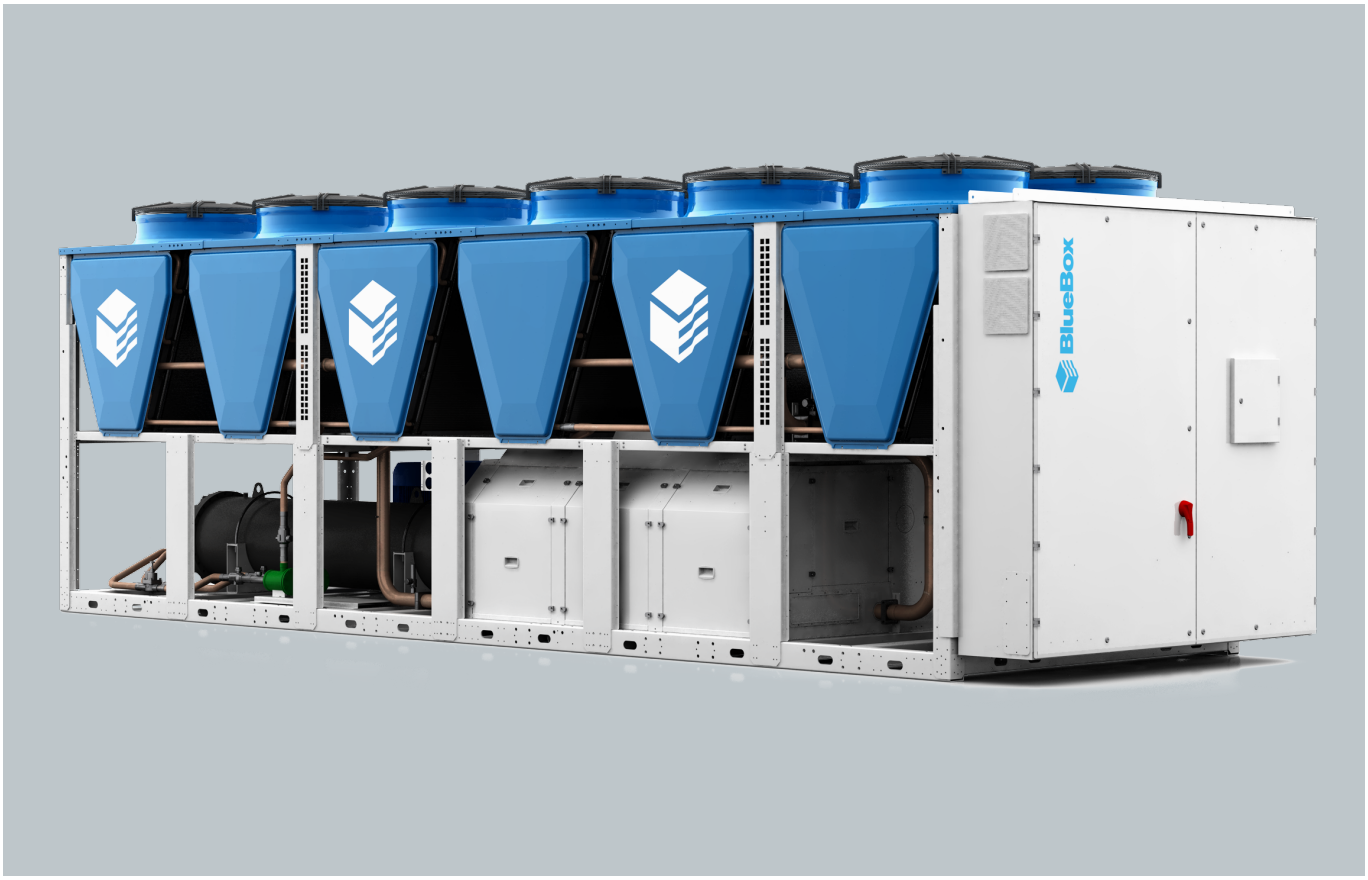
Kappa SKY

260÷1360 kW



General
High efficiency, single and double circuit chillers featuring screw compressors with variable compression ratio and an inverter for capacity modulation

Configurations
Xi: high efficiency, unit with full inverter compressors

Xh: high efficiency, unit with hybrid compressors

Si: compact dimensions, unit with full inverter compressors

Sh: compact dimensions, unit with hybrid compressors

/LN: low noise version

SLN: super low noise version

/HAT: for high external air temperature

/DS: featuring a desuperheater

/DC: with total recovery

Strengths
- High efficiency and compact dimensions
- Non-flammable refrigerant R513A, with GWP=573
- Versatile application: water temperature up to 23°C. Operation in a wide range of environmental conditions.
- Reduced noise levels, low noise and super low noise versions
- BlueThink advanced control with integrated web server. Multilogic function and Blueye® supervision system. (options)
- Flowzer: energy optimization on water side (options)
- Conforming with **Ecodesign Reg. 2281 tier 2**

WESTERN™ AIRCONDITIONING WARMTEPOMPEN

BlueBox by Swegon

Kappa SKY

Kappa SKY

PRODUCT DESCRIPTION

Kappa SKY is a range of inverter-controlled screw compressor chillers for the generation of refrigerated water from -8°C up to 23°C with external temperatures ranging between -20°C and 50°C.

The Kappa SKY range is available with 4 efficiency levels (Xi, Si and Xh, Sh) and 3 noise emission levels (base version, LN and SLN). Units from the Xi and Xh series are designed for max. seasonal efficiency. The Si and Sh models provide for excellent efficiency and very high compactness; they are specifically designed for retrofit solutions where significant restrictions exist as regards unit transport and housing. All the refrigerant circuits featured in the Xi and Si ranges fit an AC inverter-controlled screw compressor that is designed to modulate the demand for cold. The Xh and Sh ranges feature a hybrid solution where the inverter-controlled circuit and the variable screw compressor are combined with another circuit featuring a screw compressor with step adjustment.

REFRIGERANT

Refrigerant R513A (GWP=573*) standard.

The refrigerant consists in a blend of R134a (44%) and R1234yf (56%), with temperature glide equal to 0.

R513A is classified as a non hazardous fluid (Group 2 fluid under PED).

It is also included in Class A1 under the ASHRAE Standard 34:

- non-toxic;
- non-flammable.

The excellent GWP value may be an advantage in projects where:

- min. targets are adopted for the containment of the environmental footprint;
- it is possible to receive incentives or other benefits that are applicable in some countries or are connected to specific plant design criteria.

This also goes to the benefit of unit installation, commissioning and maintenance as it reduces the overall management costs.

(*) GWP (AR5), pursuant to IPCC V, evaluated over a span of 100 years.

BODY

The body is modular with a load-bearing frame, made of galvanized sheet-iron coated with polyester powder RAL 5017/7035 which makes it highly resistant to weather conditions. All screws and bolts are stainless steel.

There are yellow lifting brackets at the base of the unit to allow lifting with lifting beam.

All the units are monobloc type.

COMPRESSORS

Units fit innovative screw compressors with a variable compression ratio, which ensure optimised operation under all operating conditions.

The new position of the slide valve contributes to changing the compressor internal geometry, thus optimising the purge pressure in function of the ambient conditions. The BlueThink controller constantly monitors the evaporating and condensing temperatures of the unit and changes the compression ratio of the compressors to obtain the maximum achievable efficiency.

The compressors in use are designed according to an exclusive BlueBox specification in order to achieve maximum efficiency both under partial and full load conditions.

Xi version (full inverter)

Units in Xi version are available in single and double circuit configuration. Each circuit fits a semi-hermetic screw compressor with variable compression ratio. Each circuit also features an AC inverter for continuous capacity reduction of the refrigeration demand from each compressor from 25 up to 100%, thus achieving a min. control step of 12.5% in double circuit units. The capacity reduction of the entire unit is always continuous, from the minimum capacity reduction step, based on the number of compressors, up to 100%. The variation of the compression ratio caused by the sliding of the internal slide valve, in combination with capacity reduction of the refrigeration demand by the inverter, allows for the maximisation of the energy efficiency of the unit in all operating conditions.

In addition to managing capacity modulation, BlueThink also controls all safety devices so that the compressor can operate within its operating limits at all times and simultaneously safeguard its operation and reliability. Compressor lubrication is ensured by the pressure difference between the delivery and the suction lines, thanks to the regulation action performed by BlueThink.

All the compressors are fitted with check valve on delivery side, metal mesh filter on suction side and electronic protection with temperature sensors directly inserted in the windings and on the delivery pipe.

Startup in compressors featuring an inverter is of the "Direct On Line" type with an inverter-controlled acceleration ramp that minimises inrush currents.

In addition to the obvious energy savings arising from greater efficiency, the use of a full inverter unit also brings advantages in terms of installation:

- For these units, the cosφ (power factor) is always greater than 0.95, therefore making external power factor correction systems unnecessary.
- The maximum inrush current of the unit is always lower than its maximum absorbed current (calculated in the worst operating condition), therefore making the power cables and line protection devices less onerous.

All the compressors are fitted as standard with crankcase heater and discharge valve.

Si version (full inverter)

Units in Si version are available in double circuit configuration. Each circuit fits a semi-hermetic screw compressor with variable compression ratio. Each circuit also features an AC inverter for continuous capacity reduction of the refrigeration demand from each compressor from 25 up to 100%, thus achieving a min. control step of 12.5% in double circuit units. The capacity reduction of the entire unit is always continuous, from the min. capacity reduction step up to 100%. The variation of the compression ratio caused by the sliding of the internal slide valve, in combination with capacity reduction of the refrigeration demand by the inverter, allows for the maximisation of the energy efficiency of the unit in all operating conditions.

In addition to managing capacity modulation, BlueThink also controls all the safety devices so that the compressor can operate within its operating limits at all times and simultaneously safeguard its operation and reliability. Compressor lubrication is ensured by the pressure difference between the delivery and the suction lines, thanks to the regulation action performed by BlueThink.

All the compressors are fitted with check valve on delivery side, metal mesh filter on suction side and electronic protection with temperature sensors directly inserted in the windings and on the delivery pipe.

Startup in compressors featuring an inverter is of the "Direct On Line" type with an inverter-controlled acceleration ramp that minimises inrush currents.

In addition to the obvious energy savings arising from greater efficiency, the use of a full inverter unit also brings advantages in terms of installation:

- For these units, the cosφ (power factor) is always greater than 0.95, therefore making external power factor correction systems unnecessary.
- The maximum inrush current of the unit is always lower than its maximum absorbed current (calculated in the worst operating condition), therefore making the power cables and line protection devices less onerous.

All the compressors are fitted as standard with crankcase heater and discharge valve.

Xh and Sh versions (hybrid circuits)

Units in Xh and Sh version are available in double, hybrid circuit configuration. The first circuit fits a semi-hermetic screw compressor with variable compression ratio. The first circuit also features an AC inverter for continuous capacity reduction of the compressor refrigeration demand from 25 up to 100%, thus achieving a min. control step of 12.5% in double circuit units.

The second circuit fits a semi-hermetic screw compressor with stepped capacity reduction. The capacity reduction of the entire unit is always continuous, from the min. capacity reduction step up to 100%. The variation of the compression ratio caused by the sliding of the internal slide valve, in combination with capacity reduction of the refrigeration demand by the inverter, allows for the maximisation of the energy efficiency of the unit in all operating conditions.

difference between delivery and suction.

All the compressors are fitted with check valve on delivery side, metal mesh filter on suction side and electronic protection with temperature sensors directly inserted in the windings and on the delivery pipe.

All the compressors are fitted as standard with crankcase heater and discharge valve.

SOURCE-SIDE HEAT EXCHANGER

The exchangers are made with microchannel aluminium coils.

Thanks to continuous research in the alloys field, and sophisticated production methods, microchannel coils are made using specific aluminium alloys for the tubes and for the fins. This allows the effects of galvanic corrosion to be drastically reduced to always ensure protection of the tubes that confine the refrigerant. Tubes and fins are also subjected to SilFLUX coating processes (or equivalent) or have zinc added to further increase their corrosion resistance.

The use of microchannel coils, as opposed to conventional copper/aluminium coils, reduces the total weight of the unit and reduces the refrigerant charge.

The V-shaped arrangement of the coils enables them to be protected from hail and makes the unit compact. It also guarantees an increase in the air intake surface, and leaves ample space for distribution of the components of the refrigerant circuit and the hydraulic circuit.

Options are available for installation in environments with a particularly aggressive atmosphere or in coastal or highly industrialized areas. See section: "Description of accessories".

FANS

The fans are axial fans, directly coupled to a three-phase 6-pole electric motor, with integrated thermal overload protection (Klixon®) and IP 54 protection rating.

The fan includes the shroud, designed to optimize its efficiency and reduce noise emission to a minimum, and the safety guard.

The control manages the speed of the fans through a phase cutting speed adjuster, in order to optimize the operating conditions and efficiency of the unit.

The fan speed regulator is supplied standardly.

This control also has the effect of reducing the noise level of the unit: in fact, the typical conditions under which the control will be modulating the speed of the fans are those of the night, spring and autumn.

For units equipped with EC fans (option), the same function is carried out using the electronically commutated motor of the fans.

USER-SIDE HEAT EXCHANGER

The exchanger is a dry-expansion shell-and-tube exchanger.

It is sized to maximize the efficiency of the unit by keeping the overall dimensions and the refrigerant charge down to a minimum.

The exchanger consists of a steel shell insulated with a shell made of closed-cell foam material, while the tube bundle is made with copper tubes.

On the hydraulic connections of the heat exchanger, there are pipe taps for the differential pressure switch, and wells for the temperature probes.

The evaporator is standardly supplied with an antifreeze heater, which is wrapped around the shell, and it is heat insulated.

REFRIGERANT CIRCUIT

Each refrigerant circuit of the basic unit comprises:

- discharge valve for each compressor
- shut-off valve in the liquid line
- charging sockets
- liquid sight glass
- replaceable solid cartridge dehydrator filter
- electronic expansion valve
- pressure transducers for reading the high and low pressure values and relevant evaporating and condensing temperatures
- high pressure switches and safety valves.

The pipes of the circuit and the exchanger are insulated with extruded closed-cell expanded elastomer that is resistant to UV rays.

Compared to the mechanical expansion valve, the electronic expansion valve allows machine stability to be reached more quickly and better superheating control to maximize the use of the evaporator in all load conditions. This also acts as shut-off valve on the liquid line, as it closes during compressor stops, so preventing dangerous refrigerant migration.

ELECTRICAL CONTROL PANEL

The electrical control panel is made in a painted galvanized sheet-iron box with forced ventilation and IP54 protection rating. The electrical control panel of the basic unit comprises:

- main disconnect switch
- fuses to protect the compressors, fans and auxiliary circuits
- compressor contactors
- fan contactors
- phase monitor
- potential-free general alarm contacts
- single potential free operating contacts
- external air temperature probe
- a regulation controller with a display;
- Capacitive backup battery for electronic expansion valve
- an AC inverter for each refrigerant circuit (full inverter unit), one single AC inverter (hybrid units).

All the electrical cables inside the panel are numbered and the terminal board dedicated to the customer's connections is colored orange so that it can be quickly identified in the panel.

CONTROL BLUETHINK

Main controller functions

The regulation controller is designed for the following functions:

- water temperature control, with control of the water leaving the user-side exchanger
- freeze protection
- compressor timings
- automatic rotation of compressor starting sequence
- recording of the log of all machine inputs, outputs and states
- automatic rotation of compressor starting sequence
- recording of the alarm log
- digital input for general ON/OFF
- RS485 serial port with Modbus protocol
- Ethernet serial port with Modbus protocol and integrated web server preloaded web page

For further details on available functions and on displayed information, you can refer to the specific documentation of the control.

By default, the serial connections present as standard are enabled only for reading from BMS. Enabling of writing from BMS is to be requested when ordering.

Main functions of the webserver

The BlueThink controller is standardly supplied with a web server, access to which is gained with an authentication password.

The web page is designed to carry out the following functions (some of these are available only for users with an advanced access level):

- display of the main functions of the unit such as unit serial n°, size, refrigerant
- display of the general status of the machine: water inlet and outlet temperatures, outside air temperature, evaporating and condensing pressures, suction and discharge temperatures
- display of the status of compressors, fans, pumps, electronic expansion valves
- display in real time of the graphs of the main quantities
- display of the graphs of logged quantities
- display of alarm log
- management of users on several levels
- remote ON/OFF
- remote set point change
- remote time band change
- to view instant data relating to current absorption, power and out-of-sync events as well as electricity consumption (where the Energy Meter accessory is fitted).

Human Machine Interface (Display)

The control has a graphic display that allows the following information to be displayed:

- water inlet and outlet temperature
- set temperature and differential set points
- description of alarms
- hour meter of operation and number of start-ups of the unit, the compressors and the pumps (if present)
- high and low pressure values, and relevant condensing and evaporating temperatures
- external air temperature
- superheating at compressor suction.
- to view instant data relating to current absorption, power and out-of-sync events as well as electricity consumption (where the Energy Meter accessory is fitted).

TESTING

All the units are factory-tested and supplied complete with oil and refrigerant.

CONTROLS AND SAFETY DEVICES

All the units are fitted with the following control and safety components:

- high pressure switch with manual reset
- high pressure safety device with automatic reset, for a limited number of occurrences, managed by the controller
- low pressure safety device with automatic reset and limited tripping managed by the controller
- high pressure safety valve
- antifreeze probe at outlet of each evaporator
- water differential pressure switch installed at the factory
- overtemperature protection for compressors and fans

CERTIFICATIONS AND REFERENCE STANDARDS

The manufacturer has implemented and keeps the Management Systems listed below and it is certified against them:

- Quality Management System according to standard UNI EN ISO 9000;
- Environmental Management System according to standard UNI EN ISO 14000;
- Health and Safety Management System according to standard BS OHSAS 18000 (as converted into UNI EN ISO 45000).

These management systems ensure that the company puts in place any and all actions and initiatives to define and monitor the standards defined by its Management, which are stated in its Quality, Environmental and Safety policies.

To meet the safety requirements, the unit was designed and manufactured in compliance with the directives and product regulations below:

- PED Directive: safety criteria to be followed when designing pressure equipment;
- Machinery Directive: safety criteria to be followed when designing machinery;
- Low Voltage Directive: safety criteria to be followed when designing electrical machine parts;
- Electromagnetic Compatibility Directive: electromagnetic compatibility criteria to be followed when designing electrical machine parts;
- WEEE Directive: criteria for product management at the end of its life cycle as waste with a view to environmental protection.

The units are manufactured, tested and checked with reference to the European standards specified in the Declaration of CE Conformity, in accordance with the requirements and procedures of our Quality System.

VERSIONS

The Kappa SKY family is characterised by different versions which differ from one another by the levels of efficiency, compactness and noise. Each model is designed for optional coupling of the EC fans, thus further improving the efficiency levels of the unit.

Xi / Xh

Units in Xi and Xh version require the use of a larger number of condensing coils in order to increase the ratio between the exchange surfaces and the compressor potential capacity, which enables achieving max. efficiency under all load conditions.

The Xi models (full inverter) achieve maximum efficiency at partial loads (SEER) thanks to the use of AC inverters on both circuits and the use of compressors with a variable compression ratio (Vi).

The Xh models (hybrid circuits) contain 2 refrigerant circuits, where one circuit is provided with an AC inverter with a variable Vi screw compressor and the other circuit has a stepless compressor. The Xh models have max. efficiency performances at full load (EER) and, at the same time, maintain excellent seasonal efficiency (SEER).

Xi SLN / Xh SLN

The Kappa SKY Xi units (full inverter) and the Xh units (hybrid circuits) are also available in super low noise version (SLN).

Sound-proof compressor compartments are used (see description of /LN option) together with fans featuring a speed regulator and reduced air flow rate. The speed reduction of the fans is such that, under nominal operating conditions, the air flow rate and noise level are lower than those of the basic version of the unit.

Si / Sh

Units in Si version (full inverter) and Sh version (hybrid circuits) are compact machines and provide for high refrigerant performances, and they maintain excellent performance coefficients both at full and partial load.

The Si models (full inverter) grant high efficiency, including at partial loads (SEER), thanks to the use of AC inverters on all circuits and the use of compressors with variable compression ratio (Vi).

The Sh models (hybrid circuits) contain 2 refrigerant circuits, where one circuit is provided with an AC inverter with a variable Vi screw compressor and the other circuit has a stepless compressor. The Sh models (hybrid circuits) perform at max. efficiency at full load (EER) and, at the same time, maintain excellent seasonal efficiency (SEER).

/DC: unit with total recovery condenser

In addition to the set-up of a chiller only unit, /DC units comprise:

- a heat recovery condenser for recovering 100% of the condensation heat on each refrigerant circuit. The exchanger is a brazed plate heat exchanger; for multi-circuit units, the heat exchangers are to be manifolded outside the unit (by the customer)
- temperature probe at the inlet of each recovery exchanger
- liquid receiver for each refrigerant circuit with system for emptying the refrigerant from the condensing coil
- potential free contact in the electrical control panel for activation of recovery.

When required by the system, through the closing of a contact, the control automatically manages activation of recovery. Recovery management is carried out through a control on the temperature of the return water. The control also automatically manages safety deactivation of recovery if the condensing pressure becomes too high, and changes to using the condensing coils.

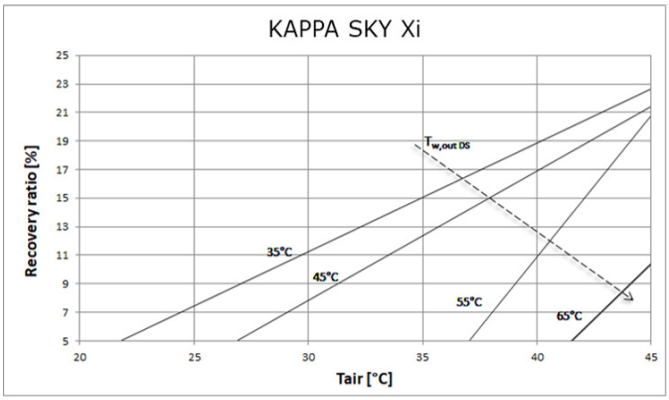
/DS: unit with desuperheater

In addition to the set-up of a chiller only unit, /DS units comprise (for each refrigerant circuit) an exchanger for condensation heat recovery of up to 20% (depending on size, version and operating conditions), placed in series with the condensing coils. The exchanger is a braze-welded plate heat exchanger. For multi-circuit units, the exchangers are to be manifolded outside the unit (by the customer).

Two illustrative graphs are shown below in which, as the ambient temperature changes, (Tair) and as the temperature of the water leaving the heat recovery heat exchanger changes, (Tw,out DS), the percentage of recovered heat is shown as an indication (Recovery ratio).

The percentage of recovered heat is calculated as the ratio between recovered thermal power to the desuperheater and the thermal power released by the condenser under nominal conditions, that is, evaporator inlet/outlet water temperature 12/7°C.

In the following graph, a constant temperature delta of 5°C between water inlet and outlet at the heat recovery heat exchanger has been considered.



/LN: silenced unit

In the unit with the /LN option, all the compressors are enclosed in fully soundproofed compartments with sound absorbing panels and soundproofing material placed in-between them.

/HAT: unit for high external air temperatures

The unit fitted with this accessory adopts an electrical control panel made using specific components to withstand high temperatures, special cables and oversize protection parts.

This accessory extends the operating limits of the unit in terms of max. external air temperature.

This accessory guarantees operation with external air temperature up to 46°C.

The /HAT accessory is compatible with versions Xi and Xh.

The /HAT accessory is not compatible with SLN versions.

The /HAT accessory is not compatible with Si Sh versions.

For higher temperatures, a set-up with air conditioning of the electrical control panel is necessary; the unit works in capacity reduction mode. The feasibility of this set-up must be assessed: please contact our sales department.

HYDRAULIC MODULES

The units may be equipped with a pre-installed hydraulic module featuring single propeller centrifugal pumps with intake and delivery flanges on the line.

The pumps fit a high efficiency motor type IE3.

An inverter may be connected to the pumps in order to achieve accurate thermodynamic regulation and to minimise energy consumption (refer to the Flowzer accessories).

All units can be fitted with hydraulic module in various configurations:

- /1P: hydraulic module with one pump
- /2P: hydraulic module with two pumps
- /1PS: hydraulic module with one pump and a buffer tank (in sizes where provided)
- /2PS: hydraulic module with two pumps and a buffer tank (in sizes where provided)

All the above-mentioned modules are fitted with pumps that have a head value between 100 and 150 kPa.

The following are also available:

- Modules /1PM, /2PM, /1PMS and /2PMS are fitted with pumps that have a boosted head value between 200 and 250 kPa.

Hydraulic modules with one pump have:

- one pump
- a gate valve on the delivery side of the pump
- an expansion vessel

Hydraulic modules with two pumps have:

- two pumps
- a check valve on the delivery side of each pump
- a gate valve on the outlet of the delivery manifold
- an expansion vessel

In the version with 2 pumps, these are always with one on standby while the other is working. Switching over between the pumps is automatic and is done by time (to balance the hours of operation of each one) or in the event of failure.

Hydraulic modules with tank also have:

- a gate valve at the inlet of the pump or the suction manifold
- a tank with drain valve and air valve

Refer to the table showing the configuration compatibility to check whether specific set-ups are available.

DESCRIPTION OF ACCESSORIES

Some accessories may be incompatible with each other even if not expressly indicated.

Refrigerant

R134 R134a
Unit supplied with refrigerant R134a instead of R513A.

Refrigerant circuit accessories

BK Brine Kit
This accessory is compulsory if a water temperature set point lower than +3°C is used (if the unit is provided with double set point or variable set point, the lower set point is considered).
The accessory consists of increased insulation and suitable sizing and calibration of some components.
The inlet and outlet temperatures of the user-side exchanger must be given on ordering to allow correct setting of the alarm parameters and verification of the sizing of the expansion valve.
The cooling set point can then be changed by the customer in an interval that, compared to the set point given on ordering, ranges from -1K up to the maximum temperature allowed by the above-stated operating limits.
The unit will be optimized to work at the set point temperature given on ordering. For different set points, the cooling capacity provided and the level of efficiency of the machine could decrease and move away from these conditions.

DVS Double safety valve
With this accessory, instead of each individual safety valve per circuit, there is a "candelabrum" with two safety valves and a diverter valve for choosing the valve in operation. This allows the safety valves to be replaced without having to drain the machine and without having to stop it.

MAFR Pressure gauges
The operating pressures of each circuit of the unit can be displayed on the control by accessing the relevant screens. Also, the machine can be fitted with pressure gauges (two for each circuit) installed in a clearly visible position. These allow reading in real time of the working pressures of the refrigerant gas on the low pressure side and on the high pressure side of each refrigerant circuit.

RIC Liquid receiver
The adoption of this accessory always guarantees correct feeding of the expansion valve even when the unit is subjected to wide external air temperature ranges.
This accessory is standard on DC units.

RUBA Compressor suction valves
The valves situated on the suction side of the compressors allow the compressor to be isolated from the rest of the refrigerant circuit, so making the maintenance operations quicker and less invasive.
The compressor discharge valve is standard on all compressors

VS Liquid line solenoid valve
This accessory prevents refrigerant migration that could damage the compressor on starting.

RPR **Refrigerant leak detector**

With this accessory, a refrigerant leak detector is placed inside each compressor compartment. Detection of a refrigerant leak is managed by the controller through a specific alarm and display of a specific icon on the display of the controller. This alarm stops the unit.

The accessory can be applied only to units in LN or SLN set-up.

RPP **Refrigerant leak detector with automatic pump down**

With this accessory, a refrigerant leak detector is placed inside each compressor compartment. Detection of a refrigerant leak is managed by the control through a specific alarm and display of a specific icon on the display of the control. For all the circuits of the unit, the alarm also starts the machine stopping procedure with pump down, confining all the refrigerant in the coils.

The accessory includes the capacitive backup battery.

The accessory can be applied only to units in LN or SLN set-up.

The accessory can be applied only to units in LN or SLN set-up.

Fan accessories

VEC **EC fans**

With this accessory, EC fans, with electronically commutated brushless motor, are used for the ventilating section. These guarantee very high efficiency levels for all working conditions and allow a 15% saving on the power absorbed by each fan working at full capacity.

Through a 0-10V analogue signal sent to each fan, the microprocessor also carries out condensation control by continuous adjustment of the air flow rate as the external air temperature changes, with a further reduction in electrical absorption and noise emission.

For further details, see the dedicated chapter: "Aeraulic head losses and options available for the fan section".

VEM **Oversize EC fans**

The increased EC fans allow to obtain the same benefits as EC fans and in addition allow to have a residual useful head of about 100Pa.

For further details, see the dedicated chapter: "Aeraulic head losses and options available for the fan section".

RECP **Pressure recuperator**

Normally, the air ejected by the fan has a high speed and this manifests itself as kinetic energy that is dissipated into the environment.

The pressure recuperator is a passive element situated on the ejection duct of each individual fan designed to allow better conversion of kinetic energy into static pressure, which manifests itself as a higher pressure generated by the fan.

This higher pressure can have at least two possible applications:

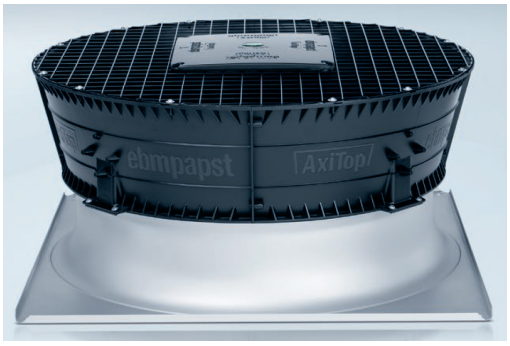
- For the same fan speed, the pressure recuperator allows an increase of about 50Pa in the available pressure of the ventilating section to be obtained. This can be useful for overcoming the head losses that may be present in specific installations. The increase in available pressure is to be considered in addition to the increase that can already be obtained with the application of oversize EC fans
- for the same pressure differential on the air, the pressure recuperator allows the same air flow rate to be obtained with a lower number of revolutions of the fan. This automatically produces a reduction of up to 3 dB(A) in the noise emission of the unit and a reduction in the absorption of the fan, with an immediate increase in the overall efficiency of the unit.

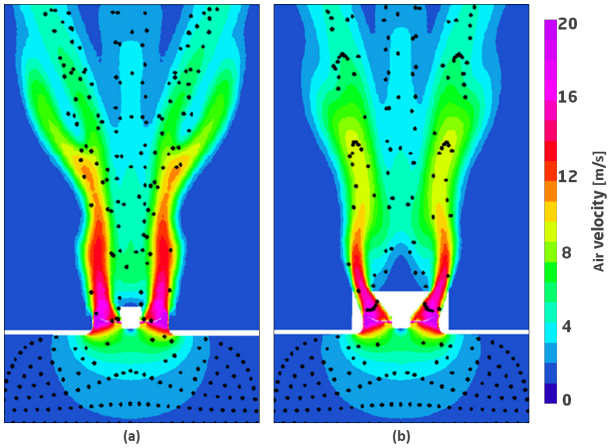
The reduction in total sound power varies depending on the model and version of the unit as it is related to the incidence of noise generated only by the fan section on the total noise emitted by the unit.

For SLN units, which already work with a reduced air flow rate, application of the pressure recuperator has a limited or negligible noise reduction effect.

To allow optimization of the performance of the accessory, combination with the speed adjuster or EC fans is necessary. In this last case, the higher efficiency of the EC fans (especially when operating at low speed) is added to the performance improvement generated by the pressure recuperator.

The accessory is supplied separately from the unit on one or more pallets and it must compulsorily be installed (by the customer) before the first start-up of the machine.





(a) fan only;

(b) fan with pressure recuperator

Hydraulic circuit accessories

RA **Antifreeze heater**

These electric heaters are fitted on the pumps and in the tank (depending on the configuration of the machine) to prevent damage to the hydraulic components due to ice formation during periods when the machine is inactive.

Based on normal operating conditions and the percentage of glycol in the system, an appropriate "antifreeze alarm" temperature is set in the control. When a temperature that is 1K higher than the antifreeze alarm threshold is detected at the outlet from the exchanger, the pump (if present) and the antifreeze heaters are switched on. If the temperature of the outgoing water reaches the antifreeze alarm threshold, the compressors are stopped, keeping the heaters and the pumps active, and the general alarm contact of the machine is activated.

The antifreeze heater is only featured as a standard component on the user-side heat exchanger.

VSIW **Water-side safety valve**

With this accessory, a safety valve is inserted in the hydraulic circuit of the unit: when the calibration pressure is reached, the valve opens and, by discharging (to be routed by the customer), prevents the system pressure from reaching limits that are dangerous for the components present in the system. The valves have positive action, that is, performance is guaranteed even if the diaphragm deteriorates or breaks.

FLUS **Flow switch (instead of the water differential pressure switch)**

As an alternative to the differential pressure switch (standard flow sensor), it is possible to request the paddle flow switch as accessory. This detects when there is no water flow to the user-side exchanger and sends a signal to the control of the unit that will stop the compressors to prevent damage to the exchangers.

Application of this accessory is compulsory for units that use non-glycol water and work with a yearly cycle where external air temperatures are zero or below.

The flow switch is supplied loose (installation by the customer) and replaces the water differential pressure switch (standard).

IVPO **Soundproofed pump compartment**

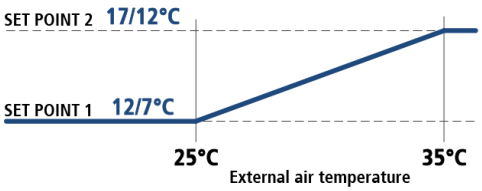
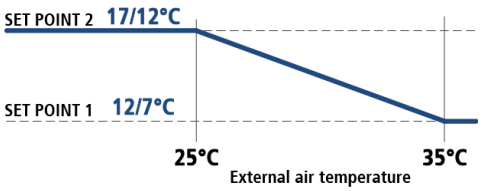
With this accessory, the motor and the impeller of the pumps are enclosed in a compartment that is fully soundproofed with sound absorbing material and soundproofing material.

Electrical accessories

CSP **Set point compensation depending on external air temperature**

For units fitted with this accessory, the set point of the unit is set so that it can vary between two values, a maximum and a minimum, depending on the external air temperature. The compensation ramp and the maximum and minimum values of the set point can be changed by the user.

Unless otherwise specified in the order, the controller will be set to implement a positive compensation logic according to the temperatures shown in the following diagrams:

	Positive compensation	Negative compensation
Chiller		

DAA **Double power supply with automatic switching**

A motor-driven automatic switch to which to connect two separate power supply lines (for example, one from the mains power line and one from the uninterruptible power supply unit) is installed in the electrical control panel of the unit.

The switching from one line to another is automatic and obligatorily requires passing through the OFF position.

When this accessory is requested, the power supply of the unit must compulsorily include neutral.

DAM **Double power supply with manual switching**

A manual switch to which to connect two separate power supply lines (for example, one from the mains power line and one from the uninterruptible power supply unit) is installed in the electrical control panel of the unit.

The switching from one line to another is manual and obligatorily requires passing through the OFF position.

ENM **Energy meter**

The accessory allows the main electrical quantities (including voltage, current, power) to be read on the three phases, via current transformer.

This accessory communicates with the BlueThink controller to supervise the monitored data. The values measured are then made available through the unit display and the web server.

ENML **Energy meter with current limiter**

The accessory allows the main electrical quantities (including voltage, current, power) to be read on the three phases, via current transformer.

This accessory communicates with the BlueThink controller to supervise the monitored data. The values measured are then made available through the unit display and the web server.

This accessory is designed to limit the maximum current the unit can absorb. The controller instantly checks the absorption levels and, where necessary, it applies a forced capacity reduction that keeps the absorbed current value below the stored threshold.

FARE Fast Restart

The Fast Restart accessory enables the controller to carry out a fast restart of the unit following a blackout, in order to reduce machine down times to a minimum.

This accessory requires the provision of a power supply line dedicated to the controller (uninterruptible power supply unit installed by the customer) and a maximum and minimum voltage relay in the electrical control panel. In this way, the controller of the unit will always remain powered even during a blackout.

Once the main power supply returns after a blackout, the starting of the first compressor takes place within 60 seconds and the full capacity of the unit is reached in about 180 seconds (a time that depends on the number of compressors and the instant load level).

In order to protect component service life, the controller may carry out the Fast Restart procedure no more than 3 times in an hour and 5 times in one day.

Also, to make it easier to carry out any maintenance on the power supply line dedicated to the controller, there is a selector switch inside the electrical control panel to allow the controller to be powered directly from the main power supply of the machine.

IACV Automatic circuit breakers

With this accessory, automatic circuit breakers are installed instead of fuses for the protection of auxiliary loads. Also, the same accessory uses automatic circuit breakers with adjustable thermal overload protection to protect the compressors.

LIID Limitation of the current absorbed by digital input

When this accessory is requested, a digital input is prepared in the terminal board to activate the forced capacity reduction of the unit to a set fixed level.

This accessory is useful when there is a need to necessarily limit the power absorbed by the unit as regards particular conditions.

We point out that, in some conditions the controller could force the unit to operate at full capacity for limited periods of time.

RE1P Relay for management of 1 external pump

This accessory can be requested for units without pumps and allows a pump outside the machine to be controlled.

RE2P Relay for management of 2 external pumps

This accessory can be requested for units without pumps and allows two pumps outside the machine to be controlled with a running/stand-by logic by implementing a rotation on the hours of operation.

The two pumps are controlled by two separate relays.

RMMT Maximum and minimum voltage relay

This accessory constantly monitors the voltage value and the unit's power supply phase sequence. If the supply voltage does not fall within the set parameters or there is a phase reversal, an alarm is generated that stops the machine to prevent damage to its main parts

SETD Double set point from digital input

The accessory allows you to preset two different operating set points and manage the change from one to the other through a digital signal.

The set point temperatures must be specified when ordering. For optimization of the unit, reference will be made to the lower set point in chiller mode and the higher set point in heat pump mode.

Unless otherwise specified in the order, the controller will be set at the factory with the following temperatures:

- in chiller mode, set point 1 to 7°C and set point 2 to 12°C
- in heat pump mode (only for HP units) set point 1 to 45°C and set point 2 to 40°C

SETV Variable set point with remote signal

The accessory allows the set point to be varied continuously between two preset values, a maximum and a minimum, depending on an external signal that can be of the 0-1V, 0-10V or 4-20mA type.

The set point temperatures and the type of signal to use for the adjustment must be specified when ordering. For optimization of the unit, reference will be made to the lower set point in chiller mode and the higher set point in heat pump mode.

Unless otherwise specified in the order, the controller will be set at the factory with 0-10V analogue input and with the following temperatures: 0V corresponds to a set point of 7°C and 10V corresponds to a set point of 12°C.

SQE Heater for electrical control panel

Electric heaters are positioned inside the electrical control panel and these prevent the formation of ice or condensation inside it.

TERM Remote-controlled user terminal panel

This accessory allows the terminal normally situated on the machine to be replicated on a support situated at a distance. It is particularly suitable when the unit is placed in an area that is not easily accessible.

The accessory is supplied loose and is to be installed by the customer at a maximum distance of 120m from the unit. We advise using a cable of the following type: "TECO O.R. FE 2x2xAWG24 SN/ST/PUR".

For this accessory, there is a dedicated serial port.

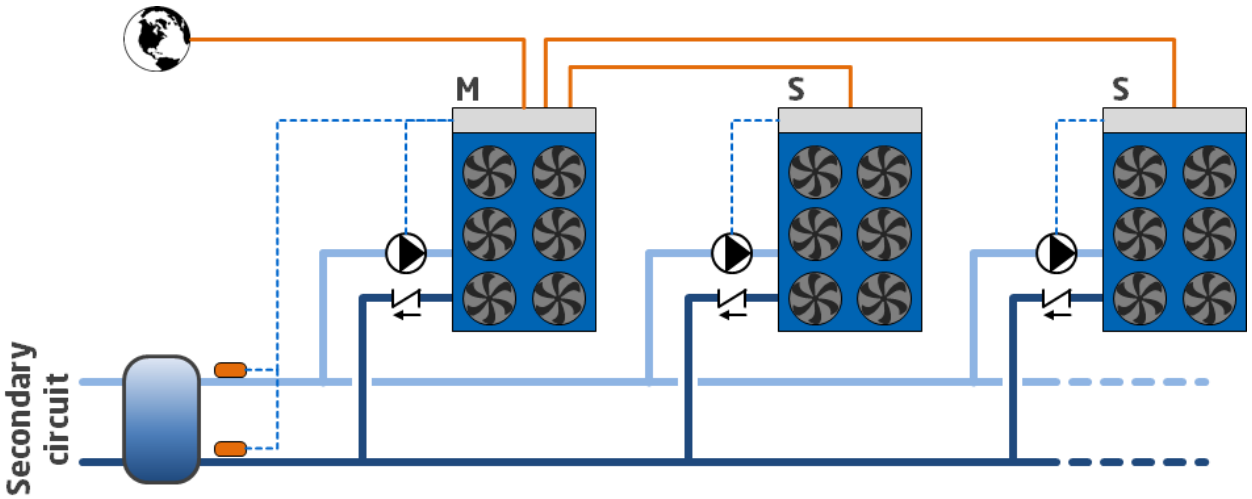
GLO **Modbus Lonworks Gateway**

With this accessory, a RS485/Lon gateway is installed inside the electrical control panel.

By default, the programming gives read-only access to the control of the unit. Enabling of read/write access should be requested when ordering.

FMx **Multilogic Function**

The Multilogic function allows management of up to 32 units equipped with advanced Bluethink controller and connected in hydraulic parallel with each other.



On the basis of the information recorded by the temperature probes installed on the delivery and return manifolds of the system, with the master unit, a capacity request is generated that is distributed among the units connected in the Multilogic network according to settable priority and optimization logics.

If communication between the units fails or if the master is off-line, the slave units can continue to work according to the set thermoregulation parameters.

The connected units can be different from each other, in terms of capacity and set-up, provided the following rules are complied with:

- if there are both chiller units and heat pumps in the Multilogic network, the Master unit must obligatorily be one of the HP units
- if there are both free cooling and non free-cooling units in the Multilogic network, the Master unit must obligatorily be one of the free-cooling units.

The Multilogic function that can be requested with the unit can be:

- **FM0:** Multilogic function for Slave unit
- **FM2:** Multilogic function for Master unit for managing up to 2 Slaves
- **FM6:** Multilogic function for Master unit for managing up to 6 Slaves

If you need to connect more than 6 slaves (up to 31), you can ask for a quotation from our sales department.

For the slave units, the accessory requires:

- programming of the unit as slave of a system of machines in Multilogic network

For the master units, the accessory requires:

- programming of the unit as master of a system of machines in Multilogic network
- entering of the parameters necessary for connection with the individual slave units
- installation in the electrical control panel of a network switch to allow the units to be connected in a LAN network.
- the supply of 2 temperature probes to be positioned on the delivery and return manifold of the system (supplied separately with it, installation and wiring by the customer)

The connection between the master unit and the slave units made with a CAT cable. 5E/UTP (prepared by the customer) with RJ45 connectors. Maximum cable length 100m.

For further details, please refer to the controller manual.

PBA BACnet protocol over IP (Ethernet)

The controller is set for use, in read and write mode, of the BACnet port on IP protocol.

By default, the programming gives read-only access to the control of the unit. Enabling of read/write access should be requested when ordering.

PSN SNMP protocol

The accessory consists of a gateway that allows Ethernet connection to a SNMP manager supervision system.

SERI RS485 serial connection with Modbus protocol

RS485 serial connection with Modbus protocol

SMAR Smartlink function predisposition

This accessory makes it possible to connect the controller of the unit with the controller of a Swegon GOLD™ air handling unit via a simple serial cable, so allowing their operating logi-cs to be merged into a single consciousness that pursues the maximum energy efficiency of the system. The RS485 serial interface is already included and dedicated to connection with Swegon units.

The option is incompatible with:

- double set point
- variable set point with remote signa
- summer/winter selection by digital input
- set point compensation depending on external air temperature
- multilogic
- all communication protocols.

SW4P Network switch with 4 ports

The accessory includes installation in DIN rail of a professional 4-port network switch.Requires Blueye via Ethernet.

SW8P Network switch with 8 ports

The accessory includes installation in DIN rail of a professional 8-port network switch.

Requires Blueye via Ethernet.

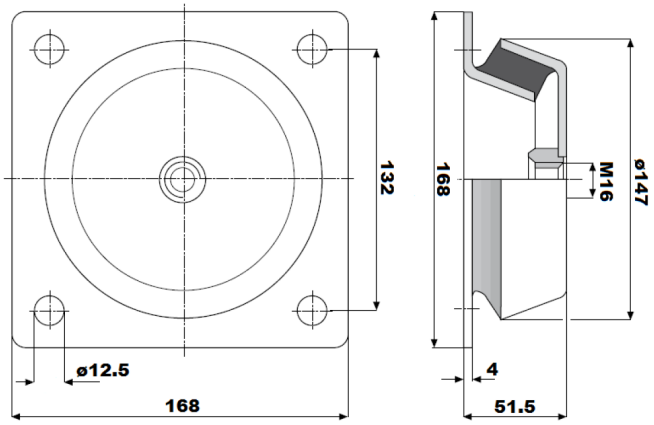
WIFI Wi-Fi

The accessory includes the supply of a Hot Spot WiFi already installed, wired and configured, complete with antenna.This accessory requires the Ethernet port of the controller to be available or, alternatively, a network switch with at least one available port to be present in the machine.

Other accessories

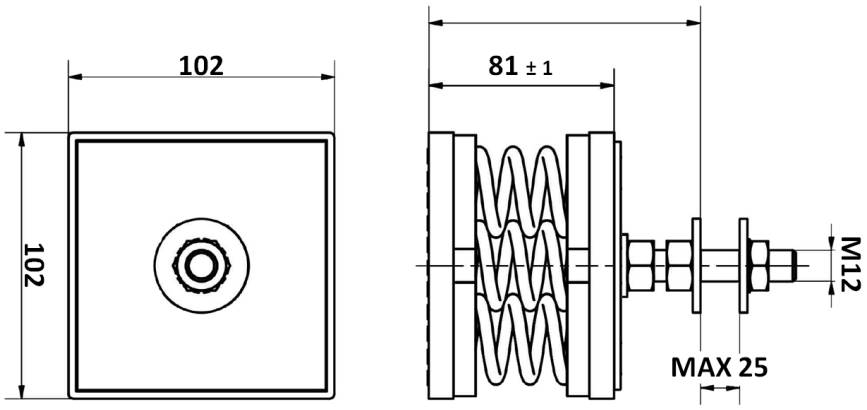
AG Rubber anti-vibration mounts

These allow you to reduce the vibrations transmitted from the unit to the surface it is standing on.
Accessory supplied loose.



AM Spring anti-vibration mounts

These allow you to reduce the vibrations transmitted from the unit to the surface it is standing on.
Accessory supplied loose.



ANTC Coil treated with anti-corrosion paints

The treatment is applied exclusively to finned pack coils with copper tubes and aluminium fins and consists of aluminium passivation and coating with a polyurethane base; a double layer of paint, of which the first passivates the aluminium and acts as primer and the second is a polyurethane based surface coating. The product has high resistance to corrosion and all environmental conditions.

The choice of whether or not to treat the exchanger should be made in relation to the environment in which the unit is to be installed and through observation of other structures and machinery with exposed metal surfaces present in the destination environment.

The cross observation criterion is the most valid method of selection currently available without having to carry out preliminary tests or measurements with instruments. The identified reference environments are:

- marine coastal
- industrial
- urban with a high housing density
- rural

Protective treatment of the exchanger is strongly recommended if at least one of the points below is verified:

- there are obvious signs of corrosion of the exposed metal surfaces in the installation area
- the distance from the coast is less than 20 km
- the prevailing winds come from the sea towards the unit
- the environment is industrial with a significant concentration of pollutants
- the environment is urban with a high population density
- the environment is rural with the presence of organic discharges and effluents.

For chiller units, this accessory also includes the "Cu/Al coil" accessory.

FW Water filter

To protect the elements of the hydraulic circuit (in particular, the exchangers), there are Y filters that can stop and settle the particles that are normally present in the water flow and would otherwise settle in the more delicate parts of the hydraulic circuit and damage its heat exchange capacity.

Installation of the water filter is mandatory even when it is not supplied as an accessory.

Accessory supplied loose.

ALPR Pre-painted aluminium coil

This option uses finned pack coils with copper tubes and pre-painted aluminium fins.

MCHE E-coated microchannel coil

The e-coated microchannel coils are treated by immersion of the whole exchanger in an emulsion of organic resins, solvents, ionic stabilisers and deionised water. This is all subjected to a suitable electric field that causes the formation of a solid, uniform deposit on the exchanger. The function of this deposit will be to protect the aluminium from corrosion without penalising its thermophysical properties.

Protective treatment of the exchanger is strongly recommended if at least one of the points below is verified:

- there are obvious signs of corrosion of the exposed metal surfaces in the installation area
- the installation is located close to the sea coast
- the prevailing winds come from the sea towards the unit
- the environment is industrial with a significant concentration of pollutants
- the environment is urban with a high population density
- the environment is rural with the presence of organic discharges and effluents.

With reference to the protection criteria to follow, especially for installations close to the coast, refer to the section titled "Installations that require the use of treated coils".

PRAC **Steel profiles frames for container shipment**

This accessory foresees the mounting of steel profiles frames on the unit for its loading into container.

When this accessory is required it's for the shipping of the unit into container and its loading is mandatory to be done at the factory

PREA **Unit suitable to be disassembled on site**

The unit is delivered so that it can be disassembled easily on site if this makes the installation operations easier.

A unit requested with this option is supplied:

- screwed instead of riveted
- with plugged and not welded pipes
- without refrigerant charge
- untested
- covered by the warranty only if reassembled and screwed together by personnel authorized by the factory

RAAL **Cu/Al coils**

This accessory uses finned pack coils with copper tubes and aluminium fins instead of microchannel coils.

RAT **Anti-intrusion nets**

An arc-welded, painted net (RAL colour 7035) is installed to close off the external openings so as to prevent access to the technical compartment by unauthorized personnel.

SLIT **Special pallet/skid for container shipment**

The unit is placed on a skid that makes the container loading and unloading operations easier.

The accessory is mandatory if shipping by container is required

STL **Brackets for transport over long distances**

The accessory consists of adding reinforcing bars to the structural metalwork. This allows the strength of the structure to be increased for long distance road transport.

Flowzer options

Our range of Flowzer options offers flexible and scalable solutions to set the speed of pumps in the system with a view to optimising and reducing energy consumption.Different types of control modes are offered based on the system and application type:

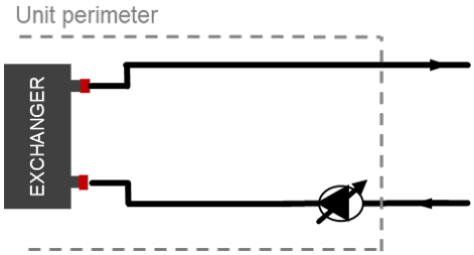
- FLOWZER VP - Inverter for manual pump adjustment
- FLOWZER VD - control of available pump discharge head for variable flow systems without monitoring the flow rate limits;
- FLOWZER VDE - flow rate control to keep the flow rate constant as the external working conditions of the system change;
- FLOWZER VDT - flow rate control with constant TD (difference between input and output temperature in the heat exchanger on the user side) in variable flow pumps, without monitoring the flow rate limits;
- FLOWZER VFPP - automatic management of variable flow rate in systems with one single primary circuit and a bypass valve;
- FLOWZER VPS - automatic management of variable flow rate, including balancing of flow rates between primary and secondary circuits;
- flowzer vps with TD-based control - automatic management of variable flow rate, including control with constant TD (difference between input and output temperature in the heat exchanger on the user side) in systems featuring both the primary and secondary circuits.

The tables below summarise the main system diagrams and show the application type and advantages/disadvantages offered by each solution. Each individual option is illustrated and explained individually in the next pages.

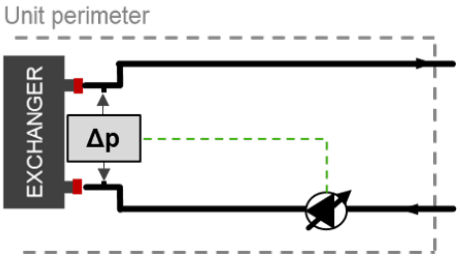
The hydraulic diagrams in this document are for exemplification purposes only and their main function is to help the reader understand the type of machines and devices the controller can manage.For a more technical evaluation of the system, please refer to the dedicated manual.

Constant flow system			
	Application	Advantages	Disadvantages
Flowzer VP	Ideal for constant flow systems The option is given to set two different speeds: one for heating and one for cooling mode or one for chiller and one for FC mode. This solution replaces the 2-way regulating valve.	- Increased efficiency: increased “REAL” EER of the unit installed, considering the power consumption of the pumps in real installation conditions and in real operating conditions. - Reduced installation times and costs: quick setup of water flow using the display.	This solution doesn't allow to save energy in the pump under part load conditions, due to the possibility to only set two frequency values in the inverter.
Flowzer VDE	Ideal for constant flow systems to keep the water flow to the heat exchanger constant under all conditions	- Plug&Play: provides for easy and flexible implementation as it is not supplied with options to be fitted therefore allows for quick commissioning.	This solution is less efficient as losses in the heat exchanger are kept constant under all conditions (including in cases when they may be reduced).

FLOWZER VP

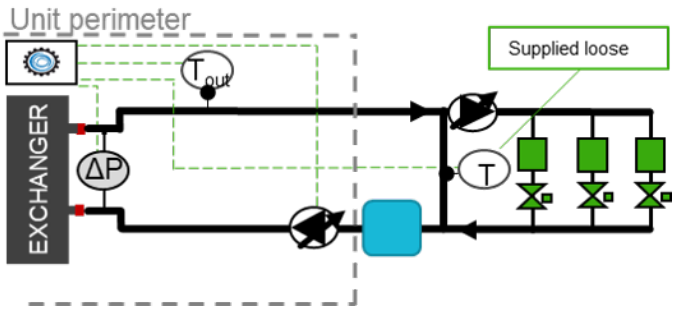


FLOWZER VDE

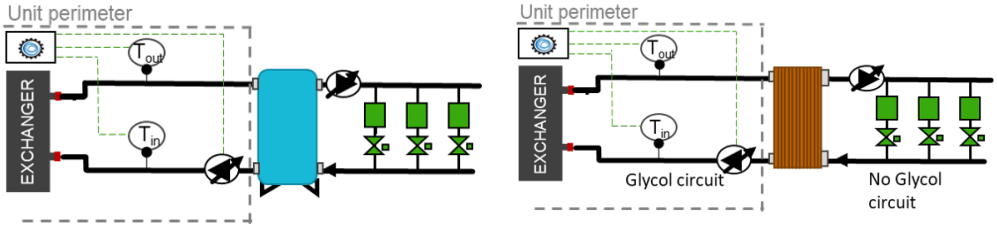


Variable flow system featuring primary and secondary circuits			
	Application	Advantages	Disadvantages
Flowzer VPS	Ideal for all systems featuring a primary and a secondary circuit divided by a hydraulic bypass branch	- Energy saving: the energy consumption during pumping operations can be cut down to 55% if compared with a traditional system - Enhanced comfort: correct balancing between primary and secondary loop	Only recommended in systems featuring a primary and a secondary circuit divided by a bypass pipe; not flexible for other applications
Flowzer VDT	Ideal for systems featuring similar users or users with similar operating conditions It is recommended in structured systems in which the client has third-party systems to control the min. and max. flow rate.	- Plug&Play: provides for easy and flexible implementation as it is not supplied with options to be fitted and for quick commissioning.	Risk of over- or underflow for some of the users in the secondary circuit if they have different operating conditions (same temperature difference) A control is required by third-party equipment to ensure compliance with the unit flow limits.
FLOWZER VPS with TD-based control	Ideal for systems featuring similar users or users with similar operating conditions Ideal for systems featuring a primary and a secondary circuits physically divided from the heat exchanger or a tank with multiple connections.	- Plug&Play: provides for easy and flexible implementation as it is not supplied with options to be fitted and for quick commissioning.	Risk of over- or underflow for some of the users in the secondary circuit if their temperature difference is not the same due to the existing operating conditions

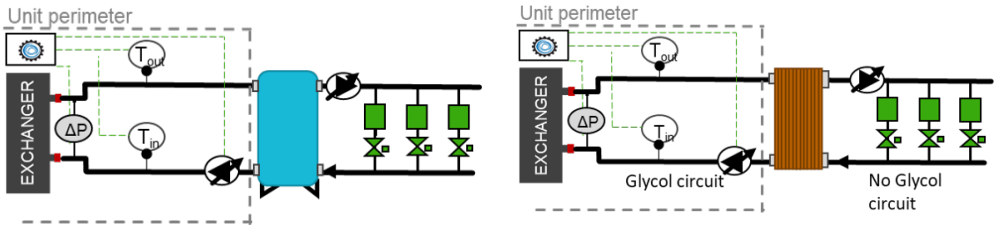
FLOWZER VPS



FLOWZER VDT

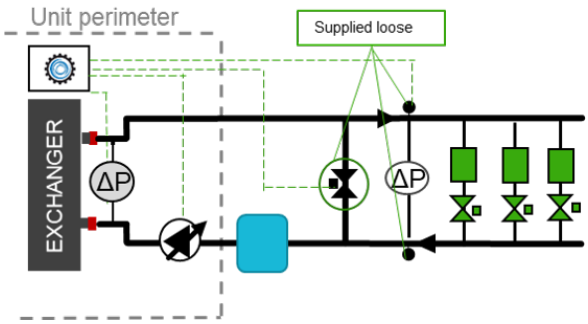


FLOWZER VPS with DT-based control

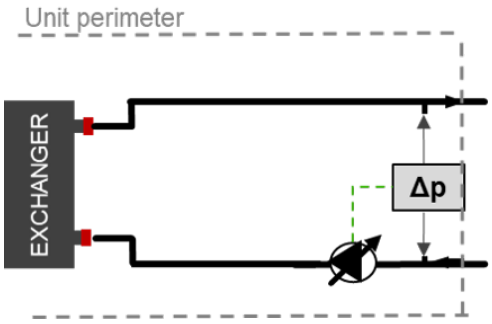


Variable flow system featuring primary circuit only			
	Application	Advantages	Disadvantages
Flowzer VFPP	Ideal for new systems intended to reduce installation costs	- Energy saving: the energy consumption during pumping operations can be cut down to 50% if compared with a traditional system Lower CAPEX thanks to reduced installation costs and smaller number of components (one pump less)	Requires some testing to correctly set the pressure available in the system and to correctly position the two transducers, based on the system layout and devices.
Flowzer VD	Ideal for systems fitted with changing users according to the season. Ideal for industrial processes, such as injection moulding, in order for each terminal to operate with the correct discharge head. It is recommended in structured systems in which the client has third-party systems to control the min. and max. flow rate.	- Plug&Play: provides for easy and flexible implementation as it is not supplied with options to be fitted therefore allows for quick commissioning.	A control is required by third-party equipment to ensure compliance with the unit flow limits.

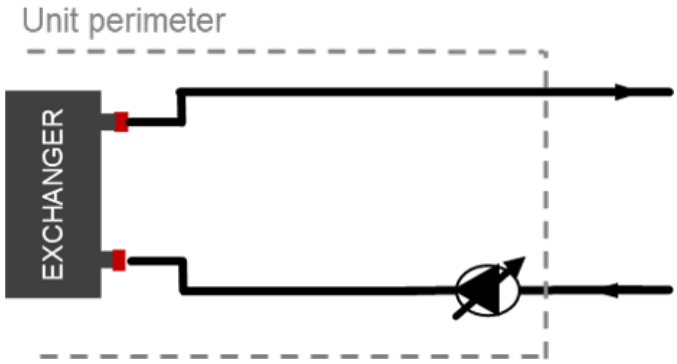
Flowzer VFPP



Flowzer VD



FVP FLOWZER VP - Inverter for manual pump adjustment



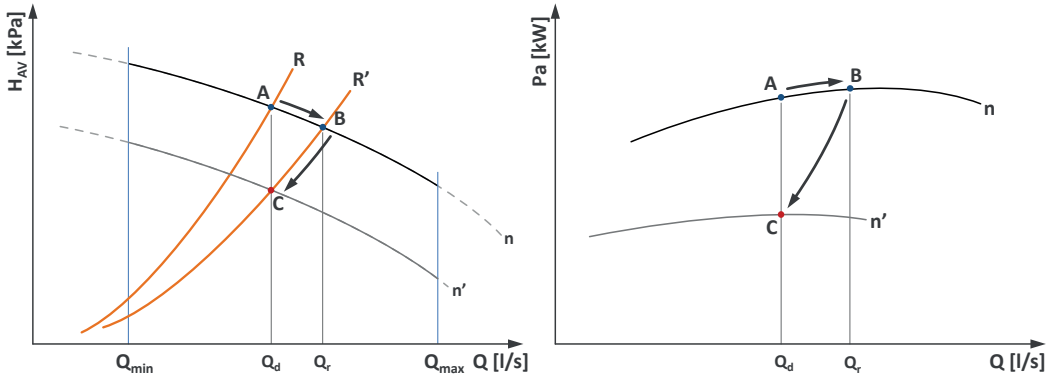
The accessory consists of inserting an inverter in the machine to manually adjust the speed of the pump (or pumps) in order to calibrate the pump flow rate on the head losses of the system.

This accessory is to be combined with one of the integrated hydraulic modules that can be selected for the unit.

Units equipped with integrated hydraulic module allow a certain level of available discharge head (point A) to be obtained under nominal flow rate conditions Qd.

But the actual head loss level of the system (e.g. characteristic curve R') normally causes the pump to find a different equilibrium point (point B), with a flow rate Qr higher than Qd.

In this condition, in addition to having a different flow from the nominal one (therefore also a different temperature jump), there is also a greater absorption of electric power from the pump itself.

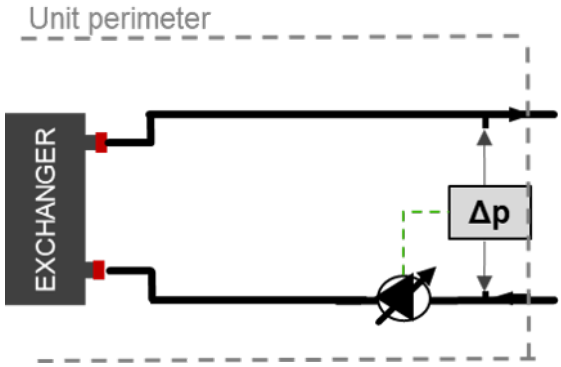


The use of the Flowzer allows the pump speed to be set manually (e.g. at speed n' instead of n) to obtain the design water flow rate and thermal gradient (point C). Once the adjustment procedure has been carried out, the pump will always work at a fixed flow rate.

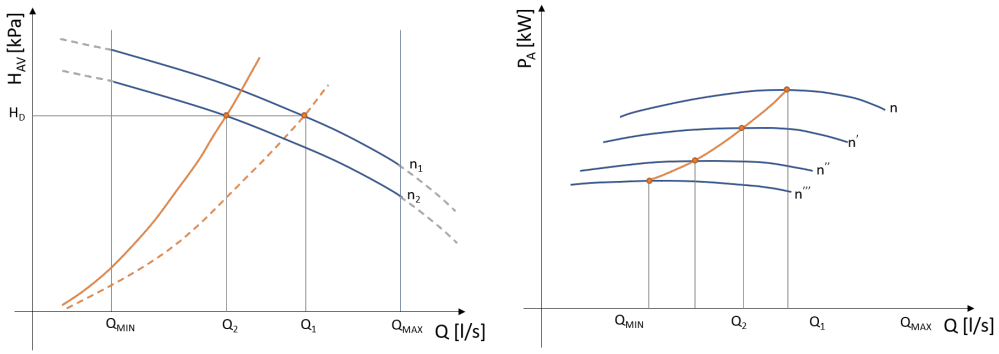
The adoption of the VP Flowzer allows to considerably reduce the electrical power consumption of the pump with a consequent energy saving. By way of example, a reduction in the flow rate of 10% leads to a reduction in power consumption of around 27%.

For the freecooling units the Flowzer VP is able to manage two different speeds of the pump automatically compensating the pressure drops of the water coil.

FVD **FLOWZER VD - control of available pump discharge head for variable flow systems without monitoring the flow rate limits;**



Flowzer VD requires two pressure transducers to be installed in the machine. Through these transducers, the inverter can gauge the actual pressure at the ends of the system and it can automatically adapt the pump speed to obtain a set available discharge head value. Flowzer VD must be combined with Flowzer VP. This accessory therefore allows a constant pressure system to be achieved.

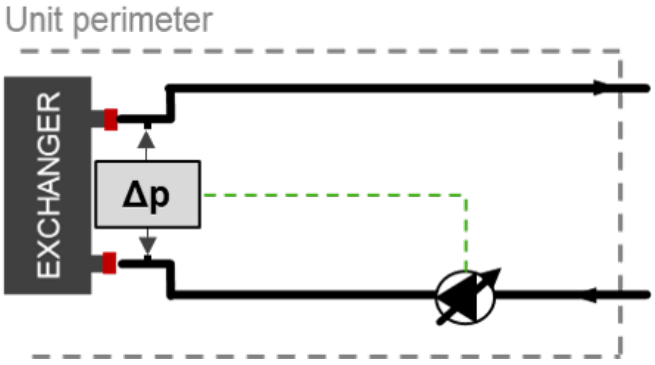


With the Flowzer VD, the customer can set, directly on the display, the available discharge head value (Hd) that the unit must maintain. As can be seen from the graph as the user request decreases, the resistant curve of the plant moves to the left, consequently the inverter reduces the speed of the pump in order to maintain the useful head necessary for the unit. With this system a significant reduction in electrical power is achieved. The customer will have to check that, in minimum flow rate conditions (that is, with the maximum number of user points closed), this is always higher than or equal to the minimum flow rate allowed by the unit.

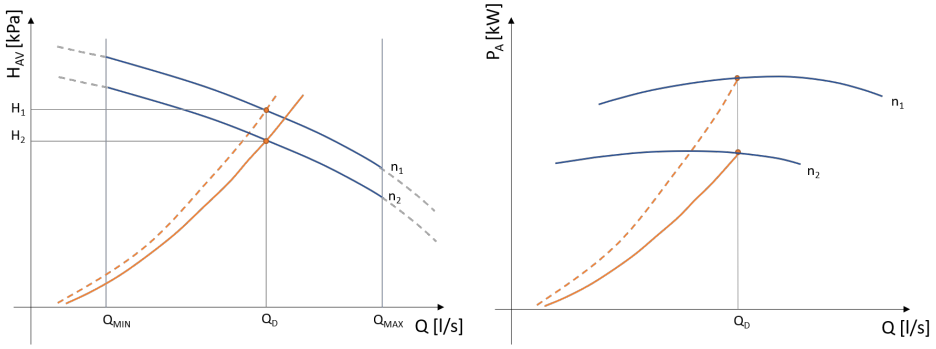
This accessory is useful when the total head losses of the circuit are slightly variable or when they change depending on the seasons (for example, some user points are active only during summer operation and not during winter operation).

The use of this accessory also allows the pump speed to be adapted to possible fouling of the filter on the hydraulic circuit.

FVDE **FLOWZER VDE - flow rate control to keep the flow rate constant as the external working conditions of the system change;**

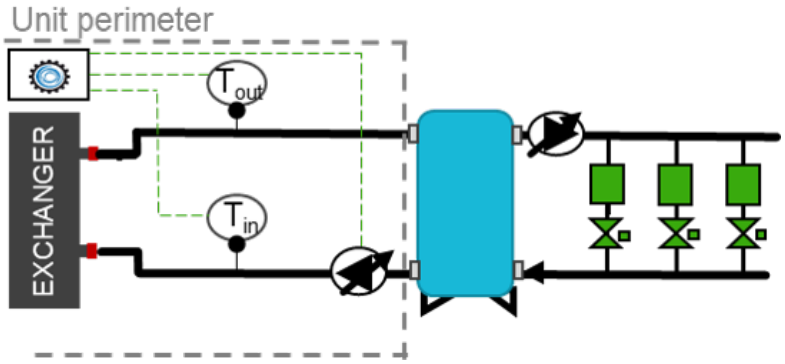


Flowzer VDE requires a differential pressure transducer to be installed in the machine. Through this transducer, the inverter can gauge the actual pressure at the ends of the heat exchanger installed in the machine and it can automatically adapt the pump speed for a constant flow value under all conditions. Flowzer VDE must be combined with Flowzer VP.



Flowzer VDE is used to automatically adjust the pump speed. As the graph shows, the inverter trips and increases the pump speed if a different condition occurs which would cause an undesired drop in the flow rate (e.g. operation of an external dry cooler). This is a more accurate solution than the VP option alone as it always provides for the water flow (Qd) required by the design conditions.

FVDT **FLOWZER VDT - flow rate control with constant TD (difference between input and output temperature in the heat exchanger on the user side) in variable flow pumps, without monitoring the flow rate limits;**



Flowzer VDT uses the temperature sensors installed at the inlet and outlet of the heat exchanger to automatically adjust the pump speed, thus keeping the T delta difference setpoint constant.

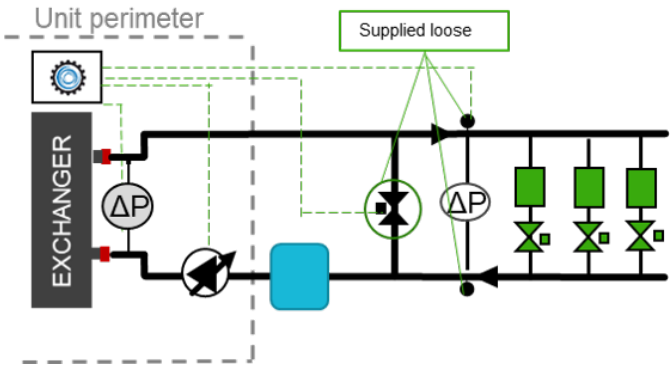
The option is not compatible with the Multilogic version. Please refer to the HYZER solutions for the compatibility between variable flow systems and multi-machine systems.

The unit must include the advanced Bluethink controller and just one heat exchanger on the user side.

With the Flowzer VDT, the customer can set, directly on the display, the available discharge head value that the unit must maintain. The customer will have to check that, in minimum flow rate conditions (that is, with the maximum number of user points closed), this is always higher than or equal to the minimum flow rate allowed by the unit.

This option is specifically designed for systems in which the system users have similar operating conditions (same temperature difference).

FVF **FLOWZER VFPP - automatic management of variable flow rate in systems with one single primary circuit and a bypass valve;**



Bluethink solution for a variable flow rate system, consisting solely of a user-side primary circuit.
Flowzer VFPP includes:

- a pressure transducer installed at the ends of the user-side exchanger (Δpe)
- a dedicated control system, installed at the factory in the electrical control panel of the unit (Sc)
- a modulating bypass valve with servo-motor supplied separately with it (Vbp), supplied loose (installation by the customer)
- two system pressure transducers (Δpp) supplied separately (installation by the customer)

It is obligatory for the option to be combined with the Flowzer VP (inverter) and with one of the hydraulic modules that can be selected for the unit. The accessory is not compatible with Multilogic. Please contact our sales department for further details.
The unit must include the advanced Bluethink controller, just one heat exchanger on the user side and a minimum capacity step of 25% or less.
The option offers a complete default package to guarantee simple selection, purchasing and commissioning.
Flowzer VFPP has the advantage of:

- implementing an innovative design, which is alternative to the classic system based on fixed flow-rate primary circuit plus secondary circuit
- being ideal for new or entirely redesigned systems, especially for comfort applications
- having a variable flow system, with maximum energy saving
- simplifying the layout of the user circuit
- limiting the capex of the system
- performing a reliable check

The Flowzer VFPP system controller uses an advanced algorithm that enables prevention of unnecessary waste of energy and hunting by the inverter and the bypass valve.
The capex of the system is also reduced thanks to:

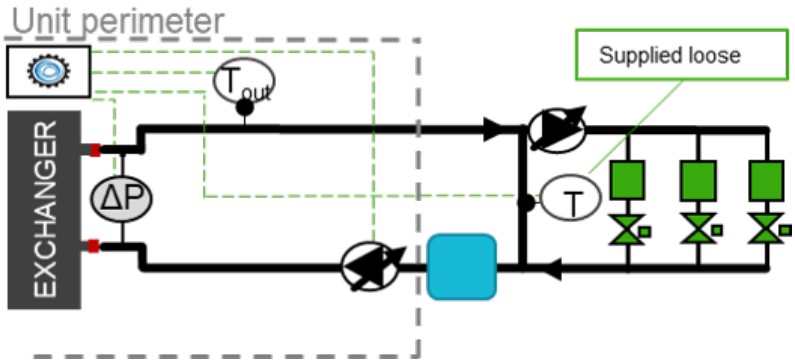
- single inverter + pumping module, integrated in the unit
- small internal footprint, due to the simplified layout

The operating principle can be summarized as follows:

- Flowzer VFPP carries out constant control of the discharge head
- the controller modulates the pump speed according to the signal detected by the system transducers Δpp
- as the demand from the system goes down, the pump speed will be reduced.
- the pump speed can be reduced until it reaches the minimum allowed flow rate on the heat exchanger of the unit
- this flow rate is indirectly monitored through the losses detected by the differential pressure transducer Δpe
- When the minimum allowed flow rate threshold is exceeded, the control system will open the bypass valve Vbp to recirculate the flow rate that is not required by the system, but is necessary to guarantee the minimum flow rate to the heat exchanger.

In the required minimum load condition (that is, with all system terminals switched off) the necessary minimum volume (Vmin) must be ensured by the relevant tank to be installed between the unit and the separator or the bypass pipe.
The bypass valve Vbp is controlled through a 0-10 V signal and must therefore be installed within 30 m of the unit.
The pressure transducers of the system Δpp provide a 4-20 mA signal and require two 1/4" female fittings. These transducers must be installed within 200 m of the unit, near the system terminal that is affected by the highest line head losses or in any case in a position where it is possible to measure an adequate pressure value.
Further details can be found in the relevant manual.

FVPS **FLOWZER VPS - automatic management of variable flow rate, including balancing of flow rates between primary and secondary circuits;**



Bluethink solution for a variable flow rate system, consisting of a primary circuit plus secondary circuit.
It is obligatory for the option to be combined with the Flowzer VP (inverter) and with one of the hydraulic modules that can be selected for the unit. The accessory is not compatible with Multilogic. Please contact our sales department for further details.
The unit must include the advanced BlueThink controller and just one heat exchanger on the user side.
The option offers a complete default package to guarantee simple selection, purchasing and commissioning.
Flowzer VPS has the advantage of:

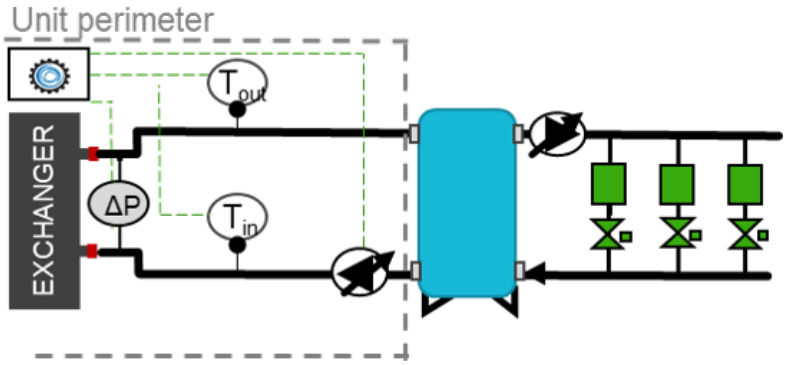
- being ideal for renovations of existing systems, especially for comfort applications
- achieving a complete variable flow system, with maximum energy saving
- implementing a flexible design, e.g. for scalable or multi-zone systems

The maximum energy saving is achieved thanks to the advanced algorithm, which prevents hunting by the inverter and balances the pump speed and the recirculation flow rate to a minimum.
With refurbishments, the system's capex is limited to the unit and its commissioning.
The dimensions of the inverter of the unit and of the pump module can be favoured by the low design discharge head of the primary circuit.
The operating principle can be summarized as follows:

- Flowzer VPS performs a smart check of the flow rate in the primary circuit and balances it with the flow rate in the secondary circuit.
- the system controller modulates the pump speed according to the condition detected by the system sensors T
- if the system terminals are switched off, the flow rate of the secondary circuit will decrease; therefore the direction of flow is detected indirectly as temperature difference by the system sensors through the separator or the bypass pipe
- The check thus contributes to reducing the speed of the primary pump until the min. flow threshold in the heat exchanger of the unit is exceeded.
- this flow rate is indirectly monitored through the losses detected by the differential pressure transducer Δpe

In the required minimum load condition (that is, with all system terminals switched off) the necessary minimum volume (Vmin) must be ensured by the relevant tank to be installed between the unit and the separator or the bypass pipe.
The temperature sensors of the system T provide a 4-20 mA signal and require 1/2" female fittings.
Further details can be found in the relevant manual.

FVPD **flowzer vps with TD-based control - automatic management of the variable flow rate, including control with constant temperature difference (TD) in the heat exchanger on the user side in systems featuring both the primary and secondary circuits.**



Bluethink solution for variable flow systems - ideal for systems featuring a primary and a secondary circuit physically divided by a heat exchanger or a tank with multiple connections.

flowzer vps with TD-based control includes:

- a differential pressure transducer, installed at the factory at the ends of the user-side heat exchanger of the unit (Δpe)

The option must be necessarily combined with the Flowzer VP (inverter) and with one of the hydraulic modules that can be selected for the unit. The option is not compatible with the Multilogic version. Please refer to the HYZER solutions for the compatibility between variable flow systems and multi-machine systems.

The unit must include the advanced Bluethink controller and just one heat exchanger on the user side.

The option offers a complete default package to guarantee simple selection, purchasing and commissioning.

flowzer vps with TD-based control offers the following advantages:

- a full package that is easy to install as all the regulating devices are pre-assembled and pre-wired in the unit;
- achieving a complete variable flow system, with maximum energy saving
- the ideal solution to refurbish existing systems where the T different must be kept constant in the system, especially in comfort applications;

The maximum energy saving is achieved thanks to the advanced algorithm, which prevents hunting by the inverter and balances the pump speed and the recirculation flow rate to a minimum.

The dimensions of the inverter of the unit and of the pump module can be favoured by the low design discharge head of the primary circuit.

The operating principle can be summarized as follows:

- flowzer vps with TD-based control performs smart monitoring of the flow rate in the primary circuit, keeping the T difference constant in the heat exchanger;
- the system controller modulates the pump speed according to the condition detected by the temperature sensors (T) in the system, which are installed at the inlet and outlet of the heat exchanger on the user side;
- the difference in the water temperature (T) and flow rate are inversely proportional, which is why if the T difference is reduced at the same performance level, the water flow exceeds the flow required by the system and the pump speed is reduced in order to save energy;

on the other hand, when the load increases, the T difference increases in the system and the pump speed is increased accordingly.

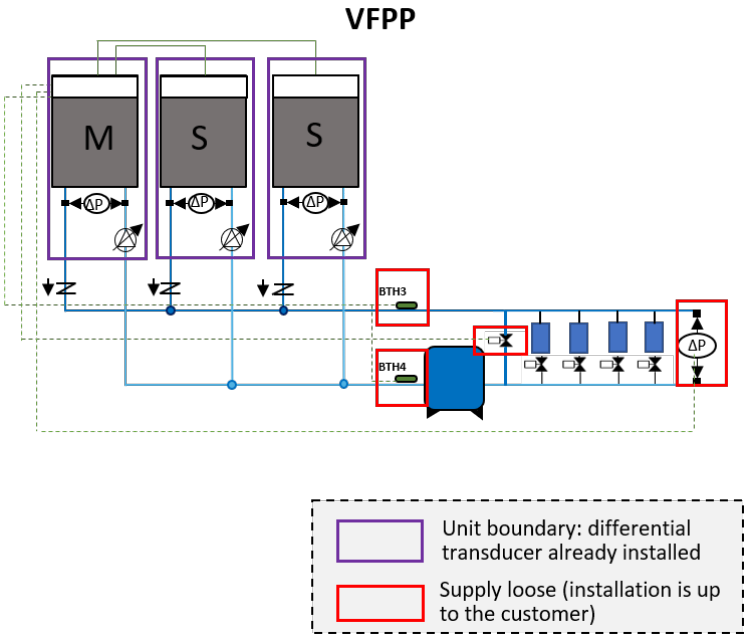
- The check contributes to reducing/increasing the speed of the pump in the primary circuit until the min./max. flow threshold admitted in the heat exchanger of the unit is exceeded.
- this flow rate is indirectly monitored through the losses detected by the differential pressure transducer Δpe

The temperature sensors of the system output a 4-20 mA signal.

Further details can be found in the relevant manual.

HFx HYZER E VFPP function

The HYZER E VFPP function combines the Multilogic function, which is designed to manage multi-machine systems, with the FLOWZER VFPP control for variable flow systems.



It is obligatory for the option to be combined with the Flowzer VP (inverter) and with one of the hydraulic modules that can be selected for the unit.

The unit must include the advanced Bluethink controller, just one heat exchanger on the user side and a minimum capacity step of 25% or less.

Units operate according to the Master/Slave logic that is typical of a Multilogic system. For additional details, please refer to the FMx option.

The HYZER E function requested with the unit can be:

- **HF0:** HYZER E VFPP function for Slave units;
- **HF2:** HYZER E VFPP function for the Master unit in order to manage up to 2 Slave units;
- **HF6:** HYZER E VFPP function for the Master unit in order to manage up to 6 Slave units.

If you need to connect more than 6 slaves (up to 31), you can ask for a quotation from our sales department.

For the slave units, the accessory requires:

- programming of the unit as slave of a system of machines in Multilogic network

For the master units, the accessory requires:

- programming of the unit as master of a system of machines in Multilogic network
- entering of the parameters necessary for connection with the individual slave units
- installation in the electrical control panel of a network switch to allow the units to be connected in a LAN network.
- the supply of 2 temperature probes to be positioned on the delivery and return manifold for system thermoregulation (supplied with the system - installation and wiring by the customer);
- the supply of two pressure transducers (supplied with the system - installation and wiring by the customer) to be installed near the system terminal that is affected by the highest head losses in the line or in any case in a position where it is possible to measure an adequate pressure value.
- The option also includes the supply of a bypass valve controlled by a 0-10 V signal, which must be selected in function of the system capacity. Please refer to the VBx options for correct selection.

The connection between the master unit and the slave units made with a CAT cable. 5E/UTP (prepared by the customer) with RJ45 connectors. Maximum cable length 100m.

For further details, please refer to the controller manual.

VBx VFPP bypass valve for HYZER E

The option is supplied with the bypass valve, which is selected according to the system capacity.

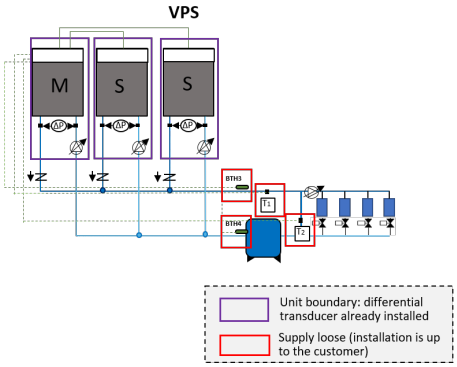
This option must be selected with either the "HYZER E VFPP function for Master unit to manage up to 2 Slave units" or "HYZER E VFPP function for Master unit to manage up to 6 Slave units".

	System capacity range**	Quantity	Diameter	Qmax**
	kW	-	in	m³/h
S_A	<240	1	2 1/2"	41.3
S_B	240÷335	1	3"	57.6
S_C	335÷570	1	4"	98
S_D	570÷850	1	5"	146.2
S_E	850÷1250	1	6"	215
S_F	1250÷1700	2	2 x 5''	2 x 146.2
S_G	1700÷2500	2	2 x 6''	2 x 215

** values based on a 5 °C temperature difference between the delivery and the return temperature

HSx HYZER E VPS function

The HYZER E VPS function combines the Multilogic function, which is used to manage multi-machine systems, with the FLOWZER VPS control for variable flow systems.



It is obligatory for the option to be combined with the Flowzer VP (inverter) and with one of the hydraulic modules that can be selected for the unit.

The unit must include the advanced Bluethink controller, just one heat exchanger on the user side and a minimum capacity step of 25% or less.

Units operate according to the Master/Slave logic that is typical of a Multilogic system. For additional details, please refer to the FMx option.

VPS control requires the installation on the machine of a differential transducer at the ends of the user-side heat exchanger in order to keep the flow rate in the system within a specific min. value allowed.

For additional details on the FLOWZER VPS logic, please refer to the dedicated FVPS option.

The networked units may be of different types, and the same observations as for the Multilogic option apply:

- if there are both chiller units and heat pumps in the network, the Master unit must obligatorily be one of the HP units;
- if there are both free-cooling and non free-cooling units in the network, the Master unit must obligatorily be one of the free-cooling units.

The HYZER E function requested with the unit can be:

- **HS0:** HYZER E VPS function for Slave units;
- **HS2:** HYZER E VPS function for the Master unit in order to manage up to 2 Slave units;
- **HS6:** HYZER E VPS function for the Master unit in order to manage up to 6 Slave units.

If you need to connect more than 6 slaves (up to 31), you can ask for a quotation from our sales department.

For the slave units, the accessory requires:

- programming of the unit as slave of a system of machines in Multilogic network

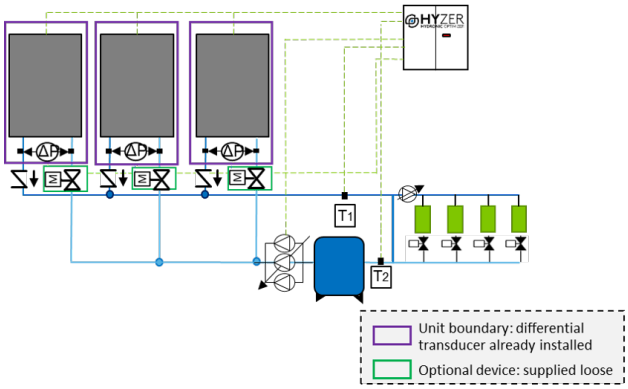
For the master units, the accessory requires:

- programming of the unit as master of a system of machines in Multilogic network
- entering of the parameters necessary for connection with the individual slave units
- installation in the electrical control panel of a network switch to allow the units to be connected in a LAN network.
- the supply of 2 temperature probes to be installed on the delivery manifold and on the bypass branch, which are typical of VPS control (supplied with the system - installation and wiring by the customer).

The connection between the master unit and the slave units made with a CAT cable. 5E/UTP (prepared by the customer) with RJ45 connectors. Maximum cable length 100m.

For further details, please refer to the controller manual.

HDx HYZER E VPS with DT-based control function



The HYZER E VPS with TD-based control function combines the Multilogic function, which is used to manage multi-machine systems, with the FLOWZER VPS with DT-based control control for variable flow systems.

It is obligatory for the option to be combined with the Flowzer VP (inverter) and with one of the hydraulic modules that can be selected for the unit.

The unit must include the advanced Bluethink controller, just one heat exchanger on the user side and a minimum capacity step of 25% or less.

Units operate according to the Master/Slave logic that is typical of a Multilogic system. For additional details, please refer to the FMx option.

VPS with DT-based control control requires the installation on the machine of a differential transducer at the ends of the user-side heat exchanger in order to keep the flow rate in the system within a specific min. value allowed.

For additional details on the FLOWZER VPS with TD-based control logic, please refer to the dedicated FVPS with DT-based control option.

The networked units may be of different types, and the same observations as for the Multilogic option apply:

- if there are both chiller units and heat pumps in the network, the Master unit must obligatorily be one of the HP units;
- if there are both free-cooling and non free-cooling units in the network, the Master unit must obligatorily be one of the free-cooling units.

The HYZER E function requested with the unit can be:

- **HD0:** HYZER E VPS with TD-based control function for Slave units;
- **HD2:** HYZER E VPS with TD-based control function for the Master unit in order to manage up to 2 Slave units;
- **HD6:** HYZER E VPS with TD-based control function for the Master unit in order to manage up to 6 Slave units.

If you need to connect more than 6 slaves (up to 31), you can ask for a quotation from our sales department.

For the slave units, the accessory requires:

- programming of the unit as slave of a system of machines in Multilogic network

For the master units, the accessory requires:

- programming of the unit as master of a system of machines in Multilogic network
- entering of the parameters necessary for connection with the individual slave units
- installation in the electrical control panel of a network switch to allow the units to be connected in a LAN network.

The connection between the master unit and the slave units made with a CAT cable. 5E/UTP (prepared by the customer) with RJ45 connectors. Maximum cable length 100m.

For further details, please refer to the controller manual.

PVX Variable flow setup for HYZER X

The dedicated HYZER X controller is designed to manage the different units, devices and components that make up a hydronic system.

Systems featuring this controller require that the PVX option be installed at the ends of the user-side heat exchanger of a differential pressure transducer so that the machine is set up for variable flow rate control.

This option is mandatory in all units making up the system.

For additional information on the product HYZER X, please refer to the specific technical catalogue.

VIX Shut-off valves for systems with external pumps for HYZER X

Systems featuring the HYZER X controller enable the selection of the shut-off valve used in systems that have an external pumping unit.

The option is always supplied separately from the unit and is for installation by the customer.

FLMX User-side flow meter for HYZER X

Systems featuring the HYZER X controller enable the selection of the flow meter option to calculate the flow rate and the performances of the units.

The option is supplied with the system for installation on the user side (installation by customer).

TECHNICAL SPECIFICATIONS

KAPPA SKY Xi

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi (R513A)										
Cooling (A35; W7)										
Refrigeration capacity	(1)	kW	257,4	301,7	344,4	440,7	507,7	589	672	741,1
Total absorbed power	(1)	kW	82,9	99,8	116,2	147,1	167,2	203	222,8	257,4
EER	(1)		3,1	3,02	2,96	2,99	3,03	2,9	3,01	2,87
Compressors										
Compressors/Circuits		n°/n°	1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	25	25	25	25	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	38	45	45	60	75	75	90	90
Refrigerant charge (CuAl)		kg	49	59	61	79	99	101	120	123
Fans										
Quantity		n°	5	6	6	8	10	10	12	12
Total air flow rate		m³/h	97000	116000	116000	155000	194000	194000	233000	233000
User-side heat exchanger										
Quantity		n°	1	1	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	43,9	52,5	58,9	75,6	87,8	101	114,3	127,4
Head loss (A35; W7)	(1)	kPa	32	37	33	35	36	33	27	33
Noise levels										
Sound power lev.	(3)	dB(A)	96	97	98	98	99	100	100	101
Sound pressure lev.	(4)	dB(A)	64	65	66	66	67	68	68	69
Sound power lev. LN vers.	(3)	dB(A)	92	93	94	94	95	96	96	97
Sound pressure lev. LN vers.	(4)	dB(A)	60	61	62	62	63	64	64	65
Dimensions and weight										
Length	(5)	mm	3956	3956	3956	5105	6252	6252	7401	7401
Depth	(5)	mm	2260	2260	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	2800	3003	3036	3738	4782	4884	5450	5535

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xi

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi (R513A)									
Cooling (A35; W7)									
Refrigeration capacity	(1)	kW	802,4	911,4	952,3	1035,3	1135,3	1248,7	1359,4
Total absorbed power	(1)	kW	270,9	304,8	328,5	344,7	366,8	412,8	447,5
EER	(1)		2,96	2,98	2,89	3	3,09	3,02	3,03
Compressors									
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	105	120	120	135	150	165	165
Refrigerant charge (CuAl)		kg	141	161	161	186	200	219	223
Fans									
Quantity		n°	14	16	16	18	20	22	22
Total air flow rate		m³/h	272000	310000	310000	349000	388000	427000	427000
User-side heat exchanger									
Quantity		n°	1	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	138,4	155,8	164	177,8	195,2	214,6	231,1
Head loss (A35; W7)	(1)	kPa	28	35	38	33	37	40	48
Noise levels									
Sound power lev.	(3)	dB(A)	102	102	103	103	104	105	105
Sound pressure lev.	(4)	dB(A)	70	69	70	70	71	72	72
Sound power lev. LN vers.	(3)	dB(A)	98	98	99	99	100	101	101
Sound pressure lev. LN vers.	(4)	dB(A)	66	65	66	66	67	68	68
Dimensions and weight									
Length	(5)	mm	8549	9698	9698	10846	11995	13144	13144
Depth	(5)	mm	2260	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	6088	7339	7339	7959	8536	9168	9342

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xi SLN

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi SLN (R513A)										
Cooling (A35; W7)										
Refrigeration capacity	(1)	kW	242,9	295,5	329,8	420,8	493,6	565,7	627,6	702,1
Total absorbed power	(1)	kW	88	105,4	123,3	156,4	176,2	215,8	236,4	274,8
EER	(1)		2,75	2,8	2,67	2,68	2,8	2,62	2,65	2,55
Compressors										
Compressors/Circuits		n°/n°	1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	25	25	25	25	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	38	45	45	60	75	75	90	90
Refrigerant charge (CuAl)		kg	49	59	61	79	99	101	120	123
Fans										
Quantity		n°	5	6	6	8	10	10	12	12
Total air flow rate		m³/h	75000	90000	90000	120000	150000	150000	180000	180000
User-side heat exchanger										
Quantity		n°	1	1	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	42	51	57	72	85	97	108	121
Head loss (A35; W7)	(1)	kPa	31	35	31	33	34	31	25	31
Noise levels										
Sound power lev.	(3)	dB(A)	89	90	91	91	92	93	93	94
Sound pressure lev.	(4)	dB(A)	57	58	59	59	60	61	61	62
Dimensions and weight										
Length	(5)	mm	3956	3956	3956	5105	6252	6252	7401	7401
Depth	(5)	mm	2260	2260	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	2970	3173	3206	3908	5122	5224	5790	5875

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xi SLN

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi SLN (R513A)									
Cooling (A35; W7)									
Refrigeration capacity	(1)	kW	754,2	836,1	897	983,7	1063	1187,1	1260,4
Total absorbed power	(1)	kW	288,3	314,2	346,9	367,6	388,5	436,7	476,4
EER	(1)		2,61	2,66	2,58	2,67	2,73	2,71	2,64
Compressors									
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	105	120	120	135	150	165	165
Refrigerant charge (CuAl)		kg	141	161	161	186	200	219	223
Fans									
Quantity		n°	14	16	16	18	20	22	22
Total air flow rate		m³/h	210000	240000	240000	270000	300000	330000	330000
User-side heat exchanger									
Quantity		n°	1	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	130	144	154	169	183	204	217
Head loss (A35; W7)	(1)	kPa	26	33	36	31	35	37	45
Noise levels									
Sound power lev.	(3)	dB(A)	95	95	96	96	97	98	98
Sound pressure lev.	(4)	dB(A)	63	62	63	63	64	65	65
Dimensions and weight									
Length	(5)	mm	8549	9698	9698	10846	11995	13144	13144
Depth	(5)	mm	2260	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	6508	7819	7819	8439	9136	9768	9942

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh (R513A)								
Cooling (A35; W7)								
Refrigeration capacity	(1)	kW	503,1	588,5	641,9	719,5	806,6	856
Total absorbed power	(1)	kW	162,5	205	213,2	247	268,8	280,2
EER	(1)		3,09	2,87	3	2,91	3	3,05
Compressors								
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	75	75	90	90	105	120
Refrigerant charge (CuAl)		kg	99	101	120	123	141	161
Fans								
Quantity		n°	10	10	12	12	14	16
Total air flow rate		m³/h	194000	194000	233000	233000	272000	310000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	87	101	110	124	139	147
Head loss (A35; W7)	(1)	kPa	35	33	26	32	28	33
Noise levels								
Sound power lev.	(3)	dB(A)	98	100	99	101	102	102
Sound pressure lev.	(4)	dB(A)	66	68	67	69	70	69
Sound power lev. LN vers.	(3)	dB(A)	94	96	95	97	98	98
Sound pressure lev. LN vers.	(4)	dB(A)	62	64	63	65	66	65
Dimensions and weight								
Length	(5)	mm	6252	6252	7401	7401	8549	9698
Depth	(5)	mm	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	4851	4975	5490	5735	6338	7389

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh (R513A)							
Cooling (A35; W7)							
Refrigeration capacity	(1)	kW	926,5	1049,7	1097,6	1234,5	1327,3
Total absorbed power	(1)	kW	315,5	344,8	353	401,1	440,3
EER	(1)		2,93	3,04	3,1	3,07	3,01
Compressors							
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	120	135	150	165	165
Refrigerant charge (CuAl)		kg	161	186	200	219	223
Fans							
Quantity		n°	16	18	20	22	22
Total air flow rate		m³/h	310000	349000	388000	427000	427000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	159	181	189	212	228
Head loss (A35; W7)	(1)	kPa	38	33	36	39	47
Noise levels							
Sound power lev.	(3)	dB(A)	102	102	103	104	103
Sound pressure lev.	(4)	dB(A)	69	69	70	71	70
Sound power lev. LN vers.	(3)	dB(A)	98	98	99	100	99
Sound pressure lev. LN vers.	(4)	dB(A)	65	65	66	67	66
Dimensions and weight							
Length	(5)	mm	9698	10846	11995	13144	13144
Depth	(5)	mm	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	7519	8174	8621	9423	9708

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xh SLN

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh SLN (R513A)								
Cooling (A35; W7)								
Refrigeration capacity	(1)	kW	476,2	553,6	618,9	687,3	751,1	813,1
Total absorbed power	(1)	kW	170,5	219	225,3	263,7	286,3	296,1
EER	(1)		2,79	2,52	2,74	2,6	2,62	2,74
Compressors								
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	75	75	90	90	105	120
Refrigerant charge (CuAl)		kg	99	101	120	123	141	161
Fans								
Quantity		n°	10	10	12	12	14	16
Total air flow rate		m³/h	150000	150000	180000	180000	210000	240000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	82	95	107	118	129	140
Head loss (A35; W7)	(1)	kPa	35	33	26	32	28	33
Noise levels								
Sound power lev.	(3)	dB(A)	91	93	92	94	95	95
Sound pressure lev.	(4)	dB(A)	59	61	60	62	63	62
Dimensions and weight								
Length	(5)	mm	6252	6252	7401	7401	8549	9698
Depth	(5)	mm	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	5191	5315	5830	6075	6758	7869

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xh SLN

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh SLN (R513A)							
Cooling (A35; W7)							
Refrigeration capacity	(1)	kW	879,2	980	1040,3	1169,7	1263,4
Total absorbed power	(1)	kW	335,9	366,3	373,8	424,6	466,9
EER	(1)		2,61	2,67	2,78	2,75	2,7
Compressors							
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	120	135	150	165	165
Refrigerant charge (CuAl)		kg	161	186	200	219	223
Fans							
Quantity		n°	16	18	20	22	22
Total air flow rate		m³/h	240000	270000	300000	330000	330000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	151	169	179	201	217
Head loss (A35; W7)	(1)	kPa	38	33	36	39	47
Noise levels							
Sound power lev.	(3)	dB(A)	95	95	96	97	96
Sound pressure lev.	(4)	dB(A)	62	62	63	64	63
Dimensions and weight							
Length	(5)	mm	9698	10846	11995	13144	13144
Depth	(5)	mm	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	7999	8774	9221	10023	10308

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Si

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Si (R513A)								
Cooling (A35; W7)								
Refrigeration capacity	(1)	kW	489,4	562,2	650,4	710,3	789,9	864,6
Total absorbed power	(1)	kW	171,5	210,5	228,4	265,9	276,6	301,4
EER	(1)		2,85	2,67	2,84	2,67	2,85	2,86
Compressors								
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	60	60	75	75	90	105
Refrigerant charge (CuAl)		kg	79	79	99	99	120	141
Fans								
Quantity		n°	8	8	10	10	12	14
Total air flow rate		m³/h	155000	155000	194000	194000	233000	272000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	84	97	112	122	136	149
Head loss (A35; W7)	(1)	kPa	34	30	25	31	26	34
Noise levels								
Sound power lev.	(3)	dB(A)	99	100	100	101	102	102
Sound pressure lev.	(4)	dB(A)	67	68	68	69	70	69
Sound power lev. LN vers.	(3)	dB(A)	95	96	96	97	98	98
Sound pressure lev. LN vers.	(4)	dB(A)	63	64	64	65	66	65
Dimensions and weight								
Length	(5)	mm	5105	5105	6252	6252	7401	8549
Depth	(5)	mm	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	3738	3738	4782	4782	5450	6088

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Si

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Si (R513A)							
Cooling (A35; W7)							
Refrigeration capacity	(1)	kW	930,9	1006,5	1104,7	1232,5	1312
Total absorbed power	(1)	kW	331,8	350,2	370,9	417	453
EER	(1)		2,8	2,87	2,97	2,95	2,89
Compressors							
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	105	120	135	150	150
Refrigerant charge (CuAl)		kg	141	161	186	200	200
Fans							
Quantity		n°	14	16	18	20	20
Total air flow rate		m³/h	272000	310000	349000	388000	388000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	160	173	190	212	226
Head loss (A35; W7)	(1)	kPa	36	31	36	38	46
Noise levels							
Sound power lev.	(3)	dB(A)	103	103	104	105	105
Sound pressure lev.	(4)	dB(A)	70	70	71	72	72
Sound power lev. LN vers.	(3)	dB(A)	99	99	100	101	101
Sound pressure lev. LN vers.	(4)	dB(A)	66	66	67	68	68
Dimensions and weight							
Length	(5)	mm	8549	9698	10846	11995	11995
Depth	(5)	mm	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	6088	7339	7959	8536	8536

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Sh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Sh (R513A)								
Cooling (A35; W7)								
Refrigeration capacity	(1)	kW	482,4	571,5	627,1	706,7	783,5	842,9
Total absorbed power	(1)	kW	167,7	214,5	218,6	256,2	276,3	286
EER	(1)		2,87	2,66	2,86	2,75	2,83	2,94
Compressors								
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	60	60	75	75	90	105
Refrigerant charge (CuAl)		kg	79	79	99	99	120	141
Fans								
Quantity		n°	8	8	10	10	12	14
Total air flow rate		m³/h	155000	155000	194000	194000	233000	272000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	83	98	108	122	135	145
Head loss (A35; W7)	(1)	kPa	33	30	24	30	26	32
Noise levels								
Sound power lev.	(3)	dB(A)	98	100	99	101	102	102
Sound pressure lev.	(4)	dB(A)	66	68	67	69	70	69
Sound power lev. LN vers.	(3)	dB(A)	94	96	95	97	98	98
Sound pressure lev. LN vers.	(4)	dB(A)	62	64	63	65	66	66
Dimensions and weight								
Length	(5)	mm	5105	5105	6252	6252	7401	8549
Depth	(5)	mm	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	4651	4775	4851	4851	5490	6338

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Sh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Sh (R513A)							
Cooling (A35; W7)							
Refrigeration capacity	(1)	kW	917,6	1030,2	1072,6	1193,7	1287
Total absorbed power	(1)	kW	323,7	351,9	359,1	406,5	447,4
EER	(1)		2,83	2,92	2,98	2,93	2,87
Compressors							
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	105	120	135	150	150
Refrigerant charge (CuAl)		kg	141	161	186	200	200
Fans							
Quantity		n°	14	16	18	20	20
Total air flow rate		m³/h	272000	310000	349000	388000	388000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	158	177	185	205	221
Head loss (A35; W7)	(1)	kPa	36	32	34	38	45
Noise levels							
Sound power lev.	(3)	dB(A)	102	102	103	104	103
Sound pressure lev.	(4)	dB(A)	69	69	70	71	70
Sound power lev. LN vers.	(3)	dB(A)	98	98	99	100	99
Sound pressure lev. LN vers.	(4)	dB(A)	65	65	66	67	66
Dimensions and weight							
Length	(5)	mm	8549	9698	10846	11995	11995
Depth	(5)	mm	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	6338	7389	8174	8621	8621

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xi

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi (R134a)										
Cooling (A35; W7)										
Refrigeration capacity	(1)	kW	254,9	304,9	341,9	439	510	587	663,9	740
Total absorbed power	(1)	kW	78,9	95,6	110,6	139,8	159	193,1	212	245,3
EER	(1)		3,22	3,18	3,09	3,13	3,2	3,03	3,13	3,01
Compressors										
Compressors/Circuits		n°/n°	1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	25	25	25	25	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	38	45	45	60	75	75	90	90
Refrigerant charge (CuAl)		kg	49	59	61	79	99	101	120	123
Fans										
Quantity		n°	5	6	6	8	10	10	12	12
Total air flow rate		m³/h	97000	116000	116000	155000	194000	194000	233000	233000
User-side heat exchanger										
Quantity		n°	1	1	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	43,9	52,5	58,9	75,6	87,8	101	114,3	127,4
Head loss (A35; W7)	(1)	kPa	32	37	33	35	36	33	27	33
Noise levels										
Sound power lev.	(3)	dB(A)	96	97	98	98	99	100	100	101
Sound pressure lev.	(4)	dB(A)	64	65	66	66	67	68	68	69
Sound power lev. LN vers.	(3)	dB(A)	92	93	94	94	95	96	96	97
Sound pressure lev. LN vers.	(4)	dB(A)	60	61	62	62	63	64	64	65
Dimensions and weight										
Length	(5)	mm	3956	3956	3956	5105	6252	6252	7401	7401
Depth	(5)	mm	2260	2260	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	2800	3003	3036	3738	4782	4884	5450	5535

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xi

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi (R134a)									
Cooling (A35; W7)									
Refrigeration capacity	(1)	kW	804	904,9	953	1033	1133,9	1246,9	1342,9
Total absorbed power	(1)	kW	258,2	290,8	314	328,9	349,3	392,7	426,6
EER	(1)		3,11	3,11	3,03	3,14	3,24	3,17	3,14
Compressors									
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	105	120	120	135	150	165	165
Refrigerant charge (CuAl)		kg	141	161	161	186	200	219	223
Fans									
Quantity		n°	14	16	16	18	20	22	22
Total air flow rate		m³/h	272000	310000	310000	349000	388000	427000	427000
User-side heat exchanger									
Quantity		n°	1	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	138,4	155,8	164	177,8	195,2	214,6	231,1
Head loss (A35; W7)	(1)	kPa	28	35	38	33	37	40	48
Noise levels									
Sound power lev.	(3)	dB(A)	102	102	103	103	104	105	105
Sound pressure lev.	(4)	dB(A)	70	69	70	70	71	72	72
Sound power lev. LN vers.	(3)	dB(A)	98	98	99	99	100	101	101
Sound pressure lev. LN vers.	(4)	dB(A)	66	65	66	66	67	68	68
Dimensions and weight									
Length	(5)	mm	8549	9698	9698	10846	11995	13144	13144
Depth	(5)	mm	2260	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	6088	7339	7339	7959	8536	9168	9342

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xi SLN

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi SLN (R134a)										
Cooling (A35; W7)										
Refrigeration capacity	(1)	kW	245	293	325	420	489	558	634	702
Total absorbed power	(1)	kW	84	100,1	118,1	149,1	168,1	206,1	224,8	262,2
EER	(1)		2,92	2,93	2,75	2,82	2,91	2,71	2,82	2,68
Compressors										
Compressors/Circuits		n°/n°	1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	25	25	25	25	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	37,5	45	45	60	75	75	90	90
Refrigerant charge (CuAl)		kg	49	59	61	79	99	101	120	123
Fans										
Quantity		n°	5	6	6	8	10	10	12	12
Total air flow rate		m³/h	75000	90000	90000	120000	150000	150000	180000	180000
User-side heat exchanger										
Quantity		n°	1	1	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	42,2	50,5	56	72,3	84,2	96,1	109,1	120,8
Head loss (A35; W7)	(1)	kPa	31	35	31	33	34	31	25	31
Noise levels										
Sound power lev.	(3)	dB(A)	89	90	91	91	92	93	93	94
Sound pressure lev.	(4)	dB(A)	57	58	59	59	60	61	61	62
Dimensions and weight										
Length	(5)	mm	3956	3956	3956	5105	6252	6252	7401	7401
Depth	(5)	mm	2260	2260	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	2970	3173	3206	3908	5122	5224	5790	5875

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xi SLN

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi SLN (R134a)									
Cooling (A35; W7)									
Refrigeration capacity	(1)	kW	765	848	900	985	1078	1188	1272
Total absorbed power	(1)	kW	273,9	299,2	330,4	349,1	370,3	416,5	453,2
EER	(1)		2,79	2,83	2,72	2,82	2,91	2,85	2,81
Compressors									
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	105	120	120	135	150	165	165
Refrigerant charge (CuAl)		kg	141	161	161	186	200	219	223
Fans									
Quantity		n°	14	16	16	18	20	22	22
Total air flow rate		m³/h	210000	240000	240000	270000	300000	330000	330000
User-side heat exchanger									
Quantity		n°	1	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	131,7	146	154,9	169,5	185,5	204,5	218,9
Head loss (A35; W7)	(1)	kPa	26	33	36	31	35	37	45
Noise levels									
Sound power lev.	(3)	dB(A)	95	95	96	96	97	98	98
Sound pressure lev.	(4)	dB(A)	63	62	63	63	64	65	65
Dimensions and weight									
Length	(5)	mm	8549	9698	9698	10846	11995	13144	13144
Depth	(5)	mm	2260	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	6508	7819	7819	8439	9136	9768	9942

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh (R134a)								
Cooling (A35; W7)								
Refrigeration capacity	(1)	kW	497,1	589,6	641,8	720,9	800,2	853,5
Total absorbed power	(1)	kW	154,2	195,2	202,3	235,2	256,1	266
EER	(1)		3,22	3,02	3,17	3,06	3,12	3,2
Compressors								
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	75	75	90	90	105	120
Refrigerant charge (CuAl)		kg	99	101	120	123	141	161
Fans								
Quantity		n°	10	10	12	12	14	16
Total air flow rate		m³/h	194000	194000	233000	233000	272000	310000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	85,6	101,5	110,5	124,1	137,7	146,9
Head loss (A35; W7)	(1)	kPa	35	33	26	32	28	33
Noise levels								
Sound power lev.	(3)	dB(A)	98	100	99	101	102	102
Sound pressure lev.	(4)	dB(A)	66	68	67	69	70	69
Sound power lev. LN vers.	(3)	dB(A)	94	96	95	97	98	98
Sound pressure lev. LN vers.	(4)	dB(A)	62	64	63	65	66	65
Dimensions and weight								
Length	(5)	mm	6252	6252	7401	7401	8549	9698
Depth	(5)	mm	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	5191	5315	5830	6075	6758	7869

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh (R134a)							
Cooling (A35; W7)							
Refrigeration capacity	(1)	kW	932	1037,2	1095,4	1219,9	1316,8
Total absorbed power	(1)	kW	300,5	327,8	335,9	380,9	418,6
EER	(1)		3,1	3,16	3,26	3,2	3,14
Compressors							
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	120	135	150	165	165
Refrigerant charge (CuAl)		kg	161	186	200	219	223
Fans							
Quantity		n°	16	18	20	22	22
Total air flow rate		m³/h	310000	349000	388000	427000	427000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	160,4	178,5	188,5	209,9	226,6
Head loss (A35; W7)	(1)	kPa	38	33	36	39	47
Noise levels							
Sound power lev.	(3)	dB(A)	102	102	103	104	103
Sound pressure lev.	(4)	dB(A)	69	69	70	71	70
Sound power lev. LN vers.	(3)	dB(A)	98	98	99	100	99
Sound pressure lev. LN vers.	(4)	dB(A)	65	65	66	67	66
Dimensions and weight							
Length	(5)	mm	9698	10846	11995	13144	13144
Depth	(5)	mm	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	7999	8774	9221	10023	10308

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xh SLN

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh SLN (R134a)								
Cooling (A35; W7)								
Refrigeration capacity	(1)	kW	476,7	559,2	612,8	683,9	761	816,4
Total absorbed power	(1)	kW	162,7	208,2	214,3	251	272,7	282,3
EER	(1)		2.,93	2,69	2,86	2,73	2,79	2,89
Compressors								
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	75	75	90	90	105	120
Refrigerant charge (CuAl)		kg	99	101	120	123	141	161
Fans								
Quantity		n°	10	10	12	12	14	16
Total air flow rate		m³/h	150000	150000	180000	180000	210000	240000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	82,1	96,3	105,5	117,7	131	140,5
Head loss (A35; W7)	(1)	kPa	35	33	26	32	28	33
Noise levels								
Sound power lev.	(3)	dB(A)	91	93	92	94	95	95
Sound pressure lev.	(4)	dB(A)	59	61	60	62	63	62
Dimensions and weights**								
Length	(5)	mm	6252	6252	7401	7401	8549	9698
Depth	(5)	mm	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	5191	5315	5830	6075	6758	7869

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Xh SLN

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh SLN (R134a)							
Cooling (A35; W7)							
Refrigeration capacity	(1)	kW	886,3	986,9	1044,4	1162,8	1248,4
Total absorbed power	(1)	kW	320,1	348,6	355,5	403,5	445
EER	(1)		2,77	2,83	2,94	2,88	2,81
Compressors							
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	120	135	150	165	165
Refrigerant charge (CuAl)		kg	161	186	200	219	223
Fans							
Quantity		n°	16	18	20	22	22
Total air flow rate		m³/h	240000	270000	300000	330000	330000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	152,5	169,9	179,7	200,1	214,9
Head loss (A35; W7)	(1)	kPa	38	33	36	39	47
Noise levels							
Sound power lev.	(3)	dB(A)	95	95	96	97	96
Sound pressure lev.	(4)	dB(A)	62	62	63	64	63
Dimensions and weights**							
Length	(5)	mm	9698	10846	11995	13144	13144
Depth	(5)	mm	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	7999	8774	9221	10023	10308

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Si

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Si (R134a)								
Cooling (A35; W7)								
Refrigeration capacity	(1)	kW	495	567	646,9	719	785,9	871,9
Total absorbed power	(1)	kW	164,6	201,6	218,5	253,8	264,7	288,1
EER	(1)		3	2,81	2,96	2,83	2,96	3,02
Compressors								
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	75	75	90	90	105	120
Refrigerant charge (CuAl)		kg	99	101	120	123	141	161
Fans								
Quantity		n°	8	8	10	10	12	14
Total air flow rate		m³/h	155000	155000	194000	194000	233000	272000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	85,2	97,6	111,4	123,8	135,3	150,1
Head loss (A35; W7)	(1)	kPa	34	30	25	31	26	34
Noise levels								
Sound power lev.	(3)	dB(A)	99	100	100	101	102	102
Sound pressure lev.	(4)	dB(A)	67	68	68	69	70	69
Sound power lev. LN vers.	(3)	dB(A)	95	96	96	97	98	98
Sound pressure lev. LN vers.	(4)	dB(A)	63	64	64	65	66	65
Dimensions and weight								
Length	(5)	mm	5105	5105	6252	6252	7401	8549
Depth	(5)	mm	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	3738	3738	4782	4782	5450	6088

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Si

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Si (R134a)							
Cooling (A35; W7)							
Refrigeration capacity	(1)	kW	925,9	1016,9	1115,9	1229,9	1323,9
Total absorbed power	(1)	kW	317,3	335,1	354,5	397,8	432,6
EER	(1)		2,91	3,03	3,14	3,09	3,06
Compressors							
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	120	135	150	165	165
Refrigerant charge (CuAl)		kg	161	186	200	219	223
Fans							
Quantity		n°	14	16	18	20	20
Total air flow rate		m³/h	272000	310000	349000	388000	388000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	159,4	175	192,1	211,7	227,9
Head loss (A35; W7)	(1)	kPa	36	31	36	38	46
Noise levels							
Sound power lev.	(3)	dB(A)	103	103	104	105	105
Sound pressure lev.	(4)	dB(A)	70	70	71	72	72
Sound power lev. LN vers.	(3)	dB(A)	99	99	100	101	101
Sound pressure lev. LN vers.	(4)	dB(A)	66	66	67	68	68
Dimensions and weight							
Length	(5)	mm	8549	9698	10846	11995	11995
Depth	(5)	mm	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	6088	7339	7959	8536	8536

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Sh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Sh (R134a)								
Cooling (A35; W7)								
Refrigeration capacity	(1)	kW	482,8	568	625,1	700,4	781,9	838,6
Total absorbed power	(1)	kW	158,7	203,3	207,7	243,1	262,7	271,1
EER	(1)		3,04	2,79	3	2,88	2,97	3,09
Compressors								
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	75	75	90	90	105	120
Refrigerant charge (CuAl)		kg	99	101	120	123	141	161
Fans								
Quantity		n°	8	8	10	10	12	14
Total air flow rate		m³/h	155000	155000	194000	194000	233000	272000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	83,1	97,8	107,6	120,6	134,6	144,4
Head loss (A35; W7)	(1)	kPa	33	30	24	30	26	32
Noise levels								
Sound power lev.	(3)	dB(A)	98	100	99	101	102	102
Sound pressure lev.	(4)	dB(A)	66	68	67	69	70	69
Sound power lev. LN vers.	(3)	dB(A)	94	96	95	97	98	98
Sound pressure lev. LN vers.	(4)	dB(A)	62	64	63	65	66	65
Dimensions and weight								
Length	(5)	mm	5105	5105	6252	6252	7401	8549
Depth	(5)	mm	2260	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	4651	4775	4851	4851	5490	6338

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

KAPPA SKY Sh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Sh (R134a)							
Cooling (A35; W7)							
Refrigeration capacity	(1)	kW	913,9	1020	1080	1204,6	1297,3
Total absorbed power	(1)	kW	307,2	333,9	340,6	386	425,2
EER	(1)		2,97	3,05	3,17	3,12	3,05
Compressors							
Compressors/Circuits		n°/n°	2/2	2/2	2/2	2/2	2/2
Minimum capacity reduction step	(2)	%	12,5	12,5	12,5	12,5	12,5
Refrigerant charge (MCHX)		kg	120	135	150	165	165
Refrigerant charge (CuAl)		kg	161	186	200	219	223
Fans							
Quantity		n°	14	16	18	20	20
Total air flow rate		m³/h	272000	310000	349000	388000	388000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate (A35; W7)	(1)	m³/h	157,3	175,5	185,9	207,3	223,3
Head loss (A35; W7)	(1)	kPa	36	32	34	38	45
Noise levels							
Sound power lev.	(3)	dB(A)	102	102	103	104	103
Sound pressure lev.	(4)	dB(A)	69	69	70	71	70
Sound power lev. LN vers.	(3)	dB(A)	98	98	99	100	99
Sound pressure lev. LN vers.	(4)	dB(A)	65	65	66	67	66
Dimensions and weight							
Length	(5)	mm	8549	9698	10846	11995	11995
Depth	(5)	mm	2260	2260	2260	2260	2260
Height	(5)	mm	2440	2440	2440	2440	2440
Operating weight (MCHX)	(5)	kg	6338	7389	8174	8621	8621

(MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils)

(1) Outside air temperature 35°C; evaporator inlet-outlet water temperature 12/7°C. Values compliant with standard EN 14511

(2) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

(3) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35°C and water input/output temperature from/to heat exchanger and user equal to 12/7°C. Values taken by measurements made in accordance with standard ISO 3744 and the Eurovent certification programme, where applicable. Binding values See NOISE LEVELS section.

(4) Values obtained from the sound power level (conditions: note 3), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values See NOISE LEVELS section.

(5) The data refers to standard unit with no accessories In particular, the introduction of some accessories such as copper / aluminum coils, hydraulic modules or recovery exchangers may result in an increase in weight that may exceed 10%. For more details, refer to the specific drawing of the selected configuration and to the "Dimensional Diagrams" section.

ECODESIGN

INTRODUCTION

The Ecodesign/ErP Directive (2009/125/EC) lays down new standards for more efficient energy use.

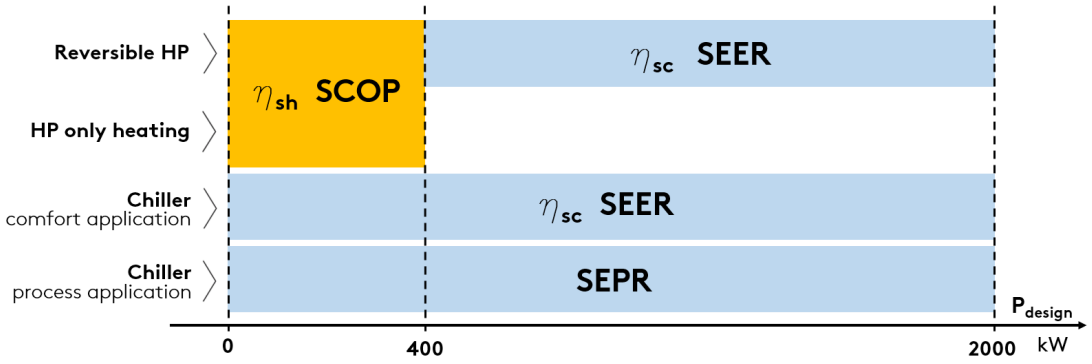
The Directive contains various regulations; as regards chiller products and heat pumps, the regulations of interest are the following:

- Regulation 2013/813, for small heat pumps (Pdesign ≤ 400 kW)
- Regulation 2016/2281, for chillers and heat pumps with Pdesign > 400 kW
- Regulation 2013/811, for heat pumps with Pdesign ≤ 70 kW.

The figure below schematically illustrates the correspondence between product and reference energy ratio.
The last-mentioned regulation (2013/811) regards the labelling (Ecolabel certification) of small heat pumps.
The other two regulations (2013/813 and 2016/2281) set seasonal efficiency targets that the products must comply with to be sold and installed in the European Union (essential requirement for CE marking).
These efficiency limits are defined through ratios, which are respectively:

- ηsh (SCOP), with reference to regulation 2013/813
- ηsc (SEER) for comfort applications and SEPR for process applications, with reference to regulation 2016/2281.

As regards regulation 2016/2281, with effect from 1st January 2021, the required minimum efficiency limit will be raised (Tier 2) from the current threshold (Tier 1).
The figure below schematically illustrates the correspondence between product and reference energy ratio.



Some notes and clarifications:

For comfort applications, regulation 2016/2281 sets the ηsc (SEER) ratio in two different operating conditions:

- SEER calculated with machine inlet/outlet water temperature of 12/7°C (low temperature application),
- SEER calculated with machine inlet/outlet water temperature of 23/18°C (medium temperature application).

The minimum efficiency requirement is the same, but can be met at condition 12/7°C or at condition 23/18°C, depending on the application envisaged for the machine.

Regulation 2013/813 distinguishes two different types: at low temperature and at medium temperature.
The following refer to the application at low temperature: (low temperature application) all heat pumps whose maximum delivery temperature for heating purposes is lower than 52°C with source at temperature of -7°C and -8°C wet bulb (air-water unit) or inlet 10°C (water-water unit), at the reference design conditions for an average climate.For these, the efficiency ratio is "low temperature application" (outlet water temperature 35°C).
For all the other heat pumps, the efficiency ratio is related to "medium temperature application" (outlet water temperature 55°C).
The ratios must be calculated according to the reference European heating season in average climatic conditions.
The minimum efficiency requirements set by the regulations are indicated below.

REGULATION 2016/2281, comfort application

TYPE OF UNIT		MINIMUM REQUIREMENT			
		Tier 1		Tier 2 (2021)	
SOURCE	**Pdesign**	**ηsc [%]**	**SEER**	**ηsc [%]**	**SEER**
air	< 400kW	149	3,8	161	4,1
air	≥ 400kW	161	4,1	179	4,55
water	< 400kW	196	5,1	200	5,2
water	≥ 400kW and < 1500kW	227	5,875	252	6,5
water	≥ 1500kW	245	6,325	272	7

REGULATION 2016/2281, process application

TYPE OF UNIT		MINIMUM REQUIREMENT	
		Tier 1	Tier 2 (2021)
SOURCE	**Pdesign**	**SEPR**	**SEPR**
air	< 400kW	4,5	5
air	≥ 400kW	5	5,5
water	< 400kW	6,5	7
water	≥ 400kW and < 1500kW	7,5	8
water	≥ 1500kW	8	8,5

The conformity of the product must be checked according to the type of application, whether comfort or process, and at the required outlet water temperature.

The two schematic tables below, respectively for comfort application and for process application, indicate the reference of the required conformity according to the type of product and the set point temperature (reference to regulations 2016/2281 and 2013/813).

Important note: for mixed comfort and process applications, the reference application for conformity is the comfort application.

COMFORT APPLICATION

PRODUCT	OUTLET WATER TEMPERATURE	COMPLIANCE INDEX	REGULATION
Chiller	< 18°C	SEER/ηsc low temperature application	2016/2281
	≥ 18°C	SEER/ηsc medium temperature application	2016/2281
Heat pumps (reversible and only heating) Pdesign≤400kW		SCOP/ηsh	2013/813
Reversible heat pumps Pdesign>400kW	< 18°C	SEER/ηsc low temperature application	2016/2281
	≥ 18°C	SEER/ηsc medium temperature application	2016/2281
Heat pumps only heating Pdesign>400kW		-	-

PROCESS APPLICATION

PRODUCT	OUTLET WATER TEMPERATURE	COMPLIANCE INDEX	REGULATION
Chiller	≥ +2°C , ≤ 12°C	SEPR	2016/2281
	> 12°C	-	-
	> -8°C , < +2°C	-	-

- = exemption from Ecodesign

Some specifications and notes follow.

EC fans:

The only option that positively affects the performance of the unit, by increasing its seasonal energy efficiency ratio, is the VEC accessory.

A unit equipped with EC fans has a higher SEER (ηsc) than the configuration with standard fans.

KAPPA SKY FAMILY

The Ecodesign/ErP Directive (2009/125/EC) lays down new standards for more efficient energy use.

Several regulations are part of the directive, and set mandatory seasonal efficiency targets for sale in the European Union.

The unit therefore, to be CE marked and sold in the EU market, must comply with the minimum requirements imposed by the regulations in question.

For Kappa SKY family, in the different configurations, the reference regulation is as follows:

Regulation 2016/2281

ηsc (SEER) for comfort applications and SEPR for process applications, with reference to regulation 2016/2281.

As regards the 2016/2281 regulation starting from 1 January 2021, the minimum required efficiency limit will be raised (Tier 2) compared to the current standard (Tier 1).

With reference to the Kappa SKY range, below is a list of concerned regulations relating to the different units in their various configurations.

KAPPA SKY Xi

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi (R513A)										
REGULATION 2016/2281										
COMFORT										
Standard units										
ηsc	(1)	%	179,6	180,5	181,3	188	188	187,1	188,8	188,4
SEER	(1)		4,56	4,58	4,6	4,77	4,77	4,75	4,79	4,78
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)										
ηsc	(1)	%	203,8	205	203	210,6	205,4	198,6	205,8	200,6
SEER	(1)		5,17	5,2	5,15	5,34	5,21	5,04	5,22	5,09
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y	Y
PROCESS										
SEPR	(2)		-	-	-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xi

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi (R513A)									
REGULATION 2016/2281									
COMFORT									
Standard units									
ηsc	(1)	%	190,1	190,5	188,8	193	192,2	192,2	190,5
SEER	(1)		4,82	4,83	4,79	4,9	4,88	4,88	4,83
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)									
ηsc	(1)	%	209,8	212,6	209,4	216,2	213,8	214,6	210,2
SEER	(1)		5,32	5,39	5,31	5,48	5,42	5,44	5,33
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y
PROCESS									
SEPR	(2)		-	-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xi SLN

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi SLN (R513A)										
REGULATION 2016/2281										
COMFORT										
Standard units										
ηsc	(1)	%	179,2	180,5	179,6	188	187,1	187,6	187,1	187,6
SEER	(1)		4,55	4,58	4,56	4,77	4,75	4,76	4,75	4,76
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)										
ηsc	(1)	%	196,6	199	194,2	203	199,8	197,4	199,8	197
SEER	(1)		4,99	5,05	4,93	5,15	5,07	5,01	5,07	5
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y	Y
PROCESS										
SEPR	(2)		-	-	-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xi SLN

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi SLN (R513A)									
REGULATION 2016/2281									
COMFORT									
Standard units									
ηsc	(1)	%	188,8	188,8	187,1	191,3	189,6	190,5	187,1
SEER	(1)		4,79	4,79	4,75	4,85	4,81	4,83	4,75
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)									
ηsc	(1)	%	203	205	202,6	207,4	205	207	203,4
SEER	(1)		5,15	5,2	5,14	5,26	5,2	5,25	5,16
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y
PROCESS									
SEPR	(2)		-	-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh (R513A)								
REGULATION 2016/2281								
COMFORT								
Standard units								
ηsc	(1)	%	187,1	187,6	188,4	187,6	188	188
SEER	(1)		4,75	4,76	4,78	4,76	4,77	4,77
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)								
ηsc	(1)	%	195	197,8	199	200,2	197,8	204,2
SEER	(1)		4,95	5,02	5,05	5,08	5,02	5,18
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
PROCESS								
SEPR	(2)		-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh (R513A)							
REGULATION 2016/2281							
COMFORT							
Standard units							
ηsc	(1)	%	187,1	189,6	188,8	188,8	187,1
SEER	(1)		4,75	4,81	4,79	4,79	4,75
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Units with EC fans (VEC)							
ηsc	(1)	%	197	201	203,8	201	195,4
SEER	(1)		5	5,1	5,17	5,1	4,96
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
PROCESS							
SEPR	(2)		-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xh SLN

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh SLN (R513A)								
REGULATION 2016/2281								
COMFORT								
Standard units								
ηsc	(1)	%	179,2	179	179,2	179	179	184,2
SEER	(1)		4,55	4,55	4,55	4,55	4,55	4,68
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)								
ηsc	(1)	%	195,4	189,4	198,2	189,4	195,4	204,6
SEER	(1)		4,96	4,81	5,03	4,81	4,96	5,19
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
PROCESS								
SEPR	(2)		-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xh SLN

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh SLN (R513A)							
REGULATION 2016/2281							
COMFORT							
Standard units							
ηsc	(1)	%	179	182,1	183,4	182,1	179
SEER	(1)		4,55	4,62	4,66	4,62	4,55
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Units with EC fans (VEC)							
ηsc	(1)	%	197,4	199,8	203	200,2	193,8
SEER	(1)		5,01	5,07	5,15	5,08	4,92
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
PROCESS							
SEPR	(2)		-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Si

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Si (R513A)								
REGULATION 2016/2281								
COMFORT								
Standard units								
ηsc	(1)	%	181,8	181,4	183	181	187,4	189
SEER	(1)		4,62	4,61	4,65	4,6	4,76	4,8
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)								
ηsc	(1)	%	194,2	189,4	196,2	190,2	201,4	205
SEER	(1)		4,93	4,81	4,98	4,83	5,11	5,2
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
PROCESS								
SEPR	(2)		-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Si

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Si (R513A)							
REGULATION 2016/2281							
COMFORT							
Standard units							
ηsc	(1)	%	188,2	191	190,6	190,6	188,6
SEER	(1)		4,78	4,85	4,84	4,84	4,79
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Units with EC fans (VEC)							
ηsc	(1)	%	202,6	209,4	208,2	209,8	205,4
SEER	(1)		5,14	5,31	5,28	5,32	5,21
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
PROCESS							
SEPR	(2)		-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Sh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Sh (R513A)								
REGULATION 2016/2281								
COMFORT								
Standard units								
ηsc	(1)	%	179,2	179	180,6	179	180,5	184,2
SEER	(1)		4,55	4,55	4,59	4,55	4,58	4,68
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)								
ηsc	(1)	%	187	183	191,8	186,2	190,2	199,8
SEER	(1)		4,75	4,65	4,87	4,73	4,83	5,07
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
PROCESS								
SEPR	(2)		-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Sh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Sh (R513A)							
REGULATION 2016/2281							
COMFORT							
Standard units							
ηsc	(1)	%	181,3	185	184,2	184,2	181,3
SEER	(1)		4,6	4,7	4,68	4,68	4,6
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Units with EC fans (VEC)							
ηsc	(1)	%	191,4	196,2	199,8	195,8	192,6
SEER	(1)		4,86	4,98	5,07	4,97	4,89
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
PROCESS							
SEPR	(2)		-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xi

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi (R134a)										
REGULATION 2016/2281										
COMFORT										
Standard units										
ηsc	(1)	%	189	190,2	191	197,4	190,6	191	195	193,4
SEER	(1)		4,8	4,83	4,85	5,01	4,84	4,85	4,95	4,91
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)										
ηsc	(1)	%	211,8	213,8	211	219,4	213,8	206,6	214,2	208,2
SEER	(1)		5,37	5,42	5,35	5,56	5,42	5,24	5,43	5,28
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y	Y
PROCESS										
SEPR	(2)		-	-	-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xi

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi (R134a)									
REGULATION 2016/2281									
COMFORT									
Standard units									
ηsc	(1)	%	200,2	200,6	198,6	203,4	201,8	202,2	199,8
SEER	(1)		5,08	5,09	5,04	5,16	5,12	5,13	5,07
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)									
ηsc	(1)	%	218,6	221,8	218,2	225	222,6	223,4	219
SEER	(1)		5,54	5,62	5,53	5,7	5,64	5,66	5,55
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y
PROCESS									
SEPR	(2)		-	-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xi SLN

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi SLN (R134a)										
REGULATION 2016/2281										
COMFORT										
Standard units										
ηsc	(1)	%	187	187,8	186,6	193,4	189	189	190,6	188,6
SEER	(1)		4,75	4,77	4,74	4,91	4,8	4,8	4,84	4,79
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)										
ηsc	(1)	%	205	207,4	202,2	211,4	207,8	205	206,6	199,4
SEER	(1)		5,2	5,26	5,13	5,36	5,27	5,2	5,24	5,06
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y	Y
PROCESS										
SEPR	(2)		-	-	-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xi SLN

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi SLN (R134a)									
REGULATION 2016/2281									
COMFORT									
Standard units									
ηsc	(1)	%	195	196,2	195,4	199	197,8	198,6	195,4
SEER	(1)		4,95	4,98	4,96	5,05	5,02	5,04	4,96
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)									
ηsc	(1)	%	210,2	213,4	211,4	215,8	214,2	216,2	211,4
SEER	(1)		5,33	5,41	5,36	5,47	5,43	5,48	5,36
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y	Y
PROCESS									
SEPR	(2)		-	-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh (R134a)								
REGULATION 2016/2281								
COMFORT								
Standard units								
ηsc	(1)	%	189,8	188,2	191	188,6	192,6	195,8
SEER	(1)		4,82	4,78	4,85	4,79	4,89	4,97
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)								
ηsc	(1)	%	203	196,2	206,6	201	205,8	213
SEER	(1)		5,15	4,98	5,24	5,1	5,22	5,4
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
PROCESS								
SEPR	(2)		-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh (R134a)							
REGULATION 2016/2281							
COMFORT							
Standard units							
ηsc	(1)	%	193,4	197,4	195	194,6	193
SEER	(1)		4,91	5,01	4,95	4,94	4,9
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Units with EC fans (VEC)							
ηsc	(1)	%	205,4	209,4	211,8	209	203,4
SEER	(1)		5,21	5,31	5,37	5,3	5,16
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
PROCESS							
SEPR	(2)		-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xh SLN

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh SLN (R134a)								
REGULATION 2016/2281								
COMFORT								
Standard units								
ηsc	(1)	%	188,6	187,4	188,6	187,8	187,4	194,2
SEER	(1)		4,79	4,76	4,79	4,77	4,76	4,93
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)								
ηsc	(1)	%	203,4	196,6	206,2	197	203,4	212,6
SEER	(1)		5,16	4,99	5,23	5	5,16	5,39
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
PROCESS								
SEPR	(2)		-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Xh SLN

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh SLN (R134a)							
REGULATION 2016/2281							
COMFORT							
Standard units							
ηsc	(1)	%	188,2	191,8	193	191,4	187,4
SEER	(1)		4,78	4,87	4,9	4,86	4,76
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Units with EC fans (VEC)							
ηsc	(1)	%	205,8	207,4	211	208,2	201,4
SEER	(1)		5,22	5,26	5,35	5,28	5,11
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
PROCESS							
SEPR	(2)		-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Si

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Si (R134a)								
REGULATION 2016/2281								
COMFORT								
Standard units								
ηsc	(1)	%	189	188,2	192,2	189,4	197,4	198,6
SEER	(1)		4,8	4,78	4,88	4,81	5,01	5,04
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)								
ηsc	(1)	%	202,6	196,6	204,6	198,2	209,4	213,4
SEER	(1)		5,14	4,99	5,19	5,03	5,31	5,41
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
PROCESS								
SEPR	(2)		-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Si

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Si (R134a)							
REGULATION 2016/2281							
COMFORT							
Standard units							
ηsc	(1)	%	197,8	201,4	200,6	201	198,6
SEER	(1)		5,02	5,11	5,09	5,1	5,04
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Units with EC fans (VEC)							
ηsc	(1)	%	210,6	218,2	216,6	218,6	213,8
SEER	(1)		5,34	5,53	5,49	5,54	5,42
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
PROCESS							
SEPR	(2)		-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Sh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Sh (R134a)								
REGULATION 2016/2281								
COMFORT								
Standard units								
ηsc	(1)	%	187	182,2	189,8	187,8	189,4	193,8
SEER	(1)		4,75	4,63	4,82	4,77	4,81	4,92
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Units with EC fans (VEC)								
ηsc	(1)	%	194,6	185,8	199,4	193	198,6	207,8
SEER	(1)		4,94	4,72	5,06	4,9	5,04	5,27
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
PROCESS								
SEPR	(2)		-	-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

KAPPA SKY Sh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Sh (R134a)							
REGULATION 2016/2281							
COMFORT							
Standard units							
ηsc	(1)	%	190,6	195	194,2	193,8	191
SEER	(1)		4,84	4,95	4,93	4,92	4,85
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Units with EC fans (VEC)							
ηsc	(1)	%	199	203,8	207,4	204,2	200,2
SEER	(1)		5,05	5,17	5,26	5,18	5,08
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
PROCESS							
SEPR	(2)		-	-	-	-	-
Compliance Tier 2 (2021)	(2)		Y	Y	Y	Y	Y

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the given condition: it can be installed only in non-EU countries.

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

ELECTRICAL SPECIFICATIONS

KAPPA SKY Xi

			25.1	31.1	34.1	43.1	51.2
KAPPA SKY Xi (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	83	119	119	172	165
Max. absorbed current (FLA)	(1)	A	162	227	227	321	324
Nominal current (Inom)	(2)	A	125	151	176	222	252
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	<10	<10	<10	<10	98,5
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	3x95+1G51	3x150+1G97	3x150+1G97	2x(3x95+1G50)	2x(3x95+1G50)
Suggested line protection	(5)		NH1gG 200A	NH2gG 315A	NH2gG 315A	NH2gG 400A	NH2gG 400A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	5 x 1,45	6 x 1,45	6 x 1,45	8 x 1,45	10 x 1,45
Rated current of standard fan		n° x A	5 x 3,40	6 x 3,40	6 x 3,40	8 x 3,40	10 x 3,40
Rated power of EC fan		n° x kW	5 x 1,25	6 x 1,25	6 x 1,25	8 x 1,25	10 x 1,25
Rated current of EC fan		n° x A	5 x 1,90	6 x 1,90	6 x 1,90	8 x 1,90	10 x 1,90
Rated power of oversize EC fans		n° x kW	5 x 2,90	6 x 2,90	6 x 2,90	8 x 2,90	10 x 2,90
Rated current of oversize EC fans		n° x A	5 x 4,40	6 x 4,40	6 x 4,40	8 x 4,40	10 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi

			59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xi (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	235	238	282	285	344
Max. absorbed current (FLA)	(1)	A	446	453	533	540	641
Nominal current (Inom)	(2)	A	307	337	389	409	460
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	129	132,2	152,2	155,4	182,1
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	2x(3x150+1G95)	2x(3x150+1G95)	3x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH3gG 630A	NH3gG 630A	NH4gG 800A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	10 x 1,45	12 x 1,45	12 x 1,45	14 x 1,45	16 x 1,45
Rated current of standard fan		n° x A	10 x 3,40	12 x 3,40	12 x 3,40	14 x 3,40	16 x 3,40
Rated power of EC fan		n° x kW	10 x 1,25	12 x 1,25	12 x 1,25	14 x 1,25	16 x 1,25
Rated current of EC fan		n° x A	10 x 1,90	12 x 1,90	12 x 1,90	14 x 1,90	16 x 1,90
Rated power of oversize EC fans		n° x kW	10 x 2,90	12 x 2,90	12 x 2,90	14 x 2,90	16 x 2,90
Rated current of oversize EC fans		n° x A	10 x 4,40	12 x 4,40	12 x 4,40	14 x 4,40	16 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	344	347	429	432	432
Max. absorbed current (FLA)	(1)	A	641	648	794	801	801
Nominal current (Inom)	(2)	A	496	521	553	622	674
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	182,1	185,3	223,5	226,7	226,7
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	3x(3x120+1G70)	3x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH4gG 800A	NH4gG 800A	NH4gG 1000A	NH4gG 1000A	NH4gG 1000A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	16 x 1,45	18 x 1,45	20 x 1,45	22 x 1,45	22 x 1,45
Rated current of standard fan		n° x A	16 x 3,40	18 x 3,40	20 x 3,40	22 x 3,40	22 x 3,40
Rated power of EC fan		n° x kW	16 x 1,25	18 x 1,25	20 x 1,25	22 x 1,25	22 x 1,25
Rated current of EC fan		n° x A	16 x 1,90	18 x 1,90	20 x 1,90	22 x 1,90	22 x 1,90
Rated power of oversize EC fans		n° x kW	16 x 2,90	18 x 2,90	20 x 2,90	22 x 2,90	22 x 2,90
Rated current of oversize EC fans		n° x A	16 x 4,40	18 x 4,40	20 x 4,40	22 x 4,40	22 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi SLN

			25.1	31.1	34.1	43.1	51.2
KAPPA SKY Xi SLN (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	118	141	141	212	235
Max. absorbed current (FLA)	(1)	A	223	267	267	391	446
Nominal current (Inom)	(2)	A	133	159	186	236	266
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	<10	<10	<10	<10	129
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	3x95+1G51	3x150+1G97	3x150+1G97	2x(3x95+1G50)	2x(3x95+1G50)
Suggested line protection	(5)		NH1gG 200A	NH2gG 315A	NH2gG 315A	NH2gG 400A	NH2gG 400A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	5 x 1,45	6 x 1,45	6 x 1,45	8 x 1,45	10 x 1,45
Rated current of standard fan		n° x A	5 x 3,40	6 x 3,40	6 x 3,40	8 x 3,40	10 x 3,40
Rated power of EC fan		n° x kW	5 x 1,25	6 x 1,25	6 x 1,25	8 x 1,25	10 x 1,25
Rated current of EC fan		n° x A	5 x 1,90	6 x 1,90	6 x 1,90	8 x 1,90	10 x 1,90
Rated power of oversize EC fans		n° x kW	5 x 2,90	6 x 2,90	6 x 2,90	8 x 2,90	10 x 2,90
Rated current of oversize EC fans		n° x A	5 x 4,40	6 x 4,40	6 x 4,40	8 x 4,40	10 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi SLN

			59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xi SLN (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	279	282	338	341	424
Max. absorbed current (FLA)	(1)	A	526	533	627	634	781
Nominal current (Inom)	(2)	A	326	358	415	436	475
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	149	152,2	175,7	178,9	217,1
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	2x(3x150+1G95)	2x(3x150+1G95)	3x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH3gG 630A	NH3gG 630A	NH4gG 800A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	10 x 1,45	12 x 1,45	12 x 1,45	14 x 1,45	16 x 1,45
Rated current of standard fan		n° x A	10 x 3,40	12 x 3,40	12 x 3,40	14 x 3,40	16 x 3,40
Rated power of EC fan		n° x kW	10 x 1,25	12 x 1,25	12 x 1,25	14 x 1,25	16 x 1,25
Rated current of EC fan		n° x A	10 x 1,90	12 x 1,90	12 x 1,90	14 x 1,90	16 x 1,90
Rated power of oversize EC fans		n° x kW	10 x 2,90	12 x 2,90	12 x 2,90	14 x 2,90	16 x 2,90
Rated current of oversize EC fans		n° x A	10 x 4,40	12 x 4,40	12 x 4,40	14 x 4,40	16 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi SLN

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi SLN (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	424	427	529	532	532
Max. absorbed current (FLA)	(1)	A	781	788	928	935	935
Nominal current (Inom)	(2)	A	524	556	587	659	719
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	217,1	220,3	257	260,2	260,2
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	3x(3x120+1G70)	3x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH4gG 800A	NH4gG 800A	NH4gG 1000A	NH4gG 1000A	NH4gG 1000A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	16 x 1,45	18 x 1,45	20 x 1,45	22 x 1,45	22 x 1,45
Rated current of standard fan		n° x A	16 x 3,40	18 x 3,40	20 x 3,40	22 x 3,40	22 x 3,40
Rated power of EC fan		n° x kW	16 x 1,25	18 x 1,25	20 x 1,25	22 x 1,25	22 x 1,25
Rated current of EC fan		n° x A	16 x 1,90	18 x 1,90	20 x 1,90	22 x 1,90	22 x 1,90
Rated power of oversize EC fans		n° x kW	16 x 2,90	18 x 2,90	20 x 2,90	22 x 2,90	22 x 2,90
Rated current of oversize EC fans		n° x A	16 x 4,40	18 x 4,40	20 x 4,40	22 x 4,40	22 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh (R513A)								
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	202	266	269	314	337	368
Max. absorbed current (FLA)	(1)	A	431	556	563	656	719	773
Nominal current (Inom)	(2)	A	274	346	360	417	454	473
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	481,5	589	592,2	650,2	723,4	750,1
Power supply			400V / 3ph / 50Hz					
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz					
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	3x(3x95+1G50)	3x(3x120+1G70)	3x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH4gG 700A	NH4gG 800A	NH4gG 800A	NH4gG 1000A
Electrical specifications for fans								
Rated power of standard fan		n° x kW	10 x 1,45	10 x 1,45	12 x 1,45	12 x 1,45	14 x 1,45	16 x 1,45
Rated current of standard fan		n° x A	10 x 3,40	10 x 3,40	12 x 3,40	12 x 3,40	14 x 3,40	16 x 3,40
Rated power of EC fan		n° x kW	10 x 1,25	10 x 1,25	12 x 1,25	12 x 1,25	14 x 1,25	16 x 1,25
Rated current of EC fan		n° x A	10 x 1,90	10 x 1,90	12 x 1,90	12 x 1,90	14 x 1,90	16 x 1,90
Rated power of oversize EC fans		n° x kW	10 x 2,90	10 x 2,90	12 x 2,90	12 x 2,90	14 x 2,90	16 x 2,90
Rated current of oversize EC fans		n° x A	10 x 4,40	10 x 4,40	12 x 4,40	12 x 4,40	14 x 4,40	16 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	400	423	465	534	561
Max. absorbed current (FLA)	(1)	A	829	908	984	1018	1075
Nominal current (Inom)	(2)	A	532	582	595	676	741
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	760,1	873,3	911,5	1151,7	1151,7
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x150+1G95)	4x(3x150+1G95)	4x(3x150+1G95)
Suggested line protection	(5)		NH4gG 1000A	NH4gG 1000A	NH4gG 1250A	NH4gG 1250A	NH4gG 1250A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	16 x 1,45	18 x 1,45	20 x 1,45	22 x 1,45	22 x 1,45
Rated current of standard fan		n° x A	16 x 3,40	18 x 3,40	20 x 3,40	22 x 3,40	22 x 3,40
Rated power of EC fan		n° x kW	16 x 1,25	18 x 1,25	20 x 1,25	22 x 1,25	22 x 1,25
Rated current of EC fan		n° x A	16 x 1,90	18 x 1,90	20 x 1,90	22 x 1,90	22 x 1,90
Rated power of oversize EC fans		n° x kW	16 x 2,90	18 x 2,90	20 x 2,90	22 x 2,90	22 x 2,90
Rated current of oversize EC fans		n° x A	16 x 4,40	18 x 4,40	20 x 4,40	22 x 4,40	22 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xh SLN

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh SLN (R513A)								
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	237	288	291	342	365	408
Max. absorbed current (FLA)	(1)	A	492	596	603	703	766	843
Nominal current (Inom)	(2)	A	288	370	381	445	484	500
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	513	610	613,4	674,9	748,3	786,7
Power supply			400V / 3ph / 50Hz					
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz					
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	3x(3x95+1G50)	3x(3x120+1G70)	3x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH4gG 700A	NH4gG 800A	NH4gG 800A	NH4gG 1000A
Electrical specifications for fans								
Rated power of standard fan		n° x kW	10 x 1,45	10 x 1,45	12 x 1,45	12 x 1,45	14 x 1,45	16 x 1,45
Rated current of standard fan		n° x A	10 x 3,40	10 x 3,40	12 x 3,40	12 x 3,40	14 x 3,40	16 x 3,40
Rated power of EC fan		n° x kW	10 x 1,25	10 x 1,25	12 x 1,25	12 x 1,25	14 x 1,25	16 x 1,25
Rated current of EC fan		n° x A	10 x 1,90	10 x 1,90	12 x 1,90	12 x 1,90	14 x 1,90	16 x 1,90
Rated power of oversize EC fans		n° x kW	10 x 2,90	10 x 2,90	12 x 2,90	12 x 2,90	14 x 2,90	16 x 2,90
Rated current of oversize EC fans		n° x A	10 x 4,40	10 x 4,40	12 x 4,40	12 x 4,40	14 x 4,40	16 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xh SLN

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh SLN (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	440	463	515	584	611
Max. absorbed current (FLA)	(1)	A	899	978	1051	1085	1142
Nominal current (Inom)	(2)	A	567	618	631	716	786
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	796,7	910,1	947	1187,4	1187,4
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x150+1G95)	4x(3x150+1G95)	4x(3x150+1G95)
Suggested line protection	(5)		NH4gG 1000A	NH4gG 1000A	NH4gG 1250A	NH4gG 1250A	NH4gG 1250A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	16 x 1,45	18 x 1,45	20 x 1,45	22 x 1,45	22 x 1,45
Rated current of standard fan		n° x A	16 x 3,40	18 x 3,40	20 x 3,40	22 x 3,40	22 x 3,40
Rated power of EC fan		n° x kW	16 x 1,25	18 x 1,25	20 x 1,25	22 x 1,25	22 x 1,25
Rated current of EC fan		n° x A	16 x 1,90	18 x 1,90	20 x 1,90	22 x 1,90	22 x 1,90
Rated power of oversize EC fans		n° x kW	16 x 2,90	18 x 2,90	20 x 2,90	22 x 2,90	22 x 2,90
Rated current of oversize EC fans		n° x A	16 x 4,40	18 x 4,40	20 x 4,40	22 x 4,40	22 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Si

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Si (R513A)								
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	232	276	279	335	338	421
Max. absorbed current (FLA)	(1)	A	440	520	526	620	627	774
Nominal current (Inom)	(2)	A	259	318	346	402	418	455
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	125,8	145,8	149	172,5	175,7	213,9
Power supply			400V / 3ph / 50Hz					
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz					
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	2x(3x150+1G95)	3x(3x95+1G50)	3x(3x95+1G50)	4x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH3gG 630A	NH4gG 700A	NH4gG 700A	NH4gG 1000A
Electrical specifications for fans								
Rated power of standard fan		n° x kW	8 x 1,45	8 x 1,45	10 x 1,45	10 x 1,45	12 x 1,45	14 x 1,45
Rated current of standard fan		n° x A	8 x 3,40	8 x 3,40	10 x 3,40	10 x 3,40	12 x 3,40	14 x 3,40
Rated power of EC fan		n° x kW	8 x 1,25	8 x 1,25	10 x 1,25	10 x 1,25	12 x 1,25	14 x 1,25
Rated current of EC fan		n° x A	8 x 1,90	8 x 1,90	10 x 1,90	10 x 1,90	12 x 1,90	14 x 1,90
Rated power of oversize EC fans		n° x kW	8 x 2,90	8 x 2,90	10 x 2,90	10 x 2,90	12 x 2,90	14 x 2,90
Rated current of oversize EC fans		n° x A	8 x 4,40	8 x 4,40	10 x 4,40	10 x 4,40	12 x 4,40	14 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Si

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Si (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	421	424	527	529	529
Max. absorbed current (FLA)	(1)	A	774	781	922	928	928
Nominal current (Inom)	(2)	A	501	529	560	629	682
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	213,9	217,1	253,8	257	257
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x150+1G95)	4x(3x150+1G95)
Suggested line protection	(5)		NH4gG 1000A	NH4gG 1000A	NH4gG 1000A	NH4gG 1250A	NH4gG 1250A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	14 x 1,45	16 x 1,45	18 x 1,45	20 x 1,45	20 x 1,45
Rated current of standard fan		n° x A	14 x 3,40	16 x 3,40	18 x 3,40	20 x 3,40	20 x 3,40
Rated power of EC fan		n° x kW	14 x 1,25	16 x 1,25	18 x 1,25	20 x 1,25	20 x 1,25
Rated current of EC fan		n° x A	14 x 1,90	16 x 1,90	18 x 1,90	20 x 1,90	20 x 1,90
Rated power of oversize EC fans		n° x kW	14 x 2,90	16 x 2,90	18 x 2,90	20 x 2,90	20 x 2,90
Rated current of oversize EC fans		n° x A	14 x 4,40	16 x 4,40	18 x 4,40	20 x 4,40	20 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Sh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Sh (R513A)								
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	234	285	288	339	362	405
Max. absorbed current (FLA)	(1)	A	486	590	596	696	759	836
Nominal current (Inom)	(2)	A	283	362	370	433	467	483
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	508,8	605,8	609	670,5	743,7	781,9
Power supply			400V / 3ph / 50Hz					
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz					
Suggested line section	(4)	mm²	2x(3x150+1G95)	3x(3x95+1G50)	3x(3x95+1G50)	3x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH3gG 630A	NH4gG 700A	NH4gG 700A	NH4gG 800A	NH4gG 1000A	NH4gG 1000A
Electrical specifications for fans								
Rated power of standard fan		n° x kW	8 x 1,45	8 x 1,45	10 x 1,45	10 x 1,45	12 x 1,45	14 x 1,45
Rated current of standard fan		n° x A	8 x 3,40	8 x 3,40	10 x 3,40	10 x 3,40	12 x 3,40	14 x 3,40
Rated power of EC fan		n° x kW	8 x 1,25	8 x 1,25	10 x 1,25	10 x 1,25	12 x 1,25	14 x 1,25
Rated current of EC fan		n° x A	8 x 1,90	8 x 1,90	10 x 1,90	10 x 1,90	12 x 1,90	14 x 1,90
Rated power of oversize EC fans		n° x kW	8 x 2,90	8 x 2,90	10 x 2,90	10 x 2,90	12 x 2,90	14 x 2,90
Rated current of oversize EC fans		n° x A	8 x 4,40	8 x 4,40	10 x 4,40	10 x 4,40	12 x 4,40	14 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Sh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Sh (R513A)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	437	460	513	581	608
Max. absorbed current (FLA)	(1)	A	892	971	1045	1078	1135
Nominal current (Inom)	(2)	A	546	594	606	685	754
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	791,9	905,1	941,8	1182	1182
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	4x(3x120+1G70)	4x(3x150+1G95)	4x(3x150+1G95)	4x(3x150+1G95)	4x(3x150+1G95)
Suggested line protection	(5)		NH4gG 1000A	NH4gG 1250A	NH4gG 1250A	NH4gG 1250A	NH4gG 1250A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	14 x 1,45	16 x 1,45	18 x 1,45	20 x 1,45	20 x 1,45
Rated current of standard fan		n° x A	14 x 3,40	16 x 3,40	18 x 3,40	20 x 3,40	20 x 3,40
Rated power of EC fan		n° x kW	14 x 1,25	16 x 1,25	18 x 1,25	20 x 1,25	20 x 1,25
Rated current of EC fan		n° x A	14 x 1,90	16 x 1,90	18 x 1,90	20 x 1,90	20 x 1,90
Rated power of oversize EC fans		n° x kW	14 x 2,90	16 x 2,90	18 x 2,90	20 x 2,90	20 x 2,90
Rated current of oversize EC fans		n° x A	14 x 4,40	16 x 4,40	18 x 4,40	20 x 4,40	20 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi

			25.1	31.1	34.1	43.1	51.2
KAPPA SKY Xi (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	83	119	119	172	165
Max. absorbed current (FLA)	(1)	A	162	227	227	321	324
Nominal current (Inom)	(2)	A	119	144	167	211	240
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	<10	<10	<10	<10	98,5
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	3x150+1G97	3x150+1G97	3x150+1G97	2x(3x95+1G50)	2x(3x95+1G50)
Suggested line protection	(5)		NH1gG 200A	NH2gG 315A	NH2gG 315A	NH2gG 400A	NH2gG 400A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	5 x 1,45	6 x 1,45	6 x 1,45	8 x 1,45	10 x 1,45
Rated current of standard fan		n° x A	5 x 3,40	6 x 3,40	6 x 3,40	8 x 3,40	10 x 3,40
Rated power of EC fan		n° x kW	5 x 1,25	6 x 1,25	6 x 1,25	8 x 1,25	10 x 1,25
Rated current of EC fan		n° x A	5 x 1,90	6 x 1,90	6 x 1,90	8 x 1,90	10 x 1,90
Rated power of oversize EC fans		n° x kW	5 x 2,90	6 x 2,90	6 x 2,90	8 x 2,90	10 x 2,90
Rated current of oversize EC fans		n° x A	5 x 4,40	6 x 4,40	6 x 4,40	8 x 4,40	10 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi

			59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xi (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	235	238	282	285	344
Max. absorbed current (FLA)	(1)	A	446	453	533	540	641
Nominal current (Inom)	(2)	A	292	320	370	390	439
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	129	132,2	152,2	155,4	182,1
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	2x(3x150+1G95)	2x(3x150+1G95)	3x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH3gG 630A	NH3gG 630A	NH4gG 800A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	10 x 1,45	12 x 1,45	12 x 1,45	14 x 1,45	16 x 1,45
Rated current of standard fan		n° x A	10 x 3,40	12 x 3,40	12 x 3,40	14 x 3,40	16 x 3,40
Rated power of EC fan		n° x kW	10 x 1,25	12 x 1,25	12 x 1,25	14 x 1,25	16 x 1,25
Rated current of EC fan		n° x A	10 x 1,90	12 x 1,90	12 x 1,90	14 x 1,90	16 x 1,90
Rated power of oversize EC fans		n° x kW	10 x 2,90	12 x 2,90	12 x 2,90	14 x 2,90	16 x 2,90
Rated current of oversize EC fans		n° x A	10 x 4,40	12 x 4,40	12 x 4,40	14 x 4,40	16 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	344	347	429	432	432
Max. absorbed current (FLA)	(1)	A	641	648	794	801	801
Nominal current (Inom)	(2)	A	474	496	527	592	642
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	182,1	185,3	223,5	226,7	226,7
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	3x(3x120+1G70)	3x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH4gG 800A	NH4gG 800A	NH4gG 1000A	NH4gG 1000A	NH4gG 1000A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	16 x 1,45	18 x 1,45	20 x 1,45	22 x 1,45	22 x 1,45
Rated current of standard fan		n° x A	16 x 3,40	18 x 3,40	20 x 3,40	22 x 3,40	22 x 3,40
Rated power of EC fan		n° x kW	16 x 1,25	18 x 1,25	20 x 1,25	22 x 1,25	22 x 1,25
Rated current of EC fan		n° x A	16 x 1,90	18 x 1,90	20 x 1,90	22 x 1,90	22 x 1,90
Rated power of oversize EC fans		n° x kW	16 x 2,90	18 x 2,90	20 x 2,90	22 x 2,90	22 x 2,90
Rated current of oversize EC fans		n° x A	16 x 4,40	18 x 4,40	20 x 4,40	22 x 4,40	22 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi SLN

			25.1	31.1	34.1	43.1	51.2
KAPPA SKY Xi SLN (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	118	141	141	212	235
Max. absorbed current (FLA)	(1)	A	223	267	267	391	446
Nominal current (Inom)	(2)	A	127	147	174	220	247
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	<10	<10	<10	<10	129
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	3x95+1G51	3x150+1G97	3x150+1G97	2x(3x95+1G50)	2x(3x95+1G50)
Suggested line protection	(5)		NH1gG 200A	NH2gG 315A	NH2gG 315A	NH2gG 400A	NH2gG 400A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	5 x 1,45	6 x 1,45	6 x 1,45	8 x 1,45	10 x 1,45
Rated current of standard fan		n° x A	5 x 3,40	6 x 3,40	6 x 3,40	8 x 3,40	10 x 3,40
Rated power of EC fan		n° x kW	5 x 1,25	6 x 1,25	6 x 1,25	8 x 1,25	10 x 1,25
Rated current of EC fan		n° x A	5 x 1,90	6 x 1,90	6 x 1,90	8 x 1,90	10 x 1,90
Rated power of oversize EC fans		n° x kW	5 x 2,90	6 x 2,90	6 x 2,90	8 x 2,90	10 x 2,90
Rated current of oversize EC fans		n° x A	5 x 4,40	6 x 4,40	6 x 4,40	8 x 4,40	10 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi SLN

			59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xi SLN (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	279	282	338	341	424
Max. absorbed current (FLA)	(1)	A	526	533	627	634	781
Nominal current (Inom)	(2)	A	305	332	388	405	441
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	149	152,2	175,7	178,9	217,1
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	2x(3x150+1G95)	2x(3x150+1G95)	3x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH3gG 630A	NH3gG 630A	NH4gG 800A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	10 x 1,45	12 x 1,45	12 x 1,45	14 x 1,45	16 x 1,45
Rated current of standard fan		n° x A	10 x 3,40	12 x 3,40	12 x 3,40	14 x 3,40	16 x 3,40
Rated power of EC fan		n° x kW	10 x 1,25	12 x 1,25	12 x 1,25	14 x 1,25	16 x 1,25
Rated current of EC fan		n° x A	10 x 1,90	12 x 1,90	12 x 1,90	14 x 1,90	16 x 1,90
Rated power of oversize EC fans		n° x kW	10 x 2,90	12 x 2,90	12 x 2,90	14 x 2,90	16 x 2,90
Rated current of oversize EC fans		n° x A	10 x 4,40	12 x 4,40	12 x 4,40	14 x 4,40	16 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xi SLN

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi SLN (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	424	427	529	532	532
Max. absorbed current (FLA)	(1)	A	781	788	928	935	935
Nominal current (Inom)	(2)	A	488	515	545	613	668
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	217,1	220,3	257	260,2	260,2
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	3x(3x120+1G70)	3x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH4gG 800A	NH4gG 800A	NH4gG 1000A	NH4gG 1000A	NH4gG 1000A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	16 x 1,45	18 x 1,45	20 x 1,45	22 x 1,45	22 x 1,45
Rated current of standard fan		n° x A	16 x 3,40	18 x 3,40	20 x 3,40	22 x 3,40	22 x 3,40
Rated power of EC fan		n° x kW	16 x 1,25	18 x 1,25	20 x 1,25	22 x 1,25	22 x 1,25
Rated current of EC fan		n° x A	16 x 1,90	18 x 1,90	20 x 1,90	22 x 1,90	22 x 1,90
Rated power of oversize EC fans		n° x kW	16 x 2,90	18 x 2,90	20 x 2,90	22 x 2,90	22 x 2,90
Rated current of oversize EC fans		n° x A	16 x 4,40	18 x 4,40	20 x 4,40	22 x 4,40	22 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh (R134a)								
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	202	266	269	314	337	368
Max. absorbed current (FLA)	(1)	A	431	556	563	656	719	773
Nominal current (Inom)	(2)	A	260	329	342	397	432	449
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	481,5	589	592,2	650,2	723,4	750,1
Power supply			400V / 3ph / 50Hz					
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz					
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	3x(3x95+1G50)	3x(3x120+1G70)	3x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH4gG 700A	NH4gG 800A	NH4gG 800A	NH4gG 1000A
Electrical specifications for fans								
Rated power of standard fan		n° x kW	10 x 1,45	10 x 1,45	12 x 1,45	12 x 1,45	14 x 1,45	16 x 1,45
Rated current of standard fan		n° x A	10 x 3,40	10 x 3,40	12 x 3,40	12 x 3,40	14 x 3,40	16 x 3,40
Rated power of EC fan		n° x kW	10 x 1,25	10 x 1,25	12 x 1,25	12 x 1,25	14 x 1,25	16 x 1,25
Rated current of EC fan		n° x A	10 x 1,90	10 x 1,90	12 x 1,90	12 x 1,90	14 x 1,90	16 x 1,90
Rated power of oversize EC fans		n° x kW	10 x 2,90	10 x 2,90	12 x 2,90	12 x 2,90	14 x 2,90	16 x 2,90
Rated current of oversize EC fans		n° x A	10 x 4,40	10 x 4,40	12 x 4,40	12 x 4,40	14 x 4,40	16 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	400	423	465	534	561
Max. absorbed current (FLA)	(1)	A	829	908	984	1018	1075
Nominal current (Inom)	(2)	A	506	553	566	642	704
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	760,1	873,3	911,5	1151,7	1151,7
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x150+1G95)	4x(3x150+1G95)	4x(3x150+1G95)
Suggested line protection	(5)		NH4gG 1000A	NH4gG 1000A	NH4gG 1250A	NH4gG 1250A	NH4gG 1250A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	16 x 1,45	18 x 1,45	20 x 1,45	22 x 1,45	22 x 1,45
Rated current of standard fan		n° x A	16 x 3,40	18 x 3,40	20 x 3,40	22 x 3,40	22 x 3,40
Rated power of EC fan		n° x kW	16 x 1,25	18 x 1,25	20 x 1,25	22 x 1,25	22 x 1,25
Rated current of EC fan		n° x A	16 x 1,90	18 x 1,90	20 x 1,90	22 x 1,90	22 x 1,90
Rated power of oversize EC fans		n° x kW	16 x 2,90	18 x 2,90	20 x 2,90	22 x 2,90	22 x 2,90
Rated current of oversize EC fans		n° x A	16 x 4,40	18 x 4,40	20 x 4,40	22 x 4,40	22 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xh SLN

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh SLN (R134a)								
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	237	288	291	342	365	408
Max. absorbed current (FLA)	(1)	A	492	596	603	703	766	843
Nominal current (Inom)	(2)	A	267	344	353	415	450	464
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	513	610	613,4	674,9	748,3	786,7
Power supply			400V / 3ph / 50Hz					
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz					
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	3x(3x95+1G50)	3x(3x120+1G70)	3x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH4gG 700A	NH4gG 800A	NH4gG 800A	NH4gG 1000A
Electrical specifications for fans								
Rated power of standard fan		n° x kW	10 x 1,45	10 x 1,45	12 x 1,45	12 x 1,45	14 x 1,45	16 x 1,45
Rated current of standard fan		n° x A	10 x 3,40	10 x 3,40	12 x 3,40	12 x 3,40	14 x 3,40	16 x 3,40
Rated power of EC fan		n° x kW	10 x 1,25	10 x 1,25	12 x 1,25	12 x 1,25	14 x 1,25	16 x 1,25
Rated current of EC fan		n° x A	10 x 1,90	10 x 1,90	12 x 1,90	12 x 1,90	14 x 1,90	16 x 1,90
Rated power of oversize EC fans		n° x kW	10 x 2,90	10 x 2,90	12 x 2,90	12 x 2,90	14 x 2,90	16 x 2,90
Rated current of oversize EC fans		n° x A	10 x 4,40	10 x 4,40	12 x 4,40	12 x 4,40	14 x 4,40	16 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Xh SLN

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh SLN (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	440	463	515	584	611
Max. absorbed current (FLA)	(1)	A	899	978	1051	1085	1142
Nominal current (Inom)	(2)	A	528	575	584	663	732
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	796,7	910,1	947	1187,4	1187,4
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x150+1G95)	4x(3x150+1G95)	4x(3x150+1G95)
Suggested line protection	(5)		NH4gG 1000A	NH4gG 1000A	NH4gG 1250A	NH4gG 1250A	NH4gG 1250A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	16 x 1,45	18 x 1,45	20 x 1,45	22 x 1,45	22 x 1,45
Rated current of standard fan		n° x A	16 x 3,40	18 x 3,40	20 x 3,40	22 x 3,40	22 x 3,40
Rated power of EC fan		n° x kW	16 x 1,25	18 x 1,25	20 x 1,25	22 x 1,25	22 x 1,25
Rated current of EC fan		n° x A	16 x 1,90	18 x 1,90	20 x 1,90	22 x 1,90	22 x 1,90
Rated power of oversize EC fans		n° x kW	16 x 2,90	18 x 2,90	20 x 2,90	22 x 2,90	22 x 2,90
Rated current of oversize EC fans		n° x A	16 x 4,40	18 x 4,40	20 x 4,40	22 x 4,40	22 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Si

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Si (R134a)								
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	232	276	279	335	338	421
Max. absorbed current (FLA)	(1)	A	440	520	526	620	627	774
Nominal current (Inom)	(2)	A	249	305	330	384	400	435
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	125,8	145,8	149	172,5	175,7	213,9
Power supply			400V / 3ph / 50Hz					
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz					
Suggested line section	(4)	mm²	2x(3x120+1G70)	2x(3x150+1G95)	2x(3x150+1G95)	3x(3x95+1G50)	3x(3x95+1G50)	4x(3x120+1G70)
Suggested line protection	(5)		NH3gG 500A	NH3gG 630A	NH3gG 630A	NH4gG 700A	NH4gG 700A	NH4gG 1000A
Electrical specifications for fans								
Rated power of standard fan		n° x kW	8 x 1,45	8 x 1,45	10 x 1,45	10 x 1,45	12 x 1,45	14 x 1,45
Rated current of standard fan		n° x A	8 x 3,40	8 x 3,40	10 x 3,40	10 x 3,40	12 x 3,40	14 x 3,40
Rated power of EC fan		n° x kW	8 x 1,25	8 x 1,25	10 x 1,25	10 x 1,25	12 x 1,25	14 x 1,25
Rated current of EC fan		n° x A	8 x 1,90	8 x 1,90	10 x 1,90	10 x 1,90	12 x 1,90	14 x 1,90
Rated power of oversize EC fans		n° x kW	8 x 2,90	8 x 2,90	10 x 2,90	10 x 2,90	12 x 2,90	14 x 2,90
Rated current of oversize EC fans		n° x A	8 x 4,40	8 x 4,40	10 x 4,40	10 x 4,40	12 x 4,40	14 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Si

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Si (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	421	424	527	529	529
Max. absorbed current (FLA)	(1)	A	774	781	922	928	928
Nominal current (Inom)	(2)	A	479	506	535	600	651
cosφ standard unit	(2)		0,95	0,95	0,95	0,95	0,95
Maximum inrush current (MIC)	(3)	A	213,9	217,1	253,8	257	257
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)	4x(3x150+1G95)	4x(3x150+1G95)
Suggested line protection	(5)		NH4gG 1000A	NH4gG 1000A	NH4gG 1000A	NH4gG 1250A	NH4gG 1250A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	14 x 1,45	16 x 1,45	18 x 1,45	20 x 1,45	20 x 1,45
Rated current of standard fan		n° x A	14 x 3,40	16 x 3,40	18 x 3,40	20 x 3,40	20 x 3,40
Rated power of EC fan		n° x kW	14 x 1,25	16 x 1,25	18 x 1,25	20 x 1,25	20 x 1,25
Rated current of EC fan		n° x A	14 x 1,90	16 x 1,90	18 x 1,90	20 x 1,90	20 x 1,90
Rated power of oversize EC fans		n° x kW	14 x 2,90	16 x 2,90	18 x 2,90	20 x 2,90	20 x 2,90
Rated current of oversize EC fans		n° x A	14 x 4,40	16 x 4,40	18 x 4,40	20 x 4,40	20 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Sh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Sh (R134a)								
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	234	285	288	339	362	405
Max. absorbed current (FLA)	(1)	A	486	590	596	696	759	836
Nominal current (Inom)	(2)	A	268	343	351	411	444	457
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	508,8	605,8	609	670,5	743,7	781,9
Power supply			400V / 3ph / 50Hz					
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz					
Suggested line section	(4)	mm²	2x(3x150+1G95)	3x(3x95+1G50)	3x(3x95+1G50)	3x(3x120+1G70)	4x(3x120+1G70)	4x(3x120+1G70)
Suggested line protection	(5)		NH3gG 630A	NH4gG 700A	NH4gG 700A	NH4gG 800A	NH4gG 1000A	NH4gG 1000A
Electrical specifications for fans								
Rated power of standard fan		n° x kW	8 x 1,45	8 x 1,45	10 x 1,45	10 x 1,45	12 x 1,45	14 x 1,45
Rated current of standard fan		n° x A	8 x 3,40	8 x 3,40	10 x 3,40	10 x 3,40	12 x 3,40	14 x 3,40
Rated power of EC fan		n° x kW	8 x 1,25	8 x 1,25	10 x 1,25	10 x 1,25	12 x 1,25	14 x 1,25
Rated current of EC fan		n° x A	8 x 1,90	8 x 1,90	10 x 1,90	10 x 1,90	12 x 1,90	14 x 1,90
Rated power of oversize EC fans		n° x kW	8 x 2,90	8 x 2,90	10 x 2,90	10 x 2,90	12 x 2,90	14 x 2,90
Rated current of oversize EC fans		n° x A	8 x 4,40	8 x 4,40	10 x 4,40	10 x 4,40	12 x 4,40	14 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

KAPPA SKY Sh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Sh (R134a)							
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	437	460	513	581	608
Max. absorbed current (FLA)	(1)	A	892	971	1045	1078	1135
Nominal current (Inom)	(2)	A	518	563	574	650	716
cosφ standard unit	(2)		0,85	0,85	0,85	0,85	0,85
Maximum inrush current (MIC)	(3)	A	791,9	905,1	941,8	1182	1182
Power supply			400V / 3ph / 50Hz				
Power supply for auxiliary circuits			230V-24V / 1ph / 50Hz				
Suggested line section	(4)	mm²	4x(3x120+1G70)	4x(3x150+1G95)	4x(3x150+1G95)	4x(3x150+1G95)	4x(3x150+1G95)
Suggested line protection	(5)		NH4gG 1000A	NH4gG 1250A	NH4gG 1250A	NH4gG 1250A	NH4gG 1250A
Electrical specifications for fans							
Rated power of standard fan		n° x kW	14 x 1,45	16 x 1,45	18 x 1,45	20 x 1,45	20 x 1,45
Rated current of standard fan		n° x A	14 x 3,40	16 x 3,40	18 x 3,40	20 x 3,40	20 x 3,40
Rated power of EC fan		n° x kW	14 x 1,25	16 x 1,25	18 x 1,25	20 x 1,25	20 x 1,25
Rated current of EC fan		n° x A	14 x 1,90	16 x 1,90	18 x 1,90	20 x 1,90	20 x 1,90
Rated power of oversize EC fans		n° x kW	14 x 2,90	16 x 2,90	18 x 2,90	20 x 2,90	20 x 2,90
Rated current of oversize EC fans		n° x A	14 x 4,40	16 x 4,40	18 x 4,40	20 x 4,40	20 x 4,40

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(5) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

HYDRAULIC MODULES

KAPPA SKY Xi

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi (R513A)										
Volume of the expansion vessel		l	24	24	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	-	-	-	-
Standard pumps										
Pump model 1P			P1	P2	P8	P3	P4	P4	P4	P5
Pump model 2P			P16	P16	P20	P17	P18	P18	P18	P19
Available head 1P	(1)	kPa	90	106	161	115	156	135	114	145
Available head 2P	(1)	kPa	122	101	148	98	138	111	79	131
Oversize pumps										
Pump model 1PM			P8	P9	P9	P10	P10	P10	P22	P6
Pump model 2PM			P20	P21	P21	P22	P22	P22	P22	P26
Available head 1PM	(1)	kPa	192	212	203	226	211	194	183	216
Available head 2PM	(1)	kPa	181	228	216	246	227	205	178	207

KAPPA SKY Xi

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi (R513A)									
Volume of the expansion vessel		l	24	24	24	24	24	24	24
Volume of the buffer tank		l	900	900	900	900	900	900	900
Standard pumps									
Pump model 1P			P5	P5	P5	P6	P6	P7	P7
Pump model 2P			P19	P19	P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	140	103	92	154	133	151	109
Available head 2P	(1)	kPa	125	83	147	134	113	128	83
Oversize pumps									
Pump model 1PM			P6	P6	P7	P7	P7	P14	P14
Pump model 2PM			P26	P24	P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	212	176	215	204	183	214	174
Available head 2PM	(1)	kPa	201	210	198	244	224	191	148

KAPPA SKY Xi SLN

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi SLN (R513A)										
Volume of the expansion vessel		l	24	24	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	-	-	-	-
Standard pumps										
Pump model 1P			P1	P2	P8	P3	P4	P4	P4	P5
Pump model 2P			P16	P16	P20	P17	P18	P18	P18	P19
Available head 1P	(1)	kPa	107	113	173	126	164	148	133	157
Available head 2P	(1)	kPa	132	109	160	109	148	126	105	144
Oversize pumps										
Pump model 1PM			P8	P9	P9	P10	P10	P10	P22	P6
Pump model 2PM			P20	P21	P21	P22	P22	P22	P22	P26
Available head 1PM	(1)	kPa	200	219	213	234	218	206	206	227
Available head 2PM	(1)	kPa	190	235	228	256	236	218	201	219

KAPPA SKY Xi SLN

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi SLN (R513A)									
Volume of the expansion vessel		l	24	24	24	24	24	24	24
Volume of the buffer tank		l	900	900	900	900	900	900	900
Standard pumps									
Pump model 1P			P5	P5	P5	P6	P6	P7	P7
Pump model 2P			P19	P19	P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	153	126	111	171	156	174	146
Available head 2P	(1)	kPa	140	109	168	153	138	153	123
Oversize pumps									
Pump model 1PM			P6	P6	P7	P7	P7	P14	P14
Pump model 2PM			P26	P24	P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	224	198	233	221	206	235	209
Available head 2PM	(1)	kPa	215	234	218	261	248	215	186

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C.

KAPPA SKY Xh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh (R513A)								
Volume of the expansion vessel		l	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	900	900
Standard pumps								
Pump model 1P			P4	P4	P4	P5	P5	P5
Pump model 2P			P18	P18	P18	P19	P19	P19
Available head 1P	(1)	kPa	160	135	127	152	139	121
Available head 2P	(1)	kPa	142	110	97	138	125	104
Oversize pumps								
Pump model 1PM			P10	P10	P22	P6	P6	P6
Pump model 2PM			P22	P22	P22	P26	P26	P24
Available head 1PM	(1)	kPa	215	194	199	222	212	194
Available head 2PM	(1)	kPa	232	204	194	213	200	229

KAPPA SKY Xh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh (R513A)							
Volume of the expansion vessel		l	24	24	24	24	24
Volume of the buffer tank		l	900	900	900	900	900
Standard pumps							
Pump model 1P			P5	P6	P6	P7	P7
Pump model 2P			P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	100	150	146	158	122
Available head 2P	(1)	kPa	156	130	127	136	97
Oversize pumps							
Pump model 1PM			P7	P7	P7	P14	P14
Pump model 2PM			P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	223	200	197	220	186
Available head 2PM	(1)	kPa	207	240	238	198	161

KAPPA SKY Xh SLN

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Xh SLN (R513A)								
Volume of the expansion vessel		l	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	900	900
Standard pumps								
Pump model 1P			P4	P4	P4	P5	P5	P5
Pump model 2P			P18	P18	P18	P19	P19	P19
Available head 1P	(1)	kPa	167	146	135	157	149	129
Available head 2P	(1)	kPa	151	124	108	144	135	113
Oversize pumps								
Pump model 1PM			P10	P10	P22	P6	P6	P6
Pump model 2PM			P22	P22	P22	P26	P26	P24
Available head 1PM	(1)	kPa	220	203	208	227	221	201
Available head 2PM	(1)	kPa	239	216	203	219	211	237

KAPPA SKY Xh SLN

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh SLN (R513A)							
Volume of the expansion vessel		l	24	24	24	24	24
Volume of the buffer tank		l	900	900	900	900	900
Standard pumps							
Pump model 1P			P5	P6	P6	P7	P7
Pump model 2P			P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	110	165	159	175	141
Available head 2P	(1)	kPa	167	145	140	153	115
Oversize pumps							
Pump model 1PM			P7	P7	P7	P14	P14
Pump model 2PM			P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	232	215	210	237	204
Available head 2PM	(1)	kPa	217	254	250	215	179

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C.

KAPPA SKY Si

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Si (R513A)								
Volume of the expansion vessel		l	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	-	-
Standard pumps								
Pump model 1P			P4	P4	P4	P5	P5	P5
Pump model 2P			P18	P18	P18	P19	P19	P19
Available head 1P	(1)	kPa	169	152	128	159	149	124
Available head 2P	(1)	kPa	152	131	97	146	135	108
Oversize pumps								
Pump model 1PM			P10	P10	P22	P6	P6	P6
Pump model 2PM			P22	P22	P22	P26	P26	P24
Available head 1PM	(1)	kPa	223	210	199	229	221	197
Available head 2PM	(1)	kPa	241	223	195	221	210	233

KAPPA SKY Si

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Si (R513A)							
Volume of the expansion vessel		l	24	24	24	24	24
Volume of the buffer tank		l	-	-	900	900	900
Standard pumps							
Pump model 1P			P5	P6	P6	P7	P7
Pump model 2P			P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	107	167	148	163	133
Available head 2P	(1)	kPa	164	150	130	143	110
Oversize pumps							
Pump model 1PM			P7	P7	P7	P14	P14
Pump model 2PM			P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	230	218	198	226	197
Available head 2PM	(1)	kPa	215	259	241	205	174

KAPPA SKY Sh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Sh (R513A)								
Volume of the expansion vessel		l	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	900	900
Standard pumps								
Pump model 1P			P4	P4	P4	P5	P5	P5
Pump model 2P			P18	P18	P18	P19	P19	P19
Available head 1P	(1)	kPa	166	140	132	154	144	124
Available head 2P	(1)	kPa	149	117	104	140	129	107
Oversize pumps								
Pump model 1PM			P10	P10	P22	P6	P6	P6
Pump model 2PM			P22	P22	P22	P26	P26	P24
Available head 1PM	(1)	kPa	219	198	205	224	216	196
Available head 2PM	(1)	kPa	237	210	200	216	205	232

KAPPA SKY Sh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Sh (R513A)							
Volume of the expansion vessel		l	24	24	24	24	24
Volume of the buffer tank		l	900	900	900	900	900
Standard pumps							
Pump model 1P			P5	P6	P6	P7	P7
Pump model 2P			P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	102	154	152	169	134
Available head 2P	(1)	kPa	158	134	133	147	109
Oversize pumps							
Pump model 1PM			P7	P7	P7	P14	P14
Pump model 2PM			P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	225	205	203	231	198
Available head 2PM	(1)	kPa	209	244	244	209	172

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C.

KAPPA SKY Xi

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi (R134a)										
Volume of the expansion vessel		l	24	24	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	-	-	-	-
Standard pumps										
Pump model 1P			P1	P2	P8	P3	P4	P4	P4	P5
Pump model 2P			P16	P16	P20	P17	P18	P18	P18	P19
Available head 1P	(1)	kPa	93	104	162	116	155	136	116	145
Available head 2P	(1)	kPa	123	100	149	98	137	111	83	132
Oversize pumps										
Pump model 1PM			P8	P9	P9	P10	P10	P10	P22	P6
Pump model 2PM			P20	P21	P21	P22	P22	P22	P22	P26
Available head 1PM	(1)	kPa	193	212	204	226	210	195	187	216
Available head 2PM	(1)	kPa	182	227	217	246	226	205	182	207

KAPPA SKY Xi

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi (R134a)									
Volume of the expansion vessel		l	24	24	24	24	24	24	24
Volume of the buffer tank		l	900	900	900	900	900	900	900
Standard pumps									
Pump model 1P			P5	P5	P5	P6	P6	P7	P7
Pump model 2P			P19	P19	P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	139	105	92	154	133	152	114
Available head 2P	(1)	kPa	125	85	146	135	113	129	88
Oversize pumps									
Pump model 1PM			P6	P6	P7	P7	P7	P14	P14
Pump model 2PM			P26	P24	P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	212	178	215	205	184	214	179
Available head 2PM	(1)	kPa	200	211	198	244	225	191	153

KAPPA SKY Xi SLN

			25.1	31.1	34.1	43.1	51.2	59.2	66.2	74.2
KAPPA SKY Xi SLN (R134a)										
Volume of the expansion vessel		l	24	24	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	-	-	-	-
Standard pumps										
Pump model 1P			P1	P2	P8	P3	P4	P4	P4	P5
Pump model 2P			P16	P16	P20	P17	P18	P18	P18	P19
Available head 1P	(1)	kPa	106	114	175	126	166	150	131	157
Available head 2P	(1)	kPa	131	110	162	110	149	129	102	144
Oversize pumps										
Pump model 1PM			P8	P9	P9	P10	P10	P10	P22	P6
Pump model 2PM			P20	P21	P21	P22	P22	P22	P22	P26
Available head 1PM	(1)	kPa	199	219	215	234	219	208	203	227
Available head 2PM	(1)	kPa	190	235	229	256	238	221	199	219

KAPPA SKY Xi SLN

			81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xi SLN (R134a)									
Volume of the expansion vessel		l	24	24	24	24	24	24	24
Volume of the buffer tank		l	900	900	900	900	900	900	900
Standard pumps									
Pump model 1P			P5	P5	P5	P6	P6	P7	P7
Pump model 2P			P19	P19	P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	151	123	110	170	152	173	143
Available head 2P	(1)	kPa	138	107	167	152	134	152	119
Oversize pumps									
Pump model 1PM			P6	P6	P7	P7	P7	P14	P14
Pump model 2PM			P26	P24	P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	223	196	233	220	203	235	206
Available head 2PM	(1)	kPa	213	232	218	261	245	214	183

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C.

KAPPA SKY Xh

			51.2	59.2	66.2	74.2	81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh (R134a)													
Volume of the expansion vessel		l	24	24	24	24	24	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	900	900	900	900	900	900	900
Standard pumps													
Pump model 1P			P4	P4	P4	P5	P5	P5	P5	P6	P6	P7	P7
Pump model 2P			P18	P18	P18	P19	P19	P19	P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	162	135	127	151	141	122	99	153	147	162	125
Available head 2P	(1)	kPa	144	110	97	138	126	105	155	133	128	140	100
Oversize pumps													
Pump model 1PM			P10	P10	P22	P6	P6	P6	P7	P7	P7	P14	P14
Pump model 2PM			P22	P22	P22	P26	P26	P24	P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	216	193	199	222	213	194	222	203	197	224	189
Available head 2PM	(1)	kPa	233	204	194	213	202	230	206	243	239	202	164

KAPPA SKY Xh

			51.2	59.2	66.2	74.2	81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh (R134a)													
Volume of the expansion vessel		l	24	24	24	24	24	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	900	900	900	900	900	900	900
Standard pumps													
Pump model 1P			P4	P4	P4	P5	P5	P5	P5	P6	P6	P7	P7
Pump model 2P			P18	P18	P18	P19	P19	P19	P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	162	135	127	151	141	122	99	153	147	162	125
Available head 2P	(1)	kPa	144	110	97	138	126	105	155	133	128	140	100
Oversize pumps													
Pump model 1PM			P10	P10	P22	P6	P6	P6	P7	P7	P7	P14	P14
Pump model 2PM			P22	P22	P22	P26	P26	P24	P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	216	193	199	222	213	194	222	203	197	224	189
Available head 2PM	(1)	kPa	233	204	194	213	202	230	206	243	239	202	164

KAPPA SKY Xh SLN

			51.2	59.2	66.2	74.2	81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh SLN (R134a)													
Volume of the expansion vessel		l	24	24	24	24	24	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	900	900	900	900	900	900	900
Standard pumps													
Pump model 1P			P4	P4	P4	P5	P5	P5	P5	P6	P6	P7	P7
Pump model 2P			P18	P18	P18	P19	P19	P19	P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	167	144	137	158	148	128	108	164	158	177	145
Available head 2P	(1)	kPa	151	122	110	144	134	112	165	144	140	155	120
Oversize pumps													
Pump model 1PM			P10	P10	P22	P6	P6	P6	P7	P7	P7	P14	P14
Pump model 2PM			P22	P22	P22	P26	P26	P24	P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	220	201	210	227	219	201	231	214	209	238	208
Available head 2PM	(1)	kPa	239	214	206	219	209	237	216	252	249	216	183

KAPPA SKY Xh SLN

			51.2	59.2	66.2	74.2	81.2	89.2	95.2	104.2	114.2	125.2	135.2
KAPPA SKY Xh SLN (R134a)													
Volume of the expansion vessel		l	24	24	24	24	24	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	900	900	900	900	900	900	900
Standard pumps													
Pump model 1P			P4	P4	P4	P5	P5	P5	P5	P6	P6	P7	P7
Pump model 2P			P18	P18	P18	P19	P19	P19	P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	167	144	137	158	148	128	108	164	158	177	145
Available head 2P	(1)	kPa	151	122	110	144	134	112	165	144	140	155	120
Oversize pumps													
Pump model 1PM			P10	P10	P22	P6	P6	P6	P7	P7	P7	P14	P14
Pump model 2PM			P22	P22	P22	P26	P26	P24	P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	220	201	210	227	219	201	231	214	209	238	208
Available head 2PM	(1)	kPa	239	214	206	219	209	237	216	252	249	216	183

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C.

KAPPA SKY Si

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Si (R134a)								
Volume of the expansion vessel		l	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	-	-
Standard pumps								
Pump model 1P			P4	P4	P4	P5	P5	P5
Pump model 2P			P18	P18	P18	P19	P19	P19
Available head 1P	(1)	kPa	167	151	129	157	149	123
Available head 2P	(1)	kPa	150	129	99	144	136	106
Oversize pumps								
Pump model 1PM			P10	P10	P22	P6	P6	P6
Pump model 2PM			P22	P22	P22	P26	P26	P24
Available head 1PM	(1)	kPa	221	209	200	228	221	196
Available head 2PM	(1)	kPa	239	222	196	220	211	232

KAPPA SKY Si

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Si (R134a)							
Volume of the expansion vessel		l	24	24	24	24	24
Volume of the buffer tank		l	-	-	900	900	900
Standard pumps							
Pump model 1P			P5	P6	P6	P7	P7
Pump model 2P			P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	108	165	145	164	129
Available head 2P	(1)	kPa	165	148	127	143	107
Oversize pumps							
Pump model 1PM			P7	P7	P7	P14	P14
Pump model 2PM			P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	231	215	196	226	194
Available head 2PM	(1)	kPa	216	257	239	206	171

KAPPA SKY Sh

			51.2	59.2	66.2	74.2	81.2	89.2
KAPPA SKY Sh (R134a)								
Volume of the expansion vessel		l	24	24	24	24	24	24
Volume of the buffer tank		l	-	-	-	-	900	900
Standard pumps								
Pump model 1P			P4	P4	P4	P5	P5	P5
Pump model 2P			P18	P18	P18	P19	P19	P19
Available head 1P	(1)	kPa	166	141	133	155	144	124
Available head 2P	(1)	kPa	149	118	105	142	130	108
Oversize pumps								
Pump model 1PM			P10	P10	P22	P6	P6	P6
Pump model 2PM			P22	P22	P22	P26	P26	P24
Available head 1PM	(1)	kPa	219	199	206	225	216	197
Available head 2PM	(1)	kPa	237	211	201	217	205	233

KAPPA SKY Sh

			95.2	104.2	114.2	125.2	135.2
KAPPA SKY Sh (R134a)							
Volume of the expansion vessel		l	24	24	24	24	24
Volume of the buffer tank		l	900	900	900	900	900
Standard pumps							
Pump model 1P			P5	P6	P6	P7	P7
Pump model 2P			P26	P6	P6	P7	P7
Available head 1P	(1)	kPa	103	156	150	166	131
Available head 2P	(1)	kPa	159	137	131	144	106
Oversize pumps							
Pump model 1PM			P7	P7	P7	P14	P14
Pump model 2PM			P24	P14	P14	P14	P14
Available head 1PM	(1)	kPa	226	207	201	228	195
Available head 2PM	(1)	kPa	210	246	242	206	169

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C.

PUMP DATA

Model	Rated power	Rated current	Min. flow rate	Max. flow rate
	kW	A	m³/h	m³/h
P1	3	6,3	15	53
P2	4	7,6	27	64
P3	5,5	10,5	36	109
P4	7,5	14,1	36	139
P5	11	20,2	68	213
P6	15	26,6	68	247
P7	18,5	33	68	271
P8	5,5	10,5	27	82
P9	7,5	14,1	27	101
P10	11	20,2	36	135
P11	11	20,2	36	157
P12	15	26,6	36	180
P13	18,5	33	68	271
P14	22	40,4	68	303
P15	3	6,3	26	64
P16	4	7,6	26	75
P17	5,5	10,5	36	109
P18	7,5	14,1	36	129
P19	11	20,2	35	166
P20	5,5	10,5	26	90
P21	7,5	14,1	26	101
P22	11	20,2	36	154
P26	15	26,6	35	189

USER-SIDE EXCHANGER FLOW RATE FIELDS

The units are sized and optimized for the following nominal conditions: external air 35°C, inlet-outlet of the user-side exchanger 12/7°C.

The units can work at design conditions different from nominal conditions, provided that:

- the design condition falls within the operating limits specified below
- the unit is equipped with all the accessories necessary for the unit to operate (ex. brine kit, HAT, ...)
- the flow rate at design conditions (that is, of the specific application) must always come within the allowed flow rate ranges specified below. If the design conditions require a water flow rate that does not come within the allowed operating range, you must contact our sales department that will identify the most suitable solution for the specific application.

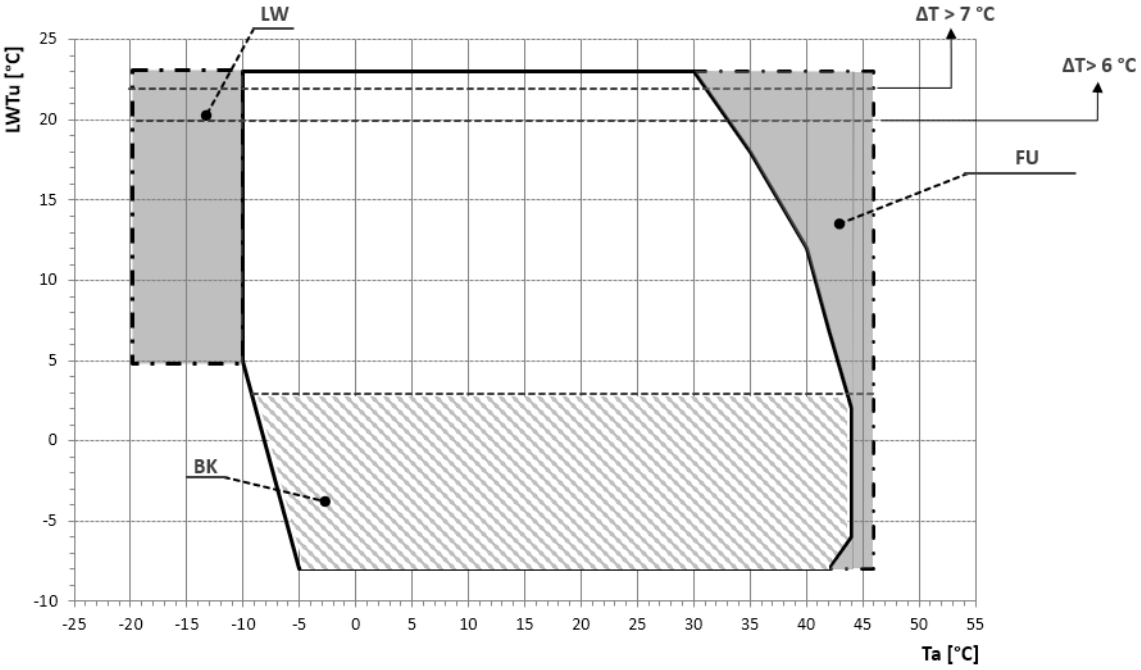
KAPPA SKY

	Qmin	Qmax
	m³/h	m³/h
25.1	20,3	84,9
31.1	21,8	85,1
34.1	26,8	106,9
43.1	29,7	120,1
51.2	31,9	121,9
59.2	38,3	153,1
66.2	48,8	202,7
74.2	49,5	202,7
81.2	68,1	289,7
89.2	60,7	256,4
95.2	60,7	256,4
104.2	80,4	339,3
114.2	80,4	339,3
125.2	87,2	368,8
135.2	87,3	368,9

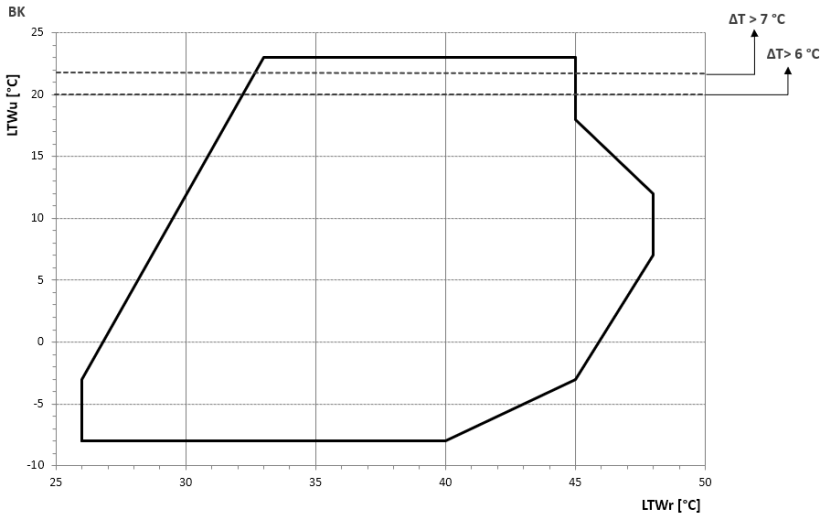
OPERATING LIMITS

KAPPA SKY XI - KAPPA SKY XH

Cooling



Total recovery



Ta: external air temperature

LWTu: water outlet temperature from the user-side heat exchanger

BK: For LWTu below +5°C, it is mandatory to fit the "Brine Kit LGW" accessory

LW: in the indicated area, the unit can work only where there is no wind

FU: in the indicated area, the control could actuate a forced capacity reduction of the compressors so as to prevent tripping of the safety devices. For external air temperature above 52°C, a set-up including air conditioning of the electrical control panel is necessary: please contact our sales department.

For LWTu below +5°C, it is compulsory to use suitable percentages of antifreeze additives (glycols) to prevent ice formation in the exchanger.

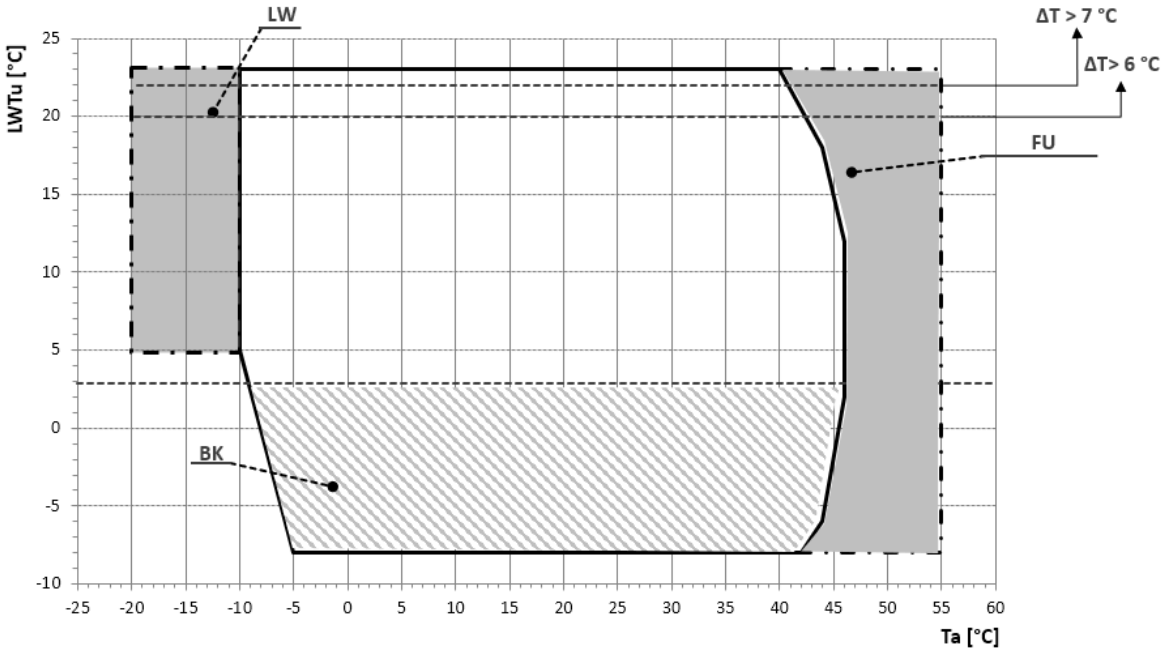
The inlet and outlet temperatures of the user-side exchanger must be given on ordering to allow correct setting of the alarm parameters and verification of the sizing of the expansion valve.

The cooling set point can then be changed by the customer in an interval that, compared to the set point given on ordering, ranges from -1K up to the maximum temperature allowed by the above-stated operating limits.

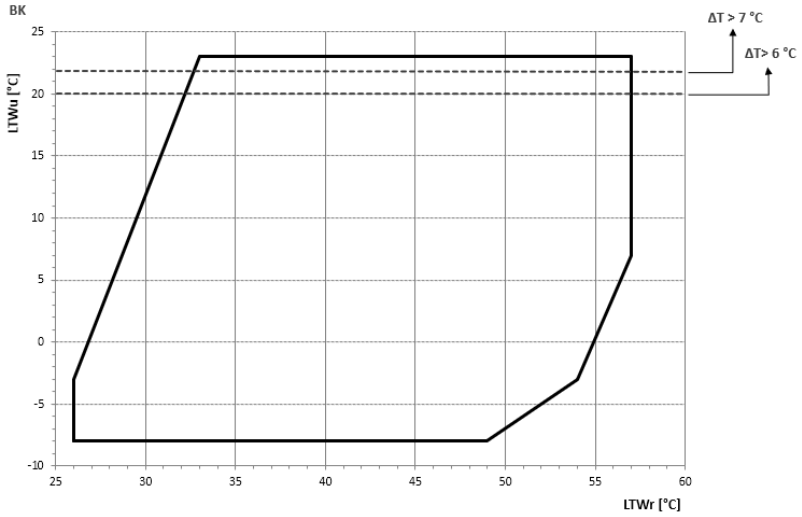
The unit will be optimized to work at the set point temperatures given on ordering. For different set points, the cooling capacity provided and the level of efficiency of the machine could decrease and move away from these conditions.

KAPPA SKY XI - KAPPA SKY XH (WITH HAT ACCESSORY)

Cooling



Total recovery



Ta: external air temperature

LWTu: water outlet temperature from the user-side heat exchanger

BK: For LWTu below +5°C, it is mandatory to fit the "Brine Kit LGW" accessory

LW: in the indicated area, the unit can work only where there is no wind

FU: in the indicated area, the control could actuate a forced capacity reduction of the compressors so as to prevent tripping of the safety devices. For external air temperature above 52°C, a set-up including air conditioning of the electrical control panel is necessary: please contact our sales department.

For LWTu below +5°C, it is compulsory to use suitable percentages of antifreeze additives (glycols) to prevent ice formation in the exchanger.

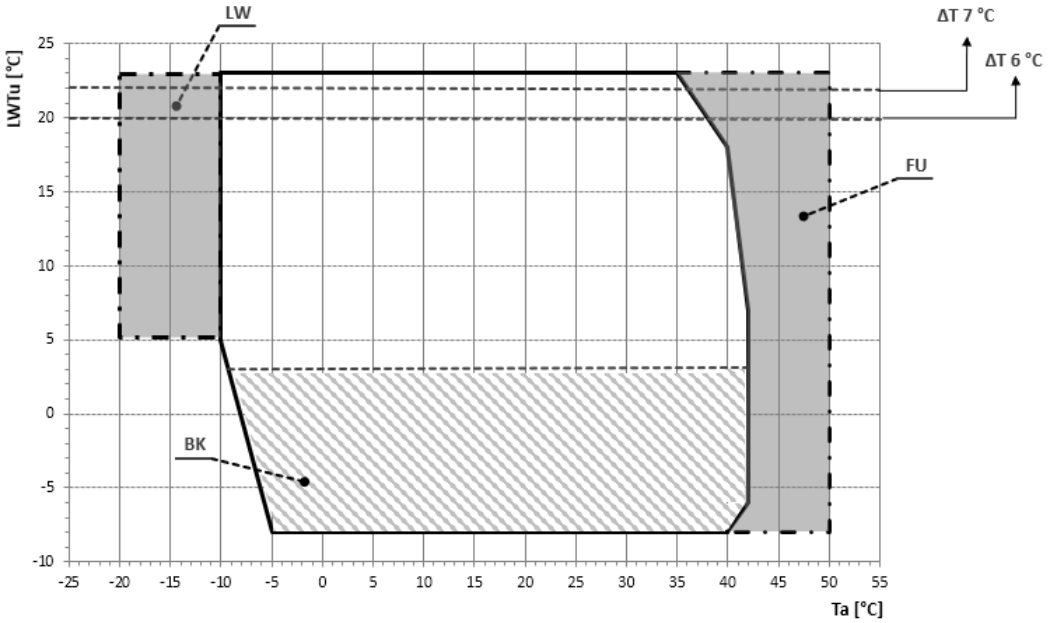
The inlet and outlet temperatures of the user-side exchanger must be given on ordering to allow correct setting of the alarm parameters and verification of the sizing of the expansion valve.

The cooling set point can then be changed by the customer in an interval that, compared to the set point given on ordering, ranges from -1K up to the maximum temperature allowed by the above-stated operating limits.

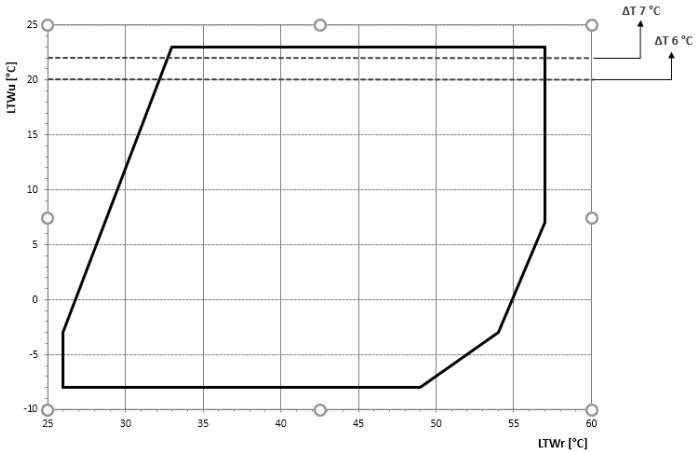
The unit will be optimized to work at the set point temperatures given on ordering. For different set points, the cooling capacity provided and the level of efficiency of the machine could decrease and move away from these conditions.

KAPPA SKY XI SLN - KAPPA SKY XH SLN

Cooling



Total recovery



Ta: external air temperature

LWTu: water outlet temperature from the user-side heat exchanger

BK: For LWTu below +5°C, it is mandatory to fit the "Brine Kit LGW" accessory

LW: in the indicated area, the unit can work only where there is no wind

FU: in the indicated area, the control could actuate a forced capacity reduction of the compressors so as to prevent tripping of the safety devices. For external air temperature above 52°C, a set-up including air conditioning of the electrical control panel is necessary: please contact our sales department.

For LWTu below +5°C, it is compulsory to use suitable percentages of antifreeze additives (glycols) to prevent ice formation in the exchanger.

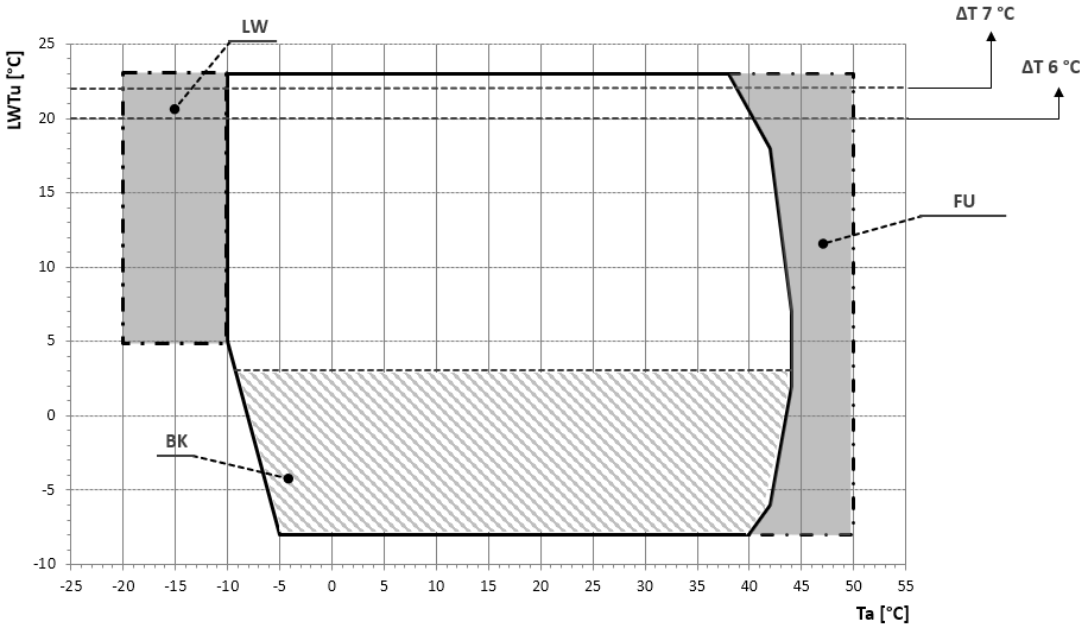
The inlet and outlet temperatures of the user-side exchanger must be given on ordering to allow correct setting of the alarm parameters and verification of the sizing of the expansion valve.

The cooling set point can then be changed by the customer in an interval that, compared to the set point given on ordering, ranges from -1K up to the maximum temperature allowed by the above-stated operating limits.

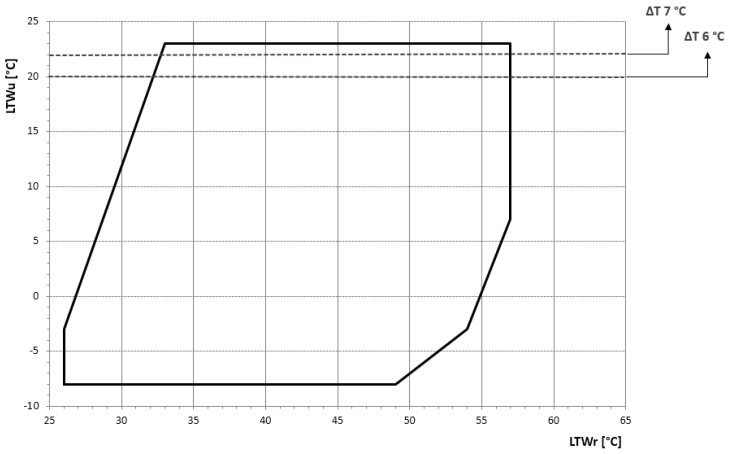
The unit will be optimized to work at the set point temperatures given on ordering. For different set points, the cooling capacity provided and the level of efficiency of the machine could decrease and move away from these conditions.

KAPPA SKY SI - KAPPA SKY SH

Cooling



Total recovery



Ta: external air temperature

LWTu: water outlet temperature from the user-side heat exchanger

BK: For LWTu below +5°C, it is mandatory to fit the "Brine Kit LGW" accessory

LW: in the indicated area, the unit can work only where there is no wind

FU: in the indicated area, the control could actuate a forced capacity reduction of the compressors so as to prevent tripping of the safety devices. For external air temperature above 52°C, a set-up including air conditioning of the electrical control panel is necessary: please contact our sales department.

For LWTu below +5°C, it is compulsory to use suitable percentages of antifreeze additives (glycols) to prevent ice formation in the exchanger.

The inlet and outlet temperatures of the user-side exchanger must be given on ordering to allow correct setting of the alarm parameters and verification of the sizing of the expansion valve.

The cooling set point can then be changed by the customer in an interval that, compared to the set point given on ordering, ranges from -1K up to the maximum temperature allowed by the above-stated operating limits.

The unit will be optimized to work at the set point temperatures given on ordering. For different set points, the cooling capacity provided and the level of efficiency of the machine could decrease and move away from these conditions.

NOISE LEVELS

KAPPA SKY Xi

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
25.1	70	38	75	43	78	46	87	55	95	63	85	53	75	43	67	35	**96**	**64**
31.1	71	39	76	44	79	47	88	56	96	64	86	54	76	44	68	36	**97**	**65**
34.1	72	40	77	45	80	48	89	57	97	65	87	55	77	45	69	37	**98**	**66**
43.1	72	40	77	45	80	48	89	57	97	65	87	55	77	45	69	37	**98**	**66**
51.2	73	41	78	46	81	49	90	58	98	66	88	56	78	46	70	38	**99**	**67**
59.2	74	42	79	47	82	50	91	59	99	67	89	57	79	47	71	39	**100**	**68**
66.2	74	42	79	47	82	50	91	59	99	67	89	57	79	47	71	39	**100**	**68**
74.2	75	43	80	48	83	51	92	60	100	68	90	58	80	48	72	40	**101**	**69**
81.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
89.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
95.2	77	44	82	49	85	52	94	61	102	69	92	59	82	49	74	41	**103**	**70**
104.2	77	44	82	49	85	52	94	61	102	69	92	59	82	49	74	41	**103**	**70**
114.2	78	45	83	50	86	53	95	62	103	70	93	60	83	50	75	42	**104**	**71**
125.2	79	46	84	51	87	54	96	63	104	71	94	61	84	51	76	43	**105**	**72**
135.2	79	46	84	51	87	54	96	63	104	71	94	61	84	51	76	43	**105**	**72**

KAPPA SKY Xi LN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
25.1	71	39	76	44	80	47	87	55	87	54	85	53	76	43	68	35	**92**	**60**
31.1	72	40	78	45	81	48	88	55	88	55	86	54	77	44	69	36	**93**	**61**
34.1	73	41	78	46	82	49	89	57	89	56	87	55	78	45	70	37	**94**	**62**
43.1	73	41	78	46	82	49	89	57	89	56	87	55	78	45	70	38	**94**	**62**
51.2	74	42	79	47	83	50	90	57	90	57	88	56	79	46	71	38	**95**	**63**
59.2	75	43	80	48	84	51	91	58	91	58	89	57	80	47	72	39	**96**	**64**
66.2	75	43	80	48	84	51	91	59	91	58	89	57	80	47	72	39	**96**	**64**
74.2	76	44	81	49	85	52	92	60	92	59	90	58	81	48	73	40	**97**	**65**
81.2	77	44	83	49	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
89.2	77	44	82	49	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
95.2	78	45	83	50	87	54	94	61	94	61	92	59	83	50	75	42	**99**	**66**
104.2	78	45	84	51	87	54	94	61	94	61	92	59	83	50	75	42	**99**	**66**
114.2	79	46	84	51	88	55	95	62	95	62	93	60	84	51	76	43	**100**	**67**
125.2	80	47	85	52	89	55	96	62	96	62	94	61	85	51	77	43	**101**	**68**
135.2	80	47	86	52	89	55	96	62	96	62	94	61	85	51	77	43	**101**	**68**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels.

Lw_tot is the only binding value.

Values obtained from measures taken according to standard ISO 3744.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

The acoustic data are related to standard conditions in referable and reproducible operating conditions. All data with the exception of Lw_tot are provided for illustrative purposes only and can not be used for forecasting purposes or for the verification of binding limits.

With special reference to noise emissions, the Manufacturer takes liability for their conformity, limited to the declared Lw_tot value. Any and all other Manufacturer's liability for the impact of such emissions in relation to the location of the machine and other conditions related to machine installation is excluded. The environment and the installation conditions, as well as the operating modes, can alter the sound emissions. Any assessment concerning these conditions falls within the area of competence of the plant designer and/or the fitter.

KAPPA SKY Xi SLN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
25.1	64	32	74	42	77	45	86	53	82	49	83	51	72	40	63	30	**89**	**57**
31.1	65	33	75	42	78	46	86	54	83	50	84	52	73	41	64	31	**90**	**58**
34.1	66	34	76	43	79	47	88	55	84	51	85	53	74	42	65	32	**91**	**59**
43.1	66	34	76	43	79	47	88	55	84	51	85	53	74	42	65	32	**91**	**59**
51.2	67	35	77	44	80	48	88	56	85	52	86	54	75	43	66	33	**92**	**60**
59.2	68	36	78	45	81	49	90	57	86	53	87	55	76	44	67	34	**93**	**61**
66.2	68	36	78	45	81	49	90	57	86	53	87	55	76	44	67	34	**93**	**61**
74.2	69	37	79	46	82	50	90	58	87	54	88	56	77	45	68	35	**94**	**62**
81.2	70	37	80	47	83	50	91	59	88	55	89	56	78	45	69	36	**95**	**62**
89.2	70	37	80	47	83	50	92	59	88	55	89	56	78	45	69	36	**95**	**62**
95.2	71	38	81	48	84	51	93	60	89	56	90	57	79	46	70	37	**96**	**63**
104.2	71	38	81	48	84	51	92	60	89	56	90	57	79	46	70	37	**96**	**63**
114.2	72	39	82	49	85	52	94	60	90	57	91	58	80	47	71	38	**97**	**64**
125.2	73	40	83	49	86	53	95	61	91	57	92	59	81	48	72	38	**98**	**65**
135.2	73	40	83	49	86	53	95	61	91	57	92	59	81	48	72	38	**98**	**65**

KAPPA SKY Xh

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
51.2	72	40	77	45	80	48	89	57	97	65	87	55	77	45	69	37	**98**	**66**
59.2	74	42	79	47	82	50	91	59	99	67	89	57	79	47	71	39	**100**	**68**
66.2	73	41	78	46	81	49	90	58	98	66	88	56	78	46	70	38	**99**	**67**
74.2	75	43	80	48	83	51	92	60	100	68	90	58	80	48	72	40	**101**	**69**
81.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
89.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
95.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
104.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
114.2	77	44	82	49	85	52	94	61	102	69	92	59	82	49	74	41	**103**	**70**
125.2	78	45	83	50	86	53	95	62	103	70	93	60	83	50	75	42	**104**	**71**
135.2	77	44	82	49	85	52	94	61	102	69	92	59	82	49	74	41	**103**	**70**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels.

Lw_tot is the only binding value.

Values obtained from measures taken according to standard ISO 3744.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

The acoustic data are related to standard conditions in referable and reproducible operating conditions. All data with the exception of Lw_tot are provided for illustrative purposes only and can not be used for forecasting purposes or for the verification of binding limits.

With special reference to noise emissions, the Manufacturer takes liability for their conformity, limited to the declared Lw_tot value. Any and all other Manufacturer's liability for the impact of such emissions in relation to the location of the machine and other conditions related to machine installation is excluded. The environment and the installation conditions, as well as the operating modes, can alter the sound emissions. Any assessment concerning these conditions falls within the area of competence of the plant designer and/or the fitter.

KAPPA SKY Xh LN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
51.2	74	42	79	47	82	50	89	57	89	57	87	55	78	46	70	38	**94**	**62**
59.2	75	43	81	49	84	52	91	59	91	59	90	58	80	48	72	40	**96**	**64**
66.2	74	42	80	48	83	51	90	58	90	58	88	56	79	47	71	39	**95**	**63**
74.2	77	45	82	50	85	53	92	60	92	60	90	58	81	49	73	41	**97**	**65**
81.2	77	44	83	50	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
89.2	77	44	83	50	86	53	93	60	93	60	92	59	82	49	74	41	**98**	**65**
95.2	78	45	83	50	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
104.2	78	45	83	50	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
114.2	79	46	84	51	87	54	94	61	94	61	92	59	83	50	75	42	**99**	**66**
125.2	80	47	85	52	88	55	95	62	95	62	94	61	84	51	76	43	**100**	**67**
135.2	78	45	84	51	87	54	94	61	94	61	92	59	83	50	75	42	**99**	**66**

KAPPA SKY Xh SLN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
51.2	66	34	76	44	79	47	88	56	84	52	85	53	74	42	65	33	**91**	**59**
59.2	68	36	78	46	81	49	90	58	86	54	87	55	76	44	67	35	**93**	**61**
66.2	67	35	77	45	80	48	89	57	85	53	86	54	75	43	66	34	**92**	**60**
74.2	69	37	79	47	82	50	91	59	87	55	88	56	77	45	68	36	**94**	**62**
81.2	70	37	80	47	83	50	92	59	88	55	89	56	78	45	69	36	**95**	**62**
89.2	70	37	80	47	83	50	92	59	88	55	89	56	78	45	69	36	**95**	**62**
95.2	70	37	80	47	83	50	92	59	88	55	89	56	78	45	69	36	**95**	**62**
104.2	70	37	80	47	83	50	91	58	88	55	89	56	78	45	69	36	**95**	**62**
114.2	71	38	81	48	84	51	93	60	89	56	90	57	79	46	70	37	**96**	**63**
125.2	72	39	82	49	85	52	94	61	90	57	91	58	80	47	71	38	**97**	**64**
135.2	71	38	81	48	84	51	93	60	89	56	90	57	79	46	70	37	**96**	**63**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels.

Lw_tot is the only binding value.

Values obtained from measures taken according to standard ISO 3744.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

The acoustic data are related to standard conditions in referable and reproducible operating conditions. All data with the exception of Lw_tot are provided for illustrative purposes only and can not be used for forecasting purposes or for the verification of binding limits.

With special reference to noise emissions, the Manufacturer takes liability for their conformity, limited to the declared Lw_tot value. Any and all other Manufacturer's liability for the impact of such emissions in relation to the location of the machine and other conditions related to machine installation is excluded. The environment and the installation conditions, as well as the operating modes, can alter the sound emissions. Any assessment concerning these conditions falls within the area of competence of the plant designer and/or the fitter.

KAPPA SKY Si

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
25.1	70	38	75	43	78	46	87	55	95	63	85	53	75	43	67	35	**96**	**64**
31.1	71	39	76	44	79	47	88	56	96	64	86	54	76	44	68	36	**97**	**65**
34.1	72	40	77	45	80	48	89	57	97	65	87	55	77	45	69	37	**98**	**66**
43.1	72	40	77	45	80	48	89	57	97	65	87	55	77	45	69	37	**98**	**66**
51.2	73	41	78	46	81	49	90	58	98	66	88	56	78	46	70	38	**99**	**67**
59.2	74	42	79	47	82	50	91	59	99	67	89	57	79	47	71	39	**100**	**68**
66.2	74	42	79	47	82	50	91	59	99	67	89	57	79	47	71	39	**100**	**68**
74.2	75	43	80	48	83	51	92	60	100	68	90	58	80	48	72	40	**101**	**69**
81.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
89.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
95.2	77	44	82	49	85	52	94	61	102	69	92	59	82	49	74	41	**103**	**70**
104.2	77	44	82	49	85	52	94	61	102	69	92	59	82	49	74	41	**103**	**70**
114.2	78	45	83	50	86	53	95	62	103	70	93	60	83	50	75	42	**104**	**71**
125.2	79	46	84	51	87	54	96	63	104	71	94	61	84	51	76	43	**105**	**72**
135.2	79	46	84	51	87	54	96	63	104	71	94	61	84	51	76	43	**105**	**72**

KAPPA SKY Si LN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
25.1	71	39	76	44	80	47	87	55	87	54	85	53	76	43	68	35	**92**	**60**
31.1	72	40	78	45	81	48	88	55	88	55	86	54	77	44	69	36	**93**	**61**
34.1	73	41	78	46	82	49	89	57	89	56	87	55	78	45	70	37	**94**	**62**
43.1	73	41	78	46	82	49	89	57	89	56	87	55	78	45	70	38	**94**	**62**
51.2	74	42	79	47	83	50	90	57	90	57	88	56	79	46	71	38	**95**	**63**
59.2	75	43	80	48	84	51	91	58	91	58	89	57	80	47	72	39	**96**	**64**
66.2	75	43	80	48	84	51	91	59	91	58	89	57	80	47	72	39	**96**	**64**
74.2	76	44	81	49	85	52	92	60	92	59	90	58	81	48	73	40	**97**	**65**
81.2	77	44	83	49	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
89.2	77	44	82	49	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
95.2	78	45	83	50	87	54	94	61	94	61	92	59	83	50	75	42	**99**	**66**
104.2	78	45	84	51	87	54	94	61	94	61	92	59	83	50	75	42	**99**	**66**
114.2	79	46	84	51	88	55	95	62	95	62	93	60	84	51	76	43	**100**	**67**
125.2	80	47	85	52	89	55	96	62	96	62	94	61	85	51	77	43	**101**	**68**
135.2	80	47	86	52	89	55	96	62	96	62	94	61	85	51	77	43	**101**	**68**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels.

Lw_tot is the only binding value.

Values obtained from measures taken according to standard ISO 3744.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

The acoustic data are related to standard conditions in referable and reproducible operating conditions. All data with the exception of Lw_tot are provided for illustrative purposes only and can not be used for forecasting purposes or for the verification of binding limits.

With special reference to noise emissions, the Manufacturer takes liability for their conformity, limited to the declared Lw_tot value. Any and all other Manufacturer's liability for the impact of such emissions in relation to the location of the machine and other conditions related to machine installation is excluded. The environment and the installation conditions, as well as the operating modes, can alter the sound emissions. Any assessment concerning these conditions falls within the area of competence of the plant designer and/or the fitter.

KAPPA SKY Sh

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
51.2	72	40	77	45	80	48	89	57	97	65	87	55	77	45	69	37	**98**	**66**
59.2	74	42	79	47	82	50	91	59	99	67	89	57	79	47	71	39	**100**	**68**
66.2	73	41	78	46	81	49	90	58	98	66	88	56	78	46	70	38	**99**	**67**
74.2	75	43	80	48	83	51	92	60	100	68	90	58	80	48	72	40	**101**	**69**
81.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
89.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
95.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
104.2	76	43	81	48	84	51	93	60	101	68	91	58	81	48	73	40	**102**	**69**
114.2	77	44	82	49	85	52	94	61	102	69	92	59	82	49	74	41	**103**	**70**
125.2	78	45	83	50	86	53	95	62	103	70	93	60	83	50	75	42	**104**	**71**
135.2	77	44	82	49	85	52	94	61	102	69	92	59	82	49	74	41	**103**	**70**

KAPPA SKY Sh LN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
51.2	74	42	79	47	82	50	89	57	89	57	87	55	78	46	70	38	**94**	**62**
59.2	75	43	81	49	84	52	91	59	91	59	90	58	80	48	72	40	**96**	**64**
66.2	74	42	80	48	83	51	90	58	90	58	88	56	79	47	71	39	**95**	**63**
74.2	77	45	82	50	85	53	92	60	92	60	90	58	81	49	73	41	**97**	**65**
81.2	77	44	83	50	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
89.2	77	44	83	50	86	53	93	60	93	60	92	59	82	49	74	41	**98**	**65**
95.2	78	45	83	50	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
104.2	78	45	83	50	86	53	93	60	93	60	91	58	82	49	74	41	**98**	**65**
114.2	79	46	84	51	87	54	94	61	94	61	92	59	83	50	75	42	**99**	**66**
125.2	80	47	85	52	88	55	95	62	95	62	94	61	84	51	76	43	**100**	**67**
135.2	78	45	84	51	87	54	94	61	94	61	92	59	83	50	75	42	**99**	**66**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels.

Lw_tot is the only binding value.

Values obtained from measures taken according to standard ISO 3744.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

The acoustic data are related to standard conditions in referable and reproducible operating conditions. All data with the exception of Lw_tot are provided for illustrative purposes only and can not be used for forecasting purposes or for the verification of binding limits.

With special reference to noise emissions, the Manufacturer takes liability for their conformity, limited to the declared Lw_tot value. Any and all other Manufacturer's liability for the impact of such emissions in relation to the location of the machine and other conditions related to machine installation is excluded. The environment and the installation conditions, as well as the operating modes, can alter the sound emissions. Any assessment concerning these conditions falls within the area of competence of the plant designer and/or the fitter.

CONFIGURATIONS THAT ARE NOT POSSIBLE

Kappa SKY Xi - Xi SLN (R513A/R134a)

	/1P /2P	/1PS /2PS	/DS	/DS /1P /DS /2P	/DS /1PS /DS /2PS	/DC	/DC /1P /DC /2P	/DC /1PS /DC /2PS
25.1		n.a.			n.a.		n.a.	n.a.
31.1		n.a.			n.a.		n.a.	n.a.
34.1		n.a.			n.a.		n.a.	n.a.
43.1		n.a.			n.a.		n.a.	n.a.
51.2		n.a.			n.a.		n.a.	n.a.
59.2		n.a.			n.a.		n.a.	n.a.
66.2		n.a.			n.a.		n.a.	n.a.
74.2		n.a.			n.a.		n.a.	n.a.
81.2							(RFQ)	n.a.
89.2							(RFQ)	n.a.
95.2							(RFQ)	n.a.
104.2							(RFQ)	n.a.
114.2							(RFQ)	n.a.
125.2							(RFQ)	n.a.
135.2							(RFQ)	n.a.

Kappa SKY Xh - Xh SLN (R513A/R134a)

	/1P /2P	/1PS /2PS	/DS	/DS /1P /DS /2P	/DS /1PS /DS /2PS	/DC	/DC /1P /DC /2P	/DC /1PS /DC /2PS
51.2		n.a.			n.a.		n.a.	n.a.
59.2		n.a.			n.a.		n.a.	n.a.
66.2		n.a.			n.a.		n.a.	n.a.
74.2		n.a.			n.a.		n.a.	n.a.
81.2							(RFQ)	n.a.
89.2							(RFQ)	n.a.
95.2							(RFQ)	n.a.
104.2							(RFQ)	n.a.
114.2							(RFQ)	n.a.
125.2							(RFQ)	n.a.
135.2							(RFQ)	n.a.

Kappa SKY Si - Sh (R513A/R134a)

	/1P /2P	/1PS /2PS	/DS	/DS /1P /DS /2P	/DS /1PS /DS /2PS	/DC	/DC /1P /DC /2P	/DC /1PS /DC /2PS
51.2		n.a.		n.a.	n.a.	n.a.	n.a.	n.a.
59.2		n.a.		n.a.	n.a.	n.a.	n.a.	n.a.
66.2		n.a.		n.a.	n.a.		n.a.	n.a.
74.2		n.a.		n.a.	n.a.		n.a.	n.a.
81.2		n.a.			n.a.		(RFQ)	n.a.
89.2		n.a.			n.a.		(RFQ)	n.a.
95.2		n.a.			n.a.		(RFQ)	n.a.
104.2		n.a.			n.a.		(RFQ)	n.a.
114.2							(RFQ)	n.a.
125.2							(RFQ)	n.a.
135.2							(RFQ)	n.a.

INSTALLATION ADVICE

The units described in this document are, by nature, strongly affected by the characteristics of the system, the working conditions and the installation site.

Remember that the unit must be installed by a qualified and skilled technician, and in compliance with the national legislation in force in the destination country.

The installation must be done in such a way that it will be possible to carry out all routine and non-routine maintenance operations.

Before starting any work, you must carefully read the "Installation, operation and maintenance manual" of the machine and do the necessary safety checks to prevent any malfunctioning or hazards.

We give some advice below that will allow you to increase the efficiency and reliability of the unit and therefore of the system into which it is inserted.

Water characteristics

To preserve the life of the exchangers, the water is required to comply with some quality parameters and it is therefore necessary to make sure its values fall within the ranges indicated in the following table:

Total hardness	2,0 ÷ 6,0 °f
Langelier index	- 0,4 ÷ 0,4
pH	7,5 ÷ 8,5
Electrical conductivity	10÷500 µS/cm
Organic elements	-
Hydrogen carbonate (HCO3-)	70 ÷ 300 ppm
Sulphates (SO42-)	< 50 ppm
Hydrogen carbonate / Sulphates (HCO3-/SO42-)	> 1
Chlorides (Cl-)	< 50 ppm
Nitrates (NO3-)	< 50 ppm
Hydrogen sulphide (H2S)	< 0,05 ppm
Ammonia (NH3)	< 0,05 ppm
Sulphites (SO3), free chlorine (Cl2)	< 1 ppm
Carbon dioxide (CO2)	< 5 ppm
Metal cations	< 0,2 ppm
Manganese ions (Mn++)	< 0,2 ppm
Iron ions (Fe2+ , Fe3+)	< 0,2 ppm
Iron + Manganese	< 0,4 ppm
Phosphates (PO43-)	< 2 ppm
Oxygen	< 0,1 ppm

Installation of water filters on all the hydraulic circuits is obligatory.

The supply of the most suitable filters for the unit can be requested as accessory. In this case, the filters are supplied loose and must be installed by the customer following the instructions given in the installation, operation and maintenance manual.

Glycol mixtures

With temperatures below 5°C, it is mandatory to work with water and anti-freeze mixtures, and also change the safety devices (anti-freeze, etc.), which must be carried out by qualified authorised personnel or by the manufacturer.

Liquid outlet temperature or minimum ambient temperature	°C	0	-5	-10	-15	-20	-25	-30	-35	-40
Freezing point	°C	-5	-10	-15	-20	-25	-30	-35	-40	-45
Ethylene glycol	%	6	22	30	36	41	46	50	53	56
Propylene glycol	%	15	25	33	39	44	48	51	54	57

The quantity of antifreeze should be considered as % on weight

Minimum water content in the system

For correct operation of the unit, it is necessary to ensure a buffering on the system such as to comply with the minimum operating time considering the greater between the minimum OFF time and the minimum ON time. In short, these contribute to limiting the number of times the compressors are switched on per hour and to preventing undesired deviations from the set point of the delivered water temperature.

Larger amounts of water are in any case always preferable, because they allow a smaller number of starts and switch-offs of the compressors, less wear of them and an increase in the efficiency of the system as a consequence of a reduction in the number of transients.

It should also be pointed out that, for air-water units working in heat pump mode, the minimum amount of water must consider the need of the unit to carry out defrosting. Having an adequate buffering volume will allow prevention of too high drifts of the delivered water temperature at the end of the defrost cycle.

The following experimental formula allows to calculate the minimum water volume of the plant.The formula refers only to the operation of the unit in cooling mode.

$$V_{min} = \frac{P_{tot} \cdot 1.000}{N} \cdot \frac{300}{\Delta T \cdot \rho \cdot c_p} + P_{tot} \cdot 0{,}8$$

where

Vmin is the minimum water content of the system [l]

Ptot is the total cooling capacity of the machine [kW]

N: number of capacity reduction steps

ΔT: differential allowed on the water temperature. Unless otherwise specified, this value is considered to be 2.5K

ρ: density of the heat-carrying fluid. Unless otherwise specified, the density of water is considered

cp: specific heat of the heat-carrying fluid. Unless otherwise specified, the specific heat of water is considered

Considering the use of water and grouping together some terms, the formula can be re-written as follows:

$$V_{min} = \frac{P_{tot}}{N} \cdot 28{,}66 + P_{tot} \cdot 0{,}8$$

For the N values, consider the following convention:

- for units with 1 compressor N = 4
- for units with 2 compressors N = 8

Installation site

To determine the best installation site for the unit and its orientation, you should pay attention to the following points:

- compliance with the clearance spaces indicated in the official dimensional drawing of the unit must be guaranteed so as to ensure accessibility for routine and non-routine maintenance operations
- you should consider the origin of the hydraulic pipes and their diameters because these affect the radiuses of curvature and therefore the spaces needed for installing them
- you should consider the position of the cable inlet on the electrical control panel of the unit as regards the origin of the power supply
- if the installation includes several units side by side, you should consider the position and dimensions of the manifolds of the user-side exchangers and of any recovery exchangers
- if the installation includes several units side by side, you should consider that the minimum distance between units is 3 metres
- you should avoid all obstructions that can limit air circulation to the source-side exchanger or that can cause recirculation between air supply and intake
- you should consider the orientation of the unit to limit, as far as possible, exposure of the source-side exchanger to solar radiation
- if the installation area is particularly windy, the orientation and positioning of the unit must be such as to avoid air recirculation on the coils. If necessary, we advise making windbreak barriers in order to prevent malfunctioning.

Once the best position for the unit has been identified, you must check that the support slab has the following characteristics:

- its dimensions must be proportionate to those of the unit: if possible, longer and wider than the unit by at least 30 cm and 15/20cm higher than the surrounding surface
- it must be able to bear at least 4 times the operating weight of the unit
- it must allow level installation of the unit: although the unit is installed on a horizontal base, make slopes in the support surface to convey rain water or defrost water to drains, wells or in any case to places where it cannot generate an accident hazard due to ice formation. All heat pump version units are equipped with discharge manifolds for the condensed water; these can be manifolded to facilitate condensate discharge.

The units are designed and built to reduce to a minimum the level of vibration transmitted to the ground, but it is in any case advisable to use rubber or spring anti-vibration mounts, which are available as accessory and should be requested when ordering.

The anti-vibration mounts must be fixed on before positioning the unit on the ground.

In the event of installation on roofs or intermediate floors, the pipes must be isolated from the walls and ceilings.

It is advisable to avoid installation in cramped places, to prevent reverberations, reflections, resonances and acoustic interactions with elements outside the unit.

It is essential that any work done to soundproof the unit does not affect its correct installation or correct operation and, in particular, does not reduce the air flow rate to the source-side exchanger.

Installations that require the use of treated coils

If the unit has to be installed in an environment with a particularly aggressive atmosphere, coils with special treatments are available as options.

- e-coated microchannel coils
- coils with anti-corrosion treatment (accessory available only for units with Cu/Al coil)

A description of the individual accessories is available in the "Description of accessories" section.

The type of coil treatment should be chosen with regard to the environment in which the unit is to be installed, through observation of other structures and machinery with exposed metal surfaces present in the destination environment.

The cross observation criterion is the most valid method of selection currently available without having to carry out preliminary tests or measurements with instruments. The identified reference environments are:

- coastal/marine
- industrial
- urban with a high housing density
- rural

Please note that in cases where different conditions co-exist, even for short periods, the choice must be suitable for preserving the exchanger in the harsher environmental conditions and not in conditions between the worst and best situation.

Particular attention must be given in cases where an environment that is not particularly aggressive becomes aggressive as a consequence of a concomitant cause, for example, the presence of a flue outlet or an extraction fan.

We strongly suggest choosing one of the treatment options if at least one of the points listed below is verified:

- there are obvious signs of corrosion of the exposed metal surfaces in the installation area
- the prevailing winds come from the sea towards the unit
- the environment is industrial with a significant concentration of pollutants
- the environment is urban with a high population density
- the environment is rural with the presence of organic discharges and effluents

In particular, for installations near the coast, the following instructions apply:

- for installations between 1 and 20 km from the coast of units with microchannel coil, we strongly recommend using the accessory "E-coated microchannel coils"
- for installations between 1 and 20 km from the coast of units with Cu/Al coils, we strongly recommend using the accessory "Coil treated with anti-corrosion paints"
- for distances within a kilometre of the coast, we strongly recommend using the accessory "Coil treated with anti-corrosion paints" for all units.

To protect the exchangers from corrosion and ensure optimal operation of the unit, we advise following the recommendations given in the user, installation and maintenance manual for cleaning the coils.

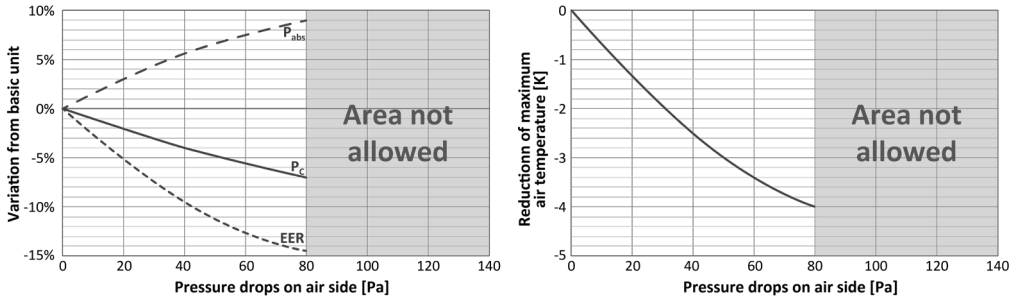
Aeraulic head losses and options available for the ventilating section

With the exception of units for which oversize fans are required, as standard, the units are designed considering that, at the nominal air flow rate, the fans work with null available pressure.

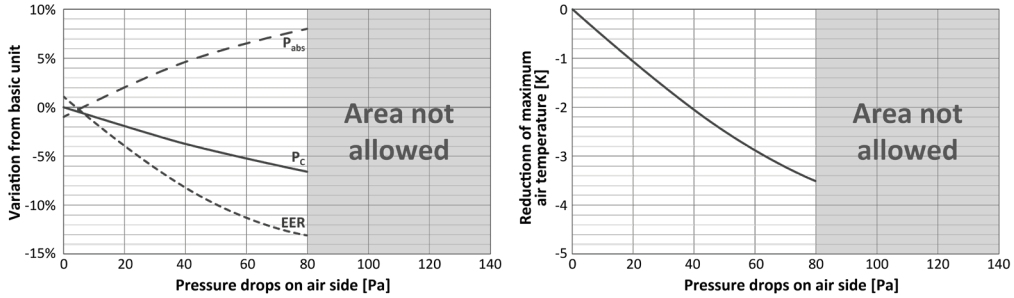
If there are obstacles to free air flow, you should consider the additional aeraulic head losses that will cause a reduction of the air flow rate and a consequent deterioration of performance.

The following diagrams show the trend of cooling capacity (PC), EER, total absorbed power (Pabs) and reduction of the maximum external air temperature in chiller operating mode, depending on the aeraulic head losses that the fans will have to overcome.

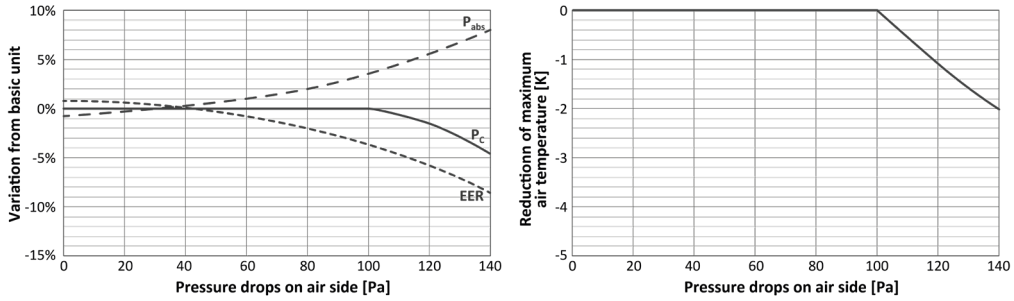
AC fans (Ø 800)



AC fans (Ø 800)



EC fans (Ø 800)



The indicated values are for the standard machine, without accessories, with AC fans and in any case in the absence of air recirculation.

Example: supposing you expect there to be obstacles that will generate an estimated aeraulic head loss of 60Pa. In this case, there are 3 possibilities:

- use the unit with standard AC fans: compared to ideal conditions, the output power will be reduced by about 5.5%, the total absorbed power will increase by about 7.5%, the EER will be reduced by about 12.5% and the maximum allowed external air temperature for operation at 100% will be reduced by about 3.4K compared to the nominal limit
- use the unit with EC fans: compared to the unit with AC fans working in ideal conditions, the output power will be reduced by about 5%, the total absorbed power will increase by about 6.5%, the EER will be reduced by about 11.5% and the maximum allowed external air temperature for operation at 100% will be reduced by about 2.8K compared to the nominal limit
- use the unit with oversize EC fans: compared to the unit with AC fans working in ideal conditions, the output power of the unit will be unchanged, the total absorbed power will increase by about 1%, the EER will be reduced by about 2% and the maximum external air temperature will remain the one shown in the diagram of the operating limits.

DIMENSIONAL DIAGRAMS

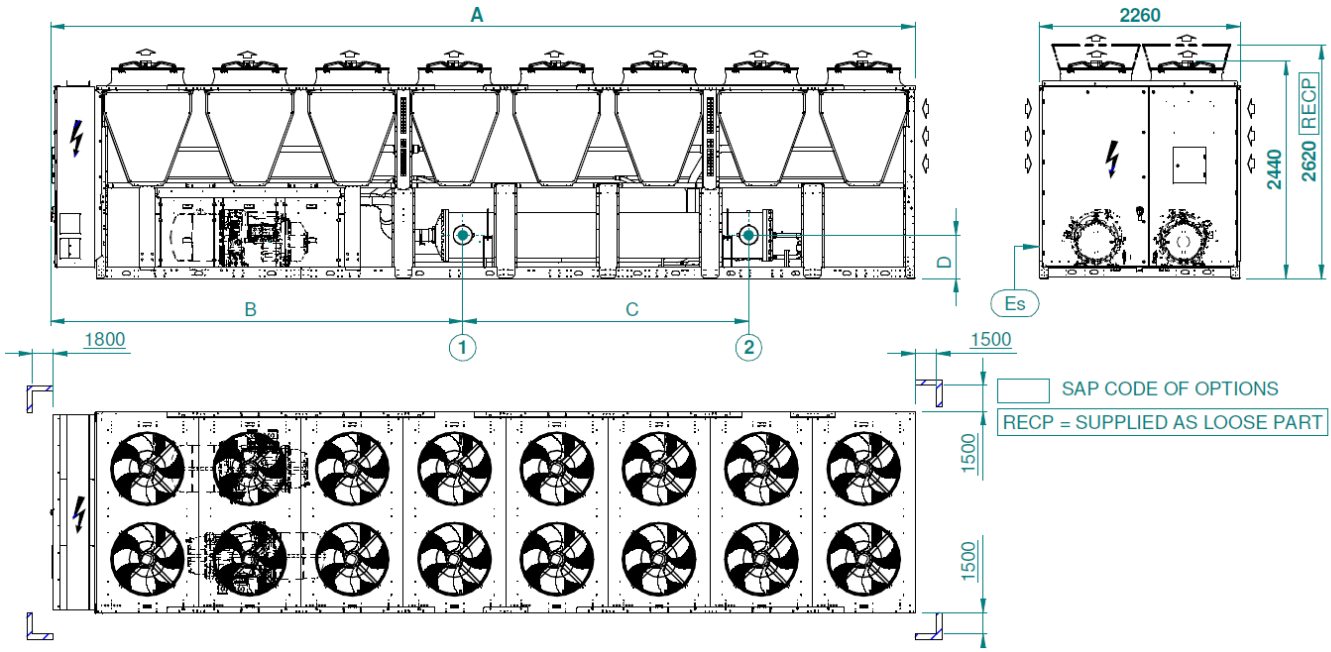
All weights and overall dimensions, as specified in this document, refer to the base unit without any option. The selection of some options, such as copper/aluminium coils, hydraulic modules or recovery heat exchangers, can sensitively increase the dimensions and/or the total net weight of the unit, depending on the unit type.

By way of example:

- /DS: unit with desuperheater --> Weight increase up to +270kg
- /DC: unit with total recovery --> Weight increase up to +766kg
- /RAAL: Cu/Al coils --> Weight increase up to +510kg
- /1P /2P: hydraulic module without tank --> Weight increase up to +900kg
- /1PS /2PS: hydraulic module with tank --> Net weight increase up to +1310kg
- /1PS /2PS: hydraulic module with tank --> Weight increase in operation up to +2260kg

KAPPA SKY XI - XI SLN - XH - XH SLN

DDIM000472

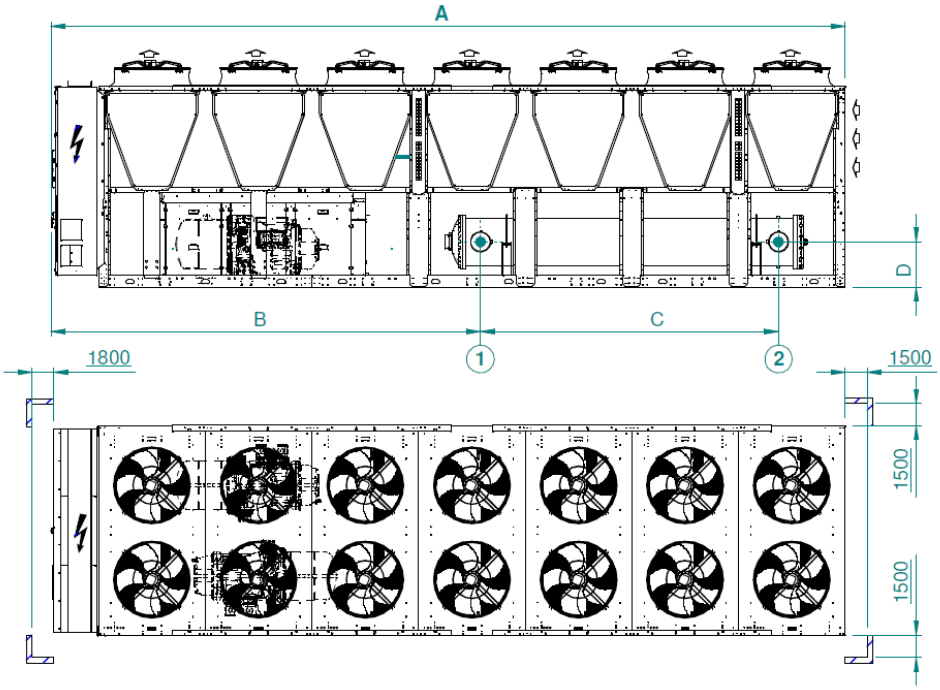


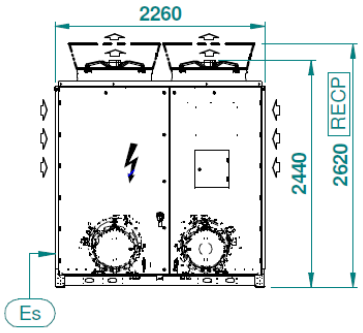
							Xi		Xi LN / Xi SLN	
SIZE	A	B	C	D	1	2	NET WEIGHT (kg)	OPERATION WEIGHT (kg)	NET WEIGHT (kg)	OPERATION WEIGHT (kg)
25.1	3959	1152	2000	476	Uout - O114.3	Uin - O114.3	2669	2797	2839	2967
31.1	3959	1152	1960	446	Uout - O114.3	Uin - O114.3	2845	3000	3015	3170
34.1	3959	1152	1960	446	Uout - O114.3	Uin - O114.3	2883	3033	3053	3203
43.1	5108	1357	1973	418	Uout - OD139.7	Uin- OD139.7	3520	3734	3720	3934
51.2	6256	1388	1967	488	Uout - OD139.7	Uin - OD139.7	4404	4777	4744	5117
59.2	6256	1388	1967	488	Uout - OD168.3	Uin - OD168.3	4515	4879	4855	5219
66.2	7404	2266	1967	488	Uout - OD168.3	Uin - OD168.3	5097	5444	5437	5784
74.2	7404	2266	1967	488	Uout - OD168.3	Uin - OD168.3	5189	5529	5529	5869
81.2	8553	2090	3262	418	Uin - OD168.3	Uout - OD168.3	5772	6081	6192	6501
89.2	9701	4626	3210	488	Uin - OD168.3	Uout - OD168.3	6790	7331	7270	7811
95.2	9701	4626	3210	488	Uin - OD168.3	Uout - OD168.3	6790	7331	7270	7811
104.2	10850	4731	3210	488	Uin - OD168.3	Uout - OD168.3	7444	7950	7924	8430
114.2	11998	5879	3210	488	Uin - OD219.1	Uout - OD219.1	8020	8526	8620	9126
125.2	13147	5879	3510	488	Uin - OD219.1	Uout - OD219.1	8608	9157	9208	9757
135.2	13147	5879	3510	488	Uin - OD219.1	Uout - OD219.1	8794	9331	9394	9931
							Xh		Xh LN / Xh SLN	
SIZE	A	B	C	D	1	2	NET WEIGHT (kg)	OPERATION WEIGHT (kg)	NET WEIGHT (kg)	OPERATION WEIGHT (kg)
51.2	6256	1388	1967	488	Uout - OD139.7	Uin - OD139.7	4473	4846	4813	5186
59.2	6256	1388	1967	488	Uout - OD168.3	Uin - OD168.3	4606	4970	4946	5310
66.2	7404	2266	1967	488	Uout - OD168.3	Uin - OD168.3	5137	5484	5477	5824
74.2	7404	2266	1967	488	Uout - OD168.3	Uin - OD168.3	5389	5729	5729	6069
81.2	8553	2090	3262	418	Uin - OD168.3	Uout - OD168.3	6022	6331	6442	6751
89.2	9701	4626	3210	488	Uin - OD168.3	Uout - OD168.3	6840	7381	7320	7861
95.2	9701	4626	3210	488	Uin - OD168.3	Uout - OD168.3	6970	7511	7450	7991
104.2	10850	4731	3210	488	Uin - OD168.3	Uout - OD168.3	7659	8165	8259	8765
114.2	11998	5879	3210	488	Uin - OD219.1	Uout - OD219.1	8105	8611	8705	9211
125.2	13147	5879	3510	488	Uin - OD219.1	Uout - OD219.1	8863	9412	9463	10012
135.2	13147	5879	3510	488	Uin - OD219.1	Uout - OD219.1	9160	9697	9760	10297

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

KAPPA SKY SI -SH

DDIM000474





SAP CODE OF OPTIONS

RECP = SUPPLIED AS LOOSE PART

							Si		Si LN	
SIZE	A	B	C	D	1	2	NET WEIGHT (kg)	OPERATION WEIGHT (kg)	NET WEIGHT (kg)	OPERATION WEIGHT (kg)
51.2	5108	1388	1967	488	Uout - OD139.7	Uin - OD139.7	4140	4513	4480	4853
59.2	5108	1388	1967	488	Uout - OD168.3	Uin - OD168.3	4251	4615	4591	4955
66.2	6256	2266	1967	488	Uout - OD168.3	Uin - OD168.3	4743	5090	5083	5430
74.2	6256	2266	1967	488	Uout - OD168.3	Uin - OD168.3	4835	5175	5175	5515
81.2	7404	2090	3262	418	Uin - OD168.3	Uout - OD168.3	5358	5667	5778	6087
89.2	8553	4626	3210	488	Uin - OD168.3	Uout - OD168.3	6441	6982	6921	7462
95.2	8553	4626	3210	488	Uin - OD168.3	Uout - OD168.3	6441	6982	6921	7462
104.2	9701	4731	3210	488	Uin - OD168.3	Uout - OD168.3	7105	7611	7585	8091
114.2	10850	5879	3210	488	Uin - OD219.1	Uout - OD219.1	7716	8222	8316	8822
125.2	11998	5879	3510	488	Uin - OD219.1	Uout - OD219.1	8294	8843	8894	9443
135.2	11998	5879	3510	488	Uin - OD219.1	Uout - OD219.1	8480	9017	9080	9617

							Sh		Sh LN	
SIZE	A	B	C	D	1	2	NET WEIGHT (kg)	OPERATION WEIGHT (kg)	NET WEIGHT (kg)	OPERATION WEIGHT (kg)
51.2	5108	1388	1967	488	Uout - OD139.7	Uin - OD139.7	4209	4582	4549	4922
59.2	5108	1388	1967	488	Uout - OD168.3	Uin - OD168.3	4342	4706	4682	5046
66.2	6256	2266	1967	488	Uout - OD168.3	Uin - OD168.3	4783	5130	5123	5470
74.2	6256	2266	1967	488	Uout - OD168.3	Uin - OD168.3	5035	5375	5375	5715
81.2	7404	2090	3262	418	Uin - OD168.3	Uout - OD168.3	5608	5917	6028	6337
89.2	8553	4626	3210	488	Uin - OD168.3	Uout - OD168.3	6491	7032	6971	7512
95.2	8553	4626	3210	488	Uin - OD168.3	Uout - OD168.3	6621	7162	7101	7642
104.2	9701	4731	3210	488	Uin - OD168.3	Uout - OD168.3	7320	7826	7920	8426
114.2	10850	5879	3210	488	Uin - OD219.1	Uout - OD219.1	7801	8307	8401	8907
125.2	11998	5879	3510	488	Uin - OD219.1	Uout - OD219.1	8549	9098	9149	9698
135.2	11998	5879	3510	488	Uin - OD219.1	Uout - OD219.1	8846	9383	9446	9983

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TC_0000_KS_EN_Rev08_20210301

WESTERN™
AIRCONDITIONING
WARMTEPOMPEN

BlueBox
by Swegon