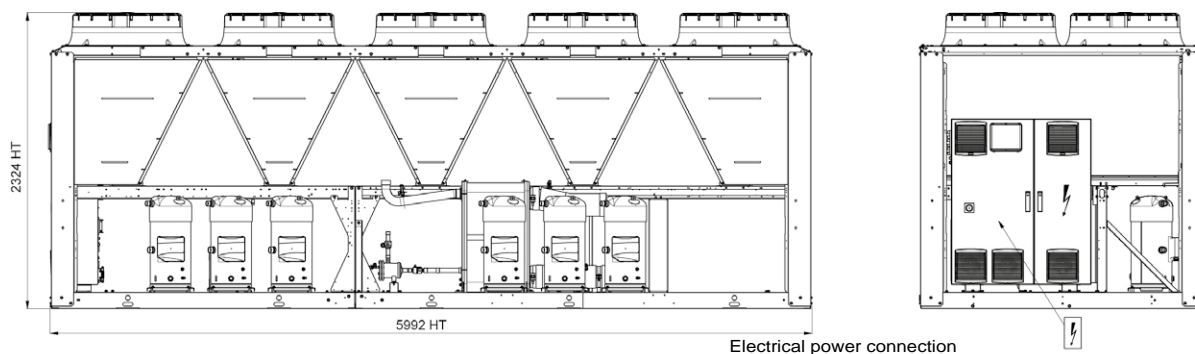
Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

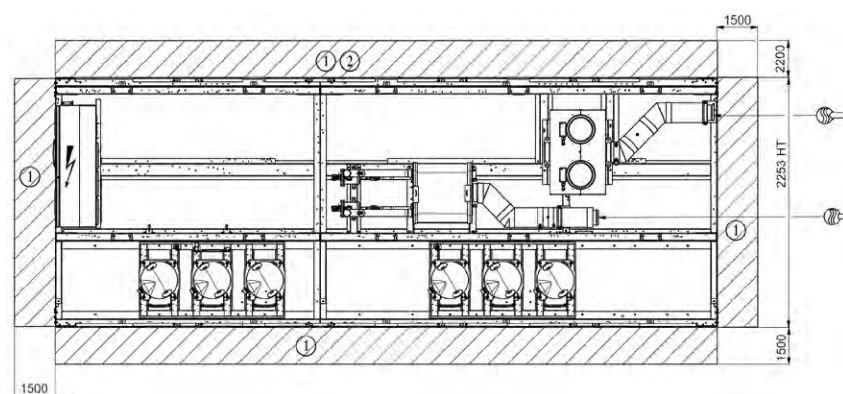
DIMENSIONS/CLEARANCES

30RBP 610R-720R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

Water inlet

Water outlet

Air outlet, do not obstruct

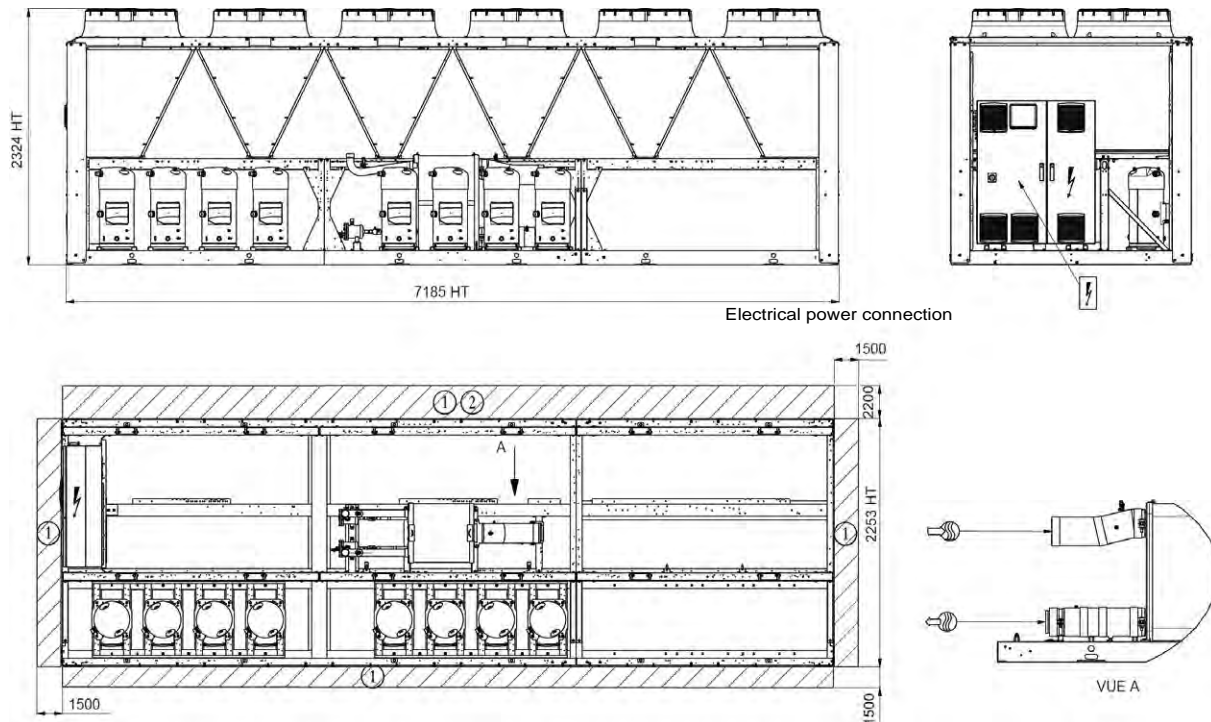
Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

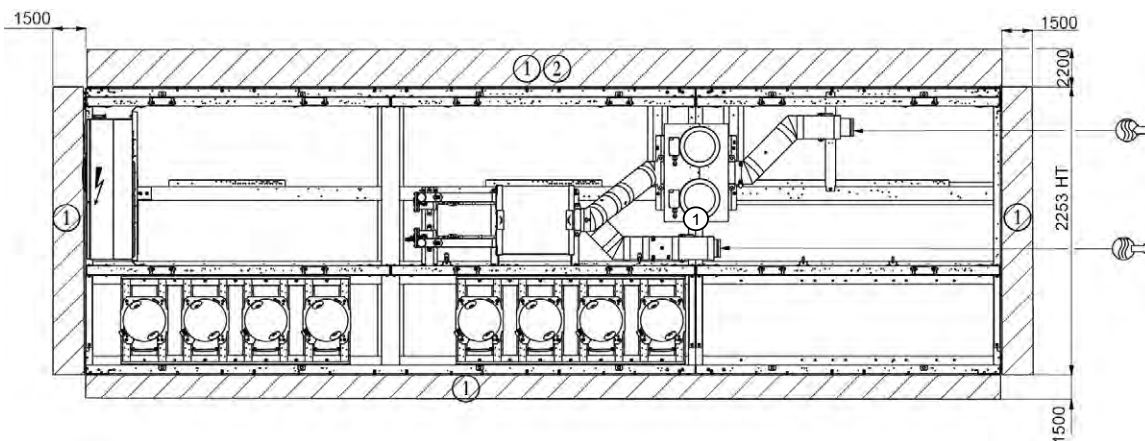
DIMENSIONS/CLEARANCES

30RBP 770R-950R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

- ① Clearances required for maintenance and air flow
- ② Clearance recommended for coil removal
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

NEW

AIR-COOLED FIXED-SPEED SCREW CHILLER



Very economical operation
Low sound levels
Simple installation
Environmentally responsible
Exceptional reliability

30XBE / 30XBP 250-1700

AQUAFORCE

Nominal cooling capacity 277 - 1684 kW - 50 Hz

The AquaForce™ 30XBE and 30XBP liquid chillers are the economic solution for commercial and industrial applications where high reliability and economic operation in all climate conditions are key customer requirements.

The AquaForce™ 30XBE and 30XBP liquid chillers are designed to meet current and future regulations for energy efficiency and operating sound levels. They use the latest Carrier technologies:

Carrier 06T twin-rotor fixed-speed screw compressors.

Low noise 6th generation of Carrier Flying Bird™ fans with AC motor (30XBE) or EC motor (30XBP).

Carrier flooded shell-and-tube evaporator with new copper tube design for low pressure drops

2nd generation of "V" shape Carrier Novation™ microchannel heat exchangers with optional Enviro-Shield coatings.

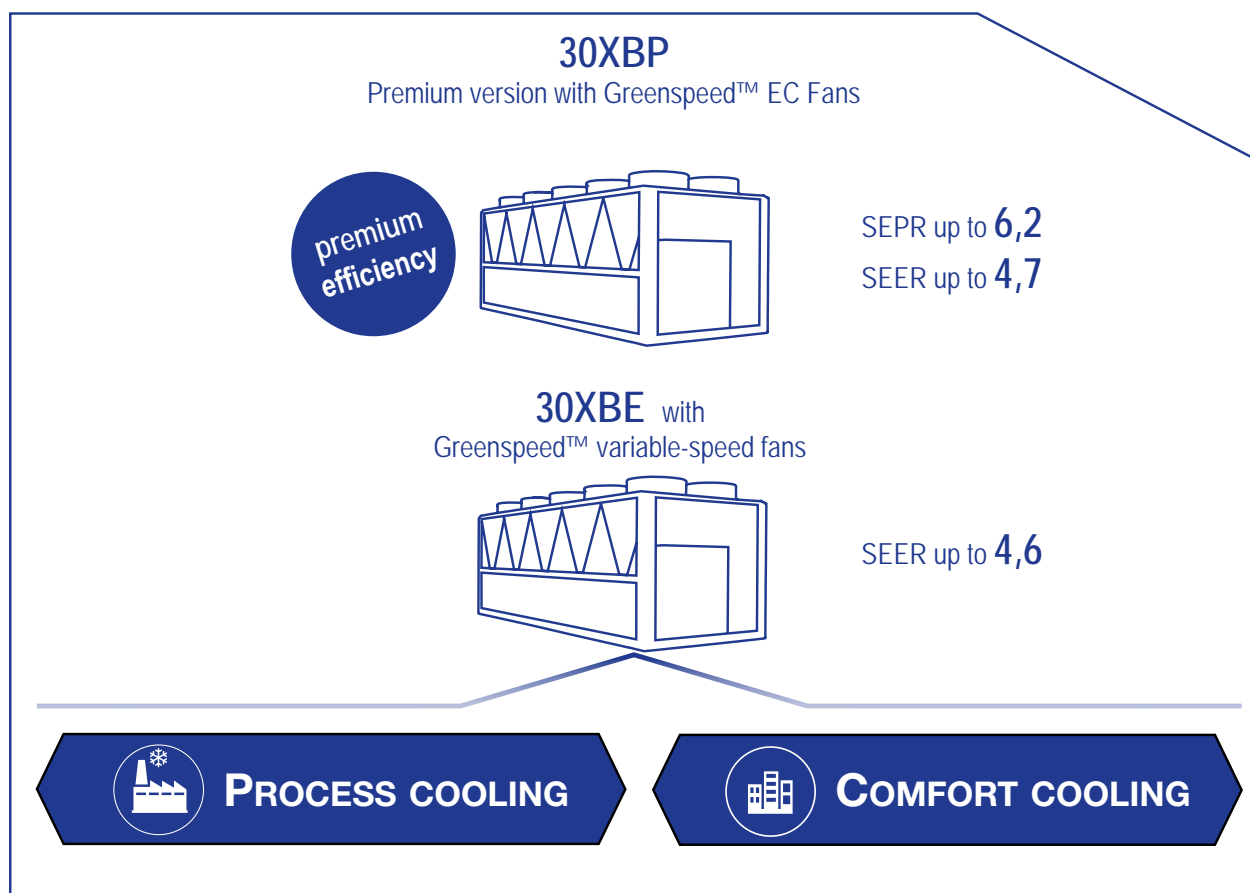
Carrier SmartVu™ control with color touch screen user interface that includes 10 languages and integrated web-server.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

AQUAFORCE®, THE RIGHT SOLUTION FOR EVERY APPLICATION

Carrier's AquaForce® 30XBE range is available in two levels of efficiency to perfectly match each customer application and meet the European Ecodesign directive requirements.



30XBE
with Greenspeed™ intelligence

The AquaForce® 30XBE with Greenspeed™ intelligence is equipped with variable-speed AC fan motors. It offers an economical solution to enhance seasonal energy efficiency levels for comfort applications. The 30XBE with Greenspeed™ intelligence meets the 2021 EU Ecodesign SEER 12/7°C requirements (Application thermal load variation from 0% to 100%).



30XBP

The AquaForce® 30XBP with Greenspeed™ intelligence is the premium version with EC fans and additional heat exchange surface to improve both the full load and part load energy efficiency.

The 30XBP provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology.

30XBE RANGES CUSTOMER BENEFITS

■ Absolute reliability

Carrier's AquaForce® 30XBE is the evolution of the 30XA range that counts thousands of installations worldwide. The reliability of the AquaForce® system is the result of intensive research, field experience combined with the highest quality standards. The AquaForce® range is equipped with the Carrier 06T twin screw compressors, well-known for its robustness, 99,7% of units without a compressor failure*, and the fully aluminium Novation® microchannel heat exchangers with Super Enviro-shield™ coatings to deliver guaranteed long-term optimized performance.

* Quality rate measured over a period of 15 years operation.



99,7%
of units without a
compressor failure



Up to
40% less
refrigerant charge



25%
smaller



from
-20°C
to **55°C**



93 dB(A)

■ Environmental responsibility

Carrier's AquaForce® 30XBE ranges are a boost for green cities and contributes to a sustainable future. Combining a reduced load refrigerant (-40% vs traditional cu/al coils) thanks to the use of Novation® microchannel heat exchangers and high energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions throughout its life cycle.

The AquaForce® PUREtec™ version, designed exclusively for ultra low GWP HFO R1234ze, are available.

■ Compact

Designed with one "V shape" Novation® microchannel heat exchanger less, Carrier's AquaForce® 30XBE is 25% smaller than the previous 30XA generation. As an example, the 30XBE -500 model is 1.2 meters shorter than the previous 30XA-502 model while offering same energy efficiency ratio.

■ Extensive scope of application

Carrier's AquaForce® 30XBE and 30XBP adapt effortlessly to a wide range of applications. Extended operating temperatures from -20°C to 55°C outdoor air temperatures and negative water temperatures make it ideal for various sectors of activity. From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaForce® 30XBE and 30XBP are the perfect solutions to combine competitive price associated with high energy efficiency whatever the climate and wherever the location.

■ Low operating sound levels

The AquaForce® 30XBE and 30XBP range offers 4 sound levels to meet the most demanding technical requirements in noise sensitive environments. 30XBE is up to 6 dB(A) quieter than the AquaForce® 30XAV generation.

The range is equipped in standard with the 6th generation of Carrier Flying Bird fans. The new fan blade inspired by nature is the result of advanced research in our laboratory. The unit can be equipped in option with AC or EC motor to guarantee smooth fan speed variation and thus eliminate start-stop noise during part load operation.

For further acoustic comfort, the units can be equipped with an acoustic compressor and oil separator enclosure reducing radiated noise (option 15), with low speed fans (option 15LS) and with sound attenuation material on the refrigerating circuit to guarantee ultra-low noise operation for highly noise sensitive environment (option 15LS+).

CUSTOMER BENEFITS

The range is available in 2 efficiency levels.

- **30XBE standard unit with variable speed AC fan motors**
The AquaForce™ 30XBE is equipped with fixed-speed screw compressors and variable-speed fans with AC motors. The 30XBE offers an economical solution to enhances seasonal energy efficiency levels for comfort applications.
(Average SEPR of 5,7, average SEER of 4,6, average EER of 3,1)
- **30XBP premium unit**
The 30XBP premium unit is equipped with EC fans to improve both the full load and part load energy efficiency. The 30XBP provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology.
(Average SEPR of 6,0, average SEER of 4,7, average EER of 3.2)

Very economical operation

Exceptionally high full load and part load energy efficiency:

- 30XBE version: SEER 12/7°C up to 4.4 in accordance with EN14825.
- 30XBP version: SEER 12/7°C up to 4.6 in accordance with EN14825.
- Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Novation™ aluminium condenser with high-efficiency micro-channels.
- Flooded shell-and-tube evaporator with new generation of cooler tubes to reduce exchanger pressure drops, especially in applications with high percentage of glycol.
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control).
- Economiser system with electronic expansion device for increased cooling capacity.

Low operating sound levels

- **Compressors**
 - Discharge dampers integrated in the oil separator (Carrier patent).
 - Silencer on the economiser return line.
 - Compressor and oil separator acoustic enclosure, reducing radiated noise (option).
- **Condenser section**
 - Condenser coils in wide angle V configuration, allowing quieter air flow across the coil
 - Low-noise 6th generation Flying Bird fans, made of a composite material (Carrier patent), are now even quieter and do not generate intrusive low-frequency noise
 - Inverter driven EC fans on 30XBP version eliminate start stop noise during part load operation.
 - Rigid fan mounting preventing start-up noise (Carrier patent).

CUSTOMER BENEFITS

Simple installation

- Integrated hydraulic module (option)
 - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation
 - Single or dual pump (as required) with run time balancing and automatic changeover to the back-up pump if a fault develops
 - Water filter to protect pump against circulating debris
 - High-capacity membrane expansion tank ensures pressurisation of the water circuit (option)
 - Thermal insulation and aluminium cladding (option)
 - Pressure sensor to check filter condition and for direct numerical display of the water flow rate with an estimate of the instantaneous cooling capacity at the control interface
- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer to supply the integrated control circuit (400/24 V).
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the controls, expansion devices, fans and compressors.

Environmental responsibility

- R-134a refrigerant
 - Range designed for use with R-134a refrigerant with the possibility to upgrade to ultra-low global warming potential R-1234ze by using the dedicated field retrofit kit.
 - 40% reduction in the refrigerant charge through the use of micro-channel heat exchangers
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Liquid line service valve for simplified maintenance (option).

Exceptional reliability

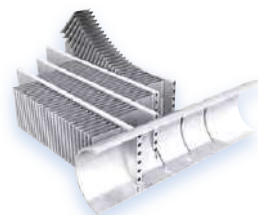
- Screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - All compressor components are easily accessible on site minimising down-time.
 - Dedicated electronic compressor protection module.
- Air condenser
 - 2nd generation of "V" shape Carrier Novation™ aluminium microchannel heat exchangers (MCHE) with high corrosion resistance. The all aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion in saline or corrosive environments.
- Evaporator
 - Thermal insulation with aluminium sheet finish (option) for improved resistance to mechanical and UV damage.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of sophisticated finite element stress analysis for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.
 - Salt mist corrosion resistance test in the laboratory for increased corrosion resistance.

30XB TECHNICAL INSIGHTS



6TH GENERATION OF FLYING BIRD™ FANS WITH AC OR EC MOTOR

- Exclusive Carrier design
- Fan blade design inspired by nature
- 30XBE standard version with variable-speed fans and AC motor
- EC fans available as standard on 30XBP premium version



2ND GENERATION OF "V" SHAPE NOVATION® MICRO CHANNEL HEAT EXCHANGERS

- Exclusive Carrier design
- High reliability with long-life aluminum alloy
- Significantly reduces refrigerant load (~40% vs cu/al coils)
- Enviro-shield™ coating for mildly corrosive environments
- Super Enviro-shield™ coating for highly corrosive environments (industry or marine applications)



FIXED-SPEED SINGLE OR DUAL PUMPS WITH AC MOTOR (OPTION)

- Low static pressure (~100 kPa) or high static pressure (~180 kPa) available
- Available on all sizes up to 400 kW



CARRIER FIXED-SPEED 06T TWIN SCREW COMPRESSOR WITH AC MOTOR

- Exclusive Carrier design
- Twin screw compressor designed for fixed speed operation
- Sliding valve control (30%-100%)
- Bearing life exceeding 100,000 hours
- 99,7% of units without compressor default



FLOODED SHELL AND TUBE EVAPORATOR

- Exclusive Carrier design
- Flooded technology for high energy efficiency
- New generation of copper tubes with specific profile to reduce pressure drops when operating with glycol

ADVANCED SMARTVU™ WITH 5 INCH COLOR TOUCH SCREEN INTERFACE

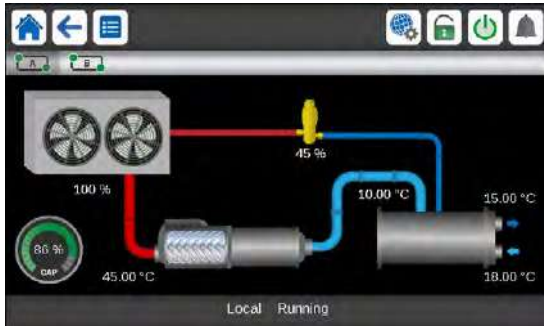
- Exclusive Carrier design
- 10 languages available: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
- Touch screen user interface
- BACnet, J-Bus or LON communication interfaces
- Optional wireless connectivity
- Web server capabilities-easy remote access via internet
- Trending capabilities



TECHNICAL INSIGHTS

SmartVu™ Control

SmartVu™, user interface



- New innovative smart control features:
 - An intuitive and user-friendly, coloured, 5" interface (7" optional)
 - Direct access to the unit's technical drawings and the main service documents
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Easy access to the control panel with inclined touch screen mounting to ensure legibility under any lighting conditions
 - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and «smart» intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), and in conjunction with one of Carrier's network products (Chiller System Manager or Plant system Manager) it forms part of a fully integrated and balanced HVAC system (optional).
- Aquaforce also communicates with other building management systems via optional communication gateways.

- The following commands/visualisations are possible from remote connection:
 - Start/stop of the machine
 - Dual set-point management: through a dedicated contact is possible to activate a second set-point (for example, during unoccupied mode).
 - Demand limit setting: to limit the maximum chiller capacity to a predefined value
 - Water pump control: these outputs control the contactors of one/two evaporator water pumps
 - Automatic changeover of pumps in the event of a fault (only with options 116S/116U).
 - Operation visualisation: indication if the unit is operating or in stand-by (no cooling load), (no cooling load) - alarm visualisation.

Remote Management (EMM option)

- The Energy Management Module (EMM) offers extended remote control possibilities:
 - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostat are installed)
 - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
 - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
 - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values
 - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm
 - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode)
 - Time schedule override: closing this contact cancels the programmed time schedule.
 - Out of service: This signal indicates that the chiller is completely out of service
 - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity
 - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault
 - Compressors running status: Set of outputs (one for each compressor) indicating which compressors are running.

TECHNICAL INSIGHTS

06T Screw Compressor



99.7%* of units without a compressor failure

* Quality rate measured over a period of 15 years operation

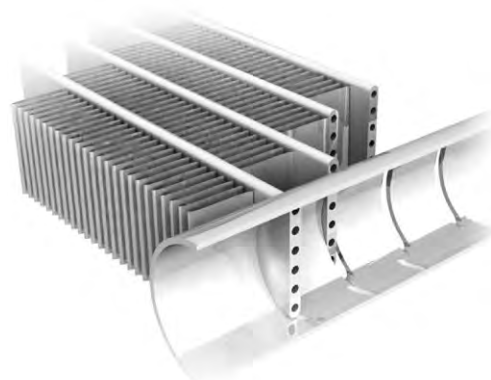
The Carrier 06T screw compressor benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high outside temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The compressor is equipped with a separate oil separator that minimises the amount of oil in circulation in the refrigerant circuit and, with its integrated silencer, considerably reduces discharge gas pulsations for much quieter operation.

Novation® Heat Exchangers with Micro-Channel coil Technology



Already utilised in the automobile and aeronautical industries for many years, the Novation™ MCHE micro-channel heat exchanger used in the Aquaforce is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers. Unlike traditional heat exchangers the Novation™ MCHE heat exchanger can be used in moderate marine and urban environments (Carrier recommendation).

From an energy efficiency point-of-view the Novation™ MCHE heat exchanger is approximately 10% more efficient than a traditional coil and allows a 40% reduction in the amount of refrigerant used in the chiller. The low thickness of the Novation™ MCHE reduces air pressure losses by 50% and makes it susceptible to very little fouling (e.g. by sand). Cleaning of the Novation™ MCHE heat exchanger is very fast using a high-pressure washer.

Carrier Novation® MCHE with Super Enviro-shield® coating, the ideal customer choice

To further enhance long-term performance, and to protect coils from early deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.

The Novation™ MCHE with Enviro-Shield protection (option 262) are recommended for installations in moderately corrosive environments. The Enviro-Shield protection utilises corrosion inhibitors which actively arrest oxidation in case of mechanical damage.

The Novation™ MCHE with the exclusive Super Enviro-Shield protection (option 263) are recommended for installations in corrosive environments. The Super Enviro-Shield protection consist in an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.

TECHNICAL INSIGHTS

Novation® Heat Exchangers with Micro-Channel coil Technology

After a total of more than 7,000 hours of testing following various test standards in UTC laboratories, the Carrier Novation® MCHE with Super Enviro-shield® coating appears to be the ideal customer choice to minimize the harmful effects of corrosive atmospheres and ensure long equipment life.

- Best corrosion resistance per ASTM B117/D610 test
- Best heat transfer performance per Carrier Marine 1 test
- Proven reliability per ASTM B117 test

Coil Types (ranked by performance)	Visual Corrosion Evaluation	Heat Transfer Performance Degradation	Time to Failure	Test Campaign Conclusions
Super Enviro-shield® Novation™ MCHE	Very good	Very good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Good	No coil leak	Very good
Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Very good
Al/Al coil	Very good	Good	No coil leak	Very good
Novation™ MCHE	Good	Good	No coil leak	Good
Cu/Cu coil	Good	Good	Leak	Acceptable
Blygold® Cu/Al coil	Good	Good	No coil leak	Acceptable
Precoat Cu/Al coil	Bad	Bad	No coil leak	Bad
Cu/Al coil	Bad	Bad	No coil leak	Bad

New Generation of Flying Bird VI fans with EC motor



The 30XBE and 30XBP utilize Carrier's 6th generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and wide operating range. The fan includes Carrier patented rotating shroud technology and back-swept blades with a unique wave-serration trailing edge inspired from nature.

It was designed and optimized for the 30XB ranges air management system configuration and heat exchanger technology and is offered with induction and EC motor options. The fan meets the latest European eco-design requirements for fan efficiency. The fan uses Carrier's robust and proven injection molded composite-thermoplastic construction.

OPTIONS

Options	No.	Description	Advantages	Use for 30XBE / 30XBP
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminum (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30XBE/30XBP 250-1700
Medium-temperature brine solution	5	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -12°C when ethylene glycol is used (-8°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	30XBE/30XBP 250-1700
Low-temperature brine solution	6	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -15°C when ethylene glycol is used (-10°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	30XBE/30XBP 250-1700
Light-brine solution, down to -3°C	8	Implementation of new control algorithms to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	30XBE/30XBP 250-1700
Unit equipped for air discharge ducting	10	Fans equipped with discharge connection flanges - maximum available pressure 60 Pa	Facilitates connections to the discharge ducts	30XBE/30XBP 250-1700
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction	30XBE/30XBP 250-1700
Very low noise level	15LS	Aesthetic and sound absorbing compressor enclosure associated with low-speed fans	Noise level reduction in sensitive environments	30XBE/30XBP 250-1700
Ultra low noise level	15LS+	Acoustic compressor enclosure, low-speed fans and enhanced sound insulation of main noise sources	Noise level reduction in sensitive environments	30XBE/30XBP 250-1700
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the electrical box from dust, water and sand. In general this option is recommended for installations in polluted environments	30XBE/30XBP 250-1700
Tropicalisation of the electrical box	22	Electrical box equipped with an electrical heater and a fan. Electrical connections on the compressors painted with a special varnish and covered with an anti-condensation foam.	Allows safe operation in typical "tropical" climate. This option is recommended for all applications where humidity inside the electrical box can reach 80% at 40°C and unit can remain in stand-by for a long time under these conditions.	30XBE/30XBP 250-1700
Grilles and enclosure panels	23	Metal grilles on the 4 unit sides, plus side enclosure panels at each end of each coil	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30XBE/30XBP 250-1700
Enclosure panels	23A	Side enclosure panels at each end of each coil	Improves aesthetics, coil and piping protection against impacts.	30XBE/30XBP 250-1700
Low inrush current	25C	Specific compressor loading and unloading sequence to limit the unit start-up current	Reduced start-up current	30XBE/30XBP 250-1700
Water exchanger frost protection	41A	Electric resistance heater on the water exchanger and discharge valve	Water exchanger frost protection down to -20°C outside temperature	30XBE/30XBP 250-1700
Evaporator & hydraulic module frost protection	41B	Electric resistance heater on water exchanger, discharge valve and hydraulic module	Water exchanger and hydraulic module frost protection down to -20°C outside temperature	30XBE/30XBP 250-500
Total heat recovery	50	Unit equipped with additional heat exchanger in parallel with the condenser coils.	Production of free hot-water simultaneously with chilled water production	30XBE/30XBP 250-1000
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	30XBE/30XBP 250-400
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	30XBE/30XBP 1100-1500
Evap. and pumps with aluminum jacket	88A	Evaporator and pumps covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30XBE/30XBP 250-400
Service valve set	92	Liquid line valve (evaporator inlet), compressor suction and discharge line valves and economiser line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	30XBE/30XBP 250-1700

OPTIONS

Options	No.	Description	Advantages	Use for 30XBE / 30XBP
Compressor discharge valves	93A	Shut-off valve on the compressor discharge piping	Simplified maintenance	30XBE/30XBP 250-1700
Evaporator with one pass more	100A	Evaporator with one pass more on the water side	Optimise chiller operation when the chilled water circuit is designed with low waterflows (high evaporator delta T)	30XBE/30XBP 250-1700
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high-rise buildings)	30XBE/30XBP 250-1700
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	30XBE/30XBP 250-1700
HP single-pump hydraulic module	116R	Hydraulic module equipped with water filter, one high pressure pump, drain valve and pressure transducers (expansion tank & aluminum jacket not included).	Easy and fast installation (plug & play). Increased system reliability	30XBE/30XBP 250-400
HP dual-pump hydraulic module	116S	Hydraulic module equipped with water filter, two high pressure pumps, drain valve and pressure transducers (expansion tank & aluminum jacket not included).	Easy and fast installation (plug & play). Increased system reliability	30XBE/30XBP 250-400
LP single-pump hydraulic module	116T	Hydraulic module equipped with water filter, one low pressure pump, drain valve and pressure transducers (expansion tank & aluminum jacket not included).	Easy and fast installation (plug & play). Increased system reliability	30XBE/30XBP 250-400
LP dual-pump hydraulic module	116U	Hydraulic module equipped with water filter, two low pressure pumps, drain valve and pressure transducers (expansion tank & aluminum jacket not included).	Easy and fast installation (plug & play). Increased system reliability	30XBE/30XBP 250-400
Dx Free Cooling system on two circuits	118A	Patented Carrier free-cooling system with cooling micro-pump on both refrigerant circuits. Operation without glycol, no extra free-cooling coil. See Dx Free-cooling option chapter	Energy savings for applications with cooling demand throughout the entire year	30XBE/30XBP 250-1000
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30XBE/30XBP 250-1700
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30XBE/30XBP 250-1700
Modbus over IP and RS485 communication gateway	149B	Bi-directional high-speed communication using the Modbus over Ethernet network (IP) protocol	Easy, quick connection via Ethernet line to a building technical management system. Allows access to several unit parameters.	30XBE/30XBP 250-1700
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30XBE/30XBP 250-1700
7" user interface	158A	Control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	30XBE/30XBP 250-1700
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	30XBE/30XBP 250-1700
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the evaporator and the oil separator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	30XBE/30XBP 250-1700
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	30XBE/30XBP 250-1700
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30XBE/30XBP 250-1700

OPTIONS

Options	No.	Description	Advantages	Use for 30XBE / 30XBP
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	30XBE/30XBP 250-1700
Insulation of the evap. in/out ref.lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/leaving refrigerant lines	30XBE/30XBP 250-1700
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30XBE/30XBP 250-1700
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30XBE/30XBP 250-1700
Welded evaporator connection kit	266	Victaulic pipe adapters for welded joints	Easy installation	30XBE/30XBP 250-1700
Compressor enclosure	279a	Compressor enclosure	Improved aesthetic, compressor protection against external elements (dust, sand, water...)	30XBE/30XBP 250-1700
Evaporator with aluminum jacket	281	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30XBE/30XBP 250-1700
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30XBE/30XBP 250-1700
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30XBE/30XBP 250-400
US screw compressor	297	Screw compressor made in US		30XBE/XBP 1100-1700
Variable Water Flow control	299	Hydraulic control function package that permits control of the water flow rate based on different possible logics (at customer choice): constant ΔT , constant outlet pressure and "fixed-speed" control	When variable-speed pumps on the primary circuit, the VWF control modulates flow rate through the evaporator, minimising pump consumption while ensuring safe/optimised chiller operation	30XBE/XBP 250-400
Free-cooling dry-cooler control	313	Remote control of 09PE or 09VE dry-cooler based on a 0-10V signal.	Easy system management, extended control capabilities of a remote dry-cooler used in free-cooling mode	30XBE/XBP 250-1700
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE.S 5010-5 :2019.	30XBE/30XBP 250-1700
Compliance with Qatar regulation	319	Specific nameplate on the unit with power supply 415 V+/-6%	Compliance with KAHRAMAA regulation in Qatar.	30XBE/30XBP 250-1700
Compliance with Morocco regulation	327	Specific documents according Morocco regulation	Conformance with Morocco regulations	30XBE/30XBP 250-1700

PHYSICAL DATA, SIZES 30XBE-250 TO 800

30XBE				250	300	350	400	450	500	600	700	750	800
Cooling													
Standard unit	CA1	Nominal capacity	kW	277	300	322	392	444	494	623	676	730	782
Full load performances*		EER	kW/kW	3,15	3,12	3,08	3,18	3,11	3,08	3,22	3,28	3,10	3,10
Unit with option 15LS (+)	CA1	Nominal capacity	kW	271	293	313	384	432	478	607	659	709	757
Full load performances*		EER	kW/kW	3,13	3,08	3,00	3,16	3,03	2,93	3,13	3,20	2,97	2,93
Seasonal energy efficiency **		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,47	4,46	4,40	4,33	4,56	4,55	4,55	4,62	4,56	4,55
		ηs cool _{12/7°C}	%	176	175	173	170	179	179	179	182	179	179
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,70	5,69	5,65	5,78	5,72	5,74	5,68	5,79	5,63	NA
Unit with Option 5		SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	2,72	3,02	3,18	2,81	3,51	3,56	3,65	3,67	3,44	3,35
Seasonal energy efficiency **													
Unit with Option 299		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,47	4,47	4,43	4,49	NA	NA	NA	NA	NA	NA
Seasonal energy efficiency **		ηs cool _{12/7°C}	%	176	176	174	177	NA	NA	NA	NA	NA	NA
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,72	5,71	5,68	5,83	NA	NA	NA	NA	NA	NA
Unit with Option 6		SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	3,29	3,46	3,52	3,26	3,42	3,5	3,5	3,62	3,38	3,34
Seasonal energy efficiency **													
Unit with 15LS (+)		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,49	4,48	4,41	4,33	4,56	4,57	4,56	4,62	4,56	4,58
Seasonal energy efficiency **		ηs cool _{12/7°C}	%	176	176	173	170	179	180	179	182	179	180
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,82	5,88	5,79	5,57	5,70	5,79	5,92	5,93	5,79	5,72
Unit with Option 5 & 15LS (+)		SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	2,75	3,10	3,29	2,83	3,54	3,67	3,79	3,82	3,55	3,57
Seasonal energy efficiency **													
Unit with Option 299 & 15LS (+)		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,47	4,47	4,42	4,47	NA	NA	NA	NA	NA	NA
Seasonal energy efficiency **		ηs cool _{12/7°C}	%	176	176	174	176	NA	NA	NA	NA	NA	NA
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,84	5,91	5,82	5,61	NA	NA	NA	NA	NA	NA
Unit with Option 6 & 15LS(+)		SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	3,35	3,58	3,71	3,38	3,64	3,61	3,63	3,78	3,50	3,55
Seasonal energy efficiency **													
Sound levels													
Standard unit													
Sound power ⁽¹⁾			dB(A)	99	99	99	99	101	99	101	99	103	103
Sound pressure at 10 m ⁽²⁾			dB(A)	67	67	67	67	69	67	68	66	70	70
Unit + option 15 ⁽³⁾													
Sound power ⁽¹⁾			dB(A)	93	93	94	95	95	95	97	96	97	98
Sound pressure at 10 m ⁽²⁾			dB(A)	61	61	62	63	63	63	64	63	64	65
Unit + option 15LS ⁽³⁾													
Sound power ⁽¹⁾			dB(A)	87	87	87	90	91	91	93	92	94	94
Sound pressure at 10 m ⁽²⁾			dB(A)	55	55	55	58	59	59	60	59	61	61
Unit + option 15LS+ ⁽³⁾													
Sound power ⁽¹⁾			dB(A)	-	-	-	-	89	89	91	90	91	92
Sound pressure at 10 m ⁽²⁾			dB(A)	-	-	-	-	57	57	58	57	58	59
Dimensions													
Standard unit													
Length			mm	3604	3604	3604	4798	4798	4798	7186	7186	7186	7186
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322

- * In accordance with standard EN14511-3:2018.
 ** In accordance with standard EN14825:2016, average climate
 *** With EG 30%
 CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
 η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
 SEPR_{-2/-8°C} **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
 NA Non Authorized for the specific application for CEE market
 (1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
 (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power L_w(A).
 (3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = DX freecooling option, 50= heat recovery.



Eurovent certified values

PHYSICAL DATA, SIZES 30XBE-250 TO 800

30XBE		250	300	350	400	450	500	600	700	750	800
Operating weight⁽⁴⁾											
Standard unit	l	3040	3071	3091	3674	3737	3798	4797	4943	5201	5514
Unit + option 15 ⁽³⁾	l	3308	3339	3359	3973	4036	4097	5128	5274	5532	5845
Unit + option 118 a ⁽³⁾		3124	3155	3175	3778	3841	4182	4929	5075	5348	5661
Unit + option 50 ⁽³⁾		3385	3417	3437	4106	4248	4590	5550	5696	6056	6368
Compressors		06T semi-hermetic screw compressor, 50 r/s									
Circuit A		1	1	1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1	1	1
No. of control stages											
Refrigerant⁽⁴⁾		R134a									
Circuit A	kg	39	37	37	52	53	55	60	61	69	69
	teqCO ₂	55,8	52,9	52,9	74,4	75,8	77,9	85,8	87,2	98,0	98,7
Circuit B	kg	40	38	39	40	40	37	61	64	61	67
	teqCO ₂	57,2	54,3	55,8	57,2	57,2	52,9	87,2	91,5	86,5	95,8
Oil											
Circuit A	l	20,8	20,8	20,8	23,5	23,5	23,5	23,5	23,5	27,6	27,6
Circuit B	l	20,8	20,8	20,8	20,8	20,8	20,8	23,5	23,5	23,5	23,5
Capacity control		SmartVu™, , Electronic Expansion Valve (EXV)									
Minimum capacity	%	15	15	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit											
Quantity		6	6	6	8	8	8	11	12	12	12
Maximum total air flow	l/s	28920	28920	28920	38560	38560	38560	53020	57840	57840	57840
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS											
Maximum total air flow	l/s	23580	23580	23580	31440	31440	31440	43230	47160	47160	47160
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type									
Water volume	l	58	61	61	66	70	77	79	94	98	119
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)									
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)									
Expansion vessel volume	l	50	50	50	50						
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400						
Water connections without or with hydraulic module		Victaulic® type									
Standard & option 8, without option 116											
Nominal diameter	in	5	5	5	5	5	5	5	6	6	6
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	141,3	168,3	168,3	168,3
Options 5, 6 et 100A											
Nominal diameter	in	4	4	4	4	4	4	5	5	5	5
Actual outside diameter	mm	114,3	114,3	114,3	114,3	114,3	114,3	141,3	141,3	141,3	141,3
Options 116											
Nominal diameter	in	4	4	4	4	-	-	-	-	-	-
Actual outside diameter	mm	114,3	114,3	114,3	114,3	-	-	-	-	-	-
Casing paint		Colour code RAL 7035									

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 30XBE-850 TO 1700

30XBE				850	900	1000	1100	1200	1300	1400	1500	1700	
Cooling													
Standard unit	CA1	Nominal capacity	kW	824,7	898,8	982,6	1143,0	1262,4	1329,6	1440,7	1511,5	1683,9	
		Full load performances*	kW/kW	3,08	3,12	3,17	3,22	3,19	3,16	3,05	3,07	3,21	
Unit with option 15LS (+)	CA1	Nominal capacity	kW	795	878	969	1113	1226	1290	1392	1464	1639	
		Full load performances*	kW/kW	2,89	2,99	3,03	3,11	3,05	2,98	2,82	2,89	3,10	
Standard unit	Seasonal energy efficiency **	SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,56	4,56	4,60	4,58	4,61	4,55	4,55	4,55	4,56	
		η _{s cool} ^{12/7°C}	%	179	179	181	180	181	179	179	179	179	
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	5,55	5,54	5,83	5,76	5,71	5,68	5,56	5,44	5,83	
Unit with Option 5	Seasonal energy efficiency **	SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,53	3,44	3,55	3,52	3,47	3,6	3,63	3,18	3,73	
		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Unit with Option 299	Seasonal energy efficiency **	η _{s cool} ^{12/7°C}	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,47	3,39	3,47	3,29	2,63	3,45	3,53	3,20	3,48	
Unit with option 6	Seasonal energy efficiency **	SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,56	4,57	4,56	4,60	4,62	4,59	4,56	4,55	4,58	
		η _{s cool} ^{12/7°C}	%	179	180	179	181	182	181	179	179	180	
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	5,80	5,76	5,88	5,90	5,81	5,71	5,68	5,52	5,81	
Unit with option 5 & 15LS (+)	Seasonal energy efficiency **	SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,66	3,55	3,78	3,61	3,31	3,22	3,27	3,28	3,80	
		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Unit with Option 299 & 15LS (+)	Seasonal energy efficiency **	η _{s cool} ^{12/7°C}	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Unit with option 6 & 15LS (+)	Seasonal energy efficiency **	SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,59	3,47	3,7	3,58	3,44	3,67	3,67	3,45	3,77	
		Sound levels											
Standard unit													
Sound power ⁽¹⁾				dB(A)	101	104	102	103	102	104	104	104	104
Sound pressure at 10 m ⁽²⁾				dB(A)	68	71	69	70	69	71	71	71	70
Unit + option 15 ⁽³⁾													
Sound power ⁽¹⁾				dB(A)	97	99	98	98	98	100	99	99	100
Sound pressure at 10 m ⁽²⁾				dB(A)	64	66	65	65	65	67	66	66	66
Unit + option 15LS ⁽³⁾													
Sound power ⁽¹⁾				dB(A)	94	95	94	94	94	99	95	96	96
Sound pressure at 10 m ⁽²⁾				dB(A)	61	62	61	61	61	66	62	63	62
Unit + option 15LS+ ⁽³⁾													
Sound power ⁽¹⁾				dB(A)	91	93	92	93	93	97	94	95	93
Sound pressure at 10 m ⁽²⁾				dB(A)	58	60	59	60	60	64	61	62	59

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

*** With EG 30%

+ SEER calculated with the option 119

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W $\eta_{\text{S cool}}$ $_{12/7^{\circ}\text{C}}$ & SEER $_{12/7^{\circ}\text{C}}$ **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**SEPR $_{-2/-8^{\circ}\text{C}}$ **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**

NA Non Authorized for the specific application for CEE market

- Not applicable

(1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = DX freecooling option, 50= heat recovery.



Eurovent certified values

PHYSICAL DATA, SIZES 30XBE-850 TO 1700

30XBE		850	900	1000	1100	1200	1300	1400	1500	1700
Dimensions										
Standard unit										
Length	mm	7186	8380	9574	11962	11962	11962	11962	13157	8380/ 8380
Width	mm	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height	mm	2322	2322	2322	2322	2322	2322	2322	2322	2322
Operating weight⁽⁴⁾										
Standard unit	kg	5563	6169	6665	7928	8069	8660	8735	9072	5935/ 5935
Unit + option 15 ⁽³⁾	kg	5894	6499	6996	8302	8443	9034	9109	9446	6266/ 6266
Unit + option 118 ⁽³⁾	kg	6050	6388	6862	-	-	-	-	-	-
Unit + option 50 ⁽³⁾	kg	6726	7130	7619	-	-	-	-	-	-
Compressors		06T semi-hermetic screw compressor, 50 r/s								
Circuit A		1	1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1	1
Circuit C										1
Circuit D										1
No. of control stages										
Refrigerant⁽⁴⁾		R134a								
Circuit A	kg	69	72	79	82	84	115	121	124	75
	teqCO ₂	98,7	103,0	113,0	117,3	120,1	164,5	173,0	177,3	107,3
Circuit B	kg	67	74	83	118	130	121	127	130	67
	teqCO ₂	95,8	105,8	118,7	168,7	185,9	173,0	181,6	185,9	95,8
Circuit C	kg									75
	teqCO ₂									107,3
Circuit D	kg									67
	teqCO ₂									95,8
Oil										
Circuit A	l	27,6	27,6	27,6	27,6	27,6	36,0	36,0	36,0	27,6
Circuit B	l	23,5	27,6	27,6	36,0	36,0	36,0	36,0	36,0	23,5
Circuit C	l									27,6
Circuit D	l									23,5
Capacity control		SmartVu™, Electronic Expansion Valve (EXV)								
Minimum capacity	%	15	15	15	15	15	15	15	15	8
Air heat exchanger		Aluminum micro-channel coils (MCHE)								
Fans		FLYING-BIRD 6, axial fan with rotating impeller								
Standard unit										
Quantity		12	14	16	20	20	20	20	22	28
Maximum total air flow	l/s	57840	67480	77120	96400	96400	96400	96400	106040	134960
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS										
Maximum total air flow	l/s	47160	55020	62880	78600	78600	78600	78600	86460	110040
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type								
Water volume	l	119	130	140	164	174	180	189	189	240
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Water connections without or with hydraulic module		Victaulic® type								
Standard & option 8										
Nominal diameter	in	6	6	8	6	6	6	6	6	6
Actual outside diameter	mm	168,3	168,3	219,1	168,3	168,3	168,3	168,3	168,3	168,3
Options 5, 6 et 100A										
Nominal diameter	in	5	5	6	6	6	6	6	6	6/6
Actual outside diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	168,3	168,3	168,3/ 168,3
Casing paint		Colour code RAL 7035								

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 30XBP-250 TO 800

30XBP				250	300	350	400	450	500	600	700	750	800	
Cooling														
Standard unit	CA1	Nominal capacity	kW	277	301	323	392	445	500	623	677	730	782	
Full load performances*		EER	kW/kW	3,21	3,18	3,14	3,23	3,16	3,23	3,27	3,34	3,14	3,13	
Unit with Option 15LS	CA1	Nominal capacity	kW	271	293	313	384	432	486	607	659	709	757	
Full load performances*		EER	kW/kW	3,17	3,11	3,03	3,20	3,05	3,13	3,16	3,23	2,99	2,95	
Standard unit	Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,66	4,64	4,55	4,50	4,62	4,67	4,66	4,77	4,61	4,58	
Seasonal energy efficiency **		ηs cool _{12/7°C}	%	183	183	179	177	182	184	183	188	181	180	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,12	6,16	6,11	6,06	6,01	6,13		6,18	5,81	5,69	
Unit with option 5	Seasonal energy efficiency **	SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	2,86	3,26	3,39	2,97	3,67	3,80	3,84	4,02	3,61	3,63	
Seasonal energy efficiency **		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,59	4,57	4,52	4,61	NA	NA	NA	NA	NA	NA	
		ηs cool _{12/7°C}	%	180	180	178	181	NA	NA	NA	NA	NA	NA	
Unit with Option 299	Seasonal energy efficiency **	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,13	6,18	6,15	6,10	NA	NA	NA	NA	NA	NA	
Seasonal energy efficiency **		SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	3,51	3,72	3,78	3,64	3,62	3,72	3,68	3,96	3,55	3,61	
		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,67	4,67	4,56	4,49	4,59	4,64	4,65	4,78	4,60	4,57	
Unit with Option 15LS(+)	Seasonal energy efficiency **	ηs cool _{12/7°C}	%	184	184	179	176	181	183	183	188	181	180	
Seasonal energy efficiency **		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,09	6,18	6,08	5,88	5,90	6,11	6,07	6,23	5,85	5,85	
		SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	2,85	3,25	3,42	2,94	3,64	3,7	3,93	3,97	3,64	3,68	
Unit with option 5 & 15LS(+)	Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,59	4,59	4,51	4,58	NA	NA	NA	NA	NA	NA	
Seasonal energy efficiency **		ηs cool _{12/7°C}	%	181	181	177	180	NA	NA	NA	NA	NA	NA	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,11	6,20	6,11	5,91	NA	NA	NA	NA	NA	NA	
Unit with option 6 & 15LS(+)	Seasonal energy efficiency **	SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	3,47	3,74	3,89	3,52	3,75	3,79	3,77	3,93	3,59	3,67	
Seasonal energy efficiency **														
Sound levels														
Standard unit														
Sound power ⁽¹⁾				dB(A)	99	99	99	99	101	99	101	99	103	103
Sound pressure at 10 m ⁽²⁾				dB(A)	67	67	67	67	69	67	68	67	70	70
Unit + option 15 ⁽³⁾														
Sound power ⁽¹⁾				dB(A)	93	93	94	95	95	95	97	96	97	98
Sound pressure at 10 m ⁽²⁾				dB(A)	61	61	62	63	63	63	65	63	64	65
Unit + option 15LS ⁽³⁾														
Sound power ⁽¹⁾				dB(A)	87	87	87	90	91	91	93	92	94	94
Sound pressure at 10 m ⁽²⁾				dB(A)	55	55	55	58	59	59	60	59	61	61
Unit + option 15LS+ ⁽³⁾														
Sound power ⁽¹⁾				dB(A)	-	-	-	-	89	89	91	90	91	92
Sound pressure at 10 m ⁽²⁾				dB(A)	-	-	-	-	56	56	57	56	58	58
Dimensions														
Standard unit														
Length				mm	3604	3604	3604	4798	4798	5992	7186	7186	7186	7186
Width				mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height				mm	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
Operating weight ⁽⁴⁾														
Standard unit				kg	2999	3030	3049	3629	3692	4023	4726	4860	5127	5439
Unit + option 15 ⁽³⁾				kg	3267	3298	3317	3928	3991	4322	5057	5191	5458	5770

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

*** With EG 30%

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W**η_s cool_{12/7°C} & SEER _{12/7°C}** Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**SEPR _{-2/-8°C}** Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application

NA Non Authorized for the specific application for CEE market

(1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = DX freecooling option, 50= heat recovery.

(4) Values are guidelines only. Refer to the unit name plate.



Eurovent certified values

PHYSICAL DATA, SIZES 30XBP-250 TO 800

30XBP		250	300	350	400	450	500	600	700	750	800
Compressors		06T semi-hermetic screw compressor, 50 r/s									
Circuit A		1	1	1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1	1	1
No. of control stages											
Refrigerant⁽⁴⁾		R134a									
Circuit A	kg	39	37	37	52	53	59	60	61	69	69
	teqCO ₂	55,8	52,9	52,9	74,4	75,8	83,7	85,8	87,2	98,0	98,7
Circuit B	kg	40	38	39	40	40	36	61	64	61	67
	teqCO ₂	57,2	54,3	55,8	57,2	57,2	51,5	87,2	91,5	86,5	95,8
Oil											
Circuit A	l	20,8	20,8	20,8	23,5	23,5	23,5	23,5	23,5	27,6	27,6
Circuit B	l	20,8	20,8	20,8	20,8	20,8	20,8	23,5	23,5	23,5	23,5
Capacity control		SmartVu™, , Electronic Expansion Valve (EXV)									
Minimum capacity	%	15	15	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit											
Quantity		6	6	6	8	8	9	11	12	12	12
Maximum total air flow	l/s	28920	28920	28920	38560	38560	43380	53020	57840	57840	57840
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS											
Maximum total air flow	l/s	23580	23580	23580	31440	31440	35370	43230	47160	47160	47160
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type									
Water volume	l	58	61	61	66	70	77	79	94	98	119
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)									
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)									
Expansion vessel volume	l	50	50	50	50						
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400						
Water connections without or with hydraulic module		Victaulic® type									
Standard & option 8, without option 116											
Nominal diameter	in	5	5	5	5	5	5	5	6	6	6
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	141,3	168,3	168,3	168,3
Options 5, 6 et 100A											
Nominal diameter	in	4	4	4	4	4	4	5	5	5	5
Actual outside diameter	mm	114,3	114,3	114,3	114,3	114,3	114,3	141,3	141,3	141,3	141,3
Options 116											
Nominal diameter	in	4	4	4	4	-	-	-	-	-	-
Actual outside diameter	mm	114,3	114,3	114,3	114,3	-	-	-	-	-	-
Casing paint		Colour code RAL 7035									

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 30XBP-850 TO 1500

30XBP				850	900	1000	1100	1200	1300	1400	1500
Cooling											
Standard unit	CA1	Nominal capacity	kW	837	899	982	1143	1262	1330	1441	1512
Full load performances*		EER	kW/kW	3,27	3,15	3,21	3,28	3,24	3,20	3,08	3,11
Unit with Option 15LS	CA1	Nominal capacity	kW	813	872	969	1113	1227	1290	1391	1466
Full load performances *		EER	kW/kW	3,13	2,98	3,06	3,16	3,06	3,01	2,84	2,91
Standard unit	Seasonal energy efficiency **	SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,68	4,61	4,69	4,70	4,72	4,62	4,63	4,62
Seasonal energy efficiency **		ηs cool ^{12/7°C}	%	184	181	185	185	186	182	182	182
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	5,96	5,84	5,83	5,90	5,87	5,99	5,65	6,16
Unit with option 5	Seasonal energy efficiency **	SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,83	3,67	3,66	3,77	3,66	3,70	3,72	3,24
Seasonal energy efficiency **		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA
		ηs cool ^{12/7°C}	%	NA	NA	NA	NA	NA	NA	NA	NA
Unit with Option 299	Seasonal energy efficiency **	SEPR ^{12/7°C} Process high temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA
Seasonal energy efficiency **		SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,75	3,64	3,58	3,45	3,73	3,59	3,69	3,42
		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,66	4,58	4,67	4,68	4,70	4,57	4,56	4,56
Unit with Option 15LS(+)	Seasonal energy efficiency **	ηs cool ^{12/7°C}	%	183	180	184	184	185	180	179	179
Seasonal energy efficiency **		SEPR ^{12/7°C} Process high temp.	kWh/kWh	5,97	5,87	5,91	6,17	6,12	5,98	5,77	5,98
		SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,75	3,65	3,72	3,55	3,49	3,41	3,45	3,46
Unit with option 5 & 15LS(+)	Seasonal energy efficiency **	SEER ^{12/7°C} Comfort low temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA
Seasonal energy efficiency **		ηs cool ^{12/7°C}	%	NA	NA	NA	NA	NA	NA	NA	NA
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA
Unit with option 6 & 15LS(+)	Seasonal energy efficiency **	SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,69	3,64	3,65	3,69	3,70	3,93	3,87	3,50
Seasonal energy efficiency **											
Sound levels											
Standard unit											
Sound power ⁽¹⁾			dB(A)	101	104	102	103	102	104	104	104
Sound pressure at 10 m ⁽²⁾			dB(A)	70	71	69	70	69	71	71	71
Unit + option 15 ⁽³⁾											
Sound power ⁽¹⁾			dB(A)	97	99	98	98	98	100	99	99
Sound pressure at 10 m ⁽²⁾			dB(A)	65	66	65	65	65	67	65	65
Unit + option 15LS ⁽³⁾											
Sound power ⁽¹⁾			dB(A)	94	95	94	94	94	99	95	96
Sound pressure at 10 m ⁽²⁾			dB(A)	61	62	61	61	61	66	62	63
Unit + option 15LS+ ⁽³⁾											
Sound power ⁽¹⁾			dB(A)	91	93	92	93	93	97	94	95
Sound pressure at 10 m ⁽²⁾			dB(A)	58	60	59	60	60	66	61	62
Dimensions											
Standard unit											
Length			mm	8380	8380	9574	11962	11962	11962	11962	13157
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2322	2322	2322	2322	2322	2322	2322	2322
Operating weight ⁽⁴⁾											
Standard unit			kg	5795	6080	6561	7812	7949	8565	8640	8941
Unit + option 15 ⁽³⁾			kq	6126	6411	6892	8183	8320	8939	9014	9315

- * In accordance with standard EN14511-3:2018.
- ** In accordance with standard EN14825:2016, average climate
- *** With EG 30%
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
- η_{js} cool^{12/7°C} & SEER ^{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
- SEPR ^{-2/-8°C} **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
- NA Non Authorized for the specific application for CEE market
- (1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power L_w(A).
- (3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = DX freecooling option, 50= heat recovery.
- (4) Values are guidelines only. Refer to the unit name plate.



Eurovent certified values

PHYSICAL DATA, SIZES 30XBP-850 TO 1700

30XBP		850	900	1000	1100	1200	1300	1400	1500
Compressors		06T semi-hermetic screw compressor, 50 r/s							
Circuit A		1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1
No. of control stages									
Refrigerant⁽⁴⁾		R134a							
Circuit A	kg	75	72	79	82	84	115	121	124
	teqCO ₂	107,3	103,0	113,0	117,3	120,1	164,5	173,0	177,3
Circuit B	kg	67	74	83	118	130	121	127	130
	teqCO ₂	95,8	105,8	118,7	168,7	185,9	173,0	181,6	185,9
Oil									
Circuit A	l	27,6	27,6	27,6	27,6	27,6	36,0	36,0	36,0
Circuit B	l	23,5	27,6	27,6	36,0	36,0	36,0	36,0	36,0
Capacity control		SmartVu™, , Electronic Expansion Valve (EXV)							
Minimum capacity	%	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)							
Fans		FLYING-BIRD 6, axial fan with rotating impeller							
Standard unit									
Quantity		14	14	16	20	20	20	20	22
Maximum total air flow	l/s	67480	67480	77120	96400	96400	96400	96400	106040
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS									
Maximum total air flow	l/s	55020	55020	62880	78600	78600	78600	78600	86460
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type							
Water volume	l	119	130	140	164	174	180	189	189
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)							
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)							
Expansion vessel volume	l								
Max. water-side operating pressure with hydraulic module	kPa								
Water connections without or with hydraulic module		Victaulic® type							
Standard & option 8									
Nominal diameter	in	6	6	8	6	6	6	6	6
Actual outside diameter	mm	168,3	168,3	219,1	168,3	168,3	168,3	168,3	168,3
Options 5, 6 et 100A									
Nominal diameter	in	5	5	6	6	6	6	6	6
Actual outside diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	168,3	168,3
Casing paint		Colour code RAL 7035							

(4) Values are guidelines only. Refer to the unit name plate.

ELECTRICAL DATA, 30XB-250 TO 1000

30XB		250	300	350	400	450	500	600	700	750	800	850	900	1000
Power circuit supply														
Nominal voltage	V-ph-Hz	400-3-50												
Voltage range	V	360-440												
Control circuit supply		24 V via internal transformer												
Maximum operating input power⁽¹⁾ - 30XB														
Standard unit	kW	127	137	148	173	193	212	259	279	310	328	359	377	442
Unit + option 15LS	kW	121	132	142	166	186	204	249	268	299	317	348	366	428
Power factor at maximum power⁽¹⁾ - 30XB														
Standard unit														
Displacement Power Factor (Cos Phi)		0,88	0,87	0,87	0,88	0,88	0,88	0,88	0,88	0,87	0,87	0,88	0,87	0,88
Unit + option 15LS														
Displacement Power Factor (Cos Phi)		0,88	0,87	0,87	0,88	0,88	0,88	0,88	0,88	0,87	0,87	0,88	0,87	0,88
Nominal operating current draw⁽²⁾ - 30XB														
Standard unit	A	151	167	183	211	242	263	327	351	402	423	439	495	535
Unit + option 15LS	A	142	158	174	199	230	251	310	333	384	405	421	477	513
Maximum operating current draw (Un)⁽¹⁾ - 30XB														
Standard unit	A	209	227	245	285	318	348	426	459	514	544	590	629	729
Unit + option 15LS	A	200	218	236	273	306	336	409	441	496	526	572	611	707
Maximum current (Un-10%)⁽¹⁾ - 30XB														
Standard unit	A	221	240	259	301	336	368	450	485	544	576	625	667	773
Unit + option 15LS	A	212	231	250	289	324	356	433	467	526	558	607	649	751
Nominal start-up current⁽³⁾ - 30XB														
Standard unit	A	246	246	262	379	480	480	539	564	738	759	759	835	835
Unit + option 15LS	A	241	241	257	374	475	475	531	555	730	751	751	826	844
Unit + option 25C	A	184	177	193	317	411	411	413	438	631	637	637	666	659
Maximum start-up current(Un)⁽²⁾ - 30XB														
Standard unit	A	275	293	293	408	511	511	618	618	783	813	813	902	952
Unit + option 15LS	A	270	288	288	403	506	506	610	609	775	805	805	893	941
Unit + option 25C	A	213	224	224	346	442	442	492	492	676	691	691	733	756

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA, 30XB-1100 TO 1700

30XB		1100	1200	1300	1400	1500	1700
Power circuit supply							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Control circuit supply		24 V via internal transformer					
Maximum operating input power⁽¹⁾ - 30XB							
Standard unit	kW						
Circuit 1 ^(a)	kW	194	223	264	284	307	363
Circuit 2 ^(a)	kW	284	308	282	305	307	363
Option 081	kW	478	532	546	588	614	-
Unit + option 15LS							
Circuit 1 ^(a)	kW	187	216	255	274	297	351
Circuit 2 ^(a)	kW	275	298	273	296	297	351
Option 081	kW	461	514	528	570	594	-
Power factor at maximum power⁽¹⁾ - 30XB							
Standard unit							
Displacement Power Factor (Cos Phi)		0,89	0,89	0,89	0,89	0,89	0,90
Unit + option 15LS							
Displacement Power Factor (Cos Phi)		0,89	0,89	0,89	0,89	0,89	0,90
Nominal operating current draw⁽²⁾ - 30XB							
Standard unit	kW						
Circuit 1 ^(a)	kW	251	267	334	347	382	439
Circuit 2 ^(a)	kW	350	386	347	379	382	439
Option 081	kW	601	652	681	726	764	-
Unit + option 15LS							
Circuit 1 ^(a)	kW	239	255	319	332	366	417
Circuit 2 ^(a)	kW	334	367	332	364	366	417
Option 081	kW	572	621	650	695	731	-
Maximum operating current draw (Un)⁽¹⁾ - 30XB							
Standard unit	kW						
Circuit 1 ^(a)	kW	316	362	430	460	498	586
Circuit 2 ^(a)	kW	463	500	460	495	498	586
Option 081	kW	778	862	889	954	995	-
Unit + option 15LS							
Circuit 1 ^(a)	kW	304	350	415	445	482	566
Circuit 2 ^(a)	kW	447	483	445	480	482	566
Option 081	kW	751	833	860	925	963	-

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XB-1100 TO 1700

30XB		1100	1200	1300	1400	1500	1700
Maximum current (Un-10%)(1) - 30XB							
Standard unit	kW						
Circuit 1(a)	kW	335	384	466	498	529	621
Circuit 2(a)	kW	501	531	498	526	529	621
Option 081	kW	835	915	963	1023	1057	-
Unit + option 15LS							
Circuit 1(a)	kW	323	372	451	483	513	601
Circuit 2(a)	kW	485	514	483	511	513	601
Option 081	kW	808	886	934	994	1025	-
Nominal start-up current (3) - 30XB							
Standard unit	kW						
Circuit 1(a)	kW	587	587	629	629	629	759
Circuit 2(a)	kW	629	629	629	629	629	759
Option 081	kW	944	979	982	1014	1018	-
Option 081 & Opt 25c		687	702	729	744	744	-
Unit + option 15LS							
Circuit 1(a)	kW	587	587	629	629	629	751
Circuit 2(a)	kW	629	629	629	629	629	751
Option 081		927	961	966	998	1001	-
Option 081 & Opt 25c		671	684	714	729	727	-
Maximum start-up current(Un)(2) - 30XB							
Standard unit	kW						
Circuit 1(a)	kW	587	587	629	629	629	813
Circuit 2(a)	kW	629	629	629	629	629	813
Option 081	kW	1059	1097	1097	1132	1136	-
Option 081 & Opt 25c		802	820	844	862	862	-
Unit + option 15LS							
Circuit 1(a)	kW	587	587	629	629	629	805
Circuit 2(a)	kW	629	629	629	629	629	805
Option 081		1042	1079	1081	1116	1119	-
Option 081 & Opt 25c		786	802	829	847	845	-

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XBP-250 TO 1000

30XBP		250	300	350	400	450	500	600	700	750	800	850	900	1000
Power circuit supply														
Nominal voltage	V-ph-Hz	400-3-50												
Voltage range	V	360-440												
Control circuit supply		24 V via internal transformer												
Maximum operating input power⁽¹⁾ - 30XBP														
Standard unit	kW	126	137	147	172	192	210	257	278	308	327	357	375	440
Unit + option 15LS	kW	124	135	145	170	189	208	254	274	304	323	353	371	434
Power factor at maximum power⁽¹⁾ - 30XBP														
Standard unit														
Displacement Power Factor (Cos Phi)		0,90	0,89	0,89	0,90	0,89	0,89	0,90	0,90	0,89	0,89	0,89	0,88	0,89
Unit + option 15LS														
Displacement Power Factor (Cos Phi)		0,90	0,89	0,89	0,90	0,89	0,89	0,90	0,90	0,89	0,89	0,89	0,88	0,89
Nominal operating current draw⁽²⁾ - 30XBP														
Standard unit	A	145	161	177	203	234	255	315	339	390	411	427	483	521
Unit + option 15LS	A	142	158	174	199	230	251	310	333	384	405	420	476	512
Maximum operating current draw (Un)⁽¹⁾ - 30XBP														
Standard unit	A	203	221	239	277	310	340	414	447	502	532	578	617	715
Unit + option 15LS	A	200	218	236	273	306	336	409	441	496	526	571	610	706
Maximum current (Un-10%)⁽¹⁾ - 30XBP														
Standard unit	A	215	234	253	293	328	360	438	473	532	564	613	655	759
Unit + option 15LS	A	212	231	250	289	324	356	433	467	526	558	606	648	750
Nominal start-up current⁽³⁾ - 30XBP														
Standard unit	A	243	243	259	376	477	477	534	558	733	754	754	829	848
Unit + option 15LS	A	241	241	257	374	475	475	531	555	730	751	751	826	844
Unit + option 25C	A	181	174	190	314	408	408	408	432	626	632	632	660	652
Maximum start-up current(Un)⁽²⁾ - 30XBP														
Standard unit	A	272	290	290	405	508	508	613	612	778	808	808	896	945
Unit + option 15LS	A	270	288	288	403	506	506	610	609	775	805	805	893	941
Unit + option 25C	A	210	221	221	343	439	439	487	486	671	686	686	727	749

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA, 30XBP-1100 TO 1500

30XBP		1100	1200	1300	1400	1500
Power circuit supply						
Nominal voltage	V-ph-Hz	400-3-50				
Voltage range	V	360-440				
Control circuit supply		24 V via internal transformer				
Maximum operating input power⁽¹⁾ - 30XBP						
Standard unit						
Circuit 1 ^(a)	kW	191	220	262	282	304
Circuit 2 ^(a)	kW	279	304	280	303	304
Option 081	kW	469	525	542	584	609
Unit + option 15LS						
Circuit 1 ^(a)	kW	188	217	258	278	301
Circuit 2 ^(a)	kW	276	301	277	300	301
Option 081	kW	463	518	535	578	602
Power factor at maximum power⁽¹⁾ - 30XBP						
Standard unit						
Displacement Power Factor (Cos Phi)		0,88	0,89	0,88	0,89	0,89
Unit + option 15LS						
Displacement Power Factor (Cos Phi)		0,88	0,89	0,88	0,89	0,89

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XBP1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XBP-1100 TO 1500

30XBP		1100	1200	1300	1400	1500
Nominal operating current draw⁽²⁾ - 30XBP						
Standard unit						
Circuit 1 ^(a)	A	245	261	330	343	377
Circuit 2 ^(a)	A	340	377	343	375	377
Option 081	A	584	638	672	717	754
Unit + option 15LS						
Circuit 1 ^(a)	A	240	256	324	337	372
Circuit 2 ^(a)	A	334	371	337	369	372
Option 081	A	574	627	661	706	743
Maximum operating current draw (Un)⁽¹⁾ - 30XBP						
Standard unit						
Circuit 1 ^(a)	A	312	358	428	458	495
Circuit 2 ^(a)	A	455	495	458	493	495
Option 081	A	766	853	885	950	990
Unit + option 15LS						
Circuit 1 ^(a)	A	307	353	422	452	490
Circuit 2 ^(a)	A	450	490	452	487	490
Option 081	A	756	842	874	939	979
Maximum current (Un-10%)⁽¹⁾ - 30XBP						
Standard unit						
Circuit 1 ^(a)	A	331	380	464	496	526
Circuit 2 ^(a)	A	493	526	496	524	526
Option 081	A	823	906	959	1019	1052
Unit + option 15LS						
Circuit 1 ^(a)	A	326	375	458	490	521
Circuit 2 ^(a)	A	488	521	490	518	521
Option 081	A	813	895	948	1008	1041
Nominal start-up current⁽³⁾ - 30XBP						
Standard unit						
Circuit 1 ^(a)	A	587	587	629	629	629
Circuit 2 ^(a)	A	629	629	629	629	629
Option 081	A	927	964	972	1004	1006
Option 081 & Opt 25c	A	678	691	719	734	733
Unit + option 15LS						
Circuit 1 ^(a)	A	587	587	629	629	629
Circuit 2 ^(a)	A	629	629	629	629	629
Option 081	A	922	959	966	998	1001
Option 081 & Opt 25c	A	674	685	714	729	727
Maximum start-up current(Un)⁽²⁾ - 30XBP						
Standard unit						
Circuit 1 ^(a)	A	587	587	629	629	629
Circuit 2 ^(a)	A	629	629	629	629	629
Option 081	A	1042	1082	1087	1122	1124
Option 081 & Opt 25c	A	793	809	834	852	851
Unit + option 15LS						
Circuit 1 ^(a)	A	587	587	629	629	629
Circuit 2 ^(a)	A	629	629	629	629	629
Option 081	A	1037	1077	1081	1116	1119
Option 081 & Opt 25c	A	789	803	829	847	845

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B and for units 30XBP1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XB WITH OPTION CU/AL HEAT EXCHANGER

30XB with option 254 or 255	250	300	350	400	450	500	600	700	750	800	850	900	1000
Power circuit supply													
Nominal voltage V-ph-Hz	400-3-50												
Voltage range V	360-440												
Control circuit supply	24 V via internal transformer												
Maximum operating input power⁽¹⁾ - 30XB													
Standard unit kW	127	137	150	173	193	214	259	279	312	331	363	384	446
Unit + option 15LS kW	121	132	144	166	186	207	249	268	301	320	352	373	433
Power factor at maximum power⁽¹⁾ - 30XB													
Standard unit													
Displacement Power Factor (Cos Phi)	0,88	0,87	0,87	0,88	0,88	0,88	0,88	0,88	0,87	0,87	0,88	0,87	0,88
Unit + option 15LS													
Displacement Power Factor (Cos Phi)	0,88	0,87	0,87	0,88	0,88	0,88	0,88	0,88	0,87	0,87	0,88	0,87	0,88
Nominal operating current draw⁽²⁾ - 30XB													
Standard unit A	151	167	187	211	242	267	327	351	406	427	447	506	542
Unit + option 15LS A	142	158	177	199	230	255	310	333	388	409	428	488	521
Maximum operating current draw (Un)⁽¹⁾ - 30XB													
Standard unit A	209	227	249	285	318	352	426	459	518	548	598	640	736
Unit + option 15LS A	200	218	239	273	306	340	409	441	500	530	579	622	715
Maximum current (Un-10%)⁽¹⁾ - 30XB													
Standard unit A	221	240	263	301	336	372	450	485	548	580	633	678	780
Unit + option 15LS A	212	231	253	289	324	360	433	467	530	562	614	660	759
Nominal start-up current⁽³⁾ - 30XB													
Standard unit A	246	246	262	379	480	480	539	564	738	759	759	835	835
Unit + option 15LS A	241	241	257	374	475	475	531	555	730	751	751	826	844
Unit + option 25C A	184	177	193	317	411	411	413	438	631	637	637	666	659
Maximum start-up current(Un)⁽²⁾ - 30XB													
Standard unit A	275	293	293	408	511	511	618	618	783	813	813	902	952
Unit + option 15LS A	270	288	288	403	506	506	610	609	775	805	805	893	941
Unit + option 25C A	213	224	224	346	442	442	492	492	676	691	691	733	756

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

- 30XB(E/P)&XBP 250 to 1000 units have a single power connection point; 30XB(E/P)&XBP 1100 to 1700 units have two connection points.

- The control box includes the following standard features:
 - One general disconnect switch per circuit
 - Starter and motor protection devices for each compressor, the fan(s) and the pump
 - Control devices

Field connections:

- All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 30XB(E/P)&XBP units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (corresponds to IEC 60204-1) (machine safety - electrical machine components - part 1: General regulations) are specifically taken into account, when designing the electrical equipment.

IMPORTANT:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation regulations.
- Conformance with EN 60204 is the best means of ensuring compliance with the Machines Directive 1.5.1.

Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

1. Environment* - Environment as classified in EN 60364 (corresponds to IEC 60364):
 - Outdoor installation*
 - Ambient temperature range: from -20°C to +55°C**
 - altitude less than or equal to 2000 m (for hydronic module, see paragraph 4.7 in the IOM)
 - presence of hard solids, class AE3 (no significant dust present)*
 - presence of corrosive and polluting substances, class AF1 (negligible)
 - Units shall not be located in places open to all persons, which can include children.
2. Compatibility for low-frequency conducted disturbances according to IEC61000-2-2 and to class 2 levels per IEC61000-2-4 standard:
 - Power supply frequency variation : ±2Hz
 - Phase imbalance : 2%
 - Total Voltage Harmonic Distortion (THDV) : 8%***
3. The neutral (N) line must not be connected directly to the unit (if necessary use a transformer).

4. Overcurrent protection of the power supply conductors is not provided with the unit.

5. The factory installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3).

6. The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks provide a local earth and consult competent local organisations to complete the electrical installation. Units delivered with variable frequency drive(s) (options : 28, 17 & 30XBE range) are not compatible with IT network. 30XB units are designed to use for domestic / residential and industrial environments:

Machines that are not equipped with variable frequency drive(s) are in accordance with the codes :

- 61000-6-3: General standards - Standard emission for residential, commercial and light industry.

- 61000-6-2: General standards - Immunity for industrial environments.

Machines that are equipped with variable frequency drive(s) (options 28, 17 & 30XBE range) are in accordance with the codes

- 61000-6-4: Generic standards - Emission standard for industrial environments.

- 61000-6-2: Generic standards - Immunity for industrial environments.

- Leakage currents: If protection by monitoring the leakage currents is necessary to ensure the safety of the installation, the presence of circuitry with DC component as well as additional leakage currents introduced by the use of variable frequency drive(s) in the unit must be considered (options 28, 17 & 30XBE range). In particular these protection devices shall be
 - suitable for protection of circuitry with AC and DC components
 - of reinforced immunity types and have a threshold not lower than 150mA.

- Capacitors that are integrated as part of the option 231 can generate electrical disturbances in the installation the unit is connected to. Presence of these capacitors must be considered during the electrical study prior to the start-up.

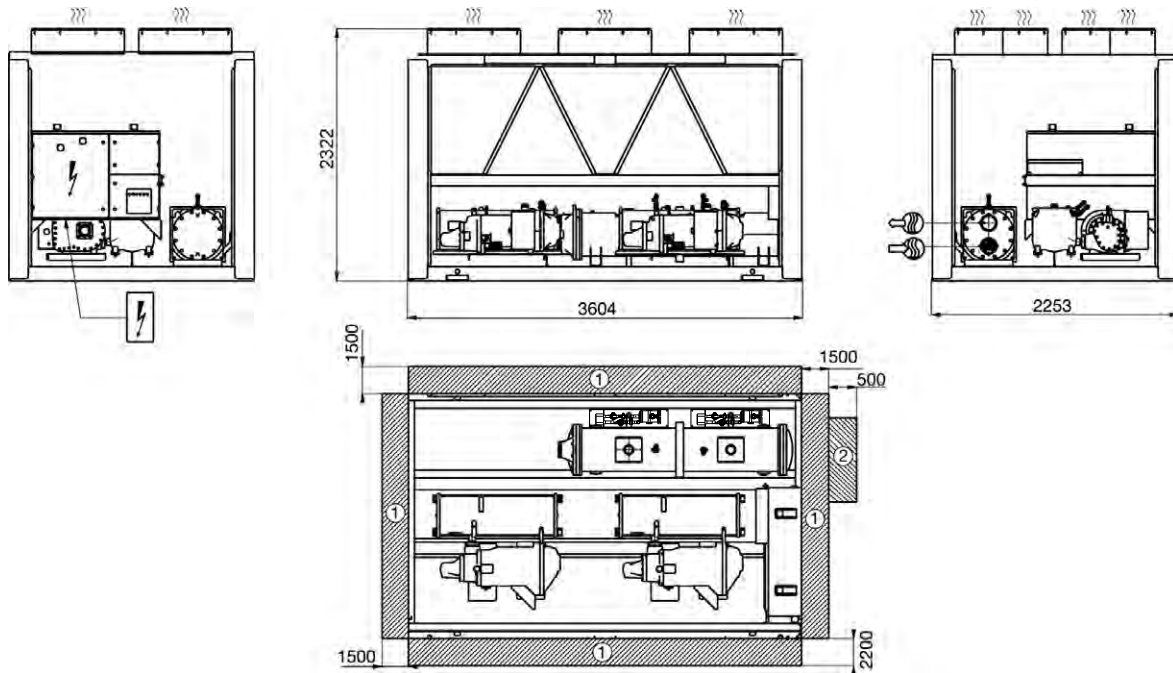
NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

* The required protection level for this class is IP43BW (according to reference document IEC 60529). All 30XB & XBP units are protected to IP44CW and fulfil this protection condition.

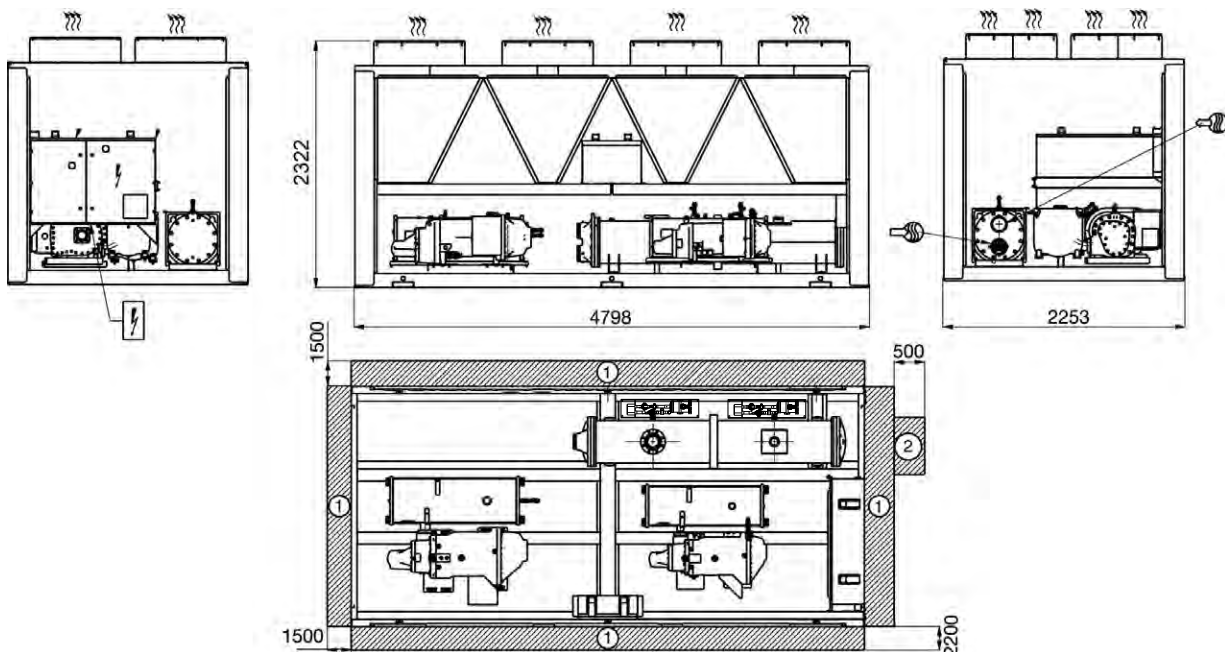
** These limits are modified for machines equipped with option/QM 231: Maximum ambient temperature : 45°C
Total Voltage harmonic distortion : 3%

DIMENSIONS / CLEARANCES

30XBE 250 to 350, 30XBP250 to 350



30XBE 400 to 500, 30XBP 400 to 450



Legend

All dimensions are given in mm.

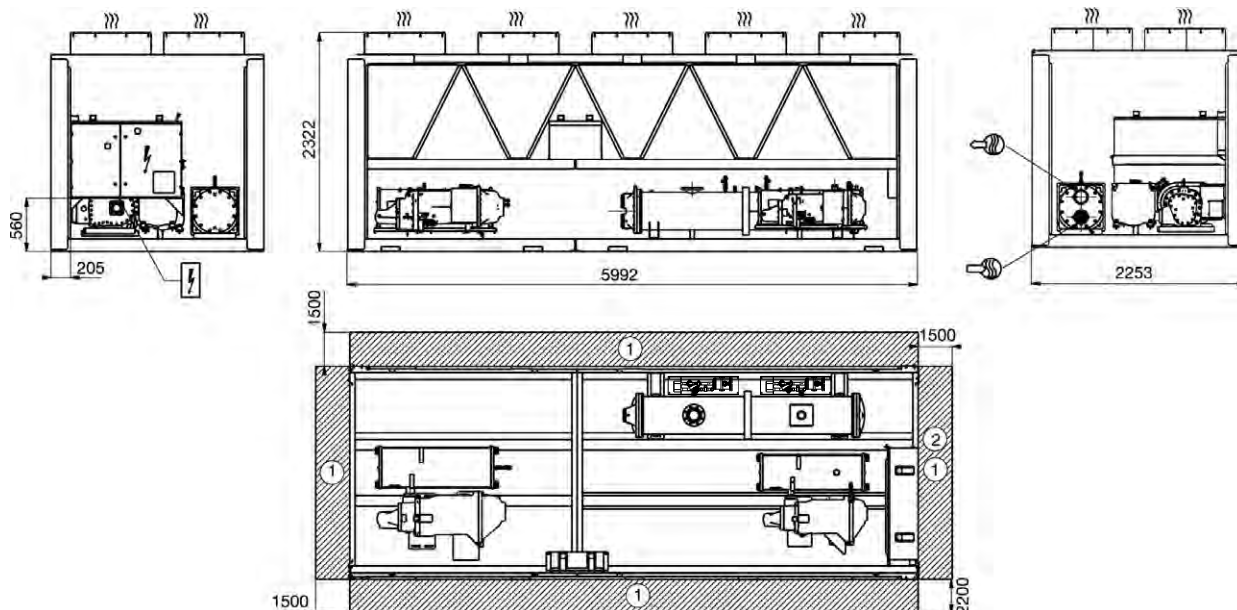
- ① Required clearances for maintenance (see note)
- ② Recommended space for evaporator tube removal
- Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Air outlet – do not obstruct
- Power supply and control connection

NOTES:

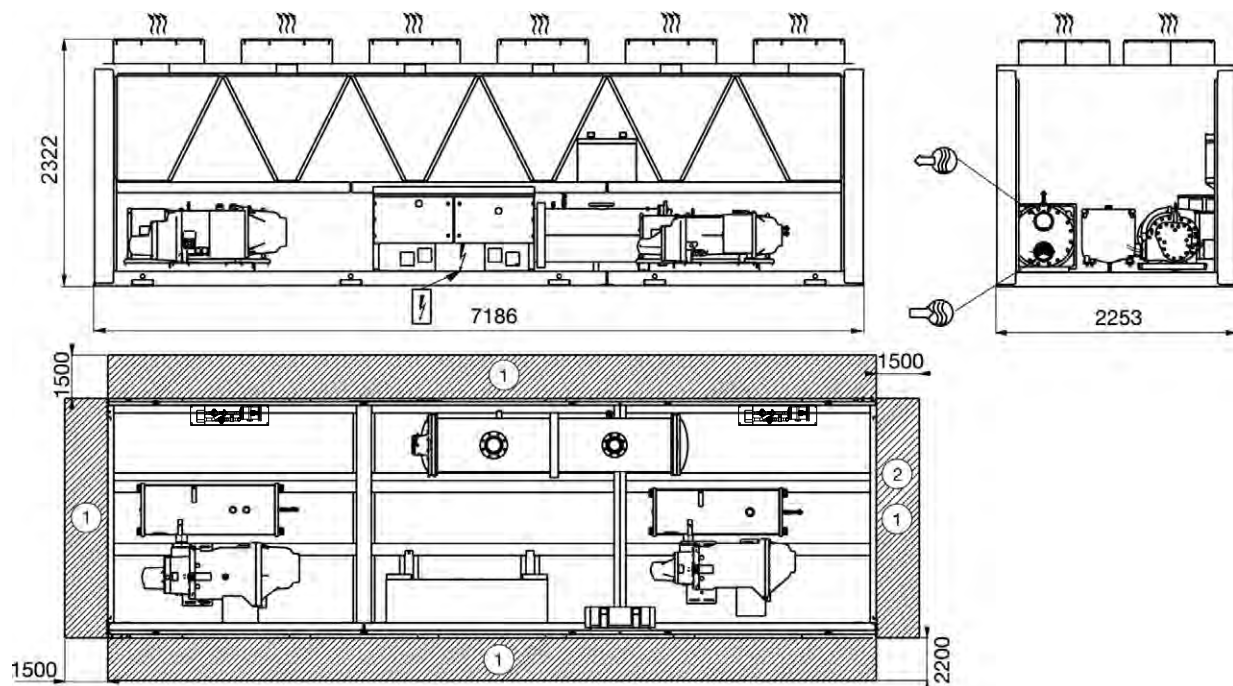
- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required

DIMENSIONS / CLEARANCES

30XBP 500, 30XBE 500, 50 (heat recovery) or 118A (free cooling)



30XBE 600 to 900, 30XBP 600 to 800



Legend

All dimensions are given in mm.

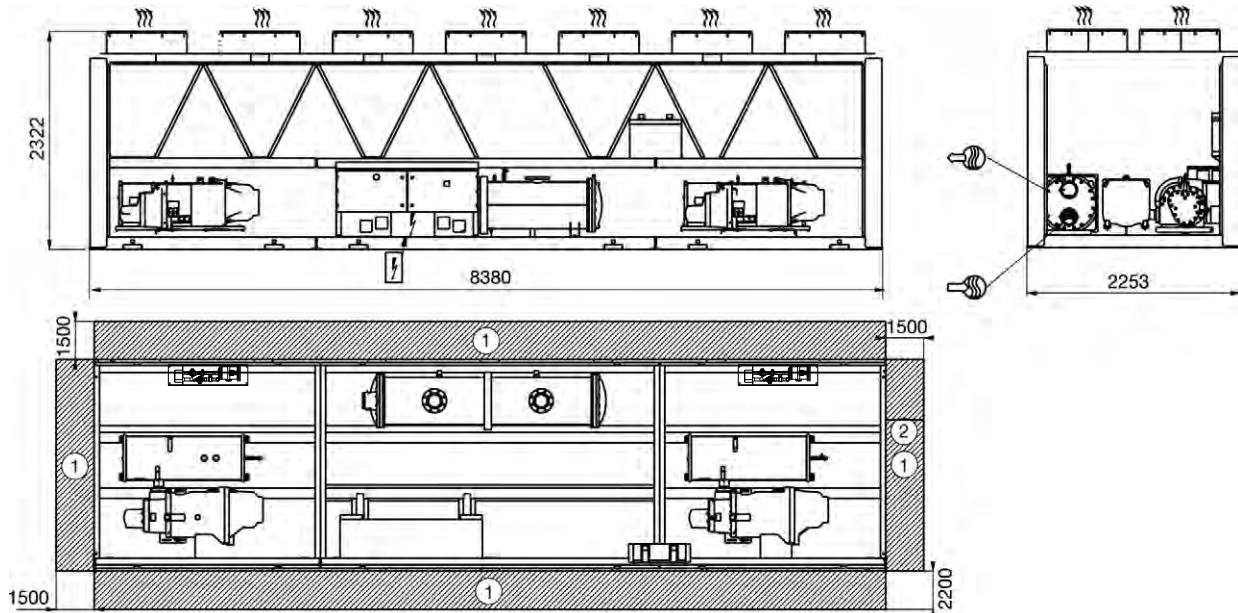
- ① Required clearances for maintenance (see note)
- ② Recommended space for evaporator tube removal
- Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
-))) Air outlet – do not obstruct
- Power supply and control connection

NOTES:

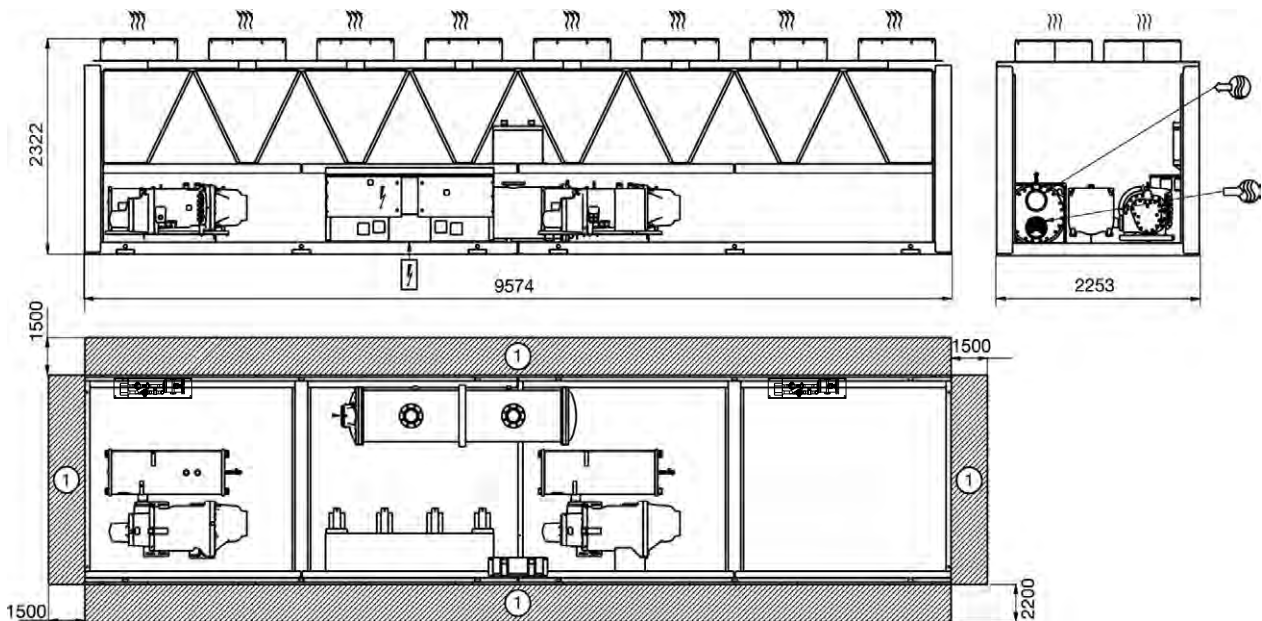
- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required

DIMENSIONS / CLEARANCES

30XBE 900, 30XBP 850 & 900, 30XBE 850 with option 50 or 118A



30XBE 1000, 30XBP 1000



Legend

All dimensions are given in mm.

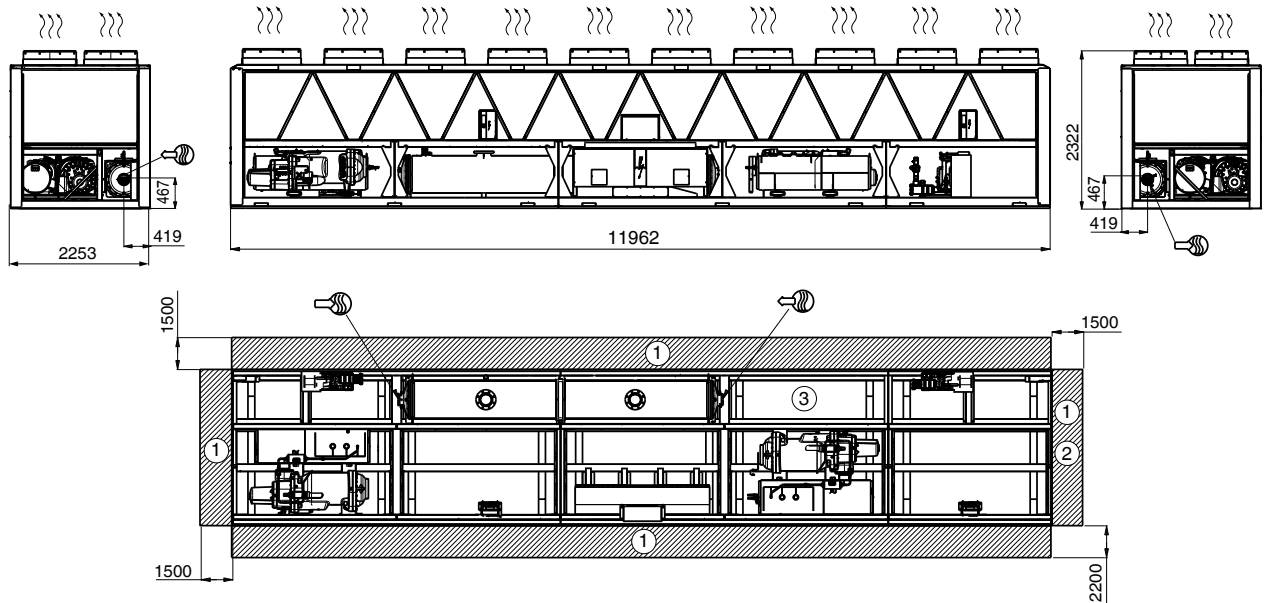
- ① Required clearances for maintenance (see note)
- ② Recommended space for evaporator tube removal
- Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Air outlet - do not obstruct
- Power supply and control connection

NOTES:

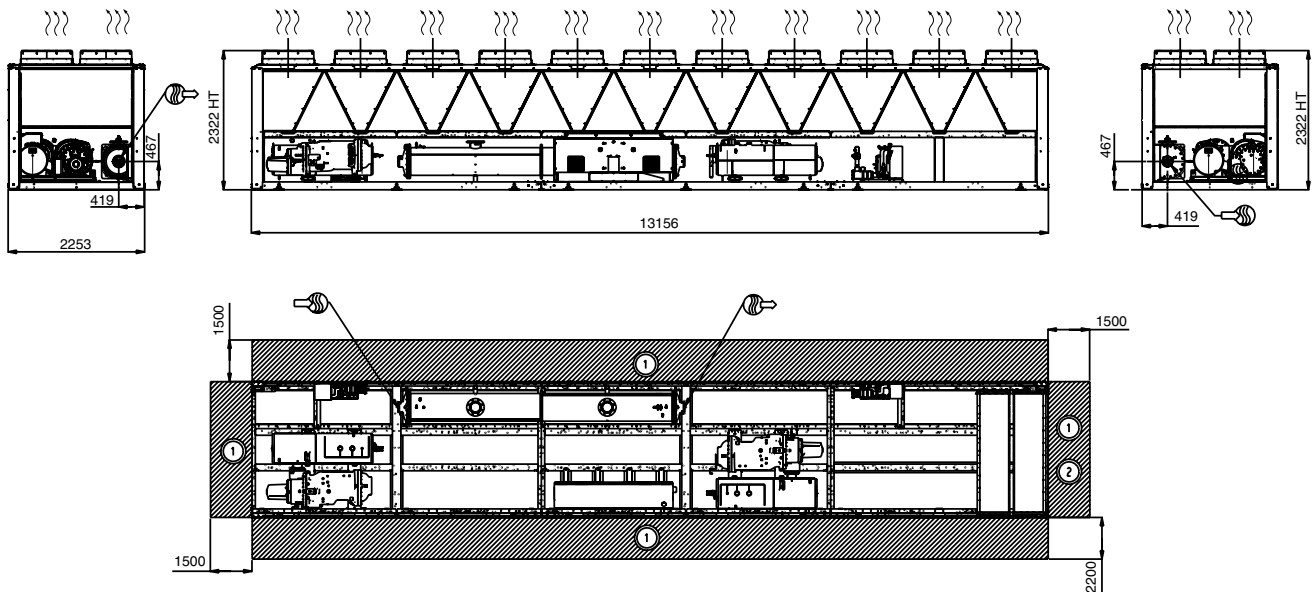
- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required

DIMENSIONS / CLEARANCES

30XBE 1100 to 1400, 30XBP 1100 to 1400






30XB1500, 30XBP1500



Legend

All dimensions are given in mm.

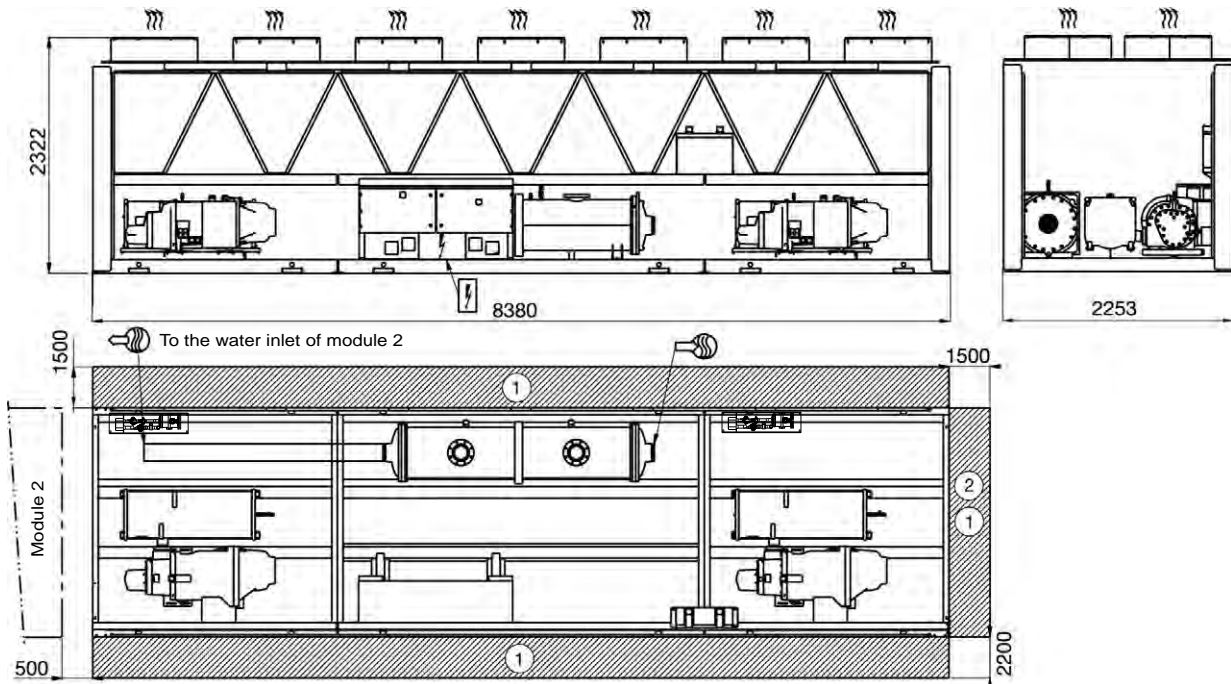
- ① Required clearances for maintenance (see note)
- ② Recommended space for evaporator tube removal
-  Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
-  Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
-))) Air outlet – do not obstruct
-  Power supply and control connection

NOTES:

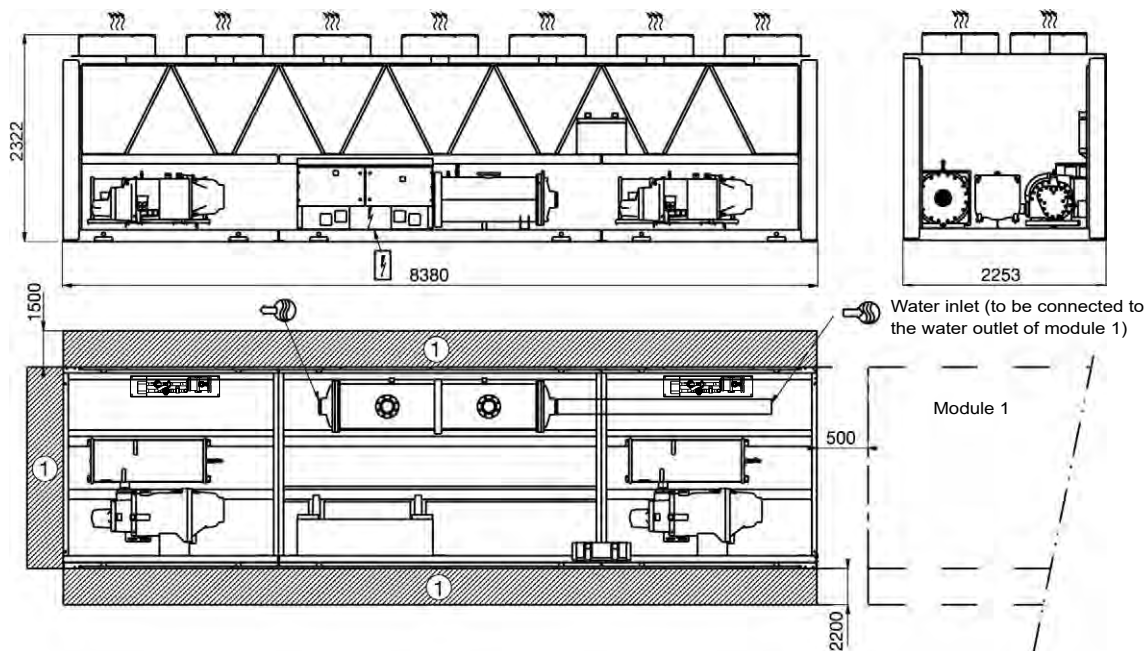
- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required

DIMENSIONS / CLEARANCES

30XBE 1700 module 1/2



30XBE 1700 module 2/2



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
- ② Recommended space for evaporator tube removal
- Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Air outlet – do not obstruct
- Power supply and control connection

NOTES:

- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required

NEW

AIR-COOLED FIXED-SPEED SCREW CHILLER



Very economical operation

Low sound levels

Simple installation

Environmentally responsible

Exceptional reliability

30XBEZE 200 - 1200

30XBPZE 200 - 400

AQUAFORCE

PUREtec

Nominal cooling capacity 210 - 1170 kW - 50 Hz

The AquaForce™ 30XBEZE and 30XBPZE liquid chillers are the economic solution with ultra-low GWP R-1234ze refrigerant for commercial and industrial applications where high reliability and economic operation in all climate conditions are key customer requirements.

The AquaForce™ 30XBEZE and 30XBPZE liquid chillers are designed to meet current and future regulations for energy efficiency and operating sound levels. They use the latest Carrier technologies:

- Refrigerant R-1234ze
- Carrier 06T twin-rotor fixed-speed screw compressors.
- Low noise 6th generation of Carrier Flying Bird™ fans with variable speed AC motor (30XBEZE) or variable speed EC motor.
- Carrier flooded shell-and-tube evaporator with new copper tube design for low pressure drops
- 2nd generation of "V" shape Carrier Novation™ microchannel heat exchangers with optional Enviro-Shield coatings.
- Carrier SmartVu™ control with color touch screen user interface that includes 10 languages.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

AQUAFORCE® VISION WITH PURETEC™ REFRIGERANT

SUSTAINABILITY

PUREtec™: the environmental excellence solution

■ GWP<1

Carrier has selected HFO R-1234ze as the best refrigerant to replace HFC R-134a on screw chillers and heat-pumps.

HFO R-1234ze offers a **Global Warming Potential (GWP) index below 1**, similar to that of natural substances (CO₂ GWP=1).

■ High efficiency

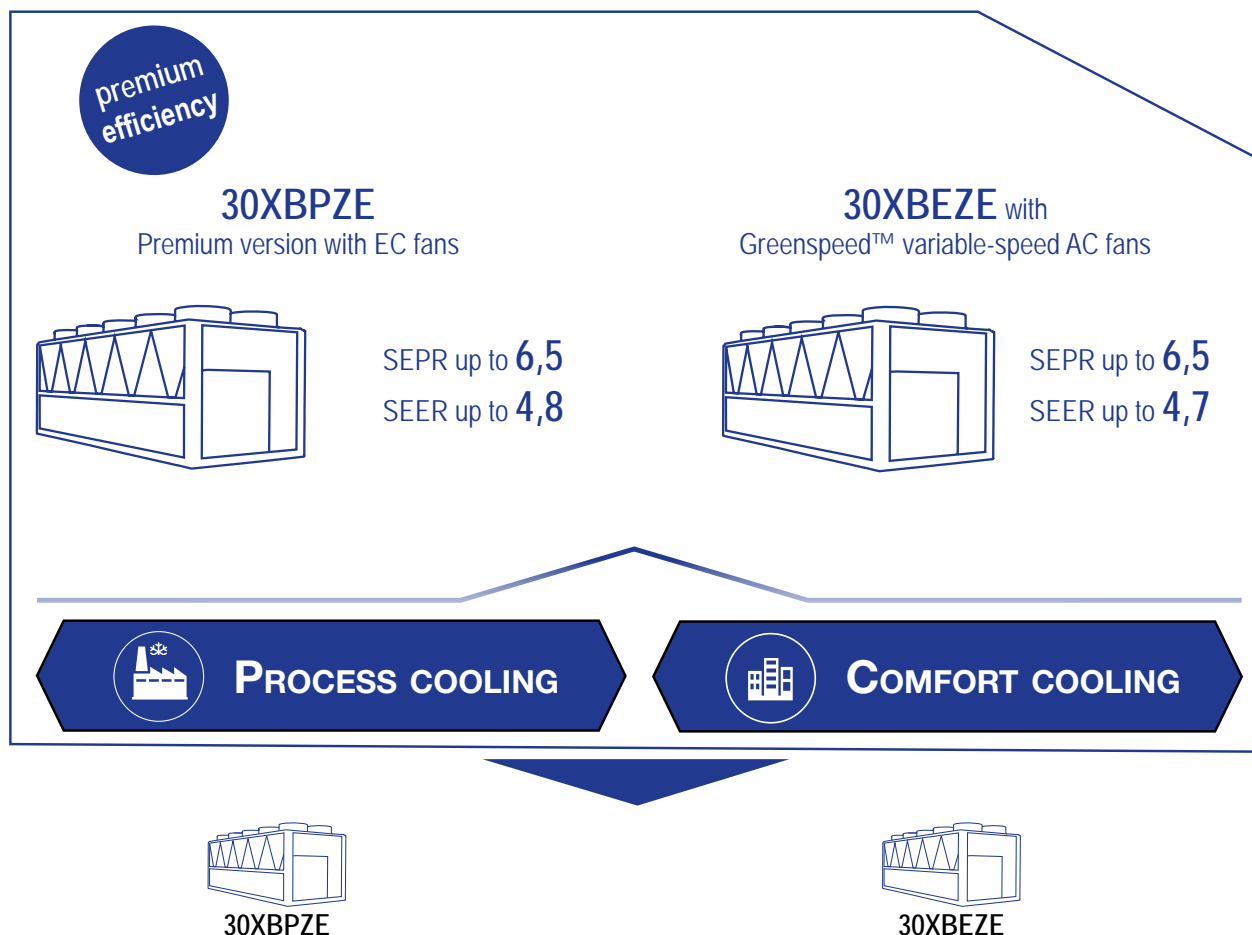
This excellent efficiency performance in turn means a **lower total carbon footprint**, with a reduction of 10% compared to HFC R-134a and HFC/HFO R-513A refrigerants.

■ Regulation compliance

Carrier has made the strategic decision to choose a long-term solution for its new chiller and heat-pump ranges using screw compressors: **HFO R-1234ze, with a GWP<1, is not impacted by the F-gas Regulation.**

AQUAFORCE® VISION THE RIGHT SOLUTION FOR EVERY APPLICATION

Carrier's AquaForce® Vision range is available in three levels of efficiency to perfectly match each customer application and meet the European Ecodesign directive requirements.



The AquaForce® 30XBPZE with Greenspeed™ intelligence is the premium version EC fans to improve both the full load and part load energy efficiency. The 30XBPZE provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology.

The AquaForce® 30XBEZE is equipped with fixed-speed screw compressor and variable-speed AC fans motors. The 30XBEZE offers an economical solution whilst providing high full load energy efficiency level for process applications and 12/7°C operation in hot climates. 30XBEZE is compliant with the 2021 EU Ecodesign SEPR -2/-8°C and 12/7°C requirements for medium and high temperature process chillers.

AQUAFORCE® VISION CUSTOMER BENEFITS

■ Outstanding performance

Equipped with fixed-speed screw compressors with EC fans and extra condensing surface, Carrier's AquaForce® Vision 30XBPZE chiller with Greenspeed™ intelligence improve both the full load and part load energy efficiency. The 30XBPZE provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology.



SEER
up to 4,5

■ Low sound levels

The new generation of Carrier 06T fixed-speed twin screw compressor with integrated resonator array and the 6th generation of Flying Bird™ fans with new fan blade design inspired by nature help reduce compressor and airflow noise down to as little as 90 dB(A). 30XBEZE/30XBPZE is 6 dB(A) quieter than the previous AquaForce® 30XAV generation.



90 dB(A)

■ Environmentally responsible

Carrier's AquaForce® Vision 30XBEZE/30XBPZE is a boost for green cities and contributes to a sustainable future. Combining a reduced load refrigerant and exceptional energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions by 25% throughout its life cycle.



UP TO
25% LESS
CO₂ EMISSION

■ Extensive scope of application

Carrier's AquaForce® Vision adapts effortlessly to a wide range of applications. Extended operating temperatures from -20°C to 55°C outdoor air temperatures and negative water temperatures make it ideal for various sectors of activity. From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaForce® Vision 30XBEZE/30XBPZE meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate and wherever the location.



FROM
-20°C
to **55°C**

■ Easy installation & maintenance

Built-in fixed-speed pumps up to 400kW, automatic nominal water flow adjustment through electronic control, automatic unit energy performance measurement under real conditions, all these new features provide peace of mind for installers and service companies alike.



25%
SMALLER

CUSTOMER BENEFITS

The range is available in 2 efficiency levels.

■ 30XBEZE standard unit

The AquaForce™ 30XBEZE is equipped with fixed-speed screw compressors and variable speed fans with AC motors. The 30XBEZE offers an economical solution whilst providing high full load efficiency for process applications and operation in high ambients.

(Average SEPR of 6,1, average SEER of 4,6, average EER of 3,3)

■ 30XBPZE premium unit

The 30XBPZE premium unit is equipped with variable speed EC fans to improve both the full load and part load energy efficiency. The 30XBPZE provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology. (Average SEPR of 6,4, average SEER of 4,6, average EER of 3,4)

Very economical operation

Exceptionally high full load and part load energy efficiency:

- 30XBEZE version with Eurovent energy efficiency class A, and SEER 12/7°C up to 4,7 in accordance with EN14825.
- 30XBPZE version with Eurovent energy efficiency class A, and SEER 12/7°C up to 4,8 in accordance with EN14825.
- Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Novation™ aluminium condenser with high-efficiency micro-channels.
- Flooded shell-and-tube evaporator with new generation of cooler tubes to reduce exchanger pressure drops, especially in applications with high percentage of glycol.
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control).
- Economiser system with electronic expansion device for increased cooling capacity.

Low operating sound levels

■ Compressors

- Discharge dampers integrated in the oil separator (Carrier patent).
- Silencer on the economiser return line.
- Compressor and oil separator acoustic enclosure, reducing radiated noise (option).

■ Condenser section

- Condenser coils in wide angle V configuration, allowing quieter air flow across the coil
- Low-noise 6th generation Flying Bird fans, made of a composite material (Carrier patent), are now even quieter and do not generate intrusive low-frequency noise
- Rigid fan mounting preventing start-up noise (Carrier patent).

CUSTOMER BENEFITS

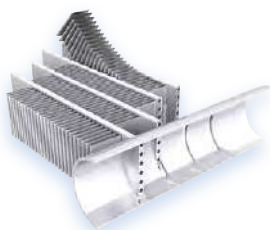
Simple installation

- Integrated hydraulic module (option)
 - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation
 - Single or dual pump (as required) with run time balancing and automatic changeover to the back-up pump if a fault develops
 - Water filter to protect pump against circulating debris
 - High-capacity membrane expansion tank ensures pressurisation of the water circuit (option)
 - Thermal insulation and aluminium cladding (option)
 - Pressure sensor to check filter condition and for direct numerical display of the water flow rate with an estimate of the instantaneous cooling capacity at the control interface
- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer to supply the integrated control circuit (400/24 V).
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the controls, expansion devices, fans and compressors.

Exceptional reliability

- Screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - All compressor components are easily accessible on site minimising down-time.
 - Dedicated electronic compressor protection module.
- Air condenser
 - 2nd generation of "V" shape Carrier Novation™ aluminium microchannel heat exchangers (MCHE) with high corrosion resistance. The all aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion in saline or corrosive environments.
- Evaporator
 - Thermal insulation with aluminium sheet finish (option) for improved resistance to mechanical and UV damage.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of sophisticated finite element stress analysis for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.
 - Salt mist corrosion resistance test in the laboratory for increased corrosion resistance.

30XBEZE AND 30XBPZE TECHNICAL INSIGHTS



3RD GENERATION OF NOVATION® MICRO CHANNEL HEAT EXCHANGERS

- Exclusive Carrier design
- Increased reliability with new aluminum alloy
- Significantly reduces refrigerant charge (-40% vs cu/al coils)
- Enviro-shield™ coating for mildly corrosive environments
- Super Enviro-shield™ coating for highly corrosive environments (industry or marine applications)
- Easy cleaning with high pressure air or water washer

ADVANCED SMARTVU™ WITH 7 INCH COLOR TOUCH SCREEN INTERFACE

- Exclusive Carrier design
- 10 languages available: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
- Touch screen user interface
- BACnet, J-Bus or LON communication interfaces
- Optional wireless connectivity



- Remote monitoring with Carrier Connect

FLOODED SHELL AND TUBE EVAPORATOR

- Exclusive Carrier design
- Flooded technology for high energy efficiency
- New generation of copper tubes with specific profile to reduce pressure drops when operating with glycol



6TH GENERATION OF VARIABLE-SPEED FLYING BIRD™ FANS WITH AC OR EC MOTOR

- Exclusive Carrier design
- Fan blade design inspired by nature
- AC motor technology
- High efficiency version with EC motor technology (option and 30XBPZE).



FIXED-SPEED DUAL PUMPS WITH AC MOTOR (OPTION)

- Low static pressure (~100 kPa) or high static pressure (~180 kPa) available
- Available on all sizes up to 400 kW



CARRIER FIXED-SPEED 06T TWIN SCREW COMPRESSOR WITH AC MOTOR

- Exclusive Carrier design
- Twin screw compressor designed for fixed speed operation
- Sliding valve control (30%-100%)
- Bearing life exceeding 100.000 hours
- 99,7% of units without compressor default

CUSTOMER BENEFITS

Environmental care

- The AquaForce™ with PUREtec refrigerant liquid chillers with Greenspeed™ Intelligence is a boost for green cities and contributes to a sustainable future. Combining a reduced charge of R-1234ze refrigerant and exceptional energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions by 15% throughout its life cycle (compared to previous fixed-speed screw liquid chiller generation).
- R-1234ze: HFO refrigerant with zero ozone depletion potential and ultra low GWP (<1).
- 40% less refrigerant charge: The micro-channel technology used for condenser coils optimises heat transfer while minimising the refrigerant volume.
- Leak tight refrigerant circuits:
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.
- Refrigerant leak alert: The AquaForce™ 30XBEZE/30XBPZE liquid chiller is equipped with an automatic refrigerant leak detection algorithm that can detect serious refrigerant loss at any point on the system (Sensitivity: 25% refrigerant charge loss per circuit, depending on the conditions). The automatic refrigerant leak detection system can help to achieve recognition within pollution prevention assessment programs, ideal for assisting in the design of sustainable buildings.
- Refrigerant leak detection: Available as an option, this additional dry-contact allows reporting of possible leaks. The leak detector (by others) should be mounted in the most likely leak location.



- R-1234ze long-term refrigerant solution
 - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
 - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
 - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity airconditioning equipment.

Designed to support Green Building Design

A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment.

The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year 30XBEZE/30XBPZE units offer a solution to this important challenge.

A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.

The following example looks at how Carrier's new 30XBEZE/30XBPZE range helps customers involved in LEED® building certification.

The other benefit of using the AquaForce™ with PUREtec™ refrigerant products is the eligibility for BUILDING labeling programs like BREEAM, HQE in France or Green Building Council labelling, that are recognizing the use of sustainable heating and air-conditioning equipment.

Let's take the example of BREEAM assessment method for the sustainability of buildings.

Two credits can be awarded where the refrigerants used in air-conditioning systems have a Global Warming Potential below 10.

And one additional credit can be awarded where the systems have a low Total Equivalent Warming Impact.

The AquaForce™ with PUREtec™ refrigerant is not only a solution that is reducing the energy bill and the CO₂ footprint. It also helps the green certification of your buildings.

Energy saving certificate

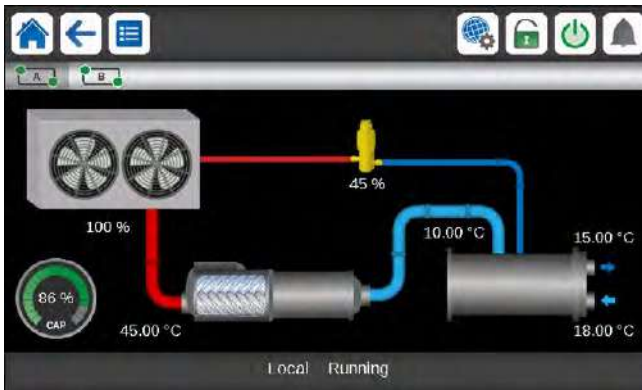
AquaForce™ with PUREtec refrigerant is eligible to Energy savings certificates in France (CEE) in comfort, industrial and agriculture applications:

- Floating High pressure control (by modulating the air flow through fan activation and its speed)
- Floating Low pressure control
- Variable speed on asynchronous fan motor
- Variable speed on asynchronous pump motor

For more details about financial incentives in France, please refer to "Fiche produit CEE"

TECHNICAL INSIGHTS

SmartVu™



- New innovative smart control features:
 - An intuitive and user-friendly, coloured, 7" interface
 - 10 languages available on choice: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Energy management:
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.

Remote management (standard)

- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional).

- The 30XBEZE/30XBPZE also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: Indication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation.

Remote management (EMM option)

- The Energy Management Module (EMM) offers extended remote control possibilities:
 - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
 - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
 - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
 - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
 - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
 - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
 - Time schedule override: Closing of this contact cancels the programmed time schedule.
 - Out of service: This signal indicates that the chiller is completely out of service.
 - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
 - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
 - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

TECHNICAL INSIGHTS

06T Screw Compressor



99.7%* of units without a compressor failure

* Quality rate measured over a period of 15 years operation

The Carrier 06T screw compressor benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high outside temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The compressor is equipped with a separate oil separator that minimises the amount of oil in circulation in the refrigerant circuit and, with its integrated silencer, considerably reduces discharge gas pulsations for much quieter operation.

Novation® Heat Exchangers with Micro-Channel coil Technology



Already utilised in the automobile and aeronautical industries for many years, the Novation™ MCHE micro-channel heat exchanger used in the Aquaforce is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers. Unlike traditional heat exchangers the Novation™ MCHE heat exchanger can be used in moderate marine and urban environments (Carrier recommendation).

From an energy efficiency point-of-view the Novation™ MCHE heat exchanger is approximately 10% more efficient than a traditional coil and allows a 40% reduction in the amount of refrigerant used in the chiller. The low thickness of the Novation™ MCHE reduces air pressure losses by 50% and makes it susceptible to very little fouling (e.g. by sand). Cleaning of the Novation™ MCHE heat exchanger is very fast using a high-pressure washer.

Carrier Novation® MCHE with Super Enviro-shield® coating, the ideal customer choice

To further enhance long-term performance, and to protect coils from early deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.

The Novation™ MCHE with Enviro-Shield protection (option 262) are recommended for installations in moderately corrosive environments. The Enviro-Shield protection utilises corrosion inhibitors which actively arrest oxidation in case of mechanical damage.

The Novation™ MCHE with the exclusive Super Enviro-Shield protection (option 263) are recommended for installations in corrosive environments. The Super Enviro-Shield protection consist in an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.

TECHNICAL INSIGHTS

Novation® Heat Exchangers with Micro-Channel coil Technology

After a total of more than 7,000 hours of testing following various test standards in UTC laboratories, the Carrier Novation® MCHE with Super Enviro-shield® coating appears to be the ideal customer choice to minimize the harmful effects of corrosive atmospheres and ensure long equipment life.

- Best corrosion resistance per ASTM B117/D610 test
- Best heat transfer performance per Carrier Marine 1 test
- Proven reliability per ASTM B117 test

Coil Types (ranked by performance)	Visual Corrosion Evaluation	Heat Transfer Performance Degradation	Time to Failure	Test Campaign Conclusions
Super Enviro-shield® Novation™ MCHE	Very good	Very good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Good	No coil leak	Very good
Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Very good
Al/Al coil	Very good	Good	No coil leak	Very good
Novation™ MCHE	Good	Good	No coil leak	Good
Cu/Cu coil	Good	Good	Leak	Acceptable
Blygold® Cu/Al coil	Good	Good	No coil leak	Acceptable
Precoat Cu/Al coil	Bad	Bad	No coil leak	Bad
Cu/Al coil	Bad	Bad	No coil leak	Bad

New Generation of Flying Bird VI fans



The 30XBEZE and 30XBPZE utilize Carrier's 6th generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and wide operating range. The fan includes Carrier patented rotating shroud technology and back-swept blades with a unique wave-serration trailing edge inspired from nature.

It was designed and optimized for the 30XBEZE air management system configuration and heat exchanger technology and is offered with induction and EC motor options. The fan meets the latest European eco-design requirements for fan efficiency. The fan uses Carrier's robust and proven injection molded composite-thermoplastic construction.

OPTIONS

Options	No.	Description	Advantages	Use for 30XBEZE / 30XBPZE
Medium-temperature brine solution	5	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -6°C when ethylene glycol is used (0°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	30XBEZE 200-1200 / 30XBPZE 200-400
Low-temperature brine solution	6	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -12°C when ethylene glycol is used (-10°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	30XBEZE 200-1200 / 30XBPZE 200-400
Unit equipped for air discharge ducting	10	Fans equipped with discharge connection flanges - maximum available pressure 60 Pa	Facilitates connections to the discharge ducts	30XBEZE 200-1200 / 30XBPZE 200-400
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction	30XBEZE 200-1200 / 30XBPZE 200-400
Very low noise level	15LS	Sound absorbing & aesthetic compressor enclosure and oil separator, evaporator and suction line acoustic treatment, combined with low-speed fans	Noise level reduction in sensitive environments	30XBEZE 200-1200 / 30XBPZE 200-400
Ultra low noise level	15LS+	Acoustic compressor enclosure, low-speed fans and enhanced sound insulation of main noise sources	Noise level reduction for sensible site	30XBEZE/ 30XBPZE 350-1200
Tropicalisation	22	Unit control box suitable for tropical climates	Reduced relative humidity in the control boxes for operation in tropical climates (warm and humid)	30XBEZE 200-1200 / 30XBPZE 200-400
Grilles and enclosure panels	23	Metallic protection grilles and side enclosure panels	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30XBEZE 200-1200 / 30XBPZE 200-400
Enclosure panels	23A	Side enclosure panels	Improves aesthetics and piping protection against impacts.	30XBEZE 200-1200 / 30XBPZE 200-400
Low inrush current	25C	compressor loading and unloading sequence to limit the unit start-up current	Reduced start-up current	30XBEZE 200-1200 / 30XBPZE 200-400
Water exchanger frost protection	41A	Electric resistance heater on the water exchanger and discharge valve	Water exchanger frost protection down to -20°C outside temperature	30XBEZE 200-1200 / 30XBPZE 200-400
Evaporator & hydraulic module frost protection	41B	Electric resistance heater on water exchanger, discharge valve and hydraulic module	Water exchanger and hydraulic module frost protection down to -20°C outside temperature	30XBEZE/ 30XBPZE 200-400
Total heat recovery	50	Unit equipped with additional heat exchanger in parallel with the condenser coils.	Production of free hot-water simultaneously with chilled water production	30XBEZE 200-750 / 30XBPZE 200-400
Total heat recovery on one circuit	50C	Unit equipped with additional heat exchanger in parallel with the condenser coils on one circuit only	Production of free hot-water simultaneously with chilled water production	30XBEZE 900-1200
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	30XBEZE 200-1200 / 30XBPZE 200-400
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	30XBEZE 900-1200
Evap. and pumps with aluminum jacket	88A	Evaporator and pumps covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30XBEZE 200-400 / 30XBPZE 200-400
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	30XBEZE 200-1200 / 30XBPZE 200-400
Compressor discharge valves	93A	Shut-off valve on the compressor discharge piping	Simplified maintenance	30XBEZE 200-1200 / 30XBPZE 200-400
Evaporator with one pass more	100A	Evaporator with one pass more on the water side	Optimise chiller operation when the chilled water circuit is designed with low waterflows (high evaporator delta T)	30XBEZE 200-1200 / 30XBPZE 200-400
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	30XBEZE 200-1200 / 30XBPZE 200-400
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet connections	Easy installation on sites with specific requirements	30XBEZE 200-1200 / 30XBPZE 200-400
HP dual-pump hydraulic module	116S	Hydraulic module equipped with water filter, two high pressure pumps, drain valve and pressure transducers (expansion tank & aluminum jacket not included).	Easy and fast installation (plug & play).	30XBEZE/ 30XBPZE 200-400

OPTIONS

Options	No.	Description	Advantages	Use for 30XBEZE / 30XBPZE
LP dual-pump hydraulic module	116U	Hydraulic module equipped with water filter, two low pressure pumps, drain valve and pressure transducers (expansion tank & aluminum jacket not included).	Easy and fast installation (plug & play).	30XBEZE/ 30XBPZE 200-400
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30XBEZE 200-1200 / 30XBPZE 200-400
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30XBEZE 200-1200 / 30XBPZE 200-400
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30XBEZE 200-1200 / 30XBPZE 200-400
Energy Management Module	156	EMM Control board with additional inputs/ outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30XBEZE 200-1200 / 30XBPZE 200-400
7" user interface	158A	Control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	30XBEZE 200-1200 / 30XBPZE 200-400
Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	30XBEZE 200-1200 / 30XBPZE 200-400
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	30XBEZE 200-1200 / 30XBPZE 200-400
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	30XBEZE 300-1200/ 30XBPZE 300-400
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30XBEZE 200-1200 / 30XBPZE 200-400
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	30XBEZE 200-1200 / 30XBPZE 200-400
Insulation of the evap. in/out ref. lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/leaving refrigerant lines	30XBEZE 200-1200 / 30XBPZE 200-400
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30XBEZE 200-1200 / 30XBPZE 200-400
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30XBEZE 200-1200 / 30XBPZE 200-400
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30XBEZE 200-1200 / 30XBPZE 200-400
Compressor enclosure	279a	Compressor enclosure	Improved aesthetic, compressor protection against external elements (dust, sand, water...)	30XBEZE 200-1200 / 30XBPZE 200-400
Evaporator with aluminum jacket	281	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30XBEZE 200-1200 / 30XBPZE 200-400
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30XBEZE 200-1200 / 30XBPZE 200-400
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30XBEZE 200-400/ 30XBPZE 200-400
US screw compressor	297	Screw compressor made in US		30XBEZE 400-1200
Variable Water Flow control	299	hydraulic control function package that permits control of the water flow rate based on different possible logics (at customer choice): constant ?T, constant outlet pressure and "fixed-speed" control	When variable-speed pumps on the primary circuit, the VWF control modulates flow rate through the evaporator, minimising pump consumption while ensuring safe/optimised chiller operation	30XBEZE 400-1200 / 30XBPZE 200-400
Free-cooling dry-cooler control	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, Extended control capabilities to a drycooler used in Free Cooling mode	30XBEZE 200-1200 / 30XBPZE 200-400

PHYSICAL DATA, SIZES 30XBEZE 200 TO 600

30XBEZE				200	230	250	300	350	400	450	500	550	600
Cooling													
Standard unit	CA1	Nominal capacity	kW	210	229	246	298	340	380	472	520	556	592
		Full load performances*	kW/kW	3,31	3,26	3,29	3,35	3,33	3,32	3,33	3,42	3,27	3,27
Unit with option 15LS (+)	CA1	Nominal capacity	kW	208	226	244	296	337	374	464	512	546	580
		Full load performances*	kW/kW	3,33	3,35	3,28	3,36	3,31	3,27	3,40	3,47	3,27	3,24
Standard unit	Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,65	4,57	4,54	4,49	4,51	4,51	4,67	4,78	4,60	4,59
		ηs cool _{12/7°C}	%	183	180	179	177	177	177	184	188	181	181
Unit with option 6	Seasonal energy efficiency **	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,23	6,36	6,43	6,26	6,24	6,34	6,36	6,39	6,03	6,06
		SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	3,55	3,53	3,53	3,37	3,53	3,51	3,49	3,60	3,56	3,38
Unit with Option 299	Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,59	4,59	4,57	4,64	4,65	4,63	-	-	-	-
		ηs cool _{12/7°C}	%	181	181	180	183	183	182	-	-	-	-
Unit with Option 5	Seasonal energy efficiency **	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,22	6,35	6,45	6,31	6,28	6,37	-	-	-	-
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,20	6,36	6,32	6,05	6,23	6,13	6,22	6,26	6,15	5,80
Unit with option 15LS (+)	Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,71	4,64	4,52	4,53	4,48	4,49	4,67	4,82	4,58	4,58
		ηs cool _{12/7°C}	%	186	182	178	178	176	176	184	190	180	180
Unit with Option 6 & 15LS (+)	Seasonal energy efficiency **	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,36	6,56	6,44	6,34	6,24	6,03	6,39	6,53	5,95	6,06
		SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	3,55	3,53	3,53	3,37	3,53	3,50	3,51	3,60	3,54	3,35
Unit with Option 299 & 15LS (+)	Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,65	4,65	4,54	4,68	4,61	4,60	-	-	-	-
		ηs cool _{12/7°C}	%	183	183	179	184	182	181	-	-	-	-
Unit with Option 5 & 15LS (+)	Seasonal energy efficiency **	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,35	6,46	6,46	6,40	6,28	6,06	-	-	-	-
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,27	6,43	6,37	6,12	6,28	6,25	6,34	6,32	6,21	5,87
Sound levels													
Standard unit													
Sound power ⁽¹⁾			dB(A)	99	99	99	99	101	99	101	99	103	103
Sound pressure at 10 m ⁽²⁾				67	67	67	67	69	67	68	66	70	70
Sound pressure at 1 m			dB(A)	80	80	80	79	81	79	80	78	82	82
Unit + option 15 ⁽³⁾													
Sound power ⁽¹⁾			dB(A)	93	93	94	95	95	95	97	96	97	98
Sound pressure at 10 m ⁽²⁾				61	61	62	63	63	63	64	63	64	65
Sound pressure at 1 m			dB(A)	74	74	75	75	75	75	76	75	76	77
Unit + option 15LS ⁽³⁾													
Sound power ⁽¹⁾			dB(A)	87	87	87	90	91	91	93	92	94	94
Sound pressure at 10 m ⁽²⁾				55	55	55	58	59	59	60	59	61	61
Sound pressure at 1 m			dB(A)	68	68	68	70	71	71	72	71	73	73
Unit + option 15LS+ ⁽³⁾													
Sound power ⁽¹⁾			dB(A)	-	-	-	-	89	89	91	90	91	92
Sound pressure at 10 m ⁽²⁾				-	-	-	-	57	57	58	57	58	59
Sound pressure at 1 m			dB(A)	-	-	-	-	69	69	70	69	70	71
Dimensions													
Standard unit													
Length			mm	3604	3604	3604	4798	4798	4798	7186	7186	7186	7186
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

*** With EG 30%

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/Wη_{sc} cool_{12/7°C} & SEER _{12/7°C} Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort applicationSEPR _{-2/-8°C} Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application

NA Non Authorized for the specific application for CEE market

- Not applicable

(1) in dB ref=10⁻¹²W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.(2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power L_w(A).

(3) Options : 15 = Low noise, 15LS = Very Low noise, 15LS+ = Ultra Low noise



Eurovent certified values

PHYSICAL DATA, SIZES 30XBEZE 200 TO 600

30XBEZE		200	230	250	300	350	400	450	500	550	600
Operating weight⁽⁴⁾											
Standard unit	l	3040	3071	3091	3674	3737	3798	4797	4943	5201	5514
Unit + option 15 ⁽³⁾	l	3308	3339	3359	3973	4036	4097	5128	5274	5532	5845
Compressors		06T semi-hermetic screw compressor, 50 r/s									
Circuit A		1	1	1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1	1	1
No. of control stages											
Refrigerant⁽⁴⁾		R1234ze(E) / A2L									
Circuit A	kg	37	35	35	51	52	52	58	58	65	69
	teqCO ₂	0,04	0,04	0,04	0,05	0,05	0,05	0,06	0,06	0,07	0,07
Circuit B	kg	39	36	37	37	37	37	59	62	58	65
	teqCO ₂	0,04	0,04	0,04	0,04	0,04	0,04	0,06	0,06	0,06	0,07
Oil											
Circuit A	l	20,8	20,8	20,8	23,5	23,5	23,5	23,5	23,5	27,6	27,6
Circuit B	l	20,8	20,8	20,8	20,8	20,8	20,8	23,5	23,5	23,5	23,5
Capacity control		SmartVu™, Electronic Expansion Valve (EXV)									
Minimum capacity	%	15	15	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		Inverter driven Flying Bird (TM) VI fans with AC motors									
Standard unit											
Quantity		6	6	6	8	8	8	11	12	12	12
Maximum total air flow	l/s	28920	28920	28920	38560	38560	38560	53020	57840	57840	57840
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS											
Maximum total air flow	l/s	23580	23580	23580	31440	31440	31440	43230	47160	47160	47160
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type									
Water volume	l	58	61	61	66	70	77	79	94	98	119
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Water connections		Victaulic® type									
Standard											
Nominal diameter	in	5	5	5	5	5	5	5	6	6	6
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	141,3	168,3	168,3	168,3
Options 100A											
Nominal diameter	in	4	4	4	4	4	4	5	5	5	5
Actual outside diameter	mm	114,3	114,3	114,3	114,3	114,3	114,3	141,3	141,3	141,3	141,3
Options 100C											
Nominal diameter	in	5	5	5	5	5	5	6	6	6	6
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	168,3	168,3	168,3	168,3
Casing paint		Colour code RAL 7035									

(3) Options : 15 = Low noise, 15LS = Very Low noise, 15LS+ = Ultra Low noise

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 30XBEZE 630 TO 1200

30XBEZE			630	700	750	900	950	1050	1150	1200	
Cooling											
Standard unit	CA1	Nominal capacity	kW	628	684	755	877	957	1025	1120	1171
Full load performances*		EER	kW/kW	3,29	3,29	3,29	3,30	3,29	3,29	3,26	3,24
Unit with option 15LS (+)	CA1	Nominal capacity	kW	613	671	737	860	935	1003	1093	1146
Full load performances*		EER	kW/kW	3,24	3,24	3,26	3,28	3,22	3,28	3,16	3,25
Standard unit	Seasonal energy efficiency **	SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,59	4,61	4,59	4,67	4,62	4,61	4,64	4,59
Seasonal energy efficiency **		ηs cool ^{12/7°C}	%	181	181	180	184	182	181	183	181
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	5,93	6,10	5,99	5,94	5,64	6,01	5,92	5,95
Unit with Option 6	Seasonal energy efficiency **	SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,37	3,36	3,38	3,41	3,31	3,48	3,43	3,31
Seasonal energy efficiency **		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	-	-	-	-	-	-	-	-
		ηs cool ^{12/7°C}	%	-	-	-	-	-	-	-	-
Unit with Option 299	Seasonal energy efficiency **	SEPR ^{12/7°C} Process high temp.	kWh/kWh	-	-	-	-	-	-	-	-
Seasonal energy efficiency **		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	-	-	-	-	-	-	-	-
		ηs cool ^{12/7°C}	%	-	-	-	-	-	-	-	-
Unit with Option 5	Seasonal energy efficiency **	SEPR ^{12/7°C} Process high temp.	kWh/kWh	5,76	5,76	5,75	5,77	5,51	5,89	5,68	5,51
Seasonal energy efficiency **		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,59	4,59	4,56	4,65	4,58	4,60	4,61	4,56
		ηs cool ^{12/7°C}	%	180	181	179	183	180	181	182	180
Unit with option 15LS (+)	Seasonal energy efficiency **	SEPR ^{12/7°C} Process high temp.	kWh/kWh	5,97	6,15	6,19	6,29	6,04	6,12	6,06	6,00
Seasonal energy efficiency **		SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,32	3,29	3,36	3,40	3,30	3,47	3,44	3,31
		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	-	-	-	-	-	-	-	-
Unit with Option 299 & 15LS (+)	Seasonal energy efficiency **	ηs cool ^{12/7°C}	%	-	-	-	-	-	-	-	-
Seasonal energy efficiency **		SEPR ^{12/7°C} Process high temp.	kWh/kWh	-	-	-	-	-	-	-	-
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	5,84	5,82	5,82	5,83	5,72	5,91	5,77	5,70
Sound levels											
Standard unit											
Sound power ⁽¹⁾	dB(A)		101	104	102	103	102	104	104	104	
Sound pressure at 10 m ⁽²⁾			68	71	69	70	69	71	71	71	
Sound pressure at 1 m ⁽²⁾	dB(A)		80	83	81	81	80	81	81	81	
Unit + option 15 ⁽³⁾											
Sound power ⁽¹⁾	dB(A)		97	99	98	98	98	100	99	99	
Sound pressure at 10 m ⁽²⁾			64	66	65	65	65	67	66	66	
Sound pressure at 1 m ⁽²⁾	dB(A)		76	78	77	76	76	77	76	76	
Unit + option 15LS ⁽³⁾											
Sound power ⁽¹⁾	dB(A)		94	95	94	94	94	99	95	96	
Sound pressure at 10 m ⁽²⁾			61	62	61	61	61	66	62	63	
Sound pressure at 1 m ⁽²⁾	dB(A)		73	74	73	72	72	76	72	73	
Unit + option 15LS+ ⁽³⁾											
Sound power ⁽¹⁾	dB(A)		91	93	92	93	93	97	94	95	
Sound pressure at 10 m ⁽²⁾			58	60	59	60	60	64	61	62	
Sound pressure at 1 m ⁽²⁾	dB(A)		70	72	71	71	71	74	71	72	

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

*** With EG 30%

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/Wη_s cool_{12/7°C} & SEER _{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**SEPR _{-2/-8°C} **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**

NA Non Authorized for the specific application for CEE market

- Not applicable

(1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.(2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power L_w(A).

(3) Options : 15 = Low noise, 15LS = Very Low noise, 15LS+ = Ultra Low noise



Eurovent certified values

PHYSICAL DATA, SIZES 30XBEZE 630 TO 1200

30XBEZE		630	700	750	900	950	1050	1150	1200
Dimensions									
Standard unit									
Length	mm	7186	8380	8380	10770	10770	11962	11962	13157
Width	mm	2253	2253	2253	2253	2253	2253	2253	2253
Height	mm	2322	2322	2322	2322	2322	2322	2322	2322
Operating weight⁽⁴⁾									
Standard unit	kg	5563	6168	6344	7687	7780	8660	8735	9072
Unit + option 15 ⁽³⁾	kg	5894	6499	6675	8061	8154	9034	9109	9446
Compressors		06T semi-hermetic screw compressor, 50 r/s							
Circuit A		1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1
No. of control stages									
Refrigerant⁽⁴⁾		R1234ze(E) / A2L							
Circuit A	kg	69	72	72	80	80	115	121	124
	teqCO ₂	0,07	0,07	0,07	0,08	0,08	0,12	0,12	0,12
Circuit B	kg	67	74	74	121	126	121	127	130
	teqCO ₂	0,07	0,07	0,07	0,12	0,13	0,12	0,13	0,13
Oil		Oil type							
Circuit A	l	27,6	27,6	27,6	27,6	27,6	36,0	36,0	36,0
Circuit B	l	23,5	27,6	27,6	36,0	36,0	36,0	36,0	36,0
Circuit C	l								
Circuit D	l								
Capacity control		SmartVu™, Electronic Expansion Valve (EXV)							
Minimum capacity	%	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)							
Fans		Inverter driven Flying Bird (TM) VI fans with AC motors							
Standard unit									
Quantity		12	14	14	18	18	20	20	22
Maximum total air flow	l/s	57840	67480	67480	86760	86760	96400	96400	106040
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS									
Maximum total air flow	l/s	47160	55020	55020	70740	70740	78600	78600	86460
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type							
Water volume	l	119	130	140	164	174	180	189	189
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000
Water connections		Victaulic® type							
Standard									
Nominal diameter	in	6	6	8	6	6	6	6	6
Actual outside diameter	mm	168,3	168,3	219,1	168,3	168,3	168,3	168,3	168,3
Options 100A									
Nominal diameter	in	5	5	6	6	6	6	6	6
Actual outside diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	168,3	168,3
Options 100C									
Nominal diameter	in	6	6	8	-	-	-	-	-
Actual outside diameter	mm	168,3	168,3	219,1	-	-	-	-	-
Casing paint		Colour code RAL 7035							

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 30XBPZE 200 TO 400

30XBPZE			200	230	250	300	350	400	
Cooling									
Standard unit	CA1	Nominal capacity	kW	210	229	246	298	340	380
Full load performances*		EER	kW/kW	3,37	3,32	3,34	3,42	3,38	3,37
Unit with Option 15LS	CA1	Nominal capacity	kW	208	226	244	296	337	374
Full load performances*		EER	kW/kW	3,37	3,33	3,29	3,40	3,34	3,30
Standard unit		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,75	4,68	4,62	4,57	4,61	4,60
Seasonal energy efficiency **		ηs cool ^{12/7°C}	%	187	184	182	180	182	181
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	6,29	6,42	6,48	6,28	6,31	6,42
Unit with option 6		SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,57	3,58	3,57	3,42	3,58	3,56
Seasonal energy efficiency **									
Unit with option 299		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,70	4,70	4,65	4,73	4,76	4,73
Seasonal energy efficiency **		ηs cool ^{12/7°C}	%	185	185	183	186	187	186
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	6,28	6,41	6,49	6,32	6,35	6,46
Unit with Option 5		SEPR ^{12/7°C} Process high temp.	kWh/kWh	6,28	6,43	6,39	6,12	6,30	6,20
Seasonal energy efficiency **									
Unit with option 15LS(+)		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,83	4,70	4,59	4,61	4,60	4,58
Seasonal energy efficiency **		ηs cool ^{12/7°C}	%	190	185	180	181	181	180
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	6,45	6,54	6,48	6,37	6,33	6,13
Unit with Option 6 & 15LS (+)		SEPR ^{-2/-8°C} Process medium temp.***	kWh/kWh	3,56	3,58	3,57	3,42	3,57	3,54
Seasonal energy efficiency **									
Unit with Option 299 & 15LS (+)		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	4,76	4,71	4,61	4,77	4,74	4,69
Seasonal energy efficiency **		ηs cool ^{12/7°C}	%	188	185	181	188	186	185
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	6,44	6,46	NA	6,42	6,37	6,17
Unit with Option 5 & 15LS (+)		SEPR ^{12/7°C} Process high temp.	kWh/kWh	6,34	6,5	6,43	6,19	6,34	6,30
Seasonal energy efficiency **									
Sound levels									
Standard unit									
Sound power ⁽¹⁾		dB(A)	99	99	99	99	101	99	
Sound pressure at 10 m ⁽²⁾			67	67	67	67	69	67	
Sound pressure at 1 m		dB(A)	80	80	80	79	81	79	
Unit + option 15 ⁽³⁾									
Sound power ⁽¹⁾		dB(A)	93	93	94	95	95	95	
Sound pressure at 10 m ⁽²⁾			61	61	62	63	63	63	
Sound pressure at 1 m		dB(A)	74	74	75	75	75	75	
Unit + option 15LS ⁽³⁾									
Sound power ⁽¹⁾		dB(A)	87	87	87	90	91	91	
Sound pressure at 10 m ⁽²⁾			55	55	55	58	59	59	
Sound pressure at 1 m		dB(A)	68	68	68	70	71	71	
Unit + option 15LS+ ⁽³⁾									
Sound power ⁽¹⁾		dB(A)	-	-	-	-	89	89	
Sound pressure at 10 m ⁽²⁾			-	-	-	-	57	57	
Sound pressure at 1 m		dB(A)	-	-	-	-	69	69	
Dimensions									
Standard unit									
Length		mm	3604	3604	3604	4798	4798	4798	
Width		mm	2253	2253	2253	2253	2253	2253	
Height		mm	2322	2322	2322	2322	2322	2322	

- * In accordance with standard EN14511-3:2018.
 ** In accordance with standard EN14825:2016, average climate
 *** With EG 30%
 CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
 η_s cool ^{12/7°C} & SEER ^{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
 SEPR ^{-2/-8°C} **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
 NA Non Authorized for the specific application for CEE market
 (1) in dB ref=10⁻¹²W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
 (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
 (3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.



Eurovent certified values

PHYSICAL DATA, SIZES 30XBPZE 200 TO 400

30XBPZE		200	230	250	300	350	400
Operating weight⁽⁴⁾							
Standard unit	kg	3015	3047	3066	3652	3715	3776
Unit + option 15 ⁽³⁾	kg	3283	3314	3334	3952	4014	4075
Compressors		06T semi-hermetic screw compressor, 50 r/s					
Circuit A	l	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1
No. of control stages	l						
Refrigerant⁽⁴⁾		R1234ze(E) / A2L					
Circuit A	kg	39	37	37	52	53	55
	teqCO ₂	0,04	0,04	0,04	0,05	0,05	0,05
Circuit B	kg	40,0	38	39	40	40	36
	teqCO ₂	0,04	0,04	0,04	0,04	0,04	0,04
Oil							
Circuit A	l	20,8	20,8	20,8	23,5	23,5	23,5
Circuit B	l	20,8	20,8	20,8	20,8	20,8	20,8
Capacity control		SmartVu™, Electronic Expansion Valve (EXV)					
Minimum capacity	%	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)					
Fans		Inverter driven Flying Bird (TM) VI fans with EC motors					
Standard unit							
Quantity		6	6	6	8	8	8
Maximum total air flow	l/s	28920	28920	28920	38560	38560	38560
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS							
Maximum total air flow	l/s	23580	23580	23580	31440	31440	31440
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type					
Water volume	l	58	61	61	66	70	77
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Water connections		Victaulic® type					
Standard							
Nominal diameter	in	5	5	5	5	5	5
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3
Option 100A							
Nominal diameter	in	4	4	4	4	4	4
Actual outside diameter	mm	114,3	114,3	114,3	114,3	114,3	114,3
Options 100C							
Nominal diameter	in	5	5	5	5	5	5
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3
Casing paint		Colour code RAL 7035					

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.

(4) Values are guidelines only. Refer to the unit name plate.

ELECTRICAL DATA, 30XBEZE 200 TO 750

30XBEZE		200	230	250	300	350	400	450	500	550	600	630	700	750
Power circuit supply														
Nominal voltage	V-ph-Hz	400-3-50												
Voltage range	V	360-440												
Control circuit supply		24 V via internal transformer												
Maximum operating input power ⁽¹⁾														
Standard unit	kW	97	105	112	142	160	174	224	239	257	270	281	305	327
Unit + option 15LS	kW	92	99	107	135	153	167	214	229	246	260	271	293	315
Power factor at maximum power ⁽¹⁾														
Standard unit														
Displacement Power Factor (Cos Phi)		0,90	0,90	0,89	0,90	0,90	0,90	0,90	0,90	0,89	0,89	0,90	0,88	0,89
Unit + option 15LS														
Displacement Power Factor (Cos Phi)		0,90	0,90	0,89	0,89	0,90	0,88	0,89	0,90	0,89	0,89	0,89	0,89	0,89
Nominal operating current draw ⁽²⁾														
Standard unit	A	116	125	134	161	181	198	248	268	288	304	314	347	367
Unit + option 15LS	A	107	116	125	149	169	185	231	249	269	286	296	326	345
Maximum operating current draw (Un) ⁽¹⁾														
Standard unit	A	155	169	182	227	258	280	359	384	417	439	454	500	530
Unit + option 15LS	A	147	160	173	216	247	269	343	367	400	422	437	480	510
Maximum current (Un-10%) ⁽¹⁾														
Standard unit	A	166	181	195	244	277	300	385	412	447	471	488	537	569
Unit + option 15LS	A	158	172	187	232	265	289	369	395	430	454	471	517	549
Nominal start-up current ⁽³⁾														
Standard unit	A	227	227	236	360	454	454	501	521	700	717	717	759	769
Unit + option 15LS	A	223	223	232	356	450	450	494	512	693	710	710	749	759
Unit + option 25C	A	184	180	189	317	407	407	392	412	605	612	612	628	642
Maximum start-up current(Un) ⁽²⁾														
Standard unit	A	248	261	261	381	479	479	581	580	754	776	776	837	852
Unit + option 15LS	A	244	257	257	377	475	475	574	572	747	769	769	827	842
Unit + option 25C	A	205	214	214	338	432	432	472	472	659	671	671	706	725

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA, 30XBEZE 0900 TO 1200

30XBEZE		900	950	1050	1150	1200
Power circuit supply						
Nominal voltage	V-ph-Hz	400-3-50				
Voltage range	V	360-440				
Control circuit supply		24 V via internal transformer				
Maximum operating input power⁽¹⁾ - 30XBEZE						
Standard unit						
Circuit 1 ^(a)	kW	154	163	224	245	262
Circuit 2 ^(a)	kW	246	262	244	260	262
Option 081	kW	399	426	468	505	524
Unit + option 15LS						
Circuit 1 ^(a)	kW	147	157	215	236	253
Circuit 2 ^(a)	kW	236	253	235	252	253
Option 081	kW	383	410	450	487	505
Power factor at maximum power⁽¹⁾ - 30XBEZE						
Standard unit						
Displacement Power Factor (Cos Phi)		0,89	0,89	0,89	0,89	0,89
Unit + option 15LS						
Displacement Power Factor (Cos Phi)		0,89	0,89	0,89	0,89	0,89
Nominal operating current draw⁽²⁾ - 30XBEZE						
Standard unit						
Circuit 1 ^(a)	A	174	184	250	267	292
Circuit 2 ^(a)	A	270	292	267	288	292
Option 081	A	444	475	516	555	583
Unit + option 15LS						
Circuit 1 ^(a)	A	163	173	235	252	275
Circuit 2 ^(a)	A	253	275	252	273	275
Option 081	A	416	447	486	524	549
Maximum operating current draw (Un)⁽¹⁾ - 30XBEZE						
Standard unit						
Circuit 1 ^(a)	A	250	265	365	397	425
Circuit 2 ^(a)	A	400	425	397	422	425
Option 081	A	650	690	762	819	850
Unit + option 15LS						
Circuit 1 ^(a)	A	240	255	351	383	410
Circuit 2 ^(a)	A	384	410	383	408	410
Option 081	A	624	665	733	790	819
Maximum current (Un-10%)⁽¹⁾ - 30XBEZE						
Standard unit						
Circuit 1 ^(a)	A	269	285	392	426	457
Circuit 2 ^(a)	A	429	457	426	454	457
Option 081	A	697	741	818	879	913
Unit + option 15LS						
Circuit 1 ^(a)	A	259	275	378	412	441
Circuit 2 ^(a)	A	414	441	412	440	441
Option 081	A	672	716	790	851	882
Nominal start-up current⁽³⁾ - 30XBEZE						
Circuit 1 ^(a)	A	587	587	629	629	629
Circuit 2 ^(a)	A	629	629	629	629	629
Option 081	A	854	876	893	915	918
Option 081 & Opt 25c	A	629	640	672	683	683
Maximum start-up current(Un)⁽²⁾ - 30XBEZE						
Circuit 1 ^(a)	A	587	587	629	629	629
Circuit 2 ^(a)	A	629	629	629	629	629
Option 081	A	987	1012	1026	1051	1054
Option 081 & Opt 25c	A	761	776	804	819	818

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B.

ELECTRICAL DATA, 30XBPZE 200 TO 400

30XBPZE		200	230	250	300	350	400
Power circuit supply							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Control circuit supply		24 V via internal transformer					
Maximum operating input power ⁽¹⁾							
Standard unit	kW	96	103	111	140	158	172
Unit + option 15LS	kW	94	101	109	138	156	170
Power factor at maximum power ⁽¹⁾							
Standard unit							
Displacement Power Factor (Cos Phi)		0,90	0,89	0,89	0,90	0,89	0,89
Unit + option 15LS							
Displacement Power Factor (Cos Phi)		0,90	0,89	0,89	0,90	0,89	0,89
Nominal operating current draw ⁽²⁾							
Standard unit	A	113	122	131	158	177	194
Unit + option 15LS	A	110	119	128	154	173	190
Maximum operating current draw (Un) ⁽¹⁾							
Standard unit	A	154	167	181	226	256	278
Unit + option 15LS	A	151	164	178	222	252	274
Maximum current (Un-10%) ⁽¹⁾							
Standard unit	A	165	180	194	242	275	299
Unit + option 15LS	A	162	176	191	238	271	295
Nominal start-up current ⁽³⁾							
Standard unit	A	227	227	236	360	454	454
Unit + option 15LS	A	225	225	234	358	452	452
Unit + option 25C	A	184	180	189	317	407	407
Maximum start-up current(Un) ⁽²⁾							
Standard unit	A	247	261	261	380	479	479
Unit + option 15LS	A	246	259	259	379	477	477
Unit + option 25C	A	204	213	213	337	431	431

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

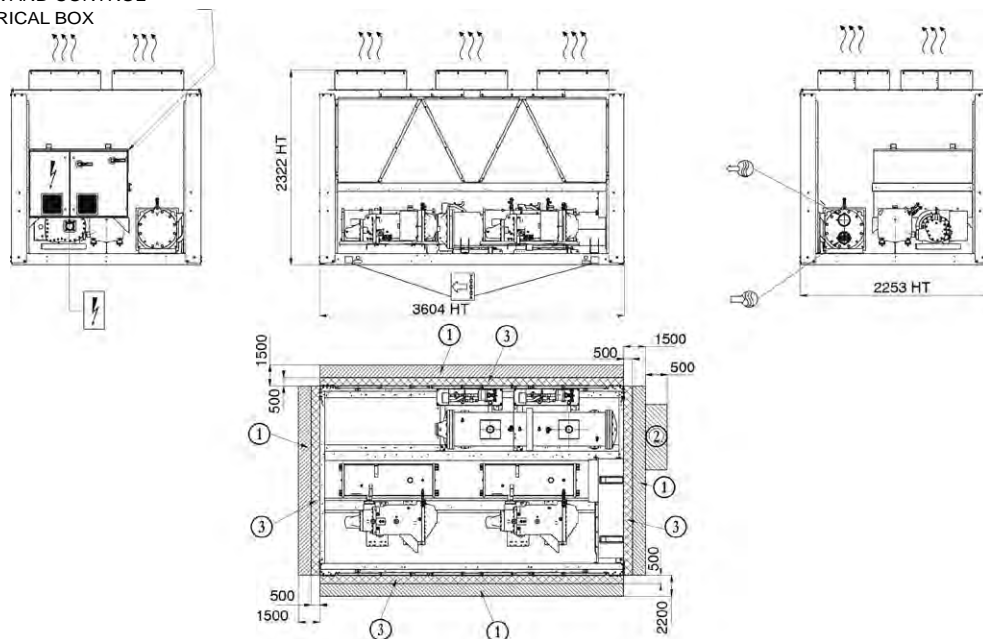
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

DIMENSIONS / CLEARANCES

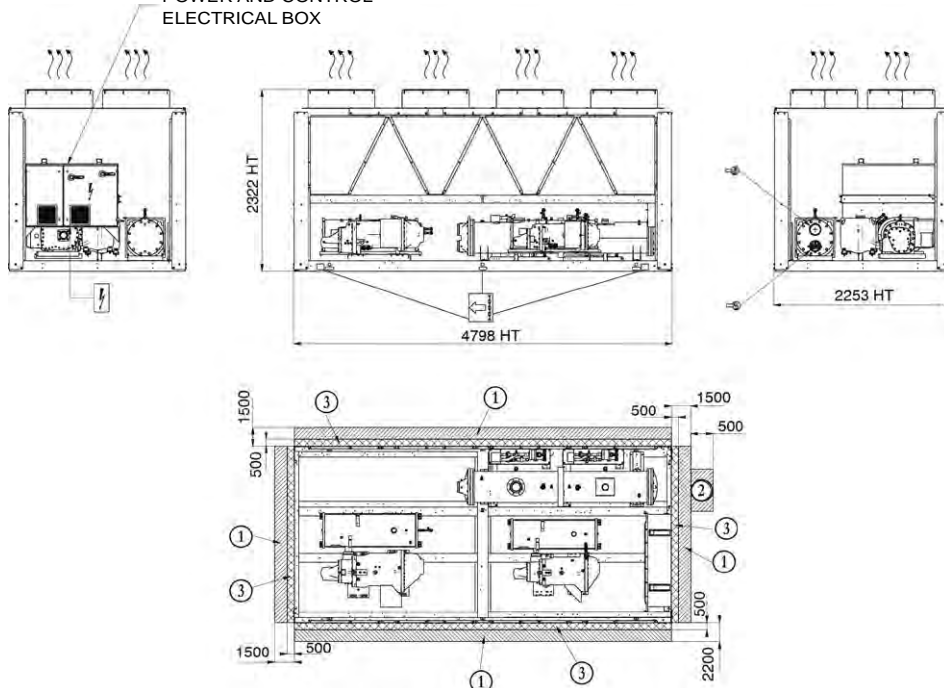
30XB(P)ZE 0200 to 250

POWER AND CONTROL
ELECTRICAL BOX



30XB(P)ZE 0300 to 400

POWER AND CONTROL
ELECTRICAL BOX



Legend

All dimensions are given in mm.

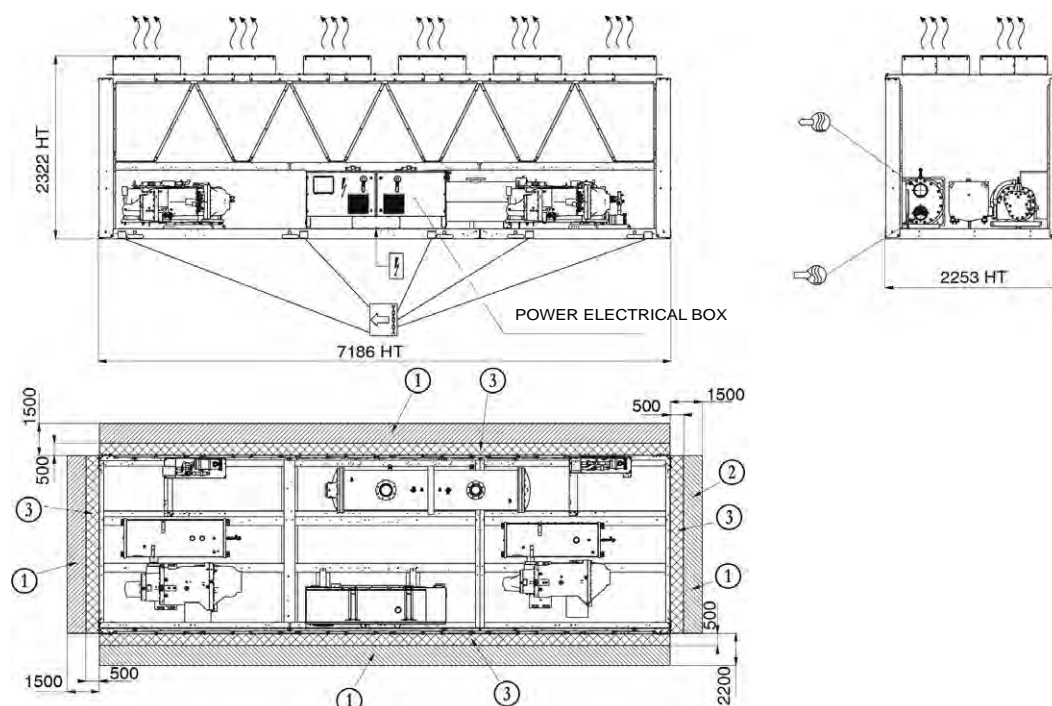
- ① Required clearances for maintenance (see note)
- ② Recommended space for evaporator tube removal
- ③ ATEX zone around the unit
- Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Air outlet – do not obstruct
- Power supply and control connection
- Sliding points

NOTES:

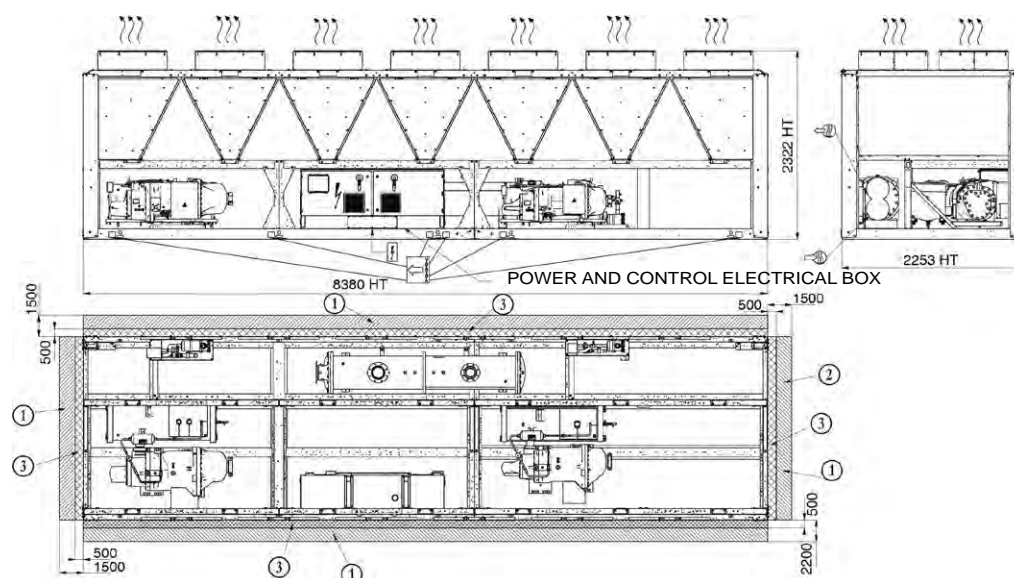
- Drawings are not contractually binding.
- Refer to unit nameplate for unit weight information
- Before designing an installation, consult the certified dimensional drawings, provided with the unit (Appendix 4).
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.7 - "Multiple chiller installation" and 3.8 - "Distance to the wall" of the installation manual to determine the space required

DIMENSIONS / CLEARANCES

30XBEZE 0450 to 630



30XBEZE 0700 to 750



Legend


Legend
All dimensions are given in mm.


- ① Required clearances for maintenance (see note)
- ② Recommended space for evaporator tube removal
- ③ ATEX zone around the unit

 Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

 Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

))) Air outlet – do not obstruct

 Power supply and control connection

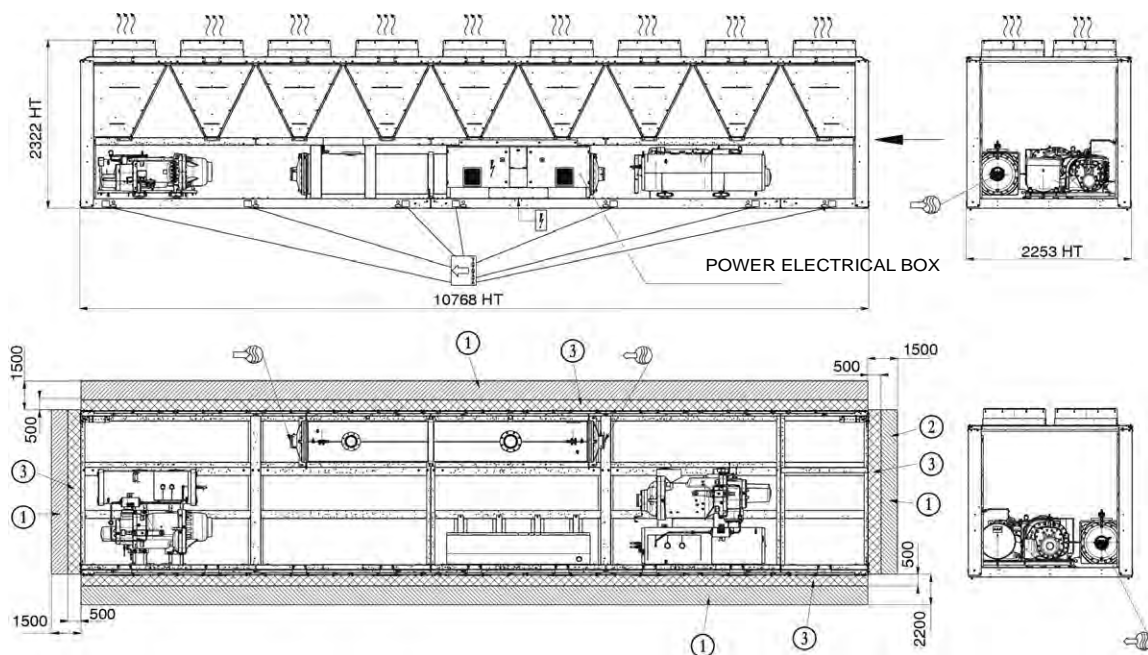
 Slings points

NOTES:

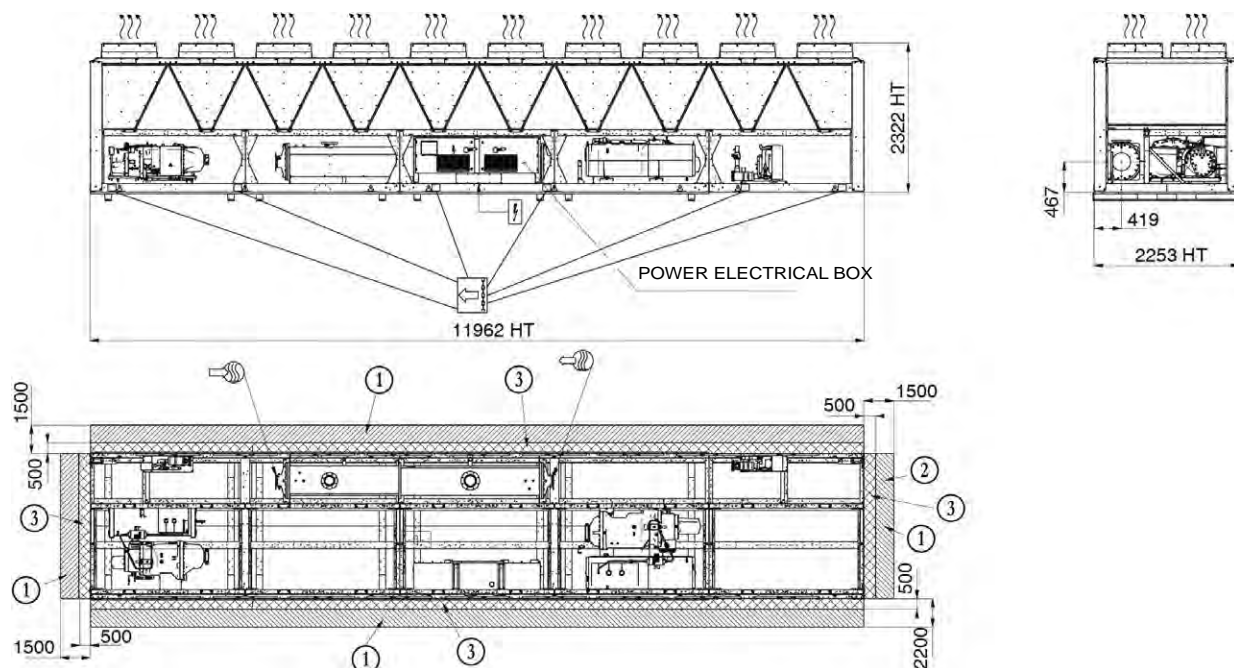
- Drawings are not contractually binding.
- Refer to unit nameplate for unit weight information
- Before designing an installation, consult the certified dimensional drawings, provided with the unit (Appendix 4).
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.7 - "Multiple chiller installation" and 3.8 - "Distance to the wall" of the installation manual to determine the space required

DIMENSIONS / CLEARANCES

30XBEZE 0900 to 950



30XBEZE 1050 to 1150



Legend

All dimensions are given in mm.

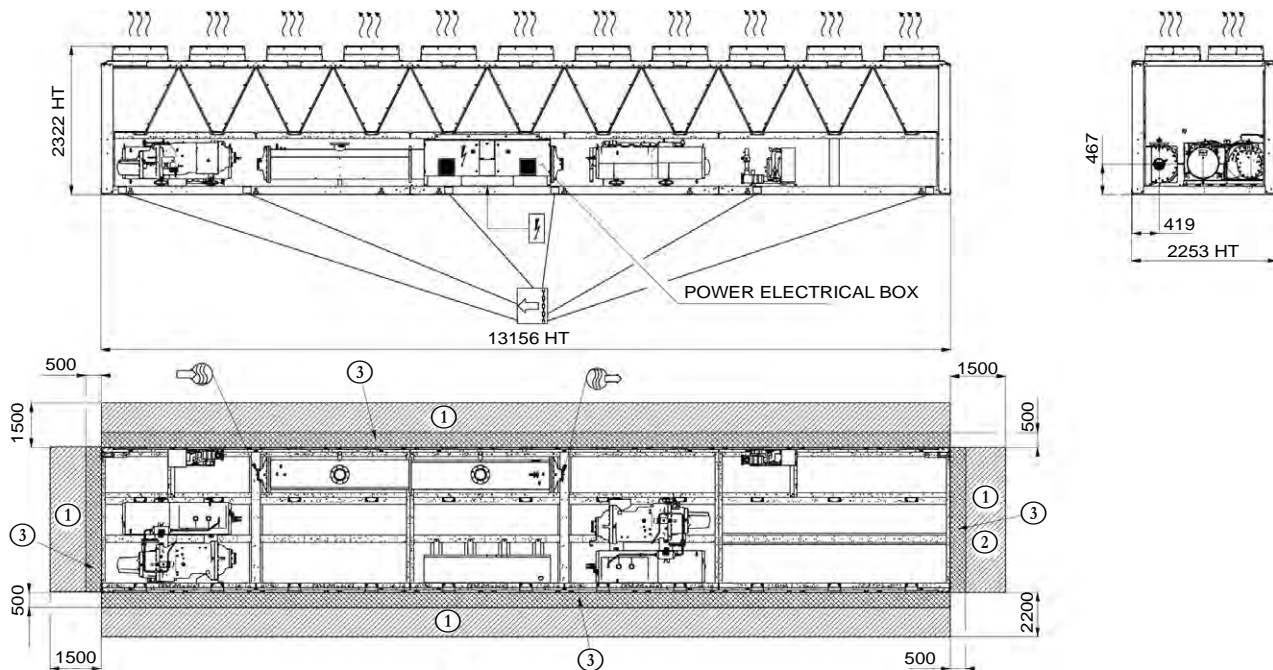
- ① Required clearances for maintenance (see note)
- ② Recommended space for evaporator tube removal
- ③ ATEX zone around the unit
- Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Air outlet – do not obstruct
- Power supply and control connection
- Slings points

NOTES:

- Drawings are not contractually binding.
- Refer to unit nameplate for unit weight information
- Before designing an installation, consult the certified dimensional drawings, provided with the unit (Appendix 4).
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.7 - "Multiple chiller installation" and 3.8 - "Distance to the wall" of the installation manual to determine the space required

DIMENSIONS / CLEARANCES

30XBEZE 1200



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
- ② Recommended space for evaporator tube removal
- ③ ATEX zone around the unit
- Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
- Air outlet – do not obstruct
- Power supply and control connection
- Slinging points

NOTES:

- Drawings are not contractually binding.
- Refer to unit nameplate for unit weight information
- Before designing an installation, consult the certified dimensional drawings, provided with the unit (Appendix 4).
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.7 - "Multiple chiller installation" and 3.8 - "Distance to the wall" of the installation manual to determine the space required

NEW

VARIABLE-SPEED SCREW LIQUID CHILLER WITH GREENSPEED™ INTELLIGENCE



Outstanding performance

Low sound levels

Intelligence and connectivity

Environmentally responsible

Wide range of applications

Simple installation and maintenance

30KAV 500 - 1100 30KAVP 500 - 1100

AQUAFORCE greenspeed

Nominal cooling capacity 493-1079 kW

The AquaForce™ Vision 30KAV/30KAVP liquid chillers with Greenspeed™ Intelligence are the premium solution for commercial and industrial applications where installers, consultants and building owners require superior reliability and optimal performances, especially at part load.

The 30KAV/30KAVP units are designed to exceed European Ecodesign directive requirements in terms of energy efficiency, versatility and operating sound levels. This result is achieved through the optimised combination of proven best-in-class technologies that include:

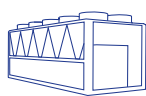
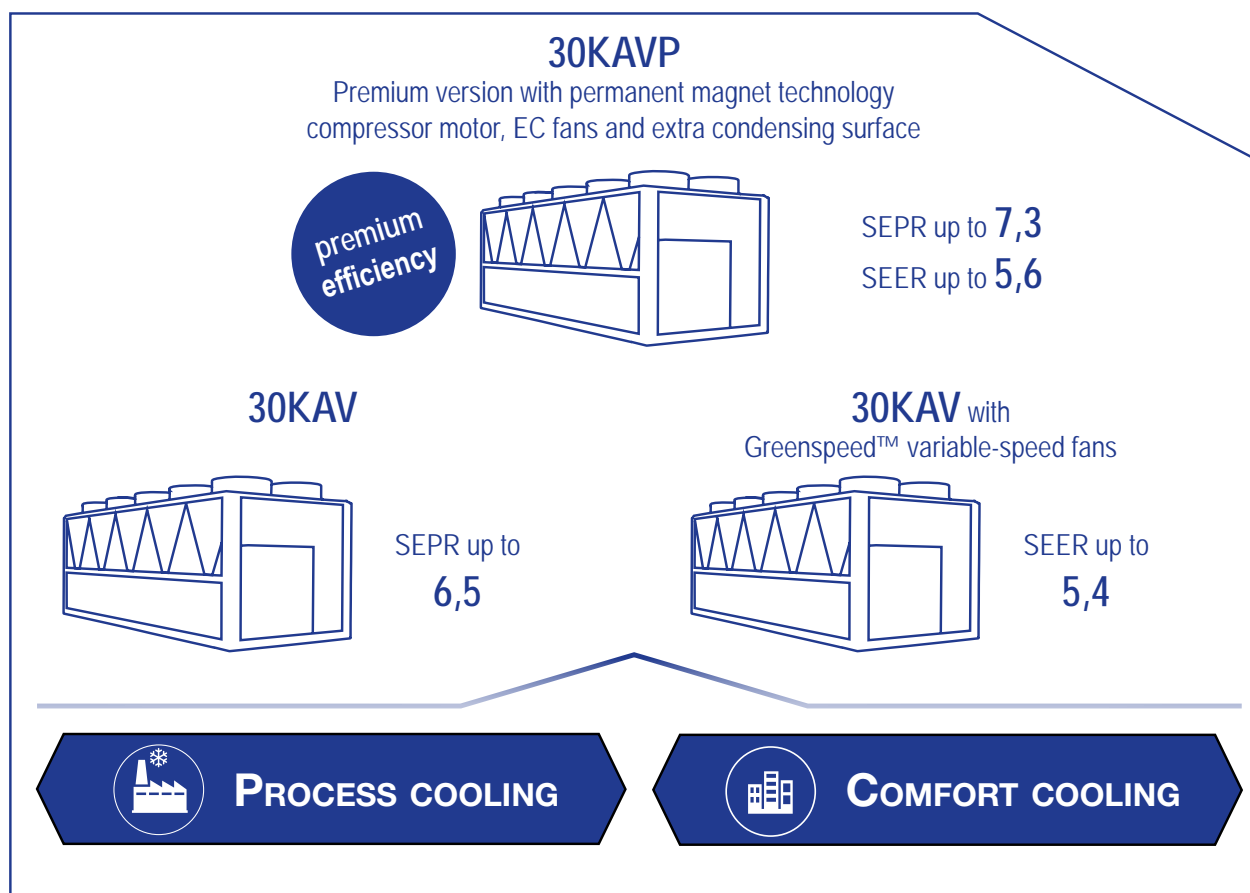
- 2nd generation of high-efficiency variable-speed twin screw compressors with built in volume index control (Vi) valve for optimal full and part load performance and Integrated Resonator Array (IRA) for low sound operation
- 30KAVP premium efficiency with a Permanent Magnet technology motor. Motor is synchronous and spins without any slip and rotor losses.
- 6th generation of Carrier Flying Bird™ fans with AC or EC motor depending on options.
- Carrier flooded shell-and-tube evaporator with new copper tubes for low pressure drops
- 3rd generation of "W" profile Carrier Novation™ microchannel heat exchangers with optional Enviro-Shield coatings.
- Carrier SmartView control with color touch screen user interface that includes 10 languages and new smart energy monitoring function.



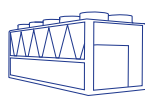
CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

AQUAFORCE® , THE RIGHT SOLUTION FOR EVERY APPLICATION

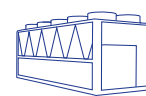
Carrier's AquaForce® 30KAV range is available in three levels of efficiency to perfectly match each customer application and meet the European Ecodesign directive requirements.

**30KAV**

The AquaForce® 30KAV is equipped with variable-speed screw compressor and fixed-speed fans with AC motor. The 30KAV offers an economical solution whilst providing high full load energy efficiency level for process applications and 12/7°C operation in hot climates. 30KAV is compliant with the 2018 EU Ecodesign SEPR -2/-8°C and 12/7°C requirements for medium and high temperature process chillers.

**30KAV**
with Greenspeed™
intelligence

The AquaForce® 30KAV with Greenspeed™ intelligence is equipped with variable-speed AC fan motors. It offers an economical solution to enhance seasonal energy efficiency levels for comfort applications. The 30KAV with Greenspeed™ intelligence meets the 2018 EU Ecodesign SEER 12/7°C requirements.

**30KAVP**

The AquaForce® 30KAVP with Greenspeed™ intelligence is the premium version with permanent magnet technology compressor motor, EC fans and additional heat exchange surface to improve both the full load and part load energy efficiency. The 30KAVP provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology.

30KAV CUSTOMER BENEFITS

■ Outstanding performance

Equipped with variable-speed screw compressors and variable-speed fans (AC as standard and EC as option) and optional variable-speed pumps, Carrier's AquaForce® Vision 30KAV chiller with Greenspeed™ intelligence automatically adjusts the cooling capacity and the water flow to perfectly match the needs of the building or the process load variations. The result is optimum operation at both full load and part load (SEER up to 5.4). 30KAV offers energy efficiency up to 10% higher than the 30XAV range with the same footprint.

The range is already fully compliant with the 2021 Ecodesign regulations.



SEER
up to 5.4

■ Low sound levels

The new generation of Carrier 06Z variable-speed twin screw compressor with integrated resonator array and the 6th generation of Flying Bird™ fans with new fan blade design inspired by nature help reduce compressor and airflow noise down to as little as 90 dB(A). 30KAV is 6 dB(A) quieter than the previous AquaForce® 30XAV generation.



90 dB(A)

■ Intelligence and connectivity

The advanced SmartView intelligent control system displays operating parameters in real time, making it intuitive and particularly user-friendly. 30KAV also features innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling energy output and instantaneous and average seasonal energy efficiency ratios. For further energy savings, 30KAV can be monitored remotely by Carrier experts for energy consumption diagnosis and optimization.



SMART ENERGY
MONITORING

■ Environmentally responsible

Carrier's AquaForce® Vision 30KAV is a boost for green cities and contributes to a sustainable future. Combining a reduced load refrigerant and exceptional energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions by 25% throughout its life cycle.

The AquaForce® Vision version with PUREtec™ refrigerant designed exclusively for ultra low GWP HFO R-1234ze will be available during the course of 2019.



UP TO
25% LESS
CO₂ EMISSION

■ Extensive scope of application

Carrier's AquaForce® Vision adapts effortlessly to a wide range of applications. Extended operating temperatures from -20°C to 55°C outdoor air temperatures and negative water temperatures make it ideal for various sectors of activity. From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaForce® Vision 30KAV meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate and wherever the location.



FROM
-20°C
to 55°C

■ Easy installation & maintenance

Built-in variable-speed pumps up to 800 kW, automatic nominal water flow adjustment through electronic control, automatic unit energy performance measurement under real conditions, in units that are 25% smaller than the previous 30XAV generation, all these new features provide peace of mind for installers and service companies alike.



25%
SMALLER

30KAVP CUSTOMER BENEFITS

■ Outstanding performance

Equipped with variable-speed screw compressors with permanent magnet motor, EC fans and extra condensing surface, Carrier's AquaForce® Vision 30KAVP chiller with Greenspeed™ intelligence automatically adjusts the cooling capacity and the water flow to perfectly match the needs of the building or the process load variations.

The SEER is 25% above 2021 Ecodesign requirements.



SEER
up to 5.6

■ Low sound levels

The new generation of Carrier 06Z variable-speed twin screw compressor with integrated resonator array and the 6th generation of Flying Bird™ fans with new fan blade design inspired by nature help reduce compressor and airflow noise down to as little as 90 dB(A). 30KAVP is 6 dB(A) quieter than the previous AquaForce® 30XAV generation.



90 dB(A)

■ Intelligence and connectivity

The advanced SmartView intelligent control system displays operating parameters in real time, making it intuitive and particularly user-friendly. 30KAVP also features innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling energy output and instantaneous and average seasonal energy efficiency ratios. For further energy savings, 30KAVP can be monitored remotely by Carrier experts for energy consumption diagnosis and optimization.



SMART ENERGY
MONITORING

■ Environmentally responsible

Carrier's AquaForce® Vision 30KAVP is a boost for green cities and contributes to a sustainable future. Combining a reduced load refrigerant and exceptional energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions by 25% throughout its life cycle.

The AquaForce® Vision version with PUREtec™ refrigerant designed exclusively for ultra low GWP HFO R-1234ze will be available during the course of 2019.



UP TO
25% LESS
CO₂ EMISSION

■ Extensive scope of application

Carrier's AquaForce® Vision adapts effortlessly to a wide range of applications. Extended operating temperatures from -20°C to 55°C outdoor air temperatures and negative water temperatures make it ideal for various sectors of activity. From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaForce® Vision 30KAVP meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate and wherever the location.



FROM
-20°C
to 55°C

■ Easy installation & maintenance

Built-in variable-speed pumps up to 800 kW, automatic nominal water flow adjustment through electronic control, automatic unit energy performance measurement under real conditions, in units that are 25% smaller than the previous 30XAV generation, all these new features provide peace of mind for installers and service companies alike.



25%
SMALLER

CUSTOMER BENEFITS

AquaForce™ Vision 30KAV/30KAVP liquid chillers with Greenspeed™ Intelligence adapt effortlessly to a wide range of applications. An extended operating range covering ambient temperatures from -20 to 55°C makes it ideal for all areas of activity. From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, 30KAV/30KAVP meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate and wherever the location.

Furthermore, the advanced SmartView intelligent control system displays operating parameters in real time, making it intuitive and particularly user-friendly. 30KAV/30KAVP also features innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling capacity, and instantaneous and average seasonal energy efficiency ratios as well as smart refrigerant leak alert that can indicate significant loss of refrigerant at any point of the system.

For further energy savings, 30KAV can be monitored remotely by Carrier experts for energy consumption diagnosis and optimization.

The 30KAV/30KAVP range is available in 5 efficiency levels.

■ 30KAV standard unit

The AquaForce™ 30KAV is equipped with variable-speed screw compressor and variable-speed fans with AC motors. The 30KAV is optimised to meet the most demanding technical and economic requirements while offering high seasonal energy efficiency levels.

(Average SEER of 5.17, average EER of 3.0)

■ 30KAV with EC fans (option 17)

The 30KAV with EC fans option enhances the seasonal energy efficiency and offers state of the art EC fan technology as standard.

(Average SEER of 5.23, average EER of 3.0)

■ 30KAV with High Energy Efficiency (option 119)

The 30KAV with High Energy Efficiency option is equipped with variable-speed fans with AC motor and additional heat exchange surface to deliver optimum performance at both full load and part load.

(Average SEER of 5.35, average EER of 3.4)

■ 30KAV with High Energy Efficiency+ (option 119+)

The 30KAV with High Energy Efficiency+ option is equipped with EC fans and additional heat exchange surface to provide the highest possible seasonal energy efficiency.

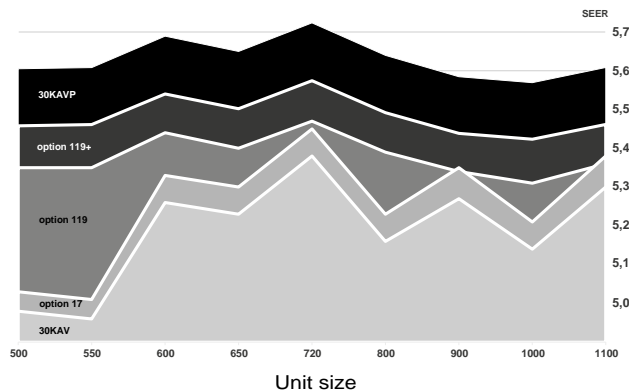
(Average SEER of 5.45, average EER of 3.4)

■ 30KAVP Premium Energy Efficiency.

The 30KAVP is based on 30KAV with option 119+. In addition, variable speed screw compressor is equipped with a premium permanent magnet motor. This is a synchronous motor without any slip and rotor losses.

(Average SEER of 5.6, average EER of 3.5)

SEER of the 30KAV/30KAVP range



Outstanding energy performance

- The 30KAV with “High energy efficiency+” is designed for very high performance both at full and part load: average SEER 5.45, average EER 3.4 as per EN14825 & EN14511.
- The 30KAVP with “Premium energy efficiency” is designed for very high performance both at full and part load: average SEER 5.6, average EER 3.5 as per EN14825 & EN14511.
- The high energy efficiency is achieved through:
 - 2nd generation of Carrier high-efficiency variable-speed twin-screw compressors with built in volume index control (Vi) valve for both optimal full and part load performance
 - Variable-speed Flying Bird™ fans with EC motor minimising power consumption while delivering optimum air flow
 - Novation™ aluminum condenser with high-efficiency micro-channel coils technology
 - New Carrier flooded shell-and-tube evaporator with new copper tubes for low pressure drops
 - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control)
 - Economiser system with electronic expansion device for increased cooling capacity.
- Optimised electrical performance:
 - Negligible start-up current (value is lower than the maximum unit current draw)
 - High displacement power factor (above 0.98)
 - EMC compliance with Class 3 requirements of the EU standard EN61800-3 (Class 2 is possible as an option).
- Hydraulic module with variable-speed dual pump
 - Variable-speed, dual pumps which automatically adjust the water flow to match the needs of the building or process load variations.
 - 3 pump control modes available: constant water flow with possibility to reduce the pump speed when there is no cooling demand, variable water flow with constant delta T or constant delta P control.
- Smart energy monitoring
 - Innovative smart energy monitoring providing users with smart data such as real time electric energy consumption, cooling capacity, and instantaneous and average seasonal energy efficiency ratios (Electricity metering accuracy: +/-5%. Cooling capacity metering accuracy: +/-5% at nominal rated conditions).
 - For further energy savings, 30KAV can be monitored remotely by Carrier experts for energy consumption diagnosis and optimization.

CUSTOMER BENEFITS

Built-in reliability and easy servicing

The 30KAV/30KAVP units offer enhanced performances as well as Carrier's acclaimed product quality and reliability. Major components were chosen, selected and tested to minimise the possibility of failure.

- 2nd generation of variable-speed twin-screw compressors:
 - The screw compressors are industrial-type with oversized bearings and motor cooled by suction gas, with a proven failure rate lower than 0.1%.
 - 30KAVP is fitted with a Permanent Magnet (PM) motor to run the variable screw compressor.
 - Motor is synchronous and spins at supplied frequency, without any slip and rotor losses to induce magnetic field. There is a benefit of +1% in full load efficiency and of +4% in part load efficiency compared to induction motors.
 - Air-cooled compressor variable-speed drive (VSD) to ensure reliable operation and easy maintenance. (Glycol-cooled variable-speed drive (VSD) types are subject to higher failure rates due to glycol pump issue. Refrigerant-cooled variable-speed drive (VSD) types are subject to higher compressor vibration levels causing possible failures in the long term).
 - Compressor bearing life exceeding 100 000 hours
 - All components related to the compressor assembly are easily accessible on site minimising down-time.

- Variable-speed fans:

30KAV is fitted with variable-speed asynchronous fan-motors as standard. One variable-speed drive (VSD) is sized to manage a group of fans per refrigerant circuit reducing first cost while ensuring high part-load efficiency.

30KAV with High Energy Efficiency+ option and 30KAVP is fitted with variable-speed EC fan-motors. Each EC fan is controlled independently ensuring continuous chiller operation in case of motor or drive failure.

- Air-cooled condenser:
 - Novation™ aluminum micro-channel heat exchanger (MCHE) with high corrosion resistance. The all aluminum design eliminates the formation of galvanic currents between aluminum and copper that cause coil corrosion in saline or corrosive environments.
 - Enviro-shield™ coating for MCHE used in standard and mildly corrosive environments with superior durability confirmed through 5000 hours testing in constant neutral salt spray per ASTM B117 and superior heat transfer performances confirmed through 2000 hours testing per CM1 (Carrier proprietary testing).
 - Super Enviro-shield™ coating for MCHE used in highly corrosive environments (industry or marine applications) with superior durability confirmed through 5000 hours testing in constant neutral salt spray per ASTM B117 and superior heat transfer performances confirmed through 2000 hours testing per CM1 (Carrier proprietary testing).
- Evaporator:
 - Carrier designed flooded evaporator with mechanically cleanable water tubes
 - Electronic paddle-free flow switch to ensure prompt alarm in case of poor liquid flow rate
 - Thermal insulation with aluminum sheet finish (option) improved resistance to mechanical and UV damage.
- Refrigerant circuits:
 - Two independent refrigerant circuits to secure partial cooling, if one of the two develops a fault.
- Auto-adaptive control:
 - Control algorithm prevents excessive compressor cycling (Carrier patent)

- Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity.

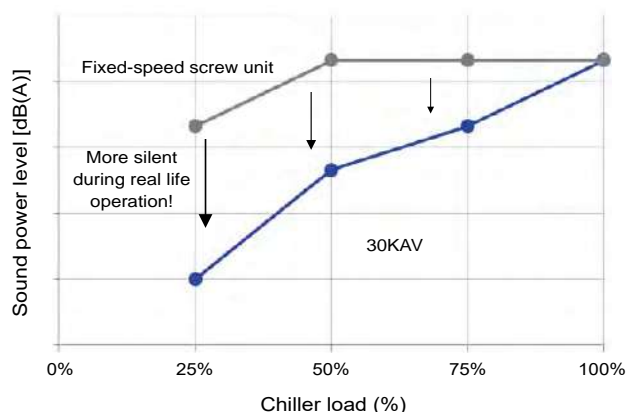
- Exceptional endurance tests:

- To design critical components and sub-assemblies to minimise the risk of failure on site, Carrier uses specialised laboratories and advanced dynamic simulation tools.
- To ensure that the units reach customer sites in the same condition as they are when tested in the factory, Carrier tests the machine behavior while being moved along a 250 km trial. The test-route is based on a military standard and is the equivalent to 5000km by truck in a normal road.
- To ensure coils corrosion resistance, salt mist corrosion resistance test are performed in UTC's laboratory.

In addition, to maintain unit performance throughout its operating life, whilst minimising maintenance costs, end users can access the "Carrier Connect" remote monitoring service.

Minimised operating sound levels

- The Greenspeed® Intelligence, featuring variable-speed screw compressors and condenser fans, minimises noise levels at part load operation.



- Standard unit features include:
 - The new generation of Carrier 06Z variable-speed twin screw compressor with integrated resonator array to reduce the noise level by 6 dB(A) compared with 06T twin screw compressor previous generation.
 - The 6th generation of silent Flying Bird™ fans with new fan blade design inspired by nature, help reduce airflow noise.
- 30KAV/30KAVP is available with 4 sound levels to match the most sensitive environments:
 - Standard: standard unit configuration with new generation of low sound screw compressor and fans
 - Low noise option: addition of high-performance compressor sound enclosure
 - Very low noise option: addition of high-performance compressor sound enclosure and fan operation at lower rotational speed.

Easy and fast installation

- Built-in variable speed pumps up to 800 kW
 - Full hydraulic module with dual pumps (low or high pressure as required) and optional expansion tank
 - Automatic nominal water flow adjustment through electronic control on the user display
- Compact units for easy transportation and installation.
 - Dimensions 25% smaller than the previous 30XAV generation

CUSTOMER BENEFITS

- Similar dimensions as the old 30GX chillers for easy replacement of the installed base.
- Simplified electrical connections:
 - Main disconnect switch
 - Transformer supply to the integrated control circuit (400/24V)
 - Single electrical point of connection
- Simplified water connections:
 - Victaulic connections on the evaporator
 - Clearly identified entering and practical reference marks for entering and leaving water connections
 - Possibility to choose different evaporator configurations, 1 or 2 passes.
- Fast commissioning:
 - Systematic factory operating test before shipment
 - Functional test for main components, expansion devices, fans and compressors.

Environmental care

- The AquaForce™ Vision 30KAV/30KAVP liquid chillers with Greenspeed™ Intelligence is a boost for green cities and contributes to a sustainable future. Combining a reduced charge of R134a refrigerant and exceptional energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions by 25% throughout its life cycle (compared to previous fixed-speed screw liquid chiller generation).
- The AquaForce™ Vision 30KAV/30KAVP liquid chiller is equipped with an automatic energy meter that provides estimated instantaneous and cumulative cooling energy output, instantaneous and cumulative electric energy consumption, instantaneous and average seasonal energy efficiency ratios (Accuracy: +/- 5% at nominal condition, +/-10% elsewhere) for unit performance monitoring and verification.
- The AquaForce™ Vision 30KAVZE version with PUREtec™ refrigerant designed exclusively for HFO R-1234ze will be available during the course of 2019.
- R-134a: HFC refrigerant with zero ozone depletion potential
- 40% less refrigerant charge: The micro-channel technology used for condenser coils optimises heat transfer while minimising the refrigerant volume.
- Leak tight refrigerant circuits:
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.
- Refrigerant leak alert: The AquaForce™ Vision 30KAV/30KAVP liquid chiller is equipped with an automatic refrigerant leak detection algorithm that can detect serious refrigerant loss at any point on the system (Sensitivity: 25% refrigerant charge loss per circuit, depending on the conditions). The automatic refrigerant leak detection system can help to achieve recognition within pollution prevention assessment programs, ideal for assisting in the design of sustainable buildings.
- Refrigerant leak detection: Available as an option, this additional dry-contact allows reporting of possible leaks. The leak detector (by others) should be mounted in the most likely leak location.

Designed to support Green Building Design

A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment.

The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year 30KAV/30KAVP units offer a solution to this important challenge.

A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.

The following example looks at how Carrier's new 30KAV/30KAVP range helps customers involved in LEED® building certification.

Energy saving certificate

30KAV-30KAVP is eligible to Energy savings certificates in France (CEE) in comfort, industrial and agriculture applications:

- Floating High pressure control (by modulating the air flow through fan activation and its speed)
- Floating Low pressure control
- Variable speed on asynchronous compressor motor
- Variable speed on asynchronous fan motor
- Variable speed on asynchronous pump motor

30 KAVP with its PM Motor is also eligible to:

- Variable speed on synchronous compressor motor

For more details about financial incentives in France, please refer to "Fiche produit CEE"

30KAV and LEED® certification

The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a preeminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

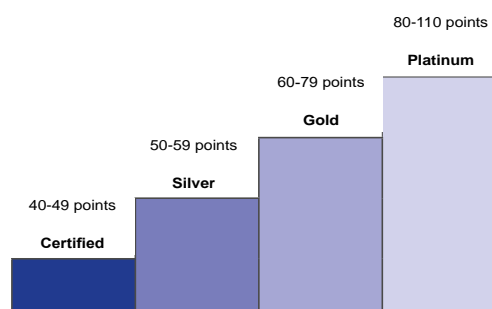
- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points



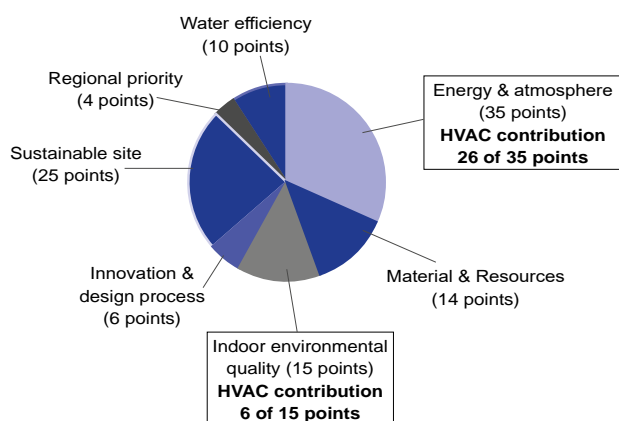
CUSTOMER BENEFITS

The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points

Overview of LEED® for new construction and major renovations



The new 30KAV/30KAVP units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

■ **EA prerequisite 2: Minimum energy Performance**

The 30KAV/30KAVP exceeds the energy efficiency requirements of ASHRAE 90,1-2007; therefore it complies with the prerequisite standard.

■ **EA prerequisite 3: Fundamental Refrigerant Management**

The 30KAV/30KAVP does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.

■ **EA credit 1: Optimise energy performance (1 to 19 points):**

Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90,1-2007 reference. The 30KAV/30KAVP, which is designed for high performance especially during part load operation, contributes to reducing the energy consumption of the building and therefore helps in gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.

■ **EA credit 4: Enhanced refrigerant management (2 points):**

With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Global Warming Potential (GWP) of the system. The 30KAV/30KAVP uses a reduced R134a charge and therefore contributes toward satisfying this credit under LEED®.

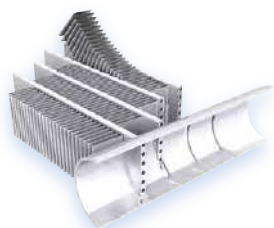
NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30KAV/30KAVP. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

30KAV TECHNICAL INSIGHTS



3RD GENERATION OF "W" SHAPE NOVATION® MICRO CHANNEL HEAT EXCHANGERS

- Exclusive Carrier design
- Increased reliability with new aluminum alloy
- Significantly reduces refrigerant charge (~40% vs cu/al coils)
- More compact units (~25% vs previous 30XAV generation)
- Enviro-shield™ coating for mildly corrosive environments
- Super Enviro-shield™ coating for highly corrosive environments (industry or marine applications)
- Easy cleaning with high pressure air or water washer

ADVANCED SMARTVIEW WITH 7 INCH COLOR TOUCH SCREEN INTERFACE

- Exclusive Carrier design
- 10 languages available: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
- Touch screen user interface
- BACnet, J-Bus or LON communication interfaces
- Optional wireless connectivity



POWERFUL SMART ENERGY MONITORING FUNCTION

- Provides smart data based on intelligent algorithms
- Real time energy consumption measurement (kWh)
- Cooling energy output measurement (kWh)
- Instantaneous and average Energy Efficiency Ratio under real operating conditions
- Remote monitoring with Carrier Connect

FLOODED SHELL AND TUBE EVAPORATOR

- Exclusive Carrier design
- Flooded technology for high energy efficiency
- New generation of copper tubes with specific profile to reduce pressure drops when operating with glycol



6TH GENERATION OF VARIABLE-SPEED FLYING BIRD™ FANS WITH AC OR EC MOTOR

- Exclusive Carrier design
- Fan blade design inspired by nature
- High efficiency version with AC motor technology
- EC motor technology (option)



VARIABLE-SPEED DUAL PUMPS WITH AC MOTOR

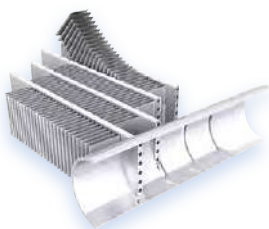
- Dual pumps designed for variable speed operation
- High efficiency AC motor
- Low static pressure (~100 kPa) or high static pressure (~180 Kpa) available
- 3 pump control modes available: constant water flow with 2 speeds, variable water flow based on constant delta T or constant delta P
- Compatibility of chillers for variable primary flow operation



LATEST GENERATION CARRIER VARIABLE-SPEED 06Z TWIN SCREW COMPRESSOR WITH AC MOTOR

- Exclusive Carrier design
- Twin screw compressor designed for variable speed operation
- High efficiency AC motor
- Stepless variable-speed control (0%-100%)
- Integrated resonator array for compressor acoustic attenuation
- Integrated check valve for quiet shutdown
- Air-cooled inverter drive for increased reliability
- Bearing life exceeding 100.000 hours
- Twin screw compressor with permanent magnet motor as option

30KAVP TECHNICAL INSIGHTS



3RD GENERATION OF "W" SHAPE NOVATION® MICRO CHANNEL HEAT EXCHANGERS

- Exclusive Carrier design
- Increased reliability with new aluminum alloy
- Significantly reduces refrigerant charge (~40% vs cu/al coils)
- More compact units (~25% vs previous 30XAV generation)
- Enviro-shield™ coating for mildly corrosive environments
- Super Enviro-shield™ coating for highly corrosive environments (industry or marine applications)
- Easy cleaning with high pressure air or water washer
- Extra W module to increase seasonal efficiency

ADVANCED SMARTVIEW WITH 7 INCH COLOR TOUCH SCREEN INTERFACE

- Exclusive Carrier design
- 10 languages available: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
- Touch screen user interface
- BACnet, J-Bus or LON communication interfaces
- Optional wireless connectivity



POWERFUL SMART ENERGY MONITORING FUNCTION

- Provides smart data based on intelligent algorithms
- Real time energy consumption measurement (kWh)
- Cooling energy output measurement (kWh)
- Instantaneous and average Energy Efficiency Ratio under real operating conditions
- Remote monitoring with Carrier Connect

FLOODED SHELL AND TUBE EVAPORATOR

- Exclusive Carrier design
- Flooded technology for high energy efficiency
- New generation of copper tubes with specific profile to reduce pressure drops when operating with glycol



6TH GENERATION OF VARIABLE-SPEED FLYING BIRD™ FANS WITH EC MOTOR

- Exclusive Carrier design
- Fan blade design inspired by nature
- High efficiency version with EC motor



VARIABLE-SPEED DUAL PUMPS WITH AC MOTOR

- Dual pumps designed for variable speed operation
- High efficiency AC motor
- Low static pressure (~100 kPa) or high static pressure (~180 Kpa) available
- 3 pump control modes available: constant water flow with 2 speeds, variable water flow based on constant delta T or constant delta P
- Compatibility of chillers for variable primary flow operation



LATEST GENERATION CARRIER VARIABLE-SPEED 06Z TWIN SCREW COMPRESSOR WITH PERMANENT MAGNET MOTOR

- Exclusive Carrier design
- Twin screw compressor designed for variable speed operation
- High efficiency permanent magnet motor
- Stepless variable-speed control (0%-100%)
- Integrated resonator array for compressor acoustic attenuation
- Integrated check valve for quiet shutdown
- Air-cooled inverter drive for increased reliability
- Bearing life exceeding 100,000 hours

TECHNICAL INSIGHTS

SmartView



- New innovative smart control features:
 - An intuitive and user-friendly, coloured, 7" interface
 - 10 languages available on choice: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Energy management:
 - Innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling capacity, and instantaneous and average seasonal energy efficiency ratios.
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.

Remote management (standard)

- Units with SmartView control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional).

- The 30KAV/30KAVP also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: Indication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation.

Remote management (EMM option)

- The Energy Management Module (EMM) offers extended remote control possibilities:
 - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
 - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
 - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
 - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
 - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
 - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
 - Time schedule override: Closing of this contact cancels the programmed time schedule.
 - Out of service: This signal indicates that the chiller is completely out of service.
 - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
 - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
 - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

TECHNICAL INSIGHTS

New generation of Carrier 06Z variable-speed twin screw compressor



The new generation of 06Z variable-speed twin screw compressors benefits from Carrier's long experience in the development of twin-rotor screw compressors. The 06Z compressor design is based on the successful 06T screw compressor, core of the well-known Aquaforce series with a number of modifications to reduce noise level and improve the energy efficiency especially during part load operation.

- New 06Z twin screw compressor optimized for variable speed operation: elimination of the slide valve, built-in volume index control (Vi) valve for both optimal full and part load performance, high efficiency AC motor with stepless inverter control from 20% to 100%.
- 30KAVP screw compressor is equipped with a Permanent Magnet (PM) Motor, which is a four pole motor compared to the two pole induction motor. By the way, the frequency setting doubles with PM motors, but the shaft speed remains the same. There is no slip or rotor losses. Thus, there is a benefit of +1% in full load efficiency and of +4% in part load efficiency.

Permanent Magnet Motor



- Separate air-cooled inverter drive for increased reliability
- New 06Z twin screw compressor design with Integrated Resonator Array (IRA) to reduce the sound level by up to 6 dB(A) when compared with previous 06T generation
- Integrated Check Valve for quiet shutdown
- Bearing life exceeding 100 000 hours.
- A dedicated oil separator is installed at the discharge of each compressor to ensure maximum oil return: Oil separates from refrigerant by gravity and returns to the low pressure side of the compressor without use of additional pumps.
- Volume index control (Vi) valve provides a reliable method of adjusting the compression ratio to better match system demand. It provides optimal performance regardless of operating condition
- Screw compressors work on the positive displacement principle to compress gas to a higher pressure. As a result, if there is an unusually high pressure in the condenser (due for example to coil fouling or operation in harsh climate) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode).
- The silencer in the oil separator line (at the compressor outlet) considerably reduces discharge gas pulsations for much quieter operation.

TECHNICAL INSIGHTS

Novation® Heat Exchangers with Microchannel Coil Technology

Already utilised in the automobile and aeronautical industries for many years, the Novation™ Micro-Channel Heat Exchanger (MCHE) used in the Aquaforce is entirely made of aluminum. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminum) come into contact in traditional heat exchangers.

- From the energy efficiency point-of-view the Novation® heat exchangers are approximately 10% more efficient than traditional coils and micro-channel coil technology allows a 40% reduction in the amount of refrigerant used in the chiller.
- The reduced depth of the Novation™ MCHE reduces air pressure losses by 50% and makes it much less susceptible to fouling (e.g. by sand). Cleaning of the Novation™ MCHE heat exchanger is very fast using a high pressure washer.
- To further enhance long-term performance, and protect coils from early deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.
 - The Novation™ MCHE with Enviro-Shield protection (option 262) is recommended for installations in moderately corrosive environments. The Enviro-Shield protection utilises corrosion inhibitors which actively arrest oxidation in case of mechanical damage.
 - The Novation™ MCHE with exclusive Super Enviro-Shield protection (option 263) is recommended for installations in corrosive environments. The Super Enviro-Shield protection consist of an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.
- After a total of more than 7,000 hours of testing following various test standards in UTC laboratories, the Carrier Novation® MCHE with Super Enviro-shield® coating appears to be the best-suited customer choice to minimize the harmful effects of corrosive atmospheres and ensure long equipment life.
 - Best corrosion resistance per ASTM B117/D610 test
 - Best heat transfer performance per Carrier Marine 1 test
 - Proven reliability per ASTM B117 test



Coil Types (ranked by performance)	Visual Corrosion Evaluation	Heat Transfer Performance Degradation	Time to Failure	Test Campaign Conclusions
Super Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Very good	No coil leak	Very good
Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Very good
Al/Al coil	Very good	Good	No coil leak	Very good
Novation™ MCHE	Good	Very good	No coil leak	Good
Cu/Cu coil	Good	Good	Leak	Acceptable
Blygold® Cu/Al coil	Good	Good	No coil leak	Acceptable
Precoat Cu/Al coil	Bad	Bad	No coil leak	Bad
Cu/Al coil	Bad	Bad	No coil leak	Bad

TECHNICAL INSIGHTS

New generation of Flying Bird VI fans with EC motors



The 30KAV/30KAVP utilizes Carrier's the 6th generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and wide operating range. The fan includes Carrier patented rotating shroud technology and back-swept blades with a unique wave-serration trailing edge inspired from nature.

It was designed and optimized for the 30KAV/30KAVP air management system configuration and heat exchanger technology. On 30KAVP, and on 30KAV with option 17 and option 119+, fans are propelled by an EC motor, also known as brushless DC, with a unique electronics to manage commutation. This provides a great accuracy for fans that require higher efficiencies and variable speed. The fan meets the latest European eco-design requirements for fan efficiency. The fan uses Carrier's robust and proven injection molded composite-thermoplastic construction.

EC Motor



TECHNICAL INSIGHTS

Variable Frequency Drives (VFD)

The compressors, the fans and the pumps of 30KAV-30KAVP are controlled by VFDs.

- VFDs electrical box has an IP44 rating as standard and IP54 as an option (available in 2019).
- Electrical box is capable of operating up to 55°C (with option 16 "High Ambient").
- Unit controls is capable of withstanding storage temperatures in the control compartment from -20°C to 68°C.
- All VFDs on the chiller (compressors, fans and pumps motors) are fully air cooled and shall not require an additional glycol cooling system, thus avoiding the maintenance associated with such cooling systems.



Fan drives + Pump drives +
electronic boards



Compressor drives + main
power connection

OPTIONS

Option	No.	Description	Advantage	30KAV/P
Medium-temperature brine solution	5	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -8°C when ethylene glycol is used (-5°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	0500-1100
Low Brine with turbulators down to -15°C	6	Redesigned evaporator including turbulators to allow chilled brine solution production with low pressure drops on the entire negative application range, down to -15°C (including turbulators, extra insulation, specific sensors and algorithms).	Covers specific applications such as ice storage and industrial processes	0500-1100
Light-brine solution, down to -4°C	8	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -4°C when ethylene glycol is used (-2°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	0500-1100
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction	0500-1100
Very low noise level	15LS	Sound absorbing & aesthetic compressor enclosure and oil separator, evaporator and suction line acoustic treatment, combined with low-speed fans	Noise level reduction in sensitive environments	0500-1100
High ambient temperature	16	Electrical components sized for part load operation up to 55°C air ambient	Extended unit part-load operation up to 55°C ambient temperature	0500-1100
EC fans	17	Unit equipped with EC fans	Enhances the unit energy efficiency	0500-1100 "already included on 30KAVP"
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the electrical box from dust, water and sand. In general this option is recommended for installations in polluted environments	0500-1100
Grilles and enclosure panels	23	Metal grilles on the 4 unit sides, plus side enclosure panels at each end of each coil	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	0500-1100
Enclosure panels	23A	Side enclosure panels	Improves aesthetics and piping protection against impacts.	0500-1100
Water exchanger frost protection	41A	Electric resistance heater on the water exchanger and discharge valve	Water exchanger frost protection down to -20°C outside temperature	0500-1100
Evaporator & hydraulic module frost protection	41B	Electric resistance heater on water exchanger, discharge valve and hydraulic module	Water exchanger and hydraulic module frost protection down to -20°C outside temperature	0500-0800
Evaporator & condenser frost protection	41C	Electric resistance heater on evaporator exchanger, discharge valve and add heaters and insulation on hydraulic connection (option 325)	Water exchanger module frost protection between 0°C and -20°C outside air temperature	0500-1100
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit (Each exchanger is equipped with heaters and insulation)	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	0500-1100
Total heat recovery	50	Unit equipped with additional heat exchanger in series with the condenser coils (Each exchanger is equipped with heaters and insulation)	Production of free hot-water with variable heat reclaim	0500-1100
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	0500-1100
Main disconnect switch with short-circuit protection	70D	Circuit breaker equipped with an external disconnect switch handle	Ensure protection of main disconnect switch and associated cables against short-circuits when building devices are not compliant	0500-1100
Evap. and pumps with aluminum jacket	88A	Evaporator and pumps covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	0500-1100
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	0500-1100
Compressor discharge valves	93A	Shut-off valve on the compressor discharge piping	Simplified maintenance	0500-1100
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	0500-1100

OPTIONS

Option	No.	Description	Advantage	30KAV/P
LP VSD dual-pump hydraulic mod.	116A	Dual low-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter.	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	0500-0800
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	0500-0800
High Energy Efficiency	119	Additional condenser coil to improve unit energy efficiency	Enhances the unit energy efficiency performance	0500-1100 "already included on 30KAVP"
High Energy Efficiency+	119+	Additional condenser coil plus EC fans to improve unit energy efficiency	Enhances the unit energy efficiency performance	0500-1100 "already included on 30KAVP"
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	0500-1100
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	0500-1100
Modbus over IP and RS485 communication gateway	149B	Bi-directional high-speed communication using the Modbus over Ethernet network (IP) protocol	Easy, quick connection via Ethernet line to a building technical management system. Allows access to several unit parameters.	0500-1100
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	0500-1100
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	0500-1100
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	0500-1100
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	0500-1100
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	0500-1100
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	0500-1100
Insulation of the evap. in/ out ref. lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/leaving refrigerant lines	0500-1100
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	0500-1100
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	0500-1100
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	0500-1100
Welded heat recovery condenser connection kit	267	Victaulic piping connection with welded joints	Easy installation	0500-1100

OPTIONS

Option	No.	Description	Advantage	30KAV/P
Evaporator with aluminum jacket	281	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	0500-1100
EMC class. C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Decrease the variable frequency drive (VFD) emission level according to C2 category requirements and allow its compliance with use in first environment (so called, residential environment).	0500-1100
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	0500-1100
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	0500-1100
Fast Capacity Recovery	295	New software algorithms to allow quick restart and fast loading while preserving unit-reliability	Full capacity recovery in less than 5 minutes after power failure. Matches requirements of typical critical missions applications	0500-1100
Variable Water Flow control	299	hydraulic control function package that permits control of the water flow rate based on different possible logics (at customer choice): constant ΔT , constant outlet pressure and "fixed-speed" control	When variable-speed pumps on the primary circuit, the VWF control modulates flow rate through the evaporator, minimising pump consumption while ensuring safe/ optimised chiller operation	0500-1100
Free-cooling dry-cooler control	313	Remote control of 09PE or 09VE dry-cooler based on a 0-10V signal. The 09PE or 09VE dry-cooler shall be selected with control cabinet option	Easy system management, extended control capabilities of a remote dry-cooler used in free-cooling mode	0500-1100
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE 5010-5 :2014.	0500-1100
Compliance with Qatar regulation	319	Specific nameplate on the unit with power supply 415 V+/-6%	Compliance with KAHRAMAA regulation in Qatar.	0500-1100
Hydraulic connection kit	325	Water piping on condenser and evaporator side	Easy installation	0500-1100
Compliance with Morocco regulation	327	Specifics documents according Morocco regulation	Conformance with Morocco regulations	0500-1100
Permanent magnet motor	329	Twin screw compressor with permanent magnet motor	Enhances the unit energy efficiency	0500-1100 already included on 30KAVP

PHYSICAL DATA

Standard units and Units with EC fans option (17)

30KAV		500	550	600	650	720	800	900	1000	1100
Cooling										
Standard unit Full load performances*	Nominal capacity	kW	493	537	600	636	723	791	892	1079
	EER	kW/kW	3,00	2,91	3,14	2,98	3,19	3,03	3,07	3,05
Standard unit Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,96	4,95	5,20	5,16	5,31	5,09	5,23	5,11
	η _{s cool} _{12/7°C}	%	196	195	205	203	209	201	206	202
	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,49	6,41	6,84	6,70	6,78	6,69	6,70	6,67
Unit + option 17 Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,02	5,00	5,27	5,23	5,39	5,16	5,31	5,19
	η _{s cool} _{12/7°C}	%	198	197	208	206	213	203	209	204
	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,56	6,46	6,92	6,78	6,86	6,77	6,78	6,74
Unit + option 329 Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,12	5,11	5,41	5,38	5,53	5,31	5,43	5,29
	η _{s cool} _{12/7°C}	%	202	201	213	212	218	209	214	209
	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,72	6,64	7,11	6,96	7,05	6,91	6,93	6,83
Unit + option 17 + option 329 Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,18	5,17	5,49	5,47	5,61	5,39	5,52	5,38
	η _{s cool} _{12/7°C}	%	204	204	217	216	221	213	218	212
	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,78	6,69	7,20	7,04	7,14	6,99	7,02	6,91
Sound levels										
Standard unit										
Sound power ⁽¹⁾	dB(A)	95	95	96	98	99	98	99	98	100
Sound pressure at 10 m ⁽²⁾	dB(A)	63	63	64	65	66	65	67	65	67
Unit + option 15⁽³⁾										
Sound power ⁽¹⁾	dB(A)	94	94	94	96	97	96	97	97	98
Sound pressure at 10 m ⁽²⁾	dB(A)	62	62	61	64	64	63	65	64	65
Unit + option 15LS⁽³⁾										
Sound power ⁽¹⁾	dB(A)	90	90	90	92	94	92	94	93	94
Sound pressure at 10 m ⁽²⁾	dB(A)	57	58	58	59	61	60	62	60	61
Dimensions										
Standard unit										
Length	mm	4387	4387	5578	5578	6772	6772	7962	7962	9155
Width	mm	2261	2261	2261	2261	2261	2261	2261	2261	2261
Height	mm	2324	2324	2324	2324	2324	2324	2324	2324	2324
Unit length + options										
Options 49/50 ⁽³⁾	mm	5578	5578	6772	6772	6772	6772	7962	7962	9155
Options 116A/116W ⁽³⁾	mm	5578	5578	5578	5578	6772	6772	-	-	-
Operating weight⁽⁴⁾										
Standard unit	kg	4779	4792	5167	5180	5643	6085	6526	6991	7399
Unit + option 49 ⁽³⁾	kg	5177	5190	5592	5605	5843	6304	6741	7222	7657
Unit + option 50 ⁽³⁾	kg	5230	5243	5718	5731	5969	6489	6927	7451	7860
Unit + options 116A/116W ⁽³⁾	kg	5314	5428	5623	5649	6261	6682	-	-	-

- * In accordance with standard EN14511-3:2013.
 ** In accordance with standard EN14825:2016, average climate
 CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
 η_{s cool}_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
 SEPR_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application**
 (1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
 (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power L_w(A).
 (3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod. 49=Partial heat recovery ; 50= Totale heat recovery ; 5=Medium Brine ; 6=Low Brine.
 (4) Values are guidelines only. Refer to the unit name plate.
 (5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.



Eurovent certified values

PHYSICAL DATA

Standard units and Units with EC fans option (17)

30KAV		500	550	600	650	720	800	900	1000	1100
Compressors		Inverter driven 06Z twin screw compressor with AC motor								
Circuit A	Quantity	1	1	1	1	1	1	1	1	1
Circuit B	Quantity	1	1	1	1	1	1	1	1	1
Unit minimum capacity ⁽⁵⁾	%	13	13	13	13	13	13	13	12	12
Refrigerant⁽⁴⁾		R134a (GWP=1430, ODP=0)								
Circuit A	kg	52	53	60	63	71	87	98	92	99
	teqCO ₂	74	76	86	90	102	124	140	132	142
Circuit B	kg	53	54	61	64	72	65	77	93	100
	teqCO ₂	76	77	87	92	103	93	110	133	143
Refrigerant⁽⁴⁾ - Option 5⁽³⁾ (Medium Brine)		R134a (GWP=1430, ODP=0)								
Circuit A	kg	61	63	71	74	86	105	114	110	120
	teqCO ₂	87	90	102	106	123	150	163	157	172
Circuit B	kg	62	64	72	75	87	80	90	111	121
	teqCO ₂	89	92	103	107	124	114	129	159	173
Refrigerant⁽⁴⁾ - Option 6⁽³⁾ (Low Brine)		R134a (GWP=1430, ODP=0)								
Circuit A	kg	55	56	63	66	77	91	103	97	104
	teqCO ₂	78	80	90	95	110	131	147	138	149
Circuit B	kg	56	57	64	67	78	68	81	98	105
	teqCO ₂	80	81	92	96	111	98	116	140	150
Oil		SW220								
Circuit A	l	27	26	25	23	20	23	20	23	20
Circuit B	l	27	26	25	23	20	23	20	23	20
Unit control		SmartView with 7 inch coloured touch screen interface								
Languages		10 languages (DE, EN, ES, FR, IT, NL, PT, TR, TU + one on customer choice)								
Smart energy metering		Standard feature								
Wireless connectivity		Option								
Expansion valve		Electronic expansion valve								
Air heat exchanger		Novation™ Micro Channel Heat Exchanger								
Fans										
Standard unit		Inverter driven Flying Bird™ VI fans with AC motor								
Unit + option 17		Inverter driven Flying Bird™ VI fans with EC motor								
Quantity		6	6	8	8	10	10	12	12	14
Maximum total air flow	l/s	35580	35580	47440	47440	59300	59300	71160	71160	83020
Maximum rotation speed	r/s	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0
Maximum total air flow + option 15LS ⁽³⁾	l/s	28920	26100	41600	43200	56000	50000	67200	57840	72800
Maximum rotation speed + option 15LS ⁽³⁾	r/s	13,2	12,0	14,2	14,7	15,2	13,7	15,2	13,2	14,2
Water heat exchanger		Flooded shell and tube heat exchanger								
Water volume	l	83	88	96	100	115	126	144	165	183
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Double pump, screen filter, relief valve, water drain valve, pressure sensors, expansion tank (option), heaters (option)								
Pump		Inverter driven dual pumps with AC motor								
Expansion vessel volume	l	80	80	80	80	80	80	-	-	-
Max. water-side operating pressure	kPa	400	400	400	400	400	400	-	-	-
Water connections		Victaulic® type								
Without options 116A/116W⁽³⁾										
Connections	pouces	5	5	6	6	6	6	8	8	8
Outside tube diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	219,1	219,1	219,1
With options 116A/116W⁽³⁾										
Connections	pouces	5	5	5	5	5	5	-	-	-
Outside tube diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	-	-	-
Casing paint		Colour code RAL 7035								

(3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod. 49=Partial heat recovery ; 50= Totale heat recovery ; 5=Medium Brine ; 6=Low Brine

(4) Values are guidelines only. Refer to the unit name plate.

(5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.

PHYSICAL DATA

30KAV with High energy efficiency option (119) and High energy efficiency+ option (119+) 30KAVP

30KAV_options 119/119+				500	550	600	650	720	800	900	1000	1100	
Cooling													
Unit + option 119+ Full load performances*	CA1	Nominal capacity	kW	517	575	611	661	731	819	907	1010	1097	
		EER	kW/kW	3,49	3,41	3,42	3,32	3,37	3,35	3,29	3,30	3,25	
Unit + option 119 Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,35	5,29	5,35	5,32	5,39	5,32	5,28	5,26	5,29	
		ηs cool _{12/7°C}	%	211	209	211	210	213	210	208	208	209	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	7,04	6,93	6,98	6,84	6,88	6,77	6,57	6,50	6,48	
Unit + option 119+ Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,44	5,39	5,44	5,40	5,49	5,42	5,37	5,36	5,39	
		ηs cool _{12/7°C}	%	215	212	215	213	217	214	212	212	212	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	7,13	7,02	7,07	6,93	6,98	6,86	6,67	6,60	6,57	
30KAVP				500	550	600	650	720	800	900	1000	1100	
Standard unit Full load performances*	CA1	Nominal capacity	kW	513	575	613	661	731	818	907	1010	1097	
		EER	kW/kW	3,56	3,48	3,49	3,39	3,47	3,42	3,36	3,36	3,31	
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,61	5,61	5,69	5,65	5,72	5,64	5,58	5,57	5,61	
		ηs cool _{12/7°C}	%	221	221	225	223	226	223	220	220	221	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,81	7,28	7,34	7,23	7,33	7,12	6,95	6,83	6,82	
30KAV_options 119/119+ & 30KAVP				500	550	600	650	720	800	900	1000	1100	
Sound levels													
30KAV_option_119+ & 30KAVP													
Sound power ⁽¹⁾			dB(A)	96	96	97	98	99	98	100	98	100	
Sound pressure at 10 m ⁽²⁾			dB(A)	63	63	64	66	66	65	67	65	67	
30KAV_option_119+ & 30KAVP : option 15 ⁽³⁾													
Sound power ⁽¹⁾			dB(A)	95	95	94	96	97	96	98	98	98	
Sound pressure at 10 m ⁽²⁾			dB(A)	62	62	62	64	64	64	65	65	65	
30KAV_option_119+ & 30KAVP : option 15LS ⁽³⁾													
Sound power ⁽¹⁾			dB(A)	90	91	91	92	94	92	94	93	94	
Sound pressure at 10 m ⁽²⁾			dB(A)	57	58	58	59	61	60	61	60	61	
Dimensions													
30KAV_option 119 & 119+ & 30KAVP													
Length			mm	6772	6772	6772	6772	7962	9155	9120	10346	10346	
Width			mm	2261	2261	2261	2261	2261	2261	2261	2261	2261	
Height			mm	2324	2324	2324	2324	2324	2324	2324	2324	2324	
Unit length + options													
Options 49/50 ⁽³⁾			mm	6772	6772	6772	6772	7962	9155	9120	10346	10346	
Options 116A/116W ⁽³⁾			mm	6772	6772	6772	6772	7962	9155	-	-	-	

- * In accordance with standard EN14511-3:2013.
- ** In accordance with standard EN14825:2016, average climate
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
- η_{s cool}_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application
- (1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
- (3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod. 49=Partial heat recovery ; 50= Totale heat recovery ; 5=Medium Brine ; 6=Low Brine
- (4) Values are guidelines only. Refer to the unit name plate.
- (5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.



Eurovent certified values

PHYSICAL DATA

30KAV with High energy efficiency option (119) and High energy efficiency+ option (119+) 30KAVP

30KAV options 119/119+		500	550	600	650	720	800	900	1000	1100
Operating weight⁽⁴⁾										
30KAV option 119+ & 30KAVP	kg	5527	5535	5547	5550	5985	6792	6901	7663	7692
option 49 ⁽³⁾	kg	5728	5735	5748	5751	6183	7007	7116	7891	7920
option 50 ⁽³⁾	kg	5781	5788	5874	5877	6327	7192	7301	8120	8149
options 116A/116W ⁽³⁾	kg	5979	6093	6081	6107	6075	7524	-	-	-
Compressors		Inverter driven 06Z twin screw compressor. 30KAV: AC motor. 30KAVP: permanent magnet motor.								
Circuit A	Quantity	1	1	1	1	1	1	1	1	1
Circuit B	Quantity	1	1	1	1	1	1	1	1	1
Unit minimum capacity ⁽⁵⁾	%	13	13	13	13	13	13	13	12	12
Refrigerant⁽⁴⁾ - 30KAV_option_119+ & 30KAVP		R134a (GWP=1430, ODP=0)								
Circuit A	kg	71	71	68	69	78	101	105	105	106
	teqCO ₂	102	102	97	99	112	144	150	150	152
Circuit B	kg	72	72	68	70	79	79	84	106	107
	teqCO ₂	103	103	97	100	113	113	120	152	153
Refrigerant⁽⁴⁾ - Option 5⁽³⁾ (Medium Brine)		R134a (GWP=1430, ODP=0)								
Circuit A	kg	80	81	79	80	91	119	121	123	127
	teqCO ₂	114	116	113	114	130	170	173	176	182
Circuit B	kg	81	82	79	81	92	94	97	124	128
	teqCO ₂	116	117	113	116	132	134	139	177	183
Refrigerant⁽⁴⁾ - Option 6⁽³⁾ (Low Brine)		R134a (GWP=1430, ODP=0)								
Circuit A	kg	75	75	71	69	82	106	110	110	111
	teqCO ₂	107	107	102	99	117	152	158	158	159
Circuit B	kg	76	76	71	72	83	83	88	111	112
	teqCO ₂	108	108	102	104	119	119	126	159	161

(3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod. 49=Partial heat recovery ; 50= Totale heat recovery ; 5=Medium Brine ; 6=Low Brine.

(4) Values are guidelines only. Refer to the unit name plate.

(5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.

PHYSICAL DATA

30KAV with High energy efficiency option (119) and High energy efficiency+ option (119+) 30KAVP

30KAV options 119/119+		500	550	600	650	720	800	900	1000	1100
Oil		SW220								
Circuit A	I	27	26	25	23	20	23	20	23	20
Circuit B	I	27	26	25	23	20	23	20	23	20
Unit control		"SmartView with 7 inch colored touch screen interface"								
Languages		10 languages (DE, EN, ES, FR, IT, NL, PT, TR, TU + one on customer choice)								
Smart energy metering		Standard feature								
Wireless connectivity		Option								
Expansion valve		Electronic expansion valve								
Air heat exchanger		Novation™ Micro Channel Heat Exchanger								
Fans										
30KAV option 119		Inverter driven Flying Bird™ VI fans with AC motor								
30KAV_option_119+ & 30KAVP		Inverter driven Flying Bird™ VI fans with EC motor								
Quantity		10	10	10	10	12	14	14	16	16
Maximum total air flow	l/s	59300	59300	59300	59300	71160	83020	83020	94880	94880
Maximum rotation speed	r/s	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0
Maximum total air flow + option 15LS ⁽³⁾	l/s	44700	43500	52000	52000	64800	67480	75600	74080	83200
Maximum rotation speed + option 15LS ⁽³⁾	r/s	12,3	12	14,2	14,2	14,7	13,2	14,7	12,7	14,2
Water heat exchanger		Flooded shell and tube heat exchanger								
Water volume	l	83	88	96	100	115	126	144	165	183
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Double pump, screen filter, relief valve, water drain valve, pressure sensors, expansion tank (option), heaters (option)								
Pump		Inverter driven dual pumps with AC motor								
Expansion vessel volume	l	80	80	80	80	80	80	-	-	-
Max. water-side operating pressure	kPa	400	400	400	400	400	400	-	-	-
Water connections		Victaulic® type								
Without options 116A/116W⁽³⁾										
Connections	inch	5	5	6	6	6	6	8	8	8
Outside tube diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	219,1	219,1	219,1
With options 116A/116W⁽³⁾										
Connections	inch	5	5	5	5	5	5	-	-	-
Outside tube diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	-	-	-
Casing paint		Colour code RAL 7035								

(3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod. 49=Partial heat recovery ; 50= Totale heat recovery ; 5=Medium Brine ; 6=Low Brine.

ELECTRICAL DATA

Standard units

30KAV		500	550	600	650	720	800	900	1000	1100
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via internal transformer								
Maximum operating input power⁽¹⁾										
Standard unit	kW	224	244	271	287	311	362	392	437	472
Unit + option 16	kW	238	258	287	304	330	385	416	466	502
Power factor at maximum power^{(1) (2)}		0,91-0,93								
Displacement Power Factor (Cos Phi)		>0,98								
Total harmonic distortion (THDi) ^{(1) (3)}	%	35-45								
Nominal operating current draw⁽⁴⁾										
Standard unit	A	265	297	316	340	362	422	468	524	564
Maximum operating current draw (Un)⁽¹⁾										
Standard unit	A	348	379	421	446	484	562	609	679	733
Unit + option 16	A	369	401	446	472	513	598	646	724	780
Maximum operating current draw (Un-10%)										
Standard unit	A	381	409	460	481	522	607	657	733	791
Unit + option 16	A	403	433	487	509	553	645	697	782	842
Start-up current										
Standard unit	A	212	228	245	262	286	378	412	399	425

(1) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

(2) Value decreases when load lowers

(3) May vary according to the installation's short circuit ratio

THDi increases when load lowers. But the highest impact on the installation occurs when the current is maximum. Therefore compliance of the installation regarding voltage harmonic distortion at PCC (per IEC61000-2-4 or other standard) shall be usually checked at max load in order to cover all load conditions.

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA

Units with option permanent magnet motor (329), option High energy efficiency (119) and option High energy efficiency+ (119+)

30KAV options 119/119+		500	550	600	650	720	800	900	1000	1100
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via internal transformer								
Maximum operating input power⁽¹⁾										
Unit + option 119	kW	223	241	263	278	301	354	378	426	455
Unit + option 119+	kW	221	239	260	275	298	351	374	422	450
Unit + option 119 + option 16	kW	237	255	279	295	320	377	402	455	485
Unit + option 119+ + option 16	kW	235	253	276	292	317	374	398	451	480
Unit + option 329	kW	217	237	250	272	304	342	383	423	461
Unit + option 329 + option 16	kW	231	251	266	289	323	365	407	452	491
Unit + option 329 + option 119	kW	216	234	242	263	294	334	369	412	444
Unit + option 329 + option 119 + option 16	kW	230	248	258	280	313	357	393	441	474
Power factor at maximum power⁽¹⁾⁽²⁾		0,91-0,93								
Displacement Power Factor (Cos Phi)		>0,98								
Total harmonic distortion (THDi) ^{(1) (3)}	%	35-45								
Nominal operating current draw⁽⁴⁾										
Unit + option 119	A	228	260	285	317	345	373	440	466	535
Unit + option 119+	A	225	257	281	313	340	368	434	460	528
Unit + option 329	A	257	288	307	330	351	409	454	508	547
Maximum operating current draw (Un)⁽¹⁾										
Unit + option 119	A	346	375	408	432	469	550	587	662	707
Unit + option 119+	A	343	372	404	428	464	545	581	656	700
Unit + option 119 + option 16	A	367	397	433	458	498	586	624	707	754
Unit + option 119+ + option 16	A	364	394	429	454	493	581	618	701	747
Unit + option 329	A	337	368	389	423	474	531	595	658	716
Unit + option 329 + option 16	A	358	390	414	449	503	567	632	703	763
Unit + option 329 + option 119	A	335	364	376	409	459	519	573	641	690
Unit + option 329 + option 119 + option 16	A	356	386	401	435	488	555	610	686	737
Maximum operating current draw (Un-10%)										
Unit + option 119	A	374	400	441	461	500	587	627	707	755
Unit + option 119+	A	371	397	437	457	495	582	621	701	748
Unit + option 119 + option 16	A	399	427	472	493	536	630	673	762	813
Unit + option 119+ + option 16	A	396	424	468	489	531	625	667	756	806
Unit + option 329	A	370	398	428	458	512	576	643	712	774
Unit + option 329 + option 16	A	392	422	455	486	543	614	683	761	825
Unit + option 329 + option 119	A	366	392	413	442	495	561	619	692	745
Unit + option 329 + option 119 + option 16	A	388	416	440	470	526	599	659	741	796
Start-up current										
Unit + option 119	A	211	230	239	255	278	371	401	390	411
Unit + option 119+	A	209	229	237	253	275	369	398	387	408
Unit + option 329	A	204	219	220	240	271	353	391	376	400

(1) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

(2) Value decreases when load lowers

(3) May vary according to the installation's short circuit ratio

THDi increases when load lowers. But the highest impact on the installation occurs when the current is maximum. Therefore compliance of the installation regarding voltage harmonic distortion at PCC (per IEC61000-2-4 or other standard) shall be usually checked at max load in order to cover all load conditions."

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA

30KAVP

30KAVP		500	550	600	650	720	800	900	1000	1100
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via internal transformer								
Maximum operating input power⁽¹⁾										
Standard unit	kW	214	232	239	260	291	331	365	408	439
Unit + option 16	kW	228	246	255	277	310	354	389	437	469
Power factor at maximum power⁽¹⁾⁽²⁾		0,91-0,93								
Displacement Power Factor (Cos Phi)		>0,98								
Total harmonic distortion (THDi) ⁽¹⁾⁽³⁾	%	35-45								
Nominal operating current draw⁽⁴⁾										
Standard unit	A	217	248	272	303	330	356	421	444	511
Maximum operating current draw (Un)⁽¹⁾										
Standard unit	A	332	361	372	405	454	514	567	635	683
Unit + option 16	A	353	383	397	431	483	550	604	680	730
Maximum operating current draw (Un-10%)⁽¹⁾										
Standard unit	A	363	389	409	438	490	556	613	686	738
Unit + option 16	A	385	413	436	466	521	594	653	735	789
Start-up current										
Standard unit		212	228	245	262	286	378	412	399	425

(1) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

(2) Value decreases when load lowers

(3) May vary according to the installation's short circuit ratio

THDi increases when load lowers. But the highest impact on the installation occurs when the current is maximum. Therefore compliance of the installation regarding voltage harmonic distortion at PCC (per IEC61000-2-4 or other standard) shall be usually checked at max load in order to cover all load conditions."

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

Compressor electrical data

Compressor	I Max (A) ⁽¹⁾ Standard	I Max (A) ⁽¹⁾ Option 16	F max (Hz) ⁽²⁾	Inverter type ⁽³⁾
06ZCE1H3AA06013	190	202	82	D3h
06ZCE1T3AA06013	239	254	105	D3h
06ZFC2T3AA06013	364	389	95	D4h
06ZCEAT3AA06013	220	233	103	D3h
06ZFCBT3AA06013	335	357	93	D4h

(1) Maximum compressor operating current draw over the entire range when powered at rated voltage. May be lower depending on the unit size.

(2) Maximum compressor frequency over the entire range. This frequency can be limited to a lower value depending on the unit size.

(3) Mechanical inverter type : defines inverter weight and dimensions.

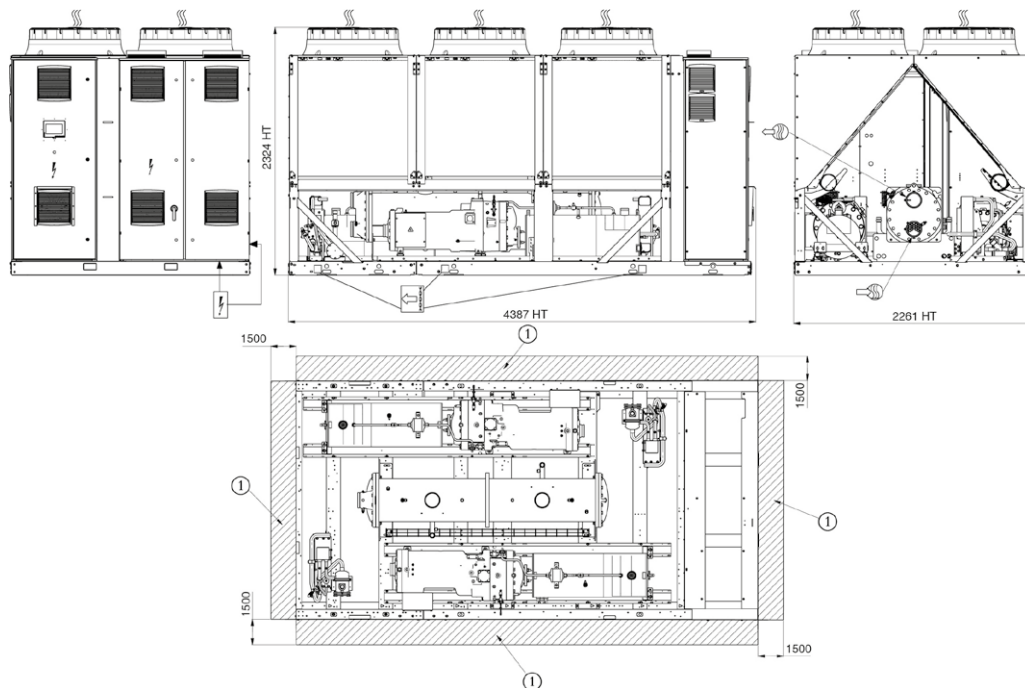
Distribution of compressors per circuit

Compressor 30KAV	Circuit	500	550	600	650	720	800	900	1000	1100
06ZCE1H3AA06013	A	1	1	-	-	-	-	-	-	-
	B	1	1	-	-	-	-	-	-	-
06ZCE1T3AA06013	A	-	-	1	1	1	-	-	-	-
	B	-	-	1	1	1	1	1	-	-
06ZFC2T3AA06013	A	-	-	-	-	-	1	1	1	1
	B	-	-	-	-	-	-	-	1	1

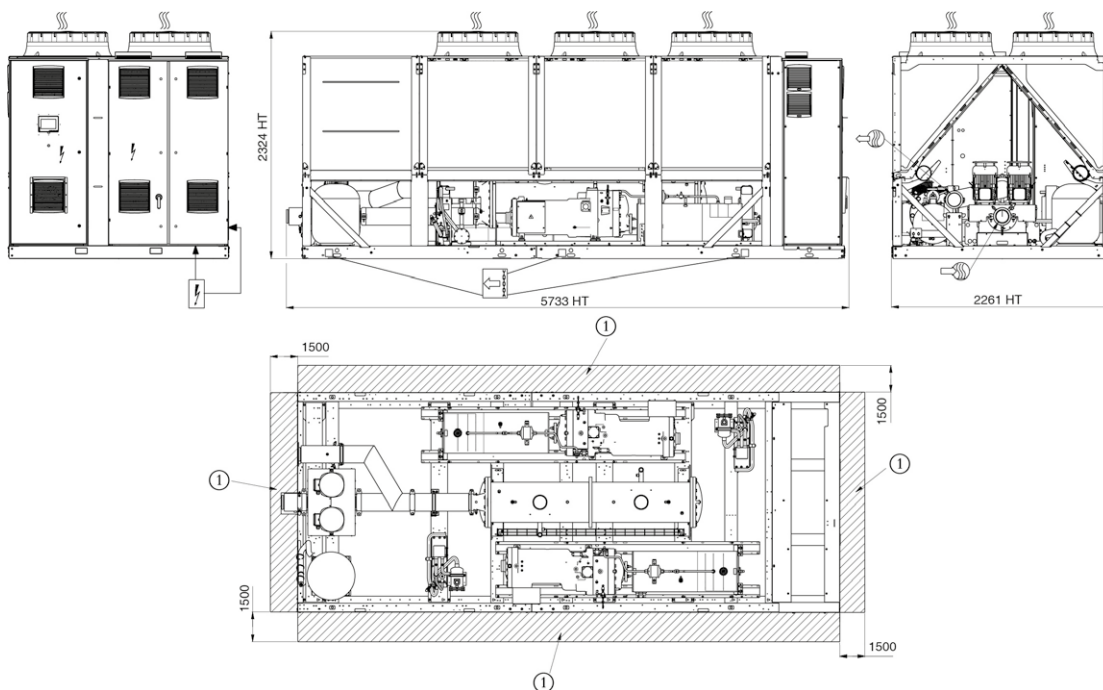
Compressor 30KAVP	Circuit	500	550	600	650	720	800	900	1000	1100
06ZCEAT3AA06013	A	1	1	1	1	1	-	-	-	-
	B	1	1	1	1	1	1	1	-	-
06ZFCBT3AA06013	A	-	-	-	-	-	1	1	1	1
	B	-	-	-	-	-	-	-	1	1

DIMENSIONS/CLEARANCES

30KAV 500 & 550 without Hydraulic module



30KAV 500 & 550 with Hydraulic module



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

Water inlet for standard unit

Water outlet for standard unit

Air outlet – do not obstruct

Power electrical connection

NOTES:

Drawings are not contractually binding.

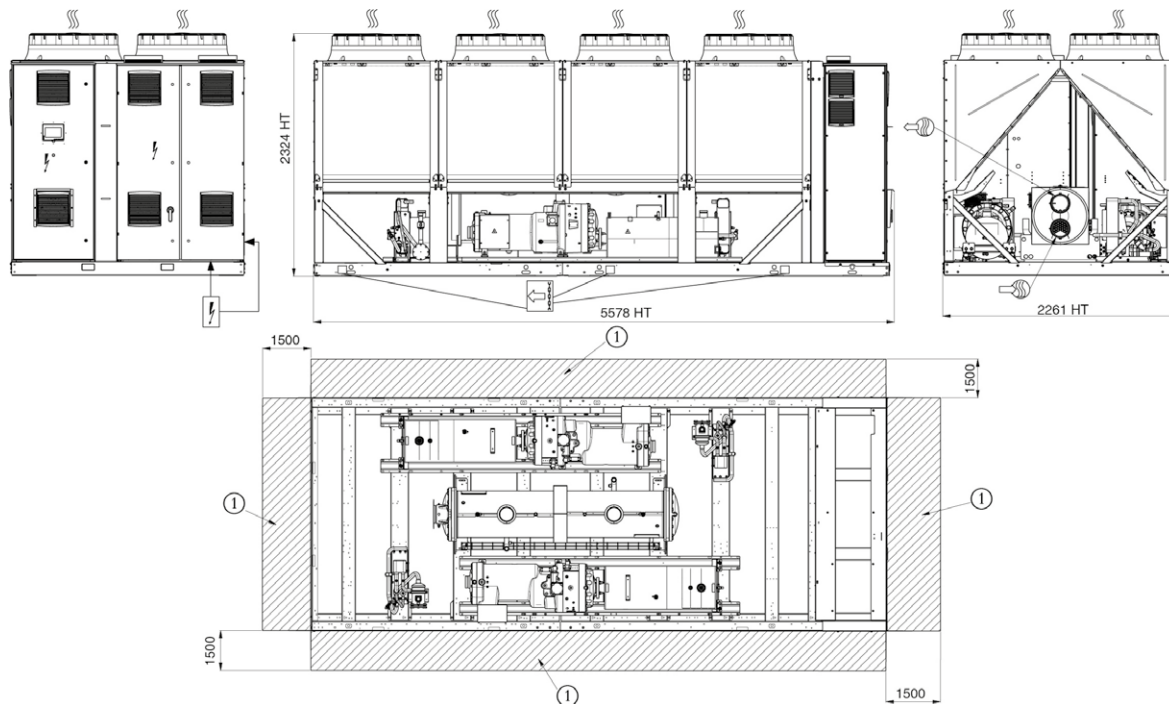
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

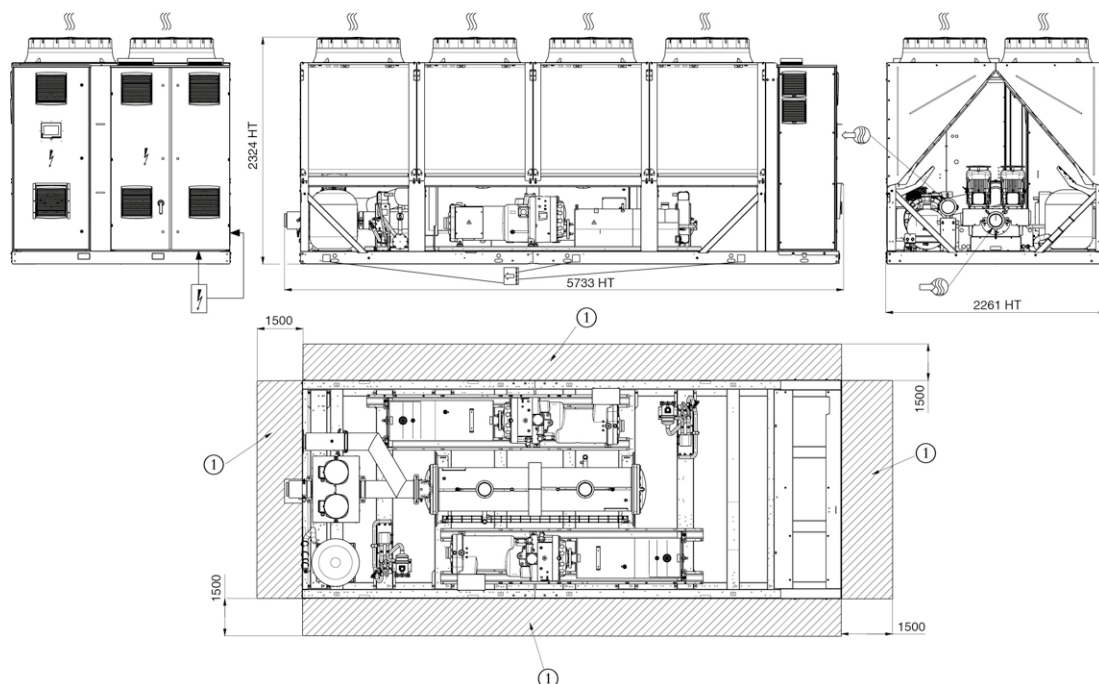
If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 600 & 650 without Hydraulic module



30KAV 600 & 650 with Hydraulic module



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)



Water inlet for standard unit



Water outlet for standard unit



Air outlet – do not obstruct



Power electrical connection

NOTES:

Drawings are not contractually binding.

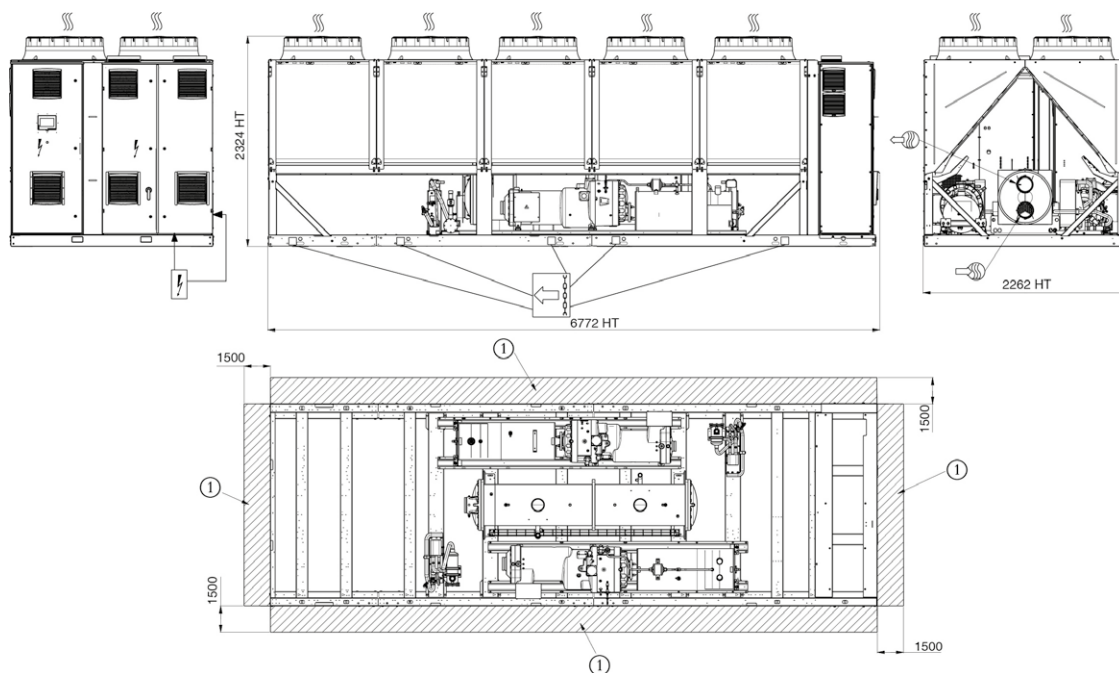
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

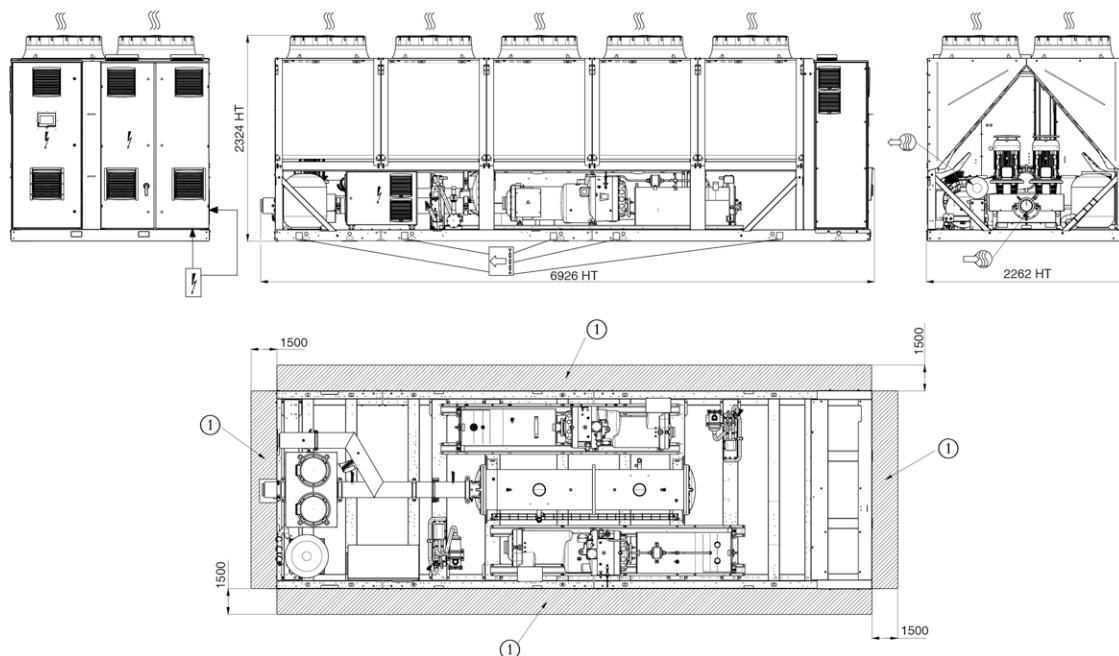
If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 500, 550, 600 & 650 opt. 119/119+ 30KAV 720 & 800 without Hydraulic module
30KAVP 500, 550, 600, 650 without Hydraulic module



30KAV 500, 550, 600 & 650 opt. 119/119+ & 30KAV 720 & 800 with Hydraulic module
30KAVP 500, 550, 600, 650 with Hydraulic module



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

Water inlet for standard unit

Water outlet for standard unit

Air outlet – do not obstruct

Power electrical connection

NOTES:

Drawings are not contractually binding.

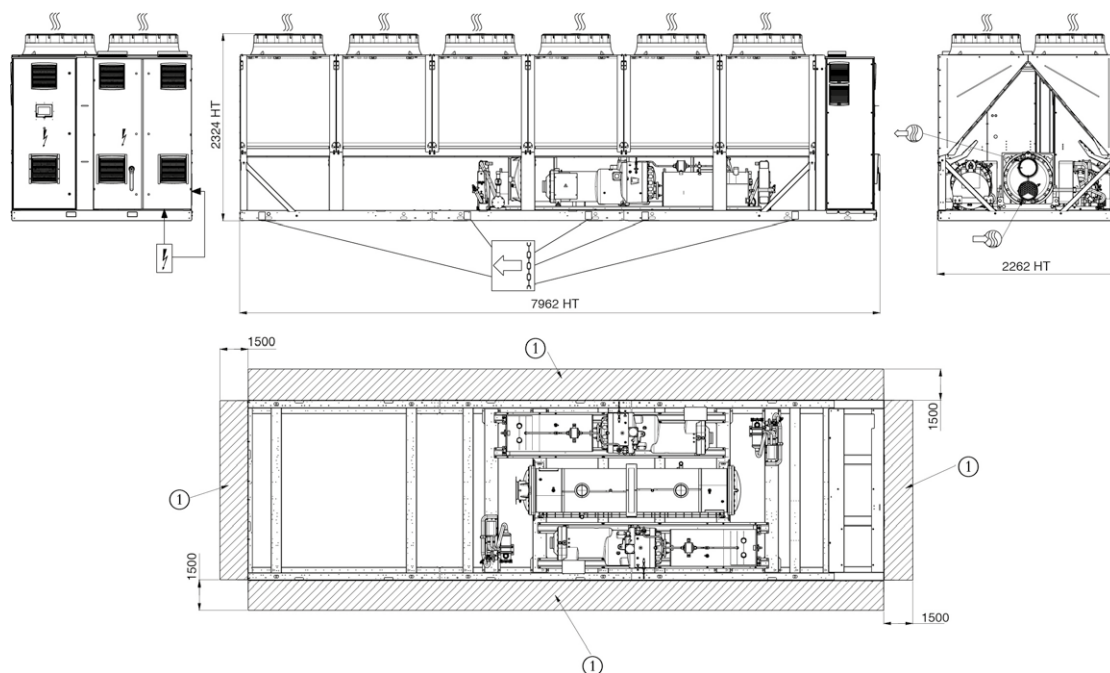
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

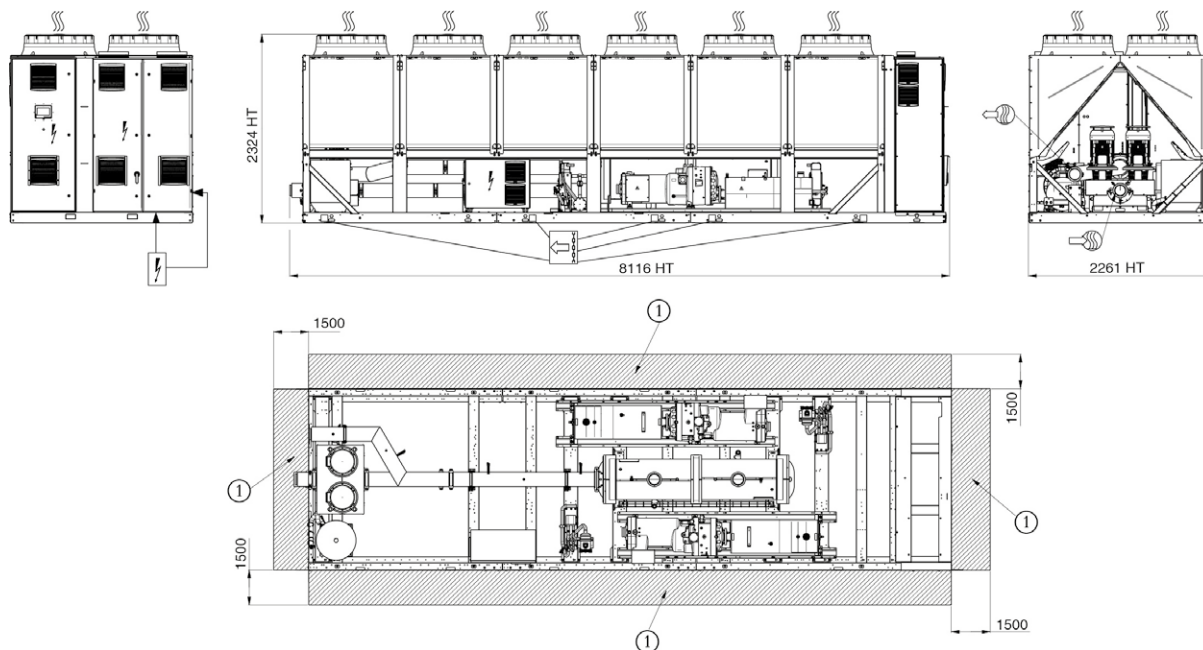
If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 720 opt. 119/119+ 30KAV 900 & 1000 without Hydraulic module 30KAVP 720 without Hydraulic module







30KAV 720 opt. 119/119+ with Hydraulic module 30KAVP 720 with Hydraulic module



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
-  Water inlet for standard unit
-  Water outlet for standard unit
-  Air outlet – do not obstruct
-  Power electrical connection

NOTES:

Drawings are not contractually binding.

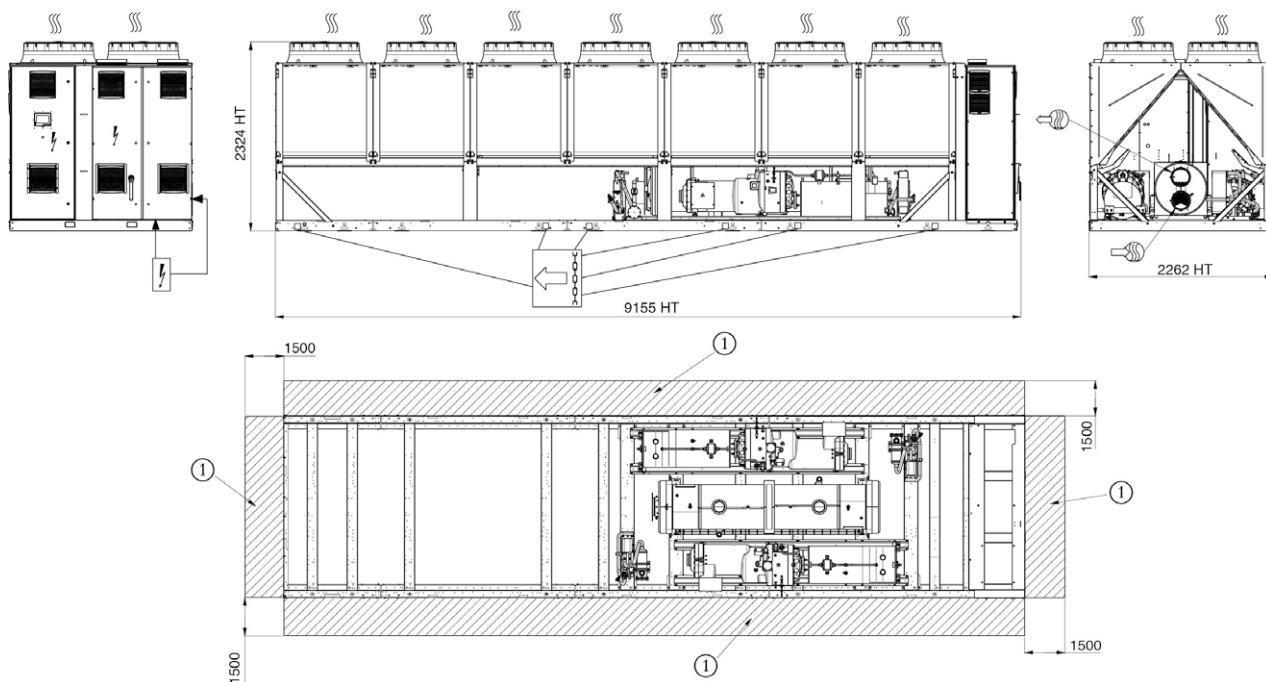
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

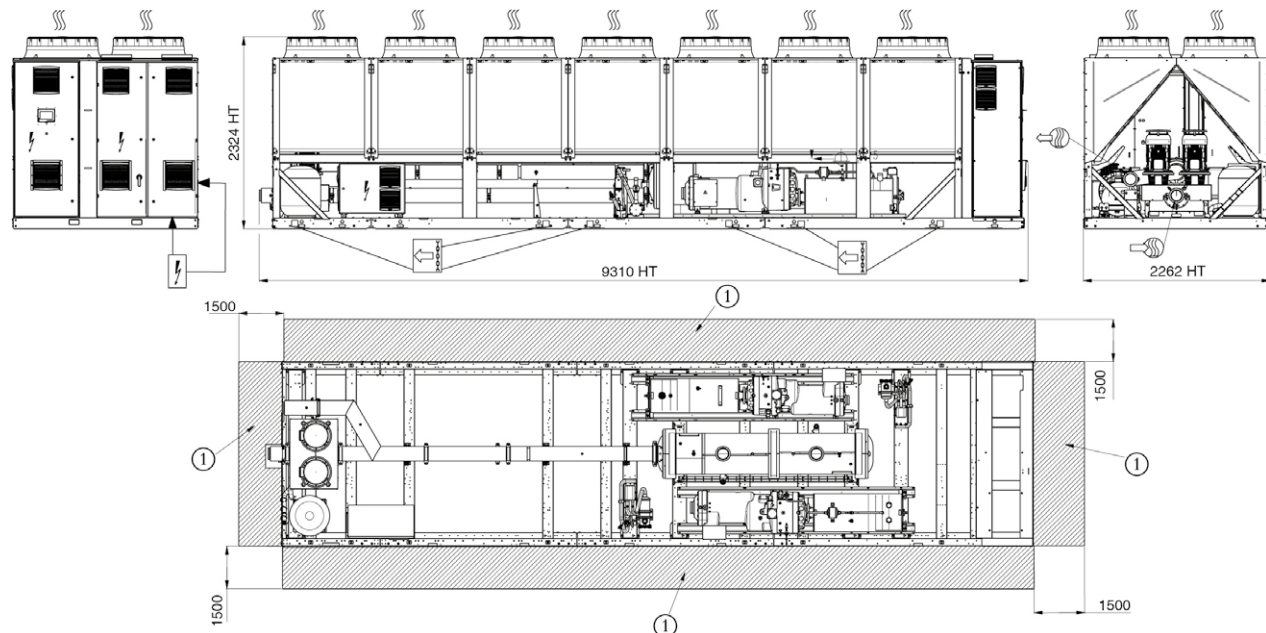
If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 800 & 900 opt. 119/119+ 30KAV 1100, without Hydraulic module
30KAVP 800, 900 without Hydraulic module



30KAV 800 opt. 119/119+ with Hydraulic module
30KAVP 800 with Hydraulic module



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
- Water inlet for standard unit
- Water outlet for standard unit
- Air outlet – do not obstruct
- Power electrical connection

NOTES:

Drawings are not contractually binding.

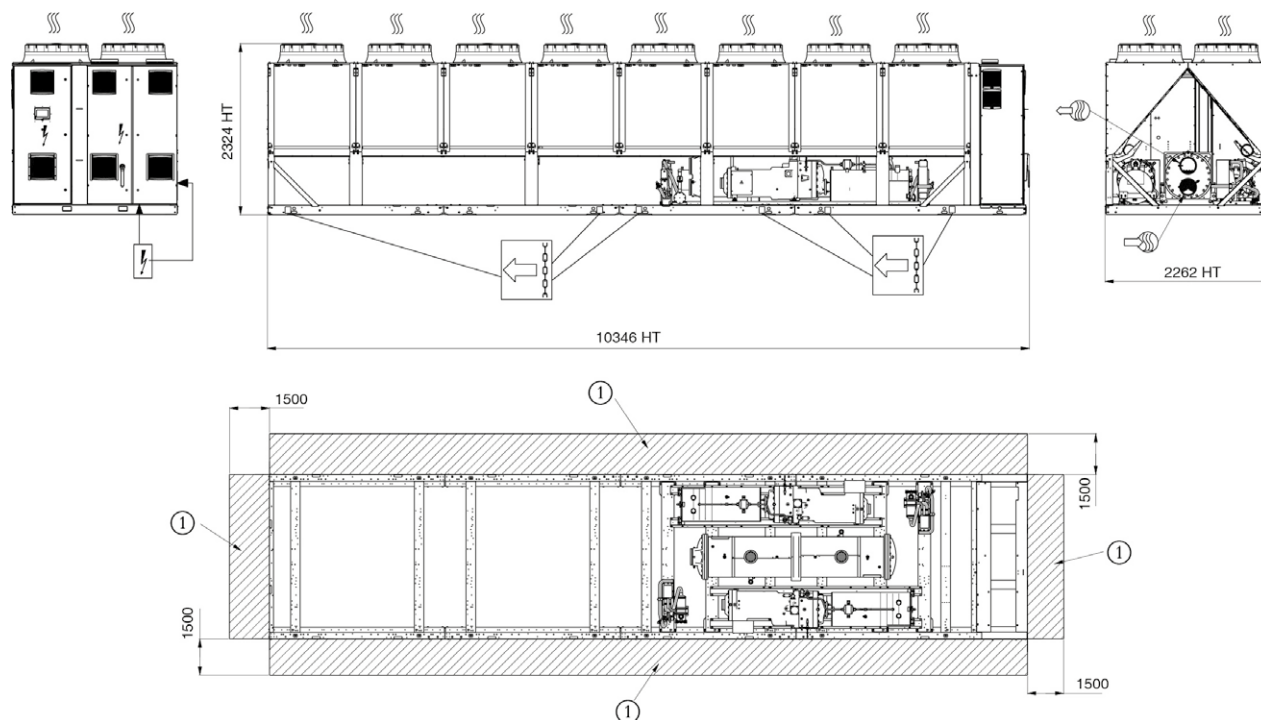
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 1000 & 1100 opt. 119/119+ 30KAVP 1000 & 1100



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
- Water inlet for standard unit
- Water outlet for standard unit
- Air outlet – do not obstruct
- Power electrical connection

Multiple chiller installation

It is recommended to install multiple chillers in a single row, arranged as shown in the example below, to avoid recycling of warm air from one unit to another.



If the situation at the site does not permit this arrangement, contact your Carrier distributor to evaluate the various possible arrangements. In certain situations an accessory (supplied loose at the time of purchase) can be added.

NOTES:

Drawings are not contractually binding.

Before designing an installation, consult the certified dimensional drawings, available on request.

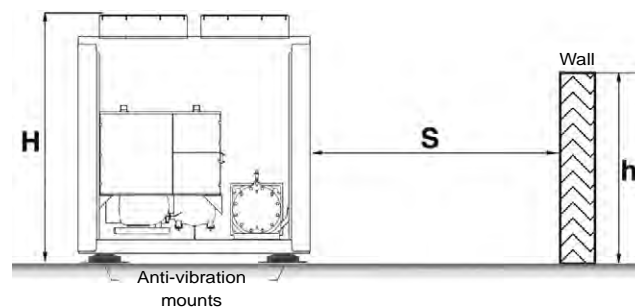
For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

If any unit(s) are close to walls, please refer to chapter "Distance to the wall" of this document to determine the space required.

Distance to the wall

To ensure correct operation for most cases:

- If $h < H$ (2,3 m), S minimum = 3 m
- If $h > H$ ou $S < 3$ m, contact your Carrier distributor to evaluate the various possible arrangements. In certain situations an accessory (supplied loose at the time of purchase) can be added.



NEW

VARIABLE-SPEED SCREW LIQUID CHILLER WITH GREENSPEED® INTELLIGENCE



Outstanding performance

Low sound levels

Intelligence and connectivity

Environmentally responsible

Wide range of applications

Simple installation and maintenance

30KAVZE 350 - 800 30KAVPZE 350 - 800

AQUAFORCE greenspeed
PUREtec

Nominal cooling capacity 370 - 820 kW

The AquaForce® Vision with Greenspeed® intelligence and PUREtec™ refrigerant is the premium solution with ultra-low GWP R-1234ze refrigerant for commercial and industrial applications where installers, consultants and building owners require superior reliability and optimal performances, especially at part load.

The 30KAVZE/30KAVPZE units are designed to exceed European Ecodesign directive requirements in terms of energy efficiency, versatility and operating sound levels. This result is achieved through the optimised combination of proven best-in-class technologies that include:

- Refrigerant R-1234ze
- 2nd generation of high-efficiency variable-speed twin screw compressors with built in volume index control (Vi) valve for optimal full and part load performance and Integrated Resonator Array (IRA) for low sound operation
- 30KAVPZE premium efficiency with a Permanent Magnet technology motor. Motor is synchronous and spins without any slip and rotor losses.
- 6th generation of Carrier Flying Bird™ fans with AC or EC motor depending on options.
- Carrier flooded shell-and-tube evaporator with new copper tubes for low pressure drops
- 3rd generation of "W" profile Carrier Novation™ microchannel heat exchangers with optional Enviro-Shield coatings.
- Carrier SmartVu™ control with color touch screen user interface that includes 10 languages and new smart energy monitoring function.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

AQUAFORCE® VISION WITH PURETEC™ REFRIGERANT

SUSTAINABILITY

PUREtec™: the environmental excellence solution

■ GWP<1

Carrier has selected HFO R-1234ze as the best refrigerant to replace HFC R-134a on screw chillers and heat-pumps.

HFO R-1234ze offers a **Global Warming Potential (GWP) index below 1**, similar to that of natural substances (CO₂ GWP=1).

■ High efficiency

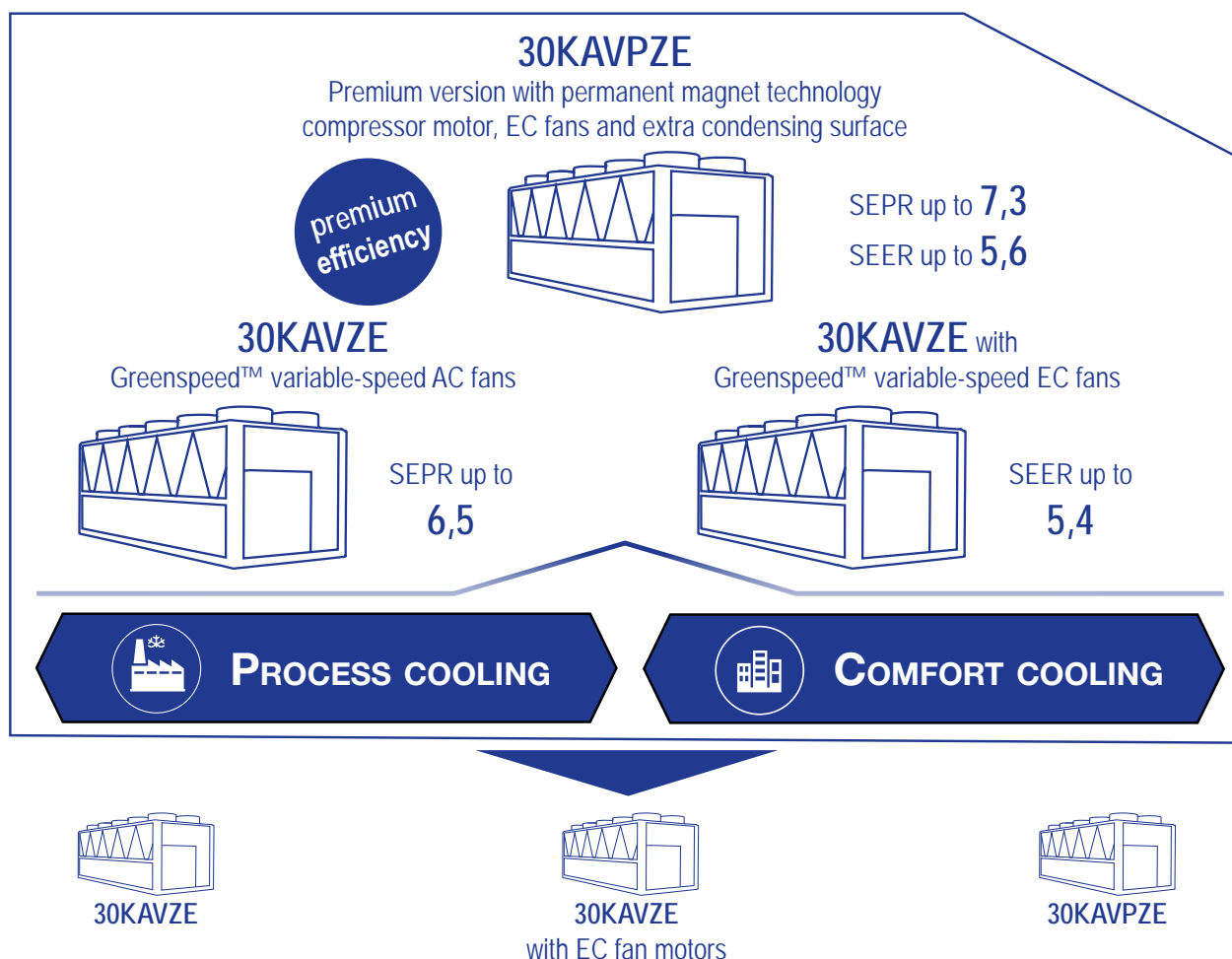
This excellent efficiency performance in turn means a **lower total carbon footprint**, with a reduction of 10% compared to HFC R-134a and HFC/HFO R-513A refrigerants.

■ Regulation compliance

Carrier has made the strategic decision to choose a long-term solution for its new chiller and heat-pump ranges using screw compressors: **HFO R-1234ze, with a GWP<1, is not impacted by the F-gas Regulation.**

AQUAFORCE® VISION THE RIGHT SOLUTION FOR EVERY APPLICATION

Carrier's AquaForce® Vision range is available in three levels of efficiency to perfectly match each customer application and meet the European Ecodesign directive requirements.



The AquaForce® 30KAVZE is equipped with variable-speed screw compressor and variable-speed AC fans with AC motor. The 30KAVZE offers an economical solution whilst providing high full load energy efficiency level for process applications and 12/7°C operation in hot climates. 30KAVZE is compliant with the 2021 EU Ecodesign SEPR -2/-8°C and 12/7°C requirements for medium and high temperature process chillers.

The AquaForce® 30KAVZE with Greenspeed™ intelligence is equipped with variable-speed EC fans motors. It offers an economical solution to enhance seasonal energy efficiency levels for comfort applications. The 30KAVZE with Greenspeed™ intelligence meets the 2021 EU Ecodesign SEER 12/7°C requirements.

The AquaForce® 30KAVPZE with Greenspeed™ intelligence is the premium version with permanent magnet technology compressor motor, EC fans and additional heat exchange surface to improve both the full load and part load energy efficiency. The 30KAVPZE provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology.

AQUAFORCE® VISION CUSTOMER BENEFITS

■ Outstanding performance

Equipped with variable-speed screw compressors with permanent magnet motor, EC fans and extra condensing surface, Carrier's AquaForce® Vision 30KAVPZE chiller with Greenspeed™ intelligence automatically adjusts the cooling capacity and the water flow to perfectly match the needs of the building or the process load variations.

The SEER is 25% above 2021 Ecodesign requirements.



SEER
up to 5.6

■ Low sound levels

The new generation of Carrier 06Z variable-speed twin screw compressor with integrated resonator array and the 6th generation of Flying Bird™ fans with new fan blade design inspired by nature help reduce compressor and airflow noise down to as little as 90 dB(A). 30KAVZE/30KAVPZE is 6 dB(A) quieter than the previous AquaForce® 30XAV generation.



90 dB(A)

■ Intelligence and connectivity

The advanced SmartVu™ intelligent control system displays operating parameters in real time, making it intuitive and particularly user-friendly. 30KAVZE/30KAVPZE also features innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling energy output and instantaneous and average seasonal energy efficiency ratios. For further energy savings, 30KAVZE/30KAVPZE can be monitored remotely by Carrier experts for energy consumption diagnosis and optimization.



SMART ENERGY
MONITORING

■ Environmentally responsible

Carrier's AquaForce® Vision 30KAVZE/30KAVPZE is a boost for green cities and contributes to a sustainable future. Combining a reduced load refrigerant and exceptional energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions by 25% throughout its life cycle.



UP TO
25% LESS
CO₂ EMISSION

■ Extensive scope of application

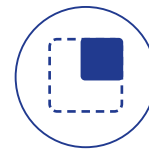
Carrier's AquaForce® Vision adapts effortlessly to a wide range of applications. Extended operating temperatures from -20°C to 55°C outdoor air temperatures and negative water temperatures make it ideal for various sectors of activity. From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaForce® Vision 30KAVZE/30KAVPZE meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate and wherever the location.



FROM
-20°C
to 55°C

■ Easy installation & maintenance

Built-in variable-speed pumps up to 600kW, automatic nominal water flow adjustment through electronic control, automatic unit energy performance measurement under real conditions, in units that are 25% smaller than the previous 30XAV generation, all these new features provide peace of mind for installers and service companies alike.



25%
SMALLER

AQUAFORCE® VISION CUSTOMER BENEFITS

AquaForce® Vision liquid chillers with Greenspeed® Intelligence adapt effortlessly to a wide range of applications. An extended operating range covering ambient temperatures from -20 to 55°C makes it ideal for all areas of activity. From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, 30KAVZE /30KAVPZE meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate and wherever the location.

Furthermore, the advanced SmartVu™ intelligent control system displays operating parameters in real time, making it intuitive and particularly user-friendly. 30KAVZE/30KAVPZE also features innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling capacity, and instantaneous and average seasonal energy efficiency ratios as well as smart refrigerant leak alert that can indicate significant loss of refrigerant at any point of the system.

For further energy savings, AquaForce® Vision can be monitored remotely by Carrier experts for energy consumption diagnosis and optimization.

The 30KAVZE/30KAVPZE range is available in 5 efficiency levels.

■ 30KAVZE standard unit

The AquaForce™ 30KAVZE is equipped with variable-speed screw compressor and variable-speed fans with AC motors. The 30KAVZE is optimised to meet the most demanding technical and economic requirements while offering high seasonal energy efficiency levels.

(Average SEER of 5.2, average EER of 3.1)

■ 30KAVZE with EC fans (option 17)

The 30KAVZE with EC fans option enhances the seasonal energy efficiency and offers state of the art EC fan technology as standard.

(Average SEER of 5.3, average EER of 3.1)

■ 30KAVZE with High Energy Efficiency (option 119)

The 30KAVZE with High Energy Efficiency option is equipped with variable-speed fans with AC motor and additional heat exchange surface to deliver optimum performance at both full load and part load.

(Average SEER of 5.4, average EER of 3.4)

■ 30KAVZE with High Energy Efficiency+ (option 119+)

The 30KAVZE with High Energy Efficiency+ option is equipped with EC fans and additional heat exchange surface to provide the highest possible seasonal energy efficiency.

(Average SEER of 5.5, average EER of 3.4)

■ 30KAVPZE Premium Energy Efficiency.

The 30KAVPZE is based on 30KAVZE with option 119+. In addition, variable speed screw compressor is equipped with a premium permanent magnet motor. This is a synchronous motor without any slip and rotor losses.

(Average SEER of 5.6, average EER of 3.5)

Outstanding energy performance

- The 30KAVZE with "High energy efficiency+" is designed for very high performance both at full and part load: average SEER 5.45, average EER 3.4 as per EN14825 & EN14511.
- The 30KAVPZE with "Premium energy efficiency" is designed for very high performance both at full and part load: average SEER 5.6, average EER 3.5 as per EN14825 & EN14511.
- The high energy efficiency is achieved through:

- 2nd generation of Carrier high-efficiency variable-speed twin-screw compressors with built in volume index control (Vi) valve for both optimal full and part load performance
- Variable-speed Flying Bird™ fans with EC motor minimising power consumption while delivering optimum air flow
- Novation™ aluminum condenser with high-efficiency micro-channel coils technology
- New Carrier flooded shell-and-tube evaporator with new copper tubes for low pressure drops
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control)
- Economiser system with electronic expansion device for increased cooling capacity.
- Optimised electrical performance:
 - Negligible start-up current (value is lower than the maximum unit current draw)
 - High displacement power factor (above 0.98)
 - EMC compliance with Class 3 requirements of the EU standard EN61800-3 (Class 2 is possible as an option).
- Hydraulic module with variable-speed dual pump
 - Variable-speed, dual pumps which automatically adjust the water flow to match the needs of the building or process load variations.
 - 3 pump control modes available: constant water flow with possibility to reduce the pump speed when there is no cooling demand, variable water flow with constant delta T or constant delta P control.
- Smart energy monitoring
 - Innovative smart energy monitoring providing users with smart data such as real time electric energy consumption, cooling capacity, and instantaneous and average seasonal energy efficiency ratios (Electricity metering accuracy: +/-5%. Cooling capacity metering accuracy: +/-5% at nominal rated conditions).
 - For further energy savings, 30KAVZE can be monitored remotely by Carrier experts for energy consumption diagnosis and optimization.

Built-in reliability and easy servicing

The AquaForce® Vision offer enhanced performances as well as Carrier's acclaimed product quality and reliability. Major components were chosen, selected and tested to minimise the possibility of failure.

- 2nd generation of variable-speed twin-screw compressors:
 - The screw compressors are industrial-type with oversized bearings and motor cooled by suction gas, with a proven failure rate lower than 0.1%.
 - 30KAVPZE is fitted with a Permanent Magnet (PM) motor to run the variable screw compressor.
 - Motor is synchronous and spins at supplied frequency, without any slip and rotor losses to induce magnetic field. There is a benefit of +1% in full load efficiency and of +4% in part load efficiency compared to induction motors.
 - Air-cooled compressor variable-speed drive (VSD) to ensure reliable operation and easy maintenance. (Glycol-cooled variable-speed drive (VSD) types are subject to higher failure rates due to glycol pump issue. Refrigerant-cooled variable-speed drive (VSD) types are subject to higher compressor vibration levels causing possible failures in the long term).
 - Compressor bearing life exceeding 100 000 hours
 - All components related to the compressor assembly are easily accessible on site minimising down-time.

AQUAFORCE® VISION CUSTOMER BENEFITS

■ Variable-speed fans:

30KAVZE is fitted with variable-speed asynchronous fan-motors as standard. One variable-speed drive (VSD) is sized to manage a group of fans per refrigerant circuit reducing first cost while ensuring high part-load efficiency.

30KAVZE + option 17 or option 199+ and 30KAVPZE are equipped with variable speed EC fan motors. Each EC fan is controlled independently ensuring continuous chiller operation in case of motor or drive failure.

■ Air-cooled condenser:

- Novation™ aluminum micro-channel heat exchanger (MCHE) with high corrosion resistance. The all aluminum design eliminates the formation of galvanic currents between aluminum and copper that cause coil corrosion in saline or corrosive environments.
- Enviro-shield™ coating for MCHE used in standard and mildly corrosive environments with superior durability confirmed through 5000 hours testing in constant neutral salt spray per ASTM B117 and superior heat transfer performances confirmed through 2000 hours testing per CM1 (Carrier proprietary testing).
- Super Enviro-shield™ coating for MCHE used in highly corrosive environments (industry or marine applications) with superior durability confirmed through 5000 hours testing in constant neutral salt spray per ASTM B117 and superior heat transfer performances confirmed through 2000 hours testing per CM1 (Carrier proprietary testing).

■ Evaporator:

- Carrier designed flooded evaporator with mechanically cleanable water tubes
- Electronic paddle-free flow switch to ensure prompt alarm in case of poor liquid flow rate
- Thermal insulation with aluminum sheet finish (option) improved resistance to mechanical and UV damage.

■ Refrigerant circuits:

- Two independent refrigerant circuits to secure partial cooling, if one of the two develops a fault.

■ Auto-adaptive control:

- Control algorithm prevents excessive compressor cycling (Carrier patent)
- Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity.

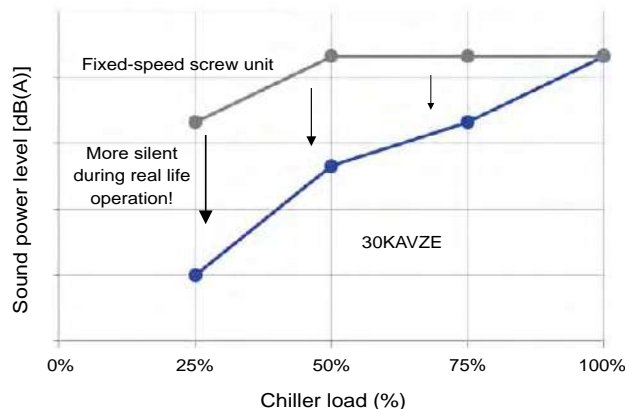
■ Exceptional endurance tests:

- To design critical components and sub-assemblies to minimise the risk of failure on site, Carrier uses specialised laboratories and advanced dynamic simulation tools.
- To ensure that the units reach customer sites in the same condition as they are when tested in the factory, Carrier tests the machine behavior while being moved along a 250 km trial. The test-route is based on a military standard and is the equivalent to 5000km by truck in a normal road.
- To ensure coils corrosion resistance, salt mist corrosion resistance test are performed in UTC's laboratory.

In addition, to maintain unit performance throughout its operating life, whilst minimising maintenance costs, end users can access the "Carrier Connect" remote monitoring service.

Minimised operating sound levels

- The Greenspeed® Intelligence, featuring variable-speed screw compressors and condenser fans, minimises noise levels at part load operation.



■ Standard unit features include:

- The new generation of Carrier 06Z variable-speed twin screw compressor with integrated resonator array to reduce the noise level by 6 dB(A) compared with 06T twin screw compressor previous generation.
- The 6th generation of silent Flying Bird™ fans with new fan blade design inspired by nature, help reduce airflow noise.

■ 30KAVZE/30KAVPZE is available with 3 sound levels to match the most sensitive environments:

- Standard: standard unit configuration with new generation of low sound screw compressor and fans
- Low noise option: addition of high-performance compressor sound enclosure
- Very low noise option: addition of high-performance compressor sound enclosure and fan operation at lower rotational speed.

Easy and fast installation

■ Built-in variable speed pumps up to 600kW

- Full hydraulic module with dual pumps (low or high pressure as required) and optional expansion tank
- Automatic nominal water flow adjustment through electronic control on the user display

■ Compact units for easy transportation and installation.

- Dimensions 25% smaller than the previous 30XAV generation
- Similar dimensions as the old 30GX chillers for easy replacement of the installed base.

■ Simplified electrical connections:

- Main disconnect switch
- Transformer supply to the integrated control circuit (400/24V)
- Single electrical point of connection

■ Simplified water connections:

- Victaulic connections on the evaporator
- Clearly identified entering and practical reference marks for entering and leaving water connections
- Possibility to choose different evaporator configurations, 1 or 2 passes.

■ Fast commissioning:

- Systematic factory operating test before shipment
- Functional test for main components, expansion devices, fans and compressors.

AQUAFORCE® VISION CUSTOMER BENEFITS

Environmental care

- The AquaForce® Vision with PUREtec™ refrigerant liquid chillers with Greenspeed® Intelligence is a boost for green cities and contributes to a sustainable future. Combining a reduced charge of R-1234ze refrigerant and exceptional energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions by 25% throughout its life cycle (compared to previous fixed-speed screw liquid chiller generation).
- The AquaForce® Vision with PUREtec™ refrigerant liquid chiller is equipped with an automatic energy meter that provides estimated instantaneous and cumulative cooling energy output, instantaneous and cumulative electric energy consumption, instantaneous and average seasonal energy efficiency ratios (Accuracy: +/- 5% at nominal condition, +/-10% elsewhere) for unit performance monitoring and verification.
- The AquaForce® Vision with PUREtec™ refrigerant designed exclusively for HFO R-1234ze will be available during the course of 2019.
- R-1234ze: HFO refrigerant with zero ozone depletion potential
- 40% less refrigerant charge: The micro-channel technology used for condenser coils optimises heat transfer while minimising the refrigerant volume.
- Leak tight refrigerant circuits:
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.
- Refrigerant leak alert: The AquaForce® Vision 30KAVZE /30KAVPZE liquid chiller is equipped with an automatic refrigerant leak detection algorithm that can detect serious refrigerant loss at any point on the system (Sensitivity: 25% refrigerant charge loss per circuit, depending on the conditions). The automatic refrigerant leak detection system can help to achieve recognition within pollution prevention assessment programs, ideal for assisting in the design of sustainable buildings.
- Refrigerant leak detection: Available as an option, this additional dry-contact allows reporting of possible leaks. The leak detector (by others) should be mounted in the most likely leak location.



- R-1234ze long-term refrigerant solution
 - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
 - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
 - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity airconditioning equipment.

■ Leak-tight refrigerant circuit

- Reduction of leaks as no capillary tubes and flare connections are used
- Verification of pressure transducers and temperature sensors without transferring refrigerant charge
- Discharge line shut-off valve and liquid line service valve for simplified maintenance.

Designed to support Green Building Design

A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment.

The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year 30KAVZE/30KAVPZE units offer a solution to this important challenge.

A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.

The following example looks at how Carrier's new 30KAVZE /30KAVPZE range helps customers involved in LEED® building certification.

The other benefit of using the AQUAFORCE PUREtec™ products is the eligibility for BUILDING labeling programs like BREEAM, HQE in France or Green Building Council labelling, that are recognizing the use of sustainable heating and air-conditioning equipment.

Let's take the example of BREEAM assessment method for the sustainability of buildings.

Two credits can be awarded where the refrigerants used in air-conditioning systems have a Global Warming Potential below 10.

And one additional credit can be awarded where the systems have a low Total Equivalent Warming Impact.

AQUAFORCE PUREtec™ is not only a solution that is reducing the energy bill and the CO₂ footprint.

It also helps the green certification of your buildings!

Energy saving certificate

AquaForce® Vision with with PUREtec™ refrigerant is eligible to Energy savings certificates in France (CEE) in comfort, industrial and agriculture applications:

- Floating High pressure control (by modulating the air flow through fan activation and its speed)
- Floating Low pressure control
- Variable speed on asynchronous compressor motor
- Variable speed on asynchronous fan motor
- Variable speed on asynchronous pump motor

30KAVPZE is equipped with variable speed synchronous compressor motor

For more details about financial incentives in France, please refer to "Fiche produit CEE"

AQUAFORCE® VISION CUSTOMER BENEFITS

30KAVZE and LEED® certification

The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a preeminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

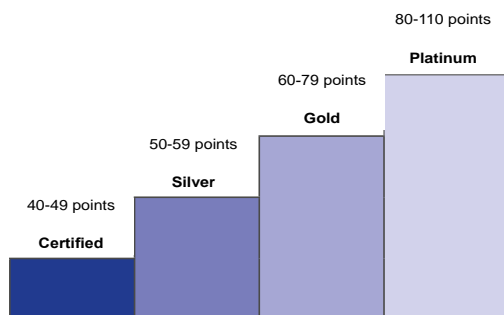
- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points

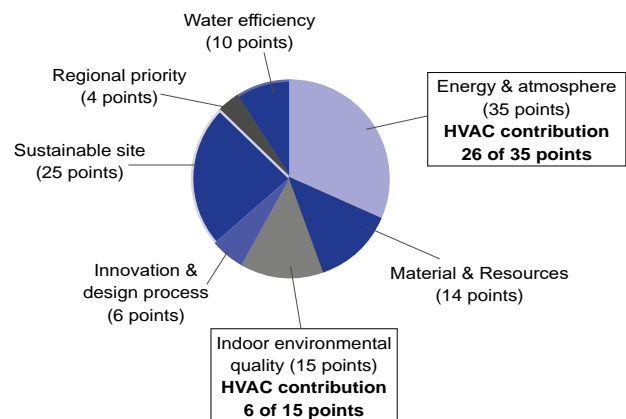


The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points

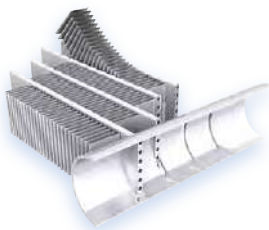
Overview of LEED® for new construction and major renovations



The new AquaForce® Vision with with PUREtec™ refrigerant units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- **EA prerequisite 2: Minimum energy Performance**
The AquaForce® Vision with with PUREtec™ refrigerant exceeds the energy efficiency requirements of ASHRAE 90.1-2007; therefore it complies with the prerequisite standard.
- **EA prerequisite 3: Fundamental Refrigerant Management**
The AquaForce® Vision with with PUREtec™ refrigerant does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.
- **EA credit 1: Optimise energy performance (1 to 19 points):**
Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90.1-2007 reference. The AquaForce® Vision with with PUREtec™ refrigerant, which is designed for high performance especially during part load operation, contributes to reducing the energy consumption of the building and therefore helps in gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.
- **EA credit 4: Enhanced refrigerant management (2 points):**
With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Global Warming Potential (GWP) of the system. The AquaForce® Vision with with PUREtec™ refrigerant uses a reduced R-1234ze charge and therefore contributes toward satisfying this credit under LEED®.

30KAVZE TECHNICAL INSIGHTS



3RD GENERATION OF "W" SHAPE NOVATION® MICRO CHANNEL HEAT EXCHANGERS

- Exclusive Carrier design
- Increased reliability with new aluminum alloy
- Significantly reduces refrigerant charge (-40% vs cu/al coils)
- More compact units (-25% vs previous 30XAV generation)
- Enviro-shield™ coating for mildly corrosive environments
- Super Enviro-shield™ coating for highly corrosive environments (industry or marine applications)
- Easy cleaning with high pressure air or water washer

ADVANCED SMARTVU™ WITH 7 INCH COLOR TOUCH SCREEN INTERFACE

- Exclusive Carrier design
- 10 languages available: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
- Touch screen user interface
- BACnet, J-Bus or LON communication interfaces
- Optional wireless connectivity



POWERFUL SMART ENERGY MONITORING FUNCTION

- Provides smart data based on intelligent algorithms
- Real time energy consumption measurement (kWh)
- Cooling energy output measurement (kWh)
- Instantaneous and average Energy Efficiency Ratio under real operating conditions
- Remote monitoring with Carrier Connect

FLOODED SHELL AND TUBE EVAPORATOR

- Exclusive Carrier design
- Flooded technology for high energy efficiency
- New generation of copper tubes with specific profile to reduce pressure drops when operating with glycol



6TH GENERATION OF VARIABLE-SPEED FLYING BIRD™ FANS WITH AC OR EC MOTOR

- Exclusive Carrier design
- Fan blade design inspired by nature
- AC motor technology
- High efficiency version with EC motor technology (option)



VARIABLE-SPEED DUAL PUMPS WITH AC MOTOR

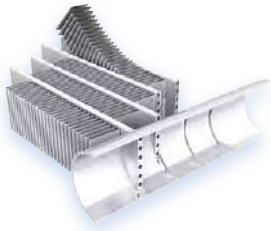
- Dual pumps designed for variable speed operation
- High efficiency AC motor
- Low static pressure (~100 kPa) or high static pressure (~180 Kpa) available
- 3 pump control modes available: constant water flow with 2 speeds, variable water flow based on constant delta T or constant delta P
- Compatibility of chillers for variable primary flow operation



LATEST GENERATION CARRIER VARIABLE-SPEED 06Z TWIN SCREW COMPRESSOR WITH AC MOTOR

- Exclusive Carrier design
- Twin screw compressor designed for variable speed operation
- High efficiency AC motor
- Stepless variable-speed control (0%-100%)
- Integrated resonator array for compressor acoustic attenuation
- Integrated check valve for quiet shutdown
- Air-cooled inverter drive for increased reliability
- Bearing life exceeding 100.000 hours
- Twin screw compressor with permanent magnet motor as option

30KAVPZE TECHNICAL INSIGHTS



3RD GENERATION OF "W" SHAPE NOVATION® MICRO-CHANNEL HEAT EXCHANGERS

- Exclusive Carrier design
- Increased reliability with new aluminum alloy
- Significantly reduces refrigerant charge (-40% vs cu/al coils)
- More compact units (-25% vs previous 30XAV generation)
- Enviro-shield™ coating for mildly corrosive environments
- Super Enviro-shield™ coating for highly corrosive environments (industry or marine applications)
- Easy cleaning with high pressure air or water washer
- Extra W module to increase seasonal efficiency



6TH GENERATION OF VARIABLE-SPEED FLYING BIRD™ FANS WITH EC MOTOR

- Exclusive Carrier design
- Fan blade design inspired by nature
- High efficiency version with EC motor



LATEST GENERATION CARRIER VARIABLE-SPEED 06Z TWIN SCREW COMPRESSOR WITH PERMANENT MAGNET MOTOR

- Exclusive Carrier design
- Twin screw compressor designed for variable speed operation
- High efficiency permanent magnet motor
- Stepless variable-speed control (0%-100%)
- Integrated resonator array for compressor acoustic attenuation
- Integrated check valve for quiet shutdown
- Air-cooled inverter drive for increased reliability
- Bearing life exceeding 100,000 hours

TECHNICAL INSIGHTS

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30KAVZE/30KAVPZE. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

SmartVu™



- New innovative smart control features:
 - An intuitive and user-friendly, coloured, 7" interface
 - 10 languages available on choice: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Energy management:
 - Innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling capacity, and instantaneous and average seasonal energy efficiency ratios.
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation

- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.

Remote management (standard)

- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional).
- The 30KAVZE/30KAVPZE also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: Indication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation.

Remote management (EMM option)

- The Energy Management Module (EMM) offers extended remote control possibilities:
 - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
 - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
 - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
 - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
 - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
 - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
 - Time schedule override: Closing of this contact cancels the programmed time schedule.
 - Out of service: This signal indicates that the chiller is completely out of service.
 - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
 - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
 - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

TECHNICAL INSIGHTS

New generation of Carrier 06Z variable-speed twin screw compressor



The new generation of 06Z variable-speed twin screw compressors benefits for Carrier's long experience in the development of twin-rotor screw compressors. The 06Z compressor design is based on the successful 06T screw compressor, core of the well-known Aquaforce series with a number of modifications to reduce noise level and improve the energy efficiency especially during part load operation.

- New 06Z twin screw compressor optimized for variable speed operation: elimination of the slide valve, built in volume index control (Vi) valve for both optimal full and part load performance, high efficiency AC motor with stepless inverter control from 20% to 100%.
- 30KAVPZE screw compressor is equipped with a Permanent Magnet (PM) Motor, which is a four pole motor compared to the two pole induction motor. By the way, the frequency setting doubles with PM motors, but the shaft speed remains the same. There is no slip or rotor losses. Thus, there is a benefit of +1% in full load efficiency and of +4% in part load efficiency.

Permanent Magnet Motor



- Separate air-cooled inverter drive for increased reliability
- New 06Z twin screw compressor design with Integrated Resonator Array (IRA) to reduce the sound level by up to 6 dB(A) when compared with previous 06T generation
- Integrated Check Valve for quiet shutdown
- Bearing life exceeding 100 000 hours.
- A dedicated oil separator is installed at the discharge of each compressor to ensure maximum oil return: Oil separates from refrigerant by gravity and returns to the low pressure side of the compressor without use of additional pumps.
- Volume index control (Vi) valve provides a reliable method of adjusting the compression ratio to better match system demand. It provides optimal performance regardless of operating condition
- Screw compressors work on the positive displacement principle to compress gas to a higher pressure. As a result, if there is an unusually high pressure in the condenser (due for example to coil fouling or operation in harsh climate) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode).
- The silencer in the oil separator line (at the compressor outlet) considerably reduces discharge gas pulsations for much quieter operation.

TECHNICAL INSIGHTS

Novation® Heat Exchangers with Microchannel Coil Technology

Already utilised in the automobile and aeronautical industries for many years, the Novation™ Micro-Channel Heat Exchanger (MCHE) used in the Aquaforce is entirely made of aluminum. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminum) come into contact in traditional heat exchangers.

- From the energy efficiency point-of-view the Novation® heat exchangers are approximately 10% more efficient than traditional coils and micro-channel coil technology allows a 40% reduction in the amount of refrigerant used in the chiller.
- The reduced depth of the Novation™ MCHE reduces air pressure losses by 50% and makes it much less susceptible to fouling (e.g. by sand). Cleaning of the Novation™ MCHE heat exchanger is very fast using a high pressure washer.
- To further enhance long-term performance, and protect coils from early deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.
 - The Novation™ MCHE with Enviro-Shield protection (option 262) is recommended for installations in moderately corrosive environments. The Enviro-Shield protection utilises corrosion inhibitors which actively arrest oxidation in case of mechanical damage.
 - The Novation™ MCHE with exclusive Super Enviro-Shield protection (option 263) is recommended for installations in corrosive environments. The Super Enviro-Shield protection consist of an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.
- After a total of more than 7,000 hours of testing following various test standards in UTC laboratories, the Carrier Novation® MCHE with Super Enviro-shield® coating appears to be the best-suited customer choice to minimize the harmful effects of corrosive atmospheres and ensure long equipment life.
 - Best corrosion resistance per ASTM B117/D610 test
 - Best heat transfer performance per Carrier Marine 1 test
 - Proven reliability per ASTM B117 test



Coil Types (ranked by performance)	Visual Corrosion Evaluation	Heat Transfer Performance Degradation	Time to Failure	Test Campaign Conclusions
Super Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Very good	No coil leak	Very good
Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Very good
Al/Al coil	Very good	Good	No coil leak	Very good
Novation™ MCHE	Good	Very good	No coil leak	Good
Cu/Cu coil	Good	Good	Leak	Acceptable
Blygold® Cu/Al coil	Good	Good	No coil leak	Acceptable
Precoat Cu/Al coil	Bad	Bad	No coil leak	Bad
Cu/Al coil	Bad	Bad	No coil leak	Bad

TECHNICAL INSIGHTS

New generation of Flying Bird VI fans with EC motors



The 30KAVZE/30KAVPZE utilizes Carrier's the 6th generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and wide operating range. The fan includes Carrier patented rotating shroud technology and back-swept blades with a unique wave-serration trailing edge inspired from nature.

It was designed and optimized for the 30KAVZE/30KAVPZE air management system configuration and heat exchanger technology. On 30KAVPZE, and on 30KAVZE with option 17 and option 119+, fans are propelled by an EC motor, also known as brushless DC, with a unique electronics to manage commutation. This provides a great accuracy for fans that require higher efficiencies and variable speed. The fan meets the latest European eco-design requirements for fan efficiency. The fan uses Carrier's robust and proven injection molded composite-thermoplastic construction.

EC fan



TECHNICAL INSIGHTS

Variable Frequency Drives (VFD)

The compressors, AC fans and the pumps of 30KAVZE-30KAVPZE are controlled by VFDs.

- Electrical box is capable of operating up to 55°C (with option 16 "High Ambient").
- Unit controls is capable of withstanding storage temperatures in the control compartment from -20°C to 68°C.
- All VFDs on the chiller (compressors, fans and pumps motors) are fully air cooled and shall not require an additional glycol cooling system, thus avoiding the maintenance associated with such cooling systems.



Fan drives + Pump drives +
electronic boards



Compressor drives + main
power connection

OPTIONS

Option	No.	Description	Advantage	30KAVZE 30KAVPZE
Medium Brine down to -6°C	5	Redesigned evaporator to allow chilled brine solution production down to -6°C (including different number of tubes in the evaporator, extra insulation, specific sensors and algorithms).	Covers specific applications such as ice storage and industrial processes	0350-0800
Low Brine with turbulators down to -12°C	6	Redesigned evaporator including turbulators to allow chilled brine solution production with low pressure drops on the entire negative application range, down to -12°C (including turbulators, extra insulation, specific sensors and algorithms).	Covers specific applications such as ice storage and industrial processes	0350-0800
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction	350-800
Very low noise level	15LS	Sound absorbing & aesthetic compressor enclosure and oil separator, evaporator and suction line acoustic treatment, combined with low-speed fans	Noise level reduction in sensitive environments	350-800
High ambient temperature	16	Electrical components sized for part load operation up to 55°C air ambient	Extended unit part-load operation up to 55°C ambient temperature	350-800
EC fans	17	Unit equipped with EC fans	Enhances the unit energy efficiency	350-800 "already included on 30KAVPZE"
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the electrical box from dust, water and sand. In general this option is recommended for installations in polluted environments	350-800
Grilles and enclosure panels	23	Metallic protection grilles and side enclosure panels	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	350-800
Enclosure panels	23A	Side enclosure panels	Improves aesthetics and piping protection against impacts.	350-800
Water exchanger frost protection	41A	Electric resistance heater on the water exchanger and discharge valve	Water exchanger frost protection down to -20°C outside temperature	350-800
Evaporator & hydraulic module frost protection	41B	Electric resistance heater on water exchanger, discharge valve and hydraulic module	Water exchanger and hydraulic module frost protection down to -20°C outside temperature	350-600
Evaporator & condenser frost protection	41C	Electric resistance heater on evaporator exchanger, discharge valve and add heaters and insulation on hydraulic connection (option 325)	Water exchanger module frost protection between 0°C and -20°C outside air temperature	350-800
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit (Each exchanger is equipped with heaters and insulation)	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	350-800
Total heat recovery	50	Unit equipped with additional heat exchanger in series with the condenser coils (Each exchanger is equipped with heaters and insulation)	Production of free hot-water with variable heat reclaim	350-800
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	350-800
Main disconnect switch with short-circuit protection	70D	Circuit breaker equipped with an external disconnect switch handle	Ensure protection of main disconnect switch and associated cables against short-circuits when building devices are not compliant	350-800
Evap. and pumps with aluminum jacket	88A	Evaporator and pumps covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	350-600
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	350-800
Compressor discharge valves	93A	Shut-off valve on the compressor discharge piping	Simplified maintenance	350-800
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	350-800
LP VSD dual-pump hydraulic mod.	116A	Dual low-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter.	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	350-600

OPTIONS

Option	No.	Description	Advantage	30KAVZE 30KAVPZE
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	350-600
High Energy Efficiency	119	Additional condenser coil to improve unit energy efficiency	Enhances the unit energy efficiency performance	350-800 "already included on 30KAVPZE"
High Energy Efficiency+	119+	Additional condenser coil plus EC fans to improve unit energy efficiency	Enhances the unit energy efficiency performance	350-800 "already included on 30KAVPZE"
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	350-800
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	350-800
Modbus over IP and RS485 communication gateway	149B	Bi-directional high-speed communication using the Modbus over Ethernet network (IP) protocol	Easy, quick connection via Ethernet line to a building technical management system. Allows access to several unit parameters.	350-800
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	350-800
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	350-800
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	350-800
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	350-800
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	350-800
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	350-800
Insulation of the evap. in/out ref. lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/leaving refrigerant lines	350-800
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	350-800
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	350-800
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	350-800
Welded heat recovery condenser connection kit	267	Victaulic piping connection with welded joints	Easy installation	350-800
Evaporator with aluminum jacket	281	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	350-800
EMC class. C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Decrease the variable frequency drive (VFD) emission level according to C2 category requirements and allow its compliance with use in first environment (so called, residential environment).	350-800

OPTIONS

Option	No.	Description	Advantage	30KAVZE 30KAVPZE
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	350-800
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	350-600
Fast Capacity Recovery	295	New software algorithms to allow quick restart and fast loading while preserving unit-reliability	Full capacity recovery in less than 5 minutes after power failure. Matches requirements of typical critical missions applications	350-800
US screw compressor	297	Screw compressor made in US		350-800
Variable Water Flow control	299	hydraulic control function package that permits control of the water flow rate based on different possible logics (at customer choice): constant ΔT , constant outlet pressure and "fixed-speed" control	When variable-speed pumps on the primary circuit, the VWF control modulates flow rate through the evaporator, minimising pump consumption while ensuring safe/ optimised chiller operation	350-800
Free-cooling dry-cooler control	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, extended control capabilities of a remote dry-cooler used in free-cooling mode	350-800
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE 5010-5 :2016.	350-800
Compliance with Qatar regulation	319	Specific nameplate on the unit with power supply 415 V+/-6%	Compliance with KAHRAMAA regulation in Qatar.	350-800
Hydraulic connection kit	325	Water piping on condenser and evaporator side	Easy installation	350-800
Compliance with Morocco regulation	327	Specifics documents according Morocco regulation	Conformance with Morocco regulations	350-800
Permanent magnet motor	329	Twin screw compressor with permanent magnet motor	Enhances the unit energy efficiency performance	350-800

PHYSICAL DATA

Standard units and Units with EC fans option (17)

30KAVZE				350	400	450	500	550	600	650	750	800
Cooling												
Standard unit Full load performances*	CA1	Nominal capacity	kW	372	404	458	483	533	606	673	751	823
		EER	kW/kW	3,08	3,01	3,13	3,08	3,13	3,15	3,18	3,17	3,20
Standard unit Seasonal energy efficiency **		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,99	4,99	5,20	5,19	5,30	5,20	5,19	5,16	5,30
		ηs cool _{12/7°C}	%	197	197	205	205	209	205	205	204	209
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,40	5,68	6,45	6,52	6,46	6,43	6,40	6,32	6,49
Unit + option 17 Seasonal energy efficiency **		SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,05	5,05	5,27	5,28	5,38	5,27	5,28	5,24	5,39
		ηs cool _{12/7°C}	%	199	199	208	208	212	208	208	207	213
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,43	5,72	6,54	6,64	6,57	6,53	6,51	6,41	6,60
Unit + option 329 Seasonal energy efficiency **		SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,15	5,15	5,37	5,36	5,47	5,36	5,36	5,32	5,47
		ηs cool _{12/7°C}	%	203	203	212	211	216	211	211	210	216
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,71	5,97	6,79	6,84	6,83	6,69	6,67	6,57	6,76
Unit + option 17 + option 329 Seasonal energy efficiency **		SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,21	5,21	5,44	5,44	5,55	5,44	5,44	5,40	5,56
		ηs cool _{12/7°C}	%	205	205	215	215	219	215	215	213	219
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,75	6,01	6,88	6,96	6,96	6,79	6,79	6,66	6,87
Sound levels												
Standard unit												
Sound power ⁽¹⁾			dB(A)	95	95	96	98	99	98	99	98	100
Sound pressure at 10 m ⁽²⁾			dB(A)	63	63	64	65	66	65	67	65	67
Pression acoustique à 1 m			dB(A)	75	75	76	78	78	77	78	77	78
Unit + option 15 ⁽³⁾												
Sound power ⁽¹⁾			dB(A)	94	94	94	96	97	96	97	97	98
Sound pressure at 10 m ⁽²⁾			dB(A)	62	62	61	64	64	63	65	64	65
Pression acoustique à 1 m			dB(A)	74	74	74	76	76	75	76	76	76
Unit + option 15LS ⁽³⁾												
Sound power ⁽¹⁾			dB(A)	90	90	90	92	94	92	94	93	94
Sound pressure at 10 m ⁽²⁾			dB(A)	57	58	58	59	61	60	62	60	61
Pression acoustique à 1 m			dB(A)	70	70	70	72	73	71	73	72	72
Dimensions												
Standard unit												
Length			mm	4387	4387	5578	5578	6772	6772	7962	7962	9155
Width			mm	2261	2261	2261	2261	2261	2261	2261	2261	2261
Height			mm	2324	2324	2324	2324	2324	2324	2324	2324	2324
Unit length + options												
Options 49/50 ⁽³⁾			mm	5578	5578	6772	6772	6772	6772	7962	7962	9155
Options 116A/116W ⁽³⁾			mm	5578	5578	5578	5578	6772	6772	-	-	-
Operating weight ⁽⁴⁾												
Standard unit			kg	4777	4790	5166	5192	5667	6089	6558	7011	7430
Unit + option 49 ⁽³⁾			kg	5177	5190	5592	5605	5843	6304	6741	7222	7657
Unit + option 50 ⁽³⁾			kg	5230	5243	5718	5731	5969	6489	6927	7451	7860
Unit + options 116A/116W ⁽³⁾			kg	5291	5405	5592	5618	6223	6644	-	-	-

- * In accordance with standard EN14511-3:2013.
- ** In accordance with standard EN14825:2016, average climate
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
- ηs cool _{12/7°C} & SEER _{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
- SEPR _{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application**
- (1) In dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
- (3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod. ; 49=Partial heat recovery ; 50= Totale heat recovery ; 5=Medium Brine ; 6=Low Brine
- (4) Values are guidelines only. Refer to the unit name plate.
- (5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.



Eurovent certified values

PHYSICAL DATA

Standard units and Units with EC fans option (17)

30KAVZE		350	400	450	500	550	600	650	750	800
Compressors		Inverter driven 06Z twin screw compressor with AC motor								
Circuit A	Quantity	1	1	1	1	1	1	1	1	1
Circuit B	Quantity	1	1	1	1	1	1	1	1	1
Unit minimum capacity ⁽⁵⁾	%	13	13	13	13	13	13	13	12	12
Refrigerant⁽⁴⁾		R1234ze (GWP=1, ODP=0)								
Circuit A	kg	49	50	57	60	67	83	93	87	94
	teqCO ₂	0	0	0	0	0	0	1	1	1
Circuit B	kg	50	51	58	61	68	62	73	88	95
	teqCO ₂	0	0	0	0	0	0	0	1	1
Refrigerant⁽⁴⁾ - Option 5⁽³⁾ (Medium Brine)		R1234ze (GWP=1, ODP=0)								
Circuit A	kg	58	60	68	71	82	101	109	105	115
	teqCO ₂	0	0	0	0	0	1	1	1	1
Circuit B	kg	59	61	69	72	83	77	86	106	116
	teqCO ₂	0	0	0	0	0	0	1	1	1
Refrigerant⁽⁴⁾ - Option 6⁽³⁾ (Low Brine)		R1234ze (GWP=1, ODP=0)								
Circuit A	kg	52	53	60	63	71	87	98	92	99
	teqCO ₂	0	0	0	0	0	1	1	1	1
Circuit B	kg	53	54	61	64	72	65	77	93	100
	teqCO ₂	0	0	0	0	0	0	0	1	1
Oil		Hatcol 4496								
Circuit A	l	27	26	25	23	20	23	20	23	20
Circuit B	l	27	26	25	23	20	23	20	23	20
Unit control		SmartVu™ with 7 inch coloured touch screen interface								
Languages		10 languages (DE, EN, ES, FR, IT, NL, PT, TR, TU + one on customer choice)								
Smart energy metering		Standard feature								
Wireless connectivity		Option								
Expansion valve		Electronic expansion valve								
Air heat exchanger		Novation™ Micro Channel Heat Exchanger								
Fans		Novation™ Micro Channel Heat Exchanger								
Standard unit		Inverter driven Flying Bird™ VI fans with AC motor								
Unit + option 17		Inverter driven Flying Bird™ VI fans with EC motor								
Quantity	6	6	8	8	10	10	12	12	14	
Maximum total air flow	l/s	35580	35580	47440	47440	59300	59300	71160	71160	83020
Maximum rotation speed	r/s	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0
Maximum total air flow + option 15LS ⁽³⁾	l/s	28920	26100	41600	43200	56000	50000	67200	57840	72800
Maximum rotation speed + option 15LS ⁽³⁾	r/s	13,2	12,0	14,2	14,7	15,2	13,7	15,2	13,2	14,2
Water heat exchanger		Flooded shell and tube heat exchanger								
Water volume	l	83	88	96	100	115	126	144	165	183
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Double pump, screen filter, relief valve, water drain valve, pressure sensors, expansion tank (option), heaters (option)								
Pump		Inverter driven dual pumps with AC motor								
Expansion vessel volume	l	80	80	80	80	80	80	-	-	-
Max. water-side operating pressure	kPa	400	400	400	400	400	400	-	-	-
Water connections		Victaulic® type								
Without options 116A/116W⁽³⁾										
Connections	inch	5	5	6	6	6	6	8	8	8
Outside tube diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	219,1	219,1	219,1
With options 116A/116W⁽³⁾										
Connections	inch	5	5	5	5	5	5	-	-	-
Outside tube diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	-	-	-
Casing paint		Colour code RAL 7035								

(3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod.; 49=Partial heat recovery ; 50= Totale heat recovery ; 5=Medium Brine ; 6=Low Brine

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA

30KAVZE option 119/119+ and 30KAVPZE

30KAVZE options 119/119+			350	400	450	500	550	600	650	750	800
Cooling											
Unit + option 119+ Full load performances* CA1	Nominal capacity	kW	380	421	467	491	541	625	684	773	836
	EER	kW/kW	3,53	3,53	3,40	3,32	3,33	3,45	3,36	3,43	3,39
Unit + option 119 Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,39	5,33	5,47	5,43	5,48	5,45	5,35	5,36	5,36
	ηs cool _{12/7°C}	%	213	210	216	214	216	215	211	211	211
	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,01	6,79	6,69	6,84	6,55	6,75	6,56	6,55	6,57
Unit + option 119+ Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,44	5,44	5,53	5,51	5,55	5,51	5,43	5,43	5,45
	ηs cool _{12/7°C}	%	215	215	218	217	219	217	214	214	215
	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,03	6,88	6,76	6,95	6,65	6,82	6,67	6,63	6,68
30KAVPZE			350	400	450	500	550	600	650	750	800
Standard unit Full load performances* CA1	Nominal capacity	kW	380	421	467	491	541	625	684	773	836
	EER	kW/kW	3,57	3,56	3,43	3,36	3,36	3,48	3,40	3,47	3,42
Standard unit Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.	kWh/kWh	5,59	5,60	5,69	5,68	5,71	5,67	5,59	5,59	5,61
	ηs cool _{12/7°C}	%	221	221	225	224	225	224	221	221	221
	SEPR _{12/7°C} Process high temp.	kWh/kWh	6,38	7,10	7,05	7,18	6,89	7,01	6,84	6,83	6,85
30KAV-ZE options 119/119+ & 30KAVPZE			350	400	450	500	550	600	650	750	800
Sound levels											
30KAV-ZE_option_119+ & 30KAVPZE											
Sound power ⁽¹⁾	dB(A)	96	96	97	98	99	98	100	98	100	
Sound pressure at 10 m ⁽²⁾	dB(A)	63	63	64	66	66	65	67	65	67	
Pression acoustique à 1 m	dB(A)	75	75	76	77	78	76	78	76	78	
30KAV-ZE_option_119+ & 30KAVPZE: option 15(3)											
Sound power ⁽¹⁾	dB(A)	95	95	94	96	97	96	98	98	98	
Sound pressure at 10 m ⁽²⁾	dB(A)	62	62	62	64	64	64	65	65	65	
Pression acoustique à 1 m	dB(A)	74	74	73	75	76	74	76	76	76	
30KAV-ZE_option_119+ & 30KAVPZE: option 15LS(3)											
Sound power ⁽¹⁾	dB(A)	90	91	91	92	94	92	94	93	94	
Sound pressure at 10 m ⁽²⁾	dB(A)	57	58	58	59	61	60	61	60	61	
Pression acoustique à 1 m	dB(A)	69	70	70	71	73	70	72	71	72	
Dimensions											
30KAV-ZE_option 119 & 119+ & 30KAVPZE											
Length	mm	6772	6772	6772	6772	7962	9155	9120	10346	10346	
Width	mm	2261	2261	2261	2261	2261	2261	2261	2261	2261	
Height	mm	2324	2324	2324	2324	2324	2324	2324	2324	2324	
Unit length + options											
Options 49/50 ⁽³⁾	mm	6772	6772	6772	6772	7962	9155	9120	10346	10346	
Options 116A/116W ⁽³⁾	mm	6772	6772	6772	6772	7962	9155	-	-	-	

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

*** With EG 30%

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W

η_{s cool} _{12/7°C} & SEER _{12/7°C} Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**SEPR _{12/7°C} Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application**(1) In dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.(2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power L_w(A).

(3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod.; 49=Partial heat recovery ; 50= Totale heat recovery ; 5=Medium Brine ; 6=Low Brine



Eurovent certified values

PHYSICAL DATA

30KAVZE option 119/119+ and 30KAVPZE

30KAV-ZE options 119/119+ & 30KAVPZE		350	400	450	500	550	600	650	750	800
Operating weight⁽⁴⁾										
30KAV-ZE_option 119+ & 30KAVPZE	kg	5532	5545	5568	5594	6029	6825	6972	7752	7814
Unit + option 49 ⁽³⁾	kg	5728	5735	5748	5751	6183	7007	7116	7891	7920
Unit + option 50 ⁽³⁾	kg	5781	5788	5874	5877	6327	7192	7301	8120	8149
options 116A/116W ⁽³⁾	kg	5941	6055	6043	6069	6029	7470	-	-	-
Compressors		Inverter driven 06Z twin screw compressor. 30KAV: AC motor. 30KAVP: permanent magnet motor.								
Circuit A	Quantity	1	1	1	1	1	1	1	1	1
Circuit B	Quantity	1	1	1	1	1	1	1	1	1
Unit minimum capacity ⁽⁵⁾	%	13	13	13	13	13	13	13	12	12
Refrigerant⁽⁴⁾ - 30KAV-ZE_option_119+ & 30KAVPZE		R1234ze (GWP=1, ODP=0)								
Circuit A	kg	67	67	68	66	74	96	100	100	101
	teqCO ₂	0	0	0	0	0	1	1	1	1
Circuit B	kg	68	68	68	67	75	75	80	101	102
	teqCO ₂	0	0	0	0	0	0	0	1	1
Refrigerant⁽⁴⁾ - Option 5⁽³⁾ (Medium Brine)		R1234ze (GWP=1, ODP=0)								
Circuit A	kg	76	77	79	77	87	114	116	118	122
	teqCO ₂	0	0	0	0	1	1	1	1	1
Circuit B	kg	77	78	79	78	88	90	93	119	123
	teqCO ₂	0	0	0	0	1	1	1	1	1
Refrigerant⁽⁴⁾ - Option 6⁽³⁾ (Low Brine)		R1234ze (GWP=1, ODP=0)								
Circuit A	kg	70	70	68	66	78	101	105	105	106
	teqCO ₂	0	0	0	0	0	1	1	1	1
Circuit B	kg	71	71	68	69	79	79	84	106	107
	teqCO ₂	0	0	0	0	0	0	1	1	1
Oil		Hatcol 4496								
Circuit A	l	27	26	25	23	20	23	20	23	20
Circuit B	l	27	26	25	23	20	23	20	23	20
Unit control		SmartVu™ with 7 inch colored touch screen interface								
Languages		10 languages (DE, EN, ES, FR, IT, NL, PT, TR, TU + one on customer choice)								
Smart energy metering		Standard feature								
Wireless connectivity		Option								
Expansion valve		Electronic expansion valve								
Air heat exchanger		Novation™ Micro Channel Heat Exchanger								
Fans										
30KAV-ZE_option 119		Inverter driven Flying Bird™ VI fans with AC motor								
30KAV-ZE_option_119+ & 30KAVPZE		Inverter driven Flying Bird™ VI fans with EC motor								
Quantity		10	10	10	10	12	14	14	16	16
Maximum total air flow	l/s	59300	59300	59300	59300	71160	83020	83020	94880	94880
Maximum rotation speed	r/s	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0
Maximum total air flow + option 15LS ⁽³⁾	l/s	44700	43500	52000	52000	64800	67480	75600	74080	83200
Maximum rotation speed + option 15LS ⁽³⁾	r/s	12,3	12	14,2	14,2	14,7	13,2	14,7	12,7	14,2
Water heat exchanger		Flooded shell and tube heat exchanger								
Water volume	l	83	88	96	100	115	126	144	165	183
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Double pump, screen filter, relief valve, water drain valve, pressure sensors, expansion tank (option), heaters (option)								
Pump		Inverter driven dual pumps with AC motor								
Expansion vessel volume	l	80	80	80	80	80	80	-	-	-
Max. water-side operating pressure	kPa	400	400	400	400	400	400	-	-	-
Water connections		Victaulic® type								
Without options 116A/116W⁽³⁾										
Connections	inch	5	5	6	6	6	6	8	8	8
Outside tube diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	219,1	219,1	219,1
With options 116A/116W⁽³⁾										
Connections	inch	5	5	5	5	5	5	-	-	-
Outside tube diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	-	-	-
Casing paint		Colour code RAL 7035								

- (3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod. ; 49=Partial heat recovery ; 50= Totale heat recovery ; 5=Medium Brine ; 6=Low Brine
(4) Values are guidelines only. Refer to the unit name plate.
(5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.

ELECTRICAL DATA

Standard units

30KAVZE		350	400	450	500	550	600	650	750	800
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via internal transformer								
Maximum operating input power⁽¹⁾										
Standard unit	kW	175	190	213	225	245	284	308	343	370
Unit + option 16	kW	187	203	225	239	259	302	327	365	396
Power factor at maximum power^{(1) (2)}		0,91-0,93								
Displacement Power Factor (Cos Phi)		>0,98								
Total harmonic distortion (THDi) ^{(1) (3)}	%	35-45								
Nominal operating current draw⁽⁴⁾										
Standard unit	A	189	211	232	245	264	303	333	372	403
Maximum operating current draw (Un)⁽¹⁾										
Standard unit	A	272	296	331	350	381	441	478	533	575
Unit + option 16	A	290	315	350	371	402	469	508	567	615
Maximum operating current draw (Un-10%)										
Standard unit	A	298	319	361	377	410	476	515	574	620
Unit + option 16	A	316	339	382	399	433	505	548	611	663
Start-up current										
Standard unit	A	180	192	206	220	240	314	341	334	335

(1) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

(2) Value decreases when load lowers

(3) May vary according to the installation's short circuit ratio

THDi increases when load lowers. But the highest impact on the installation occurs when the current is maximum. Therefore compliance of the installation regarding voltage harmonic distortion at PCC (per IEC61000-2-4 or other standard) shall be usually checked at max load in order to cover all load conditions

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA

Electrical data - Units with option permanent magnet motor (329), option High energy efficiency (119) and option High energy efficiency+ (119+)

30KAVZE options 119/119+		350	400	450	500	550	600	650	750	800
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via internal transformer								
Maximum unit power input⁽¹⁾										
Unit + option 119	kW	176	191	208	219	239	280	298	337	359
Unit + option 119+	kW	174	189	205	216	236	277	294	333	354
Unit + option 119 + option 16	kW	188	203	220	233	253	298	317	359	385
Unit + option 119+ + option 16	kW	186	201	217	230	250	295	313	355	380
Unit + option 329	kW	170	185	199	216	239	270	301	332	362
Unit + option 329 + option 16	kW	182	197	211	230	253	288	320	354	388
Unit + option 329 + option 119	kW	171	185	194	210	233	266	292	326	351
Unit + option 329 + option 119 + option 16	kW	183	197	206	224	247	284	311	348	377
Maximum capacity power factor^{(1) (2)}		0.91-0.93								
Cosine phi		>0,98								
Total harmonic distortion (THDi) ^{(1) (3)}	%	35-45								
Nominal unit current draw⁽⁴⁾										
Unit + option 119	A	171	193	216	227	253	282	315	348	384
Unit + option 119+	A	168	190	212	223	248	277	309	342	377
Unit + option 329	A	183	205	225	238	256	294	323	361	391
Maximum unit current draw (Un)⁽¹⁾										
Unit + option 119	A	274	296	323	341	371	435	464	523	557
Unit + option 119+	A	271	293	319	337	366	430	458	517	550
Unit + option 119 + option 16	A	292	315	342	362	392	463	494	557	597
Unit + option 119+ + option 16	A	289	312	338	358	387	458	488	551	590
Unit + option 329	A	265	289	309	335	372	419	468	516	563
Unit + option 329 + option 16	A	283	308	328	356	393	447	498	550	603
Unit + option 329 + option 119	A	267	289	301	326	362	413	453	507	545
Unit + option 329 + option 119 + option 16	A	285	308	320	347	383	441	483	541	585
Maximum unit current draw (Un-10%)⁽¹⁾										
Unit + option 119	A	298	318	351	367	399	468	499	563	599
Unit + option 119+	A	295	315	347	363	394	463	493	557	592
Unit + option 119 + option 16	A	316	338	372	389	422	497	532	600	642
Unit + option 119+ + option 16	A	313	335	368	385	417	492	526	594	635
Unit + option 329	A	291	312	339	362	401	454	505	557	608
Unit + option 329 + option 16	A	309	332	360	384	424	483	538	594	651
Unit + option 329 + option 119	A	290	311	329	352	390	445	488	546	588
Unit + option 329 + option 119 + option 16	A	308	331	350	374	413	474	521	583	631
Maximum starting current										
Unit + option 119	A	181	196	202	215	234	311	333	328	345
Unit + option 119+	A	179	193	200	213	232	308	322	325	321
Unit + option 329	A	176	188	195	213	236	303	336	326	329

(1) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

(2) Value decreases when load lowers

(3) May vary according to the installation's short circuit ratio

THDi increases when load lowers. But the highest impact on the installation occurs when the current is maximum. Therefore compliance of the installation regarding voltage harmonic distortion at PCC (per IEC61000-2-4 or other standard) shall be usually checked at max load in order to cover all load conditions.

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA

30KAVPZE

30KAVPZE		350	400	450	500	550	600	650	750	800
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via internal transformer								
Maximum operating input power⁽¹⁾										
Standard unit	kW	169	183	191	207	230	263	288	322	346
Unit + option 16	kW	181	195	203	221	244	281	307	344	372
Power factor at maximum power^{(1) (2)}		0,91-0,93								
Displacement Power Factor (Cos Phi)		>0,98								
Total harmonic distortion (THDi) ^{(1) (3)}	%	35-45								
Nominal operating current draw⁽⁴⁾										
Standard unit	A	163	184	205	216	240	268	299	331	365
Maximum operating current draw (Un)⁽¹⁾										
Standard unit	A	264	286	297	322	357	408	447	501	538
Unit + option 16	A	282	305	316	343	378	436	477	535	578
Maximum operating current draw (Un-10%)⁽¹⁾										
Standard unit	A	287	308	325	348	385	440	482	540	581
Unit + option 16	A	305	328	346	370	408	469	515	577	624
Start-up current										
Standard unit		173	188	193	206	228	287	320	306	334

(1) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

(2) Value decreases when load lowers

(3) May vary according to the installation's short circuit ratio

THDi increases when load lowers. But the highest impact on the installation occurs when the current is maximum. Therefore compliance of the installation regarding voltage harmonic distortion at PCC (per IEC61000-2-4 or other standard) shall be usually checked at max load in order to cover all load conditions.

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

Compressor electrical data

Compressor	I Max (A) ⁽¹⁾ Standard	I Max (A) ⁽¹⁾ Option 16	F max (Hz) ⁽²⁾	Inverter type ⁽³⁾
06ZCE1H3AA06013	146	156	82	D3h
06ZCE1T3AA06013	184	195	105	D3h
06ZFC2T3AA06013	280	301	95	D3h/D4h
06ZCEAT3AA06013	169	180	103	D3h
06ZFCBT3AA06013	258	277	93	D3h

(1) Maximum compressor operating current draw over the entire range when powered at rated voltage. May be lower depending on the unit size.

(2) Maximum compressor frequency over the entire range. This frequency can be limited to a lower value depending on the unit size.

(3) Mechanical inverter type : defines inverter weight and dimensions.

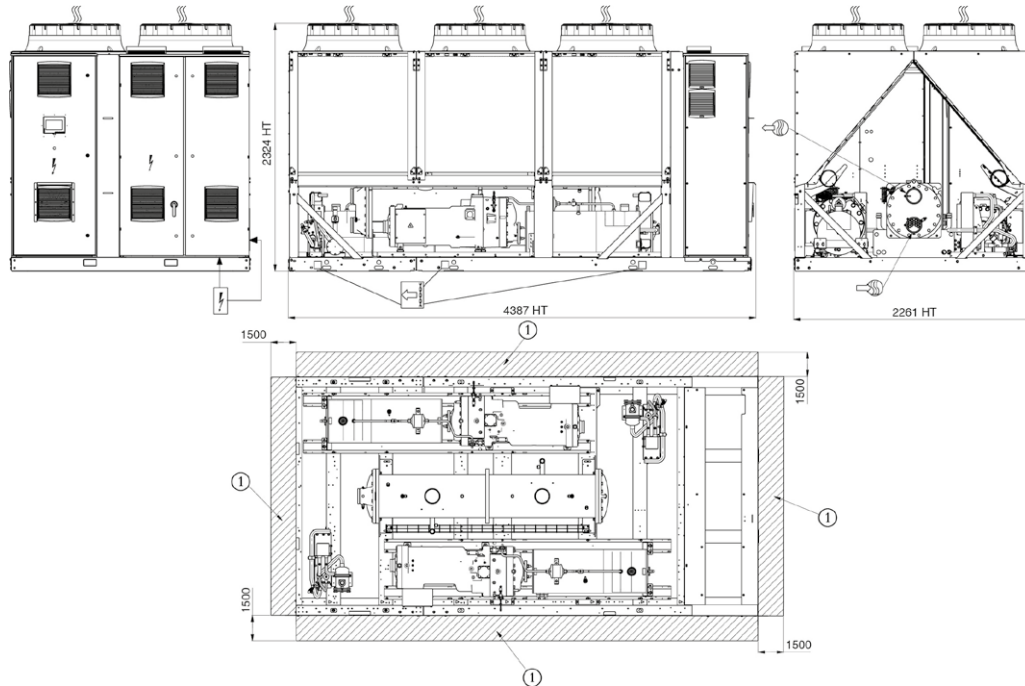
Distribution of compressors per circuit

Compressor 30KAVZE	Circuit	350	400	450	500	550	600	650	750	800
06ZCE1H3AA06013	A	1	1	-	-	-	-	-	-	-
	B	1	1	-	-	-	-	-	-	-
06ZCE1T3AA06013	A	-	-	1	1	1	-	-	-	-
	B	-	-	1	1	1	1	1	-	-
06ZFC2T3AA06013	A	-	-	-	-	-	1	1	1	1
	B	-	-	-	-	-	-	-	1	1

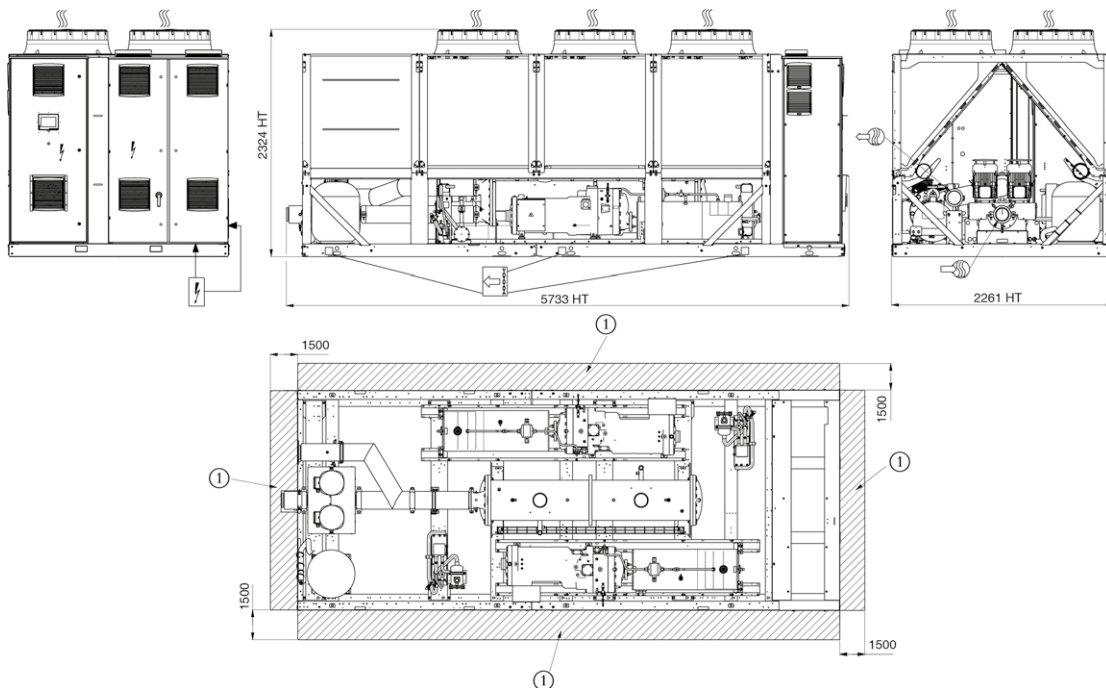
Compressor 30KAVPZE	Circuit	350	400	450	500	550	600	650	750	800
06ZCEAT3AA06013	A	1	1	1	1	1	-	-	-	-
	B	1	1	1	1	1	1	1	-	-
06ZFCBT3AA06013	A	-	-	-	-	-	1	1	1	1
	B	-	-	-	-	-	-	-	1	1

DIMENSIONS/CLEARANCES

30KAVZE 350 & 400



30KAVZE 350 & 400 with Hydraulic module



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

Water inlet for standard unit

Water outlet for standard unit

Air outlet – do not obstruct

Power electrical connection

NOTES:

Drawings are not contractually binding.

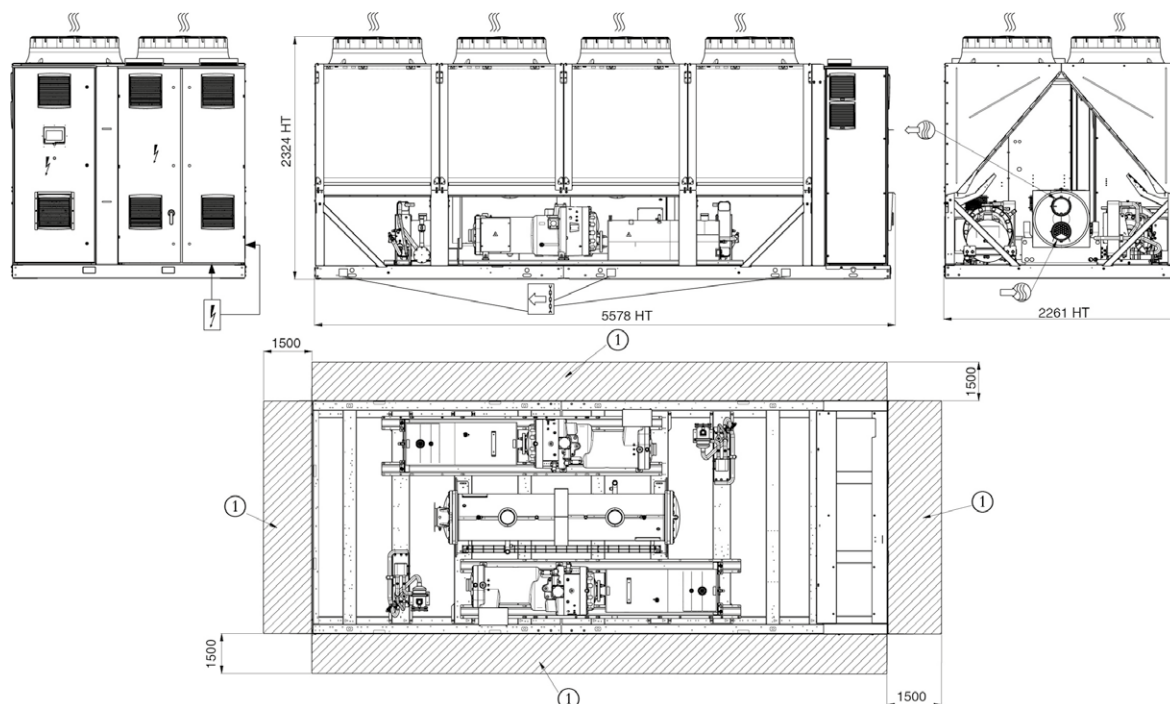
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

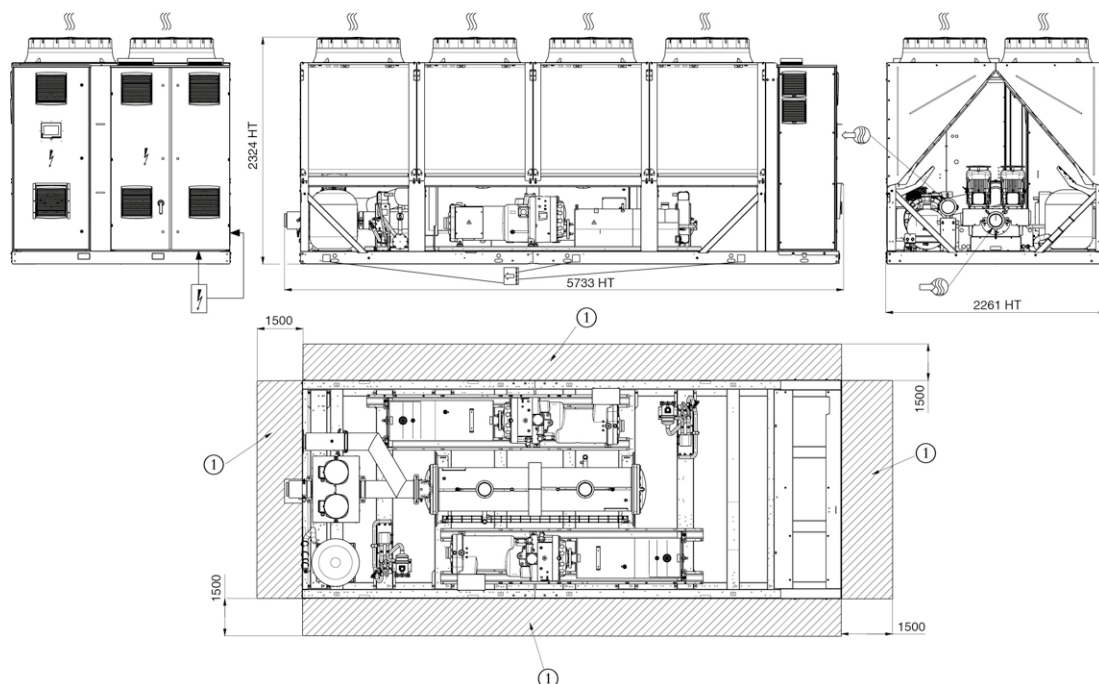
If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAVZE 450 & 500



30KAVZE 450 & 500 with Hydraulic module



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

Water inlet for standard unit

Water outlet for standard unit

Air outlet – do not obstruct

Power electrical connection

NOTES:

Drawings are not contractually binding.

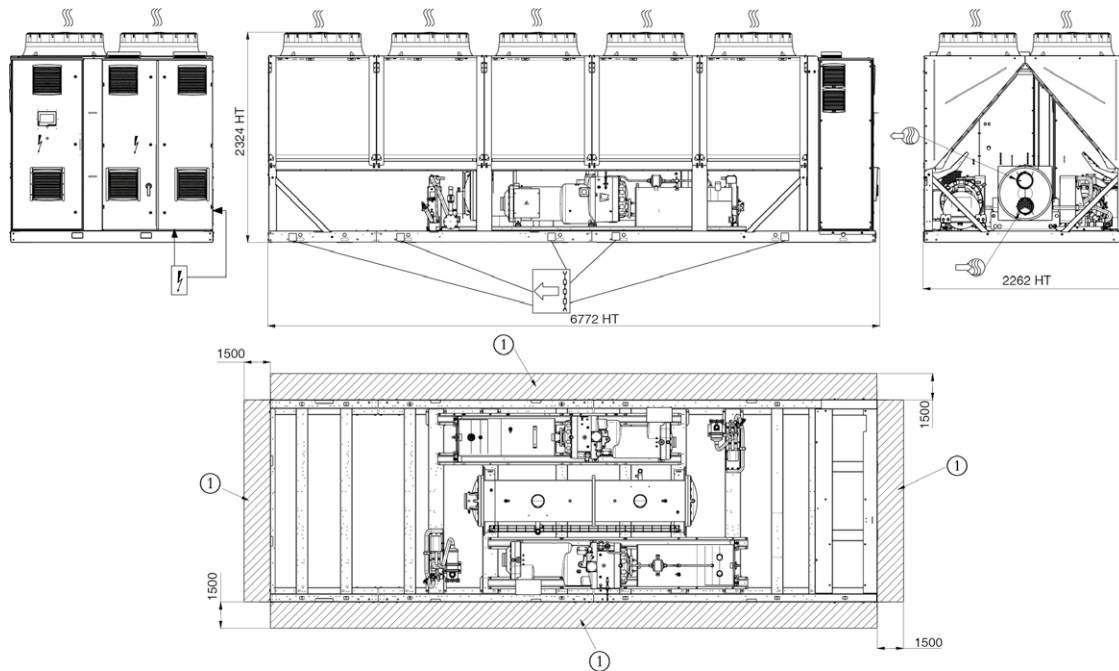
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

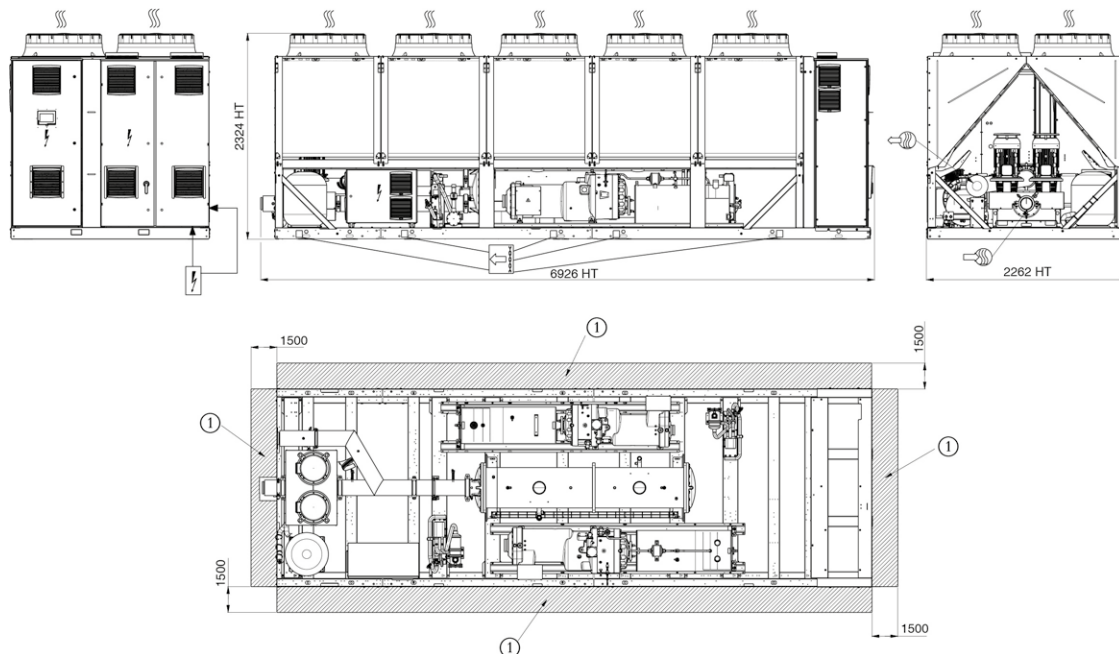
If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAVZE 350, 400, 450 & 500 opt. 119/119+ 30KAVZE 550 & 600 30KAVPZE 350, 400, 450 & 500



30KAVZE 350, 400, 450 & 500 opt. 119/119+ & 30KAVZE 550 & 600 with Hydraulic module 30KAVPZE 350, 400, 450 & 500 with Hydraulic module



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

Water inlet for standard unit

Water outlet for standard unit

Air outlet – do not obstruct

Power electrical connection

NOTES:

Drawings are not contractually binding.

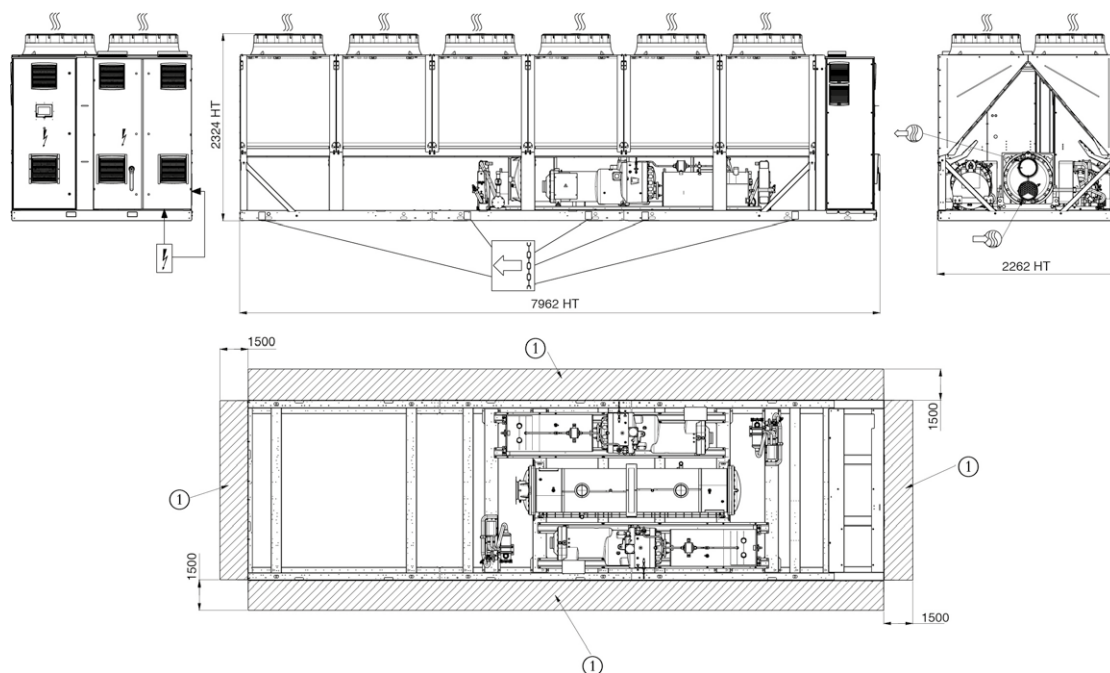
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

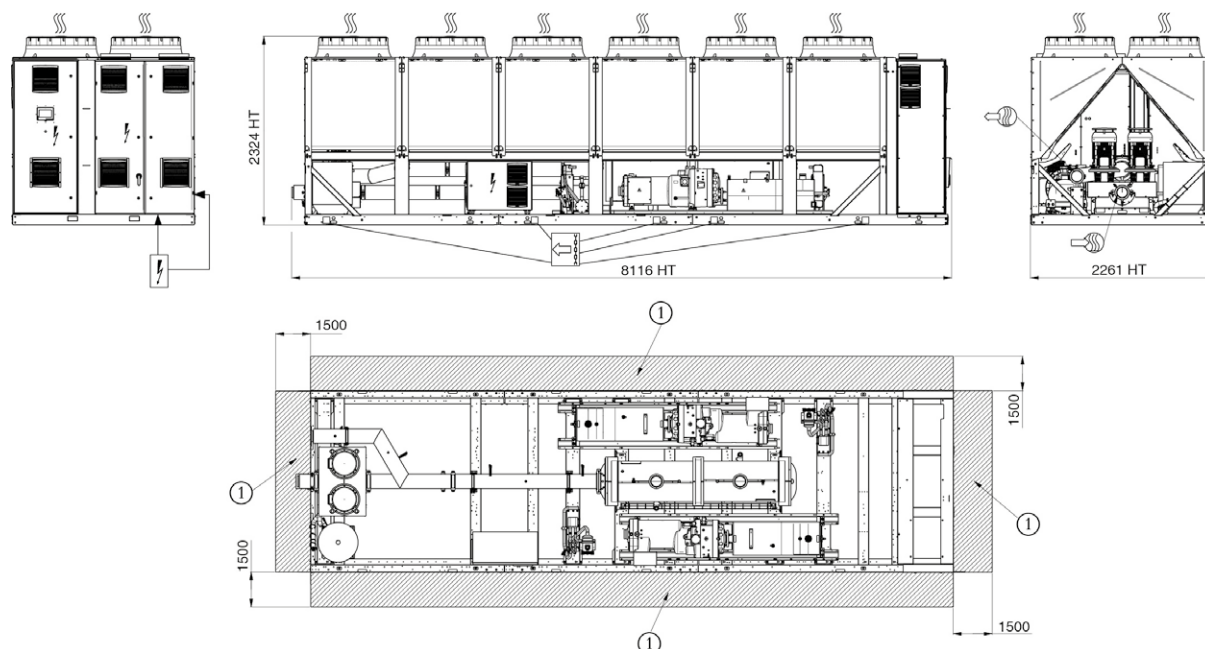
If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAVZE 550 opt. 119/119+ 30KAVZE 650 & 750 30KAVPZE 550







30KAVZE 550 opt. 119/119+ with Hydraulic module 30KAVPZE 550 with Hydraulic module



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
-  Water inlet for standard unit
-  Water outlet for standard unit
-  Air outlet – do not obstruct
-  Power electrical connection

NOTES:

Drawings are not contractually binding.

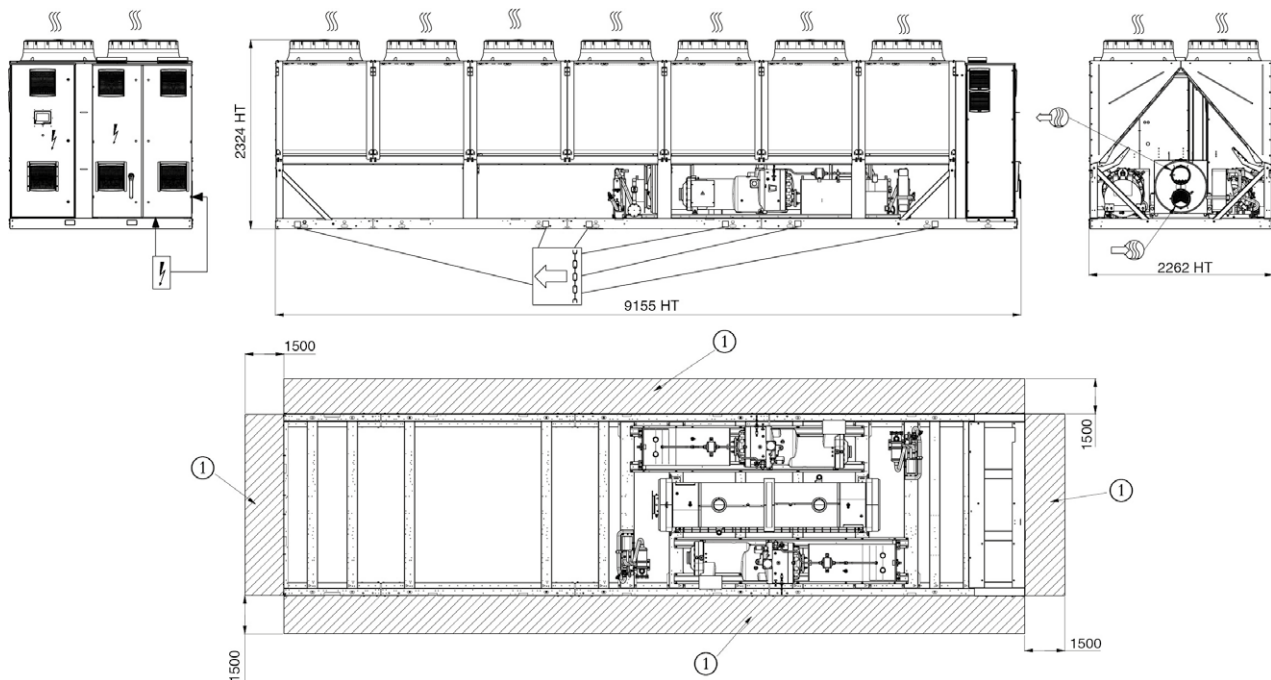
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

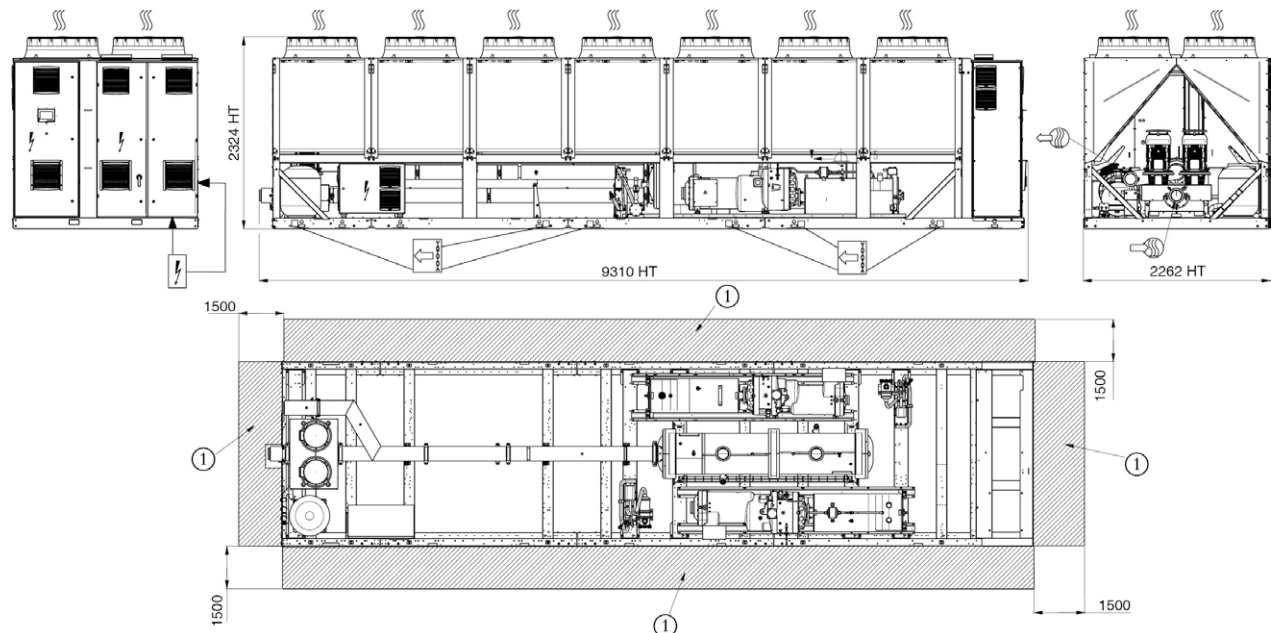
If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAVZE 600 & 650 opt. 119/119+ 30KAVZE 800, 30KAVPZE 600 & 650



30KAVZE 600 opt. 119/119+ with Hydraulic module 30KAVPZE 600 with Hydraulic module



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
- Water inlet for standard unit
- Water outlet for standard unit
- Air outlet – do not obstruct
- Power electrical connection

NOTES:

Drawings are not contractually binding.

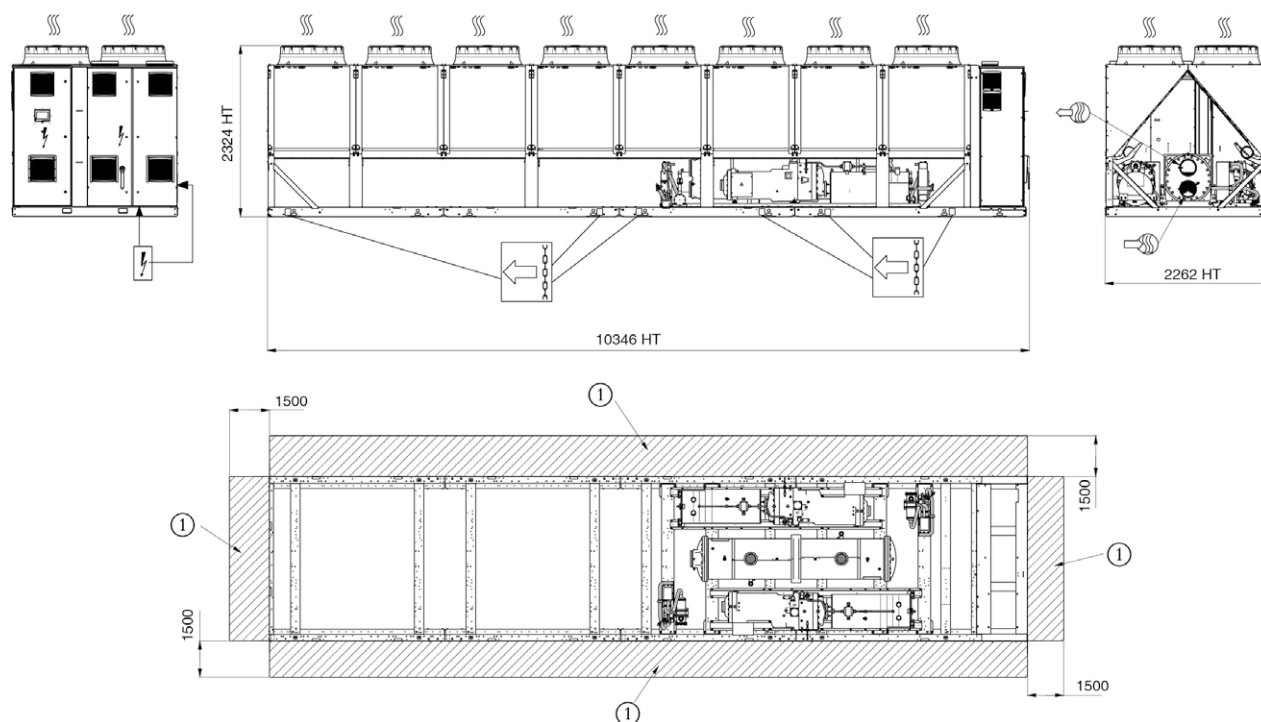
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

If any unit(s) are close to walls, please refer to chapter “Distance to the wall” of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAVZE 750 & 800 opt. 119/119+ 30KAVPZE 750 & 800



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
- Water inlet for standard unit
- Water outlet for standard unit
- Air outlet – do not obstruct
- Power electrical connection

Multiple chiller installation

It is recommended to install multiple chillers in a single row, arranged as shown in the example below, to avoid recycling of warm air from one unit to another.



If the situation at the site does not permit this arrangement, contact your Carrier distributor to evaluate the various possible arrangements. In certain situations an accessory (supplied loose at the time of purchase) can be added.

NOTES:

Drawings are not contractually binding.

Before designing an installation, consult the certified dimensional drawings, available on request.

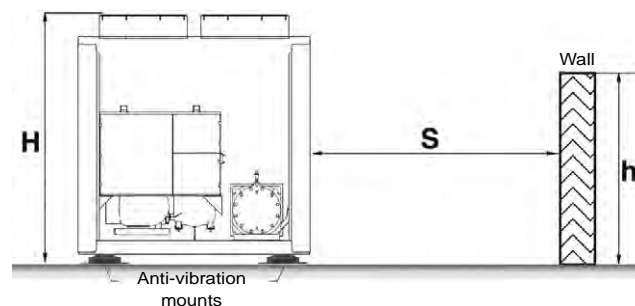
For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

If any unit(s) are close to walls, please refer to chapter "Distance to the wall" of this document to determine the space required.

Distance to the wall

To ensure correct operation for most cases:

- If $h < H$ (2,3 m), S minimum = 3 m
- If $h > H$ ou $S < 3$ m, contact your Carrier distributor to evaluate the various possible arrangements. In certain situations an accessory (supplied loose at the time of purchase) can be added.



HEAT PUMPS AND LIQUID COOLERS WITH WATER COOLED CONDENSER



Cooling and heating
application

High energy efficiency

Compact design

Low sound level

Broad field of application

30WI 700 V - 2400 V

AQUASNAP

Cooling capacity: 200-700 kW

Heating capacity: 230-800 kW

The new generation of AQUASNAP 30WI water cooled heat pumps and water chillers offers an optimal solution for all heating process or cooling applications.

These units are designed to be installed in machine rooms that are protected against freezing temperatures and inclement weather.

The new range has been optimised to use ozone-friendly HFC R410A refrigerant. The use of this refrigerant guarantees compliance with the most demanding requirements for environmental protection and increased seasonal energy efficiency.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

RANGE

AQUASNAP 30WI

Cooling-only or heating-only models with water-cooled condenser.

Acoustic configuration:

- a - STANDARD version
- b - LOW NOISE version. Compressor casing
- c - VERY LOW NOISE version. Casing with compressor sound insulation

DESCRIPTION

AQUASNAP series 30WI units are packaged machines supplied as standard with the following components:

- SCROLL hermetic compressors,
- Chilled water evaporator with brazed plates,
- Hot water condenser with brazed plates,
- Electrical power and remote control cabinet:
 - 400V-3ph-50Hz general electrical power supply (+10%/-10%) + earth,
 - Transformer fitted as standard on the machine for supplying the remote control circuit with 230V-1ph-50Hz,
- 30WI Control electronic control module.

The AQUASNAP 30WI range complies with the following European standards and directives:

- Machinery directive 2006/42/EC.
- Electromagnetic compatibility directive 2004/108/EC.
- EMC immunity and emissions EN 61800-3 'C3'
- Low voltage directive 2006/95/EC.
- RoHS 2011/65/EU
- Pressure equipment directive (PED) 97/23/EC
- Machinery directive EN 60-204 -1

DESCRIPTION OF THE MAIN COMPONENTS

■ Compressors

- Hermetic SCROLL type.
- Built-in electric motor cooled by intake gases.
- Motor protected by internal winding thermostat.
- Placed on anti-vibration mounts.

■ Evaporator

- Brazed plate exchanger.
- Stainless steel plates (AISI 316).
- Plate patterns optimised for high efficiency.
- Armaflex thermal insulation.

■ Condenser

- Brazed plate exchanger.
- Stainless steel plates (AISI 316).
- Plate patterns optimised for high efficiency.

■ Refrigerating accessories

- Dehumidifier filters with rechargeable cartridges.
- Hygroscopic sight glasses.
- Solenoid valves on refrigerant lines (700 V to 1200 V models).
- Electronic expansion valves.

■ Control and safety instruments

- High and low pressure sensors.
- High pressure safety valves.
- Water temperature control sensors.
- Evaporator frost protection sensor.
- Factory-assembled evaporator water flow controller.

■ Electrical box

- IP 21.
- 400V-3Ph-50 Hz power supply + Earth (+10%/-10%).
- Main safety switch with handle on front.
- Control circuit transformer.
- Circuit breaker for compressor motor.
- Compressor motor switches.
- 30WI Control microprocessor-controlled electronic control module.
- Wire numbering.
- Marking of the main electrical components.
- RAL 7035.

■ 30WI Control electronic control module.

The electronic control module performs the following main functions:

- Regulation of the chilled or hot water temperature
- Regulation of the water temperature based on the outdoor temperature (water law).
- Regulation for low temperature energy storage.
- Second setpoint management.
- Complete management of compressors with start-up sequence, metering and runtime balancing.
- Self-adjusting and proactive functions with adjustment of parameters on drift control.
- In-series staged capacity-reduction system on compressors based on cooling and heating demands.
- Management of compressor short cycle protection.
- Management of the machine operation limit according to outdoor temperature.
- Operating and fault status diagnostics.
- Management of a fault memory allowing a log of the last 20 incidents to be accessed, with operating readings taken when the fault occurs.
- Master/slave management of the two machines in parallel with runtime balancing and automatic changeover if a fault occurs on one machine.
- Machine time schedule.
- Display and access to the operating parameters via a multilingual LCD screen with 4 lines of 24 characters.

■ Remote management

30WI Control is equipped as standard with an RS485 serial port offering a range of remote management, monitoring and diagnostic options via the communication bus.

Several contacts are available as standard, enabling the AQUASNAP 30WI to be controlled remotely by wired link:

- Automatic operation control: when this contact is open, the machine stops.
- Setpoint 1/setpoint 2 selector: when this contact is closed, a second cooling setpoint is activated (energy storage mode, for example).
- Heating/cooling mode selector: this input switches from one operating mode to another. Contact closed = heating mode.

Contact open = cooling mode.

- Setpoint adjustable via 4-20 mA signal: this input is used to adjust the setpoint in heating or cooling mode.
- Compressor load shedding: closing the contact(s) concerned allows the power or refrigerating consumption of the machine to be limited by stopping one or more compressors.
- Water pump 1 and 2 control: these outputs control the switches for one or two water pumps.
- Fault reporting: this contact indicates the presence of a major fault which has caused one or both refrigerating circuits to stop.

■ Capacity control

In-series staged power control system on the compressors:

- 4 stages for 700 V to 1600 V models.
- 6 stages for 1800 V and 2400 V models.
- 8 stages for 2100 V models.

■ Casing

Casing made from RAL 7035 painted panels.

OPTIONS

Options	No.	Description	Advantages	Use
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	0700-2400
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be fieldinstalled allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	0700-2400
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	0700-2400
Compressor suction valve	92	Valve installed on the compressor suction side to isolate it in the refrigerant circuit	Simplified service and maintenance	0700-2400
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	0700-2400
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	0700-2400
Dry contact board	156C	Feedback board on the potential-free contact for the main statuses and faults	Simple feedback of the diagnostics and unit state	0700-2400
Phase controller	159B	Phase controller on the power	Reinforced protection of the compressors by monitoring rotation, the absence and asymmetry of the phases, and the over- or under-voltage of the electricity network	0700-2400
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	0700-2400
Low noise level	257	Compressor sound enclosure	Reduced sound emissions	0700-2400
Very low sound level	258	Enhanced sound insulation of main noise sources (Material classified CD0S2 fire class according to Euroclass 13-501).	6 dB(A) quieter than standard . Refer to the physical data table for detailed values	0700-2400
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	0700-2400
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	0700-2400
Electric energy meter	294	MID certified electric energy meter (compliant with directive 2004/22/EC). Display of energy consumption, instantaneous (U, V, I) and cumulative (kWh), on the Touch Pilot interface	Permits the acquisition, (remote) monitoring and billing of energy used.	0700-2400
External temperature sensor	312	External temperature sensor control for using weather compensation	Allow to adjust set point using weather compensation and define autorisation operation mode to external temperature	0700-2400
Compliance with Morocco regulation	327	Specifics documents according Morrocco regulation	Conformance with Morocco regulations	0700-2400

TECHNICAL SPECIFICATIONS

30WI			700 V	800 V	900 V	1000 V	1100 V	1200 V	
Heating									
Standard unit Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kW / kW	5,29	5,52	5,44	5,47	5,43	5,49
		η _s heat _{30/35°C}	%	204	213	210	211	209	211
		P _{rated}	kW	246	293	335	384	419	463
Cooling									
Standard unit Full load performances*	CA1	Net cooling capacity	kW	203	242	278	320	348	382
		Net power input	kW	49	56	64	71	79	86
		EER	kW / kW	4,18	4,32	4,33	4,5	4,42	4,42
Standard unit Seasonal energy efficiency**		SEPR _{-2/-8°C} Process medium temp ***	kWh/kWh	3,92	4,06	3,89	4,21	3,99	4,18
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort Low temp.	kW / kW	5,51	5,81	5,8	5,75	5,72	5,65
Standard unit		Lw / Lp ⁽¹⁾	dB(A)	89/57	90/58	90/58	89/57	90/58	91/59
Unit + Low Noise option		Lw / Lp ⁽¹⁾	dB(A)	84/52	85/53	85/53	86/54	87/55	88/56
Unit + Xtra Low Noise		Lw / Lp ⁽¹⁾	dB(A)	79/47	80/48	80/48	80/48	81/49	82/50
Refrigerating circuit									
Refrigerant (GWP)			R410 (GWP=2088)						
Number			2						
Refrigerant circuit 1			kg	13,5	15,5	16,4	17	19,7	21,3
Refrigerant circuit 2			kg	14	15	16,4	17,2	19,7	21,3
Tonne of CO ₂ equivalent			TCO ₂ Eq	57,42	63,68	68,49	71,41	82,27	88,95
Compressor									
Type			Hermetic scroll (- 2900 rpm)						
Number			4	4	4	4	4	4	
Start-up mode			Direct in line in series						
Capacity control		Number of stages	6	4	6	4	6	4	
		%	100-78-71-50-28-21-0	100-75-50-25-0	100-78-71-50-28-21-0	100-75-50-25-0	100-78-71-50-28-21-0	100-75-50-25-0	
Type of oil for R410A			Polyolester POE						
Oil load per circuit			l	6,7+6,7	6,7+6,7	6,7+6,7	6,7+6,7	6,7+7,2	7,2+7,2
Evaporator									
Type/ Number			Braze-plate heat exchanger/1						
Water capacity			l	20	23	26	29	32	37
Victaulic connection			Ø	DN100	DN100	DN100	DN125	DN125	DN125
Max. pressure, water end			bar	10 bar					
Min/max water flow			m³/h	22/70	26/81	29/92	33/105	35/113	38/124
Water-cooled condenser									
Type/ Number			Braze-plate heat exchanger/1						
Water capacity			l	23	26	29	32	37	40
Victaulic connection			Ø	DN100	DN100	DN100	DN125	DN125	DN125
Max. pressure, water end			bar	10 bar					
Min/max water flow			m³/h	19/64	22/74	25/84	28/95	31/103	33/112
Dimensions									
Length			mm	2099	2099	2099	2099	2099	2099
Width			mm	996					
Height			mm	1869	1869	1869	1869	1869	1869
Weight									
Weight (empty)			kg	1044	1156	1189	1312	1363	1425
Weight in operation			kg	1088	1205	1246	1378	1436	1510
Max. storage temperature			°C	+50°C					

Outputs in accordance with EUROVENT standard EN 14511 conditions

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2016, average climate

*** With EG 30%.

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m². k/W.

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². k/W

η_s heat_{30/35°C} & SCOP_{30/35°C} Values in bold comply with Ecodesign Regulation (EU) No. 813/2013 for Heating applications.

SEER_{12/7°C} Values calculated according to EN14825:2016.

SEPR_{-2/-8°C} (1) Values in bold comply with Ecodesign Regulation (EU) No. 2015/1095 for Process application

Lw : overall power level in accordance with standard ISO3744

Lp : overall pressure level at 10 metres in a free field calculated using the formula Lp=LW-10logS



Eurovent certified values

TECHNICAL SPECIFICATIONS

30WI			1400 V	1600 V	1800 V	2100 V	2400 V		
Heating									
Standard unit Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kW / kW	5,48	5,48	5,44	5,46	5,24	
		η _{s heat} _{30/35°C}	%	211	211	210	211	202	
		P _{rated}	kW	530	593	687	795	876	
Cooling									
Standard unit Full load performances*	CA1	Net cooling capacity	kW	439	495	574	651	703	
		Net power input	kW	97	108	125	145	165	
		EER	kW / kW	4,55	4,6	4,6	4,49	4,27	
Standard unit Seasonal energy efficiency**		SEPR _{-2/-8°C} Process medium temp ***	kWh/kWh	4,43	4,5	4,55	4,57	4,71	
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort Low temp.	kW / kW	5,61	5,52	5,62	5,51	5,15	
Standard unit		Lw / Lp ⁽¹⁾	dB(A)	95/63	96/64	93/61	95/63	97/65	
Unit + Low Noise option		Lw / Lp ⁽¹⁾	dB(A)	90/58	91/59	89/57	90/58	91/59	
Unit + Xtra Low Noise		Lw / Lp ⁽¹⁾	dB(A)	85/53	86/54	85/53	86/54	87/55	
Refrigerating circuit									
Refrigerant (GWP)			R410 (GWP=2088)						
Number			2						
Refrigerant circuit 1			kg	21,5	23	31	33	34	
Refrigerant circuit 2			kg	21	22	31	34	34	
Tonne of CO ₂ equivalent			TCO ₂ Eq	88,74	93,96	129,46	139,9	141,98	
Compressor									
Type			Hermetic scroll (- 2900 rpm)						
Number			4	4	6	6	6		
Start-up mode			Direct in line in series						
Capacity control		Number of stages	6	4	6	8	6		
		%	100-78-71-50-28-21-0	100-75-50-25-0	100-83-66-50-33-16-0	100-84-66-48-36-30-18-15-0	100-83-66-50-33-16-0		
Type of oil for R410A			Polyolester POE						
Oil load per circuit			l	6,3+6,3	6,3+6,3	3x6,3	3x6,3	3x6,3	
Evaporator									
Type/ Number			Brazed-plate heat exchanger						
Water capacity			l	50	57	64	77	77	
Victaulic connection			Ø	DN125	DN125	DN150	DN150	DN150	
Max. pressure, water end			bar	10 bar					
Min/max water flow			m³/h	44/137	51/151	61/150	68/150	74/150	
Water-cooled condenser									
Type/ Number			Brazed-plate heat exchanger						
Water capacity			l	55	61	73	77	77	
Victaulic connection			Ø	DN125	DN125	DN150	DN150	DN150	
Max. pressure, water end			bar	10 bar					
Min/max water flow			m³/h	38/129	43/143	52/150	59/150	66/163	
Dimensions									
Length			mm	2499	2499	3350	3350	3350	
Width			mm	996					
Height			mm	1887	1887	1970	1970	1970	
Weight									
Weight (empty)			kg	1613	1708	2284	2376	2418	
Weight in operation			kg	1713	1818	2472	2588	2637	
Max. storage temperature			°C	+50°C					

Outputs in accordance with EUROVENT standard EN 14511 conditions

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2016, average climate

*** With EG 30%.

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m². k/W.

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². k/W

η_{s heat}_{30/35°C} & SCOP_{30/35°C} Values in bold comply with Ecodesign Regulation (EU) No. 813/2013 for Heating applications.

SEER_{12/7°C} Values calculated according to EN14825:2016.

SEPR_{-2/-8°C} Values in bold comply with Ecodesign Regulation (EU) No. 2015/1095 for Process application

(1) Lw : overall power level in accordance with standard ISO3744

Lp : overall pressure level at 10 metres in a free field calculated using the formula Lp=LW-10logS



Eurovent certified values

ELECTRICAL SPECIFICATIONS

30WI	700 V	800 V	900 V	1000 V	1100 V	1200 V	1400 V	1600 V	1800 V	2100 V	2400 V
------	-------	-------	-------	--------	--------	--------	--------	--------	--------	--------	--------

COMPRESSOR

Voltage	V	400V - 3Ph - 50Hz (+10/- 10%)										
Maximum nominal current	A	140	160	182	205	218	232	266	295	356	399	443
Starting current ⁽¹⁾	A	316	334	391	414	480	494	586	615	607	720	763
Starting current with Soft Start option ⁽¹⁾	A	230	248	287	310	352	366	429	458	483	562	605

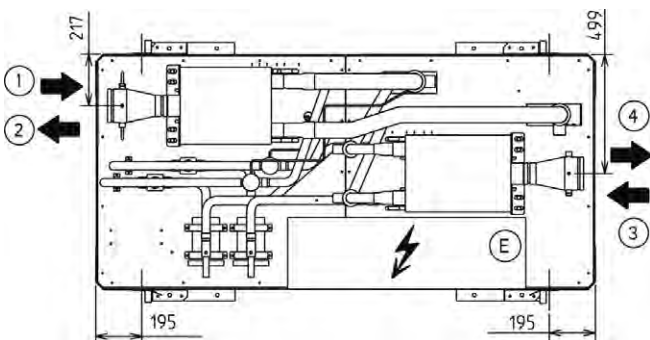
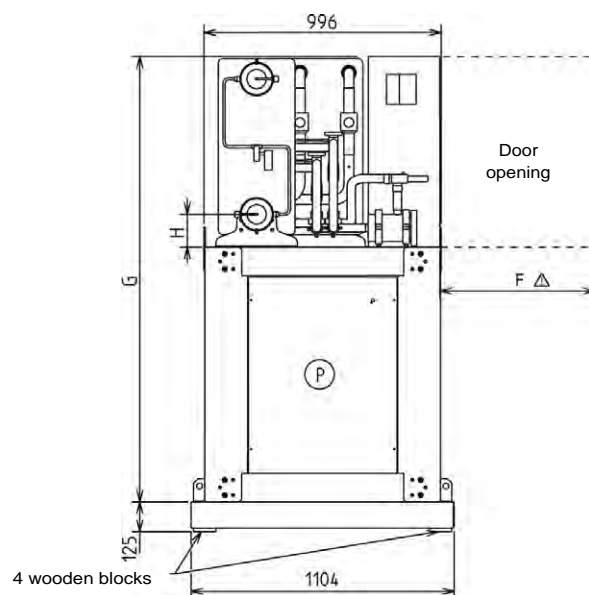
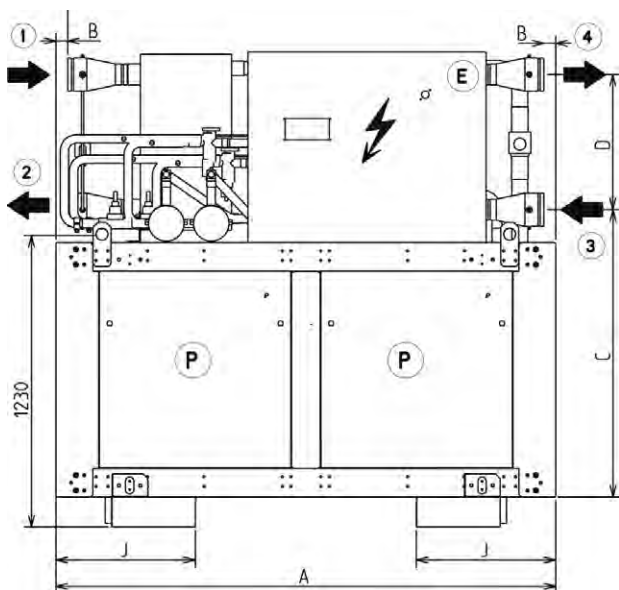
REMOTE CONTROL AUXILIARY CIRCUIT

Voltage	V	230V - 1Ph - 50Hz (+10/- 10%)										
Maximum nominal current	A	0,8	0,8	0,8	0,8	0,8	0,8	1,3	1,3	1,3	1,3	1,3
Transformer capacity	VA	160	160	160	160	160	160	250	250	250	250	250
Machine protection rating		IP 21										

- (1) Starting current of largest compressor + maximum current of other compressors under full load
Cable selection nominal current = sum of maximum nominal currents in above tables

DIMENSIONS

700 V to 1600 V models

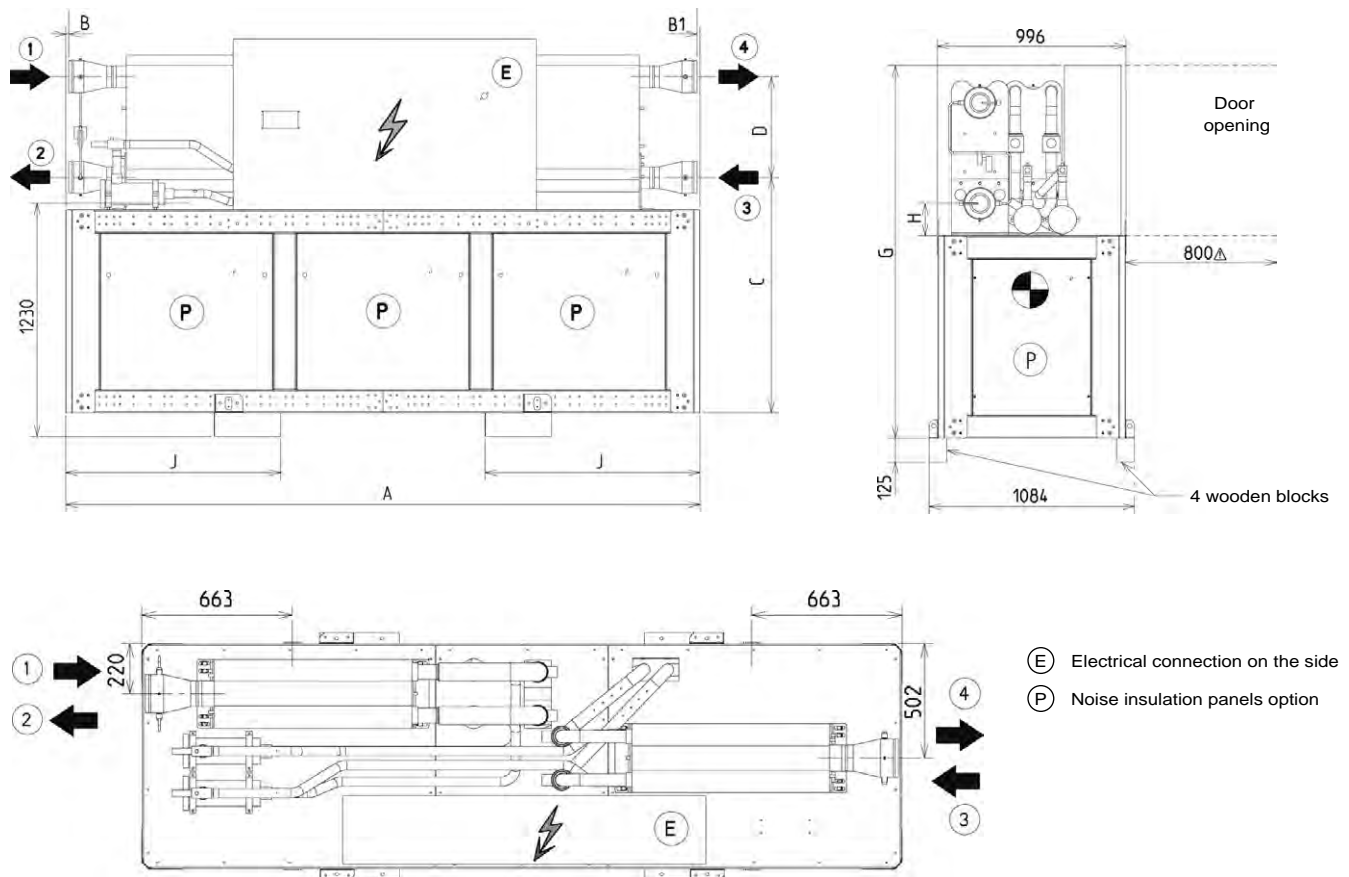


- (E) Electrical connection on the side
- (P) Noise insulation panels option

Models	Dimensions (mm)								Chilled water		Hot water		Weight (kg)	
	A	B	C	D	F	G	H	J	Inlet 1	Outlet 2	Inlet 3	Outlet 4	empty	in operation
700 V	2099	49	1207	568	1000	1869	137	585	VICTAULIC DN 100				1044	1088
800 V	2099	49	1207	568	1000	1869	137	585					1156	1205
900 V	2099	49	1207	568	1000	1869	137	585					1189	1246
1000 V	2099	49	1207	568	1000	1869	137	585	VICTAULIC DN 125				1312	1378
1100 V	2099	49	1207	568	1000	1869	137	585					1363	1436
1200 V	2099	49	1207	568	1000	1869	137	585					1425	1510
1400 V	2499	60	1240	532	600	1887	170	715					1613	1713
1600 V	2499	60	1240	532	600	1887	170	715					1708	1818

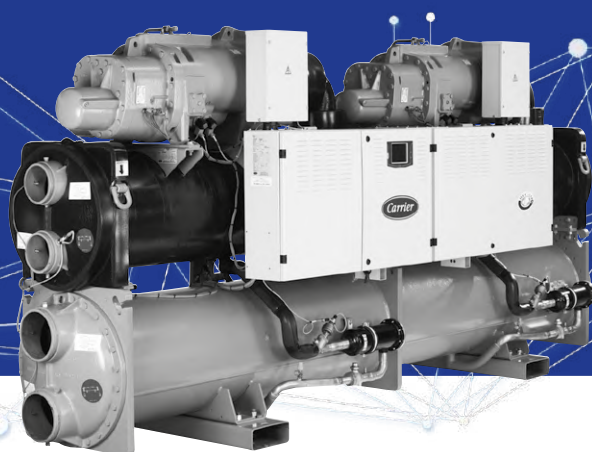
DIMENSIONS

1800 V to 2400 V models



Models	Dimensions (mm)								Chilled water		Hot water		Weight (kg)	
	A	B	B1	C	D	G	H	J	Inlet 1	Outlet 2	Inlet 1	Outlet 2	empty	in operation
1800 V	3350	63	63	1240	532	1970	170	1135	VICTAULIC DN 150				2284	2472
2100 V	3350	15	15	1240	532	1970	170	1135					2376	2588
2400 V	3350	15	15	1240	532	1970	170	1135					2418	2637

WATER-COOLED SCREW CHILLERS



Low energy consumption

High reliability

Easy and fast installation

Low operating sound levels

Environmental care

30XW/30XW-P

AQUAFORCE

Nominal cooling capacity 273-1756 kW

Nominal heating capacity 317-1989 kW

The 30XW liquid chillers are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality.

The 30XW liquid chillers are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- Refrigerant R134a
- Flooded heat exchangers that are mechanically cleanable
- Carrier SmartVu™ control with color touch screen user interface that includes 10 languages

To meet to all environmental and economic requirements, the 30XW is available in two efficiency classes:

- Entry-level efficiency 30XW units that offer an optimised balance of technical and economical aspects,
- Premium-efficiency 30XW-P units that offer unequalled energy efficiency to satisfy the most stringent demands of building owners wanting to reduce operating costs to the minimum.

The 30XW Aquaforce range is also split into two versions:

- 30XW for air conditioning and refrigeration applications
- 30XWH for heating applications

As standard, the unit can provide an evaporator leaving temperature down to 3,3°C (-12°C optional), and when operating as a heat pump, it can deliver up to 50°C (63°C optional) on the condenser side.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- SEPR up to 9,1 and SEER up to 7,7
- The high energy efficiency is reached through:
 - Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
 - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
 - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
 - Economizer system with electronic expansion device for increased cooling capacity (30XW-P).

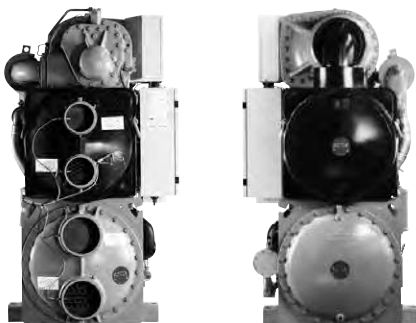
Low operating sound levels

- Standard unit features include:
 - Silencers on the compressors discharge line.
 - Silencers on the economiser return line.
 - Acoustic insulation on the components that are most subjected to radiated noise.
 - Option 257 further reduces the global unit sound level.

Easy and fast installation

- Compact design
 - The 30XW units are designed to offer the most compact dimensions on the market.
 - With a width of approximately 1 m up to 1600 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

**Compact, accessible unit - side view -
sizes up to 1600 KW**



- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer to supply the integrated control circuit (400/24 V)
- Simplified hydraulic connections
 - Victaulic connections on the evaporator and condenser
 - Practical reference marks for entering and leaving water connections
 - Possibility to reverse the heat exchanger water inlet and outlet at the factory
 - Possibility to modify the number of heat exchanger passes
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care

- R-134a refrigerant
 - HFC refrigerant with zero ozone depletion potential
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

High reliability and easy servicing

- The 30XW units offer increased global performance as well as Carrier's acclaimed product quality and reliability.
- Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuit
 - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
 - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure.
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

TECHNICAL INSIGHTS

SmartVu™



- New innovative smart control features :
 - An intuitive and user-friendly, coloured, 7" interface
 - 1 languages available on choice: DE, EN, ES, FR, T, NL, PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Energy management :
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.
- Maintenance functions :
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
- Advanced communication features :
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.

Remote Management (Standard)

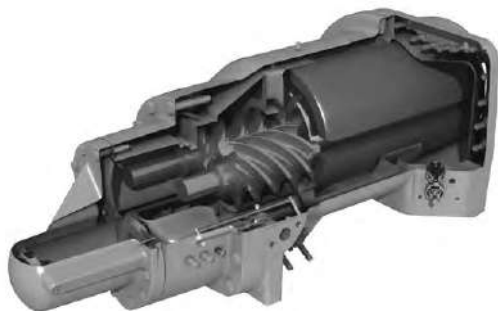
- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System anager or the Plant System anager (optional).
- The 30XW/P also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: indication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
 - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
 - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
 - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
 - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
 - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
 - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
 - Time schedule override: Closing of this contact cancels the programmed time schedule.
 - Out of service: This signal indicates that the chiller is completely out of service.
 - Chiller capacity: This analogue output (-1 gives an immediate indication of the chiller capacity.
 - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
 - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

TECHNICAL INSIGHTS

06T screw compressor



The new generation of the Carrier 06T screw compressors benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	No.	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	-0254-P1762
Unit supplied in two assembled parts	51	The unit is equipped with flanges that allow disassembly of the unit on site	Facilitates installation in plant rooms with limited access	-1652--1702, P1612-P1762
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	-0254-P1762
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	-1002--1702, P1012-P1762
No disconnect switch	82A	Unit without disconnect switch, but with short-circuit protection device	Permits an external electrical disconnect system for the unit (field-supplied), while ensuring unit short circuit protection	-0254-P1762
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	-0254--1252, P0512-P1314
Evap. dual pumps power/control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	-0254--1252, P0512-P1314
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	-0254--1252, P0512-P1314
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications)	-0254-P1762
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	-0254-P1762
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	-0254-P1762
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	-0254-P1762
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	-0254-P1762
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	-0254-P1762
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	-0254-P1762
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	-0254-P1762
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	-0254-P1762
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	-0254-P1762
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	-0254-P1762
High condensing temperature	150	Optimized compressor for operation at high condensing temperature	Increased condenser leaving water temperature up to 63°C. Allows applications with high condensing temperature (heat pumps, installations with not generously sized dry-coolers or more generally, installations with dry-coolers in hot climate). NOTE: to ens	-0254--0354, P0512-P1762
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	-0254-P1762

OPTIONS

Options	No.	Description	Advantages	Use
Control for low cond. temperature	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	-0254-P1762
Dry-cooler control	154	Adaptation of the control box for communication with the dry-cooler via a bus. For dry cooler need to select the cabinet with option control cabinet manage by the chiller control	Easy system management, extended control capabilities of a remote dry-cooler	-0254-P1762
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	-0254-P1762
7" user interface	158A	Control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	-0254-P1762
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	-0254-P1762
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	-0254-P1762
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	-0254-P1762
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	-0254-P1762
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	-0254-P1762
Low noise level	257	Evaporator sound insulation	3 dB(A) quieter than standard unit	-0402-P1762
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	-0254-P1762
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	-0254-P1762
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	-0254-P1762
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	-0254-P1762
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	-0254-P1762
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	-0254-P1762
Free-cooling dry-cooler control	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, Extended control capabilities to a drycooler used in Free Cooling mode	-0254-P1762
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE.S 5010-5:2019.	-0254-P1762
Compliance with Morocco regulation	327	Specifics documents according Morocco regulation	Conformance with Morocco regulations	-0254-P1762

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-				254	304	354	402	452	552	602	652	702	802
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	317	360	422	499	555	626	633	793	858	929
		COP	kW/kW	5,96	5,98	5,93	5,98	6,04	5,84	5,81	6,06	5,96	5,79
	HW2	Nominal capacity	kW	312	353	417	473	526	595	624	749	812	879
		COP	kW/kW	4,51	4,50	4,55	4,54	4,56	4,42	4,46	4,54	4,48	4,40
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	5,99	6,08	6,32	6,87	6,99	7,01	6,70	6,24	6,23	6,35
		η _{s heat} _{30/35°C}	%	232	235	245	267	272	272	260	242	241	246
		P _{rated}	kW	414	426	500	595	660	742	750	945	1022	1095
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	269	303	354	421	467	525	531	669	720	783
		EER	kW/kW	5,25	5,23	5,17	5,22	5,28	5,12	5,11	5,32	5,23	5,13
	CW2	Nominal capacity	kW	317	362	447	594	639	608	674	851	890	884
		EER	kW/kW	6,46	6,25	6,86	7,04	6,97	5,84	6,38	6,55	6,27	5,68
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	6,26	6,33	6,40	6,851	7,043	7,116	6,823	6,644	6,63	6,82
		η _{s cool} _{12/7°C}	%	247	250	253	271	279	282	270	263	262	270
		SEPR _{12/7°C} Process high temp.	kWh/kWh	8,60	8,16	8,80	8,12	8,28	7,72	7,90	8,83	8,25	8,01
Integrated Part Load Value	IPLV.SI		kW/kW	6,791	6,845	6,850	6,861	7,165	7,430	7,110	7,185	7,168	7,212
Sound levels - standard unit													
Sound power level ⁽¹⁾			dB(A)	95	95	95	99	99	99	99	99	99	99
Sound pressure level at 1 m ⁽²⁾			dB(A)	78	78	78	82	82	82	82	82	82	82
Sound levels - standard unit + option 257 ⁽³⁾													
Sound power level ⁽¹⁾			dB(A)	-	-	-	96	96	96	96	96	96	96
Sound pressure level at 1 m ⁽²⁾			dB(A)	-	-	-	78	78	78	78	78	78	78
Dimensions - standard unit													
Length			mm	2724	2724	2724	2741	2741	2741	2741	3059	3059	3059
Width			mm	928	928	928	936	936	936	936	1040	1040	1040
Height			mm	1567	1567	1567	1692	1692	1692	1692	1848	1848	1848
Operating weight ⁽⁴⁾			kg	2017	2036	2072	2575	2575	2613	2644	3247	3266	3282
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	-	-	-	-	-

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

η_{s heat}_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_{s cool}_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level.

(4) Weight shown is guideline only. Please refer to the unit nameplate.



Eurovent certified values



AHRI certified values
30XW-only

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Refrigerant ⁽⁴⁾		R-134a									
Circuit A	kg	84	80	78	92	92	92	92	145	135	125
	teqCO ₂	120	114	112	132	132	132	132	207	193	179
Circuit B	kg	-	-	-	-	-	-	-	-	-	-
	teqCO ₂	-	-	-	-	-	-	-	-	-	-
Oil - standard unit											
Circuit A	l	23,5	23,5	23,5	32	32	32	32	36	36	36
Circuit B	l	-	-	-	-	-	-	-	-	-	-
Capacity control		SmartVu™, electronic expansion valves (EXV)									
Minimum capacity ⁽⁵⁾	%	20	20	25	30	30	30	30	20	20	20
Evaporator		Multi-pipe flooded type									
Water volume	l	50	56	61	70	70	70	70	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	55	55	76	76	76	76	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-				852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	981	1185	1237	1324	1457	1557	1689	1795	1913	2001
		COP	kW/kW	5,98	5,77	5,67	5,79	6,12	5,96	5,76	5,61	5,94	5,92
	HW2	Nominal capacity	kW	958	1123	1174	1297	1375	1466	1592	1687	1867	1948
		COP	kW/kW	4,60	4,40	4,33	4,46	4,63	4,53	4,41	4,33	4,61	4,64
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	6,48	6,43	6,25	6,30	6,56	6,33	6,22	6,11	6,46	6,50
		ηs heat _{30/35°C}	%	251	249	242	244	254	245	241	236	251	252
	HW1	P _{rated}	kW	1153	1411	1473	1569	1737	1856	2013	2140	2265	2371
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	829	1005	1049	1128	1242	1327	1438	1532	1637	1712
		EER	kW/kW	5,33	5,19	5,12	5,25	5,55	5,45	5,31	5,24	5,54	5,55
	CW2	Nominal capacity	kW	936	1341	1505	1384	1733	1894	1981	2172	1949	2066
		EER	kW/kW	5,91	6,64	6,91	6,28	7,31	7,29	6,86	6,88	6,47	6,43
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	7,091	7,07	7,02	6,96	7,51	7,24	7,11	7,13	7,55	7,69
		ηs cool _{12/7°C}	%	281	280	278	275	298	287	282	282	299	304
		SEPR _{12/7°C} Process high temp.	kWh/kWh	8,01	8,29	8,11	7,96	8,97	9,09	8,34	8,13	8,45	8,50
Integrated Part Load Value	IPLV.SI	kW/kW	7,289	7,478	7,367	7,435	7,804	7,725	7,666	7,504	8,000	8,020	
Sound levels - standard unit													
Sound power level ⁽¹⁾		dB(A)	99	102	102	102	102	102	102	102	102	102	102
Sound pressure level at 1 m ⁽²⁾		dB(A)	82	84	84	84	83	83	83	83	83	83	83
Sound levels - standard unit + option 257 ⁽³⁾													
Sound power level ⁽¹⁾		dB(A)	96	99	99	99	99	99	99	99	99	99	99
Sound pressure level at 1 m ⁽²⁾		dB(A)	78	80	80	80	80	80	80	80	80	80	80
Dimensions - standard unit													
Length		mm	2780	4025	4025	4025	4730	4730	4730	4730	4790	4790	
Width		mm	1042	1036	1036	1036	1156	1156	1156	1156	1902	1902	
Height		mm	1898	1870	1870	1925	2051	2051	2051	2051	1515	1515	
Operating weight ⁽⁴⁾		kg	3492	5370	5408	5698	7066	7267	7305	7337	8681	8699	
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A		-	1	1	1	1	1	1	1	1	1	1	1
Circuit B		-	-	1	1	1	1	1	1	1	1	1	1

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

η_{s heat 30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_{s cool 12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level.

(4) Weight shown is guideline only. Please refer to the unit nameplate.



Eurovent certified values



AHRI certified values
30XW-only

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Refrigerant ⁽⁴⁾		R-134a									
Circuit A	kg	158	85	85	105	120	115	110	105	195	195
	teqCO ₂	226	122	122	150	172	164	157	150	279	279
Circuit B	kg	-	85	85	105	120	115	110	105	195	195
	teqCO ₂	-	122	122	150	172	164	157	150	279	279
Oil - standard unit											
Circuit A	l	36	32	32	32	36	36	36	36	36	36
Circuit B	l	-	32	32	32	32	36	36	36	36	36
Capacity control		SmartVu™, electronic expansion valves (EXV)									
Minimum capacity ⁽⁵⁾	%	20	15	15	15	15	10	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	98	182	182	205	301	301	301	301	354	354
Water connections (Victaulic)	in	6	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	137	193	193	193	340	340	340	340	426	426
Water connections (Victaulic)	in	8	8	8	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP				512	562	712	812	862	1012	1162	1314	1464	1612	1762
Heating														
Standard unit Full load performances*	HW1	Nominal capacity	kW	586	667	851	912	995	1201	1327	1522	1680	1863	2019
		COP	kW/kW	6,36	6,30	6,52	6,29	6,27	6,35	6,24	6,29	6,06	6,38	6,27
	HW2	Nominal capacity	kW	573	654	836	896	970	1179	1296	1489	1643	1823	1964
		COP	kW/kW	4,82	4,78	4,92	4,74	4,78	4,85	4,77	4,82	4,66	4,84	4,81
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	6,94	6,99	6,49	6,28	6,63	6,72	6,85	6,75	6,38	6,73	6,71
		η _{s heat} _{30/35°C}	%	269	272	252	243	257	261	266	262	247	261	260
		P _{rated}	kW	694	791	1009	1081	1180	1424	1572	1805	1993	2210	2395
Cooling														
Standard unit Full load performances*	CW1	Nominal capacity	kW	502	569	727	776	850	1025	1143	1308	1435	1606	1736
		EER	kW/kW	5,63	5,57	5,75	5,55	5,59	5,67	5,71	5,74	5,53	5,80	5,72
	CW2	Nominal capacity	kW	617	727	890	971	1001	1375	1425	1772	1905	2034	2105
		EER	kW/kW	6,88	6,94	7,20	6,98	6,83	7,46	6,90	7,55	7,28	7,34	7,11
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	7,00	7,12	7,05	6,82	7,24	7,34	7,78	7,69	7,29	7,79	7,86
		η _{s cool} _{12/7°C}	%	277	282	279	270	287	291	308	304	289	309	311
		SEPR _{12/7°C} Process high temp.	kWh/kWh	8,42	8,50	9,23	8,33	8,54	8,50	8,85	9,00	8,89	8,82	8,83
Integrated Part Load Value		IPLV.SI	kW/kW	7,391	7,473	7,556	7,301	7,538	7,639	8,053	8,150	7,485	7,757	8,089
Sound levels - standard unit														
Sound power level ⁽¹⁾			dB(A)	99	99	99	99	99	102	102	102	102	102	102
Sound pressure level at 1 m ⁽²⁾			dB(A)	82	82	81	81	81	83	83	83	83	83	83
Sound levels - standard unit + option 257 ⁽³⁾														
Sound power level ⁽¹⁾			dB(A)	96	96	96	96	96	99	99	99	99	99	99
Sound pressure level at 1 m ⁽²⁾			dB(A)	78	78	78	78	78	80	80	80	80	80	80
Dimensions - standard unit														
Length			mm	3059	3059	3290	3290	3290	4730	4730	4730	4730	4832	4832
Width			mm	936	936	1069	1069	1069	1039	1039	1162	1162	2129	2129
Height			mm	1743	1743	1950	1950	1950	1997	1997	2051	2051	1562	1562
Operating weight ⁽⁴⁾			kg	2981	3020	3912	3947	3965	6872	6950	7542	7752	10910	10946
Compressors				Semi-hermetic 06T screw compressors, 50 r/s										
Circuit A			-	1	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	1	1	1	1	1	1

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

η_{s heat}_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_{s cool}_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level.

(4) Weight shown is guideline only. Please refer to the unit nameplate.



Eurovent certified values



AHRI certified values
30XW-only

PHYSICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Refrigerant ⁽⁴⁾		R-134a										
Circuit A	kg	130	130	180	175	177	120	120	130	130	240	250
	teqCO ₂	186	186	257	250	253	172	172	186	186	343	358
Circuit B	kg	-	-	-	-	-	120	120	150	130	240	250
	teqCO ₂	-	-	-	-	-	172	172	215	186	343	358
Oil - standard unit												
Circuit A	l	32	32	36	36	36	32	32	36	36	36	36
Circuit B	l	-	-	-	-	-	32	32	32	36	36	36
Capacity control		SmartVu™, electronic expansion valves (EXV)										
Minimum capacity ⁽⁵⁾	%	30	30	20	20	20	15	15	15	10	10	10
Evaporator		Multi-pipe flooded type										
Water volume	l	101	101	154	154	154	293	293	321	321	473	473
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type										
Water volume	l	103	103	148	148	148	316	316	340	340	623	623
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

ELECTRICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	233	233	303	414	414	414	414	587	587	587
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum start-up current**											
Circuit A	A	233	233	303	414	414	414	414	587	587	587
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Cosine phi											
Nominal***		0,83	0,85	0,83	0,87	0,88	0,89	0,89	0,88	0,89	0,90
Maximum****		0,89	0,89	0,88	0,90	0,90	0,91	0,91	0,90	0,91	0,92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	76	89	97	128	135	151	151	184	200	223
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Nominal current drawn***											
Circuit A	A	84	96	113	136	144	162	162	193	214	232
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un)†											
Circuit A	A	123	145	160	206	217	242	242	295	317	351
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un -10%)****											
Circuit A	A	138	162	178	218	230	260	260	304	340	358
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum power input with option 150B†											
Circuit A	kW	67	79	87	114	118	133	134	173	183	205
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un) with option 150B†											
Circuit A	A	109	129	142	183	191	212	212	278	290	325
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	587	414	414	414	587	587	587	587	587	587
Circuit B	A	-	414	414	414	414	587	587	587	587	587
Option 81	A	-	558	574	574	747	780	801	819	819	819
Maximum start-up current**											
Circuit A	A	587	414	414	414	587	587	587	587	587	587
Circuit B	A	-	414	414	414	414	587	587	587	587	587
Option 81	A	-	631	656	656	829	882	904	938	938	938
Cosine phi											
Nominal***		0,90	0,88	0,89	0,89	0,88	0,88	0,89	0,9	0,9	0,9
Maximum****		0,92	0,90	0,91	0,91	0,90	0,90	0,91	0,92	0,92	0,92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	223	150	151	151	184	184	200	223	223	223
Circuit B	kW	-	135	151	151	151	184	200	223	202	223
Option 81	kW	-	284	301	301	334	367	399	447	425	447
Nominal current drawn***											
Circuit A	A	232	162	162	162	193	193	214	232	232	232
Circuit B	A	-	144	162	162	162	193	214	232	214	232
Option 81	A	-	306	324	324	355	386	427	464	446	464
Maximum current drawn (Un)†											
Circuit A	A	351	242	242	242	295	295	317	351	351	351
Circuit B	A	-	217	242	242	242	295	317	351	317	351
Option 81	A	-	459	484	484	537	590	634	702	668	702
Maximum current drawn (Un -10%)****											
Circuit A	A	358	260	260	260	304	304	340	358	358	358
Circuit B	A	-	230	260	260	260	304	340	358	340	358
Option 81	A	-	490	520	520	564	608	680	716	698	716
Maximum power input with option 150B†											
Circuit A	kW	205	133	133	133	173	173	183	207	207	207
Circuit B	kW	-	118	133	133	133	173	183	207	185	207
Option 81	kW	-	251	265	265	305	346	365	414	391	414
Maximum current drawn (Un) with option 150B†											
Circuit A	A	325	212	212	212	278	278	290	325	325	325
Circuit B	A	-	191	212	212	212	278	290	325	290	325
Option 81	A	-	403	424	424	490	556	580	650	615	650

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit		24 V via the built-in transformer										
Nominal start-up current*												
Circuit A	A	414	414	587	587	587	414	414	587	587	587	587
Circuit B	A	-	-	-	-	-	414	414	414	587	587	587
Option 81	A	-	-	-	-	-	556	574	747	780	801	819
Maximum start-up current**												
Circuit A	A	414	414	587	587	587	414	414	587	587	587	587
Circuit B	A	-	-	-	-	-	414	414	414	587	587	587
Option 81	A	-	-	-	-	-	631	656	829	882	904	938
Cosine phi												
Nominal***		0,88	0,89	0,88	0,89	0,90	0,86	0,87	0,88	0,88	0,89	0,90
Maximum****		0,90	0,90	0,90	0,91	0,92	0,89	0,90	0,90	0,90	0,91	0,92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0	0
Maximum power input†												
Circuit A	kW	135	151	184	200	223	134	151	184	184	200	223
Circuit B	kW	-	-	-	-	-	134	151	151	184	200	223
Option 81	kW	-	-	-	-	-	267	301	334	367	399	447
Nominal current drawn***												
Circuit A	A	144	162	193	214	232	144	162	193	193	214	232
Circuit B	A	-	-	-	-	-	144	162	162	193	214	232
Option 81	A	-	-	-	-	-	288	324	355	386	427	464
Maximum current drawn (Un)†												
Circuit A	A	217	242	295	317	351	217	242	295	295	317	351
Circuit B	A	-	-	-	-	-	217	242	242	295	317	351
Option 81	A	-	-	-	-	-	434	484	537	590	634	702
Maximum current drawn (Un -10%)****												
Circuit A	A	230	260	304	340	358	230	260	304	304	340	358
Circuit B	A	-	-	-	-	-	230	260	260	304	340	358
Option 81	A	-	-	-	-	-	460	520	564	608	680	716
Maximum power input with option 150B†												
Circuit A	kW	118	133	173	183	207	118	133	173	173	183	207
Circuit B	kW	-	-	-	-	-	118	133	133	173	183	207
Option 81	kW	-	-	-	-	-	235	265	305	346	365	414
Maximum current drawn (Un) with option 150B†												
Circuit A	A	191	212	278	290	325	191	212	278	278	290	325
Circuit B	A	-	-	-	-	-	191	212	212	278	290	325
Option 81	A	-	-	-	-	-	382	424	490	556	580	650

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-				254	304	354	402	452	552	602	652	702	802	
Heating														
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	328	366	413	502	536	597	618	756	845	869	
		COP	kW/kW	5,49	5,48	5,44	5,11	5,41	5,27	5,41	5,31	5,37	5,17	
	HW2	Nominal heating capacity	kW	319	356	402	470	501	559	599	706	789	812	
		COP	kW/kW	4,54	4,51	4,47	4,21	4,45	4,36	4,48	4,39	4,44	4,31	
	HW3	Nominal capacity	kW	310	347	391	440	469	523	582	659	738	760	
		COP	kW/kW	3,80	3,78	3,75	3,47	3,67	3,61	3,76	3,62	3,68	3,57	
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	5,99	6,25	6,18	5,90	6,12	6,13	6,07	5,76	6,02	5,23	
		η _s heat _{30/35°C}	%	232	242	239	228	237	237	235	223	233	201	
	HW3	SCOP _{47/55°C}	kWh/kWh	4,71	4,82	4,76	4,45	4,66	4,72	4,73	4,42	4,61	4,01	
		η _s heat _{47/55°C}	%	180	185	182	170	178	181	181	169	177	153	
		P _{rated}	kW	411	415	467	535	571	637	697	803	898	926	
Cooling														
Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	278	309	348	NA	NA	NA	NA	NA	NA	NA	
		EER	kW/kW	4,83	4,80	4,76	NA	NA	NA	NA	NA	NA	NA	
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	6,19	6,29	6,22	NA	NA	NA	NA	NA	NA	NA	
		η _s cool _{12/7°C}	%	245	249	246	NA	NA	NA	NA	NA	NA	NA	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,67	6,72	6,57	NA	NA	NA	NA	NA	NA	NA	
Integrated Part Load Value		IPLV.SI	kW/kW	6,364	6,527	6,531	5,928	6,176	6,287	6,185	5,931	6,433	5,575	
Sound levels - unit with option 150														
Sound power level ⁽¹⁾				dB(A)	95	95	95	99	99	99	99	102	102	102
Sound pressure level at 1 m ⁽²⁾				dB(A)	78	78	78	82	82	82	82	84	84	84
Sound levels - unit with option 150 + option 257 ⁽³⁾														
Sound power level ⁽¹⁾				dB(A)	-	-	-	96	96	96	96	100	100	100
Sound pressure level at 1 m ⁽²⁾				dB(A)	-	-	-	78	78	78	78	82	82	82
Dimensions - unit with option 150														
Length				mm	2724	2724	2724	2741	2741	2741	2741	3059	3059	3059
Width				mm	928	928	928	936	936	936	936	1090	1090	1090
Height				mm	1567	1567	1567	1692	1692	1692	1692	1858	1858	1858
Operating weight ⁽⁴⁾				kg	2017	2036	2072	2575	2575	2613	2644	3407	3438	3462
Compressors				Semi-hermetic 06T screw compressors, 50 r/s										
Circuit A				-	1	1	1	1	1	1	1	1	1	1
Circuit B				-	-	-	-	-	-	-	-	-	-	-

- * In accordance with standard EN14511-3:2018.
- ** In accordance with standard EN14825:2016, average climate
- HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kW
- HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². kW
- HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². kW
- CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W
- η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016
- η_s heat_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016
- η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
- SEPR_{12/7°C} Values calculated in accordance with EN14825:2016
- IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).
- NA Non Authorized for the specific application for CEE market
- (1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
- (3) Option 257 = Low noise level
- (4) Weight shown is guideline only. Please refer to the unit nameplate



Eurovent certified values

AHRI certified values
30XW-only

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Refrigerant ⁽⁴⁾		R-134a									
Circuit A	kg	84	80	78	92	92	92	92	145	135	125
	teqCO ₂	120	114	112	132	132	132	132	207	193	179
Circuit B	kg	-	-	-	-	-	-	-	-	-	-
	teqCO ₂	-	-	-	-	-	-	-	-	-	-
Oil - unit with option 150											
Circuit A	l	23,5	23,5	23,5	32	32	32	32	36	36	36
Circuit B	l	-	-	-	-	-	-	-	-	-	-
Capacity control		SmartVu™, electronic expansion valves (EXV)									
Minimum capacity ⁽⁵⁾	%	30	30	30	30	30	30	30	25	25	25
Evaporator		Multi-pipe flooded type									
Water volume	l	50	56	61	70	70	70	70	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	55	55	76	76	76	76	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-				852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	963	1163	1228	1338	1432	1551	1671	1776	1928	1991
		COP	kW/kW	5,36	5,37	5,28	5,38	5,56	5,32	5,23	5,12	5,34	5,27
	HW2	Nominal heating capacity	kW	939	1085	1146	1290	1329	1445	1558	1649	1873	1936
		COP	kW/kW	4,46	4,46	4,40	4,48	4,63	4,45	4,38	4,34	4,50	4,46
	HW3	Nominal capacity	kW	915	1012	1068	1249	1244	1345	1452	1543	1821	1882
		COP	kW/kW	3,73	3,71	3,66	3,77	3,83	3,68	3,64	3,63	3,81	3,77
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	5,83	5,86	5,87	5,79	6,09	5,69	5,79	5,43	5,93	5,92
		η _s heat _{30/35°C}	%	225	226	227	224	236	220	224	209	229	229
	HW3	SCOP _{47/55°C}	kWh/kWh	4,57	4,74	4,74	4,61	4,68	4,38	4,45	4,35	4,74	4,76
		η _s heat _{47/55°C}	%	175	181	182	177	179	167	170	166	182	182
		P _{rated}	kW	1094	1234	1303	1497	1518	1641	1770	1882	2179	2253
Cooling													
Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		EER	kW/kW	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		η _s cool _{12/7°C}	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		SEPR _{12/7°C} Process high temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Integrated Part Load Value		IPLV.SI	kW/kW	6,351	6,572	6,595	6,522	6,873	6,211	6,615	6,366	6,939	7,136
Sound levels - unit with option 150													
Sound power level ⁽¹⁾			dB(A)	102	102	102	102	105	105	105	105	105	105
Sound pressure level at 1 m ⁽²⁾			dB(A)	84	84	84	84	86	86	86	86	86	86
Sound levels - unit with option 150 + option 257 ⁽³⁾													
Sound power level ⁽¹⁾			dB(A)	100	99	99	99	103	103	103	103	103	103
Sound pressure level at 1 m ⁽²⁾			dB(A)	82	80	80	80	84	84	84	84	84	84
Dimensions - unit with option 150													
Length			mm	2780	4025	4025	4025	4730	4730	4730	4730	4790	4790
Width			mm	1090	1036	1036	1036	1201	1201	1201	1201	1947	1947
Height			mm	1920	1870	1870	1925	2071	2071	2071	2071	1535	1535
Operating weight ⁽⁴⁾			kg	3672	5370	5408	5698	7233	7554	7622	7670	9006	9032
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A	-			1	1	1	1	1	1	1	1	1	1
Circuit B	-			-	1	1	1	1	1	1	1	1	1

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kW

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². kW

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². kW

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W

η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_s heat_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016

η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate



Eurovent certified values



AHRI certified values
30XW-only

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Refrigerant ⁽⁴⁾		R-134a									
Circuit A	kg	158	85	85	105	120	115	110	105	195	195
	teqCO ₂	226	122	122	150	172	164	157	150	279	279
Circuit B	kg	-	85	85	105	120	115	110	105	195	195
	teqCO ₂	-	122	122	150	172	164	157	150	279	279
Oil - unit with option 150											
Circuit A	l	36	32	32	32	36	36	36	36	36	36
Circuit B	l	-	32	32	32	32	36	36	36	36	36
Capacity control		SmartVu™, electronic expansion valves (EXV)									
Minimum capacity ⁽⁵⁾	%	25	15	15	15	15	10	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	98	182	182	205	301	301	301	301	354	354
Water connections (Victaulic)	in	6	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	137	193	193	193	340	340	340	340	426	426
Water connections (Victaulic)	in	8	8	8	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-P / 30XWHP	512	562	712	812	862	1012	1162	1314	1464	1612	1762
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Heating

Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	600	670	840	910	975	1188	1375	1514	1698	1890	1983
		COP	kW/kW	5,89	5,90	5,72	5,58	5,72	5,61	5,77	5,55	5,40	5,78	5,73
	HW2	Nominal heating capacity	kW	580	646	815	885	950	1147	1322	1465	1648	1834	1929
		COP	kW/kW	4,85	4,86	4,72	4,61	4,75	4,65	4,80	4,62	4,52	4,80	4,79
	HW3	Nominal capacity	kW	561	625	790	862	925	1110	1275	1419	1598	1783	1874
		COP	kW/kW	4,02	4,04	3,92	3,83	3,97	3,86	4,01	3,88	3,81	4,00	4,00
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	6,48	6,60	6,59	6,27	6,17	5,97	6,24	6,18	6,18	6,50	6,21
		η _s heat _{30/35°C}	%	251	256	256	243	239	231	242	239	239	252	240
	HW3	SCOP _{47/55°C}	kWh/kWh	4,99	5,10	5,09	4,85	4,84	4,63	4,88	4,88	4,94	5,07	4,92
		η _s heat _{47/55°C}	%	192	196	196	186	186	177	187	187	189	195	189
		P _{rated}	kW	673	749	947	1030	1106	1330	1531	1701	1915	2133	2243

Cooling

Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	510	569	715	770	833	1011	1178	1287	1437	1613	1706
		EER	kW/kW	5,14	5,17	5,02	4,88	5,09	4,98	5,23	4,96	4,84	5,15	5,21
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	6,53	6,68	6,81	6,56	6,45	6,51	6,95	6,76	6,66	7,13	6,90
		η _s cool _{12/7°C}	%	258	264	269	259	255	258	275	267	264	282	273
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,90	6,93	7,23	6,68	6,38	6,71	6,97	6,88	7,03	7,15	6,63
Integrated Part Load Value	IPLV.SI	kW/kW		6,612	6,804	7,029	6,703	6,782	6,505	6,997	6,946	7,131	7,302	7,308

Sound levels - unit with option 150

Sound power level ⁽¹⁾	dB(A)	99	99	102	102	102	102	102	102	105	105	105	105	105
Sound pressure level at 1 m ⁽²⁾	dB(A)	82	82	84	84	84	83	83	83	86	86	86	86	86

Sound levels - unit with option 150 + option 257⁽³⁾

Sound power level ⁽¹⁾	dB(A)	96	96	100	100	100	99	99	99	103	103	103	103	103
Sound pressure level at 1 m ⁽²⁾	dB(A)	78	78	82	82	82	80	80	80	84	84	84	84	84

Dimensions - unit with option 150

Length	mm	3059	3059	3290	3290	3290	4730	4730	4730	4730	4730	4832	4832	4832
Width	mm	936	936	1105	1105	1105	1039	1039	1039	1202	1202	2174	2174	2174
Height	mm	1743	1743	1970	1970	1970	1997	1997	1997	2071	2071	1585	1585	1585
Operating weight ⁽⁴⁾	kg	2981	3020	4072	4117	4145	6872	6950	7721	8059	11225	11279	11279	11279

Compressors

		Semi-hermetic 06T screw compressors, 50 r/s												
Circuit A	-	1	1	1	1	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	-	1	1	1	1	1	1	1	1

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kW

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². kW

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². kW

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W

η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_s heat_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016

η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate



Eurovent certified values



AHRI certified values
30XW-only

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-P / 30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Refrigerant ⁽⁴⁾		R-134a										
Circuit A	kg	130	130	180	175	177	120	120	130	130	240	250
	teqCO ₂	186	186	257	250	253	172	172	186	186	343	358
Circuit B	kg	-	-	-	-	-	120	120	150	130	240	250
	teqCO ₂	-	-	-	-	-	172	172	215	186	343	358
Oil - unit with option 150												
Circuit A	l	32	32	36	36	36	32	32	36	36	36	36
Circuit B	l	-	-	-	-	-	32	32	32	36	36	36
Capacity control		SmartVu™, electronic expansion valves (EXV)										
Minimum capacity ⁽⁵⁾	%	30	30	20	20	20	15	15	15	10	10	10
Evaporator		Multi-pipe flooded type										
Water volume	l	101	101	154	154	154	293	293	321	321	473	473
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type										
Water volume	l	103	103	148	148	148	316	316	340	340	623	623
Water connections (Victaulic)	in	6	6	8	8	8	8	8	10	10	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	303	388	388	587	587	587	587	772	772	772
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum start-up current**											
Circuit A	A	303	388	388	587	587	587	587	772	772	772
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Cosine phi											
Nominal***		0,79	0,78	0,79	0,83	0,85	0,85	0,85	0,84	0,86	0,87
Maximum****		0,88	0,87	0,88	0,90	0,90	0,91	0,91	0,90	0,90	0,90
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	97	111	122	156	173	191	191	249	268	286
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Nominal current drawn***											
Circuit A	A	95	109	125	150	162	171	171	193	214	232
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un)†											
Circuit A	A	160	185	200	250	275	300	300	400	430	460
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un -10%)****											
Circuit A	A	176	206	224	270	300	330	330	419	455	476
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	772	587	587	587	772	772	772	772	772	772
Circuit B	A	-	587	587	587	587	772	772	772	772	772
Option 81	A	-	757	757	757	943	965	986	1004	1004	1004
Maximum start-up current**											
Circuit A	A	772	587	587	587	772	772	772	772	772	772
Circuit B	A	-	587	587	587	587	772	772	772	772	772
Option 81	A	-	887	887	887	1072	1172	1202	1232	1004	1232
Cosine phi											
Nominal***		0,87	0,85	0,85	0,85	0,86	0,85	0,86	0,87	0,86	0,87
Maximum****		0,90	0,90	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	286	191	191	191	252	252	271	290	290	290
Circuit B	kW	-	173	191	191	191	252	271	290	271	290
Option 81	kW	-	364	382	382	443	504	542	580	562	580
Nominal current drawn***											
Circuit A	A	232	171	171	171	210	210	230	250	250	250
Circuit B	A	-	162	171	171	171	210	230	250	230	250
Option 81	A	-	333	342	342	381	420	460	500	480	500
Maximum current drawn (Un)†											
Circuit A	A	460	300	300	300	400	400	430	460	460	460
Circuit B	A	-	275	300	300	300	400	430	460	430	460
Option 81	A	-	575	600	600	700	800	860	920	890	920
Maximum current drawn (Un -10%)****											
Circuit A	A	476	330	330	330	419	419	455	476	476	476
Circuit B	A	-	300	330	330	330	419	455	476	455	476
Option 81	A	-	630	660	660	749	838	910	952	931	952

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

High-efficiency units (option 150)

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit		24 V via the built-in transformer										
Nominal start-up current*												
Circuit A	A	587	587	772	772	772	587	587	772	772	772	772
Circuit B	A	-	-	-	-	-	587	587	587	772	772	772
Option 81	A	-	-	-	-	-	749	757	943	965	986	1004
Maximum start-up current**												
Circuit A	A	587	587	772	772	772	587	587	772	772	772	772
Circuit B	A	-	-	-	-	-	587	587	587	772	772	772
Option 81	A	-	-	-	-	-	862	887	1072	1172	1202	1232
Cosine phi												
Nominal***		0,88	0,88	0,84	0,86	0,87	0,87	0,88	0,86	0,85	0,86	0,87
Maximum****		0,91	0,92	0,90	0,90	0,90	0,91	0,92	0,91	0,91	0,91	0,91
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0	0
Maximum power input†												
Circuit A	kW	173	191	252	271	290	173	191	252	252	271	290
Circuit B	kW	-	-	-	-	-	173	191	191	252	271	290
Option 81	kW	-	-	-	-	-	346	382	443	504	542	580
Nominal current drawn***												
Circuit A	A	162	171	210	230	250	162	171	210	210	230	250
Circuit B	A	-	-	-	-	-	162	171	171	210	230	250
Option 81	A	-	-	-	-	-	324	342	381	420	460	500
Maximum current drawn (Un)†												
Circuit A	A	275	300	400	430	460	275	300	400	400	430	460
Circuit B	A	-	-	-	-	-	275	300	300	400	430	460
Option 81	A	-	-	-	-	-	550	600	700	800	860	920
Maximum current drawn (Un -10%)****												
Circuit A	A	300	330	419	455	476	300	330	419	419	455	476
Circuit B	A	-	-	-	-	-	300	330	330	419	455	476
Option 81	A	-	-	-	-	-	600	660	749	838	910	952

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

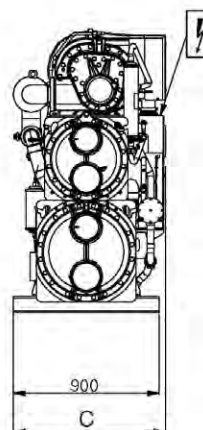
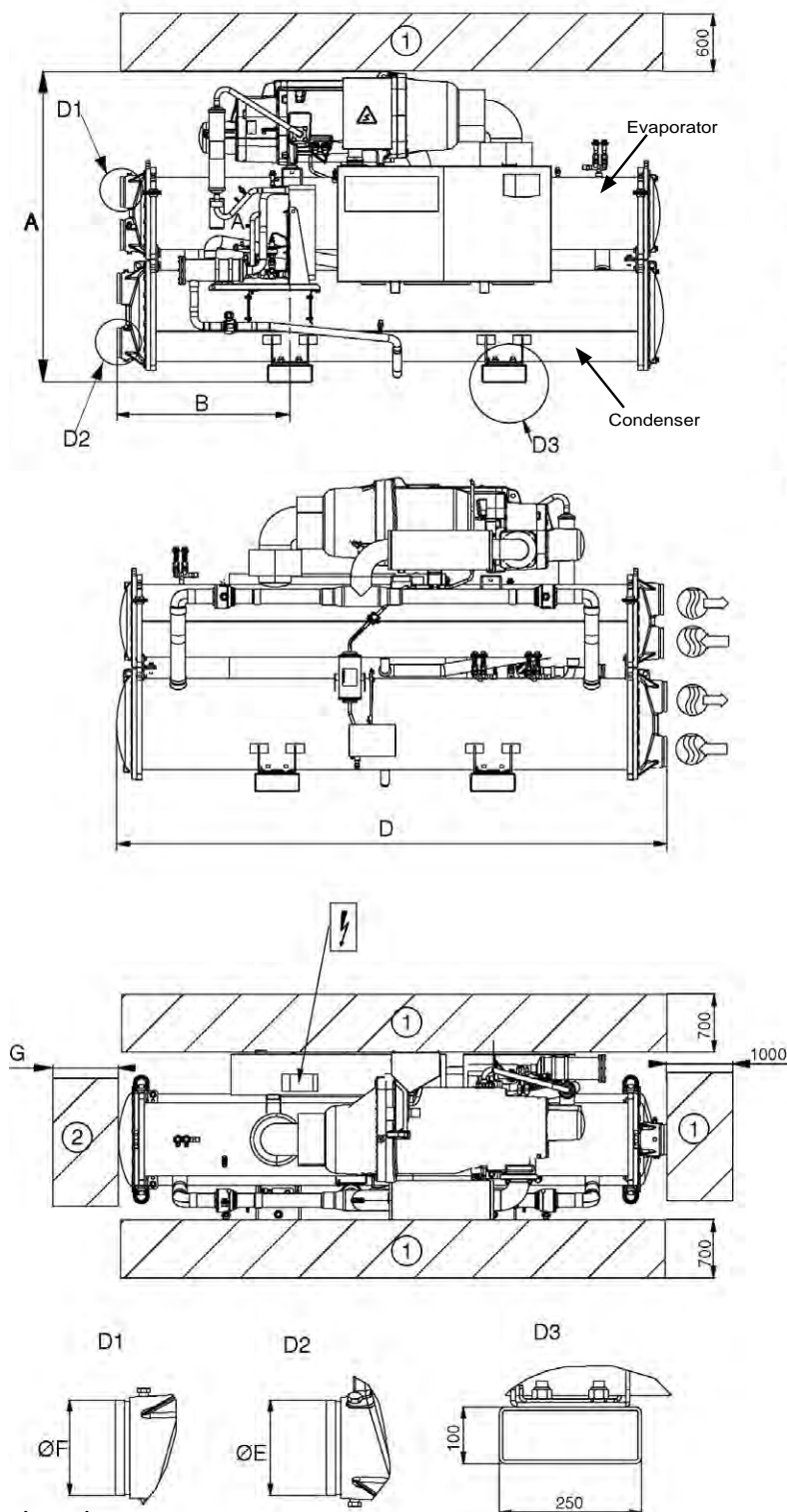
*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

DIMENSIONS/CLEARANCES

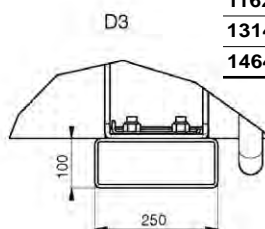
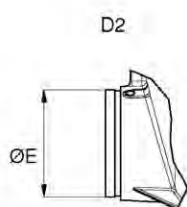
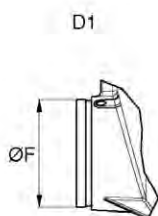
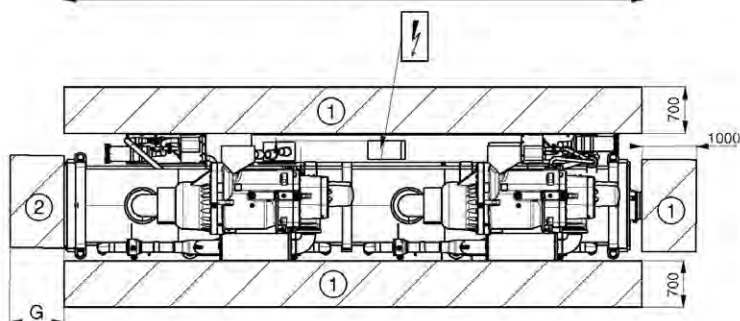
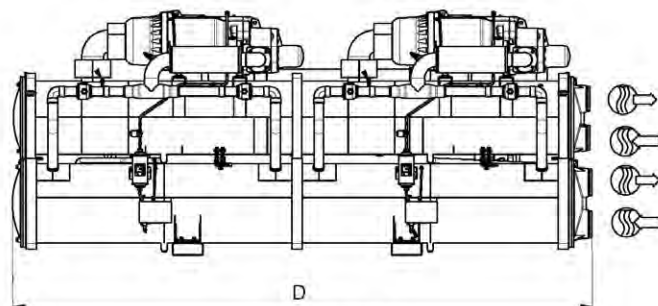
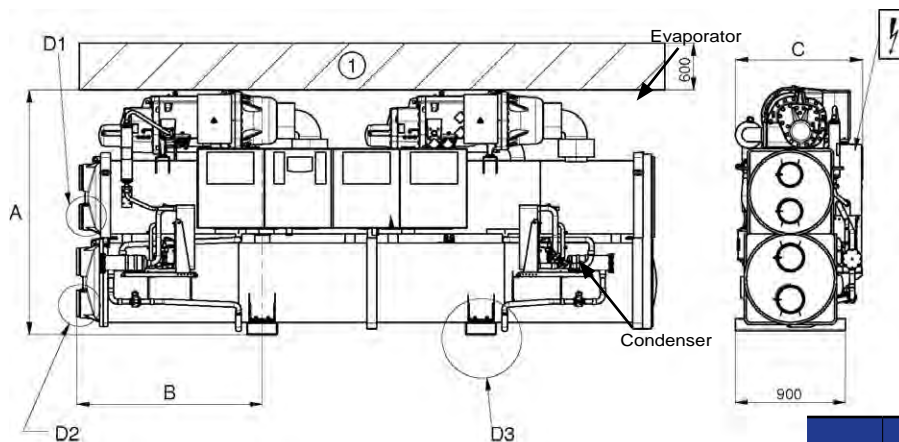
30XW-- 254-852
30XW-P 512-862



	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--							
254	1567	800	928	2724	141,3	141,3	2600
304	1567	800	928	2724	141,3	141,3	2600
354	1567	800	928	2724	141,3	141,3	2600
402	1693	810	936	2742	141,3	141,3	2600
452	1693	810	936	2742	141,3	141,3	2600
552	1693	810	936	2742	141,3	141,3	2600
602	1693	810	936	2742	141,3	141,3	2600
652	1848	968	1044	3059	168,3	168,3	2800
702	1848	968	1044	3059	168,3	168,3	2800
802	1848	968	1044	3059	168,3	168,3	2800
852	1898	828	1044	2780	219,1	168,3	2600
High-efficiency units 30XW-P							
512	1743	968	936	3059	168,3	168,3	2800
562	1743	968	936	3059	168,3	168,3	2800
712	1950	1083	1065	3290	219,1	219,1	3100
812	1950	1083	1070	3290	219,1	219,1	3100
862	1950	1083	1070	3290	219,1	219,1	3100
Standard-efficiency units 30XW-- (option 150)							
254	1567	800	928	2724	141,3	141,3	2600
304	1567	800	928	2724	141,3	141,3	2600
354	1567	800	928	2724	141,3	141,3	2600
402	1693	810	936	2742	141,3	141,3	2600
452	1693	810	936	2742	141,3	141,3	2600
552	1693	810	936	2742	141,3	141,3	2600
602	1693	810	936	2742	141,3	141,3	2600
652	1868	968	1090	3059	168,3	168,3	2800
702	1868	968	1090	3059	168,3	168,3	2800
802	1868	968	1090	3059	168,3	168,3	2800
852	1920	828	1090	2780	168,3	219,1	2600
High-efficiency units 30XW-P (option 150)							
512	1743	968	936	3059	168,3	168,3	2800
562	1743	968	936	3059	168,3	168,3	2800
712	1970	1083	1105	3290	219,1	219,1	3100
812	1970	1083	1105	3290	219,1	219,1	3100
862	1970	1083	1105	3290	219,1	219,1	3100

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

DIMENSIONS/CLEARANCES

30XW-- 1002-1552
30XW-P 1012-1464


	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--							
1002	1870	950	1036	4025	219,1	168,3	3800
1052	1870	950	1036	4025	219,1	168,3	3800
1152	1925	950	1036	4025	219,1	219,1	3800
1252	2051	1512	1162	4730	219,1	219,1	4500
1352	2051	1512	1162	4730	219,1	219,1	4500
1452	2051	1512	1162	4730	219,1	219,1	4500
1552	2051	1512	1162	4730	219,1	219,1	4500
High-efficiency units 30XW-P							
1012	1997	1512	1039	4730	219,1	219,1	4500
1162	1997	1512	1039	4730	219,1	219,1	4500
1314	2051	1512	1162	4730	219,1	219,1	4500
1464	2051	1512	1162	4730	219,1	219,1	4500
Standard-efficiency units 30XW-- (option 150)							
1002	1870	950	1036	4025	219,1	168,3	3800
1052	1870	950	1036	4025	219,1	168,3	3800
1154	2925	950	1036	4025	219,1	219,1	3800
1252	2071	1512	1202	4730	219,1	219,1	4500
1352	2071	1512	1202	4730	219,1	219,1	4500
1452	2071	1512	1202	4730	219,1	219,1	4500
1552	2071	1512	1202	4730	219,1	219,1	4500
High-efficiency units 30XW-P (option 150)							
1012	1997	1512	1039	4730	219,1	219,1	4500
1162	1997	1512	1039	4730	219,1	219,1	4500
1314	2071	1512	1202	4730	219,1	219,1	4500
1464	2071	1512	1202	4730	219,1	219,1	4500

Legend

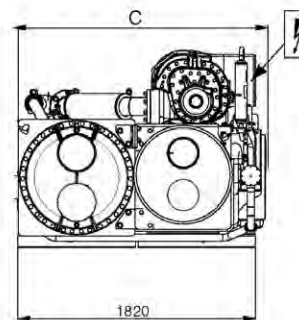
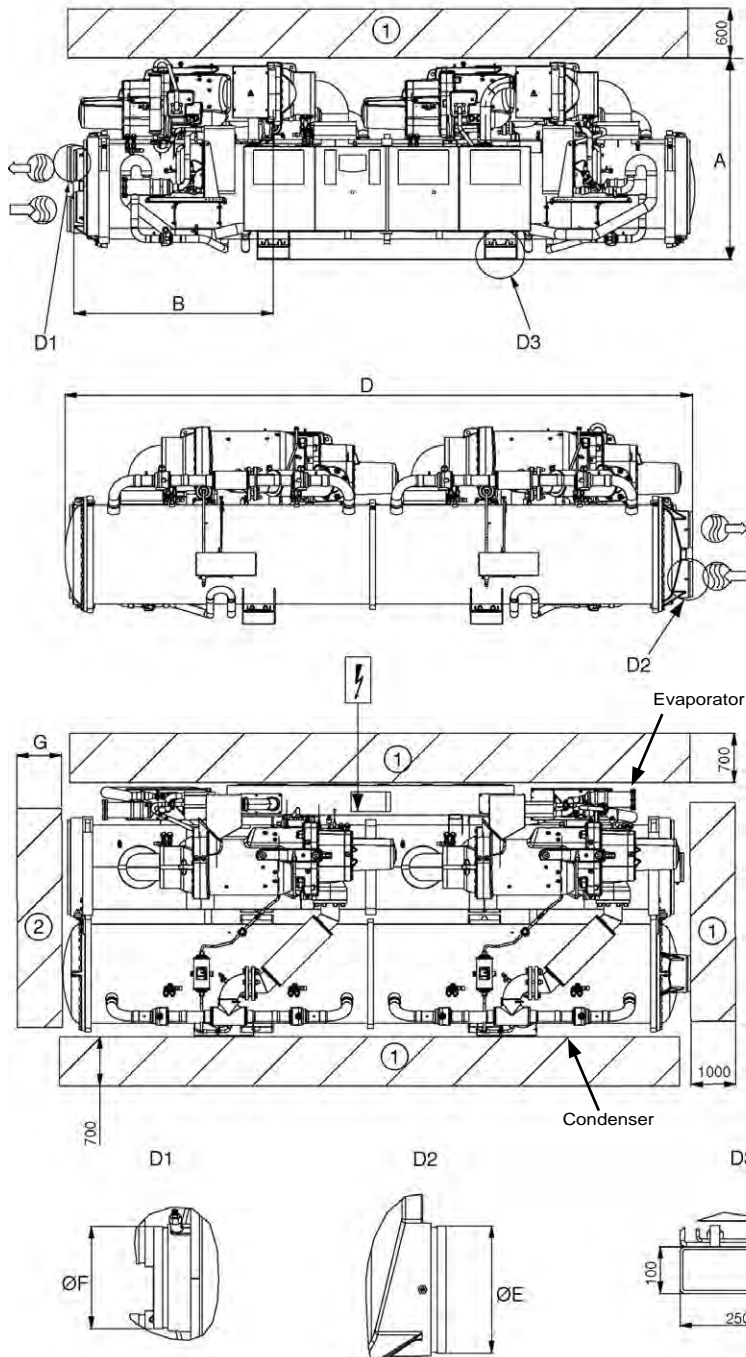
All dimensions are given in mm.

- ① Required clearance for maintenance
- ② Recommended clearance for tube removal
- ↻ Water inlet
- ↻ Water outlet
-))) Air outlet – do not obstruct
- ⚡ Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

DIMENSIONS/CLEARANCES

30XW-- 1652-1702
30XW-P 1612-1762



	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--							
1652	1515	1568	1902	4790	219,1	219,1	4500
1702	1515	1568	1902	4790	219,1	219,1	4500
High-efficiency units 30XW-P							
1612	1562	1591	2129	4832	273,1	273,1	4600
1762	1562	1591	2129	4832	273,1	273,1	4600
Standard-efficiency units 30XW-- (option 150)							
1652	1535	1568	1947	4790	219,1	219,1	4500
1702	1535	1568	1947	4790	219,1	219,1	4500
High-efficiency units 30XW-P (option 150)							
1612	1585	1591	2174	4832	273,1	273,1	4600
1762	1585	1591	2174	4832	273,1	273,1	4600

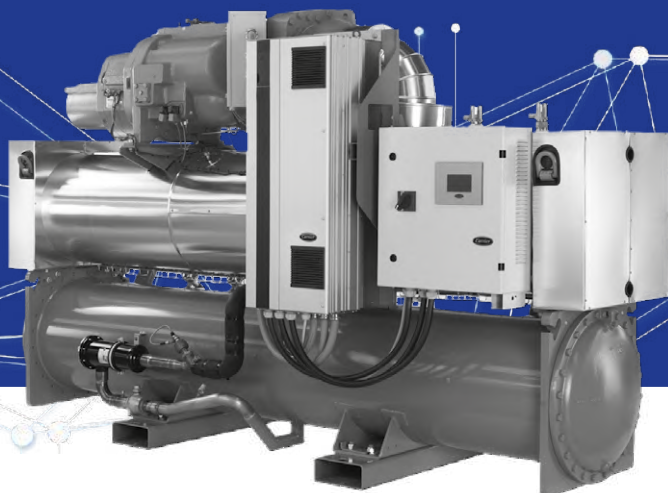
Legend

All dimensions are given in mm.

- ① Required clearance for maintenance
- ② Recommended clearance for tube removal
- Water inlet
- Water outlet
- Air outlet – do not obstruct
- Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

WATER-COOLED VARIABLE-SPEED SCREW CHILLERS



- Low energy consumption
- High reliability
- Easy and fast installation
- Minimised operating sound levels
- Environmental care
- Designed to support green building design

30XW-V 580-1710

Nominal cooling capacity 587-1741 kW
Nominal heating capacity 648-1932 kW

The 30XW-V water-sourced units are the premium solution for commercial and industrial applications where installers, consultants and building owners require maximum quality and optimal performances, especially at part load.

The 30XW-V units are designed to meet current and future requirements in terms of energy efficiency, versatility and compactness. They feature exclusive inverter-driven screw compressors - an evolution of the proven traditional Carrier twin-rotor screw compressor design. Other features include:

- the new SmartVu™ control
- mechanically cleanable flooded heat exchangers
- refrigerant R-134a

The 30XW-V/30XWHV range is split into two versions:

- 30XW-V for air conditioning applications
- 30XWHV for heating applications

As standard, the unit can provide an evaporator leaving water temperature down to 3.3°C, and when operating as a heat pump, it can deliver up to 50°C on the condenser side.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- The 30XW-V was designed for high performance both at full load and at part load.
 - Eurovent certified values per EN14511-3:2013: SEPR up to 8.07 and SEER up to 8.43
- High energy efficiency
 - Inverter-driven twin-rotor screw compressors allow precise capacity matching of building load changes and significantly reduce unit power input, especially at part-load.
 - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
 - Electronic expansion device permits operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Optimised electrical performance
 - All 30XW-V units comply with class 3 of standard EN61800-3. Category C3 refers to industrial environments. With option 282 category C2 compliance is possible.
 - Inverter-driven motors ensure negligible start-up current (value is lower than the maximum unit current draw)

High reliability

- The 30XW-V ranges offer increased global performance as well as Carrier's acclaimed product quality and reliability. Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Inverter-driven screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - The inverter is optimised for each compressor motor to ensure reliable operation and easy maintenance.
 - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuits
 - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
 - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling
 - Automatic compressor unloading in case of abnormally high condensing pressure or discharge temperature.
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

Easy and fast installation

- Compact design
 - The 30XW-V units are designed to offer compact dimensions for easy installation.
 - With a width of approximately 1.25 m up to 1000 kW the units can pass through standard door openings and only require minimum floor space in the plant room.
- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer supply to the integrated control circuit (400/24 V)
- Simplified water connections
 - Victaulic connections on the evaporator and condenser
 - Practical reference marks for entering and leaving water connections
 - Possibility to reverse the heat exchanger water inlet and outlet at the factory
 - Possibility to modify the number of heat exchanger passes
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Minimised operating sound levels

- The inverter technology used for the compressor motors minimises noise levels at part load operation. In two-compressor units at 25% of the maximum load the unit sound power level is reduced by 10 dB(A).
- Standard unit features include:
 - Silencers on the compressor discharge line.
 - Sound insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

Environmental care

- R-134a refrigerant
 - HFC-refrigerant with zero ozone depletion potential
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

Designed to support green building design

- A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment. The underlying principles of this approach: The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

CUSTOMER BENEFITS

- The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year, 30XW-V units offer a solution to this important challenge.
- A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.
- The following example looks at how Carrier's new 30XW-V range helps customers involved in LEED® building certification.

30XW-V and LEED® certification

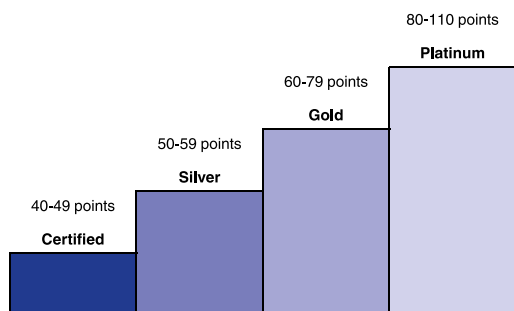
The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain the same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare. All programmes now use the same point scale:

110 Possible LEED® points

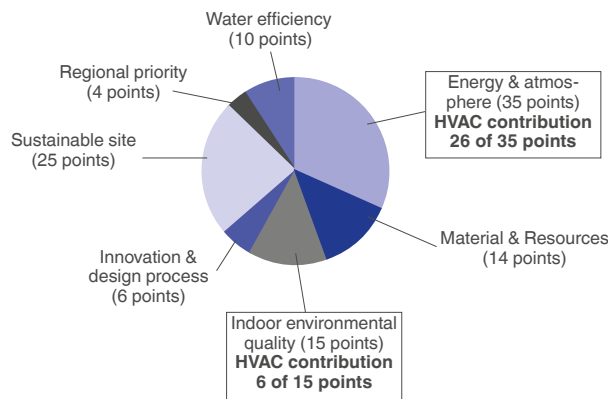


The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

Overview of LEED® for new construction and major renovations



The new 30XW-V units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- **EA prerequisite 2: Minimum energy Performance**
The 30XW-V exceeds the energy efficiency requirements of ASHRAE 90.1-2007; therefore it complies with the prerequisite standard.
- **EA prerequisite 3: Fundamental Refrigerant Management**
The 30XW-V does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.
- **EA credit 1: Optimise energy performance (1 to 19 points)**
Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90.1-2007 reference. The 30XW-V, which is designed for high performance especially during part load operation, contributes reducing the energy consumption of the building and therefore helps gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.
- **EA credit 4: Enhanced refrigerant management (2 points)**
With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Global Warming Potential (GWP) of the system. The 30XW-V uses a reduced R134a charge and therefore contributes toward satisfying this credit under LEED®.

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30XW-V. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

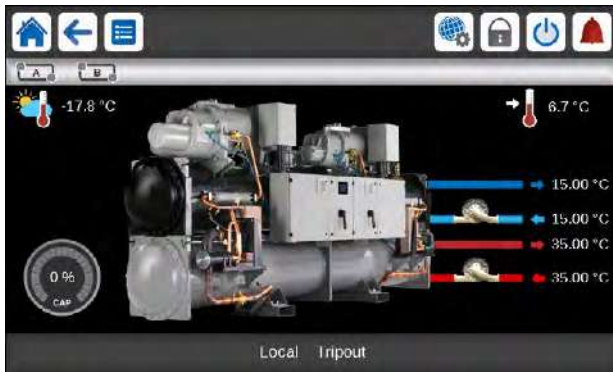
i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

TECHNICAL INSIGHTS

SmartVu™



- New innovative smart control features :
 - An intuitive and user-friendly, coloured, 7" interface
 - 10 languages available on choice: DE, EN, ES, FR, T, NL, PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Energy management :
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.
- Maintenance functions :
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
- Advanced communication features :
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.

Remote Management (Standard)

- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System anager or the Plant System anager (optional).
- The chiller also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: indication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
 - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
 - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
 - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
 - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
 - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
 - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
 - Time schedule override: Closing of this contact cancels the programmed time schedule.
 - Out of service: This signal indicates that the chiller is completely out of service.
 - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
 - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
 - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

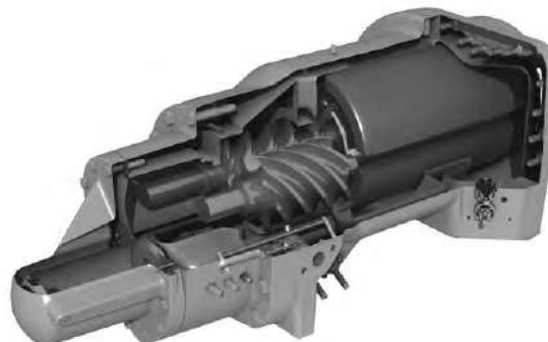
TECHNICAL INSIGHTS

Remote management (EMM option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set point reset: ensures reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
- Demand limit: permits limitation of the maximum chiller power or current based on a 0-10 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
- User safety: this contact can be used for any customer safety loop; opening the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status : set of outputs (as many as the compressors number) indicating which compressors are running.

New inverter-driven Thunderbolt screw compressor



- The new generation of Carrier inverter-driven screw compressors benefits from Carrier's long experience in the development of twin-rotor screw compressors. The design of the Thunderbolt compressors is based on the successful 06T screw compressor, core of the well-known Aquaforce series.
- Advanced control algorithms combine inverter frequency output with motor input logic to minimise mechanical part stress, resulting in best compression performance and high chiller reliability. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.
- Screw compressors use positive displacement principle to compress gases at higher pressure. As a result, in case of exceptional high temperature condenser side (due for example to water-pipes fouling or operation in harsh climate with an external dry-cooler) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode).
- The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.
- The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	No.	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	580-1710 (see dedicated paragraph)
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two chillers connected in parallel with operating time equalisation	580-1710
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	1150-1710
Evap. pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Evaporator dual pumps electrical power / control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Cond. pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Cond. dual pumps power/control circuit	84T	Unit equipped with an electrical power and control circuit for two pumps condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	580-1710
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	580-1710
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	580-1710
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	580-1710
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	580-1710
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	580-1710
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	580-1710
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	580-1710
LON gateway	148D	Two-directional communication board complying with LON protocol	Connects the unit by communication bus to a building management system	580-1710
Bacnet over IP gateway	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	580-1710
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	580-1710
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	580-1710
Control for low condensing temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	580-1710
Energy Management Module EMM	156	Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	580-1710
Leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	580-1710

OPTIONS

Options	No.	Description	Advantages	Use
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the evaporator and the oil separator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	580-1710
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	580-1710
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	580-1710
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	580-1710
Low noise level	257	Evaporator sound insulation	3 dB(A) quieter than standard unit	580-1710
Welded evaporator water connection kit	266	Victaulic piping connections with welded joints	Easy installation	580-1710
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	580-1710
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	580-1710
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	580-1710
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	580-1710
EMC classification C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Increase the variable frequency drive (VFD) immunity level according to first environment (so called, residential environment) requirements and allow its compliancy with emissions level required in category C2	580-1710
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE.S 5010-5:2019.	580-1710
Compliance with Morocco regulation	327	Specifics documents according Morocco regulation	Conformance with Morocco regulations	580-1710

PHYSICAL DATA, 30XW-V UNITS

30XW-V				580	630	810	880	1150	1280	1470	1570	1710
Heating												
Standard unit Full load performances *	HW1	Nominal capacity	kW	649	719	890	974	1261	1428	1594	1761	1932
		COP	kW/kW	4,64	4,53	4,56	4,43	4,62	4,61	4,55	4,33	4,16
	HW2	Nominal capacity	kW	687	767	956	1021	1335	1524	1712	1898	2067
		COP	kW/kW	6,15	5,98	5,96	5,81	6,05	6,00	5,82	5,49	5,34
Standard unit Seasonal energy efficiency **	HW2	SCOP _{30/35°C}	kWh/kWh	7,32	7,05	7,21	6,96	6,95	6,66	6,37	6,13	5,87
		η _s heat _{30/35°C}	%	285	274	280	270	270	259	247	237	227
		P _{rated}	kW	818	913	1134	1216	1589	1815	2041	2263	2463
Cooling												
Standard unit Full load performances*	CW1	Nominal capacity	kW	587	652	812	858	1140	1305	1461	1604	1741
		EER	kW/kW	5,44	5,31	5,25	5,07	5,45	5,50	5,38	5,05	4,94
		Eurovent class		A	A	A	A	A	A	A	A	B
	CW2	Nominal capacity	kW	791	846	1023	970	1528	1688	1703	2093	2272
		EER	kW/kW	6,96	6,50	6,22	5,63	6,86	6,64	5,99	5,99	5,99
		Eurovent class		A	A	A	A	A	A	A	A	A
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	7,94	7,62	8,43	7,93	8,31	8,19	7,74	7,70	7,34
		η _s cool _{12/7°C}	%	315	302	334	314	329	325	307	305	290
		SEPR _{12/7°C} Process high temp.	kWh/kWh	8,07	8,02	7,73	6,76	8,04	8,07	7,96	7,89	7,49
Integrated Part Load Value		IPLV.SI	kW/kW	9,060	9,120	9,450	8,950	9,240	9,300	9,170	9,300	8,980
Sound levels - standard unit												
Sound power level ⁽¹⁾			dB(A)	105	105	105	105	106	106	106	106	106
Sound pressure level at 1 m ⁽²⁾			dB(A)	87	87	87	87	87	87	87	87	87
Sound levels - standard unit + option 257 ⁽³⁾												
Sound power level ⁽¹⁾			dB(A)	102	102	102	102	103	103	103	103	103
Sound pressure level at 1 m ⁽²⁾			dB(A)	84	84	84	84	84	84	84	84	84
Dimensions - standard unit												
Length		mm	3059	3059	3290	3290	4730	4730	4730	4730	4730	4730
Width		mm	1087	1087	1237	1237	1164	1164	1255	1255	1255	1255
Height		mm	1743	1743	1950	1950	1997	1997	2051	2051	2051	2051
Operating weight ⁽⁴⁾		kg	3152	3190	4157	4161	7322	7398	7574	7770	7808	7808
Compressors				Semi-hermetic 06T screw compressors, 60 r/s								
Circuit A		-	1	1	1	1	1	1	1	1	1	1
Circuit B		-	-	-	-	-	1	1	1	1	1	1

- * In accordance with standard EN14511-3:2013.
- ** In accordance with standard EN14825:2016, average climate
- HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W
- HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W
- CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W
- CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W
- (1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) in dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
- (3) Option 257 = Low noise level
- (4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate
- η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016
- η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
- SEPR_{12/7°C} Values calculated in accordance with EN14825:2016
- NA Non Authorized for the specific application for CEE market
- IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).



Eurovent certified values

AHRI certified values
30XW-only

PHYSICAL DATA, 30XW-V UNITS

30XW-V		580	630	810	880	1150	1280	1470	1570	1710
Oil - standard unit										
Circuit A	l	32	32	36	36	32	32	36	36	36
Circuit B	l	-	-	-	-	32	32	32	36	36
Refrigerant - standard unit		R-134a, GWP=1430 following ARI4								
Circuit A	kg	130	130	180	175	120	120	115	115	110
	teqCO ₂	186	186	257	250	172	172	164	164	157
Circuit B	kg	-	-	-	-	120	120	120	115	110
	teqCO ₂	-	-	-	-	172	172	172	164	157
Capacity control		SmartVu™, inverter-driven compressor, electronic expansion valve (EXV)								
Minimum capacity	%	20	20	20	20	10	10	10	10	10
Evaporator		Multi-pipe flooded type								
Water volume	l	106	106	154	154	297	297	297	297	297
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type								
Water volume	l	112	112	165	165	340	340	340	340	340
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

ELECTRICAL DATA

30XW-V		580	630	810	880	1150	1280	1470	1570	1710
Power circuit										
Nominal power supply	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit		24 V via the built-in transformer								
Start-up current*	A	Lower than the operating current								
Maximum power factor**		0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93
Cosine phi		>0,98	>0,98	>0,98	>0,98	>0,98	>0,98	>0,98	>0,98	>0,98
Total harmonic distortion†	%	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45
Maximum power input***										
Circuit A	kW	155	193	222	246	155	193	222	222	246
Circuit B	kW	-	-	-	-	155	193	193	222	246
With option 81	kW	-	-	-	-	310	386	415	444	492
Eurovent current draw****										
Circuit A	A	175	200	240	265	175	200	240	240	265
Circuit B	A	-	-	-	-	175	200	200	240	265
With option 81	A	-	-	-	-	350	400	440	480	530
Maximum current draw (Un)***										
Circuit A	A	245	300	346	383	245	300	346	346	383
Circuit B	A	-	-	-	-	245	300	300	346	383
With option 81	A	-	-	-	-	490	600	646	692	766
Maximum current draw (Un -10%)***										
Circuit A	A	270	330	380	421	270	330	380	380	421
Circuit B	A	-	-	-	-	270	330	330	380	421
With option 81	A	-	-	-	-	540	660	710	760	842
Maximum power input with option 150B***										
Circuit A	kW	141	173	199	221	141	173	199	199	221
Circuit B	kW	-	-	-	-	141	173	173	199	221
With option 81	kW	-	-	-	-	282	346	372	398	442
Maximum current draw (Un) with option 150B***										
Circuit A	A	222	272	314	348	222	272	314	314	348
Circuit B	A	-	-	-	-	222	272	272	314	348
With option 81	A	-	-	-	-	444	544	586	628	696
Dissipated power†	W	3000	4200	4700	5300	6000	8400	8900	9400	10600

* Instantaneous start-up current

** This can vary as a function of the short-circuit current/maximum current ratio of the system transformer. Values obtained at operation with maximum unit power input.

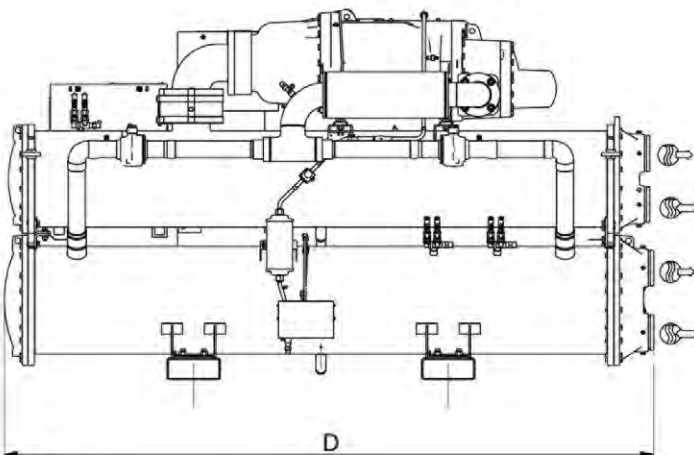
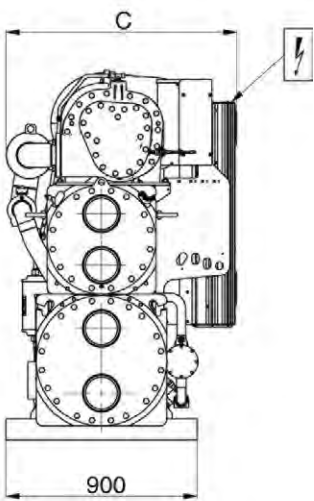
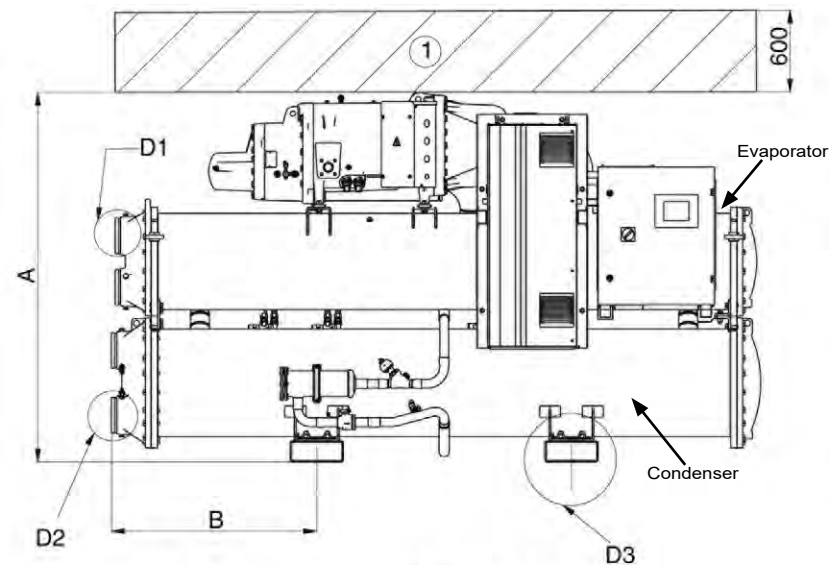
*** Values obtained at operation with maximum unit power input. Values given on the unit name plate.

**** Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C. Gross performances, not in accordance with EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

† Values obtained at operation with maximum unit power input.

DIMENSIONS/CLEARANCES

30XW-V 580-880



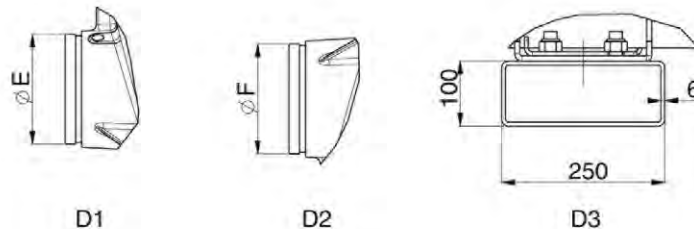
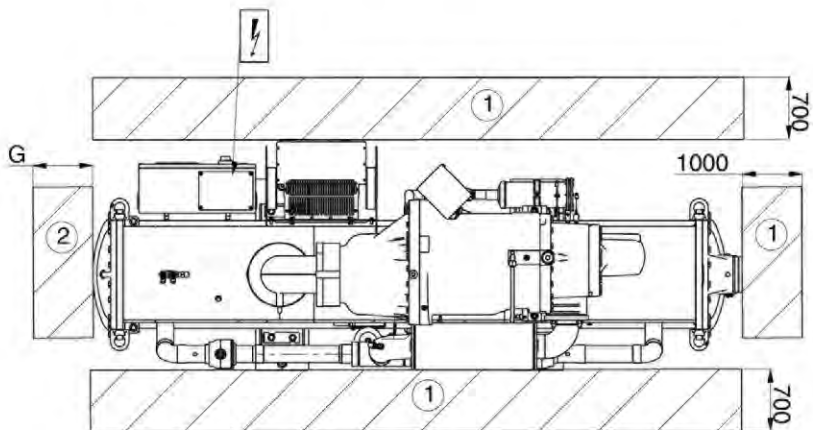
Dimensions in mm							
	A	B	C	D	E	F	G
30XW-V							
580	1743	968	1087	3059	168,3	168,3	2900
630	1743	968	1087	3059	168,3	168,3	2900
810	1950	1083	1237	3290	219,1	219,1	3100
880	1950	1083	1237	3290	219,1	219,1	3100

Legend:

All dimensions are in mm.

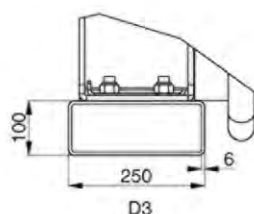
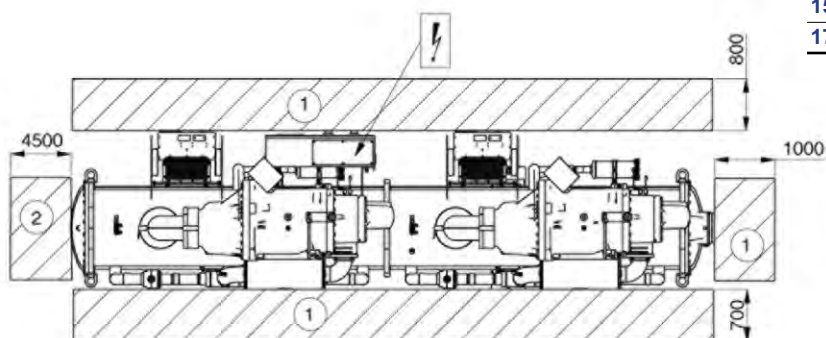
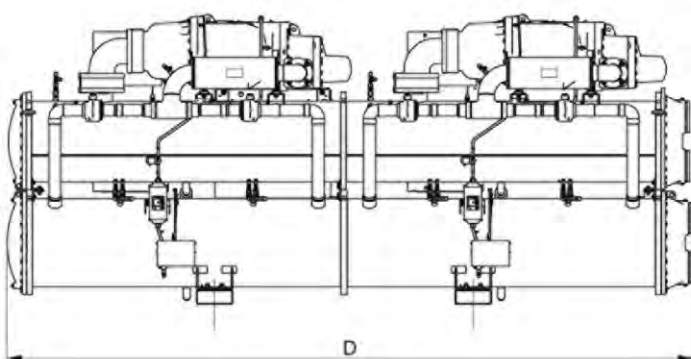
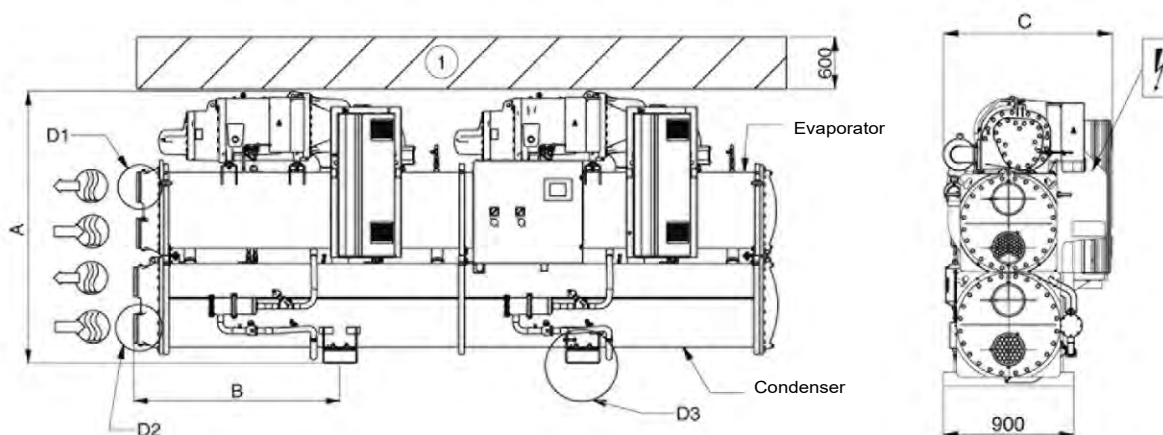
- ① Required clearance for maintenance
- ② Recommended clearance for tube removal
- Water inlet
- Water outlet
- Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.



DIMENSIONS/CLEARANCES

30XW-V 1150-1710



Dimensions in mm						
	A	B	C	D	E	F
30XW-V						
1150	1997	1514	1164	4730	219,1	219,1
1280	1997	1514	1164	4730	219,1	219,1
1470	2051	1514	1255	4730	219,1	219,1
1570	2051	1514	1255	4730	219,1	219,1
1710	2051	1514	1255	4730	219,1	219,1

Legend:

All dimensions are in mm.

- ① Required clearance for maintenance
- ② Recommended clearance for tube removal
- Water inlet
- Water outlet
- Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

WATER-COOLED SCREW CHILLERS



Low energy consumption

High reliability

Safe Design

Easy and fast installation

Minimised operating sound levels

Environmental care

30XW-PZE

AQUAFORCE
PUREtec

Nominal cooling capacity 269-1110 kW
Nominal heating capacity 319-1296 kW

The 30XW-PZE liquid chillers are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality.

The 30XW-PZE liquid chillers are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- R-1234ze refrigerant or R-515B
- Flooded heat exchangers that are mechanically cleanable
- Carrier SmartVu™ control with color touch screen user interface that includes 10 languages

The AquaForce PUREtec range is splitted into two versions:

- 30XW-PZE for air conditioning and refrigeration applications
- 30XWHPZE for heating applications

As standard, the unit can provide an evaporator leaving temperature down to 3,3°C, and when operating as a heat pump, it can deliver up to 55°C (70°C optional) on the condenser side.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- 30XW-PZE range is compliant with EU Eco-design Minimum Efficiency Performance Standards (MEPS) in cooling that apply from January 2021
- SEER 12/7°C up to 7.6 and SEPR 12/7°C up to 9.3
- 30XWHPZE range is compliant with EU Eco-design Minimum Efficiency Performance Standards (MEPS) in heating that apply from September 2015
- COP of up to 6.7 and SCOP up to 7.2
- The high energy efficiency is reached through:
 - Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
 - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
 - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
 - Economizer system with electronic expansion device for increased cooling capacity.

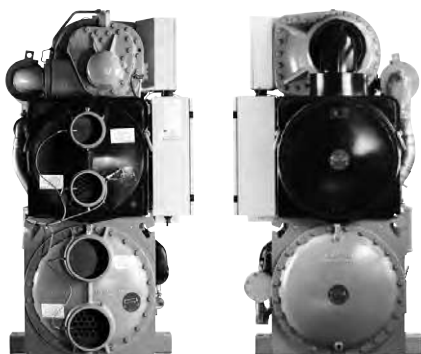
Low operating sound levels

- Standard unit features include:
 - Silencers on the compressors discharge line.
 - Silencers on the economiser return line.
 - Acoustic insulation on the components that are most subjected to radiated noise.
 - Option 257 further reduces the global unit sound level.

Easy and fast installation

- Compact design
 - The 30XW units are designed to offer the most compact dimensions on the market.
 - With a width of approximately 1 m up to 1300 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

Compact, accessible unit - side view - sizes up to 1300 KW



- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer to supply the integrated control circuit (400/24 V)
- Simplified hydraulic connections
 - Victaulic connections on the evaporator and condenser
 - Practical reference marks for entering and leaving water connections
 - Possibility to reverse the heat exchanger water inlet and outlet at the factory
 - Possibility to modify the number of heat exchanger passes
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care



- R-1234ze long-term refrigerant solution
 - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
 - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
 - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

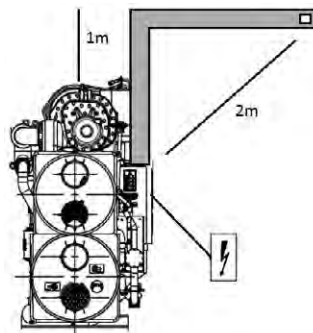
High reliability and easy servicing

- The 30XW units offer increased global performance as well as Carrier's acclaimed product quality and reliability.
- Major components are selected and tested with R-1234ze and R-515B refrigerant to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Non flammable use possible when selecting option 330, Low GWP A1 R-515 Refrigerant
- Screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuit
 - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
 - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure.
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

CUSTOMER BENEFITS

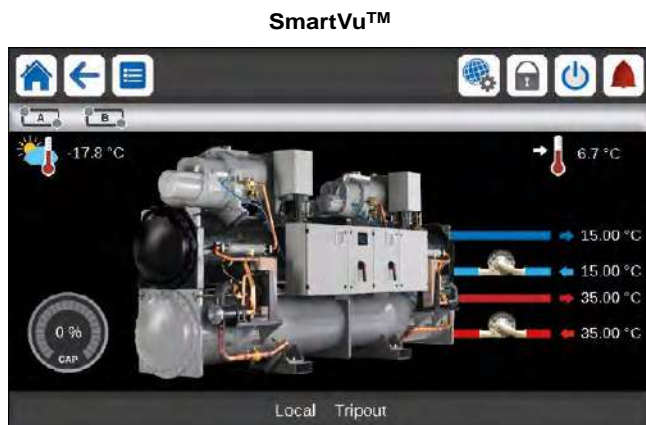
Safe Design

- Specific polyol ester oil qualified by Carrier for using with HFO-1234ze or R-515B to guarantee and maintain reliable bearing lubrication.
- Specific compressor gaskets compatible with HFO-1234ze or R-515B, tested and validated by Carrier.
- New relief valves designed for operation with HFO-1234ze or R-515B
- Specific electrical box with increased tightness and integrated blower that maintains positive air pressure to avoid any risk of ignition when using R-1234ze refrigerant.
- No need of ducted electrical cabinet fresh air supply when using option 330 - LOW GWP A1 R-515B refrigerant
- New control algorithms
- Specific documentation that contains all the installation, operation, maintenance and safety Instructions.



TECHNICAL INSIGHTS

SmartVu™ Control



- New innovative smart control features:
 - An intuitive and user-friendly, coloured, 7" interface
 - 10 languages available on choice: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation
- Energy management:
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - aintenance alert can be configured to days, months or hours of operation
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters

Remote Management (Standard)

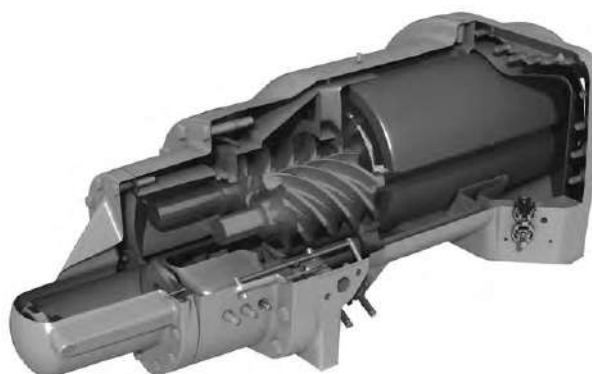
- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System anager or the Plant System anager (optional)
- The 30XWZE/30XWPZE also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: ndication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation

TECHNICAL INSIGHTS

Remote management (EMM option)

- The Energy management module (EMM) offers extended remote control possibilities:
- Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
- Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
- Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
- Time schedule override: Closing of this contact cancels the programmed time schedule.
- Out of service: This signal indicates that the chiller is completely out of service.
- Chiller capacity: This analogue output (0-10 gives an immediate indication of the chiller capacity.
- Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running

06T screw compressor



The Carrier 06T screw compressor designed for operation with HFO-1234ze and R-515B refrigerant benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	N°	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	301-1101
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	301-1101
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	801-1101
Evap. pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Evap. dual pumps power/control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Cond. pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	301-1101
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	301-1101
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	301-1101
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	301-1101
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	301-1101
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	301-1101
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	301-1101
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	301-1101
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	301-1101
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	301-1101
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	301-1101
High condensing temperature	150	Optimized compressor for operation at high condensing temperature	Increased condenser leaving water temperature up to 70°C. Allows applications with high condensing temperature (heat pumps, installations with not generously sized dry-coolers or more generally, installations with dry-coolers in hot climate). NOTE: to ensure control of the condenser leaving water temperature, this option must be fitted with 30XWH units.	301-1101
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	301-1101
Control for low cond. temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	301-1101

OPTIONS

Options	N°	Description	Advantages	Use
Dry-cooler control	154	Adaptation of the control box for communication with the dry-cooler via a bus. For dry cooler need to select the cabinet with option control cabinet manage by the chiller control	Easy system management, extended control capabilities of a remote dry-cooler	301-1101
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	301-1101
SmartVu™control, 7" user interface	158A	SmartVu™control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	301-1101
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	301-1101
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	301-1101
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	301-1101
Low noise level	257	Evaporator sound insulation	3 dB(A) quieter than standard unit	401-1101
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	301-1101
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	301-1101
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	301-1101
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	301-1101
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	301-1101
Free-cooling dry-cooler control	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, Extended control capabilities to a dryccoler used in Free Cooling mode	301-1101
Low GWP A1 R-515B refrigerant	330	Unit delivered with R-515B refrigerant charge (A1, GWP 299)	Reduced CO ₂ footprint (GWP < 300) A1 safety class Reduced installed cost in technical room	301-1101

PHYSICAL DATA, STANDARD UNITS

30XW-PZE			301	401	451	551	601	651	801	901	1001	1101
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Heating

Standard unit Full load performances*	HW1	Nominal capacity	kW	322	448	509	657	698	758	916	1012	1168	1297
		COP	kW/kW	6,12	6,55	6,47	6,63	6,48	6,47	6,52	6,49	6,50	6,30
	HW2	Nominal capacity	kW	318	439	500	646	686	741	900	991	1146	1271
		COP	kW/kW	4,66	4,94	4,88	4,99	4,85	4,89	4,95	4,92	4,95	4,80
	HW3	Nominal capacity	kW	315	433	494	638	678	725	890	976	1129	1251
		COP	kW/kW	3,65	3,82	3,80	3,84	3,74	3,80	3,83	3,82	3,86	3,73
Standard unit Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kW/kW	6,48	7,06	7,18	6,48	6,54	6,69	6,79	6,97	6,88	6,51
		η _{s heat} _{30/35°C}	%	251	274	279	251	254	259	264	271	267	252
	HW3	SCOP _{47/55°C}	kW/kW	4,55	5,22	5,21	4,49	4,60	4,76	5,07	5,09	4,95	4,62
		η _{s heat} _{47/55°C}	%	174	201	200	171	176	182	195	195	190	177
		P _{rated}	kW	411	540	615	795	845	908	1108	1218	1408	1562

Cooling

Standard unit Full load performances*	CW1	Nominal capacity	kW	271	385	435	561	595	648	783	874	1001	1111
		EER	kW/kW	5,28	5,75	5,66	5,80	5,66	5,69	5,74	5,83	5,80	5,65
	CW2	Nominal capacity	kW	375	538	610	764	813	880	1086	1220	1383	1522
		EER	kW/kW	8,00	8,15	7,99	8,55	8,17	8,33	8,10	8,13	8,27	8,13
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	6,43	7,03	7,35	6,54	6,65	6,97	7,10	7,59	7,61	7,14
		η _{s cool} _{12/7°C}	%	254	278	291	259	263	276	281	301	301	283
		SEPR _{12/7°C} Process high temp.	kWh/kWh	9,27	8,76	8,75	9,36	8,78	8,84	8,76	9,06	9,26	9,19

* In accordance with standard EN14511-3:2018

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W

η_{s heat}_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_{s heat}_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016

η_{s cool}_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application**



Eurovent certified values

PHYSICAL DATA, STANDARD UNITS

30XW-PZE		301	401	451	551	601	651	801	901	1001	1101
Sound levels - standard unit											
Sound power level ⁽¹⁾	dB(A)	93	97	97	97	97	97	100	100	100	100
Sound pressure level at 1 m ⁽²⁾	dB(A)	76	80	80	79	79	79	81	81	81	81
Sound levels - standard unit + option 257 ⁽³⁾											
Sound power level ⁽¹⁾	dB(A)	-	94	94	94	94	94	97	97	97	97
Sound pressure level at 1 m ⁽¹⁾	dB(A)	-	76	76	76	76	76	78	78	78	78
Dimensions - standard unit											
Length	mm	2724	3059	3059	3290	3290	3290	4730	4730	4730	4730
Width	mm	928	936	936	1069	1069	1069	1039	1039	1162	1162
Height	mm	1567	1743	1743	1950	1950	1950	1997	1997	2051	2051
Operating weight ⁽⁴⁾	kg	2157	3050	3050	3942	3977	3995	6932	7010	7665	7875
Compressors		Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A	-	1	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	-	-	1	1	1	1
Refrigerant - standard unit		R1234ze									
Circuit A	kg	78	130	130	180	175	170	120	120	130	130
	teq CO ₂	0,5	0,9	0,9	1,3	1,2	1,2	0,8	0,8	0,9	0,9
Circuit B	kg	-	-	-	-	-	-	120	120	150	130
	teq CO ₂	-	-	-	-	-	-	0,8	0,8	1,1	0,9
Refrigerant - option 330		R515B									
Circuit A	kg	79	132	132	183	178	173	122	122	132	132
	teq CO ₂	23,1	38,7	38,7	53,6	52,2	50,7	35,7	35,7	38,7	38,7
Circuit B	kg	-	-	-	-	-	-	122	122	152	132
	teq CO ₂	-	-	-	-	-	-	35,7	35,7	44,5	38,7
Oil - standard unit		HATCOL-4496									
Circuit A	l	20	20	20	25	25	25	20	20	25	25
Circuit B	l	-	-	-	-	-	-	20	20	20	25
Capacity control		SmartVu™, electronic expansion valves (EXV)									
Minimum capacity	%	25	30	30	15	15	20	15	15	15	10
Evaporator		Multi-pipe flooded type									
Water volume	l	61	101	101	154	154	154	293	293	321	321
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	103	103	148	148	148	316	316	340	340
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate

ELECTRICAL DATA, STANDARD UNITS

30XW-PZE		301	401	451	551	601	651	801	901	1001	1101
Power circuit											
Nom. power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current ⁽¹⁾											
Circuit A	A	303	414	414	587	587	587	414	414	587	587
Circuit B	A	-	-	-	-	-	-	414	414	414	587
Option 81	A	-	-	-	-	-	-	529	543	716	751
Maximum start-up current⁽²⁾											
Circuit A	A	303	414	414	587	587	587	414	414	587	587
Circuit B	A	-	-	-	-	-	-	414	414	414	587
Option 81	A	-	-	-	-	-	-	597	621	794	855
Cosine phi											
Nominal ⁽³⁾		0,79	0,86	0,87	0,85	0,87	0,89	0,86	0,87	0,85	0,85
Maximum ⁽⁴⁾		0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90
Total harmonic distortion ⁽⁴⁾	%	Closed to 0% (negligible)									
Maximum power input⁽⁵⁾											
Circuit A	kW	86	112	126	148	165	174	112	126	148	148
Circuit B	kW	-	-	-	-	-	-	112	126	126	148
Option 81	kW	-	-	-	-	-	-	224	252	274	296
Nominal current drawn⁽³⁾											
Circuit A	A	91	115	129	164	177	194	115	129	164	164
Circuit B	A	-	-	-	-	-	-	115	129	129	164
Option 81	A	-	-	-	-	-	-	230	258	293	328
Maximum current drawn (Un)⁽⁵⁾											
Circuit A	A	140	180	205	240	268	282	180	205	240	240
Circuit B	A	-	-	-	-	-	-	180	205	205	240
Option 81	A	-	-	-	-	-	-	360	410	445	480
Maximum current drawn (Un -10%)⁽⁴⁾											
Circuit A	A	153	196	223	261	292	307	196	223	261	261
Circuit B	A	-	-	-	-	-	-	196	223	223	261
Option 81	A	-	-	-	-	-	-	392	446	484	522
Maximum power input with option 150B⁽⁵⁾											
Circuit A	kW	76	97	110	129	146	153	97	110	129	129
Circuit B	kW	-	-	-	-	-	-	97	110	110	129
Option 81	kW	-	-	-	-	-	-	195	220	239	258
Maximum current drawn (Un) with option 150B⁽⁵⁾											
Circuit A	A	123	158	179	209	237	249	158	179	209	209
Circuit B	A	-	-	-	-	-	-	158	179	179	209
Option 81	A	-	-	-	-	-	-	316	358	388	418

- (1) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.
- (2) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.
- (3) Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.
- (4) Values obtained at operation with maximum unit power input.
- (5) Values obtained at operation with maximum unit power input. Values given on the unit nameplate.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES (OPTION 150)

30XW-ZE				301	401	451	551	601	651	801	901	1001	1101
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	319	462	516	642	697	771	912	1057	1159	1297
		COP	kW/kW	5,61	6,01	6,05	5,83	5,71	5,93	5,76	5,98	5,73	5,61
	HW2	Nominal capacity	kW	310	446	498	623	678	753	880	1018	1123	1260
		COP	kW/kW	4,59	4,93	4,97	4,8	4,7	4,91	4,74	4,93	4,74	4,66
	HW3	Nominal capacity	kW	302	433	482	605	661	734	853	983	1089	1223
		COP	kW/kW	3,78	4,05	4,09	3,95	3,88	4,06	3,89	4,06	3,94	3,88
	HW4	Nominal capacity	kW	293	420	467	585	645	715	828	950	1057	1186
		COP	kW/kW	3,07	3,29	3,32	3,21	3,16	3,29	3,15	3,29	3,21	3,18
Unit + option 150 Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	6,01	6,49	6,58	6,54	6,41	6,46	6,21	6,31	6,26	6,3
		η _s heat _{30/35°C}	%	232	251	255	254	248	250	240	244	242	244
	HW3	SCOP _{47/55°C}	kWh/kWh	4,84	4,97	5,05	4,95	4,91	4,99	4,77	4,87	4,84	4,89
		η _s heat _{47/55°C}	%	186	191	194	190	188	192	183	187	186	187
		Prated	kW	421	544	607	761	829	922	1073	1240	1371	1539
Cooling													
Unit + option 150 Full load performances*	CW1	Nominal capacity	kW	269	393	439	547	591	656	776	910	985	1101
		EER	kW/kW	4,86	5,2	5,27	5,07	4,95	5,18	5,05	5,34	5,03	4,94
	CW2	Nominal capacity	kW	352	538	605	725	782	877	1057	1251	1332	1466
		EER	kW/kW	5,58	6,44	6,4	6,24	6,12	6,42	6,23	6,45	6,16	6,06
Unit + option 150 Seasonal energy efficiency**	SEER _{12/7°C} Comfort low temp.		kWh/kWh	6,24	6,57	6,65	6,52	6,57	6,5	6,67	6,8	6,63	6,6
	η _s cool _{12/7°C}		%	247	260	263	258	260	257	264	269	262	261
	SEPR _{12/7°C} Process high temp.		kWh/kWh	6,80	7,01	7,07	7,39	6,97	6,99	6,96	7,23	7,11	7,30

* In accordance with standard EN14511-3:2018

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kW

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². kW

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². kW

HW4 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 55°C/65°C, evaporator and condenser fouling factor 0 m². kW

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016ηs heat_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016ηs cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

Eurovent certified values

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES (OPTION 150)

30XW-ZE		301	401	451	551	601	651	801	901	1001	1101
Sound levels - unit with option 150											
Sound power level ⁽¹⁾	dB(A)	93	97	97	100	100	100	100	100	103	103
Sound pressure level at 1 m ⁽²⁾	dB(A)	76	80	80	82	82	82	81	81	84	84
Sound levels - standard unit + option 257 ⁽³⁾											
Sound power level ⁽¹⁾	dB(A)	-	94	94	98	98	98	97	97	101	101
Sound pressure level at 1 m ⁽²⁾	dB(A)	-	76	76	80	80	80	78	78	82	82
Operating weight ⁽⁴⁾	kg	2157	3050	3050	4102	4147	4175	6932	7010	7844	8182
Compressors											
Semi-hermetic 06T screw compressors, 50 r/s											
Circuit A	-	1	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	-	-	1	1	1	1
Refrigerant - unit with option 150											
R1234ze											
Circuit A	kg	78	130	130	180	175	170	120	120	130	130
	teq CO ₂	0,5	0,9	0,9	1,3	1,2	1,2	0,8	0,8	0,9	0,9
Circuit B	kg	-	-	-	-	-	-	120	120	150	130
	teq CO ₂	-	-	-	-	-	-	0,8	0,8	1,1	0,9
Refrigerant - option 330											
R515B											
Circuit A	kg	79	132	132	183	178	173	122	122	132	132
	teq CO ₂	23,1	38,7	38,7	53,6	52,2	50,7	35,7	35,7	38,7	38,7
Circuit B	kg	-	-	-	-	-	-	122	122	152	132
	teq CO ₂	-	-	-	-	-	-	35,7	35,7	44,5	38,7
Oil - unit with option 150											
HATCOL-4496											
Circuit A	l	20	20	20	25	25	25	20	20	25	25
Circuit B	l	-	-	-	-	-	-	20	20	20	25
Capacity control											
SmartVu™, electronic expansion valves (EXV)											
Minimum capacity	%	30	30	30	20	20	25	15	15	15	10
Evaporator											
Multi-pipe flooded type											
Water volume	l	61	101	101	154	154	154	293	293	321	321
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser											
Multi-pipe flooded type											
Water volume	l	55	103	103	148	148	148	316	316	340	340
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES (OPTION 150)

30XW-PZE		301	401	451	551	601	651	801	901	1001	1101
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current ⁽¹⁾											
Circuit A	A	388	587	587	629	629	629	587	587	629	629
Circuit B	A	-	-	-	-	-	-	587	587	587	629
Option 81	A	-	-	-	-	-	-	712	725	767	815
Maximum start-up current ⁽²⁾											
Circuit A	A	388	587	587	629	629	629	587	587	629	629
Circuit B	A	-	-	-	-	-	-	587	587	587	629
Option 81	A	-	-	-	-	-	-	833	860	902	972
Cosine phi nominal ⁽³⁾		0,75	0,80	0,81	0,80	0,81	0,83	0,80	0,81	0,80	0,80
Cosine phi maximum ⁽⁴⁾		0,90	0,90	0,90	0,89	0,89	0,89	0,90	0,90	0,89	0,89
Total harmonic distortion ⁽⁴⁾	%	Closed to 0% (negligible)									
Maximum power input ⁽⁵⁾											
Circuit A	kW	107	144	158	202	219	228	144	158	202	202
Circuit B	kW	-	-	-	-	-	-	144	158	158	202
Option 81	kW	-	-	-	-	-	-	288	317	360	404
Nominal current drawn ⁽³⁾											
Circuit A	A	102	125	138	186	197	213	125	138	186	186
Circuit B	A	-	-	-	-	-	-	125	138	138	186
Option 81	A	-	-	-	-	-	-	250	276	324	372
Maximum current drawn (Un) ⁽⁵⁾											
Circuit A	A	174	234	257	328	356	371	234	257	328	328
Circuit B	A	-	-	-	-	-	-	234	257	257	328
Option 81	A	-	-	-	-	-	-	468	514	585	656
Max. current drawn (Un -10%) ⁽⁴⁾											
Circuit A	A	190	255	280	357	387	404	255	280	357	357
Circuit B	A	-	-	-	-	-	-	255	280	280	357
Option 81	A	-	-	-	-	-	-	510	560	637	714

(1) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

(2) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

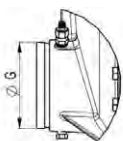
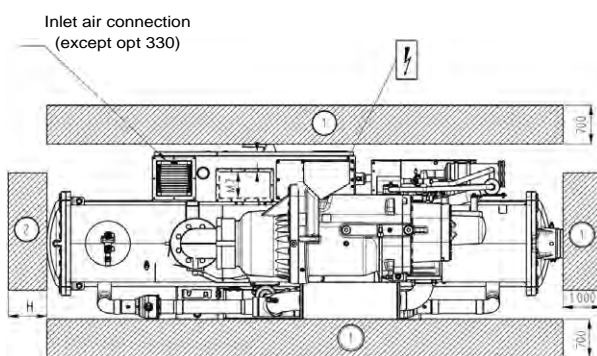
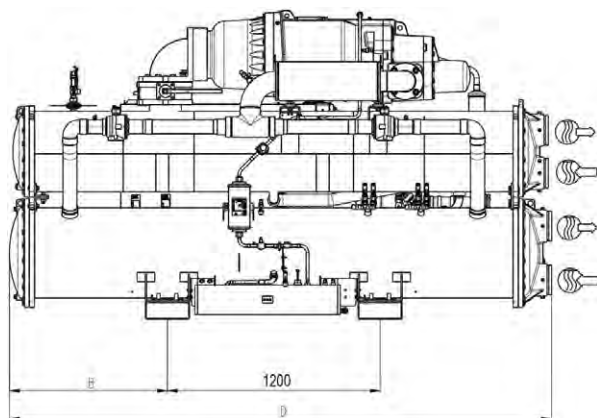
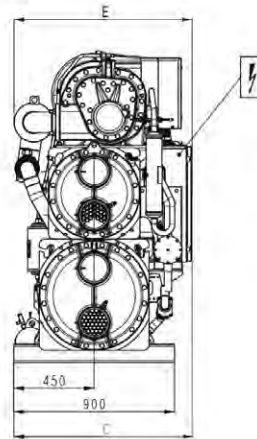
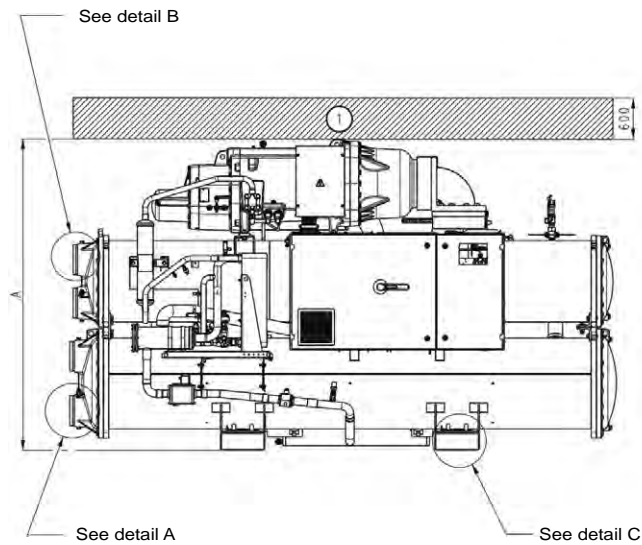
(3) Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

(4) Values obtained at operation with maximum unit power input.

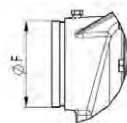
(5) Values obtained at operation with maximum unit power input. Values given on the unit nameplate.

DIMENSIONS/CLEARANCES

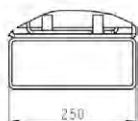
30XW-PZE 301-651



Detail A



Detail B



Detail C

Dimensions en mm								
	A	B	C	D	E	F	G	H
30XW-PZE								
301	1612	800	982	2724	983	141,3	141,3	2600
401	1743	968	980	3059	982	168,3	168,3	2800
451	1743	968	980	3059	982	168,3	168,3	2800
551	1950	1083	1080	3290	1180	219,1	219,1	3100
601	1950	1083	1080	3290	1180	219,1	219,1	3100
651	1950	1083	1080	3290	1180	219,1	219,1	3100
30XW-PZE (option 150)								
301	1612	800	982	2724	983	141,3	141,3	2600
401	1743	968	980	3059	982	168,3	168,3	2800
451	1743	968	1040	3059	1042	168,3	168,3	2800
551	1968	1083	1080	3290	1180	219,1	219,1	3100
601	1968	1083	1080	3290	1180	219,1	219,1	3100
651	1968	1083	1080	3290	1180	219,1	219,1	3100

Legend

All dimensions are given in mm

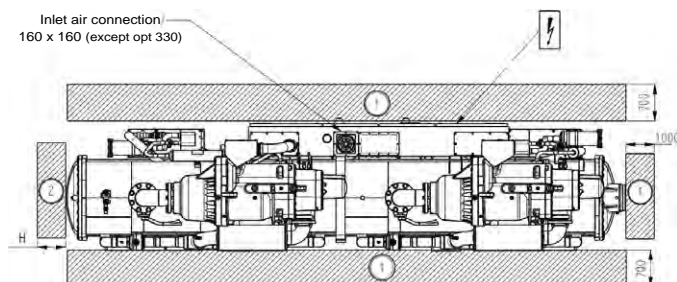
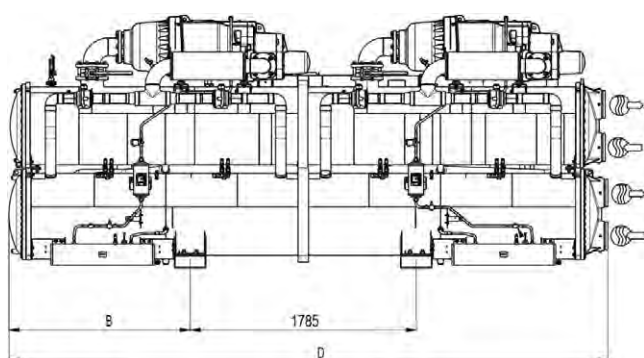
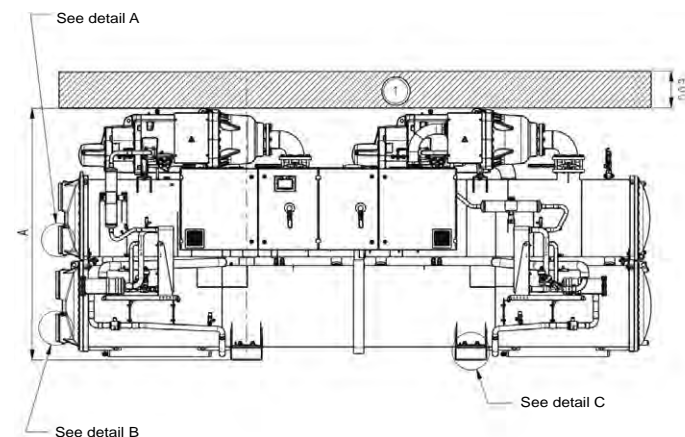
- ① → Services clearances required
- ② → Space required to remove cooler tubes
- Inlet water
- Outlet water
- Electrical supply entry

NOTES:

- Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.
- For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

DIMENSIONS/CLEARANCES

30XW-PZE 801-1101



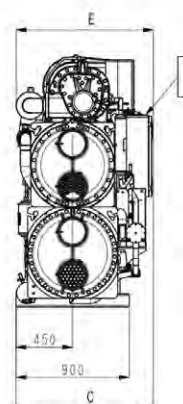
Detail A



Detail B






Detail C



Dimensions en mm								
	A	B	C	D	E	F	G	H
30XW-PZE								
801	1998	1512	1121	4730	1124	219,1	219,1	4500
901	1998	1512	1125	4730	1124	219,1	219,1	4500
1001	2051	1512	1238	4730	1238	219,1	219,1	4500
1101	2051	1512	1238	4730	1238	219,1	219,1	4500
30XW-PZE (option 150)								
801	1998	1512	1121	4730	1124	219,1	219,1	4500
901	1998	1512	1125	4730	1124	219,1	219,1	4500
1001	2070	1512	1238	4730	1238	219,1	219,1	4500
1101	2051	1512	1238	4730	1238	219,1	219,1	4500

Legend

All dimensions are given in mm

- ① → Services clearances required
- ② → Space required to remove cooler tubes
-  Inlet water
-  Outlet water
-  Electrical supply entry

NOTES:

- Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.
- For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

WATER-COOLED VARIABLE-SPEED SCREW CHILLERS



- Low energy consumption
- High reliability
- Safe Design
- Easy and fast installation
- Minimised operating sound levels
- Environmental care
- Designed to support green building design

30XW-VZE-A

Nominal cooling capacity 448-1243 kW
Nominal heating capacity 524-1485 kW

The 30XW-VZE water-sourced units are the premium solution for commercial and industrial applications where installers, consultants and building owners require maximum quality and optimal performances, especially at part load.

The 30XW-VZE units are designed to meet current and future requirements in terms of energy efficiency, versatility and compactness. They feature exclusive inverter-driven screw compressors - an evolution of the proven traditional Carrier twin-rotor screw compressor design. Other features include:

- the new SmartVu™ control
- mechanically cleanable flooded heat exchangers
- refrigerant R-1234ze or R-515B

The 30XW-VZE/30XWHVZE range is splitted into two versions:

- 30XW-VZE for air conditioning applications
- 30XWHVZE for heating applications

As standard, the unit can provide an evaporator leaving water temperature down to 3.3°C, and when operating as a heat pump, it can deliver up to 55°C on the condenser side.

AQUAFORCE
PUREtec



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

* Evaporator with aluminium jacket shown in the picture not standard - available as special order only

CUSTOMER BENEFITS

Low energy consumption

- The 30XW-VZE are designed for high performance both at full load and at part load.
 - Eurovent certified values per EN14511-3:2013: SEPR up to 10.7 and SEER up to 8.8
- High energy efficiency
 - Inverter-driven twin-rotor screw compressors allow precise capacity matching of building load changes and significantly reduce unit power input, especially at part-load.
 - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
 - Electronic expansion device permits operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Optimised electrical performance
 - All 30XW-VZE units comply with class 3 of standard EN61800-3. Category C3 refers to industrial environments. With option 282 category C2 compliance is possible.
 - Inverter-driven motors ensure negligible start-up current (value is lower than the maximum unit current draw)

High reliability

- The 30XW-VZE ranges offer increased global performance as well as Carrier's acclaimed product quality and reliability. Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Inverter-driven screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - The inverter is optimised for each compressor motor to ensure reliable operation and easy maintenance.
 - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuits
 - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
 - All components have been selected and tested with R-1234ze refrigerant and R-515B
- Evaporator
 - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling
 - Automatic compressor unloading in case of abnormally high condensing pressure or discharge temperature.
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard)

Safe Design

- Specific polyol ester oil qualified by Carrier for using with HFO-1234ze and R-515B to guarantee and maintain reliable bearing lubrication.
- Specific compressor gaskets compatible with HFO-1234ze and R-515B, tested and validated by Carrier.
- New relief valves designed for operation with HFO-1234ze and R-515B
- New control algorithms
- Specific documentation that contains all the installation, operation, maintenance and safety Instructions.
- No need of electrical cabinet ducted fresh air supply

Easy and fast installation

- Compact design
 - The 30XW-VZE units are designed to offer compact dimensions for easy installation.
 - With a width of approximately 1.25 m up to 1000 kW the units can pass through standard door openings and only require minimum floor space in the plant room.
- Simplified electrical connections
 - Transformer supply to the integrated control circuit (400/24 V)
- Simplified water connections
 - Victaulic connections on the evaporator and condenser
 - Practical reference marks for entering and leaving water connections
 - Possibility to reverse the heat exchanger water inlet and outlet at the factory
 - Possibility to modify the number of heat exchanger passes
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.
 - Non flammable use possible when selecting option 330, Low GWP A1 R-515B Refrigerant

Minimised operating sound levels

- The inverter technology used for the compressor motors minimises noise levels at part load operation. In two-compressor units at 25% of the maximum load the unit sound power level is reduced by 10 dB(A).
- Standard unit features include:
 - Silencers on the compressor discharge line.
 - Sound insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

CUSTOMER BENEFITS

Environmental care



- R-1234ze long-term refrigerant solution
 - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
 - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
 - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

Designed to support green building design

- A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment. The underlying principles of this approach: The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.
- The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year 30XWVZE units offers a solution to this important challenge.
- A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.
- The following example looks at how Carrier's new 30XWVZE range helps customers involved in LEED® building certification.

30XWVZE and LEED® certification

The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

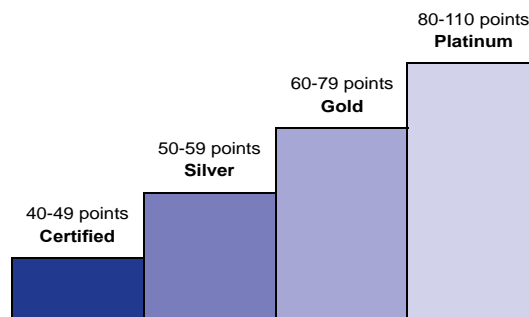
- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points

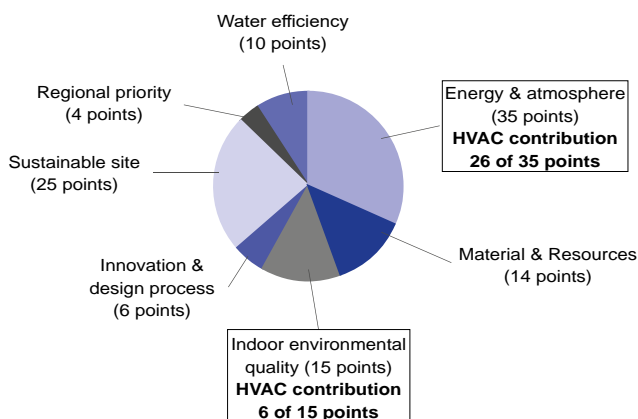


The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

Overview of LEED® for new construction and major renovations



The new 30XWVZE units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- **EA prerequisite 2: Minimum energy Performance**
The 30XWVZE exceeds the energy efficiency requirements of ASHRAE 90.1-2007; therefore it complies with the prerequisite standard.
- **EA prerequisite 3: Fundamental Refrigerant Management**
The 30XWVZE does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.

CUSTOMER BENEFITS

- **EA credit 1: Optimise energy performance (1 to 19 points)**
Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90.1-2007 reference. The 30XW-VZE, which is designed for high performance especially during part load operation, contributes reducing the energy consumption of the building and therefore helps gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.
- **EA credit 4: Enhanced refrigerant management (2 points)**
With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Global Warming Potential (GWP) of the system. The 30XWVZE uses HFO-1234ze refrigerant with Global Warming Potential Index below 1 and therefore contributes toward satisfying this credit under LEED®.

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30XWVZE. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

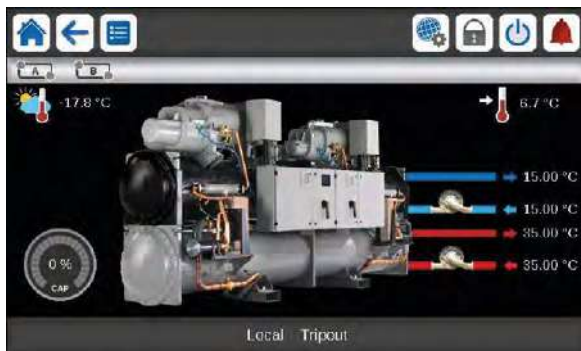
i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

TECHNICAL INSIGHTS

SmartVu™



- New innovative smart control features :
 - An intuitive and user-friendly, coloured, 7" interface
 - 1 languages available on choice :DE, EN, ES,FR,T,NL,PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Energy management :
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.
- Maintenance functions :
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation

- Advanced communication features :
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.

Remote Management (Standard)

- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System anager or the Plant System anager (optional).
- The chiller also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: indication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation.

TECHNICAL INSIGHTS

Remote management (EMM option)

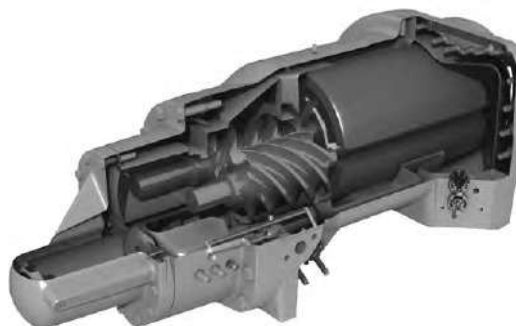
- The Energy management module (EMM) offers extended remote control possibilities:
- Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
- Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
- Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
- Time schedule override: Closing of this contact cancels the programmed time schedule.
- Out of service: This signal indicates that the chiller is completely out of service.
- Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
- Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

Remote management (EMM option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set point reset: ensures reset of the cooling set-point based on a 0-10 V signal
- Demand limit: permits limitation of the maximum chiller power or current based on a 0-10 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
- User safety: this contact can be used for any customer safety loop; opening the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status : set of outputs (as many as the compressors number) indicating which compressors are running.

New inverter-driven Thunderbolt screw compressor



- The Carrier 06T screw compressor designed for operation with HFO-1234ze refrigerant benefits from Carrier's long experience in the development of twin-rotor screw compressors. The design of the Thunderbolt compressors is based on the successful 06T screw compressor, core of the well-known Aquaforce series.
- Advanced control algorithms combine inverter frequency output with motor input logic to minimise mechanical part stress, resulting in best compression performance and high chiller reliability. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.
- Screw compressors use positive displacement principle to compress gases at higher pressure. As a result, in case of exceptional high temperature condenser side (due for example to water-pipes fouling or operation in harsh climate with an external dry-cooler) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode).
- The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.
- The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	N°	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	451-1301 (see dedicated paragraph)
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	451-1301
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	451-1301
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	451-1301
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	451-1301
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	451-1301
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	451-1301
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	451-1301
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	451-1301
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	451-1301
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	451-1301
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	451-1301
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	451-1301
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	451-1301
Control for low cond. temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	451-1301
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	451-1301
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	451-1301
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	451-1301
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	451-1301

OPTIONS

Options	N°	Description	Advantages	Use
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	451-1301
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	451-1301
Low noise level	257	Evaporator sound insulation	3 dB(A) quieter than standard unit	451-1301
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	451-1301
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	451-1301
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	451-1301
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	451-1301
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	451-1301
EMC classification C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Increase the variable frequency drive (VFD) immunity level according to first environment (so called, residential environment) requirements and allow its compliancy with emissions level required in category C2	451-1301
Fast Capacity Recovery	QM295	New software algorithms to allow quick restart and fast loading while preserving unit-reliability	Full capacity recovery in less than 5 minutes after power failure. Matches requirements of typical critical missions applications	451-1301
Compliance with Morocco regulation	327	Specifics documents according Morocco regulation	Conformance with Morocco regulations	451-1301
Low GWP A1 R-515B refrigerant	330	Unit delivered with R-515B refrigerant charge (A1, GWP 299)		451-1301

PHYSICAL DATA, 30XW-VZE UNITS

30XW-V ZE / 30XWHVZE				451	501	601	651	851	1001	1101	1201	1301	
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	523	581	730	780	1017	1157	1304	1450	1555	
		COP	kW/kW	6,3	6,14	6,04	5,92	6,27	6,29	6,12	5,74	5,61	
	HW2	Nominal capacity	kW	491	544	677	730	955	1081	1211	1344	1452	
		COP	kW/kW	4,74	4,6	4,55	4,39	4,73	4,73	4,67	4,42	4,28	
	HW3	Nominal capacity	kW	466	508	628	689	906	1007	1122	1242	1367	
		COP	kW/kW	3,52	3,41	3,42	3,24	3,51	3,5	3,52	3,39	3,22	
Standard unit Seasonal energy efficiency **	HW1	SCOP _{30/35°C}	kWh/kWh	7,64	7,39	7,62	7,57	7,45	7,4	7,17	6,64	6,56	
		η _s heat _{30/35°C}	%	298	288	297	295	290	288	279	257	254	
	HW3	SCOP _{47/55°C}	kWh/kWh	5,34	5,3	5,26	5,21	5,31	5,39	5,46	5,17	5,11	
		η _s heat _{47/55°C}	%	206	204	202	201	204	207	210	199	197	
		P _{rated}	kW	559	614	761	827	1086	1217	1361	1507	1645	
	Cooling												
Standard unit Full load performances*	CW1	Nominal capacity	kW	448	496	620	660	870	991	1115	1227	1312	
		EER	kW/kW	5,53	5,39	5,26	5,14	5,57	5,6	5,47	5,14	5,05	
		Eurovent class		A	A	A	A	A	A	A	A	A	
	CW2	Nominal capacity	kW	670	728	915	970	1301	1455	1296	1423	1521	
		EER	kW/kW	7,88	7,49	7,26	7,14	7,9	7,74	6,19	5,76	5,7	
		Eurovent class		A	A	A	A	A	A	A	A	A	
Standard unit Seasonal energy efficiency **	SEER _{12/7°C} Comfort low temp.		kWh/kWh	8,12	8,15	8,77	8,37	8,41	8,48	7,48	7,33	7,13	
	η _s cool _{12/7°C}		%	322	323	348	332	333	336	296	290	282	
	SEPR _{12/7°C} Process high temp.		kWh/kWh	10,49	10,23	10,42	10,03	10,71	10,71	9,66	9,12	9,10	
Sound levels - standard unit													
Sound power level ⁽¹⁾				dB(A)	103	103	103	103	104	104	104	104	104
Sound pressure level at 1 m ⁽²⁾				dB(A)	85	85	85	85	85	85	85	85	85
Sound levels - standard unit + option 257 ⁽³⁾													
Sound power level ⁽¹⁾				dB(A)	100	100	100	100	101	101	101	101	101
Sound pressure level at 1 m ⁽²⁾				dB(A)	82	82	82	82	82	82	82	82	82
Dimensions - standard unit													
Length				mm	3059	3059	3290	3290	4730	4730	4730	4730	4730
Width				mm	1087	1087	1237	1237	1164	1164	1264	1264	1264
Height				mm	1743	1743	1948	1948	1997	1997	2051	2051	2051

* In accordance with standard EN14511-3:2018

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kWHW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². kWHW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². kWCW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/WCW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/Wη_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016η_s heat_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**SEPR_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application**(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) in dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate



Eurovent certified values

PHYSICAL DATA, 30XW-VZE UNITS

30XW-V ZE / 30XWHVZE		451	501	601	651	851	1001	1101	1201	1301
Operating weight⁽⁴⁾	kg	3223	3261	4263	4267	7477	7553	7731	7932	7970
Compressors		Semi-hermetic 06T screw compressors, 60 r/s								
Circuit A	-	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	1	1	1	1	1
Oil - standard unit		HATCOL-4496								
Circuit A	l	20	20	25	25	20	20	25	25	25
Circuit B	l	-	-	-	-	20	20	20	25	25
Refrigerant - standard unit		R1234ze (E)								
Circuit A	kg	130	130	180	175	120	120	115	115	110
	teq CO ₂	0,9	0,9	1,3	1,2	0,8	0,8	0,8	0,8	0,8
Circuit B	kg	-	-	-	-	120	120	120	115	110
	teq CO ₂	-	-	-	-	0,8	0,8	0,8	0,8	0,8
Capacity control		SmartVu™, inverter-driven compressor, electronic expansion valve (EXV)								
Minimum capacity	%	20	20	20	20	10	10	10	10	10
Evaporator		Multi-pipe flooded type								
Water volume	l	106	106	154	154	297	297	297	297	297
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type								
Water volume	l	112	112	165	165	340	340	340	340	340
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate

ELECTRICAL DATA

30XW-VZE /30XWHVZE		451	501	601	651	851	1001	1101	1201	1301
Power circuit										
Nominal power supply	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit		24 V via the built-in transformer								
Start-up current⁽¹⁾	A	Negligible (lower than maximum current drawn)								
Maximum power factor⁽²⁾		0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93
Cosine phi		> 0,98	> 0,98	> 0,98	> 0,98	> 0,98	> 0,98	> 0,98	> 0,98	> 0,98
Harmonic distortion rate⁽³⁾	%	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45
Maximum power input⁽⁴⁾										
Circuit A	kW	125	157	189	208	125	157	189	189	208
Circuit B	kW	-	-	-	-	125	157	157	189	208
With option 81	kW	-	-	-	-	250	314	346	378	416
Eurovent current draw*										
Circuit A	A	129	148	180	197	129	149	180	180	197
Circuit B	A	-	-	-	-	129	149	149	180	197
With option 81	A	-	-	-	-	258	298	329	360	394
Maximum current draw (Un)⁽⁴⁾										
Circuit A	A	195	245	295	325	195	245	295	295	325
Circuit B	A	-	-	-	-	195	245	245	295	325
With option 81	A	-	-	-	-	390	490	540	590	650
Maximum current draw (Un -10%)⁽³⁾										
Circuit A	A	206	260	313	345	206	260	313	313	345
Circuit B	A	-	-	-	-	206	260	260	313	345
With option 81	A	-	-	-	-	412	520	573	626	690
Maximum power input with option 150B⁽⁴⁾										
Circuit A	kW	106	134	161	177	106	134	161	161	177
Circuit B	kW	-	-	-	-	106	134	134	161	177
With option 81	kW	-	-	-	-	212	268	295	322	354
Maximum current draw (Un) with option 150B⁽⁴⁾										
Circuit A	A	169	213	257	283	169	213	257	257	283
Circuit B	A	-	-	-	-	169	213	213	257	283
With option 81	A	-	-	-	-	338	426	470	514	566
Dissipated power⁽³⁾	W	3000	4200	4700	5300	6000	8400	8900	9400	10600

(1) Instantaneous start-up current.

(2) May vary, based on the short-circuit current/max. current draw ratio of the system transformer. Values obtained at operation with maximum unit power input.

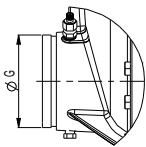
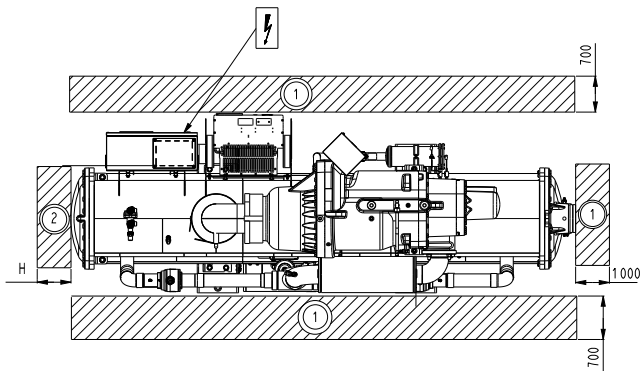
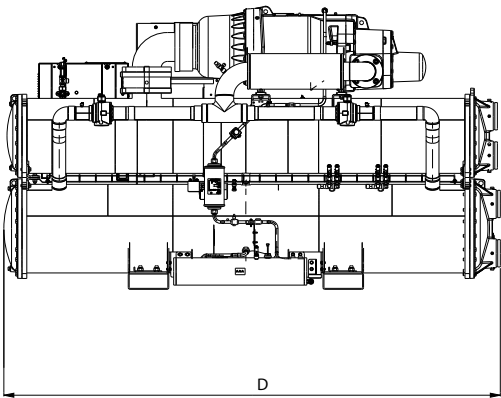
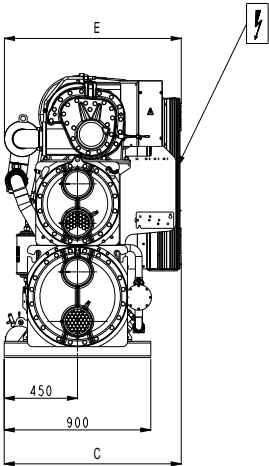
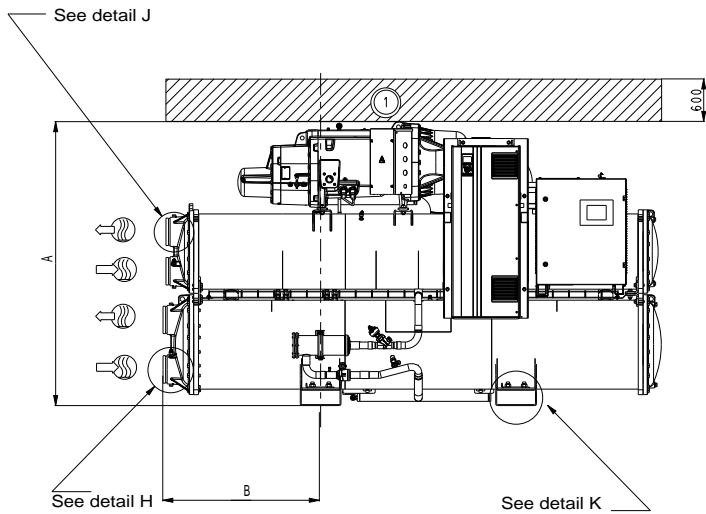
(3) Values obtained at operation with maximum unit power input.

(4) Values obtained at operation with maximum unit power input. Values given on the unit name plate.

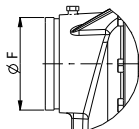
* Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C. Gross performances, not in accordance with EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

DIMENSIONS/CLEARANCES

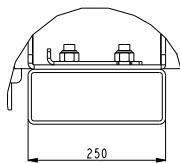
30XW-VZE 451-651



Detail H



Detail J



Detail K

Dimensions in mm								
	A	B	C	D	E	F	G	H
30XW-VZE								
451	1743	968	1087	3059	1086	168,3	168,3	2800
501	1743	968	1087	3059	1086	168,3	168,3	2800
601	1948	1083	1137	3290	1237	219,1	219,1	3100
651	1948	1083	1137	3290	1237	219,1	219,1	3100

Legend

All dimensions are given in mm

- ① → Services clearances required
- ② → Space required to remove
- Inlet water
- Outlet water
- Electrical supply entry

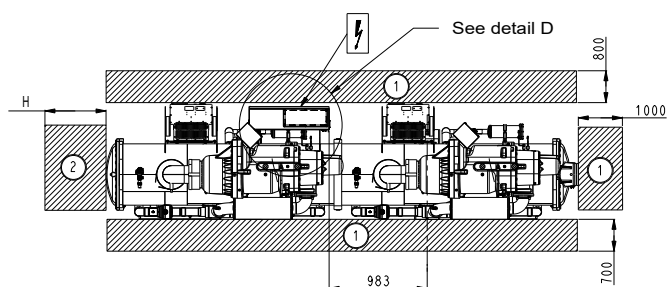
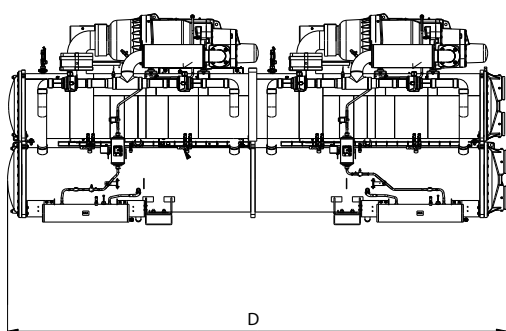
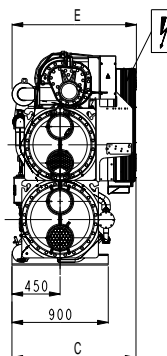
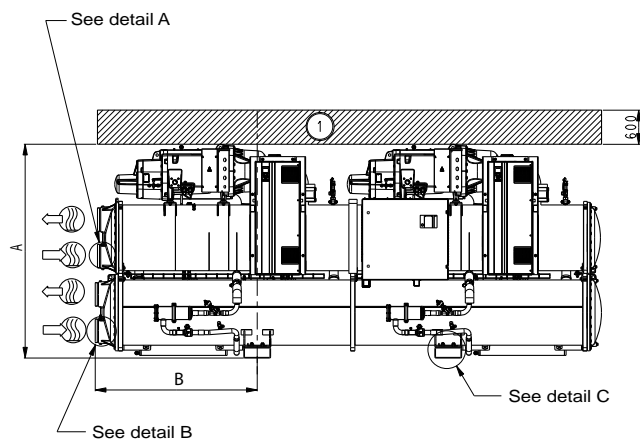
NOTES:

Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

DIMENSIONS/CLEARANCES

30XW-VZE 851-1301



Dimensions in mm								
	A	B	C	D	E	F	G	H
30XW-VZE								
851	1998	1514	1164	4730	1162	219,1	219,1	4500
1001	1998	1514	1164	4730	1162	219,1	219,1	4500
1101	2051	1514	1164	4730	1264	219,1	219,1	4500
1201	2051	1514	1164	4730	1264	219,1	219,1	4500
1301	2051	1514	1164	4730	1264	219,1	219,1	4500

Legend

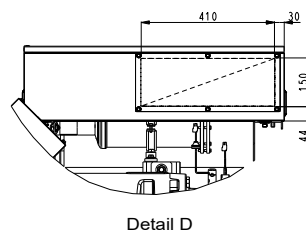
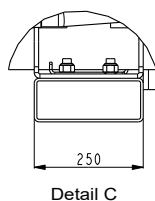
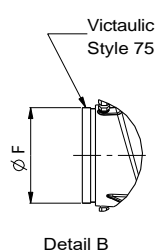
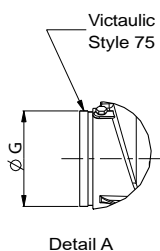
All dimensions are given in mm

- ① → Services clearances required
- ② → Space required to remove
- Inlet water
- Outlet water
- Electrical supply entry

NOTES:

Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.



WATER CHILLERS HEAT PUMP



- Energy excellence
- Compact and reliable
- Twin-turbine centrifugal compressors
- Oil-Free compressors
- Flooded shell and tubes evaporator
- Self-adjusting electronic control
- Touch screen control interface

19PV

AQUAEDGE.

Cooling capacity 550-1600 kW
Heating capacity 650-1875 kW

The latest generation of **19PV** water chillers and water-to-water heat pumps are the perfect solution for all heating and cooling applications in the Office, Healthcare, Industry, Administration, Shopping centers, data centers and Collective Housing markets.

19PV is optimised to use ozone-friendly HFC R134a refrigerant.

This range guarantees compliance with the most demanding requirements for high energy efficiency and CO₂ reduction to comply with the various applicable European directives and regulations.

When producing chilled water, these units can be connected to a drycooler or a water cooling tower.

With the heat pump option, the units can produce hot water for heating applications. They can also be used in cooling mode by reversing the cycle on the hydronic circuits using a set of valves (hydraulic valves not supplied).



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

DESCRIPTION

■ 19PV, series

Very High Efficiency cooling or heating version

The product is optimised to meet the most demanding technical and economic requirements.

The product is optimised for very high energy efficiency applications for which optimum seasonal performance SEER values are required, ensuring operating costs are kept to a minimum.

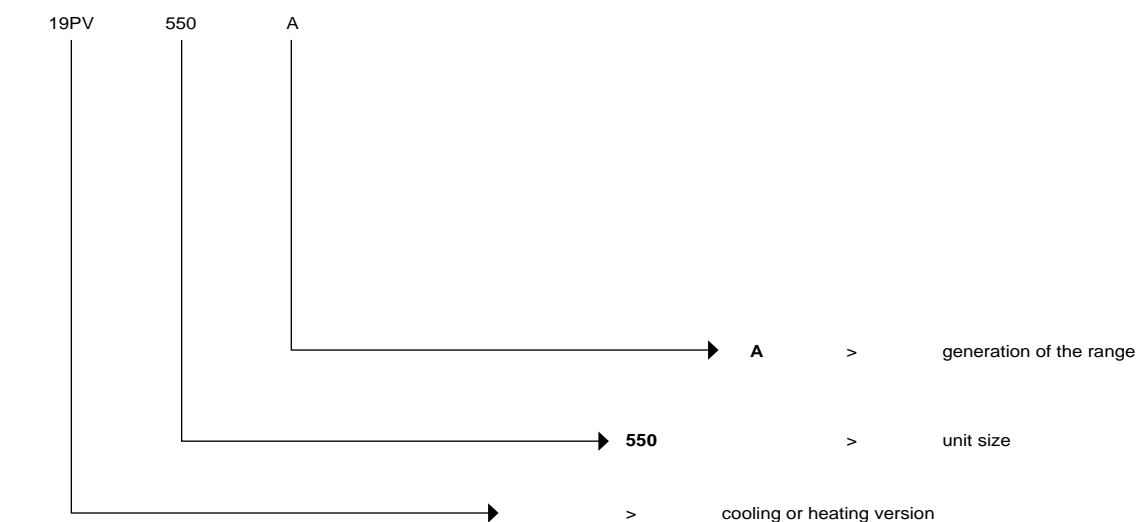
19PV units are packaged machines supplied as standard with the following components:

- Maglev centrifugal semi-hermetic compressors
- No oil
- Shell and tube type chilled-water evaporator
- Shell and tube type hot water condenser
- Electrical power and remote control cabinet:
 - 400 V-3ph-50 Hz general power supply (+/-10%) + Earth
 - transformer fitted as standard on the machine for supplying the remote control circuit with 24 V
- Touch'Pilot electronic control module
- Casing for indoor installation

The entire 19PV range complies with the following EC directives and standards:

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2014/30/EU
- EMC immunity and emissions EN 61800-3 'C2'
- Low Voltage Directive 2014/35/EU
- RoHS 2011/65/EU
- Pressure Equipment Directive (PED) 2014/68/EU
- Machinery Directive EN 60-204 -1
- Refrigeration systems and heat pumps EN 378-2.
- Regulation (EU) 2016/2281 implementing Directive 2009/125/EC with regard to ecodesign requirements

DESIGNATION



DESCRIPTION OF THE COMPONENTS

Twin-turbine centrifugal compressors,

- 2 Stages centrifugal compressors
- Optimized for R134a refrigerant
- Oil-free type
- Noiseless, vibration less via Magnetic levitation
- Compression ratio: from 1.5 to 5.0
- High efficiency permanent-magnet synchronous inverter motor.
- Linear step less capacity control via integrated inverter motor (up to 36000 rpm)
- Compressor equipped with Inlet Guide Valve at the turbine suction
- Compressor capacity control by successive use of speed variation swept volume variation at the turbine
- Integrated Soft- Start system (starting current limited to 5A)
- High Power Factor motor ($\cos\phi > 0.9$ for main operating conditions)
- Motor and electronic power section cooled by refrigerant
- Full electronic protection of motor against thermal and electrical overload via Internal sensors
- Rotation direction, no phase, under voltage, over voltage and power failure control
- Sensor on refrigerant suction and discharge for temperature monitoring
- Degree of protection: IP54

Shell and tube evaporator

- High performance glandless technology
- Copper tube bundle with internal and external grooves
- 19 mm thermal insulation
- Victaulic type coupling
- Maximum pressure, water side, of 10 bar.

Shell and tube condenser

- Copper tube bundle with internal and external grooves
- 19 mm thermal insulation (option)
- Built-in oil separator
- Victaulic type coupling
- Maximum pressure, water side, of 10 bar.

Refrigerant accessories

- Dehumidifier filters with rechargeable cartridges
- Hygroscopic sight glasses
- Electronic expansion valves
- Check-valve to prevent fluid recirculation in the compressor during transition phase

Regulation and safety instruments

- High and low pressure sensors
- Safety relief valves on refrigerating circuit
- High pressure switch on each compressor
- Evaporator antifreeze protection sensor
- Chilled water and hot water control sensors
- Electronic evaporator water circulation controller

Electrical cabinet

- Electrical cabinet index of protection IP23
- Safety disconnect switch
- 24 V control circuit
- Remote control transformer circuit
- Protection of the power and control circuits
- Touch'Pilot microprocessor-controlled electronic control module
- Electrical cabinet wire numbers
- Location of main components
- EMC filters and line reactors
- Door contact protection

Touch'Pilot control module

- User interface with 7 inch touchscreen
- Intuitive, user-friendly navigation using icons
- Clear information display in 10 languages (English, Spanish, French, German, Dutch, Turkish, Italian, Portuguese, Russian +1 Free)



The electronic control module performs the following main functions:

- regulation of the chilled water temperature (at the return or at the outlet)
- regulation of the water temperature based on the outdoor temperature (water law)
- regulation for low temperature energy storage
- second setpoint management
- complete management of compressors with start-up sequence, timer and operating time balancing
- self-regulating and proactive functions with adjustment of settings on drift control
- continuous power control slide system on the compressors according to the thermal requirements
- management of compressor short cycle protection
- phase reversal protection
- management of occupied/unoccupied modes (according to the time schedule)
- equalisation of compressor operating hours
- condensing temperature limitation (Option 152)
- diagnosis of fault and operating statuses
- management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
- blackbox memory
- master/slave management of two machines with equalisation of operating hours and automatic switching in case of a machine fault
- weekly and hourly time schedule for the machine, including 16 periods of absence
- display of all machine parameters (3 access levels, User/Maintenance/Factory, password-protected): temperature, setpoints, pressures, flow rate, operation time.
- display of trend curves for the main values
- storage of maintenance manual, wiring diagram and spare parts list.

Unit construction

- Electrical cabinet in light grey (RAL 7035)

DESCRIPTION OF THE COMPONENTS

Remote management

TouchPilot is equipped as standard with an ETHERNET (IP) connection, offering a range of options for remote management, monitoring and diagnostics.

Using the integrated Webserver, a simple internet connection uses the unit's IP address to access the TouchPilot interface on the PC, facilitating everyday management tasks and maintenance operations.

Numerous communication protocols are available: MODBUS/JBUS TC/IP as standard, BACNET IP optional, enabling integration with most CMS/BMS

Several contacts are available as standard, enabling the machine to be controlled remotely by wired link:

- automatic operation control: when this contact is open, the machine stops
- setpoint 1/setpoint 2 selector: when this contact is closed, a second cooling setpoint is activated (energy storage or unoccupied mode, for example)
- heating/cooling operating mode selection
- fault reporting: this contact indicates the presence of a major fault which has caused one or both refrigerating circuits to stop
- operational status reporting indicates that the unit is in production mode
- Condenser flow switch
- setpoint adjustable via 4-20 mA signal: this input is used to adjust the active setpoint.
- power limitation adjustable by 4-20 mA signal
- power indication: analogue output (0-10 V) providing an indication of the unit's load rate.
- user fault reporting enables integration of a fault in the water loop
- general fault reporting: this contact indicates that the unit has stopped completely
- User interlock (open=unit shuts down / closed = enable to operate)
- alert reporting: this contact indicates the presence of a minor fault which has not caused the circuit affected to stop.
- end of storage signal: enables return to the second setpoint at the end of the storage cycle
- schedule override: closing this contact cancels the time schedule.
- Evaporator pump control (control by 0-10V command)

Direct access to technical literature

- Instruction manual
- Electrical diagram
- Spare parts list



Web server integrate
as standard

IP address



Remote management via web server
Connection to RJ port
Connection via IP address
All the HMI functionalities available on the PC
Simplified remote monitoring



E-mail alerts
(2 addresses)

Maintenance alert as standard

TouchPilot has two maintenance reminder functions as standard, making users aware of the need to regularly perform maintenance operations and to guarantee the service life and performance of the unit. These two functions can be activated independently.

A reminder message appears on the unit's HMI screen, and stays there until it is acknowledged by the maintenance operator. The information and alert relating to these functions are available on the communication bus to be used on the CMS/BMS.

- the scheduled maintenance reminder: when activated, this function enables the period between two maintenance inspections to be set. This period may be set by the operator in either days, months or operating hours, depending on the application.
- the compulsory F-GAS sealing test maintenance reminder: when activated, this function, which is the default factory setting, enables the period between two sealing tests to be selected, according to the refrigerant charge, in compliance with the F-GAS regulations.

OPTIONS

Option	No.	Description	Advantage	Use 19PV
Low noise level	15	Discharge piping acoustic insulation	Up to 3 dB(A) quieter than standard unit	0550-1600
Master/slave operation	58A	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel over Ethernet network (IP)	Optimised operation of two units connected in parallel operation with operating time equalisation	0550-1600
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	0900-1600
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	0550-1180
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	0550-1180
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications)	0550-1600
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	0550-1600
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	0550-1600
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	0550-1600
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	0550-1600
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	0550-1600
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	0550-1600
Control for low cond. temperature	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensation)	0550-1600
Dry-cooler control	154	Remote control of 09PE or 09VE dry-cooler based on a 0-10V signal. The 09PE or 09VE dry-cooler shall be selected with control cabinet option	Easy system management, extended control capabilities of a remote dry-cooler	0550-1600
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	0550-1600
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	0550-1600
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	0550-1600
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	0550-1600
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	0550-1600
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	0550-1600
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	0550-1600
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	0550-1600
Free-cooling dry-cooler control	313	Remote control of 09PE or 09VE dry-cooler based on a 0-10V signal. The 09PE or 09VE dry-cooler shall be selected with control cabinet option	Easy system management, extended control capabilities of a remote dry-cooler used in free-cooling mode	0550-1600
Heat Pump application	322	Unit configured for Heat Pump application, includes thermal condenser insulation	Optimisation on heating mode & minimize thermal dispersions condenser side	0550-1600

STANDARD UNIT TECHNICAL CHARACTERISTICS

19PV				550	720	800	900	1010	1180	1300	1450	1600
Heating												
Standard unit Full load performances*	HW1	Nominal capacity	kW	649	844	939	1050	1198	1389	1538	1700	1875
		COP	kW/kW	6,13	6,26	5,93	5,79	5,89	5,76	5,97	5,89	5,67
	HW2	Nominal capacity	kW	629	817	915	1039	1186	1351	1491	1648	1820
		COP	kW/kW	4,89	4,81	4,63	4,68	4,68	4,53	4,72	4,62	4,50
Standard unit Seasonal energy efficiency**		SCOP _{30/35°C}	kW/kW	7,43	7,42	7,35	7,30	7,23	6,82	6,90	6,47	6,54
		ηs heat _{30/35°C}	%	289	289	286	284	281	265	268	251	254
		P _{rated}	kW	763	993	1103	1235	1409	1634	1809	2001	2203
Cooling												
Standard unit Full load performances*	CW1	Nominal capacity	kW	550	717	791	880	1007	1167	1302	1442	1578
		EER net	kW/kW	5,39	5,53	5,18	5,02	5,15	5,13	5,38	5,42	5,13
		Eurovent class		A	A	A	B	A	A	A	A	A
		EER gross***		5,55	5,70	5,32	5,14	5,30	5,33	5,63	5,69	5,39
	CW2	Nominal capacity	kW	631	823	917	1014	1134	1348	1441	1638	1794
		EER net	kW/kW	8,00	8,43	7,79	7,61	7,86	7,80	8,04	8,11	7,49
		Eurovent class		A	A	A	A	A	A	A	A	A
		EER gross***		8,41	8,88	8,19	7,94	8,25	8,37	8,68	8,78	8,17
Standard unit Seasonal energy efficiency**	SEER _{12/7°C} Comfort low temp.		kW/kW	9,70	9,55	9,54	9,79	9,59	9,49	9,50	9,48	9,14
	ηs cool _{12/7°C}		%	385	379	379	389	381	377	377	376	363
	SEPR _{12/7°C} Process high temp.		kWh/kWh	9,48	10,31	9,78	9,05	9,26	9,44	9,49	9,75	9,32
	ESEER		kW/kW	8,55	8,47	8,40	8,70	8,21	8,15	8,00	8,04	7,93
	ESEER gross***		kW/kW	9,74	9,62	9,48	9,79	8,96	9,66	9,51	9,74	9,77
Sound levels												
standard unit												
Sound power ⁽¹⁾			dB(A)	89	92	94	92	94	95	94	95	97
Sound pressure at 10 m ⁽²⁾			dB(A)	57	60	62	60	62	63	62	63	65
Dimensions												
Standard unit												
Length			mm	3140	3160	3360	4345	4345	4345	4800	4800	4800
Width			mm	1270	1310	1335	1385	1385	1385	1385	1390	1410
Height			mm	1780	1880	1965	2036	2036	2036	2000	2050	2100
Operating weight ⁽³⁾												
Standard unit			kg	2402	2930	3376	4831	4855	4904	5504	6164	6730
Compressors				MagLev compressor TT300 / TT350								
Circuit A				2	2	2	1	1	1	2	2	2
Circuit B				-	-	-	2	2	2	2	2	2

- * In accordance with standard EN14511-3:2013.
- ** In accordance with standard EN14825:2013, average climate
- *** Values not Eurovent certified. Calculation without the impact of the exchanger pressure drop.
- HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kW
- HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². kW
- CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kW
- CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kW
- η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
- SEPR_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application**
- (1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
- (3) Values are guidelines only. Refer to the unit name plate.



Eurovent certified values

STANDARD UNIT TECHNICAL CHARACTERISTICS

19PV		550	720	800	900	1010	1180	1300	1450	1600
Refrigerant⁽³⁾		R-134a								
Circuit A	kg	95,0	120,0	140,0	100,0	100,0	100,0	125,0	135,0	150,0
	teqCO ₂	135,9	171,6	200,2	143,0	143,0	143,0	178,8	193,1	214,5
Circuit B	kg	-	-	-	125,0	125,0	125,0	125,0	135,0	150,0
	teqCO ₂	-	-	-	178,8	178,8	178,8	178,8	193,1	214,5
Capacity control		Touch'Pilot, electronic expansion valves (EXV)								
Minimum capacity	%	15	10	10	10	10	10	10	10	10
Evaporator		Flooded multi-pipe type								
Water volume	l	115	165	180	285	285	285	330	330	365
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Flooded multi-pipe type								
Water volume	l	145	157	187	308	308	308	339	487	487
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

(3) Values are guidelines only. Refer to the unit name plate.

ELECTRICAL DATA NOTES FOR STANDARD UNITS

19PV		550	720	800	900	1010	1180	1300	1450	1600
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via the built-in transformer								
Maximum operating input power⁽¹⁾- Standard unit										
Circuit 1 ^(a)	kW	140	201	230	76	116	111	133	187	222
Circuit 2 ^(a)	kW	-	-	-	152	152	222	204	187	222
Unit with option 81	kW	-	-	-	229	269	333	337	375	445
Power factor at maximum power ⁽¹⁾		0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92
Total Harmonic Distortion Intensity	%	<45	<45	<45	<45	<45	<45	<45	<45	<45
Nominal operating current draw⁽²⁾- Standard unit										
Circuit 1 ^(a)	A	162	208	244	93	129	119	151	210	243
Circuit 2 ^(a)	A	-	-	-	185	187	237	229	210	243
Unit with option 81	A	-	-	-	278	315	356	380	420	486
Maximum operating current draw (Un)⁽¹⁾- Standard unit										
Circuit 1 ^(a)	A	220	315	361	119	183	174	209	294	349
Circuit 2 ^(a)	A	-	-	-	239	239	349	319	294	349
Unit with option 81	A	-	-	-	358	422	523	528	588	697
Maximum current (Un-10%)⁽¹⁾- Standard unit										
Circuit 1 ^(a)	A	237	340	390	129	197	188	225	318	377
Circuit 2 ^(a)	A	-	-	-	258	258	377	345	318	377
Unit with option 81	A	-	-	-	387	456	565	570	635	753
Maximum start-up current(Un) - Standard unit⁽³⁾		Lower than max current								
Dissipated power of electrical equipment ⁽¹⁾	W	782	1249	1249	1144	1347	1814	1884	2351	2351

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C

(3) Start-up current is limited by the soft-start controller included in the compressor.

(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B

Note: Options 84 and 84R are not included in these values.

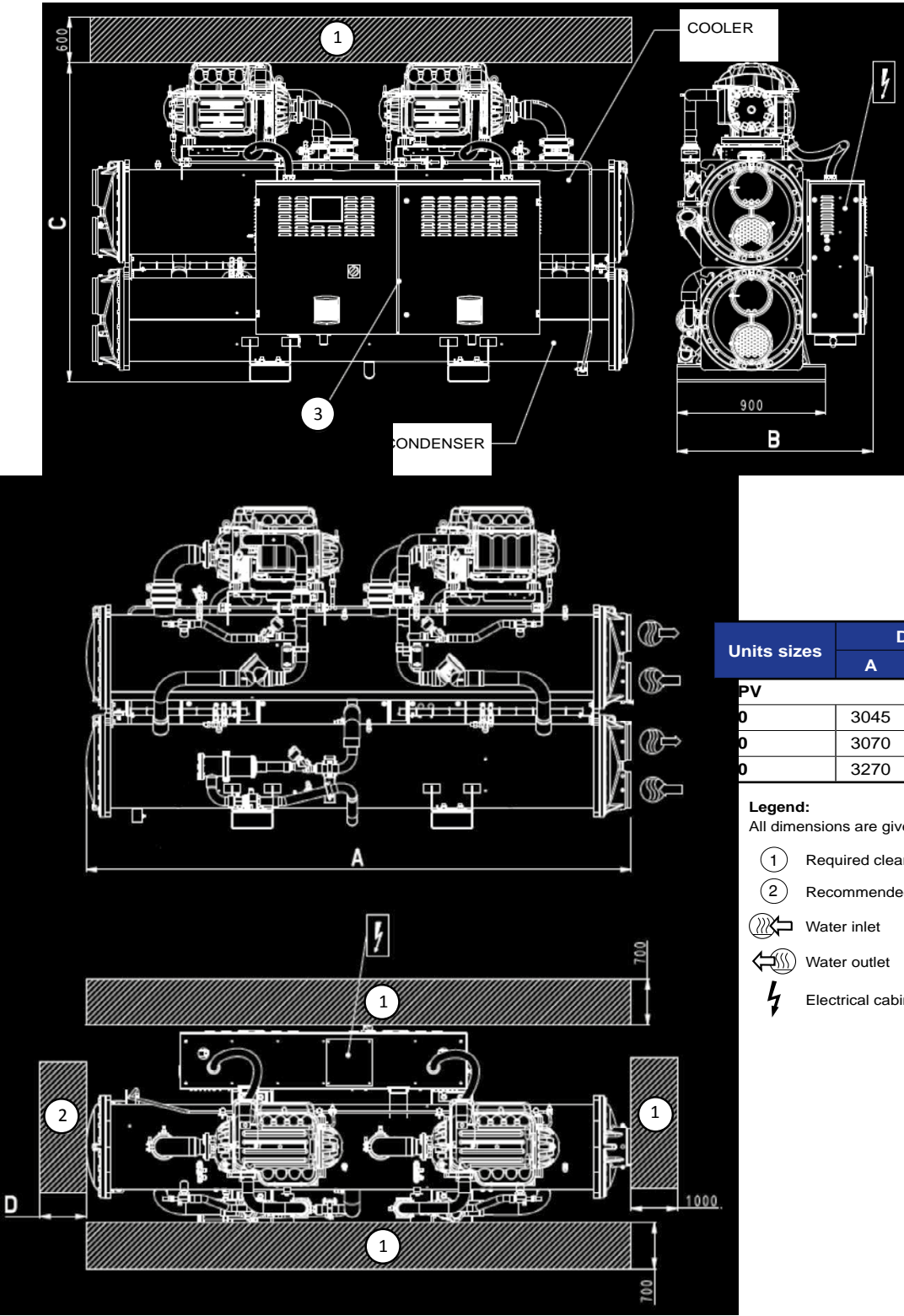
19PV		550	720	800	900	1010	1180	1300	1450	1600
Short-circuit withstand current (TN system)										
Circuit A+B	KA	50	50	50	50	50	50	50	50	50

(1) If another current limitation protection device is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended protection.

Note: The short-circuit stability current values above are suitable with the TN system.

DIMENSIONS

19PV 550 to 800



Units sizes	Dimensions in mm			
	A	B	C	D
19PV				
550	3045	1120	1745	2800
600	3070	1155	1846	2800
800	3270	1190	1925	3000

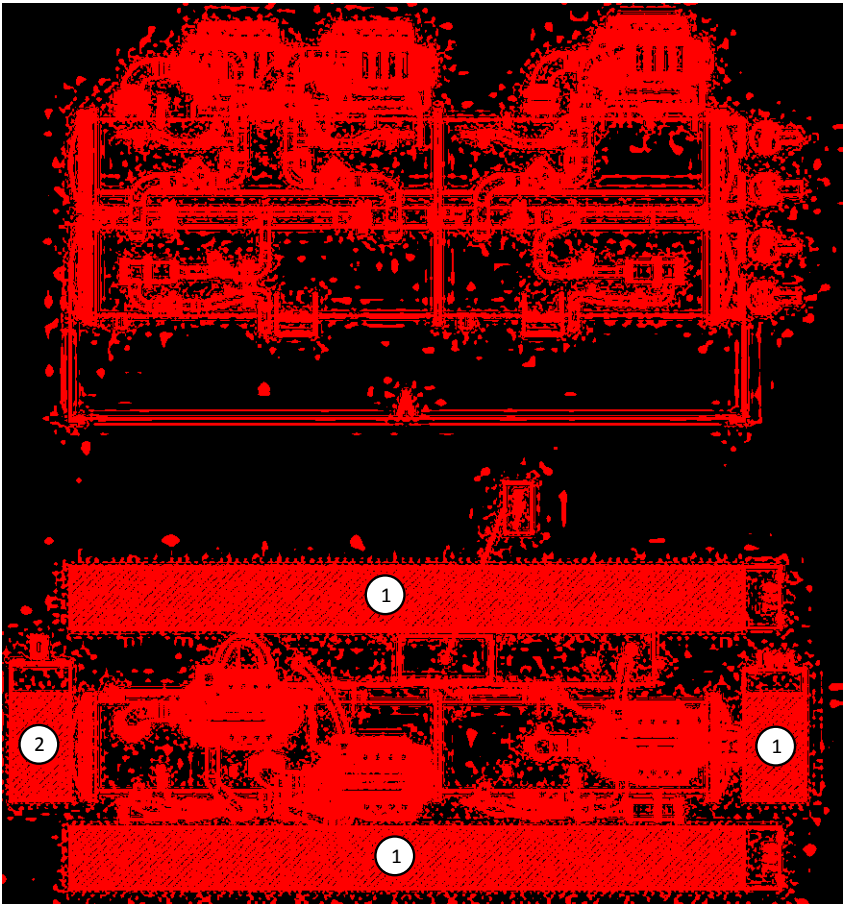
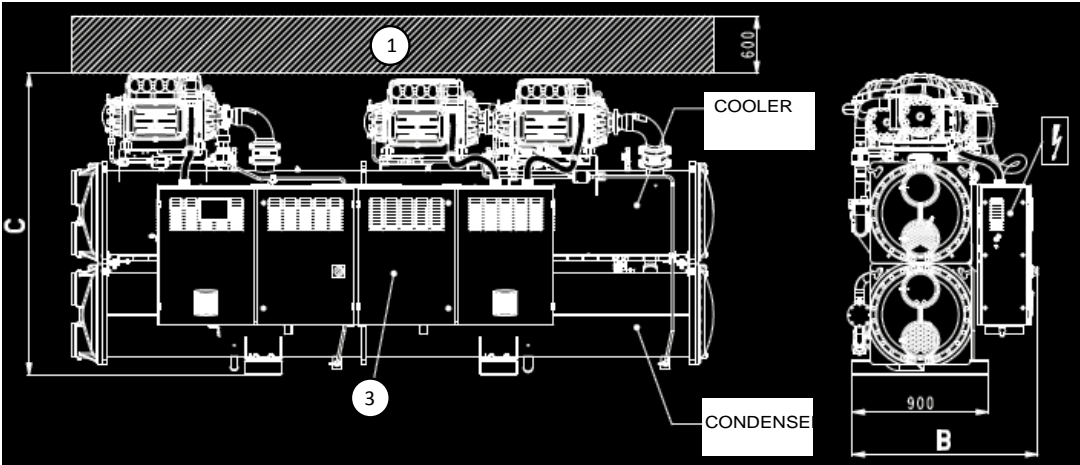
- Legend:**
All dimensions are given in mm.
- ① Required clearance for maintenance
 - ② Recommended clearance for tube removal
 - Water inlet
 - Water outlet
 - Electrical cabinet

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.



DIMENSIONS

19PV 900 to 1180



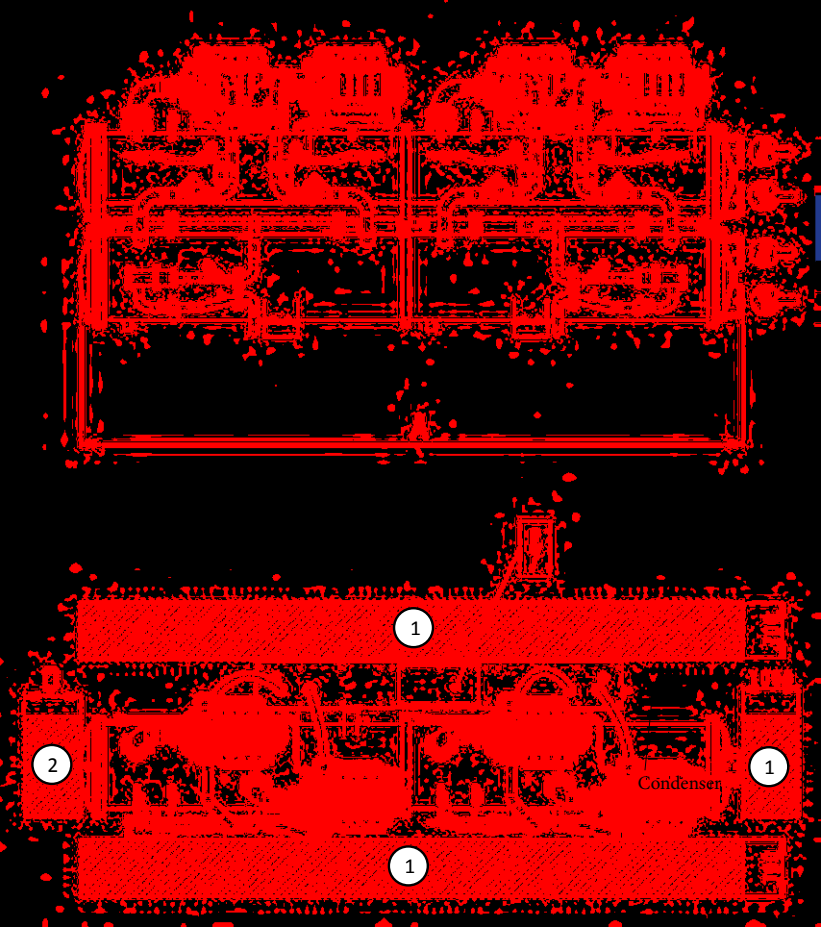
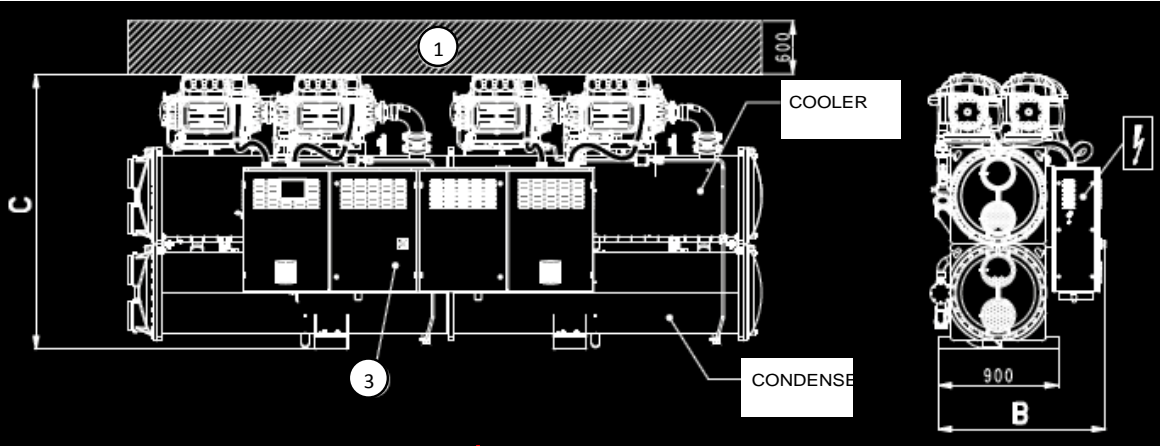
Units sizes	Dimensions in mm			
	A	B	C	D
19PV				
900	4257	1290	1955	3950
1010	4257	1290	1955	3950
1180	4257	1290	1955	3950

- Legend:**
All dimensions are given in mm.
- ① Required clearance for maintenance
 - ② Recommended clearance for tube removal
 - Water inlet
 - Water outlet
 - Electrical cabinet

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

DIMENSIONS

19PV 1300 to 1600



Units sizes	Dimensions in mm			
	A	B	C	D
19PV				
1300	4705	1290	1955	4400
1450	4740	1290	2011	4400
1600	4740	1325	2065	4400

- Legend:**
All dimensions are given in mm.
- ① Required clearance for maintenance
 - ② Recommended clearance for tube removal
 - Water inlet
 - Water outlet
 - Electrical cabinet

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

CERAMIC BEARING CENTRIFUGAL LIQUID CHILLER WITH PURETEC™ REFRIGERANT AND GREENSPEED® INTELLIGENCE



Reliability
Efficiency
Acoustic comfort
Flexibility
Footprint

AQUAEDGE greenspeed
PUREtec

19DV3/4/5*

Nominal cooling capacity: 1300 - 3800 kW

Designed to perfectly meet the new requirements in terms of energy performance, acoustic comfort, refrigerant sustainability, low maintenance and total cost of ownership, the 19DV is the new standard for the medium cooling capacity centrifugal chiller market.

* 19DV5 3000-3800 kW available Q1/2022



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES AND BENEFITS

Reliable

Advanced back-to-back two-stage compressor naturally balances both radial and axial thrust on shaft.

Simple and robust ceramic bearing system enables refrigerant lubrication that doesn't request oil lubrication which is requested by conventional chillers. Customers won't be troubled by oil related failures as well as maintenance cost and efforts.

High tier variable speed starter equipped with harmonic filter(optional), total harmonic distortion (THD) $\leq 5\%$ and fully complies with IEEE519 standard.

Swift restart - 19DV can restart within 30 seconds (with UPS) after power recovery and achieve to required cooling load more rapidly, especially reliable for data center application.

Efficient

Advanced back-to-back two-stage compressor naturally balances both radial and axial thrust on shaft.

Simple and robust ceramic bearing system enables refrigerant lubrication that doesn't request oil lubrication which is requested by conventional chillers. Customers won't be troubled by oil related failures as well as maintenance cost and efforts.

High tier variable speed starter equipped with harmonic filter(optional), total harmonic distortion (THD) $\leq 5\%$ and fully complies with IEEE519 standard.

Swift restart - 19DV can restart within 30 seconds (with UPS) after power recovery and achieve to required cooling load more rapidly, especially reliable for data center application.

Carrier back-to-back two-stage compressor integrated with inter-stage economizer which improves both cooling capacity and efficiency.

High speed direct drive motor reduces mechanical loss by 75% resulting from the removal of gear driven system.

By application of refrigerant lubricated ceramic bearings, the efficiency decline by oil in heat exchangers is not existed in 19DV.

Pioneer falling film evaporator is designed for low pressure refrigerant, which performs a significantly enhanced heat transfer efficiency by mitigating submergence effect especially at part load conditions.

High performance tubing with internally and externally enhanced fins improves chiller efficiency by reducing overall resistance to heat transfer.

Greenspeed® variable speed control gives a moment-to-moment control of compressor speed to adapt building load changes perfectly, which ensures the chiller always operating efficiently at both full load and part load.

19DV chillers can achieve up to 7.0 full load COP and 11.8 IPLV at AHRI conditions.

Sustainable

R-1233zd(E) is new non-Ozone Depletion Substances, the ultra low Global Warming Potential of ~ 1 , non-flammability and non-toxicity refrigerant that provides a safe and environmentally steward solution to centrifugal chillers.

Carrier pioneer falling film evaporator design helps reduce the refrigerant charge significantly.

The industry leading energy efficiency of 19DV chiller leads to lower electrical power consumption and significant reduction of related CO2 emissions.

Flexible

System layout of 19DV chillers is well optimized and specific crescent shape economizer is designed to best leverage the space between evaporator and condenser that brings up to -15% smaller footprint versus legacy R-123 unit.

Patented re-locatable control panel could be installed at any of the four corners of the chiller, which makes the layout of chillers more flexible to fit the site conditions.

Bolt together modular design is ideal for retrofit project or installation in limited place.

Miscellaneous optional offerings (such as marine water box) help to facilitate daily maintenance on jobsite.

Quiet

Refrigerant-cooled hermetic motor, no gear driven, optimized flow channel and 60% impeller speed of legacy design, all these features contribute to reduce refrigerant airflow noise.

Greenspeed® variable speed control adaptively turns down impeller speed at part load for better acoustic performance.

19DV chillers can meet 18001 standard recommended by Occupational Health and Safety Advisory Services (OHSAS).

Smart

PIC5+ intelligent control - color touch screen, intuitive menu, animated component level interface, graphic trending, auto pushed alarm mail, smart password and more than 10 languages for choice.

Multiple remote access methods present the users a flexible way to monitor and control the chillers.

Carrier lifecycle data management system supports online data management and analysis, daily and key performance reports, prognostics and preventative maintenance, which will help the users continuously optimize the chiller and system operation.

Carrier PIC5+ Control System - Intelligent Colorful Touch Screen

Carrier two-stage centrifugal chiller equips the latest PIC5+ control system with strong control and monitoring function during chiller operation. The control system applies a 10.4 inch high resolution touch screen, which can support more than ten language choices for customer, real time display of operation parameters with pictures makes it more human friendly and comfortable interface for operation. The control system simulates and monitors chiller operation, adjusts cooling or heating capacity according to load change and provides various protections during operation.



FEATURES AND BENEFITS

Reliable Start-up and Operation

PIC5+ control system provides customer the smart password to avoid any setting change without authorization.

When chiller receives start-up order, controller will conduct following pre-start safety checking, to ensure parameters like condensing pressure, bearing temperature, motor winding temperature, discharge temperature, evaporator saturated temperature and average line voltage etc. are normal.

During chiller operation, except for the function of monitoring main operation parameters the control system also has capability to record and display trend curve, which is real time trend of key components during operation. It ensures effective and reliable operation of chiller by optimized intelligent and dynamic control algorithm.

The control system has comprehensive protection during operation, such as surge protection, overvoltage and overcurrent protection, discharge temperature overheat protection, bearing temperature overheat protection, evaporator and condenser anti-freeze protection, low discharge superheat protection etc. in order to ensure chiller long time reliable operation.

The optional envelope stability control is advanced parametric solution to control both chiller system and compressor to best balance the chiller efficiency and reliability. In real time, the controller optimizes compressor speed, guide vane position and stabilizer valve position to find the most efficient operating point throughout the operating range, without comprising the chiller stability.

Effective Failure Diagnostic

The PIC5+ control system has failure diagnostic function and can be easily accessed via touch screen for detail chiller operation parameters. If control system detects failure the alarm will be initiated and related code will be recorded in alarm menu. The alarm records can be automatically saved by control system. Carrier service technician can read and delete alarm records by Carrier service/PCDCT tools.

The control system has additional pre-diagnostic function. Different with diagnostic function, information displayed from this function is mainly for maintenance purpose. For an example, to inform customer periodically replace filter from this function.

The control system has email alarm function. The control system can automatically send out an email with one or more alarm information to customer or service people through effective email address when alarm exists.

Flexible Interface and Connection

The installation of Carrier colorful touch screen is very flexible. It greatly improves the convenience that customer can install touch screen at any corner of the chiller.

The customer can not only directly operate on touch screen but also use the port to connect with BAS system. The control system facilitates various accesses, such as CCN to meet customer requirements. PIC5+ is compatible with Carrier i-Vu control network and integrated BACnet/IP protocol. PIC5+ also facilitates protocol such as native Modbus and converter for LonWorks to simplify the seamless connection with building automation systems.

Carrier LDMS (Lifecycle Data Management System) is based on "Big Data Processing" and supports more value-added customer service such as online data management and analysis, daily and key performance reports, prognostics and preventative maintenance. The enhanced data management and analysis will help the users to achieve continuous optimization of the chiller and system operation.

Main Page

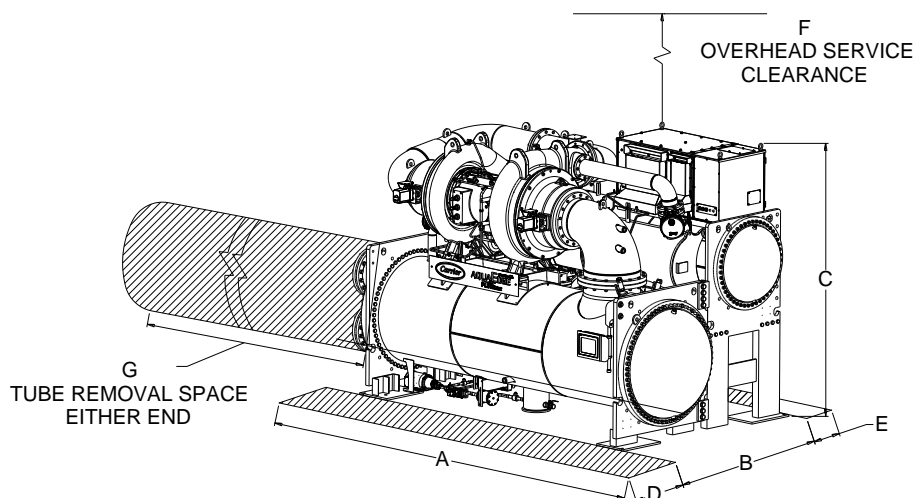
Control system main page operation and primary parameters monitored:

- Main page button
- Menu page button
- Log in/Language button
- Start-up/Stop page button
- Alarm menu button
- Setting point
- Chiller load percentage
- Inlet Guide Vane position percentage
- Condensing water pump status
- Chilled water pump status
- Condenser water inlet/outlet temperature
- Evaporator water inlet/outlet temperature
- Condenser saturated temperature and pressure
- Evaporator saturated temperature and pressure

Customer can easily read the primary information of chiller, components status and access to other interfaces from this page. They are:

- General parameter page
- Temperature/Pressure page
- Input/Output parameter page
- Water system parameter page
- Operation time
- Mode
- Graphic data trend

DIMENSIONS/CLEARANCE



NOTES:

1. Dished head waterbox shown.
2. Service areas shown are minimum space required. For major compressor service, it is desirable to have an 2.4m wide service area on the cooler or condenser side to allow the compressor to be positioned on the floor next to the chiller, unless arrangements are made that allow for rigging the compressor elsewhere.
3. Refer to Table 1 for A, B and C.

Table 1-1— 19DV Chiller Dimensions (Nozzle-In-Head Waterbox)

19DV Dimensions (Nozzle-In-Head Waterbox)				
Cooler heat exchanger sizer	Condenser heat exchanger size	A (length, dished head waterbox)	B (width)	C (height)
		2-Pass		
		Mm		
G2*	G2*	4778.5	2595.8	2928.1
G4*	G4*	5299.2	2595.8	2928.1
H2*	H2*	4778.5	2761.2	3073.0
H4*	H4*	5299.2	2761.2	3073.0

*Assumes both cooler and condenser nozzle on same end of chiller.

NOTES:

1. Service access should be provided per American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 15, latest edition, National Fire Protection Association (NFPA) 70, and local safety code.
2. Overhead clearance for service rigging 19DV compressor should be at least 1524 mm.
3. Dimensions are approximate. Certified drawings available upon request.
4. Marine waterboxes typically add to the width of the machine. See certified drawings for details.
5. 'A' length dimensions shown are for standard 1034kPa design and flanges connections. The 2068kPa design and flanges will add length. See certified drawings.
6. Table contains heat exchanger dimensions. For arrangements where the compressor motor housing extends past the waterbox, consult the 19DV certified drawings.
7. Consult factory for configurations not listed in the above table.

Table 1-2— 19DV Chiller Dimensions (Marine Waterbox)

19DV Dimensions (Nozzle-In-Head Waterbox)				
Cooler heat exchanger sizer	Condenser heat exchanger size	A (length, dished head waterbox)	B (width)	C (height)
		2-Pass		
		Mm		
G2*	G2*	5343.5	2595.8	2928.1
G4*	G4*	5864.2	2595.8	2928.1

*Assumes both cooler and condenser nozzle on same end of chiller.

NOTES:

1. Service access should be provided per American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 15, latest edition, National Fire Protection Association (NFPA) 70, and local safety code.
2. Overhead clearance for service rigging 19DV compressor should be at least 1524 mm.
3. Dimensions are approximate. Certified drawings available upon request.
4. 'A' length dimensions shown are for standard 1034kPa design and flanges connections. The 2068kPa design and flanges will add length. See certified drawings.
5. Table contains heat exchanger dimensions. For arrangements where the compressor motor housing extends past the waterbox, consult the 19DV certified drawings.
6. Consult factory for configurations not listed in the above table.

PHYSICAL DATA

Air-conditioning (380V-3Ph-50Hz)

Model	Cooling Capacity	Input Power	Chiller Line Amps	Footprint		
				Length	Width	Height
	kW	kW	A	mm	mm	mm
19DV-F24F243345B9	1300	199,6	302	4600	2480	2570
19DV-F24F243545D9	1650	256,9	388	4600	2480	2570
19DV-F24F243645F9	2000	319,1	482	4600	2480	2570
19DV-G24G234425B9	2110	321,2	523	4762	2508	2882
19DV-G24G244525D9	2462	377,9	616	4762	2508	2882
19DV-G44G444625D9	2813	434,8	688	5284	2508	2882

- Note:**
- The above selections are based on entering/leaving chilled water temperature 12/7°C, entering/leaving cooling water temperature 32/37°C, evaporator fouling factor 0.0176 m²C/kW and condenser fouling factor 0.044 m²C/kW.
 - Carrier will select specific models using E-Cat on different requests for tonnage, lift, and efficiency. For details, please contact local agencies.
 - Standard evaporator and condenser water side pressure is 1.0MPa. For more requirements, please contact local agencies.
 - For more details or customized selections, please contact local agencies.

SINGLE-STAGE CENTRIFUGAL LIQUID CHILLERS



Single-stage compressor

Industry-leading Efficiency with VFD

Standard or high-tier VFD on choice

Wide Application

Stable Operation

Low Sound Level

Modular Construction

19XR/XRV Single-stage



Nominal cooling capacity 1000-5300 kW

The Carrier 19XR/19XRV centrifugal chillers provide exceptional value by achieving energy efficiency levels as high as 6.8 (COP_r) utilising proven technology designed specifically for chlorine-free refrigerants:

- Unique concept of the hermetic compressor:
 - Single-stage aerodynamic impeller
 - Tunnel diffusers, based on aircraft engine technology
 - Motor cooled by refrigerant gas injection
- Possibility to control the compressors using a variable frequency drive (19XRV) to maximise machine energy efficiency.
- Use of high-efficiency evaporator and condenser tubes
- Expansion sub-cooler integrated into the condenser
- Patented float valve technology for optimised sub-cooling and refrigerant level in the evaporator
- Refrigerant R-134a or R-513A

These advantages, together with the modularity of the units and their efficiency, economical operation and dimensional constraints allow the use of the Carrier 19XR/19XRV centrifugal chillers in any high-capacity water cooling applications.

PHYSICAL DATA

heat exchanger frame size	Compressor frame size	Dimensions (mm)					
		Length		Width		Height	
		Min	Max	Min	Max	Min	Max
3	XR3	4230	4820	1670	1800	2055	2465
4	XR3	4365	4950	1880	1880	2140	2550
5	XR3	4390	4980	1995	1995	2150	2720
5	XR4	4390	4980	2055	2301	2250	2915
6	XR4	4415	5005	2145	2480	2365	2970
7	XR4	5050	5210	2430	2935	2850	3283
7	XR5	5160	5210	2470	2935	3015	3283
8	XR5	5200	5845	2710	3165	3040	3335

heat exchanger frame size	Compressor frame size	Weight (kg)					
		net (chiller + R134a)		operating (net + water)		R134a	
		Min	Max	Min	Max	Min	Max
3	XR3	6780	8100	7200	8700	277	390
4	XR3	7180	9180	7985	10200	381	508
5	XR3	8090	10890	9145	12160	493	674
5	XR4	8950	12680	10000	13950	493	674
6	XR4	9500	13430	10785	14995	546	740
7	XR4	13045	16835	14950	18700	836	1168
7	XR5	15500	20420	17400	22760	836	1168
8	XR5	18035	23800	20725	26870	984	1309

Data for unit with two-pass nozzle-in-head water boxes being at the same end (compressor end / DS code)

FEATURES AND ADVANTAGES

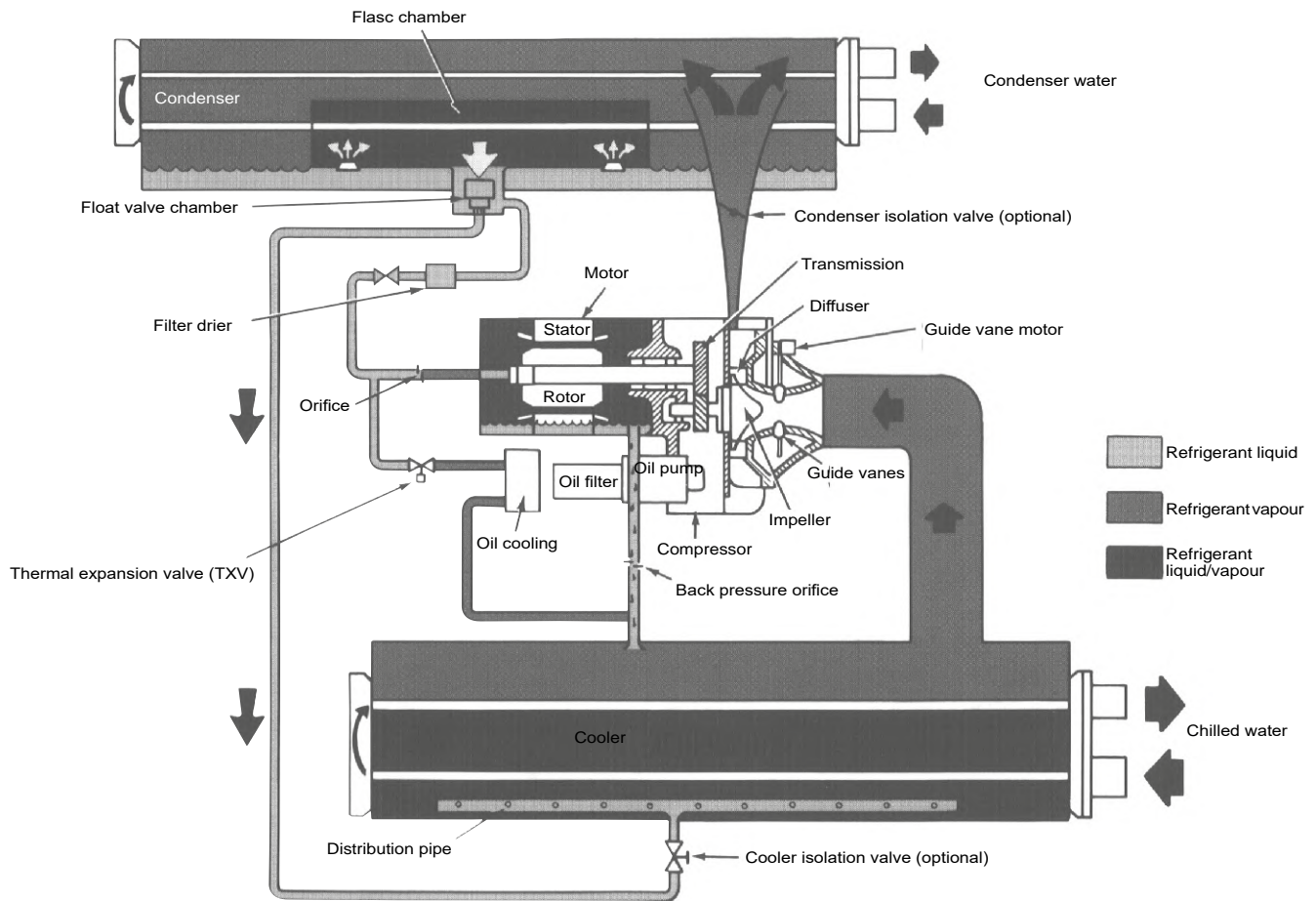
- Nominal cooling capacities from 1000 to 5300 kW.
- Mix-match capabilities – a complete line of compressors and heat exchangers to ensure the optimal combination of machine components regardless of capacity, lift and efficiency specifications.
- Hermetic compressor – elimination of leak risks from the compressor/motor shaft sealing in an open compressor.
- Single-stage compressor with special features – aerodynamically contoured impellers, variable inlet guide vanes and movable diffusers for better compressor part and full-load operating efficiency.
- Variable speed compressor capability – improvement of part load efficiency and electrical performance.
- Heat exchangers certified by the European pressure vessels code (PED), and all marine code certifications.
- International Chiller Visual Control (ICVC) -a large english LCD (liquid crystal display) features 4 menu-specific soft keys. The default display offers all in one glance review of key chiller operation data, simplifying the interaction between chiller and user.

OPTIONS/ACCESSORIES

- Two types of unit-mounted variable frequency drives (VFDs): standard and high tier, to match different customer requirements in terms of cost and electrical performances
- Refrigerant isolation valves allow the refrigerant to be stored inside the chiller during service
- Hot gas by-pass for surge prevention during operation at high condensing temperature or for optimized operation at low load conditions
- Spring isolators adapted for all chiller configurations
- Unit-mounted starter reduces machine installation time and expense
- High-voltage motors available: 3000 V, 3300V, 5500V, 6300V, 10 kV, 11 kV, 50 Hz or 60 Hz
- CCN/JBus or CCN/BACnet: remote connection
- 21 bar water heat exchanger
- Waterbox with flanges and counterflanges
- Delivered in multiple sections to facilitate the installation
- Refrigerant leak detector module : unit-mounted sensor (not compatible with 19XRV VFD)
- Tailor maid request Marine, Oil & Gas, Chemical, other customization

OPTIONS/ACCESSORIES

19XR refrigeration cycle



CONTROLS

Touch Pilot control system with strong control and monitoring function during chiller operation. The Touch Pilot control system applies a 10.5 inch high resolution touch screen, which can support more than ten language choices for customer, real time display of operation parameters with pictures makes it more human friendly and comfortable interface for operation.



TWO-STAGE CENTRIFUGAL LIQUID CHILLERS



Interstage economizer
Two-stage compressor
Industry-leading Efficiency with VFD
Wide Application
Stable Operation
Low Sound Level
Modular Construction

19XR/XRV Two-stage

AQUAEDGE

Nominal cooling capacity 2800 - 10500 kW

The Carrier 19XR/19XRV with a COP up to 6.5 (AHRI conditions) and an IPLV up to 7.4 or up to 10.5 with VFD centrifugal chillers provide exceptional value by achieving energy efficiency levels as high as 6.8 (COP_r) utilising proven technology designed specifically for chlorine-free refrigerants:

- Interstage economizer to improve efficiency and increase capacity.
- Unique concept of the hermetic compressor:
 - Dual-stage aerodynamic impeller
 - Vane-less diffuser to meet high lift application requirement with stable operation
 - Motor cooled by spraying liquid refrigerant on the motor windings.
- Possibility to control the compressors using a variable frequency drive (19XRV) to maximise machine energy efficiency.
- Use of high-efficiency evaporator and condenser tubes
- Expansion sub-cooler integrated into the condenser
- Patented float valve technology for optimised sub-cooling and refrigerant level in the evaporator
- Refrigerant R-134a or R-513A

These advantages, together with the modularity of the units and their efficiency, economical operation and dimensional constraints allow the use of the Carrier 19XR/19XRV two-stage centrifugal chillers in any high-capacity water cooling applications such as air-conditioning, heat-pump, energy recovery, ice thermal storage, marine, VFD and high-voltage applications.

PHYSICAL DATA

Heat exchanger frame size	Compressor frame size	Dimensions (mm)					
		Length		Width		Height	
		Min	Max	Min	Max	Min	Max
7	XRE	5160	5210	2470	2935	3015	3283
8	XRE	5200	5845	2710	3165	3040	3335

Heat exchanger frame size	Compressor frame size	Weight (kg)					
		net		operating		R134a	
		Min	Max	Min	Max	Min	Max
7	XRE	16015	20815	17920	23155	836	1168
8	XRE	18505	24270	21195	27340	984	1309

heat exchanger frame size		Compressor frame size	Dimensions (mm)		
cooler frame size	condenser frame size		Length	Width	Height
A4	A4	XR6	5175	3130	3485
A6	A6	XR6	5785	3130	3485
A4	B4	XR6	5195	3255	3485
A6	B6	XR6	5805	3255	3485
B6	C6	XR7	5925	3670	3745
C6	C6	XR7	5975	3800	3815
C6	D6	XR7	5975	4015	3815

heat exchanger frame size		Compressor frame size	Weight (kg)		
			net	operating	R134a
cooler frame size	condenser frame size		Max	Max	Max
A4	A4	XR6	30830	35466	1277
A6	A6	XR6	32330	37580	1465
A4	B4	XR6	33080	38432	1416
A6	B6	XR6	34900	40813	1623
B6	C6	XR7	44270	52132	1709
C6	C6	XR7	49110	58055	1997
C6	D6	XR7	54190	64647	2218

Data for unit with two-pass nozzle-in-head water boxes being at the same end (compressor end / DS code)

FEATURES AND ADVANTAGES

- Nominal cooling capacities from 2800-10500 kW.
- Mix-match capabilities – a complete line of compressors and heat exchangers to ensure the optimal combination of machine components regardless of capacity, lift and efficiency specifications.
- Hermetic compressor – elimination of leak risks from the compressor/motor shaft sealing in an open compressor.
- Dual stage compressor with non-blade diffuser designed, combined with inner-stage economizer for chiller performance improvement and high lift application. The innovative two-stage compressor provides a dramatic range of capabilities. With a maximum LWT of 65°C and a minimum LCWT of -6°C, the 19XR two-stage centrifugal chiller is ideal wherever energy conservation and environmental protection are required.
- Variable speed compressor capability on 19XRV-E AquaEdge chiller - Improvement of part load efficiency and electrical performance.
- 19XRV/XR(V)-E equipped with a LF2 VFD that designs with total harmonic distortion (THD)<5% and fully meets IEEE519-1992 requirement. The 19XRV/XR(V)-E becomes a more cost-effective choice for installations with a high percentage of time operating at part load.

- Heat exchangers certified by the European pressure vessels code (PED), and all marine code certifications.
- Touch Pilot control system with strong control and monitoring function during chiller operation. The Touch Pilot control system applies a 10.5 inch high resolution touch screen, which can support more than ten language choices for customer, real time display of operation parameters with pictures makes it more human friendly and comfortable interface for operation.



OPTIONS/ACCESSORIES

- Two types of unit-mounted variable frequency drives (VFDs): standard and high tier, to match different customer requirements in terms of cost and electrical performances (VFD available on 19XRE only)
- Refrigerant isolation valves allow the refrigerant to be stored inside the chiller during service
- Hot gas by-pass for surge prevention during operation at high condensing temperature or for optimized operation at low load conditions
- Spring isolators adapted for all chiller configurations
- Unit-mounted starter reduces machine installation time and expense (VFD available on 19XRE only)
- High-voltage motors available: 400V (19XRE only), 3kV, 3.3kV, 6.3kV, 10kV, 11kV
- CCN/JBus or CCN/BACnet: remote connection
- 21 bar water heat exchanger
- Waterbox with flanges and counterflanges
- Nozzle with flanges (water inlet/outlet with flanges)
- Delivered in multiple sections sections to facilitate the installation
- Refrigerant leak detector module : unit-mounted sensor (not compatible with 19XRE with unit-mounted VFD)

DRYCOOLERS



09PE

From 10 to 1100 kW

The 09PE range is particularly suited to tertiary, industrial and healthcare applications. Drycoolers in the 09PE range are mainly designed for cooling water or glycol/water mix for:

- Condensers for water chillers,
- Free cooling,

These devices are designed to be installed outdoors.

Performance

Flexibility

Intelligence

Energy optimisation

Acoustic optimisation

DESCRIPTION

Excellent resistance to corrosion

The casing boasts category C3 protection against corrosion, in line with ISO standard 12944-2 – RAL 7035 (light grey)



- ① **Coil**
Copper tubing and manifolds, high-performance aluminium fins, resistant to fouling.
Anti-shear system for bundle tubing.
Piping: ISO PN16 02A type rotating flanges as per DIN 2642 in 304L stainless steel (1 or 2 inlets/outlets depending on flow rate).
- ② **Fan motor assemblies**
Profiled collars in galvanised steel with RAL7035 polyester powder paint or RAL9005 composite depending on the motor reference.
Aluminium and polypropylene impeller.
Class F motor - IP54 - three-phase 400 V +/-10 % 50 Hz +/-2 % - Standard connection to the motor terminal boxes.
Black protective grille compliant with standard BS ISO 12499.
Individual partitioning.
The motors are also available in a 60 Hz version or in other voltages.
- ③ **Casing**
Galvanised steel with polyester powder paint. Assembly using stainless rivets and LANTHANUM nuts and bolts for the feet.
- ④ **Feet**
Galvanised steel with polyester powder paint.
- ⑤ **Protective enclosures on the elbows and manifolds**

Each device is tested:

- The coil sealing is subjected to an underwater airtightness test.
- For devices with the terminal strip or electrical cabinet option: rotation tests, dielectric tests, current measurement.

The 09PE range complies with the following European directives:

- Machinery directive 2006/42/EC,
- EMC directive 2014/30/EU,
- Pressure Equipment Directive (PED) 2014/68 EU.

RANGE

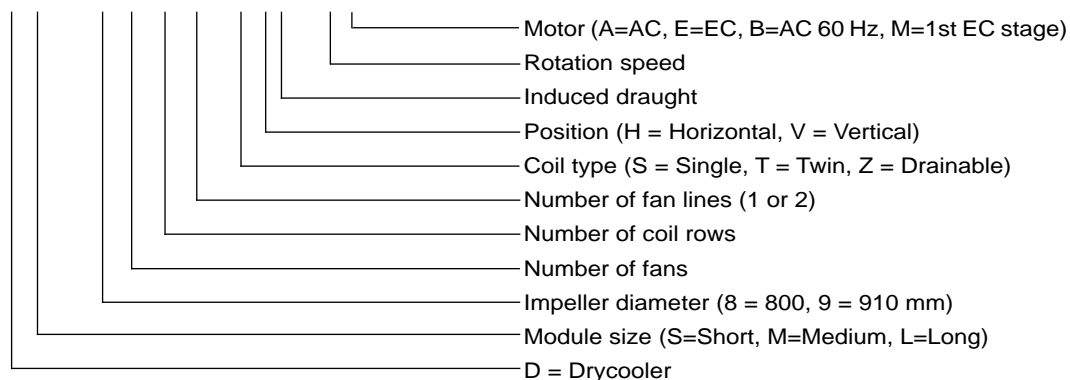
09PE is a large modular range, which offers:

- 3 casing lengths (S, M or L module), allowing either the dimensions, the capacity or the power consumption to be optimised.
- A range of sizes, from 1 to 14 fans.
- 2 impeller diameters, 800 or 910 mm.
- Several rotation speeds, from 340 to 1270 rpm (AC motor).
- Configuration: horizontal or vertical unit.

Various combinations of these elements, as well as the choice of a number of options, allow us to provide devices that are adapted to a range of applications and environments.

DESCRIPTION

09PE DLN 9 12 4-2 SHI 690A 9A

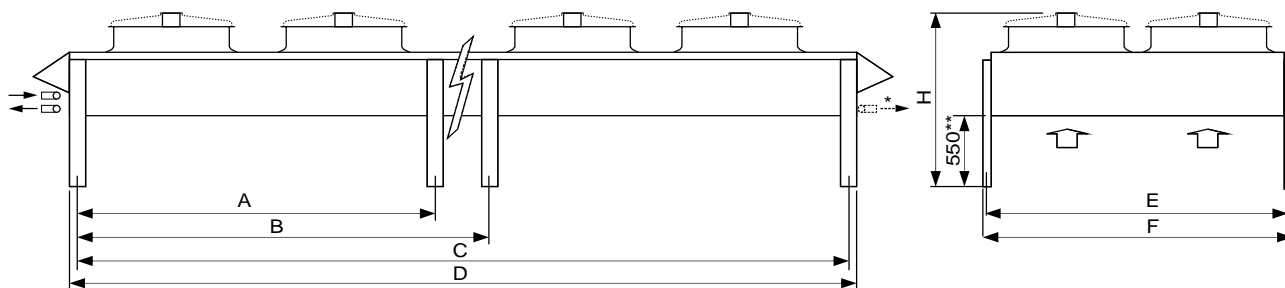


OPTIONS FOR EACH APPLICATION

	Options	Description/Advantages
Protection adapted for the environment	Pre-coated aluminium fins	Improves the resistance of the fins to corrosion. For low corrosion environments.
	High-efficiency coating on fins: ALUCOAT®507/HERESITE (on request)	Improves the resistance of the fins to corrosion. For corrosive environments.
	Stainless steel tubing bundle	For corrosive fluids.
	Corrosiveness resistance category C5M	Casing and fan motor assemblies for corrosive environments.
	ATEX II 2G/3G	For explosive atmospheres.
Quick, simple installation	Terminal box	Connection to the terminals of each motor on the front panel of the device.
	Protection cabinet	Protected by a thermal-magnetic circuit breaker on each motor.
	Control cabinet	Motor and control protection, either by electronic board, depending on the temperature, or by the chiller if compatible.
	Maintenance switch	For stopping individual motors.
	Counter-flanges	In stainless steel, with gaskets, bolts and collar.
	Raised feet	To ensure a good flow of air depending on how the units are installed: against a wall, side by side, etc.
	Blade protective screen	Protection against hail, impacts, etc. For vertical position.
Installation surface constraints	Vertical position	For narrow terraces.
Optimised, secure transport	Stacking of 2 identical devices	
	Skid for transport by container	Secure transport and easy loading/unloading.
Optimisation of electrical consumption and noise	EC motor (with electronic switching)	Variable speed control from 0 to 100% using a 0/10V signal.
Application for water without glycol	Drainable coil	Device located on a slope to prevent frost - drainage by gravity
Free cooling application	Free cooling valve kit	Valves with motor, controlled by the control cabinet. Controlled according to the operation of the drycooler or chiller.
Adiabatic cooling application	ADIABATIC COOLER (water misting into the air flow)	Size of the unit reduced by cooling of the ambient air. Operates completely safely due to the antibacterial treatment applied to the water (Option).

DIMENSIONS

Horizontal Position - Induced Draught



Unit shown has 2 fan lines - no. of motors between the feet is not contractually binding

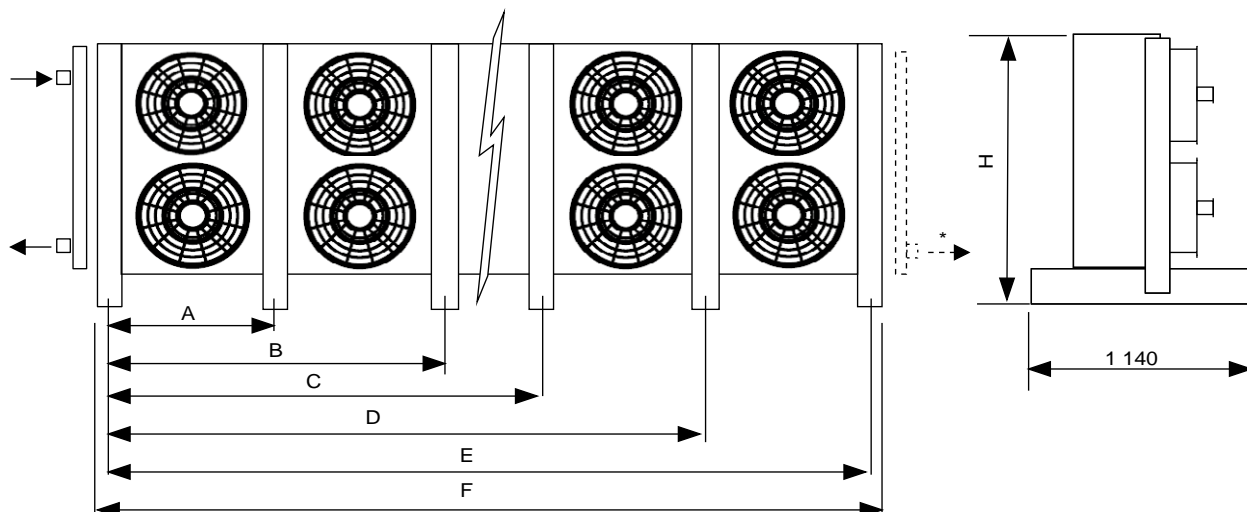
* for units with input/output piping on the opposite side

** standard feet

No. of motors		1	2	3	4	5	6	4	6	8	10	12	14
DSN S module	A	-	-	-	-	1840	1840	-	-	-	1840	1840	1840
	B	-	-	-	-	2790	3740	-	-	-	2790	3740	4690
	C	830	1780	2730	3680	4630	5580	1780	2730	3680	4630	5580	6530
	D	950	1900	2850	3800	4750	5700	1900	2850	3800	4750	5700	6650
	H	1390 max											
DMN M module	Max empty weight without options +/-10% (kg)	233	369	503	666	809	928	638	875	1135	1393	1617	1874
	A	-	-	-	3140	3140	-	-	3140	3140	4740	4740	3140
	B	-	-	-	-	4740	-	-	-	4740	-	7940	-
	C	1480	3080	4680	6280	7880	-	3080	4680	6280	7880	9480	11080
	D	1600	3200	4800	6400	8000	-	3200	4800	6400	8000	9600	11200
DLN L module	H	IMPELLER ø 800: 1390 max - IMPELLER ø 910: 1460 max											
	Max empty weight without options +/-10% (kg)	314	523	712	958	1183	-	918	1298	1645	2029	2388	2772
	A	-	-	-	3740	3740	-	-	3740	3740	5640	5640	-
	B	-	-	-	-	5640	-	-	-	5640	-	-	-
	C	1780	3680	5580	7480	9380	-	3680	5580	7480	9380	11280	-
All	D	1900	3800	5700	7600	9500	-	3800	5700	7600	9500	11400	-
	H	IMPELLER ø 800: 1390 max - IMPELLER ø 910: 1460 max											
	Max empty weight without options +/-10% (kg)	352	599	846	1110	1373	-	1036	1474	1929	2384	2806	-
	E	1240						2360					
	F	1280						2400					

Dimensions in mm, excluding options













Vertical position



Unit shown has 2 fan lines - no. of motors between the feet is not contractually binding

* for units with input/output piping on the opposite side

DIMENSIONS

													
No. of motors		1	2	3	4	5	6	4	6	8	10	12	14
DSN S module	A	-	-	-	1840	1840	1840	-	-	1840	1840	1840	1840
	B	-	-	-	-	2790	3740	-	-	-	2790	3740	4690
	C	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-
	E	830	1780	2730	3680	4630	5580	1780	2730	3680	4630	5580	6530
	F	950	1900	2850	3800	4750	5700	1900	2850	3800	4750	5700	6650
	Max empty weight without options +/-10% (kg)	282	419	554	705	915	1039	684	922	1181	1497	1727	1983
DMN M module	A	-	-	1540	1540	1540		-	1540	1540	1540	3140	3140
	B	-	-	3140	4740	3140		-	3140	4740	3140	6340	4740
	C	-	-	-	-	4740		-	-	-	4740	-	6340
	D	-	-	-	-	6340		-	-	-	6340	-	7940
	E	1480	3080	4680	6280	7880		3080	4680	6280	7880	9480	11080
	F	1600	3200	4800	6400	8000		3200	4800	6400	8000	9600	11200
	Max empty weight without options +/-10% (kg)	356	558	835	1046	1339		927	1383	1734	2187	2464	2920
DLN L module	A	-	-	1840	1840	1840		-	1840	1840	1840	3740	
	B	-	-	3740	5640	3740		-	3740	5640	3740	7540	
	C	-	-	-	-	5640		-	-	-	5640	-	
	D	-	-	-	-	7540		-	-	-	7540	-	
	E	1780	3680	5580	7480	9380		3680	5580	7480	9380	11280	
	F	1900	3800	5700	7600	9500		3800	5700	7600	9500	11400	
	Max empty weight without options +/-10% (kg)	399	639	972	1204	1537		1053	1572	1986	2501	2842	
All	H	1370						2490					

Dimensions (mm)

INSTALLATION RECOMMENDATIONS

- These units are designed to operate outside. When starting up, frost and snow could adversely affect the operation of horizontal units.

As a general measure, all steps should be taken to avoid the risk of air recycling. This is especially important when the installation comprises several units.

It is not recommended to install units near the hot air extraction duct outlet or close to deciduous plants (this could cause fouling).

- A horizontal unit must have a surrounding clearance of 1.5 m. Where the use of anti-vibration mounts is required, use a rigid frame which locks the feet together.

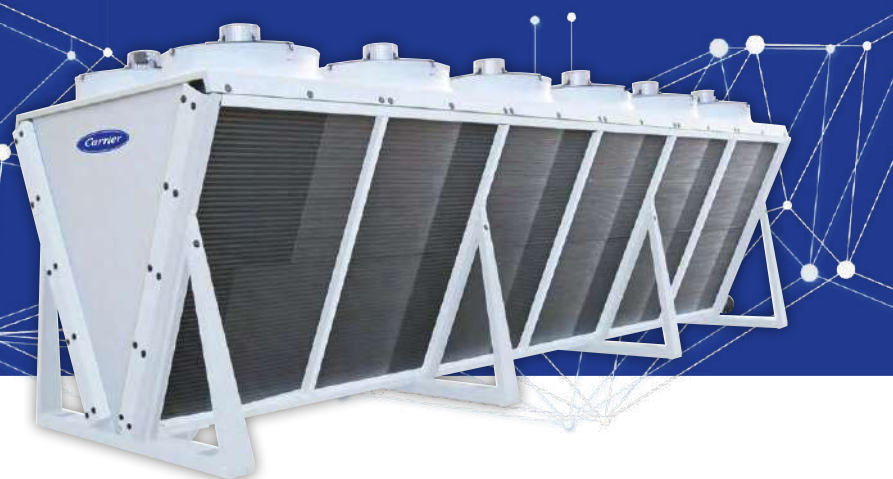
- A vertical unit should preferably be placed parallel to the direction of the wind. It is not recommended for use with low fan rotation speeds. In addition, we recommend that these units be stabilised using braces connecting their two upper ends to fixed supports (wall or framework).

- If speed regulators other than those recommended by the manufacturer are used, check that these are compatible with the electric motors.

- Commissioning and maintenance: refer to the instruction manual.

- These units comply with the European directives. The installer is responsible for ensuring the compliance of the installation. The installer must ensure safety and protective devices (emergency stop, shut-off valves, lightning protection, etc.) are put in place and are accessible.

DRYCOOLERS



Compact design
Acoustic comfort
40% smaller footprint

09VE

From 100 to 1870 kW

Drycoolers in this range are mainly designed for cooling water or glycol/water mix for:

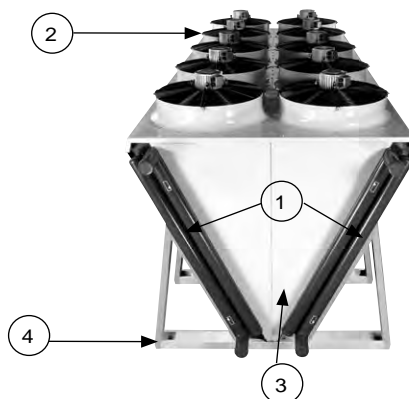
- Condensers for water chillers,
- Free cooling.

These devices are designed to be installed outdoors.

DESCRIPTION

Excellent resistance to corrosion

Casing with corrosiveness resistance category as per ISO 12944-2.



① 2 Coils

Copper tubes and high-performance aluminium fins, resistant to fouling.
Manifolds and piping: RAL 7024 graphite grey painted steel.

② Fan motor assemblies

Profiled collars in galvanised steel with RAL7035 polyester powder paint or RAL7035 composite depending on the motor reference.

Aluminium + polypropylene propeller.

Class F motors - IP54 - TRI400V +/-10% 50Hz +/-2% - Standard connection to motor terminal boxes

Black protective grille compliant with standard BS ISO 12499.

The motors are also available in a 60 Hz version or in other voltages.

Partitioning in pairs.

③ Casing

Galvanised steel with polyester powder paint in RAL7035 light grey.

④ Feet

Galvanised steel with polyester powder paint in RAL7035 light grey

Each device is tested:

- The coil sealing is subjected to an underwater airtightness test.
- For devices with the terminal strip or electrical cabinet option: rotation tests, dielectric tests, current measurement.

The entire range complies with the following European directives:

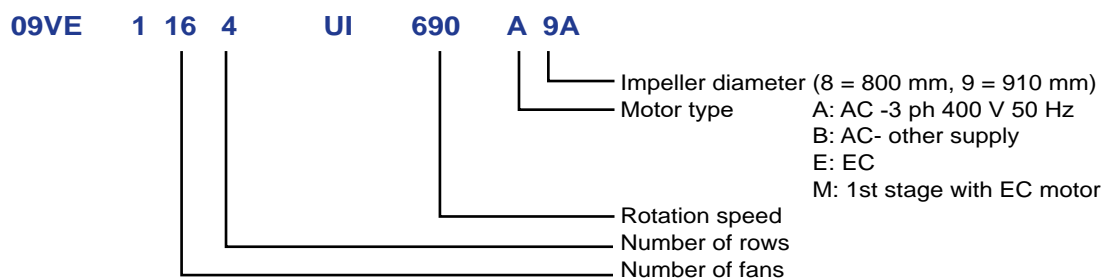
- Machinery directive 2006/42/EC,
- EMC directive 2014/30/EU,
- Pressure Equipment Directive (PED) 2014/68 EU.

RANGE

- A range of sizes, from 6 to 20 fans.
- 2 impeller diameters, 800 or 910 mm.
- Several rotation speeds, from 340 to 1270 rpm (AC motor).

Various combinations of these elements, as well as the choice of a number of options, allow us to provide devices that are adapted to a range of applications and environments.

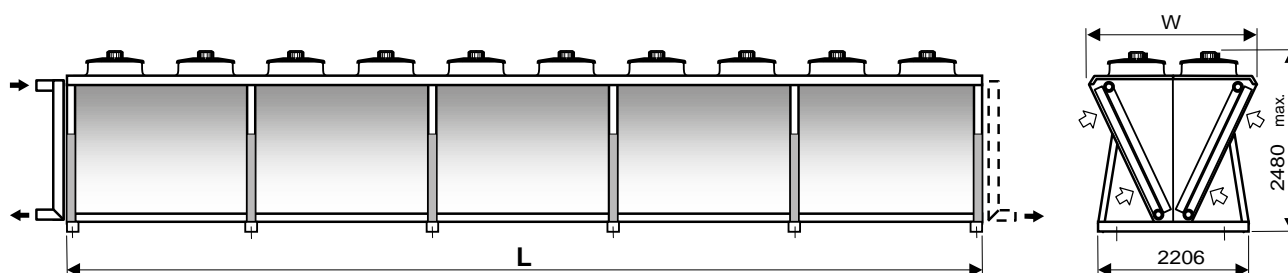
DESCRIPTION











OPTIONS FOR EACH APPLICATION

	Options	Description/advantages
Protection adapted for the environment	Pre-coated aluminium fins	Improves the resistance of the fins to corrosion. For low corrosion environments.
	High-efficiency coating on fins: ALUCOAT®507/HERESITE (on request)	Improves the resistance of the fins to corrosion. For relatively corrosive environments.
	Stainless steel tubing bundle	For corrosive fluids.
	Corrosiveness resistance category C5M	Casing and fan motor assemblies for corrosive environments.
	ATEX II 2G/3G	For explosive atmospheres
Quick, simple installation	Terminal box	Connection to the terminals of each motor on the front panel of the device.
	Protection cabinet	Protected by a thermal-magnetic circuit breaker on each motor.
	Control cabinet	Motor and control protection, either by electronic board, depending on the temperature, or by the chiller if compatible.
	Flanges	NFE 1092-1 type 01A PN16 steel
	Counter-flanges	In steel, with gaskets and bolts.
	Blade protective screen	Impact protection
Optimisation of electrical consumption and noise	EC (electrically commutated) motor	Variable speed control from 0 to 100% using a 0/10V signal.
Application for water without glycol	Drainable coil	Device located on a slope to prevent frost - drainage by gravity
Free cooling application	Free cooling valve kit	Valves with motors controlled by the control cabinet. Controlled according to the operation of the drycooler or water chiller.
Adiabatic cooling application	ADIABATIC COOLER (water misting into the air flow)	Size of the unit reduced by cooling of the ambient air. Operates completely safely due to the antibacterial treatment applied to the water (Option).

DIMENSIONS



	1060	1080	1100	1120	1140	1160	1180	1200
								
L (mm)	3550	4700	5850	7000	8150	9300	10450	11660
w (mm)	2305 to 2420 depending on the model							

Up to size 1180, these units can be transported by container.
Dimensions without options

INSTALLATION RECOMMENDATIONS

- These units are designed to operate outside. When starting up, frost and snow could adversely impair its operation.
As a general measure, all steps should be taken to avoid the risk of air recycling. This is especially important when the installation comprises several units.
It is not recommended to install units near the hot air extraction duct outlet or close to deciduous plants (this could cause clogging).
- Allow a clearance of 1.5 m around the device. Where the use of anti-vibration mounts is required, use a rigid frame which locks the feet together.
- If **speed regulators** other than those recommended by the manufacturer are used, check that these are compatible with the electric motors.
- **Commissioning and maintenance:** refer to the instruction manual.
- These units **comply with the European directives**. The installer is responsible for ensuring the compliance of the installation. The installer must ensure safety and protective devices (emergency stop, shut-off valves, lightning protection, etc.) are put in place and are accessible.

NEW

SINGLE-EFFECT HOT WATER-FIRED ABSORPTION CHILLERS



Complete range 80 to 4000 kW

HFC-refrigerant free

Hot water source from 110 to 80°C

COP_r up to 0.78

16LJ01-03 16LJ-F11-82

Nominal cooling capacity 83-3956 kW

The Carrier 16LJ & 16LJ-F single-effect absorption chillers are designed to provide chilled water from waste heat sources generated from industrial processes and cogeneration systems.

Carrier absorption chillers allow diversification of critical cooling requirements. Critical cooling loads are met with minimal electrical power input.

They allow smaller emergency generators compared to an electrical driven chiller.

The units are ozone-safe and CFC-free. Cooling requirements are met without chlorine-based refrigerants.

They reduce the contribution to global warming and minimise the global impact by greatly reducing electricity consumption and production of greenhouse gases.

The solution inhibitor has no impact on the environment.

An absorption chiller does not utilise mechanical moving parts, and this leads to quiet, vibration-free operation.

The use of high-efficiency heat transfer surface has reduced the space required for installation of the absorption chiller, resulting in a smaller footprint.

PHYSICAL DATA

16LJ/16LJ-F	LJ			LJ-F									
Size	01	02	03	11	12	13	14	21	22	23	24	31	32
Capacity kW	83	131	166	264	316	387	475	545	633	738	844	949	1055
Chilled water system*													
Flow rate l/sec	3.58	5.64	7.14	12.6	15.1	18.5	22.7	26	30.3	35.3	40.3	45.3	50.3
Pressure drop kPa	73	60	60	72.2	78.4	48.5	52.9	46.8	50.2	102	105	104	106
Connection(ANSI) inch	2	2 1/2	2 1/2	3	3	4	4	5	5	5	5	6	6
Retention volume m ³	0.06	0.08	0.08	0.11	0.13	0.15	0.17	0.22	0.25	0.28	0.30	0.35	0.38
Cooling water system*													
Flow rate l/sec	5.4	8.5	10.8	20.8	25	30.6	37.5	43.1	50	58.3	66.7	75	83.3
Pressure drop kPa	23	16	15	78.8	81.8	86.6	95.4	89.1	93.4	58.4	62.5	49.8	51.6
Connection(ANSI) inch	3	4	4	5	5	5	5	6	6	8	8	8	8
Retention volume m ³	0.13	0.18	0.23	0.33	0.37	0.40	0.45	0.58	0.63	0.69	0.76	0.98	1.05
Hot water system*													
Flow rate l/sec	3.28	5.17	6.56	8.4	10.1	12.3	15.1	17.3	20.1	23.4	26.8	30.1	33.5
Pressure drop kPa	58	41	41	24.7	26.4	65.6	72.8	31.5	32.5	22.0	22.1	22.4	22.3
Connection(ANSI) inch	2	2 1/2	2 1/2	4	4	4	4	5	5	6	6	6	6
Retention volume m ³	0.04	0.04	0.07	0.07	0.08	0.09	0.10	0.13	0.14	0.15	0.17	0.21	0.22
Rupture disk connection inch	2	2	2	2	2	2	2	2	2	2	2	2	2
Dimensions													
Length (L) mm	1745	2450	2450	2 640	2 640	3 650	3 650	3 690	3 690	4 770	4 770	5 300	5 300
Height (H) mm	2115	2115	2115	2 430	2 430	2 430	2 430	2 600	2 600	2 600	2 600	2 840	2 840
Width (W) mm	1255	1255	1435	1 400	1 400	1 400	1 400	1 500	1 500	1 500	1 500	1 580	1 580
Tube removal mm	900	1350	1350	2 400	2 400	3 400	3 400	3 400	3 400	4 500	4 500	4 500	4 500
Weight													
Operation weight kg	2070	2680	3150	4 000	4 200	5 200	5 500	6 600	6 900	8 100	8 600	10 500	11 000
Max shipping weight kg	1820	2380	2720	3 500	3 600	4 500	4 700	5 600	5 900	7 000	7 300	9 000	9 300
Shipping method u	1	1	1	1	1	1	1	1	1	1	1	1	1
Power supply V-ph-Hz		400-3-50			400-3-50								
Apparent power kVA	3.1	3.1	3.1	5.0	5.0	5.0	6.8	6.9	6.9	6.9	6.9	10.5	10.5
Total electric current A	4.8	4.8	4.8	7.5	7.5	7.5	10.2	10.3	10.3	10.3	10.3	15.5	15.5
Absorbent pump N°1, power input kW	0.75	0.75	0.75	1.1	1.1	1.1	2.2	2.2	2.2	2.2	2.2	3.0	3.0
Absorbent pump N°1, electric current A	2.2	2.2	2.2	2.8	2.8	2.8	5.5	5.5	5.5	5.5	5.5	7.5	7.5
Absorbent pump N°2, power input kW	/	/	/	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	1.5	1.5
Absorbent pump N°2, electric current A	/	/	/	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	4.7	4.7
Refrigerent pump, power input kW	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Refrigerent pump, electric current A	0.7	0.7	0.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Purge pump, power input kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Purge pump, electric current A	1.1	1.1	1.1	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
PD cell heater kW	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038
Control circuit kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

- * Condition for LJ 12/26,7 °C (Fouling Factor = 0.0176 m²°C/kW)
 29.4/38.4 °C (Fouling Factor = 0.044 m²°C/kW)
 95/86 °C (Fouling Factor = 0.0176 m²°C/kW)
- * Condition for LJ-F 12/7 °C (Fouling Factor = 0.018 m²°C/kW)
 29.4/36.3 °C (Fouling Factor = 0.044 m²°C/kW)
 90/80 °C (Fouling Factor = 0.018 m²°C/kW)

Notes : These performance data are provided to support early design activity. For selection outside ARI operating conditions, contact Carrier

PHYSICAL DATA

16LJ-F	LJ-F												
Size	41	42	51	52	53	61	62	63	71	72	73	81	82
Capacity kW	1 178	1 319	1 477	1 653	1 846	2 110	2 373	2 637	2 901	3 165	3 428	3 692	3 956
Chilled water system*													
Flow rate l/sec	56.4	63.1	70.6	78.9	88.3	100.8	113.3	126.1	138.6	151.1	163.9	176.4	188.9
Pressure drop kPa	102	88.5	74.3	37.4	49.3	95.6	45.9	59.9	114	50.7	62.7	50.8	61.7
Connection(ANSI)	8	8	8	8	8	10	10	10	12	12	12	14	14
Retention volume m ³	0.49	0.56	0.70	0.77	0.83	1.06	1.13	1.21	1.43	1.53	1.63	1.82	1.94
Cooling water system*													
Flow rate l/sec	93.1	104.2	116.7	130.6	145.8	166.7	187.5	208.3	229.2	250	270.8	291.7	312.5
Pressure drop kPa	52.8	55.4	94.4	128	43.1	78.1	105	70.6	45.6	57.4	70.8	59.2	71.4
Connection(ANSI)	10	10	12	12	12	14	14	14	16	16	16	16	16
Retention volume m ³	1.31	1.41	1.97	2.13	2.27	2.87	3.05	3.23	3.79	4.02	4.23	4.75	5.10
Hot water system*													
Flow rate l/sec	37.4	41.8	46.8	52.4	58.5	66.9	75.2	83.6	91.9	101	109	117	126
Pressure drop kPa	21.7	22.1	63.8	28.6	37.8	27.2	36.4	47.5	37.9	47.9	59.2	49.3	59.8
Connection(ANSI)	8	8	8	8	8	10	10	10	10	10	10	10	10
Retention volume m ³	0.29	0.32	0.35	0.37	0.40	0.69	0.72	0.76	0.82	0.86	0.90	0.99	1.03
Rupture disk connection	inch	2	2	2	2	2	2	2	2	2	2	2	2
Dimensions													
Length (L) mm	5 330	5 330	5 500	5 950	6 480	6 710	7 210	8 230	7 230	8 220	8 220	8 320	8 320
Height (H) mm	3 080	3 080	3 450	3 450	3 450	3 680	3 680	3 680	4 000	4 000	4 000	4 180	4 180
Width (W) mm	1 690	1 690	2 000	2 000	2 000	2 230	2 230	2 230	2 730	2 730	2 730	3 010	3 010
Tube removal mm	4 500	4 500	4 600	5 200	5 700	5 200	5 700	6 200	5 700	6 200	6 700	6 200	6 700
Weight													
Operation weight kg	13 000	13 600	18 400	20 000	21 400	28 300	30 300	32 400	38 700	41 200	43 700	46 900	49 600
Max shipping weight kg	10 900	11 300	15 400	16 600	17 900	11 500	12 200	13 100	16 000	17 000	18 000	19 000	19 900
Shipping method	u	1	1	1	1	1	2	2	2	2	2	2	2
Power supply V-ph-Hz 400-3-50													
Apparent power kVA	10.6	10.6	10.6	10.6	10.8	18.7	18.7	18.7	24.2	24.2	25.6	25.6	25.6
Total electric current A	15.6	15.6	15.6	15.6	15.9	27.4	27.4	27.4	35.3	35.3	37.4	37.4	37.4
Absorbent pump N°1, power input kW	3.0	3.0	3.0	3.0	3.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Absorbent pump N°1, electric current A	7.5	7.5	7.5	7.5	7.5	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Absorbent pump N°2, power input kW	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.7	3.7	3.7	3.7	3.7
Absorbent pump N°2, electric current A	4.7	4.7	4.7	4.7	5.0	5.0	5.0	5.0	11.0	11.0	11.0	11.0	11.0
Refrigerent pump, power input kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.75	0.75	1.2	1.2	1.2
Refrigerent pump, electric current A	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.5	2.5	4.6	4.6	4.6
Purge pump, power input kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.75	0.75	0.75	0.75	0.75
Purge pump, electric current A	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.9	1.9	1.9	1.9	1.9
PD cell heater kW	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038
Control circuit kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

* Condition for LJ-F 12/7 °C (Fouling Factor = 0.018 m²/kW)
29.4/36.3°C (Fouling Factor = 0.044 m²/kW)
90/80°C (Fouling Factor = 0.018 m²/kW)

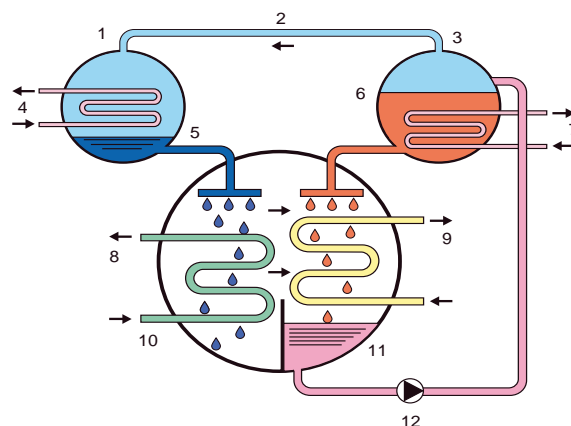
Notes : These performance data are provided to support early design activity. For selection outside ARI operating conditions, contact Carrier

THE ABSORPTION CYCLE

The absorption cooling cycle, like the mechanical vapour compression refrigeration cycle, utilizes the latent heat of evaporation of a refrigerant to remove heat from the entering chilled water. Vapour compression refrigeration systems use a chlorine-based refrigerant and a compressor to transport the refrigerant vapour to be condensed in the condenser. The absorption cycle, however, uses water as the refrigerant and an absorbent lithium bromide solution to absorb the vaporised refrigerant. Heat is then applied to the solution to release the refrigerant vapour from the absorbent. The refrigerant vapour is then condensed in the condenser.

The basic single-effect absorption cycle (see Figure 1) includes generator, condenser, evaporator and absorber with refrigerant (liquid) and lithium bromide as the working solutions. The generator utilizes a heat source (steam or hot water) to vaporise the diluted lithium bromide solution. The water vapour that is released travels to the condenser where it is condensed back into a liquid, transferring the heat to the cooling tower water. Once condensed, the liquid refrigerant is distributed over the evaporator tubes, removing the heat from the chilled water and vaporising the liquid refrigerant. The concentrated lithium bromide solution from the generator passes into the absorber, absorbs the refrigerant vapour solution from the evaporator and dilutes itself. The diluted lithium bromide solution is then pumped back to the generator where the cycle is started again.

Figure 1 - Simplified absorption cycle

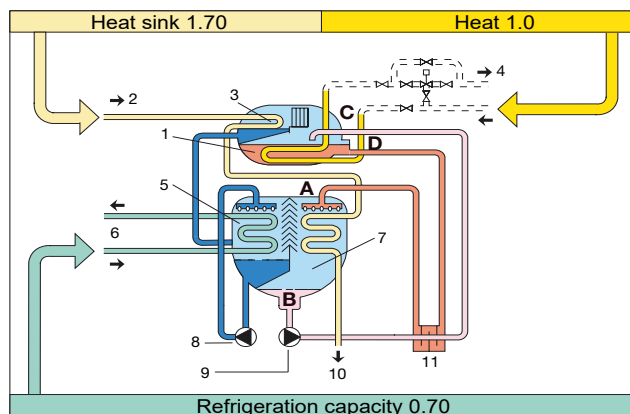


Legend

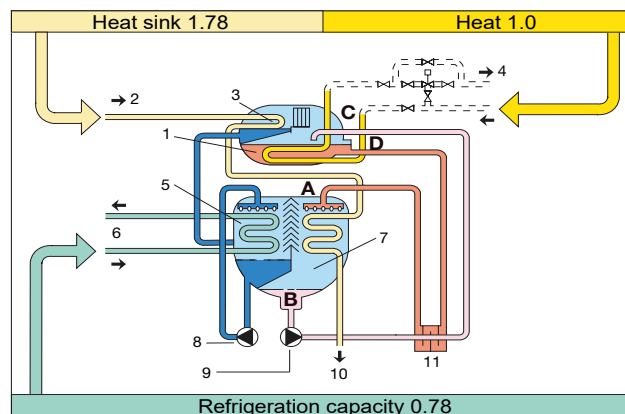
1. Condenser
2. Refrigerant vapour
3. Generator
4. Cooling water
5. Liquid refrigerant
6. Concentrated solution
7. Heat source
8. Chilled water
9. Cooling water
10. Evaporator
11. Absorber
12. Absorbent pump

Cooling cycle schematic

LJ 01/02/03

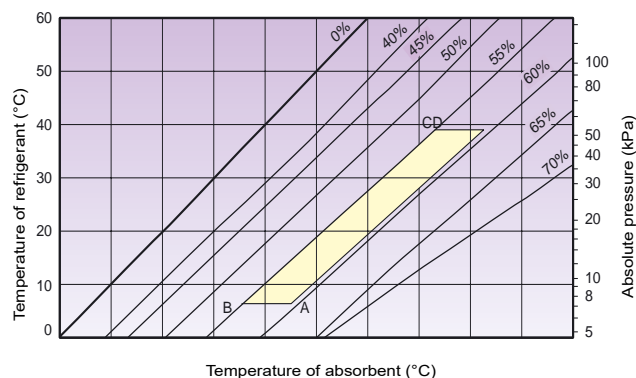


LJF 11-82



Legend

- | | |
|---------------------|---------------------------|
| 1. Generator | 10. Heat exchanger |
| 2. Cooling water | 11. Cooling water |
| 3. Condenser | 12. Concentrated solution |
| 4. Hot water | 13. Diluted solution |
| 5. Evaporator | 14. Liquid solution |
| 6. Chilled water | 15. Refrigerant vapour |
| 7. Absorber | 16. Cooling water |
| 8. Refrigerant pump | 17. Chilled water |
| 9. Absorbent pump | 18. Hot water |



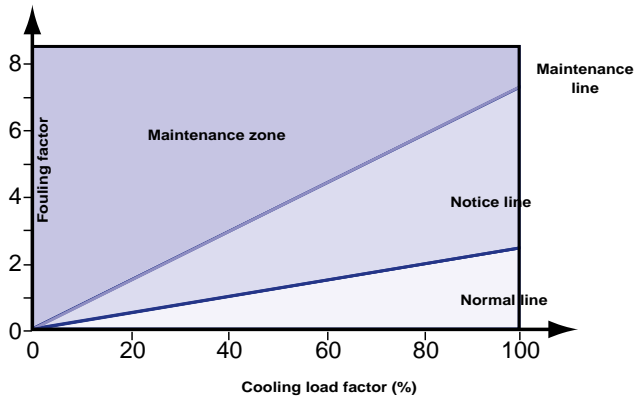
FEATURES AND ADVANTAGES

Expert self-diagnosis function

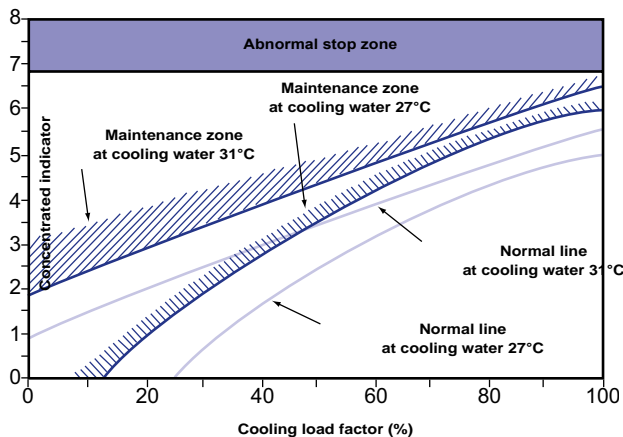
The expert function is provided to monitor operating conditions, predict chiller information and maintain stable operation.

Predictive maintenance information

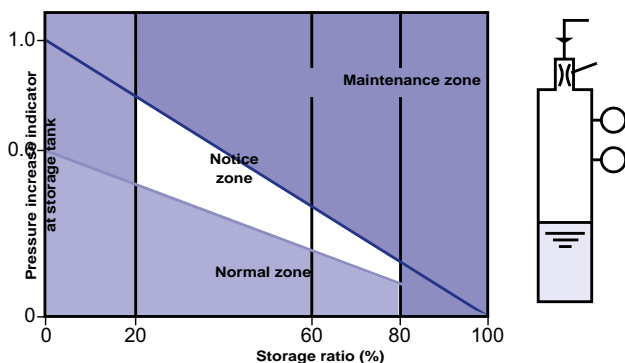
Graph 1 - Fouling of heat transfer tubes in cooling water system



Graph 2 - Tend of absorbent concentration



Graph 3 - Vacuum condition monitoring



Legend

1. Storage tank
2. Diluted solution
3. Purge nozzle
4. Pd cell
5. Pressure sensor

Control system

- The Carrier control system surpasses other proportional only control systems available today. The digital PID (proportional plus integral plus derivative) control maximises unit performance by maintaining a ± 0.5 K variance in leaving chilled-water temperature from the set-point. Proportional controls can typically only maintain a ± 1 K variance from the set-point. The controller's innovative design also incorporates the ability to start and stop the system chilled/hot and cooling water pumps. During shutdown these pumps are sequenced to ensure a complete dilution cycle
- The leaving chilled-water temperature is measured every five seconds and steam input is changed according to the gradient of the leaving chilled-water temperature curve. System temperatures, set-points, and operational records are displayed along with indicator lights for the chiller and pumps.
- The Carrier control system offers its users selfdiagnostics by constantly monitoring the chiller status and will automatically shut the chiller down if a fault occurs. The cause of shutdown will be retained in the memory and can be displayed for immediate operator review. The controller's memory will also retain and display the cause of the last three system fault conditions. This method of retaining fault conditions is extremely useful for maintaining an accurate

FEATURES AND ADVANTAGES

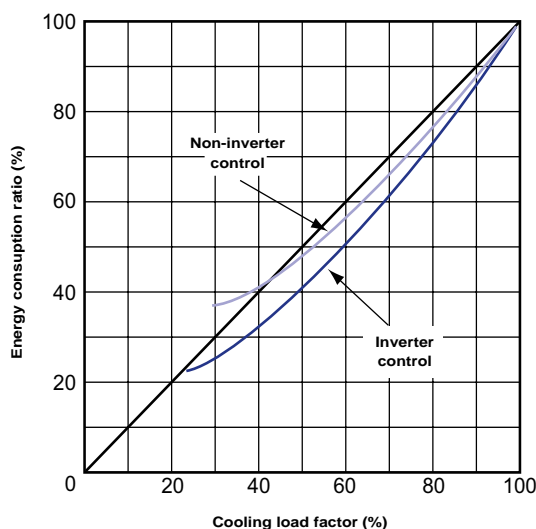
Fast digital PID control

The introduction of new digital PID control stabilises the chilled/hot water temperature with high accuracy. It quickly responds to the load fluctuation and supplies stable chilled/hot water temperature. It is suitable for air-conditioning intelligent buildings which require sophisticated control.

Saving energy with the inverter (option)

Balancing the load and flow rate with the absorbent pump's inverter control enables efficient and energy-saving operation. As a result, it reduces input energy and electric power consumption. Running cost is decreased by 5% compared to non-inverter control.

Graph 4 - Running cost curve



Notes

1. Chilled water leaving temperature 7°C constant
2. Cooling water entering temperature:

Load factor (%)	Temperature (°C)
100	32
50	27
30	25

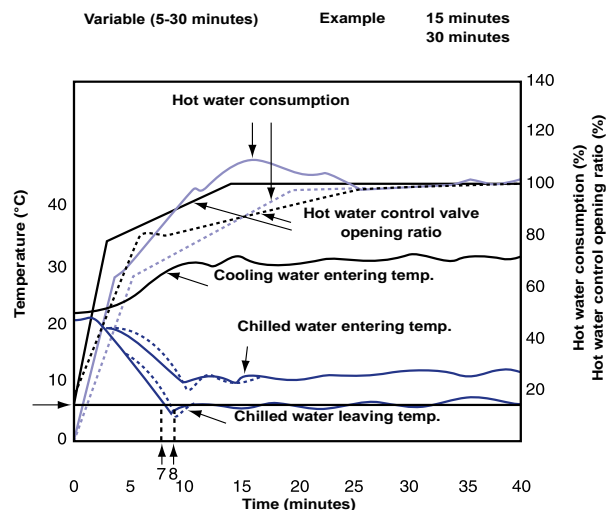
Purge system

The high-performance purge system maintains the required operating pressure, preserves chiller performance characteristics, minimises chiller maintenance to one purge operation per season (for year-round operation).

Hot-water valve opening control

- At the start-up, the opening angle of the hot-water control valve is controlled in three stages, reducing the amount of hot water and the time needed to reach the desired level, compared with the previous model.
- Adjusting the opening speed of the hot-water control valve at the second and third stage, it is possible to set up the most suitable conditions for the site auxiliary equipment.

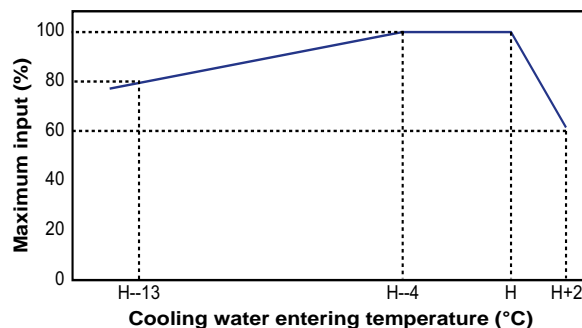
Graph 5 - Hot water valve opening control



Expansion of safe operating zone

- This ensures quick response to rapid changes and maintains stable operation.
- The safe operating zone is between 19 °C and 34 °C cooling water temperature (for a nominal cooling water entering temperature of 32 °C).

Graph 6 - Safe operating zone chart



Crystallisation protection

A microprocessor monitors the absorbent concentration. Steam supply is stopped, and the unit is returned to normal operation, when the concentration is over a certain limit, to prevent the crystallisation of absorbent.

SINGLE-EFFECT STEAM-FIRED ABSORPTION CHILLERS SUPER ABSORPTION



Complete range
350 to 2500 kW

HFC-refrigerant free

Steam supply pressure
50 to 100 kPa

16TJ

Nominal cooling capacity 350-2500 kW

The Carrier Corporation has more than 100 years experience in providing HVAC systems and equipment around the world and offers a complete product solutions for many different type of applications: From residential to industrial.

For all cases where power grid is not available on site or either not extensively developed, or where thermal energy sources (water or steam) are available on site, Carrier offers a complete range of absorption chillers.

PHYSICAL DATA

Single effect steam-fired absorption chillers

16TJ		11	12	13	14	21	22	23	24
Cooling capacity	kW	352	422	527	633	738	844	985	1125
Chilled water system*									
Flow rate	l/s	15.1	18.2	22.7	27.3	31.7	36.4	42.5	48.3
Pressure drops	kPa	50	51	64	67	60	64	42	45
Connection (ANSI)	in	4	4	4	4	5	5	6	6
Retention volume	m ³	0.12	0.13	0.15	0.17	0.22	0.25	0.29	0.31
Cooling water system*									
Flow rate	l/s	22.7	27.3	34.2	40.8	47.8	54.4	63.6	72.8
Pressure drops	kPa	34	37	32	36	32	35	65	70
Connection (ANSI)	in	5	5	5	5	6	6	8	8
Retention volume	m ³	0.33	0.37	0.41	0.45	0.58	0.63	0.69	0.76
Steam system									
Consumption	kg/h	780	940	1170	1410	1640	1880	2190	2500
Steam inlet (ANSI)	in	5	5	5	5	6	6	8	8
Drain outlet (ANSI)	in	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
Control valve	in	2	2	2-1/2	2-1/2	2-1/2	3	3	4
Shutoff valve	in	2	2	2-1/2	2-1/2	2-1/2	3	3	4
Dimensions									
Length	mm	2690	2690	3690	3690	3790	3790	4850	4850
Height	mm	2200	2200	2200	2200	2350	2350	2370	2370
Width	mm	1400	1400	1400	1400	1560	1560	1560	1560
Tube removal space	mm	2400	2400	3400	3400	3400	3400	4500	4500
Weight									
Operating weight	kg	4000	4300	5100	5400	6700	6900	7900	8300
Max shipping weight**	kg	3500	3700	4500	4700	5800	6000	6900	7200
Power supply	V-ph-Hz	400-3-50							
Apparent power	kVA	4.0	4.0	4.0	4.0	5.8	5.8	5.9	5.9
Total electric current	A	6.1	6.1	6.1	6.1	8.8	8.8	8.9	8.9
Absorbent pump, power input	kW	1.1	1.1	1.1	1.1	2.2	2.2	2.2	2.2
Absorbent pump, electric current	A	2.8	2.8	2.8	2.8	5.5	5.5	5.5	5.5
Refrigerant pump, power input	kW	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Refrigerant pump, electric current	A	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4
Purge pump, power input	kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Purge pump, electric current	A	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
PD cell heater	kW	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038
Control circuit	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

* In accordance with ARI 560 - 2000
12.2 / 6.7 °C (fouling factor = 0.0176 m² K/kW)
29.4 / 38.4 °C (fouling factor = 0.044 m² K/kW)
Saturated steam 100 kPa

** All sizes shipped as one-piece

Notes: These performance data are provided to support early design activity. For selection outside ARI operating conditions contact Carrier.

PHYSICAL DATA

16TJ		31	32	41	42	51	52	53
Cooling capacity	kW	1266	1407	1582	1758	1969	2215	2461
Chilled water system*								
Flow rate	l/s	54.4	60.6	68.1	75.8	84.7	95.3	106.1
Pressure drops	kPa	48	51	44	39	35	47	61
Connection (ANSI)	in	6	6	8	8	8	8	8
Retention volume	m ³	0.35	0.38	0.49	0.56	0.7	0.77	0.83
Cooling water system*								
Flow rate	l/s	81.7	90.8	102.2	113.6	127.2	143.1	158.9
Pressure drops	kPa	54	57	59	63	39	52	68
Connection (ANSI)	in	8	8	10	10	12	12	12
Retention volume	m ³	0.98	1.05	1.31	1.41	1.98	2.13	2.28
Steam system								
Consumption	kg/h	2810	3120	3510	3900	4370	4920	5460
Steam inlet (ANSI)	in	8	8	8	8	10	10	10
Drain outlet (ANSI)	in	2	2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2
Control valve	in	4	4	4	4	4	5	5
Shutoff valve	in	4	4	4	4	4	5	5
Dimensions								
Length	mm	4940	4940	4990	4990	5060	5600	6100
Height	mm	2610	2610	2860	2860	3210	3210	3210
Width	mm	1630	1630	1700	1700	1990	1990	1990
Tube removal space	mm	4500	4500	4500	4500	4600	5200	5700
Weight								
Operating weight	kg	10300	10600	12500	12800	17500	18900	20200
Max shipping weight**	kg	8900	9100	10700	10900	14800	16000	17100
Power supply	V-ph-Hz	400-3-50						
Apparent power	kVA	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Total electric current	A	10.9	10.9	10.9	10.9	10.9	10.9	10.9
Absorbent pump, power input	kW	3	3	3	3	3	3	3
Absorbent pump, electric current	A	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Refrigerant pump, power input	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Refrigerant pump, electric current	A	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Purge pump, power input	kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Purge pump, electric current	A	1.1	1.1	1.1	1.1	1.1	1.1	1.1
PD cell heater	kW	0.038	0.038	0.038	0.038	0.038	0.038	0.038
Control circuit	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3

* In accordance with ARI 560 - 2000
12.2 / 6.7 °C (fouling factor = 0.0176 m² K/kW)
29.4 / 38.4°C (fouling factor = 0.044 m² K/kW)
Saturated steam 100 kPa

** All sizes shipped as one-piece

Notes: These performance data are provided to support early design activity. For selection outside ARI operating conditions contact Carrier.

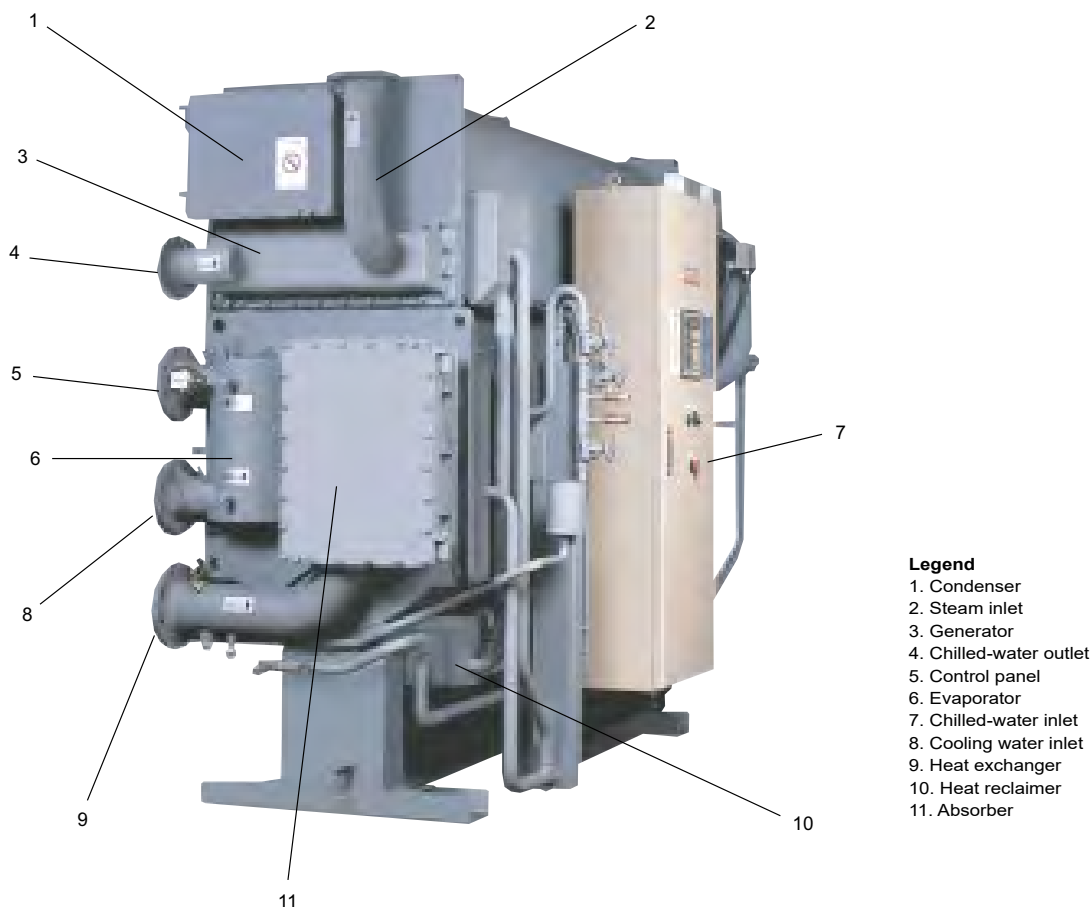
NOMENCLATURE

16TJ - 11

Capacity code

Unit type: Single-effect, steam-fired absorption chillers

COMPONENT IDENTIFICATION



Legend

1. Condenser
2. Steam inlet
3. Generator
4. Chilled-water outlet
5. Control panel
6. Evaporator
7. Chilled-water inlet
8. Cooling water inlet
9. Heat exchanger
10. Heat reclaimer
11. Absorber

SCOPE OF SUPPLY

1. Standards met

The units comply with the following standards:

- ARI 560-2000
- 2006/42/EC (machine directive)
- 2006/95/EC (low-voltage directive)
- 2004/108/EC (electromagnetic compatibility directive)
- 97/23/EC (pressure equipment directive).

2. Absorption chiller, comprising:

1. Lower shell

- Evaporator and refrigerant dispersion tray
- Absorber and absorbent dispersion tray with eliminators
- Bases.

2. Upper shell

- Generator with eliminators
- Condenser with eliminators
- Rupture disk.

3. Heat exchangers with refrigerant drain heat reclaimer

4. Pumps

- Absorbent pump with isolating valves
- Refrigerant pump with isolating valves
- Purge pump.

5. Purge unit

- Purge tank with ejector device
- Diaphragm valves and piping with liquid trap
- Pressure sensor
- Palladium cell with heater.

6. Control panel

- Controller with data display
- LEDs and operation buttons
- Inverter for absorbent pump (option)
- Circuit breaker
- Transformer
- Relays and terminal blocks
- Purge pump operation switch.

7. Locally mounted parts

- Temperature sensors
- Chilled-water flow switch.

8. Interconnecting piping and wiring

- Refrigerant and absorbent piping
- Internal power and control wiring.

9. Initial charge

- Absorbent (lithium bromide)
- Refrigerant (water)
- Inhibitor (lithium molybdate).

10. Painting

- Main unit: Rust-preventive paint
- Control panel: Finish paint.

11. Accessories

- Operation manual
- Washer (for fixing foundation bolts)
- Gasket and sealant for rupture disk
- Purge pump oil
- Matching flanges, gaskets, bolts and nuts.

SCOPE OF SUPPLY

3. Factory test

1. Check of external dimensions
2. Hydraulic pressure test of water headers Test pressure is 1.5 times of maximum working pressure
3. Vacuum-side leak test
4. Electric insulation resistance test
5. Dielectric breakdown test
6. Function test of electric circuit and safety devices

4. Scope of supply of the purchaser

1. Building and foundations
2. External chilled water, cooling water and steam piping work including various safety valves, isolation valves, mating flanges, gaskets, bolts and nuts, etc.
3. External wiring and piping for the chillers including necessary parts
4. Insulation for the chillers including necessary parts.

5. Finish painting of the chillers (if needed)
6. Cooling water entering temperature control device
7. Cooling water treatment device
8. Various temperature/pressure gauges for steam and water lines.
9. Cooling tower(s), chilled-water pump(s) and steam control valve and steam shut-off valve
10. Electric power supply (as specified)
11. Supply of chilled water, cooling water, steam and air* at rated conditions
12. Maintenance of the chiller
13. Necessary tools, labour and materials for installation and site test operation
14. Any other item not specifically mentioned in the scope of supply

* If pneumatic steam valve control is used.

SCOPE OF ORDER

Item	Standard	Option
Chilled water		
Temperature	Entering: 12.2 °C, leaving: 5 °C through 12 °C Leaving: 6.7 °C, temperature difference 3 K through 10 K	
Flow rate	0.043 l/s x kW - Changes depending on chilled water temperature difference (min 50%)	
Max. working pressure	1034 kPa	1540 kPa, 2068 kPa
Hydraulic test pressure	Max. working pressure x 1.5	Max working pressure x 1.5
Fouling factor	0.018 m ² K/kW Max. 0.18 m ² K/kW	
Tube material	Copper tube	Cu Ni tube
Water quality	Refer to JRA-GL02E-1994	No option
Structure of water header	Removable type and epoxy treated	No option
Manufacturing standard of water header	Flanged ANSI	No option
Cooling water		
Temperature	Entering: 29.4 °C Leaving: 38.4 °C, entering: 20 °C through 33 °C	
Flow rate	0.065 l/s per kW. Within the water flow rate range of each model	
Max. working pressure	1034 kPa	1540 kPa, 2068 kPa
Hydraulic test pressure	Max. working pressure x 1.5	
Fouling factor	0.044 m ² K/kW. Max. 0.18 m ² K/kW	
Tube material	Copper tube	Cu Ni tube
Water quality	Refer to JRA-GL02E-1994	No option
Structure of water header	Hinged type and epoxy treated	No option
Manufacturing standard of water header	Flanges ANSI	No option
Steam		
Supply pressure	100 kPa, 50 kPa through 100 kPa, max. 5 K superheat	
Specific steam consumption	2.22 kg/h/kW. Changes depend on the specifications.	
Max. working pressure	146 kPa	No option
Hydraulic test pressure	Max. working pressure x 1.5	No option
Tube material	9/1 Copper nickel tube	No option
Steam quality	Refer to JIS-B-8223	No option
Manufacturing standard of water header	Flanged ANSI	No option
Electricity		
Power supply	400 V - 3 phase - 50Hz (Voltage control within ±10%, frequency control within ±5%)	Contact the Carrier representative
Shipment		
	One section	Multi-shipment

SCOPE OF ORDER

Item	Standard	Option
Control		
Safety functions	Refrigerant temperature Chilled water freeze protection Chilled water flow switch Cooling water temperature HT generator temperature HT generator pressure HT generator solution level Crystallisation protection Motor protection	Cooling water flow switch
Capacity control	Digital PID control by chilled-water temperature	Inverter control of #1 absorbent pump
Parts	Selected by Carrier	No option
Control panel		
Painting	Munsell 5Y-7/1	No option
Indication lights	Operation Stop Alarm	No option No option No option
Display	LED	No option
External terminals (volt-free normally open contact)	Operation indication Stop indication Alarm indication Feedback indication Cooling mode indication	No option
Structure Parts	Indoor type Selected by Carrier	No option No option
Electrical wiring and piping	Wire: 600 V polyvinyl grade (chloride-insulated wires) Pipe: Plicatube (flexible metal conduits)	No option No option
Insulation condition		
Place Ambient temperature Ambient humidity	Indoor 5 °C through 40 °C Relative humidity: Max. 90 % at 45 °C	No option No option No option
Atmosphere	Be sure the following are not present: - Corrosive gas - Explosive gas - Poisonous gas	No option

FEATURES AND ADVANTAGES

- The Carrier 16TJ single-effect absorption chillers are designed for cooling applications where low-pressure steam is available as waste heat.
- They can tie into district steam systems.
- Carrier absorption chillers allow diversification of critical cooling requirements. Critical cooling loads are met with minimal electrical power input.
- They allow smaller emergency generators compared to an electrical driven chiller.
- The units are ozone-safe and CFC-free. Cooling requirements are met without chlorine-based refrigerants.
- They reduce the contribution to global warming and minimise the global impact by greatly reducing electricity consumption and production of greenhouse gases.
- The solution inhibitor has no impact on the environment.
- An absorption chiller does not utilise mechanical moving parts, and this leads to quiet, vibration-free operation.
- The use of high-efficiency heat transfer surfaces has reduced the space required for installation of the absorption chiller, resulting in a smaller footprint.

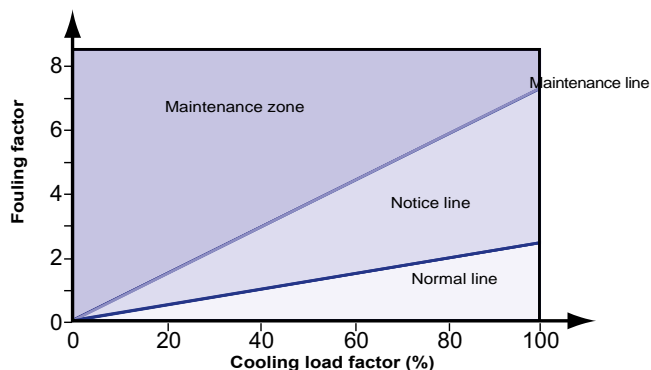
CONTROLS

Expert self-diagnosis function

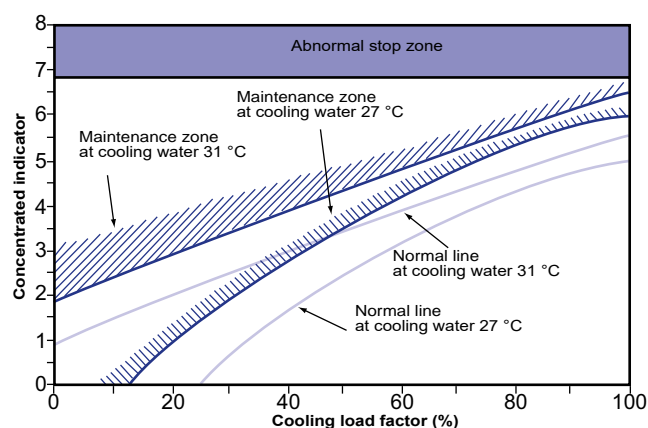
- The expert function is provided to monitor operating conditions, predict chiller information and maintain stable operation.

Predictive maintenance information

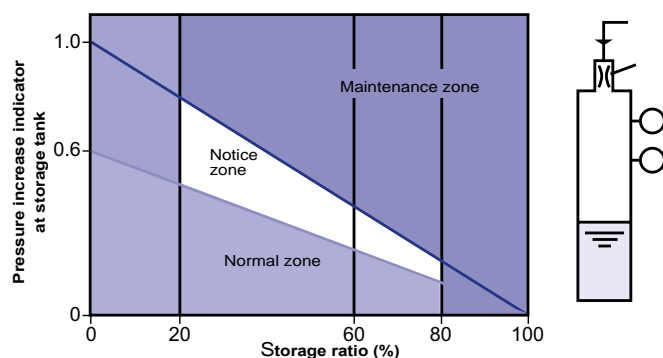
Graph 1 - Fouling of heat transfer tubes in cooling water system



Graph 2 - Trend of absorbent concentration



Graph 3 - Vacuum condition monitoring



Legend

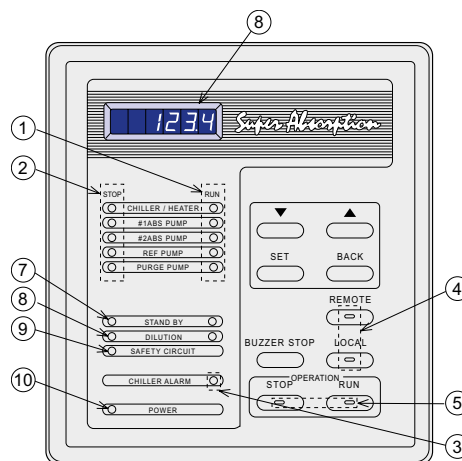
1. Storage tank
2. Diluted solution
3. Purge nozzle
4. Pd cell
5. Pressure sensor

Carrier control system

- The Carrier control system surpasses other proportional only control systems available today. The digital PID (proportional plus integral plus derivative) control maximises unit performance by maintaining a ± 0.5 K variance in leaving chilled-water temperature from the set-point. Proportional controls can typically only maintain a ± 1 K variance from the set-point. The controller's innovative design also incorporates the ability to start and stop the system chilled and cooling water pumps. During shutdown these pumps are sequenced to ensure a complete dilution cycle.
- The leaving chilled-water temperature is measured every five seconds and steam input is changed according to the gradient of the leaving chilled-water temperature curve. System temperatures, set-points, and operational records are displayed along with indicator lights for the chiller and pumps.
- The Carrier control system offers its users selfdiagnostics by constantly monitoring the chiller status and will automatically shut the chiller down if a fault occurs. The cause of shutdown will be retained in the memory and can be displayed for immediate operator review. The controller's memory will also retain and display the cause of the last three system fault conditions. This method of retaining fault conditions is extremely useful for maintaining an accurate record of unit performance and fault history.

Display and control board

Figure 2 - Indication lights



Legend

- | Legend Name | LED colour |
|---------------------------------------|---------------------|
| ① Operation indication light | Green |
| ② Stop indication light | Orange |
| ③ Alarm indication light | Red |
| ④ Remote/local select button with LED | Green |
| ⑤ Operation select button with LED | Green |
| ⑥ Data display | 7 segment LED (red) |
| ⑦ Stand-by indication light | Green |
| ⑧ Dilution indication light | Green |
| ⑨ Safety circuit indication light | Green |
| ⑩ Power indication light | Orange |
| GL. Purge indication light | Green |
| 43P. Purge pump on-off switch | |
| 43ES. Emergency stop switch | |

CONTROLS

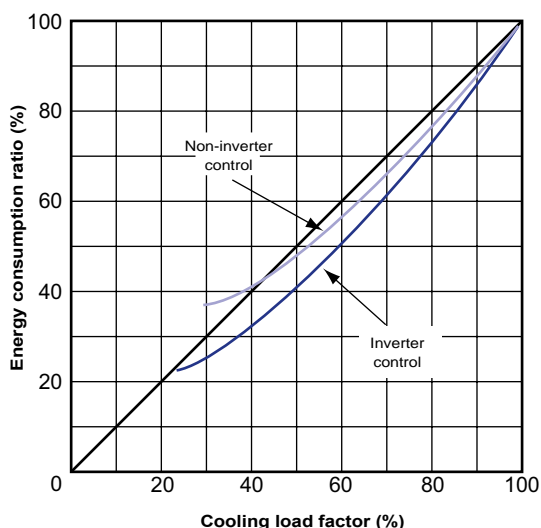
Fast digital PID control

The introduction of new digital PID control stabilises the chilled water temperature with high accuracy. It quickly responds to the load fluctuation and supplies stable chilled water temperature. It is suitable for air-conditioning intelligent buildings which require sophisticated control.

Saving energy with the inverter (option)

Balancing the load and flow rate with the absorbent pump's inverter control enables efficient and energy-saving operation. As a result, it reduces input energy and electric power consumption. Running cost is decreased by 5% compared to non-inverter control.

Graph 4 - Running cost curve



Notes:

1. Chilled-water leaving temperature 7 °C constant
2. Cooling water entering temperature:

Load factor (%)	Temperature (°C)
100	32
50	27
30	25

Purge system

- The high-performance purge system maintains the required operating pressure, preserves chiller performance characteristics, minimises chiller maintenance to one purge operation per season (for year-round operation).

Steam valve opening control

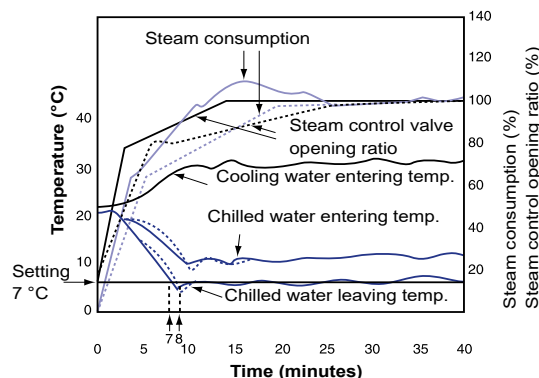
- At the start-up, the opening angle of the steam control valve is controlled in three stages, reducing the amount of steam and the time needed to reach the desired level, compared with the previous model.
- Adjusting the opening speed of the steam control valve at the second and third stage, it is possible to set up the most suitable conditions for the site auxiliary equipment.

Graph 5 - Steam valve opening control

Variable (5-30 minutes)

Example:

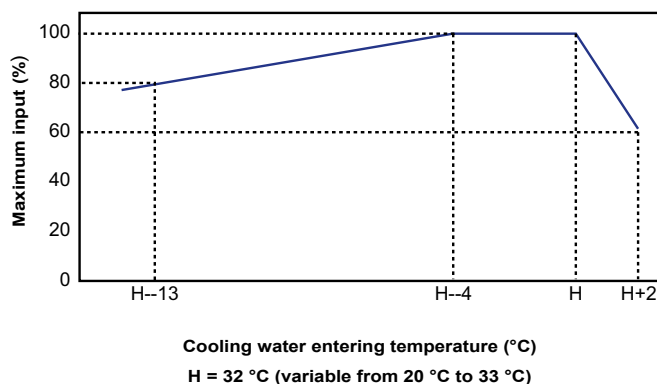
15 minutes
30 minutes



Expansion of safe operating zone

- This ensures quick response to rapid changes and maintains stable operation.
- The safe operating zone is between 19 °C and 34 °C cooling water temperature (for a nominal cooling water entering temperature of 32 °C).

Graph 6 - Safe operating zone chart



Crystallisation protection

- A microprocessor monitors the absorbent concentration. Steam supply is stopped, and the unit is returned to normal operation, when the concentration is over a certain limit, to prevent the crystallisation of absorbent.

FOUNDATION DIMENSIONS, MM

Figure 3 - 16TJ-11 through 16TJ-42

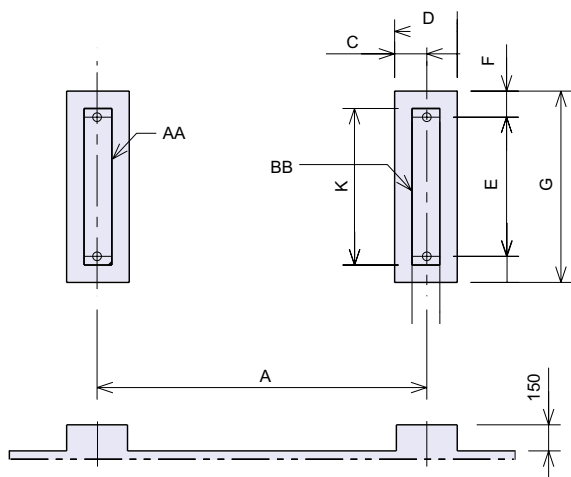


Figure 5 - 16TJ-51 through 16TJ-53

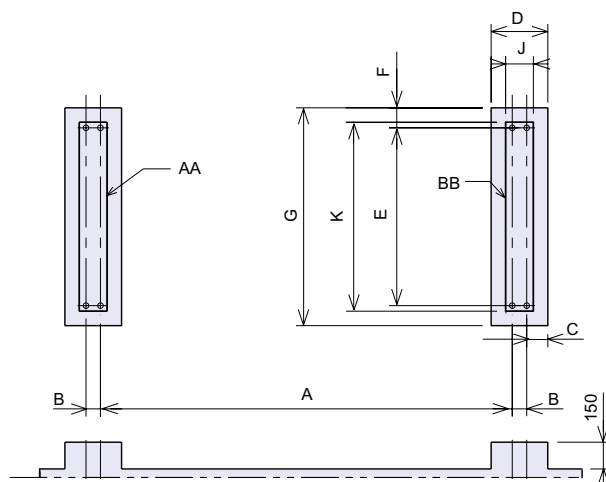
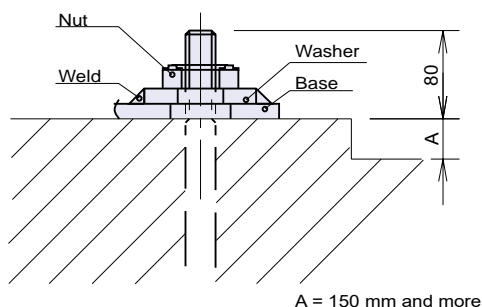


Figure 4 - Details of weld



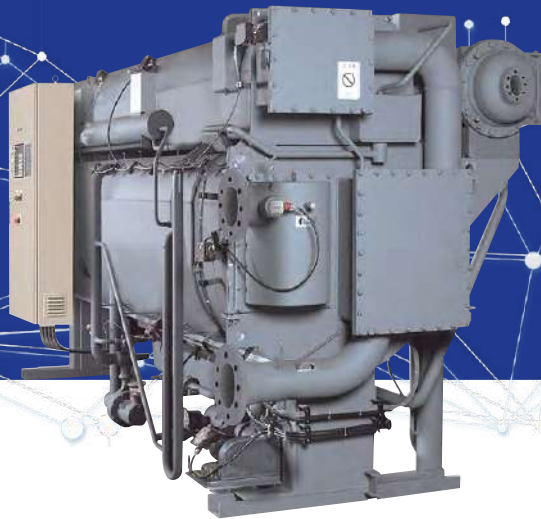
Notes:

1. The machine base has ø50-mm hole for the anchor bolt.
2. The anchor bolt should be fixed as shown in the detail drawing. Washer should be welded to the base (see Fig. 4)
3. There should be a drain channel around the foundation.
4. The floor surface should be made waterproof to facilitate maintenance work.
5. The surface of the foundation should be made flat.
6. Anchor bolts and nuts are to be supplied by customer.

Dimensional data

16TJ	Weight, kg			Dimensions, mm								
	AA + BB	AA	BB	A	B	C	D	E	F	G	J	K
11	3800	1900	1900	1890	--	175	360	800	150	1100	160	900
12	4000	2000	2000	1890	--	175	360	800	150	1100	160	900
13	4900	2450	2450	2916	--	175	360	800	150	1100	160	900
14	5100	2550	2550	2916	--	175	360	800	150	1100	160	900
21	6200	3100	3100	2866	--	200	400	1000	150	1300	200	1100
22	6500	3250	3250	2866	--	200	400	1000	150	1300	200	1100
23	7600	3800	3800	3886	--	200	400	1000	150	1300	200	1100
24	8000	4000	4000	3886	--	200	400	1000	150	1300	200	1100
31	9800	4900	4900	3836	--	225	450	1100	150	1400	250	1200
32	10200	5100	5100	3836	--	225	450	1100	150	1400	250	1200
41	11800	5900	5900	3836	--	225	450	1150	150	1450	250	1250
42	12300	6150	6150	3836	--	225	450	1150	150	1450	250	1250
51	16900	8450	8450	3706	130	190	510	1600	180	1960	250	1700
52	18300	9150	9150	4248	130	190	510	1600	180	1960	250	1700
53	19600	9800	9800	4746	130	190	510	1600	180	1960	250	1700

DOUBLE-EFFECT STEAM-FIRED ABSORPTION CHILLERS



SUPER ABSORPTION

16NK

Nominal cooling capacity 345 to 4652 kW

Eighteen sizes with nominal cooling capacities from 345 to 4652 kW.

The 16NK absorption chillers are designed for cooling applications where low-pressure steam is available as waste heat.

Minimises global warming effect by greatly reducing power consumption and eliminating the generation of greenhouse gases.

Allows diversification of critical cooling requirements. Critical cooling loads are met with minimal electrical power input.

Allows use of smaller emergency generators since the electrical load associated with an absorption chiller is minimal.

PHYSICAL DATA

16NK		11	12	13	21	22	31	32	41	42
Cooling capacity	kW	345	447	549	689	861	1034	1238	1378	1551
Chilled water system*										
Flow rate	l/s	14.8	19.2	23.6	29.7	37.2	44.4	53.3	59.4	66.7
Pressure drop	kPa	44	64	64	57	42	41	49	46	41
Connection (ANSI)	in	4	4	4	5	6	6	6	8	8
Retention volume	m ³	0.13	0.15	0.17	0.24	0.28	0.34	0.36	0.46	0.48
Cooling water system*										
Flow rate	l/s	24.7	31.9	39.4	49.4	61.9	74.2	88.9	98.9	111.4
Pressure drop	kPa	68	40	49	109	74	53	65	67	73
Connection (ANSI)	in	5	5	5	6	8	8	8	10	10
Retention volume	m ³	0.34	0.38	0.42	0.58	0.63	0.89	0.95	1.11	1.9
Steam system		Saturated steam 784 kPa								
Consumption	kg/h	400	510	630	790	980	1180	1410	1570	1770
Dimensions		mm								
Length A		2810	3850	3850	3880	4920	5040	5040	5100	5100
Height B		2200	2200	2200	2250	2250	2390	2390	2600	2600
Width C		2050	1910	1910	2240	2070	2170	2170	2400	2400
Operating weight	kg	4600	5800	6100	7500	8800	11200	11800	13900	14500
Power supply		V-ph-Hz								
		400-3-50								
Total current drawn	A	10.8	10.8	10.8	13.3	13.3	13.6	13.6	20.7	20.7

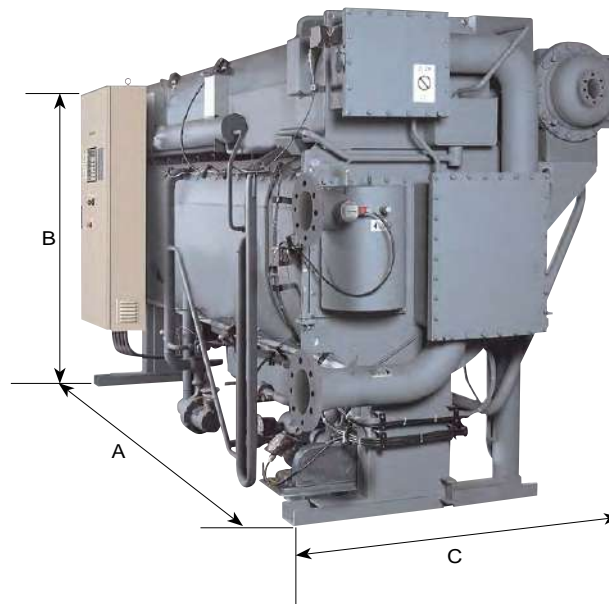
16NK		51	52	53	61	62	63	71	72	81
Cooling capacity	kW	1723	1927	2170	2412	2757	3101	3446	3963	4652
Chilled water system*										
Flow rate	l/s	74.2	83.1	93.9	103.9	118.6	133.6	148.3	170.6	200.3
Pressure drop	kPa	98	46	61	123	83	78	54	81	84
Connection (ANSI)	in	8	8	8	10	10	10	12	12	14
Retention volume	m ³	0.65	0.71	0.77	0.99	1.06	1.13	1.41	1.61	1.94
Cooling water system*										
Flow rate	l/s	123.6	138.3	155.6	173.1	197.8	222.5	247.2	284.4	333.9
Pressure drop	kPa	53	71	94	61	83	111	77	113	122
Connection (ANSI)	in	12	12	12	14	14	14	16	16	16
Retention volume	m ³	1.87	2.01	2.14	2.79	2.97	3.15	3.67	4.11	4.76
Steam system		Saturated steam 784 kPa								
Consumption	kg/h	1960	2200	2470	2750	3140	3530	3920	4510	5300
Dimensions		mm								
Length A		5330	5870	6370	6100	6190	6710	6440	7460	7460
Height B		2900	2900	2900	3330	3330	3330	3450	3450	3650
Width C		2770	2800	2800	2970	3000	3000	3300	3300	3500
Operating weight	kg	18800	20800	22300	26500	30000	32100	38000	42300	47300
Power supply		V-ph-Hz								
		400-3-50								
Total current drawn	A	22.7	24.5	24.5	25.5	25	25	33.5	33.5	33.5

Cooling per ARI 560 2000:

* 12.2 → 6.7°C (fouling factor = 0.0176 m² K/kW)** 29.4 → 35.4°C (fouling factor = 0.044 m² K/kW)

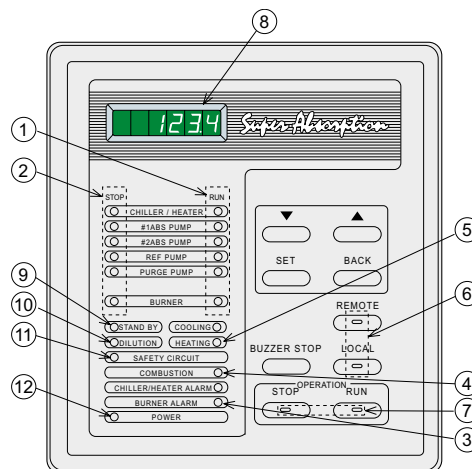
FEATURES AND ADVANTAGES

- Eighteen sizes with nominal cooling capacities from 345 to 4652 kW.
- The 16NK absorption chillers are designed for cooling applications where low-pressure steam is available as waste heat.
- Can tie into district steam systems.
- Allows diversification of critical cooling requirements. Critical cooling loads are met with minimal electrical power input.
- Allows use of smaller emergency generators since the electrical load associated with an absorption chiller is minimal.
- Environmentally balanced and CFC-free.
- Minimises global warming effect by greatly reducing power consumption and eliminating the generation of greenhouse gases.
- Reduced noise and vibration levels. The absorption chiller does not use a large motor-compressor, leading to quiet, vibration-free operation.
- Small footprint. The high efficiency associated with double-effect chillers results in a reduction of the required installation space.
- Auto-diagnosis system monitors operating conditions, predicts chiller information and maintains stable operation.
- Advanced high-precision control system.
- Absorption pump with inverter control for efficient, energy-saving operation.
- High-performance purge system minimises maintenance requirements.
- State-of-the-art protection devices guarantee enhanced operating safety.



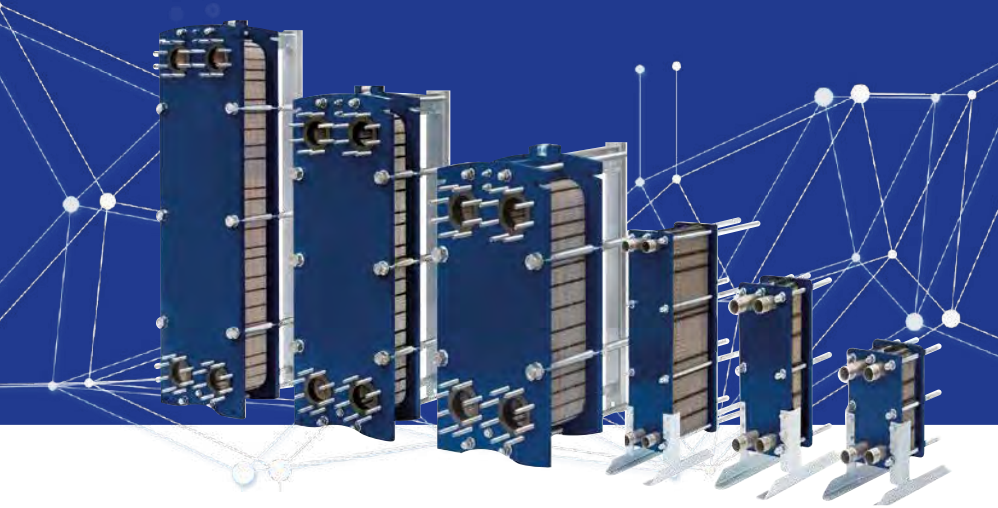
CONTROLS

Display and control board



- | | |
|------------------------------|------------------------------|
| 1 Operation indication | 7 Operation mode selection |
| 2 Stop indication | 8 Data display |
| 3 Alarm indication | 9 Stand-by indication |
| 4 Combustion indication | 10 Dilution indication |
| 5 Cooling/heating indication | 11 Safety circuit indication |
| 6 Remote/local select button | 12 Power indication |

GASKETED PLATE HEAT EXCHANGERS



Decoupling of the machines to the system

Cost efficient design

Qualified and reliable

High heat transfer coefficient

Close temperature approach

10TE

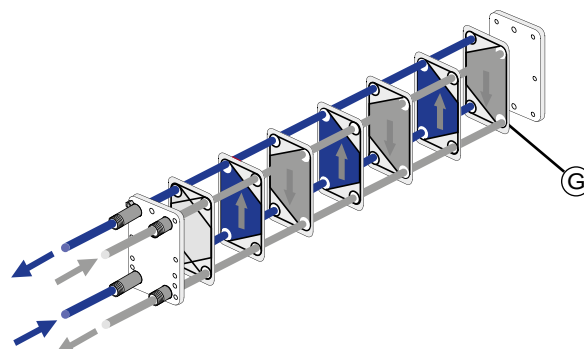
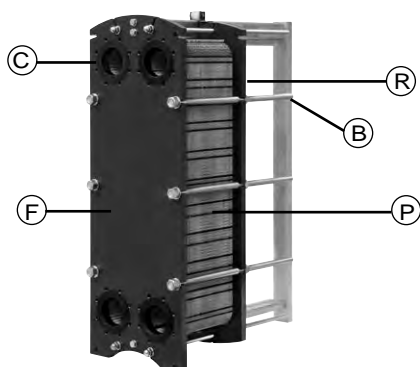
Large range capable to handle water flow rate up to 800m³/h

10TE gasketed plate heat exchangers are particularly well-suited for a wide range of applications:

- Water source heat pump and water cooled chillers
- Heat recovery
- Space heating
- Domestic hot water production
- Swimming pool heating
- Recovery on corrosive waste
- Geothermal energy recovery
- Industrial processes in general

DESCRIPTION

Gasketed plate heat exchanger consists of a number of corrugated heat transfer plates (P) compressed by means of tightening bolts (B) between a front fixed frame plate (F) and a rear moveable frame plate (R). Specific rubber gaskets (G) fastened on each plates generates two alternating independent circuits where the heat transfer between the two fluids take place in parallel and countercurrent flow. The unit is connected with the pipe system by means of pipe or flanged connections (C).



SELECTION

Due to the range's extreme modularity, the thermal selection must be optimised on the thermal requirements and the allowable pressure drops for the fluids utilised. The importance pressure drops must not be underestimated when selecting a heat exchanger, as it influences the choice and number of plates and thus the heat transfer area.

The heat transfer area is also influenced by other factors, such as the height to width ratio, the gap between the plates, and the angle and depth of the chevron patterns. The product and the configuration able to match individual duty's requirement in the most efficient way is selected with a dedicated and user-friendly selection software.

ADVANTAGES

- Excellent heat transfer coefficient
- Very low pinch point temperatures possible
- High corrosion resistance
- Compact footprint
- Easy to install and to maintain
- Low-capacity circuits and fluid retention volume
- Possibility of heat transfer area extension
- Maximum differential pressure equal to maximum operating pressure

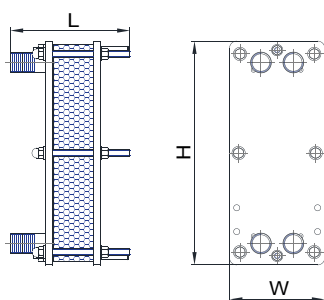
PRECAUTIONS

- Ensure the exchanger gaskets are not damaged:
 - Avoid water hammering, pressure/temperature spikes, and limit on/off cycles.
 - Do not use $\frac{1}{4}$ -turn valves.
 - Use with steam between 0 and 3 bar (effective).
 - Provide a control system adapted to the requirements and which takes the low capacity of the circuits into account.
- Ensure the plates are kept clean so they maintain their thermal efficiency:
 - Filter fluids containing suspended particles.
 - Ensure the fluids are constantly circulating in the exchanger to prevent any build-up or scale.

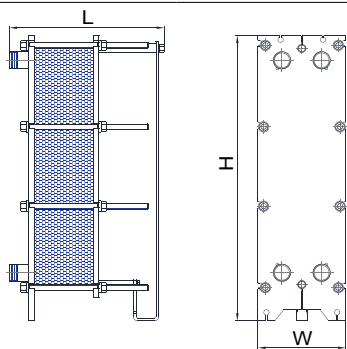
RANGE

	10TE020+	10TE040+	10TE030+	10TE070+	10TE160+	10TE260+	10TE125+	10TE180+
Connection size	DN 32			DN 50			DN 65	
Maximum flow rate (m³/h)	19			63			80	83
Max. design pressure (bar)	25			25			16	10
Dimensions (mm)	200			310			310	392
W								
H	320	470	775	678	1008	1353	819	1030
L (min-max)	248-557	248-557	248-671	408-918	408-1383	408-1383	438-948	401-871
Plate patterns	H	H	H	H / L	H / L	H / L	H / L	H / L
Max. number of plates	75	75	101	151	251	251	151	151
Max. heat transfer area (m²)	1.6	3.1	8.2	11.6	40.8	63.3	19	27
Plate materials and thickness	304 stainless steel	0.4	0.4	0.4	0.4	0.4	-	-
316L stainless steel	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.5	0.5
254 SMO	0.6	0.6	0.6	0.6	0.6	0.6	0.6	-
Titanium	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Gasket materials	NBR	✓	✓	✓	✓	✓	✓	✓
EPDMprx	✓	✓	✓	✓	✓	✓	✓	✓
FPM	✓	✓	✓	✓	✓	✓	✓	-

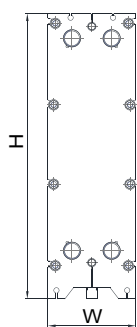
	10TE300+	10TE450+	10TE700+	10TE400+	10TE600+	10TE900+	10TE650+	10TE990+
Connection	DN 100			DN 150			DN 200	
Maximum flow rate (m³/h)	240			380			800	730
Max. design pressure (bar)	10			10			10	10
Dimensions (mm)	530			609			810	790
W								
H	1124	1569	2014	1372	1819	2317	1707	2206
L (min-max)	938-2453	941-2446	941-2446	946-3256	946-3256	946-4064	1366-3277	1357-3267
Plate patterns	H / L	H / L	H / L	H / L	H / L	H / L	H / L	H / L
Max. number of plates	401	401	401	551	551	701	551	551
Max. heat transfer area (m²)	107.5	193	279.5	215	355	631	334	534
Plate materials and thickness	304 stainless steel	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6
316L stainless steel	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6
254 SMO	0.6	0.6	0.6	0.6	0.6	0.6	0.6	-
Titanium	0.6	0.6	0.6	0.6	0.6	-	0.7	0.6
Gasket materials	NBR	✓	✓	✓	✓	✓	✓	✓
EPDMprx	✓	✓	✓	✓	✓	✓	✓	✓
FPM	✓	✓	✓	✓	✓	✓	✓	-



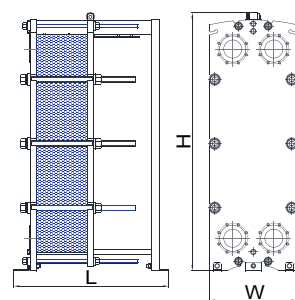
DN 32



DN 50



DN 65



DN 100

DN 150

DN 200

OPTIONS AND ACCESSORIES

TF insulation (DN 32, DN 50 and DN 65 models)

Description

TF is the thermal insulation specifically designed for HVAC applications of our small size plate heat exchangers.

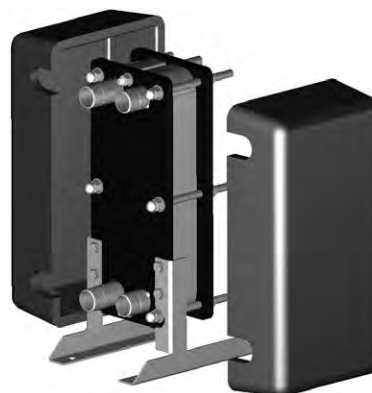
TF is a thermoformed and semi-rigid prefabricated case easy to install and to adjust to the specific configuration of the heat exchanger and to eventual particular customer needs.

The special "double-layered" structure, comprising two different expanded elastomers (thickness up to 30 mm), makes it suitable for heating and cooling applications.

Supplied as a kit, it can be easily and quickly assembled with no need for special tools (only a cutter is required) supported by the assembly instruction sheet and the templates pre-marked on each case.

Advantages

- Heat exchanger completely contained inside the insulation: minimized energy losses and condensation, higher level of safety and comfort for those who work around the heat exchanger.
- Easy to adapt on site to all product's configurations (single or multi-pass, with or without mounting brackets, with or without drip tray, etc.) and to adjust to different customer's needs (specific installation supports or devices, non-standard position of connections, etc.).
- Low installation costs.
- Available from stock.
- Lightweight and resilient.



Technical specifications

- Exterior finish: semi-rigid high density dark greys foam.
- Insulating materials: cross-linked, closed-cell, polyolefin (PO) foam with a density of 84 kg/m³ (outer layer) and cross-linked, closed-cell, polyolefin (PO) foam with a density of 35 kg/m³ (inner layer).
- Thermal conductivity coefficient (λ -value) of the insulating materials at 40°C: 0,0372 W/mk (outer layer) and 0,038 W/mk (inner layer).
- Operating temperature limits: -10°C / + 130°C.
- Classification of fire resistance of the insulating materials: conform to the FMVSS 302 standard of flame containment at less than 100 mm/min

PB insulation (DN 100, DN 150 and DN 200 models)

Description

PB is the thermal insulation specifically designed for HVAC applications of our larger size plate heat exchangers.

PB is a self-supporting modular structure made with insulating panels (thickness 45 mm) anchored together by means of locking hooks and coupled in such a way as to minimize the thermal bridges.

The particular sandwich structure of the insulating panels, obtained by coupling two Aluminum foils to the polyurethane foam, ensures to the case high thermal insulation, good structural rigidity and appropriate surface finish.

Supplied as a kit, it is easily and quickly assembled without the use of special tools.

Advantages

- Heat exchanger completely contained inside the insulation: minimized energy losses and condensation, higher level of safety and comfort for those who work around the heat exchanger.
- Low installation costs.
- Available from stock.
- Quick and easy access to the heat exchanger for inspection.



Technical specifications

- Exterior finish of the panels: smooth sheet of pre-painted Aluminum RAL 2306 (thickness 0.5 mm).
- Insulating material: rigid foam of polyurethane with a high percentage of closed cells (above 95%) and a density of 48 kg/m³.
- Initial thermal conductivity coefficient (λ -value) of the insulating material: 0.024 W/m °C (measured at an average temperature of 10°C according to ISO 8302).
- Operating temperature: -10°C / + 130°C.
- Classification of fire resistance of the insulating material: B - 2s, d0 (according to EN 13501-1: 2007).

OPTIONS AND ACCESSORIES

Drip tray (all models)

Description

The drip tray is a safeguard device specifically designed to collect water or other fluids in case of unexpected fluid leakage or when the heat exchangers is open for maintenance.

Strongly recommended in case of hazardous media and when further protection for the outside environment is required, it is also used in cooling applications to collect condensate formed on the outside of the heat exchanger.

Designed to be positioned under the heat exchanger and fixed by fastening bolts on the anchor brackets, the drip tray is dimensioned to hold the entire plate pack and the two frame plates. In this way all eventual fluids coming from the heat exchanger can be collected in the drip tray and drained by mean of the apposite draining pipe.

Advantages

- Reduced risk of flooding in case of condensate, unexpected fluid leakage or when the heat exchangers is open for maintenance.
- Possibility to adjust tilt to facilitate drainage.
- Low installation costs.
- Available from stock

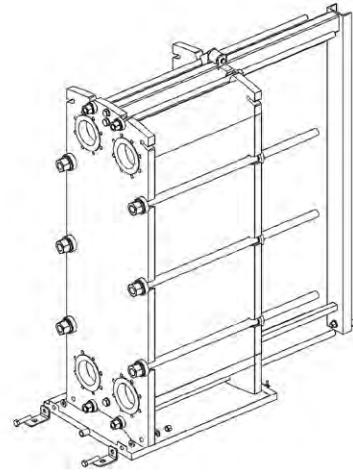
Technical specifications

Material of construction: Stainless steel AISI 304 (thickness 1mm).

Draining pipe: 3/4" sleeve internally threaded

Main dimensions

The drip trays are available in various sizes to be fitted to all models of the standard range of gasketed plate heat exchangers.





Heating

449

Type	Range	Refrigerant	Cooling capacity, kW	Heating capacity, kW	Page
<hr/>					
Air-to-water heat pumps, axial fan					
With scroll or rotary compressors	30AWH	R-410A	3-16	4-15	451
	30AWH HO 5H-15HT	R-410A	4-17	4-15	459
NEW	61AF 014-019	R-410A	-	14-20	469
	30RQV	R-410A	15-18	17-21	477
	30RQ	R-410A	16-39	17-41	485
	61AF 022-105	R-410A	-	21-102	495
	30RQS	R-410A	38-148	42-150	505
	30RQSY	R-410A	37-147	42-151	517
NEW	30RQM / 30RQP	R-410A	154-510	179-434	533
	30RQ-/30RQP 165-520R	R32	160-500	170-530	551
<hr/>					
Water-to-water heat pumps					
with scroll compressors					
	61WG	R-410A	25-190	29-230	575
	30WG / 30WGA	R-410A	25-190	29-230	595
with screw compressors					
	30XWH / 30XWHP	R-410A	273-1756	317-1989	629
	30XWHV	R-410A	587-1741	648-1932	657
	30XWHP-ZE	R-1234ze	269-1110	319-1296	669
	30XWH-VZE	R-1234ze	448-1243	524-1485	683
	61XWH-ZE	R-1234ze	-	200-2500	695

REVERSIBLE AIR TO WATER HEAT PUMP



Monobloc inverter
Compact, reliable and
efficient
More than a Heat Pump

30AWH

AQUASNAP
Reversible

Nominal heating capacity 4-15 kW
Nominal cooling capacity 3-16 kW

The new reversible AquaSnap PLUS air-to-water heat pumps/chillers with built-in inverter technology were designed for residential and light commercial applications. They offer excellent energy efficiency values, exceptionally quiet operation and meet the most stringent operating temperature demands.

The units integrate the latest technological innovations: Non-ozone depleting refrigerant R410A, DC inverter twin-rotary compressors, low-noise fan and microprocessor control.

With exceptional energy efficiency values the inverter mini-chillers qualify for local tax reductions and incentive plans in all EU countries.

The 30AW units were specifically designed for ease-of-installation and service and underline Carrier's reputation for highest product quality and reliability.

For added flexibility the AquaSnap PLUS units are available with or without hydraulic module. The AquaSnap PLUS can be used with complementary accessories to suit the installation.

The AquaSnap PLUS heat pump systems can be used with a wide choice of Carrier terminal fan coil units - cassettes, low, medium and high-pressure satellite units, console units, underceiling units and high-wall units.

Ecodesign is the European Directive that sets mandatory requirements for Energy related Products (ErP) to improve their energy efficiency. Carrier supports initiatives to reduce the environmental impact of its products.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

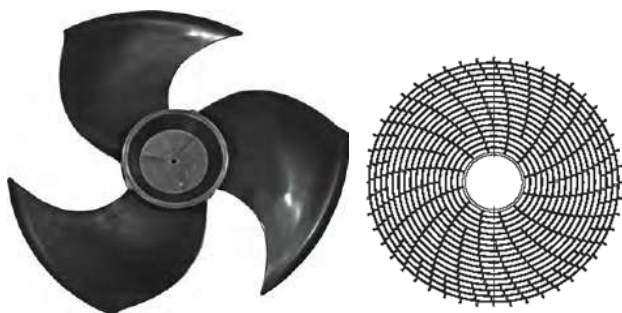
Features

- Wide operating range in both heating and cooling mode offering high performance in a wide temperature range.
- DC inverter twin-rotary compressors with Pulse Amplitude Modulation (PAM) and Pulse Width Modulation (PWM) for enhanced reliability, low energy consumption and smooth vibration-free operation under all operating conditions.
- Variable-speed fans with an innovative patented fan blade shape ensure improved air distribution at exceptionally low noise levels
- Pre-set or customised selection of the appropriate climate curve for stable output capacity to match the heat load.
- Output to link and integrate the unit with existing heat sources or a back-up heating source (single or dual-energy approach) for increased savings and optimum comfort all year round.
- Connection and control of an external dehumidifier through the Comfort™ Series programmable thermostat 33AW-CS1 to monitor and regulate the relative humidity.
- Input and output connections to the three-way valve for connection to a domestic hot-water buffer-tank. Provides increased flexibility for any application.
- Leaving water temperature up to 60°C for radiator and domestic hot water applications.
- Plug-and-play control for failsafe serviceability.
- Alarm input to force the unit off for increased safety, and matching with external control systems or safety devices.
- Output to operate an additional water pump for increased installation flexibility.

Advanced technology

- Electronic system management: several sensors placed in key positions in the refrigerant circuit electronically detect the operational system status. Two micro-controllers receive the input from the sensors, manages them using advanced control algorithms and optimises the refrigerant flow and the functioning of all core components - the compressor, fan motors and the pulse modulation valve.
- The pulse modulation valve, a bi-flow electronic expansion device, optimises the refrigerant amount in the circuit and the superheat, preventing refrigerant migration back into the compressor. This device further enhances high system performance and reliability.
- The air management system, consisting of the propeller fan, orifice and air discharge grille guarantees minimised noise levels.

New patented fan blade shape and grille profile with low pressure drop



Advanced performance

- The AquaSnap PLUS heat pump systems have an extremely high energy efficiency ratio in both cooling and heating mode, ensuring significant energy savings. Large, efficient coils and optimised circuiting ensure that all combinations meet the European tax rebate efficiency targets. Efficiency at part load conditions (seasonal energy efficiency) reaches the highest level in the industry.
- Year-round comfort - the advanced technology used in the new AquaSnap PLUS heat pump condensing units provides optimised comfort levels for the end users, both in terms of water temperature control and quietness. The desired temperature is quickly reached and effectively maintained without fluctuations. The 30AW offers optimised individual comfort levels - both in winter and in summer.
- Wide temperature operating range: AquaSnap PLUS heat pumps can operate efficiently in extreme temperature conditions. To suit the requirements of IT applications, the new AquaSnap PLUS can work at low-ambient conditions in cooling mode (down to 0°C and up to 46°C outside temperature). For end user comfort the units also operate down to -20°C outdoor temperature in heating mode, and in the summer season they produce hot water up to 60°C at up to 30°C outside temperature for domestic hot water applications.

Environmental care

- Non-ozone depleting refrigerant R410A.
- Chlorine-free refrigerant of the HFC group with zero ozone depletion potential.
- High-density refrigerant, therefore less refrigerant required.
- Very efficient - gives an increased energy efficiency ratio (EER).
- The components of AquaSnap PLUS heat pump systems are free of any hazardous substances.
- The new packaging ensures high protection during transport and handling and is 100% recyclable.

Fast and simple installation and service

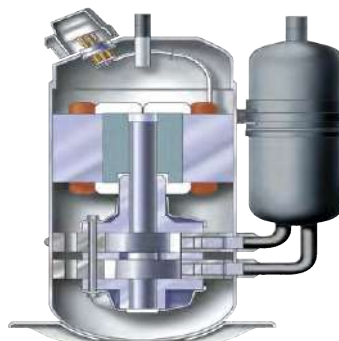
- Easy access to all internal components: simply undo three screws to remove the complete front panel to access the refrigerant piping connections, control box and electrical connections, as well as the compressor and other key parts.
- Advanced circuit design and component selection has resulted in a compact unit with an exceptionally small footprint that is easy to transport even through narrow doors.
- Reduced operating weight and a handle on the unit panels to facilitate transport.
- No additional buffer tank required, simplifying and speeding up the installation process.
- 3 bar pressure relief valve as standard.
- Two or three-litre internal expansion tank.
- High-temperature refrigerant protection.
- Water flow switch to ensure that the circuits contain enough water to operate correctly.
- Various power cable outlet options: pre-punched holes in the cabinet panels permit cable exit on the side, front or rear.
- Dealer service tool connection kit includes the software and connections to monitor the operating parameters from a personal computer, giving an easy-to-read display with visual graphs and statistics indicators.
- All 30AW units are equipped with 1 inch gas MPT water connections.
- Option for an integrated hydronic module reduces space requirements and simplifies the installation. Only the power and the water supply and return piping need to be connected.



- Condensate drain piping connection to the unit includes a leak-proof pipe rubber joint.
- Specially shaped anchorage feet ensure correct and safe unit fixing to the foundation.
- The Comfort™ Series programmable thermostat periodically runs system checks to monitor and assess the unit operating parameters (standard parameters for the H version (AC) are 45°C LWT in heating and 7°C LWT in cooling, and for the X version (CHF) 35°C LWT in heating and 15°C LWT in cooling.). If a problem occurs, troubleshooting fault codes and messages help the service technician to identify the fault.

DC inverter twin-rotary compressor

- Advanced technology providing maximum energy-efficiency with high capacity available at peak conditions and optimised efficiency at low and mid compressor speeds. The AquaSnap PLUS heat pump DC inverter uses Intelligent Power Drive Unit (IPDU) hybrid inverter technology, combining two electronic management logics: Pulse Amplitude Modulation (PAM) and Pulse Width Modulation (PWM) for optimised compressor operation in all conditions, minimised temperature fluctuations, and providing perfect individual comfort control with significantly reduced energy consumption:
 - PAM: pulse amplitude modulation of the direct current controls the compressor at maximum load conditions (start-up and peak load), increasing the voltage at fixed frequency. The compressor works at high speed to rapidly achieve the desired temperature.
 - PWM: pulse width modulation of the direct current controls the compressor at partial load conditions, adjusting the frequency at fixed voltage. The compressor speed is fine-tuned and the system provides high-level comfort (no temperature fluctuations) at exceptionally efficient working conditions.



- Compressor frequency is increased continuously up to the maximum level. This ensures that there are no current draw peaks in the start-up phase and safe connection to a single-phase power supply even in large-capacity systems. The maximum operating current of AquaSnap PLUS systems is below 7.2 A (systems up to 4 kW) and below 23 A for larger systems (12 kW). Inverter ramp-up speed makes soft starts unnecessary and ensures immediate maximum power.
- The two rotary compression cylinders, offset from each other by 180°, and the DC brushless motor with the shaft in perfect balance ensure reduced vibration and noise, even at very low operating speeds. This results in an extremely wide range between minimum and maximum capacity with continuous operation, guaranteeing that the system is always optimised and provides maximum comfort at exceptionally high efficiency levels.
- Twin-rotary cylinders, low vibrations and low load to the shaft ensure highest compressor reliability and a long trouble-free operating life.
- All DC brushless twin-rotary compressors are equipped with crankcase heaters as standard.
- A double compressor shield for acoustic insulation further reduces noise levels.

Superior reliability

- Exceptional endurance tests
 - Third-party testing and certification - all performances are certified by Eurovent and unit safety is certified by IMQ.
 - All units are tested at various stages on the production line for circuit leakage, electrical compliance, water and refrigerant pressures.
 - End-of-line test of all unit operating parameters.
 - Corrosion resistance test.
 - Accelerated ageing test on critical components and complete assembled units, simulating thousands of hours of continuous operation
 - Packaging crash test to ensure that the units are adequately protected against accidental shocks.
 - Extensive field and site testing.

Corrosion-resistant casing



Economical operation

- Increased energy efficiency at part load
 - The exceptionally high energy efficiency of the AquaSnap PLUS heat pumps is the result of a long qualification and optimisation process.
 - Use of ambient air as primary source of energy in domestic heating applications significantly reduces the overall energy consumption and minimises CO₂ emissions.
 - Night mode operation at reduced compressor speed, resulting in low-noise operation and a significant reduction in energy consumption.
 - Easy-to-set and economical silent mode, reducing the compressor speed.
 - R410A refrigerant is easier to use than other refrigerant blends.

GMC board

- The new GMC controller was specifically developed for the AquaSnap PLUS inverter heat pumps, and incorporates new control algorithms. It features customised or pre-defined climate curves, domestic hot water control, a night-time noise reduction function, a defrost/alarm output signal, an external heat source, a pump block prevention function, freeze protection and compressor operation management.



User interfaces

- The AquaSnap PLUS can use the following user interfaces:
 - the 33AW-CS1 Comfort™ Series programmable thermostat with easy-to-read LCD screen. It provides enhanced control capability for maximised performance, reliability and indoor comfort and has extended programming features such as weekly scheduling and dehumidifier/humidifier signals. The sleek contemporary design blends in with any room decor.
 - the AquaSnap PLUS 33AW-RC1 remote controller
 - dry contacts

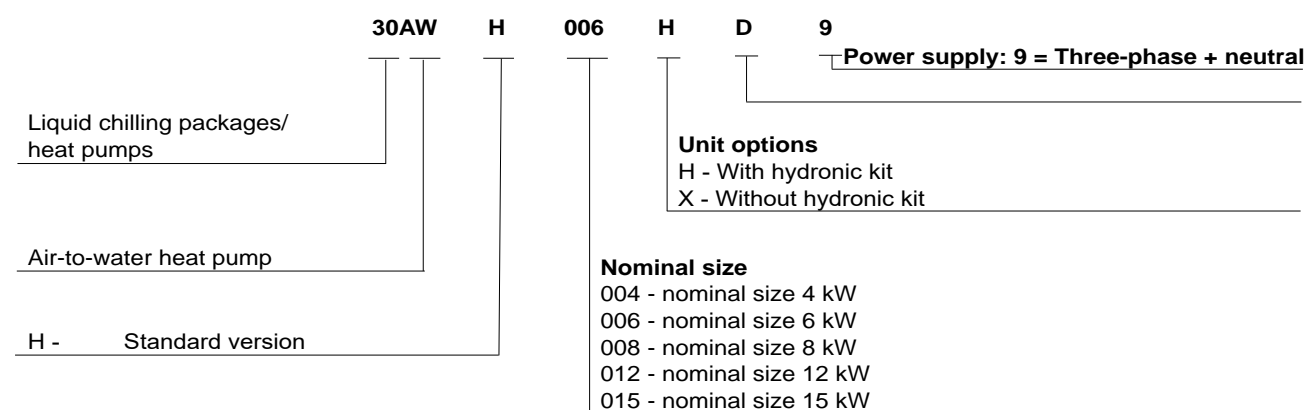


Comfort™ Series
programmable
thermostat 33AW-CS1

Remote controller
33AW-RC1



TYPE KEY



OPTIONS AND ACCESSORIES

Options	Description	Advantages	Use
Additional outdoor sensor	Additional outdoor sensor 33AW-RAS01	Better reading of outdoor air temperature	30AW 004-015
Remote controller	33AW-RC1 remote controller	On/off, heating/cooling and ECO mode	30AW 004-015
Programmable thermostat	33AW-CS1 Comfort™ series programmable thermostat	Extensive control features like weekly scheduling	30AW 004-015

PHYSICAL DATA

30AW				004	006	008	012	015	12-3Ph	15-3Ph
Heating										
H version Full load performances*	HA1	Nominal capacity	kW	4,07	5,76	7,16	11,86	14,46	12	15
		COP	kW/kW	4,15	4,28	3,97	3,95	4,09	4,3	4,2
	HA2	Nominal capacity	kW	3,87	5,76	7,36	12,91	13,96	11,20	14,50
		COP	kW/kW	3,26	3,05	3,19	3,03	3,23	3,35	3,30
	HA3	Nominal capacity	kW	4,27	5,43	7,25	10,9	12,4	11,4	12,2
		COP	kW/kW	2,92	2,77	2,81	2,79	3,02	3,12	2,98
Standard unit	HA3	SCOP	kW/kW	3,53	3,37	2,84	2,95	3,25	3,47	3,33
Seasonal energy efficiency**		ηs heat	%	138	132	111	115	127	136	130
		P _{rated}	kW	3	4	5	9	9	8	9
Cooling										
H version Full load performances*	CA1	Nominal capacity	kW	3,33	4,73	5,84	10,2	13,0	10,2	13,0
		EER	kW/kW	3,02	3,00	2,98	2,96	2,95	3,00	2,91
		Eurovent class		B	B	B	B	B	B	B
	CA2	Nominal capacity	kW	4,93	7,04	7,84	13,5	16,0	13,5	16,0
		EER	kW/kW	4,20	3,70	3,99	3,66	3,85	4,15	3,81
		Eurovent class		A	B	A	B	A	A	A
Sound levels										
Standard unit										
Sound power level ⁽¹⁾ (H3)			dB(A)	62	62	64	67	68	68	68
Sound pressure level at 4m ⁽²⁾ (H3)			dB(A)	42	42	44	47	48	48	48
Sound power level ⁽¹⁾ (C1)			dB(A)	64	64	65	68	69	69	69
Sound pressure level at 4 m ⁽²⁾ (C1)			dB(A)	44	44	45	48	49	49	49
Dimensions										
Length			mm	908	908	908	908	908	908	908
Depth			mm	350	350	350	350	350	350	350
Height			mm	821	821	821	1363	1363	1363	1363
Operating weight ⁽³⁾										
Unit without circulator (X version)			kg	54	58	66	101	109	113	113
Unit with circulator (H version)			kg	57	61	69	104	112	116	116
Compressors				DC Inverter Twin-Rotary						
Refrigerant				R410A						
Circuit charge ⁽³⁾			kg	1,195	1,35	1,81	2,45	3,385	2,45	3,385
			CO ₂ eq.	2,5	2,8	3,8	5,1	7,1	5,1	7,1
Air heat exchangers				Copper tubes and aluminium fins						
Fans				Variable speed 3 blades fan						
Quantity				1	1	1	2	2	2	2

- * In accordance with standard EN14511-3:2013
- ** In accordance with standard EN14825:2016, average climate
- HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fooling factor 0 m².K/W
- HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fooling factor 0 m².K/W
- HA3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fooling factor 0 m².K/W
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fooling factor 0 m².K/W
- CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fooling factor 0 m².K/W
- η_s heat_{47/55°C} & SCOP_{47/55°C}** **Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**
- (1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
- (2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
- (3) Weights are guideline only. Refer to the unit nameplate



Eurovent certified values

PHYSICAL DATA

30AW		004	006	008	012	015	12-3Ph	15-3Ph
Water heat exchanger (X version)								
Water pressure drop (C1)	kPa	10	8	10	20	28	20	28
Water pressure drop (H1)	kPa	17	12	14	25	33	25	33
Water pressure drop (H2)	kPa	16	12	14	29	31	29	31
Min. system water content	l	14	21	28	42	49	42	49
Max. water-side operating pressure	kPa	300	300	300	300	300	300	300
Hydronic module (H version)								
Pump		Variable speed circulator						
Expansion tank volume	l	2	2	2	3	3	3	3
Available static pressure (C1)	kPa	65	65	66	76	66	76	66
Available static pressure (H1)	kPa	60	60	56	70	58	70	55
Available static pressure (H2)	kPa	62	60	55	72	60	73	58
Min. system water content	l	14	21	28	42	49	42	49
Max. water-side operating pressure	kPa	300	300	300	300	300	300	300
Water connections with or without hydronic module								
Diameter	inch	1 M	1 M	1 M	1 M	1 M	1 M	1 M
Outside tube diameter	mm	25,4 M	25,4 M	25,4 M	25,4 M	25,4 M	25,4 M	25,4 M
Chassis paint colour		Beige						

ELECTRICAL DATA

30AW		004	006	008	012	015	012-3Ph	015-3Ph
Power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	400-3N-50	400-3N-50
Voltage range	V	198-264	198-264	198-264	198-264	198-264	376-424	376-424
Full load current	A	9	11	14,5	20,7	22,6	11,1	11,1
Fuse rating	A	10	16	16	25	25	16	16
Main power cable section	mm ²	2,5	2,5	2,5	2,5	2,5	2,5	2,5

SOUND POWER LEVELS LW

Cooling mode

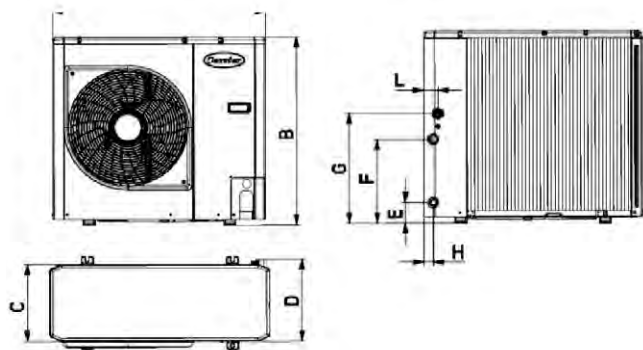
30AW		Octave bands, Hz							Sound power levels	
		125	250	500	1000	2000	4000	8000		
004	dB	61	68	62	56	51	47	41	dB(A)	64
006	dB	61	68	63	56	53	50	46	dB(A)	64
008	dB	66	62	63	59	56	55	51	dB(A)	65
012	dB	70	65	67	62	58	57	50	dB(A)	68
015	dB	70	68	66	64	61	58	53	dB(A)	69
012-3Ph	dB	70	68	66	64	61	58	53	dB(A)	69
015-3Ph	dB	70	68	66	64	61	58	53	dB(A)	69

Heating mode

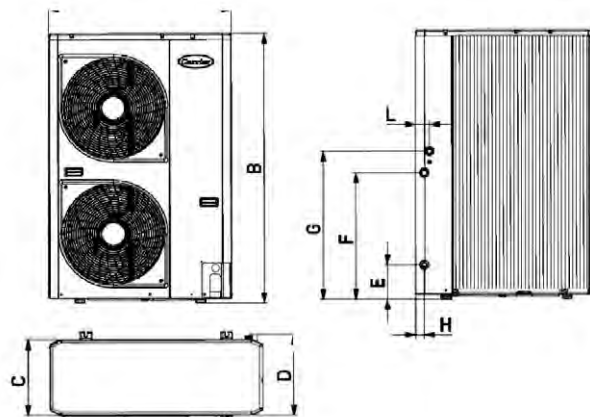
30AW		Octave bands, Hz							Sound power levels	
		125	250	500	1000	2000	4000	8000		
004	dB	67	62	61	56	50	47	43	dB(A)	62
006	dB	62	64	62	55	50	48	43	dB(A)	62
008	dB	66	65	63	57	54	52	45	dB(A)	64
012	dB	70	66	66	61	57	54	46	dB(A)	67
015	dB	72	68	67	63	59	56	50	dB(A)	68
012-3Ph	dB	72	68	67	63	59	56	50	dB(A)	68
015-3Ph	dB	72	68	67	63	59	56	50	dB(A)	68

DIMENSIONS, MM

30AW 004-008

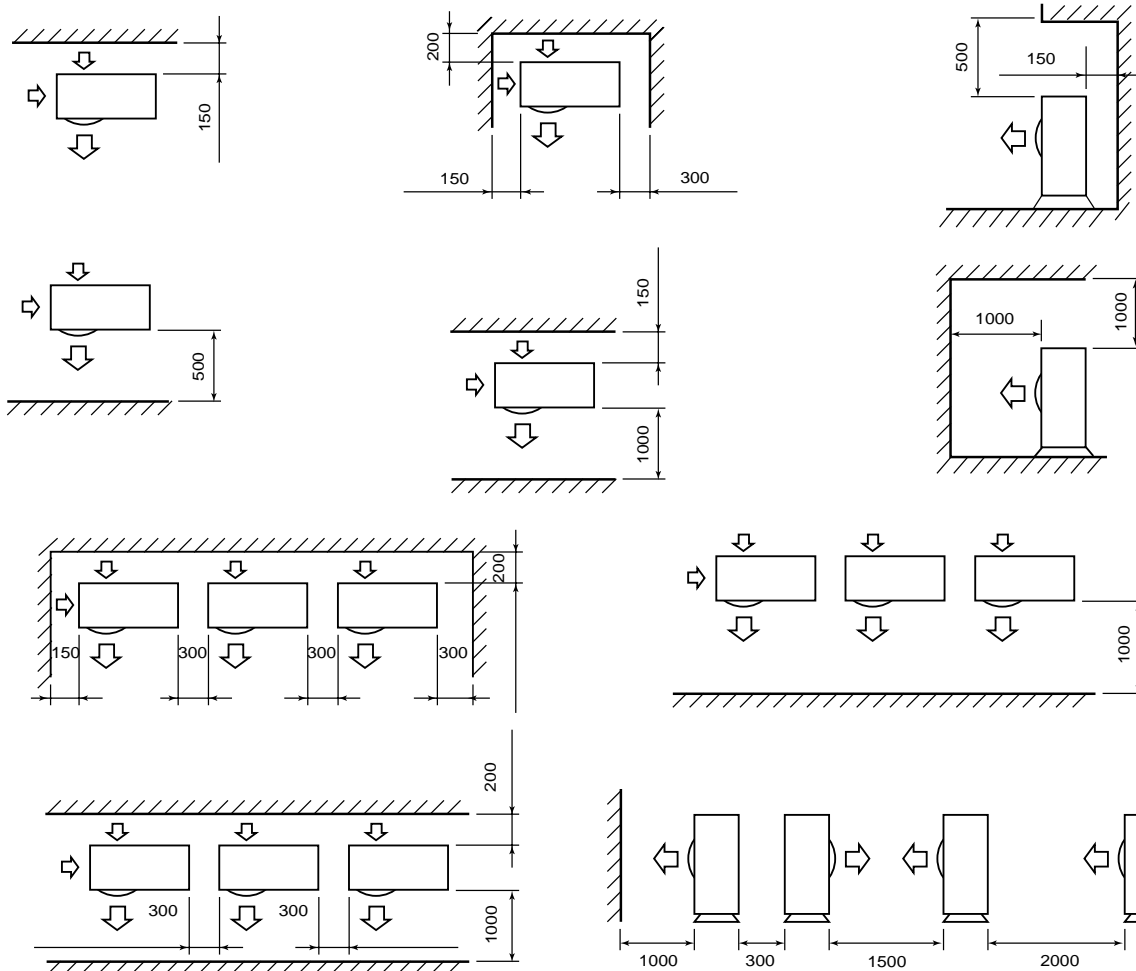


30AW 012-015



30AW	A	B	C	D	E	F	G	H	L
004	908	821	326	350	87	356	466	40	60
006	908	821	326	350	87	356	466	40	60
008	908	821	326	350	87	356	466	40	60
012	908	1363	326	350	174	640	750	44	69
015	908	1363	326	350	174	640	750	44	69

CLEARANCES, MM



NEW

REVERSIBLE AIR-TO-WATER HEAT PUMP



Simple, reliable,
high efficiency heat pump
Built-in hydraulic module
Equipped with NHC control

30AWH HO

Nominal heating capacity: 4 - 15 kW
Nominal cooling capacity : 4 - 17 kW

The 30AWH HO air-to-water heat pump is designed for heating and cooling applications in new and existing individual homes and small businesses.

When installed alone, the 30AWH HO is compatible with low to medium temperature emitters (underfloor heating, fan coil units, water cassettes, radiators, mixed installations, etc.).

The 30AWH HO is also compatible with medium to high temperature emitters for boiler back up operation.

The 30AWH HO heat pump is installed outside in an open area, ideally as close as possible to the boiler room.

Each device is tested in the factory and delivered ready for operation.

AQUASNAP.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

RANGES

The 30AWH HO range of reversible heat pumps comprises 4 single-phase models and 2 three-phase models.

DESCRIPTION

Operation in cooling mode with an outdoor temperature of 0 °C to 46 °C.

Operation in heating mode with an outdoor temperature of -20 °C to 35 °C.

If the heat pump is the only source of heat:

Below the equilibrium temperature, heating must be provided by another heating source or using an additional electrical supply actuated by the 30AWH HO.

For a boiler backup heat pump installation: operates down to the equilibrium point (temperature below which the heat pump can no longer keep up with heating requirements); below this point, the heat pump and boiler run alternately.

CONFORMITY

EMC: Electromagnetic Compatibility directive 2014/30/EU

RoHS: Restriction of Hazardous Substances directive 2011/65/EU

Ecodesign 2009/125/EC

Machinery 2006/42/EC

DESCRIPTION OF THE MAIN COMPONENTS

The new 30AWH HO air-to-water reversible heat pumps, with Inverter technology, have been designed for residential applications and for small commercial installations.

They offer excellent energy efficiency and exceptionally quiet operation.

These units integrate the very latest technological innovations: R410A refrigerant fluid which does not contribute to ozone depletion, Twin Rotary DC Inverter compressors, a low-noise fan with an electronic control.



Ecodesign is the European ecodesign directive, aimed at improving the energy efficiency of energy-related products (ErP) through regulation. Carrier supports initiatives to reduce the environmental impact of its products.

Specifications

- A vast operating range, both in cooling and heating mode, offering great performance across a broad range of temperatures.
- Twin Rotary DC Inverter compressors with pulse amplitude modulation (PAM) and pulse width modulation (PWM) for increased reliability, reduced energy consumption and operation without vibration, whatever the operating conditions.
- Variable speed fans with a patented innovative blade shape, ensuring better distribution of air at exceptionally low sound levels.
- Pre-configured or customisable water laws, for stable power levels which correspond to the losses.
- The option to connect and integrate the unit into existing heat sources or into an auxiliary heating source (using a single or dual energy source), which allows for increased savings and optimal comfort in any weather conditions.
- Inlet and outlet connections to the three-way valve, to enable connection to a domestic hot water tank, increase the flexibility of use, regardless of the application.
- A water outlet temperature of up to 60 °C for heating and domestic hot water in residential applications.
- Plug and play control for intrinsic maintenance and servicing safety.
- For enhanced safety, an incoming alarm signal can force the unit to shut down, and is compatible with external safety devices or control systems.
- Outgoing signal making it possible to control the operation of a customer's accelerator pump or additional pump to increase the versatility of the installation.

Advanced technology

- Electronic system management: several sensors placed in key positions within the refrigerant circuit detect the operating status of the system. Two micro-controls receive the signals sent by the sensors; they manage them using advanced control algorithms and optimise the refrigerant fluid flow rate and the operation of all the main components – the compressor, the fan motors and the electronic expansion valve.

- The electronic expansion valve is a dual flow electronic device that optimises the volume of refrigerant in the circuit and overheats it, preventing fluid from returning to the compressor. This device further improves system performance and reliability.
- The air management system, which comprises the axial flow fan, the orifice and the air discharge grille, guarantees minimised sound levels.



New patented fan blade shape and low pressure drop grille

- The new coil has a blue hydrophilic coating which allows water to migrate more easily to the bottom of the exchanger using gravity.

In particular, this innovation enables:

- the frosting time to be increased by reducing the accumulation of frost on the coil
- better defrosting by improving the flow of water over the fins

Operation in heating mode is thereby improved.

Advanced performances

- The 30AWH HO offers extremely high energy efficiency, both in heating mode and in cooling mode, thereby guaranteeing significant energy savings. Large coils with high efficiency and optimised circuits ensure that all the combinations meet the European objectives concerning tax deductions relating to energy savings. The part load efficiency (seasonal energy efficiency) reaches the highest level in this industrial sector.
- Year-round comfort – the advanced technology used in the 30AWH HO provides users with optimised levels of comfort, in terms of water temperature regulation and the low sound level.

The required temperature is obtained rapidly, and kept constant, without any fluctuations. The 30AWH HO offers optimised levels of comfort in both winter and summer.

- The 30AWH HO can operate at low ambient temperatures in cooling mode (from outdoor temperatures of 0 °C to 46 °C). To guarantee user comfort, the units operate down to an outdoor temperature of -20 °C in heating mode, while in summer, they can produce hot water up to 60 °C, at an outdoor temperature of up to 35 °C for domestic hot water applications.
- The 30AWH HO also has new Energy Soft technology. This advanced control logic allows energy to be extracted from the outside air to guarantee energy-optimised defrosting without the use of the compressor.

Unlike traditional defrosting technology, Energy Soft has virtually no thermal impact on the water loop.

FEATURES AND BENEFITS

Environmental care

- Non-ozone depleting R-410A refrigerant.
- Fluid from the HFC family, a chlorine-free product which does not deplete the ozone layer.
- Very dense, so a smaller amount is required than other fluids.
- Highly efficient, it enables a high energy efficiency ratio (EER) to be obtained.
- The packaging offers increased protection during transport and handling, and is 100% recyclable.

Quick and simple to install and maintain

- Easy access to all internal components: simply undo three screws to remove the entire front panel, in order to access all of the components.
- The advanced circuit design and choice of components has enabled a compact unit to be created, with an exceptionally small footprint that is easy to transport even through narrow doors.
- The reduced weight of the unit, and the presence of a handle on the panels, ensure it is easy to transport.
- 3 bar safety valve fitted as standard.
- Two- or three-litre internal expansion tank.
- Protection against high refrigerant temperatures.
- Water flow controller to ensure that the circuits contain enough water to operate correctly.
- Several options for the power cable outlets: prepunched holes in the casing panels enable the cable to be fed via the side, front, or rear.
- The 30AWH HO has gas type male couplings.
- The built-in hydraulic module reduces the space required and simplifies installation. Simply connect up all the connections: electrical, water supply, and return pipes.
- The coupling between the condensate drain pipe and the unit has an airtight rubber gasket.
- The mounting brackets have a specially designed shape to ensure that the unit is safely and securely attached to its base.

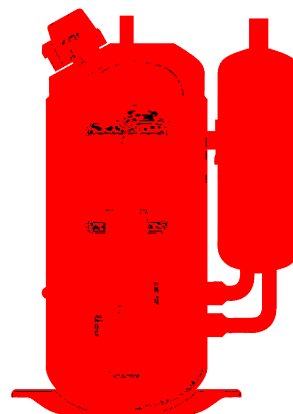
Twin Rotary DC Inverter compressors

- Advanced technology, which offers maximum energy efficiency, with high capacity available under peak conditions, and optimised efficiency at low and moderate compressor speeds. The 30AWH HO heat pump uses IPDU (intelligent power drive unit) hybrid inverter technology, which combines two electronic control logics: pulse amplitude modulation (PAM) and pulse width modulation (PWM) to ensure the compressor provides optimised operation under all conditions, to minimise temperature fluctuations, and ensure perfect control of individual comfort, whilst significantly reducing energy consumption.

- PAM: the pulse amplitude modulation of the direct current controls the compressor under maximum load conditions (start-up and peak load), which increases the voltage at a fixed frequency. The compressor runs at a high speed to quickly reach the desired temperature,
- PWM: the pulse width modulation of the direct current controls the compressor at partial load conditions, adjusting the frequency at fixed voltage.

The compressor speed is precisely adjusted, and the system offers an enhanced level of comfort (no fluctuations in temperature) in operating conditions with exceptional efficiency.

- The compressor frequency is increased continuously up to the maximum level. This ensures there are no current peaks during the start-up phase, and provides a secure connection to a single-phase current supply, even for large capacity systems. The maximum operating current of the 30AWH HO is less than 8.9 A (for systems up to 5 kW) and less than 25.6 A for larger systems (15 kW). The inverter warm-up speed makes soft starts unnecessary by ensuring maximum capacity immediately.
- The two rotating compression cylinders, offset from one another by 180°, and the brushless DC motor with a perfectly balanced shaft, ensure that vibrations and noise are reduced to a minimum, even at very low operating speeds. This gives a very wide operating range between the minimum capacity and the maximum capacity in continuous operation, which guarantees that the system is always optimised and provides maximum comfort at exceptionally high levels of energy efficiency.
- The two rotating compression cylinders, the low vibrations and the low load imposed on the shaft ensure the compressor offers the best possible reliability and a long and trouble-free operational life.
- All two-cylinder rotary compressors with a brushless DC inverter motor are equipped with crankcase heaters as standard.
- A double protective screen soundproofs the compressor, further reducing the sound levels.



FEATURES AND BENEFITS

Absolute reliability

- Exceptional endurance tests:
 - All the units undergo tests at various stages of their manufacture to ensure tightness of the circuits, electrical conformity, and to check the water and refrigerant pressure.
 - At the end of production, all the unit's operating parameters are thoroughly tested.
 - Corrosion durability test.
 - Accelerated ageing test on the critical components and on the fully-assembled units, simulating thousands of hours of continuous operation.
 - Impact testing on the packaging, to ensure that the units are suitably protected against accidental impacts.
 - Numerous, comprehensive tests on-site.

Economical operation

- High energy efficiency:
 - The exceptionally high energy efficiency of 30AWH HO heat pumps is the result of a long selection and optimisation process.
 - The use of ambient air as the main energy source in residential heating applications considerably reduces energy consumption and CO₂ emissions.
 - Sleep mode, with reduced compressor speed at night, provides a low operating sound level, and significant reductions in energy consumption.
 - An easily adjustable and economical silent mode reduces the compressor speed.
 - R-410A refrigerant is easier to use than other fluids.

NHC Control

NHC control associate with compressor and fan variable frequency driver combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressor, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

Ease of use

- The NHC controller can be associated with a new user interface (WUI) which allows easy access to the configuration parameters (compressor frequency, refrigerant temperature, setpoints, air temp., water inlet temp., alarm report, etc.).
- This user interface is also very intuitive in its use. It allows the operating mode to be easily read and selected. The functions are represented by icons on the LCD backlit screen.

To facilitate the use of this interface, 3 access levels are available: end user, installer and factory.

Key features

- Predefined climatic curves (12) or customized climatic curve (water temperature setpoint control)
- Air temperature setpoint control
- Scheduling mode
- Low noise level or night mode
- Antifreeze protection by triggering the internal accelerator pump
- Slab curing mode
- Backup electric heater controlled in 1/2/3 heat stage(s)
- Backup by oil or gas boiler
- Hydraulic module with control of the flow rate
- Manages an additional pump

- Management of swimming pool heating during autumn and winter
- Manages domestic hot water with or without
 - anti-legionella mode
 - DHW backup
 - DHW backup + boosted by 1, 2 or 3 electric heating stage(s)
- Master-slave control of 4 units operating in parallel with runtime balancing and automatic changeover in case of a unit fault (sensor available as an accessory).
- ModBus protocol

Choice of control product

Two options are available to actuate the 30AWH HO heat pump:

- User interface (WUI)
- ModBus protocol

User interface (WUI)



This interface can be installed up to 50 m away. It is connected to the NHC control using 4 H07RN-F 0.75 mm² cables.

The WUI has an internal sensor to measure the room temperature.

Regulation can be based on the room air temperature

ModBus

Direct access with ModBus connection to set, configure and monitor the 30AWH HO unit.

FEATURES AND BENEFITS

Large choice of input contacts:

- Remote on/off contact
- Remote heating/cooling contact: this contact is used to select cooling mode (contact open) or heating mode (contact closed).
- Remote economy contact: this contact is used to select the presence mode when the contact is open or the economy absence mode when the contact is closed.
- Safety input contact: this contact is normally closed and, depending on the configuration, is used to stop the unit, disable heating mode or disable cooling mode when open.

Several functions can be configured by the installer.

They can be used to adapt to the machine environment:

- Night mode/power limitation: this contact reduces the compressor maximum frequency to prevent noise.
- Off-peak times: if the general purpose contact, configured to "off-peak times", is closed, then the electric heating stages are not allowed.
- Offloading request: if the general purpose contact, configured to "Offloading request", is closed, then the unit must be stopped as soon as possible.
- Solar input: If the general purpose contact, configured to "Solar Input", is closed, then the unit is not allowed to run in heating or DHW mode because hot water is produced from a solar source.
- DHW priority: when this input is closed, the unit switches to domestic hot water production regardless of the space heating demand and the current DHW schedule (requires DHW temperature sensor supplied as an accessory).
- Anti-legionella cycle request: when this input is closed, domestic hot water production is requested with the anti-legionella setpoint.
- Summer contact: this contact is used to select winter (contact open) or summer mode (contact closed).
- Electric energy meter input: this input is used to count the number of pulses received from an external electric energy meter (not supplied).
- External alarm indication input: when this input is open, the alarm is tripped. This alarm is for information only, it does not affect unit operation.

Remote output contact available

Two output contacts can be chosen on the NHC control, based on the desired configuration:

State: alert (unit still operates), Alarm, Standby, Cooling or Heating or DHW or Defrosting operation),

Cooling operation, Heating operation, DHW operation, Defrosting operation, indoor air temperature reached, electric stage 2 activated, electric stage 3 activated.

TECHNICAL CHARACTERISTICS

30AWH HO			5H	7H	11H	15H	11 HT	15 HT	
Heating									
Unit with hydraulic module Full load performance*	HA1	Nominal capacity	kW	5,10	7,15	11,25	15,10	11,20	15,00
		COP	kW/kW	4,40	4,10	4,70	4,25	4,60	4,35
	HA2	Nominal capacity	kW	4,85	6,80	11,30	13,40	10,40	13,50
		COP	kW/kW	3,40	3,20	3,60	3,40	3,60	3,50
	HA3	Nominal capacity	kW	4,45	6,75	11,20	11,65	10,25	11,80
		COP	kW/kW	2,80	2,70	2,95	2,90	3,00	3,00
Unit with hydraulic module Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	4,73	4,68	4,39	4,41	4,26	4,35
		ηs heat _{30/35°C}	%	186	184	173	173	167	171
	HA3	SCOP _{47/55°C}	kWh/kWh	3,32	3,36	3,35	3,45	3,34	3,40
		ηs heat _{47/55°C}	%	130	131	131	135	131	133
		P _{rated}	kW	3	4	9	10	9	11
		Energy labelling		A++	A++	A++	A++	A++	A++
Cooling									
Unit with hydraulic module Full load performance*	CA1	Nominal capacity	kW	4,00	5,55	11,20	12,80	10,65	13,00
		EER	kW/kW	3,10	3,10	3,40	3,10	3,40	3,20
		Eurovent class		A	A	A	A	A	A
	CA2	Nominal capacity	kW	4,85	8,00	13,70	16,00	13,75	17,00
		EER	kW/kW	4,35	4,00	4,60	4,10	4,65	4,15
		Eurovent class		A	A	A	A	A	A
Unit with hydraulic module Seasonal energy efficiency**	SEER _{12/7°C} Comfort low temp.		kWh/kWh	4,85	5,75	5,15	5,00	5,40	5,25
	ηs cool _{12/7°C}		kW/kW	191	227	203	197	212	208
Sound levels									
Standard unit									
Sound power level ⁽²⁾			dB(A)	64	65	68	69	69	69
Sound pressure level at 10 m ⁽³⁾			dB(A)	33	34	37	38	38	38
Dimensions									
Length			mm	908	908	908	908	908	908
Width			mm	350	350	350	350	350	350
Height			mm	821	821	1363	1363	1363	1363
Operating weight ⁽¹⁾									
Standard unit			kg	57	69	115	115	121	121
Compressors			Rotary compressor	1	1	1	1	1	1
Refrigerant			R410A						
Charge ⁽¹⁾			kg	1,10	1,60	2,80	2,80	3	3
Capacity control									
Minimum capacity ⁽⁴⁾			%	23 %	20 %	20 %	17 %	20 %	17 %

- * In accordance with standard EN14511-3:2013. In accordance with standard EN14511-3:2013.
- ** In accordance with standard EN14825:2016, average climate conditions
- HA1 Heating mode conditions: Water type heat exchanger water inlet/outlet temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m². kW
- HA2 Heating mode conditions: Water type heat exchanger water inlet/outlet temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m². kW
- HA3 Heating mode conditions: Water type heat exchanger water inlet/outlet temperature 47°C/55°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m². kW
- CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². kW
- CA2 Cooling mode conditions: evaporator water inlet/outlet temperature 23 °C/18 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². kW
- η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with standard EN 14825:2016
- η_s heat_{47/55°C} & SCOP_{47/55°C} **Values in bold comply with Ecodesign Regulation (EU) No. 813/2013 for Heating applications**
- η_s cool_{12/7°C} & SEER_{12/7°C} Values calculated in accordance with standard EN 14825:2016
- (1) Values are guidelines only. Refer to the unit nameplate.
- (2) In dB ref=10⁻¹² W, (A) weighting. Declared dual number noise emission value in accordance with ISO 4871 (with an associated uncertainty of +/-2dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (3) In dB ref 20 μPa, (A) weighting. Declared dual number noise emission value in accordance with ISO 4871 (with an associated uncertainty of +/-2dB(A)). For information, calculated from the sound power level Lw(A).
- (4) Min. water-side operating pressure with variable speed hydraulic module is 40 kPa.



Eurovent certified values

TECHNICAL CHARACTERISTICS

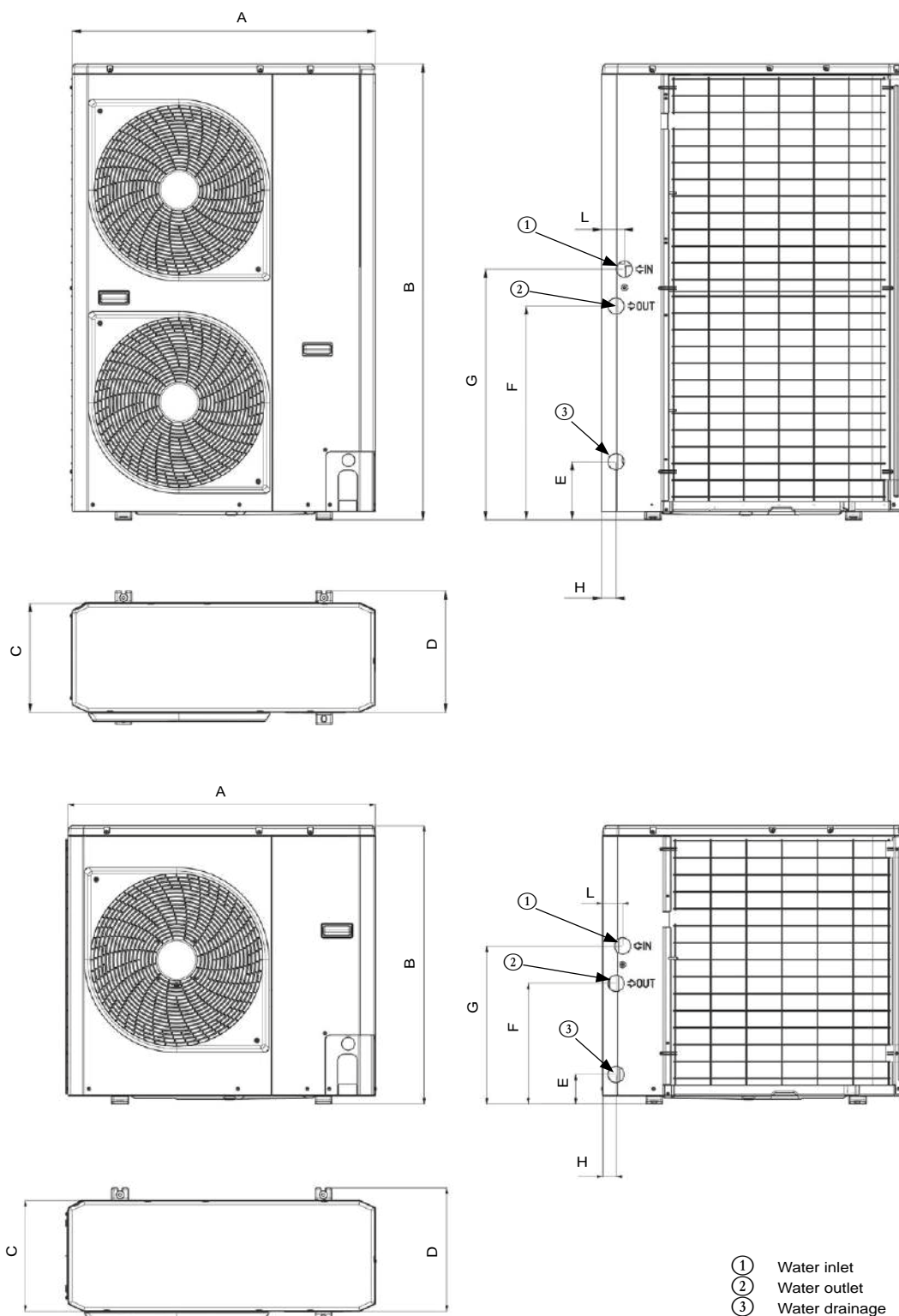
30AWH HO	5H	7H	11H	15H	11 HT	15 HT
Condenser	Grooved copper tubes, aluminium fins					
Fans	Axial type					
Quantity	1	1	2	2	2	2
Maximum total air flow	800	800	1800	1800	1800	1800
Maximum rotation speed	560	660	820	820	820	820
Evaporator	Brazed plate heat exchanger					
Water volume	1,7	2,3	4,4	4,4	4,4	4,4
Hydraulic module	Circulator, relief valve, paddle flow switch, expansion tank					
Circulator	Centrifugal pump (variable speed)					
Expansion tank volume	2	2	3	3	3	3
Max. water-side operating pressure with hydraulic module ⁽⁵⁾	300	300	300	300	300	300
Water connections						
Inlet diameter (BSP GAS)	1	1	1	1	1	1
Outlet diameter (BSP GAS)	1	1	1	1	1	1
Casing paint colour	Colour code: RAL 7035					

(5) Min. water-side operating pressure with variable speed hydraulic module is 40 kPa.

ELECTRICAL DATA

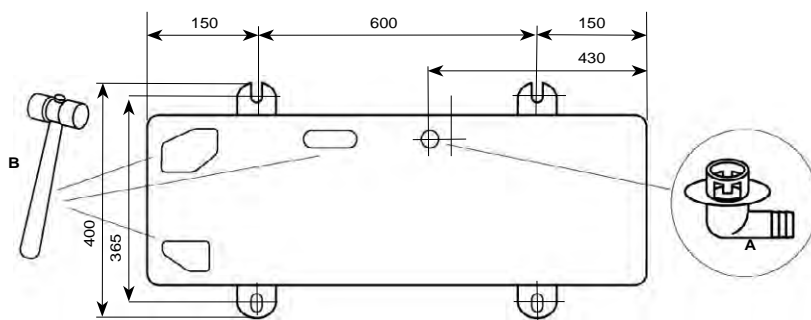
30AWH HO		5H	7H	11H	15H	11 HT	15 HT
Nominal voltage	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	400-3N-50	400-3N-50
Voltage range	V	220-240	220-240	220-240	220-240	380-415	380-415
Current at full load	A	8,9	16,7	23,3	25,6	16,8	16,8
Fuse capacity	A	16	20	32	32	20	20
Electrical power cable section (H07 RN-F)	mm²	2,5	2,5	4	4	2,5	2,5
WUI (user interface) cable section	mm²	H07RN-F 4 x 0.75					
Circuit breaker	Am	10	16	25	25	16	16

DIMENSIONS



30AWH HO	A	B	C	D	E	F	G	H	L	weight (kg)
5H	908	821	326	350	87	356	466	40	60	57
7H	908	821	326	350	87	356	466	40	60	69
11H	908	1363	326	350	169	645	744	43	73	115
15H	908	1363	326	350	169	645	744	43	73	115
11HT	908	1363	326	350	169	645	744	43	73	121
15HT	908	1363	326	350	169	645	744	43	73	121

INSTALLATION RECOMMENDATION

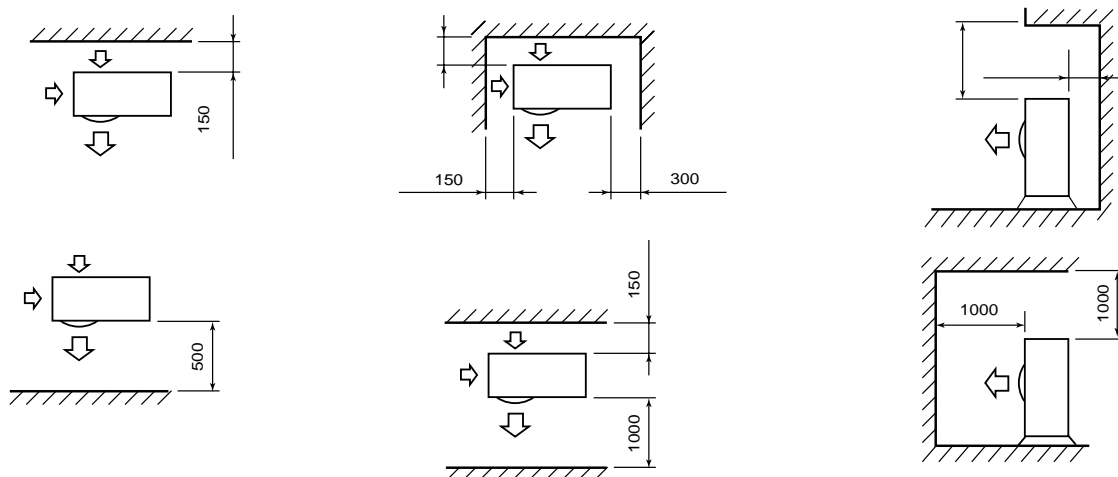


If drainage is provided by the drain pipe, connect the nipple (A) and use the drain pipe (internal diameter: 16 mm) available commercially. If the installation is to be located in a very cold area or area with high snowfall levels, where the condensate drain pipe could freeze, the drainage capacity of the pipe must be checked, or a electric heat trace cable must be added.

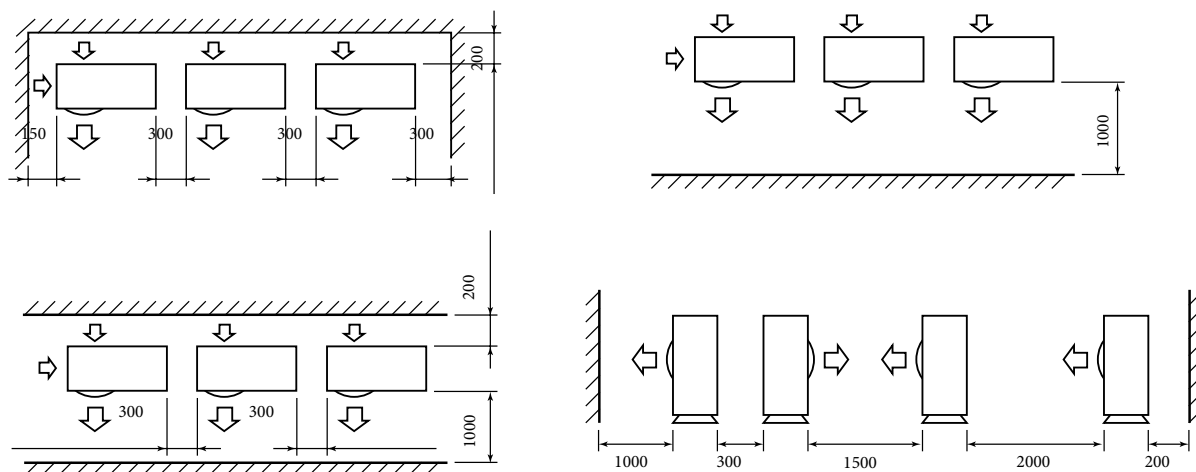
The drainage capacity increases if the pre-punched holes in the condensate pan are open (open the pre-punched holes outwards using a hammer (B), etc.).

FREE SPACE (MM)

Installation of a single unit



Installation of multiple units



Note: The height of obstacles at the front and rear should be less than the height of the outdoor unit,

HIGH-TEMPERATURE MONOBLOC AIR-TO-WATER HEAT PUMPS WITH INTEGRATED HYDRAULIC MODULE



Hot water up to 65°C
High energy efficiency level
Hydraulic module with
Class A circulator
Superior reliability

61AF 014-019

Nominal heating capacity 14-20 kW

The AquaSnap high-temperature heat pump range was designed for commercial applications such as the heating of offices, apartments and hotels as well as domestic hot water production in new and refurbished buildings.

AQUASNAP.
Heating



CARRIER participates in the ECP programme for LCP/HP
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FEATURES AND BENEFITS

Features

The main features of this product range are:

- **Energy savings**
The 61AF range is certified to the Eurovent energy efficiency class A with a coefficient of performance (COP) of over 4. This complies with the COP required by the Ecolabel certification.
- **Ease-of-installation**
The high-temperature AquaSnap heat pumps incorporate a hydraulic module with a variable speed pump, in option.
- **Easy integration**
The low noise levels of the 61AF heat pump and its very compact chassis reduce the noise disturbance from the unit.
- **Application flexibility**
The operating range allows outside temperatures down to -20°C and leaving water temperatures up to 65°C for domestic hot water applications.
- **Availability**
 - Intelligent unit control permits unit operation in extreme conditions, minimising unit shut-down times.
 - Hot water production at 65°C is available continuously.

Carrier quality is your guarantee for the safety and durability of the installation.

The high-temperature heat pump range incorporates the latest technological features:

- scroll compressors with vapour injection
- low-noise fans made of a composite material
- auto-adaptative microprocessor control
- electronic expansion valve
- variable speed pump.

The high-temperature AquaSnap heat pumps can be equipped with a hydraulic module that is integrated into the heat pump chassis, limiting the installation to straight-forward operations like the wiring and the connection of the hot water supply and return piping.

Quiet operation

- **Compressors**
 - Low-noise scroll compressors with low vibration level.
 - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings.
 - Dynamic suction and discharge piping supports, minimising vibration transmission (Carrier patent).
- **Evaporator section**
 - Vertical evaporator coils
 - Protection grilles on anti-vibration mountings to protect the heat exchanger against possible shocks.
 - Latest-generation low-noise Flying Bird fans are now even quieter and do not generate intrusive low-frequency noise.
 - Rigid fan installation for reduced start-up noise.

Easy and fast installation

- **Integrated hydraulic module (option)**
 - Variable speed water pump.
 - Water filter protects the water pump against circulating debris (option).
 - Overpressure valve, set to 3 bar for the 61AF 014 and to 4 bar for the 61AF 019.
 - Thermal insulation and frost protection down to -20°C, using an electric resistance heater.
- **Physical features**
 - The unit has a small footprint and a low height (1103 mm for the 61AF 014 and 1550 mm for the 61AF 019), allowing it to blend in with any architectural styles.
 - The unit is enclosed by easily removable panels, covering all components (except condensers and fans).
- **Simplified electrical connections**
 - Single power supply point with neutral.
 - Main disconnect switch with high trip capacity (standard only for 61AF 019).
 - Transformer for safe 24 V control circuit supply included.
- **Fast commissioning**
 - Systematic factory operation test before shipment.
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- **Seasonal heating performance optimized**
 - In accordance with standard EN 14825/2013 in average climate, the Seasonal Coefficient of performance (SCOP) reaches 2.83 for an energy label of A+.
 - The electronic expansion device (EXV) allows operation at a lower condensing pressure (COP optimisation).
 - Dynamic superheat management for better utilisation of the condenser surface.
 - Specific Free Defrost algorithm is present to optimise performance and comfort even during defrost period.
- **Reduced maintenance costs**
 - Maintenance-free scroll compressors with vapour injection.
 - Pro-Dialog+ control offers fast diagnosis of possible incidents and their history.

Environmental care

- **Non-ozone depleting R-407C refrigerant**
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential.
 - Very efficient - ensures an increased energy efficiency ratio (COP).
- **Leak-tight refrigerant circuit**
 - Brazed refrigerant connections for increased leak-tightness.
 - Reduction of leaks due to elimination of capillary tubes (TXVs).
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.

FEATURES AND BENEFITS

Superior reliability

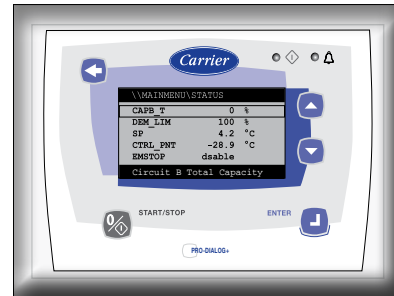
- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling.
- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory.
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports.
 - Transport simulation test in the laboratory on a vibrating table.

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the condenser water pump for optimum energy efficiency.

- Energy management
 - Seven-day internal time schedule clock: permits unit on/off control and operation at a second set-point.
 - Set-point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T.
 - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault (option).
 - Start/stop based on the outside air temperature.
- Ease-of-use
 - The new backlighted LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
 - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier).
 - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet browsers. They are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set-point, air temperature, entering/leaving water temperature.
 - As standard the unit includes a board for the control of a boiler and four electric resistance heater stages.

Pro-Dialog+ operator interface



Remote operating mode with volt-free contacts (standard)

A simple two-wire communication bus between the RS485 port of the AquaSnap high-temperature heat pumps and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities.

Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of a heating system. Please consult your Carrier representative for more information on these products.

- Start/stop: opening of this contact will shut down the heat pump.
- Dual set-point: closing of this contact activates a second heating set-point (example: unoccupied mode).
- Demand limit: closing of this contact limits the maximum heat pump capacity to a predefined value.
- User safety: this contact is connected in series with the water flow switch and can be used for any customer safety loop.
- Water pump control.
- Alert indication: this volt-free contact indicates the presence of a minor fault.
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of the refrigerant circuit.

Remote interface (accessory)

This accessory includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24 V transformer supplied. This interface allows access to the same menus as the unit interface and can be installed up to 300 m from the 61AF unit.

TYPE KEY

	61 A F	-	0 14	P	7	B	-	-	-	-	A	
Range												- - Revision status
Standard version												- - New option (Not used)
Nominal capacity												- - New option (Not used)
X - Without hydraulic module												- - Standard
P - With variable speed circulator without expansion tank												A - Master/Slave (lead/lag)
7 - Single phase power supply (230/1+N/50) (Only size 14)												- - Standard
9 - Power supply with neutral cable (400/3+N/50)												A - Remote User Interface HMI (as accessory)
- - Without gateway												
B - CCN Jbus gateway												
C - CCN Bacnet gateway												
D - CCN LONtalk gateway												

ACCESSORIES

Accessories	Description	Advantages	Use
Water filter	External water filter on the hydraulic module	Water pump protection against circulating debris	61AF 014-019

PHYSICAL DATA

61AF				014-7	014-9	019-9
Heating						
Standard unit Full load performances *	HA1	Nominal capacity	kW	13,8	13,4	19,9
		COP	kW/kW	3,88	4,14	4,23
	HA2	Nominal capacity	kW	14,0	13,6	19,6
		COP	kW/kW	3,31	3,49	3,45
	HA3	Nominal capacity	kW	14,0	13,6	19,5
		COP	kW/kW	2,89	2,99	2,93
	HA4	Nominal capacity	kW	13,8	13,5	19,8
		COP	kW/kW	2,41	2,47	2,41
Standard unit Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,35	3,57	3,49
		ηs heat _{30/35°C}	%	131	140	137
		P _{rated}	kWh/kWh	14	13	13
	HA3	SCOP _{47/55°C}	%	2,92	3,05	3,08
		ηs heat _{47/55°C}	kW	114	119	120
		P _{rated}		14	13	14
	Operating weight ⁽¹⁾					
	Standard unit (without hydraulic kit)			kg	159	159
Standard unit (plus hydraulic module option)			kg	169	169	216
Sound levels						
Sound power level ⁽²⁾			dB(A)	71	71	72
Sound pressure level at 10 m ⁽³⁾			dB(A)	40	40	41
Dimensions						
Length			mm	1103	1103	1135
Depth			mm	333	333	559
Height			mm	1278	1278	1579
Compressor				One, hermetic scroll, 48,3 r/s, one capacity stage		
Refrigerant				R-407C		
Charge			kg	4,0	4,0	8,0
			teqCO ₂	7,1	7,1	14,2
Capacity control				Pro-Dialog+		
Minimum capacity			%	100	100	100
Condenser				Direct-expansion plate heat exchanger		
Water volume			l	3,7	3,7	3,9
Max. water-side operating pressure with and without hydraulic module			kPa	300	300	400
Fan				Two, axial twin-speed fans		
Total air flow (high speed)			l/s	2050	2050	2000
Speed			r/s	11,7	11,7	14,5
Evaporator				Grooved copper tubes and aluminium fins		
Pump				Variable speed pump		
Water connections with/without hydraulic module				Victaulic		
Connections			inch	1 female	1 female	1 male in/1-1/4 male out
Outside diameter			mm	25	25	25 in/32 out
Chassis paint colour				Colour code: RAL 7035		

- * In accordance with standard EN14511-3:2013
- ** In accordance with standard EN14825:2016, average climate
- HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- HA3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- HA4 Heating mode conditions: Water heat exchanger water entering/leaving temperature 55°C/65°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016
- η_s heat_{47/55°C} & SCOP_{47/55°C}
- Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**
- (1) Weight shown is a guideline only. Please refer to the unit nameplate
- (2) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (3) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).



Eurovent certified values

ELECTRICAL DATA

61AF - standard unit		014-7	014-9	019	014-7	014-9	019
		Without pump			With pump		
Power circuit							
Nominal power supply	V-ph-Hz	230-1-50	400-3-50	400-3-50	230-1-50	400-3-50	400-3-50
Voltage range	V	207-253	360-440	360-440	207-253	360-440	360-440
Control circuit supply		24 V, via internal transformer			24 V, via internal transformer		
Maximum start-up current (Un)⁽¹⁾							
Standard unit	A	-	66	102	-	67	103
Unit with electronic starter option	A	47	-	-	48	-	-
Unit power factor at maximum capacity⁽²⁾		0,82	0,82	0,82	0,82	0,82	0,82
Maximum unit power input⁽²⁾	kW	6,4	5,9	8,8	6,5	6,0	8,9
Nominal unit current draw⁽³⁾	A	22,9	7,9	12,4	24,0	9,0	13,5
Maximum unit current draw (Un)⁽⁴⁾	A	30,7	10,8	16,0	31,8	11,9	17,1
Maximum unit current draw (Un-10%)*	A	36,4	11,9	16,6	37,5	13,0	17,7

- (1) Maximum instantaneous start-up current (maximum operating current of the compressor + fan current + locked rotor current of the compressor).
 (2) Power input, compressor and fan, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).
 (3) Standardised Eurovent conditions: condenser entering/leaving water temperature = 40°C/45°C, outside air temperature db/wb = 7°C/6°C.
 (4) Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).
 * Maximum unit operating current at maximum unit power input and 360 V.

Electrical data and operating conditions notes:

- 61AF 014-019 units have a single power connection point located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
 - a main disconnect switch (size 019 only),
 - starter and motor protection devices for the compressor, the fan and the pump,
 - the control devices.
- Field connections:
All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 61AF units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical equipment.

Notes:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machinery Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

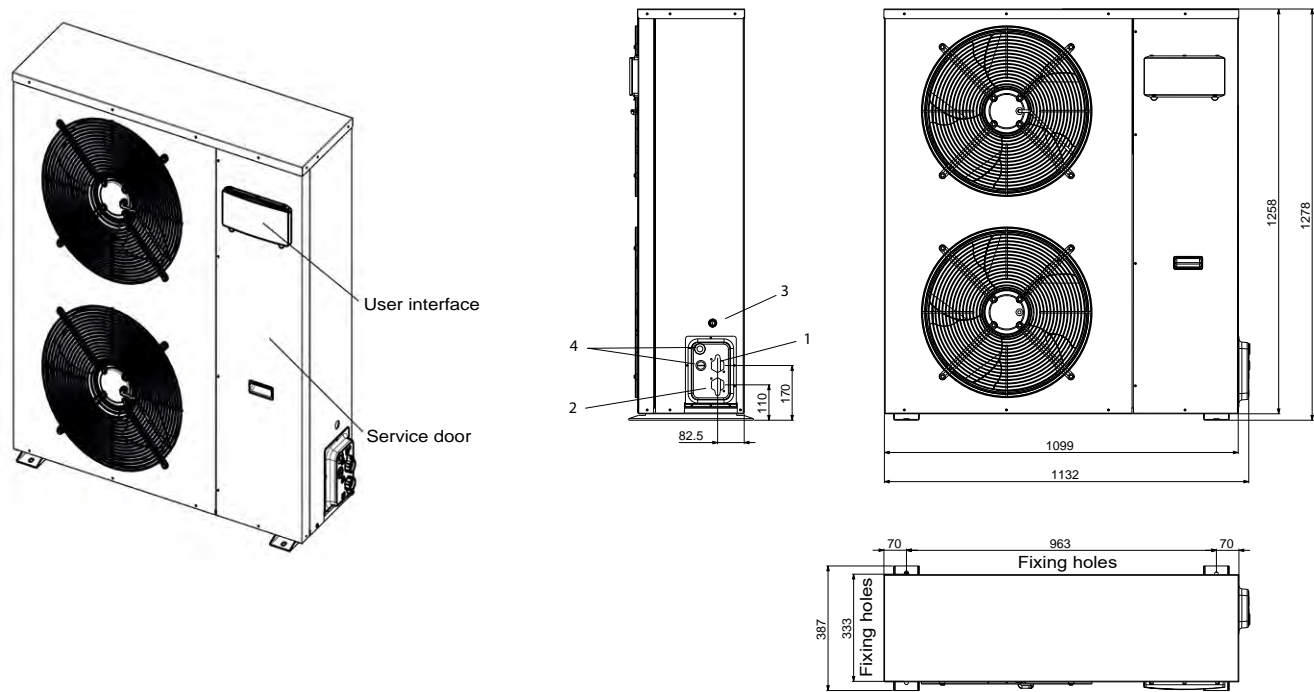
- The operating environment for the 61AF units is specified below:
 - Environment⁽¹⁾ - Environment as classified in EN 60721 (corresponds to IEC 60721):
 - outdoor installation⁽¹⁾
 - ambient temperature range: -20°C to +40°C, class 4K4H
 - altitude: ≤ 2000 m
 - presence of hard solids, class 4S2 (no significant dust present)
 - presence of corrosive and polluting substances, class 4C2 (negligible)
 - Power supply frequency variation: ± 2 Hz.
 - The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
 - Overcurrent protection of the power supply conductors is not provided with the unit.
 - The factory-installed disconnect switch is of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3)
 - The units are designed for connection to TN networks (IEC 60364). For IT networks the earth connection must not be at the network earth. Provide a local earth, consult competent local organisations to complete the electrical installation.

Caution: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

- (1) The required protection level for this class is IP43BW (according to reference document IEC 60529). All 61AF units are protected to IP44CW and fulfil this protection condition.

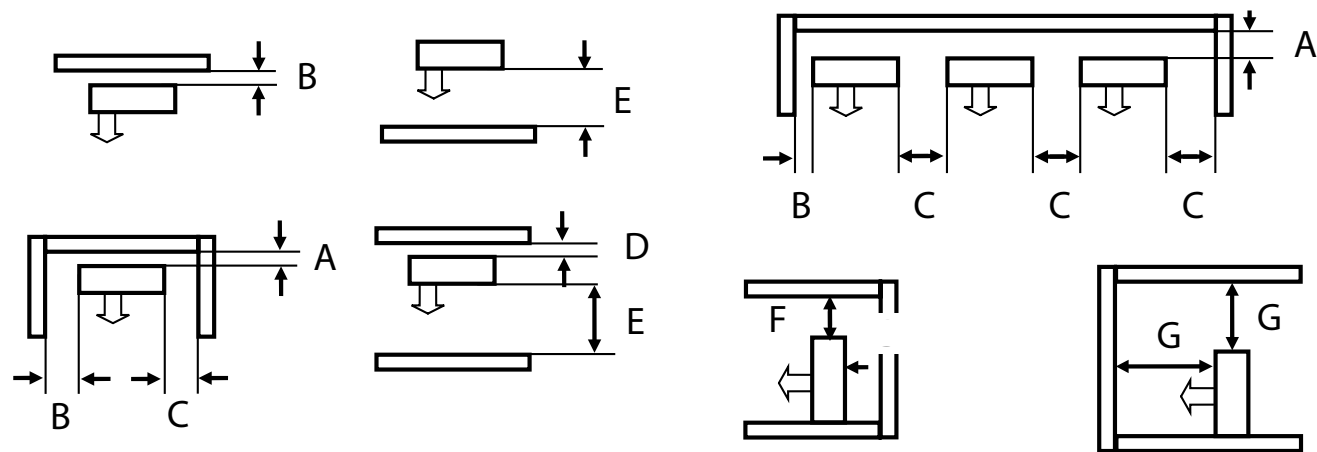
DIMENSIONS, MM

61AF 014 unit with and without hydraulic module



- 1. Water outlet
- 2. Water inlet
- 3. Relief valve outlet
- 4. Electrical connections

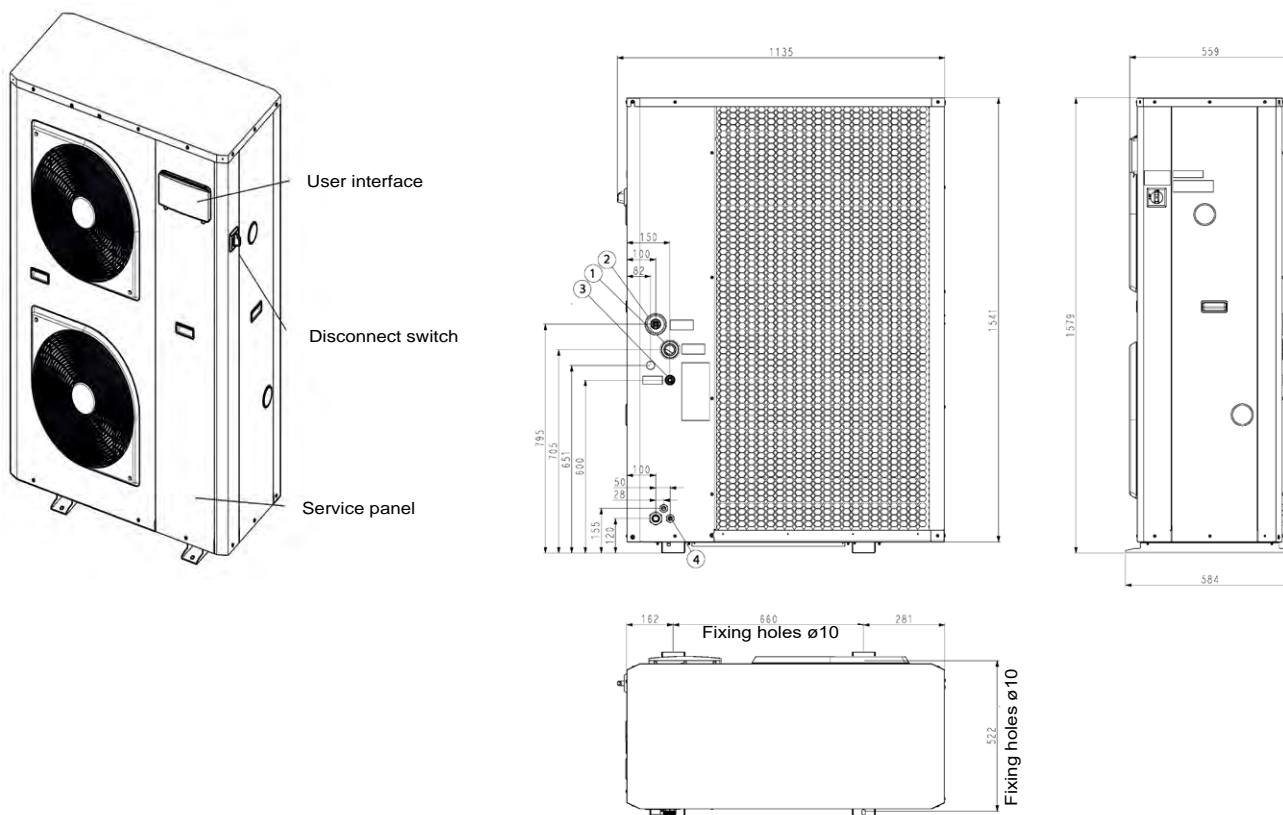
CLEARANCES, MM



61AF 014	A	B	C	D	E	F	G
	100	250	500	100	670	400	670

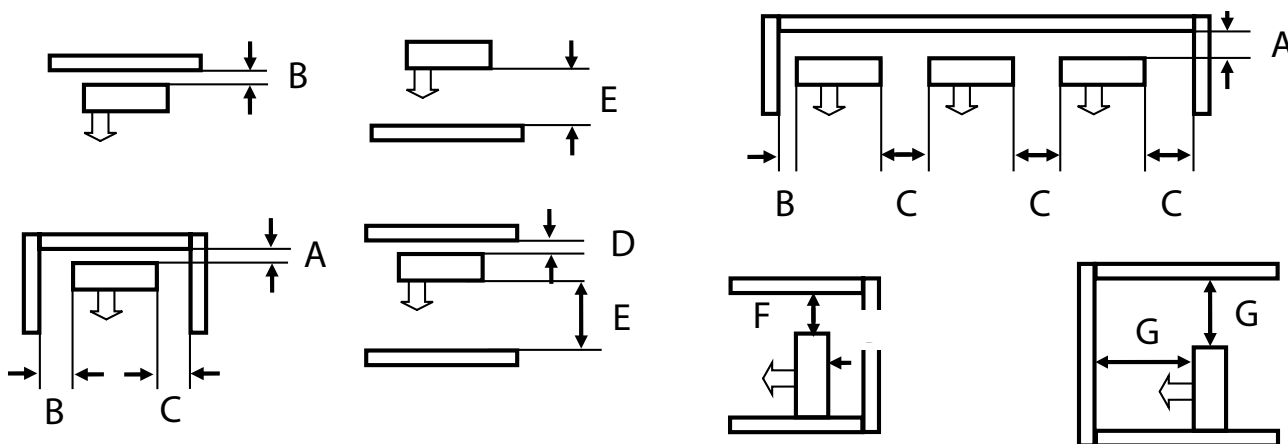
DIMENSIONS, MM

61AF 019 unit with and without hydraulic module



1. Water outlet
2. Water inlet
3. Relief valve outlet
4. Power connections

CLEARANCES, MM



61AF 019	A	B	C	D	E	F	G
	300	200	400	200	700	500	1000

INVERTER AIR-COOLED LIQUID CHILLERS & REVERSIBLE AIR TO WATER HEAT PUMPS



Easy and fast installation
Hydraulic module available
Inverter technology compressor and fans
Superior reliability

30RQV

Nominal heating capacity 17-21 kW
Nominal cooling capacity 15-18 kW

The AquaSnap Greenspeed® liquid chiller/heat pump range was designed for commercial applications such as the air conditioning of offices, hotels and large residential houses. The units integrate the latest technological innovations: Non-ozone depleting refrigerant R410A, DC inverter twin-rotary compressors, low-noise variable speed fans and microprocessor control.

With exceptional energy efficiency values the inverter chillers qualify for local tax reductions and incentive plans in all EU countries.

For added flexibility the AquaSnap Greenspeed® units are available with or without hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.

AQUASNAP greenspeed



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FEATURES AND BENEFITS

Features

The AquaSnap Greenspeed® heat pump systems can be used with a wide choice of Carrier terminal fan coil units - cassettes, low, medium and high-pressure satellite units, console units, underceiling units and high-wall units.

Ecodesign is the European Directive that sets mandatory requirements for Energy related Products (ErP) to improve their energy efficiency. Carrier supports initiatives to reduce the environmental impact of its products.

Quiet operation

- Compressors
 - Low-noise INVERTER Twin rotary compressor with low vibration levels
 - Advanced technology providing maximum energy-efficiency with high capacity available at peak conditions and optimised efficiency at low and mid compressor speeds. The AquaSnap Greenspeed® heat pump DC inverter uses Intelligent Power Drive Unit (IPDU) hybrid inverter technology. An electronic management logic is used to optimised compressor operation in all conditions, minimised temperature fluctuation to give a perfect individual comfort control with significant reduction of energy consumption :
 - PWM: pulse width modulation of the direct current controls the compressor at partial load conditions, adjusting the frequency at fixed voltage. The compressor speed is fine-tuned and the system provides high-level comfort (no temperature fluctuations) at exceptionally efficient working conditions.



Compressor frequency is increased continuously up to the maximum level. This ensures that there are no current draw peaks in the start-up phase. Inverter ramp-up speed makes soft starts unnecessary and ensures immediate maximum power.

- The two rotary compression cylinders, offset from each other by 180°, and the DC brushless motor with the shaft in perfect balance ensure reduced vibration and noise, even at very low operating speeds. This results in an extremely wide range between minimum and maximum capacity with continuous operation, guaranteeing that the system is always optimised and provides maximum comfort at exceptionally high efficiency levels.
- Twin-rotary cylinders, low vibrations and low load to the shaft ensure highest compressor reliability and a long trouble-free operating life.
- All DC brushless twin-rotary compressors are equipped with internal system to secure the motor against oil issues due to colder climate.
- A double compressor shield for acoustic insulation further reduces noise levels.

- Air heat exchanger section
 - Vertical air heat exchanger coils
 - The latest-generation low-noise fans are now even quieter and do not generate intrusive low-frequency noise
 - Rigid fan installation for reduced start-up noise.

Easy and fast installation

- Integrated hydraulic module (option)
 - Fixed speed water pump or variable speed circulator
 - Water filter protecting the water pump against circulating debris
 - High-capacity membrane expansion tank ensures pressurisation of the water circuit (option)
 - Overpressure valve, set to 3 bar
 - Thermal insulation and frost protection down to -20°C, using an electric resistance heater and pump cycling.
 - Integrated water fill system to ensure correct water pressure (option)

No additional buffer tank required, simplifying and speeding up the installation process (to be checked with the water volume of installation).

- Physical features
 - Advanced circuit design and component selection has resulted in a compact unit with an exceptionally small footprint that is easy to transport even through narrow doors.

Reduced operating weight and a handle on the unit panels to facilitate transport.

- The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- A neutral color (RAL 7035) to facilitate the integration in residential area
- Simplified electrical connections
 - Main disconnect switch with high trip capacity (option)
 - Transformer for safe 24 V control circuit supply included
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Increased seasonal efficiency
 - In accordance with EN 14825:2013, Average Climate, energy label reach A+ (see Physical data RQV units). The exceptionally high energy efficiency of the AquaSnap Greenspeed® unit is the result of a long qualification and optimisation process.
- Reduced maintenance costs
 - Maintenance-free twin rotary compressors
 - Fast diagnosis of possible incidents and their history via the user interface WUI
 - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Non-ozone depleting R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

FEATURES AND BENEFITS

Superior reliability

- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table.

NHC Control

NHC control associate with compressor and fan variable frequency driver combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressor, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

- Ease-of-use
 - NHC control can be associated with a new User interface (WUI) which allow an easy access to the configuration parameters (frequency compressor, refrigerant circuit temperature, sets points, air temp, entering water temp, alarm report...).
 - This user interface is also very intuitive in its use. It allows reading and easy selection of the operating mode. The functions are represented by icons on the LCD backlit screen.
 - To facilitate the use of this interface, 3 levels of access are available: end user, installer and factory.



- Key features
 - Heating and cooling mode
 - Domestic hot water
 - Master/slave control of 4 units operating in parallel with operating time equalisation and automatic changeover in case of a unit fault (need Master slave sensor in accessory).
 - Scheduling period
- Choice of control product
 - 3 options are available to drive the 30RQV 17-21:
 - Dry contact
 - User interface WUI
 - ModBus protocol

User Interface WUI



- This interface can be installed up to 50 m away. It is connected to the NHC board with a 4 wires cable.
- 2 installation possibilities:
 - Inside the room (with remote interface accessory) : IAT sensor is an accessory, it is not mandatory to operate in remote user interface, because WUI has an internal sensor to measure the room temperature take with the internal sensor, set-point selected is air temperature.
 - On the HP/chiller (with local user interface option) : set-point is on water temperature are water temperature



Local User Interface configuration

- ModBus
 - Direct access with Modbus connection to set, configure and monitor the 30RQV
- Input remote contact :
 - Remote On/Off Contact
 - Remote Heat/Cool Contact: This switch is used to select the Cooling Mode (contact opened) or the Heating Mode (contact closed).
 - Remote Economic Contact: This switch is used to select the regular Home Mode when contact is opened or the Economic Away Mode when contact is closed.
 - Safety Input Contact: This switch is normally closed type, according to configuration it is used either to stop the unit, to ban the Heating Mode or to ban the Cooling Mode when contact is opened.

FEATURES AND BENEFITS

■ Large choice of Input Contacts

Several functions can be configured by the installer. They allow to adapt to the environment of the machine:

- Power Limitation / Night Mode: This switch is used to reduce the compressor maximum frequency to avoid noise.
- Off Peak: If the General Purpose Contact, configured to "Off Peak", is closed then the Electric Heat Stages are not allowed.
- Loadshed Request: If the General Purpose Contact, configured to "Loadshed Request", is closed then unit shall be stopped as soon as possible.
- Solar Input: If the General Purpose Contact, configured to "Solar Input", is closed then the unit is not allowed to run in Heating or DHW Mode because hot water is produced from a solar source.
- DHW Request Switch from tank : When this input is closed, the Domestic Hot Water production is requested (need DHW sensor delivered in accessory).
- DHW Priority : When this input is closed, the unit is switching to Domestic Hot Water production regardless of the Space Heating demand and the current DHW schedule (need DHW sensor delivered in accessory).

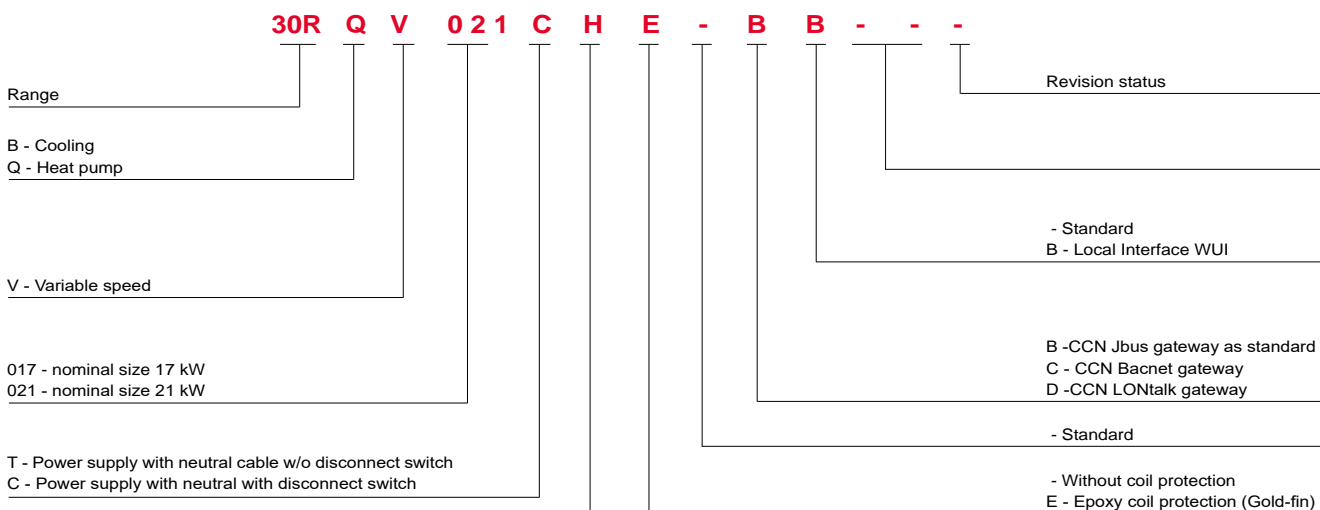
- Anti-Legionella Cycle Request : When this input is closed, the Domestic Hot Water production is requested with the Anti-Legionella set-point.
- Summer Switch : This switch is used to select the Winter (contact opened) or the Summer Mode (contact closed).
- Energy Meter Input : This input is used to count the number of pulses received from an external energy meter (not supplied)
- External Alarm Indication Input : When this input is opened, alarm is tripped. This alarm is for information only, it does not affect the unit operation.

■ Output remote contact available

2 Output contacts could be chosen on the NHC board, upon configuration for the following purposes:

alert, alarm , Standby, running (Cool, Heat, DHW or Defrost Modes), IAT Reached, electrical Heat Stage 2, electrical Heat Stage 3

TYPE KEY



- X - Without hydraulic module
- H - With hydraulic module with expansion tank
- F - With hydraulic module with expansion tank and water filling system
- R - With hydraulic and without expansion tank*
- Z - With hydraulic, w/o expansion tank and with water filling system
- M - With variable speed circulator with expansion tank
- N - With variable speed circulator with expansion tank and water filling system
- P - With variable speed circulator without expansion tank
- Q - With variable speed circulator, w/o expansion tank and with water filling system

Accessories

- Remote User Interface (00PSG002521900A)
- DHW sensor (00PSG002501300A)
- Master /slave sensor (00PSG000596400A)
- Additional OAT sensor (00PSG002522000A)

PHYSICAL DATA, 30RQV UNITS

30RQV				17		21	
Heating							
Standard unit Full load performances*	HA1	Nominal capacity	kW	17,1		21,1	
		COP	kW/kW	4,1		4,1	
	HA2	Nominal capacity	kW	16,2		20,0	
		COP	kW/kW	3,4		3,3	
	HA3	Nominal capacity	kW	15,3		19,1	
		COP	kW/kW	2,7		2,7	
Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,68		3,56	
		IJs heat _{30/35°C}	%	144		139	
	HA3	SCOP _{47/55°C}	kWh/kWh	3,1		2,9	
		IJs heat _{47/55°C}	%	121		113	
		P _{rated}	kW	9,5		15,43	
		Energy labelling		A+		A+	
		Cooling					
Standard unit Full load performances*	CA1	Nominal capacity	kW	14,9		18,6	
		EER	kW/kW	3,0		3,1	
		Eurovent class		B		A	
	CA2	Nominal capacity	kW	19,8		25,8	
		EER	kW/kW	3,9		3,8	
		Eurovent class		A		A	
Seasonal energy efficiency		SEER _{12/7°C} Comfort low temp.	kWh/kWh	151		149	
Sound levels							
Standard unit							
Sound power level ⁽¹⁾			dB(A)	71		74	
Sound pressure level at 10 m ⁽²⁾			dB(A)	40		43	
Dimensions - Standard unit							
Length ⁽³⁾			mm	1109		1109	
Width			mm	584		584	
Height			mm	1579		1579	
Operating Weight ⁽⁴⁾							
Standard unit			kg	190,9		199,4	
Compressors			Rotary compressor	1		1	
Refrigerant			R410A				
Charge ⁽⁴⁾			kg	8		8	
Capacity control							
Minimum capacity ⁽⁵⁾			%	33 %		41 %	
Air heat exchanger				Grooved copper tubes, aluminium fins			
Fans - Standard unit				Axial type fan			
Quantity				2		2	
Maximum total air flow			l/s	2000		2400	
Maximum rotational speed			rps	14		16	
Water heat exchanger				Brazed plate heat exchanger			
Water volume			l	1,52		1,9	
Max water-side operating pressure without hydraulic module			kPa	1000		1000	

* In accordance with standard EN 14511-3:2013

** In accordance with standard EN 14825:2013, Average climate

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

IJs heat_{30/35°C} & SCOP_{30/35°C} Applicable Ecodesign regulation: (EU) No 813/2013

IJs heat_{47/55°C} & SCOP_{47/55°C} Applicable Ecodesign regulation: (EU) No 813/2013

SEER_{12/7°C} Applicable Ecodesign regulation: (EU) No 2016/2281

(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20 µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Length = 1141 mm if main disconnect switch

(4) Values are guidelines only. Refer to the unit nameplate.



Eurovent certified values

PHYSICAL DATA, 30RQV UNITS

30RQV		17	21
Hydraulic module (option)		Pump, relief valve, paddle flow switch, expansion tank (option)	
Pump		Centrifugal pump	
Expansion tank volume	l	8	8
Max. water-side operating pressure with hydraulic module ⁽⁶⁾	kPa	300	300
Water connections (Without Hydraulic Module)			
Inlet diameter (MPT GAS)	inch	1	1
Outlet diameter (MPT GAS)	inch	1	1
Water connections (With Hydraulic Module)			
Inlet diameter (MPT GAS)	inch	1-1/4	1-1/4
Outlet diameter (MPT GAS)	inch	1	1
Water Filling System (Option)			
Diameter (MPT GAS)	inch	1/2	1/2
Chassis paint colour	Colour code:	RAL 7035	RAL 7035

(6) Min. water-side operating pressure with fixed speed hydraulic module is 50 kPa and with variable speed hydraulic module is 40 kPa.

ELECTRICAL DATA, 30RQV UNITS

30RQV (full options)		17	21
Power circuit			
Nominal power supply	V-ph-Hz	400-3+N-50	400-3+N-50
Voltage range	V	360-440	360-440
Control circuit supply		24V AC via internal transformer	
Nominal unit current drawn (Un) *	A	12,5	14,3
Maximum unit power input (Un) **	kW	10,8	12,4
Cos Phi unit at maximum power **		0,93	0,93
Maximum unit current drawn (Un-10%)***	A	18,5	21,2
Maximum unit current drawn (Un) ****	A	16,7	19,2
Maximum Start-up current, standard unit †	A	Not Applicable (less than the operating current)	

* Conditions equivalent to the standardised Eurovent conditions (evaporator water entering-leaving temperature = 12 °C/7 °C, outside air temperature = 35 °C).

** Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15 °C, saturated condensing temperature 68.3 °C) and nominal voltage of 400 V (data given on the unit nameplate).

*** Maximum unit operating current at maximum unit power input and at 360 V.

**** Maximum unit operating current at maximum unit power input and at 400 V (values given on the unit nameplate).

† Maximum instantaneous start-up current at operating limits (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

Fan motor electrical data: at Eurovent equivalent conditions and motor ambient air temperature of 50 °C at 400 V: 3.8 A, start-up current 20 A, power input 1.75 kW

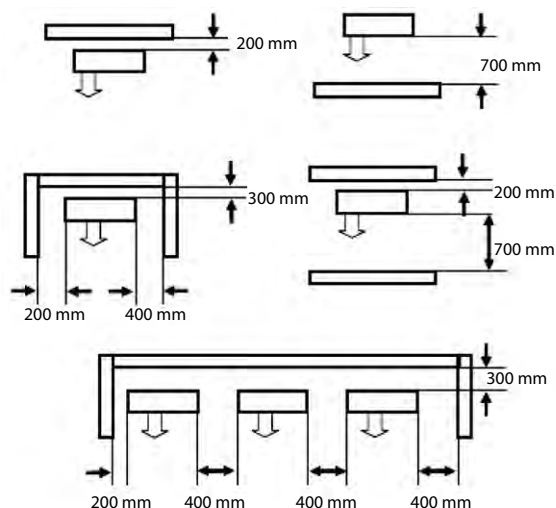
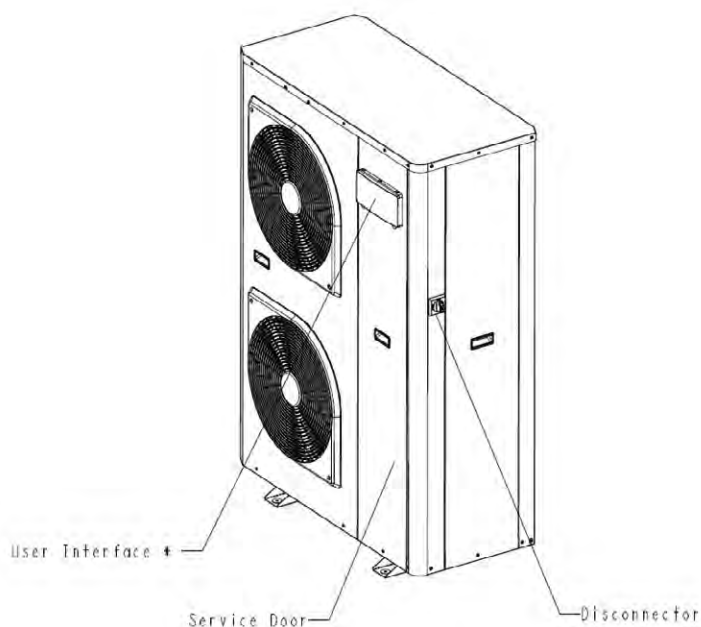
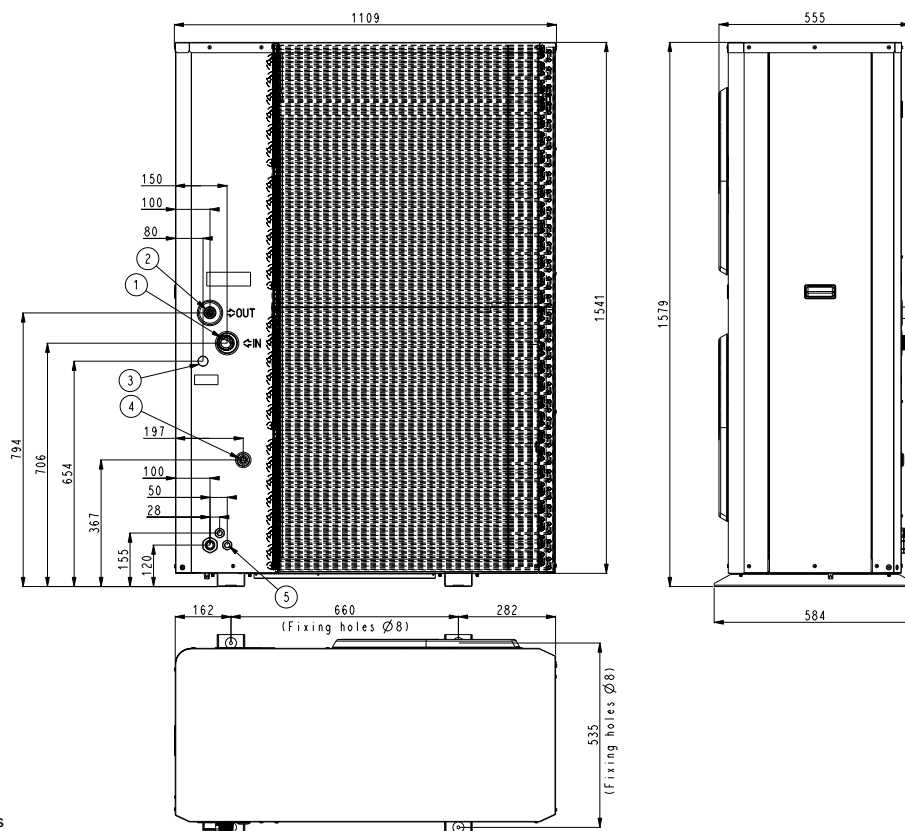
DIMENSIONS/CLEARANCES

30RQV 017-021

Legend

All dimensions are in mm

- ① Water inlet
- ② Water outlet
- ③ Fill kit connection
- ④ Safety valve outlet
- ⑤ Electrical connections



AIR-TO-WATER HEAT PUMPS



Easy and fast installation
Hydraulic module available
Economical operation
Superior reliability

30RQ 017-040 A

AQUASNAP
Reversible

Nominal heating capacity 30RQ: 17-41 kW
Nominal cooling capacity 30RQ: 16-39 kW

The Aquasnap liquid chiller/heat pump range was designed for commercial applications such as the air conditioning of offices and hotels etc.

The new Aquasnap units integrate the latest technological innovations:

- Ozone-friendly refrigerant R410A
- Scroll compressors
- Low-noise fans
- Auto-adaptive microprocessor control

The Aquasnap units are equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration levels
 - The compressor assembly is supported by anti-vibration mountings
- Air heat exchanger section
 - Vertical air heat exchanger coils
 - The latest-generation low-noise fans are now even quieter and do not generate intrusive low-frequency noise
 - Rigid fan installation for reduced start-up noise.

Easy and fast installation

- Integrated hydraulic module
 - Fixed speed circulator
 - Water filter protecting the water pump against circulating debris
 - High-capacity membrane expansion tank ensures pressurisation of the water circuit
 - Overpressure valve, set to 4 bar
 - Automatic purge valve positioned at the highest point of the hydraulic module to remove air from the system.
 - Thermal insulation and frost protection down to -10°C, using an electric resistance heater and pump cycling.
 - Integrated water fill system to ensure correct water pressure (option)
- Physical features
 - With its small footprint the unit blends in with any architectural styles.
 - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Simplified electrical connections
 - A single power supply point (power supply without neutral available as an option and in standard for units size 40kW)
 - Main disconnect switch with high trip capacity
 - Transformer for safe 24 V control circuit supply included
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Increased energy efficiency at part load
 - In accordance with standard EN 14825/2013 in average climate, the Seasonal Coefficient of performance (SCOP) reaches 3.01 for an energy label of A.
 - Specific Free Defrost algorithm is present to optimise performance and comfort even during defrost period.
- Reduced maintenance costs
 - Maintenance-free scroll compressors
 - Fast diagnosis of possible incidents and their history via the Pro-Dialog+ control
 - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Ozone-friendly R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Hydraulic module, sizes 026-040



Superior reliability

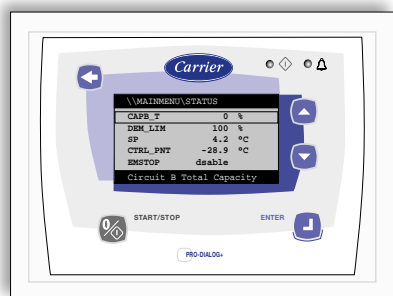
- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table.

FEATURES

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

Pro-Dialog+ interface



■ Energy management

- Seven-day internal time schedule clock: Permits unit on/off control and operation at a second set point
- Set point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T
- Master/slave control of two units operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
- Change-over based on the outside air temperature

■ Integrated features

- Night mode: Capacity and fan speed limitation for reduced noise level

■ Ease-of-use

- The new backlit LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
- The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier)
- The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet navigators. They are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set point, air temperature, entering/leaving water temperature.

Remote operating mode with volt-free contacts (standard)

A simple two-wire communication bus between the RS485 port of the Aquasnap and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.

- Start/stop: Opening of this contact will shut down the unit
- Dual set point: Closing of this contact activates a second set point (example: Unoccupied mode)
- Alert indication: This volt-free contact indicates the presence of a minor fault
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of the unit
- User safety: This contact can be used for any customer safety loop, closing of the contact generates a specific alarm
- Out of service: This signal indicates that the unit is completely out of service
- Unit capacity: This analogue output (0-10 V) gives an immediate indication of the unit capacity
- Compressor operation: This contact signals that the compressor is in operation

FEATURES

Remote interface (option)

This interface allows access to the same menus as the unit interface and can be installed up to 300 m away. It includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24V transformer supplied.

Interface access, sizes 026-040



TYPE KEY

30R	Q	-	021	C	H	E	-	B	A	--	-
Range											Revision status
B - Cooling											Not used
Q - Heat pump											
- - Standard											- - Standard
Y - High static fan											A - Remote user Interface HMI (As accessory)
017 - nominal size 17 kW											- - Without gateway
021 - nominal size 21 kW											B - CCN JBus gateway
026 - nominal size 26 kW											C - CCN Bacnet gateway
033 - nominal size 33 kW											D - CCN LONtalk gateway
040 - nominal size 40 kW											- - Standard
C - Power supply with neutral cable (only sizes 017-033)											- - Without coil protection
D - Power supply without neutral											E - Epoxy coil protection (Gold-fin)
X - Without hydraulic module											
H - With hydraulic module with expansion tank											
F - With hydraulic module with expansion tank and water filling system											
R - With hydraulic and without expansion tank											
Z - With hydraulic, w/o expansion tank and with water filling system											

PHYSICAL DATA, 30RQ UNITS

30RQ				017	021	026	033	040
Heating								
Standard unit Full load performances*	HA1	Nominal capacity	kW	17,6	22,0	30,8	34,3	38,6
		COP	kW/kW	4,03	3,98	3,98	3,98	3,52
	HA2	Nominal capacity	kW	17,0	21,5	29,6	33,0	40,7
		COP	kW/kW	3,21	3,28	3,21	3,19	3,16
Standard unit Seasonal energy efficiency**	HA1	SCOP 30/35°C	kW/kW	3,23	3,20	3,26	3,27	3,25
		ηs heat 30/35°C	%	126	125	127	128	127
		P _{rated}	kW	13	13	21	23	31
		Energy labelling		A+	A+	A+	A+	A+
Cooling								
Standard unit Full load performances*	CA1	Nominal capacity	kW	15,8	19,9	26,3	32,3	39,2
		EER	kW/kW	3,10	3,03	2,94	3,14	2,85
		Eurovent class		A	B	B	A	C
	CA2	Nominal capacity	kW	21,9	26,9	34,0	42,9	54,2
		EER	kW/kW	3,93	3,68	3,56	3,88	3,44
		Eurovent class		A	B	C	A	D
Standard unit Seasonal energy efficiency**		SEER 12/7°C Comfort low temp.	kWh/kWh	3,42	3,28	3,25	3,45	3,32
		SEER 23/18°C Comfort medium temp.	kWh/kWh	4,08	3,78	3,74	3,96	3,85
		SEPR 12/7°C Process high temp.	kWh/kWh	5,43	5,20	4,95	5,10	3,94
Integrated Part Load Value	IPLV.SI	kW/kW	4,400	4,172	4,068	4,352	3,846	
Operating weight ⁽¹⁾								
Standard unit, with hydraulic module			kg	206	223	280	295	305
Standard unit, without hydraulic module			kg	191	208	262	277	287
Sound power level ⁽²⁾			dB(A)	72	74	78	78	80
Sound pressure level at 10 m ⁽³⁾			dB(A)	40	42	46	46	48
Dimensions								
Length		mm	1136			1002		
Depth		mm	584			824		
Height		mm	1579			1790		
Compressor				One hermetic scroll compressor				
Refrigerant charge R-410A			kg	6,4	7,7	7,6	9,5	9,8
			teqCO ₂	13,4	16,1	15,9	19,8	20,5
Control				Pro-Dialog+				

- * In accordance with standard EN14511-3:2013
 ** In accordance with standard EN14825:2016, average climate
 HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W
 HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W
 CA1 Cooling mode conditions: evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
 CA2 Cooling mode conditions: evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
ηs heat 30/35°C & SCOP 30/35°C Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application
SEER 12/7°C & SEPR 12/7°C Values calculated in accordance with EN14825:2016
SEER 23/18°C Values calculated in accordance with EN14825:2016
IPLV.SI Calculations according to standard performances AHRI 551-591 (SI)
 (1) Weight shown is a guideline only. Please refer to the unit nameplate
 (2) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
 (3) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).



Eurovent certified values

PHYSICAL DATA, 30RQ UNITS

30RQ		017	021	026	033	040
Fans		Two twin-speed axial fans, 3 blades		One twin-speed axial fan, 7 blades		
Diameter	mm	495	495	710	710	710
Air flow	l/s	2217	1978	3530	3530	3530
Speed	r/s	14,5	14,5	15	15	15
Water heat exchanger		Plate heat exchanger, maximum operating pressure 1000 kPa				
Water volume	l	1,52	1,9	2,28	2,85	3,8
Air heat exchanger		Copper tubes and aluminum fins				
Pipe diameter	in	3/8	3/8	3/8	3/8	3/8
Number of rows		2,5	3	2,5	3	3
Number of pipes per row		60	60	60	60	60
Fin spacing	mm	1,69	1,69	1,69	1,69	1,69
Standard unit						
Water connections (MPT gas)	in	1	1	1-1/4	1-1/4	1-1/4
Unit with hydraulic module		Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic air purge valve, relief valve				
Pump		One single-speed pump, maximum water-side operating pressure 400 kPa				
Expansion tank capacity	l	5	5	8	8	8
Entering water connection	in	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4
Leaving water connection	in	1	1	1-1/4	1-1/4	1-1/4
Nominal operating current	A	1,3	1,4	2,4	2,6	2,8
Chassis paint colour		Beige				

ELECTRICAL DATA, 30RQ UNITS

30RQ		017	021	026	033	040
Power circuit						
Nominal power supply	V-ph-Hz	400-3+N-50 (power supply option C) or 400-3-50 (power supply option D)				400-3-50 (STD - no option)
Voltage range	V	340-460				360-440
Control circuit supply		24 V via internal transformer				
Maximum start-up current (Un)*	A	75	95	118	118	176
Unit power factor at nominal capacity**		0.84	0.79	0.77	0.81	0.9
Maximum operating power input**	kW	7.8	9.1	11	13.8	17.5
Nominal current drawn***	A	8	12	16	17	25
Maximum operating current draw (Un)****	A	13	16	20	24	30
Maximum operating current draw (Un-15%)†	A	15	18	23	27	36

* Maximum instantaneous start-up current (locked rotor current of the compressor).

* Power input, compressors and fans, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).

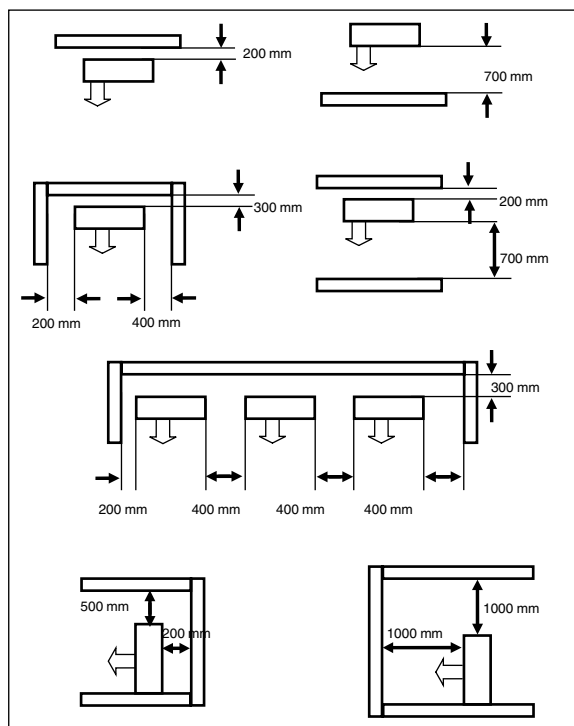
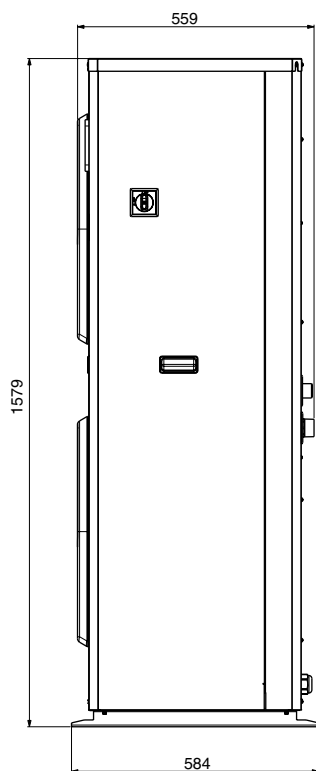
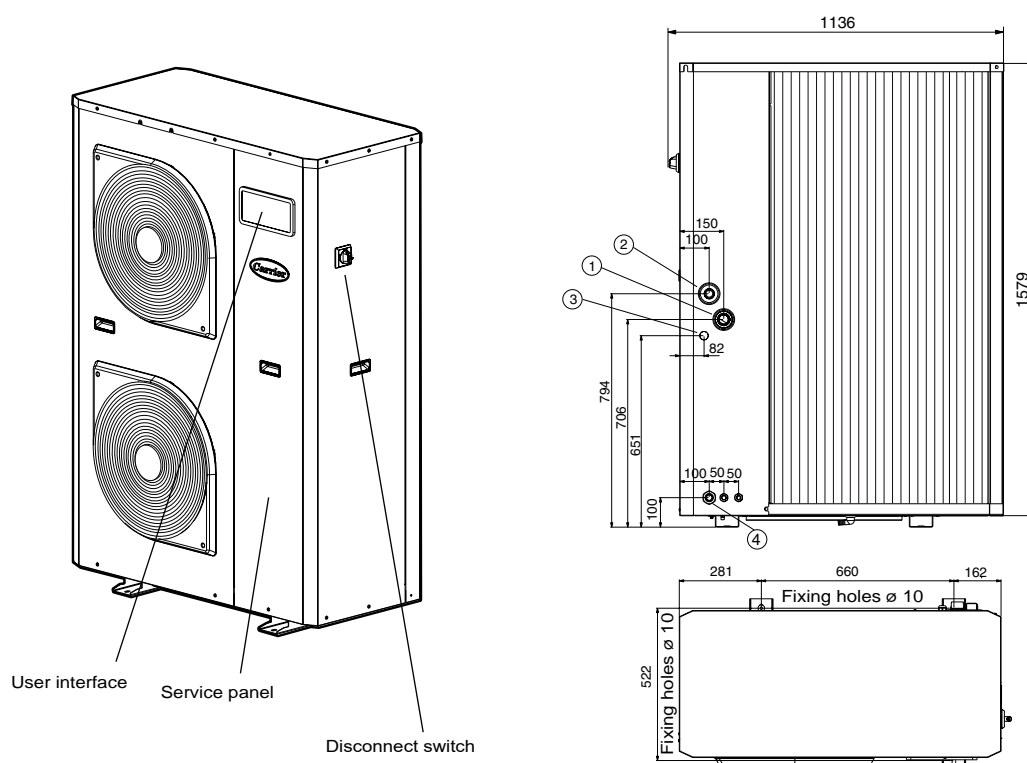
*** Standardised Eurovent conditions: Water heat exchanger entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

**** Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).

† Maximum unit operating current at maximum unit power input and 340-460V for sizes 017 to 033 or 360-440V for size 040.

DIMENSIONS/CLEARANCES

30RQ 017-021



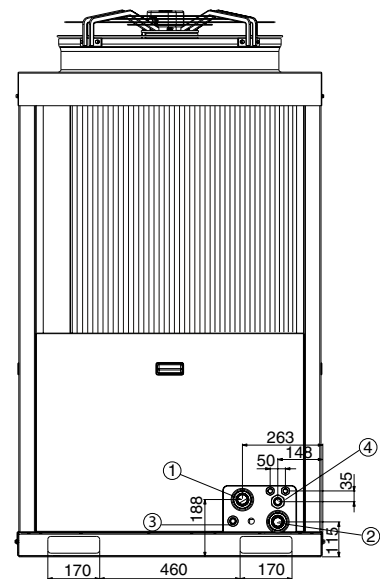
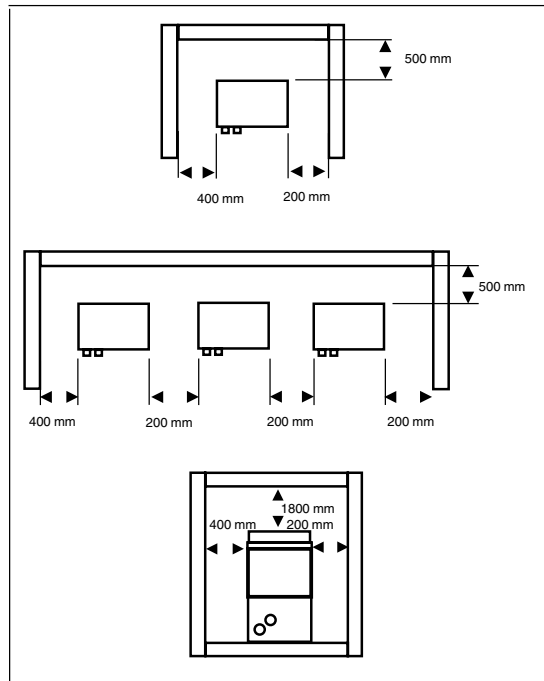
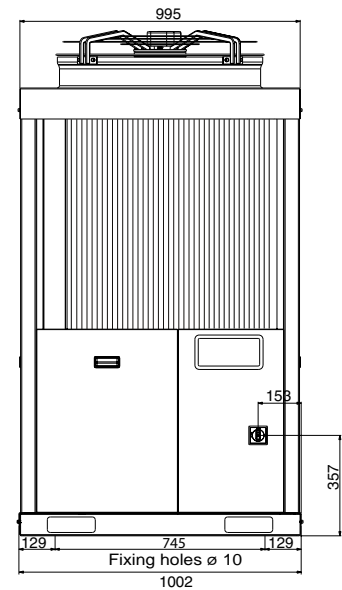
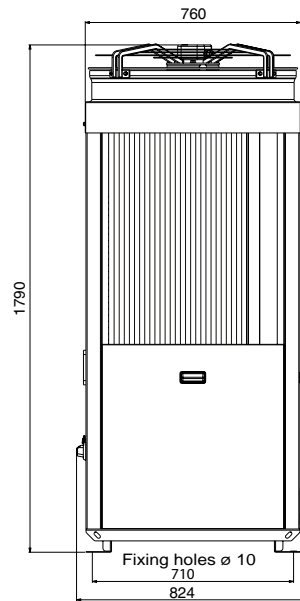
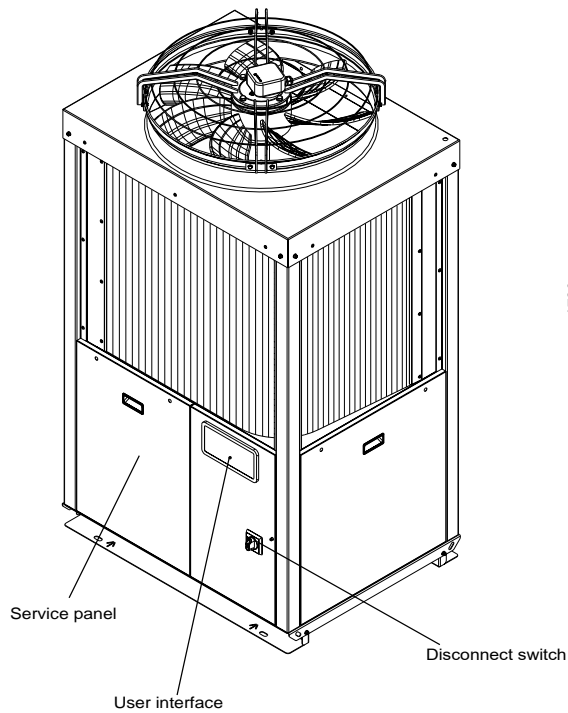
Legend

All dimensions are in mm

1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Power connections

DIMENSIONS/CLEARANCES

30RQ 026-040



Legend

All dimensions are in mm

1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Power connections

HIGH-TEMPERATURE MONOBLOC AIR-TO-WATER HEAT PUMPS WITH INTEGRATED HYDRAULIC MODULE



Unit with protection grille option



Heating system control (accessory)

61AF optimized for heating
Compact design
Plug & play approach
High temperature 65°C

61AF 022-105

AQUASNAP
Heating

Nominal heating capacity 21-102 kW 50 Hz

The AquaSnap high-temperature heat pump range was designed for commercial applications such as the heating of offices, apartments and hotels as well as domestic hot water production in new and refurbished buildings.

The main features of this product range are:

- Energy savings

The 61AF range is certified to the Eurovent energy efficiency class A with a coefficient of performance (COP) of over 4. This complies with the COP required by the Ecolabel certification.

- Ease-of-installation

The high-temperature AquaSnap heat pumps incorporate an optional hydraulic module with a variable speed pump.

- Easy integration

The low noise levels of the 61AF heat pump and its very compact chassis reduce the noise disturbance from the unit.

- Application flexibility

The operating range allows outside temperatures down to -20°C and leaving water temperatures up to 65°C for domestic hot water applications.

- Availability

- Intelligent unit control permits unit operation in extreme conditions, minimising unit shut-down times.
- Hot water production at 65°C is available continuously.



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FEATURES AND BENEFITS

Carrier quality is your guarantee for the safety and durability of the installation.

The AquaSnap high-temperature heat pumps incorporate the latest technological features:

- scroll compressors with vapour injection
- low-noise fans made of a composite material
- auto-adaptative microprocessor control
- electronic expansion valve
- variable speed.

The AquaSnap high-temperature heat pumps can be equipped with a hydraulic module that is integrated into the heat pump chassis, limiting the installation to straight-forward operations like the wiring and the connection of the hot water supply and return piping.

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration level.
 - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings.
 - Dynamic suction and discharge piping supports, minimising vibration transmission (Carrier patent).
- Evaporator section
 - Vertical evaporator coils
 - Anti-vibration mountings and optional grilles to protect the heat exchanger against possible shocks.
 - Latest-generation low-noise Flying Bird fans, made of a composite material (Carrier patent), are now even quieter and do not generate intrusive low-frequency noise.
 - Rigid fan installation for reduced start-up noise (Carrier patent).

Easy and fast installation

- Integrated hydraulic module (option)
 - Variable speed pump, based on the pressure loss of the hydraulic installation.
 - Water filter protects the water pump against circulating debris.
 - Pump protected against cavitation by a pressure transducer that measures the entering water pressure.
 - Overpressure valve, set to 4 bar.
 - Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options).
- Physical features
 - The unit has a small footprint and a low height (1329 mm) allowing it to blend in with any architectural styles.
 - The unit is enclosed by easily removable panels, covering all components (except condensers and fans).
- Simplified electrical connections
 - Single power supply point without neutral.
 - Main disconnect switch with high trip capacity.
 - Transformer for safe 24 V control circuit supply included.
- Fast commissioning
 - Systematic factory operation test before shipment.
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

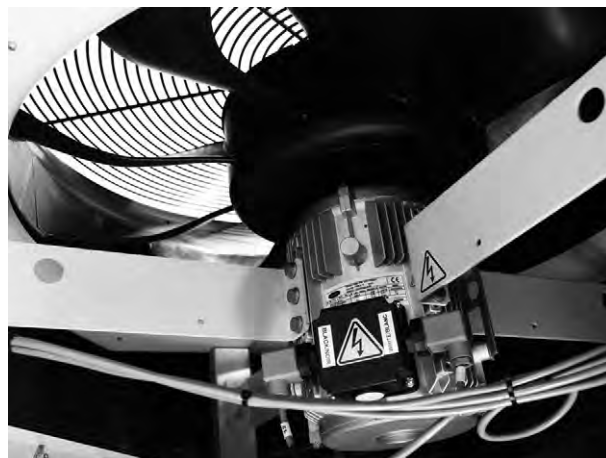
Economical operation

- Increased energy efficiency
 - Eurovent energy efficiency class A (in accordance with EN14511-3:2011).
 - The exceptional energy efficiency level (COP) of the high-temperature AquaSnap heat pumps in the heating mode is the result of a long qualification and optimisation process.

- The electronic expansion device (EXV) allows operation at a lower condensing pressure (COP optimisation).
- Dynamic superheat management for better utilisation of the condenser surface.
- Patented FreeDefrost algorithm without reverse the circuit in order to optimised energy during defrost and increase energy performance.
- Reduced maintenance costs
 - Maintenance-free scroll compressors with vapour injection.
 - Touch Pilot Junior control offers fast diagnosis of possible incidents and their history.

Environmental care

- Non-ozone depleting R-407C refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential.
 - Very efficient - ensures an increased energy efficiency ratio (COP).
 - Flying Bird IV fan



- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness.
 - Reduction of leaks due to elimination of capillary tubes (TXVs).
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.



Unit with protection grille option

FEATURES AND BENEFITS

Superior reliability

- State-of-the-art concept

Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.

- Auto-adaptive control

Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent).

- Exceptional endurance tests

- Corrosion resistance tests in salt mist in the laboratory.
- Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports.
- Transport simulation test in the laboratory on a vibrating table.

Touch Pilot Junior control

The Touch Pilot Junior features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4.3" colour touch screen.

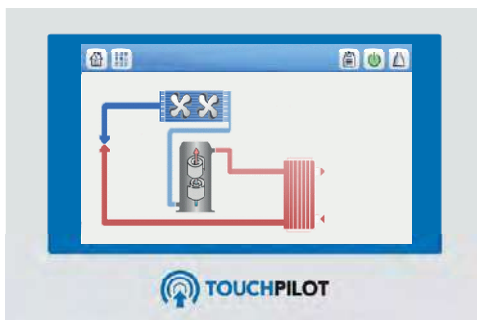
- Energy management

- Internal time schedule clock: Controls heat pump on/off times and operation at a second set-point
- Set-point offset based on the outside air temperature
- Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.

- Integrated advanced communication features

- Night mode: Capacity and fan speed limitation for reduced noise level
- With hydraulic module: Water pressure display and water flow rate calculation
- Easy and high-speed communication technology over Ethernet (IP) to a building management system
- Access to multiple unit parameters.

- 4.3" Touch Pilot Junior user interface



Remote management (standard)

Units with Touch Pilot Junior control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap also communicates with other building management systems via optional communication gateways.

- A connection terminal allows remote control of the AquaSnap by wired cable:
- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

OPTIONS AND ACCESSORIES

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	61AF 022-105
Unit with ductable fans	11	Fans with 100 Pa maximum available pressure	Allows connection to discharge ducts in order to facilitate air evacuation	61AF 035-105
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction by 1 to 2 dB(A)	61AF 022-105
Very low noise level	15LS	Aesthetic and sound absorbing compressor enclosure associated with low-speed fans	Noise level reduction for sensible site	61AF 035-105
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	61AF 022-105
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	61AF 022-105
Water Exchanger frost protection	42	Electric heater on the hydraulic module	hydraulic module frost protection at low outside temperatures down to -20°C	61AF 022-105 with option 116X
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	61AF 022-105
LP VSD single-pump	116X	Variable speed single pump, For more details, refer to the dedicated chapter (expansion tank not included)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	61AF 022-105
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	61AF 022-105
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	61AF 022-105
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	61AF 022-106
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	61AF 022-105
Condenser screw connection sleeves kit	265	Condenser inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	61AF 022-105
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	61AF 035-105
Set-point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy managment, allow to adjust set-point by a 4-20mA external signal	61AF 022-105

Accessories	Description	Advantages	Use
00PPG000488000- Heating System Manager type A: controls one heat emitter type with an auxiliary electric heater or boiler	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	61AF 022-105
00PPG000488100- Heating System Manager type B: controls two heat emitter types (or independent zones) and domestic hot water production with an auxiliary electric heater or boiler	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	61AF 022-105
00PPG000488200- Heating System Manager type C: controls two heat emitter types (or independent zones) and domestic hot water production with a district heating system as auxiliary source	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	61AF 022-105

PHYSICAL DATA

61AF				022	030	035	045	055	075	105
Heating										
Standard unit Full load performances*	HA1	Nominal capacity	kW	20,6	25,9	32,3	43,6	51,6	64,9	102
		COP	kW/kW	4,07	3,97	3,99	4,31	4,35	3,98	4,25
	HA2	Nominal capacity	kW	20,6	25,5	32,0	43,1	51,8	66,8	102
		COP	kW/kW	3,43	3,33	3,31	3,59	3,66	3,43	3,59
	HA3	Nominal capacity	kW	20,7	25	31,6	42,8	52,3	68	102
		COP	kW/kW	2,99	2,9	2,88	3,14	3,19	3,01	3,13
	HA4	Nominal capacity	kW	20,9	24,5	31,3	42,7	53,3	68,1	103
		COP	kW/kW	2,50	2,43	2,41	2,64	2,68	2,54	2,64
Standard unit Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,35	3,30	3,42	3,55	3,63	3,55	3,60
		ηs heat _{30/35°C}	%	131	129	134	139	142	139	141
	HA3	SCOP _{47/55°C}	kWh/kWh	2,92	2,92	2,94	3,10	3,14	2,99	3,15
		ηs heat _{47/55°C}	%	114	114	115	121	123	117	123
		P _{rated}	kW	15	19	31	43	55	63	94
		Energy labelling		A+	A+	A+	A+	A+	A+	-
Operating weight ⁽¹⁾										
Standard unit (without hydraulic module)			kg	353	409	426	540	564	904	1024
Standard unit (with hydraulic module option)			kg	362	418	435	555	579	919	1039
Sound levels										
Sound power level ⁽²⁾			dB(A)	77	78	83	82	84	84	85
Sound pressure level at 10 m ⁽³⁾			dB(A)	46	46	51	51	53	52	53
Dimensions										
Lenght			mm	1110			1114		2273	
Depth			mm	1327			2100		2100	
Height			mm	1330			1330		1330	
Compressor				Hermetic scroll compressors, 48,3 r/s						
Quantity				1	1	1	1	1	2	2
Number of capacity stages				1	1	1	1	1	2	2
Refrigerant				R407C						
Charge			kg	8	8,8	9,7	10	13,2	22	26,5
			teqCO ₂	14,2	15,6	17,2	17,7	23,4	39,0	47,0
Capacity control				Touch Pilot Junior						
Minimum capacity			%	100	100	100	100	100	50	50

- * In accordance with standard EN14511-3:2013
- ** In accordance with standard EN14825:2016, average climate
- HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- HA3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- HA4 Heating mode conditions: Water heat exchanger water entering/leaving temperature 55°C/65°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016
- η_s heat_{47/55°C} & SCOP_{47/55°C} **Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**
- Not applicable
- (1) Weight shown is a guideline only. Please refer to the unit nameplate
- (2) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (3) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).



Eurovent certified values

PHYSICAL DATA

61AF		022	030	035	045	055	075	105
Condenser		Direct expansion, plate heat exchanger						
Water volume	l	4,9	6,4	8,2	9,6	12,1	16,4	22,7
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000
Max. water-side operating pressure plus hydraulic module	kPa	400	400	400	400	400	400	400
Fan		Axial Flying Bird IV with rotating shroud						
Quantity		1	1	1	1	1	2	2
Maximum total air flow	l/s	3770	3748	3736	4035	4036	7479	8072
Max speed, standard unit	tr/s	12	12	12	12	12	12	12
Max speed, unit with option 11	tr/s	-	-	16	16	16	16	16
Evaporator		Grooved copper tubes and aluminium fins						
Hydraulic module (option 116)								
Variable speed pump		Pump, Victaulic screen filter, relief valve, purge valves (water and air), cavitation pressure sensors						
Water connections with / without hydraulic module		Victaulic						
Connections	inch	1"1/4	1"1/4	1"1/2	1"1/2	1"1/2	2	2
Outside diameter	mm	42,4	42,4	48,3	48,3	48,3	60,3	60,3
Chassis paint colour		Colour code RAL7035						

ELECTRICAL DATA

61AF - standard unit (without hydraulic module)		022	030	035	045	055	075	105
Power circuit								
Nominal power supply	V-ph-Hz	400-3-50						
Voltage range	V	360-440						
Control circuit supply		24 V, via internal transformer						
Maximum start-up current (Un) ⁽¹⁾								
Standard unit	A	103	101	129	169	201	157	241
Unit with electronic starter option	A	55	54	68	89	101	94	142
Unit power factor at maximum capacity ⁽²⁾		0,82	0,82	0,83	0,87	0,87	0,83	0,87
Maximum unit power input ⁽²⁾	kW	9	11	15	19	23	30	46
Nominal unit current draw ⁽³⁾	A	13	16	19	23	28	39	55
Maximum unit current draw (Un) ⁽⁴⁾	A	16	20	26	32	38	53	76
Maximum unit current draw (Un-10%) *	A	18	22	29	35	42	57	83
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit						
Short-circuit stability and protection		See table below.						

- (1) Maximum instantaneous start-up current (maximum operating current of the compressor + fan current + locked rotor current of the compressor).
 (2) Power input, compressor and fan, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400V (data given on the unit nameplate).
 (3) Standardised Eurovent conditions: evaporator entering/leaving water temperature 40°C/45°C, outside air temperature db/wb = 7°C/6°C.
 (4) Maximum unit operating current at maximum unit power input and 400V (values given on the unit nameplate).
 * Maximum unit operating current at maximum unit power input and 360V.

Short-circuit stability current, main disconnect without fuse (TN system⁽¹⁾)

61AF - standard unit (main disconnect switch)	022	030	035	045	055	075	105
Value with unspecified upstream protection							
Short-term current at 1 s (I _{cs})	kA rms	0,6	0,6	0,6	1,26	1,26	2
Admissible peak current (I _{pk})	kA pk	4,5	4,5	4,5	6	6	10
Maximum value with upstream protection by circuit breaker							
Conditional short-circuit current (I _{cc})	kA rms	5,4	7	7	7,7	7,7	10
Circuit breaker - Compact range		32	40	40	50	63	100
Reference number ⁽²⁾		5SY6332-7	5SY6340-7	5SY6340-7	5SY4350-7	5SY4363-8	5SP4380-7
Maximum value with upstream protection by fuses (gL/gG)							
Conditional short-circuit current (I _{cc})	kA rms	17	50	50	50	50	14,5
Fuse (gL/gG)		40	40	40	63	63	125

- (1) Earthing system type
 (2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended circuit breaker.
 The short-circuit stability current values above are suitable with the TN system.

Electrical data and operating conditions notes:

- 61AF 022-105 units have a single power connection point located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
 - a main disconnect switch,
 - starter and motor protection devices for each compressor, the fans and the pump,
 - the control devices.
- Field connections:**
 All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 61AF units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical equipment.

NOTES:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

- The operating environment for the 61AF units is specified below:

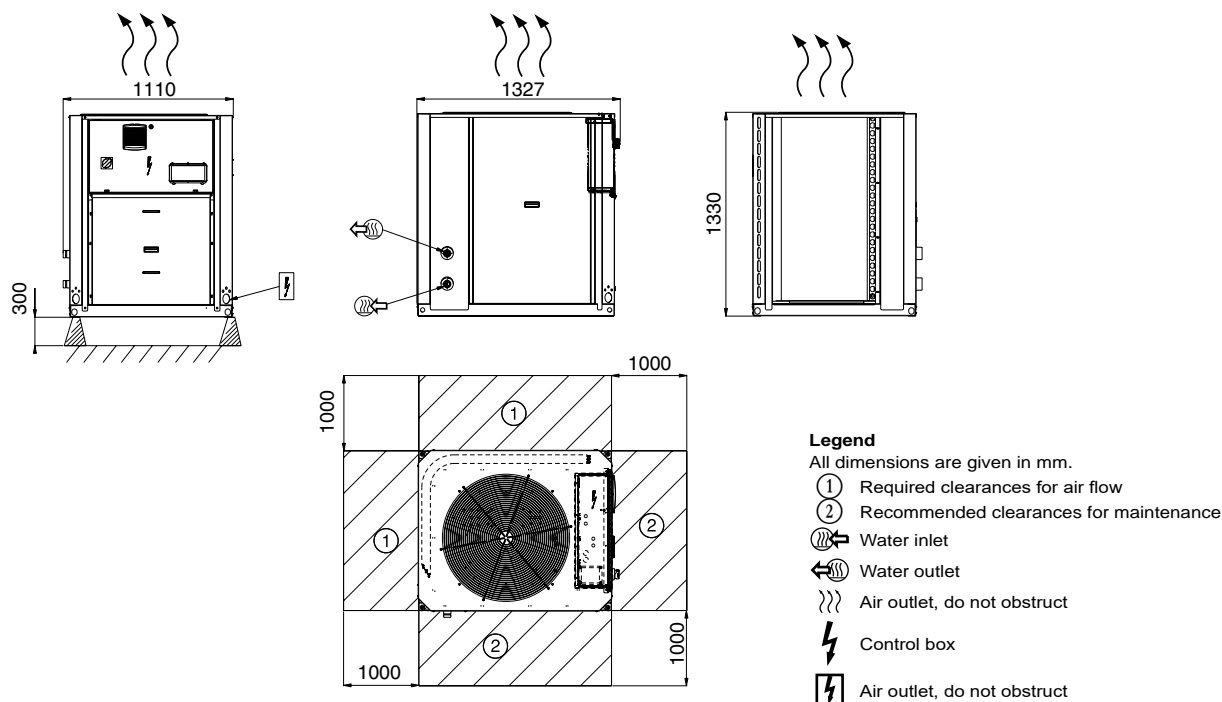
- Environment⁽¹⁾ - Environment as classified in EN 60721 (corresponds to IEC 60721):
 - outdoor installation⁽¹⁾
 - ambient temperature range: -20°C to +40°C, class 4K4H
 - altitude: ≤ 2000 m
 - presence of hard solids, class 4S2 (no significant dust present)
 - presence of corrosive and polluting substances, class 4C2 (negligible)
- Power supply frequency variation: ± 2 Hz.
- The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
- Overcurrent protection of the power supply conductors is not provided with the unit.
- The factory-installed disconnect switch is of a type suitable for power interruption in accordance with EN 60947.
- The units are designed for connection to TN networks (IEC 60364). For IT networks the earth connection must not be at the network earth. Provide a local earth, consult competent local organisations to complete the electrical installation. Units delivered with speed drive (options 116) are not compatible with IT network.

Caution: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

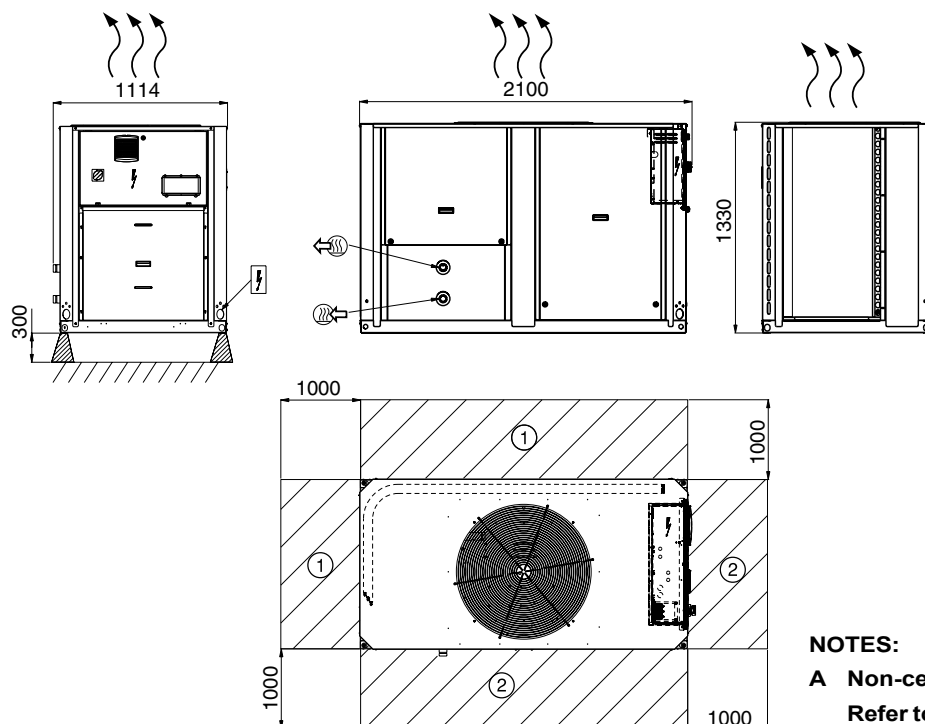
(1) The required protection level for this class is IP43BW (according to reference document IEC 60529). All 61AF units are protected to IP44CW and fulfil this protection condition.

DIMENSIONS/CLEARANCES

61AF 022-035 units with and without hydraulic module

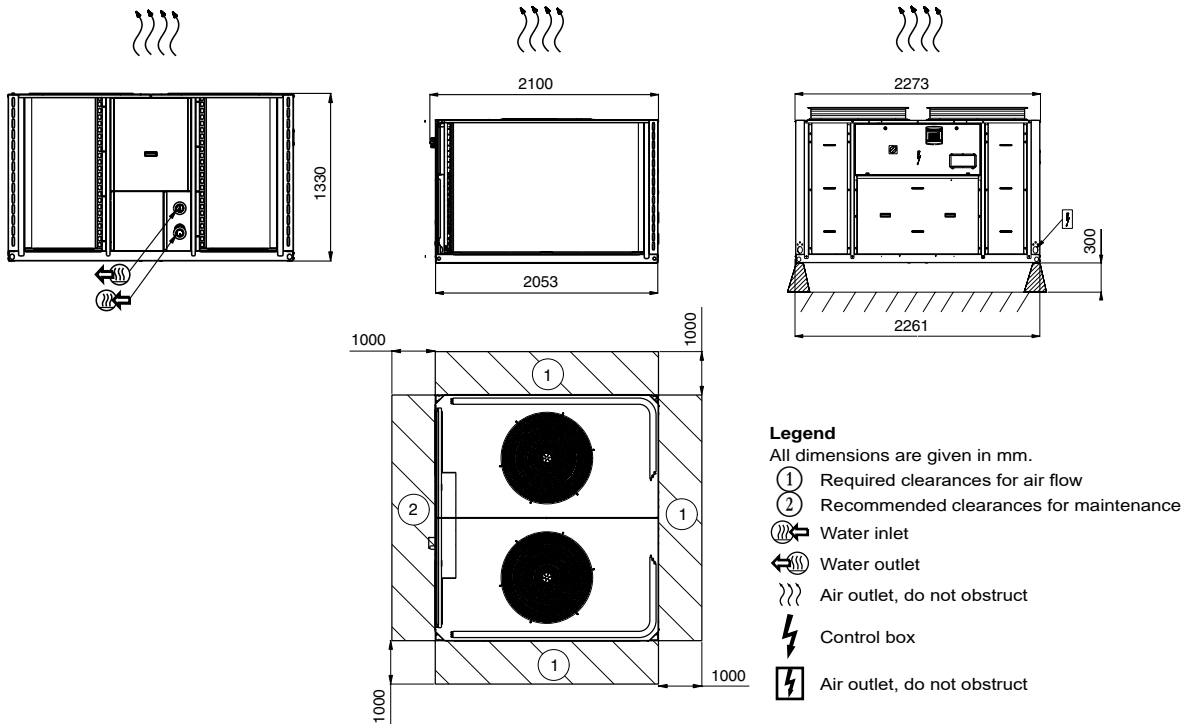


61AF 045-055 units with and without hydraulic module

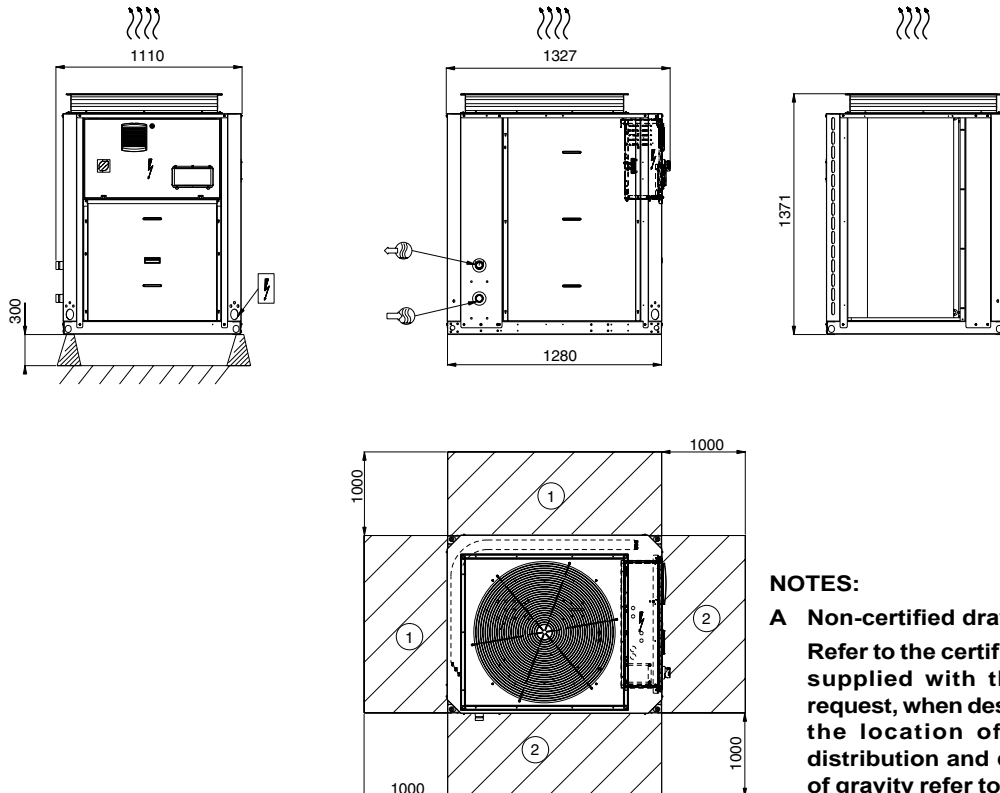


DIMENSIONS/CLEARANCES

61AF 075-105 units with and without hydraulic module



61AF 035 with option 11, units with and without hydraulic module



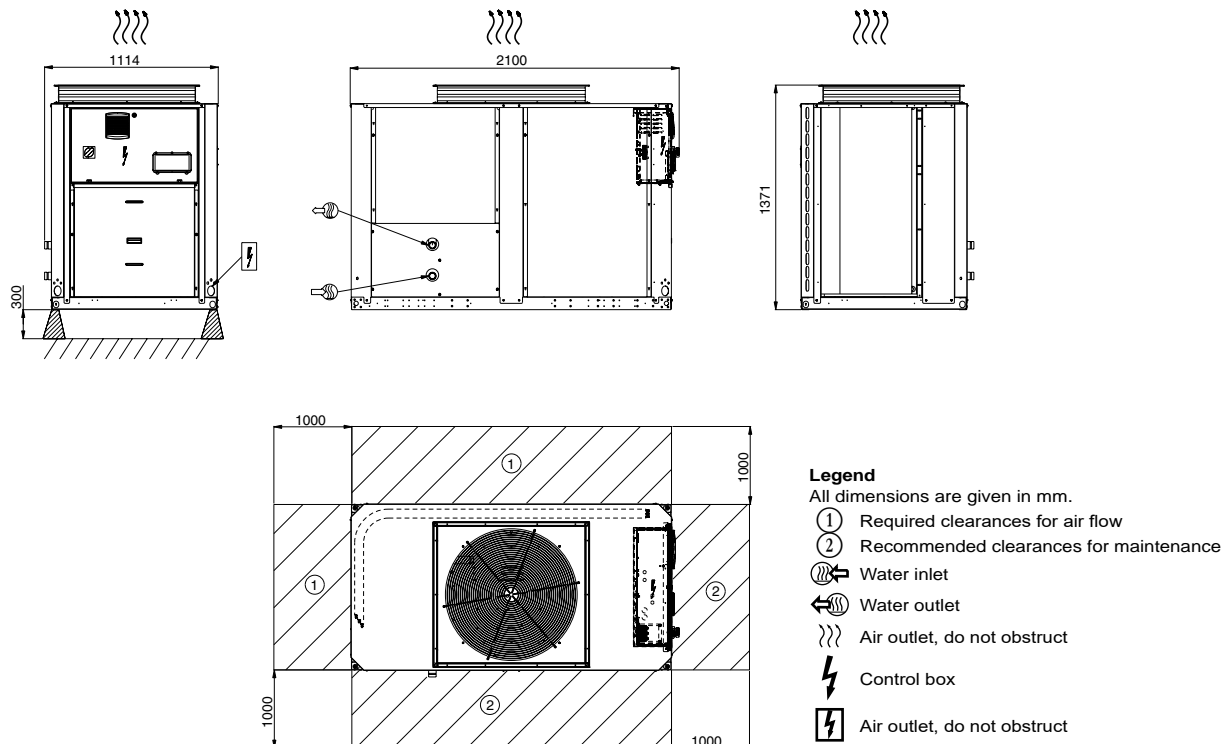
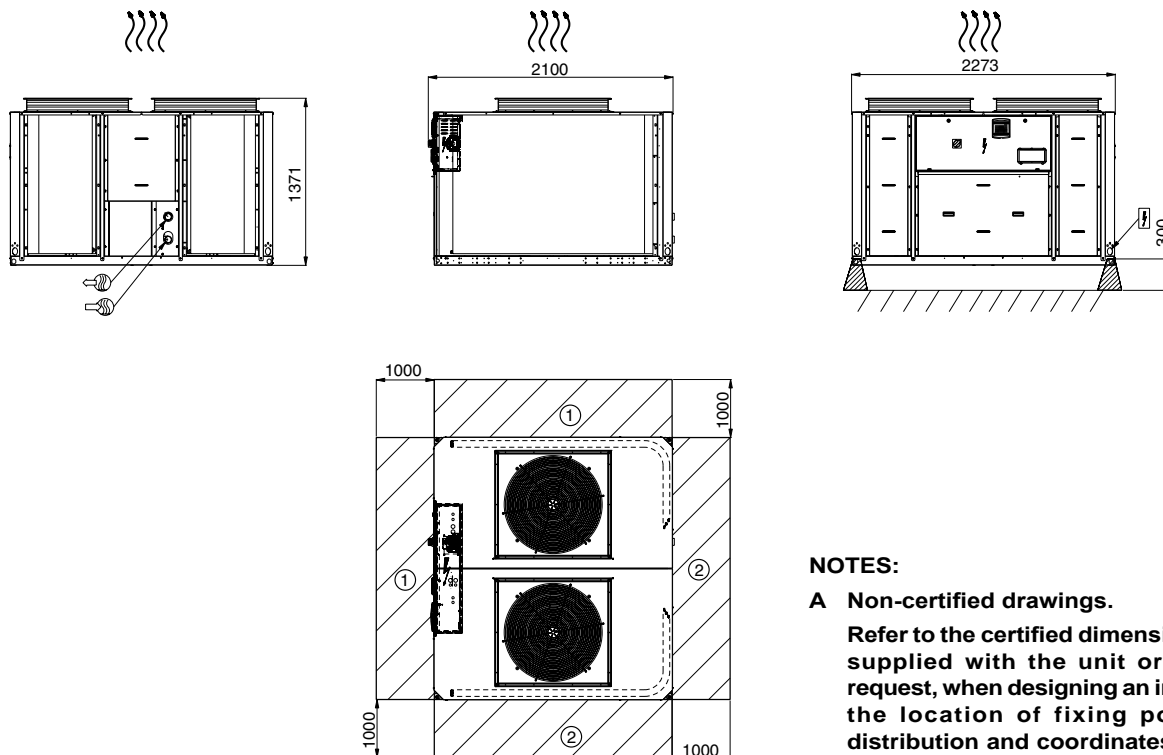
NOTES:

A Non-certified drawings.

Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

DIMENSIONS/CLEARANCES**61AF 045-055 with option 11, units with and without hydraulic module****61AF 075-105 with option 11, units with and without hydraulic module****NOTES:****A Non-certified drawings.**

Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.**C The height of the solid surface must not exceed 2 m.**

REVERSIBLE AIR-TO-WATER HEAT PUMPS



Commercial and industrial applications

Compact design

Quiet operation

Variable water flow

Partial heat reclaim

30RQS 039-160 B

AQUASNAP
Reversible

Nominal heating capacity 30RQS: 42-150 kW
Nominal cooling capacity 30RQS: 38-148 kW

The Aquasnap range of liquid chillers/air-to-water heat pumps was designed for commercial (air conditioning of offices, hotels etc.) or industrial (low-temperature process units etc.) applications.

The Aquasnap integrates the latest technological innovations:

- Ozone-friendly refrigerant R410A
- Scroll compressors
- Low-noise fans made of a composite material
- Auto-adaptive microprocessor control
- Electronic expansion valve
- Variable-speed pump (option)

The Aquasnap can be equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the chilled water supply and return piping.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent).
- Air evaporator / condenser (30RQS) section
 - Vertical condenser coils
 - Anti-vibration mountings and optional grilles to protect the heat exchanger against possible shocks.
 - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
 - Rigid fan installation for reduced start-up noise (Carrier patent).

Easy and fast installation

- Integrated hydraulic module (option)
 - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation

Hydraulic module



- Single or dual water pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
- Water filter protects the pump against circulating debris
- Pressure measurement, using two pressure transducers and allowing indication of water flow rate, water pressure and lack of water.
- High-capacity membrane expansion tank ensures pressurisation of the water circuit
- Overpressure valve, set to 4 bar
- Speed variator on the pumps (option) to ensure the correct flow rate, based on the system requirements
- Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)

- Physical features
 - The unit has a small footprint and a low height (1330 mm) allowing it to blend in with any architectural styles.
 - The unit is enclosed by easily removable panels, covering all components (except air heat exchangers and fans).
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch (option 70) with high trip capacity
 - Transformer for safe 24 V control circuit supply included

- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Optional variable-speed pump for economical operation
- The control algorithm adjusts the water flow rate based on the actual system requirements and obsoletes the need for the control valve at the unit outlet.
- Increased energy efficiency at part load
 - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.
 - The electronic expansion device (EXV) allows operation at a lower condensing pressure (SEER and SCOP Seasonal performances optimisation).
 - Dynamic superheat management for better utilisation of the water heat exchanger surface.
 - Defrost cycle optimisation (30RQS).
- Reduced maintenance costs
 - Maintenance-free scroll compressors
 - Fast diagnosis of possible incidents and their history via the SmartVu™ control
 - R410A refrigerant is easier to use than other refrigerant blends.

Environmental care

- Ozone-friendly R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient - gives an increased energy efficiency ratio
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Reduction of leaks due to reduced vibration levels and elimination of capillary tubes (TXVs)
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.

Partial view of the hydraulic circuit



FEATURES

Superior reliability

- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
 - Hydraulic module with integrated pressure transducers allowing measurement of the water pressure at two points, as well as measurement of the water flow rate and detection of lack of water and pressure. This considerably reduces the risk of problems such as frost accumulation on the water heat exchanger.
 - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) Aquasnap continues to operate, but at reduced capacity.
 - On Heat pump version 30RQS specific Free Defrost algorithm to optimise performance and comfort even during defrost period.
- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table.

SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: Controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.

- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
 - Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
 - Storage of maintenance manual, wiring diagram and spare parts list
 - Display of trend curves for the main values
 - Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
 - Blackbox memory
- 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

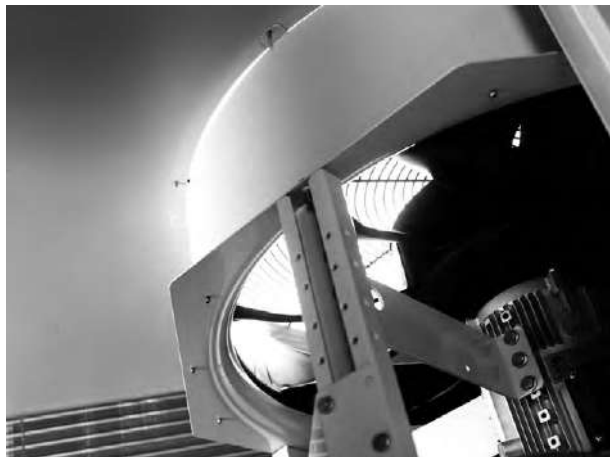
The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

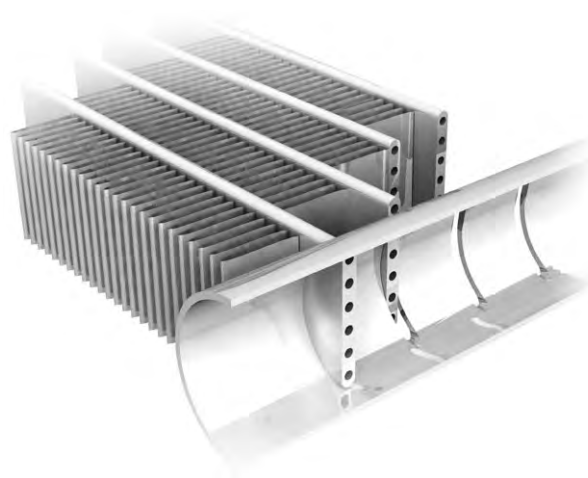
- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: Closing of this contact activates a second setpoint (e.g. unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.
- Setpoint adjustable via 4-20 mA signal

FEATURES

Flying Bird IV fan



All-aluminium micro-channel heat exchanger (MCHE)



Already utilised in the automobile and aeronautical industries for many years, the MCHE micro-channel heat exchanger is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers.

As an option, the Enviro-Shield and Super Enviro-Shield anti-corrosion protections have been developed to increase the application range of the MCHE coil from medium to very corrosive environments. With Enviro-Shield protection, corrosion resistance of the MCHE coil is doubled without any impact on heat exchange.

With Super Enviro-Shield protection corrosion resistance of the MCHE coil is multiplied by four, and allows use in very corrosive industrial or marine environments

The MCHE heat exchanger allows a reduction in chiller refrigerant charge by up to 50%.

The low thickness of the MCHE reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHE heat exchanger is very fast using a dry air jet or a high-pressure washer, while observing the usage precautions.

OPTIONS

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30RQS 039-160
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RQS 039-160
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RQS 039-160
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise emission reduction at reduces fan speed	30RQS 039-160
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	30RQS 039-160
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RQS 039-160
Winter operation down to -20°C	28	Fan speed control via frequency converter	Stable unit operation when the air temperature is between -10°C and -20°C.	30RQS 039-160
Frost protection down to -20°C	42	Electric heater on the hydraulic module	Hydraulic module frost protection at low outside temperatures	30RQS 039-160
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit.	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RQS 039-160
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30RQS 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RQS 039-160
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RQS 039-160
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RQS 039-160
LP single-pump hydraulic module	116T	Single low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RQS 039-160
LP dual-pump hydraulic module	116U	Dual low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RQS 039-160
HP variable-speed single-pump hydraulic mod.	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RQS 039-160

OPTIONS

Options	No.	Description	Advantages	Use
HP variable-speed dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), water filter, electronic flow switch, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	30RQS 039-160
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RQS 039-160
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RQS 039-160
ModBus over IP and RS485 communication gateway	149B	Bi-directional high-speed communication using the ModBus over Ethernet network (IP) protocol	Easy, quick connection via Ethernet line to a building technical management system. Allows access to several unit parameters.	30RQS 039-160
External boiler management	156a	Control board factory-installed on the unit to control a boiler	Extended remote control capabilities to a boiler on/off command. Permits easy control of a basic heating system	30RQS 039-160
Electric heaters management	156b	Control board factory-installed on the unit with additional inputs/outputs in order to manage up to 4 external heating stage (electrical heaters...)	Extended remote control capabilities to up to 4 electric heaters. Permits easy control of a basic heating system	30RQS 039-160
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30RQS 039-160
Evaporator screw connection sleeves	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30RQS 039-160
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RQS 039-160
Reinforced ECM filtration for fan VFD	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RQS 039-160 with option 5B, 6B or 28
Reinforced ECM filtration for pump VFD	282B	Pump variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RQS 039-160 with option 116V or 116W
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (require option 116)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RQS 039-160
Set point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy management, allow to adjust set point by a 4-20mA external signal	30RQS 039-160
Plastic tarp	331	Plastic tarp covering the unit with straps and held down on a wooden pallet.	Prevents dust and external soiling on the machine during storage and transportation.	30RQS 039-160

PHYSICAL DATA, 30RQS

30RQS				39	45	50	60	70	78	80	90	100	120	140	160
Heating															
Standard unit Full load performances*	HA1	Nominal capacity	kW	42,3	46,4	53,2	61,2	68,0	77,6	81,7	92,2	100	116	135	155
		COP	kW/kW	3,69	3,69	3,76	3,72	3,64	3,46	3,78	3,80	3,76	3,68	3,61	3,47
	HA2	Nominal capacity	kW	41,5	46,3	51,7	59,3	65,9	75,0	78,9	89,5	97,4	112	130	150
		COP	kW/kW	3,05	3,02	3,01	3,01	2,98	2,85	3,11	3,05	3,06	3,00	2,94	2,86
Standard unit Seasonal efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,32	3,39	3,53	3,40	3,40	3,28	3,51	3,50	3,57	3,54	3,44	3,42
		ηs heat _{30/35°C}	%	130	133	138	133	133	128	137	137	140	139	135	134
		P _{rated}	kW	35,5	31,6	36,3	43,8	50,1	55,7	56,8	81,5	72,3	84,2	99,4	111
		Energy labelling		A+	A+	A+	A+	A+	A+	A+	-	-	-	-	-
Cooling															
Standard unit Full load performances*	CA1	Nominal capacity	kW	37,7	43,1	49,4	58,0	63,1	70,2	77,0	84,9	95,1	112	131	148
		EER	kW/kW	2,80	2,66	2,61	2,72	2,66	2,43	2,75	2,66	2,66	2,65	2,73	2,54
	CA2	Nominal capacity	kW	47,1	53,9	62,7	70,7	78,2	88,5	96,5	107	117	142	162	185
		EER	kW/kW	3,23	3,11	3,04	3,08	3,04	2,81	3,14	3,09	3,05	3,05	3,12	2,88
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	3,64	3,67	3,70	3,53	3,49	3,37	3,83	3,70	3,76	4,00	3,65	3,62
		SEPR _{12/7°C} Process high temp.	kWh/kWh	4,92	4,95	4,74	4,53	4,44	4,72	5,16	4,67	4,62	5,15	4,59	4,95
Unit with option 6B Seasonal energy efficiency**		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh	2,58	2,58	2,61	2,96	2,98	2,86	2,70	2,86	3,04	2,94	2,80	2,68
Integrated Part Load Value		IPLV.SI	kW/kW	4,464	4,447	4,409	4,127	4,102	4,033	4,475	4,314	4,378	4,795	4,246	4,295
Sound levels															
Standard unit															
Sound power level ⁽¹⁾			dB(A)	80	81	81	86	87	87	84	84	84	84	90	90
Sound pressure level at 10 m ⁽²⁾			dB(A)	49	49	49	55	55	55	52	52	52	52	58	58
Unit with option 15LS															
Sound power level ⁽¹⁾			dB(A)	79	80	80	80	80	80	83	83	83	83	83	83
Sound pressure level at 10 m ⁽²⁾			dB(A)	48	48	48	48	48	48	51	51	51	51	51	51
Dimensions															
Length			mm	1090	1090	1090	1090	1090	1090	2273	2273	2273	2273	2273	2273
Width			mm	2109	2109	2109	2109	2109	2109	2136	2136	2136	2136	2136	2136
Height			mm	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330
Operating weight ⁽³⁾															
Standard unit without hydraulic module			kg	497	504	533	546	547	554	739	886	894	953	1054	1072
Standard unit with hydraulic module															
Single high-pressure pump			kg	529	537	563	576	576	584	769	918	926	989	1093	1111
Dual high-pressure pump			kg	555	563	588	602	602	610	795	963	971	1037	1130	1148

*	In accordance with standard EN14511-3:2013
**	In accordance with standard EN14825:2016, average climate
HA1	Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W
HA2	Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W
CA1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
CA2	Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
ηs heat 30/35°C & SCOP 30/35°C	Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application
SEER 12/7°C & SEPR 12/7°C	Values calculated in accordance with EN14825:2016
SEPR -2/-8°C	Values calculated in accordance with EN14825:2016
IPLV.SI	Calculations according to standard performances AHRI 551-591 (SI).
-	Not applicable
(1)	In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Values shown are a guideline only. Please refer to the unit nameplate



Eurovent certified values

PHYSICAL DATA, 30RQS

30RQS		39	45	50	60	70	78	80	90	100	120	140	160
Compressors		Hermetic scroll compressors, 48,3 r/s											
Circuit A		2	2	2	2	2	2	2	3	3	3	2	2
Circuit B		-	-	-	-	-	-	-	-	-	-	2	2
No of control stages		2	2	2	2	2	2	2	3	3	3	4	4
Refrigerant charge ⁽³⁾		R-410A, GWP=2088 following ARI4											
Circuit A	kg	12,5	13,5	16,5	17,5	18	16,5	21,5	27,5	28,5	33	19	18,5
	teqCO ₂	26,1	28,2	34,5	36,5	37,6	34,5	44,9	57,4	59,5	68,9	39,7	38,6
Circuit B	kg	-	-	-	-	-	-	-	-	-	-	19	18,5
	teqCO ₂	-	-	-	-	-	-	-	-	-	-	39,7	38,6
Capacity control		SmartVu™											
Minimum capacity	%	50	50	50	50	50	50	50	33	33	33	25	25
Air heat exchangers		Grooved copper tubes and aluminium fins											
Fans		Axial Flying Bird IV with rotating shroud											
Quantity		1	1	1	1	1	1	2	2	2	2	2	2
Maximum total air flow	l/s	3692	3690	3910	5285	5284	5282	7770	7380	7376	7818	10568	10568
Maximum rotation speed	r/s	12	12	12	16	16	16	12	12	12	12	16	16
Water heat exchanger		Direct expansion, plate heat exchanger											
Water volume	l	2,6	3	4	4,8	4,8	5,6	8,7	8,7	9,9	11,3	12,4	14,7
Without hydraulic module													
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
With hydraulic module (option)													
Single or dual pump (as selected)		Pump, Victaulic screen filter, relief valve, expansion tank, purge valves (water + air), pressure sensors											
Expansion tank volume	l	12	12	12	12	12	12	35	35	35	35	35	35
Expansion tank pressure ⁽⁴⁾	bar	1	1	1	1	1	1	1	1,5	1,5	1,5	1,5	1,5
Max. water-side operating pressure	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with/without hydraulic module		Victaulic											
Connections	in	2	2	2	2	2	2	2	2	2	2	2	2
Outside diameter	mm	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3
Chassis paint colour		Colour code: RAL7035											

(3) Values shown are a guideline only. Please refer to the unit nameplate

(4) When delivered, the standard pre-inflation of the tank is not necessarily the optimal value for the system. To permit changing the water volume, change the inflation pressure to a pressure that is close to the static head of the system. Fill the system with water (purging the air) to a pressure value that is 10 to 20 kPa higher than the pressure in the tank

ELECTRICAL DATA, 30RQS

Electrical data, 30RQS

30RQS without hydraulic module		039	045	050	060	070	078	080	090	100	120	140	160
Power circuit													
Nominal power supply	V-ph-Hz	400-3-50											
Voltage range	V	360-440											
Control circuit supply		24 V via internal transformer											
Maximum start-up current (Un)⁽¹⁾													
Standard unit	A	114	135	143	146	176	213	214	174	208	248	243	286
Unit with electronic starter option	A	75	87	94	96	114	140	140	125	150	176	186	215
Unit power factor at maximum capacity⁽²⁾		0,83	0,81	0,81	0,83	0,81	0,78	0,78	0,83	0,81	0,79	0,81	0,78
Maximum operating power input⁽²⁾	kW	20	22	25	28	31	36	36	42	46	53	62	72
Nominal unit operating current draw⁽³⁾	A	26	29	33	36	42	53	53	55	62	77	85	106
Maximum operating current draw (Un)⁽⁴⁾	A	35	45	47	53	67	73	74	81	99	108	134	146
Maximum operating current draw (Un-10%)[†]	A	38	49	51	58	75	80	80	89	110	118	150	159
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit											
Short-circuit stability and protection		See table 9,1											

(1) Maximum instantaneous start-up current at operating limit value (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

(2) Power input, at the unit permanent maximum operating conditions (data given on the unit nameplate)

(3) Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

(4) Maximum unit current at 400 V, non permanent operating conditions (values given on the unit nameplate).

† Maximum unit operating current at 360 V, non permanent operating conditions.

Short-circuit stability current (TN system⁽¹⁾)

30RQS	039	045	050	060	070	078
Value without upstream protection						
Short-term current at 1s - I _{sc} - kA rms	3,36	3,36	3,36	3,36	3,36	3,36
Admissible peak current - I _{pk} - kA pk	20	20	20	20	20	15
Value with upstream protection by circuit breaker						
Conditional short-circuit current I _{cc} - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H
Reference No. ⁽²⁾	29670	29670	29670	29670	29670	29670

30RQS	080	090	100	120	140	160
Value without upstream protection						
Short-term current at 1s - I _{sc} - kA rms	3,36	5,62	5,62	5,62	5,62	5,62
Admissible peak current - I _{pk} - kA pk	15	20	20	15	20	15
Value with upstream protection by circuit breaker						
Conditional short-circuit current I _{cc} - kA rms	40	40	40	40	30	30
Schneider circuit breaker - Compact series	NS100H	NS100H	NS160H	NS160H	NS250H	NS250H
Reference No. ⁽²⁾	29670	29670	30670	30670	31671	31671

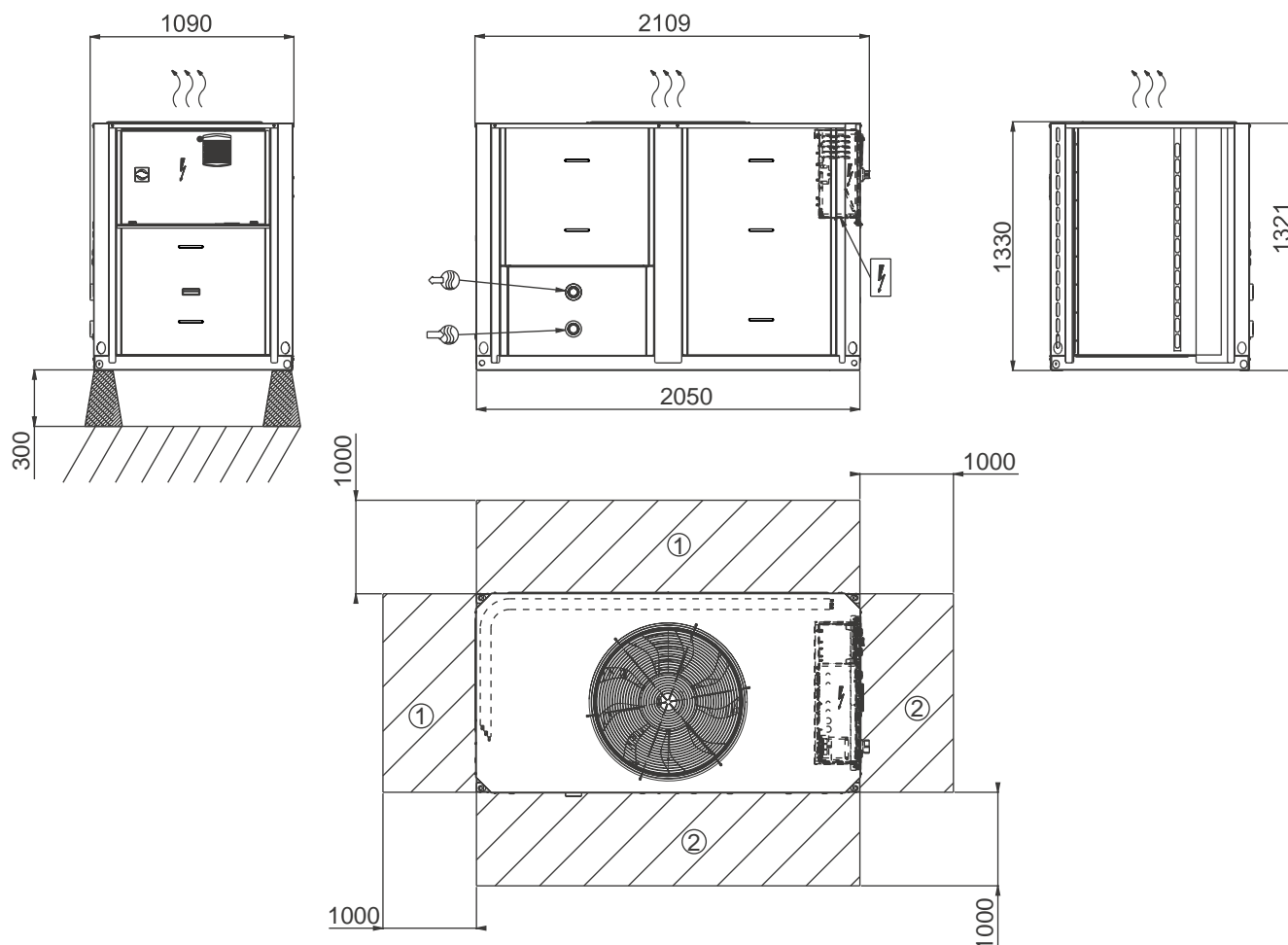
(1) Earthing system type

(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.

The short-circuit stability current values above are suitable with the TN system.

DIMENSIONS/CLEARANCES, 30RQS

30RQS 039-078, units with and without hydraulic module



Legend:

All dimensions are given in mm

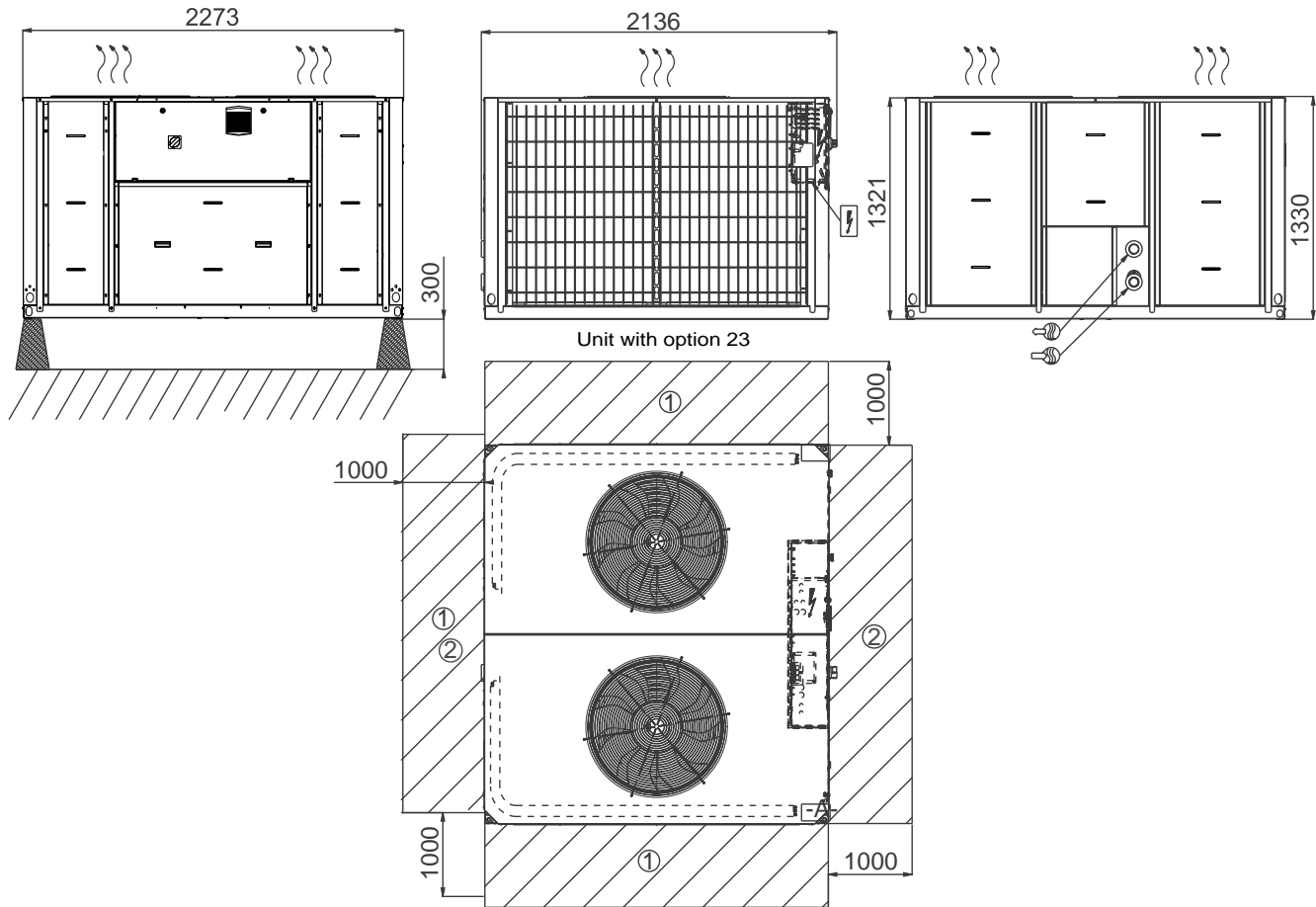
- Control box
- Water inlet
- Water outlet
- Required clearances for air entry
- Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

NOTES:

- A Non-certified drawings.**
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.
- B In multiple-chiller installations (maximum four units),** the side clearance between the units should be increased from 1000 to 2000 mm.
- C The height of the solid surface must not exceed 2 m.**






DIMENSIONS/CLEARANCES, 30RQS

30RQS 080-160, units with and without hydraulic module



Legend:

All dimensions are given in mm

-  Control box
-  Water inlet
-  Water outlet
- ① Required clearances for air entry
- ② Recommended space for maintenance
-  Air outlet, do not obstruct
-  Power supply inlet

NOTES:

A Non-certified drawings.

Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.

For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

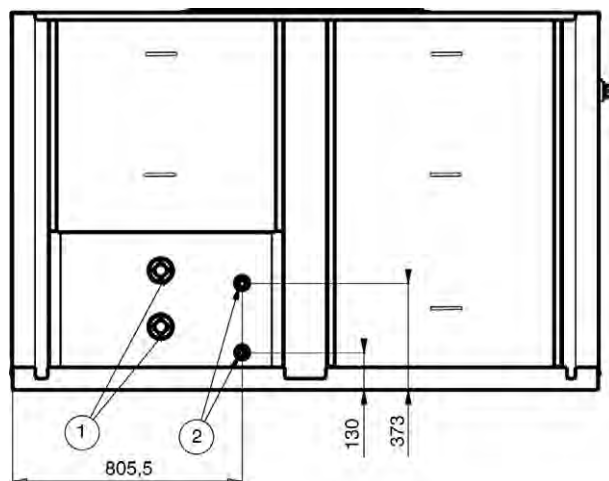
B In multiple-chiller installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

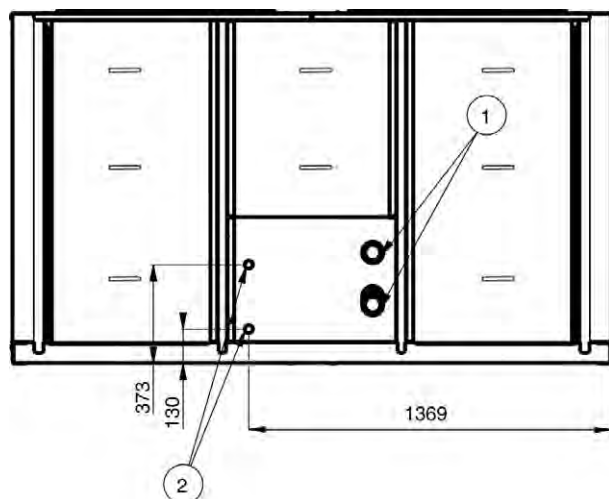
DIMENSIONS/CLEARANCES FOR 30RQS UNITS WITH OPTION 49

Position of the desuperheater inlets and outlets

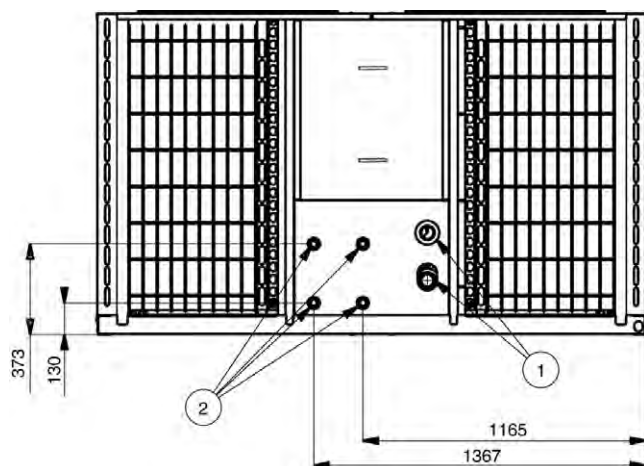
30RQS 039-080



30RQS 090-120



30RQS 140-160



Unit with option 23

- ① Unit water inlet and outlet
- ② Water inlet and outlet, unit with option 49

DUCTABLE REVERSIBLE AIR-TO-WATER HEAT PUMPS



Compact design
High static available pressure
Quiet operation
Variable speed fans
Variable water flow

30RQSY 039-160 B

AQUASNAP
Reversible

Nominal heating capacity 30RQSY: 42-151 kW
Nominal cooling capacity 30RQSY: 37-147 kW

The Aquasnap liquid chiller/heat pump range was designed for commercial (air conditioning of offices, hotels etc.) or industrial (low-temperature process units etc.) applications.

It integrates the latest technological innovations:

- Ozone-friendly refrigerant R410A
- Scroll compressors
- Low-noise fans made of a composite material
- Auto-adaptive microprocessor control
- Electronic expansion valve
- Variable-speed pump (option)

The Aquasnap can be equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the chilled water supply and return piping.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
- Air evaporator/condenser (30RQSY) section
 - Vertical condenser coils
 - Anti-vibration mountings and optional grilles to protect the heat exchanger against possible shocks.
 - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
 - Fan motor controlled by a variable-frequency controller, to allow adjustment of the fan speed in accordance with the ducting for optimised efficiency.
 - Rigid fan installation for reduced start-up noise (Carrier patent)

Easy and fast installation

- Physical features
 - Flying Bird IV fans controlled by a variable-frequency controller to provide up to 240 Pa available pressure (depending on the size) at nominal flow rate
 - Flow control in accordance with the ducting for optimised efficiency with the possibility to program a maximum supply air flow.
 - Supply air duct connection frame.
 - Suction air connection frame standard for sizes 30RQSY 039-078
 - Suction air filters optional (30RQSY 039-078 only)
 - Small unit footprint with a low height (1371 mm) for easy installation in most buildings
 - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Integrated hydraulic module (option)
 - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation.

Hydraulic module



- Single or dual water pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
- Water filter protects the water pump against circulating debris
- Pressure measurement, using two pressure transducers and allowing indication of water flow rate, water pressure and lack of water.
- High-capacity membrane expansion tank ensures pressurisation of the water circuit
- Overpressure valve, set to 4 bar
- Speed variator on the pumps (option) to ensure the correct flow rate, based on the system requirements
- Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch (option 70) with high trip capacity
 - Transformer for safe 24 V control circuit supply included
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors

Economical operation

- Variable-speed pump (option)
 - The control algorithm adjusts the water flow rate in accordance with the actual system requirements. This saves energy and makes the flow control valve unnecessary.
- Variable-speed fan
 - Variable-speed ventilation permits adjustment to any duct type and variation of the air flow rate for maximised unit performances under any operating conditions.
- Increased energy efficiency at part load
 - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.
 - The electronic expansion device (EXV) allows operation at a lower condensing pressure (SEER and SCOP seasonal performances optimisation).
 - Dynamic superheat management for better utilisation of the water heat exchanger surface.
 - Defrost cycle optimisation (30RQSY)
- Reduced maintenance costs
 - Maintenance-free scroll compressors
 - Fast diagnosis of possible incidents and their history via the SmartVu™ control
 - R410A refrigerant is easier to use than other refrigerant blends

FEATURES

Environmental care

- Ozone-friendly R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient - gives an increased energy efficiency ratio
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Reduction of leaks due to reduced vibration levels and elimination of capillary tubes (TXVs)
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Supply air connection frame



Superior reliability

- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
 - Hydraulic module with integrated pressure transducers allowing measurement of the water pressure at two points, as well as measurement of the water flow rate and detection of lack of water and pressure. This considerably reduces the risk of problems such as frost accumulation on the water heat exchanger.
 - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) Aquasnap continues to operate, but at reduced capacity.
 - On Heat pump version 30RQSY specific Free Defrost algorithm to optimise performance and comfort even during defrost period.

- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table.

SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: Controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
 - Storage of maintenance manual, wiring diagram and spare parts list
 - Display of trend curves for the main values
 - Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
 - Blackbox memory

FEATURES

■ 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

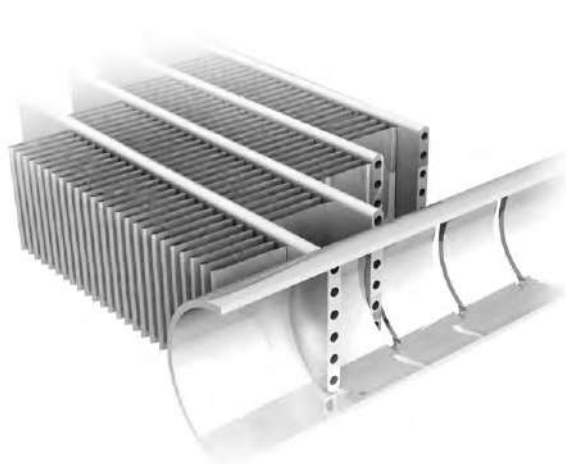
- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: Closing of this contact activates a second setpoint (e.g. unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.
- Setpoint adjustable via 4-20 mA signal

Variable fan speed controller*



All-aluminium micro-channel heat exchanger

(MCHE)



Already utilised in the automobile and aeronautical industries for many years, the MCHE micro-channel heat exchanger is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers.

As an option, the Enviro-Shield and Super Enviro-Shield anti-corrosion protections have been developed to increase the application range of the MCHE coil from medium to very corrosive environments. With Enviro-Shield protection, corrosion resistance of the MCHE coil is doubled without any impact on heat exchange.

With Super Enviro-Shield protection corrosion resistance of the MCHE coil is multiplied by four, and allows use in very corrosive industrial or marine environments

The MCHE heat exchanger allows a reduction in chiller refrigerant charge by up to 50%.

The low thickness of the MCHE reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHE heat exchanger is very fast using a dry air jet or a high-pressure washer, while observing the usage precautions.

OPTIONS

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminum (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30RQSY 039-160
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RQSY 039-160
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RQSY 039-160
Very low noise level	15LS	Acoustic compressor enclosure	Compressor noise emission reduction	30RQSY 039-160
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	30RQSY 039-160
Suction filter	23B	Washable G2 efficiency filter in accordance with EN 779	Prevents pollution of the air-heat exchanger	30RQSY 039-78
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RQSY 039-160
Hydraulic module frost protection	42	Electric heater on the hydraulic module	hydraulic module frost protection at low outside temperatures down to -20°C	30RQSY 039-160
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit.	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RQSY 039-160
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	30RQSY 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RQSY 039-160
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RQSY 039-160
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter(expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RQSY 039-160
HP evap. variable-speed single-pump	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter(expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RQSY 039-160
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RQSY 039-160
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RQSY 039-160
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RQSY 039-160
ModBus over IP and RS485 communication gateway	149B	Bi-directional high-speed communication using the ModBus over Ethernet network (IP) protocol	Easy, quick connection via Ethernet line to a building technical management system. Allows access to several unit parameters.	30RQSY 039-160
Evaporator screw connection sleeves (kit)	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30RQSY 039-160

OPTIONS

Options	No.	Description	Advantages	Use
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RQSY 039-160
Reinforced ECM filtration for fan VFD	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RQSY 039-160
Reinforced ECM filtration for pump VFD	282B	Pump variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RQSY 039-160 with option 116V or 116W
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RQSY 039-160
Set point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy management, allow to adjust set point by a 4-20mA external signal	30RQSY 039-160
Plastic tarp	331	Plastic tarp covering the unit with straps and held down on a wooden pallet.	Prevents dust and external soiling on the machine during storage and transportation.	30RQSY 039-160

PHYSICAL DATA, 30RQSY

30RQSY				39	45	50	60	70	78	80	90	100	120	140	160
Heating															
Standard unit Full load performances*	HA1	Nominal capacity	kW	42,3	46,4	53,2	61,5	68,3	78,0	81,8	92,2	100	116	135	156
		COP	kW/kW	3,65	3,66	3,70	3,80	3,69	3,63	3,82	3,81	3,64	3,60	3,62	3,46
	HA2	Nominal capacity	kW	41,5	46,3	51,8	59,6	66,3	75,4	78,9	89,5	97,4	112	131	151
		COP	kW/kW	3,03	3,01	2,99	3,05	3,01	2,98	3,15	3,08	2,97	2,95	2,95	2,85
Standard unit Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,28	3,29	3,26	3,38	3,38	3,35	3,40	3,38	3,30	3,37	3,45	3,36
		η _s heat _{30/35°C}	%	128	129	127	132	132	131	133	132	129	132	135	131
		P _{rated}	kW	36	32	36	44	50	56	57	82	73	84	100	112
		Enerav labelling		A+	A+	A+	A+	A+	A+	A+	-	-	-	-	-

Cooling

Standard unit Full load performances*	CA1	Nominal capacity	kW	36,9	43,1	49,4	57,1	62,1	69,1	77,0	84,9	95,1	112	129	146
		EER	kW/kW	2,80	2,72	2,66	2,71	2,65	2,41	2,73	2,66	2,66	2,67	2,70	2,50
	CA2	Nominal capacity	kW	46,1	53,9	62,7	69,5	76,8	87,0	96,5	107	117	142	159	182
		EER	kW/kW	3,23	3,18	3,09	3,06	3,03	2,77	3,13	3,10	3,06	3,07	3,08	2,83
Standard unit Seasonal energy efficiency**		SEER ^{12/7°C} Comfort low temp.	kWh/kWh	3,53	3,65	3,63	3,53	3,50	3,35	3,59	3,52	3,62	3,90	3,93	3,87
		SEPR ^{12/7°C} Process high temp.	kWh/kWh	5,00	5,41	4,84	4,90	4,77	4,88	5,08	4,62	4,60	5,23	4,81	5,31
Unit with option 6B Seasonal energy efficiency**		SEPR ^{-2/-8°C} Process medium temp.	kWh/kWh	3,08	3,08	2,61	2,96	2,97	2,86	2,70	2,86	3,04	2,94	2,80	2,58
Integrated Part Load Value		IPLV.SI	kW/kW	3,670	3,816	3,715	3,568	3,596	3,580	3,532	3,398	3,543	3,916	3,681	3,802
Sound levels															
Standard unit - for 160 Pa external static pressure															
Sound power level at discharge ⁽¹⁾			dB(A)	84	84	84	87	87	87	87	87	87	87	90	90
Sound power level radiated ⁽¹⁾				84	84	84	87	87	87	87	87	87	87	90	90
Sound pressure level at 10 m ⁽²⁾			dB(A)	53	53	53	55	55	55	56	56	56	56	58	58
Dimensions				If two values are shown the first one is for standard units and the second one for units with option 23B											
Length		mm		2142/2307	2142/2307	2142/2307	2142/2307	2142/2307	2142/2307	2273	2273	2273	2273	2273	2273
Width		mm		1132/1297	1132/1297	1132/1297	1132/1297	1132/1297	1132/1297	2122	2122	2122	2122	2122	2122
Height		mm		1371	1371	1371	1371	1371	1371	1371	1371	1371	1371	1371	1371
Operating weight ⁽³⁾															
Standard unit without hydraulic module			kg	512	519	553	567	567	574	753	921	930	988	1084	1101
Standard unit with hydraulic module															
Single high-pressure pump			kg	542	549	582	596	597	604	783	952	962	1024	1123	1140
Dual high-pressure pump			kg	568	575	608	622	623	630	809	997	1007	1072	1160	1177

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2016, average climate

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W

HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W

η_s heat_{30/35°C} & SCOP_{30/35°C} **Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**SEER_{12/7°C} & SEPR_{12/7°C} Values calculated in accordance with EN14825:2016SEPR_{-2/-8°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).

- Not applicable

(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Values shown are a guideline only. Please refer to the unit nameplate



Eurovent certified values

PHYSICAL DATA, 30RQSY

30RQSY		39	45	50	60	70	78	80	90	100	120	140	160
Compressors		Hermetic scroll compressors, 48,3 r/s											
Circuit A		2	2	2	2	2	2	2	3	3	3	2	2
Circuit B		-	-	-	-	-	-	-	-	-	-	2	2
No of control stages		2	2	2	2	2	2	2	3	3	3	4	4
Refrigerant charge ⁽³⁾		R-410A, GWP=2088 following ARI4											
Circuit A	kg	12,5	13,5	16,5	17,5	18	16,5	21,5	27,5	28,5	33	19	18,5
	teqCO ₂	26,1	28,2	34,5	36,5	37,6	34,5	44,9	57,4	59,5	68,9	39,7	38,6
Circuit B	kg	-	-	-	-	-	-	-	-	-	-	19	18,5
	teqCO ₂	-	-	-	-	-	-	-	-	-	-	39,7	38,6
Oil charge ⁽³⁾		POE SZ160 (EMKARATE RL-32-3MAF)											
Circuit A	l	5,8	7,2	7,2	7,2	7,0	7,0	7,2	7,0	7,0	7,0	7,0	7,0
Circuit B	l	-	-	-	-	-	-	-	-	-	-	7,0	7,0
Capacity control		SmartVu™											
Minimum capacity	%	50	50	50	50	50	50	50	33	33	33	25	25
Air heat exchangers		Grooved copper tubes and aluminium fins											
Fans		Axial Flying Bird IV with rotating shroud											
Quantity		1	1	1	1	1	1	2	2	2	2	2	2
Maximum total air flow	l/s	3692	3690	3910	5278	4982	5267	7770	7380	7376	7818	9964	10534
Maximum rotation speed	r/s	16	16	16	18	18	18	16	16	16	16	18	18
Water heat exchanger (direct-expansion type)		Plate heat exchanger, max. water-side operating pressure without hydraulic module 1000 kPa											
Water volume	l	2,6	3	4	4,8	4,8	5,6	8,7	8,7	9,9	11,3	12,4	14,7
With hydraulic module (option)		Pump, Victaulic screen filter, relief valve, expansion tank, purge valves (water + air), pressure sensors											
Single or dual pump (as selected)													
Expansion tank volume	l	12	12	12	12	12	12	35	35	35	35	35	35
Expansion tank pressure ⁽⁴⁾	bar	1	1	1	1	1	1	1	1,5	1,5	1,5	1,5	1,5
Max. water-side operating pressure	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with/without hydraulic module		Victaulic											
Connections	in	2	2	2	2	2	2	2	2	2	2	2	2
Outside diameter	mm	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3
Chassis paint colour		Colour code: RAL7035											

(3) Values shown are a guideline only. Please refer to the unit nameplate

(4) When delivered, the standard pre-inflation of the tank is not necessarily the optimal value for the system. To permit changing the water volume, change the inflation pressure to a pressure that is close to the static head of the system. Fill the system with water (purging the air) to a pressure value that is 10 to 20 kPa higher than the pressure in the tank

ELECTRICAL DATA, 30RQSY

30RQSY without hydraulic module		039	045	050	060	070	078	080	090	100	120	140	160
Power circuit													
Nominal power supply	V-ph-Hz	400-3-50											
Voltage range	V	360-440											
Control circuit supply		24 V via internal transformer											
Maximum start-up current (Un)⁽¹⁾													
Standard unit	A	116	137	145	148	176	213	219	179	213	253	244	287
Unit with electronic starter option	A	75	87	94	96	114	143	149	130	155	181	186	215
Unit power factor at maximum capacity⁽²⁾		0,83	0,81	0,81	0,83	0,81	0,83	0,83	0,83	0,81	0,79	0,81	0,78
Maximum operating power input⁽²⁾	kW	21	24	26	30	32	36	39	46	49	56	64	73
Nominal unit operating current draw⁽³⁾	A	28	32	36	39	43	53	59	61	67	83	86	106
Maximum operating current draw (Un)⁽⁴⁾	A	37	47	49	55	67	73	79	86	104	113	135	147
Maximum operating current draw (Un-10%)[†]	A	41	52	54	61	75	80	85	94	116	123	150	160
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit											
Short-circuit stability and protection		See table 9,1											

(1) Maximum instantaneous start-up current at operating limit value (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

(2) Power input, at the unit permanent maximum operating conditions (data given on the unit nameplate)

(3) Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

(4) Maximum unit current at 400 V, non permanent operating conditions (values given on the unit nameplate).

† Maximum unit operating current at 360 V, non permanent operating conditions.

Short-circuit stability current (TN system⁽¹⁾)

30RQSY	039	045	050	060	070	078
Value with unspecified upstream protection						
Short-term current at 1s - I _{cs} - kA rms	3,36	3,36	3,36	3,36	3,36	3,36
Admissible peak current - I _{pk} - kA pk	20	20	20	20	20	15
Max. value with upstream protection by circuit breaker						
Conditional short-circuit current I _{cc} - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H
Reference No. ⁽²⁾	29670	29670	29670	29670	29670	29670

30RQSY	080	090	100	120	140	160
Value with unspecified upstream protection						
Short-term current at 1s - I _{cs} - kA rms	3,36	5,62	5,62	5,62	5,62	5,62
Admissible peak current - I _{pk} - kA pk	15	20	20	15	20	15
Max. value with upstream protection by circuit breaker						
Conditional short-circuit current I _{cc} - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS160H	NS160H	NS250H	NS250H
Reference No. ⁽²⁾	29670	29670	30670	30670	31671	31671

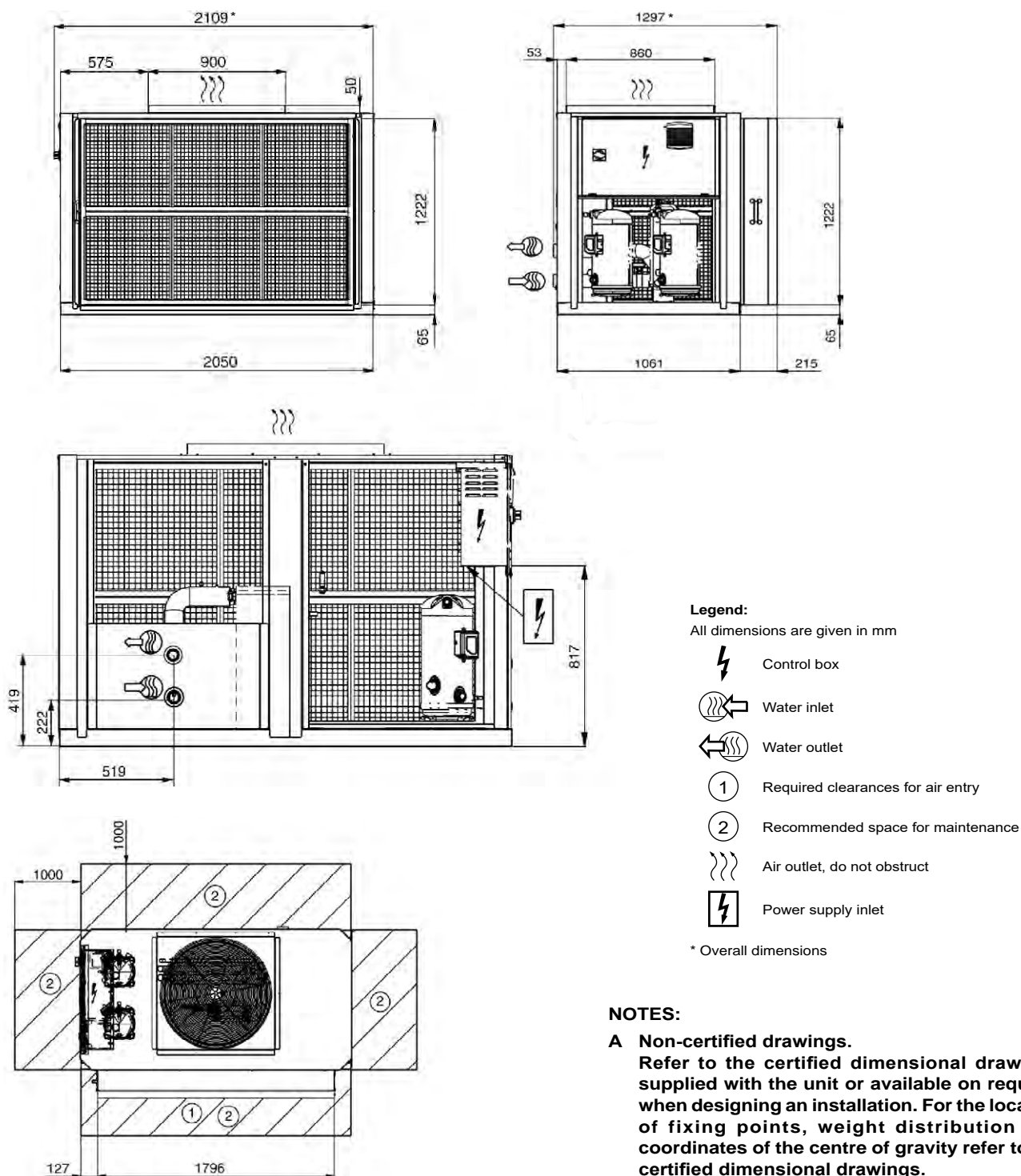
(1) Earthing system type

(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.

The short-circuit stability current values above are suitable with the TN system.

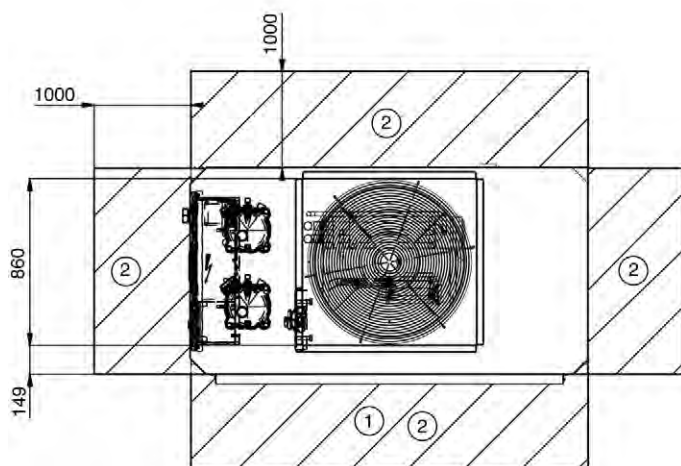
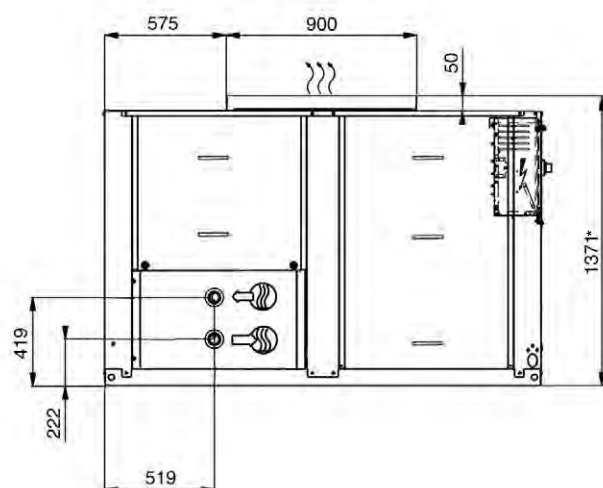
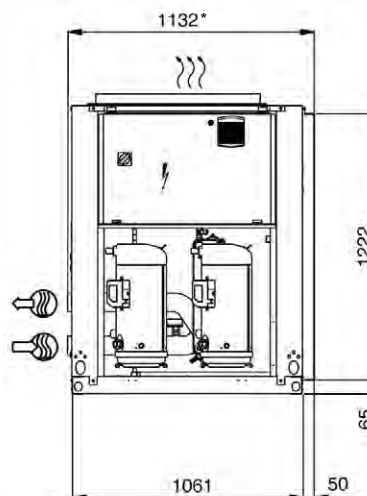
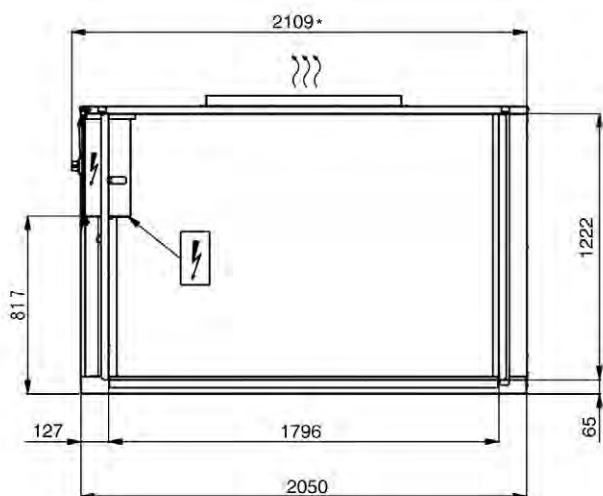
DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 039-045, units with and without hydraulic module, without filter frame



DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 039-045, option 23B, units with and without hydraulic module, with filter frame



Legend:

All dimensions are given in mm



Control box



Water inlet



Water outlet



Required clearances for air entry



Recommended space for maintenance



Air outlet, do not obstruct



Power supply inlet

* Overall dimensions

NOTES:

A Non-certified drawings.

Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

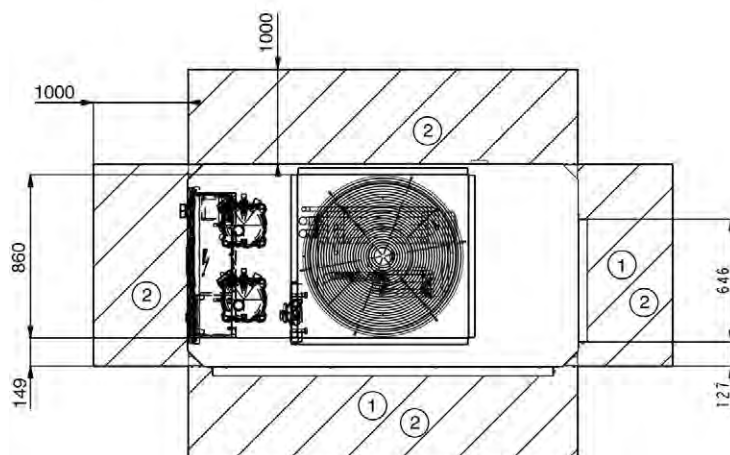
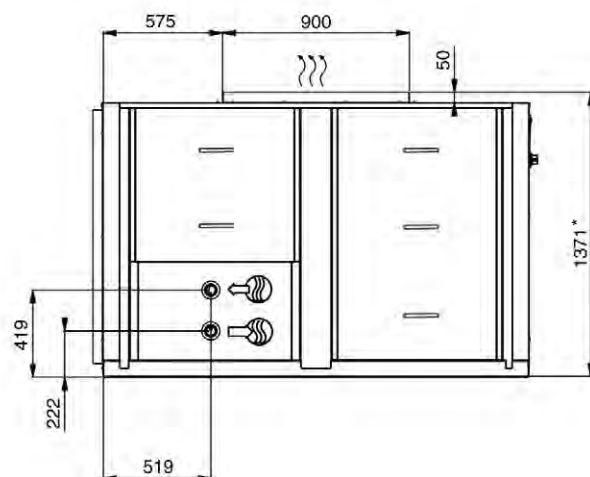
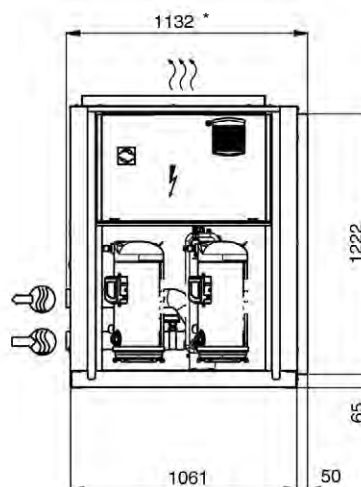
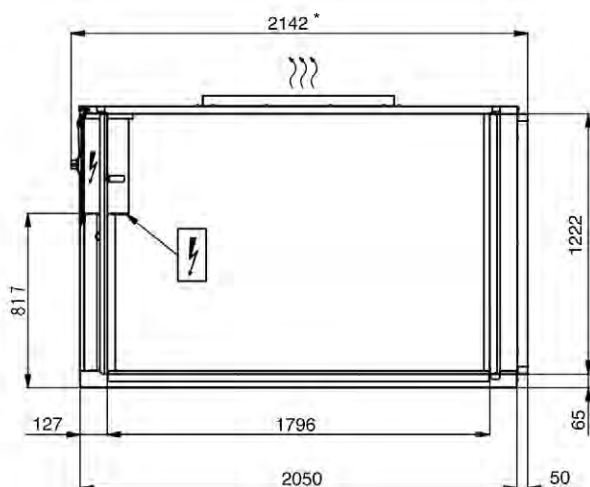
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RQSY 039-078).

C The unit must be installed level (less than 2 mm per metre deviation in both axes).

D Units 30RQSY 039-078 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 050-078, units with and without hydraulic module, without filter frame



Legend:

All dimensions are given in mm



Control box



Water inlet



Water outlet



Required clearances for air entry



Recommended space for maintenance



Air outlet, do not obstruct



Power supply inlet

* Overall dimensions

NOTES:

A Non-certified drawings.

Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

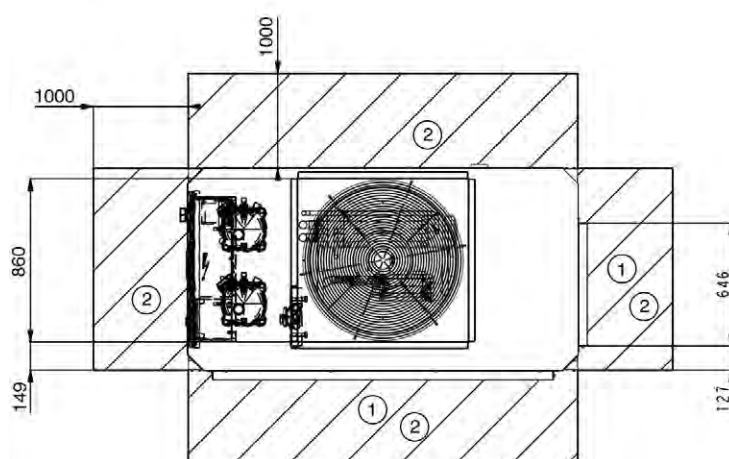
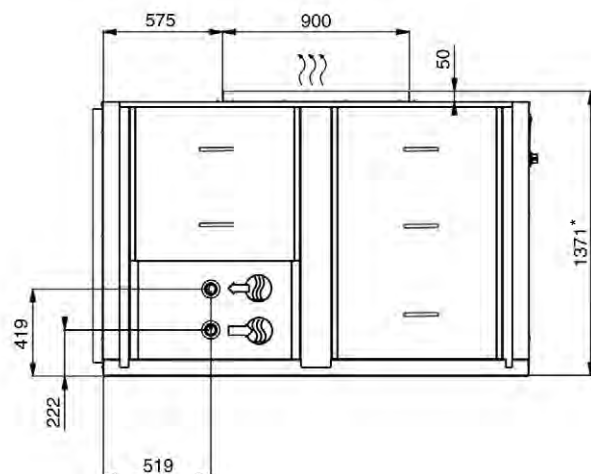
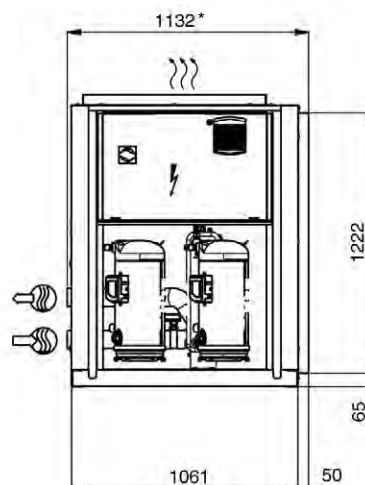
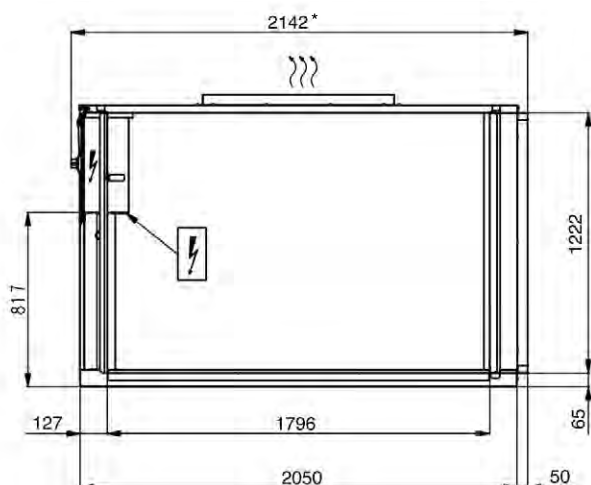
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RQSY 039-078).

C The unit must be installed level (less than 2 mm per metre deviation in both axes).

D Units 30RQSY 039-078 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 050-078, option 23B, units with and without hydraulic module, with filter frame



Legend:

All dimensions are given in mm



Control box



Water inlet



Water outlet



Required clearances for air entry



Recommended space for maintenance



Air outlet, do not obstruct



Power supply inlet

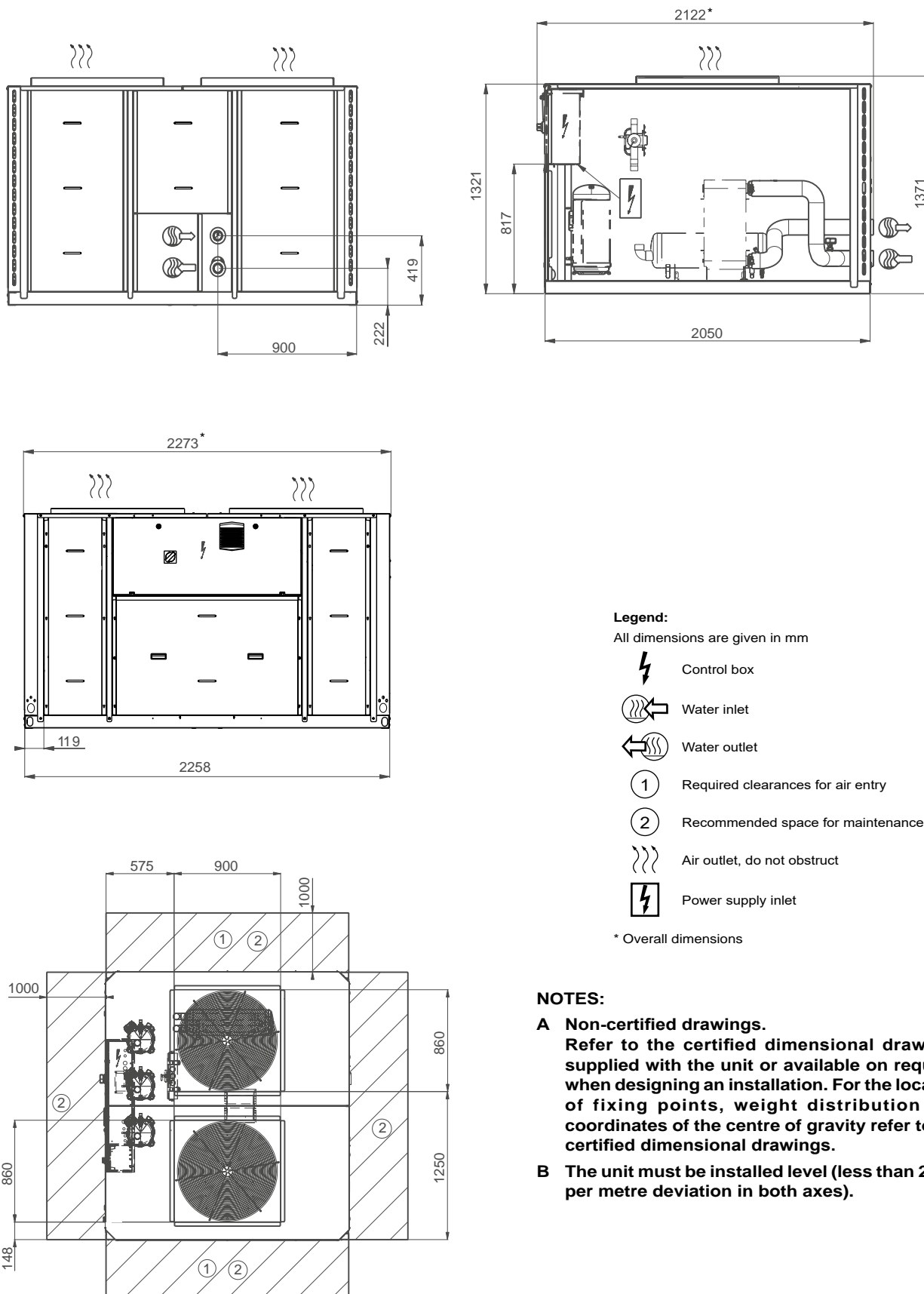
* Overall dimensions

NOTES:

- A Non-certified drawings.**
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.
- B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RQSY 039-078).**
- C The unit must be installed level (less than 2 mm per metre deviation in both axes).**
- D Units 30RQSY 039-078 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.**

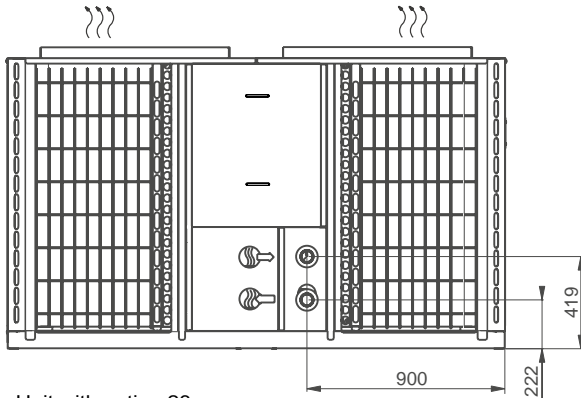
DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 080-120, units with and without hydraulic module

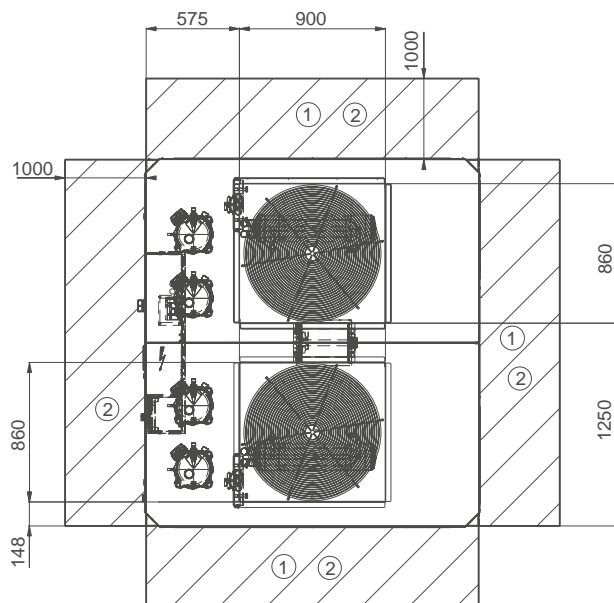
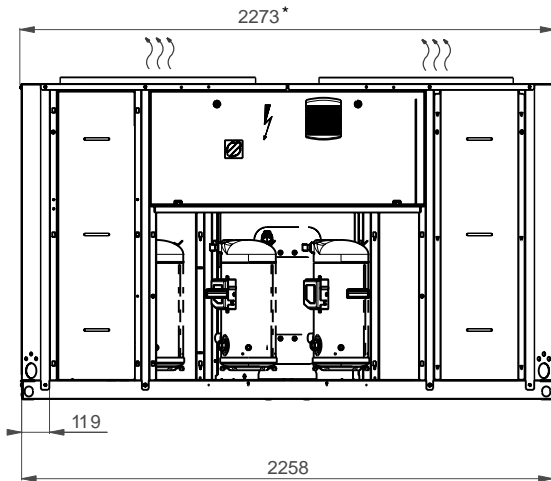
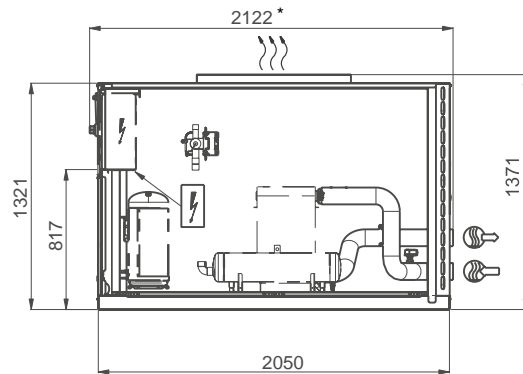


DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 140-160, units with and without hydraulic module



Unit with option 23



Legend:

All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- Required clearances for air entry
- Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

NOTES:

A Non-certified drawings.

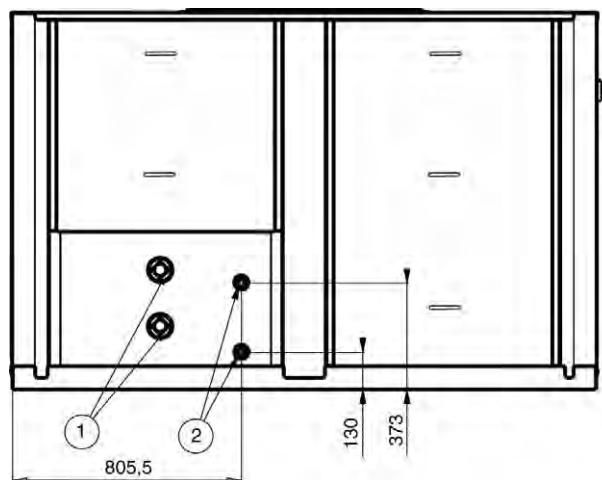
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the centre of gravity refer to the certified dimensional drawings.

B The unit must be installed level (less than 2 mm per metre deviation in both axes).

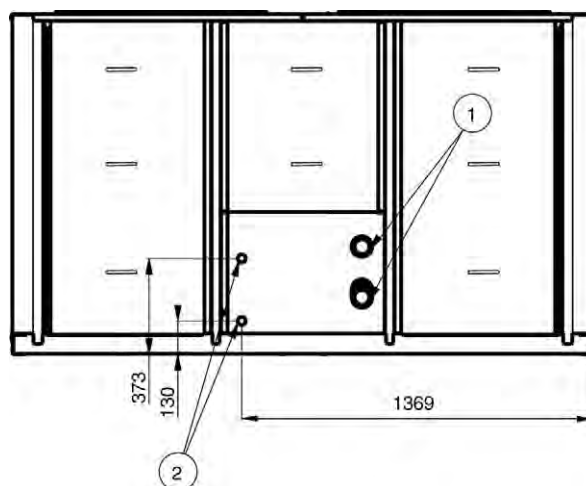
DIMENSIONS/CLEARANCES FOR 30RQSY UNITS WITH OPTION 49

Position of the desuperheater inlets and outlets

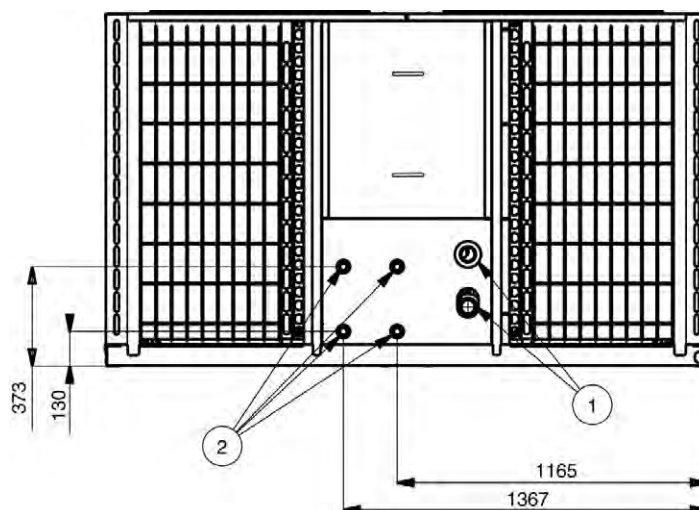
30RQSY 039-080



30RQSY 090-120



30RQSY 140-160



Unit with option 23

- ① Unit water inlet and outlet
- ② Water inlet and outlet, unit with option 49

AIR-TO-WATER SCROLL HEAT PUMP WITH GREENSPEED® INTELLIGENCE



Unit with low noise level option

- High full and part-load efficiency
- Compact and simple to install
- Low sound level
- Low refrigerant charge
- Superior reliability

30RQM/30RQP



Nominal heating capacity 179-434 kW
Nominal cooling capacity 154-510 kW

The AquaSnap® heat pumps are the best value solution for commercial and industrial applications where installers, consultants and building owners require reduced installed costs, optimal performances and maximum quality.

The new generation AquaSnap® features two new versions:

- The AquaSnap® (30RQM) version features a compact all-in-one package optimised for full-load applications where reduced investment cost (low Capex) is required.
- The AquaSnap Greenspeed® (30RQP) version features a compact all-in-one package optimised for part-load applications where high SCOP and SEER are required. The AquaSnap Greenspeed® equipped with variable speed fans and variable speed pump provides premium part load efficiency to reduce utility costs over the lifespan of the heat pump. Additionally, the low sounds levels achieved at part load conditions can be very beneficial for sensitive acoustic applications.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

AQUASnap® WITH GREENSPEED INTELLIGENCE

SIMPLICITY

The simplicity of AquaSnap®, tried and trusted

■ Experience

With more than 60,000 units installed since 1998, AquaSnap® **sets the standard in “plug & play”** air conditioning and heating solutions. Compact and simple to install, the new generation of AquaSnap® with Greenspeed intelligence combines **trusted reliability with even more innovation**.

■ Easy installation

AquaSnap® integrates an hydraulic module with pressure transducers for digital water flow rate display on the user interface and pump protection against low hydraulic pressure.

The **variable-speed pump allows easy and fast installation start-up** thanks to the electronic setting of the nominal water flow.

■ Adaptability

The new AquaSnap® heat pumps can operate in all climates with large operating maps in cooling and heating modes. Thanks to special coil coatings, the AquaSnap® heat pumps can withstand operation in corrosive environments. To match specific commercial or industrial application requirements, the unit can be equipped with multiple options.

THE STANDARD IN
«PLUG & PLAY»
AIR CONDITIONING AND
HEATING SOLUTIONS

UP TO 15% MORE EFFICIENCY
WITH THE SAME DIMENSIONS AS
PREVIOUS GENERATION

ONE PRODUCT FOR
MANY APPLICATIONS

&

INTELLIGENCE

Greenspeed intelligence: the smart innovation

■ Smart efficiency

The new generation of AquaSnap® heat pumps delivers on the energy savings and reduced carbon footprint required by the latest European regulations. AquaSnap® heat pumps with Greenspeed intelligence offer **Seasonal Coefficient of Performance (SCOP) in heating of up to 3.35 and Seasonal Energy Efficiency (SEER) in cooling of up to 4.11**, making them the best value air conditioning solution in commercial and industrial applications.

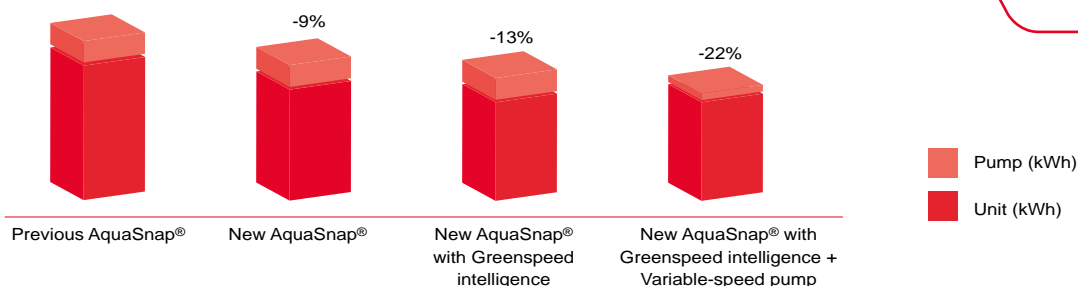
■ Acoustic comfort

Thanks to the variable-speed fans, AquaSnap® heat pumps with Greenspeed intelligence offer **smooth fan speed variation during partial load operation**. For noise sensitive environments during both night and day, the AquaSnap® noise level can be automatically factory-set or tuned on-site.

■ Advanced control

An advanced control algorithm calculates energy efficiency and **readjusts fan speed in real time** to reduce energy consumption. **«Free Defrost», an innovative defrosting solution**, can significantly improve the SCOP of the heat pump during positive outside air temperature conditions. For further energy savings, the water flow rate can be **electronically controlled** to meet real application needs, thus significantly reducing pumping energy consumption both night and day.

LIFETIME ENERGY SAVINGS



Source: Carrier estimates based on 15-year energy savings calculations comparing a 400kW AquaSnap® heat pump of the previous generation to a new AquaSnap® heat pump, a new AquaSnap® Greenspeed heat pump with variable speed pump in a variable primary flow water system design at an office building in an average European climate, 3500 running hours and 1000 stand-by hours per year. This information is intended as an example for comparison purposes only.

30RQM TECHNICAL INSIGHT

AquaSnap® scroll heat pumps 30RQM



**FIXED-SPEED
FLYING BIRD® FAN**



SmartView CONTROL

- 4.3" user-friendly touch screen
- All main parameters displayed on one screen
- Direct access to the unit's technical drawings and main service documents
- Easy remote monitoring via the internet
- Easy and secured access to unit parameters
- Smart Energy Monitoring provide in real time energy consumption, Cooling and Heating capacity, instantaneous and average seasonal energy efficiency ratios



COPPER ALUMINIUM COILS

- Heat shrinkable tube to protect distribution capillary tubes
- Coil electric resistance heaters to prevent ice formation and ease condensate draining during defrost



**HEAT
EXCHANGER**

- True dual-circuit brazed plate heat exchanger with asymmetric channels

30RQP TECHNICAL INSIGHT

AquaSnap® scroll heat pumps with Greenspeed intelligence 30RQP

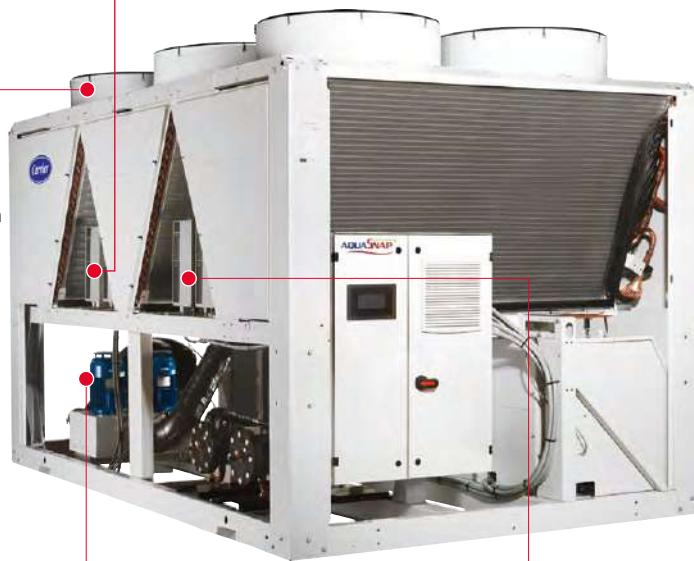


VARIABLE-SPEED FLYING BIRD® FAN

- Carrier-designed fan blades
- Proprietary algorithm to control fan speed
- Dedicated drive
- Night-mode operation



VARIABLE-SPEED FAN DRIVE



VARIABLE-SPEED PUMP (Option)

- Water flow electronic setting & readings
- Automatic pump protection against low water pressure
- Multiple pump control capabilities:
 - fixed-speed
 - variable-speed based on constant pressure or constant temperature

VARIABLE-SPEED PUMP DRIVE



FEATURES AND BENEFITS

The AquaSnap® heat pumps are designed to meet current and future Ecodesign and F-Gas European regulation requirements in terms of energy efficiency and reduced CO₂ emissions. They use the best technologies available today:

- Reduced refrigerant charge of non-ozone depleting R-410A refrigerant
- Scroll compressors
- Greenspeed® variable-speed driven fans (30RQP models)
- Brazed plate heat exchangers with reduced pressure drops
- Auto-adaptive microprocessor control with Greenspeed® intelligence
- Smart View control with web connectivity possibilities and colour touch screen user display
- Extra energy savings through partial heat recovery

Both AquaSnap® versions can be equipped with an integrated hydraulic module, limiting the installation to conventional operations such as connection of the power supply and the supply and return piping (plug & play), according to the dimensions of the standard unit.

Recommended by Carrier, AquaSnap® can be equipped with one or two Greenspeed® variable-speed pumps to significantly reduce energy costs linked to pumping (reduction of more than two-thirds), ensure optimum water flow rate control, and improve overall system reliability.



Highly economical operation

- High unit full and part load energy efficiency and efficient design of the water side:
 - Standardised Eurovent values in accordance with EN 14511-3:2013 EER up to 2.9 (30RQP version)
 - 30RQP and 30RQM ranges are compliant with EU Ecodesign Tier 2 Minimum Efficiency Performance Standards (MEPS) in heating that apply from September 2017
 - Multiple scroll compressors equipped with a high-efficiency motor that permit exact matching of the capacity to the load
 - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control)
 - Air heat exchanger with Greenspeed® variable speed fans (30RQP version)
 - Low pressure drop brazed plate heat exchangers (pressure drops < 45 kPa at Eurovent conditions).
- Specific control functions to reduce unit energy use during occupied and unoccupied periods:
 - Internal timer programming: Permits heat pump on/off control and operation at a second set-point
 - Set-point automatically offset based on the outside air temperature or room air temperature (via an option)
 - Floating high-pressure management
 - Variable-speed fan control
 - Cooling and heating demand limitation.

Refer to control chapter for more information.

- On Heat pump version 30RQM/30RQP specific Free Defrost algorithm to optimise performance & comfort even during defrost period.

- Greenspeed® variable-speed pump to reduce pumping energy use up to 2/3 (option recommended by Carrier):

- Eliminate energy losses through the water flow rate control valve by electronically setting the nominal water flow rate
- Save energy during stand-by periods or part-load operation by automatically reducing the water pump speed. The energy consumption of the pump motor varies according to the cube of the speed, so that a reduction in speed of just 40% can reduce energy consumption by 80%
- Improved unit part-load performance (Increased SCOP and SEER values with variable water flow rate as per the EN14825 standard).

Refer to hydraulic option chapter for more information.



Extra energy savings through partial heat recovery option that permits free hot water production.

Reduced maintenance costs

- Fast diagnosis of possible incidents and their history via the control
- R-410A refrigerant is easier to use than other refrigerant blends.

Low sound level

Coil section with fixed speed fans (30RQM models):

- Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
- Low-noise 4th generation Flying Bird fans, made of a composite material (Carrier patent)
- Rigid fan installation for reduced noise (Carrier patent).

Coil section with Greenspeed® variable-speed fans (30RQP models recommended by Carrier for even quieter operation):

- Exceptional acoustic signature during part-load operation through smooth fan speed variation.

- Specific control functions or features to reduce noise level during night or unoccupied periods:

- Night time sound control with capacity and fan speed limitation
- Low-noise scroll compressors with low vibration level
- The compressor assembly is installed on an independent chassis and supported by flexible anti-vibration mountings.
- Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
- Acoustic compressor enclosure, reducing radiated noise emissions (option).



FEATURES AND BENEFITS

Quick and easy installation

- Compact design
 - The AquaSnap® units are designed to offer compact dimensions and low weight for easy installation.
- Integrated hydraulic module (option)
 - Low or high-pressure water pump (as required)
 - Single or dual pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
 - Water filter protecting the water pump against circulating debris
 - Pressure transducers for direct numerical display of the water flow rate and water pressures
 - Thermal insulation and frost protection down to -20 °C, using an electric resistance heater (option)
 - High-capacity membrane expansion tank (option).
- Integrated hydraulic module with Greenspeed® variable-speed pump (option recommended by Carrier)
 - Quick and easy electronic setting of the nominal water flow rate when the unit is commissioned, thus eliminating the need to adjust the water flow rate control valve
 - Automatic control of the pump speed based on constant speed, constant pressure difference or constant temperature difference.
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch with high trip capacity
 - 24 V control circuit without risk from a transformer included.
- Fast unit commissioning
 - Systematic factory test before shipment
 - Quick-test function for step-by-step verification of the sensors, electrical components and motors.

Reduced installation costs

- Optional Greenspeed® variable-speed pump with hydraulic module (option recommended by Carrier)
 - Elimination of the water flow control valve cost
 - Water system design with variable primary flow (VPF) can provide significant installation cost savings compared with traditional constant primary-variable secondary systems; elimination of the secondary distribution pump, etc.
 - Water system design with fan coils fitted with 2-way valves instead of 3-way valves.

Environmental responsibility

- R-410A non-ozone depleting refrigerant.
- Reduced direct warming potential (10% of total equivalent warming impact):
 - Low R410-A refrigerant charge
 - Leak-tight refrigerant circuit with minimum brazed connections
 - Qualified Carrier maintenance personnel to provide refrigerant servicing
 - ISO 14001 manufacturing site.
- Reduced indirect warming potential (90% of total equivalent warming impact):
 - Reduced unit energy use (high full- and part-load efficiency)
 - Pumping energy consumption can be reduced by up to 2/3 using Greenspeed® variable-speed pumps.
- Refrigerant leak detection: Available as an option, this additional dry-contact allows reporting of possible leaks. The leak detector (by others) should be mounted in the most likely leak location. An Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions.

Superior reliability

- State-of-the-art concept
 - Two independent refrigerant circuits; the second one automatically takes over if the first one develops a fault, maintaining partial cooling under all circumstances
 - All compressor components are easily accessible on site, minimising downtime
 - V-coil design to protect the coils against hail impact
 - Optional anti-corrosion coil coating for use in moderately corrosive environments.
 - Electronic flow switch. Auto-setting according to cooler size and fluid type
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and reduces the quantity of water in the water loop (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure
 - Automatic fan speed adjustment in case of coil fouling (30RQP models)
 - Smooth fan start to increase unit lifetime (30RQP models).
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of simulation tools (finite element analysis) for the design of critical components
 - Transport simulation test on an endurance circuit based on a military standard.

FEATURES AND BENEFITS

SMART VIEW Control

The Smart View features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4"3 colour touch screen.

- Energy management configuration
 - Internal time schedule clock: Controls heat pump on/off times and operation at a second set-point
 - Set-point offset based on the outside air temperature
 - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
 - Innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling/heating capacity, and instantaneous and average seasonal energy efficiency ratios.
- Advanced communication features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation
 - High-speed user-friendly communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Functionality of maintenance
 - Compulsory maintenance reminder– FGAS sealing check
 - Periodic maintenance reminder Maintenance alarm which can be configured to days, months or hours of operation
- 4"3-inch Smart View user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with Smart View control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows remote control of the AquaSnap® by wired cable:

- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: closing of this contact activates a second set-point (e.g.: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

Energy management module (option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: Permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set-point reset: Ensures reset of the cooling set-point based on a 4-20 mA
- Demand limit: Permits limitation of the maximum heat pump power based on a 4-20 mA signal
- Demand limit 1 and 2: Closing of these contacts limits the maximum heat pump power or current to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
- Time schedule override: Closing of this contact cancels the time schedule effects.
- Out of service: This signal indicates that the heat pump is completely out of service.
- Unit capacity: This analogue output (0-10 V) gives an immediate indication of the unit capacity.
- Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Boiler control: This on/off output controls an independent boiler to provide hot water.
- Electric heater control: this on/off output controls up to 4 electric heater stages to provide additional heating capacity during the cold season.

OPTIONS

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30RQM/30RQP 160-520
Low temperature brine solution	6B	Low temperature chilled water production down to -8°C with ethylene or propylene glycol	Covers specific applications such as ice storage and industrial processes	30RQP 180-230-270-310
High static fans	12	Unit equipped with high static variable speed fan (maximum 200Pa), each fan being equipped with a connection flange allowing the connection to the ducting system.	Ducted fan discharge, optimised temperature control, based on the operating conditions and system characteristics	30RQM/30RQP 160-520
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction by 1 to 2 dB(A)	30RQM/30RQP 160-520
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise level reduction for sensible site	30RBM 160-520
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the electrics box from dust, water and sand. In general this option is recommended for installations in polluted environments	30RQM/30RQP 160-520
Grilles and enclosure panels	23	Metal grilles on the 4 unit sides, plus side enclosure panels at each end of the coils	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30RQM/30RQP 160-520
Enclosure panels	23A	Side enclosure panels at each end of the coil	Improves aesthetics, coil and piping protection against impacts.	30RQM/30RQP 160-520
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RQM/30RQP 160-520
Winter operation down to -20°C	28	Fan speed control of lead fan for each circuit using a variable frequency drive	Stable unit operation for outside air temperatures from 0°C down to -20°C in cooling mode	30RQM 160-520
Water exchanger frost protection	41	Electric heater on the water exchanger and the water piping	Water exchanger module frost protection between 0°C and -20°C outside air temperature	30RQM/30RQP 160-520
Exchanger & hydraulic frost protection	42A	Electric heater on the water exchanger hydraulic module and optional expansion tank	Water exchanger and hydraulic module frost protection down to an outside air temperature of -20°C	30RQM/30RQP 160-520
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RQM/30RQP 160-520
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	30RQM/30RQP 160-520
Compressor discharge valves	93A	Shut-off valves on the compressor discharge piping	Simplified maintenance. Possibility to store the refrigerant charge in the condenser side during servicing	30RQM/30RQP 160-520
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play)	30RQM/30RQP 160-520
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play)	30RQM/30RQP 160-520
LP single-pump hydraulic module	116T	Single low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play)	30RQM/30RQP 160-520
LP dual-pump hydraulic module	116U	Dual low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play)	30RQM/30RQP 160-520
Evap. HP variable-speed single-pump	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	30RQM/30RQP 160-520

OPTIONS

Options	No.	Description	Advantages	Use
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	30RQM/30RQP 160-520
Lon gateway	148D	Two-directional communication board complying with LonTalk protocol	Connects the unit by communication bus to a building management system	30RQM/30RQP 160-520
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RQM/30RQP 160-520
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RQM/30RQP 160-520
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30RQM/30RQP 160-520
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	30RQM/RQP 160-520
Compliance with Russian regulations	199	EAC certification	Compliance with Russian regulations	30RQM/30RQP 160-520
Compliance with Australian regulations	200	Unit approved to Australian code	Compliance with Australian regulations	30RQM/30RQP 160-520
Power factor correction	231	Capacitors for automatic regulation of power factor (cos phi) value to 0,95.	Reduction of the apparent electrical power, compliance with minimum power factor limit set by utilities	30RQM/30RQP 160-520
Coil defrost resistance heaters	252	Electric heaters under the coils and the condensate pans	Prevents frost formation on the coils; compulsory in the heating mode, if the outdoor is below 0°C	30RQM/30RQP 160-520
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RQM/30RQP 160-520
230 V electric plug	284	230 VAC power supply source provided with plug socket and transformer (180 VA, 0.8 A)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30RQM/30RQP 160-520
Expansion vessel	293	6-bar expansion tank integrated into the hydraulic module (option 116 required)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RQM/30RQP 160-520
Screwed water connection sleeve kit for DSH	303	DSH connections with screw connection sleeves	Easy installation. Allows unit connection to a screw connector	30RQM/30RQP 160-520
Welded water connection kit for DSH	304	DSH inlet/outlet welded connection sleeves	Easy installation	30RQM/30RQP 160-520
Set-point adjustment by 4-20 mA signal	311	Connections enabling a 4-20 mA signal input	Easy energy management, allow to adjust set-point by a 4-20mA external signal	30RQM/30RQP 160-520

PHYSICAL DATA. SIZES 160 TO 520

30RQM				160	180	210	230	240	270	310	330	380	430	470	520
Heating															
Standard unit Full load performances*	HA1	Nominal capacity	kW	181	198	240	216	272	294	342	359	415	474	457	436
		COP	kW/kW	3,75	3,79	3,81	3,56	3,86	3,75	3,74	3,82	3,72	3,72	3,62	3,57
	HA2	Nominal capacity	kW	174	191	232	245	262	282	329	345	399	456	498	537
		COP	kW/kW	2,99	3,05	3,04	2,91	3,11	2,96	2,98	3,04	2,95	2,97	2,95	2,94
Standard unit Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,20	3,21	3,23	3,21	3,20	3,22	3,20	3,20	3,30	3,35	3,35	3,32
		η _s heat _{30/35°C}	%	125	125	126	125	125	126	125	125	129	131	131	130
		P _{rated}	kW	121	134	159	169	159	194	211	231	268	305	339	356
Cooling															
Standard unit Full load performances*	CA1	Nominal capacity	kW	154	168	201	225	232	264	297	322	372	424	458	510
		EER	kW/kW	2,76	2,87	2,73	2,74	2,89	2,86	2,86	2,87	2,87	2,90	2,75	2,74
		Eurovent class		C	C	C	C	C	C	C	C	C	B	C	C
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	3,89	3,89	3,93	3,99	3,95	4,03	4,06	4,00	4,04	4,11	4,09	4,04
		SEPR _{12/7°C} Process high temp.	kWh/kWh	4,40	4,31	4,41	4,12	4,64	4,77	4,72	5,09	5,03	4,86	4,78	4,58
Sound levels															
Standard unit															
Sound power level ⁽¹⁾			dB(A)	90	91	91	91	92	92	93	93	94	94	94	94
Sound pressure level at 10 m ⁽²⁾			dB(A)	58	59	59	59	60	60	61	61	62	62	62	62
Standard unit + option 15 ⁽³⁾															
Sound power level ⁽¹⁾			dB(A)	89	90	90	90	91	91	91	92	92	93	93	93
Sound pressure level at 10 m ⁽²⁾			dB(A)	57	58	58	58	59	59	59	60	60	61	61	61
Dimensions															
Length			mm	2410	2410	2410	2410	3604	3604	3604	3604	4797	4797	4797	4797
Width			mm	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
Height			mm	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297
Operating weight ⁽⁴⁾															
Standard unit			kg	1415	1490	1618	1641	2049	2197	2318	2548	3013	3274	3286	3327
Standard unit + option 15/15LS			kg	1497	1572	1726	1749	2157	2323	2444	2693	3175	3454	3466	3507
Standard unit + option 15/15LS + option 116W ⁽³⁾			kg	1637	1712	1878	1900	2318	2531	2662	2897	3380	3700	3748	3788
Unit + option 15 + option 116W + Water buffer tank option			kg	2585	2656	2821	2844	3257	3471	3598	3833	4312	4643	4692	4732
Compressors				Hermetic Scroll 48,3 r/s											
Circuit A				1	1	2	2	2	2	2	2	3	4	4	4
Circuit B				2	2	2	2	2	3	3	4	4	4	4	4
No. of control stages				3	3	4	4	4	5	5	6	7	8	8	8

- * In accordance with standard EN14511-3:2013.
- ** In accordance with standard EN14825:2016, average climate
- HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
- η_s heat_{30/35°C} & SCOP_{30/35°C}** **SEER_{12/7°C} & SEPR_{12/7°C}** **Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**
Values calculated in accordance with EN14825:2016
- (1) In dB ref=10⁻¹² W. (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent at nominal conditions EN14511 - cooling mode.
- (2) In dB ref 20 μPa. (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information. calculated from the sound power level Lw(A).
- (3) Options: 15 = Low noise level. 116S = High Pressure dual-pump hydraulic module
- (4) Weights are guidelines only. Refer to the unit nameplate.



Eurovent certified values

PHYSICAL DATA. SIZES 160 TO 520

30RQM		160	180	210	230	240	270	310	330	380	430	470	520
Refrigerant⁽⁴⁾		R410A											
Circuit A charge	kg	14,5	22,0	23,0	24,0	27,0	27,0	30,0	33,0	42,0	53,0	54,0	56,0
	teqCO ₂	30,3	45,9	48,0	50,1	56,4	56,4	62,6	68,9	87,7	110,7	112,8	116,9
Circuit B charge	kg	23,0	23,0	23,0	24,0	35,0	36,0	48,5	53,0	53,0	53,0	54,0	56,0
	teqCO ₂	48,0	48,0	48,0	50,1	73,1	75,2	101,3	110,7	110,7	110,7	112,8	116,9
Capacity control		Smart View Control											
Minimum capacity	%	33%	33%	25%	25%	25%	20%	20%	17%	14%	13%	13%	13%
Air heat exchangers		Grooved copper tubes and aluminium fins											
Fans		Axial Flying Bird 4 with rotating shroud											
Quantity		3	4	4	4	5	5	6	6	7	8	8	8
Maximum total air flow	l/s	13542	18056	18056	18056	22569	22569	27083	27083	31597	36111	36111	36111
Maximum rotation speed	r/s	16	16	16	16	16	16	16	16	16	16	16	16
Water heat exchanger		Dual-circuit plate heat exchanger											
Water content	l	15	15	15	19	27	27	35	44	44	44	47	53
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic Module (option)		Pump. Victaulic screen filter. relief valve. water valve and air purge. pressure sensors. expansion tank (option)											
Pump		Centrifugal. monocoil. 48,3 r/s. low or high pressure (as required). single or dual pump (as required)											
Expansion vessel volume	l	50	50	50	50	80	80	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module		Victaulic type											
Diameter	inch	3	3	3	3	4	4	4	4	4	4	4	4
External diameter	mm	88,9	88,9	88,9	88,9	114,3	114,3	114,3	114,3	114,3	114,3	114,3	114,3
Chassis paint colour		Colour code RAL 7035											

(4) Weights are guidelines only. Refer to the unit nameplate.

PHYSICAL DATA, SIZES 160 TO 520

30RQP				160	180	210	230	240	270	310	330	380	430	470	520
Heating															
Standard unit Full load performances*	HA1	Nominal capacity	kW	181	198	240	216	272	294	342	359	415	474	457	436
		COP	kW/kW	3,75	3,79	3,81	3,56	3,86	3,75	3,74	3,82	3,72	3,72	3,62	3,57
	HA2	Nominal capacity	kW	174	191	232	245	262	282	329	345	399	456	498	537
		COP	kW/kW	2,99	3,05	3,04	2,91	3,11	2,96	2,98	3,04	2,95	2,97	2,95	2,94
Standard unit Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,38	3,38	3,39	3,39	3,38	3,39	3,41	3,40	3,43	3,46	3,47	3,41
		η _{s heat} _{30/35°C}	%	132	132	133	133	132	132	133	133	134	135	136	134
		P _{rated}	kW	121	134	159	169	159	194	211	231	268	305	339	356
Cooling															
Standard unit Full load performances*	CA1	Nominal capacity	kW	154	168	201	225	232	264	297	322	372	424	458	510
		EER	kW/kW	2,76	2,87	2,73	2,74	2,89	2,86	2,86	2,87	2,87	2,90	2,75	2,74
		Eurovent class	C	C	C	C	C	C	C	C	C	C	B	C	C
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,07	4,08	4,09	4,13	4,16	4,21	4,16	4,23	4,32	4,33	4,30	4,22
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,24	5,29	5,29	5,16	5,13	5,39	5,52	5,45	5,56	5,63	5,40	5,18
Unit + option 6 Seasonal energy efficiency**		SEPR _{-2/-8°C} Process medium temp.***	kWh/kWh	NA	3,55	NA	3,47	NA	3,36	3,67	NA	NA	NA	NA	NA
Sound levels															
Standard unit															
Sound power level ⁽¹⁾			dB(A)	90	91	91	91	92	92	93	93	94	94	94	94
Sound pressure level at 10 m ⁽²⁾			dB(A)	58	59	59	59	60	60	61	61	62	62	62	62
Standard unit + option 15 ⁽³⁾															
Sound power level ⁽¹⁾			dB(A)	89	90	90	90	91	91	91	92	92	93	93	93
Sound pressure level at 10 m ⁽²⁾			dB(A)	57	58	58	58	59	59	59	60	60	61	61	61
Standard unit + option 15LS ⁽³⁾															
Sound power level ⁽¹⁾			dB(A)	84	85	86	86	86	87	87	87	88	89	89	89
Sound pressure level at 10 m ⁽²⁾			dB(A)	52	53	54	54	54	55	55	55	56	57	57	57
Dimensions															
Length			mm	2410	2410	2410	2410	3604	3604	3604	3604	4797	4797	4797	4797
Width			mm	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
Height			mm	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297
Operating weight ⁽⁴⁾															
Standard unit			kg	1450	1526	1654	1677	2085	2233	2355	2585	3050	3331	3343	3393
Standard unit + option 15/15LS			kg	1533	1609	1762	1785	2193	2359	2481	2729	3212	3512	3524	3573
Standard unit + option 15/15LS + option 116W ⁽³⁾			kg	1673	1749	1914	1936	2354	2568	2699	2934	3416	3757	3806	3854
Unité + option 15 + option 116W + Water buffer tank option			kg	2632	2708	2873	2895	3313	3527	3658	3893	4375	4716	4765	4813
Compressors				Hermetic Scroll 48.3 r/s											
Circuit A				1	1	2	2	2	2	2	2	3	4	4	4
Circuit B				2	2	2	2	2	3	3	4	4	4	4	4
No. of control stages				3	3	4	4	4	5	5	6	7	8	8	8

- * In accordance with standard EN14511-3:2013.
- ** In accordance with standard EN14825:2016, average climate
- *** With EG 30%
- HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
- CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
- η_{s heat}_{30/35°C} & SCOP_{30/35°C} **Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**
- SEER_{12/7°C} & SEPR_{12/7°C} Values calculated in accordance with EN14825:2016
- SEPR_{-2/-8°C} **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
- NA Non Authorized for the specific application for CEE market
- (1) In dB ref 20 μPa. (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent at nominal conditions EN14511 - cooling mode.
- (2) In dB ref 20 μPa. (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information. calculated from the sound power level Lw(A).
- (3) Options: 15 = Low noise level. 116S = High Pressure dual-pump hydraulic module
- (4) Weights are guidelines only. Refer to the unit nameplate.



Eurovent certified values

PHYSICAL DATA, SIZES 160 TO 520

30RQP		160	180	210	230	240	270	310	330	380	430	470	520
Refrigerant⁽⁴⁾		R410A											
Circuit A charge	kg	14,5	22,0	23,0	24,0	27,0	27,0	30,0	33,0	42,0	53,0	54,0	56,0
	teqCO ₂	30,3	45,9	48,0	50,1	56,4	56,4	62,6	68,9	87,7	110,7	112,8	116,9
Circuit B charge	kg	23,0	23,0	23,0	24,0	35,0	36,0	48,5	53,0	53,0	53,0	54,0	56,0
	teqCO ₂	48,0	48,0	48,0	50,1	73,1	75,2	101,3	110,7	110,7	110,7	112,8	116,9
Capacity control		Smart View Control											
Minimum capacity	%	33%	33%	25%	25%	25%	20%	20%	17%	14%	13%	13%	13%
Air heat exchangers		Grooved copper tubes and aluminium fins											
Fans		Axial Flying Bird 4 with rotating shroud											
Quantity		3	4	4	4	5	5	6	6	7	8	8	8
Maximum total air flow	l/s	13542	18056	18056	18056	22569	22569	27083	27083	31597	36111	36111	36111
Maximum rotation speed	r/s	16	16	16	16	16	16	16	16	16	16	16	16
Water heat exchanger		Dual-circuit plate heat exchanger											
Water content	l	15	15	15	19	27	27	35	44	44	44	47	53
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic Module (option)		Pump, Victaulic screen filter, relief valve, water valve and air purge, pressure sensors, expansion tank (option)											
Pump		Centrifugal, monocell, 48,3 r/s, low or high pressure (as required), single or dual pump(as required)											
Expansion vessel volume	l	50	50	50	50	80	80	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module													
Diameter	inch	3	3	3	3	4	4	4	4	4	4	4	4
External diameter	mm	88,9	88,9	88,9	88,9	114,3	114,3	114,3	114,3	114,3	114,3	114,3	114,3
Chassis paint colour		Colour code RAL 7035											

(4) Weights are guidelines only. Refer to the unit nameplate.

ELECTRICAL DATA

30RQM		160	180	210	230	240	270	310	330	380	430	470	520
Power circuit													
Nominal power supply	V-ph-Hz	400 - 3 -50											
Voltage range	V	360 - 440											
Control circuit supply		24 V via internal transformer											
Nominal unit current draw ⁽¹⁾													
Circuit A&B	A	100	110	133	147	151	166	191	199	233	266	294	322
Maximum unit power input ⁽²⁾													
Circuit A&B	kW	80	88	107	118	120	134	152	161	188	215	236	258
Cosine Phi unit at maximum power ⁽²⁾		0,88	0,87	0,88	0,88	0,87	0,88	0,87	0,88	0,88	0,88	0,88	0,88
Maximum unit current draw (Un-10%) ⁽³⁾													
Circuit A&B	A	144	158	192	211	215	241	273	289	337	385	422	460
Maximum unit current draw (Un) ⁽⁴⁾													
Circuit A&B - Standard Unit	A	133	146	177	195	199	222	252	266	310	354	390	425
Circuit A&B - Unit with option 231	A	100	110	133	148	151	166	192	200	233	266	296	326
Maximum start-up current, standard unit (Un) ⁽⁵⁾													
Circuit A&B	A	307	356	352	406	409	396	462	440	485	529	600	636
Max. start-up current, unit with soft starter (Un) ⁽⁵⁾													
Circuit A&B	A	261	283	305	332	336	350	389	394	438	482	527	562

- (1) Conditions equivalent to the standardised Eurovent conditions (evaporator water input-output temperature = 12 °C/7 °C, outside air temperature = 35 °C)
 (2) Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15 °C, saturated condensing temperature 68.3 °C) and nominal voltage of 400 V (data given on the unit nameplate).
 (3) Maximum unit operating current at maximum unit power input and at 360 V.
 (4) Maximum unit operating current at maximum unit power input and at 400 V (values given on the unit nameplate).
 (5) Maximum instantaneous starting current at operating limits (maximum operating current of the smallest compressor(s) + current of the fan(s) + locked rotor current of the largest compressor).
 Fan motor electrical data reported upstream the variable speed drive at Eurovent equivalent conditions and motor ambient air temperature of 50 °C at 400 V:
 Current 3.8 A; Start-up current 20 A; Power input: 1.75 kW.

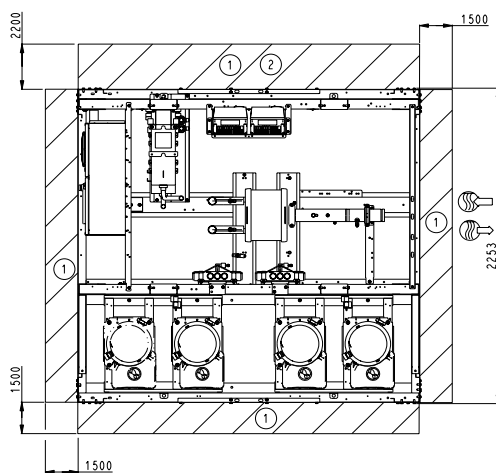
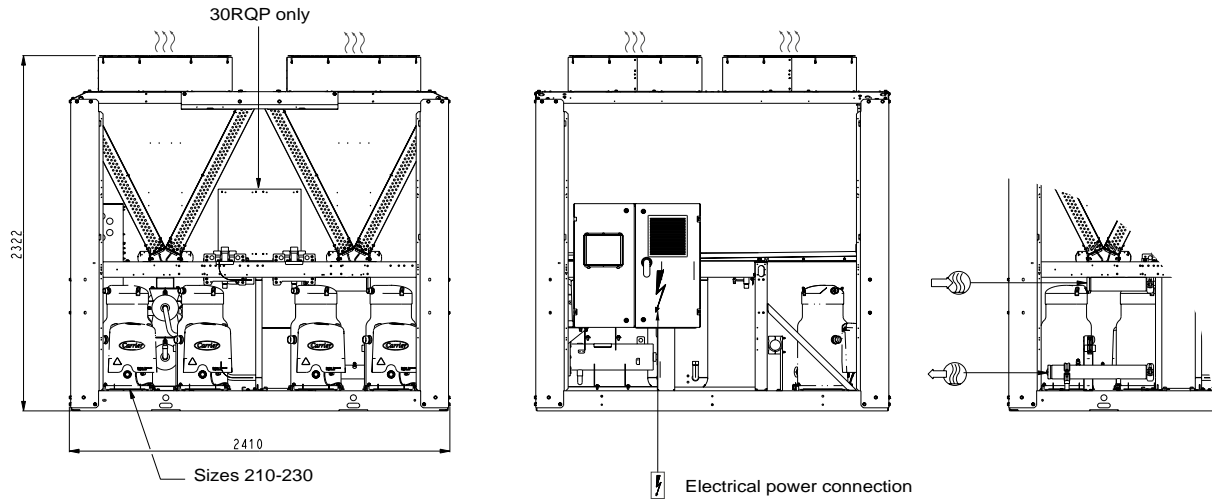
30RQP		160	180	210	230	240	270	310	330	380	430	470	520
Power circuit													
Nominal power supply	V-ph-Hz	400 - 3 -50											
Voltage range	V	360 - 440											
Control circuit supply		24 V via internal transformer											
Nominal unit current draw ⁽¹⁾													
Circuit A&B	A	97	107	130	144	147	162	186	195	227	260	288	316
Maximum unit power input ⁽²⁾													
Circuit A&B	kW	81	88	108	118	120	134	153	161	188	215	237	259
Cosine Phi unit at maximum power ⁽²⁾		0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88
Maximum unit current draw (Un-10%) ⁽³⁾													
Circuit A&B	A	142	154	189	208	211	237	268	284	331	378	416	454
Maximum unit current draw (Un) ⁽⁴⁾													
Circuit A&B - Standard Unit	A	131	142	174	192	195	218	247	261	305	348	383	419
Circuit A&B - Unit with option 231	A	98	108	131	146	148	164	188	197	230	262	291	321
Maximum start-up current, standard unit (Un) ⁽⁵⁾													
Circuit A&B	A	305	353	349	402	405	392	458	436	479	523	594	629
Max. start-up current, unit with soft starter (Un) ⁽⁵⁾													
Circuit A&B	A	259	279	302	329	332	346	384	389	433	476	520	556

- (1) Conditions equivalent to the standardised Eurovent conditions (evaporator water input-output temperature = 12 °C/7 °C, outside air temperature = 35 °C)
 (2) Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15 °C, saturated condensing temperature 68.3 °C) and nominal voltage of 400 V (data given on the unit nameplate).
 (3) Maximum unit operating current at maximum unit power input and at 360 V.
 (4) Maximum unit operating current at maximum unit power input and at 400 V (values given on the unit nameplate).
 (5) Maximum instantaneous starting current at operating limits (maximum operating current of the smallest compressor(s) + current of the fan(s) + locked rotor current of the largest compressor).
 Fan motor electrical data reported upstream the variable speed drive at Eurovent equivalent conditions and motor ambient air temperature of 50 °C at 400 V:
 Current 3.8 A; Start-up current 20 A; Power input: 1.75 kW.

DIMENSIONS/CLEARANCES

30RQM/30RQP 160-230 (with and without hydraulic module)

Unit without hydraulic module



Key:

All dimensions are in mm.

- ① Clearances required for maintenance and air flow
- ② Clearances recommended for removal of the coils

Water inlet

Water outlet

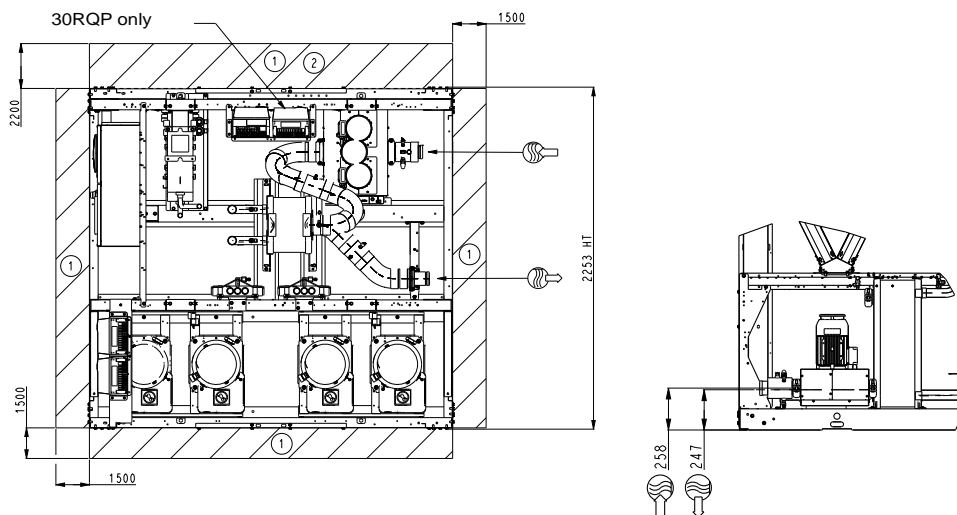
Air outlet, do not obstruct

Control box

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution points and center of gravity coordinates please refer to the dimensional drawings.

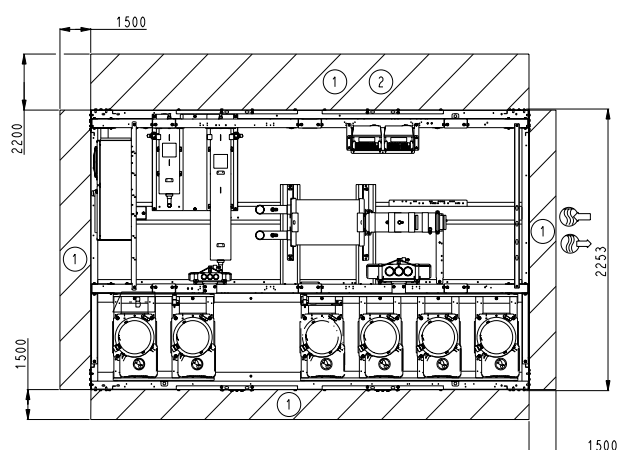
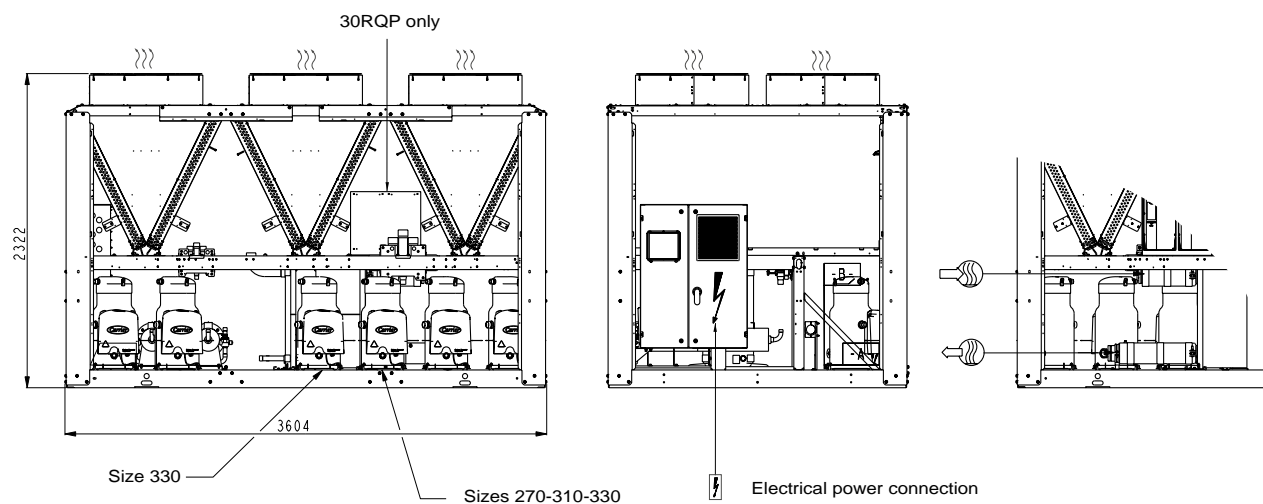
Unit with hydraulic module



DIMENSIONS/CLEARANCES

30RQM/30RQP 240-330 (with and without hydraulic module)

Unit without hydraulic module

**Key:**

All dimensions are in mm.

- ① Clearances required for maintenance and air flow
- ② Clearances recommended for removal of the coils

Water inlet

Water outlet

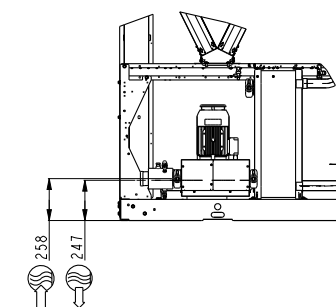
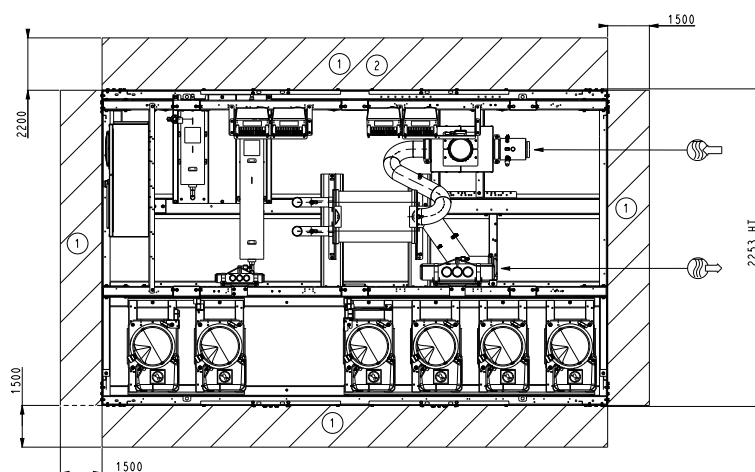
Air outlet, do not obstruct

Control box

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution points and center of gravity coordinates please refer to the dimensional drawings.

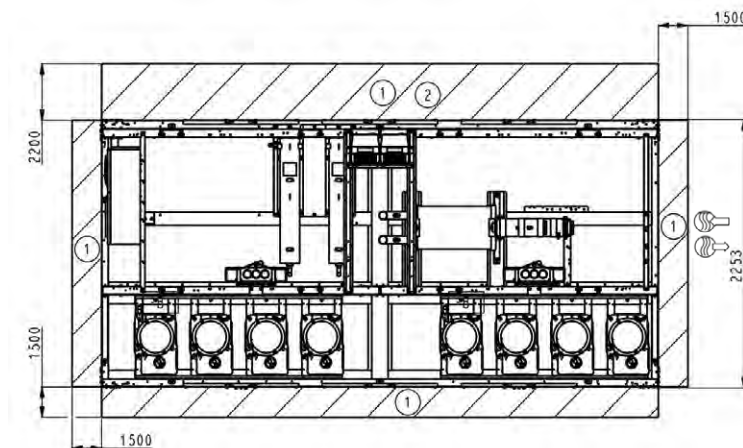
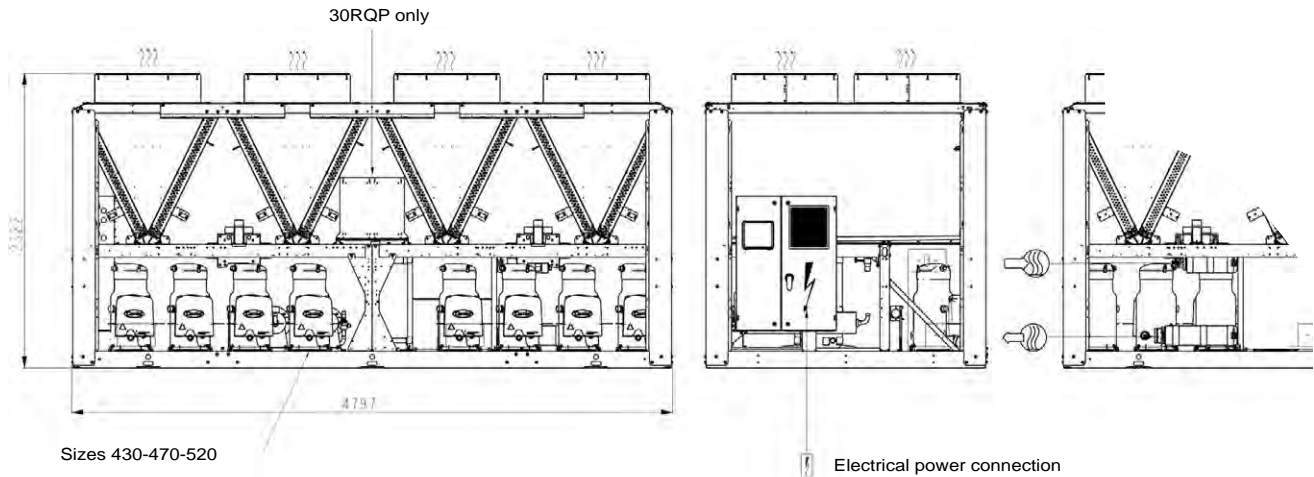
Unit with hydraulic module



DIMENSIONS/CLEARANCES

30RQM/30RQP 380-520 (with and without hydraulic module)

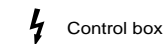
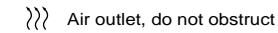
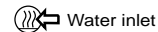
Unit without hydraulic module



Key:

All dimensions are in mm.

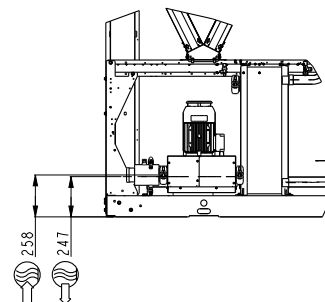
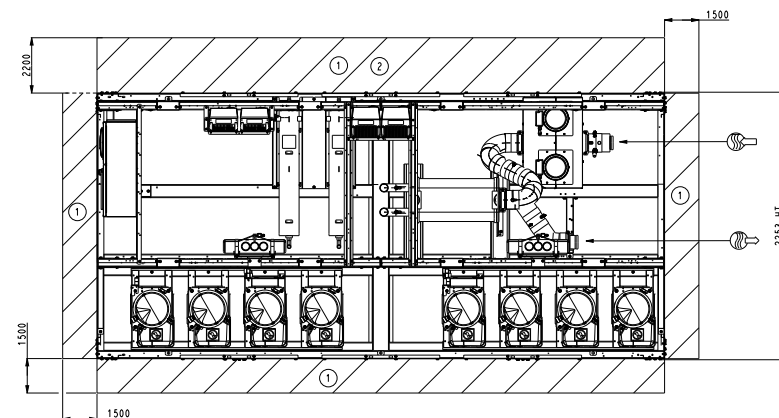
- ① Clearances required for maintenance and air flow
- ② Clearances recommended for removal of the coils



Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution points and center of gravity coordinates please refer to the dimensional drawings.

Unit with hydraulic module



NEW

HEAT PUMPS WITH GREENSPEED® INTELLIGENCE



Unit with low noise level option

Low environmental impact

High full and part load efficiency

Compact and simple to install

Low refrigerant charge

Superior reliability

30RQ/30RQP 165R-520R

Heating capacity 170-530 kW

Cooling capacity 160-500 kW

AquaSnap® heat pumps are the best solution for commercial and industrial applications where installers, engineering and design departments and building owners require reduced installation costs, optimal performances and maximum quality.

The latest generation AquaSnap® is available in two versions:

- The AquaSnap® (30RQ) version is a compact all-in-one package optimised for full-load applications where reduced investment cost (low CapEx) is required.
- The premium AquaSnap® version with Greenspeed® intelligence (30RQP) is optimised for part load applications where a high SEER, SEPR, SCOP or IPLV value is required. This version is equipped with a variable speed pump and fans, providing premium part load efficiency to reduce maintenance costs over the lifespan of the chiller. In addition, the sound levels achieved under the part load conditions are particularly low. Besides operating efficiently and quietly, the AquaSnap® range with Greenspeed® intelligence operates from -20 °C up to +48 °C as standard.

AQUASnap greenspeed



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

R-32: THE BEST SOLUTION FOR SCROLL HEAT PUMPS



Carrier was the first to introduce the R-1234ze HFO with ultra-low GWP in screw chillers, as far back as early 2016. Today, having examined its main properties, Carrier has chosen R-32 refrigerant to replace high-GWP R-410A refrigerant in its Scroll heat pumps, for its lower environmental impact, high energy efficiency, good availability and ease of use.

R-32 is currently the ideal refrigeration solution for units equipped with Scroll compressors. By using R-32 refrigerants, Carrier has reduced the carbon footprint of its AquaSnap® range of heat pumps by 80%. This is the result of a much lower GWP and a significant reduction in the system's cooling charge compared to the previous generation that used R-410A.

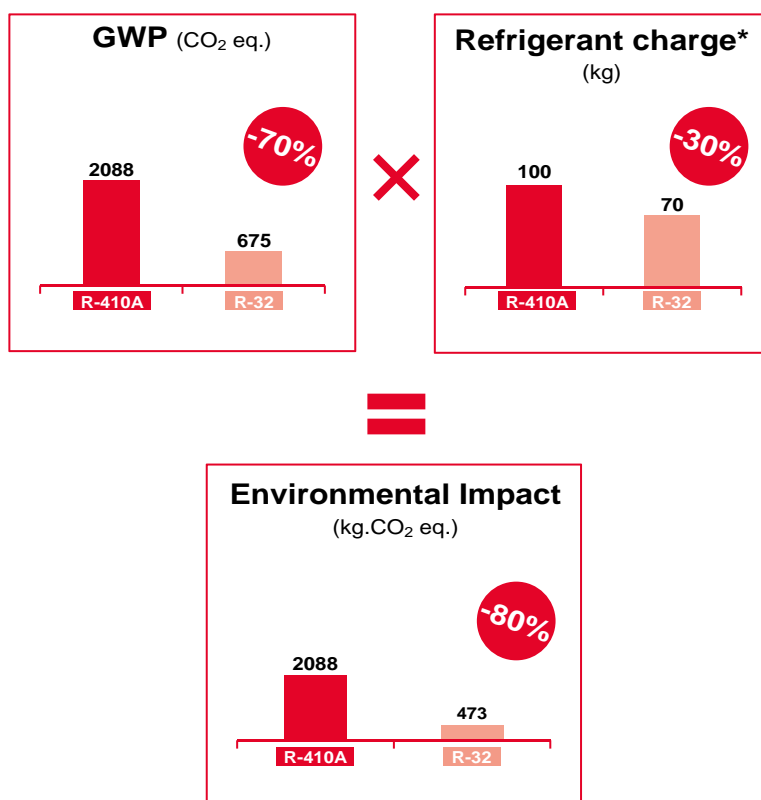
R-32 is also the right choice economically, reducing the locally imposed tax burden on HFCs based on the CO₂ impact.



CO₂ FOOTPRINT
REDUCED BY UP TO **80%**

Lower environmental impact (-80% compared to R410A)

- R-32 has zero ozone depletion potential (ODP)
- The Global Warming Potential (GWP) of R-32 is 675, i.e. approximately one third of that of R-410A (PRP 2088)
- The AquaSnap® R-32 cooling charge is reduced by 30% compared to the previous version using R-410A*
- The carbon footprint of AquaSnap® R-32 is therefore 473 (675 x 0.7), i.e. 80 % lower than the version using R-410A (2088 x 1)



* Reduced refrigerant charge in Carrier heat pumps thanks to the use of R-32 and a new coil design.

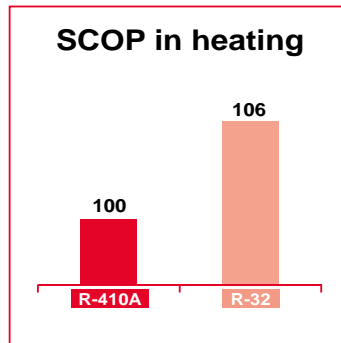
R-32: THE BEST SOLUTION FOR SCROLL HEAT PUMPS



SCOP up to +6%

High energy efficiency

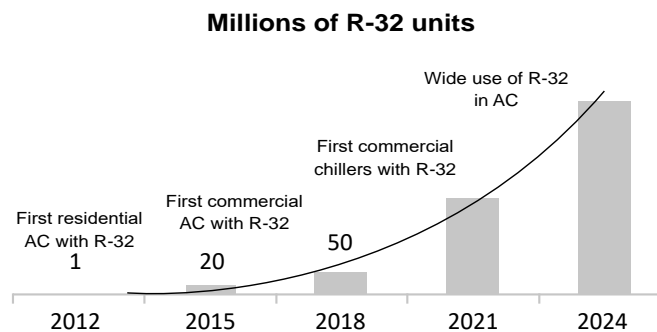
The seasonal efficiency of AquaSnap® R-32 is higher than that of the previous R-410A version by:
- approximately 6% in heating mode



SIMPLICITY

Widely available and easy to use

More than 50 million R-32 air conditioning units are in circulation on the global market. While R-32 has been used for some time in residential and commercial air conditioning units, most manufacturers now use R-32 in VRF systems, heat pumps, which means R-32 is widely available around the world.



R-32 has been widely available for over 15 years, as it comprises 50% of the composition of R-410A.

R-32 is easy to use: it is a pure refrigerant, therefore it is not necessary to drain the entire circuit in the event of a leak.



SAFETY

R-32 is an A2L classified refrigerant thanks to its low flammability.

- **No specific safety requirements** for transporting chillers by road or for outdoor installation.
- The service tools must be **certified** for **A2L** refrigerants in accordance with standard ISO 817 or EN378.
- Service technicians **must be qualified for brazing components** on PED 2 fluid units.

AQUASNAP® - CUSTOMER BENEFITS

■ Outstanding performance

Equipped with variable-speed fans (VSD as standard and EC optional) and optional variable-speed pumps, Carrier's AquaSnap® 30RQP range with Greenspeed® intelligence automatically adjusts the cooling capacity and water flow to perfectly adapt to the building's requirements or load variations. The result is optimal operation at both full load and part load (up to 5.4 SEER 3.9 SCOP). The 30RQP offers energy efficiency up to 10% higher than the previous range with the same or a smaller footprint.

The range is already fully compliant with the 2021 Ecodesign regulations.



SCOP up to **3.9**

■ Intelligence and connectivity

The advanced SmartVu™ control system displays operating parameters in real time, making it intuitive and particularly user-friendly. The AquaSnap® 30RQP range is also characterised by a brand new smart energy monitoring function which provides users with smart data such as electrical energy consumption in real time, supplied cooling and heating energy and instantaneous and average seasonal energy efficiency values. For even greater energy savings, the AquaSnap® 30RQP can be monitored remotely by Carrier experts to further optimise the energy consumption level.



SMART ENERGY
MONITORING

■ Extensive scope

The AquaSnap® range is suitable for a very wide range of applications from tertiary to industrial processes. The range can operate at outdoor temperatures from -20 °C to +48 °C and with negative water temperatures (-8 °C). From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaSnap® 30RQP units meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate or application.



BETWEEN
-20 °C
and **48 °C**

■ Easy installation & maintenance

Thanks to the variable-speed pumps up to 950 kW, automatic adjustment of the nominal water flow rate via electronic control and automatic measurement of the unit's energy performance under real conditions, the pumping energy consumption is reduced by almost two thirds: these new features guarantee peace of mind for installers and maintenance companies and lower energy bills for users.



Pumping energy
reduced by
up to **66%**

AQUASNAP® - CUSTOMER BENEFITS

AquaSnap® liquid chillers and heat pumps are designed to meet current and future Ecodesign and F-Gas European regulation requirements in terms of energy efficiency and reduced CO₂ emissions. They use the best technologies available today:

- Reduced refrigerant charge of non-ozone depleting R-32A refrigerant with low GWP
- Scroll compressors
- Greenspeed® variable-speed fans (30RQP models)
- Brazed-plate heat exchangers with reduced pressure drops
- Self-regulating microprocessor control with Greenspeed® intelligence
- Colour touch screen with web connectivity options

Both AquaSnap® versions can be equipped with a built-in hydraulic module, limiting the installation to conventional operations such as connection of the power supply and the supply and return piping (plug & play), according to the dimensions of the standard unit.

Recommended by Carrier, the AquaSnap® can be equipped with one or two Greenspeed® variable-speed pumps to significantly reduce energy costs linked to pumping (reduction of more than two-thirds), ensure optimum water flow rate control, and improve overall system reliability.



Very economical operation

- High unit full- and part-load energy efficiency and efficient design of the water side:
 - SCOP 35°C up to 3.9 (30RQP version).
 - Multiple scroll compressors equipped with a high-efficiency motor which can exactly match the cooling capacity to the load required
 - Electronic expansion valve enabling operation at a lower condensing pressure and improved use of the evaporator heat exchange surface (superheat control)
 - Aluminium micro-channel heat exchangers and Greenspeed® variable-speed fans (30RQP version)
 - Low pressure drop brazed plate heat exchangers (< 45 kPa under Eurovent conditions).

- Specific control functions to reduce unit cooling energy use during occupied and unoccupied periods:
 - Internal timer: switches the chiller on/off and controls operation at a second setpoint
 - Setpoint automatically offset based on the outdoor air temperature or room air temperature (via an option)
 - Floating high pressure (HP) management
 - Variable-speed fan control
 - Cooling demand limitation.

Refer to the control section for more information.

- Greenspeed® variable-speed pump to reduce pumping energy consumption by up to two-thirds (option recommended by Carrier):
 - Eliminate energy losses through the water flow rate control valve by electronically setting the nominal water flow rate
 - Save energy during stand-by periods or part-load operation by automatically reducing the water pump speed. The energy consumption of the pump motor varies according to the cube of the speed, so that a reduction in speed of just 40% can reduce energy consumption by 80%
 - Improved unit part-load performance (increased SEER/SCOP value with variable water flow according to standard EN14825).

Refer to the hydraulic option section for more information.



- Extra energy savings through multiple options:
 - Carrier drycooler Free cooling mode management
 - Partial heat recovery.
- Reduced maintenance costs:
 - Fast diagnosis of possible incidents and their history via the control
 - Programmable maintenance alert
 - Programmable F-Gas leak monitoring alert

AQUASNAP® - CUSTOMER BENEFITS

Low noise level

- Condenser with fixed-speed fans (30RQ):
 - Optional low-speed fans (700 rpm) and compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
 - Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
 - Low noise 6th generation Flying Bird™ fans, made of a composite material (Carrier patent)
 - Rigid fan installation for reduced noise (Carrier patent).
- Condenser with Greenspeed® variable-speed fans (30RQP) recommended by Carrier for even quieter operation):
 - Optional factory setting of the fan at low speed, with compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
 - Exceptional acoustic signature during part-load operation through smooth fan speed variation.
- Specific control functions or features to reduce noise level during the night or unoccupied periods:
 - Night-time sound control with cooling capacity and fan speed limitation
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by flexible anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
 - Acoustic compressor enclosure, reducing radiated noise emissions (option).



Quick and easy installation

- Compact design:
 - AquaSnap® units are designed with compact dimensions for easy installation.
 - With a length of approximately 4.8 m for 550 kW and a width of 2.25 m, the units require minimal floor space.
- Integrated hydraulic module (option):
 - Low or high-pressure water pump (as required)
 - Single or dual pump (as required) with runtime balancing and automatic changeover to the back-up pump if a fault develops

- Built-in variable-speed pumps with automatic nominal water flow adjustment via electronic control on the user display.
- Water filter protects the water pump against circulating debris
- Pressure sensors for direct numerical display of the water flow rate and water pressures
- Thermal insulation and frost protection down to -20 °C, using a heater (option)
- High-capacity membrane expansion tank (option).
- Built-in hydraulic module with Greenspeed® variable-speed pump (option recommended by Carrier):
 - Quick and easy electronic setting of the nominal water flow rate when the unit is commissioned, thus eliminating the need to adjust the water flow rate control valve
 - Automatic control of the pump speed based on constant speed, constant pressure difference or constant temperature difference.
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch with high trip capacity
 - 24 V control circuit using an integrated transformer.
- Simplified hydraulic connections:
 - Victaulic type couplings on the exchanger;
 - clearly identified and practical reference marks for entering and leaving water connections;
- Fast unit commissioning
 - Systematic factory test before shipment
 - Quick-test function for step-by-step verification of the sensors, electrical components and motors.

Reduced installation costs

- Optional Greenspeed® variable-speed pump with hydraulic module (option recommended by Carrier)
 - Cut costs relating to the water flow control valve
 - The design of the water system with variable primary flow (VPF) can provide significant installation cost savings compared with traditional constant primary systems with variable secondary circuits; elimination of the secondary distribution pump, etc.
 - Water system design with fan coils fitted with 2-way valves instead of 3-way valves.
- No buffer tank required thanks to Carrier's advanced control algorithm
 - Minimum water loop volume reduced to 2.5 l/kW.

AQUASNAP® - CUSTOMER BENEFITS

Environmental responsibility

AquaSnap® liquid chillers with Greenspeed® intelligence are a boost for green cities and contribute to a sustainable future. Combining a refrigerant charge up to 30% lower, along with R-32 refrigerant with a GWP 70% lower than that of the previous version using R410A, and exceptional energy efficiency, this chiller significantly reduces energy consumption while reducing carbon dioxide emissions by throughout its life cycle.

- The AquaSnap® liquid chiller is equipped with an automatic energy meter that indicates the instantaneous and overall cooling energy at the outlet, the instantaneous and overall electrical energy consumption, the instantaneous and average seasonal energy efficiency for monitoring and a unit performance check.
- Pumping energy consumption can be reduced by up to two thirds using Greenspeed® variable-speed pumps
- 40% lower refrigerant charge: the micro-channel technology used for condenser coils optimises heat transfer while minimising the refrigerant volume.
- Sealed refrigerant circuits:
 - reduction of leaks thanks to the absence of capillary tubes and the use of flare connections
 - verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - discharge line shut-off valve and liquid line service valve for simplified maintenance
 - qualified Carrier maintenance personnel to provide refrigerant servicing
 - ISO 14001 production plant
- Refrigerant leak detection: available as an option, this additional dry contact allows reporting of possible leaks. The leak detector (supplied externally) should be mounted in the most likely leak location.

Superior reliability

- State-of-the-art concept
 - Two independent refrigerant circuits; the second one automatically takes over if the first one develops a fault, maintaining partial cooling in all circumstances
 - All compressor components are easily accessible on site, minimising downtime
 - V-coil design to protect the coils against hail impact

- Optional Enviro-shield® anti-corrosion coil coating for use in moderately corrosive environments. The coating is applied using an electroless conversion process which modifies the surface of the aluminium producing a coating that is integral to the coil. Immersion in a bath to ensure 100% coverage. No heat transfer variation, tested for 4000 hours in salt spray per ASTM B117
- Optional Super Enviro-shield® anti-corrosion coil coating for use in extremely corrosive environments. Extremely durable and flexible epoxy polymer coating applied on micro-channel heat exchangers by electro coating process with a final UV protective topcoat. Minimal heat transfer variation, tested for 6000 hours in salt spray per ASTM B117, superior impact resistance per ASTM D2794
- Electronic flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - The control algorithm prevents excessive compressor cycling and reduces the quantity of water in the water loop (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure
 - Automatic fan speed adjustment in case of coil fouling (30RQP model)
 - Soft fan start to increase unit lifetime (30RQP model).
- Exceptional endurance tests:
 - To design critical components and sub-assemblies to minimise the risk of failure on site, Carrier uses specialised laboratories and advanced dynamic simulation tools.
 - To ensure that the units reach customer sites in the same condition as they are when tested in the factory, Carrier tests the machine behaviour during transportation over 250 km. The road test is based on a military standard and is the equivalent to 5000 km by truck on a normal road.
 - To guarantee the coil corrosion resistance, salt spray corrosion resistance tests are performed in the group's laboratory.
 - In addition, to maintain the unit's performance throughout its operating life whilst minimising maintenance costs, end users can access the "Connected Services" remote monitoring service.

AQUASNAP® - CUSTOMER BENEFITS

Designed to support Green Building Design

A green building is a building that is environmentally sustainable and is designed, constructed and operated to minimise the total impact on the environment.

The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

The air conditioning system can use between 30 and 40% of the annual building energy consumption. Choosing the right air conditioning system is one of the main considerations when designing a green building. For buildings with a load that varies throughout the year, the AquaSnap® 30RQP unit offers a solution to this important challenge.

A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.

The following example looks at how Carrier's new AquaSnap® range helps customers affected by LEED® building certification.

Energy saving certificate

The AquaSnap® 30RQP unit is eligible for energy saving certificates in France (CEE) in comfort, industrial and agriculture applications:

- Floating High pressure control (by modulating the air flow through fan activation and speed)
- Floating Low pressure control
- Variable speed on asynchronous fan motor
- Variable speed on asynchronous pump motor

For more details about financial incentives in France, please refer to the "CEE product sheet".

The AquaSnap® range and LEED® certification

The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

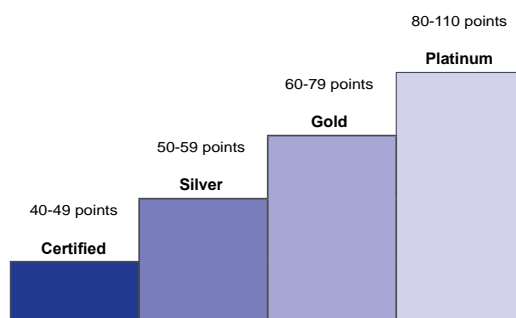
- sustainable Sites (SS)
- water efficiency (WE)
- energy and atmosphere (EA)
- materials and resources (MR)
- indoor environmental quality (IEQ)
- innovation in design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain the same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points



The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impact of each component or sub-system on the building as a whole.

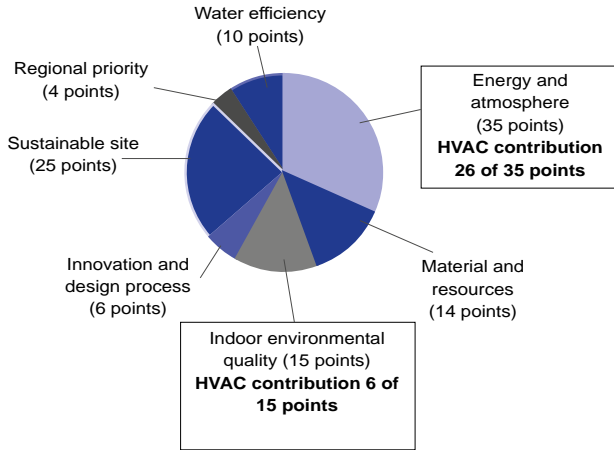
While the LEED® green building certification programs do not certify products or services, choosing the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points

AQUASNAP® - CUSTOMER BENEFITS

Designed to support Green Building Design

Overview of LEED® for new construction and major renovations



The new AquaSnap® units from Carrier can help building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- EA prerequisite 2: minimum energy performance
- 30RQP units exceed the energy efficiency requirements of ASHRAE 90.1-2007; therefore they satisfy the prerequisites.
- EA prerequisite 3: fundamental refrigerant management
30RQP units do not use chlorofluorocarbon (CFC) refrigerants, thus satisfying the prerequisites.
- EA credit 1: Optimise energy performance (1 to 19 points):
Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90.1-2007 reference. 30RQP units, which are designed for high performance especially during part load operation, help to reduce the building's energy consumption and therefore to gain points for this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used to analyse energy. It meets the modelling requirements for this credit and produces reports which can be easily transferred to LEED® charts.
- EA credit 4: enhanced refrigerant management (2 points)
With this credit, LEED® awards systems that minimise the installed system's Ozone Depletion Potential (ODP) and Global Warming Potential (GWP). 30RQP units use a reduced R-32 charge and therefore help satisfy the requirements of this LEED® credit.

NOTE: This section describes the prerequisites and credit requirements in LEED® for new construction and is directly related to 30RQP units. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the HVAC system as a whole.

i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: fundamental commissioning of energy management systems;
- EA credit 3: enhanced commissioning (2 points);
- EA credit 5: measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

30RQ TECHNICAL OVERVIEW

COPPER/ALUMINIUM COILS (30RQ)

- Protective heat shrink sleeves around the distribution sections
- Coil heaters to prevent frost formation and help drain condensate during defrosting



SIXTH GENERATION FLYING BIRD™ FIXED-SPEED FANS

- Exclusive Carrier design
- Fan blade design inspired by nature
- High efficiency version with AC motor technology



SmartVu™ control

- 9 languages available
- 4.3" user-friendly touch screen
- All main parameters displayed on one screen
- Direct access to the unit's technical drawings and the main service documents
- Very easy online monitoring
- Easy and secure access to unit parameters
- Optional BACnet, J-Bus or LON communication interfaces

SMART ENERGY CONSUMPTION MONITORING

- Real time energy consumption estimation (kWh)
- Estimation of the supplied cooling/heating energy (kWh)
- Instantaneous and average energy efficiency values under real operating conditions
- Remote monitoring with "Connected service"

SCROLL COMPRESSORS



REDUCED REFRIGERANT CHARGE



HIGH-EFFICIENCY BRAZED PLATE HEAT EXCHANGER

- Latest generation asymmetrical type
- Low pressure drop



30RQP TECHNICAL OVERVIEW



FAN SPEED REGULATOR



SIXTH GENERATION FLYING BIRD™ VARIABLE-SPEED FANS

- Carrier fan blade design inspired by nature
- Patented algorithm to control the fan speed
- Dedicated variator or EC type motor
- Night mode operation



VARIABLE-SPEED PUMP

- Water flow electronic control and reading
- Automatic protection of the pump against low pressure
- Multiple control options:
 - constant flow with low speed mode on standby
 - variable flow based on pressure difference or constant temperature

PUMP SPEED REGULATOR



TECHNICAL INNOVATIONS

SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - Innovative smart energy monitoring, providing users with smart data such as real-time electrical energy consumption and cooling capacity, and instantaneous and average energy efficiency values.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
 - Display of trend curves for the main values
 - Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
 - Blackbox memory

■ 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: closing of this contact activates a second setpoint (e.g.: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

TECHNICAL INNOVATIONS

Energy management module (option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: enables the setpoint to be reset based on the indoor air temperature of the building (with Carrier thermostat).
- Setpoint reset: the cooling setpoint is reset based on a 4-20 mA signal.
- Demand limit: Enables the maximum chiller power to be limited based on a 4-20 mA signal.
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller power or current to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: when ice storage has finished, this input is used to return to the second setpoint (unoccupied mode).
- Time schedule override: closing of this contact cancels the effects of the time schedule.
- Out of service: This signal indicates that the chiller is completely out of service.
- Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
- Alert indication: this volt-free contact indicates the need to carry out a maintenance operation or the presence of a minor fault.
- Boiler control: this on/off output controls an independent boiler to provide hot water.

TECHNICAL INNOVATIONS

New generation of Flying Bird™ VI fans with AC or EC motors (option)



The 30RQ-RQP unit uses Carrier's sixth generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and a wide operating range. The fans use Carrier patented rotating shroud technology and back-swept blades with a wave-serration trailing edge inspired by nature.

They were designed and optimised for the 30RQ-RQP unit's air management system configuration and heat exchanger technology.

The fans and their shrouds use Carrier's robust and proven injection moulded composite thermoplastic construction.

On the 30RQP with option 17, the fans are driven by an EC motor, also known as brushless DC, with dedicated electronics to manage commutation. This offers high precision for fans that require higher efficiency and variable speed. The fans meet the latest European Ecodesign requirements for fan efficiency.

EC motor (option 17)



OPTIONS

Options	No.	Description	Advantages	30RQ/RQP 165R-520
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminum (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	165R-520R
Low-temperature brine solution	6B	Low temperature chilled water production down to -8 °C with ethylene or propylene glycol	Covers specific applications such as ice storage and industrial processes	165R-520R
High static fans	12	Unit equipped with high static variable-speed fans (maximum 200Pa), each fan being equipped with a connection flange allowing the connection to the ducting system.	Ducted fan discharge, optimised temperature control, based on the operating conditions and system characteristics	30RQP 165R-520R
Very low noise level	15LS	Aesthetic and sound absorbing compressor enclosure associated with low-speed fans	Noise level reduction in sensitive environments	165R-520R
EC fans	17	Unit equipped with EC fans	Enhances the unit energy efficiency	30RQP 165R-520R
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	165R-520R
Circuit Soft Starter	25E	Electronic starter on each circuit	Cost effective reduction of start-up current	165R-520R
Compressor Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	165R-520R
Water exchanger frost protection	41	Electric heater on the water exchanger and the water piping	Water exchanger module frost protection between 0°C and -20°C outside air temperature	165R-520R
Exchanger & hydraulic frost protection	42A	Electrical heaters on the water type heat exchanger, water pipes, hydraulic module and expansion tank	Water type heat exchanger and hydraulic module frost protection down to an outdoor air temperature of -20 °C	165R-520R
Exchanger & hydraulic frost protection	42B	Electric heater on the water exchanger hydraulic module and optional expansion tank & water buffer tank	Water type heat exchanger and hydraulic module frost protection down to an outdoor air temperature of -20 °C	165R-520R
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Production of free high-temperature hot water simultaneously with chilled water production (or hot water for heat pump)	165R-520R
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	165R-520R
Compressor suction and discharge valves	92A	Shut-off valves on the compressor suction and discharge piping	Simplified maintenance. Possibility to store the refrigerant charge in the cooler or condenser side during servicing	165R-520R
HP single-pump hydraulic module	116R	Single high-pressure water pump, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	165R-520R
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	165R-520R
LP single-pump hydraulic module	116T	Single low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	165R-520R
LP dual-pump hydraulic module	116U	Dual low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	165R-520R
Variable-speed single HP pump	116V	Single high pressure water pump with variable speed drive, water filter, electronic water flow control, pressure sensors. Multiple variable water flow control options. For more details, refer to the dedicated section (expansion tank not included; option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy savings (more than two-thirds), tighter water flow control, improved sytem reliability	165R-520R
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive, pressure sensors. Multiple variable water flow control options. For more details, refer to the dedicated section (expansion tank not included; option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy savings (more than two-thirds), tighter water flow control, improved sytem reliability	165R-520R

OPTIONS

Options	No.	Description	Advantages	30RQ/RQP 165R-520R
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	165R-520R
ModBus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	165R-520R
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	165R-520R
Energy management module	156	Control board with additional inputs/outputs. See Contacts available in option on control description.	Extended remote control capabilities (setpoint reset, ice storage end, demand limits, boiler on/off command, etc.)	165R-520R
Input contact for refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	165R-520R
Compliance with Russian regulations	199	EAC certification	Compliance with Russian regulations	165R-520R
Coil defrost resistance heaters	252	Electric heaters under the coils and the condensate pans	Prevents frost formation on the coils; compulsory in heating mode, if the outdoor temperature is below 0 °C	165R-520R
Insulation of the evaporator entering/leaving refrigerant lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/leaving refrigerant lines	165R-520R
Enviro-Shield anti-corrosion protection®	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	No
Super Enviro-Shield anti-corrosion protection®	263	Extremely durable and flexible epoxy polymer coating applied on micro-channel heat exchangers by electro coating process, final UV protective topcoat. Minimal thermal transfer variation, tested to withstand more than 6000 hours of constant neutral salt spray as per ASTM B117, improved impact resistance as per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	No
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	165R-520R
Compressor enclosure	279a	Compressor enclosure	Improved aesthetics, compressor protection against external elements (dust, sand, water, etc.)	165R-520R
230 V electrical plug	284	230 VAC power supply source provided with plug socket and transformer (180 VA, 0.8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	165R-520R
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play) and Protection of closed water systems from excessive pressure	165R-520R
Screwed water connection kit for DSH	303	DSH connections with screw connection sleeves	Easy installation. Allows unit connection to a screw connector	165R-520R
Welded water connection kit for DSH	304	DSH inlet/outlet welded connection sleeves	Easy installation	165R-520R
Water buffer tank module	307	Built-in water buffer tank	Avoids short cycle on compressors and ensures stable water in the loop	165R-520R
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, control capabilities extended to a drycooler used in Free Cooling mode	165R-520R
Compliance with UAE regulations	318	Additional label on the unit with rated power input, rated current and EER in accordance with AHRI 550/590	Compliance with ESMA standard UAE 5010-5:2016.	165R-520R
Compliance with Qatar regulations	319	Specific name plate on the unit with 415 V+/-6% power supply	Compliance with KAHARAMAA regulations in Qatar.	165R-520R
Process application or Out Europe installation	326	Specific option compatibility management	Allow options compatibility not available in standard due to Ecodesign compliance	No
Compliance with Moroccan regulations	327	Specific regulatory documentation	Compliance with Moroccan regulations	165R-520R

PHYSICAL DATA, SIZES 165R TO 520R

30RQ				165R	180R	210R	230R	270R	310R	330R	370R	400R	430R	470R	520R	
Heating																
Standard unit Full load performances*	HA1	Nominal capacity	kW	178	197	237	256	275	317	336	387	406	441	467	537	
		COP	kW/kW	3,88	3,80	3,84	3,84	3,82	3,82	3,81	3,82	3,81	3,80	3,73	3,80	
	HA2	Nominal capacity	kW	173	192	231	250	269	310	329	378	397	431	458	526	
		COP	kW/kW	3,16	3,09	3,14	3,12	3,11	3,10	3,09	3,10	3,09	3,10	3,03	3,09	
Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,42	3,43	3,37	3,44	3,46	3,50	3,54	3,49	3,54	3,51	3,50	3,54	
		η _{s heat 30/35°C}	%	134	134	132	135	135	137	139	137	139	138	137	139	
		P _{rated}	kW	134	150	179	194	209	241	256	295	310	336	358	410	
Cooling																
Standard unit Full load performances*	CA1	Nominal capacity	kW	164	181	215	236	254	302	324	362	381	413	439	500	
		EER	kW/kW	2,92	2,78	2,92	2,85	2,76	2,85	2,80	2,82	2,76	2,82	2,74	2,73	
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	3,88	3,77	3,82	3,86	3,81	4,10	4,18	4,07	4,06	3,97	3,96	4,07	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	4,61	4,47	4,52	4,43	4,38	4,69	4,62	4,73	4,63	4,70	4,60	4,65	
Unit + option 15LS Full load performance*	CA1	Nominal capacity	kW	155	171	204	223	239	285	305	341	358	389	414	470	
		EER	kW/kW	2,79	2,61	2,79	2,68	2,57	2,67	2,60	2,64	2,57	2,65	2,56	2,55	
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,16	4,00	4,19	4,08	4,02	4,48	4,49	4,45	4,32	4,43	4,37	4,30	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	4,68	4,52	4,65	4,50	4,46	4,86	4,76	4,91	4,75	4,90	4,80	4,78	
Sound levels																
Standard unit																
Sound power ⁽¹⁾				dB(A)	90,5	91,0	91,5	92,0	92,0	93,0	93,5	94,0	94,0	94,5	94,5	95,0
Sound pressure at 10 m ⁽²⁾				dB(A)	58,0	58,5	59,5	60,0	60,0	60,5	61,0	61,5	61,5	62,0	62,0	62,5
Unit + option 15LS ⁽³⁾																
Sound power ⁽¹⁾				dB(A)	85,0	86,0	86,5	87,0	87,0	88,0	88,0	89,0	89,0	89,5	90,0	90,0
Sound pressure at 10 m ⁽²⁾				dB(A)	53,0	53,5	54,0	54,5	54,5	55,5	55,5	56,5	56,5	57,0	57,5	57,5

- * In accordance with standard EN14511-3:2013.
 ** In accordance with standard EN14825:2013, average climate
 HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W
 HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W
 CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
η_{s heat 30/35°C} & SCOP_{30/35°C} Values in bold comply with Ecodesign Regulation (EU) No. 813/2013 for heating application
SEER_{12/7°C} & SEPR_{12/7°C} Applicable Ecodesign regulation: (EU) No 2016/2281.
 (1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
 (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
 (3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module



Eurovent certified values

PHYSICAL DATA, SIZES 165R TO 520R

30RQ		165R	180R	210R	230R	270R	310R	330R	370R	400R	430R	470R	520R
Dimensions													
Standard unit													
Length	mm	2410	2410	2410	2410	2410	3604	3604	3604	3604	4798	4798	4798
Width	mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height	mm	2324	2324	2324	2324	2324	2324	2324	2324	2324	2324	2324	2324
Unit + option 307													
Length	mm	3604	3604	3604	3604	3604	4798	4798	4798	4798	5992	5992	5992
Operating weight⁽⁴⁾													
Unité standard	kg	1569	1575	1784	1811	1817	2394	2452	2672	2678	3154	3180	3430
Unit + option 15LS ⁽³⁾	kg	1652	1658	1892	1920	1926	2520	2579	2817	2823	3317	3343	3611
Unit + option 15LS + option 116W ⁽³⁾	kg	1787	1793	2039	2067	2073	2715	2774	3051	3057	3551	3614	3882
Unit + option 15LS + option 116W + option 307 ⁽³⁾	kg	2771	2777	3022	3049	3055	3725	3783	4060	4066	4551	4614	4882
Compressors		Scroll hermetic 48,3 r/s											
Circuit A		1	1	2	2	2	2	2	2	2	3	3	4
Circuit B		2	2	2	2	2	3	3	4	4	4	4	4
Number of control stages		3	3	4	4	4	5	5	6	6	7	7	8
Refrigerant⁽⁴⁾		III	III	III	III	III	III	IV	IV	IV	IV	IV	IV
Fluide frigorigène⁽⁴⁾		R32/A2L											
Circuit A	kg	10,50	10,50	16,00	16,00	16,00	16,00	18,00	18,00	18,00	27,00	27,00	36,00
	teqCO ₂	7,1	7,1	10,8	10,8	10,8	10,8	12,2	12,2	12,2	18,2	18,2	24,3
Circuit B	kg	16,00	16,00	16,00	16,00	16,00	27,00	27,00	36,00	36,00	36,00	36,00	36,00
	teqCO ₂	10,8	10,8	10,8	10,8	10,8	18,2	18,2	24,3	24,3	24,3	24,3	24,3
Oil													
Circuit A	l	6,6	6,6	13,2	13,2	13,2	13,2	13,2	13,2	13,2	19,8	19,8	26,4
Circuit B	l	13,2	13,2	13,2	13,2	13,2	19,8	19,8	26,4	26,4	26,4	26,4	26,4
Capacity control		SmartVu™											
Minimum capacity	%	33	33	25	25	25	20	20	17	17	14	14	13
Air heat exchanger		Grooved copper tubes and aluminium fins											
Fans		FLYING-BIRD 6, axial fan with rotating impeller											
Standard unit													
Quantity		3	3	4	4	4	5	5	6	6	7	7	8
Maximum total air flow	l/s	14460	14460	19280	19280	19280	24100	24100	28920	28920	33740	33740	38560
Maximum rotation speed	tr/s	16	16	16	16	16	16	16	16	16	16	16	16
Water heat exchanger		Direct-expansion welded plate heat exchanger											
Water volume	l	16,2	16,2	16,2	20,7	20,7	38,7	48,6	48,6	48,6	48,6	52,2	58,5
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)											
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)											
Expansion vessel volume	l	50	50	50	50	50	80	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module		Victaulic® type											
Connections	inch	3	3	3	3	3	4	4	4	4	4	4	4
External parameter	mm	88,5	88,6	88,7	88,8	88,9	114,3	114,4	114,5	114,6	114,7	114,8	114,9
Casing paint		Colour code RAL 7035											

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 165R TO 520R

30RQP				165R	180R	210R	230R	270R	310R	330R	370R	400R	430R	470R	520R	
Heating																
Standard unit Full load performances*	HA1	Nominal capacity	kW	178	197	237	256	275	317	336	387	406	441	467	537	
		COP	kW/kW	3,88	3,80	3,84	3,84	3,82	3,82	3,81	3,82	3,81	3,80	3,73	3,80	
	HA2	Nominal capacity	kW	173	192	231	250	269	310	329	378	397	431	458	526	
		COP	kW/kW	3,16	3,09	3,14	3,13	3,11	3,10	3,09	3,10	3,09	3,10	3,03	3,10	
Seasonal energy efficiency**	HA1	SCOP _{30/35°C}	kWh/kWh	3,64	3,63	3,71	3,74	3,77	3,81	3,83	3,87	3,88	3,88	3,86	3,92	
		η _{s heat 30/35°C}	%	143	142	145	147	148	149	150	152	152	152	151	154	
		P _{rated}	kW	134	149	179	193	209	241	256	294	309	336	357	409	
Cooling																
Standard unit Full load performances*	CA1	Nominal capacity	kW	164	181	215	236	254	302	324	362	381	413	439	500	
		EER	kW/kW	2,92	2,78	2,91	2,85	2,76	2,85	2,80	2,82	2,76	2,81	2,74	2,73	
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,44	4,26	4,53	4,44	4,34	4,77	4,81	4,88	4,87	4,81	4,75	4,81	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,52	5,29	5,43	5,26	5,15	5,49	5,34	5,60	5,40	5,60	5,43	5,47	
Unit + option 15LS Full load performance*	CA1	Nominal capacity	kW	155	171	204	223	239	285	305	341	358	389	414	470	
		EER	kW/kW	2,77	2,60	2,77	2,67	2,56	2,66	2,59	2,63	2,56	2,64	2,55	2,54	
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	4,41	4,26	4,56	4,41	4,35	4,73	4,76	4,91	4,78	4,94	4,86	4,75	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	5,44	5,22	5,42	5,18	5,10	5,51	5,37	5,62	5,39	5,65	5,47	5,52	
Sound levels																
Standard unit																
Sound power ⁽¹⁾				dB(A)	90,5	91,0	91,5	92,0	92,0	93,0	93,5	94,0	94,0	94,5	94,5	95,0
Sound pressure at 10 m ⁽²⁾				dB(A)	58,0	58,5	59,5	60,0	60,0	60,5	61,0	61,5	61,5	62,0	62,0	62,5
Unit + option 15LS ⁽³⁾																
Sound power ⁽¹⁾				dB(A)	85,0	86,0	86,5	87,0	87,0	88,0	88,0	89,0	89,0	89,5	90,0	90,0
Sound pressure at 10 m ⁽²⁾				dB(A)	53,0	53,5	54,0	54,5	54,5	55,5	55,5	56,5	56,5	57,0	57,5	57,5

- * In accordance with standard EN14511-3:2013.
 ** In accordance with standard EN14825:2013, average climate
 HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W
 HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator frosting factor 0 m².K/W
 CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W
η_{s heat 30/35°C} & SCOP_{30/35°C} Values in bold comply with Ecodesign Regulation (EU) No. 813/2013 for heating application
SEER_{12/7°C} & SEPR_{12/7°C} Applicable Ecodesign regulation: (EU) No 2016/2281.
 (1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
 (2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
 (3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module



Eurovent certified values

PHYSICAL DATA, SIZES 165R TO 520R

30RQP		165R	180R	210R	230R	270R	310R	330R	370R	400R	430R	470R	520R
Dimensions													
Standard unit													
Length	mm	2410	2410	2410	2410	2410	3604	3604	3604	3604	4798	4798	4798
Width	mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height	mm	2324	2324	2324	2324	2324	2324	2324	2324	2324	2324	2324	2324
Unit + option 307													
Length	mm	3604	3604	3604	3604	3604	4798	4798	4798	4798	5992	5992	5992
Operating weight⁽⁴⁾													
Unité standard	kg	1569	1575	1784	1811	1817	2394	2452	2672	2678	3154	3180	3430
Unit + option 15LS ⁽³⁾	kg	1652	1658	1892	1920	1926	2520	2579	2817	2823	3317	3343	3611
Unit + option 15LS + option 116W ⁽³⁾	kg	1787	1793	2039	2067	2073	2715	2774	3051	3057	3551	3614	3882
Unit + option 15LS + option 116W + option 307 ⁽³⁾	kg	2771	2777	3022	3049	3055	3725	3783	4060	4066	4551	4614	4882
Compressors		Hermétique Scroll 48,3 tr/s											
Circuit A		1	1	2	2	2	2	2	2	2	3	3	4
Circuit B		2	2	2	2	2	3	3	4	4	4	4	4
Number of control stages		3	3	4	4	4	5	5	6	6	7	7	8
Refrigerant⁽⁴⁾		III	III	III	III	III	III	IV	IV	IV	IV	IV	IV
Fluide frigorigène⁽⁴⁾		R32/A2L											
Circuit A	kg	10,50	10,50	16,00	16,00	16,00	16,00	18,00	18,00	18,00	27,00	27,00	36,00
	teqCO ₂	7,1	7,1	10,8	10,8	10,8	10,8	12,2	12,2	12,2	18,2	18,2	24,3
Circuit B	kg	16,00	16,00	16,00	16,00	16,00	27,00	27,00	36,00	36,00	36,00	36,00	36,00
	teqCO ₂	10,8	10,8	10,8	10,8	10,8	18,2	18,2	24,3	24,3	24,3	24,3	24,3
Oil													
Circuit A	l	6,6	6,6	13,2	13,2	13,2	13,2	13,2	13,2	13,2	19,8	19,8	26,4
Circuit B	l	13,2	13,2	13,2	13,2	13,2	19,8	19,8	26,4	26,4	26,4	26,4	26,4
Capacity control		SmartVu™											
Minimum capacity	%	33	33	25	25	25	20	20	17	17	14	14	13
Air heat exchanger		Grooved copper tubes and aluminium fins											
Fans		FLYING-BIRD 6, axial fan with rotating impeller											
Standard unit													
Quantity		3	3	4	4	4	5	5	6	6	7	7	8
Maximum total air flow	l/s	14460	14460	19280	19280	19280	24100	24100	28920	28920	33740	33740	38560
Maximum rotation speed	tr/s	16	16	16	16	16	16	16	16	16	16	16	16
Water heat exchanger		Direct-expansion welded plate heat exchanger											
Water volume	l	16,2	16,2	16,2	20,7	20,7	38,7	48,6	48,6	48,6	48,6	52,2	58,5
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)											
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)											
Expansion vessel volume	l	50	50	50	50	50	80	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module		Victaulic® type											
Connections	inch	3	3	3	3	3	4	4	4	4	4	4	4
External parameter	mm	88,5	88,6	88,7	88,8	88,9	114,3	114,4	114,5	114,6	114,7	114,8	114,9
Casing paint		Colour code RAL 7035											

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module

(4) Values are guidelines only. Refer to the unit name plate.

ELECTRICAL DATA

30RQ		165R	180R	210R	230R	270R	310R	330R	370R	400R	430R	470R	520R
Power circuit supply													
Nominal voltage	V-ph-Hz	400 - 3 - 50											
Voltage range	V	360 - 440											
Control circuit supply		24 V via internal transformer											
Maximum operating input power ^{(1) or (2)}													
Circuit A&B	kW	74,6	84,2	99,4	109,0	118,6	138,7	148,3	168,3	177,9	193,2	207,6	237,2
Power factor at maximum power ^{(1) or (2)}													
Cosine phi standard unit		0,83	0,83	0,83	0,83	0,83	0,83	0,83	0,83	0,83	0,83	0,83	0,83
Nominal operating current draw ⁽⁴⁾													
Standard unit	A	100,8	113,2	134,4	146,8	159,2	186,6	199	226,4	238,8	260	278,6	318,4
Maximum operating current draw (Un) ^{(1) or (2)}													
Standard unit	A	129	145,6	172	188,6	205,2	239,9	256,5	291,2	307,8	334,2	359,1	410,4
Maximum current (Un-10%) ^{(1) or (2)}													
Standard unit	A	140,7	156,7	187,6	203,6	219,6	258,5	274,5	313,4	329,4	360,3	384,3	439,2
Maximum start-up current(Un) ^{(2) + (3)}													
Standard unit	A	305	362	348	401	418	453	469	504	520	547	572	623
Unit + option 25/25E	A	262	310	305	349	366	401	417	452	468	495	520	571

30RQP		165R	180R	210R	230R	270R	310R	330R	370R	400R	430R	470R	520R
Power circuit supply													
Nominal voltage	V-ph-Hz	400 - 3 - 50											
Voltage range	V	360 - 440											
Control circuit supply		24 V via internal transformer											
Maximum operating input power ^{(1) or (2)}													
Circuit A&B	kW	74,8	84,4	99,8	109,3	118,9	139,2	148,7	169	178,6	193,7	208,1	237,8
Power factor at maximum power ^{(1) or (2)}													
Cosine phi standard unit		0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85
Nominal operating current draw ⁽⁴⁾													
Standard unit	A	98,1	110,5	130,8	143,2	155,6	182,1	194,5	221	233,4	253,7	272,3	311,2
Maximum operating current draw (Un) ^{(1) or (2)}													
Standard unit	A	126,3	142,9	168,4	185	201,6	235,4	252	285,8	302,4	327,9	352,8	403,2
Maximum current (Un-10%) ^{(1) or (2)}													
Standard unit	A	138	154	184	200	216	254	270	308	324	354	378	432
Maximum start-up current(Un) ^{(2) + (3)}													
Standard unit	A	302	359	344	398	414	448	465	498	515	541	565	616
Unit + option 25/25E	A	259	307	301	346	362	396	413	446	463	489	513	564

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

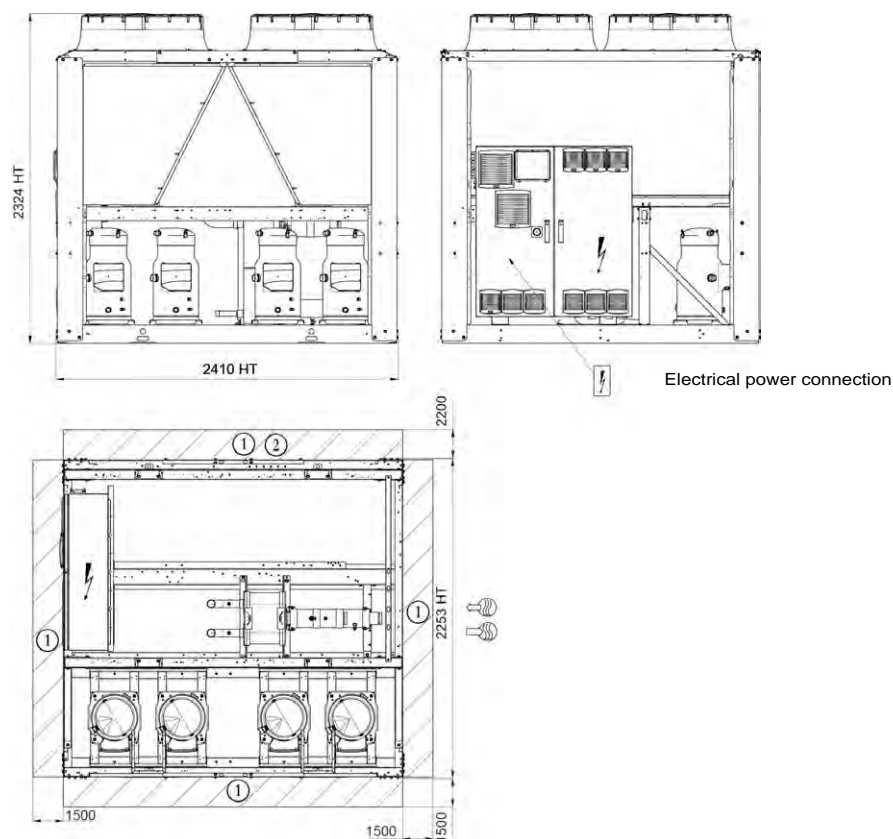
(3) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

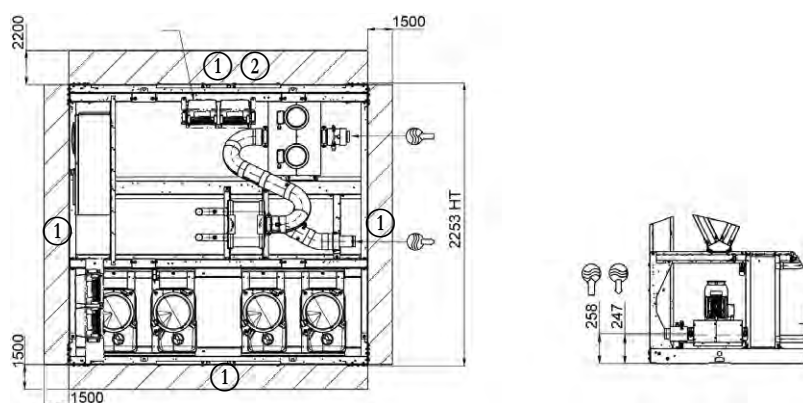
DIMENSIONS/CLEARANCES

30RQ/30RQP 165R-270R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

Water inlet

Water outlet

Air outlet, do not obstruct

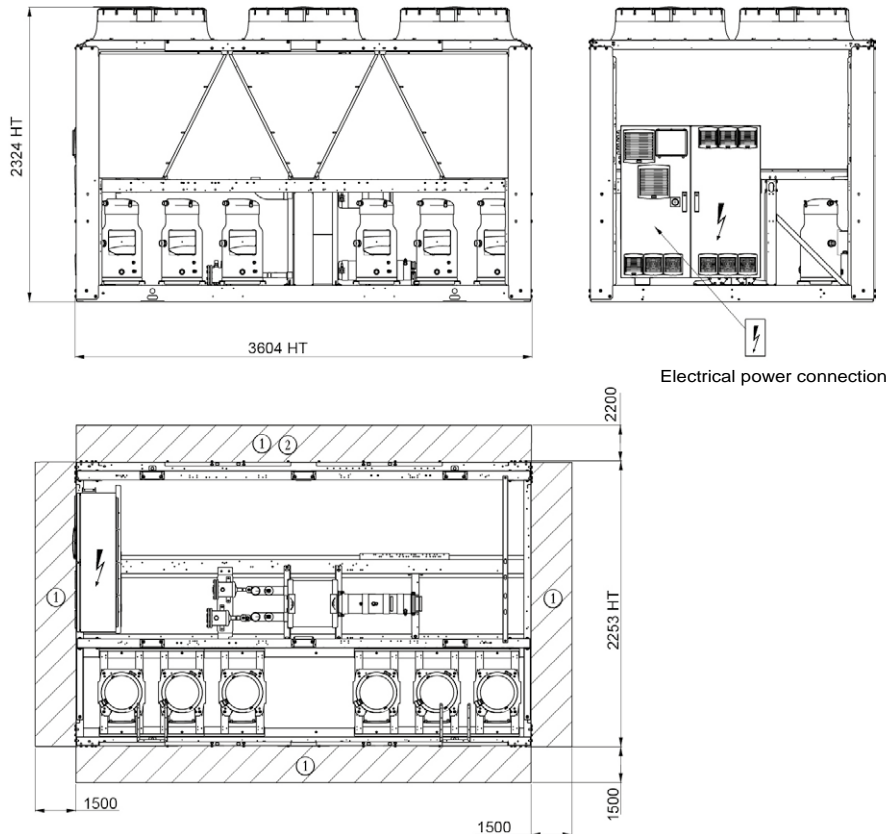
Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

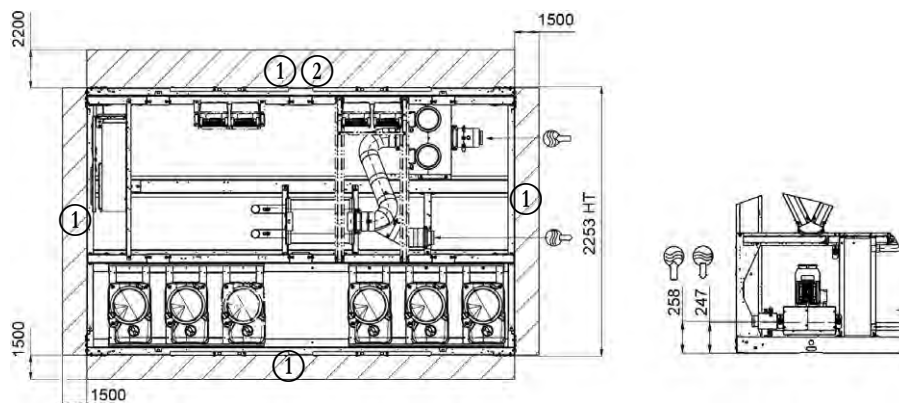
DIMENSIONS/CLEARANCES

30RQ/30RQP 310R-400R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

Water inlet

Water outlet

Air outlet, do not obstruct

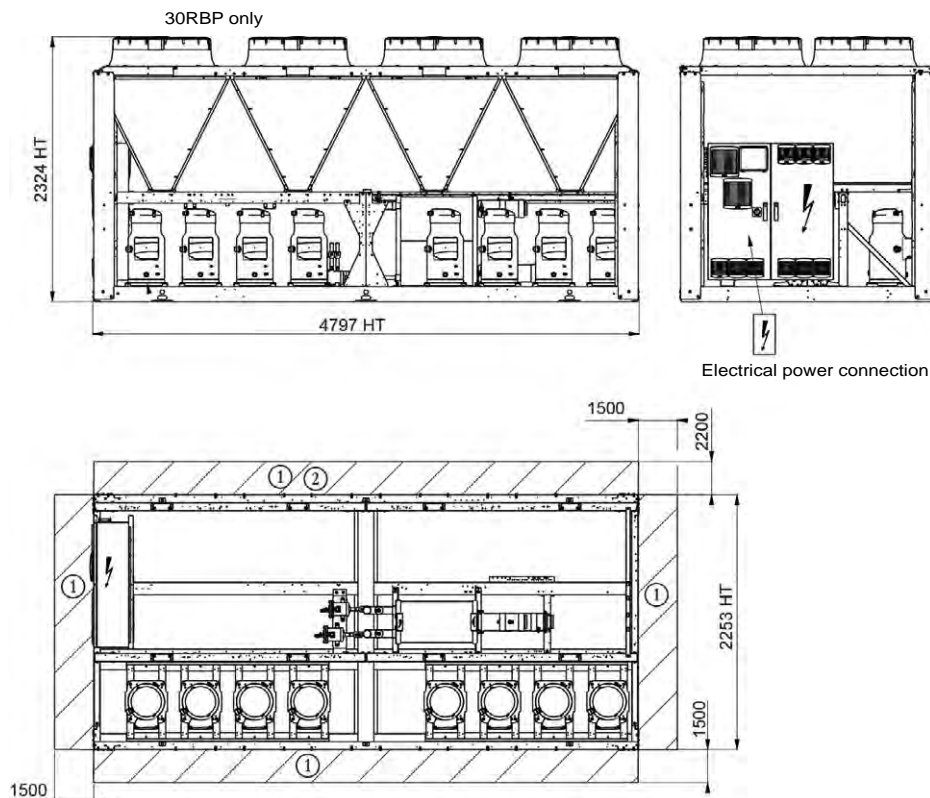
Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

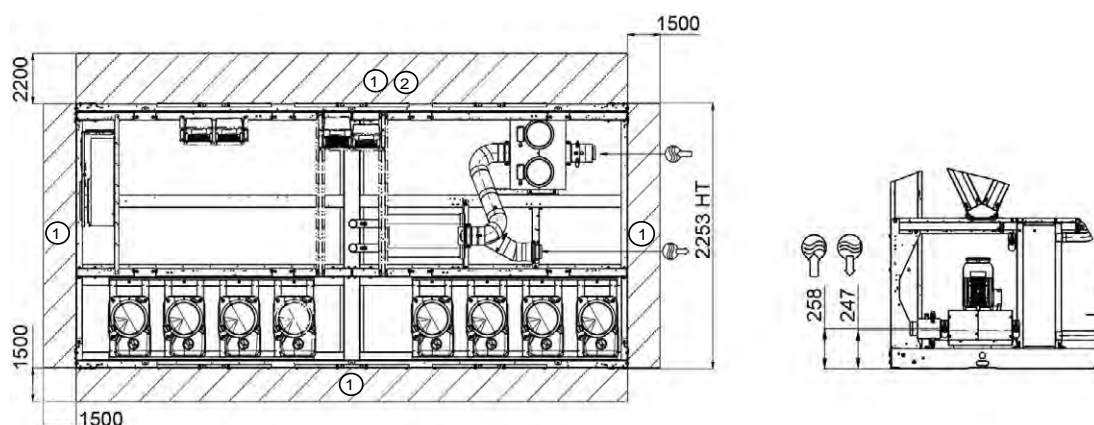
DIMENSIONS/CLEARANCES

30RQ/30RQP 430R-520R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

Water inlet

Water outlet

Air outlet, do not obstruct

Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

WATER-SOURCED HEAT PUMPS



61WG optimized for heating
Compact design
Plug and play approach
High efficiency

61WG-A

AQUASNAP
Heating

Nominal heating capacity 29-230 kW
Nominal cooling capacity 25-190 kW

The 61WG units are new Carrier chillers and heat pumps designed for commercial (offices, small hotels, leisure facilities), residential and industrial applications. All units offer a unique combination of high performance and functionality in an exceptionally compact chassis.

61WG units are designed for high-temperature heating applications with hot water production possible up to 65 °C.

A large number of options is available for the whole range:

- hydraulic modules with or without variable water flow rate,
- reinforced sound insulation,
- stacking and connection of two units



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Features

- Reduced footprint
- Scroll compressors and R-410A refrigerant
- Variable-flow pump
- Low-noise option (-3 dB(A))
- Stacking of two units for increased capacity (up to size 090)
- Several communication protocols available: JBus, BacNet, MS/TP, LON
- Water connection at the top or rear (61WG only)

Available versions

61WG - optimised for heating

- High temperature up to +65 °C
- Evaporator temperature down to -5 °C
- Control of the three-way diverter valve for domestic hot water and space heating requirements
- System approach - the Heating System Manager maximises the global efficiency of complex systems where the 61WG units are combined with an auxiliary heating source to serve multi-zone space heating and domestic hot water production.

The right unit for any application

- The high temperature of the 61WG units makes them compatible with most heating systems, both in new and refurbished buildings and permits domestic hot water production (with a dedicated temperature setpoint).
- Option 153 "Built-in DHW and space heating control" allows control of both domestic hot water and space heating requirements:
 - Domestic hot water production: a built-in three-way valve is directed to divert the heat flow from the space heating loop to the domestic hot water loop and vice versa.
 - Space heating control: the setpoint is adjustable, based on the daily schedule or the outside air temperature (weather compensation function).
 - Control of auxiliary systems: if an alarm is detected at the or if there is insufficient heating capacity, a digital signal starts an auxiliary electric heater (1 to 4 stages) or boiler.
 - Pump control: allows control of the built-in pump as well as the pump in the secondary loop (to terminals).

- In 61WG units the Heating System Manager (HSM) accessory allows control of systems with several heat sources and different additional systems: electric heat, boiler or for the most complex systems district heating (see pages 9 to 11).

Adaptability and simple installation

- The 61WG units can be provided with several hydraulic module options, both on the evaporator and/or condenser side, with different levels of available pressure and variable or fixed-speed pumps (see page 7).
- If option 153 is selected domestic hot water production is controlled via a built-in three-way diverter valve (not supplied).
- 61WG units offer water-side cooling/heating reversibility.

Water connections at the rear of the unit



Internal view of 61WG unit with hydraulic module



CUSTOMER BENEFITS

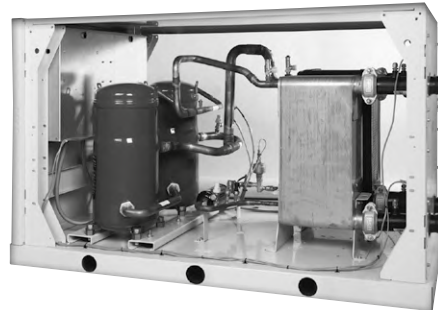
Water connections at the top of the unit



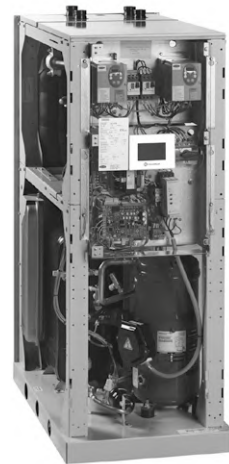
Component accessibility

See photos below.

Access to scroll compressors



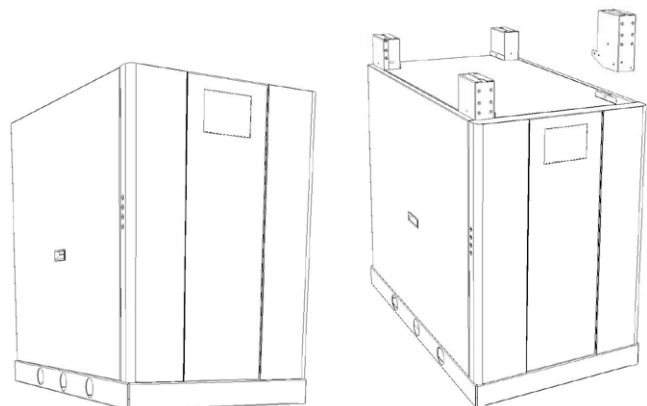
Access to control panel



A compact high-performance product range

- Small footprint, ideal for refurbished buildings, allows access in very tight plant rooms.
- 61WG: High SCOP satisfies even the most stringent standards, with a leaving water temperature of up to 65 °C without supplementary system.
- Units optimized for process and comfort applications.
- Variable-flow pumps reduce system energy consumption.
- The entire range offers low sound levels, allowing installation in any building type. The low-noise option ensures enhanced acoustic comfort (-3 dB(A)).
- 61WG units are equipped with the latest generation R410A scroll compressor, optimised for typical operating conditions for water-sourced units.

Two-unit stacking option for reduced footprint size 020-090



CUSTOMER BENEFITS

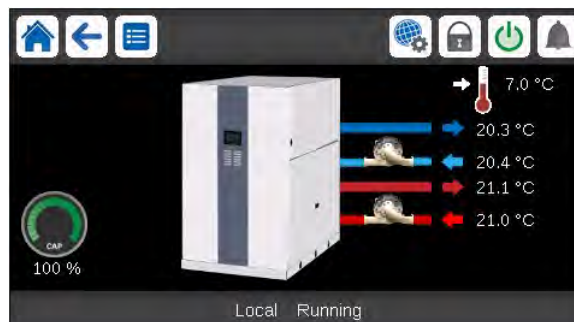
SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - Innovative smart energy monitoring, providing users with smart data such as real-time electrical energy consumption and cooling capacity, and instantaneous and average energy efficiency values.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
 - Display of trend curves for the main values
 - Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
 - Blackbox memory

■ 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: closing of this contact activates a second setpoint (e.g.: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

OPTIONS

Options	No.	Description	Advantages	Use
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	61WG 020-190
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	61WG 020-190
External disconnect handle	70F	The handle of the electrical disconnect switch is on the outside of the unit	Quick access to the unit disconnect switch	61WG 020-190
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	61WG 110-190
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	61WG 110-190
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	61WG 020-190
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	61WG 110-190
LP evap. single-pump	116T	Evaporator hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	61WG 020-190
HP evap. variable-speed single-pump	116V	Evaporator hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	61WG 020-190
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	61WG 110-190
LP VSD single-pump	116Y	Evaporator hydraulic module equipped with low -pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	61WG 110-190
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	61WG 020-190
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	61WG 020-190
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	61WG 020-190

OPTIONS

Options	No.	Description	Advantages	Use
Built-in DHW & space heating control	153	Control board factory-installed on the unit, control using weather compensation, control of supplementary electric heater (4 stages) or boiler, needle valve for domestic hot-water production with programmable time schedule.	Permits easy control of a basic heating system	61WG 020-090
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	61WG 020-190
Insulation of the evap. in/out ref.lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, anti-UV insulant	Prevents condensation on the evaporator entering/leaving refrigerant lines	61WG 020-190
Low noise level	257	Compressor sound enclosure	Reduced sound emissions	61WG 020-190
Very low sound level	258	Enhanced sound insulation of main noise sources (Material classified CD0S2 fire class according to Euroclass 13-501).	6 dB(A) quieter than standard . Refer to the physical data table for detailed values	61WG 020-090
Evaporator screw connection sleeves kit	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	61WG 020-140
Condenser screw connection sleeves kit	265	Condenser inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	61WG 020-140
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	61WG 020-190
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	61WG 020-190
HP single-pump, cond. side	270R	Condenser hydraulic module equipped with high pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	61WG 110-190
LP single-pump, cond. side	270T	Condenser hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	61WG 020-190
HP cond. variable-speed single-pump	270V	Condenser hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	61WG 020-190
HP cond. variable-speed dual-pump	270W	Condenser hydraulic module equipped with dual high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	61WG 110-190
LP cond. variable-speed single-pump	270Y	Condenser hydraulic module equipped with low-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	61WG 110-190
High-temp. water prod. with glycol solution on the evap.	272	Condenser side water production up to 65 °C, with glycol solution on the evaporator side to -5 °C	Geothermal application and domestic hot-water production	61WG 020-190
Unit stackable for operation	273	Unit stackable for operation	Reduced footprint size	61WG 020-090
water connection at the top	274	Customer water connection at the top of the unit	Reduced footprint size	61WG 020-190
Safety hydraulic components, evap. side	293	Screen filter, expansion tank and relief valve integrated in the evaporator hydraulic module	Easy and fast installation (plug & play), operating safety	61WG 020-190
Safety hydraulic components, cond. side	293A	Screen filter, expansion tank and relief valve integrated in the condenser hydraulic module	Easy and fast installation (plug & play), operating safety	61WG 020-190
Set point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy management, allow to adjust set point by a 4-20mA external signal	61WG 020-190
External temperature sensor	312	External temperature sensor control for using weather compensation	Allow to adjust set point using weather compensation and define autorisation operation mode to external temperature	61WG 020-190

PHYSICAL DATA, 61WG UNITS

61WG				020	025	030	035	040	045	050	060	070	080	090
Heating														
Standard unit Full load performances*	HW1	Nominal capacity	kW	29	34	38	44	50	57	69	78	88	100	117
		COP	kW/kW	5,42	5,29	5,21	5,29	5,34	5,32	5,49	5,36	5,46	5,28	5,33
	HW2	Nominal capacity	kW	28	33	37	43	49	55	66	76	84	95	109
		COP	kW/kW	4,35	4,34	4,20	4,27	4,32	4,36	4,51	4,32	4,35	4,27	4,31
	HW3	Nominal capacity	kW	27	32	35	41	47	52	64	74	80	90	103
		COP	kW/kW	3,65	3,68	3,52	3,59	3,56	3,66	3,75	3,64	3,63	3,56	3,60
	HW4	Nominal capacity	kW	26	31	34	40	43	49	61	71	76	85	97
		COP	kW/kW	2,96	2,96	2,86	2,93	2,88	2,96	2,98	3,04	2,99	2,94	2,97
	HB1	Nominal capacity	kW	22	26	29	34	38	42	50	57	67	75	87
		COP	kW/kW	4,24	4,26	4,29	4,27	4,27	4,25	4,25	4,27	4,26	4,28	4,29
Standard unit Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kW/kW	5,36	5,20	5,11	5,19	5,23	5,19	5,84	5,93	5,93	5,83	5,82
		ηs heat _{30/35°C}	%	206	200	197	200	201	200	226	229	229	225	225
	HW3	SCOP _{47/55°C}	kW/kW	4,37	4,32	4,20	4,28	4,32	4,35	4,86	4,88	4,80	4,89	4,80
		ηs heat _{47/55°C}	%	167	165	160	163	165	166	186	187	184	188	184
		P _{rated}	kW	32	38	42	49	56	63	76	88	97	109	124
		Energy labelling		A++	A++	A++	A++	A++	A++	-	-	-	-	-
Operating weight ⁽¹⁾			kg	191	200	200	207	212	220	386	392	403	413	441
Operating weight with option 258 ⁽¹⁾			kg	198	207	207	214	219	227	399	405	416	426	454
Sound levels ⁽²⁾														
Sound power level, standard unit			dB(A)	67	68	69	69	70	70	72	72	72	73	73
Sound power level, option 257			dB(A)	65	66	66	67	68	68	68	69	69	69	70
Sound power level, option 258			dB(A)	61	62	63	63	64	64	66	66	66	67	67
Sound power level, option 257+258			dB(A)	60	62	62	62	64	63	65	65	65	66	66
Dimensions, standard unit ⁽³⁾														
Width			mm	600	600	600	600	600	600	880	880	880	880	880
Length			mm	1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474
Height			mm	901	901	901	901	901	901	901	901	901	901	901
Compressors				Hermetic scroll 48.3 r/s										
Quantity				1	1	1	1	1	1	2	2	2	2	2
Number of capacity stages				1	1	1	1	1	1	2	2	2	2	2
Minimum capacity			%	100	100	100	100	100	100	50	50	50	50	50

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/WHW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/WHW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/WHW4 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 55°C/65°C, evaporator and condenser fouling factor 0 m². k/WHB1 Heating mode conditions: Evaporator entering/leaving water temperature 0°C/-3°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W, evaporator fluid: 30% ethylene glycol.η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016η_s heat_{47/55°C} & SCOP_{47/55°C} **Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**

- Not applicable

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) In dB ref=10⁻¹² W, (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.

(3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings



Eurovent certified values

PHYSICAL DATA, 61WG UNITS

61WG		020	025	030	035	040	045	050	060	070	080	090
Refrigerant⁽¹⁾		R410A (GWP=2088 Following ARI4)										
Charge, standard unit	kg	3,5	3,5	3,6	3,7	4,0	4,6	7,6	7,8	7,9	8,7	11,5
	teqCO ₂	7,2	7,3	7,4	7,6	8,2	9,5	15,9	16,3	16,5	18,2	24
Charge, unit with option 272	kg	2,7	2,9	2,9	3,0	3,2	3,9	7,2	7,3	7,4	7,6	10,5
	teqCO ₂	5,6	6,0	6,1	6,3	6,7	8,1	14,9	15,2	15,5	15,9	21,9
Capacity control		SmartVu™										
Evaporator		Direct-expansion plate heat exchanger										
Water volume	l	3,3	3,6	3,6	4,2	4,6	5,0	8,4	9,2	9,6	10,4	12,5
Water connections		Raccordements Victaulic										
Inlet/outlet	in	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Plate heat exchanger										
Net water volume	l	3,3	3,6	3,6	4,2	4,6	5,0	8,4	9,2	9,6	10,4	12,5
Water connections		Victaulic										
Inlet/outlet	in	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Chassis paint color		Color code: RAL7035										

(1) Weight shown is a guideline only. Please refer to the unit nameplate

PHYSICAL DATA, 61WG UNITS

61WG				110	120	140	150	170	190
Heating									
Standard unit Full load performances*	HW1	Nominal capacity	kW	135	151	175	183	204	235
		COP	kW/kW	5,48	5,44	5,44	5,62	5,49	5,48
	HW2	Nominal capacity	kW	131	147	168	176	197	226
		COP	kW/kW	4,56	4,53	4,55	4,63	4,52	4,53
	HW3	Nominal capacity	kW	124,4	140,7	161,3	166,0	186,2	212,5
		COP	kW/kW	3,58	3,48	3,56	3,53	3,42	3,49
	HW4	Nominal capacity	kW	118	131	150	157	174	200
		COP	kW/kW	2,83	2,74	2,85	2,86	2,70	2,85
	HB1	Nominal capacity	kW	102	114	133	135	153	177
		COP	kW/kW	4,42	4,39	4,42	4,40	4,39	4,38
Standard unit Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kW/kW	6,20	6,32	6,24	6,18	6,19	6,03
		η _s heat _{30/35°C}	%	241	245	242	240	240	234
	HW3	SCOP _{47/55°C}	kW/kW	5,03	5,03	5,03	5,02	5,05	4,93
		η _s heat _{47/55°C}	%	194	193	193	194	194	190
		P _{rated}	kW	144	162	185	193	215	247
Operating weight ⁽¹⁾			kg	707	733	758	841	877	908
Sound levels ⁽²⁾									
Sound power level, standard unit			dB(A)	76	77	78	76	77	78
Sound power level, option 257			dB(A)	73	74	75	73	74	75
Dimensions, standard unit ⁽³⁾									
Width			mm	880	880	880	880	880	880
Length			mm	1583	1583	1583	1583	1583	1583
Height			mm	1574	1574	1574	1574	1574	1574
Compressors				Hermetic scroll 48.3 r/s					
Quantity				3	3	3	4	4	4
Number of capacity stages				3	3	3	4	4	4
Minimum capacity			%	33	33	33	25	25	25
Refrigerant ⁽¹⁾				R410A (GWP=2088 Following ARI4)					
Charge, standard unit			kg	13,3	14,5	15,6	21,0	23,0	24,2
			teqCO ₂	27,8	30,3	32,6	43,8	48,0	50,5
Capacity control				SmartVu™					

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/WHW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/WHW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/WHW4 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 55°C/65°C, evaporator and condenser fouling factor 0 m². k/WHB1 Heating mode conditions: Evaporator entering/leaving water temperature 0°C/-3°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W, evaporator fluid: 30% ethylene glycol.η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016η_s heat_{47/55°C} & SCOP_{47/55°C}(1) **Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**

(2) Weight shown is a guideline only. Please refer to the unit nameplate

(3) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.

(3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings



Eurovent certified values

PHYSICAL DATA, 61WG UNITS

61WG		110	120	140	150	170	190
Evaporator		Direct-expansion plate heat exchanger					
Water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections		Victaulic					
Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Condenser		Plate heat exchanger					
Net water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections		Victaulic					
Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Chassis paint color		Color code: RAL7035					

ELECTRICAL DATA

61WG without hydraulic module		020	025	030	035	040	045	050	060	070	080	090	
Power circuit													
Nominal voltage	V-ph-Hz	400-3-50											
Voltage range	V	360-440											
Control circuit supply		24 V, via internal transformer											
Maximum start-up current draw (Un)⁽¹⁾													
Standard unit	A	98	142	142	147	158	197	161,6	163	171,4	184,7	227,9	
Unit with electronic starter option	A	53,9	78,1	78,1	80,9	86,9	108,4	97,7	99,2	105,2	113,6	139,2	
Unit power factor at maximum capacity⁽²⁾		0,9	0,8	0,9	0,9	0,9	0,9	0,8	0,9	0,9	0,9	0,9	
Maximum operating power input⁽²⁾		kW	9,5	11,3	12,4	14,4	15,9	18,2	22,5	24,9	28,7	31,8	36,4
Nominal unit operating current draw⁽³⁾		A	10,6	12,9	13,3	15,2	16,5	19,7	25,8	26,6	30,4	33,0	39,4
Maximum operating current draw (Un)⁽⁴⁾		A	16,1	19,6	21,1	24,4	26,7	30,9	39,2	42,2	48,8	53,4	61,8
Maximum operating current draw (Un-10%)*		A	17,9	21,8	23,4	27,1	29,7	34,3	43,6	46,9	54,2	59,3	68,7
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit											
Short-circuit stability and protection		See table below "Short-circuit stability current"											

61WG without hydraulic module		110	120	140	150	170	190
Power circuit							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Control circuit supply		24 V, via internal transformer					
Maximum start-up current draw (Un)⁽¹⁾							
Standard unit	A	195,8	211,4	258,8	220,2	238,1	289,7
Unit with electronic starter option	A	129,7	140,3	170,2	154,1	167	201,1
Unit power factor at maximum capacity⁽²⁾		0,87	0,85	0,85	0,87	0,85	0,85
Maximum operating power input⁽²⁾		kW	44	47	55	59	73
Nominal unit operating current draw⁽³⁾		A	45,6	49,5	59,1	60,8	78,8
Maximum operating current draw (Un)⁽⁴⁾		A	73,2	80,1	92,7	97,6	106,8
Maximum operating current draw (Un-10%)*		A	81,3	89	103	108,4	118,7
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit					
Short-circuit stability and protection		See table below "Short-circuit stability current"					

- (1) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).
- (2) Maximum power input at the unit operating limits.
- (3) Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 30 °C/35 °C.
- (4) Maximum unit operating current at maximum unit power input and 400 V.
- * Maximum unit operating current at maximum unit power input and 360 V.

ELECTRICAL DATA

Short-circuit stability current (TN system⁽¹⁾) - standard unit (with main disconnect switch)

61WG	020	025	030	035	040	045	050	060	070	080	090
Value with non-specified upstream protection											
Short-term current at 1 s - I _{cw}	kA rms	3	3	3	3	3	3	3	3	3	3
Admissible peak current - I _{pk}	kA pk	6	6	6	6	6	6	6	6	6	6
Maximum value with upstream protection (by circuit breaker)											
Conditional short-circuit current I _{cc}	kA rms	40	40	40	40	40	40	40	40	40	40
Schneider circuit breaker - Compact series		NSX 100N									
Reference number ⁽²⁾		LV429795									

(1) Earthing system type

(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.

The short-circuit stability current values above are suitable with the TN system.

61WG	110	120	140	150	170	190
Value with non-specified upstream protection						
Short-term current at 1 s - I _{cw}	kA rms	5,5	5,5	5,5	5,5	5,5
Admissible peak current - I _{pk}	kA pk	20	20	20	20	20
Maximum value with upstream protection (by circuit breaker)						
Conditional short-circuit current I _{cc}	kA rms	154	154	154	154	154
Schneider circuit breaker - Compact series		NSX 100N				
Reference number ⁽²⁾		LV429795				

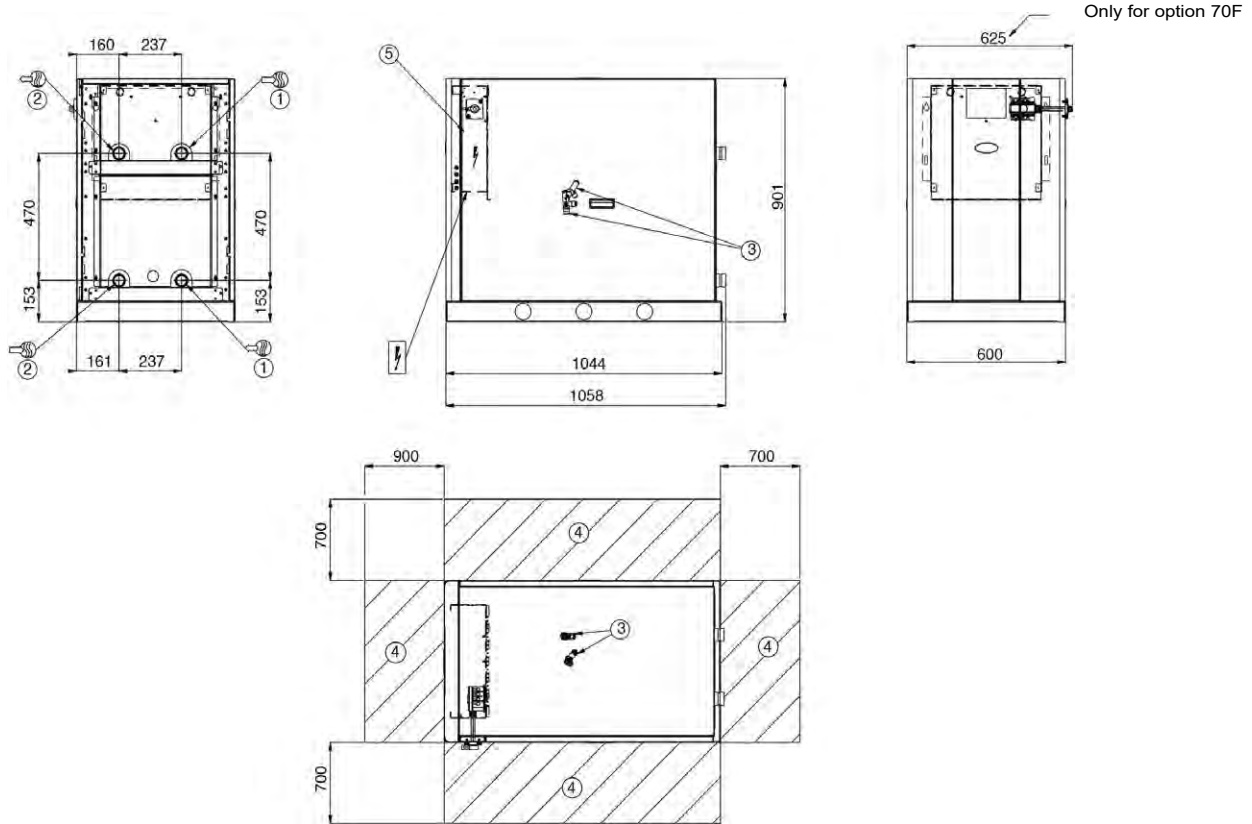
(1) Earthing system type

(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.

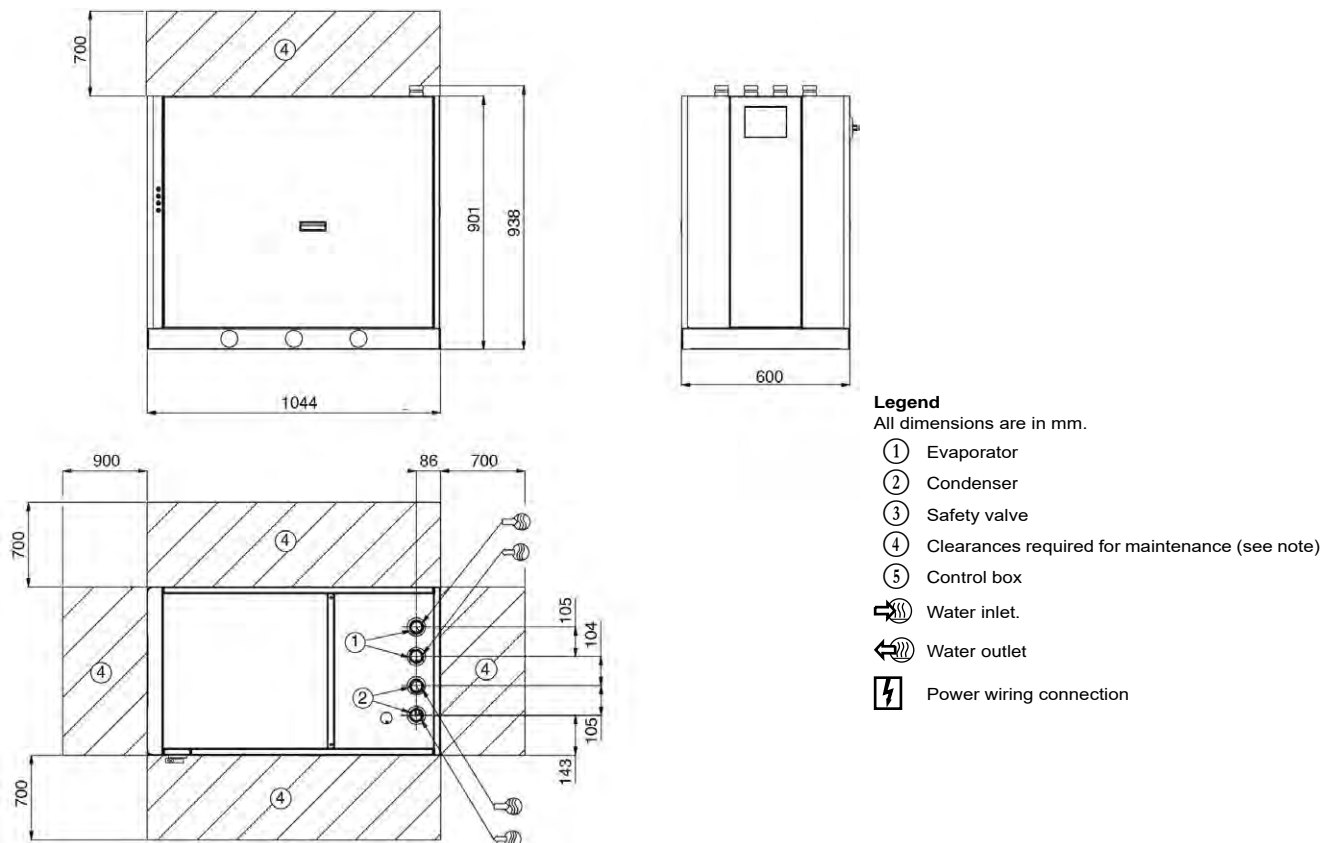
The short-circuit stability current values above are suitable with the TN system.

DIMENSIONS/CLEARANCES

61WG 020-045 - standard unit



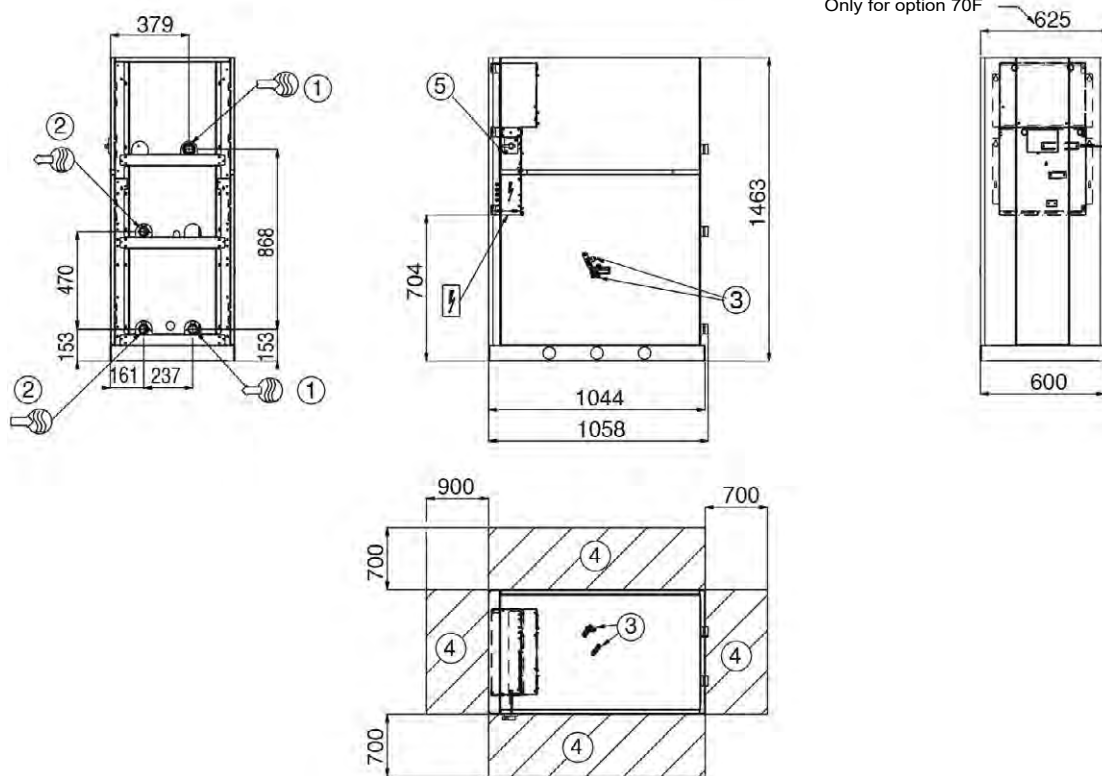
61WG 020-045 - unit with top connections (option 274)



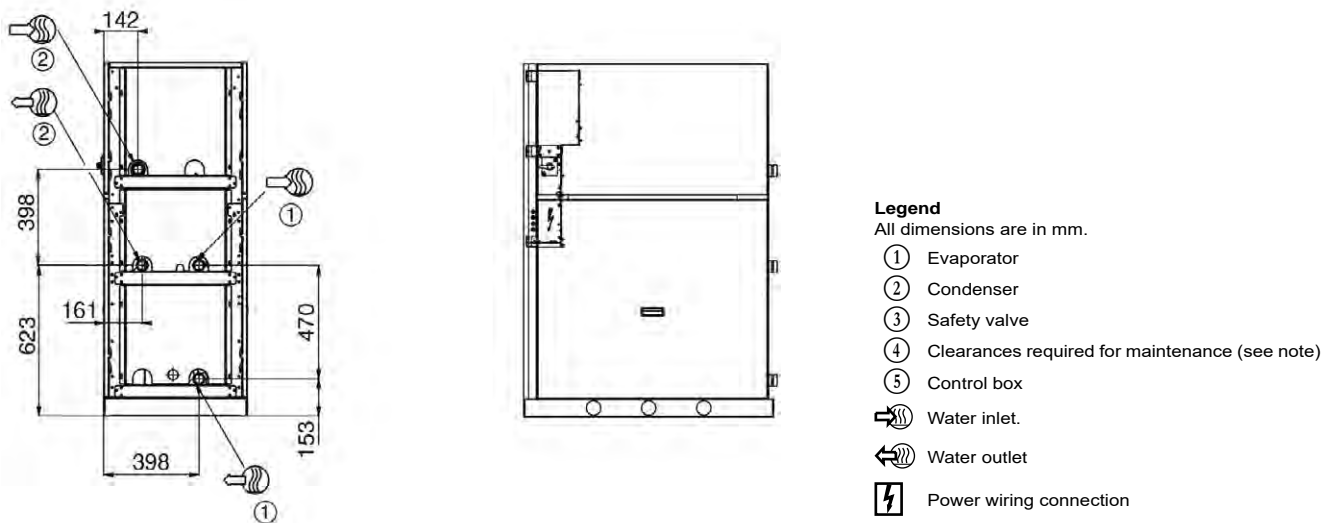
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

61WG 020-045 - unit with evaporator hydraulic module (option 116)



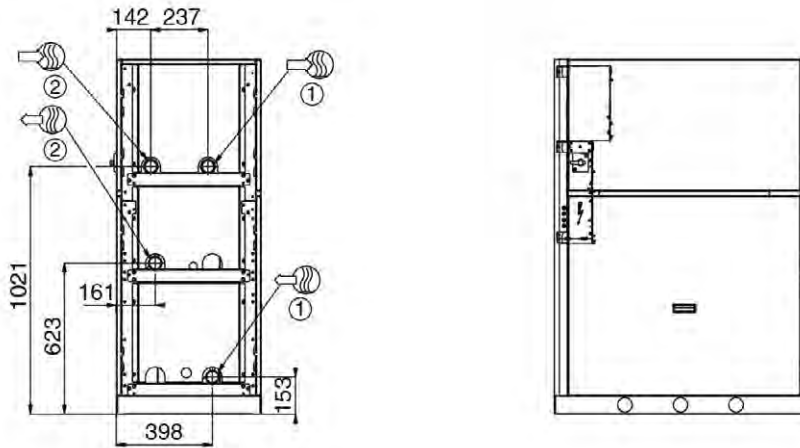
61WG 020-045 - unit with condenser hydraulic module (option 270)



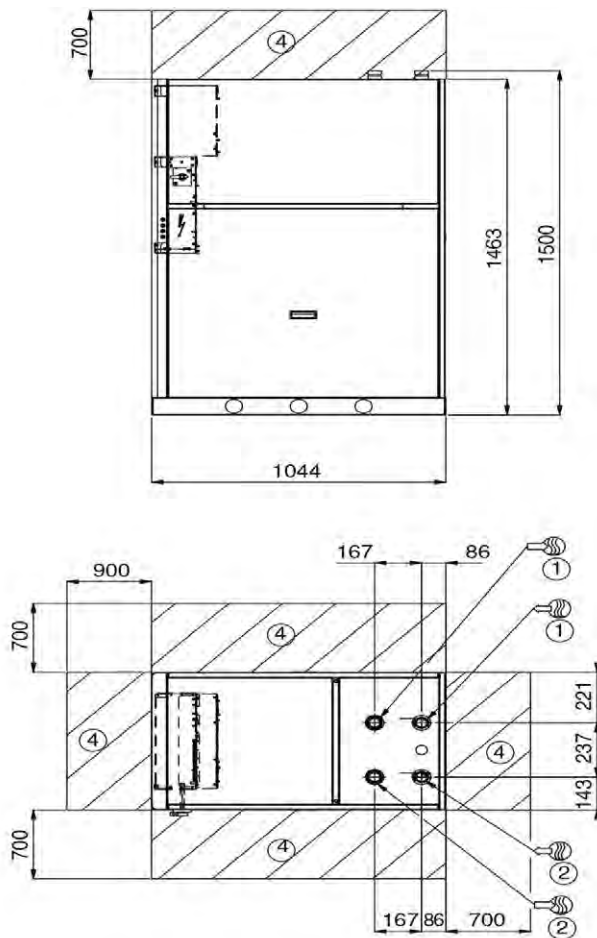
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

61WG 020-045 - unit with evaporator/condenser hydraulic modules (options 116 + 270)



61WG 020-045 - unit with hydraulic module and top connections (options 116 + 274 or 270 + 274 or 116 + 270 + 274)



Legend

All dimensions are in mm.

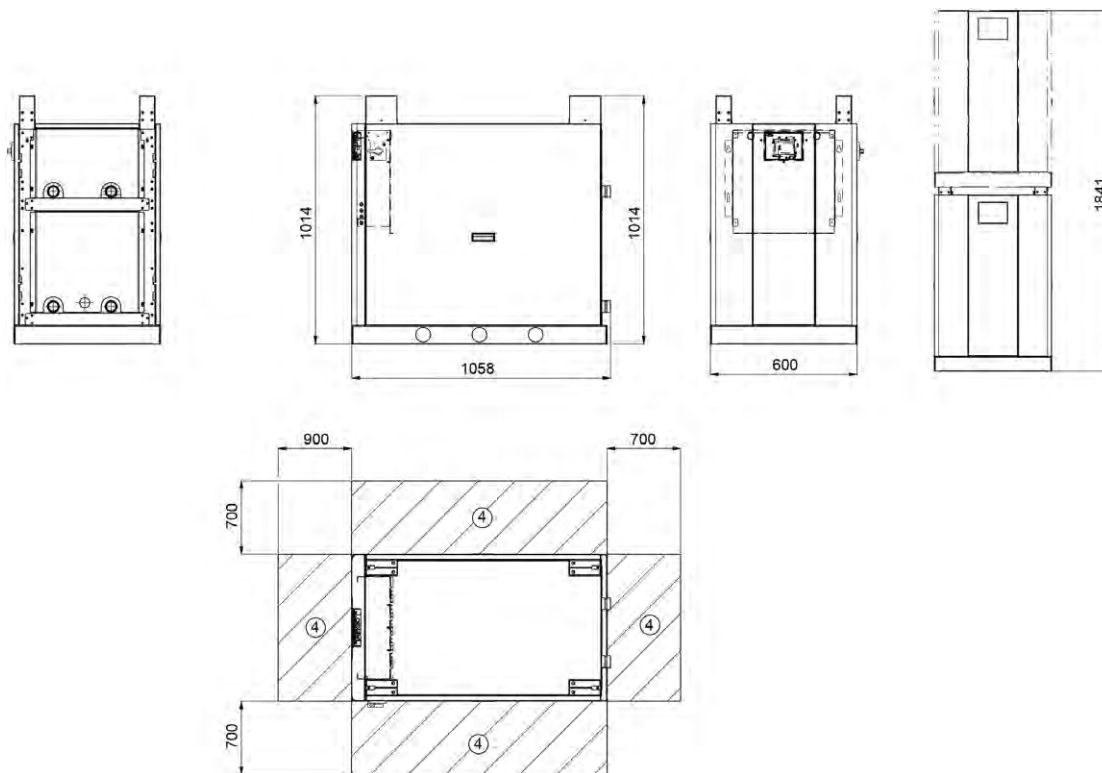
- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

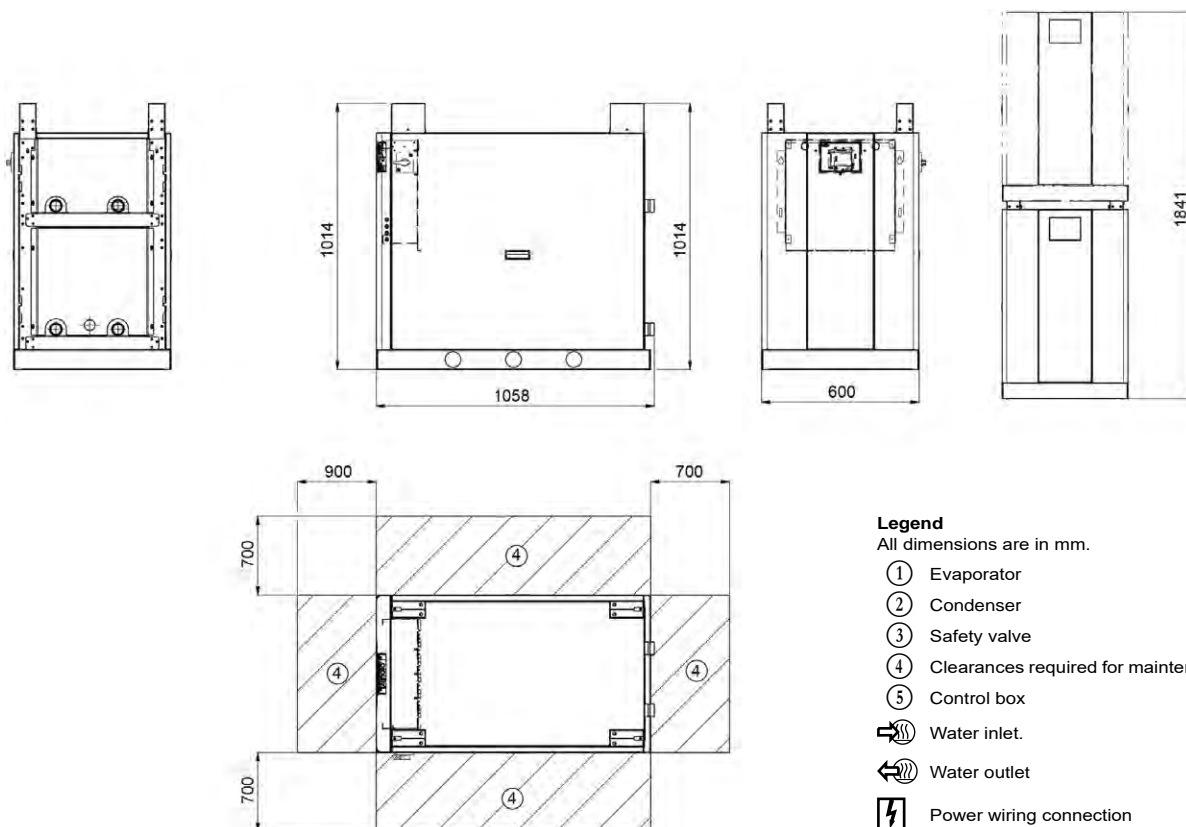
DIMENSIONS/CLEARANCES

61WG 020-045 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.



61WG 050-090 - standard unit



Legend

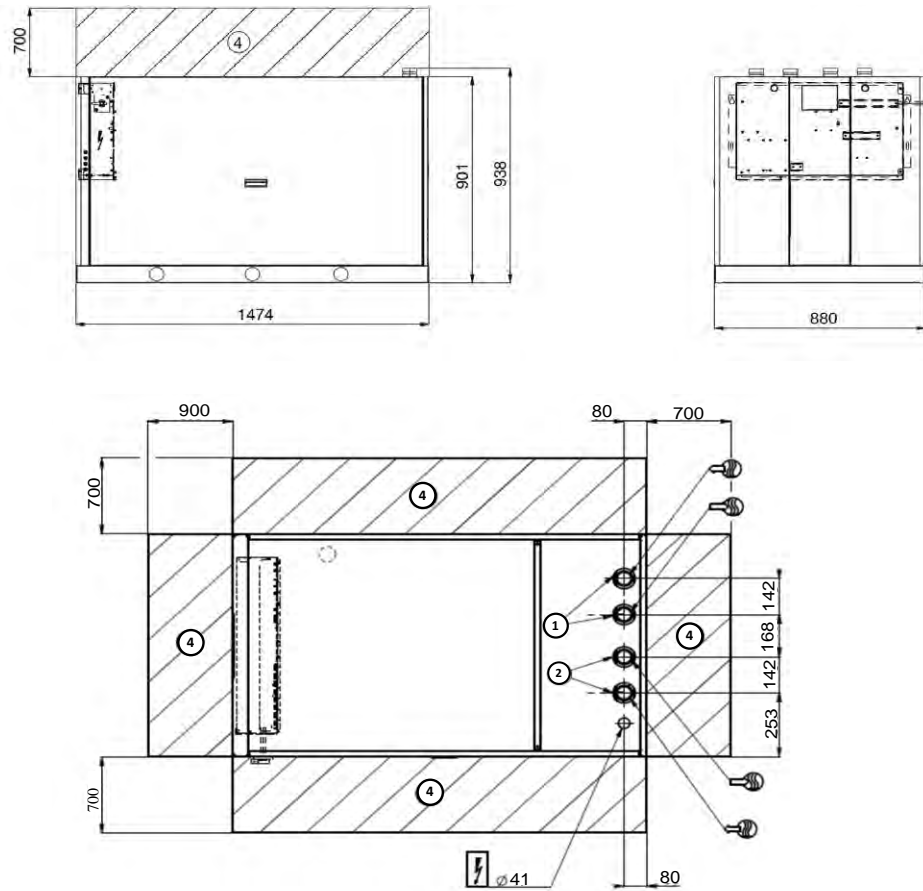
All dimensions are in mm.

- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet.
- Water outlet
- Power wiring connection

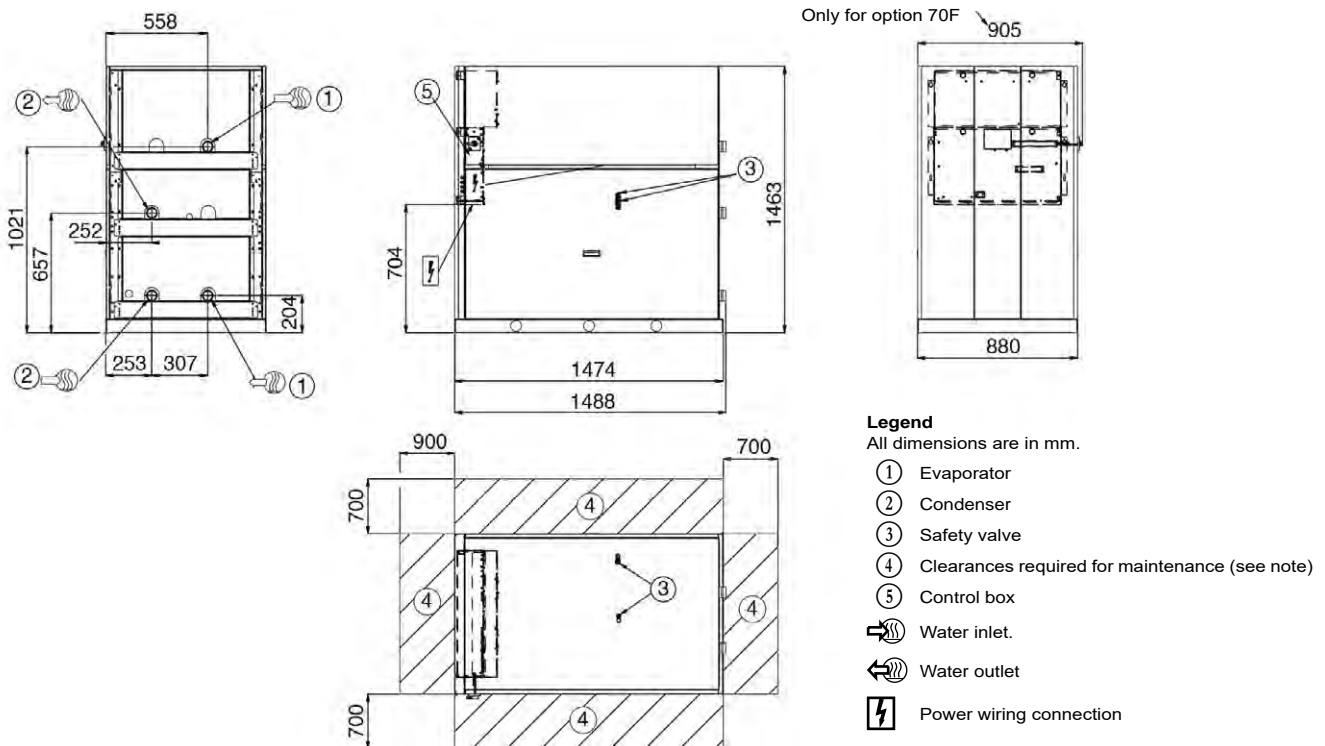
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

61WG 050-090 - unit with top connections (option 274)



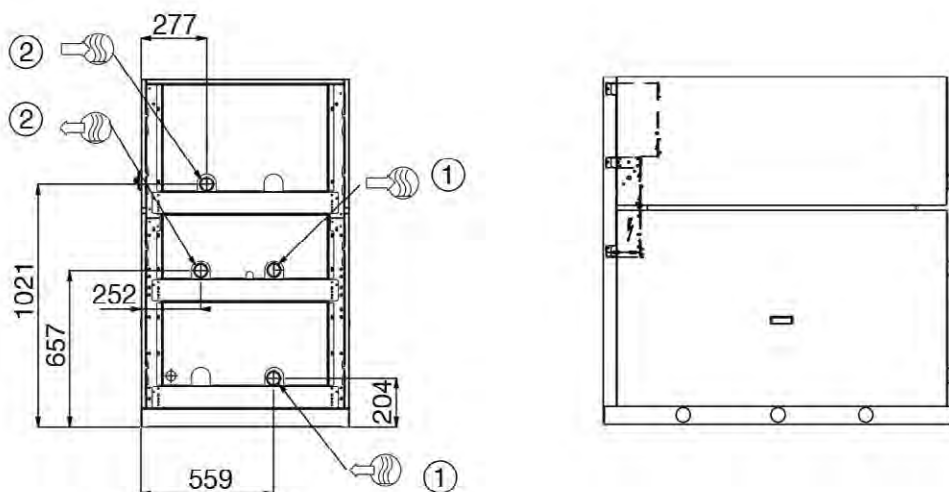
61WG 050-090 - unit with evaporator hydraulic module (option 116)



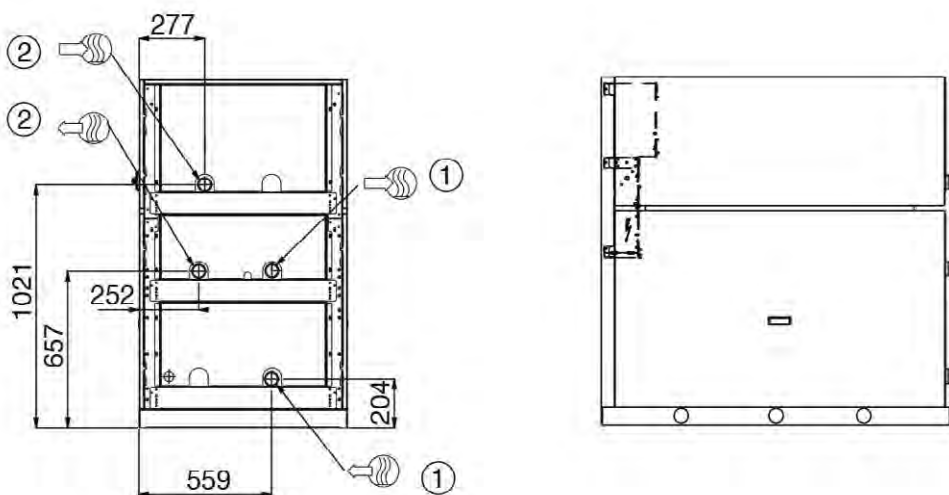
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

61WG 050-090 - unit with condenser hydraulic module (option 270)






61WG 050-090 - unit with evaporator/condenser hydraulic modules (options 116 + 270)



Legend

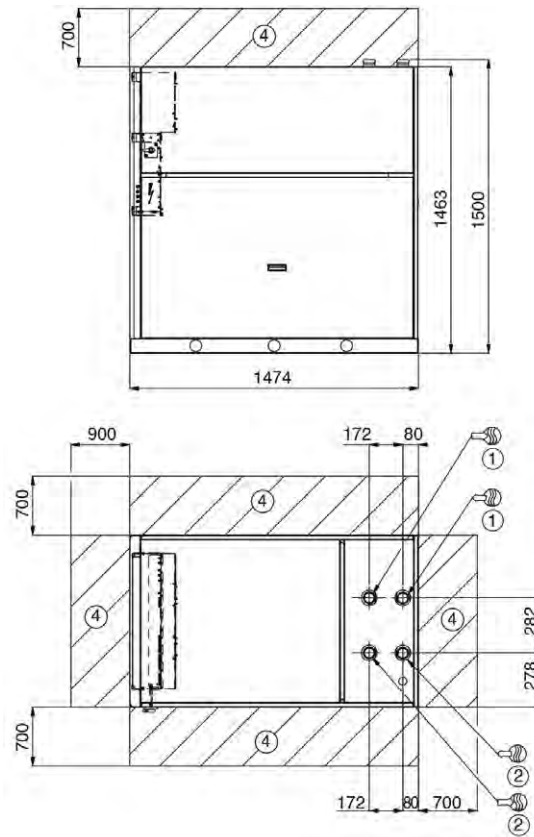
All dimensions are in mm.

- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
-  Water inlet.
-  Water outlet
-  Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

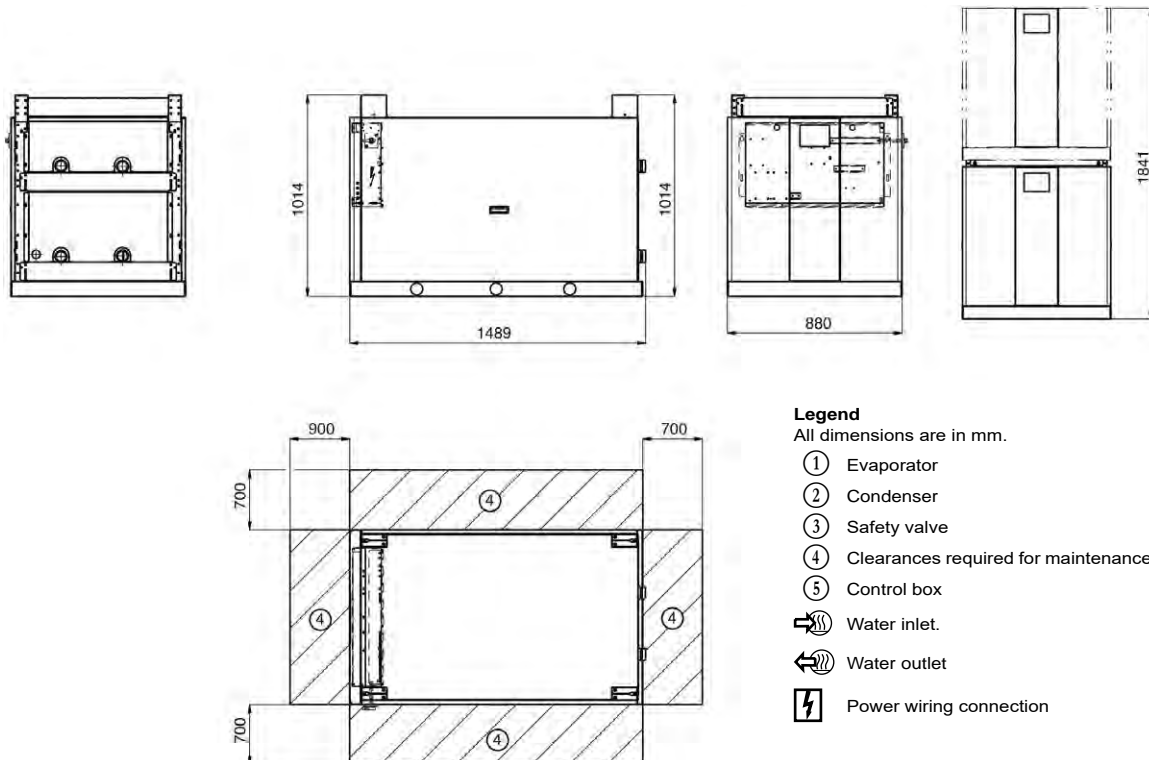
DIMENSIONS/CLEARANCES

61WG 050-090 - unit with hydraulic module and top connections (options 116 + 274 or 270 + 274 or 116 + 270 + 274)



61WG 050-090 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.



Legend

All dimensions are in mm.

- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- ⑥ Water inlet.
- ⑦ Water outlet
- ⑧ Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

WATER-COOLED AND CONDENSERLESS LIQUID CHILLERS WATER-SOURCED HEAT PUMPS



30WG optimized for cooling
Compact design
Plug and play approach
High efficiency

30WG/30WGA-A

AQUASNAP.

Nominal heating capacity 29-230 kW
Nominal cooling capacity 25-190 kW

The 30WG/30WGA units are new Carrier chillers and heat pumps designed for commercial (offices, small hotels, leisure facilities), residential and industrial applications. All units offer a unique combination of high performance and functionality in an exceptionally compact chassis.

The 30WG, also available as a condenserless version (30WGA), is designed for air-conditioning applications with a high SEER value. As they can produce chilled water down to -12 °C they are also suitable for process applications.

A large number of options is available for the whole range:

- hydraulic modules with or without variable water flow rate,
- reinforced sound insulation,
- stacking and connection of two units
- low-temperature applications down to -12 °C (30WG only).



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Features

- Reduced footprint
- Scroll compressors and R-410A refrigerant
- Variable-flow pump
- Low-noise option (-3 dB(A))
- Stacking of two units for increased capacity (up to size 090)
- Several communication protocols available: JBus, BacNet, MS/TP, LON
- Water connection at the top or rear (30WG only)

Available versions

30WG - optimised for air conditioning and process Heating & Cooling

- Evaporator temperature down to -12 °C
- Condenser temperature up to +60 °C
- Condensing pressure control devices available

30WGA - optimised for air conditioning

- Continuous operation up to 62 °C saturated condensing temperature
- Compatible remote condensers available
- Optimised remote condenser fan control

The right unit for any application

- Option 153 "Built-in DHW and space heating control" allows control of both domestic hot water and space heating requirements:
 - Domestic hot water production: a built-in three-way valve is directed to divert the heat flow from the space heating loop to the domestic hot water loop and vice versa.
 - Space heating control: the setpoint is adjustable, based on the daily schedule or the outside air temperature (weather compensation function).
 - Control of auxiliary systems: if an alarm is detected at the 30WG or if there is insufficient heating capacity, a digital signal starts an auxiliary electric heater (1 to 4 stages) or boiler.
 - Pump control: allows control of the built-in pump as well as the pump in the secondary loop (to terminals).
- In 30WG units the pressure control signal ensures safe unit operation and maximised performance at low source-side water temperatures.

- The condenserless 30WGA units are ideal for refurbishment projects where a remote condenser exists on site, and for all projects without geothermal/natural sinks for heat rejection.
- In 30WG units the Heating System Manager (HSM) accessory allows control of systems with several heat sources and different additional systems: electric heat, boiler or for the most complex systems district heating (see pages 9 to 11).

Adaptability and simple installation

- The 30WG units can be provided with several hydraulic module options, both on the evaporator and/or condenser side, with different levels of available pressure and variable or fixed-speed pumps (see page 7).
- If option 153 is selected domestic hot water production is controlled via a built-in three-way diverter valve (not supplied).
- 30WG units offer water-side cooling/heating reversibility.
- Remote condenser fan control possible for 30WGA units.

Water connections at the rear of the unit



CUSTOMER BENEFITS

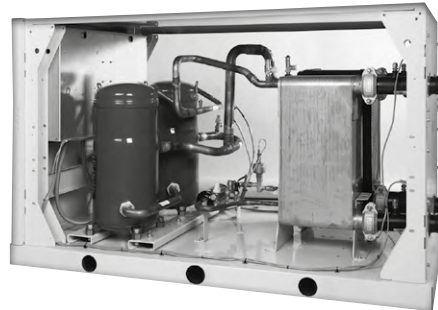
Internal view of 30WG 170



Component accessibility

See photos below.

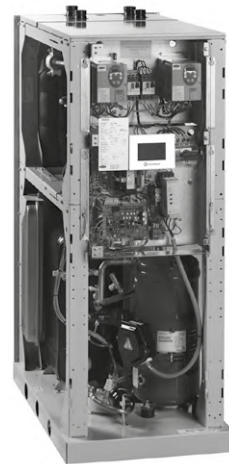
Access to scroll compressors



Water connections at the top of the unit



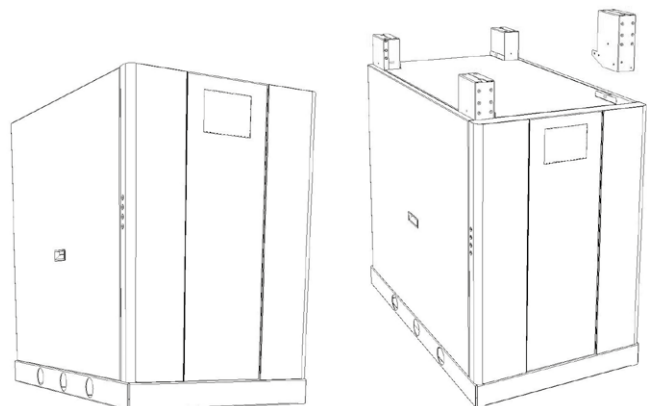
Access to control panel



A compact high-performance product range

- Small footprint, ideal for refurbished buildings, allows access in very tight plant rooms.
- 30WG: High SEER and SEPR
- Units optimized for process and comfort applications.
- The 30WGA is based on the 30WG design to ensure efficient operation for applications with remote air-cooled condensers.
- Variable-flow pumps reduce system energy consumption.
- The entire range offers low sound levels, allowing installation in any building type. The low-noise option ensures enhanced acoustic comfort (-3 dB(A)).
- 30WG/30WGA units are equipped with the latest generation R410A scroll compressor, optimised for typical operating conditions for water-sourced units.

Two-unit stacking option for reduced footprint size 020-090



CUSTOMER BENEFITS

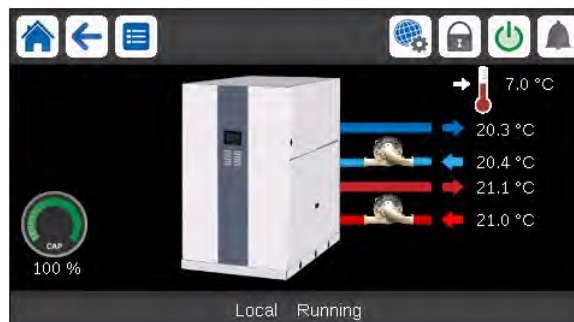
SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - Innovative smart energy monitoring, providing users with smart data such as real-time electrical energy consumption and cooling capacity, and instantaneous and average energy efficiency values.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
 - Display of trend curves for the main values
 - Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
 - Blackbox memory

■ 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: closing of this contact activates a second setpoint (e.g.: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

CUSTOMER BENEFITS

30WG/30WGA units compatible the Carrier 09 series drycoolers/remote condensers

The Carrier 09 series drycoolers and remote condensers are compatible with the 30WG and 30WGA units.

The chiller 30WG/30WGA can control the fans of the dry cooler / remote condenser via digital or analogue outputs (according to AC or EC motors) with following options :

- For chiller 30WG/30WGA : option 154
- For dry cooler / remote condenser : dedicated control cabinet with an auxiliary board.

A simple communication bus is required between the chiller and the dry cooler/ remote condenser.

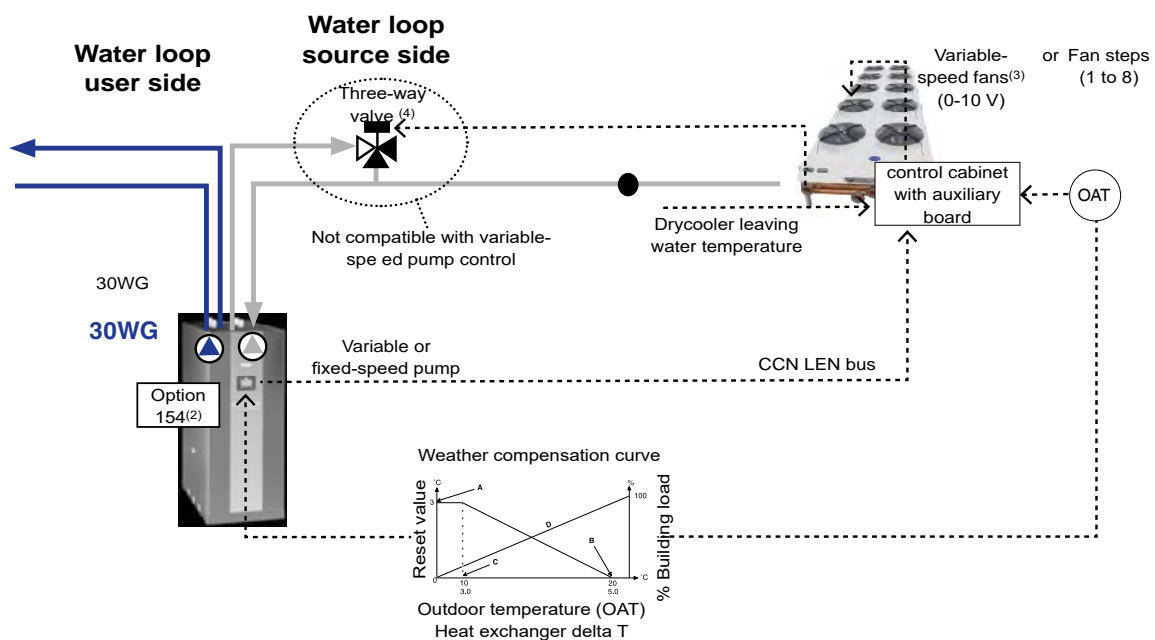
As all control components are installed and tested in the factory, installation and start-up of the unit and its associated drycooler/ remote condenser are simplified.

Control board algorithms optimise energy consumption based on:

- the outside temperature and chilled-water temperature read for drycoolers
- the outside temperature and saturated refrigerant discharge temperature read for remote condensers.

A simple communication bus is required downstream to connect the control board to the unit control.

30WG system concept

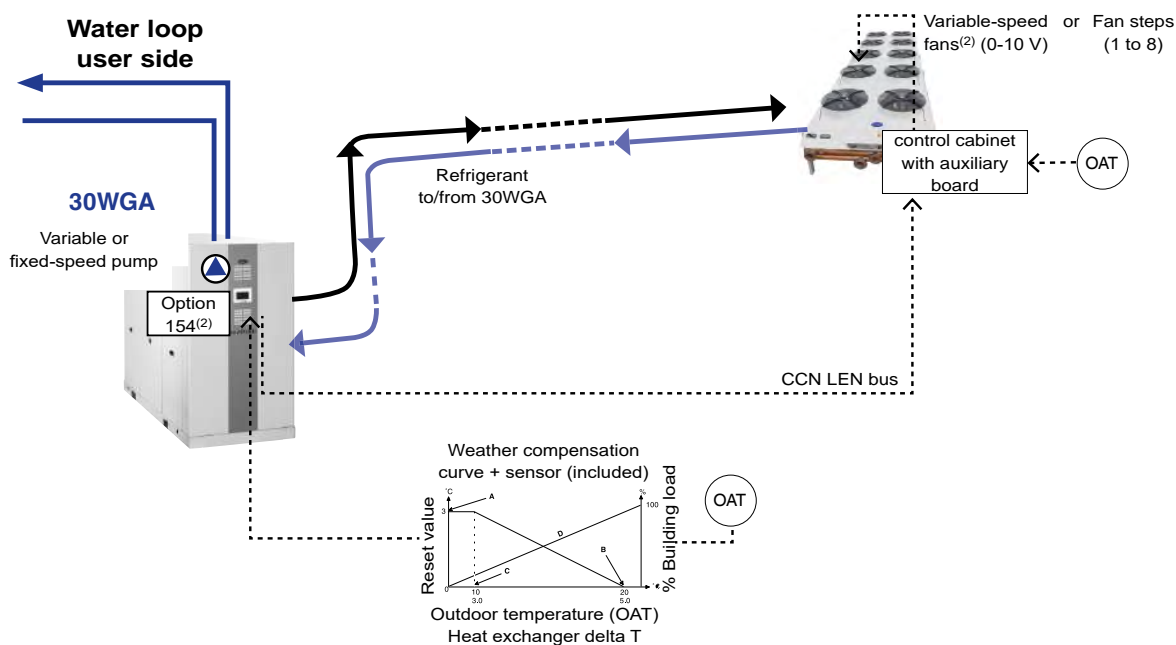


Legend

- CCN** Carrier Comfort Network
LEN Local equipment network
OAT Outside air temperature
 (1) Control board option on 09PE dedicated to 30WG
 (2) Option 154 for connection and communication with 09PE Drycooler
 (3) For correct operation of the unit below 0 °C variable speed fans are required.
 (4) Three-Way valve or two two-way valves optional on 09PE

CUSTOMER BENEFITS

30WGA system concept



Legend

- CCN** Carrier Comfort Network
LEN Local equipment network
OAT Outside air temperature
 (1) Control board option on 09PE dedicated to 30WG
 (2) Option 154 for connection and communication with 09PE Drycooler
 (3) For correct operation of the unit below 0 °C variable-speed fans are required.

OPTIONS

Options	No.	Description	Advantages	Use
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30WGA 020-190
Low-temperature brine solution	6B	Low temperature glycol solution production down to -12 °C with ethylene glycol	Covers specific applications such as ice storage and industrial processes	30WG 020-190
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30WG 020-190 30WGA 020-190
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30WG 020-190 30WGA 020-190
External disconnect handle	70F	The handle of the electrical disconnect switch is on the outside of the unit	Quick access to the unit disconnect switch	30WG 020-190 30WGA 020-190
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	30WG 110-190
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	30WG 110-190
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	30WG 020-190
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30WG 110-190 30WGA 110-190
LP evap. single-pump	116T	Evaporator hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30WG 020-190 30WGA 020-190
HP evap. variable-speed single-pump	116V	Evaporator hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30WG 020-190 30WGA 020-190
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30WG 110-190 30WGA 110-190
LP VSD single-pump	116Y	Evaporator hydraulic module equipped with low -pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30WG 110-190 30WGA 110-190
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30WG 020-190 30WGA 020-190
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30WG 20-190 30WGA 020-190
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30WG 020-190 30WGA 020-190

OPTIONS

Options	No.	Description	Advantages	Use
Built-in DHW & space heating control	153	Control board factory-installed on the unit, control using weather compensation, control of supplementary electric heater (4 stages) or boiler, needle valve for domestic hot-water production with programmable time schedule.	Permits easy control of a basic heating system	30WG 020-190
Specific dry cooler control	154	Dedicated connection and software for 09PE drycooler management. For 09PE drycooler need to select the option control cabinet manage by the chiller	Permits the use of an energy-efficient plug-and-play system	30WG 020-190
Condenser control	154	Control box for communication with the condenser via a bus. For OPERA condenser need to select the cabinet with option control cabinet manage by the chiller Connect'Touch control	Permits the use of an energy-efficient plug-and-play system	30WGA 020-190
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30WG 020-190 30WGA 020-190
Insulation of the evap. in/out ref.lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, anti-UV insulant	Prevents condensation on the evaporator entering/leaving refrigerant lines	30WG 020-190 30WGA 020-190
Low noise level	257	Compressor sound enclosure	Reduced sound emissions	30WG 020-190 30WGA 020-190
Very low sound level	258	Enhanced sound insulation of main noise sources (Material classified CD0S2 fire class according to Euroclass 13-501).	6 dB(A) quieter than standard . Refer to the physical data table for detailed values	30WG 020-090 30WGA 020-090
Evaporator screw connection sleeves kit	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30WG 020-140 30WGA 020-140
Condenser screw connection sleeves kit	265	Condenser inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30WG 020-140
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30WG 020-190 30WGA 020-190
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	30WG 020-190
HP single-pump, cond. side	270R	Condenser hydraulic module equipped with high pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	30WG 110-190
LP single-pump, cond. side	270T	Condenser hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	30WG 020-190
HP cond. variable-speed single-pump	270V	Condenser hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	30WG 020-190
HP cond. variable-speed dual-pump	270W	Condenser hydraulic module equipped with dual high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	30WG 110-190
LP cond. variable-speed single-pump	270Y	Condenser hydraulic module equipped with low-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	30WG 110-190
Unit stackable for operation	273	Unit stackable for operation	Reduced footprint size	30WG 020-090 30WGA 020-090

OPTIONS

Options	No.	Description	Advantages	Use
water connection at the top	274	Customer water connection at the top of the unit	Reduced footprint size	30WG 020-190 30WGA 020-190
Replaceable filter drier	277	Filter drier with cartridge to replace hermetic filter	Easy filter replacement without emptying the refrigerant circuit	30WGA 020-190
Safety hydraulic components, evap. side	293	Screen filter, expansion tank and relief valve integrated in the evaporator hydraulic module	Easy and fast installation (plug & play), operating safety	30WG 020-190 30WGA 020-190
Safety hydraulic components, cond. side	293A	Screen filter, expansion tank and relief valve integrated in the condenser hydraulic module	Easy and fast installation (plug & play), operating safety	30WG 020-190
Set point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy management, allow to adjust set point by a 4-20mA external signal	30WG 020-190 30WGA 020-190
External temperature sensor	312	External temperature sensor control for using weather compensation	Allow to adjust set point using weather compensation and define autorisation operation mode to external temperature	30WG 020-190 30WGA 020-190
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, Extended control capabilities to a dryccoler used in Free Cooling mode	30WG 020-190 30WGA 020-190

PHYSICAL DATA, 30WG UNITS , SIZES 020 TO 090

30WG				020	025	030	035	040	045	050	060	070	080	090	
Heating															
Standard unit Full load performances*	HW1	Nominal capacity	kW	30	35	38	44	50	56	70	77	89	101	114	
		COP	kW/kW	5,53	5,53	5,49	5,52	5,49	5,51	5,58	5,48	5,53	5,46	5,50	
	HW2	Nominal capacity	kW	29	33	36	43	49	54	68	74	85	97	108	
		COP	kW/kW	4,34	4,37	4,35	4,36	4,40	4,35	4,39	4,35	4,32	4,40	4,32	
	HW3	Nominal capacity	kW	28	33	35	41	47	52	65	73	81	93	103	
		COP	kW/kW	3,59	3,63	3,61	3,60	3,67	3,61	3,58	3,62	3,54	3,70	3,56	
Standard unit Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kW/kW	5,46	5,45	5,36	5,40	5,35	5,38	6,12	6,08	6,09	6,11	6,09	
		η _{s heat} _{30/35°C}	%	211	210	206	208	206	207	237	235	235	236	235	
	HW3	SCOP _{47/55°C}	kW/kW	4,36	4,37	4,34	4,37	4,40	4,34	4,91	4,96	4,85	5,08	4,91	
		η _{s heat} _{47/55°C}	%	167	167	166	167	168	166	188	190	186	195	188	
		P _{rated}	kW	32	37	40	47	54	59	75	83	93	106	118	
		Energy labelling		A++	A++	A++	A++	A++	A++	-	-	-	-	-	
	Cooling														
	Standard unit Full load performances*	CW1	Nominal capacity	kW	25	29	32	37	42	47	58	63	74	84	95
EER			kW/kW	4,72	4,72	4,69	4,73	4,69	4,72	4,72	4,65	4,69	4,65	4,68	
Eurovent class				B	B	B	B	B	B	B	B	B	B	B	
CW2		Nominal capacity	kW	34	39	43	50	57	66	79	86	102	113	129	
		EER	kW/kW	6,42	6,10	6,03	6,04	5,90	6,06	6,12	5,95	6,19	5,93	6,13	
		Eurovent class		A	A	A	A	A	A	A	A	A	A	A	
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kW/kW	4,94	4,94	4,83	4,87	4,85	4,88	5,70	5,62	5,58	5,72	5,68	
		SEPR _{12/7°C} Process high temp.	kW/kW	6,42	6,44	6,26	6,22	6,26	6,31	6,63	6,50	6,48	6,59	6,62	
Unit with option 6B Seasonal energy efficiency**		SEPR _{2/-8°C} Process medium temp.***	kWh/kWh	3,92	4,26	4,43	4,34	4,47	4,01	4,12	4,73	4,55	4,78	4,76	
Integrated part load value		IPLV.SI	kW/kW	5,840	5,850	5,760	5,780	5,770	5,820	6,580	6,680	6,560	6,810	6,720	
Operating weight ⁽¹⁾			kg	191	200	200	207	212	220	386	392	403	413	441	
Operating weight with option 258 ⁽¹⁾			kg	198	207	207	214	219	227	399	405	416	426	454	
Sound levels ⁽²⁾															
Sound power level, standard unit				dB(A)	67	68	69	69	70	70	72	72	72	73	73
Sound power level, option 257				dB(A)	65	66	66	67	68	68	68	69	69	69	70
Sound power level, option 258				dB(A)	61	62	63	63	64	64	66	66	66	67	67
Sound power level, option 257 + 258				dB(A)	60	62	62	62	64	63	65	65	65	66	66
Dimensions, standard unit ⁽³⁾															
Width				mm	600	600	600	600	600	600	880	880	880	880	880
Length				mm	1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474
Height				mm	901	901	901	901	901	901	901	901	901	901	901

- * In accordance with standard EN14511-3:2013
- ** In accordance with standard EN14825:2016, average climate
- *** With EG 30%
- HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W
- HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W
- HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W
- CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W
- CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W
- η_{s heat}_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016
- η_{s heat}_{47/55°C} & SCOP_{47/55°C} **Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**
- SEER_{12/7°C} & SEPR_{12/7°C} Values calculated in accordance with EN14825:2016
- SEPR_{2/-8°C} Values calculated in accordance with EN14825:2016
- Not applicable
- IPLV.SI Calculations according to standard performances AHRI 551-591 (SI)
- (1) Weight shown is a guideline only. Please refer to the unit nameplate
- (2) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
- (3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.



Eurovent certified values

PHYSICAL DATA, 30WG UNITS , SIZES 020 TO 090

30WG	020	025	030	035	040	045	050	060	070	080	090	
Compressors	Hermetic scroll 48.3 r/s											
Quantity	1	1	1	1	1	1	2	2	2	2	2	
Number of capacity stages	1	1	1	1	1	1	2	2	2	2	2	
Minimum capacity	%	100	100	100	100	100	100	50	50	50	50	
Refrigerant ⁽¹⁾	R410A (GWP=2088 Following ARI4)											
Charge, standard unit	kg	3,5	3,5	3,6	3,7	4,0	4,6	7,6	7,8	7,9	8,7	11,5
	teqCO ₂	7,2	7,3	7,4	7,6	8,2	9,5	15,9	16,3	16,5	18,2	24
Capacity control	SmartVu™											
Evaporator	Direct-expansion plate heat exchanger											
Water volume	l	3,3	3,6	3,6	4,2	4,6	5,0	8,4	9,2	9,6	10,4	12,5
Water connections	VICTAULIC											
Inlet/outlet	in	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser	Plate heat exchanger											
Net water volume	l	3,3	3,6	3,6	4,2	4,6	5,0	8,4	9,2	9,6	10,4	12,5
Water connections	VICTAULIC											
Inlet/outlet	in	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Chassis paint color	Color code: RAL7035											

(1) Weight shown is a guideline only. Please refer to the unit nameplate

PHYSICAL DATA, 30WG UNITS, SIZES 110 TO 190

30WG			110	120	140	150	170	190	
Heating									
Standard unit Full load performances*	HW1	Nominal capacity	kW	135	152	175	183	207	238
		COP	kW/kW	5,50	5,50	5,42	5,58	5,59	5,50
	HW2	Nominal capacity	kW	131	148	163	174	197	218
		COP	kW/kW	4,44	4,45	4,38	4,41	4,50	4,38
	HW3	Nominal capacity		125	140	160	166	187	214
		COP		3,56	3,45	3,54	3,55	3,44	3,53
Standard unit Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kW/kW	6,31	6,37	6,31	6,31	6,32	6,18
		η _s heat _{30/35°C}	%	244	247	244	244	245	239
	HW3	SCOP _{47/55°C}	kW/kW	5,05	5,09	5,05	5,02	5,17	4,96
		η _s heat _{47/55°C}	%	194	196	194	193	199	190
		P _{rated}	kW	143	161	178	191	216	239
Cooling									
Standard unit Full load performances*	CW1	Nominal capacity	kW	115	130	144	153	172	192
		EER	kW/kW	4,79	4,77	4,70	4,83	4,78	4,79
		Eurovent class		B	B	B	B	B	B
	CW2	Nominal capacity	kW	155	176	196	207	231	262
		EER	kW/kW	6,20	6,10	6,01	6,23	5,97	6,14
		Eurovent class		A	A	A	A	A	A
Standard unit Seasonal energy efficiency**	SEER _{12/7°C} Comfort low temp.		kW/kW	6,12	6,24	6,17	5,97	6,06	5,96
	SEPR _{12/7°C} Process high temp.		kWh/kWh	6,98	7,13	6,90	6,54	6,62	6,41
Unit with option 6B Seasonal energy efficiency**	SEPR _{2/-8°C} Process medium temp.***		kWh/kWh	4,01	4,40	4,35	4,52	4,65	4,45
Integrated part load value	IPLV.SI		kW/kW	6,860	6,980	6,900	6,820	6,890	6,820
Operating weight ⁽¹⁾			kg	707	733	758	841	877	908
Sound levels ⁽²⁾									
Sound power level, standard unit			dB(A)	76	77	78	76	77	78
Sound power level, option 257			dB(A)	73	74	75	73	74	75
Dimensions, standard unit ⁽³⁾									
Width			mm	880	880	880	880	880	880
Length			mm	1583	1583	1583	1583	1583	1583
Height			mm	1574	1574	1574	1574	1574	1574
Compressors			Hermetic scroll 48.3 r/s						
Quantity				3	3	3	4	4	4
Number of capacity stages				3	3	3	4	4	4
Minimum capacity			%	33	33	33	25	25	25

- * In accordance with standard EN14511-3:2013
- ** In accordance with standard EN14825:2016, average climate
- *** With EG 30%
- HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m2. k/W
- HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m2. k/W
- HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m2. k/W
- CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m2.K/W
- CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m2.K/W
- η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016
- η_s heat_{47/55°C} & SCOP_{47/55°C} **Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**
- SEER_{12/7°C} & SEPR_{12/7°C} Values calculated in accordance with EN14825:2016
- SEPR_{-2/-8°C} Values calculated in accordance with EN14825:2016
- IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).
- (1) Weight shown is a guideline only. Please refer to the unit nameplate
- (2) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
- (3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.



Eurovent certified values

PHYSICAL DATA, 30WG UNITS, SIZES 110 TO 190

30WG		110	120	140	150	170	190
Refrigerant ⁽¹⁾		R410A (GWP=2088 Following ARI4)					
Charge, standard unit	kg	13,3	14,5	15,6	21,0	23,0	24,2
	teqCO ₂	27,8	30,3	32,6	43,8	48,0	50,5
Capacity control		SmartVu™					
Evaporator		Direct-expansion plate heat exchanger					
Water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections	-	Victaulic					
Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Condenser		Plate heat exchanger					
Net water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections	-	Victaulic					
Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Chassis paint color		Color code: RAL7035					

(1) Weight shown is a guideline only. Please refer to the unit nameplate

PHYSICAL DATA, 30WGA UNITS

30WGA				020	025	030	035	040	045	050	060	070	080	090
Standard unit Full load performances*	CS1	Nominal capacity	kW	22,8	27	29,1	34	39,2	42,7	54,5	59,1	67,5	78,2	87,4
		EER	kW/kW	3,70	3,76	3,68	3,73	3,75	3,70	3,70	3,66	3,64	3,81	3,77
	CS2	Nominal capacity	kW	31,8	37,6	40,3	47	53,2	61,3	74,5	81,2	94,9	108	121
		EER	kW/kW	5,35	5,25	5,11	5,09	4,99	5,15	5,16	5,15	5,18	5,26	5,13
Operating weight ⁽¹⁾			kg	164	171	171	177	180	185	321	324	332	339	354
Operating weight with option 258 ⁽¹⁾			kg	171	178	178	184	187	192	334	337	345	352	367
Sound levels ⁽²⁾														
Sound power level, standard unit			dB(A)	67	68	69	69	70	70	72	72	72	73	73
Sound power level, option 257			dB(A)	65	66	66	67	68	68	68	69	69	69	70
Sound power level, option 258			dB(A)	61	62	63	63	64	64	66	66	66	67	67
Sound power level, option 257 + 258			dB(A)	60	62	62	62	64	63	65	65	65	66	66
Dimensions, standard unit ⁽³⁾														
Width			mm	600	600	600	600	600	600	880	880	880	880	880
Length			mm	1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474
Height			mm	901	901	901	901	901	901	901	901	901	901	901
Compressors				Hermetic scroll 48.3 r/s										
Circuit A				1	1	1	1	1	1	2	2	2	2	2
Circuit B				-	-	-	-	-	-	-	-	-	-	-
Number of capacity stages				1	1	1	1	1	1	2	2	2	2	2
Minimum capacity			%	100	100	100	100	100	100	50	50	50	50	50
Refrigerant				R410A (GWP=2088 Following ARI4)										
Capacity control				SmartVu™										
Evaporator				Direct-expansion plate heat exchanger										
Water volume			l	3,3	3,6	3,6	4,2	4,6	5,0	8,4	9,2	9,6	10,4	12,5
Water connections				Victaulic										
Inlet/outlet			in	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module			kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Refrigerant connections														
Discharge line diameter			in	7/8	7/8	7/8	7/8	7/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8
Liquid line diameter			in	5/8	5/8	5/8	5/8	5/8	5/8	7/8	7/8	7/8	7/8	7/8
Chassis paint color				Color code: RAL7035										

* In accordance with standard EN14511-3:2013. Refrigerant piping equivalent length (without drier and valves) = 3 m.

CS1 Cooling mode conditions: evaporator entering/leaving water temperature 12 °C/7 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m²K/W.

CS2 Cooling mode conditions: evaporator entering/leaving water temperature 23 °C/18 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m²K/W.

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1.

(3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.

PHYSICAL DATA, 30WGA UNITS

30WGA				110	120	140	150	170	190
Standard unit Full load performances*	CS1	Nominal capacity	kW	106	119	132	140	159	175
		EER	kW/kW	3,78	3,78	3,72	3,75	3,81	3,72
	CS2	Nominal capacity	kW	146	166	185	195	218	247
		EER	kW/kW	5,24	5,17	5,12	5,32	5,17	5,26
Operating weight⁽¹⁾			kg	762	787	814	909	944	975
Sound levels⁽²⁾									
Sound power level			dB(A)	76	77	78	76	77	78
Sound power level, option 257			dB(A)	73	74	75	73	74	75
Dimensions, standard unit ⁽³⁾									
Width			mm	880	880	880	880	880	880
Length			mm	1583	1583	1583	1583	1583	1583
Height			mm	1574	1574	1574	1574	1574	1574
Compressors				Hermetic scroll 48.3 r/s					
Circuit A				3	3	3	4	4	4
Number of capacity stages				3	3	3	4	4	4
Minimum capacity			%	33	33	33	25	25	25
Refrigerant				R410A (GWP=2088 Following ARI4)					
Capacity control				SmartVu™					
Evaporator				Direct-expansion plate heat exchanger					
Water volume			l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections				Victaulic					
Inlet/outlet			in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module				1000	1000	1000	1000	1000	1000
Refrigerant connections									
Discharge line diameter			in	1"3/8	1"3/8	1"3/8	1"1/8	1"1/8	1"1/8
Liquid line diameter			in	7/8"	7/8"	7/8"	7/8"	7/8"	7/8"
Chassis paint color				Color code: RAL7035					

- * In accordance with standard EN14511-3:2013. Refrigerant piping equivalent length (without drier and valves) = 3 m.
- CS1 Cooling mode conditions: evaporator entering/leaving water temperature 12 °C/7 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m²K/W.
- CS2 Cooling mode conditions: evaporator entering/leaving water temperature 23 °C/18 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m²K/W.
- (1) Weight shown is a guideline only. Please refer to the unit nameplate
- (2) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/- 3dB(A)). Measured in accordance with ISO 9614-1.
- (3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.

ELECTRICAL DATA

30WG without hydraulic module		020	025	030	035	040	045	050	060	070	080	090
Power circuit												
Nominal voltage	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V, via internal transformer										
Maximum start-up current draw (Un)⁽¹⁾												
Standard unit	A	98	142	142	147	158	197	161	162	170	183	226
Unit with electronic starter option	A	53,9	78,1	78,1	80,9	86,9	108,4	96,8	97,9	104,1	112,3	137,4
Unit power factor at maximum capacity⁽²⁾		0,9	0,8	0,9	0,9	0,9	0,9	0,8	0,9	0,9	0,9	0,9
Maximum operating power input⁽²⁾		kW	9,2	10,8	11,7	13,7	15,1	17,1	21,5	23,3	27,3	34,2
Nominal unit operating current draw⁽³⁾		A	10,5	13,2	13,8	15,6	16,2	20,2	26,4	27,6	31,2	40,4
Maximum operating current draw (Un)⁽⁴⁾		A	15,6	18,7	19,8	23,2	25,4	29	37,4	39,6	46,4	58
Maximum operating current draw (Un-10%)*		A	17,3	20,8	22	25,8	28,2	32,2	41,6	44	51,6	64,4
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table below "Short-circuit stability current"										

(1) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).

(2) Maximum power input at the unit operating limits.

(3) Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 30 °C/ 35 °C.

(4) Maximum unit operating current at maximum unit power input and 400 V.

* Maximum unit operating current at maximum unit power input and 360 V.

30WG without hydraulic module		110	120	140	150	170	190
Power circuit							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Control circuit supply		24 V, via internal transformer					
Maximum start-up current draw (Un)⁽¹⁾							
Standard unit	A	193,4	208,8	255	216,6	234,2	284
Unit with electronic starter option	A	127,3	137,7	166,4	150,5	163,1	195,4
Unit power factor at maximum capacity⁽²⁾		0,87	0,85	0,85	0,87	0,85	0,85
Maximum operating power input⁽²⁾		kW	41	45	51	55	68
Nominal unit operating current draw⁽³⁾		A	46,8	48,6	60,6	62,4	80,8
Maximum operating current draw (Un)⁽⁴⁾		A	69,6	76,2	87	92,8	116
Maximum operating current draw (Un-10%)*		A	77,3	84,7	96,7	103,1	128,9
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit					
Short-circuit stability and protection		See table below "Short-circuit stability current"					

(1) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).

(2) Maximum power input at the unit operating limits.

(3) Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 30 °C/ 35 °C.

(4) Maximum unit operating current at maximum unit power input and 400 V.

* Maximum unit operating current at maximum unit power input and 360 V.

ELECTRICAL DATA

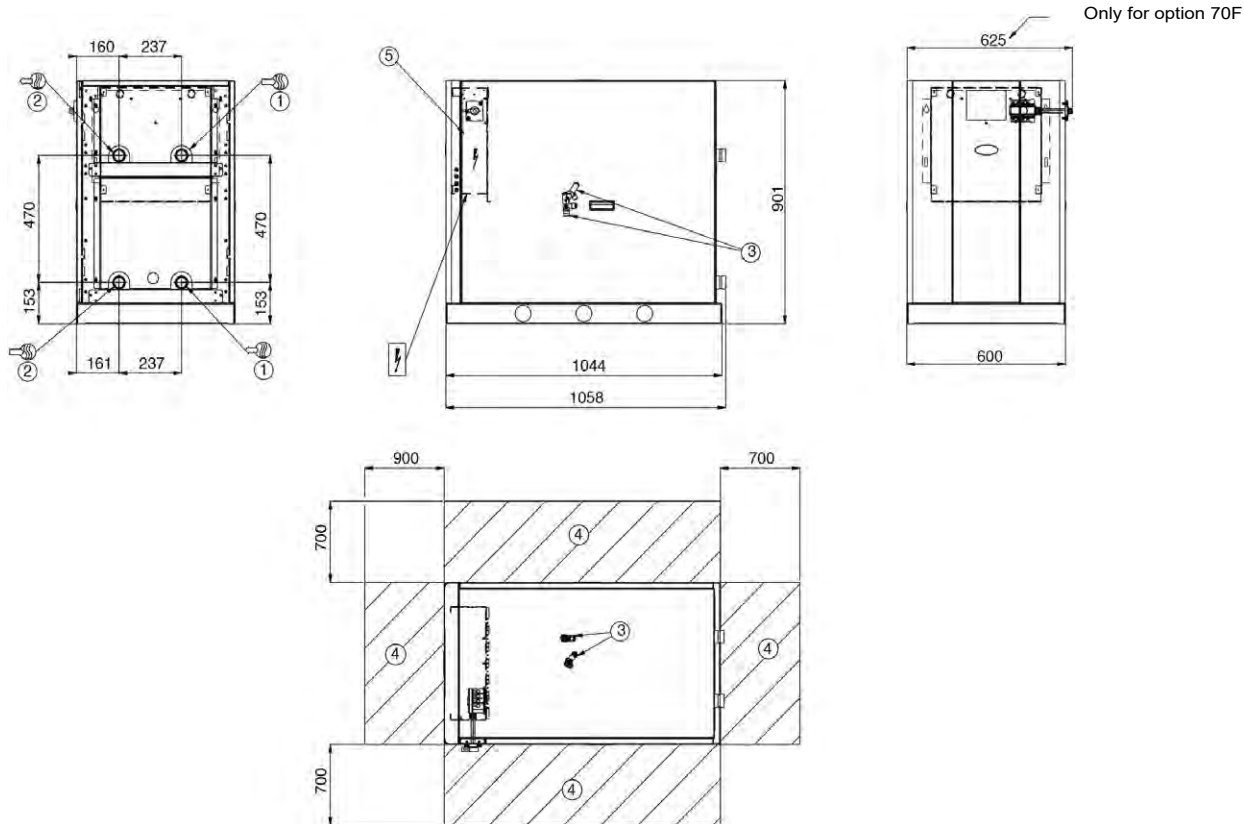
30WGA without hydraulic module		020	025	030	035	040	045	050	060	070	080	090
Power circuit												
Nominal voltage	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V, via internal transformer										
Maximum start-up current draw (Un)⁽¹⁾												
Standard unit	A	98	142	142	147	158	197	161	162	170	183	226
Unit with electronic starter option	A	53,9	78,1	78,1	80,9	86,9	108,4	96,8	97,9	104,1	112,3	137,4
Unit power factor at maximum capacity⁽²⁾		0,9	0,8	0,9	0,9	0,9	0,9	0,8	0,9	0,9	0,9	0,9
Maximum operating power input⁽²⁾		kW	9,2	10,8	11,7	13,7	15,1	17,1	21,5	23,3	27,3	34,2
Nominal unit operating current draw⁽³⁾		A	11,4	13,8	14,7	16,5	18,1	21,2	27,6	29,4	33,1	36,4
Maximum operating current draw (Un)⁽⁴⁾		A	15,6	18,7	19,8	23,2	25,4	29	37,4	39,6	46,4	58
Maximum operating current draw (Un-10%)*		A	17,3	20,8	22	25,8	28,2	32,2	41,6	44	51,6	64,4
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table below "Short-circuit stability current"										

30WGA without hydraulic module		110	120	140	150	170	190
Power circuit							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Control circuit supply		24 V, via internal transformer					
Maximum start-up current draw (Un)⁽¹⁾							
Standard unit	A	193,4	208,8	255	216,6	234,2	284
Unit with electronic starter option	A	127,3	137,7	166,4	150,5	163,1	195,4
Unit power factor at maximum capacity⁽²⁾		0,87	0,85	0,85	0,87	0,85	0,85
Maximum operating power input⁽²⁾		kW	41	45	51	55	68
Nominal unit operating current draw⁽³⁾		A	49,5	54,3	63,6	66	72,4
Maximum operating current draw (Un)⁽⁴⁾		A	69,6	76,2	87	92,8	101,6
Maximum operating current draw (Un-10%)*		A	77,3	84,7	96,7	103,1	112,9
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit					
Short-circuit stability and protection		See table below "Short-circuit stability current"					

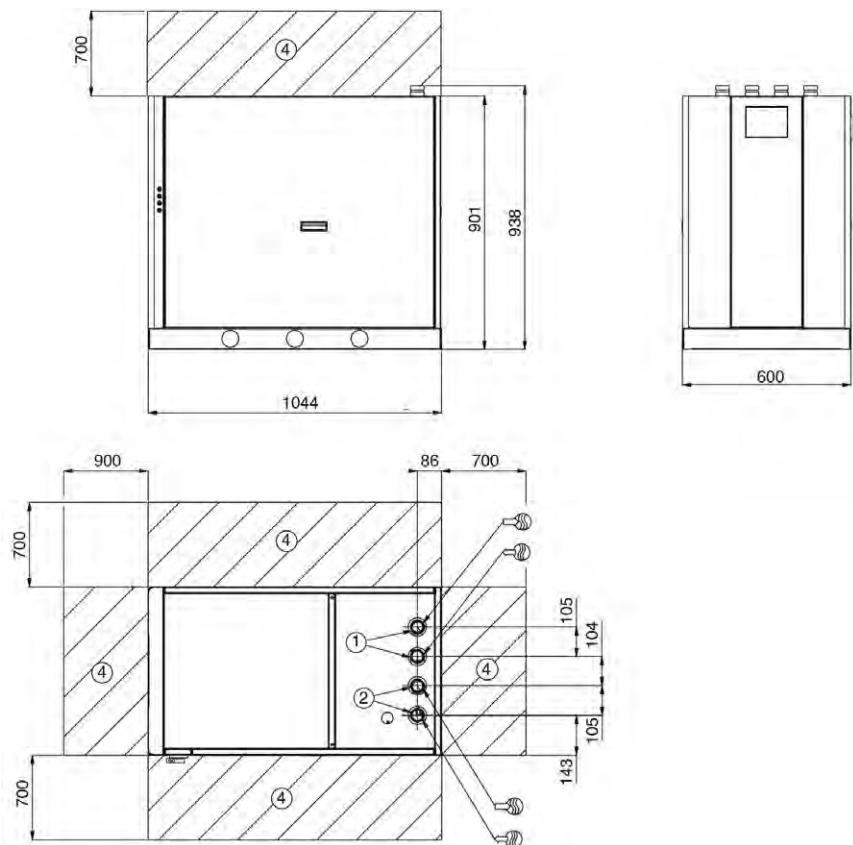
- (1) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).
- (2) Maximum power input at the unit operating limits.
- (3) Values obtained at the following conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 45 °C.
- (4) Maximum unit operating current at maximum unit power input and 400 V.
- * Maximum unit operating current at maximum unit power input and 360 V.

DIMENSIONS/CLEARANCES

30WG 020-045 - standard unit



30WG 020-045 - unit with top connections (option 274)



Legend

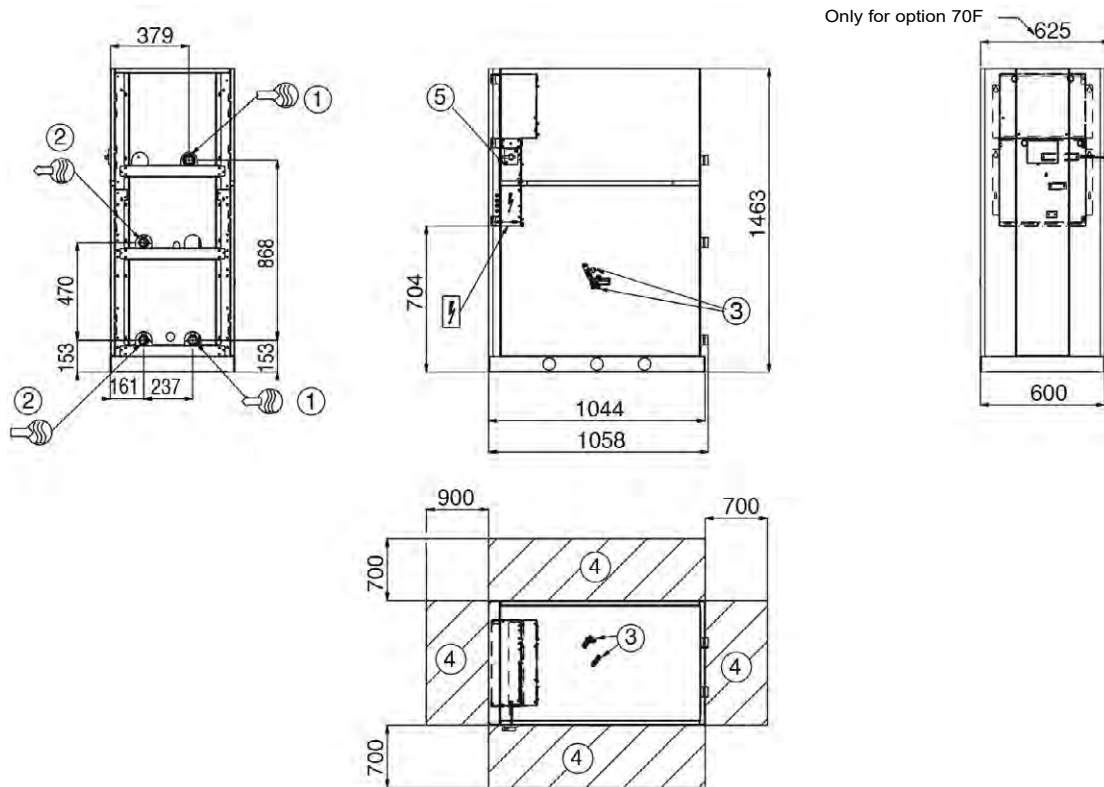
All dimensions are in mm.

- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet.
- Water outlet
- Power wiring connection

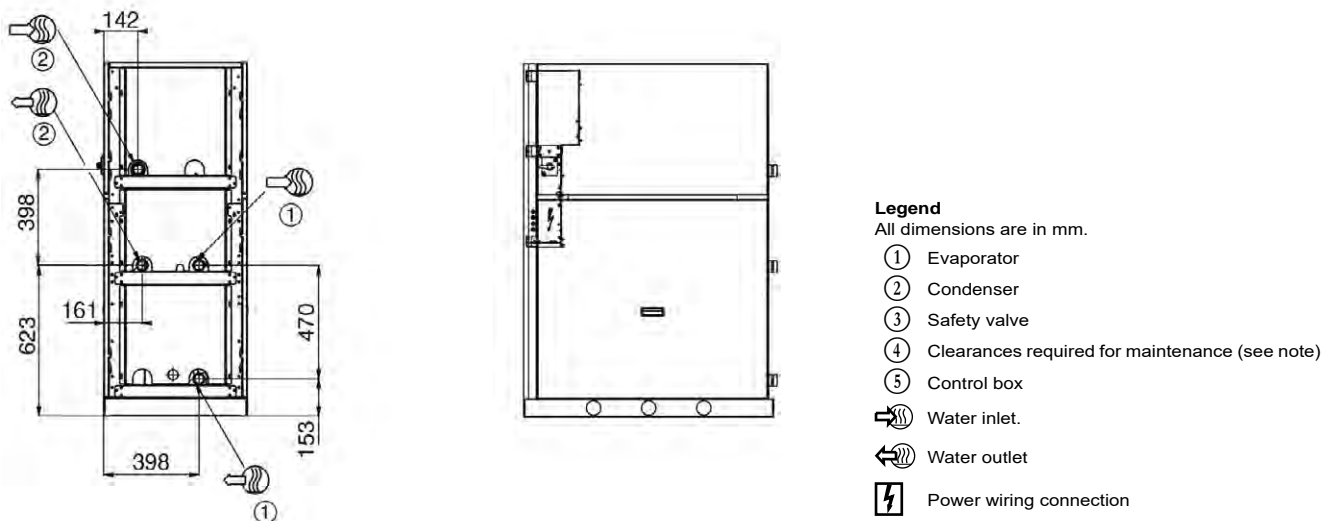
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 020-045 - unit with evaporator hydraulic module (option 116)



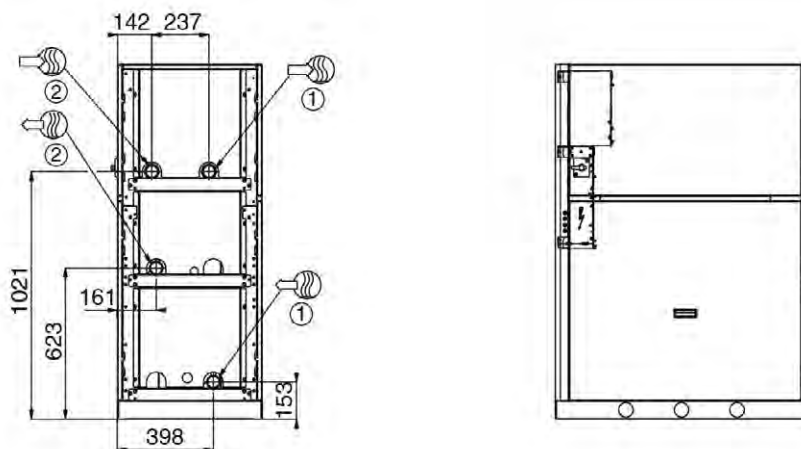
30WG 020-045 - unit with condenser hydraulic module (option 270)



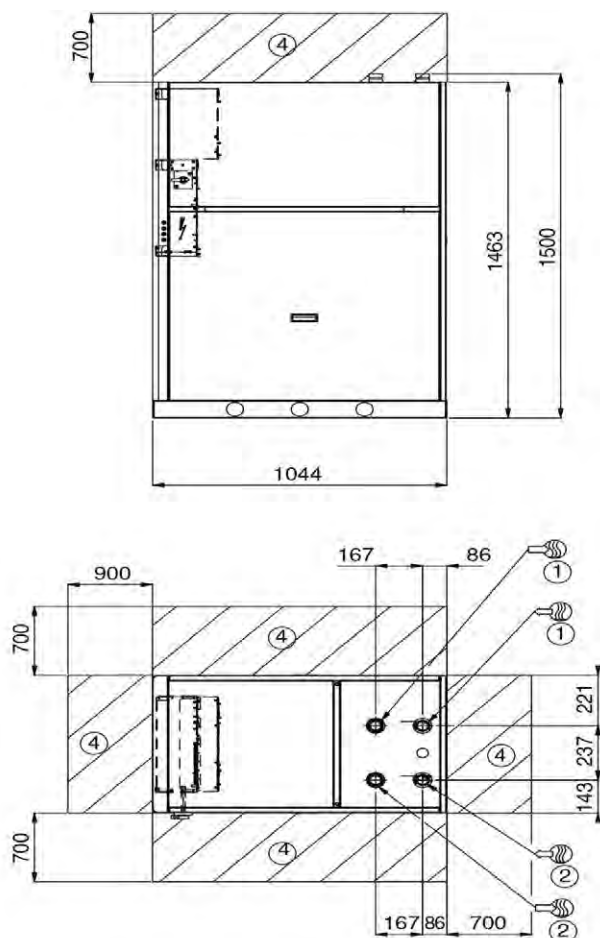
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 020-045 - unit with evaporator/condenser hydraulic modules (options 116 + 270)



30WG 020-045 - unit with hydraulic module and top connections (options 116 + 274 or 270 + 274 or 116 + 270 + 274)



Legend

All dimensions are in mm.

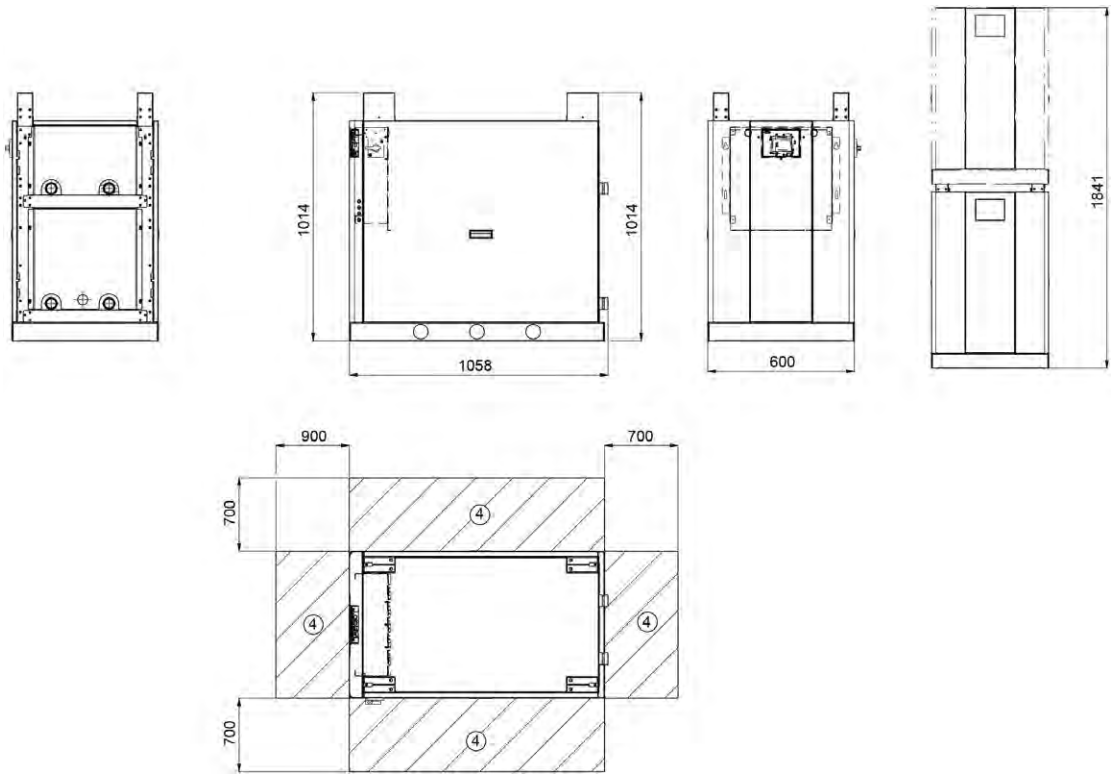
- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

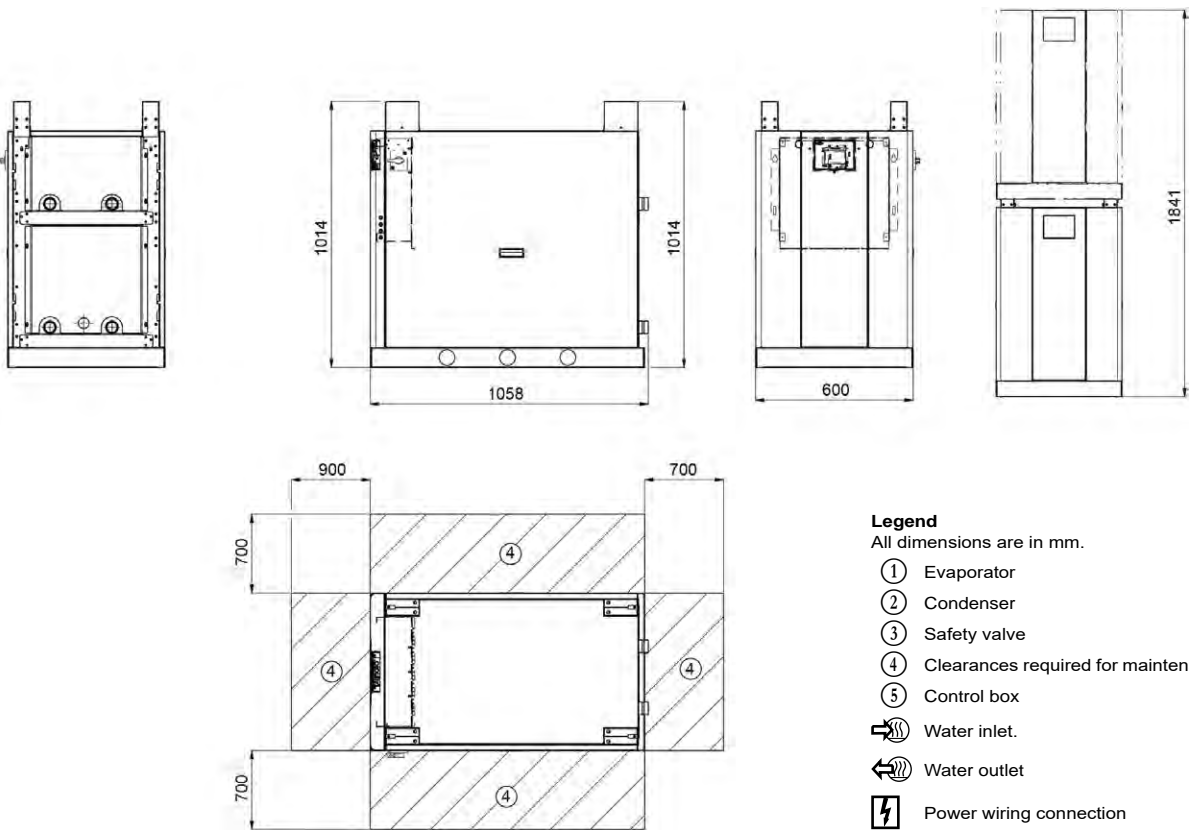
DIMENSIONS/CLEARANCES

30WG 020-045 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.



30WG 050-090 - standard unit

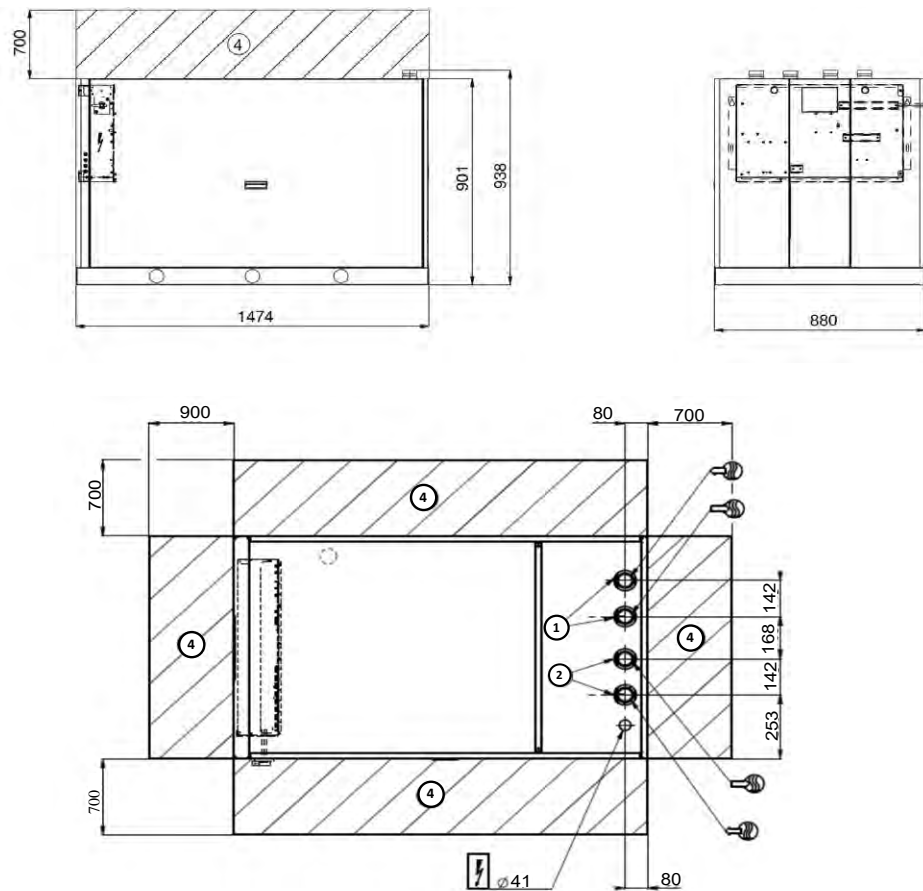


- Legend**
All dimensions are in mm.
- ① Evaporator
 - ② Condenser
 - ③ Safety valve
 - ④ Clearances required for maintenance (see note)
 - ⑤ Control box
 - ➡ Water inlet.
 - ➡ Water outlet
 - ⚡ Power wiring connection

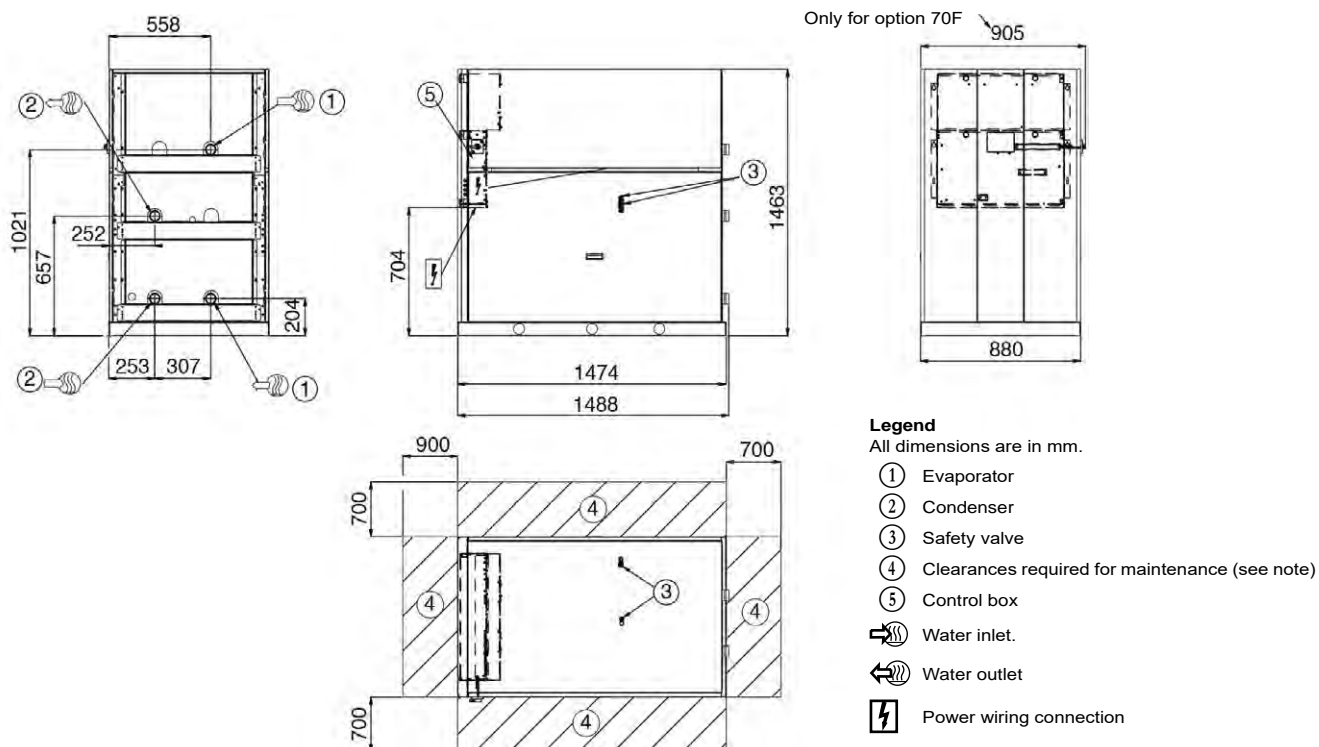
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 050-090 - unit with top connections (option 274)



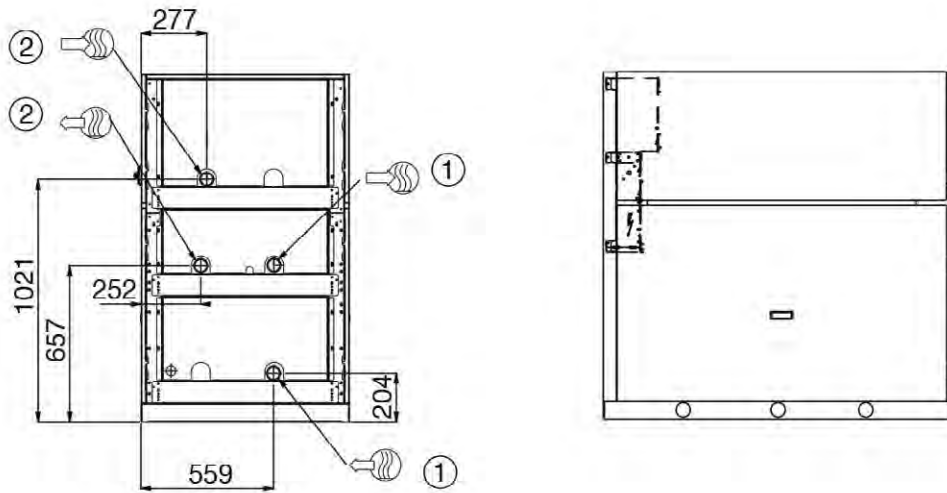
30WG 050-090 - unit with evaporator hydraulic module (option 116)



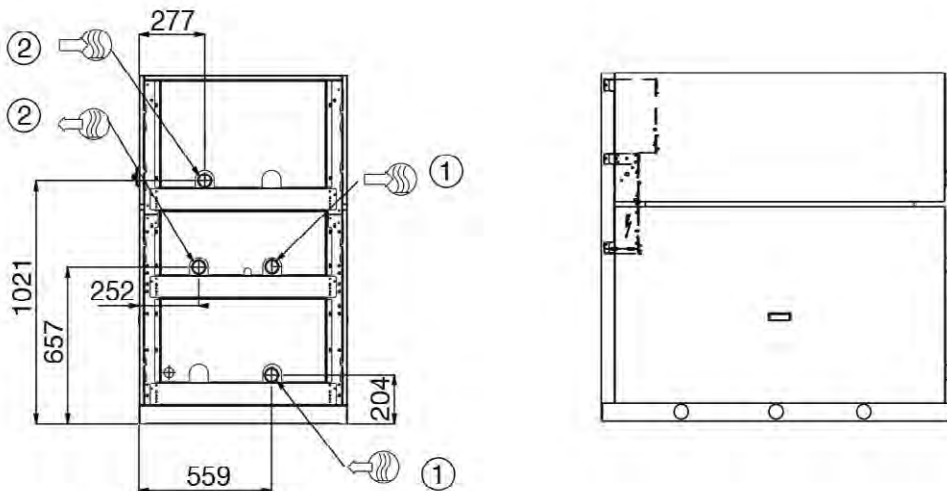
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 050-090 - unit with condenser hydraulic module (option 270)



30WG 050-090 - unit with evaporator/condenser hydraulic modules (options 116 + 270)



Legend

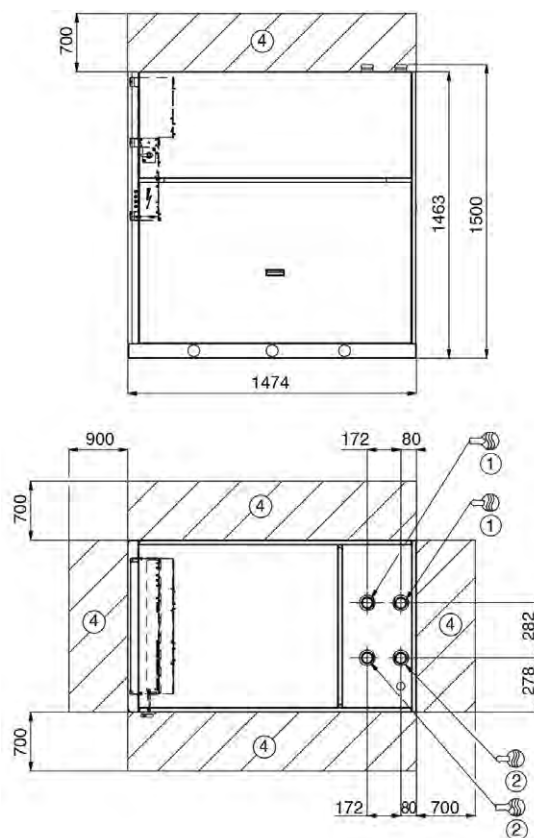
All dimensions are in mm.

- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

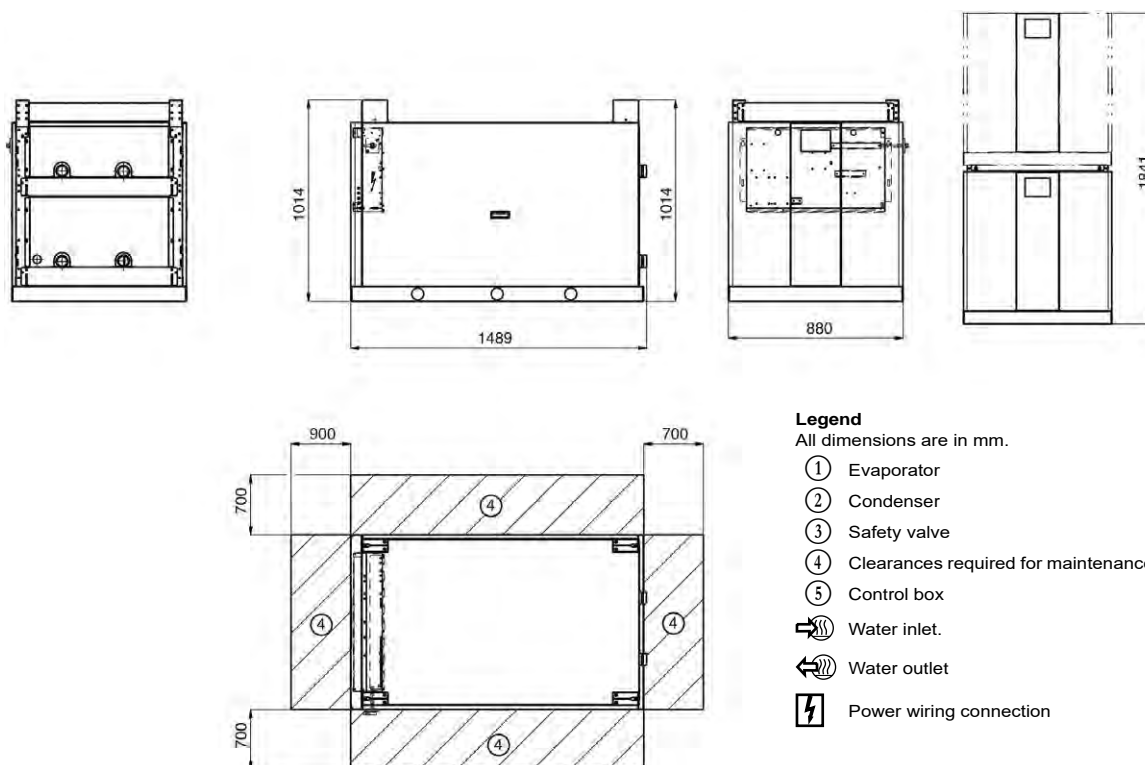
DIMENSIONS/CLEARANCES

30WG 050-090 - unit with hydraulic module and top connections (options 116 + 274 or 270 + 274 or 116 + 270 + 274)



30WG 050-090 - stackable unit (option 273)

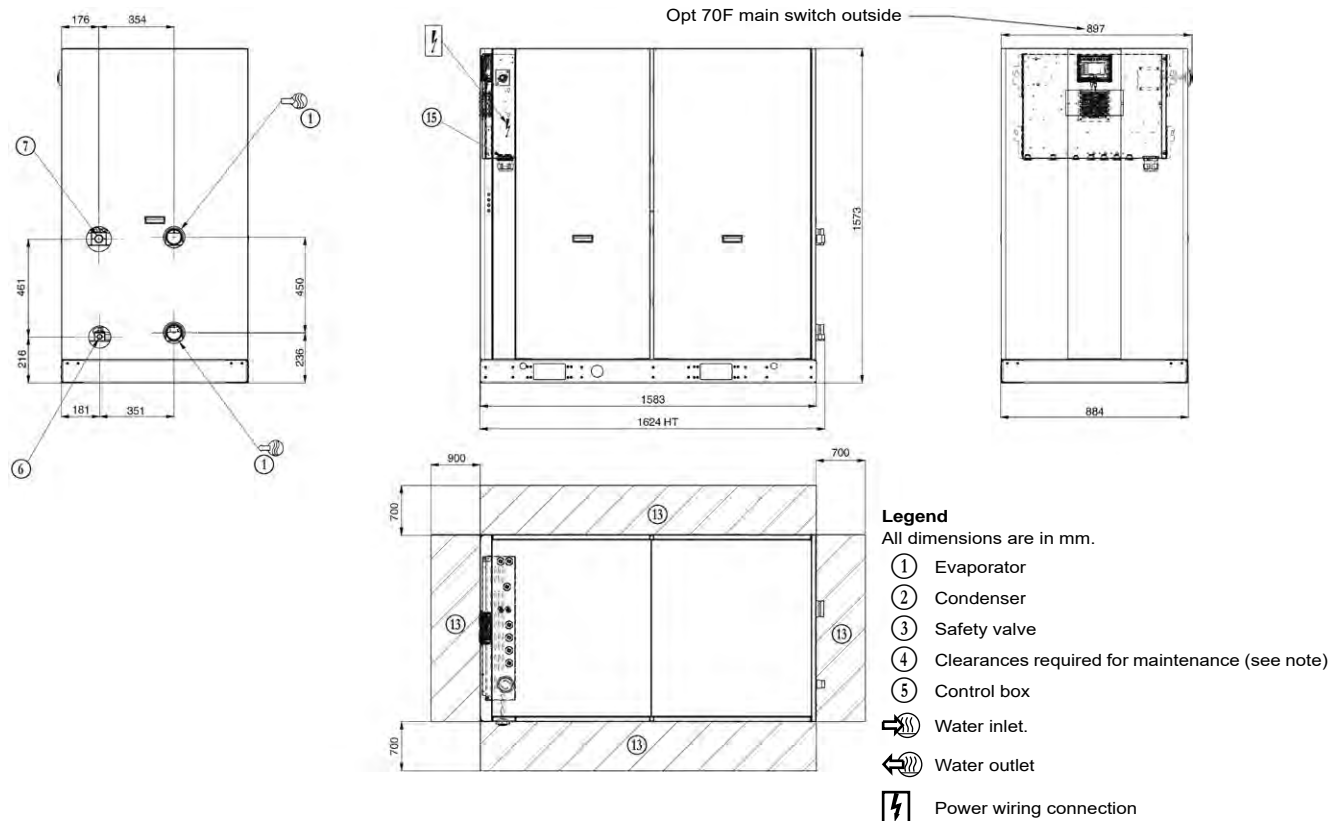
NOTE: The water and electrical connections are identical to those of the standard unit.



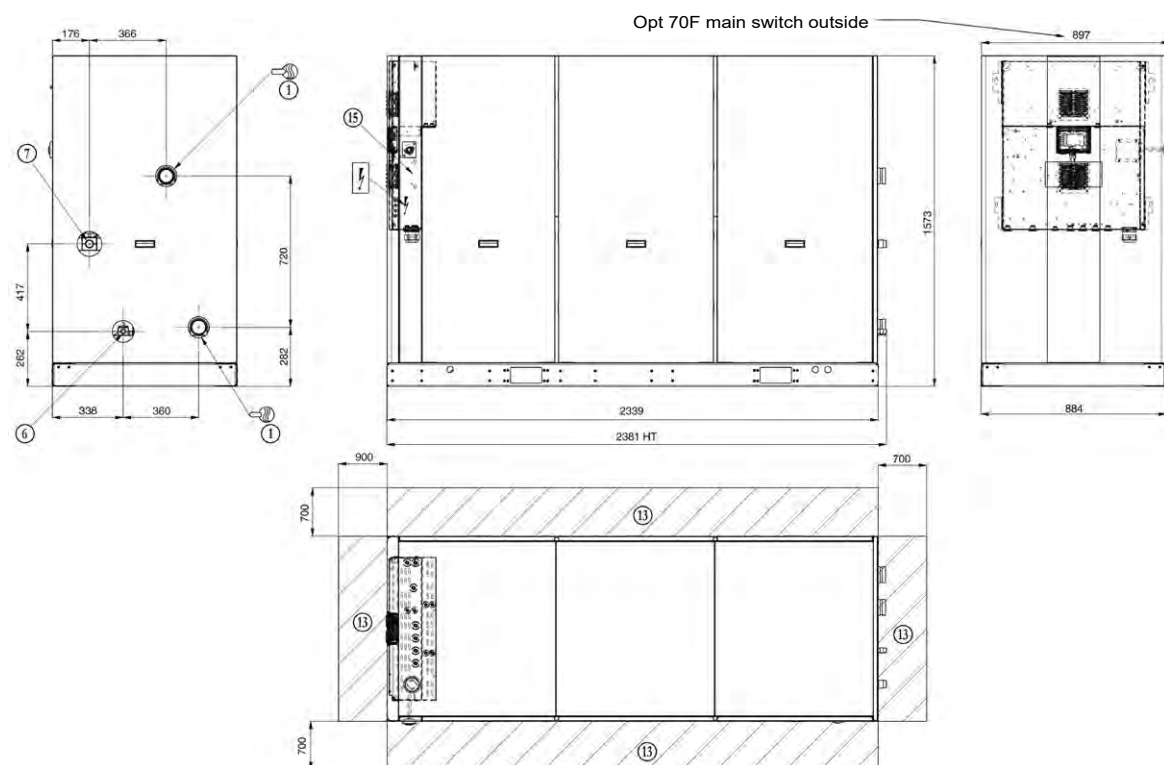
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WGA 110-140 - Standard unit



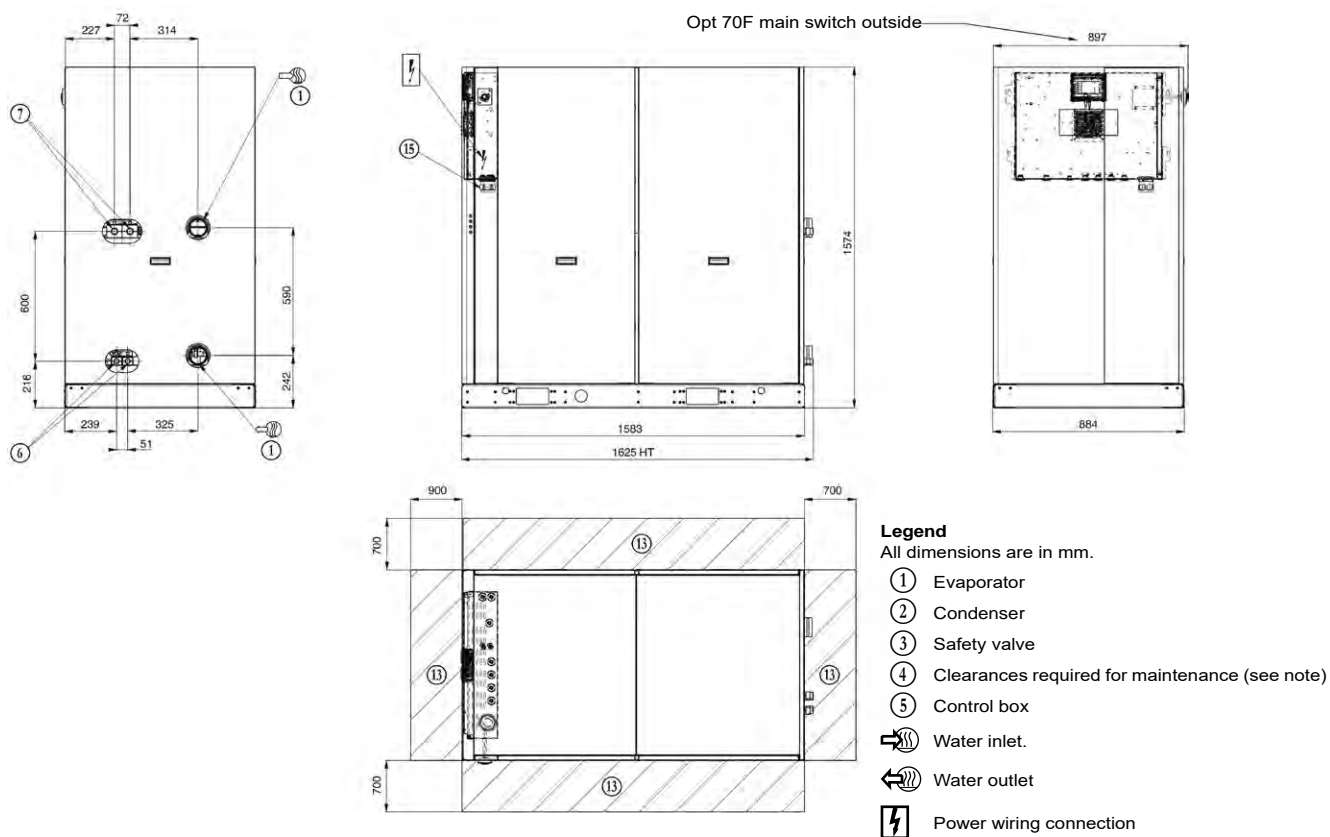
30WGA 110-140 - Unit with hydraulic module (option 116)



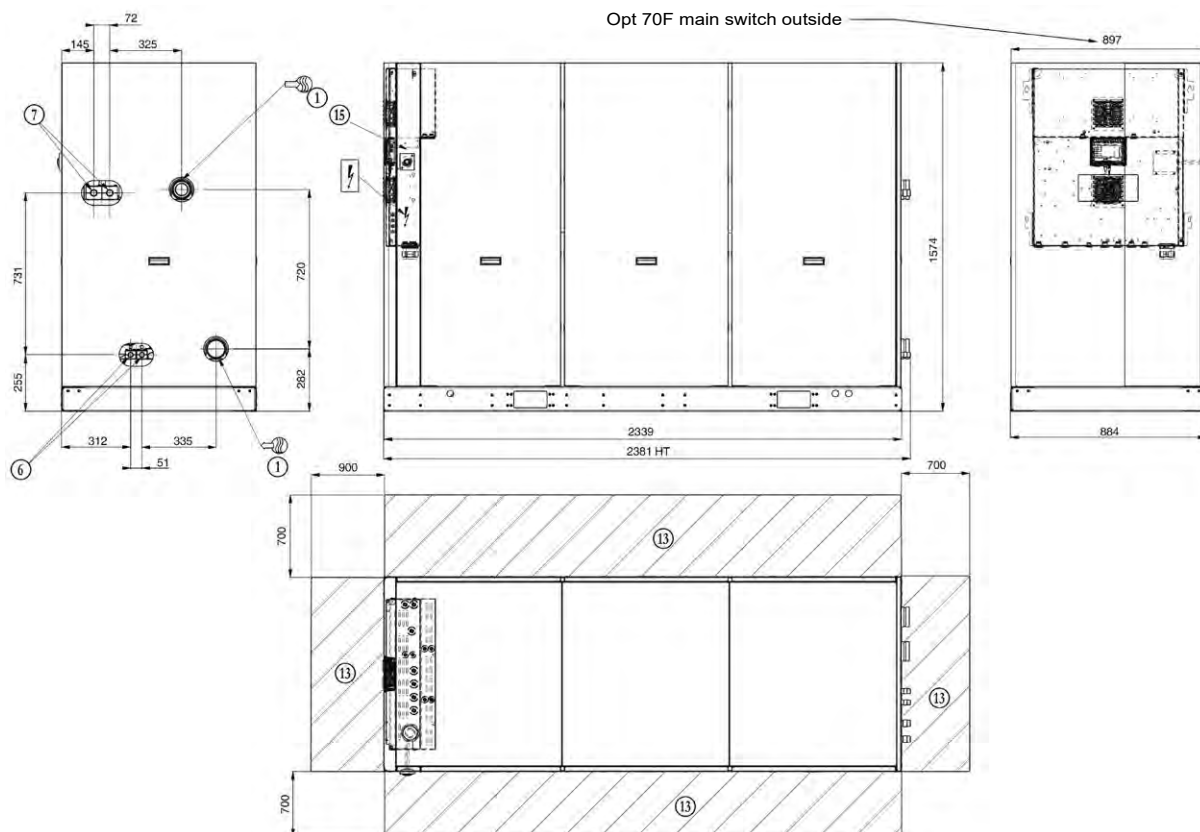
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WGA 150-190 - Standard unit



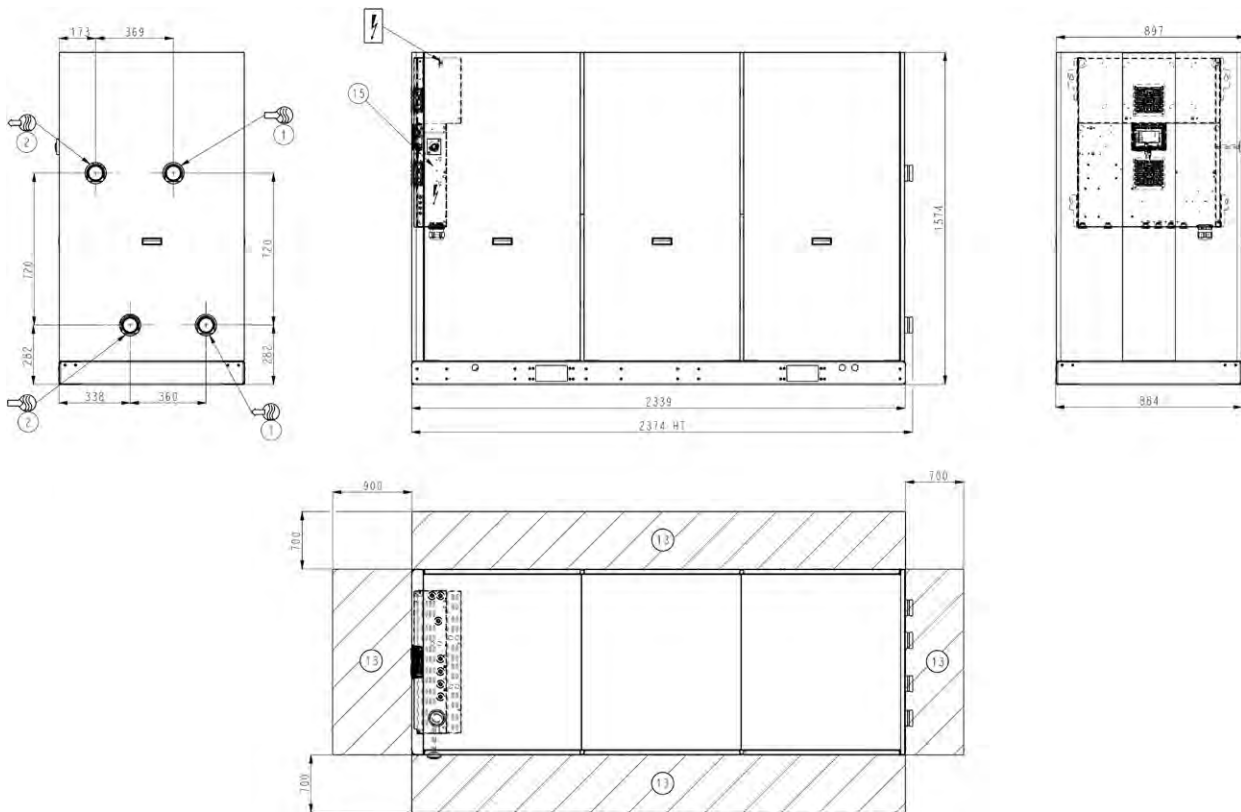
30WGA 150-190 - Unit with hydraulic module (option 116)



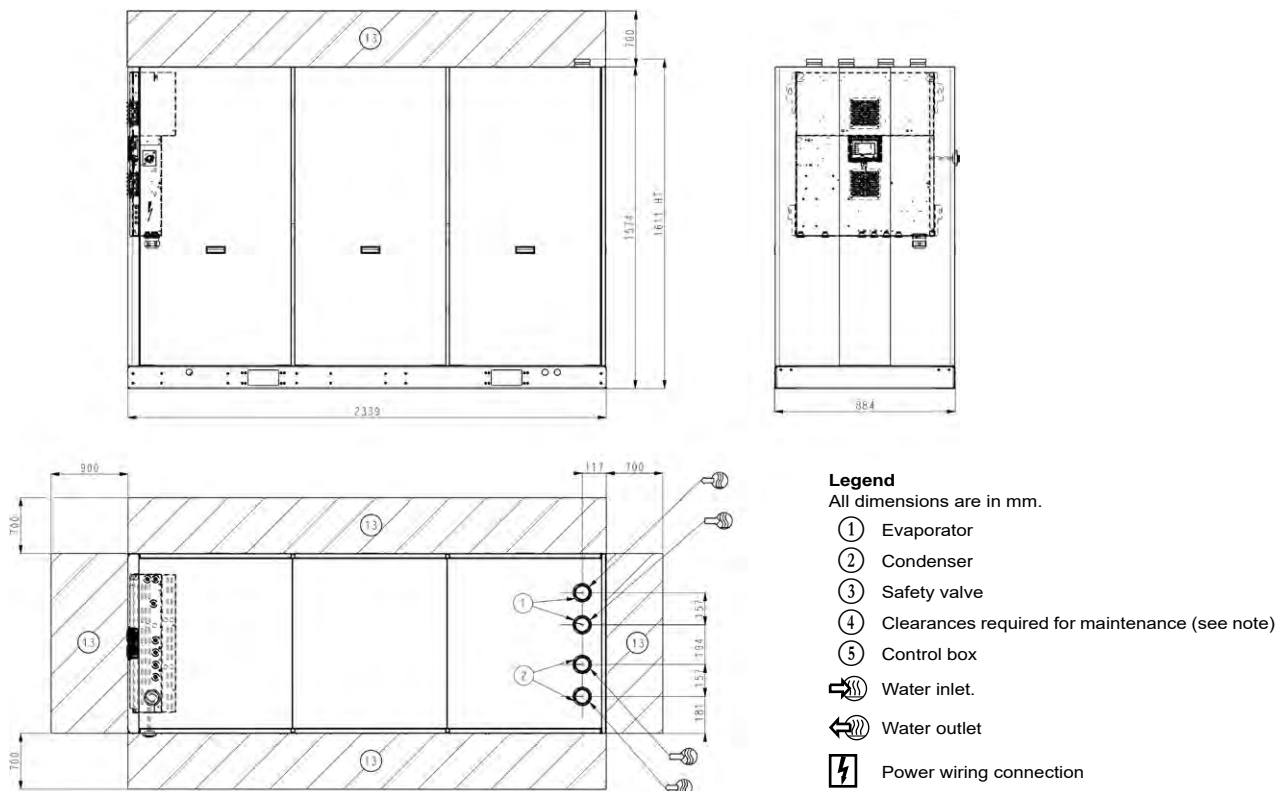
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 110-140 - unit with hydraulic module (option 116-270)



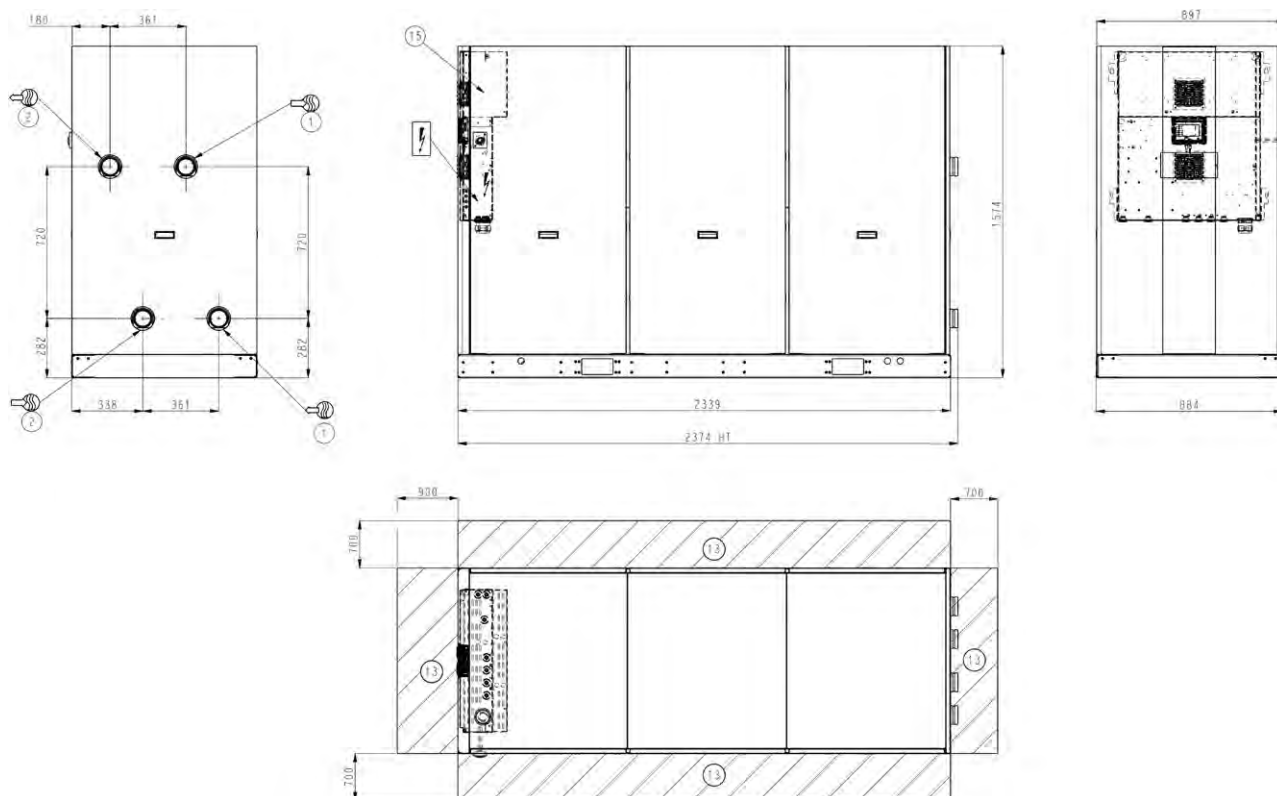
30WG 110-140 - unit with hydraulic module and top connections (option 116-270 and 274)



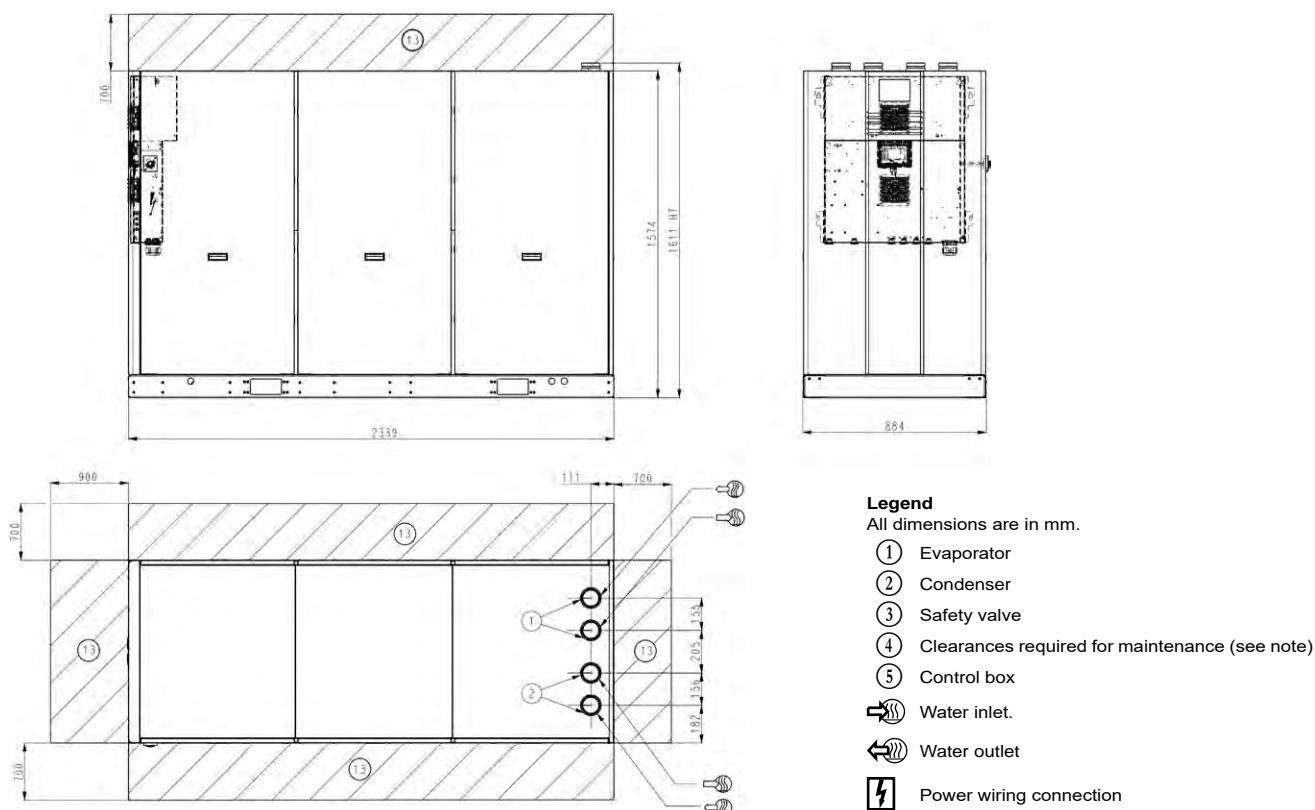
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 150-190 - unit with hydraulic module (option 116-270)



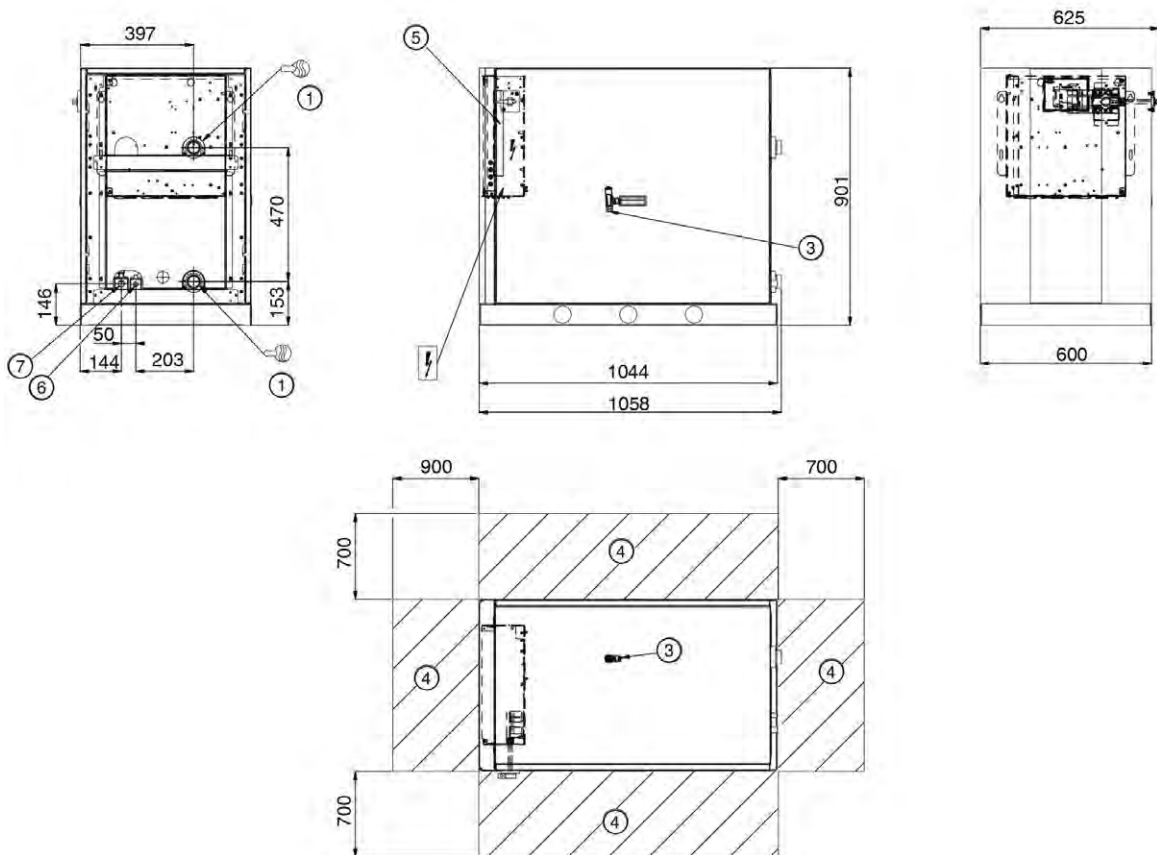
30WG 150-190 - unit with hydraulic module and top connections (option 116-270 and 274)



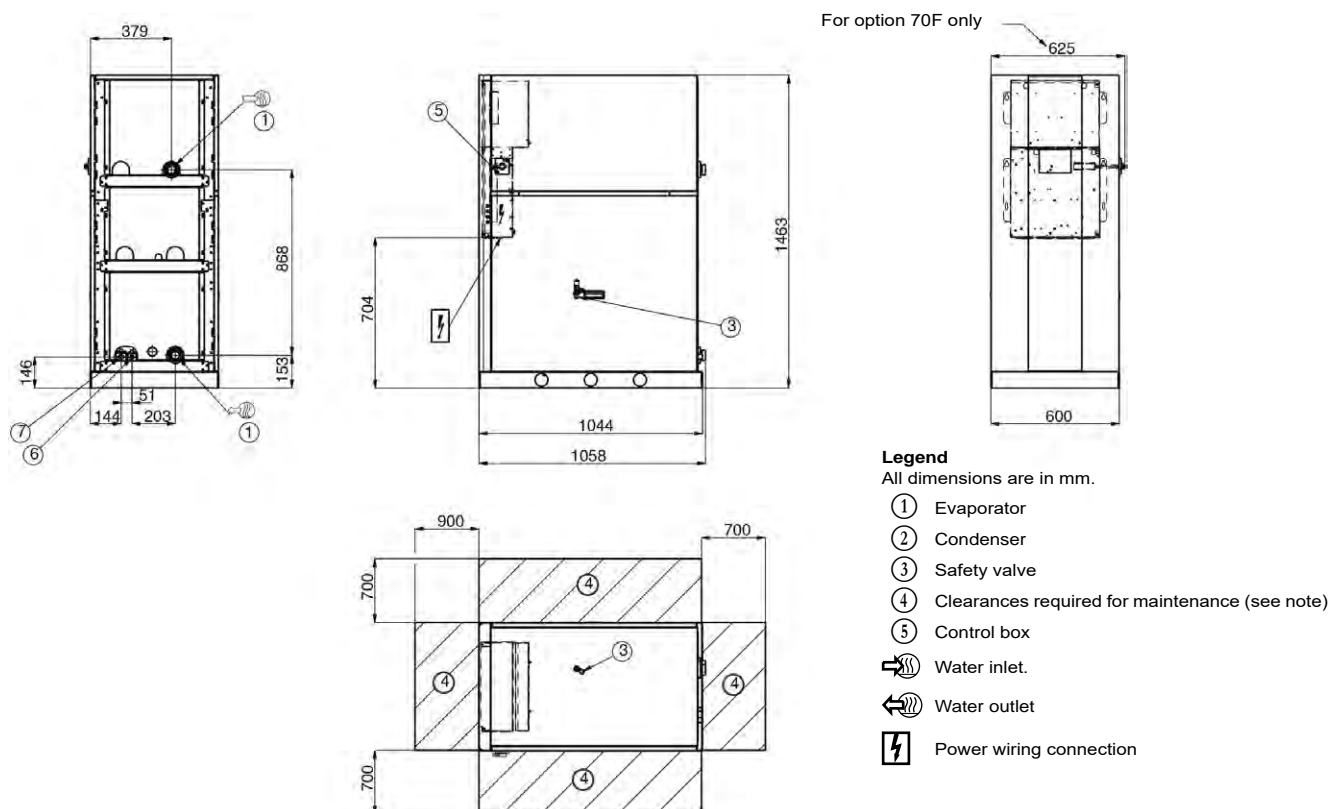
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WGA 020-045 - standard unit



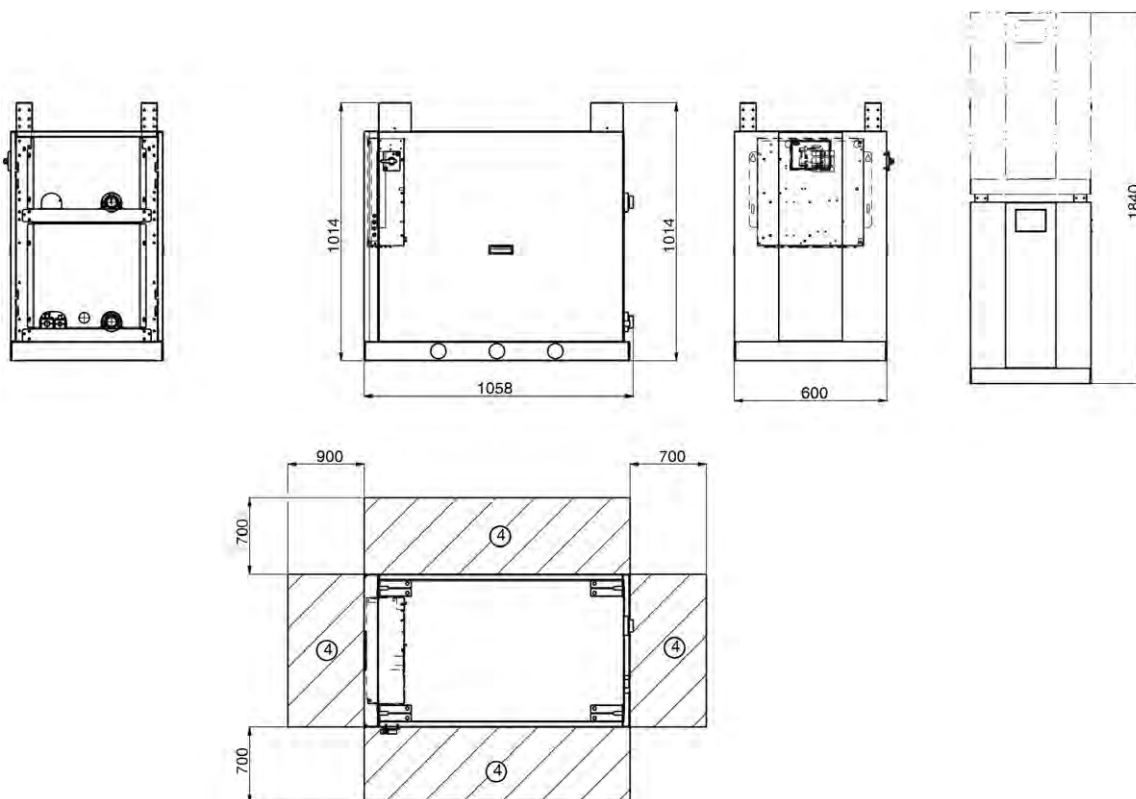
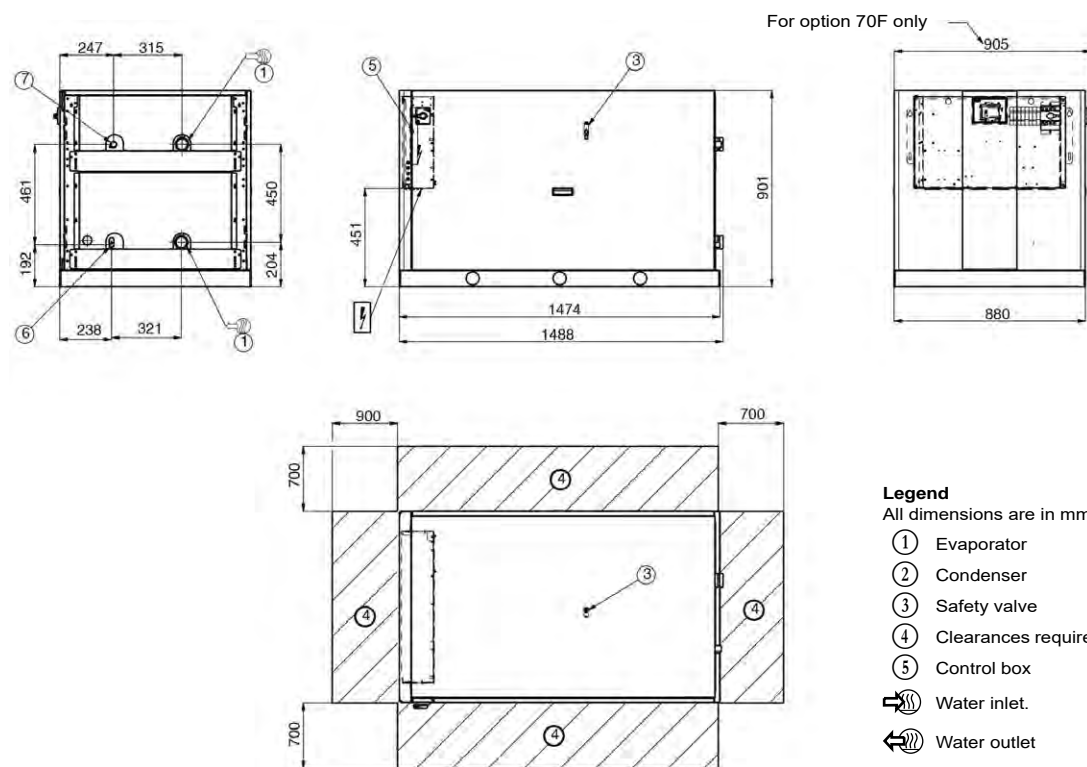
30WGA 020-045 - unit with evaporator hydraulic module (option 116)



NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES**30WGA 020-045 - stackable unit (option 273)**

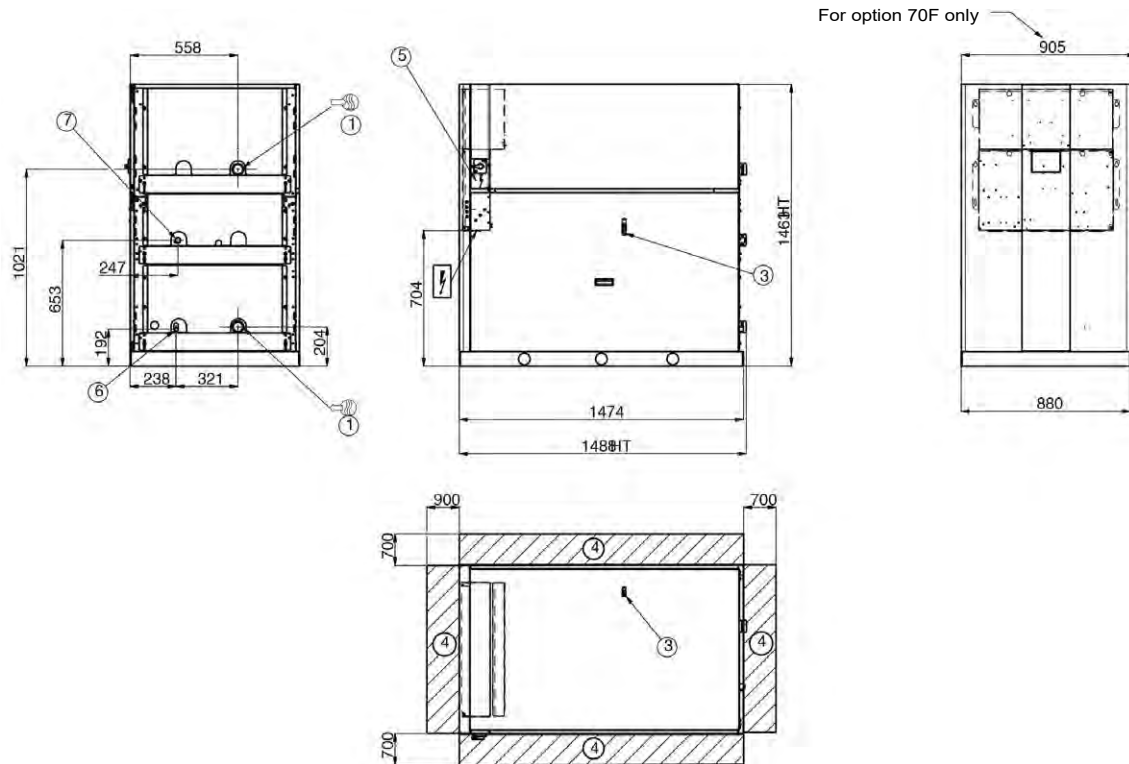
NOTE: The water and electrical connections are identical to those of the standard unit.

**30WGA 050-090 - standard unit**

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

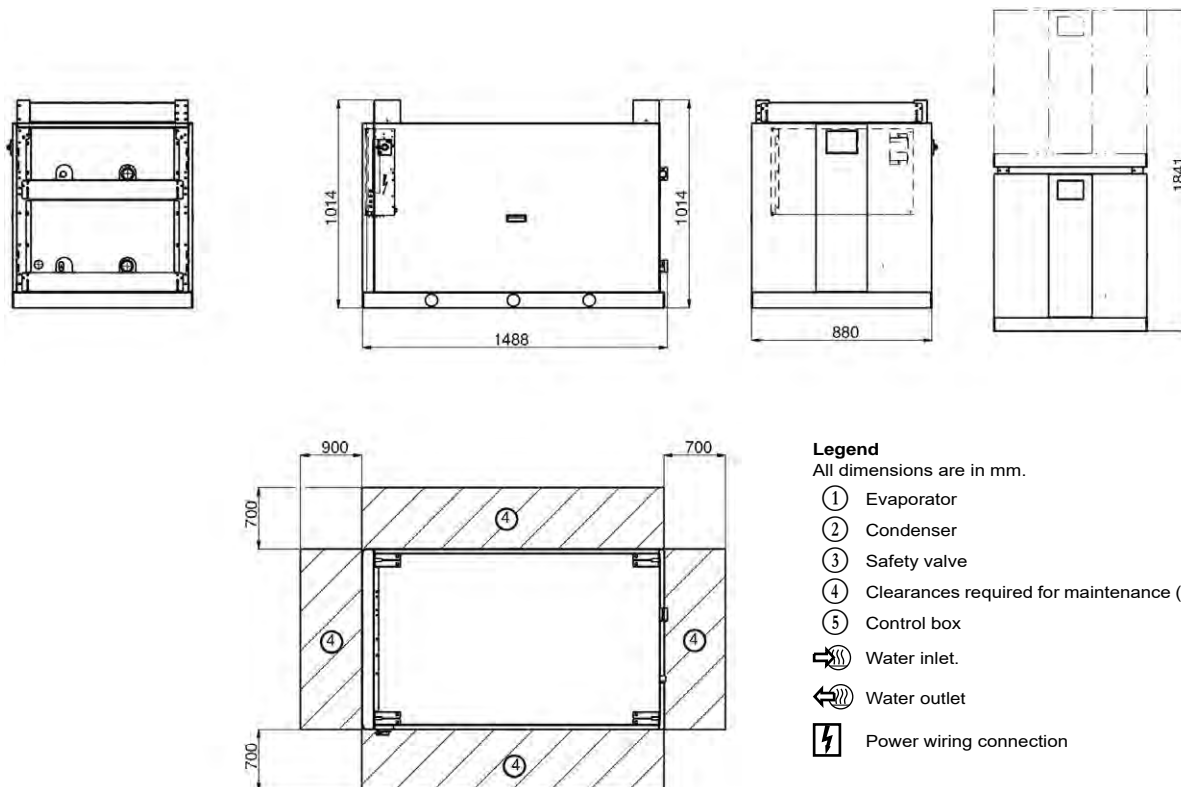
DIMENSIONS/CLEARANCES

30WGA 050-090 - unit with evaporator hydraulic module (option 116)



30WGA 050-090 - stackable unit (option 273)

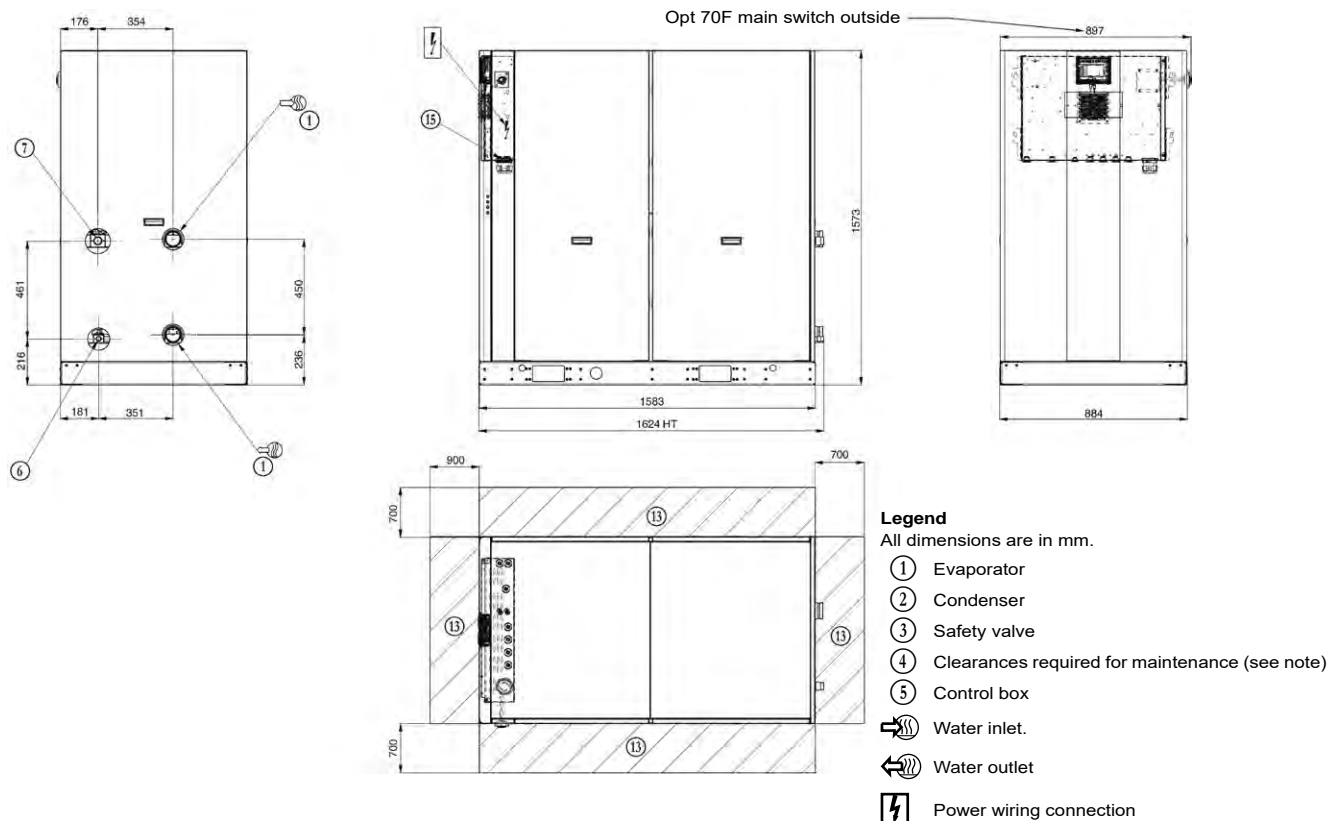
NOTE: The water and electrical connections are identical to those of the standard unit.



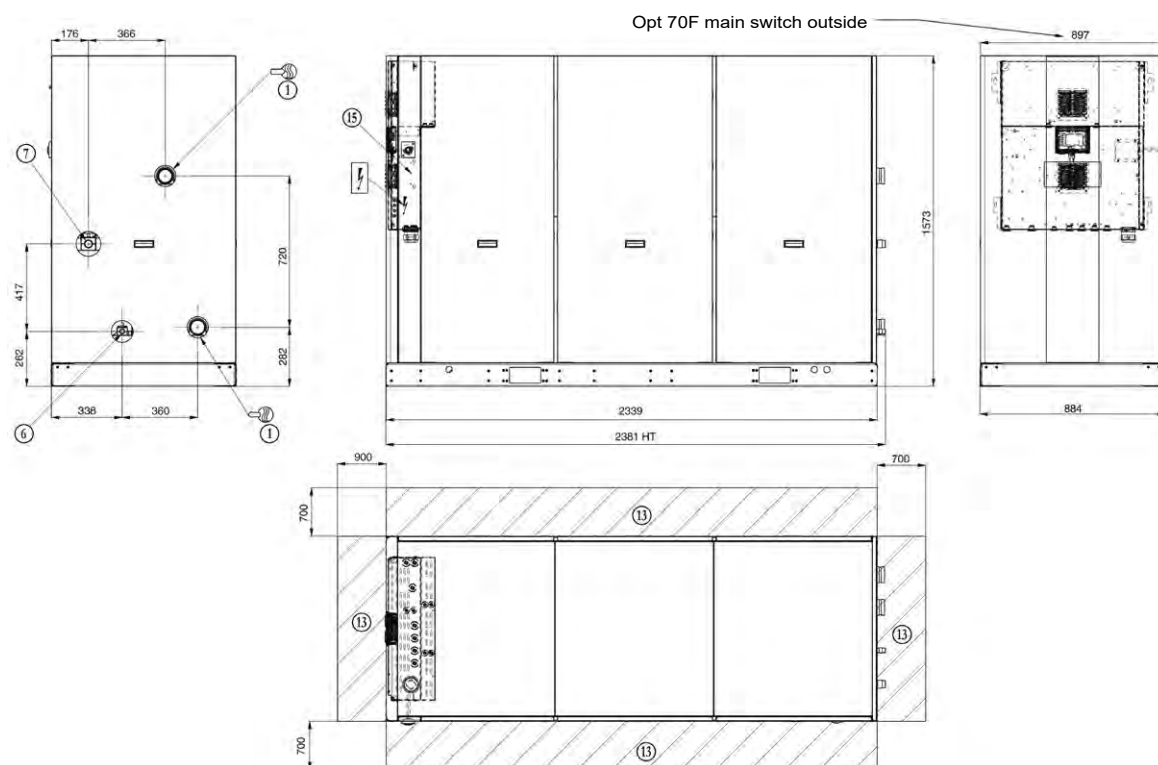
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WGA 110-140 - Standard unit



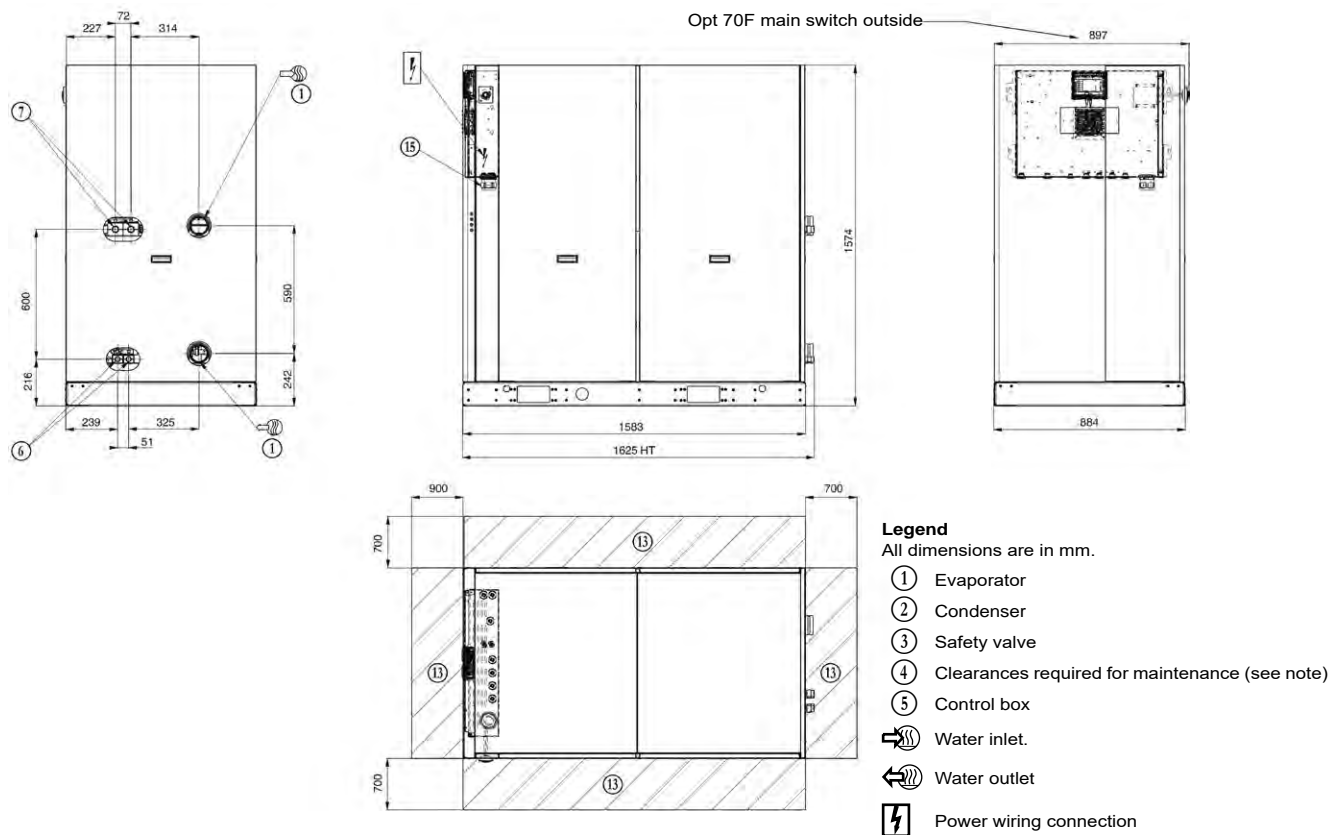
30WGA 110-140 - Unit with hydraulic module (option 116)



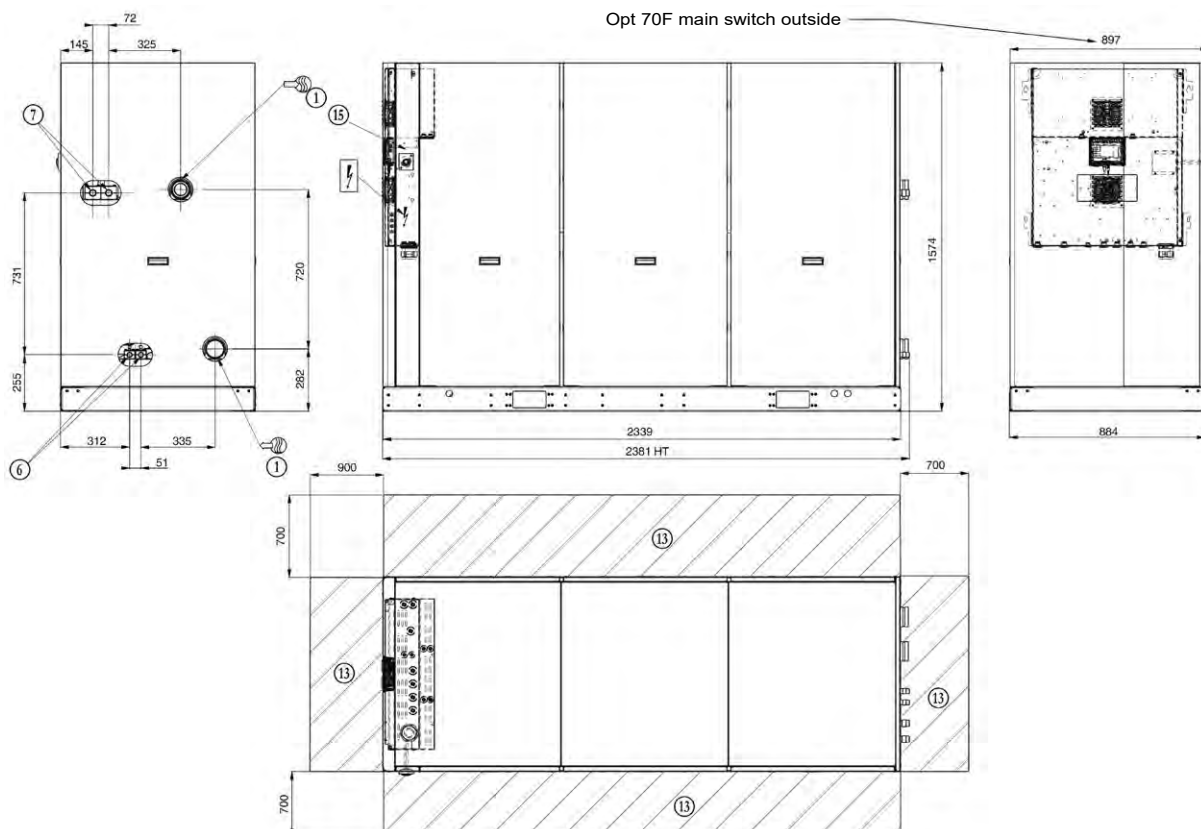
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WGA 150-190 - Standard unit



30WGA 150-190 - Unit with hydraulic module (option 116)



NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

WATER-SOURCED SCREW HEAT PUMPS



Low energy consumption

High reliability

Easy and fast installation

Low operating sound levels

Environmental care

30XWH/30XWHP

AQUAFORCE

Nominal heating capacity 317-1989 kW
Nominal cooling capacity 273-1756 kW

The 30XWH/30XWHP liquid chillers are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality.

The 30XW/30XWHP liquid chillers are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- Refrigerant R134a
- Flooded heat exchangers that are mechanically cleanable
- Carrier SmartVu™ control with color touch screen user interface that includes 10 languages

To meet to all environmental and economic requirements, the 30XWH/30XWHP is available in two efficiency classes:

- Entry-level efficiency 30XWH units that offer an optimised balance of technical and economical aspects,
- Premium-efficiency 30XWHP units that offer unequalled energy efficiency to satisfy the most stringent demands of building owners wanting to reduce operating costs to the minimum.

The 30XW Aquaforce range is also split into two versions:

- 30XW for air conditioning and refrigeration applications
- 30XWH for heating applications

As standard, the unit can provide an evaporator leaving temperature down to 3,3°C (-12°C optional), and when operating as a heat pump, it can deliver up to 50°C (63°C optional) on the condenser side.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- SEPR up to 9,1 and SEER up to 7,7
- The high energy efficiency is reached through:
 - Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
 - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
 - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
 - Economizer system with electronic expansion device for increased cooling capacity (30XW-P).

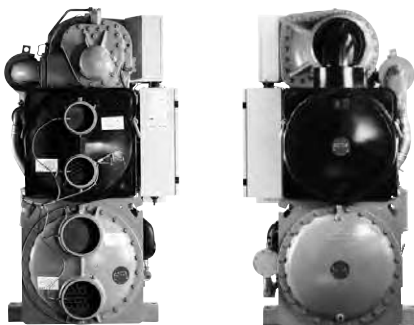
Low operating sound levels

- Standard unit features include:
 - Silencers on the compressors discharge line.
 - Silencers on the economiser return line.
 - Acoustic insulation on the components that are most subjected to radiated noise.
 - Option 257 further reduces the global unit sound level.

Easy and fast installation

- Compact design
 - The 30XW units are designed to offer the most compact dimensions on the market.
 - With a width of approximately 1 m up to 1600 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

**Compact, accessible unit - side view -
sizes up to 1600 KW**



- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer to supply the integrated control circuit (400/24 V)
- Simplified hydraulic connections
 - Victaulic connections on the evaporator and condenser
 - Practical reference marks for entering and leaving water connections
 - Possibility to reverse the heat exchanger water inlet and outlet at the factory
 - Possibility to modify the number of heat exchanger passes
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care

- R-134a refrigerant
 - HFC refrigerant with zero ozone depletion potential
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

High reliability and easy servicing

- The 30XW units offer increased global performance as well as Carrier's acclaimed product quality and reliability.
- Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuit
 - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
 - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure.
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

TECHNICAL INSIGHTS

SmartVu™



- New innovative smart control features :
 - An intuitive and user-friendly, coloured, 7" interface
 - 1 languages available on choice: DE, EN, ES, FR, T, NL, PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Energy management :
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.
- Maintenance functions :
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
- Advanced communication features :
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.

Remote Management (Standard)

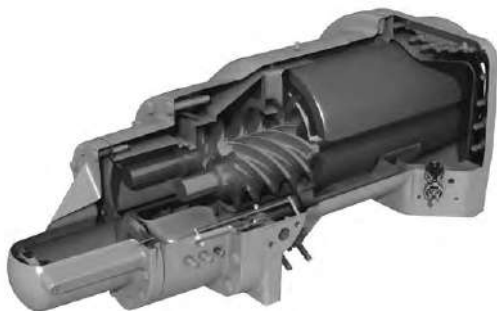
- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System anager or the Plant System anager (optional).
- The 30XW/P also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: indication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
 - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
 - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
 - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
 - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
 - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
 - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
 - Time schedule override: Closing of this contact cancels the programmed time schedule.
 - Out of service: This signal indicates that the chiller is completely out of service.
 - Chiller capacity: This analogue output (-1 gives an immediate indication of the chiller capacity.
 - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
 - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

TECHNICAL INSIGHTS

06T screw compressor



The new generation of the Carrier 06T screw compressors benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	No.	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	-0254-P1762
Unit supplied in two assembled parts	51	The unit is equipped with flanges that allow disassembly of the unit on site	Facilitates installation in plant rooms with limited access	-1652--1702, P1612-P1762
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	-0254-P1762
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	-1002--1702, P1012-P1762
No disconnect switch	82A	Unit without disconnect switch, but with short-circuit protection device	Permits an external electrical disconnect system for the unit (field-supplied), while ensuring unit short circuit protection	-0254-P1762
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	-0254--1252, P0512-P1314
Evap. dual pumps power/control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	-0254--1252, P0512-P1314
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	-0254--1252, P0512-P1314
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications)	-0254-P1762
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	-0254-P1762
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	-0254-P1762
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	-0254-P1762
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	-0254-P1762
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	-0254-P1762
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	-0254-P1762
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	-0254-P1762
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	-0254-P1762
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	-0254-P1762
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	-0254-P1762
High condensing temperature	150	Optimized compressor for operation at high condensing temperature	Increased condenser leaving water temperature up to 63°C. Allows applications with high condensing temperature (heat pumps, installations with not generously sized dry-coolers or more generally, installations with dry-coolers in hot climate). NOTE: to ens	-0254--0354, P0512-P1762

OPTIONS

Options	No.	Description	Advantages	Use
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	-0254-P1762
Control for low cond. temperature	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	-0254-P1762
Dry-cooler control	154	Adaptation of the control box for communication with the dry-cooler via a bus. For dry cooler need to select the cabinet with option control cabinet manage by the chiller control	Easy system management, extended control capabilities of a remote dry-cooler	-0254-P1762
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	-0254-P1762
7" user interface	158A	Control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	-0254-P1762
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	-0254-P1762
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	-0254-P1762
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	-0254-P1762
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	-0254-P1762
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	-0254-P1762
Low noise level	257	Evaporator sound insulation	3 dB(A) quieter than standard unit	-0402-P1762
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	-0254-P1762
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	-0254-P1762
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	-0254-P1762
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	-0254-P1762
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	-0254-P1762
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	-0254-P1762
Free-cooling dry-cooler control	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, Extended control capabilities to a drycooler used in Free Cooling mode	-0254-P1762
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE.S 5010-5:2019.	-0254-P1762
Compliance with Morocco regulation	327	Specifics documents according Morocco regulation	Conformance with Morocco regulations	-0254-P1762

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-				254	304	354	402	452	552	602	652	702	802
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	317	360	422	499	555	626	633	793	858	929
		COP	kW/kW	5,96	5,98	5,93	5,98	6,04	5,84	5,81	6,06	5,96	5,79
	HW2	Nominal capacity	kW	312	353	417	473	526	595	624	749	812	879
		COP	kW/kW	4,51	4,50	4,55	4,54	4,56	4,42	4,46	4,54	4,48	4,40
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	5,99	6,08	6,32	6,87	6,99	7,01	6,70	6,24	6,23	6,35
		η _{s heat} _{30/35°C}	%	232	235	245	267	272	272	260	242	241	246
		P _{rated}	kW	414	426	500	595	660	742	750	945	1022	1095
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	269	303	354	421	467	525	531	669	720	783
		EER	kW/kW	5,25	5,23	5,17	5,22	5,28	5,12	5,11	5,32	5,23	5,13
	CW2	Nominal capacity	kW	317	362	447	594	639	608	674	851	890	884
		EER	kW/kW	6,46	6,25	6,86	7,04	6,97	5,84	6,38	6,55	6,27	5,68
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	6,26	6,33	6,40	6,851	7,043	7,116	6,823	6,644	6,63	6,82
		η _{s cool} _{12/7°C}	%	247	250	253	271	279	282	270	263	262	270
		SEPR _{12/7°C} Process high temp.	kWh/kWh	8,60	8,16	8,80	8,12	8,28	7,72	7,90	8,83	8,25	8,01
Integrated Part Load Value	IPLV.SI	kW/kW	6,791	6,845	6,850	6,861	7,165	7,430	7,110	7,185	7,168	7,212	
Sound levels - standard unit													
Sound power level ⁽¹⁾			dB(A)	95	95	95	99	99	99	99	99	99	99
Sound pressure level at 1 m ⁽²⁾			dB(A)	78	78	78	82	82	82	82	82	82	82
Sound levels - standard unit + option 257 ⁽³⁾													
Sound power level ⁽¹⁾			dB(A)	-	-	-	96	96	96	96	96	96	96
Sound pressure level at 1 m ⁽²⁾			dB(A)	-	-	-	78	78	78	78	78	78	78
Dimensions - standard unit													
Length			mm	2724	2724	2724	2741	2741	2741	2741	3059	3059	3059
Width			mm	928	928	928	936	936	936	936	1040	1040	1040
Height			mm	1567	1567	1567	1692	1692	1692	1692	1848	1848	1848
Operating weight ⁽⁴⁾			kg	2017	2036	2072	2575	2575	2613	2644	3247	3266	3282
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	-	-	-	-	-

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

η_{s heat}_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_{s cool}_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level.

(4) Weight shown is guideline only. Please refer to the unit nameplate.



Eurovent certified values



AHRI certified values
30XW-only

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Refrigerant ⁽⁴⁾		R-134a									
Circuit A	kg	84	80	78	92	92	92	92	145	135	125
	teqCO ₂	120	114	112	132	132	132	132	207	193	179
Circuit B	kg	-	-	-	-	-	-	-	-	-	-
	teqCO ₂	-	-	-	-	-	-	-	-	-	-
Oil - standard unit											
Circuit A	l	23,5	23,5	23,5	32	32	32	32	36	36	36
Circuit B	l	-	-	-	-	-	-	-	-	-	-
Capacity control		SmartVu™, electronic expansion valves (EXV)									
Minimum capacity ⁽⁵⁾	%	20	20	25	30	30	30	30	20	20	20
Evaporator		Multi-pipe flooded type									
Water volume	l	50	56	61	70	70	70	70	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	55	55	76	76	76	76	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-				852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	981	1185	1237	1324	1457	1557	1689	1795	1913	2001
		COP	kW/kW	5,98	5,77	5,67	5,79	6,12	5,96	5,76	5,61	5,94	5,92
	HW2	Nominal capacity	kW	958	1123	1174	1297	1375	1466	1592	1687	1867	1948
		COP	kW/kW	4,60	4,40	4,33	4,46	4,63	4,53	4,41	4,33	4,61	4,64
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	6,48	6,43	6,25	6,30	6,56	6,33	6,22	6,11	6,46	6,50
		ηs heat _{30/35°C}	%	251	249	242	244	254	245	241	236	251	252
		P _{rated}	kW	1153	1411	1473	1569	1737	1856	2013	2140	2265	2371
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	829	1005	1049	1128	1242	1327	1438	1532	1637	1712
		EER	kW/kW	5,33	5,19	5,12	5,25	5,55	5,45	5,31	5,24	5,54	5,55
	CW2	Nominal capacity	kW	936	1341	1505	1384	1733	1894	1981	2172	1949	2066
		EER	kW/kW	5,91	6,64	6,91	6,28	7,31	7,29	6,86	6,88	6,47	6,43
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	7,091	7,07	7,02	6,96	7,51	7,24	7,11	7,13	7,55	7,69
		ηs cool _{12/7°C}	%	281	280	278	275	298	287	282	282	299	304
		SEPR _{12/7°C} Process high temp.	kWh/kWh	8,01	8,29	8,11	7,96	8,97	9,09	8,34	8,13	8,45	8,50
Integrated Part Load Value	IPLV.SI	kW/kW	7,289	7,478	7,367	7,435	7,804	7,725	7,666	7,504	8,000	8,020	
Sound levels - standard unit													
Sound power level ⁽¹⁾		dB(A)	99	102	102	102	102	102	102	102	102	102	102
Sound pressure level at 1 m ⁽²⁾		dB(A)	82	84	84	84	83	83	83	83	83	83	83
Sound levels - standard unit + option 257 ⁽³⁾													
Sound power level ⁽¹⁾		dB(A)	96	99	99	99	99	99	99	99	99	99	99
Sound pressure level at 1 m ⁽²⁾		dB(A)	78	80	80	80	80	80	80	80	80	80	80
Dimensions - standard unit													
Length		mm	2780	4025	4025	4025	4730	4730	4730	4730	4790	4790	
Width		mm	1042	1036	1036	1036	1156	1156	1156	1156	1902	1902	
Height		mm	1898	1870	1870	1925	2051	2051	2051	2051	1515	1515	
Operating weight ⁽⁴⁾		kg	3492	5370	5408	5698	7066	7267	7305	7337	8681	8699	
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A		-	1	1	1	1	1	1	1	1	1	1	1
Circuit B		-	-	1	1	1	1	1	1	1	1	1	1

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level.

(4) Weight shown is guideline only. Please refer to the unit nameplate.



Eurovent certified values



AHRI certified values
30XW-only

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Refrigerant ⁽⁴⁾		R-134a									
Circuit A	kg	158	85	85	105	120	115	110	105	195	195
	teqCO ₂	226	122	122	150	172	164	157	150	279	279
Circuit B	kg	-	85	85	105	120	115	110	105	195	195
	teqCO ₂	-	122	122	150	172	164	157	150	279	279
Oil - standard unit											
Circuit A	l	36	32	32	32	36	36	36	36	36	36
Circuit B	l	-	32	32	32	32	36	36	36	36	36
Capacity control		SmartVu™, electronic expansion valves (EXV)									
Minimum capacity ⁽⁵⁾	%	20	15	15	15	15	10	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	98	182	182	205	301	301	301	301	354	354
Water connections (Victaulic)	in	6	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	137	193	193	193	340	340	340	340	426	426
Water connections (Victaulic)	in	8	8	8	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP				512	562	712	812	862	1012	1162	1314	1464	1612	1762
Heating														
Standard unit Full load performances*	HW1	Nominal capacity	kW	586	667	851	912	995	1201	1327	1522	1680	1863	2019
		COP	kW/kW	6,36	6,30	6,52	6,29	6,27	6,35	6,24	6,29	6,06	6,38	6,27
	HW2	Nominal capacity	kW	573	654	836	896	970	1179	1296	1489	1643	1823	1964
		COP	kW/kW	4,82	4,78	4,92	4,74	4,78	4,85	4,77	4,82	4,66	4,84	4,81
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	6,94	6,99	6,49	6,28	6,63	6,72	6,85	6,75	6,38	6,73	6,71
		η _s heat _{30/35°C}	%	269	272	252	243	257	261	266	262	247	261	260
		P _{rated}	kW	694	791	1009	1081	1180	1424	1572	1805	1993	2210	2395
Cooling														
Standard unit Full load performances*	CW1	Nominal capacity	kW	502	569	727	776	850	1025	1143	1308	1435	1606	1736
		EER	kW/kW	5,63	5,57	5,75	5,55	5,59	5,67	5,71	5,74	5,53	5,80	5,72
	CW2	Nominal capacity	kW	617	727	890	971	1001	1375	1425	1772	1905	2034	2105
		EER	kW/kW	6,88	6,94	7,20	6,98	6,83	7,46	6,90	7,55	7,28	7,34	7,11
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	7,00	7,12	7,05	6,82	7,24	7,34	7,78	7,69	7,29	7,79	7,86
		η _s cool _{12/7°C}	%	277	282	279	270	287	291	308	304	289	309	311
		SEPR _{12/7°C} Process high temp.	kWh/kWh	8,42	8,50	9,23	8,33	8,54	8,50	8,85	9,00	8,89	8,82	8,83
Integrated Part Load Value		IPLV.SI	kW/kW	7,391	7,473	7,556	7,301	7,538	7,639	8,053	8,150	7,485	7,757	8,089
Sound levels - standard unit														
Sound power level ⁽¹⁾			dB(A)	99	99	99	99	99	102	102	102	102	102	102
Sound pressure level at 1 m ⁽²⁾			dB(A)	82	82	81	81	81	83	83	83	83	83	83
Sound levels - standard unit + option 257 ⁽³⁾														
Sound power level ⁽¹⁾			dB(A)	96	96	96	96	96	99	99	99	99	99	99
Sound pressure level at 1 m ⁽²⁾			dB(A)	78	78	78	78	78	80	80	80	80	80	80
Dimensions - standard unit														
Length			mm	3059	3059	3290	3290	3290	4730	4730	4730	4730	4832	4832
Width			mm	936	936	1069	1069	1069	1039	1039	1162	1162	2129	2129
Height			mm	1743	1743	1950	1950	1950	1997	1997	2051	2051	1562	1562
Operating weight ⁽⁴⁾			kg	2981	3020	3912	3947	3965	6872	6950	7542	7752	10910	10946
Compressors				Semi-hermetic 06T screw compressors, 50 r/s										
Circuit A			-	1	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	1	1	1	1	1	1

*	In accordance with standard EN14511-3:2018.
**	In accordance with standard EN14825:2016, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m ² . k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m ² . k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m ² .K/W
CW2	Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m ² .K/W
η _s heat _{30/35°C} & SCOP _{30/35°C}	Values calculated in accordance with EN14825:2016
η _s cool _{12/7°C} & SEER _{12/7°C}	Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application
SEPR _{12/7°C}	Values calculated in accordance with EN14825:2016
IPLV.SI	Calculations according to standard performances AHRI 551-591 (SI).
(1)	In dB ref=10 ⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level.
(4)	Weight shown is guideline only. Please refer to the unit nameplate.



Eurovent certified values


AHRI certified values
30XW-only

PHYSICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Refrigerant ⁽⁴⁾		R-134a										
Circuit A	kg	130	130	180	175	177	120	120	130	130	240	250
	teqCO ₂	186	186	257	250	253	172	172	186	186	343	358
Circuit B	kg	-	-	-	-	-	120	120	150	130	240	250
	teqCO ₂	-	-	-	-	-	172	172	215	186	343	358
Oil - standard unit												
Circuit A	l	32	32	36	36	36	32	32	36	36	36	36
Circuit B	l	-	-	-	-	-	32	32	32	36	36	36
Capacity control		SmartVu™, electronic expansion valves (EXV)										
Minimum capacity ⁽⁵⁾	%	30	30	20	20	20	15	15	15	10	10	10
Evaporator		Multi-pipe flooded type										
Water volume	l	101	101	154	154	154	293	293	321	321	473	473
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type										
Water volume	l	103	103	148	148	148	316	316	340	340	623	623
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

ELECTRICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	233	233	303	414	414	414	414	587	587	587
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum start-up current**											
Circuit A	A	233	233	303	414	414	414	414	587	587	587
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Cosine phi											
Nominal***		0,83	0,85	0,83	0,87	0,88	0,89	0,89	0,88	0,89	0,90
Maximum****		0,89	0,89	0,88	0,90	0,90	0,91	0,91	0,90	0,91	0,92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	76	89	97	128	135	151	151	184	200	223
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Nominal current drawn***											
Circuit A	A	84	96	113	136	144	162	162	193	214	232
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un)†											
Circuit A	A	123	145	160	206	217	242	242	295	317	351
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un -10%)****											
Circuit A	A	138	162	178	218	230	260	260	304	340	358
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum power input with option 150B†											
Circuit A	kW	67	79	87	114	118	133	134	173	183	205
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un) with option 150B†											
Circuit A	A	109	129	142	183	191	212	212	278	290	325
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	587	414	414	414	587	587	587	587	587	587
Circuit B	A	-	414	414	414	414	587	587	587	587	587
Option 81	A	-	558	574	574	747	780	801	819	819	819
Maximum start-up current**											
Circuit A	A	587	414	414	414	587	587	587	587	587	587
Circuit B	A	-	414	414	414	414	587	587	587	587	587
Option 81	A	-	631	656	656	829	882	904	938	938	938
Cosine phi											
Nominal***		0,90	0,88	0,89	0,89	0,88	0,88	0,89	0,9	0,9	0,9
Maximum****		0,92	0,90	0,91	0,91	0,90	0,90	0,91	0,92	0,92	0,92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	223	150	151	151	184	184	200	223	223	223
Circuit B	kW	-	135	151	151	151	184	200	223	202	223
Option 81	kW	-	284	301	301	334	367	399	447	425	447
Nominal current drawn***											
Circuit A	A	232	162	162	162	193	193	214	232	232	232
Circuit B	A	-	144	162	162	162	193	214	232	214	232
Option 81	A	-	306	324	324	355	386	427	464	446	464
Maximum current drawn (Un)†											
Circuit A	A	351	242	242	242	295	295	317	351	351	351
Circuit B	A	-	217	242	242	242	295	317	351	317	351
Option 81	A	-	459	484	484	537	590	634	702	668	702
Maximum current drawn (Un -10%)****											
Circuit A	A	358	260	260	260	304	304	340	358	358	358
Circuit B	A	-	230	260	260	260	304	340	358	340	358
Option 81	A	-	490	520	520	564	608	680	716	698	716
Maximum power input with option 150B†											
Circuit A	kW	205	133	133	133	173	173	183	207	207	207
Circuit B	kW	-	118	133	133	133	173	183	207	185	207
Option 81	kW	-	251	265	265	305	346	365	414	391	414
Maximum current drawn (Un) with option 150B†											
Circuit A	A	325	212	212	212	278	278	290	325	325	325
Circuit B	A	-	191	212	212	212	278	290	325	290	325
Option 81	A	-	403	424	424	490	556	580	650	615	650

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit		24 V via the built-in transformer										
Nominal start-up current*												
Circuit A	A	414	414	587	587	587	414	414	587	587	587	587
Circuit B	A	-	-	-	-	-	414	414	414	587	587	587
Option 81	A	-	-	-	-	-	556	574	747	780	801	819
Maximum start-up current**												
Circuit A	A	414	414	587	587	587	414	414	587	587	587	587
Circuit B	A	-	-	-	-	-	414	414	414	587	587	587
Option 81	A	-	-	-	-	-	631	656	829	882	904	938
Cosine phi												
Nominal***		0,88	0,89	0,88	0,89	0,90	0,86	0,87	0,88	0,88	0,89	0,90
Maximum****		0,90	0,90	0,90	0,91	0,92	0,89	0,90	0,90	0,90	0,91	0,92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0	0
Maximum power input†												
Circuit A	kW	135	151	184	200	223	134	151	184	184	200	223
Circuit B	kW	-	-	-	-	-	134	151	151	184	200	223
Option 81	kW	-	-	-	-	-	267	301	334	367	399	447
Nominal current drawn***												
Circuit A	A	144	162	193	214	232	144	162	193	193	214	232
Circuit B	A	-	-	-	-	-	144	162	162	193	214	232
Option 81	A	-	-	-	-	-	288	324	355	386	427	464
Maximum current drawn (Un)†												
Circuit A	A	217	242	295	317	351	217	242	295	295	317	351
Circuit B	A	-	-	-	-	-	217	242	242	295	317	351
Option 81	A	-	-	-	-	-	434	484	537	590	634	702
Maximum current drawn (Un -10%)****												
Circuit A	A	230	260	304	340	358	230	260	304	304	340	358
Circuit B	A	-	-	-	-	-	230	260	260	304	340	358
Option 81	A	-	-	-	-	-	460	520	564	608	680	716
Maximum power input with option 150B†												
Circuit A	kW	118	133	173	183	207	118	133	173	173	183	207
Circuit B	kW	-	-	-	-	-	118	133	133	173	183	207
Option 81	kW	-	-	-	-	-	235	265	305	346	365	414
Maximum current drawn (Un) with option 150B†												
Circuit A	A	191	212	278	290	325	191	212	278	278	290	325
Circuit B	A	-	-	-	-	-	191	212	212	278	290	325
Option 81	A	-	-	-	-	-	382	424	490	556	580	650

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-				254	304	354	402	452	552	602	652	702	802
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	328	366	413	502	536	597	618	756	845	869
		COP	kW/kW	5,49	5,48	5,44	5,11	5,41	5,27	5,41	5,31	5,37	5,17
	HW2	Nominal heating capacity	kW	319	356	402	470	501	559	599	706	789	812
		COP	kW/kW	4,54	4,51	4,47	4,21	4,45	4,36	4,48	4,39	4,44	4,31
	HW3	Nominal capacity	kW	310	347	391	440	469	523	582	659	738	760
		COP	kW/kW	3,80	3,78	3,75	3,47	3,67	3,61	3,76	3,62	3,68	3,57
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	5,99	6,25	6,18	5,90	6,12	6,13	6,07	5,76	6,02	5,23
		η _{s heat} _{30/35°C}	%	232	242	239	228	237	237	235	223	233	201
	HW3	SCOP _{47/55°C}	kWh/kWh	4,71	4,82	4,76	4,45	4,66	4,72	4,73	4,42	4,61	4,01
		η _{s heat} _{47/55°C}	%	180	185	182	170	178	181	181	169	177	153
		P _{rated}	kW	411	415	467	535	571	637	697	803	898	926
Cooling													
Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	278	309	348	NA	NA	NA	NA	NA	NA	NA
		EER	kW/kW	4,83	4,80	4,76	NA	NA	NA	NA	NA	NA	NA
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	6,19	6,29	6,22	NA	NA	NA	NA	NA	NA	NA
		η _{s cool} _{12/7°C}	%	245	249	246	NA	NA	NA	NA	NA	NA	NA
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,67	6,72	6,57	NA	NA	NA	NA	NA	NA	NA
Integrated Part Load Value		IPLV.SI	kW/kW	6,364	6,527	6,531	5,928	6,176	6,287	6,185	5,931	6,433	5,575
Sound levels - unit with option 150													
Sound power level ⁽¹⁾			dB(A)	95	95	95	99	99	99	99	102	102	102
Sound pressure level at 1 m ⁽²⁾			dB(A)	78	78	78	82	82	82	82	84	84	84
Sound levels - unit with option 150 + option 257 ⁽³⁾													
Sound power level ⁽¹⁾			dB(A)	-	-	-	96	96	96	96	100	100	100
Sound pressure level at 1 m ⁽²⁾			dB(A)	-	-	-	78	78	78	78	82	82	82
Dimensions - unit with option 150													
Length			mm	2724	2724	2724	2741	2741	2741	2741	3059	3059	3059
Width			mm	928	928	928	936	936	936	936	1090	1090	1090
Height			mm	1567	1567	1567	1692	1692	1692	1692	1858	1858	1858
Operating weight ⁽⁴⁾			kg	2017	2036	2072	2575	2575	2613	2644	3407	3438	3462
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	-	-	-	-	-

*	In accordance with standard EN14511-3:2018.
**	In accordance with standard EN14825:2016, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m ² . kW
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m ² . kW
HW3	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m ² . kW
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m ² . K/W
η _{s heat} 30/35°C & SCOP _{30/35°C}	Values calculated in accordance with EN14825:2016
η _{s heat} 47/55°C & SCOP _{47/55°C}	Values calculated in accordance with EN14825:2016
η _{s cool} 12/7°C & SEER _{12/7°C}	Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application
SEPR _{12/7°C}	Values calculated in accordance with EN14825:2016
IPLV.SI	Calculations according to standard performances AHRI 551-591 (SI).
NA	Non Authorized for the specific application for CEE market
(1)	In dB ref=10 ⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level
(4)	Weight shown is guideline only. Please refer to the unit nameplate



Eurovent certified values

AHRI certified values
30XW-only

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-/30XWH-		254	304	354	402	452	552	602	652	702	802
Refrigerant ⁽⁴⁾		R-134a									
Circuit A	kg	84	80	78	92	92	92	92	145	135	125
	teqCO ₂	120	114	112	132	132	132	132	207	193	179
Circuit B	kg	-	-	-	-	-	-	-	-	-	-
	teqCO ₂	-	-	-	-	-	-	-	-	-	-
Oil - unit with option 150											
Circuit A	l	23,5	23,5	23,5	32	32	32	32	36	36	36
Circuit B	l	-	-	-	-	-	-	-	-	-	-
Capacity control		SmartVu™, electronic expansion valves (EXV)									
Minimum capacity ⁽⁵⁾	%	30	30	30	30	30	30	30	25	25	25
Evaporator		Multi-pipe flooded type									
Water volume	l	50	56	61	70	70	70	70	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	55	55	76	76	76	76	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-				852	1002	1052	1154	1252	1352	1452	1552	1652	1702	
Heating														
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	963	1163	1228	1338	1432	1551	1671	1776	1928	1991	
		COP	kW/kW	5,36	5,37	5,28	5,38	5,56	5,32	5,23	5,12	5,34	5,27	
	HW2	Nominal heating capacity	kW	939	1085	1146	1290	1329	1445	1558	1649	1873	1936	
		COP	kW/kW	4,46	4,46	4,40	4,48	4,63	4,45	4,38	4,34	4,50	4,46	
	HW3	Nominal capacity	kW	915	1012	1068	1249	1244	1345	1452	1543	1821	1882	
		COP	kW/kW	3,73	3,71	3,66	3,77	3,83	3,68	3,64	3,63	3,81	3,77	
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	5,83	5,86	5,87	5,79	6,09	5,69	5,79	5,43	5,93	5,92	
		η _{s heat} _{30/35°C}	%	225	226	227	224	236	220	224	209	229	229	
	HW3	SCOP _{47/55°C}	kWh/kWh	4,57	4,74	4,74	4,61	4,68	4,38	4,45	4,35	4,74	4,76	
		η _{s heat} _{47/55°C}	%	175	181	182	177	179	167	170	166	182	182	
		P _{rated}	kW	1094	1234	1303	1497	1518	1641	1770	1882	2179	2253	
Cooling														
Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		EER	kW/kW	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		η _{s cool} _{12/7°C}	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		SEPR _{12/7°C} Process high temp.	kWh/kWh	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Integrated Part Load Value		IPLV.SI	kW/kW	6,351	6,572	6,595	6,522	6,873	6,211	6,615	6,366	6,939	7,136	
Sound levels - unit with option 150														
Sound power level ⁽¹⁾				dB(A)	102	102	102	102	105	105	105	105	105	105
Sound pressure level at 1 m ⁽²⁾				dB(A)	84	84	84	84	86	86	86	86	86	86
Sound levels - unit with option 150 + option 257 ⁽³⁾														
Sound power level ⁽¹⁾				dB(A)	100	99	99	99	103	103	103	103	103	103
Sound pressure level at 1 m ⁽²⁾				dB(A)	82	80	80	80	84	84	84	84	84	84
Dimensions - unit with option 150														
Length				mm	2780	4025	4025	4025	4730	4730	4730	4730	4790	4790
Width				mm	1090	1036	1036	1036	1201	1201	1201	1201	1947	1947
Height				mm	1920	1870	1870	1925	2071	2071	2071	2071	1535	1535
Operating weight ⁽⁴⁾				kg	3672	5370	5408	5698	7233	7554	7622	7670	9006	9032
Compressors				Semi-hermetic 06T screw compressors, 50 r/s										
Circuit A				-	1	1	1	1	1	1	1	1	1	1
Circuit B				-	-	1	1	1	1	1	1	1	1	1

- * In accordance with standard EN14511-3:2018.
 ** In accordance with standard EN14825:2016, average climate
 HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kW/W
 HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². kW/W
 HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². kW/W
 CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W
 η_{s heat} 30/35°C & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016
 η_{s heat} 47/55°C & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016
 η_{s cool} 12/7°C & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
 SEPR_{12/7°C} Values calculated in accordance with EN14825:2016
 IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).
 (1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
 (2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
 (3) Option 257 = Low noise level
 (4) Weight shown is guideline only. Please refer to the unit nameplate



Eurovent certified values

AHRI certified values
30XW-only

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Refrigerant ⁽⁴⁾		R-134a									
Circuit A	kg	158	85	85	105	120	115	110	105	195	195
	teqCO ₂	226	122	122	150	172	164	157	150	279	279
Circuit B	kg	-	85	85	105	120	115	110	105	195	195
	teqCO ₂	-	122	122	150	172	164	157	150	279	279
Oil - unit with option 150											
Circuit A	l	36	32	32	32	36	36	36	36	36	36
Circuit B	l	-	32	32	32	32	36	36	36	36	36
Capacity control		SmartVu™, electronic expansion valves (EXV)									
Minimum capacity ⁽⁵⁾	%	25	15	15	15	15	10	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	98	182	182	205	301	301	301	301	354	354
Water connections (Victaulic)	in	6	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	137	193	193	193	340	340	340	340	426	426
Water connections (Victaulic)	in	8	8	8	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-P / 30XWHP	512	562	712	812	862	1012	1162	1314	1464	1612	1762
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Heating

Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	600	670	840	910	975	1188	1375	1514	1698	1890	1983
		COP	kW/kW	5,89	5,90	5,72	5,58	5,72	5,61	5,77	5,55	5,40	5,78	5,73
	HW2	Nominal heating capacity	kW	580	646	815	885	950	1147	1322	1465	1648	1834	1929
		COP	kW/kW	4,85	4,86	4,72	4,61	4,75	4,65	4,80	4,62	4,52	4,80	4,79
	HW3	Nominal capacity	kW	561	625	790	862	925	1110	1275	1419	1598	1783	1874
		COP	kW/kW	4,02	4,04	3,92	3,83	3,97	3,86	4,01	3,88	3,81	4,00	4,00
Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	6,48	6,60	6,59	6,27	6,17	5,97	6,24	6,18	6,18	6,50	6,21
		η _s heat _{30/35°C}	%	251	256	256	243	239	231	242	239	239	252	240
	HW3	SCOP _{47/55°C}	kWh/kWh	4,99	5,10	5,09	4,85	4,84	4,63	4,88	4,88	4,94	5,07	4,92
		η _s heat _{47/55°C}	%	192	196	196	186	186	177	187	187	189	195	189
		P _{rated}	kW	673	749	947	1030	1106	1330	1531	1701	1915	2133	2243

Cooling

Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	510	569	715	770	833	1011	1178	1287	1437	1613	1706
		EER	kW/kW	5,14	5,17	5,02	4,88	5,09	4,98	5,23	4,96	4,84	5,15	5,21
		SEER _{12/7°C} Comfort low temp.	kWh/kWh	6,53	6,68	6,81	6,56	6,45	6,51	6,95	6,76	6,66	7,13	6,90
		η _s cool _{12/7°C}	%	258	264	269	259	255	258	275	267	264	282	273
Seasonal energy efficiency**		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,90	6,93	7,23	6,68	6,38	6,71	6,97	6,88	7,03	7,15	6,63
Integrated Part Load Value	IPLV.SI	kW/kW		6,612	6,804	7,029	6,703	6,782	6,505	6,997	6,946	7,131	7,302	7,308

Sound levels - unit with option 150

Sound power level ⁽¹⁾	dB(A)	99	99	102	102	102	102	102	102	105	105	105	105	105
Sound pressure level at 1 m ⁽²⁾	dB(A)	82	82	84	84	84	83	83	83	86	86	86	86	86

Sound levels - unit with option 150 + option 257⁽³⁾

Sound power level ⁽¹⁾	dB(A)	96	96	100	100	100	99	99	99	103	103	103	103	103
Sound pressure level at 1 m ⁽²⁾	dB(A)	78	78	82	82	82	80	80	80	84	84	84	84	84

Dimensions - unit with option 150

Length	mm	3059	3059	3290	3290	3290	4730	4730	4730	4730	4730	4832	4832	4832
Width	mm	936	936	1105	1105	1105	1039	1039	1039	1202	1202	2174	2174	2174
Height	mm	1743	1743	1970	1970	1970	1997	1997	1997	2071	2071	1585	1585	1585
Operating weight ⁽⁴⁾	kg	2981	3020	4072	4117	4145	6872	6950	7721	8059	11225	11279	11279	11279

Compressors

		Semi-hermetic 06T screw compressors, 50 r/s												
Circuit A	-	1	1	1	1	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	-	1	1	1	1	1	1	1	1

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W

η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_s heat_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016

η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate



Eurovent certified values



AHRI certified values
30XW-only

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-P / 30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Refrigerant ⁽⁴⁾		R-134a										
Circuit A	kg	130	130	180	175	177	120	120	130	130	240	250
	teqCO ₂	186	186	257	250	253	172	172	186	186	343	358
Circuit B	kg	-	-	-	-	-	120	120	150	130	240	250
	teqCO ₂	-	-	-	-	-	172	172	215	186	343	358
Oil - unit with option 150												
Circuit A	l	32	32	36	36	36	32	32	36	36	36	36
Circuit B	l	-	-	-	-	-	32	32	32	36	36	36
Capacity control		SmartVu™, electronic expansion valves (EXV)										
Minimum capacity ⁽⁵⁾	%	30	30	20	20	20	15	15	15	10	10	10
Evaporator		Multi-pipe flooded type										
Water volume	l	101	101	154	154	154	293	293	321	321	473	473
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type										
Water volume	l	103	103	148	148	148	316	316	340	340	623	623
Water connections (Victaulic)	in	6	6	8	8	8	8	8	10	10	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate

(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XWH-/30XWH-		254	304	354	402	452	552	602	652	702	802
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	303	388	388	587	587	587	587	772	772	772
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum start-up current**											
Circuit A	A	303	388	388	587	587	587	587	772	772	772
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Cosine phi											
Nominal***		0,79	0,78	0,79	0,83	0,85	0,85	0,85	0,84	0,86	0,87
Maximum****		0,88	0,87	0,88	0,90	0,90	0,91	0,91	0,90	0,90	0,90
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	97	111	122	156	173	191	191	249	268	286
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Nominal current drawn***											
Circuit A	A	95	109	125	150	162	171	171	193	214	232
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un)†											
Circuit A	A	160	185	200	250	275	300	300	400	430	460
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un -10%)****											
Circuit A	A	176	206	224	270	300	330	330	419	455	476
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	772	587	587	587	772	772	772	772	772	772
Circuit B	A	-	587	587	587	587	772	772	772	772	772
Option 81	A	-	757	757	757	943	965	986	1004	1004	1004
Maximum start-up current**											
Circuit A	A	772	587	587	587	772	772	772	772	772	772
Circuit B	A	-	587	587	587	587	772	772	772	772	772
Option 81	A	-	887	887	887	1072	1172	1202	1232	1004	1232
Cosine phi											
Nominal***		0,87	0,85	0,85	0,85	0,86	0,85	0,86	0,87	0,86	0,87
Maximum****		0,90	0,90	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	286	191	191	191	252	252	271	290	290	290
Circuit B	kW	-	173	191	191	191	252	271	290	271	290
Option 81	kW	-	364	382	382	443	504	542	580	562	580
Nominal current drawn***											
Circuit A	A	232	171	171	171	210	210	230	250	250	250
Circuit B	A	-	162	171	171	171	210	230	250	230	250
Option 81	A	-	333	342	342	381	420	460	500	480	500
Maximum current drawn (Un)†											
Circuit A	A	460	300	300	300	400	400	430	460	460	460
Circuit B	A	-	275	300	300	300	400	430	460	430	460
Option 81	A	-	575	600	600	700	800	860	920	890	920
Maximum current drawn (Un -10%)****											
Circuit A	A	476	330	330	330	419	419	455	476	476	476
Circuit B	A	-	300	330	330	330	419	455	476	455	476
Option 81	A	-	630	660	660	749	838	910	952	931	952

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

High-efficiency units (option 150)

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit		24 V via the built-in transformer										
Nominal start-up current*												
Circuit A	A	587	587	772	772	772	587	587	772	772	772	772
Circuit B	A	-	-	-	-	-	587	587	587	772	772	772
Option 81	A	-	-	-	-	-	749	757	943	965	986	1004
Maximum start-up current**												
Circuit A	A	587	587	772	772	772	587	587	772	772	772	772
Circuit B	A	-	-	-	-	-	587	587	587	772	772	772
Option 81	A	-	-	-	-	-	862	887	1072	1172	1202	1232
Cosine phi												
Nominal***		0,88	0,88	0,84	0,86	0,87	0,87	0,88	0,86	0,85	0,86	0,87
Maximum****		0,91	0,92	0,90	0,90	0,90	0,91	0,92	0,91	0,91	0,91	0,91
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0	0
Maximum power input†												
Circuit A	kW	173	191	252	271	290	173	191	252	252	271	290
Circuit B	kW	-	-	-	-	-	173	191	191	252	271	290
Option 81	kW	-	-	-	-	-	346	382	443	504	542	580
Nominal current drawn***												
Circuit A	A	162	171	210	230	250	162	171	210	210	230	250
Circuit B	A	-	-	-	-	-	162	171	171	210	230	250
Option 81	A	-	-	-	-	-	324	342	381	420	460	500
Maximum current drawn (Un)†												
Circuit A	A	275	300	400	430	460	275	300	400	400	430	460
Circuit B	A	-	-	-	-	-	275	300	300	400	430	460
Option 81	A	-	-	-	-	-	550	600	700	800	860	920
Maximum current drawn (Un -10%)****												
Circuit A	A	300	330	419	455	476	300	330	419	419	455	476
Circuit B	A	-	-	-	-	-	300	330	330	419	455	476
Option 81	A	-	-	-	-	-	600	660	749	838	910	952

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

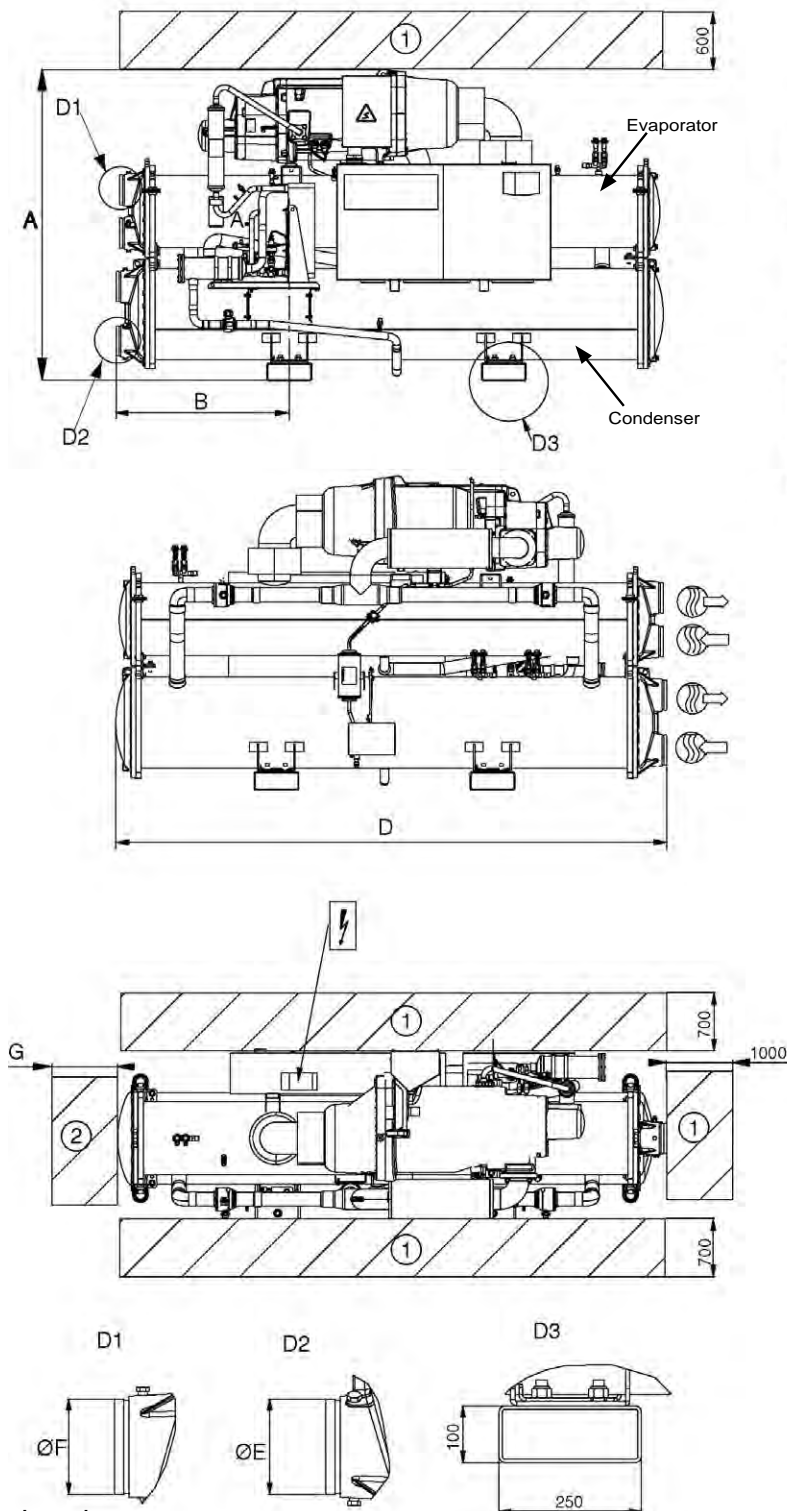
**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

DIMENSIONS/CLEARANCES

30XW--/30XWH- 254-852

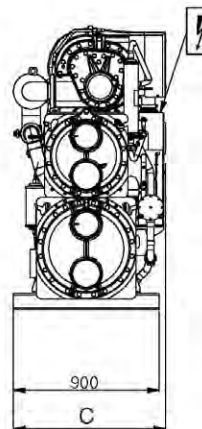
30XW-P/30XWHP 512-862



Legend

All dimensions are given in mm.

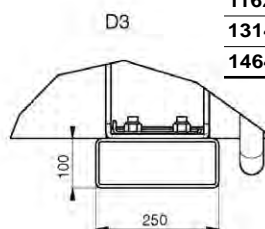
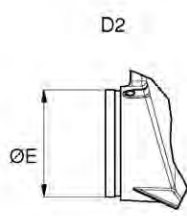
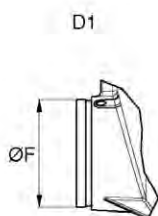
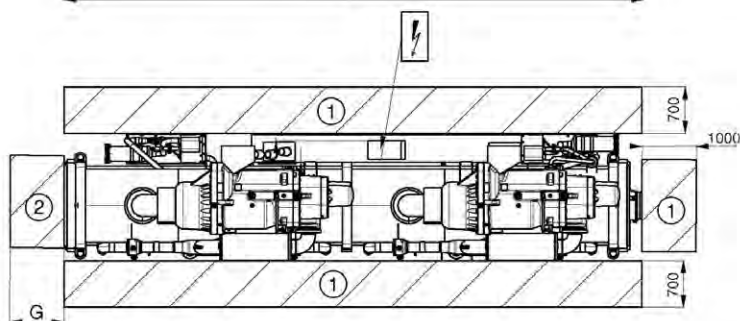
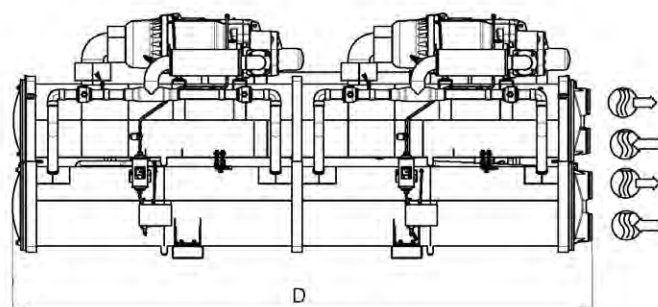
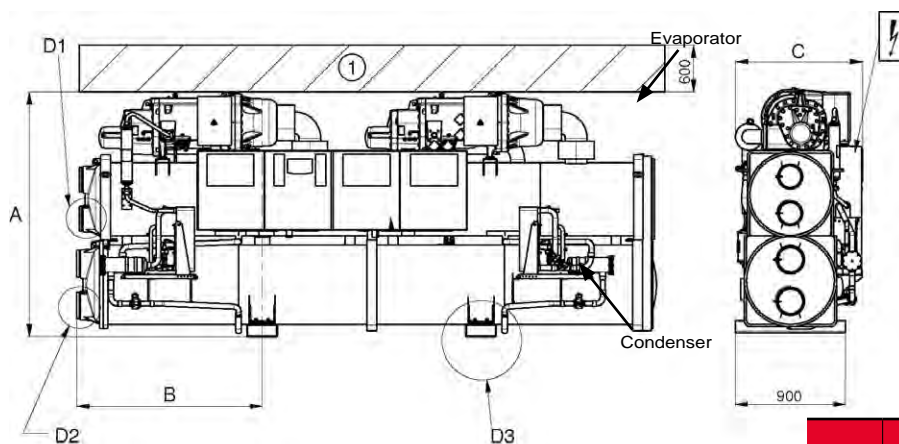
- ① Required clearance for maintenance
- ② Recommended clearance for tube removal
- ↺ Water inlet
- ↻ Water outlet
-))) Air outlet – do not obstruct
- ⚡ Power supply connection



	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--/30XWH-							
254	1567	800	928	2724	141,3	141,3	2600
304	1567	800	928	2724	141,3	141,3	2600
354	1567	800	928	2724	141,3	141,3	2600
402	1693	810	936	2742	141,3	141,3	2600
452	1693	810	936	2742	141,3	141,3	2600
552	1693	810	936	2742	141,3	141,3	2600
602	1693	810	936	2742	141,3	141,3	2600
652	1848	968	1044	3059	168,3	168,3	2800
702	1848	968	1044	3059	168,3	168,3	2800
802	1848	968	1044	3059	168,3	168,3	2800
852	1898	828	1044	2780	219,1	168,3	2600
High-efficiency units 30XW-P/30XWHP							
512	1743	968	936	3059	168,3	168,3	2800
562	1743	968	936	3059	168,3	168,3	2800
712	1950	1083	1065	3290	219,1	219,1	3100
812	1950	1083	1070	3290	219,1	219,1	3100
862	1950	1083	1070	3290	219,1	219,1	3100
Standard-efficiency units 30XW--/30XWH- (option 150)							
254	1567	800	928	2724	141,3	141,3	2600
304	1567	800	928	2724	141,3	141,3	2600
354	1567	800	928	2724	141,3	141,3	2600
402	1693	810	936	2742	141,3	141,3	2600
452	1693	810	936	2742	141,3	141,3	2600
552	1693	810	936	2742	141,3	141,3	2600
602	1693	810	936	2742	141,3	141,3	2600
652	1868	968	1090	3059	168,3	168,3	2800
702	1868	968	1090	3059	168,3	168,3	2800
802	1868	968	1090	3059	168,3	168,3	2800
852	1920	828	1090	2780	168,3	219,1	2600
High-efficiency units 30XW-P/30XWHP (option 150)							
512	1743	968	936	3059	168,3	168,3	2800
562	1743	968	936	3059	168,3	168,3	2800
712	1970	1083	1105	3290	219,1	219,1	3100
812	1970	1083	1105	3290	219,1	219,1	3100
862	1970	1083	1105	3290	219,1	219,1	3100

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

DIMENSIONS/CLEARANCES

30XW--/30XWH- 1002-1552
30XW-P/30XWHP 1012-1464


	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--/30XWH-							
1002	1870	950	1036	4025	219,1	168,3	3800
1052	1870	950	1036	4025	219,1	168,3	3800
1152	1925	950	1036	4025	219,1	219,1	3800
1252	2051	1512	1162	4730	219,1	219,1	4500
1352	2051	1512	1162	4730	219,1	219,1	4500
1452	2051	1512	1162	4730	219,1	219,1	4500
1552	2051	1512	1162	4730	219,1	219,1	4500
High-efficiency units 30XW-P/30XWHP							
1012	1997	1512	1039	4730	219,1	219,1	4500
1162	1997	1512	1039	4730	219,1	219,1	4500
1314	2051	1512	1162	4730	219,1	219,1	4500
1464	2051	1512	1162	4730	219,1	219,1	4500
Standard-efficiency units 30XW--/30XWH- (option 150)							
1002	1870	950	1036	4025	219,1	168,3	3800
1052	1870	950	1036	4025	219,1	168,3	3800
1154	2925	950	1036	4025	219,1	219,1	3800
1252	2071	1512	1202	4730	219,1	219,1	4500
1352	2071	1512	1202	4730	219,1	219,1	4500
1452	2071	1512	1202	4730	219,1	219,1	4500
1552	2071	1512	1202	4730	219,1	219,1	4500
High-efficiency units 30XW-P/30XWHP (option 150)							
1012	1997	1512	1039	4730	219,1	219,1	4500
1162	1997	1512	1039	4730	219,1	219,1	4500
1314	2071	1512	1202	4730	219,1	219,1	4500
1464	2071	1512	1202	4730	219,1	219,1	4500

Legend

All dimensions are given in mm.

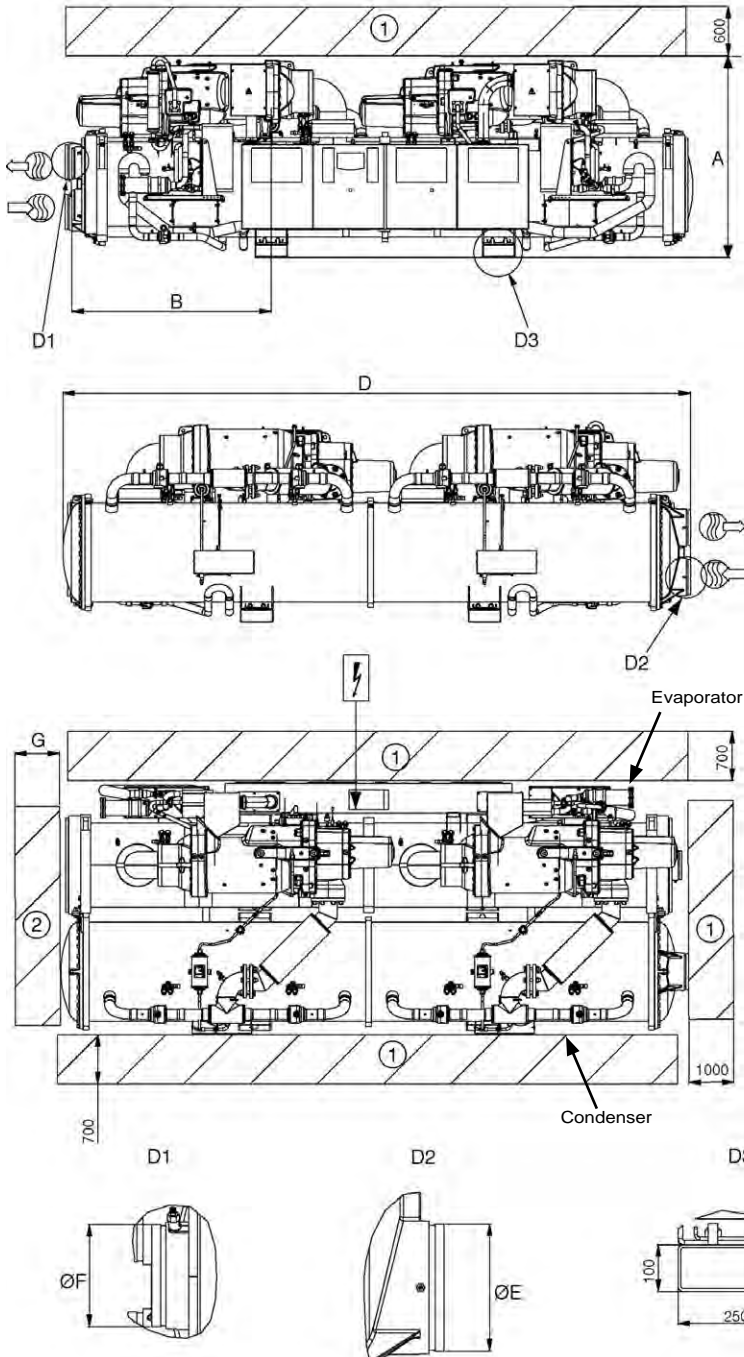
- ① Required clearance for maintenance
- ② Recommended clearance for tube removal
- ↻ Water inlet
- ↻ Water outlet
-))) Air outlet – do not obstruct
- ⚡ Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

DIMENSIONS/CLEARANCES

30XW--/30XWH- 1652-1702

30XW-P/30XWHP 1612-1762



	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--/30XWH-							
1652	1515	1568	1902	4790	219,1	219,1	4500
1702	1515	1568	1902	4790	219,1	219,1	4500
High-efficiency units 30XW-P/30XWHP							
1612	1562	1591	2129	4832	273,1	273,1	4600
1762	1562	1591	2129	4832	273,1	273,1	4600
Standard-efficiency units 30XW--/30XWH- (option 150)							
1652	1535	1568	1947	4790	219,1	219,1	4500
1702	1535	1568	1947	4790	219,1	219,1	4500
High-efficiency units 30XW-P/30XWHP (option 150)							
1612	1585	1591	2174	4832	273,1	273,1	4600
1762	1585	1591	2174	4832	273,1	273,1	4600

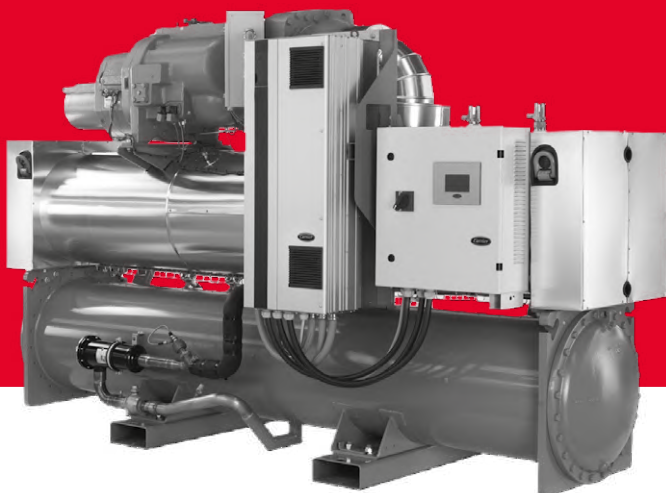
Legend

All dimensions are given in mm.

- ① Required clearance for maintenance
- ② Recommended clearance for tube removal
- Water inlet
- Water outlet
- Air outlet – do not obstruct
- Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

WATER-SOURCED VARIABLE-SPEED SCREW HEAT PUMPS



Low energy consumption

High reliability

Easy and fast installation

Minimised operating
sound levels

Environmental care

Designed to support green
building design

30XWHV



Nominal heating capacity 648-1932 kW
Nominal cooling capacity 587-1741 kW

The 30XWHV water-sourced units are the premium solution for commercial and industrial applications where installers, consultants and building owners require maximum quality and optimal performances, especially at part load.

The 30XWHV units are designed to meet current and future requirements in terms of energy efficiency, versatility and compactness. They feature exclusive inverter-driven screw compressors - an evolution of the proven traditional Carrier twin-rotor screw compressor design. Other features include:

- the new SmartVu™ control
- mechanically cleanable flooded heat exchangers
- refrigerant R-134a

The 30XW-V/30XWHV range is split into two versions:

- 30XW-V for air conditioning applications
- 30XWHV for heating applications

As standard, the unit can provide an evaporator leaving water temperature down to 3.3°C, and when operating as a heat pump, it can deliver up to 50°C on the condenser side.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- The 30XWHV was designed for high performance both at full load and at part load.
 - Eurovent certified values per EN14511-3:2013: SEPR up to 8.07 and SEER up to 8.43
- High energy efficiency
 - Inverter-driven twin-rotor screw compressors allow precise capacity matching of building load changes and significantly reduce unit power input, especially at part-load.
 - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
 - Electronic expansion device permits operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Optimised electrical performance
 - All 30XWHV units comply with class 3 of standard EN61800-3. Category C3 refers to industrial environments. With option 282 category C2 compliance is possible.
 - Inverter-driven motors ensure negligible start-up current (value is lower than the maximum unit current draw)

High reliability

- The 30XWHV ranges offer increased global performance as well as Carrier's acclaimed product quality and reliability. Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Inverter-driven screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - The inverter is optimised for each compressor motor to ensure reliable operation and easy maintenance.
 - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuits
 - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
 - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling
 - Automatic compressor unloading in case of abnormally high condensing pressure or discharge temperature.
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

Easy and fast installation

- Compact design
 - The 30XWHV units are designed to offer compact dimensions for easy installation.
 - With a width of approximately 1.25 m up to 1000 kW the units can pass through standard door openings and only require minimum floor space in the plant room.
- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer supply to the integrated control circuit (400/24 V)
- Simplified water connections
 - Victaulic connections on the evaporator and condenser
 - Practical reference marks for entering and leaving water connections
 - Possibility to reverse the heat exchanger water inlet and outlet at the factory
 - Possibility to modify the number of heat exchanger passes
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Minimised operating sound levels

- The inverter technology used for the compressor motors minimises noise levels at part load operation. In two-compressor units at 25% of the maximum load the unit sound power level is reduced by 10 dB(A).
- Standard unit features include:
 - Silencers on the compressor discharge line.
 - Sound insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

Environmental care

- R-134a refrigerant
 - HFC-refrigerant with zero ozone depletion potential
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

Designed to support green building design

- A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment. The underlying principles of this approach: The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

CUSTOMER BENEFITS

- The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year, 30XWHV units offers a solution to this important challenge.
- A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.
- The following example looks at how Carrier's new 30XWHV range helps customers involved in LEED® building certification.

30XWHV and LEED® certification

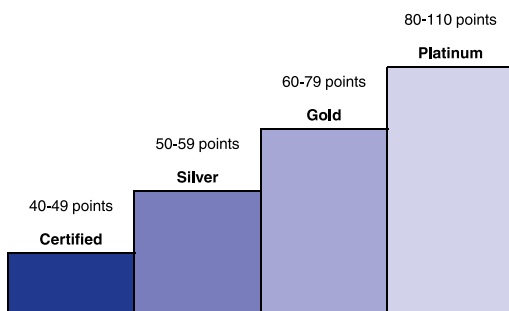
The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare. All programmes now use the same point scale:

110 Possible LEED® points

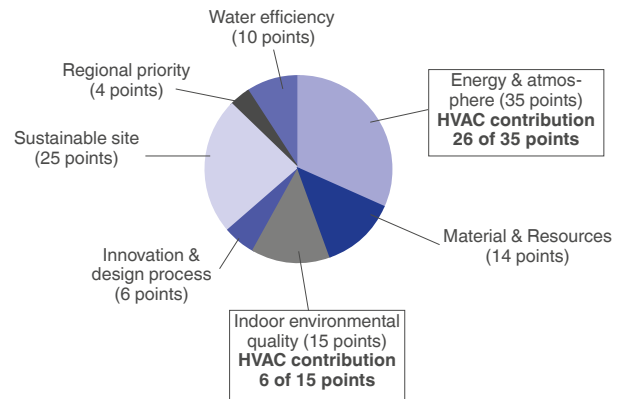


The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

Overview of LEED® for new construction and major renovations



The new 30XWHV units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- **EA prerequisite 2: Minimum energy Performance**
The 30XWHV exceeds the energy efficiency requirements of ASHRAE 90,1-2007; therefore it complies with the prerequisite standard.
- **EA prerequisite 3: Fundamental Refrigerant Management**
The 30XWHV does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.
- **EA credit 1: Optimise energy performance (1 to 19 points)**
Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90,1-2007 reference. The 30XWHV, which is designed for high performance especially during part load operation, contributes reducing the energy consumption of the building and therefore helps gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.
- **EA credit 4: Enhanced refrigerant management (2 points)**
With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Global Warming Potential (GWP) of the system. The 30XWHV uses a reduced R134a charge and therefore contributes toward satisfying this credit under LEED®.

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30XWHV. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

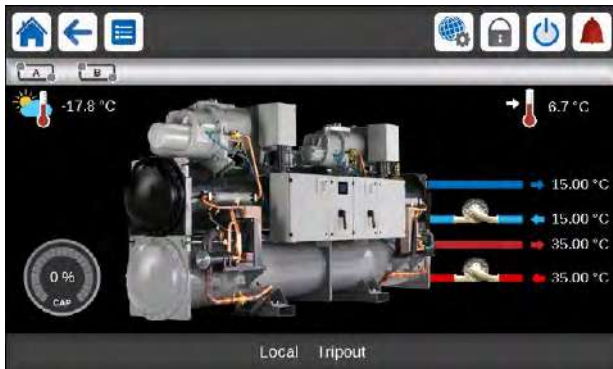
i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

TECHNICAL INSIGHTS

SmartVu™



- New innovative smart control features :
 - An intuitive and user-friendly, coloured, 7" interface
 - 10 languages available on choice: DE, EN, ES, FR, T, NL, PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Energy management :
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.
- Maintenance functions :
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
- Advanced communication features :
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.

Remote Management (Standard)

- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System anager or the Plant System anager (optional).
- The chiller also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: indication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
 - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
 - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
 - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
 - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
 - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
 - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
 - Time schedule override: Closing of this contact cancels the programmed time schedule.
 - Out of service: This signal indicates that the chiller is completely out of service.
 - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
 - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
 - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

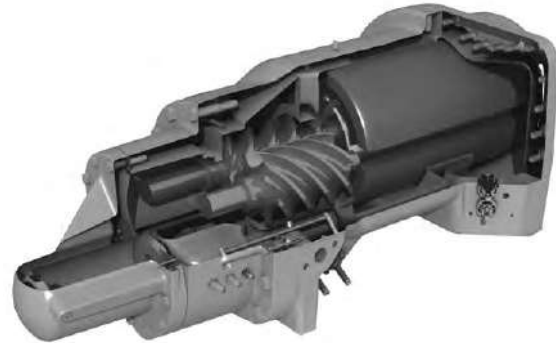
TECHNICAL INSIGHTS

Remote management (EMM option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set point reset: ensures reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
- Demand limit: permits limitation of the maximum chiller power or current based on a 0-10 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
- User safety: this contact can be used for any customer safety loop; opening the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status : set of outputs (as many as the compressors number) indicating which compressors are running.

New inverter-driven Thunderbolt screw compressor



- The new generation of Carrier inverter-driven screw compressors benefits from Carrier's long experience in the development of twin-rotor screw compressors. The design of the Thunderbolt compressors is based on the successful 06T screw compressor, core of the well-known Aquaforce series.
- Advanced control algorithms combine inverter frequency output with motor input logic to minimise mechanical part stress, resulting in best compression performance and high chiller reliability. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.
- Screw compressors use positive displacement principle to compress gases at higher pressure. As a result, in case of exceptional high temperature condenser side (due for example to water-pipes fouling or operation in harsh climate with an external dry-cooler) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode).
- The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.
- The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	No.	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	580-1710 (see dedicated paragraph)
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two chillers connected in parallel with operating time equalisation	580-1710
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	1150-1710
Evap. pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Evaporator dual pumps electrical power / control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Cond. pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Cond. dual pumps power/control circuit	84T	Unit equipped with an electrical power and control circuit for two pumps condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	580-1710
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	580-1710
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	580-1710
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	580-1710
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	580-1710
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	580-1710
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	580-1710
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	580-1710
LON gateway	148D	Two-directional communication board complying with LON protocol	Connects the unit by communication bus to a building management system	580-1710
Bacnet over IP gateway	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	580-1710
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	580-1710
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	580-1710
Control for low condensing temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	580-1710
Energy Management Module EMM	156	Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	580-1710
Leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	580-1710

OPTIONS

Options	No.	Description	Advantages	Use
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the evaporator and the oil separator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	580-1710
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	580-1710
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	580-1710
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	580-1710
Low noise level	257	Evaporator sound insulation	3 dB(A) quieter than standard unit	580-1710
Welded evaporator water connection kit	266	Victaulic piping connections with welded joints	Easy installation	580-1710
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	580-1710
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	580-1710
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	580-1710
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	580-1710
EMC classification C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Increase the variable frequency drive (VFD) immunity level according to first environment (so called, residential environment) requirements and allow its compliancy with emissions level required in category C2	580-1710
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE.S 5010-5:2019.	580-1710
Compliance with Morocco regulation	327	Specifics documents according Morocco regulation	Conformance with Morocco regulations	580-1710

PHYSICAL DATA, 30XW-V UNITS

30XW-V / 30XWHV				580	630	810	880	1150	1280	1470	1570	1710
Heating												
Standard unit Full load performances *	HW1	Nominal capacity	kW	649	719	890	974	1261	1428	1594	1761	1932
		COP	kW/kW	4,64	4,53	4,56	4,43	4,62	4,61	4,55	4,33	4,16
	HW2	Nominal capacity	kW	687	767	956	1021	1335	1524	1712	1898	2067
		COP	kW/kW	6,15	5,98	5,96	5,81	6,05	6,00	5,82	5,49	5,34
Standard unit Seasonal energy efficiency **	HW2	SCOP _{30/35°C}	kWh/kWh	7,32	7,05	7,21	6,96	6,95	6,66	6,37	6,13	5,87
		η _s heat _{30/35°C}	%	285	274	280	270	270	259	247	237	227
		P _{rated}	kW	818	913	1134	1216	1589	1815	2041	2263	2463
Cooling												
Standard unit Full load performances*	CW1	Nominal capacity	kW	587	652	812	858	1140	1305	1461	1604	1741
		EER	kW/kW	5,44	5,31	5,25	5,07	5,45	5,50	5,38	5,05	4,94
		Eurovent class		A	A	A	A	A	A	A	A	B
	CW2	Nominal capacity	kW	791	846	1023	970	1528	1688	1703	2093	2272
		EER	kW/kW	6,96	6,50	6,22	5,63	6,86	6,64	5,99	5,99	5,99
		Eurovent class		A	A	A	A	A	A	A	A	A
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	7,94	7,62	8,43	7,93	8,31	8,19	7,74	7,70	7,34
		η _s cool _{12/7°C}	%	315	302	334	314	329	325	307	305	290
		SEPR _{12/7°C} Process high temp.	kWh/kWh	8,07	8,02	7,73	6,76	8,04	8,07	7,96	7,89	7,49
Integrated Part Load Value		IPLV.SI	kW/kW	9,060	9,120	9,450	8,950	9,240	9,300	9,170	9,300	8,980
Sound levels - standard unit												
Sound power level ⁽¹⁾			dB(A)	105	105	105	105	106	106	106	106	106
Sound pressure level at 1 m ⁽²⁾			dB(A)	87	87	87	87	87	87	87	87	87
Sound levels - standard unit + option 257 ⁽³⁾												
Sound power level ⁽¹⁾			dB(A)	102	102	102	102	103	103	103	103	103
Sound pressure level at 1 m ⁽²⁾			dB(A)	84	84	84	84	84	84	84	84	84
Dimensions - standard unit												
Length		mm	3059	3059	3290	3290	4730	4730	4730	4730	4730	4730
Width		mm	1087	1087	1237	1237	1164	1164	1255	1255	1255	1255
Height		mm	1743	1743	1950	1950	1997	1997	2051	2051	2051	2051
Operating weight ⁽⁴⁾		kg	3152	3190	4157	4161	7322	7398	7574	7770	7808	7808
Compressors				Semi-hermetic 06T screw compressors, 60 r/s								
Circuit A		-	1	1	1	1	1	1	1	1	1	1
Circuit B		-	-	-	-	-	1	1	1	1	1	1

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/WHW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/WCW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/WCW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) in dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate

η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

NA Non Authorized for the specific application for CEE market

IPLV.SI Calculations according to standard performances AHRI 551-591 (SI).



Eurovent certified values

AHRI certified values
30XW-only

PHYSICAL DATA, 30XW-V UNITS

30XW-V / 30XWHV		580	630	810	880	1150	1280	1470	1570	1710
Oil - standard unit										
Circuit A	l	32	32	36	36	32	32	36	36	36
Circuit B	l	-	-	-	-	32	32	32	36	36
Refrigerant - standard unit		R-134a, GWP=1430 following ARI4								
Circuit A	kg	130	130	180	175	120	120	115	115	110
	teqCO ₂	186	186	257	250	172	172	164	164	157
Circuit B	kg	-	-	-	-	120	120	120	115	110
	teqCO ₂	-	-	-	-	172	172	172	164	157
Capacity control		SmartVu™, inverter-driven compressor, electronic expansion valve (EXV)								
Minimum capacity	%	20	20	20	20	10	10	10	10	10
Evaporator		Multi-pipe flooded type								
Water volume	l	106	106	154	154	297	297	297	297	297
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type								
Water volume	l	112	112	165	165	340	340	340	340	340
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

ELECTRICAL DATA

30XW-V/30XWHV		580	630	810	880	1150	1280	1470	1570	1710
Power circuit										
Nominal power supply	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit		24 V via the built-in transformer								
Start-up current*	A	Lower than the operating current								
Maximum power factor**		0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93
Cosine phi		>0,98	>0,98	>0,98	>0,98	>0,98	>0,98	>0,98	>0,98	>0,98
Total harmonic distortion†	%	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45
Maximum power input***										
Circuit A	kW	155	193	222	246	155	193	222	222	246
Circuit B	kW	-	-	-	-	155	193	193	222	246
With option 81	kW	-	-	-	-	310	386	415	444	492
Eurovent current draw****										
Circuit A	A	175	200	240	265	175	200	240	240	265
Circuit B	A	-	-	-	-	175	200	200	240	265
With option 81	A	-	-	-	-	350	400	440	480	530
Maximum current draw (Un)***										
Circuit A	A	245	300	346	383	245	300	346	346	383
Circuit B	A	-	-	-	-	245	300	300	346	383
With option 81	A	-	-	-	-	490	600	646	692	766
Maximum current draw (Un -10%)***										
Circuit A	A	270	330	380	421	270	330	380	380	421
Circuit B	A	-	-	-	-	270	330	330	380	421
With option 81	A	-	-	-	-	540	660	710	760	842
Maximum power input with option 150B***										
Circuit A	kW	141	173	199	221	141	173	199	199	221
Circuit B	kW	-	-	-	-	141	173	173	199	221
With option 81	kW	-	-	-	-	282	346	372	398	442
Maximum current draw (Un) with option 150B***										
Circuit A	A	222	272	314	348	222	272	314	314	348
Circuit B	A	-	-	-	-	222	272	272	314	348
With option 81	A	-	-	-	-	444	544	586	628	696
Dissipated power†	W	3000	4200	4700	5300	6000	8400	8900	9400	10600

* Instantaneous start-up current

** This can vary as a function of the short-circuit current/maximum current ratio of the system transformer. Values obtained at operation with maximum unit power input.

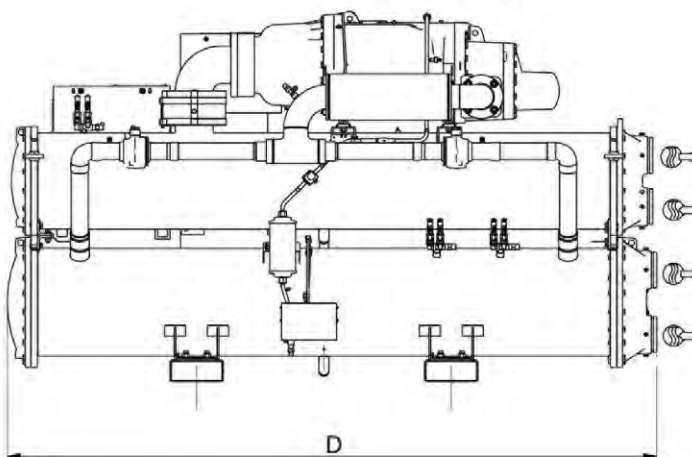
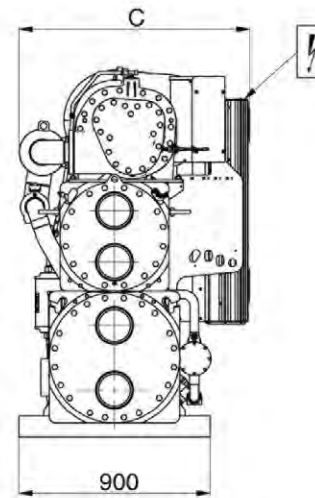
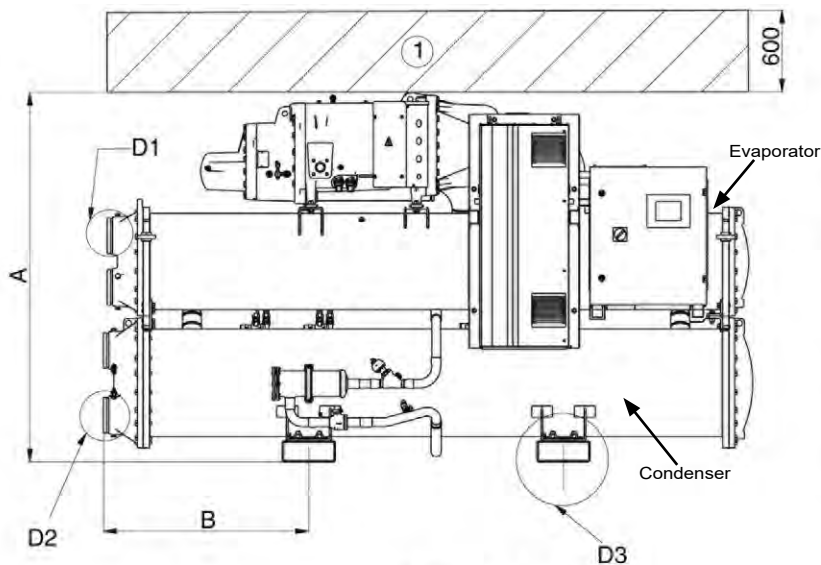
*** Values obtained at operation with maximum unit power input. Values given on the unit name plate.

**** Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C. Gross performances, not in accordance with EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

† Values obtained at operation with maximum unit power input.

DIMENSIONS/CLEARANCES

30XWHV 580-880



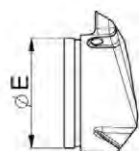
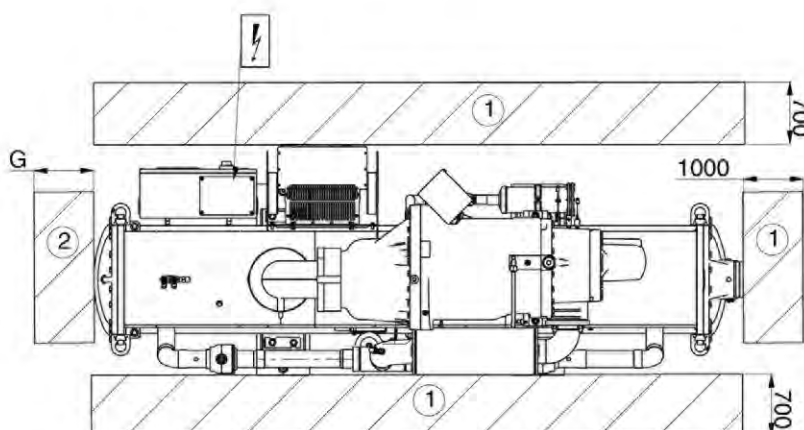
Dimensions in mm							
	A	B	C	D	E	F	G
30XWHV							
580	1743	968	1087	3059	168,3	168,3	2900
630	1743	968	1087	3059	168,3	168,3	2900
810	1950	1083	1237	3290	219,1	219,1	3100
880	1950	1083	1237	3290	219,1	219,1	3100

Legend:

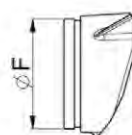
All dimensions are in mm.

- ① Required clearance for maintenance
- ② Recommended clearance for tube removal
- Water inlet
- Water outlet
- Power supply connection

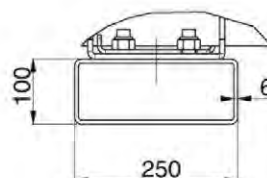
NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.



D1



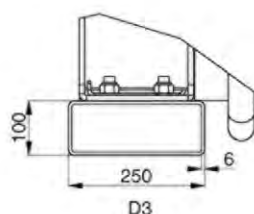
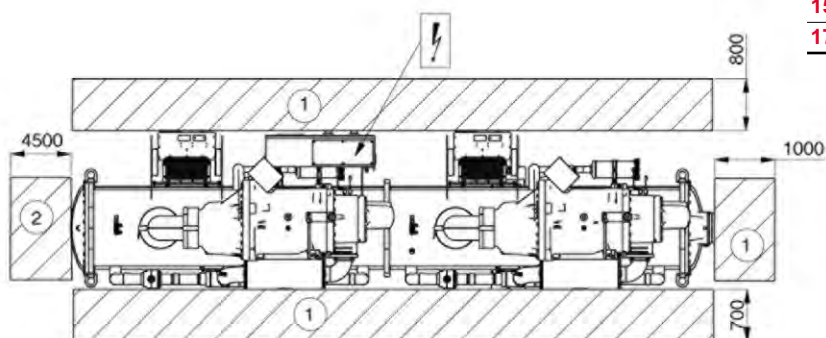
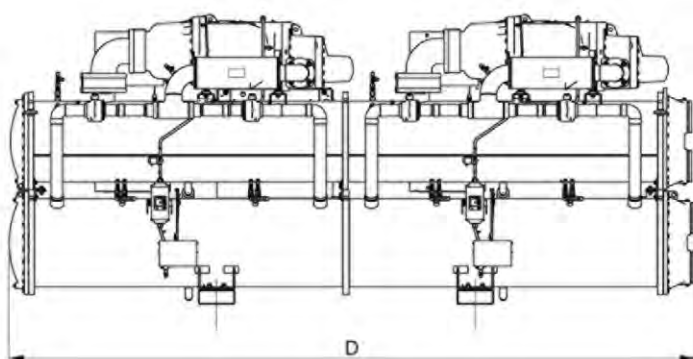
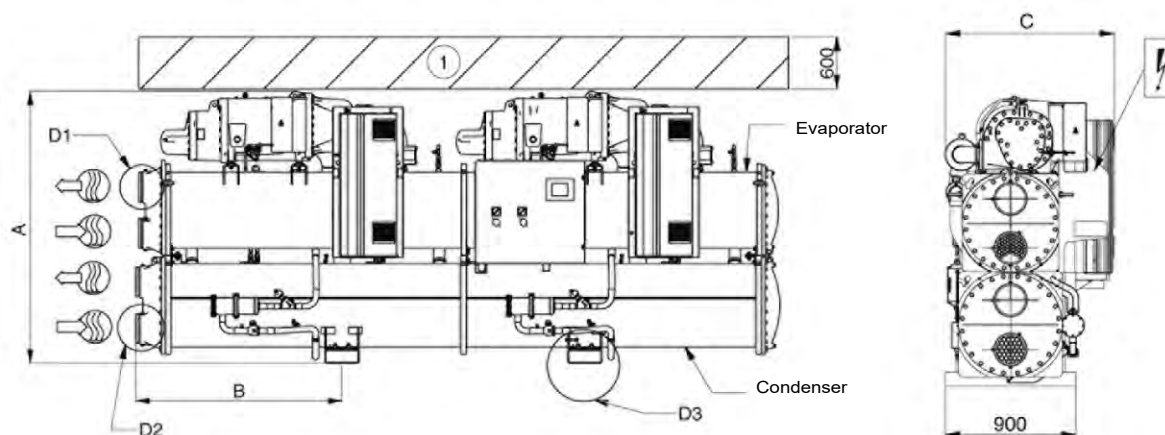
D2



D3

DIMENSIONS/CLEARANCES

30XWHV 1150-1710



Dimensions in mm						
	A	B	C	D	E	F
30XWHV						
1150	1997	1514	1164	4730	219,1	219,1
1280	1997	1514	1164	4730	219,1	219,1
1470	2051	1514	1255	4730	219,1	219,1
1570	2051	1514	1255	4730	219,1	219,1
1710	2051	1514	1255	4730	219,1	219,1

Legend:

All dimensions are in mm.

- ① Required clearance for maintenance
- ② Recommended clearance for tube removal
- Water inlet
- Water outlet
- Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

WATER-SOURCED SCREW HEAT PUMPS



Low energy consumption

High reliability

Safe Design

Easy and fast installation

Minimised operating sound levels

Environmental care

30XWHPZE

AQUAFORCE
PUREtec

Nominal heating capacity 319-1296 kW
Nominal cooling capacity 269-1110 kW

The 30XWHPZE heat pumps are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality.

The 30XWHPZE heat pumps are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- R-1234ze refrigerant or R-515B
- Flooded heat exchangers that are mechanically cleanable
- Carrier SmartVu™ control with color touch screen user interface that includes 10 languages

The AquaForce PUREtec range is splitted into two versions:

- 30XW-PZE for air conditioning and refrigeration applications
- 30XWHPZE for heating applications

As standard, the unit can provide an evaporator leaving temperature down to 3,3°C, and when operating as a heat pump, it can deliver up to 55°C (70°C optional) on the condenser side.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- SEER 12/7°C up to 7.6 and SEPR 12/7°C up to 9.3
- 30XWHPZE range is compliant with EU Eco-design Minimum Efficiency Performance Standards (MEPS) in heating that apply from September 2015
- COP of up to 6.7 and SCOP up to 7.2
- The high energy efficiency is reached through:
 - Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
 - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
 - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
 - Economizer system with electronic expansion device for increased cooling capacity.

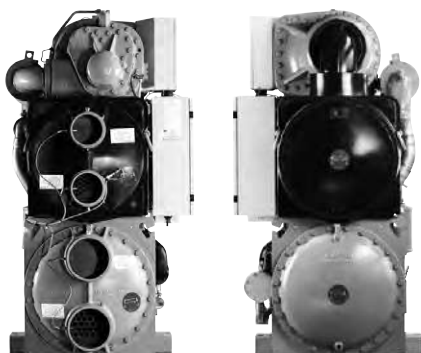
Low operating sound levels

- Standard unit features include:
 - Silencers on the compressors discharge line.
 - Silencers on the economiser return line.
 - Acoustic insulation on the components that are most subjected to radiated noise.
 - Option 257 further reduces the global unit sound level.

Easy and fast installation

- Compact design
 - The 30XW units are designed to offer the most compact dimensions on the market.
 - With a width of approximately 1 m up to 1300 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

Compact, accessible unit - side view - sizes up to 1300 kW



- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer to supply the integrated control circuit (400/24 V)
- Simplified hydraulic connections
 - Victaulic connections on the evaporator and condenser
 - Practical reference marks for entering and leaving water connections
 - Possibility to reverse the heat exchanger water inlet and outlet at the factory
 - Possibility to modify the number of heat exchanger passes
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care



- R-1234ze long-term refrigerant solution
 - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
 - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
 - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

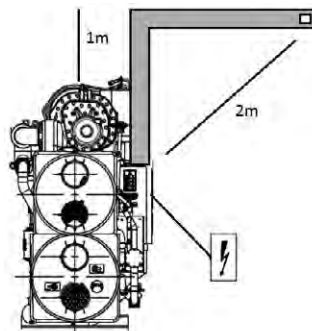
High reliability and easy servicing

- The 30XW units offer increased global performance as well as Carrier's acclaimed product quality and reliability.
- Major components are selected and tested with R-1234ze and R-515B refrigerant to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Non flammable use possible when selecting option 330, Low GWP A1 R-515 Refrigerant
- Screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuit
 - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
 - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure.
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

CUSTOMER BENEFITS

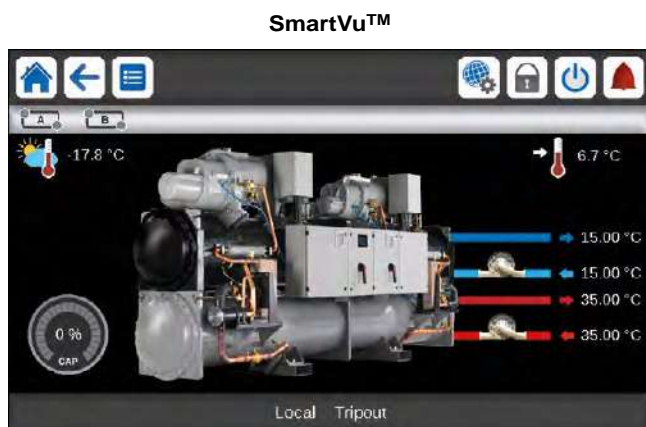
Safe Design

- Specific polyol ester oil qualified by Carrier for using with HFO-1234ze or R-515B to guarantee and maintain reliable bearing lubrication.
- Specific compressor gaskets compatible with HFO-1234ze or R-515B, tested and validated by Carrier.
- New relief valves designed for operation with HFO-1234ze or R-515B
- Specific electrical box with increased tightness and integrated blower that maintains positive air pressure to avoid any risk of ignition when using R-1234ze refrigerant.
- No need of ducted electrical cabinet fresh air supply when using option 330 - LOW GWP A1 R-515B refrigerant
- New control algorithms
- Specific documentation that contains all the installation, operation, maintenance and safety Instructions.



TECHNICAL INSIGHTS

SmartVu™ Control



- New innovative smart control features:
 - An intuitive and user-friendly, coloured, 7" interface
 - 10 languages available on choice: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation
- Energy management:
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - aintenance alert can be configured to days, months or hours of operation
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters

Remote Management (Standard)

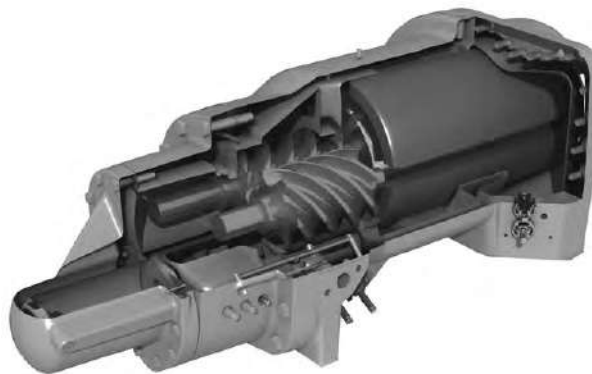
- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System anager or the Plant System anager (optional)
- The 30XWZE/30XWPZE also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: ndication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation

TECHNICAL INSIGHTS

Remote management (EMM option)

- The Energy management module (EMM) offers extended remote control possibilities:
- Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
- Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
- Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
- Time schedule override: Closing of this contact cancels the programmed time schedule.
- Out of service: This signal indicates that the chiller is completely out of service.
- Chiller capacity: This analogue output (0-10 gives an immediate indication of the chiller capacity.
- Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running

06T screw compressor



The Carrier 06T screw compressor designed for operation with HFO-1234ze and R-515B refrigerant benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	N°	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	301-1101
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	301-1101
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	801-1101
Evap. pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Evap. dual pumps power/control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Cond. pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	301-1101
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	301-1101
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	301-1101
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	301-1101
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	301-1101
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	301-1101
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	301-1101
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	301-1101
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	301-1101
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	301-1101
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	301-1101
High condensing temperature	150	Optimized compressor for operation at high condensing temperature	Increased condenser leaving water temperature up to 70°C. Allows applications with high condensing temperature (heat pumps, installations with not generously sized dry-coolers or more generally, installations with dry-coolers in hot climate). NOTE: to ensure control of the condenser leaving water temperature, this option must be fitted with 30XWH units.	301-1101
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	301-1101
Control for low cond. temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	301-1101

OPTIONS

Options	N°	Description	Advantages	Use
Dry-cooler control	154	Adaptation of the control box for communication with the dry-cooler via a bus. For dry cooler need to select the cabinet with option control cabinet manage by the chiller control	Easy system management, extended control capabilities of a remote dry-cooler	301-1101
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	301-1101
SmartVu™control, 7" user interface	158A	SmartVu™control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	301-1101
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	301-1101
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	301-1101
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	301-1101
Low noise level	257	Evaporator sound insulation	3 dB(A) quieter than standard unit	401-1101
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	301-1101
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	301-1101
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	301-1101
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	301-1101
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	301-1101
Free-cooling dry-cooler control	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, Extended control capabilities to a dryccoler used in Free Cooling mode	301-1101
Low GWP A1 R-515B refrigerant	330	Unit delivered with R-515B refrigerant charge (A1, GWP 299)	Reduced CO ₂ footprint (GWP < 300) A1 safety class Reduced installed cost in technical room	301-1101

PHYSICAL DATA, STANDARD UNITS

30XW-PZE / 30XWHPZE	301	401	451	551	601	651	801	901	1001	1101
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Heating

Standard unit Full load performances*	HW1	Nominal capacity	kW	322	448	509	657	698	758	916	1012	1168	1297
		COP	kW/kW	6,12	6,55	6,47	6,63	6,48	6,47	6,52	6,49	6,50	6,30
	HW2	Nominal capacity	kW	318	439	500	646	686	741	900	991	1146	1271
		COP	kW/kW	4,66	4,94	4,88	4,99	4,85	4,89	4,95	4,92	4,95	4,80
	HW3	Nominal capacity	kW	315	433	494	638	678	725	890	976	1129	1251
		COP	kW/kW	3,65	3,82	3,80	3,84	3,74	3,80	3,83	3,82	3,86	3,73
Standard unit Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kW/kW	6,48	7,06	7,18	6,48	6,54	6,69	6,79	6,97	6,88	6,51
		η _{s heat} _{30/35°C}	%	251	274	279	251	254	259	264	271	267	252
	HW3	SCOP _{47/55°C}	kW/kW	4,55	5,22	5,21	4,49	4,60	4,76	5,07	5,09	4,95	4,62
		η _{s heat} _{47/55°C}	%	174	201	200	171	176	182	195	195	190	177
		P _{rated}	kW	411	540	615	795	845	908	1108	1218	1408	1562

Cooling

Standard unit Full load performances*	CW1	Nominal capacity	kW	271	385	435	561	595	648	783	874	1001	1111
		EER	kW/kW	5,28	5,75	5,66	5,80	5,66	5,69	5,74	5,83	5,80	5,65
	CW2	Nominal capacity	kW	375	538	610	764	813	880	1086	1220	1383	1522
		EER	kW/kW	8,00	8,15	7,99	8,55	8,17	8,33	8,10	8,13	8,27	8,13
Standard unit Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	6,43	7,03	7,35	6,54	6,65	6,97	7,10	7,59	7,61	7,14
		η _{s cool} _{12/7°C}	%	254	278	291	259	263	276	281	301	301	283
		SEPR _{12/7°C} Process high temp.	kWh/kWh	9,27	8,76	8,75	9,36	8,78	8,84	8,76	9,06	9,26	9,19

* In accordance with standard EN14511-3:2018

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W

η_{s heat}_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_{s heat}_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016

η_{s cool}_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application**



Eurovent certified values

PHYSICAL DATA, STANDARD UNITS

30XW-PZE / 30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Sound levels - standard unit											
Sound power level ⁽¹⁾	dB(A)	93	97	97	97	97	97	100	100	100	100
Sound pressure level at 1 m ⁽²⁾	dB(A)	76	80	80	79	79	79	81	81	81	81
Sound levels - standard unit + option 257 ⁽³⁾											
Sound power level ⁽¹⁾	dB(A)	-	94	94	94	94	94	97	97	97	97
Sound pressure level at 1 m ⁽¹⁾	dB(A)	-	76	76	76	76	76	78	78	78	78
Dimensions - standard unit											
Length	mm	2724	3059	3059	3290	3290	3290	4730	4730	4730	4730
Width	mm	928	936	936	1069	1069	1069	1039	1039	1162	1162
Height	mm	1567	1743	1743	1950	1950	1950	1997	1997	2051	2051
Operating weight ⁽⁴⁾	kg	2157	3050	3050	3942	3977	3995	6932	7010	7665	7875
Compressors											
Semi-hermetic 06T screw compressors, 50 r/s											
Circuit A	-	1	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	-	-	1	1	1	1
Refrigerant - standard unit											
R1234ze											
Circuit A	kg	78	130	130	180	175	170	120	120	130	130
	teq CO ₂	0,5	0,9	0,9	1,3	1,2	1,2	0,8	0,8	0,9	0,9
Circuit B	kg	-	-	-	-	-	-	120	120	150	130
	teq CO ₂	-	-	-	-	-	-	0,8	0,8	1,1	0,9
Refrigerant - option 330											
R515B											
Circuit A	kg	79	132	132	183	178	173	122	122	132	132
	teq CO ₂	23,1	38,7	38,7	53,6	52,2	50,7	35,7	35,7	38,7	38,7
Circuit B	kg	-	-	-	-	-	-	122	122	152	132
	teq CO ₂	-	-	-	-	-	-	35,7	35,7	44,5	38,7
Oil - standard unit											
HATCOL-4496											
Circuit A	l	20	20	20	25	25	25	20	20	25	25
Circuit B	l	-	-	-	-	-	-	20	20	20	25
Capacity control											
SmartVu™, electronic expansion valves (EXV)											
Minimum capacity	%	25	30	30	15	15	20	15	15	15	10
Evaporator											
Multi-pipe flooded type											
Water volume	l	61	101	101	154	154	154	293	293	321	321
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser											
Multi-pipe flooded type											
Water volume	l	55	103	103	148	148	148	316	316	340	340
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate

ELECTRICAL DATA, STANDARD UNITS

30XW-PZE / 30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Power circuit											
Nom. power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current ⁽¹⁾											
Circuit A	A	303	414	414	587	587	587	414	414	587	587
Circuit B	A	-	-	-	-	-	-	414	414	414	587
Option 81	A	-	-	-	-	-	-	529	543	716	751
Maximum start-up current⁽²⁾											
Circuit A	A	303	414	414	587	587	587	414	414	587	587
Circuit B	A	-	-	-	-	-	-	414	414	414	587
Option 81	A	-	-	-	-	-	-	597	621	794	855
Cosine phi											
Nominal ⁽³⁾		0,79	0,86	0,87	0,85	0,87	0,89	0,86	0,87	0,85	0,85
Maximum ⁽⁴⁾		0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90
Total harmonic distortion ⁽⁴⁾	%	Closed to 0% (negligible)									
Maximum power input⁽⁵⁾											
Circuit A	kW	86	112	126	148	165	174	112	126	148	148
Circuit B	kW	-	-	-	-	-	-	112	126	126	148
Option 81	kW	-	-	-	-	-	-	224	252	274	296
Nominal current drawn⁽³⁾											
Circuit A	A	91	115	129	164	177	194	115	129	164	164
Circuit B	A	-	-	-	-	-	-	115	129	129	164
Option 81	A	-	-	-	-	-	-	230	258	293	328
Maximum current drawn (Un)⁽⁵⁾											
Circuit A	A	140	180	205	240	268	282	180	205	240	240
Circuit B	A	-	-	-	-	-	-	180	205	205	240
Option 81	A	-	-	-	-	-	-	360	410	445	480
Maximum current drawn (Un -10%)⁽⁴⁾											
Circuit A	A	153	196	223	261	292	307	196	223	261	261
Circuit B	A	-	-	-	-	-	-	196	223	223	261
Option 81	A	-	-	-	-	-	-	392	446	484	522
Maximum power input with option 150B⁽⁵⁾											
Circuit A	kW	76	97	110	129	146	153	97	110	129	129
Circuit B	kW	-	-	-	-	-	-	97	110	110	129
Option 81	kW	-	-	-	-	-	-	195	220	239	258
Maximum current drawn (Un) with option 150B⁽⁵⁾											
Circuit A	A	123	158	179	209	237	249	158	179	209	209
Circuit B	A	-	-	-	-	-	-	158	179	179	209
Option 81	A	-	-	-	-	-	-	316	358	388	418

- (1) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.
- (2) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.
- (3) Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.
- (4) Values obtained at operation with maximum unit power input.
- (5) Values obtained at operation with maximum unit power input. Values given on the unit nameplate.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES (OPTION 150)

30XW-ZE / 30XWHZE				301	401	451	551	601	651	801	901	1001	1101
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	319	462	516	642	697	771	912	1057	1159	1297
		COP	kW/kW	5,61	6,01	6,05	5,83	5,71	5,93	5,76	5,98	5,73	5,61
	HW2	Nominal capacity	kW	310	446	498	623	678	753	880	1018	1123	1260
		COP	kW/kW	4,59	4,93	4,97	4,8	4,7	4,91	4,74	4,93	4,74	4,66
	HW3	Nominal capacity	kW	302	433	482	605	661	734	853	983	1089	1223
		COP	kW/kW	3,78	4,05	4,09	3,95	3,88	4,06	3,89	4,06	3,94	3,88
	HW4	Nominal capacity	kW	293	420	467	585	645	715	828	950	1057	1186
		COP	kW/kW	3,07	3,29	3,32	3,21	3,16	3,29	3,15	3,29	3,21	3,18
Unit + option 150 Seasonal energy efficiency**	HW1	SCOP _{30/35°C}	kWh/kWh	6,01	6,49	6,58	6,54	6,41	6,46	6,21	6,31	6,26	6,3
		η _s heat _{30/35°C}	%	232	251	255	254	248	250	240	244	242	244
	HW3	SCOP _{47/55°C}	kWh/kWh	4,84	4,97	5,05	4,95	4,91	4,99	4,77	4,87	4,84	4,89
		η _s heat _{47/55°C}	%	186	191	194	190	188	192	183	187	186	187
		Prated	kW	421	544	607	761	829	922	1073	1240	1371	1539
Cooling													
Unit + option 150 Full load performances*	CW1	Nominal capacity	kW	269	393	439	547	591	656	776	910	985	1101
		EER	kW/kW	4,86	5,2	5,27	5,07	4,95	5,18	5,05	5,34	5,03	4,94
	CW2	Nominal capacity	kW	352	538	605	725	782	877	1057	1251	1332	1466
		EER	kW/kW	5,58	6,44	6,4	6,24	6,12	6,42	6,23	6,45	6,16	6,06
Unit + option 150 Seasonal energy efficiency**		SEER _{12/7°C} Comfort low temp.	kWh/kWh	6,24	6,57	6,65	6,52	6,57	6,5	6,67	6,8	6,63	6,6
		η _s cool _{12/7°C}	%	247	260	263	258	260	257	264	269	262	261
		SEPR _{12/7°C} Process high temp.	kWh/kWh	6,80	7,01	7,07	7,39	6,97	6,99	6,96	7,23	7,11	7,30

* In accordance with standard EN14511-3:2018

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W

HW4 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 55°C/65°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_s heat_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016

η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016



Eurovent certified values

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES (OPTION 150)

30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Sound levels - unit with option 150											
Sound power level ⁽¹⁾	dB(A)	93	97	97	100	100	100	100	100	103	103
Sound pressure level at 1 m ⁽²⁾	dB(A)	76	80	80	82	82	82	81	81	84	84
Sound levels - standard unit + option 257 ⁽³⁾											
Sound power level ⁽¹⁾	dB(A)	-	94	94	98	98	98	97	97	101	101
Sound pressure level at 1 m ⁽²⁾	dB(A)	-	76	76	80	80	80	78	78	82	82
Operating weight ⁽⁴⁾	kg	2157	3050	3050	4102	4147	4175	6932	7010	7844	8182
Compressors											
Semi-hermetic 06T screw compressors, 50 r/s											
Circuit A	-	1	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	-	-	1	1	1	1
Refrigerant - unit with option 150											
R1234ze											
Circuit A	kg	78	130	130	180	175	170	120	120	130	130
	teq CO ₂	0,5	0,9	0,9	1,3	1,2	1,2	0,8	0,8	0,9	0,9
Circuit B	kg	-	-	-	-	-	-	120	120	150	130
	teq CO ₂	-	-	-	-	-	-	0,8	0,8	1,1	0,9
Refrigerant - option 330											
R515B											
Circuit A	kg	79	132	132	183	178	173	122	122	132	132
	teq CO ₂	23,1	38,7	38,7	53,6	52,2	50,7	35,7	35,7	38,7	38,7
Circuit B	kg	-	-	-	-	-	-	122	122	152	132
	teq CO ₂	-	-	-	-	-	-	35,7	35,7	44,5	38,7
Oil - unit with option 150											
HATCOL-4496											
Circuit A	l	20	20	20	25	25	25	20	20	25	25
Circuit B	l	-	-	-	-	-	-	20	20	20	25
Capacity control											
SmartVu™, electronic expansion valves (EXV)											
Minimum capacity	%	30	30	30	20	20	25	15	15	15	10
Evaporator											
Multi-pipe flooded type											
Water volume	l	61	101	101	154	154	154	293	293	321	321
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser											
Multi-pipe flooded type											
Water volume	l	55	103	103	148	148	148	316	316	340	340
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES (OPTION 150)

30XW-PZE / 30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current ⁽¹⁾											
Circuit A	A	388	587	587	629	629	629	587	587	629	629
Circuit B	A	-	-	-	-	-	-	587	587	587	629
Option 81	A	-	-	-	-	-	-	712	725	767	815
Maximum start-up current ⁽²⁾											
Circuit A	A	388	587	587	629	629	629	587	587	629	629
Circuit B	A	-	-	-	-	-	-	587	587	587	629
Option 81	A	-	-	-	-	-	-	833	860	902	972
Cosine phi nominal ⁽³⁾		0,75	0,80	0,81	0,80	0,81	0,83	0,80	0,81	0,80	0,80
Cosine phi maximum ⁽⁴⁾		0,90	0,90	0,90	0,89	0,89	0,89	0,90	0,90	0,89	0,89
Total harmonic distortion ⁽⁴⁾	%	Closed to 0% (negligible)									
Maximum power input ⁽⁵⁾											
Circuit A	kW	107	144	158	202	219	228	144	158	202	202
Circuit B	kW	-	-	-	-	-	-	144	158	158	202
Option 81	kW	-	-	-	-	-	-	288	317	360	404
Nominal current drawn ⁽³⁾											
Circuit A	A	102	125	138	186	197	213	125	138	186	186
Circuit B	A	-	-	-	-	-	-	125	138	138	186
Option 81	A	-	-	-	-	-	-	250	276	324	372
Maximum current drawn (Un) ⁽⁵⁾											
Circuit A	A	174	234	257	328	356	371	234	257	328	328
Circuit B	A	-	-	-	-	-	-	234	257	257	328
Option 81	A	-	-	-	-	-	-	468	514	585	656
Max. current drawn (Un -10%) ⁽⁴⁾											
Circuit A	A	190	255	280	357	387	404	255	280	357	357
Circuit B	A	-	-	-	-	-	-	255	280	280	357
Option 81	A	-	-	-	-	-	-	510	560	637	714

(1) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

(2) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

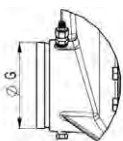
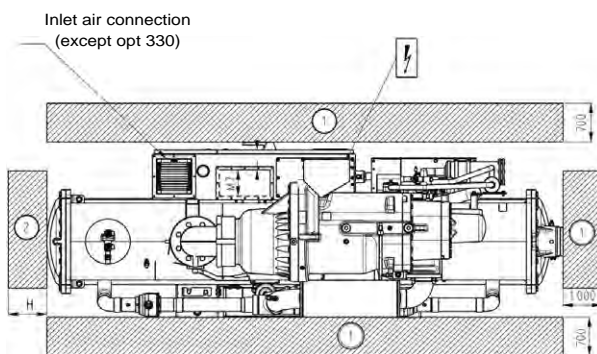
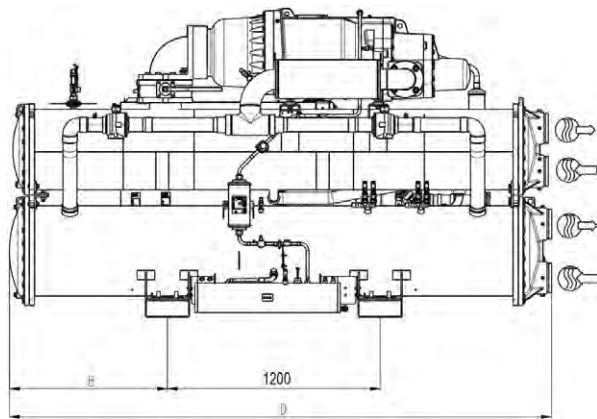
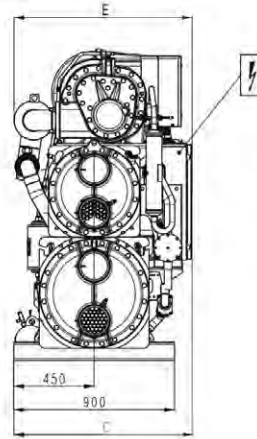
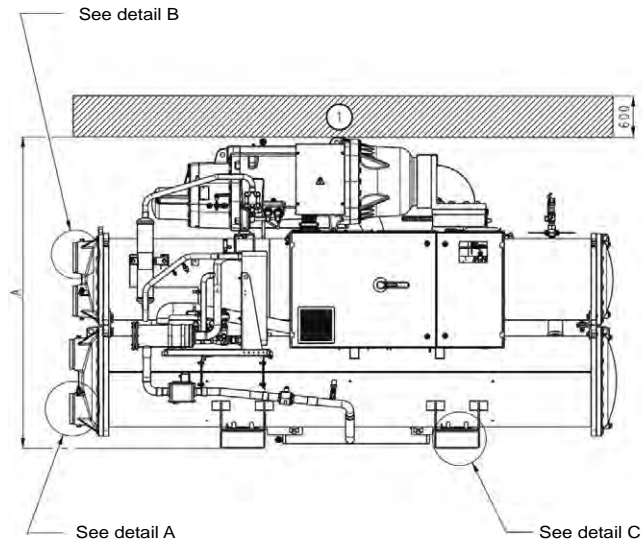
(3) Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

(4) Values obtained at operation with maximum unit power input.

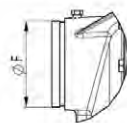
(5) Values obtained at operation with maximum unit power input. Values given on the unit nameplate.

DIMENSIONS/CLEARANCES

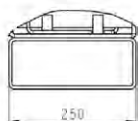
30XWHPZE 301-651



Detail A



Detail B



Detail C

Dimensions en mm								
	A	B	C	D	E	F	G	H
30XWHPZE								
301	1612	800	982	2724	983	141,3	141,3	2600
401	1743	968	980	3059	982	168,3	168,3	2800
451	1743	968	980	3059	982	168,3	168,3	2800
551	1950	1083	1080	3290	1180	219,1	219,1	3100
601	1950	1083	1080	3290	1180	219,1	219,1	3100
651	1950	1083	1080	3290	1180	219,1	219,1	3100
30XWHPZE (option 150)								
301	1612	800	982	2724	983	141,3	141,3	2600
401	1743	968	980	3059	982	168,3	168,3	2800
451	1743	968	1040	3059	1042	168,3	168,3	2800
551	1968	1083	1080	3290	1180	219,1	219,1	3100
601	1968	1083	1080	3290	1180	219,1	219,1	3100
651	1968	1083	1080	3290	1180	219,1	219,1	3100

Legend

All dimensions are given in mm

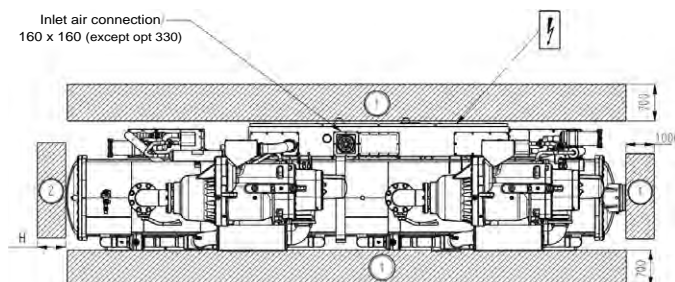
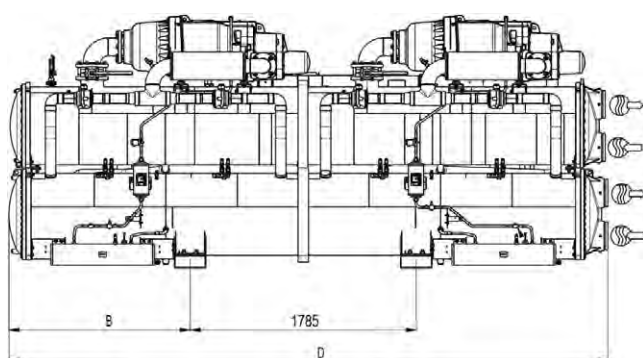
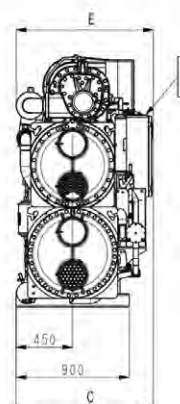
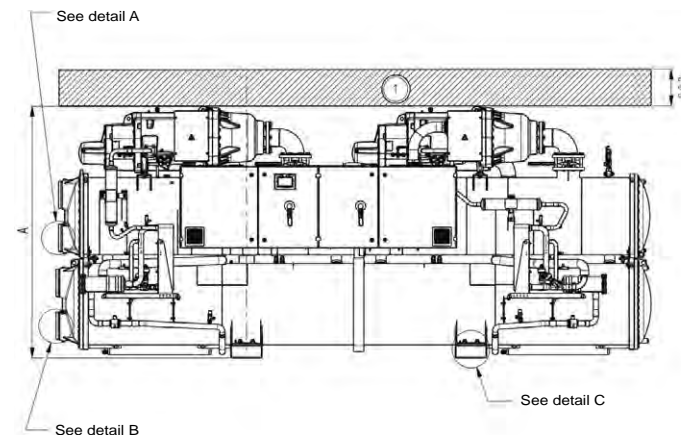
- ① → Services clearances required
- ② → Space required to remove cooler tubes
- ⊕ Inlet water
- ⊖ Outlet water
- ⚡ → Electrical supply entry

NOTES:

- Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.
- For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

DIMENSIONS/CLEARANCES

30XWHPZE 801-1101



Detail A



Detail B



Detail C

Dimensions en mm

	A	B	C	D	E	F	G	H
30XWHPZE								
801	1998	1512	1121	4730	1124	219,1	219,1	4500
901	1998	1512	1125	4730	1124	219,1	219,1	4500
1001	2051	1512	1238	4730	1238	219,1	219,1	4500
1101	2051	1512	1238	4730	1238	219,1	219,1	4500
30XWHPZE (option 150)								
801	1998	1512	1121	4730	1124	219,1	219,1	4500
901	1998	1512	1125	4730	1124	219,1	219,1	4500
1001	2070	1512	1238	4730	1238	219,1	219,1	4500
1101	2051	1512	1238	4730	1238	219,1	219,1	4500

Legend

All dimensions are given in mm

- ① → Services clearances required
- ② → Space required to remove cooler tubes
- Inlet water
- Outlet water
- Electrical supply entry

NOTES:

- Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.
- For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

WATER-SOURCED VARIABLE-SPEED SCREW HEAT PUMPS



- Low energy consumption
- High reliability
- Safe Design
- Easy and fast installation
- Minimised operating sound levels
- Environmental care
- Designed to support green building design

30XWHVZE-A

Nominal heating capacity 524-1485 kW
Nominal cooling capacity 448-1243 kW

The 30XWHVZE water-sourced units are the premium solution for commercial and industrial applications where installers, consultants and building owners require maximum quality and optimal performances, especially at part load.

The 30XWHVZE units are designed to meet current and future requirements in terms of energy efficiency, versatility and compactness. They feature exclusive inverter-driven screw compressors - an evolution of the proven traditional Carrier twin-rotor screw compressor design. Other features include:

- the new SmartVu™ control
- mechanically cleanable flooded heat exchangers
- refrigerant R-1234ze or R-515B

The 30XW-VZE/30XWHVZE range is splitted into two versions:

- 30XW-VZE for air conditioning applications
- 30XWHVZE for heating applications

As standard, the unit can provide an evaporator leaving water temperature down to 3.3°C, and when operating as a heat pump, it can deliver up to 55°C on the condenser side.

AQUAFORCE
PUREtec



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

* Evaporator with aluminium jacket shown in the picture not standard - available as special order only

CUSTOMER BENEFITS

Low energy consumption

- The 30XWHVZE are designed for high performance both at full load and at part load.
 - Eurovent certified values per EN14511-3:2013: SEPR up to 10.7 and SEER up to 8.8
- High energy efficiency
 - Inverter-driven twin-rotor screw compressors allow precise capacity matching of building load changes and significantly reduce unit power input, especially at part-load.
 - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
 - Electronic expansion device permits operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Optimised electrical performance
 - All 30XWHVZE units comply with class 3 of standard EN61800-3. Category C3 refers to industrial environments. With option 282 category C2 compliance is possible.
 - Inverter-driven motors ensure negligible start-up current (value is lower than the maximum unit current draw)

High reliability

- The 30XWHVZE ranges offer increased global performance as well as Carrier's acclaimed product quality and reliability. Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Inverter-driven screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - The inverter is optimised for each compressor motor to ensure reliable operation and easy maintenance.
 - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuits
 - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
 - All components have been selected and tested with R-1234ze refrigerant and R-515B
- Evaporator
 - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling
 - Automatic compressor unloading in case of abnormally high condensing pressure or discharge temperature.
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard)

Safe Design

- Specific polyol ester oil qualified by Carrier for using with HFO-1234ze and R-515B to guarantee and maintain reliable bearing lubrication.
- Specific compressor gaskets compatible with HFO-1234ze and R-515B, tested and validated by Carrier.
- New relief valves designed for operation with HFO-1234ze and R-515B
- New control algorithms
- Specific documentation that contains all the installation, operation, maintenance and safety Instructions.
- No need of electrical cabinet ducted fresh air supply

Easy and fast installation

- Compact design
 - The 30XWHVZE units are designed to offer compact dimensions for easy installation.
 - With a width of approximately 1.25 m up to 1000 kW the units can pass through standard door openings and only require minimum floor space in the plant room.
- Simplified electrical connections
 - Transformer supply to the integrated control circuit (400/24 V)
- Simplified water connections
 - Victaulic connections on the evaporator and condenser
 - Practical reference marks for entering and leaving water connections
 - Possibility to reverse the heat exchanger water inlet and outlet at the factory
 - Possibility to modify the number of heat exchanger passes
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.
 - Non flammable use possible when selecting option 330, Low GWP A1 R-515B Refrigerant

Minimised operating sound levels

- The inverter technology used for the compressor motors minimises noise levels at part load operation. In two-compressor units at 25% of the maximum load the unit sound power level is reduced by 10 dB(A).
- Standard unit features include:
 - Silencers on the compressor discharge line.
 - Sound insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

CUSTOMER BENEFITS

Environmental care



- R-1234ze long-term refrigerant solution
 - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
 - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
 - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

Designed to support green building design

- A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment. The underlying principles of this approach: The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.
- The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year 30XW-VZE/30XWHVZE units offers a solution to this important challenge.
- A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.
- The following example looks at how Carrier's new 30XW-VZE/30XWHVZE range helps customers involved in LEED® building certification.

30XW-VZE/30XWHVZE and LEED® certification

The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

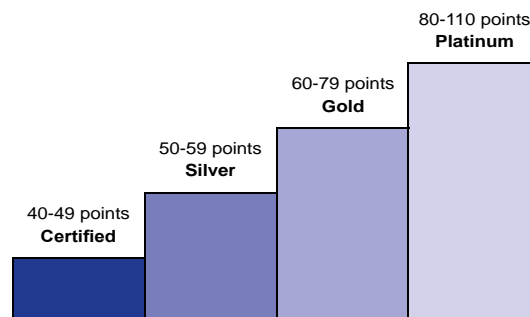
- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points

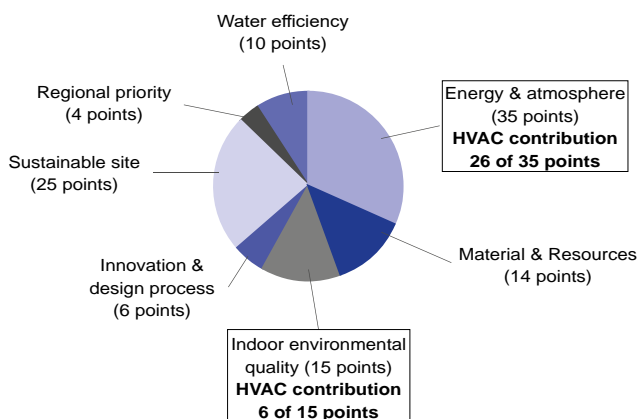


The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

Overview of LEED® for new construction and major renovations



The new 30XW-VZE/30XWHVZE units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- **EA prerequisite 2: Minimum energy Performance**
The 30XW-VZE/30XWHVZE exceeds the energy efficiency requirements of ASHRAE 90.1-2007; therefore it complies with the prerequisite standard.
- **EA prerequisite 3: Fundamental Refrigerant Management**
The 30XW-VZE/30XWHVZE does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.

CUSTOMER BENEFITS

- **EA credit 1: Optimise energy performance (1 to 19 points)**
Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90,1-2007 reference. The 30XW-VZE/30XWHVZE, which is designed for high performance especially during part load operation, contributes reducing the energy consumption of the building and therefore helps gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.
- **EA credit 4: Enhanced refrigerant management (2 points)**
With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Global Warming Potential (GWP) of the system. The 30XW-VZE/30XWHVZE uses HFO-1234ze refrigerant with Global Warming Potential Index below 1 and therefore contributes toward satisfying this credit under LEED®.

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30XW-V-ZE/30XWHV-ZE. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

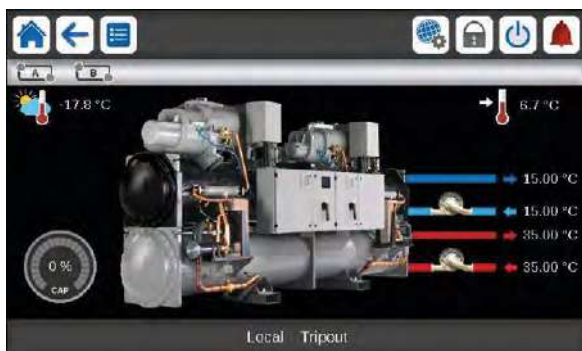
i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

TECHNICAL INSIGHTS

SmartVu™



- **New innovative smart control features :**
 - An intuitive and user-friendly, coloured, 7" interface
 - 1 languages available on choice :DE, EN, ES,FR,T,NL,PT, TR, TU + one additional customer choice
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Setpoint offset based on the outside air temperature
 - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
 - With hydraulic module: Water pressure display and water flow rate calculation.
- **Energy management :**
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.
- **Maintenance functions :**
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation

- **Advanced communication features :**
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.

Remote Management (Standard)

- Units with SmartVu™ control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System anager or the Plant System anager (optional).
- The chiller also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
 - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
 - Operation visualisation: indication if the unit is operating or if it is in stand-by (no cooling load)
 - Alarm visualisation.

TECHNICAL INSIGHTS

Remote management (EMM option)

- The Energy management module (EMM) offers extended remote control possibilities:
- Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
- Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
- Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
- Time schedule override: Closing of this contact cancels the programmed time schedule.
- Out of service: This signal indicates that the chiller is completely out of service.
- Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
- Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

Remote management (EMM option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set point reset: ensures reset of the cooling set-point based on a 0-10 V signal
- Demand limit: permits limitation of the maximum chiller power or current based on a 0-10 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
- User safety: this contact can be used for any customer safety loop; opening the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status : set of outputs (as many as the compressors number) indicating which compressors are running.

New inverter-driven Thunderbolt screw compressor



- The Carrier 06T screw compressor designed for operation with HFO-1234ze refrigerant benefits from Carrier's long experience in the development of twin-rotor screw compressors. The design of the Thunderbolt compressors is based on the successful 06T screw compressor, core of the well-known Aquaforce series.
- Advanced control algorithms combine inverter frequency output with motor input logic to minimise mechanical part stress, resulting in best compression performance and high chiller reliability. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.
- Screw compressors use positive displacement principle to compress gases at higher pressure. As a result, in case of exceptional high temperature condenser side (due for example to water-pipes fouling or operation in harsh climate with an external dry-cooler) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode).
- The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.
- The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	N°	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	451-1301 (see dedicated paragraph)
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	451-1301
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	451-1301
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	451-1301
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	451-1301
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	451-1301
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	451-1301
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	451-1301
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	451-1301
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	451-1301
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	451-1301
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	451-1301
Modbus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	451-1301
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	451-1301
Control for low cond. temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	451-1301
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	451-1301
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	451-1301
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	451-1301
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	451-1301

OPTIONS

Options	N°	Description	Advantages	Use
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	451-1301
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	451-1301
Low noise level	257	Evaporator sound insulation	3 dB(A) quieter than standard unit	451-1301
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	451-1301
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	451-1301
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	451-1301
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	451-1301
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	451-1301
EMC classification C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Increase the variable frequency drive (VFD) immunity level according to first environment (so called, residential environment) requirements and allow its compliancy with emissions level required in category C2	451-1301
Fast Capacity Recovery	QM295	New software algorithms to allow quick restart and fast loading while preserving unit-reliability	Full capacity recovery in less than 5 minutes after power failure. Matches requirements of typical critical missions applications	451-1301
Compliance with Morocco regulation	327	Specifics documents according Morocco regulation	Conformance with Morocco regulations	451-1301
Low GWP A1 R-515B refrigerant	330	Unit delivered with R-515B refrigerant charge (A1, GWP 299)		451-1301

PHYSICAL DATA, 30XW-VZE UNITS

30XW-V ZE / 30XWHVZE	451	501	601	651	851	1001	1101	1201	1301
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Heating

Standard unit Full load performances*	HW1	Nominal capacity	kW	523	581	730	780	1017	1157	1304	1450	1555
		COP	kW/kW	6,3	6,14	6,04	5,92	6,27	6,29	6,12	5,74	5,61
	HW2	Nominal capacity	kW	491	544	677	730	955	1081	1211	1344	1452
		COP	kW/kW	4,74	4,6	4,55	4,39	4,73	4,73	4,67	4,42	4,28
	HW3	Nominal capacity	kW	466	508	628	689	906	1007	1122	1242	1367
		COP	kW/kW	3,52	3,41	3,42	3,24	3,51	3,5	3,52	3,39	3,22
Standard unit Seasonal energy efficiency **	HW1	SCOP _{30/35°C}	kWh/kWh	7,64	7,39	7,62	7,57	7,45	7,4	7,17	6,64	6,56
		η _s heat _{30/35°C}	%	298	288	297	295	290	288	279	257	254
		SCOP _{47/55°C}	kWh/kWh	5,34	5,3	5,26	5,21	5,31	5,39	5,46	5,17	5,11
	HW3	η _s heat _{47/55°C}	%	206	204	202	201	204	207	210	199	197
		P _{rated}	kW	559	614	761	827	1086	1217	1361	1507	1645

Cooling

Standard unit Full load performances*	CW1	Nominal capacity	kW	448	496	620	660	870	991	1115	1227	1312
		EER	kW/kW	5,53	5,39	5,26	5,14	5,57	5,6	5,47	5,14	5,05
		Eurovent class		A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	670	728	915	970	1301	1455	1296	1423	1521
		EER	kW/kW	7,88	7,49	7,26	7,14	7,9	7,74	6,19	5,76	5,7
		Eurovent class		A	A	A	A	A	A	A	A	A
Standard unit Seasonal energy efficiency **		SEER _{12/7°C} Comfort low temp.	kWh/kWh	8,12	8,15	8,77	8,37	8,41	8,48	7,48	7,33	7,13
		η _s cool _{12/7°C}	%	322	323	348	332	333	336	296	290	282
		SEPR _{12/7°C} Process high temp.	kWh/kWh	10,49	10,23	10,42	10,03	10,71	10,71	9,66	9,12	9,10

Sound levels - standard unit

Sound power level ⁽¹⁾	dB(A)	103	103	103	103	104	104	104	104	104
Sound pressure level at 1 m ⁽²⁾	dB(A)	85	85	85	85	85	85	85	85	85

Sound levels - standard unit + option 257⁽³⁾

Sound power level ⁽¹⁾	dB(A)	100	100	100	100	101	101	101	101	101
Sound pressure level at 1 m ⁽²⁾	dB(A)	82	82	82	82	82	82	82	82	82

Dimensions - standard unit

Length	mm	3059	3059	3290	3290	4730	4730	4730	4730	4730
Width	mm	1087	1087	1237	1237	1164	1164	1264	1264	1264
Height	mm	1743	1743	1948	1948	1997	1997	2051	2051	2051

* In accordance with standard EN14511-3:2018

** In accordance with standard EN14825:2016, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². kW

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². kW

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². kW

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². K/W

η_s heat_{30/35°C} & SCOP_{30/35°C} Values calculated in accordance with EN14825:2016

η_s heat_{47/55°C} & SCOP_{47/55°C} Values calculated in accordance with EN14825:2016

η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Process application**

(1) In dB ref=10⁻¹² W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) in dB ref 20μPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate



Eurovent certified values

PHYSICAL DATA, 30XW-VZE UNITS

30XW-V ZE / 30XWHVZE		451	501	601	651	851	1001	1101	1201	1301
Operating weight⁽⁴⁾	kg	3223	3261	4263	4267	7477	7553	7731	7932	7970
Compressors		Semi-hermetic 06T screw compressors, 60 r/s								
Circuit A	-	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	1	1	1	1	1
Oil - standard unit		HATCOL-4496								
Circuit A	l	20	20	25	25	20	20	25	25	25
Circuit B	l	-	-	-	-	20	20	20	25	25
Refrigerant - standard unit		R1234ze (E)								
Circuit A	kg	130	130	180	175	120	120	115	115	110
	teq CO ₂	0,9	0,9	1,3	1,2	0,8	0,8	0,8	0,8	0,8
Circuit B	kg	-	-	-	-	120	120	120	115	110
	teq CO ₂	-	-	-	-	0,8	0,8	0,8	0,8	0,8
Capacity control		SmartVu™, inverter-driven compressor, electronic expansion valve (EXV)								
Minimum capacity	%	20	20	20	20	10	10	10	10	10
Evaporator		Multi-pipe flooded type								
Water volume	l	106	106	154	154	297	297	297	297	297
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type								
Water volume	l	112	112	165	165	340	340	340	340	340
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate

ELECTRICAL DATA

30XW-VZE /30XWHVZE		451	501	601	651	851	1001	1101	1201	1301
Power circuit										
Nominal power supply	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit		24 V via the built-in transformer								
Start-up current⁽¹⁾	A	Negligible (lower than maximum current drawn)								
Maximum power factor⁽²⁾		0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93	0,91-0,93
Cosine phi		> 0,98	> 0,98	> 0,98	> 0,98	> 0,98	> 0,98	> 0,98	> 0,98	> 0,98
Harmonic distortion rate⁽³⁾	%	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45
Maximum power input⁽⁴⁾										
Circuit A	kW	125	157	189	208	125	157	189	189	208
Circuit B	kW	-	-	-	-	125	157	157	189	208
With option 81	kW	-	-	-	-	250	314	346	378	416
Eurovent current draw*										
Circuit A	A	129	148	180	197	129	149	180	180	197
Circuit B	A	-	-	-	-	129	149	149	180	197
With option 81	A	-	-	-	-	258	298	329	360	394
Maximum current draw (Un)⁽⁴⁾										
Circuit A	A	195	245	295	325	195	245	295	295	325
Circuit B	A	-	-	-	-	195	245	245	295	325
With option 81	A	-	-	-	-	390	490	540	590	650
Maximum current draw (Un -10%)⁽³⁾										
Circuit A	A	206	260	313	345	206	260	313	313	345
Circuit B	A	-	-	-	-	206	260	260	313	345
With option 81	A	-	-	-	-	412	520	573	626	690
Maximum power input with option 150B⁽⁴⁾										
Circuit A	kW	106	134	161	177	106	134	161	161	177
Circuit B	kW	-	-	-	-	106	134	134	161	177
With option 81	kW	-	-	-	-	212	268	295	322	354
Maximum current draw (Un) with option 150B⁽⁴⁾										
Circuit A	A	169	213	257	283	169	213	257	257	283
Circuit B	A	-	-	-	-	169	213	213	257	283
With option 81	A	-	-	-	-	338	426	470	514	566
Dissipated power⁽³⁾	W	3000	4200	4700	5300	6000	8400	8900	9400	10600

(1) Instantaneous start-up current.

(2) May vary, based on the short-circuit current/max. current draw ratio of the system transformer. Values obtained at operation with maximum unit power input.

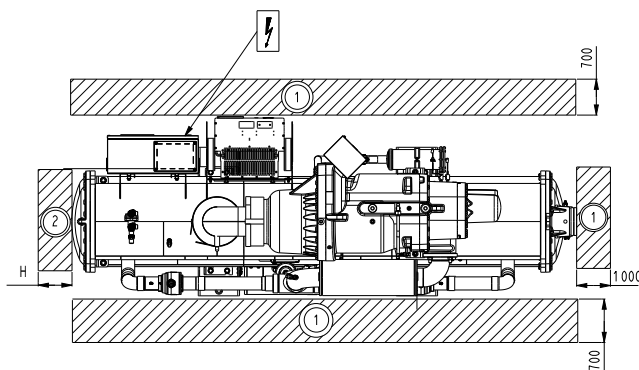
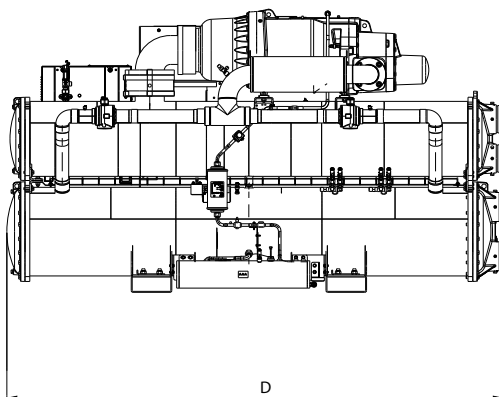
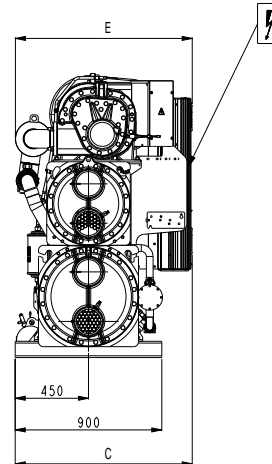
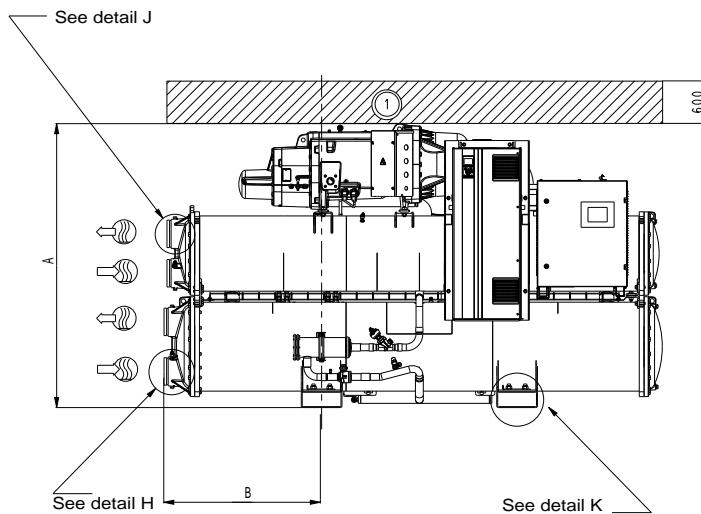
(3) Values obtained at operation with maximum unit power input.

(4) Values obtained at operation with maximum unit power input. Values given on the unit name plate.

* Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C. Gross performances, not in accordance with EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

DIMENSIONS/CLEARANCES

30XWHVZE 451-651



Dimensions in mm								
	A	B	C	D	E	F	G	H
30XWHVZE								
451	1743	968	1087	3059	1086	168,3	168,3	2800
501	1743	968	1087	3059	1086	168,3	168,3	2800
601	1948	1083	1137	3290	1237	219,1	219,1	3100
651	1948	1083	1137	3290	1237	219,1	219,1	3100

Legend

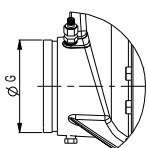
All dimensions are given in mm

- ① → Services clearances required
- ② → Space required to remove
- Inlet water
- Outlet water
- Electrical supply entry

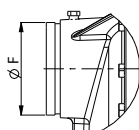
NOTES:

Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.

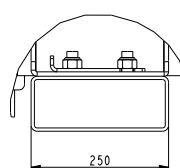
For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.



Detail H



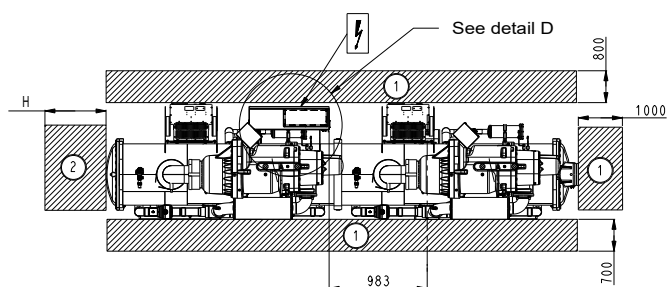
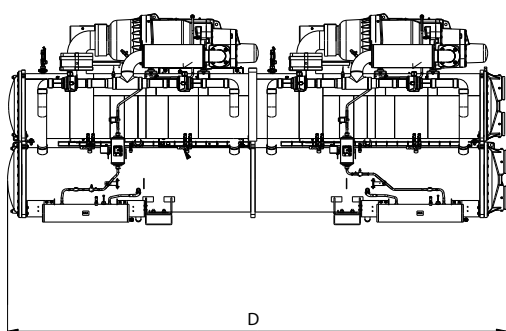
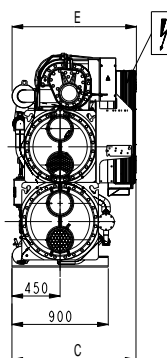
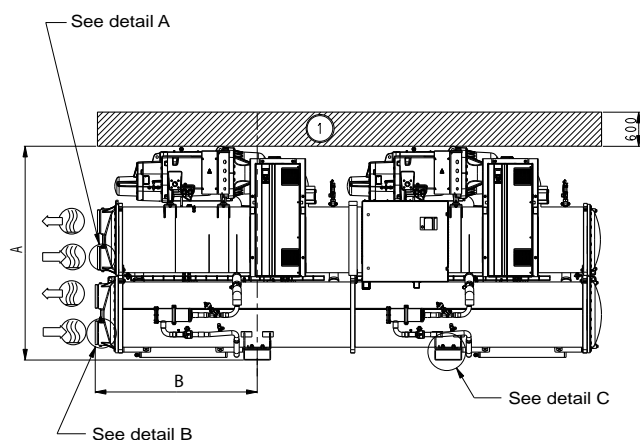
Detail J



Detail K

DIMENSIONS/CLEARANCES

30XWHVZE 851-1301



Dimensions in mm								
	A	B	C	D	E	F	G	H
30XWHVZE								
851	1998	1514	1164	4730	1162	219,1	219,1	4500
1001	1998	1514	1164	4730	1162	219,1	219,1	4500
1101	2051	1514	1164	4730	1264	219,1	219,1	4500
1201	2051	1514	1164	4730	1264	219,1	219,1	4500
1301	2051	1514	1164	4730	1264	219,1	219,1	4500

Legend

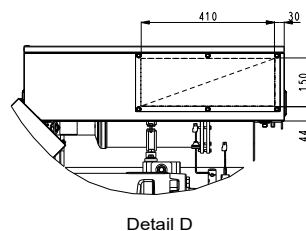
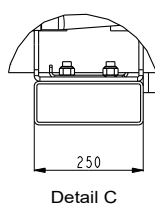
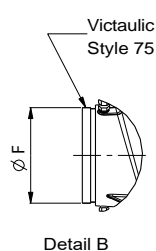
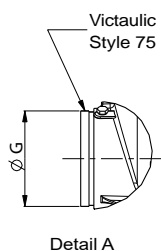
All dimensions are given in mm

- ① → Services clearances required
- ② → Space required to remove
- Inlet water
- Outlet water
- Electrical supply entry

NOTES:

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For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.



HIGH TEMPERATURE WATER-SOURCE HEAT PUMP



Renewable heat solution able
to produce hot water up to
85°C

Multiple applications: district
heating, space heating,
process heating

Multiple renewable energy
sources: waste heat from data
centers, from industry, grey
waters, ground source water

61XWHLZE
61XWH-ZE
61XWHHZE

AQUAFORCE
PUREtec

Nominal heating capacity 200 - 2500 kW

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps are the premium solution for industrial and commercial heating applications where end users, consultants and building owners require optimal performances, very hot water temperature, environmental solution and maximum reliability.

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness.

They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- R-1234ze refrigerant
- Touch Pilot control system
- Flooded heat exchangers that are mechanically cleanable

The 61XWHZE Aquaforce range is available into three versions:

- 61XWHLZE for low heat source temperatures
- 61XWH-ZE for medium heat source temperatures
- 61XWHHZE for high heat source temperatures

INTRODUCTION

Forecasts indicate that 75% of the European citizens will live in urban areas in 2020 and that this share will increase to 84% by 2050. People in cities use three times as much energy as people who live in the country. This has tremendous implications for the environment today and in the future if we do nothing.

Recent European surveys have demonstrated that there is enough waste heat produced in the European Union to heat the entire building stock. Industrial waste heat, waste heat from grey waters, waste heat from process cooling, data centers... All this waste energy too frequently released into the air or into water bodies.

More and more, developers, consultants, cities, politics will need to imagine intelligent, sustainable cities with smart heating and cooling solutions. More and more industrial end users will need to imagine new solutions to value waste heat from industrial processes.

Heat pumps have been already used to such purpose for many years.

More recently CARRIER has supported customers across various markets on big projects like data centers, hospitals, schools, district heating with large heat-pumps using HFC 134a.

Higher with PUREtec

Now the combination of Carrier technology and HFO refrigerant enables to offer high temperature PUREtec heat pumps capable of delivering hot water up to 85°C!

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps can recover, upgrade and value the waste heat for reuse in applications like local or district heating. Selecting the 61XWHZE, you can now have an alternative and complement as traditional boiler in applications such as district heating or industrial processes.

While the boilers are heating only, 61XWHZE heat-pumps can provide heating, cooling and transfer energy from waste energy with much higher energy efficiency performance ratios than boilers.

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps are the premium solution for industrial and commercial heating applications where installers, consultants and building owners require optimal performances hot water temperature, environmental solution, maximum reliability and safety.

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- R-1234ze refrigerant
- Touch Pilot control system
- Flooded heat exchangers that are mechanically cleanable

Customer Benefits

Renewable Heat Solution

- The perfect solution for district heating systems
 - The 61XWHZE contribute both towards the EU 2020 ambition of 27% energy mix coming from renewable sources and the expansion of district heating from the present level of around 12% to 50% in 2050 in EU.
 - Multiple 61XWHZE high temperature water-source heat pumps can be combined to reach the best efficiency and higher capacities.
 - The district heating networks using 61XWHZE high temperature water-source heat pumps are being illegible for financial incentives in many countries.

- The perfect solution for smart cities
 - The 61XWHZE high temperature water-source heat pumps can recover energy from industrial process wasted heat, IT cooling systems, grey waters, to produce very hot water up to 85°C to supply residential buildings, commercial buildings, hotels, hospitals, public offices, schools, industries located in the district.

- The perfect solution for process heating and facilities space heating

- The 61XWHZE high temperature water-source heat pumps can be used in the industrial sector to recover, upgrade and value any water stream up to 55°C as a source to higher temperature levels of 85°C which make it attractive for several usages. Some examples are the heat removed from electrical motors, industrial machines, paper industry, steel industry, non-metallic industry (glass, cement, tile, brick, food, beverage), chemical industries or also facilities space heating.

Low energy consumption

- Renewable energy source to comply with EU 2020 targets (27% of renewable energy)
- No need for a gas network
- The heat pump technology is more efficient and sustainable than any fossil fuel combustion system.
- 61XWHZE achieves great Coefficient Of Performance (COP of 6 or more), with very low carbon impact when compared with traditional boilers.
- The high energy efficiency is reached through:
 - Twin-rotor screw carrier compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the heating capacity to the load.
 - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
 - Electronic expansion device permitting improved utilisation of the evaporator heat exchange surface.
 - Economizer system with electronic expansion device for increased heating/cooling capacity.

Low sound level

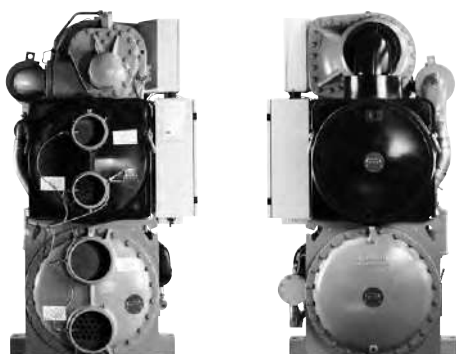
- Standard unit features include:
 - Silencers on the compressors discharge line.
 - Silencers on the economiser return line.
 - Acoustic insulation on the components that are most subjected to radiated noise.
 - Specific attenuation possible upon request.

INTRODUCTION

Easy and fast installation

- The 61XWHZE units just need an electrical connection and a water source.
- Compact design
 - The 61XWHZE water-source heat pumps are designed to offer the most compact dimensions on the market.
 - With a width of less than 1.4 m up to 2500 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

Compact, accessible unit - side view



- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer to supply the integrated control circuit (400/24 V)
- Simplified hydronic connections
 - Victaulic connections on the evaporator and condenser
 - Practical reference marks for entering and leaving water connections
 - Possibility to reverse the heat exchanger water inlet and outlet at the factory
 - Possibility to modify the number of heat exchanger passes
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care



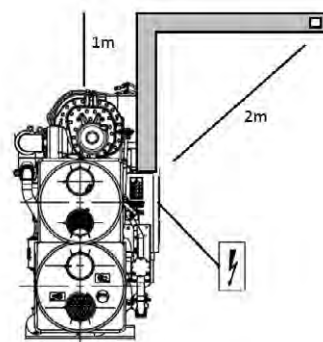
- R-1234ze long-term refrigerant solution
 - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
 - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
 - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

High reliability and easy servicing

- The 61XWHZE water-source heat pumps offer increased global performance as well as Carrier's acclaimed product quality and reliability.
- Major components are selected and tested with R-1234ze refrigerant to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuit
 - One or two independent refrigerant circuits the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
 - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure.
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

Safe Design Carrier

- Specific compressor gaskets compatible with HFO-1234ze, tested and validated.
- New relief valves designed for operation with HFO-1234ze and high temperature
- Specific electrical box with increased tightness and integrated blower that maintains positive air pressure to avoid any risk of ignition.
- New control algorithms
- Specific documentation that contains all the installation, operation, maintenance and safety Instructions.



INTRODUCTION

Technical insights

Touch Pilot Control

Touch Pilot control, 5" user interface



- New innovative smart control features:
 - An intuitive and user-friendly, coloured, 5" interface (7" optional)
 - Direct access to the unit's technical drawings and the main service documents
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
 - Easy access to the controller box with inclined touch screen mounting to ensure legibility under any lighting conditions
 - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
 - Internal time schedule clock controls heat pump on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

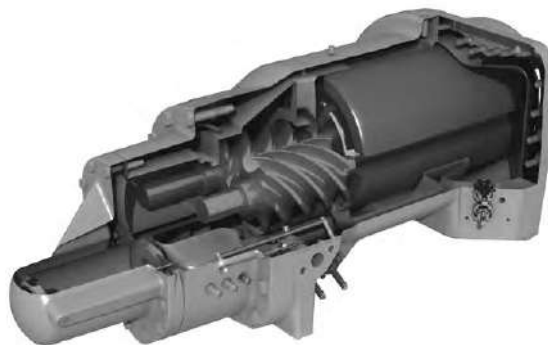
- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- The 61XWHZE also communicates with other building management systems via optional communication gateways.
- The 61XWHZE is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.
- The following commands/visualisations are possible from remote connection:
 - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
 - Start/stop of the machine

- Dual set-point management: through a dedicated contact is possible to activate a second set-point (example: unoccupied mode)
- Demand limit setting: to limit the maximum heat pump capacity to a predefined value
- Operation visualization: indication if the unit is operating or if it's in stand-by no heating load
- alarm visualization.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
 - Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
 - Set point reset: ensures reset of the heating set-point based on a 4-20 mA signal
 - Demand limit: permits limitation of the maximum heat pump power or current based on a 4-20 mA signal
 - Demand limit 1 and 2: closing of these contacts limits the maximum heat pump power or current to two predefined values
 - User safety: this contact can be used for any customer safety loop; opening of the contact generates a specific alarm
 - Time schedule override: closing of this contact cancels the time schedule effects
 - Out of service: this signal indicates that the heat pump is completely out of service
 - Heat pump capacity: this analogue output (0-10 V) gives an immediate indication of the heat pump capacity
 - Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.

06T screw compressor



The Carrier 06T screw compressor designed for operation with HFO-1234ze refrigerant benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor heating capacity and ensures exceptionally high stability of the hot water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

OPTIONS

Options	No.	Description	Advantages	Use for 61XWH range
Star / delta start	25A	Star / Delta start on each compressor	Reduced start-up current	3-5, 10
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	3-17
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	10-17
No disconnect switch	82A	Unit without disconnect switch, but with short-circuit protection device	Permits an external electrical disconnect system for the unit (field-supplied), while ensuring unit short circuit protection	3-17
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	3-10 Not available on 61XWHHZE
Evap. dual pumps power/control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	3-10 Not available on 61XWHHZE
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	3-10 Not available on 61XWHHZE
Evaporator with one pass more	100A	Evaporator with one pass more on the water side	Optimise chiller operation when the chilled water circuit is designed with low waterflows (high delta T evaporator inlet/outlet)	3-17
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	3-17
Condenser with one pass more	102A	Condenser with three passes on the water side. Condenser inlet and outlet on opposite sides.	Adapted to sites where larger temperature differences and smaller water flow rates are required	3-17
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	3-17
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	3-17
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	3-17
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	3-17
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	3-17
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	3-17
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	3-17
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	3-17
Control for low cond. temperature	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	3-17
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	3-17
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	3-17
Low noise level	257	Evaporator sound insulation	3 dB(A) quieter than standard unit	5-17

OPTIONS

Options	No.	Description	Advantages	Use for 61XWH range
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	3-17
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	3-17
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	3-17
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	3-17
Conformance with Moroccan regulations	327	Specific regulatory documentation	Conformance with Moroccan regulations	3-17

PHYSICAL DATA

61XWHLZE/61XWH-ZE/61XWHHZE		Model	3	5	7	10	14	15	17
61XWH-ZE (Heating performances*)	Nominal capacity**	kW	300	484	727	967	1453	1468	1570
Dimensions - 61XWHLZE/61XWH-ZE									
Length		mm	2724	3059	3290	4730	4730	4790	4790
Width		mm	981	1041	1079	1125	1148	1399	1399
Height		mm	1594	1745	1968	2002	2070	2305	2305
Dimensions - 61XWHHZE									
Length		mm	2724	3059	3290	4730	-	4790	-
Width		mm	981	1041	1079	1125	-	1417	-
Height		mm	1594	1745	1968	2002	-	2305	-
Operating weight ⁽¹⁾		kg	2054	2942	4147	7265	8031	9519	9519
Compressors			Semi-hermetic 06T screw compressors, 50 r/s						
Circuit A	-		1	1	1	1	1	1	1
Circuit B	-		-	-	-	1	1	1	1
Refrigerant - 61XWHLZE ⁽²⁾			R1234ze						
Circuit A	kg		107	168	237	154	176	237	226
	teq CO ₂		0,7	1,2	1,7	1,1	1,2	1,7	1,6
Circuit B	kg		-	-	-	154	187	237	231
	teq CO ₂		-	-	-	1,1	1,3	1,7	1,6
Refrigerant - 61XWH-ZE ⁽²⁾			R1234ze						
Circuit A	kg		97	153	215	140	160	215	205
	teq CO ₂		0,7	1,1	1,5	1,0	1,1	1,5	1,4
Circuit B	kg		-	-	-	140	170	215	210
	teq CO ₂		-	-	-	1,0	1,2	1,5	1,5
Refrigerant - 61XWHHZE ⁽²⁾			R1234ze						
Circuit A	kg		88	138	195	140	-	195	-
	teq CO ₂		0,6	1,0	1,4	1,0	-	1,4	-
Circuit B	kg		-	-	-	140	-	195	-
	teq CO ₂		-	-	-	1,0	-	1,4	-
Oil - standard unit			HATCOL4496						
Circuit A	l		20	20	25	20	25	25	25
Circuit B	l		-	-	-	20	25	25	25
Capacity control			Touch Pilot, electronic expansion valves (EXV)						
Minimum capacity	%		50	50	50	25	25	25	25
Evaporator			Multi-pipe flooded type						
Water volume	l		61	101	154	293	321	354	354
Water connections (Victaulic)	in		5	6	8	8	8	8	8
Drain and vent connections (NPT)	in		3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa		1000	1000	1000	1000	1000	1000	1000
Condenser			Multi-pipe flooded type						
Water volume	l		55	103	148	316	340	426	426
Water connections (Victaulic)	in		5	6	8	8	8	8	8
Drain and vent connections (NPT)	in		3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa		1000	1000	1000	1000	1000	1000	1000

* In accordance with standard EN14511-3:2013.

** Heating mode conditions: Evaporator entering/leaving water temperature 20°C/15°C, condenser entering/leaving water temperature 70°C/75°C, evaporator and condenser fouling factor 0 m². kW

(1) Weight shown is guideline only. Please refer to the unit nameplate

(2) Refrigerant charge shown is guideline only. Charge may differ according to options. Please refer to the unit nameplate

ELECTRICAL DATA

61XWHLZE / 61XWH-ZE	Model	3	5	7	10	14	15	17
Power circuit								
Nom. power supply	V-ph-Hz	400-3-50						
Voltage range	V	360-440						
Control circuit		24 V via the built-in transformer						
Maximum start-up current⁽¹⁾ - Standard unit								
Circuit A	A	1210	1828	1919	1828	1919	1919	1919
Circuit B	A	-	-	-	1828	1919	1919	1919
Option 81	A	-	-	-	2158	2425	2425	2407
Maximum start-up current - Star/delta start option⁽²⁾								
Circuit A	A	388	587	-	587	-	-	-
Circuit B	A	-	-	-	587	-	-	-
Transient (< 150ms)	A	1210	1828	-	1828	-	-	-
Option 81	A	-	-	-	943	-	-	-
Transient (< 150ms)	A	-	-	-	2158	-	-	-
Cosine phi								
Nominal		0,70	0,80	0,81	0,80	0,81	0,81	0,83
Maximum ⁽²⁾		0,89	0,89	0,89	0,89	0,89	0,89	0,89
Total harmonic distortion ⁽²⁾	%	Closed to 0% (negligible)						
Maximum power input⁽³⁾								
Circuit A	kW	137	203	312	203	312	312	301
Circuit B	kW	-	-	-	203	312	312	301
Option 81	kW	-	-	-	406	624	624	602
Maximum current drawn (Un)⁽³⁾								
Circuit A	A	222	330	506	330	506	506	488
Circuit B	A	-	-	-	330	506	506	488
Option 81	A	-	-	-	660	1012	1012	976
Maximum current drawn (Un -10%)⁽²⁾								
Circuit A	A	240	356	546	356	546	546	527
Circuit B	A	-	-	-	356	546	546	527
Option 81	A	-	-	-	712	1092	1092	1054

(1) Instantaneous start-up current for star connection (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

(2) Values obtained at operation with maximum unit power input.

(3) Values obtained at operation with maximum unit power input. Values given on the unit name plate.

61XWHHZE	Model	3	5	7	10	14	15	17
Maximum start-up current⁽¹⁾ - Standard unit								
Circuit A	A	1210	1828	1919	1828	-	1919	-
Circuit B	A	-	-	-	1828	-	1919	-
Option 81	A	-	-	-	2188	-	-	-
Maximum start-up current - Star/delta start option⁽²⁾								
Circuit A	A	388	587	-	587	-	-	-
Circuit B	A	-	-	-	587	-	-	-
Transient (< 150ms)	A	1210	1828	-	1828	-	-	-
Option 81	A	-	-	-	947	-	-	-
Transient (< 150ms)	A	-	-	-	2188	-	-	-
Maximum power input⁽⁴⁾								
Circuit A		148	222	334	222	-	334	-
Circuit B		-	-	-	222	-	334	-
Option 81	%	-	-	-	444	-	-	-
Maximum current drawn (Un)⁽⁴⁾								
Circuit A	kW	241	360	543	360	-	543	-
Circuit B	kW	-	-	-	360	-	543	-
Option 81	kW	-	-	-	720	-	-	-
Maximum current drawn (Un -10%)⁽³⁾								
Circuit A	A	260	389	586	389	-	586	-
Circuit B	A	-	-	-	389	-	586	-
Option 81	A	-	-	-	778	-	-	-

(1) Instantaneous start-up current for delta connection (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor).

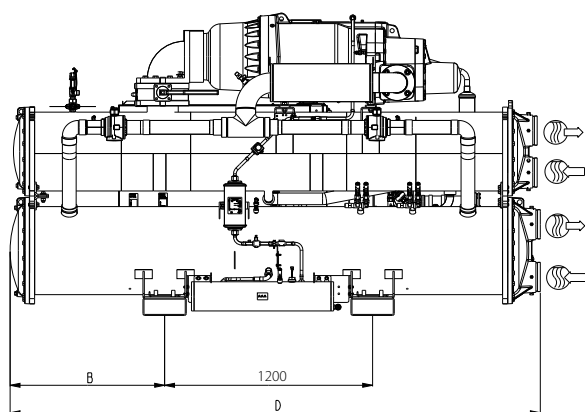
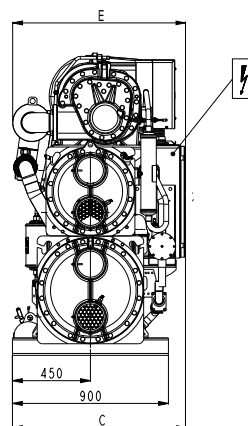
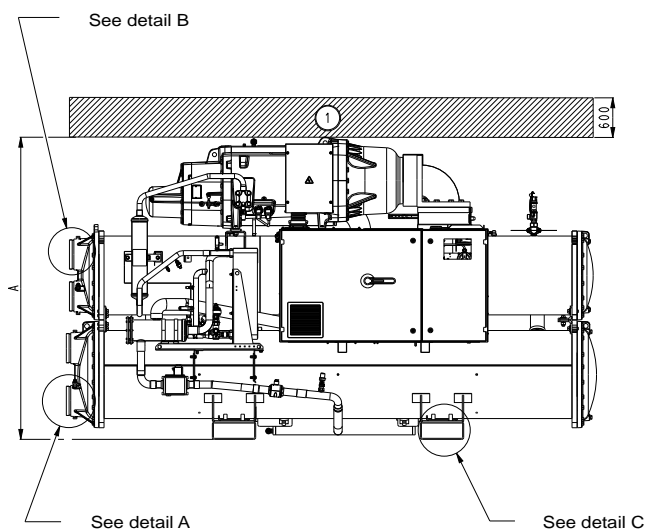
(2) Both Max start-up current and transient peak to be considered for installation

(3) Values obtained at operation with maximum unit power input.

(4) Values obtained at operation with maximum unit power input. Values given on the unit name plate.

DIMENSIONS/CLEARANCES






61XWHLZE/61XWH-ZE/61XWHHZE 03-05-07

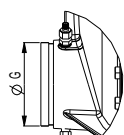
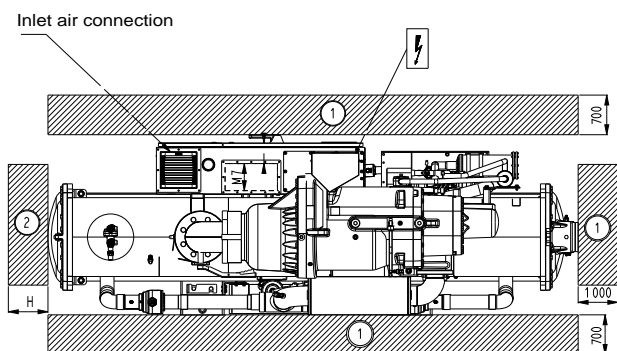


61XWHLZE/61XWH-ZE/61XWHHZE								
	A	B	C	D	E	F	G	H
Model	Dimensions in mm							
3	1594	723	981	2724	982	141,3	141,3	2600
5	1745	891	1041	3059	1039	168,3	168,3	2900
7	1968	1007	1079	3290	1170	219,1	219,1	3100

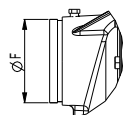
Legend

All dimensions are given in mm

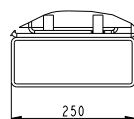
-  → Services clearances required
-  → Space required to remove cooler tubes
-  Inlet water
-  Outlet water
-  Electrical supply entry



Detail A



Detail B



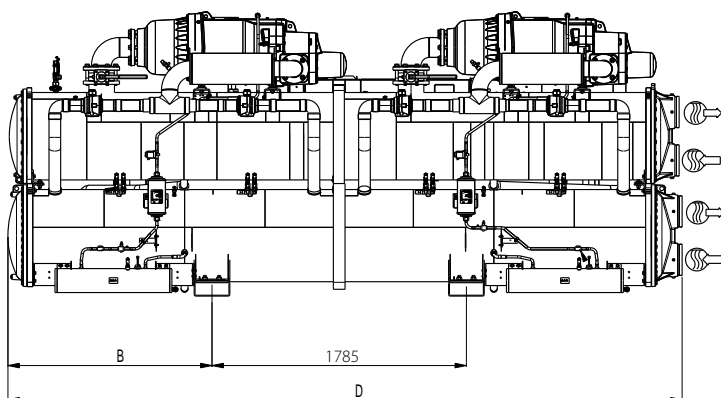
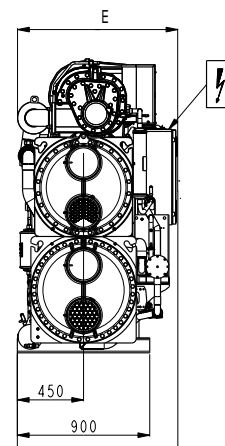
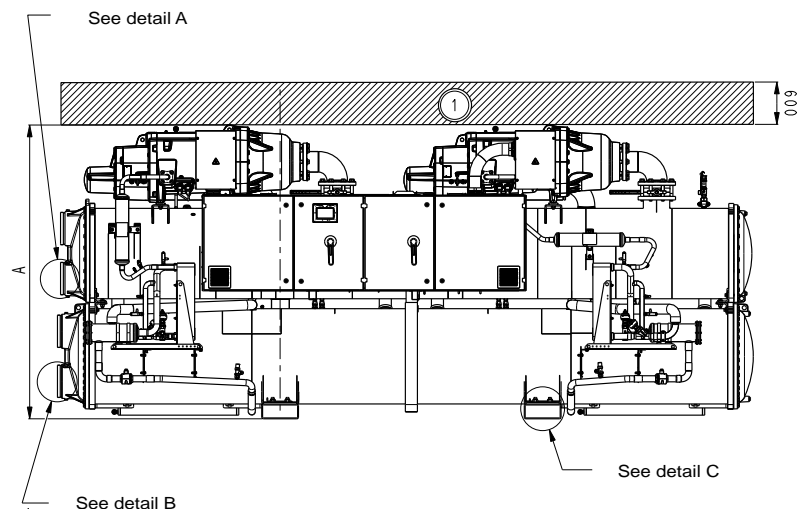
Detail C

NOTES:

- Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.
- For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.

DIMENSIONS/CLEARANCES

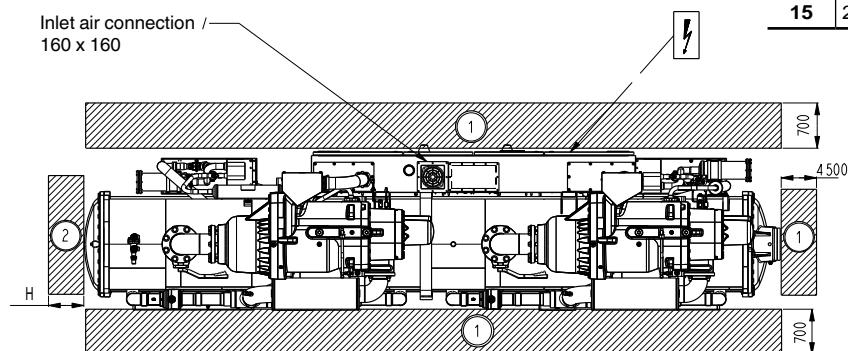
61XWHLZE/61XWH-ZE 10-14-15-17; 61XWHHZE 10-15



61XWHLZE/61XWH-ZE								
	A	B	C	D	E	F	G	H
Model	Dimensions in mm							
10	2002	1432	1124	4730	1124	219,1	219,1	4500
14	2070	1432	1148	4730	1237	219,1	219,1	4500
15	2305	1458	1399	4790	1264	219,1	219,1	4500
17	2305	1458	1399	4790	1264	219,1	219,1	4500

61XWHHZE								
	A	B	C	D	E	F	G	H
Model	Dimensions in mm							
10	2002	1432	1124	4730	1124	219,1	219,1	4500
15	2305	1458	1417	4790	1282	219,1	219,1	4500

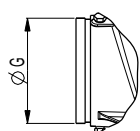
Inlet air connection /
160 x 160



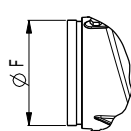
Legend

All dimensions are given in mm

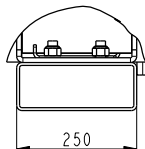
- ① → Services clearances required
- ② → Space required to remove cooler tubes
- Inlet water
- Outlet water
- Electrical supply entry



Detail A



Detail B



Detail C

NOTES:

- Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.
- For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.



PRESENTATION

COOLING

HEATING

AIR TREATMENT

CONTROLS

Air treatment

706

Type				Range	Cooling capacity, kW	Heating capacity, kW	Air flow m ³ /h	Page
Hybrid Terminal				36XB	0.27-2	0.25-8	-	707
				36XH	0.4-1.8	-	-	711
				42AM	-	-	-	715
Air heaters								
Chilled-water terminal units								
Cassette	Cabinet	Concealed/Ducted						
x				42GW	2p /1.6-9.6 4p /1.3-8	2p /1.9-11 4p /1.1-14	-	735
x				42KY	1-6	2-10	-	749
	x		NEW	42NC-ND	0.7-8.7	1.3-11.6	-	761
		x	NEW	42ET	-	-	-	775
		x		42NL/NH	-	-	-	791
		x	NEW	42EP	-	-	-	843
		x		42BJ	0.5-6	0.5-12.2	-	863
		x		42GR	-	-	-	875
	x			42WM	1.2-3.8	1.3-4.3	-	885
	x		NEW	42SI	0.43-3.7	0.8-4.8	-	895
Air handling units								
				39CQ	-	-	1000-6000	905
				39HX	-	-	300-18000	911
				39CP	-	-	1000-30000	919
				39HQ	-	-	5000-13000	931
				39CZ	-	-	1000-61000	935
Close control units								
				50CJ	05-55	4.5-41	-	949
				50CO	40-127	-	10000-27000	959
Rooftop units								
				50FF/FC	22.3-90.2	21.9-89.7	-	965
			NEW	50FC	100-279.9	100.2-308.4	-	995
Packaged units								
				38ZS/ZF	20-138	23-148	-	1017
				40ZS/ZF	-	-	-	1025
				50NI	19.1-114.9	19.3-121.4	-	1031

HYBRID TERMINAL



36XB

Cooling capacity 0.27-2 kW
Heating capacity 0.25-8 kW

The 36XB Hybrid Terminal combines the advantages of both chilled beams and fan coils: energy efficiency, high levels of comfort, extremely low noise and high indoor air quality.

The low height profile (<200mm) of the unit facilitates installation in low height ceilings and allows increased room heights for refurbishment projects.

Unit aesthetics can be tailored to suit site specific ceiling layouts, colour schemes and return air grill design.

Unlike conventional chilled beams, the Carrier 36XB Hybrid terminal is fitted with a coil condensate drain pan as standard. Even if the cooling coil is supplied with chilled water at 6°C, there is no danger of condensate falling into the occupied space.

PHYSICAL DATA

Cooling capacities

Room Temperature: Dry bulb = 27°C and humidity = 47% - Fresh air temperature 14°C

Air flow m ³ /h	LEC Fan speed V	Chilled water temperature 7-12°C				Chilled water temperature 14-17°C				Fan consumption W	Air pressure drop Pa	Noise Pressure level dB(A)*	Noise level NR*
		Total cooling capacity W	Sensible cooling capacity W	Coil Water flow l/h	Water pressure drop KPa	Total cooling capacity W	Sensible cooling capacity W	Coil Water flow l/h	Water pressure drop KPa				
30	0	269	249	43	1	256	252	36	1	0	9	< 20	< 20
	2	537	416	68	2	330	325	58	1	3.7	10	< 20	< 20
	5	891	672	130	4	508	503	108	3	5.7	11	32	27
	8	1297	977	202	10	719	714	169	7	10.6	14	44	39
60	0	753	609	83	2	504	499	68	1	0	28	< 20	< 20
	2	830	664	97	2	542	537	79	2	3.7	29	< 20	< 20
	5	1145	895	151	6	703	697	126	4	5.7	30	32	27
	8	1465	1136	205	10	870	865	173	7	10.6	32	44	39
90	0	1107	902	122	4	748	743	101	2	0	57	< 20	< 20
	3	1128	917	126	4	759	754	104	3	3.7	57	< 20	< 20
	5	1414	1129	173	7	906	901	144	5	5.7	59	32	27
	8	1698	1346	223	12	1055	1051	187	9	10.6	61	44	39
120	0	1443	1184	158	6	985	989	130	4	0	98	35	30
	2	1508	1233	169	7	1018	1013	140	5	3.7	98	35	30
	5	1730	1401	205	10	1135	1130	173	7	5.7	99	35	30
	8	1987	1600	252	15	1271	1268	212	11	10.6	100	45	40
150	0	1767	1460	191	9	1217	1212	158	6	0	149	41	36
	2	1797	1484	194	9	1233	1228	162	7	3.7	149	41	36
	5	1980	1624	227	12	1329	1325	191	9	5.7	150	42	37
	8	2194	1791	263	17	1444	1441	223	12	10.6	151	46	41

Preliminary Data :

* Sound Level guidance with acoustic attenuation -9 dB(A)

Heating capacities

Room Temperature: 20°C - Fresh air temperature 20°C

Air flow m ³ /h	LEC Fan speed V	Hot water temperature 70-50°C			Hot water temperature 45-40°C			Fan consumption W	Air pressure drop Pa	Noise Pressure level dB(A)*	Noise level NR*
		Total heating capacity W	Coil Water flow l/h	Water pressure drop KPa	Total heating capacity W	Coil Water flow l/h	Water pressure drop KPa				
30	0	444	18	1	241	43	1	0	9	< 20	< 20
	2	718	32	1	390	68	1	3.7	10	< 20	< 20
	5	1365	61	1	749	130	4	5.7	11	32	27
	8	2127	94	2	1179	205	9	10.6	14	44	39
60	0	873	40	1	475	83	2	0	28	< 20	< 20
	2	1009	43	1	551	97	1	3.7	29	< 20	< 20
	5	1593	68	1	877	151	5	5.7	30	32	27
	8	2195	97	2	1219	212	9	10.6	32	44	39
90	0	1275	58	1	699	122	3	0	57	< 20	< 20
	3	1316	61	1	722	126	4	3.7	57	< 20	< 20
	5	1849	83	2	1021	176	7	5.7	59	32	27
	8	2383	104	2	1327	230	11	10.6	61	44	39
120	0	1654	72	1	912	158	6	0	98	35	30
	2	1777	79	1	981	169	6	3.7	98	35	30
	5	2195	97	2	1219	212	9	5.7	99	35	30
	8	2684	119	3	1500	259	13	10.6	100	45	40
150	0	2013	90	2	1115	194	8	0	149	41	36
	2	2070	94	2	1148	198	8	3.7	149	41	36
	5	2416	104	3	1346	234	11	5.7	150	42	37
	8	2829	126	3	1583	274	15	10.6	151	46	41

Preliminary Data :

* Sound Level guidance with acoustic attenuation -9 dB(A)

OPTIONS

Communicating controller

- BMS compatible controller
- For 2 pipe, 2 pipe + electric heater and 4 pipe applications
- Aquasmart Evolution System compatible
- Variable fan speed control, demand based ventilation (CO₂ monitoring) and coil condensation control.
- Integrated window blind and lighting control.
- Motorised blinds & lighting control

Aquasmart System Manager



FEATURES AND ADVANTAGES

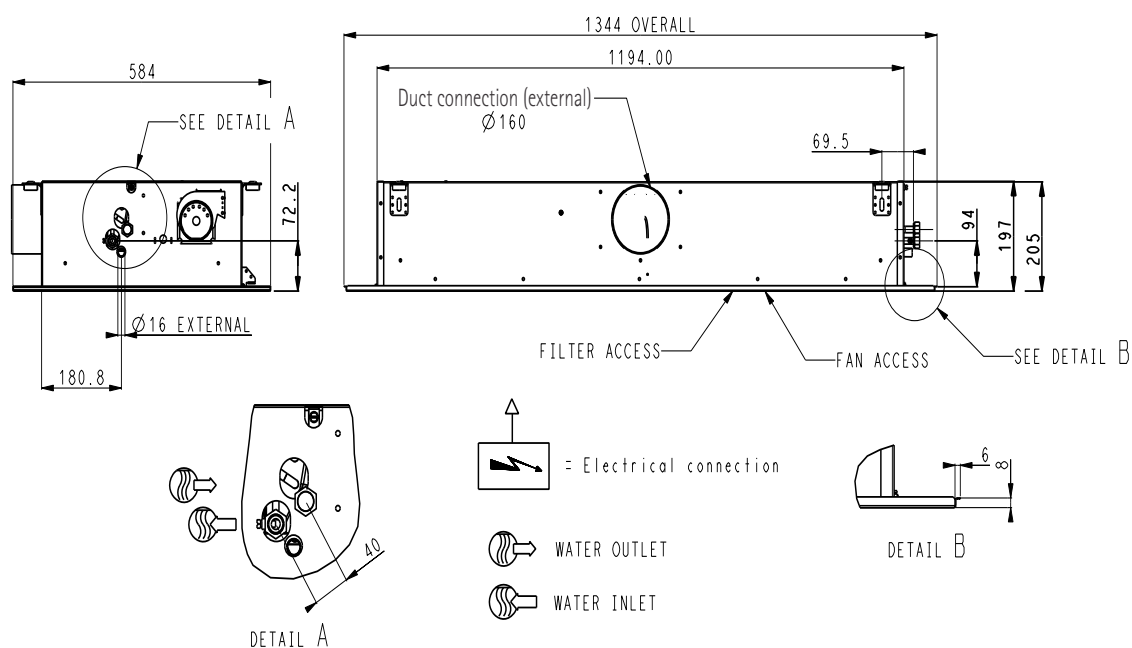
Features

- The 36XB Hybrid Terminal combines the advantages of both chilled beams and fan coils: energy efficiency, high levels of comfort, extremely low noise and high indoor air quality.
- The low height profile (<200mm) of the unit facilitates installation in low height ceilings and allows increased room heights for refurbishment projects.
- Unit aesthetics can be tailored to suit site specific ceiling layouts, colour schemes and return air grill design.
- Unlike conventional chilled beams, the Carrier 36XB Hybrid terminal is fitted with a coil condensate drain pan as standard. Even if the cooling coil is supplied with chilled water at 6°C, there is no danger of condensate falling into the occupied space.
- A unit mounted changeover valve allows the coil to be connected to a 4 pipe water system so providing either cooling or heating, as required.
- If required, the Carrier 36XB Hybrid Terminal can be fitted with a room air return filter G3 to F5. This filter is accessible for cleaning / replacement without disturbing the unit / ceiling.

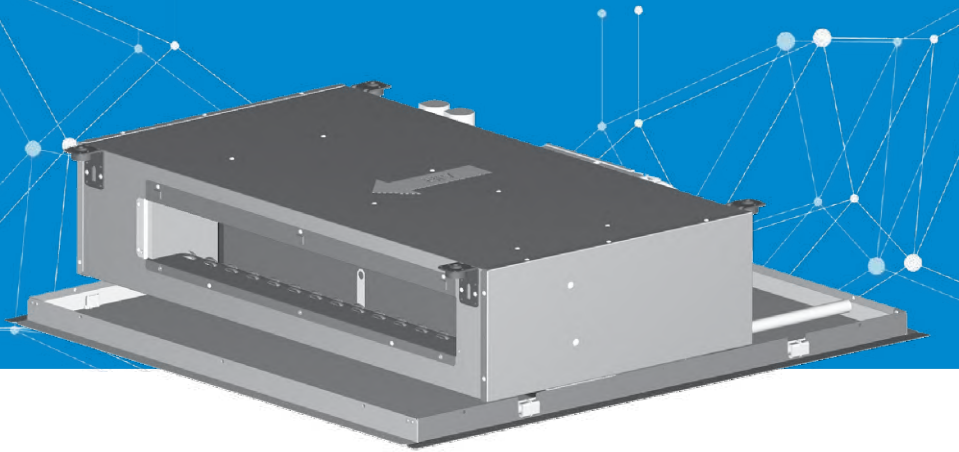
Principals of Operation

- Primary ventilation air is supplied to each unit inducing secondary (room) air flow over the cooling / heating coil without the need to run the unit fan.
- During periods of peak demand, the unit fan may be energised to increase secondary air flow hence and boosting the unit cooling / heating output.
- Unique Carrier supply air diffuser design ensures excellent air distribution, no 'dumping' and minimal room temperature gradients in both cooling and heating.
- The primary ventilation air volume can be controlled based on room CO₂ levels to maximise comfort and minimise system energy consumption
- The CO₂ sensor (optional) mounted in the secondary (room) air flow can modulate the supply of primary ventilation air to the unit from 2.8 to 33 l/s, depending on room occupancy.
- Using the unit fan only when there is a peak demand in the occupied space offers energy savings for up to 80% of the annual building occupancy.
- Based on a typical office profile & loads this economy can result in an average annual unit specific fan power (A-SFP) <0.05 W/l/s
- Assured air quality; in addition to varying the quantity of hygienic air, the hybrid terminal 36XB may receive a filter on the return air available from the grid.
- Energy efficiency, easy installation, comfort, low noise and high indoor air quality.

DIMENSIONS/CLEARANCES



HYBRID TERMINAL



Thermal and acoustical comfort

Full system design flexibility

Energy savings

Improved indoor air quality

Ease of control and integration

36XH

Cooling capacity 0.4-1.8 kW

Specially designed for the hotel market, the 36XH meets low energy building requirements whilst delivering highest guest room comfort standards.

The hybrid solution offers all the benefits of the traditional systems with none of the disadvantages. The hybrid generate energy efficiency improvements over standard fan coil solutions and offering whenever applicable, the same free cooling and increased ventilation air benefits of chilled beam solutions.

As with all hydraulic solutions the elimination of sudden and rapid air temperature swings, typically the 'bane' of refrigerant based systems, contributes to better room temperature control and avoids cold drafts.

PERFORMANCES IN COOLING MODE

Conditions:

Room temperature : 26°C/19.5°CWB - Water temperature: 7°C/12°C

Fresh air: air flow : 60 m³/h - Temperature : 24°C

Air flow m ³ /h	Fan voltage V	Total cooling capacity W	Sensible cooling Capacity W	Fan consumption W	Pressure Sound level* dB(A)**
48	0	368	278	0	28
100	2	685	493	4	30
250	3.5	1351	972	11	34
400	6	1822	1338	29	45

Preliminary data

* Theoretical acoustic attenuation 9dB

** Tolerance on value is +/-2dB(A)

FEATURES AND BENEFITS

Features

- Fully integrated concept including the base unit and integrated supply & return grille, drain pan / filter options (if required) and all necessary controls and valves
- Operation as a chilled beam, a fan coil unit OR in a mixed mode combining the benefits of both
- Integrated unit, grille & all control elements within design simplifies installation and saves time & money
- Ability to operate with low water temperatures if required and manage latent loads
- Capability to respond to rapid load changes
- Use of EC unit fan only when there is a peak demand in the occupied space offers energy savings for up to 80% of the annual building occupancy period
- Low noise performance
- Low height profile (<200mm) unit facilitates installation in low height ceiling voids allowing increased room heights for new and refurbishment projects
- Supply air diffuser ensures excellent air distribution with no 'dumping' in both cooling and heating modes over the full range of operating airflows
- Adaptable design to suit customer project aesthetics needs (specific ceiling layouts, colour schemes and return air grille design)

- A CO₂ sensor (optional) mounted in the secondary (room) air flow provides the controls the information required to modulate the supply of primary ventilation air depending on room occupancy. Hence primary ventilation air volume can be controlled based on room CO₂ levels to maximise comfort and minimise system energy consumption whenever possible.

NORMAL: NIGHT TIME / SLEEP PERIOD / DAY USE (early mornings)

- This mode builds upon the comfort being supplied already in the ECO mode by energising the unit cooling / heating valve to deliver increased cooling / heating via the integrated coil.
- Unit cooling / heating output is thus boosted according to operating conditions chosen.

BOOST: DAY USE (afternoon/early evenings with solar gains etc.)

- Should loads change rapidly in the space and/or exceed that supplied by the normal modes due to increased occupancy and/or other thermal gains (ex: solar) then the unit fan is energised increasing secondary air flow over the unit coil rapidly boosting cooling / heating output.
- Unit fan is a variable speed fan (EC motor) & the required extra air flow / capacities are thus managed accordingly.

Occupant comfort

The 36XH offers flexibility of operation to deliver the right amount of cooling or heating as needed minimising energy consumption and acoustic level whilst maximising comfort at the unit.

Occupant control

The three different control operating modes operate seamlessly to offer flexibility for hotels where the three modes could be customised to meet room occupant needs and address issues of noise particular at 'sleep periods' for example:

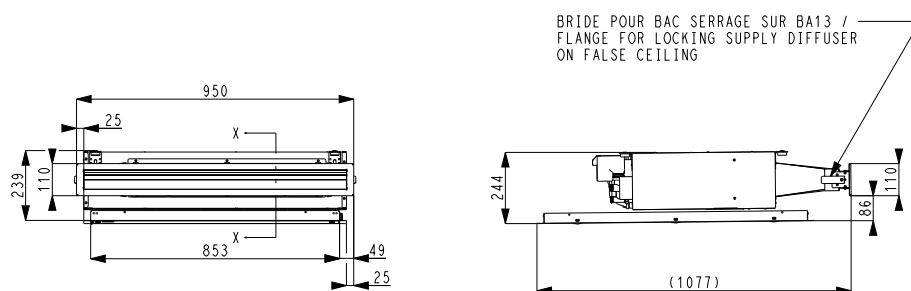
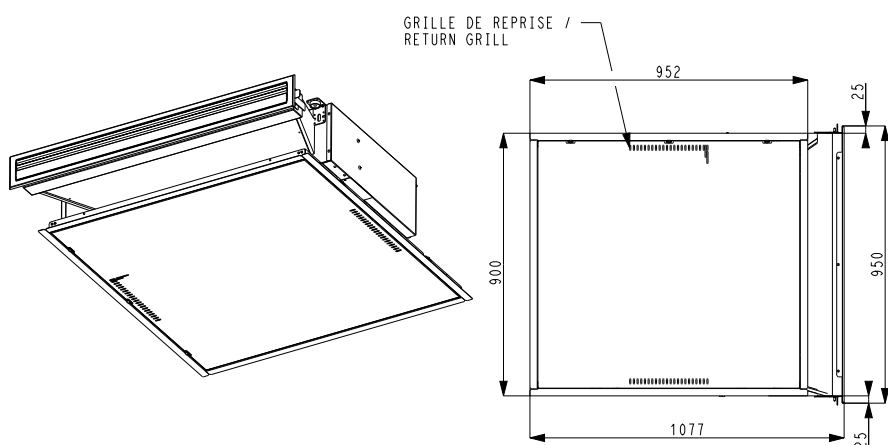
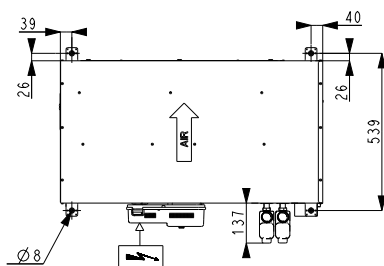
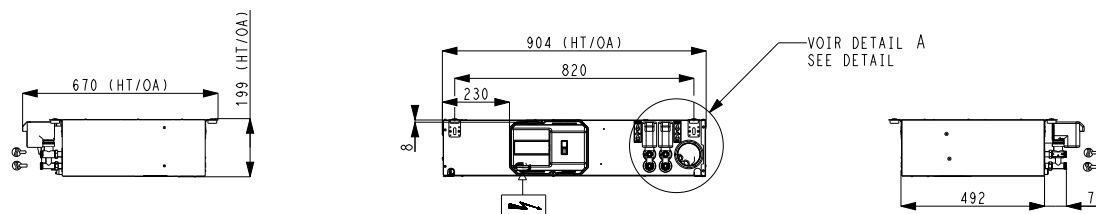
ECO: NIGHT TIME / SLEEP PERIOD

- Primary ventilation air is supplied to each unit inducing and mixing with secondary (room) to be diffused into the occupied space.
- The cooling/heating is supplied by the pre-treated ventilation air that unlike a fan coil system design can be increased to the same quantities as for a chilled beam system providing the possibility of improved IAQ air quality and when outdoor conditions allow maximising the potential of primary free cooling.

System energy savings

A system based upon the 36X hybrid terminal offers energy savings over fan coil and chilled beam systems in areas of fan energy (terminal & ventilation systems), heating & cooling of ventilation air etc. that ultimately depend in quantity upon final system design requirements however system analysis and comparisons suggest between 8-15% savings may be expected.

DIMENSIONS/CLEARANCE



= RACCORDEMENT ELECTRIQUE / ELECTRICAL CONNECTION

(AN/FA) = AIR NEUF EN OPTION, SELON CONFIGURATION CLIENT / FRESH AIR IN OPTION, POSITION ACCORDING TO CUSTOMER REQUIREMENTS

(HT/OA) = HORS TOUS / OVER ALL

= SORTIE EAU / OUTLET WATER

= ENTREE EAU / INLET WATER

AIR HEATERS DESTRATIFIER



The best solution for heating and/or cooling large spaces

Ensures buildings warm up ultra fast

Excellent diffusion via patented JET+ double deflection technology

Available with low consumption EC motor

Destratifier version for better air mixing in heating mode

42AM 42AMA

In wall-mounted or ceiling-mounted versions, the **air heater** is the simple, affordable heating/cooling solution for all your applications: for your premises in the tertiary sector (sales area, gym, multi-purpose rooms etc.) or in industry (workshop, garage, storage unit, logistics platform, etc.).

The air heater may have associated **destratifiers** (42AMA-) to promote mixing of the building air. (Anti-stratification solution).

The 42AM range meets APSAD and NFPA guidelines on unit peripheral air speeds.

All are less than 5 m/s at 0.5 m from the diffuser and thus do not interfere with sprinkler systems.

RANGE

Heating version

Heating/cooling medium	LP water	HP superheated water - Oil	HP steam
AC motor	THREE-PHASE 2-speed – SINGLE-PHASE 1 variable speed IP 44 (42AM-AC35) and IP54 (42AM-AC40 to 42AM-AC63)		
Reinforced variant	CORROBLOC version – IP 55/65 – 700-hour salt spray test		
Coil (tubing/row)	Copper/Alu	316L stainless steel/Alu	316L stainless steel/Alu
Reinforced versions	316L stainless steel pipes/HERESITE coating	HERESITE coating	
Casing	Precoated off-white (RAL 7035) galvanised steel		
Reinforced versions	304L stainless steel		
ATEX versions	LCIE 13 ATEX 1015 X – Zone 2 – IIB or IIC – T4 or T6		

Heating or Cooling version

Heating/cooling medium	LP water
EC motor	Variable speed single-phase with 0-10 V signal IP 54 (42AM-EC30 and 42AM-EC35) and IP55 (42AM-EC40 to 42AM-EC63)
Coil (tubing/row)	Copper/Alu
Reinforced versions	316L stainless steel pipes/HERESITE coating
Casing	Off-white precoated galvanised steel (RAL 7035) Built-in condensate pan + quick-release fitting for cooling
Reinforced versions	304L stainless steel

CODES

	Range							Series		Size				Model	Coil	Thermal function	Sp. option	Modif. index
Product ref.	4	2	A	M	-	A	C	3	5	1	M	0	-	s	0	H	I	A
Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Digits 1 to 7								Digits 8&9		Digit 14				Digit 17				
42AM-AC: AC motor air heater- Digit 16 = H, C, P or S								30*		S = Suspended-Digit 16 = H or -				- = NONE				
42AM-EC: EC motor air heater - Digit 16 = H or C								35		M = Wall-mounted only				I = Stainless steel casing				
42AM-EX: ATEX air heater - Digit 16 = H, C, P or S								40						C = Corroblock FMA - I				
42AMAAC: AC motor destratifier - Digit 16 = -								45**						42AM-AC				
42AMAEC: EC motor destratifier - Digit 16 = -								50						H = Heresite-coated coil				
								63***						Digit 15				
								64****						- = NONE (for 42AMAAC and 42AMAEC)				
														0 = 2 standard pipes				
														1 = 2 stainless steel pipes				
Digits 10 to 13																		
42AM-AC	1M0- = 1 row 1-ph/230 V FMA with AC motor - Digit 16 = H, P or S																	
	3M0H = 3 rows 1-ph/230 V FMA with AC motor - Heating - Digit 16 = H																	
	1T0- = 1 row 3-ph/400 V FMA with AC motor - Digit 16 = H, P or S																	
	3T0- = 3 rows 3-ph/400 V FMA with AC motor - Digit 16 = H																	
42AM-EC	1M9- = 1 row 1-ph/230 V FMA with EC motor- Digit 16 = H																	
	2M9H = 2 rows 1-ph/230 V FMA with EC motor - Digit 8&9 =30 and Digit 16 = H																	
	2M9C = 2 rows 1-ph/230 V FMA with EC motor - Digit 8&9 =30 and Digit 16 = C or R																	
	3M9H = 3 rows 1-ph/230 V FMA with EC motor - HEATING - Digit 16 = H																	
	3M9C = 3 rows 1-ph/230 V FMA with EC motor - Cooling or Heating/Cooling - Digit 16 = C																	
42AM-EX (Gaseous atmospheres and Zone 2 only)	1T1- = 1 row 380 V/3-ph - ATEX IIBT4 motor (gas) - Digit 16 = H, P or S																	
	3T1H = 3 rows 380 V/3-ph - ATEX IIBT4 motor (gas) - Digit 16 = H																	
	3T1C = 3 rows 380 V/3-ph - ATEX IIBT4 motor (gas)- Cooling or Heating/Cooling-Digit 16 = C																	
	1T2- = 1 row 380 V/3-ph - ATEX IIBT5 motor (gas) - Digit 16 = H, P or S																	
	3T2H= 3 rows 380 V/3-ph - ATEX IIBT5 motor (gas) - Heating - Digit 16 = H																	
	3T2C= 3 rows 380 V/3-ph - ATEX IIBT5 motor (gas)- Cooling or Heating/Cooling-Digit 16 = C																	
	1T3- = 1 row 380 V/3-ph - ATEX IICT4 motor (gas) - Digit 16 = H, P or S																	
	3T3H= 3 rows 380 V/3-ph - ATEX IICT4 motor (gas) - Heating - Digit 16 = H																	
	3T3C= 3 rows 380 V/3-ph - ATEX IICT4 motor (gas)- Cooling or Heating/Cooling-Digit 16 = C																	
	1T4- = 1 row 380 V/3-ph - ATEX IICT6 motor (gas) - Digit 16 = H, P or S																	
3T4H= 3 rows 380 V/3-ph - ATEX IICT6 motor (gas) - Heating - Digit 16 = H																		
3T4C= 3 rows 380 V/3-ph - ATEX IICT6 motor (gas)- Cooling or Heating/Cooling-Digit 16 = C																		
42AMAAC	-M0- = 1-ph/230 V FMA with AC motor- Cooling or Heating/Cooling-Digit 16 = -																	
	-T0- = 3-ph/400 V FMA with AC motor- Cooling or Heating/Cooling-Digit 16 = -																	
42AMAEC	-M9- = 1-ph/230 V FMA with EC motor- Cooling or Heating/Cooling-Digit 16 = -																	

TECHNICAL DESCRIPTION

High-efficiency fan motor assembly

Silent FMA with an epoxy polyester-coated aluminium airfoil propeller to ensure the best compromise between air flow efficiency and acoustic comfort.

The ROTOREX design with windings inserted in the fan hub, keeps the motor cool to ensure that it operates at optimum efficiency.



Available versions:

- THREE-PHASE 2 speeds (accessory: LS/HS switch)
- SINGLE-PHASE 1 variable speed (accessory: 5-speed autotransformer)

Low consumption EC FMA

Fan motor assembly equipped with a powerful high-efficiency EC (electronically commutated) motor. These EC motors (single-phase 230 V drive) will be progressively controlled by the 0-10 V signal, to ensure acoustic comfort and air flow efficiency and to optimise consumption of electricity. A shunt can be used to operate the air heater at maximum speed.

Casing

- Elegant galvanised steel casing, pre-painted in RAL 7035 (light grey).
- Built-in condensate drain pan for cooling applications, featuring an antibacterial design (perforated bottom) and quick-release fitting.
- Inlet cone optimised for improved air flow performance and acoustic comfort level.
- Advantages:
 - Its classic design means that it can easily blend into the architecture of the installation site.
 - No need to add an unsightly condensate drain pan.
 - Condensate pipes quick and extremely simple to connect, without any need for a clamp.

Diffuser

Double deflection diffuser made from rigid aluminium sections, based on the BERNOULLI fluid flow principle and on NACA0012 airfoils, creating a high induction rate on the primary air, in order to increase the air streams, limit the stratification phenomenon and thereby reduce energy consumption.

Basic version on request for a minimum quantity of 15 units (one size available only: 42AM-AC641T0-M0H):

- Single-deflection diffuser with directional louvre
- Light-grey galvanised steel louvre

JET+ version (fitted as standard):

- Double-deflection diffuser
- JET+ aluminium louvre with NACA0012 airfoil design
- Each louvre is directional
- Advantages:
 - Air flows adjustable in 4 directions for optimum coverage of the area to be handled, while limiting draughts.
 - Laminar flow of the airstream for improved acoustic comfort (no turbulence at the diffuser outlet).
 - Increased velocity of the air streams thanks to the aerodynamics of the curved airfoil (low pressure on the underside of the wing) increases the coverage of the air streams and the induction rate.
 - Limits stratification.
 - Reduced building warm-up time:
 - Recorded energy savings of 15 to 20%.

Heat exchanger

HIGH EFFICIENCY heat exchanger coil with tapered intake baffles to help pressurise the finned casing, available in the following versions:

LP hot or cold water version – Available with 1 or 3 rows:

- Copper pipe Ø 9.52 mm
- Embossed aluminium fins – Thickness 10/100 mm
- Fin spacing 2.1 mm
- Equilateral geometry 32 mm
- Advantage: Excellent thermal yield (dry transfer coefficient > 50 W/m².K)

HP superheated water version- Oil – Available with 1 row:

- 316L stainless steel Ø 16 mm thick pipe
- Embossed aluminium fins – Thickness 28.5/100 mm
- Fin spacing 2.5 mm
- Can be used with heat transfer oils
- Advantage: robust aluminium finned casing for industrial environments (polluted air) compatible with high-pressure jet washing.

HP steam version – Available with 1 row:

- 316L stainless steel Ø 16 mm thick pipe
- Embossed aluminium fins – Thickness 28.5/100 mm
- Fin spacing 2.5 mm
- Advantage: excellent corrosion resistance thanks to chemical treatments injected into the steam installation pipe networks.

TECHNICAL DESCRIPTION

Control

A range of "Plug & Play" proportional air-source/water-source controllers with heat exchanger (or electric heater) are used to control the air flow of the fan motor assembly and the heating capacity required for the room, according to the occupancy periods (built-in timer).

Single-phase EC FMA + LP water application:

- The single-phase EC BOX can control:
 - 6 H4000 single-phase ECs
 - 6 TPL 4000 single-phase ECs
 - 3 H4000 single-phase ECs + 3 TPL single-phase ECs
 - 4 H4000 single-phase ECs + 2 TPL single-phase ECs

Options and accessories

- Wall bracket, ceiling bracket, IPN additional kit
- Filter box
- Specific diffuser (on door, high-level etc.)
- Room thermostat for THREE-PHASE or SINGLE-PHASE installation
- LS/HS switch for 3-PH fan motor assembly
- 5-speed autotransformer for single-phase AC FMAs
- Proximity switch
- Circuit breaker unit

By special request:

- ATEX air heater

42AM PERFORMANCE SUPERHEATED WATER AND STEAM 230 V/1-PH/50 HZ MOTOR - AC AND EC

HEATING operation - 230 V/1-ph/50 Hz motor - AC and EC									
Model	No. rows	Supply air speed SINGLE-PHASE	Flow rate m³/h	Air speed m/s	Range (metres)		Heating capacity (kW)		Sound pressure
					Wall-mounted	Suspended	SW	HPS	dB(A)
30	2	Direct	1 420	3.16 m/s	15	3			45
35	1	Direct	2 600	3.92 m/s	22	6	29	32	48
		R3*	2 360	3.56 m/s	18	4	27	29	46
	3	Direct	2 075	3.13 m/s	15	2,5			50
		R3*	1 780	2.68 m/s	14	2			48
40	1	Direct	4 200	4.57 m/s	26	8,5	43	46	54
		R3*	3 914	4.26 m/s	24	7,5	39	42	52
	3	Direct	3 450	3.75 m/s	23	7			56
		R3*	3 220	3.50 m/s	20	5,5			54
45	1	Direct	5 200	4.20 m/s	27	8,5			56
		R3*	4 100	3.31 m/s	24	6			49
	3	Direct	4 550	3.68 m/s	18	3,5			59
		R3*	3 650	2.95 m/s	17	3			52
50	1	Direct	7 100	4.22 m/s	28	9	79	77	56
		R3*	5 700	3.39 m/s	26	7	66	70	50
	3	Direct	6 200	3.69 m/s	24	6,5			58
		R3*	5 055	3.01 m/s	23	5,5			52
63	1	Direct	10 450	4.19 m/s	28	10,5	103	107	54
		R3*	8 900	3.57 m/s	22	8	93	98	47
	3	Direct	8 280	3.32 m/s	21	6,5			56
		R3*	6 270	2.52 m/s	19	5			44

HEATING - COOLING operation - 230 V/1-ph/50 Hz motor - EC						
Model	No. rows	Supply air speed	Air flow rate	Air speed	Range (metres)	Sound pressure
			m³/h	m/s	Wall-mounted	dB(A)
30M9 (EC)	2	Direct	1200	2.67 m/s	12	43
35M9 (EC)	3	Direct	1640	2.47 m/s	23	30
40M9 (EC)			2160	2.35 m/s	26	48
45M9 (EC)			3025	2.44 m/s	24	45
50M9 (EC)			4060	2.41 m/s	23	54
63M9 (EC)			5960	2.39 m/s	21	53

Specifications determined using the following information:

■ **Superheated water (ES HP):** temperature: 180 - 120 °C / TR=15 °C – RH 50 %

■ **Steam (VAP HP):** temperature 175 °C – 8 bar / TR=15 °C – RH 50 %

■ **Cooling:** temperature 7 - 12 °C / TR=27 °C – RH 50 %

■ **Air stream:** * with JET+ diffuser for a residual speed of 0.1 m/s

* defined with a Δt TS/TR of 15 °C (heating) and 7 °C (cooling)

* for LP water operation

■ **Air speed:** JET+ diffuser outlet

■ **Sound pressure:** 5 metres from the unit, directivity 2, attenuation of 22 dB

■ **Direct:** speed obtained when wired directly to single-phase motor.

■ **R3*** (version with AC motor): supply air speed obtained with an autotransformer at 3. Other operation points (5 in total) can be supplied on request by your agent using our technical selection software.

42AM PERFORMANCE SUPERHEATED WATER AND STEAM 400 V/3-PH/50 HZ MOTOR

HEATING operation - 400 V/3-ph/50 Hz motor - AC									
Model	No. rows	Supply air speed THREE-PHASE	Flow rate m³/h	Air speed m/s	Range (metres)		Heating capacity (kW)		Sound pressure dB(A)
					Wall-mounted	Suspended	SW	HPS	
35	1	HS	2 600	3.92 m/s	22	6	29	32	48
		LS	2 210	3.33 m/s	17	3,5	27	29	44
	3	HS	2 165	3.26 m/s	18	4,5			50
		LS	1 775	2.67 m/s	14	2			46
40	1	HS	4 000	4.35 m/s	25	8	42,7	45,7	55
		LS	3 480	3.79 m/s	21	5	38	41	51
	3	HS	3 400	3.70 m/s	22	6,5			56
		LS	2 960	3.22 m/s	17	3,5			52
45	1	HS	5 400	4.36 m/s	28	9			56
		LS	3 910	3.16 m/s	23	5,5			49
	3	HS	5 000	4.04 m/s	24	7,5			59
		LS	3 910	3.16 m/s	20	4			52
50	1	HS	7 500	4.46 m/s	30	10	79,4	77,4	56
		LS	5 740	3.41 m/s	26	7	66,2	70,1	50
	3	HS	6 500	3.86 m/s	26	8,5			58
		LS	5 020	2.98 m/s	23	5,5			52
63	1	HS	11 140	4.47 m/s	29	11,5	110	115	55
		LS	9 635	3.87 m/s	24	8,5	100	105	48
	3	HS	9 175	3.68 m/s	25	10			57
		LS	7 545	3.03 m/s	21	7			49

Specifications determined using the following information:

■ **Superheated water (ES HP):** temperature: 180 - 120 °C / TR=15 °C – RH 50 %

■ **Steam (VAP HP):** temperature 175 °C – 8 bar / TR=15 °C – RH 50 %

■ **Air stream:** * with JET+ diffuser for a residual speed of 0.1 m/s

* defined with a Δt TS/TR of 15 °C

* for LP water operation

■ **Air speed:** JET+ diffuser outlet

■ **Sound pressure:** 5 metres from the unit, directivity 2, attenuation of 22 dB

DESTRATIFIER DETERMINATION AND SELECTION EXAMPLE (42AMA)

The use of 42AMA units is recommended for buildings between 5 and 15 metres high.

S = Supply (released at the top of the building)

TR = Temperature under roof

TW = Temperature setpoint in the work area

$$\text{Calculated flow rate for destratifiers} = \frac{A}{0.3 \times (TR - TW)}$$

Selection example:

Supply under building roof = S = 45,000 kcal (52,200 Watts)

Temperature under roof = TR = 30°C

Temperature setpoint in the work area = TW = 16°C

$$\text{Calculated flow rate for destratifiers} = \frac{45\,000}{0.3 \times (30 - 16)} = 10714 \text{ m}^3/\text{h}$$

Either: 2 X 42AMA-50---T0 at HS or 1 x 42AMA-63---T0 at HS.

42AMA AIR FLOW & ACOUSTIC PERFORMANCE

42AMA-	40		45		50		63	
THREE-PHASE motor (3-phase 400 V coupling)	HS △	LS ★	HS △	LS ★	HS △	LS ★	HS △	LS ★
SINGLE-PHASE AC and SINGLE-PHASE EC motor	Direct	-	Direct	-	Direct	-	Direct	-
Flow rate m ³ /h	4400	3000	6000	4100	8000	5500	11500	8800
Air stream m	15	8	14	9	16	10	19	14
Sound pressure dB(A)	51	43	54	46	57	47	55	50

Specifications determined using the following information:

Air stream: * with JET+ diffuser for a residual speed of 0.1 m/s

Sound pressure: * measured 8 metres from unit, directivity 2, attenuation of 26 dB

42AM - HOT WATER - 230 V/1-PH/50 HZ MOTOR - AC AND EC

Inlet/Outlet water temperature, °C		42AM--302*				42AM--351							
		Air flow rate (m ³ /h) Direct				Air flow rate (m ³ /h) Direct				Air flow rate (m ³ /h) R3*			
		1420				2600				2360			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	17,1	15,8	14,8	13,9	11,9	11	10,3	9,62	11,5	10,6	9,93	9,28
	PD	42,7	36,8	32,7	28,9	7,91	6,95	6,11	5,4	7,41	6,42	5,73	5,07
60-40	Hc	10,7	9,4	8,46	7,52	7,12	6,19	5,49	4,77	6,87	5,97	5,29	4,6
	PD	18,4	14,6	12	9,65	3,37	2,63	2,12	1,65	3,17	2,46	1,99	1,55
45-40	Hc					7,08	6,17	5,49	4,81	6,83	5,95	5,29	4,65
	PD					40,4	31,7	25,7	20,3	37,9	29,5	24	19,1
50-42	Hc					7,52	6,62	5,94	5,27	7,26	6,38	5,74	5,09
	PD					19,3	15,3	12,6	10,1	18,1	14,4	11,9	9,52

Inlet/Outlet water temperature, °C		42AM--353								42AM--401							
		Air flow rate (m ³ /h) Direct				Air flow rate (m ³ /h) R3*				Air flow rate (m ³ /h) Direct				Air flow rate (m ³ /h) R3*			
		2075				1780				4200				3914			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	25,9	23,9	22,3	20,8	23,7	21,8	20,4	19	17,2	15,9	14,9	13,9	16,8	15,5	14,5	13,5
	PD	7,65	6,53	5,77	5,03	6,43	5,5	4,87	4,24	7,24	6,25	5,55	4,9	6,91	5,96	5,3	4,68
60-40	Hc	15,5	13,4	11,9	10,4	14,1	12,3	10,8	9,45	10,2	8,81	7,78	6,72	9,93	8,58	7,58	6,55
	PD	3	2,29	1,82	1,43	2,51	1,93	1,54	1,21	2,99	2,3	1,85	1,42	2,86	2,2	1,76	1,36
45-40	Hc	15,2	13,2	11,7	10,3	13,8	12	10,7	9,35	10,3	8,97	7,98	6,99	10	8,74	7,77	6,81
	PD	40	30,3	24,4	18,9	33,5	25,6	20,4	15,8	38,1	29,5	23,8	18,7	36,3	28,1	22,6	17,9
50-42	Hc	16,3	14,3	12,8	11,3	14,8	13	11,7	10,3	10,9	9,6	8,61	7,62	10,6	9,35	8,39	7,43
	PD	18,5	14,4	11,7	9,29	15,5	12,1	9,81	7,81	17,9	14	11,5	9,22	17,1	13,4	11	8,79

42AM - HOT WATER - 230 V/1-PH/50 HZ MOTOR - AC AND EC

Inlet/Outlet water temperature, °C		42AM--403								42AM--451							
		Air flow rate (m³/h) Direct				Air flow rate (m³/h) R3*				Air flow rate (m³/h) Direct				Air flow rate (m³/h) R3*			
		3450				3220				5200				4100			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	40,1	36,9	34,6	32,3	38,6	35,5	33,2	31	23,4	21,6	20,3	19	21,3	19,7	18,5	17,3
	PD	13,3	11,4	10,1	8,9	12,3	10,6	9,37	8,26	14,6	12,7	11,3	10	12,4	10,7	9,55	8,46
60-40	Hc	24,2	20,9	18,5	16,1	23,2	20,1	17,8	15,5	14,3	12,5	11,2	9,92	13,1	11,5	10,2	9,01
	PD	5,47	4,22	3,36	2,63	5,09	3,93	3,13	2,45	6,43	5,12	4,2	3,37	5,5	4,34	3,57	2,83
45-40	Hc	23,5	20,4	18,2	15,9	22,6	19,6	17,4	15,3	13,7	12	10,7	9,38	12,5	10,9	9,71	8,53
	PD	67,9	52,4	42,2	32,9	63,2	48,7	39	30,6	72,4	56,8	45,9	36,5	61,3	48	38,9	30,8
50-42	Hc	25,2	22,1	19,8	17,5	24,2	21,2	19	16,8	14,7	12,9	11,6	10,3	13,4	11,8	10,6	9,42
	PD	32,1	25,1	20,5	16,4	29,8	23,3	19	15,2	34,9	27,8	23	18,6	29,5	23,6	19,5	15,8

Inlet/Outlet water temperature, °C		42AM--453								42AM--501							
		Air flow rate (m³/h) Direct				Air flow rate (m³/h) R3*				Air flow rate (m³/h) Direct				Air flow rate (m³/h) R3*			
		4550				3650				7100				5700			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	54,4	50,2	47	43,8	47,8	44	41,2	38,5	31	28,6	26,9	25,1	28,5	26,3	24,7	23,1
	PD	13,5	11,6	10,3	9,02	10,6	9,08	8,04	7,06	7,9	6,84	6,1	5,4	6,8	5,89	5,25	4,65
60-40	Hc	33,5	29,3	26,1	22,9	29,4	25,6	22,8	20	18,6	16,2	14,3	12,5	17,1	14,8	13,1	11,4
	PD	5,69	4,44	3,57	2,81	4,47	3,46	2,8	2,18	3,39	2,65	2,13	1,66	2,92	2,27	1,83	1,42
45-40	Hc	31,6	27,5	24,4	21,4	27,6	24	21,3	18,7	18,4	16,1	14,3	12,5	16,9	14,7	13,1	11,5
	PD	68,6	53	42,4	33,2	53,5	41	33	25,7	40,3	31,4	25,5	20,2	34,5	26,9	21,8	17,3
50-42	Hc	34	29,8	26,8	23,7	29,7	26,1	23,4	20,8	19,6	17,2	15,5	13,7	18	15,8	14,2	12,6
	PD	32,5	25,4	20,8	16,6	25,3	19,9	16,2	12,9	19,2	15,2	12,6	10,1	16,6	13,1	10,9	8,69

Inlet/Outlet water temperature, °C		42AM--503								42AM--631							
		Air flow rate (m³/h) Direct				Air flow rate (m³/h) R3*				Air flow rate (m³/h) Direct				Air flow rate (m³/h) R3*			
		6200				5055				10450				8900			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	74,3	68,4	64,1	59,8	65,9	60,8	56,9	53,1	45,4	41,9	39,3	36,7	42,7	39,4	37	34,5
	PD	12,8	11	9,74	8,56	10,3	8,81	7,8	6,87	6,89	5,94	5,28	4,65	6,16	5,32	4,72	4,16
60-40	Hc	45,8	40,1	35,7	31,3	40,7	35,5	31,7	27,8	26,9	23,3	20,6	17,8	25,3	21,9	19,3	16,7
	PD	5,46	4,27	3,44	2,71	4,39	3,42	2,77	2,17	2,79	2,14	1,71	1,32	2,5	1,91	1,53	1,19
45-40	Hc	43,1	37,5	33,3	29,2	38,2	33,2	29,5	25,9	27,2	23,7	21	18,5	25,5	22,2	19,8	17,3
	PD	64,8	49,9	39,9	31,4	51,6	39,9	32	25	36,3	28,1	22,7	17,9	32,4	25,1	20,3	15,9
50-42	Hc	46,3	40,7	36,5	32,4	41,1	36,1	32,4	28,8	28,8	25,3	22,7	20,1	27,1	23,8	21,4	18,9
	PD	30,7	24,1	19,7	15,7	24,5	19,3	15,7	12,6	17	13,4	11	8,75	15,1	12	9,77	7,81

Inlet/Outlet water temperature, °C		42AM--633							
		Air flow rate (m³/h)Direct				Air flow rate (m³/h) R3*			
		8280				6270			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18
80-60	Hc	106	97,5	91,4	85,4	89,1	82,2	77	72
	PD	21,5	18,3	16,2	14,3	15,5	13,3	11,8	10,4
60-40	Hc	66,1	58,2	52,3	46,3	56	49,2	44	38,9
	PD	9,2	7,26	5,94	4,76	6,74	5,31	4,31	3,43
45-40	Hc	/	53,1	47,3	41,5	51,1	44,5	39,7	34,9
	PD	/	82,5	66,5	52,2	76,9	59,2	47,7	37,6
50-42	Hc	65,8	57,9	52,1	46,3	55,3	48,7	43,8	38,9
	PD	50,9	40,1	32,8	26,3	36,8	28,9	23,8	19

Hc Heating capacity (kW)

PD Water pressure drop (kPa)

* Only available in EC version

42AM - CHILLED WATER & HOT WATER - 230 V/1-PH/50 HZ MOTOR - EC

Inlet/Outlet water temperature, °C		42AM--302*				42AM--353				42AM--403				42AM--453				42AM--503				42AM--633*			
		Air flow rate (m³/h)				Air flow rate (m³/h)				Air flow rate (m³/h)				Air flow rate (m³/h)				Air flow rate (m³/h)				Air flow rate (m³/h)			
		- Direct				- Direct				- Direct				- Direct				- Direct				- Direct			
		1200				1640				2160				3025				4060				4060			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	17,1	15,8	14,8	13,9	21,4	19,7	18,5	17,2	28,9	26,6	24,9	23,2	40,6	37,4	35,1	32,8	54,9	50,6	47,4	44,3	82	75,7	71	66,4
	PD	42,7	36,8	32,7	28,9	5,32	4,5	4	3,5	7,2	6,2	5,5	4,8	7,8	6,7	6	5,2	7,3	6,3	5,6	4,9	13,2	11,4	10,1	8,9
60-40	Hc	10,7	9,4	8,46	7,52	12,8	11,1	9,8	8,6	17,3	15	13,3	11,7	25	21,9	19,5	17,1	33,9	29,6	26,4	23,2	51,6	45,4	40,6	35,9
	PD	18,4	14,6	12	9,65	2,1	1,6	1,3	1	3	2,3	1,9	1,5	3,3	2,6	2,1	1,7	3,1	2,4	2	1,6	5,8	4,6	3,7	3
45-40	Hc					12,5	10,9	9,7	8,5	16,8	14,6	13	11,4	23,5	20,5	18,2	16	31,7	27,6	24,6	21,6	46	41,1	36,6	32,2
	PD					27,6	21,3	16,9	13,1	36,6	28,4	22,7	17,8	39,4	30,6	24,5	19,2	36,5	28,3	22,8	17,9	44,9	51,1	41,2	32,4

Inlet/Outlet water temperature, °C		42AM--302*				42AM--353				42AM--403				42AM--453				42AM--503				42AM--633*			
		Relative humidity 50%				Relative humidity 50%				Relative humidity 50%				Relative humidity 50%				Relative humidity 50%				Relative humidity 50%			
		Air flow rate (m³/h)				Air flow rate (m³/h)				Air flow rate (m³/h)				Air flow rate (m³/h)				Air flow rate (m³/h)				Air flow rate (m³/h)			
		Direct				Direct				Direct				Direct				Direct				Direct			
		1200				1640				2160				3025				4060				5960			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		23	25	27		23	25	27		23	25	27		23	25	27		23	25	27		23	25	27	
7-12	TCC	2,95	3,65	4,59		3,38	4,28	5,6		4,6	5,91	7,64		7,13	8,87	11,6		9,66	12,1	15,7		15,2	19,3	24,4	
	SCC	2,95	3,5	3,99		3,38	4,28	5,17		4,6	5,85	6,98		7,13	8,67	10,2		9,66	11,8	13,7		15,2	18,2	20,8	
	PD	24,4	36,1	55		2,34	3,69	6,22		3,46	5,55	9,08		4,44	6,75	11,3		4,22	6,55	10,7		8,46	13,3	20,6	
8-13	8-13	2,69	3,28	4,06		2,96	3,9	4,93		4,04	5,3	6,71		6,39	8,08	10,2		8,66	10,9	13,9		13,8	17,1	21,7	
	SCC	2,69	3,24	3,75		2,96	3,9	4,78		4,04	5,3	6,46		6,39	8,02	9,47		8,66	10,9	12,9		13,8	16,8	19,6	
	PD	20,4	29,5	43,8		1,82	3,1	4,86		2,68	4,53	7,06		3,6	5,65	8,76		3,43	5,37	8,52		6,98	10,6	16,5	
10-15	TCC	2,15	2,71	3,31		2,16	3,1	3,99		2,92	4,22	5,43		4,84	6,54	8,19		6,55	8,86	11,1		10,8	14	17,3	
	SCC	2,15	2,71	3,26		2,16	3,1	3,99		2,92	4,22	5,43		4,84	6,54	8,12		6,55	8,86	11		10,8	14	16,9	
	PD	13,4	20,6	29,7		0,993	1,98	3,22		1,43	2,92	4,74		2,11	3,75	5,79		2,01	3,57	5,5		4,38	7,11	10,7	

Hc Heating capacity (kW)
TCC Total cooling capacity
SCC Sensible cooling capacity (kW)
PD Water pressure drop (kPa)
* Only available in EC version

42AM - HOT WATER - 400 V/3-PH/50 HZ MOTOR - AC

Inlet/Outlet water temperature, °C		42AM--351								42AM--353							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		2600				2210				2165				1775			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	11,9	11	10,3	9,62	11,2	10,3	9,69	9,05	26,6	24,5	22,9	21,4	23,7	21,8	20,4	19
	PD	7,92	6,86	6,12	5,41	7,09	6,14	5,48	4,84	8,04	6,86	6,07	5,3	6,42	5,49	4,86	4,24
60-40	Hc	7,13	6,2	5,5	4,78	6,71	5,83	5,17	4,49	15,9	13,8	12,2	10,7	14,1	12,3	10,8	9,47
	PD	3,38	2,63	2,13	1,66	3,03	2,36	1,9	1,48	3,15	2,4	1,91	1,5	2,51	1,93	1,55	1,21
45-40	Hc	7,08	6,18	5,5	4,82	6,66	5,8	5,16	4,53	15,6	13,6	12,1	10,6	13,8	12	10,7	9,36
	PD	40,5	31,7	25,7	20,3	36,3	28,3	22,9	18,3	42	32,4	25,7	20	33,5	25,6	20,4	15,8
50-42	Hc	7,53	6,63	5,95	5,28	7,08	6,23	5,59	4,96	16,7	14,7	13,1	11,6	14,8	13	11,7	10,3
	PD	19,3	15,3	12,7	10,2	17,3	13,7	11,3	9,11	19,5	15,2	12,3	9,79	15,5	12,1	9,82	7,82

Inlet/Outlet water temperature, °C		42AM--401								42AM--403							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		4000				3480				3400				2960			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	16,9	15,6	14,6	13,6	16,1	14,8	13,9	13	39,8	36,6	34,3	32	36,8	33,8	31,7	29,5
	PD	7,01	6,04	5,37	4,74	6,38	5,51	4,9	4,33	13,1	11,2	9,92	8,76	11,3	9,69	8,63	7,55
60-40	Hc	10	8,65	7,64	6,6	9,51	8,21	7,26	6,29	24	20,8	18,4	16	22,1	19,2	17	14,8
	PD	2,9	2,23	1,79	1,37	2,65	2,03	1,63	1,27	5,39	4,16	3,31	2,59	4,66	3,58	2,88	2,26
45-40	Hc	10,1	8,81	7,83	6,86	9,61	8,37	7,44	6,52	23,3	20,3	18	15,8	21,5	18,7	16,6	14,6
	PD	36,8	28,5	23	18,1	33,5	26	21	16,4	66,9	51,6	41,6	32,4	57,6	44,5	35,7	28
50-42	Hc	10,7	9,42	8,45	7,48	10,2	8,96	8,03	7,11	25	21,9	19,6	17,4	23,1	20,2	18,1	16,1
	PD	17,3	13,6	11,1	8,91	15,7	12,4	10,1	8,13	31,6	24,7	20,2	16,1	27,4	21,3	7,4	13,9

Inlet/Outlet water temperature, °C		42AM--451								42AM--453							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		5400				3910				5000				3910			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	23,7	21,9	20,6	19,2	21	19,4	18,2	17	57,4	52,9	49,6	46,2	49,8	45,9	43	40,1
	PD	14,9	13	11,6	10,2	12	10,4	9,24	8,19	15	12,8	11,3	9,97	11,5	9,84	8,71	7,65
60-40	Hc	14,5	12,7	11,4	10,1	12,8	11,3	10,1	8,84	35,3	30,9	27,5	24,1	30,7	26,8	23,9	20,9
	PD	6,58	5,24	4,31	3,45	5,32	4,23	3,46	2,74	6,27	4,89	3,95	3,1	4,84	3,76	3,03	2,37
45-40	Hc	13,9	12,1	10,8	9,5	12,3	10,7	9,54	8,38	33,4	29	25,8	22,6	28,9	25,1	22,3	19,6
	PD	74,2	58,2	47,3	37,4	59,3	46,4	37,7	29,9	76,5	58,7	47	36,7	58,1	44,7	35,9	28
50-42	Hc	14,9	13,1	11,8	10,5	13,1	11,6	10,4	9,25	35,8	31,5	28,3	25,1	31,1	27,3	24,5	21,7
	PD	35,7	28,5	23,6	19,1	28,6	22,8	18,8	15,3	35,9	28,1	23	18,3	27,4	21,6	17,6	14

Inlet/Outlet water temperature, °C		42AM--501								42AM--503							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		7500				5740				6500				5020			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	31,7	29,2	27,4	25,6	28,6	26,4	24,8	23,2	76,4	70,4	65,9	61,6	65,7	60,6	56,7	53
	PD	8,2	7,1	6,33	5,6	6,84	5,93	5,29	4,68	13,5	11,6	10,3	9,03	10,2	8,76	7,16	6,83
60-40	Hc	19	16,5	14,6	12,7	17,2	14,9	13,2	11,5	47,1	41,2	36,8	32,3	40,6	35,5	31,6	27,7
	PD	3,51	2,75	2,21	1,73	2,94	2,28	1,84	1,43	5,75	4,49	3,67	2,86	4,37	3,4	2,76	2,16
45-40	Hc	18,8	16,4	14,6	12,8	17	14,8	13,2	11,6	44,4	38,6	34,3	30,1	38,1	33,1	29,5	25,8
	PD	41,9	32,6	26,4	20,9	34,8	27,1	22	17,5	68,5	52,7	42,3	33,1	51,3	39,7	31,8	24,9
50-42	Hc	20	17,6	15,8	14	18,1	15,9	14,3	12,7	47,7	41,9	37,6	33,4	41	36	32,3	28,7
	PD	19,9	15,8	13	10,5	16,7	13,2	10,9	8,77	32,4	25,4	20,8	16,6	24,4	19,2	15,7	12,5

Hc Heating capacity (kW)

PD Water pressure drop (kPa)

42AM - HOT WATER - 400 V/3-PH/50 HZ MOTOR - AC

Inlet/Outlet water temperature, °C		42AM--631								42AM--633							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		11140				9635				9175				7545			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	46,5	42,9	40,2	37,5	44,1	40,7	38,1	35,6	112	103	97	90,6	100	92,2	86,5	80,8
	PD	7,19	6,2	5,5	4,85	6,51	5,62	4,99	4,4	24	20,5	18,2	16	19,2	16,5	14,6	12,9
60-40	Hc	27,6	23,9	21	18,2	26,1	22,6	19,9	17,2	70	61,7	55,4	49,1	62,7	55,1	49,5	43,7
	PD	2,91	2,24	1,78	1,38	2,64	2,02	1,61	1,25	10,2	8,1	6,6	5,3	8,36	6,56	2,17	4,26
45-40	Hc	27,8	24,2	21,5	18,9	26,3	22,9	20,4	17,9	/	56,4	50,2	44,1	57,6	50,1	44,6	39,2
	PD	37,9	29,4	23,7	18,6	34,3	26,6	21,5	16,9	/	92,9	74,5	58,3	96,6	74,2	59,5	46,7
50-42	Hc	15,7	25,9	23,3	20,6	16,4	24,6	22	19,5	29,9	61,5	55,3	49,1	31,6	54,7	49,2	43,8
	PD	17,7	13,9	11,5	9,12	16	12,6	10,3	8,26	56,9	44,8	36,8	29,4	45,6	36,1	29,5	23,8

Hc Heating capacity (kW)

PD Water pressure drop (kPa)

ELECTRIC MOTOR SPECIFICATIONS

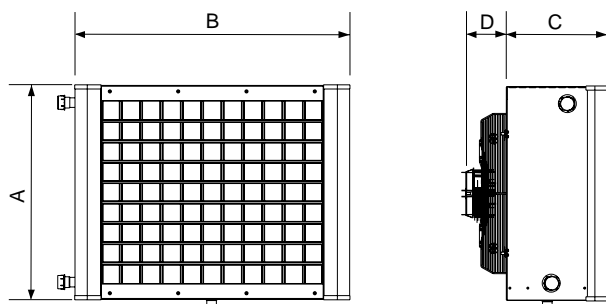
Use	Family	Size	Motor	Speed of rotation (rpm)	Nom. current A	P. Abs W	IP	Thermal cut-out	Class	Operating T°
HEATING	42AM--	35H	THREE-PHASE 230/400 V – 50 Hz	HS - Δ 1385	0,35	110	44	NO	F	-40°C / +60°C
				LS - ★ 1175	0,15	70				
	42AM--/ 42AMA-	40H/40-		HS - Δ 1404	0,5	260	54	YES 6.3 A - 165 °C		-40 °C / +70 °C
				LS - ★ 1176	0,3	170				
	42AM--/ 42AMA-	45H/45-		HS - Δ 1385	1,13	550				
				LS - ★ 1040	0,64	380				
	42AM--/ 42AMA-	50H/50-		HS - Δ 1391	1,51	770				
				LS - ★ 1176	0,9	520				
	42AM--/ 42AMA-	63H/63-		HS - Δ 1000	1,3	590				
				LS - ★ 750	0,63	250				
	42AMS-	63H	HS - Δ 1000	1,3	590					
			LS - ★ 750	0,63	250					
HEATING	42AM--	35H	SINGLE-PHASE 230 V – 50 Hz	Direct 1330	0,7	150	44	NO	F	-40°C / +60°C
	42AM--/42AMA-	40H/40-		Direct 1400	1,3	300	54	YES 6.3 A - 165 °C		-40 °C / +70 °C
	42AM--/42AMA-	45H/45-		Direct 1380	2,01	480				
	42AM--/42AMA-	50H/50-		Direct 1403	2,78	630				
	42AM--/42AMA-	63H/63-		Direct 913	2,6	580				
EC FMA										
HEATING	42AM--	30H	SINGLE-PHASE 230 V 50/60 Hz	1530	0,8	85	54	PTC	B	-25 °C/+55 °C
	42AM--	35H		1480	1,35	165	54	PTC	B	-25 °C/+50 °C
	42AM--/42AMA-	40H/40-		1760	2,2	500	55	Thermal cut-out	B	-25°C/+60°C
	42AM--/42AMA-	45H/45-		1500	2,2	500	55	Thermal cut-out	B	-25°C/+60°C
	42AM--/42AMA-	50H/50-		1440	3,25	740	55	Thermal cut-out	B	-40°C/+60°C
	42AM--/42AMA-	63H/63-		1020	3,2	730	55	Thermal cut-out	B	-40°C/+60°C
COOLING	42AM--	30C	SINGLE-PHASE 230 V 50/60 Hz	1530	0,8	85	54	PTC	B	-25 °C/+55 °C
	42AM--	35C		1040	0,65	73	54	PTC	B	-25°C/+60°C
	42AM--	40C		1760	2,2	500	55	Thermal cut-out	B	-25°C/+60°C
	42AM--	45C		1500	2,2	500	55	Thermal cut-out	B	-25°C/+60°C
	42AM--	50C		970	1,1	250	55	Thermal cut-out	B	-25°C/+60°C
	42AM--	63C		770	1,1	250	55	Thermal cut-out	B	-25°C/+60°C

COIL SPECIFICATIONS

		30	35		40		45		50		63		
HOT WATER/COLD WATER COIL	Number of heating rows	2	1	3	1	3	1	3	1	3	1	3	
	Number of cooling rows	2	3										
	Coil capacity (L)	0,8	0,68	1,66	0,96	2,28	1,38	3,22	2,18	4,55	2,97	6,4	
	Connection diameter	1/2"	3/4"				1"		1" ¼				
	Connection type	Threaded unions 243 GCU F/M											
	Maximum operating pressure	13 bar											
	Test pressure	24 bar											
	Max T°	110°C											
SUPERHEATED WATER COIL	Number of heating rows	1											
	Coil capacity (L)		1,19		1,69		-		2,66		3,69		
	Connection diameter		33.7 mm		42.4 mm		-		42.4 mm				
	Connection type	Smooth 316L stainless steel tube (to be welded)											
	Maximum operating pressure		16 bar										
	Test pressure		24 bar										
	Max T°		200°C										
STEAM COIL	Number of heating rows	1											
	Coil capacity (L)		0,97		1,22		-		1,95		2,86		
	Connection diameter		26,9		33,7		-		48,3				
	Connection type		Smooth 316L stainless steel tube (to be welded)										
	Maximum operating pressure		16 bar										
	Test pressure		24 bar										
	Max T°		200°C										

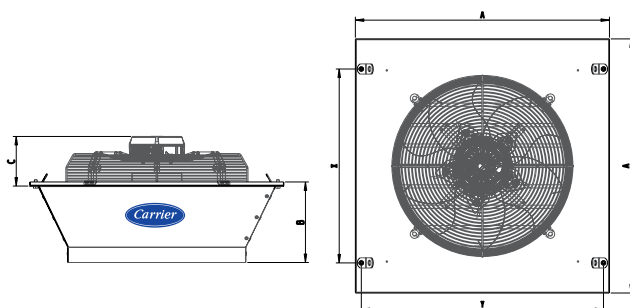
DIMENSIONS

42AM air heater



Size	A	B	C	D		Weight (kg)		
				STD	EC			
	mm						1 row	2 rows
30	395	600	286	115	115	-	18	-
35	460	646	286	101	126	21	-	26
40	557	700	286	142	143	30	-	34
45	620	813	286	142	143	40	-	44
50	716	918	336	142	188	50	-	56
63	876	1050	336	142	200	62	-	72
63S	872	1050	295	126		60	-	-

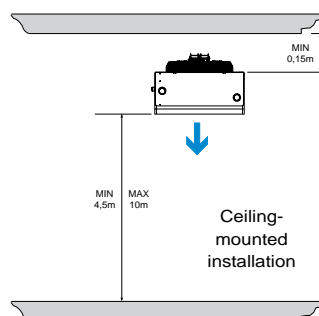
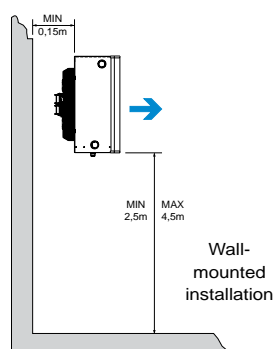
42AMA destratifier



Size	A	B	C		X	Y	Weight kg
			STD	EC			
40	586	183	143	143	370	552	17
45	666	212	143	143	470	632	22
50	747	225	143	188	570	712	25
63	907	273	143	200	705	872	33

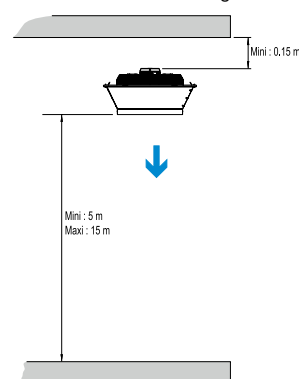
INSTALLATION

42AM air heater



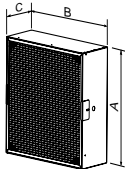
42AMA destratifier

Recommended for buildings between 5 and 15 metres high.



ASSEMBLY ACCESSORIES



A different assembly for each use.

RETURN AIR ACCESSORIES						
	Size	A	B	C	Codes	Filter box (G1 filter in accordance with EN 779) Prevents premature clogging of exchanger coils Not ductable
	35	440		220	7185105	
	40	520			7185106	
	45	600			7185107	
	50	680			7185108	
	63/63S	840			7185110	




DIFFUSION ACCESSORIES						
	Size	A	B	C	Codes	**Diffuser on door** Create an air curtain that limits energy loss when doors are opened.
35	750	700	300	7185133		
40	850	750	325	7185134		
45	970	850	350	7185135		
50	1100	970	375	7185136		
63/63S	1250	1170	400	7185137		
	Size	A	B	C	Codes	**Diffuser for large spaces** Reduction cone for increasing the air throws.
35	—	—	—	—		
40	178	555	522	7185138		
45	136	637	618	7185139		
50	132	740	714	7185140		
63/63S	282	872	814	7185141		
ASSEMBLY SUPPORT ACCESSORIES						
	Size				Codes	**Wall bracket**
All	7181226					
35 to 45	7181228	**Additional kit for fastening on an IPN**				
50 to 63/63S	7181230					
	Size				Codes	**Suspension support for ceiling mounting**
All	7282116					

ELECTRICAL ACCESSORIES



ELECTRICAL & USER SAFETY

	Codes		Padlockable proximity switch Available in a 1 or 2-speed version, this accessory must be placed at least 2 metres from any rotating part, to comply with French standard IT 246, Art. 4-7-3, and EC requirements.		
	0596142				
	0596147				
	Use	Circuit breaker unit - FMA SINGLE-PHASE AC heating	Circuit breaker unit - FMA SINGLE-PHASE EC heating	Circuit breaker unit - FMA SINGLE-PHASE EC cooling	Circuit breaker unit THREE-PHASE AC
	42AM--30		7252526	7252526	
	42AM--35	7252526	7252527	7252526	7252523
	42AM--40	7252527	7252528	7252528	7252525
	42AM--45	7252528	7252528	7252528	7252527
	42AM--50	7252529	7252529	7252527	72525227
	42AM--63	7252529	7252529	7252527	7252527
	42AMS-63				7252527
	42AMA-40	7252527	7252528		7252525
	42AMA-45	7252528	7252528		7252527
	42AMA-50	7252529	7252529		7252527
	42AMA-63	7252529	7252529		7252527

THERMOSTATS

	Codes	Manual/auto room thermostat - SINGLE-PHASE / SINGLE-PHASE EC installation	
	7486653	"3-speed EC thermostat kit (for EC SINGLE-PHASE FMA) - Heating and cooling with manual toggle switch - Inductive breaking capacity 3.53A"	
	7486654	"1-speed AC thermostat kit (for AC SINGLE-PHASE FMA) - Heating and cooling with manual toggle switch - Inductive breaking capacity 3.53A"	
	5201027	Summer or Winter thermostat - SINGLE-PHASE AC FMA	
	Codes	IP54 industrial environment thermostat - THREE-PHASE AC installation	
	7113335	Summer or Winter thermostat - 3-PH AC FMA - 1 Stage	
	7113336	Summer or Winter thermostat - 3-PH AC FMA - 2 Stages	

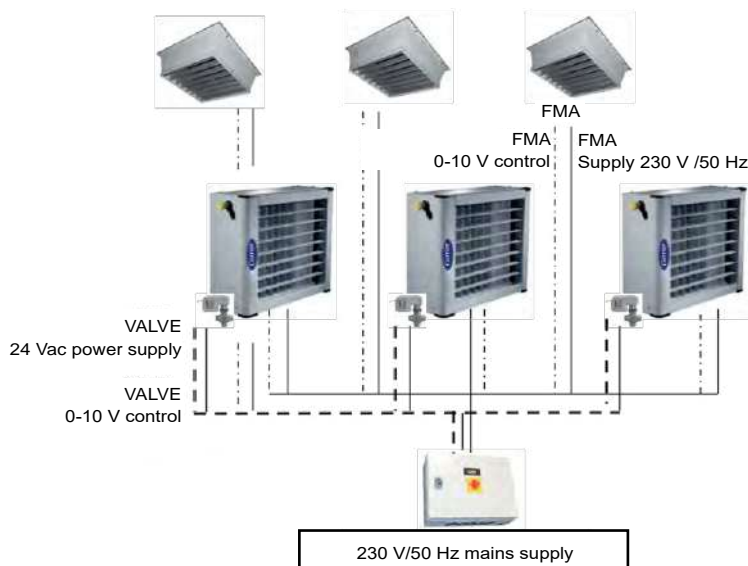
SUPPLY AIR SPEED SELECTION

	Codes	LS/HS switch For 3-phase motor, selects two motor rotation speeds and stop.
	7169961	
	Codes	Autotransformer with selector switch (3.5 A) Used to obtain 5 supply air speeds by varying the voltage on the variable speed AC 1 single-phase motors.
	7166982	

42AM SINGLE-PHASE EC AIR HEATER CONTROL

Single-phase EC FMA + LP water application:

- The single-phase EC BOX can control:
 - 6 H4000 single-phase ECs
 - 6 TPL 4000 single-phase ECs
 - 3 H4000 single-phase ECs + 3 TPL single-phase ECs
 - 4 H4000 single-phase ECs + 2 TPL single-phase ECs



Description

- Complete "PLUG & PLAY" control solution for air-source (0-10 V SINGLE-PHASE EC FMA) and/or water-source (0-10 V three-way valve) for 42AM air heaters equipped with SINGLE-PHASE EC FMAs.
- Proportional control system adjusts the supply air velocity and coil water supply based on the difference between the indoor temperature (measured by the built-in sensor) and the programmed temperature setpoint (summer or winter).
- Built-in timer featuring 3 operating modes: COMFORT, ECO and FROST PROTECTION (weekly setting).
- Electrical components (circuit breaker, padlockable proximity switch, contactor, thermostat, timer, etc.) included. Remote control On/Off function, with two fault summaries. Communication possible via ModBus/JBUS protocols or BACnet IP (optional expansion card).

Advantages

- All your air heaters will be controlled centrally via an EC MONO BOX master controller
- You can adjust the heating or cooling to meet your needs as water is supplied to one or more heat exchangers in proportion to your building's heating demand (available with the optional valve kit).
- Supply air temperatures are controlled to maintain the necessary air streams. You can choose between fresh air only or mix with frost protection via the actuator to be installed on the 2-channel mixing box with built-in filter (available with the fresh air kit + damper actuator + frost protection thermostat kit) or 100% recirculated air.
- You will bring the fresh air rate of your building in line with current regulations or according to the space occupancy (via the built-in timer) thanks to an internal timer which can be configured on a weekly basis using 3 operating modes (Comfort, Eco, Frost protection). Fresh air damper controlled via the EC MONO BOX (On/off) depending on optional fresh air kit (Antifreeze thermostat + servomotor).
- Your building's heating requirement will depend on its occupancy and be serviced by centralised management of 42AM air heaters via the controller (a SINGLE-PHASE EC BOX controls 6 42AMs- or 6 42AMAs- or 3 42AMs- + 3 42AMAs- or 4 42AMs- + 2 42AMAs-).
- The display shows the operating status of each individual 42AM heater (fresh air or return air, motor fault, risk of frost, etc.)
- No need to size and wire the electrical components (circuit breaker, padlockable proximity switch, contactor, thermostat, timer, etc.) as this all-in-one control solution makes for faster installation.
- Two user levels: USER (restricted access) and INSTALLER (full access) for greater simplicity, ease of use and security.
- Option to use a remote control On/Off function with two fault summaries. Communication possible via ModBus/JBUS protocols or BACnet IP (optional expansion card).

Electrical data

- Single-phase EC BOX unit supply: Single-phase 230 V
- Index of Protection: IP54
- Built-in motor overload and user protections as required by French standard NF C 15-100

42AM FOR EXPLOSIVE ATMOSPHERES

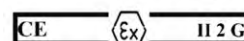
THE 42AM also meets the requirements of ATEX directives

Ex II 2 G
II c 65 °C - 105 °C or 120 to 220 °C
EEx d/de IIB or IIC T4 to T6

This special series of ATEX-certified 42AM air heaters is the result of CARRIER's extensive expertise and experience. This approval, issued by an independent external body, is your guarantee of complete compliance with the ATEX directives.

The 42AM-EX range is certified for your applications:

- In the presence of explosive gas agents
- In Zone 2 only
- For explosion groups IIB or IIC
- With T4 to T6 gas self-ignition temperatures
- Low pressure water, superheated water, steam, oil, compressed air...



What is ATEX?

ATEX or explosive atmosphere can be caused in atmospheric conditions by flammable gases, vapours or mists or by combustible dusts mixed with air. After ignition, combustion spreads through the whole of the unburned mixture.

How is an ATEX zone defined?

ATEX zones are determined based on the probability and duration of the occurrence of an explosive atmosphere. This risk analysis is used to define zones, explosion groups and maximum surface temperature classes. These atmospheres are mainly found in painting workshops, metal processing workshops, waste recycling, wood processing, etc.

Who defines ATEX zones?

Any operator of a production facility where an explosive atmosphere may occur must define the relevant ATEX zones, explosion groups and temperature classes. By doing so, the operator will also be able to set up the necessary means of prevention (communication, documentation, recommendations, etc.).

"Directive 94/9/EC divides the equipment and protective systems which it covers into equipment groups and categories; this Directive (1999/92/EC) provides for a classification by the employer of the places where explosive atmospheres may occur in terms of zones and determines which equipment and protective systems groups and categories should be used in each zone."

ZONE		Category	The explosive agent is:
Gas (G)	Dust (D)		
0	20	0	Present continuously, frequently or over a long period: NO CARRIER PRODUCT
1	21	1	Present occasionally under normal use: NO CARRIER PRODUCT
2	22	2	Rarely or briefly present

GAS - EXPLOSION GROUP AND TEMPERATURE CLASS						
Temperature class	T1	T2	T3	T4	T5	T6
Max surface temp	450°C	300°C	200°C	135°C	100°C	85°C
Explosion group						
IIA	Acetone Ammonia Benzene Acetic acid Ethane Ethyl acetate Ethyl chloride Methanol Naphthalene Phenol Propane	i-Amyl acetate Butane Butyl alcohol	Petrol Diesel Hot oil Hexane	Acetaldehyde		
IIB	Town gas	Ethylene	Hydrogen sulphide	Ethyl ether		
IIC	Hydrogen	Acetylene				Carbon disulphide

OPERATING LIMITS

	Cooling mode	heating mode	Steam mode	Superheated water mode
Water circuit	Min. water inlet temp.: 5 °C Max. operating pressure: 13 bar	Max. water inlet temp.: 110 °C Max. operating pressure: 13 bar	Max. steam temp.: 200 °C Max. operating pressure: 16 bar	Max. water inlet temp.: 200 °C Max. operating pressure: 16 bar
Indoor temperature	Tmax: 60 °C and Tmin -15 °C			
1-PH AC motor	-	Nominal voltage: 230 V (+/-6 %) Frequency: 50 Hz <u>Size 35:</u> Index of Protection: IP44 <u>Sizes: 40 - 45-50-63:</u> Index of Protection: IP54	Nominal voltage: 230 V (+/-6 %) Frequency: 50 Hz <u>Size 35:</u> Index of Protection: IP44 <u>Sizes: 40 - 45-50-63:</u> Index of Protection: IP54	Nominal voltage: 230 V (+/-6 %) Frequency: 50 Hz <u>Size 35:</u> Index of Protection: IP44 <u>Sizes: 40 - 45-50-63:</u> Index of Protection: IP54
3-PH AC motor	-	Nominal voltage: 400 V (+/-6%) Frequency: 50 Hz <u>Size 35:</u> Index of Protection: IP44 <u>Sizes: 40 - 45-50-63:</u> Index of Protection: IP54	Nominal voltage: 400 V (+/-6%) Frequency: 50 Hz <u>Size 35:</u> Index of Protection: IP44 <u>Sizes: 40 - 45-50-63:</u> Index of Protection: IP54	Nominal voltage: 400 V (+/-6%) Frequency: 50 Hz <u>Size 35:</u> Index of Protection: IP44 <u>Sizes: 40 - 45-50-63:</u> Index of Protection: IP54
SINGLE-PHASE EC motor	"Frequency: 50/60 Hz <u>Sizes 30 and 35:</u> Nominal voltage: 230 V (Range 200..240) Index of Protection: IP54 <u>Sizes 40 - 45-50-63:</u> Nominal voltage: 230 V (Range 200..277) Index of Protection: IP55	Frequency: 50/60 Hz <u>Sizes 30 and 35:</u> Nominal voltage: 230 V (Range 200..240) Index of Protection: IP54 <u>Sizes 40 - 45-50-63:</u> Nominal voltage: 230 V (Range 200..277) Index of Protection: IP55	-	-

4-WAY CASSETTE



Easy installation
Centralised diffusion
Low energy consumption
Optimised comfort
Aesthetically integrated
into suspended ceilings
Quiet operation

42GW

2 pipes

Cooling capacity: 1.6-9.6 kW
Heating capacity: 1.9-11 kW

4 pipes

Cooling capacity: 1.3-8 kW
Heating capacity : 1.1-14 kW

Carrier's Idrofan cassettes 42GW_AC/LEC offer a modern solution for a host of commercial applications. They are particularly suitable for big offices, stores, restaurants, bars, hotel receptions, meeting rooms, banks, laboratories and exhibition rooms.



CODING

	Range				size & motor type			Coil type	Control	Valves	Electric heater	Valve servomotors	Elec. box
Product ref.	4	2	G	W	2	0	0	C	A	G	A	A	-
Digit	1	2	3	4	5	6	7	8	9	10	11	12	13

Digit 8

C = 2-pipe

D = 4-pipe

Digit 5 - 6 - 7

2	0	0	AC motor
2	0	9	EC motor
3	0	0	AC motor
3	0	9	EC motor
4	0	0	AC motor
4	0	9	EC motor
5	0	0	AC motor
5	0	9	EC motor
6	0	0	AC motor
6	0	9	EC motor
7	0	1	AC motor
7	0	9	EC motor

Digit 10

- = No valves

G = 2-way valve

H = 4-way valve

Digit 11

- = None

A = Elec. batt.

Digit 13

- = Without CARRIER valve, for customer 230V ON/OFF valve

X = Without CARRIER valve, for customer 230V - 3PTS valve

Y = Without CARRIER valve, for customer 24V - 3PTS valve

Z = Without CARRIER valve, for customer 24V ON/OFF valve

Digit 12

- = None

A = 230 V ON/OFF actuator

B = 24V ON/OFF servomotor (mandatory, digit 9 = -)

C = 3-POINT 230 V actuator (with NTC or WTC)

B = 24V 3-POINT servomotor (mandatory, digit 9 = -)

Digit 9

- = None

A = 33TA Thermostat for AC motor (2-PIPE)

B = 33TB Thermostat for AC motor (4-pipe or 2-pipe + elec.)

C = 33TC Thermostat for EC motor (2-pipe)

D = 33TD Thermostat for EC motor (4-pipe or 2-pipe + elec.)

K = NTC control (AQUASMART EVOLUTION®)

L = WTC LON control (manual louvres grille, without IR)

M = WTC BACNET control (manual louvres grille, without IR)

L = WTC LON control (grille with motorised louvres and/or IR receiver)

M = WTC BACNET control (grille with motorised louvres and/or IR receiver)

TECHNICAL DESCRIPTION

- The 42GW_AC is available with a 3-speed AC motor. The 42GW_LEC is available with a variable speed low energy consumption (LEC) motor.
- The 42GW is installed in suspended ceilings, and can provide two, three or four-way diffusion. These units maintain the requisite temperature and humidity degree with precision, while preventing draughts and formation of areas of stagnant air.
- The air inlet grille blends in nicely with all types of interior.
- Carrier's hydraulic cassette is available in 6 sizes, to suit a vast range of applications, with air flows ranging from 100 to 402 l/s (360 to 1450 m³/h). The Idrofan cassette offers an ultra-low noise level, for situations where low noise level is the most important selection criterion.

General specifications

- The slimline 42GW is light and easy to install. The small frame is perfectly suited to conventional ceiling tiles, and is easy to install anywhere.
- Comfort is ensured by a four-way air supply, and the opening of each diffuser can also be set, or even closed completely.
- Integrated cooling and heating coils, which come factory-fitted, for two-pipe or two-pipe plus electrical heater applications, as well as 4-pipe applications.

Designed for quiet

- 42GW units have been designed especially to operate very quietly, with noise levels which represent new comfort levels for buildings. The unique design of the centrifugal fan ensures very quiet operation.
- The new design of the fan/motor block ensures quiet operation (half the noise of the previous model). Particular attention has been paid to low-speed operation of the fan.
- The special shape of the diffuser ensures a rapid mix of supply air and ambient air. Conditioned air is blown against the ceiling, and then distributed uniformly throughout the room. The return air enters the cassette via a large grille. It is then cleaned by a removable and washable synthetic filter, conditioned and then supplied again.

Motors

- The Idrofan is available with a three-speed AC motor, with ultra-low noise levels, which makes it one of the quietest cassettes on the market.
- The Idrofan is also available with variable speed LEC motors (low energy consumption), which meet the new building energy performance objectives. The low energy consumption solution improves the unit's performances, bringing you:
 - Lower energy costs – the LEC motor reduces the unit's energy consumption by 50 to 70%. This option meets the new regulations in terms of building energy management.
 - Better comfort – the variable speed low energy consumption motor reduces the noise level compared to multi-speed motors, making for an ultra-quiet air flow, even at very low operating levels. Thanks to the NTC control, a maximum fan speed can be set to better manage noise level.
 - Maximum flexibility – the air flow automatically adapts from 0 to 100%, ensuring perfect cooling or heating conditions in the room.
 - Extended service life – low energy consumption LEC technology motors run at lower fan motor temperatures, which extends their service life.

Filters

- The standard filter used for the Idrofan range has a pleated filtration surface, which provides a surface area 87% larger than a traditional filter, as well as the following additional advantages:
 - Low pressure drop, consumption and noise level.
 - The mean filter cleaning interval is three times longer than for standard filters.
 - EU1 grade polypropylene-based filter.
- In the Idrofan cassette range, the filter is situated in the unit's grille. Cleaning is simple: you need only detach the filter manually from the support on the grille. The filter frame can be lowered, and the filter can be easily removed. Refitting is just as simple, you need only follow the procedure in reverse. Washable filters are supplied in the standard version.



Condensate drain pump

- Self-contained, very high-performance condensate drain pump flush-mounted in soundproofing material, for better condensate management - quick and quiet.
- The cassette's main condensate pan has been improved thanks to use of the very latest composite materials, to provide better noise absorption, easier cleaning and better condensed water transfer from the coil to the discharge pump.

TECHNICAL DESCRIPTION

Electrics box

- All the units are equipped with an electrics box, which contains the terminal strips. This box is located on the outside of the unit, with a fuse to protect the unit and the control. The box cover is easy to open: you need only remove a mounting bolt. For more details on the electrical connections, please consult the appropriate wiring prints.



Carrier controllers range

- The Idrofan is available with the complete range of Carrier controllers. Several types facilitate installation. The number of controllers offers an abundance of solutions and makes selection easy, according to its application.
 - A-B-C-D type electronic thermostats
 - The Carrier electronic thermostats range is available for all Carrier hot water terminal ranges
 - Type A: a two-pipe application equipped with alternating current motors
 - Type B: four or two-pipe applications equipped with electric heating and alternating current motors.
 - Type C: a two-pipe application equipped with EC motors
 - Type D: four or two-pipe applications equipped with electric heating and EC motors.
- The thermostat for FCU with EC motors option manages 3 intermittent and configurable speeds, via a 0-10V signal.
- The thermostats come in an elegant square shape with a coaxial button enabling the room temperature to be set, as well as three buttons for setting the ventilation speed, cooling or heating mode, and START or STOP mode, as the customer wishes.
- Wall-mounted controls can easily and discreetly be integrated into any room environment.
- The operating range of the electronic thermostats goes from 10°C to 30°C, with the option of limiting the temperature in public buildings where low energy consumption is a paramount requirement. This is done via a micro-switch which is inside the control (cooling setpoint between 23°C and 30°C, heating between 10°C and 21°C).

The following characteristics are available as parameters:

- **Auto ventilation:** the fan speed is automatically set by the thermostat; when the ambient temperature drifts away from the setting, maximum speed is selected. When the ambient temperature nears the desired value, the speed decreases until reaching minimum speed or stopping in the deadband.

- **Automatic changeover:** automatic changeover from cooling mode to heating mode, depending on the water temperature, ensures that the ideal ambient temperature is maintained.
- **Remote changeover:** automatic changeover from cooling mode to heating mode, depending on the remote signal emitted by the control system.
- **Draught protection:** this function stops the fan if the water temperature is too low or too high in relation to demand, thereby ensuring that the room's occupants are not disturbed by a warm draught.
- **Air temperature sensor:** this sensor is mounted on the unit. If the thermostat is installed on a wall, a second sensor situated in the thermostat may be used to correctly set the desired ambient temperature.
- **Low water temperature cutout:** this function ensures that the ambient temperature is maintained above the minimum level. If the unit has been shut down and ambient temperature has dropped below 7°C, low water temperature cutout is activated and the unit operates in heating mode until the temperature reaches above 9°C. The unit is then switched off again.
- **Optimised heating management (available with the electrical heater option):** if the water temperature is below 30°C, the system operates in heating demand mode, and the electrical heater is the only available heating source. If the water temperature is above 35°C, the system operates in auxiliary heating mode, powering up the water coil and electrical heater at the same time. The auxiliary heating function is deactivated if the temperature reaches above 45°C (the electrical heater is then de-energized).
- **Unoccupied mode:** this temperature function saves energy when the room is unoccupied, without needing to switch off the unit. When the unoccupied mode button is held down, the current setpoint is modified as follows, without changing the position of the setpoint selection button:
 - Cooling: setpoint increased by 4 K
 - Heating: setpoint decreased by 4 K

The unit reverts to normal operation when the unoccupied mode button is held down again.

- **LED intensity:** for office applications or light commercial applications, 10 seconds after the user interface has last been used, all the necessary LEDs are dimmed. As soon as the user touches the user interface again, the LEDs revert to normal brightness. To prevent disruption to hotel customers, the thermostat can be configured from Night Mode to Dark Mode: in this case, 10 seconds after the user interface has last been used, all the LEDs will switch off. As soon as the user touches the user interface again, the current status LEDs will switch on, and revert to normal brightness.

TECHNICAL DESCRIPTION

- **Air sampling:** if no ventilation demand is made and the air sampling jumper is in the ON position, the command executes the air sampling function: the air moves, to ensure a more reliable ambient temperature reading.
- **Continuous ventilation:** if there is no ventilation demand and the continuous ventilation jumper is in the ON position, the control selects low, medium or high fan speed, depending on the ventilation speed selection, regardless of the thermal conditions. If the fan is controlled by automatic ventilator mode and the control is not in demand phase, the fan is activated permanently in low speed mode.
- **External contact:** a high voltage input signal for external contact is displayed. If the external contact is activated, the device will respond according to its local configuration:
 - Presence detection (empty room with a hotel door card), energy saving mode is activated, the internal temperature is increased by 4°C in cooling mode and is decreased by 4°C in heating mode
 - Window contact: during STOP mode (window open), all the outputs are disconnected (fan, valves, etc.), and only the frost protection function is active if it has been started up via its micro-switch.
- **Master/slave control:**
 - Thermostat type A_AC and B_AC: the accessories grouped control panel (42N9006) provides a ventilation speed relay only (the water valves must be wired or related separately) for up to 300 units with air temperature-based control (no water valves), or for 10 two-pipe units with water control, or 5 four-pipe units with water control
 - Thermostat type C_EC and D_EC: the EC motor thermostat version can control up to 10 LEC units thanks to parallel wiring of the analogue output signal with two 0-10 cables (the water valves and electric heaters must be wired or relayed separately).

NTC

- A PID controller can communicate and combine energy savings algorithms with solutions providing complete control functions, compatible with the Aquasmart Evolution system. The NTC control is compatible with the low energy consumption motor option, and combines energy savings with optimised comfort.

Valve types available

- Valve bodies: both types of valve, two-way or four-way (three-way with integral by-pass) are factory-fitted and subjected to factory tests. These chilled water valves are completely insulated in a moulded insulant jacket, which prevents condensation from forming on the valve body. This new jacket reduces the complexity of the range and prevents the risk of water leaks. These valves can be factory-fitted on the unit side.

WTC controller

- Open Communication protocol BACnet or LON
- Communication PID controller
- Large range of user interfaces, wall mounted or remote
- Manage the motorized louvers of the grill in manual or automatic
- Manages the EC motor for optimised comfort
- Manages a CO2 sensor to improve air quality
- Optional lighting and/or blinds management modules, controlled from the same user interface
- Large range of sensors (light, presence, etc.)

Valve types available

- Valve bodies: both types of valve, two-way or four-way (three-way with integral by-pass) are factory-fitted and subjected to factory tests. These chilled water valves are completely insulated in a moulded insulant jacket, which prevents condensation from forming on the valve body. This new jacket reduces the complexity of the range and prevents the risk of water leaks. These valves can be factory-fitted on the unit side.



Insulating moulded jacket for the valve

- Valve actuators: Carrier has a vast range of valve actuators with two or four-way valve bodies, which offer the most suitable solution whatever the control type and the customer's requirements, from on/off to proportional type, and a 230 V or 24 V power supply:
 - 230 V on/off actuator
 - 24 V on/off actuator
 - 230 V 3-point floating actuator
 - 24 V 3-point floating actuator
- When combining low energy consumption motors with an NTC control, it is recommended to use 230 V three-point floating actuators, to increase energy savings and improve comfort.

TECHNICAL DESCRIPTION

Auxiliary condensate pan

- An auxiliary condensate pan is available as an accessory if the water valves, shut-off valves or balancing valves are customer supplied. Conversely, the auxiliary condensate pan is not required if you have water valves factory-fitted by Carrier, since they come supplied with an insulated valve body (insulating moulded jacket), which prevents condensation.*



Auxiliary drain pan for units 42GW_S/E 200/209, 300/309, 400/409



Auxiliary drain pan for units 42GW_S/E 500/509, 600/609, 701/709

Electrical heater option

- There is an electrical heater option only on models with a two-pipe coil. There is an electrical heater available for each Idrofan cassette size, factory-fitted to ensure reliable and completely safe operation.

Fresh air inlet option

- All the units have couplings provided for fresh air inlet ducts, which can considerably improve the indoor air quality, while the fresh air intake volume is regulated by the CO₂ sensor by means of the NTC control.
- The fresh air flow must represent less than 10% of the total air flow, to prevent operating problems and excessive noise. For a higher air flow, there is a primary air kit which can be fitted on the precut hole provided for an air duct in the adjacent room, and a noise barrier, such that the fresh air enters the room via a diffuser.

Conditioned air supply via a duct in an adjacent room

- This option supplies conditioned air in a room situated near the Idrofan cassette, via an air duct (customer supplied). If this option is used, the supply air opening corresponding to the duct must be closed, using the air discharge outlet closing kit supplied. This kit cannot be used in units fitted with an electrical heater. An air inlet grille must be fitted (if possible near the floor) between the air conditioned room (where the unit is) and the adjacent room; or a cut-out can be made at the bottom of the door.
- The duct lengths can be calculated in accordance with the "air distribution in an adjacent room" diagram, which figures in the installation, operation and maintenance manual, also taking into account the pressure drop via the air diffusers and the fresh air filters.

Ease of maintenance

- All of the main components (motors, fans and discharge pump) are accessible from the unit base; you need only remove the grille. These components can also be removed without having to touch the other components or removing the surrounding ceiling tiles.

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH AC MOTORS

42GW	200C			300C			400C			500C			600C			701C			
Coil type	2-pipe			2-pipe			2-pipe			2-pipe			2-pipe			2-pipe			
Fan speed	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Air flow	l/s	183	125	100	204	140	89	249	173	134	272	199	147	321	229	139	402	299	166
	m³/h	660	450	360	735	505	320	900	625	485	980	720	530	1160	825	500	1450	1080	600
Cooling																			
Total cooling capacity	kW	2.33	1.74	1.53	3.96	2.86	1.86	4.64	3.46	2.77	6.03	4.41	3.33	7.13	5.43	3.68	8.54	6.43	4.02
Sensible cooling capacity	kW	1.95	1.46	1.28	3.01	2.16	1.41	3.57	2.64	2.11	4.68	3.44	2.58	5.37	4.03	2.66	6.4	4.81	2.95
Water flow	l/s	0.11	0.09	0.08	0.19	0.14	0.09	0.23	0.17	0.13	0.29	0.21	0.16	0.34	0.26	0.18	0.41	0.31	0.19
	l/h	410	310	270	690	500	320	810	600	480	1050	760	580	1240	940	640	1490	1120	700
Water pressure drop, cooling	kPa	11.1	6.8	5.6	15.2	8.6	4.7	19.8	11.6	7.9	23.8	13.4	8.3	12.4	7.8	4.6	21.9	13.1	6
Heating mode																			
Heating capacity	kW	2.74	2.17	1.92	3.68	3.15	1.94	5.28	3.92	3.16	6.84	5.08	3.8	8.51	6.26	3.85	10.28	7.95	4.38
Water flow	l/s	0.13	0.11	0.09	0.18	0.15	0.09	0.26	0.19	0.15	0.33	0.24	0.18	0.41	0.30	0.19	0.50	0.38	0.21
	l/h	480	380	330	640	550	340	920	680	550	1190	880	660	1480	1090	670	1790	1380	760
Water pressure drop, heating	kPa	11.8	8.4	7.1	12.8	10.1	5.0	18.6	11.7	8.4	23.1	14.4	9.2	15.3	9.6	4.8	18	11	5
Water volume	l	0.55			1.1			1.1			1.6			2.4			2.4		
Sound levels																			
Sound power level	dB(A)	49	41	37	53	47	35	57	48	42	49	40	35	54	46	38	59	52	40
Sound pressure level	dB(A)	40	32	28	44	38	26	48	39	33	40	31	26	45	37	29	50	43	31
NR value**		36	28	25	40	31	20	43	34	28	35	26	21	40	32	22	45	38	25
Power input	W	58	35	25	58	34	17	99	58	38	66	41	28	88	61	34	125	92	44
Current	A	0.27	0.17	0.12	0.24	0.14	0.07	0.41	0.24	0.16	0.30	0.17	0.12	0.46	0.27	0.14	0.63	0.41	0.19
EUROVENT FCEER energy class (cooling mode)		D			C			D			C			C			D		
EUROVENT FCCOP energy class (heating mode)		E			D			D			C			C			D		
Electrical heater																			
High capacity @240V	W	1500			2500			2500			3000			3000			3000		
Current (high capacity) @240V	A	6.3			10.4			10.4			12.5			12.5			12.5		
Coil connection diameter	inches	3/4 " gas			3/4" gas			3/4 " gas			1" gas			1" gas			1" gas		
Condensate diameter	mm	16			16			16			16			16			12.5		
Weight, unit	kg	14.8			16.5			16.5			37			39.6			39.6		
Weight, grille	kg	3			3			3			5			5			5		

Based on Eurovent conditions:

Cooling mode (2 and 4-pipe coils): entering air temperature 27°C dry bulb/19°C wet bulb, 7°C/12°C entering and leaving water temperature

Heating mode (2-pipe coil): air temperature 20°C, 45°C/40°C entering and leaving water temperature

Heating mode (4-pipe coil): air temperature 20°C, 65°C/55°C entering and leaving water temperature

* Speeds: 1 = high, 2 = medium, 3 = low

** Sound pressure level and NR values with hypothetical noise attenuation of the room of -9 dB(A).

Note: the version with an electrical heater is available on all 2-pipe units



Eurovent certified values

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH AC MOTORS

42GW		200D			300D			400D			600D			701D		
Coil type		4-pipe			4-pipe			4-pipe			4-pipe			4-pipe		
Fan speed	l/s	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m³/h	183	125	100	204	140	89	249	173	134	321	229	139	402	299	166
		660	450	360	735	505	320	900	625	485	1160	825	500	1450	1080	600
Cooling																
Total cooling capacity	kW	1.97	1.49	1.34	3.34	2.67	1.98	3.95	3.18	2.53	6.58	4.93	2.96	7.49	5.97	3.14
Sensible cooling capacity	kW	1.84	1.37	1.18	2.62	2.05	1.49	3.25	2.55	2.04	5.08	3.78	2.31	5.89	4.64	2.53
Water flow	l/s	0.10	0.07	0.06	0.17	0.13	0.10	0.20	0.16	0.12	0.32	0.24	0.14	0.39	0.32	0.18
	l/h	350	260	230	580	460	340	700	560	440	1140	860	510	1310	1040	550
Water pressure drop, cooling	kPa	14.9	9.1	7.6	12.6	8.6	5.6	16.5	11.2	7.6	25.2	15.3	6.5	31.5	21.8	7.1
Water volume, cooling	l	0.4			1.1			1.1			2.4			2.4		
Heating mode																
Heating capacity	kW	1.67	1.27	1.09	5.46	4.4	3.1	5.8	5	4.32	10.04	7.79	5.28	12.77	10.07	6.43
Water flow rate	l/s	0.04	0.03	0.03	0.15	0.12	0.09	0.16	0.14	0.12	0.27	0.21	0.14	0.35	0.27	0.17
	l/h	150	110	100	548	439	310	585	499	430	989	765	516	1247	989	628
Water pressure drop, heating	kPa	29.5	18.8	14.8	21.1	14.8	8.5	24.2	18.9	15	12.3	8.4	5.1	17.9	12.3	6.5
Water volume	l	0.1			0.6			0.6			1.2			1.2		
Sound levels																
Sound power level	dB(A)	49	40	36	53	44	35	57	48	42	54	46	38	59	52	40
Sound pressure level	dB(A)	40	31	27	44	35	26	48	39	33	45	37	29	50	43	31
NR value**		35	27	23	39	30	20	43	34	28	40	32	22	45	38	25
Power input	W	58	35	25	58	34	17	99	58	38	88	61	34	125	92	44
Current	A	0.27	0.17	0.12	0.24	0.14	0.07	0.41	0.24	0.16	0.46	0.27	0.14	0.63	0.41	0.19
EUROVENT FCEER energy class (cooling mode)		E			C			D			C			D		
EUROVENT FCCOP energy class (heating mode)		E			C			D			C			C		
Connection diameter																
Cooling coil	inches	3/4 " gas			3/4 " gas			3/4 " gas			1" gas			1" gas		
Heating coil	inches	1/2 " gas			1/2 " gas			1/2 " gas			3/4 " gas			3/4 " gas		
Condensate diameter	mm	16			16			16			16			16		
Unit weight	kg	14.8			16.5			16.5			39.6			39.6		
Grille weight	kg	3			3			3			5			5		

Based on Eurovent conditions:

Cooling mode (2 and 4-pipe coils): entering air temperature 27°C dry bulb/19°C wet bulb, 7°C/12°C entering and leaving water temperature

Heating mode (2-pipe coil): air temperature 20°C, 45°C/40°C entering and leaving water temperature

Heating mode (4-pipe coil): air temperature 20°C, 65°C/55°C entering and leaving water temperature

* Speeds: 1 = high, 2 = medium, 3 = low

** Sound pressure level and NR values with hypothetical noise attenuation of the room of -9 dB(A).

Note: the version with an electrical heater is available on all 2-pipe units



Eurovent certified values

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH LEC MOTORS

42GW	209C			309C			409C			509C			609C			709C			
Coil type	2-pipe			2-pipe			2-pipe			2-pipe			2-pipe			2-pipe			
Fan speed	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Voltage (DC)	V	10	6	2	10	6	2	10	6	2	10	6	2	10	6	2	10	6	2
Air flow	l/s	183	125	100	204	140	89	249	173	134	272	199	147	321	229	139	443	299	166
	m³/h	660	450	360	735	505	320	900	625	485	980	720	530	1160	825	500	1600	1080	600
Cooling																			
Total cooling capacity	kW	2.36	1.77	1.54	3.98	2.88	1.87	4.68	3.5	2.79	6.08	4.44	3.35	7.19	5.47	3.71	9.55	6.49	4.05
Sensible cooling capacity	kW	1.98	1.49	1.29	3.04	2.18	1.42	3.61	2.67	2.13	4.72	3.47	2.6	5.43	4.07	2.68	7.16	4.86	2.98
Water flow rate	l/s	0.11	0.09	0.08	0.19	0.14	0.09	0.23	0.17	0.13	0.29	0.21	0.16	0.34	0.26	0.18	0.46	0.31	0.19
	l/h	410	310	270	690	500	320	810	600	480	1050	760	580	1240	940	640	1660	1120	700
Water side pressure drop, cooling	kPa	11.1	6.8	5.6	15.2	8.6	4.7	19.8	11.6	7.9	23.8	13.4	8.3	12.4	7.8	4.6	26.9	13.1	6
Heating mode																			
Heating capacity	kW	2.74	2.17	1.92	3.68	3.15	1.94	5.28	3.92	3.16	6.84	5.08	3.8	8.51	6.26	3.85	11.03	7.95	4.38
Water flow	l/s	0.13	0.11	0.09	0.18	0.15	0.09	0.26	0.19	0.13	0.33	0.24	0.18	0.41	0.30	0.19	0.53	0.38	0.21
	l/h	480	380	330	640	550	340	920	680	480	1190	880	660	1480	1090	670	1920	1380	760
Water pressure drop, heating	kPa	11.8	8.4	7.1	12.8	10.1	5	18.6	11.7	8.5	23.1	14.4	9.2	15.3	9.6	4.8	30.6	18	7.2
Water volume	l	0.55			1.1			1.1			1.6			2.4			2.4		
Sound levels																			
Sound power level	dB(A)	49	40	36	53	44	35	57	48	42	49	40	35	54	46	38	61	52	40
Sound pressure level	dB(A)	40	31	27	44	35	26	48	39	33	40	31	26	45	37	29	52	43	31
NR value**		35	27	23	40	31	20	43	35	29	35	26	20	39	32	22	47	38	25
Power input	W	29	13	9	33	14	7	57	23	13	25	12	7	45	23	9	115	40	11
Current	A	0.19	0.1	0.08	0.27	0.13	0.08	0.46	0.2	0.12	0.23	0.12	0.08	0.4	0.22	0.1	0.89	0.35	0.12
EUROVENT FCEER energy class (cooling mode)		B			A			B			A			A			A		
EUROVENT FCCOP energy class (heating mode)		B			B			B			A			A			B		
Electrical heater																			
High capacity @240V	W	1500			2500			2500			3000			3000			3000		
Current (high capacity) @240V	A	6.3			10.4			10.4			12.5			12.5			12.5		
Coil connection diameter	inches	3/4 " gas			3/4" gas			3/4 " gas			1" gas			1" gas			1" gas		
Condensate diameter	mm	16			16			16			16			16			12.5		
Weight, unit	kg	14.8			16.5			16.5			37			39.6			39.6		
Weight, grille	kq	3			3			3			5			5			5		

Based on Eurovent conditions:

Cooling mode (2 and 4-pipe coils): entering air temperature 27°C dry bulb/19°C wet bulb, 7/12°C entering and leaving water temperature

Heating mode (2-pipe coil): air temperature 20°C, 45°C/40°C entering and leaving water temperature

Heating mode (4-pipe coil): air temperature 20°C, 65°C/55°C entering and leaving water temperature

Sound pressure level and NR values with hypothetical noise attenuation of the room of -9 dB(A).

Note: the version with an electrical heater is available on all 2-pipe units



Eurovent certified values

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH LEC MOTORS

42GW		209D			309D			409D			609D			709D		
Coil type		4-pipe			4-pipe			4-pipe			4-pipe			4-pipe		
Fan speed																
Voltage (DC)	V	10	6	2	10	6	2	10	6	2	10	6	2	10	6	2
Air flow	l/s	183	125	100	204	140	89	249	173	134	321	229	139	443	299	166
	m³/h	660	450	360	735	505	320	900	625	485	1160	825	500	1600	1080	600
Cooling																
Total cooling capacity	kW	1.97	1.49	1.34	3.34	2.67	1.98	3.95	3.18	2.53	6.58	4.93	2.96	7.49	5.97	3.14
Sensible cooling capacity	kW	1.84	1.37	1.18	2.62	2.05	1.49	3.25	2.55	2.04	5.08	3.78	2.31	5.89	4.64	2.53
Water flow	l/s	0.10	0.07	0.06	0.17	0.13	0.10	0.20	0.16	0.12	0.32	0.24	0.14	0.36	0.29	0.15
	l/h	350	260	230	580	460	340	700	560	440	1140	860	510	1310	1040	550
Water pressure drop, cooling	kPa	14.9	9.1	7.6	12.6	8.6	5.6	16.5	11.2	7.6	25.2	15.3	6.5	31.5	21.8	7.1
Water volume, cooling	l	0.4			1.1			1.1			2.4			2.4		
Heating mode																
Heating capacity	kW	1.67	1.27	1.09	5.46	4.4	3.1	5.8	5	4.32	10.04	7.79	5.28	13.99	10.07	6.43
Water flow	l/s	0.04	0.03	0.03	0.13	0.11	0.08	0.14	0.12	0.11	0.24	0.19	0.13	0.31	0.24	0.16
	l/h	150	110	100	480	390	270	510	440	380	880	680	460	1120	880	560
Water pressure drop, heating	kPa	29.5	18.8	14.8	21.1	14.8	8.5	24.2	18.9	15	12.3	8.4	5.1	20.7	12.3	6.5
Water volume	l	0.1			0.6			0.6			1.2			1.2		
Sound levels																
Sound power level	dB(A)	49	40	36	53	44	35	57	48	42	54	46	38	61	52	40
Sound pressure level	dB(A)	40	31	27	44	35	26	48	39	33	45	37	29	52	43	31
NR value**		35	27	23	40	31	20	43	35	29	39	32	22	47	38	25
Power input	W	29	13	9	33	14	7	57	23	13	45	23	9	115	40	11
Current	A	0.19	0.1	0.08	0.27	0.13	0.08	0.46	0.2	0.12	0.4	0.22	0.1	0.89	0.35	0.12
EUROVENT FCEER energy class (cooling mode)		B			A			B			A			B		
EUROVENT FCCOP energy class (heating mode)		C			A			B			A			A		
Connection diameter																
Cooling coil	inch	3/4 " gas			3/4 " gas			3/4 " gas			1" gas			1" gas		
Heating coil	inch	1/2 " gas			1/2 " gas			1/2 " gas			3/4 " gas			3/4 " gas		
Condensate diameter	mm	16			16			16			16			12.5		
Weight, unit	kg	14.8			14.8			14.8			39.6			39.6		
Heaters weight	kg	3			3			3			5			5		

Based on Eurovent conditions:

Cooling mode (2 and 4-pipe coils): entering air temperature 27°C dry bulb/19°C wet bulb, 7/12°C entering and leaving water temperature

Heating mode (2-pipe coil): air temperature 20°C, 45°C/40°C entering and leaving water temperature

Heating mode (4-pipe coil): air temperature 20°C, 65°C/55°C entering and leaving water temperature

Sound pressure level and NR values with hypothetical noise attenuation of the room of -9 dB(A).

Note: the version with an electrical heater is available on all 2-pipe units

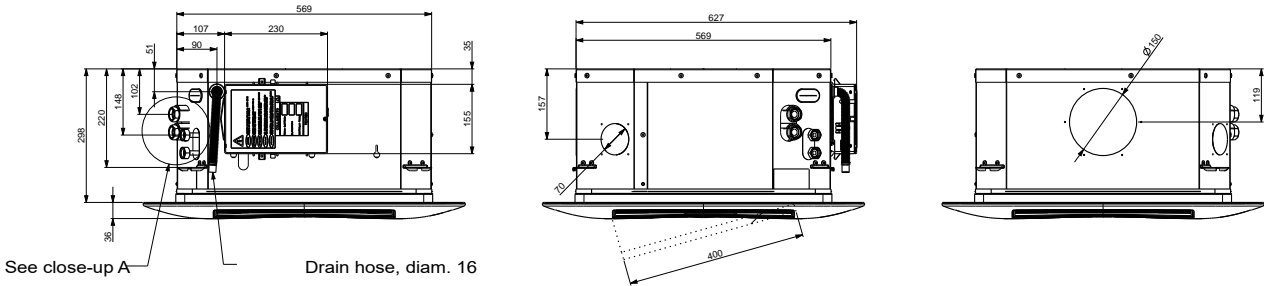


Eurovent certified values

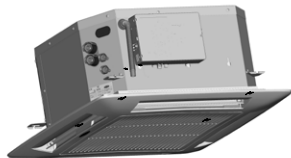
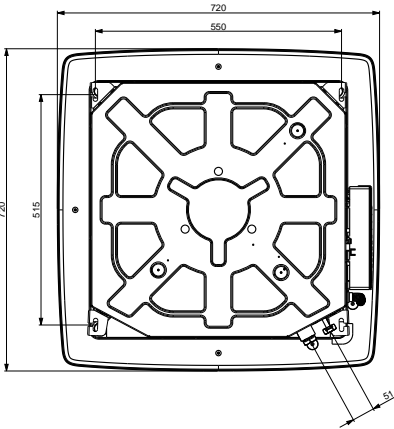
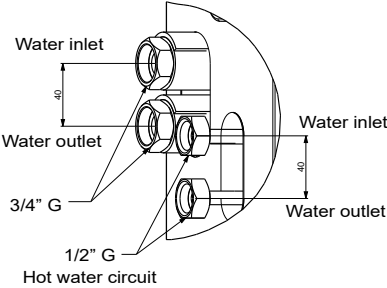
DIMENSIONS, MM

42GW 200/209 - 300/309 - 400/409 (compact chassis)

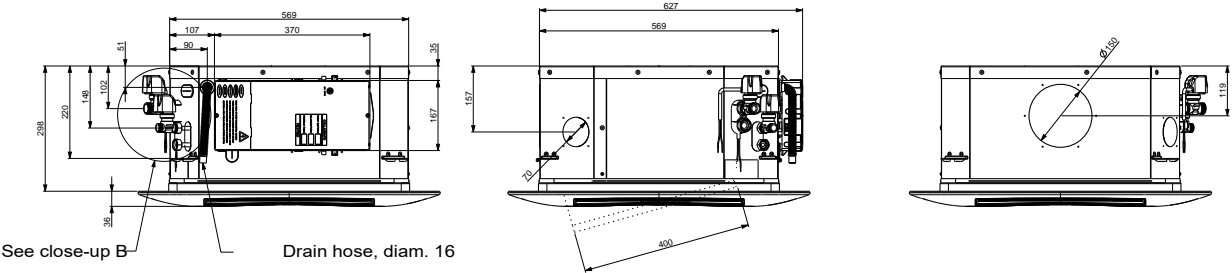
Unit without valve



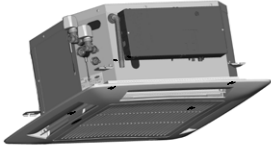
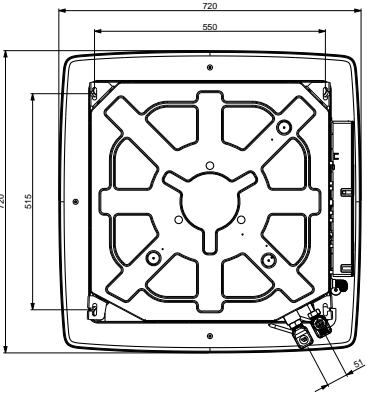
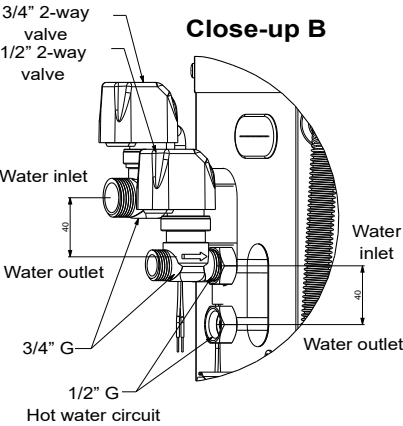
Close-up A



Unit with 2-way valve



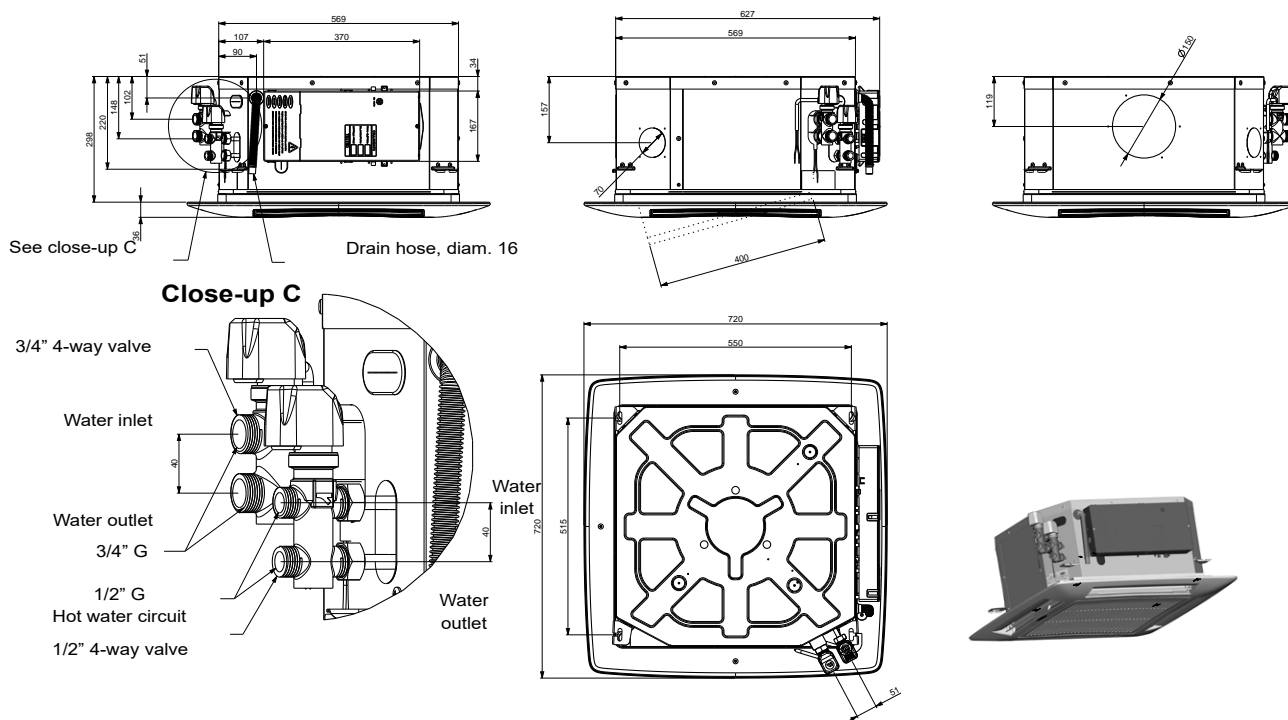
Close-up B



DIMENSIONS, MM

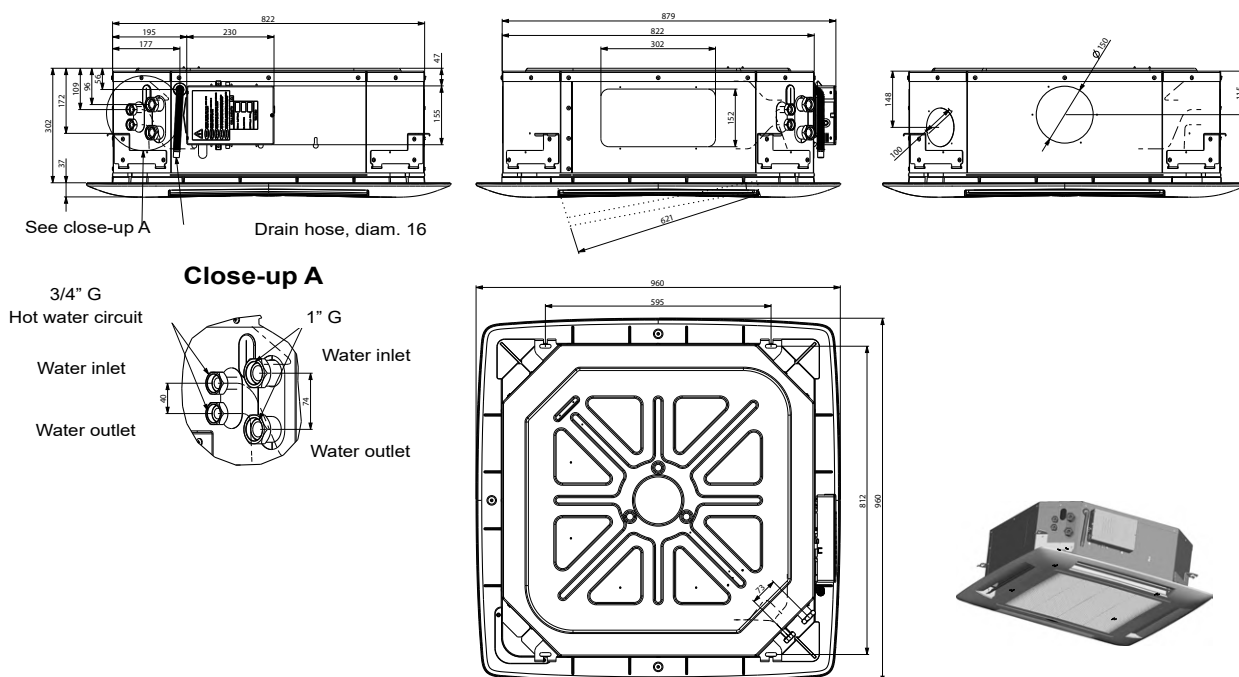
42GW 200/209 - 300/309 - 400/409 (compact chassis)

Unit with 4-way valves



42GW 500/509 - 600/609 - 701/709 (big chassis)

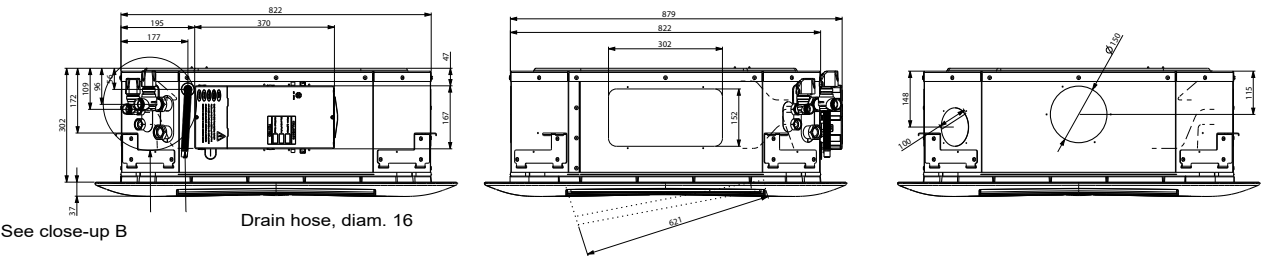
Unit without valve



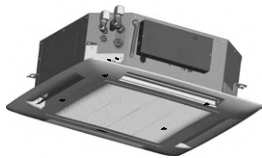
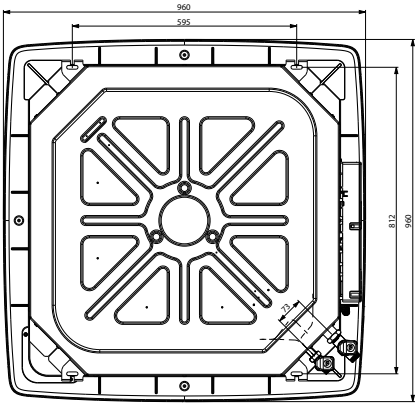
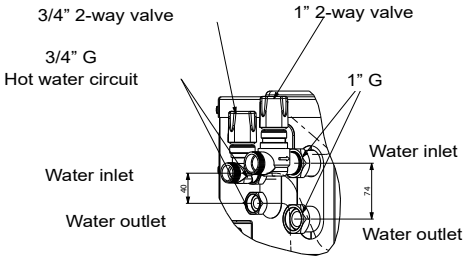
DIMENSIONS, MM

42GW 500/509 - 600/609 - 701/709 (big chassis)

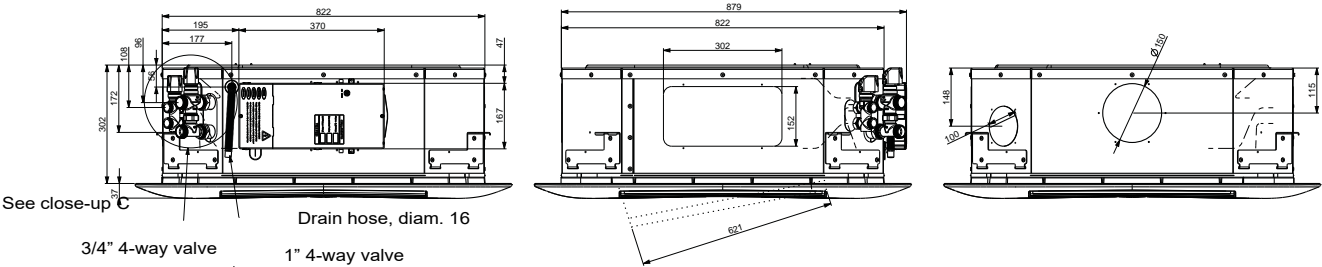
Unit with 2-way valve



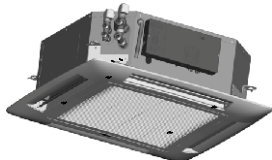
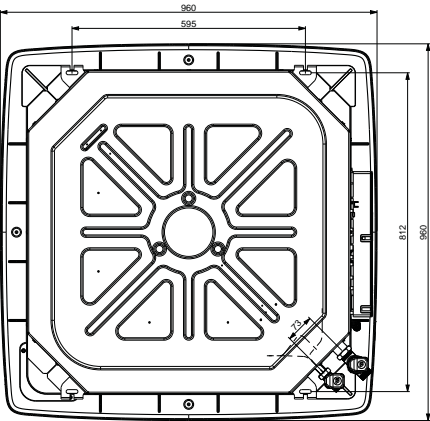
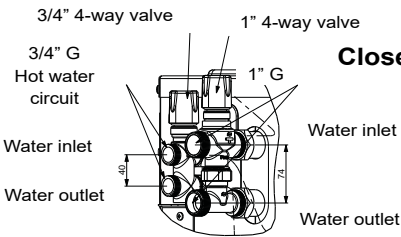
Close-up B



Unit with 4-way valve



Close-up C



COIL WATER CAPACITY

42GW		200/209	300/309	400/409	500/509	600/609	701/709
Coil volume	l	0,55	1,1	1,1	1,6	2,4	2,4

AIR STREAM, IN METRES

42GW	All louvres open			One louvre closed			Two louvres closed		
	High speed	Medium speed	Low speed	High speed	Medium speed	Low speed	High speed	Medium speed	Low speed
200/209	3,8	3,2	2,7	4,3	3,7	3,0	4,8	4,1	3,4
300/309	4,0	3,4	2,8	4,5	3,8	3,2	5,0	4,3	3,5
400/409	4,8	4,1	3,4	5,3	4,5	3,7	5,8	4,9	4,1
500/509	3,0	2,6	2,1	3,5	3,0	2,5	4,0	3,4	2,8
600/609	3,4	2,9	2,4	3,9	3,3	2,7	4,4	3,7	3,1
701/709	4,3	3,7	3,0	4,8	4,1	3,4	5,3	4,5	3,7

Notes:

1. The louvres were set so as to use the Coanda effect to obtain an air flow model parallel to the ceiling, and adhering to it as much as possible.
2. The air discharge is defined as the distance between the point where the air flow emerges from the unit parallel to the ceiling, and the point where its speed drops to 0.2 m/s.
3. These values are supplied as a guide; they may vary according to the ceiling type, the room dimensions and even its furniture.

OPERATING LIMITS

Water circuit	Maximum water side pressure: 1400 kPa (142 m WG)	Minimum entering water temperature: 5°C Maximum entering water temperature: 80°C
Indoor temperature		Minimum temperature: 5°C Maximum temperature: 32°C in heating mode with electric heating device
Power supply	Nominal voltage Operating limits	230 V - 1 ph - 50/60 Hz Min. 207 V - max. 253 V - units without electric heating device Min. 216 V - max. 244 V - units with electric heating device

VALVE KIT

Valve kit	42GW 9029	42GW 9031	42GW 9030	42GW 9032	42GW 9033	42GW 9035	42GW 9034	42GW 9036
Unit option (10th letter)	H - 4-way	H - 4-way	H - 4-way	H - 4-way	G - 2-way	G - 2-way	G - 2-way	G - 2-way
Description	3/4" cooling	1" cooling	3/4" cooling + 1/2" heating	1" cooling + 3/4" heating	3/4" cooling	1" cooling	3/4" cooling + 1/2" heating	1" cooling + 3/4" heating
Valve centre-to-centre, mm	40	73	40/40	73/40	40	73	40/40	73/40
Valve gasket coupling type	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat
2-pipe								
200C, 300C, 400C	x				x			
209C, 309C, 409C	x				x			
500C, 600C, 701C		x				x		
509C, 609C, 709C		x				x		
4-pipe								
200D, 300D, 400D			x				x	
209D, 309D, 409D			x				x	
600D, 701D				x				x
609D, 709D				x				x

COANDA EFFECT CASSETTE



Optimised Coanda Effect

Thermal comfort

Indoor air quality

Responsiveness of the system
and individual adjustment

Low energy consumption

Acoustic comfort

Perfect integration : suitable
for 600 x 600 mm false ceiling
grid as standard

Ease of maintenance

42KY

Cooling capacity: 1 kW to 6 kW
Heating capacity: 2 kW to 10 kW

Energy performance, comfort and indoor air quality: Carrier's 42KY cassette is the all-in-one solution to meet heating and cooling requirements for commercial buildings and provide optimum comfort for users.

This low consumption (LEC) variable speed active comfort unit makes it possible to adapt the indoor temperature automatically and independently to the preferences of occupants with very quick response times.

Optimisation of the Coanda Effect for air diffusion, to meet the requirements of the standard NF EN ISO 7730, ensures perfect control of thermal phenomena that can cause discomfort. Carrier's 42KY cassette makes it possible to eliminate the draughts that are felt with sweeping diffusion systems or those with direct airflow onto the occupant.

Eco-designed product that is 90% recyclable, the 42KY cassette has been developed to limit its impact on the environment throughout its life cycle.



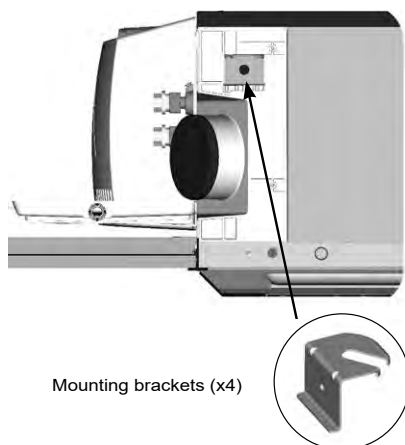
CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

OPERATION AND ADVANTAGES

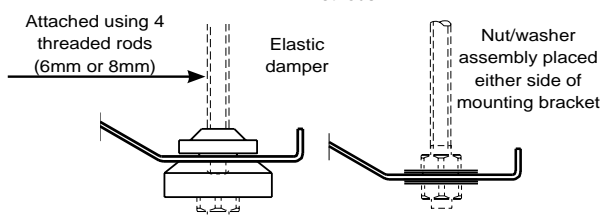
Use

The air treatment unit is fitted within the suspended ceiling, at the edge of the room, with the outlet facing the windows. It has all the economical advantages that come from installing and operating a central heated and chilled water production unit. The location facilitates hydraulic connection via the suspended ceiling of the adjoining corridor, and gravity draining of condensate (no pump).

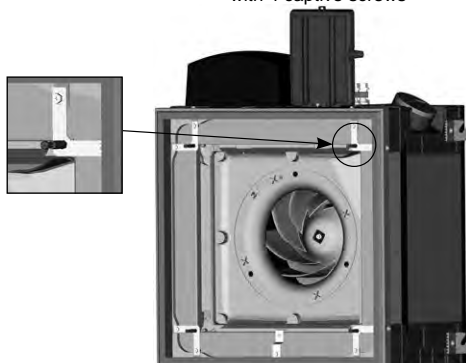
The 42KY cassette must be suspended from the ceiling with four 6 mm or 8 mm threaded rods (not supplied), that are fixed to the four mounting brackets of the device with elastic anti-vibration mounts or a nut/washer assembly fitted either side of the mounting bracket.



Mounting principle
2 methods



Diffuser mounting system
with 4 captive screws



Operating principle

The centrifugal turbine draws air through a perforated metal intake grille. The air is filtered, then heated or cooled through a temperature exchange coil fed with either hot or chilled water. The air is then pulsed horizontally at 180° or 360°, by means of the Coanda Effect in the room to be treated.

The Coanda effect

Coanda effect diffuser:

The single slot peripheral outlet with its narrow opening and specific internal profile will increase the initial speed of the air as it leaves the diffuser. The high speed of the moving flow of air causes an area of low pressure which keeps it close to the ceiling, (there is no direct blast on occupants) and the ambient air is drawn in by induction to be reinjected in the air stream. The air mix rate, the range and the coverage of the air flow are improved, which reduces thermal phenomena that cause discomfort in the occupied area (residual air flow rate, asymmetric temperatures, radiation caused by walls, etc.).

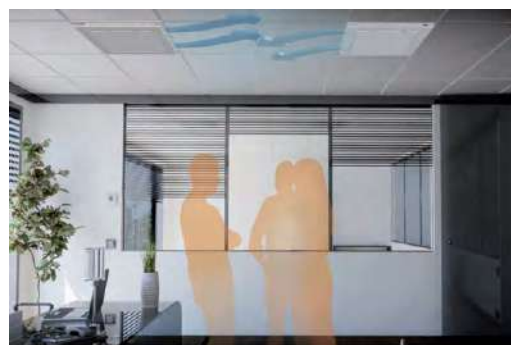
"Anti cold shower" system

The one-way 180° diffuser is fitted with an "anti cold shower" system that maximises comfort by preventing cold air from falling between two cassettes.

The system incorporates two deflectors in the insulation which offsets the air stream slightly in the lateral axis. When the units are placed side by side in the same room, the air flows do not oppose one another and cross over in parallel, which avoids any cold air draughts.

This patented system removes the discomfort caused by draughts without having to reduce the outlets and with no increased noise levels, while maintaining the air flow necessary for the thermal requirements.

with anti "cold shower" system

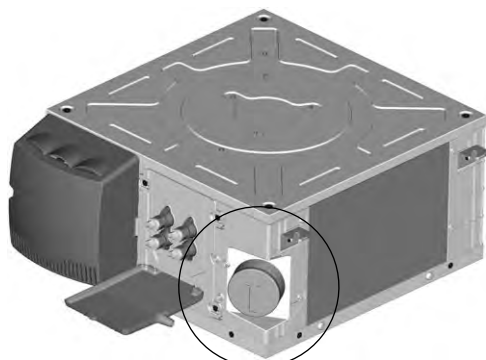


without anti "cold shower" system

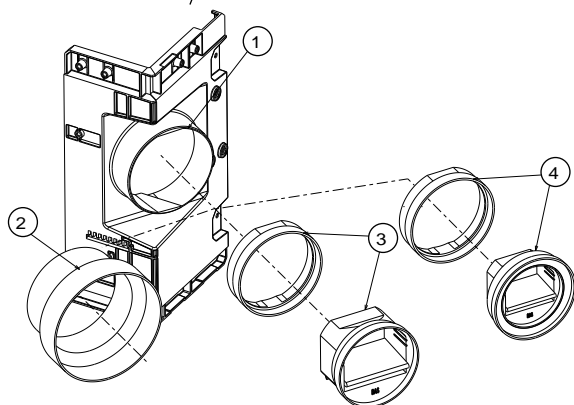


OPERATION AND ADVANTAGES

Fresh air inlet spigot



Ø 100 mm spigot, max. air flow 90 m³/h recommended. Network balancing system not supplied by Carrier.



- ① Fresh air inlet on device
- ② Ø100 / Ø125 mm adapter
- ③ 60/75/90 m³/h air flow controller kit
- ④ 15/30/45 m³/h air flow controller kit

Innovative design

- Next generation chassis that combines high density EPS for its thermal and phonic properties, ABS PC and a ribbed galvanised sheet steel base to stiffen the assembly.
- Chassis with unique dimensions for all sizes, adapted to the suspended ceiling grid size 600 x 600 mm.
- Hydraulic, air and electrical connections on the same side to facilitate installation and access for maintenance operations.
- Fresh air inlet with 100 mm sleeve integrated to the chassis with removable plug.

Range

The 42KY one-way cassette range includes 3 models that cover a flow rate from 250 to 770 m³/h which meet the most stringent of sound level requirements.

The 42KY is available as:

- 2-tube system, with heating or cooling mode.
- 2-tube + 2-wire system, with heating + cooling/cooling + electric mode.
- 4-tube system, with heating and cooling mode.

Advantages

- Individual adjustment of the indoor temperature.
- Responsive system.
- Large power range.
- Coanda effect diffusion over 180 or 360° for even coverage and perfect control of the thermal phenomena that can cause discomfort.
- Acoustic comfort.
- LEC low consumption motor.
- G3 filter.
- Optimised hydraulic coil.
- Condensate drain by gravity avoiding the need for a drain pump.
- Modern and elegant design for perfect integration.
- Eco-designed product that is 90% recyclable. The 42KY cassette has been developed to limit its impact on the environment throughout its life cycle.
- Ease of maintenance.

Greater comfort

Optimised Coanda Effect diffusion for perfect control of thermal phenomena that can cause discomfort and make the room feel draughty.

Compliance with energy requirements

- Optimised temperature exchange coils to meet low energy buildings requirements as well as cost limitation
- LEC low consumption motor.
- Reduction in power of the electric heating coils to match the requirements of new buildings.

Eco-design

Raw materials

30% saving in weight and 21% saving in volume thanks to a compact and well thought out architecture.

Use of easily recyclable materials (EPS and ABS).

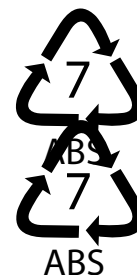
Transport

Raw material suppliers selected from those that are less than 100 km from our manufacturing and packaging factory, enabling a 50% gain in volumes transported (reduction in CO₂ emissions).

Recycling and ease of disassembly

90% recyclable products.

Materials can be completely separated and fixings have been reduced by 40% to allow greater efficiency at recycling plants.

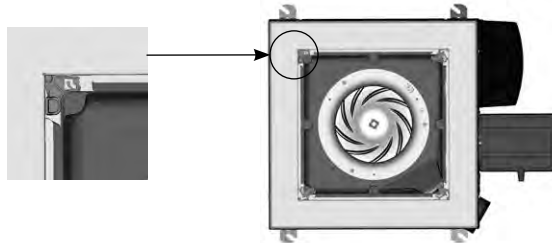


OPERATION AND ADVANTAGES

Ease of installation and operation

The 42KY cassette is designed to be easy to fit and not require many on-site operations:

- Fitting template provided with each unit to mark out the anchoring points on the ceiling.
- Optimised weight and size to facilitate handling during installation.
- Mounting brackets equipped with anti-slip system to hold the threaded rods when attaching and levelling the unit.
- Safety system to suspend the diffuser leaving the technician's hands free to tighten the mounting bolts.



- Technical plate containing all connections (electrical, air and hydraulic) on one face.
- Fresh air inlet sleeve with plug integrated directly to the chassis (no fitting necessary).
- Large electrical box with single latch that can house all the control systems of the Carrier range.
- Access to internal components without the need to open suspended ceilings, easy to open filter hatch grille that is hinged to facilitate maintenance operations.
- Diffusion panels supplied in individual packaging, making it easier to fit the unit with no risk of damaging or soiling visible parts during installation.

CODES

	Range				Size	Motor	Coils	Control	Valves	Elec heater	Valve servomotors	Sensors	Condensate drainage	Grille adaptation	Coil protection	Modif. index
Product ref.	4	2	K	Y	1	9	C	-	G	A	-	A	P	T	-	A
Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					Digit 5											Digit 10
					1											- = None
					2											C= Coil protection
					3											
						Digit 6										Digit 13
						0 = 5-speed motor										- = None
						9 = LEC 0 -10 V motor										T = 675 x 675 ceiling adapter
																S = Staff ceiling adapter
							Digit 7									Digit 13
							C = 2-tube									- = None
							D = 4-tube									P = Condensate drain pump
																H = Lift kit
								Digit 8								Digit 12
								- = No control								- = None
								K = NTC control with fuse protection								A = Return sensor
								K = WTC Lon control with fuse protection								B = changeover sensor (2-tube only digit 9 =H)
								K = WTC BaCNet control with fuse protection								C = return sensor and changeover sensor (2-tube only digit 9 =H)
									Digit 9							
								- = No valves								
								G = 2-way valve								
								H = 4-way valve								
										Digit 10						
								- = No valves								
								A = Elec heater (digit 7 = "C")								
											Digit 11					
											- = None					
											A = 230V ON/OFF servomotor					
											B = 24V ON/OFF servomotor (digit 8 = " " no control)					
											C = 230V 3-POINT servomotor (digit 8 = " " or K, L or M)					
											B = 24V 3-POINT servomotor (digit 8 = " " no control)					
											E = 24V 0-10V modulating servomotor (digit 8 = " " no control)					

TECHNICAL DESCRIPTION

Return/supply interface

Coanda Effect diffusion through a single slot with a narrow opening and specific internal profile.

- 180° diffusion (1-way) or 360° diffusion (4-way)
- In sheet metal painted in RAL 9010 to be fitted over the chassis with exactly the same dimensions as a standard suspended ceiling tile.
- Perforated metal return grille with hinge-mounted filter housing that requires no tools to open it.
- PSE insulation, M1 fire resistance with very low heat transfer coefficient.
- Flat G3 filter on metal frame.

Chassis

- Unique chassis and reduced footprint for all sizes fitted in place of a suspended ceiling tile, either 600 x 600 mm or 675 x 675 mm (optional).
- Ribbed galvanised steel motor support base panel, 10/10th thick.
- High-density PSE casing integrating thermal and acoustic functionalities. 15 mm thick base and 25 to 30 mm thick vertical sides that make up the casing.
- Low emission of TVOCs and no halogenated compounds.
- ABS corner reinforcements fitted with open galvanised steel mounting brackets with one-way system for assembly of threaded rods.
- M1 fire rating.
- Hydraulic, air and electrical connections on the same side of the technical panel at the rear of the unit providing a single access point.
- Galvanised 0.8 mm sheet metal frame finished in RAL 9010 to which the diffusion interface is fixed.

Water coil

- 1 hot water or cold water circuit (2-tube system).
- 1 hot water circuit + 1 cold water circuit (4-tube system).
- One-piece coupling with 40 mm centre to centre distance with integrated sealed flush fitting female revolving unions and gaskets, for easy fitting of the control valves.
- One, two or three row circular coil with low pressure drop.
- Copper tubes, one-piece aluminium fins (1.6 mm pitch).
- Bleeding and draining.
- Rated pressure of 16 bar (at 20°C).
- Test pressure: 24 bar.
- Max hot water inlet temperature:
 - 4-tube application: 80°C,
 - 2-tube application: 70°C,
 - 2-tube/2-wire application: 55°C (min air flow rate: 200m³/h).
- Min cold water inlet temperature: 6°C.

Electric heater (2-tube + electric system)

- 230V/1/50 single-tube electrical elements inserted into the aluminium housing.
- 2 temperature limiters, manually and automatically reset, inserted in the aluminium block with easy access that does not require the suspended ceiling to be opened, via the return/supply air interface.
- Heater element power supply on the connection terminal inside the electrics box.
- Option to deactivate a heater element on site by means of a shunt on the terminal to reduce the electrical power.
- Condensate drain pan
- Single-piece all-climate primary pan in high density watertight EPS, naturally tilted and can be removed from underneath with no need to open the suspended ceiling.
- M1 fire rating class.
- PC ABS auxiliary pan (configured to prevent standing water) to be used to catch condensate from valves from the primary pan.
- Gravity drain: height 70mm.
- Drainage bushing: external Ø 15 to 20 mm.

Fan motor assembly

LEC motor (low energy consumption)

Low energy motor making it possible to reduce electrical consumption by up to 85%.

- Sealed, tropicalised, with protected shaft.
- Progressive control with 0-10V control signal.
- Internal automatic heat protection with serial opening on winding.
- Mounted on rubber mounts.
- 230V/1Ph/50 Hz power supply (60Hz compatible).

Note: The minimum voltage to start up the motor is 2V.

Or

Asynchronous motor

5 factory-wired speeds connected to a terminal strip for customisation.

- Sealed, tropicalised, with protected shaft.
- Permanent capacitor.
- Ball bearings.
- Internal automatic heat protection with serial opening on winding.
- Resilient mounts.
- 230V/1Ph/50 Hz power supply (60Hz compatible).
- High efficiency and power factor.

Fan(s)

- Balanced centrifugal impeller (Ø 282 mm) with airfoil blades.
- Polymer impeller.
- Single-point mounting system with foolproofing device.

TECHNICAL DESCRIPTION

Electrics box

- Large ABS electrics box, with a hinge to keep it open and screw closure.
- Protection rating IP20.
- Terminal block on DIN rail in accordance with EN 50022, depth 7.5 mm.
- Junction block located with tension clamp. Cross section 0.5 to 2.5 mm² - Max current: 24A – Shock resistance: 8 kV. Cable routing for customer connections.

Fresh air inlet sleeve

Connecting sleeve for fresh air inlet, Ø100 mm, integrated to the chassis with removable plug.

Filtration

- Regenerative flexible polyester fibre filter element.
- Positioned at the fan inlet.
- EN779 efficiency Class: G3.
- On rigid metal frame.
- Accessed via the hinged inlet grille.
- Low energy impact.
- M1 fire rating.
- A protected air stream which prevents particles being drawn into suspended ceilings.
- Uniform treatment of the room thanks to optimised diffusion using the Coanda effect.
- Suitable mixing rate.

Device mounting

- Open mounting brackets, factory-fitted, made from galvanised steel, 15/10th thick, with check valve for securing the threaded rods during fitting and levelling.

Packaging

- Strapped cardboard crate for the casing.
- Fitting template and direction of fitting printed on the cardboard.
- Return/supply air interface supplied separately in protective cardboard packaging.
- Delivered on a plastic-wrapped pallet.

Control systems

- A-B-C-D type electronic thermostats.
- NTC / Aquasmart Evolution networked electronic control.
- WTC LON or BACnet networked electronic control.

Options (factory assembled)

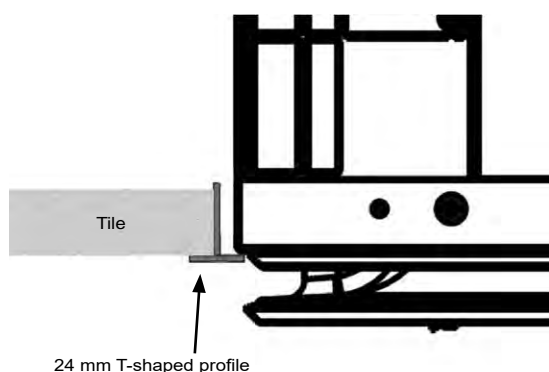
- Condensate drain pump.
- Lift kit.
- Finishing trim frame for 675 x 675 mm suspended ceiling tiles.
- Finishing trim frame for STAFF ceilings.
- Hydraulic coil with protected fins for aggressive / corrosive areas (locations close to the sea or to chemical industries).

Accessories (available separately)

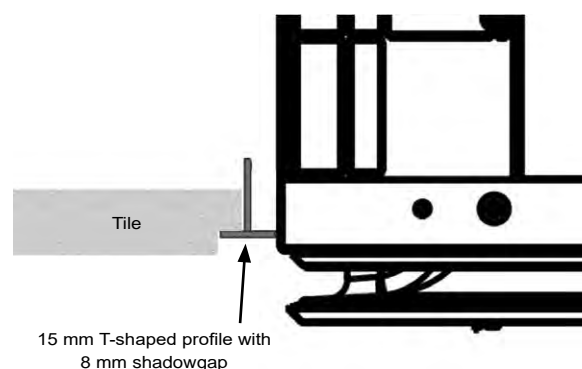
- Vibration damping rubber mounts for mounting brackets.
- Self-regulating conditioned fresh air inlet module (3 flow rates adjustable using a set of shims).
- Ø 100-125 mm sleeve adapter.
- Condensate drain pump kit with high safety device.
- 80 mm riser kit for gravity drainage without condensate drain pump.
- Finish counter frame kit for 675 mm suspended ceiling tile.

INTEGRATION INTO THE SUSPENDED CEILING

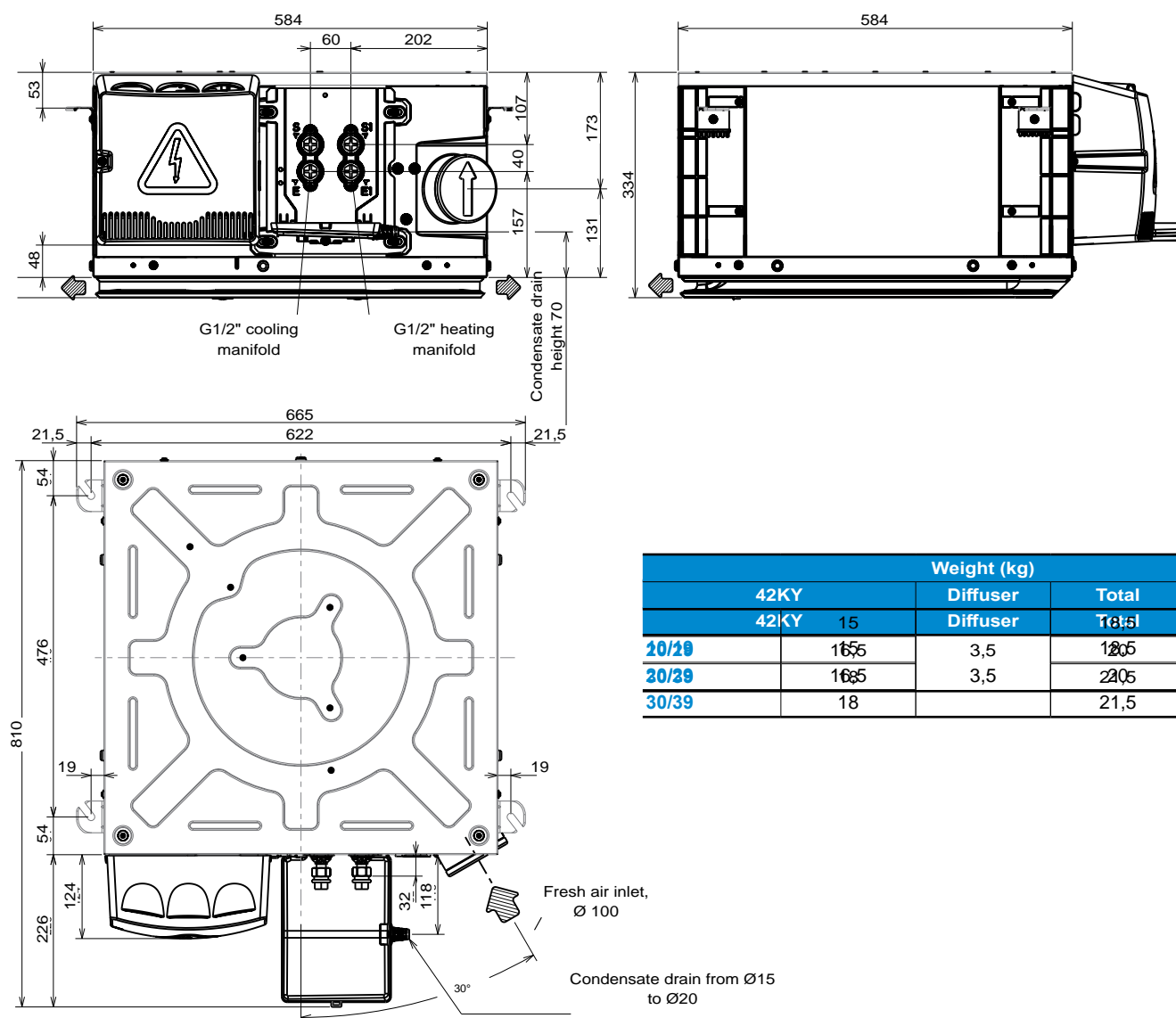
Mounting position with 600 x 600 mm suspended ceiling on T-shaped profile



Mounting position with 600 x 600 mm suspended ceiling on T-shaped profile with 8 mm shadowgap



DIMENSIONS



Weight (kg)			
42KY	Diffuser	Total	
42KY	15	Diffuser	Total
20/29	16,5	3,5	20,0
30/29	16,5	3,5	20,0
30/39	18		21,5

SPECIFICATIONS FOR UNITS UNDER EUROVENT CONDITIONS

2 pipes application

Model	Speed	Voltage	Input Power	Air flow	Heating capacity	Pressure drop heating	Cooling capacity		Pressure drop cooling	Lw	LP	Comfort level (ISO or NR)	Average air temperature rise in K Auxiliary electric heater 230/1/50
		v	W	m3/h	W	kPa	Total W	Sensible W	kPa	dB(A)	dB(A)		
42KY10C-----	HS		45	440	2 000	12,8	1 700	1 550	10,7	49	37	32	
	MS		41	380	1 800	10,7	1 530	1 390	8,9	46	34	29	
	LS		34	235	1 350	6,3	1 190	1 030	5,5	37	25	19	
42KY19C-----	HS	4,9	17	440	2 070	13,0	1 700	1 550	10,5	49	37	32	
	MS	3,4	8	310	1 650	9,0	1 370	1 220	6,9	42	34	29	
	LS	2,5	5	235	1 400	7,0	1 190	1 040	5,3	37	25	19	
42KY20C-----	HS		45	420	2 700	17,2	2 600	2 030	18,7	51	39	34	
	MS		41	360	2 300	13,7	2 280	1 750	14,8	47	35	30	
	LS		34	215	1 550	7,0	1 580	1 150	7,6	35	23	18	
42KY29C-----	HS	4,9	17	420	2 700	17,2	2 590	2 020	18,4	51	39	34	
	MS	4,2	12	360	2 300	13,7	2 280	1 760	14,5	47	35	30	
	LS	2,5	5	215	1 550	7,0	1 580	1 150	7,3	35	23	18	
42KY20C--A-----	HS		45	420	2 390	11,4	2 050	1 800	9,9	51	39	34	900W (2R)
	MS		41	360	2 200	9,4	1 870	1 580	8,4	47	35	30	
	LS		34	215	1 600	5,4	1 420	1 090	5,1	35	23	18	
42KY29C--A-----	HS	4,9	17	420	2 390	11,6	2 040	1 790	9,7	51	39	34	900W (2R)
	MS	4,2	12	360	2 200	9,6	1 870	1 590	8,2	47	35	30	
	LS	2,5	5	215	1 600	5,6	1 420	1 090	4,8	35	23	18	
42KY30C-----	HS		77	660	4 150	23,5	4 340	3 260	29,5	58	46	40	
	MS		56	525	3 350	16,0	3 540	2 620	20,2	51	39	34	
	LS		40	405	2 600	10,3	2 840	2 070	13,3	45	33	27	
42KY39C-----	HS	6,7	38	660	4 150	23,5	4 350	3 270	29,1	58	46	40	
	MS	5,3	21	525	3 350	16,0	3 540	2 630	19,8	51	39	34	
	LS	3	6	290	1 900	6,0	2 210	1 570	8,6	38	26	19	
42KY30C--A-----	HS		77	660	4 050	19	3 833	3 009	9,9	58	46	40	1200W (2R)
	MS		56	525	3 300	13,1	3 169	2 442	8,4	51	39	34	
	LS		40	405	2 720	8,8	2 600	1 955	5,1	45	33	27	
42KY39C--A-----	HS	5,3	21	525	3 320	13,3	2 260	2 890	13,3	51	39	34	1200W (2R)
	MS	4,6	15	460	2 950	10,8	2 610	2 010	10,8	48	36	30	
		3	6	290	2 110	6,1	1 910	1 400	6,3	38	26	19	

4-tube

Model	Speed	Voltage	Input Power	Air flow	Heating capacity	Pressure drop heating	Cooling capacity		Pressure drop cooling	Lw	LP	Comfort level (ISO or NR)
		v	W	m3/h	W	kPa	Total W	Sensible W	kPa	dB(A)	dB(A)	
42KY20D-----	HS		45	420	2 400	17,0	2 050	1 800	9,9	51	39	34
	MS		41	360	2 200	15,0	1 870	1 580	8,4	47	35	30
	LS		34	215	1 700	10,0	1 420	1 090	5,1	35	23	18
42KY29D-----	HS	4,9	17	420	2 400	17,0	2 040	1 790	9,7	51	39	34
	MS	4,2	12	360	2 200	15,0	1 870	1 590	8,2	47	35	30
	LS	2,5	5	215	1 700	10,0	1 420	1 090	4,8	35	23	18
42KY30D-----	HS		77	660	3 000	22,0	3 833	3 009	19,2	58	46	40
	MS		56	525	2 600	17,0	3 169	2 442	13,4	51	39	34
	LS		40	405	2 200	14,0	2 600	1 955	9,3	45	33	27
42KY39D-----	HS	5,3	21	525	2 600	18,0	2 260	2 890	13,2	51	39	34
	MS	4,6	15	460	2 400	15,0	2 610	2 010	10,8	48	36	30
		3	6	290	1 900	12,0	1 910	1 400	5,9	38	26	19

EUROVENT Conditions

- Cooling mode: water temperature: 7/12°C, inlet air temperature: 27°C - 19°C (WB)
- Heating mode (2T): water temperature: 45°/40°C, inlet air temperature: 20°C
- Heating mode (4T): water temperature: 65°/55°C, inlet air temperature: 20°C
- The sound pressure levels (Lp) and ISO NR level are based on hypothetical attenuation of the room of 12 dB(A)

TECHNICAL SPECIFICATIONS

Coil capacity (L)

42KY cassette		10/19	20/29	30/39
2-tube coil		0.4	0.8	1.1
2-tube coil + electric heater		-	0.6	1
4-tube coil	Cooling	-	0.6	1
	Heating	-	0.2	0.2

Diameters of coil couplings

Coil connection type: flush fit female threaded union nuts

Valve connection type: install flush fit male threaded unions

42KY cassette		10/19	20/29	30/39
2-tube coil		G 1/2"	G 1/2"	G 1/2"
2-tube coil + electric heater		-	G 1/2"	G 1/2"
4-tube coil	Cooling	-	G 1/2"	G 1/2"
	Heating	-	G 1/2"	G 1/2"

Motor electrical specifications

42KY	Motor information	AC asynchronous motor			LEC motor		
		10	20	30	19	29	39
Input power (W)	V5	70	70	101	38	38	56
	V4	45	45	77	17	17	38
	V3	41	41	56	12	12	21
	V2	38	38	47	8	8	15
	V1	34	34	40	5	5	11
Input current (A)	V5	0,30	0,30	0,32	0,18	0,18	0,40
	V4	0,21	0,21	0,29	0,09	0,09	0,28
	V3	0,19	0,19	0,24	0,07	0,07	0,17
	V2	0,18	0,18	0,22	0,04	0,04	0,13
	V1	0,17	0,17	0,21	0,02	0,02	0,10

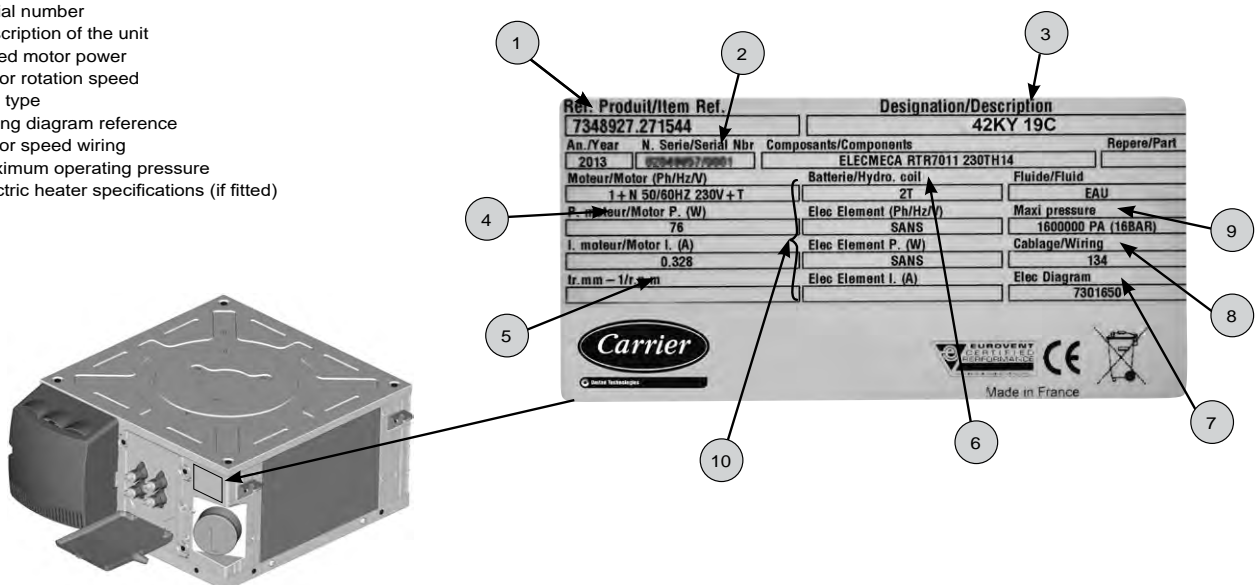
NB: Specifications given for a 230 V +/-10% - 50 Hz power supply.

- For operation at 60Hz, the power input and rotation speed values are generally higher.

- Motor operating range: min. return T°C: 0°C, max. return T°C: 40°C Unit information plate

The information plate shows all the information needed to identify the unit and its configuration. This plate is placed on the technical side that has all the connections, above the fresh air inlet.

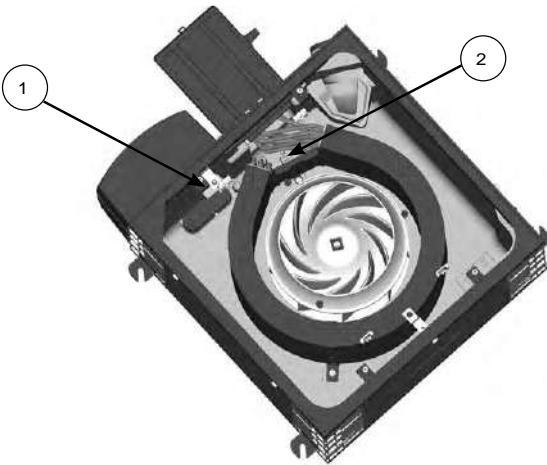
- ① Code
- ② Serial number
- ③ Description of the unit
- ④ Rated motor power
- ⑤ Motor rotation speed
- ⑥ Coil type
- ⑦ Wiring diagram reference
- ⑧ Motor speed wiring
- ⑨ Maximum operating pressure
- ⑩ Electric heater specifications (if fitted)



TECHNICAL SPECIFICATIONS

Electrical heaters

2 single-tube 230/1/50 electrical elements inserted into the aluminium housing and bent around the hydraulic coil.



Remove shunt to deactivate a heater (reduction of 300w)

- ① Temperature limiter with manual reset
- ② Temperature limiter with automatic reset

Electrical heater specifications - Input voltage 230V - 1 ph - 50Hz

42KY cassette	10/19	20/29	30/39
Electrical power (W)	-	900	1200
Input current (A)	-	3.6	4.8

Limitations of use

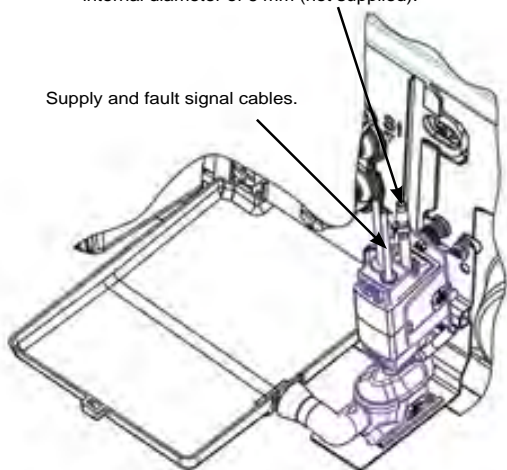
42KY cassette	Operating pressure max. 16 Bar	Minimum water inlet temperature: 6°C
		Maximum water inlet temperature:
		4-tube coil: 80°C
		2-tube coil: 70°C
		2-tube coil + electric heater: 55°C (min air flow rate 200m3/h)
Indoor temperature	-	Minimum temperature: 5°C
	-	Maximum temperature: 40°C
Power supply	Nominal usage limitations	Min 207 - Max 253 V for units without electrical heater
		Min 216 - Max 244 V for units with electrical heater

OPTIONS (FACTORY ASSEMBLED)

Condensate drain pump

The pump discharge must be connected to the wastewater pipe by a flexible tube with an internal diameter of 6 mm (not supplied).

Supply and fault signal cables.



Maximum flow rate	10.4 l/h
Maximum discharge height	7 m (flow rate 4 l/h)
Maximum pressure	10 m (flow rate 0 l/h)
Sound level at 1 m in accordance with EN ISO 3744 and 4871 (measurements taken at LNE, pump in water, outside of application)	20.2 dBA
Power supply	230V +10%/-15% - 50/60Hz – 19W
Electric insulation class	Class 1
Detection levels	ON: 14.7 mm, OFF: 10.7 mm, AL: 17 mm
Safety switch	NF: 5A resistance – 250V AgNI 90/10 gold-plated contacts.
Thermal protection (overheating)	70°C (automatic restart)
Operating cycle (operating factor)	100%
Protection (as per NF EN 60529)	IP64
Safety standard	CE
RoHS directive	Compliant
WEEE directive	Compliant

Pump performance Water flow in litres per hour (-15% / +20%)				
Discharge height	Horizontal length of the discharge pipe			
	5 metres	10 metres	20 metres	30 metres
1 metre	10,4	9,1	8,3	7,3
2 metres	8,5	7,8	7	6,4
3 metres	7,9	7,1	6,3	5,8
4 metres	7	6	5,3	4,9

Operating limit:

Drain: flexible tube int. Ø 6 mm, end piece Ø 8.8 mm. This accessory must be paired with a valve control to allow the upper safety limit to control the valve's closure (stopping condensate).

$$\text{Condensate flow rate (l/h)} = \frac{\text{Total capacity} - \text{Sensible capacity (W)}}{680}$$

Accessories (available separately)

Description	
Condensate drain pump kit	
Elastic dampers (4 per device)	
Lift kit	
Self adjusting module kit, diameter 100 mm	15/30/45 m³/h
	60/75/90 m³/h
AN adapter kit, diameter 100/125 mm	
Frame kit for suspended ceiling 675x675	
LEC motor speed control 3 speed ON/OFF unit kit (only for thermostat or controllers not from CARRIER that have 3 x 230V speed outputs)	
Description	
Condensate drain pump	
Lift kit	
Frame for 675 x 675 suspended ceiling tiles	
Finishing trim frame for STAFF ceilings	
Hydraulic coil with protected blades	

NEW

CONCEALED MODEL



Versatile

unit meeting all building-specific constraints

Energy and ecodesign performance.

Improved occupant comfort, very low sound level

Innovative design ensuring easy installation and simplified maintenance

42N 42NC-42NR-42ND-42NI-42NU

Cooling capacity 0.7–8.7kW
Heating capacity 1.3–11.6kW

Designed for heating and cooling, the new 42N is available in 2 models (cased or uncased).

The versatility of the new 42N, thanks to its different assembly options and range of accessories, means it can be adapted to any type of installation.

In Europe, it has become a benchmark solution for renovations of large office blocks and hotel chains and restoration of buildings, etc.

Modern aesthetic lines, excellent sound levels and optimised thermal performance. With its new 42N range, CARRIER offers a comfort solution which is both economical and quick to set up.



CARRIER participates in the ECP programme for FC/FCP
Check ongoing validity of certificate:
www.eurovent-certification.com

MORPHO CODES

Range & Model				Size	Coil efficiency	motor type	Coil Type	Control	Valve	Electrical heater	Actuators	Supply Rect. flange	Sensors	Drain pump
4	2	N	C	1	2	9	F	A	G	A	A	-	-	-
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Digit 5	
1	Size 1
2	Size 2
3	Size 3
4	Size 4
5	Size 5
6	Size 6

Digit 1- 2 -3-4	
42NC	= Standard cabinet
42NR	= Cabinet with front return grill
42ND	= Standard concealed
42NI	= Concealed with plenum in-line
42NU	= Concealed with U_plenum

Digit 6	
1	low efficiency
2	medium efficiency
3	standard efficiency
4	high efficiency

Digit 7	
5	AC motor 5 speed
6*	AC Motor 3 speed
9	EC motor 10 -10V

Digit 8	
F	= 2 pipes - Left hand
G	= 2 pipes - Right hand
C	= 4 pipes - Left hand
D	= 4 pipes - Right hand

Digit 9	
-	= NO CONTROL SUPPLIED
K	= NTC ControllerAQUASmart EVOLUTION®) without user interface
L	= WTC Lon without user interface
M	= WTC BACnet without user interface
V	= 33TZ Thermostat built-in for Cabinet version (fitted) (only 42NC & 42NR)
W	= 33TZ Thermostat wall version (not fitted)

Digit 10	
-	= No valve
G	= 2 ways valve
H	= 4 ways (3 ways valve with by-pass)
L	= 2 ways Auto balancing valve without pressure port
T	= 2 ways Auto balancing valve with pressure drop

Digit 11	
-	= No electrical heater
A	= Electrical Heater HIGH CAPACITY
B	= Electrical Heater LOW CAPACITY

Digit 13	
-	= Without
A	= With rectangular flange (only for 42ND)

Digit 12	
-	= Sans
A	= ON/OFF 230V ACTUATOR
B	= ON/OFF 24V ACTUATOR (Mandatory digit 9 = -)
C	= 230V PROPORTIONAL 3-POINTS ACTUATOR (Mandatory digit 9 = - or K/L/M)
D	= 24V PROPORTIONAL 3-POINTS ACTUATOR (Mandatory digit 9 = -)
E	= 0-10V ACTUATOR (Mandatory digit 9 = -)

Digit 14	
-	= Without
A	= Air return sensor (only for digit 9 = W)
B	= Change/over sensor (only for digit 8 =F/G, digit 9 = V/W, digit 10=H)
C	= Air return + change over sensor (only for digit 8 =F/G, digit 9 = W, digit 10=H)

Digit 15	
-	= Without
P	= With drain pump (for vertical installation)
Q	= With drain pump (for horizontal installation)

Nota :

* Only available in Sizes 2 & 3

TECHNICAL DESCRIPTION

Casing

- Single-unit casing and side members in ABS
- Front/rear panel in galvanised steel with mounting holes for easy fixing.

Casing for cabinet model

Bi-material casing in two colours:

- Flange, side member and supply air grille in RAL 7035 grey ABS
- Front pressed metal panel painted RAL 9010 white and front mounted return air grille (42NR) in RAL 7035 grey
- Central access point for housing 33TZ thermostat.

Water coil

- High performance coil concept
- Coil casing in galvanised panels.
- Copper pipes, aluminium louvre or non-louvre fins, patented.
- Water coil tap on the left or right of the unit from the front of the supply air (to be specified when ordering).
- 2 or 4-pipe main coil fitted with $\frac{1}{2}$ " or $\frac{3}{4}$ " rotary couplings with air purge and drain screw.
- Additional coil for 4 pipes fitted with $\frac{1}{2}$ " rotary couplings with 40 mm centre-to-centre distance.
- Nominal pressure of 16 bar (at 20°C)
- Test pressure 18 bar.
- Maximum hot water inlet temperature:
 - 4-pipe application: 90°C
 - 2-pipe application: 90°C
 - 2-pipe/2-wire application: 55°C (min. air flow: 200 m³/h)

Electric heater

- Single pipe 230V single phase 50/60 Hz electrical elements inserted into the aluminium housing.
- Two capillary tube temperature limiters with manual and automatic reset inserted in the aluminium housing.

Condensate drain pan

- Pan in ABS PC 10% fibreglass with M1 class reinforced EPS insulation (20 mm thick).
- Reinforced insulation for all climates, M1 class EPS panel (20 mm thick).
- Auxiliary drain pan in ABS.
- 22 mm external Ø raised condensate outlet.

Fan motor assembly

■ Fan(s)

Impeller(s) in ABS in split units for total accessibility of the different parts of the fan motor assembly.

160 mm impeller(s), with exclusive airfoil blades in self-extinguishable HB ABS.

■ EC motor

High energy efficiency motor enabling a reduction of up to 85% in electricity consumption.

- Brushless technology.
- Sealed type, tropicalised with protected shaft.
- Progressive control with 0-10V control signal.
- Internal normally closed series automatic overload protection on the windings.
- Mounted on anti-vibration mounts.
- Supply 230V±10%/1-Ph/50-60 Hz.

Note: The minimum voltage to start up the motor is 2V.

■ Asynchronous motor

- 5 factory-fitted wired speeds (connected and available at the terminal) for customised adjustment.
- Sealed, tropicalised type, class F with protected shaft.
- Permanent capacitor.
- Ball bearings.
- Automatic overload protection as standard on winding.
- Resilient mounts.
- 230V single-phase 50/60 Hz power supply, reduced consumption.

Electrics box

- Box incorporated on the side of the base opposite the hydraulics.
- Fully encased in an enclosure in PP 20% Talc.
- Electrical connection terminal on DIN rail in compliance with EN 50022, 7.5 mm deep.
- Wire clamps for customer connection.

Air filter

- Flexible filter medium made of regenerative polyester fibre, on rigid frame.
- Efficiency class EN 779: G3.
- Fire rating: M1.
- Mounted on pivoting runners for easy maintenance

Packaging

- Delivered in individual boxes on pallets protected by stretch wrap film.

Controls

- Electronic thermostat : 33TZ (built-in thermostat for vertical model with or without casing or available in wall mounted for all models) & 33TA/B/C/D (available from ERCD in wall mounted only).
- Networked electronic range (CCN): NTC.
- Networked electronic range (LON or BacNET): WTC.

Factory-fitted options

- Condensate drain pump.
- Rectangular supply air sleeve for direct distribution in soffit.
- Supply and return air plenum : in line for model 42NI and lateral U for model 42NU for sizes 2 to 4.
- Hydraulic coil with blades protected for use in harmful/corrosive atmospheres (coastal locations, or areas close to chemical industries).

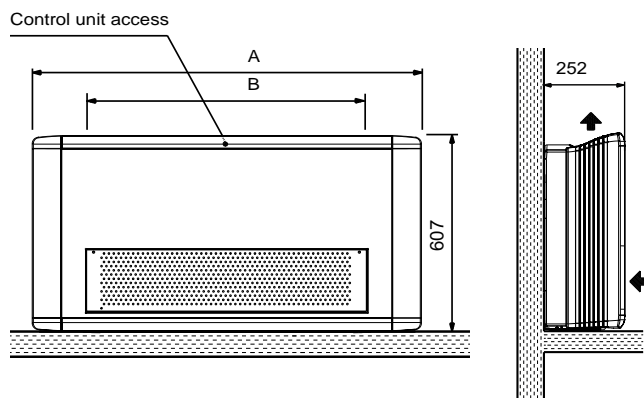
Accessories supplied separately

- Support feet or base
- Return air grille between feet
- Rear skirting support and rear painted panel
- Single- or dual-deflection diffusion grille
- Supply air plenum in kit for sizes 1 to 6 diameter 200 mm or 160 mm for sizes 1 to 5
- Resilients mounts (lot of 4 pcs)

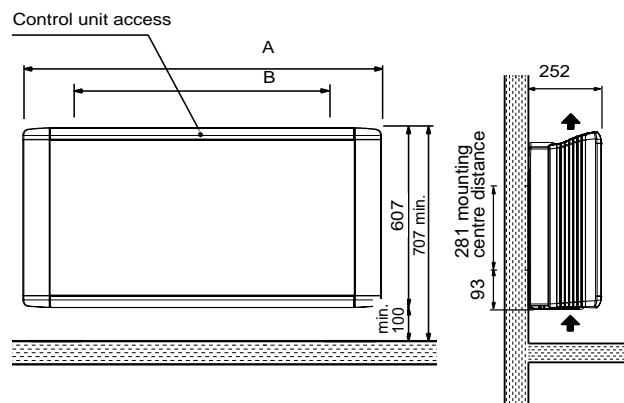
Note: refer to the technical manual and the instruction manual for more information.

ASSEMBLY AND DIMENSIONS – CABINET MODEL (VERTICAL APPLICATION)

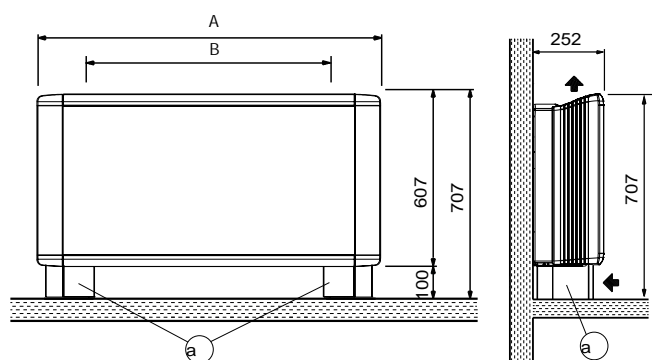
42NR: Unit with return on front



42NC: Basic unit with return underneath



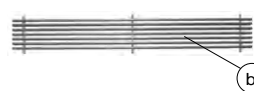
42NC + feet: Basic unit with feet



Options available with feet:

- Base mounted grille

- Rear painted panel



- Rear skirting support



Accessories for assembly configurations (supplied separately)

- a: Support feet
- b: Aluminium return air grille between feet
- c: Painted rear skirting support
- j: Rear painted panel RAL 7035

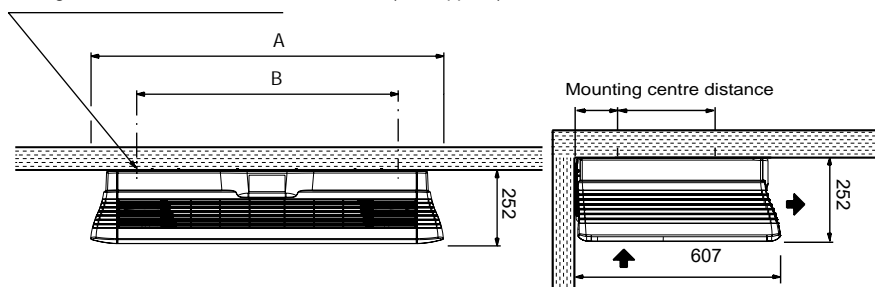
Sizes	A	B mounting centre distance	Weight (kg) *
1	840	505	20
2	1000	665	23
3	1200	865	28
4	1400	1065	34
5	1600	1265	39
6	1800	1465	44

* Weight of the unit in 4-pipe version (without valves)

ASSEMBLY AND DIMENSIONS – CABINET MODEL (HORIZONTAL APPLICATION)

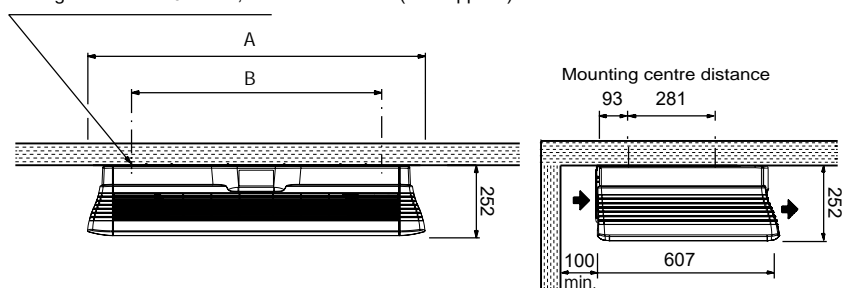
42NR: Unit with return on front

Mounting: 4 sealed M6 shafts, nuts and washers (not supplied)



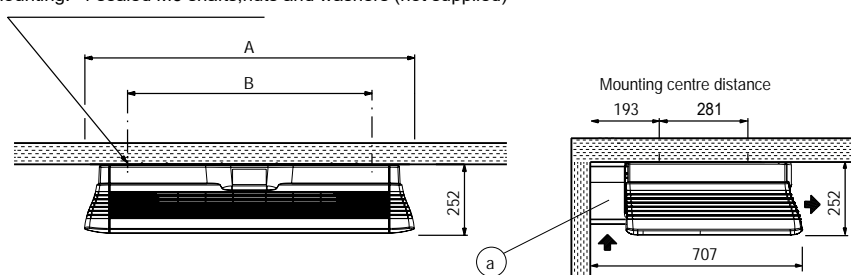
42NC: Basic unit

Mounting: 4 sealed M6 shafts, nuts and washers (not supplied)



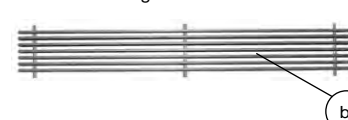
42NC + feet: Basic unit with feet

Mounting: 4 sealed M6 shafts, nuts and washers (not supplied)



Option available with feet:

- Base mounted grille



Accessories for assembly configurations (supplied separately)

a: Support feet

b: Aluminium internal return air grille between feet

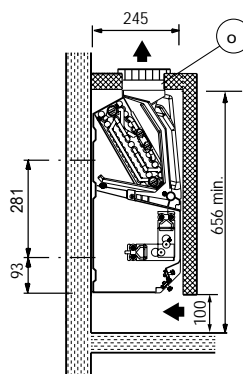
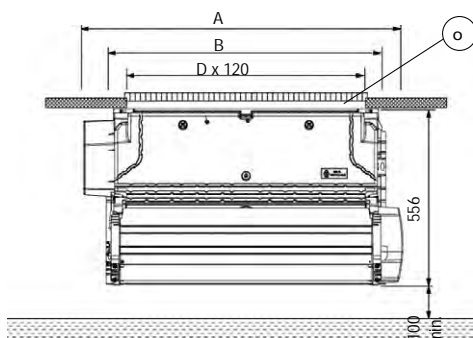
Note: with feet the condensate drain pump must be used.

Sizes	A	B mounting centre distance	Weight (kg) *
1	840	505	20
2	1000	665	23
3	1200	865	28
4	1400	1065	34
5	1600	1265	39
6	1800	1465	44

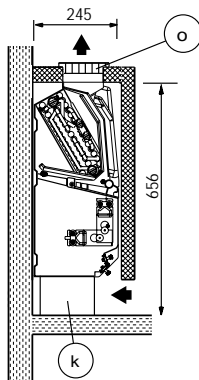
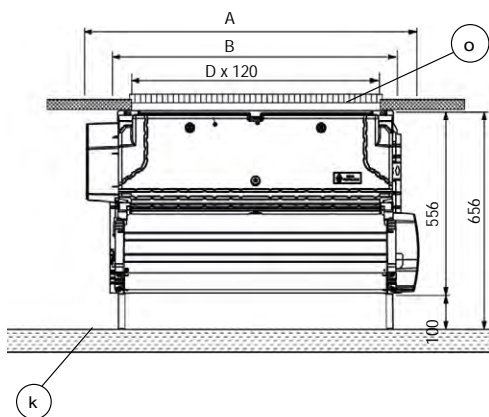
* Weight of heaviest unit in 4-pipe configuration

ASSEMBLY AND DIMENSIONS – CONCEALED MODEL (VERTICAL APPLICATION)

42ND: Basic unit with bottom-mounted return



42ND + support: Basic unit with support base



Accessories for assembly configurations (supplied separately)



k Support base

o Aluminium single deflection diffusion or return air grille with sealing frame (without hatch).

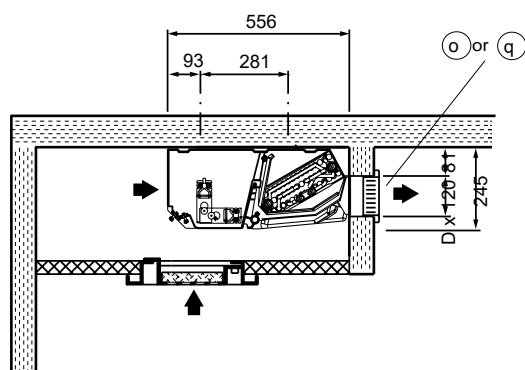
Note: this grille can be used for both return and supply air.

Sizes	A	B mounting centre distance	D grille space	Weight (kg) *
1	652	505	355	15
2	812	665	515	18
3	1012	865	715	22
4	1212	1065	915	28
5	1412	1265	1115	32
6	1612	1465	1315	36

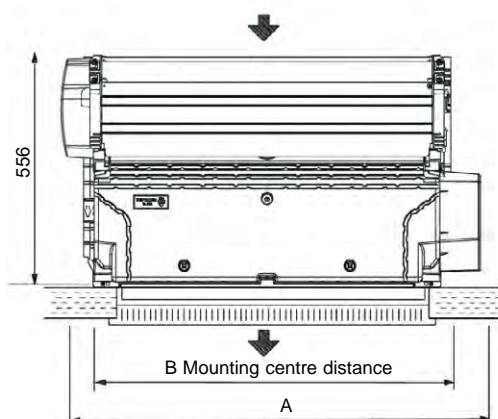
* Weight of the unit in 4-pipe version (without valves)

ASSEMBLY AND DIMENSIONS – HORIZONTAL CONCEALED MODEL

42ND: Unit with return on front



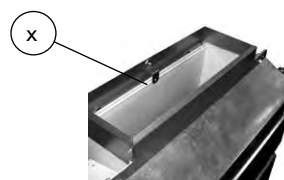
View from beneath



Option available
- Aluminium single (o) or double (q) deflection diffusion grille with sealing frame



- Metal sleeve for connection to air discharge



Accessories for assembly configurations
(supplied separately)

o: Aluminium single deflection diffusion grille with sealing frame.

q: Aluminium double deflection diffusion grille with sealing frame

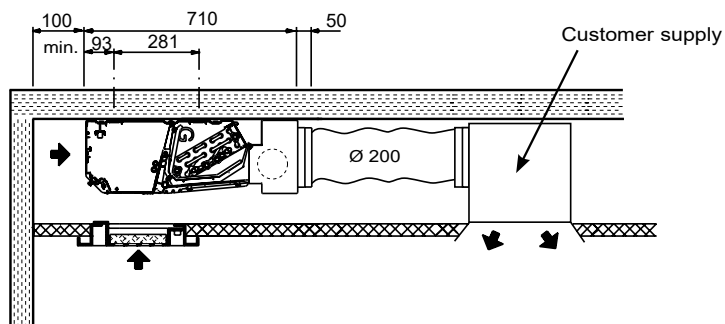
x: Metal sleeve connecting rectangular sleeve to supply air

Size	A	B mounting centre distance	D grille space	Weight (kg) *
1	652	505	355	15
2	812	665	515	18
3	1012	865	715	22
4	1212	1065	915	28
5	1412	1265	1115	32
6	1612	1465	1315	36

* Weight of the unit in 4-pipe version (without valves)

ASSEMBLY AND DIMENSIONS – HORIZONTAL CONCEALED MODEL

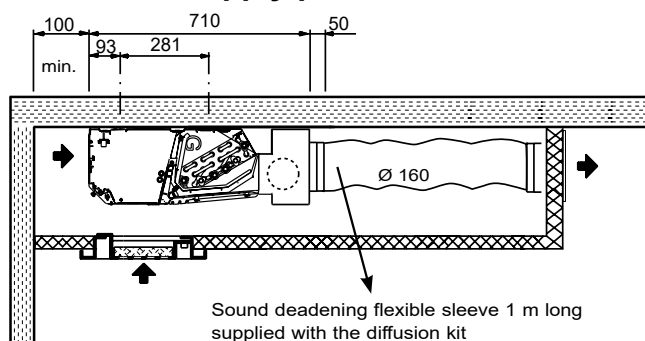
42ND + kit supply plenum Ø 200 mm:



Supply air plenum delivered not fitted. Available for sizes 1 to 6

Size	Number of collars	Ø of collars
1	1	200
2	1	200
3	2	200
4	3	200
5	3	200
6	3	200

42ND + kit supply plenum Ø 160 mm:

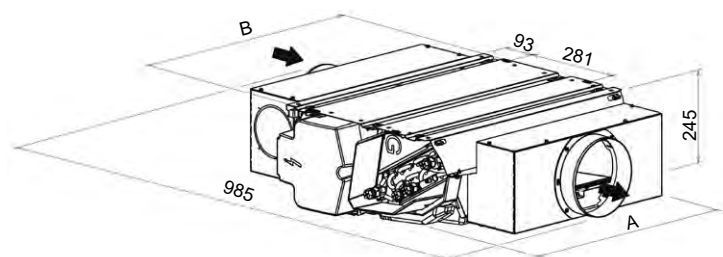


Supply air plenum delivered not fitted. Available for sizes 1 to 5

Size	Number of collars	Ø of collars
1	1	160
2	1	160
3	2	160
4	3	160
5	3	160

42NI :

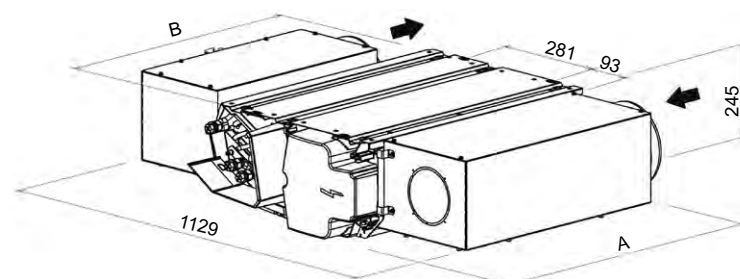
Supply and return air plenum factory-fitted with Ø 200 mm spigots available for sizes 2 to 4



Size	A	B	Number of collars
2	760	665	1
3	960	865	2
4	1160	1065	3

42NU:

Supply and return air plenum factory-fitted with Ø 200 mm spigots available for sizes 2 to 4



Size	A	B	Number of collars
2	770	665	1
3	970	865	1
4	1170	1065	1

PERFORMANCE – 2-PIPES SYSTEM

Eurovent conditions

Cooling mode: water temperature: 7/12 °C, inlet air temperature: 27 °C - 19 °C (WB)

Heating operation: water temperature: 45/40 °C, inlet air temperature: 20 °C

Sizes	AC motor Motor speed	EC motor Voltage (V)	Air Flow (m³/h)	Cooling cap. W		Heating capacity W	Sound power LW dB(A)	Electric consumption W		Electric heater	
				Total	Sensible			AC Motor	EC Motor	Low capacity W	High capacity W
42N-115F/G	V4	4,6	265	1 040	990	1 530	46	24	10	300	600
42N-119F/G	V3	3,9	225	880	830	1 360	41	19	6		
	V1	2,8	165	710	660	1 030	33	12	5		
42N-135F/G	V4	5	265	1 390	1 130	1 880	46	25	11	300	600
42N-139F/G	V3	4,2	225	1 200	970	1 600	42	19	8		
	V1	2,9	165	850	670	1 160	36	11	5		
42N-215F/G	V4	4,8	415	1 760	1 690	2 500	50	42	15	500	1000
42N-219F/G	V3	4,3	370	1 620	1 540	2 330	47	40	12		
	V1	2,7	230	1 150	1 050	1 550	36	33	5		
42N-235F/G	V4	4,8	410	2 140	1 800	2 690	50	42	15	500	1000
42N-239F/G	V3	4,3	365	1 910	1 640	2 430	46	40	12		
	V1	2,7	225	1 320	1 120	1 670	35	33	5		
42N-245F/G	V4	4,8	410	2 420	1 960	2 960	50	42	15		
42N-249F/G	V3	4,3	365	2 190	1 770	2 650	47	40	12		
	V1	2,7	225	1 480	1 150	1 740	36	33	5		
42N-315F/G	V4	5,3	645	2 720	2 150	3 410	53	53	26	800	1600
42N-319F/G	V3	4,4	535	2 390	1 870	2 960	47	47	17		
	V1	2,2	230	1 380	1 030	1 670	29	36	4		
42N-325F/G	V4	5,3	645	3 160	2 620	3 840	53	53	26		
42N-329F/G	V3	4,4	535	2 760	2 250	3 180	47	47	17		
	V1	2,2	230	1 300	1 080	1 680	29	36	4		
42N-335F/G	V4	5,3	620	3 510	2 700	4 280	53	53	26	800	1600
42N-339F/G	V3	4,4	505	3 050	2 340	3 590	47	47	17		
	V1	2,2	220	1 370	1 060	1 690	29	36	4		
42N-435F/G	V4	6,8	1030	5 750	4 480	6 310	60	102	59	1200	2400
42N-439F/G	V3	5,4	805	4 740	3 590	5 150	55	87	31		
	V1	3,2	445	2 910	2 160	3 170	41	68	10		
42N-535F/G	V4	7,1	1120	6 150	4 840	6 950	60	94	60	1600	3200
42N-539F/G	V3	5,8	910	5 350	4 100	5 740	55	80	35		
	V1	3,6	535	3 440	2 620	3 660	42	64	11		
42N-645F/G	V4	7,8	1350	7 990	5 970	8 590	63	122	87		
42N-649F/G	V3	7,1	1210	7 420	5 550	7 870	61	118	65		
	V1	4,4	730	5 070	3 770	5 230	49	105	18		

(1) Important: the air supply temperature should not exceed 65°C (CARRIER recommendation).

CARRIER participates in the ECP program for Fan Coil Units :

The certified values are : Input voltage for variable speed units only, Total cooling Capacity, Sensible Capacity, Total heating capacity, Water Pressure Drop, Electric Motor Consumption, Lw (inlet+radiated) and Lw (outlet) for ducted units, Lw (overall) for non-ducted units and Air Flow Rate and External Static Pressure for ducted units only

PERFORMANCE – 4 PIPES SYSTEM

Eurovent conditions

Cooling operation: water temperature: 7/12°C, inlet air temperature: 27°C - 19°C (WB)

Heating operation: water temperature: 65/55°C, inlet air temperature: 20°C

Sizes	AC motor Motor speed	EC motor Voltage (V)	Air Flow (m³/h)	Cooling cap. W		Heating capacity W	Sound power LW dB(A)	Electric consumption W	
				Total	Sensible			AC Motor	EC Motor
42N-135C/D	V4	5,0	260	1 390	1 130	1 130	46	25	11
42N-139C/D	V3	4,2	215	1 200	970	1 030	42	19	8
	V1	2,9	140	850	670	850	36	11	5
42N-235C/D	V4	4,8	410	2 130	1 850	1 860	50	42	15
42N-239C/D	V3	4,3	365	1 940	1 660	1 760	46	40	12
	V1	2,7	225	1 320	1 120	1 390	35	33	5
42N-245C/D	V4	4,8	410	1 910	1 740	3 420	50	42	15
42N-249C/D	V3	4,3	365	1 720	1 560	3 250	46	40	12
	V1	2,7	225	1 200	1 090	2 470	35	33	5
42N-335C/D	V4	5,3	620	3 310	2 690	2 980	53	53	26
42N-339C/D	V3	4,4	505	2 790	2 280	2 650	47	47	17
	V1	2,2	220	1 200	1 040	1 540	29	36	4
42N-345C/D	V4	5,3	620	2 930	2 390	4 730	53	53	26
42N-349C/D	V3	4,4	505	2 550	2 040	4 150	47	47	17
	V1	2,2	220	1 180	960	2 130	29	36	4
42N-435C/D	V4	6,8	1030	5 480	4 300	4 110	60	102	59
42N-439C/D	V3	5,4	805	4 650	3 570	3 600	55	87	31
	V1	3,2	445	2 940	2 190	2 610	41	68	10
42N-445C/D	V4	6,8	1030	4 910	4 080	5 720	60	102	59
42N-449C/D	V3	5,4	805	4 150	3 380	4 990	55	87	31
	V1	3,2	445	2 650	2 070	3 600	41	68	10
42N-535C/D	V4	7,1	1120	5 880	4 810	5 770	60	94	60
42N-539C/D	V3	5,8	910	4 980	4 070	5 090	55	80	35
	V1	3,6	535	3 330	2 590	3 790	42	64	11
42N-635C/D	V4	7,8	1250	8 150	6 040	9 150	64	120	82
42N-639C/D	V3	7,1	1120	7 460	5 550	8 160	62	117	61
	V1	4,5	680	4 960	3 670	6 270	50	105	19

CARRIER participates in the ECP program for Fan Coil Units :

The certified values are : Input voltage for variable speed units only, Total cooling Capacity, Sensible Capacity, Total heating capacity, Water Pressure Drop, Electric Motor Consumption, Lw (inlet+radiated) and Lw (outlet) for ducted units, Lw (overall) for non-ducted units and Air Flow Rate and External Static Pressure for ducted units only

TECHNICAL CHARACTERISTICS

Coil capacity (litres)

		115/119	135/139	215/219	235/239	245/249	315/319	325/329	335/339	435/439	535/539	645/649
2-pipe system	Hot or cold water coil	0,23	0,33	0,30	0,45	0,53	0,40	0,47	0,63	0,84	1,03	1,33
		135/139	235/239	245/249	335/339	345/349	435/439	445/449	535/539	635/639		
4-pipe system	Cold water coil	0,33	0,45	0,36	0,60	0,52	0,71	0,72	1,11	1,32		
	Hot water coil	0,075	0,098	0,19	0,13	0,21	0,22	0,24	0,274	0,47		

Coil connection diameters

- Coil connection type: rotary couplings with flat face;
- Valve connection type: install flush fit male threaded unions.

		115/119	135/139	215/219	235/239	245/249	235/239	245/249	335/339	325/329	435/439	535/539	645/649
2-pipe system	Hot or cold water coil	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G3/4"	G3/4"
		135/139	235/239	245/249	245/249	335/339	345/349	445/449	535/539	635/639			
4-pipe system	Cold water coil	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G3/4"	G3/4"	G3/4"		
	Hot water coil	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"		

Motor specifications

		AC Asynchronous Motor							EC brushless motor					
	Speeds	Sizes						Speeds	Sizes					
		1-5	2-5	4-5	4-5	5-5	6-5		1-9	2-9	3-9	4-9	5-9	6-9
Max. power input (W)	V5	33	58	88	106	108	135	V5	11	25	32	77	90	100
	V4	31	41	67	93	94	114	V4	9	15	22	63	80	75
	V3	29	36	52	80	79	99	V3	6	11	13	36	42	55
	V2	27	31	42	72	72	88	V2	5	8	7	21	26	32
	V1	26	27	35	63	63	77	V1	4	5	3	11	13	16
Max. input current (W)	V5	0,14	0,25	0,38	0,46	0,47	0,59	V5	0,11	0,20	0,29	0,62	0,71	0,74
	V4	0,13	0,18	0,29	0,40	0,41	0,50	V4	0,09	0,13	0,20	0,50	0,62	0,67
	V3	0,13	0,16	0,23	0,35	0,34	0,43	V3	0,07	0,11	0,13	0,30	0,35	0,44
	V2	0,12	0,13	0,18	0,31	0,31	0,38	V2	0,06	0,09	0,08	0,19	0,21	0,27
	V1	0,11	0,12	0,15	0,27	0,27	0,33	V1	0,06	0,06	0,06	0,11	0,13	0,16

Note: Specifications determined for 230V +/-10% - 50Hz supply.


For operation at 60 Hz, the power input and rotation speed values are generally higher. Motor operating range:
 minimum return T°C: 0°C,
 maximum return T°: 40°C


Unit information plate

The information plate shows all the information needed to identify the unit and its configuration. This plate is located on the condensate pan, on the electrical connection side.



- Code
- Serial number
- Description of the unit
- Nominal motor output
- Motor rotation speed
- Coil type
- Wiring diagram reference
- Motor speed wiring
- Maximum operating pressure
- Electrical heater specifications (if fitted)

Ref.Produit/item Ref.		Designation/Description	
7552742		42ND539FMGAA - CP	
An./Year	N. Serie/Serial Nbr	Composants/Components	
2019	02786871/0001		
Moteur/Motor (Ph/Hz/V)	Batterie/Hydro. coil	Fluide/Fluid	
1 + N 50/60HZ 230/220V +T	2T	EAU	
P. moteur/Motor P. (W)	Elec Element (Ph/Hz/V)	Maxi pressure (bar)	
118.9/142.7	1 + N 50/60HZ230/220V	1600000 PA (16BAR)	
I. moteur/Motor I. (A)	Elec Elem. P. (W)/L.(A)	Cablage/Wiring	
0.89/1.07	3200	SANS	
tr.mm - 1/r.p.m	Elec Diagram	N° Incorporation CE	
	7547562		


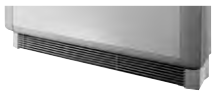




 CARRIER SCS
 Route de Thil
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 Tel : (00 33)4 72 25 21 21


 Made in France






OPTIONS (FACTORY FITTED)

42NC/42NR	42ND/42NI/42NU	Figures	Digit number	Description
•	•		14	Condensate drain pump fitted to unit with high safety device.
	•		13	Metal sleeve for connection to air discharge

FACTORY ACCESSORIES (DELIVERED SEPARATELY)

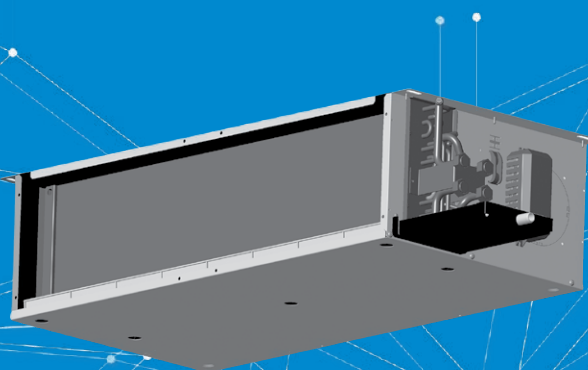
Figures	Description		SIZE 1	SIZE 2	SIZE 3	SIZE 4	SIZE 5	SIZE 6
	Support feet for cased model	Code	7242933					
	Internal return air grille between feet	Code	7242935	7242936	7242937	7242938	7242939	7242940
	Rear skirting support in RAL7035 light grey, 55 mm thick (for 70 mm skirting)	Code	7242926	7242927	7242928	7242929	7242930	7242931
	Rear painted panel in RAL7035 light grey for positioning the unit by a window	Code	7262703	7262704	7262705	7262706	7262707	7262708
	Support base for Concealed unit	Code	7242932					

FACTORY ACCESSORIES (DELIVERED SEPARATELY)

Figures	Description		SIZE 1	SIZE 2	SIZE 3	SIZE 4	SIZE 5	SIZE 6
	Single deflection diffusion grille with sealing frame for vertical and horizontal Concealed models	Code	7256897	7256898	7256899	7256900	7256901	7256902
	Double deflection diffusion grille with sealing frame for horizontal Concealed models	Code	7242942	7242943	7242944	7242945	7242946	7242947
	Supply plenum with Spigots Ø 200 mm	Code	7512282	7512284	7512286	7512288	7242995	7242996
	Supply air plenum with Spigots Ø 160 mm	Code	7512283	7512285	7512287	7512289	7243490	
	Resilient mounts supplied separately (4 per unit)	Code	0219453					

NEW

DUCTABLE FAN COIL UNIT



Ducted unit for suspended ceiling application

Easy installation

Easy maintenance

42ET



The Carrier 42ET is available in different sizes with 2-pipe or 4-pipe coils, with an air flow range from 112 to 1087 m³/h, a total cooling capacity range from 0.7 kW to 6.98 kW and a heating capacity range from 0.88 kW to 7.63 kW.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

1 - FUNCTIONS AND CONFIGURATIONS

- Compact and modular ducted unit, designed for any suspended ceiling installation.
- Reliable and economical for tertiary buildings and hotels, guesthouses, offices or light commercial applications.
- Low height of 235 mm (sizes 2/3/4/5).
- Two types of asynchronous fan motor assembly available:
 - standard version
 - Low noise level version
- G3 filter as standard.

1.1 - Configuration

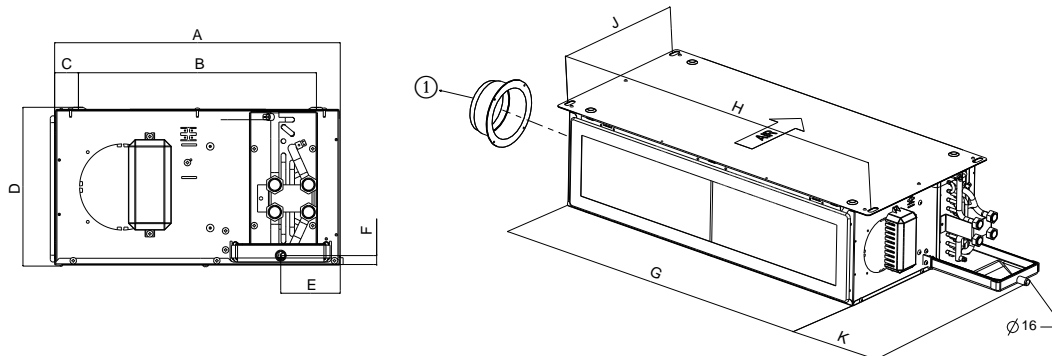
Each of the 42ET sizes can be equipped:

- with a direct air supply/return.
- with a rectangular sleeve on the return and/or supply for connection to a rectangular duct.

2 - DIMENSIONAL DRAWINGS

NOTE: All drawings shown have the coil connections on the right-hand side. Units with left-hand connections are symmetrical.

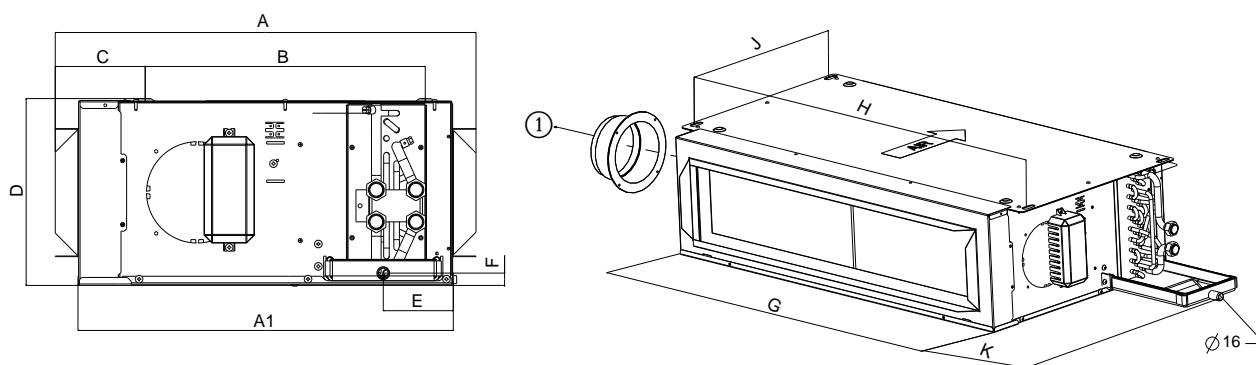
Standard unit non-ducted supply and return



Dimensions in mm				
Size	2xx	3xx	4xx	5xx
A	420	420	420	420
B	361	361	361	361
C	35	35	35	35
D	234	234	234	234
E	88	88	88	88
F	12	12	12	12

Dimensions in mm				
Size	2xx	3xx	4xx	5xx
G	450	620	820	1020
H	500	670	870	1070
J	361	361	361	361
K	228	228	228	228
G + K	678	848	1048	1248
Weight* [kg]	12	14	17	20

Unit with rectangular sleeves at air supply and return



Dimensions in mm				
Size	2xx	3xx	4xx	5xx
A	525	525	525	525
B	361	361	361	361
C	112	112	112	112
D	234	234	234	234
E	88	88	88	88
Rectangular Flanges	380 x 160	550 x 160	750 x 160	950 x 160

Dimensions in mm				
Size	2xx	3xx	4xx	5xx
F	12	12	12	12
A1	469	469	469	469
G	453	623	823	1023
H	500	670	870	1070
J	361	361	361	361
K	228	228	228	228
G + K	681	851	1051	1251
Weight* [kg]	12	14	17	20

KEY

- 1 Lateral optimized fresh air position in base unit (opposite to coil hand at inlet)
 * Maximum weight - without valve option - without water
 Air flow direction
 All dimensions are in mm.

3 - MAIN MODULES AND COMPONENTS

3.1 - Casing

In order to further enhance occupant comfort this product range offers especially low noise levels. The casing is made of galvanised sheet steel with full high-efficiency internal lining for optimised thermal and sound insulation of the unit.

In order to comply with the various local regulations (fire class) the fan coil unit is available with both class M1 type insulation (in compliance with NF P 92-507) and Euroclass level B-s3-d0 (in compliance with EN 13501).

In order to reduce the dimensions to the minimum, the units are equipped with high-efficiency heat exchangers with very high cooling capacity/treated air flow ratios. The condensate drain pan height is optimised.

3.2 - Fan motor assemblies

3.2.1 - Multi-speed motor in compliance with ErP 2015 regulations

Motor description

- Asynchronous motors, 4 poles with internal overload protection
- Permanent capacitor
- Class B winding insulation, varnish class F
- See operating limits in chapter 8.

The 42ET unit has a multi-speed fan with forward curved, double inlet, single or double wheel fans depending on the unit size.

Six speeds are available and three standard speeds are factory connected.

- Minimum speed: R6
- Maximum speed: R1
- To modify the fan motor speed on site please refer to the IOM

3.3 - Electrical connection solutions

3.3.1 - Unit with bare wire type connection (standard)

The three standard speeds of the multi-speed fan are available with bare wires.

Minimum speed = R6 maximum speed = R1.

3.3.2 - Unit with electrics box

The unit may be factory-fitted with an optional electrics box with the 3 standard speeds connected to a terminal strip. This option enables the installer to connect the unit to a thermostat. The electrics box can be opened with a screwdriver.

3.4 - Hydraulic coil

- Aluminium fins mechanically bonded by expansion onto copper tubes
- 1/2-inch threaded female water inlet and outlet connections
- Air bleed valves and drain as standard.
- Operating pressure 1550 kPa.

The coil, condensate drain pan and coil access door are in the form of an easily removable drawer.

3.5 - Single unit condensate drain pan

One-piece condensate drain pan made in polypropylene and insulated with 5 mm of foam.

Drain connection diameter: Ø 16 mm external

M1 fire rating (in compliance with NFP92-507).

3.6 - Filter

3.6.1 - Specifications

The 42ET unit includes as standard G3 filter in compliance with EN 779.

G3 filters have medium fire rating M1 (according to NFP 92-507) and a metal frame.

The "without filter" option is only available for units with a rectangular flange on the return side to ensure that a duct can be connected when the unit operates.

To prevent coil fouling, Carrier recommends the use of a filter installed in either the fan coil unit or in the return air grille.

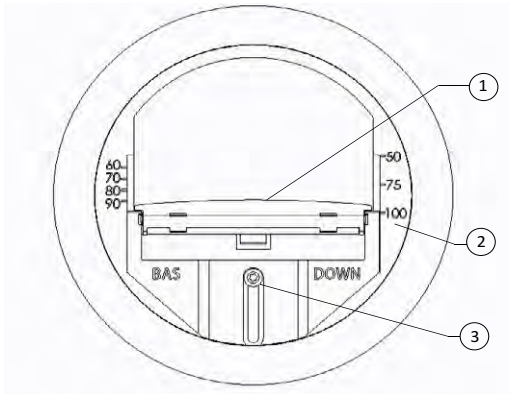
4 - ACCESSORIES SPECIFICATIONS

4.1 - Fresh air controller (option)

4.1.1 - Constant volume fresh air controller

The unit can be fitted with a constant fresh air flow controller adjustable from 15 m³/h to 180 m³/h to allow the fresh air intake and the air change rate to be controlled.

The fresh air supply is located in the side of the base unit casing.



Example: Range 50-100 m³/h

- 1 Air Damper
- 2 Fresh airflow damper position setting (in m³/h)
- 3 Airflow adjustment screw

The fresh air controller may be modified on site by relocating the damper (adjustable screw). Three ranges of air-controller are provided: 15 to 50m³/h, 60 to 100m³/h and 110 to 180m³/h.

IMPORTANT: If a return air temperature sensor is provided, the constant fresh air flow rate must not exceed 50 % of the unit supply air flow rate at minimum speed.

NOTE: To operate correctly, the fresh air flow controller requires a differential pressure in the range of 60 Pa to 210 Pa.

4.2 - Valves and actuator motors (option)

NOTE: The motor/valve assembly is normally closed.

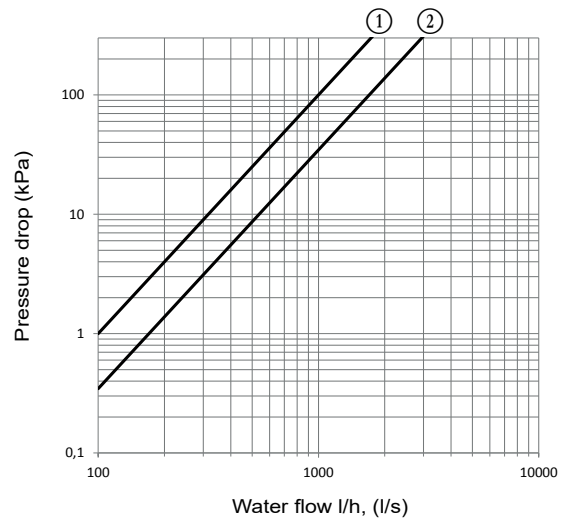
4.2.1 - Valve actuator motors

The 42ET is available with two or four-way valve bodies (three-way with integral by-pass), with a 230 V on/off actuator.

4.2.2 - Standard two-way valve and three-way valve (with integral by-pass)

Features of the 1/2" two-way and three-way valves

- 1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN15 for 1/2" valve
- Nominal pressure: PN 16 bar



Key

- 1 1/2" - 230 V ON/OFF valve 42ET - Size 2 Kvs = 1
- 2 1/2" - 230 V ON/OFF valve 42ET - Sizes 3,4,5 Kvs = 1.7

5 - PRODUCT CHARACTERISTICS LIST

Characteristic Name		Character no. coding	Value	Description
Range		1-2	42	
		3-4	ET	
UNIT SIZE (digits 5 - 6 - 7)	Chassis size	5	2	Chassis size 2
			3	Chassis size 3
			4	Chassis size 4
			5	Chassis size 5
	Efficiency	6	2	Standard efficiency
			3	Medium efficiency
			4	High efficiency
			5	Extra high efficiency
	Fan type	7	5	Multi-speed AC motor
			6	Multi-speed AC motor Low Noise Level
Connection and coil type		8	F	2-pipe coil left-hand
			G	2 pipes coil Right Hand
			C	4 pipes coil Left Hand
			D	4 pipes coil Right Hand
Control		9	-	Bare wires
			E	Electrics box
Valve body		10	-	Without valve
			G	2-way valve
			H	3-way valve with by-pass
Indoor air quality		11	-	without filter
			V	G3 filter
Valve actuator		12	-	Without actuator
			A	230V ON/OFF actuator
Rectangular sleeves		13	-	Without rectangular flange
			A	Outlet rectangular flange only
			B	Inlet rectangular flange only
			C	Inlet and outlet rectangular flanges
Fresh air		14	-	Without
			A	DN125 spigot only
			B	DN125 15 - 50 m³/h airflow controller
			C	DN 125 50 - 100 m³/h airflow controller
			D	DN125 100 - 180 m³/h airflow controller
Packaging		15	-	Individual (PS protection)
			A	Bundle (Filmed on a pallet)

6 - 42ET PERFORMANCE DATA

6.1 - Physical and electrical data at Eurovent conditions - 42ET - Size 2

With G3 filter - without plenum

42ET		225						235						245					
Fan speed (Eurovent certification speeds)		R6 (L)	R5	R4 (M)	R3	R2	R1 (H)	R6 (L)	R5	R4 (M)	R3	R2	R1 (H)	R6 (L)	R5	R4	R3 (M)	R2	R1 (H)
Air flow	l/s	53	63	90	104	118	133	53	63	90	104	118	133	53	63	90	104	118	133
	m³/h	191	225	324	375	424	479	191	225	324	375	424	479	191	225	324	375	424	479
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*																			
Total cooling capacity	kW	1,06	1,22	1,64	1,81	1,95	2,09	1,22	1,42	1,93	2,17	2,37	2,56	1,36	1,57	2,13	2,40	2,64	2,89
Sensible cooling capacity	kW	0,84	0,97	1,33	1,48	1,62	1,75	0,93	1,08	1,50	1,69	1,87	2,04	0,99	1,15	1,60	1,82	2,02	2,23
Water flow	l/s	0,05	0,06	0,08	0,09	0,10	0,10	0,06	0,07	0,09	0,11	0,12	0,13	0,07	0,08	0,10	0,12	0,13	0,14
	l/h	190	210	290	320	350	370	210	250	340	380	420	450	240	280	370	420	460	510
Water pressure drop	kPa	13,5	17,5	29,0	34,6	39,6	44,8	10,2	13,4	24	29,6	34	39,1	7,4	9,5	16,6	20,7	24,9	29,3
Water volume	l	0,4						0,5						0,6					
Heating mode, two pipes**																			
Heating capacity	kW	1,26	1,45	1,97	2,20	2,41	2,62	1,42	1,65	2,28	2,59	2,86	3,15	1,53	1,79	2,52	2,86	3,12	3,29
Water flow	l/s	0,06	0,07	0,09	0,11	0,12	0,13	0,07	0,08	0,11	0,13	0,14	0,15	0,08	0,09	0,12	0,14	0,15	0,16
	l/h	220	250	340	380	420	460	250	290	400	450	500	550	270	310	440	500	540	570
Water pressure drop	kPa	15,2	19,3	32,1	38,9	45,3	52,5	11,8	15,1	25,9	32	37,9	44,7	8,9	11,4	19,8	24,4	28,3	31
Water volume	l	0,4						0,5						0,6					
Cooling mode, four pipes*																			
Total cooling capacity	kW	NA						0,92	1,07	1,43	1,60	1,73	1,86	1,27	1,45	1,93	2,16	2,35	2,55
Sensible cooling capacity	kW							0,78	0,90	1,23	1,38	1,51	1,64	0,95	1,09	1,50	1,69	1,86	2,04
Water flow	l/s							0,04	0,05	0,07	0,08	0,09	0,09	0,06	0,07	0,09	0,11	0,11	0,13
	l/h							160	190	250	280	310	330	220	250	340	380	410	450
Water pressure drop	kPa							4,6	5,8	9,6	11,7	13,7	15,8	9,9	12,6	21,6	26,1	30,4	34,9
Water volume	l							0,3						0,4					
Heating mode, four pipes***																			
Heating capacity	kW	NA						1,49	1,71	2,26	2,49	2,68	2,86	1,70	1,93	2,50	2,73	2,87	2,93
Water flow	l/s							0,04	0,04	0,06	0,06	0,06	0,07	0,04	0,05	0,06	0,07	0,07	0,07
	l/h							130	150	200	220	230	250	150	170	220	240	250	260
Water pressure drop	kPa							4,3	5,2	7,8	9	10,2	11,3	5	6	9	10,2	11,1	11,5
Water volume	l							0,2						0,3					
Sound levels																			
Sound power level (overall)	dB(A)	38	42	50	53	56	59	38	42	50	53	56	59	38	42	50	53	56	59
Electrical data, motor																			
Power input	W	27	31	46	54	66	83	27	31	46	54	66	83	27	31	46	54	66	83
Input current	A	0,12	0,14	0,21	0,25	0,30	0,38	0,12	0,14	0,21	0,25	0,30	0,38	0,12	0,14	0,21	0,25	0,30	0,38
FCEER [energy class]	2 pipes	36	[E]				42	[E]				46	[E]						
FCCOP [energy class]	2 pipes	44	[E]				50	[E]				53	[E]						
FCEER [energy class]	4 pipes	NA						32	[E]				42	[E]					
FCCOP [energy class]	4 pipes	NA						51	[E]				55	[E]					

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.

** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 45 °C, water temperature difference = 5K

*** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 65 °C, water temperature difference = 10 K.



Eurovent certified values

6 - 42ET PERFORMANCE DATA

42ET		226						236						246										
Fan speed (Eurovent certification speeds)		R6 (L)	R5	R4 (M)	R3	R2	R1 (H)	R6 (L)	R5	R4 (M)	R3	R2	R1 (H)	R6 (L)	R5	R4	R3 (M)	R2	R1 (H)					
Air flow	l/s	33	37	51	61	72	86	33	37	51	61	72	86	33	37	51	61	72	86					
	m³/h	117	133	185	221	258	309	117	133	185	221	258	309	117	133	185	221	258	309					
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Cooling mode, two pipes*																								
Total cooling capacity	kW	0,79	0,88	1,16	1,33	1,47	1,60	0,84	0,94	1,26	1,46	1,64	1,84	0,91	1,03	1,37	1,58	1,77	2,01					
Sensible cooling capacity	kW	0,59	0,66	0,89	1,03	1,15	1,29	0,61	0,69	0,94	1,10	1,25	1,43	0,65	0,73	0,99	1,15	1,31	1,52					
Water flow	l/s	0,04	0,04	0,06	0,06	0,07	0,08	0,04	0,04	0,06	0,07	0,08	0,09	0,04	0,05	0,07	0,08	0,09	0,10					
	l/h	140	150	200	230	260	280	150	160	220	260	290	320	160	180	240	280	310	350					
Water pressure drop	kPa	8,9	10,6	16,8	21,3	25,2	28,6	6,3	7,3	11,4	14,6	17,9	22,1	4,6	5,1	7,4	9,2	11,0	13,6					
Water volume	l	0,4						0,5						0,6										
Heating mode, two pipes**																								
Heating capacity	kW	0,90	1,02	1,37	1,59	1,77	1,86	0,92	1,04	1,41	1,66	1,90	2,22	0,95	1,08	1,49	1,76	2,03	2,38					
Water flow	l/s	0,04	0,05	0,07	0,08	0,09	0,09	0,04	0,05	0,07	0,08	0,09	0,11	0,05	0,05	0,07	0,09	0,10	0,11					
	l/h	160	180	240	280	310	320	160	180	240	290	330	390	170	190	260	310	350	410					
Water pressure drop	kPa	10	11,8	18,6	23,4	27,8	30,1	6,8	8,1	12,3	15,7	19,4	25	4,5	5,3	8,0	10,0	12,2	15,5					
Water volume	l	0,4						0,5						0,6										
Cooling mode, four pipes*																								
Total cooling capacity	kW	NA						0,73	0,81	1,05	1,19	1,29	1,36	0,80	0,89	1,15	1,29	1,40	1,47					
Sensible cooling capacity	kW							0,56	0,63	0,84	0,97	1,07	1,17	0,59	0,67	0,88	1,02	1,13	1,24					
Water flow	l/s							0,04	0,04	0,05	0,06	0,06	0,07	0,04	0,04	0,06	0,06	0,07	0,04	0,04	0,06	0,06	0,07	0,07
	l/h							130	140	180	210	230	240	140	150	200	230	250	260					
Water pressure drop	kPa							4,3	4,8	6,6	7,8	8,9	9,7	5,6	6,4	9,3	11,2	12,8	14,0					
Water volume	l							0,3						0,4										
Heating mode, four pipes***																								
Heating capacity	kW	NA						1,13	1,26	1,66	1,91	2,14	2,43	1,12	1,26	1,65	1,91	2,14	2,43					
Water flow	l/s							0,03	0,03	0,04	0,05	0,05	0,06	0,03	0,03	0,04	0,05	0,05	0,06					
	l/h							100	110	150	170	190	210	100	110	150	170	190	210					
Water pressure drop	kPa							4	4,4	6	7,1	8,2	9,7	4	4,4	5,9	6,9	8	9,5					
Water volume	l													0,2						0,3				
Sound levels																								
Sound power level (overall)	dB(A)	26	28	35	39	43	47	26	28	35	39	43	47	26	28	35	39	43	47					
Electrical data, motor																								
Power input	W	13	15	20	24	29	36	13	15	20	24	29	36	13	15	20	24	29	36					
Input current	A	0,06	0,07	0,09	0,11	0,13	0,16	0,06	0,07	0,09	0,11	0,13	0,16	0,06	0,07	0,09	0,11	0,13	0,16					
FCEER [energy class]	2 pipes	58	[D]					63	[D]					67	[D]									
FCCOP [energy class]	2 pipes	67	[E]					70	[E]					72	[D]									
FCEER [energy class]	4 pipes	NA						53	[E]					56	[D]									
FCCOP [energy class]	4 pipes	NA						83	[D]					82	[D]									

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – inlet water temperature = 7 °C, water temperature difference = 5 K.

** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 45 °C, water temperature difference = 5 K

*** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 65 °C, water temperature difference = 10 K.



Eurovent certified values

6 - 42ET PERFORMANCE DATA

6.2 - Physical and electrical data at Eurovent conditions - 42ET - Size 3

With G3 filter - without plenum

42ET		325						335					
Fan speed		R6	R5	R4	R3	R2	R1	R6	R5	R4	R3	R2	R1
(Eurovent certification speeds)		(L)		(M)			(H)	(L)		(M)			(H)
Air flow	l/s	89	100	135	151	167	183	89	100	135	151	167	183
	m³/h	321	361	485	544	601	657	321	361	485	544	601	657
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*													
Total cooling capacity	kW	1,50	1,63	2,02	2,18	2,33	2,46	1,86	2,06	2,66	2,92	3,15	3,37
Sensible cooling capacity	kW	1,27	1,40	1,76	1,92	2,06	2,19	1,47	1,63	2,13	2,35	2,55	2,74
Water flow	l/s	0,07	0,08	0,10	0,11	0,11	0,12	0,09	0,10	0,13	0,14	0,16	0,17
	l/h	260	290	360	390	410	440	330	360	470	510	560	600
Water pressure drop	kPa	11,4	13,4	19,9	22,6	25,4	27,9	12,8	15,5	25,1	29,5	33,5	37,6
Water volume	l	0,7						0,9					
Heating mode, two pipes**													
Heating capacity	kW	2,07	2,27	2,83	3,06	3,26	3,43	2,36	2,63	3,39	3,71	4,00	4,26
Water flow	l/s	0,10	0,11	0,14	0,15	0,16	0,17	0,11	0,13	0,16	0,18	0,19	0,21
	l/h	360	400	490	530	570	600	410	460	590	650	700	740
Water pressure drop	kPa	19,4	22,3	31,3	35,4	39,2	42,8	16,7	19,9	30,5	35,6	40,5	45,1
Water volume	l	0,7						0,9					
Cooling mode, four pipes*													
Total cooling capacity	kW	NA						2,26	2,48	3,13	3,42	3,68	3,91
Sensible cooling capacity	kW							1,65	1,83	2,35	2,58	2,80	3,00
Water flow	l/s							0,11	0,12	0,15	0,17	0,18	0,19
	l/h							390	430	550	600	650	690
Water pressure drop	kPa							36,1	42,4	63,2	73,5	83,5	93,6
Water volume	l							0,6					
Heating mode, four pipes***													
Heating capacity	kW	NA						2,55	2,78	3,36	3,57	3,75	3,93
Water flow	l/s							0,06	0,07	0,08	0,09	0,09	0,09
	l/h							220	240	290	310	330	340
Water pressure drop	kPa							11,8	13,6	18,5	20,5	22,3	24,1
Water volume	l												
Sound levels													
Sound power level (overall)	dB(A)	44	47	55	58	60	62	44	47	55	58	60	62
Electrical data, motor													
Power input	W	39	45	63	74	85	101	39	45	63	74	85	101
Input current	A	0,18	0,21	0,29	0,34	0,39	0,46	0,18	0,21	0,29	0,34	0,39	0,46
FCEER [energy class]	2 pipes	35	[E]					44	[E]				
FCCOP [energy class]	2 pipes	48	[E]					56	[E]				
FCEER [energy class]	4 pipes	NA						53	[E]				
FCCOP [energy class]	4 pipes	NA						59	[E]				

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.

** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 45 °C, water temperature difference = 5 K

*** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 65 °C, water temperature difference = 10 K.



Eurovent certified values

6 - 42ET PERFORMANCE DATA

42ET		345						346					
Fan speed (Eurovent certification speeds)		R6 (L)	R5	R4 (M)	R3	R2	R1 (H)	R6 (L)	R5	R4 (M)	R3	R2	R1 (H)
Air flow	l/s	89	100	135	151	167	183	42	49	71	84	101	121
	m³/h	321	361	485	544	601	657	152	178	254	304	365	437
Available static pressure		Pa	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*													
Total cooling capacity	kW	2,39	2,63	3,23	3,44	3,60	3,75	1,17	1,37	1,93	2,27	2,64	3,01
Sensible cooling capacity	kW	1,71	1,90	2,41	2,60	2,77	2,93	0,83	0,97	1,37	1,62	1,91	2,21
Water flow	l/s	0,12	0,13	0,16	0,17	0,18	0,18	0,06	0,07	0,09	0,11	0,13	0,15
	l/h	420	460	570	600	630	660	210	240	340	400	460	530
Water pressure drop	kPa	26,3	31,3	43,7	48,5	52,5	56,4	8,8	10,8	18,5	24,3	31,8	39,3
Water volume	l	1,0						1,0					
Heating mode, two pipes**													
Heating capacity	kW	2,48	2,74	3,41	3,67	3,91	4,16	1,24	1,44	2,02	2,37	2,77	3,17
Water flow	l/s	0,12	0,13	0,16	0,18	0,19	0,20	0,06	0,07	0,10	0,11	0,13	0,15
	l/h	430	480	590	640	680	720	220	250	350	410	480	550
Water pressure drop	kPa	23,8	27,7	39,1	44,1	49	54,2	9,2	11,1	17,5	22,2	28,1	34,9
Water volume	l	1,0						1,0					
Cooling mode, four pipes*													
Total cooling capacity	kW	2,46	2,70	3,38	3,66	3,90	4,12	1,14	1,33	1,91	2,27	2,65	2,91
Sensible cooling capacity	kW	1,74	1,93	2,46	2,69	2,90	3,10	0,81	0,95	1,36	1,62	1,90	2,15
Water flow	l/s	0,12	0,13	0,16	0,18	0,19	0,20	0,06	0,06	0,09	0,11	0,13	0,14
	l/h	430	470	590	640	680	730	200	230	340	400	460	510
Water pressure drop	kPa	37,6	44	64,1	73,6	82,4	90,9	11,4	14,9	28,2	37,9	48,7	57,3
Water volume	l	0,6						0,6					
Heating mode, four pipes***													
Heating capacity	kW	2,55	2,78	3,36	3,57	3,75	3,93	1,52	1,73	2,21	2,44	2,69	3,12
Water flow	l/s	0,06	0,07	0,08	0,09	0,09	0,09	0,04	0,04	0,05	0,06	0,07	0,08
	l/h	220	240	290	310	330	340	130	150	190	210	240	270
Water pressure drop	kPa	10,7	11,9	15,5	16,9	18,2	19,4	6,1	6,9	9,0	10,1	11,4	13,9
Water volume	l	0,4						0,4					
Sound levels													
Sound power level (overall)	dB(A)	44	47	55	58	60	62	28	31	41	45	49	54
Electrical data, motor													
Power input	W	39	45	63	74	85	101	25	29	41	49	59	72
Input current	A	0,18	0,21	0,29	0,34	0,39	0,46	0,11	0,13	0,19	0,22	0,27	0,33
FCEER [energy class]	2 pipes	55	[E]					46	[E]				
FCCOP [energy class]	2 pipes	58	[E]					49	[E]				
FCEER [energy class]	4 pipes	54	[E]					45	[E]				
FCCOP [energy class]	4 pipes	59	[E]					57	[E]				

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.

** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 45 °C, water temperature difference = 5 K.

*** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 65 °C, water temperature difference = 10 K.



Eurovent certified values

6 - 42ET PERFORMANCE DATA

6.3 - Physical and electrical data at Eurovent conditions - 42ET - Size 4

With G3 filter - without plenum

42ET		425						435											
Fan speed (Eurovent certification speeds)		R6 (L)	R5	R4 (M)	R3	R2	R1 (H)	R6 (L)	R5	R4	R3 (M)	R2	R1 (H)						
Air flow	l/s	148	166	229	262	291	309	148	166	229	262	291	309						
	m³/h	532	596	824	942	1047	1114	532	596	824	942	1047	1114						
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0						
Cooling mode, two pipes*																			
Total cooling capacity	kW	2,75	3,00	3,80	4,13	4,38	4,50	3,26	3,63	4,76	5,20	5,52	5,66						
Sensible cooling capacity	kW	2,23	2,45	3,18	3,50	3,75	3,88	2,51	2,80	3,73	4,14	4,45	4,60						
Water flow	l/s	0,13	0,15	0,19	0,20	0,21	0,22	0,16	0,18	0,23	0,25	0,27	0,28						
	l/h	480	530	670	730	770	800	570	640	830	910	970	1000						
Water pressure drop	kPa	19,2	22,4	33,4	38,6	42,7	45,1	27,7	33,7	52,7	61,6	68,2	71,7						
Water volume	l	1,0						1,3											
Heating mode, two pipes**																			
Heating capacity	kW	3,33	3,73	5,04	5,61	5,99	6,16	3,51	3,97	5,54	6,25	6,72	6,90						
Water flow	l/s	0,16	0,18	0,24	0,27	0,29	0,30	0,17	0,19	0,27	0,30	0,33	0,33						
	l/h	580	650	880	980	1040	1070	610	690	960	1090	1170	1200						
Water pressure drop	kPa	21,6	26,1	43,6	52,4	58,8	61,6	26,1	32,1	56,9	70	79,5	83,1						
Water volume	l	1,0						1,3											
Cooling mode, four pipes*																			
Total cooling capacity	kW	NA						2,81	3,07	3,87	4,21	4,49	4,63						
Sensible cooling capacity	kW							2,27	2,50	3,23	3,56	3,83	3,97						
Water flow	l/s							0,14	0,15	0,19	0,21	0,22	0,23						
	l/h							490	540	680	740	790	820						
Water pressure drop	kPa							25,4	29,6	43,8	50,7	56,7	60,3						
Water volume	l	NA						0,9											
Heating mode, four pipes***																			
Heating capacity	kW							NA						3,69	4,12	5,38	5,82	6,04	6,09
Water flow	l/s													0,09	0,10	0,13	0,14	0,15	0,15
	l/h													320	360	470	510	530	530
Water pressure drop	kPa	24,5	29,4	46,6	53,4	57	57,7												
Water volume	l	NA						0,5											
Sound levels																			
Sound power level (overall)	dB(A)							43	47	54	57	60	62	43	47	54	57	60	62
Electrical data, motor																			
Power input	W	58	68	98	115	132	158	58	68	98	115	132	158						
Input current	A	0,27	0,31	0,45	0,53	0,60	0,72	0,27	0,31	0,45	0,53	0,60	0,72						
FCEER [energy class]	2 pipes	42	[E]					49	[E]										
FCCOP [energy class]	2 pipes	53	[E]					56	[E]										
FCEER [energy class]	4 pipes	NA						41	[E]										
FCCOP [energy class]	4 pipes	NA						56	[E]										

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – inlet water temperature = 7 °C, water temperature difference = 5 K.

** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 45 °C, water temperature difference = 5 K

*** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 65 °C, water temperature difference = 10 K.



Eurovent certified values

6 - 42ET PERFORMANCE DATA

42ET		426						436					
Fan speed (Eurovent certification speeds)		R6 (L)	R5	R4 (M)	R3	R2	R1 (H)	R6 (L)	R5	R4	R3 (M)	R2	R1 (H)
Air flow	l/s	68	92	126	151	177	216	68	92	126	151	177	216
	m³/h	246	331	454	545	638	776	246	331	454	545	638	776
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*													
Total cooling capacity	kW	1,32	1,72	2,28	2,67	3,01	3,37	1,49	1,99	2,71	3,22	3,66	4,02
Sensible cooling capacity	kW	1,08	1,41	1,88	2,21	2,51	2,86	1,17	1,56	2,12	2,52	2,88	3,27
Water flow	l/s	0,06	0,08	0,11	0,13	0,15	0,16	0,07	0,10	0,13	0,16	0,18	0,19
	l/h	230	300	400	470	530	590	260	350	470	560	640	700
Water pressure drop	kPa	7,1	10,6	17,1	22,5	27,5	33	7,3	11,5	19,5	26,6	33,2	38,6
Water volume	l	1,0						1,3					
Heating mode, two pipes**													
Heating capacity	kW	1,66	2,12	2,73	3,20	3,72	4,62	1,72	2,26	3,03	3,61	4,21	5,09
Water flow	l/s	0,08	0,10	0,13	0,16	0,18	0,22	0,08	0,11	0,15	0,18	0,20	0,24
	l/h	290	370	480	560	650	800	300	390	530	630	730	880
Water pressure drop	kPa	10,6	14	19,6	24,5	30,7	43,1	8,4	12,6	20,4	27,3	35,4	49,1
Water volume	l	1,0						1,3					
Cooling mode, four pipes*													
Total cooling capacity	kW	NA						1,35	1,79	2,44	2,87	3,26	3,62
Sensible cooling capacity	kW							1,09	1,45	1,97	2,33	2,66	3,03
Water flow	l/s							0,07	0,09	0,12	0,14	0,16	0,18
	l/h							240	310	430	500	570	640
Water pressure drop	kPa							7,8	12,1	20,6	27,4	33,6	40
Water volume	l							0,9					
Heating mode, four pipes***													
Heating capacity	kW	NA						2,24	2,73	3,15	3,35	3,58	4,34
Water flow	l/s							0,06	0,07	0,08	0,08	0,09	0,11
	l/h							200	240	280	290	310	380
Water pressure drop	kPa							11,8	15,8	19,8	21,7	24,2	33,2
Water volume	l												
Sound levels													
Sound power level (overall)	dB(A)	24	30	39	42	47	52	24	30	39	42	47	52
Electrical data, motor													
Power input	W	22	32	43	55	68	88	22	32	43	55	68	88
Input current	A	0,10	0,15	0,20	0,25	0,31	0,40	0,10	0,15	0,20	0,25	0,31	0,40
FCEER [energy class]	2 pipes	54	[E]					63	[D]				
FCCOP [energy class]	2 pipes	68	[E]					73	[D]				
FCEER [energy class]	4 pipes	NA						57	[D]				
FCCOP [energy class]	4 pipes	NA						84	[D]				

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – inlet water temperature = 7 °C, water temperature difference = 5 K.

** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 45 °C, water temperature difference = 5 K

*** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 65 °C, water temperature difference = 10 K.



Eurovent certified values

6 - 42ET PERFORMANCE DATA

6.4 - Physical and electrical data at Eurovent conditions - 42ET - Size 5

With G3 filter - without plenum

42ET		525						535					
Fan speed (Eurovent certification speeds)		R6 (L)	R5	R4	R3 (M)	R2	R1 (H)	R6 (L)	R5	R4	R3 (M)	R2	R1 (H)
Air flow	l/s	152	171	243	280	318	367	152	171	243	280	318	367
	m³/h	546	614	875	1009	1143	1322	546	614	875	1009	1143	1322
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*													
Total cooling capacity	kW	2,71	2,98	3,89	4,28	4,65	5,08	3,17	3,56	4,84	5,39	5,86	6,40
Sensible cooling capacity	kW	2,23	2,46	3,28	3,65	3,99	4,42	2,49	2,79	3,85	4,33	4,76	5,28
Water flow	l/s	0,13	0,14	0,19	0,21	0,23	0,25	0,16	0,17	0,24	0,26	0,29	0,31
	l/h	480	520	690	760	820	900	560	620	850	950	1030	1130
Water pressure drop	kPa	17,1	20,5	32,8	38,7	44,7	52,2	21,4	26,7	46,2	55,4	64	74,6
Water volume	l	1,4						1,8					
Heating mode, two pipes**													
Heating capacity	kW	3,49	3,89	5,25	5,83	6,33	6,90	3,60	4,06	5,59	6,23	6,74	7,27
Water flow	l/s	0,17	0,19	0,25	0,28	0,31	0,33	0,18	0,20	0,27	0,30	0,33	0,35
	l/h	610	680	910	1010	1100	1200	630	710	970	1080	1170	1260
Water pressure drop	kPa	21,9	26,3	43,8	52,5	60,6	70,3	25,7	31,5	54,5	65,5	75,1	85,6
Water volume	l	1,4						1,8					
Cooling mode, four pipes*													
Total cooling capacity	kW	NA						2,73	3,02	3,98	4,39	4,76	5,19
Sensible cooling capacity	kW							2,22	2,46	3,30	3,68	4,03	4,45
Water flow	l/s							0,13	0,15	0,19	0,21	0,23	0,26
	l/h							480	530	700	770	840	920
Water pressure drop	kPa							18,3	22,2	36,1	42,7	49,1	57,3
Water volume	l							1,1					
Heating mode, four pipes***													
Heating capacity	kW	NA						3,01	3,30	4,25	4,65	4,99	5,39
Water flow	l/s							0,07	0,08	0,10	0,11	0,12	0,13
	l/h							260	290	370	410	440	470
Water pressure drop	kPa							6	6,8	10,1	11,6	13	14,7
Water volume	l							1,1					
Sound levels													
Sound power level (overall)	dB(A)	44	47	54	57	60	62	44	47	54	57	60	62
Electrical data, motor													
Power input	W	59	69	100	119	140	171	59	69	100	119	140	171
Input current	A	0,27	0,32	0,46	0,54	0,64	0,78	0,27	0,32	0,46	0,54	0,64	0,78
FCEER [energy class]	2 pipes	41	[E]					50	[E]				
FCCOP [energy class]	2 pipes	55	[E]					57	[E]				
FCEER [energy class]	4 pipes	NA						42	[E]				
FCCOP [energy class]	4 pipes	NA						46	[E]				

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – inlet water temperature = 7 °C, water temperature difference = 5 K.

** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 45 °C, water temperature difference = 5 K

*** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 65 °C, water temperature difference = 10 K.



Eurovent certified values

6 - 42ET PERFORMANCE DATA

42ET		545						555					
Fan speed (Eurovent certification speeds)		R6 (L)	R5	R4	R3	R2 (M)	R1 (H)	R6 (L)	R5	R4	R3 (M)	R2	R1 (H)
Air flow	l/s	152	171	243	280	318	367	139	164	228	262	293	325
	m³/h	546	614	875	1009	1143	1322	502	589	820	944	1055	1171
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*													
Total cooling capacity	kW	4,06	4,48	5,96	6,63	7,23	7,85	NA					
Sensible cooling capacity	kW	2,91	3,23	4,38	4,93	5,44	6,01						
Water flow	l/s	0,20	0,22	0,29	0,32	0,35	0,38						
	l/h	710	780	1040	1160	1270	1380						
Water pressure drop	kPa	49,9	58,6	94,4	113,4	131,6	152,1						
Water volume	l	1,6											
Heating mode, two pipes**													
Heating capacity	kW	4,26	4,76	6,60	7,42	8,05	8,13	NA					
Water flow	l/s	0,21	0,23	0,32	0,36	0,39	0,39						
	l/h	740	830	1150	1290	1400	1410						
Water pressure drop	kPa	46,8	56,3	97,6	119,4	137,2	139,8						
Water volume	l	1,6											
Cooling mode, four pipes*													
Total cooling capacity	kW	2,95	3,29	4,47	5,01	5,50	6,08	3,54	4,02	5,21	5,81	6,35	6,90
Sensible cooling capacity	kW	2,38	2,65	3,64	4,11	4,55	5,09	2,58	2,96	3,92	4,41	4,85	5,29
Water flow	l/s	0,14	0,16	0,22	0,24	0,27	0,30	0,17	0,19	0,25	0,28	0,31	0,34
	l/h	520	580	780	880	970	1070	620	700	910	1020	1110	1210
Water pressure drop	kPa	18,4	22,6	39,7	48,2	56,6	67,6	45,6	55,9	86,5	104,4	121,6	140,9
Water volume	l	1,4						1,6					
Heating mode, four pipes***													
Heating capacity	kW	3,48	3,88	5,15	5,63	6,00	6,37	4,92	5,44	6,54	7,01	7,41	7,84
Water flow	l/s	0,08	0,09	0,13	0,14	0,15	0,16	0,12	0,13	0,16	0,17	0,18	0,19
	l/h	300	340	450	490	530	560	430	480	570	610	650	690
Water pressure drop	kPa	6,9	8,1	12,6	14,6	16,2	17,9	10,6	12,3	16,2	18	19,6	21,5
Water volume	l	0,6						0,4					
Sound levels													
Sound power level (overall)	dB(A)	44	47	54	57	60	62	43	46	53	56	59	61
Electrical data, motor													
Power input	W	59	69	100	119	140	171	58	68	99	116	135	165
Input current	A	0,27	0,32	0,46	0,54	0,64	0,78	0,27	0,31	0,45	0,53	0,62	0,76
FCEER [energy class]	2 pipes	63	[D]					0	[E]				
FCCOP [energy class]	2 pipes	67	[E]					0	[E]				
FCEER [energy class]	4 pipes	46	[E]					56	[D]				
FCCOP [energy class]	4 pipes	54	[E]					74	[D]				

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – inlet water temperature = 7 °C, water temperature difference = 5 K.

** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 45 °C, water temperature difference = 5 K

*** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 65 °C, water temperature difference = 10 K.



Eurovent certified values

6 - 42ET PERFORMANCE DATA

42ET		536						546						556					
Fan speed (Eurovent certification speeds)		R6 (L)	R5	R4	R3 (M)	R2	R1 (H)	R6 (L)	R5	R4	R3	R2 (M)	R1 (H)	R6 (L)	R5	R4	R3	R2 (M)	R1 (H)
Air flow	l/s	133	154	223	259	294	327	133	154	223	259	294	327	129	147	213	248	280	313
	m³/h	478	555	804	934	1057	1177	478	555	804	934	1057	1177	466	530	767	892	1009	1125
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*																			
Total cooling capacity	kW	3,21	3,59	4,57	5,05	5,54	6,12	3,62	4,12	5,57	6,26	6,85	7,36	NA					
Sensible cooling capacity	kW	2,40	2,71	3,60	4,04	4,47	4,95	2,58	2,95	4,08	4,63	5,12	5,55						
Water flow	l/s	0,16	0,18	0,22	0,25	0,27	0,30	0,18	0,20	0,27	0,30	0,33	0,36						
	l/h	560	630	800	890	970	1080	630	720	970	1090	1200	1290						
Water pressure drop	kPa	23,8	29,0	43,8	51,5	60,1	71,0	42,1	51,1	84,4	102,8	120,0	135,9						
Water volume	l	1,3						1,6											
Heating mode, two pipes**																			
Heating capacity	kW	3,72	4,24	5,69	6,26	6,66	6,91	3,78	4,36	6,14	6,94	7,53	7,74	NA					
Water flow	l/s	0,18	0,21	0,28	0,30	0,32	0,33	0,18	0,21	0,30	0,34	0,36	0,38						
	l/h	650	740	990	1090	1160	1200	660	760	1070	1210	1310	1350						
Water pressure drop	kPa	28,4	35,0	56,5	66,2	73,4	78,1	38,6	48,8	86,3	106,5	122,4	128,4						
Water volume	l	1,3						1,6											
Cooling mode, four pipes*																			
Total cooling capacity	kW	NA						2,57	2,96	4,18	4,75	5,22	5,55	3,33	3,70	4,95	5,56	6,13	6,69
Sensible cooling capacity	kW							2,08	2,39	3,39	3,88	4,29	4,61	2,42	2,70	3,70	4,21	4,67	5,12
Water flow	l/s							0,13	0,14	0,20	0,23	0,26	0,27	0,16	0,18	0,24	0,27	0,30	0,33
	l/h							450	520	730	830	920	980	580	650	860	970	1070	1170
Water pressure drop	kPa							16,2	20,6	37,3	46,2	53,7	59,6	40,9	49,2	79,2	96,7	114,4	133,0
Water volume	l							1,4						1,6					
Heating mode, four pipes***																			
Heating capacity	kW	NA						3,45	3,79	4,79	5,28	5,74	6,22	4,68	5,10	6,32	6,82	7,24	7,66
Water flow	l/s							0,08	0,09	0,12	0,13	0,14	0,15	0,11	0,13	0,15	0,17	0,18	0,19
	l/h							300	330	420	460	500	550	410	450	550	600	630	670
Water pressure drop	kPa							8,8	9,9	13,3	15,2	17,1	19,2	9,9	11,2	15,4	17,3	19	20,7
Water volume	l													0,6					
Sound levels																			
Sound power level (overall)	dB(A)	42	44	52	56	59	61	42	44	52	56	59	61	41	43	51	55	58	60
Electrical data, motor																			
Power input	W	54	64	92	109	125	148	54	64	92	109	125	148	54	63	90	106	122	144
Input current	A	0,25	0,29	0,42	0,50	0,57	0,68	0,25	0,29	0,42	0,50	0,57	0,68	0,25	0,29	0,41	0,49	0,56	0,66
FCEER [energy class]	2 pipes	54	[E]					63	[D]					NA					
FCCOP [energy class]	2 pipes	64	[E]					67	[E]					NA					
FCEER [energy class]	4 pipes	NA						46	[E]					57	[D]				
FCCOP [energy class]	4 pipes	NA						58	[E]					78	[D]				

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – inlet water temperature = 7 °C, water temperature difference = 5 K.

** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 45 °C, water temperature difference = 5 K.

*** Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 65 °C, water temperature difference = 10 K.



Eurovent certified values

DUCTABLE FAN COIL UNIT



42NL & 42NH

The Carrier 42NH and 42NL are available in different sizes with 2-pipe, 2-pipe plus electric heater or 4-pipe coils, with an air flow range from 100 to 2300 m³/h, a total cooling capacity range from 0.6 kW to 12 kW and a nominal heating capacity range from 0.8 kW to 17 kW.



CARRIER participates in the ECP programme for FC/FCP
Check ongoing validity of certificate:
www.eurovent-certification.com

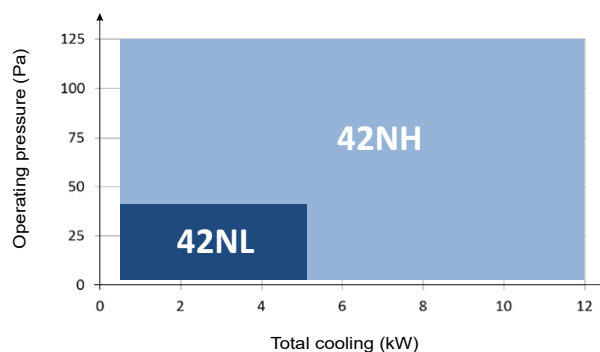
1 - FUNCTIONS AND CONFIGURATIONS

- Compact and modular ducted unit, designed for any false ceiling installation.
- Reliable and economical for tertiary building as hotel guest rooms, offices or light commercial applications.
- Low height of 235 mm (sizes 2/3/4/5) and 285 mm (sizes 6/7)
- Compatible with the Carrier diffuser ranges.
- Extremely low sound levels for ducted applications.
- Five- to Six- speed fan AC motors offers a wide choice of medium speeds.
- Available with Low Energy Consumption variable-speed EC motor.
- High-pressure centrifugal fan for 42NH Range
- G3 filter as standard.
- Safe factory installed electric heater with multiple capacity stages choices.
- Low water pressure drop with factory installed valves.
- Factory installed options (valves and controllers) for fast and easy installation in false ceilings.

1.1 - Modularity

Thanks to its two versions, the range is suitable for all applications.

The 42NL version is optimised for soffit installations while the 42NH is optimised for air return and supply ducted installations.

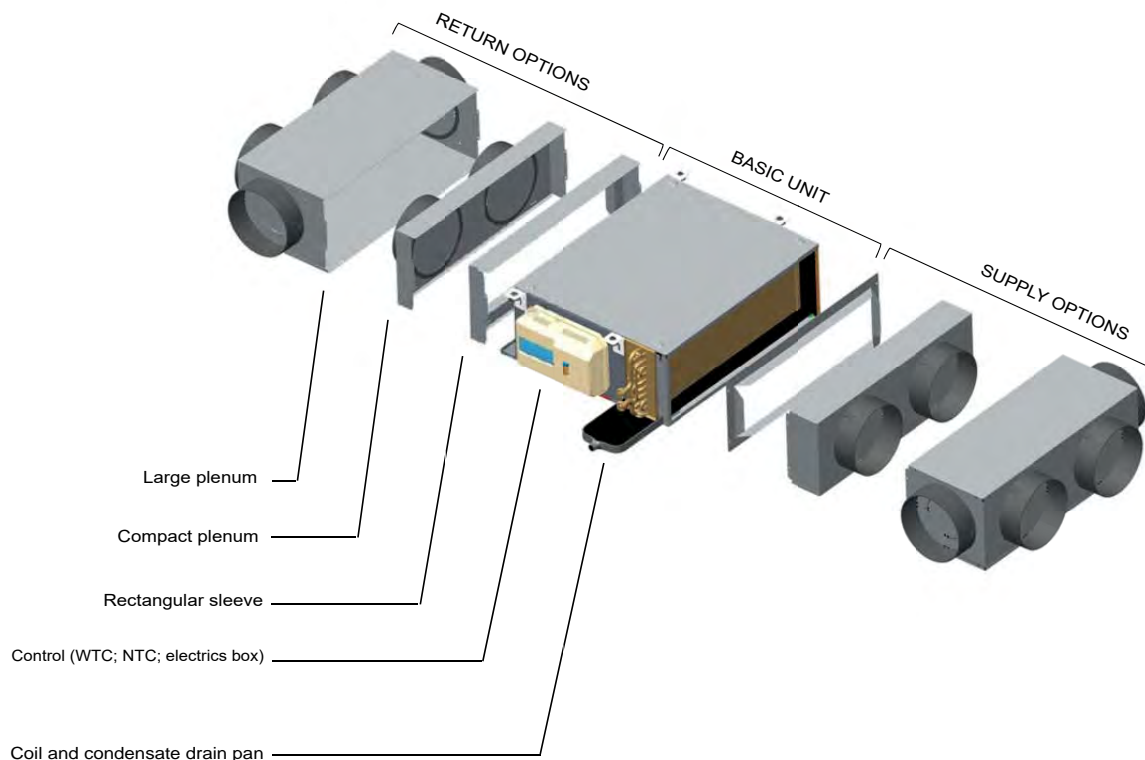


1.2 - Configuration and flexibility

Each of the 42NL and 42NH sizes can be equipped:

- with non-ducted return and/or direct supply;
- with a rectangular flange on the return and/or supply (ideal for connecting the fan coil unit to the air duct);
- with return and/or plenums including a large number of spigots with diameters of 160, 200 or 250 mm depending on the unit size.

The image below shows all available plenum configurations on the 42NL or 42NH (e.g. size 3) with a spigot diameter of 200 mm.



1 - FUNCTIONS AND CONFIGURATIONS

1.3 - Standard spigot configuration

Large and small plenums are available for all sizes as per the drawings below:

(*) = Minimum number of spigots required to ensure sufficient available static pressure and fan reliability

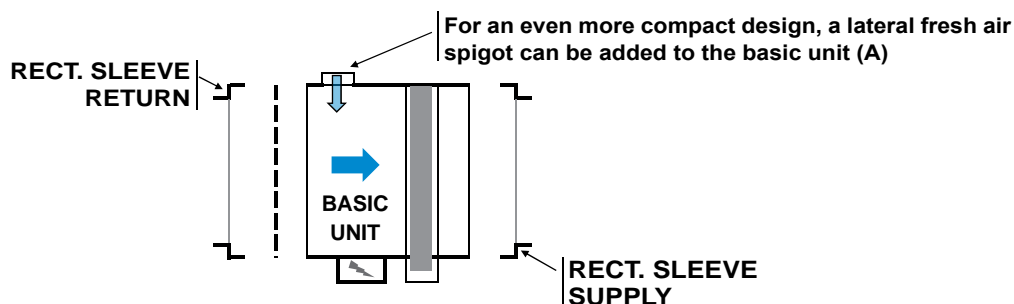
	42NH & 42NL Size 2xx	42NH & 42NL Size 3xx	42NH & 42NL Size 4xx
LARGE RETURN OR SUPPLY			
COMPACT RETURN OR SUPPLY			
LIMITS (*)	MIN. NO. OF SPIGOTS = 1x160 or 1x200 (2x160 and 1x200 for 42NH279)	MIN. NO. OF SPIGOTS = 2x160 or 1x200 (2x160 and 2x200 for 42NL range)	MIN. NO. OF SPIGOTS = 3x160 or 2x200
	42NH & 42NL Size 5xx	42NH Size 6xx	42NH Size 7xx
LARGE RETURN OR SUPPLY			
COMPACT RETURN OR SUPPLY			
LIMITS (*)	MIN. NO. OF SPIGOTS = 3x160 or 2x200 (4x160 and 3x200 for 42NL range)	MIN. NO. OF SPIGOTS = 3x200 or 2x250	MIN. NO. OF SPIGOTS = 4x200 or 3x250

NOTE:

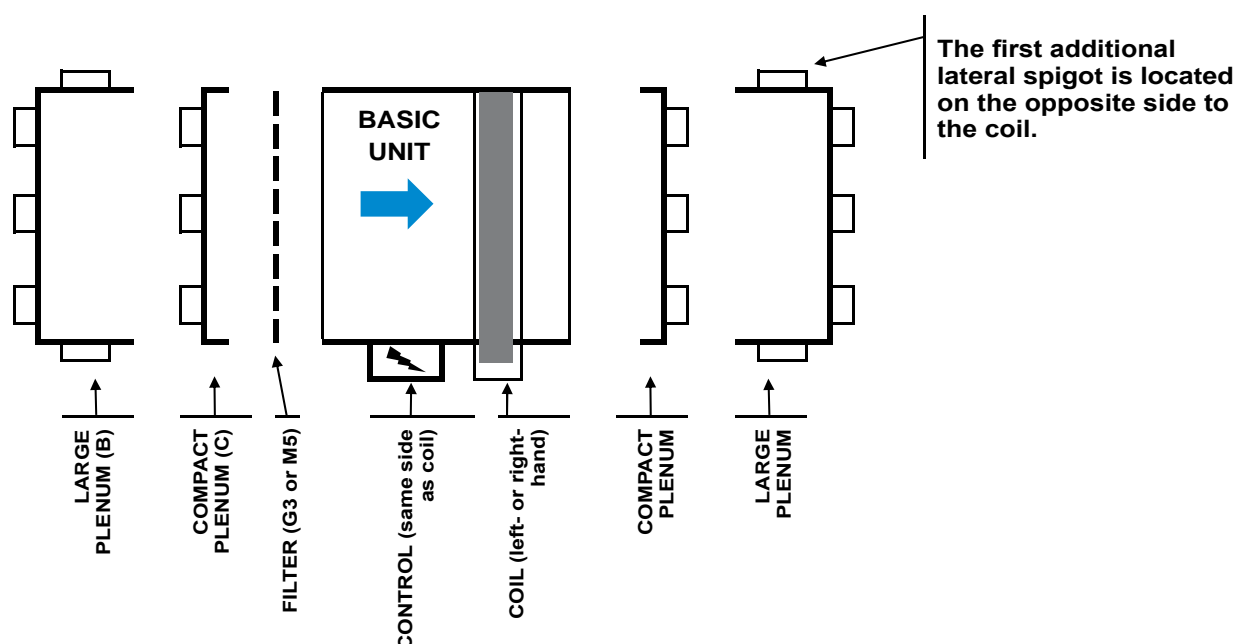
- Electrical heater are not available for 42NL Units when plenum are selected (due to minimum airflow requirement).
- Non-standard configurations not listed above can be provided upon special request. Contact your local Carrier representative.

1 - FUNCTIONS AND CONFIGURATIONS

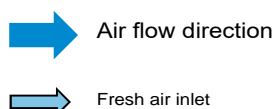
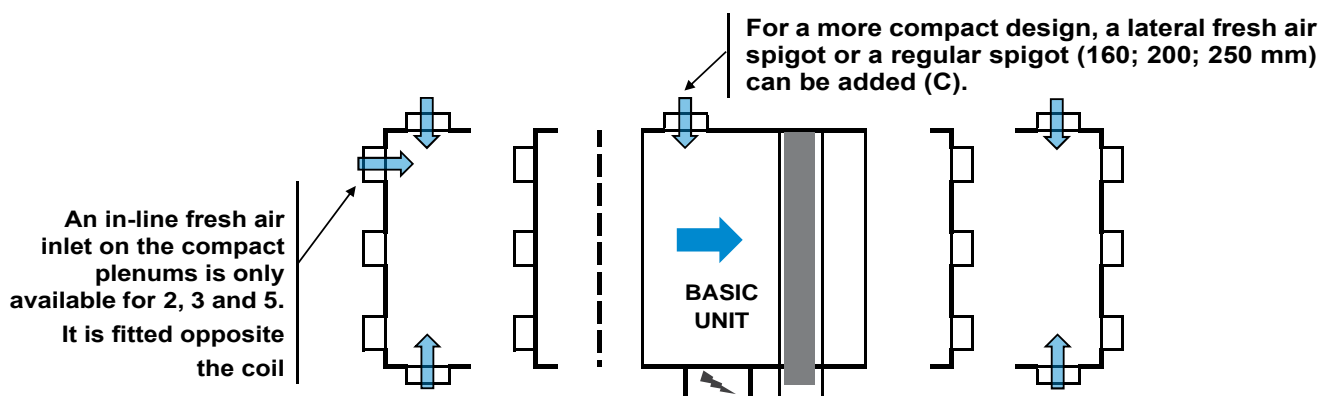
Standard configuration with return and supply rectangular sleeves:



Standard configuration with spigots without fresh air:



Standard configuration with fresh air return possibilities:

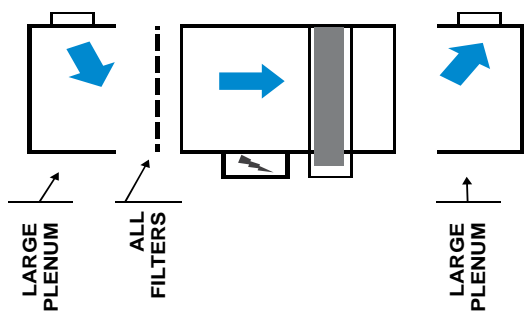


- (A) In this case, the air must be filtered beforehand to prevent any damage to the fan and the soiling of the coil.
- (B) Large plenum is required to fit the M5 filter
- (C) Without any filter the small inlet plenum is flat for improved compactness.

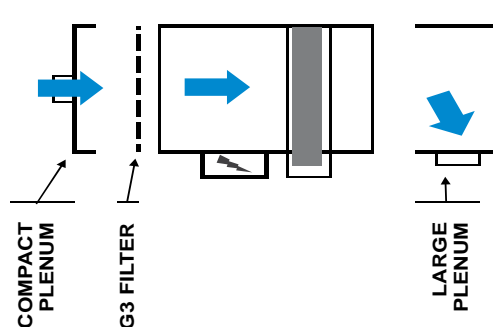
1 - FUNCTIONS AND CONFIGURATIONS

Additional configurations are displayed below:

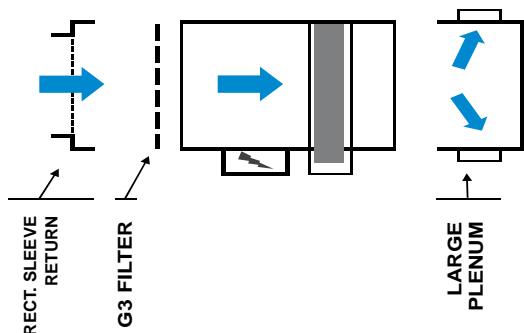
U-shaped



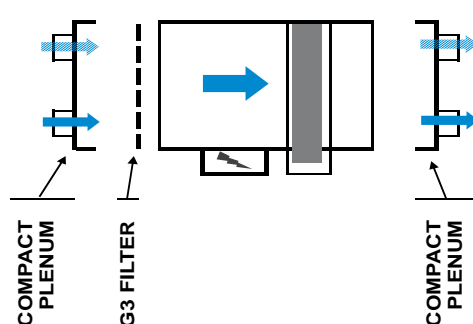
L-shaped



T-shaped

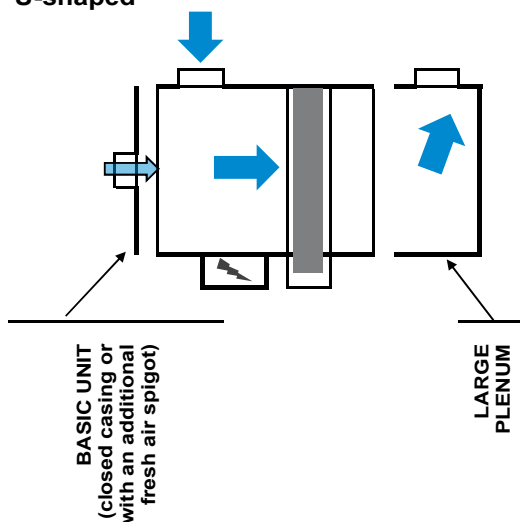


H-shaped or I-shaped

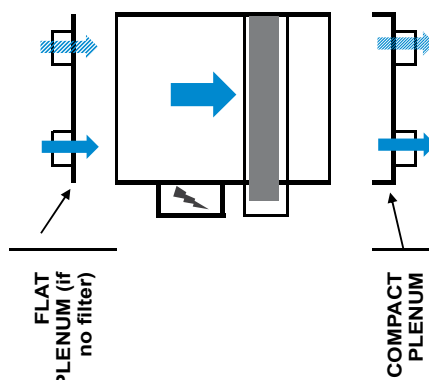


Configurations without filter (ultra-compact design)

U-shaped



H-shaped or I-shaped



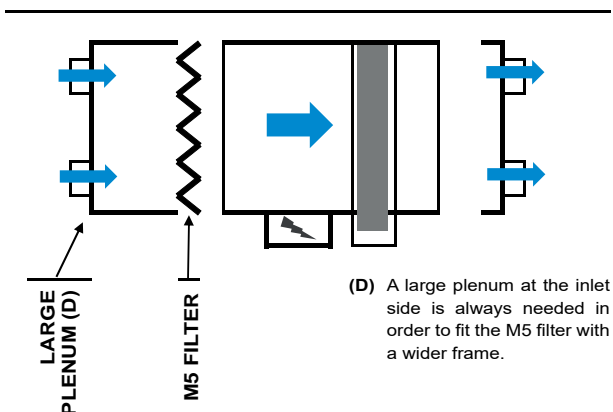
Compatibility Reminder	Size 2		Size 3	Sizes 4 to 7
	22x / 23x	279		
1x160	NH/NL	n.a.	n.a.	n.a.
1x200	NH/NL	NH	NH	n.a.
1x250	n.a.	n.a.	n.a.	n.a.

Compatibility Reminder	Size 2 to 3	Size 4	Size 5	Size 6	Size 7
2x160	NH/NL	n.a.	n.a.	n.a.	n.a.
2x200	NH/NL	NH/NL	NH	n.a.	n.a.
2x250	n.a.	n.a.	n.a.	NH	n.a.

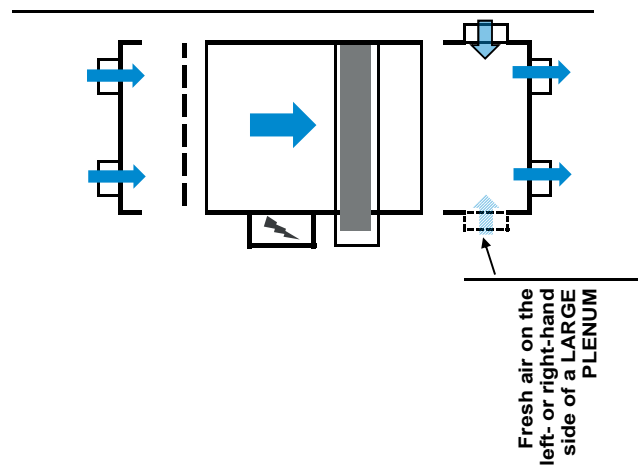
NA: Not Available

1 - FUNCTIONS AND CONFIGURATIONS

M5 filter configurations

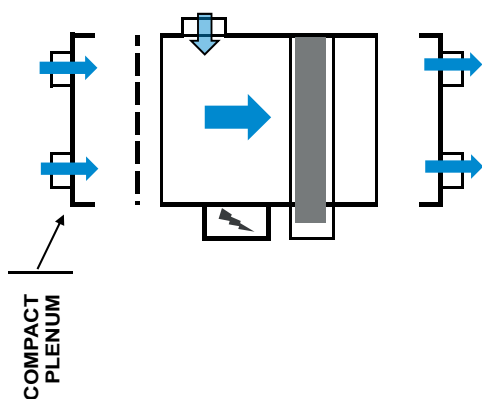


Lateral fresh air configuration at the supply side

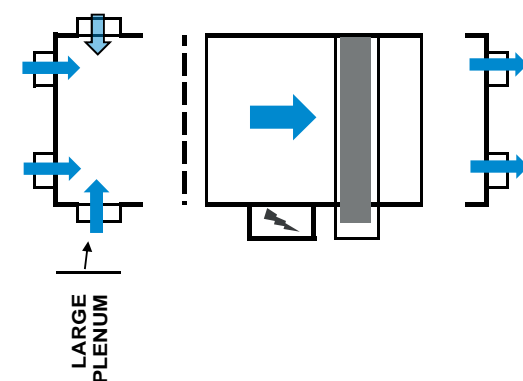


Fresh air configurations at the return side

Lateral fresh air (opposite side to coil) Option 1 "Optimised"



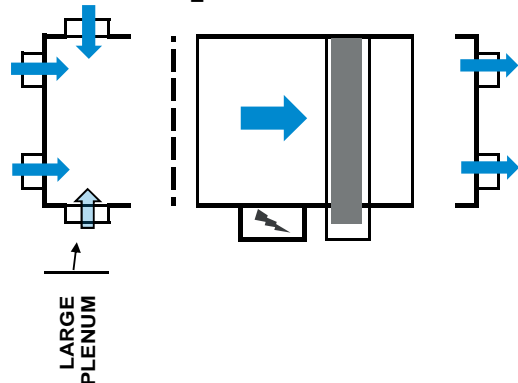
Option 2 "In_opp"



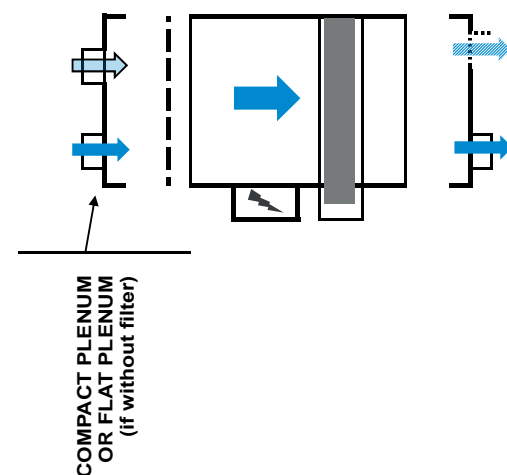
Inlet optimised: for a compact design, the fresh air is fitted on the basic unit (on the opposite side to the coil).

With this option, the fresh air is located opposite the coil and is always installed in a large plenum.

Lateral fresh Air "In_coil"



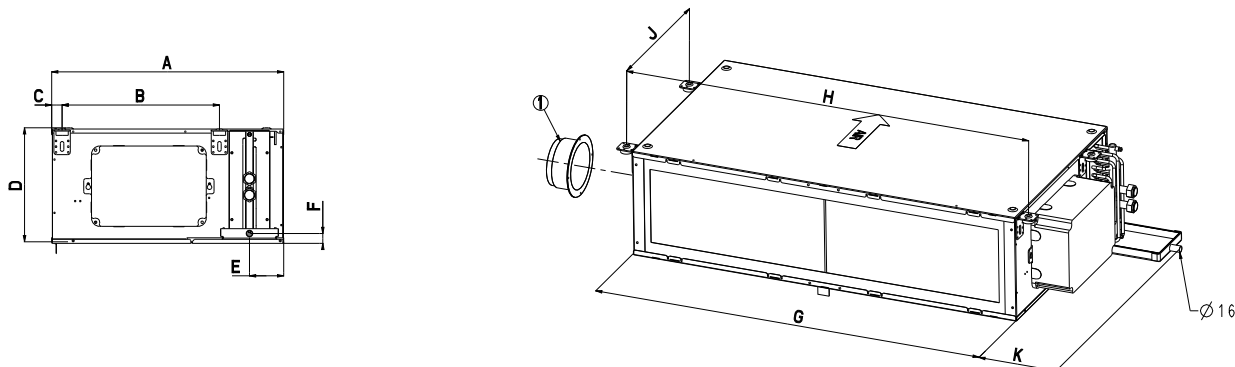
"In_line" fresh air (for sizes 2, 3 and 5)



2 - DIMENSIONAL DRAWINGS

NOTE: All the drawings show the coil connection on the right-hand side. Coils with left-hand connections are strictly symmetrical,

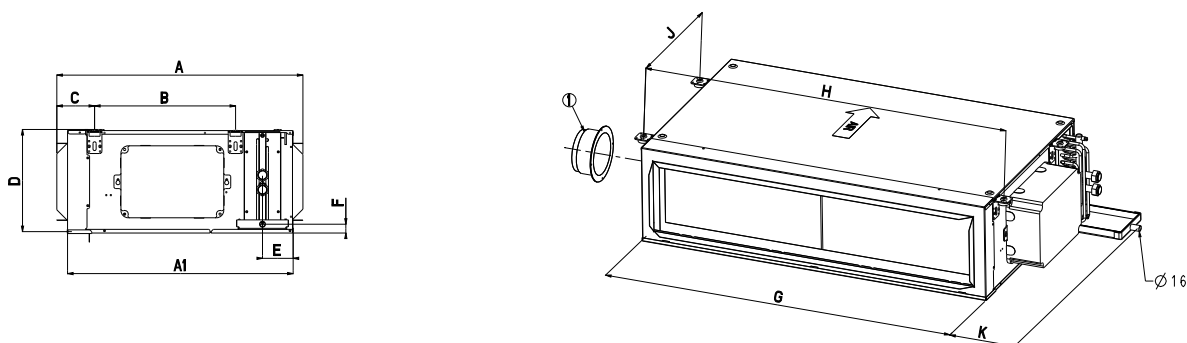
Standard unit without rectangular return and supply flanges



Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	520	520	520	520	575	575
B	330	330	330	330	385	385
C	25	25	25	25	25	25
D	235	235	235	235	285	285
E	85	85	85	85	85	85
F	17	17	17	17	25	25

Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
G	450	620	820	1020	1020	1320
H	500	670	870	1070	1070	1370
J	330	330	330	330	385	385
K	230	230	230	230	230	230
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	15	18	23	27	30	36

Standard unit with rectangular sleeves on the return and supply



Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	520	520	520	520	575	575
B	330	330	330	330	385	385
C	25	25	25	25	25	25
D	235	235	235	235	285	285
E	85	85	85	85	85	85
Rectangular Flanges	380 x 160	550 x 160	750 x 160	950 x 160	950 x 210	1250 x 210

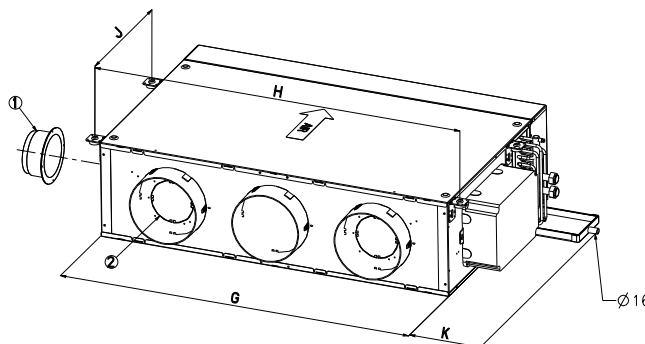
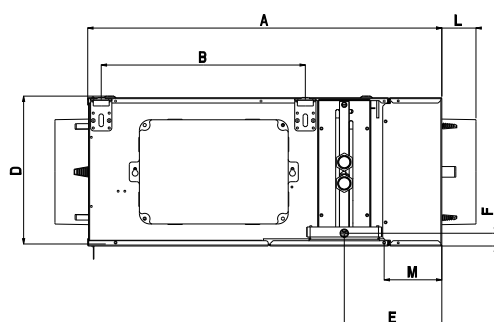
Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
F	17	17	17	17	25	25
A1	561	561	561	561	615	615
G	450	620	820	1020	1020	1320
H	500	670	870	1070	1070	1370
J	330	330	330	330	385	385
K	230	230	230	230	230	230
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	15	18	23	27	30	36

KEY

- 1 Lateral optimized fresh air position in base unit (opposite to coil hand at inlet)
 * Maximum weight 42NL/NH (AC or EC motor version) - without valve option - without water
 Air flow direction
 All dimensions are in mm.

2 - DIMENSIONAL DRAWINGS

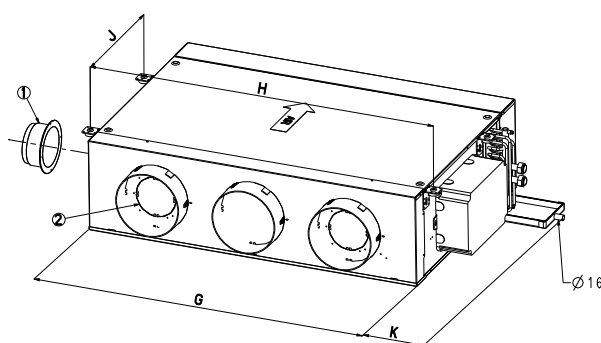
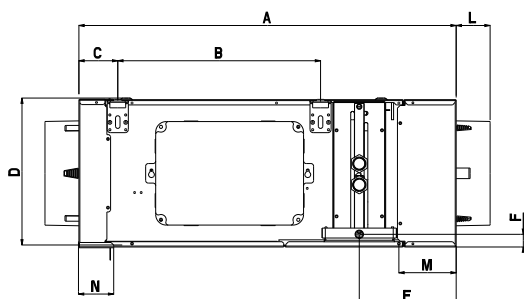
Unit without filter with compact plenum at return and supply (optimised length)



Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	611	611	611	611	666	666
B	330	330	330	330	385	385
C	25	25	25	25	25	25
D	235	235	235	235	285	285
E	185	185	185	185	185	185
F	17	17	17	17	25	25
G	450	620	820	1020	1020	1320

Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
H	500	670	870	1070	1070	1370
J	330	330	330	330	385	385
K	230	230	230	230	230	230
L	63	63	63	63	76	76
M	100	100	100	100	100	100
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	19	23	29	33	37	44

Unit with G3 filter and compact plenum at the return and supply



Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	660	660	660	660	715	715
B	330	330	330	330	385	385
C	75	75	75	75	75	75
D	235	235	235	235	285	285
E	185	185	185	185	185	185
F	17	17	17	17	25	25
G	450	620	820	1020	1020	1320

Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
H	500	670	870	1070	1070	1370
J	330	330	330	330	385	385
K	230	230	230	230	230	230
L	63	63	63	63	76	76
M	100	100	100	100	100	100
N	50	50	50	50	50	50
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	19	23	29	33	37	44
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	19	23	29	33	37	44

KEY

1

Lateral optimized fresh air position in base unit (opposite to coil hand at inlet)

2

In line fresh air position for compact plenum (with or without filter)

*

Maximum weight 42NL/NH (AC or EC motor version) - without valve option - without water

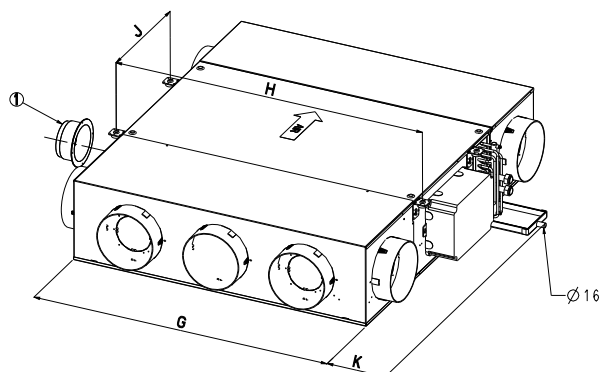
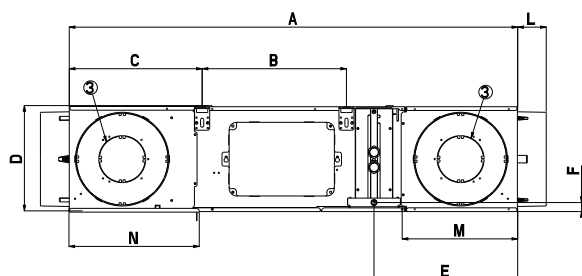


Air flow direction

All dimensions are in mm.

2 - DIMENSIONAL DRAWINGS

Unit with G3 or M5 filter and large plenum at the return and supply



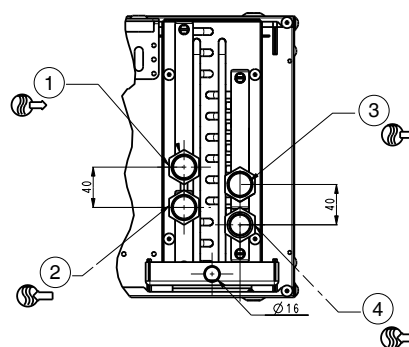
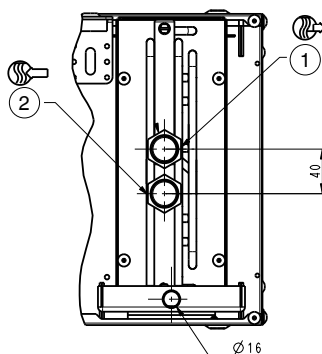
Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	1040	1040	1040	1040	1195	1195
B	330	330	330	330	385	385
C	305	305	305	305	355	355
D	235	235	235	235	285	285
E	333	333	333	333	382	382
F	17	17	17	17	25	25
G	450	620	820	1020	1020	1320

Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
H	500	670	870	1070	1070	1370
J	330	330	330	330	385	385
K	230	230	230	230	230	230
L	63	63	63	63	76	76
M	250	250	250	250	297	297
N	280	280	280	280	330	330
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	22	27	34	40	45	53

KEY

- 1 Lateral optimized fresh air position in base unit (opposite to coil hand at inlet)
3 Lateral fresh air position in large plenum (at inlet or outlet side)
* Maximum weight 42NL/NH (AC or EC motor version) - without valve option - without water
 Air flow direction
All dimensions are in mm.

Water coil



DN:
1/2" 42NH/NL 2xx, 3xx, 4xx, 5xx
3/4" 42NH 6xx, 7xx

- 1 Cooling water outlet for 4-pipe coil and heating/cooling for 2-pipe coil
2 Cooling water inlet for 4-pipe coil and heating/cooling for 2-pipe coil
3 Heating water outlet (4-pipe coil)
4 Heating water inlet (4-pipe coil)

3 - MAIN MODULES AND COMPONENTS

3.1 - Casing

In order to further enhance occupant comfort, this product range offers especially low noise levels. The casing is made of galvanised sheet steel with full high-efficiency internal lining for optimised thermal and sound insulation of the unit.

In order to comply with the various local regulations (fire class) the fan-coil unit is available with both class M1 type insulation (according to NF P 92-507) and Euroclass level B-s3-d0 (according to EN 13501). It is also equipped with anti-vibration mounts as standard.

In order to reduce the dimensions to the minimum, the units are equipped with high-efficiency heat exchangers with very high cooling capacity/treated air flow ratios. The condensate drain pan height is optimised.

3.2 - Fan motor assemblies

3.2.1 - Multi-speed fan motor assembly compliant with ErP 2015 regulations

Motor description

- Asynchronous motors, 4 poles with internal overload protection
- Permanent capacitor
- Class B winding insulation, varnish class F
- See operating limits in chapter 8.

The 42NH and 42NL have a multi-speed fan motor assembly with forward curved, double inlet, single, double or triple wheel fans depending on the unit size.

Five speeds are available as standard for 42NH (Six speeds for 42NL). Three speeds must be selected to allow connection of the fan motor in accordance with applicable electromechanical or electronic control.

- Minimum speed: R5 for 42NH; R6 for 42NL
- Maximum speed: R1
- Units can be supplied with Carrier electronic controls and prewired to a selection of three speeds.
- For other fan motor Speed wiring combinaisons refer to the unit options list (chapter 6).

3.2.2 - Low-consumption fan motor assembly (variable-speed LEC)

Motor description

- Permanent magnet brushless motor
- Electronically commutated
- Class B winding insulation, varnish class F
- See operating limits in chapter 8.

The 42NH and 42NL units are equipped with the LEC fan motor, which is controlled by a 0 to 10 V signal, available with the Carrier NTC or WTC type electronic control.

NOTE: In this case the minimum control signal that allows the motor to start is 2 V for two- and four-pipe versions and 3 V for versions equipped with electric heaters.

If the product is supplied without a Carrier control device, verification of EMC conformity is the responsibility of the installer.

3.3 - Fan wiring solutions

3.3.1 - Multi-speed unit with bare wires (standard)

As standard, all speeds of the multi-speed fan are available with bare wires (six speeds for the 42NL and five speeds for the 42NH), offering greater flexibility.

Minimum speed = R6 or R5, maximum speed = R1.

3.3.2 - Multi-speed unit with optional controller or electrics box

When ordering, three of the five speeds must be selected to enable the motor connection to comply with the applicable controller (NTC, WTC or electrics box for Carrier thermostats).

With the electrical box, the installer can connect the unit to a terminal board. The electrical box can be opened with a screw driver.

The electrical box permits changing the speed wiring without access to the motor. All available speeds are connected.



Wiring example: By default, R5 R3 R1 are connected on the terminal board.
The other 2 or 3 speeds are available and easy to access

NOTE: The standard wiring for all unit ranges is always R5 R3 R1.

3.3.3 - Variable-speed low energy consumption (LEC) fan motor with bare wires (standard)

The variable-speed low energy consumption (LEC) motor must be controlled by a 0-10 VDC signal.

3.3.4 - Variable-speed low energy consumption (LEC) fan motor with electrics box

This option allows the installer to connect the unit to a terminal board inside an electrical box. The electrical box can be opened with a screw driver.

The 0-10 VDC signal that controls the variable-speed fan is directly accessible at the terminal strip.

3.3.5 - Cover only option

A plastic cover accessory can be added to house a controller supplied by the customer (max. dimensions L = 200 mm x D = 100 mm x H = 95 mm). It is installed on site or in the factory on a multi-speed unit or on a variable speed fan motor with low energy consumption (LEC).

NOTE: This option is not compatible with the electrics box option.



3 - MAIN MODULES AND COMPONENTS

3.3.6 - Fuse holder option

A fuse holder can be provided as an option for all controllers or with the electrics box.



3.4 - Hydraulic coil

- Aluminium fins mechanically bonded by expansion onto copper tubes
- 1/2-inch threaded female water inlet and outlet connections for sizes 2 to 5
- 3/4-inch threaded female water inlet and outlet connections for sizes 6 and 7
- Air bleed valves and drain as standard.
- Operating pressure 1550 kPa.

The coil, condensate drain pan and coil access door are in the form of an easily removable drawer.

3.5 - Single unit condensate drain pan

Single unit condensate drain pan made from polypropylene and insulated with 5 mm of foam.

Drain connection diameter: Ø 16 mm external
HB fire rating (in compliance with UL94).

3.6 - Filter

3.6.1 - Specifications

The 42NH and 42NL include as standard a G3 filter in compliance with EN 779.

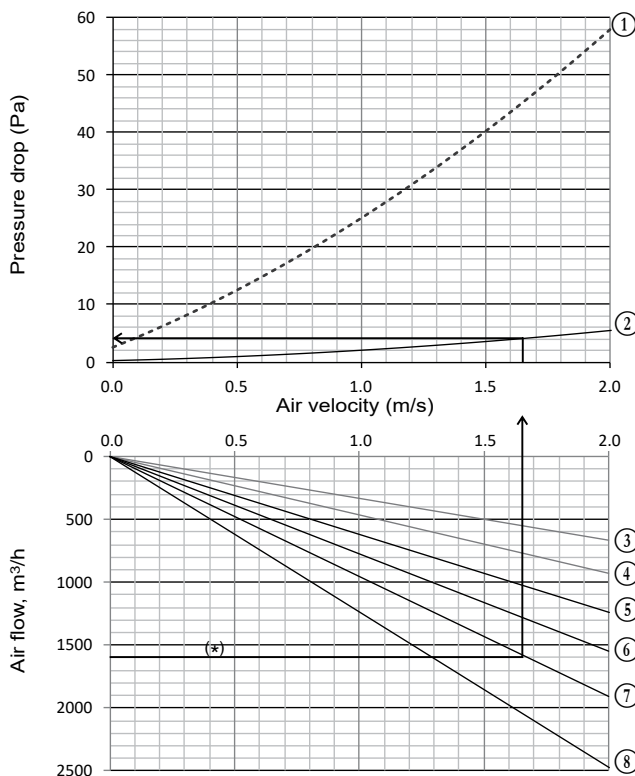
A pleated M5 filter (for range 42NH only) according to EN 779 are also available. G3 and M5 filters have medium fire rating M1 (according to NFP 92-507) and a metal frame.

The "without filter" option is only available for units with a rectangular sleeve on the return side to ensure that a duct can be connected when the unit operates.

To prevent coil fouling, Carrier recommends the use of a filter installed in either the fan coil unit or in the return air grille.

The 42NH offers four filter configurations:

- Without filter: only available for units with an inlet plenum with spigots or with a rectangular flange inlet
- G3 filter: metal wire frame, medium efficiency supplied as standard
- M5 filter (only for 42NH): metal wire frame, high efficiency, thickness = 55 mm.



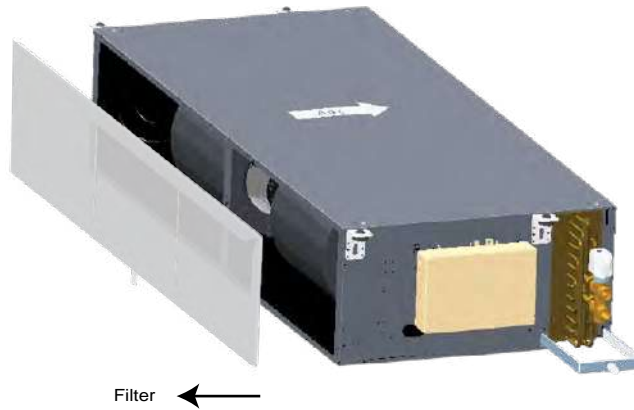
Key

- 1 M5 filter
- 2 G3 filter
- 3 Airflow for 42NH/NL Size 2
- 4 Airflow for 42NH/NL Size 3
- 5 Airflow for 42NH/NL Size 4
- 6 Airflow for 42NH/NL Size 5
- 7 Airflow for 42NH Size 6
- 8 Airflow for 42NH Size 7
- (*) Example: The pressure drop of a G3 filter used in a 42NH645 is 5 Pa for a 1600 m³/h air flow.

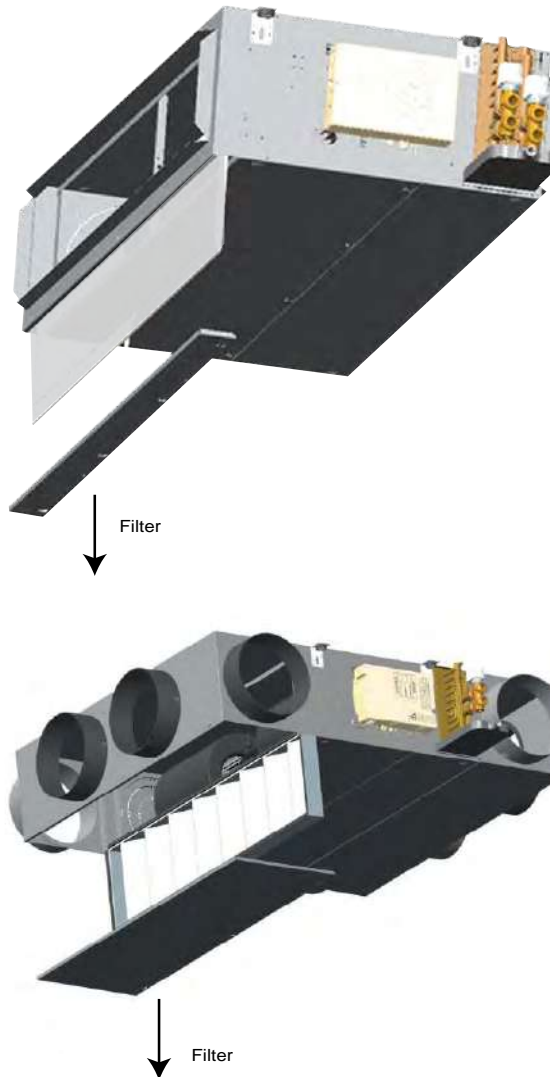
3 - MAIN MODULES AND COMPONENTS

3.6.2 - Filter access

Without a rectangular return sleeve, the filter is removed from the rear.



With a rectangular sleeve or return plenum, the filter is removed from below (hatch).



4 - OPTIONS SPECIFICATIONS

4.1 - Electric heater (option for 2-pipe coil)

Resistive wire type heater

- Supply voltage: 230 V - 1 ph - 50 Hz
- Heater size and capacity per unit (+5% ; -10%):

Electrical Heater Capacity	Low	Medium	High	Very High
42NH/NL 2-5	1 x 500 W	1 x 800 W	1 x 1000 W	NA
42NH/NL 2-9	1 x 500 W	1 x 800 W	1 x 1000 W	NA
42NH/NL 3-5	1 x 500 W	1 x 800 W	1 x 1000 W	1 x 1600 W
42NH/NL 3-9	1 x 500 W	1 x 800 W	1 x 1000 W	1 x 1600 W
42NH/NL 4-5	2 x 500 W	2 x 800 W	2 x 1000 W	NA
42NH/NL 4-9	1 x 500 W	1 x 800 W	1 x 1000 W	1 x 1600 W
42NH/NL 5-5	2 x 500 W	2 x 800 W	2 x 1000 W	NA
42NH/NL 5-9	2 x 500 W	2 x 800 W	2 x 1000 W	NA
42NH 6-5	2 x 500 W	2 x 800 W	2 x 1000 W	2 x 1600 W
42NH 6-9	2 x 500 W	2 x 800 W	2 x 1000 W	2 x 1600 W
42NH 7-5	2 x 500 W	2 x 800 W	2 x 1000 W	2 x 1600 W
42NH 7-9	2 x 500 W	3 x 500 W	3 x 800 W	3 x 1000 W

- The heater is protected with a dual safety device:
 - a) Self-holding automatically reset integrated safety thermostat
 - b) Destructive thermofuse link
- Available for 2-pipe coil only.

WARNING: Minimum supply air flow must be maintained to avoid damaging the electric heaters.

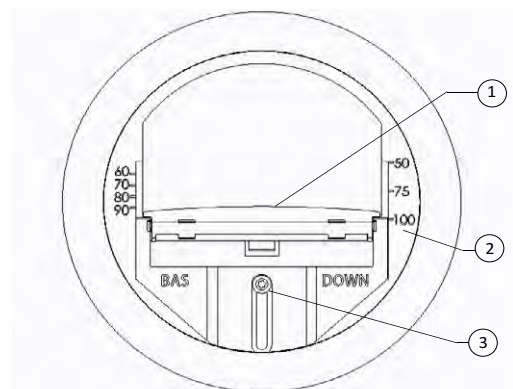
A minimum control signal of 3 V is selected by default with Electronic Carrier controller (NTC / WTC). To prevent low air flow with the 42NL range, plenums are not available as an option.

4.2 - Fresh air controller (option)

4.2.1 - Constant volume fresh air controller

The coil can be fitted with a constant fresh air flow controller adjustable from 15 m³/h to 180 m³/h to allow the fresh air intake and the air change rate to be controlled.

The fresh air supply can be located in the air supply plenum, in the air return plenum or in the side of the basic unit casing for a compact design.



Example: Range 50-100 m³/h

- 1 Air Damper
- 2 Fresh airflow damper position setting (in m³/h)
- 3 Airflow adjustment screw

The fresh air controller may be modified on site by relocating the damper (adjustable screw). Three ranges of air-controller are provided: 15 to 50m³/h, 60 to 100m³/h and 110 to 180m³/h.

IMPORTANT: If an optional return air temperature sensor is provided, the constant fresh air flow rate must not exceed 50 % of the unit supply air flow rate at minimum speed.

NOTE: To operate correctly, the fresh air flow controller requires a differential pressure in the range of 60 Pa to 210 Pa.

4.2.2 - Variable volume fresh air controller

The unit can be equipped with an optional variable fresh air flow controller from 0-55 l/s (0-200 m³/h). It is connected to the numeric Carrier controller and can regulate the fresh air intake in two ways:

- Either using a fixed rate set by the installer that can be reconfigured as required
- Or based on the CO₂ level; in this case it is connected to a CO₂ sensor via the Carrier numeric controller.



NOTE: With the variable fresh air flow controller the pressure upstream of the fresh air duct must be 180 Pa.

4 - OPTIONS SPECIFICATIONS

4.3 - Valves and actuators (option)

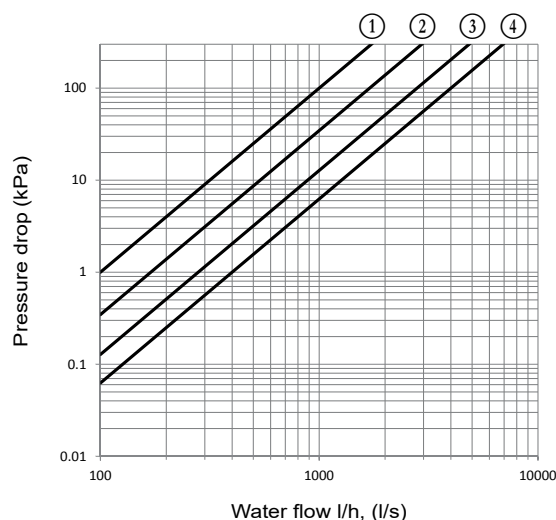
NOTE: The motor/valve assembly is normally closed.

4.3.1 - Valve actuators

A wide choice of actuators is available with two- or four-way valve bodies (three-way with integral bypass) to offer the right solution for any controller type and customer requirement, from on/off to proportional types, with either 230 V or 24 V power supply:

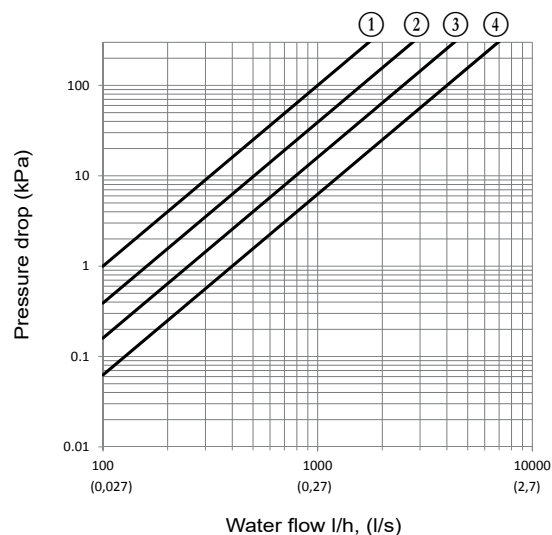
- On/off 230 V actuator
- On/off 24 V actuator
- Floating 3-point 230 V actuator
- Floating 3-point 24 V actuator
- Modulating 0-10 V/24 V actuator

When combined with LEC motors and WTC or NTC controllers, floating 3-point 230 V actuators are recommended to increase energy savings and enhance comfort.



Key

- 1 1/2" - ON/OFF valve 42NL/NH - Size 2 Kvs = 1
- 2 1/2" - ON/OFF valve 42NL/NH - Sizes 3, 4, 5 Kvs = 1.7
- 3 3/4" - ON/OFF valve 42NL/NH - Size 6 Kvs = 2.8
- 4 3/4" - ON/OFF valve 42NL/NH - Size 7 Kvs = 4



Key

- 1 1/2" - Modulating valve (3-points & 0-10V) 42NL/NH - Size 2 Kvs = 1
- 2 1/2" - Modulating valve (3-points & 0-10V) 42NL/NH - Sizes 3, 4, 5 Kvs = 1.6
- 3 3/4" - Modulating valve (3-points & 0-10V) 42NL/NH - Size 6 Kvs = 2.5
- 4 3/4" - Modulating valve (3-points & 0-10V) 42NL/NH - Size 7 Kvs = 4

NOTE: 24 V power supply actuators are not compatible with Carrier controllers (Thermostats A/B/C/D, WTC and NTC).

4.3.2 - Standard two-way valve body and three-way valve body (with integral bypass)

Features of the 1/2" two-way and three-way valves for 42NL/NH sizes 2 to 5

- 1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN15 for 1/2" valve
- Nominal pressure: PN 16 bar

Features of the 3/4" two-way and three-way valves for 42NH sizes 6 and 7

- 3/4" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN20 for 3/4" valve
- Nominal pressure: PN 16 bar

4 - OPTIONS SPECIFICATIONS

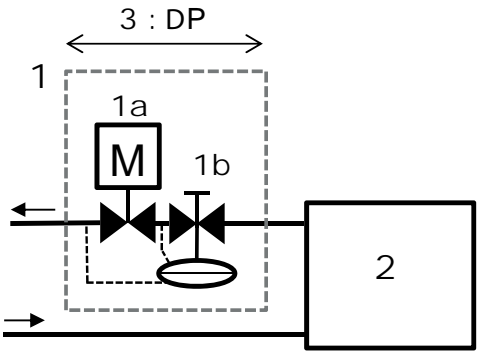
4.3.3 - Two way balancing valve body

New two-way valves with embedded balancing function technology are available as an option with 42NH and 42NL units. The Carrier two-way valve with balancing function combines the functionality of a dynamic balancing valve and a control valve in one product.



The dynamic balancing function maintains a constant differential pressure over the control valve.

The control valve regulates the flow by means of a variable orifice which is controlled by the actuator.



- Key**
- 1. Two-way valve with balancing function
 - 1a. Valve actuator for waterflow control
 - 1b. Differential pressure controller & balancing feature
 - 2. Fan-coil unit
 - 3. Minimum operating pressure drop at nominal waterflow: 20 kPa for sizes 4 and 5

The constant differential pressure across the control valve ensures accurate control and maximises valve authority, independently of the pressure conditions in the system.

Advantages compared to the standard two-way valve

- Improved and reliable commissioning. The water flow can be set and controlled on site.
- Higher energy efficiency due to optimal waterflow and maximized valve authority.
- Enhanced comfort thanks to stable and precise ambient temperature control.

Features of the 1" two-way valves with balancing function for 42NL/NH sizes

- 1" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN 20 for 1" valve
- Nominal pressure: PN 16 bar
- Minimum operating differential pressure = 20 kPa at nominal flow.

As a secondary option, two pressure points can be added to the valve body in order to accurately measure the flow rate during the commissioning and maintenance stages.

Sizes	2xx & 3xx	4xx & 5xx
water flow range	100-575 l/h	220 - 1330 l/h
Nominal Diameter	DN15	DN20
Thread	G3/4" for flat washer	G 1" for flat washer

4.4 - Flexible water pipes (option)

4.4.1 - Materials

- Pipes: EPDM-based elastomer (Ethylene Propylene Diene Monomer)
- Braid: 304L stainless steel
- Insulation: cellular foam rubber with M1 fire rating (9 mm thick, flexible water pipes).

4.4.2 - Characteristics

- Minimum bend radius (insulated pipes): 106 mm
- The flexible water pipes are designed for treated or untreated water.
- Maximum operating pressure: 16 bar
- 1/2" female flat gas connections for sizes 2, 3, 4 and 5
- 3/4" female flat gas connections for sizes 6 and 7
- Length: 1 m.

4 - OPTIONS SPECIFICATIONS

4.5 - Sensors (option)

4.5.1 - Water temperature sensor

A water temperature sensor can be provided as an option for NTC and WTC controllers.

- For 2-pipe coil: The sensor is installed on a cooling/heating water pipe (for change-over function).
- For 4-pipe coil: The sensor is installed on a heating water pipe (for cold-draft function that prevents the operation of the unit when the heating network is off).

The fan coil unit is delivered with an electrical box, the "water temperature sensor" option is actually a switch that will be connected to the Carrier thermostat.

NOTE:

- *The water sensor option (switch) with electrical box is only available for 2-pipe coil without electrical heater.*
- *A water probe can also be provided as an accessory only in order to use the cold draft function of the thermostat.*

4.5.2 - Air temperature sensors

Two factory-fitted air temperature sensors are available as an option for NTC and WTC controllers. They measure the temperature at the supply and/or return side.

4.5.3 - CO₂ sensor

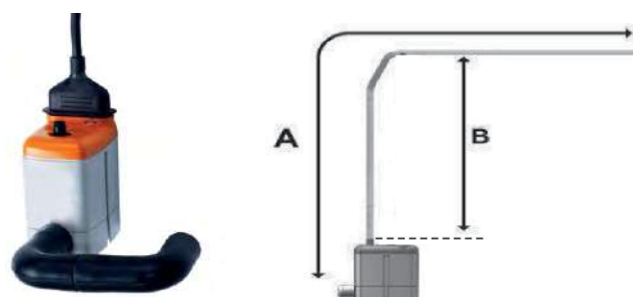
For indoor air quality control, a CO₂ sensor is available as an option for NTC and WTC controllers. The sensor is factory fitted at the inlet side.

4.6 - Condensate pump (option)

The condensate pump option is designed to fit on the side of the unit drain pan. Electrical power supply 230V-50/60Hz.

Condensate pump discharge performances:

TABLE OF ACTUAL DISCHARGE (l/h)				
Discharge head (B)	Total length of pipe (Ø int. 6 mm) A			
	5 m	10 m	20 m	30 m
0 m	20	19	18	17
2 m	16	15	14	13,5
4 m	11,5	11	10,5	10
6 m		8,5	7,5	6,5
8 m		6	5	4
10 m		4	3,5	2,5



Technical characteristics	
Max. flow rate	20 l/h -10%
Max. recommended discharge height	10 m
Max. manometric pressure	14 m
Max sound level at 1 m distance	< 28 dBA
Electrical supply	230V +10%/-15% - 50/60Hz
Max. input Power	16 W (pour 230V/50Hz)
Rated current	65 mA (pour 230V/50Hz)
Detection levels	ON : 18 mm, OFF : 12 mm, AL : 21.5 mm
Alarm contact	Contact NC : 8A maxi – 250V
Thermal protection	90°C (auto reset)
Cycle de fonctionnement (facteur de marche)	100%
Protection (selon NF EN 60529)	IPX4

5 - CONTROL (OPTION)

The unit can be supplied with a wide range of Carrier controls. These offer functions to suit the various application requirements, summarised in the table below.

	Thermostats	NTC	WTC
Communication protocols			
Carrier Communication Network (CCN) Aquasmart compatible		x	
BACnet MSTP			x
LON			x
Control algorithms			
On-off	x		
Proportional-integral		x	x
Carrier Energy saving algorithm		x	x
Fan control			
3 fixed speeds for AC motors	Types A and B	x	x
Automatic optimum fan speed selection	x	x	x
3 fixed speeds for EC motors	Types C and D	x	x
EC motors Variable speed		x	x
Water valve management			
Air flow control only (no water valve)	x		
230V On-off actuators	x	x	x
230V Modulating actuators (floating 3pts)		x	x
Main functions			
Setpoint control	x	x	x
Occupied/unoccupied mode	x	x	x
Frost protection mode	x	x	x
Window/door contact input	x	x	x
Measurement of water inlet temperature for automatic seasonal changeover (2 pipes)	Type A&C	x	x
Measurement of water inlet temperature to prevent cold-draughts (4 pipes and 2 pipes + electric heater)	Types B and D	x	x
Manual changeover	x	x	x
Frost protection mode	x	x	x
Continuous ventilation within dead-band	x	x	x
Periodical ventilation within dead-band	x	x	x
On-site configuration	x	x	x
Unit grouping Master/Slave	x	x	x
Cassette Louvers control		x	x
Supply air temperature monitoring limiting		x	x
Electrical heater loadshed		x	x
Dirty filter alarm		x	x
Alarm reporting		x	x
Indoor Air Quality control (CO ₂ sensor)		o	o
Demand-controlled ventilation (DCV) (0-10 V fresh air valve)		o	o
Free cooling mode			o
Presence detection			o
User interfaces			
Automatic or manual fan speed control	x	x	x
Setpoint adjustment	x	x	x
Occupancy (eco) button	x	x	o
Digital display		o	o
Remote control (infra-red)		o	o
CO ₂ sensor		o	o
Luminosity sensor			o
Motion detection			o
Easy connection RJ45 jack (on wall mounted UI)			x
Light and blinds management			
Light power modules			o
Blinds power modules			o
Control kit			
On site control kit solution			o

Key

X Feature available as standard

O Optional

NOTE: For the features and specifications of the Carrier controllers, refer to the technical documentation for each controller.

Upon special request, other controller types can be factory-installed on the units (supplied by Carrier or the customer).

6 - PRODUCT CHARACTERISTICS LIST

Characteristic Name		Digit n° Codification	Value	Description	Pack.	Compatibility	
Range		1-2	42				
		3-4	NH				
			NL				
UNIT SIZE (Digits 5 - 6 - 7)	Chassis size	5	2	Chassis Size 2	Yes	Unit size availability (Digit n° 5-6-7):	
			3	Chassis size 3			
			4	Chassis Size 4		2-pipe:	4-pipe:
			5	Chassis Size 5		NL / NH 225;235;229;239;279	NL / NH 235;239;279
			6	Chassis size 6		NL / NH 325;335;329;339	NL / NH 335;339
			7	Chassis Size 7		NL / NH 325;335;329;339	NL / NH 335;339
	Efficiency	6	2	Standard efficiency	Yes	NL / NH 425;435;429;439	NL / NH 435;439
			3	Medium efficiency		NL / NH 525;535;529;539	NL / NH 535;545;539;549
			4	High efficiency		NH 635;645;639;649	NH 645;649
			7	Extra High efficiency			
	Fan type	7	5	AC multispeed motor	Yes	NH 735;745;739;749	NH 735;745;739;749
			9	EC low consumption motor			
Coil hand & type		8	F	2 pipes coil Left Hand	Yes		
			G	2 pipes coil Right Hand			
			C	4 pipes coil Left Hand			
			D	4 pipes coil Right Hand			
Control		9	-	Bare wires	Yes	Valves and actuators must be selected with NTC	
			E	Electrics box			
			K	NTC			
			L	WTC LON			
			M	WTC BACNET			
Valve body		10	-	Without valve	Yes	Balancing valves are not available for unit sizes 6xx and 7xx	
			G	2-way valve	Yes		
			H	4-way valve	Yes		
			L	2-way balancing valve	No		
			T	2-way balancing valve and pressure points	No		
Electrical heater		11	-	Without electric heater	Yes	Electrical heaters are not compatible with 42NL with plenum.	
			E	500W electric heater		Highest capacity for unit size 2xx	
			F	800W electric heater		Highest capacity for unit sizes 3xx and 4x9	
			G	1000W electric heater		Highest capacity for unit sizes 4x5 and 5xx	
			H	1500W electric heater		Highest capacity for unit sizes 7x9	
			J	1600W electric heater		Highest capacity for unit sizes 6xx and 7x5	
			K	2000W electric heater			
			L	2400W electric heater			
			M	3000W electric heater			
			N	3200W electric heater			
Valve actuator		12	-	Without actuator	Yes	24 V actuators are not available with Carrier controllers. 3-point floating actuators are not available with the electrics box	
			A	230V ON/OFF actuator	Yes		
			C	230V floating actuator (3 points)	No		
			B	24V ON/OFF actuator	Yes		
			D	24V floating actuator (3 points)	No		
			E	24V 0-10V modulating actuator	No		
Rectangular flanges		13	-	Without rectangular flange	Yes		
			A	Outlet rectangular flange only	Yes		
			B	Inlet rectangular flange only	Yes		
			C	Inlet and outlet rectangular flanges	Yes		
Specific (options selection)		14	-	Without specific option	Yes		
			A	With specific options (factory fitted)	Yes		

Key:

☐ Default value for mandatory characteristic

☐ Pack: Available with individual packaging

6 - PRODUCT CHARACTERISTICS LIST

Specific options (can be selected if digit no. 14 = A*)

Characteristic Name	Value	Description	Pack.	Compatibility
Indoor air quality	Without	Filter	Yes	Only available with rect. flanges or plenum
	G3		Yes	
	M5		No	M5 filter only available for 42NH units with plenum
Fan speed wiring for AC motor	654	AC motor speeds arrangement:	Yes	R6 not available for 42NH range
	653			
	652			
	651	R6 = minimum speed for 42NL		
	643	R5 = minimum speed for 42NH		
	642	R1 = maximum speed		
	641			
	632			
	631	When this option is not selected, the standard wiring for all 42NL and 42NH units is always R5-R3-R1		
	621			
	543			
	542			
	541			
	532			
	531			
	521			
	432			
	431			
	421			
	321			
Packaging	Bundle	Filmed on a pallet (shrink wrap)	-	
	Individual	Individual packaging		
Inlet plenum	1_inline	1 spigot in line	No	According to unit sizes, filter and fresh air position Use selection software for more informations
	1_lat_op	1 lateral spigot opposite to coil side		
	1_lat	1 lateral spigot at coil side		
	2	2 spigots		
	2_lat	2 lateral spigots		
	3	3 spigots		
	4	4 spigots		
	5	5 spigots		
	6	6 spigots		
Outlet plenum	7	7 spigots	No	According to unit sizes, filter and fresh air position Use selection software for more informations
	1_inline	1 spigot in line		
	1_lat_op	1 lateral spigot opposite to coil side		
	1_lat	1 lateral spigot at coil side		
	2	2 spigots		
	2_lat	2 lateral spigots		
	3	3 spigots		
	4	4 spigots		
	5	5 spigots		
6	6 spigots			

Key:

☐ Default value for mandatory characteristic

Pack: Available with individual packaging

* If digit no. 14 = "-" the default values are selected.

Boolean: yes or no

6 - PRODUCT CHARACTERISTICS LIST

Characteristic Name	Value	Description	Pack.	Compatibility
Inlet spigots diameter	DN160	Spigot diameter	No	DN160 Not available for unit sizes 6xx to 7xx
	DN200			DN250 Not available for unit sizes 2xx to 5xx
	DN250			
Outlet spigots diameter	DN160	Spigot diameter	No	DN160 Not available for unit sizes 6xx to 7xx
	DN200			DN250 Not available for unit sizes 2xx to 5xx
	DN250			
Fresh air	DN125	Without controller - spigot only	No	Motorized air damper compatible with NTC and WTC only (Position feedback is not available if WTC and CO ₂ sensor are also selected)
	DN125_15_50	15 to 50 m ³ /h controller		
	DN125_50_100	50 to 100 m ³ /h controller		
	DN125_100_180	100 to 180 m ³ /h controller		
	Adaptor_D125	For motorized air damper (to be ordered separately)		
Fresh air position	In_opp	At inlet side opposite to coil hand	No	According to unit sizes, filter and spigots selection Use selection software for more informations
	In_coil	At inlet side same as coil hand		
	In_line	At inlet rear side		
	Optimized	Inlet optimized: opposite to coil hand in base unit for compact design		
	Out_opp	At outlet side opposite to coil hand		
	Out_coil	At outlet side same as coil hand		
Fuse holder	boolean	Fuse holder	Yes	
Plastic cover	boolean	Plastic cover	Yes	For bare wires (without control only)
Condensate pump	boolean	Condensate pump	No	
Flexible	boolean	Flexible hoses	No	
Return air sensor	boolean	Return air temperature sensor	Yes	Compatible with NTC and WTC only
Supply air sensor	boolean	Supply air temperature sensor	Yes	Compatible with NTC and WTC only
Water temperature sensor	boolean	Water temperature sensor	Yes	According to controller and coil type
CO₂ sensor	boolean	CO ₂ sensor	Yes	Compatible with NTC and WTC only

Key:

Pack: Available with individual packaging

* If digit no. 14 = "-" the default values are selected.

Boolean: yes or no

7 - 42NH AND 42NL PERFORMANCE DATA

7.1 - Physical and electrical data at Eurovent conditions - 42NL - Sizes 2 and 3

With G3 filter - without plenum

42NL		225						235					
Fan speed		R6	R5	R4	R3	R2	R1	R6	R5	R4	R3	R2	R1
(Eurovent certification speeds)		(L)	(M)	(H)			(Max)	(L)	(M)	(H)			Max
Air flow	l/s	59	69	96	109	125	138	59	69	96	109	125	138
	m³/h	214	248	346	393	449	496	214	248	346	393	449	496
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes ⁽¹⁾													
Total cooling capacity	kW	1,17	1,33	1,72	1,87	2,03	2,13	1,35	1,54	2,04	2,25	2,46	2,62
Sensible cooling capacity	kW	0,93	1,06	1,40	1,54	1,69	1,80	1,03	1,18	1,59	1,76	1,96	2,10
Water flow	l/s	0,06	0,06	0,08	0,09	0,10	0,11	0,07	0,08	0,10	0,11	0,12	0,13
	l/h	210	230	300	330	360	380	240	270	360	400	430	460
Water pressure drop	kPa	16,2	20,4	31,4	36,5	42	46,3	12,2	15,6	26,5	31	36,3	40,7
Water volume	l	0,4						0,5					
Heating mode, two pipes ⁽²⁾													
Heating capacity	kW	1,39	1,58	2,07	2,28	2,50	2,68	1,57	1,80	2,41	2,69	2,99	3,23
Water flow	l/s	0,07	0,08	0,10	0,11	0,12	0,13	0,08	0,09	0,12	0,13	0,14	0,16
	l/h	240	270	360	400	440	470	270	310	420	470	520	560
Water pressure drop	kPa	17,9	22,1	35	41,3	48,6	54,7	13,9	17,3	28,4	34,2	41	46,8
Water volume	l	0,4						0,5					
Cooling mode, four pipes ⁽¹⁾													
Total cooling capacity	kW	NA						1,02	1,16	1,51	1,65	1,80	1,90
Sensible cooling capacity	kW							0,86	0,98	1,30	1,44	1,58	1,69
Water flow	l/s							0,05	0,06	0,08	0,08	0,09	0,09
	l/h							180	200	270	290	320	340
Water pressure drop	kPa							5,4	6,6	10,5	12,4	14,6	16,4
Water volume	l							0,3					
Heating mode, four pipes ⁽³⁾													
Heating capacity	kW	NA						1,63	1,84	2,36	2,56	2,76	2,91
Water flow	l/s							0,04	0,04	0,06	0,06	0,07	0,07
	l/h							140	160	210	220	240	260
Water pressure drop	kPa							4,8	5,7	8,3	9,5	10,7	11,6
Water volume	l							0,2					
Electric heater								230V ±10% - 1ph - 50Hz					
Maximum capacity	W	1000						1000					
Current input	A	4,6						4,6					
Sound levels													
Sound power level (global)	dB(A)	38	41	48	51	54	57	38	41	48	51	54	57
Electrical data, motor													
Power input	W	28	31	45	54	65	80	28	31	45	54	65	80
Current input	A	0,12	0,14	0,20	0,23	0,28	0,35	0,12	0,14	0,20	0,23	0,28	0,35
FCEER [energy class] - 2 pipes		42 [E]						48 [E]					
FCCOP [energy class]		50 [E]						56 [E]					
FCEER [energy class] - 4 pipes								37 [E]					
FCCOP [energy class]								58 [E]					

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

(1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.

(2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.

(3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL		229				239			
Fan speed		2V	4V	6V	10V	2V	5V	7V	10V
(Eurovent certification speeds)		(L)	(M)	(H)	Max	(L)	(M)	(H)	(Max)
Air flow	l/s	43	58	73	102	43	65	81	102
	m³/h	153	210	261	368	153	234	292	368
Available static pressure	Pa	0	0	0	0	0	0	0	0
Cooling mode, two pipes ⁽¹⁾									
Total cooling capacity	kW	0,89	1,17	1,41	1,83	1,00	1,48	1,81	2,17
Sensible cooling capacity	kW	0,70	0,94	1,14	1,50	0,76	1,14	1,40	1,71
Water flow	l/s	0,04	0,06	0,07	0,09	0,05	0,07	0,09	0,11
	l/h	150	200	240	320	170	260	310	380
Water pressure drop	kPa	9,4	15,7	22,1	33,8	7	14,1	20,3	28,7
Water volume	l	0,4				0,5			
Heating mode, two pipes ⁽²⁾									
Heating capacity	kW	1,03	1,37	1,65	2,17	1,13	1,70	2,08	2,55
Water flow	l/s	0,05	0,07	0,08	0,11	0,06	0,08	0,10	0,12
	l/h	180	240	290	380	200	300	360	440
Water pressure drop	kPa	11	17,5	23,8	37,9	8,3	15,8	22,2	31,1
Water volume	l	0,4				0,5			
Cooling mode, four pipes ⁽¹⁾									
Total cooling capacity	kW	NA				0,76	1,12	1,35	1,61
Sensible cooling capacity	kW					0,65	0,96	1,16	1,40
Water flow	l/s					0,04	0,05	0,06	0,08
	l/h					130	190	230	280
Water pressure drop	kPa					3,4	6,1	8,3	11,4
Water volume	l					0,3			
Heating mode, four pipes ⁽³⁾									
Heating capacity	kW	NA				1,21	1,75	2,09	2,46
Water flow	l/s					0,03	0,04	0,05	0,06
	l/h					110	150	180	220
Water pressure drop	kPa					3,3	5,4	6,9	8,9
Water volume	l								
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz			
Maximum capacity	W	1000				1000			
Current input	A	4,6				4,6			
Sound levels									
Sound power level (global)	dB(A)	32	37	40	48	32	38	41	48
Electrical data, motor									
Power input	W	3	5	7	13	3	5	9	13
Current input	A	0,05	0,06	0,08	0,14	0,05	0,06	0,10	0,14
FCEER [energy class] - 2 pipes		263 [A]				304 [A]			
FCCOP [energy class]		310 [A]				347 [A]			
FCEER [energy class] - 4 pipes						230 [A]			
FCCOP [energy class]						366 [A]			

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL		325						335					
Fan speed		R6	R5	R4	R3	R2	R1	R6	R5	R4	R3	R2	R1
(Eurovent certification speeds)		(L)	(M)	(H)			(Max)	(L)	(M)	(H)			(Max)
Air flow	l/s	84	94	124	144	154	168	84	94	124	144	154	168
	m³/h	302	338	447	517	555	606	302	338	447	517	555	606
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes ⁽¹⁾													
Total cooling capacity	kW	1,43	1,56	1,90	2,11	2,20	2,33	1,75	1,94	2,48	2,80	2,95	3,16
Sensible cooling capacity	kW	1,21	1,32	1,65	1,84	1,94	2,06	1,38	1,54	1,98	2,24	2,38	2,56
Water flow	l/s	0,07	0,08	0,09	0,11	0,11	0,12	0,09	0,09	0,12	0,14	0,14	0,16
	l/h	250	270	340	380	390	420	310	340	440	490	520	560
Water pressure drop	kPa	10,5	12,2	17,9	21,3	23,1	25,6	11,6	13,9	22	27,5	30,3	33,8
Water volume	l	0,7						0,9					
Heating mode, two pipes ⁽²⁾													
Heating capacity	kW	1,97	2,16	2,67	2,96	3,10	3,27	2,23	2,48	3,17	3,57	3,77	4,02
Water flow	l/s	0,09	0,11	0,13	0,14	0,15	0,16	0,11	0,12	0,15	0,17	0,18	0,19
	l/h	340	380	460	510	540	570	390	430	550	620	660	700
Water pressure drop	kPa	17,9	20,6	28,6	33,6	36,2	39,5	15,3	18,1	27,2	33,3	36,6	40,9
Water volume	l	0,7						0,9					
Cooling mode, four pipes ⁽¹⁾													
Total cooling capacity	kW	NA						1,75	1,91	2,35	2,60	2,73	2,88
Sensible cooling capacity	kW							1,37	1,50	1,88	2,10	2,21	2,36
Water flow	l/s							0,09	0,09	0,11	0,13	0,13	0,14
	l/h							310	340	410	460	480	510
Water pressure drop	kPa							15,9	18,8	26,9	32	34,7	38,3
Water volume	l							0,6					
Heating mode, four pipes ⁽³⁾													
Heating capacity	kW	NA						2,43	2,66	3,21	3,48	3,61	3,78
Water flow	l/s							0,06	0,06	0,08	0,09	0,09	0,09
	l/h							210	230	280	310	320	330
Water pressure drop	kPa							11	12,6	17,2	19,7	20,9	22,5
Water volume	l							0,3					
Electric heater								230V ±10% - 1ph - 50Hz					
Maximum capacity	W	1600						1600					
Current input	A	7,3						7,3					
Sound levels													
Sound power level (global)	dB(A)	43	46	54	57	59	61	43	46	54	57	59	61
Electrical data, motor													
Power input	W	38	45	62	74	86	99	38	45	62	74	86	99
Current input	A	0,16	0,20	0,27	0,32	0,37	0,44	0,16	0,20	0,27	0,32	0,37	0,44
FCEER [energy class] - 2 pipes		36 [E]						45 [E]					
FCCOP [energy class]		50 [E]						57 [E]					
FCEER [energy class] - 4 pipes								44 [E]					
FCCOP [energy class]								62 [E]					

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

(1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.

(2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.

(3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL	329				339								
Fan speed	2V	4V	6V	10V	2V	5V	7V	10V					
(Eurovent certification speeds)	(L)	(M)	(H)	(Max)	(L)	(M)	(H)	(Max)					
Air flow	l/s	55	88	120	165	55	88	120	165				
	m³/h	198	318	431	594	198	318	431	594				
Available static pressure	Pa	0	0	0	0	0	0	0	0				
Cooling mode, two pipes ⁽¹⁾													
Total cooling capacity	kW	1,05	1,52	1,89	2,35	1,21	1,87	2,44	3,16				
Sensible cooling capacity	kW	0,87	1,29	1,64	2,08	0,95	1,48	1,95	2,56				
Water flow	l/s	0,05	0,07	0,09	0,11	0,06	0,09	0,12	0,15				
	l/h	180	260	330	410	210	320	420	550				
Water pressure drop	kPa	5,9	11,2	17	25	5,9	12,6	20,7	32,9				
Water volume	l	0,7				0,9							
Heating mode, two pipes ⁽²⁾													
Heating capacity	kW	1,37	2,05	2,60	3,23	1,50	2,34	3,06	3,96				
Water flow	l/s	0,07	0,10	0,13	0,16	0,07	0,11	0,15	0,19				
	l/h	240	360	450	560	260	410	530	690				
Water pressure drop	kPa	10,9	19,1	27,3	38,7	8,2	16,5	25,7	39,8				
Water volume	l	0,7				0,9							
Cooling mode, four pipes ⁽¹⁾													
Total cooling capacity	kW	NA				1,27	1,87	2,36	2,95				
Sensible cooling capacity	kW					0,98	1,47	1,89	2,43				
Water flow	l/s					0,06	0,09	0,11	0,14				
	l/h					220	320	400	510				
Water pressure drop	kPa					8	16	25	37				
Water volume	l	NA				0,5984							
Heating mode, four pipes ⁽³⁾													
Heating capacity	kW					NA				1,95	2,90	3,58	4,27
Water flow	l/s									0,05	0,07	0,09	0,11
	l/h									170	250	310	380
Water pressure drop	kPa	7	13	19	26								
Water volume	l	0,3											
Electric heater													
		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz							
Maximum capacity	W	1600				1600							
Current input	A	7,3				7,3							
Sound levels													
Sound power level (global)	dB(A)	37	46	53	60	37	46	53	60				
Electrical data, motor													
Power input	W	4	10	20	49	4	10	20	49				
Current input	A	0,06	0,10	0,17	0,39	0,06	0,10	0,17	0,39				
FCEER [energy class] - 2 pipes		187 [A]				223 [A]							
FCCOP [energy class]		254 [B]				284 [A]							
FCEER [energy class] - 4 pipes						228 [A]							
FCCOP [energy class]						360 [A]							

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.2 - Physical and electrical data at Eurovent conditions - 42NL - Size 4

With G3 filter - without plenum

42NL		425						435					
Fan speed		R6	R5	R4	R3	R2	R1	R6	R5	R4	R3	R2	R1
(Eurovent certification speeds)		(L)	(M)	(H)			(Max)	(L)	(M)	(H)			(Max)
Air flow	l/s	129	149	209	234	267	301	129	149	209	234	267	301
	m³/h	464	537	751	842	960	1085	464	537	751	842	960	1085
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes ⁽¹⁾													
Total cooling capacity	kW	2,37	2,67	3,44	3,70	4,01	4,26	2,69	3,12	4,25	4,67	5,15	5,59
Sensible cooling capacity	kW	1,93	2,19	2,87	3,13	3,43	3,70	2,12	2,45	3,35	3,70	4,13	4,53
Water flow	l/s	0,12	0,13	0,17	0,18	0,20	0,21	0,13	0,15	0,21	0,23	0,25	0,28
	l/h	420	470	610	660	710	760	470	550	750	820	910	990
Water pressure drop	kPa	14,8	18,5	28,3	32,2	36,8	41,2	19,4	25,7	43,7	51,3	60,8	70,2
Water volume	l	1,0						1,3					
Heating mode, two pipes ⁽²⁾													
Heating capacity	kW	2,95	3,40	4,61	5,07	5,60	6,09	3,15	3,64	5,04	5,60	6,29	6,97
Water flow	l/s	0,14	0,16	0,22	0,24	0,27	0,29	0,15	0,18	0,24	0,27	0,30	0,34
	l/h	510	590	800	880	970	1060	550	630	880	970	1090	1210
Water pressure drop	kPa	17,70	22,40	37,50	44,10	52,30	60,50	21,70	27,80	48,20	57,90	70,90	84,70
Water volume	l	1,0						1,3					
Cooling mode, four pipes ⁽¹⁾													
Total cooling capacity	kW	NA						2,46	2,77	3,58	3,88	4,23	4,56
Sensible cooling capacity	kW							1,99	2,25	2,97	3,25	3,58	3,90
Water flow	l/s							0,12	0,14	0,18	0,19	0,21	0,23
	l/h							430	490	630	690	750	810
Water pressure drop	kPa							20,1	24,9	38,5	44,2	51,3	58,7
Water volume	l							0,9					
Heating mode, four pipes ⁽³⁾													
Heating capacity	kW	NA						3,17	3,68	5,01	5,50	6,05	6,54
Water flow	l/s							0,08	0,09	0,12	0,13	0,15	0,16
	l/h							280	320	440	480	530	570
Water pressure drop	kPa							18,9	24,3	41,2	48,4	57,1	65,4
Water volume	l							0,5					
Electric heater								230V ±10% - 1ph - 50Hz					
Maximum capacity	W	2000						2000					
Current input	A	9,1						9,1					
Sound levels													
Sound power level (global)	dB(A)	45	48	55	58	60	63	45	48	55	58	60	63
Electrical data, motor													
Power input	W	57	69	98	113	129	157	57	69	98	113	129	157
Current input	A	0,25	0,30	0,43	0,49	0,57	0,69	0,25	0,30	0,43	0,49	0,57	0,69
FCEER [energy class] - 2 pipes		40 [E]						46 [E]					
FCCOP [energy class]		51 [E]						54 [E]					
FCEER [energy class] - 4 pipes								42 [E]					
FCCOP [energy class]								55 [E]					

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
(2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
(3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL		429						439						
Fan speed		2V	3.5V	4V	6V	8V	10V	2V	3.5V	4V	6V	8V	10V	
(Eurovent certification speeds)		(L)	(M)	(H)			(Max)	(L)	(M)	(H)			(Max)	
Air flow	l/s	67	110	123	169	206	226	67	111	123	169	206	226	
	m³/h	240	397	444	610	743	814	240	398	444	610	743	814	
Available static pressure		Pa	0	0	0	0	0	0	0	0	0	0	0	
Cooling mode, two pipes ⁽¹⁾														
Total cooling capacity		kW	1,33	2,09	2,31	2,99	3,43	3,63	1,34	2,32	2,60	3,56	4,22	4,54
Sensible cooling capacity		kW	1,08	1,71	1,89	2,47	2,87	3,06	1,09	1,84	2,05	2,80	3,33	3,60
Water flow	l/s	0,06	0,10	0,11	0,14	0,17	0,18	0,06	0,11	0,13	0,17	0,21	0,22	
	l/h	230	360	400	520	600	640	230	400	450	620	740	800	
Water pressure drop		kPa	5,3	11,5	13,8	21,9	27,9	31	5,4	14,3	17,7	32,2	42,9	48,8
Water volume		l	1,0						1,3					
Heating mode, two pipes ⁽²⁾														
Heating capacity		kW	1,49	2,52	2,82	3,83	4,57	4,93	1,59	2,68	3,00	4,12	4,98	5,42
Water flow	l/s	0,07	0,12	0,14	0,19	0,22	0,24	0,08	0,13	0,14	0,20	0,24	0,26	
	l/h	260	440	490	670	800	860	280	470	520	720	870	940	
Water pressure drop		kPa	6,1	13,6	16,4	27,3	36,9	42,0	7,3	16,7	20,1	34,2	47,3	54,7
Water volume		l	1,0						1,3					
Cooling mode, four pipes ⁽¹⁾														
Total cooling capacity		kW	NA						1,40	2,18	2,40	3,09	3,57	3,79
Sensible cooling capacity		kW							1,11	1,76	1,94	2,54	2,96	3,17
Water flow	l/s	0,07							0,11	0,11	0,15	0,18	0,19	
	l/h	240							380	410	540	630	670	
Water pressure drop		kPa							7,0	15,6	18,6	29,6	37,9	42,3
Water volume		l							0,9					
Heating mode, four pipes ⁽³⁾														
Heating capacity		kW	NA						1,50	2,68	3,02	4,15	4,96	5,35
Water flow	l/s	0,04							0,07	0,07	0,10	0,12	0,13	
	l/h	130							240	260	360	430	470	
Water pressure drop		kPa							5,9	14,4	17,5	29,8	40,5	46,1
Water volume		l							0,5					
Electric heater		230V ±10% - 1ph - 50Hz							230V ±10% - 1ph - 50Hz					
Maximum capacity		W	1600						1600					
Current input		A	7,3						7,3					
Sound levels														
Sound power level (global)		dB(A)	38	49	52	60	65	67	38	49	52	60	65	67
Electrical data, motor														
Power input		W	6	15	18	42	78	99	6	14	18	42	78	99
Current input		A	0,07	0,15	0,18	0,38	0,65	0,80	0,07	0,15	0,18	0,38	0,65	0,80
FCEER [energy class] - 2 pipes		173 [B]						189 [A]						
FCCOP [energy class]		205 [B]						225 [B]						
FCEER [energy class] - 4 pipes								187 [A]						
FCCOP [energy class]								218 [B]						

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.3 - Physical and electrical data at Eurovent conditions - 42NL - Size 5

With G3 filter - without plenum

42NL	525						535						545						
Fan speed	R6	R5	R4	R3	R2	R1	R6	R5	R4	R3	R2	R1	R6	R5	R4	R3	R2	R1	
(Eurovent certification speeds)	(L)		(M)	(H)		(Max)	(L)		(M)	(H)		(Max)	(L)		(M)	(H)		(Max)	
Air flow	l/s	150	170	233	275	313	359	150	170	233	275	313	359	150	170	233	275	313	359
	m³/h	540	612	840	991	1127	1291	540	612	840	991	1127	1291	540	612	840	991	1127	1291
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes ⁽¹⁾																			
Total cooling capacity	kW	2,69	2,97	3,78	4,23	4,61	5,00	3,14	3,54	4,68	5,32	5,80	6,30	NA					
Sensible cooling capacity	kW	2,21	2,46	3,17	3,59	3,95	4,34	2,47	2,78	3,71	4,26	4,70	5,18						
Water flow	l/s	0,13	0,14	0,19	0,21	0,23	0,25	0,15	0,17	0,23	0,26	0,28	0,31						
	l/h	470	520	670	750	810	890	550	620	820	930	1020	1110						
Water pressure drop	kPa	16,8	20,3	31,3	37,9	43,9	50,8	21	26,4	43,7	54	62,9	72,7						
Water volume	l	1,4					1,8												
Heating mode, two pipes ⁽²⁾																			
Heating capacity	kW	3,45	3,87	5,08	5,75	6,27	6,80	3,56	4,04	5,41	6,14	6,68	7,18	NA					
Water flow	l/s	0,17	0,19	0,24	0,28	0,30	0,33	0,17	0,19	0,26	0,30	0,32	0,35						
	l/h	600	670	880	1000	1090	1180	620	700	940	1070	1160	1250						
Water pressure drop	kPa	21,6	26,1	41,5	51,3	59,5	68,6	25,3	31,3	51,4	64	74	83,8						
Water volume	l	1,4					1,8												
Cooling mode, four pipes ⁽¹⁾																			
Total cooling capacity	kW	NA					2,70	3,00	3,86	4,33	4,71	5,11	2,92	3,27	4,32	4,93	5,44	5,98	
Sensible cooling capacity	kW						2,20	2,45	3,19	3,62	3,98	4,37	2,35	2,64	3,51	4,04	4,49	4,99	
Water flow	l/s						0,13	0,15	0,19	0,21	0,23	0,25	0,14	0,16	0,21	0,24	0,27	0,29	
	l/h						470	530	680	760	830	910	510	570	760	870	960	1060	
Water pressure drop	kPa						17,9	22	34,3	41,8	48,3	55,8	18	22,4	37,4	47	55,5	65,6	
Water volume	l						1,1					1,4							
Heating mode, four pipes ⁽³⁾																			
Heating capacity	kW	NA					2,99	3,29	4,14	4,60	4,95	5,32	3,44	3,86	5,00	5,57	5,96	6,31	
	l/s						0,07	0,08	0,10	0,11	0,12	0,13	0,08	0,09	0,12	0,14	0,14	0,15	
Water flow	l/h						260	290	360	400	430	470	300	340	440	490	520	550	
Water pressure drop	kPa						5,9	6,8	9,6	11,4	12,8	14,4	6,8	8,1	12,1	14,3	16	17,6	
Water volume	l											0,5					0,6		
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz							
Maximum capacity	W	2000					2000					2000							
Current input	A	9,1					9,1					9,1							
Sound levels																			
Sound power level (global)	dB(A)	42	46	53	57	59	62	42	46	53	57	59	62	42	46	53	57	59	62
Electrical data, motor																			
Power input	W	58	67	99	118	137	170	58	67	99	118	137	170	58	67	99	118	137	170
Current input	A	0,26	0,30	0,43	0,52	0,60	0,74	0,26	0,30	0,43	0,52	0,60	0,74	0,26	0,30	0,43	0,52	0,60	0,74
FCEER [energy class] - 2 pipes		42 [E]					51 [E]												
FCCOP [energy class]		56 [E]					58 [E]												
FCEER [energy class] - 4 pipes							43 [E]					47 [E]							
FCCOP [energy class]							47 [E]					55 [E]							

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL	529						539						549						
Fan speed	2V	4V	5V	6V	8V	10V	2V	4V	5.5V	6V	8V	10V	2V	4V	5.5V	6V	8V	10V	
(Eurovent certification speeds)	(L)		(M)	(H)		(Max)	(L)		(M)	(H)		(Max)	(L)		(M)	(H)		(Max)	
Air flow	l/s	82	141	172	188	231	255	82	141	179	187	230	254	81	140	179	187	230	254
	m³/h	294	508	618	675	831	918	294	507	645	673	828	915	290	505	644,5	674	829	916
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes ⁽¹⁾																			
Total cooling capacity	kW	1,65	2,60	3,04	3,26	3,80	4,06	1,70	2,99	3,78	3,93	4,69	5,06	NA					
Sensible cooling capacity	kW	1,33	2,14	2,52	2,71	3,19	3,44	1,36	2,36	2,98	3,10	3,72	4,04						
Water flow	l/s	0,08	0,13	0,15	0,16	0,18	0,20	0,08	0,14	0,18	0,19	0,23	0,24						
	l/h	280	450	530	560	660	710	290	520	650	680	810	880						
Water pressure drop	kPa	6,8	15,3	20,6	23,5	30,8	34,7	6,7	18,6	29,1	31,5	42,9	48,9						
Water volume	l	1,4					1,8												
Heating mode, two pipes ⁽²⁾																			
Heating capacity	kW	1,90	3,25	3,90	4,22	5,03	5,43	1,70	3,32	4,26	4,44	5,35	5,79	NA					
Water flow rate	l/s	0,09	0,16	0,19	0,20	0,24	0,26	0,08	0,16	0,21	0,21	0,26	0,28						
	l/h	330	570	680	730	870	940	300	580	740	770	930	1010						
Water pressure drop	kPa	8,3	19,6	26,5	30,3	40,7	46,5	7,6	22,6	34,2	36,7	50,4	57,9						
Water volume	l	1,4					1,8												
Cooling mode, four pipes ⁽¹⁾																			
Total cooling capacity	kW	NA					1,59	2,60	3,19	3,31	3,88	4,15	1,64	2,79	3,49	3,63	4,33	4,69	
Sensible cooling capacity	kW						1,29	2,12	2,62	2,72	3,21	3,46	1,33	2,25	2,83	2,94	3,53	3,84	
Water flow	l/s						0,08	0,13	0,15	0,16	0,19	0,20	0,08	0,13	0,17	0,18	0,21	0,23	
	l/h						270	450	550	570	670	720	280	480	605	630	750	810	
Water pressure drop	kPa						6,7	16,2	24	25,7	33,8	38,2	6,3	16,1	24,65	26,6	36,7	42,5	
Water volume	l						1,1					1,4							
Heating mode, four pipes ⁽³⁾																			
Heating capacity	kW	NA					1,80	2,84	3,43	3,54	4,10	4,38	1,76	3,23	4,04	4,20	4,95	5,31	
Water flow	l/s						0,04	0,07	0,08	0,09	0,10	0,11	0,04	0,08	0,10	0,10	0,12	0,13	
	l/h						160	250	300	310	360	380	150	280	355	370	430	470	
Water pressure drop	kPa						3	5,5	7,2	7,6	9,5	10,5	2,7	6,2	8,65	9,2	11,9	13,3	
Water volume	l											0,5					0,6		
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz							
Maximum capacity	W	2000					2000					2000							
Current input	A	9,1					9,1					9,1							
Sound levels																			
Sound power level (global)	dB(A)	32	43	47	51	55	58	32	43	49	51	55	58	32	43	49	51	55	58
Electrical data, motor																			
Power input	W	4	11	18	24	43	58	4	11	21	24	43	58	4	11	21	24	43	58
Current input	A	0,04	0,09	0,13	0,17	0,28	0,39	0,04	0,09	0,15	0,17	0,28	0,39	0,04	0,09	0,15	0,17	0,28	0,39
FCEER [energy class] - 2 pipes		233 [A]					241 [A]												
FCCOP [energy class]		296 [A]					268 [A]												
FCEER [energy class] - 4 pipes							213 [A]					227 [A]							
FCCOP [energy class]							248 [B]					265 [A]							

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.4 - Physical and electrical data at Eurovent conditions - 42NH - Sizes 2 and 3

With G3 filter - without plenum

42NH		225					235					229			
Fan speed		R5	R4	R3	R2	R1	R5	R4	R3	R2	R1	2V	7V	8V	10V
(Eurovent certification speeds)		(L)			(M)	(H)	(L)			(M)	(H)	(L)	(M)	(H)	
Air flow	l/s	23	47	58	63	76	23	47	58	63	76	25	64	70	81,11
	m³/h	81	170	209	228	272	81	170	209	228	272	91	229	253	292
Available static pressure	Pa	6	28	42	50	71	6	28	42	50	71	8	50	61	81
Cooling mode, two pipes ⁽¹⁾															
Total cooling capacity	kW	0,48	0,96	1,14	1,22	1,42	0,54	1,10	1,32	1,42	1,66	0,55	1,26	1,36	1,52
Sensible cooling capacity	kW	0,37	0,76	0,90	0,97	1,14	0,40	0,84	1,00	1,08	1,28	0,43	1,00	1,09	1,23
Water flow	l/s	0,02	0,05	0,06	0,06	0,07	0,03	0,05	0,06	0,07	0,08	0,03	0,06	0,07	0,075
	l/h	80	170	200	220	250	90	190	230	250	290	90	220	240	270
Water pressure drop	kPa	3,6	11,2	15,6	17,9	23,3	3,4	8,5	11,9	13,7	18,2	4,3	18	21,1	25,5
Water volume	l	0,4					0,5					0,4			
Heating mode, two pipes ⁽²⁾															
Heating capacity	kW	0,57	1,14	1,37	1,47	1,71	0,62	1,27	1,54	1,67	1,96	0,64	1,48	1,61	1,81
Water flow	l/s	0,03	0,06	0,07	0,07	0,08	0,03	0,06	0,08	0,08	0,09	0,03	0,07	0,08	0,086
	l/h	100	200	240	260	300	110	220	270	290	340	110	260	280	310
Water pressure drop	kPa	4,5	12,9	17,4	19,6	25,2	3,3	10	13,5	15,4	20	5,4	19,8	22,8	27,9
Water volume	l	0,4					0,5					0,4			
Cooling mode, four pipes ⁽¹⁾															
Total cooling capacity	kW	NA					0,44	0,84	0,99	1,07	1,24	NA			
Sensible cooling capacity	kW						0,36	0,71	0,84	0,90	1,06				
Water flow	l/s						0,02	0,04	0,05	0,05	0,06				
	l/h						80	150	180	190	220				
Water pressure drop	kPa						2,3	4	5,20	5,9	7,6				
Water volume	l						0,3								
Heating mode, four pipes ⁽³⁾															
Heating capacity	kW	NA					0,68	1,35	1,61	1,72	1,98	NA			
Water flow	l/s						0,02	0,03	0,04	0,04	0,05				
	l/h						60	120	140	150	170				
Water pressure drop	kPa						1,8	3,8	4,7	5,2	6,4				
Water volume	l						0,2								
Electric heater															
Maximum capacity	W	230V ±10%					230V ±10%					230V ±10%			
		1000					1000					1000			
Current input	A	4,6					4,6					4,6			
Sound levels															
Sound power level (return and radiated)	dB(A)	32	43	48	49	53	32	43	48	49	53	36	50	52	56
Sound power level (supply)	dB(A)	31	40	46	49	52	31	40	46	49	52	37	51	53	58
Electrical data, motor															
Power input	W	13	20	41	43	44	13	20	41	43	44	3	18	22	33
Current input	A	0,13	0,16	0,22	0,23	0,24	0,13	0,16	0,22	0,23	0,24	0,05	0,22	0,28	0,39
FCEER [energy class] - 2 pipes		37 [D]					43 [C]					95 [A]			
FCCOP [energy class]		46 [C]					51 [C]					117 [A]			
FCEER [energy class] - 4 pipes							33 [D]								
FCCOP [energy class]							54 [C]								

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
(2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
(3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		239				279				289			
Fan speed		2V	7V	8V	10V	2V	6V	7V	10V	2V	6V	7V	10V
(Eurovent certification speeds)		(L)	(M)	(H)		(L)	(M)	(H)		(L)	(M)	(H)	
Air flow	l/s	25	64	70	81	32	85	97	124	36	96	108	134
	m³/h	91	229	253	292	116	305	349	446	128	347	387	481
Available static pressure	Pa	8	50	61	81	7	50	65	107	7	50	62	96
Cooling mode, two pipes ⁽¹⁾													
Total cooling capacity	kW	0,62	1,45	1,58	1,78	0,78	1,86	2,07	2,45	1,00	2,44	2,67	3,15
Sensible cooling capacity	kW	0,46	1,11	1,22	1,38	0,59	1,44	1,61	1,94	0,71	1,79	1,97	2,35
Water flow	l/s	0,03	0,07	0,08	0,09	0,04	0,09	0,10	0,12	0,05	0,12	0,13	0,16
	l/h	110	250	280	310	130	320	360	430	170	420	470	560
Water pressure drop	kPa	3,7	13,8	16,2	20,4	4,7	21,9	26,9	36,1	4,4	21	25,1	33,5
Water volume	l	0,5				0,5				0,6			
Heating mode, two pipes ⁽²⁾													
Heating capacity	kW	0,70	1,68	1,84	2,09	0,88	2,17	2,44	2,98	1,05	2,78	3,09	3,79
Water flow	l/s	0,03	0,08	0,09	0,10	0,04	0,11	0,12	0,14	0,05	0,13	0,15	0,18
	l/h	120	290	320	360	150	380	420	520	180	480	540	660
Water pressure drop	kPa	3,9	15,5	18	22,2	5,7	23,7	28,9	40,7	4,9	23,3	27,8	39,5
Water volume	l	0,5				0,5				0,6			
Cooling mode, four pipes ⁽¹⁾													
Total cooling capacity	kW	0,49	1,10	1,19	1,33	0,60	1,39	1,53	1,79	0,94	2,17	2,35	2,72
Sensible cooling capacity	kW	0,41	0,93	1,01	1,14	0,50	1,19	1,32	1,57	0,68	1,66	1,81	2,13
Water flow	l/s	0,02	0,05	0,06	0,06	0,03	0,07	0,08	0,09	0,04	0,11	0,11	0,13
	l/h	80	190	210	230	100	240	270	320	160	380	410	480
Water pressure drop	kPa	2,4	6	6,8	8,4	2,8	8,9	10,7	14,5	5,9	26	30	39
Water volume	l	0,3				0,3				0,4			
Heating mode, four pipes ⁽³⁾													
Heating capacity	kW	0,77	1,73	1,88	2,09	0,96	2,16	2,37	2,75	0,97	2,29	2,53	3,09
Water flow	l/s	0,02	0,04	0,04	0,05	0,02	0,05	0,06	0,07	0,03	0,06	0,06	0,08
	l/h	70	150	160	180	80	190	210	240	90	200	220	270
Water pressure drop	kPa	2	5,3	5,9	6,9	2,5	7,3	8,4	10,6	2,5	7,8	9,1	12,5
Water volume	l	0,2				0,2				0,3			
Electric heater		230V ±10%				230V ±10%				230V ±10%			
Maximum capacity	W	1000				1000				1000			
Current input	A	4,6				4,6				4,6			
Sound levels													
Sound power level (return and radiated)	dB(A)	36	50	52	56	34	52	54	61	36	54	57	61
Sound power level (supply)	dB(A)	37	51	53	58	34	55	58	64	35	56	59	65
Electrical data, motor													
Power input	W	3	18	22	33	4	25	36	70	7	36	49	50
Current input	A	0,05	0,22	0,28	0,39	0,06	0,29	0,40	0,75	0,08	0,31	0,40	0,91
FCEER [energy class] - 2 pipes		109[A]				98 [A]				85 [A]			
FCCOP [energy class]		130 [A]				118 [A]				97 [A]			
FCEER [energy class] - 4 pipes		84 [B]				74 [B]				78 [B]			
FCCOP [energy class]		138 [A]				123 [A]				84 [B]			

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		325					335				
Fan speed		R5	R4	R3	R2	R1	R5	R4	R3	R2	R1
(Eurovent certification speeds)			(L)	(M)	(H)	Max		(L)	(M)	(H)	Max
Air flow	l/s	55	79	102	131	160	55	79	102	131	160
	m³/h	197	284	366	471	577	197	284	366	471	577
Available static pressure	Pa	14	30	50	83	124	14	30	50	83	124
Cooling mode, two pipes ⁽¹⁾											
Total cooling capacity	kW	0,94	1,27	1,55	1,87	2,16	1,10	1,57	1,98	2,48	2,95
Sensible cooling capacity	kW	0,76	1,06	1,31	1,61	1,89	0,84	1,22	1,55	1,96	2,36
Water flow	l/s	0,05	0,07	0,08	0,10	0,11	0,06	0,08	0,10	0,13	0,15
	l/h	180	240	290	350	400	210	290	370	460	540
Water pressure drop	kPa	5,9	9,6	13,6	19,1	24,2	5	9	15	23	31
Water volume	l	0,7					0,9				
Heating mode, two pipes ⁽²⁾											
Heating capacity	kW	1,36	1,87	2,30	2,77	3,18	0,57	2,11	2,66	3,30	3,88
Water flow	l/s	0,07	0,09	0,11	0,13	0,15	0,07	0,10	0,13	0,16	0,19
	l/h	240	320	400	480	550	260	370	460	570	680
Water pressure drop	kPa	10,9	16,7	22,7	30,3	37,7	8,2	13,9	20,3	29,2	38,5
Water volume	l	0,7					0,9				
Cooling mode, four pipes ⁽¹⁾											
Total cooling capacity	kW	NA					1,15	1,58	1,94	2,34	2,70
Sensible cooling capacity	kW						0,86	1,21	1,51	1,86	2,18
Water flow	l/s						0,06	0,08	0,10	0,12	0,14
	l/h						220	290	360	430	500
Water pressure drop	kPa						8,5	14,5	21,0	28,6	36,3
Water volume	l						0,6				
Heating mode, four pipes ⁽³⁾											
Heating capacity	kW	NA					1,71	2,32	2,81	3,31	3,69
Water flow	l/s						0,04	0,06	0,07	0,08	0,09
	l/h						150	200	250	290	320
Water pressure drop	kPa						6,4	10,2	13,8	18	21,6
Water volume	l										
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	1600					1600				
Current input	A	7,3					7,3				
Sound levels											
Sound power level (return and radiated)	dB(A)	42	45	49	56	60	42	45	49	56	60
Sound power level (supply)	dB(A)	46	48	54	61	66	46	48	54	61	66
Electrical data, motor											
Power input	W	109	126	146	168	190	109	126	146	168	190
Current input	A	0,50	0,57	0,65	0,75	0,88	0,50	0,57	0,65	0,75	0,88
FCEER [energy class] - 2 pipes		10 [E]					13 [E]				
FCCOP [energy class]		15 [E]					17 [E]				
FCEER [energy class] - 4 pipes							13 [E]				
FCCOP [energy class]							19 [E]				

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

(1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.

(2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.

(3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		329				339			
Fan speed		2V	3.7V	4.5V	10V	2V	3.7V	4.5V	10V
(Eurovent certification speeds)		(L)	(M)	(H)	Max	(L)	(M)	(H)	Max
Air flow	l/s	59	125	147	212	59	124	146	212
	m ³ /h	213	450	528	764	212	447	527	763
Available static pressure	Pa	11	50,1	69	143	11	50	70	145
Cooling mode, two pipes⁽¹⁾									
Total cooling capacity	kW	1,11	1,93	2,15	2,64	1,29	2,50	2,85	3,70
Sensible cooling capacity	kW	0,92	1,68	1,89	2,38	1,01	2,00	2,29	3,04
Water flow	l/s	0,05	0,10	0,11	0,13	0,06	0,12	0,14	0,19
	l/h	190	342	380	480	220	433	500	670
Water pressure drop	kPa	6,5	18	22	32,7	6,6	22	28	45,3
Water volume	l	0,7				0,9			
Heating mode, two pipes⁽²⁾									
Heating capacity	kW	1,46	2,68	3,01	3,74	1,61	3,16	3,61	4,70
Water flow	l/s	0,07	0,13	0,14	0,18	0,08	0,15	0,17	0,23
	l/h	250	466	520	650	280	547	625	820
Water pressure drop	kPa	11,9	28,7	34,3	49,2	9,0	27,2	34,1	53,5
Water volume	l	0,7				0,9			
Cooling mode, four pipes⁽¹⁾									
Total cooling capacity	kW	NA				1,22	2,38	2,65	3,30
Sensible cooling capacity	kW					1,03	1,90	2,15	2,75
Water flow	l/s					0,06	0,11	0,13	0,17
	l/h					230	410	470	600
Water pressure drop	kPa					9,5	26,8	32,6	49,6
Water volume	l					0,6			
Heating mode, four pipes⁽³⁾									
Heating capacity	kW	NA				1,82	3,20	3,51	4,34
Water flow	l/s					0,04	0,08	0,08	0,11
	l/h					160	278	305	380
Water pressure drop	kPa					7,0	17,14	19,9	28,6
Water volume	l					0,3			
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz			
Maximum capacity	W	1600				1600			
Current input	A	7,3				7,3			
Sound levels									
Sound power level (return and radiated)	dB(A)	37	54	58	67	37	54	58	67
Sound power level (supply)	dB(A)	40	59	63	71	40	59	63	71
Electrical data, motor									
Power input	W	8	37	58,5	174	8	37	58,5	172
Current input	A	0,11	0,57	0,79	1,35	0,11	0,57	0,79	1,35
FCEER [energy class] - 2 pipes		73 [B]				90 [A]			
FCCOP [energy class]		104 [A]				118 [A]			
FCEER [energy class] - 4 pipes						85 [A]			
FCCOP [energy class]						127 [A]			

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.5 - Physical and electrical data at Eurovent conditions - 42NH - Size 4

With G3 filter - without plenum

42NH		425					435					
Fan speed		R5	R4	R3	R2	R1	R5	R4	R3	R2	R1	
(Eurovent certification speeds)		(L)	(M)	(H)		Max	(L)	(M)	(H)		Max	
Air flow	l/s	89	140	166	189	197	89	140	166	189	197	
	m³/h	320	505	599	679	709	320	505	599	679	709	
Available static pressure		Pa	20	50	70	90	98	20	50	70	90	98
Cooling mode, two pipes ⁽¹⁾												
Total cooling capacity	kW	1,72	2,60	3,01	3,30	3,40	1,84	3,07	3,62	4,02	4,14	
Sensible cooling capacity	kW	1,37	2,10	2,44	2,71	2,80	1,44	2,36	2,79	3,12	3,22	
Water flow	l/s	0,09	0,13	0,15	0,16	0,17	0,09	0,15	0,18	0,20	0,20	
	l/h	310	460	530	580	600	330	540	640	710	730	
Water pressure drop	kPa	8,7	18	22,6	26,5	28	10	25,1	33,9	40	42,1	
Water volume	l	1,0					1,3					
Heating mode, two pipes ⁽²⁾												
Heating capacity	kW	1,98	3,16	3,75	4,22	4,39	2,02	3,32	3,99	4,53	4,72	
Water flow	l/s	0,09	0,15	0,18	0,20	0,21	0,10	0,16	0,19	0,22	0,23	
	l/h	340	550	650	730	760	350	580	690	790	820	
Water pressure drop	kPa	9,3	19,8	26,3	32,2	34,5	10,6	23,8	32,4	40,2	43,2	
Water volume	l	1,0					1,3					
Cooling mode, four pipes ⁽¹⁾												
Total cooling capacity	kW	NA					1,76	2,66	3,06	3,36	3,45	
Sensible cooling capacity	kW						1,39	2,14	2,49	2,75	2,84	
Water flow	l/s						0,09	0,13	0,15	0,16	0,17	
	l/h						320	470	540	590	610	
Water pressure drop	kPa						11,3	23,5	29,8	34,7	36,5	
Water volume	l						0,9					
Heating mode, four pipes ⁽³⁾												
Heating capacity	kW	NA					2,13	3,51	4,14	4,64	4,81	
Water flow	l/s						0,05	0,09	0,10	0,11	0,12	
	l/h						190	310	360	410	420	
Water pressure drop	kPa						10	22,4	29,7	36	38,3	
Water volume	l						0,5					
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz					
Maximum capacity	W	2000					2000					
Current input	A	9,1					9,1					
Sound levels												
Sound power level (return and radiated)	dB(A)	43	51	55	57	58	43	51	55	57	58	
Sound power level (supply)	dB(A)	47	54	58	60	61	47	54	58	60	61	
Electrical data, motor												
Power input	W	79	87	94	103	117	79	87	94	103	117	
Current input	A	0,43	0,51	0,62	0,67	0,72	0,43	0,51	0,62	0,67	0,72	
FCEER [energy class] - 2 pipes		25 [E]					28 [D]					
FCCOP [energy class]		29 [D]					30 [D]					
FCEER [energy class] - 4 pipes							26 [D]					
FCCOP [energy class]							32 [D]					

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

(1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.

(2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.

(3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		429					439				
Fan speed		2V	3.7V	5V	7V	9V	2V	3.7V	5V	7V	9V
(Eurovent certification speeds)		(L)	(M)	(H)		Max	(L)	(M)	(H)		Max
Air flow	l/s	61	129	159	212	219	61	129	159	212	219
	m³/h	218	464,2	574	764	787	218	464,2	574	764	787
Available static pressure	Pa	11	50,4	76	135	143	11	50,4	76	135	143
Cooling mode, two pipes ⁽¹⁾											
Total cooling capacity	kW	1,26	2,46	2,90	3,56	3,61	1,22	2,85	3,50	4,31	4,35
Sensible cooling capacity	kW	1,00	1,99	2,37	2,95	2,99	0,99	2,21	2,70	3,38	3,42
Water flow	l/s	0,06	0,12	0,14	0,18	0,18	0,06	0,14	0,17	0,21	0,22
	l/h	220	426	510	640	650	210	494	610	770	780
Water pressure drop	kPa	4,8	15,82	21,3	30,7	31,7	4,8	21,51	31,9	45,6	46,7
Water volume	l	1,0					1,3				
Heating mode, two pipes ⁽²⁾											
Heating capacity	kW	1,34	2,91	3,59	4,69	4,80	1,38	3,03	3,81	5,05	5,17
Water flow	l/s	0,06	0,14	0,17	0,23	0,23	0,07	0,15	0,18	0,24	0,25
	l/h	230	504	620	820	830	240	528	660	880	900
Water pressure drop	kPa	5,2	17,31	24,5	38,5	40,1	5,8	20,57	29,9	48,4	50,5
Water volume	l	1,0					1,3				
Cooling mode, four pipes ⁽¹⁾											
Total cooling capacity	kW	NA					1,28	2,52	2,97	3,59	3,63
Sensible cooling capacity	kW						1,02	2,03	2,41	2,97	3,01
Water flow	l/s						0,06	0,12	0,14	0,18	0,18
	l/h						220	436	520	640	650
Water pressure drop	kPa						6,1	20,71	28,4	39,6	40,7
Water volume	l						0,9				
Heating mode, four pipes ⁽³⁾											
Heating capacity	kW	NA					1,34	3,21	3,97	5,10	5,21
Water flow	l/s						0,03	0,08	0,10	0,13	0,13
	l/h						120	279	350	450	460
Water pressure drop	kPa						5	19,45	27,7	42,5	44,1
Water volume	l						0,5				
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	1600					1600				
Current input	A	7,3					7,3				
Sound levels											
Sound power level (return and radiated)	dB(A)	37	54	60	66	66	37	54	60	66	66
Sound power level (supply)	dB(A)	40	62	67	72	72	40	62	67	72	72
Electrical data, motor											
Power input	W	8	36,3	74	147	174	8	36,3	74	147	174
Current input	A	0,12	0,43	0,98	1,26	1,31	0,12	0,43	0,98	1,26	1,31
FCEER [energy class] - 2 pipes		86 [A]					92 [A]				
FCCOP [energy class]		100 [A]					104 [A]				
FCEER [energy class] - 4 pipes							88 [A]				
FCCOP [energy class]							106 [A]				

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

(1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.

(2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.

(3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.6 - Physical and electrical data at Eurovent conditions - 42NH - Size 5

With G3 filter - without plenum

42NH		525					535					545									
Fan speed		R5	R4	R3	R2	R1	R5	R4	R3	R2	R1	R5	R4	R3	R2	R1					
(Eurovent certification speeds)		(L)	(M)	(H)		Max	(L)	(M)	(H)		Max	(L)	(M)	(H)		Max					
Air flow	l/s	213	240	257	268	279	213	240	257	268	279	213	240	257	268	279					
	m³/h	767	863	924	964	1004	767	863	924	964	1004	767	863	925	964	1004					
Available static pressure		Pa	40	50	57	62	68	40	50	57	62	68	40	50	57	62	68				
Cooling mode, two pipes ⁽¹⁾																					
Total cooling capacity	kW	3,52	3,84	4,03	4,15	4,25	4,33	4,77	5,05	5,21	5,36	NA									
Sensible cooling capacity	kW	2,94	3,23	3,41	3,51	3,62	3,41	3,79	4,02	4,16	4,29										
Water flow	l/s	0,17	0,19	0,20	0,20	0,21	0,21	0,23	0,25	0,26	0,26										
	l/h	620	680	710	730	750	760	840	890	920	940										
Water pressure drop	kPa	28,5	32,3	35	36,8	38,5	38,2	45,3	49,6	52,3	55										
Water volume	l	1,4					1,8														
Heating mode, two pipes ⁽²⁾																					
Heating capacity	kW	4,72	5,19	5,47	5,64	5,81	5,00	5,53	5,84	6,03	6,20	NA									
Water flow rate	l/s	0,23	0,25	0,26	0,27	0,28	0,24	0,27	0,28	0,29	0,30										
	l/h	820	900	950	980	1010	870	960	1020	1050	1080										
Water pressure drop	kPa	36,5	43	47,1	49,7	52,2	45	53,4	58,7	62	65,1										
Water volume	l	1,4					1,8														
Cooling mode, four pipes ⁽¹⁾																					
Total cooling capacity	kW	NA					3,59	3,93	4,13	4,25	4,36	3,99	4,40	4,66	4,82	4,97					
Sensible cooling capacity	kW						2,96	3,25	3,43	3,55	3,65	3,23	3,58	3,81	3,95	4,08					
Water flow	l/s						0,18	0,19	0,20	0,21	0,21	0,19	0,22	0,23	0,24	0,24					
	l/h						640	690	730	750	770	700	780	820	850	880					
Water pressure drop	kPa						30,6	35,5	38,7	40,5	42,5	32,8	38,9	43	45,6	47,9					
Water volume	l											1,1					1,4				
Heating mode, four pipes ⁽³⁾																					
Heating capacity	kW	NA					3,89	4,21	4,41	4,52	4,64	4,67	5,10	5,34	5,48	5,61					
Water flow	l/s						0,09	0,10	0,11	0,11	0,11	0,11	0,13	0,13	0,13	0,14					
	l/h						340	370	390	400	410	410	450	470	480	490					
Water pressure drop	kPa						8,7	9,9	10,6	11,1	11,5	10,8	12,4	13,4	14	14,5					
Water volume	l											0,5					0,6				
Electric heater												230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	2000					2000					2000									
Current input	A	9,1					9,1					9,1									
Sound levels																					
Sound power level (return and radiated)	dB(A)	55	56	57	58	58	55	56	57	58	58	55	56	57	58	58					
Sound power level (supply)	dB(A)	55	57	59	60	61	55	57	59	60	61	55	57	59	60	61					
Electrical data, motor																					
Power input	W	105	113	117	124	134	105	113	117	124	134	105	113	117	124	134					
Current input	A	0,59	0,64	0,67	0,71	0,76	0,59	0,64	0,67	0,71	0,76	0,59	0,64	0,67	0,71	0,76					
FCEER [energy class] - 2 pipes		34 [D]					42 [C]														
FCCOP [energy class]		45 [C]					48 [C]														
FCEER [energy class] - 4 pipes							34 [D]					38 [D]									
FCCOP [energy class]							37 [D]					45 [C]									

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
(2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
(3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH	529					539					549					
Fan speed	2V	5V	6V	8V	10V	2V	5V	6V	8V	10V	2V	5V	6V	8V	10V	
(Eurovent certification speeds)	(L)	(M)	(H)		Max	(L)	(M)	(H)		Max	(L)	(M)	(H)		Max	
Air flow	l/s	85	213	244	307	347	85	213	244	307	347	85	213	244	307	347
	m³/h	306	765	878	1105	1249	306	765	878	1105	1249	306	765	878	1105	1249
Available static pressure	Pa	8	50	66	104	133	8	50	66	104	133	8	50	66	104	133
Cooling mode, two pipes ⁽¹⁾																
Total cooling capacity	kW	1,70	3,57	3,93	4,54	4,86	1,77	4,37	4,88	5,72	6,13	NA				
Sensible cooling capacity	kW	1,37	2,98	3,31	3,89	4,19	1,41	3,46	3,88	4,63	5,01					
Water flow	l/s	0,08	0,17	0,19	0,22	0,24	0,08	0,21	0,24	0,28	0,30					
	l/h	290	620	690	800	870	300	760	850	1010	1090					
Water pressure drop	kPa	7,2	28,4	33	42,9	49,1	7,2	38,1	46,5	61,6	70,3					
Water volume	l	1,4				1,8										
Heating mode, two pipes ⁽²⁾																
Heating capacity	kW	1,98	4,71	5,26	6,20	6,68	1,80	4,99	5,61	6,61	7,07	NA				
Water flow	l/s	0,09	0,23	0,26	0,30	0,32	0,09	0,24	0,27	0,32	0,34					
	l/h	340	820	920	1080	1160	310	870	980	1150	1230					
Water pressure drop	kPa	8,8	36,4	44	58,3	66,4	8,4	44,8	54,8	72,6	81,6					
Water volume	l	1,4				1,8										
Cooling mode, four pipes ⁽¹⁾																
Total cooling capacity	kW	NA				1,65	3,64	4,01	4,64	4,97	1,73	4,03	4,51	5,35	6,02	
Sensible cooling capacity	kW					1,34	3,00	3,33	3,92	4,23	1,39	3,28	3,68	4,42	5,04	
Water flow	l/s					0,08	0,18	0,19	0,23	0,25	0,08	0,19	0,22	0,26	0,29	
	l/h					280	630	700	820	890	300	700	790	940	1030	
Water pressure drop	kPa					7,2	30,5	36,3	47,3	54	6,8	32,8	40	54,3	62	
Water volume	l					1,1					1,4					
Heating mode, four pipes ⁽³⁾																
Heating capacity	kW	NA				1,87	3,88	4,26	4,90	5,23	1,88	4,66	5,16	5,91	7,44	
Water flow	l/s					0,04	0,09	0,10	0,12	0,13	0,04	0,11	0,13	0,14	0,18	
	l/h					160	340	370	430	460	160	410	450	520	650	
Water pressure drop	kPa					3,2	8,7	10,1	12,6	14	2,9	10,8	12,7	15,8	22	
Water volume	l									0,5					0,6	
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz					
Maximum capacity	W	2000				2000					2000					
Current input	A	9,1				9,1					9,1					
Sound levels																
Sound power level (return and radiated)	dB(A)	35	53	57	63	66	35	53	57	63	66	35	53	57	63	66
Sound power level (supply)	dB(A)	36	57	61	66	70	36	57	61	66	70	36	57	61	66	70
Electrical data, motor																
Power input	W	9	52	78	146	212	9	52	78	146	212	9	52	78	146	212
Current input	A	0,12	0,67	0,95	1,58	1,88	0,12	0,67	0,95	1,58	1,88	0,12	0,67	0,95	1,58	1,88
FCEER [energy class] - 2 pipes		94 [A]				107 [A]										
FCCOP [energy class]		122 [A]				120 [A]										
FCEER [energy class] - 4 pipes						93 [A]					101 [A]					
FCCOP [energy class]						107 [A]					118 [A]					

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.7 - Physical and electrical data at Eurovent conditions - 42NH - Sizes 6 and 7

With G3 filter - without plenum

42NH		635					645					
Fan speed		R5	R4	R3	R2	R1	R5	R4	R3	R2	R1	
(Eurovent certification speeds)			(L)	(M)	(H)	Max		(L)	(M)	(H)	Max	
Air flow	l/s	200	298	397	460	499	200	298	397	460	499	
	m³/h	720	1072	1428	1657	1796	720	1072	1428	1657	1796	
Available static pressure		Pa	13	28	50	67	79	13	28	50	67	79
Cooling mode, two pipes ⁽¹⁾												
Total cooling capacity	kW	4,03	5,81	7,31	8,08	8,47	4,57	6,80	8,62	9,52	9,97	
Sensible cooling capacity	kW	3,17	4,62	5,94	6,67	7,06	3,44	5,14	6,65	7,49	7,92	
Water flow	l/s	0,20	0,29	0,36	0,40	0,42	0,23	0,33	0,42	0,47	0,49	
	l/h	720	1030	1290	1430	1500	820	1200	1520	1680	1760	
Water pressure drop	kPa	12,3	24	35	41,3	45,1	12,1	25	38,6	45,1	49	
Water volume	l	1,5					2					
Heating mode, two pipes ⁽²⁾												
Heating capacity	kW	5,21	7,59	9,76	11,00	11,67	5,56	8,21	10,59	11,92	12,64	
Water flow	l/s	0,25	0,37	0,47	0,53	0,56	0,27	0,40	0,51	0,58	0,61	
	l/h	910	1320	1700	1910	2030	970	1430	1840	2070	2200	
Water pressure drop	kPa	15,9	29,7	45,6	56	62,1	14,8	28,1	43,4	53,1	58,8	
Water volume	l	1,5					2,0					
Cooling mode, four pipes ⁽¹⁾												
Total cooling capacity	kW	NA					3,80	5,38	6,63	7,22	7,52	
Sensible cooling capacity	kW						3,05	4,40	5,56	6,18	6,50	
Water flow	l/s						0,19	0,27	0,33	0,36	0,37	
	l/h						680	960	1180	1280	1340	
Water pressure drop	kPa						11,1	20,9	29,9	34,4	37,1	
Water volume	l						1,3					
Heating mode, four pipes ⁽³⁾												
Heating capacity	kW	NA					4,92	6,79	8,05	8,57	8,82	
Water flow	l/s						0,12	0,17	0,20	0,21	0,21	
	l/h						430	600	710	750	770	
Water pressure drop	kPa						6,6	10,8	14,2	15,7	16,5	
Water volume	l						0,7					
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz					
Maximum capacity	W	3200					3200					
Current input	A	14,6					14,6					
Sound levels												
Sound power level (return and radiated)	dB(A)	50	56	58	61	62	50	56	58	61	62	
Sound power level (supply)	dB(A)	50	59	62	65	66	50	59	62	65	66	
Electrical data, motor												
Power input	W	185	217	225	242	286	185	217	225	242	286	
Current input	A	0,96	1,11	1,28	1,38	1,55	0,96	1,11	1,28	1,38	1,55	
FCEER [energy class] - 2 pipes		29 [D]					34 [D]					
FCCOP [energy class]		38 [D]					41 [C]					
FCEER [energy class] - 4 pipes							26 [D]					
FCCOP [energy class]							33 [D]					

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		639				649			
Fan speed		2V	6V	7V	10V	2V	7V	8V	10V
(Eurovent certification speeds)		(L)	(M)	(H)	Max	(L)	(M)	(H)	Max
Air flow	l/s	102	269	303	389	90	327	364	426
	m ³ /h	368	967	1089	1400	323	1176	1310	1532
Available static pressure	Pa	7	50	63	105	4	50	62	85
Cooling mode, two pipes ⁽¹⁾									
Total cooling capacity	kW	1,76	5,44	5,99	7,21	1,87	7,49	8,14	9,04
Sensible cooling capacity	kW	1,40	4,34	4,80	5,85	1,51	5,71	6,25	7,04
Water flow	l/s	0,08	0,26	0,29	0,36	0,09	0,36	0,39	0,44
	l/h	300	950	1050	1280	320	1300	1420	1590
Water pressure drop	kPa	3,5	20,3	24,6	34,2	3,7	29,1	34,4	41,3
Water volume	l	1,5				2			
Heating mode, two pipes ⁽²⁾									
Heating capacity	kW	2,19	6,90	7,70	9,60	2,33	8,94	9,84	11,21
Water flow	l/s	0,11	0,33	0,37	0,46	0,11	0,43	0,48	0,54
	l/h	380	1200	1340	1670	410	1550	1710	1950
Water pressure drop	kPa	4,1	25,3	30,4	44,4	3,7	32,5	38,3	47,8
Water volume	l	1,5				2			
Cooling mode, four pipes ⁽¹⁾									
Total cooling capacity	kW	NA				1,83	5,90	6,33	6,91
Sensible cooling capacity	kW					1,48	4,87	5,27	5,85
Water flow	l/s					0,09	0,29	0,31	0,34
	l/h					310	1030	1110	1230
Water pressure drop	kPa					3,6	23,9	27,7	32
Water volume	l					1,3			
Heating mode, four pipes ⁽³⁾									
Heating capacity	kW	NA				2,17	7,22	7,70	8,30
Water flow	l/s					0,05	0,18	0,19	0,20
	l/h					190	630	670	730
Water pressure drop	kPa					2,3	11,9	13,2	14,9
Water volume	l					0,7			
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz			
Maximum capacity	W	3200				3200			
Current input	A	14,6				14,6			
Sound levels									
Sound power level (return and radiated)	dB(A)	38	58	61	67	38	61	64	67
Sound power level (supply)	dB(A)	46	60	63	69	46	63	66	69
Electrical data, motor									
Power input	W	8	76	106	222	9	111	153	233
Current input	A	0,09	0,71	1,02	2,01	0,09	0,71	1,02	2,01
FCEER [energy class] - 2 pipes		92 [A]				83 [B]			
FCCOP [energy class]		122 [A]				105 [A]			
FCEER [energy class] - 4 pipes						70 [B]			
FCCOP [energy class]						89 [A]			

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		735					745				
Fan speed		R5	R4	R3	R2	R1	R5	R4	R3	R2	R1
(Eurovent certification speeds)				(L)	(M)	(H)			(L)	(M)	(H)
Air flow	l/s	148	218	374	533	600	148	218	374	533	600
	m³/h	534	785	1346	1918	2161	534	785	1346	1918	2161
Available static pressure	Pa	4	8	25	50	63	4	8	25	50	63
Cooling mode, two pipes ⁽¹⁾											
Total cooling capacity	kW	3,19	4,66	7,62	9,97	10,76	3,43	5,09	8,52	11,32	12,25
Sensible cooling capacity	kW	2,42	3,55	5,92	7,98	8,72	2,55	3,77	6,41	8,75	9,60
Water flow	l/s	0,16	0,23	0,38	0,49	0,53	0,17	0,25	0,42	0,56	0,60
	l/h	580	840	1360	1770	1910	620	910	1510	2000	2160
Water pressure drop	kPa	9,1	18,1	42,5	66,4	75,8	7,9	16	41,8	66,2	75,9
Water volume	l	2					2,6				
Heating mode, two pipes ⁽²⁾											
Heating capacity	kW	3,81	5,46	9,03	12,49	13,86	3,85	5,62	9,55	13,38	14,88
Water flow	l/s	0,18	0,26	0,44	0,60	0,67	0,19	0,27	0,46	0,65	0,72
	l/h	660	950	1570	2170	2410	670	980	1660	2330	2590
Water pressure drop	kPa	10,7	19,1	44,7	78,2	93,7	9	16,3	39,5	70,5	84,8
Water volume	l	2					2,6				
Cooling mode, four pipes ⁽¹⁾											
Total cooling capacity	kW	2,80	3,95	6,29	8,28	8,99	3,33	4,94	8,11	10,46	11,18
Sensible cooling capacity	kW	2,22	3,17	5,16	6,96	7,61	2,50	3,69	6,18	8,25	8,96
Water flow	l/s	0,14	0,20	0,31	0,41	0,44	0,17	0,25	0,40	0,51	0,55
	l/h	510	720	1130	1480	1600	600	890	1440	1850	1980
Water pressure drop	kPa	8,9	16,5	36	56,8	65,6	9,9	20,3	47,6	72,9	81,9
Water volume	l	1,3					1,7				
Heating mode, four pipes ⁽³⁾											
Heating capacity	kW	3,64	5,20	8,43	11,16	12,13	4,14	6,31	10,54	13,74	14,80
Water flow	l/s	0,09	0,13	0,21	0,27	0,29	0,10	0,15	0,26	0,33	0,36
	l/h	320	460	740	980	1060	360	550	920	1200	1300
Water pressure drop	kPa	5,1	8,6	18,5	29,7	34,3	5,4	10,2	23,6	36,9	41,9
Water volume	l	0,7					0,9				
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	3200					3200				
Current input	A	14,6					14,6				
Sound levels											
Sound power level (return and radiated)	dB(A)	41	48	57	63	64	41	48	57	63	64
Sound power level (supply)	dB(A)	42	48	58	66	68	42	48	58	66	68
Electrical data, motor											
Power input	W	174	227	282	316	356	174	227	282	316	356
Current input	A	0,84	1,08	1,40	1,74	1,86	0,84	1,08	1,40	1,74	1,86
FCEER [energy class] - 2 pipes		29 [D]					32 [D]				
FCCOP [energy class]		34 [D]					37 [D]				
FCEER [energy class] - 4 pipes		24 [E]					30 [D]				
FCCOP [energy class]		32 [D]					39 [D]				

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

(1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.

(2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.

(3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		739				749			
Fan speed		2V	7V	8V	10V	2V	7V	8V	10V
(Eurovent certification speeds)		(L)	(M)	(H)	Max	(L)	(M)	(H)	Max
Air flow	l/s	124	441	477	529	124	441	477	529
	m ³ /h	445	1586	1717	1906	445	1586	1717	1906
Available static pressure	Pa	4	50	59	72	4	50	59	72
Cooling mode, two pipes⁽¹⁾									
Total cooling capacity	kW	2,79	8,84	9,34	10,00	2,97	9,94	10,56	11,34
Sensible cooling capacity	kW	2,16	6,99	7,43	8,01	2,25	7,60	8,11	8,78
Water flow	l/s	0,13	0,43	0,45	0,49	0,14	0,48	0,51	0,55
	l/h	480	1540	1630	1760	510	1730	1840	1990
Water pressure drop	kPa	6,6	52,7	58,2	65,9	5,8	51,8	57,7	65,7
Water volume	l	2				2,6			
Heating mode, two pipes⁽²⁾									
Heating capacity	kW	3,22	10,51	11,31	12,42	3,22	11,19	12,07	13,30
Water flow	l/s	0,16	0,51	0,55	0,60	0,16	0,54	0,58	0,64
	l/h	560	1830	1970	2160	560	1950	2100	2310
Water pressure drop	kPa	8,3	58	65,8	77,4	6,6	51,8	59,1	69,8
Water volume	l	2				2,6			
Cooling mode, four pipes⁽¹⁾									
Total cooling capacity	kW	2,51	7,33	7,75	8,31	2,89	9,36	9,86	10,50
Sensible cooling capacity	kW	2,02	6,10	6,48	6,99	2,21	7,27	7,71	8,29
Water flow	l/s	0,12	0,36	0,38	0,41	0,14	0,45	0,48	0,51
	l/h	430	1280	1360	1470	500	1630	1720	1840
Water pressure drop	kPa	6,7	44,7	49,5	56,4	7,1	58,7	64,6	72,4
Water volume	l	1,3				1,7			
Heating mode, four pipes⁽³⁾									
Heating capacity	kW	3,07	9,65	10,28	11,11	3,36	12,02	12,75	13,68
Water flow	l/s	0,08	0,24	0,25	0,27	0,08	0,29	0,31	0,33
	l/h	270	850	900	970	290	1050	1120	1200
Water pressure drop	kPa	4	23,3	25,9	29,5	4,1	29,4	32,5	36,7
Water volume	l	0,7				0,9			
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz			
Maximum capacity	W	3000				3000			
Current input	A	13,7				13,7			
Sound levels									
Sound power level (return and radiated)	dB(A)	45	60	62	63	45	60	62	63
Sound power level (supply)	dB(A)	44	61	63	65	44	61	63	65
Electrical data, motor									
Power input	W	10	137	177	240	10	137	177	240
Current input	A	0,11	1,11	1,38	1,85	0,11	1,11	1,38	1,85
FCEER [energy class] - 2 pipes		87 [A]				96 [A]			
FCCOP [energy class]		109 [A]				113 [A]			
FCEER [energy class] - 4 pipes		75 [B]				92 [A]			
FCCOP [energy class]		101 [A]				120 [A]			

Fan speed: L = Low, M = Medium, H = High



Eurovent certified values

- (1) Eurovent conditions: inlet air temperature = 27 °C db/47 % RH – water inlet temperature = 7 °C, water temperature difference = 5 K.
 (2) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 50 °C, water flow identical to cooling mode.
 (3) Eurovent conditions: inlet air temperature = 20 °C, water inlet temperature = 70 °C, water temperature difference = 10K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.8 - Electrical data

7.8.1 - 42NL

42NL 2-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	0,35	80	138	495	0
	0,35	80	136	490	3
	0,35	79	131	470	12
	0,35	79	125	450	19
	0,35	78	119	430	26
	0,35	77	114	410	33
	0,34	77	108	390	38
	0,34	76	103	370	44
	0,34	76	97	350	48
	0,34	75	92	330	53
	0,34	75	86	310	57
	0,34	75	81	290	60
R2	0,33	73	56	200	73
	0,28	65	125	450	0
	0,28	65	119	430	7
	0,28	64	114	410	14
	0,28	64	108	390	21
	0,27	63	103	370	27
	0,27	63	97	350	33
	0,27	62	92	330	38
	0,27	62	86	310	43
	0,27	61	81	290	48
	0,26	61	75	270	52
	0,26	60	69	250	56
R3	0,26	59	64	230	60
	0,26	59	58	210	63
	0,26	58	53	190	67
	0,26	58	47	170	70
	0,23	54	110	394	0
	0,23	53	103	370	10
	0,23	53	97	350	18
	0,23	52	92	330	25
	0,23	51	86	310	30
	0,23	51	81	290	35
	0,23	50	75	270	40
	0,22	50	69	250	44
R4	0,22	49	64	230	49
	0,22	49	58	210	53
	0,21	48	53	190	57
	0,21	48	47	170	62
	0,21	48	42	150	68
	0,20	45	96	345	0
	0,20	45	94	340	2
	0,20	45	89	320	9
	0,20	44	83	300	15
	0,19	44	78	280	21
	0,19	43	72	260	27
	0,19	43	67	240	32
R5	0,19	42	61	220	38
	0,18	42	56	200	43
	0,18	41	50	180	49
	0,18	41	44	160	55
	0,14	31	69	247	0
	0,14	31	68	245	1
	0,14	31	65	235	4
	0,13	31	56	200	13
	0,13	31	50	180	18
	0,13	31	47	170	21
	0,13	31	44	160	24
	0,13	30	42	150	27
R6	0,13	30	39	140	30
	0,13	30	36	130	33
	0,13	29	33	120	36
	0,13	29	31	110	39
	0,12	28	61	211	0
	0,12	27	50	180	6
	0,12	27	47	170	8
	0,12	27	44	160	11
	0,12	27	42	150	13
	0,12	27	39	140	15
	0,12	27	36	130	18
	0,12	27	28	100	26

Key

I Current drawn by the fan motor

P Power input to the fan motor

42NL 2-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	0,14	13	103	370	0
	0,13	13	97	350	4
	0,13	13	90	325	9
	0,13	13	94	340	6
	0,13	13	89	320	10
	0,13	12	83	300	14
	0,12	12	78	280	18
	0,11	10	56	200	30
	0,09	8	28	100	42
9V	0,12	12	97	350	0
	0,12	12	90	325	5
	0,12	11	83	300	10
	0,12	11	76	275	15
	0,12	10	69	250	19
	0,11	10	63	225	23
	0,11	9	56	200	26
	0,10	9	49	175	29
	0,09	8	28	100	37
8V	0,11	10	89	320	0
	0,11	10	83	300	4
	0,11	9	75	270	10
	0,10	9	67	240	14
	0,10	8	58	210	19
	0,09	8	50	180	22
	0,09	7	42	150	26
	0,09	7	33	120	30
	0,08	7	25	90	33
7V	0,10	9	81	292	0
	0,10	8	76	275	3
	0,09	8	69	250	8
	0,09	8	64	230	11
	0,09	7	58	210	14
	0,08	7	42	150	21
	0,08	6	28	100	26
	0,07	6	21	75	28
6V	0,08	7	74	261	0
	0,07	7	69	250	2
	0,07	6	64	230	4
	0,07	6	58	210	7
	0,07	6	53	190	10
	0,07	6	47	170	13
	0,07	5	42	150	15
	0,07	5	31	110	20
	0,07	5	21	75	23
5V	0,06	5	65	235	0
	0,06	5	60	215	2
	0,06	5	56	200	4
	0,06	5	50	180	7
	0,06	5	44	160	9
	0,06	5	39	140	11
	0,06	4	33	120	13
	0,06	4	28	100	15
	0,05	4	17	60	18
4V	0,06	5	58	210	0
	0,06	4	56	200	1
	0,06	4	49	175	4
	0,06	4	42	150	7
	0,06	4	35	125	10
	0,06	4	28	100	12
	0,06	4	21	75	14
	0,06	4	28	100	15
	0,05	3	14	50	16
3V	0,06	4	51	182	0
	0,06	3	47	170	1
	0,06	3	42	150	3
	0,05	3	28	100	8
	0,05	3	14	50	11
2V	0,05	3	43	155	0
	0,05	3	38	135	2
	0,05	3	32	115	3
	0,05	3	26	95	5
	0,04	2	11	40	8

Qv Air flow

ESP Available external static pressure

R Fixed speed

7 - 42NH AND 42NL PERFORMANCE DATA

42NL 3-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	0,44	99	168	605	0
	0,44	99	167	600	3
	0,43	98	161	580	11
	0,43	96	156	560	18
	0,42	95	150	540	25
	0,41	94	144	520	31
	0,41	93	139	500	37
	0,41	92	133	480	43
	0,40	91	128	460	48
	0,40	90	122	440	53
	0,39	90	117	420	58
	0,39	89	111	400	62
R2	0,39	89	106	380	66
	0,39	88	100	360	70
	0,37	86	154	555	0
	0,37	85	153	550	2
	0,36	84	147	530	11
	0,35	82	142	510	20
	0,35	81	136	490	27
	0,34	80	131	470	34
	0,34	79	125	450	40
	0,34	78	119	430	46
	0,33	77	114	410	51
	0,33	77	108	390	56
R3	0,33	76	103	370	61
	0,32	75	97	350	65
	0,32	75	92	330	69
	0,32	75	90	325	70
	0,32	74	143	515	0
	0,31	73	139	500	8
	0,31	72	133	480	16
	0,30	71	128	460	24
	0,30	70	122	440	31
	0,29	69	117	420	37
	0,29	68	111	400	43
	0,29	67	106	380	48
R4	0,28	66	100	360	53
	0,28	65	94	340	57
	0,28	64	89	320	62
	0,27	64	83	300	66
	0,27	63	78	280	69
	0,27	62	124	445	0
	0,27	62	122	440	4
	0,26	60	117	420	13
	0,26	59	111	400	22
	0,25	57	106	380	30
	0,25	57	100	360	37
R5	0,24	56	94	340	43
	0,24	55	89	320	48
	0,24	55	83	300	54
	0,24	54	78	280	58
	0,24	54	72	260	63
	0,23	54	67	240	67
	0,20	45	94	340	0
	0,19	44	89	320	7
	0,19	43	83	300	15
	0,18	42	78	280	22
	0,18	42	72	260	29
R6	0,18	41	67	240	36
	0,18	41	61	220	42
	0,18	41	56	200	48
	0,16	38	83	300	0
	0,16	37	78	280	7
	0,16	37	72	260	14
	0,16	37	67	240	20
	0,16	37	61	220	26
	0,16	36	56	200	32
	0,16	36	50	180	38
	0,15	36	44	160	44

Key

I Current drawn by the fan motor

R Fixed speed

P Power input to the fan motor

Qv Air flow rate

ESP Available external static pressure

42NL 3-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	0,39	49	168	605	0
	0,39	49	167	600	2
	0,38	48	161	580	8
	0,37	47	156	560	14
	0,37	46	150	540	20
	0,36	45	144	520	27
	0,35	44	139	500	33
	0,34	43	133	480	39
	0,31	39	111	400	64
9V	0,35	41	153	550	0
	0,34	40	147	530	9
	0,33	39	142	510	17
	0,31	38	136	490	24
	0,30	37	131	470	31
	0,30	37	125	450	37
	0,29	36	119	430	43
	0,28	35	114	410	49
	0,27	33	103	370	59
8V	0,30	34	144	517	0
	0,30	34	142	510	3
	0,28	33	136	490	11
	0,27	32	131	470	19
	0,26	31	125	450	25
	0,25	31	119	430	31
	0,24	30	114	410	37
	0,23	27	97	350	51
	0,22	26	89	320	56
7V	0,27	33	133	480	0
	0,26	32	128	460	6
	0,25	31	122	440	13
	0,24	30	117	420	19
	0,24	29	111	400	24
	0,23	29	106	380	29
	0,23	28	100	360	33
	0,22	25	83	300	44
	0,20	23	69	250	53
6V	0,17	20	119	430	0
	0,16	19	111	400	8
	0,16	18	106	380	13
	0,16	18	100	360	17
	0,15	17	94	340	21
	0,15	16	83	300	28
	0,14	15	69	250	37
	0,13	14	56	200	46
	0,12	14	53	190	48
5V	0,14	15	103	370	0
	0,13	14	97	350	5
	0,13	14	92	330	10
	0,13	13	86	310	14
	0,12	13	81	290	18
	0,12	12	75	270	22
	0,12	12	69	250	25
	0,11	11	56	200	33
	0,09	10	42	150	42
4V	0,10	10	89	320	0
	0,10	9	83	300	4
	0,10	9	78	280	9
	0,09	9	72	260	12
	0,09	8	67	240	15
	0,09	8	61	220	18
	0,09	8	56	200	21
	0,09	7	42	150	26
	0,08	7	28	100	32
3V	0,08	7	69	250	0
	0,08	6	56	200	10
	0,07	6	42	150	16
	0,07	5	28	100	21
	0,05	4	14	50	26
2V	0,06	4	54	195	0
	0,06	4	42	150	6
	0,06	4	28	100	10
	0,05	3	14	50	13
	0,05	3	7	25	15

7 - 42NH AND 42NL PERFORMANCE DATA

42NL 4-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	0.69	157	299	1075	0
	0.69	156	292	1050	6
	0.68	155	278	1000	17
	0.68	154	264	950	26
	0.67	152	250	900	35
	0.67	150	236	850	42
	0.66	149	222	800	50
	0.65	147	208	750	56
	0.65	145	194	700	62
	0.64	144	181	650	68
	0.63	142	167	600	73
	0.63	141	153	550	78
R2	0.57	129	267	960	0
	0.57	129	264	950	3
	0.56	128	257	925	10
	0.56	127	250	900	16
	0.55	126	242	870	23
	0.55	125	233	840	29
	0.54	123	225	810	35
	0.54	122	217	780	40
	0.53	121	208	750	45
	0.52	118	181	650	59
	0.51	116	167	600	65
	0.50	114	153	550	70
R3	0.49	113	233	840	0
	0.49	111	228	820	7
	0.48	110	222	800	14
	0.48	109	217	780	20
	0.47	107	211	760	26
	0.47	106	206	740	31
	0.46	105	200	720	35
	0.46	104	194	700	39
	0.46	103	189	680	43
	0.45	103	183	660	46
	0.45	102	178	640	49
	0.44	99	153	550	60
R4	0.43	98	208	750	0
	0.42	96	201	725	9
	0.41	94	194	700	17
	0.40	92	188	675	24
	0.40	91	181	650	30
	0.39	89	174	625	35
	0.39	89	167	600	40
	0.38	88	160	575	44
	0.38	87	153	550	48
	0.38	87	146	525	51
	0.38	86	139	500	55
	0.37	86	132	475	58
R5	0.30	68	149	535	0
	0.30	68	147	530	3
	0.29	66	139	500	14
	0.29	65	133	480	20
	0.28	65	128	460	24
	0.28	64	122	440	28
	0.28	64	119	430	30
	0.28	64	117	420	31
	0.28	64	114	410	33
	0.28	64	111	400	35
	0.28	64	108	390	36
	0.28	63	106	380	37
R6	0.25	57	129	465	0
	0.25	57	125	450	5
	0.25	56	119	430	11
	0.25	56	114	410	17
	0.24	56	108	390	21
	0.24	55	103	370	25
	0.24	55	97	350	28
	0.24	55	92	330	31
	0.24	55	86	310	33

Key

I Current drawn by the fan motor
P Power input to the fan motor

42NL 4-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	0.80	99	226	815	0
	0.79	99	222	800	7
	0.79	99	215	775	19
	0.79	99	208	750	31
	0.78	98	201	725	43
	0.77	97	194	700	54
	0.76	95	188	675	64
	0.74	93	181	650	74
	0.73	91	174	625	83
	0.75	91	217	780	0
	0.72	89	208	750	14
	0.70	87	201	725	26
9V	0.69	85	194	700	36
	0.67	83	188	675	46
	0.66	81	181	650	56
	0.64	79	174	625	65
	0.63	77	167	600	73
	0.61	75	160	575	81
	0.65	78	207	745	0
	0.63	76	201	725	8
	0.60	73	194	700	19
	0.58	71	188	675	29
	0.57	70	181	650	38
	0.56	68	174	625	46
8V	0.55	66	167	600	53
	0.54	65	160	575	60
	0.53	64	153	550	67
	0.54	58	192	690	0
	0.53	58	188	675	5
	0.50	57	181	650	13
	0.48	55	174	625	21
	0.46	54	167	600	28
	0.44	53	160	575	35
	0.43	52	153	550	42
	0.42	51	146	525	49
	0.41	49	139	500	55
7V	0.38	42	169	610	0
	0.37	42	167	600	3
	0.35	41	160	575	10
	0.33	40	153	550	17
	0.32	39	146	525	24
	0.31	38	139	500	31
	0.30	36	132	475	37
	0.30	35	125	450	44
	0.29	34	118	425	49
	0.29	30	150	540	0
	0.28	29	146	525	3
	0.27	28	139	500	9
6V	0.25	28	132	475	15
	0.24	27	125	450	21
	0.23	26	118	425	27
	0.22	25	111	400	32
	0.22	24	104	375	37
	0.21	23	97	350	41
	0.18	18	124	445	0
	0.17	18	118	425	4
	0.16	17	111	400	8
	0.15	17	104	375	13
	0.14	16	97	350	17
	0.14	15	90	325	21
5V	0.13	15	83	300	25
	0.13	14	76	275	28
	0.13	13	69	250	32
	0.12	11	97	350	0
	0.11	10	83	300	8
	0.10	9	69	250	15
	0.10	9	56	200	21
	0.09	8	42	150	26
	0.07	6	67	240	0
	0.07	5	56	200	4
	0.07	5	42	150	9
	0.06	4	28	100	12
4V	0.06	4	14	50	15

Qv Air flow
ESP Available external static pressure
R Fixed speed

7 - 42NH AND 42NL PERFORMANCE DATA

42NL 5-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	0,74	170	358	1290	0
	0,74	169	354	1275	2
	0,73	168	347	1250	6
	0,73	167	340	1225	10
	0,73	166	333	1200	14
	0,72	164	319	1150	21
	0,71	162	306	1100	28
	0,70	160	292	1050	35
	0,69	158	278	1000	41
	0,69	156	264	950	48
	0,68	155	250	900	54
	0,66	150	208	750	71
R2	0,60	137	313	1125	0
	0,60	136	306	1100	5
	0,59	135	299	1075	9
	0,59	134	292	1050	13
	0,58	132	278	1000	21
	0,57	129	264	950	29
	0,56	128	250	900	37
	0,55	126	236	850	44
	0,54	124	222	800	51
	0,54	122	208	750	58
	0,53	121	194	700	64
	0,52	119	181	650	70
R3	0,52	118	275	990	0
	0,51	116	264	950	8
	0,50	115	257	925	13
	0,50	113	250	900	18
	0,49	112	243	875	23
	0,49	111	236	850	28
	0,48	110	229	825	32
	0,48	109	222	800	37
	0,47	108	215	775	41
	0,47	107	208	750	45
	0,46	106	194	700	53
	0,45	103	167	600	66
R4	0,43	99	233	840	0
	0,43	97	222	800	10
	0,42	95	215	775	15
	0,42	94	208	750	21
	0,41	94	201	725	26
	0,41	93	194	700	31
	0,40	92	188	675	35
	0,40	91	181	650	39
	0,40	90	174	625	43
	0,40	90	167	600	47
	0,39	89	160	575	51
	0,39	89	153	550	54
R5	0,30	67	169	610	0
	0,30	67	167	600	2
	0,30	67	160	575	8
	0,29	66	153	550	13
	0,29	66	146	525	17
	0,29	66	139	500	22
	0,29	65	132	475	26
	0,29	65	125	450	30
	0,28	64	118	425	34
	0,28	64	111	400	37
	0,28	64	104	375	41
	0,28	63	97	350	45
R6	0,26	58	149	535	0
	0,25	58	139	500	8
	0,25	57	132	475	12
	0,25	57	125	450	16
	0,25	57	118	425	20
	0,25	57	111	400	24
	0,25	56	104	375	27
	0,25	56	97	350	31
	0,25	56	90	325	35

Key

I Current drawn by the fan motor
P Power input to the fan motor

42NL 5-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	0,39	58	254	915	0
	0,39	57	250	900	3
	0,37	55	236	850	11
	0,36	54	222	800	18
	0,35	52	208	750	26
	0,34	50	194	700	33
	0,33	49	181	650	41
	0,32	47	167	600	48
	0,29	44	139	500	62
	0,34	51	243	875	0
	0,34	50	236	850	4
	0,32	48	222	800	11
9V	0,31	46	208	750	18
	0,30	44	194	700	25
	0,28	42	181	650	32
	0,27	41	167	600	38
	0,26	39	153	550	45
	0,24	36	125	450	58
8V	0,28	43	229	825	0
	0,28	42	222	800	4
	0,26	39	208	750	10
	0,25	37	194	700	16
	0,24	36	181	650	23
	0,23	34	167	600	29
	0,22	33	153	550	35
	0,22	32	139	500	42
	0,20	30	111	400	54
	0,22	33	208	750	0
	0,21	31	194	700	6
	0,20	29	181	650	13
7V	0,19	28	167	600	19
	0,19	27	153	550	25
	0,18	26	139	500	31
	0,17	25	125	450	36
	0,17	24	111	400	42
	0,15	22	83	300	52
	0,17	24	186	670	0
	0,16	23	181	650	3
	0,16	22	167	600	9
	0,15	21	153	550	14
	0,14	20	139	500	20
	0,14	19	125	450	24
6V	0,13	18	111	400	29
	0,13	17	97	350	34
	0,11	15	69	250	42
	0,13	18	169	610	0
	0,13	17	167	600	1
	0,12	16	153	550	5
5V	0,12	16	139	500	10
	0,11	15	125	450	14
	0,11	14	111	400	19
	0,10	13	97	350	23
	0,10	13	83	300	27
	0,09	11	56	200	35
	0,09	11	139	500	0
	0,08	10	125	450	4
	0,08	10	111	400	8
	0,08	9	97	350	12
	0,07	9	83	300	16
	0,07	8	69	250	20
4V	0,07	8	56	200	23
	0,06	7	42	150	26
	0,06	7	28	100	29
	0,06	7	111	400	0
	0,06	7	97	350	4
	0,06	6	83	300	8
3V	0,06	6	69	250	11
	0,05	5	28	100	19
	0,04	4	83	295	0
	0,04	4	69	250	2
2V	0,04	4	56	200	5
	0,04	3	42	150	7
	0,04	3	28	100	9

Qv Air flow

ESP Available external static pressure

R Fixed speed

7 - 42NH AND 42NL PERFORMANCE DATA

7.8.2 - 42NH

42NH 2-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	0,24	54	143	515	0
	0,24	54	142	510	3
	0,24	53	136	490	12
	0,24	53	131	470	20
	0,23	52	125	450	28
	0,23	51	119	430	35
	0,23	51	114	410	41
	0,22	50	108	390	47
	0,22	49	103	370	52
	0,21	48	97	350	57
	0,21	47	92	330	61
	0,19	43	69	250	74
R2	0,18	41	56	200	80
	0,17	39	42	150	85
	0,23	50	99	355	0
	0,22	48	93	335	12
	0,22	46	88	315	23
	0,21	45	82	295	32
	0,20	43	76	275	41
	0,20	42	71	255	49
	0,19	40	65	235	56
	0,18	39	60	215	62
	0,18	38	57	205	65
	0,18	37	54	195	68
R3	0,18	36	51	185	70
	0,17	36	49	175	72
	0,17	35	46	165	74
	0,17	35	43	155	76
	0,16	34	40	145	78
	0,16	33	38	135	80
	0,22	48	79	285	0
	0,22	47	74	265	12
	0,21	45	68	245	24
	0,20	44	65	235	29
	0,20	42	63	225	35
	0,20	41	60	215	39
R4	0,19	40	57	205	44
	0,19	39	54	195	49
	0,18	38	51	185	53
	0,18	37	49	175	56
	0,18	36	46	165	60
	0,17	35	43	155	63
	0,17	34	40	145	67
	0,16	33	38	135	69
	0,16	32	35	125	72
	0,16	20	54	195	0
	0,16	20	53	190	7
	0,16	20	51	185	13
R5	0,16	20	50	180	18
	0,16	20	49	175	23
	0,15	20	47	170	28
	0,15	20	46	165	33
	0,15	20	44	160	37
	0,15	19	42	150	46
	0,14	19	39	140	53
	0,14	19	36	130	59
	0,14	19	33	120	65
	0,13	13	35	125	0
	0,13	13	32	115	9
	0,13	13	31	110	13
R5	0,13	13	29	105	17
	0,13	13	28	100	21
	0,13	13	26	95	25
	0,13	13	25	90	29
	0,12	13	24	85	33
	0,12	13	22	80	36
	0,12	13	21	75	40
	0,12	13	19	70	43
	0,12	13	18	65	46
	0,12	13	17	60	49

42NH 229 & 239 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	0,39	47	169	610	0
	0,38	47	167	600	2
	0,36	44	153	550	15
	0,35	42	139	500	29
	0,33	40	125	450	43
	0,31	37	111	400	57
	0,29	35	97	350	70
	0,26	32	69	250	90
	0,25	30	42	150	101
9V	0,34	40	161	580	0
	0,31	37	139	500	19
	0,28	33	111	400	45
	0,26	31	97	350	58
	0,25	29	83	300	70
	0,24	28	69	250	79
	0,23	26	56	200	86
	0,22	26	49	175	89
	0,22	26	42	150	91
8V	0,28	32	147	530	0
	0,27	31	139	500	7
	0,26	30	133	480	12
	0,25	29	128	460	17
	0,25	29	122	440	22
	0,24	28	117	420	26
	0,21	24	83	300	53
	0,19	21	56	200	70
	0,18	20	42	150	75
7V	0,22	24	133	480	0
	0,21	24	125	450	8
	0,20	23	111	400	20
	0,19	21	97	350	30
	0,18	20	83	300	40
	0,16	18	69	250	48
	0,15	17	56	200	56
	0,14	15	42	150	62
	0,13	15	35	125	66
6V	0,16	18	119	430	0
	0,16	18	111	400	6
	0,15	16	97	350	16
	0,14	15	83	300	25
	0,13	14	69	250	34
	0,12	13	56	200	41
	0,11	12	42	150	47
	0,11	11	35	125	50
	0,10	11	28	100	52
5V	0,12	13	106	380	0
	0,12	13	97	350	5
	0,11	12	83	300	14
	0,10	11	69	250	22
	0,09	10	56	200	29
	0,09	9	42	150	34
	0,08	8	35	125	37
	0,08	8	28	100	39
	0,08	7	25	90	40
4V	0,09	10	90	325	0
	0,09	9	83	300	4
	0,09	9	78	280	7
	0,09	8	72	260	10
	0,09	8	67	240	13
	0,08	8	56	200	19
	0,08	7	42	150	24
	0,07	6	28	100	28
	0,06	6	21	75	29
3V	0,07	6	72	260	0
	0,07	5	56	200	7
	0,07	5	39	140	14
	0,06	4	28	100	17
	0,06	4	22	80	19
2V	0,05	4	50	180	0
	0,05	3	44	160	4
	0,05	3	39	140	6
	0,05	3	28	100	9
	0,05	3	17	60	11

Key

I Current drawn by the fan motor
P Power input to the fan motor

Qv Air flow
ESP Available external static pressure

R Fixed speed

7 - 42NH AND 42NL PERFORMANCE DATA

42NH 279 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	0,75	93	225	810	0
	0,75	93	222	800	3
	0,71	88	194	700	31
	0,69	85	181	650	46
	0,66	82	167	600	62
	0,63	78	153	550	77
	0,60	74	139	500	93
	0,57	71	125	450	109
	0,55	67	111	400	124
9V	0,65	81	213	767	0
	0,65	80	208	750	6
	0,63	78	194	700	20
	0,61	76	181	650	34
	0,59	73	167	600	49
	0,57	70	153	550	63
	0,54	66	139	500	78
	0,49	60	111	400	106
	0,46	56	97	350	120
8V	0,51	63	196	705	0
	0,51	63	194	700	1
	0,50	61	181	650	14
	0,48	59	167	600	27
	0,46	56	153	550	40
	0,44	53	139	500	54
	0,42	50	125	450	67
	0,37	45	97	350	93
	0,34	40	69	250	117
7V	0,40	48	176	635	0
	0,39	47	167	600	10
	0,38	45	153	550	22
	0,36	43	139	500	34
	0,34	41	125	450	46
	0,32	38	111	400	57
	0,30	36	97	350	67
	0,29	33	83	300	78
	0,25	29	56	200	98
6V	0,29	33	150	540	0
	0,27	32	139	500	11
	0,26	30	125	450	24
	0,24	28	111	400	34
	0,23	26	97	350	44
	0,21	24	83	300	53
	0,20	23	69	250	61
	0,19	21	56	200	70
	0,18	20	42	150	78
5V	0,20	22	129	465	0
	0,20	22	125	450	4
	0,18	21	111	400	15
	0,17	19	97	350	24
	0,16	18	83	300	32
	0,15	16	69	250	40
	0,14	15	56	200	47
	0,13	14	42	150	54
	0,12	13	28	100	60
4V	0,13	15	110	395	0
	0,12	14	97	350	8
	0,12	13	83	300	16
	0,11	12	69	250	24
	0,10	11	56	200	30
	0,10	11	49	175	33
	0,10	10	42	150	36
	0,09	9	35	125	38
	0,09	9	28	100	40
3V	0,08	8	83	300	0
	0,08	8	69	250	7
	0,07	7	56	200	13
	0,07	6	42	150	19
	0,06	5	14	50	27
2V	0,06	5	61	200	0
	0,05	5	47	170	4
	0,05	4	33	120	8
	0,05	4	19	70	12
	0,05	3	6	20	14

42NH 289 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	0,91	116	207	745	0
	0,90	114	201	725	8
	0,88	112	194	700	17
	0,84	107	181	650	37
	0,80	102	167	600	56
	0,75	96	153	550	75
	0,71	91	139	500	93
	0,64	82	111	400	123
	0,60	76	83	300	142
9V	0,85	108	203	725	0
	0,83	105	194	700	9
	0,79	101	181	650	26
	0,75	95	167	600	45
	0,70	90	153	550	64
	0,66	85	139	500	83
	0,62	80	125	450	100
	0,59	76	111	400	115
	0,55	71	83	300	132
8V	0,68	85	194	680	0
	0,67	84	181	650	10
	0,65	82	167	600	24
	0,62	78	153	550	40
	0,58	73	139	500	58
	0,54	69	125	450	76
	0,50	64	111	400	93
	0,47	60	97	350	107
	0,45	56	83	300	118
7V	0,51	64	164	595	0
	0,49	62	153	550	13
	0,46	58	139	500	28
	0,43	54	125	450	45
	0,40	50	111	400	61
	0,37	46	97	350	76
	0,34	42	83	300	89
	0,32	40	69	250	100
	0,31	38	56	200	106
6V	0,38	47	140	505	0
	0,36	45	132	475	11
	0,34	42	118	425	28
	0,31	38	104	375	44
	0,28	35	90	325	58
	0,26	32	76	275	70
	0,25	30	63	225	80
	0,24	29	49	175	85
	0,18	20	42	150	78
5V	0,27	33	124	445	0
	0,26	32	118	425	6
	0,25	31	111	400	12
	0,23	28	97	350	26
	0,21	25	83	300	39
	0,19	23	69	250	50
	0,18	21	56	200	59
	0,17	20	42	150	64
	0,12	13	28	100	60
4V	0,18	21	100	360	0
	0,18	21	97	350	3
	0,16	19	83	300	15
	0,15	17	69	250	26
	0,14	16	63	225	31
	0,14	16	56	200	35
	0,13	15	49	175	39
	0,12	14	42	150	43
	0,12	13	35	125	46
3V	0,12	13	72	260	0
	0,11	12	56	200	10
	0,10	11	42	150	19
	0,09	9	28	100	28
	0,08	8	22	80	31
2V	0,08	7	46	165	0
	0,08	7	42	150	3
	0,07	7	35	125	8
	0,07	6	28	100	13
	0,06	5	14	50	20

7 - 42NH AND 42NL PERFORMANCE DATA

42NH 3-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	0,88	201	199	716	0
	0,88	201	194	700	12
	0,88	200	192	690	20
	0,88	200	189	680	28
	0,87	199	186	670	37
	0,87	198	183	660	46
	0,87	197	181	650	56
	0,85	195	174	625	80
	0,84	192	167	600	105
	0,82	190	160	575	129
	0,81	186	153	550	151
	0,79	183	146	525	170
R2	0,77	179	139	500	186
	0,76	175	132	475	198
	0,75	173	159	572	0
	0,75	173	158	570	2
	0,75	173	153	550	16
	0,75	172	147	530	32
	0,75	171	142	510	49
	0,74	170	136	490	66
	0,73	168	131	470	84
	0,72	166	125	450	101
	0,71	164	119	430	118
	0,70	161	114	410	133
R3	0,69	158	108	390	146
	0,68	155	103	370	157
	0,67	152	97	350	166
	0,64	145	86	310	172
	0,65	150	124	448	0
	0,65	150	124	445	2
	0,65	148	111	400	30
	0,64	147	106	380	41
	0,64	146	100	360	52
	0,63	144	94	340	64
	0,63	143	89	320	77
	0,62	141	83	300	91
R4	0,62	140	81	290	99
	0,61	139	78	280	108
	0,61	138	75	270	115
	0,61	137	72	260	121
	0,57	129	94	340	0
	0,57	128	88	315	16
	0,57	127	83	300	23
	0,56	127	81	290	27
	0,56	126	78	280	31
	0,56	125	75	270	35
	0,56	125	72	260	38
	0,56	124	69	250	43
R5	0,55	124	67	240	47
	0,55	124	64	230	51
	0,55	123	61	220	55
	0,55	123	58	210	61
	0,55	124	50	180	75
	0,50	111	65	233	0
	0,49	110	63	225	4
	0,49	109	56	200	15
	0,49	109	53	190	18
	0,49	109	50	180	21
	0,49	108	47	170	24
	0,49	108	44	160	27
R5	0,48	107	39	140	34
	0,48	107	33	120	42
	0,48	107	28	100	50

Key

I Current drawn by the fan motor

P Power input to the fan motor

Qv Air flow rate

ESP Available external static pressure

R Fixed speed

42NH 3-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	1,34	174	278	1000	0
	1,34	174	264	950	35
	1,34	174	250	900	66
	1,34	174	236	850	95
	1,34	174	222	800	124
	1,33	173	208	750	151
	1,33	173	194	700	177
	1,32	172	181	650	201
	1,32	172	153	550	242
	1,34	174	278	1000	0
	1,34	174	264	950	35
	1,34	174	250	900	66
9V	1,34	174	236	850	95
	1,34	174	222	800	124
	1,33	173	208	750	151
	1,33	173	194	700	177
	1,32	172	167	600	223
	1,32	172	153	550	242
	1,34	174	278	1000	0
	1,34	174	264	950	35
	1,34	174	250	900	66
	1,34	174	236	850	95
	1,34	174	222	800	124
	1,33	173	208	750	151
8V	1,33	173	194	700	177
	1,32	172	167	600	223
	1,32	172	139	500	258
	1,23	167	275	989	0
	1,23	167	271	975	7
	1,22	165	264	950	20
	1,20	161	250	900	45
	1,11	151	222	800	93
	1,01	140	194	700	137
	0,95	129	167	600	174
	0,91	122	139	500	201
	0,90	120	111	400	216
7V	0,98	136	263	945	0
	0,95	128	236	850	36
	0,91	123	222	800	56
	0,89	118	208	750	75
	0,82	113	194	700	93
	0,70	103	167	600	125
	0,68	93	139	500	149
	0,61	86	111	400	161
	0,58	81	83	300	159
	0,69	100	235	845	0
	0,68	92	222	800	12
	0,59	82	194	700	42
6V	0,55	75	167	600	73
	0,50	69	139	500	102
	0,45	62	111	400	127
	0,33	45	69	250	149
	0,31	41	63	225	150
	0,28	36	56	200	151
	0,41	57	197	710	0
	0,41	57	194	700	3
	0,35	51	167	600	28
	0,35	44	139	500	52
	0,31	38	111	400	73
	0,27	34	83	300	90
5V	0,25	32	56	200	101
	0,24	32	42	150	105
	0,24	32	36	130	105
	0,25	30	153	550	0
	0,24	28	139	500	10
	0,22	24	111	400	30
	0,17	19	69	250	54
	0,14	15	28	100	63
	0,08	9	83	300	0
	0,08	8	69	250	7
	0,08	8	56	200	13
	0,07	7	42	150	18
2V	0,07	7	28	100	23

7 - 42NH AND 42NL PERFORMANCE DATA

42NH 4-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	0,72	161	369	1330	0
	0,71	158	361	1300	6
	0,67	150	333	1200	25
	0,63	142	306	1100	42
	0,60	134	278	1000	58
	0,58	128	250	900	73
	0,56	125	236	850	80
	0,55	122	222	800	87
	0,54	119	208	750	93
	0,53	117	194	700	99
	0,52	114	181	650	106
	0,50	112	167	600	111
	0,49	109	153	550	117
	0,47	105	125	450	128
R2	0,67	148	325	1170	0
	0,65	145	319	1150	5
	0,60	134	292	1050	27
	0,55	123	264	950	47
	0,52	115	236	850	64
	0,49	107	208	750	80
	0,47	104	194	700	87
	0,46	101	181	650	94
	0,44	98	167	600	101
	0,43	95	153	550	107
	0,42	93	139	500	113
	0,40	90	125	450	120
	0,40	89	118	425	123
	0,39	88	111	400	126
R3	0,62	133	246	885	0
	0,57	124	236	850	16
	0,54	119	229	825	26
	0,52	114	222	800	36
	0,50	110	215	775	44
	0,48	107	208	750	51
	0,46	101	194	700	63
	0,44	97	181	650	73
	0,43	94	167	600	80
	0,41	91	153	550	87
	0,40	88	139	500	95
	0,38	84	125	450	103
	0,37	82	118	425	107
	0,36	79	111	400	113
R4	0,51	109	171	615	0
	0,49	104	167	600	12
	0,46	98	160	575	29
	0,44	94	153	550	44
	0,42	90	146	525	55
	0,40	86	139	500	65
	0,39	84	132	475	72
	0,38	82	125	450	79
	0,37	80	118	425	84
	0,36	78	111	400	89
	0,35	76	104	375	94
	0,34	74	97	350	99
	0,33	71	90	325	104
	0,31	68	83	300	111
R5	0,43	87	115	415	0
	0,42	86	111	400	8
	0,41	85	108	390	15
	0,40	84	106	380	21
	0,39	82	103	370	28
	0,39	81	100	360	36
	0,38	79	97	350	43
	0,37	78	94	340	50
	0,36	76	92	330	57
	0,35	75	89	320	63
	0,35	73	86	310	69
	0,34	72	83	300	74
	0,33	71	81	290	78
	0,32	70	78	280	81

Key

I Current drawn by the fan motor

P Power input to the fan motor

Qv Air flow rate

ESP Available external static pressure

R Fixed speed

42NH 4-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	1,34	174	292	1050	0
	1,34	174	278	1000	25
	1,34	173	264	950	54
	1,34	174	250	900	82
	1,34	174	236	850	109
	1,33	174	222	800	136
	1,33	173	208	750	163
	1,32	173	194	700	188
	1,32	172	181	650	214
	1,34	174	292	1050	0
9V	1,34	174	278	1000	25
	1,34	173	264	950	54
	1,34	174	250	900	82
	1,34	174	236	850	109
	1,33	174	222	800	136
	1,33	173	208	750	163
	1,32	173	194	700	188
	1,32	172	181	650	214
	1,34	174	292	1050	0
	1,34	174	278	1000	25
8V	1,34	173	264	950	54
	1,34	174	250	900	82
	1,34	174	236	850	109
	1,33	174	222	800	136
	1,33	173	208	750	163
	1,32	173	194	700	188
	1,32	172	181	650	214
	1,29	169	291	1046	0
	1,28	167	271	975	40
	1,25	165	264	950	54
7V	1,12	157	236	850	103
	1,10	145	208	750	140
	1,02	134	181	650	168
	0,94	125	153	550	190
	0,93	122	139	500	198
	0,92	120	125	450	206
	1,04	140	275	991	0
	1,01	133	250	900	38
	0,98	128	236	850	58
	0,93	123	222	800	76
6V	0,90	118	208	750	93
	0,86	113	194	700	108
	0,78	103	167	600	135
	0,71	93	139	500	158
	0,65	86	111	400	177
	0,82	108	252	906	0
	0,71	92	222	800	33
	0,69	89	215	775	41
	0,66	87	208	750	48
	0,60	79	181	650	72
5V	0,56	72	153	550	92
	0,51	66	125	450	109
	0,49	62	111	400	117
	0,46	58	97	350	125
	0,46	58	211	759	0
	0,41	51	181	650	26
	0,39	49	167	600	38
	0,37	46	153	550	48
	0,35	43	139	500	58
	0,32	40	125	450	66
4V	0,30	37	111	400	74
	0,30	35	104	375	77
	0,29	34	97	350	81
	0,25	31	167	600	0
	0,23	27	139	500	18
	0,22	24	111	400	34
	0,19	20	83	300	46
	0,18	19	76	275	49
	0,10	10	91	327	0
	0,10	9	69	250	8
2V	0,09	8	56	200	12
	0,08	7	42	150	16
	0,08	7	35	125	17
	0,08	7	35	125	17

7 - 42NH AND 42NL PERFORMANCE DATA

42NH 5-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	0,76	168	403	1450	0
	0,74	163	389	1400	9
	0,70	154	361	1300	26
	0,67	147	333	1200	41
	0,64	140	306	1100	55
	0,61	134	278	1000	68
	0,59	128	250	900	80
	0,57	123	222	800	92
	0,54	118	194	700	105
	0,53	113	167	600	117
	0,51	108	139	500	131
	0,50	105	125	450	138
R2	0,49	103	111	400	146
	0,71	156	378	1360	0
	0,69	152	361	1300	11
	0,65	143	333	1200	28
	0,61	135	306	1100	43
	0,57	126	278	1000	57
	0,54	119	250	900	71
	0,51	112	222	800	85
	0,48	106	194	700	98
	0,48	103	167	600	112
	0,48	101	139	500	127
	0,49	102	125	450	135
R3	0,50	103	111	400	143
	0,67	147	343	1235	0
	0,65	143	333	1200	8
	0,63	137	319	1150	18
	0,60	132	306	1100	28
	0,58	128	292	1050	37
	0,56	123	278	1000	45
	0,54	119	264	950	53
	0,52	115	250	900	60
	0,51	111	236	850	67
	0,49	108	222	800	74
	0,47	101	194	700	88
R4	0,44	95	167	600	103
	0,41	90	139	500	119
	0,39	85	111	400	137
	0,64	137	299	1075	0
	0,63	134	292	1050	7
	0,59	127	278	1000	20
	0,56	122	264	950	32
	0,54	116	250	900	43
	0,51	111	236	850	52
	0,49	107	222	800	61
	0,47	103	208	750	70
	0,46	100	194	700	77
R5	0,45	97	181	650	85
	0,43	92	153	550	98
	0,41	89	111	400	122
	0,59	123	247	890	0
	0,55	116	236	850	15
	0,51	109	222	800	31
	0,48	104	208	750	45
	0,46	99	194	700	56
	0,44	95	181	650	66
	0,42	92	167	600	75
	0,41	89	153	550	83
	0,39	86	139	500	91
R5	0,38	84	132	475	95
	0,37	82	125	450	99
	0,35	77	111	400	108

Key

I Current drawn by the fan motor

P Power input to the fan motor

Qv Air flow rate

ESP Available external static pressure

R Fixed speed

42NH 5-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	1,88	252	513	1845	0
	1,88	252	500	1800	17
	1,88	252	472	1700	51
	1,88	249	444	1600	77
	1,87	242	417	1500	98
	1,80	232	389	1400	114
	1,72	219	361	1300	127
	1,52	190	306	1100	151
	1,31	159	250	900	181
9V	1,85	236	506	1820	0
	1,84	235	500	1800	5
	1,79	228	472	1700	30
	1,73	221	444	1600	53
	1,68	213	417	1500	74
	1,62	205	389	1400	92
	1,49	187	333	1200	125
	1,35	167	278	1000	152
	1,21	147	222	800	176
8V	1,58	198	481	1730	0
	1,56	195	472	1700	6
	1,49	187	444	1600	24
	1,43	178	417	1500	42
	1,31	162	361	1300	75
	1,20	146	306	1100	105
	1,08	130	250	900	132
	0,97	115	194	700	154
	0,85	100	139	500	172
7V	1,27	156	431	1550	0
	1,22	150	417	1500	9
	1,15	139	389	1400	26
	1,08	130	361	1300	43
	1,03	123	333	1200	58
	0,98	116	306	1100	72
	0,93	110	278	1000	86
	0,84	98	222	800	108
	0,65	73	139	500	134
6V	0,95	112	383	1380	0
	0,92	108	375	1350	5
	0,89	103	361	1300	12
	0,77	89	306	1100	39
	0,73	83	278	1000	52
	0,69	79	250	900	63
	0,66	74	222	800	74
	0,62	70	194	700	84
	0,45	49	111	400	108
5V	0,69	100	235	845	0
	0,68	92	222	800	12
	0,59	82	194	700	42
	0,55	75	167	600	73
	0,50	69	139	500	102
	0,45	62	111	400	127
	0,33	45	69	250	149
	0,31	41	63	225	150
	0,28	36	56	200	151
4V	0,49	54	281	1010	0
	0,48	53	278	1000	1
	0,39	42	250	900	11
	0,32	34	222	800	21
	0,28	29	194	700	29
	0,25	26	167	600	37
	0,24	25	139	500	44
	0,25	25	111	400	49
	0,26	26	83	300	54
3V	0,24	25	213	765	0
	0,24	24	208	750	2
	0,22	23	194	700	6
	0,19	18	139	500	21
	0,14	14	69	250	33
2V	0,12	11	143	515	0
	0,12	11	139	500	1
	0,11	10	111	400	7
	0,10	9	83	300	12
	0,09	7	42	150	18

7 - 42NH AND 42NL PERFORMANCE DATA

42NH 6-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	1,55	350	643	2315	0
	1,55	348	639	2300	4
	1,48	334	611	2200	23
	1,43	321	583	2100	40
	1,37	309	556	2000	55
	1,32	297	528	1900	67
	1,27	286	500	1800	78
	1,22	276	472	1700	88
	1,18	266	444	1600	96
	1,14	257	417	1500	103
	1,10	248	389	1400	109
	1,06	239	361	1300	115
R2	0,95	215	278	1000	132
	1,38	298	556	2000	1
	1,29	280	528	1900	31
	1,22	263	500	1800	52
	1,15	248	472	1700	66
	1,08	234	444	1600	77
	1,03	222	417	1500	85
	0,97	211	389	1400	92
	0,92	200	361	1300	99
	0,88	190	333	1200	107
	0,83	180	306	1100	116
	0,79	170	278	1000	125
R3	0,74	161	250	900	133
	0,70	151	222	800	139
	1,28	274	454	1635	0
	1,24	264	444	1600	13
	1,12	240	417	1500	41
	1,07	229	403	1450	51
	1,03	220	389	1400	60
	0,99	211	375	1350	66
	0,95	203	361	1300	73
	0,92	196	347	1250	78
	0,88	189	333	1200	84
	0,86	183	319	1150	90
R4	0,83	177	306	1100	95
	0,78	167	278	1000	107
	0,67	144	222	800	126
	1,11	227	305	1097	0
	1,06	218	299	1075	31
	1,02	209	292	1050	53
	0,98	201	285	1025	65
	0,95	194	278	1000	72
	0,92	188	271	975	76
	0,89	183	264	950	80
	0,87	179	257	925	85
	0,86	175	250	900	89
R5	0,84	172	243	875	94
	0,83	169	236	850	99
	0,81	166	229	825	104
	0,96	188	201	723	0
	0,94	183	199	715	23
	0,89	175	194	700	50
	0,87	170	192	690	59
	0,85	166	189	680	65
	0,83	163	186	670	69
	0,82	160	183	660	73
	0,81	158	181	650	77
	0,79	155	178	640	82
	0,78	153	175	630	87
	0,77	151	172	620	91
	0,76	149	169	610	96

Key

- I** Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
ESP Available external static pressure
R Fixed speed

42NH 6-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	2,01	280	522	1880	0
	1,97	275	514	1850	8
	1,91	266	500	1800	21
	1,80	251	472	1700	45
	1,72	239	444	1600	67
	1,65	229	417	1500	87
	1,59	221	389	1400	105
	1,54	213	361	1300	121
	1,35	183	278	1000	157
	1,77	238	506	1820	0
	1,75	235	500	1800	4
	1,64	221	472	1700	26
9V	1,56	209	444	1600	45
	1,49	200	417	1500	63
	1,44	192	389	1400	80
	1,34	177	333	1200	110
	1,22	161	278	1000	138
	1,13	150	250	900	151
	1,42	194	450	1620	0
	1,39	190	444	1600	4
	1,22	167	403	1450	37
	1,11	152	361	1300	64
	1,04	141	319	1150	86
	0,98	133	278	1000	105
8V	0,92	124	236	850	121
	0,83	111	194	700	137
	0,69	92	153	550	152
	1,02	141	403	1450	0
	0,97	133	389	1400	10
	0,89	121	361	1300	29
	0,83	112	333	1200	46
	0,79	106	306	1100	61
	0,75	102	278	1000	74
	0,72	98	250	900	86
	0,67	92	208	750	101
	0,43	54	111	400	124
7V	0,71	93	361	1300	0
	0,68	88	333	1200	18
	0,64	83	306	1100	33
	0,60	78	278	1000	46
	0,55	73	250	900	56
	0,51	68	222	800	65
	0,47	63	194	700	75
	0,44	58	167	600	85
	0,39	45	97	350	105
	0,50	69	319	1150	0
	0,49	65	306	1100	6
	0,46	59	278	1000	19
6V	0,43	54	250	900	30
	0,40	50	222	800	40
	0,38	47	194	700	48
	0,35	43	167	600	56
	0,32	39	139	500	63
	0,24	28	83	300	72
	0,35	46	256	920	0
	0,33	44	250	900	3
	0,28	36	222	800	14
	0,25	31	194	700	23
	0,23	29	167	600	30
	0,22	28	139	500	36
5V	0,21	25	111	400	42
	0,18	21	83	300	47
	0,17	19	75	270	49
	0,19	22	194	700	0
	0,16	19	167	600	9
	0,14	17	139	500	16
	0,13	15	111	400	21
	0,11	12	56	200	29
	0,09	10	139	500	0
	0,09	10	125	450	3
	0,08	9	97	350	8
	0,08	8	69	250	12
4V	0,07	7	42	150	15
	0,07	7	42	150	15

7 - 42NH AND 42NL PERFORMANCE DATA

42NH7-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
R1	2,03	456	785	2830	0
	2,01	451	778	2800	3
	1,94	435	750	2700	14
	1,87	419	722	2600	24
	1,80	404	694	2500	34
	1,73	390	667	2400	43
	1,61	361	611	2200	60
	1,49	335	556	2000	76
	1,38	311	500	1800	90
	1,27	287	444	1600	103
	1,18	266	389	1400	115
	1,09	246	333	1200	127
R2	1,00	227	278	1000	138
	1,74	385	629	2265	0
	1,68	371	611	2200	10
	1,59	350	583	2100	24
	1,50	331	556	2000	38
	1,42	313	528	1900	50
	1,34	296	500	1800	61
	1,27	281	472	1700	72
	1,20	266	444	1600	81
	1,14	252	417	1500	90
	1,09	240	389	1400	98
	1,03	228	361	1300	106
R3	0,98	217	333	1200	113
	0,82	180	222	800	138
	1,40	302	390	1405	0
	1,39	300	389	1400	2
	1,24	267	361	1300	39
	1,11	239	333	1200	67
	1,00	216	306	1100	88
	0,91	197	278	1000	102
	0,87	189	264	950	108
	0,84	182	250	900	113
	0,81	175	236	850	118
	0,78	169	222	800	122
R4	0,76	164	208	750	127
	1,08	229	219	790	0
	1,06	224	217	780	16
	1,04	219	214	770	30
	1,01	215	211	760	43
	0,99	210	208	750	54
	0,97	206	206	740	64
	0,95	202	203	730	72
	0,93	198	200	720	80
	0,93	196	199	715	83
	0,92	194	197	710	86
	0,90	190	194	700	92
R5	0,83	175	181	650	108
	0,77	163	167	600	114
	0,84	175	149	537	0
	0,83	172	147	530	9
	0,81	169	144	520	21
	0,80	165	142	510	32
	0,78	162	139	500	42
	0,77	159	136	490	52
	0,75	156	133	480	60
	0,74	153	131	470	68
	0,73	151	128	460	75
	0,71	148	125	450	81
	0,70	146	122	440	87

Key
I Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
ESP Available external static pressure
R Fixed speed

42NH 7-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
	(A)	(W)	(l/s)	(m³/h)	G3 Filter (Pa)
10V	1,85	247	635	2285	0
	1,79	247	625	2250	9
	1,78	246	583	2100	40
	1,71	236	528	1900	72
	1,60	219	472	1700	94
	1,38	185	389	1400	114
	1,11	148	306	1100	126
	0,86	114	222	800	136
9V	1,78	247	635	2285	0
	1,79	247	625	2250	9
	1,78	246	583	2100	40
	1,71	236	528	1900	72
	1,60	219	472	1700	94
	1,38	185	389	1400	114
	1,11	148	306	1100	126
	0,86	114	222	800	136
8V	1,38	187	547	1980	0
	1,38	186	542	1960	6
	1,36	185	528	1900	19
	1,30	176	472	1700	59
	1,23	166	417	1500	86
	1,15	154	361	1300	104
	1,04	140	306	1100	117
	0,93	123	250	900	128
7V	0,86	114	222	800	134
	1,11	142	517	1860	0
	1,11	142	514	1850	2
	1,11	142	500	1800	13
	1,06	137	444	1600	48
	0,98	129	389	1400	70
	0,89	119	333	1200	85
	0,80	107	278	1000	97
6V	0,71	94	222	800	109
	0,67	88	194	700	115
	0,85	106	469	1690	1
	0,84	106	458	1650	8
	0,84	105	444	1600	16
	0,82	103	417	1500	30
	0,79	100	389	1400	42
	0,76	96	361	1300	51
5V	0,73	91	333	1200	59
	0,66	82	278	1000	71
	0,51	61	167	600	95
	0,59	72	406	1460	0
	0,58	72	389	1400	10
	0,57	70	361	1300	22
	0,54	67	333	1200	32
	0,52	64	306	1100	40
4V	0,49	59	278	1000	45
	0,46	55	250	900	49
	0,42	51	222	800	53
	0,34	41	139	500	69
	0,38	45	329	1185	0
	0,37	44	319	1150	5
	0,35	41	278	1000	21
	0,33	39	250	900	28
3V	0,31	36	222	800	32
	0,29	34	194	700	36
	0,27	31	167	600	41
	0,22	25	111	400	50
	0,26	26	83	300	54
	0,22	25	247	890	1
	0,21	23	222	800	11
	0,18	20	167	600	21
2V	0,16	18	111	400	28
	0,16	17	83	300	31
	0,11	11	164	590	0
	0,11	11	153	550	4
	0,10	10	139	500	8
	0,10	9	111	400	12
	0,08	7	56	200	18

NEW

DUCTABLE FAN COIL UNIT



Ductable unit for suspended ceiling or raised floor

Extra flat unit for better integration in renovation or new build projects

Optimised energy consumption level

Flexible configuration to meet the different requirements of buildings

Managed comfort

42EP



The Carrier 42EP range is available in 3 casing sizes with a 2-pipe coil, 2-pipe coil plus electric heater or 4-pipe coil. The total cooling capacity range is from 0.4 to 4.2 kW and the heating capacity range is 0.5 to 5 kW in the 2-pipe configuration and 0.5 to 4.8 kW with 4 pipes (Eurovent conditions)



CARRIER participates in the ECP programme for FC/FCP
Check ongoing validity of certificate:
www.eurovent-certification.com

1 - FUNCTIONS AND CONFIGURATIONS

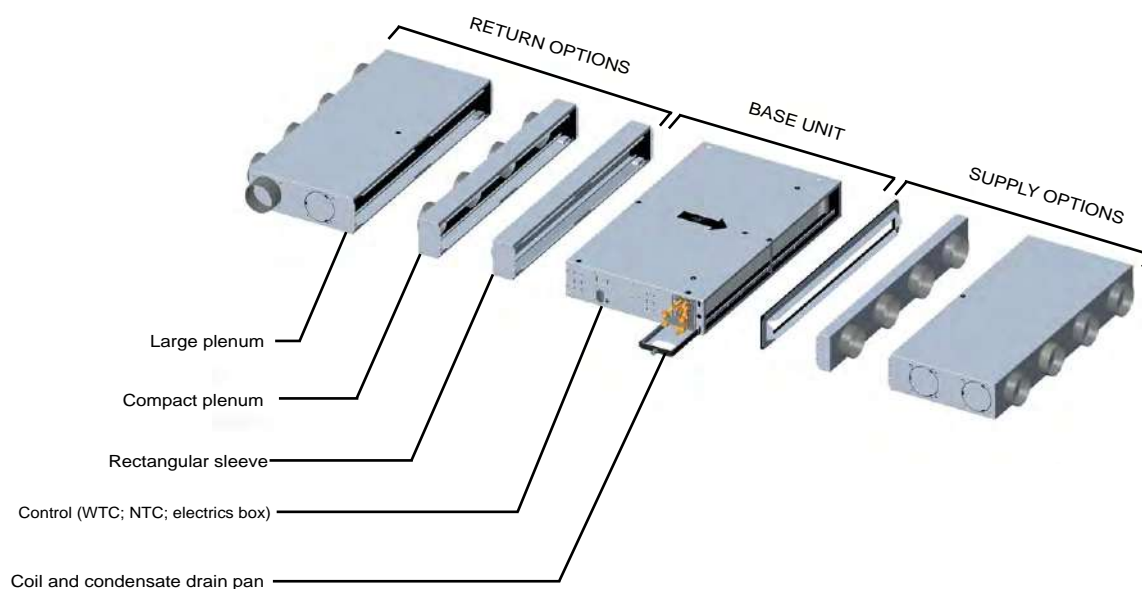
- New generation slimline ductable fan coil (150 mm high) which can be adapted to both the new build and renovation markets to gain height underneath the suspended ceiling and improve the well-being of occupants.
- Equipped with an innovative fan combined with a low energy consumption (LEC) electronically commutated motor that meets the new building energy performance objectives thanks to auto-adaptive adjustment of the air flow rate from 0 to 100% ensuring perfect cooling and heating conditions in the room.
- G3 filter as standard.
- Safe factory installed electric heater with a wide choice of output levels.
- Low water pressure drop with factory installed valves.
- Factory-fitted options (valves and controllers) for fast and easy installation in suspended ceilings.
- The 42EP is available for fitting either in a suspended ceiling or a raised floor
- High operating pressure (above 150 Pa) with managed flow rate losses

1.1 - Configuration and flexibility

Each size of the 42EP can be supplied:

- with free return and/or direct air supply
- with a rectangular sleeve on the return and/or on the supply air
- with return plenums and/or supply air plenums to meet the requirements of installations with spigots with a diameter of 125 mm.

The illustration below shows the available plenum configurations with spigots with a diameter of 125 mm.



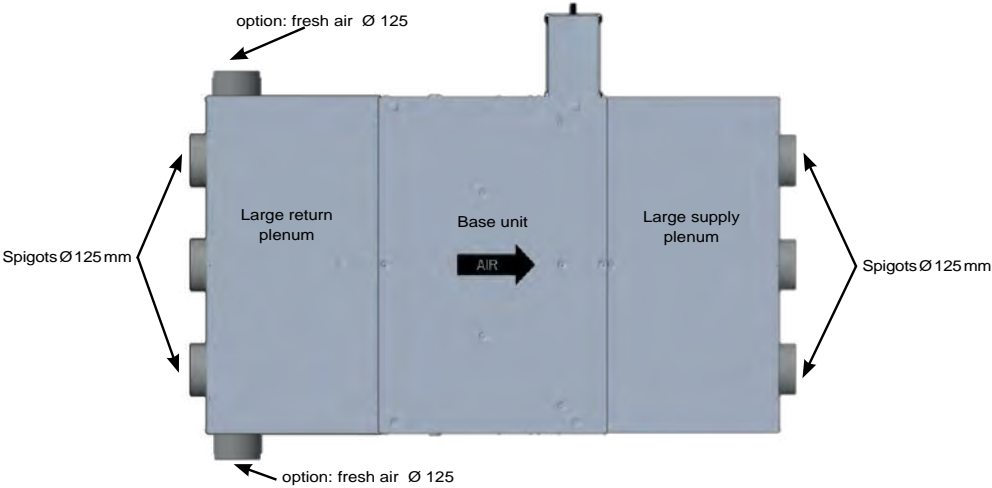
1 - FUNCTIONS AND CONFIGURATIONS

1.2 - Configuration with plenum with linear arrangement

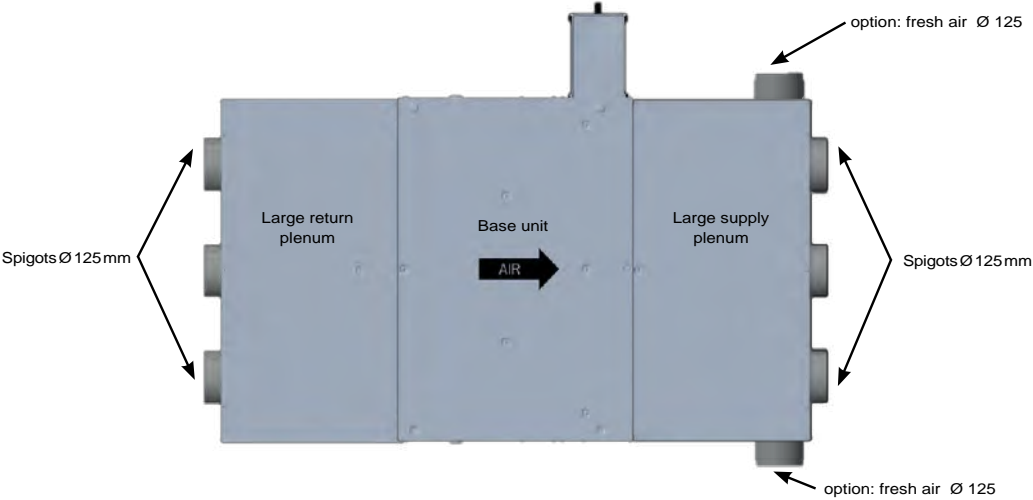
Option of a Compact or Large plenum with spigots with a diameter of 125 mm
 (*) = Minimum number of spigots required to ensure sufficient available static pressure and fan reliability.

Number of spigots			
	42EP0xx	42EP1xx	42EP2xx
Ø125 mm	2	3	4

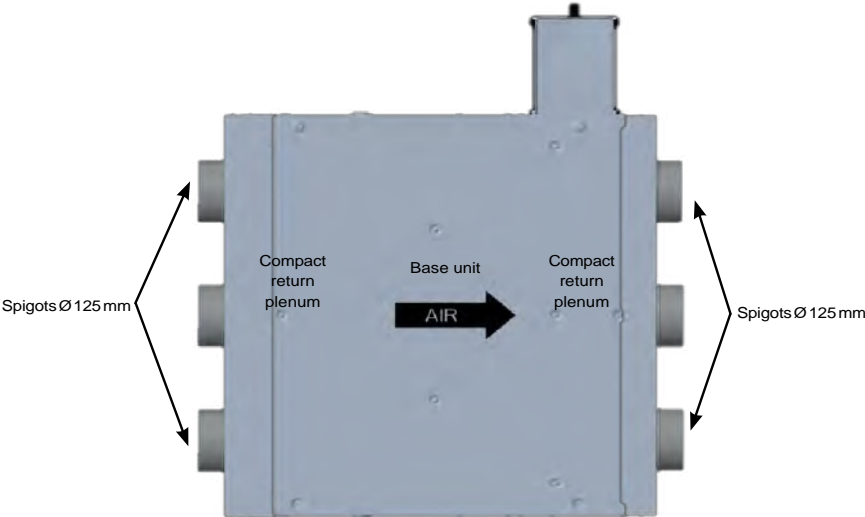
Large plenum with or without fresh air on the return



Large plenum with or without fresh air on the supply air



Compact plenum (fresh air not available)

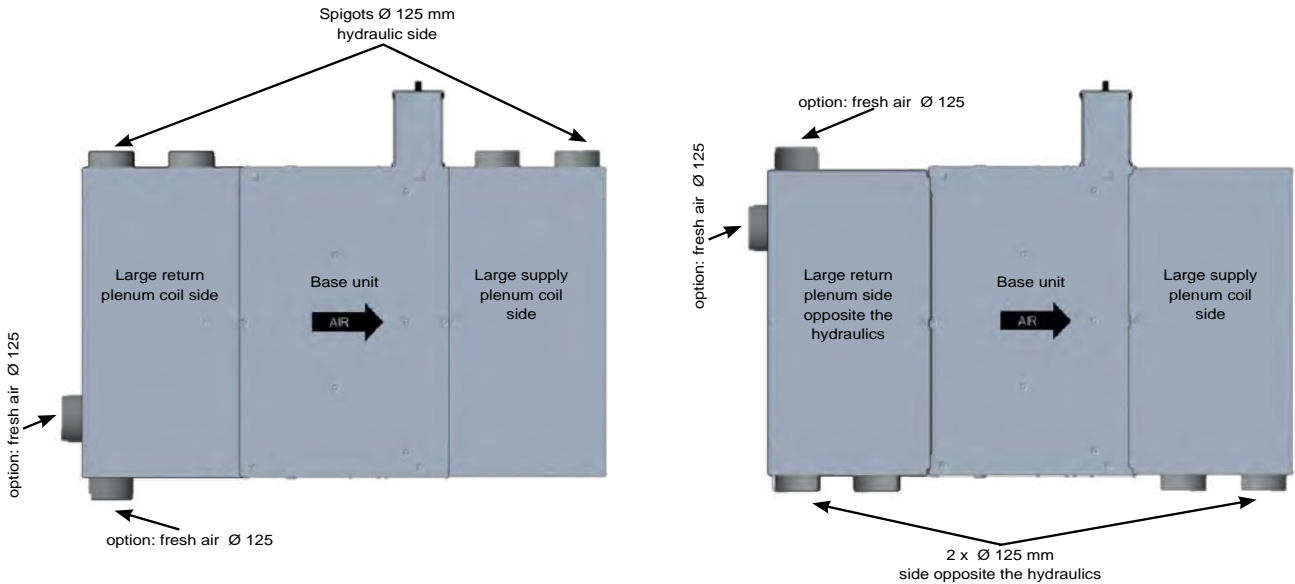


1 - FUNCTIONS AND CONFIGURATIONS

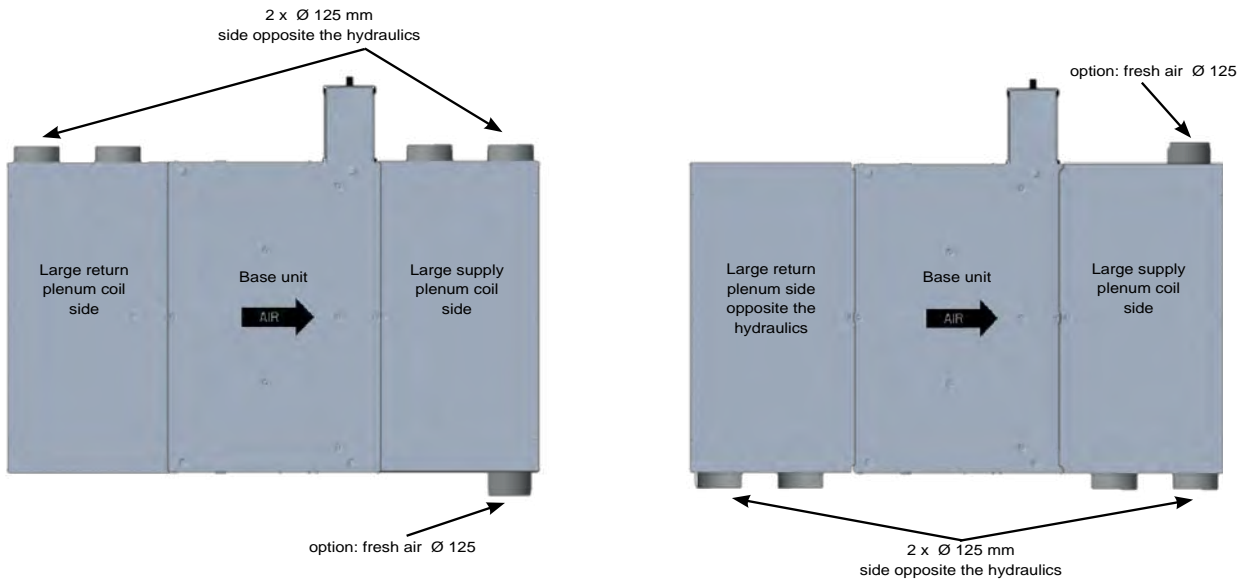
1.3 - Configurations with lateral plenum (U-shaped)

Ø125 mm	Number of spigots		
	42EP0xx	42EP1xx	42EP2xx
	2	2	2

Large plenum with or without fresh air on the return



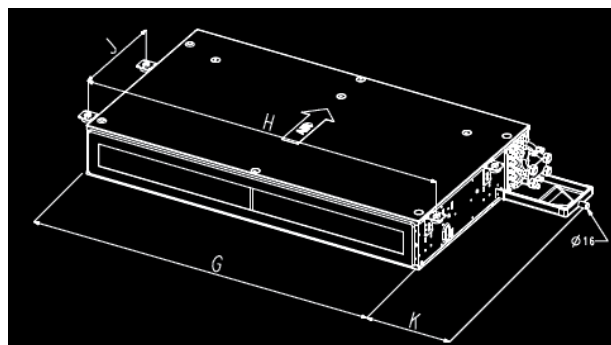
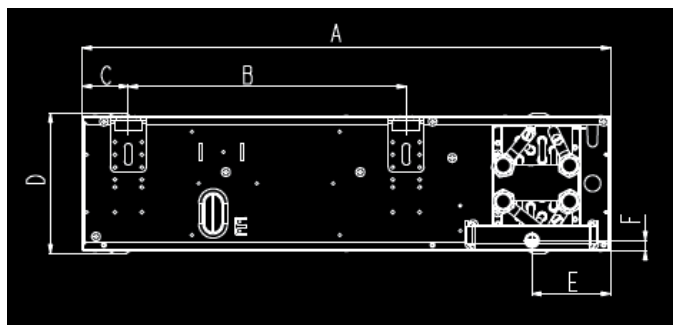
Large plenum with or without fresh air on the supply air (Fresh air pressure available on the supply air must be greater than 200 Pa)



2 - DIMENSIONAL DRAWINGS

NOTE: All the plans shown are set up with the coil on the right; units set up with the coil on the left are strict symmetrical. The unit is shown in a suspended ceiling; it is available in a raised floor depending on the configuration (see type key on page 16)

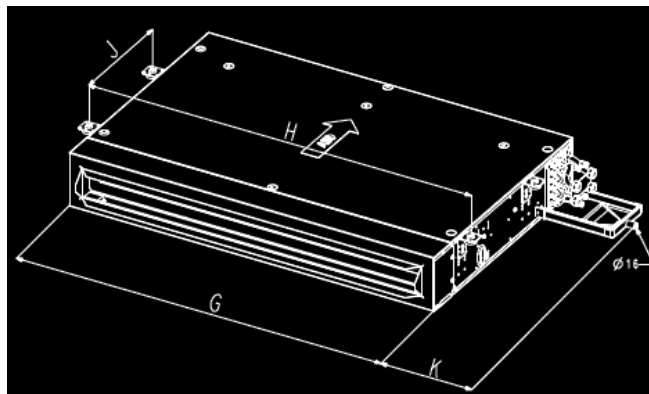
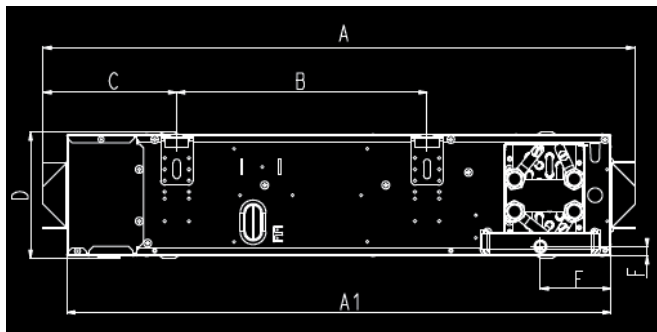
Standard unit with return and supply without rectangular sleeves fitted



Dimensions in mm			
Size	0xx	1xx	2xx
A	589	589	589
B	310	310	310
C	51	51	51
D	156	156	156
E	87	87	87
F	15	15	15

Dimensions in mm			
Size	2xx	3xx	4xx
G	520	820	1020
H	569	869	1069
J	310	310	310
K	329	228	228
G + K	849	1048	1248
Weight* [kg]	12	16	21

Standard unit with rectangular sleeves on the return and supply



Dimensions in mm			
Size	0xx	1xx	2xx
A	733	733	733
B	310	310	310
C	165	165	165
D	156	156	156
E	87	87	87
F	15	15	15
Sleeves	451 x 81	751 x 81	951 x 81

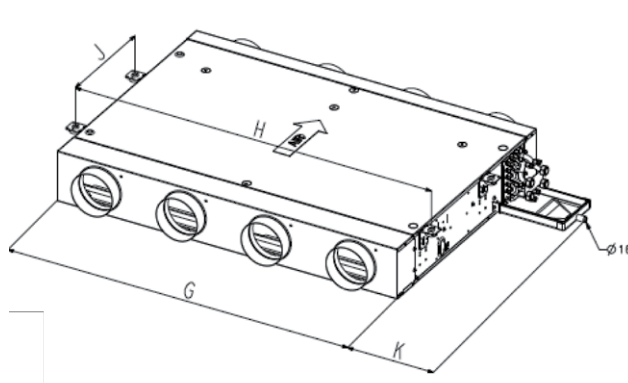
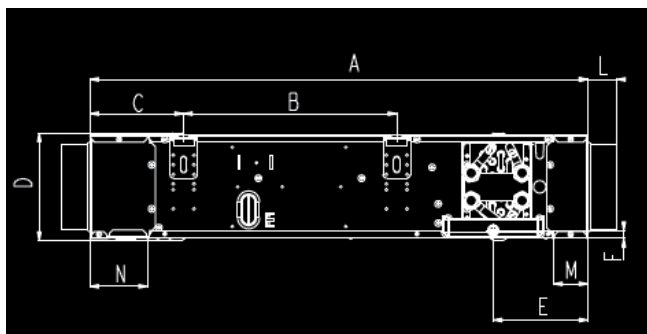
Dimensions in mm			
Size	0xx	1xx	2xx
A1	674	674	674
G	520	820	1020
H	569	869	1069
J	310	310	310
K	329	228	228
G + K	849	1048	1248
Weight* [kg]	13	18	25

KEY

* Maximum weight - without option - without water
 Air flow direction

2 - DIMENSIONAL DRAWINGS

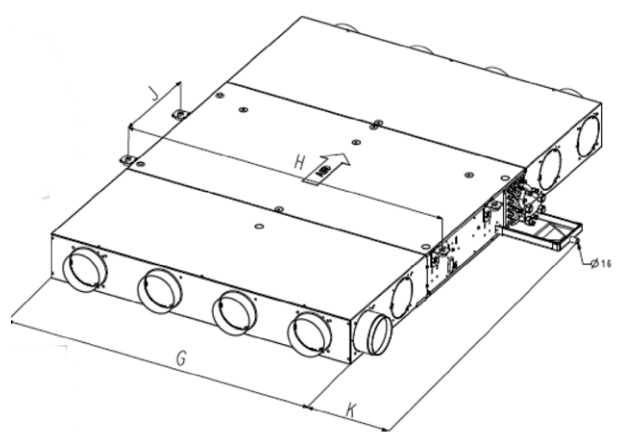
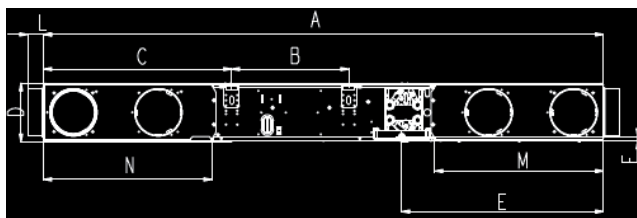
Standard unit with compact plenum with linear arrangement on the return and supply air (optimised length)



Dimensions in mm			
Size	0xx	1xx	2xx
A	724	724	724
B	310	310	310
C	136	136	136
D	156	156	156
E	138	138	138
F	15	15	15
M	50	50	50
N	83	83	83
L	42	42	42

Dimensions in mm			
Size	0xx	1xx	2xx
G	520	820	1020
H	569	869	1069
J	310	310	310
K	329	228	228
G + K	849	1048	1248
Weight* [kg]	15	21	28

Standard unit with large plenum with linear arrangement on the return and supply air



Dimensions in mm			
Size	0xx	1xx	2xx
A	1482	1482	1482
B	310	310	310
C	498	498	498
D	156	156	156
E	534	534	534
F	15	15	15
M	446	446	446
N	446	446	446
L	62	62	62

Dimensions in mm			
Size	0xx	1xx	2xx
G	520	820	1020
H	569	869	1069
J	310	310	310
K	329	228	228
G + K	849	1048	1248
Weight* [kg]	24	33	42

KEY

* Maximum weight - without option - without water



Air flow direction

3 - MAIN MODULES AND COMPONENTS

3.1 - Casing

In order to further enhance occupant comfort, this product range offers especially low noise levels. The casing is made of galvanised sheet steel with full high-efficiency internal lining for optimised thermal and sound insulation of the unit.

In order to comply with the various local regulations (fire class) the fan-coil unit is available with both class M1 type insulation (according to NF P 92-507) and Euroclass level B-s3-d0 (according to EN 13501). It is also equipped with anti-vibration mounts as standard.

In order to reduce the dimensions to the minimum, the units are equipped with high-efficiency heat exchangers with very high cooling capacity/treated air flow ratios. The condensate drain pan height is optimised.

3.2 - Fan motor assemblies.

3.2.1 - Low-consumption fan motor (variable-speed LEC motor)

Motor description

- Permanent magnet brushless motor
- Electronically commutated
- Class B winding insulation, varnish class F
- See operating limits in section 8

42EP units are equipped with LEC fan motors, controlled by a 0-10 V signal, which can be actuated by Carrier NTC or WTC controllers.

NOTE: In this case, the minimum control signal that allows the motor to start is 2 V for the two- and four-pipe versions; for versions equipped with electric heaters, please refer to section 9.

If the product is supplied without a Carrier control device, verification of EMC conformity is the responsibility of the installer.

3.3 - Fan wiring solutions

3.3.1 - Unit with bare wires (standard)

The motor cable is left for the customer to connect up using its own resources.

The variable-speed low energy consumption (LEC) motor must be actuated by a 0-10 VDC signal.

3.3.2 - Variable-speed low energy consumption (LEC) fan motor with electrics box

This option allows the installer to connect the unit directly to the electrical terminal strip installed in the electrics box. The electrics box can be opened with a screwdriver.

The 0-10 VDC signal that controls the variable-speed fan is directly accessible at the terminal strip.

3.3.3 - Fuse holder or circuit breaker option

A fuse holder or a circuit breaker can be fitted to the units as an option.

3.4 - Hydraulic coil

- Aluminium fins mechanically bonded by expansion onto copper pipes
- 1/2-inch threaded female water inlet and outlet couplings
- Air bleed valves and drain valves as standard.
- Operating pressure 1600 kPa.

The coil, condensate drain pan and coil access door form a drawer which is easy to remove.

3.5 - Single unit condensate drain pan

As standard, the unit is equipped with a single unit condensate drain pan made from polypropylene and insulated with 5 mm of foam.

Drain connection diameter: Ø 16 mm external

HB fire rating (as per standard UL94).

As an option, the unit can be equipped with an aluminium pan insulated with 5 mm of foam.

This pan is compulsory if an electric heater is to be used

3.6 - Filter

3.6.1 - Specifications

42EP units include a non-regenerative G3 filter as standard in compliance with EN 779.

The "without filter" option is only available for units with a plenum or a rectangular sleeve on the return side to ensure that a duct can be connected when the unit is operating.

To prevent fouling of the coil, Carrier recommends the use of a filter installed either in the fan coil unit or in the return air grille.

4 - OPTIONS SPECIFICATIONS

4.1 - Electric heater (option for 2-pipe coil)

Resistive wire type heater

- Supply voltage: 230 V - 1 ph - 50 Hz
- Heater size and capacity per unit (+5% ; -10%):

Electric heater capacity	Low	Medium	High	Very High
42EP 0x9	1 x 500 W	1 x 800 W	NA	NA
42EP 1x9	1 x 500 W	1 x 800 W	1 x 1000 W	NA
42EP 2x9	1 x 500 W	1 x 800 W	1 x 1000 W	1 x 1600 W

- The heater is protected with a dual safety device:
 - a) Self-holding automatically reset integrated safety thermostat
 - b) Destructive thermofuse link
- Available for 2-pipe coil only.

WARNING: A minimum supply air flow rate must be maintained to avoid damaging the electric heaters.

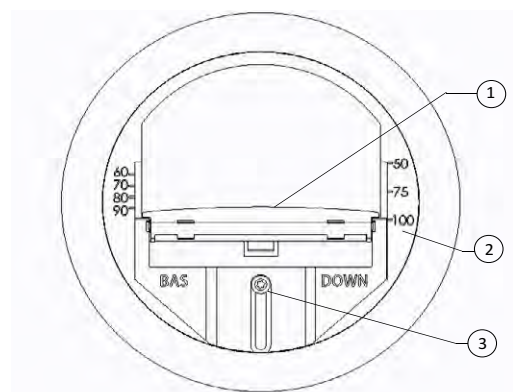
A minimum control signal of 3 V is selected by default with the Carrier electronic controller (NTC / WTC).

4.2 - Fresh air controller (option)

4.2.1 - Constant volume fresh air controller

The coil can be fitted with a constant fresh air flow controller adjustable from 15 m³/h to 180 m³/h to allow the fresh air intake and the air change rate to be controlled.

The fresh air supply may be located in the supply plenum, or in the return plenum.



Example: Range 50-100 m³/h

- 1 Air Damper
- 2 Fresh airflow damper position setting (in m³/h)
- 3 Airflow adjustment screw

The fresh air controller may be modified on site by relocating the damper (adjustable screw). Three ranges of air-controller are provided: 15 to 50m³/h, 60 to 100m³/h and 110 to 180m³/h.

IMPORTANT: If an optional return air temperature sensor is provided, the constant fresh air flow rate must not exceed 50 % of the unit supply air flow rate at minimum speed.

NOTE: To operate correctly, the fresh air flow controller requires a differential pressure in the range of 60 Pa to 210 Pa.

4.2.2 - Variable volume fresh air controller

The unit can be equipped with an optional variable fresh air flow controller from 0-55 l/s (0-200 m³/h). It is connected to the numeric Carrier controller and can regulate the fresh air intake in two ways:

- Either using a fixed rate set by the installer that can be reconfigured as required
- Or based on the CO₂ level; in this case it is connected to a CO₂ sensor via the Carrier numeric controller.



NOTE: with the variable fresh air flow controller, the pressure upstream of the fresh air duct must be 180 Pa. The fresh air flow controller is not supplied fitted.

4 - OPTIONS SPECIFICATIONS

4.3 - Valves and actuators

NOTE: The motor/valve assembly is normally closed.

4.3.1 - Valve actuators

A wide choice of actuators is available with two- or four-way valve bodies (three-way with integral bypass) to offer the right solution for any controller type and customer requirement, from on/off to proportional types, with either 230 V or 24 V power supply:

- On/off 230 V actuator
- On/off 24 V actuator
- Floating 3-point 230 V actuator
- Floating 3-point 24 V actuator
- Modulating 0-10 V/24 V actuator

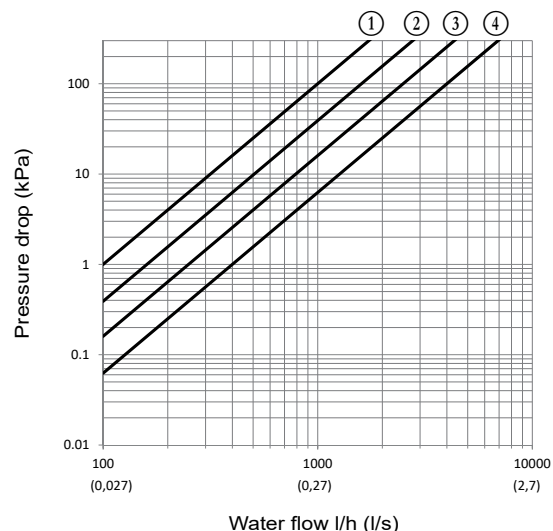
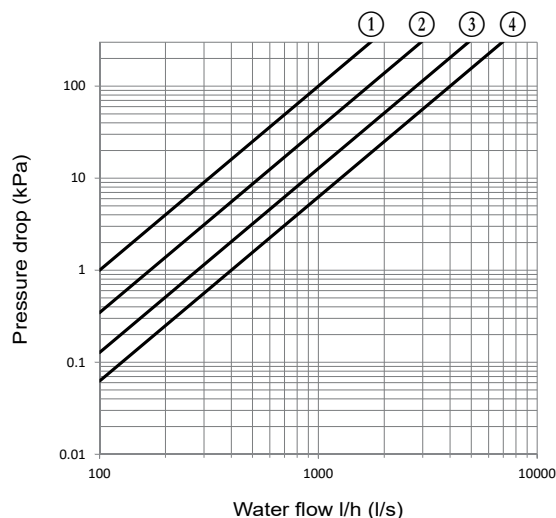
When combined with LEC motors and WTC or NTC controllers, floating 3-point 230 V actuators are recommended to increase energy savings and enhance comfort.

NOTE: 24 V power supply actuators are not compatible with Carrier controllers (Thermostats A/B/C/D, WTC and NTC).

4.3.2 - Standard two-way valve body and three-way valve body (with integral bypass)

Specifications of 1/2" two-way and three-way valves

- 1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN15 for 1/2" valve
- Nominal pressure: PN 16 bar



4 - OPTIONS SPECIFICATIONS

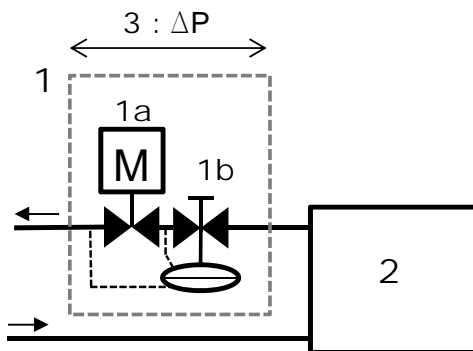
4.3.3 - Two way balancing valve body

Two-way valves with embedded balancing technology are available as an option. The CARRIER automatic balancing two-way valve combines the functionality of a dynamic balancing valve and a control valve in one product.



The dynamic balancing function maintains a constant differential pressure over the control valve.

The control valve regulates the flow by means of a variable orifice which is controlled by the actuator.



Key

1. Two-way valve with balancing function
 - 1a. Valve actuator for waterflow control
 - 1b. Differential pressure controller & balancing feature
2. Fan-coil unit
3. Minimum operating pressure drop at nominal waterflow:
20 kPa for sizes 4 and 5

The constant differential pressure across the control valve ensures accurate control and maximises valve authority, independently of the pressure conditions inside the system.

Advantages compared to the two-way valve

- Improved and reliable commissioning. The water flow can be set and controlled on site.
- Higher energy efficiency due to optimal waterflow and maximized valve authority.
- Enhanced comfort thanks to stable and precise ambient temperature control.

Specifications for automatic balancing 2-way valves

- 1" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN 20 for 1" valve
- Nominal pressure: PN 16 bar
- Minimum operating differential pressure = 20 kPa at nominal flow.

4.4 - Water hoses (option)

4.4.1 - Materials

- Pipes: EPDM-based elastomer (Ethylene Propylene Diene Monomer)
- Braid: 304L stainless steel
- Insulation: cellular foam rubber with M1 fire rating (9 mm thick, flexible water pipes).

4.4.2 - Specifications

- Minimum bend radius (insulated pipes): 106 mm
- The water hoses are designed for treated or untreated water.
- Maximum operating pressure: 16 bar
- 1/2" female gas couplings with flat gaskets
- Length: 1 m.

4 - OPTIONS SPECIFICATIONS

4.5 - Sensors (option)

4.5.1 - Water temperature sensor

A water temperature sensor can be provided as an option for NTC and WTC controllers.

- For 2-pipe coil: The sensor is installed on a cooling/heating water pipe (for change-over function).
- For 4-pipe coil: The sensor is installed on a heating water pipe (for cold-draft function that prevents the operation of the unit when the heating network is off).

While the fan coil unit is delivered with an electrics box, the "water temperature sensor" option is actually a switch that will be connected to the Carrier thermostat.

NOTE:

- *The water sensor option (switch) with electrical box is only available for 2-pipe coil without electric heater.*
- *A water probe can also be provided as an accessory only in order to use the cold draft function of the thermostat.*

4.5.2 - Air temperature sensors

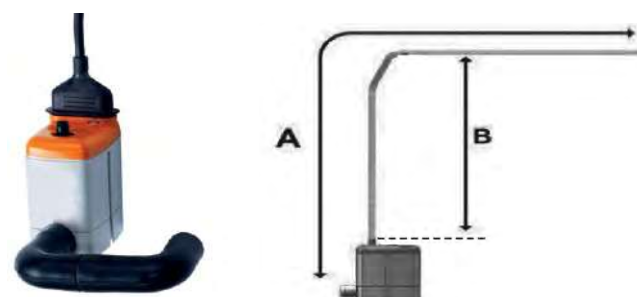
Two factory-fitted air temperature sensors are available as an option for NTC and WTC controllers. They measure the temperature at the supply and/or return side.

4.6 - Condensate pump (option)

The condensate pump option is designed to fit on the side of the unit drain pan. Electrical power supply 230V-50/60Hz.

Condensate pump discharge performances:

TABLE OF ACTUAL DISCHARGE (l/h)				
Discharge head (B)	Total length of pipe (Ø int. 6 mm) A			
	5 m	10 m	20 m	30 m
0 m	20	19	18	17
2 m	16	15	14	13,5
4 m	11,5	11	10,5	10
6 m		8,5	7,5	6,5
8 m		6	5	4
10 m		4	3,5	2,5



Technical characteristics	
Max. flow rate	20 l/h -10%
Max. recommended discharge height	10 m
Max. manometric pressure	14 m
Max sound level at 1 m distance	< 28 dBA
Electrical supply	230V +10%/-15% - 50/60Hz
Max. input Power	16 W (pour 230V/50Hz)
Rated current	65 mA (pour 230V/50Hz)
Detection levels	ON : 18 mm, OFF : 12 mm, AL : 21.5 mm
Alarm contact	Contact NC : 8A maxi – 250V
Thermal protection	90°C (auto reset)
Operating cycle (duty factor)	100%
Protection (selon NF EN 60529)	IPX4

5 - CONTROL

The unit can be supplied with a wide range of Carrier controls. These offer functions to suit the various application requirements, summarised in the table below.

	Thermostats	NTC	WTC
Communication Protocols			
Carrier Communication Network (CCN) Aquasmart compatible		x	
BACnet MSTP			x
LON			x
Control algorithms			
On-off	x		
Proportional-integral		x	x
Carrier Energy saving algorithm		x	x
Fan control			
AC motors 3 speeds descreet	Type A&B	x	x
Automatic optimum fan speed selection	x	x	x
EC motors 3 speeds descreet	Type C&D	x	x
EC motors Variable speed		x	x
Water Valve management			
Air flow control only (no water valve)	x		
230V On-off actuators	x	x	x
230V Modulating actuators (floating 3pts)		x	x
Main functions			
Setpoint control	x	x	x
Occupied/unoccupied mode	x	x	x
Frost protection mode	x	x	x
Window / Door contact input	x	x	x
Measurement of water inlet temperature for automatic seasonal changeover (2 pipes)	Type A&C	x	x
Measurement of water inlet temperature to prevent cold-draft (4 pipes and 2 pipes + electric heater)	Type B&D	x	x
Manual changeover	x	x	x
Frost protection mode	x	x	x
Continuous ventilation within dead-band	x	x	x
Periodical ventilation within dead-band	x	x	x
On-site configuration	x	x	x
Unit grouping Master/Slave	x	x	x
Cassette Louvers control		x	x
Supply air temperature monitoring limiting		x	x
Electric heater loadshed		x	x
Dirty filter alarm		x	x
Alarm reporting		x	x
Indoor Air Quality control (CO ₂ sensor)		o	o
Demand control ventilation (DCV) (0-10V fresh air valve)		o	o
Free cooling mode			o
Presence detection			o
User interfaces			
Automatic or manual fan speed control	x	x	x
Setpoint adjustment	x	x	x
Occupancy (eco) button	x	x	o
Digital display		o	o
Remote control (infra-red)		o	o
CO ₂ sensor		o	o
Luminosity sensor			o
Motion detection			o
Easy connection RJ45 jack (on wall mounted UI)			x
Light & Blinds management			
Light power modules			o
Blinds power modules			o
Control kit			
On site control kit solution			o

Key

X Feature available as standard

O Optional

NOTE: for the features and specifications of the Carrier controllers outlined above, refer to the technical documentation for each controller.

Upon special request, other controller types can be factory-installed on the units (supplied by Carrier or the customer).

6 - LIST OF PRODUCT SPECIFICATIONS

Feature name	Digit no. type key	Value	Description	Compatibility
Range	1-2	42		
	3-4	EP		
Chassis size	5	0	Chassis size 0	
		1	Chassis size 1	
		2	Chassis size 2	
Coil efficiency	6	2	Standard	in 2-pipe only
		3	Medium	in 2-pipe only
		4	Medium	in 4-pipe only
Motor type	7	9	LEC low consumption motor	
Connection and coil type	8	F	2-pipe coil left-hand	connection: in the air flow direction
		G	2-pipe coil right-hand	
		C	4-pipe coil left-hand	
		D	4-pipe coil right-hand	
Control	9	-	Bare wires	
		E	Electrics box	
		K	NTC	
		L	WTC LON	
		M	WTC BACNET	
Valve body	10	-	Without valve	
		G	2-way valve	changeover sensor not compatible with two-way valve and automatic balancing 2-way valve
		H	3-way valve with by-pass	
		L	Automatic balancing 2-way valve without pressure tapplings	
		T	Automatic balancing 2-way valve with pressure tapplings	
Electric heater	11	-	Without electric heater	
		E	500 W electric heater	
		F	800 W electric heater	
		G	1000 W electric heater	Not available in Size 0
		H	1600 W electric heater	Not available in Size 0 & 1
Valve actuator	12	-	Without actuator	
		A	230 V ON/OFF actuator	
		C	3-point 230 V actuator	
		B	24 V ON/OFF actuator	not available with CARRIER control
		D	3-point 24 V actuator	not available with CARRIER control
		E	Modulating 0-10 V/24 V actuator	not available with CARRIER control
		P	Modulating PWM 230 V actuator	only for electrics box or WTC
Return plenum	13	-	Without	
		A	Rectangular sleeve	number of spigots according to size see sect.1.2
		B	Compact plenum	
		C	Large plenum (linear arrangement)	
		D	Large plenum (lateral arrangement) hydraulic side	
Supply plenum	14	E	Large plenum (lateral arrangement) opposite the hydraulics	
		-	Without	
		A	Rectangular sleeve	number of spigots according to size see sect.1.2
		B	Compact plenum	
		C	Large plenum (linear arrangement)	
Spigot diameter on the return	15	-	Without	
		A	Ø 125 mm	
Spigot diameter on the supply air	16	-	Without	
		A	Ø 125 mm	

Key:

☐ Basic configuration

6 - LIST OF PRODUCT SPECIFICATIONS

Feature name	Digit no. type key	Value	Description	Compatibility
Filtration	17	-	Without	compulsory plenum or sleeve on the return
		V	G3	
Condensate pan	18	P	Plastic	
		A	Aluminium	Compulsory with electric heater
Fresh air	19	-	Without	
		A	DN125 spigot only	
		B	Module MR DN125 15-50 m3/h	Only available with Large plenum
		C	Module MR DN125 50-100 m3/h	
		D	Module MR DN125 100-125 m3/h	
		E	DN 125 adapter for fresh air valve (must be ordered separately)	
Fresh air position	20	-	Without	
		A	On the return, hydraulic side	Only available with Large plenum
		B	On the return, opposite the hydraulics	
		C	On the linear return	
		D	On the supply air, opposite the hydraulics	
		F	On the supply air, hydraulic side	
Relay for electric heater	21	-	Without	
		R	with relay	Only for "electrics box" option
Electrical protection	22	-	Without	
		F	Fuse disconnect switch	
		C	Circuit breaker	
Air sensor	23	-	Without	
		A	Return sensor	only for Control = NTC or WTC
		B	Supply air sensor	
		C	Return air sensor & supply air sensor	
Water temperature sensor	24	-	Without	
		A	With water temperature sensor	changeover sensor with four-way valve
Spigot protection	25	-	Without	
		A	Hose protection	
Hose	26	-	Without	
		F	With hoses	
Specific labelling	27	-	Without specific labelling	
		A	Individual specific labelling	
		B	Specific labelling for the pallet	
		C	Individual and pallet specific labelling	
Application	28	C	Suspended ceiling	
		F	Raised floor	

Key:



Basic configuration

7 - 42EP PERFORMANCE DATA

7.1 - Physical and electrical data at Eurovent conditions - 42EP - Size 0

With G3 filter - without plenum

42EP 2-Pipe		029								039							
Fan speed		2	3	4	5	6	7	8	9	2	3	4	5	6	7	8	9
		LS		MS			HS			LS			MS		HS		
Débit d'air	m³/h	67	115	157	197	231	273	305	324	74	128	177	222	266	317	355	379
Operating pressure	Pa	9	27	50	78	107	150	187	211	6	17	32	50	72	102	128	146
Cooling mode, 2-pipe*																	
Total cooling capacity	kW	0,4	0,6	0,8	0,9	1,1	1,2	1,3	1,3	0,5	0,8	1,0	1,2	1,4	1,6	1,7	1,8
Sensible cooling capacity	kW	0,3	0,5	0,7	0,8	0,9	1,0	1,1	1,2	0,4	0,6	0,8	1,0	1,2	1,4	1,5	1,6
Water flow rate	l/h	71	106	136	161	181	203	217	222	87	137	178	214	245	278	300	310
Water pressure drop	kPa	1	3	5	6	8	10	12	12	1	2	3	5	6	8	10	11
Water volume	l	1,0								1,3							
Heating mode, 2-pipe*																	
Heating capacity	kW	0,5	0,8	1,0	1,2	1,4	1,6	1,8	1,9	0,6	1,0	1,3	1,6	1,8	2,1	2,3	2,5
Water flow rate	l/h	91	136	176	212	241	277	304	322	103	165	219	268	312	363	400	426
Water pressure drop	kPa	2	4	6	8	9	11	13	14	1	3	4	6	7	9	11	12
Water volume	l																
Electric heater		230V ±10% - 1ph - 50Hz								230V ±10% - 1ph - 50Hz							
Maximum capacity	W	800								800							
Input current	A	3,7								3,7							
Low capacity	W	500								500							
Input current	A	2,3								2,3							
Sound levels																	
Supply air sound power level	dB(A)	31	41	48	53	56	59	62	64	32	42	48	53	57	60	63	65
Radiated+sound power level	dB(A)	30	40	46	51	54	57	60	62	31	40	47	51	55	58	61	63
Motor electrical data																	
Power input	W	4	8	13	22	38	59	82	86	4	8	13	21	34	53	73	86
Current	A	0,043	0,063	0,094	0,147	0,223	0,335	0,447	0,553	0,043	0,063	0,094	0,147	0,223	0,335	0,447	0,553
FCEER [energy class]	2-pipe	60	C							68	B						
FCCOP [energy class]	2-pipe	78	B							84	B						

Declared speeds: LS = Low Speed | MS = Medium Speed | HS = High Speed



Eurovent certified values

* Eurovent conditions: Air inlet = 27 °C (19 °C wb) – water inlet = 7 °C, ΔT 5K

** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 45 °C, ΔT 5K

*** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 65 °C, ΔT 10K

7 - 42EP PERFORMANCE DATA

42EP 4-Pipe		049							
Fan speed		2	3	4	5	6	7	8	9
		LS			MS		HS		
Air flow	m ³ /h	78	122	173	214	255	308	345	368
Operating pressure	Pa	7	16	33	50	72	104	131	148
Cooling mode, 4-pipe*									
Total cooling capacity	kW	0,5	0,8	1,0	1,2	1,4	1,6	1,7	1,8
Sensible cooling capacity	kW	0,4	0,6	0,8	1,0	1,1	1,3	1,5	1,6
Water flow rate	l/h	93	133	176	208	238	274	295	305
Water pressure drop	kPa	1	2	3	5	6	8	9	10
Water volume	l	1,3							
Heating mode, 4-pipe***									
Heating capacity	kW	0,8	1,1	1,3	1,5	1,7	2,0	2,2	2,3
Water flow rate	l/h	139	183	229	266	300	342	371	391
Water pressure drop	kPa	3	6	8	11	13	16	18	19
Water volume	l	0,5							
Sound levels									
Supply air sound power level	dB(A)	32	41	48	53	57	60	62	65
Intake+radiated sound power level	dB(A)	31	40	47	51	55	58	60	62
Motor electrical data									
Power input	W	4	8	13	22	38	59	82	86
Current	A	0,043	0,063	0,094	0,147	0,223	0,335	0,447	0,553
FCEER [energy class]	4-pipe	69	B						
FCCOP [energy class]	4-pipe	97	A						

Declared speeds: LS = Low Speed | MS = Medium Speed | HS = High Speed



Eurovent certified values

- * Eurovent conditions: Air inlet = 27 °C (19 °C wb) – water inlet = 7 °C, ΔT 5K
 ** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 45 °C, ΔT 5K
 *** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 65 °C, ΔT 10K

7 - 42EP PERFORMANCE DATA

7.2 - Physical and electrical data at Eurovent conditions - 42EP - Size 1

With G3 filter - without plenum

42EP 2-Pipe		129								139							
Fan speed		2	3	4	5	6	7	8	9	2	3	4	5	5,7	7	8	9
		LS		MS			HS			LS				MS	HS		
Air flow	m³/h	85	137	182	220	267	310	346	365	97	171	218	271	310	378	420	446
Operating pressure	Pa	11	28	50	73	108	145	180	202	5	15	25	38	50	74	92	104
Cooling mode, 2-pipe*																	
Total cooling capacity	kW	0,6	0,9	1,2	1,3	1,5	1,7	1,8	1,9	0,7	1,2	1,5	1,8	2,0	2,4	2,5	2,6
Sensible cooling capacity	kW	0,4	0,7	0,9	1,0	1,2	1,3	1,4	1,5	0,5	0,9	1,1	1,4	1,5	1,8	2,0	2,1
Water flow rate	l/h	120	180	230	260	310	350	380	390	128	212	261	313	346	406	436	452
Water pressure drop	kPa	4	9	14	18	23	28	32	34	3	7	11	15	19	24	28	30
Water volume	l	1,4								2,0							
Heating mode, 2-pipe*																	
Heating capacity	kW	0,7	1,0	1,3	1,5	1,8	2,0	2,2	2,3	0,8	1,3	1,7	2,0	2,3	2,7	3,0	3,1
Water flow rate	l/h	120	180	230	260	310	350	380	390	136	230	287	349	389	466	510	540
Water pressure drop	kPa	4	8	13	17	22	27	31	33	2	6	10	13	16	21	25	27
Water volume	l	1,4								2,0							
Electric heater		230V ±10% - 1ph - 50Hz								230V ±10% - 1ph - 50Hz							
Maximum capacity	W	1000								1000							
Input current	A	4,6								4,6							
Medium capacity		800								800							
Input current	A	3,7								3,7							
Low capacity		500								500							
Input current	A	2,3								2,3							
Sound levels																	
Supply air sound power level	dB(A)	32	43	50	55	59	62	65	67	33	43	50	55	58	63	65	68
Radiated+sound power level	dB(A)	33	41	48	52	57	60	63	64	30	42	47	52	55	60	62	64
Motor electrical data																	
Power input	W	5	8	16	25	39	60	80	88	5	8	16	25	39	60	80	88
Current	A	0,05	0,08	0,14	0,22	0,33	0,47	0,60	0,68	0,05	0,08	0,14	0,22	0,33	0,47	0,60	0,68
FCEER [energy class]	2-pipe	75	B							88	A						
FCCOP [energy class]	2-pipe	76	B							100	A						

Declared speeds: LS = Low Speed | MS = Medium Speed | HS = High Speed



Eurovent certified values

* Eurovent conditions: Air inlet = 27 °C (19 °C wb) – water inlet = 7 °C, ΔT 5K

** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 45 °C, ΔT 5K

*** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 65 °C, ΔT 10K

7 - 42EP PERFORMANCE DATA

42EP 4-Pipe		149							
Fan speed		2	3	4	5	5,8	7	8	9
		LS				MS	HS		
Air flow	m ³ /h	88	151	217	262	306	368	410	437
Operating pressure	Pa	4	12	25	37	50	73	90	102
Cooling mode, 4-pipe*									
Total cooling capacity	kW	0,7	1,1	1,5	1,8	2,0	2,3	2,5	2,6
Sensible cooling capacity	kW	0,5	0,8	1,1	1,3	1,5	1,8	2,0	2,1
Water flow rate	l/h	119	191	259	302	339	396	428	444
Water pressure drop	kPa	2	6	11	14	18	24	27	29
Water volume	l	1,4							
Heating mode, 4-pipe***									
Heating capacity	kW	1,0	1,5	1,9	2,2	2,4	2,7	2,9	3,1
Water flow rate	l/h	174	252	325	371	411	470	505	528
Water pressure drop	kPa	7	15	23	29	33	41	46	50
Water volume	l	0,7							
Electric heater		230V ±10% - 1ph - 50Hz							
Maximum capacity	W	1000							
Input current	A	4,6							
Sound levels									
Supply air sound power level	dB(A)	33	43	50	55	59	63	65	68
Intake+radiated sound power level	dB(A)	30	40	47	52	55	59	62	64
Motor electrical data									
Power input	W	5	8	16	25	39	60	80	88
Current	A	0,05	0,08	0,14	0,22	0,33	0,47	0,6	0,684
FCEER [energy class]	4-pipe	82	B						
FCCOP [energy class]	4-pipe	112	A						

Declared speeds: LS = Low Speed | MS = Medium Speed | HS = High Speed



Eurovent certified values

* Eurovent conditions: Air inlet = 27 °C (19 °C wb) – water inlet = 7 °C, ΔT 5K

** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 45 °C, ΔT 5K

*** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 65 °C, ΔT 10K

7 - 42EP PERFORMANCE DATA

7.3 - Physical and electrical data at Eurovent conditions - 42EP - Size 2

42EP 2-Pipe		229								239							
Fan speed		2	3	4	4,8	6	7	8	9	2	3	4	5	6	7	8	9
		LS			MS		HS			LS			MS		HS		
Air flow	m³/h	147	264	394	458	567	677	748	797	141	247	364	453	542	649	719	766
Operating pressure	Pa	5	17	37	50	77	109	134	152	5	15	32	50	72	103	127	144
Cooling mode, 2-pipe*																	
Total cooling capacity	kW	1,02	1,61	2,23	2,48	2,88	3,22	3,38	3,45	1,11	1,79	2,51	2,98	3,41	3,87	4,13	4,26
Sensible cooling capacity	kW	0,76	1,23	1,74	1,97	2,33	2,67	2,86	2,99	0,79	1,31	1,88	2,26	2,63	3,04	3,30	3,47
Water flow rate	l/h	176	277	382	426	494	553	581	593	190	306	431	511	586	664	709	731
Water pressure drop	kPa	14	34	68	87	106	118	127	127	7	19	34	45	57	71	81	87
Water volume	l	1,7								2,5							
Heating mode, 2-pipe*																	
Heating capacity	kW	1,14	1,81	2,55	2,88	3,42	3,92	4,24	4,47	1,15	1,89	2,71	3,27	3,83	4,45	4,87	5,16
Water flow rate	l/h	196	312	439	495	589	676	730	770	198	326	467	564	659	766	838	889
Water pressure drop	kPa	12	29	51	62	81	103	117	127	6	15	27	38	49	63	73	80
Water volume	l	1,7								2,5							
Electric heater		230V ±10% - 1ph - 50Hz								230V ±10% - 1ph - 50Hz							
Maximum capacity	W	1600								1600							
Input current	A	7,3								7,3							
High capacity		1000								1000							
Input current	A	4,6								4,6							
Medium capacity		800								800							
Input current	A	3,7								3,7							
Low capacity		500								500							
Input current	A	2,3								2,3							
Sound levels																	
Supply air sound power level	dB(A)	36	45	52	56	60	63	66	68	37	46	52	57	61	64	66	69
Radiated+sound power level	dB(A)	33	43	49	53	58	61	64	66	33	43	49	54	58	61	64	66
Motor electrical data																	
Power input	W	9	14	26	38	63	96	133	167	9	14	26	38	63	96	133	167
Current	A	0,11	0,16	0,25	0,38	0,58	0,84	1,08	1,31	0,11	0,16	0,25	0,38	0,58	0,84	1,08	1,31
FCEER [energy class]	2-pipe	71	B							78	B						
FCCOP [energy class]	2-pipe	83	B							85	A						

Declared speeds: LS = Low Speed | MS = Medium Speed | HS = High Speed



Eurovent certified values

* Eurovent conditions: Air inlet = 27 °C (19 °C wb) – water inlet = 7 °C, ΔT 5K

** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 45 °C, ΔT 5K

*** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 65 °C, ΔT 10K

7 - 42EP PERFORMANCE DATA

42EP 4-Pipe		249							
Fan speed		2	3	4	5	6	7	8	9
		LS			MS		HS		
Air flow	m ³ /h	139	247	351	451	532	632	702	755
Operating pressure	Pa	5	15	31	50	70	99	122	141
Cooling mode, 4-pipe*									
Total cooling capacity	kW	1,1	1,8	2,5	3,0	3,4	3,8	4,1	4,2
Sensible cooling capacity	kW	0,8	1,3	1,8	2,3	2,6	3,0	3,3	3,4
Water flow rate	l/h	191	316	421	516	583	658	702	729
Water pressure drop	kPa	7	19	32	45	55	69	78	86
Water volume	l	2,5							
Heating mode, 4-pipe***									
Heating capacity	kW	1,5	2,3	2,9	3,4	3,7	4,2	4,5	4,8
Water flow rate	l/h	260	393	495	579	641	723	780	825
Water pressure drop	kPa	19	39	58	76	90	111	125	136
Water volume	l	1,00							
Sound levels									
Supply air sound power level	dB(A)	37	46	52	57	61	64	66	69
Radiated+sound power level	dB(A)	33	42	49	54	58	61	64	66
Motor electrical data									
Power input	W	9	15	26	43	65	100	133	168
Current	A	0,11	0,16	0,25	0,38	0,58	0,84	1,083	1,308
FCEER [energy class]	4-pipe	78	B						
FCCOP [energy class]	4-pipe	98	A						

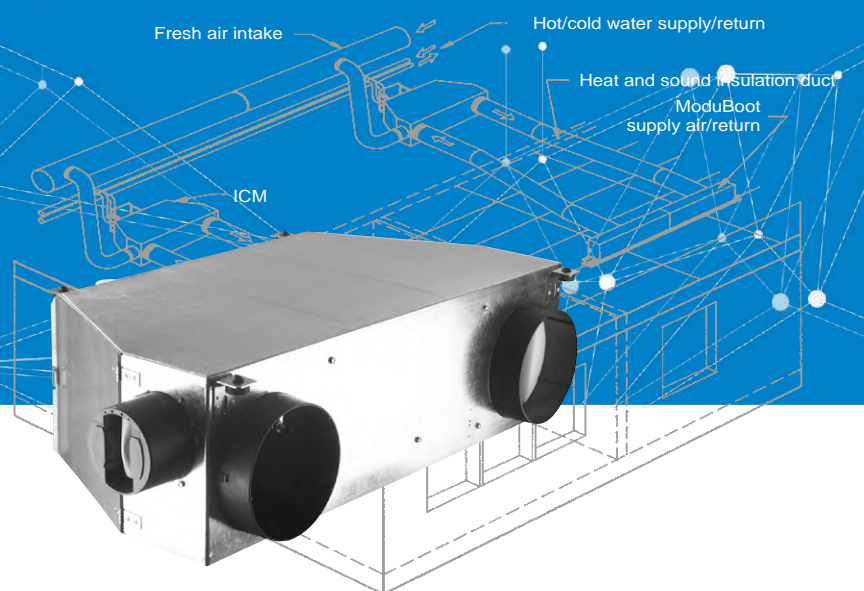
Declared speeds: LS = Low Speed | MS = Medium Speed | HS = High Speed



Eurovent certified values

- * Eurovent conditions: Air inlet = 27 °C (19 °C wb) – water inlet = 7 °C, ΔT 5K
 ** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 45 °C, ΔT 5K
 *** Eurovent conditions: Air inlet = 20 °C (15 °C wb max) – water inlet = 65 °C, ΔT 10K

LOW-CONSUMPTION INDIVIDUAL COMFORT MODULE FOR VARIABLE AIR VOLUME SYSTEMS



All-in-one offer: minimal
installation costs thanks to
factory-tested and -fitted options

Easy integration into a
centralised zone

Very low sound level

Available static pressure: 100 to
350 Pa

42BJ ICM LEC

Total cooling capacity 0.5 – 6.0 kW
Total heating capacity 0.5 - 12.2 kW

The Carrier 42BJ ICM (Individual Comfort Module) is a compact air conditioning system available in 3 sizes, designed for conditioning rooms measuring 25 to 50 m².

OVERVIEW AND ADVANTAGES

The 42BJ module is connected by flexible sound-absorbing ducts (heat insulated air discharge duct) to one or more plenums incorporating a linear diffuser which is seamlessly integrated into the suspended ceiling of the room to be air-conditioned (CARRIER ModuBoots 35BD/35SR range).

The units can be fitted in suspended ceilings or raised floors, ideally in corridors, where they are connected to hot water, chilled water and fresh air circuits.

These circuits installed in the building's circulation zones (for easy maintenance) never cross into air-conditioned spaces. Only the 35BD/35SR diffuser(s), inert components of the system, are located in the occupied space. This means that maintenance is performed outside of the occupied space and facilitates programming when the building is occupied.

The Individual Comfort Module has been designed to be ultra quiet; moreover, thanks to its available static pressure, it can be located away from the air-conditioned space.

■ Comfort

The 42BJ ICM LEC can be equipped with a Carrier digital control, providing each occupant with a remote user interface located on their desktop or wall, enabling individual selection of preferred comfort conditions:

- Room temperature of the room
- Forced air function (quick renewal of air in the office)
- Set to occupied or unoccupied mode by the user of each ICM LEC to meet energy-saving requirements.

The Aquasmart Evolution is used to control and optimise each module according to the requirements of the operator or local regulations. Thanks to this central energy-monitoring system, the comfort conditions can be controlled at all times to obtain the best balance between energy savings and individual comfort.

If the product is supplied without a Carrier control device, the integrator is responsible for ensuring EMC conformity.

Air quality

■ Indoor Air quality (IAQ)

Carrier is committed to developing a system for managing Indoor Air Quality (IAQ) built into air conditioning units. A major innovation which paves the way for the air conditioning systems of the future.

In this application, each individual comfort module (ICM LEC) is equipped with a fresh air intake control and high-efficiency filtration to successfully protect against any type of pollutant.

This therefore guarantees excellent indoor air quality as explained below in 2 steps:

- High-efficiency filtration: type F5 or F6
- Fresh air flow modulation: CARRIER units may be equipped with a fresh air flow modulation system to control the air flow diffused in a room.

■ Three objectives:

Adapt the ventilation flow rate to the actual occupancy of the rooms.

Maintain excellent indoor air quality to ensure the comfort and health of occupants, in accordance with the labour code.

Control energy costs relating to air change in rooms to avoid "over-ventilating" the building and to minimise operating costs, particularly when the building is unoccupied.

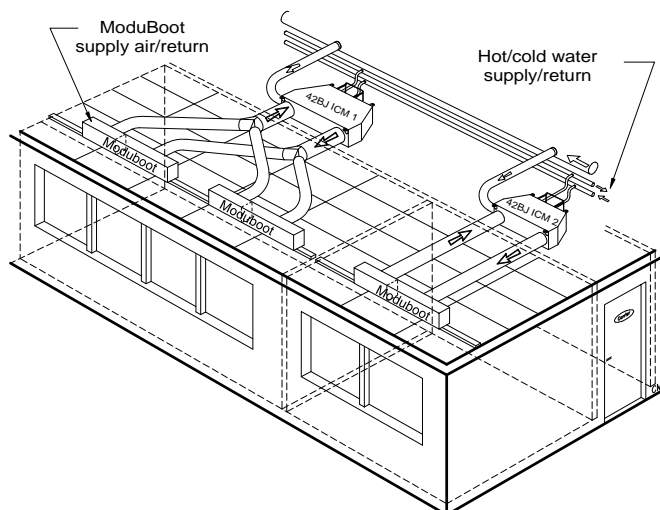
■ Operating principle

The occupants of a room release an average of 0.0045 l/s (16.2 l/h) of CO₂. A CO₂ sensor, located in the terminal's return air duct, measures the concentration of the room air conditioned by the unit. This concentration measured represents the actual occupancy of the room.

This sensor sends a signal to the Carrier digital controller which, in turn, sends a signal to actuate the fresh air valve:

If the concentration of CO₂ is below a threshold value: the fresh air flow is at minimum or zero,

if it is above: the flow rate is increased to the maximum level set.



CODES

	Range				Size		Modification index	Coils	Supply and return air plenum	Valves	Valve actuators	Control	Sensors	Filters and access	Fresh air	Motor wiring
Product ref.	4	2	B	J	1	9	D	A	T	C	A	A	A	G	-	W
Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Digit 5/6	
1	9
2	9
4	9

Digit 7	
D	

Digit 8	
A = 2 RH pipes	
B = 2 LH pipes	
C = 4 RH pipes	
D = 4 LH pipes	
E = 2 pipes/2 RH wires (LP) (PTC 2 wired stages)	
F = 2 pipes/2 LH wires (LP) (PTC 2 wired stages)	
G = 2 pipes/2 RH wires (HP) (PTC 5 wired stages)	
H = 2 pipes/2 LH wires (HP) (PTC 5 wired stages)	
J = 2 pipes/2 RH wires (MP) (PTC 4 wired stages)	
K = 2 pipes/2 LH wires (MP) (PTC 4 wired stages)	

Digit 9	
T = 1x supply air collar, 1x return air collar	
Sizes 19-29: Ø200 mm	
Size 49: Ø250 mm	

Digit 10	
- = No valves	
C = 2-way valve	
D = 4-way valve	
J = 2-way valve + insulated flexible connections	
K = 4-way valves + insulated flexible connections	

Digit 15	
- = None	
A = Ø125 mm collar (without flow controller)	
B = Ø125 mm fixed 30 m³/h flow controller	
C = Ø125 mm adjustable 60 -160 m³/h flow controller	
E = Ø125 mm adapter for motorised fresh air valve	

Digit 14	
F = Access from under filter F5	
G = Access from side STANDARD filter F5	
H = Access from above filter F5	
K = Access from under filter F6	
L = Access from side filter F6	
M = Access from above filter F6	

Digit 13	
- = None	
A = Return sensor	
B = Supply air sensor	
C = Changeover sensor	
D = Supply air + return sensors	
F = Return + Changeover sensors	
G = Supply air + Changeover sensors	
E = Return + Supply air + Changeover sensors	
H = CO ₂ sensor	
J = Return air + CO ₂ sensors	
K = Supply air + CO ₂ sensors	
L = Changeover + CO ₂ sensors	
M = Return + Supply air + CO ₂ sensors	
N = Return air + Changeover + CO ₂ sensors	
P = Supply air + Changeover + CO ₂ sensors	
Q = Return + Supply air + Changeover + CO ₂ sensors	

Digit 12	
- = None	
A = NTC control	
K = NTC control + fuse disconnect switch	
D = NTC control + IAQ board	
L = NTC control + IAQ board + fuse disconnect switch	
S = WTC LON control	
T = WTC BACNET control	
U = WTC LON control + fuse disconnect switch	
V = WTC BACNET control + fuse disconnect switch	

Digit 11	
- = None	
A = 230 V ON/OFF actuator	
C = 3-POINT 230 V actuator (with NTC or WTC)	

TECHNICAL DESCRIPTION

■ Frame:

The 42BJ ICM LEC features a galvanised steel sheet metal box; the inside is covered with sound and heat insulation (fire protection rating M1)

- "LEC" fan motor assembly with electronically commutated variable-speed direct-drive motor (commonly called an "EC motor"), controlled by a 0-10 V signal enabling it to operate over a broad range of rotation speeds

■ Water coil

Aluminium fins mechanically bonded by expansion onto a copper tube.

1/2" gas union nut inlet/outlet connections. Air bleed valves as standard. Coil attached to the condensate pan and coil access door forming a drawer which is easily removed for maintenance.

Coils available:

- 2 pipes with changeover or for use with an electric heater
- 4 pipes.

■ PTC electric heater

Positive Temperature Coefficient

The PTC electric heater belongs to a new generation of powerful heater rods which combine two technologies: electric heating and surface temperature limitation (cutting-edge technology based on the use of ceramics).

The actual cooling capacity depends on the air flow and its inlet temperature.

This modern technology guarantees safe, self-regulation of the cooling capacity. Moreover, each coil is equipped with a safety thermostat with automatic reset (contact opens when the temperature rises, triggered at 70 °C and average differential 20 K).

Warning: Before carrying out any work on the electric heater, the mains power supply to the unit must be disconnected.

Enhanced comfort without stratification: Supply air temperature = 35 °C



■ Thermoformed condensate pan

Main condensate pan under the coil and auxiliary pan under the valves forming a packaged assembly to prevent any risks of leaks. As the coil is placed on the fan intake to facilitate spraying, condensate is drained via a check valve, the height of the water between the main pan and the auxiliary pan is sufficient to overcome the negative pressure inside the unit. A siphon does not need to be fitted with this device.

Insulated auxiliary pan.

Drain ext. dia. 16 mm.

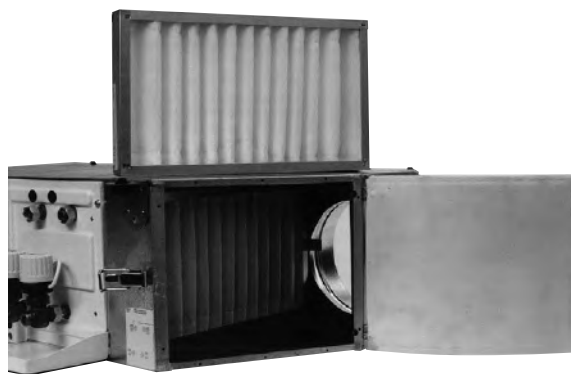
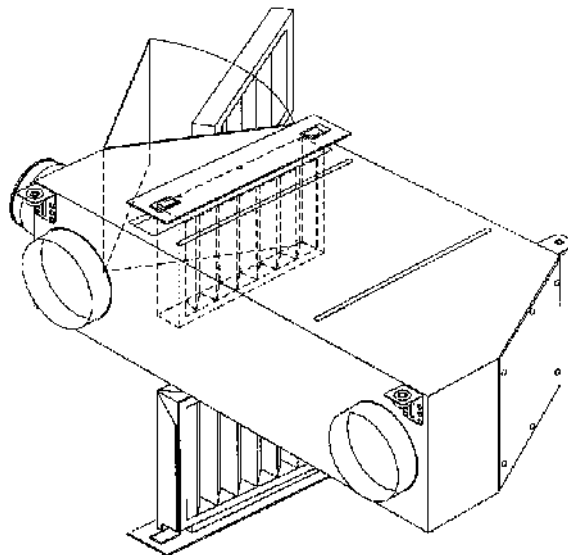
■ Filter and access

The Carrier Individual Comfort Module is equipped with a high-efficiency type F5 or F6 filter.

Fire protection rating for the medium is M1, metal frame.

The filter can be accessed via one of 3 sides of the 42BJ ICM LEC:

- Access from above: for use in a raised floor
- Access from below: for use in a suspended ceiling
- Side access: all uses



TECHNICAL DESCRIPTION

■ Constant fresh air flow controller (optional)

The Individual Comfort Module can be equipped with a constant fresh air flow controller, for controlling the air intake and air change. Depending on the room occupancy, the constant fresh air flow controller may prove essential.

Range of fresh air flow controllers available:

8.3 l/s or 30 m³/h (-10%; + 20%)

16.6 l/s or 60 m³/h (-10%; + 20%)

The fresh air feed is located before the water coils. The collar retaining the controller is made from ABS, connection diameter:

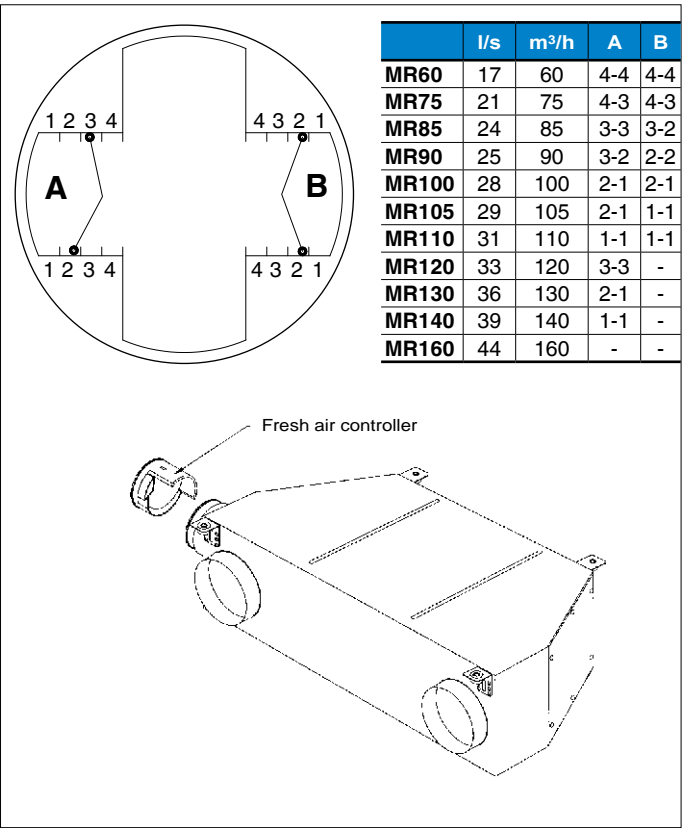
- 125 mm for 16.6 l/s (60 m³/h controller)
- 74 mm for 8.3 l/s (30 m³/h controller).

Important: if the 42BJ ICM LEC is equipped with a return air temperature sensor, the constant fresh air flow must not exceed 50% of the unit supply air flow rate at low speed.

Note: The 16.6 l/s (60 m³/h) fresh air controller can be modified on site by moving or removing two plastic restrictors to increase capacity up to a maximum constant fresh air flow of 44.4 l/s (160 m³/h).

A label affixed to the 42BJ explains how to adjust the setting of the two plastic restrictors.

Note: the 8.3 l/s (30 m³/h) constant fresh air flow controller requires a differential pressure of 50 Pa to 200 Pa to operate. The 16.6 l/s (60 m³/h) constant fresh air flow controller requires a differential pressure of 70 Pa to 200 Pa.



OPTIONS

Valves

■ Valve actuators

A range of actuators is available with two- or four-way valve bodies (three-way with integral bypass) to offer the appropriate solution for any controller type and customer requirement, from on/off to proportional types, with 230 V power supply

- 230 V ON/OFF actuator
- Floating 3-point 230 V actuator

When combined with LEC motors and WTC or NTC controllers, floating 3-point 230-V actuators are recommended to increase energy savings and enhance comfort.

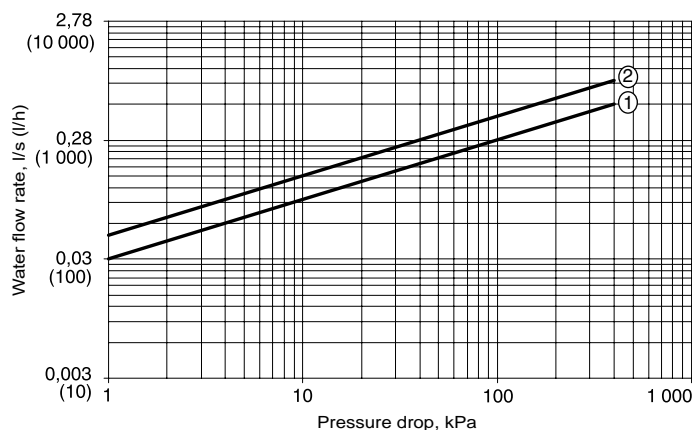
■ 1/2" two-way valve body

- G1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body.
- DN 15 for 1/2" valve
- Fluid: water and glycol solution (max. 40% glycol)
- Operating range: 2-90 °C
- Rated pressure: 1600 kPa (RP 16 bar)
- Kvs = 1.6

■ Three-way 1/2" valve body (with integral bypass)

- G1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body.
- DN 15 for 1/2" valve
- Fluid: water and glycol solution (max. 40% glycol)
- Operating range: 2-90 °C
- Rated pressure: 1600 kPa (RP 16 bar)
- Kvs = 1

Valve pressure drop



1 Kvs = 1
2 Kvs = 1.6

Flexible connections

- Pipe: EPDM elastomer
- 304L stainless braid
- Connections: brass
- Insulation: cellular elastomer with M1 fire resistance rating, Ø18 mm
- thickness 9 mm, class 3 (in accordance with standard EN 12828).
- Maximum hot operating temperature 90 °C
- water mixture max. 40% ethylene glycol or propylene glycol
- Operating pressure: 1600 kPa (16 bar)
- Minimum curve radius: 106 mm
- 1/2" union nut connections
- Length: approx. 1 m

Transducers and sensors

■ Water temperature sensor

A water temperature sensor can be provided as an option for NTC and WTC controllers

- For 2-pipe coil: The sensor is installed on a hot/cold water pipe (for changeover function).
- For 4-pipe coil: The sensor is installed on a hot water pipe (for cold-draught function that prevents the operation of the unit when the hot water network is off).

■ Air temperature sensors

Two air temperature sensors, factory fitted, are available as an option for NTC and WTC controllers. They measure the air temperature at the inlet and/or at the outlet side.

■ CO₂ sensor

For indoor air quality control, a CO₂ sensor is available as an option for NTC and WTC controllers. The sensor is factory fitted at the inlet side.

OPTIONS

Accessories

There are many accessories available to facilitate installation of the 42BJ ICM LEC. Contact your local representative.

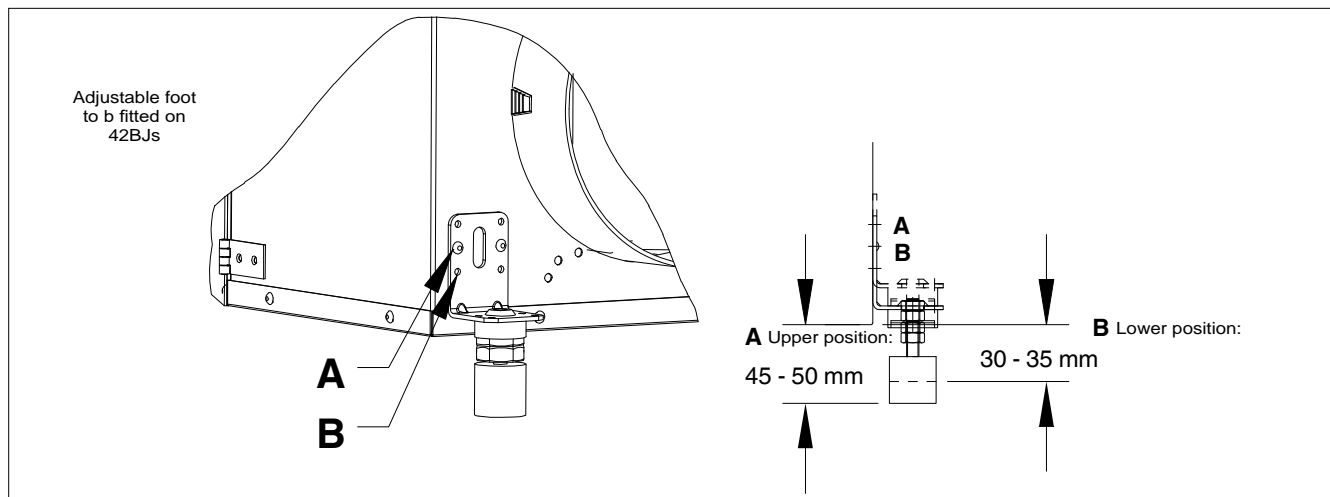
■ Condensate drain pump

A condensate drain pump can be installed on 42BJ ICM LECs either before (ideally) or after the units are installed in suspended ceilings or raised floors.

■ Adjustable feet for installation of the 42BJ ICM LEC in a raised floor: Allow for filter access from above or the side.

The 42BJ ICM LEC can be installed in a raised floor; anti-vibration adjustable feet are sold as accessories and designed to be installed on site. Contact your local representative.

Fitting procedure



CONTROL

The unit can be supplied with a wide range of Carrier controls. These controls offer functions to suit the various application requirements, summarised in the table below.

	Thermostats	NTC	WTC
Communication Protocols			
Carrier Communication Network (CCN) Aquasmart compatible		x	
BACnet MSTP			x
LON			x
Control algorithms			
On-off	x		
Proportional-integral		x	x
Carrier Energy saving algorithm		x	x
Fan control			
3 fixed speeds for AC motors	Type A&B	x	x
Automatic optimum fan speed selection	x	x	x
3 fixed speeds for EC motors	Type C&D	x	x
EC motors Variable speed		x	x
Water Valve management			
Air flow control only (no water valve)	x		
230 V On-off actuators	x	x	x
230 V Modulating actuators (floating 3pts)		x	x
Main functions			
Setpoint control	x	x	x
Occupied/unoccupied mode	x	x	x
Frost protection mode	x	x	x
Window/Door switch input	x	x	x
Measurement of water inlet temperature for automatic seasonal changeover (2 pipes)	Type A&C	x	x
Measurement of water inlet temperature to prevent cold-draught (4 pipes and 2 pipes + electric heater)	Type B&D	x	x
Manual changeover	x	x	x
Frost protection mode	x	x	x
Continuous ventilation within dead-band	x	x	x
Periodical ventilation within dead-band	x	x	x
On-site configuration	x	x	x
Unit grouping Master/Slave	x	x	x
Cassette Louvers control		x	x
Supply air temperature monitoring limiting		x	x
Electrical heater loadshed		x	x
Dirty filter alarm		x	x
Alarm reporting		x	x
Indoor Air Quality control (CO ₂ sensor)		o	o
Demand-controlled ventilation (DCV) (0-10 V fresh air valve)		o	o
Free cooling mode			o
Presence detection			o
User interfaces			
Automatic or manual fan speed control	x	x	x
Setpoint adjustment	x	x	x
Occupancy (eco) button	x	x	o
Digital display		o	o
Remote control (infra-red)		o	o
CO ₂ sensor		o	o
Luminosity sensor			o
Motion detection			o
Easy connection RJ45 jack (on wall mounted UI)			x
Light & Blinds management			
Light power modules			o
Blinds power modules			o
Control kit			
On site control kit solution			o

Key

- X Feature available as standard
O Optional

NOTE: Please refer to the technical documentation for the aforementioned Carrier controller for details of the applicable specifications and characteristics. Upon special request other controller types can be factory-installed on the units (supplied by Carrier or the customer).

TECHNICAL AND ELECTRICAL CHARACTERISTICS

42BJ		1.9			2.9			4.9		
Ventilation speeds ⁽¹⁾		L	M	H	L	M	H	L	M	H
Voltage	V	2	5	10	2	6	10	2	8	10
Air flow	l/s	40	113	189	52	160	223	69	231	244
	m³/h	144	405	680	187	576	804	250	831	880
Available static pressure	Pa	6	50	141	5	50	97	5	50	56
Cooling mode ⁽²⁾										
Total cooling capacity	kW	1,06	2,46	3,43	1,37	3,88	5,09	2,09	5,23	5,41
Sensible cooling capacity	kW	0,77	1,88	2,7	0,96	2,84	3,77	1,45	3,81	3,95
Water flow rate	l/h	180	430	620	240	680	910	360	920	960
	l/s	0,05	0,12	0,17	0,07	0,19	0,25	0,10	0,26	0,27
Water pressure drop	kPa	4,3	17,3	31,6	4,4	25,8	42,1	11,9	60,9	65,2
Heating mode, two pipes ⁽³⁾										
Heating capacity	kW	1,04	2,46	3,55	1,33	3,93	5,27	1,97	5,54	5,79
Water flow rate	l/h	180	430	620	230	680	920	340	960	1010
	l/s	0,05	0,12	0,17	0,06	0,19	0,26	0,09	0,27	0,28
Water pressure drop	kPa	4,1	14,9	27,7	4,3	23	37,9	12,4	70,9	76,6
Water capacity	L	0,9	0,9	0,9	1,2	1,2	1,2	1,5	1,5	1,5
Heating mode, four pipes ⁽⁴⁾										
Heating capacity	kW	1,32	2,62	3,48	1,76	3,76	4,52	2,63	5,73	5,92
Water flow rate	l/h	120	230	300	150	330	400	230	500	520
	l/s	0,03	0,06	0,08	0,04	0,09	0,11	0,06	0,14	0,14
Water pressure drop	kPa	2,4	5,8	9	3,5	10,4	14,1	14,1	53,6	56,7
Water capacity	L	0,2	0,2	0,2	0,29	0,29	0,29	0,45	0,45	0,45
Electric heater		1 ph - 50 Hz - 230 V								
Maximum capacity	kW	0,5	1,9	2,23	0,75	2,12	2,25	1	2,25	2,25
Maximum input current	A	11	11	11	11	11	11	11	11	11
Sound levels										
Lw (global): Global sound power level	dB(A)	38	58	67	38	63	69	42	70	72
Lw (inlet + radiated): Sound power level, return + radiated	dB(A)	35	50	59	35	52	59	38	60	61
Lw (outlet): Sound power level, supply air	dB(A)	36	57	66	34	63	69	40	70	72
Lp (global): Sound pressure level ⁽⁵⁾	dB(A)	21	41	50	21	46	52	25	53	55
NC value ⁽⁵⁾	dB(A)	14	35	46	18	42	48	18	48	50
NR value ⁽⁵⁾	dB(A)	16	37	48	20	44	50	20	50	52
Electrical data, motor		1 ph - 50 Hz - 230 V; low energy consumption EC type								
Power input	W	6	46	159	8	67	175	7	148	186
F5 or F6 air filter	mm	240 x 400			240 x 550			315 x 550		
Physical data		1/2" gas			1/2" gas			1/2" gas		
Heating and cooling coils connection diameter	in	1/2" gas			1/2" gas			1/2" gas		
Connection collar diameter	mm	200			200			250		
Height (standard)	mm	270			270			345		
Width (standard)	mm	665			815			815		
Length (standard)	mm	900			1100			1100		
Unit weight (standard)	kg	31			40			50		

(1) Fan speed: L = Low, M = Medium, H = High

(2) Conditions: Air inlet temperature 27 °C/47% RH, water inlet temperature 7 °C, water temperature difference 5 K.

(3) Conditions: Air inlet temperature 20 °C/% RH, water inlet temperature 45 °C, water temperature difference 5 K.

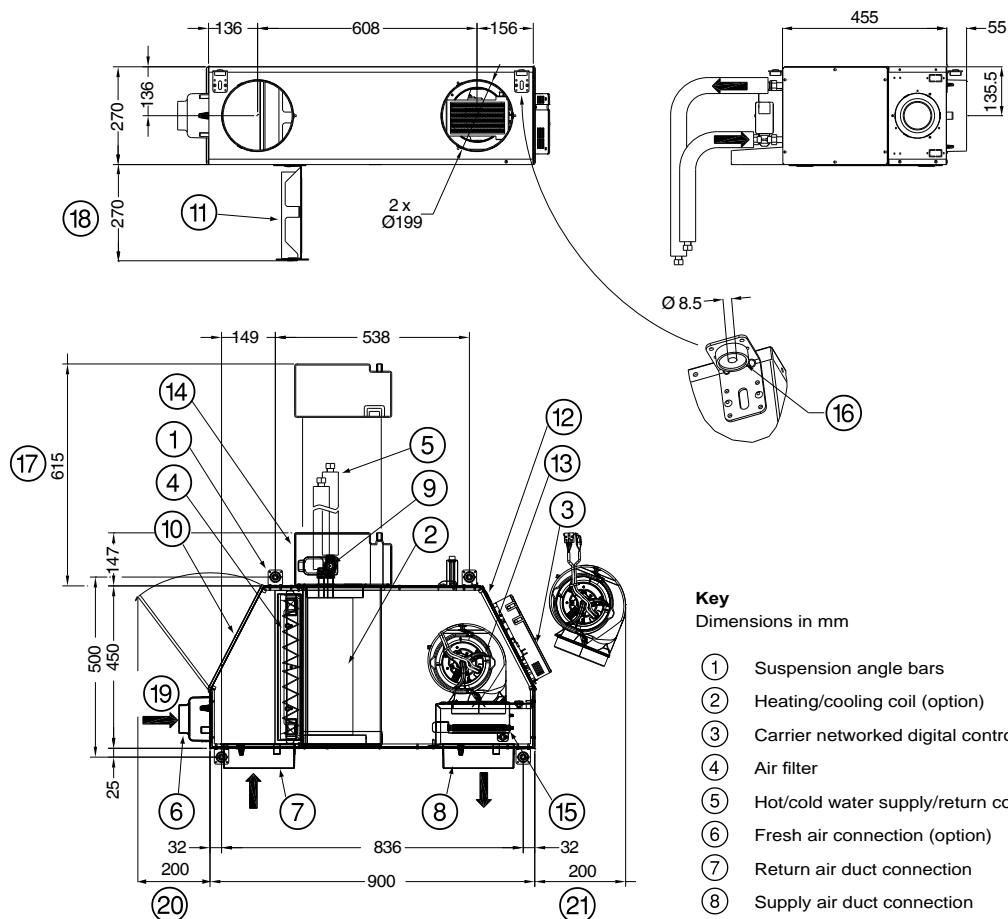
(4) Conditions: Air inlet temperature 20 °C/% RH, water inlet temperature 65 °C, water temperature difference 10 K.

(5) Based on hypothetical noise attenuation of the room and the system of -17 dB(A).

DIMENSIONS AND CLEARANCE

42BJ ICM LEC 1.9

Servo on left

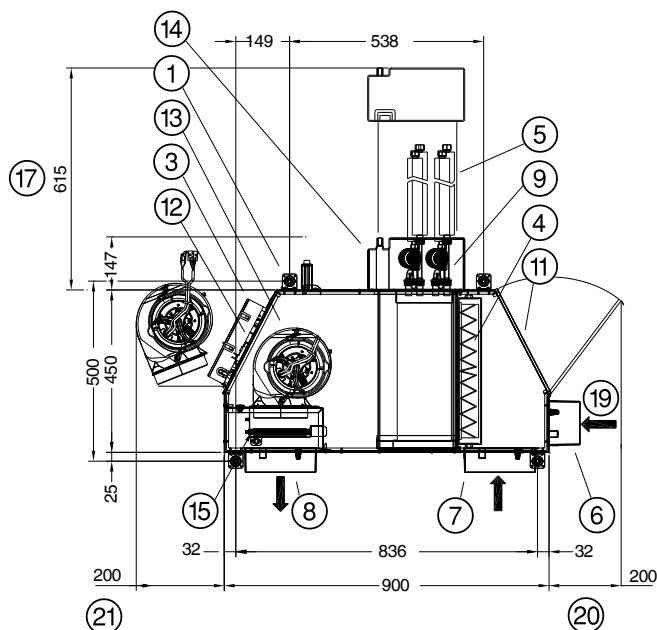


Key

Dimensions in mm

- ① Suspension angle bars
- ② Heating/cooling coil (option)
- ③ Carrier networked digital control
- ④ Air filter
- ⑤ Hot/cold water supply/return connection
- ⑥ Fresh air connection (option)
- ⑦ Return air duct connection
- ⑧ Supply air duct connection
- ⑨ Water flow control valves (option)
- ⑩ Side filter access door
- ⑪ Motor access door
- ⑫ LEC fan motor assembly
- ⑬ Condensate drain pan
- ⑭ Electric heater (option)
- ⑮ Electric heater
- ⑯ Rubber damper
- ⑰ Coil-pan assembly free space
- ⑱ Free space for filter access via base (option)
- ⑲ Fresh air (option)
- ⑳ Side filter access free space
- ㉑ Fan free space

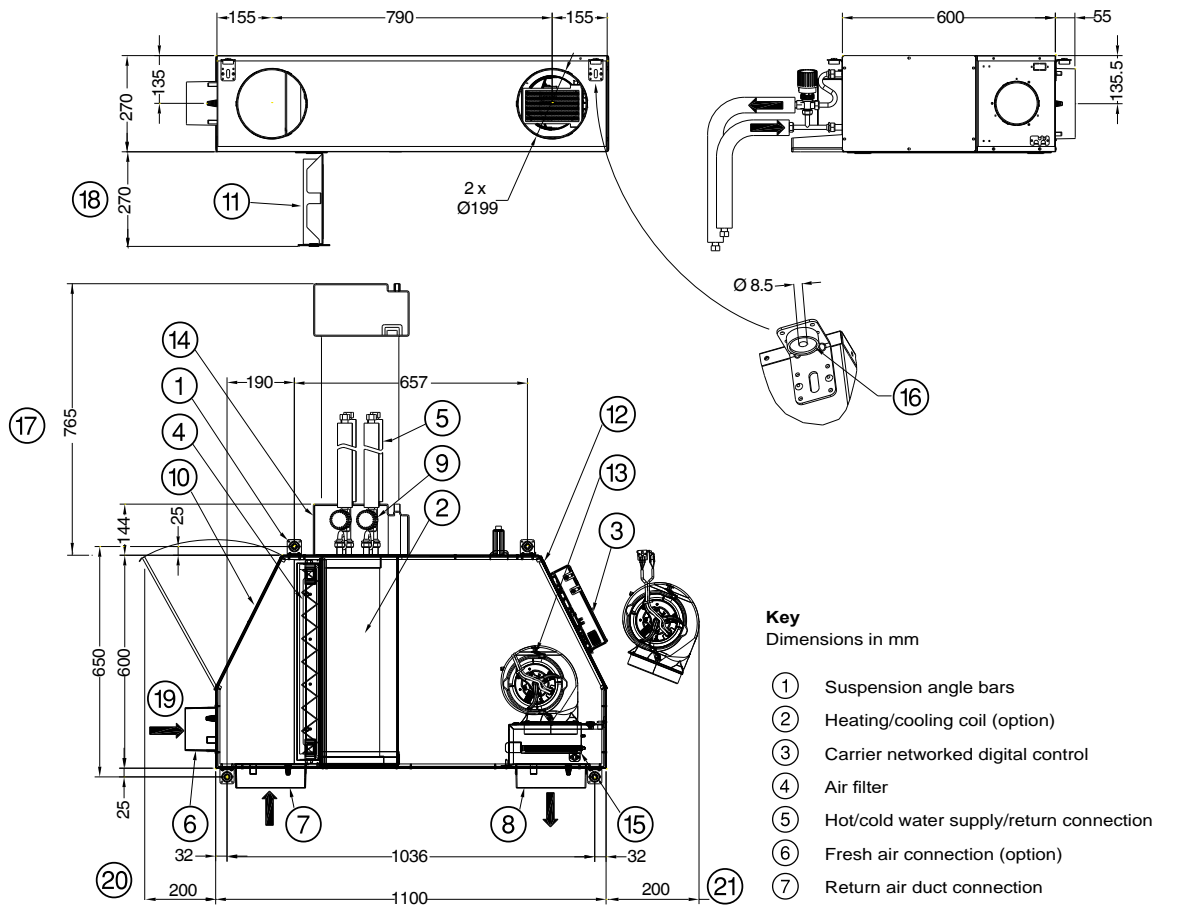
Servo on right



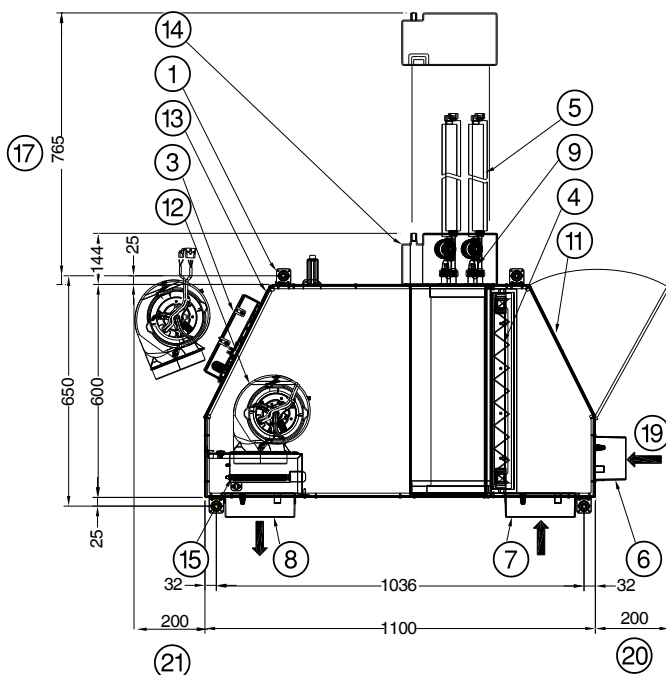
DIMENSIONS AND CLEARANCE

42BJ ICM LEC 2.9

Servo on left



Servo on right



Key

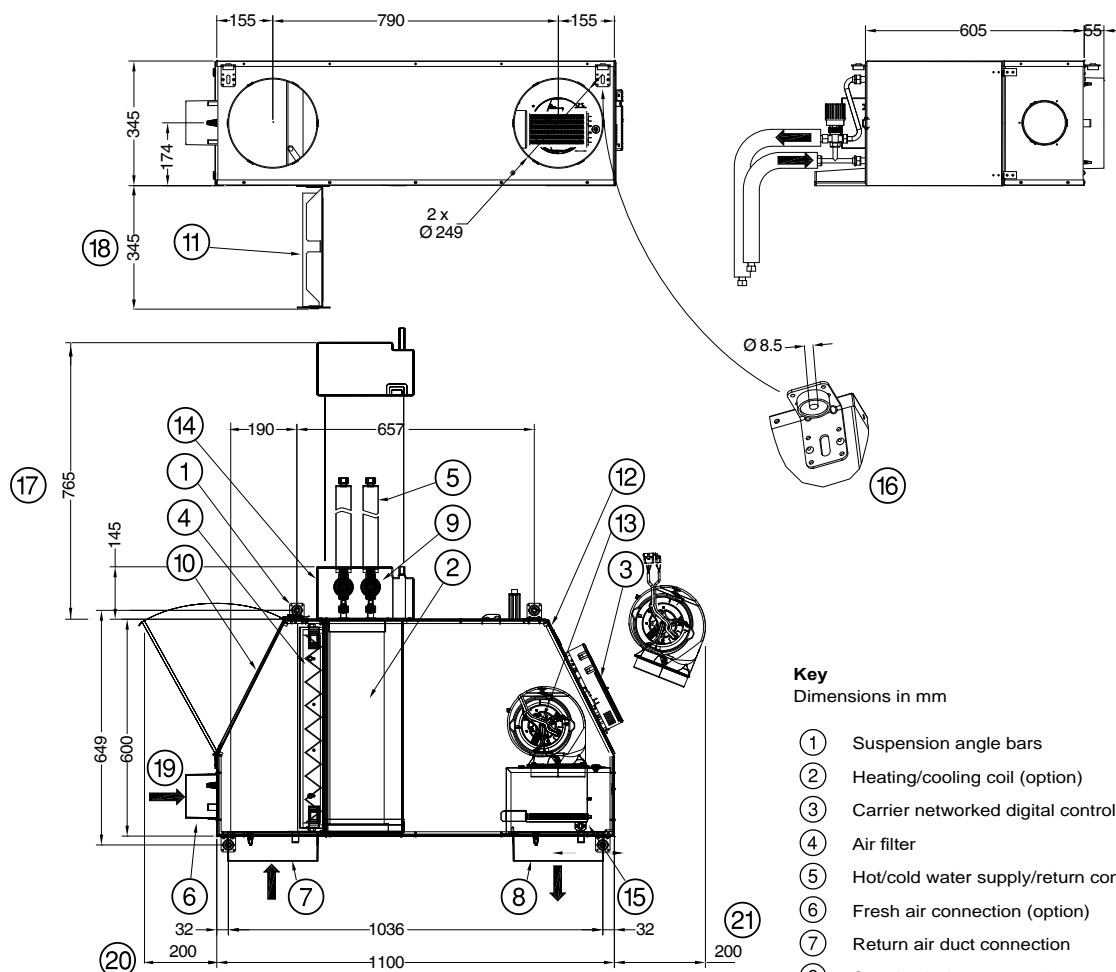
Dimensions in mm

- ① Suspension angle bars
- ② Heating/cooling coil (option)
- ③ Carrier networked digital control
- ④ Air filter
- ⑤ Hot/cold water supply/return connection
- ⑥ Fresh air connection (option)
- ⑦ Return air duct connection
- ⑧ Supply air duct connection
- ⑨ Water flow control valves (option)
- ⑩ Side filter access door
- ⑪ Motor access door
- ⑫ LEC fan motor assembly
- ⑬ Condensate drain pan
- ⑭ Electric heater (option)
- ⑮ Electric heater
- ⑯ Rubber damper
- ⑰ Coil-pan assembly free space
- ⑱ Free space for filter access via base (option)
- ⑲ Fresh air (option)
- ⑳ Side filter access free space
- ㉑ Fan free space

DIMENSIONS AND CLEARANCE

42BJ ICM LEC 4.9

Servo on left

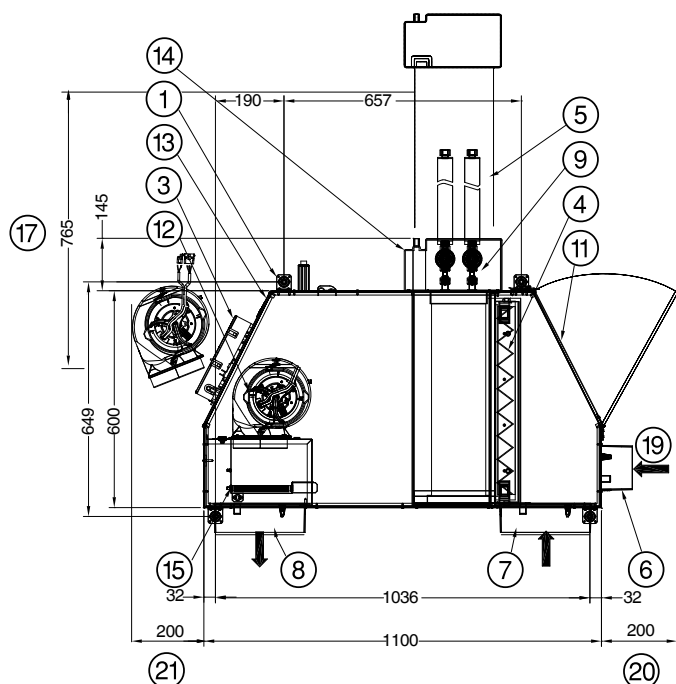


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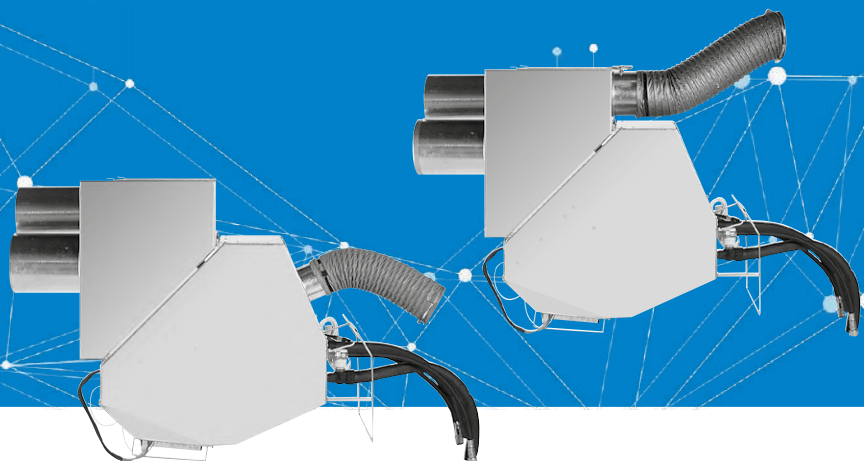
Dimensions in mm

- ① Suspension angle bars
- ② Heating/cooling coil (option)
- ③ Carrier networked digital control
- ④ Air filter
- ⑤ Hot/cold water supply/return connection
- ⑥ Fresh air connection (option)
- ⑦ Return air duct connection
- ⑧ Supply air duct connection
- ⑨ Water flow control valves (option)
- ⑩ Side filter access door
- ⑪ Motor access door
- ⑫ LEC fan motor assembly
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- ⑭ Electric heater (option)
- ⑮ Electric heater
- ⑯ Rubber damper
- ⑰ Coil-pan assembly free space
- ⑱ Free space for filter access via base (option)
- ⑲ Fresh air (option)
- ⑳ Side filter access free space
- ㉑ Fan free space

Servo on right



AIR TREATMENT MODULES



42GR



Two sizes with two-pipe plus electric heater or four-pipe coils, with an air flow range from 103 to 109 l/s, a cooling capacity of 3.1 kW and a heating capacity range from 2.9 to 3.5 kW.

Decentralised compact ducted chilled-water fan coil system, designed for installation in plant rooms. This allows centralised service and maintenance.

Reliable and efficient heating and cooling for office blocks and institutional buildings.

The LEC (low energy consumption) fan motor assembly is available as standard. This direct-drive motor is electronically commutated (EC motor), controlled by a 0–10 V signal and allows precise, simple and quiet unit operation in a wide range of rotational speeds in variation from the original speed.

PHYSICAL DATA

42GR		1.9			2.9		
Fan speed *		L	M	H	L	M	H
Variable Speed	V	4	6	10	4	6	10
Air Flow Rate	l/s	44	70	100	52	88	123
	m ³ /h	160	250	360	187	316	441
External Static Pressure	Pa	64	151	310	57	164	320
Cooling Mode **							
Total cooling capacity	kW	1,32	1,86	2,36	1,67	2,65	3,44
Sensible cooling capacity	kW	0,92	1,33	1,72	1,13	1,81	2,37
Water flow rate	l/h	230	330	430,0	290	460	610
	l/s						
Water pressure drop	kPa	7	12,9	19,9	4	8,5	13,4
Two-pipe heating Mode ***							
Heating capacity	kW	1,32	1,95	2,65	1,49	2,39	3,16
Water flow rate	l/h	230	340	460	260	420	550
	l/s						
Water pressure drop	kPa	6,6	12,2	20,3	3,7	7,2	11,1
Water content	l		0,83			1,5	
Four-pipe heating Mode ****							
Heating capacity	kW	1,44	1,92	2,39	1,86	2,76	3,45
Water flow rate	l/h	130	170	210	160	240	300
	l/s						
Water pressure drop	kPa	2,5	3,6	4,7	4,4	7,8	11,2
Water content	l		0,17				
Electrical heater		1 ph - 50 Hz - 230 V					
Maximum capacity	kW		1,7			1,8	
Maximum current drawn	A		11			11	
Sounds levels							
Lw (global): Sound power level	dB(A)	45	57	65	51	60	66
Lw (inlet + radiated): Sound power level	dB(A)	41	50	59	49	58	64
Lw (outlet): Sound power level	dB(A)	43	56	64	46	55	61
Lp (global): Sound pressure level ‡	dB(A)	28	40	48	34	43	49
NC level ‡	dB(A)	24	36	44	29	36	43
NR level ‡	dB(A)	26	38	46	31	38	45
Electrical data, motor		1 ph - 50 Hz - 230 V ; type EC low energy consumption					
Power input	W	15	42	113	16	56	137
Air filter F5 or F6	mm	225 x 350			395 x 350		
Physical data							
Connection diameter, chilled and hot-water coil	in	1/2" gaz			1/2" gaz		
Length (standard)	mm	960			960		
Height (standard)	mm	962			962		
Depth (standard)	mm	250			420		
Unit weight (standard)	kg	35			50		

* Fan speed: L= Low, M: Medium, H=High

** Cooling mode: Entering air temperature 27°C/47% rh, entering/leaving water temperature 7°C/12°C

*** Heating mode (2 pipe): Entering air temperature 20°C, entering/leaving water temperature 45°C/40°C.

**** Heating mode (4 pipe)s: Entering air temperature 20°C, entering/leaving water temperature 65°C/55°C

‡ Based on an hypothetical attenuation for the room and the air distribution system of -17dB(A)

COOLING CAPACITIES, KW

42GR19

Water temperatures (°C) Inlet - Outlet		Relative Humidity 50 %														
		Air flow rate l/s (m³/h)														
		28 (100)			56 (200)			83 (300)			97 (350)			111 (400)		
		Dry bulb Air Temperature inlet (°C)														
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
6 - 12	TC	0.94	0.78	0.64	1.70	1.40	1.10	2.32	1.91	1.51	2.60	2.13	1.69	2.85	2.34	1.86
	SHC	0.61	0.55	0.49	1.14	1.01	0.89	1.60	1.42	1.26	1.81	1.61	1.43	2.01	1.79	1.59
	TSA	8.7	8.7	8.5	9.9	9.9	9.8	11.0	10.8	10.5	11.4	11.2	10.8	11.9	11.6	11.2
	DE	134	112	91	243	200	157	332	273	216	371	305	242	407	335	266
7 - 12	TC	0.91	0.75	0.60	1.66	1.36	1.07	2.27	1.87	1.47	2.54	2.09	1.65	2.78	2.29	1.82
	SHC	0.60	0.53	0.47	1.12	1.00	0.88	1.58	1.41	1.24	1.79	1.59	1.41	1.98	1.77	1.57
	TSA	9.1	9.1	9.1	10.2	10.1	10.0	11.2	11.0	10.7	11.7	11.4	11.0	12.1	11.8	11.3
	DE	156	129	102	284	234	183	390	322	252	436	360	283	478	394	312
8 - 13	TC	0.83	0.67	0.53	1.51	1.22	0.94	2.08	1.67	1.30	2.32	1.88	1.46	2.54	2.07	1.62
	SHC	0.56	0.50	0.44	1.06	0.93	0.82	1.50	1.32	1.16	1.69	1.50	1.33	1.88	1.67	1.48
	TSA	10.1	10.2	9.9	11.1	11.1	10.8	12.0	11.8	11.4	12.5	12.2	11.7	12.9	12.5	12.0
	DE	143.3	116	92	260	209	161	357	288	223	398	322	252	436	356	279
10 - 15	TC	0.67	0.54	0.42	1.21	0.95	0.73	1.67	1.31	1.03	1.87	1.48	1.17	2.06	1.64	1.30
	SHC	0.49	0.44	0.39	0.93	0.82	0.72	1.32	1.16	1.02	1.51	1.32	1.16	1.68	1.48	1.29
	TSA	12.2	12.0	11.4	13.0	12.8	12.3	13.7	13.4	12.8	14.0	13.6	13.1	14.3	13.9	13.3
	DE	115	92	71	208	163	126	287	226	178	322	254	201	354	282	224

42GR29

Water temperatures (°C) Inlet - Outlet		Relative Humidity 50 %																	
		Air flow rate l/s (m³/h)																	
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)		
		Dry bulb Air Temperature inlet (°C)																	
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
6 - 12	TC	1.03	0.88	0.72	1.95	1.64	1.30	2.81	2.34	1.86	3.58	2.98	2.37	4.28	3.57	2.84	4.91	4.10	3.28
	SHC	0.65	0.59	0.53	1.26	1.12	0.99	1.83	1.63	1.44	2.36	2.11	1.86	2.86	2.56	2.26	3.32	2.98	2.65
	TSA	7.1	7.2	7.3	7.9	8.1	8.2	8.5	8.7	8.7	9.1	9.1	9.1	9.7	9.6	9.5	10.2	10.1	9.8
	DE	147	126	103	279	234	186	401	335	266	513	427	339	612	510	406	702	587	469
7 - 12	TC	0.98	0.83	0.67	1.88	1.57	1.24	2.71	2.25	1.78	3.46	2.88	2.27	4.14	3.44	2.72	4.76	3.96	3.15
	SHC	0.63	0.57	0.50	1.22	1.09	0.96	1.78	1.59	1.40	2.31	2.06	1.82	2.80	2.50	2.21	3.26	2.91	2.59
	TSA	7.9	8.0	8.0	8.4	8.6	8.7	9.0	9.1	9.1	9.5	9.5	9.4	10.0	10.0	9.8	10.6	10.4	10.1
	DE	168	142	115	323	269	213	466	387	305	595	494	390	711	591	468	818	679	541
8 - 13	TC	0.90	0.76	0.60	1.73	1.41	1.09	2.48	2.03	1.57	3.17	2.59	2.00	3.78	3.11	2.41	4.34	3.57	2.78
	SHC	0.60	0.53	0.47	1.15	1.02	0.89	1.68	1.49	1.30	2.18	1.93	1.69	2.64	2.35	2.07	3.08	2.74	2.42
	TSA	9.0	9.0	9.0	9.5	9.7	9.7	10.0	10.1	10.0	10.5	10.5	10.3	11.0	10.9	10.7	11.5	11.2	11.0
	DE	155.4	130	103	297	243	188	427	349	269	544	445	344	650	534	413	747	613	477
10 - 15	TC	0.75	0.60	0.46	1.41	1.11	0.84	2.02	1.59	1.20	2.57	2.02	1.54	3.08	2.43	1.87	3.54	2.80	2.18
	SHC	0.53	0.46	0.41	1.01	0.89	0.78	1.48	1.30	1.14	1.93	1.69	1.48	2.34	2.06	1.81	2.74	2.41	2.13
	TSA	11.0	11.0	10.8	11.6	11.7	11.4	12.0	12.0	11.7	12.4	12.3	11.9	12.8	12.6	12.2	13.2	12.9	12.4
	DE	129	104	79	242	190	144	347	273	206	443	348	266	530	418	322	609	482	375

Legend:

TC - Total cooling capacity, kW

SHC - Sensible heat capacity, kW

TSA - Air discharge temperature, °C

WF - Water flow, l/s

OPTIONS/ACCESSORIES

- Custom-made product on request

FEATURES AND ADVANTAGES

- Two sizes with two-pipe plus electric heater or four-pipe coils, with an air flow range from 103 to 109 l/s, a cooling capacity of 3.1 kW and a heating capacity range from 2.9 to 3.5 kW.
- Decentralised compact ducted chilled-water fan coil system, designed for installation in plant rooms. This allows centralised service and maintenance.
- Reliable and efficient heating and cooling for office blocks and institutional buildings.
- High efficiency EU6 filter.
- Extremely low sound level.
- The LEC (low energy consumption) fan motor assembly is available as standard. This direct-drive motor is electronically commutated (EC motor), controlled by a 0–10 V signal and allows precise, simple and quiet unit operation in a wide range of rotational speeds in variation from the original speed.
- High-pressure centrifugal fans, compatible with air diffusion systems up to 300 Pa.
- Compatible with the 35BD air diffuser range.
- Safe factory-installed electric heater for single or two-stage hot water heating.
- Available with demand control ventilation (DCV) and CO₂ sensor.
- Can be equipped with a UV-PCO IAQ module.
- Low hydraulic pressure drop with a valve mounted, compatible with all chiller pump kits.
- Quick installation with factory-installed options (controls, valves).
- Available with NTC controller (Aquasmart Evolution) or WTC controller (LON or BACNET)

35BD linear diffuser (supply and return air)



ELECTRICAL DATA

42GR19

Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m³/h)	Qv (l/s)	P (Pa)
10V	0.90	0.54	112	492	137	2
	0.90	0.54	112	447	124	106
	0.91	0.53	112	397	110	232
	0.90	0.53	111	351	97	327
	0.91	0.53	112	303	84	418
	0.90	0.54	112	254	71	497
	0.80	0.53	98	197	55	560
9V	0.90	0.54	112	489	136	3
	0.90	0.54	111	448	125	98
	0.90	0.54	112	399	111	224
	0.92	0.53	112	349	97	330
	0.85	0.53	103	301	84	387
	0.78	0.52	93	249	69	413
	0.70	0.51	82	201	56	449
8V	0.61	0.50	71	154	43	485
	0.92	0.53	112	489	136	2
	0.92	0.53	111	449	125	93
	0.84	0.52	101	397	110	184
	0.77	0.51	91	349	97	239

Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m³/h)	Qv (l/s)	P (Pa)
8V	0.70	0.51	81	301	83	285
	0.63	0.50	72	249	69	319
	0.57	0.49	63	198	55	345
	0.50	0.48	55	152	42	374
7V	0.75	0.51	88	450	125	1
	0.68	0.50	80	399	111	78
	0.62	0.49	70	350	97	141
	0.56	0.49	62	301	84	188
	0.49	0.48	54	249	69	227
	0.43	0.47	48	198	55	251
	0.38	0.47	41	154	43	276
6V	0.34	0.46	36	110	31	298
	0.48	0.55	60	390	108	6
	0.44	0.54	55	350	97	59
	0.39	0.54	48	300	83	112
5V	0.34	0.54	42	249	69	157
	0.30	0.53	36	202	56	181
	0.25	0.52	30	151	42	194
	0.22	0.52	26	101	28	221
	0.30	0.53	37	324	90	2
	0.29	0.52	35	302	84	28
	0.25	0.51	29	249	69	74

legend:

V - Fan motor control voltage supply

ELECTRICAL DATA

42GR19

Control (Volts)	I (A)	Cos	Puis. (W)	Qv	Qv	P (Pa)
				(m³/h)	(l/s)	
5V	0.22	0.50	25	201	56	103
	0.19	0.48	21	142	39	123
	0.17	0.45	18	102	28	143
4V	0.18	0.51	21	256	71	3
	0.15	0.50	17	199	55	46
	0.13	0.49	15	149	41	72
	0.11	0.48	13	104	29	82
	0.10	0.48	11	66	18	98

legend:

V - Fan motor control voltage supply

42GR29

Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m³/h)	Qv (l/s)	P (Pa)
10V	1.44	0.55	179	806	224	2
	1.39	0.55	172	763	212	52
	1.37	0.53	165	728	202	94
	1.34	0.54	162	695	193	126
	1.31	0.52	159	590	164	224
	1.29	0.51	150	527	147	271
	1.21	0.53	146	497	138	290
	1.15	0.54	141	459	128	305
	1.02	0.54	128	374	104	352
	0.96	0.52	113	320	89	369
	0.78	0.52	94	183	51	406
9V	1.24	0.51	150	754	209	4
	1.24	0.52	148	716	199	47
	1.18	0.55	147	676	188	92
	1.07	0.53	140	621	173	151
	1.17	0.56	136	562	156	200
	1.05	0.54	127	511	142	239
	1.02	0.55	123	436	121	278
	0.86	0.54	108	373	104	307
	0.74	0.52	89	260	72	335
	0.68	0.52	82	186	52	350
8V	0.81	0.53	101	658	183	0
	0.81	0.53	101	605	168	62
	0.85	0.52	101	557	155	108
	0.86	0.54	105	506	140	153
	0.82	0.56	99	454	126	184
	0.73	0.54	90	404	112	209
	0.67	0.50	81	350	97	236
	0.60	0.52	69	302	84	249
	0.56	0.49	64	253	70	257
	0.48	0.56	56	158	44	273
	0.57	0.52	69	563	156	0
7V	0.56	0.55	69	517	144	48
	0.55	0.52	67	478	133	71
	0.57	0.49	71	431	120	115

legend:

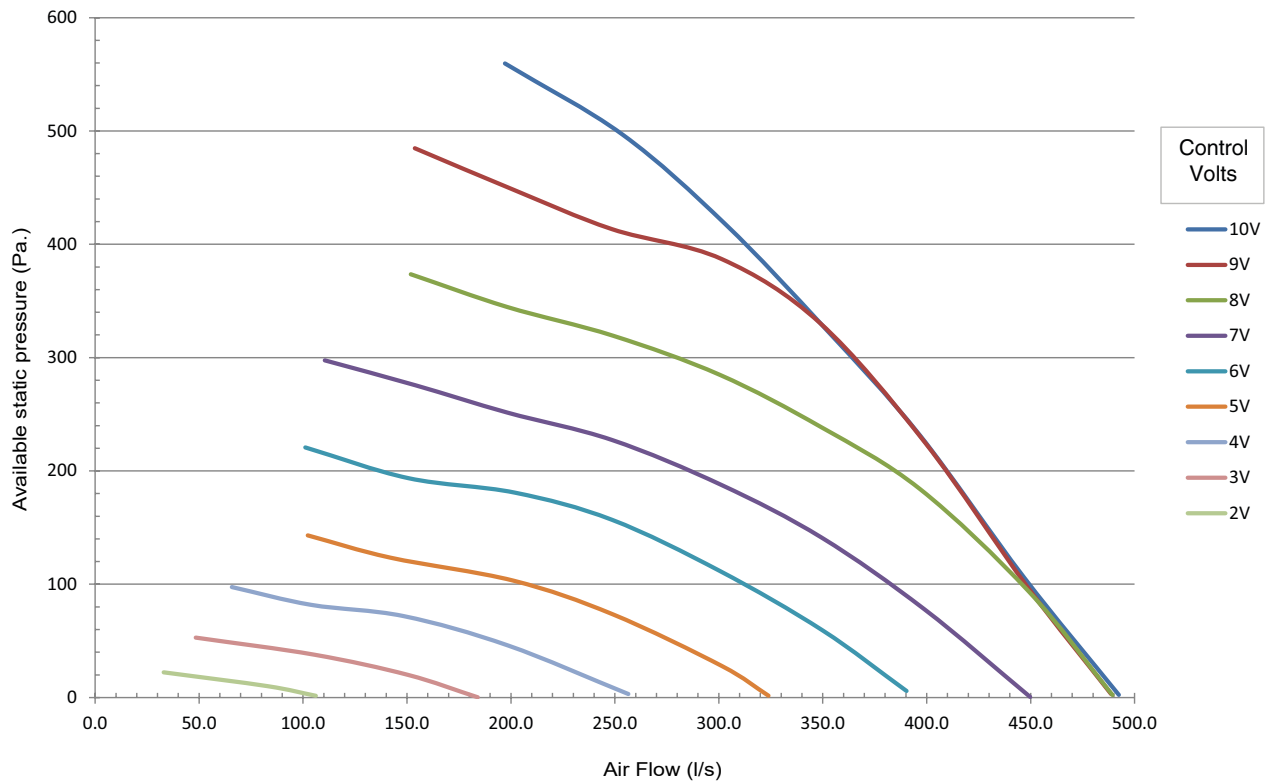
V - Fan motor control voltage supply

Control (Volts)	I (A)	Cos	Puis. (W)	Qv	Qv	P (Pa)
				(m³/h)	(l/s)	
3V	0.11	0.45	11	184	51	0
	0.10	0.42	10	151	42	20
3V	0.09	0.41	8	106	29	38
	0.07	0.40	7	48	13	53
2V	0.06	0.39	5	106	29	2
	0.06	0.39	5	83	23	10
	0.05	0.38	4	33	9	22

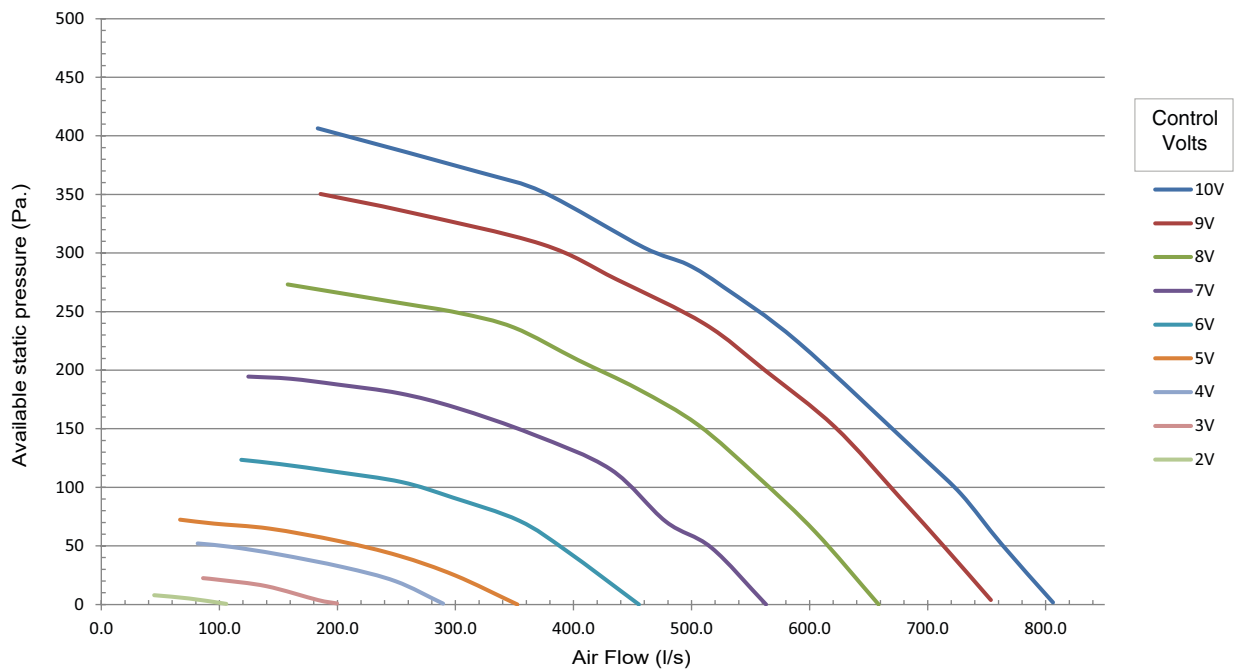
Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m³/h)	Qv (l/s)	P (Pa)
7V	0.52	0.55	63	366	102	145
	0.45	0.53	51	301	84	168
	0.41	0.52	47	252	70	180
	0.39	0.51	45	201	56	188
	0.35	0.49	40	160	45	193
	0.33	0.46	36	124	35	195
	0.36	0.49	39	455	126	0
6V	0.35	0.48	39	395	110	45
	0.35	0.53	40	354	98	72
	0.31	0.53	33	298	83	91
	0.29	0.49	32	254	71	104
	0.26	0.73	28	198	55	113
	0.23	1.00	25	151	42	120
	0.21	1.00	23	119	33	123
5V	0.22	0.91	23	352	98	0
	0.21	1.00	21	300	83	25
	0.18	1.00	19	252	70	42
	0.17	1.00	17	201	56	54
	0.15	1.00	14	142	40	65
	0.14	1.00	12	95	26	69
	0.13	1.00	12	67	19	72
4V	0.16	1.00	15	290	80	1
	0.14	1.00	15	249	69	20
	0.14	1.00	14	205	57	32
	0.13	1.00	12	150	42	43
	0.12	1.00	10	110	31	49
	0.13	1.00	10	82	23	52
	0.11	1.00	8	200	55	1
3V	0.10	1.00	8	184	51	4
	0.09	1.00	7	140	39	16
	0.10	1.00	7	101	28	21
	0.09	1.00	7	86	24	22
2V	0.07	1.00	4	106	29	1
	0.06	1.00	2	74	21	5
	0.07	1.00	4	45	12	8

AIR FLOW/AVAILABLE STATIC PRESSURE DATA

42GR19



42GR29



legend:

V - Fan motor control voltage supply

SOUND POWER LEVEL

42GR19

Volts	Type	Octave band frequency (Hz)						
		125	250	500	1K	2K	4K	dB(A)
10V	SUP	49	51	47	60	60	54	64
	RET	39	43	41	46	49	39	52
	RAD	50	48	51	55	53	46	58
	SUP	48	51	46	59	58	52	62
9V	RET	39	42	40	47	46	38	51
	RAD	47	47	50	54	51	45	57
	SUP	47	50	45	58	56	51	61
8V	RET	38	42	39	48	44	37	50
	RAD	48	47	49	53	50	44	56
	SUP	44	47	43	56	51	47	58
7V	RET	35	38	36	43	39	32	45
	RAD	46	43	47	50	45	40	53
	SUP	41	43	40	54	46	42	56
6V	RET	31	34	33	38	34	28	41
	RAD	44	40	44	47	41	35	49
	SUP	36	39	36	48	40	38	49
5V	RET	26	29	30	34	27	24	36
	RAD	39	36	41	42	36	33	45
	SUP	32	34	32	41	34	32	43
4V	RET	22	23	26	31	21	20	32
	RAD	34	32	37	38	31	29	41
	SUP	28	30	28	35	28	27	37
3V	RET	17	20	23	27	17	16	29
	RAD	30	28	33	34	26	24	37
	SUP	25	28	26	32	25	23	34
2V	RET	15	18	20	25	15	15	27
	RAD	27	25	30	31	22	20	33

42GR29

Volts	Type	Octave band frequency (Hz)						
		125	250	500	1K	2K	4K	dB(A)
10V	SUP	66	64	60	50	46	52	61
	RET	66	54	53	48	50	45	57
	RAD	61	56	56	58	58	51	63
	SUP	65	62	58	48	45	50	60
9V	RET	65	52	51	47	48	43	55
	RAD	60	55	54	57	56	49	62
	SUP	64	60	57	47	43	48	58
8V	RET	63	50	49	45	46	41	53
	RAD	59	54	53	56	54	46	60
	SUP	61	57	53	44	38	43	55
7V	RET	61	48	47	44	43	38	51
	RAD	56	50	50	54	51	42	57
	SUP	58	53	49	42	34	38	51
6V	RET	59	45	45	42	39	34	48
	RAD	54	47	48	52	47	37	54
	SUP	54	48	44	38	26	29	46
5V	RET	54	39	39	36	30	-	42
	RAD	49	41	42	47	39	-	49
	SUP	49	43	38	34	18	20	40
4V	RET	49	34	32	30	21	-	36
	RAD	45	36	36	42	31	-	43
	SUP	41	36	33	28	16	-	34
3V	RET	43	31	30	28	18	-	30
	RAD	36	30	31	34	27	-	37
	SUP	34	29	27	22	14	-	28
2V	RET	38	29	28	26	15	-	23
	RAD	28	24	25	26	23	-	30

Legend:

V - Fan motor control voltage supply

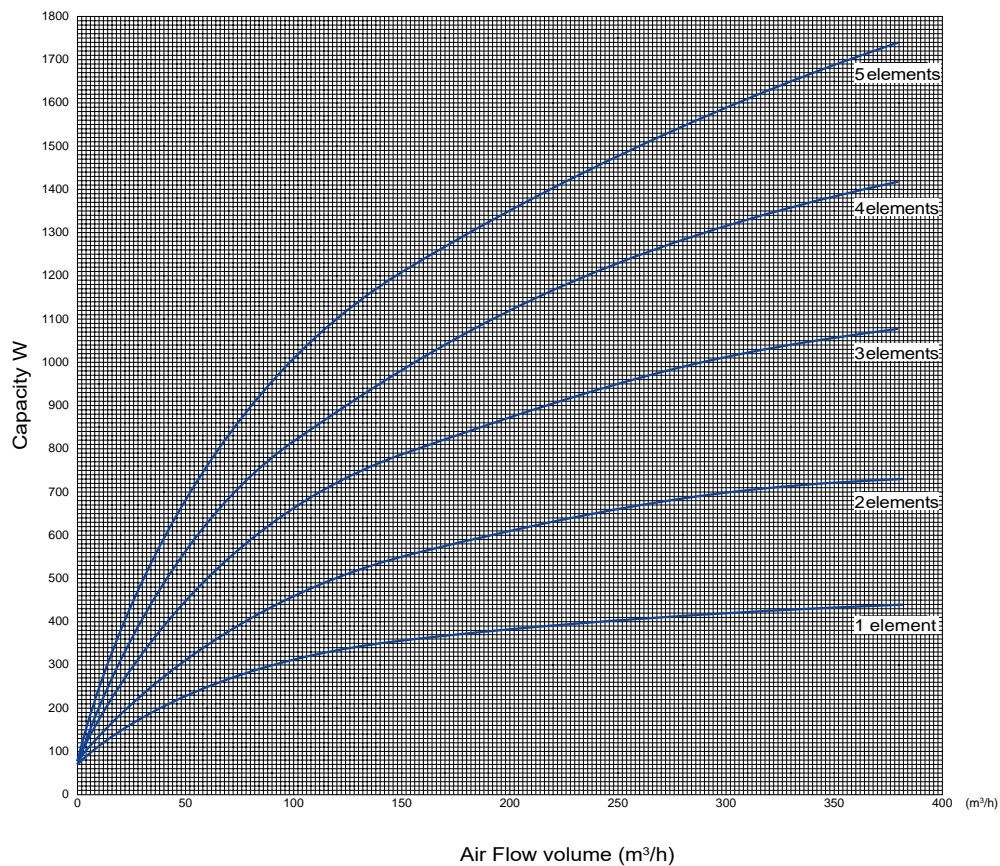
SUP - Supply (dB re = 10-12 W)

RET - Return (dB re = 10-12 W)

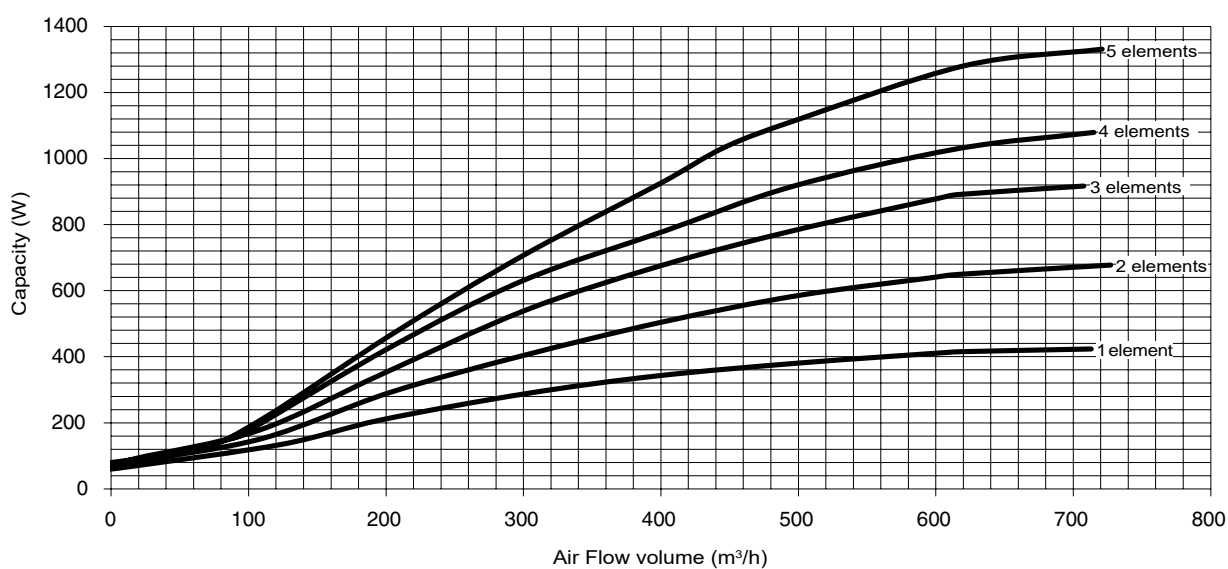
RAD - Radiated (dB re = 10-12 W)

ELECTRICAL HEATER PERFORMANCES

42GR Size 19

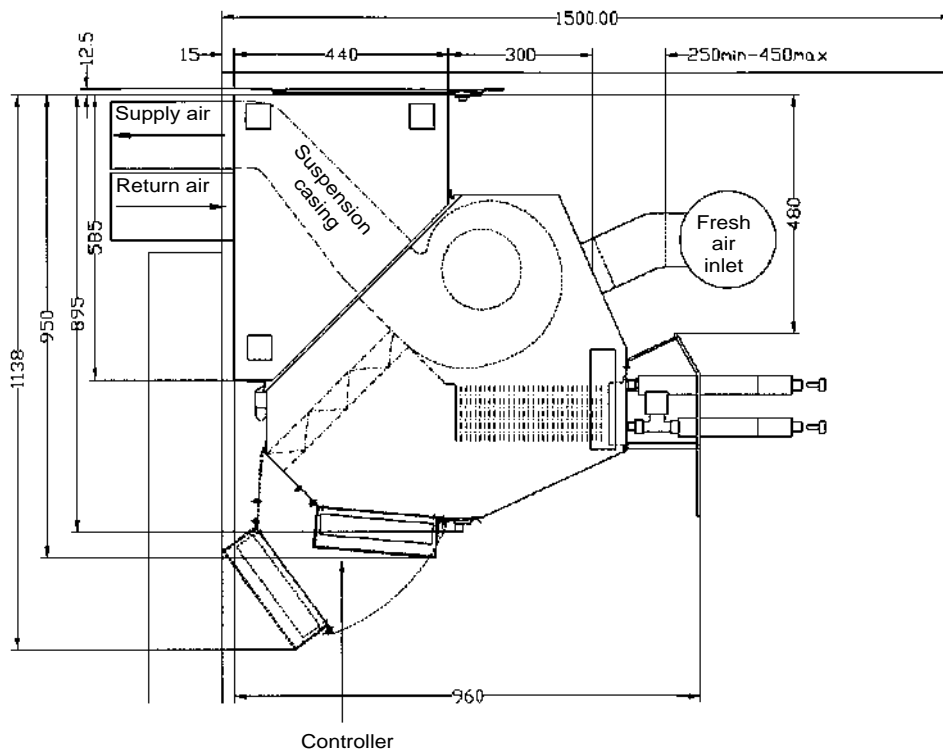


42GR Size 29



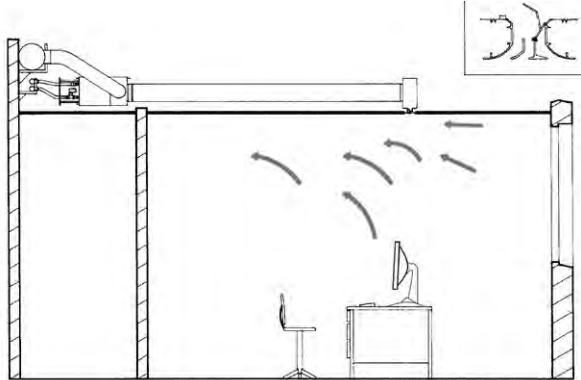
DIMENSIONS/CLEARANCES, MM

Standard installation

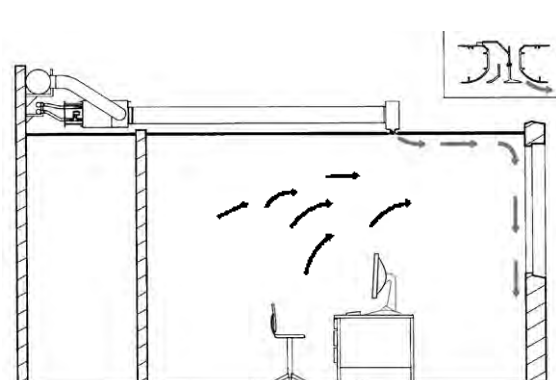


Air distribution with Optimix linear diffusers

Cooling air flow



Heating air flow



HIGH WALL FAN COIL



Easy installation
Modern & design
Low energy consumption
Low noise level

42WM

Cooling capacity 1.2-3.8 kW
Heating capacity 1.3-4.3 kW

The 42WM is an hydronic high wall fan coil available in 2 models and 4 sizes

The modern and appealing design of the unit in RAL 9003 colour allows the use in any environment.

All the models perform very low electric consumption and extremely quite sound levels according to the request of today's new projects.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

GAMME

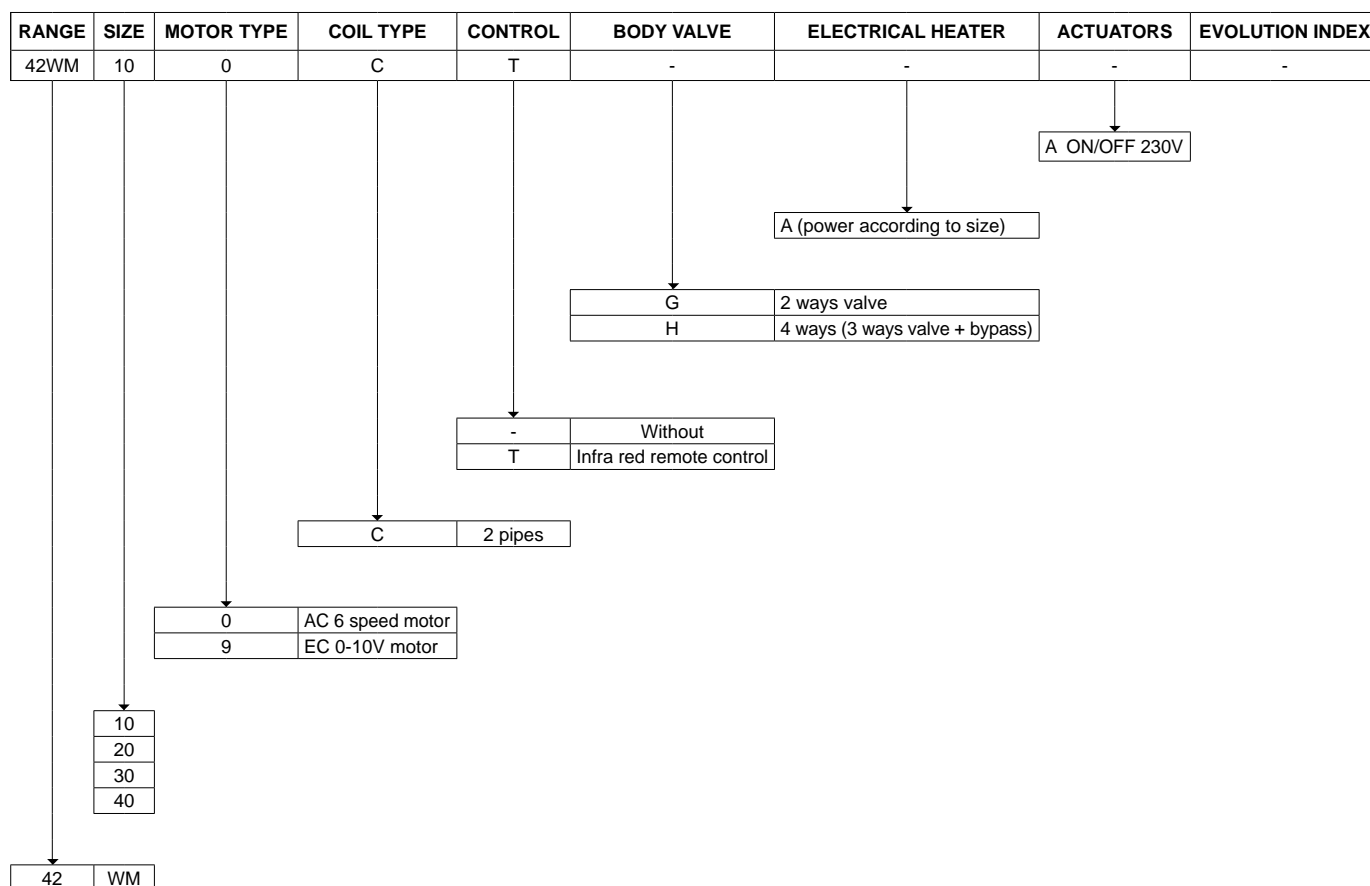
The 42WM range includes 2 models and 4 sizes .

It covers a range of cooling capacity from 1.2 kW to 3.8 kW at Eurovent conditions

The 42WM is available in :

- 2 pipe system heating or cooling
- 2 pipes and electrical heater cooling and/or heating + electrical heater

CODIFICATION



TECHNICAL DESCRIPTION

Casing

Made of auto-extinguishing ABS UL94 HB plastic with high specifications and great resistance to aging.
The diffusion flap is adjusted manually in the basic version, with remote control in T version.

Air Filter

Washable-regenerable synthetic filter, readily accessible.

Fan Assembly

Made of plastic tangential fan.

Electric motor

AC version

The motor is for single phase power supply and has six speeds, three of which are connected, with capacitor. The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Internal thermal protection with automatic reset, protection IP 20, class B. The speeds connected in the factory are indicated by "MIN, MED and MAX" in the following tables.

EC version

Electronic motor with permanent magnet brushless electronic motor that is controlled with reconstructed current according to a BLAC sinusoidal wave.

The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phases frequency modulated, wave form power supply.

The electric power supply required for the machine is therefore single-phase with voltage of 230-240V and frequency of 50- 60Hz.

Heat exchange coil

It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain.

The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
The connections are on the left side facing the unit only.

Electrical heater (option)

The heater is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.

The electric heaters are single phase 230V supply.

The electric heater is fitted with a overheat protection.

The unit is fitted with two safety thermostats:

- one thermostat with manual reset;
- one thermostat with automatic reset

Condensate Collection Tray

Made from polypropylene; the outside diameter of the condensate discharge pipe is 16mm.

Installation template

A cardboard installation template is supplied with every unit to help the mounting on the wall.

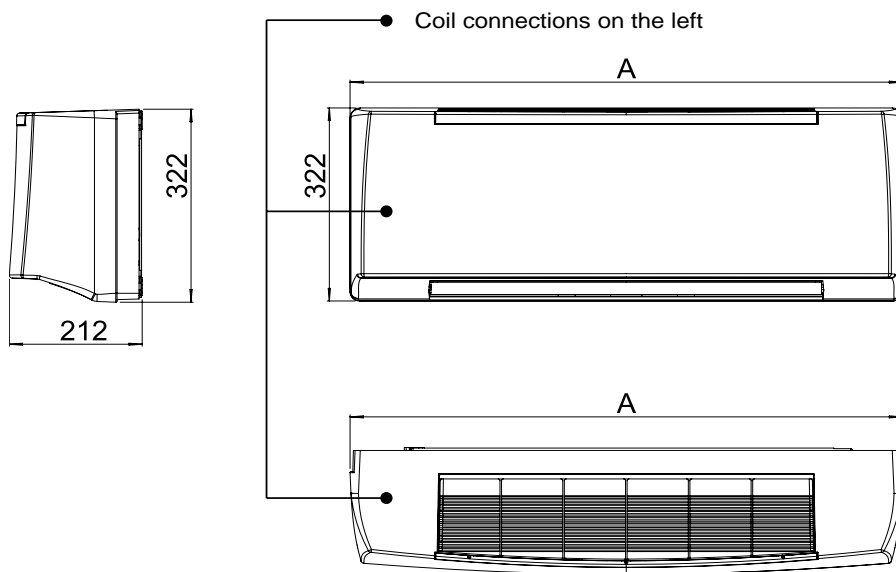
Options fitted in factory

- 2 ways valve
- 3 ways valve
- ON/OFF 230V actuator
- control with infra-red remote

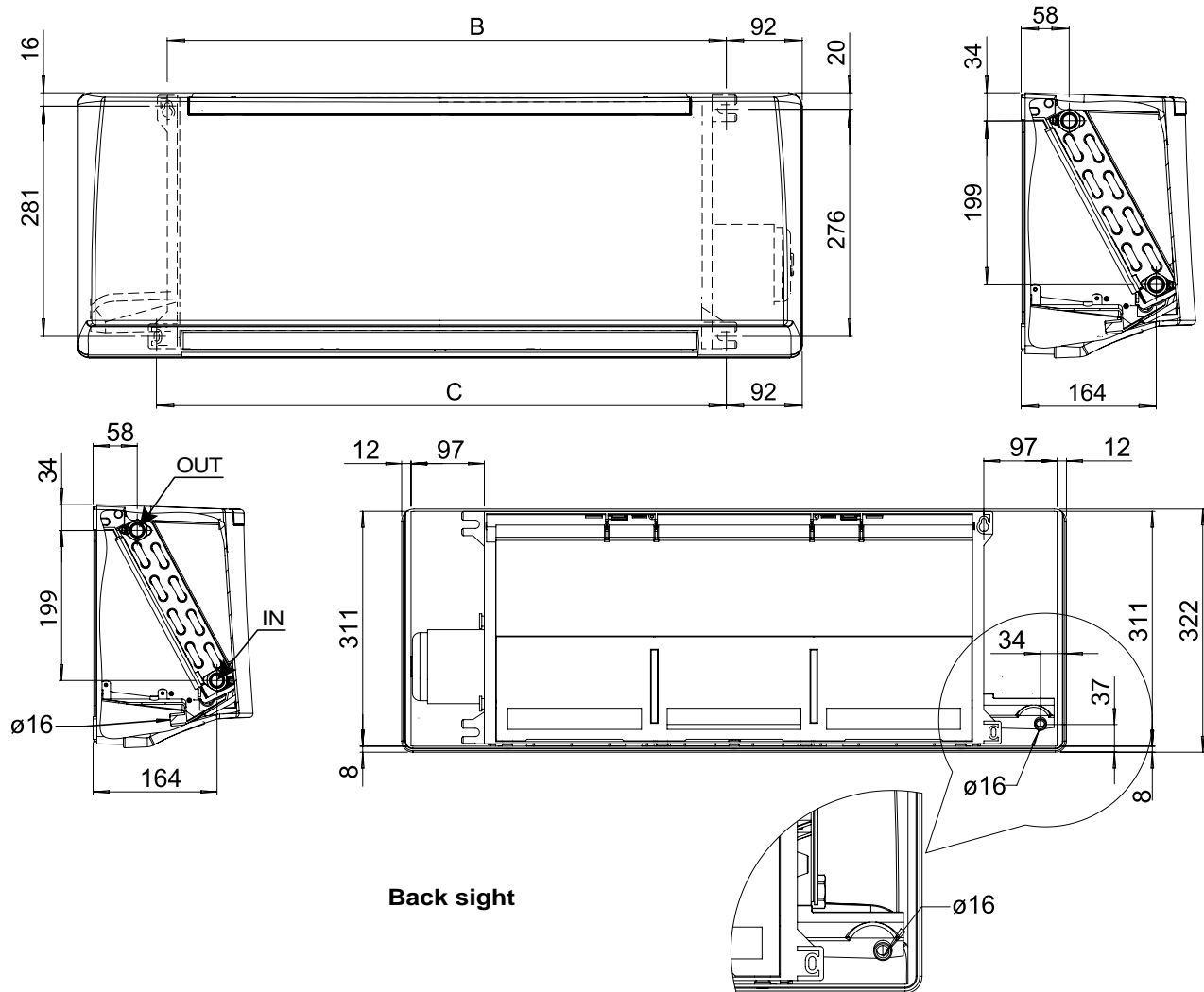
Accessories available in kit

- Condensate drain pump
- Kit 2 ways valve
- Kit 3 ways valve

DIMENSION, WEIGHT

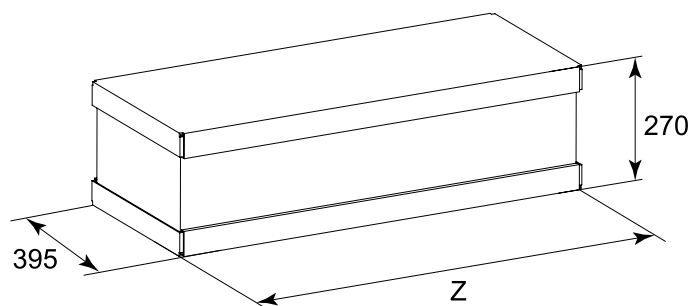


Mounting Dimension



Back sight

DIMENSION, WEIGHT



Dimension (mm)

Model	10	20	30	40
A	880	880	1185	1185
B	678	678	983	983
C	691	691	996	996
Z	950	950	1255	1255

Weight (kg)

Model	Weight packed unit				Weight unpacked unit			
	10	20	30	40	10	20	30	40
without valve	12	12	16	16	10	10	13	13
with valve	13	13	17	17	11	11	14	14

TECHNICAL CHARACTERISTIC

Max. entering water temperature..... + 70 °C

Min. entering water temperature..... + 6 °C

for entering water temperatures below + 6°C, contact technical support

Max. rated pressure.....1000 kPa (10 bars)

Max. ambient temperature with electric coil in heating mode: 25°C.

Water content (l)

Model	10	20	30	40
Liters	0,85	0,85	1,28	1,28

Installation height (m)

Model	sizes 10 to 40
Minimum	2
Maximum	3

AC motor electrical data (max. absorption)

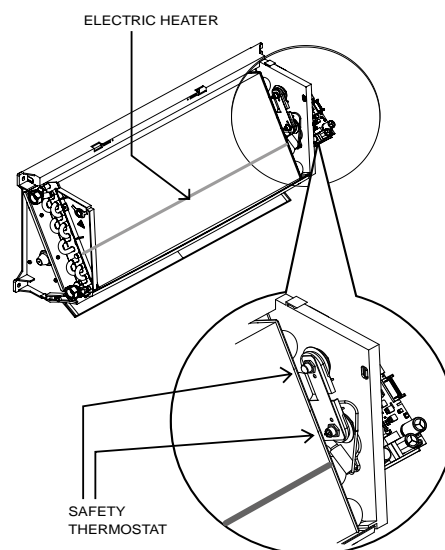
Model		42WM100	42WM200	42WM300	42WM400
230/1 50Hz	W	30	32	46	48
	A	0,16	0,16	0,23	0,23

EC Motor electrical data (max. absorption)

Model		42WM109	42WM209	42WM309	42WM409
230/1 50Hz	W	15	21	20	30
	A	0,14	0,19	0,18	0,26

Electrical heater

Model	42WM100/109	42WM200/209	42WM300/309	42WM400/409
Nominal installed power	1000 Watt	1000 Watt	1500 Watt	1500 Watt
Nominal power voltage	230V ~	230V ~	230V ~	230V ~
Number and section of connecting wires	3 x 1,5mm ²	3 x 1,5mm ²	3 x 1,5mm ²	3 x 1,5mm ²
Current input	4,5 A	4,5 A	7 A	7 A
Recommended fuse (Type gG) for overload protection	6 A	6 A	8 A	8 A



EUROVENT PERFORMANCES

2-pipe units

Size	Speed	Air flow m³/h	Heating capacity W	Pressure Drop kPa	Cooling Capacity		Pressure Drop kPa	Pabs W	Lw dB(A)	LP * dB(A)	EUROVENT FCEER	EUROVENT FCCOP
					Total W	Sensible W					Class	Class
42WM100	1	205	1 340	4,5	1 230	910	4,8	12	35	26	C	C
	2	270	1 680	6,8	1 490	1 130	6,8	14	41	32		
	3	340	2 020	9,4	1 750	1 330	9,2	17	46	37		
	4	375	2 180	10,8	1 850	1 440	10,1	18	48	39		
	5	470	2 585	14,7	2 150	1 680	13,2	24	52	43		
	6	500	2 705	15,9	2 230	1 745	14,1	30	53	44		
42WM200	1	250	1580	6,1	1 420	1 060	6,2	12	39	30	C	C
	2	305	1850		1 640	1 230	8,0	14	43	34		
	3	365	2130	10,4	1 820	1 410	9,8	18	47	38		
	4	400	2290		1 953	1 495	11,1	20	49	40		
	5	480	2620	15,1	2 160	1 730	13,3	24	53	44		
	6	545	2880		2 350	1 855	15,5	30	55	46		
42WM300	1	280	1890	9,1	1 870	1 330	11,2	16	35	26	C	C
	2	375	1130	13,8	2 300	1 670	16,2	21	40	31		
	3	480	2930	20,1	2 770	2 030	22,7	26	45	36		
	4	545	3230	24,1	3 000	2 240	26,2	29	48	39		
	5	730	4040	35,9	3 630	2 755	37,1	38	55	46		
	6	780	4240	39,2	3 770	2 880	39,8	46	57	48		
42WM400	1	300	2 000	10,1	1 980	1 409	12,4	17	36	27	C	C
	2	440	2730	22,2	2 600	1 910	23,0	23	43	34		
	3	500	3020	28,2	2 845	2 090	30,3	27	46	37		
	4	610	3530	35,2	3 230	2 440	34,0	32	51	42		
	5	675	3800	39,9	3 460	2 610	40,4	35	54	45		
	6	790	4280	49,8	3 760	2 930	45,1	48	57	48		

Size	Speed (Voltage)	Air flow m³/h	Heating capacity W	Pressure Drop kPa	Cooling Capacity		Pressure Drop kPa	Pabs W	Lw dB(A)	LP *\$ (A)	EUROVENT FCEER	EUROVENT FCCOP
					Total W	Sensible W					Class	Class
42WM109	1V	190	1 260	4,0	1 160	850	5,0	6	37	28	B	B
	3V	240	1 530	5,7	1 390	1 025	6,0		39	30		
	5V	290	1 780	7,5	1 570	1 190	7,7	9	46	37		
	7,5V	355	2 090	10,0	1 810	1 370	9,6		48	39		
	10V	415	2 350	12,4	1 990	1 560	11,2	15	52	43		
42WM209	1V	260	1 630	6,4	1 460	1 090	6,9	7	40	31	B	B
	3V	315	1 900	8,4	1 680	1 260	8,3		44	35		
	5V	375	2 180	10,8	1 860	1 450	10,1	12	47	38		
	7,5V	440	2 460	13,4	2 070	1 600	12,3		51	42		
	10V	510	2 740	16,3	2 240	1 810	13,7	21	55	46		
42WM309	1V	270	1 830	8,7	1 820	1 300	10,7	6	37	28	A	A
	3V	345	2 240	12,5	2 200	1 580	14,9		42	33		
	5V	420	2 630	16,6	2 520	1 850	19,0	11	45	36		
	7,5V	420	3 110	11,5	2 930	2 160	25,1		49	40		
	10V	620	3 570	28,8	3 270	2 480	30,4	20	53	44		
42WM409	1V	375	2 400	14,1	2 330	1 690	16,5	9	43	34	A	A
	3V	465	2 850	19,3	2 720	1 990	21,9		46	37		
	5V	550	3 260	24,4	3 030	2 270	26,6	16	49	40		
	7,5V	665	3 760	31,7	3 430	2 590	33,4		53	44		
	10V	770	4 200	38,6	3 720	2 890	38,7	30	57	48		

EUROVENT conditions

Cooling mode : Entering air temperature : 27°C/19°C_{BH}, entering/leaving water temperature : 7°C/12°C

Heating mode : Entering air temperature : 20°C, entering/leaving water temperature: 45°C/40°C

* Acoustic pressure level is based on an hypothetical sound attenuation of the room of 9 dB(A)

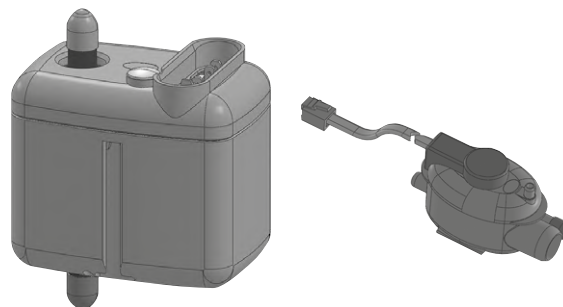


Eurovent certified values

ACCESSORIES

Condensate drain pump

		Code
Not fitted on the unit		9025309
Height for vertical flow (m)	Water flow (l/h) depending on the length of horizontal flow	
	5m	10 m
1	7,6	7,2
2	5,6	5,2
3	4,0	3,7
4	3,2	2,9



Wall or concealed installation kit

Model	ID	Code
10-20	KIF 10-20	9025191
30-40	KIF 30-40	9025193

Wall or concealed installation kit to be used as an installation template or in case the right connections are previously designed (the units are provided only with left connections).

The technical space within the frame allows to unit the right connections of the installation and the left connections of the unit. Two variants are available:

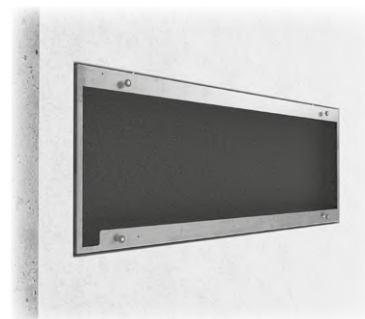
- Recessed box installation
- Wall installation with aesthetic frame.

In the first case the frame is recessed, whereas in the second case it fits the unit esthetically.

The aesthetic frame characteristics are:

- Galvanized steel painted RAL 9003
- Pre-drilled panels for cables and ductworks
- Internal insulation.

Recessed box installation

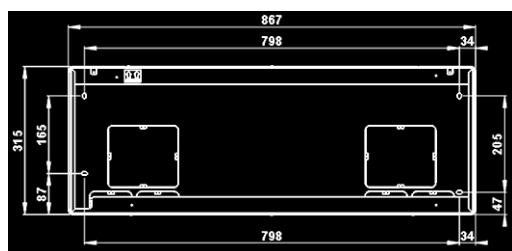


Wall installation

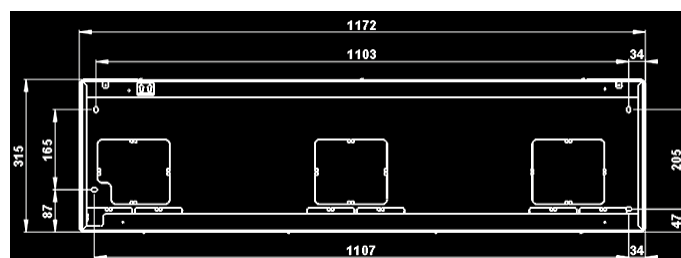


Dimensions

Gr. 1 - 2



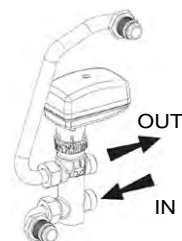
Gr. 3 - 4



ACCESSORIES

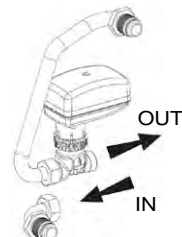
3 way valve

Mod.	Valve			Code
	DN	(Ø)	Kvs	Not fitted
10-20	15	1/2"	1,6	9025321H
30-40	20	3/4"	2,5	9025323H



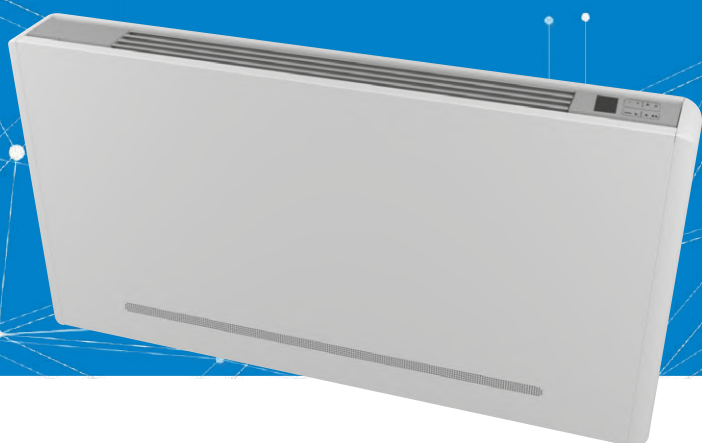
2 way valve

Mod.	Valve			Code
	DN	(Ø)	Kvs	Not fitted
10-20	15	1/2"	1,6	9025311H
30-40	20	3/4"	2,5	9025313H



NEW

SLIM FAN COIL



Easy installation
Elegant design and reduced dimensions
Low energy consumption
Low noise level

42SI

Cooling capacity 0.43-3.7kW
Heating capacity 0.8-4.8 kW

The 42SI is an hydronic slim wall fan coil available in 4 models (with cabinet and without cabinet) and 5 sizes

The slim cabinet version can be installed in any ambient thanks to its elegant design and reduced dimensions (depth is only 150 mm).

All the models perform very low electric consumption and extremely quite sound levels according to the request of today's new projects.



CARRIER participates in the ECP programme for FC/FCP
Check ongoing validity of certificate:
www.eurovent-certification.com

RANGE

The 42SI range includes 4 models and 5 sizes .

It covers a range of cooling capacity from 0.43 kW to 3.7 kW at Eurovent conditions

The 42SI is available in :

- 2 pipe system heating or cooling
- 4 pipes system heating/cooling

CODIFICATION

Range				Casing- Size & motor type			Coil Type	Control	Body Valve	Electrical heater	Actuators	Modification index
4	2	S	I	C	2	9	F	-	-	-	A	
1	2	3	4	5	6	7	8	9	10	11	12	13

Digit 12

' - = without
A = ON/OFF 230V ACTUATOR

Digit 11

- = without

Digit 10

' - = without
G = 2 WAYS VALVE GROUP
H = 3 WAYS VALVE GROUP

Digit 9

- = without
A = With Electronic control & user interface built-in
B = With Electronic control & command built-in with Wifi
C = With Electronic control (without wall user interface)

Digit 8

F = 2 pipes Left
G = 2 pipes Right
C = 4 pipes Left
D = 4 pipes Right

Digit 5 - 6 - 7

C	2	9	Size 2 _ Standard Height with cabinet_ EC motor
C	4	9	Size 4 _ Standard Height with cabinet_ EC motor
C	6	9	Size 6 _ Standard Height with cabinet_ EC motor
C	8	9	Size 8 _ Standard Height with cabinet_ EC motor
C	9	9	Size 9 _ Standard Height with cabinet_ EC motor
R	2	9	Size 2 _ Low Height (370 mm) with cabinet_ EC motor
R	4	9	Size 4 _ Low Height (370 mm) with cabinet_ EC motor
R	6	9	Size 6 _ Low Height (370 mm) with cabinet_ EC motor
R	8	9	Size 8 _ Low Height (370 mm) with cabinet_ EC motor
R	9	9	Size 9 _ Low Height (370 mm) with cabinet_ EC motor
N	2	9	Size 2 _ Standard Height without cabinet_ EC motor
N	4	9	Size 4 _ Standard Height without cabinet_ EC motor
N	6	9	Size 6 _ Standard Height without cabinet_ EC motor
N	8	9	Size 8 _ Standard Height without cabinet_ EC motor
N	9	9	Size 9 _ Standard Height without cabinet_ EC motor
L	2	9	Size 2 _ Low Height without cabinet_ EC motor
L	4	9	Size 4 _ Low Height without cabinet_ EC motor
L	6	9	Size 6 _ Low Height without cabinet_ EC motor
L	8	9	Size 8 _ Low Height without cabinet_ EC motor
L	9	9	Size 9 _ Low Height without cabinet_ EC motor

TECHNICAL DESCRIPTION

Frame

Made with high-resistance electrolytically zinc-coated metal.

Casing (for 42SIC & 42SIR version)

Air intake grid made with electrolytically zinc-coated sheet metal painted with oven-dried epoxy powders, with quick-release device to clean the filters.

Reversible air outlet grid made with aluminium painted with oven-dried epoxy powders (metallic silver paint). Its generous size enhances its high mechanical strength

For 42SIC 2 pipes :

Lateral made in plastic (RAL9003)

Front panel made with electrolytically zinc-coated sheet metal painted with oven-dried epoxy powders

For 42SIC 4 pipes & 42SIR (low height) :

Sides and front panel made with electrolytically zinc-coated sheet metal painted with oven-dried epoxy powders (RAL 9003)

Air Filter

Polypropylene filter, washable or regenerable.

Fan Motor

Tangential fan made from synthetic material with staggered fins mounted on EPDM anti-vibration supports. Statically and dynamically balanced rotor, assembled directly on the motor's shaft.

Single phase electric motor fitted on anti-vibration EPDM supports.

Heat exchange coil

It is made with copper pipes and aluminium fins with high efficiency coils . 3/4 Eurokonus threaded fittings compliant with the requirements of the new EU Standards.

Condensate drip Tray

Made in ABS the outside diameter of the condensate discharge pipe is 14mm.

Options fitted in factory

- 2 ways valve
- 3 ways valve
- ON/OFF 230V actuator
- electronic control with user interface built-in

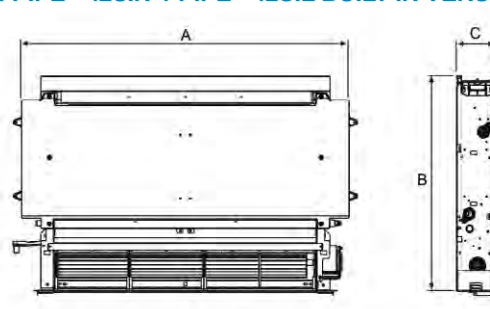
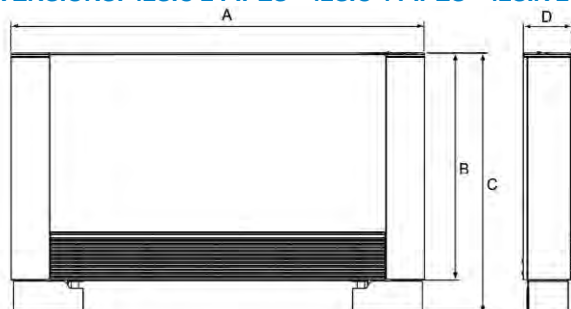
Accessories available in kit

- Kit 2 ways valve
- Kit 3 ways valve
- Back panel RAL9010 for cabinet version (42SIC or 42SIR)
- White color feet for covering floor pipes
- White color support feet
- In-wall box for vertical concealed version (42SIN or 42SIL)
- Front panel RAL90032 'equipped with return grill and supply adjustable blade for vertical concealed version (42SIN or 42SIL)
- LCD TOUCH electronic wall mounted control panel with or without WIFI module color black or white

DIMENSION, WEIGHT

VERSIONS: 42SIC 2 PIPES - 42SIC 4 PIPES - 42SIR 2 PIPES

42SIN 2-PIPE - 42SIN 4-PIPE - 42SIL BUILT-IN VERSIONS



VERSIONS: 42SIC 2 PIPES

DIMENSIONS		42SIC29F/G	42SIC49F/G	42SIC69F/G	42SIC89F/G	42SIC99F/G
A	mm	723	923	1123	1323	1523
B	mm	578	578	578	578	578
C	mm	658	658	658	658	658
D	mm	150	150	150	150	150
WEIGHT						
Net weight	kg	17	20	23	26	29

VERSIONS: 42SIC 4 PIPES

DIMENSIONS		42SIC29C/D	42SIC49C/D	42SIC69C/D	42SIC89C/D	42SIC99C/D
A	mm	723	923	1123	1323	1523
B	mm	638	638	638	638	638
C	mm	718	718	718	718	718
D	mm	150	150	150	150	150
WEIGHT						
Net weight	kg	18	21	25	28	32

42SIN 2-PIPES BUILT-IN VERSIONS

DIMENSIONS		42SIN29F/G	42SIN49F/G	42SIN69F/G	42SIN89F/G	42SIN99F/G
A	mm	480	680	880	1080	1280
B	mm	576	576	576	576	576
C	mm	126	126	126	126	126
WEIGHT						
Net weight	kg	9	12	15	18	21

42SIN 4-PIPE BUILT-IN VERSIONS

DIMENSIONS		42SIN29C/D	42SIN49C/D	42SIN69C/D	42SIN89C/D	42SIN99C/D
A	mm	480	680	880	1080	1280
B	mm	636	636	636	636	636
C	mm	126	126	126	126	126
WEIGHT						
Net weight	kg	10	13	17	20	24

VERSIONS: 42SIR 2 PIPES

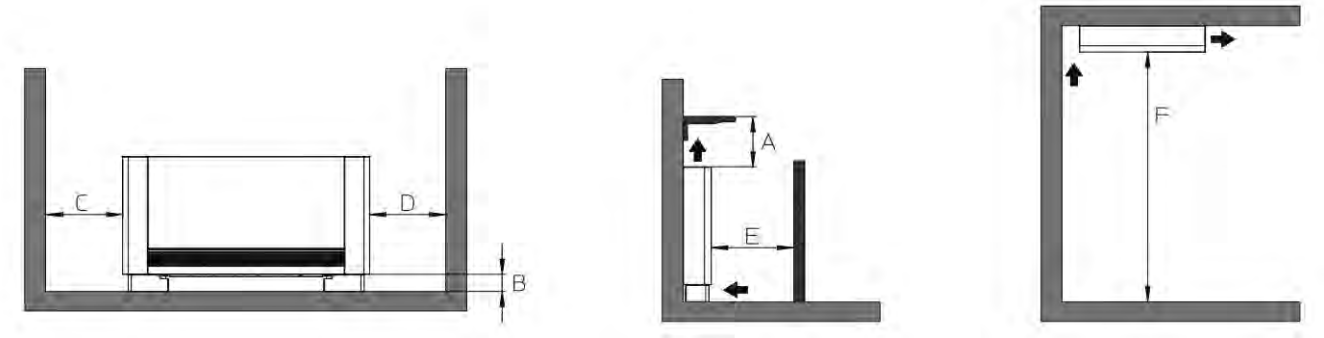
DIMENSIONS		42SIR29F/G	42SIR49F/G	42SIR69F/G	42SIR89F/G	42SIR99F/G
A	mm	723	923	1123	1323	1523
B	mm	378	378	378	378	378
C	mm	458	458	458	458	458
D	mm	150	150	150	150	150
WEIGHT						
Net weight	kg	12	14	16	19	23

42SIL 2 PIPES BUILT-IN VERSIONS

DIMENSIONS		42SIL29C/D	42SIL49C/D	42SIL69C/D	42SIL89C/D	42SIL99C/D
A	mm	480	680	880	1080	1280
B	mm	376	376	376	376	376
C	mm	126	126	126	126	126
Weight						
Net Weight	kg	7	9	11	13	15

POSITIONING

DISTANCES		29	49	69	89	99
A	mm	140	140	140	140	140
B	mm	80	80	80	80	80
C	mm	20	20	20	20	20
D	mm	20	20	20	20	20
E	mm	400	400	400	400	400
F	mm	2500	2500	2500	2500	2500



THERMAL PERFORMANCES

2 PIPES

PERFORMANCE			42SIC29F/G 42SIN29F/G	42SIR29F/G 42SIL29F/G	42SIC49F/G 42SIN49F/G	42SIR49F/G 42SIL49F/G	42SIC69F/G 42SIN69F/G	42SIR69F/G 42SIL69F/G
Total cooling capacity	a	W	830	560	1760	1040	2650	1640
Sensitive cooling capacity		W	620	520	1270	840	1960	1400
Water flow rate		l/h	143	95	303	179	456	281
Water pressure drop		KPa	7,2	4,7	8,4	10,7	22,5	4,5
Heating capacity with water inlet at 50°C	b	W	1090	780	2350	1570	3190	2380
Water flow rate (water inlet at 50°C)		l/h	143	95	303	179	456	281
Water pressure drop (water inlet at 50°C)		KPa	5,7	1,4	6,6	8,8	16,3	3,4
Heating capacity without ventilation (50°C)		W	210	150	247	165	291	217
Heating capacity with water inlet at 70°C	c	W	1890	1390	3990	2730	5470	4140
Water flow rate (70°C at 10)		l/h	162	119	343	234	471	356
Water pressure drop (70°C at 10)		KPa	6,7	2	7,6	13	16,1	4,7
Heating capacity without ventilation 70		W	322	236	379	259	447	338

HYDRAULIC FEATURES

Battery water content	liter	0,47	0,28	0,8	0,45	1,13	0,61
Maximum operating pressure	bar	10	10	10	10	10	10
Hydraulic connections		eurokonus 3/4	eurokonus 3/4	eurokonus 3/4	eurokonus 3/4	eurokonus 3/4	eurokonus 3/4

AERULIC DATA

Maximum airflow	d	m³/h	162	140	320	250	461	390
Airflow at medium speed (AUTO mode)		m³/h	113	96	252	199	367	306
Airflow at minimum ventilation speed		m³/h	55	49	155	119	248	204
Maximum static pressure available		Pa	10	10	10	10	13	10

ELECTRICAL DATA

Power supply voltage	V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Maximum power consumption	W	11,9	11,9	17,6	17,6	19,8	19,8
Maximum current consumption	A	0,11	0,11	0,16	0,16	0,18	0,18
Power consumption at minimum speed	W	6	6	12	12	14	14

SOUND LEVEL

Sound pressure at maximum airflow	g	dB(A)	39,4	38,8	40,2	39,5	42,2	41,4
Sound pressure at medium airflow	g	dB(A)	33,2	32,7	34,1	33,5	34,4	33,7
Sound pressure at minimum airflow	g	dB(A)	24,2	23,8	25,3	24,9	25,6	25,1
Sound pressure at temperature set point	g	dB(A)	18,8	18,8	19,6	19,6	22,3	22,3

- (a) Water temperature at battery inlet 7°C, water temperature at battery outlet 12°C, ambient air temperature 27°C dry bulb and 19°C wet bulb (UNI EN 1397).
- (b) Water temperature at battery inlet 50°C, water flow rate as in cooling ambient air temperature 20°C (UNI EN 1397 standard).
- (c) Water temperature at battery inlet 70°C, water temperature at battery outlet 60°C, ambient air temperature 20°.
- (d) Airflow measured with clean filters.
- (g) Sound pressure measured in semianechoic chamber in compliance with ISO 7779.

THERMAL PERFORMANCES

2 PIPES

PERFORMANCE			42SIC89F/G 42SIN89F/G	42SIR89F/G 42SIL89F/G	42SIC99F/G 42SIN99F/G	42SIR99F/G 42SIL99F/G
Total cooling capacity	a	W	3340	2310	3800	3140
Sensitive cooling capacity		W	2650	2100	3010	2500
Water flow rate		l/h	574	397	654	539
Water pressure drop		KPa	18,6	2,1	24,9	14,5
Heating capacity with water intel at 50°C	b	W	4100	3250	4860	3910
Water flow rate (water intel at 50°C)		l/h	574	397	654	539
Water pressure drop (water intel at 50°C)		KPa	14	3,5	18,3	13,4
Heating capacity without ventilation (50°C)		W	366	290	449	361
Heating capacity with water intel at 70°C	c	W	6980	5650	8300	6620
Water flow rate (70°C at 10)		l/h	600	485	714	569
Water pressure drop (70°C at 10)		KPa	14	4,5	19,8	14
Heating capacity without ventilation 70		W	563	455	690	550
HYDRAULIC FEATURES						
Battery water content		liter	1,46	0,77	1,8	0,94
Maximum operating pressure		bar	10	10	10	10
Hydraulic connections			eurokonus 3/4	eurokonus 3/4	eurokonus 3/4	eurokonus 3/4
AERAILIC DATA						
Maximum airflow	d	m³/h	576	540	648	600
Airflow at medium speed (AUTO mode)		m³/h	453	416	494	460
Airflow at minimum ventilation speed		m³/h	370	343	426	403
Maximum static pressure available		Pa	13	10	13	10
ELECTRICAL DATA						
Power supply voltage		V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50
Maximum power consumption		W	26,5	26,5	29,7	43
Maximum current consumption		A	0,26	0,26	0,28	0,27
Power consumption at minimum speed		W	18	18	19	19
SOUND LEVEL						
Sound pressure at maximum airflow	g	dB(A)	42,5	41,6	43,9	42,6
Sound pressure at medium airflow	g	dB(A)	35	34,3	37,6	36,5
Sound pressure at minimum airflow	g	dB(A)	26,3	25,7	27,6	26,8
Sound pressure at temperature set point	g	dB(A)	22,7	22,7	23,8	23,8

- (a) Water temperature at battery inlet 7°C, water temperature at battery outlet 12°C, ambient air temperature 27°C dry bulb and 19°C wet bulb (UNI EN 1397).
- (b) Water temperature at battery inlet 50°C, water flow rate as in cooling ambient air temperature 20°C (UNI EN 1397 standard).
- (c) Water temperature at battery inlet 70°C, water temperature at battery outlet 60°C, ambient air temperature 20°.
- (d) Airflow measured with clean filters.
- (g) Sound pressure measured in semianechoic chamber in compliance with ISO 7779.

THERMAL PERFORMANCES

4 PIPES

PERFORMANCE			42SIC29C/D	42SIN29C/D	42SIC49C/D	42SIN49C/D	42SIC69C/D	42SIN69C/D
Total cooling capacity	a	W	760	760	1620	1620	2420	2420
Sensitive cooling capacity		W	566	566	1205	1205	1800	1800
Water flow rate		l/h	130	130	277	277	416	416
Water pressure drop		KPa	6,1	6,1	7,1	7,1	18,6	18,6
Heating capacity with water inlet at 50°C	b	W	610	610	1290	1290	1710	1710
Water flow rate (water inlet at 50°C)		l/h	104	104	222	222	294	294
Water pressure drop (water inlet at 50°C)		KPa	4,7	4,7	6,8	6,8	10,4	10,4
Heating capacity with water inlet at 70°C	c	W	980	980	2110	2110	2790	2790
Water flow rate (70°C at 10)		l/h	85	85	181	181	240	240
Water pressure drop (70°C at 10)		KPa	3,4	3,4	4,8	4,8	7,2	7,2
HYDRAULIC FEATURES								
Cooling battery water content		liter	0,47	0,47	0,8	0,8	1,13	1,13
Heating battery water content		liter	0,16	0,16	0,27	0,27	0,38	0,38
Maximum operating pressure		bar	10	10	10	10	10	10
Hydraulic connections			eurokonus 3/4	eurokonus 3/4	eurokonus 3/4	eurokonus 3/4	eurokonus 3/4	eurokonus 3/4
AERAILIC DATA								
Maximum airflow	d	m³/h	147	147	289	289	411	411
Airflow at medium speed (AUTO mode)		m³/h	101	101	230	230	323	323
Airflow at minimum ventilation speed		m³/h	51	51	138	138	215	215
Maximum static pressure available		Pa	8	10	8	10	11	13
ELECTRICAL DATA								
Power supply voltage		V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Maximum power consumption		W	11,9	11,9	17,6	17,6	19,8	19,8
Maximum current consumption		A	0,11	0,11	0,16	0,16	0,18	0,18
Power consumption at minimum speed		W	6	6	12	12	14	14
SOUND LEVEL								
Sound pressure at maximum airflow	g	dB(A)	39,2	39,2	39,8	39,8	41,8	41,8
Sound pressure at medium airflow	g	dB(A)	33,1	33,1	33,9	33,9	34,2	34,2
Sound pressure at minimum airflow	g	dB(A)	24,2	24,2	25,1	25,1	25,4	25,4
Sound pressure at temperature set point	g	dB(A)	18,8	18,8	19,6	19,6	22,3	22,3

- (a) Water temperature at battery inlet 7°C, water temperature at battery outlet 12°C, ambient air temperature 27°C dry bulb and 19°C wet bulb (UNI EN 1397).
- (b) Water temperature at battery inlet 50°C, water flow rate as in cooling ambient air temperature 20°C (UNI EN 1397 standard).
- (c) Water temperature at battery inlet 70°C, water temperature at battery outlet 60°C, ambient air temperature 20°.
- (d) Airflow measured with clean filters.
- (g) Sound pressure measured in semianechoic chamber in compliance with ISO 7779.

THERMAL PERFORMANCES

4 PIPES

PERFORMANCE			42SIC89C/D	42SIN89C/D	42SIC99C/D	42SIN99C/D
Total cooling capacity	a	W	3040	3040	3640	3640
Sensitive cooling capacity		W	2300	2300	2720	2720
Water flow rate		l/h	523	523	627	627
Water pressure drop		KPa	14,9	14,9	21,7	21,7
Heating capacity with water inlet at 50°C	b	W	2130	2130	2900	2900
Water flow rate (water inlet at 50°C)		l/h	366	366	499	499
Water pressure drop (water inlet at 50°C)		KPa	10,1	10,1	15	15
Heating capacity with water inlet at 70°C	c	W	3480	3480	4740	4740
Water flow rate (70°C at 10)		l/h	299	299	408	408
Water pressure drop (70°C at 10)		KPa	5,4	5,4	8,8	8,8
HYDRAULIC FEATURES						
Cooling battery water content		liter	1,46	1,46	1,8	1,8
Heating battery water content		liter	0,49	0,49	0,6	0,6
Maximum operating pressure		bar	10	10	10	10
Hydraulic connections			eurokonus 3/4	eurokonus 3/4	eurokonus 3/4	eurokonus 3/4
AERAILIC DATA						
Maximum airflow	d	m³/h	529	529	602	602
Airflow at medium speed (AUTO mode)		m³/h	408	408	462	462
Airflow at minimum ventilation speed		m³/h	336	336	404	404
Maximum static pressure available		Pa	11	13	11	13
ELECTRICAL DATA						
Power supply voltage		V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50
Maximum power consumption		W	26,5	26,5	29,7	29,7
Maximum current consumption		A	0,26	0,26	0,28	0,28
Power consumption at minimum speed		W	18	18	19	19
SOUND LEVEL						
Sound pressure at maximum airflow	g	dB(A)	42,2	42,2	43,6	43,6
Sound pressure at medium airflow	g	dB(A)	34,8	34,8	37,2	37,2
Sound pressure at minimum airflow	g	dB(A)	26,1	26,1	27,4	27,4
Sound pressure at temperature set point	g	dB(A)	22,7	22,7	23,8	23,8

- (a) Water temperature at battery inlet 7°C, water temperature at battery outlet 12°C, ambient air temperature 27°C dry bulb and 19°C wet bulb (UNI EN 1397).
- (b) Water temperature at battery inlet 50°C, water flow rate as in cooling ambient air temperature 20°C (UNI EN 1397 standard).
- (c) Water temperature at battery inlet 70°C, water temperature at battery outlet 60°C, ambient air temperature 20°.
- (d) Airflow measured with clean filters.
- (g) Sound pressure measured in semianechoic chamber in compliance with ISO 7779.

COMPACT AIR HANDLING UNIT



The modular Ultra-Slim
AHU is the guaranteed
perfect solution

Ideal for a compact
installation

Available in single-flow or
aligned or adjacent dual-
flow versions

39CQ

Air flow: 1000-6000m³/h

The 39CQ air handling unit is a modular ventilation unit, which can be configured to meet all your requirements whilst complying with current standards.

It is available in several versions: single-flow, aligned dual-flow, adjacent dual-flow.

The 39CQ AHU is used for fresh air change, air recirculation, air extraction and air handling using its filtration, heating, cooling, recovery and ventilation functions...

USE

There are three different installations in the range, so it can be adapted to meet your needs:

- horizontal ceiling-mounted version, accessed from underneath,
- horizontal floor-mounted version, accessed from the top,
- vertical wall-mounted version, accessed via the front.

It is available in three sizes to meet all your needs, able to handle air flows from 1000 to 6000 m³/h.

At 400 mm thick, it is ultra compact and can be fitted into the tightest of spaces.

This range is particularly well-suited to tertiary buildings:

- administration, offices,
- education facilities, libraries, community centres,
- cafés, hotels, restaurants,
- shopping centres, nursing homes, healthcare facilities,
- collective housing

All installations requiring ventilation.

RANGE

The 39CQ range comprises 3 sizes from 1000 to 6000 m³/h.

There are four standardised lengths of casing, adapted to the configuration and options selected.

The AHU will therefore comprise one or several casings, depending on your selection; 610, 830, 1100 and 1400 mm modules.

39CQ	025	040		060
Assembly	Ceiling-mounted (C), Floor-mounted (F), Vertical (V)			
Width/Height	750*400	1310*400		1880*400
Nominal air flow (m³/h) (Speed: 3.1 m/s across finned layer)	2000	4000		6000
Plug fan, AC motor	Plug fan	1	1	2
	Electric motor	1	1	2
	Available power	0.55 kW - 4-pole/1.1 kW - 2-pole/1.4 kW - 2 pole		
	Number of inverters	1	1	1
Plug fan, AC motor	Plug fan	1	1	2
	EC motor	1	1	2
	Available power	1 kW		
Pleated filters	G4 / M5 / F7 HEE / F9 HEE			
Opacimetric filters (Short flexible pockets)	M6 / F7			
Opacimetric filters (Rigid pockets)	M6 / F7 / F8 / F9			
Hydraulic heating coil	1/2/3 rows	1/2/4 rows		1/2/4 rows
Hydraulic cooling coil	3/4/6 rows			
Direct expansion cooling oil	3/6 rows			
Electric heating coil	15 kW	24 kW		33 kW
Adjacent plate heat exchanger	Yes	Yes		No

DESCRIPTION

Casing

- Double-skin panels made from sheet steel, galvanised on both sides, thickness 8/10 mm
- RAL 7035 lacquer coated finish on external panels
- M0/A1 fire rating
- Mineral wool, thickness 25 mm

Connection and utilities

- Hydraulic connection possible on the right or left (to be specified when ordering).
- The access doors are positioned according to the choice of model:
 - horizontal ceiling-mounted model: access doors located underneath the unit,
 - horizontal floor-mounted model: access doors located on top of the unit,
 - vertical wall-mounted model: access doors on the front of the unit

Damper

- Uncased external damper
- Damper in choice of sealing class 1 or 3, as per EN 1751
- Damper thickness 110 mm and height 310 mm
- Optional servomotor

Filtration

- Filter cell with universal dimensions
- Three filtration stages possible per air flow rate
- Pleated filters in efficiency class G4, M5, F7 and F9 HPE
- Short bag filters in efficiency classes M6 to F7
- Rigid bag filters in efficiency classes M6 to F9
- Pressure tapping as standard on each filtration stage
- Option, pressure switch, pressure gauge, ...

DESCRIPTION

Heat exchange coil

- Hydraulic coil
 - Copper tubes, aluminium fins
 - Choice of 3 coil sizes for each AHU size
 - Optional frost protection thermostat with automatic reset
 - Condensate drain pan in stainless steel
- Evaporator coil
 - Copper tubes, aluminium fins
 - Choice of 3 coil sizes for each AHU size
 - Stainless condensate drain pan

- Electric heater
 - Shielded resistors in scrolled finned pipes
 - 2 high-limit safety thermostats: one automatic and one manual reset
 - Anti-radiation screen, depending on the upstream and downstream elements

Output power supplied by the electric heaters

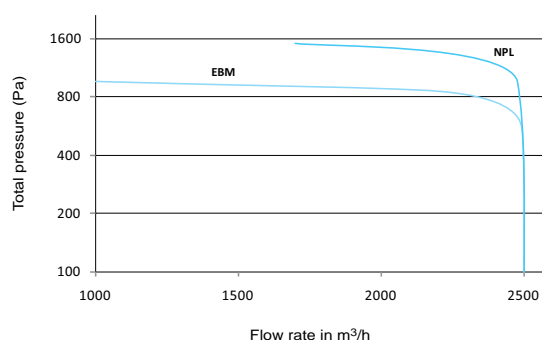
AHU size	Main casing	Additional box	
	2 stages	2 stages	4 stages
025	2 * 7.5 = 15 kW	2 * 7.5 = 15 kW	4 * 7.5 = 30 kW
040	2 * 12 = 24 kW	2 * 12 = 24 kW	4 * 12 = 48 kW
060	2 * 16.5 = 33 kW	2 * 16.5 = 33 kW	4 * 16.5 = 66 kW

Ventilation

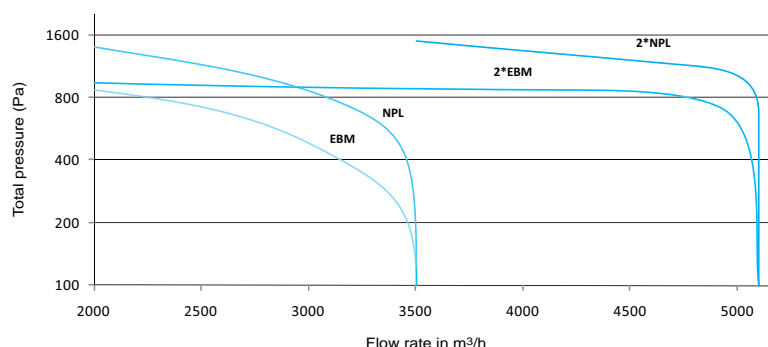
- "Plug Fan" type direct drive FMA.
- 1 or 2 FMA for each air flow rate, depending on the size and conditions.
- Plug fan combined with a motor at the end of the shaft.
- AC motor with optional frequency inverter.
- EC motor (electronically commutated motor with built-in variable speed control).

39CQ	025	040	060
Assembly	Ceiling-/floor-mounted/vertical		
Nominal air flow (m ³ /h) (Speed: 3.1 m/s across finned layer)	2000	4000	6000
Plug fan, AC motor	Plug fan	1	2
	Electric motor	1	2
	Available power	0.55 kW - 4-pole/1.1 kW - 2-pole/1.4 kW - 2 pole	
	Number of inverters	1	1
Plug fan, EC motor	Plug fan	1	2
	EC motor	1	2
	Available power	1 kW	

39CQ 025

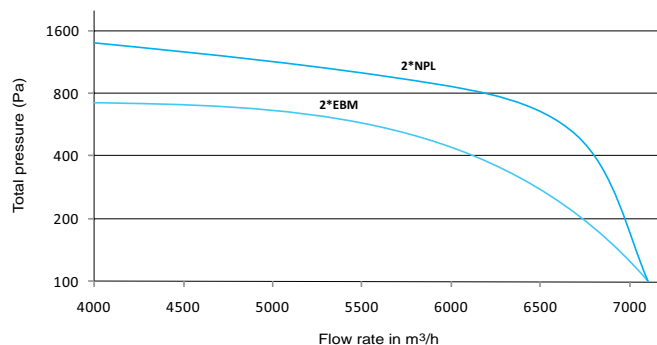


39CQ 040



DESCRIPTION

39CQ 060



Accessories and options

- 2-channel mixing box: 3 air flow positions available
- 3-way mixing box
- Angled or straight plenum
- Sound attenuator
- Adjacent plate heat exchanger (sizes 025 and 040 only)
- Control

Control

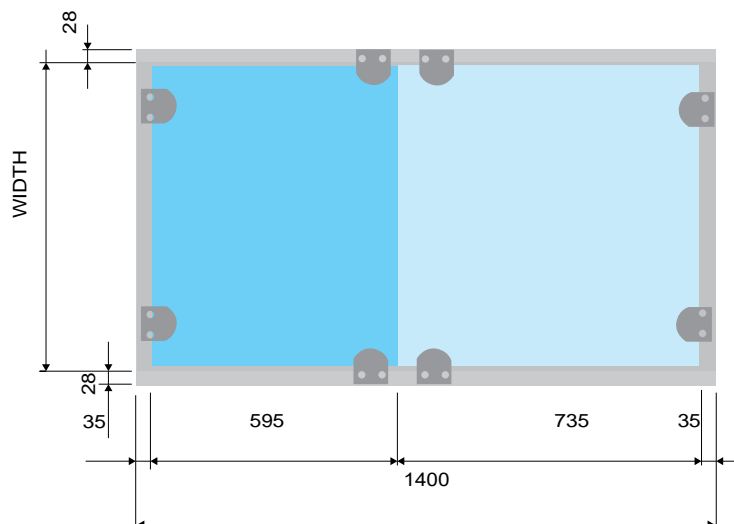
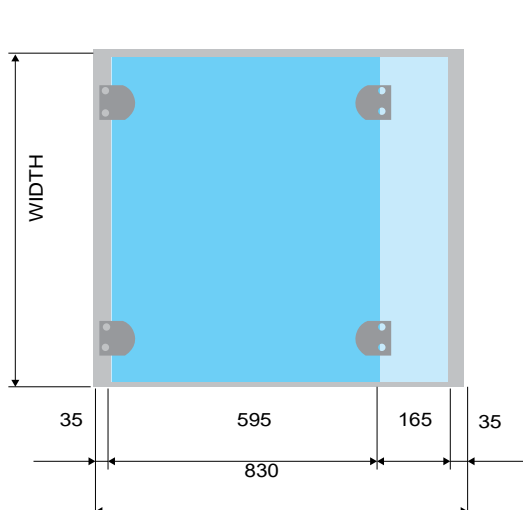
- Electrics box for power, control and internal regulation of the unit, comprising as standard:
 - Three-phase 400 V power supply + Earth
 - main disconnect switch
 - protected transformer
 - protection and control of all electrical components by a circuit-breaker and switch

- peripheral options and power terminal block
- surface-mounted electric heater unit, or delivered unassembled
- control by factory preprogrammed controller, algorithm created in-house
- hand-held cabled micro-terminal
- fault summary contact
- control by constant flow/constant pressure/CO²
- pressure and temperature sensors, depending on the selection
- numerous options and functions available

SPACE REQUIREMENTS AND DIMENSIONS:

DIMENSIONAL SPECIFICATIONS			
AHU size	025	040	060
External dimensions (in mm)	750 * 400	1310 * 400	1880 * 400
Casing length (in mm)	610 - 830 - 1100 - 1400: Four standardised lengths of casing, automatically adapted to the components and options selected		

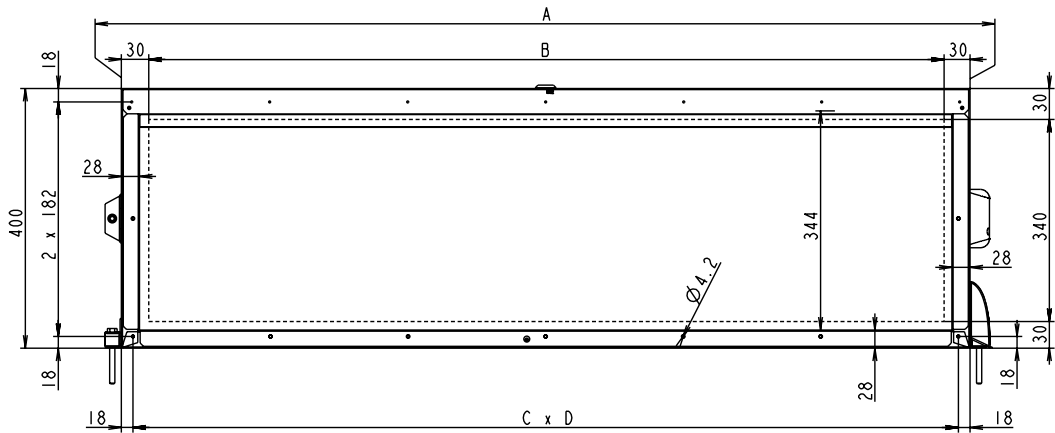
- 610 mm module ▶ 1 x 540 mm door
- 830 mm module ▶ 1 x 595 mm door
- 1100 mm module ▶ 1 x 595 mm door + 1 x 435 mm door
- 1400 mm module ▶ 1 x 595 mm door + 1 x 735 mm door



AIR CONNECTION

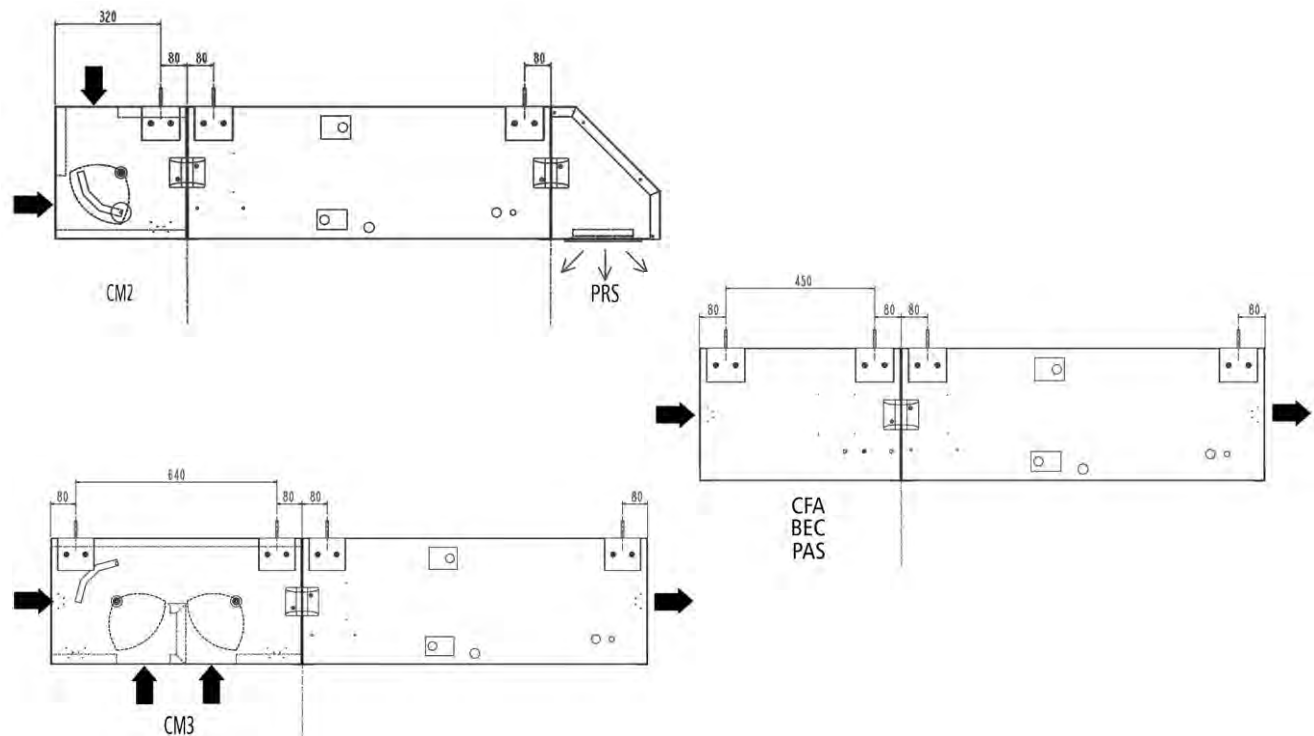
Air connection

Air connection AHU intake - AHU discharge - Mixing and plate heat exchanger



	A	B	C	D
39CQ 025	750	690	3	238
39CQ 040	1310	1250	6	212,3
39CQ 060	1880	1820	8	230,5

Examples of compositions



HIGH-EFFICIENCY DUAL-FLOW AIR HANDLING UNIT



Plug & play unit
(built-in control)

Class A+ across
entire range

Classic / Vertical dual-flow

High-efficiency
heat recovery unit

High performance plug fan

39HX

Air flow: 300-18000m³/h

The 39HX dual-flow air handling unit is a PLUG & PLAY ventilation unit equipped with a highly efficient heat recovery unit with plug fans and high performance EC motors, designed to meet all the requirements of recent ecodesign regulations.

Unit supplied ready to use, prewired, preprogrammed in the factory and supplied with a remote control.

It draws clean, fresh air indoors using, on average, 80% less energy than that needed for air conditioning (cooling and heating).



www.eurovent-certification.com

USE

These units are designed for use in the following applications:

- Administrative buildings, Offices
- Education facilities, Libraries, Community centres
- Cafés, Hotels, Restaurants
- Shopping Centres
- Nursing homes, Healthcare facilities
- Collective Housing

⇒ All facilities where ventilation is required.

Specifications	Class
Mechanical strength	D2
Airtightness	L1
Filter bypass leak	F9
Thermal transmission	T3
Thermal bridge	TB2

39HXE & HXEZ models: 9 sizes, air flow from 300 to 18,000 m³/h. Floor-mounted horizontal unit with horizontal air flows and air connections on the sides.

39HXEZ model: 9 sizes, air flow from 300 to 18,000 m³/h.

Wheel equipped with a purge sector as standard

39HXA model: 5 sizes, air flow from 350 to 8500 m³/h.

39HXC model: 5 sizes, air flow from 300 to 6600 m³/h.

Floor-mounted horizontal unit with horizontal air flows and air connections on the sides.

39HXV model: 3 sizes, air flow from 300 to 2600 m³/h. Floor-mounted vertical unit with vertical air flows and air connections on the top.

High energy-efficiency heat recovery unit

Depending on its layout, the 39HX offers two different high-efficiency heat recovery systems:



"CONTRA FLOW" plate heat exchanger fitted with a bypass (C, V, H models)



Rotary heat exchanger (39HXA and 39HXE & HXEZ models) Optimal heat recovery all year round

RANGE

Classic 39HXC, 39HXE & 39HXEZ

Sizes	Nominal flow rate (m ³ /h)	Max. power* (kW)	Max current* (A)	Voltage (V)
010	1000	1,43	6,2	1-Ph 230 3-Ph 400
020	2000	2,50	3,6	
030	3000	3,82	5,5	
040	4000	4,23	6,1	
050	5000	4,23	6,1	
060	6000	6,03	8,7	
075	7500	6,03	8,7	
100	10000	12,06	17,4	
150	15000	15,45	22,3	

39HXA

Sizes	Nominal flow rate (m ³ /h)	Max. power* (kW)	Max current* (A)	Voltage (V)
010	1000	1,2	5,4	1-Ph 230 3-Ph 400
020	2000	2,5	2,9	
030	3000	4,2	6,1	
050	5000	6,1	8,8	
075	7500	7,1	10,3	

Vertical 39HXV

Sizes	Nominal flow rate (m ³ /h)	Max. power* (kW)	Max current* (A)	Voltage (V)
007	1000	1,43	6,2	1-Ph 230 3-Ph 400
015	1500	2,50	3,6	
020	2000	2,50	3,6	

* These values are provided for guidance only and are based on a standard dual-flow unit without electric heater option.

DESCRIPTION

Casing

- Double-skin panels made from steel sheet metal, galvanised on both sides, thickness 8/10 mm.
- RAL 7035 grey precoated external panels.
- Class M0/A1.
- Mineral wool, 50 mm thick.

Filtration

- M5 HEE, F7 HEE, F9 HEE filters.
- Filter cells kept compressed by a special system to ensure a leaktight seal.
- HXC, HXV models: fouling value monitored by analogue sensor and displayed by the controller.
- HXA model: pressure switch control on each air flow. Pressure switch status displayed by the controller.

Ventilation

- Plug fan driven by an electronically commutated motor (EC motor, built-in variable speed control).

Heat recovery units

- "Contra Flow" plate heat exchanger equipped with a motorised bypass (HXC and HXV models). Efficiency greater than 80% across the range of air flows.
- Rotary heat exchanger equipped with variable rotation speed control (39HXC & HXV models).
 - ⇒ Efficiency greater than 80% at nominal flow rate.
- Purge sector as standard (39HXC model)
- Constant speed rotary heat exchanger (HXA model)
 - ⇒ Efficiency greater than 80% at nominal flow rate.

Hydraulic coil

- Copper pipes, aluminium fins.
- Coil can be integrated or additional (cased).
- With the accessory fitted, 2- or 3-way control valve and 0-10 V actuator controlled by 39HX Control for setpoint accuracy.
- Stainless steel condensate drain pan (cooling coil or mixed coil only).

Electric heaters

- High-limit safety thermostat with automatic and manual reset.
- Control by 2-stage on/off operation fully controlled by 39HX Control.

DX coil

- Copper tubes, aluminium fins.
- For reversible heating/cooling operation.
- Internal space optimised for VRV units.
- Stainless steel condensate drain pan.

List of outdoor units optimised for 39HXA DX available on request.

Electrics box

- Electrics box for power, control and internal regulation of the unit, comprising as standard:
 - Power supply (3-Ph 400 V + Earth or 1-Ph 230 V + Earth).
 - Main disconnect switch.
 - Protected transformer.
 - Protection and control of all electrical components by a circuit breaker and contact switch.
 - Peripheral options and power terminal block.
 - Factory-programmed PLC control.
 - Hand-held cabled micro-terminal.
 - Fault summary contact.
 - 3 temperature sensors.
 - 4 pressure sensors (2 pressure sensors and 2 pressure switches on the 39HXA model).
 - Control unit option for factory-fitted/wired DX unit (39HXA model)

Accessories

Damper formed of airfoil blades, powered by a servomotor
On/off with return spring.
Flexible sleeve.
Adjustable feet.
CO₂ air quality sensor.
Roof.
Canopy.
Mixing section.
Remote ambience control.
ModBus RTU, LON, KNX, ModBus communication
TCP, Bacnet IP, web interface.

MODELS & SIZES	Power (kW)	Current (A)	Voltage (V)
C 010 & E & EZ 010 V 007	4,5	20	1-Ph 230
V 015 (additional casing)	7,20	11	
V 015	8,1	12	
C 020 & E & EZ 020	10,8	16	
C 030 & E & EZ 030	12,6	19	
C 040 & E & EZ 040	16,8	25	
E & EZ 050	19,8	29	
C 060 & E & EZ 060	22,8	34	
E & EZ 075	31,2	46	
E & EZ 100	50	74	
E & EZ 150	65	96	3-Ph 400

CONTROL

39HX Control

The 39HX features, as standard, an electrics box equipped with a factory-programmed PLC and a hand-held micro-terminal.

39HX Control function				Included	Options*
Fan time schedule	Built-in timer: management in series	4 events per year, per week and per day		X	
Safety	Frost protection	By fresh air temperature control		X	
		By monitoring the pressure difference from the heat recovery unit on the flow of exhaust air (analogue sensor)			X
	Monitoring of sensor status			X	
	Monitoring operation values (thresholds)			X	
	Operating control of EC fan motor assemblies			X	
	Filter fouling control (via analogue sensor or pressure switch, depending on the model)			X	
	Fault summary			X	
Alarms	Fire monitoring (input available for potential free (dry) contact (normally closed))			X	
	Management of alarms and log (100)			X	
Control mode	Control of return air or supply air temperature			X	
	Regulated temperature control based on outdoor temperature			X	
	Control of room temperature with a room terminal				X
Hot air and/or cold air production	Gradual action on the 2- or 3-way control valve on the hydraulic coil				X
	Gradual action on the electric heater TRIAC				X
	On/Off action on the various stages of the electric heater				X
DX*** coil	Gradual action on a VRV outdoor unit				X
	Heating/cooling control				X
	Optimised defrost cycle management				X
Free cooling	Shut-down of the rotary heat exchanger (HXE & HXEZ and HXA models)			X	
	Opening of the bypass on the Contra Flow plate heat exchanger (HXC and HXH models)			X	
Night cooling function	Shut-down of the rotary heat exchanger (HXE & HXEZ and HXA models)			X	
	Opening of the bypass on the Contra Flow plate heat exchanger (HXC and HXH models)			X	
Efficiency optimisation	Variation of the rotation speed of the rotary recovery unit (HXE & HXEZ model)			X	
Configuration of the air flow rate	2 air flow rate setpoints per air flow			X	
	Display of the air flow rate			X	
Constant flow rate operation	Keeps the air flow rate constant regardless of how fouled the filters are			X	
Modulation of flow rates operation	Single zone	0-10V signal	CO ₂ sensor		X
		Contact	Presence contact		X
			External contact		X
	Multi zone	Air supply duct constant pressure operation			X
Communicating mode	Management by CMS	ModBus RS485 protocol			X
		LON protocol			X
		KNX protocol			X
		ModBus TCP/BACNET IP protocol			X
		Web interface			X
Miscellaneous	Colour touchscreen interface with synoptic				X
	Languages supported (French/English/German/Dutch/Spanish/Italian)			X	
	Integrated temperature sensors (*3: fresh air supply and extraction, exhaust air extraction)			X	
	Integrated pressure checks (*4: fresh air and exhaust air filter fouling level, fresh air and exhaust air fan)			X	
	Damper control				X
	Information provided to the user via the hand-held micro terminal			X	
	Contact for controlling the pumps for the hydraulic coils (with operating control)**			X	
	Contact for controlling an external outdoor heat production system (boiler, etc.)**			X	
	Contact for controlling a humidifier**			X	
	Electric heater load shedding input**			X	

Option*: Requires the component to be selected as an option: damper, coil, CO₂ sensor, etc.

** Except 39HXA model

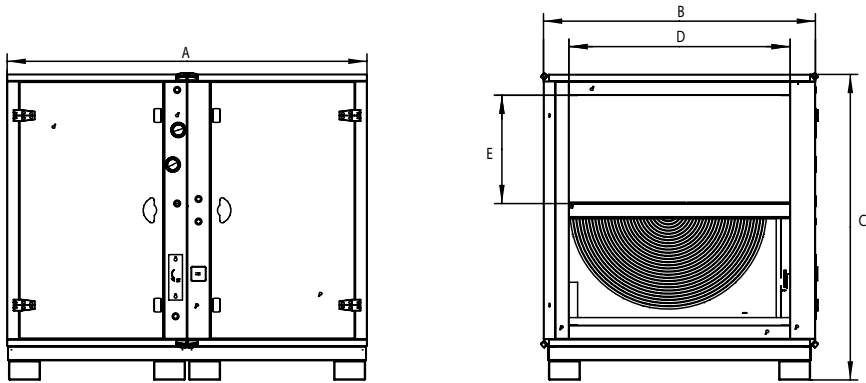
*** Only available on the 39HXA model

AIR FLOW DIMENSIONS AND ORIENTATION

Classic 39HXC, 39HXE & HXEZ & 39HXA

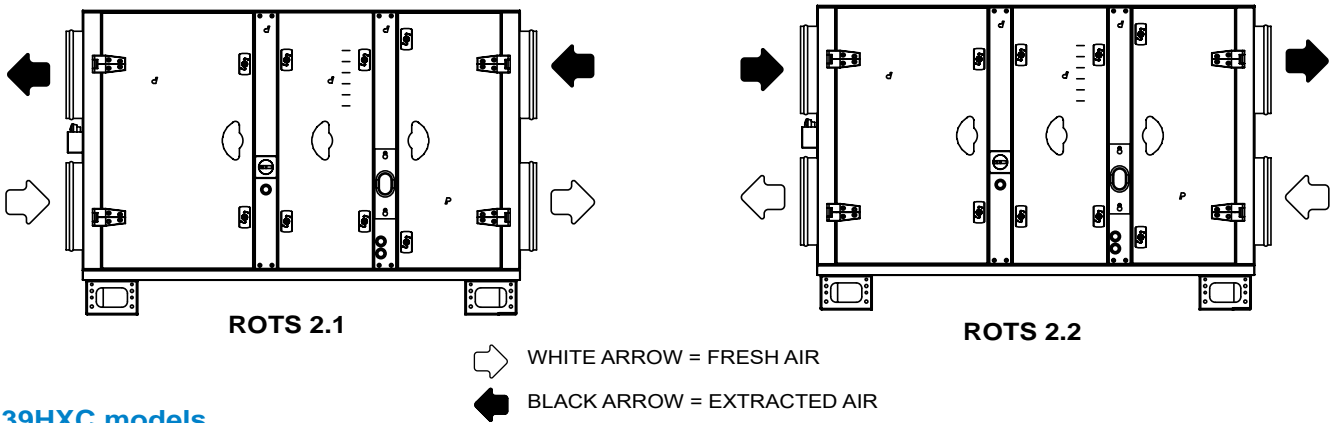
Sizes	39HXC, 39HXE & HXEZ & 39HXA									
	Height (C) (mm)	Width (B) (mm)	Length (A) (mm)				Weight (kg)*			
			HXC	HXA	HXE	HXEZ	HXC	HXA	HXE	HXEZ
010	958	810	1580	1266**	1266	1480	200	180	201	273
020	1158	1010	1150 + 800	1310**	510+800	800+800	350	250	309	382
030	1359	1210	1264 + 800	1600	800+800	1264+800	465	330	432	556
040	1659	1510	1264 + 800	-	800+800	1264+800	580	-	558	654
050	1659	1510	-	1600	800+800	1264+800	-	445	604	704
060	1959	1810	1407 + 800	-	800+800	1407+800	765	-	702	742
075	1959	1810	-	1600	800+800	1407+800	-	580	751	811
100	2090	1920	-	-	1100+1100	1820+1100	-	-	955	1065
150	2340	2192	-	-	1100+1200	1820+1200	-	-	1250	1357

* Without internal option.
 ** Circular coupling; protrudes 47 mm on either side.

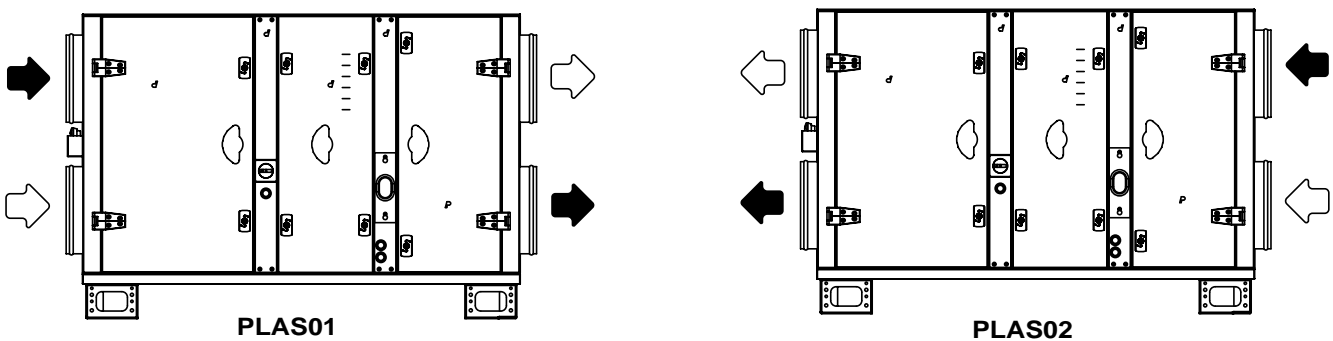


AIR FLOW ORIENTATION

39HXE & HXEZ, 39HXA models



39HXC models



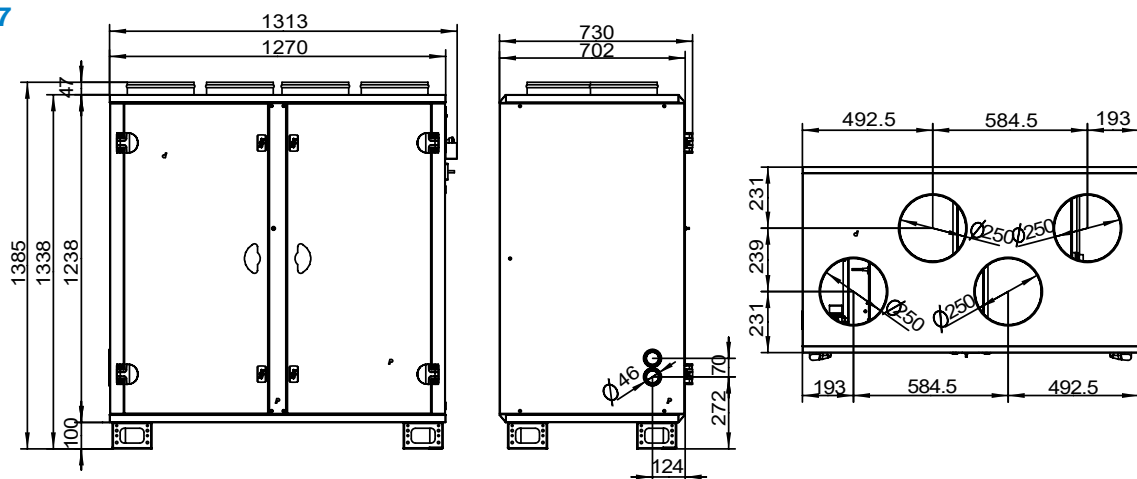
AIR FLOW DIMENSIONS AND ORIENTATION

Vertical 39HXV

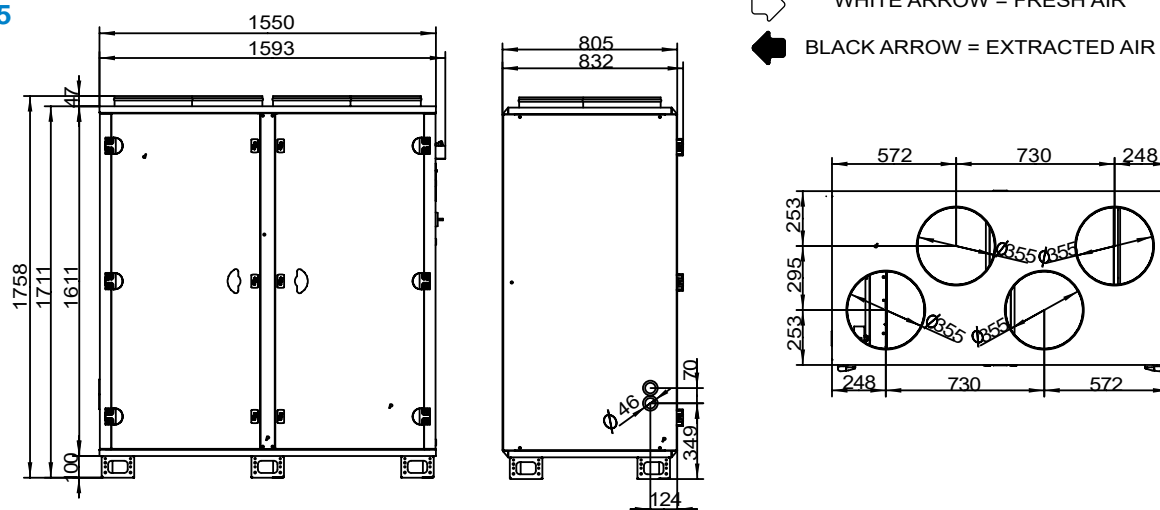
Sizes	Dimensions			Weight (kg)*
	Height	Length	Width	
007	1385	1313	730	202
015	1758	1593	832	330
020	1901	1735	832	389

* Without internal option

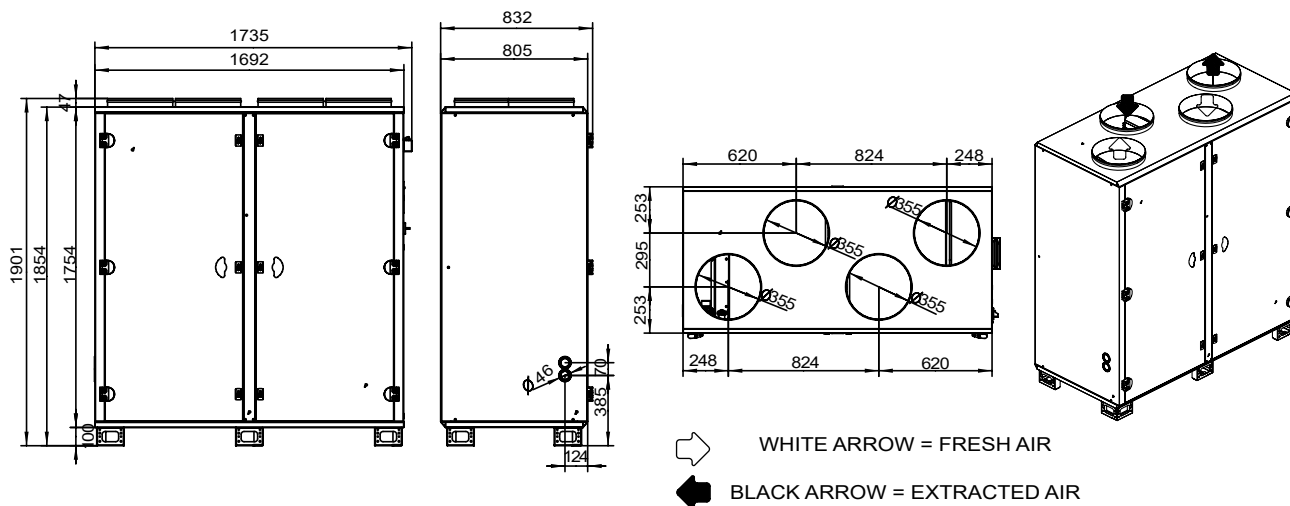
Size 007



Size 015



Size 020

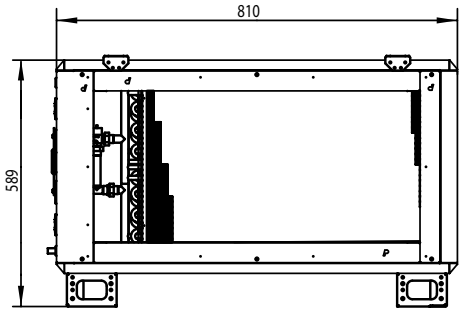


AIR FLOW DIMENSIONS AND ORIENTATION

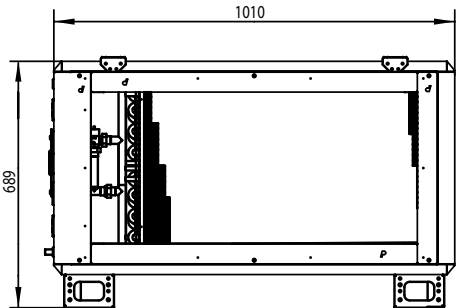
Additional casing (MUST ONLY BE POSITIONED IN A HORIZONTAL AIR FLOW)

39HX MODELS	Additional casing sizes (mm)	Weight (kg)
E & EZ 010 & C 010 V 007	Size1 589 x 400 x 810	49 kg
E & EZ 020 & C 020 V 015 & V 020	Size 2 689 x 400 x 1010	62 kg
E & EZ 030 & C 030	Size 3 759 x 400 x 1210	68 kg
E & EZ 040 & E & EZ 050 C 040 & C 050	Size 4 909 x 400 x 1510	88 kg
E & EZ 060 & E & EZ 075 C 060 & C 075	Size 5 1059 x 400 x 1810	112 kg

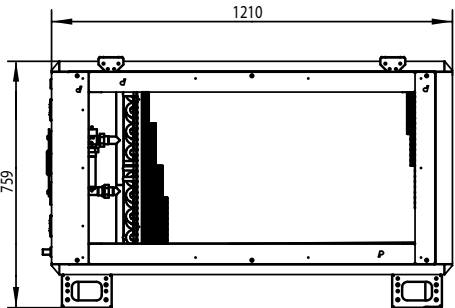
Size 1



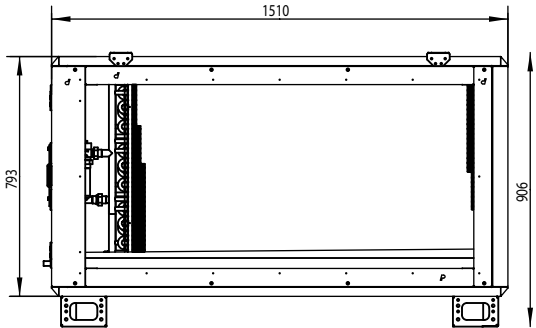
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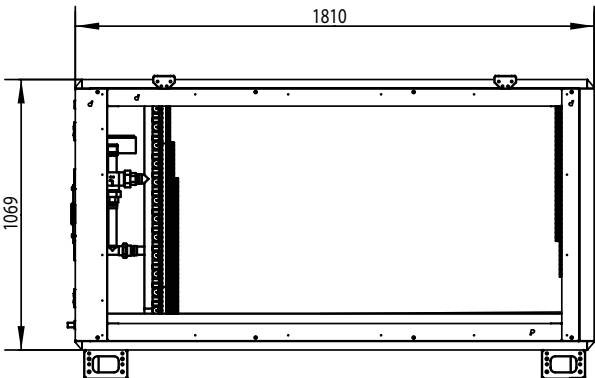
Size 3



Size 4



Size 5



AIR HANDLING UNIT



AHU for multiple applications

Designed to conform
to standards EN 13053
and EN 1886

For all service sector, industry
and healthcare environments

39CP C hygienic version

39CP D hygienic version
DIN 1946-4 compliant.

VDI 6022 option.

39CP

Air flow: 1000 to 30,000m³/h

Air handling unit: 39CP

The new range of 39CP air handling units is the latest generation of AHUs developed to meet the EN 1886 and EN13053 standards, integrating the most innovative components (high efficiency filters, heat recovery systems, EC fans, variable speed controllers, etc.).

This range has been designed to meet rigorous and stringent environmental requirements. As confirmation of its quality processes, the production facility has received certifications in the following standards: ISO 9001, ISO14001, ISO18001.

The 39CP range has EUROVENT AHU programme certification. This generation has been designed to meet these criteria, providing a high level of thermal classification, and ensuring it is suited for every application.

The range was developed by the European Air Side research and test center. It was designed using cutting edge digital resources, and all steps were confirmed by testing in climatic test and acoustic chambers.

The test center also enables CARRIER to offer its customers performance tests on manufactured products before they leave the facility in certain cases.

The painting, machining, panelwork, frame, fitting of gaskets, welding, and control tests are performed on production lines devoted entirely to the 39CP range.

The facility also produces air-water or refrigerant exchangers. Carrier uses its own calculating and sizing tools.

These factors give Carrier complete control of both its performances and its procurement cycles.

All of the above aspects combine to help create a high quality product which gives you complete satisfaction in a diverse range of applications, from offices and service sector administration to industrial processes and controlled environments in industry, satisfying also the healthcare requirements.



CARRIER participates in the ECP programme for
39CP range Check ongoing validity of certificate:
www.eurovent-certification.com

USE

The 39CP range is designed for the service, industry and healthcare sector to meet different requirements in terms of air mixing, filtration, heating, refrigeration, dehumidification, humidification, ventilation, recovery and sound attenuation. It is available as a horizontally-mounted version for installation indoors or outdoors with a roof and accessories to protect it from the weather. The range is available in a single or dual-flow version.

Thanks to the broad spectrum of solutions on offer, and the product's excellent modularity, the specifications for this product always comply with the EN 13053 and EN 1886 standards, whatever its configuration.

39CP L: tertiary sector applications



- Casing resistance: class D2
- Casing airtightness: class L1 (-400 Pa)/ L2 (+700 Pa)
- Thermal transmission: class T3 (option T2)
- Thermal bridging factor: class TB3 (option TB2)
- Filter bypass: class F9

39CP H and 39CP C: multiple applications



- Casing resistance: class D1
- Casing airtightness: class L1
- Thermal transmission: class T2
- Thermal bridging factor: class TB1
- Filter bypass: class F9

The standard EN-1886, define the main construction features for Air Handling units.

Among most important features we have :

Thermal transmittance [W.m-2.K-1]: The heat flow per area and temperature difference through the casing of the air handling unit.

Thermal bridging factor [-]: The ratio between the lowest temperature difference between any point on the external surface and the mean internal air temperature and the mean air-to-air temperature difference

Carrier 39CP range can be upgraded from T3/TB3 to T2/TB2 offering improved technical features and significant energy savings.

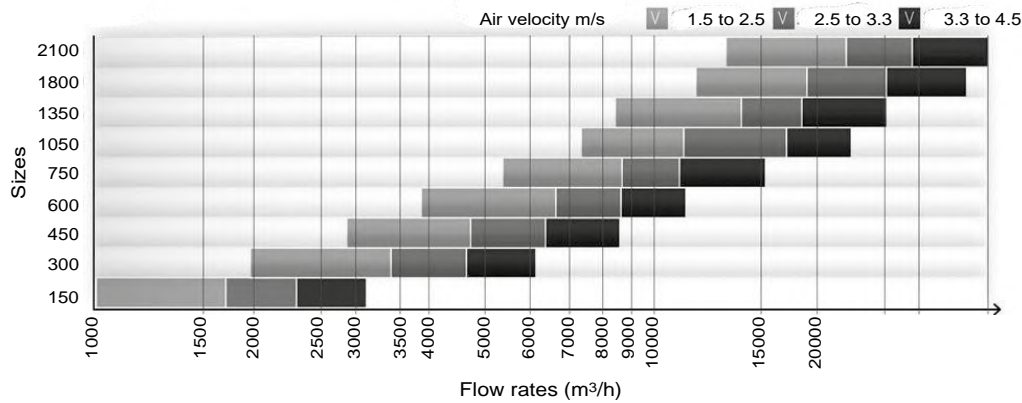
RANGE

The 39CP segment 1 range consists of 9 sizes to handle air flow rates from 1000 to 30,000 m³/h.

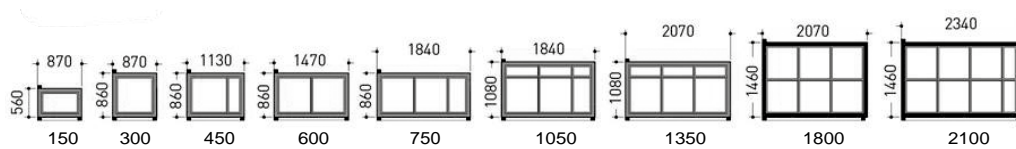
The diagram below is used to pre-select the required size according to:

- The air velocity in the front active section of the heat exchange coils
- The air flow rate to be handled.

Selection table



AHU section by sizes (mm)



GENERAL DESCRIPTION OF THE 39CP RANGES

Casing

- Self-supporting panel construction up to size 2100
- Double-skin panels with 50 mm mineral wool insulation with long fibres with a high insulation coefficient.
- Moulded high strength bi-component polyurethane gaskets for the casing and door, guaranteeing a perfect seal.
- Inside of the AHU is perfectly smooth and even, with no protruding screws, as per the specifications in European standard EN 13053 (no internal handles).
- Doors hung on high quality frames, guaranteeing durability, performance and easy access for maintenance with adjustable hinges, external twist-lock handles and decompression system.
- AHUs delivered in several units are equipped with specific factory-fitted assembly pieces, which ensure perfect alignment to simplify assembly.
- Each component unit of the AHU is equipped with an 80 mm ground insulation frame and multifunction ergonomic supports (handling, assembly).
- Each component is fitted with its own service panels. This allows independent removal for each function.

Standard:

39CP L

- Conventional double-skin panels
- External wall made from sheet metal with RAL 7035 lacquer coating
- Internal wall made from Z275 galvanised steel

39CP H

- Highly-insulated panels, with thermal bridge break profiles
- External wall made from sheet metal with RAL 7035 lacquer coating
- Internal wall made from Z275 galvanised steel

39CP C

- Highly-insulated panels, with thermal bridge break profiles
- External wall made from galvanised steel with RAL 7035 lacquer coating
- Internal wall made from galvanised steel with RAL 7035 lacquer coating

GENERAL DESCRIPTION OF THE 39CP RANGES

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Textured RAL 7035 paintwork on external panels	Standard	Standard	Standard
Textured RAL 7035 paintwork on internal panels	X	X	Standard
Internal and/or external panels in 304 L or Z3CN 18.10 stainless steel	NA	X	X
Internal and/or external panels in 316 L or Z3CND 17.11.02 stainless steel	NA	X	X
Stainless steel indoor baseframe	X	X	X
Sloped stainless steel indoor baseframe with drainage	NA	X	X
Galvanised ground insulation frame (h = 80mm)	Standard	Standard	Standard
Painted frame	X	X	X
Stainless steel frame	NA	X	X
Factory-assembled AHU on common rack : max size 1350 or maximum length 6 m	X	X	X
Container kit (for assembled air handling unit)	X	X	X
Adjustable support feet with 60 mm extension	X	X	X
Fixed extension feet up to 400 mm	X	X	X
Sloped roof for outdoor mounting	X	X	X
Louvres with grilles to match external casing finish	X	X	X
Protective cover for external components to match external casing finish	X	X	X
Factory-fitted cable raceway	X	X	X
Lateral technical unit	NA	X	X
DIN 1946-4 hygienic option	NA	NA	X

X Option

NA Not applicable

Mixing and air intakes

The air inlet and mixing section may be installed at the intake, inserted between the functions or installed at the device outlet.

These functions are equipped with dampers formed of counter-rotating profiled blades, with lateral gaskets, and driven by conrods.

These dampers are installed outside of or inside the casing, depending on the solution chosen.

Independent control of the louvres: manual, motorised or ready to be motorised

The functions provided depend on the selection:

- Isolation damper
- Two-way mixing with air intake
- Two-way flow distributions: top, front or lateral
- Three-way mixing: aligned, stacked or juxtaposed

Depending on the finishes:

39CP L

- Class 1 galvanised steel blades and frame compliant with EN1751

39CP H / 39CP C

- Class 3 aluminium blades and frame compliant with EN1751

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Servomotor operated damper	Kit	Kit	Kit
Manual operated damper	X	X	X
Class 3 damper with defrosting system	X	X	X
Class 4 airtightness damper compliant with EN 1751	NA	X	X
Polyester coated face and bypass dampers (frame and blades)	X	X	X
Stainless steel 304L damper	NA	X	X
ATEX damper	NA	X	X
Stainless steel drain pan	X	X	X
Hinged access door	X*	X*	X*
Lift-off door	X	X*	X*
Porthole on door	X	X	X
230V bulkhead light	X	X	X
Door contact switch	NA	X	X

* Availability depends on the configuration

X Option

NA Not applicable

GENERAL DESCRIPTION OF THE 39CP RANGES

Filters

To meet the requirements of all the applications, a very wide range of filter efficiencies, technologies and dimensions is available.

Across the entire range, and for each type of filter, cells with international dimensions of 24" x 24" and 12" x 24" are available.

On sizes 150 to 1350, compact filters which are 50mm thick are available in full section (FS) to optimise energy consumption.

Different types of filter assembly are available, depending on the efficiency level, technology and location within the AHU.

There are 6 specific assembly systems:

Assembly A available for filters with international dimensions and **Assembly A FS** for filters with a full section

- Traditional tracks designed for efficiency levels G1 to M6:
For Compact cells, 50 mm thick, side door

Assembly B available for filters with international dimensions and **Assembly B FS** for filters with a full section

- Compressible tracks designed for efficiency levels G4 to F9 or Activated Carbon (urban pollution) for Compact cells and flexible or rigid bag with side door.

Assembly C for filters with international dimensions:

- Universal frames designed for efficiency levels G4 to F9, E10 or Activated Carbon (urban pollution) for Compact cells and flexible or rigid bag with access section and side door

Assembly D for Absolute filters with international dimensions

- Absolute large-media frames for EPA and HEPA Absolute cubic cells

Assembly E for Absolute filters with international dimensions

- Absolute plate for EPA and HEPA Absolute cubic cells for industrial applications (e.g. pharmaceuticals).

Assembly F for Cubic carbon filters with international dimensions

- Large-media frames for Activated Carbon cubic cells.

Description	Construction Code	Assembly	Efficiency *	Cell descriptive code
50mm flat metal filter	C	A or C	G1	Galvanised steel metal medium and frame
50mm flat filter	C	A, B or C	G4	Galvanised steel metal frame and synthetic medium
			M5	
			M6	
			F7	
50mm flat filter (full section) up to size 1350	C FS	A FS or B FS	G4	Galvanised steel metal frame and synthetic medium
			M5	
			M6	
			F7	
292mm rigid bag filter	RB	B or C	M6	Polypropylene frame and fibreglass medium
			F7	
			F8	
			F9	
380mm short flexible bag filter	SB	B or C	E10	Galvanised steel metal frame and synthetic medium
			G4	
			M5	
			M6	
600mm long flexible bag filter	LB	B or C	F7	Galvanised steel metal frame and synthetic medium
			M6	
			F9	
			F7	
292mm Absolute filter	CUBIC 610x610	D or E	E10	Polypropylene frame and fibreglass medium
			H13	
			H14	
292 mm rigid bag carbon filter + fine filter, std universal frame	RB	B or C	Carbon+F7	Polypropylene frame, synthetic + carbon medium
Flexible carbon bag filter + 600mm long bag fine filter	LB	B or C	Carbon + F7	ABS frame, synthetic + carbon medium
292mm rigid bag carbon filter	RB	B or C	Carbon	Carbon polypropylene frame
Cubic carbon filter	CUBIC 595x595	F	Carbon	Metal frame + carbon panel

C: 50 mm compact filter
C FS: 50 mm compact filter, full section
RB: 290mm rigid bag filter
SB: 380mm short flexible bag filter
LB: 600 mm long flexible bag filter
CUBIC: 292 mm cubic

* Carrier 39CP software offers the equivalent classification of the filters according the ISO 16890

GENERAL DESCRIPTION OF THE 39CP RANGES

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Lift-off door	Standard	Standard	Standard
Filter pressure tapping	Standard	Standard	Standard
Pressure tapping per filter stage	Standard	Standard	Standard
Additional filter set	X	X	X
Galvanized steel drip tray	X	X	X
Stainless steel drip tray	X	X	X
Liquid manometer (supplied loosely in a kit)	X	X	X
Differential pressure switch	X	X	X
Magnehelic pressure gauge (supplied loosely in a kit)	X	X	X
Magnehelic pressure gauge factory fitted	X	X	X
Double glass porthole	X	X	X
230V bulkhead light (supplied loosely)	X	X	X
230V bulkhead light and wired to external switch	X	X	X
Door contact switch	X	X	X
Filter slide rails painted	X	X	Standard
Filter frame painted	X	X	Standard
304 L or 316 L stainless steel slide rails	X	X	X
Stainless steel frontal access filter frame (fine filters •F")	X	X	X
Painted filter frame (EPA/HEPA filters)	X	X	Standard
Stainless steel filter frame (HEPA filters •H")	X	X	X
Hatch for pressure measurement	NA	X	X
ATEX filters	NA	X	X

X Option

NA Not applicable

Plate heat recovery system

Three efficiency levels available: from 60% to 85%

The plate heat exchangers are always equipped with a total bypass on fresh air and access door to the servomotor

Condensate drain pan on exhaust air side, made from galvanised steel with condensate drain piping as standard

Available in a stacked configuration for all sizes

Access door to the condensate drain pan(s)

In the standard construction, the heat exchanger has aluminium plates, and can be used routinely up to an air temperature of 90°C (if the plate heat exchanger is a component of an AHU, the standard limit temperature is 80°C). The leakage flow rate is 0.1%, the nominal flow rate for a pressure difference of 400 Pa between the 2 air streams.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Pre-painted aluminium plates	X	X	X
Condensate drain pan (exhaust air side) stainless steel	X	X	X
Condensate drain pan (fresh air side) galvanised	X	X	X
Condensate drain pan (fresh air side) stainless steel	X	X	X
Paint on baffle, partition and support	X	X	X
Plate exchangers components made of 304 L or 316 L stainless steel	NA	X	X
Painted bypass damper	X	X	X
Stainless steel bypass damper	NA	X	X
Servomotor or manual damper operation	X	X	X
Pressure tappings in intake and exhaust	Standard	Standard	Standard
Additional access door	X	X	X
Door inspection window	x	x	x

X Option

NA Not applicable General description of the 39CP ranges

GENERAL DESCRIPTION OF THE 39CP RANGES

Rotary heat recovery system

Three efficiency levels available: from 75% to 85%

- Corrugated aluminium fins
- Adjustable peripheral gasket to guarantee a minimum leak flow rate
- Lateral inspection panel

- Constant speed gear motor (230 / 400 V three-phase power supply)
- Maintenance-free ball bearing

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Gear motor and variable frequency drive for variable speeds from 0 to 10 rpm – 230 V single-phase	X	X	X
Coated aluminium heat recovery wheel	X	X	X
Hygroscopic heat recovery wheel (for humidity exchange)	X	X	X
Enthalpic heat recovery wheel (for total power exchange)	X	X	X
Condensates drain pan	NA	X	X
316 stainless steel drain pan	NA	X	X
Indoor panels polyester coated	NA	X	X
Indoor panels in 304 L or 316 L stainless steel	NA	X	X
Pressure tapings	X	X	X
Purge sector	X	X	X
Door porthole	X	X	X

X Option
NA Not applicable

Heating coil

Fluids:

- **Hot water**
 - Construction with copper tubes and aluminium fins.
 - Maximum primary fluid temperature = 120 °C.
 - Operating pressure for water: 8 bar as standard - Higher pressures on consultation.
 - Removable sealing flanges between the casing and manifolds (up to 3" diameter prevent damage to the sealing system during connection operations).

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:

- Copper tubes with unions up to a diam. of 2"1/2.
- Grooved steel tubes for larger diameters.

- **Superheated water**
 - Construction with steel tubes and aluminium fins.
 - Maximum primary fluid temperature = 200 °C.
 - Operating pressure for water: 30 bar max.
 - Supply manifolds and tubes made from steel with smooth ends.
- **Refrigerant**
 - Construction with copper tubes and aluminium fins.
 - Supply tubes made from copper with smooth ends.
- **Steam**
 - Max pressure 2 to 8 bar - stainless steel tubes, aluminium fins.
 - Manifolds and supply tubes are stainless steel tubes with smooth ends

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Smooth pipe coil (without fins)	X	X	X
Superheated water coil	X	X	X
Steam coil	X	X	X
Condensation coil	X	X	X
Pressure tapping, upstream and downstream	X	X	X
Precoated fins/ max. primary fluid temperature 110°C	X	X	X
Stainless steel water coil	X	X	X
ALTENA treatment, max. temperature 160°C	X	X	X
BLYGOLD treatment, max. temperature 90°C	X	X	X
HERESITE treatment, max. temperature 180°C	X	X	X
Copper fins coil	X	X	X
304 L or 316 L stainless steel tracks	X	X	X
304 L or 316 L stainless steel slide rails	X	X	X
Standard screw flanges	Kit	Kit	Kit
Stainless steel screw flanges	Kit	Kit	Kit
Quick connections kit (copper tubes) (victaulic type)	Kit	Kit	Kit
Threaded connections (steel tubes)	Kit	Kit	Kit
Frost protection thermostat (manual reset)	X	X	X
Frost protection thermostat with automatic reset (supplied loose item)	X	X	X
Frost protection thermostat with automatic reset (factory fitted)	X	X	X

X Option
NA Not applicable

GENERAL DESCRIPTION OF THE 39CP RANGES

Electric heater

- Shielded resistors in stainless steel scrolled finned tubes
- Connected to copper strips.
- Double insulation assembly.

- Equipped with two safety thermostats: first with manual reset, second with automatic reset.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Slide rails painted	X	X	X
304 L or 316 L stainless steel slide rails	X	X	X
304 L or 316 L stainless steel coil casing	X	X	X
Single- or three-phase connection	X	X	X

X Option

NA Not applicable

Cooling coil

- Chilled water / direct expansion coil
- Construction with copper tubes and aluminium fins.
- Operating pressure for water: 8 bar as standard - Higher pressures on consultation.
- Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
- Droplet separator as standard if necessary, as an option on request.
- Removable sealing flanges between the casing and manifolds up to 3" diameter, preventing damage to the sealing system during connection operations.

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:

- Copper tubes with unions up to a diam. of 2"1/2.
- Grooved steel tubes for larger diameters.
- Direct expansion evaporation
 - Construction with copper tubes and aluminium fins.
 - Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
 - Droplet separator as standard if necessary, as an option on request.
 - Standard smooth copper refrigerant supply tubes (supplied capped)
 - Manifold on fluid intake as standard.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Chilled water coil	X	X	X
Direct expansion evaporation coil	X	X	X
Access panel on droplet separator	as standard if compulsory		
Precoated fins/ max. primary fluid temperature 110°C	X	X	X
Stainless steel tubes coil	X	X	X
Copper fins coil	X	X	X
ALTENA treatment, max. temperature 160°C	X	X	X
BLYGOLD treatment, max. temperature 90°C	X	X	X
HERESITE treatment, max. temperature 180°C	X	X	X
Slide rails painted	X	X	X
Stainless steel slide rails	X	X	X
304 L or 316 L stainless steel coil casing	X	X	X
316 L stainless steel condensate drain pan	X	X	X
316L stainless steel hygienic drain pan	NA	X	X
Insulated drain pan (cell foam)	X	X	X
Headers/elbows insulation	X	X	X
All stainless steel droplet separator (frame and medium)	X	X	X
Polypropylene blade droplet separator, galvanised frame	X	X	X
Polypropylene blade droplet separator, stainless steel frame	NA	X	X
Aluminium blade droplet separator, galvanised frame	NA	X	X
Aluminium blade droplet separator, stainless steel frame	NA	X	X
Pressure tapping, upstream and downstream	X	X	X
Standard screw flanges	Kit	Kit	Kit
Stainless steel screw flanges	Kit	Kit	Kit
Tubes with quick connections (copper tubes) (victaulic type)	Kit	Kit	Kit
Threaded connections (steel tubes)	Kit	Kit	Kit
Frost protection sensor support	X	X	X

X Option

NA Not applicable

GENERAL DESCRIPTION OF THE 39CP RANGES

Fans

- Forward-curved dual-inlet fan.
- Backward-curved dual-inlet fan.
- Steel scroll and impeller.
- Belt and pulley transmission on the dual-inlet fans.
- Assembly on anti-vibration frame with flexible internal sleeve and damper mounts.
- Metal impeller plug fan turbine with AC motor
- Assembly on anti-vibration frame with flexible internal sleeve and damper mounts.
- Standard motor: asynchronous three-phase, 230 / 400 V
- 50 Hz up to 3 kW - 400 V - 50 Hz from 4 kW, IP 55 protection, class F with PTC
- Steel plug fan with EC motor with integrated variator, three-phase 400 V n- 50 Hz
- Inspection hatch with bolts in compliance with the "MECHANICAL SAFETY" specification in the EN 1886 standard and the machinery directive.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Forward curved centrifugal fan with pulley belt transmission	X	X	X
Backward curved centrifugal fan with pulley belt transmission	X	X	X
Plug fan with asynchronous motor	X	X	X
EC plug fan	X	X	X
ATEX fan	NA	X	X
Flush mounted panel	X	X	X
Access panel mounted on hinges	Standard	Standard	Standard
Pressure tappings	X	X	X
Door contact switch	X	X	X
Panel window	X	X	X
Smoke detector (NF S61961)	X	X	X
230V Bulkhead light (supplied loose item)	X	X	X
230V Bulkhead light fitted and wired to an external switch	X	X	X
Anticorrosion painting for wheel and motor assembly (centrifugal and AC plug fan motor)	X	X	X
Stainless steel wheel and motor assembly (centrifugal and AC motor plug fan)	NA	X	X
Anticorrosion painting for EC fan wheel	NA	X	X
Protection grill for centrifugal fan	X	X	X
Screened door protection	X	X	X
Housing for belt - pulley transmission	X	X	X
2 motors set in parallel	X	X	X
Motor support on rails	X	X	X
Variable frequency drive (supplied loose item)	X	X	X
Variable frequency drive factory fitted	X	X	X
Door switch factory fitted	X	X	X
Door switch (supplied loose item)	X	X	X
Anti recirculation damper for fan	X	X	X

X Option
NA Not applicable

Sound attenuator

- Different lengths of baffle depending on the required attenuation.
- Mineral wool of different densities, the faces are covered with an anti-erosion shield.
- Galvanised panels.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Baffle lengths (in mm)	600 - 900 - 1200 - 1500		
Anti shredding glass cloth	NA	X	X
Polyester coated slide rails	X	X	X
Epoxy painted sheet metal baffles	X	X	X
304 L or 316 L stainless steel rails	X	X	X
Ground wire for ATEX applications	NA	X	X

X Option
NA Not applicable

GENERAL DESCRIPTION OF THE 39CP RANGES

Standalone production steam humidifier

With steam production (standalone with electrodes)

The supply includes

- Aluminium steam distributor.
- Steamer with electrical cabinet and controller (IP20).
- Proportional or on/off control.

- Duct/cylinder connection.

- Condensate return tubes and connections.
- Three-phase 400 V - 415 V supply voltage depending on capacity
- Min and max supply water conductivity limits 125 - 1250 microsiemens/cm (8000 - 800 ohm).
- Hardness of supply water 15 - 30 degrees (French).

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Stainless steel	X	X	X
Galvanised droplet separator	X	X	X
Stainless steel droplet separator	X	X	X
Double glass porthole	X	X	X
230V Bulkhead light factory fitted and wired to an external switch	X	X	X
Flush mounted panel	X	X	X
Door contact switch	X	X	X

X Option

NA Not applicable

Control

The electrical box is integrated into the unit and the electrical cables are protected by an enclosed cable raceway, factory-fitted.

The unit can be supplied as a single unit, equipped with a control which is fully assembled and tested in the factory if it is formed of one block, or a multi-block assembled on the optional multi-block frame.

Plug & Play solution: the electrics box is powered by a 400 V + earth power supply

The control software for the 39CP range enables the following:

- Temperature regulation*: sensor on supply air / return air / room air
- Humidification and dehumidification regulation*: sensor on return or room air
- Fan management: constant flow / constant pressure
- Filter fouling management (4-stage filtration as maximum)
- Single-zone air quality management (CO₂) sensor on return air or room air
- Water coils: cooling/heating/mixed/direct expansion (3 maximum)
 - 2-way valve
 - Three-way valve.

- Electric heater (4-stage heaters as maximum)

- Proportional and On/Off control
- 1 TRIAC type proportional stage (compulsory)
- Independent power supply, control by the AHU PLC.

- Steam humidifier with electrode:

- Independent power supply, control by the AHU PLC.
- Management of cooling modes: Free cooling / Night cooling

- Management of frost protection faults

- Fire protection

- Communication board available:

- Modbus RTU RS485 / Modbus TCP IP / KNX / LON / BACNET IP

The control does not enable the following elements to be managed:

- Steam coil / Superheated water coil / Glycol/water mix coils / Condenser coil
- Make-up / gas burner
- Adiabatic humidifier

* availability depends on options; see specific control document

Extra accessories:

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Flexible sleeves	X	X	X
Insulated flexible sleeves for the outside of the casing	X	X	X
Rain protection hood (supplied with grill)	X	X	X
Additional protection grill	X	X	X
Factory-assembled AHU on common rack : max size 1350 or maximum length 6 m	X	X	X

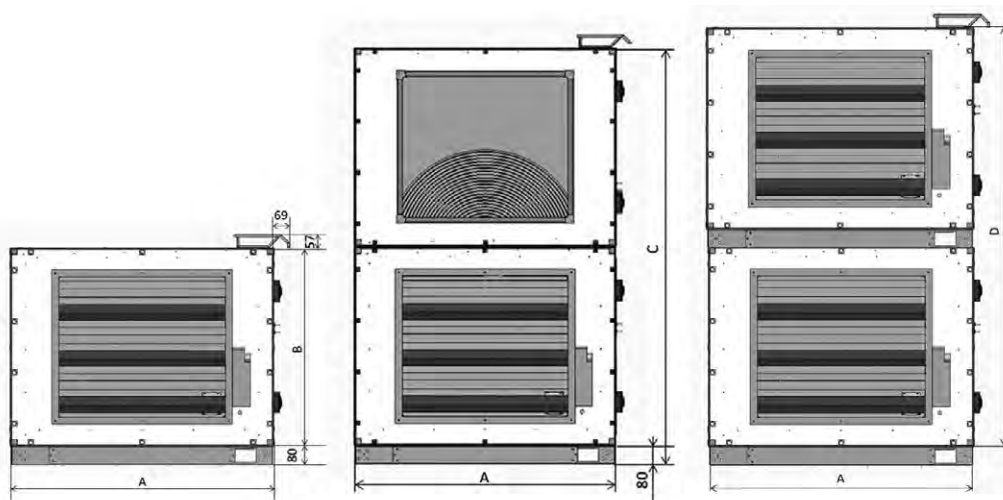
X Option

NA Not applicable

DIMENSIONS

External dimensions and raceway details*

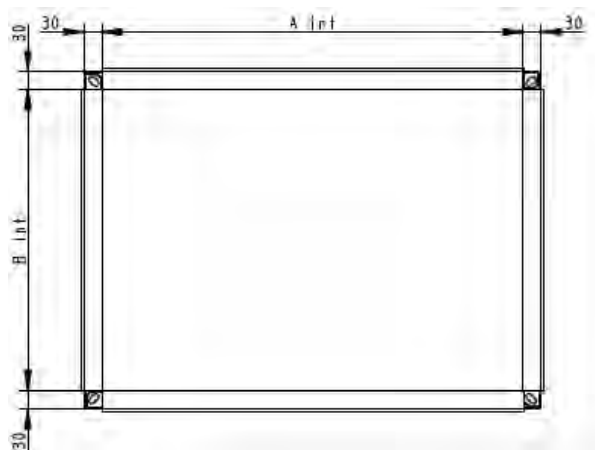
* raceway optional



Sizes	Casing external dimension				Block length*
	A	B	C	D	
150	870	560	1122		250 < L < 2800
300	870	860	1722		250 < L < 2800
450	1130	860	1722		250 < L < 2800
600	1470	860	1722		250 < L < 2800
750	1840	860	1722		250 < L < 2800
1050	1840	1080	2162		250 < L < 2800
1350	2070	1080	2162		250 < L < 2800
1800	2070	1460		3000	250 < L < 2800
2100	2340	1460		3000	250 < L < 2300

* Length excluding the unit end panel

Connection flanges



- Reference 00: Lateral air intake
- Reference 1: Air intake, small section
- Reference 2: Air intake, large section
- Reference 3: Scroll fan discharge air intake

39CP L		150	300	450	600	750	1050	1350	1800	2100
39CP H										
39CP C										
Reference 00 - LATERAL	A	320	320	470	620	720	770	970	870	970
	B	370	670	670	670	670	870	870	1270	1270
Reference 1 - SMALL SECTION	A	515	515	775	1115	1485	1485	1715	1715	1985
	B	220	370	370	370	370	470	470	670	670
Reference 2 - LARGE SECTION	A	515	515	775	1115	1485	1485	1715	1715	1985
	B	370	670	670	670	670	870	870	1270	1270
Reference 3: FAN DISCHARGE	A	-	520	520	520	520	620	620	920	920
	B	-	520	520	520	520	620	620	920	920

AIR HANDLING UNITS



39HQ

Air flow 5000-130000 m³/h

Airovision is a modular construction that can be fully customised to provide the required performance for any application.

Special new casings encompass only high-quality components, including filters, heat recovery systems, fan assemblies, cooling and heating coils, humidifiers and attenuators.

The Airovision range also pays special attention to air quality and reduction of the energy required to cool, heat, humidify and supply the conditioned air.

Airovision is available in a large selection of sizes and arrangements, suitable for many different applications.



Controls (Option)

AIROVISION®



www.eurovent-certification.com

OPTIONS

- 100% stainless steel
- Direct-drive fans
- All types of humidification systems, including infrasonic
- Flat pack option for site assembly
- Heat recovery systems (run-around coil, plate heat exchanger and thermal wheels)
- Wide selection of standard accessories
- 316L stainless steel drain pan with PVC wall lining in the outside air inlet section and filter section
- Plug fan EC motors
- Pro-Dialog controller with human interface (local or remote installation)

FEATURES AND ADVANTAGES

- Airovision is a modular construction that can be fully customised to provide the required performance for any application.
- Special new casings encompass only high-quality components, including filters, heat recovery systems, fan assemblies, cooling and heating coils, humidifiers and attenuators.
- The Airovision range also pays special attention to air quality and reduction of the energy required to cool, heat, humidify and supply the conditioned air.
- Airovision is available in a large selection of sizes and arrangements, suitable for many different applications.
- Applications include leisure and event complexes, theatres, museums, libraries, offices in companies and government institutions, shopping centers, super-markets, department stores and educational establishments, as well as oil drilling rigs, airports and cruise ships.
- In addition Airovision is also ideal in health care and in industries with stringent hygiene requirements.

Environmentally sound

- No paint treatment required after the production process
- 100% recyclable components
- Low energy usage due to optimised component selection
- High-efficiency heat recovery systems available

Technical specification (in accordance with EN1886)

- Heat transfer factor class T2
- Thermal bridging factor TB 2
- Air tightness class B (L2)
- Mechanical strength class 1A (DI)
- Filter bypass leakage
 - class F7 for standard slide-in construction
 - class F9 for special slide-in construction
 - class F9 for built-in construction

High-efficiency centrifugal fan



Special sorption heat recovery wheels



Filters are easily removable



Generously sized access doors



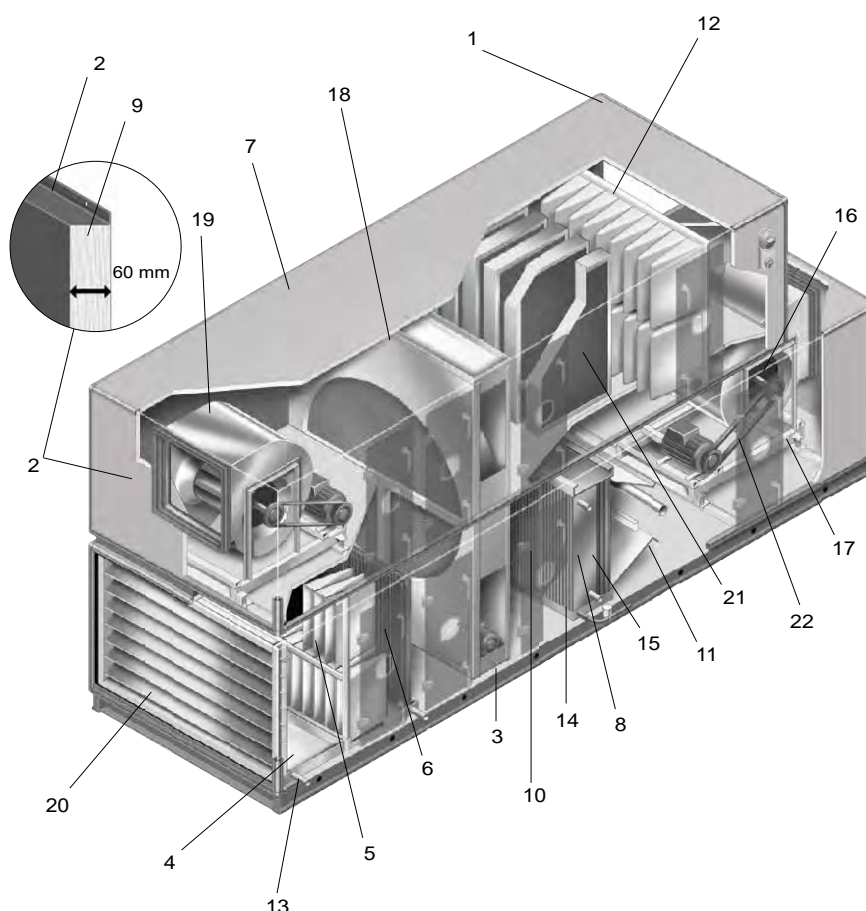
FEATURES AND ADVANTAGES

Rigid construction

- 1 Carrier profiled steel frame construction with purpose-built corner and center posts
- 2 Panels with 60 mm thick thermal insulation
- 3 Robust base frame made of galvanised steel box profile

High corrosion resistance

- 4 316L stainless steel drain pan with PVC wall lining in the outside air inlet section and filter section (option)
- 5 Filters held in 316L stainless steel frames
- 6 Anti-corrosion protection available
- 7 Internal and external panels made of high-quality prepainted galvanised sheet steel
- 8 Cooling coils with integrated stainless steel drain pan and plastic droplet eliminator housed in an aluminium frame
- 9 Special panel design and frame detail eliminate the risk of condensation forming in the panels



Easy maintenance

- 10 Various inspection options with generously sized clear opening access doors
- 11 Completely smooth internal surfaces
- 12 Filters easily removable
- 13 Drain pan in the outside air inlet section and filter section equipped with drain (option)
- 14 Cooling coil drain pan fully accessible for cleaning/disinfection
- 15 Moisture eliminator after the cooling coil easily removable
- 16 Long-life fan and motor bearings
- 17 Fans removable from the side

High-quality built-in components

- 18 Special sorption heat recovery wheels for optimised recovery of heat, cold and humidity
- 19 High-efficiency centrifugal low-noise fans, mounted on vibration isolators with low transmission factor
- 20 Aluminium dampers with UV-resistant double nylon bearings
- 21 Skrim faced sound absorption splitters
- 22 Matched high-efficiency belt drives

FEATURES AND ADVANTAGES

Central station air handling unit range (based on a nominal filter loading of 1.11 m³/s)

Width \ Height	4	5	6	7	8	9	10	11	12	13	14
2.5	0.56	0.69	0.83								
4	1.11	1.39	1.67	1.81	2.22	2.50	2.78	3.06	3.33		
6	1.67	2.22	2.50	2.92	3.33	3.75	4.17	4.72	5.00	5.56	5.83
8			3.33	3.89	4.44	5.00	5.56	6.11	6.67	7.22	7.78
10					5.56	6.39	6.94	7.64	8.33	9.03	9.72
12						7.50	8.33	9.17	10.00	10.83	11.67
14									11.67	12.78	13.61
16										14.44	15.56
18											
20											

Width \ Height	15	16	17	18	19	20	21	22	23	24	25
2.5											
4											
6	6.39	6.67	7.22	7.50							
8	8.33	8.89	9.44	10.00	10.56	11.11	11.67	12.22	12.78	13.33	
10	10.56	11.11	11.94	12.50	13.33	13.89	14.72	15.28	16.11	16.67	17.50
12	12.50	13.33	14.44	15.00	15.83	16.67	17.50	18.33	19.17	20.00	20.83
14	14.72	15.56	16.67	17.50	18.61	19.44	20.56	21.39	22.50	23.33	24.44
16	16.67	17.78	18.89	20.00	21.11	22.22	23.33	24.44	25.56	26.67	27.78
18				22.50	23.89	25.00	26.39	27.50	28.89	30.00	31.39
20						27.78	29.17	30.56	31.94	33.33	34.72

Preferred range
 Combination with heat recovery
 Other sizes

Note: All air flow values are in m³/s. Larger unit sizes are possible.

Module dimension : 160 mm

External width : n x module plus 98 mm

External height : n x module plus 98 mm

Base frame height : 60 mm or 62 mm

Example : type 39HQ12.10

Width : 12 x 160 plus 98 = 2.018 mm

Height : 10 x 160 plus 98 = 1.698 mm

Nominal air flow : 8.33 m³/s

AIR HANDLING UNIT



39CZ

Air flow: 1000 to 610000 m³/h

The 39CZ range is designed for the service sector, industry and healthcare markets, to meet different requirements in terms of air mixing, filtration, heating, refrigeration, dehumidification, humidification, ventilation, recovery and sound attenuation. It is available as a horizontally-mounted version for installation indoors or outdoors with a roof and protection accessories. The range is available in a single or dual-flow version.

Thanks to the broad spectrum of solutions on offer, and the product's excellent modularity, the specifications for this product will always comply with the EN 13053 and EN 1886 standards, whatever its configuration.

AHU for all applications

Designed to meet the
EN 13053 and EN 1886
standards

The effective solution for
service sector, industry and
healthcare applications



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

USE

External wall with RAL 7035 paint

Compliance with the provisions of the EN 13053 standard

Classification in accordance with European standard EN 1886

Casing resistance: class D1

Casing airtightness: class L1

Filter bypass leak: class F9

Thermal transmittance: class T2

Thermal bridge factor: class TB2

RANGE

The 39CZ range consists of 14 sizes to handle air flow rates from 1000 to 66,000 m³/h.

The diagram below shows how to preselect the necessary size based on:

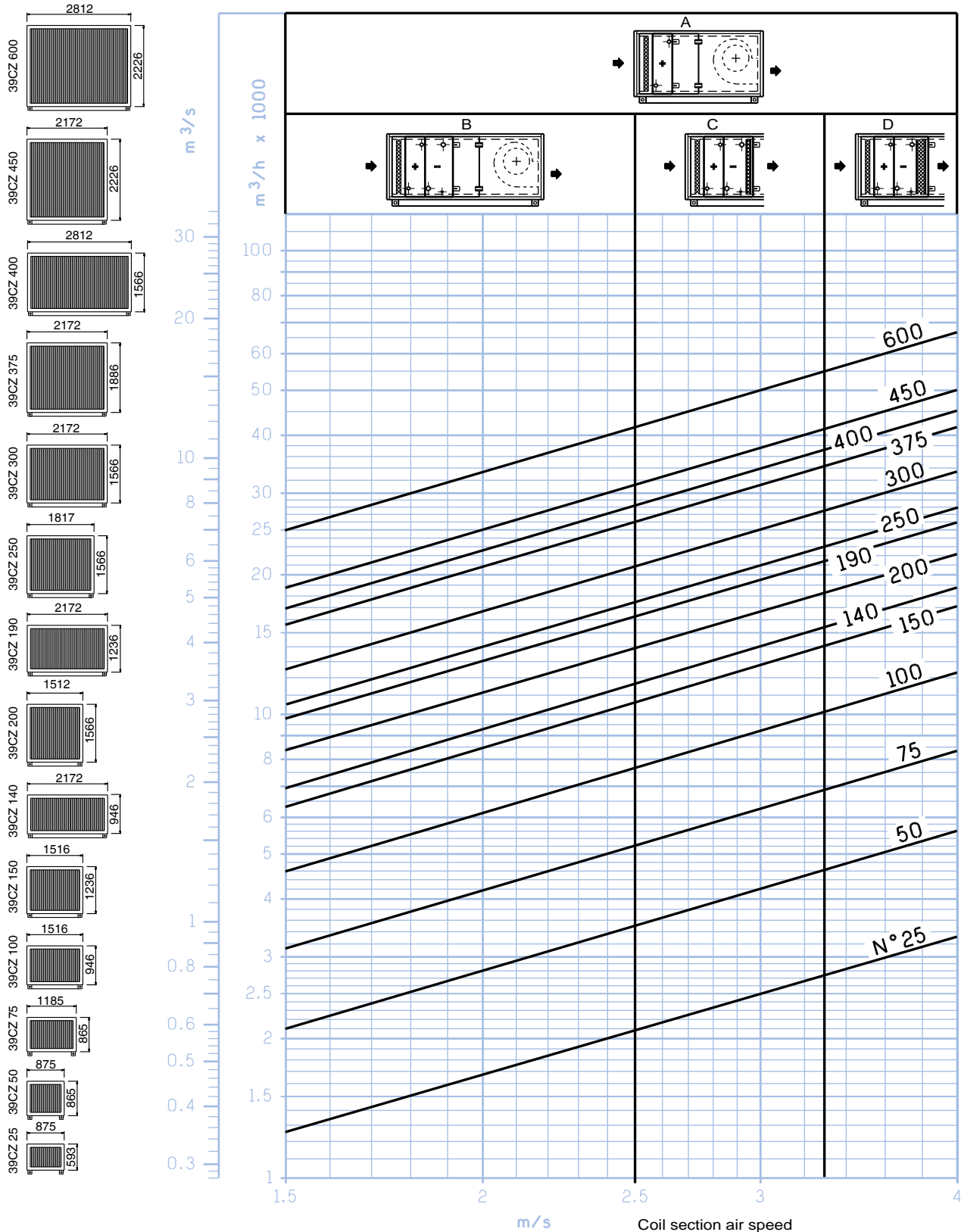
- The flow speed in the active front section of the exchanger coils.
- The air flow rate to be handled.



RANGE

The diagrams show the standard compositions with the usage limit corresponding to the components.

- Air heater (A).
- air conditioning unit without droplet separator (B).
- With drain screen separator (C).
- With blade-type separator (D)



DESCRIPTION

Casing

- Double-skin panel with 50 mm mineral insulation with long fibres reinforced by welded fibreglass material,
- Peripheral frame fitted or mounting brackets in stainless steel,
- Depending on the size, double-skin panels, galvanised, coated, smooth walls with no protruding screws as per EN 13053.

Construction structure depending on AHU sizes.

- Sizes 25 to 75: self-supporting panels with aluminium vertical uprights.
- Sizes 100 to 150: panels screwed onto an aluminium structure sunk into the casing.
- Sizes 200 to 600: panels screwed onto an aluminium double honeycomb structure offering high resistance to flexing.

- Air handling units consist of multi-block components or mono-block components if the composition and size allow.
- All of our blocks can be disassembled on the installation site.

At least one removable panel per function in accordance with EN 13053, access panel as standard on functions requiring maintenance.

Lift-off panels on offset hinges, equipped with slow closing latches in composite material, polyamide handles, large section square porthole in accordance with EN 13053.

OPTIONS AVAILABLE PER RANGE	39CZ ST	39CZ CL & HE
Adjustable support feet + 35/+ 60 mm	X	X
Support feet risers up to 400 mm	X	X
Stainless steel ground insulation casing (h: 100)	X	X
Epoxy or polyurethane paint on int. and ext. panels	X	X
Int. and ext. panels in pre-painted RAL 9010 sheet metal		standard
Int. and ext. panels in 304 L stainless steel or Z3CN 18.10	X	X
Flat stainless steel base	X	X
Inclined stainless steel base (per block)	X	X
Reinforced insulation	X	X
Roof for OUTDOOR model	X	X
Screened canopies for OUTDOOR model	X	X

Damper

- Isolation damper
- Safety damper (CH38)
- Control damper

All the dampers consist of airfoil blades, counter rotating with lateral seals and driven by toothed wheels or control rods. Steel frame and aluminium blades on 39CZ ST CL & HE Class 3 in accordance with EN1751. These dampers are installed on the inside or outside of the casing, depending on the solution chosen. Louvre control: manual, motorised or to be motorised.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Servomotor	kit	kit
Mechanism electric heaters <-25°C	X	X
Toothed wheels	standard	standard
Control rods	X	X
Class 4 sealing in accordance with EN 1751		X
Polyurethane frame paint	X	standard
Polyurethane or epoxy paint on louvres and frames	X	X
Frame and dampers in stainless steel sheet		X

DESCRIPTION

Boxes

Air intake boxes (AHU intake)

Single air intake, mixing, economiser mixing.

Air discharge box (AHU discharge)

Directional, distribution.

Assembly of combined louvres outside or inside the casing for the task defined by the section chosen. Manual control, motorised or to be motorised.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL&HE
Servomotor	kit	kit
Mechanism electric heaters for fresh air at a temperature < -25°C	X	X
Toothed wheels	standard	standard
Control rods	X	X
Class 4 sealing in accordance with EN 1751		X
Galvanised safety base with drain	X	X
Stainless steel sheet safety base with drain	X	X
Polyurethane or epoxy paint on louvres and frames	X	X
Lighting not connected (if access provided)	kit	kit
Lighting wired to switch (if access provided)	X	X
Double glass porthole	X	X
Lift-off panel (louvres control on opposite side)	X	X
Hinged door (louvres control on opposite side)	X	X

Filters

- G2 & G4 efficiency, M5 to F9, H10 to H14 (with the equivalence of the new ISO 16890 filtration standard) or activated carbon with international dimensions mounted on compressible tracks, on universal frame or large-media frames with pressure tapings on each filtration stage, EN 1886 Filter bypass leakage classification (F9 classification).
- Fitting system equipment for filter cells for all 3 ranges.

- Filter cells with international dimensions 24" x 24" and 12" x 24".
- Efficiency classification in accordance with EN 779 from G2 to F9.
- Efficiency classification in accordance with EN 1822 from H10 to H14.

■ 4 Standardised assembly systems

Assembly 0: traditional tracks for full section G4 cells.

Assembly 1: compressible tracks (horizontal extension), G2 and G4 efficiency, 65 to 90 % gravimetric (GRAVI) efficiency with side door.

Assembly 2: compressible tracks (horizontal and vertical extension), M5 to F9 efficiency, 40 to 98 % opacimetric (OPA) efficiency with side door.

Assembly 3: 3U universal frames or 3B large-media frames, M5 to H10 efficiency for universal frames, 40 % OPA to 85 % MPPS efficiency, H10 to H14 efficiency for large-media frames, 85 to 99.995 % MPPS efficiency.

Activated carbon: a model with activated carbon cells for urban pollution can also be installed in assembly 2 or 3 (universal frame); another for specific pollution must be installed in a large-media frame.

ASSEMBLY	0	1	2	3U	3B
F1 efficiency G2		X			
F2 efficiency G4	X	X		X	
F3 efficiency G4			X	X	
HEP efficiency M6/F7			X	X	
HPS efficiency M5/F8			X	X	
FHPS efficiency G4 + F6/F8			X	X	
HPR efficiency M5/F9			X	X	
HPR efficiency H10				X	
H10 to H14					X
HPR CARB urban pollution				X	
CARBOC specific pollution					X

DESCRIPTION

■ Name of filters selected

Application	CARRIER	Construction material		Classification	Efficiency		Construction	
		Frame	Medium					
Prefilter	F1	Galv.	Galv. or stainless steel	G2	Gravimetric	65%	Flat filter	
	F2		Synthetic	G4		90%	pleated filter	
	F3			G4		90%	short bag	
High efficiency filter	HEP1		fibreglass	M6	Opacimetric	65%	pleated filter	
	HEP2					F7		85%
	HEP3					F8		95%
	M5		Fibreglass or synthetic	M5		< 65%	Short or long bag	
	HPS1			M6		65%		
	HPS2			F7		85%		
	HPS3	F8		95%				
	FHPS1	Synthetic	G4+M6	90% Grav + 65% Opa				
	FHPS2		G4+F7	90% Grav + 85% Opa				
	FHPS3		G4+F8	90% Grav + 90% Opa				
	Absolute filter	HPR1	Polypropylene +ABS	Fibreglass		M6	65%	Deep smooth dihedral
		HPR2				F7	85%	
		HPR3				F8	95%	
		HPR4				F9	98%	
HPR H10		ABS			E10	85% MPPS		
H10	E10		85% MPPS					
H12	E12		99.5% MPPS					
H13	H13		99.95% MPPS					
H14	H14		99.995% MPPS					
Activated carbon filter	HPR CARB	Polypropylene	Synthetic	Urban pollution			Deep dihedral	
	CARBOC	Galv.	Nonwoven + carbon	Specific pollution			Dihedral carbon squares	

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Lift-off panel or hinged door	X	X
Galvanised safety container	X	X
Stainless steel safety container		X
Pressure tapping per filter stage	standard	standard
Liquid pressure gauge	kit	kit
Contact pressure gauge	kit	kit
Magnehelic pressure gauge	kit or assembled	kit or assembled
Double glass porthole	X	X
Lighting not connected	kit	kit
Lighting wired to switch	X	X
Door contact	kit or assembled	assembled
Polyurethane or epoxy paint on tracks and frames	X	X
Paint on frame:	X	standard
polyurethane	X	
Stainless steel tracks	X	standard
Stainless steel universal frame (•F" fine filters)	X	X
Stainless steel large-media frame (HEPA •H" filters)	X	X
Pressurised door (assembly 3 downstream of the fan)	standard	standard
Opening for DOP injection/Hatch for DOP measurement		X

DESCRIPTION

Heating coil

- For hot water
 - Construction with copper tubes and aluminium fins.
 - Maximum primary fluid temperature = 120 °C.
 - Operating pressure for water: 8 bar as standard - Higher pressures on consultation.

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:

- Copper or steel tubes with unions up to 3" diameter.
 - Steel tubes with smooth ends for larger diameters.
 - Removable sealing flanges between the casing and manifolds (up to 3" diameter prevent damage to the sealing system during connection operations).
- For superheated water
 - Construction with steel tubes and aluminium fins.
 - Maximum primary fluid temperature = 200 °C.
 - Operating pressure for water: 30 bar max.
 - Supply manifolds and tubes made from steel with smooth ends.

- For refrigerant fluid
 - Construction with steel tubes and aluminium fins.
 - Supply tubes made from copper with smooth ends.
- For steam (on consultation)
 - Low pressure < 2 bar - copper tubes, aluminium fins.
 - High pressure 2 to 8 bar - cupronickel or stainless steel tubes depending on the size of the AHU, the pressure and the steam quality.
 - Supply manifolds and tubes made from steel or stainless steel with smooth ends.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Hot water coil in stock	X	X
Standard circuit coil	X	X
Superheated water coil	X	X
Steam coil	X	X
Condensation coil	X	X
Antifreeze probe slide	X	X
Frost protection thermostat supplied in a kit	X	X
Frost protection thermostat supplied mounted	X	X
Pressure tapplings, upstream and downstream	X	X
Precoated fins/primary fluid max. T° 110°C	X	X
Coil with ALTENA treatment max. T° 160°C	X	X
Coil with HERESITE treatment max. T° 180°C	X	X
Copper fins	X	X
Galvanised steel safety container	X	X
Stainless steel safety container	X	X
Epoxy paint on tracks	X	standard
Stainless steel tracks	X	X
Stainless steel coil panels	X	X
Screw flanges and counter-flanges	kit	kit
Tubes with quick connections	X	X

Electric heater

- Shielded resistors in scrolled stainless steel finned tubes
- Connection to copper strips.
- Double insulation assembly.
- Safety thermostat with automatic and manual reset as standard.

- To commission the heater: refer to the manual supplied with each unit.
- Take the necessary precautions to prevent abnormal heating when the fan is switched off (ensure post ventilation).

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Safety thermostat with automatic reset	standard	standard
Three-phase or single-phase connection	X	X
Painted tracks	X	standard
Stainless steel tracks	X	X
Stainless steel heater panels	X	X

DESCRIPTION

Cooling coil

Inclined condensate drain pan in accordance with EN 13053,

■ Chilled water

- Construction with copper tubes and aluminium fins.
- Operating pressure for water: 8 bar as standard - Higher pressures on consultation.
- Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
- Droplet separator as standard if necessary, as an option on request.

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:

- Copper or steel tubes with unions up to 3" diameter.
- Steel tubes with smooth ends for larger diameters.
- Removable sealing flanges between the casing and manifolds up to 3" diameter prevent damage to the sealing system during connection operations.

■ Direct expansion evaporation

- Construction with copper tubes and aluminium fins.
- Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
- Droplet separator as standard if necessary, as an option on request.
- Standard smooth copper refrigerant supply tubes (supplied capped)
- Manifold on fluid intake as standard.
- Removable panel for accessing the expansion valve and solenoid valve incorporated in the casing (the valve and solenoid valve may be supplied assembled if the coil is connected to a CARRIER condensation unit).

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Chilled water coil in stock	X	X
Standard circuit chilled water coil	X	X
Direct expansion evaporation coil	X	X
Access panel on droplet separator	as standard if compulsory	
Pressure tapings, upstream and downstream	X	X
Precoated fins	X	X
Coil with ALTENA treatment	X	X
Coil with HERESITE treatment	X	X
Copper fins	X	X
Stainless tube exchanger, aluminium fins	X	X
Stainless steel condensate drain pan	X	standard
Heat insulation of pan, elbows and manifolds	X	X
Painted tracks	X	standard
Stainless steel tracks	X	X
Hygiene pan		X standard on HE
Stainless steel heater panels	X	X
Fully galvanised droplet separator	as standard if compulsory	
Droplet separator with galvanised frame, stainless steel medium	X	X
100% stainless steel droplet separator, frame and medium	X	as standard if compulsory
Droplet separator with polypropylene blades	as standard if compulsory	
Screw flanges and counter-flanges	kit	kit
Tubes with quick connections	X	X

DESCRIPTION

Adiabatic humidifiers

■ Spray - Efficiency 80 to 90%

- Stainless steel module with sloped bottom, door for inspection, maintenance and replacement of the drain screens and droplet separator.

- 2 or 3 spray ramps (depending on efficiency).
- Drain screens.
- Water tank with its supply equipment.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
400 V three-phase pump and recirculation accessories	X	X
Double glass porthole	X	standard
Lighting not connected	kit	kit
Lighting connected on switch	X	X
Droplet separator with galvanised frame with stainless steel mesh	X	standard
Fully stainless steel droplet separator	X	X
Water tank pan spray washer	X	X
Hydraulic connection for UV treatment of recirculated water	X	X

Steam humidifiers

■ Without steam production

The supply includes:

- Stainless steel steam distributor
- Permissible steam pressure range (0.2 to 3.5 bar)
- Cast iron steam/water separator

- Main steam valve
- 24 V or 240 V on/off or progressive servomotor

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Galvanised steel safety container	X	X
Stainless steel safety container	X	X
Fully galvanised droplet separator	X	X
Droplet separator with galvanised frame, stainless steel mesh	X	X
Fully stainless steel droplet separator	X	X
Double glass porthole	X	X
Lighting not connected	kit	kit
Lighting connected on switch	X	X
Lift-off panel	X	X

■ With steam production (standalone with electrodes)

The supply includes:

- Aluminium steam distributor.
- Steamer with electrical cabinet and controller (IP 20).
- Proportional or on/off control.
- Humidity controller or control sensor.
- Duct/cylinder connection.

- Condensate return tubes and connections.
- 230 V single-phase or 400 V - 415 V three-phase supply voltage.
- Min and max supply water conductivity limits 125 - 1250 microsiemens/cm (8000 - 800 ohm).
- Hardness of supply water 15 - 30 degrees (French).

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Galvanised safety container	X	X
Stainless steel safety container	X	X
Fully galvanised droplet separator	X	X
Droplet separator with galvanised frame, stainless steel mesh	X	X
Fully stainless steel droplet separator	X	X
Double glass porthole	X	standard
Lighting not connected	kit	kit
Lighting connected on switch	X	standard
Lift-off panel	X	X

■ With steam production (standalone with heaters) on consultation

DESCRIPTION

Fans

- Forward-curved dual-inlet fan.
- Backward-curved dual-inlet fan.
- Plug fan.
- EC plug fan.
- Steel scroll and impeller.
- Assembly on anti-vibration frame.
- Connection via internal flexible sleeve.
- Ball bearings mounted in fan inlets.
- Belt and pulley transmission on the dual-inlet fans.
- Standard motor: asynchronous three-phase, 230 / 400 V
- 50 Hz up to 4 kW - 400 V - 50 Hz from 5.5 kW, IP 55 protection, class F with PTC.
- Inspection hatch with bolts in compliance with the "MECHANICAL SAFETY" specification in the EN 1886 standard and the machinery directive.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Fan with forward-curved blades and transmission	X	X
Fan with backward-curved blades and transmission	X	X
Plug fan	X	standard
EC plug fan	X	X
Sparkproof fan	X	X
Spring mounts	standard	standard
Lift-off panel	X	X
Hinged door	standard	standard
Pressurised door (plug fan), hinged for sizes > 250	standard	standard
Pressure connections	X	X
Holes with blanking covers	X	X
Door contact	kit or assembled	kit or assembled
Galvanised steel safety container	X	X
Stainless steel safety container	X	X
Double glass porthole	X	X
Smoke detector (NF S61961)	kit	kit
Lighting not connected	kit	kit
Lighting connected on switch	X	X
Paint on casing and bracket	X	standard
Stainless steel casing, bracket	X	X
Inspection hatch and vent on scroll	X	X
Epoxy painted scroll and impeller	X	standard
Screens on inlets	X	X
Door protection	X	X
Belt housing	X	X
2 motors fitted	X	X

Heat recovery unit

■ Plate

- Standard construction or HEE plate heat exchanger.
- The heat exchanger has aluminium plates. This component can be used normally up to an air temperature of 150 °C (if the plate heat exchanger is an AHU component, the standard temperature limit is 80 °C with a differential pressure of 1000 Pa and a leak flow rate between the 2 air streams (EXHAUST/INTAKE) of less than 1 %.
- Condensate drain pan on exhaust air side, made from galvanised steel with condensate drain piping as standard.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
For stacked AHUs	X	X
For adjacent AHUs	X	X
G4 prefilter and M5 filter incorporated depending on size	X	X
Bypass on fresh air	X	X
Coated aluminium plates	X	X
Epoxy paint on internal panels	X	X
Pressure tapping on the 4 air handling orifices	X	X
Stainless steel condensate drain pan	X	X
Damper control, manual, motorised or ready to be motorised	X	X

DESCRIPTION

■ Heat pipe (gravity type)

- Constructed in the same way as a coil with several rows of finned tubes; the assembly is mounted in a casing with an intermediate partition separating the cooling and heating areas.
- Standard construction: copper tubes, aluminium fins, galvanised steel casing.

- Transfer fluid: refrigerant, operation from -25 to +50 °C.
- Assembly in either vertical, fixed horizontal or mobile horizontal position on shaft.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
For stacked or adjacent AHUs	X	X
Bypass on fresh air or exhaust air	X	X
Sensor, controller, servomotor for mobile model	X	X
Precoated fins	X	X
Fins with ALTENA treatment	X	X
Fins with HERESITE treatment	X	X
Stainless steel heater panels	X	X
Stainless steel condensate drain pan	X	X
Pressure tapping on the 4 air handling orifices	X	X

■ Rotating

- Corrugated aluminium exchange medium.
- Adjustable midway and peripheral gasket to guarantee a minimum leak flow rate.
- Lateral inspection panel.

- Constant speed gear motor (230/400 V three-phase power supply).
- Maintenance-free ball bearing.
- For sensible power exchange as standard.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Gear motor and variable frequency drive for variable speeds from 0 to 10 rpm – 230 V single-phase	X	X
Coated aluminium rotor	X	X
Hygroscopic rotor for total power exchange	X	X
Polyurethane or epoxy painted internal panels	X	X
Stainless steel internal panels	X	X
Pressure tapping on the 4 air handling orifices	X	X

Sound attenuators

- Baffles.
- Mineral wool of different densities, the faces are covered with an anti-erosion shield.
- Galvanised panels.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Baffle length	500 - 900 - 1200 - 1500	
Coating with fray-resistant fabric	X	standard
Painted mounting tracks	X	standard
Painted baffle panels	X	standard
Stainless steel baffle panels	X	X

Accessories

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Standard flexible sleeves for the outside of the casing	X	X
Insulated flexible sleeves for the outside of the casing	X	X
Rain protection frame with bird screen	X	X
Grille frame for protection of the air handling orifices on AHUs	X	X

BLOCK AND AHU DIMENSIONS

Table of "L" block lengths available (all integrated elements), the total length of the AHUs is obtained by adding 25 mm to each end.

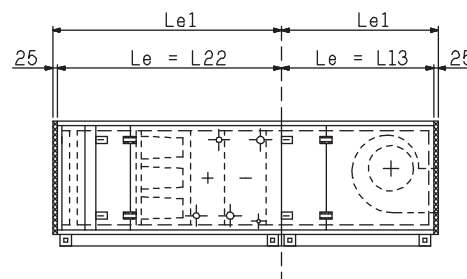
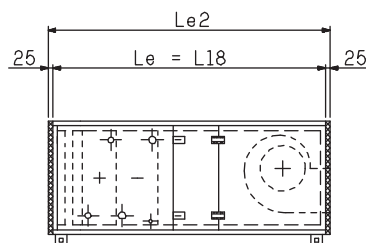
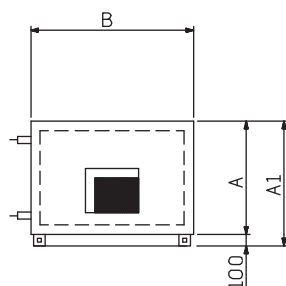
		Unit No.	25 to 50	75	100 to 450	400 & 600
block/AHU maximum length	length "L"	L2		200		
		L3		300		
		L4		400		
		L5		500		
		L6		600		
		L7		700		
		L8		800		
		L9		900		
		L10		1000		
		L11		1100		
		L12		1200		
		L13		1300		
		L14		1400		
		L15		1500		
		L16		1600		
		L17		1700		
		L18		1800		
		L19		1900		
		L20		2000		
		L21		2100		
75		L22	2200	2200	2200	2200
400 & 600		L23	2300		2300	2300
25 to 50		L24	2400		2400	
		L25			2500	
		L26			2600	
		L27			2700	
		L28			2800	
		L29			2900	
		L30			3000	
		L31			3100	
100 to 450		L32			3200	

■ AHU dimensions

L length of integrated elements

Le 1 length of integrated elements + 1 end panel

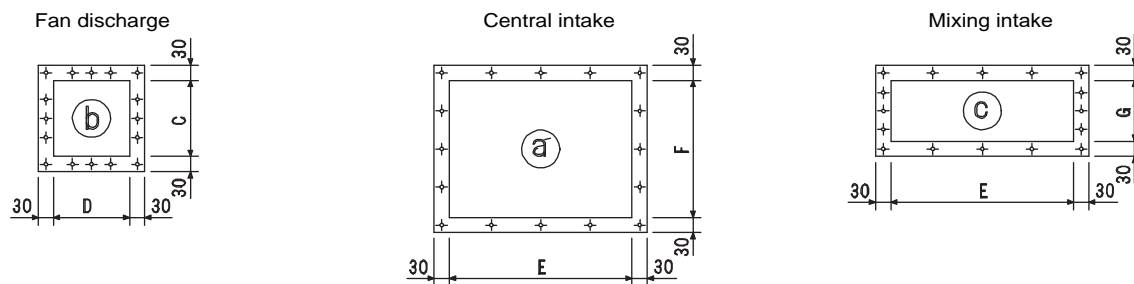
Le 2 length of integrated elements + 2 end panels



Unit No.	25	50	75	100	150	140	200	190	250	300	375	400	450	600
A	593	865	865	946	1236	946	1566	1236	1566	1566	1886	1566	2226	2226
A1	693	965	965	1046	1336	1046	1666	1336	1666	1668	1986	1666	2326	2326
B	875	875	1185	1516	1516	2172	1516	2172	1817	2172	2172	2812	2172	2812

BLOCK AND AHU DIMENSIONS

■ Connection flanges



Unit No.	25	50	75	100	150	140	200	190	250	300	375	400	450	600
C	299	415	464	514	574	514	724	574	814	914	1024	914	1144	1144
D	299	415	464	514	574	514	724	574	814	914	1024	914	1144	1144
E	610	610	910	1260	1260	1860	1260	1860	1560	1860	1860	2510	1860	2510
F	310	610	610	610	1010	610	1310	1010	1310	1310	1510	1310	1810	1810
G	160	310	310	310	410	310	610	410	610	610	760	610	910	910

PRECISION CABINET



For version X

- Compact footprint
- Dual-wall construction
- Fan motor assembly with EC motor (electronically commutated)
- PLC control
- Condenser fan variable speed control

50CJ

Cooling capacity: 5-55 kW
Heating capacity: 4.5-41 kW

Precision air conditioning cabinet specially designed for the air handling requirements (filtration, temperature and humidity control) of computer rooms, telecommunications rooms and specific purpose rooms (electronics, sensitive storage, medical, controlled atmosphere rooms, etc.).

Dual-wall construction. The choice of technology used (self regulation depending on the room loads, EC motor: electronically commutated) can reduce the energy consumption.

This unit is quick and easy to install, and particularly simple to use.

RANGE

The 50CJ cabinet comes in two versions:

■ **50CJ W: Chilled water model:**

- Cooling capacity range: 5 to 27 kW
- Flow rate: 800 to 6000 m³/h
- 5 sizes available

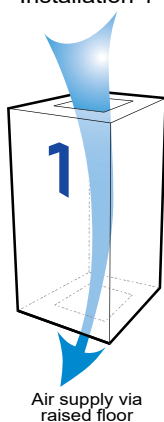
■ **50CJ X: direct expansion model with exterior air condensation unit:**

- Cooling capacity range: 7 to 47 kW
- Flow rate: 800 to 12,000 m³/h
- 11 sizes available

INSTALLATION

UNDER installation: reversed air supply

Installation 1



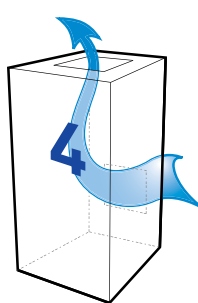
Air supply via raised floor

Installation 3



Front return

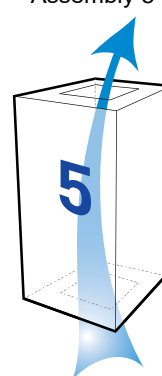
Installation 4



Rear return

OVER installation: top air supply

Assembly 5



Return air below

QUICK SELECTION

50CJ W

Cold water coil

Sizes	W5	W8	W12	W16		W27	
Air flow rate (m ³ /h)	1 300	2 000	2 500	3 000	4 000	5 000	6 000
*Maximum operating pressure with M5 (ePM10 50%) or F7 (ePm1: 60%) filtration	400	400	259	400	85	400	324
Total/sensible cooling capacity (kW)	5/4.8	8/7.6	10.5/9.9	14.7/13.2	18/16.7	23.5/21.5	27/25.1
Water flow rate (m ³ /h)	0,86	1,4	1,8	2,5	3,1	4	4,6
Pressure drop (mWC) (Coil + valve)	4,3	4,9	5,1	4,7	10	4,1	5,2

* Maximum operating pressure dependent on air flow rate. Take away approximately 20 Pa if there is a hot water coil on 50CJW
The operation point can be adjusted directly via the controller. Hence all the air flow/operating pressure combinations are possible, with the values in the table above as the maximum values.

Correction factors	7/12 °C	10/15 °C	12/18 °C
22 °C/45%	0,84	0,58	0,44
24 °C/45%	1	0,74	0,5
30 °C/35%	1,48	1,18	0,9

Correction factors to apply to the cooling capacity based on the outdoor temperature and the return air conditions.

QUICK SELECTION

50CJ W

Hot water coil

Sizes	W5	W8	W12	W16		W27	
Air flow rate (m³/h)	1 300	2000	2 500	3 000	4 000	5 000	6 000
Heating capacity (kW)	4,5	6,2	7,5	11,9	13,7	17,8	19,5
Water flow rate (m³/h)	0,21	0,27	0,33	0,5	0,6	0,8	0,9
Pressure drop (mWC) (Coil + valve)	1,3	2,6	4,3	2,1	2,8	1	1,2

Specifications: heating capacity, air 20 °C, pure water 80 °C/60 °C

Correction factors to apply to the heating capacity for 90 °C/70 °C water temperature range: 1.23 and 45 °C/35 °C: 0.37.

Electric heater

Sizes		W5	W8	W12	W16	W27
Total electrical power (kW)		3		6	9	12
Electrical power (kW)	Stage 1	3			6	6
	Stage 2	-	-	3	3	6
Number of heaters	Stage 1	3 x 1 kW			3 x 2 kW	3 x 2 kW
	Stage 2	-		3 x 1 kW	3 x 1 kW	3 x 2 kW
Total current (A)		4,3		8,7	13	17,3

2 stage or TRIAC electric heater, depending on the option selected

50CJ X

Cooling coil

Sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Air flow rate (m³/h)	1 300	2 000	2 500	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
*Maximum operating pressure with M5 (ePM10 50%) or F7 (ePm1: 60%) filtration	400	400	276	400	89	400	324	273	26	330	21
Total/sensible cooling capacity (kW)	7.2/6	8/7.65	10.6/9.7	11/10.9	15/14.7	19/18.6	23.2/22.4	30.1/27.9	35/32	38/37.4	47/45.4

* Maximum operating pressure dependent on air flow rate. Take away approximately 20 Pa if there is a hot water coil on 50CJ X
The operation point can be adjusted directly via the controller. Hence all the air flow/operating pressure combinations are possible, with the values in the table above as the maximum values.

Correction factors	30 °C	32 °C	35 °C	40 °C
24 °C/50%	1,02	1	0,98	0,93
26 °C/50%	1,06	1,04	1,02	0,98

Correction factors to apply to the cooling capacity based on the outdoor temperature and the return air conditions.

Hot water coil

Sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Air flow rate (m³/h)	1 300	2 000	2 500	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Heating capacity (kW)	4,5	6,2	7,5	11,9	13,7	17,8	19,5	25,8	27,6	37,5	40,9
Water flow rate (m³/h)	0,21	0,27	0,33	0,5	0,6	0,8	0,9	1,1	1,2	1,65	1,8
Pressure drop (mWC) (Coil + valve)	1,3	2,6	4,3	2,1	2,8	1	1,2	1,7	1,9	2,8	3,3

Specifications: heating capacity, air 20 °C, pure water 80 °C/60 °C

Correction factors to apply to the heating capacity for 90 °C/70 °C water temperature range: 1.23 and 45 °C/35 °C: 0.37.

Electric heater

Sizes		X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Total electrical power (kW)		3		6	9		12		18		24	
Electrical power (kW)	Stage 1	3			6		6		12		12	
	Stage 2	-	-	3	3		6		6		12	
Number of heaters	Stage 1	3 x 1 kW			3 x 2 kW		3 x 2 kW		3 x 4 kW		3 x 4 kW	
	Stage 2	-		3 x 1 kW	3 x 1 kW		3 x 2 kW		3 x 2 kW		3 x 4 kW	
Total current (A)		4.3		8.7	13		17.3		26		34.6	

2 stage or TRIAC electric heater, depending on the option selected

INDOOR UNIT TECHNICAL DESCRIPTION

■ Casing

Dual-wall construction.

RAL 7035 grey pre-lacquered panel, removable:

- 1 mm pre-lacquered exterior panels,
- Glass wool, thickness 25 mm, class M0 (A2-s1),
- 0.8 mm galvanised interior panels.

■ Filtration

- EN 779-2012 efficiency: M5
- ISO16890 efficiency: ePM10 50%.
- Options:
 - EN 779-2012 efficiency: F7
 - ISO16890 efficiency: ePM1: 60%.
- Optional (excl. 50CJX 5/8/10 and 50CJW5/8/12):
 - Dual filtration M5 (ePM10 50%) +F7 (ePM1:60%).
- Filter cells tightly compressed against counter-frame by a gasket to ensure a completely leaktight seal.
- Fouling level monitored by an analogue pressure sensor.

* except for models W 5/8/12 and X 5/8/12.

■ Cooling coil cross-section

- Copper tube coil, aluminium fins.
- Aluminium condensate drain pan.
- Model W with 2- or 4-way control valve fitted and connected. Optional thermally insulated flexible connections
- Model X with thermostatic expansion valve.

■ Ventilation section

- Direct drive centrifugal fan, associated with an electronically commutated (EC motor).
- EC motor: fan adaptation via manual adjustment or "self-regulating" adjustment by the controller, depending on the room load - system air control.
- EC electric motor 1-Ph/230 V/50-60 Hz, 4-pole, class F.
- Air flow rate monitored by an analogue pressure sensor.

■ Electrics box

Electrical power and control box consisting of:

- Power supply: 3-Ph/400V/50Hz+T+N.
- Emergency stop type disconnect switch.
- Three-phase 400 / 24 V transformer with protection.
- Protection and control of fan motor, and of humidifier and electric heater depending on options selected.
- Regulated by Carrier CCU Controller.
- Return air dry-bulb temperature control.
- Return humidity control:
- Supply humidity control (optional)
- Dehumidification humidity control (optional)
- Options available: water leak detection, fire thermostat and supply air low-limit monitoring.
- Remote control and fault summary contact.
- Condensate drain pump (optional).

■ Accessories

- Support base for supply air via raised floor:
- Supply plenum.
- Acoustic plenum with sound trap.
- Motorised damper on intake section.
- Additional water leak sensor.
- Fire thermostat.
- Hydraulic connection kit (chilled water and hot water coils).

Indoor unit options

■ Electric heater

- Fan-controlled operation.
- 2-stage control (except 3 kW electric heater).
- 2-stage or TRIAC control.
- Two high-limit safety thermostats with automatic and manual reset.

■ Hot water coil

- 1-row coil made of copper tubes with aluminium fins.
- 2- or 4-way control valve fitted and connected.
- Optional flexible connections.

■ Humidifier

Immersed electrode humidifier with humidifier information available directly on the Carrier CCU Controller:

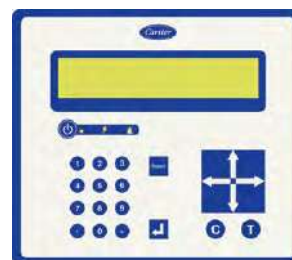
- Stainless steel large surface area electrodes,
- Steam flow rate: 3 kg/h for sizes 50CJW5/8/12 and 50CJX5/8/10)
- Steam flow rate: 8 kg/h for other sizes
- Steam cylinder in a single easy to remove component,
- Filling solenoid valves,
- Drain pump,
- Electronics board for operation management,
- Diffusion jet,
- Water supply connection kit.

Operates on municipal water supply only (water conductivity 350 to 1250 μ S and hardness 15 to 30 °F). Do not use deionised or softened water.

Indoor unit regulation

■ Unit control and monitoring

Carrier CCU Controller



- 160-character display showing the operating instructions, operating states, faults and solutions. Configurable controller.
- Two fault levels.
- Monitoring of operating times.
- RS 485 output with Jbus/ModBus RTU protocol.
- Can manage rotations, backups and top-ups between units.
- BACNET IP or MSTP gateways optional.
- Optional changeover thermostat (only on W).

DESCRIPTION OF THE CL2 OUTDOOR UNIT (MODEL X)

■ **Scroll Compressor**

- Crankcase resistance on models 50-65-75
- Air-cooled condenser, copper tube coil, aluminium fins
- Propeller fan(s) (1 or 2 depending on models) with EC motor
- All-season operation
- Condensation pressure control by fan variable speed control (pressure sensor)
- Refrigerant connections (FLARE connections)
- External operating temperature limits: -15°C to +45°C
- Casing in recyclable synthetic "ABS" material and UV stabilised, light and very solid. Its exclusive and valuable design, makes it easier to integrate into the visual space.

■ **Optional equipment**

- Anti-vibration mount kit
- Wall support kit (models 28-35)
- Crankcase resistance on models 28-35
- Thermostatic expansion valve kit
- Blygold pump kit

TECHNICAL AND ELECTRICAL CHARACTERISTICS

Indoor unit

		W5	W8	W12	W16	W27			
		X5	X8	X10	X12/15	X19/24	X31/36	X38/48	
Fan motor	Voltage	V	230 V						
	Power	kW	1,036		1,029	2,072	2,058	3,087	
	Current	A	4,51		4,38	9,02	8,76	13,14	
Control circuit (transformer)	Voltage	V	24 V						
	Current	A	1						
Humidifier (option)	Voltage	V	400						
	Power	kW	2,25		6				
	Current	A	3,2		8,7				
Electric heater (option)	Voltage	V	400						
	Power	kW	3		6	9	12	18	24
	Current	A	4,3		8,7	13	17,3	26	34,6
Total current without option	Current	A	5,51		5,38	10,02	9,76	14,14	
	Rating of main switch	A	16						
Total current with humidifier	Current	A	8,71		14,08	18,72	18,46	22,84	
	Rating of main switch	A	16			25			
Total current with electric heater	Current	A	9,81		14,21	18,38	27,32	35,76	48,74
	Rating of main switch	A	16		25	40	63		
Total current all options	Current	A	13,01		17,41	27,08	36,02	44,46	57,44
	Rating of main switch	A	16		25	40		63	

CL2 condensation unit outdoor unit (model X)

Sizes			28	35	50	65	75
Compressor	Quantity		1				
	Type		SCROLL				
	Oil capacity	l	1,25			1,7	
	Oil type		POE				
	Voltage		400 V - 3 Ph - 50 Hz				
	Maximum current	A	6,9	7,6	10,3	11,2	14,3
Refrigerant		R410A					
Refrigerant weight	kg	1,6		2,65	2,75	3	
Power and current		W/A	45 W/0.2 A Option ⁽¹⁾		45 W/0.2 A		
Crankcase heater							
Coil type		Grooved copper tubes - aluminium fins					
Fan	Quantity		1		2		
	Type		Propeller				
	Nominal flow rate	m³/h	2350	2770	4700	5540	5000
	Speed	Rpm	700	904	700	904	
	Maximum current	A	0,46	0,97	0,92	1,94	1,94
Rated voltage of unit	V	400 V - 3 Ph+N - 50 Hz					
Total current	A	7,5	8,3	11,3	12,6	15,7	
Start-up current	A	36	49	65,5	75,5	102,5	
Electrical cables not supplied*	mm²	5G1.5	5G2.5	5G4		5G6	
Recommended cables for the proximity switch		Am	10		16		20
Refrigerant connections	ø liquid line	inches	3/8"				1/2"
	ø intake line	inches	5/8"	3/4"		7/8"	

* Cable with 2 or 3 charged conductors in a raceway or duct, exposed mounting, for temperatures below 60 °C and a maximum length of 30 m.

Note: for different conditions, refer to the current standard in the country of installation (example for France: NFC 15-100)

SOUND PRESSURE LEVEL

Indoor unit

Sizes	Chilled water model	5	8	12	16	27						
	Direct expansion model	5	8	10	12	15	19	24	31	36	38	48
Air flow rate (m³/h)		1 300	2 000	2 500	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Sound pressure level (dBA)		49	53	58	57	61	59	63	60	63	60	64

Sound pressure level of indoor unit at 2 m unrestricted space, air supply connected, +/-3 dB.

CL2 outdoor unit (model X)

Sizes	5	8	10	12	15	19	24	31	36	38	48
Models	28	28	35	35	50	65	75	2x50	2x65	2x65	2X75
Sound pressure level (dBA)	39	39	45	45	43	47	47	46	50	50	50

Sound pressure level of outdoor unit, at 5 m, 1.5 m from floor, in a free field, directivity 2 and +/-3 dB.

COIL WEIGHT AND CONNECTION

Unit weight

Indoor unit

Chilled water model sizes	W5	W8	W12	W16		W27					
Direct expansion model sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Weight of indoor unit (kg)	115	120	125	280		310		375		480	

Indoor unit

Direct expansion units	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Outdoor units (CL2) no./type	1x28	1x28	1x35	1x35	1x50	1x65	1x75	2x50	2x65	2x65	2x75
Unit weight of outdoor unit (kg)	64	69	69	69	101	112	118	101	112	112	118

Coil connections

Indoor unit

Cold water coil

Sizes	W5	W8	W12	W16	W27		
Inlet/outlet connections	G 1/2" M	G 3/4" M	G 3/4" M	G 3/4" M	G 1" M	G 1" M	G 1 1/4" M
Condensate drainage*	Diam 32						

Direct expansion coil

Sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Intake pipe	G 5/8" M	G 5/8" M	G 3/4" M	G 7/8" M	G 7/8" M	G 1 1/8" M	G 1 1/8" M	G 2 X 7/8" M	G 2 X 7/8" M	G 2 X 1 1/8" M	G 2 X 1 1/8" M
Liquid pipes	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	2 x 1/2"	2 x 1/2"	2 x 1/2"	2 x 1/2"
Condensate drainage*	Ø 32 mm										

Hot water coil

Chilled water model sizes	W5	W8	W12	W16		W27					
Direct expansion model sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Inlet/outlet connections	G 1/2" M	G 1/2" M	G 1/2" M	G 1/2" M		G 3/4" M		G 3/4" M		G 3/4" M	

Outdoor unit

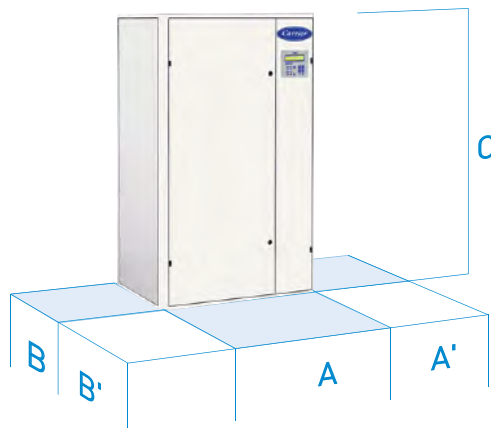
Direct expansion model sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Outdoor units no./type	1x28	1x28	1x35	1x35	1x50	1x65	1x75	2x50	2x65	2x65	2x75
Intake pipe	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"	2 x 3/4"	2 x 7/8"	2 x 7/8"	2 x 7/8"
Liquid pipes	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	2 x 3/8"	2 x 3/8"	2 x 3/8"	2 x 1/2"
Condensate drainage*	Diam 32										

Chilled water coil connections: inlet on threaded coupling and outlet on threaded control valve.

Condensate drain connection on smooth coupling.

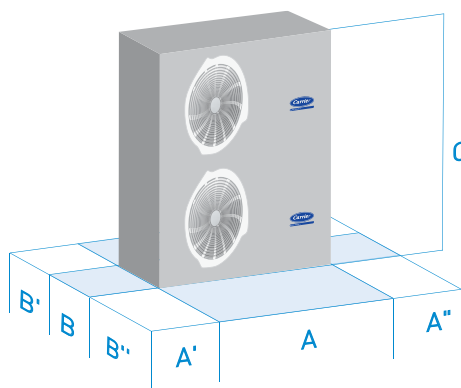
* Drain connections if optional pump is fitted: Ø 6

DIMENSIONS AND OPERATING AREA



Indoor unit

Units	Dimensions (mm)				
	A	A'	B	B'	C
W5 or X5	675	500	500	700	1700
W8 or X8	675	500	500	700	1700
W12 or X10	675	500	500	700	1700
W16 or X12/15	850	500	780	700	1900
W27 or X19/24	1150	500	780	700	1900
X31/36	1490	500	780	700	1900
X38/48	1990	500	780	700	1900



Outdoor unit (CL2)

Models	Dimensions (mm)						
	A	A'	A''	B	B'	B''	C
28	1035	150	1000	450	150	1500	732
35	1035	150	1000	450	150	1500	732
50	1035	150	1000	450	150	1500	1332
65	1035	150	1000	450	150	1500	1332
75	1035	150	1000	450	150	1500	1332

OPERATING LIMITS

Chilled water (W)

Water circuit	Maximum pressure: PN16	Minimum water inlet temperature: 5 °C (Consult us for other values)
		Maximum water inlet temperature: 80 °C (Consult us for other values)
Indoor temperature		Minimum air inlet temperature: 12 °C, and according to return humidity
		Maximum air inlet temperature: 45 °C and according to return humidity (Weight in water, condensed <0.8 g of water/Kg of dry air)
Power supply		3PH/400V+E+N

Direct expansion (X)

Indoor temperature		Minimum air inlet temperature: 18 °C, and according to return humidity
		Maximum air outlet temperature: 28 °C and according to return humidity (Weight in water, condensed <0.8 g of water/Kg of dry air)
Outdoor temperature		Minimum air inlet temperature: -15 °C
		Maximum air inlet temperature: 45 °C
Power supply	Indoor unit	3PH/400V+E+N
	Outdoor unit(s)	3PH/400V+E+N

PRECISION CABINET



Wide range of single unit
water chillers

Compact and attractive design

EC motor saves energy

Self-adjusting control

Easy installation

50CO

Cooling capacity: 40 to 127 kW
Air flow: 10,000 to 27,000 m³/h

Close control unit specifically adapted to meet the needs of rooms with a high heat load or sensitive locations (data centres, computer rooms, autocom rooms, etc.).

The choice of technology used (self-adjusting control which adapts to the room loads, electronically commutated EC motor) can reduce energy consumption.

Thanks to its skilful design, the **50CO** integrates seamlessly into its intended location.

RANGE

50CO W Chilled water model

Cooling capacity range: 40 to 127 kW

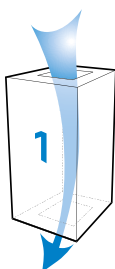
Nominal air flow range: 10,000 to 27,000 m³/h

5 sizes available

INSTALLATION

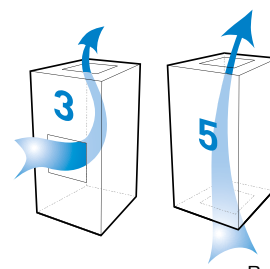
Fitting UNDER

Air supply via raised floor



Fitting OVER

Front return



Return air below

QUICK SELECTION

Cold water coil

Sizes	W40		W53		W78		W100	
Air flow (m ³ /h)	Nominal ⁽¹⁾	Maximum ⁽²⁾	Nominal ⁽¹⁾	Maximum ⁽²⁾	Nominal ⁽¹⁾	Maximum ⁽²⁾	Nominal ⁽¹⁾	Maximum ⁽²⁾
	10 000	13 300	13 300	13 300	18 800	20 500	24 500	27 000
Maximum operating pressure with M5 filter (Pa)	400	171	229	229	400	400	343	157
Maximum operating pressure with F7 filter (Pa)	400	60	140	140	400	400	261	68
Sensible cooling capacity (kW)	40	45	55	53	78	78	100	100
Nominal capacity (kW) *	3,7		3,7		7,1		7,1	
Nominal current (A) *	6,4		6,4		11,8		11,8	

(1) Conditions: Return air 24°C 45% (RH) - Water temperature: 7/12°C

(2) Conditions: Return air 26°C 40% (RH) - Water temperature: 10/15°C

* Excluding electrical heater and humidifier option

Hot Water Coil (option)

Sizes	W40		W53		W78		W100	
Air flow (m ³ /h)	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
	10 000	13 300	13 300	13 300	18 800	20 500	24 500	27 000
Heating capacity (kW) ⁽¹⁾	36	40	44	44	63	66	71	73
Heating capacity (kW) ⁽²⁾	18	21	23	23	33	34	37	38

(1) 17°C - 80/60°C

(2) 17°C - 45/40°C

Electric heater (option)

Sizes	W40		W53		W78		W100	
Power (kW)	12		18		24		33,6	
Total current (A)	17,3		26		34,7		48,6	

QUICK SELECTION

Humidifier (Option)

Sizes	W40 to W100
Steam flow rate (kg/h)	8
Electrical power (kW)	6
Current (A)	8,7

DESCRIPTION

■ Casing

Dual-wall construction (with MO / A1 fire rating).
RAL 7035 and 7024 grey precoated removable panel.
- 0.8mm painted precoated exterior panel.
- Mineral wool, 25 mm thick.
- 0.8 mm galvanised interior panel.

■ Filtration

Filter cells.

Filter cells kept compressed against the counter frame with the gasket directly on the filter cells.

EN 779-2012 efficiency: M5

ISO16890 efficiency: ePM10 50%

Or

EN 779-2012 efficiency: F7

ISO16890 efficiency: ePM1: 60%

Filter fouling value monitored by analogue sensor and displayed by the controller.

■ Cooling coil cross-section

Copper tubes, aluminium fins.
Stainless condensate drain pan.
Stainless coil flanges (option).
2-way or 3-way control valve fitted and connected.

■ Ventilation section

Centrifugal plug fan, associated with an electronically commutated motor (EC motor).

EC motor: fan adaptation via manual adjustment or "self-regulating" adjustment by the controller, depending on the room load - system air control.

The fan also has a ModBus card which allows faults and settings such as the actual power input, current, rotation speed, etc. to be transmitted.

■ Electrics box

Power, command and control electrics box consisting of:

- 3-phase 400 V power supply + Earth.
- Main disconnect switch.
- Three-phase 400 V 50 Hz transformer with protection.
- Protection and control of all electrical components by a circuit breaker and contact switch.
- Automatic CARRIER CCU Controller.
- Return air dry-bulb temperature control.
- Return humidity control, in supply or dehumidification mode.
- Water leak detection as standard.
- Remote control and fault summary contact.

■ Accessories (option)

Free cooling box.
Support sub-base for supply air via raised floor.
Cased sub-base with grille or damper.
Supply plenum.
Motorised damper on intake section.
Fire thermostat.
Supply air low limit sensor.
BACnet gateway (IP or MSTP).
Raised floor pressure management.
Changeover thermostat.

OPTIONS

■ Electric heater

Fan-controlled operation.
Control by 2-stage operation or by progressive action (TRIAC).
High-limit safety thermostat with automatic and manual reset.

■ Hot water coil

1-row coil made of copper tubes with aluminium fins.
2- or 4-way progressive action valve fitted, and connected.

■ Humidifier

Humidifier with immersed electrodes and an electronic board to transmit all information relating to the humidifier directly to the CARRIER CCU Controller.

- Stainless steel large surface area electrodes.
- Flow rate of 8 kg/h, depending on the model.
- Steam cylinder in a single easy to remove component.
- Drain pump and filling solenoid valve.
- Electronics board for operation management.
- Diffusion duct.

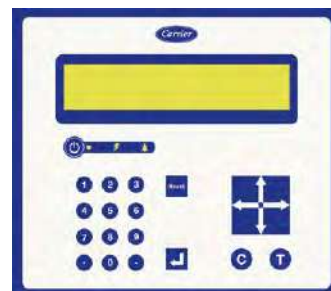
Operates using municipal water supply only (water conductivity of between 350 and 1250 µS inclusive and hardness between 15 and 30 °F). Do not use deionised or softened water.

CONTROL

Unit control and monitoring:

CARRIER CCU Controller

- 160-character display showing the operating instructions, operating statuses, faults and solutions. Configurable controller.
- Two fault levels.
- Monitoring of operating times.
- RS 485 output with Jbus/ModBus protocol.
- Master/slave type management possible.
- BACnet gateway (IP or MSTP) optional
- Optional management of pressure in raised floor
- Optional changeover thermostat
- Bus management between the centrifugal plug fan and the controller.
- Transmits fan faults and settings such as the actual power input, current, rotation speed, etc. to the controller.



ELECTRICAL SPECIFICATIONS

Sizes		W40	W53	W78	W100
Fan motor	Voltage (V)	400			
	Power (kW)	3,4		6,8	
	Current (A)	5,4		10,8	
Control circuit (transformer)	Voltage (V)	24			
	Current (A)	1			
Humidifier (option)	Voltage (V)	400			
	Power (kW)	6			
	Current (A)	8,7			
Electric heater (option)	Voltage (V)	400			
	Power (kW)	12	18	24	33,6
	Current (A)	17,4	26	34,6	48,4
Total current without option	Current (A)	6,4	6,4	11,8	11,8
	Disconnect switch rating (A)	16			
Total current with humidifier	Current (A)	15,1	15,1	20,5	20,5
	Disconnect switch rating (A)	25		40	
Total current with electric heater	Current (A)	23,8	32,4	46,4	60,2
	Disconnect switch rating (A)	40		63	80
Total current all options	Current (A)	32,5	41,1	55,1	68,9
	Disconnect switch rating (A)	40	63		80

CONNECTIONS

Cold water coil

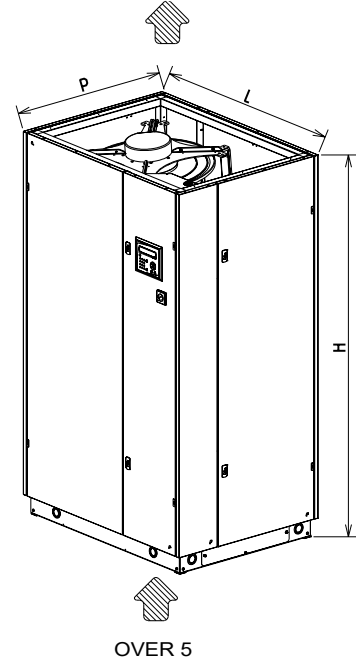
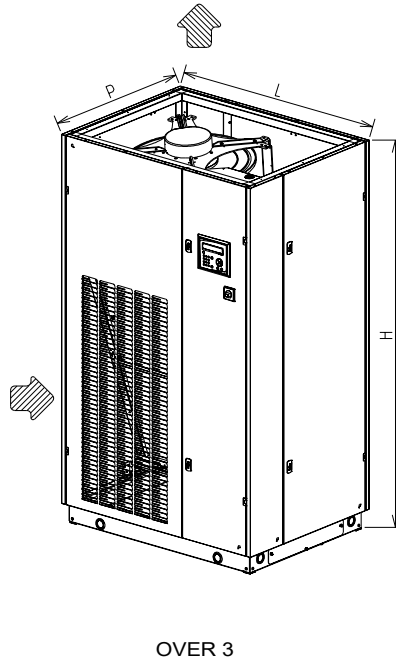
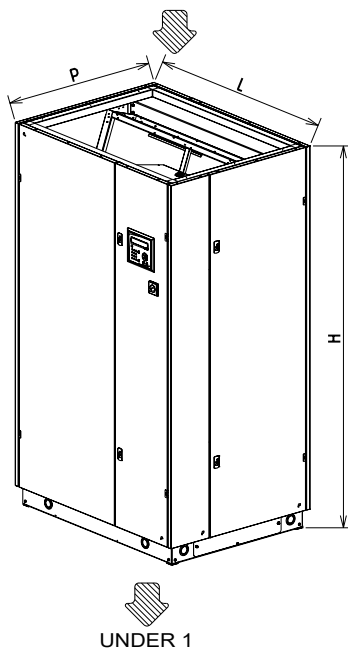
Sizes	W40	W53	W78	W100
Inlet	G1"1/4 (M)	G1"1/4 (M)	G1"1/2 (M)	G1"1/2 (M)
Outlet	G1"1/4 (F)	G1"1/4 (F)	G1"1/2 (F)	G1"1/2 (F)

Hot water coil

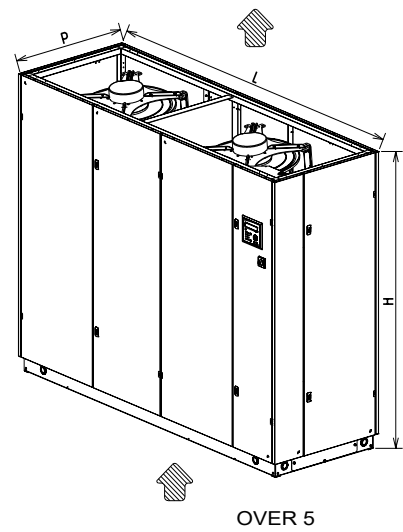
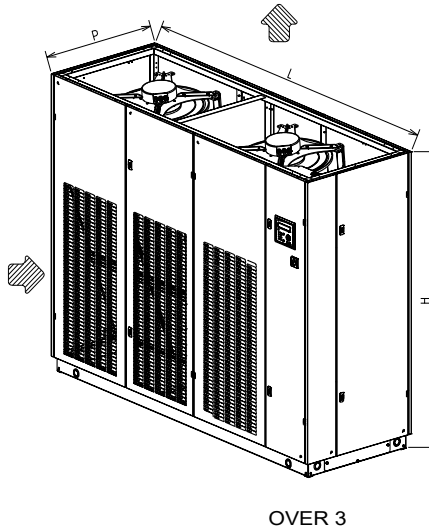
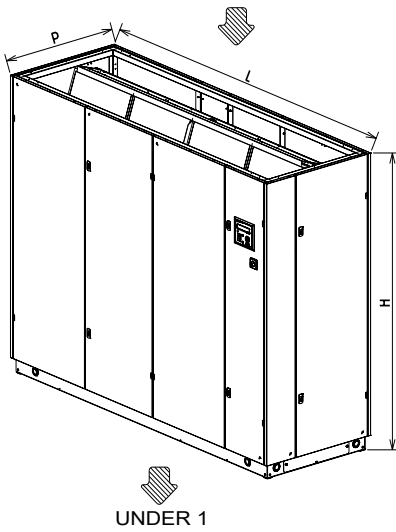
Sizes	W40	W53	W78	W100
Inlet	G3/4" (M)	G3/4" (M)	G3/4" (M)	G3/4" (M)
Outlet	G3/4" (M)	G3/4" (M)	G3/4" (M)	G3/4" (M)

DIMENSIONS

W40 - W53



W78 - W100



Sizes	Dimensions (mm)			Weight (kg)
	H	L	D	
W40	1990	1190	890	350
W53		1520		385
W78		2070		545
W100		2620		635

OPERATING LIMITS

Water circuit	Maximum pressure: PN16	Minimum water inlet temperature: 5 °C (Consult us for other values)
		Maximum water inlet temperature: 80 °C (Consult us for other values)
Indoor temperature		Minimum air inlet temperature: 12 °C, and according to return humidity
		Maximum air inlet temperature: 45 °C and according to return humidity (Weight in water, condensed <0.8 g of water/Kg of dry air)
Power supply		3PH/400V + earth

PACKAGED ROOFTOP UNITS AND SEPARATED GAS MODULE OPTION



High efficiency
Superior reliability
Compact system
Energy recovery
Variable speed EC fans

50FF/FC 020 - 093

Nominal cooling capacity 22.3 - 90.2 kW
Nominal heating capacity 21.9 - 89.7 kW

The new **50FF/FC** packaged rooftop range consists of autonomous compact air-air units of horizontal design, rooftop type.

■ **50FF series:** for **cooling-only** operation.

■ **50FC series:** for **reversible heat pump** operation.

The range of available capacities in the series allows for the air conditioning of medium and large surface areas which are common in shopping malls, food retail, logistics and many other commercial and industrial applications.

50FF/FC units are designed for optimized part-load management in achieving the highest levels of seasonal efficiency, exceeding the limits set by regulation.

With its mono-block lightweight construction, the units feature a self-supporting frame, designed to ease the installation and maintenance works.

The units integrate the latest technological innovations:

- Multi-scroll compressors.
- Electronic expansion valves.
- Variable speed EC fans.
- Auto-adaptative microprocessor control.

For maximum adaptability, a number of options is available to meet any operating requirement:

- Exhaust air energy recovery.
- Economizer.
- Indoor air quality management.
- Installation roofcurbs.
- Auxiliary heating modules.
- Extended operation limits.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES AND ADVANTAGES

Carrier's new range of packaged rooftop air conditioning units 50FF/FC has been designed to set high standards in performance. The series offers design flexibility, ease of installation, quality and superior reliability thanks to the number of technological improvements and the available options that allow for seamless integration in the building.

Designed to withstand outdoors installation, it can operate all-year-round performing at the highest levels of seasonal efficiency thanks to the management of the new control inside.

The high efficiency cooling circuits have been developed as to eliminate any leaks caused by any vibration modes and designed with state-of-the-art components including electronic expansion valves in all the circuits. The refrigerant circuits come fitted with pressure transducers and temperature sensors which allow for accurate control on the operation conditions together with the management of the fans speed.

The cabinet has been designed and tested for the most demanding conditions. With double skin insulated side panels as standard, all the sheet metal work comes in powder-coated finishes outdoors and indoors. The self-supporting structure has been conceived also to reduce weight and to optimize transportation capabilities. Thorough transportation tests have been also conducted as to validate the two-height stackable feature.

Ease of maintenance is also granted thanks to the great accessibility to components through removable side panels, access doors fitted with dual hinges with locking functions or removable outdoor fans covers. The condensates drain pan is now removable for easy cleansing.

Additional energy savings are possible thanks to multiple options such as economizers, exhaust air energy recovery or indoor air quality sensors. This can also be combined with scheduling functions or BMS integration through many standardized protocols.



Design flexibility

All 50FF/FC units are field-convertible to horizontal air flow. Being able to convert a unit from vertical airflow to horizontal makes it easy to overcome job site complications.

- Vertical supply/return units are ideal for new construction or retrofit to existing installations. The low unit profile is maintained when the unit is installed on the accessory roofcurb.

The ducts can be attached directly to the roofcurb to allow all ductwork to be completed before the unit is positioned.

- Horizontal units are ideal for replacement or applications such as through-the-wall where sound must be attenuated before the duct penetrates the roof. Ducts connect directly to the unit. Horizontal units may be curb or slab mounted.

Easy and fast installation

The unit is connected directly to an air distribution ductwork without additional elements or equipment, pipes, cables, etc. taking no floor space at all. This design reduces the cost of installation, facilitates a quick connection and ensures reliable operation.

A vast number of options integrated in the unit meet many operating requirements.

Superior reliability

- Excellent full and part load efficiencies are achieved by using tandem scroll compressors. The compressors are equipped with crankcase heaters and protected by electronic sensors and logic to control minimum on and off times and reverse rotation.
- All units are tested at various stages on the production line for circuit leakage, electrical compliance and refrigerant pressures.

Advanced technology and performance

In tertiary sector installation, a high percentage of the annual air conditioning energy consumption comes from the use of fans for transporting air. Using fans which are more efficient has a direct impact on reducing consumption.

- Electronic plug-fans in the indoor circuit with direct drive and variable speed offer the following advantages:
 - Elimination of friction losses during transmission thanks to the direct drive.
 - Greater aerodynamic efficiency of the rotor (reactive blades with an optimized profile), running at very high operating pressures.
 - Greatly increased motor efficiency. Permanent magnets DC motors activated using electronic switching integrated into the motor itself.
 - Variable speed to ensure a constant supply air flow rate, independent of the filters clogging level.
 - Measuring the flow rate through a calibrated section at the fan intake and a differential pressure sensor allows the control to handle the flow rate reliably and precisely in both on CAV and VAV systems.
- Electronic axial fans in the outdoor circuit which adapt the rotation speed to the installation's requirements, reducing electricity consumption, the sound level at part load and improving the unit's average seasonal efficiency.

Environmental care

- Making an environmentally responsible decision is possible when using R-410A refrigerant.

This refrigerant is an HFC refrigerant that does not contain chlorine that is damaging to the ozone layer, and unaffected by the Montreal Protocol. R-410A refrigerant is a safe, non-toxic, efficient and environmentally balanced for the future.

- Also, to reduce the environmental impact, this new series is not requiring any wooden pallets for handling, thus eliminating not only the waste disposal but avoiding the cut of trees.

KEY FOR CONFIGURATION

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
50FC	020	A	4	A	B1	LL	000	S	N	A	H	S	000	0000	0000	0	0	AA00	00	A00	000	AA00	0000	0000

A: Unit type

50FF: air/air cooling-only
50FC: air/air heat pump

B: Unit model

1 circuit: 020 / 028 / 037 / 040 / 045 / 047
2 circuits: 052 / 058 / 062 / 070 / 074 / 086 / 093

C: Version of the series

A: Current version

D: Electrical power

4: 400V / 3ph + N / 50Hz
5: 400V / 3ph / 50Hz

E: Type of refrigerant

A: R410A

F: Flow + Assembly

B1: Standard.
B2: Standard. Economizer, 2 dampers
BF: Standard. 100% fresh air
B3: Standard. Economizer, 3 dampers
BX: Standard. Axial fan in return section
BP: Standard. EC plug-fan in return section
BA: Standard. Cooling recovery circuit with EC plug-fan in return section
BT: Standard. Return top box with EC plug-fan or centrifugal fan
BB: Standard. Cooling recovery circuit with EC plug-fan or centrifugal fan in return top box
BW: Standard. Heat recovery wheel module
R1: In-line.
R2: In-line. Economizer, 2 dampers
RP: In-line. EC plug-fan in return section
RW: In-line. Heat recovery wheel module

G: Coil coating : Indoor - Outdoor

LL - Indoor coil	- Outdoor coil
L: Aluminium	L: Aluminium
P: Polyurethane	P: Polyurethane
N: Inera®	N: Inera®
C: Copper	C: Copper
Y: Blygold®	Y: Blygold®

H: Heating

000: Without auxiliary heating
BAx: Gas burner, 3 power outputs:
x = F (Low) / M (Nominal) / S (High)
BBx: Boiler with hot water coil, 3 power outputs:
x = F (Low) / M (Nominal) / S (High)
RAX: Electrical heaters, 3 power outputs:
x = F (Low) / M (Nominal) / S (High)
HAX: Hot water coil, 2 options:
x = S (Standard) / F (Very low outdoor temperature)

I: Protection for low outdoor temperature

S: Without protection
A: Freeze protection OAT lower than -10°C
B: Freeze protection OAT lower than -14°C
C: Freeze protection OAT lower than -10°C + spring shut-off dampers
D: Freeze protection OAT lower than -14°C + spring shut-off dampers

J: Supply fan

N: 3 available pressures
F (Low) / N (Nominal) / S (High)

K: Air filtration + droplet eliminator

A: G4
B: G4+ droplet eliminator
C: G4 low pressure drop
D: G4 low pressure drop + droplet eliminator
E: G4 + M6

F: G4 + M6 + droplet eliminator
G: G4 + F7
H: G4 + F7 + droplet eliminator
I: G4 + F9
J: G4 + F9 + droplet eliminator
K: G4 l.p.d. + F7
L: G4 l.p.d. + F7 + droplet eliminator
M: G4 l.p.d. + F9
N: G4 l.p.d. + F9 + droplet eliminator
O: M6 + F7
P: M6 + F7 + droplet eliminator
Q: M6 + F9
R: M6 + F9 + droplet eliminator
S: F7 + F9
T: F7 + F9 + droplet eliminator
U: F9 + F9
V: F9 + F9 + droplet eliminator

L: Outdoor fan

L: AC (2-speed)
H: EC (electronic)

M: Insulation

S: Standard insulation
M: Euroclass A2-s1, d0 (M0) insulation

N: Indoor unit

000 - Without optional accessories
A: Condensate drain pan in stainless steel
A: Room overpressure management
A: Filter fouling detector

O: Outdoor unit

0000 - Without optional accessories
A: Fresh air safety grid
A: Outdoor coil protection grid
A: Antivibration mounts
A: Droplet eliminator at the fresh air intake

P: Heat recovery wheel

0000 - Without optional accessories
A: Filters G4 (fresh air intake)
B: Filters G4 l.p.d (fresh air intake)
C: Filters G4 + M6 (fresh air intake)
A: Wheel speed with on/off control
B: Wheel speed with variable control
A: Channel spacing of 2,0 mm
B: Channel spacing of 2,5 mm
A: Material: Aluminium
B: Material: Aluminium with epoxy
C: Material: Hybrid wheel
D: Material: aluminium with silicagel

Q: Extra heating

O: Without extra heating
B: Heat recovery coil
C: Preheater (electrical coil) in fresh air (N)
D: Preheater (electrical coil) in fresh air (F)

R: Special applications

O: Without special applications
B: Active dehumidification condensation coil
C: Air zoning
D: Low return temperature application
I: Low T application + Air zoning
K: Low T application + Active dehumidification
L: 100% fresh air
M: 100% fresh air + Air zoning

S: Sensors

0000 - Without options
A: Smoke detection control unit
A: CO₂ sensor environment installation
B: CO₂ sensor ducted installation
C: CO₂ sensor on the pLAN network
A: 1 sensor RS485

B: 2 sensors RS485
C: 3 sensors RS485
D: 4 sensors RS485
E: 1 sensor NTC
A: Ambient temperature sensor
B: Dual ambient temp.+humidity sensor
C: Ambient sensor on the pLAN network

T: Economizer management + Outdoor hum.

00 - Without economizer + without sensor
A: Outdoor humidity sensor on the unit
B: Outdoor hum. sensor on pLAN network
A: Thermal management
B: Thermoenthalpic management
C: Enthalpic management

U: Terminal + Unit communication

000 - Without terminal + stand-alone unit + without communication card
A: Card RS485 Modbus/Carel
B: Card Ethernet PCoWeb
C: Card RS485 LonWorks®
D: Card Ethernet BACnet™
E: Card RS485 BACnet™
F: Card RS485 Konnex
O: Stand-alone unit
A: Master unit
B: Slave unit
A: Graphic terminal in electrical cabinet
B: User terminal in electrical cabinet
C: Graphic terminal in the cabinet + User terminal remote up to 100 m
D: User terminal in the cabinet + Graphic terminal remote up to 200 m
E: Graphic terminal in the cabinet + Graphic terminal remote up to 200 m
F: Touch panel in electrical cabinet
G: Touch panel in the cabinet + Graphic terminal remote up to 200 m
H: Touch panel in the cabinet + User terminal remote up to 100 m

V: Miscellaneous item 1

000 - Without options
A: On-off control of an humidifier
B: Proportional control of an humidifier
A: Electrical energy meter
B: Cooling capacity & elec. energy meter
A: Refrigerant leak detector

W: Miscellaneous item 2

AA00 - Switching devices + std phase relay
A: Compressor soft starter
A: Varnish protection
B: High performance phase sequence relay
B: High grade switching devices

X: Centrifugal return fan

0000 - Without centrifugal return fan
A: Low flow and nominal pressure
B: Low flow and high pressure
C: Nominal flow and nominal pressure
D: Nominal flow and high pressure
E: High flow and nominal pressure
F: High flow and high pressure
G: Low flow and low pressure
H: Nominal flow and low pressure
I: High flow and low pressure
Unused

Y: Indoor air direction

0000 - Lower direction
O: Lower supply and lower return
1: Lateral supply and lower return
2: Lower supply and lateral return
3: Lateral supply and lateral return
Unused

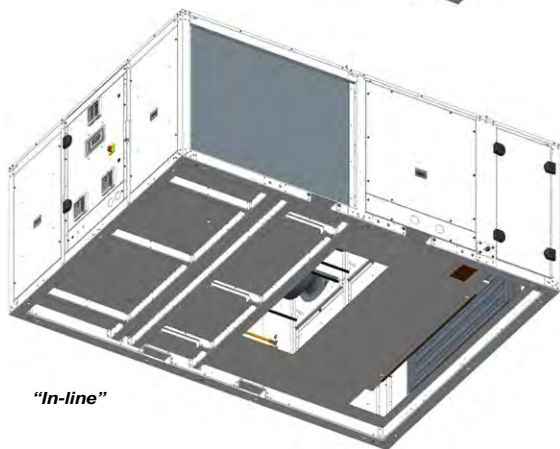
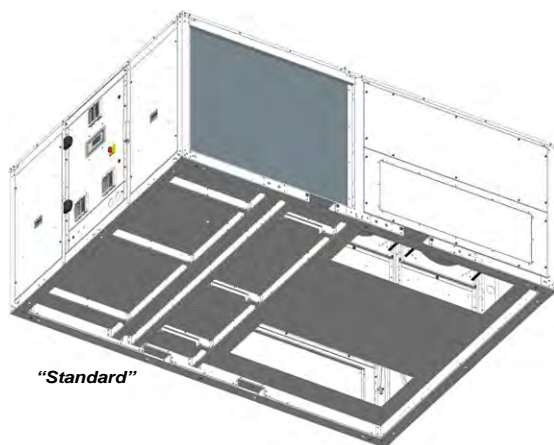
UNIT COMPONENTS

Casing

- Casing made of galvanised steel metal with polyester paint, white colour RAL 7035.
- New self-supporting frame that allow the transport of two stacked units and without the need for a wooden pallet.
- Removable panels for easy access to all components: electrical cabinet, compressors, fans, filters, etc.

Indoor unit

- Two configurations are available, depending on the indoor air flow direction: "Standard" (all models) and "In-line" (models 052 to 093).



- Thermal and acoustic insulation, in double wall panels and registers, with Euroclass A2-s1, d0 (M0) fire classification.
- Coil with copper pipes and aluminium fins.
- EC electronic supply plug-fans with variable control speed and flow rate controller.
- Reusable gravimetric air filters G4, mounted on a frame.

Dual locking system mounted on the access panel to filters.

- Isolated pan of condensate drainage sloping down towards the drain. This pan is removable for easy cleaning.

Outdoor unit

- Coil with copper pipes and aluminium fins.
- EC electronic axial fan(s) which adapt the rotation speed to the installation's requirements, thereby reducing electricity consumption, the sound level at partial charge and improving the unit's average seasonal efficiency.
- The cover with the motor fan(s) may be lifted to access the inside of the outdoor unit.

Cooling circuit

- Hermetic scroll-type compressors in tandem design that improves the management of stages and the part load efficiencies, assembled over antivibration mounts. Relay for phase-sequence monitoring and phase loss protection.
- Crankcase heater.
- Electronic expansion valve(s).
- Four-way cycle reversing valve(s) (heat pump units).
- Acid-resistant filter(s) dryer.
- Cooling design with:
 - 1-air volume: models 50FC 020 to 047 and models 50FF.
 - 2-air volumes: models 50FC 052 to 093.

Protections

- High pressure pressostat(s).
- High and low pressure transducers.
- Compressor discharge temperature control.
- Main door switch.
- Protection for power lines of compressors with manual motor starters and power lines of fan motors with magnetothermic switches. These devices provide protection against overload, short circuit, phase failure and undervoltage.
- Automatic switch in the control circuit.

Electrical cabinet

- Complete and fully wired electrical cabinet. Insulated access door to prevent condensation. Forced ventilation of the electrical cabinet. Protection IP54.
- Numeration of wired and identification of components in the electrical cabinet. It permits easy tracing and diagnostics.
- Hinges + quarter-turn latches on the removable access door.
- Electrical power supply with neutral.
- Main ground connection.
- Compressor and fan motor contacts.

OPERATING LIMITS

Inlet air conditions		Cooling	
		50FF	50FC
Indoor coil	Minimum temperature	9,7°C WB	
	Maximum temperature	24°C WB	
Outdoor coil	Minimum temperature	12°C (1)	
	Maximum temperature	52°C	48°C

Inlet air conditions		Heating	
		50FC	
Indoor coil	Minimum temperature	10°C	
	Maximum temperature	27°C	
Outdoor coil	Minimum temperature	-15°C WB (2)	
	Maximum temperature	15°C WB	

(1) With a condensation pressure control operating down to -10°C.

(2) When the outdoor temperature is usually below 5°C WB, the installation of a support element is recommended.

CONTROLS

"50FC" control

Factory-installed "50FC" control provide the capability for free standing operation or may be linked with a more extensive system. Factory-installed and programmed Modbus communication capability provides simple integration with the building BMS system.

The 50FF/FC range may also be configured to communicate via LonWorks®, BACnet™ and Konnex protocols, if required by the application.

The "50FC" control also have the capability to communicate with our supervision solutions: **pCO Web**, **PlantWatchPRO3** and **BOSS**.

This communication flexibility allows simple system integration, as well as data collection, trending, monitoring and alarm displays. The control provides unparalleled service diagnostic information.

This control also manages a local connection between units through a pLAN network (Local Area Network), allowing data and information to be exchanged between units, for a maximum of 15 units.

The "50FC" control are your link to a world of simple and easy-to-use rooftop units that offer outstanding performance and value. With the sensors, it maintains control over all the components of the unit and helps optimise the performance of the refrigeration circuits as conditions change, resulting in the following features:

- Higher part load efficiency.
- Better control of temperature.
- Superior reliability.
- High ambient cooling operation at 48°C.
- Low ambient cooling operation at -15°C WB.

The main functions of this control are:

- Selection of setpoint and operating mode: HEATING / COOLING / AUTO / VENTILATION.
- Continuous control of the operating parameters.
- Display of the values measured by the sensors.
- Compressors cycles.
- Defrosting management.
- Control of the supply air temperature.
- All-seasons operation via the condensation and evaporation pressure control.

The management of the unit in cooling mode is based on the principle of a high floating pressure. The condensation pressure setpoint is continually calculated depending on the outdoor temperature. This pressure is regulated by adjusting the air flow on the outdoor fans.

- Setpoint compensation based on the outdoor temperature.
- Hourly and weekly schedule.
- Fire protection.
- Diagnosis of faults and general alarm.
- Management of all the optional components available for the unit: economizer, back-up heating, CO2 air quality sensor, energy recovery,...

User interfaces

Graphic terminal

This terminal, fitted as standard on the electrical cabinet, is very easy to use. It provides detailed explanations of control in easy to understand English. No decoding is required.

Only 6, large, easy-to-use buttons are required to maneuver through the entire menus.

- This terminal is used to:
 - Carry out initial programming of the unit.
 - Modify operating parameters.
 - Switch the unit ON / OFF.
 - Select the operating mode and adjust the setpoints.



- Display the variables controlled and sensor values measured.
- Display the current alarms and their historical record.

User terminal (optional)

This terminal can be installed on the electrical cabinet, instead of the graphic terminal. In this case, the remote connection of the graphic terminal is possible.



- This terminal is used to:
 - Switch the unit ON / OFF.
 - Select the operating mode and adjust the setpoints.
 - Display the installation's temperatures and humidity, outdoor temperature, supply air temperature, CO₂ sensor and opening of the outdoor damper.
 - Display alarms codes.

Touch panel (optional)

With the same functions as the graphic terminal, the 4.3 inch touchscreen panel makes interaction between the user and the unit much easier by simplifying navigation between the various screens.



Supervision solutions

Different solutions of supervision are available bases on the dimensions of the installation for unit fitted with A BMS card (Ethernet pCO Web or RS485 Carel / Modbus).

pCO Web

- It is the solution for the management and supervision of a single unit if this incorporates the Ethernet pCO Web card.

PlantWatchPRO3

- This is a solution designed for the monitoring of small and medium-size installations, capable of manage up to 30 units. Suitable for technical environments, no parts are in movement. It's available in two versions: panel and wall.

Includes: 7 " touch display, buzzer for notifications, 1 USB port and 1 SD card slot for downloading reports, charge devices models and applying service packs.

For this option, each unit needs one RS485 Carel / Modbus board.

BOSS

- This is the solution for the management and supervision of air-conditioning installations with up to 300 units. Integrated Hotspot Wi-Fi.

It offers advanced monitoring and maintenance functions and allows zones and groups to be created to simplify the management of the installation. It also allows energy meters to be integrated to monitor the installation electricity consumption.

BOSS is available in two versions:

- CPU device.
- CPU device, monitor, keyboard and screen.

For this option, each unit needs one RS485 Carel / Modbus board.

These systems are used to manage the installation remotely. All the information on the system can be accessed via a simple Internet connection. The online interface, the same one used by the local user, enables monitoring and complete configuration of the installation: from the office or anywhere else the user happens to be.

To control multiple sites remotely, there are special tools dedicated to centralized management, such as **RemotePRO** and **RemoteValue**.

PHYSICAL DATA (EN-14511-2018)

50FF		020	028	037	040	045	047	052	058	062	070	074	086	093
Cooling capacities														
Cooling capacity (1)	kW	22,88	28,86	34,80	38,76	43,36	44,98	49,85	54,22	59,89	68,70	72,77	80,84	90,39
Power input (2)	kW	7,13	9,30	10,62	12,10	14,10	14,87	15,58	17,27	19,92	21,48	22,89	26,34	30,06
EER performance		3,21	3,10	3,28	3,20	3,07	3,02	3,20	3,14	3,01	3,20	3,18	3,07	3,01
SEER		4,89	4,84	4,59	4,44	4,33	4,32	4,63	4,55	4,49	4,49	4,49	4,31	4,25
ηs		193%	191%	181%	175%	170%	170%	182%	179%	177%	176%	177%	170%	167%
Outdoor circuit fan		Electronic axial fan												
Nominal air flow	m³/h	9.000	14.500	17.000	17.000	17.000	17.750	31.000	31.000	31.000	33.000	33.000	34.500	35.000
Available static pressure	mm.w.c	5												
Number / Diameter	mm	1 / 630	1 / 800					2 / 800						
Motor output	kW	0,9	2,6					2 x 2,6						
Maximum speed	r.p.m.	1.140	1.020					1.020						
Maximum absorbed current	A	1,6	3,9					7,8						
Indoor circuit supply fan		Electronic plug-fan												
Nominal air flow	m³/h	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Available static pressure	mm.w.c	12	12	12	15	15	15	20	20	20	20	20	20	25
Number / Diameter	mm	1 / 500	1 / 500					2 / 500					2 / 500	
Motor output	kW	1 x 2,65	1 x 2,83					2 x 2,65					2 x 2,83	
Power input	kW	0,62	1,01	1,79	1,90	2,00	2,04	2,04	2,20	2,20	3,53	3,53	3,42	3,75
Speed	r.p.m.	1.700												
Maximum absorbed current	A	4,2	4,3					8,4					8,6	
Compressor		Scroll												
No. compressors / stages / circuits		2 / 2 / 1												
Oil type		Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC												
Volume of oil	l	2,5	2,5	3,3	3,5	3,5	3,5	3,6	5,0	5,0	5,0	6,5	6,8	6,8
Electrical characteristics														
Mains voltage		400 V / III ph / 50 Hz (±10%)												
Power supply		3 Wires + Ground + Neutral												
Maximum absorbed current	A	18,9	26,5	26,4	29,9	33,6	34,0	42,6	49,0	53,5	54,6	55,7	61,3	74,3
Refrigerant		R-410A												
Global warming potential (3)	GWP	2.088												
Charge	kg	7,3	7,6	9,7	9,7	10,0	10,3	9,7	9,7	10,0	17,0	17,5	17,5	18,0
Environment impact	tCO2eq	15,2	15,9	20,3	20,3	20,9	21,5	20,3	20,3	20,9	27,1	28,2	28,2	29,2
Additional charge of optional active dehumid.	kg	3,3	3,3	5,4	5,4	5,4	5,4	10,5	10,5	10,5	10,5	10,5	10,5	10,5
Environment impact of optional active dehumid.	tCO2eq	6,9	6,9	11,3	11,3	11,3	11,3	21,9	21,9	21,9	21,9	21,9	21,9	21,9
Weight														
B1 assembly	kg	594	617	699	698	704	701	914	929	936	1.035	1.059	1.057	1.078

(1) Cooling capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 27°C, 19°C WB and 35°C outdoor temperature.

(2) Total power input by compressors and motorised fans under nominal conditions, calculated in accordance with the EN-14511-2018 standard.

(3) Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

Compliance

- Machinery Directive 2006/42/EC (MD)
- Electromagnetic Compatibility Directive 2014/30/EU (EMC)
- Low Voltage Directive 2014/35/EU (LVD)
- Pressure Equipment Directive 2014/68/EU (Category 2) (PED)
- RoHS Directive 2011/65/EU (RoHS)
- Eco-design Directive 2009/125/EC (ECO-DESIGN)
- Energy Labelling Directive 2017/1369/EU (ECO-LABELLING)
- Harmonised Standard: EN 378-2:2012 (Refrigerating systems and heat pumps - Safety and environmental requirements).

PHYSICAL DATA (EN-14511-2018)

50FC		020	028	037	040	045	047	052	058	062	070	074	086	093
Cooling capacities														
Cooling capacity (1)	kW	22,31	27,78	33,44	36,90	41,50	43,92	53,22	57,80	60,39	68,26	72,22	80,66	90,18
Power input (3)	kW	7,00	8,98	10,25	11,79	13,40	14,26	16,53	18,38	19,38	21,27	22,89	25,77	28,94
EER performance		3,19	3,09	3,26	3,13	3,10	3,08	3,22	3,14	3,12	3,21	3,15	3,13	3,12
SEER		4,82	4,83	4,57	4,44	4,34	4,35	4,82	4,82	4,85	4,62	4,56	4,44	4,45
ηs		190%	190%	180%	175%	171%	171%	190%	190%	191%	182%	179%	175%	175%
Heating capacities														
Heating capacity (2)	kW	21,88	27,72	33,05	36,61	41,82	44,56	50,71	55,79	58,57	67,68	71,77	80,38	89,66
Power input (3)	kW	5,82	7,99	9,09	10,21	12,00	12,95	14,43	16,01	16,89	18,97	20,27	22,91	25,90
COP performance		3,76	3,47	3,64	3,59	3,49	3,44	3,51	3,48	3,47	3,57	3,54	3,51	3,46
SCOP		3,47	3,43	3,45	3,45	3,46	3,44	3,57	3,59	3,50	3,49	3,55	3,59	3,58
ηs		136%	134%	135%	135%	135%	135%	140%	141%	137%	137%	139%	141%	140%
Outdoor circuit fan		Electronic axial fan												
Nominal air flow	m³/h	9.000	14.500	17.000	17.000	17.000	17.750	31.000	31.000	31.000	33.000	33.000	34.500	35.000
Available static pressure	mm.w.c	5												
Number / Diameter	mm	1 / 630	1 / 800						2 / 800					
Motor output	kW	0,9	2,6						2 x 2,6					
Maximum speed	r.p.m.	1.140	1.020						1.020					
Maximum absorbed current	A	1,6	3,9						7,8					
Indoor circuit supply fan		Electronic plug-fan												
Nominal air flow	m³/h	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Available static pressure	mm.w.c	12	12	12	15	15	15	20	20	20	20	20	20	25
Number / Diameter	mm	1 / 500		1 / 500				2 / 500					2 / 500	
Motor output	kW	1 x 2,65		1 x 2,83				2 x 2,65					2 x 2,83	
Power input	kW	0,62	1,01	1,79	1,90	2,00	2,04	2,04	2,20	2,20	3,53	3,53	3,42	3,75
Speed	r.p.m.	1.700												
Maximum absorbed current	A	4,2		4,3				8,4					8,6	
Compressor		Scroll												
No. compressors / stages / circuits		2 / 2 / 1						4 / 4 / 2						
Oil type		Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC												
Volume of oil	l	2,5	2,5	3,3	3,5	3,5	3,5	2,5 + 2,5	2,5 + 2,5	2,5 + 3,3	3,3 + 3,3	3,3 + 3,5	3,5 + 3,5	3,5 + 3,5
Electrical characteristics														
Mains voltage		400 V / III ph / 50 Hz (±10%)												
Power supply		3 Wires + Ground + Neutral												
Maximum absorbed current	A	18,9	26,5	26,4	29,9	33,6	34,0	48,1	53,5	53,2	56,3	60,2	68,8	73,8
Refrigerant		R-410A												
Global warming potential (4)	GWP	2.088												
Charge	kg	8,0	8,3	11,0	11,0	11,3	11,6	2 x 6,3	2 x 6,4	2 x 6,5	2 x 10,0	2 x 10,2	2 x 10,2	2 x 10,3
Environment impact	tCO2eq	16,7	17,3	23,0	23,0	23,6	24,2	26,1	26,7	27,1	41,8	42,4	42,4	42,8
Additional charge of optional active dehumid. (5)	kg	4,9	4,9	4,6	4,6	4,6	4,6	11,2	11,2	11,2	11,5	11,5	11,5	11,5
Environment impact of optional active dehumid.	tCO2eq	10,2	10,2	9,6	9,6	9,6	9,6	23,4	23,4	23,4	24,0	24,0	24,0	24,0
Weight														
B1 assembly	kg	585	610	675	680	685	690	990	995	1.040	1.155	1.160	1.165	1.170

- (1) Cooling capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 27°C, 19°C WB and 35°C outdoor temperature.
- (2) Heating capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 20°C and 6°C WB outdoor temperature.
- (3) Total power input by compressors and motorised fans under nominal conditions, calculated in accordance with the EN-14511-2018 standard.
- (4) Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.
- (5) In two-circuit models, additional charge on circuit 2.

Compliance

- Machinery Directive 2006/42/EC (MD)
- Electromagnetic Compatibility Directive 2014/30/EU (EMC)
- Low Voltage Directive 2014/35/EU (LVD)
- Pressure Equipment Directive 2014/68/EU (Category 2) (PED)
- RoHS Directive 2011/65/EU (RoHS)
- Eco-design Directive 2009/125/EC (ECO-DESIGN)
- Energy Labelling Directive 2017/1369/EU (ECO-LABELLING)
- Harmonised Standard: EN 378-2:2012 (Refrigerating systems and heat pumps - Safety and environmental requirements).

FACTORY OPTIONS AND ACCESSORIES

Category	Description	Factory installed option	Field installed accessory	Models
Electrical power Flow + Assembly	400 V / 3 ph / 50 (without neutral)	X		All
	B2: Standard. Economizer, 2 dampers	X		All
	BF: Standard. 100% fresh air	X		All
	B3: Standard. Economizer, 3 dampers	X		All
	BX: Standard. Axial fan in return section	X		All
	BP: Standard. EC plug-fan in return section	X		All
	BA: Standard. Cooling recovery circuit with EC plug-fan in return section	X		All
	BT: Standard. Return top box with EC plug-fan or centrifugal fan	X		All
	BB: Standard. Cooling recovery circuit with EC plug-fan or centrifugal fan in return top box	X		All
	BW: Standard. Heat recovery wheel module	X		All
	R2: In-line. Economizer, 2 dampers	X		052 to 093
	RP: In-line. EC plug-fan in return section	X		052 to 093
	RW: In-line. Heat recovery wheel module	X		052 to 093
Coil coating	Coils with copper-made pipes and fins	X		All
	INERA® coils with aluminium alloy fins and copper pipes	X		All
	Coils with polyurethane precoated aluminium fins and copper pipes	X		All
	Blygold® coating	X		All
Heating	Auxiliary hot water coil : Standard or Very low outdoor temperature	X		All
	Auxiliary electrical heaters	X		All
	Warm air heater module with gas burner (supplied installed inside a pre-assembly roofcurb)		X	All
	Gas-fired condensing boiler with hot water coil	X (*)		All
Protection low temperature	Freeze protection OAT lower than -10°C	X		All
	Freeze protection OAT lower than -14°C	X		All
	Freeze protection OAT lower than -10°C + spring shut-off dampers	X		All
	Freeze protection OAT lower than -14°C + spring shut-off dampers	X		All
Supply fan	Supply fan with high available pressure or low available pressure	X		All
Air filtration + droplet eliminator	Droplet eliminator after the indoor air coil	X	X	All
	Low pressure drop G4 filters	X	X	All
	G4 filters + M6, F7 or F9 folded filters	X	X	All
	Low pressure drop G4 filters + F7 or F9 folded filters	X	X	All
	Double stage of folded filters: M6+F7, M6+F9, F7+F9 or F9+F9	X	X	All
Outdoor fan	Two-speed direct-driven axial fans	X		All
Insulation	Thermal and acoustic insulation, Euroclass A2-s1, d0 (M0), in ceramic fibre	X		All
Indoor unit	Condensates drain pan in stainless steel	X	X	All
	Room overpressure management	X		All
	Filter fouling detection with differential pressure switch	X		All
Outdoor unit	Fresh air safety grid	X	X	All
	Outdoor coil protection grid	X	X	All
	Droplet eliminator at the fresh air intake	X	X	All
	Antivibration mounts made of rubber	X	X	All
Heat recovery wheel	Selection of the heat recovery wheel (BW and RW assemblies): wheel materials, channel cross section, air filtration and type of speed control	X		All
Extra heating	Heat recovery coil	X		All
	Preheater (electrical heater) in fresh air, low or nominal power		X	All
Special applications	Active dehumidification with condensation coil	X		All
	Air zoning	X		All
	Low return temperature application	X		All
	Low return temperature application + Air zoning	X		All
	Low return temperature application + Active dehumidification	X		All
	100% fresh air (without or with air zoning)	X		All
Sensors	NTC ambient temperature sensor on the control board or 1 to 4 sensors with RS485 comm.	X	X	All
	Dual ambient temperature-humidity sensor with RS485 communication. Up to four sensors	X	X	All
	CO2 sensor: environment or ducted installation or installed on a pLAN network	X	X	All
	Smoke detection control unit in accordance with the NF S 61-961 standard	X	X	All
Economizer + Outd. humidity	Economizer management: thermal, enthalpic or thermoenthalpic	X	X	All
	Outdoor air humidity sensor: supplied with the unit or installed on a pLAN network	X	X	All
Terminal + Unit communication	Graphic terminal installed in the electrical cabinet + User terminal remote up to 100 m	X	X	All
	Graphic terminal installed in the electrical cabinet + Graphic terminal remote up to 200 m	X	X	All
	User terminal installed in the electrical cabinet	X	X	All
	User terminal installed in the electrical cabinet + Graphic terminal remote up to 200 m	X	X	All
	Touch panel in the electrical cabinet	X	X	All
	Touch panel in the cabinet + Graphic terminal remote up to 200 m	X	X	All
	Touch panel in the cabinet + User terminal remote up to 100 m	X	X	All
	Unit configuration: stand-alone, master or slave	X	X	All
	Communication cards: RS485 Modbus/Carel; Ethernet PCoWeb; RS485 LonWorks®; Ethernet BACnet™; RS485 BACnet™; RS485 Konnex	X	X	All
Miscellaneous item 1	Management of an humidifier with on-off or proportional control	X		All
	Electrical energy meter	X		All
	Cooling capacity and electrical energy meter	X		All
	Refrigerant leak detector	X		All
Miscellaneous item 2	Compressor soft-starter	X		All
	Varnish protection for components on the electrical cabinet: control board, cards and terminals	X		All
	High performance phase sequence relay	X		All
	High grade switching devices	X		All
Return fan	Centrifugal return fan (BB and BT assemblies). 9 combinations of air flow and available pressure	X		All
Air direction	0: Lower supply and lower return; 1: Lateral supply and lower return 2: Lower supply and lateral return; 3: Lateral supply and lateral return	X		All
Roofcurb	Pre-assembly roofcurbs with adjustable height		X	"Standard"
	Adaptation roofcurbs for replacing units on renovation		X	"In-line"

(*) Part of this option must be installed on-site.

FACTORY OPTIONS AND ACCESSORIES (CONT.)

Assembly + Indoor air flow direction (B: "Standard")

Assembly	Description	Models	Indoor air direction			
			0 Lower supply Lower return	1 Lateral supply Lower return	2 Lower supply Lateral return	3 Lateral supply Lateral return
B1	"Standard"	All				
B2	"Standard" Economizer, 2 dampers	All				
BF	"Standard" 100% fresh air	All	×	×		
B3	"Standard" Economizer, 3 dampers	All			×	×
BX	"Standard" Axial fan in return section	All			×	×
BP	"Standard" EC plug-fan in return section	All			×	×
BA	"Standard" Cooling recovery circuit with EC plug-fan in return section	All			×	×
BT	"Standard" Return top box with EC plug-fan or centrifugal fan	All	×	×		
BB	"Standard" Cooling recovery circuit with EC plug-fan in return top box or centrifugal fan	All	×	×		
BW	"Standard" Heat recovery wheel module	All			×	×

S: air supply

R: air return

F: fresh air intake

E: air exhaust

FACTORY OPTIONS AND ACCESSORIES (CONT.)

Assembly + Indoor air flow direction (R: "In-line")

Assembly	Description	Models	Indoor air direction	
			0 Lower supply Lower return	2 Lower supply Lateral return
R1	"In-line"	052 to 093		
R2	"In-line" Economizer, 2 dampers	052 to 062		
		070 to 093		
RP	"In-line" EC plug-fan in return section	052 to 062		×
		070 to 093		×
RW	"In-line" Heat recovery wheel module	052 to 093		×

S: air supply

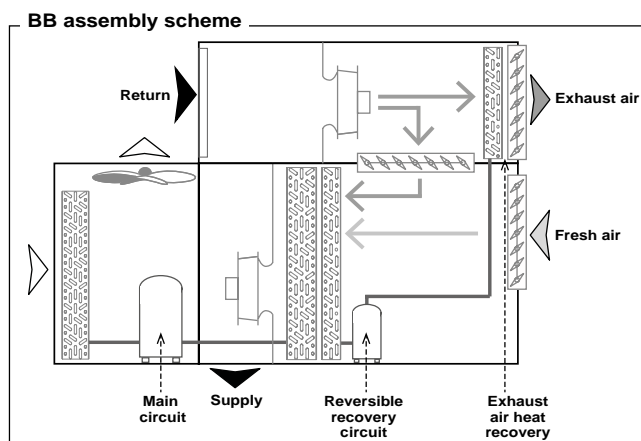
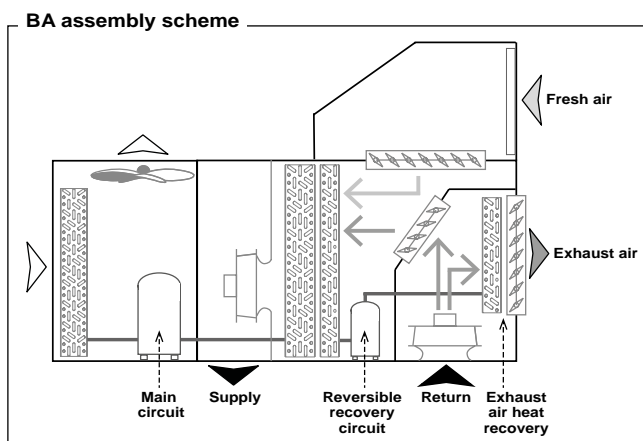
R: air return

F: fresh air intake

E: air exhaust

Active recovery (BA and BB assemblies)

The unit is fitted with a thermodynamic circuit dedicated to the recovery of the extracted air energy, with independent and proportional control, adapted to the air renewal requirements in order to raise the COP, EER and seasonal efficiency.



FACTORY OPTIONS AND ACCESSORIES (CONT.)

Passive recovery (BW and RW assemblies)

The heat recovery wheel is used to transfer the sensible and latent heat from the air-conditioned room's return air to the fresh air used for ventilation, before it's discharged outdoors.

The return air circulates in half of the heat recovery unit and the ventilation air circulates in the other half, in the opposite direction. As the rotor rotates, very fine channels of air which form the matrix come into contact with the fresh air and the return air in turn, thereby transferring heat and humidity from one to the other.

The efficiency of energy recovery depend on the wheel selected: wheel material, channel cross section, air filtration and type of speed control.

The heat recovery wheel is fitted into a module placed on one side of the unit (assemblies BW and RW). This module is supplied disassembled with the unit, for installation on site.

Electrical power

- These units can be supplied for the following power supply voltages:
 - 400 V / 3 ph + N / 50 Hz (standard)
 - 400 V / 3 ph / 50 Hz (optional)

Coils coating

- Coil with copper-made pipes and fins. Upon request.
- INERA® coils with aluminium alloy fins of high performance and great resistance to the corrosion, and copper pipes.
- Coils with polyurethane precoated aluminium fins and copper pipes.
- Blygold® coating.

Note: These coating can be applied to various coils (outdoor, indoor and hot water coil) according to the combinations available in our "Selection Software".

Heating

The unit only can incorporate one of these heating elements:

- **Auxiliary hot water coil**, with three-way valve and proportional control, for assembly inside the unit.
 - The unit incorporates a freeze protection thermostat.
 - There are two configuration types available:
 - Standard (HAS), the only safety system is the freeze protection thermostat.
 - Very low outdoor temperature (HAF), with freeze protection technology based on the water temperature. This protection is made up of a circulation pump as well as two sensors inserted in the input and the output of the coil.

Important: this option is mandatory for an outdoor temperature lower than -20°C WB. Consult for percentages of glycol water above 20%.

Note: on units with this option, air supply only may be lateral (factory-configured).

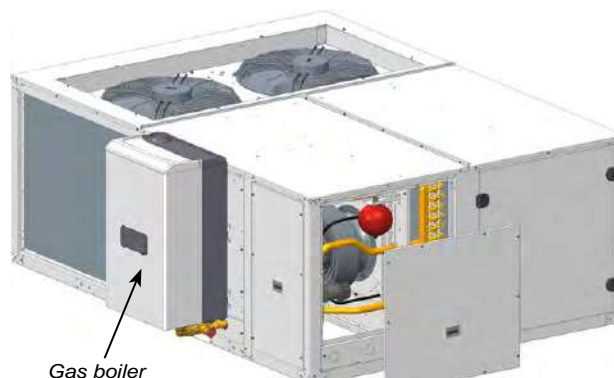
Note: the active dehumidification is not compatible with the hot water coil.

- **Gas-fired condensing boiler with hot water coil**. Natural or propane gas boiler with modulating actuator, in accordance with the Gas Directive 2009/142/EC, mounted on the side of the unit.

The boiler is connected to the water circuit of the auxiliary coil.

Up to 3 values of total power available for each model:

50FF/FC	020 to 047	052 to 062	070 to 093
BBF (Low)	unavailable	Condexa PRO 50 (coming soon)	Condexa PRO 50 (coming soon)
BBM (Nominal)	Condexa PRO 40 (coming soon)	Condexa PRO 70	Condexa PRO 70
BBS (High)	Condexa PRO 70	Condexa PRO 100	Condexa PRO 100



Note: the active dehumidification is not compatible with the gas boiler.

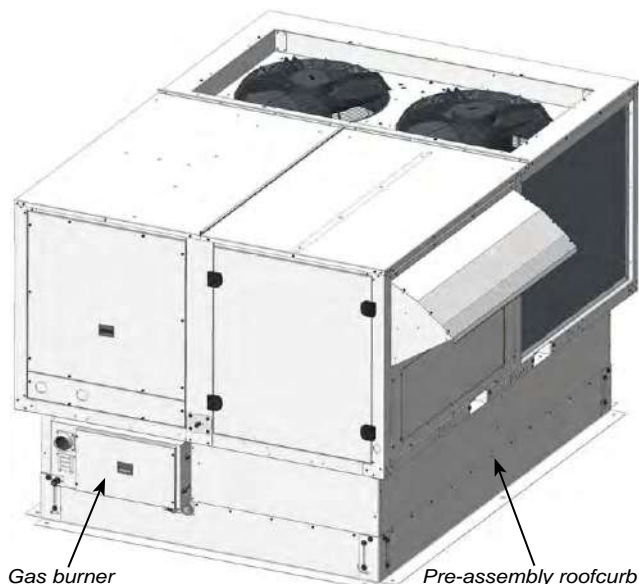
- **Warm air heater module with gas burner** with modulating actuator, in accordance with the Gas Directive 2009/142/EC, installed inside a pre-assembly roofcurb.

Condensation boiler with premixing and modulation technology that allows outputs close to 109% with regard to the lower heating value (LCV).

Up to 3 values of total power available for each model:

50FF/FC	020 to 047	052 to 062	070 to 093
BAF (Low)	PCH020	unavailable	unavailable
BAM (Nominal)	PCH034	PCH065	PCH080
BAS (High)	PCH045	PCH080	PCH105

Note: It's recommended to use the filter fouling detector (optional) in units with gas burner.



FACTORY OPTIONS AND ACCESSORIES (CONT.)

- **Auxiliary electrical heaters**, with two power stages and on/off control, for assembly and connection inside the unit. Up to 3 values of total power available for each model:

50FF/FC	020 to 047	052 to 062	070 to 093
RAF (Low)	12 kW	12 kW	18 kW
RAM (Nominal)	18 kW	18 kW	27 kW
RAS (High)	unavailable	27 kW	36 kW

Protection for low outdoor temperature

- Freeze protection OAT lower than -10°C. Mandatory for an outdoor temperature lower than -10°C WB.
 - Electrical heater for protection of the components of the electrical cabinet.
 - Compressor with protection for low temperature.
- Freeze protection OAT lower than -14°C. Mandatory for an outdoor temperature lower than -14°C WB. In addition to the options of -10°C, this includes:
 - Reinforced electrical heater for protection of the components of the electrical cabinet.
 - Electrical heater for anti-freeze protection of dampers of the economizer (if applicable).
 - Protective kit of the gas burner for low temperature (if applicable).
- Freeze protection OAT lower than -10°C + spring shut-off dampers in case of a power failure.
- Freeze protection OAT lower than -14°C + spring shut-off dampers in case of a power failure.

Supply fan

- There are 3 optional fans depending on the available pressure:
 - Low pressure (F): all models except for 037, 040, 045, 047, 070 and 074.
 - Nominal pressure (N): all models.
 - High pressure (S): all models.
- Important: the "Selection Software" will choose the supply fan with lower consumption for the available pressure required.

Air filtration + Droplet eliminator

Options to improve indoor air quality:

- Different combinations of filters are available:
 - Gravimetric filters G4 with low pressure drop.
 - Gravimetric filters G4 of standard type + folded opacimetric filters M6, F7 or F9.
 - Gravimetric filters G4 with low pressure drop + folded opacimetric filters F7 or F9.
 - Double-stage of folded opacimetric filters (M6+F7, M6+F9, F7+F9 or F9+F9).

Important: filters G4 of standard type supplied from the factory cannot be replaced by other types of filters because the thickness of the frames is different.

Classification of these filters according to the new **ISO 16890 Standard**:

- G4 → ISO Coarse 60%
- M6 → ISO ePM2.5 50%
- F7 → ISO ePM1 60%
- F9 → ISO ePM1 90%

- Droplet eliminator after the indoor air coil. Recommended in cases where a high moisture content in the air is foreseen or when the air flow is high.

Note: with hot water coil it is not possible to assemble the droplet eliminator.

Outdoor fan

- Two-speed direct-driven axial fan(s). Watertight motor class F, IP54 and internal thermal protection. Dynamically balanced propellers and outdoor protective grille.
- Not recommended with the optional active dehumidification and outdoor temperatures below 12°C.

Insulation

- Thermal and acoustic insulation in ceramic fibre, with Euroclass fire classification A2-s1, d0 (M0) in panels not removable in contact with the indoor air (top, bottom panel).
- Note: the other panels and registers of the indoor unit always include thermal and acoustic insulation, with Euroclass fire classification A2-s1, d0 (M0).

Indoor unit

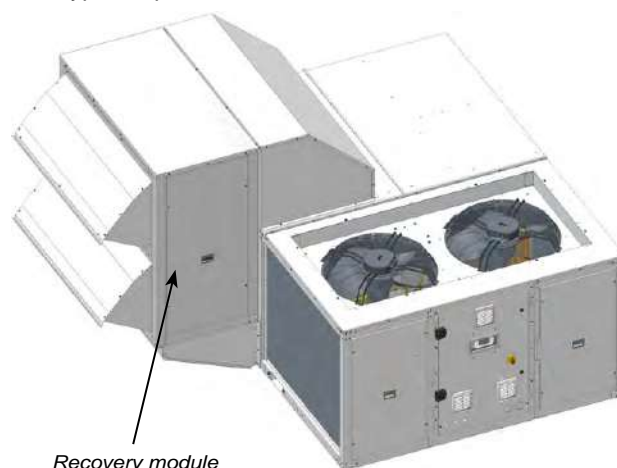
- Condensate drain pan in stainless steel for corrosion protection.
- Room overpressure management (available in BP, BT, BW, RP and RW assemblies). In installations with different air flow in supply and return, to prevent the entry of outdoor air or to eliminate odours from inside, the fresh air damper and the exhaust damper will be managed independently.
- Filter fouling detection with differential pressure switch.

Outdoor unit

- Fresh air safety grid (9x9mm).
- Outdoor coil protection grid.
- Antivibration mounts made of rubber.
- Droplet eliminator at the fresh air intake. This one and the thermoenthalpic free-cooling are necessary in cases where a high moisture content in the air is foreseen.

Heat recovery wheel

- The heat recovery wheel is fitted into a module placed on one side of the unit (BW and RW assemblies).
- The efficiency of energy recovery depend on the wheel selected: wheel material, channel cross section, air filtration and type of speed control.



Recovery module

FACTORY OPTIONS AND ACCESSORIES (CONT.)

Extra heating

- **Heat recovery coil (HRC).** The coil function is to pre-heat the air that will pass through the main indoor coil. For this, it uses the temperature of an outdoor water installation.

The coil is supplied with a 3-way valve for installation outside the unit but manages by the electronic control.

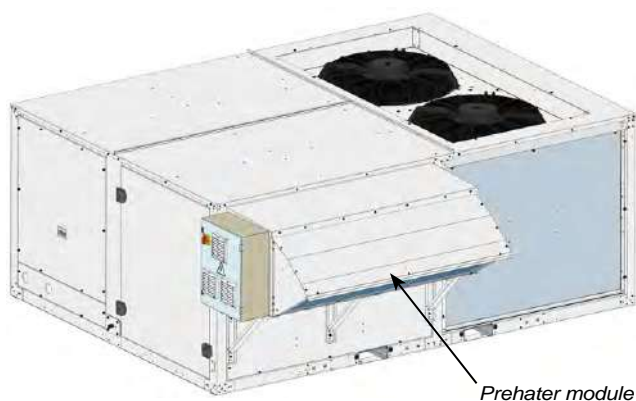
This option is compatible with B1, B2, BF, BT, BB, R1 and R2 assemblies.

- With BF assembly, 100% fresh air, it is possible to incorporate a preheater module (electrical heater) coupled to the fresh air intake. This module is supplied in kit for installation on site.

The electrical heater with proportional control will modulate capacity to get the condenser inlet conditions within the operating limits of the cooling circuit in case of very low outdoor temperatures.

Two values of power are available: low (F) and nominal (N).

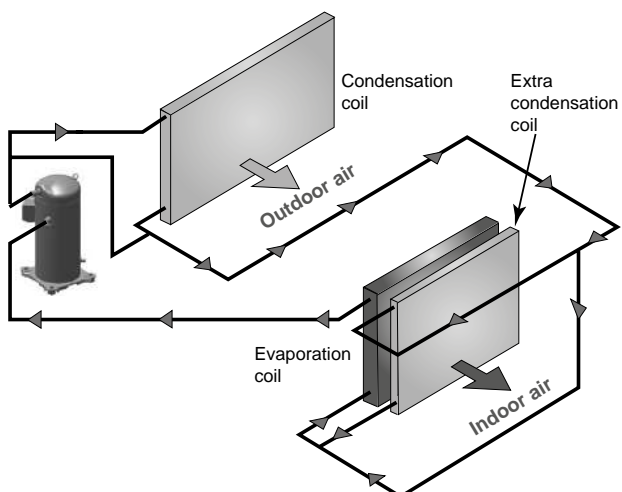
Note: The electrical connection of the kit is the responsibility of the installer.



Special applications

- **Active dehumidification with condensation coil.** Extra condensation coil for dehumidification applications in high relative humidity ambients.

The dehumidification process is done by the main refrigerant coil. Hot gas recovered is injected in the additional condensation coil to reheat the air.



This new option is the solution for applications which require the highest degree of indoor comfort and humidity control. It could be of particular interest to the supermarkets,

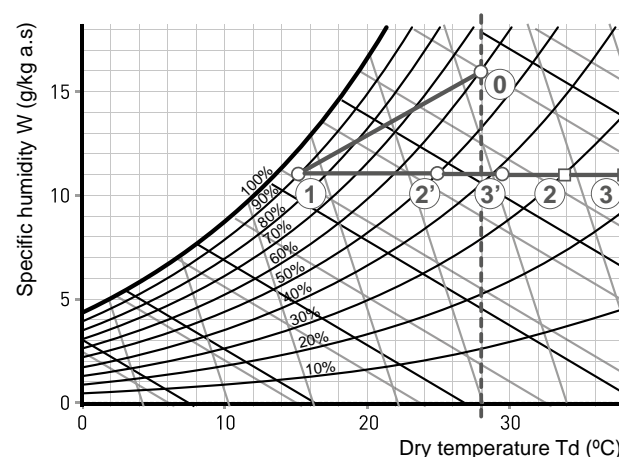
restaurants, museums and in cases of high latent cooling load and/or in humid climates.

It's used in low temperature stock applications to avoid condensation over goods or refrigeration cabinets glass doors.

It allows controlling the maximum levels of humidity in the room in the most efficient way, and independently of the location and the part-load of the unit.

The use of the extra condensation battery to reheat the air after the evaporator provides a flexible and efficient operation to accurately compensate for the room demand.

This option also allows an additional reheating using the auxiliary electrical heaters.



- 0 → 1: Normal evolution in the evaporator without using extra condensation coil
- 1 → 2: Reheating using extra condensation coil in units of 1 circuit
- 1 → 2': Reheating using extra condensation coil in units of 2 circuits
- 2 → 3: Additional reheating using the auxiliary electrical heaters in units of 1 circuit
- 2' → 3': Additional reheating using the auxiliary electrical heaters in units of 2 circuits

The "Selection software" allows to obtain the value of the supply air temperature for the point 2 (or 2') according to the extra condensation coil. It will also calculate point 3 (or 3') according to the power selected for the auxiliary electrical heaters.

Note: the active dehumidification is not compatible with the hot water coil, the gas boiler, the air zoning and the BF assembly.

- **Low return temperature application.** This option is particularly interesting in certain applications for food conservation and it can be used in large storage facilities. With this option, the unit, operating in cooling mode, is adapted to manage an installation with low return temperature (15°C).

- The mounting **100% fresh air** with no return or extraction air flow (BF assembly) will address special requests where return air flow cannot be used, in order to avoid contamination (kitchens, and some other places with indoor odours or other pollutants).

In order to keep the cooling circuit working inside operation limits, and depending on design conditions, the unit could be selected with lower air flow than minimum used for the same size in the rest of assemblies.

Depending on the heating design conditions, it is also necessary to select an additional electrical heating in the fresh air intake (preheater module).

FACTORY OPTIONS AND ACCESSORIES (CONT.)

■ Zoning of the air flow up to 4 different zones.

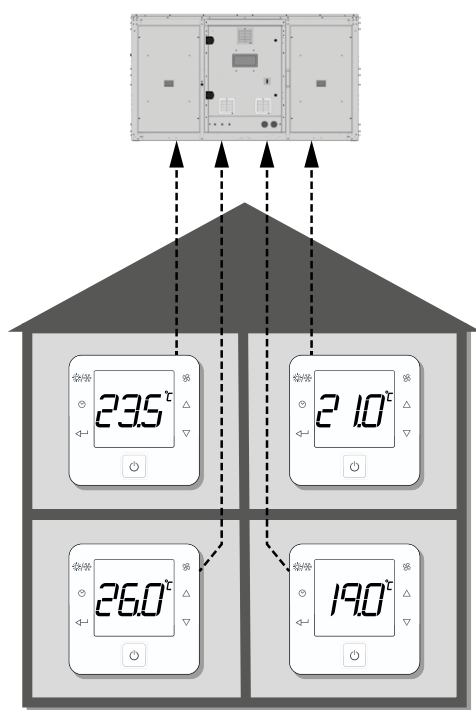
This option allows the management of the air flow of the unit to condition up to 4 different zones with a minimum air flow of 35% (all in one operating mode: heating or cooling).

The air zoning includes 4 zone terminals and a control board in a separate box. The zone terminals, the servomotors of the dampers as well as the main board of the "50FC" control are connected to this box.

The unit adapts the air flow and the capacity according to the needs and active zones at any time. The electronic control sends the control signal to the servomotors of the dampers.

Important: the dampers and servomotors are not supplied from the factory.

Note: the active dehumidification is not compatible with the air zoning.



Sensors

- Ambient temperature sensor(s). There are 3 options:
 - One NTC sensor connected to the control board.
Note: An ambient sensor with RS485 communication is required for installation at more than 30 meters.
 - Up to four sensors with RS485 communication.
 - Sensor(s) installed on the master unit of the local network (pLAN).
- Dual ambient temperature-humidity sensor(s). Up to four sensors with RS485 communication or installed on the pLAN network. This sensor is compulsory in units with enthalpic or thermoenthalpic free-cooling (optional). In this case, the outdoor air humidity sensor is also added.
- CO₂ sensor for air quality control. There are 3 options:
 - Sensor for installation in the environment.
 - Sensor for ducted installation.
 - Sensor installed on the master unit of the local network (pLAN).
- Smoke detection control unit in accordance with the NF S 61-961 standard.

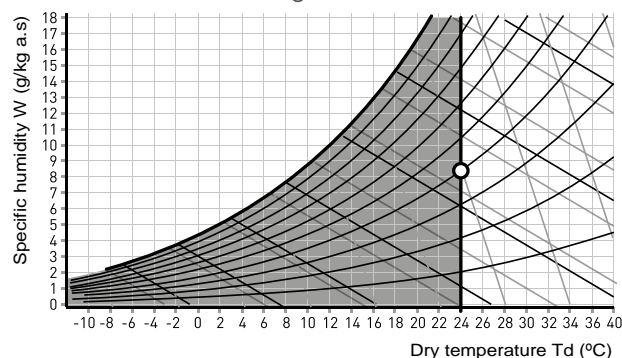
Economizer management + outdoor humidity

- The economizer allows to make best use of outdoor air conditions when these are more favourable than the return air conditions. This allows the cooling capacity to be reduced. The percentage of outdoor air can vary between 0% and 100%.

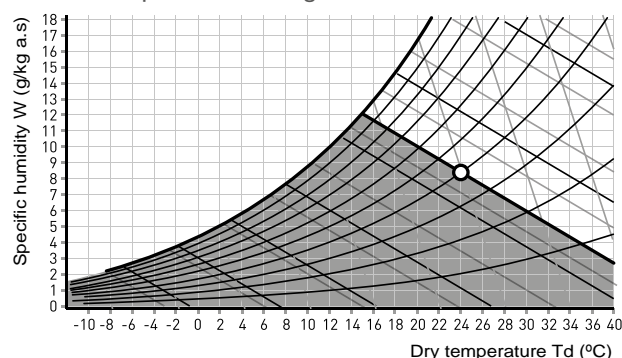
The economizer management can be:

- Thermal, by comparing the temperatures.
- Enthalpic, by comparing the enthalpies. Recommended in cases where a high moisture content in the air is foreseen.
- Thermoenthalpic, by comparing the enthalpies and correcting for temperature. This is the optimum solution as it takes the variability of the climate into account.

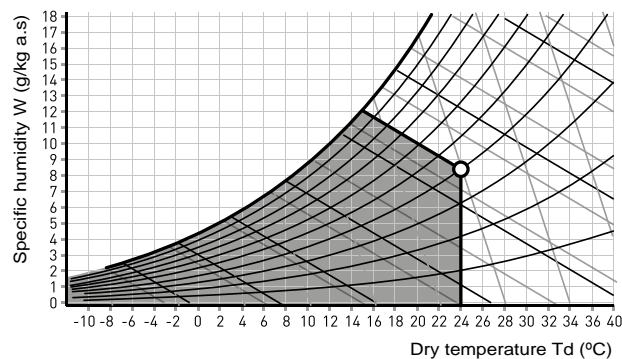
Thermal free-cooling



Enthalpic free-cooling



Thermoenthalpic free-cooling



- Outdoor air humidity sensor (compulsory in units with optional enthalpic or thermoenthalpic free-cooling).

There are 2 options:

- Sensor supplied with the unit.
- Sensor installed on another unit of the local network (pLAN).

FACTORY OPTIONS AND ACCESSORIES (CONT.)

Terminal + unit communication

- By default, the electronic control is supplied with a graphic terminal installed in the electrical cabinet of the unit, but these other configurations also are available:
 - Graphic terminal installed in the electrical cabinet and User terminal remote up to 100 meters.
 - Graphic terminal installed in the electrical cabinet and Graphic terminal remote up to 200 meters (two TCONN bypass cards must be used from 50 to 200 meters).
 - User terminal installed in the electrical cabinet, instead of the graphic terminal.
 - User terminal installed in the electrical cabinet and Graphic terminal remote up to 200 meters (two TCONN bypass cards must be used from 50 to 200 meters).
 - Touch panel installed in the electrical cabinet, instead of the graphic terminal.
 - Touch panel installed in the electrical cabinet and Graphic terminal remote up to 200 meters (two TCONN bypass cards must be used from 50 to 200 meters).
 - Touch panel installed in the electrical cabinet and User terminal remote up to 100 meters.



Graphic terminal



Touch panel



User terminal

- Control without terminal (for units with shared terminal in a pLAN network).
- By default, the electronic control is configured for a stand-alone unit, but it is also possible to place it in a pLAN network (Local Area Network) as Master or Slave.
- This control allows the connection to a centralised technical management system by using a specific BMS card for some of the following communication protocols:
 - RS485 serial cards for network communication with protocols: Carel, Modbus, LonWorks®, BACnet™ MSTP, Konnex.
 - Ethernet pCO Web card for network communication with protocols: Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.

Miscellaneous item 1

- Management of an humidifier with on-off or proportional control.
- Electrical energy meter for monitoring of the power consumption of the installation.
- Cooling capacity and electrical energy meter. In addition to the energy meter, the unit incorporates mixing and supply enthalpic sensors with RS485 communication that enable cooling and heating capacities to be calculated.

- Refrigerant leak detector. This allows prompt identification of gas leaks, guaranteeing the safety of any people in the vicinity. Installation of the device ensures compliance with European standards F-GAS and EN378 as well as ASHRAE 15.

Miscellaneous item 2

- Compressor soft starter.
- Varnish protection for the components on the electrical cabinet: control board, cards and terminals.
- High performance phase monitoring relay, which ensures phase-sequence monitoring and protection against loss of phase, under and overvoltage as well as phase imbalance. Highly recommended for installations with power system voltage instability, high level of electromagnetic disturbances EMC, etc.
- High grade switching devices.

Centrifugal return fan

- Centrifugal return fan, coupled by pulleys and belts. Electric motor with tensioner, class F, IP55 and internal thermal protection. Turbine with an impeller of front-curved blades. Greased spherical bearings, with no maintenance required. Available in BB and BT assemblies.

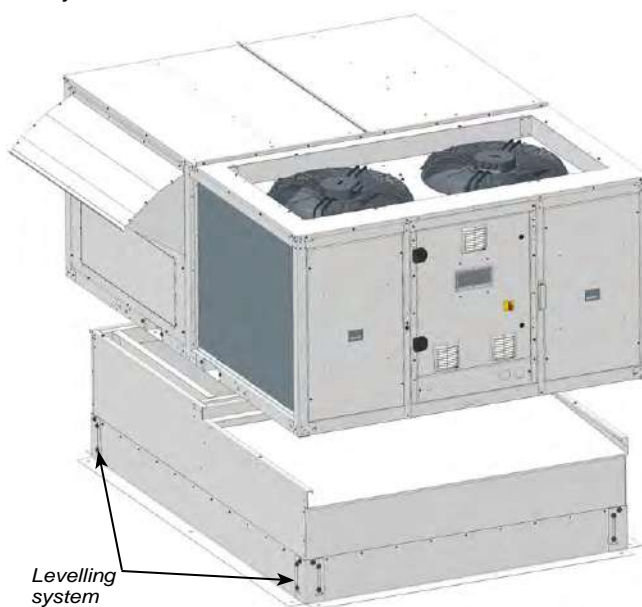
There are 9 fan options depending on:

- Air flow: low, nominal and high.
- Available pressure: low, nominal and high.

Pre-assembly roofcurbs

- "Standard" assemblies can rest on pre-assembly roofcurbs with adjustable height, built in galvanised steel panelling with polyester paint and thermal insulation.

The levelling system uses angle pieces that allow adjustments in the X and Y axes.



- "In-line" assemblies have a wide range of adaptation roofcurbs which are ready for replacing units on renovation from different manufacturers (upon request).

SOUND LEVELS dB(A)

Sound power level (LW)

50FF/FC	020	028	037	040	045	047	052	058	062	070	074	086	093
63 Hz	55,2	60,8	61,4	60,9	61,3	63,1	64,3	64,5	64,9	64,8	64,6	64,6	65,3
125 Hz	64,2	66,7	68,9	66,1	70,0	71,1	69,6	69,9	71,5	72,4	71,3	71,4	74,0
250 Hz	71,8	74,8	76,1	72,9	76,3	76,4	77,0	77,7	78,9	79,7	78,4	77,9	79,3
500 Hz	70,2	76,7	76,4	76,8	77,1	78,3	79,5	80,1	80,4	79,9	80,1	80,2	80,9
1000 Hz	72,0	76,2	76,3	77,5	77,3	78,2	79,4	79,9	80,2	79,8	80,4	80,6	80,7
2000 Hz	69,7	73,5	74,3	75,3	74,1	75,5	77,0	77,4	77,8	77,7	78,3	78,1	77,7
4000 Hz	62,6	69,2	70,3	70,6	70,4	72,2	73,1	73,4	73,7	73,8	73,9	74,2	74,4
8000 Hz	59,0	63,7	65,5	65,8	65,6	67,5	67,9	68,2	68,6	68,9	69,1	69,4	69,6
Total dB(A)	77,5	82,0	82,5	82,5	83,0	84,0	85,0	85,5	86,0	86,0	86,0	86,0	86,5

Sound pressure level (LP)

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

50FF/FC	020	028	037	040	045	047	052	058	062	070	074	086	093
Total dB(A)	51,0	55,5	56,0	56,0	56,5	57,5	58,3	58,8	59,3	59,3	59,1	59,1	59,6

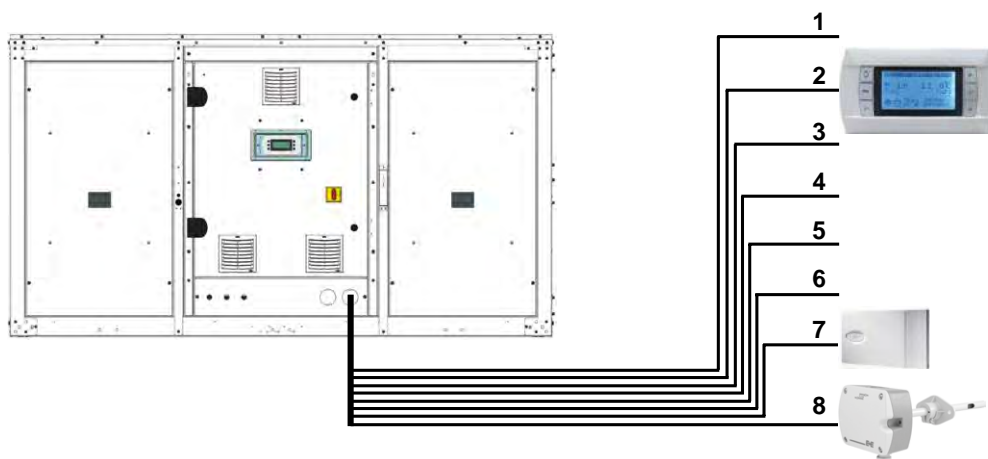
Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

ELECTRICAL CONNECTIONS

No.	50FF/FC	020 to 093
1	Main power supply	400 III ($\pm 10\%$)
2	Remote connection of graphic terminal (by default installed on the electrical cabinet) (1)	Telephone cable 6 wires standard (RJ12 connector)
4	Remote off/on (optional)	2 wires
5	General fault signal (optional)	2 wires
6	Circulation pump signal for HWC (antifreeze safety) (optional)	1 wire
7	Ambient sensor	NTC
		RS485
8	CO2 sensor (optional)	3 wires

(1) In this case, it's possible to install the user terminal on the electrical cabinet.

(2) Up to four RS485 ambient sensors can be connected in series on the field-bus of the control board.



WEIGHT OVERVIEW

Weight overview of the various assemblies (kg)

50FF		020	028	037	040	045	047	052	058	062	070	074	086	093
B1 assembly		594	617	699	698	704	701	914	929	936	1.035	1.059	1.057	1.078
B2 and BF assemblies		609	632	718	718	718	720	946	967	969	1.070	1.094	1.112	1.113
B3 assembly		682	705	796	796	796	798	1.047	1.062	1.070	1.197	1.221	1.230	1.231
BX assembly		713	736	815	815	815	817	1.090	1.111	1.112	1.248	1.272	1.290	1.291
BP assembly		723	746	831	831	828	833	1.120	1.141	1.142	1.276	1.300	1.309	1.310
BA assembly		781	804	900	900	897	902	1.211	1.232	1.233	1.379	1.403	1.412	1.413
BT assembly		774	797	882	882	882	884	1.213	1.228	1.236	1.371	1.395	1.413	1.414
BB assembly		832	855	951	951	951	953	1.304	1.319	1.327	1.474	1.498	1.516	1.517
BW assembly	Machine	722	745	834	834	834	837	1.122	1.143	1.145	1.206	1.230	1.248	1.249
	Recovery module	254	254	254	254	254	254	348	348	348	454	454	454	454
	Total weight	976	999	1.088	1.088	1.088	1.091	1.470	1.491	1.493	1.660	1.684	1.702	1.703
R1 assembly		--	--	--	--	--	--	972	993	994	1.068	1.092	1.111	1.111
R2 assembly		--	--	--	--	--	--	1.010	1.031	1.033	1.105	1.129	1.147	1.148
RP assembly		--	--	--	--	--	--	1.180	1.201	1.202	1.294	1.318	1.336	1.337
RW assembly	Machine	--	--	--	--	--	--	957	978	980	1.247	1.271	1.289	1.290
	Recovery module	--	--	--	--	--	--	719	719	719	454	454	454	454
	Total weight	--	--	--	--	--	--	1.676	1.697	1.699	1.701	1.725	1.743	1.744

50FC		020	028	037	040	045	047	052	058	062	070	074	086	093
B1 assembly		594	617	699	698	704	701	986	986	1.004	1.146	1.146	1.135	1.160
B2 and BF assemblies		609	632	718	718	718	720	1.018	1.024	1.037	1.181	1.181	1.190	1.195
B3 assembly		682	705	796	796	796	798	1.119	1.119	1.138	1.308	1.308	1.308	1.313
BX assembly		713	736	815	815	815	817	1.162	1.168	1.180	1.359	1.359	1.368	1.373
BP assembly		723	746	831	831	828	833	1.192	1.198	1.210	1.387	1.387	1.387	1.392
BA assembly		781	804	900	900	897	902	1.283	1.289	1.301	1.490	1.490	1.490	1.495
BT assembly		774	797	882	882	882	884	1.285	1.285	1.304	1.482	1.482	1.491	1.496
BB assembly		832	855	951	951	951	953	1.376	1.376	1.395	1.585	1.585	1.594	1.599
BW assembly	Machine	722	745	834	834	834	837	1.194	1.200	1.213	1.317	1.317	1.326	1.331
	Recovery module	254	254	254	254	254	254	348	348	348	454	454	454	454
	Total weight	976	999	1.088	1.088	1.088	1.091	1.542	1.548	1.561	1.771	1.771	1.780	1.785
R1 assembly		--	--	--	--	--	--	1.044	1.050	1.062	1.179	1.179	1.189	1.193
R2 assembly		--	--	--	--	--	--	1.082	1.088	1.101	1.216	1.216	1.225	1.230
RP assembly		--	--	--	--	--	--	1.252	1.258	1.270	1.405	1.405	1.414	1.419
RW assembly	Machine	--	--	--	--	--	--	1029	1035	1048	1358	1358	1367	1372
	Recovery module	--	--	--	--	--	--	719	719	719	454	454	454	454
	Total weight	--	--	--	--	--	--	1.749	1.755	1.767	1.812	1.812	1.822	1.826

WEIGHT OVERVIEW (CONT.)

Weight supplement from the main options (kg)

50FF/FC			020	028	037	040	045	047	052	058	062	070	074	086	093
Pre-assembly roofcurb (without gas burner)			145	145	145	145	145	145	205	205	205	237	237	237	237
Pre-assembly roofcurb (with gas burner)	BAF (Low)		265	265	265	265	265	265	--	--	--	--	--	--	--
	BAM (Nominal)		274	274	274	274	274	274	385	385	385	463	463	463	463
	BAS (High)		284	284	284	284	284	284	411	411	411	483	483	483	483
Electrical heaters	RAF (Low)		20	20	20	20	20	20	17	17	17	17	17	17	17
	RAM (Nominal)		17	17	17	17	17	17	21	21	21	21	21	21	21
	RAS (High)		--	--	21	21	21	21	25	25	25	25	25	25	25
Hot water coil	Standard	Empty	33	33	37	37	37	37	51	51	51	58	58	58	58
		Service	40	40	46	46	46	46	67	67	67	78	78	78	78
	Very low outdoor T	Empty	41	41	45	45	45	45	71	71	71	78	78	78	78
		Service	49	49	55	55	55	55	89	89	89	100	100	100	100
Boiler + Hot water coil	Boiler		69	69	69	69	69	69	69	69	69	69	69	69	69
	Water circuit	Empty	47	47	52	52	52	52	79	79	79	87	87	87	87
		Service	55	55	62	62	62	62	98	98	98	109	109	109	109
	Total service weight		124	124	131	131	131	131	167	167	167	178	178	178	178
Heat recovery coil (HRC)	Empty		22	22	21	21	21	21	30	30	30	36	36	36	36
	Service		31	31	31	31	31	31	44	44	44	53	53	53	53
Preheater in fresh air	Low power		93	93	93	93	93	93	121	121	121	144	144	144	144
	Nominal power		105	105	105	105	105	105	138	138	138	165	165	165	165
Supply fan	Low pressure (F)		-7	-7	--	--	--	--	-21	-21	-21	-9	-9	-9	-9
	High pressure (S)		4	4	28	28	28	28	38	38	38	29	29	29	29
Droplet eliminator	Indoor coil		24	24	25	25	25	25	34	34	34	43	43	43	43
	Fresh air intake		8	8	8	8	8	8	11	11	11	14	14	14	14
Centrifugal return fan (BT and BB assemblies)	A: Low flow + nominal pressure		-8	-7	7	10	10	10	-21	-21	-21	20	20	20	20
	B: Low flow + high pressure		-1	3	31	31	31	31	0	10	10	30	30	30	30
	C: Nominal flow + nominal pressure		-7	7	13	17	17	17	-1	-1	-1	47	47	47	47
	D: Nominal flow + high pressure		3	9	38	38	38	38	26	26	26	145	145	145	145
	E: High flow + nominal pressure		0	13	17	36	36	36	20	27	27	60	60	60	60
	F: High flow + high pressure		9	15	48	63	48	48	44	44	44	145	145	185	185
	G: Low flow + low pressure		-10	-2	1	7	7	7	-2	-2	-2	10	10	-2	-2
	H: Nominal flow + low pressure		-2	7	8	34	35	35	3	3	3	14	14	14	14
	I: High flow + low pressure		1	7	34	40	40	40	21	21	21	56	56	56	56
Active dehumidification	50FF		27	27	34	34	34	34	52	52	52	59	59	59	59
	50FC		38	38	45	45	45	45	59	59	59	70	70	70	70

OPTIONS FOR THE OUTDOOR UNIT

Axial 2-speed outdoor fan

50FF/FC			020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow	(m³/h)		9.000	14.500	17.000	17.000	17.000	17.750	31.000	31.000	31.000	33.000	33.000	34.500	35.000
Available static pressure	(mm.w.c.)		4												
Number	(mm)		1	1				2							
Diameter	(mm)		630	800				800							
Output	(kW)		0,4 / 0,6	1,2 / 1,9				2 x (1,2 / 1,9)							
Maximum speed	(r.p.m.)		690 / 840	670 / 880				670 / 880							
Max. absorbed current	(A)		1,2	3,9				2 x 3,9							

OPTIONS FOR THE INDOOR UNIT

Droplet eliminator after the indoor air coil

Air flow at which it is recommended to install a droplet eliminator after the indoor coil.

50FF/FC	020	028	037	040	045	047	052	058	062	070	074	086	093
Air flow (m³/h)	7.776	7.776	10.206	10.206	10.206	10.206	14.580	14.580	14.580	14.580	18.468	18.468	18.468

Note: for operating conditions with high dehumidification in the indoor coil (e.g. in installations close to the coast) it may be necessary to install a separator even if the flow is less than the previous one.

Note: the droplet eliminator after the indoor coil is not compatible with the hot water coil or the gas boiler.

Heat recovery coil

The function of the heat recovery coil is to pre-heat the air that will pass through the main indoor coil. For this, it uses the temperature of an outdoor water installation. This function is managed by the unit's electronic control.

The coil is supplied with a 3-way valve for installation outside the unit but manages by the unit's electronic control.

This option is compatible with B1, B2, BF, BT, BB, R1 and R2 assemblies.

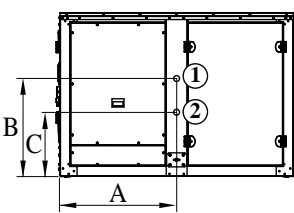
50FF/FC	020	028	037	040	045	047	052	058	062	070	074	086	093
Air pressure drop (mm.w.c.)	2,6	3,9	5,0	5,5	5,7	5,7	4,3	4,6	4,6	4,5	4,5	4,7	4,7
Water 35/30°C (30% MEG) and inlet air 20°C	Heating capacity (kW)	11,19	13,01	16,92	17,53	17,75	23,76	24,27	24,27	32,77	32,77	33,37	33,37
	Water flow (m³/h)	2,08	2,40	3,20	3,30	3,30	4,40	4,60	4,60	6,08	6,08	6,30	6,30
	Water pressure drop (m.w.c.)	1,2	1,6	2,8	3,0	3,1	1,9	2,0	2,0	4,0	4,0	4,1	4,1
Water 35/30°C (30% MEG) and inlet air 15°C	Heating capacity (kW)	16,89	19,63	25,26	26,18	26,55	35,65	36,52	36,52	48,55	48,55	49,44	49,44
	Water flow (m³/h)	2,08	2,40	3,20	3,30	3,30	4,40	4,60	4,60	6,08	6,08	6,30	6,30
	Water pressure drop (m.w.c.)	2,6	3,3	5,8	6,2	6,3	4,0	4,1	4,1	8,2	8,2	8,5	8,5

Water (inlet air 20°C)	30/35°C	*40°C	*45°C	% of MEG	10%	20%	30%
Correction coefficients	1,00	1,35	1,70	Correction coefficients	1,06	1,03	1,00

Note: the heat recovery coil is not compatible with the hot water coil, the gas boiler or the gas burner.

Position of the hydraulic connections of the heat recovery coil

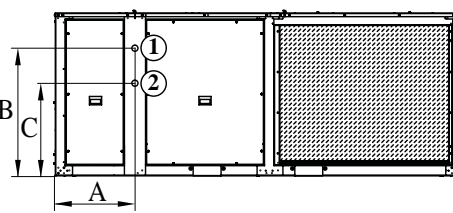
"Standard" assemblies



50FF/FC	Dimensions (mm)		
	A	B	C
020 to 037	872	721	443
052 to 062	1099	721	443
070 to 093	1099	721	443

① Outlet, Ø1/2" ② Inlet, Ø1/2"

"In-line" assemblies



50FF/FC	Dimensions (mm)		
	A	B	C
052 to 062	534	721	443
070 to 093	914	721	443

① Outlet, Ø1/2" ② Inlet, Ø1/2"

Supply plug-fan EC with high (S) or low (F) available pressure

50FF/FC	020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow (m³/h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Nominal available static pressure (mm.w.c.)	12	12	12	15	15	15	20	20	20	20	20	20	25
Low pressure (F)	Number / Diameter (mm)	1 / 500			--			1 / 500			--		
	Output (kW)	1,3			--			5,6			--		
	Speed (r.p.m.)	1.350			--			2.200			--		
	Max. absorbed current (A)	2,1			--			8,4			--		
High pressure (S)	Number / Diameter (mm)	1 / 500			2 / 500			2 / 500			2 / 500		
	Output (kW)	2,8			2 x 2,6			2 x 5,6			2 x 5,6		
	Speed (r.p.m.)	1.700			1.700			2.200			2.200		
	Max. absorbed current (A)	4,3			2 x 4,2			2 x 8,4			2 x 8,4		

Note: the value of power input according to the selected flow can be found at our "Selection Software".

OPTIONS FOR THE INDOOR UNIT (CONT.)

EC plug-fan in return section (BP / BA / BT / BB / RP assemblies)

50FF/FC	020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow (m ³ /h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Nominal available static pressure (mm.w.c.)	12	12	12	15	15	15	20	20	20	20	20	20	25
Number / Diameter (mm)	1 / 500						2 / 500						
Output (kW)	2,6						2 x 2,6						
Speed (r.p.m.)	1.700						1.700						
Maximum absorbed current (A)	4,0						2 x 4,0						

Note: the value of power input according to the selected flow can be found at our "Selection Software".

EC plug-fan in return section (BW / RW assemblies)

50FF/FC	020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow (m ³ /h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Nominal available static pressure (mm.w.c.)	12	12	12	15	15	15	20	20	20	20	20	20	25
Nominal pressure (N)	Number / Diameter (mm)	1 / 500						2 / 500					
	Output (kW)	2,6						2 x 2,6					
	Speed (r.p.m.)	1.700						1.700					
	Max. absorbed current (A)	4,0						2 x 4,0					
High pressure (H)	Number / Diameter (mm)	--	1 / 500						--	2 / 500			
	Output (kW)	--	2,8						--	2 x 2,8			
	Speed (r.p.m.)	--	1700						--	1.700			
	Max. absorbed current (A)	--	4,3						--	2 x 4,3			

Note: the value of power input according to the selected flow can be found at our "Selection Software".

Heat recovery wheel module (BW / RW assemblies)

This heat recovery wheel is used to transfer the sensible and latent heat from the air-conditioned room's return air to the fresh air used for ventilation, before it's discharged outdoors.

The return air circulates in half of the heat recovery unit and the ventilation air circulates in the other half, in the opposite direction. As the rotor rotates, very fine channels of air which form the matrix come into contact with the fresh air and the return air in turn, thereby transferring heat and humidity from one to the other.

The efficiency of the recovery depends on the following factors:

■ Wheel diameters:

- 800 mm: models 020 to 047
- 1300 mm: models 052 to 062
- 1600 mm: models 070 to 093

■ Matrix materials:

- Aluminium: sensible heat recovery.
- Epoxy coated aluminium: sensible heat recovery in aggressive environments.
- Hybrid wheel: enthalpic recovery.
- Silicagel coated aluminium: enthalpic recovery with high efficiency in the recovery of latent heat.

■ Channel cross section:

The wheel is formed of two panels of aluminium, one smooth and one fluted. The fluted panel can be provided in two different configurations:

- 2.0 mm cross section: the commonly-used cross section due to its high efficiency and moderate pressure drops.
- 2.5 mm cross section: low pressure drop. Designed for high frontal speeds with low pressure drops.

The heat recovery wheel is fitted into a module placed on one side of the unit.

This module features gravimetric filters G4 on the fresh air intake which, optionally, can be replaced by G4 with low pressure drop or G4 + M6. It also features filters G4 with low pressure drop on the exhaust air outlet.

This assembly can be supplied, in option, with a speed drive for the wheel which avoids the risk of ice forming on the wheel during the defrost operation.



Important: the calculations for the selection of a heat recovery wheel according to the parameters described above should be done using our "Selection Software".

OPTIONS FOR THE INDOOR UNIT (CONT.)

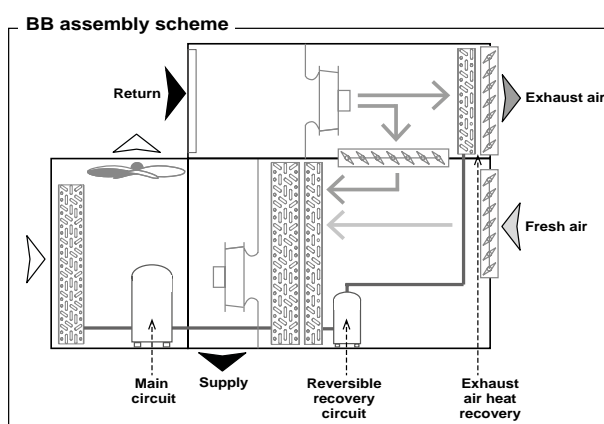
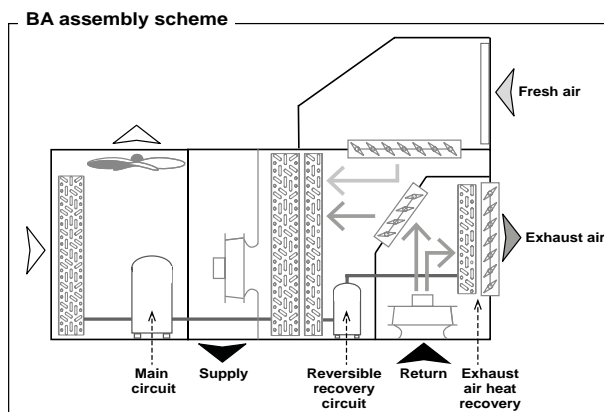
Cooling recovery circuit (BA / BB assemblies)

Thermodynamic circuit dedicated to the recovery of the extracted air energy, with independent and proportional control, adapted to the air renewal requirements in order to raise the COP, EER and seasonal efficiency of the unit set.

■ The circuit is composed of:

- EC plug-fan in return section.
- Air circuit comprised of coils with copper pipes and aluminium fins.
- Electronic expansion valve.
- Hermetic scroll-type compressor with sound insulation, assembled over antivibration mounts.
- Crankcase heater.
- Four-way cycle reversing valve.
- Anti-acid dehydrator filter.
- High and low pressure transducers.
- Condensates drain pan.

50FF/FC	020 to 028	037 to 047	052 to 062	070 to 093
Compressor type	Scroll			
No. of compressors / circuits	1 / 1			
Max. absorbed current (A)	5,4	7,2	10,1	12,1
Oil type	Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC			
Volume of oil (l)	0,7	1,2	1,7	1,8
Charge of R-410A (kg)	1,7	2,5	3,0	3,4
Environment impact (tCO ₂ eq)	3,5	5,2	6,3	7,1



Total cooling capacity with recovery circuit

50FF/FC			020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow (m³/h)			5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Outdoor temperature 35°C / 40% RH Indoor temperature 27°C / 50% RH	20% fresh air	Pft (kW)	29,6	36,2	45,7	49,4	54,2	56,5	70,4	75,4	77,8	90,6	94,5	103,2	112,4
		Pfs (kW)	23,7	29,6	38,1	40,2	42,4	43,3	55,9	59,0	59,9	72,1	73,6	78,1	81,6
		Pa (kW)	8,5	9,6	11,5	12,8	14,0	14,7	17,8	19,5	20,5	21,7	23,3	25,8	29,0
	40% fresh air	Pft (kW)	31,3	37,9	48,2	52,0	56,8	59,3	73,8	78,8	81,4	95,1	99,2	107,9	117,4
		Pfs (kW)	25,1	31,2	39,7	41,8	44,2	45,2	58,8	62,0	62,9	76,0	77,4	81,9	85,5
		Pa (kW)	8,1	9,3	10,9	12,3	13,5	14,2	17,1	18,9	19,9	20,9	22,5	25,1	28,3
	80% fresh air	Pft (kW)	33,7	40,3	51,9	55,7	60,7	63,2	78,8	84,1	86,8	102,3	106,3	115,0	125,1
		Pfs (kW)	27,5	33,7	42,4	44,4	47,0	47,8	62,4	65,8	66,9	82,3	84,0	87,9	92,6
		Pa (kW)	7,9	9,1	10,6	12,1	13,4	14,0	16,8	18,5	19,6	20,6	22,2	24,9	28,2

Pft: Total gross cooling capacity (sum of the power of the main circuit and the recovery circuit)

Total heating capacity with recovery circuit

50FF/FC			020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow (m³/h)			5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Outdoor temperature 6°C BH Indoor temperature 20°C	20% fresh air	Pct (kW)	29,7	35,8	44,3	47,9	53,0	55,7	68,3	73,5	76,2	87,8	91,9	100,9	110,2
		Pa (kW)	6,7	7,9	9,3	10,3	11,6	12,4	14,7	16,2	17,1	18,8	20,1	22,6	25,8
	40% fresh air	Pct (kW)	31,1	37,1	46,2	49,8	55,0	64,4	71,0	76,2	79,0	91,1	95,2	104,2	113,7
		Pa (kW)	6,4	7,5	8,9	9,9	11,1	11,9	14,1	15,5	16,4	18,0	19,3	21,7	24,7
	80% fresh air	Pct (kW)	32,8	39,0	47,8	52,3	57,7	60,4	74,8	80,1	83,0	95,6	99,8	108,9	118,7
		Pa (kW)	5,9	6,8	8,1	9,0	10,1	10,9	12,9	14,1	14,9	16,5	17,6	19,8	22,5

Pct: Total gross heating capacity (sum of the power of the main circuit and the recovery circuit)

OPTIONS FOR THE INDOOR UNIT (CONT.)

Axial fan in return section (BX assembly)

50FF/FC	020	028	037	040	045	047	052	058	062	070	074	086	093
Maximum air flow (m³/h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Available static pressure (mm.w.c.)	5												
Number / Diameter (mm)	1 / 500		2 / 450				2 / 500			3 / 500			
Output (kW)	0,7		2 x 0.5				2 x 0.7			3 x 0.7			
Speed (r.p.m.)	1.390		1.360				1.390			1.390			
Maximum absorbed current (A)	1,4		2 x 1,0				2 x 1,4			3 x 1,4			

Auxiliary hot water coil

Auxiliary hot water coil, with three-way valve and proportional control, for assembly and connection inside the unit. This option always incorporates a freeze protection thermostat.

50FF/FC		020	028	037	040	045	047	052	058	062	070	074	086	093
Air pressure drop	(mm.w.c.)	2,4	3,5	3,5	3,6	4,3	4,3	3,4	3,6	3,6	3,5	3,7	3,7	3,7
Water 80/60°C and inlet air 20°C	Heating capacity	(kW)	27,6	32,0	47,6	48,4	49,2	49,2	95,8	98,3	98,3	129,0	129,0	131,5
	Water flow	(m ³ /h)	1,4	1,6	2,1	2,1	2,1	2,1	2,7	2,8	2,8	3,6	3,6	3,7
	Water pressure drop	(m.w.c.)	0,2	0,3	0,5	0,5	0,5	0,5	0,5	0,5	0,9	0,9	1,0	0,9
Water 90/70°C and inlet air 20°C	Heating capacity	(kW)	34,2	39,8	58,7	59,8	90,8	90,8	118,5	121,5	121,5	158,7	158,7	161,9
	Water flow	(m ³ /h)	1,7	2,0	2,6	2,6	2,6	3,4	3,4	3,4	4,5	4,5	4,6	4,6
	Water pressure drop	(m.w.c.)	0,3	0,4	0,7	0,7	0,8	0,8	0,7	0,7	0,7	1,3	1,4	1,4

Note: Maximum water inlet temperature 95°C, maximum pressure 4 bar.

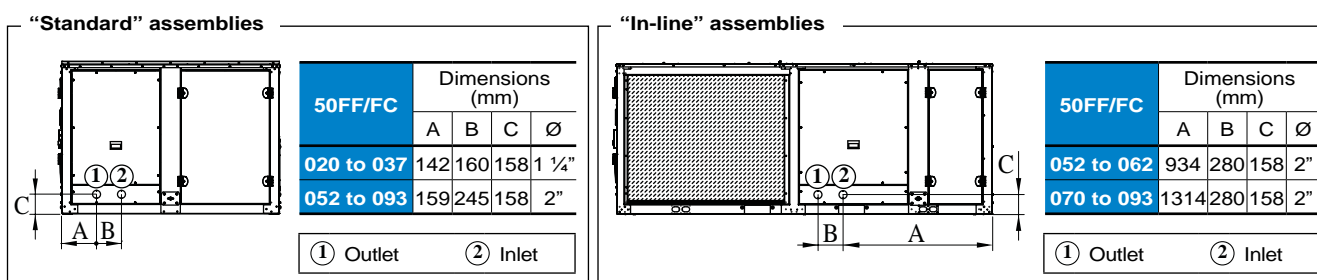
Note: the hot water coil is not compatible with the droplet eliminator after the indoor air coil, the heat recovery coil or the active dehumidification.

Position of the hydraulic connections of the hot water coil

The inlet/outlet connections of the hot water coil are located inside the unit and the connection is made via the side panel.

In models 052 to 093 it can also be made via the base of the unit using flexible piping (only available for units without pre-assembly roofcurb).

The position of the sheet metal precuts on the side panel are shown in the following diagrams.



"Very low outdoor temperature" option (HAF)

Note: on units with the "Very low outdoor temperature" option, air supply only may be lateral (factory-configured).

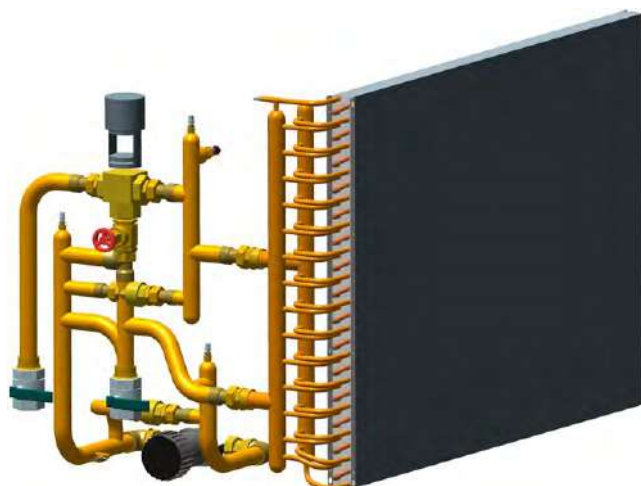
■ This anti-freeze safety incorporates:

- Circulation pump.
- Water temperature sensors located in the inlet and the outlet of the coil.

Important: this option is mandatory for an outdoor temperature lower than -20°C WB. Consult for percentages of glycol water above 20%.

■ Characteristics of the water circuit:

50FF/FC		020 to 047	052 to 093
Circulation pump	Motor output (W)	90	140
	Max. absorbed current (A)	0,75	1,15



OPTIONS FOR THE INDOOR UNIT (CONT.)

Gas-fired condensing boiler with hot water coil

Gas-fired condensing boiler with modulating actuator, in accordance with the Gas Directive 2009/142/EC, mounted on the side of the unit.

EC certification: 0085CP0214.



■ Up to 3 values of total power available for each model:

50FF/FC	020 to 047	052 to 062	070 to 093
BBF (Low)	unavailable	Condexa PRO 50 (coming soon)	Condexa PRO 50 (coming soon)
BBM (Nominal)	Condexa PRO 40 (coming soon)	Condexa PRO 70	Condexa PRO 70
BBS (High)	Condexa PRO 70	Condexa PRO 100	Condexa PRO 100

Note: the gas boiler is not compatible with the droplet eliminator after the indoor coil, the heat recovery coil or the active dehumidification.

■ The key features of the boiler are:

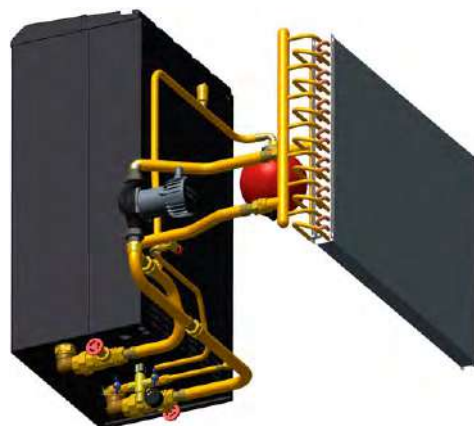
- Natural or propane gas boiler.
- Burner with premixing and modulation technology that allows outputs close to 109% (Hi performance).
- Heat exchanger made of stainless steel with a low carbon content.
- Proportional air / gas valve. Low NOx emissions (class 5, according to standard EN 297).
- Condensate drain with siphon.
- Forced draught.
- Electronic ignition.
- Safety devices: safety thermostat, low water pressure safety switch, flowmeter, Delta-T control, smoke temperature sensor.
- NTC sensor for boiler water temperature regulation.
- Working temperature of water from -7°C to 100°C. Consult for percentages of glycol water above 20%.
- Electronic controller with microprocessor and Multifunction LCD display for boiler's control, configuration and diagnostics. Possibility of ModBus communication.
- The electronic control of the unit will only manage the boiler connection as heating support depending on the ambient conditions.

■ The boiler is connected to the hydraulic circuit of the auxiliary hot water coil. The water circuit, installed inside the unit, is composed of:

- Water coil.
- Circulation pump.
- Expansion vessel.
- Gate valves.
- Safety valve with a tare value of 4 bar.
- Automatic air bleeder valve.

■ Characteristics of the water circuit:

	50FF/FC	020 to 047	052 to 093
Expansion vessel	Volume (l)	5	5
	Filling pressure (kg/cm ²)	1,5	1,5
Circulation pump	Motor output (W)	90	140
	Max. absorbed current (A)	0,75	1,15



■ Type of gas used depending on the destination country:

Country	Category	Gas	Pressure (mbar)	Gas	Pressure (mbar)
Italy, Ireland, Great Britain, Portugal, Slovenia, Slovakia, Greece	II2H3+	G20	20	G30/G31	28-30/37
Spain	II2H3+	G20	18	G30/G31	28-30/37
Romania, Bulgaria, Turkey, Denmark, Estonia, Sweden, Norway, Latvia, Lithuania, Finland, Russia	II2H3B/P	G20	20	G30	30
Hungary	II2H3B/P	G20	25	G30	30
Poland	II2H3B/P	G20	25	G30	37
Croatia	II2H3B/P	G20	20	G30/G31	30
Holland	II2H3B/P	G25	25	G30	30
Czech Rep., Austria, Switzerland	II2H3B/P	G20	20	G30	50
Luxembourg	II2H3B/P	G20	20	G30	50
	II2E3P	G20	20	G31	37
Belgium	I2E(S)	G20/G25	20/25	--	--
	I3+	--	--	G30/G31	28-30/37
France	II2E+3+	G20/G25	20/25	G30/G31	28-30/37
Malta, Cyprus, Iceland	I3B/P	--	--	G30	30
Germany	II2ELL3B/P	G20/G25	25	G30	50

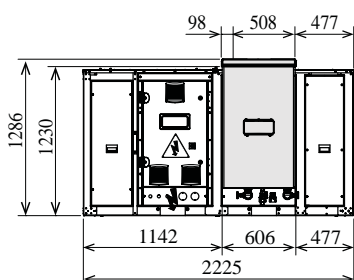
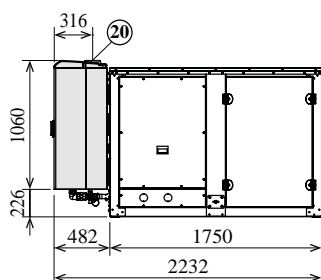
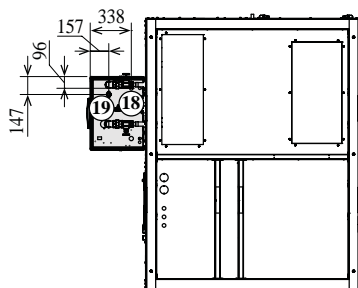
OPTIONS FOR THE INDOOR UNIT (CONT.)

■ Technical characteristics of the boiler:

Model		Condexa PRO 40 (coming soon)	Condexa PRO 50 (coming soon)	Condexa PRO 70	Condexa PRO 100	
Type of equipment		B23 - B53 - B53P				
NOx Class (according to standard EN 297)		Val	5			
Boiler performance	Total thermal power (Hs)	kW			76/15	108/21,6
	Total thermal power (Hi)	kW			68/14	97/19,4
	Nominal power supplied to the water 100% (80°C - 60°C)	kW			66,7	95,2
	Nominal power supplied to the water 100% (50°C - 30°C)	kW			73,5	105
	Nominal power supplied to the water 100% (60°C - 40°C)	kW			71	101
	Condensate hourly production 100% (50°C - 30°C) with G20	kg/h			8,5	12,3
	Performance with nominal power (80°C - 60°C)	%			98,1	98,1
	Performance with nominal power (50°C - 30°C)	%			108,1	108,2
	Performance with nominal power Tm = 50°C (60°C - 40°C)	%			104,4	104,1
	Performance with reduced load 30% (80°C - 60°C)	%			98,5	98,3
	Performance with reduced load 30% (50°C - 30°C)	%			109	109
	Performance with reduced load 30% Tm = 50°C (60°C - 40°C)	%			105,3	105
	Losses in enclosure (Tm = 70°C)	%	0,1			
	Energy efficiency marking (Directive 92/42 EC)		★★★★			
Energy efficiency	Seasonal energy efficiency class in heating			A	A	
	Seasonal energy efficiency in heating	%			92,7	92,7
Gas supply	Gas category	II2H3+				
	Natural Gas consumption (G20) (nominal / minimum)	m³/h			7,2/1,4	10,3/2,1
Electrical data	Power supply	230 Vac - 50 Hz				
	Power input at 100%	W			77	203
	Power input at 30%	W			30	31
	Power input in stand-by	W			13	6
	Ingress protection rating	IP X5D				
	Operating temperatures	from -15°C to +70°C				
Connections	Ø Gas supply			G1"	G1"	
	Ø Flue outlet	mm			DN80	DN110
	Ø Condensate drain	mm			25	25
Heating circuit	Control of heating temperature (min. / max.)	°C	20 / 80			
	Working pressure (max. / min.)	bar	6 / 0,7			

Location of the gas burner

50FF/FC 020-028-037-040-045-047



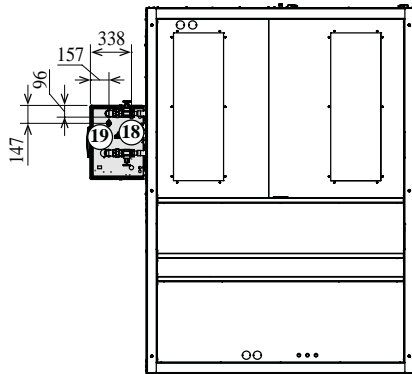
Legend

All dimensions are given in mm.

- (18) Boiler drainage Ø 25mm
Important: Siphon minimum height 300mm
- (19) Gas supply 1" M
- (20) Flue outlet (flue connection):
Condexa PRO 40 / 50 / 70: Ø 80mm

OPTIONS FOR THE INDOOR UNIT (CONT.)

50FF/FC 052-058-062-070-074-086-093, “Standard”

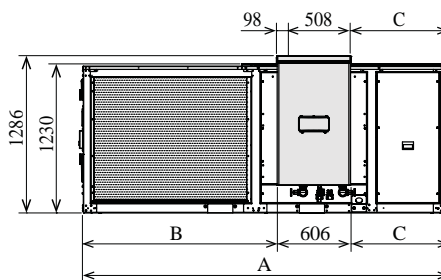
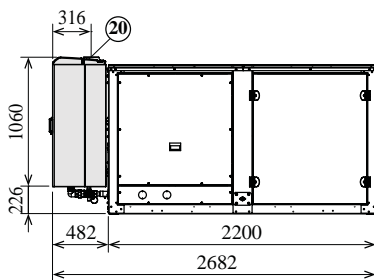


50FF/FC	Dimensions (mm)		
	A	B	C
052 to 062	3.000	1.588	806
070 to 093	3.650	1.858	1.186

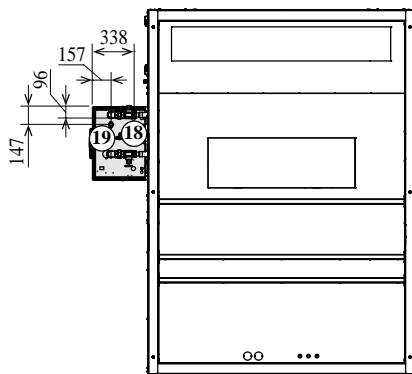
Legend

All dimensions are given in mm.

- (18) Boiler drainage Ø 25mm
Important: Siphon minimum height 300mm
- (19) Gas supply 1" M
- (20) Flue outlet (flue connection):
Condexa PRO 50 / 70: Ø 80mm
Condexa PRO 100: Ø 110 mm



50FF/FC 052-058-062-070-074-086-093, “In-line”

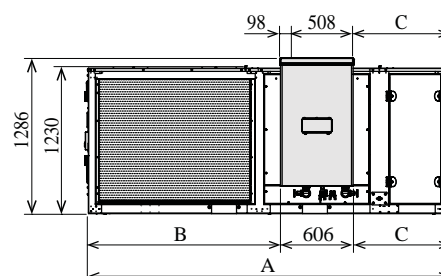
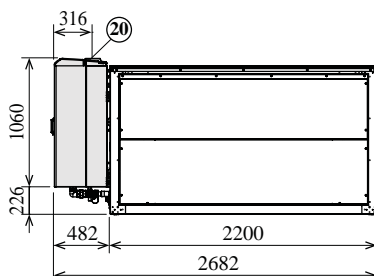


50FF/FC	Dimensions (mm)		
	A	B	C
052 to 062	3.000	1.588	806
070 to 093	3.650	1.860	1.184

Legend

All dimensions are given in mm.

- (18) Boiler drainage Ø 25mm
Important: Siphon minimum height 300mm
- (19) Gas supply 1" M
- (20) Flue outlet (flue connection):
Condexa PRO 50 / 70: Ø 80mm
Condexa PRO 100: Ø 110 mm



NOTES:

- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.

IMPORTANT:

- The flue of the gas boiler is not supplied with the unit. Its design and installation is the responsibility of the installer and must comply with all the directives and regulations in force in the installation location.

OPTIONS FOR THE INDOOR UNIT (CONT.)

Auxiliary electrical heaters

Auxiliary electrical heaters, with two power stages and on/off control, for assembly and connection inside the unit.

■ Up to 3 values of total power available for each model:

50FF/FC	020 to 047	052 to 062	070 to 093
RAF (Low)	12 kW	12 kW	18 kW
RAM (Nominal)	18 kW	18 kW	27 kW
RAS (High)	unavailable	27 kW	36 kW

■ Characteristics:

Total power (kW)	12	18	27	36
Stages power (kW)	6 + 6	9 + 9	9 + 18	18 + 18
Current (A)	17,3	26,0	39,0	52,0
Power supply	400 V / III ph			

Preheater in fresh air (BF assembly)

With BF assembly, 100% fresh air, it is possible to incorporate a preheater module (electrical heater) coupled to the fresh air intake.

This module is supplied in kit for installation on site.

The electrical heater with proportional control will modulate capacity to get the condenser inlet conditions within the operating limits of the cooling circuit in case of very low outdoor temperatures.

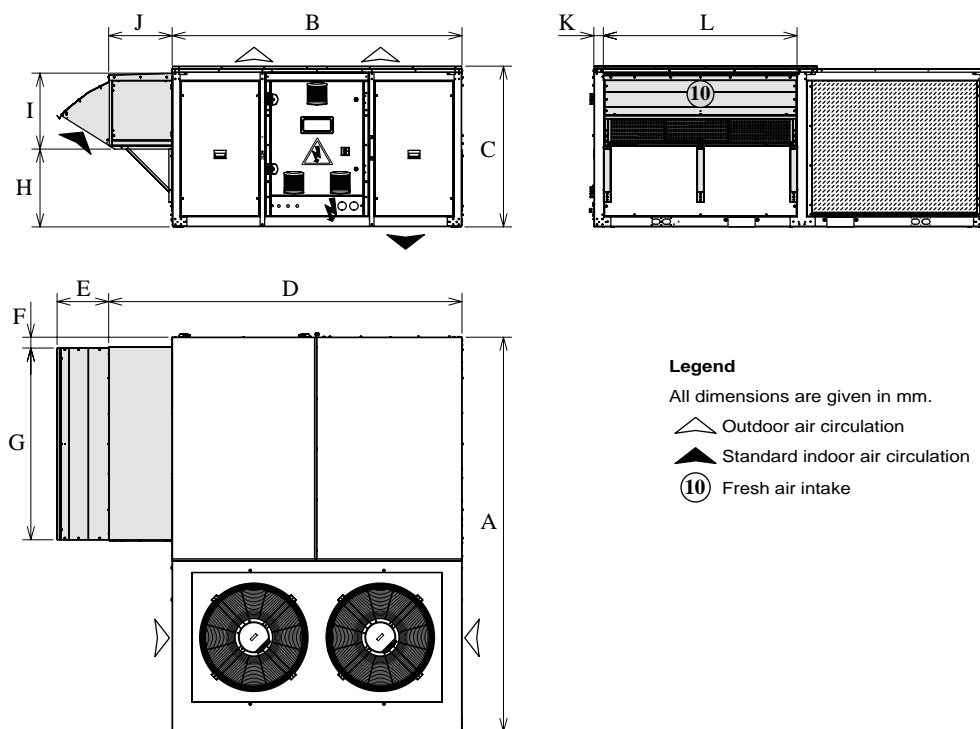
■ 2 values of total power available for each model:

50FF/FC	020 to 047	052 to 062	070 to 093
Low power	18 kW	27 kW	36 kW
Nominal power	36 kW	54 kW	72 kW

■ Characteristics:

Total power (kW)	18	27	36	54	72
Current (A)	26,0	39,0	52,0	78,0	104,0
Power supply	400 V / III ph				

Location of the preheater module



Legend

All dimensions are given in mm.

Outdoor air circulation

Standard indoor air circulation

Fresh air intake

50FF/FC	Dimensions (mm)											
	A	B	C	D	E	F	G	H	I	J	K	L
020 to 047	2.225	1.750	1.230	2.232	391	82	998	591	577	482	73	1.013
052 to 062	3.000	2.200	1.230	2.682	391	82	1.455	591	577	482	72	1.470
070 to 093	3.650	2.200	1.230	2.682	391	82	1.835	591	577	482	72	1.850

NOTES:

- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.

OPTIONS FOR THE INDOOR UNIT (CONT.)

Operating limits with 100% fresh air unit (BF assembly)

■ COOLING mode:

- The maximum outdoor temperature depends on the air flow. The lower air flow, the higher temperature: 33°C DB with nominal air flow, 35°C DB with minimum air flow and 43°C DB with the minimum air flow of the BF assembly (50% lower than in rest of assemblies).

■ HEATING mode:

- Without electrical preheater: minimum outdoor temperature: 7°C with minimum air flow.
- With electrical preheater: the minimum outdoor temperature depends on the model, the air flow and the selected preheater. Refer to the attached table for reference although, depending on the model, this temperature may be lower.

Minimum outdoor temperature with preheater option	Electrical preheater	
	Low power	Nominal power
Nominal air flow	> 2°C	> -3°C
Minimum air flow of BF assembly	> -6°C	> -15°C

Active dehumidification

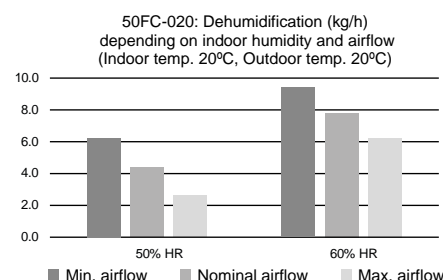
Active dehumidification with extra condensation coil for dehumidification applications in high relative humidity ambients.

The dehumidification process is done by the main refrigerant coil, the activation of compressors in cooling mode allows humidity to be removed from the evaporation coil. Depending on temperature conditions in comparison with set-point conditions, the control will adapt the amount of energy recovered in the additional condensation coil to reheat the air flow. This option also allows an additional reheating using the auxiliary electrical heaters.

■ Influence of selection conditions:

Dehumidification capacity of the unit is strongly influence by different factors:

- Supply air flow: The lower air flow, the higher dehumidification capacity.
- Relative humidity setpoint: The influence of humidity setpoint is key. The higher setpoint, the higher dehumidification capacity.



■ Technical performance:

Calculations performed for the minimum supply flow of the unit.

50FF/FC	020	028	037	040	045	047	052	058	062	070	074	086	093
Dehumidification capacity (1) kg/h	7,0	8,9	9,7	12,4	15,4	17,5	16,9	19,6	21,6	22,3	25,3	31,2	38,4
Energy recovery capacity (1) (4) kW	28,3	35,2	42,0	46,9	52,6	55,7	33,2	36,3	38,0	42,6	45,3	50,6	56,7
Dehumidification capacity (2) kg/h	12,3	15,5	17,7	21,1	25,2	27,7	29,3	33,2	35,6	38,5	42,5	50,0	59,4
Energy recovery capacity (2) (4) kW	30,0	37,5	44,9	50,0	56,1	59,3	35,4	38,7	40,4	45,5	48,3	53,9	60,2
Dehumidification capacity (3) kg/h	6,2	7,5	7,9	10,4	13,1	15,0	14,1	16,7	18,4	19,4	22,4	26,6	34,2
Energy recovery capacity (3) (4) kW	25,7	32,5	38,5	43,3	48,4	51,3	30,6	33,5	35,0	38,9	41,4	46,5	51,7

(1) Indoor coil conditions: 27°C and 50%HR. Outdoor temperature 35°C.

(2) Indoor coil conditions: 25°C and 60%HR. Outdoor temperature 20°C.

(3) Indoor coil conditions: 20°C and 50%HR. Outdoor temperature 20°C.

(4) Maximum energy recovery capacity in the additional condensation coil.

Note: Axial 2-speed outdoor fans (optional) are not recommended with active dehumidification and outdoor temperatures below 12°C.

Note: The active dehumidification is not compatible with the hot water coil, the gas boiler, the gas burner, the air zoning and the BF assembly.

OPTIONS FOR THE INDOOR UNIT (CONT.)

Warm air heater module with gas burner

Warm air heater module with gas burner with modulating actuator, in accordance with the Gas Directive 2009/142/EC, installed inside a pre-assembly roofcurb. The 50FF/FC unit with lower air supply will be placed on this roofcurb.

EC certification: 0476CQ0451.

■ Up to 3 values of total power available for each model:

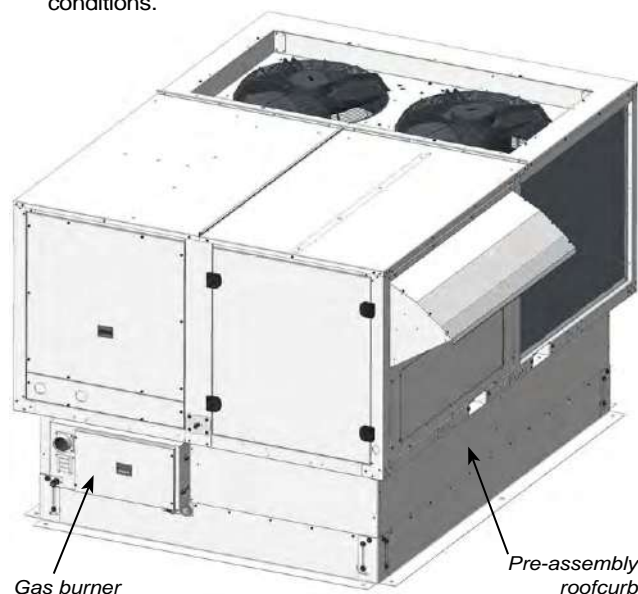
50FF/FC	020 to 047	052 to 062	070 to 093
BAF (Low)	PCH020	unavailable	unavailable
BAM (Nominal)	PCH034	PCH065	PCH080
BAS (High)	PCH045	PCH080	PCH105

Note: the gas burner is not compatible with the heat recovery coil or the active dehumidification.

■ The key features of the boiler are:

- Natural or propane gas burner.
- Condensation boiler with premixing and modulation technology that allows outputs close to 109% (Hi performance).
- The premixed burner, in combination with the air/gas valve, ensures a "clean" combustion. Low NOx emissions (class 5, according to standard EN 297).
- The combustion chamber and the burner are entirely made of stainless steel.
- Electronic controller with microprocessor and multifunction LCD display, located inside the burner, for burner's control, configuration and diagnostics.

- The electronic control of the unit will only manage the burner connection as heating support depending on the ambient conditions.



Note: It's recommended to use the clogged filter pressostat (optional) in units with gas burner.

Note: Drawings of roofcurb with gas burner can be consulted on pages 95 to 97.

Model			PCH020		PCH034		PCH045		PCH065		PCH080		PCH105		
Type of equipment			B23P - B53P - C13 - C43 - C53 - C63 - C83												
EC certification		PIN.	0476CQ0451												
NOx Class		Val	5												
Heater performance	Range		Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	
	Thermal output (Hi)	kW	4,75	19,00	7,60	34,85	8,50	42,00	12,40	65,00	16,40	82,00	21,00	100,00	
	Useful thermal output	kW	4,97	18,18	8,13	33,56	8,97	40,45	13,40	62,93	17,77	80,03	22,77	97,15	
	Hi performance (L.C.V.)	%	104,63	95,68	106,97	96,30	105,50	96,30	108,06	96,82	108,35	97,60	108,40	97,15	
	Hs performance (H.C.V.)	%	94,26	86,20	96,37	86,76	95,07	86,76	97,36	87,22	97,62	87,93	97,68	87,52	
	Flue losses with burner on (Hi)	%	0,4	4,3	0,6	3,7	0,5	3,7	0,2	3,2	0,3	2,4	0,2	2,8	
	Flue losses with burner off (Hi)	%	<0,1												
	Losses in enclosure (1)		0%												
Max. condensation (2)		l/h	0,4		0,9		1,1		2,1		3,3		2,7		
Exhaust gases - Polluting emissions	Carbon monoxide - B1 - (0% of O2) (3)	ppm	< 5												
	Nitrogen oxides - NOx - (0% of O ₂) (Hi) (4)		38 mg/kWh - 22 ppm		42 mg/kWh - 24 ppm		33 mg/kWh - 19 ppm		39 mg/kWh - 22 ppm		41 mg/kWh - 23 ppm		39 mg/kWh - 22 ppm		
	Nitrogen oxides - NOx - (0% of O ₂) (Hs) (5)		34 mg/kWh - 20 ppm		38 mg/kWh - 22 ppm		30 mg/kWh - 17 ppm		35 mg/kWh - 20 ppm		37 mg/kWh - 21 ppm		35 mg/kWh - 20 ppm		
	Available pressure at flue	Pa	80		90		100		120						
Electrical data	Power supply		230 Vac - 50 Hz single-phase												
	Power input		11	45	11	74	24	82	15	97	20	123	20	130	
	Power input in stand-by		<5												
	Ingress protection rating		IP X5D												
	Operating Temperatures		from -15°C to +40°C												
Connections	Ø gas connection	GAS	UNI/ISO 7/1- 3/4"												
	Ø intake/exhaust pipes	mm	80/80												

(1) Enclosure losses match those of the machine housing the PCH.

(2) Max. condensation produced acquired from testing 30%Qn.

(3) Value referenced to cat. H (G20)

(4) Weighted value to EN1020:2009 ref. to class H (G20), referred to Hi (L.C.V.).

(5) Weighted value to EN1020:2009 ref. to class H (G20), referred to Hs (H.C.V.).

OPTIONS FOR THE INDOOR UNIT (CONT.)

■ Gas settings:

Gas type	Gas settings		PCH020		PCH034		PCH045		PCH065		PCH080		PCH105	
			min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
G20 Cat. E-H	Air supply pressure	mbar	20 [min 17-max 25]											
	Ø pilot nozzle	mm	0,7											
	Gas consumption (15°C-1013mbar)	m3/h	0,51	2,01	0,80	3,69	0,90	4,44	1,31	6,88	1,74	8,68	2,22	10,58
	Carbon dioxide - CO ₂ content	%	8,8	9,1	8,7	9,1	8,7	9,1	8,7	9,1	8,7	9,1	8,5	9,1
	Fumes temperature	°C	39	113	31	94	30	94	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	31		57		72		107		135		165	
	Gas butterfly valve	mm	5,8		7,4		7,5		11,0		12,2		15,8	
G25 Cat. L-LL	Air supply pressure	mbar	25 [min 17-max 30] (20 for Germany)											
	Ø pilot nozzle	mm	0,7 (0,75 for Germany)											
	Gas consumption (15°C-1013mbar)	m3/h	0,59	2,34	0,93	4,29	1,05	5,17	1,53	8,00	2,02	10,1	2,21	12,30
	Carbon dioxide - CO ₂ content	%	8,8	9,0	8,6	9,0	8,8	8,9	8,8	9,2	8,6	8,9	8,8	9,0
	Fumes temperature	°C	39	113	31	94	30	94	31	86	26	70	28	80
	Fume mass flow rate (max.)	kg/h	--											
	Gas butterfly valve	mm	7,4		8,9		8,9		Not necessary		Not necessary		Not necessary	
G30 Cat. 3B-P	Air supply pressure	mbar	30 [min 25-max 35] - 50 [min 42,5-max 57,5]											
	Ø pilot nozzle	mm	0,51											
	Gas consumption (15°C-1013mbar)	m3/h	0,40	1,58	0,63	2,90	0,71	3,49	1,03	5,39	1,49	6,80	1,70	8,30
	Carbon dioxide - CO ₂ content	%	10,8	11,4	10,8	11,5	10,8	10,9	10,7	11,3	10,1	10,3	10,4	10,6
	Fumes temperature	°C	39	113	31	94	30	94	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	--											
	Gas butterfly valve	mm	3,7		5,0		5,2		6,5		7,0		9,3	
G31 Cat. 3P	Air supply pressure	mbar	30 [min 25-max 35] - 37 [min 25-max 45] - 50 [min 42,5-max 57,5]											
	Ø pilot nozzle	mm	0,51											
	Gas consumption (15°C-1013mbar)	m3/h	0,39	1,55	0,62	2,85	0,70	3,43	1,01	5,31	1,34	6,70	1,47	8,18
	Carbon dioxide - CO ₂ content	%	9,3	9,8	9,2	9,7	9,3	9,4	9,4	9,6	9,3	9,6	9,5	9,8
	Fumes temperature	°C	39	113	31	94	30	94	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	24		45		58		84		107		130	
	Gas butterfly valve	mm	3,7		5,0		5,2		6,5		7,0		9,3	

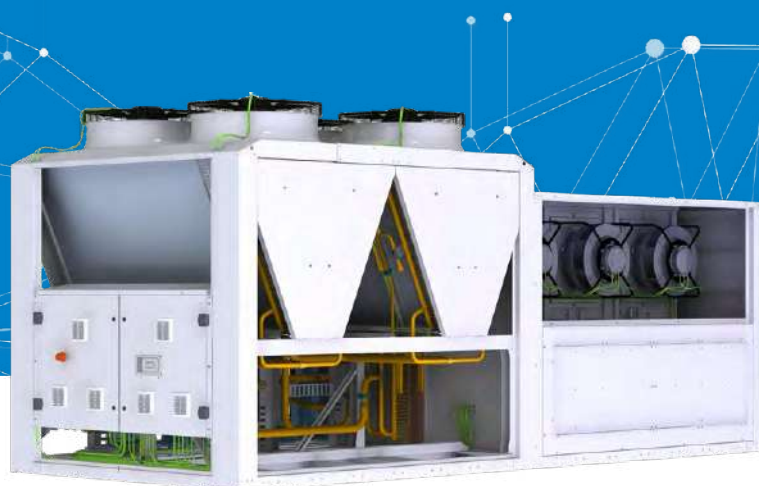
■ Type of gas used depending on the destination country:

Country	Category	Gas	Pressure (mbar)	Gas	Pressure (mbar)
Austria, Switzerland	II2H3B/P	G20	20	G30/G31	50
Belgium < 70kW	I2E(S)B,I3P	G20/G25	20/25	G31	37
Belgium > 70kW	I2E(R)B,I3P	G20/G25	20/25	G31	37
Germany	II2ELL3B/P	G20/G25	20	G30/G31	50
Denmark, Finland, Greece, Sweden, Norway, Italy, Czech Republic, Estonia, Lithuania, Slovenia, Albania, Macedonia, Bulgaria, Romania, Croatia, Turkey, Azerbaijan	II2H3B/P	G20	20	G30/G31	30
Spain, United Kingdom, Ireland, Portugal, Slovakia	II2H3P	G20	20	G31	37
France	II2Esi3P	G20/G25	20/25	G31	37
Luxembourg	II2E3P	G20/G25	20	G31	37/50
Netherlands	II2EK3B/P	G20/G25.3	20/25	G30/G31	30
Hungary	II2HS3B/P	G20/G25.1	25	G30/G31	30
Cyprus, Malta	I3B/P	--	--	G30/G31	30
Latvia	I2H	G20	20		
Iceland	I3P	--	--	G31	37
Poland	II2ELwLs-3B/P	G20/G27/G2.350 (*)	20/13	G30/G31	37
Russia	II2H3B/P	G20	20	G30/G31	30

(*) Consult the available burners with G2.350.

NEW

PACKAGED ROOFTOP UNITS



High efficiency
Superior reliability
Compact system
Low sound level
Energy recovery
Variable speed EC fans

50FC 100 - 280

Nominal cooling capacity 100,0 - 279,9 kW
Nominal heating capacity 100,2 - 308,4 kW

The **50FC** packaged rooftop range consists of autonomous compact air-air units of horizontal design, rooftop type.

■ **50FC series, models 100 to 280:** for **reversible heat pump** operation.

The range of available capacities in the series allows for the air conditioning of medium and large surface areas which are common in shopping malls, food retail, logistics and many other commercial and industrial applications.

50FC units are designed for optimized part-load management in achieving the highest levels of seasonal efficiency, exceeding the limits set by regulation.

With its mono-block lightweight construction, the units feature a self-supporting frame, designed to ease the installation and maintenance works.

The units integrate the latest technological innovations:

- Multi-scroll compressors in tandem.
- Electronic expansion valves.
- Variable speed EC fans.
- Auto-adaptative microprocessor control.

For maximum adaptability, a number of options is available to meet any operating requirement:

- Exhaust air energy recovery.
- Economizer.
- Indoor air quality management.
- Available static pressure up to 80 mm.w.c.
- Zoning with variation of airflow.
- Installation roofcurbs.
- Auxiliary heating modules.
- Extended operation limits.



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FEATURES AND ADVANTAGES

Carrier's range of packaged rooftop air conditioning units 50FC has been designed to set high standards in performance. The series offers design flexibility, ease of installation, quality and superior reliability thanks to the number of technological improvements and the available options that allow for seamless integration in the building.

Designed to withstand outdoors installation, it can operate all-year-round performing at the highest levels of seasonal efficiency thanks to the management of the new control inside.

The high efficiency cooling circuits have been developed as to eliminate any leaks caused by any vibration modes and designed with state-of-the-art components including electronic expansion valves in all the circuits. The refrigerant circuits come fitted with pressure transducers and temperature sensors which allow for accurate control on the operation conditions together with the management of the fans speed.

The chassis has been designed and tested for the most demanding conditions. With aluminium panels as standard, the self-supporting structure has been conceived also to reduce weight and to optimize transportation capabilities. All the sheet metal work comes in powder-coated finishes outdoors and indoors.

Ease of maintenance is also granted thanks to the great accessibility to components through removable side panels, access doors fitted with dual hinges with locking functions.

Additional energy savings are possible thanks to multiple options such as economizers, exhaust air energy recovery or indoor air quality sensors.

This can also be combined with scheduling functions or BMS integration through many standardized protocols.



Design flexibility

The design of these units allows the airflow direction (lateral and lower) to be converted on-site. Being able to convert the unit airflow makes it easy to overcome job site complications.

- Vertical supply/return units are ideal for new construction or retrofit to existing installations. The low unit profile is maintained when the unit is installed on the accessory roofcurb.

The ducts can be attached directly to the roofcurb to allow all ductwork to be completed before the unit is positioned.

- Horizontal units are ideal for replacement or applications such as through-the-wall where sound must be attenuated before the duct penetrates the roof. Ducts connect directly to the unit. Horizontal units may be curb or slab mounted.

Easy and fast installation

The unit is connected directly to an air distribution ductwork without additional elements or equipment, pipes, cables, etc. taking no floor space at all. This design reduces the cost of installation, facilitates a quick connection and ensures reliable operation.

A vast number of options integrated in the unit meet many operating requirements.

Superior reliability

- Excellent full and part load efficiencies are achieved by using tandem scroll compressors. The compressors are equipped with crankcase heaters and protected by electronic sensors and logic to control minimum on and off times and reverse rotation.
- All units are tested at various stages on the production line for circuit leakage, electrical compliance and refrigerant pressures.

Advanced technology and performance

In tertiary sector installation, a high percentage of the annual air conditioning energy consumption comes from the use of fans for transporting air. Using fans which are more efficient has a direct impact on reducing consumption.

- Electronic plug-fans in the indoor circuit with direct drive and variable speed offer the following advantages:
 - Elimination of friction losses during transmission thanks to the direct drive.
 - Greater aerodynamic efficiency of the rotor (reactive blades with an optimized profile), running at very high operating pressures.
 - Greatly increased motor efficiency. Permanent magnets DC motors activated using electronic switching integrated into the motor itself.
 - Variable speed to ensure a constant supply air flow rate, independent of the filters clogging level.
 - Measuring the flow rate through a calibrated section at the fan intake and a differential pressure sensor allows the control to handle the flow rate reliably and precisely in both on CAV and VAV systems.
- Electronic axial fans in the outdoor circuit which adapt the rotation speed to the installation's requirements, reducing electricity consumption, the sound level at part load and improving the unit's average seasonal efficiency.

Environmental care

- Making an environmentally responsible decision is possible when using R-410A refrigerant.

This refrigerant is an HFC refrigerant that does not contain chlorine that is damaging to the ozone layer, and unaffected by the Montreal Protocol. R-410A refrigerant is a safe, non-toxic, efficient and environmentally balanced for the future.

- Also, to reduce the environmental impact, this new series is not requiring any wooden pallets for handling, thus eliminating not only the waste disposal but avoiding the cut of trees.

KEY FOR CONFIGURATION

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
50FC	100	A	4	A	B1	LL	000	S	N	A	H	S	000	0000	0000	0	0	AA00	00	A00	000	AA00	0000	0000

A: Unit type

50FC: air/air heat pump

B: Unit model

2 circuits: 100 / 110 / 120 / 130 / 145 / 160 / 170 / 180 / 200 / 220 / 250 / 280

C: Version of the series

A: Current version

D: Electrical power4: 400V / 3ph + N / 50Hz
5: 400V / 3ph / 50Hz**E: Type of refrigerant**

A: R410A

F: Airflow + AssemblyB1: Standard
B2: Economizer, 2 dampers
BP: Plug-fan in return section
BA: Cooling recovery circuit with plug-fan in return section
BT: Return top box with plug-fan or centrifugal fan
BB: Cooling recovery circuit with plug-fan or centrifugal fan in return top box
BW: Heat recovery wheel module**G: Coil coating : Indoor - Outdoor**LL: Aluminium - Aluminium
LP: Aluminium - Polyurethane
LN: Polyurethane - Inera®
PP: Polyurethane - Polyurethane
PN: Polyurethane - Inera®
NN: Inera® - Inera®**H: Heating**000: Without auxiliary heating
BAx: Gas burner, 2 power outputs:
x = M (Nominal) / S (High)
RAX: Electrical heaters, 3 power outputs:
x = F (Low) / M (Nominal) / S (High)
HAX: Hot water coil:
x = S (Standard)**I: Protection for low outdoor temperature**S: Without protection
A: Freeze protection OAT lower than -10°C**J: Supply fan**F: Low available pressure (aluminium)
N: Nominal available pressure (polypropylene)
M: Nominal available pressure (aluminium)
S: High available pressure (aluminium)**K: Air filtration + droplet eliminator**A: G4
B: G4+ droplet eliminator
C: G4 low pressure drop
D: G4 low pressure drop + droplet eliminator
G: G4 + F7
H: G4 + F7 + droplet eliminator
K: G4 low pressure drop + F7
L: G4 low pressure drop + F7 + droplet eliminator
O: M6 + F7
P: M6 + F7 + droplet eliminator
S: F7 + F9
T: F7 + F9 + droplet eliminator**L: Outdoor fan**L: AC (2-speed)
H: EC (electronic)**M: Insulation**S: Standard insulation
M: Insulation M0 with double wall (50mm)**N: Indoor unit**000 - Without optional accessories
A: Condensate drain pan in stainless steel
A: Unused
A: Filter fouling detector**O: Outdoor unit**0000 - Without optional accessories
A: Fresh air safety grid
A: Outdoor coil protection grid
A: Antivibration mounts
A: Droplet eliminator at the fresh air intake**P: Heat recovery wheel**0000 - Without optional accessories
4: Wheel diameter: 1500 mm
5: Wheel diameter: 1800 mm
6: Wheel diameter: 2000 mm
7: Wheel diameter: 2200 mm
A: Wheel speed with on/off control
B: Wheel speed with variable control
A: Channel cross section of 2,0 mm
B: Channel cross section of 2,5 mm
A: Material : Aluminium
C: Material : Hybrid wheel**Q: Extra heating**0: Without extra heating
B: Heat recovery coil**R: Special applications**0: Without special applications
C: Air zoning
D: Low return temperature application
I: Low T application + Air zoning**S: Sensors**0000 - Without optional accessories
A: Smoke detection control unit
A: CO₂ sensor environment installation
B: CO₂ sensor ducted installation
C: CO₂ sensor on the pLAN network
A: 1 sensor RS485
B: 2 sensors RS485
C: 3 sensors RS485
D: 4 sensors RS485
E: 1 sensor NTC
A: Ambient temperature sensor
B: Dual ambient temp.+humidity sensor
C: Ambient sensor on the pLAN network**T: Economizer management + Outdoor hum.**00 - Without economizer + without sensor
A: Outdoor humidity sensor on the unit
B: Outdoor hum. sensor on pLAN network
A: Thermal management
B: Thermoenthalpic management
C: Enthalpic management**U: Terminal + Unit communication**000 - Without terminal + stand-alone unit + without communication card
A: Card RS485 Modbus/Carel
B: Card Ethernet PCoWeb
C: Card RS485 LonWorks®
D: Card Ethernet BACnet™
E: Card RS485 BACnet™
F: Card RS485 Konnex
0: Stand-alone unit
A: Master unit
B: Slave unit
A: Graphic terminal in electrical cabinet
B: User terminal in electrical cabinet
C: Graphic terminal in the cabinet + User terminal remote up to 100 m
D: User terminal in the cabinet + Graphic terminal remote up to 200 m
E: Graphic terminal in the cabinet + Graphic terminal remote up to 200 m
F: Touch panel in electrical cabinet
G: Touch panel in the cabinet + Graphic terminal remote up to 200 m
H: Touch panel in the cabinet + User terminal remote up to 100 m**V: Miscellaneous item 1**000 - Without optional accessories
A: On-off control of an humidifier
B: Proportional control of an humidifier
A: Electrical energy meter
B: Cooling capacity & elec. energy meter
A: Refrigerant leak detector**W: Miscellaneous item 2**AA00 - Without optional accessories
A: Unused
A: Varnish protection
A: Unused
A: Unused**X: Return fan**0000 - Without return fan
A: Centrifugal, low airflow
C: Centrifugal, nominal airflow
E: Centrifugal, high airflow
N: Plug-fan, nominal pressure (polyprop.)
M: Plug-fan, nominal pressure (aluminium)
S: Plug-fan, high pressure (aluminium)
Unused**Y: Indoor airflow direction**0000 - Lower direction
0: Lower supply and lower return (B1, B2, BP, BA and BW assemblies)
1: Lateral supply and lower return (montajes B1, B2, BP, BA and BW)
2: Lower supply and lateral return (montajes B1, B2, BT and BB)
3: Lateral supply and lateral return (montajes B1, B2, BT and BB)
4: Upper supply and lower return (montajes B1 and B2)
5: Lateral supply and upper return (montajes B1 and B2)
6: Upper supply and lateral return (montajes B1 and B2)
7: Lower supply and upper return (montajes B1 and B2)
8: Upper supply and upper return (montajes B1 and B2)
Unused



UNIT COMPONENTS

Casing

- Structure made of galvanised steel metal. Panels and registers in aluminium. Finished with polyester paint, white colour RAL 7035.
- Removable panels for easy access to all components: electrical cabinet, compressors, fans, filters, etc.
- Skids for easy transport in a container. The dimensions of this range allow all models and assemblies to be transported in a container, so that the special SEI4C maritime packaging is not necessary under any circumstances.

Outdoor unit

- Coils with copper pipes and aluminium fins.
- EC electronic axial fans which adapt the rotation speed to the installation's requirements, thereby reducing electricity consumption, the sound level at partial charge and improving the unit's average seasonal efficiency. IP55 protection.

Indoor unit

- Thermal and acoustic insulation in panels and registers with M1 fire classification.
- Coils with copper pipes and aluminium fins.
- EC electronic supply plug-fans with variable control speed and flow rate controller.
- Reusable gravimetric air filters G4, mounted on a frame. Dual locking system mounted on the access panel to filters.
- Isolated pan of condensates drainage sloping down towards the drain. This pan is removable for easy cleaning in models 100 to 170.

Cooling circuit

- Hermetic scroll-type compressors in tandem design that

improves the management of stages and the part load efficiencies, assembled over antivibration mounts. Relay for phase-sequence monitoring and phase loss protection.

- Crankcase heater.
- Electronic expansion valves.
- Four-way cycle reversing valves.
- Acid-resistant filters dryer.
- Cooling design in 2-air volumes.

Protections

- High pressure pressostats.
- High and low pressure transducers.
- Refrigerant leak control (by low-pressure alarm).
- Compressor discharge temperature control.
- Main door switch.
- Protection for power lines of compressors with manual motor starters and power lines of fan motors with magnetothermic switches. These devices provide protection against overload, short circuit, phase failure and undervoltage.
- Automatic switch in the control circuit.

Electrical cabinet

- Complete and fully wired electrical cabinet. Insulated access door to prevent condensation. Forced ventilation of the electrical cabinet. Protection IP54.
- Numeration of wired and identification of components in the electrical cabinet. It permits easy tracing and diagnostics.
- Hinges + quarter-turn latches on the removable access doors.
- Electrical power supply with neutral.
- Main ground connection.
- Compressor and fan motor contacts.

CONTROLS

"50FC" control

Factory-installed "50FC" control provide the capability for free standing operation or may be linked with a more extensive system. Factory-installed and programmed Modbus communication capability provides simple integration with the building BMS system.

The 50FF/FC range may also be configured to communicate via LonWorks®, BACnet™ MSTP, Konnex, Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP protocols, if required by the application.

The "50FC" control also have the capability to communicate with our supervision solutions: **pCO Web** (1 unit), **PlantWatchPRO3** (30 units), **BOSS mini** (50 units) and **BOSS** (300 units).

This communication flexibility allows simple system integration, as well as data collection, trending, monitoring and alarm displays. The control provides unparalleled service diagnostic information.

With this control it is also possible to connect to a local pLAN (Local Area Network) for a maximum of 15 units, with one unit configured as "Master" and the others as "Slaves". This network allows the exchange of data and information between the units, and depending on the conditions of the installation, share the reading of some probes installed on the unit configured as "Master", temperature setpoints and operating mode. It is also possible to configure one unit as "Back-up" just in case for failure of the another unit on the pLAN network.

The "50FC" control are your link to a world of simple and easy-to-use rooftop units that offer outstanding performance and value. With the sensors, it maintains control over all the components of the unit and helps optimise the performance of the refrigeration circuits as conditions change, resulting in the following features:

- Higher part load efficiency.
- Better control of temperature.
- Superior reliability.
- High ambient cooling operation at 48°C.
- Low ambient cooling operation at -15°C WB.

The main functions of this control are:

- Selection of setpoint and operating mode: HEATING / COOLING / AUTO / VENTILATION.
- Continuous control of the operating parameters.
- Display of the values measured by the sensors.
- Compressors cycles.
- Defrosting management.
- Control of the supply air temperature.
- All-seasons operation via the condensation and evaporation pressure control.

The management of the unit in cooling mode is based on the principle of a high floating pressure. The condensation pressure setpoint is continually calculated depending on the outdoor temperature. This pressure is regulated by adjusting the air flow on the outdoor fans.

- Setpoint compensation based on the outdoor temperature.

- Hourly and weekly schedule.
- Fire protection.
- Diagnosis of faults and general alarm.
- Management of all the optional components available for the unit: economizer, back-up heating, CO₂ air quality sensor, energy recovery,...

User interfaces

Graphic terminal

This terminal, fitted as standard on the electrical cabinet, is very easy to use. It provides detailed explanations of control in easy to understand English. No decoding is required.



Only 6, large, easy-to-use buttons are required to maneuver through the entire menus.

- This terminal is used to:
 - Carry out initial programming of the unit.
 - Modify operating parameters.
 - Switch the unit ON / OFF.
 - Select the operating mode and adjust the setpoints.
 - Display the variables controlled and sensor values measured.
 - Display the current alarms and their historical record.

User terminal (optional)

This terminal can be installed on the electrical cabinet, instead of the graphic terminal. In this case, the remote connection of the graphic terminal is possible.



- This terminal is used to:
 - Switch the unit ON / OFF.
 - Select the operating mode and adjust the setpoints.
 - Display the installation's temperatures and humidity, outdoor temperature, supply air temperature, CO₂ sensor and opening of the outdoor damper.
 - Display alarms codes.

Touch panel (optional)

With the same functions as the graphic terminal, the 4.3 inch touchscreen panel makes interaction between the user and the unit much easier by simplifying navigation between the various screens.



OPERATING LIMITS

Inlet air conditions		Cooling
Indoor coil	Minimum temperature	9,7°C WB
	Maximum temperature	24°C WB
Outdoor coil	Minimum temperature	12°C (1)
	Maximum temperature	48°C

Inlet air conditions		Heating
Indoor coil	Minimum temperature	10°C
	Maximum temperature	27°C
Outdoor coil	Minimum temperature	-15°C WB (2)
	Maximum temperature	15°C WB

(1) With a condensation pressure control operating down to -10°C.

(2) When the outdoor temperature is usually below 5°C WB, the installation of a support element is recommended.

PHYSICAL DATA (EN-14511-2018)

50FC		100	110	120	130	145	160	170	180	200	220	250	280
Cooling capacities													
Cooling capacity (1)	kW	100,00	109,76	119,14	129,34	144,21	158,58	166,76	179,73	199,99	219,85	252,94	279,91
Power input (3)	kW	31,58	35,88	39,53	42,08	47,92	54,98	59,36	56,46	66,47	77,57	83,02	96,62
EER performance		3,17	3,06	3,01	3,07	3,01	2,88	2,81	3,18	3,01	2,83	3,05	2,90
SEER		4,75	4,65	4,56	4,75	4,62	4,56	4,57	4,85	4,70	4,69	4,59	4,54
ηs		187%	183%	179%	187%	182%	180%	180%	191%	185%	184%	181%	179%
Heating capacities													
Heating capacity (2)	kW	100,20	109,97	121,14	131,24	148,31	162,78	170,96	189,73	209,99	234,84	280,12	308,40
Power input (3)	kW	27,69	31,07	35,22	36,33	41,86	47,28	50,15	50,69	58,44	67,23	78,11	89,48
COP performance		3,62	3,54	3,44	3,61	3,54	3,44	3,41	3,74	3,59	3,49	3,59	3,45
SCOP		3,44	3,45	3,42	3,42	3,42	3,34	3,37	3,38	3,38	3,38	3,38	3,37
ηs		135%	135%	134%	134%	134%	131%	132%	132%	132%	132%	132%	132%
Outdoor circuit fan		Electronic axial fan											
Nominal air flow	m³/h	44.000	44.000	44.000	58.000	58.000	64.000	64.000	80.000	86.000	86.000	120.000	120.000
Available static pressure	mm.w.c	5											
Number / Diameter	mm	2 / 800			2 / 910				4 / 800			4 / 910	
Maximum speed	r.p.m.	1.100			1.070				1.100			1.070	
Motor output	kW	2 x 3,0			2 x 3,3				4 x 3,0			4 x 3,3	
Maximum absorbed current	A	2 x 4,6			2 x 5,0				4 x 4,6			4 x 5,0	
Indoor circuit supply fan		Electronic plug-fan (Polypropylene)											
Nominal air flow	m³/h	18.000	19.800	21.600	23.400	26.100	28.800	30.600	32.400	36.000	39.000	40.500	45.000
Nominal avail. static pressure	mm.w.c	25	25	25	30	35	35	35	35	35	35	35	35
Minimum air flow	m³/h	10.800			14.040				19.440			24.300	
Maximum air flow	m³/h	25.920			36.720				46.800			54.000	
Number / Diameter	mm	3 / 500				4 / 500			5 / 500			6 / 500	
Speed	r.p.m.	1.700				1.700			1.700			1.700	
Motor output	kW	3 x 2,6				4 x 2,6			5 x 2,6			6 x 2,6	
Maximum absorbed current	A	3 x 4,0				4 x 4,0			5 x 4,0			6 x 4,0	
Compressor		Scroll											
No. compressors / stages / circuits		4 / 4 / 2											
Oil type		Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC											
Volume of oil	l	4 x 3,0	2 x 3,0 + 2 x 3,3	4 x 3,3	4 x 3,3	4 x 3,3	4 x 3,3	2 x 3,3 + 2 x 3,6	2 x 3,3 + 2 x 3,6	3 x 3,6 + 1 x 6,1	1 x 3,6 + 3 x 6,1	4 x 6,1	4 x 6,1
Electrical characteristics													
Mains voltage		400 V / III ph / 50 Hz (±10%)											
Power supply		3 Wires + Ground + Neutral											
Maximum absorbed current	A	85,6	90,9	99,4	107,4	120,0	129,9	137,5	149,9	166,7	185,3	207,7	230,3
Refrigerant		R-410A											
Global warming potential (4)		2.088											
Charge	kg	34,0	34,0	34,0	37,0	37,0	37,5	38,0	54,0	56,0	56,0	67,0	68,0
Environment impact	tCO2eq	71,0	71,0	71,0	77,3	77,3	78,3	79,3	112,8	116,9	116,9	139,9	142,0
Weight													
B1 assembly	kg	1.420	1.435	1.450	1.630	1.665	1.670	1.675	2.255	2.355	2.455	2.785	2.845

- (1) Cooling capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 27°C, 19°C WB and 35°C outdoor temperature.
 (2) Heating capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 20°C and 6°C WB outdoor temperature.
 (3) Total power input by compressors and motorised fans under nominal conditions, calculated in accordance with the EN-14511-2018 standard.
 (4) Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

Compliance

- Machinery Directive 2006/42/EC (MD)
- Electromagnetic Compatibility Directive 2014/30/EU (EMC)
- Low Voltage Directive 2014/35/EU (LVD)
- Pressure Equipment Directive 2014/68/EU (Category 2) (PED)
- RoHS Directive 2011/65/EU (RoHS)
- Eco-design Directive 2009/125/EC (ECO-DESIGN)
- Energy Labelling Directive 2017/1369/EU (ECO-LABELLING)
- Harmonised Standard: EN 378-2:2012 (Refrigerating systems and heat pumps - Safety and environmental requirements).



Eurovent
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values

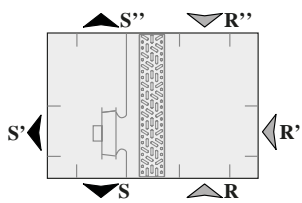
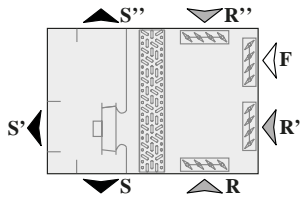
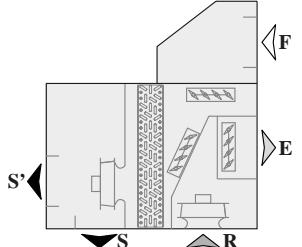
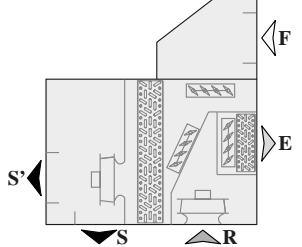
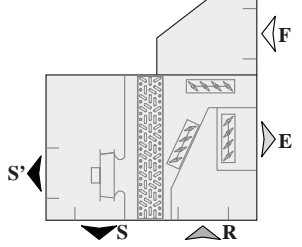
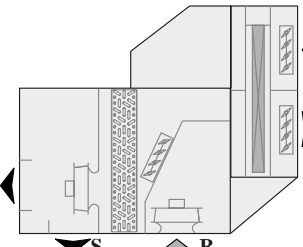
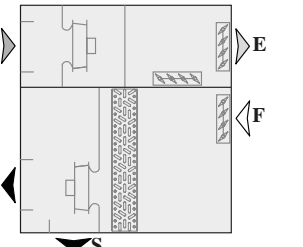
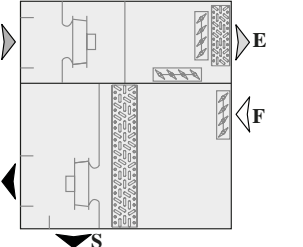
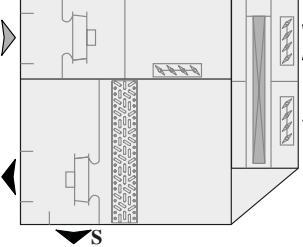
FACTORY OPTIONS AND ACCESSORIES

Category	Description	Upon request	Factory installed option	Field installed accessory
Electrical power	400 V / 3 ph / 50 (without neutral)		X	
Airflow + Assembly	B2: Economizer, 2 dampers		X	
	BP: Plug-fan in return section		X	
	BA: Cooling recovery circuit with plug-fan in return section		X	
	BT: Return top box with plug-fan or centrifugal fan		X	
	BB: Cooling recovery circuit with plug-fan or centrifugal fan in return top box		X	
	BW: Heat recovery wheel module		X	(*)
	B3: Economizer, 3 dampers	X	X	
Coil coating	BL: Return top box with plug-fan or centrifugal fan with heat recovery wheel module	X	X	(*)
	INERA® coils with aluminium alloy fins and copper pipes		X	
	Coils with polyurethane precoated aluminium fins and copper pipes		X	
	Coils with copper-made pipes and fins	X	X	
Heating	Blygold® coating	X	X	
	Auxiliary hot water coil: «Standard»		X	
	Auxiliary hot water coil: «Very low outdoor temperature»	X	X	
	Auxiliary hot water coil		X	
Protection low temperature	Warm air heater module with gas burner (supplied installed inside a pre-assembly roofcurb)			X
	Freeze protection OAT lower than -10°C		X	
	Freeze protection OAT lower than -14°C	X	X	
	Freeze protection OAT lower than -10°C + spring shut-off dampers	X	X	
Supply fan	Freeze protection OAT lower than -14°C + spring shut-off dampers	X	X	
	Indoor plug-fan with nominal available pressure (Aluminum), low pressure (Aluminum) or high pressure (Aluminum)		X	
Air filtration + droplet eliminator	Droplet eliminator after the indoor air coil		X	X
	Filters G4 low pressure drop		X	X
	Filters G4 + folded filters F7		X	X
	Filters G4 low pressure drop + folded filters F7		X	X
	Double stage of folded filters: M6+F7, F7+F9		X	X
Outdoor fan	Two-speed direct-driven axial fans		X	
Insulation	Thermal and acoustic insulation, Euroclass A2-s1, d0 (M0), with double wall (50mm)		X	
Indoor unit	Condensates drain pan in stainless steel		X	X
	Room overpressure management	X	X	
	Filter fouling detection with differential pressure switch		X	
Outdoor unit	Fresh air safety grid		X	X
	Outdoor coil protection grid		X	X
	Droplet eliminator at the fresh air intake		X	X
	Antivibration mounts made of rubber		X	X
Heat recovery wheel	Selection of the heat recovery wheel (BW assembly): diameter, channel cross section, wheel material and and type of speed control		X	
Extra heating	Heat recovery coil		X	
Special applications	Air zoning		X	(*)
	Low return temperature application		X	
	Low return temperature application + Air zoning		X	
Sensors	NTC ambient temperature sensor on the control board or 1 to 4 sensors with RS485 comm.		X	X
	Dual ambient temperature-humidity sensor with RS485 communication. Up to four sensors		X	X
	CO2 sensor: environment or ducted installation or installed on a pLAN network		X	X
	Smoke detection control unit in accordance with the NF S 61-961 standard		X	X
Economizer + Outd. humidity	Economizer management: thermal, enthalpic or thermoenthalpic		X	X
	Outdoor air humidity sensor: supplied with the unit or installed on a pLAN network		X	X
Terminal + Unit communication	Graphic terminal installed in the electrical cabinet + User terminal remote up to 100 m		X	X
	Graphic terminal installed in the electrical cabinet + Graphic terminal remote up to 200 m		X	X
	User terminal installed in the electrical cabinet		X	X
	User terminal installed in the electrical cabinet + Graphic terminal remote up to 200 m		X	X
	Touch panel in the electrical cabinet		X	X
	Touch panel in the cabinet + Graphic terminal remote up to 200 m		X	X
	Touch panel in the cabinet + User terminal remote up to 100 m		X	X
	Unit configuration: stand-alone, master or slave		X	X
	Communication cards: RS485 Modbus/Carel; Ethernet PCoWeb; RS485 LonWorks®; Ethernet BACnet™; RS485 BACnet™; RS485 Konnex		X	X
	Management of an humidifier with on-off or proportional control		X	
Miscellaneous item 1	Electrical energy meter		X	
	Cooling capacity and electrical energy meter		X	
	Refrigerant leak detector		X	
	Varnish protection for components on the electrical cabinet: control board, cards and terminals		X	
Miscellaneous item 2	High performance phase sequence relay	X	X	
	Centrifugal return fan: 3 airflow options: low, nominal and high		X	
Return fan	Return plug-fan: 3 available pressure options: nominal pressure (Polypropylene), nominal pressure (Aluminium) or high pressure (Aluminium)			
	There are 9 combinations in the direction of airflow with: - Supply: lower, lateral and upper - Return: lower, lateral and upper		X	
Airflow direction				
Roofcurb	Pre-assembly roofcurbs with adjustable height			X
	Adaptation roofcurbs for replacing units on site	X		X

(*) The rotary heat exchanger (BW and BL assemblies) and part of the air zoning option are supplied disassembled with the unit, for installation on site.

FACTORY OPTIONS AND ACCESSORIES (CONT.)

Assembly + Indoor air flow direction

B1 assembly Standard									
B2 assembly Economizer, 2 dampers: fresh air damper interlocked with return damper									
BP assembly Plug-fan in return section									
BA assembly Plug-fan in return section + Cooling recovery circuit (active recovery)									
B3 assembly (upon request) Economizer, 3 dampers: fresh air damper and exhaust air damper									
BW assembly Plug-fan in return section + Heat recovery wheel module (passive recovery)									
BT assembly Return top box with plug- fan or centrifugal fan									
BB assembly Return top box with plug- fan or centrifugal fan + Cooling recovery circuit (active recovery)									
BL assembly (upon request) Return top box with plug- fan or centrifugal fan + Heat recovery wheel module (passive recovery)									
Legend <table border="1"> <tr> <td>S Lower air supply</td><td>R Lower air return</td></tr> <tr> <td>S' Lateral air supply</td><td>R' Lateral air return</td></tr> <tr> <td>S'' Upper air supply</td><td>R'' Upper air return</td></tr> <tr> <td>F Fresh air intake</td><td>E Exhaust air outlet</td></tr> </table>		S Lower air supply	R Lower air return	S' Lateral air supply	R' Lateral air return	S'' Upper air supply	R'' Upper air return	F Fresh air intake	E Exhaust air outlet
S Lower air supply	R Lower air return								
S' Lateral air supply	R' Lateral air return								
S'' Upper air supply	R'' Upper air return								
F Fresh air intake	E Exhaust air outlet								
<p>Note: only one of the three possible options (lower, lateral or upper) can be selected for both, supply and return.</p> <p>The airflow direction selected for supply and return (lower or lateral) is easily interchangeable on site.</p>									

Indoor airflow direction		
0 Lower supply and lower return	3 Lateral supply and lateral return	6 Upper supply and lateral return
1 Lateral supply and lower return	4 Upper supply and lower return	7 Lower supply and upper return
2 Lower supply and lateral return	5 Lateral supply and upper return	8 Upper supply and upper return

FACTORY OPTIONS AND ACCESSORIES (CONT.)

Electrical power

- These units can be supplied for the following power supply voltages:

- 400 V / 3 ph + N / 50 Hz (standard)
- 400 V / 3 ph / 50 Hz (optional)

Coils coating

- INERA® coils with aluminium alloy fins of high performance and great resistance to the corrosion, and copper pipes.
- Coils with polyurethane precoated aluminium fins and copper pipes.
- Coil with copper-made pipes and fins **(upon request)**.
- Blygold® coating **(upon request)**.

Note: These coating can be applied to various coils (outdoor, indoor and hot water coil) according to the combinations available in the "Selection Software".

Heating

The unit only can incorporate one of these heating elements:

- **Auxiliary hot water coil**, with three-way valve and proportional control, for assembly inside the unit.

The unit incorporates a freeze protection thermostat.

- Optional «Very low outdoor temperature» **(upon request)**: Additional freeze protection technology based on the water temperature. This protection is made up of a circulation pump as well as two sensors inserted in the input and the output of the coil.

Important: this option is mandatory for an outdoor temperature lower than -20°C WB. Consult for percentages of glycol water above 20%.

- **Auxiliary electrical heaters**, with two power stages and on/off control, for assembly and connection inside the unit. Up to 3 values of total power available for each model:

50FC	RAF (Low)	RAM (Nominal)	RAS (High)
100 to 120	27 kW	36 kW	54 kW
130 to 170	36 kW	54 kW	72 kW
180 to 220	45 kW	72 kW	90 kW
250 to 280	54 kW	72 kW	108 kW

- **Warm air heater module with gas burner** with modulating actuator, in accordance with the Gas Directive 2009/142/EC, installed inside a pre-assembly roofcurb.

The 50FC unit with lower air supply will be placed on this roofcurb.

Two values of power available for each model:

50FC	100 to 120	130 to 170	170 to 280
BAM (Nominal)	PCH080	PCH130	PCH160
BAS (High)	PCH130	PCH160	PCH210

Note: It's recommended to use the filter fouling detector (optional) in units with gas burner.



Protection for low outdoor temperature

- Freeze protection OAT lower than -10°C. Mandatory for an outdoor temperature lower than -10°C WB.
 - Electrical heater for protection of the components of the electrical cabinet.
 - Compressor with protection for low temperature.
- Freeze protection OAT lower than -14°C **(upon request)**. Mandatory for an outdoor temperature lower than -14°C WB. In addition to the options of -10°C, this includes:
 - Reinforced electrical heater for protection of the components of the electrical cabinet.
 - Electrical heater for anti-freeze protection of dampers of the economizer (if applicable).
 - Protective kit of the gas burner for low temperature (if applicable).
- Freeze protection OAT lower than -10°C + spring shut-off dampers in case of a power failure **(upon request)**.
- Freeze protection OAT lower than -14°C + spring shut-off dampers in case of a power failure **(upon request)**.

Supply fan

- By default, these units are fitted with plug-fans for a nominal available pressure (N), in Polypropylene.

The following fans can optionally be supplied:

- F: Low available pressure (Aluminium)
- M: Nominal available pressure (Aluminium)
- S: High available pressure (Aluminium)

FACTORY OPTIONS AND ACCESSORIES (CONT.)

Note: Aluminium fans are rated A2-s1, d0 (M0) and comply with regulations for public promises in France.

Important: the "Selection Software" will choose the supply fan with lower consumption for the available pressure required.

Air filtration + Droplet eliminator

Options to improve indoor air quality:

- Different combinations of filters are available:
 - Gravimetric filters G4 with low pressure drop.
 - Gravimetric filters G4 of standard type + folded opacimetric filters F7.
 - Gravimetric filters G4 with low pressure drop + folded opacimetric filters F7.
 - Double-stage of folded opacimetric filters: M6+F7 or F7+F9.

Classification of these filters according to the new **ISO 16890 Standard**:

- G4 → ISO Coarse 60%
- M6 → ISO ePM2.5 50%
- F7 → ISO ePM1 60%
- F9 → ISO ePM1 90%

- Droplet eliminator after the indoor air coil. Recommended in cases where a high moisture content in the air is foreseen or when the air flow is high.

Note: with hot water coil it is not possible to assemble the droplet eliminator.

Outdoor fan

- Two-speed direct-driven axial fan(s). Watertight motor class F, IP54 and internal thermal protection. Dynamically balanced propellers and outdoor protective grille.

Insulation

- Thermal and acoustic insulation A2-s1,d0 (M0) with sandwich panels with double wall, 50 mm thick, in all indoor section in contact with airflow.



Standard insulation



M0 insulation

Optionally, **upon request**, the fresh air damper and the exhaust damper can be managed independently for greater airflow differences. This option may be necessary to prevent the entry of outside air or to eliminate odours from inside (BP, BT and BW assemblies).

Note: This option is not available on BA and BB assemblies because this type of control of the dampers penalizes cooling recovery.

Outdoor unit

- Fresh air safety grid (9x9mm).
- Outdoor coil protection grid.
- Antivibration mounts made of rubber.
- Droplet eliminator at the fresh air intake. This one and the thermoenthalpic free-cooling are necessary in cases where a high moisture content in the air is foreseen.

Heat recovery wheel

- The heat recovery wheel is fitted into a module placed on one side of the unit. This module is supplied disassembled with the unit, for installation on site.

Available with BW assembly, and upon request, with BL assembly.

This rotary recovery unit is used to transfer the sensible and latent heat from the air-conditioned room's return air to the fresh air used for ventilation, before it's discharged outdoors. This option reduces the compressors runtime, ensuring energy saving and benefiting the environment.

The efficiency of energy recovery depend on the wheel selected: material, wheel diameters, channel cross section and type of speed control.



Heat recovery module

Indoor unit

- Condensate drain pan in stainless steel for corrosion protection.
- Filter fouling detection with differential pressure switch.
- Room overpressure management. Assemblies that include a return fan allow the management of airflow differences between supply air and return air of up to 10%, setting up flow setpoints.

Extra heating

- Heat recovery coil (HRC). The coil function is to pre-heat the air that will pass through the main indoor coil. For this, it uses the temperature of an outdoor water installation.

The coil is supplied with a 3-way valve for installation outside the unit but manages by the electronic control.

This option is compatible with B1, B2, BT and BB assemblies.

FACTORY OPTIONS AND ACCESSORIES (CONT.)

Special applications

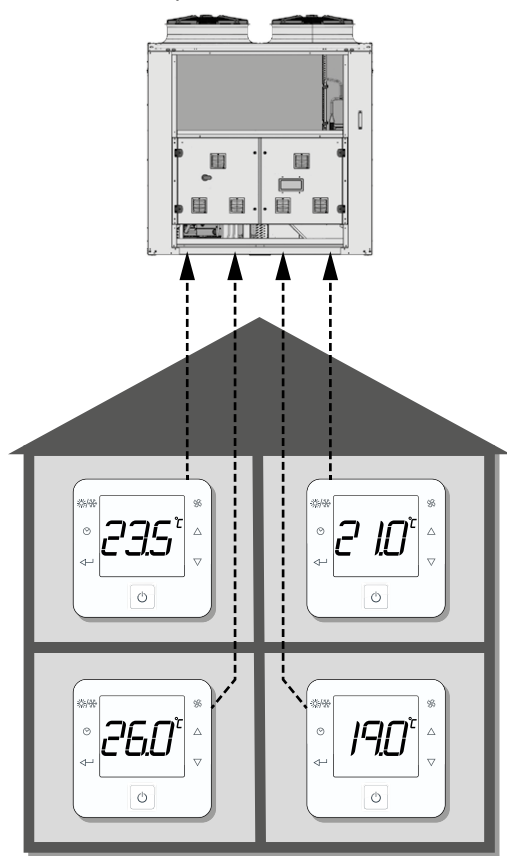
- **Low return temperature application.** This option is mainly focused to food storage, and can be applied to large warehouses installations.

With this option, the unit adapts all its devices to manage low return temperature (15°C) in cooling mode. This is possible due to some changes in the control operation parameters.

The "Selection Software" includes the option as mandatory when return temperature is lower than 20°C (with 15°C as the minimum allowed value).

- **Zoning of the air flow up to 4 different zones.**

This option allows the management of the air flow of the unit to condition up to 4 different zones with a minimum air flow of 35% (all of them in same operating mode: heating or cooling). This function allows to adapt the indoor air flow to the installation requirements.



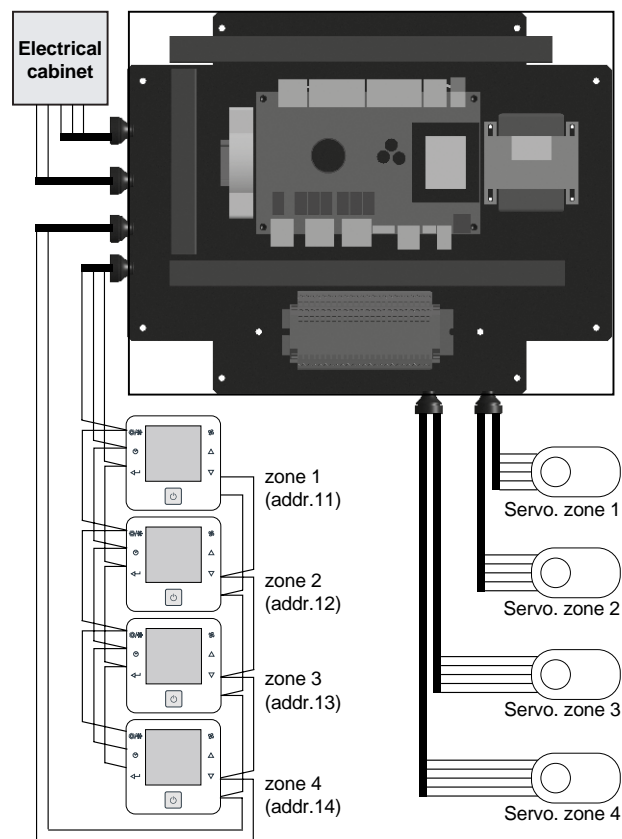
Regulation gives the control signal to the dampers installed in each zone (dampers and servomotors for those dampers not supplied). The unit modifies the air flow and capacity depending on information coming from sensors in each zone and considering active zones in each moment.

The option includes 4 zone terminals (one for each zone), the additional control board supplied in an independent box to be connected with the 4 terminals, the unit board and also to the servomotors that control dampers in each zone (dampers and servos not supplied).

The temperature information for each zone is coming from temperature sensor integrated inside each zone terminal. It is not needed to install any extra ambient sensor.

Note: In case the unit includes an economizer for enthalpic or thermoenthalpic free cooling (T+H control) an extra return T+H sensor in the offer is required. If the unit additionally includes CO₂ probe, it must be a return probe and not an ambient probe.

In following picture, electronic PCB and 4 zone terminals are detailed. Connections can be found in the "50FC" control manual.



Sensors

- **Ambient temperature sensor(s).** There are 3 options:
 - One NTC sensor connected to the control board.
Note: An ambient sensor with RS485 communication is required for installation at more than 30 meters.
 - Up to four sensors with RS485 communication.
 - Sensor(s) installed on the master unit of the local network (pLAN).
- **Dual ambient temperature-humidity sensor(s).** Up to four sensors with RS485 communication or installed on the pLAN network. This sensor is compulsory in units with enthalpic or thermoenthalpic free-cooling (optional). In this case, the outdoor air humidity sensor is also added.
- **CO₂ sensor for air quality control.** There are 3 options:
 - Ambient air quality sensor,
 - Return air quality sensor (duct-mounted),
 - Sensor installed on the master unit of the local network (pLAN).
- **Smoke detection control unit** in accordance with the NF S 61-961 standard, that uses a LED to indicate the installation status, and if the probe detects the presence of smoke in the installation, it stops the operation of the unit and gives the order to open or close the outdoor damper (configured by parameter).

To ensure compliance with the French regulations on Fire safety (ERP), it's possible to select the opening of the fresh air damper and the exhaust air damper to 100% (return air damper closed).

FACTORY OPTIONS AND ACCESSORIES (CONT.)

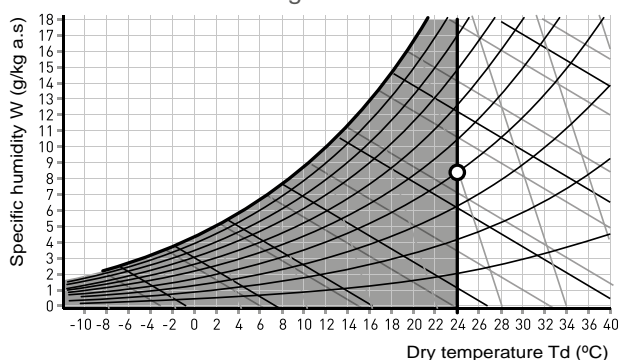
Economizer management + outdoor humidity

- Managing free-cooling with an **economizer** allows to make best use of outdoor air conditions when these are more favourable than the return air conditions. This allows the cooling capacity to be reduced. The percentage of outdoor air can vary between 0% and 100%.

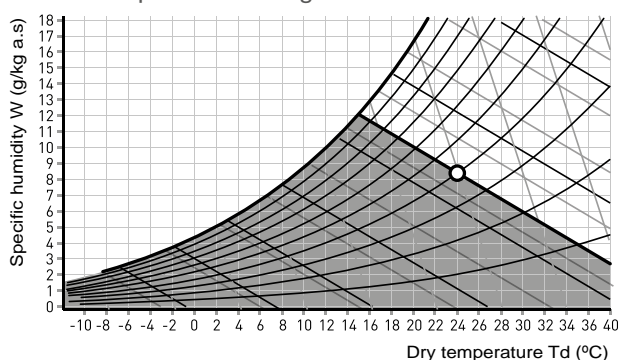
The economizer management can be:

- Thermal, by comparing the temperatures.
- Enthalpic, by comparing the enthalpies. Recommended in cases where a high moisture content in the air is foreseen.
- Thermoenthalpic, by comparing the enthalpies and correcting for temperature. This is the optimum solution as it takes the variability of the climate into account.

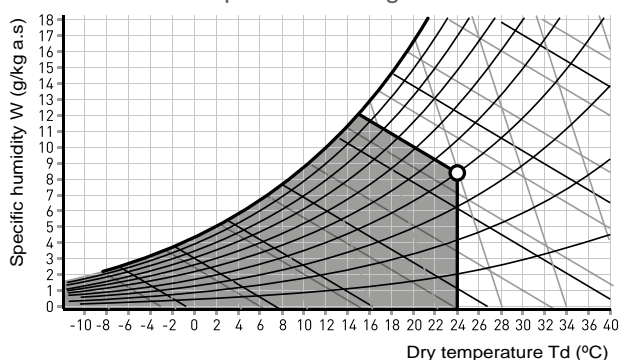
Thermal free-cooling



Enthalpic free-cooling



Thermoenthalpic free-cooling



One function that helps improve energy management is **nocturnal free-cooling**. This feature allows the compressors to be disabled in summer with programming, the unit works providing free-cooling at night, when the outdoor conditions are favourable. This allows the cooling demand to decrease significantly early in the day.

- **Outdoor air humidity** sensor (compulsory in units with optional enthalpic or thermoenthalpic free-cooling).

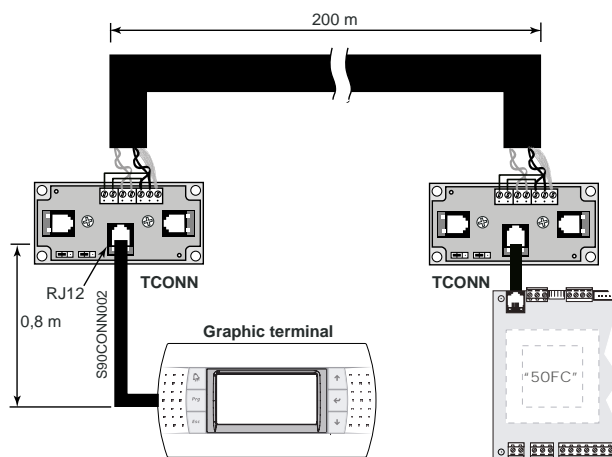
There are 2 options:

- Sensor supplied with the unit.
- Sensor installed on another unit of the local network (pLAN).

Terminal + unit communication

- By default, the electronic control is supplied with a graphic terminal installed in the electrical cabinet of the unit, but these other configurations also are available:

- Graphic terminal installed in the electrical cabinet and User terminal remote up to 100 meters.
- Graphic terminal installed in the electrical cabinet and Graphic terminal remote up to 200 meters (two TCONN bypass cards must be used from 50 to 200 meters).
- User terminal installed in the electrical cabinet, instead of the graphic terminal.
- User terminal installed in the electrical cabinet and Graphic terminal remote up to 200 meters (two TCONN bypass cards must be used from 50 to 200 meters).



- Touch panel installed in the electrical cabinet, instead of the graphic terminal.
- Touch panel installed in the electrical cabinet and Graphic terminal remote up to 200 meters (two TCONN bypass cards must be used from 50 to 200 meters).
- Touch panel installed in the electrical cabinet and User terminal remote up to 100 meters.



Graphic terminal



Touch panel



User terminal

FACTORY OPTIONS AND ACCESSORIES (CONT.)

- Control without terminal (for units with shared terminal in a pLAN network).

- By default, the electronic control is configured for a stand-alone unit, but it is also possible to place it in a pLAN network (Local Area Network) as Master, Slave or Back-up. The maximum number of units that can be configured on a Master/Slave pLAN network is 15, and in case of Back-up units is 2.

Important: to use any of the following functionalities it is necessary to configure in the "Selection software" one unit as Master and the others as Slaves (including the back-up unit). The specific functionality will be configured on site (according to the "50FC control manual").

The pLAN network allows to have the following functionalities depending on the parameterized configuration:

- Master/Slave:

It allows to share the VecticGD terminal, as well as some of the probes installed in the master unit: ambient temperature or ambient temperature + humidity, outdoor temperature, outdoor humidity and CO₂ air quality.

- Extended Master/Slave:

It includes "Master/Slave" functionalities and the master unit provides ambient temperature setpoints to the other units.

- Master/Slave with the same operating mode:

It includes the "Extended Master/Slave" functionalities and the master unit also provides the status (Cooling-Heating - Ventilation) to the other units.

- Back-up in case of alarm:

One unit is configured as a backup unit, in case of malfunction of the other pLAN network unit.

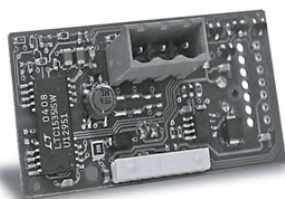
- Extended Back-up:

It includes the "Back-up in case of alarm" functionalities and also, the control manages the automatic switching between the two units weekly, to compensate the operation times of both units.

Note: In the case of installations with Back-up units, it is not possible to share the probes, nor the terminal, since both units must be fully autonomous in their operation. If both units are connected to the same supply duct network, it is imperative that the installation consists of non-return dampers (installer responsibility).

- This control allows the connection to a centralised technical management system by using a specific BMS card for some of the following communication protocols:

- RS485 serial cards for network communication with protocols: Carel, Modbus, LonWorks®, BACnet™ MSTP, Konnex.
- Ethernet pCO Web card for network communication with protocols: Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.



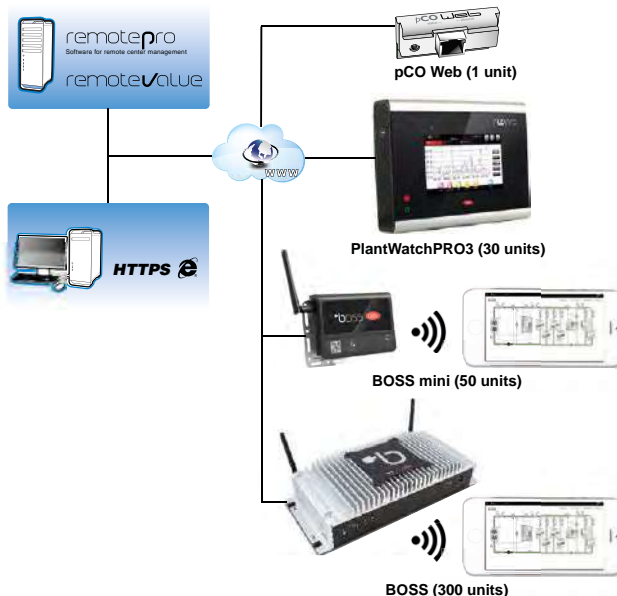
RS485 Carel/Modbus card



Ethernet pCO Web card

Supervision solutions

Different solutions of supervision are available bases on the dimensions of the installation for unit fitted with Ethernet pCO Web and RS485 Carel / Modbus cards.



- pCO Web:

It is the solution for the management and supervision of a single unit if this incorporates the Ethernet pCO Web card.

- PlantWatchPRO3:

This is a solution designed for the monitoring of small and medium-size installations, capable of manage up to 30 units. Suitable for technical environments, no parts are in movement.

It's available in two versions: panel and wall.

Includes: 7 " touch display, buzzer for notifications, 1 USB port and 1 SD card slot for downloading reports, charge devices models and applying service packs.

For this option, each unit needs one RS485 Carel / Modbus board.

- BOSS:

This is the solution for the management and supervision of air-conditioning installations with up to 300 units.

Its main advantages are:

- Integrated WIFI Hotspot for direct access without any extra infrastructure.
- Smartphone compatibility.
- Secure supervisor control from remote through a simple browser.

It offers advanced monitoring and maintenance functions and allows zones and groups to be created to simplify the management of the installation. It also allows energy meters to be integrated to monitor the installation electricity consumption.

BOSS is available in two versions:

- CPU device.
- CPU device, monitor, keyboard and screen.

For this option, each unit needs one RS485 Carel / Modbus board.

FACTORY OPTIONS AND ACCESSORIES (CONT.)

- BOSS mini (New)

This is the solution for the management and supervision of air-conditioning installations with up to 10 units with 50 variables per unit or 50 units with 10 variables maximum per unit, but with the same features as BOSS.

BOSS mini is available in two versions:

- CPU device, mouse and keyboard.
- CPU device, monitor, mouse and keyboard.

These systems are used to manage the installation remotely. All the information on the system can be accessed via a simple Internet connection. The online interface, the same one used by the local user, enables monitoring and complete configuration of the installation: from the office or anywhere else the user happens to be.

To control multiple sites remotely, there are special tools dedicated to centralized management, such as **RemotePRO** and **RemoteValue**.

Miscellaneous item 1

- Management of an humidifier with on-off or proportional control.
- Electrical energy meter for monitoring of the power consumption of the installation.
- Cooling capacity and electrical energy meter. In addition to the energy meter, the unit incorporates mixing and supply enthalpic sensors with RS485 communication that enable cooling and heating capacities to be calculated.
- Refrigerant leak detector (in ppm). This allows prompt identification of gas leaks, guaranteeing the safety of any people in the vicinity. This detector allows the number of periodic revisions to the unit to be reduced.

Miscellaneous item 2

- Varnish protection for the components on the electrical cabinet: control board, cards and terminals.
- High performance phase monitoring relay (**upon request**). In addition to the phase-sequence monitoring and phase loss protection, performed by the built-in relay as standard in these units, the high performance relay allows control of under and overvoltage as well as phase imbalance.

Highly recommended for installations with power system voltage instability, high level of electromagnetic disturbances EMC, etc.

Return fan

- Centrifugal return fan, coupled by pulleys and belts. Electric motor with tensioner, class F, IP55 and internal thermal protection. Turbine with an impeller of front-curved blades. Greased spherical bearings, with no maintenance required. Available in BB and BT assemblies.

There are 3 fan options depending on the airflow: low, nominal and high.

- Return plug-fan. There are 3 fan options depending on the available pressure:

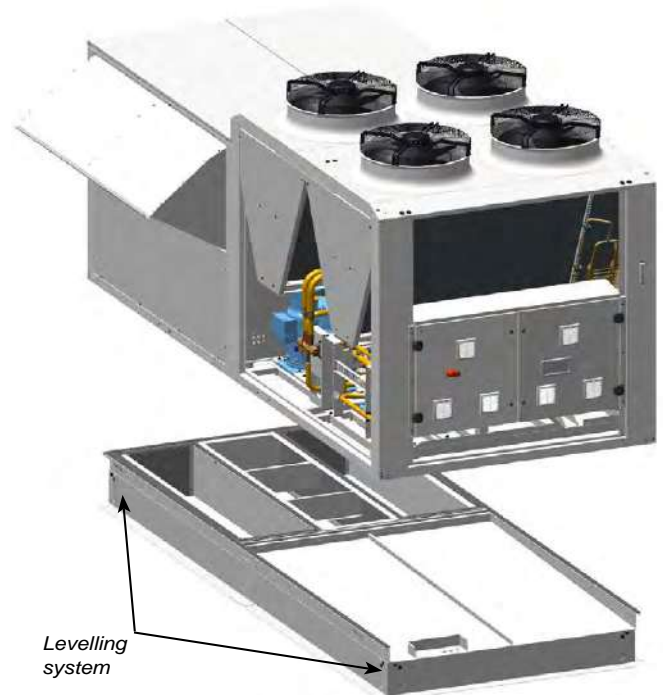
- N: Nominal available pressure (Polypropylene).
- M: Nominal available pressure (Aluminium).
- S: High available pressure (Aluminium).

Important: the "Selection Software" will choose the fan with lower consumption for the available pressure required.

Pre-assembly roofcurbs

- The units can rest on standardised pre-assembly roofcurbs with adjustable height, built in galvanised steel panelling with polyester paint and thermal insulation.

The levelling system uses angle pieces that allow adjustments in the X and Y axes.



- Adaptation roofcurbs ready for direct replacement on site of units from different manufacturers (**upon request**).

SOUND LEVELS dB(A)

Sound power level (LW)

50FC	100	110	120	130	145	160	170	180	200	220	250	280
63 Hz	64,6	65,1	65,6	66,1	66,6	66,9	67,1	67,1	67,9	69,1	70,6	71,6
125 Hz	71,4	71,9	72,4	72,9	73,4	73,7	73,9	73,9	74,7	75,9	77,4	78,4
250 Hz	77,9	78,4	78,9	79,4	79,9	80,2	80,4	80,4	81,2	82,4	83,9	84,9
500 Hz	80,2	80,7	81,2	81,7	82,2	82,5	82,7	82,7	83,5	84,7	86,2	87,2
1000 Hz	80,6	81,1	81,6	82,1	82,6	82,9	83,1	83,1	83,9	85,1	86,6	87,6
2000 Hz	78,1	78,6	79,1	79,6	80,1	80,4	80,6	80,6	81,4	82,6	84,1	85,1
4000 Hz	74,2	74,7	75,2	75,7	76,2	76,5	76,7	76,7	77,5	78,7	80,2	81,2
8000 Hz	69,4	69,9	70,4	70,9	71,4	71,7	71,9	71,9	72,7	73,9	75,4	76,4
Total dB(A)	86,0	86,5	87,0	87,5	88,0	88,3	88,5	88,5	89,3	90,5	92,0	93,0

Sound pressure level (LP)

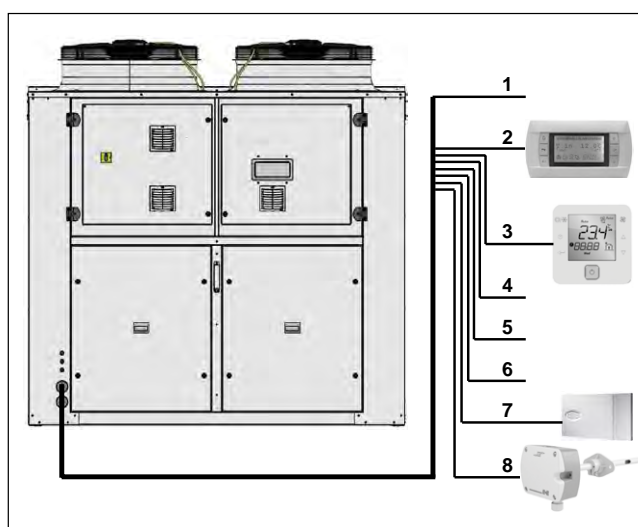
Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

50FC	100	110	120	130	145	160	170	180	200	220	250	280
Total dB(A)	58,6	59,1	59,6	60,0	60,5	60,8	61,0	60,7	61,5	62,7	64,0	65,0

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

ELECTRICAL CONNECTIONS

No.	50FC		100 to 280
1	Main power supply	400 III (±10%)	3 Wires + Ground + Neutral
2	Remote connection of graphic terminal (by default installed on the electrical cabinet) (1)		Telephone cable 6 wires standard (RJ12 connector)
3	Connection of user terminal (optional) (2)		2 wires for power supply 230V + 1 shielded cable for communication type AGW20 / 22 (1 braided pair + drainwire + shielding)
4	Remote off/on (optional)		2 wires
5	General fault signal (opt.) (3)		2 wires
6	Remote Cooling/Heating (opt.)		2 wires
7	Circulation pump signal for HWC (antifreeze safety) (optional)		1 wire
8	Ambient sensor	NTC	2 wires
		RS485	5 wires (4)
9	CO ₂ sensor (optional)		3 wires



- (1) In this case, it's possible to install the user terminal on the electrical cabinet.
- (2) It's necessary that the terminal uses the same power supply that the control board.
- (3) The output for general alarm signal is not compatible with the following options: hot water coil, heat recovery coil, rotary heat exchanger and on/off signal for external humidifier. With these options, possibility of general alarm upon request.
- (4) Up to four RS485 ambient sensors can be connected in series on the field-bus of the control board.

WEIGHT OVERVIEW

Weight overview of the various assemblies (kg)

50FC		100	110	120	130	145	160	170	180	200	220	250	280
Standard insulation	B1 assembly	1.420	1.435	1.450	1.630	1.665	1.670	1.675	2.255	2.355	2.455	2.785	2.845
	B2 assembly	1.465	1.480	1.495	1.670	1.705	1.710	1.715	2.355	2.425	2.525	2.895	2.955
	BP assembly	1.669	1.684	1.699	1.935	1.970	1.975	1.980	2.745	2.815	2.915	3.235	3.295
	BA assembly	1.780	1.795	1.810	2.085	2.120	2.125	2.130	2.935	3.005	3.105	3.435	3.495
	BT assembly	1.765	1.780	1.795	2.025	2.030	2.035	2.040	2.855	2.925	3.025	3.285	3.345
	BB assembly	1.875	1.890	1.905	2.175	2.180	2.185	2.190	3.005	3.075	3.175	3.485	3.545
	BW assembly	Machine	1.610	1.625	1.640	1.795	1.830	1.835	1.840	2.725	2.795	3.145	3.205
		Wheel module (smaller diam.)	560	560	560	650	650	650	650	685	685	705	705
		Total weight	2.170	2.185	2.200	2.445	2.480	2.485	2.490	3.410	3.480	3.580	3.910
M0 insulation	B1 assembly	1.540	1.555	1.570	1.725	1.760	1.765	1.770	2.405	2.505	2.605	2.985	3.045
	B2 assembly	1.590	1.605	1.620	1.765	1.800	1.805	1.810	2.505	2.575	2.675	3.095	3.155
	BP assembly	1.790	1.805	1.820	2.050	2.085	2.090	2.095	2.940	3.010	3.110	3.460	3.520
	BA assembly	1.905	1.920	1.935	2.220	2.255	2.260	2.265	3.130	3.200	3.300	3.660	3.720
	BT assembly	1.875	1.890	1.905	2.150	2.185	2.190	2.195	3.050	3.120	3.220	3.510	3.570
	BB assembly	2.005	2.020	2.035	2.320	2.355	2.360	2.365	3.200	3.270	3.370	3.710	3.770
	BW assembly	Machine	1.720	1.735	1.750	2.040	2.075	2.080	2.085	2.920	2.990	3.370	3.430
		Wheel module (smaller diam.)	590	590	590	685	685	685	685	725	725	745	745
		Total weight	2.310	2.325	2.340	2.725	2.760	2.765	2.770	3.645	3.715	3.815	4.175

Weight supplement from the main options (kg)

50FC		100	110	120	130	145	160	170	180	200	220	250	280
Larger diameter wheel (recovery module)		10	10	10	20	20	20	20	10	10	10	10	10
Pre-assembly roofcurb (without gas burner)		374	374	374	402	402	402	402	467	467	467	534	534
Pre-assembly roofcurb (with gas burner)	BAM (Nominal)	804	804	804	925	925	925	925	1.084	1.084	1.084	1.204	1.204
	BAS (High)	867	867	867	974	974	974	974	1.127	1.127	1.127	1.250	1.250
Electrical heaters	RAF (Low)	29	29	29	34	34	34	34	40	40	40	45	45
	RAM (Nominal)	32	32	32	41	41	41	41	57	57	57	58	58
	RAS (High)	39	39	39	55	55	55	55	64	64	64	73	73
Hot water coil (HWC)	Empty	94	94	94	102	102	102	102	113	113	113	128	128
	Service	143	143	143	155	155	155	155	181	181	181	201	201
Heat recovery coil (HRC)	Empty	77	77	77	84	84	84	84	90	90	90	109	109
	Service	123	123	123	132	132	132	132	153	153	153	181	181
Supply fan	Low pressure, aluminium (F)	-28	-28	-28	7	-25	-25	-25	-32	-32	-32	-21	-21
	Nominal pressure, aluminium (M)	7	7	7	41	9	9	9	11	11	11	14	14
	High pressure, aluminium (S)	65	65	65	65	33	86	86	108	108	108	129	129
Droplet eliminator	Indoor coil	67	67	67	78	78	78	78	84	84	84	97	97
	Fresh air intake: B2, BW assemblies	23	23	23	26	26	26	26	29	29	29	33	33
	Fresh air intake: BP, BA, BT, BB assemblies	18	18	18	21	21	21	21	23	23	23	26	26
Centrifugal return fan (BT and BB assemblies)	Low airflow	45	33	41	78	50	46	29	58	62	3	58	69
	Nominal airflow	102	102	102	61	37	47	48	132	126	83	83	167
	High airflow	102	84	97	70	48	48	111	132	--	--	168	188
Return plug-fan (BP, BA, BT, BB and BW assemblies)	Nominal pressure, aluminium (M)	4	4	4	43	10	6	6	9	0	0	0	0
	High pressure, aluminium (S)	43	43	43	97	65	65	65	65	59	0	78	78

OPTIONS FOR THE OUTDOOR UNIT

Axial 2-speed outdoor fan

50FC		100	110	120	130	145	160	170	180	200	220	250	280
Cooling mode	SEER	4,07	4,07	3,99	4,10	4,07	3,85	3,85	4,21	4,09	4,12	4,00	3,86
	ηs	160%	160%	157%	161%	160%	151%	151%	166%	161%	162%	157%	151%
Heating mode	SCOP	3,27	3,27	3,26	3,29	3,28	3,21	3,22	3,29	3,21	3,23	3,23	3,21
	ηs	128%	128%	128%	128%	128%	126%	126%	128%	125%	126%	126%	126%
Nominal air flow	(m³/h)	44.000	44.000	44.000	58.000	58.000	64.000	64.000	80.000	86.000	86.000	120.000	120.000
Available static pressure	(mm.w.c.)	4											
Number / Diameter	(mm)	2 / 800			2 / 910			4 / 800			4 / 910		
Maximum speed	(r.p.m.)	880 / 670			885 / 685			880 / 670			885 / 685		
Output	(kW)	2 x (1,9 / 1,2)			2 x (2,5 / 1,6)			4 x (1,9 / 1,2)			4 x (2,5 / 1,6)		
Max. absorbed current	(A)	2 x 3,9			2 x 5,2			4 x 3,9			4 x 5,2		

OPTIONS FOR THE INDOOR UNIT

Supply plug-fan with different available pressure options

50FC		100	110	120	130	145	160	170	180	200	220	250	280
Nominal air flow (m³/h)		18.000	19.800	21.600	23.400	26.100	28.800	30.600	32.400	36.000	39.000	40.500	45.000
Nominal pressure (Aluminium) (M)	Number / Diameter (mm)	3 / 500			3 / 500			4 / 500			5 / 500		
	Speed (r.p.m.)	1.750			1.750			1.750			1.750		
	Output (kW)	3 x 2,6			3 x 2,6			4 x 2,6			5 x 2,6		
	Max. absorbed current (A)	3 x 4,0			3 x 4,0			4 x 4,0			5 x 4,0		
Low pressure (Aluminium) (F)	Number / Diameter (mm)	2 / 500			3 / 500			3 / 500			4 / 500		
	Speed (r.p.m.)	1.750			1.700			1.750			1.750		
	Output (kW)	2 x 2,6			3 x 2,6			3 x 2,6			4 x 2,6		
	Max. absorbed current (A)	2 x 4,0			3 x 4,0			3 x 4,0			4 x 4,0		
High pressure (Aluminium) (S)	Number / Diameter (mm)	3 / 500			3 / 500			4 / 500			5 / 500		
	Speed (r.p.m.)	2.100			2.100			2.100			2.100		
	Output (kW)	3 x 4,6			3 x 4,6			4 x 4,6			5 x 4,6		
	Max. absorbed current (A)	3 x 7,2			3 x 7,2			4 x 7,2			5 x 7,2		

Note: the value of power input according to the selected flow can be found at the "Selection Software".

Return plug-fan (BP / BA / BT / BB / BW assemblies)

50FC		100	110	120	130	145	160	170	180	200	220	250	280
Nominal air flow (m³/h)		18.000	19.800	21.600	23.400	26.100	28.800	30.600	32.400	36.000	39.000	40.500	45.000
Nominal pressure (Polypropyl.) (N)	Number / Diameter (mm)	2 / 500				3 / 500				3 / 500	3 / 500	4 / 500	
	Speed (r.p.m.)	1.700				1.700				1.750	2.100	1.700	
	Output (kW)	2 x 2,6				3 x 2,6				3 x 2,6	3 x 4,6	4 x 2,6	
	Max. absorbed current (A)	2 x 4,0				3 x 4,0				3 x 4,0	3 x 7,2	4 x 4,0	
Nominal pressure (Aluminium) (M)	Number / Diameter (mm)	2 / 500			2 / 500			3 / 500			3 / 500	3 / 500	4 / 500
	Speed (r.p.m.)	1.750			2.100			1.750			1.750	2.100	1.750
	Output (kW)	2 x 2,6			2 x 4,6			3 x 2,6			3 x 2,6	3 x 4,6	4 x 2,6
	Max. absorbed current (A)	2 x 4,0			2 x 7,2			3 x 4,0			3 x 4,0	3 x 7,2	4 x 4,0
High pressure (Aluminium) (S)	Number / Diameter (mm)	2 / 500				3 / 500				4 / 500			
	Speed (r.p.m.)	2.100				2.100				2.100			
	Output (kW)	2 x 4,6				3 x 4,6				4 x 4,6			
	Max. absorbed current (A)	2 x 7,2				3 x 7,2				4 x 7,2			

Note: the value of power input according to the selected flow can be found at the "Selection Software".

OPTIONS FOR THE INDOOR UNIT (CONT.)

Heat recovery wheel module (BW assembly)

This heat recovery wheel is used to transfer the sensible and latent heat from the air-conditioned room's return air to the fresh air used for ventilation, before it's discharged outdoors.

The return air circulates in half of the heat recovery unit and the ventilation air circulates in the other half, in the opposite direction. As the rotor rotates, very fine channels of air which form the matrix come into contact with the fresh air and the return air in turn, thereby transferring heat and humidity from one to the other.

The efficiency of the recovery depends on the following factors:

■ Wheel diameters:

- Models 100 to 120: 1500 mm and 1800 mm
- Models 130 to 170: 1800 mm and 2000 mm
- Models 180 to 280: 2000 mm and 2200 mm

■ Matrix materials:

- Aluminium: sensible heat recovery.
- Hybrid wheel: enthalpic recovery.
- Epoxy coated aluminium (**upon request**): sensible heat recovery in aggressive environments.
- Silicagel coated aluminium (**upon request**): enthalpic recovery with high efficiency in the recovery of latent heat.

■ Channel cross section:

The wheel is formed of two panels of aluminium, one smooth and one fluted. The fluted panel can be provided in two different configurations:

- 2.0 mm cross section: the commonly-used cross section due to its high efficiency and moderate pressure drops.
- 2.5 mm cross section: low pressure drop. Designed for

high frontal speeds with low pressure drops.

The heat recovery wheel is fitted into a module placed on one side of the unit.

This module features gravimetric filters G4 with low pressure drop both on the fresh air intake and on the exhaust air outlet.

This assembly can be supplied, in option, with a speed drive for the wheel which avoids the risk of ice forming on the wheel during the defrost operation.



Important: the calculations for the selection of a rotary heat exchanger according to the parameters described above should be done using the "Selection Software".

Centrifugal return fan (BT / BB assemblies)

50FC		100	110	120	130	145	160	170	180	200	220	250	280
Option A: Low airflow	Air flow (m³/h)	14.400	15.840	17.280	18.720	20.880	23.040	24.480	25.920	28.800	31.200	32.400	36.000
	Available pressure (mm.w.c.)	15	15	15	15	15	15	15	15	15	15	15	15
	Motor output (kW)	2 x 1,5	2 x 1,1	2 x 1,5	3 x 1,5	3 x 1,5	3 x 1,5	3 x 1,1	3 x 1,5	3 x 2,2	3 x 2,2	4 x 1,1	4 x 1,5
	Power input (kW)	2 x 0,78	2 x 0,98	2 x 1,25	3 x 0,56	3 x 0,72	3 x 0,92	3 x 1,07	3 x 1,25	3 x 1,65	3 x 2,12	4 x 1,05	4 x 1,39
	Max. absorbed current (A)	2 x 3,6	2 x 2,7	2 x 3,6	3 x 3,6	3 x 3,6	3 x 3,6	3 x 2,7	3 x 3,6	3 x 5,0	3 x 5,0	4 x 2,7	4 x 3,6
	Speed (r.p.m.)	490	490	548	439	459	490	516	584	610	490	514	581
	OPK code	2 x OPK0719	2 x OPK0721	2 x OPK0722	3 x OPK0720	3 x OPK0724	3 x OPK0719	3 x OPK0725	3 x OPK0723	3 x OPK0726	3 x OPK0727	4 x OPK0725	4 x OPK0723
Option C: Nominal airflow	Air flow (m³/h)	18.000	19.800	21.600	23.400	26.100	28.800	30.600	32.400	36.000	39.000	40.500	45.000
	Available pressure (mm.w.c.)	15	15	15	15	15	15	15	15	15	15	15	15
	Motor output (kW)	3 x 1,5	3 x 1,5	3 x 1,5	3 x 1,1	3 x 1,5	3 x 2,2	3 x 2,2	3 x 3,0	3 x 3,0	3 x 3,0	4 x 2,2	4 x 3,0
	Power input (kW)	3 x 0,51	3 x 0,64	3 x 0,78	3 x 0,94	3 x 1,27	3 x 1,65	3 x 1,99	3 x 2,33	3 x 2,98	3 x 2,98	4 x 1,95	4 x 2,60
	Max. absorbed current (A)	3 x 3,6	3 x 3,6	3 x 3,6	3 x 2,7	3 x 3,6	3 x 5,0	3 x 5,0	3 x 6,9	3 x 6,9	3 x 6,9	4 x 5,0	4 x 6,9
	Speed (r.p.m.)	439	439	490	490	581	623	659	718	757	769	659	718
	OPK code	3 x OPK0720	3 x OPK0720	3 x OPK0719	3 x OPK0721	3 x OPK0723	3 x OPK0726	3 x OPK0727	3 x OPK0729	3 x OPK0728	3 x OPK0730	4 x OPK0727	4 x OPK0729
Option E: High airflow	Air flow (m³/h)	21.600	23.760	25.920	28.080	30.015	31.680	35.190	35.640	--	--	48.600	49.500
	Available pressure (mm.w.c.)	15	15	15	15	15	15	15	15	--	--	15	15
	Motor output (kW)	3 x 1,5	3 x 1,1	3 x 1,5	3 x 1,5	3 x 2,2	3 x 2,2	3 x 3,0	3 x 3,0	--	--	4 x 3,0	4 x 3,0
	Power input (kW)	3 x 0,78	3 x 0,98	3 x 1,25	3 x 1,47	3 x 1,88	3 x 2,2	3 x 2,96	3 x 2,98	--	--	4 x 2,98	4 x 2,98
	Max. absorbed current (A)	3 x 3,6	3 x 2,7	3 x 3,6	3 x 3,6	3 x 5,0	3 x 5,0	3 x 6,9	3 x 6,9	--	--	4 x 6,9	4 x 6,9
	Speed (r.p.m.)	490	490	548	581	659	659	757	757	--	--	376	769
	OPK code	3 x OPK0719	3 x OPK0721	3 x OPK0722	3 x OPK0723	3 x OPK0727	3 x OPK0727	3 x OPK0728	3 x OPK0728	--	--	4 x OPK0728	4 x OPK0730

OPTIONS FOR THE INDOOR UNIT (CONT.)

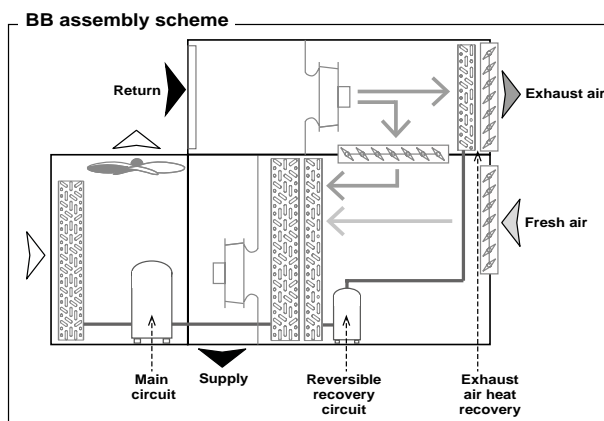
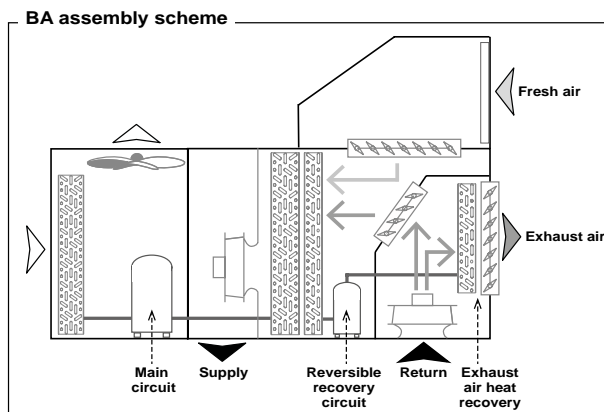
Cooling recovery circuit (BA / BB assemblies)

Thermodynamic circuit dedicated to the recovery of the extracted air energy, with independent and proportional control, adapted to the air renewal requirements in order to raise the COP, EER and seasonal efficiency of the unit set.

■ The circuit is composed of:

- EC plug-fan in return section.
- Air circuit comprised of coils with copper pipes and aluminium fins.
- Electronic expansion valve.
- Hermetic scroll-type compressor with sound insulation, assembled over antivibration mounts.
- Crankcase heater.
- Four-way cycle reversing valve.
- Anti-acid dehydrator filter.
- High and low pressure transducers.
- Condensates drain pan.

50FC	100 to 120	130 to 145	160 to 170	180 to 220	250 to 280
Compressor type	Scroll				
No. of compressors / circuits	1 / 1				
Max. absorbed current (A)	13,7	18,7	21,7	24,0	27,5
Oil type	Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC				
Volume of oil (l)	3,0	3,3	3,3	3,3	3,6
Charge of R-410A (kg)	5,3	6,4	6,4	7,6	11,9
Environment impact (tCO ₂ eq)	11,1	13,4	13,4	15,9	24,8



Heat recovery coil

The function of the heat recovery coil is to pre-heat the air that will pass through the main indoor coil. For this, it uses the temperature of an outdoor water installation. This function is managed by the unit's electronic control.

The coil is supplied with a 3-way valve for installation outside the unit but manages by the unit's electronic control.

This option is compatible with B1, B2, BT and BB assemblies.

50FC		100	110	120	130	145	160	170	180	200	220	250	280
Air pressure drop	(mm.w.c.)	2,3	2,7	3,1	2,9	3,6	4,2	4,6	4,6	5,5	6,2	5,8	6,0
Water 35/30°C (30% MEG) and inlet air 20°C	Heating capacity (kW)	39,4	41,9	44,3	49,9	53,4	56,9	59,0	58,5	62,6	64,8	81,6	82,8
	Water flow (m³/h)	7,3	7,8	8,2	9,3	9,9	10,5	10,9	10,9	11,6	12,1	15,2	15,4
	Water pressure drop (1) (m.w.c.)	3,1	3,2	3,3	5,1	5,3	5,6	5,7	4,4	4,5	4,5	7,0	7,0

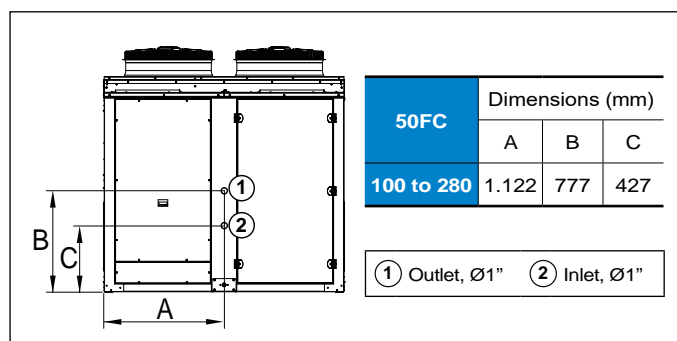
(1) Pressure drop in the coil and in the internal circuit of the unit.

Note: the heat recovery coil is not compatible with the hot water coil or the gas burner.

Correction coefficients

Water (inlet air 20°C)	30/35°C	* /40°C	* /45°C
Correction coefficients	1,00	1,35	1,70
% of MEG	10%	20%	30%
Correction coefficients	1,06	1,03	1,00

Position of the hydraulic connections



OPTIONS FOR THE INDOOR UNIT (CONT.)

Droplet eliminator after the indoor air coil

Air flow at which it is recommended to install a droplet eliminator after the indoor coil.

50FC	100	110	120	130	145	160	170	180	200	220	250	280
Air flow (m³/h)	25.920	25.920	25.920	34.700	34.700	34.700	34.700	39.658	39.658	39.658	46.675	46.675

Note: for operating conditions with high dehumidification in the indoor coil (e.g. in installations close to the coast) it may be necessary to install a separator even if the flow is less than the previous one.

Note: the droplet eliminator after the indoor coil is not compatible with the hot water coil.

Auxiliary electrical heaters

Auxiliary electrical heaters, with two power stages and on/off control, for assembly and connection inside the unit.

■ Up to 3 values of total power available for each model:

50FC	RAF (Low)	RAM (Nominal)	RAS (High)
100 to 120	27 kW	36 kW	54 kW
130 to 170	36 kW	54 kW	72 kW
180 to 220	45 kW	72 kW	90 kW
250 to 280	54 kW	72 kW	108 kW

■ Characteristics:

Total power (kW)	27	36	45	54	72	90	108
Stages power (kW)	9 + 18	18 + 18	18 + 27	27 + 27	36 + 36	45 + 45	54 + 54
Current (A)	39,0	52,0	65,0	78,0	104,0	130,0	156,0
Power supply	400 V / III ph						

Auxiliary hot water coil

Auxiliary hot water coil, with three-way valve and proportional control, for assembly and connection inside the unit. This option always incorporates a freeze protection thermostat.

50FC	100	110	120	130	145	160	170	180	200	220	250	280
Air pressure drop (mm.w.c.)	2,2	2,6	3,0	2,9	3,5	4,1	4,5	3,9	4,7	5,4	4,2	5,0
Water 80/60°C and inlet air 20°C	Heating capacity (kW)	181,0	192,4	203,2	226,4	242,3	257,3	266,8	278,2	295,8	309,5	336,8
	Water flow (m³/h)	8,0	8,5	9,0	10,0	10,7	11,4	11,8	12,3	13,1	13,7	14,9
	Water pressure drop (m.w.c.)	3,3	3,4	3,5	4,0	4,2	4,3	4,4	4,3	4,3	5,9	6,0
Water 90/70°C and inlet air 20°C	Heating capacity (kW)	222,5	236,6	250,0	278,1	297,9	316,6	328,3	346,2	368,2	385,7	416,9
	Water flow (m³/h)	9,9	10,5	11,1	12,4	13,3	14,1	14,6	15,4	16,4	17,1	18,5
	Water pressure drop (m.w.c.)	3,6	3,7	3,8	4,5	4,6	4,8	5,0	4,4	4,4	4,5	6,1

Note: Maximum water inlet temperature 95°C, maximum pressure 4 bar.

Note: The hot water coil is not compatible with the droplet eliminator after the indoor air coil or the heat recovery coil.

Position of the hydraulic connections of the hot water coil

The inlet/outlet connections of the hot water coil are located inside the unit and the connection is made via the side panel.

It can also be made via the base of the unit using flexible piping (for installation with pre-assembly roofcurb).

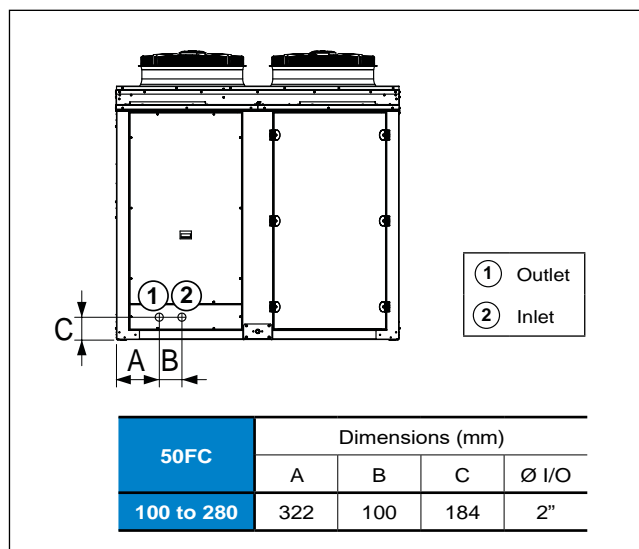
The position of the sheet metal precuts on the side panel are shown in the following diagrams.

"Very low outdoor temperature" option (upon request)

■ This anti-freeze safety incorporates:

- Circulation pump.
- Water temperature sensors located in the inlet and the outlet of the coil.

Important: this option is mandatory for an outdoor temperature lower than -20°C WB. Consult for percentages of glycol water above 20%.



OPTIONS FOR THE INDOOR UNIT (CONT.)

Warm air heater module with gas burner

Warm air heater module with gas burner with modulating actuator, in accordance with the Gas Directive 2009/142/EC, installed inside a pre-assembly roofcurb. The 50FC unit with lower air supply will be placed on this roofcurb.

EC certification: 0476CQ0451.

■ Two values of power available for each model:

50FC	100 to 120	130 to 170	170 to 280
BAM (Nominal)	PCH080	PCH130	PCH160
BAS (High)	PCH130	PCH160	PCH210

Note: the gas burner is not compatible with the heat recovery coil.

■ The key features of the boiler are:

- Natural or propane gas burner.
- Condensation boiler with premixing and modulation technology that allows outputs close to 109% (Hi performance).
- The premixed burner, in combination with the air/gas valve, ensures a "clean" combustion. Low NOx emissions < 70 mg/kWh HCV (class 5, according to standard EN 297).

Note: Burners must not exceed NOx: 70 mg/kWh HCV emission values from January 1st, 2021 (according to European Regulations 2016/2281).

- The combustion chamber and the burner are entirely made of stainless steel.
- Electronic controller with microprocessor and multifunction LCD display, located inside the burner, for burner's control, configuration and diagnostics.

- The electronic control of the unit will only manage the burner connection as heating support depending on the ambient conditions.



Note: It's recommended to use the clogged filter pressostat (optional) in units with gas burner.

Modelo		PCH080		PCH105 (2 x PCH065)		PCH105 (2 x PCH065)		PCH105 (2 x PCH065)			
Type of equipment		B23P - B53P - C13 - C43 - C53 - C63 - C83									
EC certification		PIN.		0476CQ0451							
NOx Class		Val		5							
Heater performance	Range	Min.	Max	Min.	Max	Min.	Max	Min.	Max		
	Thermal output (Hi)	kW	16,40	82,00	12,40	130,00	16,40	164,00	21,00	200,00	
	Useful thermal output	kW	17,77	80,03	13,40	125.86	17,77	160.06	22,77	194,30	
	Hi performance (L.C.V.)	%	108,35	97,60	108,06	96,82	108,35	97,60	108,40	97,15	
	Hs performance (H.C.V.)	%	97,62	87,93	97,36	87,22	97,62	87,93	97,68	87,52	
	Flue losses with burner on (Hi)	%	0,3	2,4	0,2	3,2	0,3	2,4	0,2	2,8	
	Flue losses with burner off (Hi)	%	<0,1								
	Losses in enclosure (1)		0%								
Max. condensation (2)		l/h		3,3		4,2		6,6		5,4	
Exhaust gases - Polluting emissions	Carbon monoxide - B1 - (0% of O2) (3)	ppm		< 5							
	Nitrogen oxides - NOx - (0% of O ₂) (Hi) (4)			41 mg/kWh - 23 ppm		39 mg/kWh - 22 ppm		41 mg/kWh - 23 ppm		39 mg/kWh - 22 ppm	
	Nitrogen oxides - NOx - (0% of O ₂) (Hs) (5)			37 mg/kWh - 21 ppm		35 mg/kWh - 20 ppm		37 mg/kWh - 21 ppm		35 mg/kWh - 20 ppm	
	Available pressure at flue	Pa		120							
Electrical data	Power supply	230 Vac - 50 Hz single-phase									
	Power input			20	123	30	194	40	246	40	260
	Power input in stand-by			<5							
	Ingress protection rating			IP X5D							
	Operating temperatures			from -15°C to +40°C							
Connections	Ø gas connection	GAS		3/4" M		1 1/2" M					
	Ø intake/exhaust pipes	mm		80/80		2 x 80/80					

(1) Enclosure losses match those of the machine housing the PCH.

(2) Max. condensation produced acquired from testing 30%Qn.

(3) Value referenced to cat. H (G20)

(4) Weighted value to EN1020:2009 ref. to class H (G20), referred to Hi (L.C.V.).

(5) Weighted value to EN1020:2009 ref. to class H (G20), referred to Hs (H.C.V.).

OPTIONS FOR THE INDOOR UNIT (CONT.)

■ Gas settings:

Gas type	Gas settings		PCH080		PCH130 (2 x PCH065)		PCH160 (2 x PCH065)		PCH210 (2 x PCH065)	
			min.	max.	min.	max.	min.	max.	min.	max.
G20 Cat. E-H	Air supply pressure	mbar	20 [min 17-max 25]							
	Ø pilot nozzle	mm	0,7							
	Gas consumption (15°C-1013mbar)	m3/h	1,74	8,68	2 x 1,31	2 x 6,88	2 x 1,74	2 x 8,68	2 x 2,22	2 x 10,58
	Carbon dioxide - CO ₂ content	%	8,7	9,1	8,7	9,1	8,7	9,1	8,5	9,1
	Fumes temperature	°C	26,5	70	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	135		2 x 107		2 x 135		2 x 165	
	Gas butterfly valve	mm	12,2		11,0		12,2		15,8	
G25 Cat. L-LL	Air supply pressure	mbar	25 [min 17-max 30] (20 for Germany)							
	Ø pilot nozzle	mm	0,7 (0,75 for Germany)							
	Gas consumption (15°C-1013mbar)	m3/h	2,02	10,1	2 x 1,53	2 x 8,00	2 x 2,02	2 x 10,1	2 x 2,21	2 x 12,30
	Carbon dioxide - CO ₂ content	%	8,6	8,9	8,8	9,2	8,6	8,9	8,8	9,0
	Fumes temperature	°C	26	70	31	86	26	70	28	80
	Fume mass flow rate (max.)	kg/h	--							
	Gas butterfly valve	mm	Not necessary							
G30 Cat. 3B-P	Air supply pressure	mbar	30 [min 25-max 35] - 50 [min 42,5-max 57,5]							
	Ø pilot nozzle	mm	0,51							
	Gas consumption (15°C-1013mbar)	m3/h	1,49	6,80	2 x 1,03	2 x 5,39	2 x 1,49	2 x 6,80	2 x 1,70	2 x 8,30
	Carbon dioxide - CO ₂ content	%	10,1	10,3	10,7	11,3	10,1	10,3	10,4	10,6
	Fumes temperature	°C	26,5	70	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	--							
	Gas butterfly valve	mm	7,0		6,5		7,0		9,3	
G31 Cat. 3P	Air supply pressure	mbar	30 [min 25-max 35] - 37 [min 25-max 45] - 50 [min 42,5-max 57,5]							
	Ø pilot nozzle	mm	0,51							
	Gas consumption (15°C-1013mbar)	m3/h	1,34	6,70	2 x 1,01	2 x 5,31	2 x 1,34	2 x 6,70	2 x 1,47	2 x 8,18
	Carbon dioxide - CO ₂ content	%	9,3	9,6	9,4	9,6	9,3	9,6	9,5	9,8
	Fumes temperature	°C	26,5	70	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	107		2 x 84		2 x 107		2 x 130	
	Gas butterfly valve	mm	7,0		6,5		7,0		9,3	

■ Type of gas used depending on the destination country:

Country	Category	Gas	Pressure (mbar)	Gas	Pressure (mbar)
Austria, Switzerland	II2H3B/P	G20	20	G30/G31	50
Belgium < 70kW	I2E(S)B,I3P	G20/G25	20/25	G31	37
Belgium > 70kW	I2E(R)B,I3P	G20/G25	20/25	G31	37
Germany	II2ELL3B/P	G20/G25	20	G30/G31	50
Denmark, Finland, Greece, Sweden, Norway, Italy, Czech Republic, Estonia, Lithuania, Slovenia, Albania, Macedonia, Bulgaria, Romania, Croatia, Turkey, Azerbaijan	II2H3B/P	G20	20	G30/G31	30
Spain, United Kingdom, Ireland, Portugal, Slovakia	II2H3P	G20	20	G31	37
France	II2Esi3P	G20/G25	20/25	G31	37
Luxembourg	II2E3P	G20/G25	20	G31	37/50
Netherlands	II2EK3B/P	G20/G25.3	20/25	G30/G31	30
Hungary	II2HS3B/P	G20/G25.1	25	G30/G31	30
Cyprus, Malta	I3B/P	--	--	G30/G31	30
Latvia	I2H	G20	20		
Iceland	I3P	--	--	G31	37
Poland	II2ELwLs-3B/P	G20/G27/G2.350 (*)	20/13	G30/G31	37
Russia	II2H3B/P	G20	20	G30/G31	30

(*) Consult the available burners with G2.350.

AIR-COOLED CONDENSING UNITS WITH AXIAL FAN AND VERTICAL DISCHARGE



Split-system
R-410A refrigerant
Outdoor unit with axial fan
Configuration flexibility

38ZS/ZF

Cooling capacity 21-138 kW
Heating capacity 23-148 kW

The **38ZS/ZF** range are air-cooled condensing units designed for installation outdoors. They can be connected on-site with one direct expansion exchanger (or two in case of models 200 to 360).

Two options are available:

- **38ZS series: non reversible** units.
- **38ZF series: reversible** units.

They are equipped axial fan(s) with free vertical discharge, hermetic scroll-type compressor(s) and electric panel with electronic control with optimized components for the refrigerant R-410A

A vast number of options meet numerous operating demands.

All of the units are tested and checked in the factory

Range

- 1 cooling circuit, 1 compressor:
 - Models: 90 / 100 / 120 / 160 / 180 / 182
- 2 cooling circuits, 2 compressors:
 - Models: 200 / 240 / 320 / 360 / 420 / 485 / 540 / 600

OPERATING LIMITS

Inlet air conditions		Cooling	Heating
Refrigerant ①	Minimum	-6 °C	40 °C
	Maximum	10 °C	52 °C
Inlet air	Minimum	12 °C ②	-10 °C WB
	Maximum	48 °C	15 °C WB

① For connection with a direct expansion exchanger.

② With control of operation condensation pressure activated up to -10°C.

UNIT COMPONENTS

- Casing made of galvanised steel metal with polyester paint, grey graphite colour RAL 7024 and white RAL 7035. Self-supporting frame.

Air circuit

- Axial 2-speed fan(s) directly coupled to the motor (models 90 to 182 wired to high speed). Watertight motor class F, IP54 and internal thermal protection. Dynamically balanced propellers and outdoor protective grille.
- Coil(s) with copper pipes and aluminium fins. Two designs:
 - Models 90 to 320: Coil in U
 - Models 360 to 600: Coils in V
- Condensates drain pan (in models 360 to 600).

Cooling circuit

- Hermetic scroll-type compressor(s) with sound insulation, assembled over shock absorbers. Control of phase equilibrium and the direction of rotation.
- Crankcase heater.
- Thermostatic expansion valve(s) with external equalisation (heat pump units).
- Four-way cycle reversing valve(s) (heat pump units).
- Particle separator(s), anti-acid dehydrating filter(s) and liquid receiver(s).
- Cooling connections for welding.
- Maximum equivalent length of the cooling line 50 metres (for longer distances, it is necessary to use an oil separator).

Protections

- High and low pressure pressostats.
- Compressor discharge temperature control.
- Non-return valve built into the compressor.
- Main door switch.
- Magnetothermic protection switches for the compressor(s) and fan(s) motor power line.
- Automatic switch in the control circuit.

Electric panel

- Complete and fully wired electrical panel. Insulated panel cover to prevent condensation. Protection IP55.
- Transformer for power supply without neutral included in the electrical panel.
- Main ground connection.
- Compressor(s) and fan(s) motor contacts.

COMPLIANCE

- Machinery Directive 2006/42/CE (MD)
- Electromagnetic Compatibility Directive 2014/30/EU (EMC)
- Low Voltage Directive 2014/35/EU (LVD)
- Pressure Equipment Directive 2014/68/EU (Category 2) (PED)
- RoHS Directive 2011/65/EU (RoHS)
- Harmonised Standard: EN 378-2:2012 (Refrigerating systems and heat pumps - Safety and environmental requirements).

Optional

Outdoor environment

Temperature

- Electrical heater for protection of the components of the electric panel. This is compulsory if the outdoor temperature is lower than -8°C WB. With an outdoor temperature over than -16°C WB will be compulsory a reinforced resistance.
- Compressor with protection for low temperature (supplementary crankcase heater). This is compulsory if the outdoor temperature is lower than -8°C WB.

Corrosion

- Coil with copper pipes and copper fins.
- INERA® coil with copper pipes and fins of an aluminium alloy, of high performance and great resistance to the corrosion.
- Coil with copper pipes and aluminium fins with polyurethane and Blygold® coating.

Humidity

- Tropicalised electric panel.
- Tropicalised motors and fans (please consult).

Installation

- Antivibration mounts made of rubber.
- Service valves and refrigerant load for cooling connections (up to 7,5 meters long).
- Oil separator for cooling connections with maximum equivalent length of the cooling line greater than 50 metres.
- Air coil protection grille (in models 90 to 320).
- Condensates drain pan (in models 90 to 320).

Electric panel

- Electrical power supply with neutral.
- Energy meter for monitoring of the power consumption of the installation (with CIATrtc control).
 - Models 90 to 182: available if the unit does not incorporate electrical heaters.
 - Models 200 to 600: available with all optional.

Energy saving

- Electronic EC axial fans that adjust their rotation speed to the installation requirements, thereby reducing electricity consumption, the sound level at partial charge and improving the average seasonal output of the unit.

ELECTRONIC CONTROLS

CARRIERrtc basic & medium (standard)

Available in two versions:

■ **CARRIERrtc basic:** models 90 to 182

■ **CARRIERrtc medium:** models 200 to 600

Note: Optionally, the models 90 to 182 can incorporate the CARRIERrtc medium version.

CARRIERrtc basic & medium control is an electronic module with microprocessor comprised of a control board and a TCO user terminal that ensures the following functions:

■ Selection of the operating mode:

- HEATING
- COOLING
- AUTO *Auto*
- DESHUMIDIFICATION
- FAN (no icon).



- Modification of the set-point.
- Permanent control of the operating parameters.
- View of the values measured by the sensors.
- View of the alarms produced by means of codes.
- Timing of the compressors.
- Control of the compressor discharge temperature by probe.
- Control of the ambient temperature thanks to the probe incorporated into TCO terminal. This probe can be replaced by an return or ambient probe that would be installed in the control board.
- Operation during all seasons via the condensation and evaporation pressure control.
- Control of the outlet temperature to improve thermal **comfort level** of the installation.
 - In cooling mode this control prevents excessively significant drops in the ambient temperature.
 - In heating mode, it prevents the stratification of the hot air masses.
- The following features improve the energy management of the installation:



Defrosting management (in heat pump units). Possibility of **intelligent defrosting** that reduces energy consumption of the heat pump, by adjusting the time between defrosting operations to the actual needs of the unit.



Compensation of the set-point based on the outdoor temperature. This function prevents thermal "shock" between the inside and outside of the premises whilst at the same time provides significant energy savings



Time schedule that reduces energy consumption, adjusting the needs of air conditioning of the building TCO terminal has a schedule programmer with an intuitive graphic interface that allows 6 time slots to be chosen for each day of the week. A change in the set-point temperature or the disconnection of the unit can be scheduled in these time slots (according to the building occupancy).



Optional functions:

If the indoor unit connected to the 38ZS/ZF unit has these options:

- Control of the auxiliary electrical heaters.
- Proportional control of a hot water auxiliary coil.
- Humidity control.
- Anti-fire safety.
- Control of the opening of the outdoor air damper.
- Management of thermal free-cooling.
- Detection of clogged filters and air flow control.
- Connection to a centralised technical management system (BMS) for supervision (please see "Optional" chapter).

pGD1 Terminal (optional):

Optionally, this control can have a terminal for pGD1 maintenance that facilitates the initial scheduling of the unit, the modification of the operating parameters and the description of the alarms produced.



CARRIERrtc electronic control (optional)

Electronic module with microprocessor comprised of a control board and a pGD1 graphic terminal installed over the unit electric panel and accessed using a polycarbonate collapsible window.

Optionally this terminal can be replaced by a TCO user terminal for installation inside of the premises. In this case the TCO terminal are not allowed to access parameters control and time schedule

The management of the ambient temperature is controlled via a NTC ambient probe. This probe can be replaced by 1 or 2 RS485 probes.



In addition to the functions described in CARRIERrtc basic & medium control, depending on the indoor unit connected to the 38ZS/ZF unit, this control allows controlling optional elements such as:

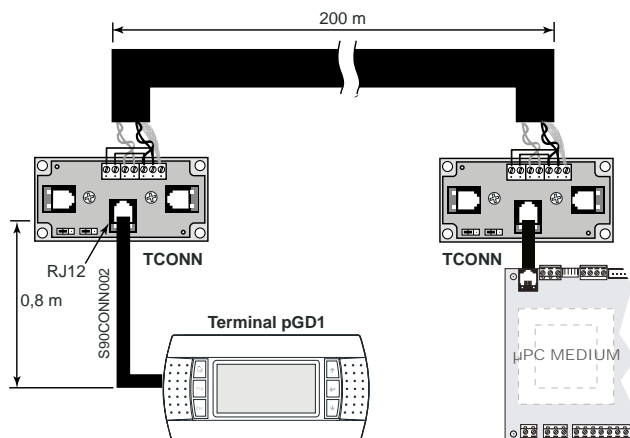
- Electronic plug-fans.
- Enthalpic or thermoenthalpic free-cooling.
- Smoke detecting station.
- Air quality probe for measuring CO₂ and/or volatile compounds..
- Energy meter.
- Refrigerant leak detector.

It also manages a local connection between units through a pLAN network (Local Area Network), thus allowing communication of data and information for a maximum of 15 units. This enables the reduction of the number of pGD1 terminals, since a single shared terminal can monitor all control boards. It also allows to share the reading of some probes.

Optional for electronic controls

CARRIERrtc basic & medium control (standard)

- pGD1 terminal for maintenance of the unit.
- Kit remote control to 200 meters with pGD1 (pGD1 terminal + 2 TCONN bypass cards).



- Return or ambient temperature probe connected to the board that replaces the ambient probe of the thermostat TCO. Return probe is required for anti-fire safety.
- Mixing temperature probe: compulsory to manage the free-cooling.

CARRIERrtc control (optional)

- TCO user terminal, instead of pGD1 terminal.
- Control without pGD1 terminal (for units with shared terminal).
- Kit remote control to 200 meters with pGD1 terminal (pGD1 terminal + 2 TCONN bypass cards).
- Ambient temperature probe with RS485 communication. By default the control incorporates a NTC probe.
Note: An ambient probe with RS485 communication is required for installation to more than 30 m.
- Double ambient temperature probe with RS485 communication.
- Ambient T+RH probe with RS485 (compulsory in units with enthalpic or thermoenthalpic free-cooling as optional). In this case also added outdoor air humidity probe.
- Air quality probe for installation in the environment or in duct to enable measuring CO₂ and/or volatile compounds.

Communication

CARRIERrtc basic & medium controls allow the connection to a centralised technical management system by using a specific BMS card for some of the following communication protocols:

- RS485 serial cards for network communication with protocols: Carel, Modbus, LonWorks®, BACnet™ MSTP, Konnex.
- Ethernet pCO Web card for network communication with protocols: Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.

Supervision solutions

Different solutions of supervision are available according to the dimensions of the installation.

■ pCO Web

It is the solution for the management and supervision of a single unit if it incorporates the Ethernet pCO Web card.

■ PlantWatchPRO3

It is a solution designed for the monitoring of installations of medium - small dimensions, with ability to manage up to 30 units. Suitable for technical environments, it has no parts in movement. It's available in two versions: panel and wall.

Includes: 7 " touch display, buzzer for notifications, 1 USB port and 1 SD card slot for downloading reports, charge devices models and applying service packs.

In this case, each unit needs one RS485 Carel / Modbus board.

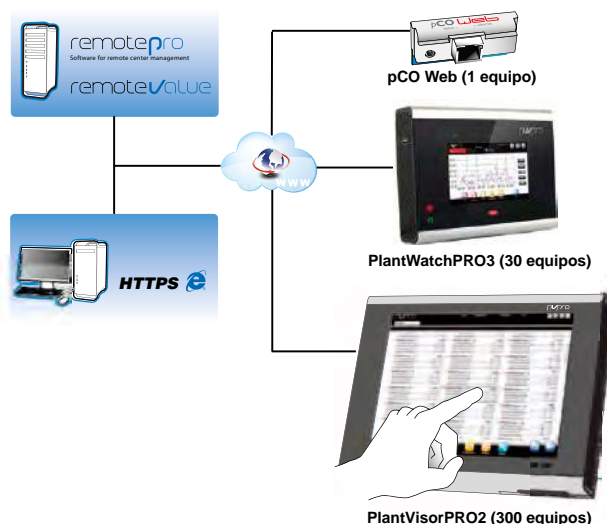
■ PlantVisorPRO2

This is the solution for the management and supervision of air-conditioning installations with up to 300 units. It performs advanced monitoring and maintenance functions and enables creating areas and groups which simplify the management of the installation. It also allows the integration of energy meters for monitoring the power consumption of the installation.

PlantVisorPRO2 is available in two versions:

- **Box:** comprised of the CPU unit and, optionally, by monitor and keyboard.
- **Touch:** this includes the CPU and the touchscreen in the one device.

In this case, each unit needs one RS485 Carel / Modbus board



These systems allow the installation in remote management. Through a single connection to the Internet is accessed the information system. The Web interface, which is available for the local user, allows the monitoring and the complete configuration of the installation: from the office or any other user's current location.

For remote control of multiple sites, there are dedicated tools for centralized management as **RemotePRO** and **RemoteValue**.

TECHNICAL CHARACTERISTICS

38ZS/ZF		90	100	120	160	180	182	200
Cooling capacities	Cooling capacity ① (kW)	20,8	24,4	28,5	36,2	39,2	42,5	50,4
	Power input ③ (kW)	6,3	7,7	8,3	11,8	14,2	11,8	14,7
	EER performance	3,31	3,15	3,44	3,06	2,76	3,62	3,42
Heating capacities	Heating capacity ② (kW)	22,6	26,6	31,0	39,2	43,1	46,6	58,1
	Power input ③ (kW)	6,4	7,1	8,4	10,1	12,4	11,6	14,7
	COP performance	3,55	3,76	3,68	3,87	3,48	4,01	3,94
Outdoor circuit axial fan	Nominal air flow (m³/h)	10.000		14.200			20.000	
	Available static pressure (mm.w.c)	--						
	Number	1						
	Diameter (mm)	630		800				
	Output (kW)	0,7 / 0,4		0,8 / 0,5			2,0 / 1,3	
	Speed (r.p.m.)	875 / 650		680 / 540			895 / 705	
Compressor	Type	Scroll						
	No. compressors / No. circuits / No. stages	1 / 1 / 1						2 / 2 / 2
	Oil type	Copeland 3MAF 32 cST, Danfoss POE 160 SZ, ICI Emkarate RL32 CF, Mobil EAL Artic 22 CC						
	Volume of oil (l)	3,0	3,3	3,3	3,3	6,2	6,2	2 x 3,3
Cooling connections	Circuit 1: Liquid line	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"	1/2"
	Circuit 1: Gas line	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
	Circuit 2: Liquid line	--	--	--	--	--	--	1/2"
	Circuit 2: Gas line	--	--	--	--	--	--	1 1/8"
Refrigerant	Type	R-410A						
	Global warming potential (GWP) ④	2.088						
	Load up to 7,5 m (kg)	6,3	6,4	8,6	8,2	9,2	12,8	17,3
	Environment impact (tCO2 e)	13,2	13,4	18,0	17,1	19,2	26,7	36,1
Electrical features	Mains voltage	400 V / III ph / 50 Hz (±10%)						
	Power supply	3 Wires + Ground						
Maximum absorbed current	Compressor(s) (A)	15,3	18,5	20,1	25,1	29,1	29,1	37,0
	Fan (A)	1,3	1,3	2,2	2,2	2,2	4,3	4,3
	Control (A)	0,9	0,9	0,9	0,9	0,9	0,9	1,8
	Total (A)	17,5	20,7	23,2	28,2	32,2	34,3	43,1
Dimensions	Length (mm)	1.511		1.511				1.811
	Width (mm)	1.066		1.066				1.066
	Height (mm)	1.088		1.413				1.763
Weight	(kg)	275	281	317	326	368	388	490

① Rated conditions: evaporation temperature = 5°C, outdoor air temperature = 35°C, overheating = 5°C

② Rated conditions: condensing temperature = 49°C, outdoor air temperature = 7°C, overheating = 0°C

③ Total power input by compressors and motorised fans under those conditions.

④ Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

TECHNICAL CHARACTERISTICS

38ZS/ZF		240	320	360	420	485	540	600
Cooling capacities	Cooling capacity ① (kW)	55,5	70,0	86,4	103,6	115,5	124,6	138,4
	Power input ③ (kW)	16,8	24,8	24,4	28,0	32,9	39,1	44,9
	EER performance	3,31	2,82	3,55	3,70	3,51	3,19	3,08
Heating capacities	Heating capacity ② (kW)	64,9	81,8	94,2	108,9	123,5	134,3	148,2
	Power input ③ (kW)	15,6	20,9	23,0	28,8	30,9	36,8	38,8
	COP performance	4,15	3,91	4,10	3,79	4,00	3,65	3,82
Outdoor circuit axial fan	Nominal air flow (m³/h)	20.000		39.000		37.000		
	Available static pressure (mm.w.c)	--						
	Number	1		2				
	Diameter (mm)	800						
	Output (kW)	2,0 / 1,3						
	Speed (r.p.m.)	895 / 705						
Compressor	Type	Scroll						
	No. compressors / No. circuits / No. stages	2 / 2 / 2						
	Oil type	Copeland 3MAF 32 cST, Danfoss POE 160 SZ, ICI Emkarate RL32 CF, Mobil EAL Artic 22 CC						
	Volume of oil (l)	2 x 3,3	2 x 3,3	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2
Cooling connections	Circuit 1: Liquid line	5/8"	5/8"	5/8"	5/8"	5/8"	7/8"	7/8"
	Circuit 1: Gas line	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
	Circuit 2: Liquid line	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	7/8"
	Circuit 2: Gas line	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
Refrigerant	Type	R-410A						
	Global warming potential (GWP) ④	1.720						
	Load up to 7,5 m (kg)	17,4	22,2	22,7	31,4	31,4	33,4	33,6
	Environment impact (tCO2 e)	36,3	46,4	47,4	65,6	65,6	69,7	70,2
Electrical features	Mains voltage	400 V / III ph / 50 Hz (±10%)						
	Power supply	3 Wires + Ground						
Maximum absorbed current	Compressor(s) (A)	40,2	50,2	58,2	68,9	79,6	91,1	102,6
	Fan (A)	4,3	4,3	8,6	8,6	8,6	8,6	8,6
	Control (A)	1,8	1,8	1,8	1,8	1,8	1,8	1,8
	Total (A)	46,3	56,3	68,6	79,3	90,0	101,5	113,0
Dimensions	Length (mm)	1.811	1.811	2.201				
	Width (mm)	1.066	1.066	2.069				
	Height (mm)	1.763	2.063	1.966				
Weight	(kg)	492	544	974	1.024	1.029	1.078	1.127

① Rated conditions: evaporation temperature = 5°C, outdoor air temperature = 35°C, overheating = 5°C

② Rated conditions: condensing temperature = 49°C, outdoor air temperature = 7°C, overheating = 0°C

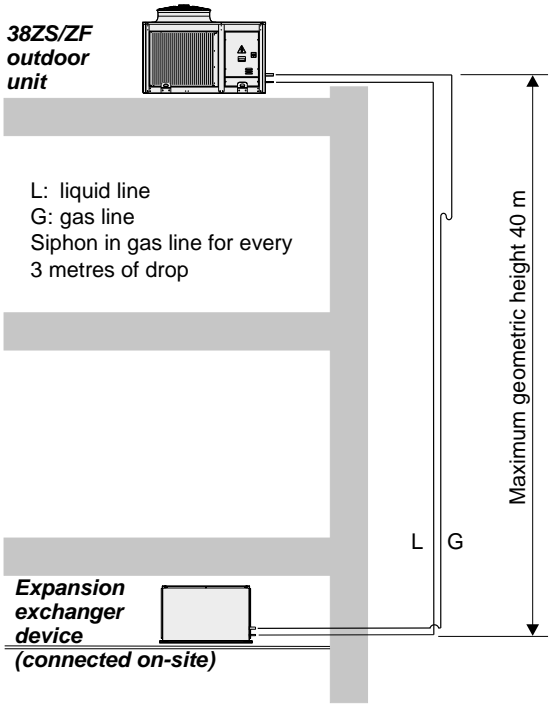
③ Total power input by compressors and motorised fans under those conditions.

④ Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

RECOMMENDATIONS FOR THE COOLING CONNECTION

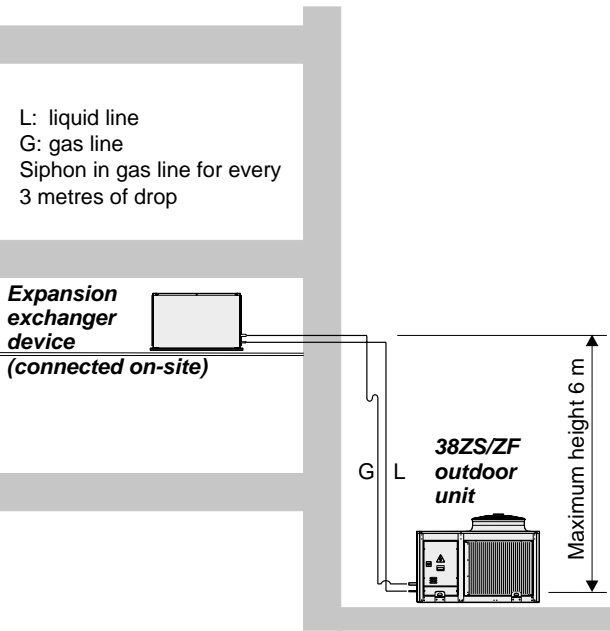
Outdoor unit top

Maximum equivalent length of the cooling line: 50 metres
For longer lengths an oil separator must be user



Outdoor unit bottom

Maximum equivalent length of the cooling line: 7 metres



ADDITIONAL LOAD OF R-410A REFRIGERANT

Additional load per linear metre of piping for equivalent maximum lengths exceeding 7 metres:

Nominal diameter (inches)	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"
Interior section (cm²)	0,149	0,444	0,900	1,505	2,282	3,120	4,290	5,346
Liquid line charge (g/m)	19,3	57,0	115,0	193,5	292,3	404,1	550,3	685,7
Gas line charge (g/m)	--	0,2	0,4	0,7	1,0	1,4	2,0	2,5

INDOOR UNITS



Split-system
R-410A Refrigerant
Indoor unit with centrifugal fan
Configuration flexibility

40ZS/ZF 90 - 600

The **40ZS/ZF** series are units with horizontal construction designed for installation indoors, connected to a network of ducts.

They are equipped with centrifugal fan (EC plug-fan also available in models 90 to 360), and expansion valve.

A vast number of options meet numerous operating demands.

All of the units are tested and checked in the factory.

Range

- 1 circuit:
 - Models: 90 / 100 / 120 / 160 / 180 / 182
- 2 circuits:
 - Models: 200 / 240 / 320 / 360 / 420 / 485 / 540 / 600

UNIT COMPONENTS

- Casing made of galvanised steel metal with polyester paint, white colour RAL 7035. Self-supporting frame.

- Reusable air filters, assembled on a frame.
- Condensate drain pan.

Air circuit

- Coil(s) with copper pipes and aluminium fins.
- Centrifugal fan(s) coupling by pulleys and belts. Electric motor(s) with tensioner, class F, IP55 and internal thermal protection. Double-intake turbines, with an impeller of front-curved blades. Greased spherical bearings, with no maintenance required.

Cooling circuit

- Thermostatic expansion valve(s) with external equalisation (check valve in 40ZF series).

Protections

- Main door switch.

OPTIONS

Outdoor environment

Corrosion

- Coil with copper pipes and copper fins.
- INERA® coil with copper pipes and fins of an aluminium alloy, of high performance and great resistance to the corrosion.
- Coil with copper pipes and aluminium fins with polyurethane and Blygold® coating (indoor unit and/or hot water coil).
- Condensates drain pan in stainless steel.

Humidity

- Stop-drop in the indoor air coil. Recommended in cases where a high moisture content in the air is foreseen or when the air flow is high.
- Stop-drop in the outdoor air intake.

Comfort / heating options

- Hot water auxiliary coil, with three-way valve. Two options:
 - Nominal coil for heating in cooling-only units.
 - Auxiliary coil for heating in heat pump units.

If the unit includes hot water coil and free-cooling, and works with negative temperatures of outdoor air, an anti-freeze thermostat as safety system is mandatory.

- Auxiliary electrical heaters. With this option, the air flow controller is included.

Comfort / indoor air quality options

- Filtration of the supply air:
 - Gravimetric filter G4.
 - Gravimetric filter G4 + creased opacimetric filters F6 to F9.
- Filtration of the return air (with return fan):
 - Gravimetric filter G4.
 - Gravimetric filter G4 + creased opacimetric filters F6.

Safety

- Soft starter of the supply and/or return centrifugal fans which prolongs the set time mainly aimed at installations with cloth ducts. Compulsory for motors with an output of 15 kW and above.
- Differential pressostat for the detection of clogged filters.
- Differential pressostat for control of air flow.
- Smoke detecting station in accordance with the NF S 61-961 standard.
- Refrigerant leak detector (with CARRIERtc control). This allows prompt identification of gas leaks, guaranteeing the safety of any people in the vicinity. Installation of the device ensures compliance with European standards F-GAS and EN378 as well as ASHRAE 15.

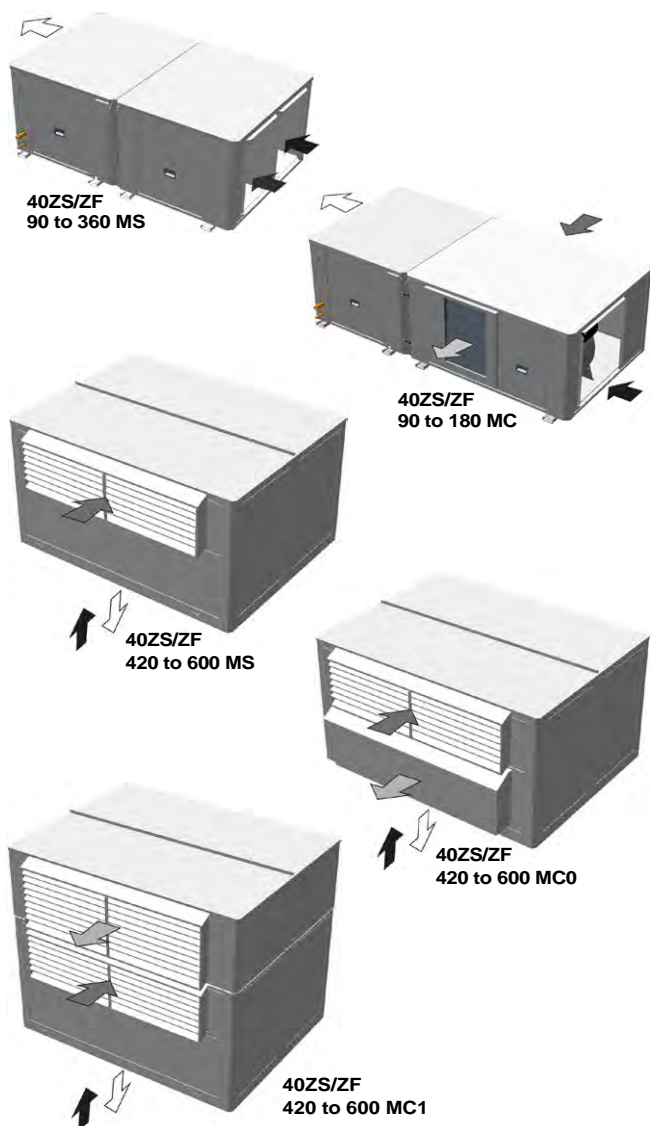


OPTIONS (CONT.)

Installation options

- Antivibration mounts made of rubber.
 - Position of supply and/or return of the indoor unit air.
 - Supply and/or return fan with high available pressure.
 - Electronic plug-fan in the air supply in models 90 to 360.
 - Assemblies with **mixing box** for air renewal and free-cooling:
 - 2 motorised dampers:
 - MS assembly: fresh air intake.
 - 3 motorised dampers:
 - MC assembly: fresh air intake, air extraction and return with centrifugal fan (models 90 to 180 and 420 to 600) or EC plug-fan (models 420 to 600 with MC0 assembly).
- Note: EC plug-fan in models 420 to 600 with MC0 assembly: upon request.

Note: CARRIER_{rtc} electronic control is mandatory with EC plug-fans.



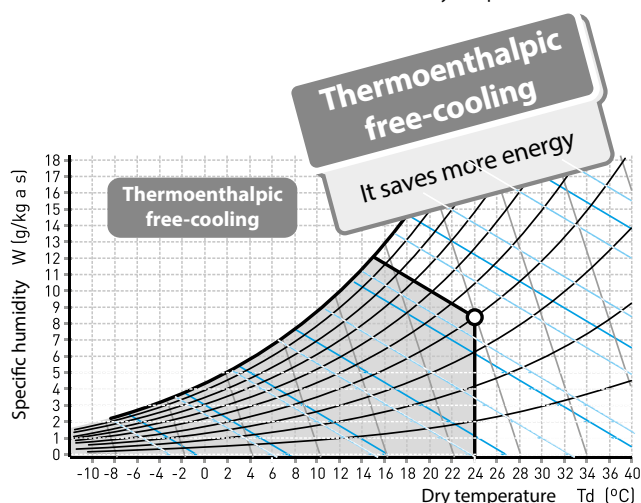
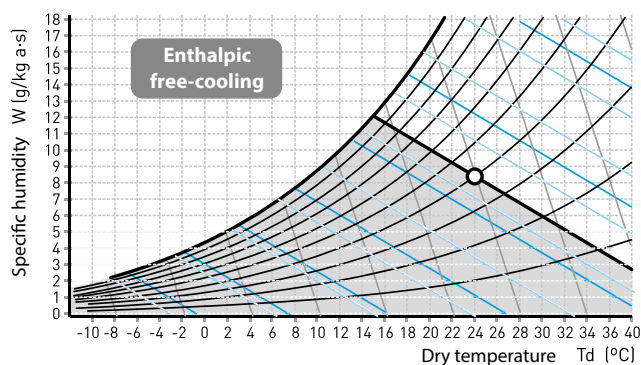
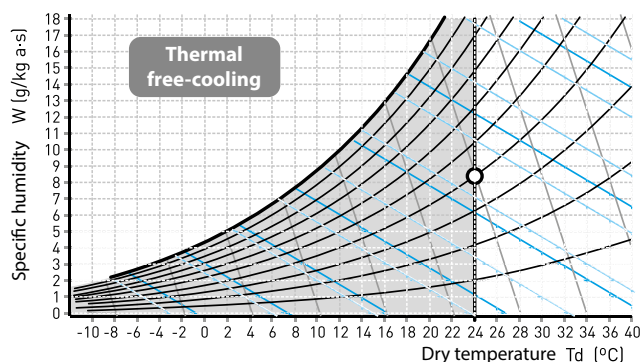
All the possible combinations of "Assemblies with mixing boxes" are represented on the following page.

Free-cooling

On units with mixing box, the free-cooling can be managed by the electronic control. Running the unit in free-cooling mode allows it to make best use of outdoor air conditions when these are more favourable than the return air conditions. This allows the cooling capacity to be reduced.

The percentage of outdoor air can vary between 0% and 100%. There are three options for free-cooling management:

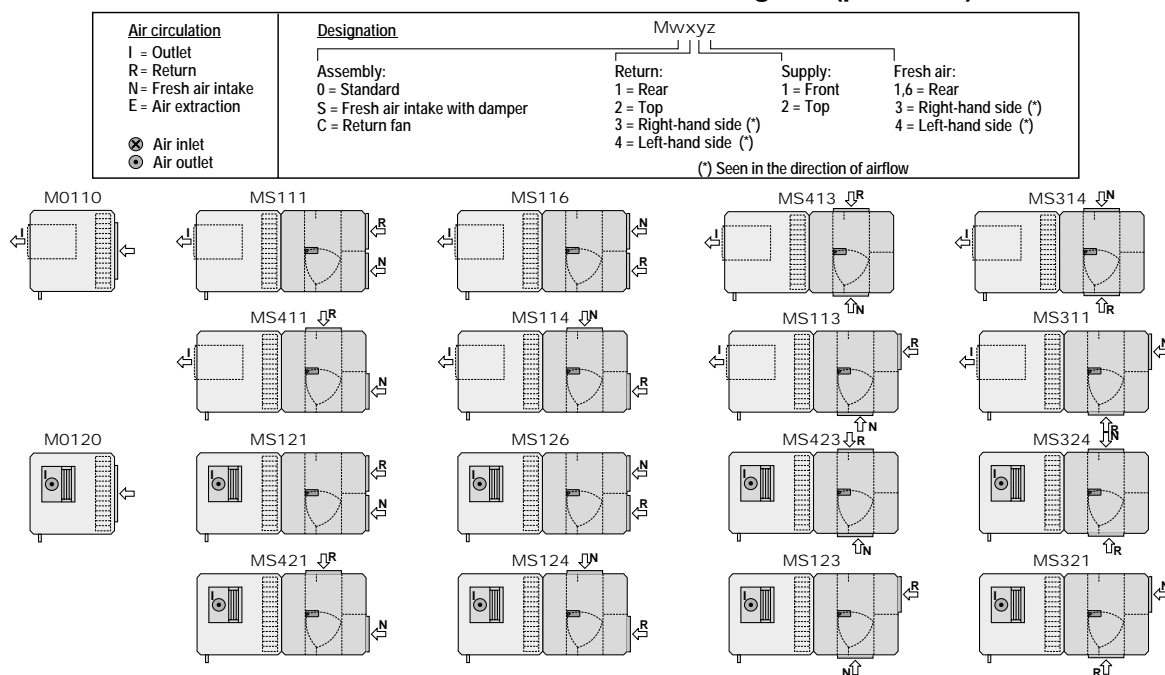
- Thermal, by comparing the temperatures.
- Enthalpic, by comparing the enthalpies. Recommended in cases where a high moisture content in the air is foreseen.
- Thermoenthalpic, by comparing the enthalpies and correcting for temperature. This is the optimum solution as it takes the variability of the climate into account.



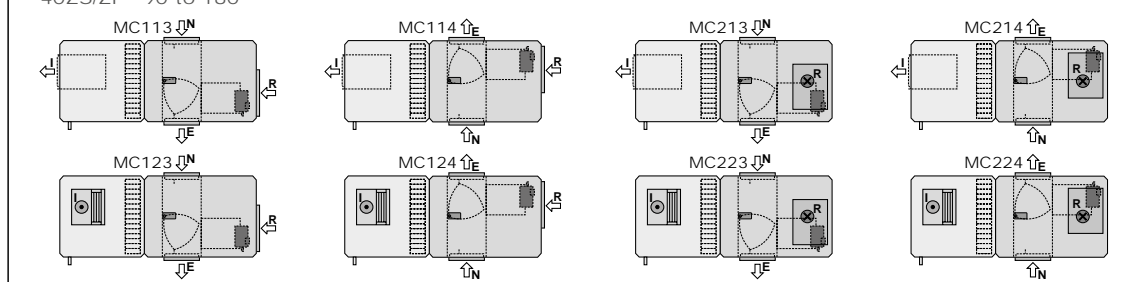
Note: CARRIER_{rtc} electronic control is mandatory with enthalpic or thermoenthalpic free-cooling.

OPTIONS (CONT.)

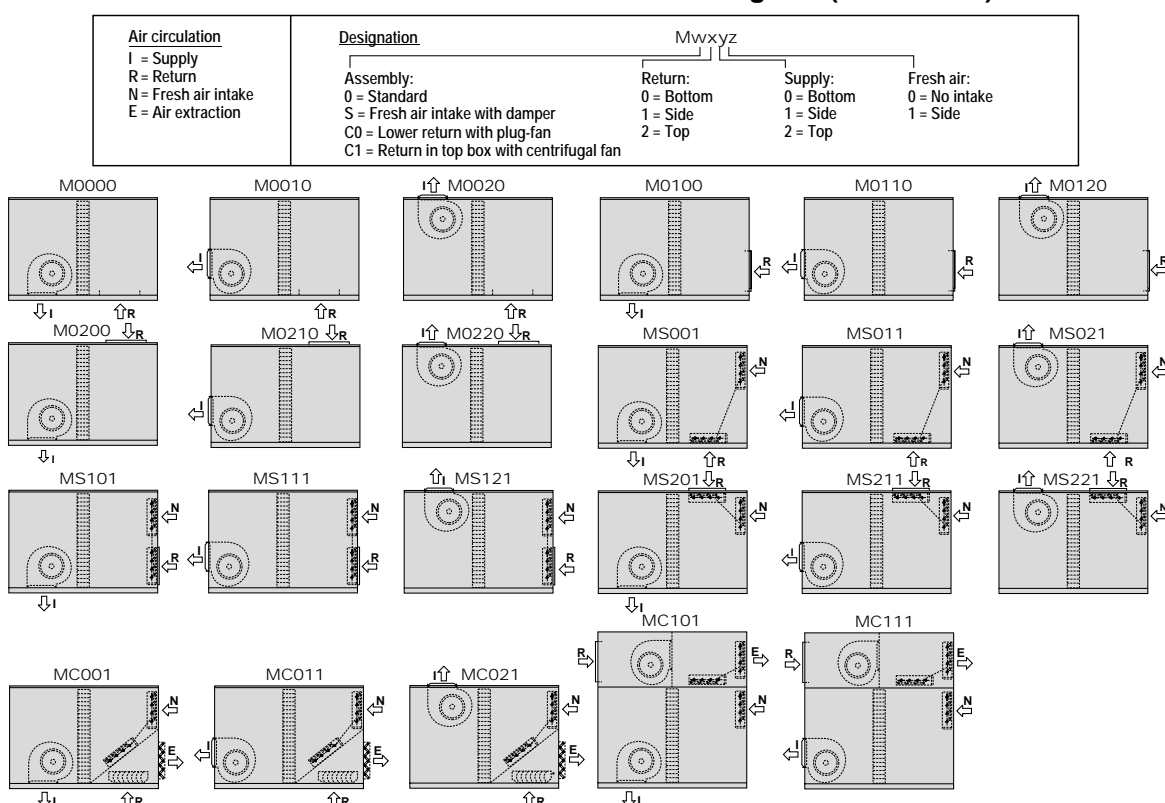
40ZS/ZF - 90 to 360: assemblies with mixing box (plan view)



40ZS/ZF - 90 to 180



40ZS/ZF - 420 to 600: assemblies with mixing box (raised view)



TECHNICAL CHARACTERISTICS

40ZS/ZF		90	100	120	160	180	182	200
Centrifugal fan	Nominal air flow (m³/h)	4.000	4.600	5.200	7.000	7.000	8.000	9.200
	Available static pressure (mm.w.c)	15	15	15	15	15	15	20
	Number / turbines	1 / 1					2 / 2	
	Motor output (kW)	1,1	1,1	1,1	1,5	1,5	2 x 0,75	2 x 1,1
	Power input (kW)	0,61	0,83	0,88	1,08	1,08	2 x 0,59	2 x 0,91
	Speed (r.p.m.)	985	1049	916	761	761	963	1126
Max. absorbed current	Fan (A)	2,7	2,7	2,7	3,6	3,6	4,2	5,4
Dimensions	Length (mm)	1.190			1.520		2.144	
	Width (mm)	950			1.028		950	
	Height (mm)	731			731		731	
Weight	(kg)	147	147	190	199	199	262	262

40ZS/ZF		240	320	360	420	485	540	600
Centrifugal fan	Nominal air flow (m³/h)	10.300	14.000	15.500	18.000	18.200	20.400	24.000
	Available static pressure (mm.w.c)	20	20	20	20	20	20	20
	Number / turbines	2 / 2			1 / 3			
	Motor output (kW)	2 x 1,5	2 x 1,5	2 x 2,2	4	4	4	5,5
	Power input (kW)	2 x 0,94	2 x 1,15	2 x 1,39	2,52	2,82	2,96	3,40
	Speed (r.p.m.)	974	789	816	677	677	643	681
Max. absorbed current	Fan (A)	7,2	7,2	10,0	9,0	9,0	9,0	11,6
Dimensions	Length (mm)	2.144	2.804		2.853			
	Width (mm)	950	1.028		2.160			
	Height (mm)	731	800		1.524			
Weight	(kg)	262	365	365	920	920	963	964

SOUND LEVELS dB(A)

Sound power level on the indoor unit

Sound power level in the indoor fan supply to be taken into account for the silencer calculation:

40ZS/ZF	90	100	120	160	180	182	200	240	320	360	420	485	540	600
Total dB(A)	79	82	80	80	80	82	85	82	83	85	86	87	89	92

MODULAR COMPACT HEAT PUMPS



R-410A refrigerant
Scroll compressor in tandem
Flexibility of configuration
Outdoor plug-fan with EC
HEE motor

50NI 90 - 485

Nominal cooling capacity 19,1-114,9 kW
Nominal heating capacity 19,3-121,4 kW

Air to air compact units with vertical construction for indoor use only.

■ **50NI series:** Air-air reversible heat pump units. Ten different models available:

- 90, 120, 160 and 180: 1 circuit and 2 compressors.
- 200, 240, 280, 320, 360, 420 and 485: 2 circuits and 4 compressors.

These units are equipped with hermetic scroll compressors and tandem configuration, as well as plug-fan EC for indoor and outdoor circuits. This allows to get a high seasonal performance.

The units are supplied in 2 modules, **outdoor module** and **indoor module** for installation on site as compact version or split version, according to the choice.

A vast number of options meet numerous operating demands.

All of the units are tested and checked in the factory.

Compliance

Machinery Directive 2006/42/EC (MD)

Electromagnetic Compatibility Directive 2014/30/EU (EMC)

Low Voltage Directive 2014/35/EU (LVD)

Pressure Equipment Directive 2014/68/EU (Category 2) (PED)

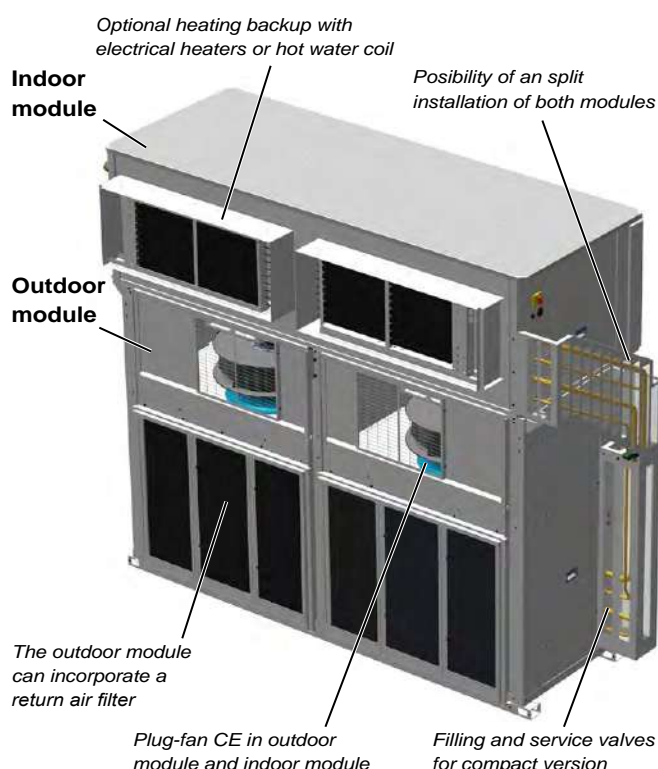
RoHS Directive 2011/65/EU (RoHS)

Eco-design Directive 2009/125/EC (ECO-DESIGN)

Energy Labelling Directive 2010/30/EU (ECO-LABELLING)

Harmonised Standard: EN 378-2:2012 (Refrigerating systems and heat pumps - Safety and environmental requirements).

UNIT COMPONENTS



Outdoor module

- Casing made of galvanised steel metal with polyester paint, white colour RAL 7035. Self-supporting frame.

Outdoor air circuit

- EC electronic supply plug-fans directly coupled with variable control speed and flow rate controller. In tertiary sector installation, a high percentage of the annual air conditioning energy consumption comes from the use of fans for transporting air. Using fans which are more efficient has a direct impact on reducing consumption.
- Coil(s) with copper pipes and aluminium fins.
- Condensate drain pan.

Cooling circuit

- Hermetic scroll-type compressors in tandem design that improves the management of stages and the part load efficiencies. Sound insulation, assembled over antivibration mounts. Control of phase equilibrium and the direction of rotation.
- Crankcase heater.
- Thermostatic expansion valve(s) with external equalisation.
- Four-way cycle reversing valve(s).
- Suction accumulator, anti-acid dehydrating filter(s), liquid receiver(s).
- Service valves for cooling connections and refrigerant charge, when the unit is supplied in Compact version.

Possibility of installation in split version, with optional service valves.

- Cooling connections for welding

Electric panel

- Complete and fully wired electric panel. Insulated panel cover to prevent condensation. Protection IP55.
- Transformer for power supply without neutral included in the electrical panel.
- Main ground connection.
- Compressor(s) and fan(s) motor contacts.

Protections

- High and low pressure pressostats.
- Compressor discharge temperature control.
- Non-return valve built into the compressor.
- Main door switch.
- Magnetothermic protection switches for the compressors power line and fans motor.
- Automatic switch in the control circuit.

Indoor module

- Casing made of galvanised steel metal with polyester paint, white colour RAL 7035. Self-supporting frame.

Indoor air circuit

- Coil(s) with copper pipes and aluminium fins.
- EC electronic supply plug-fans directly coupled with variable control speed and flow rate controller. In tertiary sector installation, a high percentage of the annual air conditioning energy consumption comes from the use of fans for transporting air. Using fans which are more efficient has a direct impact on reducing consumption. Plug-fans with direct drive and variable speed offer the following advantages:
 - Elimination of friction losses during transmission thanks to the direct drive.
 - Greater aerodynamic efficiency of the rotor (reactive blades with an optimized profile), running at very high operating pressures.
 - Greatly increased motor efficiency. Permanent magnets DC motors activated using electronic switching integrated into the motor itself.
 - Variable speed to ensure a constant supply air flow rate, independent of the filters clogging level.
 - Measuring the flow rate through a calibrated section at the fan intake and a differential pressure sensor allows the control to handle the flow rate reliably and precisely in both on CAV and VAV systems.
- Reusable air filters, assembled on a frame.
- Condensate drain pan.

Cooling circuit

- Thermostatic expansion valve(s) with external equalisation

Protections

- Main door switch.

OPERATING LIMITS

Inlet air conditions		Cooling	Heating
Indoor coil	Minimum	14 °C WB	10 °C
	Maximum	22 °C WB	27 °C
Outdoor coil	Minimum	12 °C ①	-10 °C WB
	Maximum	45 °C	15 °C WB

① With a condensation pressure control operating down to -10°C.

ELECTRONIC CONTROL

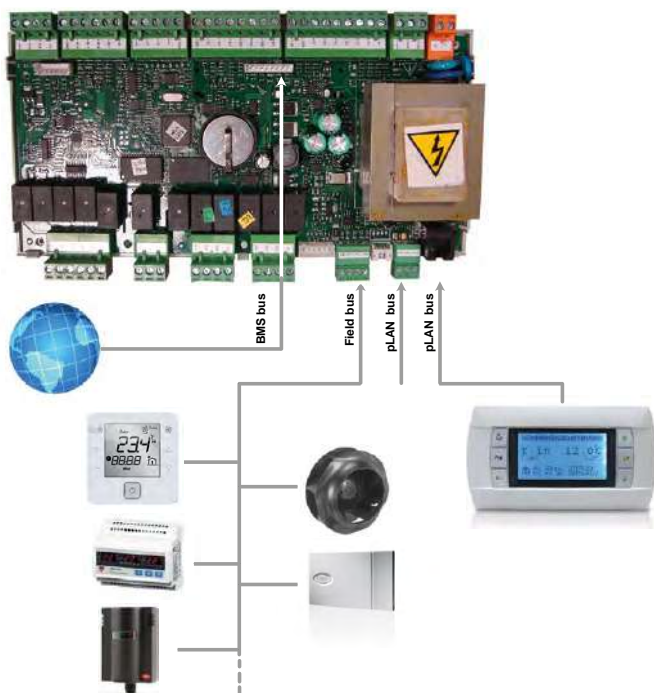
CARRIERrtc control

The **CARRIERrtc** control consists of a μ PC MEDIUM control board, sensors, a pGD1 graphic terminal and a TCO user terminal (optional).

This system uses a RS485 field-bus to manage additional components.

A BMS card (optional) allows the control board to be connected to a centralised technical management system.

It also manages a local connection between units through a pLAN network (μ PC MEDIUM Local Area Network), allowing data and information to be exchanged between units, for a maximum of 15 units.



Main functions:

- Selection of setpoint and operating mode: HEATING / COOLING / AUTO / VENTILATION.
- Continuous control of the operating parameters.
- Display of the values measured by the sensors.
- Compressors time delays.
- Defrosting management (in heat pump units).
- Control of the supply air temperature.
- All-seasons operation via the condensation and evaporation pressure control.

The management of the unit in cooling mode is based on the principle of a high floating pressure. The condensation pressure setpoint is continually calculated depending on the outdoor temperature. This pressure is regulated by adjusting the air flow on the outdoor fans.

- Setpoint compensation based on the outdoor temperature.
- Hourly and weekly schedule.
- Fire protection.
- Diagnosis of faults and general alarm.

Optional function:

This control is used to manage additional components such as:

- External air damper for the renewal of fresh air, depending on the temperature of the mixed air or depending on the air quality sensor.
- Mixing box for thermal, enthalpic or thermoenthalpic free-cooling.
- Auxiliary electrical heaters: two-stage with on/off control or single-stage with proportional control.
- Hot water coil with 3-way valve, with proportional or on/off control.
- Humidifier with proportional or on/off control.
- Clogged filter pressostat.
- Refrigerant leak detector.
- Air quality sensor for measuring CO₂.
- Energy meter and calculation of the cooling and heating capacities.

pGD1 terminal:

This terminal, fitted as standard on the electrical cabinet, is very easy to use. It provides detailed explanations of control in easy to understand English. No decoding is required.

Only 6, large, easy-to-use buttons are required to maneuver through the entire menus.

This terminal is used to:

- Carry out initial programming of the unit.
- Modify operating parameters.
- Switch the unit ON / OFF.
- Select the operating mode and adjust the setpoints.
- Display the variables controlled and sensor values measured.
- Display the current alarms and their historical record.



TCO user terminal (optional):

This terminal can be installed on the electrical cabinet, instead of pGD1 terminal. In this case, the remote connection of the pGD1 terminal is possible. Please consult "Control options".

TCO terminal is used to:

- Switch the unit ON / OFF.
- Select the operating mode.
- Adjust the setpoints.
- Display the installation's temperatures and humidity, outdoor temperature, supply air temperature, CO₂ sensor and opening of the outdoor damper.
- Display alarms codes.



PHYSICAL DATA (EN-14511-2018)

Outdoor module 50NI		90	120	160	180	200	240	280	320	360	420	485
Cooling capacities	Cooling capacity (1) (kW)	19,10	25,33	33,94	39,74	47,23	52,07	60,59	69,66	81,52	104,61	114,90
	Power input (3) (kW)	7,72	9,97	14,26	16,03	20,10	18,75	22,00	25,97	32,28	37,70	41,20
	EER performance	2,47	2,54	2,38	2,48	2,35	2,78	2,75	2,68	2,53	2,77	2,78
	SEER	3,64	3,55	3,53	3,54	3,53	3,93	3,89	3,85	3,78	4,01	3,98
	ηs	143%	139%	138%	139%	138%	154%	153%	151%	148%	157%	155%
Heating capacities	Heating capacity (2) (kW)	19,27	27,63	37,16	44,64	51,99	57,49	64,65	74,07	84,77	108,00	121,40
	Power input (3) (kW)	6,43	9,74	13,05	15,68	18,42	17,77	20,07	23,75	29,41	36,20	41,10
	COP performance	3,00	2,84	2,84	2,85	2,82	3,23	3,22	3,12	2,88	2,98	2,95
	SCOP	3,25	3,29	3,33	3,31	3,21	3,25	3,21	3,25	3,21	3,22	3,20
	ηs	127%	129%	130%	129%	125%	127%	125%	127%	126%	126%	125%
Outdoor fan	Nominal air flow (m³/h)	7.000	10.000	13.000	13.000	19.000	23.000	23.000	24.400	24.400	30.000	35.000
	Available static pressure (mm.w.c)	20	20	20	20	20	20	20	20	20	20	20
	Type	Electronic plug-fan										
	Number / Diameter (mm)	1 / 500	1 / 500	1 / 560	1 / 560	2 / 500	2 / 560	2 / 560	2 / 560	2 / 560	2 / 500	4 / 500
	Motor output (kW)	2,6	2,6	3,0	3,0	2 x 2,6	2 x 3,0	2 x 3,0	2 x 3,0	2 x 3,0	2 x 4,6	4 x 2,6
	Power input (kW)	1,35	2,24	2,90	2,90	2 x 2,37	2 x 2,06	2 x 2,06	2 x 2,38	2 x 2,38	2 x 3,61	4 x 1,88
	Speed (r.p.m.)	1.700	1.700	1.495	1.495	1.700	1.495	1.495	1.495	1.495	2.100	1.700
Compressor	Type	Scroll										
	No. compress. / circuits / stages	2 / 1 / 2				4 / 2 / 4						
	Oil type	Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC										
	Volume of oil (l)	2,5	2,5	3,5	3,5	5,0	4,8	6,8	7,1	7,2	13,2	13,2
Cooling connections	Circuit 1: Liquid line	1/2"	5/8"	5/8"	5/8"	1/2"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"
	Circuit 1: Gas line	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"
	Circuit 2: Liquid line	-	-	-	-	1/2"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"
	Circuit 2: Gas line	-	-	-	-	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"
Refrigerant	Type	R-410A										
	Global warming potential (GWP) (4)	2.088										
	Load up to 7,5 m in split version (kg)	9,0	11,1	13,0	14,2	17,3	19,1	24,9	25,9	26,4	38,7	39,3
	Environment impact (tCO2 e)	18,8	23,2	27,1	29,6	36,1	39,9	52,0	54,1	55,1	80,8	82,1
	Load in compact version (kg)	8,4	10,5	12,0	13,2	15,3	17,1	22,9	23,9	24,4	36,7	37,3
	Environment impact (tCO2 e)	17,5	21,9	25,1	27,6	31,9	35,7	47,8	49,9	50,9	76,6	77,9
Electrical features	Mains voltage	400 V / III ph / 50 Hz (±10%)										
	Power supply	3 wires + gnd										
	Maximum absorbed current (A)	18,7	21,8	29,6	34,5	43,5	44,7	52,0	59,3	69,0	89,3	97,4
Dimensions	Length (mm)	1.191	1.471	1.471	1.471	2.186	2.746	2.746	2.746	2.746	3.484	3.484
	Width (mm)	860	860	860	860	860	860	860	860	860	860	860
	Height (mm)	1.437	1.717	1.717	1.717	1.437	1.717	1.717	1.717	1.717	1.717	1.717
Weight	(kg)	300	364	378	383	588	737	782	789	793	1.043	1.052
Indoor module 50NI		90	120	160	180	200	240	280	320	360	420	485
Indoor supply circuit fan	Nominal air flow (m³/h)	4.000	5.200	7.000	8.000	9.200	10.300	12.500	14.000	15.500	21.000	21.000
	Available static pressure (mm.w.c)	15	15	15	15	15	20	20	20	20	20	20
	Type	Electronic plug-fan										
	Number / Diameter (mm)	1 / 500	1 / 500	1 / 500	1 / 500	2 / 500	2 / 500	2 / 500	2 / 500	2 / 500	3 / 500	3 / 500
	Motor output (kW)	2,7	2,7	2,7	2,7	2 x 2,7	2 x 2,7	2 x 2,7	2 x 2,7	2 x 2,7	3 x 2,6	3 x 2,6
	Power input (kW)	0,63	0,86	1,32	1,38	2 x 0,71	2 x 0,95	2 x 1,10	2 x 1,32	2 x 1,58	3 x 1,40	3 x 1,40
	Speed (r.p.m.)	1.700	1.700	1.700	1.700	1.700	1.700	1.700	1.700	1.700	1.700	1.700
Max. absorbed current	Fan (A)	4,2	4,2	4,2	4,2	8,2	8,2	8,2	8,2	8,2	12,0	12,0
Dimensions	Length (mm)	1.190	1.190	1.520	1.520	2.183	2.144	2.804	2.804	2.804	2.974	2.974
	Width (mm)	950	950	1.028	1.028	950	950	1.028	1.028	1.028	1.209	1.209
	Height (mm)	731	731	731	731	731	731	800	800	800	1.091	1.091
Weight	(kg)	175	175	204	204	303	303	389	389	389	536	536

- (1) Cooling capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 27°C, (19°C WB) and 35°C outdoor T.
 (2) Heating capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 20°C and 6°C WB outdoor temperature.
 (3) Total power input by compressors and motorised fans under nominal conditions, calculated in accordance with the EN-14511-2018 standard.
 (4) Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

OPTIONS

Options for the outdoor module

Outdoor environment

Corrosion

- Coil with copper pipes and copper fins.
- INERA® coil with copper pipes and fins of an aluminium alloy, of high performance and great resistance to the corrosion.
- Coil with copper pipes and aluminium fins with polyurethane and Blygold® coating.

Humidity

- Tropicalised electric panel.
- Tropicalised motors and fans (please consult).

Installation

- Antivibration mounts made of rubber.
- Service valves for cooling connections and refrigerant charge, when the unit is supplied for installation as split version.
- Oil separator for cooling connections with maximum equivalent length of the cooling line greater than 50 metres, optional only available when the units are supplied in 2 modules, **outdoor module** and **indoor module** for installation as split version.
- Position of air supply of the outdoor unit:
 - Lateral: by default
 - Upper: only available when the units are supplied for installation as split version.
- Gravimetric filters in the return air. The filters frame is removable, and upon request, it is possible to supply the frame separately with the unit SP, to be joined on site (width = 53 mm)

Acoustic

- Acoustic insulating cover for compressor.

Electric panel

- Electrical power supply with neutral.
- Energy meter for monitoring of the power consumption of the installation. Available if the unit does not incorporate electrical heaters (optional upon request).



Options for the indoor module

Outdoor environment

Humidity

- Stop-drop in the indoor air coil. Recommended in cases where a high moisture content in the air is foreseen or when the air flow is high.
- Stop-drop in the outdoor air intake.

Corrosion

- Coil with copper pipes and copper fins.
- INERA® coil with copper pipes and fins of an aluminium alloy, of high performance and great resistance to the corrosion.
- Coil with copper pipes and aluminium fins with polyurethane and Blygold® coating (indoor unit and/or hot water coil).
- Condensates drain pan in stainless steel.

Comfort / heating options

- Hot water auxiliary coil, with three-way valve and proportional control.

If the unit includes hot water coil and free-cooling, and works with negative temperatures of outdoor air, an anti-freeze thermostat as safety system is mandatory.

- Electrical heaters with assembly in two stages and proportional control.

Comfort / indoor air quality options

- Filtration of the supply air:
 - Gravimetric filter G4.
 - Gravimetric filter G4 + creased opacimetric filters M6 to F9.

Classification of the filters according to the new **ISO 16890 Standard**:

- G4 → ISO Coarse 60%
- M6 → ISO ePM10 60%
- F7 → ISO ePM1 50%
- F8 → ISO ePM1 65%
- F9 → ISO ePM1 80%

- Air quality sensor to enable measuring CO₂ for installation in the environment or duct-mounted (attached picture).



Security

- Differential pressostat for the detection of clogged filters.
- Smoke detecting station in accordance with the NF S 61-961 standard.
- Refrigerant leak detector (in ppm). This allows prompt identification of gas leaks, guaranteeing the safety of any people in the vicinity. This detector allows the number of periodic revisions to the unit to be reduced.



Installation

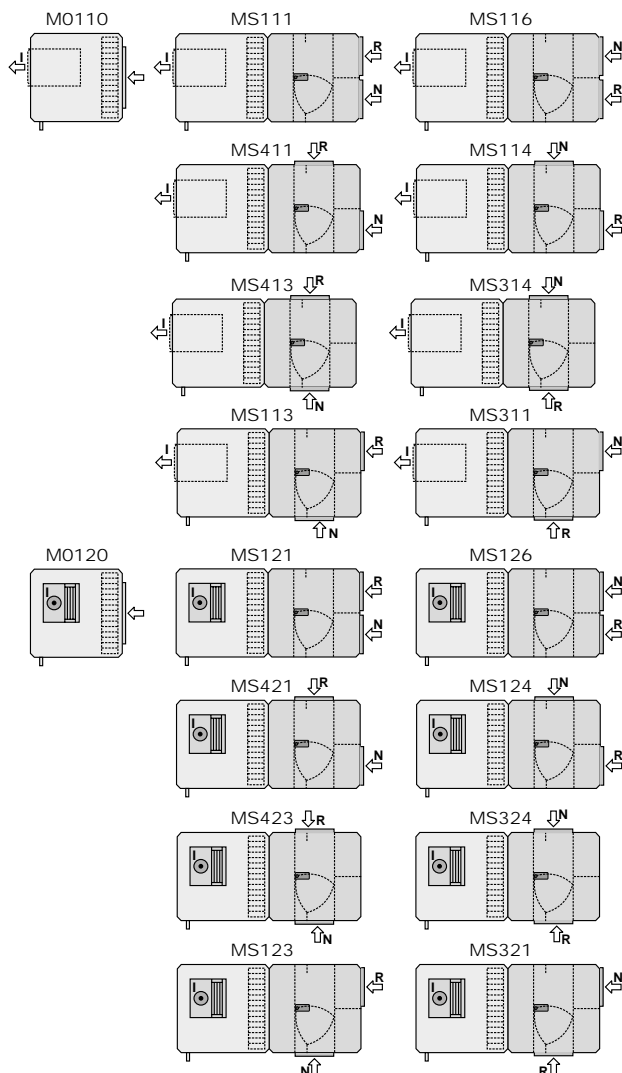
- Antivibration mounts made of rubber
- Position of supply and/or return of the indoor unit air.

OPTIONS (...CONTINUATION)

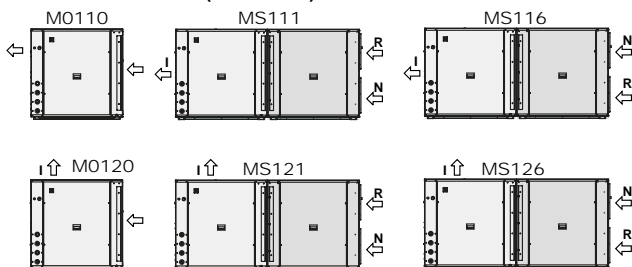
- Assemblies with mixing box with 2 motorised damper for air renewal and free-cooling:

Assemblies with mixing box

Models 90 to 360 (plan view)



Models 420 and 485 (raised view)



Air circulation

I = Supply
R = Return

N = Fresh air inlet
E = Air extraction

⊗ Air inlet
⊙ Air outlet

Designation

Mwxyz

Assembly:
0 = Standard
S = Outdoor air intake with damper

Return:
1 = Rear
2 = Top
3 = Right-hand side (*)
4 = Left-hand side (*)

Supply:
1 = Front
2 = Top

Fresh air:
1,6 = Rear
3 = Right-hand side (*)
4 = Left-hand side (*)

(*) Seen in the direction of airflow

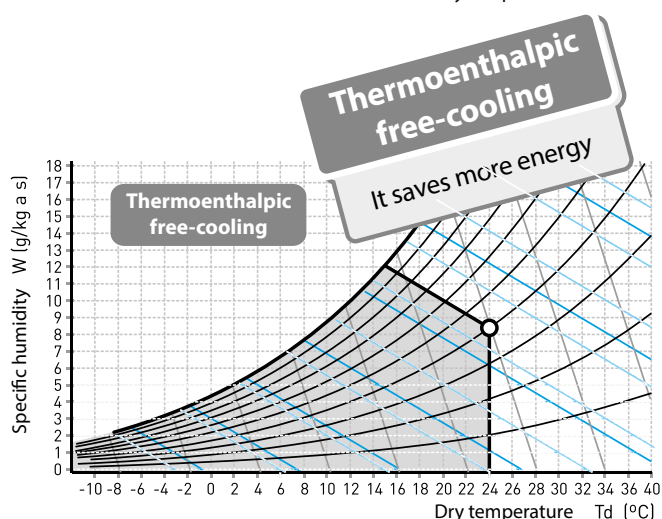
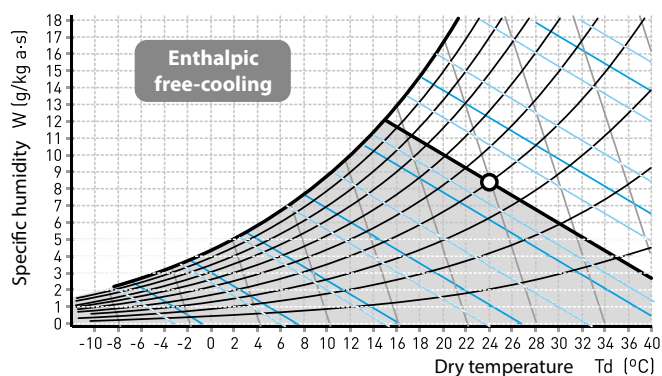
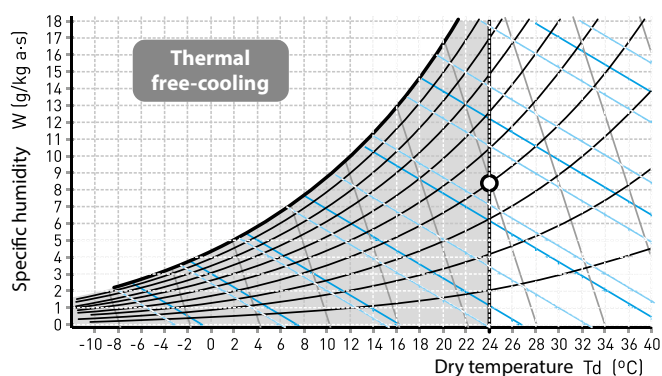
Important: In compact version, the connection of the mixing box with its structural support is under the responsibility of the installer.

Free-cooling management:

Running the unit in free-cooling mode allows it to make best use of outdoor air conditions when these are more favourable than the return air conditions. This allows the cooling capacity to be reduced. The percentage of outdoor air can vary between 0% and 100%.

There are three options for free-cooling management:

- Thermal, by comparing the temperatures.
- Enthalpic, by comparing the enthalpies. Recommended in cases where a high moisture content in the air is foreseen.
- Thermoenthalpic, by comparing the enthalpies and correcting for temperature. This is the optimum solution as it takes the variability of the climate into account.



OPTIONS (...CONTINUATION)

Options for electronic control

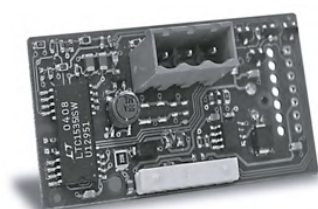
CARRIERrtc options

- TCO user terminal, for installation on the electric panel, instead of pGD1 terminal.
- Control without pGD1 terminal (for units with shared terminal).
- Kit remote control to 200 meters with pGD1 terminal (pGD1 terminal + 2 TCONN bypass cards). In this case it's possible to install the TCO terminal on the electric panel.
- Ambient temperature probe with RS485 communication. By default the control incorporates a NTC probe.
Note: An ambient probe with RS485 communication is required for installation to more than 30 m.
- Two to four ambient temperature probe with RS485 communication.
- Ambient T+RH probe with RS485 (compulsory in units with enthalpic or thermoenthalpic free-cooling as optional). In this case also added outdoor air humidity probe.
- Air quality probe for installation in the environment or in duct to enable measuring CO₂.

Communication options

CARRIERrtc control allows the connection to a centralised technical management system by using a specific BMS card for some of the following communication protocols:

- RS485 serial cards for network communication with protocols: Carel, Modbus, LonWorks®, BACnet™ MSTP, Konnex.
- Ethernet pCO Web card for network communication with protocols: Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.



Carel y Modbus



Ethernet pCO Web

Supervision solutions

Different solutions of supervision are available according to the dimensions of the installation.

■ pCO Web

It is the solution for the management and supervision of a single unit if it incorporates the Ethernet pCO Web card.

■ PlantWatchPRO3

It is a solution designed for the monitoring of installations of medium - small dimensions, with ability to manage up to 30 units. Suitable for technical environments, it has no parts in movement. It's available in two versions: panel and wall.

Includes: 7 " touch display, buzzer for notifications, 1 USB port and 1 SD card slot for downloading reports, charge devices models and applying service packs.

In this case, each unit needs one RS485 Carel / Modbus board.

■ BOSS

This is the solution for the management and supervision of air-conditioning installations with up to 300 units. Its main advantages are:

- Integrated WIFI Hotspot for direct access without any extra infrastructure.
- Smartphone compatibility.
- Secure supervisor control from remote through a simple browser.

It offers advanced monitoring and maintenance functions and allows zones and groups to be created to simplify the management of the installation. It also allows energy meters to be integrated to monitor the installation electricity consumption.

BOSS is available in two versions:

- CPU device.
- CPU device, monitor, keyboard and screen.

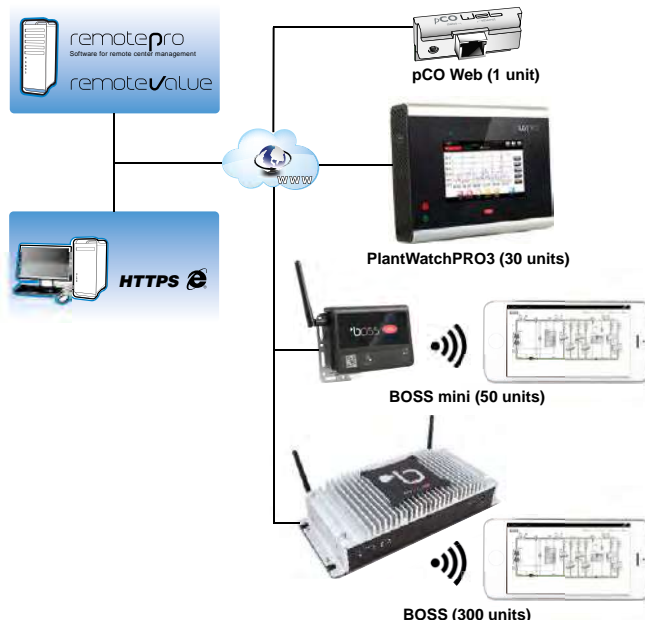
For this option, each unit needs one RS485 Carel / Modbus board.

■ BOSS mini (New)

This is the solution for the management and supervision of air-conditioning installations with up to 10 units with 50 variables per unit or 50 units with 10 variables maximum per unit, but with the same features as BOSS.

BOSS mini is available in two versions:

- CPU device, mouse and keyboard.
- CPU device, monitor, mouse and keyboard.



These systems allow the installation in remote management. Through a single connection to the Internet is accessed the information system. The Web interface, which is available for the local user, allows the monitoring and the complete configuration of the installation: from the office or any other user's current location.

For remote control of multiple sites, there are dedicated tools for centralized management as **RemotePRO** and **RemoteValue**.

SOUND LEVELS dB(A)

Sound power level 50NI compact version

50NI compact	90	120	160	180	200	240	280	320	360	420	485
63 Hz	45,7	59,8	57,0	60,4	63,5	62,1	62,1	58,8	68,5	68,2	68,5
125 Hz	60,4	66,5	66,3	74,7	66,5	71,6	71,6	73,5	72,2	74,5	74,6
250 Hz	73,8	72,9	73,7	73,7	73,3	78,5	78,1	75,8	77,4	82,4	85,2
500 Hz	76,3	80,6	81,2	81,2	81,0	82,8	83,7	82,3	82,4	84,5	87,4
1000 Hz	80,7	83,8	83,9	84,0	85,0	84,7	84,9	85,8	85,8	86,4	88,5
2000 Hz	79,4	83,3	83,9	83,9	84,9	82,3	82,5	83,8	83,7	84,2	85,8
4000 Hz	73,0	77,5	77,5	77,3	79,1	77,5	77,7	76,6	77,7	79,7	80,0
8000 Hz	64,0	69,0	68,2	72,2	72,9	71,5	71,8	69,0	73,1	72,2	73,0
Total dB(A)	84,7	88,2	88,5	88,8	89,5	89,1	89,4	89,5	89,8	91,1	93,3

Sound pressure level 50NI compact

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

50NI compact	90	120	160	180	200	240	280	320	360	420	485
Total dB(A)	56,6	59,9	60,3	60,5	61,1	62,2	62,5	62,6	62,8	63,9	66,1

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

Sound power level 50NI outdoor module

Outdoor module	90	120	160	180	200	240	280	320	360	420	485
63 Hz	42,7	56,84	53,96	57,39	60,47	59,1	59,1	55,8	65,5	65,2	65,5
125 Hz	57,4	63,55	63,34	71,75	63,55	68,6	68,6	70,5	69,2	71,5	71,6
250 Hz	70,8	69,86	70,71	70,71	70,31	75,5	75,1	72,8	74,4	79,4	82,2
500 Hz	73,3	77,58	78,24	78,20	78,00	79,8	80,7	79,3	79,4	81,5	84,4
1000 Hz	77,7	80,80	80,86	80,96	82,02	81,7	81,9	82,8	82,8	83,4	85,5
2000 Hz	76,4	80,32	80,95	80,93	81,88	79,3	79,5	80,8	80,7	81,2	82,8
4000 Hz	70,0	74,46	74,46	74,29	76,08	74,5	74,7	73,6	74,7	76,7	77,0
8000 Hz	61,0	65,99	65,23	69,21	69,88	68,5	68,8	66,0	70,1	69,2	70,0
Total dB(A)	78,7	82,2	82,5	82,8	86,5	86,1	86,4	86,5	86,8	88,1	90,3

Sound pressure level 50NI outdoor module

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

Outdoor module	90	120	160	180	200	240	280	320	360	420	485
Total dB(A)	53,6	56,9	57,3	57,5	58,1	59,5	59,8	60,0	60,2	61,4	63,5

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

Sound power level 50NI indoor module

Sound power level in the indoor fan supply to be taken into account for the silencer calculation:

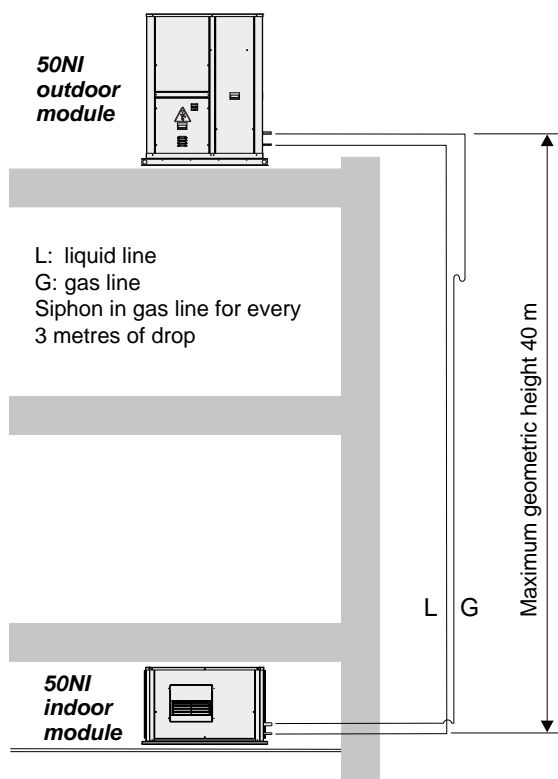
Indoor module	90	120	160	180	200	240	280	320	360	420	485
Total dB(A)	68,2	72,4	78,8	82,1	71,6	78,7	79,2	81,7	84,2	81,8	81,8

RECOMMENDATIONS FOR THE COOLING CONNECTION IN SPLIT VERSION

In split version, the outdoor module and indoor module must follow some recommendations

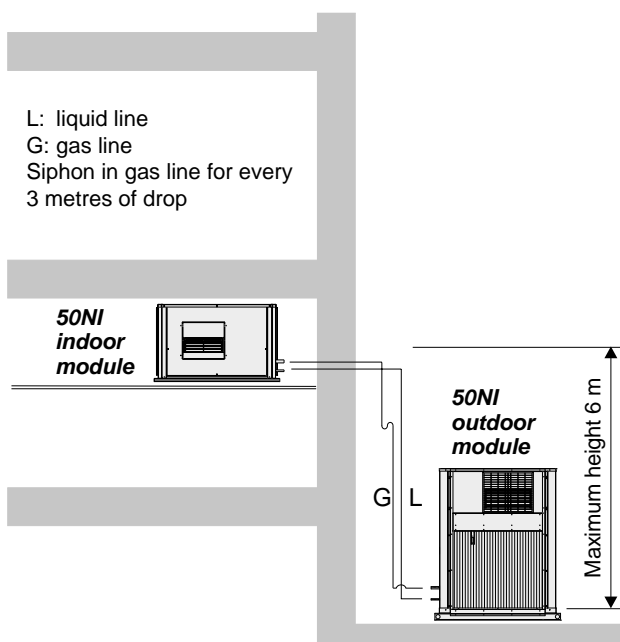
Outdoor unit top

Maximum equivalent length of the cooling line: 50 metres
For longer lengths an oil separator must be user



Outdoor unit bottom

Maximum equivalent length of the cooling line: 30 metres



Note: when the unit is supplied for split version with the outdoor and indoor modules, can include optionally filling and service valves for the circuit connections and the charge of refrigerant until 7 m of distance.

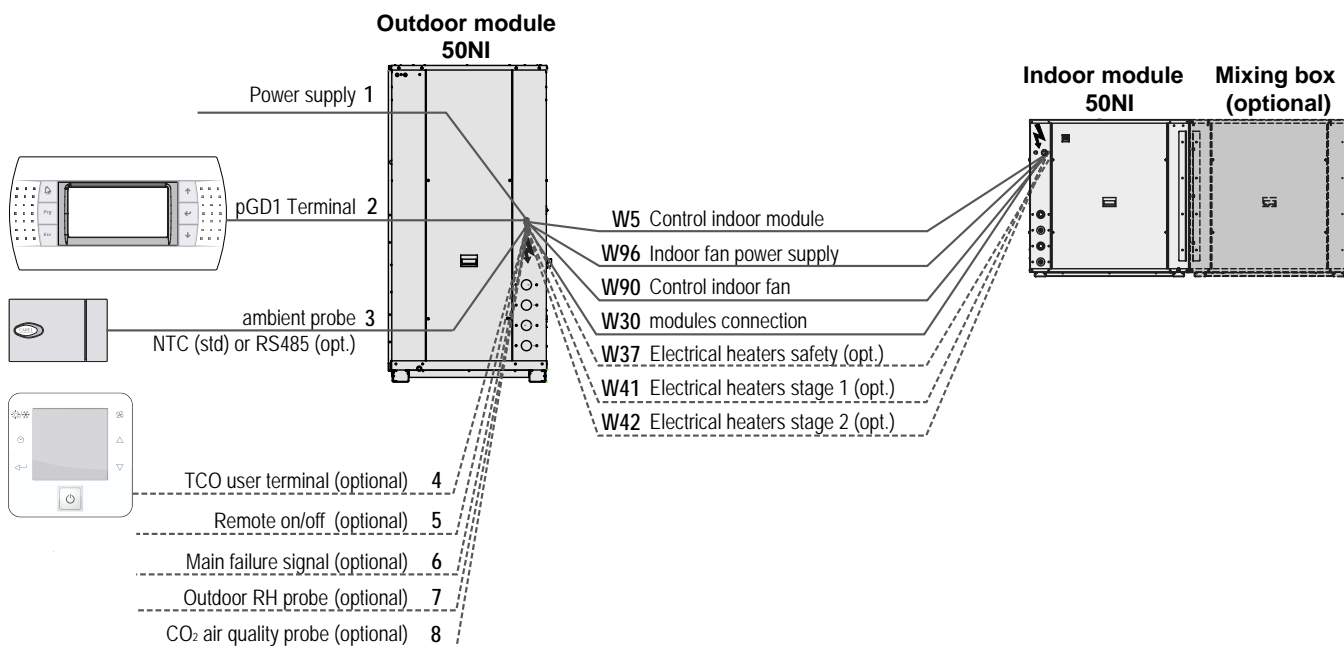
ADDITIONAL LOAD OF R-410A REFRIGERANT

Additional load per linear metre of piping for equivalent maximum lengths exceeding 7 metres:

Nominal diameter (inches)	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"
Interior section (cm ²)	0,149	0,444	0,900	1,505	2,282	3,120	4,290	5,346
Liquid line charge (g/m)	19,3	57,0	115,0	193,5	292,3	404,1	550,3	685,7
Gas line charge (g/m)	--	0,2	0,4	0,7	1,0	1,4	2,0	2,5

ELECTRICAL CONNECTIONS BETWEEN THE MODULES

CARRIER_{rtc} control



No.	50NI		90	120	160	180	200	240	280	320	360	420	485
1	Power supply	400 III ($\pm 10\%$)	3 + GND										
2	pGD1 terminal connection (standard in electrical panel)		Telephone cable 6 wires standard (RJ12 connector) (until 50 m)										
3	Ambient probe (1)	NTC	2 wires										
		RS485 (2)	5 wires										
4	TCO user terminal connection (3)		2 wires for power supply 230V + 1 shielded cable for communication type AGW20 / 22 (1 braided pair + drainwire + shielding)										
5	Remote on/off (optional)		2 wires										
6	Main failure signal (optional)		2 wires										
7	Outdoor RH probe (optional) (1)		3 wires										
8	CO ₂ air quality probe (optional) (1)		3 wires										
W5 (5)	Control indoor module		5 wires										
W96 (5)	Indoor fan power supply		4 wires										
W90 (5)	Control indoor fan		7 wires										
W30 (5)	Modules connection	without free-cooling (std)	2 wires										
		free-cooling (opt.)	7 wires										
W37 (5)	Safety thermistors of electrical heaters (optional)		2 wires										
W41 (5)	Electrical heaters. stage 1 (optional) (4)		4 wires										
W42 (5)	Electrical heaters. stage 2 (optional) (4)		4 wires										

(1) Connection of probes by client

(2) It is possible connect from 1 to 4 ambient probes RS485 in series in the Field-bus of the control board

(3) If the unit is going to be installed in an industrial environment with a high level of electromagnetic interference, it is recommended to shield the cables of the thermostat control.

(4) The power supply for the electrical heater must be protected by an automatic switch and/or fuses to be foreseen by the installer.

(5) Connection hose to connect the modules supplied to work in compact version.

OPTIONS FOR THE INDOOR MODULE

High pressure plug-fan

Indoor module 50NI		420	485
Nominal air flow	(m³/h)	21.000	21.000
Available static pressure	(mm.w.c.)	20	
Maximum available static pressure	(mm.w.c.)	60	
Number / Diameter	(mm)	2 x 500	
Motor output	(kW)	2 x 4,6	
Power input	(kW)	2 x 3,6	
Speed	(r.p.m.)	2.100	
Maximum absorbed current	(A)	2 x 7,2	

Stop-drop in the indoor air coil

Air flow as from which it is recommended to install a stop-drop in the indoor coil.

Indoor module 50NI		90	120	160	180	200	240	280	320	360	420	485
Air flow for stop-drop	(m³/h)	5.246	5.246	7.283	7.283	11.110	11.110	16.566			16.949	

Note: for operating conditions with high dehumidification in the indoor coil (example. in installations close to the coast) it may be necessary to install a separator even if the flow is less than the previous one.

Note: with hot water coil it is not possible to assemble the stop-drop.

Electrical heaters

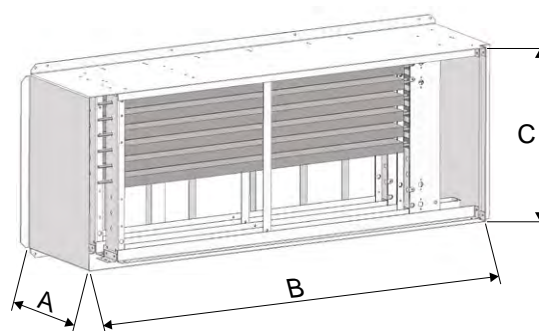
Standard assembly in two stages (optional assembly in one stage with no over price)

Available capacities

Indoor module 50NI	Total output (kW)	6	9	12	15	18	24	30	36	45	54
	Stage power (kW)	3 + 3	3 + 6	6 + 6	6 + 9	9 + 9	12 + 12	15 + 15	18 + 18	18 + 27	27 + 27
90 / 120	Current (A) (400V / IIIph / 50Hz)	8,7	13,0	17,3	Unavailable						
160 / 180		Unavailable		17,3	21,7	26,0	Unavailable				
200 / 240 / 280 / 320 / 360		Unavailable			21,7	26,0	34,6	43,4	52,0	Unavailable	
420 / 485		Unavailable							52,0	65,0	78,0

Frame for assembly of the auxiliary heater in the indoor supply fan

Indoor module 50NI	Total output	Dimensions (mm)		
		A	B	C
90 / 120 (1 frame)	6 / 9 kW (1 row)	150	482	443
	12 kW (2 rows)	262	482	443
160 / 180 (1 frame)	12 kW / 15 / 18 kW (1 row)	189	1.142	443
200 / 240 (1 frame)	15 / 18 kW (1 row)	189	1.142	443
	24 / 30 / 36 kW (2 rows)	297	1.142	443
280 / 320 / 360 (2 frames)	15 / 18 / 24 / 30 / 36 kW (1 row)	189	1.142	443
420 / 485 (2 frames)	36 / 45 / 54 kW (1 row)	189	1.142	443



This frame is designed with side access for maintenance purposes. In models with two supply fan outlets (two frames), the electrical heaters are distributed as symmetrically as possible between both frames.

OPTIONS FOR THE INDOOR MODULE

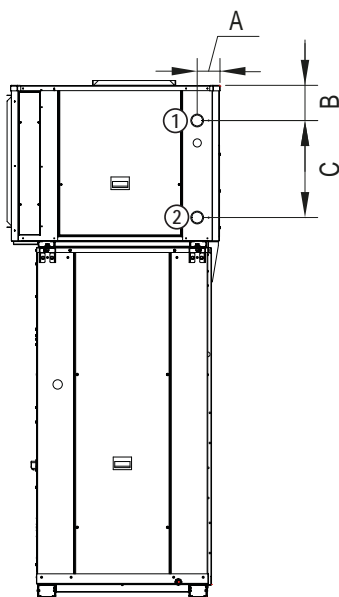
Auxiliary hot water coil

Hot water coil assembled inside the unit with a three-way valve managed by the unit control for back-up during heating in heat pump units. In this case the air inlet temperature matches the air supply temperature of the indoor coil..

Indoor module 50NI			90	120	160	180	200	240	280	320	360
Air pressure drop		(mm.w.c.)	2,9	4,5	4,2	4,2	3,4	4,0	5,5	6,6	7,8
Water 80/60°C	Heating capacity	(kW)	12,9	14,9	23,0	23,0	31,6	33,6	38,6	40,9	43,7
	Water flow	(m³/h)	0,6	0,7	1,0	1,0	1,4	1,5	1,7	1,8	1,9
	Water pressure drop	(m.c.a.)	0,1	0,2	0,5	0,5	0,5	0,5	0,7	0,8	0,9
Water 90/70°C	Heating capacity	(kW)	17,9	20,8	31,5	31,5	43,5	46,5	53,1	56,3	60,1
	Water flow	(m³/h)	0,8	0,9	1,4	1,4	1,9	2,0	2,3	2,5	2,6
	Water pressure drop	(m.w.c.)	0,2	0,3	0,8	0,8	0,9	1,0	1,2	1,4	1,6
Weight (empty)		(kg)	7,8	7,8	11,0	11,0	16,3	16,3	16,3	16,3	16,3
Diameter of hydraulic connections			3/4"			1"					

Note: with stop-drop in the indoor air coil it is not possible to assemble the hot water coil.

Position of hydraulic connections for auxiliary hot water coil



① Inlet ② Outlet

Dimensions (mm)	A	B	C
90 and 120	108	172	413
160 to 200	108	172	380
240	112	140	413
280 to 360	112	173	476



Controls

1044

Type	Range	Page
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Control Solutions

	Smart Energy Monitoring	1045
	Plant CTRL™	1047
	Fan coil controls overview	1049
	Thermostats	1051
NEW	33TZ	1053
	NTC controllers	1057
	WTC controllers	1061
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	Thermal Energy Storage system	1069

FOR CHILLERS & HEAT PUMPS



- CONNECTED SERVICES
- PERFORMANCE MONITORING
- TRACKING ENERGY CONSUMPTION
- IMPROVED EQUIPMENT AVAILABILITY
- FULLY SECURED ACCESS

Smart Energy Monitoring

Optimize equipment operation & energy

The smart energy monitoring solutions, control and monitor in real time from one to several Carrier chillers and heat pumps. Compatible with all existing and new equipment, you benefit from the analysis of Carrier experts.

These solutions can be combined with both electrical and thermal metering options to track, monitor and optimize equipment performance and energy consumption.

OPTIONS

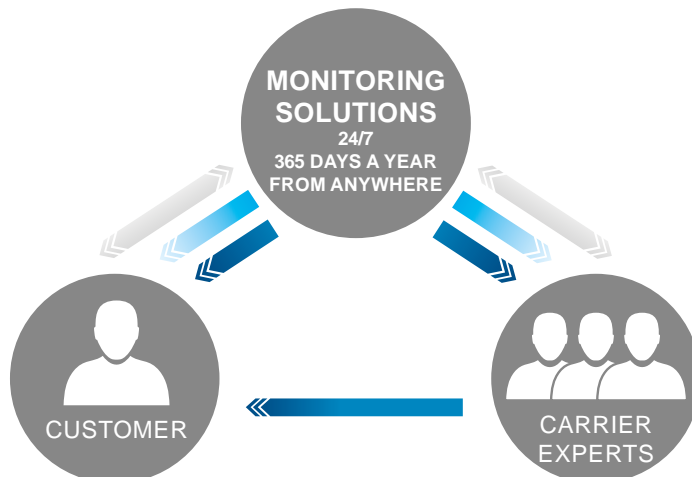


Electrical metering



Thermal metering

- Information
- Alarms
- Preventive & corrective actions



MAIN FEATURES

- Site remote access (one or several units)
- Service access to pre-diagnose a remote fault
- Operating data storage and events
- Alerts / Alarms by mail
- Curve displays (customizable)
- Raw data extractions (customizable)
- Weekly, monthly, quarterly and yearly statistic reports
- Electrical metering option
- Thermal metering option
- Other options are available. For more information, please ask your Carrier sales representative.



ELECTRICAL



METERING / THERMAL METERING

Retrieve electrical & thermal data of the equipment on the smart energy monitoring solution to monitor & optimize electrical and thermal consumption (voltage, current, power, energy, etc.).

The metering hardware will be integrated into the electrical cabinet of the chiller. If the integration is not possible, a separated box is available in several references depending on the current range of the measured equipment.

Both meters comply with MID (Measuring Instruments Directive). Both electrical and thermal meters are also available in stand alone version:

- Collect electrical data (voltages, current, power, energy, etc.) for three phase power supply of one or several equipment
- Collect Thermal data (temperatures, flow, capacity & energy)
- Connect to a local BMS (LON FT-10, BACnet MS/TP, Modbus RTU)

CAPACITY

- For all new and / or legacy chillers & heat pumps (from one to several)
- Communication with chiller or heat pump in CCN or BACnet protocols
- Communication with BMS through BACnet IP or Modbus TCP in option
- Electrical metering for three phase power supply of one or several equipment
- Thermal metering for one or several equipment
- Up to 150 operating data points recorded
- All customer parameters available

PHYSICAL CHARACTERISTICS

Electrical Metering

- Electrical counter
- 3 phases circuit breaker
- 3 static current transformers (openable in option)

Thermal Metering

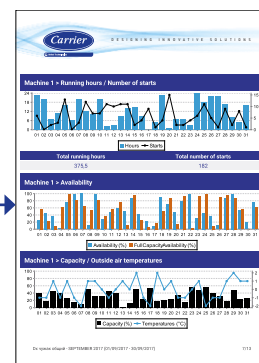
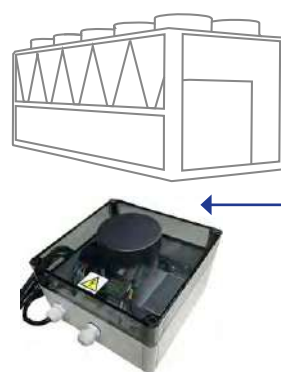
- Thermal counter
- 1 flowmeter
- 2 temperature sensors

Monitoring solutions (box and integrated versions)

- 3G Modem + SIM card
- Metal box (only for box version)
- CCN gateway (only for box version)
- 230VAC -24VDC transformer (only for box version)
- Circuit breaker (only for box version)
- Antenna's power gain (5 m cable, only for box version)
- Terminal block (only for box version)

SOLUTION ADVANTAGES

- Fully secured connection
- Minimizing maintenance and operating costs
- Understanding equipment operation
- Improving HVAC equipment availability
- Optimal control of equipment
- Managing energy expenses and consumptions
- Optimizing energy use & saving costs
- Meeting energy regulation criteria
- Benefit from our Carrier expertise through our service contracts



Reports, real-time data and alerts
complemented by expert analysis

FOR COOLING & HEATING PLANTS



- ADVANCED PLANT CONTROL
- OPERATION AND ENERGY CONSUMPTION OPTIMIZATION
- HIGH ADDED VALUE SOLUTION
- SECURED HEATING & COOLING PRODUCTION
- QUICK RETURN ON INVESTMENT
- COMPLYING WITH ENERGY REGULATIONS & BUILDING CERTIFICATIONS

PlantCTRL™

Management & monitoring system

The PlantCTRL™ regulates and controls all Carrier thermal production plants operation. This system is compatible with all existing and new Carrier equipment from two to several chillers and / or heat pumps.

Available for all applications, this system is able to manage all cooling & heating production components and all associated hydraulic devices: Chillers, heat pumps, cooling towers, dry coolers, energy metering, valves and pumps.

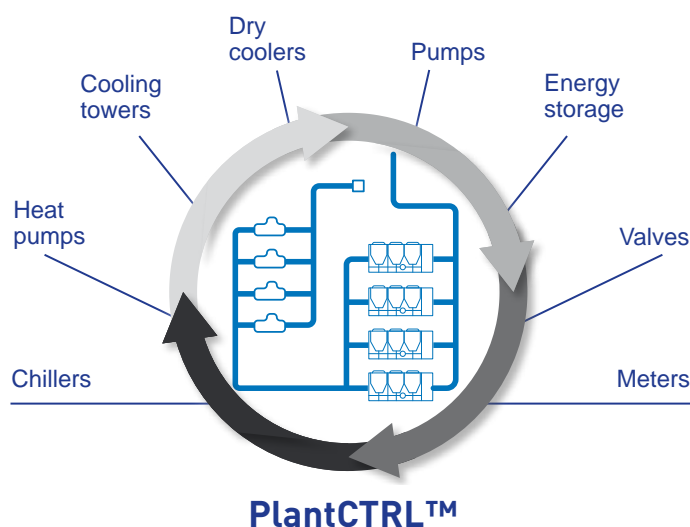
OPTIONS



User interface



Remote monitoring



MAIN FEATURES

Command & control your HVAC plant

- Production and operation strategy management
- Controlling and monitoring of chillers and heat pumps, drycoolers and cooling towers depending on the operation needed
- Controlling and monitoring of all hydraulic components of the installation (valves, pumps, frequency converters,...)

Manage the energy

- Daily and seasonal programming
- Optimization of the chillers, heat pumps and hydraulic components cascading management
- Set-points configuration and optimization
- Energy management of the system (free cooling, energy recovery and other sources)

Secure the operation

- Faults / alarms detection and signaling, corrective management algorithms
- Equipment management alternation / rescue / priority network
- Preventive maintenance alerts scheduling
- View of the installation and equipment states

Monitor the installation

- On site local monitoring and remote monitoring through the dedicated Website
- View in real time of the equipment and installation states, access to installation synoptics, operation curves
- Events notification by mail (faults / alarms)
- Long-term saving of recorded values, events & curves

CAPACITY

- Management of the chillers, heat pumps, drycoolers, cooling towers, pumps and valves
- Energy metering, flowmeters, temperature sensors and pressures
- Energy recovery and free cooling
- Coupling with other energy sources (EnR, boilers, geothermal,...)
- Communication with all BMS
- Other communication by open protocols and non Carrier equipment (BACnet IP, MS/TP, Modbus TCP / IP, Modbus RTU and LonWorks,...)

PHYSICAL CHARACTERISTICS

- Available in box version for both new and existing equipment (an integrated option for electrical cabinet is available)
- Dimensions and weights according to configuration and options
- IP54 steel enclosure
- Enclosure power supply: 100-230 VAC, 50 / 60Hz
- Operating temperature range: -10 °C to +50 °C
- Humidity: 0 to 90% RH, non-condensing
- Storage: -20 °C to +60 °C, 0 to 90% RH, non-condensing

USER INTERFACE



/ REMOTE MONITORING



OPTIONS

It is possible to monitor the installation locally from the user interface of the PlantCTRL™ box or from a PC.

You have also the possibility to monitor the installation remotely from a PC/tablet with internet access. The PlantCTRL also communicates with the BMS.

The three monitoring options provide access to all equipment operating parameters in real time:

- Installation synoptics
- Operating curves
- Schedule programming
- Event reports
- Components states
- Recorded data

SOLUTION ADVANTAGES

Expert in plant management:

- System and control expertise
- Commissioning and installation support
- One supplier to facilitate the installation
- Ergonomic and easy friendly user interface
- Optimized operation sequencer

Flexible and scalable solution:

- Tailor-made solution for existing and new plants
- Suitable to process & comfort applications
- Compliance with all BMS
- Fully configurable according to building evolutions
- 24/7 plant monitoring

Costs management and profitability:

- Real-time operating and maintenance costs management
- Quick Return On Investment
- Carrier service experts support

Secured installation:

- Maximize equipment lifetime
- Improve equipment efficiency
- Secure the plant operation
- Facilitate better production availability

Energy optimization:

- Manage energy consumption
- Energy optimization during the lifetime of the installation
- Preventive maintenance to ensure the durability of equipment

Comply with energy regulations:

- LEED, BREEAM and HQE credits
- Value of sustainable energy solutions (free cooling, energy recovery,...)
- Contribute to develop energy efficiency of buildings (local and European regulations)

FAN COIL CONTROLS OVERVIEW



	33TZ Thermostat	Thermostat	NTC controllers	WTC controllers
Communication Protocols				
Carrier Communication Network (CCN) Aquasmart compatible			x	
BACnet				x
LON				x
Control algorithms				
On-off	x	x		
Proportional-integral			x	x
Carrier Energy saving algorithm			x	x
Fan control				
AC motors 3 speeds descreet	x	Type A&B	x	x
Automatic optimum fan speed selection		x	x	x
EC motors 3 speeds descreet	see 33TZ section	Type C&D	x	x
EC motors Variable speed			x	x
Water Valve management				
Air flow control only (no water valve)	x	x		
On-off actuators	x	x	x	x
Modulating actuators (3pts or 0-10V)			x	x
Main functions				
Set-point control	x	x	x	x
Occupied/unoccupied mode	x	x	x	x
Frost protection mode	x	x	x	x
Window / Door contact input	x	x	x	x
Measurement of water inlet temperature for automatic seasonal changeover (2 pipes)	only 2p & 2p+elec heater	Type A&C	x	x
Automatic seasonal changeover (4 pipes and 2 pipes + electric heater)	only 2p & 2p +elec heater	Type D&B	x	x
Manual changeover		x	x	x
Frost protection mode	x	x	x	x
Continuous ventilation within dead-band	x	x	x	x
Periodical ventilation within dead-band	x	x	x	x
On-site configuration	x	x	x	x
Unit grouping Master/Slave		x	x	x
Cassette Louvers control			x	x
Supply air temperature monitoring limiting			x	x
Electrical heater loadshed			x	x
Dirty filter alarm			x	x
Alarm reporting			x	x
Indoor Air Quality control (CO ₂ sensor)			o	o
Demand control ventilation (DCV) (0-10V fresh air valve)			o	o
Free cooling mode				o
Presence detection				o

Legend

- x feature available as standard
- o optional

FAN COIL CONTROLS OVERVIEW



	33TZ Thermostat	Thermostat	NTC controllers	WTC controllers
User interfaces				
Automatic or manual fan speed control	x	x	x	x
Operating mode selection	x	x	x	x
Occupancy (eco) button		x	x	x
Digital display			o	o
Remote control (infra-red)			o	o
CO ₂ sensor			o	o
Light sensor				o
Presence sensor				o
Easy connection RJ45 jack (on wall mounted UI)				x
Light & Blinds management				
Light power modules				o
Blinds power modules				o
Control kit				
On site control kit solution				o

Legend

- x feature available as standard
- o optional

CONTROL SOLUTIONS



Thermostats

Carrier electronic thermostat range is available for all Carrier hydraulic terminal ranges:

- Type A - Two-pipe application with AC motors
- Type B - Four-pipe or two-pipe applications with electric heaters with AC motors
- Type C - Two-pipe application with EC motors
- Type D - Four-pipe or two-pipe applications with electric heaters with EC motors

The thermostat for fan coil units with EC motor option controls three configurable discrete speeds via an 0-10 V signal.

The electronic thermostat set range is from 10°C to 30°C, with the possibility to limit the temperature in public buildings where low energy consumption is a key requirement. This is done via a dip-switch inside the control (cooling range 23°C/30°C, heating range 10°C/21°C).

FEATURES AND ADVANTAGES

- Auto fan: the control automatically sets the fan speed. If the room temperature is far from the set-point, high fan speed is selected. As the room temperature approaches the desired value, the fan speed decreases to the minimum speed.
- Automatic changeover from cooling to heating mode, based on the water temperature, ensures that the ideal room temperature is maintained.
- Remote changeover - automatic changeover from cooling to heating mode, based on the remote signal from the monitoring system.
- Frost protection keeps the room temperature above a minimum level.
- Booster heating control optimisation (with electric heater option): with the water temperature below 30°C the system will be in heat demand mode and the electric heater is the only available heating source. If the water temperature is above 35°C the system will be in booster heating mode, energising water valve and electric heater together. This function is deactivated if the water temperature is above 45°C (the electric heater will be de-energised).
- Energy saving when the room is unoccupied, without the need to switch off the unit. If the energy-saving button is pressed, the actual set-point will be modified as follows, without changing the position of the set-point selection knob: ± 4 K.
- LED intensity (offices or light commercial applications) - 10 seconds after the last user interface use all LEDs are reduced in intensity. To avoid disturbing hotel guests, the thermostat can be configured from "Night Mode" to "Dark Mode": 10 seconds after the last user interface use, all LEDs are switched off.
- Air sampling: with no fan request and the air sampling jumper in ON position, the control performs the air sampling function. The air in the room is moved, thermal stratification is reduced for a more reliable ambient temperature reading.
- Continuous fan (no fan request and continuous fan jumper ON): the control selects the fan speed, regardless of thermal station conditions. With fan in auto fan mode and control not in the demand phase, the fan permanently runs at low speed.
- External contact: A high voltage input signal for external contact is present. If the contact is activated, device behaviour depends on its configuration on site:
 - Presence detection energy saving mode is activated, room temperature is raised by 4 K in cooling mode and reduced by 4 K in heating mode.
 - Window contact: in OFF mode (window open), all outputs are disconnected (fan, valves, etc.) and only the frost protection function is active, if enabled.

NEW

ELECTRONIC ON/OFF AIR OR WATER CONTROL SYSTEM



Factory-recessed thermostat

Customised performance
with a low cost solution

33TZ

The 33TZ control system is a specific Carrier control system with an innovative design, dedicated to fan coil units, and developed using our expertise.

The 33TZ control system is a Carrier electronic control system devised to control a non-independent air handling terminal unit (ductable, cassette-type fan coil units...) for applications using 2 tubes, 2 tubes/2 wires, 4 tubes with recirculated air.

There are two types of 33TZ controls:

- Air control types, which act on the ventilation. This application has its drawbacks when used with vertical devices: the coil continually supplies cold water or hot water, which creates an incorrect temperature reading at the intake.
- Water control types, which act on two-way valves or four-way valves with a 230 V electrothermic motor and ventilation (recommended to ensure comfort levels).

The 33TZ control is available in a built-in version factory-fitted in a fan coil unit to be mounted under a sill, or a wall-mounted version to be connected by the installer.

DESCRIPTION

The 33TZ control is an on/off type control, which can be configured for the chosen application on site using 8 switches. It has a potentiometer for setting the required temperature, which can be adjusted across a range of +/- 6 °C.

The wall-mounted version is available with a potentiometer graduated in degrees.

Two temperature setpoints: heating (19 °C) and cooling (factory-set at 25 °C).

The cooling setpoint can be configured on-site (25 °C or 23 °C).

The 33TZ has a selector to actuate three manual ventilation speeds.

The operating statuses of the thermostat are displayed using 3 LEDs: comfort/heating/cooling on.

The changeover is managed automatically by the thermostat via a water temperature sensor or via a signal from an external dry contact.

When heating or cooling is requested, the fan is triggered automatically at the speed selected by the user.

The 33TZ controls the heating via the electric heater in time-proportional mode, according to the ventilation speed selected, to prevent the comfort unit overheating.



The thermostat manages the fan delays required for unit shut down.

If the selector is in the off position, the thermostat keeps the room in which it is installed frost-free at a setpoint of 8 °C.

A dry contact input, which can be configured on-site, enables the thermostat to be automatically switched to economy mode (automatic shift of +/- 5 °C in the heating and cooling setpoints) or frost protection mode (heating setpoint +8 °C).

See our instruction manual for more detailed information.

33TZ CONTROL ON AIR (WITHOUT VALVE)

		42NC/NR ND vertical installation	42NC/NR/ND/ NI/NU	42KY	42GW / 42NH/ NL
CONTROL UNIT On/Off electronic controller Thermostat with potentiometer Wall-mounted or built-in version (without isolating switch) Without valve Return air sensor (for built-in version) Fittings not included		Configuration in the POD	Configuration in the POD	For AC or EC motor	For AC motor only
AIR CONTROL (without valve, not recommended for vertical units*)					
2-pipe system					
- Heating only (or heating/cooling selection using external contact)		digit 9 = "V"	digit 9 = "W"	wall version	wall version
- Cooling only (or heating/cooling selection using external contact)					
- Automatic heating/cooling with changeover sensor (supplied separately on wall-mounted units)		digit 9 = "V" & digit 14 = "B"	digit 9 = "W" & digit 14 = "B"	wall version + change over sensor	wall version + change over sensor
2-pipe system + 2000 W max. electric heater					
- Cooling + electric heater		digit 9 = "V"	digit 9 = "W"	wall version	wall version
Heating/cooling + electric *with temperature sensor supplied as a kit		digit 9 = "V" & digit 14 = "B"	digit 9 = "W" & digit 14 = "B"	wall version + change over sensor	wall version + change over sensor
Surcharge for power levels of over 2000 W and up to 4600 W		Standard in the unit	Standard in the unit	On request	On request
OPTIONS and ACCESSORIES					
	Return air temperature sensor for wall thermostat, supplied as a kit or change over sensor	L = 2,5 m			

* **Note regarding 42NC/NR/ND vertical units fitted with 33TZ built-in** : the heat continuously radiated on the sensor by the heat exchange coil will prevent the control system from operating correctly. It is the customer's responsibility to place the sensor at the best location that will ensure that the units operate correctly.

33TZ CONTROL WITH VALVE

		42NC/NR ND vertical installation	42NC/NR/ND/ NI/NU	42KY	42GW / 42NH/ NL
CONTROL UNIT On/Off electronic controller Thermostat with potentiometer Wall-mounted or built-in version (without isolating switch) Without valve Return air sensor (for built-in version) Fittings not included		Built version 33TZ	Configuration in the POD	For AC or EC motor	For AC motor only
2-pipe system					
Heating only or cooling only					
With 2 ways valve ON/OFF 230V		digit 9 = "V" & digit 10&12= GA	digit 9 = "W" & digit 10&12= GA	wall version	wall version
With 4 ways valve ON/OFF 230V		digit 9 = "V" & digit 10&12= HA	digit 9 = "W" & digit 10&12= HA		
Automatic heating/cooling with changeover sensor (supplied separately on wall-mounted units)		digit 9 = "V" & digit 10&12= HA & digit 14 = "B"	digit 9 = "W" & digit 10&12= HA & digit 14 = "B"	wall version + change over sensor	wall version + change over sensor
With 4 ways valve ON/OFF 230V					
2-pipe system + 2000 W max. electric heater					
Cooling only + electric heater					
With 2 ways valve ON/OFF 230V		digit 9 = "V" & digit 10&12= GA	digit 9 = "W" & digit 10&12= GA	wall version	wall version
With 4 ways valve ON/OFF 230V		digit 9 = "V" & digit 10&12= HA	digit 9 = "W" & digit 10&12= HA		
Automatic heating/cooling +electrical heater with changeover sensor (supplied separately on wall-mounted units)		digit 9 = "V" & digit 10&12= HA & digit 14 = "B"	digit 9 = "W" & digit 10&12= HA & digit 14 = "B"	wall version + change over sensor	wall version + change over sensor
With 4 ways valve ON/OFF 230V					
Surcharge for power levels of over 2000 W and up to 4600 W		included	included	On request	On request
4-pipe system					
With 2 ways valve ON/OFF 230V		digit 9 = "V" & digit 10&12= GA	digit 9 = "W" & digit 10&12= GA	Wall version	Wall version
With 4 ways valve ON/OFF 230V		digit 9 = "V" & digit 10&12= HA	digit 9 = "W" & digit 10&12= HA		
OPTIONS and ACCESSORIES					
	Return air temperature sensor for wall thermostat, supplied as a kit or change over sensor	L = 2,5 m			



CONTROL SOLUTIONS



NTC controllers

Carrier offers one of the market's most sophisticated and complete communicating controllers for hydraulic fan coil ranges, the NTC controller, that is compatible with the full Carrier fan coil range.

For the customer and installer the same controller simplifies and eases installation and service operations whilst covering a wide range of hydraulic system types and applications.

The controller can be applied and function as either a standalone control, as part of a larger CCN system application, or at the heart of a Aquasmart system functioning with the Aquasmart Touch Pilot System Manager.

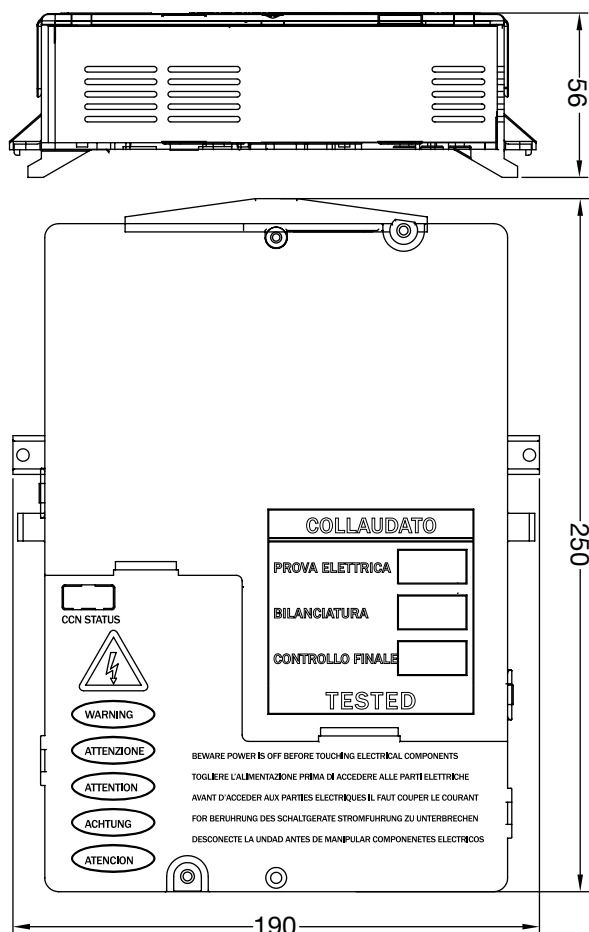


NETWORK COMMUNICATION

- The NTC communicating controller can be connected on an RS 485 bus, using the Carrier Comfort Network (CCN) protocol.
- Units equipped with the NTC controller can be part of the Aquasmart Evolution system.

ADVANCED FUNCTIONS

- Low Energy Consumption (LEC) variable speed control.
- The NTC controller can drive the fan speed continuously within a configurable range for optimal thermal and acoustic comfort.
- Hydraulic control - The NTC controls both floating and fixed-point value actuator types (230 V on-off and 230 V three point).
- Demand controller ventilation (DCV) - On fan coils equipped with CO₂ sensors and fresh air dampers, the NTC controller can adjust the amount of fresh air admitted to the room, as required by the occupants.
- IAQ management - The NTC controller can control all features related to Indoor Air Quality that are included in Carrier terminal fan coil units.



Carrier Room Controller (CRC2)



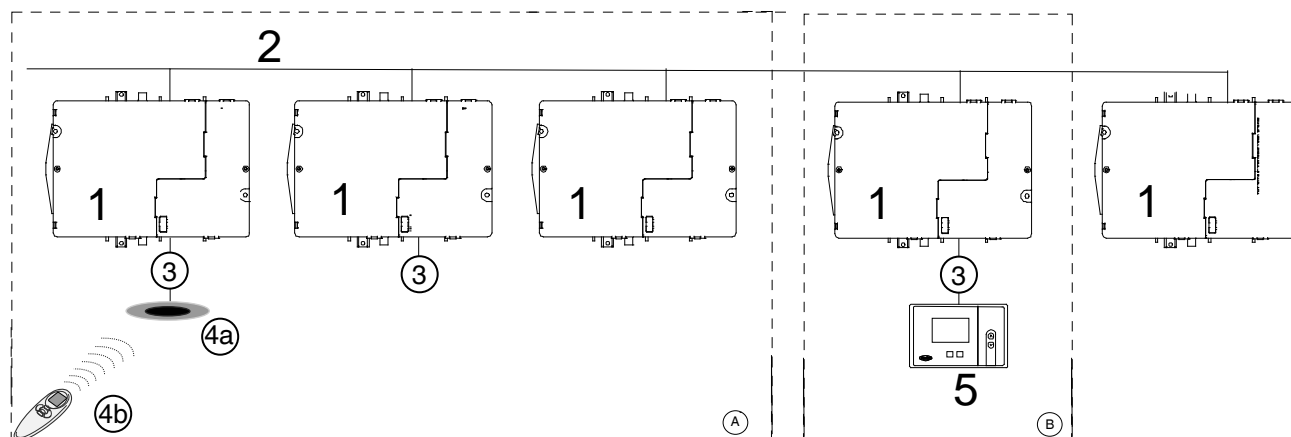
Simplified User Interface (SUI)



Infrared Remote Control (IR2) and receiver



ADVANCED FUNCTIONS



Legend

- 1 NTC controller
- 2 Secondary communication bus
- 3 User interface connection
- 4 IR2
- 5 CRC2
- A Room A
- B Room B

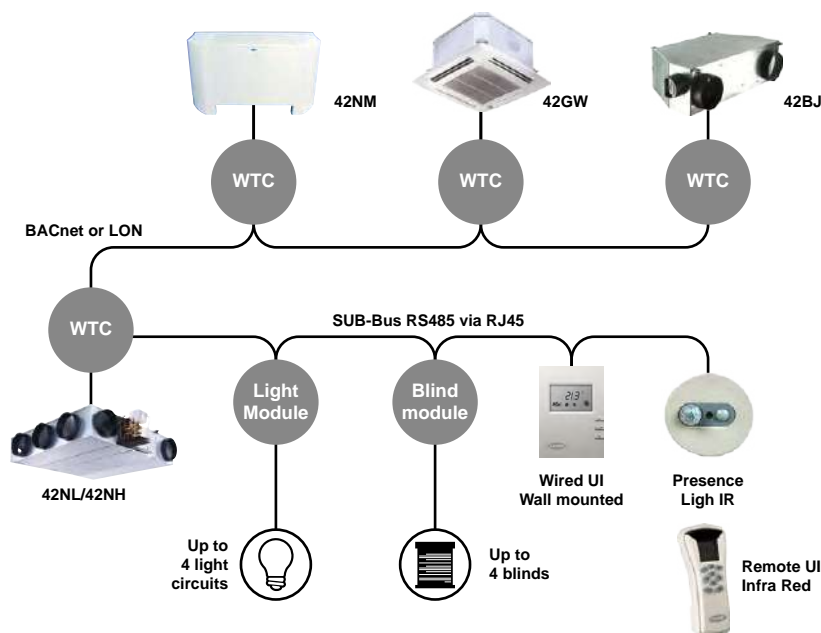
FEATURES AND ADVANTAGES

- The NTC controller controls and optimises the operation of hydraulic terminal fan coil units. It is a microprocessor-based CCN (Carrier Comfort Network) compatible communicating controller with energy-saving algorithms.
- Energy-saving algorithms manage water valve operation and fan speed control simultaneously to ensure minimum energy consumption whilst maximising comfort conditions for the occupant.
- Factory-installed on terminal fan coils
The NTC controller is factory-installed on the terminal fan coil; the assembly is also factory-tested. As a result, field installation is extremely simple.

- A wide range of user interfaces
Depending on the application, two user interface types can be selected:
 - A simplified wired analogue user interface (SUI) that can be wall-mounted
 - A wired communicating user interface (CRC2) that can be wall-mounted.
 - An infrared user interface (IR2) for use together with a wall-mounted infrared receiver or a receiver incorporated on compatible terminal fan coils (42GW)

CONTROL ARCHITECTURE

A variety of configurations for every application



FEATURES AND ADVANTAGES

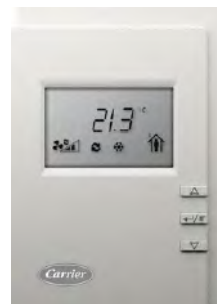
- **High efficiency:** The WTC's energy saving algorithms control fan speed and manage water operation in parallel achieving optimal energy consumption whilst ensuring there is no resulting loss in comfort for occupants.
- **Easy installation:** The WTC is compatible with the full Carrier fan coil range. For customers and installers the same controller simplifies and eases installation and service operations whilst covering a wide range of hydraulic system types and applications. The WTC is factory installed on the terminal fan coil before factory testing of each individual terminal. As result, field installation is extremely simple.
- **Variety of configurations:** The controller can operate as either a standalone control, command and follow function for open spaces, or at the heart of a building management system.
- **User friendly user interface:** The user interface is available in a variety of configurations: no display, LCD display, temperature sensor, lights and blind control, etc.

ADVANCED FUNCTIONS

- **Low Energy Consumption (LEC) variable speed control:** The WTC can drive the fan speed continuously within a configurable range for optimal thermal and acoustic comfort.
- **Modulating hydraulic control:** The WTC controls both floating and fixed-point value actuator types (230V on-off and 230V three point).
- **Demand controller ventilation (DCV) & IAQ management:** on fan coils equipped with CO₂ sensors and fresh air dampers, the WTC can adjust the amount of fresh air admitted to the room, as required by the occupants.
- **Lights and blind management modules:** The WTC supervises the interconnection of light modules & blinds modules, allowing the user to improve local comfort control with the same user interface as HVAC system.

ROOM CONTROLLER - USER INTERFACE

Large choice of Room Controllers



Infrared Remote Control and receivers





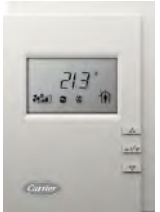


HVAC



HVAC + lights/Blinds



A range of user interfaces to meet all needs

	Room Control Interface			Infrared Remote Interface	
					
	WTC-RCI-S	WTC-RCI-SF/SQF	WTC-RCI-D/DC/DM/DCM	WTC-IR	TC-IR-LB
Temperature sensor	✓	✓	✓		
Set-point offset		✓	✓	✓	✓
Fan speed	✓	✓	✓	✓	✓
With or without occupancy function		✓	✓	✓	✓
Operating mode		✓	✓	✓	✓
Light & blind control			✓		✓
Power supply from WTC	✓	✓	✓		
Quick connection	RJ45	RJ45	RJ45		
Local service tool			✓		
With or without motion sensor			✓		
LCS display			✓	✓	✓
Infrared receiver with status (LED & BUZZER)				✓	
Infrared receiver					✓

CONTROL SOLUTIONS



Aquasmart



Aquasmart Evolution is a complete hydraulic heating, ventilating and air conditioning (HVAC) system ideal for residential and light commercial applications from offices, commerce to hotels and hospitals. It offers perfect comfort for building occupants whilst optimising economical operation for applications up to 2500 m². Larger installations with multiple systems can be managed and integrated within a single Building Management solution thanks to the new BACnet option capability.

An Aquasmart system consists of up to 128 terminal fan coil units, served by up to two chillers or heat pumps (master-slave), to supply cooling and/or heating to occupied spaces and fresh air handling units. The system manager can fully integrate and control up to eight Carrier fresh air handling units*. Each fresh air plant can be associated with specific terminal fan coils and/or zones for optimum building use management with occupancy, controlling and minimising energy use.

Individual schedules can be set up and managed for each and all air treatment plants. The Aquasmart System Manager supplies building information enabling dynamic and precise control of the air handling units* night-time free-cooling feature to further reduce building energy consumption.

* If air treatment unit is not supplied by Carrier, integration is limited to control via a digital output for the main fresh-air unit.

FEATURES AND ADVANTAGES

- The Aquasmart Evolution system ensures significant energy savings combined with optimised user comfort by managing building zoning, occupancy and room temperatures in accordance with needs.
- Terminal fan coil units can be organised in up to 32 zones to optimise building management by zone requirement and according to building design conditions.
- The Touch Pilot System Manager – the brain and building user interface was designed to facilitate use and allow rapid access to manage and configure system operation to maximise energy savings at comfort conditions.
- System components are fitted with communicating controls allowing the System Manager to communicate with and obtain feedback on user needs and operation. Based on the system requirements the System Manager coordinates the system heating and cooling modes for maximum comfort and optimal energy consumption, respecting the comfort parameters and occupancy schedules for the building zones.
- The Aquasmart system offers affordable building HVAC system management featuring capabilities usually only available in more expensive solutions and requiring additional building-by-building programming development.

TOUCH
Pilot

System design layout and configuration guide

- The System Manager is connected to the system components via a communication bus, and allows control of all system and individual terminal operating parameters.
- System configuration is simple through easily accessible menus. Unit grouping is managed by the network and requires no specific wiring to allow easy reconfiguration to suit later building layout modifications.
- The Aquasmart Evolution components are delivered complete, configured and factory-tested.

Energy savings

- The Aquasmart system controls offer superior comfort levels. By optimising and controlling the system components building owners and occupants can save energy and reduce their energy bill, contributing to a reduction in building carbon emissions.
- System control saving possibilities are further enhanced with a range of significant energy-saving features available at equipment level, such as air handling unit with heat recovery technology, the use of reversible 30RQ air-to-water heat pumps for space heating, 61AF heat pumps for domestic hot water and a range of fan coil units with EC motor technology and variable fan speed control.
- Energy simulations conducted with a recognised software simulation program indicate that Aquasmart can achieve energy savings over a traditional non-communicating and non-optimised system. Case studies indicate that savings of 25% and beyond are possible. Each project merits its own assessment of the opportunities.



FEATURES AND ADVANTAGES

New System Manager

The Touch Pilot system manager is the user interface and allows building managers to control the Aquasmart system and associated components and features.

- Intuitive colour touch screen.
- A system set-up wizard leads installers through a number of easy intuitive steps to identify and configure the system and manage system set-up, operation and maintenance.
- Icon-driven menus easily and rapidly manage and maintain the HVAC system.
- Management of system parameters including cooling and heating set-points (terminals and cooling and/or heating plants) and occupied and non-occupied periods.
- Optimisation of energy consumption, monitoring of component operation and reporting of system faults.
- Management of occupied/unoccupied time schedules and smart start features to ensure that comfort requirements are met from the very beginning of the occupied period.

- The System Manager is compatible with a web browser, allowing user access to the system from a remote location such as a maintenance office within the building or from an off-site location where internet access is available. This facilitates ease-of-access and use and allows service and maintenance companies to offer remote service coverage without visiting the site, thus reducing carbon emissions due to transport.
- The availability of a new Carrier Apple application (HVAC smart browser) extends the accessibility to smart phones and tablets.



System selection

- The Aquasmart system is easy to select and configure with all units supplied from the factory with pre-installed, pre-configured and pre-tested controls and valves. The installer only needs to adjust the system parameters to the local building or application needs - a task made even easier with the New System Manager.

- Carrier has created a Quick Selection Guide that is available to rapidly identify and select the system components, facilitating the design process and saving time for designers and installers alike.
- Please contact your local sales office for a copy of this guide.

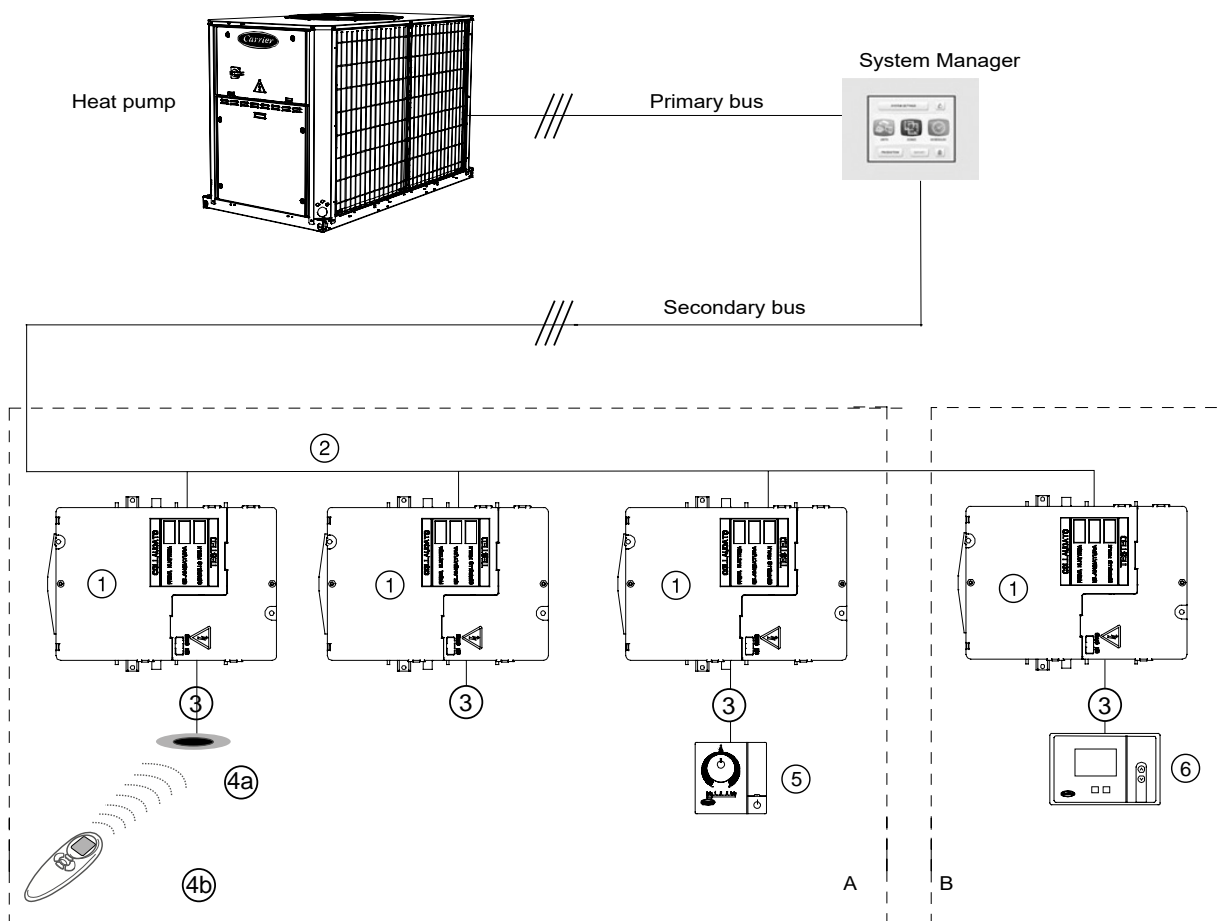
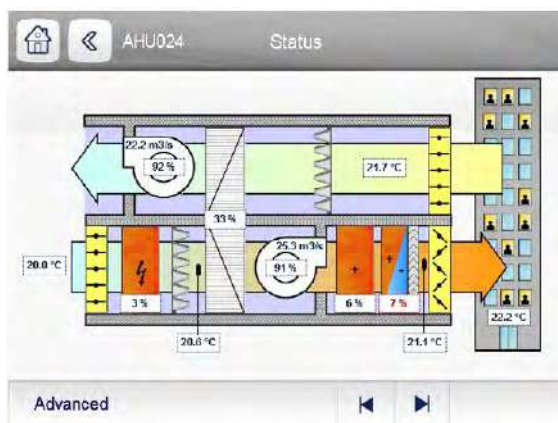


FEATURES AND ADVANTAGES

Building Management System Integration

- The latest release of the Aquasmart Touch Pilot system manager enhances the capabilities to integrate Aquasmart systems with Carrier or third-party building management system front-end software. The new BACnet option allows

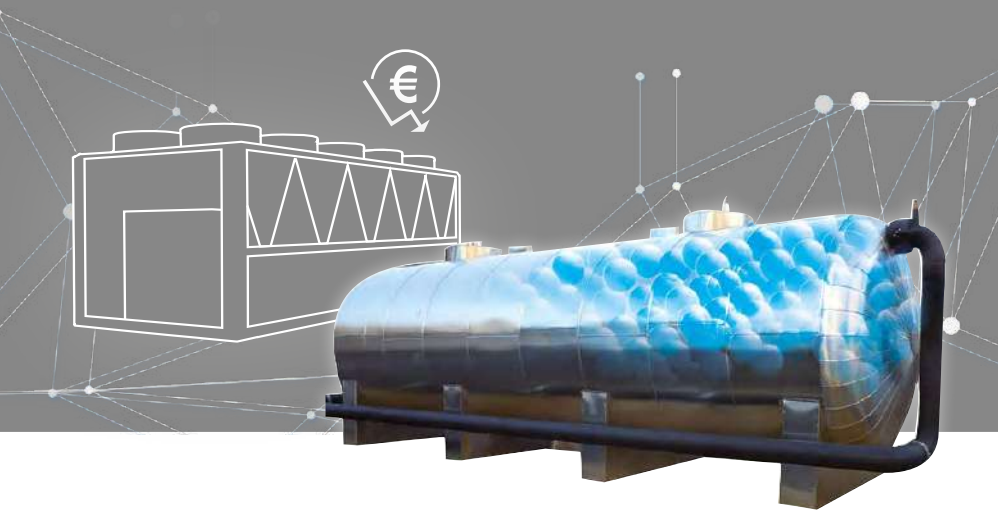
access to read and read/write system parameters from the building management system facilitating integration of Aquasmart within the overall building management.



Legend

- | | |
|-------------------------------|----------|
| ① NTC controller | ⑤ SUI |
| ② Secondary communication bus | ⑥ CRC2 |
| ③ User interface connection | A Room A |
| ④ Infrared controller IR2 | B Room B |

FOR HVAC SYSTEMS



TURNKEY SOLUTION
PROVEN TECHNOLOGY
UNIQUE EXPERTISE
SUSTAINABLY DESIGNED
REDUCED OPERATING COSTS
100% SMART -GRID COMPATIBLE
NON-STOP SUPPORT

Thermal Energy Storage

For HVAC systems with peak cooling demand >500 kW

In a global context affected by a continuous increase of electricity prices and the challenge of reducing our environment impact, energy must be saved and controlled. For energy demand management and sustainable approach to intelligent buildings, Carrier proposes the Thermal Energy Storage technology (TES) by latent heat.

Shift your electricity consumption from peak to off peak hour

The TES technology consists of Phase Change Materials (PCM) used to store in nodules the cooling thermal energy produced by chillers.

By storing the thermal energy during the night and releasing it during the day, this solution allows using the electricity at the lowest prices and avoids the peaks. By spreading the thermal energy production over 24 hours, TES can reduce the capacity of the chillers by 30% to 70%*.

*Source: Measured differences between equivalent systems designed with and without TES.

**MULTI
APPLICATION**


Industry


Office


Hospital

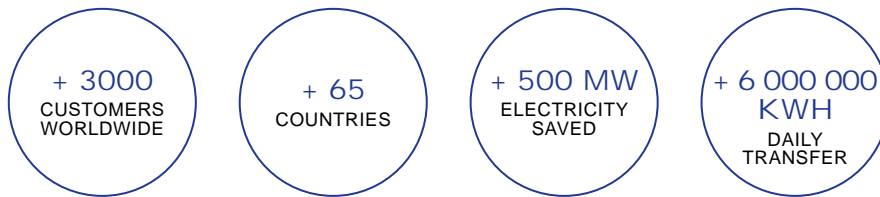

Commercial center


Data center


Hotel

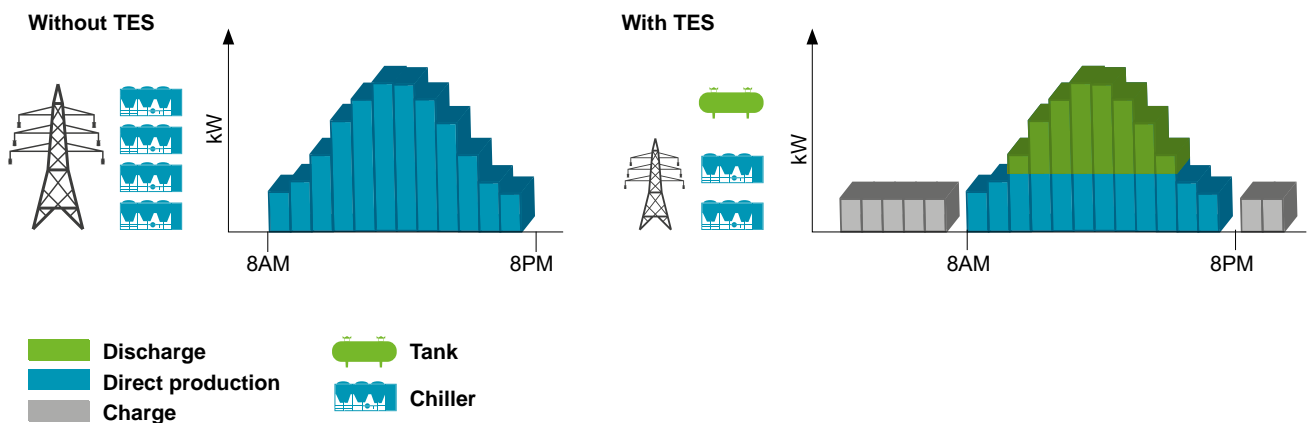

Cultural heritage

WORLDWIDE PLAYER IN THERMAL ENERGY STORAGE SYSTEMS



Source: Estimates based on existing TES solutions at customer sites.

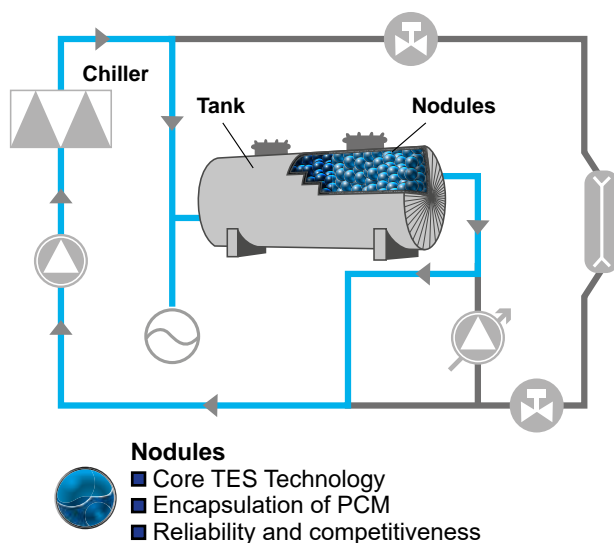
Histogram of a building's daily cooling needs and its electricity consumption profile



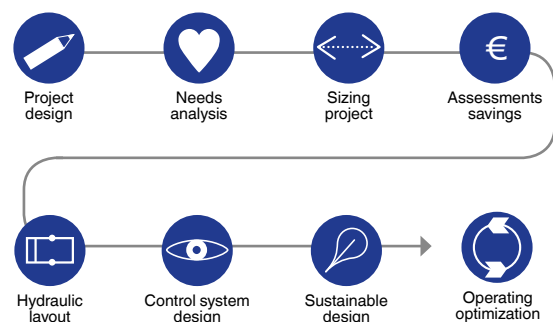
A CUTTING-EDGE HVAC SOLUTION

HVAC system designed with storage

The TES system along with your chillers is composed of one or several tanks filled with spherical elements called nodules that contain the Phase Change Materials (PCM). The use of PCM in nodules provides very high energy density and power exchange.



A turnkey solution from project design to implementation



Carrier optimizes the design and the operation of your installation for each application as commercial or industrial buildings.

We assist the consulting engineers by adapting the hydraulic layout to each project: application, operating conditions and specific customer needs. Where necessary complementary technologies such as free cooling or energy recovery are integrated.



