Databook

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Air to Water Small Inverter Chiller & Heat Pump

EWYK-CZ Heat Pump

EWAK-CZ Cooling Only

For cooling, heating and domestic hot water applications

- **Natural refrigerant R290 (Propane)**
- **Availability from Stock**
- **Full inverter technology**

R290

AHRI CERTIFIED® www.ahridirectory.org
Water-Cooled Water Chilling and Heat Pump Water-Heating Packages AHRI Standards 550/590 and 551/591

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

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DAIKIN

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1. General Characteristics

The new Daikin Small Inverter Chiller&Heat pump series (EWA/YK-CZ) is the result of careful design aimed to optimize energy efficiency and thus the total life cycle cost of the unit, with outstanding attention to safety measures.
The units feature high efficiency scroll compressors arranged in single configuration in combination with an Economizer for the vapour Injection on each refrigerant circuit, optimized condensing section with advanced technology condensing fans and plates evaporator with low refrigerant content and reduced pressure drops.

Low environmental impact
The use of natural refrigerants is a key step towards reducing the environmental impact of heating and cooling systems. Propane (R290) is a hydrocarbon refrigerant with a negligible Ozone Depletion Potential (ODP = 0) and a very low Global Warming Potential (GWP = 0,02), making it one of the most environmentally friendly options currently available.
F-GAS regulations, which entered into force in 2015, have progressively phased down high-GWP HFC refrigerants. By switching to R290, the carbon footprint of the unit is drastically reduced due to its minimal contribution to global warming. Despite being a hydrocarbon, R290 offers high energy efficiency, contributing to lower indirect CO_2 emissions from electricity consumption.
R290 is classified as A3 according to ISO 817, meaning it is flammable but non-toxic. This requires careful design and adherence to safety standards, yet it can be safely used in a wide range of applications, including air-to-water heat pumps, with proper system design, leak detection, and ventilation measures. Being a pure, single-component refrigerant, R290 is also easy to reclaim, recycle, and reuse, further enhancing its environmental benefits.
Daikin has long promoted the reduction of environmental impact across heating, cooling, and refrigeration systems. With extensive expertise in both refrigerant handling and equipment design, the company leverages natural refrigerants like R290 to provide high-efficiency solutions with a minimal carbon footprint.

Compared to other low-GWP alternatives to HFCs, R290 offers an unmatched combination of very low direct emissions, high energy efficiency, and excellent thermodynamic performance. While it requires adherence to safety standards due to flammability, its environmental benefits make it a preferred choice for sustainable cooling and heating applications.

Outstanding reliability
The units have one or two truly independent refrigerant circuits with one or two compressors to assure maximum safety for any maintenance, whether planned or not.

Condensation control
Units are equipped with fan speed modulation thanks to factory mounted inverter.

Fan silent mode
Units are standardly supplied with fan silent mode. This feature allows the user to set up detailed time bands to reduce fan rotation speed and therefore sound emission in those areas where night quietness is a mandatory requirement.
Fan Boost: the unit can go in fan Boost operation to be enabled in case of eventual external canalization just enabling the function in the controller. Refer to “Available fan static pressure correction factors” tables in case of additional pressure drop due to ducts or canalizations.

Superior control logic
The control logic is designed to provide maximum efficiency, to continue operation in unusual operating conditions and to provide history of unit operation. Easy interface with Bacnet or Modbus communications. Master/Slave operation is provided as standard allowing to connect up to 4 units working as single system.

Dynamic Condensing Pressure Management.
Superior software logic has been developed to get the highest efficiency at whatever operating condition: thanks to the Dynamic Condensing Pressure Management the unit controller adjusts the condensing pressure set-point to minimize the overall power input.

Code requirements – Safety and observant of laws/directives

All units are designed and manufactured in accordance with the following directives and harmonized standards:

Low voltage directive	DIRECTIVE 2014/35/EU
Electromagnetic compatibility (EMC)	DIRECTIVE 2014/30/EU
Machinery directive	DIRECTIVE 2006/42/EC
Pressure equipment design	DIRECTIVE 2014/68/EU
Ecodesign	DIRECTIVE 2009/125/EC
Ecodesign	REGULATION 813/2013
Safety of machinery	IEC EN 60335-2-40
EMC - Part 6-2	EN 61000-6-2
EMC - Part 6-4	EN 61000-6-4
Electrical and safety standards	EN 60335-2-40 / EN 378
Methods for calculation pressure relief devices	EN 13136

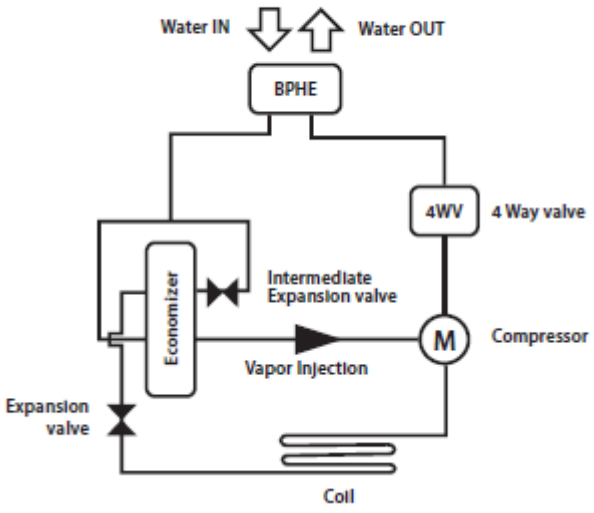
Certifications

Units are CE marked, complying with European directives in force, concerning manufacturing and safety.

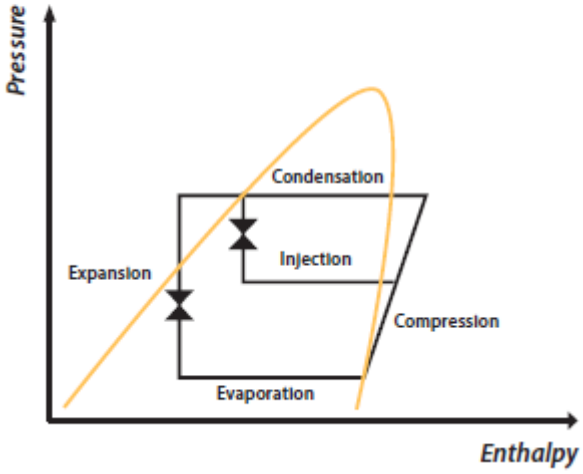
Compressors

Daikin Hermetic orbiting scroll type optimized for R290 operation and complete with motor over-temperature and over-current protection devices. Each compressor is equipped with an oil heater that keeps the oil from being diluted by the refrigerant when the unit is not running. Each compressor is mounted on rubber antivibration mounts and is standardly equipped with compressor jacket for a quite operation. Unit is delivered with complete oil charge.
The Variable Frequency Drive (VFD) is integrated in the electrical panel of the unit and it allows continuous modulation of compressor's rotational speed.
On site, unit can be set to operate in ***Boosted mode***, please check the performances using the Chiller selection software. Another feature to be set on site is the ***Constant Heating Capacity***, a standard control feature that has the purpose of keeping the heat capacity supplied by the unit unchanged as the ambient temperature decreases. This is achieved accelerating the compressor frequency to get as close as possible to the Heating Capacity at 40/45 °C OAT 7°C, while the ambient temperate decreases. Please check the CSS in the Energy Analysis section.
Compressor is combined with the ***Vapor Injection*** technology with an additiona Economizer Echanger us per below operating schemes:

Refrigerant piping diagram with economizer for Vapor Injection



Refrigerant cycle with Vapor Injection



Water side heat exchanger

The unit is equipped with a direct expansion plate-to-plate type evaporator optimized for R290 refrigerant operation. This heat exchanger is made of stainless-steel brazed plates and is covered with 20mm closed cell insulation material.
The evaporator flow switch is provided as standard feature, the water filter is available as accessory.

Air Side Heat Exchanger

The Air Side Heat Exchanger is manufactured with internally enhanced seamless copper tubes arranged in a staggered row pattern and mechanically expanded into lanced and rippled aluminum Air Side Heat Exchanger fins with full fin collars. An integral sub-cooler circuit provides sub-cooling to effectively eliminate liquid flashing and increase cooling capacity without increasing the power input.

Air Side Heat Exchanger fans

Fans are propeller type with high efficiency design blades developed by Daikin to maximize performances. The ATEX Fan motor is rated IP54. Standard units are equipped with EC motors to enhance efficiency at part load, reduce sound and extend operating range towards negative ambient temperatures.

Electronic expansion valve

The unit is equipped with electronic expansion valves to achieve precise control of R290 refrigerant mass flow. As today's systems require improved energy efficiency, accurate temperature control, wide range of operating conditions, the application of electronic expansion valves becomes mandatory.
Electronic expansion valves have unique features: short opening and closing time, high resolution, positive shut-off function to eliminate use of additional solenoid valve, continuous modulation of mass flow without stress in the refrigerant circuit and corrosion resistance stainless steel body. If compared to traditional thermostatic valves, electronic expansion valves allow the system to work with low condenser pressure (wintertime) without any refrigerant flow problems and the perfect control of the chilled water temperature.

Refrigerant circuit

Each unit has one or two refrigerant circuit and each one includes:

- Compressor
- Refrigerant
- Water side heat exchanger
- Air side heat exchanger
- Electronic expansion valve
- Filter drier
- Charging valves
- Pressure switch
- Pressure transducers

Electrical panel

Power and control are in the main panel that is manufactured to ensure protection against all weather conditions. The electrical panel is IP54 and (when opening the doors) internally protected against possible accidental contact with live parts. The main panel is fitted with a main switch interlocked door that shuts off power supply when opening.

MicroTech 4 controller

The MicroTech 4 controller is installed as standard.
It gives the possibility to check the most relevant control parameters and modify unit set-points. Additionally, temperatures and pressures of water, refrigerant and air, programmable values, set points can be accessed based on a preset list of user profiles. A sophisticated software with adaptive logic, selects the most energy efficient combination of compressors, EEXV and fans to keep stable operating conditions to maximize unit energy efficiency and reliability.
MicroTech 4 protects critical components based on external signals from onboard sub-system (such as motor temperatures, refrigerant and oil pressures and temperatures, correctness of phase sequence, pressure switches and freezing of heat exchanger).
The input coming from high-pressure switches cuts all digital output from the controller in less than 50ms, as an additional security for the equipment. Floating point calculations supported for increased accuracy in Pressure / Temperature conversions.

Safety device / logic for each refrigerant circuit

- high pressure (pressure switch)
- high pressure safety valves
- high pressure (transducer)
- low pressure (transducer)
- fans circuit breakers
- low pressure ratio

System security

The following securities are available:

- low ambient temperature lock-out
- freeze protection.

2. F-Gas Information

Additional information related to REGULATION (EU) 2024/573 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 7 February 2024 on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014.

Unit Model	Refrigerant type	Refrigerant GWP	N° of circuits	Refrigerant charge Circuit 1 [kg]	Refrigerant charge Circuit 2 [kg]
EWYK020CZ N/P -A1	R290	0,02	1	2,95	-
EWYK025CZ N/P -A1	R290	0,02	1	2,95	-
EWYK030CZ N/P -A1	R290	0,02	1	2,95	-
EWYK040CZ N/P -A1	R290	0,02	1	3,05	-
EWYK050CZ N/P -A2	R290	0,02	1	2,95	2,95
EWYK060CZ N/P -A2	R290	0,02	2	2,95	2,95
EWYK070CZ N/P -A2	R290	0,02	2	2,95	3,05
EWYK085CZ N/P -A2	R290	0,02	2	3,05	3,05

Actual refrigerant charge depends on the final unit construction, details can be found on the unit labels.

3. Daikin Safety Shield

The use of propane (R290) as a natural refrigerant offers outstanding environmental performance but requires a rigorously engineered safety approach.
For this reason, the modular reversible air-to-water heat pump range is designed according to an advanced, multi-layer safety concept that ensures maximum protection for people, property, and equipment throughout the entire product life cycle.
This safety philosophy goes beyond regulatory compliance, embedding risk prevention directly into product design, manufacturing, installation, operation, and end-of-life management.
Safe installation, operation, and maintenance require full compliance with the information and precautions provided in the official product documentation (IOM/OM).

Life-Cycle Safety Approach

Unlike conventional safety strategies that focus mainly on unit operation, the Daikin safety concept for R290 modular heat pumps is based on a holistic, life-cycle-oriented methodology.
Safety measures are implemented at every critical stage:

- **Manufacturing**

Assembly and testing are performed in dedicated R290-certified production areas, equipped with continuous gas detection systems and controlled ventilation to prevent refrigerant accumulation.

- **Transport and Storage**

Units are shipped in a secure condition, with refrigerant safely contained in dedicated onboard tanks, minimizing risks during logistics and handling.

➢ **Installation and Commissioning**

Commissioning procedures are restricted to trained and certified personnel. System activation requires authorized tools and digital access, ensuring correct installation, parameter configuration, and safety verification.

➢ **Operation and Maintenance**

Continuous monitoring of safety devices is ensured during normal operation. Critical safety systems remain active even during power outages, maintaining protection under all conditions.

➢ **Service and Troubleshooting**

The modular design allows safe access to electrical and refrigerant components while preserving physical separation and containment of flammable refrigerant zones.

➢ **Decommissioning and Recycling**

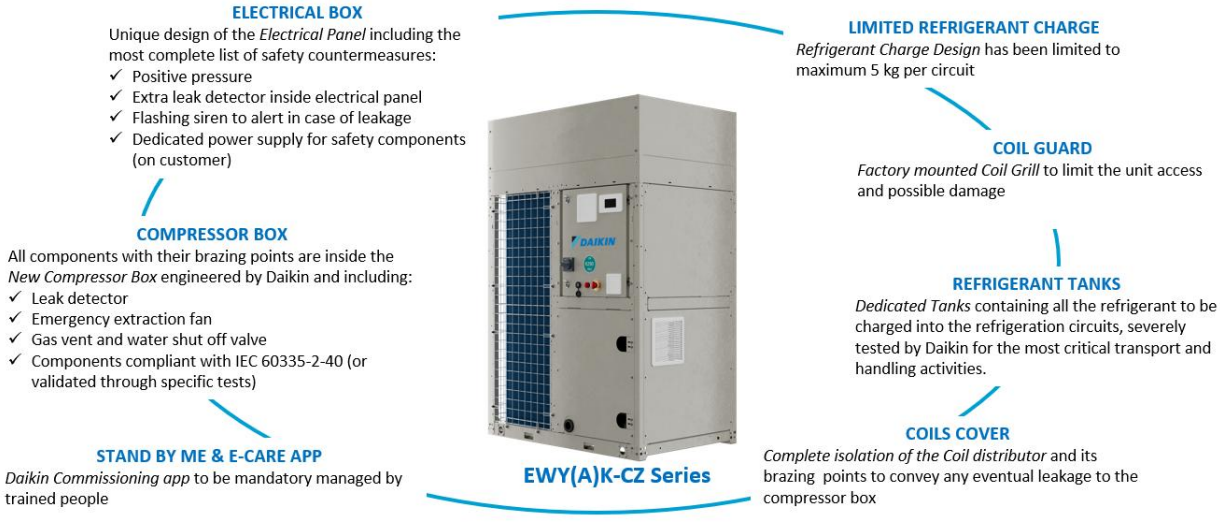
Dedicated procedures are defined for safe refrigerant recovery, component disassembly, and environmentally responsible disposal at end of life.

This comprehensive approach guarantees consistent safety integrity from factory to recycling.

➢ **Integrated Safety Architecture**

Each module of the reversible air-to-water heat pump is equipped with multiple, redundant safety components, designed to prevent ignition risks and ensure early detection of any propane leakage.

Key safety features include:



- **Compressor box extraction fan**
  Provides continuous ventilation and effective dilution in the event of refrigerant leakage.

- **Electrical panel extraction fans**
  Prevents gas accumulation within electrical panel.

- **Redundant gas leak detectors**
  Installed in critical zones such as the compressor box and electrical panel to ensure early detection.

- **Pressurized electrical cabinet**
  Prevents ingress of refrigerant into electrical cabinet.

- **Water leak separator**
  Detects any presence of propane in the hydraulic fluid, enabling early identification of refrigerant leaks into the water circuit.

- **Visual and audible alarm system**
  Ensures immediate local warning in case of detected leakage.

- **Coil covers**
  Complete isolation of the Coil distributor and its brazing points to convey any eventual leakage to the compressor box to be detected by the leak detector.

- **Sealed refrigerant tanks (On board)**
  Ensure safe containment of propane during transport, installation, and commissioning.

- **Protections against freezing**

Freeze protection measures as standard
To prevent freezing of the plate heat exchanger, the unit is equipped with below protection measures:

- **Flow switch** – The flow switch is set to stop the unit before the water flow rate drops to a level that could lead to freezing conditions inside the plate heat exchanger (please check IOM for flow switch setting);

- **Evaporator electric heater** – An electric heater installed on the plate heat exchanger to prevent freezing.

- **Pump recirculation logic** – Automatic pump enabling to recirculate water in case of critical water temperature (close to freezing point).

These measures are designed to prevent freezing during normal system operation.

- **Gas separation countermeasure on the water side**

Dedicated gas vent valve factory mounted on the water-side pipe and confined inside the compressor box so that any leak in the water is then expelled and detected by the leak detector located in the compressor box. The eventual leakage is detected by the compressor box leak detector that is activating the extraction fan and an automatic shut off valve that is isolating the unit from the water loop.
The gas vent valve is **designed to detect leakage with NO FLOW in the heat exchanger, so when the water pump is turned OFF.**

It provides an additional independent safety layer to detect **propane presence in the water circuit** in the unlikely event of plate heat exchanger breakdown (i.e. water freezing of the heat exchanger)**.**

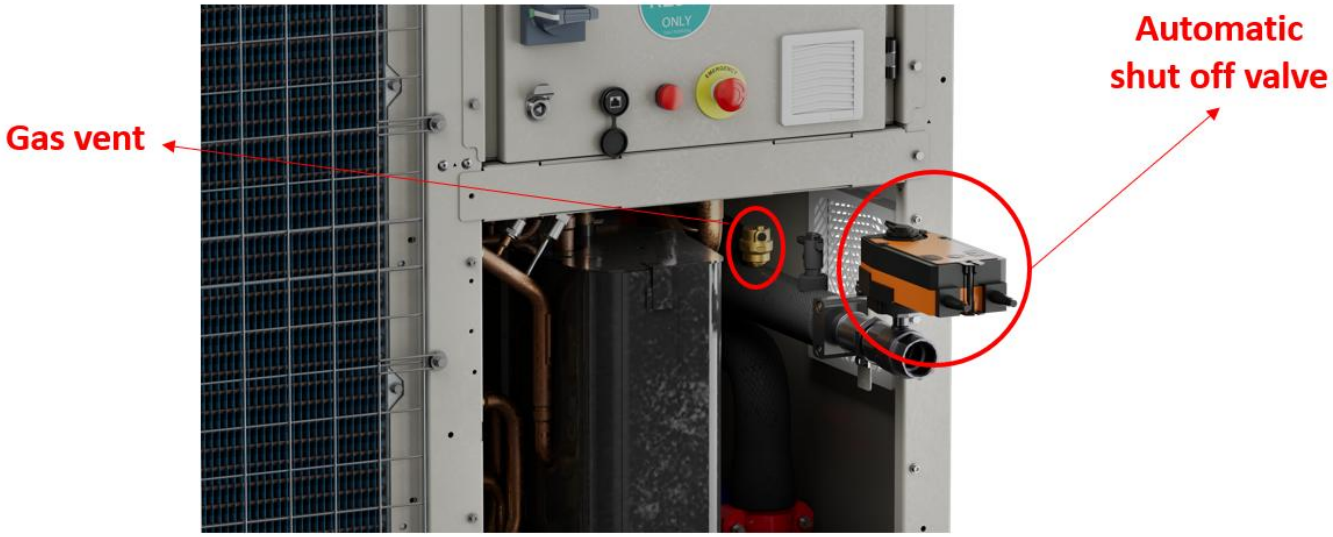
Without this device, in case of heat exchanger breakdown, due for example to water freezing in case of abnormal system operation, refrigerant may migrate in the water circuit. Mixture of water and refrigerant may reach the internal units.

The Gas Separation countermeasure integrates:

- **Gas vent**, allowing separation of possible refrigerant from the water circuit (standard and Factory mounted). The gas vent can work with glycol.

- **Refrigerant leak detector**, designed to detect the presence of propane inside the compressor box (standard and Factory mounted).

- **Automatic shut off valve**, designed to isolate the unit where the leak is detected from the water loop (standard, shipped loose, to be mounted and cabled on site).



Customer Value

Enhanced system safety through **early detection of refrigerant leakage** into the hydraulic circuit, when the unit is not powered and no water circulation is present **(Pump turned OFF – NO WATER FLOW CONDITION).**
Although there are no current regulations requiring manufacturers to equip/supply an automatic refrigerant-water separation system on board the unit, Daikin products have been designed with a dedicated system for this purpose.
Furthermore, unlike what is typically offered on the market, **Daikin equips this system as a standard**.
If additional requirements are present, the customer will need to implement an appropriate system solution to ensure separation of any potential gas leakage from the water supplied to the terminals.
The installer will have to adopt any additional solution or component in the plant if the safety features provided by the factory are not in line with the project requirements (i.e. detection of refrigerant leakage into the hydraulic circuit, when the unit is powered and water circulation is present).
To ensure continuous operation under all conditions, the leak detector included in the gas separator box is **powered by a dedicated power supply as all safety devices of the unit**.
Please see next section for further details about this feature.

- **Dedicate power supply for safety devices**

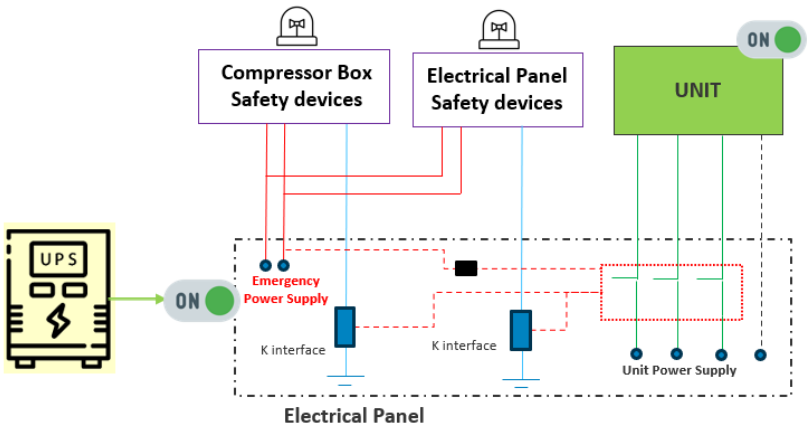
All safety devices must always be powered by an independent 230V power supply provided by the customer trough UPS (Uninterruptible Power Supply) in order to guarantee proper operation under all conditions, including emergency situations or main unit power failures. This dedicated power line always ensures continuous monitoring and activation of the safety systems. In the event that the power supply to the safety devices is not active, interrupted, or improperly connected, the unit will not start and will remain in a safe standby condition to prevent unsafe operation.
Safe installation, operation, and maintenance require full compliance with the information and precautions provided in the official product documentation (IOM/OM).

To ensure operation in the event of a power failure of the Emergency power line, the use of an UPS is mandatory and the minimum requirements to be respected are:

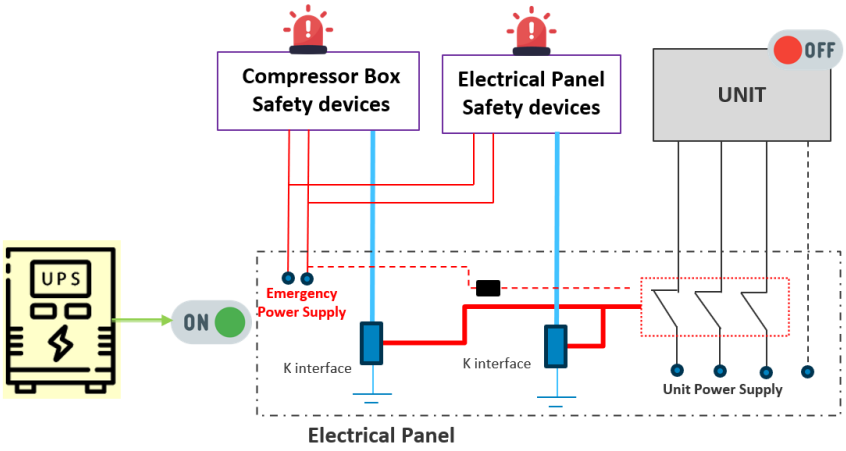
-UPS- input: 230 V AC, output: 230 V AC / 1500 VA (Battery module (device with 2 batteries) 48 V DC, 7 Ah) [covering up to 1 h of shut down]

-UPS- input: 230 V AC, output: 230 V AC / 2500 VA (Battery module (device with 6 batteries) 48 V DC, 7 Ah) [covering up to 5 h of shut down]"

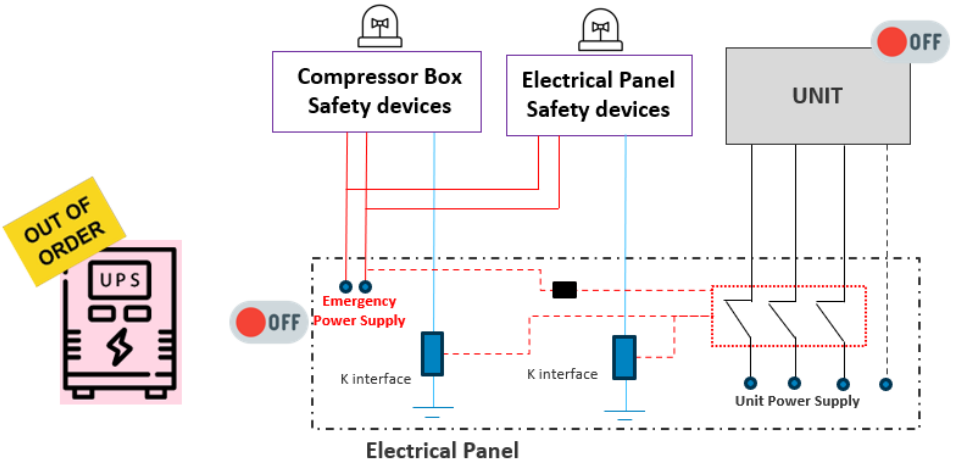
Unit Running – No Alarms



Propane Leak – Safety System Activation



UPS not available – Unit shut down / Startup blocked



Safety Beyond Regulatory Compliance

The safety concept for R290 modular heat pumps is developed according to proactive safety engineering principles and:

- fully complies with EN 378 and IEC 60335-2-40 standards.
- is derived from a structured Health Hazard Assessment (HHA) methodology, ensuring that risk mitigation is embedded from design to operation.
- reflects a zero-compromise approach to safety, reliability, and product quality.

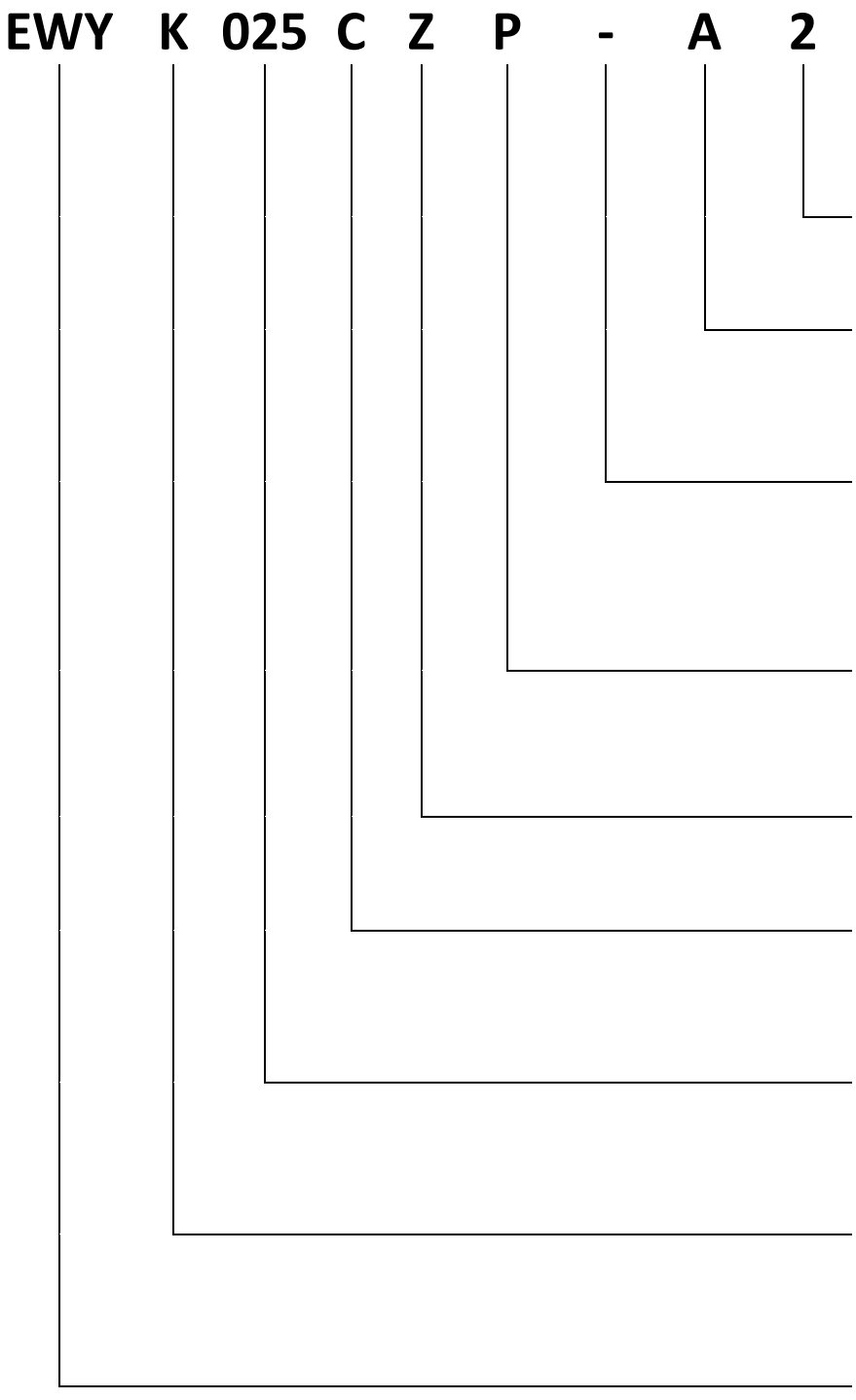
Certified peace of mind

By combining natural refrigerant efficiency with an advanced safety architecture, the modular reversible air-to-water heat pump range delivers:

- Industry-leading safety performance
- High operational reliability
- Full regulatory compliance
- Maximum environmental benefit of R290 refrigerant

This results in certified peace of mind for designers, installers, and end users, making the system a benchmark solution for sustainable and safe heating and cooling applications.
Safe installation, operation, and maintenance require full compliance with the information and precautions provided in the official product documentation (IOM/OM).

4. Nomenclature



Digit 13: Number of independent refrigerant circuit
1 or 2

Digit 12: series revision

A = first revision

Digit 11: Option Configuration

- = No option

Digit 10: Pump Configuration

P = Standard lift Inverter Pump
N = No Pump

Digit 9: Compressor control

Z = with VFD

Digit 8: Range

C = Small Inverter Range

Digit 5 -7: capacity in kW at standard conditions
20 up to 85

Digit 4: Refrigerant

K = R290

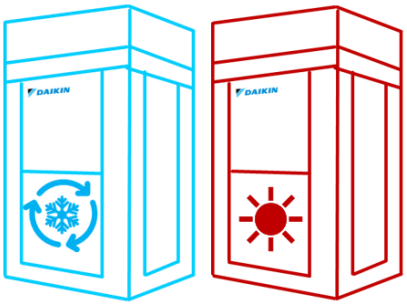
Digit 1 – 3: Unit type

EWY = Air to water heat pump
EWA = Air to water cooling only

5. Standard components and Features

Hour run meter (provided as standard)
Main switch interlock door (provided as standard and to be mounted on site)

Master / Slave (provided as standard)
The DAIKIN Master/ Slave (M/S) control. Once set which unit has the role of master, the other(s) will operate as slave(s) based on the inputs provided by the master.
The heat pumps must be installed in parallel in the hydronic plant.
Thanks to Master/Slave control it is possible to balance the working hours of the compressors enhancing reliability and extending the life of the system.
In order to operate in Master/Slave mode an additional probe (available as an accessory EKRTSMSP) must be installed on the common line of the plant and connected to the master unit.
Master Slaves control logic has been improved in order to optimize the Defrost management to avoid plant simultaneous de frost.



20mm evaporator insulation (provided as standard)
The heat exchanger is fitted with 20mm closed cell insulation material.

Brine Version (provided as standard)
For operation with temperature at the outlet of the evaporator below +4°C the unit must operate with a glycol mixture (with ethylene or propylene glycol) and the Brine Version to be enabled in the controller.
Alarm from external device (provided as standard)
The unit controller is able to receive an external alarm signal. The user can decide whether this alarm signal will stop the unit or not.

Water filter (provided as standard and to be mounted on site)
The water filter removes impurities from the water by means of a fine physical barrier. It must be installed on the water pipe connected to the heat exchanger inlet. Water filter mesh is 1 mm.
The filter is shipped loose. NOTE: The installation of the water filter is mandatory.

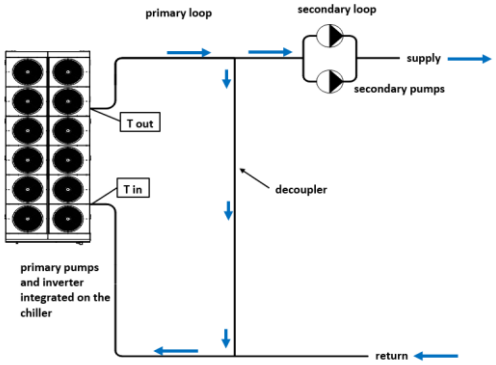
Water Shut off valve (provided as standard and to be mounted on site)
Shut off valves are delivered with the unit and to be field installed.

Evaporator flow switch (provided as standard, factory mounted)
It is always factory mounted on the leaving water side and cabled.

Hydronic kit
Unit mounted hydronic kit is available for the P version in standardized solution.
This pump kit provides an average available head of 150 kPa at chiller standard conditions.
The kit is completed with mechanical elements specified in the Piping diagram.
The hydronic kit is protected from freezing as standard with insulation on the pipes, expansion vessel and BPHE, with additional heater tapes on the expansion vessel and BPHE as well.

Inverter for pump (provided as standard for P version)
The Inverter kit is standardly associated with the hydronic kit. The inverter for the pump has been designed for operation at an ambient temperature of max 50 ° C; continuous operation at full load at an ambient temperature of 50 ° C will reduce the useful life of the inverter itself.
The inverter pump can be used for the following purposes:
- Adjusting the water flow rate during unit commissioning.
- Set a “thermostat” pump speed. With the inverter kit, it is possible to manage two different water flow settings: a setting for water flow during the "Thermostat ON" mode (when the chiller is actually providing cooling to the plant), and a set for the “thermostat off” mode (when the plant load is satisfied and the compressors are waiting to start). This feature allows to achieve energy saving on plant operating cost by reducing the speed of the pumps when the chiller has reached the set point.
- Control variable flow on primary loop based on chiller delta-T (available for single chiller installation only)

Having the unit with the inverter kit for the on-board pump it is possible to manage a variable water flow rate for the primary loop. This function is available as standard when the hydronic kit plus inverter are selected.
The standard feature is applicable for single unit installation only. In case of multiple chillers installation an additional control is needed.
The variable flow control is suitable for primary/secondary plant but can not be used in Variable Primary Flow chilled water system configurations.



In a Primary-Secondary plant configuration a key component is the decoupler. The decoupler is always open (no valve must be installed). The aim of the decoupler is to allows the primary and secondary pumps to operate at different flow rates. This is necessary because the primary pumps and secondary pumps are managed differently and so the primary and secondary flow rate are practically never the same. Specifically, the primary flow rate is managed based on the chiller delta-T (Tout - Tin), the secondary flow rate is regulated to maintain the necessary pressure differential in the secondary loop. The direction of the water flow through the decoupler must be always from supply to return. To ensure this the primary flow rate must be higher than the secondary flow rate. If this condition is not respected the warmer return water will flow backwards through the decoupler and raise the supply water temperature. Due to the higher temperature of the supply water the terminal (users) unit control will open the valves asking for higher water flow rate. The secondary pumps will speed up increasing even more the water flow rate on secondary plant making the situation even worse (secondary flow rate >> primary flow rate). As result there will be no control on the supply water temperature losing effectiveness of the cooling plant.
On the other side any excess in the primary flow, vs. secondary flow, flows through the decoupler from the supply to the return mixing with the warmer return water. To reach this target is very important to have minimum pressure drop in the decoupler that needs to be sized to reach a pressure drop that should not exceed 4÷5 kPa for the flow rate of the primary pump.
Activating the variable flow control the chiller will modulate the water flow rate based on the chiller delta-T.
When the secondary loop will reduce the water flow rate (because the plant load decrease), the water flow rate in the decoupler (always from supply to return) increases. The return water temperature mixes with the supply water from the decoupler reducing the inlet water temperature and so the delta-T on the chiller. As consequence the chiller control reduce the speed of the pump, reducing the primary flow rate.
On the opposite, when the flow rate on secondary flow increases also the water temperature at the chiller inlet increase (increasing the delta-T); therefore, the chiller control will increase the water flow rate.

ANTIFREEZE PROTECTION ELECTRIC HEATER (Factory Mounted as STD)
Electric heaters are placed in the water side components to protect vital parts of the hydraulic system inside the unit including the BPHE. These Electric heaters will only protect internal parts of the unit. It can't protect field installed parts outside the unit. Field heater tapes must be provided by the installer.

6. Accessories

Accessories	
EKRNORKITM	Nordic Kit for SIC R290 MONO
EKRNORKITD	Nordic Kit for SIC R29 DUAL
EKRTSMSP	Temperature sensor for M/S and sCM configuration
EKSCSGW	Smart Grid Ready box
Communication Modules & Panels	
EKRSCIOR	IO EXTENSION FOR R290 UNIT
EKRSCM	IO EXTENSION FOR sCM
EKRSCTDH	TEMPERATURE SENSOR FOR DHW APPLICATION
EKRSCSMR	Kit DoS router with antenna without SIM card
EKRSCDPR	Differential pressure trasduced for VPF for R290
EKRCM200J	Modbus RTU communication module
EKRCMBACMSTP	BACNet MSTP communication module
EKRCMBACIP	BACnet/IP communication module
EKRDIPM05	INTELLIGENT PUMP MANAGER FOR ICM 5 PUMPS
EKRDIPM10	INTELLIGENT PUMP MANAGER FOR ICM 10 PUMPS
EKRDISM	INTELLIGENT SECONDARY MANAGER FOR ICM
EKRSCPCS	Local/remote display external HMI
EKRVALVEKITM	KIT DIVERTER FOR SAFETY VALVE AND COLLECTOR MONO
EKRVALVEKITD	KIT DIVERTER FOR SAFETY VALVE AND COLLECTOR DUAL

MOBILE APP
Mobile APP access is available thanks to the Wi-Fi stick provided as standard and factory mounted.
mAP - Mobile APP for HMI controller extension toward endusers: HMI APP available on smartphone and tablet devices for close monitoring of unit parameters up to 5 m.

Variable Primary Flow
By selecting EKRSCIOR the chiller can manage the Variable Primary water flow according to the differential pressure measured in a specific point of the plant, selected by the plant designer. The differential pressure transducer is available as an accessory EKRSCDPR. However, not providing the connection capillaries between the evaporator and the accessory itself. Once installed, the differential pressure transducer must be connected to the unit. As an alternative the unit controller can receive directly the differential pressure value from an external BMS communicating with the standards communication protocols (eg. MODBUS).
The Variable Primary Flow (VPF) configuration is an alternative to the more "traditional" Primary/Secondary (P/S) plant configuration.

Daikin Applied Europe is not responsible for the plant configuration and cannot confirm the optimal position of the differential pressure transducer.

A bypass line (field supply) needs to be installed which always guarantees that the minimum water flow of the chiller is supplied (refer to the "Operating limit" chapter for indication on minimum water flow). The bypass valve will be an ON/OFF normally closed valve controlled by the chiller. In case the minimum water flow allowed is not reached, the chiller will open the bypass line restoring the water flow above the minimum value.
In case of multiple units' installations in a primary only plant, to control the pump speed an external control is required. Master/Slave function does not support primary only chilled water systems with variable flow operation. For unit installed in Primary/Secondary plants the option Variable Primary Flow is not applicable. In this case an external control is required.

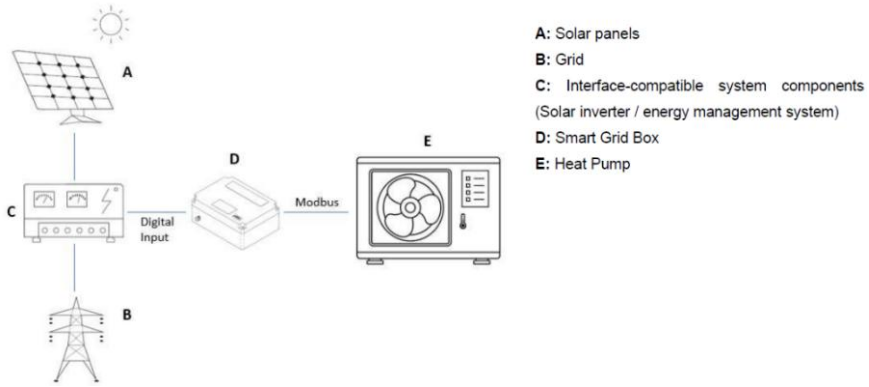
Note: VPF can be used only for units installed in a primary only plant to be controlled according to VPF strategy. Master/Slave function does not support primary only chilled water systems with variable flow operation. To use VPF for multiple units please select the sCM accessory.
VPF is not compatible with DHW operation.

EKRNORKIT – NORDIC KIT for Mono and Dual Circuit units
Specific kit designed to work in cold climate application and for the use of R290 units, to avoid ice and snow formation in the bottom of the unit:

EKRTSMSP– Temperature sensor for M/S and sCM configuration
Temperature sensor to be connected to the master unit and in the common leaving water collector.
Quantity:
1x EKRTSMSP to be ordered only for the master.

EKSCSGW - Smart Grid Ready box

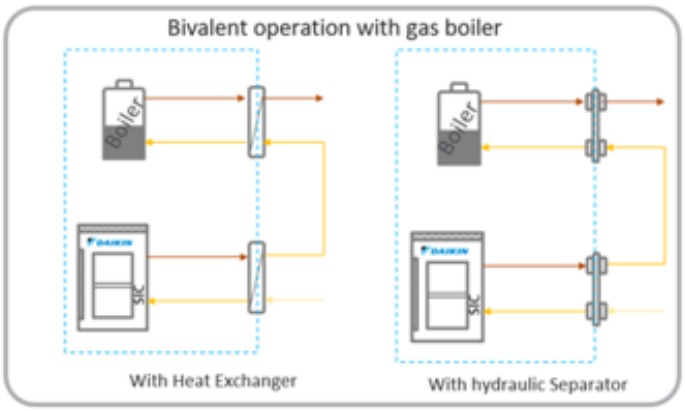
The Smart Grid Box is an accessory that allows the integration of the Heat Pump control for a Smart Grid application.

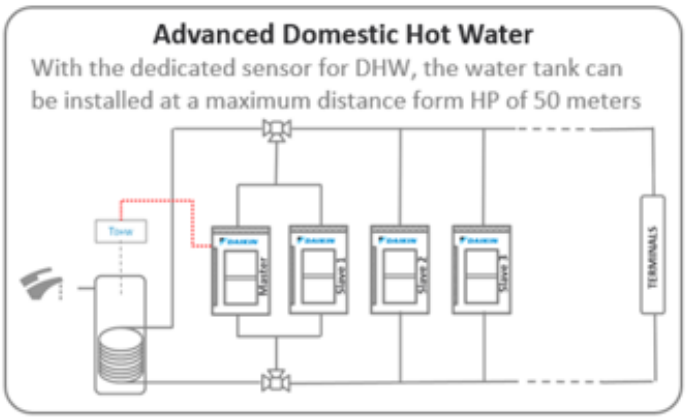


To integrate the Smart Grid Box into the EWA/YK-CZ P/N, the system layout should be designed to be compatible with these new control functionalities. The interface-compatible system components (not supplied by Daikin Applied Europe) can transmit digital signals to the Smart Grid ready box of the heat pump, in order to control it with regard to energy consumption or other different target variables.

EKRSCIOR - IO EXTENSION FOR R290 UNIT

Additional module for the controller (to be mounted on site) extending the numbers of Inputs/Outputs (I/O).
This additional module for the controller is extending the numbers of Inputs/Outputs for Variable Primary Flow, Bivalent operation with gas Boilers and Advanced DHW. VPF is not compatible with DHW and Bivalent operations.
1x EKRTSMSP to be ordered only for the master.





EKRSCM - IO EXTENSION FOR sCM - smart Chiller Manager

Additional module for the controller (to be mounted on site) to extend the Master&Slave functionalities up to 8 units.
Selecting the accessory all the functionalities of EKRSCIOR are included, so they are not compatible.
1x EKRSCM to be ordered for each unit.

EKRCM200J - Modbus RTU communication module

Additional communication module to enable Modbus RTU communication protocol on the unit.
Quantity:
1* EKRCM200J on the master unit to integrate the master data and some data of the slaves.
1* EKRCM200J for each unit for complete integration.
EKRCM200J not compatible with EKRCMBACMSTP and EKRCMBACIP

EKRCMBACMSTP - BACNet MSTP communication module
Additional communication module to enable BACNet MSTP communication protocol on the unit.
Quantity:
1* EKRCMBACMSTP on the master unit to integrate the master data and some data of the slaves.
1* EKRCMBACMSTP for each unit for complete integration.
EKRCMBACMSTP not compatible with EKRCM200J and EKRCMBACIP

EKRCMBACIP – BACnet/IP communication module
Additional communication module to enable BACNet IP communication protocol on the unit.
Quantity:
1* EKRCMBACIP on the master unit to integrate the master data and some data of the slaves.
1* EKRCMBACIP for each unit for complete integration.
EKRCMBACIP not compatible with EKRCMBACMSTP and EKRCM200J

EKRSCSMR - Kit DoS router with antenna without SIM card
Additional router 4G connected to the unit to enable the connection to Daikin on Site cloud. ATEX anthenna to be mounted on top of the unit. No SIM card from the factory and to be managed on site by the end user.
A subscription is needed.
Quantity:
1* EKRSCSMR on the master unit to integrate the master data and some data of the slaves.
1* EKRSCSMR for each unit for complete integration.
No incompatibilities

EKRSCDPR - Differential pressure transducer for VPF for R290
Differential pressure sensor, one placed on the most disadvantaged terminal of the plant for Variable Primary Flow application and one in the Brazed plate heat exchanger of each unit.
Quantity:
1x EKRSCDPR to be ordered for each unit + 1x EKRSCDPR to be placed in the most critical point of the plant.

EKRDIPM05 – INTELLIGENT PUMP MANAGER FOR ICM 5 PUMPS
External control panel to manage up to 5 manifolded pumps.
Quantity:
1x EKDIPM05 for each plant to control up to five pumps.

EKRDIPM10 – INTELLIGENT PUMP MANAGER FOR ICM 10 PUMPS
External control panel to manage up to 10 manifolded pumps.
Quantity:
1x EKDIPM10 for each plant to control up to five pumps.

EKRDISM – INTELLIGENT SECONDARY MANAGER FOR ICM
External control panel that can manage secondary water circuit devices such as Pumps, Bypass Valves, Sensors and Energy Meters in a building water distribution system.
Quantity:
1x EKRDISM for each plant to control up to five pumps.

EKRSCTDH – TEMPERATURE SENSOR FOR DHW APPLICATION
Temperature sensor to be connected to the master unit for DHW applications and for a distance between unit and tank of up to 50m. This accessory can be ordered only in combination with EKRSCIOR.
Quantity:
1x EKRSCTDH only for the Master

EKRSCPCS - Local/remote display external HMI

Dedicated external and remote HMI to be used outside the safety zone. To use the remote screen, the cable of the standard unit HMI mounted on board must be disconnected and to be cabled to the remote one.

Not ATEX components and to be mounted outside the safety zone.

EKRVALVEKITM - KIT DIVERTER FOR SAFETY VALVE AND COLLECTOR

A dedicated kit of diverter for Safety Valves and the collector pipes for the refrigerant. The kit is available for the Mono and Dual circuit units.

1x EKRVALVEKITM for each unit.

7. Technical data

EWYK~CZ P Heat Pump with Pump On Board

		EWYK020CZ P-A1	EWYK025CZ P-A1	EWYK030CZ P-A1	EWYK040CZ P-A1	EWYK050CZ P-A2	EWYK060CZ P-A2	EWYK070CZ P-A2	EWYK085CZ P-A2
COOLING PERFORMANCE 12/7 35°C									
Capacity – Cooling (1)	kW	**17.81**	**21.33**	**24.88**	**35.06**	**44.29**	**51.83**	**60.76**	**72.43**
Capacity control - Type		Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled
Unit power input - Cooling	kW	5.05	6.37	8.03	10.88	12.77	16.21	20.07	23.56
EER (1)		**3.52**	**3.35**	**3.10**	**3.22**	**3.47**	**3.20**	**3.03**	**3.07**
SEER (1) (2)		5.37	5.41	5.25	5.8	5.54	5.21	5.33	5.48
IPLV		5.67	5.09	5.13	5.56	5.24	5.19	5.28	5.43
Flow rate (1)	l/s	0.84	1.01	1.18	1.66	2.1	2.46	2.88	3.44
Pressure Drop (1)	kPa	13.65	18.26	23.16	25.9	29.75	40.74	55.74	39.31
HEATING PERFORMANCE 40/45 7°C									
Capacity - Heating (3)	kW	**19.88**	**24.51**	**30.21**	**39.55**	**49.25**	**58.67**	**70.39**	**82.63**
Unit power input (3)	kW	5.09	6.40	8.22	10.92	13.10	16.00	20.55	23.95
COP (3)		**3.91**	**3.83**	**3.68**	**3.62**	**3.76**	**3.67**	**3.43**	**3.45**
SCOP HT 65°C (5)		3.02	3.06	3.03	3.14	3.02	3.00	3.05	3.12
ηs,h (6)		117.6%	119.3%	118.2%	122.7%	117.8%	117.2%	119.0%	121.6%
SCOP MT 55°C (5)		3.50	3.56	3.51	3.61	3.50	3.45	3.50	3.55
ηs,h (6)		137%	139%	137%	141%	137%	135%	137%	139%
SCOP LT 35°C (4)		4.75	4.82	4.68	4.74	4.62	4.52	4.57	4.66
ηs,h (6)		187%	190%	184%	187%	182%	178%	180%	183%
Flow rate (3)	l/s	0.97	1.2	1.47	1.92	2.39	2.85	3.42	4.01
Pressure Drop (3)	kPa	11.38	16.77	24.4	32.82	35.65	49.62	70.12	49.95
AIR HEAT EXCHANGER									
Type *		Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes
WATER HEAT EXCHENGER		Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate
FAN									
Type *		Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Quantity	No.	1	1	1	2	2	2	3	4
SOUND LEVEL									
Sound Power level Full load HEATING=COOLING (7)	dB(A)	84	84	84	85	87	88	88	89
Sound Power Level EN12102 Part load (8)	dB(A)	68	68	69	69	71	71	71	71
DIMENSIONS									
Height	mm	1877	1877	1877	1877	1877	1877	1877	1877
Width	mm	1252	1252	1252	1752	2506	2506	3006	3507
Length	mm	804	804	804	804	816	816	816	816
COMPRESSOR Type		Inverter Scroll with Vapour Injection							
Quantity	N°	1	1	1	1	2	2	2	2
Economizer	N°	1	1	1	1	2	2	2	2
Refrigerant Charge	kg	2.95	2.95	2.95	3.05	5.9	5.9	6	6.1

The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software.

(1) Standard Rating Conditions for Air to water chillers according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 35°C at sea level; Indoor heat exchanger inlet water temperature 12°C, outlet water temperature 7°C. Fluid: water, Fouling factor = 0

(2) Seasonal Energy Efficiency Ratio as defined in EN14825, part load condition in cooling for Air to Water units, fan coil application, variable outlet, variable flow.

(3) Standard Rating Conditions for Air to water heat pumps according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 7°C at sea level; Indoor heat exchanger inlet water temperature 40°C, outlet water temperature 45°C. Fluid: water, Fouling factor = 0

(4) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, Low temperature application, variable outlet, variable flow.

(5) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, Medium temperature application, variable outlet, variable flow.

(6) The seasonal space heating energy efficiency ηs,h is calculated as defined in Regulation (EU) 2016/2281

(7) Sound power level measured in accordance with ISO9614, according to EN14511:2 for cooling only mode water IN/OUT 12/7°C and 35°C Amb, full load operation and for heating only mode water IN/OUT 40/45°C and 7°C Amb, full load operation.

(8) Sound power level measured in accordance with ISO9614, according to EN12102 valid for heating mode.

EWYK~CZ N Heat pump with No Pump On Board

		EWYK020CZ N-A1	EWYK025CZ N-A1	EWYK030CZ N-A1	EWYK040CZ N-A1	EWYK050CZ N-A2	EWYK060CZ N-A2	EWYK070CZ N-A2	EWYK085CZ N-A2
COOLING PERFORMANCE 12/7 35°C									
Capacity – Cooling (1)	kW	**17.60**	**21.07**	**24.61**	**34.73**	**43.97**	**51.41**	**60.23**	**71.38**
Capacity control - Type		Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled
Unit power input - Cooling	kW	5.10	6.43	8.10	10.98	12.92	16.39	20.08	23.49
EER (1)		**3.45**	**3.28**	**3.04**	**3.16**	**3.40**	**3.14**	**3.00**	**3.04**
SEER (1) (2)		5.10	5.15	5.00	5.57	5.29	5.00	5.09	5.32
IPLV		6.88	6.67	6.23	6.36	6.10	5.87	5.84	6.10
Flow rate (1)	l/s	0.84	1.01	1.18	1.66	2.1	2.46	2.88	3.44
Pressure Drop (1)	kPa	13.65	18.26	23.16	25.9	29.75	40.74	55.74	39.31
HEATING PERFORMANCE 40/45 7°C									
Capacity - Heating (3)	kW	**20.15**	**24.79**	**30.50**	**39.92**	**49.66**	**59.13**	**71.02**	**83.25**
Unit power input (3)	kW	5.15	6.46	8.26	11.05	13.29	16.19	20.65	23.99
COP (3)		**3.92**	**3.84**	**3.69**	**3.61**	**3.74**	**3.65**	**3.44**	**3.47**
SCOP HT 65°C (5)		2.95	3.01	2.99	3.12	2.96	2.96	3.03	3.10
ηs,h (6)		115.1%	117.5%	116.5%	121.6%	115.4%	115.3%	118.2%	121.0%
SCOP MT 55°C (5)		3.42	3.49	3.45	3.56	3.41	3.39	3.47	3.52
ηs,h (6)		134%	136%	135%	139,3%	133,4%	132%	136%	138%
SCOP LT 35°C (4)		4.58	4.65	4.53	4.61	4.47	4.38	4.50	4.58
ηs,h (6)		180%	183%	178%	181%	176%	172%	177%	180%
Flow rate (3)	l/s	0.97	1.2	1.47	1.92	2.39	2.85	3.42	4.01
Pressure Drop (3)	kPa	11.38	16.77	24.4	32.82	35.65	49.62	70.12	49.95
AIR HEAT EXCHANGER									
Type *		Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes
WATER HEAT EXCHENGER		Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate
FAN									
Type *		Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Quantity	No.	1	1	1	2	2	2	3	4
SOUND LEVEL									
Sound Power level Full load HEATING=COOLING (7)	dB(A)	84	84	84	85	87	88	88	89
Sound Power Level EN12102 Part load (8)	dB(A)	68	68	69	69	71	71	71	71
DIMENSIONS									
Height	mm	1877	1877	1877	1877	1877	1877	1877	1877
Width	mm	1252	1252	1252	1752	2506	2506	3006	3507
Length	mm	804	804	804	804	816	816	816	816
COMPRESSOR Type		Inverter Scroll with Vapour Injection							
Quantity	N°	1	1	1	1	2	2	2	2
Economizer	N°	1	1	1	1	2	2	2	2
Refrigerant Charge	kg	2.95	2.95	2.95	3.05	5.9	5.9	6	6.1

The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software.
(1) Standard Rating Conditions for Air to water chillers according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 35°C at sea level; Indoor heat exchanger inlet water temperature 12°C, outlet water temperature 7°C. Fluid: water, Fouling factor = 0
(2) Seasonal Energy Efficiency Ratio as defined in EN14825, part load condition in cooling for Air to Water units, fan coil application, variable outlet, variable flow.
(3) Standard Rating Conditions for Air to water heat pumps according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 7°C at sea level; Indoor heat exchanger inlet water temperature 40°C, outlet water temperature 45°C. Fluid: water, Fouling factor = 0
(4) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, Low temperature application, variable outlet, variable flow.
(5) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, Medium temperature application, variable outlet, variable flow.
(6) The seasonal space heating energy efficiency ηs,h is calculated as defined in Regulation (EU) 2016/2281
(7) Sound power level measured in accordance with ISO9614, according to EN14511:2 for cooling only mode water IN/OUT 12/7°C and 35°C Amb, full load operation and for heating only mode water IN/OUT 40/45°C and 7°C Amb, full load operation.
(8) Sound power level measured in accordance with ISO9614, according to EN12102 valid for heating mode.

EWAK~CZ P Cooling Only with Pump On Board

MODEL		EWAK020CZ P-A1	EWAK025CZ P-A1	EWAK030CZ P-A1	EWAK040CZ P-A1	EWAK050CZ P-A2	EWAK060CZ P-A2	EWAK070CZ P-A2	EWAK085CZ P-A2
COOLING PERFORMANCE 12/7 35°C									
Capacity – Cooling (1)	kW	**17.81**	**21.33**	**24.88**	**35.06**	**44.29**	**51.83**	**60.76**	**72.43**
Capacity control - Type		Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled
Unit power input - Cooling	kW	5.05	6.37	8.03	10.88	12.77	16.21	20.07	23.56
EER (1)		**3.52**	**3.35**	**3.10**	**3.22**	**3.47**	**3.20**	**3.03**	**3.07**
SEER (1) (2)		5.37	5.41	5.25	5.8	5.54	5.21	5.33	5.48
IPLV		5.67	5.09	5.13	5.56	5.24	5.19	5.28	5.43
Flow rate (1)	l/s	0.84	1.01	1.18	1.66	2.1	2.46	2.88	3.44
Pressure Drop (1)	kPa	13.65	18.26	23.16	25.9	29.75	40.74	55.74	39.31
AIR HEAT EXCHANGER									
Type *		Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes
WATER HEAT EXCHENGER		Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate
FAN									
Type *		Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Quantity	No.	1	1	1	2	2	2	3	4
SOUND LEVEL									
Sound Power level Full Load (7)	dB(A)	84	84	84	85	87	88	88	89
DIMENSIONS									
Height	mm	1877	1877	1877	1877	1877	1877	1877	1877
Width	mm	1252	1252	1252	1752	2506	2506	3006	3507
Length	mm	804	804	804	804	816	816	816	816
COMPRESSOR Type		Inverter Scroll with Vapour Injection							
Quantity	N°	1	1	1	1	2	2	2	2
Economizer	N°	1	1	1	1	2	2	2	2
Refrigerant Charge	kg	2.95	2.95	2.95	3.05	5.9	5.9	6	6.1

The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software.
(1) Standard Rating Conditions for Air to water chillers according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 35°C at sea level; Indoor heat exchanger inlet water temperature 12°C, outlet water temperature 7°C. Fluid: water, Fouling factor = 0
(2) Seasonal Energy Efficiency Ratio as defined in EN14825, part load condition in cooling for Air to Water units, fan coil application, variable outlet, variable flow.
(3) Standard Rating Conditions for Air to water heat pumps according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 7°C at sea level; Indoor heat exchanger inlet water temperature 40°C, outlet water temperature 45°C. Fluid: water, Fouling factor = 0
(4) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, Low temperature application, variable outlet, variable flow.
(5) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, Medium temperature application, variable outlet, variable flow.
(6) The seasonal space heating energy efficiency ηs,h is calculated as defined in Regulation (EU) 2016/2281
(7) Sound power level measured in accordance with ISO9614, according to EN14511:2 for cooling only mode water IN/OUT 12/7°C and 35°C Amb, full load operation and for heating only mode water IN/OUT 40/45°C and 7°C Amb, full load operation.
(8) Sound power level measured in accordance with ISO9614, according to EN12102 valid for heating mode.

EWAK~CZ N Cooling Only with No Pump On Board

MODEL		EWAK020CZ N-A1	EWAK025CZ N-A1	EWAK030CZ N-A1	EWAK040CZ N-A1	EWAK050CZ N-A2	EWAK060CZ N-A2	EWAK070CZ N-A2	EWAK085CZ N-A2
COOLING PERFORMANCE 12/7 35°C									
Capacity – Cooling (1)	kW	**17.60**	**21.07**	**24.61**	**34.73**	**43.97**	**51.41**	**60.23**	**71.38**
Capacity control - Type		Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled	Inverter Controlled
Unit power input - Cooling	kW	5.10	6.43	8.10	10.98	12.92	16.39	20.08	23.49
EER (1)		**3.45**	**3.28**	**3.04**	**3.16**	**3.40**	**3.14**	**3.00**	**3.04**
SEER (1) (2)		5.10	5.15	5.00	5.57	5.29	5.00	5.09	5.32
IPLV		6.88	6.67	6.23	6.36	6.10	5.87	5.84	6.10
Flow rate (1)	l/s	0.84	1.01	1.18	1.66	2.1	2.46	2.88	3.44
Pressure Drop (1)	kPa	13.65	18.26	23.16	25.9	29.75	40.74	55.74	39.31
AIR HEAT EXCHANGER									
Type *		Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes	Al Fins&Cu Tubes
WATER HEAT EXCHENGER		Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate
FAN									
Type *		Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Quantity	No.	1	1	1	2	2	2	3	4
SOUND LEVEL									
Sound Power level Full load (7)	dB(A)	84	84	84	85	87	88	88	89
DIMENSIONS									
Height	mm	1877	1877	1877	1877	1877	1877	1877	1877
Width	mm	1252	1252	1252	1752	2506	2506	3006	3507
Length	mm	804	804	804	804	816	816	816	816
COMPRESSOR Type		Inverter Scroll with Vapour Injection							
Quantity	N°	1	1	1	1	2	2	2	2
Economizer	N°	1	1	1	1	2	2	2	2
Refrigerant Charge	kg	2.95	2.95	2.95	3.05	5.9	5.9	6	6.1

The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software.
(1) Standard Rating Conditions for Air to water chillers according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 35°C at sea level; Indoor heat exchanger inlet water temperature 12°C, outlet water temperature 7°C. Fluid: water, Fouling factor = 0
(2) Seasonal Energy Efficiency Ratio as defined in EN14825, part load condition in cooling for Air to Water units, fan coil application, variable outlet, variable flow.
(3) Standard Rating Conditions for Air to water heat pumps according to EN14511:2 Outdoor Heat exchanger inlet dry bulb temperature 7°C at sea level; Indoor heat exchanger inlet water temperature 40°C, outlet water temperature 45°C. Fluid: water, Fouling factor = 0
(4) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, Low temperature application, variable outlet, variable flow.
(5) Seasonal Coefficient of performance as defined in EN14825, part load condition in heating for Air-to-Water units, Medium temperature application, variable outlet, variable flow.
(6) The seasonal space heating energy efficiency ηs,h is calculated as defined in Regulation (EU) 2016/2281
(7) Sound power level measured in accordance with ISO9614, according to EN14511:2 for cooling only mode water IN/OUT 12/7°C and 35°C Amb, full load operation and for heating only mode water IN/OUT 40/45°C and 7°C Amb, full load operation.
(8) Sound power level measured in accordance with ISO9614, according to EN12102 valid for heating mode.

8. Electrical data

MODEL		EWYK020CZ N/P-A1	EWYK025CZ N/P-A1	EWYK030CZ N/P-A1	EWYK040CZ N/P-A1	EWYK050CZ N/P-A2	EWYK060CZ N/P-A2	EWYK070CZ N/P-A2	EWYK085CZ N/P-A2
POWER SUPPLY									
Phases	No.	3N	3N	3N	3N	3N	3N	3N	3N
Number of conductors	No.	3 Phases + Neutral + Ground							
Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Voltage	V	400	400	400	400	400	400	400	400
Tolerances Min/Max	%	10%	10%	10%	10%	10%	10%	10%	10%
UNIT with Pump									
Maximum inrush current(2)	A	0	0	0	0	0	0	0	0
Nominal running current Cooling&Heating(1)	A	12.1/12.1	14.8/14.8	18.2/18.3	21.6/21.5	28.5/28.9	34.7/34.9	40.4/41.8	46.5/46.7
Maximum running current (3)	A	42,3	42,3	42,3	45,9	77,9	77,9	83,9	87,5
Maximum current for wires sizing (4)	A	47,0	47,0	47,0	51,0	86,5	86,5	93,2	97,2
UNIT without Pump									
Maximum inrush current(2)	A	0	0	0	0	0	0	0	0
Nominal running current Cooling&Heating(1)	A	11.1/11.1	13.8/13.8	17.2/17.3	20.6/20.5	27.5/27.9	33.7/32.9	38.4/38.8	43.5/43.7
Maximum running current (3)	A	39,6	39,6	39,6	43,2	75,2	75,2	78,8	82,4
Maximum current for wires sizing (4)	A	44,0	44,0	44,0	48,0	83,6	83,6	87,6	91,6
EMERGENCY DEVICES POWER SUPPLY (5)									
Phases	n	1	1	1	1	1	1	1	1
Frequency	Hz	50	50	50	50	50	50	50	50
Voltage	V	230	230	230	230	230	230	230	230
Tolerances Min/Max	%	10%	10%	10%	10%	10%	10%	10%	10%

1) Standard conditions - Cooling Only evaporator water in/out = 12/7°C; ambient = 35.0°C, unit at full load operation in Cooling Only; Heating condenser water in/out = 40/45°C; ambient = 7.0°C, unit at full load operation in heating; operating fluid: Water; fouling factor = 0°C/W
2) In case of Variable frequency drive starting method, the inrush current is equal to zero
3) Maximum current absorbed by the unit (compressors and fans) @ 400 Volts
4) Calculated as Max. running current x 1,1
5) All safety devices must always be powered by an independent 230V power supply provided by the customer trough UPS (Uninterruptible Power Supply) in order to guarantee proper operation under all conditions, including emergency situations or main unit power failures. This dedicated power line always ensures continuous monitoring and activation of the safety systems. In the event that the power supply to the safety devices is not active, interrupted, or improperly connected, the unit will not start and will remain in a safe standby condition to prevent unsafe operation.

The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice.

For updated information on project base refer to Chiller Selection Software and unit's certified drawing and wiring diagram.

9. Sound data

Sound data Heating in Part Load (According to EN12102 - Part load "C" point of SCOP profile.)

	Hz63	Hz125	Hz250	Hz500	Hz1000	Hz2000	Hz4000	Hz8000	SoundPower	SoundPressure
EWYK020CZP/N-A1	56.5	54.3	50.0	48.8	47.2	41.7	38.8	39.4	68.0	51.7
EWYK025CZP/N-A1	56.5	54.3	50.0	48.8	47.2	41.7	38.8	39.4	68.0	51.7
EWYK030CZP/N-A1	57.6	55.4	51.0	49.8	48.1	42.5	39.6	40.2	69.0	52.6
EWYK040CZP/N-A1	57.1	54.9	50.6	49.4	47.8	42.2	39.3	39.9	69.0	52.2
EWYK050CZP/N-A2	59.3	57.0	52.5	51.3	49.6	43.8	40.8	41.4	71.0	54.0
EWYK060CZP/N-A2	59.3	57.0	52.5	51.3	49.6	43.8	40.8	41.4	71.0	54.0
EWYK070CZP/N-A2	58.4	56.1	51.6	50.4	48.8	43.1	40.1	40.8	71.0	53.2
EWYK085CZP/N-A2	58.1	55.8	51.4	50.2	48.5	42.8	39.9	40.5	71.0	52.9

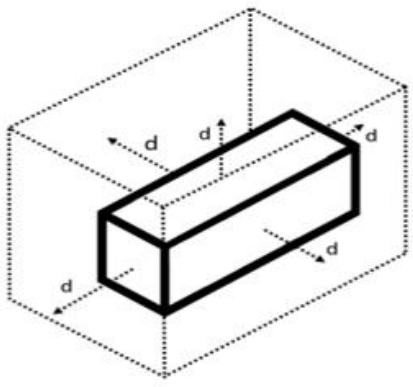
Sound data Heating=Cooling in Full Load (According to ISO9614 and EN14511:2)

	Hz63	Hz125	Hz250	Hz500	Hz1000	Hz2000	Hz4000	Hz8000	SoundPower	SoundPressure
EWY(A)K020CZP/N-A1	70.4	70.9	65.9	63.5	61.0	57.8	53.1	47.8	84.0	66.3
EWY(A)K025CZP/N-A1	70.4	70.9	65.9	63.5	61.0	57.8	53.1	47.8	84.0	66.3
EWY(A)K030CZP/N-A1	70.4	70.9	65.9	63.5	61.0	57.8	53.1	47.8	84.0	66.3
EWY(A)K040CZP/N-A1	71.0	71.5	66.4	64.1	61.5	58.3	53.5	48.2	85.0	66.9
EWY(A)K050CZP/N-A2	73.1	73.6	68.4	66.0	63.3	60.0	55.1	49.6	87.0	68.7
EWY(A)K060CZP/N-A2	74.1	74.6	69.4	66.9	64.2	60.9	55.9	50.3	88.0	69.6
EWY(A)K070CZP/N-A2	70.4	70.9	65.9	63.5	61.0	57.8	53.1	47.8	88.0	70.1
EWY(A)K085CZP/N-A2	75.5	76.0	70.6	68.2	65.4	62.0	56.9	51.3	89.0	70.8

Sound Power levels are measured in accordance with ISO 9614.
Sound Pressure at levels 1 meter are measured in accordance with ISO 3744.
NOTE: The sound data in the Octave band spectrum is based on calculation, thus intended as general guideline, and not considered binding.
All data are subject to change without notice. For updated information on project base refer to specific selections.

Sound pressure at distance > 1 meter is calculated from the sound power as follows:

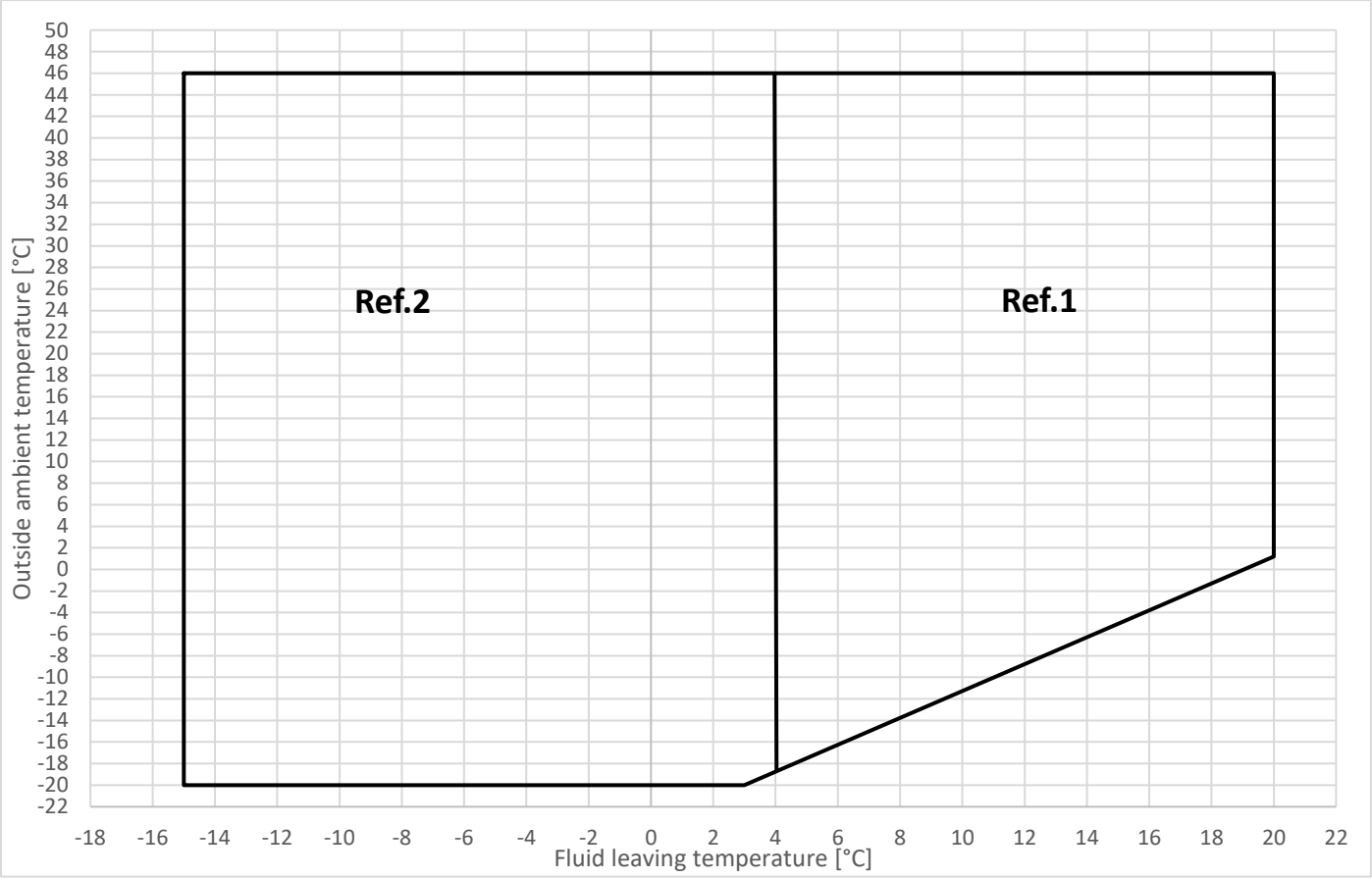
Lp = Lw – 10 x Log10(Ad)



where Ad being the surface around the chiller calculated at the specific distance d

10. Operating Limits

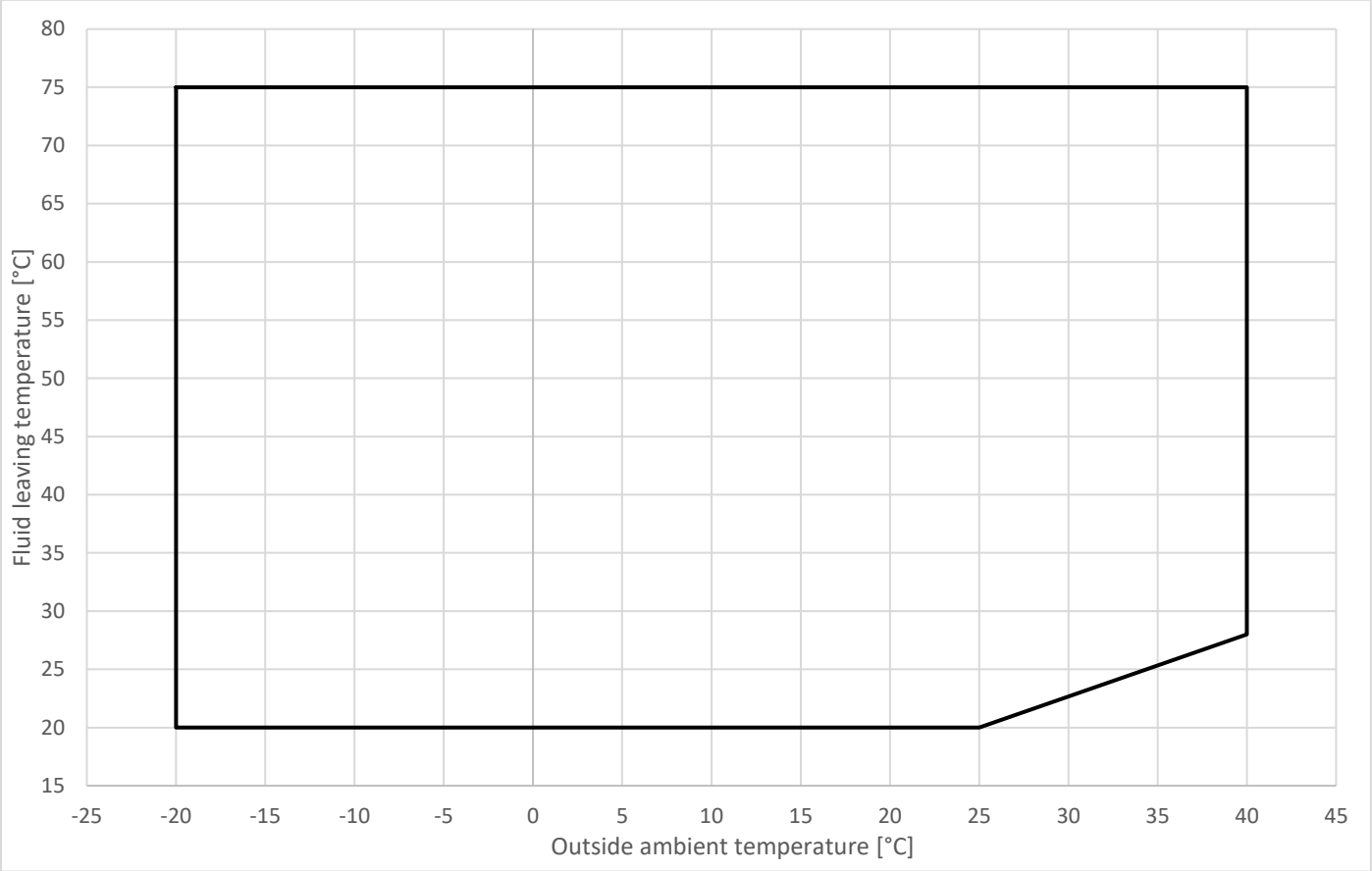
Cooling only envelope



Ref. 1 - Standard unit (No options).
Ref. 2 - Standard unit (No options). For operation with fluid leaving temperature below 4°C, the unit **must** operate with **glycol mixture**. The glycol percentage must be provided according to the fluid leaving temperature needed.

Note:
The above graphic represents a guideline about the operating limits of the range. Please refer to the latest Chiller Configurator Software for real operating limits working conditions for each size.

Heating only envelope



Note:
The above graphic represents a guideline about the operating limits of the range.
Please refer to the latest Chiller Configurator Software for real operating limits working conditions for each size.

Minimum glycol percentage for low air ambient temperature to prevent freezing of the hydraulic circuit

AMBIENT T [°C]	-3	-8	-15	-20
ETHYLENE GLYCOL	10%	20%	30%	40%

AMBIENT T [°C]	-3	-8	-15	-20
PROPYLENE GLYCOL	10%	20%	30%	40%

The presence of glycol in the water system will affect unit performances. Refer to the selection software for details. All machine protection systems, such as antifreeze and low-pressure protection will need to be set in accordance with the type and percentage of the glycol and plant requirements.

Air heat exchanger - Altitude correction factors

ELEVATION ABOVE SEA LEVEL [m]	0	300	600	900	1200	1500	1800
BAROMETRIC PRESSURE [mbar]	1013	997	942	908	875	843	812
HEATING/COOLING CAPACITY CORRECTION FACTOR	1	0,993	0,986	0,979	0,973	0,967	0,96
POWER INPUT CORRECTION FACTOR	1	1,005	1,009	1,015	1,021	1,026	1,031

Maximum operating altitude is 1800 m above sea level.

Maximum cable dimension

Maximum cable dimension that can be physically connected to the main switch with release coil for unit shutdown.

Model	Max cable size [mm^2]	Main Switch Size [A]
EWY(A)K020CZ N/P -A1	70	160
EWY(A)K025CZ N/P -A1	70	160
EWY(A)K030CZ N/P -A1	70	160
EWY(A)K040CZ N/P -A1	70	160
EWY(A)K050CZ N/P -A2	70	160
EWY(A)K060CZ N/P -A2	70	160
EWY(A)K070CZ N/P -A2	70	160
EWY(A)K085CZ N/P -A2	70	160

Correction factors with external static pressure on air section

COOLING			
EXTERNAL STATIC PRESSURE [Pa]	**0**	**50**	**100**
COOLING CAPACITY CORRECTION FACTOR	1	0.99	0.98
UNIT PI CORRECTION FACTOR	1	1.03	1.07
REDUCTION OF MAX OPERATING AMBIENT TEMPERATURE [°C]	0	-1.5	-3.0

HEATING			
EXTERNAL STATIC PRESSURE [Pa]	**0**	**50**	**100**
HEATING CAPACITY CORRECTION FACTOR	1	0.99	0.98
UNIT PI CORRECTION FACTOR	1	1.008	1.014
INCREASE OF MIN OPERATING AMBIENT TEMPERATURE [°C]	0	+0.5	+1.0

COOLING Boosted Fan			
EXTERNAL STATIC PRESSURE [Pa]	**0**	**50**	**100**
COOLING CAPACITY CORRECTION FACTOR	1	1	1
UNIT PI CORRECTION FACTOR	1	1.04	1.10
REDUCTION OF MAX OPERATING AMBIENT TEMPERATURE [°C]	0	0	0

HEATING Boosted Fan			
EXTERNAL STATIC PRESSURE [Pa]	**0**	**50**	**100**
HEATING CAPACITY CORRECTION FACTOR	1	1	1
UNIT PI CORRECTION FACTOR	1	1.05	1.10
INCREASE OF MIN OPERATING AMBIENT TEMPERATURE [°C]	0	0	0

Applications with more than 100 Pa of external static pressure are not recommended.
Heating correction factors are intended not considering the de frost.
In case of canalization is not possible to reduce Sound power level with Fan Silent Mode.

11. Water quality and content

Before putting the unit into operation, clean the water circuit. Dirt, scales, corrosion debrits and other material can accumulate inside the heat exchanger and reduce its heat exchanging capacity. Pressure drop can increase as well, thus reducing water flow. Proper water treatment therefore reduces the risk of corrosion, erosion, scaling, etc. The most appropriate water treatment must be determined locally, according to the type of system and water characteristics. The manufacturer is not responsible for damage to or malfunctioning of equipment caused by failure to treat water or by improperly treated water. Plant water quality must respect the following table;

Water quality requirements	
Ph (25 °C)	**7.5 – 9.0**
Electrical conductivity [µS/cm] (25°C)	**< 500**
Chlorine molecular [mg Cl2/l]	**<1.0**
Sulphate ion [mg SO_4^{2-} / l]	**< 100**
Alkalinity [mg $CaCO_3$ / l]	**< 100**
Total Hardness [mg $CaCO_3$ / l]	**80 ÷ 150**
Iron [mg Fe / l]	**< 0.2**
Ammonium ion [mg NH^{4+} / l]	**< 0.5**
Hydrogen carbonate [mg HCO3/l]	**60 ÷ 200**
HCO3/ $SO_4^{2-]}$	**< 0.5**
Ca+Mg/HCO3	**>1.6**

The values above are intended as guidelines and not exhaustive for a complete analysis on compatibility with unit components.
All data and information are subject to change without notice. Always refer to latest information available from factory on project base.

Plant water content

Cooling Mode
The chilled water content of the systems should have a minimum water amount to avoid excessive stress (start and stops) on the compressors.
Design considerations for water volume are the minimum cooling load, the water temperature setpoint differential and the cycle time for the compressors.
As a general indication, the system water content should not be less than the values deriving from the following formula:

$$\textit{Single circuit Unit} \rightarrow 5\ \frac{\text{lt}}{\text{kW}_{\text{nominal}}}$$

$$\textit{Dual circuit Unit} \rightarrow 3{,}5\ \frac{\text{lt}}{\text{kW}_{\text{nominal}}}$$

kW$_{nominal}$ = Cooling capacity at 12/7°C OAT=35°C

The above rule of thumb derives from the following formula, as the relative volume of water capable of maintaining the water temperature setpoint differential during the minimum load transient avoiding an excessive starts and stops of the compressor itself (which depends on the compressor technology):

$$Water\ Volume = \frac{CC\ [W]\ x\ Min\ load\ \%\ x\ DNCS[s]}{FD\ \left[\frac{g}{L}\right] * SH\left[\frac{J}{g°C}\right] * (DT)[°C]}$$

CC = Cooling Capacity
DNCS = Delay to next Compressor Start
FD = Fluid Density
SH = Specific Heat
DT = Water Temperature Setpoint Differential

A properly designed storage tank should be added if the system components do not provide sufficient water volume.
By default, the unit is set to have a water temperature setpoint differential in line with Comfort Cooling application which allows to operate with the minimum volume mentioned in the previous formula.
However, if a smaller temperature differential is set, as in the case of Process Cooling applications where temperature fluctuations must be avoided, a larger minimum water volume will be required.
To ensure proper operation of the unit when changing the value of setting, the minimum water volume must be corrected.

In case of more than one installed unit, the overall capacity of the installation must be considered in the calculation so summing the water content of each unit.

Heating Mode
The heating water content of the systems should have a minimum water amount to avoid excessive decrease of the water setpoint during the defrost cycle to guarantee the proper environmental comfort.
As a general indication the system water content should not be less than the values deriving from the following fomula:

$$\textit{Single circuit Unit} \rightarrow 16\ \frac{\text{lt}}{\text{kW}_{\text{nominal}}}$$

$$\textit{Dual circuit Unit} \rightarrow 8\ \frac{\text{lt}}{\text{kW}_{\text{nominal}}}$$

kW$_{nominal}$ = Heating capacity at 40/45°C OAT=7°C

The above rule of thumb derives from the following formula, as the relative volume of water capable of maintaining the system temperature within an acceptable ΔT (which depends on the heating application) during the defrost transient:

$$Water\ Volume = \frac{CC\ [W]\ x\ \mathrm{MDD}[s]}{FD\left[\frac{g}{L}\right] * SH\ \left[\frac{J}{g°C}\right] *\ DT[°C]}$$

CC = Cooling Capacity during defrost operation
MDD = Max Defrost Duration
FD = Fluid Density
SH = Specific Heat
DT = Acceptable Water Temperature Differential

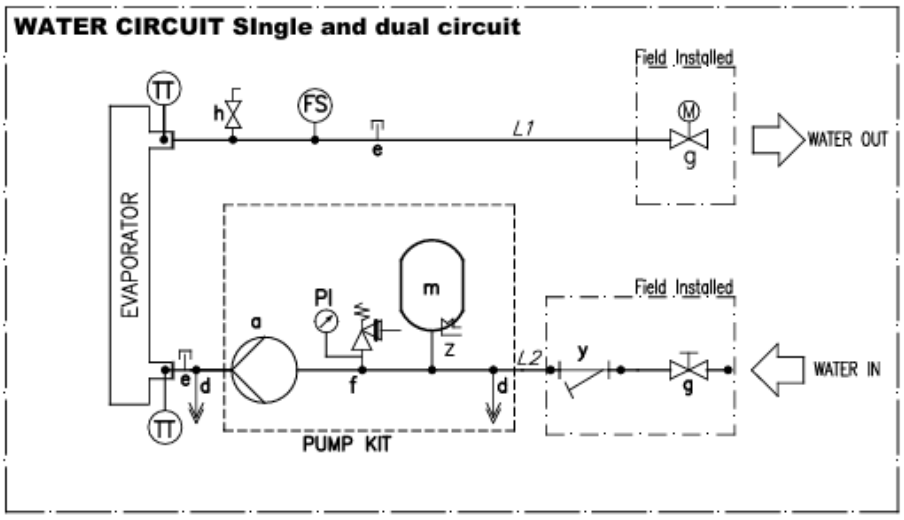
The water temperature difference is considered acceptable for the Comfort Heating application which allows to operate with the minimum volume mentioned in the previous formula.
However, if a smaller water temperature difference is considered acceptable, a larger minimum water volume will be required.
A properly designed storage tank should be added if the system components do not provide sufficient water volume.

In case of more than one installed unit, the overall capacity of the installation must be considered in the calculation so summing the water content of each unit.

Note: The indication is intended as a general guideline and not intended to substitute the evaluation made by qualified technical personnel or by HVAC engineers. For more detailed analysis is better to consider the use of other more detailed approach.
These considerations refer to the water volume always flowing through the unit. If there are bypasses, branch of the system that can be excluded, that parts should not be accounted in the water content calculation.

12. Hydronics

Hydraulic schemes



WATER CIRCUIT EQUIPMENT

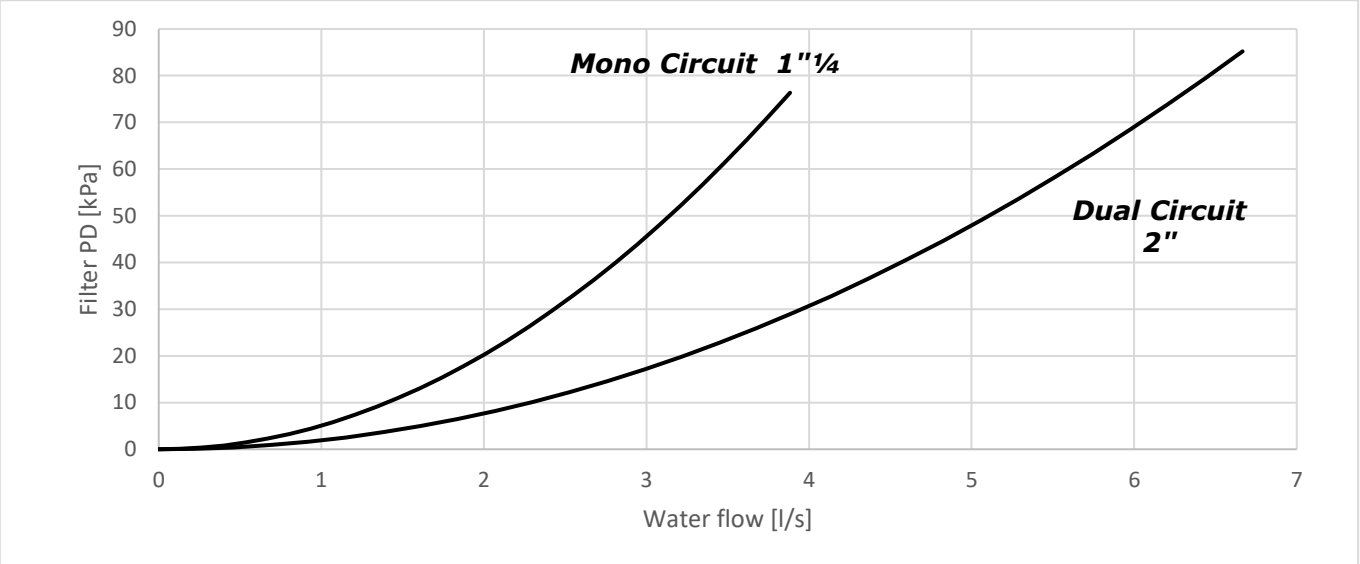
a	PUMP
d	DRAIN
e	PLUGGED FITTING
f	SAFETY VALVE 3 BAR 1/2"
g	MOTOR ACTUATED SHUT OFF VALVE
h	AIR VENT (valvola di sfiato)
m	EXPANSION VESSEL
y	WATER FILTER
TT	TEMPERATURE SENSOR (sensore di temperatura)
PI	PRESSURE GAUGE (manometro)
FS	FLOWSWITCH (flussostato)
L1	INSULATED STEEL PIPE WATER OUT (DN 32, DN50)
L2	INSULATED STEEL PIPE WATER IN (DN 32, DN50)

Water pressure

Check whether the water pressure is above 1 bar. If it is lower, add water.
The maximum operating pressure is 3 bar for P versions.
For N version please take care that the components installed in the field piping can withstand the water pressure "maximum 3 bar + static pressure of the external pump" and not exceeding 10 bar.

13. Water filter technical data

Water filter mesch of 1mm



The filter is provided from factory but shipped loose and to be mounted on site.
The installation of the filter is mandatory.

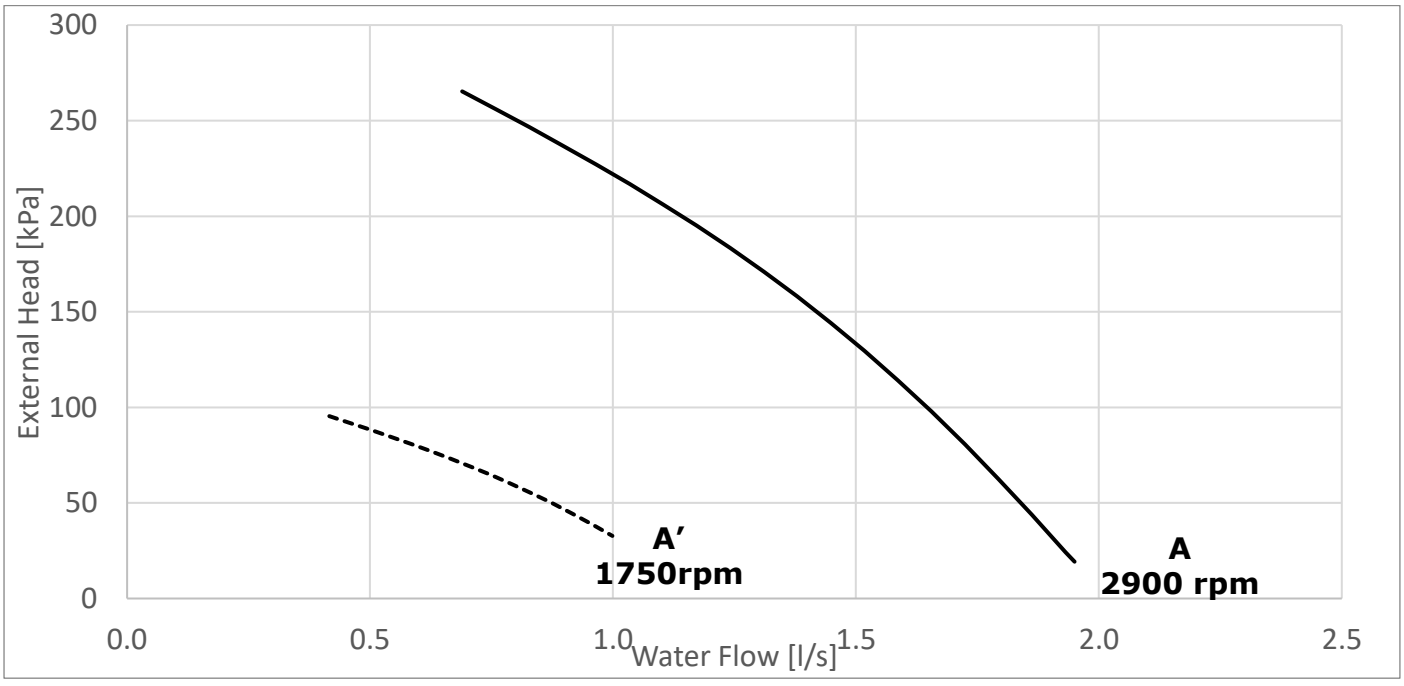
14. Pump technical data and curves

EWAYK~CZP – Pump Low lift

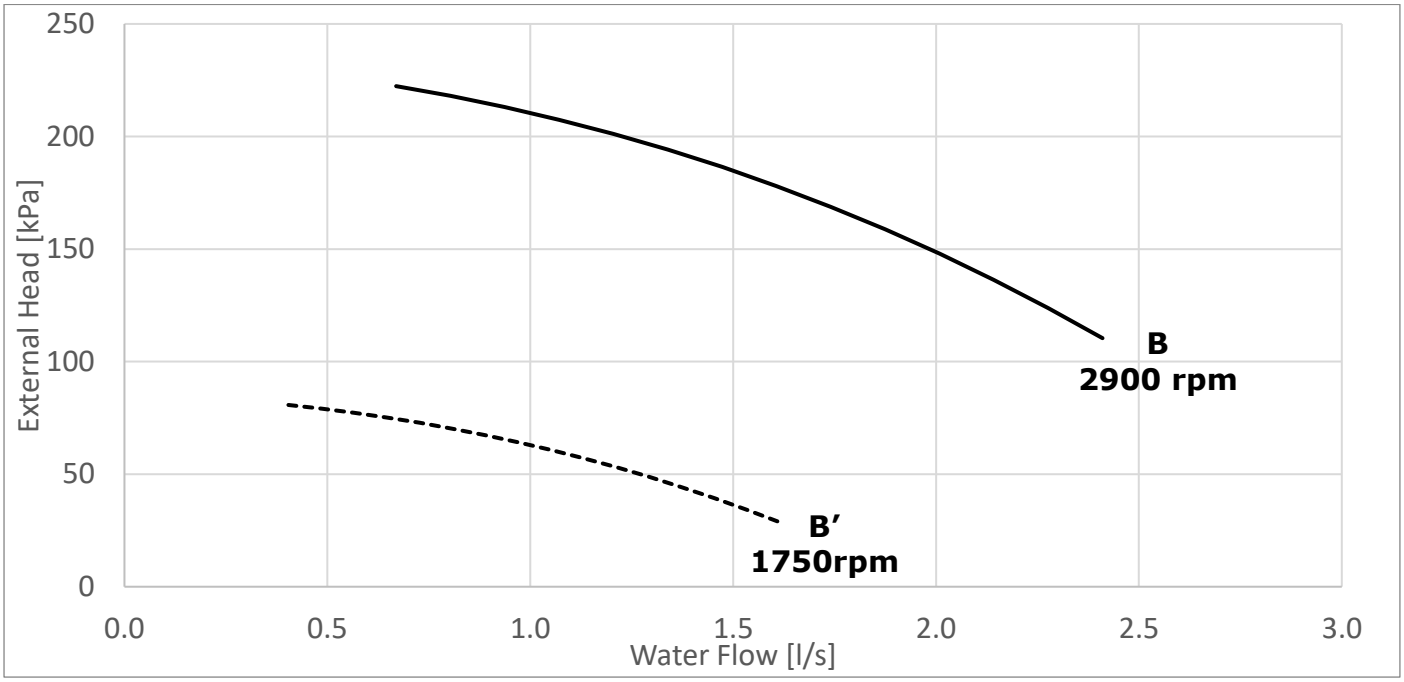
The default rpm value of the pump mounted on the Unit is 2900 rpm. For low flow rates close to the minimum declared limit, reduce the frequency [Hz] of the inverter pump to a minimum speed up to 1750 rpm.

Pump Curves	
Model	**Pump curve**
EW(Y/A)K020CZP-A1	A-A'
EW(Y/A)K025CZP-A1	A-A'
EW(Y/A)K030CZP-A1	A-A'
EW(Y/A)K040CZP-A1	B-B'
EW(Y/A)K050CZP-A2	C-C'
EW(Y/A)K060CZP-A2	C-C'
EW(Y/A)K070CZP-A2	D-D'
EW(Y/A)K085CZP-A2	E-E'

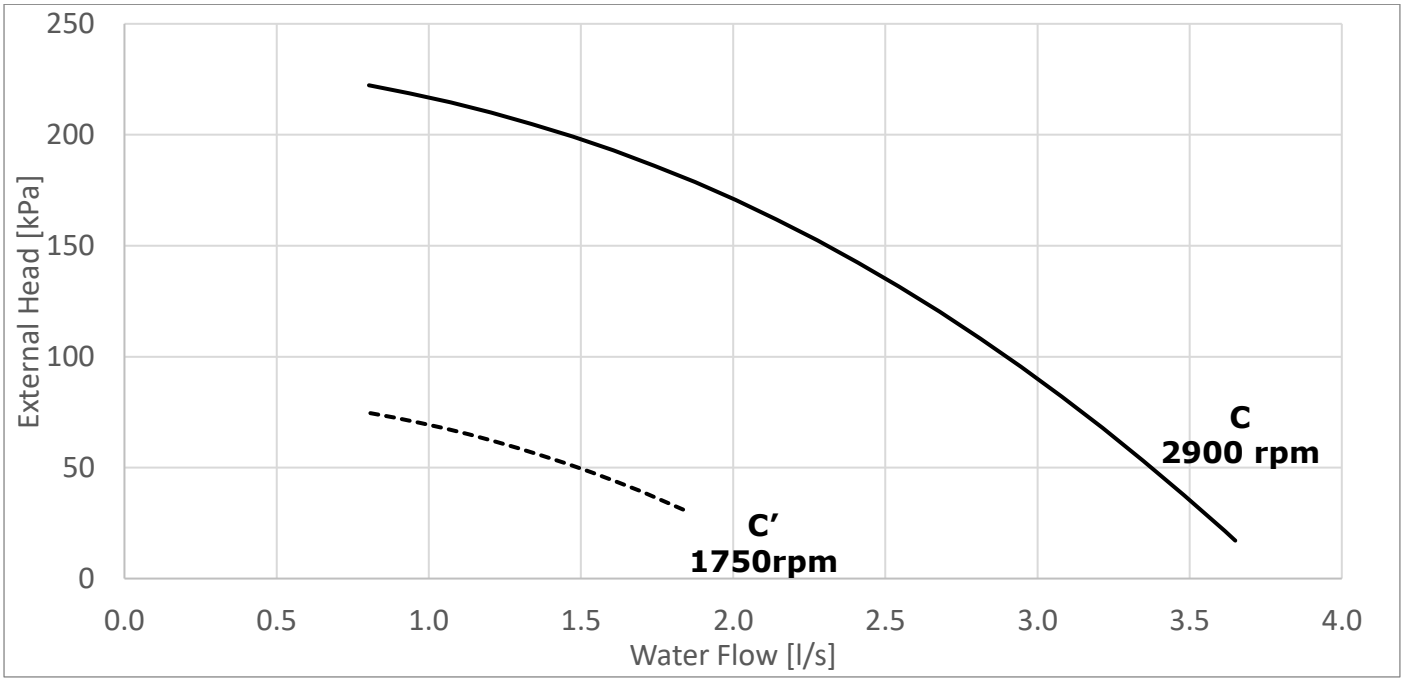
Size 20-25-30



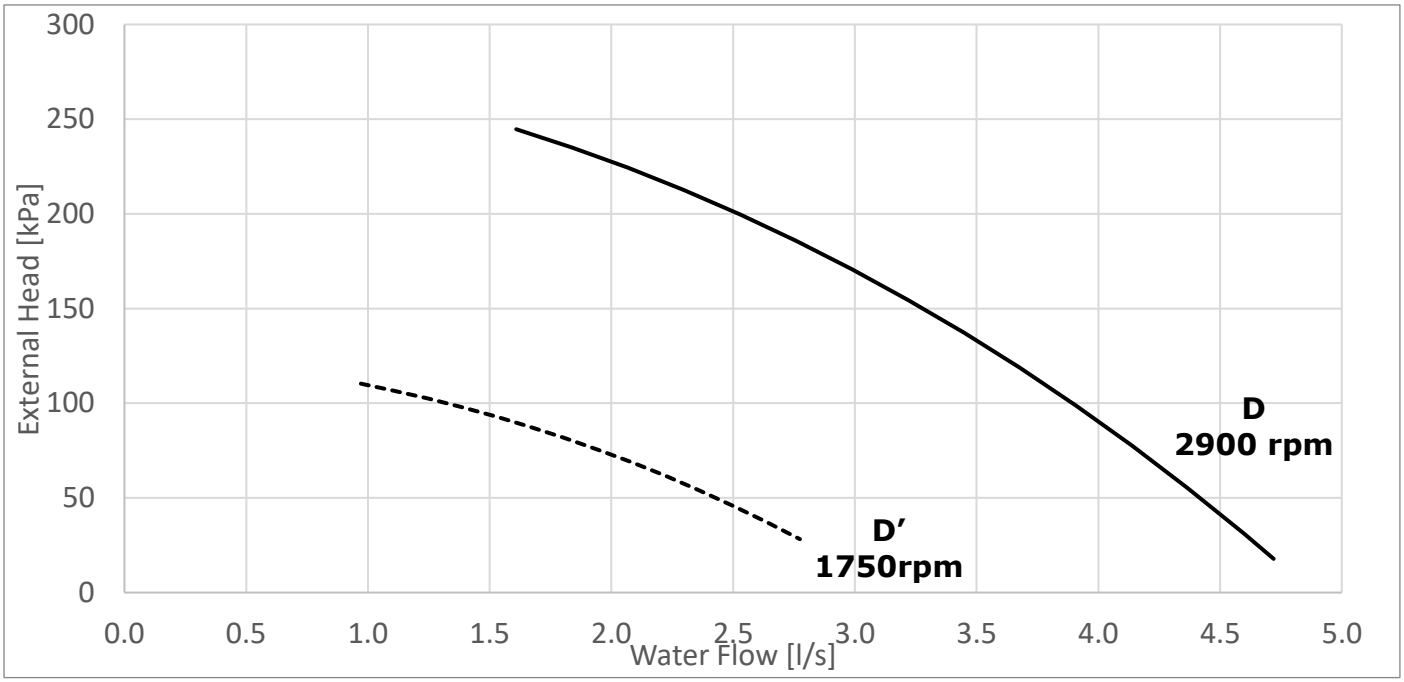
Size 40



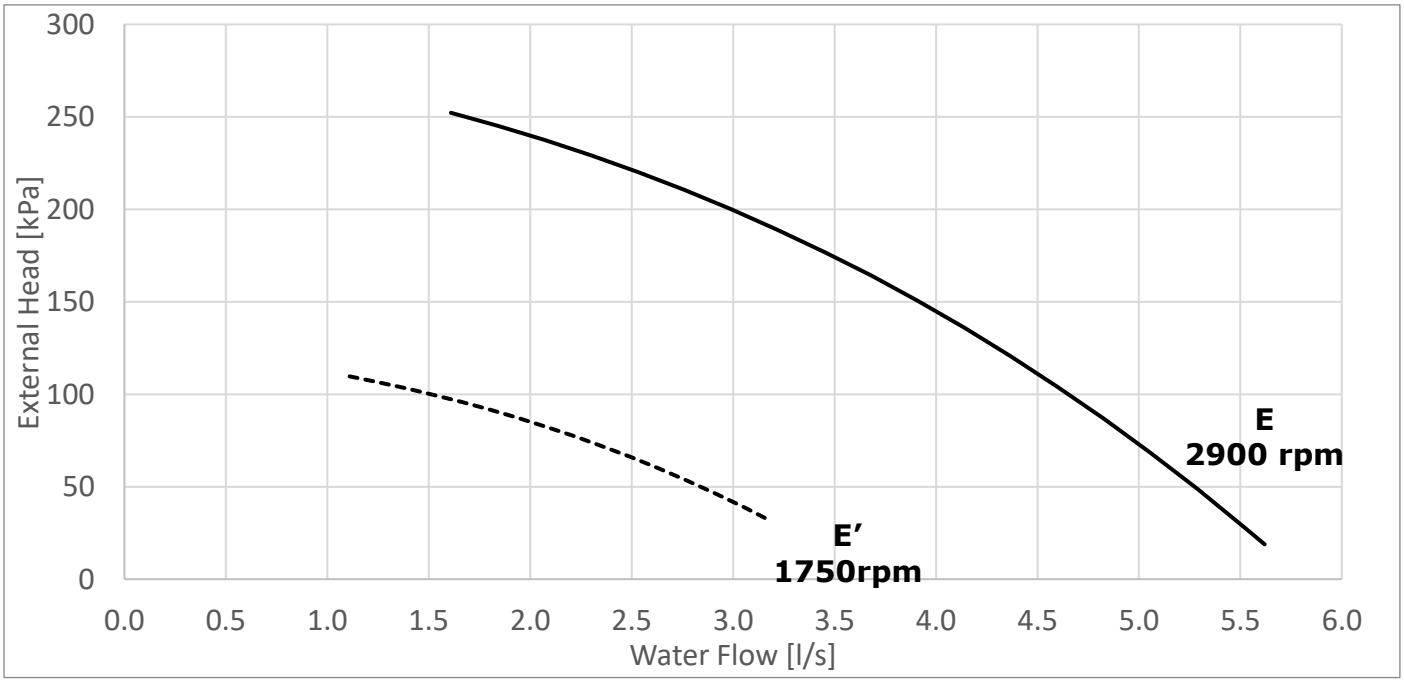
Size 50-60



Size 70



Size 85



External head refers to unit equipped with hydronic kit, defined as difference between pump external static pressure head and evaporator and water filter pressure drops.

For water flow limits of the unit refer to water flow section.

Water flow

The following tables indicate the minimum and maximum water flow allowed for each model. For application with Variable Primary Flow refer to the following value for the dimensioning of the bypass line.
For minimum flow allowed (maximum DELTAT) in full load operation refer to Selection Software.

N – Naked Version			P - Pump Versions		
MODEL	Min Flow [l/s]	Max flow [l/s]	MODEL	Min flow [l/s]	Max flow [l/s]
EWY(A)K020CZN-A1	0,35	2,2	EWY(A)K020CZP-A1	0,4	1,95
EWY(A)K025CZN-A1	0,35	2,2	EWY(A)K025CZP-A1	0,4	1,95
EWY(A)K030CZN-A1	0,35	2,2	EWY(A)K030CZP-A1	0,4	1,95
EWY(A)K040CZN-A1	0,4	2,4	EWY(A)K040CZP-A1	0,4	2,4
EWY(A)K050CZN-A1	0,76	5,0	EWY(A)K050CZP-A1	0,76	3,65
EWY(A)K060CZN-A2	0,76	5,0	EWY(A)K060CZP-A2	0,76	3,65
EWY(A)K070CZN-A2	0,76	5,0	EWY(A)K070CZP-A2	0,95	4,7
EWY(A)K085CZN-A2	1,04	6,7	EWY(A)K085CZP-A2	1,04	5,6

Technical data

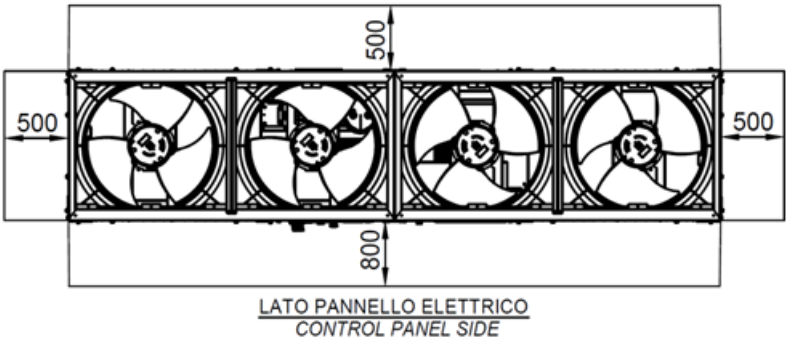
Model	Power [kW]	Current [A]
EW(Y/A)K020CZP-A1	1,1	2,4
EW(Y/A)K025CZP-A1	1,1	2,4
EW(Y/A)K030CZP-A1	1,1	2,4
EW(Y/A)K040CZP-A1	1,1	2,4
EW(Y/A)K050CZP-A2	1,1	2,4
EW(Y/A)K060CZP-A2	1,1	2,4
EW(Y/A)K070CZP-A2	2,2	4,6
EW(Y/A)K085CZP-A2	2,2	4,6

(1) 400V power supply with ±10% tolerance on Voltage, Voltage unbalance between phases must be within ±3%

15. Installation notes and maintenance space

The values below are general guidelines for maintenance space for single unit and in combination for multiple units in Master Slave. When considering unit installation, it is essential to ensure proper clearances around the unit to allow all maintenance activities and component replacement in compliance with safety standards. For general dimensions, please refer to the dedicated master drawings for each configuration.
PLEASE REFER TO OFFICIAL INSTALLATION AND OPERATION MANUAL (IOM) FOR INFORMATION REGARDING SAFETY DISTANCES AROUND THE UNITS as well as for details on storage, handling, and installation of the units.

For the installation site, consider free the minimum required maintenance space as reported in the picture below:



Service space requirements

- 800 mm from the Electrical Panel of the unit
- 500 mm from the Back of the unit
- 500 mm laterally from the unit

These spaces are suitable for dismantling using a crane, while additional space must be considered for the use of a forklift.

16. Technical Specifications

General information

The chiller will be designed and manufactured in accordance with the following European directives:

- Construction of pressure vessel 2014/68/EU
- Machinery Directive 2006/42/EC
- Low Voltage 2014/35/EU
- Electromagnetic Compatibility 2014/30/EU
- Harmonized standard EN 60204–1 Safety of Machinery
- Manufacturing Quality Standards UNI – UNI EN 14000

The unit will be tested at full load in the factory (at the nominal working conditions and water temperatures).
The chiller will be delivered to the job site completely assembled and charged with refrigerant and oil.
The installation of the chiller must comply with the manufacturer's instructions for rigging and handling equipment.

The unit will be able to start up and operate (as standard) at full load with:

- Condenser leaving fluid temperature between..... °C and..... °C
- Evaporator leaving fluid temperature between..... °C and..... °C

Refrigerant

R290

Performance

Chiller shall supply the following performances:

Number of Chiller(s)		unit(s)
Fluid		type
Cooling capacity for single chiller		kW
Power input for single chiller		kW
Evaporator Entering Temperature (EET)		°C
Evaporator Leaving Temperature (ELT)		°C
Evaporator Water Flow rate		l/s
Condenser Entering Temperature (CET)		°C
Condenser Leaving Temperature (CLT)		°C
Condenser Water Flow rate		l/s
Minimum full load efficiency (EER)		kW/kW
Minimum part load efficiency (SEER)		kW/kW
Minimum part load efficiency (SEPR)		kW/kW
Minimum part load efficiency (IPLV)		kW/kW
Minimum part load efficiency (ESEER)		kW/kW

Operating voltage range should be 400V ±10%, 3ph + N, 50/60Hz, voltage unbalance maximum 3%, without neutral conductor.

Unit description

The unit shall include as standard: one refrigerant circuit per module, each of them equipped with an hermetic type rotary scroll compressors, thermal expansion device, refrigerant direct expansion plate to plate heat exchangers, R290 refrigerant, motor starting components, control system and all components necessary for a safe and stable unit operation. The unit will be factory assembled on a robust base frame made of galvanized steel, protected by epoxy paint.

Sound level and vibrations

Sound power level shall not exceed ……dB(A). The sound power levels must be rated in accordance with ISO 9614 (other types of rating cannot be used).

Dimensions

Unit dimensions shall not exceed following indications:

- Unit length..... mm
- Unit width..... mm
- Unit height..... mm

Compressors

The units shall be equipped with:

High performance hermetic scroll compressors optimized to work with R290, with reduced vibration and sound emissions.

- High efficiency values shall be guaranteed by:
- High volumetric efficiency in the whole range of application, through the continuous contact between the fixed and the orbiting scroll deleting the dead space and the re-expansion of the refrigerant gas;
- Low pressure drops due to the absence of inlet and discharge valves and to the uniform compression cycle;
- Reduction of the heat exchange between the gas during suction and discharge due to the separation of gas flows;

- The reduced noise shall be obtained by:
- The absence of the inlet and discharge valves
- The uniform compression cycles
- The absence of pistons which ensures reduced vibration and pulsation of the refrigerant

- The engine shall be cooled by the suction refrigerant fluid.
- Shall be present a thermal protection for the three phases complete with sensors on the stator windings to avoid overheating caused by lack of phase, insufficient cooling, mechanical locks, power supply out of tolerance;
- The compressors shall be fitted on rubber antivibration mounts.
- The compressors shall be provided complete with oil charge.

Evaporator (PHE) The units shall be equipped with a direct expansion plate to plate type evaporator. The evaporator will be made of stainless steel brazed plates closed cell with thermal insulation material.

- The evaporator will have 2 refrigerant circuit.
- The evaporator will be manufactured in accordance to PED approval.
- Flow switch must be installed on plant.
- Water filter must be installed on plant.

Refrigerant circuit The unit shall have one refrigerant circuit per module according to the capacity.

- The circuit shall include as standard the following safety devices: High and low pressure switch, hot gas temperaturemonitoring, overload relay.

Electrical control panel Power and control Power and control sections shall be located into the main electrical panel. The power section shall include Main switch, auxiliary and control cut-outs, transformers, control fuses, relay and auxiliary relay, sensors, unit digital controller. The main panel doors shall be interlocked to the main switch to guarantee safe operations when the doors are open.

Controller
The controller will be installed as standard and it will be used to modify unit set-points and check control parameters.
- A sophisticated software with predictive logic, will select the most energy efficient combination of compressors and EEXV to keep stable operating conditions to maximize unit energy efficiency and reliability;
- The controller will be able to protect critical components based on external signals received from the unit itself.

Controller features
Controller shall be guarantee following minimum functions:

- Management of the compressors;
- Full routine operation at condition of high evaporator entering water temperature (start-up);
- Leaving water evaporator temperature regulation;
- Display of Status Safety Devices;
- Number of starts and compressor working hours;
- Optimized management of unit load;
- Start at high evaporator water temperature;
- Master / Slave (provided as standard) ;
- Variable primary Flow (available as accessory).

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