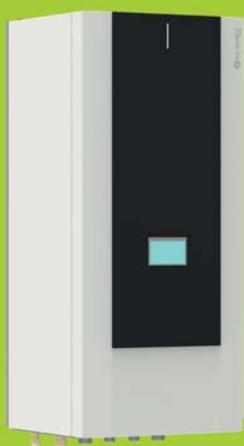




# SPHERA EVO 2.0 EASYHybrid

SQKN-YEE 1 BH+MiSAN-YEE 1 S 2.1-8.1



MANUAL  
FOR INSTALLATION,  
USE AND MAINTENANCE

Change living home

M0GQ00002-01 02/2023



Keep this manual with the wiring diagram in an accessible place for the operator, for future reference.

---

Dear Customer,

We congratulate you on choosing these product

Clivet has been working for years to offer systems able to assure the maximum comfort for a long time with highly-reliable, efficient, high-quality and safe solutions. The target of the company is to offer advanced systems, that assure the best comfort and reduce energy consumption as well as the installation and maintenance costs for the entire life-cycle of the system.

With this manual, we want to give you information that are useful for all phases: from reception, installation and use to disposal - so that such an advanced system can provide the best performances during installation and use.

Best regards and have a good read.

CLIVET Spa

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Pay particular attention to:



INSTALLER use



USER use



## Component supplied with the unit:

Use and maintenance manual

Torx key

Torx insert

## Water connections

1" mesh filter (0.5mm stainless steel mesh)

1/2" EPDM gasket

3/4" EPDM gasket

## Refrigeration connections

3/8"-->10mm gas fittings

5/8"-->16mm gas fittings

10mm-->6mm gas fittings

3/8" copper gasket

5/8" copper gasket

## Boiler

Use and maintenance manual

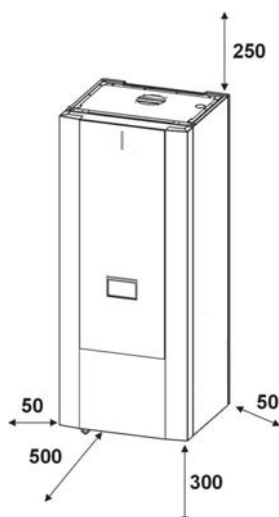
DN25 condensate drainpipe with fitting

Fixing bracket



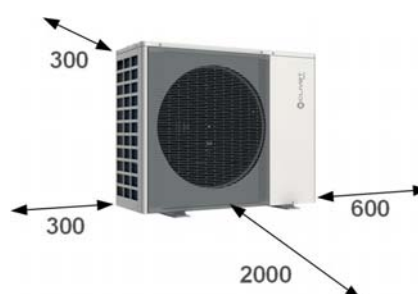
## STD UNIT INSTALLATION

### Indoor unit

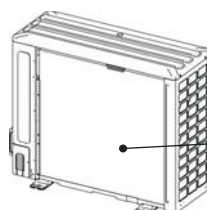


| Size                      | A     | B  |
|---------------------------|-------|----|
| Hydronic + structure - kg | 39    | 41 |
| 24kW boiler - kg          | 27    | -  |
| 34kW boiler - kg          | 42    | 42 |
| Width                     | 410   |    |
| Length                    | 450   |    |
| Height                    | 1130  |    |
| Operating weight - kg     | 70/73 | 75 |

### Outdoor unit

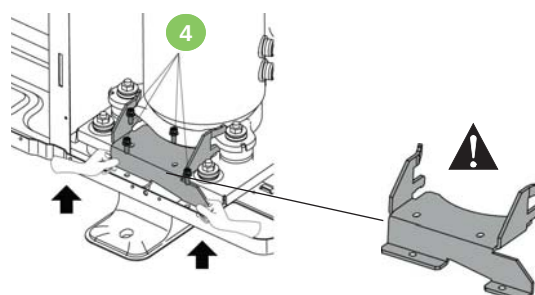


| Size         | 2.1-3.1 | 4.1-5.1 | 6.1-8.1 | 6.1-8.1 |
|--------------|---------|---------|---------|---------|
| Width        | 426     | 523     |         |         |
| Length       | 986     | 1104    |         |         |
| Height       | 712     | 886     |         |         |
| kg           | 58      | 77      | 96      | 112     |
| Power supply | 1-phase |         |         | 3-phase |



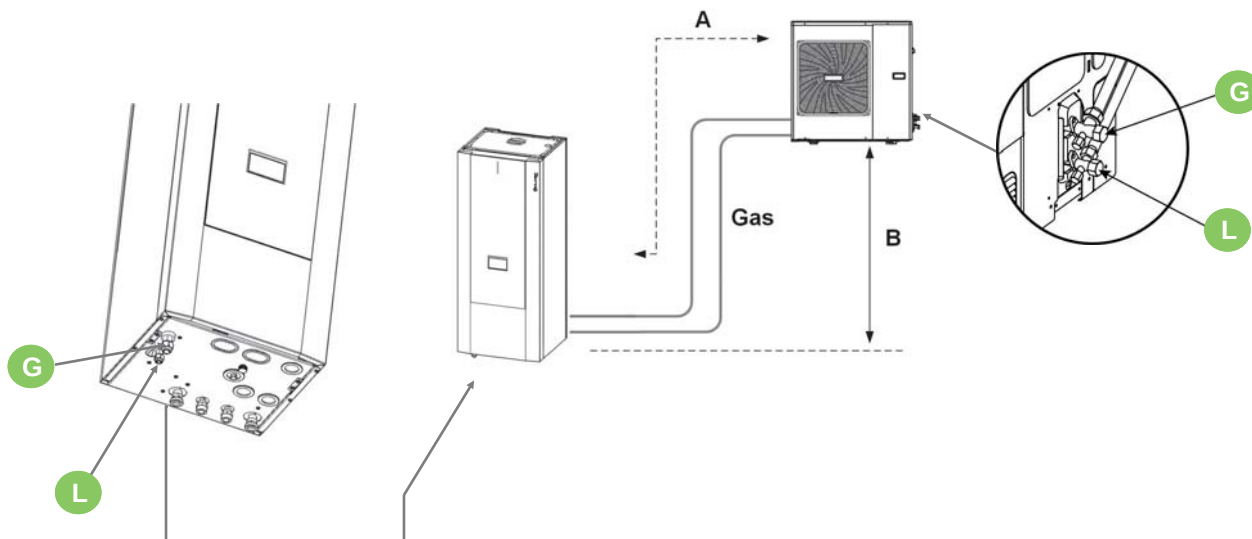
Remove panel

Remove the compressor fixing bracket (size 6.1-8.1)





## REFRIGERATOR CONNECTIONS



Use the components supplied with the unit or perform flaring to make the connections.

| Maximum distances                                                                     |   |   | 2.1 - 8.1 |
|---------------------------------------------------------------------------------------|---|---|-----------|
| Refrigerant pipe min/max equivalent length                                            | A | m | 2 - 30    |
| Maximum refrigerant pipe height difference with outdoor unit higher than indoors unit | B | m | 25        |
| Maximum refrigerant pipe height difference with outdoor unit underthan indoor unit.   | B | m | 25        |

| Type of pipes         |   | 2.1 - 3.1      | 4.1 - 8.1     |
|-----------------------|---|----------------|---------------|
| Liquid Ø external     | L | 1/4" (6,3mm) * | 3/8" (9,5mm)  |
| Gas Ø external        | G | 5/8" (15,9mm)  | 5/8" (15,9mm) |
| Min. thickness gas    |   | 0,8 mm         |               |
| Min. thickness liquid |   | 0,8 mm         |               |

\* Reduction 10-6 for outdoor unit size 2.1-3.1



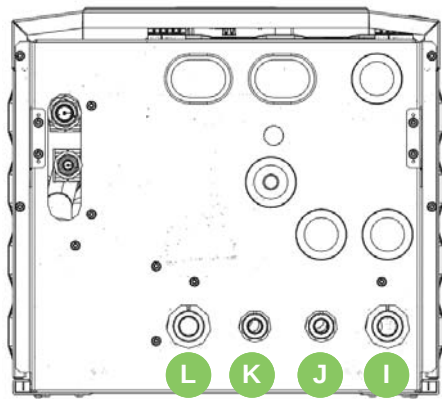
| Additional refrigerant charge                          |  | 2.1 - 3.1 | 4.1 - 8.1 |
|--------------------------------------------------------|--|-----------|-----------|
| Further refill for distance exceeding 15 metres (kg/m) |  | 0,02      | 0,038     |



Water connections

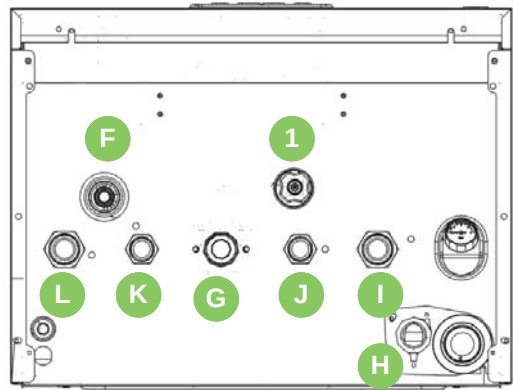


Unit



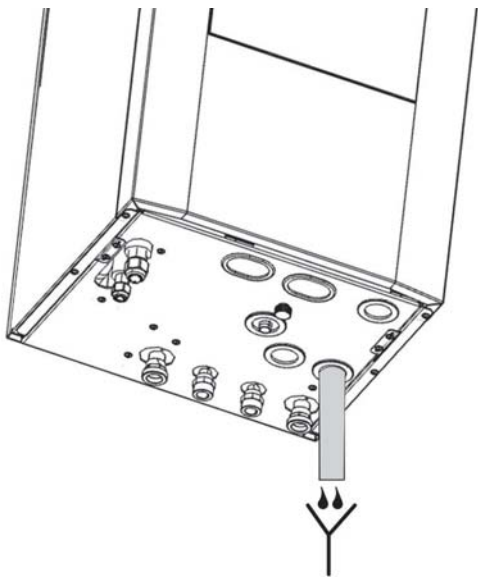
| N° | Description       | Ø    |
|----|-------------------|------|
| L  | System return     | 1"   |
| K  | DHW boiler output | 3/4" |
| J  | Aqueduct inlet    | 3/4" |
| I  | System outlet     | 1"   |

Boiler

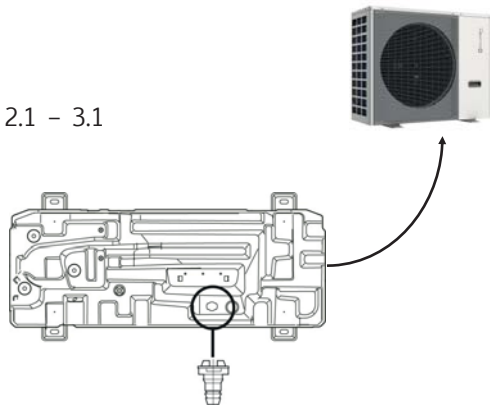


|   |                            |      |
|---|----------------------------|------|
| G | Gas connection             | 3/4" |
| H | Boiler condensate drain    |      |
| F | Safety valve drain         | 15mm |
| 1 | System filling schut valve |      |

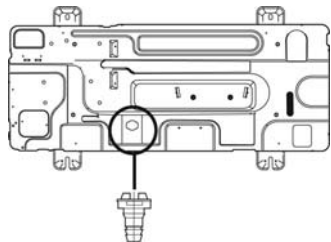
Condensate drain



Size 2.1 - 3.1

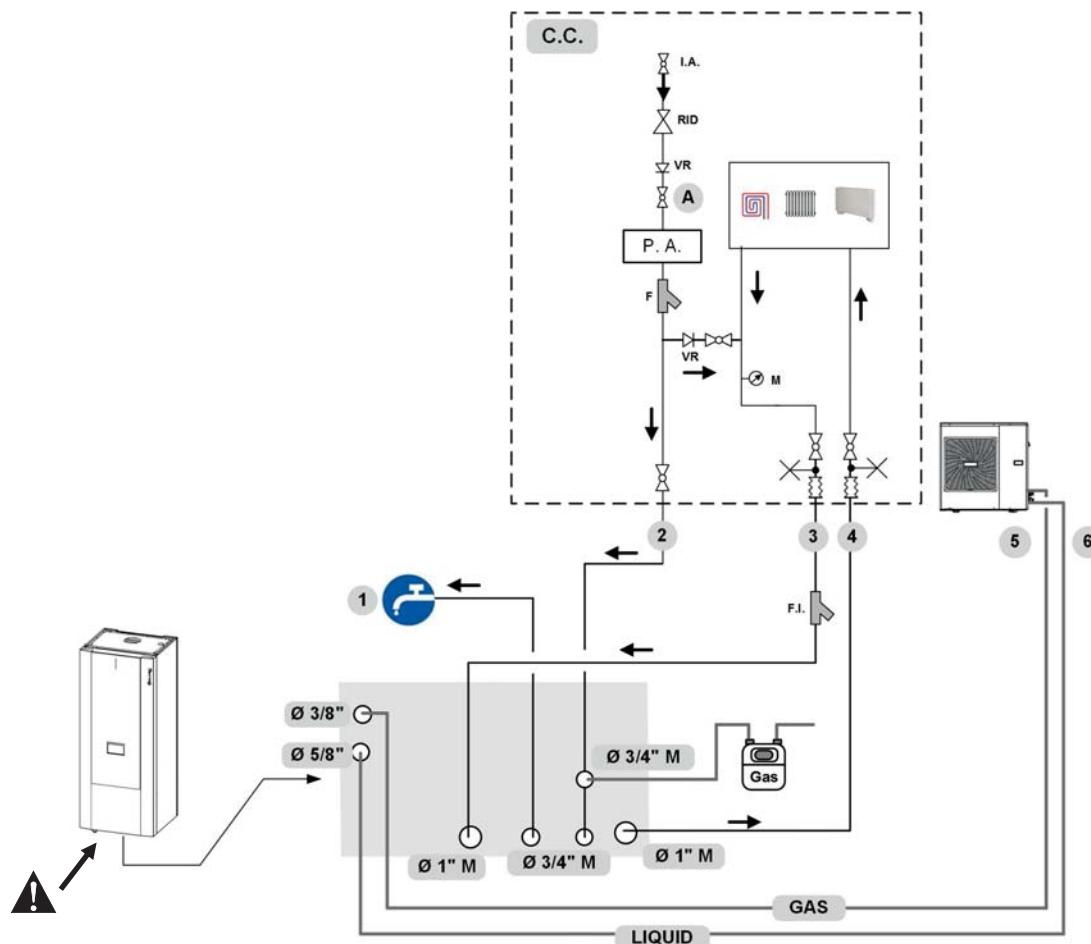


Size 5.1 - 8.1





## HYDRAULIC CONNECTION SCHEMA



Isolate the pipes to avoid heat dispersions and formation of condensate.

Indicative plumbing diagram

The system components must be defined by Designer and Installer (ex. expansion tanks, vents, taps, calibration/safety valves etc.)

| C.C. | Components provided by Customer         | 1 | DHW outlet                |
|------|-----------------------------------------|---|---------------------------|
| A    | System valve                            | 2 | Aqueduct inlet            |
| I.A. | Aqueduct inlet                          | 3 | System water return       |
| F    | Water filter (provided by the customer) | 4 | System water outlet       |
| F.I. | System filter                           | 5 | Refrigerant line (liquid) |
| M    | Pressure gauge                          | 6 | Refrigerant line (gas)    |
| P.A. | Descaler protection                     |   | Vent                      |
| RID  | Pressure reducing valve                 |   | Cut-off valves            |
| VR   | Check valve                             |   | Anti-vibration joints     |

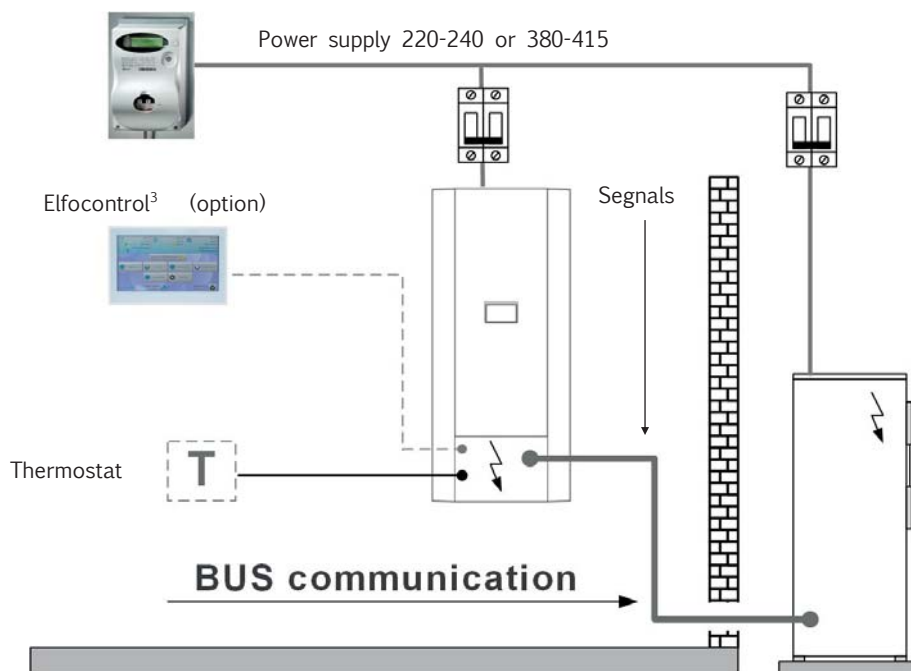


In the tightening operations always use the wrench and backup wrench.



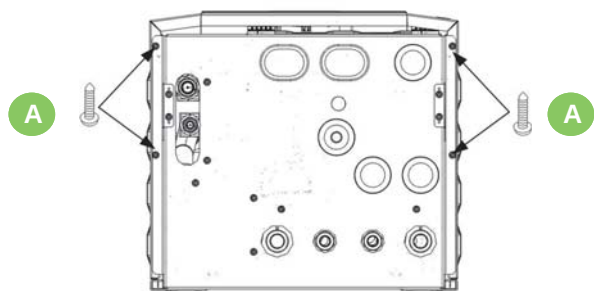
## ELECTRICAL CONNECTIONS

⇒ *Separate power supply and signal*



## Access to the internal parts

- 1 Remove the screws (A)
- 2 Remove the panel



Keyboard cable connected







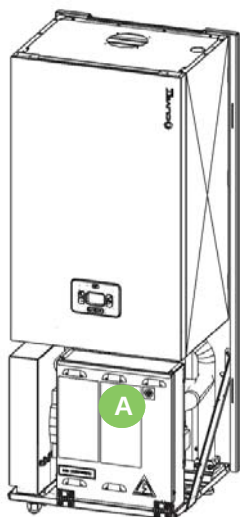
## Internal unit connections



Carry out the connection in accordance with the electric connection layout.

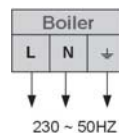
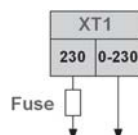
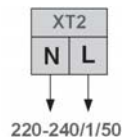
Wiring size (mm<sup>2</sup>) = 1,5

A = Wiring diagram

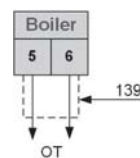
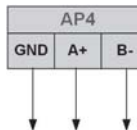


1-phase supply

Power



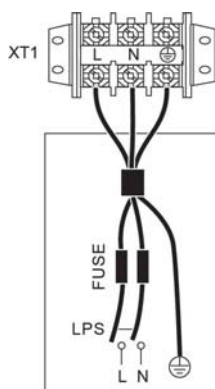
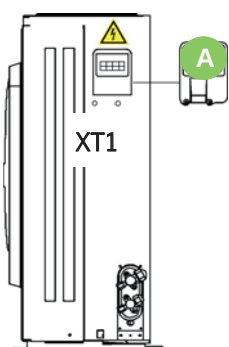
Signal



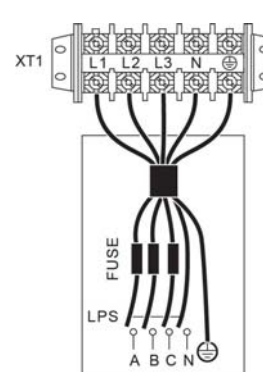
## External unit connections



Remove the protective cover (A)



1-phase supply

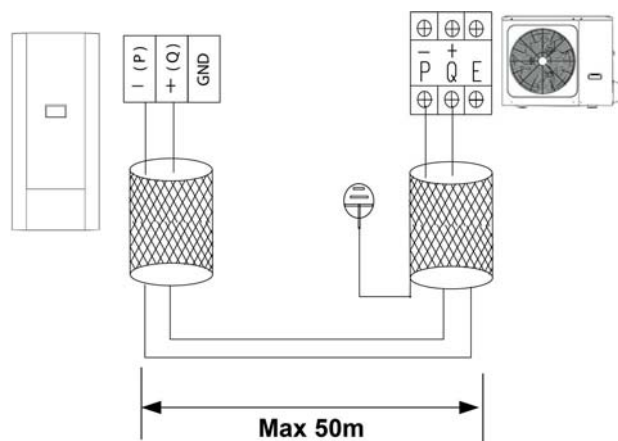


3-phase supply

| Unit (size)                         | 1-phase |         |         | 3-phase |
|-------------------------------------|---------|---------|---------|---------|
|                                     | 2.1-3.1 | 4.1-5.1 | 6.1-8.1 | 6.1-8.1 |
| Maximum overcurrent protector (MOP) | 18      | 19      | 30      | 14      |
| Wiring size (mm <sup>2</sup> )      | 4       | 4       | 6       | 2,5     |



## Bus connections



|            |                                                                |
|------------|----------------------------------------------------------------|
| Cable type | 2-core shielded wire 0,75 - 1,25 mm <sup>2</sup> (AWG18-AWG16) |
|------------|----------------------------------------------------------------|

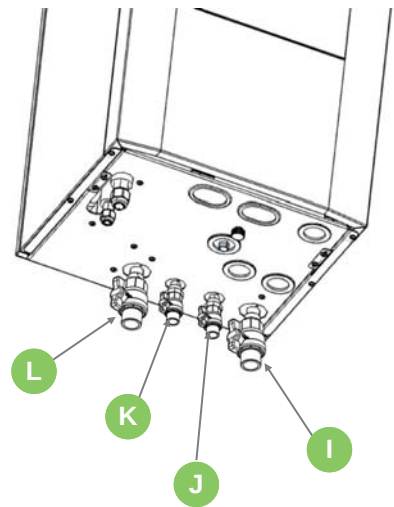


## START-UP



### System charge heating/cooling

- 1 Switch OFF the unit
  - 2 Start filling; open the filling tap located on the system
  - 3 Open taps (L-I)
  - 4 Open the vent valves of the terminals or radiators
  - 5 Close them when water begins to exit; continue the charging until the pressure intended for the system (max.3 bar).
  - 6 Check the hydraulic seal of the joints.
- Repeat the operation after the unit has operated for a number of hours and periodically control the system pressure. Reintegration is carried out when the unit is off (pump OFF).



|   |                                 |
|---|---------------------------------|
| L | System return                   |
| K | Aqueduct inlet                  |
| J | Uscita ACS                      |
| I | System outlet                   |
|   | Taps (provided by the customer) |



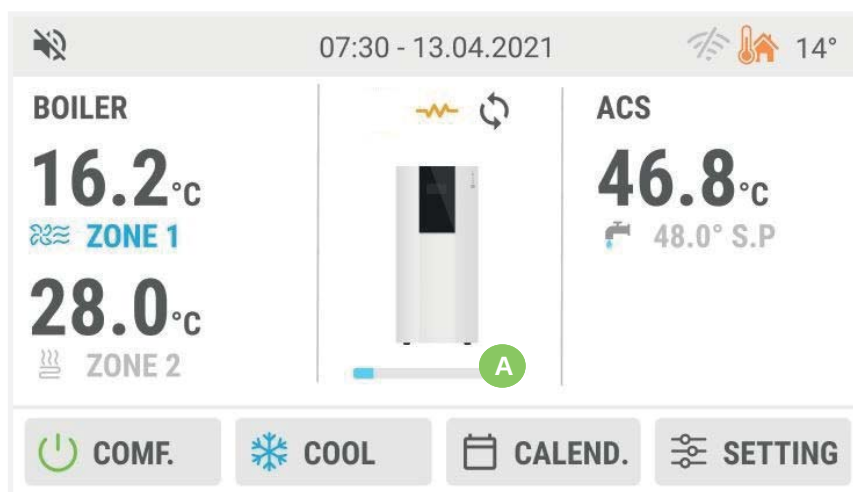
| ✓ Preliminary checks |                                                                                                                               |  |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------|--|
| 1                    | <input type="checkbox"/> Are the functional spaces of the internal unit and the external unit being observed ?                |  |
| 2                    | <input type="checkbox"/> Is the section of the cooling lines correct ? Have the supplied sealing couplings <u>been</u> used ? |  |
| 3                    | <input type="checkbox"/> Does the equivalent length of the refrigerant piping exceed 3m or $\leq 30m$ ?                       |  |
| 4                    | <input type="checkbox"/> Is the height different of the refrigerant piping below 25m?                                         |  |
| 5                    | <input type="checkbox"/> Have emptying and additional load been carried out ? Was there a visual check for oil / leaks ?      |  |
| 6                    | <input type="checkbox"/> Water features are suitable? The hydraulic system has been cleaned?                                  |  |
| 7                    | <input type="checkbox"/> Is the water filter from the waterworks inlet correctly installed ?                                  |  |
| 8                    | <input type="checkbox"/> Is the system filter on the supply correctly installed?                                              |  |
| 9                    | <input type="checkbox"/> Are the inlet and outlet of the water lines correct ?                                                |  |
| 10                   | <input type="checkbox"/> Is there a non-return valve on the DHW recirculation line?                                           |  |
| 11                   | <input type="checkbox"/> Present safety valve on the DHW side?                                                                |  |
| 12                   | <input type="checkbox"/> Present expansion vessel on the DHW side?                                                            |  |
| 13                   | <input type="checkbox"/> Has the compressor support bracket been removed?                                                     |  |
| 14                   | <input type="checkbox"/> Does the system contain the minimum required amount of water?                                        |  |
| 15                   | <input type="checkbox"/> Are the anti-vibration joints on the hydraulic connections present ?                                 |  |
| 16                   | <input type="checkbox"/> Was the system loaded, placed under pressure and was the air let out ?                               |  |
| 17                   | <input type="checkbox"/> Have you verified the expansion tank charge ?                                                        |  |
| 18                   | <input type="checkbox"/> Was the condensate produced by the external unit drained correctly ? Can it freeze ?                 |  |
| 19                   | <input type="checkbox"/> Have the electrical connections to the external unit been made ?                                     |  |
| 20                   | <input type="checkbox"/> Earthing connection? Is the power supply correct ?<br>Is the available power supply sufficient ?     |  |
| 21                   | <input type="checkbox"/> Are the system temperature and the room temperature with the operating limits ?                      |  |
| 22                   | <input type="checkbox"/> Is the screed “dry” ? (only in presence of radiant panels)                                           |  |
| 23                   | <input type="checkbox"/> Has the carter resistance been charged for at least 8 hours ?                                        |  |
| 24                   | <input type="checkbox"/> Select keyboard language                                                                             |  |
| 25                   | <input type="checkbox"/> Set date and time                                                                                    |  |
| 26                   | <input type="checkbox"/> Sanitary water and system personalisation                                                            |  |
| 27                   | <input type="checkbox"/> Compile documentation                                                                                |  |



## SETTINGS



### MULTIFUNCTION KEYPAD - TOUCH SCREEN



#### Display

|  |                          |  |                          |               |                           |
|--|--------------------------|--|--------------------------|---------------|---------------------------|
|  | Active Silent mode       |  | System status            |               | DHW                       |
|  | Active SuperSilent mode  |  | Cooling                  |               | Anti-legionella           |
|  | Fan coil                 |  | Heating                  |               | Active alarm              |
|  | Radiant panels           |  | Scheduling               |               | Alarm on progress         |
|  | Radiators                |  | Setting                  | <b>16.2°C</b> | Zone 1 temperature        |
|  | Defrosting               |  | DHW recirculation        | <b>28.0°C</b> | Zone 2 temperature        |
|  | DHW + HP (heat pump)     |  | Solar panel (if present) | <b>46.8°C</b> | Actual DHW temperature    |
|  | DHW + Boiler             |  | Outside air temperature  | <b>48.0°C</b> | DHW setpoint              |
|  | DHW + Resistance         |  | Wi-fi                    | <b>A</b>      | Display unit in operation |
|  | DHW + solar (if present) |  | Electric heater          |               |                           |



## Menu structure



Press 5s

### Heat pump

Boiler only (heat pump excluded)

Normal operation (operation dependent on circuit demand)

Settings

Climatic Zone 1 (fixed / compensated)

Climatic Zone 2 (fixed / compensated)



Press

### System status

Off

Economy

Comfort

Programmed

DHW only



Press

### System mode

Cooling

Heating

Automatic



Press

### Zone Setpoint

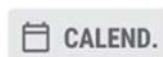
Zone 1 / Zone 2 setpoint temperature



Press 5s

### Date and hour

Year / month / day / hour / minute



Press

### Calendar

Unit scheduling

Dhw scheduling

Timed forcing

Anti-legionella



Press 5s

### DHW

Normal operation (operation dependent on DHW demand)

Only solar thermal (the DHW storage tank is heated only by the solar panels)

Boilr only (the heat pump is excluded)

Reload now (Boost) Function used to anticipate the production of domestic hot water by bringing it up to temperature (storage tank setpoint)

Exclude

Settings

Anti-legionella set

Recirculation enable

Charging mode



Press 5s

## Stata I/O

DI01  
DI02  
DI03  
Ecc....



Press

## Operation status

Set point  
T. external  
T. return  
T. supply  
Ecc..



Press

## Setting \*

Parameter  
Keyboard  
language  
Brightness  
Upload language files (\*\*)  
Info system  
HMI  
IDU Mainboard  
ODU Mainboard  
Double Zone Mainboard (only if enabled secondary)  
Alarms (if active alarms are present)  
Alarms log  
Installer functions  
WiFi configuration  
Cloud configuration  
Export parameters (\*\*)  
Update parameters (\*\*)  
Update firmware (\*\*)

(\*) Visible only after having entered the password

(\*\*) Only with USB connected

## LIST OF ACCESSORIES SEPARATELY SUPPLIED

| Indoor unit      |                                                                   |
|------------------|-------------------------------------------------------------------|
| KIRE2HX/KIR2HX   | 2 zones: external kit, both at high temperature                   |
| KIRE2HXL/KIR2HXL | 2 zones: external kit, high temperature + low temperature (mixed) |
| KCSX/KCSIX       | Kit for secondary circuit (1L hydraulic separator + pump)         |
| DIX              | 1L hydraulic separator                                            |
| ACI40X           | 40-liter inertial storage tank                                    |
| ACS200X          | 200-litre domestic hot water storage tank                         |
| ACS300X          | 300-litre domestic hot water storage tank                         |
| ACS500X          | 500-litre domestic hot water storage tank                         |
| SCS08X           | 0.8 m <sup>2</sup> solar exchanger for flange installation        |
| SCS12X           | 1.2 m <sup>2</sup> solar exchanger for flange installation        |
| VDACSX           | Thermostatic diverter valve for domestic hot water                |
| 3DHWX            | 3-way valve for domestic hot water                                |
| KCVEX            | Circulation kit: circulation group, control unit, expansion tank  |

| Tower version |                                                                                                |
|---------------|------------------------------------------------------------------------------------------------|
| TUNOX         | Main aesthetic heat pump cabinet                                                               |
| TDUEX         | Additional aesthetic cabinet with 150L DHW storage tank                                        |
| TDUESX        | Additional aesthetic cabinet with 150L DHW storage tank with a 1m <sup>2</sup> solar exchanger |
| TTREAX        | Second additional aesthetic cabinet with 150L DHW storage tank                                 |
| TTREX         | Additional aesthetic cabinet for system accessories                                            |
| AC50X         | 50 litre system inertial storage tank for indoor installation                                  |
| KPRSX         | DHW recirculation pump kit                                                                     |

| System   |                                                                                                                                           |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| HID-TCXB | WHITE chronothermostat with soft touch display, temperature control and management via App / Voice control, for semi-uncased installation |
| HID-TCXN | BLACK chronothermostat with soft touch display, temperature control and management via App / Voice control, for semi-uncased installation |
| SWCX     | SwitchConnect radio receiver                                                                                                              |

| Outdoor unit |                                                           |
|--------------|-----------------------------------------------------------|
| DTX          | Auxiliary condensate collection tray                      |
| APAVX        | Kit of antivibration mounts for floor installation        |
| ASTFX        | Kit of antivibration mounts for wall bracket installation |
| KSIPX        | Wall fixing bracket kit                                   |

| Boiler |                                                       |
|--------|-------------------------------------------------------|
| KSDFX  | Suction and exhaust fittings 80mm diameter            |
| KCSAFX | Vertical coaxial connection Ø 60/100                  |
| CCOAX  | Horizontal coaxial curve Ø 60/100 adjustable at 360 ° |
| TCOAX  | Coaxial pipe L = 1000mm Ø 60/100 with terminal        |

N.B.: the name and availability of accessories that are supplied separately may vary over time, please refer to our website for the most up-to-date version.





## SAFETY

Operate in compliance with safety regulations in force .

Use single protection devices:  
gloves, glasses, helmet, etc..

The precautions in this manual are divided as indicated on the side.

They are important, so make sure you follow them closely.

Please read these instructions carefully before installing.

Keep this manual handy for future reference.

This unit contains fluorinated gases. For specific information on gas types and quantities, please refer to the plate found on the unit.

Please contact your dealer for future assistance.

### DANGER

⇒ An incorrect installation of equipment or accessories may provoke electric shocks, short circuits, leaks, fire or other damages to the equipment. Make sure you only use accessories provided by the supplier - which are designed specifically for the equipment - and make sure they are installed by a professional.

⇒ All activities described in this manual must be performed by authorised technicians. Make sure to wear suitable personal protection such as gloves and safety goggles while installing the unit or performing maintenance operations.

⇒ Switch off the power switch before touching electrical components and terminals.

⇒ When the service panels are removed, the live parts can easily be touched by mistake.

⇒ Never leave the unit unattended during installation or maintenance operations while the service panel is removed.



### Meaning of the symbols DANGER, WARNING, CAUTION and NOTE

#### DANGER

⇒ It indicates a situation of imminent danger that, if not avoided, will cause death or serious lesions.

#### WARNING

⇒ It indicates a potentially dangerous situation that, if not avoided, may cause death or serious lesions.

#### CAUTION

⇒ It indicates a potentially dangerous situation that, if not avoided, may cause slight or moderate injury. Also used to warn against unsafe practices.

#### NOTE

⇒ It indicates situation that may cause accidental damage to the equipment or property.



- ⇒ Do not touch the water pipes during and after performing welding or junction work as the pipes may be very hot and you may burn your hands. To avoid lesions, wait until the pipes return to a normal temperature or make sure you are wearing protective gloves.
- ⇒ Do not touch any switch with wet hands. Touching a switch with wet hands may lead to electric shock.

### WARNING

- ⇒ The power supply of the series complies with IEC / EN 61000-3-11 and must be connected to a suitable power supply network, in able to support a maximum system impedance of  $Z_{max} = 0.351 \text{ ohm}$  on the interface. Keep in touch with the supply authority so to ensure that the power supply is connected only to a power supply with an impedance no more than the one shown above.
- ⇒ Maintenance operations must be performed as recommended by the manufacturer. Maintenance and reparation operations requiring the assistance from specialized personnel must be performed under the supervision of the person competent as regards flammable refrigerants.
- ⇒ Tear and dispose of plastic bags so that children may not play with them. Children playing with plastic bags risk choking.
- ⇒ Some products use PP packaging straps. Do not pull the straps or use them to lift or move the product. It may be dangerous should the straps break.
- ⇒ Dispose safely of packaging material such as nails or other metal or wooden parts that may cause lesions.
- ⇒ Ask your dealer or qualified personnel to perform installation operations according to this manual. Do not install the unit yourself.



Warning:  
Fire hazard  
Flammable materials



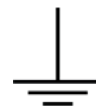
*An incorrect installation may cause water leaks, electric shock or fire.*

- ⇒ Make sure to only use accessories and parts specified for installation operations. Failing to use specific parts may cause*
- ⇒ water leaks, electric shock, fire or the unit falling from its support.*
- ⇒ Install the unit on a structure that can withstand its weight. An insufficiently robust structure may lead to the unit falling causing possible lesions.*
- ⇒ Perform installation operations considering the possibility that strong winds, hurricanes or earthquakes may occur. Incorrect installation operations may lead to accidents caused by falling equipment.*
- ⇒ Make sure all electrical operations are performed by qualified personnel in accordance with the law, local regulations and this manual.*
- ⇒ Connect the unit to a separate power supply circuit. An insufficient capacity of the power supply circuit or incorrect connections may lead to electric shock or fire.*
- ⇒ Make sure to install an additional differential circuit-breaker against a leakage to earth compliant with the law and local regulations.*
- ⇒ The unit must be installed with an Creepage Breaker near the power supply and must be effectively earthed.*
- ⇒ A creepage breaker must be installed adjacent to the power supply*
- ⇒ Never use the wire and fuse with wrong rated current, otherwise unit may break down and cause fire furthermore.*
- ⇒ Failing to install a differential circuit-breaker may lead to electric shock and fire.*
- ⇒ Make sure all the wiring is safe. Use the specified wires and make sure terminal connections and wires are protected against*



*the water, external forces or other phenomena. Incomplete connections or fixing may cause a fire.*

- ⇒ When connecting the power supply, arrange the wires so that the front panel can be fixed properly. If the front panel is not in position, it may lead to terminals overheating, electric shock or fire.*
- ⇒ People working or intervening on a cooling circuit must hold a suitable certification issued by an authorised assessment centre proving their suitability to handle refrigerants safely in compliance with a specific assessment recognised by industry associations.*
- ⇒ After installation operations are over, verify that there are no refrigerant leaks.*
- ⇒ Never touch the leaking refrigerant directly, as it may lead to serious frostbite injuries. Do not touch the refrigerant pipes during and right after functioning, as they may be hot or cold depending on the conditions of the refrigerant flowing through the pipes, compressor and other parts of the cooling circuit. Burns or frostbite may occur if you touch the refrigerant pipes. If it is necessary to touch the pipes, wait for them to return to a normal temperature or wear protective gloves and clothes.*
- ⇒ Do not touch the internal parts (pump, backup heater, etc.) during and immediately after functioning. Touching internal parts may cause burns. To avoid lesions, wait until the internal parts have returned to a normal temperature or, if touching them is necessary, wear protective gloves.*
- ⇒ Do not use other means than those recommended by the manufacturer to hasten the defrosting or cleaning process.*
- ⇒ The equipment must be placed somewhere without continuous ignition sources (e.g. open*





*flame, a gas-operated device or an electric heater).*

*⇒ Do not pierce nor burn.*

*⇒ Be aware that refrigerants are odourless.*

### **CAUTION**

*⇒ Place the unit on the ground.*

*⇒ The earth resistance should comply with the law and local regulations.*

*⇒ Do not connect the earth cable to gas or water mains, lightning rods or phone earth cables.*

*⇒ Incomplete earthing may cause electrical shocks.*

- Gas mains: fires or explosions may occur in case of a gas leak.
- Water mains: rigid vinyl tubes are not effective.
- Lightning rods or phone earth cables: the electrical threshold can increase abnormally if hit by lightning.

*⇒ Install the power supply cable at least one metre from TVs or radios to prevent interferences or disturbances. Depending on the type of radio wave, one metre may not be enough to avoid disturbances.*

*⇒ Do not wash the unit as it may cause electric shocks or fires.*

*⇒ If the power supply cable is damaged, it must be replaced by the producers, personnel from its assistance network or qualified personnel.*

*⇒ Do not install the unit in the following places:*

- Where there is mineral oil, even in form of vapour. Plastic parts may deteriorate, disperse and cause water leaks.
- Where corrosive gases (such as sulphurous acid) are produced.
- Where the corrosion of copper pipes or welded parts may cause refrigerant leaks.
- Where there are devices emitting electromagnetic waves. Electromagnetic waves may disturb the control system and cause malfunctions.



- Where flammable gases may leak, or carbon fibre or flammable powers may be found in the air or where volatile flammable materials such as paint thinners or petrol are handled. These gases may cause a fire.
- Where the air contains high levels of salt, such as the seaside.
- Where the power supply voltage is subject to fluctuations, such as in factories.
- On vehicles or ships.
- Where there are acid or alkaline vapours.

⇒ *Prior to installation, verify if the user's power supply meets the unit's installation requirements (including reliable earthing, differential circuit-breaker, component size, wire section, etc.). If the electrical installation requirements are not met, the unit cannot be installed until the electrical system is rectified.*

⇒ *Before the hydraulic connection and electrical wiring operations, verify that the installation area is safe and without hidden dangers such as water, electricity and gas conduits.*

⇒ *Do not touch the fins of the heat exchanger as they may cause injury.*

⇒ *If installing multiple units in a centralised manner, adjust the electric load on the various phases. Do not connect multiple units to the same phase of the three-phase supply.*

⇒ *The following subjects may use the unit if supervised or instructed on safe usage and capable of understanding the possible dangers: children who are minimum 8 years old, people with no experience or knowledge, people with limited physical, sensory or mental abilities.*

⇒ *Children should be supervised to ensure that they do not play with the appliance.*

⇒ *Cleaning and maintenance operations to be carried out by the user must not be performed by unsupervised children.*



- ⇒ *Once the installation is complete, the unit tested and functioning is normal, instruct the client as regards the use and maintenance of the unit as indicated in this manual. In addition, make sure that the manual is suitably kept for future reference.*
- ⇒ *The installer must deliver the manual and wiring diagram to the User.*
- ⇒ *DISPOSAL: do not dispose of this product as unsorted waste. Contact the local authorities for information on the collection systems available. If electrical equipment is disposed of in landfills, dangerous substances may infiltrate the waste water and enter the food chain, harming the health and well-being of people and animals.*





This product contains fluorinated greenhouse gases covered by the Kyoto protocol. Do not discharge gas into air.

Refrigerant type: R32

Characteristics of R32 refrigerant:

- minimum environmental impact thanks to the low Global Warming Potential GWP
- low flammability, class A2L according to ISO 817
- low combustion speed
- low toxicity

The refrigerant quantity is indicated on the unit plate

Quantity factory-loaded refrigerant and equivalent CO<sub>2</sub> tons:

| Size      | Refrigerant (kg) | Equivalent CO <sub>2</sub> tons |
|-----------|------------------|---------------------------------|
| 2.1 - 3.1 | 1,50             | 1,02                            |
| 4.1 - 5.1 | 1,65             | 1,11                            |
| 6.1 - 8.1 | 1,84             | 1,24                            |

#### Physical characteristics of the R32 refrigerant

|                            |       |                          |
|----------------------------|-------|--------------------------|
| Safety class (ISO 817)     | A2L   |                          |
| GWP                        | 675   |                          |
| LFL Low flammability limit | 0.307 | kg/m <sup>3</sup> @ 60°C |
| BV Burning velocity        | 6,7   | cm/s                     |
| Boiling point              | -52   | °C                       |
| GWP                        | 675   | 100 yr ITH               |
| GWP                        | 677   | ARS 100 yr ITH           |
| Self-ignition temperature  | 648   | °C                       |





## UNIT IDENTIFICATION

### Serial number label

The serial number label is positioned on the unit and allows to identify all the unit features.

### Warning

⇒ *It has not to be removed for any reason.*

It reports the regulations indications such as:

- machine type, exemple
- size
- serial number  
xxxxxxxxxxx
- year of manufacture
- wiring diagram number
- electrical data
- manufacturer logo and address .

### Serial number

It identifies uniquely each machine.

It identifies specific spare parts for the machine.

### Assistance request

Note data from the serial number label and write them in the chart on side, so you will find them easily when needed.

In case of intervention you have to provide data.

|                     |
|---------------------|
| Serie               |
| Size                |
| Serial number       |
| Year of manufacture |
| Wiring diagram      |

## Preliminary information

### NOTE

Before beginning the work, ensure you that have the final project for installing the system and positioning the units.

Operate in compliance with safety regulations in force .

Use single protection devices.



Before accepting the delivery you have to check:

- that the unit hasn't been damaged during transport.
- Check that the materials delivered correspond with that indicated on the transport document comparing the data with the identification label 'A' positioned on the packaging.

In case of damage or anomaly:

- Write down on the transport document the damage you found and quote this sentence: "Conditional acceptance clear evidence of deficiencies/damages during transport".
- Contact supplier and the carrier by fax and registered mail with advice of receipt.

### NOTE

⇒ Any disputes must be made within the 8 days following the delivery. Complaints after this period are invalid.

### Storage

Shelter from: direct sunlight, rain, sand and wind.

Stocking temperature:

maximum 50°C

minimum -10°C

### NOTE

⇒ The respect of the instructions on the exterior side of the packaging assures the physical and functional integrity of the unit for the final user's advantage.

### Handling

Before handling verify that the unit keeps its balance.

The following examples are indications the choice of the means and of the handling modes will depend on factors.

- 1 Verify unit weight and handling equipment lifting capacity .
- 2 Identify critical points during handling (disconnected routes, flights, steps, doors).
- 3 Stair climbing trolley.
- 4 Use protection (A) to avoid the unit damaging
- 5 Do not leave loose packages during the transport
- 6 Do not move the units alone

### DANGER

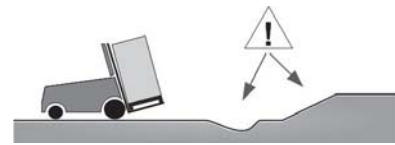
⇒ It is strictly forbidden to stand under the machine when it is lifted.



1



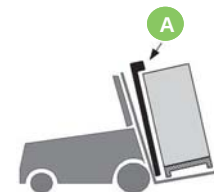
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3



4



5



6





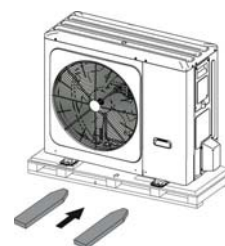
### External unit

- 1 Fork input side
- 2 Input side for lifting by crane
- 3 Do not lean it more than 45°, and do not lay it sidelong
- 4 Before starting the handling, make sure that the unit is stable.

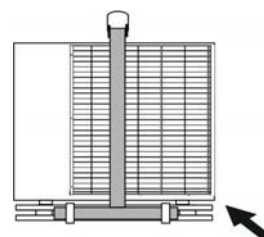
### DANGER

⇒ *It is strictly forbidden to stand under the machine when it is lifted.*

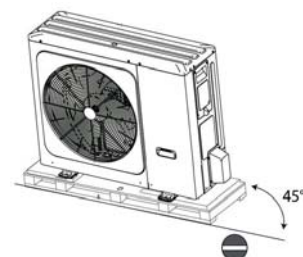
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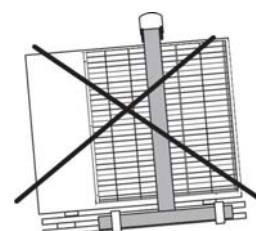
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3



4





## 1 - Component supplied with the unit

Use and maintenance manual

Torx key

Torx insert

### Water connections

1" mesh filter (0.5mm stainless steel mesh)

1/2" EPDM gasket

3/4" EPDM gasket

### Refrigeration connections

3/8"-->10mm gas fittings

5/8"-->16mm gas fittings

10mm-->6mm gas fittings

3/8" copper gasket

5/8" copper gasket

### Boiler

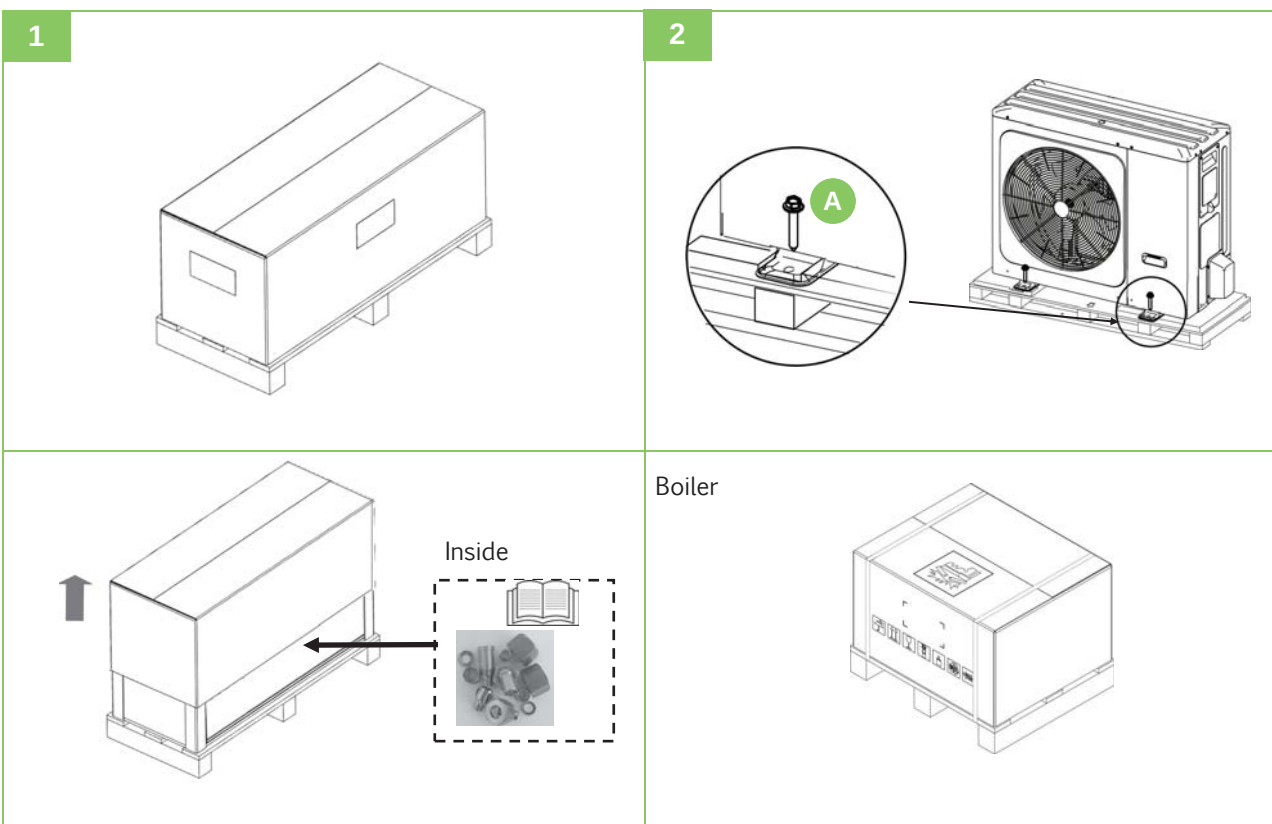
Use and maintenance manual

DN25 condensate drainpipe with fitting

Fixing bracket

## 2 - Remove wooden platforms

- Remove the screws (A)



## Packing removing

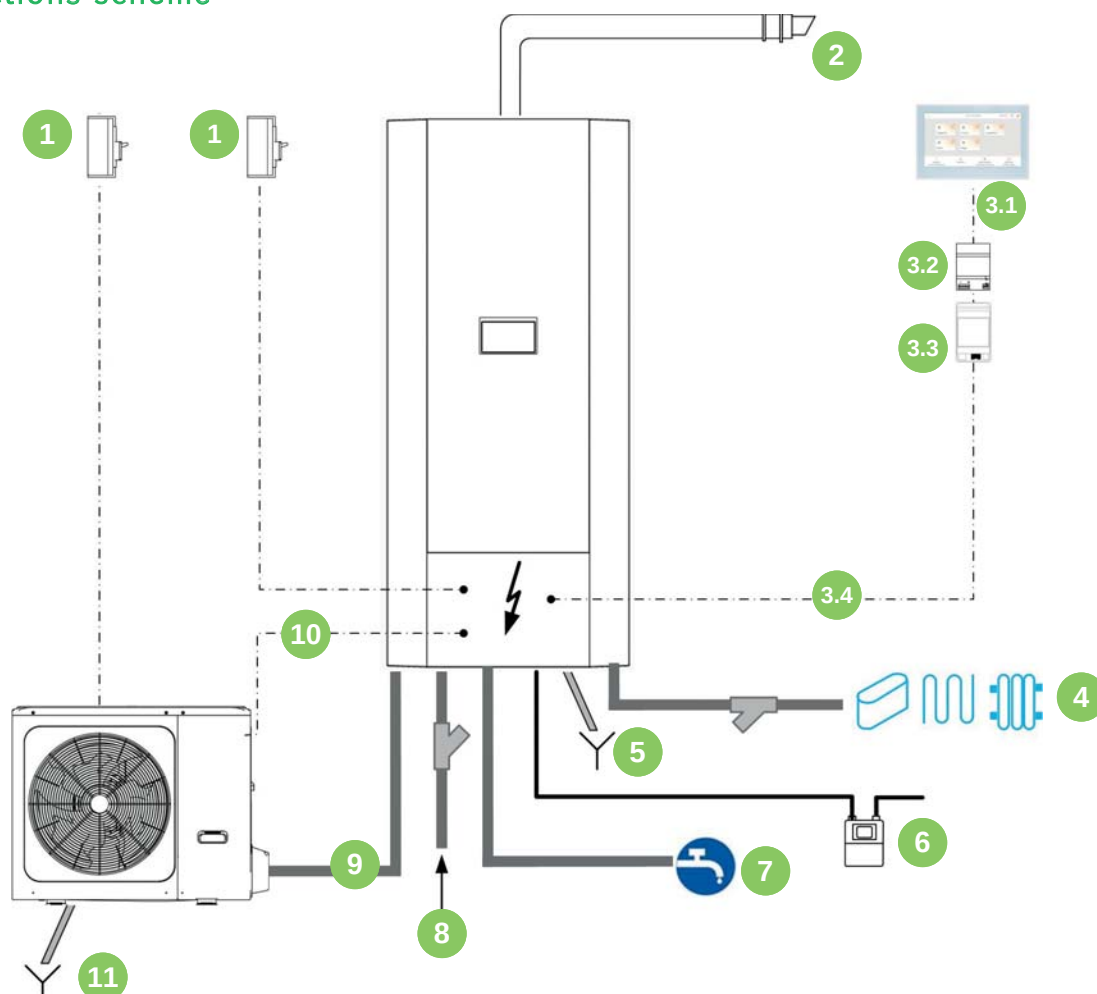
Be careful not to damage the unit.

Keep packing material out of children's reach it may be dangerous.

Recycle and dispose of packing material in conformity with local regulations.



## Connections scheme



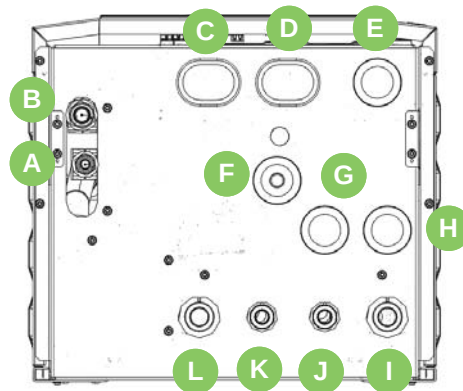
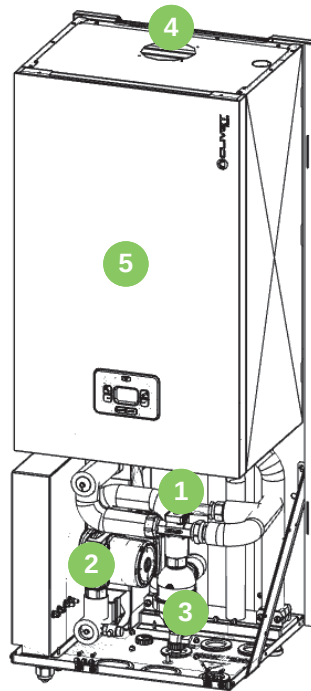
|     |                                       |            |
|-----|---------------------------------------|------------|
| 1   | Supply line                           |            |
| 2   | Exhaust fumes                         |            |
| 3   | Elfocontrol <sup>3</sup> EVO (option) |            |
| 3.1 | Ethernet max 90m (option)             | UTP cat. 5 |
| 3.2 | Power supply unit 12Vdc (option)      |            |
| 3.3 | Ethernet converter (option)           |            |
| 3.4 | RS485 on keyboard (option)            |            |
| 4   | System                                |            |
|     | System outlet                         | Ø 1"       |
|     | System return                         | Ø 1"       |

|    |                         |                          |
|----|-------------------------|--------------------------|
| 5  | Boiler condensate drain | Provided by the customer |
| 6  | Gas line                | Ø 3/4"                   |
| 7  | Outlet DHW              | Ø 3/4"                   |
| 8  | Acqueduct input         | Ø 3/4"                   |
| 9  | Refrigerant lines       |                          |
| 10 | BUS                     | Max 50m                  |
| 11 | Unit condensate drain   | Provided by the customer |
|    |                         |                          |
|    |                         |                          |
|    |                         |                          |



## Components

1. Flowmeter
2. System pump
3. Magnetic sludge
4. Boiler exhaust fumes
5. Boiler

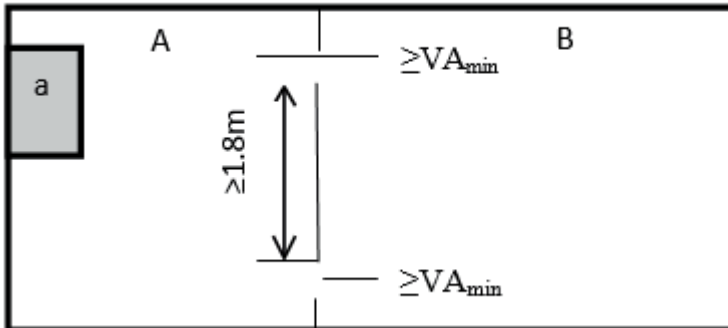


## Connections

- |                                         |                                   |
|-----------------------------------------|-----------------------------------|
| A. Liquid line Ø 3/8"                   | G. Methane gas pipe inlet Ø 3/4"  |
| B. Gas line Ø 5/8"                      | H. Boiler condensate drain Ø DN25 |
| C. Electrical connections input (power) | I. System outlet Ø 1"             |
| D. External unit connections output     | J. Aqueduct input Ø 3/4"          |
| E. Unit keyboard connections output     | K. DHW outlet Ø 3/4"              |
| F. System drain / safety valves         | L. System return Ø 1"             |



If the total refrigerant charge in the system is  $\leq 1.84$  kg there are no minimum surface requirements.



a Indoor unit (wall mounting)

A Room where the unit is installed.

B Room adjacent to room A.

Area A+B must be greater than or equal to the minimum surface required in table 2 according to the total charge.

If the total refrigerant charge in the system is  $\geq 1.84$  kg it is necessary to comply with the minimum surface requirements indicated in the following procedure:

- 1 calculate, based on piping length, the total refrigerant charge (mc)
- 2 calculate area room A (Aroom A)
- 3 calculate, through table 1, the maximum refrigerant charge allowed by room A (mmax)
- 4 **if  $mmax \geq mc$  the unit can be installed in room A**

**if  $mmax \leq mc$**

- 1 calculate the area of room B adjacent to room A (Aroom B)
- 2 calculate, through table 2, the minimum total area (Amin total) required for the total refrigerant charge (mc)
- 3 **if (Aroom A + Aroom B)  $\geq$  Amintotal**
- 4 calculate, through table 3.1 or 3.2, (depending on the power of the outdoor unit), the minimum area of natural ventilation opening between room A and room B
- 5 the unit can be installed in room A if
  - There are 2 ventilation openings (permanently open) between room A and B, 1 at the top and 1 at the bottom.
  - Lower opening: the lower opening must meet the minimum area requirements (VAmin). It must be as close to the floor as possible. If the ventilation opening starts from the floor, the height should be  $\geq 20$ mm. The lower part of the opening must be less than 100 mm from the floor. At least 50% of the required opening area must be  $< 200$  mm from the floor. The entire area of the opening must be  $< 300$  mm from the floor.
  - Upper opening: the upper opening area must be greater than or equal to the lower opening. The lower part of the upper opening must be at least 1.5 m above the upper part of the lower opening.
  - Outward ventilation openings are NOT considered suitable ventilation openings (the user can lock them when it is cold).
  - **if (Aroom A + Aroom B)  $<$  Amintotal call the retailer**



Table 1 - Maximum refrigerant charge allowed in a room: Indoor unit

| A <sub>room</sub> (m <sup>2</sup> ) | Maximum refrigerant charge in a room (m <sub>max</sub> )<br>(kg) |
|-------------------------------------|------------------------------------------------------------------|
|                                     | H = 600 mm                                                       |
| 1                                   | 0,138                                                            |
| 2                                   | 0,276                                                            |
| 3                                   | 0,414                                                            |
| 4                                   | 0,553                                                            |
| 5                                   | 0,691                                                            |
| 6                                   | 0,829                                                            |
| 7                                   | 0,967                                                            |
| 8                                   | 1,105                                                            |
| 9                                   | 1,243                                                            |
| 10                                  | 1,382                                                            |
| 11                                  | 1,520                                                            |
| 12                                  | 1,658                                                            |
| 13                                  | 1,796                                                            |
| 14                                  | 1,934                                                            |
| 15                                  | 2,072                                                            |
| 16                                  | 2,210                                                            |
| 17                                  | 2,349                                                            |
| 18                                  | 2,487                                                            |

- H: This is the release height; the vertical distance in millimetres from the floor to the lowest point of the unit when installed.
- For H values lower than 600 mm, the value of H considered is 600 mm to comply to IEC 60335-2-40:2018 Clause GG 2.
- For intermediate A<sub>room</sub>, values, consider the value that corresponds to the lower A<sub>room</sub> value from the table. If A<sub>room</sub> = 7.5m<sup>2</sup> consider the value that corresponds to A<sub>room</sub> = 7m<sup>2</sup>.
- System with total refrigerant charge lower or equal than 1.84 kg are not subjected to any room requirements.





Table 2 - Minimum floor area: Indoor unit

| m <sub>c</sub> (kg) | Minimum floor area (m <sup>2</sup> ) (Amintotal ) |
|---------------------|---------------------------------------------------|
|                     | H = 600 mm                                        |
| 1,84                | 13,319                                            |
| 1,86                | 13,464                                            |
| 1,88                | 13,608                                            |
| 1,9                 | 13,753                                            |
| 1,92                | 13,898                                            |
| 1,94                | 14,043                                            |
| 1,96                | 14,187                                            |
| 1,98                | 14,332                                            |
| 2                   | 14,477                                            |
| 2,02                | 14,622                                            |
| 2,04                | 14,767                                            |
| 2,06                | 14,911                                            |
| 2,08                | 15,056                                            |
| 2,1                 | 15,201                                            |
| 2,12                | 15,346                                            |
| 2,14                | 15,490                                            |
| 2,16                | 15,635                                            |
| 2,18                | 15,780                                            |
| 2,2                 | 15,925                                            |
| 2,22                | 16,069                                            |
| 2,24                | 16,214                                            |
| 2,26                | 16,359                                            |
| 2,28                | 16,504                                            |
| 2,3                 | 16,649                                            |
| 2,32                | 16,793                                            |
| 2,34                | 16,938                                            |
| 2,36                | 17,083                                            |
| 2,38                | 17,228                                            |
| 2,4                 | 17,372                                            |
| 2,42                | 17,517                                            |

- For H values lower than 600 mm, the value of H considered is 600 mm to comply to IEC 60335-2-40:2018 Clause GG 2.
- For intermediate m<sub>c</sub> value, consider the value that corresponds to the higher m<sub>c</sub> value from the table. If m<sub>c</sub> = 2,07 kg consider the value that corresponds to m<sub>c</sub> = 2,08 kg.
- Systems with total refrigerant charge lower or equal than 1.84 kg are not subjected to any room requirements.
- Charge above 1,80 kg are not allowed in the sizes 2.1 e 3.1.
- Charge above 2,22 kg are not allowed in the sizes 4.1 e 5.1.
- Charges above 2.41 kg are not allowed in the sizes 6.1, 7.1 and 8.1.



Table 3 - Minimum venting opening area for natural ventilation: For units with a power rating of 8 to 10 kW.

| m <sub>c</sub><br>[kg] | mmax<br>[kg] | Minimum venting opening area (cm <sup>2</sup> ) (VAmin) |
|------------------------|--------------|---------------------------------------------------------|
|                        |              | H = 600 mm                                              |
| 2,22                   | 0,1          | 1026                                                    |
| 2,22                   | 0,3          | 928                                                     |
| 2,22                   | 0,5          | 832                                                     |
| 2,22                   | 0,7          | 735                                                     |
| 2,22                   | 0,9          | 638                                                     |
| 2,22                   | 1,1          | 542                                                     |
| 2,22                   | 1,3          | 445                                                     |
| 2,22                   | 1,5          | 348                                                     |
| 2,22                   | 1,7          | 251                                                     |
| 2,22                   | 1,9          | 138                                                     |
| 2,22                   | 2,1          | 52                                                      |

- For H values lower than 600 mm, the value of H considered is 600 mm to comply to IEC 60335-2-40:2018 Clause GG 1.
- For intermediate mmax values, consider the value that corresponds to the higher mmax value from the table. If mmax = 0.6 kg consider the value that corresponds to mc= 0.7 kg.

Table 4 - Minimum venting opening area for natural ventilation: For units with a power rating of 12 to 16 kW.

| m <sub>c</sub><br>[kg] | mmax<br>[kg] | Minimum venting opening area (cm <sup>2</sup> ) (VAmin) |
|------------------------|--------------|---------------------------------------------------------|
|                        |              | H = 600 mm                                              |
| 2,41                   | 0,1          | 1118                                                    |
| 2,41                   | 0,3          | 1020                                                    |
| 2,41                   | 0,5          | 924                                                     |
| 2,41                   | 0,7          | 827                                                     |
| 2,41                   | 0,9          | 730                                                     |
| 2,41                   | 1,1          | 633                                                     |
| 2,41                   | 1,3          | 537                                                     |
| 2,41                   | 1,5          | 440                                                     |
| 2,41                   | 1,7          | 343                                                     |
| 2,41                   | 1,9          | 247                                                     |
| 2,41                   | 2,1          | 150                                                     |
| 2,41                   | 2,3          | 48                                                      |

- For H values lower than 600 mm, the value of H considered is 600 mm to comply to IEC 60335-2-40:2018 Clause GG 1.
- For intermediate mmax values, consider the value that corresponds to the higher mmax value from the table. If mmax = 0.6 kg consider the value that corresponds to mmax= 0.7 kg.



## Positioning

The installation has been implemented by qualified technical personnel only and that the instructions contained in the present manual and the local regulations in force have been adhered to.

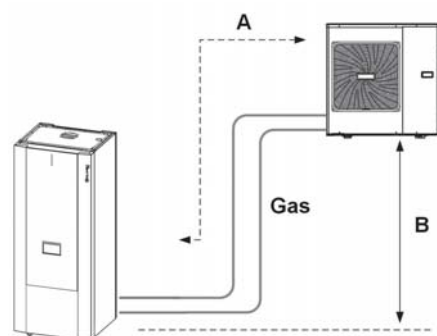
Choose the installation place according to the following criteria:

- customer approval
- safe accessible position
- guarantee good unit operation
- enough space for installation and maintenance shall be preserved.
- make sure that there's no obstacle around the unit
- the base surface should to bear the weight of the unit and suitable for installing the unit without increasing noise or vibration
- carry out maintenance operations
- technical spaces requested by the unit
- water connections
- max. distance allowed by the electrical connections
- max. distance allowed by the refrigeranting connections
- control points with capacity adequate to the unit weight
- verify that all bearing points are aligned and leveled
- sound levels (TECHNICAL INFORMATION section) external unit

## Maximum distance

Refrigerant pipes

| Size                                                                                  |   |   | 2.1 - 8.1 |
|---------------------------------------------------------------------------------------|---|---|-----------|
| Refrigerant pipe min/max equivalent length                                            | A | m | 2 - 30    |
| Maximum refrigerant pipe height difference with outdoor unit higher than indoors unit | B | m | 25        |
| Maximum refrigerant pipe height difference with outdoor unit underthan indoor unit.   | B | m | 25        |





### External unit

- Installed EXTERNAL
- in fixed positions

If the unit is installed on a roof or terrace, check the load capacity and the possibility for discharging the condensate.

Installation standards:

- spaces for the air intake/exhaust
- condensate water draining
- install the unit raised from the ground

Prefer places where the unit doesn't disturb the neighbours.

Avoid installations in places subject to flooding

Avoid installations next to bedrooms or windows.

Avoid snow accumulating obstructing for air ejection and suction

A correct circulation of the air is indispensable to guarantee the good working order of the machine.

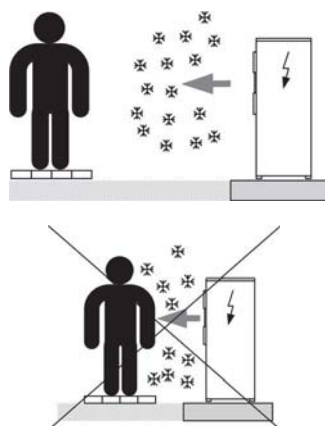
Avoid therefore:

- obstacles to the airflow;
- exchange difficulties;
- leaves or other foreign bodies that can obstruct the exchange batteries;
- winds that hinder or favour the airflow;
- heat or pollution sources close to the unit (chimneys, extractors etc);
- stratification (cold air that stagnates at the bottom);
- recirculation (expelled air that is sucked in again);
- positioning below the level of the threshold, close to very high walls, attics or in angles that could give rise to stratification or recirculation phenomena.
- Ignoring the previous indications could:
  - energy efficiency decrease;
  - blocks due to HIGH PRESSURE (in summer) or LOW PRESSURE (in winter).

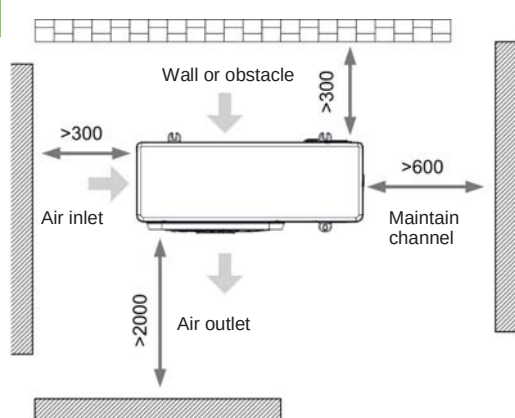


- 1 Consider clearances and direction of expelled air. Single unit installation
- 2 Units side by side
- 3 Units in parallel
- 4 Keep the min. distances from the pedestrian areas.
- 5 Avoid installations next to bedrooms or windows. Consider sound emissions
- 6 Provide windbreaks (or similar) in locations with strong winds.
- 7 Avoid snow accumulations on batteries. Install the unit lifted from the ground.

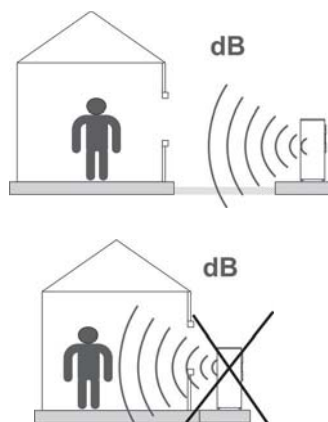
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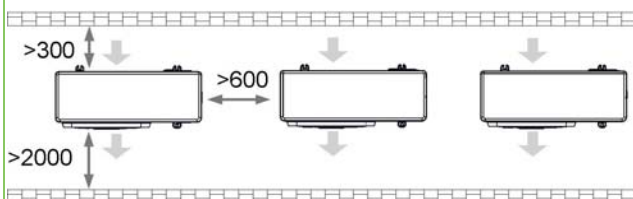
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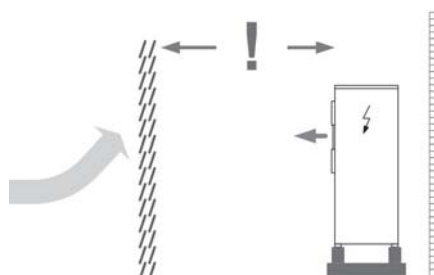
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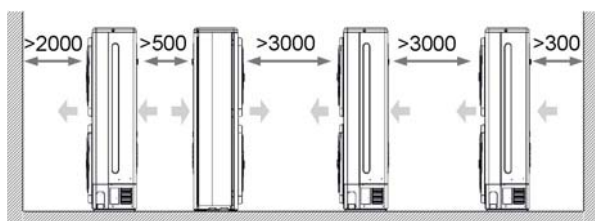
2



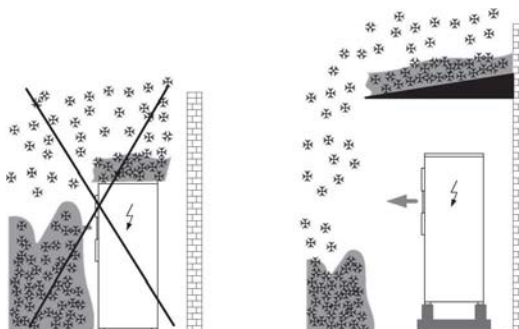
6



3



7





### Installation

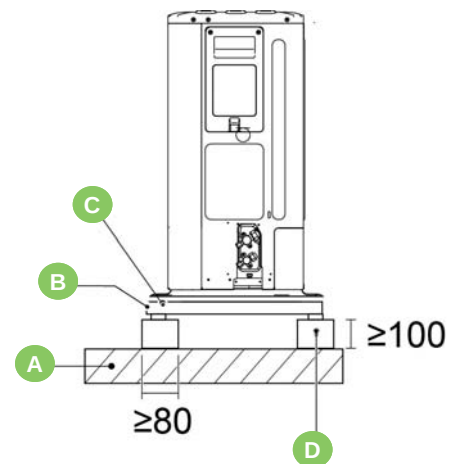
Check the strength and level of the installation ground so that the unit may not cause any vibrations or noise during its operation.

Prepare four sets each of  $\varnothing 10$  Expansion bolts, nuts and washers

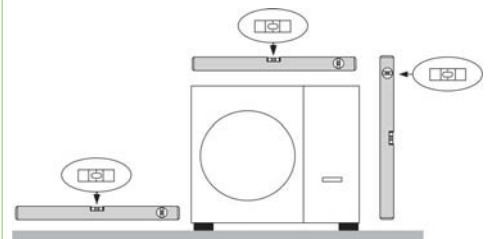
#### NOTE

⇒ Screw in the foundation bolts until their length is 20 mm from the foundation surface.

- A. Floor or roof
- B. Neoprene strip
- C.  $\varnothing 10$  Expansion bolt
- D. Concrete support base  $h \geq 100\text{mm}$



### Levelling unit





### Condensate drain

When a heat pump is running it produces a considerable amount of water due to the defrosting cycles of the external coil.

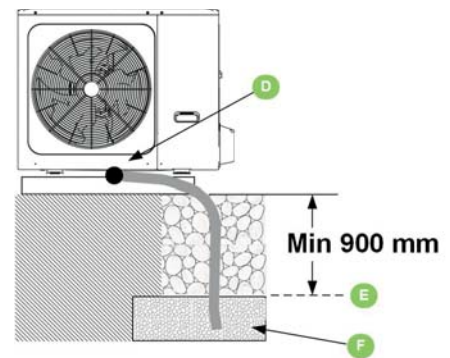
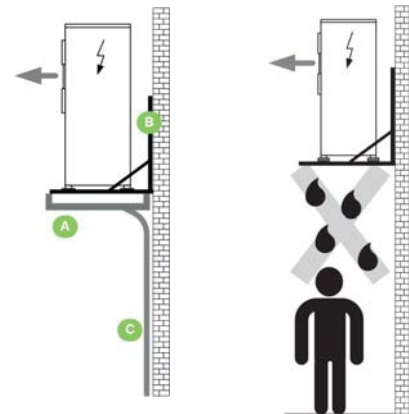
#### NOTE

⇒ The condensation must be eliminated in a manner to avoid wetting pedestrian areas.

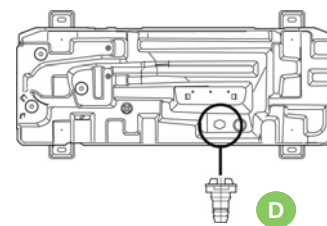
With extensive very cold outdoor temperatures, condensation could freeze outside the unit blocking the flow and causing a slow build-up of ice; therefore special attention must be paid to eliminating condensation, raising the unit off the ground and evaluating whether antifreeze elements should be installed.

To avoid freezing of the water downstream of the drain lay the tube below the frost line (E).

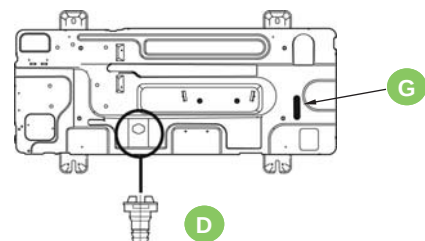
- A DTX = Condensation collection basin (Accessory separately supplied)
- B Unit support ((Accessory separately supplied)
- C Pipe discharge connection (Customer care)
- D Condensate discharge connection Ø 30
- E Frost line
- F Layer of gravel or pebbles to help with condensate drainage
- G This drain hole is covered by rubber plug. If the small drain hole can not meet the drainage requirements, the big drain hole can be used at the same time.



Size 2.1 – 3.1



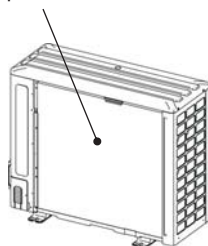
Size 4.1 – 8.1



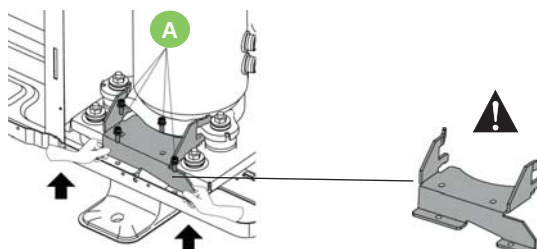


### Remove the compressor fixing bracket (size 6.1-8.1)

Remove panel



Remove screws A



### Internal unit

- installed inside
- in a dry room/compartment where the temperature cannot fall below 0°C degrees
- in fixed positions
- on a flat/vertical wall which is able to support the weight of the module
- the unit must always be handled by at least 2 people

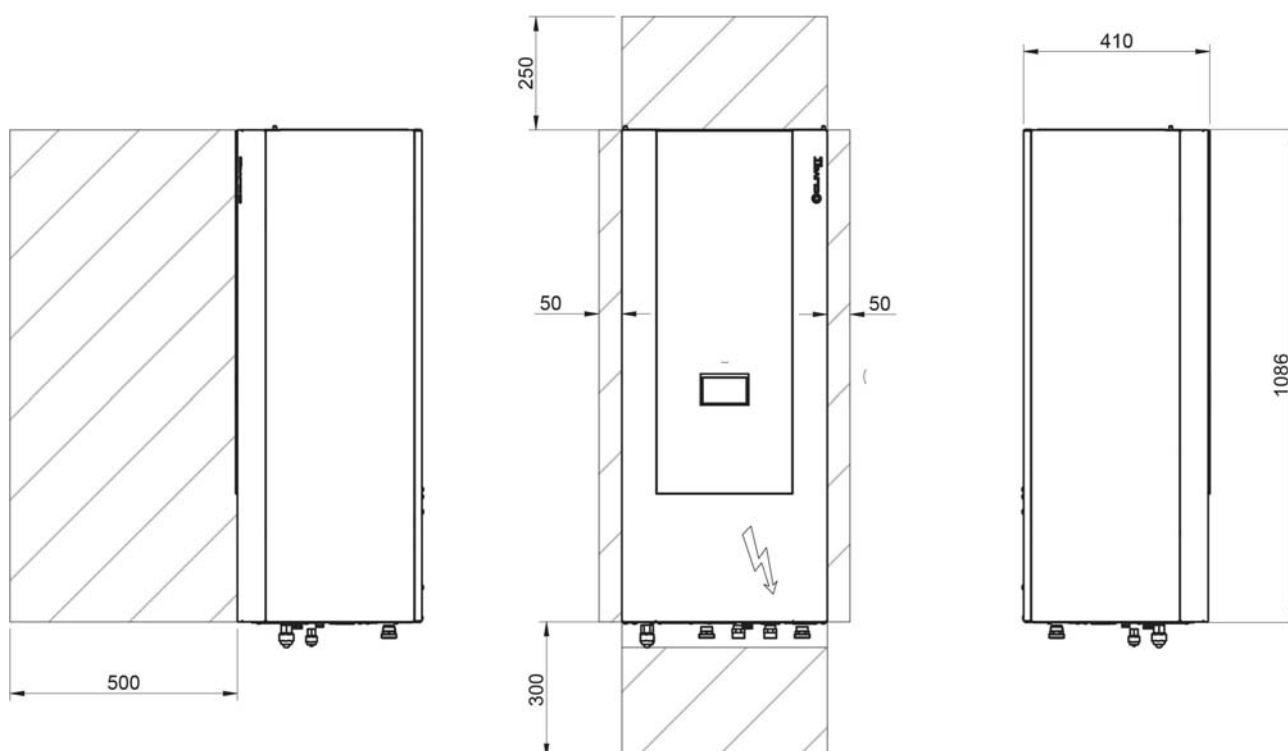
Keep to the indicated safety spaces.

Prefer places where the unit doesn't disturb the neighbours.

Avoid installations in places subject to flooding

Avoid installations next to bedrooms or windows.

The spaces can be occupied by objects that must be easily removeable in case of maintenance interventions.







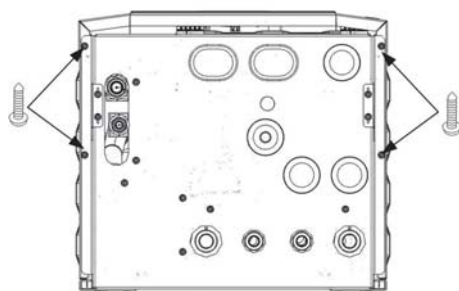
### Access to the internal parts / wall mounting / boiler installation

- 1 Remove the screws
- 2 Remove the panel

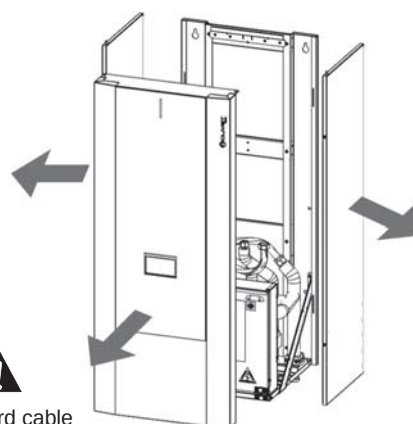
- 3 Fissaggio a muro (total weight with boiler 24kW = 70kg.; boiler 34kW = 79kg.)
- 4 Unit in fixed positions and in bubble level



1

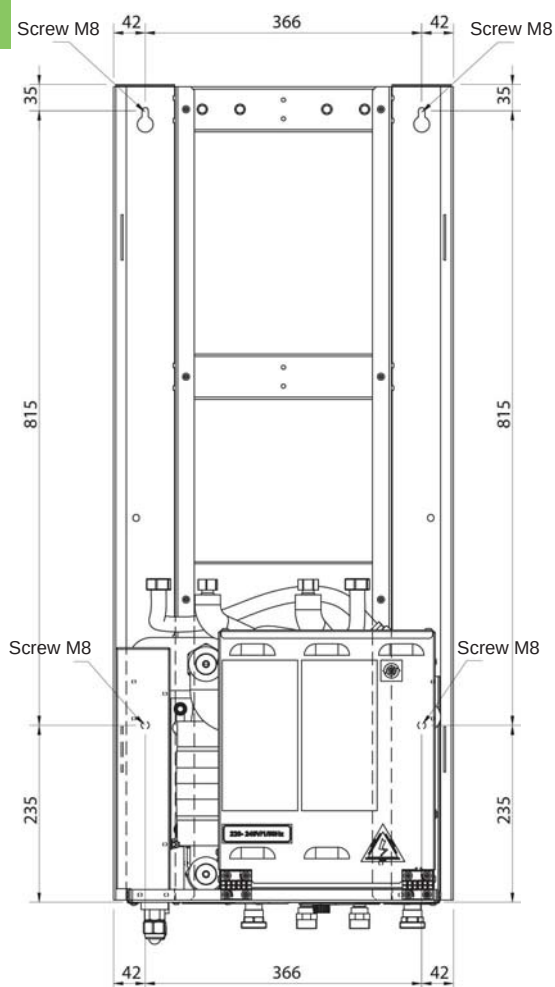


2



Keyboard cable connected

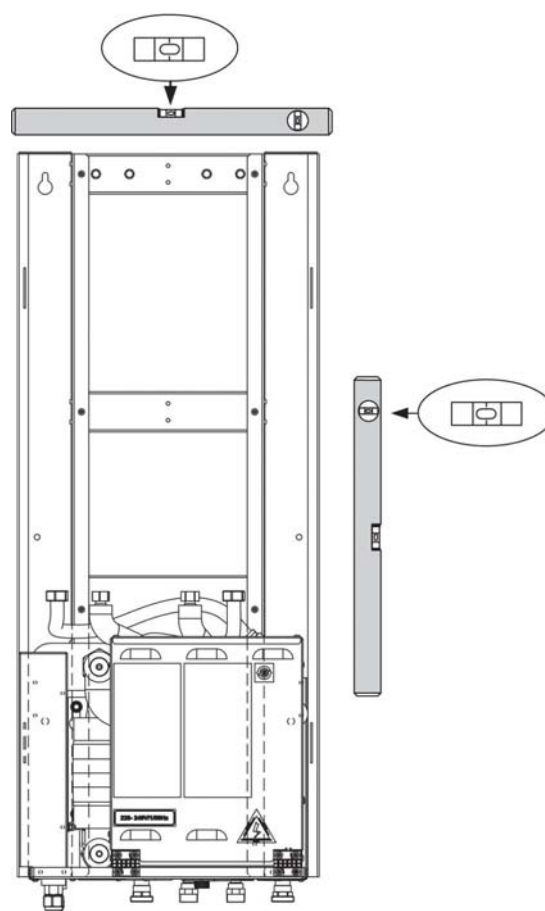
3



Screws / plugs not supplied

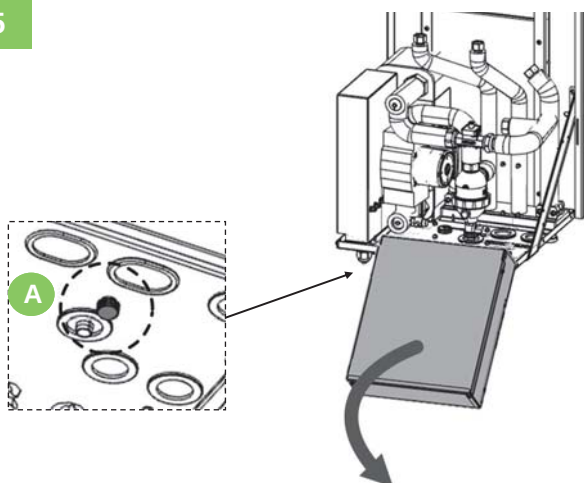


4



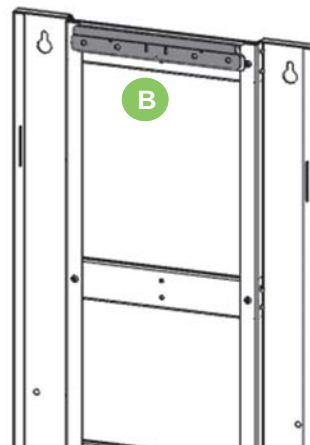


5



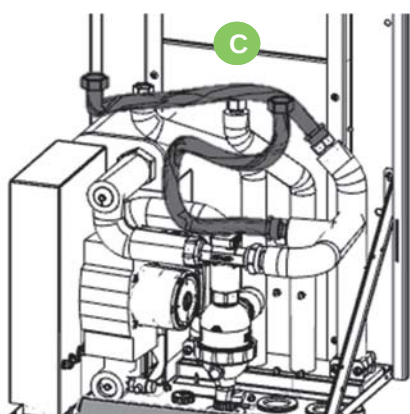
Unscrew the electrical panel lock knob (A)

6



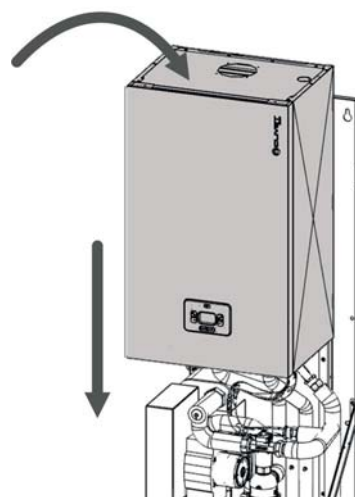
Install the boiler support bracket (B) with 4 M6 screws

7



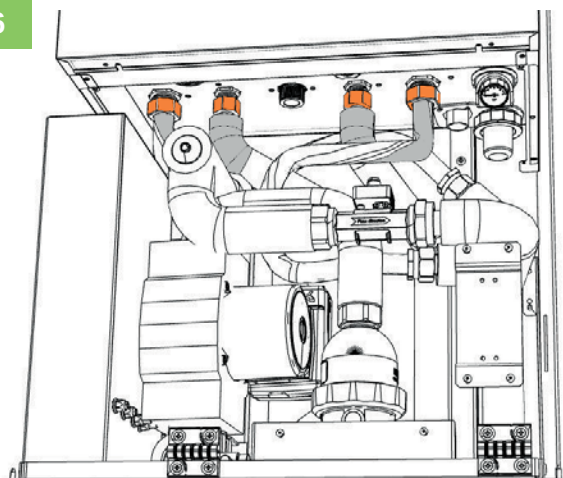
Install pipes (C) + gaskets

8



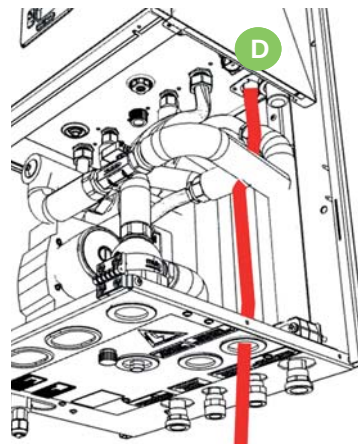
Hook up the boiler

6



Connect pipes + gaskets

7



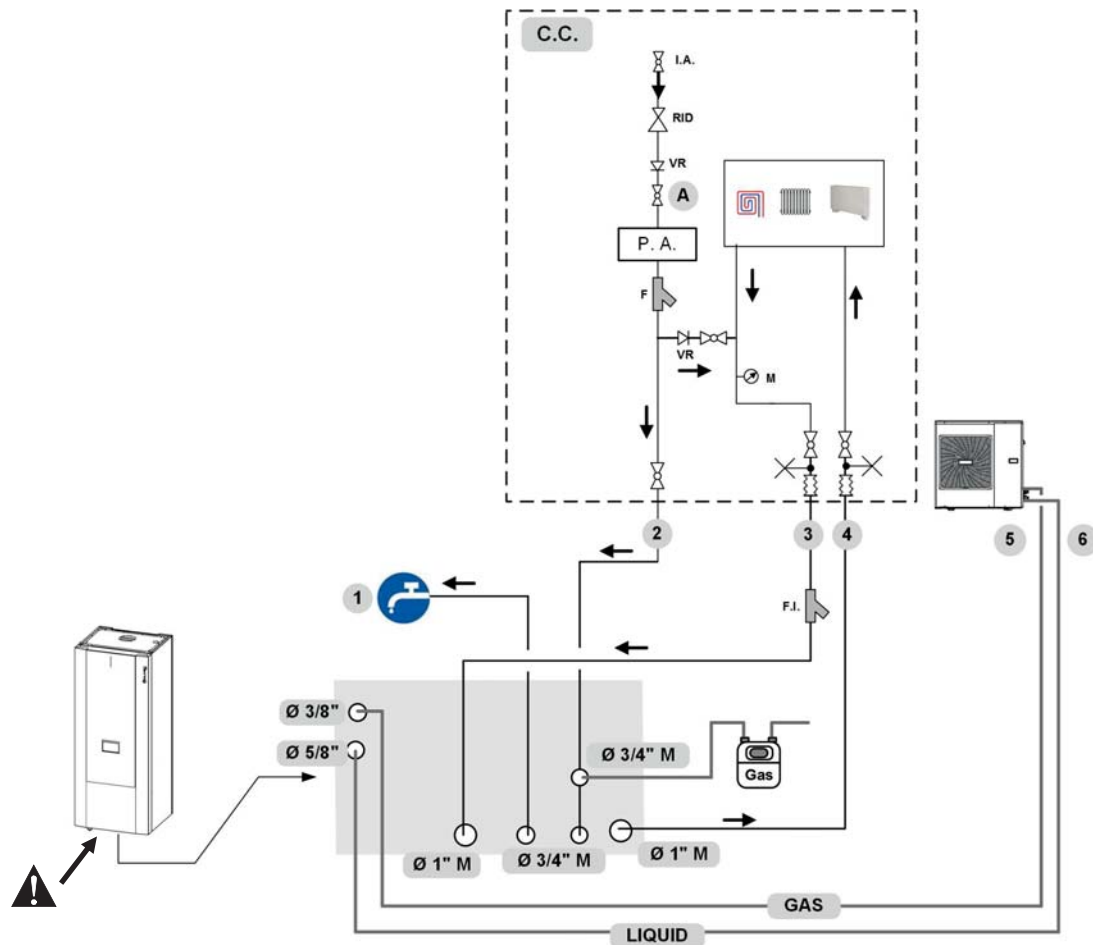
Install the boiler condensate drain pipe (D)  
Connections see manual boiler



In the tightening operations always use the wrench and backup wrench.



### Hydraulic connection schema



**!** Isolate the pipes to avoid heat dispersions and formation of condensate.

Indicative plumbing diagram

The system components must be defined by Designer and Installer (ex. expansion tanks, vents, taps, calibration/safety valves etc.)

**Indispensable components system (not supplied)**

| C.C. | Components provided by Customer         |
|------|-----------------------------------------|
| A    | System valve                            |
| I.A. | Aqueduct inlet                          |
| F    | Water filter (provided by the customer) |
| F.I. | System filter                           |
| M    | Pressure gauge                          |
| P.A. | Descaler protection                     |
| RID  | Pressure reducing valve                 |
| VR   | Check valve                             |

|   |                           |
|---|---------------------------|
| 1 | DHW outlet                |
| 2 | Acqueduct input           |
| 3 | System water return       |
| 4 | System water outlet       |
| 5 | Refrigerant line (liquid) |
| 6 | Refrigerant line (gas)    |
|   | Vent                      |
|   | Cut-off valves            |
|   | Anti-vibration joints     |



In the tightening operations always use the wrench and backup wrench.



### An air bleed valve

Install the highest points of tubes in a way that the air can escape from the circuit.

### Water filter (provided by the client)

The filter is extremely important: it helps to lockout any impurities in the water and avoid clogging the system and heat exchanger.

It must be installed immediately at the entrance to the water mains, in a position that is easily accessible for cleaning.

The filter should never be re-moved.

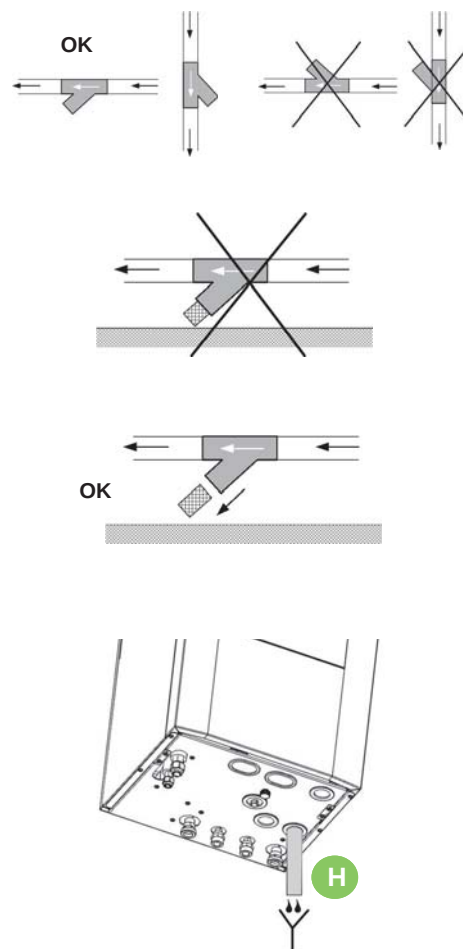
Check for clogging from time to time

### System filter

Must be installed on the system return

The filter must never be removed.

Check for clogging from time to time.



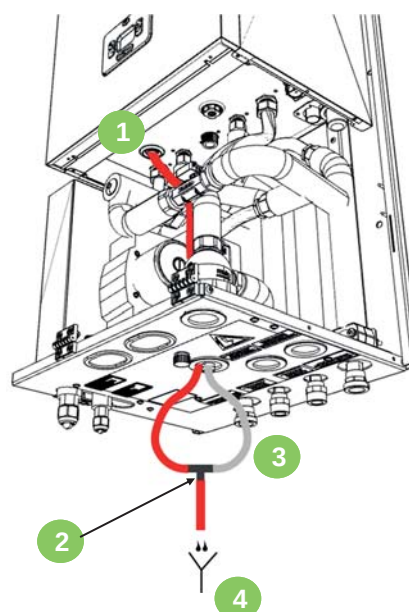
### Connecting the indoor unit drains / safety valve

- Connect a pipe to the safety valve (1) and to the "T" supply (2) and to the magnetic sludge (3).
- Secure the pipe using a pipe clamp and place in an area suitable the drain accumulation / drain pit (4)

⇒ Tubing by the customer (Ø15mm M)

Inside the unit there is a safety valve (3 bar) that must be connected to a suitable drain, otherwise if valve intervened and flood the rooms, the heat pump manufacturer will not be responsible.

|   |                              |      |
|---|------------------------------|------|
| H | Boiler condensate drain      | DN25 |
|   | Drain accumulation/drain pit |      |



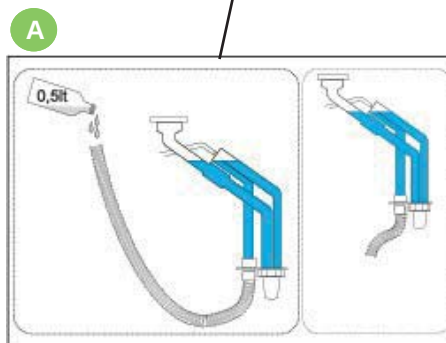
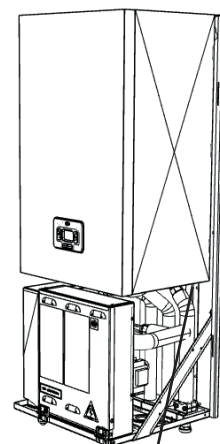


### Boiler condensate drain

⇒ The boiler condensate discharge, must be carried out properly in accordance with the legislation in force and/or national/local regulations in force for wastewater discharge.

#### NOTE

⇒ Fill the trap A (see: boiler manual)





### Note

⇒ If DHW (domestic hot water) storage is present, accessory supplied separately.

Fill the storage tank (DHW) only during the unit start-up.

If the house is not immediately lived, or the unit is turned off for long periods, empty the storage tank to avoid the stagnation of the water, or with temperatures close to 0°C the risk of freeze.

See the instructions for the accessory for details on cleaning the drain storage..

## Water features

### Note

⇒ Circulators function well exclusively with clean and high-quality tap water.

The most frequent factors that can affect circulators and the system are oxygen, limescale, sludge, acidity level and other substances (including chlorides and minerals).

In addition to the quality of water, installation also plays an important role. The heating system must be airtight. Choose materials that are not sensitive to oxygen diffusion (risk of corrosion...).

### Characteristics of the water

- compliant with local regulations
- Langelier Index (LI) between 0 and +0.4
- within the limits indicated in the chart

Water quality must be checked by qualified personnel.

### Hardness

If the water is hard, install a system suitable to preserve the unit from harmful deposits and limestone formation.

If necessary, install a water softener to reduce water hardness

### Cleanliness

Before connecting the water to the unit, clean the system thoroughly with specific products effective to remove residues or impurities that may affect functioning. Existing systems must be free from sludge and contaminants and protected against build-ups.

### New systems

In case of new installations, it is essential to wash the entire installation (with the circulator uninstalled) before commissioning the central installation. This removes residues of the installation process (welding, waste, joint products...) and preservatives (including mineral oil). The system must then be filled with clean high-quality tap water.

### Existing systems

If a new boiler or heat pump is installed on an existing heating system, the system must be rinsed to avoid the presence of particles, sludge and waste. The system must be drained before installing the new unit. Dirt can be removed only with a suitable

### Water component for corrosion limit on Copper

|                                                               |                                                      |     |
|---------------------------------------------------------------|------------------------------------------------------|-----|
| PH                                                            | 7,5 ÷ 9,0                                            |     |
| SO <sub>4</sub> <sup>2-</sup>                                 | < 100                                                |     |
| HCO <sub>3</sub> <sup>-</sup> / SO <sub>4</sub> <sup>2-</sup> | > 1                                                  |     |
| Total Hardness                                                | 8 ÷ 15                                               | °f  |
| Cl <sup>-</sup>                                               | < 50                                                 | ppm |
| PO <sub>4</sub> <sup>3-</sup>                                 | < 2,0                                                | ppm |
| NH <sub>3</sub>                                               | < 0,5                                                | ppm |
| Free Chlorine                                                 | < 0,5                                                | ppm |
| Fe <sub>3</sub> <sup>+</sup>                                  | < 0,5                                                | ppm |
| Mn <sup>++</sup>                                              | < 0,05                                               | ppm |
| CO <sub>2</sub>                                               | < 50                                                 | ppm |
| H <sub>2</sub> S                                              | < 50                                                 | ppb |
| Temperature                                                   | < 65                                                 | °C  |
| Oxygen content                                                | < 0,1                                                | ppm |
| Sand                                                          | 10 mg/L<br>0.1 to 0.7mm max diameter                 |     |
| Ferrite hydroxide Fe <sub>3</sub> O <sub>4</sub> (black)      | Dose < 7.5 mg/L 50% of mass<br>with diameter < 10 µm |     |
| Iron oxide Fe <sub>2</sub> O <sub>3</sub> (red)               | Dose < 7.5mg/L<br>Diameter < 1 µm                    |     |



water flow. Each section must then be washed separately. Particular attention must also be paid to “blind spots” where a lot of dirt can accumulate due to the reduced water flow. The system must then be filled with clean high-quality tap water. If, after rinsing, the quality of the water is still unsuitable, a few measures must be taken to avoid problems. An option to remove pollutants is to install a filter. Various types of filters are available. A mesh filter is designed to catch large dirt particles. This filter is usually placed in the part with the larger flow. A tissue filter is designed to catch the finer particles.

### Exclusions

The warranty does not cover damage formed by limestone, deposits and impurities deriving from the water supply and/or by the malfunctioning of the system cleaning system.

### Note

⇒ *If necessary, fit a water softener to reduce water hardness.*

### Risk of frost

### Note

⇒ *When the outside temperature gets close to 0°C, the water in the pipes and unit may freeze.*

⇒ *Frost may determine irreversible damage to the unit.*

⇒ *Frost damage is not covered by the warranty.*

If the unit or hydraulic connections are subject to temperatures close to 0°C:

- mix water with glycol, or
- safeguard the pipes with heating cables placed under the insulation, or
- empty the system in cases of long non-use

### Anti-freeze solutions

Consider that the use of anti-freeze solution determines an increase in a pressure drop.

Make sure that the glycol type utilized is inhibited (not corrosive) and compatible with the water circuit components.

Do not use different glycol mixture (i.e. ethylene with propylene).



## START-UP

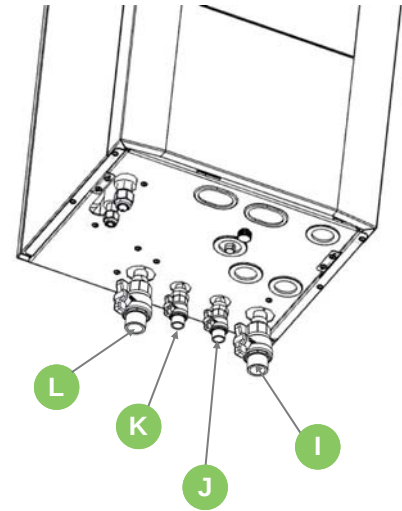


### System charge heating/cooling

- 1 Switch OFF the unit
  - 2 Start filling; open the filling tap located on the system
  - 3 Open taps (L-I)
  - 4 Open the vent valves of the terminals or radiators
  - 5 Close them when water begins to exit; continue the charging until the pressure intended for the system (max.3 bar).
  - 6 Check the hydraulic seal of the joints.
    - Repeat the operation after the unit has operated for a number of hours and periodically control the system pressure.
- Reintegration is carried out when the unit is off (pump OFF).

### Boiler

See: boiler manual "System filling"



|   |                                 |
|---|---------------------------------|
| L | System return                   |
| K | Aqueduct inlet                  |
| J | DHW outlet                      |
| I | System outlet                   |
|   | Taps (provided by the customer) |





## Refrigerant lines

Unit is designed to ensure the best comfort and energy efficiency levels. To maintain these high values is necessary to consider the system details that could adversely affect on performances.

### NOTE

*In particular:*

- ⇒ *the length of the refrigerant piping should be as small as possible ;*
- ⇒ *to realize a path of the pipes as straight as possible by limiting the presence of curves;*
- ⇒ *properly insulate pipes;*
- ⇒ *properly load the refrigerant system.*

### NOTE

- ⇒ *An incorrect sizing can cause damage to the compressor or variations in the cooling capacity .*

When cut-off parts (solenoid valves, taps etc) are installed pay attention to the possible formation of traps for the refrigerant, meaning closed zones up or downstream in which the refrigerant is unable to expand freely.

With an increase in temperature under these circumstances (exposure to the sun, ducting close to heat sources etc) the expansion of the trapped gas could cause an explosion in the refrigerating ducting. Evaluate the possibility of installing a safety valve especially in the ducting of the liquid which is exposed to the most risk.

The operations must be carried out by an expert refrigerationist .

Avoid curves with a too small curving radius.

Avoid squashing the pipes.

Provide anchoring rods to support the ducting (the weight must not be on the unit).

The rods must allow the thermal dilation of the ducting.

Place anti-vibrating material between the rods and the ducting to avoid the transmission of vibrations.

Clean with nitrogen or dry air before attaching the ducting to the two units.

The internal unit and the heat exchanger must be connected with refrigerating ducting suitable for the refrigerant used and covered with thermal insulation.



**Warning:**  
**Fire hazard**  
**Flammable materials**

Before starting light operations:

**safety warnings for**  
**operations on units**  
**containing R32**



## Ducting

### Pressure Equipment Directive

This unit is a subset: to operate it has to be combined to another unit.

It is an installer responsibility :

- follow the PED Directive and to the national regulations of PED Directive realization
- consider the insertion of any additional security devices
- check the safety device operation
- write on the serial label number the amount of total refrigerant
- issue the Declaration of conformity
- inform the user of the need to carry out regular checks

### NOTE

⇒ Use only copper pipes for refrigeration, specifications for R32

The installation of the pipes may affect the level of noise in the system:

- install flexible joints between the unit and the pipes
- Install antivibration material between the brackets and the pipes so as to prevent the transmission of vibrations
- avoid the passage in particularly silent environments

Pipes must be clean.

Plug the ends of the pipe prior to passing it through a hole in the wall (1).

Do not place the ends of pipes which have not been plugged or closed with tape directly on the ground (2).

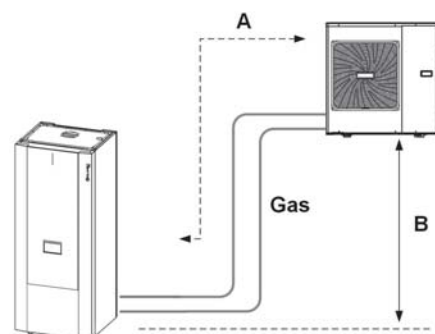
If the installation of the pipes is not to be completed within the next day or for a long period of time, braze the ends of the pipes and introduce nitrogen oxide via a Schrader valve access joint to avoid the formation of humidity and the contamination of the particles.

| Size                                                                                  |   |   | 2.1 - 8.1 |
|---------------------------------------------------------------------------------------|---|---|-----------|
| Refrigerant pipe min/max equivalent length                                            | A | m | 2 - 30    |
| Maximum refrigerant pipe height difference with outdoor unit higher than indoors unit | B | m | 25        |
| Maximum refrigerant pipe height difference with outdoor unit underthan indoor unit.   | B | m | 25        |

Equivalent length of the lines (metres ) = Effective length (metres)  
+ (Q.ty of curves x K)

Consider K=0.3 m for wide radius 90° curves;

Consider K=0.5 m for standard 90° elbow curves





### Internal unit

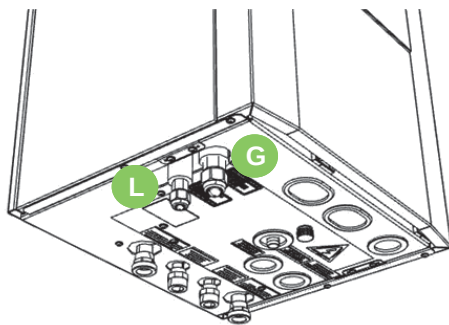
Before attaching the ducting to the two units, clean with dry air or nitrogen.

#### Type of pipes

| Size .                | 2.1 - 3.1     | 4.1 - 8.1     |
|-----------------------|---------------|---------------|
| Liquid Ø external     | 1/4" (6,3mm)  | 3/8" (9,5mm)  |
| Gas Ø external        | 5/8" (15,9mm) | 5/8" (15,9mm) |
| Min. thickness gas    | 0,8 mm        |               |
| Min. thickness liquid | 0,8 mm        |               |

### Refrigerating couplings

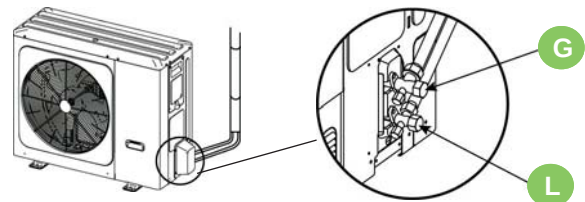
#### 1 Internal unit



**G** Gas line

**L** Liquid line

#### 2 External unit



**G** Gas line

**L** Liquid line

#### 3

Use the components supplied with the unit or perform flaring to make the connections.

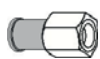
#### Refrigerating line fittings

Size

2.1 - 8.1



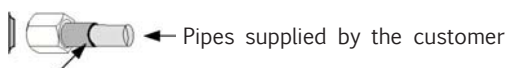
2x5/8" Gas line  
2x3/8" Liquid line



2x5/8" Gas line  
2x3/8" Liquid line



Reduction 10-6 for outdoor unit size 2.1-3.1

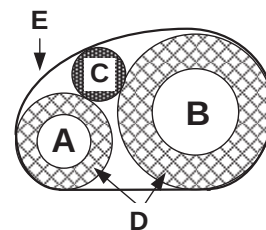


Welding points

#### 4

Insulate pipes.

Use insulation with resistance  $t = 120^{\circ} \text{C}$  with a thickness of at least 13 mm.



**A** Liquid ducting

**B** Gas ducting

**C** Electric cables

**D** Insulation

**E** Sheath - sticky tape



### internal unit vacuum operation

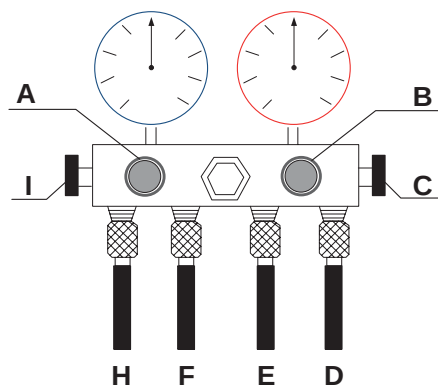
is delivered with charged refrigerator circuits in the following manner:

| External unit charged with refrigerant |          |           |           |           |
|----------------------------------------|----------|-----------|-----------|-----------|
| Size                                   |          | 2.1 - 3.1 | 4.1 - 5.1 | 6.1 - 8.1 |
| R32                                    | kg       | 1,50      | 1,65      | 1,84      |
| * total charge                         | t CO2-eq | 1,02      | 1,11      | 1,24      |

### NOTE

⇒ The refrigerant charge present in the external unit is sufficient up to 15 meters of distance between the 2 units.

| Lengths of ducting exceeding 15 metres          |           |           |
|-------------------------------------------------|-----------|-----------|
| Further refill for distance exceeding 15 metres |           |           |
| Size                                            | 2.1 - 3.1 | 4.1 - 8.1 |
| kg/m                                            | 0,02      | 0,038     |



|   |                           |
|---|---------------------------|
| A | VAC vacuum gauge cock     |
| B | REF refrigerant cock      |
| C | HIGH high pressure cock   |
| D | liquid high pressure pump |
| E | Refrigerant pipe          |
| F | Vacuum pump pipe          |
| H | Low pressure pipe         |
| I | LOW low pressure cock     |

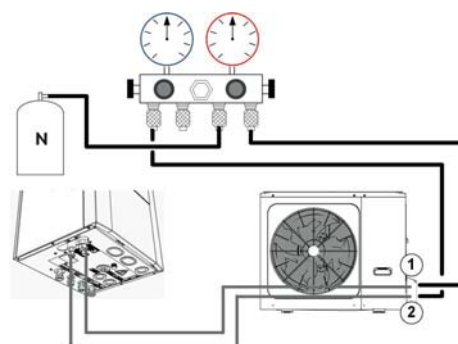


After having completed the refrigerating connections the sealing of the refrigerating circuit must be checked:

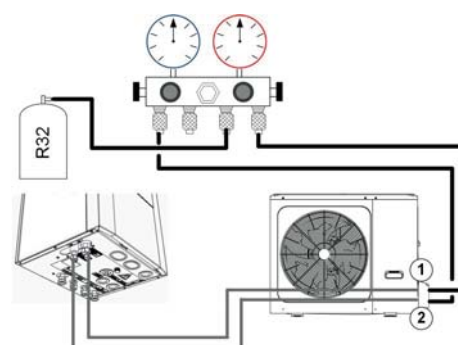
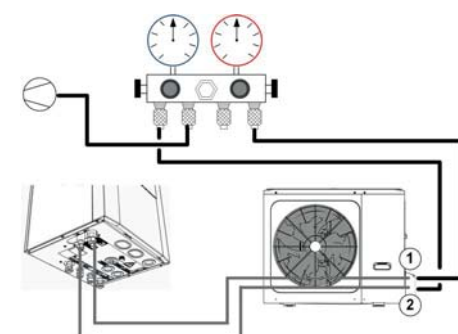
- maintain close the indoor unit cocks **1** and **2**
- connect pipes **D** and **H** to cocks **1** and **2**
- close cocks **A**, **B**, **C** and **I**
- connect **E** to the nitrogen cylinder
- open cocks **C** and **I**
- perform the tightness test
- **Mode 1:** open cock **B**, pressurize the circuit up to 45 bar (see the label) and wait few hours.
- **Mode 2:** open cock **B**, pressurize the circuit up to 65 bar (as according to UNI-EN 378-2 2009:PS x 1,43 law)
- spray using a leak detector spray cocks and pipes and check if bubbles are present (gas leaks)
- if everything is OK, proceed
- discharge the nitrogen from the unit

- connect **F** to the vacuum pump
- open cocks **A**, **C** and **I**
- start the vacuum pump
- in optimal conditions, 15-60 minutes are required to create the vacuum. In the event of high moisture content in the piping or the temperature is  $< 20^{\circ}\text{C}$ , a few hours may be required
- reach the lowest value (approximately 1 mbar = 100 Pa.)
- close cock **A**
- turn off the pump
- overlap the red pointer of the vacuum gauge to the black one
- check the vacuum gauge to ensure that the pressure does not rise, for a few minutes
- if it rises, repeat the procedure
- if everything is OK, proceed

- connect **E** to the coolant cylinder
- open cock **B** to charge the coolant (see table "additional energy exchanger charge")
- close cocks **B**, **C** and **I**
- disconnect pipes **D** and **H** and cocks **1** and **2**



|   |             |
|---|-------------|
| 1 | Gas line    |
| 2 | Liquid line |





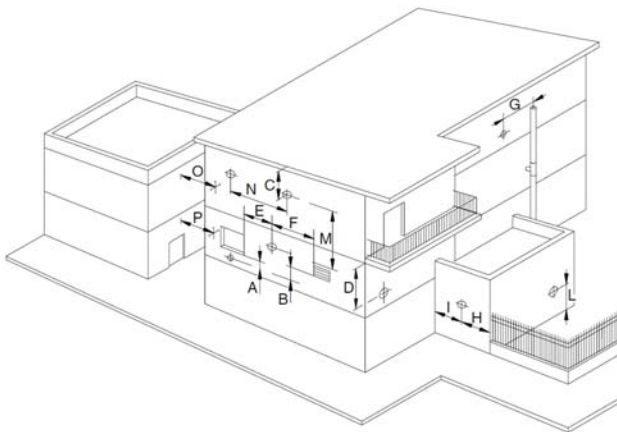
### Drain pipe - by the costumer

For more details: see Boiler manual

The connections to the flues and the wall drains, where admitted, have a fundamental importance for the good operation of the boiler, and must be carried out by the qualified installer in compliance with the national and local technical regulations and standards in force.

The professional is responsible for identifying the applicable dispositions, evaluate case by case the compatibility with them and the need for any changes to the processed diagrams.

### Wall drains positioning

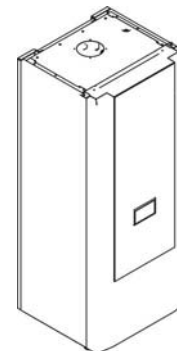


| Drain positioning                                                                          | Distances | Boiler |
|--------------------------------------------------------------------------------------------|-----------|--------|
|                                                                                            |           | (mm)   |
| Underneath window                                                                          | A         | 600    |
| Underneath aeration opening                                                                | B         | 600    |
| Underneath waterspout                                                                      | C         | 300    |
| Underneath balcony **                                                                      | D         | 300    |
| From an adjacent window                                                                    | E         | 400    |
| From an adjacent aeration opening                                                          | F         | 600    |
| From vertical or horizontal drains or piping ***                                           | G         | 300    |
| From a corner of the building                                                              | H         | 300    |
| From a recess of the building                                                              | I         | 300    |
| From the ground or other ground surface                                                    | L         | 2500   |
| Between two drains in vertical                                                             | M         | 1500   |
| Between two drains in horizontal                                                           | N         | 1000   |
| Between 2 buildings without openings or drains within a range of 3 m from the fumes outlet | O         | 2000   |
| Likewise, but with openings or drains within a range of 3 m from the fumes outlet          | P         | 3000   |

\*\* The drains placed underneath the balcony must protrude over its end, including the height of the protective railing (if present), must not be < at 2m.

\*\*\* The exhaust of the drain fumes has a high temperature and must not be in contact with flammable materials (e.g. wooden attics, plastic gutters, etc...) keep at distance not < 500 mm or adopt any protective measures.

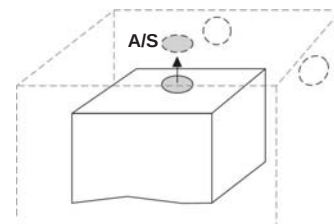
### Unit



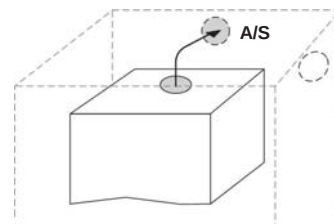
### Possible coaxial tube outlets

A/S = return air / exhaust fumes

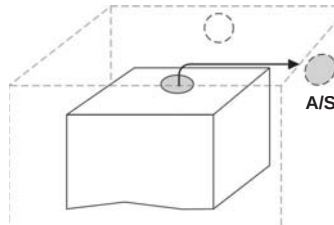
#### Top outlet



#### Rear outlet

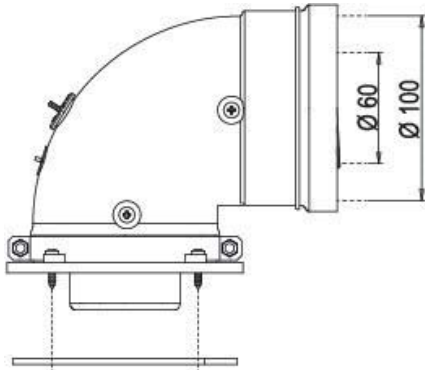


#### Right outlet



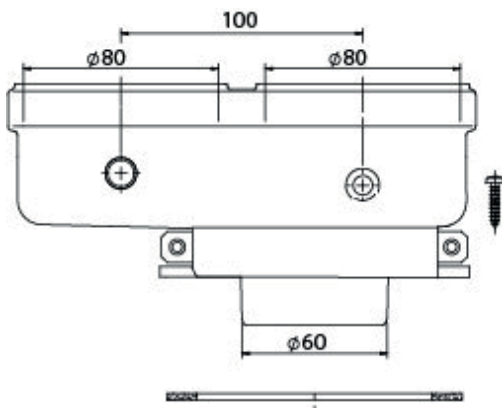


### CCOAX - Horizontal coaxial curve Ø 60/100 adjustable at 360 °



Accessory separately supplied

### KSDFX - Suction and exhaust fittings 80mm diameter



Accessory separately supplied

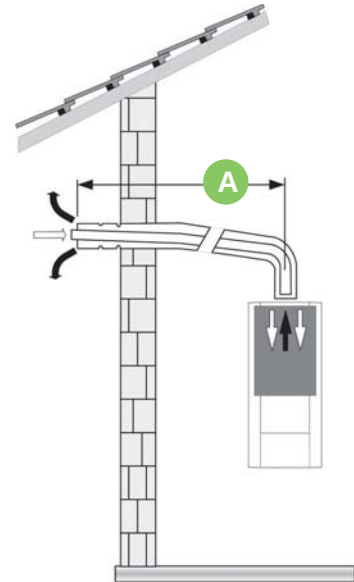
### KCSAF - Vertical coaxial connection Ø 60/100



Accessory separately supplied

### Coaxial drain length

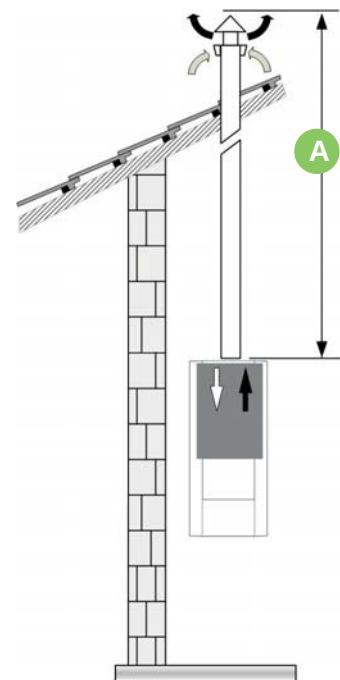
It allows flue gas emission and the intake of air from the outside wall.



|   |         |
|---|---------|
| A | Max 7 m |
|---|---------|

### Coaxial drain length

It allows flue gas emission and the intake of air directly from the roof.



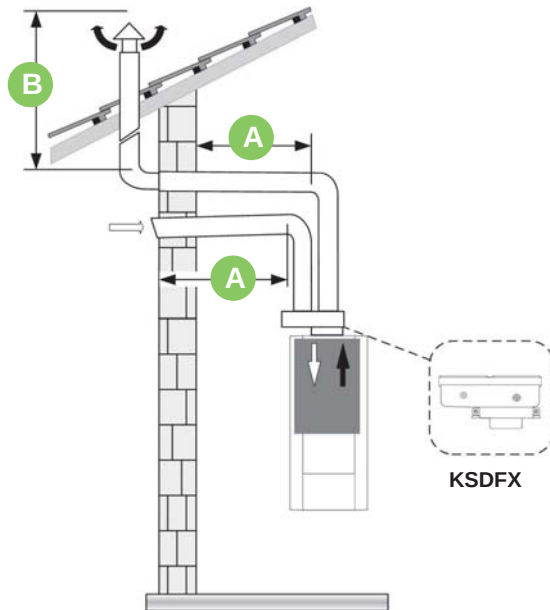
|   |         |
|---|---------|
| A | Max 7 m |
|---|---------|



### Split drain length

The two-pipe system allows the flue gas emission along the flue and intake of air directly from the outside.

**KSDFX** - Suction and exhaust fittings 80mm diameter (accessory separately supplied)

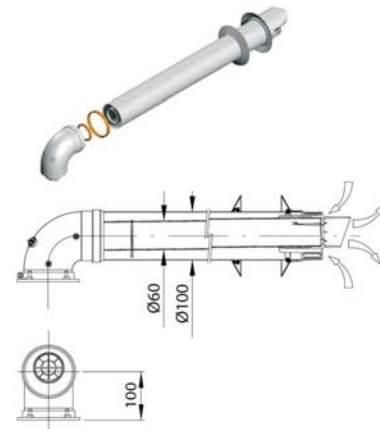


|   |                                 |
|---|---------------------------------|
| A | Max. 4 m Ø 80                   |
| B | Max. 22 m Ø 50 / Max. 60 m Ø 60 |

Connection to chimney, flue or wall drain where admitted, must be realised with the specific fumes drain kits (supply by the customer).

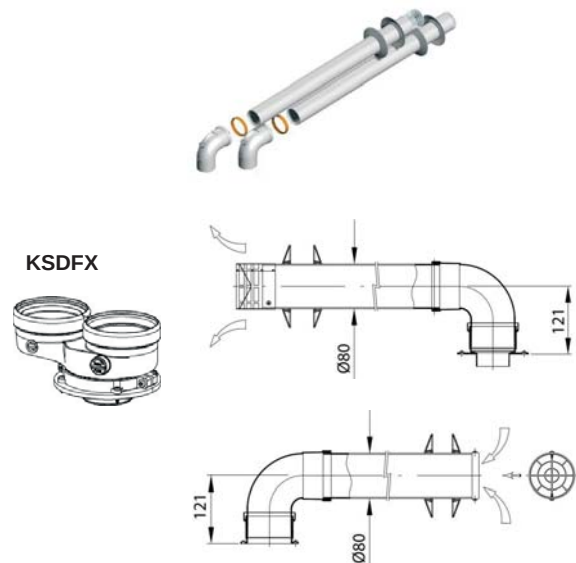
⇒ *Bear in mind that the insertion of every bend on the path entails the decrease of the maximum admitted length.*

### Coaxial drain Ø 60/100 (horizontal)



| Bend | Maximum length reduction |
|------|--------------------------|
| 90°  | - 1 m                    |
| 45°  | - 0,5 m                  |

### Split drain Ø 80/80 (horizontal)

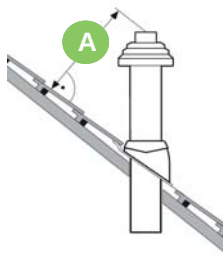


| Bend              | Maximum length reduction |
|-------------------|--------------------------|
| Air intake 90°    | - 1,5 m                  |
| Smoke exhaust 90° | - 2,0 m                  |





### Roof drain

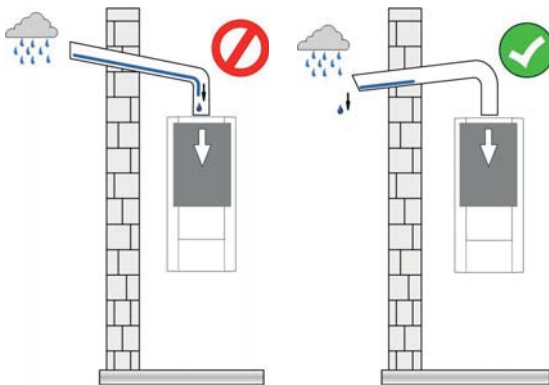


|   |            |                                  |
|---|------------|----------------------------------|
| A | $\geq 500$ | In areas with abundant snowfalls |
|---|------------|----------------------------------|

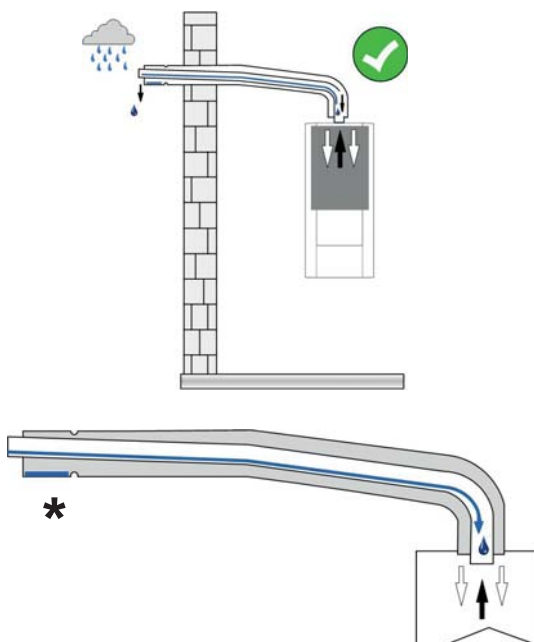
### INSTALLATION EXAMPLES

#### Intake

Avoid the rain input



#### Coaxial pipe



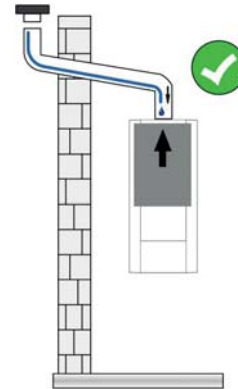
Uphill fumes, return of condensate

\* Rib for rain block

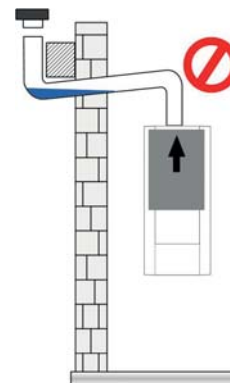
### Drain

The flue gas emissions and collection of condensate must be carried out correctly according to the applicable national and local technical and regulatory provisions.

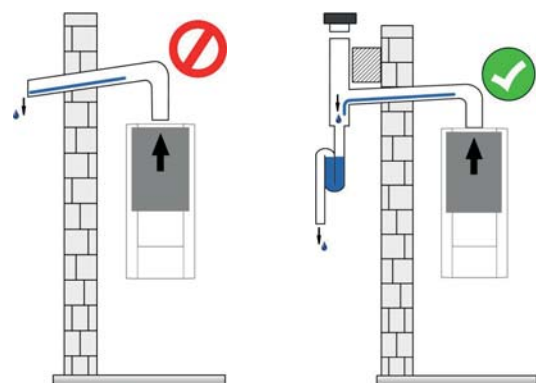
Allow the condensate return



Avoid condensate stagnations



Not dripping the condensate



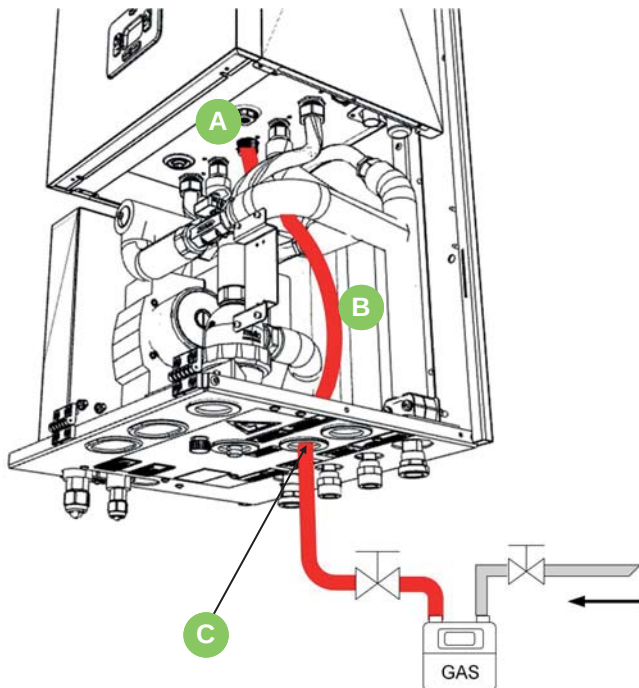


### Gas line connection

The gas connection must be carried out by the qualified installer in compliance with the national standards.

- ⊖ It is strictly forbidden to use hemp or teflon to connect the boiler to the gas mains.
  - ⚠ This appliance must only be installed in adequately ventilated environments.
  - ⚠ The air inlet must be positioned at floor level in a way that cannot be obstructed and is protected with a grille that does not reduce the air passage section.
- 1 Install a shut-off cock upstream of the appliance
  - 2 Install a gas mesh filter on the tap mounted on the boiler if there is any danger of contamination of the gas
  - 3 Check the distributed gas is the one for which the boiler was designed
  - 4 The gas supply pressure falls within the values indicated on the data plate

- 5 The piping must be equipped with all the safety and control devices prescribed by applicable law
  - 6 The piping must have an adequate section according to the required flow rate and its length
  - 7 Clean all gas supply system piping to avoid any residues that might jeopardise the good operation of the boiler
  - 8 Check the gas supply line is conform with the current prescriptions and standards
  - 9 Check internal and external seal of the system and of the gas connections
  - 10 Open the meter cock and bleed any air contained inside the system piping.
- A. Gas inlet Ø 3/4" M flat seat.  
B. Route the gas tube into the unit  
C. Boiler gas hose routing



The boiler can function with the following modes :

- domestic hot water production in case of heat pump switch-off for inadequate functioning conditions (low external temperature)
- system heating without domestic hot water request and in case the heat pump is unable to reach the setpoint set within the envisioned times
- antilegionella cycles in the domestic hot water
- domestic hot water (it is not instantaneous, the accumulation is heated through the exchange coil) and system heating in integration, in replacement or in case of fault of the heat pump.

It is not possible to request electric heaters instead of the standard condensing boiler.

The system expansion vessel is the one in the boiler.





The characteristics of the lines must be determined by specialized personnel able to design electrical installations in compliance with regulations in force.

The protective equipment of the unit supply line must be able to shut-off the presumed short circuit current, which value must be determined in accordance with the system features.

The power cable and protection cable section must be defined in accordance with the characteristics of the protections adopted.

All electrical operations should be performed by trained personnel having the requirements envisaged by the regulations in force and informed about the risks relevant to these activities.

Operate in compliance with safety regulations in force.

### Electric data

The serial number label reports the unit's specific electrical data, electrical accessories included.

The electrical data indicated in the technical bulletin and in the manual refer to the standard unit, accessories excluded.

The label reports the indications envisaged by regulations, in particular:

Voltage

F.L.A.: full load ampere, absorbed current at maximum admitted conditions

F.L.I.: full load input, full load power input at max. admissible condition

Electrical wiring diagram No.

### Connections

Refer to the unit's electrical diagram (the number of the diagram is shown on the serial number label)

Verify that the electrical supply has characteristics conforming to the data shown on the serial number label.

Before starting work, ensure the unit is isolated, unable to be turned on and a safety sign used.

Ensure correct earth connection.

Ensure cables are suitably protected.

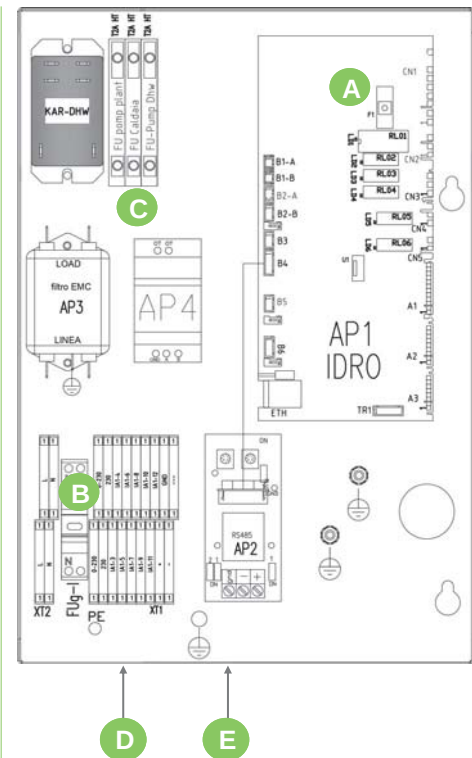
Before powering the unit, make sure that all the protections that were removed during the electrical connection work have been restored.





## Internal unit fuses - 220-240/1/50

|   |                      |
|---|----------------------|
| A | Fuse card            |
| B | Fuse general         |
| C | Fuse DHW pump        |
|   | Fuse pump/circulator |
|   | Fuse boiler          |
| D | Power input          |
| E | Signal input         |



## Internal unit connections

To access the panel see "Access to internal parts"  
Carry out the connection in accordance with the electric connection layout.

Wiring size (mm<sup>2</sup>) = 1,5

Stated values are maximum values (see electrical data for exact values).

### Note

- ⇒ The ground fault circuit interrupter must be a high-speed type breaker of 30 mA (<0.1 s).
- ⇒ Use a 3-conductor shielded cable.

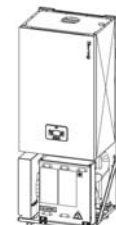
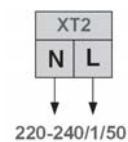
## Boiler connections

Boiler communication.

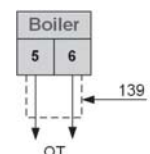
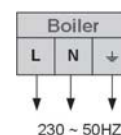
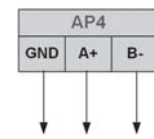
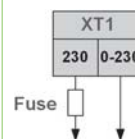
Connect contacts 5-6 with OT (Open Therm) (connection "139 - Remote control" see boiler manual).

## 1-phase supply

### Power



### Signal





## Optional connections

### Digital input configuration (password protected)

Different configuration combinations are available using inputs DI1 and DI2.

Configuration parameters

parameter **9 ConfigF-DI1**

parameter **10 ConfigF-DI2**

| value      | description                                                                         |
|------------|-------------------------------------------------------------------------------------|
| <b>0 =</b> | Ingresso disabilitato                                                               |
| <b>1 =</b> | Remote ON-OFF input<br>DHW production with open contact is not active               |
| <b>2 =</b> | Remote mode change input (hot/cold)                                                 |
| <b>3 =</b> | Remote system call input<br>DHW production remains active even with open contact    |
| <b>4 =</b> | Second remote system set point                                                      |
| <b>7 =</b> | Enable DHW resistance from digital Input up to SetHotH2O<br>(photovoltaic function) |

### Remote ON/OFF

Enables the unit to be turned on remotely ( e.g. by a thermostat or timer)

### Remote mode change (hot/cold)

Enables the mode to be changed from heating to cooling by a remote control unit.

### Remote system call

Enables the unit to be turned on in response to an environment heating signal (e.g. room thermostat)

### Second remote system set point

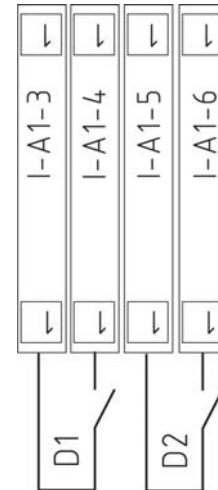
Enables a second ambient set point to be selected to minimise energy consumption.

### DHW production from photovoltaic

The electric heater for the production of domestic hot water can be supplied by photovoltaics if excess energy is available.

Enabling is via digital consent.

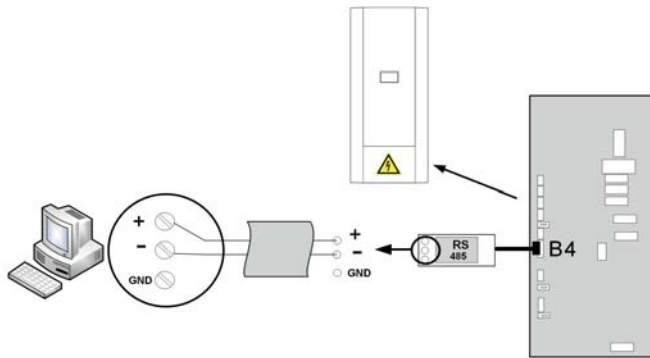
### Terminal block of the customer connections





## Supervisor (opzione)

The unit can be connected to ELFOControl3 or an external supervisor system. In this case follow the connections as shown.



| Connections |                        |               |      |                       |                             |                   |
|-------------|------------------------|---------------|------|-----------------------|-----------------------------|-------------------|
| Rif.        | N° of connection       | Section (mm²) |      | Nominal capacity pF/m | Impedance characteristics Ω | Recommended cable |
|             |                        | Min           | Max  |                       |                             |                   |
| RS485       | 2 twisted and shielded | 0,22          | 0,35 | <50                   | 120                         | BELDEN 3105A      |

Recommended cable Belden 3105A or others with equal properties

Configuration:

| parameter | description | Extended description                                   |
|-----------|-------------|--------------------------------------------------------|
| 101       | Adress      | ModBus supervision serial address                      |
| 102       | BaudRate    | Baud Rate (0=4800 / 1=9600 2=19200) supervision serial |
| 103       | Parity      | Parity 0=NO / 1=Odd 2=Even supervision serial          |

To use unit in a MODBUS network it is necessary to address the RS-485 MODULE by S3, S4, S5 ; allowed and valid addresses from 1 to 127

S5 - it sets the address hundreds : ON = 100, OFF = 0

S3 - it sets the address dozens

S4 - imposta le unità dell' indirizzo

S1 - 485 terminator : ON = termination YES

S2 - line polarizer

Inside the 485 network must be polarized only one board, usually is polarized the master, i.e. the PC; in this case S2 = OFF

= polarization NO

If more cards are polarized, faults occur

J1 - RS 485 serial

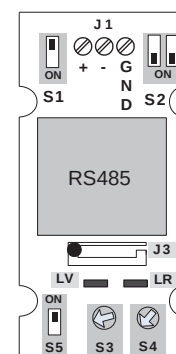
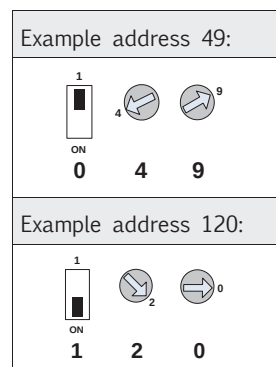
J3 - TTL serial

LV = green led : OK

LR = red led quick flashing::

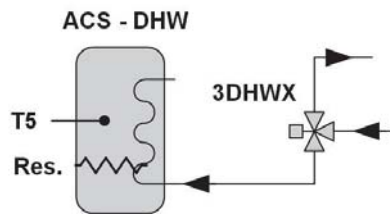
wrong address

faulty module





### 3 Three-way valve for domestic hot water(option)



T5 = storage tank probe

3DHWX = 3-way valve

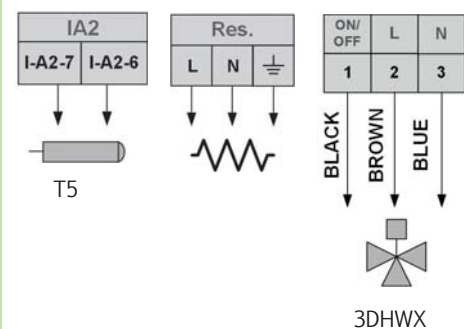
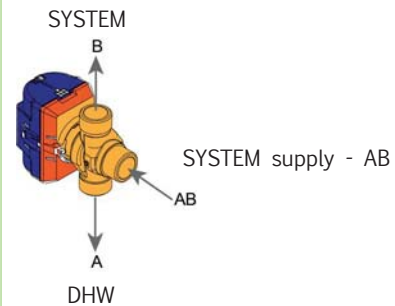
Res. = storage tank resistance not supplied

#### Parameters setting

Par. 1 TypeMachine = 2

Par. 3 EnH2OSan = 2

Par. 52 DelayValvs = H2Osanitary valve opening time



### Elfocontrol<sup>3</sup> EVO (option)

Equipped with:

12Vdc AL12X feeder

Ethernet/485 converter

Ethernet UTP cat.5 cable (5 m long)

For details, see instructions ELFOControl3 manual





### SMART GRID management - Photovoltaic

| Energy cost | Contact |         | Electric heater available | Operation                  |                                                                                                                   |
|-------------|---------|---------|---------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------|
|             | SG      | EVU     |                           | System                     | DHW                                                                                                               |
| Free        | Boosted | Boosted | -                         | Standard                   | When there is no demand for system heating/cooling: forced domestic hot water operation with T5S set point = 60°C |
|             |         |         | IBH                       |                            |                                                                                                                   |
|             |         |         | TBH                       |                            | Forced domestic hot water operation with T5S set point = 70°C.                                                    |
|             |         |         |                           |                            | TBH is forcibly started until the domestic hot water set point is reached.                                        |
|             |         |         |                           |                            | If necessary, the Heat Pump can work simultaneously on the Heating/Cooling system.                                |
| Economical  | OFF     | Boosted | -                         | Standard                   | The domestic hot water set point is forced to T5S + 3°C.                                                          |
|             |         |         | IBH                       |                            |                                                                                                                   |
|             |         |         | TBH                       |                            | The domestic hot water set point is forced to T5S + 3°C                                                           |
|             |         |         |                           |                            | The TBH is forced to start when T5 < T5s - 2°C and stops when T5 ≥ T5s + 3°C                                      |
| Standard    | OFF     | OFF     | Any                       | Standard                   | Standard                                                                                                          |
| Expensive   | Boosted | OFF     | -                         | Immediate forced shut down | Immediate forced shut down **                                                                                     |
|             |         |         |                           |                            |                                                                                                                   |

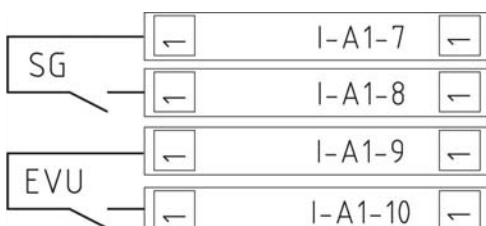
\* when IBH and TBH are enabled together, IBH can only be used for system heating.

\*\* DISINFECT, FAST DHW, STORAGE TANK and other domestic hot water-related functions do not work.

Note: frost protection and defrosting operate smoothly in all conditions.

Note: if AHS is available, it can operate for Heating, Cooling or DHW in any of these conditions.

### Terminal block of the customer connections







### External unit connections

Carry out the connection in accordance with the electric connection layout.

Remove the protective cover (A)

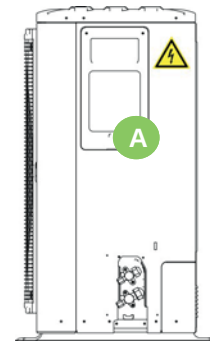
| Unit (kW)                           | 1-phase |         |         | 3-phase |
|-------------------------------------|---------|---------|---------|---------|
|                                     | 2.1-3.1 | 4.1-5.1 | 6.1-8.1 | 6.1-8.1 |
| Maximum overcurrent protector (MOP) | 18      | 19      | 30      | 14      |
| Wiring size (mm <sup>2</sup> )      | 4       | 4       | 6       | 2,5     |

Stated values are maximum values (see electrical data for exact values).

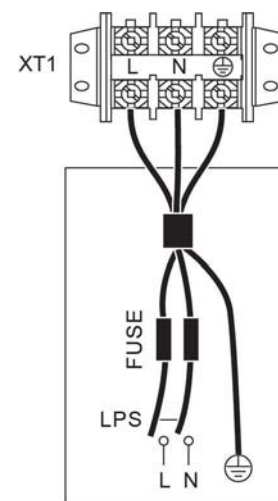
#### Note

⇒ The ground fault circuit interrupter must be a high-speed type breaker of 30 mA (<0.1 s).

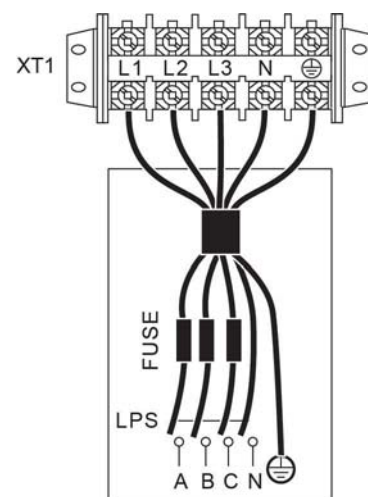
⇒ Use a 3-conductor shielded cable.



#### 1-phase supply



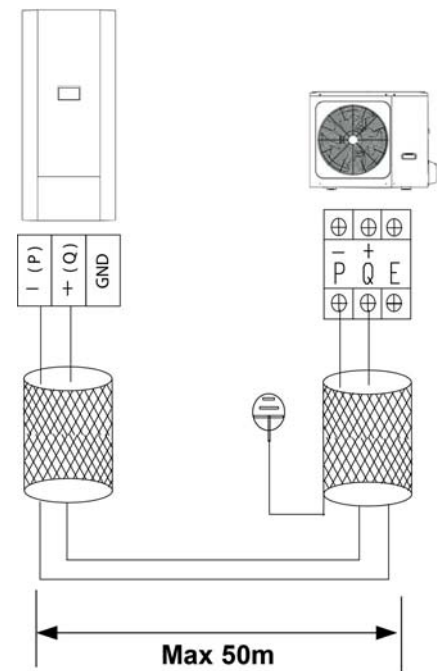
#### 3-phase supply





### Bus connections

Use a 2-conductor shielded cable as an internal/external signal cable, and earth the shielding.



|            |                                                                   |
|------------|-------------------------------------------------------------------|
| Cable type | 2-core shielded wire 0,75 - 1,25 mm <sup>2</sup><br>(AWG18-AWG16) |
|------------|-------------------------------------------------------------------|



## General

The indicated operations should be done by F.GAS qualified technician with specific training on the product. Upon request, the service centres performing the start-up.

The electrical, water connections and the other system works are by the installer.

Agree upon in advance the start-up data with the service centre.

Before checking, please verify the following:

- the unit should be installed properly and in conformity with this manual
- the electrical power supply line should be isolated at the beginning
- the unit isolator is open, locked and equipped with the suitable warning
- make sure no tension is present

## WARNING

⇒ After turning off the power, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.

⇒ Before accessing check with a multimeter that there are no residual stresses.

## Preliminary checks

The following check list is a brief reminder of the points to check and of the operations to perform to start-up the unit.

For details on the points mentioned in the check list refer to various chapters of the manual.

| ✓  | Preliminary checks                                                                                                       |
|----|--------------------------------------------------------------------------------------------------------------------------|
| 1  | <input type="checkbox"/> Are the functional spaces of the internal unit and the external unit being observed ?           |
| 2  | <input type="checkbox"/> Is the section of the cooling lines correct ? Have the supplied sealing couplings been used ?   |
| 3  | <input type="checkbox"/> Does the equivalent length of the refrigerant piping exceed 2 or ≤30m?                          |
| 4  | <input type="checkbox"/> Is the height different of the refrigerant piping below 25m?                                    |
| 5  | <input type="checkbox"/> Have emptying and additional load been carried out ? Was there a visual check for oil / leaks ? |
| 6  | <input type="checkbox"/> Water features are suitable? The hydraulic system has been cleaned?                             |
| 7  | <input type="checkbox"/> Is the water filter from the waterworks inlet correctly installed ?                             |
| 8  | <input type="checkbox"/> Is the system filter on the supply correctly installed?                                         |
| 9  | <input type="checkbox"/> Are the inlet and outlet of the water lines correct ?                                           |
| 10 | <input type="checkbox"/> Is there a non-return valve on the DHW recirculation line?                                      |
| 11 | <input type="checkbox"/> Present safety valve on the DHW side?                                                           |
| 12 | <input type="checkbox"/> Present expansion vessel on the DHW side?                                                       |
| 13 | <input type="checkbox"/> Has the compressor support bracket been removed?                                                |
| 14 | <input type="checkbox"/> Does the system contain the minimum required amount of water?                                   |



|    |                          |                                                                                       |
|----|--------------------------|---------------------------------------------------------------------------------------|
| 15 | <input type="checkbox"/> | Are the anti-vibration joints on the hydraulic connections present ?                  |
| 16 | <input type="checkbox"/> | Was the system loaded, placed under pressure and was the air let out ?                |
| 17 | <input type="checkbox"/> | Have you verified the expansion tank charge ?                                         |
| 18 | <input type="checkbox"/> | Is the solar installation present? The circuit is charged?                            |
| 19 | <input type="checkbox"/> | Was the condensate produced by the external unit drained correctly ? Can it freeze ?  |
| 20 | <input type="checkbox"/> | Have the electrical connections to the external unit been made ?                      |
| 21 | <input type="checkbox"/> | Earthing connection?                                                                  |
| 22 | <input type="checkbox"/> | ELFOControl <sup>3</sup> EVO is correctly installed? (Only if present)                |
| 23 | <input type="checkbox"/> | Have optional electrical connections been made ? (summer/winter, second set, etc....) |
| 24 | <input type="checkbox"/> | Is the power supply correct ?<br>Is the available power supply sufficient ?           |
| 25 | <input type="checkbox"/> | Are the system temperature and the room temperature with the operating limits ?       |
| 26 | <input type="checkbox"/> | Is the screed "dry" ? (only in presence of radiant panels)                            |

## Start-up sequence

### Unit power supply ON

|   |                          |                                                                                                          |
|---|--------------------------|----------------------------------------------------------------------------------------------------------|
|   | ✓                        | <b>Start-up sequence</b>                                                                                 |
| 1 | <input type="checkbox"/> | Has the carter resistance been charged for at least 8 hours ?                                            |
| 2 | <input type="checkbox"/> | Select keyboard language                                                                                 |
| 3 | <input type="checkbox"/> | Set date and time                                                                                        |
| 4 | <input type="checkbox"/> | Sanitary water and system personalisation                                                                |
| 5 | <input type="checkbox"/> | Personalise anti-dew compensation (if radiant panels are present) only from ELFOControl <sup>3</sup> EVO |
| 6 | <input type="checkbox"/> | Enable solar (if present)                                                                                |
| 7 | <input type="checkbox"/> | Compile documentation                                                                                    |



### Refrigerant circuit

- 1 Visually inspect the refrigerating circuit: the presence of oil stains can be a symptom of leakage (caused e.g. by transportation, handling or other).
- 2 Verify that the refrigerating circuit is in pressure: Using the unit manometers, if present, or service manometers.
- 3 Make sure that all the service outlets are closed with proper caps; if caps are not present a leak of refrigerant can be possible.
- 4 Open all of the refrigeration circuit shut-off valves (if applicable).

### Hydraulic circuit

- 1 The unit is fitted with a flowmeter that is used as a safety device and cannot be bypassed due to warranty purposes. Carry out the following checks when starting the unit:
  - circulator stopped > zero flow-rate reading;
  - circulator working > flow rate reading greater than the minimum.
 If one of these two conditions does not occur, the unit displays a water flow error.
- 2 Before connecting the unit to the hydraulic system, make sure that the hydraulic system has been washed and that the water has been drained
- 3 Check that the hydraulic circuit has been filled and pressurized-
- 4 Check that the shut-off valves in the circuit are in the "OPEN" position.
- 5 Check that there is no air inside the circuit, and bleed it through the vent valves in the high points of the system if necessary.
- 6 When using antifreeze solutions, make sure the glycol percentage is suitable for the type of use envisaged.

#### NOTE

⇒ *Neglecting the washing will lead to several filter cleaning interventions and at worst cases can cause damages to the exchangers and the other parts.*

| Weight of glycol (%)      | 10   | 20   | 30    | 40    |
|---------------------------|------|------|-------|-------|
| Freezing temperature (°C) | -3.9 | -8.9 | -15.6 | -23.4 |
| Safety temperature        | -1   | -4   | -10   | -19   |

### Electric circuit

Check the unit is connected to the earthing system.

Check the conductors are tightened as: the vibrations caused by handling and transport might cause these to come loose.

Power the unit by closing the isolation device but leave in OFF.

Check the network frequency and voltage values, which must be within the limits:

220/240V +/- 10%

50 Hz +/- 1%

#### NOTE

⇒ *Working outside of these limits can cause irreversible damages and voids the warranty.*



## Anti-legionella

Enable the function:

- Par 69 Enable anti-legionella (1= enable)
- Par 70 Anti-legionella set point (password-protected).

## Anti-legionella scheduling

The anti-Legionnaire's disease cycle disinfects the DHW thermally. The unit is delivered with a set point of 65°C (par. 70, password protected).

The scheduling allows to set :

- Cadence:
  - Disabled
  - Weekly
  - Monthly

- Day
- Start hour

⇒ *We recommend a weekly or monthly schedule.*

## Screed heating

### Only with radiant panels

Procedure to follow in the event of winter mode start-up in cold environments and screed to be heated or a new non-dry screed.

- 1 Close the heads
- 2 Leave only one area active
- 3 Start the unit with the ACS enabled
- 4 Wait for the area to reach the temperature
- 5 Repeat steps 2 and 3 for each area

⇒ *Starting all the areas simultaneously can block the unit.*

⇒ *Do not start the system during the winter in rooms without fittings.*

## Anti-dew compensation

The function is necessary in applications with radiant panels and keypad in environment (environment thermostat).

The set point is limited downwards in order to avoid the formation of condensate on the floors.

The function may be enabled through parameter, it is only active in cooling.

| Configuration : |                                |         |
|-----------------|--------------------------------|---------|
| parameter       | description                    | circuit |
| 427             | Anti-dew compensation enabling | C2      |



### Solar setup - option

If the solar circuit is present, enable the function as the menu.  
The solar activates when the Solar temperature  $> 8^{\circ}\text{C}$  than the temperature in the accumulation, and remains active until  $80^{\circ}\text{C}$ .

Configuration:

par.59 EnSolare:    0 = not enable  
                          1 = enabled on DHW  
                          2 = enabled on DHW and system

### Recirculation DHW calibration

DHW recirculation, if foreseen in the system, is carried out by making the sanitary water circulate through the unit pump.

The pump alternates ON and OFF cycles with duration that may be set by parameters (password protected):

par.74 Recirculation Time OFF  
par.75 Recirculation Time ON.

The recirculation function is active only at the times foreseen by the DHW scheduler:

- Maintenance +recirculation
- Reload + recirculation

The parameters are the same that manage the anti-stratification recirculation in the DHW accumulation.

The recirculation still causes some inefficiencies (thermal dispersions in system piping etc.) therefore duration and frequency will have to be optimised for the system.

### Compressor casing resistances

Connect the compressor oil heating resistances at least 8 hours before the compressor is to be started:

- at the first unit start-up
  - after each prolonged period of inactivity
- 1 Power the heaters: isolator switch on 1 / ON.
  - 2 Check the power consumption of the resistances to make sure that they are functioning.
  - 3 Start-up the compressor only if the crank-case temperature on the lower side is be higher than the outside temperature by at least  $10^{\circ}\text{C}$ .
  - 4 Do not start the compressor with the crankcase oil below operating temperature.



### Starting report

Reading the objective operating conditions is useful for checking the unit over time.

With unit of full load, namely in stable conditions and close to those of work, take the following data:

- Voltage and general absorptions with unit at full load
- Absorption of varied electrical loads (compressors, fans, pumps etc)
- Temperatures and capacities of different liquid (water, air) in the inlet and outlet of the unit.
- Temperature and pressures on the characteristic points of the refrigerating circuit (compressor discharge, liquid, intake).

The readings should be stored and made available during maintenance .

### 2014/68/UE PED directive

DIRECTIVE 2014/68/UE PED gives instructions for installers, users and maintenance technicians as well.

Refer to local regulations; briefly and as an example, see the following:

Compulsory verification of the first installation:

- only for units assembled on the installer's building site (for ex. Condensing circuit + direct expansion unit)

Certification of setting in service:

- for all the units

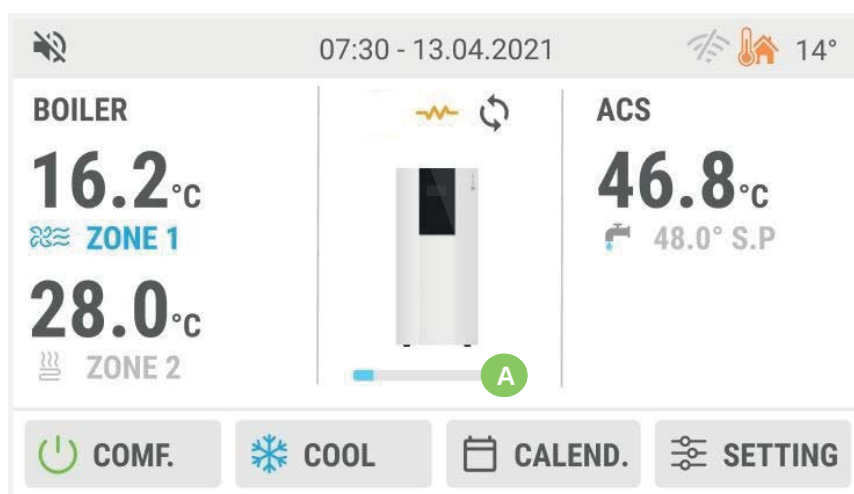
Periodical verifications:

- to be executed with the frequency indicated by the Manufacturer (see the "maintenance inspections" paragraph)





## MULTIFUNCTION KEYPAD - TOUCH SCREEN



## Display

|  |                          |  |                          |               |                           |
|--|--------------------------|--|--------------------------|---------------|---------------------------|
|  | Active Silent mode       |  | System status            |               | DHW                       |
|  | Active SuperSilent mode  |  | Cooling                  |               | Anti-legionella           |
|  | Fan coil                 |  | Heating                  |               | Active alarm              |
|  | Radiant panels           |  | Scheduling               |               | Alarm on progress         |
|  | Radiators                |  | Setting                  | <b>16.2°C</b> | Zone 1 temperature        |
|  | Defrosting               |  | DHW recirculation        | <b>28.0°C</b> | Zone 2 temperature        |
|  | DHW + HP (heat pump)     |  | Solar panel (if present) | <b>46.8°C</b> | Actual DHW temperature    |
|  | DHW + Boiler             |  | Outside air temperature  | <b>48.0°C</b> | DHW setpoint              |
|  | DHW + Resistance         |  | Wi-fi                    | <b>A</b>      | Display unit in operation |
|  | DHW + solar (if present) |  | Electric heater          |               |                           |

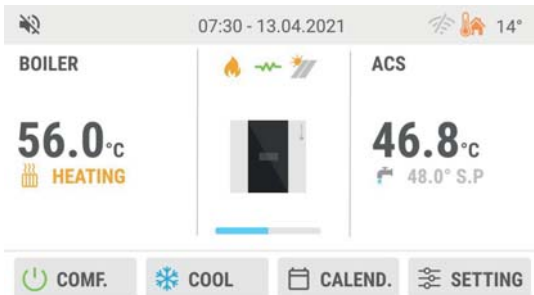


The main screen changes according to the type of system

The installer is responsible for configuration.

### BOX configuration

#### 1) 1 single zone system + Instant DHW

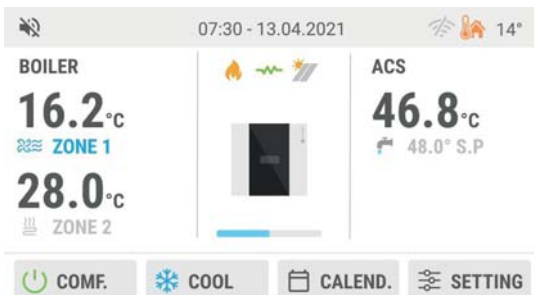


Configuration

Setting -->Parameter

35EnCircuiti = 0

#### 2) double zone system + Instant DHW



Configuration

Setting -->Parameter

35EnCircuiti =1 or 2

### TOWER configuration

#### 1) 1 single zone system + DHW



Configuration

Setting -->Parameter

12EnH2OSan = 1

35EnCircuiti = 0

#### 2) double zone system + DHW



Configuration

Setting -->Parameter

12EnH2OSan = 1

35EnCircuiti =1 or 2



## Menu structure



Press 5s

### Heat pump

Boiler only (heat pump excluded)

Normal operation (operation dependent on circuit demand)

Settings

Climatic Zone 1 (fixed / compensated)

Climatic Zone 2 (fixed / compensated)



Press

### System status

Off

Economy

Comfort

Programmed

DHW only



Press

### System mode

Cooling

Heating

Automatic



Press

### Zone Setpoint

Zone 1 / Zone 2 setpoint temperature



Press 5s

### Date and hour

Year / month / day / hour / minute



Press

### Calendar

Unit scheduling

Dhw scheduling

Timed forcing

Anti-legionella



Press 5s

### DHW

Normal operation (operation dependent on DHW demand)

Only solar thermal (the DHW storage tank is heated only by the solar panels)

Boilr only (the heat pump is excluded)

Reload now (Boost) Function used to anticipate the production of domestic hot water by bringing it up to temperature (storage tank setpoint)

Exclude

Settings

Anti-legionella set

Recirculation enable

Charging mode



Press 5s

### Stata I/O

DI01  
DI02  
DI03  
Ecc....



Press

### Operation status

Set point  
T. external  
T. return  
T. supply  
Ecc..



Press

### Setting \*

Parameter  
Keyboard  
language  
Brightness  
Upload language files (\*\*)  
Info system  
HMI  
IDU Mainboard  
ODU Mainboard  
Double Zone Mainboard (only if enabled secondary)  
Alarms (if active alarms are present)  
Alarms log  
Installer functions  
WiFi configuration  
Cloud configuration  
Export parameters (\*\*)  
Update parameters (\*\*)  
Update firmware (\*\*)

(\*) Visible only after having entered the password

(\*\*) Only with USB connected



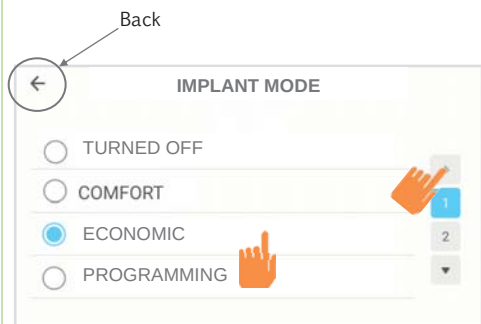
## System controls

### Controls:

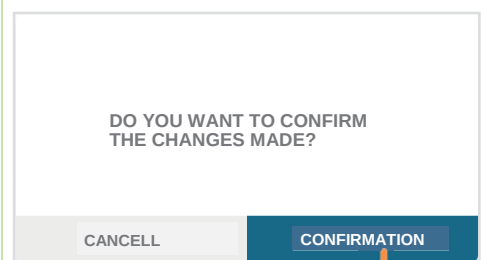
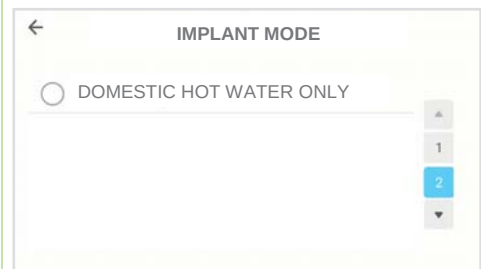
- Off
- Comfort (set the circuit water setpoint for optimal ambient comfort)
- Economy (optimises the circuit water setpoint for reduced power consumption)
- Timer automatic (operation dependent on the weekly timer + DHW timer settings)
- DHW only (the unit is only active for DHW production)



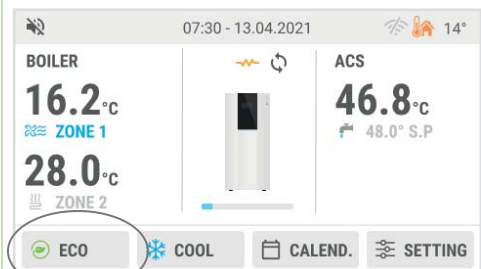
Press



Select the control



Press to  
save



Mode



## System mode

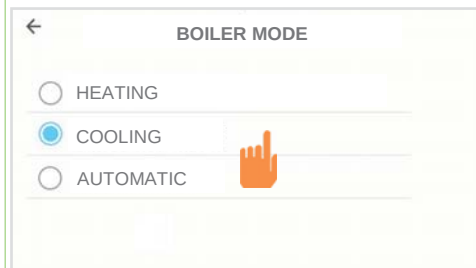
Selects the mode between Heating, Cooling and Automatic

## Date and hour

Sets the current date and time



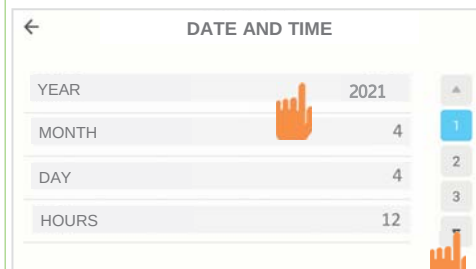
Press



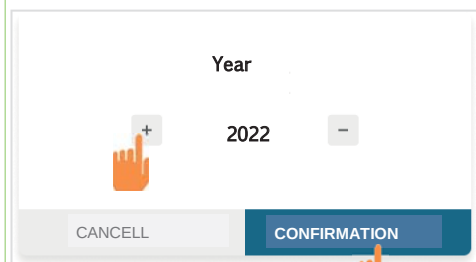
Press



Press



Press Year



Press to  
save

Repeat the same procedure  
for year, day, hour, minute

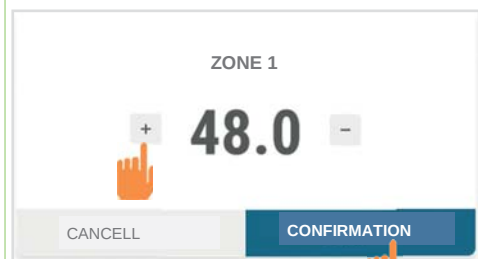


## Heating/cooling temperature adjustment

Sets the system delivery temperature, Zone 1 and Zone 2

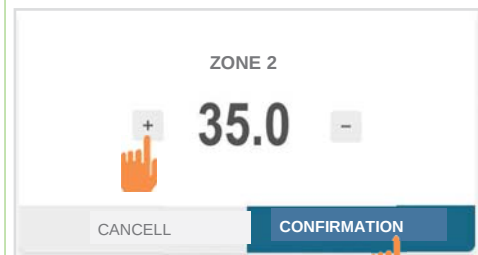


Press - Zone 1



Set temperature

Press to save



Set temperature

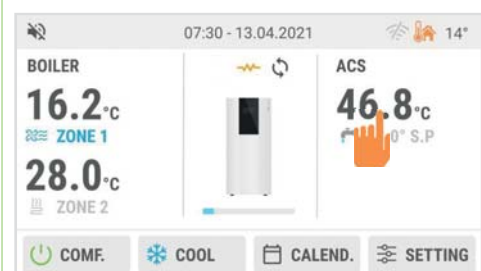
Press to save

## DHW temperature adjustment

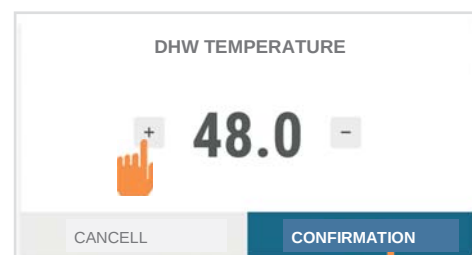
### NOTE

⇒ In the Box configuration, the temperature displayed is the current boiler temperature (instantaneous production).

⇒ In Tower configuration (box+storage tank ) is the current storage tank temperature.



Press



Set temperature

Press to save



## Alarms reset in progress

Before resetting an alarm identify and remove the cause that generate it

 Repeated reset can cause irreversible damages as malfunctioning of the system itself.

In case of doubt please contact an Assistance Centre.

If the alarm remains, it is displayed



## Alarms reset (installer use)



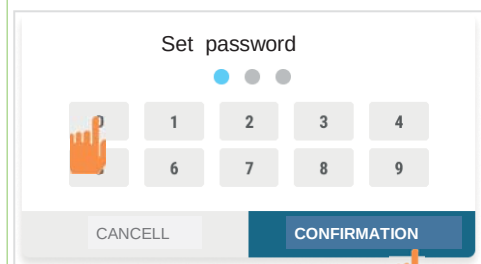
The pop-up appears



Press



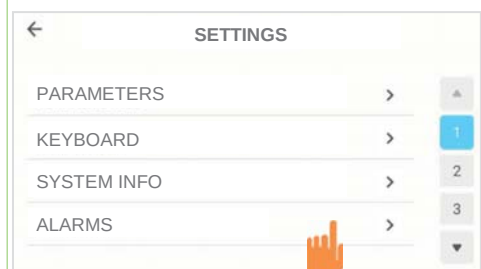
Press



Enter password



Confirm



Press



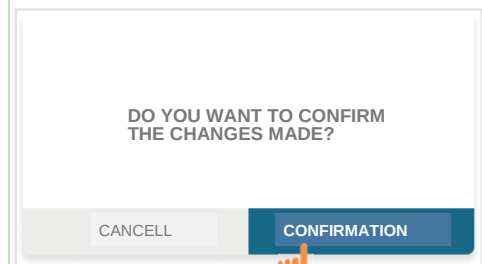


### Alarms log reset (installer use)

⇒ This function deletes all the saved alarms



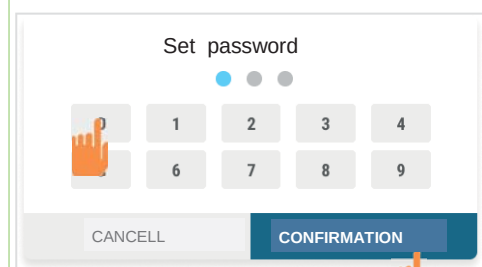
Press



Press



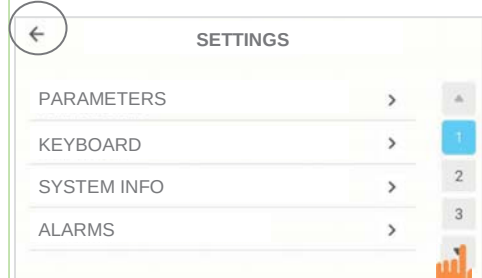
Press



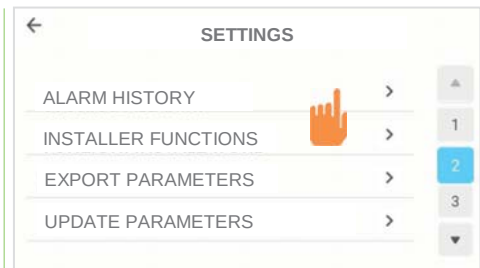
Enter password

Confirm

Back



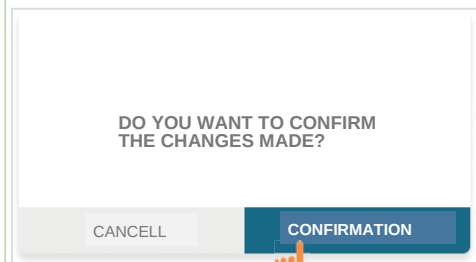
Press



Press

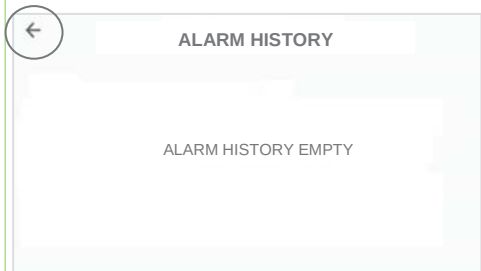


Press



Press

Back





## Unit scheduling

It allows the user to customise the programs according to his/her own requirements (max. 3 programs), setting time bands and selecting from Comfort (Com), Economy (Eco) and Off (switched off). Each program can be assigned to any day of the week, for example, Monday prog1, Tuesday prog2, etc..



### Example of program

Program OFF

No program, unit off

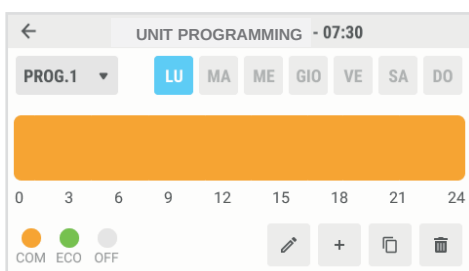
No DHW production



### Example of program

Program economic

Program used to keep the water setpoint constant for lower energy consumption



### Example of program

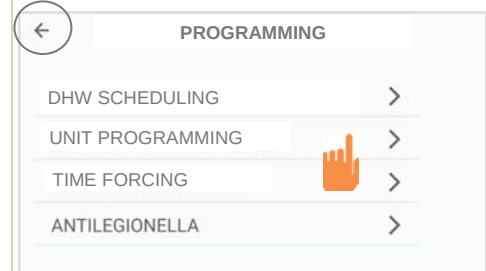
Program comfort

Program used to keep the water setpoint higher, for optimal ambient comfort



Back

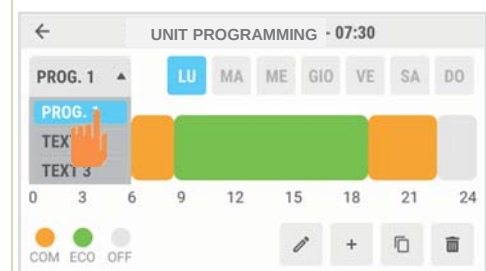
Press



Press - Unit programming



Press - Prog.1



Select program

Press



Select day



← UNIT PROGRAMMING · 07:30

PROG.1 ▾ LU MA ME GIO VE SA DO

0 3 6 9 12 15 18 21 24

COM ECO OFF

✎ + ☰ 🗑

Press

NEW TIME SLOT

☒ COMF ☐ ECO ☐ OFF

START 09:00 END 11:00

✎ + - ✎ + -

CANCEL CONFIRMATION

Select Comf  
Set start and end time

Press to save

NEW TIME SLOT

☐ COMF ☒ ECO ☐ OFF

START 12:00 END 18:00

✎ + - ✎ + -

CANCEL CONFIRMATION

Select Eco  
Set start and end time

Press to save

← UNIT PROGRAMMING · 07:30

PROG.1 ▾ LU MA ME GIO VE SA DO

0 3 6 9 12 15 18 21 24

COM ECO OFF

✎ + ☰ 🗑

Copy program

Press

COPY PROGRAMMING

LU MA ME GIO VE SA DO

CANCEL CONFIRMATION

Select days: Wednesday, Thursday

Press to save



## Dhw scheduling



Selects 4 types of programming:

- Maintenance
- Storage
- Recirculation
- Storage + Recirculation

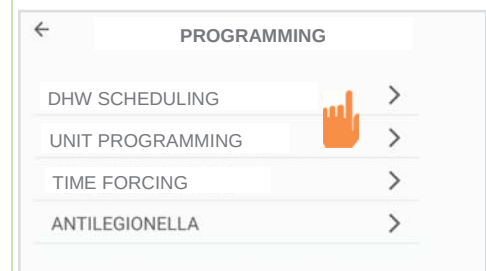
It is better to schedule the maintenance phase at night and during the periods of reduced use of domestic hot water.

Storage: use this mode during periods of greatest DHW demand.

Recirculation: this mode ensures that hot water is quickly available when the tap is opened, thus reducing wastage.



Press



Press - Sanitary programming



Press - Prog.1



Select program

Press



Select day



DHW SCHEDULING - 07:30

PROG.1 ▾ LU MA ME GIO VE SA DO

0 3 6 9 12 15 18 21 24

Mant Mant+Ric Acc Acc+Ric

Press

NEW TIME SLOT

☒ Mant ☐ Mant+Ric ☐ Acc ☐ Acc+Ric

START 00:00 - END 07:00 -

CANCEL CONFIRMATION

Select Mant  
Set start and end time

Press to save

NEW TIME SLOT

☐ Mant ☐ Mant+Ric ☒ Acc ☐ Acc+Ric

START 18:00 - END 22:00 -

CANCEL CONFIRMATION

Select Acc  
Set start and end time

Press to save

DHW SCHEDULING - 07:30

PROG.1 ▾ LU MA ME GIO VE SA DO

0 3 6 9 12 15 18 21 24

Mant Mant+Ric Acc Acc+Ric

Copy program

Press

COPY PROGRAMMING

LU MA ME GIO VE SA DO

CANCEL CONFIRMATION

Select days: Wednesday, Thursday

Press to save



## Scheduling anti-legionella

Edit PRG.

Copy PRG.

New PRG.

Delete PRG.

The anti-Legionnaire's disease cycle disinfects the DHW thermally.

- The scheduling allows to set :
- Cadece:
  - Disabled
  - Weekly
  - Monthly

- Day
- Start hour

We recommend a weekly or monthly schedule.

The screenshot shows the Clivet control interface with the following steps:

- Home Screen:** Displays boiler and ACS temperatures. The 'CALEND.' button is highlighted.
- PROGRAMMING Menu:** Accessed by pressing 'CALEND.'. The 'ANTILEGIONELLA' option is highlighted.
- Press - Anti-legionella:** The 'ANTILEGIONELLA' screen shows 'Periodicity' set to 'Disabled'. The 'Press' button is highlighted.
- PERIODICITY Selection:** The 'PERIODICITY' screen shows options: 'Disabled' (selected), 'Weekly', and 'Monthly'. The 'Weekly' option is highlighted.
- Select - Weekly:** The 'ANTILEGIONELLA' screen shows 'Periodicity' set to 'Weekly'. The 'Day of the week' is set to 'LU' and 'Starting time' is '00:00'. The 'LU' button is highlighted.
- Set - Day and hour:** The 'DAY OF THE WEEK' screen shows the 'LU' button highlighted.
- Confirmation:** The 'CONFIRMATION' button is highlighted.



## Monthly setting

STARTING TIME

00:00

CANCEL CONFIRMATION

Press  
Set start time

Press to  
save

← PERIODICITY

☒ Disabled

☐ Weekly

☐ Monthly

Select Monthly

← ANTILEGIONELLA

Periodicity Monthly

Day of the month 4

Starting time 00:00

Set - Day and hour

DAY OF THE MONTH

4

CANCEL CONFIRMATION

Select day

STARTING TIME

00:00

CANCEL CONFIRMATION

Press  
Set start time

Press to  
save



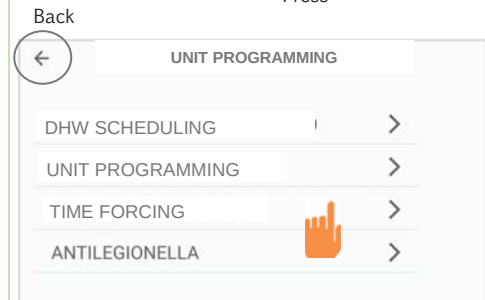


## Timed forcing

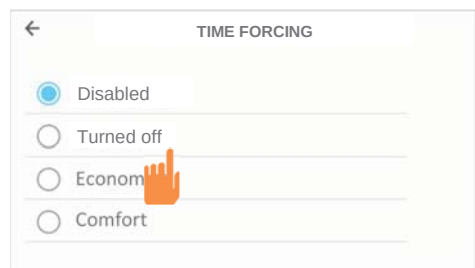
The unit can be forced into a given mode (off - economy - comfort) for a certain time, regardless of the timer settings. When this time is over, the previous program resumes.



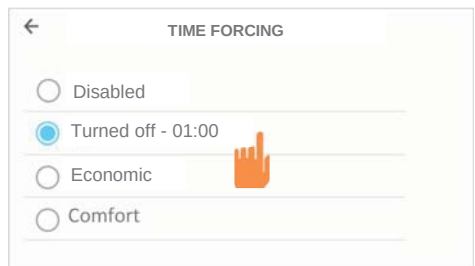
Press



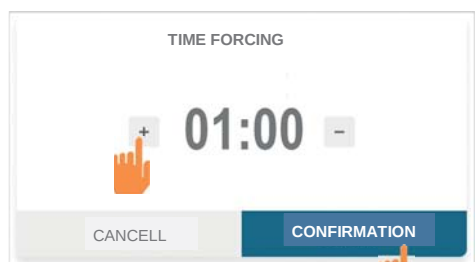
Press - Timed forging



Press - Off



Press - Off



Press  
Set end time

Press to  
save

Monthly



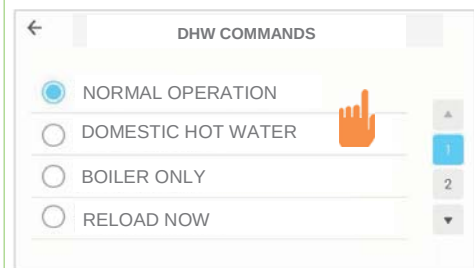
## DHW

- Normal operation (operation dependent on DHW demand)
- DHW only (domestic hot water production only)
- Boiler only (heat pump excluded)
- Reload now (Boost) (Function used to anticipate the production of domestic hot water by bringing it up to temperature (storage tank setpoint))
- Exclude

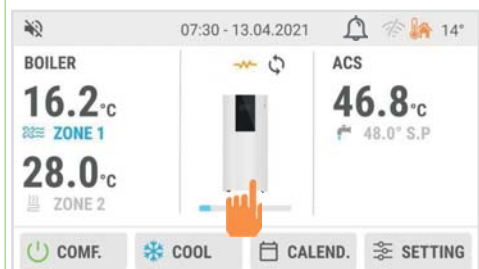
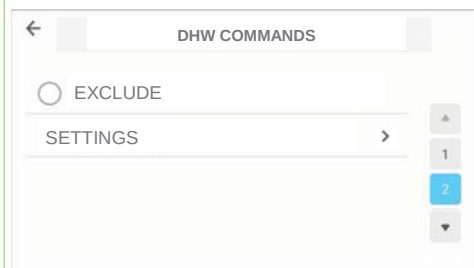
## Unit stata (consultation only)



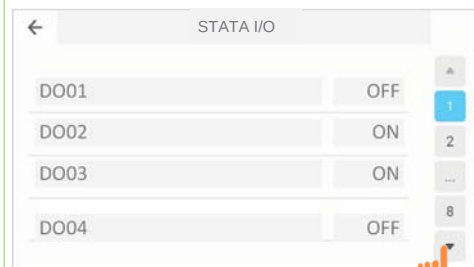
Press 5s.



Select the function



Press 5s.



Press



## Unit info/system (consultation only)

## Climatic curves (installer use)

The 2 climatic zones can be configured.

### Supply water set point:

#### Fixed:

- no compensation is set on the outdoor temperature; the value can be set
- dew compensation remains active in the Summer

#### Compensated

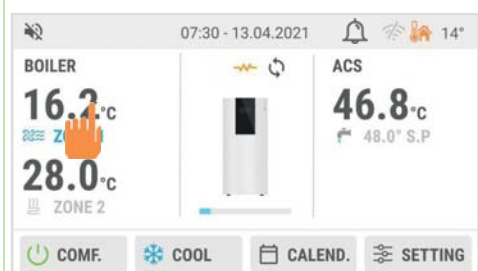
- varies according to the outdoor temperature



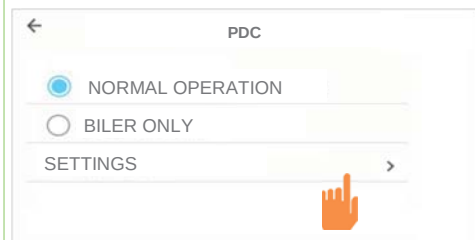
Press



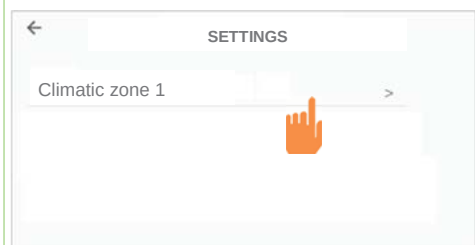
Press



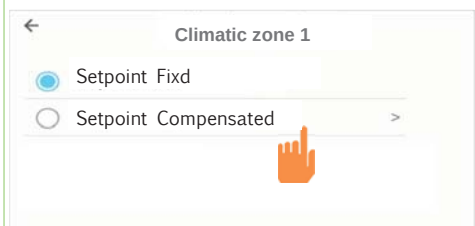
Press 5s.



Press - Setting



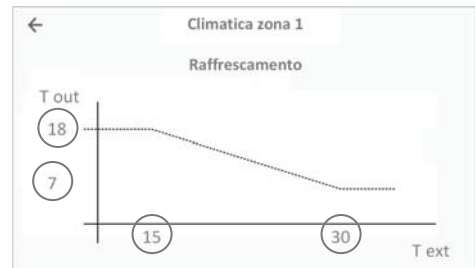
Press - Climatic



Press - Setpoint Compensated



## Climate setting zone 1 (cooling)



Press the numbers to change

The form shows the maximum outdoor temperature ( $T_{out\ max}$ ) set to 20.0. There are '+' and '-' buttons for adjustment. Below the form are 'CANCEL' and 'CONFIRMATION' buttons. An orange hand icon is pointing at the '+' button.

Press

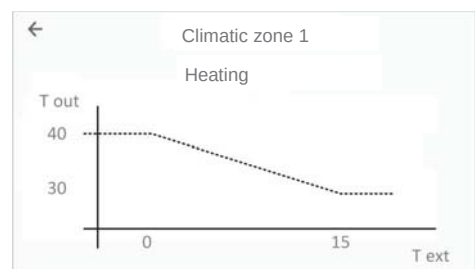
Press to save

The form shows the minimum outdoor temperature ( $T_{out\ min}$ ) set to 6.0. There are '+' and '-' buttons for adjustment. Below the form are 'CANCEL' and 'CONFIRMATION' buttons. An orange hand icon is pointing at the '+' button.

Press

Press to save

## Climate setting zone 1 (heating)



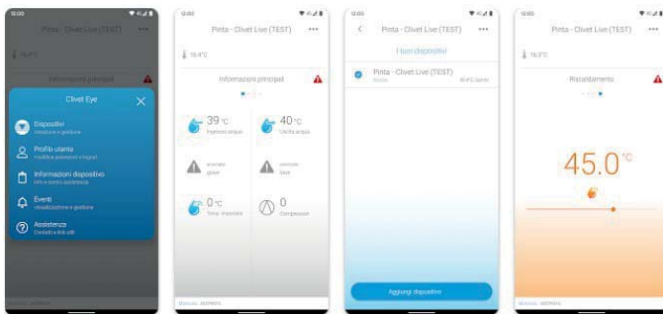
Same procedure for heating



## Connection to the WiFi network

The units in the Sphera Evo 2.0 EASYHybrid series come equipped with a Wi-Fi connection, and when this is configured you can access the Cloud and communicate remotely with the unit.

Communication is via the Clivet Eye App, available for free download in the App Store and Google Play.



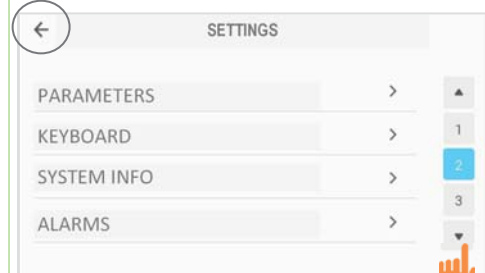
To set up the communication system for the unit, you need to follow these steps:

- Connection to the Wi-Fi network
- Connection to the Cloud
- Check the configuration via the Clivet Eye App

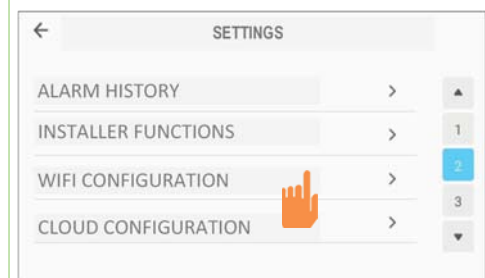


Press

Back



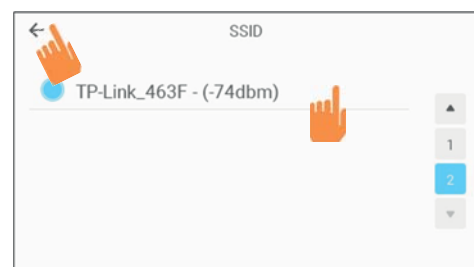
Press



Press WIFI



Press



Select the WIFI network

Press back



Enter WIFI network protection password.

← WIFI CONFIGURATION

SSID - TP-Link\_463F >

Protection - WPA/WPA2 >

Password - \*\*\*\* >

DHCP - ON >

Press password

← Password

1 2 3 4 5 6 7 8 9 0 ' >

q w e r t y u i o p è + >

a s d f g h j k l ò à ù >

< z x c v b n m , . - >

>

Enter PASSWORD

Press Enter

Do you want to confirm the changes made?

Cancel Confirmation

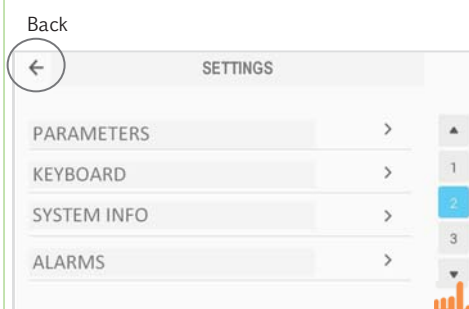
Press to  
save



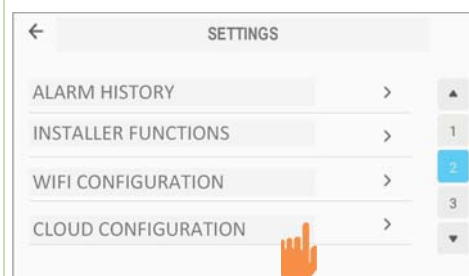
## Cloud connection



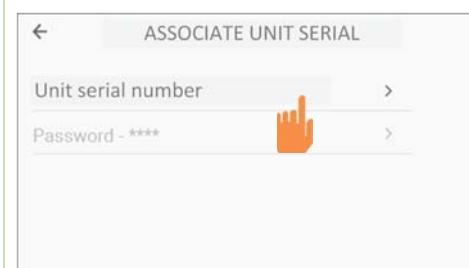
Press



Press



Press CLOUD



Press Serial number



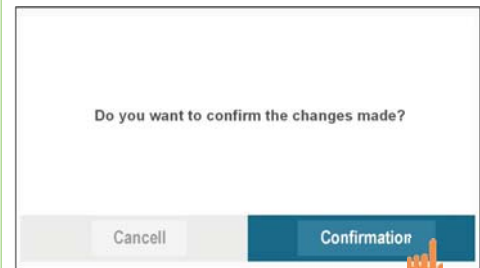
Enter unit serial number

Press ENTER



Enter password.

Define a password and associate it with the unit serial number to complete the association on the CLOUD.



Do you want to confirm the changes made?

Cancel Confirmation

Press to save

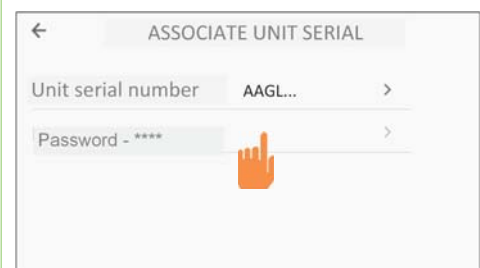


Serial number

AAGL.....

1 2 3 4 5 6 7 8 9 0 ' ↵  
 q w e r t y u i o p è +  
 a s d f g h j k l ò à ù ↵  
 < z x c v b n m , . - ↵

Press Back



← ASSOCIATE UNIT SERIAL

Unit serial number AAGL... >

Password - \*\*\*\* >

Premere password

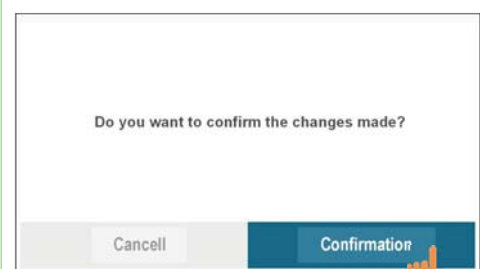


← Password

1 2 3 4 5 6 7 8 9 0 ' ↵  
 q w e r t y u i o p è +  
 a s d f g h j k l ò à ù ↵  
 < z x c v b n m , . - ↵

Enter PASSWORD

Press Enter



Do you want to confirm the changes made?

Cancel Confirmation

Press to save





## Registering from your mobile device

Search for Clivet Eye in the APP STORE or GOOGLE PLAY to install the app.

### Sign in/Sign up

Press to register the account.

#### Sign up

Complete all the fields.

#### Connect the device

Connect the device to the particular user by entering the serial number and password.

The password is the one you set during connection to the Cloud (see Cloud Connection)

Once the procedure is completed, you can log in using these credentials.

 A screenshot of the Clivet mobile app login screen. At the top is the Clivet Digital Solutions logo. Below it are two input fields: 'Username' and 'Password'. The password field has an eye icon to toggle visibility. A link 'Hai dimenticato la password?' is next to the password field. Below the fields is a 'Remember me' checkbox. At the bottom is a large 'Accedi' button. A small link 'Non hai un account? Registrati' is at the very bottom.


Register

 A screenshot of the Clivet mobile app registration screen. It has a back arrow and the title 'Registrazione'. The Clivet logo is at the top. The screen contains four input fields: 'Scegli l'email principale', 'Scegli una password', 'Scegli una password', and 'Conferma password scelta'. Below these is a checkbox for 'Accetto i termini e le condizioni di utilizzo della Privacy Policy'. At the bottom is a 'Prova tu' button.

Continue

 A screenshot of the Clivet mobile app screen for registering a device. It has the Clivet logo at the top. The title is 'Registra il tuo primo dispositivo' with the subtitle 'Inserisci i dati del dispositivo'. There are two input fields: 'Matrícula' and 'Password'. At the bottom are two buttons: 'Registra' and 'ANNULLA'.

Register



## Registering from PC

Access the web address <https://www.cliveteye.com>

## Sign in/Sign up

Press to register the account.

### Sign up

Complete all the fields.

### Connect the device

Connect the device to the particular user by entering the serial number and password.

The password is the one you set during connection to the Cloud (see Cloud Connection)

Once the procedure is completed, you can log in using these credentials.

The image shows the CLIVET login and registration interface. At the top is the CLIVET logo. Below it are two input fields: 'E-mail' and 'Password'. A dark button labeled 'ACCEDI' (Login) is positioned below the password field. Underneath the login button is a link for 'Termini e condizioni di utilizzo della Privacy'. Further down, there are two links: 'Hai dimenticato la password?' and 'Non sei ancora registrato?'. Below these links is a dark button labeled 'REGISTRATI' (Register). At the bottom, there is a copyright notice: '© 2022 Copyright Clivet | www.cliveteye.com'. An orange hand icon is pointing at the 'REGISTRATI' button.

Registrati

The image shows the CLIVET registration form. It features the CLIVET logo at the top. Below the logo are several input fields: 'E-mail \*', 'Password \*', 'Conferma Password \*', 'Nome', 'Cognome', and 'Regione sociale'.

The image shows the CLIVET device connection form. It has the heading 'Inserisci i dati della tua prima thing'. Below this heading are two input fields: 'Matricola \*' and 'Password di controllo \*'. At the bottom, there is a checkbox labeled 'Accetto i termini e condizioni di utilizzo della Privacy'.



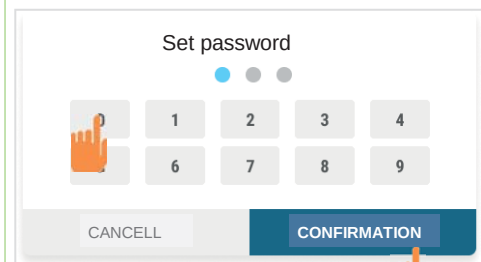
## Accessing user parameters

The unit is set by the factory with default unit parameters to values that can satisfy the greater number of installation cases. For a detailed customization of the system is however possible to make changes

For the list of parameters see the following pages.



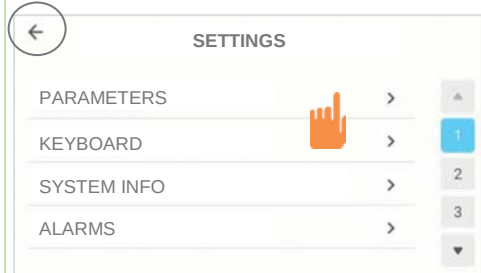
Press



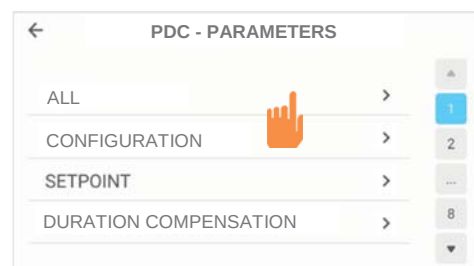
Enter password

Confirm

Back

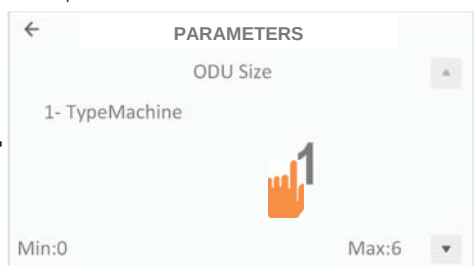


Press - Parameters

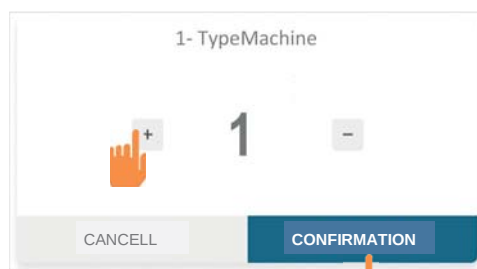


Press - All

Example



Press



Press

Insert value

Press to save



## User parameters

The list includes the parameters accessible to the user, according to the unit configuration some parameters are visible and some not.

| Modbus Address | ID  | Mnemonic     | Extended description                                                                     | Val Min    | Val Max      | Default | U.M.       |
|----------------|-----|--------------|------------------------------------------------------------------------------------------|------------|--------------|---------|------------|
| 1013           | 14  | CompExt      | External compensation enabling for outdoor temp.<br>0=No<br>1=Cool<br>2=Heat<br>3=Always | 0          | 3            | 0       | Num        |
| 1017           | 18  | MantCoolEn   | Enable Summer maintenance                                                                | 0          | 1            | 0       | 1=yes/0=No |
| 1018           | 19  | MantHeatEn   | Enable Winter maintenance                                                                | 0          | 1            | 0       | 1=yes/0=No |
| 1034           | 35  | SetCool      | Summer setpoint                                                                          | MinSetCool | MaxSetCool   | 7       | °C         |
| 1035           | 36  | SetHeat      | Winter setpoint                                                                          | MinSetHeat | MaxSetHeat   | 45      | °C         |
| 1036           | 37  | SecondSetC   | Secondary summer setpoint                                                                | MinSetCool | MaxSetCool   | 12      | °C         |
| 1037           | 38  | SecondSetH   | Secondary Winter Setpoint                                                                | MinSetHeat | MaxSetHeat   | 35      | °C         |
| 1038           | 39  | SetCoolC2    | Circuit 2 Summer Setpoint                                                                | MinSetCool | MaxSetCool   | 7       | °C         |
| 1039           | 40  | SetHeatC2    | Circuit 2 Winter Setpoint                                                                | MinSetHeat | MaxSetHeat   | 45      | °C         |
| 1040           | 41  | SecondSetC2  | Circuit 2 secondary summer setpoint                                                      | MinSetCool | MaxSetCool   | 12      | °C         |
| 1041           | 42  | SecondSetH2  | Circuit 2 Winter Secondary Setpoint                                                      | MinSetHeat | MaxSetHeat   | 35      | °C         |
| 1063           | 64  | SetAccumulo  | Unit internal storage tank domestic hot water Setpoint                                   | 0          | 100          | 45      | °C         |
| 1065           | 66  | BandaMant    | Maximum variation allowed inside during maintenance phase                                | 0          | 100          | 6       | °C         |
| 1068           | 69  | EnAntilegio  | Enable antilegionella                                                                    | 0          | 1            | 0       | °C         |
| 1072           | 73  | EnRircircolo | 0=Not managed,<br>1=Enabled,<br>2=Enabled only in Heating,<br>3=Enabled only in Cooling  | 0          | 1            | 0       | Flag       |
| 1130           | 131 | CExtMaxC     | Maximum out. Summer correction Temp.                                                     | -60        | 90           | 15      | °C         |
| 1131           | 132 | CExtMinC     | Minimum out. Summer correction Temp.                                                     | -60        | 90           | 30      | °C         |
| 1132           | 133 | CExtMaxH     | Maximum out. Winter correction Temp.                                                     | -60        | 90           | 15      | °C         |
| 1133           | 134 | CExtMinH     | Minimum out. Winter correction Temp.                                                     | -60        | 90           | 0       | °C         |
| 1134           | 135 | MaxCEXC      | Max. Summer correction value                                                             | 0          | 25           | 8       | °C         |
| 1135           | 136 | MaxCEXH      | Max. Winter correction value                                                             | 0          | 25           | 10      | °C         |
| 1140           | 141 | CExtMaxC2    | Secondary circuit 2 Maximum out. Summer correction Temp.                                 | -60        | 90           | 15      | °C         |
| 1141           | 142 | CExtMinC2    | Secondary circuit 2 Minimum out. Summer correction Temp.                                 | -60        | 90           | 30      | °C         |
| 1142           | 143 | CExtMaxH2    | Secondary circuit 2 Maximum out. Winter correction Temp.                                 | -60        | 90           | 15      | °C         |
| 1143           | 144 | CExtMinH2    | Secondary circuit 2 Minimum out. Winter correction Temp.                                 | -60        | 90           | 0       | °C         |
| 1144           | 145 | MaxCEXC2     | Secondary circuit 2 maximum summer correction value                                      | 0          | 25           | 8       | °C         |
| 1145           | 146 | MaxCEXH2     | Secondary circuit 2 maximum winter correction value                                      | 0          | 25           | 10      | °C         |
| 1161           | 162 | LimitePW     | Power input limit                                                                        | 0          | 50           | 4,5     | Kw         |
| 1174           | 175 | LimitePWDI   | Power input limit enabled from digital input                                             | 0          | 177_LimitePW | 4,3     | Kw         |
| 1201           | 202 | SetMantCool  | Summer Maintenance Set Point                                                             | -30        | 60           | 20      | °C         |
| 1202           | 203 | SetMantHeat  | Winter Maintenance Set Point                                                             | -30        | 60           | 30      | °C         |
| 1261           | 262 | IstTAmb      | Ambient temperature hysteresis                                                           | 0          | 15           | 2       | °C         |
| 1427           | 428 | CompExtC2    | External Temp. comp. enabling<br>0=No<br>1=Cool<br>2=Heat<br>3=Always                    | 0          | 3            | 0       | Num        |

Data subject to updates.



## Allarms code

| Alarm code | Address | Meaning                                 |
|------------|---------|-----------------------------------------|
| E00        | 3000    | bit0 ALL_TIMEOUT_TAST_e00,              |
| E01        |         | bit1 ERR_SONDA_IN_E01                   |
| E02        |         | bit2 ERR_SONDA_OUT_E02,                 |
| E03        |         | bit3 ERR_SONDA_EXT_E03,                 |
| E04        |         | bit4 ERR_SONDA_BATTERIA_E04,            |
| E05        |         | bit5 ERR_SONDA_T1_E05                   |
| E06        |         | bit6 ERR_FLUSSIMETRO_E06                |
| E08        |         | bit7 ERR_SONDA_PRESS1_E08,              |
| F01        |         | bit8 ALL_HP1_CIRC1_F01,                 |
| F02        |         | bit9 ALL_LP1_CIRC1_F02,                 |
| E26        |         | bit10 ALL_TERMICA1_E26,                 |
| E23        |         | bit11 ALL_TERMICO_VENTIL_CIRC1_E23,     |
| I01        |         | bit12 ALL_FLUSSO_POMPA_UT_I01,          |
| I03        |         | bit13 ALL_GELO_UT_I03,                  |
| I06        |         | bit14 ALL_CARICO_I06,                   |
| I07        |         | bit15 ALL_DELTA_T_INC_I07,              |
| I09        | 3001    | bit0 PREALL_ANTIGELO_i09,               |
| I11        |         | bit1 ALL_TIN_FUORI_NORM_i11,            |
| I12        |         | bit2 SCAMB_INS_SEC/PRIM (LATO ACS)_i12, |
| I13        |         | bit3 ALL_GELO_AMBIENTE_I13,             |
| E14        |         | bit4 ALL_TIMEOUT_POTENZA_e14,           |
| F10        |         | bit5 ALL_MAX_TS_F10,                    |
| E15        |         | bit6 ERR_SONDA_SOLARE_E15,              |
| E16        |         | bit7 ERR_SONDA_ACS_SUP_E16,             |
| E18        |         | bit8 ERR_SONDA_SCARICO_E18,             |
| E19        |         | bit9 ERR_SONDA_ASP_E19,                 |
| I15        |         | bit10 ALL_CARICO_ACS_I15,               |
| E33        |         | bit11 ALL_TIMEOUT_IO_E33,               |
| E34        |         | bit12 ERR_SONDA_IN_C1_E34,              |
| E35        |         | bit13 ALL_TERMICO_POMPA_C1_E35,         |
| E36        |         | bit14 ERR_SONDA_IN_C2_E36,              |
| E37        |         | bit15 ERR_SONDA_OUT_C2_E37,             |
| E38        | 3002    | bit0 ALL_TERMICO_POMPA_C2_E38,          |
| E32        |         | bit1 ALLARME_INVERTER_E32               |
| E46        |         | bit2 ALL_CALDAIA_E46,                   |
| E47        |         | bit3 ALL_TIMEOUT_IO_E47                 |
| I22        |         | bit4 ALL_HT_IMPIANTO (I22)              |
| E59        |         | bit5 CONDENSER_OUTLET_HT_PROTECTION_E59 |
| E60        |         | bit6 ERR_ODU_POWER_SUPPLY_E60           |



|     |      |       |                                                              |
|-----|------|-------|--------------------------------------------------------------|
| F22 | 3002 | bit7  | FAN_SPEED_IN_A_AREA_10MIN_F22                                |
| E61 |      | bit8  | ERR_ODU_EEPROM_E61                                           |
| E62 |      | bit9  | ALL_FAN_E62                                                  |
| F23 |      | bit10 | LP_PROTECTION_F23                                            |
| E63 |      | bit11 | DC_GEN_VOLT_TOO_LOW_E63                                      |
| I23 |      | bit12 | T4 OUT OF HIGH COOL LIMIT_I23                                |
| I24 |      | bit13 | T4 OUT OF HIGH DHW LIMIT_I24                                 |
| I25 |      | bit14 | T4 OUT OF HIGH HEAT LIMIT_I25                                |
| I26 |      | bit15 | T4 OUT OF LOW COOL LIMIT_I26                                 |
| I27 | 3003 | bit0  | T4 OUT OF LOW HEAT/DHW LIMIT_I27                             |
| E70 |      | bit1  | Mancata accensione del bruciatore                            |
| E71 |      | bit2  | Intervento protezione sovratemperatura                       |
| E72 |      | bit3  | Temperatura fumi elevata                                     |
| E73 |      | bit4  | Anomalia pressostato acqua                                   |
| E74 |      | bit5  | Anomalia sensore di mandata                                  |
| E75 |      | bit6  | Anomalia sensore sanitario                                   |
| E76 |      | bit7  | Pressione acqua impianto non corretta                        |
| E77 |      | bit8  | Errori specifici controllo combustione                       |
| E78 |      | bit9  | Anomalia sensore ritorno                                     |
| E79 |      | bit10 | Anomalia ventilatore                                         |
| E80 |      | bit11 | Intervento protezione scambiatore                            |
| E81 |      | bit12 | Troppi errori SW o errore comparso per sostituzione scheda   |
| E82 |      | bit13 | Anomalia parametri scheda                                    |
| E83 |      | bit14 | Errore richieste multiple                                    |
| E84 |      | bit15 | Superamento numero massimo di Reset consecutivi              |
| E85 | 3004 | bit0  | Segnale fiamma parassita                                     |
| E86 |      | bit1  | Tensione di alimentazione inferiore a 180V                   |
| E87 |      | bit2  | Anomalia termostato limite con parametro b06 = 1 o 4         |
| E88 |      | bit3  | Errore generico hardware o software della scheda elettronica |
| E89 |      | bit4  | Segnale fiamma presente con bruciatore spento                |
| E90 |      | bit5  | Mancanza fiamma dopo fase di accensione                      |
| E91 |      | bit6  | Intervento sicurezza condotto evacuazione fumi               |
| E92 |      | bit7  | Anomalia sonda esterna                                       |
| E93 |      | bit8  | Frequenza di alimentazione sbagliata                         |
| E94 |      | bit9  | Richiesta calibrazione                                       |
| E95 |      | bit10 | Anomalia sonda fumi                                          |

Description of alarms, see next page



## Allarms

In case of maloperations the alarms are indicated by the 'Alarm in progress' symbol on the multifunctional keypad.

To view the alarms select Menu ► Setting

To reset the alarm remove its cause and reset the active alarm.

Before resetting an alarm identify and remove the cause that generate it.

Repeated reset can cause irreversible damages as maloperation of the system itself.

In case of doubt please contact an Assistance Centre.

| Visualisation of code on indoor unit keypad | Visualisation of code on moto-condensing unit board | Description                                            | Possible cause                                                                                                                                                                                                                |         |
|---------------------------------------------|-----------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| e00                                         | -                                                   | Base keypad disconnection                              | Keypad not communicating with unit                                                                                                                                                                                            | A       |
| E01                                         | -                                                   | Exchanger input temp. probe                            | faulty or disconnected sensor                                                                                                                                                                                                 | A       |
| E02                                         | -                                                   | Exchanger output temp. probe                           | faulty or disconnected sensor                                                                                                                                                                                                 | A       |
| E03                                         | E6                                                  | Outside temp. probe                                    | The T4 sensor connector is loosening. Reconnect it.<br>The T4 sensor connector is wet or there is water in. remove the water, make the connector dry. Add waterproof adhesive<br>The T4 sensor failure, change a new sensor.  | A       |
| E04                                         | E5                                                  | Coil temperature probe(T3)                             | The T3 sensor connector is loosening. Reconnect it.<br>The T3 sensor connector is wet or there is water in. remove the water, make the connector dry. Add waterproof adhesive.<br>The T3 sensor failure, change a new sensor. | A       |
| E05                                         | -                                                   | Auxiliary heater temperature probe                     | faulty or disconnected sensor                                                                                                                                                                                                 | A       |
| E06                                         | -                                                   | Flowmeter                                              | Flowmeter disconnected, wrongly wiring, or faulty                                                                                                                                                                             | M       |
| E08                                         | H8                                                  | Pressure 1 probe (HP)                                  | Pressure sensor connector disconnected. Re-connect it.<br>Faulty pressure sensor.<br>Replace the sensor                                                                                                                       | A       |
| e14                                         | H1                                                  | Communication error of the modular compressor inverter | Wrongly connected/disconnected wiring, or faulty board; replace board.                                                                                                                                                        | A/<br>M |
| E15                                         | -                                                   | Solar temperature probe (17)                           | faulty or disconnected sensor                                                                                                                                                                                                 | A       |
| E16                                         | -                                                   | DHW tank temperature probe (17)                        | faulty or disconnected sensor                                                                                                                                                                                                 | A       |
| E18                                         | EA                                                  | Compressor discharge Temp. probe                       | faulty or disconnected sensor                                                                                                                                                                                                 | A       |

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed



| Visualisation of code on indoor unit keypad | Visualisation of code on moto-condensing unit board | Description                                         | Possible cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |
|---------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| E19                                         | E9                                                  | Compressor return temperature probe (Th)            | The Th sensor connector is loosening. Reconnect it.<br>The Th sensor connector is wet or there is water in. remove the water, make the connector dry. Add waterproof adhesive.<br>The Th sensor failure, change a new sensor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A   |
| E23                                         | H6                                                  | Fan thermal                                         | Strong wind or typhoon below toward to the fan, to make the fan running in the opposite direction.<br>Change the unit direction or make shelter to avoid typhoon below to the fan.<br>Fan motor is broken, change a new fan motor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | A   |
| E26                                         | P3                                                  | Compressor thermal                                  | The same reason to F1/P1.<br>Power supply voltage of the unit is low, increase the power voltage to the required range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A   |
| E32                                         | P6                                                  | Inverter protection (IPDU and IR341)                | Power supply voltage of the unit is low, increase the power voltage to the required range.<br>The space between the units is too narrow for heat exchange. Increase the space between the units.<br>Heat exchanger is dirty or something is block on the surface. Clean the heat exchanger or remove the obstruction.<br>Fan is not running. Fan motor or fan is broken, Change a new fan or fan motor.<br>Insufficient coolant load. Recharge the refrigerant in right volume.<br>Water flow rate is low, there is air in system, or pump head is not enough. Release the air and reselect the pump.<br>Water outlet temp sensor is loosening or broken, reconnect it or change a new one.<br>Water tank heat exchanger is smaller than the required 1.7m <sup>2</sup> (10-16kW unit) or 1.4m <sup>2</sup> (5-7kW unit)<br>Module wires or screws are loosening. Reconnect wires and screws.<br>The Thermal Conductive Adhesive is dry or drop. Add some thermal conductive adhesive.<br>The wire connection is loosening or drop. Reconnect the wire.<br>Drive board is defective, replace a new one.<br>If already confirm the control system has no problem, then compressor is defective, replace a new compressor. | A   |
| E33                                         | -                                                   | Communication failure of secondary management board | ANOMALY ON CAN CONNECTION<br>disconnected wiring, DIP1 frame not correctly configured, lack of power supply to the I/O card (check T1 outlet and wiring), fuse 5F1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | A   |
| E34                                         | -                                                   | Return temperature probe of secondary C1            | faulty or disconnected sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A   |
| E35                                         | -                                                   | Thermal pump of secondary C1                        | pump high absorption - air in the installation - defective wirings - faulty pump                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | A/M |

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed





| Visualisation of code on indoor unit keypad | Visualisation of code on moto-condensing unit board | Description                                                                                                  | Possible cause                                                                                                                                                                                                                                                                                                                                                       |     |
|---------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| E36                                         | -                                                   | Return temperature probe of secondary C2                                                                     | faulty or disconnected sensor                                                                                                                                                                                                                                                                                                                                        | A   |
| E37                                         | -                                                   | Supply temperature probe of secondary C2                                                                     | faulty or disconnected sensor                                                                                                                                                                                                                                                                                                                                        | A   |
| E38                                         | -                                                   | Thermal pump of secondary C2                                                                                 | pump high absorption - air in the installation - defective wirings - faulty pump                                                                                                                                                                                                                                                                                     | A/M |
| E46                                         | -                                                   | Boiler alarm                                                                                                 | Boiler-to-unit communication error.<br>Check boiler connections                                                                                                                                                                                                                                                                                                      | M   |
| E47                                         | H0                                                  | Communication failure ODU Module                                                                             | Wire doesn't connect between indoor unit and outdoor unit. Connect the wire.<br>Communication wire sequence is not right. Reconnect the wire in the right sequence.<br>Whether there is a high magnetic field or high power interfere, such as lifts, large power transformers, etc.<br>To add a barrier to protect the unit or to move the unit to the other place. | A   |
| E59                                         | Pd                                                  | High Temperature protection of coil condenser (T3)                                                           | Energy exchanger coil dirty or obstructed<br>Heat exchanger is dirty or something is block on the surface. Clean the heat exchanger or remove the obstruction.<br>Fan is not running. Fan motor or fan is broken, Change a new fan or fan motor.                                                                                                                     | A   |
| E60                                         | H7                                                  | Power supply voltage malfunction                                                                             | Whether the power supply input is in the available range.<br>Power off and power on for several times rapidly in short time. Remain the unit power off for more than 3 minutes than power on.<br>The circuit defect part of Main control board is defective. Replace a new Main PCB.                                                                                 | A   |
| E61                                         | HF                                                  | Outdoor chip EEPROM malfunction                                                                              | The EEPROM parameter is error, rewrite the EEPROM data.<br>EEPROM chip part is broken. Change a new EEPROM chip part.<br>Main PCB is broken, change a new PCB.                                                                                                                                                                                                       | A   |
| E62                                         | HH                                                  | Fan motor malfunction H6 happened 10 times in 120 minutes, manually reset by power off. (Need power refresh) | See E23/H6                                                                                                                                                                                                                                                                                                                                                           | A   |
| E63                                         | F1                                                  | DC generatrix voltage too lower (Main relay keep open)                                                       | If F1 appears when power on , check wiring of the unit.<br>Check the communication between main board and driver board.<br>Check if the PTC is hot or not , if it is hot , power off the unit and wait the temperature drop down and power on again.<br>Check the DC generatrix voltage , if it is low , check the bridge rectifier and module board.                | A   |

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed



| Visualisation of code on indoor unit keypad | Visualisation of code on moto-condensing unit board | Description                                                          | Possible cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |
|---------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| F01                                         | P1                                                  | High pressure (HP)                                                   | <p>Heating mode, DHW mode.</p> <p>The water flow is low; water temp is high, whether there is air in the water system. Release the air.</p> <p>Water pressure is lower than 0.1Mpa, charge the water to let the pressure in the range of 0.15~0.2Mpa.</p> <p>Excessive coolant load. Recharge the refrigerant in right volume.</p> <p>Electrical expansion valve locked or winding connector is loosening.</p> <p>Tap-tap the valve body and plug in/ plug off the connector for several times to make sure the valve is working correctly. And install the winding in the right location</p> <p>DHW mode:</p> <p>Water tank heat exchanger is smaller than the required 1.7m<sup>2</sup>(10-16kW unit) or 1.4m<sup>2</sup>(5-7kW unit)</p> <p>Cooling mode</p> <p>Energy exchanger coil dirty or obstructed.</p> <p>Heat exchanger is dirty or something is block on the surface.</p> <p>Clean the heat exchanger or remove the obstruction.</p> | A |
| F02                                         | P0                                                  | Low pressure (LP)                                                    | <p>Insufficient coolant load. Charge refrigerant in right volume.</p> <p>When at heating mode or heat water mode, heat exchanger is dirty or something is block on the surface. Clean the heat exchanger or remove the obstruction.</p> <p>The water flow is low in cooling mode.</p> <p>Electrical expansion valve locked or winding connector loosens.</p> <p>Tap-tap the valve body and plug in/ plug off the connector for several times to make sure the valve is working correctly.</p> <p>And install the winding in the right location</p>                                                                                                                                                                                                                                                                                                                                                                                                | A |
| F10                                         | P4                                                  | Max. discharge temperature alarm                                     | <p>The same reason to F1/P1.</p> <p>Insufficient coolant load. Charge refrigerant in right volume.</p> <p>Twout temp sensor connector loosens. Reconnect it.</p> <p>T1 temp sensor connector loosens. Reconnect it.</p> <p>T5 temp sensor connector loosens. Reconnect it.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | A |
| F22                                         | HE                                                  | Fan speed in A area and last 10 minutes                              | The outside ambient Temp. is too high (higher than 30°C, the unit still operate heat mode. Close the heat mode when the ambient Temp. is higher than 30°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | A |
| F23                                         | HP                                                  | Low pressure protection(less than 0.6MPa) happened 3 times in 1 hour | Check gas charge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | A |

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed



| Visualisation of code on indoor unit keypad | Visualisation of code on moto-condensing unit board | Description                                                                            | Possible cause                                                                                                                                                                                                              |     |
|---------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| I01                                         | -                                                   | Utility pump flow                                                                      | system not under pressure - air must be let out, dirty sludge remover, primary circulator stopped (mechanical error, burned fuse)                                                                                           | A/M |
| I03                                         | -                                                   | Source pump flow                                                                       | Absence of water flow source side. Check pump flow. Check pump operation. Verify flow switch activation.                                                                                                                    | M   |
| I06                                         | -                                                   | Discharged primary circuit                                                             | System load low pressure                                                                                                                                                                                                    | M   |
| I07                                         | -                                                   | Delta of input/output primary exchanger temperature inconsistent to the operating mode | In SUMMER the outgoing temperature is higher than the incoming temperature;<br>In WINTER the incoming temperature is lower than the outgoing temperature;<br>Jammed refrigerating circuit inversion valve (check solenoid). | M   |
| i09                                         | -                                                   | Preallarme antigelo circuito primario                                                  | INVERNO sbrinamento in condizioni anomale (funzionamento fuori dai limiti)<br>ESTATE : bassa portata e set point troppo basso                                                                                               | A   |
| i11                                         | -                                                   | Exchange input water temperature over the current operating mode limits                | operation out of limits<br>(Example: In SUMMER the system flow temperature is higher than 25 °C; In WINTER the flow temperature is lower than 20°C)                                                                         | A   |
| i12                                         | -                                                   | DHW primary/secondary circuit insufficient exchange                                    | low flow on the DHW exchanger. Dirty exchanger.                                                                                                                                                                             | A   |
| I15                                         | -                                                   | Water charged DHW system (DHW)                                                         | sanitary water system with insufficient pressure                                                                                                                                                                            | M   |
| I22                                         | -                                                   | System high temperature alarm                                                          | active supplementary heating element present<br>heating element thermostat with contact open<br>circulator pump stopped<br>lack of water in the system                                                                      | A/M |
| -                                           | -/E1                                                | Phase sequence fault (only for 3 Ph unit)                                              | Check the power supply cables to avoid phase loss.<br>Check the power supply cables sequence; change any two cables sequence of the three power supply.                                                                     | A   |
| -                                           | -/H4                                                | 3 times E32/P6 protect                                                                 | See E32/P6                                                                                                                                                                                                                  | A   |
| -                                           | -/HL                                                | PFC module failure                                                                     | The PFC module is broken, change a new PFC module.                                                                                                                                                                          | A   |
| I23                                         | -                                                   | high outdoor temperature in cooling mode                                               | Stopped compressor / Wait for temperature dropping                                                                                                                                                                          | A   |
| I24                                         | -                                                   | high outdoor temperatur in DHW mode                                                    | Stopped compressor / Wait for temperature dropping                                                                                                                                                                          | A   |
| I25                                         | -                                                   | high outdoor temperature in Heating mode                                               | Stopped compressor / Wait for temperature dropping                                                                                                                                                                          | A   |
| I26                                         | -                                                   | low outdoor temperature in cooling mode                                                | Compressor stopped / Wait for temperature rising                                                                                                                                                                            | A   |
| I27                                         | -                                                   | LOW outdoor temperature in heating / DHW mode                                          | Compressor stopped / Wait for temperature rising                                                                                                                                                                            | A   |

A the alarm automatically resets when the cause that set it off ends

M the alarm manually resets when the cause that set it off ends and a keypad reset is executed



| Visualisation of code on indoor unit keypad | Visualisation of code on boiler      | Description                                                   | Possible cause                                                                                                                                                                                                                                                             |
|---------------------------------------------|--------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E70                                         | A01                                  | No burner ignition                                            | <ul style="list-style-type: none"> <li>• No gas</li> <li>• Ignition/detection electrode fault</li> <li>• Insufficient gas supply pressure</li> <li>• Trap blocked</li> <li>• Air/fume ducts obstructed</li> <li>• Wrong calibration</li> <li>• Faulty gas valve</li> </ul> |
| E71                                         | A08/F09                              | Overtemperature protection intervention                       | <ul style="list-style-type: none"> <li>• Sensor not correctly positioned on flow pipe or damaged</li> <li>• No water circulation in the system</li> <li>• Air in the system</li> </ul>                                                                                     |
| E72                                         | A07- F15                             | High fume temperature                                         | <ul style="list-style-type: none"> <li>• The fume probe detects an excessive temperature</li> </ul>                                                                                                                                                                        |
| E73                                         | A23/A24/ A26/F20/ F21 /F40/ F47/ F51 | Water pressure switch fault                                   | <ul style="list-style-type: none"> <li>• Wrongly configured parameter</li> <li>• System pressure problems (transducer)</li> <li>• b06 set to 3</li> </ul>                                                                                                                  |
| E74                                         | F10                                  | Flow sensor fault                                             | <ul style="list-style-type: none"> <li>• Sensor damaged</li> <li>• Wiring shorted</li> <li>• Wiring disconnected</li> </ul>                                                                                                                                                |
| E75                                         | F12                                  | DHW sensor fault                                              | <ul style="list-style-type: none"> <li>• Sensor damaged</li> <li>• Wiring shorted</li> <li>• Wiring disconnected</li> </ul>                                                                                                                                                |
| E76                                         | F37                                  | Incorrect system water pressure                               | <ul style="list-style-type: none"> <li>• Pressure too low</li> <li>• Water pressure switch damaged or disconnected</li> </ul>                                                                                                                                              |
| E77                                         | A65 - A97 - F65 - F98                | Specific combustion control errors                            | <ul style="list-style-type: none"> <li>• Fume ducts obstructed.</li> <li>• Low gas pressure.</li> <li>• Condensate trap blocked.</li> <li>• Fumes recirculation or combustion problem</li> </ul>                                                                           |
| E78                                         | F11                                  | Return sensor fault                                           | <ul style="list-style-type: none"> <li>• Sensor damaged</li> <li>• Wiring shorted</li> <li>• Wiring disconnected</li> </ul>                                                                                                                                                |
| E79                                         | F05                                  | Fan fault                                                     | <ul style="list-style-type: none"> <li>• No 230V power supply</li> <li>• Tachometric signal interrupted</li> <li>• Fan damaged</li> </ul>                                                                                                                                  |
| E80                                         | A09                                  | Exchanger protection activation                               | <ul style="list-style-type: none"> <li>• No water circulation in the system</li> <li>• Poor circulation and anomalous flow probe temperature increase</li> <li>• blocked exchanger</li> </ul>                                                                              |
| E81                                         | A98                                  | Too many SW errors or error occurred during board replacement | <ul style="list-style-type: none"> <li>• Board Replacement</li> <li>• Fume ducts obstructed.</li> <li>• Low gas pressure.</li> <li>• Condensate trap blocked.</li> <li>• Fumes recirculation or combustion problem.</li> </ul>                                             |
| E82                                         | F19                                  | Card parameter fault                                          | <ul style="list-style-type: none"> <li>• Wrong card parameter setting</li> </ul>                                                                                                                                                                                           |



| Visualisation of code on indoor unit keypad | Visualisation of code on boiler | Description                                        | Possible cause                                                                                                                                                                                     |
|---------------------------------------------|---------------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E83                                         | A44                             | Multiple requests error                            | <ul style="list-style-type: none"> <li>• Repeated short-term requests</li> </ul>                                                                                                                   |
| E84                                         | A64                             | Maximum number of consecutive Resets exceeded      | <ul style="list-style-type: none"> <li>• Maximum number of consecutive Resets exceeded</li> </ul>                                                                                                  |
| E85                                         | A80                             | Parasite flame signal                              | <ul style="list-style-type: none"> <li>• Electrode problem.</li> <li>• Electronic board problem.</li> </ul>                                                                                        |
| E86                                         | F34                             | Supply voltage under 180V                          | <ul style="list-style-type: none"> <li>• Electric mains trouble</li> </ul>                                                                                                                         |
| E87                                         | F50 - F53                       | Limit thermostat fault with parameter b06 = 1 or 4 | <ul style="list-style-type: none"> <li>• No/poor water circulation in the system</li> <li>• Air in the system</li> <li>• Incorrect parameter</li> </ul>                                            |
| E88                                         | A99                             | Generic error                                      | <ul style="list-style-type: none"> <li>• Electronic board hardware or software error</li> </ul>                                                                                                    |
| E89                                         | A02                             | Flame present signal with burner off               | <ul style="list-style-type: none"> <li>• Electrode fault</li> <li>• Card fault</li> </ul>                                                                                                          |
| E90                                         | A06                             | No flame after the ignition phase                  | <ul style="list-style-type: none"> <li>• Ionization electrode fault</li> <li>• Flame unstable</li> <li>• air/fume ducts obstructed</li> <li>• Trap blocked</li> <li>• Wrong calibration</li> </ul> |
| E91                                         | A14                             | Fume extraction duct safety device intervention    | <ul style="list-style-type: none"> <li>• Fault A07 generated 3 times in the last 24 hours</li> </ul>                                                                                               |
| E92                                         | F39                             | External probe fault                               | <ul style="list-style-type: none"> <li>• Probe damaged or wiring shorted</li> <li>• Probe disconnected after activating the sliding temperature</li> </ul>                                         |
| E93                                         | F35                             | Wrong supply frequency                             | <ul style="list-style-type: none"> <li>• Electric mains trouble</li> </ul>                                                                                                                         |
| E94                                         | F62                             | Calibration required                               | <ul style="list-style-type: none"> <li>• New card or boiler not yet calibrated</li> </ul>                                                                                                          |
| E95                                         | F13                             | Fume probe fault                                   | <ul style="list-style-type: none"> <li>• Probe damaged</li> <li>• Wiring shorted</li> <li>• Wiring disconnected</li> </ul>                                                                         |



## Password-protected unit parameters (installer use)

The unit is set by the factory with default unit parameters to values that can satisfy the greater number of installation cases.

For a detailed customization of the system is however possible to make changes; the following is a list of all unit parameters, with all the available settings.

According to the unit configuration some parameters are visible and some not.

### ATTENTION

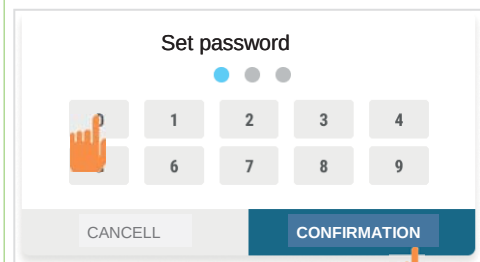
The access to parameters or modifications are allowed only to the qualified serviceman who assumes all responsibility, in case of doubts please contact Clivet.

For any changes not permitted or not approved by Clivet, the same declines any responsibility for malfunctions and/or damages to the unit/system and to people.

Password for installer use only: 115



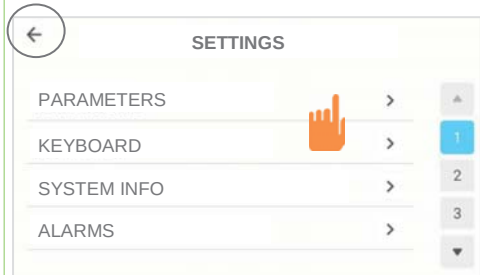
Press



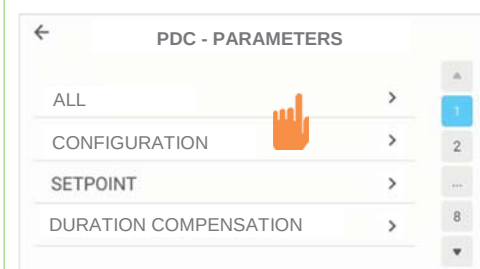
Enter password

Confermare

Back

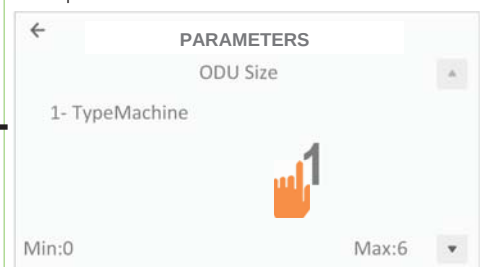


Press - Parametres

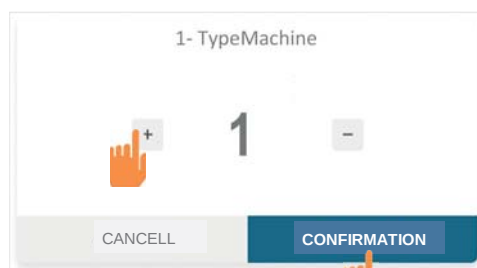


Press - All

Example



Press



Press

Insert value

Press to save



## Password-protected unit parameters (installer use)

| Modbus Address | ID | Mnemonic    | Extended description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Val Min | Val Max | Default | U.M. |
|----------------|----|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|---------|------|
| 1000           | 1  | TypeMachine | Type unit<br>0 = not configured<br>1 = Sphera BOX Easy Hybrid<br>2 = Sphera Tower Easy Hybrid<br>3 = Sphera Invisible<br>4 = Sphera Tower<br>5 = Sphera Box<br>6 = Edge<br>7 = Big Edge                                                                                                                                                                                                                                                                                                                                     | 0       | 10      | 0       | Num  |
| 1002           | 3  | EnH2OSan    | Enable DHW function<br>0=DHW Disabled,<br>1= DHW+ Heating/Cooling,,<br>2= DHW+ only Heating,<br>3=DHW+ only Cooling,<br>4=only DHW<br>5= Instant DHW                                                                                                                                                                                                                                                                                                                                                                        | 0       | 5       | 1       | Num  |
| 1003           | 4  | CaldaiaEn   | Enable Gas boiler +HP<br>0= Gas boiler disabled,<br>1= Enabled 2 pipe gas boiler<br>2= Enabled modbus 4 pipe gasboiler                                                                                                                                                                                                                                                                                                                                                                                                      | 0       | 2       | 0       | Num  |
| 1004           | 5  | EnPAux      | Backup heater enabling<br>0=Not enabled,<br>1=Enabled,<br>2= Enabled (does not intervene due to DHW compressor failure)                                                                                                                                                                                                                                                                                                                                                                                                     | 0       | 2       | 0       | Num  |
| 1005           | 6  | EnCircuiti  | Secondary configuration<br>0=1 AT;<br>1=2 AT;<br>2=1 AT+1 MISC;                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0       | 9       | 0       | Num  |
| 1006           | 7  | ControlMode | Enable automatic temperature control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0       | 1       | 0       | Num  |
| 1007           | 8  | EnCascade   | Enabling of cascade function between units                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0       | 1       | 0       | Num  |
| 1008           | 9  | Config-DI1  | F-DI1 digital input configuration<br>0 = disabled input<br>1 = Remote ON-OFF input<br>2 = Remote Mode Change (H/C) Input<br>3 = remote system call input<br>4 = second remote system setpoint<br>5 = Power limitation to PWDI Limit from digital input (NEW)<br>6 = DHW on Storage Tank threshold from digital input (NEW)<br>7 = DHW Heater Activation from I-DI1 up to SetHotH2O (photovoltaic function)<br>8 = Mode Change (H/C) Input from exclusive digital input (closed = HEAT open = COOL)                          | 0       | 6       | 1       | Num  |
| 1009           | 10 | Config-DI2  | F-DI1 digital input configuration<br>0 = disabled input<br>1 = Remote ON-OFF input<br>2 = Remote Mode Change (H/C) Input<br>3 = remote system call input<br>4 = second remote system setpoint<br>5 = Power limitation to PWDI Limit from digital input (NEW)<br>6 = DHW on Storage Tank threshold from digital input (NEW)<br>7 = DHW Heater Activation from I-DI1 up to SetHotH2O (photovoltaic function) (SPHERA release 04/2018)<br>8 = Mode Change (H/C) Input from exclusive digital input (closed = HEAT open = COOL) | 0       | 6       | 0       | Num  |
| 1012           | 13 | EnCCar      | Load compensation enabling<br>0=No<br>1=Cool<br>2=Heat<br>3=always                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0       | 3       | 0       | Num  |

Data subject to updates.

## 11 CONTROL



|      |     |              |                                                                                                                                                                                              |     |     |    |               |
|------|-----|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|---------------|
| 1014 | 15  | CompDutyEn   | Enable duty cycle compensation<br>0=No<br>1=Cool<br>2=Heat<br>3=Always                                                                                                                       | 0   | 3   | 0  | Num           |
| 1015 | 16  | CompOnEn     | Enable duration compensation<br>0=none<br>1=cooling only<br>2= heating only<br>3=Always                                                                                                      | 0   | 3   | 3  | Num           |
| 1021 | 22  | ControlPump  | Enable utility pump shut-off:<br>0=Not enabled (always on)<br>1=according to the ambient call (from electromechanical thermostat or Hid-H1)<br>2=according to the system storage temperature | 0   | 2   | 1  | Num           |
| 1022 | 23  | EnPowerLimit | Power Limit Enabling                                                                                                                                                                         | 0   | 1   | 0  | 1=Si/<br>0=No |
| 1023 | 24  | EnAntiRug    | Enable anti-dew compensation (No probe, probe present in the event of a remote keypad)                                                                                                       | 0   | 1   | 0  | 1=Si/<br>0=No |
| 1024 | 25  | EnControlIHC | Enable automatic variation of mode change                                                                                                                                                    | 0   | 1   | 0  | 1=Si/<br>0=No |
| 1050 | 51  | SanHeatMode  | Management for forced production of DHW with system thermoregulation in heating mode satisfied<br>0=No<br>1=Yes<br>2=Yes internal storage tank                                               | 0   | 2   | 2  | Num           |
| 1052 | 53  | CompExtH2OS  | Comp. enabling for External Temp. of the DHW setpoint                                                                                                                                        | 0   | 1   | 0  | 1=Si/<br>0=No |
| 1053 | 54  | MaxCompH2OS  | Maximum correction value outdoor T for domestic hot water setpoint                                                                                                                           | 0   | 25  | 10 | °C            |
| 1058 | 59  | EnSolare     | 0=not enabled,<br>1=enabled on DHW,<br>2=enabled on DHW and system                                                                                                                           | 0   | 4   | 0  | Flag          |
| 1066 | 67  | BandaAcc     | Maximum variation allowed inside storage tank during accumulation phase                                                                                                                      | 0   | 100 | 3  | °C            |
| 1067 | 68  | SetBoost     | DHW setpoint in boost mode operation                                                                                                                                                         | 55  | 80  | 55 | °C            |
| 1069 | 70  | SetAntilegio | Anti-legionella set point                                                                                                                                                                    | 50  | 70  | 65 | °C            |
| 1073 | 74  | TempoRicOn   | Pump On time during recirculation cycle                                                                                                                                                      | 0   | 60  | 10 | Min           |
| 1074 | 75  | TempoRicOff  | Pump Off time during recirculation cycle                                                                                                                                                     | 0   | 180 | 45 | Min           |
| 1075 | 76  | StartRic     | Recirculation start time                                                                                                                                                                     | 0   | 24  | 6  | Ore           |
| 1076 | 77  | StopRic      | Recirculation stop time                                                                                                                                                                      | 0   | 24  | 23 | Ore           |
| 1078 | 79  | CextMaxS     | Maximum outdoor DHW compensation temperature in summer mode                                                                                                                                  | -60 | 90  | 30 | °C            |
| 1079 | 80  | CextMinS     | Minimum outdoor DHW compensation temperature in summer mode                                                                                                                                  | -60 | 30  | 15 | °C            |
| 1087 | 88  | LowTForceR   | Storage temperature below which the DHW heaters are activated                                                                                                                                | 0   | 60  | 5  | °C            |
| 1088 | 89  | PWHeaterACS  | DHW heater electric power                                                                                                                                                                    | 0   | 10  | 2  | kW            |
| 1100 | 101 | Address      | Unit address on supervision ModBus serial                                                                                                                                                    | 0   | 127 | 2  | Ind.          |
| 1101 | 102 | BaudRate     | Supervision serial Baud Rate<br>0=4800<br>1=9600<br>2=19200                                                                                                                                  | 0   | 2   | 1  | Flag          |
| 1102 | 103 | Parity       | Supervision serial Parity<br>0=NO<br>1=Odd<br>2=Even                                                                                                                                         | 0   | 2   | 0  | Flag          |

Data subject to updates.



## 11 CONTROL



|      |     |              |                                                                                                                                                                              |     |       |             |                  |
|------|-----|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------|-------------|------------------|
| 1106 | 107 | TimeOutRete  | Supervisor Modbus network timeout                                                                                                                                            | 1   | 600   | <b>60</b>   | Sec.             |
| 1170 | 171 | LimI         | Current limit                                                                                                                                                                | 10  | 50    | <b>18</b>   | A                |
| 1172 | 173 | ODUPowerLim  | ODU absorption limit (0 no limitation; 1-8 limitation)                                                                                                                       | 0   | 8     | <b>0</b>    | Num              |
| 1210 | 211 | NMachine     | Number of units connected in Mini-network                                                                                                                                    | 2   | 6     | <b>3</b>    | Num              |
| 1211 | 212 | NumSleep     | No. of units in standby for rotation                                                                                                                                         | 0   | 5     | <b>0</b>    | Num              |
| 1212 | 213 | ControlAlarm | Enable units in alarm exclusion                                                                                                                                              | 0   | 1     | <b>0</b>    | Flag             |
| 1213 | 214 | OffsetMS     | Offset between machine Setpoints                                                                                                                                             | 0   | 20    | <b>0</b>    | °C               |
| 1214 | 215 | TimeOut      | Polling wait time from master                                                                                                                                                | 0   | 32000 | <b>60</b>   | Sec.             |
| 1215 | 216 | TimeWork     | Wear update time                                                                                                                                                             | 0   | 1000  | <b>24</b>   | Ore              |
| 1216 | 217 | TimeAlarm    | Alarm duration before standby                                                                                                                                                | 0   | 32000 | <b>300</b>  | Sec.             |
| 1217 | 218 | TimeUnitMS   | Switch-on delay of 1 <sup>st</sup> power step of each unit in mini-network                                                                                                   | 0   | 9999  | <b>600</b>  | Sec.             |
| 1218 | 219 | OffsetMSFNC  | Offset between machine Setpoints in Mini-network with FNC = on                                                                                                               | 0   | 20    | <b>0</b>    | °C               |
| 1219 | 220 | FNCSleepMode | Enabling to (only) do FNC when the unit is in Sleep mode                                                                                                                     | NO  | SI    | <b>NO</b>   | Flag             |
| 1220 | 221 | ACSSleepMode | Enabling to (only) do DHW when the unit is in Sleep mode                                                                                                                     | NO  | SI    | <b>NO</b>   | Flag             |
| 1221 | 222 | DelayDfr     | Waiting for new defrost enabling after the last defrosting by a unit in mini-network                                                                                         | 0   | 32000 | <b>300</b>  | Sec.             |
| 1276 | 277 | PWRes        | Power input of additional heaters                                                                                                                                            | 0   | 10    | <b>2</b>    | kW               |
| 1290 | 291 | SogliaExtC   | External temperature threshold below which the boiler is enabled                                                                                                             | -30 | 90    | <b>-20</b>  | °C               |
| 1291 | 292 | IsteresiExt  | External temperature hysteresis for PDC reactivation                                                                                                                         | 0   | 25    | <b>1</b>    | °C               |
| 1292 | 293 | TBypassAlm   | Transition time for alarm from PDC to boiler                                                                                                                                 | 0   | 250   | <b>30</b>   | Min              |
| 1301 | 302 | EnSwitchPDC  | Switch enabling between PDC and Boiler depending on COP                                                                                                                      | 0   | 1     | <b>0</b>    | Num              |
| 1302 | 303 | CaldaiaOEM   | 0= Clivet configuration boiler<br>1= Boiler Radiant configuration                                                                                                            | 0   | 1     | <b>0</b>    | Num              |
| 1312 | 313 | TLimiteCool  | Inp water temp below which the activation of the comps in COOL is allowed                                                                                                    | -30 | 90    | <b>25</b>   | °C               |
| 1313 | 314 | TLimiteHeat  | Inp water temp above which the activation of the comps in HEAT is allowed                                                                                                    | -30 | 90    | <b>20</b>   | °C               |
| 1362 | 363 | ManualVcc    | Compressor control voltage set manually                                                                                                                                      | 0   | 10    | <b>5</b>    | Volt             |
| 1363 | 364 | EnManualVcc  | Manual compressor control enabling<br>0=automatic control<br>1= manual control<br>With Poweroff-PowerOn the parameter goes back to the default value (0 = automatic control) | 0   | 1     | <b>0</b>    | Num              |
| 1390 | 391 | TypeTerm     | Type of terminal connected (considering the most used one)<br>0=radiant panels<br>1=Fancoil<br>2=Radiator                                                                    | 0   | 2     | <b>0</b>    | Num              |
| 1391 | 392 | EnClimatica  | Operation with climatic function active or not<br>0= fixed point operation<br>1= operation with climatic function                                                            | 0   | 1     | <b>0</b>    | Num              |
| 1392 | 393 | CostoGas     | Fuel cost in €/m <sup>3</sup>                                                                                                                                                | 0   | 5     | <b>0,85</b> | €/m <sup>3</sup> |
| 1393 | 394 | CostoEle     | Cost of electrical power in €/kWh                                                                                                                                            | 0   | 5     | <b>0,2</b>  | €/kWh            |
| 1402 | 403 | DlyPumpSec   | Pump switch-off delay after no call/circuit off                                                                                                                              | 0   | 32000 | <b>30</b>   | Sec.             |

Data subject to updates.



|      |     |               |                                                                                                                   |     |     |           |               |
|------|-----|---------------|-------------------------------------------------------------------------------------------------------------------|-----|-----|-----------|---------------|
| 1403 | 404 | TimeLimTemp   | Maximum time for secondary temperature above or below maximum range                                               | 1   | 120 | <b>5</b>  | Min           |
| 1408 | 409 | MaxH2O-HeatC1 | Maximum supply temperature in circuit 1 HEAT                                                                      | 0   | 100 | <b>60</b> | °C            |
| 1409 | 410 | MinH2OCoolC1  | Minimum supply temperature in circuit 1 COOL                                                                      | 0   | 100 | <b>5</b>  | °C            |
| 1410 | 411 | DeltaPumpC1   | Circuit 1 nominal temperature differential                                                                        | 0   | 50  | <b>5</b>  | °C            |
| 1411 | 412 | BandaD-PumpC1 | Band centred for DeltaTPump1                                                                                      | 0,5 | 10  | <b>2</b>  | °C            |
| 1412 | 413 | MaxSignPumC1  | Circulator 1 maximum control signal                                                                               | 0   | 100 | <b>80</b> | %             |
| 1413 | 414 | MinSignPumC1  | Circulator 1 minimum control signal                                                                               | 0   | 100 | <b>20</b> | %             |
| 1414 | 415 | ModoUtilizC1  | Circuit 1 seasonal enabling<br>1 = only COOL,<br>2 = only HEAT,<br>3 = Always                                     | 0   | 3   | <b>3</b>  | Num           |
| 1415 | 416 | ChiamataUtC1  | Configure ambient call on circuit 1<br>0= FROM digital input,<br>1=Remotely (Thermostat/ModBus Keypad)<br>2= Both | 0   | 2   | <b>0</b>  | Num           |
| 1425 | 426 | ModoUtilizC2  | Circuit 2 seasonal enabling<br>1 = only COOL,<br>2 = only HEAT,<br>3 = Always                                     | 0   | 3   | <b>3</b>  | Num           |
| 1426 | 427 | EnAntirugC2   | Enable circuit 2 anti-dew compensation                                                                            | 0   | 1   | <b>0</b>  | 1=Si/<br>0=No |
| 1428 | 429 | MaxH2O-HeatC2 | Maximum supply temperature in circuit 2 HEAT                                                                      | 0   | 100 | <b>60</b> | °C            |
| 1429 | 430 | MinH2OCoolC2  | Minimum supply temperature in circuit 2 COOL                                                                      | 0   | 100 | <b>5</b>  | °C            |
| 1430 | 431 | DeltaPumpC2   | Circuit 2 nominal temperature differential                                                                        | 0   | 50  | <b>5</b>  | °C            |
| 1431 | 432 | BandaD-PumpC2 | Band centred for DeltaTPump2                                                                                      | 0,5 | 10  | <b>2</b>  | °C            |
| 1432 | 433 | MaxSignPumC2  | Circulator 2 maximum control signal                                                                               | 0   | 100 | <b>80</b> | %             |
| 1433 | 434 | MinSignPumC2  | Minimum circulator 2 control signal                                                                               | 0   | 100 | <b>20</b> | %             |
| 1434 | 435 | ChiamataUtC2  | Configure ambient call on circuit 2<br>0= FROM digital input,<br>1=Remotely (Thermostat/ModBus Keypad)<br>2= Both | 0   | 2   | <b>0</b>  | Num           |

Data subject to updates.



## Stata

| Keyboard order | Mnemonico            | Description                                                     | U.M.       |
|----------------|----------------------|-----------------------------------------------------------------|------------|
| 1              | Set Point            | Current primary setpoint                                        | °C         |
| 2              | T ripresa            | Exchanger input water temperature                               | °C         |
| 3              | T mandata            | Exchanger output water temperature                              | °C         |
| 4              | T ausiliario         | Backup heater output water temperature                          | °C         |
| 5              | Setpoint ACS         | DHW storage tank high probe temperature                         | °C         |
| 6              | T ACS                | DHW storage tank low probe temperature                          | °C         |
| 7              | T solare             | Solar collector temperature                                     | °C         |
| 8              | R ausiliario         | Backup heater                                                   | 0=Off 1=On |
| 9              | T esterna            | Ambient temperature                                             | °C         |
| 10             | Comp Modulante       | Variable speed compressor                                       | rps        |
| 11             | Pompa utilizzo       | Utility pump                                                    | %          |
| 12             | Comando caldaia      | Boiler/integrated boiler control                                | 0=Off 1=On |
| 13             | Portata H2O impianto | System side water flow rate                                     | l/min      |
| 14             | T batteria           | Circuit condensation coil temperature                           | °C         |
| 15             | T aspirazione        | Intake temperature                                              | °C         |
| 16             | T scarico            | Drain temperature                                               | °C         |
| 17             | Termostatica         | Valve opening percentage                                        | %          |
| 18             | Fan Speed            | Circuit 1 source flow rate                                      | 0-15       |
| 19             | Pressure 1           | Circuit 1 condensation pressure                                 | Bar        |
| 20             | Pressure 2           | Circuit 1 evaporation pressure                                  | Bar        |
| 21             | Set point C1         | Secondary circuit 1 current setpoint                            | °C         |
| 22             | T mandata C1         | Secondary circuit 1 supply temperature                          | °C         |
| 23             | T ripresa C1         | Secondary circuit 1 return temperature                          | °C         |
| 24             | Pompa C1             | Secondary circulator 1 control signal                           | 0=Off 1=On |
| 25             | Set point C2         | Secondary circuit 2 current setpoint                            | °C         |
| 26             | T mandata C2         | Secondary circuit 2 supply temperature                          | °C         |
| 27             | T ripresa C2         | Secondary circuit 2 return temperature                          | °C         |
| 28             | Pompa C2             | Secondary circulator 2 control signal                           | 0=Off 1=On |
| 29             | Valvola C2           | Secondary circuit 2 valve opening percentage (100 = fully open) | %          |
| 30             | Set caldaia Impianto | Boiler valves control/boiler modulation                         | %          |
| 31             | Set caldaia ACS      | Boiler valves control/boiler modulation                         | %          |
| 32             | Ore Comp             | Compressor 1 operating hours                                    | hour       |
| 33             | Spunti Comp          | Compressor 1 start-ups                                          | Number     |
| 34             | Salto gradino        | Current step value (including compensations)                    | °C         |
| 35             | T. inserimento       | Dynamic TimeScan relating to insertion of resources             | Seconds    |
| 36             | Corr T esterna       | External T compensation                                         | °C         |
| 37             | Corr T ambiente      | Ambient T compensation                                          | °C         |
| 38             | Offset carico        | Load compensation                                               | °C         |
| 39             | Comp Duty Cycle      | Duty Cycle compensation                                         | °C         |
| 40             | Comp Durata          | Duration compensation                                           | °C         |



|    |                               |                                         |                                     |
|----|-------------------------------|-----------------------------------------|-------------------------------------|
| 41 | Potenza termica               | Heating capacity delivery               | KW                                  |
| 42 | PW assorbita ODU              | Electrical power absorbed               | KW                                  |
| 43 | Corrente ODU                  | ODU current                             | 0-500 A                             |
| 44 | Tensione ODU                  | ODU voltage                             | 0-400 Vrms                          |
| 45 | Driver Module protection code | Inverter protection                     | Bitmap                              |
| 46 | ODU limited frequency code    | Frequency limitation code               | Numero                              |
| 47 | Minirete                      | Status of connection modules in cascade | X=nodo sconnesso<br>O=Nodo connesso |



## Updating the keypad (installer use)

⇒ Access reserved for technical assistance personnel during start-up and subsequent interventions.



Certain USB pen drive brands may not be detected.

### Materials required for the update:

- PC with the files required for the update process
- USB pen drive (empty)

After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

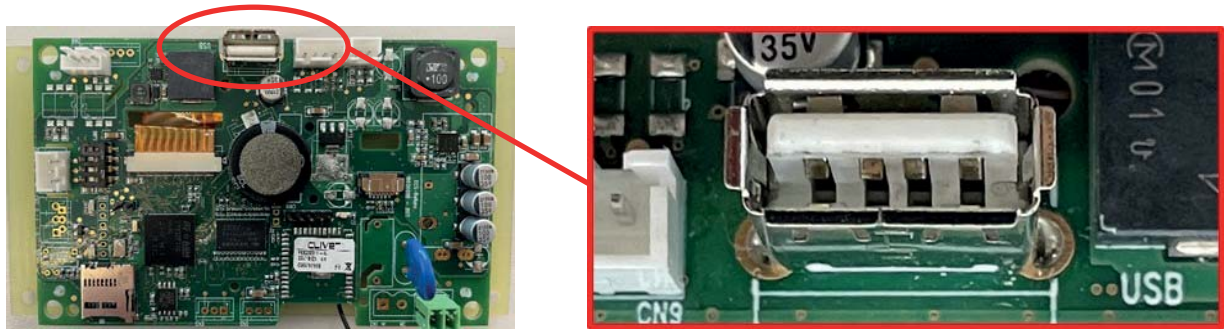
Copy to the ROOT of the USB pen drive the file:

**V658Rxxx.bin**

**V658Rxxx.md5**

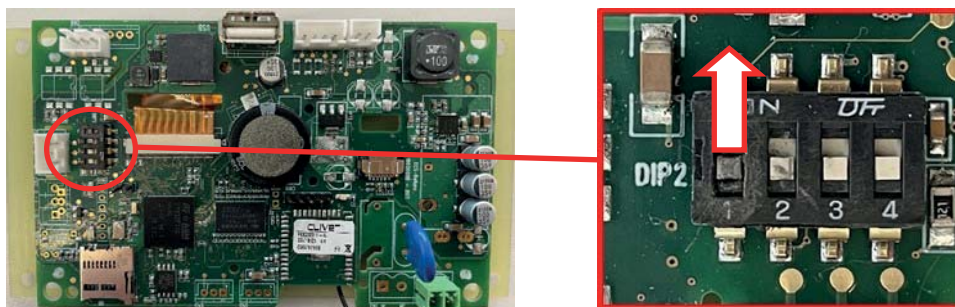
- If the unit is powered and running, the OFF mode operation must be set from the ON/OFF menu, and once the unit is off (0% on the display) disconnect it from the power supply.

With the unit disconnected, connect the USB pen drive to the USB port of the keypad (on the rear of the keypad).

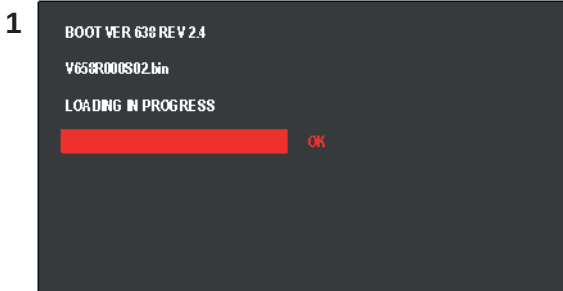


Set switch 1 of bank DIP2 to On.

Power on the unit.

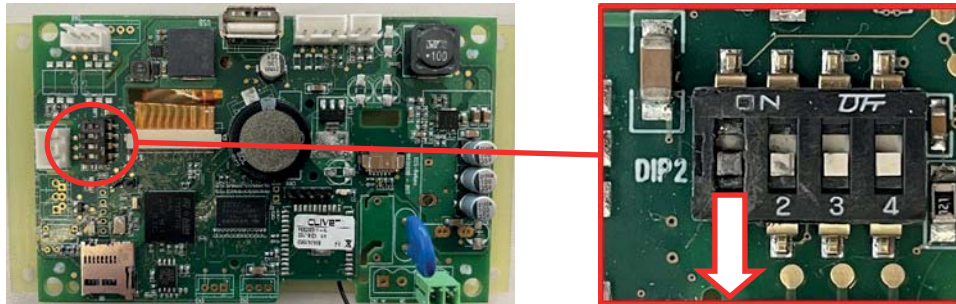


The keypad is powered on, follow the instructions on the display





Reposition switch 1 to OFF without removing the power supply



Continue with procedure on display

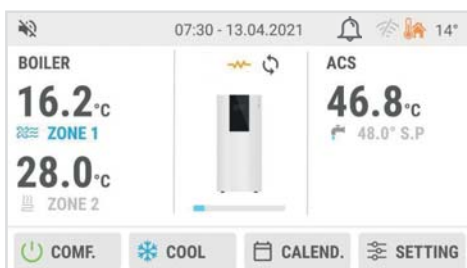
- 3**

**4**

**4**

**5**

After the update has been completed, the keypad will display the main menu



⇒ IF THE WORDING DOES NOT APPEAR, DISCONNECT THE POWER SUPPLY TO THE UNIT ONCE AGAIN, CHECK THAT THE PEN DRIVE IS PROPERLY INSERTED AND THAT THE FILE IS PRESENT IN THE ROOT, THEN REPEAT THE OPERATION.

The update process terminates when the main window reappears.

At this stage, disconnect the unit from the power supply, remove the USB pen drive and power the unit again.





## Languages update (installer use)

⇒ Access reserved for technical assistance personnel during start-up and subsequent interventions.



Certain USB pen drive brands may not be detected.

### Materiale necessari per l'aggiornamento:

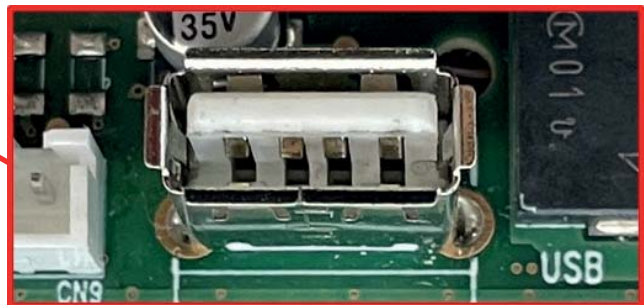
- PC with the files required for the update process
- USB pen drive (empty)

After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

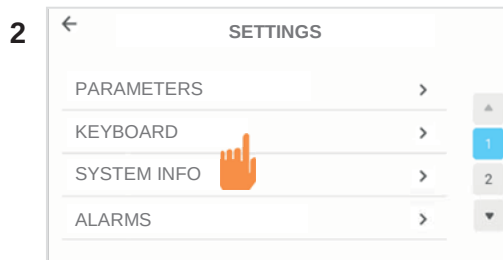
Copy to the ROOT of the USB pen drive the file:

**Languages\_xxxx**

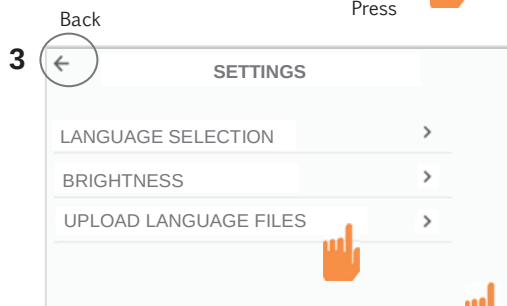
With the unit disconnected, connect the USB pen drive to the USB port of the keypad (on the rear of the keypad).



Press

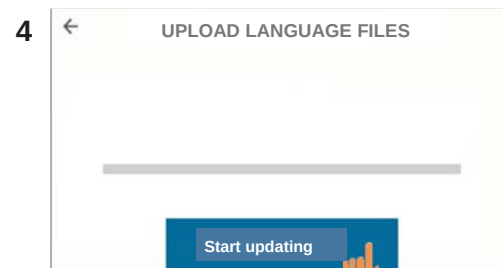


Press Keyboard

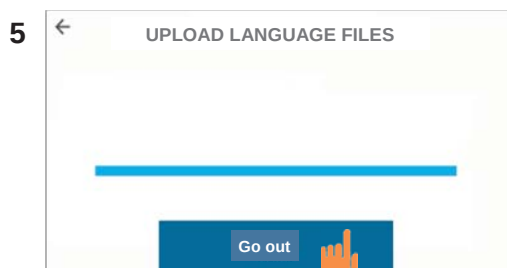


Press: Upload language file

Press



Press - Start



Press



## Hydro board firmware update (installer use)



Certain USB pen drive brands may not be detected.

⇒ Access reserved for technical assistance personnel during start-up and subsequent interventions.

### Materials required for the update:

- PC with the files required for the **V421RXXX** update process
- USB pen drive (empty)

After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

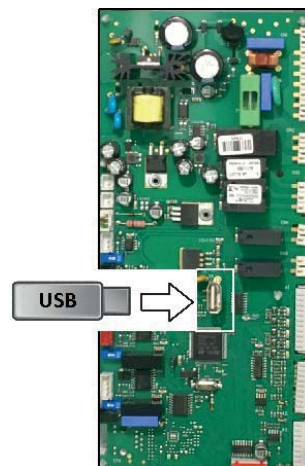
Add the following two files to the ROOT of the USB pen drive:

- **V421Rxxx.s19**
- **V421Rxxx.md5**

With the unit powered and in OFF mode, connect the USB pen drive to the USB port of the refrigeration board (moto-condensing unit).

Wait roughly 60 seconds for the file to be read and loaded then perform the procedure illustrated below. If the 'Update firmware' option does not appear in the **Setting menu** wait a few minutes more or try disconnecting and reconnecting the USB pen drive to the board.

Check that the update files are PRESENT in the root.



- Press
- Enter password

Confirm
- Press update firmware

Press
- Press - Start
- 
- Press

At the end of the update procedure, check that the firmware version has been installed correctly by entering the **Setting** info from the **Info system** menu





## Refrigeration board parametres update (installer use)



Certain USB pen drive brands may not be detected.

⇒ Access reserved for technical assistance personnel during start-up and subsequent interventions.

### Material required for the update:

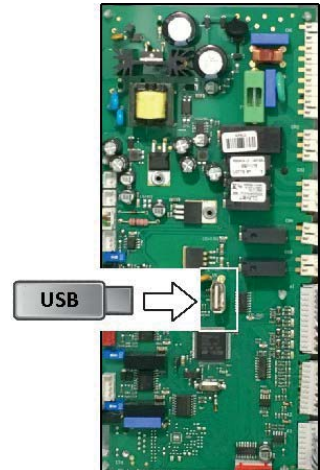
- PC with the pari.xml file required for the update process
- USB pen drive (empty)

After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

Copy in the root of the USB pen drive the file of the parameters related to the Serial number of the internal unit

⇒ NB: The parameters must be downloaded from the portal through the serial number of the internal unit

With the unit powered and in **OFF mode**, connect the pen drive to the USB port of the hydro board



- Press
- Enter password

Confirm
- Press update parameters

Press
- Press - Start
- Press



## Export parameters (installer use)



Certain USB pen drive brands may not be detected.

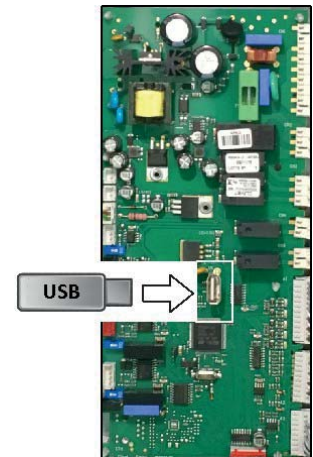
⇒ Access reserved for technical assistance personnel during start-up and subsequent interventions.

### Material required for the update:

- PC
- USB pen drive (empty)

After connecting the USB pen drive to the PC, delete any files saved on the pen drive.

⇒ With the unit powered and in OFF mode, connect the pen drive to the USB port of the hydro board



- Press
- Enter password

Confirm
- Press export parameters

Press
- Press - Start
- Press

## MODBUS PROTOCOL - INSTALLER USE

⇒ According to the unit configuration some parameters are visible and some not.

### Supervision controls

| Address | Description    | U.M.   | Bit | Function                      | Enable                      | Notes                                                                |
|---------|----------------|--------|-----|-------------------------------|-----------------------------|----------------------------------------------------------------------|
| 2600    | ModoRemoto     | Bitmap | 0   | 1=ON / 0=OFF                  | EnStatoRete = 1             | ON/OFF via network (1=Comfort; 0=OFF) enabled when EnStatoRete=1     |
|         |                |        | 1   | 1=Maintenance / 0=OFF         | EnStatoRete = 1             | Maintenance via network (1=maintenance) enabled when EnStatoRete=1   |
|         |                |        | 2   | 1=Heat / 0=Cool               | EnModoRete = 1              | Machine mode via network (1=Heat, 0=Cool ) enabled when EnModoRete=1 |
|         |                |        | 3   | Eco                           | EnStatoRete = 1             | Economy via network (1=Eco) enabled when EnStatoRete=1               |
|         |                |        | 4   | DHW only mode                 | EnModoSoloACSRete = 1       | 1 = DHW only mode via network, enabled if EnModoSoloACSRete=1        |
|         |                |        | 5   | Request DHW                   | EnRichiestaACSRete = 1      | 1 = DHW request via network, enabled if EnRichiestaACSRete = 1       |
|         |                |        | 6   | DHW priority                  | EnPriorACSRete = 1          | 1= DHW priority active if EnPriorACSRete = 1                         |
|         |                |        | 7   | Free                          |                             |                                                                      |
|         |                |        | 8   | Anti-frost condition          |                             | 1= anti-frost condition active                                       |
|         |                |        | 9   | Room thermoregulation request | EnRichiestaAmbRete = 1      | 1= room thermoregulation active, enabled if EnRichiestaAmbRete = 1   |
|         |                |        | 10  | Active solar                  |                             | 1= active solar                                                      |
|         |                |        | 11  | Free                          |                             |                                                                      |
|         |                |        | 12  | Only boiler                   | EnSoloCaldaiaRete = 1       | 1= boiler only operation, enabled if EnSoloCaldaiaRete = 1           |
|         |                |        | 13  | Free                          |                             |                                                                      |
|         |                |        | 14  | Free                          |                             |                                                                      |
|         |                |        | 15  | Free                          |                             |                                                                      |
| 2601    | RegistroFlag 1 | Bitmap | Bit | Function                      | Enable                      | Notes                                                                |
|         |                |        | 0   | EnSetPointRete                |                             | Remote water setpoint enable                                         |
|         |                |        | 1   | EnSetSanitariaRete            |                             | Remote DHW setpoint enable                                           |
|         |                |        | 2   | EnModoRete                    | Season settings via network | Remote unit mode enable                                              |
|         |                |        | 3   | EnRichiestaACSRete            | DHW request via network     | Remote DHW request enable                                            |





|      |                    |        |          |                       |                                                                  |                                                    |
|------|--------------------|--------|----------|-----------------------|------------------------------------------------------------------|----------------------------------------------------|
| 2602 | RegistroFlag 2     | Bitmap | 4        | EnModoSoloACSReTe     | DHW only via network                                             | Remote DHW only enable                             |
|      |                    |        | 5        | EnStatoReTe           | On, Off, Maintenance via network                                 | Remote unit state enable                           |
|      |                    |        | 6        | EnPriorACSReTe        | DHW/circuit priority via network                                 | Remote DHW priority enable                         |
|      |                    |        | 7        | EnSondaMandataReTe    |                                                                  | Remote delivery water temperature enable           |
|      |                    |        | 8        | EnSondaRipresaReTe    |                                                                  | Remote return water temperature enable             |
|      |                    |        | 9        | EnSondaAccumuloReTe   |                                                                  | Remote storage tank temperature enable             |
|      |                    |        | 10       | EnSondaAriaReTe       | 0: on-board reading (thermostat).<br>1: networked sensor reading | Remote room air temperature enable                 |
|      |                    |        | 11       | EnSondaMandataAuxReTe |                                                                  | Remote auxiliary delivery water temperature enable |
|      |                    |        | 12       | Free                  |                                                                  |                                                    |
|      |                    |        | 13       | EnSondaTExReTe        |                                                                  | Remote external temperature sensor enable          |
|      |                    |        | 14       | Free                  |                                                                  |                                                    |
|      |                    |        | 15       | EnDemandLimitReTe     | Demand limit value via network                                   | Remote demand limit value enable                   |
|      |                    |        | Bit      | Function              | Enable                                                           | Notes                                              |
|      |                    |        | 0        | EnSetAmbienteReTe     |                                                                  | Remote room setpoint enable                        |
|      |                    |        | 1        | EnRichiestaAmbReTe    | Room thermoregulation request via network                        | Remote room thermoregulation request enable        |
| 2603 | SetHeatRemoto      | °C/10  | 2        | EnSondaURAmbReTe      | 0: room thermostat reading<br>1: networked sensor reading        | Remote external relative humidity enable           |
|      |                    |        | 3        | EnACSControlReTe      | To control DHW via the network, enable 2709_RegistroFlagACS      | Remote DHW control enable                          |
|      |                    |        | 4        | Free                  |                                                                  |                                                    |
|      |                    |        | 5        | EnSoloCaldaiaReTe     | To control the "Boiler only" command via the network             | Remote boiler only enable                          |
|      |                    |        | 6        | EnTempRugiada         | Dewpoint sensor enable via network                               | Enable networked dewpoint register 2617            |
|      |                    |        | 7-15     | Free                  |                                                                  |                                                    |
|      |                    |        | Setpoint |                       | EnSetPointReTe = 1                                               | Heating setpoint set by supervisor                 |
|      |                    |        | Setpoint |                       | EnSetPointReTe = 1                                               | Cooling setpoint set by supervisor                 |
|      |                    |        | Setpoint |                       | EnSetSanitariaReTe = 1                                           | DHW setpoint set by supervisor                     |
|      |                    |        |          |                       |                                                                  |                                                    |
|      |                    |        |          |                       |                                                                  |                                                    |
|      |                    |        |          |                       |                                                                  |                                                    |
|      |                    |        |          |                       |                                                                  |                                                    |
|      |                    |        |          |                       |                                                                  |                                                    |
|      |                    |        |          |                       |                                                                  |                                                    |
| 2604 | SetCoolRemoto      | °C/10  |          |                       |                                                                  |                                                    |
|      |                    |        |          |                       |                                                                  |                                                    |
|      |                    |        |          |                       |                                                                  |                                                    |
| 2605 | SetH2OSanitariaRem | °C/10  |          |                       |                                                                  |                                                    |
|      |                    |        |          |                       |                                                                  |                                                    |
|      |                    |        |          |                       |                                                                  |                                                    |



|      |                           |       |                   |                           |                                                          |
|------|---------------------------|-------|-------------------|---------------------------|----------------------------------------------------------|
| 2606 | TemperaturaRipresaRem     | °C/10 | Temperature       | EnSondaRipresaRete = 1    | System return temperature controlled by supervisor       |
| 2607 | TemperaturaMandataRem     | °C/10 | Temperature       | EnSondaMandataRete = 1    | System delivery temperature controlled by supervisor     |
| 2608 | TemperaturaAriaEsternaRem | °C/10 | Temperature       | EnSondaTexRete = 1        | External air temperature controlled by supervisor        |
| 2609 | TemperaturaAccumuloRem    | °C/10 | Temperature       | EnSondaAccumuloRete = 1   | System storage tank temperature controlled by supervisor |
| 2610 | TemperaturaAmbienteRem    | °C/10 | Temperature       | EnSondaAriaRete = 1       | Room temperature controlled by supervisor                |
| 2611 | TemperaturaMandataAuxRem  | °C/10 | Temperature       | EnSondaMandataAuxRete = 1 | Auxiliary delivery temperature controlled by supervisor  |
| 2612 | Libero                    |       |                   |                           |                                                          |
| 2613 | Libero                    |       |                   |                           |                                                          |
| 2614 | DemandLimitRem            | kW    | Limit             | EnDemandLimitRete = 1     | Demand limit value controlled by supervisor              |
| 2615 | SetAmbienteRemoto         | °C/10 | Setpoint          | EnSetAmbienteRete = 1     | Room setpoint set by supervisor                          |
| 2616 | UrAmbienteRem             | %     | Humidity probe    | EnSondaURAmbRete = 1      | Room humidity controlled by supervisor                   |
| 2617 | TemperaturaRugiadaRem     | °C*10 | Temperature probe | EnTempRugiada=1           | Dewpoint sent by supervisor                              |

| DHW controls |                      |        |      |                      |                                                                                                                                                              |
|--------------|----------------------|--------|------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Address      | Description          | U.M.   | Bit  | Function             | Notes                                                                                                                                                        |
| 2700         | ModoRemoto Sanitaria | Bitmap |      |                      |                                                                                                                                                              |
|              |                      |        | 0    | 1=ON / 0=OFF         | EnComandiRete = 1                                                                                                                                            |
|              |                      |        | 1    | Free                 |                                                                                                                                                              |
|              |                      |        | 2    | 1 = Storage          | 1 = storage mode via network, enabled if EnComandiRete=1                                                                                                     |
|              |                      |        | 3    | 1 = Recirculation    | 1 = recirculation mode via network, enabled if EnComandiRete=1                                                                                               |
|              |                      |        | 4    | 1 = No solar         | 1 = no solar mode via network, enabled if EnComandiRete=1                                                                                                    |
|              |                      |        | 5    | 1 = Resistances only | 1 = DHW heating elements only mode via network, enabled if EnComandiRete=1                                                                                   |
|              |                      |        | 6    | 1 = Boost            | 1=Boost mode via network, enabled if EnComandiRete=1 and parameter xxx_EnBoost=1                                                                             |
|              |                      |        | 7    | 1 = Reload now       | This bit must be set to 1 to start the recharge reload now and must be reset when 2801 bit9 (Reload Now Completed) is set to 1 is enabled by EnComandiRete=1 |
|              |                      |        | 8-15 | Free                 |                                                                                                                                                              |



|      |                         |        |             |                               |                                                                                  |
|------|-------------------------|--------|-------------|-------------------------------|----------------------------------------------------------------------------------|
| 2701 | Setpoint accumulo       | °C/10  | Setpoint    | EnSetAccumuloRete = 1         | Storage tank setpoint set by supervisor                                          |
| 2702 | Banda sanitaria         | °C/10  | Temperature | EnBandaSanitariaRete = 1      | DHW temperature range setpoint controlled by supervisor                          |
| 2703 | Set mantenimento        | °C/10  | Setpoint    | EnSetMantenimentoRete = 1     | Maintenance setpoint controlled by supervisor                                    |
| 2704 | Setpoint antilegionella | °C/10  | Setpoint    | EnSetAntilegioRete = 1        | Anti-Legionnaire's disease setpoint controlled by supervisor                     |
| 2705 | SetHotH2O               | °C/10  | Setpoint    | EnSetHotH2ORete = 1           | DHW maximum temperature setpoint                                                 |
| 2706 | Timer antilegionella    | min    | Time        | EnComandoAntilegioRete = 1    | Interval between anti-Legionnaire's disease cycles controlled by supervisor      |
| 2707 | Setpoint Boost          | °C/10  |             |                               |                                                                                  |
| 2708 | LowTForceRes            | °C/10  | Temperature | EnDeltaTForceResRete = 1      | Minimum DHW temperature to trip safety heating elements controlled by supervisor |
| 2709 | Registro FlagACS        | Bitmap | Bit         | Function                      | Note                                                                             |
|      |                         |        | 0           | EnComandiRete (2700)          | Remote DHW control enable                                                        |
|      |                         |        | 1           | EnSetAccumuloRete (2701)      | Remote storage tank setpoint enable                                              |
|      |                         |        | 2           | EnBandaSanitariaRete (2702)   | Remote DHW range enable                                                          |
|      |                         |        | 3           | EnSetMantenimentoRete (2703)  | Remote maintenance setpoint enable                                               |
|      |                         |        | 4           | EnSetAntilegioRete (2704)     | Remote anti-Legionnaire's disease setpoint enable                                |
|      |                         |        | 5           | EnSetHotH2ORete (2705)        | Remote DHW maximum temperature enable                                            |
|      |                         |        | 6           | EnComandoAntilegioRete (2706) | Remote anti-Legionnaire's disease interval enable                                |
|      |                         |        | 7           | EnDeltaTForceResRete (2708)   | Remote DHW minimum temperature heating elements enable                           |
|      |                         |        | 8           | EnDeltaTSolareRete (2711)     | Remote solar temperature enable                                                  |
|      |                         |        | 9-15        | Free                          |                                                                                  |
| 2710 | Libero                  |        |             |                               |                                                                                  |
| 2711 | DeltaTSolare            | °C/10  | Temperature | EnDeltaTSolareRete = 1        | Remote delta temperature between DHW and solar to enable solar                   |

Data subject to updates.



## Secondary statuses

### Circuit 1

| Address   | Id | Description                         | U:M:              | Notes             |                                                       |                          |
|-----------|----|-------------------------------------|-------------------|-------------------|-------------------------------------------------------|--------------------------|
| 4500      | 1  | Current H2O set point               | °C*10             | Setpoint          |                                                       |                          |
| 4501      | 2  | Return H2O operating temperature    | °C*10             | Temperature probe |                                                       |                          |
| 4502      | 3  | Supply H2O operating temperature    | °C*10             | Temperature probe |                                                       |                          |
| 4503      | 4  | Averaged temperature variation      | °C*10             | Temperature Delta |                                                       |                          |
| 4504      | 5  | Instantaneous temperature variation | °C*10             | Temperature Delta |                                                       |                          |
| 4505      | 64 | Statuses and alarms bitmap          | Bitmap            | Bit               | Function                                              | Configuration            |
|           |    |                                     |                   | 0                 | Circulator                                            | 1=On                     |
|           |    |                                     |                   | 1                 | Anti-lock                                             | 1=Function running       |
|           |    |                                     |                   | 2                 | Valve in full recirculation (or full open) position   | 1=Positioned             |
|           |    |                                     |                   | 3                 | In posizionamento tutto ricircolo (o in tutto aperto) | 1=In positioning         |
|           |    |                                     |                   | 4                 | Anti-ice                                              | 1=under way              |
|           |    |                                     |                   | 5                 | Circulator pump forcing due to compressor start-up    | 1=under way              |
|           |    |                                     |                   | 6                 | Set point limited by dew point                        | 1=active                 |
|           |    |                                     |                   | 7                 | Call                                                  | 1=In energy request mode |
|           |    |                                     |                   | 8                 | Supply temperature beyond limits                      | 1=active                 |
|           |    |                                     |                   | 9                 | Circulator pump thermal alarm                         |                          |
|           |    |                                     |                   | 10                | Defective return probe                                |                          |
|           |    |                                     |                   | 11                | Defective supply probe                                |                          |
|           |    |                                     |                   | 12                | Antifreeze alarm                                      |                          |
|           |    |                                     |                   | 13                | Secondary on/of                                       | 1 =on / 0=off            |
|           |    |                                     |                   | 14                | Free                                                  |                          |
|           |    |                                     |                   | 15                | Free                                                  |                          |
| 4506      | 7  | Circulator                          | %*10 (0...1000)   | Circulator        |                                                       |                          |
| 4507      | 8  | Valve position (calculated)         | %*10 (0...1000)   |                   |                                                       |                          |
| 4508      | 9  | PID output calculation              | -1000...1000      |                   |                                                       |                          |
| 4509      | 10 | Valve request correction            | %*10 (-100...100) |                   |                                                       |                          |
| 4510      | 11 | Correction scan timer               | Sec               |                   |                                                       |                          |
| 4511      | 12 | Valve relay activation duration     | Sec               |                   |                                                       |                          |
| 4512      | 13 | Dew operating temperature           | °C*10             |                   |                                                       |                          |
| 4513      | 14 | Air operating temperature           | °C*10             |                   |                                                       |                          |
| 4514      | 15 | Operating R.H.                      | %                 |                   |                                                       |                          |
| 4515-4529 |    | Free                                |                   |                   |                                                       |                          |

Data subject to updates.



## Circuit 2

| Address | Id | Description                         | U:M:              | Notes             |                                                       |                          |
|---------|----|-------------------------------------|-------------------|-------------------|-------------------------------------------------------|--------------------------|
| 4530    | 1  | Current H2O set point               | °C*10             | Setpoint          |                                                       |                          |
| 4531    | 2  | Return H2O operating temperature    | °C*10             | Temperature probe |                                                       |                          |
| 4532    | 3  | Supply H2O operating temperature    | °C*10             | Temperature probe |                                                       |                          |
| 4533    | 4  | Averaged temperature variation      | °C*10             | Temperature Delta |                                                       |                          |
| 4534    | 5  | Instantaneous temperature variation | °C*10             | Temperature Delta |                                                       |                          |
| 4535    | 64 | Statuses and alarms bitmap          | Bitmap            | Bit               | Function                                              | Configuration            |
|         |    |                                     |                   | 0                 | Circulator                                            | 1=On                     |
|         |    |                                     |                   | 1                 | Anti-lock                                             | 1=Function running       |
|         |    |                                     |                   | 2                 | Valve in full recirculation (or full open) position   | 1=Positioned             |
|         |    |                                     |                   | 3                 | In posizionamento tutto ricircolo (o in tutto aperto) | 1=In positioning         |
|         |    |                                     |                   | 4                 | Anti-ice                                              | 1=under way              |
|         |    |                                     |                   | 5                 | Circulator pump forcing due to compressor start-up    | 1=under way              |
|         |    |                                     |                   | 6                 | Set point limited by dew point                        | 1=active                 |
|         |    |                                     |                   | 7                 | Call                                                  | 1=In energy request mode |
|         |    |                                     |                   | 8                 | Supply temperature beyond limits                      | 1=active                 |
|         |    |                                     |                   | 9                 | Circulator pump thermal alarm                         |                          |
|         |    |                                     |                   | 10                | Defective return probe                                |                          |
|         |    |                                     |                   | 11                | Defective supply probe                                |                          |
|         |    |                                     |                   | 12                | Antifreeze alarm                                      |                          |
|         |    |                                     |                   | 13                | Secondary on/of                                       | 1 =on / 0=off            |
|         |    |                                     |                   | 14                | Free                                                  |                          |
|         |    |                                     |                   | 15                | Free                                                  |                          |
| 4536    | 7  | Circulator                          | %*10 (0...1000)   | Circulator        |                                                       |                          |
| 4537    | 8  | Valve position (calculated)         | %*10 (0...1000)   |                   |                                                       |                          |
| 4538    | 9  | PID output calculation              | -1000...1000      |                   |                                                       |                          |
| 4539    | 10 | Valve request correction            | %*10 (-100...100) |                   |                                                       |                          |
| 4540    | 11 | Correction scan timer               | Sec               |                   |                                                       |                          |
| 4541    | 12 | Valve relay activation duration     | Sec               |                   |                                                       |                          |
| 4542    | 13 | Dew operating temperature           | °C*10             |                   |                                                       |                          |
| 4543    | 14 | Air operating temperature           | °C*10             |                   |                                                       |                          |
| 4544    | 15 | Operating R.H.                      | %                 |                   |                                                       |                          |

Data subject to updates.





## Secondary commands

### Circuit 1

| Address   | id | Description                     | U:M:   |                   |                    |                                      |                                                                                                                                                |
|-----------|----|---------------------------------|--------|-------------------|--------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 4600      |    | Remote controls                 | Bitmap | Bit               | Function           | Enable                               | Notes                                                                                                                                          |
|           |    |                                 |        | 0                 | 1=ON / 0=OFF       | EnStatoRete=1                        | 0 = OFF<br>1 = ON                                                                                                                              |
|           |    |                                 |        | 1-6               | Free               |                                      |                                                                                                                                                |
|           |    |                                 |        | 7                 | Remote request     | EnChiamataRete=1                     | 0 = Request from digital input<br>1 = Request from network                                                                                     |
|           |    |                                 |        | 8-15              | Free               |                                      |                                                                                                                                                |
| 4601      |    | Remote supply heat H2O setpoint | °C*10  | Setpoint          |                    | EnSetAcquaRete=1                     |                                                                                                                                                |
| 4602      |    | Remote supply cool H2O setpoint | °C*10  | Setpoint          |                    | EnSetAcquaRete=1                     |                                                                                                                                                |
| 4603      |    | Remote air temperature          | °C*10  | Temperature probe |                    | EnSondaAriaRete=1                    |                                                                                                                                                |
| 4604      |    | Remote R.H.                     | %      | Humidity probe    |                    | EnSondaUmiditàRete=1                 |                                                                                                                                                |
| 4605      |    | Remote dew temperature          | °C*10  | Temperature probe |                    | EnTempRugiada=1                      |                                                                                                                                                |
| 4606      |    | Flat register                   | Bitmap | Bit               | Function           | Enable                               | Notes                                                                                                                                          |
|           |    |                                 |        | 0                 | EnSetAcquaRete     | 0: Local<br>1: Network               | Enables the network set point, if the latter fails it maintains the last value coming from the network                                         |
|           |    |                                 |        | 1                 | EnSondaAriaRete    | 0: Local<br>1: Network               | 0: the ambient thermostat reading applies (H1)<br>1: the networked value applies; if the latter fails, the thermostat reading applies          |
|           |    |                                 |        | 2                 | EnSondaUmiditàRete | 0: Local<br>1: Network               | 0: the thermostat reading applies<br>1: the networked value applies; if the latter fails, the thermostat reading applies                       |
|           |    |                                 |        | 3                 | EnStatoRete        | 0: Local<br>1: network not forceable | Enables on-off of the circuit from remote                                                                                                      |
|           |    |                                 |        | 4                 | EnTempRugiada      | 0: Local<br>1: Network               | 0: the calculation made by the board applies<br>1: the networked value applies; if the latter fails, the calculation made by the board applies |
|           |    |                                 |        | 5                 | EnChiamataRete     | 0: Local<br>1: Network               | 0: request from digital inputs<br>1: request from bit7 of the remote control                                                                   |
|           |    |                                 |        | 6-15              | Free               |                                      |                                                                                                                                                |
| 4607-4629 |    | Free                            |        |                   |                    |                                      |                                                                                                                                                |

Data subject to updates.



## Circuit 2

| Address | id | Description                     | U:M:   |                   |                    |                                      |                                                                                                                                                |
|---------|----|---------------------------------|--------|-------------------|--------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 4630    |    | Remote controls                 | Bitmap | Bit               | Function           | Enable                               | Notes                                                                                                                                          |
|         |    |                                 |        | 0                 | 1=ON / 0=OFF       | EnStatoRete=1                        | 0 = OFF<br>1 = ON                                                                                                                              |
|         |    |                                 |        | 1-6               | Free               |                                      |                                                                                                                                                |
|         |    |                                 |        | 7                 | Remote request     | EnChiamataRete=1                     | 0 = Request from digital input<br>1 = Request from network                                                                                     |
|         |    |                                 |        | 8-15              | Free               |                                      |                                                                                                                                                |
| 4631    |    | Remote supply heat H2O setpoint | °C*10  | Setpoint          |                    | EnSetAcquaRete=1                     |                                                                                                                                                |
| 4632    |    | Remote supply cool H2O setpoint | °C*10  | Setpoint          |                    | EnSetAcquaRete=1                     |                                                                                                                                                |
| 4633    |    | Remote air temperature          | °C*10  | Temperature probe |                    | EnSondaAriaRete=1                    |                                                                                                                                                |
| 4634    |    | Remote R.H.                     | %      | Humidity probe    |                    | EnSondaUmiditàRete=1                 |                                                                                                                                                |
| 4635    |    | Remote dew temperature          | °C*10  | Temperature probe |                    | EnTempRugiada=1                      |                                                                                                                                                |
| 4636    |    | Flat register                   | Bitmap | Bit               | Function           | Enable                               | Notes                                                                                                                                          |
|         |    |                                 |        | 0                 | EnSetAcquaRete     | 0: Local<br>1: Network               | Enables the network set point, if the latter fails it maintains the last value coming from the network                                         |
|         |    |                                 |        | 1                 | EnSondaAriaRete    | 0: Local<br>1: Network               | 0: the ambient thermostat reading applies (H1)<br>1: the networked value applies; if the latter fails, the thermostat reading applies          |
|         |    |                                 |        | 2                 | EnSondaUmiditàRete | 0: Local<br>1: Network               | 0: the thermostat reading applies<br>1: the networked value applies; if the latter fails, the thermostat reading applies                       |
|         |    |                                 |        | 3                 | EnStatoRete        | 0: Local<br>1: network not forceable | Enables on-off of the circuit from remote                                                                                                      |
|         |    |                                 |        | 4                 | EnTempRugiada      | 0: Local<br>1: Network               | 0: the calculation made by the board applies<br>1: the networked value applies; if the latter fails, the calculation made by the board applies |
|         |    |                                 |        | 5                 | EnChiamataRete     | 0: Local<br>1: Network               | 0: request from digital inputs<br>1: request from bit7 of the remote control                                                                   |
|         |    |                                 |        | 6-15              | Free               |                                      |                                                                                                                                                |

Data subject to updates.



## IDU Supervisor stata

| Address | Id | Description                                        | U.M.                                    | Notes                             |
|---------|----|----------------------------------------------------|-----------------------------------------|-----------------------------------|
| 4200    | 1  | Current set point                                  | °C/10                                   | Setpoint                          |
| 4201    | 11 | Exchanger water inlet temperature (TWIn Return)    | °C/10                                   | Temperature probe                 |
| 4202    | 12 | Exchanger water outlet temperature (TWOOut Supply) | °C/10                                   | Temperature probe                 |
| 4203    | 13 | Total supply temperature after Auxiliary (T1)      | °C/10                                   | Temperature probe                 |
| 4204    | 14 | Outdoor air temperature (T4)                       | °C/10                                   | Temperature probe                 |
| 4205    | 67 | DHW Setpoint                                       | °C/10                                   | Setpoint                          |
| 4206    | 16 | DHW accumulation temperature                       | °C/10                                   | Temperature probe                 |
| 4207    |    | DHW temperature at boiler outlet (instantaneous)   |                                         | Temperature probe                 |
| 4208    |    | Boiler DHW inlet temperature                       | °C/10                                   | Temperature probe                 |
| 4209    | 17 | Utility pump                                       | %/10                                    | PWM                               |
| 4210    | 74 | Primary flow                                       | (l/min)/10                              |                                   |
| 4211    | 79 | Solar exchanger inlet probe                        | °C/10                                   | Temperature probe                 |
| 4212    | 20 | Pressure 1                                         | Bar/100                                 | High pressure transducer          |
| 4213    | 21 | Pressure 2 Reserved                                | Bar/100                                 | High pressure transducer          |
| 4214    | 26 | Thermoregulator Request                            | %/10                                    |                                   |
| 4215    | 27 | Compressor Request                                 | rps                                     | Compressor required frequency     |
| 4216    | 28 | Compressor operating hours                         | hour                                    | Compressor                        |
| 4217    | 29 | Comp starts                                        | Number                                  | Compressor                        |
| 4218    | 35 | Mininet/Node connected                             | X=node disconnected<br>O=Node connected |                                   |
| 4219    | 36 | Electric power absorbed                            | KW                                      | Calculation of the absorbed power |
| 4220    | 37 | Current M-ODU                                      | A                                       | Absorbed current M-ODU            |
| 4221    | 38 | Voltage M-ODU                                      | V                                       | Voltage M-ODU                     |
| 4222    | 39 | RPS Operativi Compressore                          | 0-120 RPS                               | Compressor working RPS            |
| 4223    | 49 | Return temperature                                 | °C/10                                   | Temperature probe                 |
| 4224    | 50 | Discharge temperature                              | °C/10                                   | Temperature probe                 |
| 4225    | 53 | Thermostatic valve opening                         | STEPS                                   | Thermostatic                      |
| 4226    | 63 | Fan                                                | Number                                  | Fan 0-15                          |
| 4227    | 22 | Riscaldatore ausiliario modulazione                | %/10                                    | Out 0-10V                         |



|      |    |                                                |            |                      |                                                       |            |                                     |                                               |               |
|------|----|------------------------------------------------|------------|----------------------|-------------------------------------------------------|------------|-------------------------------------|-----------------------------------------------|---------------|
| 4228 | 23 | Boiler valve control / Auxiliary heater        | 0=Off 1=On | Unit statuses bitmap | Bitmap                                                | 0=Off 1=On | Out 0-10V                           |                                               |               |
| 4229 | 24 | Boiler modulation (set) / boiler valve control | °C/10      |                      |                                                       |            | Bit                                 | Function                                      | Configuration |
| 4230 | 64 |                                                | 0          |                      |                                                       |            | ON/OFF                              | 0=OFF<br>1=ON                                 |               |
|      |    |                                                | 1          |                      |                                                       |            | Heat/Cool                           | 0=Cool<br>1=Heat                              |               |
|      |    |                                                | 2          |                      |                                                       |            | Eco                                 | 1=Eco active                                  |               |
|      |    |                                                | 3          |                      |                                                       |            | Only bollre                         | 1=Only bollre                                 |               |
|      |    |                                                | 4          |                      |                                                       |            | Only DHW                            | 1=Only DHW                                    |               |
|      |    |                                                | 5          |                      |                                                       |            | Defrosting                          | 1= In defrosting mode                         |               |
|      |    |                                                | 6          |                      |                                                       |            | Cycle reverse status                | 0 = De-energised valve<br>1 = Energised valve |               |
|      |    |                                                | 7          |                      |                                                       |            | Alarms cumulative                   | 0 = Inactive<br>1 = active                    |               |
|      |    |                                                | 8          |                      |                                                       |            | DHW valve                           | 0 = installation side<br>1 = DHW side         |               |
|      |    |                                                | 9          |                      |                                                       |            | Free                                |                                               |               |
|      |    |                                                | 10         |                      |                                                       |            | Boiler / additional heating element | 0=OFF<br>1=ON                                 |               |
|      |    |                                                | 11         |                      |                                                       |            | Oil return                          | 1 = active                                    |               |
|      |    |                                                | 12         |                      |                                                       |            | Smart grid SG                       | 1 = active                                    |               |
|      |    |                                                | 13         |                      |                                                       |            | Smart grid EVU                      | 1 = active                                    |               |
|      |    |                                                | 14         |                      |                                                       |            | Free                                |                                               |               |
|      |    |                                                | 15         |                      |                                                       |            | Free                                |                                               |               |
| 4231 | 65 | DHW Status Bitmap                              | Bit        | Function             | Configuration                                         |            |                                     |                                               |               |
|      |    |                                                | 0          | ON/OFF               | 0=OFF<br>1=ON                                         |            |                                     |                                               |               |
|      |    |                                                | 1          | Recirculation        | 0 = inactive recirculation<br>1= active recirculation |            |                                     |                                               |               |
|      |    |                                                | 2          | Maintenance          | 1 = In maintenance                                    |            |                                     |                                               |               |
|      |    |                                                | 3          | DHW with Solar Only  | 1=DHW with Solar Only                                 |            |                                     |                                               |               |
|      |    |                                                | 4          | DHW with HP          | 1 = DHW production with HP                            |            |                                     |                                               |               |
|      |    |                                                | 5          | DHW with Boiler      | 1 = DHW production with Bolier                        |            |                                     |                                               |               |





| Address | Id | Description                 | U.M.   | Notes                                                                                                          |                        |
|---------|----|-----------------------------|--------|----------------------------------------------------------------------------------------------------------------|------------------------|
| 2800    |    | DHW internal probe          | °C/10  | Temperature                                                                                                    |                        |
| 2801    |    | DHW and solar status bitmap | Bitmap | Bit                                                                                                            | Configuration          |
|         |    |                             |        | bit0                                                                                                           | Available solar        |
|         |    |                             |        | bit1                                                                                                           | Enabled solar          |
|         |    |                             |        | bit2                                                                                                           | Free                   |
|         |    |                             |        | bit3                                                                                                           | Active anti-Legionella |
|         |    |                             |        | bit4                                                                                                           | Free                   |
|         |    |                             |        | bit5                                                                                                           | Free                   |
|         |    |                             |        | bit6                                                                                                           | Free                   |
|         |    |                             |        | bit7                                                                                                           | Free                   |
|         |    |                             |        | bit8                                                                                                           | = bit 0                |
|         |    |                             |        | bit9                                                                                                           | Reload now Completed   |
|         |    |                             |        | It should be set to 1 when the reload function is now completed and is reset after a time equal to 600 seconds |                        |
|         |    |                             |        | bit10                                                                                                          | Free                   |
|         |    |                             |        | bit11                                                                                                          | Free                   |
|         |    |                             |        | bit12                                                                                                          | Free                   |
|         |    |                             |        | bit13                                                                                                          | Free                   |
|         |    |                             |        | bit14                                                                                                          | Free                   |
|         |    |                             |        | bit15                                                                                                          | Free                   |
| 2802    |    | Solar temperature probes    | °C/10  | Temperature                                                                                                    |                        |
| 2803    |    | DHW outputs Bitmap          | Bitmap | Bit                                                                                                            | Configuration          |
|         |    |                             |        | bit0                                                                                                           | Active resistance      |
|         |    |                             |        | bit1                                                                                                           | DHW pump               |
|         |    |                             |        | bit2                                                                                                           | Free                   |
|         |    |                             |        | bit3                                                                                                           | Free                   |
|         |    |                             |        | bit4                                                                                                           | Free                   |
|         |    |                             |        | bit5                                                                                                           | Free                   |
|         |    |                             |        | bit6                                                                                                           | Free                   |



|      |                                |        |          |      |  |
|------|--------------------------------|--------|----------|------|--|
| 2803 | DHW outputs Bitmap             | Bitmap | bit7     | Free |  |
|      |                                |        | bit8     | Free |  |
|      |                                |        | bit9     | Free |  |
|      |                                |        | bit10    | Free |  |
|      |                                |        | bit11    | Free |  |
|      |                                |        | bit12    | Free |  |
|      |                                |        | bit13    | Free |  |
|      |                                |        | bit14    | Free |  |
|      |                                |        | bit15    | Free |  |
|      |                                |        | Setpoint |      |  |
| 2804 | Current DHW set                | °C/10  | hour     |      |  |
| 2805 | DHW resistance operation hours | °C/10  | Num      |      |  |
| 2806 | DHW resistance starts          | °C/10  |          |      |  |



## Stati Supervisore ODU

| Register address | Content                                            | Note                                                                                   |
|------------------|----------------------------------------------------|----------------------------------------------------------------------------------------|
| 4300             | The frequency at which the compressor operates     | Units (Hertz). A non-zero means that the compressor is on                              |
| 4301             | Out-of-machine operating mode                      | 0: Shutdown 2: Cooling 3: Heating 4: Forced Cooling 5: Hot water                       |
| 4302             | Fan speed                                          | 0-15 for 0-15 fan speed                                                                |
| 4303             | T3 Coil temperature                                | Units: 0.1 °C (read value = actual valuer)                                             |
| 4304             | T4 Outdoor ambient temperature                     | Units: 0.1 °C (read value = actual valuer)                                             |
| 4305             | Tp Compressor condensing temperature               | Units: 0.1 °C (read value = actual valuer)                                             |
| 4306             | Driver module protections code                     | 100-109 for L0-L9, 0 for unseth protection<br>40 = H4<br>60 = P6<br>80 = F8<br>90 = P1 |
| 4307             | External current (AC side)                         | Unit: Ampere                                                                           |
| 4308             | External AC voltage                                | Unit: Volts                                                                            |
| 4309             | EEV opening                                        | Real value = actual opening/8                                                          |
| 4310             | Error code                                         | See appendix                                                                           |
| 4311             | State                                              | ODU states (1=On ; 0= Off)                                                             |
|                  |                                                    | BIT6-BIT15 Reserved                                                                    |
|                  |                                                    | BIT5 External test mode flag                                                           |
|                  |                                                    | BIT3 Return oil                                                                        |
|                  |                                                    | BIT1 Defrost                                                                           |
|                  |                                                    | Bit0 External power acquisition enable bit                                             |
| 4312             | Th Compressor suction temperature                  | Units: 0.1 °C (read value = actual valuer)                                             |
| 4313             | Pressure value 1                                   | True value: 100 units (MPa)                                                            |
| 4314             | Pressure value 2                                   | True value: 100 units (MPa) - RESERVED                                                 |
| 4315             | DC bus current                                     | Unit: Ampere                                                                           |
| 4316             | DC bus voltage                                     | Back pass-back value: actual value/10 (units: volts)                                   |
| 4317             | Tfin temperature of the module board               | Units: 0.1 °C (read value = actual valuer)                                             |
| 4318             | External current limit scheme                      | The actual running scenario value [0-8]                                                |
| 4319             | The external machine runs a limited frequency code | 0 = Unlimited frequency                                                                |
|                  |                                                    | 1 = T4 limit frequency                                                                 |
|                  |                                                    | 2 = T3 limit frequency                                                                 |
|                  |                                                    | 3 = The current limit of the whole machine                                             |
| 4328             |                                                    | 4 = ACVolt limit frequency                                                             |
| 4329             |                                                    | 5 = Tfin frequency limit                                                               |
| 4330             |                                                    | 6 = Tp limit frequency                                                                 |
| 4331             |                                                    | 7 = Pressure limit frequency                                                           |
| 4332             |                                                    | 8 = Twin frequency limit                                                               |
| 4333             |                                                    | 9 = T3e frequency limit                                                                |
| 4320             | The maximum operational frequency                  | [Hz] Minimum value of frequency limits                                                 |





|      |                                              |                                                                                                                                                           |
|------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4321 | The whole machine consumes power (high data) | The power consumption data (32bits) will be returned via the register when the external power input is connected to the matching meter.                   |
|      |                                              | Power data --- 16bits high                                                                                                                                |
| 4322 | The whole machine consumes power (low data)  | Power data --- 16bits low                                                                                                                                 |
| 4323 | Set the frequency                            | If the mode is non-shutdown, is the requested frequency; if the set frequency is 0 is still shutdown.                                                     |
| 4324 | internal command                             |                                                                                                                                                           |
| 4325 | Mode set [LSByte]                            | 0 = Shutdown<br>2 = Cooling mode<br>3 = Heating mode<br>5 = Hot water mode                                                                                |
|      | Size [MSByte]                                | ODU unit size<br>0 not yet read from ODU unit or wrong value read<br>1 = 4 kW<br>2 = 6 kW<br>3 = 8 kW<br>4 = 10 kW<br>5 = 12 kW<br>6 = 14 kW<br>7 = 16 kW |
| 4326 | Heating highest operating frequency          | unit Hz                                                                                                                                                   |
| 4327 | Heating minimum operating frequency          | unit Hz                                                                                                                                                   |
| 4328 | Cooling highest operating frequency          | unit Hz                                                                                                                                                   |
| 4329 | Cooling minimum operating frequency          | unit Hz                                                                                                                                                   |

Data subject to updates.



## AHS Supervision stata

| Modbus IDU | Description                                                                                               | min. | max.  | u.m. |
|------------|-----------------------------------------------------------------------------------------------------------|------|-------|------|
| 4400       | Heating enabling, pump switch-on (if set to 1) - Executes and removes the heating request from the boiler | 0    | 1     | --   |
| 4401       | DHW comfort (if at 1) -Enabling and disabling of DHW comfort and preheating function                      | 0    | 1     | --   |
| 4402       | Summer (if = 1) / Winter (if = 0) - Enabling and disabling of DHW operation (instant boiler as well)      | 0    | 1     | --   |
| 4403       | DHW disabling (if = 1)                                                                                    | 0    | 1     | --   |
| 4404       | Fault signalling in progress (0=no fault-1=fault in progress)                                             | 0    | 1     | --   |
| 4405       | Heating request in progress (if = 1)                                                                      | 0    | 1     | --   |
| 4406       | DHW request in progress (if = 1)                                                                          | 0    | 1     | --   |
| 4407       | Flame present signalling (if 1 = flame present)                                                           | 0    | 1     | --   |
| 4408       | Block Fault signalling (if 1=generic boiler burner block alarm)                                           | 0    | 1     | --   |
| 4409       | Low pressure fault (if = 1)                                                                               | 0    | 1     | --   |
| 4410       | Heating setpoint                                                                                          | 0.0  | 100.0 | °C   |
| 4411       | DHW setpoint                                                                                              | 0.0  | 127.0 | °C   |
| 4412       | BLOR remote release                                                                                       | 0    | 255   |      |
| 4413       | Supply heating temperature                                                                                | 0.0  | 127.0 | °C   |
| 4414       | Return heating temperature                                                                                | 0.0  | 127.0 | °C   |
| 4415       | DHW temperature                                                                                           | 0.0  | 127.0 | °C   |
| 4416       | Outdoor temperature                                                                                       | 0.0  | 127.0 | °C   |
| 4417       | Alarm code present - as per the inst/use manual list of faults                                            | 0    | 255   |      |
| 4418       | Burner modulation level                                                                                   | 0.0  | 100.0 | %    |
| 4419       | System pressure                                                                                           | 0.0  | 10.0  | bar  |

Data subject to updates.



## Safety

Operate in compliance with safety regulations in force .

Use single protection devices:

gloves, glasses, helmet, etc..

## General

Maintenance must be performed by authorized centres or by qualified personnel

The maintenance allows to:

- maintaining the unit efficient
- reduce the deterioration speed all the equipment is subject to over time
- collect information and data to understand the efficiency state of the unit and prevent possible faults

### WARNING

- ⇒ *Before checking, please verify the following:*
- ⇒ *the electrical power supply line should be isolated at the beginning*
- ⇒ *the line isolator device is open, locked and equipped with the suitable warning sign*
- ⇒ *make sure no tension is present*
- ⇒ *After switching the power off, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.*
- ⇒ *Before accessing check with a multimeter that there are no residual stresses.*

## Frequency of interventions

Perform an inspection every 6 months.

However, frequency depends on the type of use.

Plan inspections at close intervals in the event of:

- frequent use (continuous or very intermittent use, near the operating limits, etc)
- critical use (service necessary)

### WARNING

- ⇒ *Before performing any work, please read carefully: SAFETY WARNINGS FOR OPERATIONS ON UNITS CONTAINING R32*





## SAFETY WARNINGS FOR OPERATIONS ON UNITS CONTAINING R32

### Area checks

Before working on systems containing flammable refrigerants, perform safety checks to reduce the risk of combustion to the minimum. Before performing any reparation operations on the cooling system, comply with the following warnings.

### Work procedures

Operations must be performed following a controlled procedure so as to reduce the risk of flammable gases or vapours developing.

### General work area

All the personnel in charge with maintenance operations and other operators working in the local area must be instructed and monitored as regards the nature of the intervention.

Avoid working in tight spaces. The area surrounding the working space must be cordoned off. Make sure the area is secured by monitoring the flammable material.

### Check the presence of refrigerant

Both before and during operations, the area must be monitored with a dedicated refrigerant detector to make sure the technician is aware of the presence of potentially-flammable environments.

Make sure the leak detection equipment is suitable for use with flammable refrigerants and therefore without sparks, suitably sealed or intrinsically safe.

### Presence of the fire extinguisher

If hot interventions are not performed on cooling equipment or connected components, suitable fire fighting equipment must be kept at hand.

Keep a dry-powder or CO2 extinguisher near the loading area.

### No ignition source

It is absolutely forbidden to use ignition sources that may lead to fire or explosion during operations on the cooling system or on pipes that contain or have contained flammable refrigerant.

All possible ignition sources, including cigarettes, must be kept sufficiently away from the installation, reparation, removal and disposal site as flammable refrigerant may be released in the surrounding area.

Before starting operations, the area surrounding the equipment must be inspected to guarantee the absence of flammables or combustion risks. "SMOKING IS FORBIDDEN" signs must be affixed.

### Ventilated area

Before intervening on the system or performing any hot intervention, make sure to be in an outdoor or suitably ventilated area.

Ventilation must be maintained during operations. Ventilation must disperse the released refrigerant safely, preferably outdoors in the atmosphere.

### Cooling equipment checks

Should a replacement be necessary, the new components installed must be suitable for the purpose envisaged and compliant with specifications.

Always follow the manufacturer guidelines on maintenance and assistance. In case of doubt, contact the manufacturer technical office for assistance.

The following checks must be performed on systems containing flammable refrigerants:

- the quantity of the charge must comply with the size of the room where the parts containing refrigerant are installed;
- the machine and ventilation intake function correctly and are not obstructed;
- If an indirect cooling circuit is used, the secondary circuits must be checked to verify the presence of refrigerants; the marking on the equipment remains visible and readable;
- Make sure markings and symbols are always readable; cooling pipes or components must be installed in a position that makes improbable their exposure to substances that may corrode the components



containing refrigerant, unless they are manufactured with material intrinsically resistant to corrosion or suitably protected against corrosion.

### Electrical device checks

The reparation and maintenance of electric components must include initial safety checks and component inspection procedures.

In case of a fault that compromises safety, do not perform any electrical connection to the circuit until said fault is suitably resolved.

If it is not possible to repair the fault immediately and electrical components need to remain functioning, a temporary solution must be adopted. This must be reported to the owner of the equipment so as to keep all parties informed.

Initial safety checks must include:

- that condensers are emptied. This operation must be performed safely to avoid any sparks;
- that electrical components and wiring are not exposed during the charging, recovering or venting phases;
- That the earth conductor is continuous.

### Repairing sealed components

- During the reparation operations of sealed components, disconnect all the equipment before removing sealed casings etc. If, during operations, it is absolutely necessary for the equipment to remain connected, a leak detection device must be placed in the most critical point so as to report any potentially-dangerous situation.
- Pay particular attention to what follows to guarantee that, while intervening on electrical components, the housing is not altered in a way so as to affect the level of protection. This includes damage to cables, an excessive number of connections, terminals not compliance with the original specifications, damage to gaskets, an unsuitable installation of gaskets, etc.
- Make sure the device is installed safely.
- Check that the seals or sealing materials are not altered in such a way that they no longer the impede the entry of flammable environments. Spare parts must comply with manufacturer specifications.

#### NOTE:

⇒ *Using silicone sealants may inhibit the effectiveness of a few types of leak detection equipment. It is not necessary to isolate intrinsically safe components before performing operations on them.*

### Reparation of intrinsically safe components

Do not apply permanent inductive or capacitive loads to the circuit without making sure that they do not exceed the admissible voltage and current allowed for equipment in use.

Intrinsically safe components are the only component type on which operations can be performed in a flammable atmosphere. The testing device must show a correct value. Replace components only with the parts specified by the manufacturer.

Following a leak, other parts could lead to the combustion of the refrigerant in the atmosphere.

### Wires

Make sure wires are not subjected to wear, corrosion, excessive pressure or vibration, that there are no sharp edges and that they do not produce other negative effects on the environment. The inspection must also keep into consideration the effects of time or the continuous vibration caused e.g. by compressors or fans.

### Detection of flammable refrigerants

Under no circumstance is it possible to use potential ignition sources to search or detect refrigerant leaks.

Do not use halide lights (or any other open flame detectors).

### Leak detection methods

The following leak detection methods are considered acceptable for systems containing flammable refrigerants. Electric leak detectors must always be used to identify flammable refrigerants, although they do not present a suitable sensitivity level or require recalibration (detection equipment must be calibrated in an area free from refrigerants).



Check that the detector is not a possible source of ignition and that it is suitable for the refrigerant. Leak detection equipment must always be set to an LFL percentage and calibrated depending on the refrigerant used, so the correct gas percentage (25% max) must be verified.

Leak detection fluids are suitable for most refrigerants, although using detergents containing chlorine should be avoided as this substance may react with the refrigerant and corrode copper pipes.

If a leak is suspected, all open flames must be removed or switched off.

If a leak is identified that requires brazing, all the refrigerant must be recovered from the system or isolated (using interception valves) in a section of the system far away from the leak. Oxygen-Free-Nitrogen (OFN) is then purged through the system both before and during the brazing procedure.

### Removal and evacuation

When intervening on the cooling circuit to perform repair work or any other type of work, always follow the normal procedure. However, considering the risk of flammability, we recommend following the best practices. Comply with the following procedure:

- remove the refrigerant;
- purge the circuit with inert gas;
- evacuate;
- Purge again with inert gas;
- Interrupt the circuit with interruption or brazing.

The refrigerant charge must be collected in suitable recovery tanks. To make the unit safe, flushing with Oxygen-free-Nitrogen must be performed. This procedure may have to be repeated multiple times. Do not use compressed air or oxygen for this operation.

Flushing is obtained interrupting the system vacuum with OFN and filling until the operating pressure is obtained, then releasing into the atmosphere and restoring the vacuum. This process must be repeated until there is no trace of refrigerant in the system.

When using the final OFN charge, the system must be vented to the atmospheric pressure to allow the intervention. This step is essential to perform brazing operations on the pipes.

Make sure that the vacuum pump intake is not near ignition sources and that there is suitable ventilation.

### Charging operations

In addition to conventional charging operations, the following requirements must be complied with:

- When using charging equipment, make sure that the various refrigerants are not contaminated. Flexible tubes or conduits must be as short as possible to reduce to the minimum the quantity of refrigerant contained.
- Tanks must be kept in a vertical position.
- Before loading the system with refrigerant, check that the cooling system is earthed.
- Label the system when fully charged (unless already labelled).
- Make sure not to fill the cooling system excessively.
- Before recharging the system, the pressure must be tested with OFN. A leak test must be performed after the charging operations but before commissioning. Before leaving the site, perform an additional leak test.

### Dismantling

Before performing this procedure, it is essential that the technician has become familiar with the equipment and the relative details.

We recommend employing good practices for a safe recovery of the refrigerants.

Before performing the operation, take a sample of oil and refrigerant should an analysis be necessary before reusing the regenerated refrigerant. Before performing the operation, check the availability of electricity.

- Become familiar with the equipment and how it functions.



- Electrically isolate the system.

Before attempting the procedure, check that:

- The mechanical manipulation equipment is available, if necessary, to handle refrigerant tanks;
- All the personal protection equipment is available and employed correctly;
- The recovery procedure is monitored at all times by skilled personnel;
- The recovery equipment and tanks comply with suitable standards.
- If possible, pump the cooling system.
- If it is not possible to obtain a vacuum, make sure that a collector removes the refrigerant from various parts of the system.
- Before proceeding with the recovery, check that the tank is located on the scales.
- Start up the recovery machine and use it following the instructions by the manufacturer.
- Do not fill the tanks excessively. (Do not exceed 80% of the liquid volume).
- Do not exceed the tank's maximum operating pressure, not even momentarily.
- Once the tanks are filled correctly and the process is over, make sure that the tanks and equipment are immediately removed from the site and that all insulation valves on the equipment are closed.
- The refrigerant recovered must not be loaded into another cooling system unless it has been cleaned and checked.

### Labelling

Equipment must be labelled reporting the dismantling and emptying of the refrigerant.

Labels must be dated and signed.

Make sure all the equipment is labelled and reporting the presence of flammable refrigerant.

### Recovery

When removing the refrigerant from the system, please adopt good practices to remove all refrigerants safely in case of both assistance or decommissioning operations.

When transferring the refrigerant into the tanks, make sure only suitable tanks are used to recover the refrigerant.

Make sure enough tanks are used.

All the tanks to be used are designated for the recovered refrigerant and are labelled for that specific refrigerant (e.g. special tanks for refrigerant collection).

Tanks must be equipped with a perfectly-functioning safety valve and relative interception valves.

Empty recovery tanks are evacuated and, if possible, cooled before recovery.

Recovery equipment must be perfectly functioning with the respective instruction booklets at hand and they must be suitable to recover flammable refrigerants. A series of perfectly-functioning calibrated scales must also be available.

Flexible tubes must be equipped with leak-proof disconnection fittings in good condition. Before using the recovery machine, make sure it is in good condition, maintained and that all associated electrical components are sealed to avoid combustion in case of a refrigerant leak. Please contact the manufacturer in case of doubt.

The refrigerant recovered must be taken to the supplier in suitable recovery tanks and with the relative waste transfer note suitably filled in.

Do not mix the refrigerants in the recovery units nor in the tanks.

If it is necessary to remove compressors or compressor oils, make sure they are evacuated to an acceptable level to make sure no trace is left of the flammable refrigerant inside the lubricant. The evacuation process must be performed before taking the compressors back to the suppliers.

The electric resistance must be used with the compressor body only to accelerate this process.

Operations to discharge the oil from the system must be performed in full safety.

## 20. Transport, mark and storage

- 1 Transport of equipment containing flammable refrigerants  
Compliance with transport regulations



- 2 Marking of equipment with symbols  
Compliance with local regulations
- 3 Disposal of equipment employing flammable refrigerants  
Compliance with national regulations
- 4 Storage of equipment/devices  
The equipment must be stored in compliance with the instructions provided by the manufacturer.
- 5 Storing packed (unsold) equipment  
Packing must be performed in such a way that mechanical damage to the equipment inside it does not cause refrigerant leaks.  
The maximum number of elements that can be stored together is determined by local regulations.





### Checklist for recommended regular checks

Checks effected on.....by.....of the company.....

| ✓                        | intervention frequency (months)                                                                       | 1 | 6 | 12 |
|--------------------------|-------------------------------------------------------------------------------------------------------|---|---|----|
| <input type="checkbox"/> | Panel fixing                                                                                          |   |   | X  |
| <input type="checkbox"/> | External unit fan fixing                                                                              |   | X |    |
| <input type="checkbox"/> | External unit coil cleaning                                                                           |   | X |    |
| <input type="checkbox"/> | Charged pressure of water system                                                                      |   | X |    |
| <input type="checkbox"/> | Docking joints, caps and shafts                                                                       |   | X |    |
| <input type="checkbox"/> | Leak visual check on solar panel fittings                                                             |   | X |    |
| <input type="checkbox"/> | Air in the pipes                                                                                      |   |   | X  |
| <input type="checkbox"/> | Flowmeter function                                                                                    |   |   | X  |
| <input type="checkbox"/> | Drain dirt separator                                                                                  | X | X | X  |
| <input type="checkbox"/> | Capacity contactor status                                                                             |   |   | X  |
| <input type="checkbox"/> | Terminal closing, cable insulation integrity                                                          |   |   | X  |
| <input type="checkbox"/> | Voltage and phase unbalancing (no load and on-load)                                                   |   | X |    |
| <input type="checkbox"/> | Absorptions of the single electrical loads                                                            |   | X |    |
| <input type="checkbox"/> | Compressor carter resistance test                                                                     |   | X |    |
| <input type="checkbox"/> | Leak control *                                                                                        |   |   | X  |
| <input type="checkbox"/> | Measure of operating parameters of the refrigerant circuit                                            |   | X |    |
| <input type="checkbox"/> | Check drier filter                                                                                    |   |   | X  |
| <input type="checkbox"/> | Presence of oil stains                                                                                |   | X |    |
| <input type="checkbox"/> | Closure of pipe unions, Schrader caps                                                                 |   | X |    |
| <input type="checkbox"/> | Protective device / integrity test : safety valves, pressure switches, thermostats, flow switches etc |   | X |    |
| <input type="checkbox"/> | Check schedulers, setpoints, compensations, etc...                                                    |   | X |    |
| <input type="checkbox"/> | Control device/integrity test: alarm signalling, thermometers, probes, pressure gauges etc            |   | X |    |
| <input type="checkbox"/> | Fill in the unit booklet                                                                              |   |   |    |

### NOTE

⇒ Refer to the local regulations. Companies and technicians performing installation, maintenance/repair, leak control and recovery operations must be CERTIFIED as set out by the local regulations.



### Unit booklet

It's advisable to create a unit booklet to take notes of the unit interventions.

In this way, it will be easier to adequately schedule the various interventions and facilitate any troubleshooting.

On the schedule note:

- date
- intervention description
- carried out measures etc.

### Standby mode

If a long period of inactivity is foreseen:

- turn off the power
- avoid the risk of frost (empty the system or add glycol)

Turn off the power to avoid electrical risks or damages by lightning strikes.

With lower temperatures keep heaters turned on in of the electrical panel (option).

It's recommended that the re-start after the stopping period is performed by a qualified technician, especially after seasonal stops or seasonal

switching.

When restarting, refer to what is indicated in the "start-up" section.

Schedule technical assistance in advance to avoid hitches and to guarantee that the system can be used when required



## External unit fan

Check:

- ensure that the fan and the relative protection grids are well fixed
- The fan bearings (evident by noise and anomalous vibrations )
- the terminal protection covers are closed and the cable holders are properly positioned

Access to the fan

- Remove the screws (A)

**DANGER**

⇒ Exercise caution to avoid a possible hand injury





### Outdoor unit air coil

Accidental contact with the exchanger flaps can cause injuries from cut: use protective gloves.

The coil must allow maximum thermal exchange, therefore, the surface must be clear from dirt and scaling.

Clean the air inlet side.

Use a soft brush or aspirator or pressurised air jet or high-pressure water jet machine.

Keep the direction parallel to the flow of the flaps to avoid damages.

Check the aluminium flaps have not been damaged or folded, on the contrary contact an authorised after-sales assistance centre to "comb" the coil for excellent air flow.

### Outdoor unit condensate drain

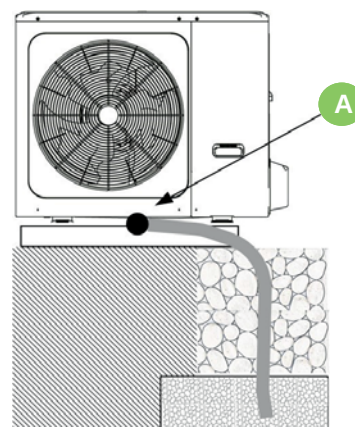
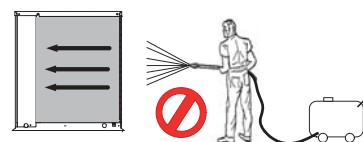
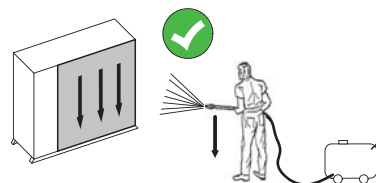
Dirt or scale can give rise to clogging.

Also, microorganisms and mould can flourish in the bowl.

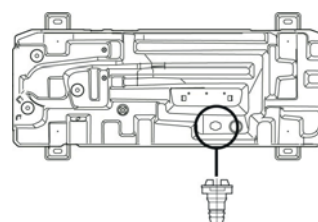
Foresee periodical cleaning with suitable detergents and, eventually, disinfect with sanitising products.

Once cleaning is completed, pour water inside the bowl to check the regular outflow.

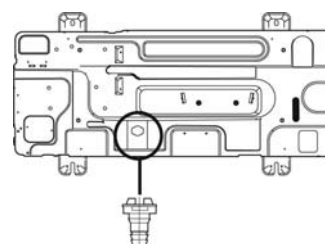
A - Condensate discharge connection



Size 2.1 – 5.1



Size 6.1 – 8.1





### Periodic system checks

- Charge check of expansion tanks
- Water filter cleaning check
- Check system and aqueduct operating pressures

### Expansion vessel

Check the expansion vessel charge (at least once a year).

First check that the expansion vessel is totally drained of water.

If you necessary load with nitrogen, take care that the pressure does not exceed the value indicated on the label.

### Water filter

Check that no impurities prevent the correct passage of water.

### Safety valves

The safety valves must be checked regularly.

Almost all losses are caused by impurities deposited inside the valve.

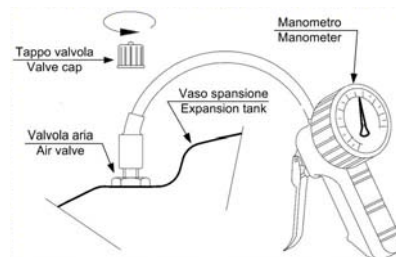
It's normal if some water drops from the hole of safety valve during operation.

But, if there is a great amount of water, call your service agent for instructions.

Please beware of burn, beware of the hot water from the valve.

To carry out a wash:

- manually open the valve
- rotate the knob in the sense indicated by the arrow in the knob.





## Magnetic sludge

Magnetic filter “A” separates the impurities (sand particles, rust ... etc) present in the system water.

The impurities are collected in a settling chamber.

Cleaning the filter can also be done with a working system.

Clean the filter:

- During the start up of the unit
- After one week from the start up
- After one month from start up
- Once a year

## ATTENTION

⇒ Restore system pressure

## Unloading

- Remove the magnet holder cartridge (1);
- Open the tap to purge impurities (2);
- Close the tap.

## Cleaning (extraordinary)

Close the shut-off valves of the system and water supply.

Disassembly sequence:

- Unscrew the ring nut (1) of the lower cover (2) of the dirt separator and remove the filter
- Take out the magnet cartridge.
- Clean the filter and the bottom cover.
- Reinsert the magnet cartridge.
- Close the bottom cover of the dirt separator
- Open the shut-off valves of the plant and aqueduct.

Check pressure of the plant

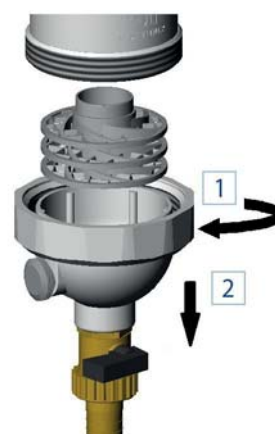
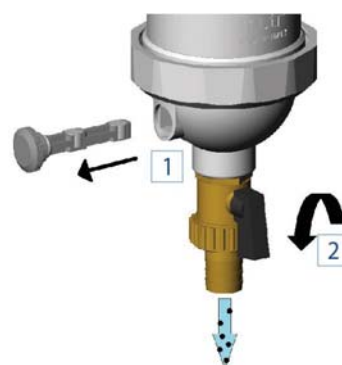
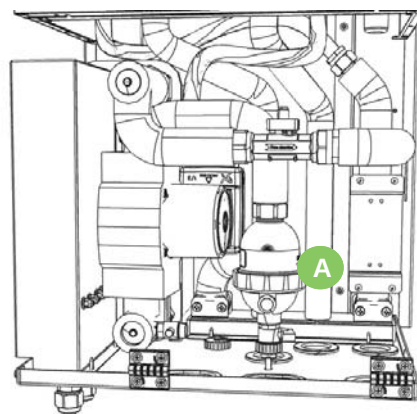
## Structure

Check the condition of the parts making up the structure.

Paint so as to eliminate or reduce oxidation at the points in the unit where this problem may occur.

Check that the panelling is fastened correctly.

Poor fastening may give rise to malfunctions and abnormal noise and vibration.





### CLEANING THE OUTER COATING.

Clean with:

- soapy water.
- water-based detergents containing anionic and/or non-ionic surfactants.

Always rinse with clean water.

### WARNING

Do not use:

- A. solvent-based degreasing agents such as: acetone, denatured ethyl alcohol, trichloroethylene, white spirit, etc.;
- B. dilute acids in aqueous solution (Hydrochloric Acid, Nitric Acid) and products containing dilute acids.
- C. dilute bases in aqueous solution (Caustic Soda, Sodium Hypochlorite, Ammonia)
- D. fluorinated hydrocarbons
- E. mineral-based lubricating oils.

⇒ *These substances can attack the surface of the product and lead to the formation of cracks and, over time, to the possibility of breakage of the plastic material.*



## Disconnection

### WARNING

⇒ Before performing any operation, read the warnings found in the Maintenance chapter.

Avoid leak or spills into the environment.

Before disconnecting the unit, the following must be recovered, if present:

- refrigerant gas
- Anti-freeze solutions in the hydraulic circuit

Awaiting decommissioning and disposal, the unit can also be stored outdoors, as bad weather and rapid changes in temperature do not harm the environment provided that the electric, cooling and hydraulic circuits of the unit are intact and closed.

## WEEE INFORMATION

The manufacturer is registered on the EEE National Register, in compliance with implementation of Directive 2012/19/EU and relevant national regulations on waste electrical and electronic equipment.

This Directive requires electrical and electronic equipment to be disposed of properly.

Equipment bearing the crossed-out wheelie bin mark must be disposed of separately at the end of its life cycle to prevent damage to human health and to the environment.

Electrical and electronic equipment must be disposed of together with all of its parts.

To dispose of "household" electrical and electronic equipment, the manufacturer recommends you contact an authorised dealer or an authorised ecological area.

"Professional" electrical and electronic equipment must be disposed of by authorised personnel through established waste disposal authorities around the country.

In this regard, here is the definition of household WEEE and professional WEEE:

WEEE from private households: WEEE originating from private households and WEEE which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households. Subject to the nature and quantity, where the waste from EEE was likely to have been by both a private household and users of other than private households, it will be classed as private household WEEE;

Professional WEEE: all WEEE which comes from users other than private households.

This equipment may contain:

refrigerant gas, the entire contents of which must be recovered in suitable containers by specialised personnel with the necessary qualifications;

- lubrication oil contained in compressors and in the cooling circuit to be collected;
- mixtures with antifreeze in the water circuit, the contents of which are to be collected;
- mechanical and electrical parts to be separated and disposed of as authorised.

When machine components to be replaced for maintenance purposes are removed or when the entire unit reaches the end of its life and needs to be removed from the installation, waste should be separated by its nature and disposed of by authorised personnel at existing collection centres.

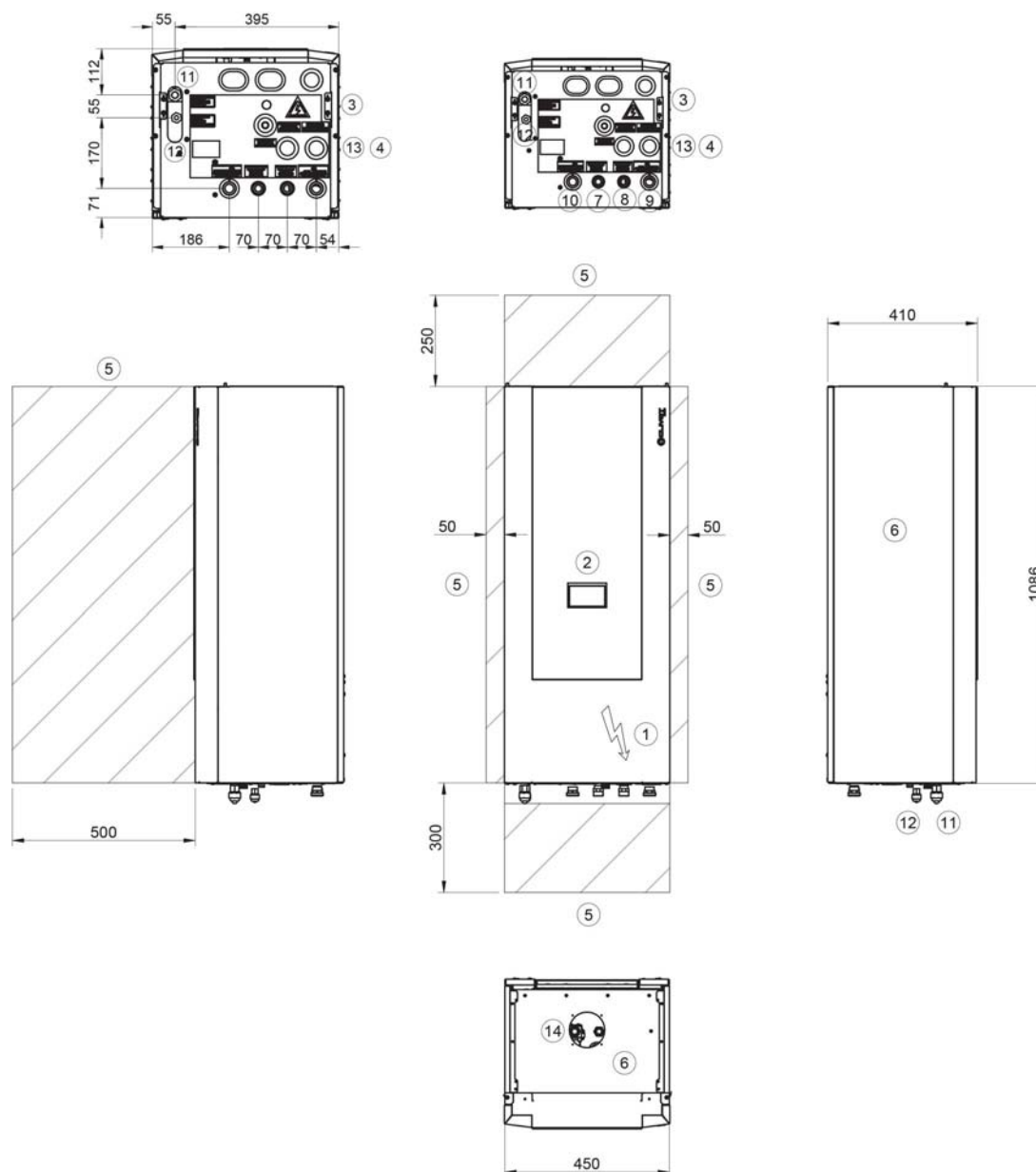


**Warning:**  
**Fire hazard**  
**Flammable materials**





## Dimensional - Internal unit



- 1 Electric panel
- 2 Controller keypad
- 3 Electrical line intake
- 4 Condensate drain
- 5 Functional spaces

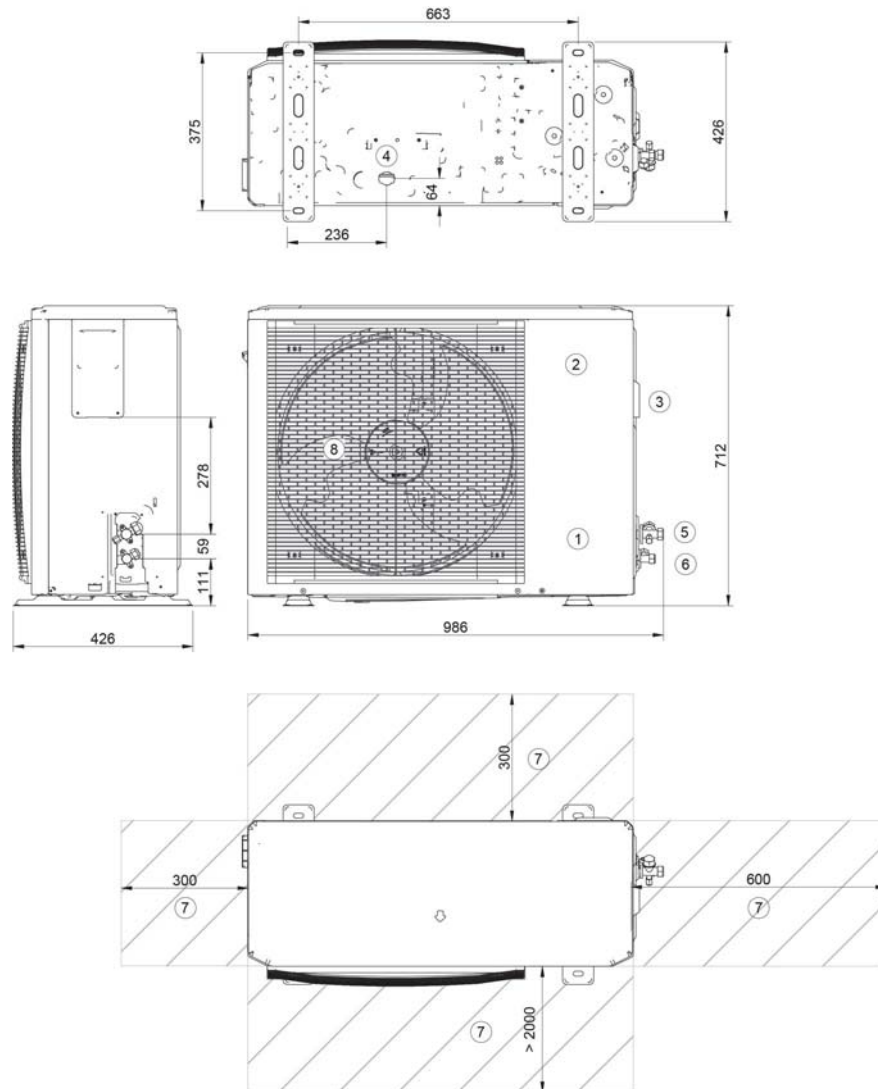
- 6 Gas boiler
- 7 Boiler DHW supply  $\varnothing$  3/4" M
- 8 Boiler DHW return  $\varnothing$  3/4" M
- 9 Supply to system  $\varnothing$ 1" M
- 10 Return to system  $\varnothing$ 1" M

- 11 Gas line ( $\varnothing$ 5/8" G)
- 12 Liquid line ( $\varnothing$ 3/8" G)
- 13 Gas boiler inlet
- 14 Boiler fumes outlet

| Size                 |    | A     | B  |
|----------------------|----|-------|----|
| Hydronic + structure | kg | 39    | 41 |
| 24kW boiler          | kg | 31    | -- |
| 34kW boiler          | kg | 34    | 34 |
| Operating weight     | kg | 70/73 | 75 |
| Shipping weight      | kg | 44    | 46 |

## 14 TECHNICAL INFORMATION

### External unit Size 2.1 - 3.1

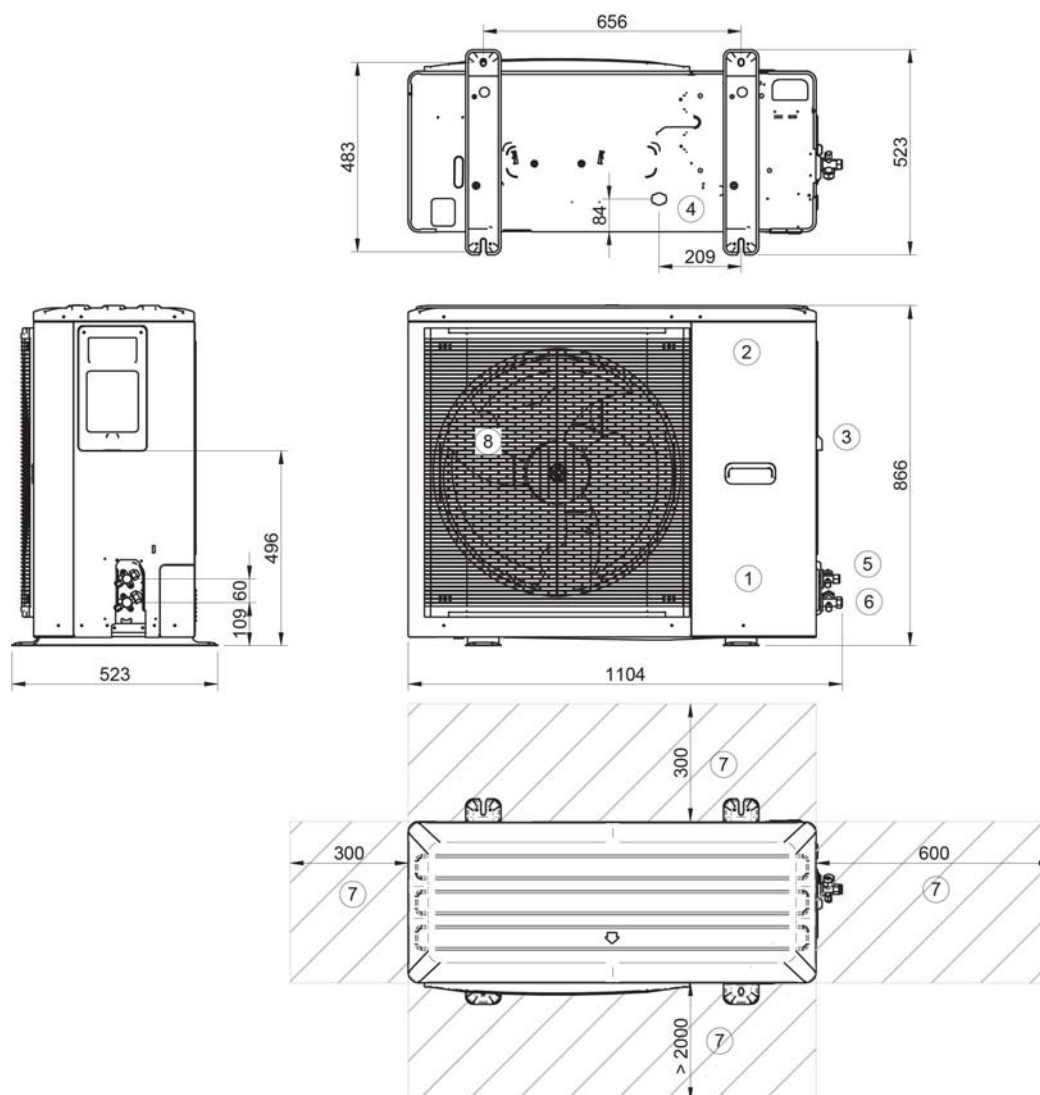


- 1 Compressor compartment
- 2 Electrical panel
- 3 Power input
- 4 Condensate drain
- 5 Suction line connection (ø 1/4" G)
- 6 Liquid line connection (ø 5/8" G)
- 7 Functional spaces
- 8 Electric fan

(M) Air supply

| Size             |    | 2.1 -3.1 |
|------------------|----|----------|
| Operating weight | kg | 58       |
| Shipping weight  | kg | 64       |

### Size 4.1 - 5.1



- 1 Compressor compartment
- 2 Electrical panel
- 3 Power input
- 4 Condensate drain
- 5 Suction line connection (ø3/8" G)
- 6 Liquid line connection (ø5/8" G)
- 7 Functional spaces
- 8 Electric fan

| Size             |    | 4.1 - 5.1 | 6.1 - 8.1 | 6.1 - 8.1 |
|------------------|----|-----------|-----------|-----------|
| Power supply     |    | 1ph       |           | 3ph       |
| Operating weight | kg | 77        | 96        | 112       |
| Shipping weight  | kg | 88        | 110       | 125       |

# General technical data

| Size                           |   |     | A+2.1     |    | A+3.1     |    | A+4.1      |    | A+5.1       |    | B+6.1*      |  | C+7.1*      |  | D+8.1*      |  |
|--------------------------------|---|-----|-----------|----|-----------|----|------------|----|-------------|----|-------------|--|-------------|--|-------------|--|
| Heating                        |   |     |           |    |           |    |            |    |             |    |             |  |             |  |             |  |
| Air 7°C - Water 35°C           |   |     |           |    |           |    |            |    |             |    |             |  |             |  |             |  |
| Nominal heating capacity / max | 1 | kW  | 4,32/6,26 |    | 6,18/7,41 |    | 8,30/9,11  |    | 10,09/10,3  |    | 12,13/14,60 |  | 14,51/15,5  |  | 16,01/16,80 |  |
| Total power input              | 1 | kW  | 0,80      |    | 1,19      |    | 1,56       |    | 2,01        |    | 2,42        |  | 3,09        |  | 3,52        |  |
| COP                            | 1 | -   | 5,42      |    | 5,21      |    | 5,31       |    | 5,01        |    | 5,00        |  | 4,70        |  | 4,55        |  |
| Water flow-rate                | 1 | l/s | 0,21      |    | 0,30      |    | 0,41       |    | 0,49        |    | 0,57        |  | 0,67        |  | 0,75        |  |
| Nominal available pressure     | 1 | kPa | 31,2      |    | 36,5      |    | 33,1       |    | 31,0        |    | 25,7        |  | 31,7        |  | 22,6        |  |
| Maximum available pressure     | 1 | kPa | 69        | 95 | 62        | 90 | 47         | 83 | 31          | 76 | 70          |  | 55          |  | 39          |  |
| Air -7°C - Water 35°C          |   |     |           |    |           |    |            |    |             |    |             |  |             |  |             |  |
| Nominal heating capacity / max | 2 | kW  | 4,17/6,25 |    | 6,05/6,97 |    | 7,33/8,35  |    | 8,20/9,30   |    | 10,49/13,85 |  | 12,23/14,09 |  | 13,43/14,33 |  |
| Total power input              | 2 | kW  | 1,32      |    | 2,01      |    | 2,27       |    | 2,67        |    | 3,36        |  | 4,33        |  | 4,90        |  |
| COP                            | 2 | -   | 3,16      |    | 3,00      |    | 3,23       |    | 3,07        |    | 3,13        |  | 2,82        |  | 2,74        |  |
| Water flow-rate                | 2 | l/s | 0,22      |    | 0,29      |    | 0,34       |    | 0,40        |    | 0,56        |  | 0,62        |  | 0,70        |  |
| Nominal available pressure     | 2 | kPa | 35,0      |    | 39,8      |    | 34,0       |    | 31,7        |    | 65,8        |  | 63,1        |  | 47,7        |  |
| Maximum available pressure     | 2 | kPa | 69        | 94 | 64        | 91 | 58         | 88 | 49          | 84 | 71          |  | 63          |  | 49          |  |
| Air 7°C - Water 45°C           |   |     |           |    |           |    |            |    |             |    |             |  |             |  |             |  |
| Nominal heating capacity / max | 3 | kW  | 4,16/5,96 |    | 6,03/7,13 |    | 8,22/8,98  |    | 10,01/10,30 |    | 12,30/14,50 |  | 14,00/15,70 |  | 16,01/16,60 |  |
| Total power input              | 3 | kW  | 1,06      |    | 1,57      |    | 2,08       |    | 2,59        |    | 3,24        |  | 3,84        |  | 4,45        |  |
| COP                            | 3 | -   | 3,93      |    | 3,83      |    | 3,95       |    | 3,86        |    | 3,80        |  | 3,65        |  | 3,60        |  |
| Water flow-rate                | 3 | l/s | 0,19      |    | 0,30      |    | 0,39       |    | 0,49        |    | 0,60        |  | 0,67        |  | 0,76        |  |
| Nominal available pressure     | 3 | kPa | 32,3      |    | 36,4      |    | 34,9       |    | 31,0        |    | 51,6        |  | 41,8        |  | 21,7        |  |
| Maximum available pressure     | 3 | kPa | 70        | 95 | 63        | 90 | 51         | 85 | 31          | 76 | 65          |  | 55          |  | 38          |  |
| Air 7°C - Water 55°C           |   |     |           |    |           |    |            |    |             |    |             |  |             |  |             |  |
| Nominal heating capacity / max | 4 | kW  | 4,08/5,74 |    | 5,94/6,90 |    | 7,50/7,80  |    | 9,60/9,72   |    | 12,07/13,90 |  | 13,85/14,50 |  | 16,00/16,20 |  |
| Total power input              | 4 | kW  | 1,36      |    | 1,93      |    | 2,35       |    | 3,10        |    | 3,89        |  | 4,53        |  | 5,52        |  |
| COP                            | 4 | -   | 3,00      |    | 3,07      |    | 3,19       |    | 3,10        |    | 3,10        |  | 3,05        |  | 2,90        |  |
| Water flow-rate                | 4 | l/s | 0,12      |    | 0,18      |    | 0,23       |    | 0,29        |    | 0,36        |  | 0,41        |  | 0,48        |  |
| Nominal available pressure     | 4 | kPa | 35,6      |    | 33,4      |    | 31,2       |    | 33,6        |    | 14,1        |  | 16,5        |  | 17,4        |  |
| Maximum available pressure     | 4 | kPa | 70        | 98 | 70        | 96 | 69         | 94 | 63          | 91 | 90          |  | 105         |  | 80          |  |
| Cooling                        |   |     |           |    |           |    |            |    |             |    |             |  |             |  |             |  |
| Air 35°C - Water 18°C          |   |     |           |    |           |    |            |    |             |    |             |  |             |  |             |  |
| Nominal cooling capacity / max | 5 | kW  | 4,55/6,88 |    | 6,44/7,65 |    | 8,10/11,13 |    | 10,00/12,03 |    | 12,06/15,02 |  | 13,79/15,30 |  | 14,84/16,38 |  |
| Total power input              | 5 | kW  | 0,75      |    | 1,23      |    | 1,58       |    | 2,10        |    | 3,00        |  | 3,73        |  | 4,07        |  |
| EER                            | 5 | -   | 6,08      |    | 5,24      |    | 5,12       |    | 4,77        |    | 4,02        |  | 3,70        |  | 3,65        |  |
| Water flow-rate                | 5 | l/s | 0,22      |    | 0,32      |    | 0,38       |    | 0,48        |    | 0,60        |  | 0,63        |  | 0,71        |  |
| Nominal available pressure     | 5 | kPa | 34,9      |    | 34,8      |    | 34,6       |    | 10,6        |    | 13,1        |  | 16,3        |  | 15,1        |  |
| Maximum available pressure     | 5 | kPa | 69        | 94 | 61        | 89 | 51         | 85 | 32          | 76 | 65          |  | 61          |  | 48          |  |
| Air 35°C - Water 7°C           |   |     |           |    |           |    |            |    |             |    |             |  |             |  |             |  |
| Nominal cooling capacity / max | 6 | kW  | 4,26/6,14 |    | 6,25/6,39 |    | 7,46/7,94  |    | 9,10/8,67   |    | 11,80/11,16 |  | 12,86/11,72 |  | 14,20/12,88 |  |
| Total power input              | 6 | kW  | 1,22      |    | 2,02      |    | 2,24       |    | 2,94        |    | 4,29        |  | 5,04        |  | 5,80        |  |
| EER                            | 6 | -   | 3,50      |    | 3,09      |    | 3,33       |    | 3,09        |    | 2,75        |  | 2,55        |  | 2,45        |  |
| Water flow-rate                | 6 | l/s | 0,20      |    | 0,29      |    | 0,36       |    | 0,43        |    | 0,54        |  | 0,59        |  | 0,64        |  |
| Nominal available pressure     | 6 | kPa | 35,8      |    | 36,1      |    | 34,3       |    | 36,8        |    | 18,1        |  | 20,3        |  | 25,1        |  |
| Maximum available pressure     | 6 | kPa | 70        | 95 | 64        | 91 | 56         | 87 | 43          | 82 | 74          |  | 67          |  | 60          |  |

## 14 TECHNICAL INFORMATION

- 1 User side entering/leaving water temperature 30/35 °C, source side air 7°C (U.R. = 85% Heat power data, Total power input and COP in accordance with EN 14511:2018
- 2 User side entering/leaving water temperature 30/35 °C, source side air -7°C Heat power data, Total power input and COP in accordance with EN 14511:2018
- 3 User side entering/leaving water temperature 40/45 °C, source side air 7°C (U.R. = 85% Heat power data, Total power input and COP in accordance with EN 14511:2018
- 4 User side entering/leaving water temperature 18/23 °C, source side air 35°C Heat power data, Total power input and COP in accordance with EN 14511:2018
- 5 User side entering/leaving water temperature 7/12 °C, source side air 35°C Heat power data, Total power input and COP in accordance with EN 14511:2018
- 6 The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2018, Clima Average, High Temperature 47/55°C

\* All data calculated with zero height difference and equivalent length of 7m.

| SIZE                                                                             |    |    | A+2.1 | A+3.1 | A+4.1 | A+5.1 | B+6.1* | C+7.1* | D+8.1* |
|----------------------------------------------------------------------------------|----|----|-------|-------|-------|-------|--------|--------|--------|
| <b>ErP</b>                                                                       |    |    |       |       |       |       |        |        |        |
| <b>Average climate conditions - Heat pumps for High temperature applications</b> |    |    |       |       |       |       |        |        |        |
| Nominal power                                                                    | 7  | kW | 4     | 6     | 7     | 9     | 12     | 13     | 13     |
| SCOP                                                                             | 7  | -  | 3.32  | 3.54  | 3.72  | 3.73  | 3.56   | 3.52   | 3.48   |
| Generator energy class                                                           | 7  | -  | A++   | A++   | A++   | A++   | A++    | A++    | A++    |
| $\eta_s$                                                                         | 7  | %  | 130   | 138   | 146   | 146   | 139    | 138    | 136    |
| System energy class                                                              | 7  | -  | A++   | A++   | A++   | A++   | A++    | A++    | A++    |
| $\eta_s$                                                                         | 7  | %  | 135   | 143   | 151   | 151   | 144    | 143    | 141    |
| <b>Average climate conditions - Heat pumps for Low temperature applications</b>  |    |    |       |       |       |       |        |        |        |
| Nominal power                                                                    | 8  | kW | 5     | 6     | 8     | 10    | 12     | 14     | 16     |
| SCOP                                                                             | 8  | -  | 5,13  | 5,15  | 5.32  | 5.27  | 5.00   | 4.91   | 4.89   |
| Generator energy class                                                           | 8  | -  | A+++  | A+++  | A+++  | A+++  | A+++   | A+++   | A+++   |
| $\eta_s$                                                                         | 8  | %  | 202   | 203   | 210   | 208   | 196    | 193    | 193    |
| System energy class                                                              | 8  | -  | A+++  | A+++  | A+++  | A+++  | A+++   | A+++   | A+++   |
| $\eta_s$                                                                         | 8  | %  | 207   | 208   | 215   | 213   | 201    | 198    | 198    |
| <b>Average climate conditions - Heat pump for fan coil applications</b>          |    |    |       |       |       |       |        |        |        |
| Nominal power                                                                    | 9  | kW | 4     | 6     | 7     | 9     | 12     | 13     | 14     |
| SEER                                                                             | 9  | -  | 5,09  | 5,42  | 5.95  | 6.01  | 5.16   | 5.10   | 4.87   |
| Generator energy class                                                           | 9  | -  | A+++  | A+++  | A+++  | A+++  | A+++   | A+++   | A+++   |
| $\eta_s$                                                                         | 9  | %  | 201   | 214   | 235   | 238   | 203    | 201    | 192    |
| <b>Heat pump for domestic hot water applications</b>                             |    |    |       |       |       |       |        |        |        |
| Declared load profile                                                            | 10 | -  | L     | XL    | L     | XL    | L      | XL     | XL     |
| $\eta_{wh}$                                                                      | 10 | %  | 120   | 123   | 120   | 123   | 116    | 125    | 116    |
| Domestic Hot Water Energy Class                                                  | 10 | -  | A+    | A+    | A+    | A+    | A+     | A+     | A+     |

- 7 The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2018, Clima Average, High Temperature 47/55°C
- 8 The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2018, Clima Average, Low Temperature 30/35°C
- 9 The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2018, Clima Average, Clima Average, Low temperature 12/7°C
- 10 Data in accordance: EN 16147:2017

\* All data calculated with zero height difference and equivalent length of 7m.

## Construction - Outdoor unit

| Size                                    |   |                   | 2.1          | 3.1          | 4.1          | 5.1          | 6.1          | 7.1          | 8.1          |
|-----------------------------------------|---|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Characteristics</b>                  |   |                   |              |              |              |              |              |              |              |
| Compressor                              |   |                   | Twin Rotary  |              |              |              |              |              |              |
| Refrigerant                             |   |                   | R32          |              |              |              |              |              |              |
| Refrigerant charge                      |   | kg                | 1.50         | 1.50         | 1.65         | 1.65         | 1.84         | 1.84         | 1.84         |
| GWP                                     |   | t <sub>CO2</sub>  | 675          | 675          | 675          | 675          | 675          | 675          | 675          |
| Equivalent tons of CO <sub>2</sub> (*)  |   | t <sub>t</sub>    | 1.02         | 1.02         | 1.11         | 1.11         | 1.24         | 1.24         | 1.24         |
| Oil charge                              |   | l                 | 0,46         | 0,46         | 0,46         | 0,46         | 1,10         | 1,10         | 1,10         |
| Type of fan                             |   |                   | Axial fan    |              |              |              |              |              |              |
| Nominal air flow                        |   | m <sup>3</sup> /h | 2770         | 2770         | 4030         | 4030         | 4060         | 4060         | 4060         |
| Outdoors unit sound pressure at 1 metre | 1 | dB(A)             | 42           | 44           | 45           | 47           | 50           | 51           | 53           |
| Sound power                             | 1 | dB(A)             | 55           | 57           | 58           | 60           | 63           | 64           | 66           |
| <b>Dimensions</b>                       |   |                   |              |              |              |              |              |              |              |
| Operating (L x P x A)                   |   | mm                | 1008x426x712 | 1008x426x712 | 1118x523x865 | 1118x523x865 | 1118x523x865 | 1118x523x865 | 1118x523x865 |
| Package (L x P x A)                     |   | mm                | 1065x485x800 | 1065x485x800 | 1180x560x890 | 1180x560x890 | 1180x560x890 | 1180x560x890 | 1180x560x890 |
| Operation weight 230M / 400TN           | 2 | kg                | 58           | 58           | 77           | 77           | 96/112       | 96/112       | 96/112       |
| Shipping weight 230M / 400TN            | 2 | kg                | 64           | 64           | 88           | 88           | 110/125      | 110/125      | 110/125      |

1 Sound pressure level determined using the intense metric method (UNI EN ISO 9614-2). Data referred to the following full load conditions:  
Heating - utility side water inlet/outlet 47/55°C, air source side 7°C. Cooling - utility side water inlet/outlet 12/7°C, air source side 35°C.

2 Power supply 220-240V ~ 50Hz / Power supply 380-415V 3N~ 50Hz

(\*) It contains fluorinated greenhouse gases.

## Construction - Indoor unit

| Size                          |   |      | A            | B            |
|-------------------------------|---|------|--------------|--------------|
| <b>System characteristics</b> |   |      |              |              |
| Maximum circuit pressure      |   | bar  | 3,0          | 3,0          |
| System expansion tank         | 1 | l    | 8,0          | 8,0          |
| Expansion vessel pre-charge   |   | bar  | 1,0          | 1,0          |
| System water connections      |   | inch | 1"           | 1"           |
| System water connections      |   | inch | 3/4"         | 3/4"         |
| <b>Dimensions</b>             |   |      |              |              |
| Operating (L x P x A)         |   | mm   | 108x450x410  | 108x450x410  |
| Package (L x P x A)           |   | mm   | 1180x500x560 | 1180x500x560 |
| Operation weight              |   | kg   | 70           | 81           |
| Shipping weight               |   | kg   | 42           | 44           |

1 Sufficient volume up to a maximum of 60 litres of system water content.

## Hydraulic data - Indoor unit + Outdoor unit

| Size                             |   |     | 2.1      | 3.1      | 4.1      | 5.1      | 6.1      | 7.1      | 8.1      |
|----------------------------------|---|-----|----------|----------|----------|----------|----------|----------|----------|
| <b>Characteristics</b>           |   |     | <b>A</b> | <b>A</b> | <b>A</b> | <b>A</b> | <b>B</b> | <b>B</b> | <b>B</b> |
| Minimum system water content     | 1 | l   | 40       | 40       | 40       | 40       | 60       | 60       | 60       |
| Minimum admitted water flow rate |   | l/s | 0,16     | 0,16     | 0,16     | 0,16     | 0,16     | 0,16     | 0,16     |
| Maximum admitted water flow rate |   | l/s | 0,61     | 0,61     | 0,61     | 0,61     | 0,92     | 0,92     | 0,92     |

1 Consider the water content of the area with less volume

## Sound levels outdoor unit

### Standard mode

| SIZE | Sound power level |     |     |     |      |      |      |      | Sound pressure level | Sound power level |
|------|-------------------|-----|-----|-----|------|------|------|------|----------------------|-------------------|
|      | Octave band (Hz)  |     |     |     |      |      |      |      |                      |                   |
|      | 63                | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dB(A)                | dB(A)             |
| 2.1  | 46                | 49  | 49  | 52  | 52   | 46   | 37   | 27   | 42                   | 55                |
| 3.1  | 49                | 48  | 50  | 55  | 53   | 48   | 39   | 30   | 44                   | 57                |
| 4.1  | 36                | 51  | 53  | 56  | 55   | 49   | 44   | 30   | 45                   | 58                |
| 5.1  | 37                | 56  | 53  | 57  | 57   | 51   | 47   | 36   | 47                   | 60                |
| 6.1  | 44                | 53  | 54  | 60  | 58   | 55   | 52   | 51   | 50                   | 63                |
| 7.1  | 44                | 54  | 55  | 60  | 59   | 57   | 56   | 54   | 51                   | 64                |
| 8.1  | 46                | 58  | 57  | 60  | 61   | 59   | 54   | 51   | 53                   | 66                |

Sound levels refer to units with full load under nominal test conditions. Data referred to the following conditions:

entering / leaving exchanger water temperature user side 47/55°C source side exchanger air inlet 7°C.

The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.

Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2).

### Silenced mode

| SIZE | Sound pressure level | Sound power level |
|------|----------------------|-------------------|
|      | dB(A)                | dB(A)             |
| 2.1  | 40                   | 53                |
| 3.1  | 40                   | 53                |
| 4.1  | 42                   | 55                |
| 5.1  | 42                   | 55                |
| 6.1  | 46                   | 59                |
| 7.1  | 47                   | 60                |
| 8.1  | 48                   | 61                |

Sound levels refer to units with full load under nominal test conditions. For maximum capacity delivered in silent mode use a correction factor of 0.8.

Data referred to the following conditions: entering / leaving exchanger water temperature user side 47/55°C source side exchanger air inlet 7°C.

The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.

Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2).

### Super-silenced mode

| SIZE | Sound pressure level | Sound power level |
|------|----------------------|-------------------|
|      | dB(A)                | dB(A)             |
| 2.1  | 37                   | 50                |
| 3.1  | 38                   | 51                |
| 4.1  | 39                   | 52                |
| 5.1  | 39                   | 52                |
| 6.1  | 41                   | 54                |
| 7.1  | 41                   | 54                |
| 8.1  | 41                   | 54                |

Sound levels refer to units with full load under nominal test conditions. For maximum capacity delivered in silent mode use a correction factor of 0,6

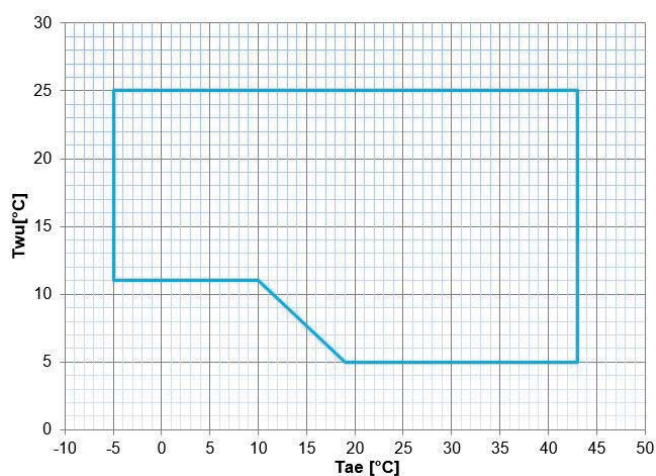
Data referred to the following conditions: entering / leaving exchanger water temperature user side 47/55°C source side exchanger air inlet 7°C.

The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.

Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2).



## Operational limits - Cooling

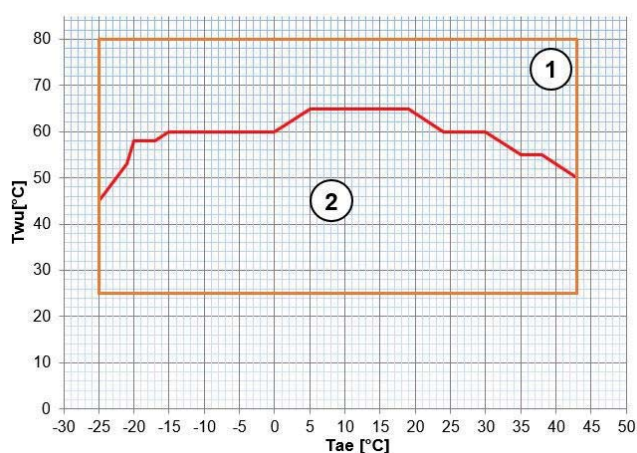


T<sub>wu</sub> [°C] = Exchanger water outlet temperature

T<sub>a</sub>e [°C] = Outdoors exchanger air inlet temperature

1 Normal operating range

## Operational limits - Heating



T<sub>wu</sub> [°C] = Exchanger water outlet temperature

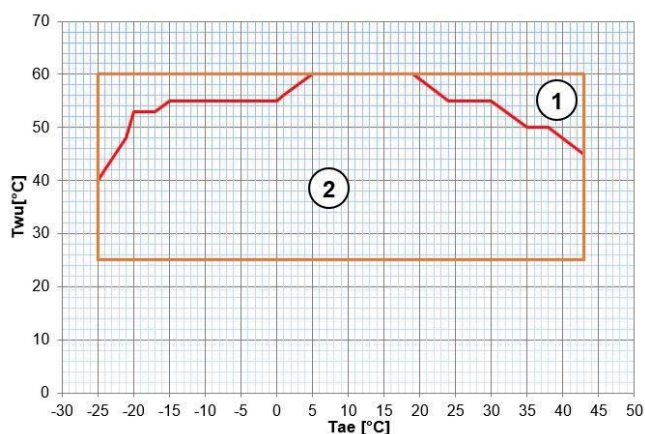
T<sub>a</sub>e [°C] = Outdoors exchanger air inlet temperature

1 Operating range with boiler

2 Operating range with heat pump only

In the configuration with electrical integration resistance, the limits vary according to the electrical power of the chosen resistance.

## Operational limits - DHW



T<sub>wu</sub> [°C] = Exchanger water outlet temperature

T<sub>a</sub>e [°C] = Outdoors exchanger air inlet temperature

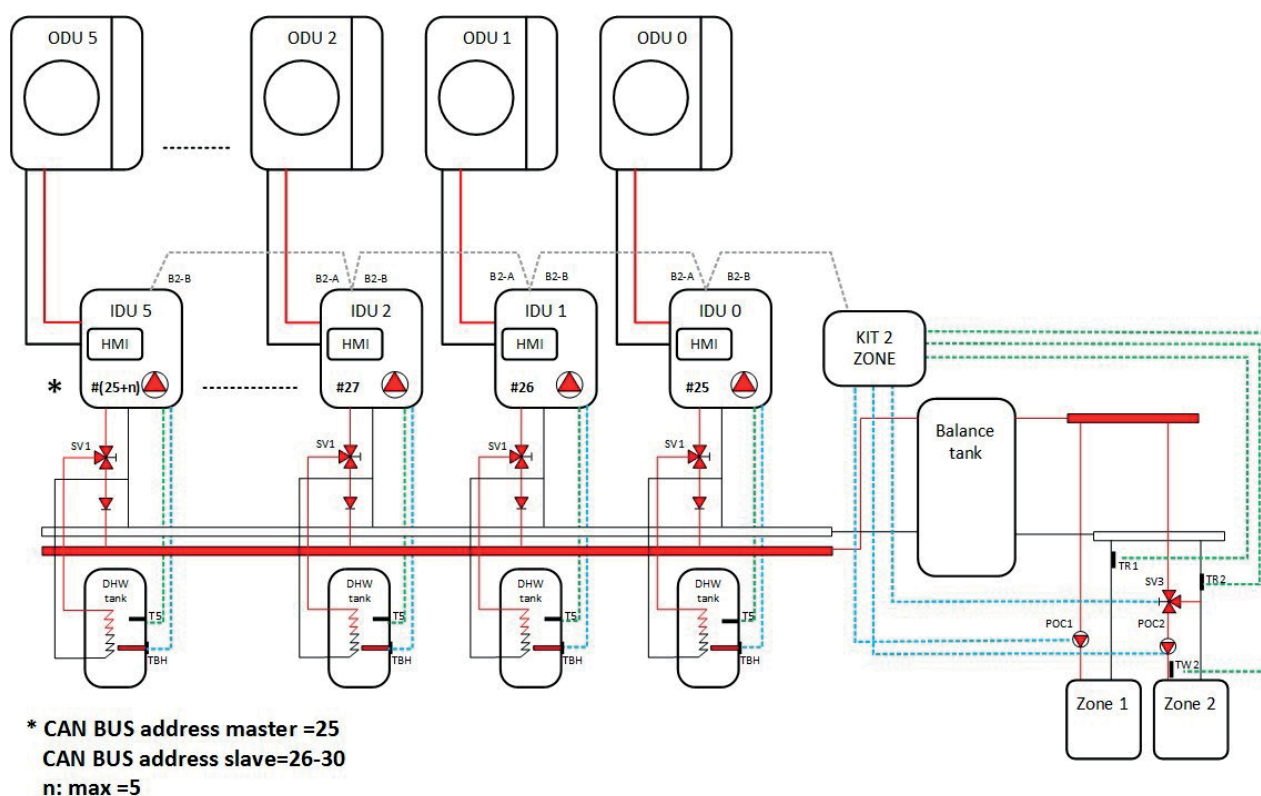
1 Operating range with boiler

2 Operating range with heat pump only - storage tank and 3-way DHW valve required

In the configuration with electrical integration resistance, the limits vary according to the electrical power of the chosen resistance.



Cascade operation allows up to 6 units to be connected in parallel, thereby ensuring that the system is fully reliable and efficient. The Master unit controls and displays the parameters of the entire system on its User Interface, activating the Slave units when its capacity is not enough to fulfil the system load



|              |                                                             |
|--------------|-------------------------------------------------------------|
| IDU 0        | Master (indoor unit)                                        |
| IDU 1...     | Slave (max 5 indoor units)                                  |
| ODU 0 ...    | Outdoor units                                               |
| HMI          | Unit keypad                                                 |
| KIT 2 Zone   | 2-zone temperature management kit (connected to the master) |
| SV1          | 3-way system DHW valve (indoor unit)                        |
| T5           | DHW temperature probe                                       |
| DHW Tank     | DHW tank                                                    |
| TBH          | DHW backup heater (electric heater)                         |
| Balance tank | Inertial tank                                               |
| SV3          | Zone 2 mixing valve (low temperature)                       |
| POC1         | Zone 1 pump                                                 |
| POC2         | Zone 2 pump                                                 |
| TR1          | Zone 1 return temperature probe                             |
| TW2          | Zone 2 supply temperature probe                             |
| TR2          | Zone 2 return temperature probe                             |
| Zona 1       | Fan coil                                                    |
| Zona 2       | Underfloor heating                                          |



### Cooling, Heating and DHW logic

The Master-Slave function (cascade) logic of several units enables management of the following controls

- ON/OFF controls
- HEAT/COOL control
- System setpoint
- compressor rotation for system side wear
- in DHW mode, each unit can manage its own DHW tank independently if the relevant parameter is enabled. The DHW setpoint is managed independently by the unit.

The Master unit can operate in Cooling / Heating / DHW / AUTO mode.

The Slave units can operate in Cooling / Heating mode and each unit can manage DHW independently.

In AUTO mode, the Master unit decides how to operate based on its T4 probe (outdoor temperature) and transmits the signal to the Slave units.

The 3-way valve and the DHW tank must be installed in the pipe of the Master or slave units that have DHW operation enabled. All units always allow the instantaneous operation of DHW production with boiler

All units are each connected to their own boiler (DHW) which is managed based on demand.

### Rotation and back-up.

The system counts the hours of operation of the compressor for all the units (including the main one).

When the system is started, the units with the shortest operating time have priority to start. This

way the system rotates the operation of all the units in order to ensure they are used evenly.

In the event of a unit malfunction, the Master unit is set up to activate the next one and ensure continuity of operation.

⇒ *Note: the Master unit is included in the rotation logic, but cannot have a backup.*

### Master unit cascade activation:

P117\_CanAddress = 25 (note that single units must also have 25 as an address, otherwise any secondary board will not work)

P211\_NMachine > 0 enables cascade management on the master (obviously a value of 1 would not make any sense)

### Slave unit cascade activation:

P117\_CanAddress = 26, 27, etc. up to 30 for a maximum of 5 slave units (a total of 6 units in cascade)

P211\_NMachine = 0 (should be kept at 0)

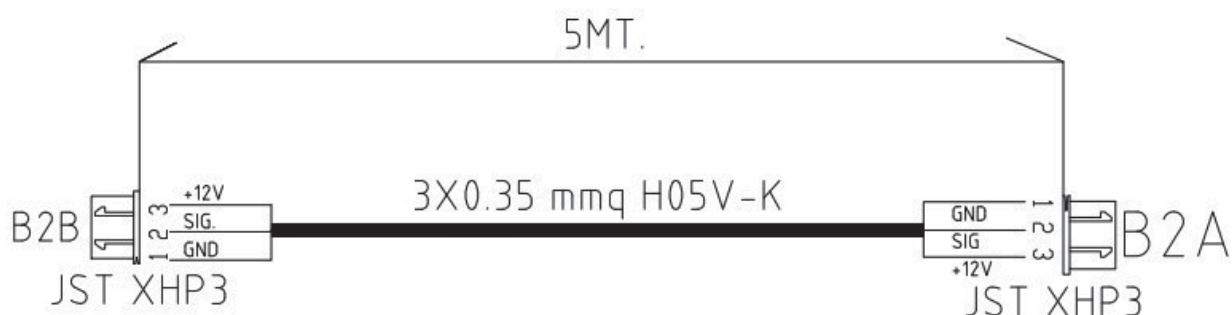
Each unit can manage one DHW tank. DHW management is independent for each unit.

⇒ *NOTE: Slave units cannot be fitted with a booster board (kit 2 zone)*

### Connection between the units

To connect the units together, use wiring C95900079 – Cable kit for cascade connection of Sphera Easy Hybrd units.

The connection is made from connector B2-A to connector B2-B



## 16 ENERGY DATA SHEETS AND LABELLING

### Modello info prodotto /Product info template

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     |                   |                 |                                                                                                                                                                                                                                                                                              |                     |                   |                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|-----------------|
| Information requirements for heat pump space heaters and heat pump combination heaters.<br>Informazioni obbligatorie per gli apparecchi a pompa di calore per il riscaldamento d'ambiente<br>e gli apparecchi di riscaldamento misti a pompa di calore                                                                                                                                                                                                                                                                   |                     |                   |                 |                                                                                                                                                                                                                                                                                              |                     |                   |                 |
| Model(s): / Modelli:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |                   |                 | <b>aa</b>                                                                                                                                                                                                                                                                                    |                     |                   |                 |
| Air-to-water heat pump: / Pompa di calore aria/acqua:                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |                   |                 | <b>ab</b>                                                                                                                                                                                                                                                                                    |                     |                   |                 |
| Water-to-water heat pump: / Pompa di calore acqua/acqua:                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                   |                 | <b>ac</b>                                                                                                                                                                                                                                                                                    |                     |                   |                 |
| Brine-to-water heat pump: / Pompa di calore salamoia/acqua:                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                     |                   |                 | <b>ad</b>                                                                                                                                                                                                                                                                                    |                     |                   |                 |
| Low-temperature heat pump: / Pompa di calore a bassa temperatura:                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                     |                   |                 | <b>ae</b>                                                                                                                                                                                                                                                                                    |                     |                   |                 |
| Equipped with a supplementary heater: / Con riscaldatore supplementare:                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                   |                 | <b>af</b>                                                                                                                                                                                                                                                                                    |                     |                   |                 |
| Heat pump combination heater: / Apparecchio misto a pompa di calore:                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |                   |                 | <b>ag</b>                                                                                                                                                                                                                                                                                    |                     |                   |                 |
| Heat pump combination heater: / Apparecchio misto a pompa di calore:<br>Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application. /<br>I parametri sono dichiarati per l'applicazione a temperatura media, tranne per le pompe di calore a bassa temperatura Per le pompe di calore a bassa temperatura, i parametri sono dichiarati per l'applicazione a bassa temperatura. |                     |                   |                 |                                                                                                                                                                                                                                                                                              |                     |                   |                 |
| Parameters shall be declared for average climate conditions. /<br>I parametri sono dichiarati per condizioni climatiche medie.                                                                                                                                                                                                                                                                                                                                                                                           |                     |                   |                 |                                                                                                                                                                                                                                                                                              |                     |                   |                 |
| Item /<br>Elemento                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Symbol /<br>Simbolo | Value /<br>Valore | Unit /<br>Unità | Item /<br>Elemento                                                                                                                                                                                                                                                                           | Symbol /<br>Simbolo | Value /<br>Valore | Unit /<br>Unità |
| Rated heat output (*) /<br>Potenza termica nominale (*)                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <i>Prated</i>       | <b>ah</b>         | kW              | Seasonal space heating energy efficiency /<br>Efficienza energetica stagionale del riscaldamento d'ambiente                                                                                                                                                                                  | <i>ηs</i>           | <b>ai</b>         | %               |
| Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj /<br>Capacità di riscaldamento dichiarata a carico parziale, con temperatura interna pari a 20 °C e temperatura esterna Tj                                                                                                                                                                                                                                                                                            |                     |                   |                 | Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj /<br>Coefficiente di prestazione dichiarato o indice di energia primaria per carico parziale, con temperatura interna pari a 20 °C e temperatura esterna Tj |                     |                   |                 |
| <i>Tj = - 7 °C</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>Pdh</i>          | <b>aj</b>         | kW              | <i>Tj = - 7 °C</i>                                                                                                                                                                                                                                                                           | <i>COPd</i>         | <b>at</b>         | -               |
| <i>Tj = + 2 °C</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>Pdh</i>          | <b>ak</b>         | kW              | <i>Tj = + 2 °C</i>                                                                                                                                                                                                                                                                           | <i>COPd</i>         | <b>au</b>         | -               |
| <i>Tj = + 7 °C</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>Pdh</i>          | <b>al</b>         | kW              | <i>Tj = + 7 °C</i>                                                                                                                                                                                                                                                                           | <i>COPd</i>         | <b>av</b>         | -               |
| <i>Tj = + 12 °C</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <i>Pdh</i>          | <b>am</b>         | kW              | <i>Tj = + 12 °C</i>                                                                                                                                                                                                                                                                          | <i>COPd</i>         | <b>aw</b>         | -               |
| Tj = bivalent temperature /<br>Temperatura bivalente                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <i>Pdh</i>          | <b>an</b>         | kW              | Tj = bivalent temperature /<br>Temperatura bivalente                                                                                                                                                                                                                                         | <i>COPd</i>         | <b>ax</b>         | -               |
| Tj = operation limit temperature /<br>temperatura limite di esercizio                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <i>Pdh</i>          | <b>ao</b>         | kW              | Tj = operation limit temperature /<br>temperatura limite di esercizio                                                                                                                                                                                                                        | <i>COPd</i>         | <b>ay</b>         | -               |
| For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) /<br>Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                                                                                                                                                                                                                                                                                                                    | <i>Pdh</i>          | <b>ap</b>         | kW              | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) /<br>Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                                                                                        | <i>COPd</i>         | <b>az</b>         | -               |
| Bivalent temperature /<br>Temperatura bivalente                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <i>Tbiv</i>         | <b>aq</b>         | °C              | For air-to-water heat pumps: Operation limit temperature /<br>Per le pompe di calore aria/ acqua: temperatura limite di esercizio                                                                                                                                                            | <i>TOL</i>          | <b>ba</b>         | °C              |
| Cycling interval capacity for heating /<br>Ciclicità degli intervalli di capacità per il riscaldamento                                                                                                                                                                                                                                                                                                                                                                                                                   | <i>Pcych</i>        | <b>ar</b>         | kW              | Cycling interval efficiency /<br>Efficienza della ciclicità degli intervalli                                                                                                                                                                                                                 | <i>COPcych</i>      | <b>bb</b>         | -               |
| Degradation co-efficient (**) /<br>Coefficiente di degradazione (**)                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <i>Cdh</i>          | <b>as</b>         | -               | Heating water operating limit temperature /<br>Temperatura limite di esercizio di riscaldamento dell'acqua                                                                                                                                                                                   | <i>WTOL</i>         | <b>bc</b>         | -               |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                               |           |                                                                                                                                       |                                                                                                                                                                                                                                           |              |           |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|------|
| Power consumption in modes other than active mode /<br>Consumo energetico in modi diversi dal modo attivo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                               |           |                                                                                                                                       | Supplementary heater /<br>Riscaldatore supplementare                                                                                                                                                                                      |              |           |      |
| Off mode /<br>Modo spento                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <i>POFF</i>                                                                   | <b>bd</b> | kW                                                                                                                                    | Rated heat output (*) /<br>Potenza termica nominale (*)                                                                                                                                                                                   | <i>Psup</i>  | <b>bh</b> | kW   |
| Thermostat-off mode /<br>Modo termostato spento                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <i>PTO</i>                                                                    | <b>be</b> | kW                                                                                                                                    |                                                                                                                                                                                                                                           |              |           |      |
| Standby mode /<br>Modo stand-by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <i>PSB</i>                                                                    | <b>bf</b> | kW                                                                                                                                    | Type of energy input /<br>Tipo di alimentazione energetica                                                                                                                                                                                | <b>bi</b>    |           |      |
| Crankcase heater mode /<br>Modo riscaldamento del carter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <i>PCK</i>                                                                    | <b>bg</b> | kW                                                                                                                                    |                                                                                                                                                                                                                                           |              |           |      |
| Other items /<br>Altri elementi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                               |           |                                                                                                                                       |                                                                                                                                                                                                                                           |              |           |      |
| Capacity control /<br>Controllo della capacità                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>bj</b>                                                                     |           | For air-to-water heat pumps: Rated air<br>flow rate, outdoors /<br>Per le pompe di calore aria/ acqua:<br>portata d'aria, all'esterno |                                                                                                                                                                                                                                           | -            | <b>bm</b> | m3/h |
| Sound power level, indoors/outdoors /<br>Livello della potenza sonora,<br>all'interno/all'esterno                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <i>LWA</i>                                                                    | <b>bk</b> | dB(A)                                                                                                                                 | For water-/brine-to-water heat pumps:<br>Rated brine or water flow rate, outdoor<br>heat exchanger /<br>Per le pompe di calore acqua/acqua e<br>salamoia/acqua: flusso di salamoia o acqua<br>nominale, scambiatore di calore all'esterno | -            | <b>bn</b> | m3/h |
| Annual energy consumption /<br>Consumo energetico annuo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <i>QHE</i>                                                                    | <b>bl</b> | kWh                                                                                                                                   |                                                                                                                                                                                                                                           |              |           |      |
| For heat pump combination heater: /<br>Per gli apparecchi di riscaldamento misti a pompa di calore:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                               |           |                                                                                                                                       |                                                                                                                                                                                                                                           |              |           |      |
| Declared load profile /<br>Profilo di carico dichiarato                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>bo</b>                                                                     |           | Water heating energy efficiency /<br>Efficienza energetica di riscaldamento<br>dell'acqua                                             |                                                                                                                                                                                                                                           | <i>ηwh</i>   | <b>bq</b> | -    |
| Daily electricity consumption /<br>Consumo quotidiano di energia elettrica                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <i>Qelec</i>                                                                  | <b>bp</b> | kWh                                                                                                                                   | Daily fuel consumption /<br>Consumo quotidiano di combustibile                                                                                                                                                                            | <i>Qfuel</i> | <b>br</b> | kWh  |
| Annual electricity<br>consumption /<br>Consumo annuo di energia<br>elettrica                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <i>AEC</i>                                                                    | <b>bs</b> | kWh                                                                                                                                   | Annual fuel consumption /<br>Consumo annuo di combustibile                                                                                                                                                                                | <i>AFC</i>   | <b>bt</b> | GJ   |
| Contact details: /<br>Recapiti:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CLIVET SPA - VIA CAMP LONC, 25 - Z.I. VILLAPAIERA - 32032 FELTRE (BL) - ITALY |           |                                                                                                                                       |                                                                                                                                                                                                                                           |              |           |      |
| (*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).<br>(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9. /<br>(*) Per gli apparecchi a pompa di calore per il riscaldamento d'ambiente e gli apparecchi di riscaldamento misti a pompa di calore, la potenza termica nominale Pnominale è pari al carico teorico per il riscaldamento Pdesignh e la potenza termica nominale di un riscaldatore supplementare Psup è pari alla capacità supplementare di riscaldamento sup(Tj).<br>(**) Se Cdh non è determinato mediante misurazione, il coefficiente di degradazione è Cdh = 0,9. |                                                                               |           |                                                                                                                                       |                                                                                                                                                                                                                                           |              |           |      |

Product fiche: combination heaters  
Scheda prodotto: apparecchi di riscaldamento misti

| SERIES / Serie                                                    | <i>ca</i> |                                                                               |           |
|-------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------|-----------|
| Model / Modello                                                   | 1         | -                                                                             | <i>cb</i> |
| Size / Grandezza                                                  | 2         | -                                                                             | <i>cc</i> |
| Medium-temperature application / Applicazione a media temperatura | 3         | °C                                                                            | <i>cd</i> |
| Low-temperature application / Applicazione a bassa temperatura    | 4         | °C                                                                            | <i>ce</i> |
| DHW profile / Profilo ACS                                         | 5         | -                                                                             | <i>cf</i> |
| Medium-temperature class / Classe a media temperatura             | 6         | -                                                                             | <i>cg</i> |
| Low-temperature class / Classe a bassa temperatura                | 7         | -                                                                             | <i>ch</i> |
| DHW class / Classe ACS                                            | 8         | -                                                                             | <i>ci</i> |
| Ptn                                                               | 9         | kW                                                                            | <i>cj</i> |
| Qhe_ambiente                                                      | 10        | kWh                                                                           | <i>ck</i> |
| Qhe_acs                                                           | 11        | kWh                                                                           | <i>cl</i> |
| $\eta_s$                                                          | 12        | %                                                                             | <i>cm</i> |
| $\eta_{s\_wh}$                                                    | 13        | %                                                                             | <i>cn</i> |
| LwA_in                                                            | 14        | dB                                                                            | <i>co</i> |
| FOM                                                               | 15        | -                                                                             | <i>cp</i> |
| Precautions / Precauzioni                                         | 16        | See installation and operating manual /<br>Vedi manuale di uso e manutenzione |           |
| P th_colder                                                       | 17        | kW                                                                            | <i>cq</i> |
| P th_warmer                                                       | 18        | kW                                                                            | <i>cr</i> |
| Q HE_colder                                                       | 19        | kWh                                                                           | <i>cs</i> |
| Q HE_warmer                                                       | 20        | kWh                                                                           | <i>ct</i> |
| Q HE_colder_wh                                                    | 21        | kWh                                                                           | <i>cu</i> |
| Q HE_warmer_wh                                                    | 22        | kWh                                                                           | <i>cv</i> |
| $\eta_{s\_colder}$                                                | 23        | %                                                                             | <i>cw</i> |
| $\eta_{s\_warmer}$                                                | 24        | %                                                                             | <i>cx</i> |
| $\eta_{s\_colder\_wh}$                                            | 25        | %                                                                             | <i>cy</i> |
| $\eta_{s\_warmer\_wh}$                                            | 26        | %                                                                             | <i>cz</i> |
| LwA_out                                                           | 27        | dB                                                                            | <i>da</i> |

Product fiche: temperature control /  
Scheda prodotto: dispositivi di controllo della temperatura

| SERIES / Serie   | <i>ca</i> |   |                  |
|------------------|-----------|---|------------------|
| Model / Modello  | 1         | - | <b><i>cb</i></b> |
| Size / Grandezza | 2         | - | <b><i>cc</i></b> |
| Device class     | 3         | - | <b><i>db</i></b> |
| $\eta_s$         | 4         | % | <b><i>dc</i></b> |

Product fiche: packages of combination heater, temperature control and solar device /  
Scheda prodotto: insiemi di apparecchi di riscaldamento misti, dispositivi di controllo della temperatura e dispositivi solari

|                                               |    |    |                  |
|-----------------------------------------------|----|----|------------------|
| I                                             | 1  | %  | <b><i>cm</i></b> |
| II                                            | 2  | -  | <b><i>dd</i></b> |
| III                                           | 3  | -  | <b><i>de</i></b> |
| IV                                            | 4  | -  | <b><i>df</i></b> |
| V                                             | 5  | -  | <b><i>dg</i></b> |
| VI                                            | 6  | -  | <b><i>dh</i></b> |
| Control class T / Classe controllo T          | 7  | %  | <b><i>db</i></b> |
| $\eta_{s\_caldaia}$                           | 8  | %  | <b><i>di</i></b> |
| Collector / Collettore                        | 9  | m2 | <b><i>dj</i></b> |
| V serbatoio                                   | 10 | m3 | <b><i>dk</i></b> |
| $\eta_{collettore}$                           | 11 | %  | <b><i>dl</i></b> |
| Storage Tank Class / Classe serbatoio         | 12 | -  | <b><i>dm</i></b> |
| Energy Efficiency / Efficienza energetica     | 13 | %  | <b><i>dn</i></b> |
| Energy Efficiency C / Efficienza energetica C | 14 | %  | <b><i>do</i></b> |
| Energy Efficiency W / Efficienza energetica W | 15 | %  | <b><i>dp</i></b> |
| I                                             | 16 | %  | <b><i>cn</i></b> |
| II                                            | 17 | -  | <b><i>dq</i></b> |
| III                                           | 18 | -  | <b><i>dr</i></b> |
| Load Profile / Profilo di carico              | 19 | -  | <b><i>cf</i></b> |
| $\eta_{s\_wh}$                                | 20 | %  | <b><i>cn</i></b> |
| $\eta_{s\_wh\_colder}$                        | 21 | %  | <b><i>cy</i></b> |
| $\eta_{s\_wh\_warmer}$                        | 22 | %  | <b><i>cz</i></b> |



# Media temperatura / medium-temperature

| ID | Description                                                                                                                                                                                                                | Symbol  | A - 2.1 - 24kW                            | A - 3.1 - 24kW                            | A - 4.1 - 24kW                            | A - 5.1 - 24kW                            | B - 6.1 - 34kW                            | C - 7.1 - 34kW                            |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| aa | Model(s): / Modelli:                                                                                                                                                                                                       | -       | SQKN-YEE 1 BH A 24kW<br>MISAN-YEE 1 S 2.1 | SQKN-YEE 1 BH A 24kW<br>MISAN-YEE 1 S 3.1 | SQKN-YEE 1 BH A 24kW<br>MISAN-YEE 1 S 4.1 | SQKN-YEE 1 BH A 24kW<br>MISAN-YEE 1 S 5.1 | SQKN-YEE 1 BH B 34kW<br>MISAN-YEE 1 S 6.1 | SQKN-YEE 1 BH C 34kW<br>MISAN-YEE 1 S 7.1 |
| ab | Air-to-water heat pump: / Pompa di calore aria/acqua:                                                                                                                                                                      | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ac | Water-to-water heat pump: / Pompa di calore acqua/acqua:                                                                                                                                                                   | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ad | Brine-to-water heat pump: / Pompa di calore salamoia/acqua:                                                                                                                                                                | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ae | Low-temperature heat pump: / Pompa di calore a bassa temperatura:                                                                                                                                                          | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| af | Equipped with a supplementary heater: / Con riscaldatore supplementare:                                                                                                                                                    | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ag | Heat pump combination heater: / Apparecchio misto a pompa di calore:                                                                                                                                                       | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ah | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Prated  | 4                                         | 6                                         | 7                                         | 9                                         | 12                                        | 13                                        |
| ai | Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente                                                                                                                   | ηs      | 130                                       | 139                                       | 146                                       | 146                                       | 140                                       | 138                                       |
| aj | Tj = - 7 °C                                                                                                                                                                                                                | Pdh     | 3,61                                      | 4,97                                      | 6,09                                      | 7,58                                      | 10,35                                     | 11,12                                     |
| ak | Tj = + 2 °C                                                                                                                                                                                                                | Pdh     | 2,16                                      | 3,02                                      | 3,94                                      | 4,44                                      | 6,62                                      | 6,82                                      |
| al | Tj = + 7 °C                                                                                                                                                                                                                | Pdh     | 1,54                                      | 2,00                                      | 2,52                                      | 2,92                                      | 4,45                                      | 4,73                                      |
| am | Tj = + 12 °C                                                                                                                                                                                                               | Pdh     | 1,29                                      | 1,30                                      | 1,72                                      | 1,74                                      | 3,04                                      | 3,03                                      |
| an | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | Pdh     | 3,61                                      | 4,97                                      | 6,09                                      | 7,58                                      | 10,35                                     | 11,12                                     |
| ao | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | Pdh     | 3,91                                      | 5,27                                      | 4,97                                      | 5,46                                      | 9,59                                      | 9,88                                      |
| ap | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | Pdh     | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| aq | Bivalent temperature / Temperatura bivalente                                                                                                                                                                               | Tbiv    | -7                                        | -7                                        | -7                                        | -7                                        | -7                                        | -7                                        |
| ar | Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento                                                                                                                        | Pcych   | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| as | Degradation co-efficient (***) / Coefficiente di degradazione (***)                                                                                                                                                        | Cdh     | 0,9                                       | 0,9                                       | 0,9                                       | 0,9                                       | 0,9                                       | 0,9                                       |
| at | Tj = - 7 °C                                                                                                                                                                                                                | COPd    | 2,02                                      | 2,12                                      | 2,27                                      | 2,02                                      | 2,05                                      | 2,06                                      |
| au | Tj = + 2 °C                                                                                                                                                                                                                | COPd    | 3,21                                      | 3,41                                      | 3,56                                      | 3,63                                      | 3,51                                      | 3,41                                      |
| av | Tj = + 7 °C                                                                                                                                                                                                                | COPd    | 4,43                                      | 4,82                                      | 4,70                                      | 4,95                                      | 4,77                                      | 4,85                                      |
| aw | Tj = + 12 °C                                                                                                                                                                                                               | COPd    | 6,20                                      | 6,32                                      | 9,71                                      | 9,87                                      | 6,43                                      | 6,43                                      |
| ax | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | COPd    | 2,02                                      | 2,12                                      | 2,27                                      | 2,02                                      | 2,05                                      | 2,06                                      |
| ay | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | COPd    | 1,68                                      | 1,64                                      | 1,88                                      | 1,87                                      | 1,85                                      | 1,86                                      |
| az | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | COPd    | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| ba | For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio                                                                                             | TOL     | -10                                       | -10                                       | -10                                       | -10                                       | -10                                       | -10                                       |
| bb | Cycling interval efficiency / Efficienza della ciclicità degli intervalli                                                                                                                                                  | COPcych | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bc | Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua                                                                                                                    | WTOL    | 65                                        | 65                                        | 65                                        | 65                                        | 65                                        | 65                                        |
| bd | Off mode / Modo spento                                                                                                                                                                                                     | POFF    | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| be | Thermostat-off mode / Modo termostato spento                                                                                                                                                                               | PTO     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| bf | Standby mode / Modo stand-by                                                                                                                                                                                               | PSB     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| bg | Crankcase heater mode / Modo riscaldamento del carter                                                                                                                                                                      | PCK     | 0                                         | 0                                         | 0                                         | 0                                         | 0                                         | 0                                         |
| bh | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Psup    | 24                                        | 24                                        | 24                                        | 24                                        | 34                                        | 34                                        |
| bi | Type of energy input / Tipo di alimentazione energetica                                                                                                                                                                    |         | Natura gas / Gas naturale                 | Natura gas / Gas naturale                 | Natura gas / Gas naturale                 | Natura gas / Gas naturale                 | Natura gas / Gas naturale                 | Natura gas / Gas naturale                 |
| bj | Capacity control / Controllo della capacità                                                                                                                                                                                |         | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      |
| bl | Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno                                                                                                                                | LWA     | 41/55                                     | 41/57                                     | 41/58                                     | 41/60                                     | 41/63                                     | 41/64                                     |
| bl | Annual energy consumption / Consumo energetico annuale                                                                                                                                                                     | kWh     | 2542                                      | 3283                                      | 3824                                      | 4749                                      | 6793                                      | 7380                                      |
| bm | For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno                                                                                               |         | 2750                                      | 3000                                      | 4750                                      | 5000                                      | 6000                                      | 6250                                      |
| bn | For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno |         | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bo | Declared load profile / Profilo di carico dichiarato                                                                                                                                                                       |         | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bp | Daily electricity consumption / Consumo quotidiano di energia elettrica                                                                                                                                                    | Qelec   | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bq | Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua                                                                                                                                        | ηwh     | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| br | Daily fuel consumption / Consumo quotidiano di combustibile                                                                                                                                                                | Qfuel   | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bs | Annual electricity consumption / Consumo annuo di energia elettrica                                                                                                                                                        | AEC     | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bt | Annual fuel consumption / Consumo annuo di combustibile                                                                                                                                                                    | AEF     | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |



| ID | Description                                                                                                                                                                                                                   | Symbol  | C - 8.1 - 34kW                            | A - 2.1 - 34kW                            | A - 3.1 - 34kW                            | A - 4.1 - 34kW                            | A - 5.1 - 34kW                            |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| aa | Model(s): / Modelli:                                                                                                                                                                                                          | -       | SQKN-YEE 1 BH D 34kW<br>MISAN-YEE 1 S 8.1 | SQKN-YEE 1 BH A 34kW<br>MISAN-YEE 1 S 2.1 | SQKN-YEE 1 BH A 34kW<br>MISAN-YEE 1 S 3.1 | SQKN-YEE 1 BH A 34kW<br>MISAN-YEE 1 S 4.1 | SQKN-YEE 1 BH A 34kW<br>MISAN-YEE 1 S 5.1 |
| ab | Air-to-water heat pump: / Pompa di calore aria/acqua:                                                                                                                                                                         | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ac | Water-to-water heat pump: / Pompa di calore acqua/acqua:                                                                                                                                                                      | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ad | Brine-to-water heat pump: / Pompa di calore salamoia/acqua:                                                                                                                                                                   | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ae | Low-temperature heat pump: / Pompa di calore a bassa temperatura:                                                                                                                                                             | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| af | Equipped with a supplementary heater: / Con riscaldatore supplementare:                                                                                                                                                       | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ag | Heat pump combination heater: / Apparecchio misto a pompa di calore:                                                                                                                                                          | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ah | Rated heat output (*) /<br>Potenza termica nominale (*)                                                                                                                                                                       | Prated  | 13                                        | 4                                         | 6                                         | 7                                         | 9                                         |
| ai | Seasonal space heating energy efficiency /<br>Efficienza energetica stagionale del riscaldamento d'ambiente                                                                                                                   | ηs      | 136                                       | 130                                       | 139                                       | 146                                       | 146                                       |
| aj | Tj = - 7 °C                                                                                                                                                                                                                   | Pdh     | 11,79                                     | 3,61                                      | 4,97                                      | 6,09                                      | 7,58                                      |
| ak | Tj = + 2 °C                                                                                                                                                                                                                   | Pdh     | 7,05                                      | 2,16                                      | 3,02                                      | 3,94                                      | 4,44                                      |
| al | Tj = + 7 °C                                                                                                                                                                                                                   | Pdh     | 4,73                                      | 1,54                                      | 2,00                                      | 2,52                                      | 2,92                                      |
| am | Tj = + 12 °C                                                                                                                                                                                                                  | Pdh     | 3,03                                      | 1,29                                      | 1,30                                      | 1,72                                      | 1,74                                      |
| an | Tj = bivalent temperature /<br>Temperatura bivalente                                                                                                                                                                          | Pdh     | 11,79                                     | 3,61                                      | 4,97                                      | 6,09                                      | 7,58                                      |
| ao | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                            | Pdh     | 10,67                                     | 3,91                                      | 5,27                                      | 4,97                                      | 5,46                                      |
| ap | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) /<br>Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | Pdh     | -                                         | -                                         | -                                         | -                                         | -                                         |
| aq | Bivalent temperature /<br>Temperatura bivalente                                                                                                                                                                               | Tbiv    | -7                                        | -7                                        | -7                                        | -7                                        | -7                                        |
| ar | Cycling interval capacity for heating /<br>Ciclicità degli intervalli di capacità per il riscaldamento                                                                                                                        | Pcych   | -                                         | -                                         | -                                         | -                                         | -                                         |
| as | Degradation co-efficient (**) /<br>Coefficiente di degradazione (**)                                                                                                                                                          | Cdh     | 0,9                                       | 0,9                                       | 0,9                                       | 0,9                                       | 0,9                                       |
| at | Tj = - 7 °C                                                                                                                                                                                                                   | COPd    | 2,04                                      | 2,02                                      | 2,12                                      | 2,27                                      | 2,02                                      |
| au | Tj = + 2 °C                                                                                                                                                                                                                   | COPd    | 3,34                                      | 3,21                                      | 3,41                                      | 3,56                                      | 3,63                                      |
| av | Tj = + 7 °C                                                                                                                                                                                                                   | COPd    | 4,85                                      | 4,43                                      | 4,82                                      | 4,70                                      | 4,95                                      |
| aw | Tj = + 12 °C                                                                                                                                                                                                                  | COPd    | 6,43                                      | 6,20                                      | 6,32                                      | 9,71                                      | 9,87                                      |
| ax | Tj = bivalent temperature /<br>Temperatura bivalente                                                                                                                                                                          | COPd    | 2,04                                      | 2,02                                      | 2,12                                      | 2,27                                      | 2,02                                      |
| ay | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                            | COPd    | 1,84                                      | 1,68                                      | 1,64                                      | 1,88                                      | 1,87                                      |
| az | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) /<br>Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | COPd    | -                                         | -                                         | -                                         | -                                         | -                                         |
| ba | For air-to-water heat pumps: Operation limit temperature /<br>Per le pompe di calore aria/ acqua: temperatura limite di esercizio                                                                                             | TOL     | -10                                       | -10                                       | -10                                       | -10                                       | -10                                       |
| bb | Cycling interval efficiency /<br>Efficienza della ciclicità degli intervalli                                                                                                                                                  | COPcych | -                                         | -                                         | -                                         | -                                         | -                                         |
| bc | Heating water operating limit temperature /<br>Temperatura limite di esercizio di riscaldamento dell'acqua                                                                                                                    | WTOL    | 65                                        | 65                                        | 65                                        | 65                                        | 65                                        |
| bd | Off mode /<br>Modo spento                                                                                                                                                                                                     | POFF    | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| be | Thermostat-off mode /<br>Modo termostato spento                                                                                                                                                                               | PTO     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| bf | Standby mode /<br>Modo stand-by                                                                                                                                                                                               | PSB     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| bg | Crankcase heater mode /<br>Modo riscaldamento del carter                                                                                                                                                                      | PCK     | 0                                         | 0                                         | 0                                         | 0                                         | 0                                         |
| bh | Rated heat output (*) /<br>Potenza termica nominale (*)                                                                                                                                                                       | Psup    | 34                                        | 34                                        | 34                                        | 34                                        | 34                                        |
| bi | Type of energy input /<br>Tipo di alimentazione energetica                                                                                                                                                                    |         | Natura gas / Gas naturale                 | Natura gas / Gas naturale                 | Natura gas / Gas naturale                 | Natura gas / Gas naturale                 | Natura gas / Gas naturale                 |
| bj | Capacity control /<br>Controllo della capacità                                                                                                                                                                                |         | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      |
| bl | Sound power level, indoors/outdoors /<br>Livello della potenza sonora, all'interno/all'esterno                                                                                                                                | LWA     | 41/66                                     | 41/55                                     | 41/57                                     | 41/58                                     | 41/60                                     |
| bl | Annual energy consumption /<br>Consumo energetico annuale                                                                                                                                                                     | kWh     | 7915                                      | 2542                                      | 3283                                      | 3824                                      | 4749                                      |
| bm | For air-to-water heat pumps: Rated air flow rate, outdoors /<br>Per le pompe di calore aria/ acqua: portata d'aria, all'esterno                                                                                               |         | 6500                                      | 2750                                      | 3000                                      | 4750                                      | 5000                                      |
| bn | For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger /<br>Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno |         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bo | Declared load profile /<br>Profilo di carico dichiarato                                                                                                                                                                       |         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bp | Daily electricity consumption /<br>Consumo quotidiano di energia elettrica                                                                                                                                                    | Qelec   | -                                         | -                                         | -                                         | -                                         | -                                         |
| bq | Water heating energy efficiency /<br>Efficienza energetica di riscaldamento dell'acqua                                                                                                                                        | ηwh     | -                                         | -                                         | -                                         | -                                         | -                                         |
| br | Daily fuel consumption /<br>Consumo quotidiano di combustibile                                                                                                                                                                | Qfuel   | -                                         | -                                         | -                                         | -                                         | -                                         |
| bs | Annual electricity consumption /<br>Consumo annuo di energia elettrica                                                                                                                                                        | AEC     | -                                         | -                                         | -                                         | -                                         | -                                         |
| bt | Annual fuel consumption /<br>Consumo annuo di combustibile                                                                                                                                                                    | AEF     | -                                         | -                                         | -                                         | -                                         | -                                         |

| ID | Description                                                          | Symbol | A - 2.1 - 24kW                 | A - 3.1 - 24kW                 | A - 4.1 - 24kW                 | A - 5.1 - 24kW                 | B - 6.1 - 34kW                 | C - 7.1 - 34kW                 |
|----|----------------------------------------------------------------------|--------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| ca | SERIES / Serie                                                       | -      | SPHERA EVO 2.0<br>EASYHybrid   | SPHERA EVO 2.0<br>EASYHybrid   | SPHERA EVO 2.0<br>EASYHybrid   | SPHERA EVO 2.0<br>EASYHybrid   | SPHERA EVO 2.0<br>EASYHybrid   | SPHERA EVO 2.0<br>EASYHybrid   |
| cb | Model / Modello                                                      | -      | SQKN-YEE 1 BH<br>MISAN-YEE 1 S | SQKN-YEE 1 BH<br>MISAN-YEE 1 S | SQKN-YEE 1 BH<br>MISAN-YEE 1 S | SQKN-YEE 1 BH<br>MISAN-YEE 1 S | SQKN-YEE 1 BH<br>MISAN-YEE 1 S | SQKN-YEE 1 BH<br>MISAN-YEE 1 S |
| cc | Size / Grandezza                                                     | -      | A - 2.1 - 24kW                 | A - 3.1 - 24kW                 | A - 4.1 - 24kW                 | A - 5.1 - 24kW                 | B - 6.1 - 34kW                 | C - 7.1 - 34kW                 |
| cd | Medium-temperature application /<br>Applicazione a media temperatura | °C     | 55                             | 55                             | 55                             | 55                             | 55                             | 55                             |
| ce | Low-temperature application /<br>Applicazione a bassa temperatura    | °C     | 35                             | 35                             | 35                             | 35                             | 35                             | 35                             |
| cf | DHW profile / Profilo ACS                                            | -      | -                              | -                              | -                              | -                              | -                              | -                              |
| cg | Medium-temperature class / Classe a media                            | -      | A++                            | A++                            | A++                            | A++                            | A++                            | A++                            |
| ch | Low-temperature class / Classe a bassa temperatura                   | -      | A+++                           | A+++                           | A+++                           | A+++                           | A+++                           | A+++                           |
| ci | DHW class / Classe ACS                                               | -      | -                              | -                              | -                              | -                              | -                              | -                              |
| cj | P <sub>th</sub>                                                      | kW     | 4                              | 6                              | 7                              | 9                              | 12                             | 13                             |
| ck | Q <sub>he_ambiente</sub>                                             | kWh    | 2542                           | 3283                           | 3824                           | 4749                           | 6793                           | 7380                           |
| cl | Q <sub>he_acs</sub>                                                  | kWh    | -                              | -                              | -                              | -                              | -                              | -                              |
| cm | η <sub>s</sub>                                                       | %      | 130                            | 139                            | 146                            | 146                            | 140                            | 138                            |
| cn | η <sub>s_Wh</sub>                                                    | %      | 120                            | 120                            | 116                            | 116                            | -                              | 124                            |
| co | LwA <sub>in</sub>                                                    | dB(A)  | 41                             | 41                             | 41                             | 41                             | 41                             | 41                             |
| cp | FOM                                                                  | -      | -                              | -                              | -                              | -                              | -                              | -                              |
| cq | P <sub>th_colder</sub>                                               | kW     | 4                              | 5                              | 7                              | 8                              | 11                             | 12                             |
| cr | P <sub>th_warmer</sub>                                               | kW     | 5                              | 7                              | 9                              | 11                             | 15                             | 16                             |
| cs | Q <sub>HE_colder</sub>                                               | kWh    | 3164                           | 4087                           | 4761                           | 5914                           | 8459                           | 9191                           |
| ct | Q <sub>HE_warmer</sub>                                               | kWh    | 1719                           | 2217                           | 2581                           | 3204                           | 4578                           | 4973                           |
| cu | Q <sub>HE_colder_Wh</sub>                                            | kWh    | -                              | -                              | -                              | -                              | -                              | -                              |
| cv | Q <sub>HE_warmer_Wh</sub>                                            | kWh    | -                              | -                              | -                              | -                              | -                              | -                              |
| cw | η <sub>s_colder</sub>                                                | %      | 118                            | 126                            | 132                            | 133                            | 127                            | 125                            |
| cx | η <sub>s_warmer</sub>                                                | %      | 163                            | 174                            | 183                            | 184                            | 175                            | 173                            |
| cy | η <sub>s_colder_Wh</sub>                                             | %      | -                              | -                              | -                              | -                              | -                              | -                              |
| cz | η <sub>s_warmer_Wh</sub>                                             | %      | -                              | -                              | -                              | -                              | -                              | -                              |
| da | LwA <sub>out</sub>                                                   | dB(A)  | 55                             | 57                             | 58                             | 60                             | 63                             | 64                             |
| db | Device class                                                         | -      | VIII                           | VIII                           | VIII                           | VIII                           | VIII                           | VIII                           |
| dc | η <sub>s</sub>                                                       | %      | 5                              | 5                              | 5                              | 5                              | 5                              | 5                              |
| dd | II                                                                   | -      | 0,57                           | 0,47                           | 0,40                           | 0,33                           | 0,34                           | 0,31                           |
| de | III                                                                  | -      | 7                              | 5                              | 4                              | 3                              | 2                              | 2                              |
| df | IV                                                                   | -      | 3                              | 2                              | 2                              | 1                              | 1                              | 1                              |
| dg | V                                                                    | -      | 12,0                           | 13,0                           | 14,0                           | 13,4                           | 12,6                           | 13,0                           |
| dh | VI                                                                   | -      | 33                             | 35                             | 37                             | 38                             | 35                             | 35                             |
| di | η <sub>s_caldaia</sub>                                               | %      | 97                             | 97                             | 97                             | 97                             | 97                             | 97                             |
| dj | Collector / Collettore                                               | m2     | -                              | -                              | -                              | -                              | -                              | -                              |
| dk | V serbatoio                                                          | m3     | -                              | -                              | -                              | -                              | -                              | -                              |
| dl | η collettore                                                         | %      | -                              | -                              | -                              | -                              | -                              | -                              |
| dm | Storage Tank Class / Classe serbatoio                                | -      | -                              | -                              | -                              | -                              | -                              | -                              |
| dn | Energy Efficiency / Efficienza energetica                            | %      | 116                            | 124                            | 131                            | 135                            | 131                            | 131                            |
| do | Energy Efficiency C / Efficienza energetica C                        | %      | 114                            | 122                            | 130                            | 134                            | 130                            | 130                            |
| dp | Energy Efficiency W / Efficienza energetica W                        | %      | 128                            | 137                            | 145                            | 149                            | 144                            | 144                            |
| dq | II                                                                   | -      | -                              | -                              | -                              | -                              | -                              | -                              |
| dr | III                                                                  | -      | -                              | -                              | -                              | -                              | -                              | -                              |

| ID | Description                                                          | Symbol | C - 8.1 - 34kW                 | A - 2.1 - 34kW                 | A - 3.1 - 34kW                 | A - 4.1 - 34kW                 | A - 5.1 - 34kW                 |
|----|----------------------------------------------------------------------|--------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| ca | SERIES / Serie                                                       | -      | SPHERA EVO 2.0<br>EASYHybrid   | SPHERA EVO 2.0<br>EASYHybrid   | SPHERA EVO 2.0<br>EASYHybrid   | SPHERA EVO 2.0<br>EASYHybrid   | SPHERA EVO 2.0<br>EASYHybrid   |
| cb | Model / Modello                                                      | -      | SQKN-YEE 1 BH<br>MISAN-YEE 1 S | SQKN-YEE 1 BH<br>MISAN-YEE 1 S | SQKN-YEE 1 BH<br>MISAN-YEE 1 S | SQKN-YEE 1 BH<br>MISAN-YEE 1 S | SQKN-YEE 1 BH<br>MISAN-YEE 1 S |
| cc | Size / Grandezza                                                     | -      | C - 8.1 - 34kW                 | A - 2.1 - 34kW                 | A - 3.1 - 34kW                 | A - 4.1 - 34kW                 | A - 5.1 - 34kW                 |
| cd | Medium-temperature application /<br>Applicazione a media temperatura | °C     | 55                             | 55                             | 55                             | 55                             | 55                             |
| ce | Low-temperature application /<br>Applicazione a bassa temperatura    | °C     | 35                             | 35                             | 35                             | 35                             | 35                             |
| cf | DHW profile / Profilo ACS                                            | -      | -                              | -                              | -                              | -                              | -                              |
| cg | Medium-temperature class / Classe a media                            | -      | A++                            | A++                            | A++                            | A++                            | A++                            |
| ch | Low-temperature class / Classe a bassa temperatura                   | -      | A+++                           | A+++                           | A+++                           | A+++                           | A+++                           |
| ci | DHW class / Classe ACS                                               | -      | -                              | -                              | -                              | -                              | -                              |
| cj | P <sub>tn</sub>                                                      | kW     | 13                             | 4                              | 6                              | 7                              | 9                              |
| ck | Q <sub>he_ambiente</sub>                                             | kWh    | 7915                           | 2542                           | 3283                           | 3824                           | 4749                           |
| cl | Q <sub>he_acs</sub>                                                  | kWh    | -                              | -                              | -                              | -                              | -                              |
| cm | η <sub>s</sub>                                                       | %      | 136                            | 130                            | 139                            | 146                            | 146                            |
| cn | η <sub>s_Wh</sub>                                                    | %      | 124                            | 120                            | 120                            | 116                            | 116                            |
| co | L <sub>WA_in</sub>                                                   | dB(A)  | 41                             | 41                             | 41                             | 41                             | 41                             |
| cp | FOM                                                                  | -      | -                              | -                              | -                              | -                              | -                              |
| cq | P <sub>th_colder</sub>                                               | kW     | 13                             | 4                              | 5                              | 7                              | 8                              |
| cr | P <sub>th_warmer</sub>                                               | kW     | 17                             | 5                              | 7                              | 9                              | 11                             |
| cs | Q <sub>HE_colder</sub>                                               | kWh    | 9857                           | 3164                           | 4087                           | 4761                           | 5914                           |
| ct | Q <sub>HE_warmer</sub>                                               | kWh    | 5333                           | 1719                           | 2217                           | 2581                           | 3204                           |
| cu | Q <sub>HE_colder_Wh</sub>                                            | kWh    | -                              | -                              | -                              | -                              | -                              |
| cv | Q <sub>HE_warmer_Wh</sub>                                            | kWh    | -                              | -                              | -                              | -                              | -                              |
| cw | η <sub>s_colder</sub>                                                | %      | 124                            | 118                            | 126                            | 132                            | 133                            |
| cx | η <sub>s_warmer</sub>                                                | %      | 171                            | 163                            | 174                            | 183                            | 184                            |
| cy | η <sub>s_colder_Wh</sub>                                             | %      | -                              | -                              | -                              | -                              | -                              |
| cz | η <sub>s_warmer_Wh</sub>                                             | %      | -                              | -                              | -                              | -                              | -                              |
| da | L <sub>WA_out</sub>                                                  | dB(A)  | 66                             | 55                             | 57                             | 58                             | 60                             |
| db | Device class                                                         | -      | VIII                           | VIII                           | VIII                           | VIII                           | VIII                           |
| dc | η <sub>s</sub>                                                       | %      | 5                              | 5                              | 5                              | 5                              | 5                              |
| dd | II                                                                   | -      | 0,30                           | 0,67                           | 0,58                           | 0,52                           | 0,45                           |
| de | III                                                                  | -      | 2                              | 7                              | 5                              | 4                              | 3                              |
| df | IV                                                                   | -      | 1                              | 3                              | 2                              | 2                              | 1                              |
| dg | V                                                                    | -      | 12,4                           | 12,0                           | 13,0                           | 14,0                           | 13,4                           |
| dh | VI                                                                   | -      | 35                             | 33                             | 35                             | 37                             | 38                             |
| di | η <sub>s_caldaia</sub>                                               | %      | 97                             | 97                             | 97                             | 97                             | 97                             |
| dj | Collector / Collettore                                               | m2     | -                              | -                              | -                              | -                              | -                              |
| dk | V serbatoio                                                          | m3     | -                              | -                              | -                              | -                              | -                              |
| dl | η collettore                                                         | %      | -                              | -                              | -                              | -                              | -                              |
| dm | Storage Tank Class / Classe serbatoio                                | -      | -                              | -                              | -                              | -                              | -                              |
| dn | Energy Efficiency / Efficienza energetica                            | %      | 131                            | 113                            | 120                            | 126                            | 129                            |
| do | Energy Efficiency C / Efficienza energetica C                        | %      | 130                            | 110                            | 118                            | 124                            | 128                            |
| dp | Energy Efficiency W / Efficienza energetica W                        | %      | 143                            | 125                            | 133                            | 140                            | 143                            |
| dq | II                                                                   | -      | -                              | -                              | -                              | -                              | -                              |
| dr | III                                                                  | -      | -                              | -                              | -                              | -                              | -                              |

Bassa temperatura / low-temperature

| ID | Description                                                                                                                                                                                                                | Symbol  | A - 2.1 - 24kW                            | A - 3.1 - 24kW                            | A - 4.1 - 24kW                            | A - 5.1 - 24kW                            | B - 6.1 - 34kW                            | C - 7.1 - 34kW                            |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| aa | Model(s): / Modelli:                                                                                                                                                                                                       | -       | SQKN-YEE 1 BH A 24kW<br>MISAN-YEE 1 S 2.1 | SQKN-YEE 1 BH A 24kW<br>MISAN-YEE 1 S 3.1 | SQKN-YEE 1 BH A 24kW<br>MISAN-YEE 1 S 4.1 | SQKN-YEE 1 BH A 24kW<br>MISAN-YEE 1 S 5.1 | SQKN-YEE 1 BH B 34kW<br>MISAN-YEE 1 S 6.1 | SQKN-YEE 1 BH C 34kW<br>MISAN-YEE 1 S 7.1 |
| ab | Air-to-water heat pump: / Pompa di calore aria/acqua:                                                                                                                                                                      | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ac | Water-to-water heat pump: / Pompa di calore acqua/acqua:                                                                                                                                                                   | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ad | Brine-to-water heat pump: / Pompa di calore salamoia/acqua:                                                                                                                                                                | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ae | Low-temperature heat pump: / Pompa di calore a bassa temperatura:                                                                                                                                                          | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| af | Equipped with a supplementary heater: / Con riscaldatore supplementare:                                                                                                                                                    | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ag | Heat pump combination heater: / Apparecchio misto a pompa di calore:                                                                                                                                                       | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ah | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Prated  | 5                                         | 6                                         | 8                                         | 10                                        | 12                                        | 14                                        |
| ai | Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente                                                                                                                   | ηs      | 202                                       | 203                                       | 210                                       | 208                                       | 197                                       | 193                                       |
| aj | Tj = - 7 °C                                                                                                                                                                                                                | Pdh     | 4,74                                      | 5,51                                      | 7,15                                      | 8,45                                      | 10,69                                     | 12,33                                     |
| ak | Tj = + 2 °C                                                                                                                                                                                                                | Pdh     | 135,00                                    | 3,30                                      | 4,65                                      | 5,23                                      | 6,57                                      | 7,97                                      |
| al | Tj = + 7 °C                                                                                                                                                                                                                | Pdh     | 1,99                                      | 2,24                                      | 2,91                                      | 3,47                                      | 4,48                                      | 5,21                                      |
| am | Tj = + 12 °C                                                                                                                                                                                                               | Pdh     | 1,45                                      | 1,45                                      | 1,85                                      | 1,96                                      | 3,67                                      | 3,67                                      |
| an | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | Pdh     | 4,74                                      | 5,51                                      | 7,15                                      | 8,45                                      | 10,69                                     | 12,33                                     |
| ao | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | Pdh     | 5,21                                      | 5,80                                      | 6,42                                      | 7,38                                      | 10,95                                     | 11,90                                     |
| ap | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | Pdh     | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| aq | Bivalent temperature / Temperatura bivalente                                                                                                                                                                               | Tbiv    | -7                                        | -7                                        | -7                                        | -7                                        | -7                                        | -7                                        |
| ar | Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento                                                                                                                        | Pcych   | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| as | Degradation co-efficient (**) / Coefficiente di degradazione (**)                                                                                                                                                          | Cdh     | 0,90                                      | 0,90                                      | 0,90                                      | 0,90                                      | 0,90                                      | 0,90                                      |
| at | Tj = - 7 °C                                                                                                                                                                                                                | COPd    | 3,15                                      | 3,13                                      | 3,30                                      | 3,18                                      | 3,07                                      | 2,87                                      |
| au | Tj = + 2 °C                                                                                                                                                                                                                | COPd    | 4,96                                      | 4,91                                      | 5,17                                      | 5,03                                      | 4,68                                      | 4,62                                      |
| av | Tj = + 7 °C                                                                                                                                                                                                                | COPd    | 6,81                                      | 7,11                                      | 7,08                                      | 7,33                                      | 6,90                                      | 7,07                                      |
| aw | Tj = + 12 °C                                                                                                                                                                                                               | COPd    | 8,94                                      | 8,94                                      | 9,46                                      | 9,94                                      | 9,96                                      | 9,95                                      |
| ax | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | COPd    | 3,15                                      | 3,13                                      | 3,30                                      | 3,18                                      | 3,07                                      | 2,87                                      |
| ay | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | COPd    | 2,86                                      | 2,70                                      | 3,06                                      | 2,97                                      | 2,79                                      | 2,69                                      |
| az | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | COPd    | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| ba | For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio                                                                                             | TOL     | -10                                       | -10                                       | -10                                       | -10                                       | -10                                       | -10                                       |
| bb | Cycling interval efficiency / Efficienza della ciclicità degli intervalli                                                                                                                                                  | COPcych | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bc | Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua                                                                                                                    | WTOL    | 65                                        | 65                                        | 65                                        | 65                                        | 65                                        | 65                                        |
| bd | Off mode / Modo spento                                                                                                                                                                                                     | POFF    | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| be | Thermostat-off mode / Modo termostato spento                                                                                                                                                                               | PTO     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| bf | Standby mode / Modo stand-by                                                                                                                                                                                               | PSB     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| bg | Crankcase heater mode / Modo riscaldamento del carter                                                                                                                                                                      | PCK     | 0,000                                     | 0,000                                     | 0,000                                     | 0,000                                     | 0,000                                     | 0,000                                     |
| bh | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Psup    | 24                                        | 24                                        | 24                                        | 24                                        | 34                                        | 34                                        |
| bi | Type of energy input / Tipo di alimentazione energetica                                                                                                                                                                    |         | Natural gas / Gas naturale                | Natural gas / Gas naturale                | Natural gas / Gas naturale                | Natural gas / Gas naturale                | Natural gas / Gas naturale                | Natural gas / Gas naturale                |
| bj | Capacity control / Controllo della capacità                                                                                                                                                                                |         | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      |
| bl | Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno                                                                                                                                | LWA     | 41/55                                     | 41/57                                     | 41/58                                     | 41/60                                     | 41/63                                     | 41/64                                     |
| bl | Annual energy consumption / Consumo energetico annuale                                                                                                                                                                     | kWh     | 2161                                      | 2502                                      | 3141                                      | 3747                                      | 4994                                      | 5868                                      |
| bm | For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno                                                                                               |         | 2750                                      | 3000                                      | 4750                                      | 5000                                      | 6000                                      | 6250                                      |
| bn | For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno |         | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bo | Declared load profile / Profilo di carico dichiarato                                                                                                                                                                       |         | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bp | Daily electricity consumption / Consumo quotidiano di energia elettrica                                                                                                                                                    | Qelec   | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bq | Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua                                                                                                                                        | ηwh     | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| br | Daily fuel consumption / Consumo quotidiano di combustibile                                                                                                                                                                | Qfuel   | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bs | Annual electricity consumption / Consumo annuo di energia elettrica                                                                                                                                                        | AEC     | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bt | Annual fuel consumption / Consumo annuo di combustibile                                                                                                                                                                    | AEF     | -                                         | -                                         | -                                         | -                                         | -                                         | -                                         |

| ID | Description                                                                                                                                                                                                                | Symbol  | C - 8.1 - 34kW                            | A - 2.1 - 34kW                            | A - 3.1 - 34kW                            | A - 4.1 - 34kW                            | A - 5.1 - 34kW                            |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| aa | Model(s) / Modelli:                                                                                                                                                                                                        | -       | SQKN-YEE 1 BH D 34kW<br>MISAN-YEE 1 S 8.1 | SQKN-YEE 1 BH A 34kW<br>MISAN-YEE 1 S 2.1 | SQKN-YEE 1 BH A 34kW<br>MISAN-YEE 1 S 3.1 | SQKN-YEE 1 BH A 34kW<br>MISAN-YEE 1 S 4.1 | SQKN-YEE 1 BH A 34kW<br>MISAN-YEE 1 S 5.1 |
| ab | Air-to-water heat pump: / Pompa di calore aria/acqua:                                                                                                                                                                      | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ac | Water-to-water heat pump: / Pompa di calore acqua/acqua:                                                                                                                                                                   | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ad | Brine-to-water heat pump: / Pompa di calore salamoia/acqua:                                                                                                                                                                | -       | NO                                        | NO                                        | NO                                        | NO                                        | NO                                        |
| ae | Low-temperature heat pump: / Pompa di calore a bassa temperatura:                                                                                                                                                          | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| af | Equipped with a supplementary heater: / Con riscaldatore supplementare:                                                                                                                                                    | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ag | Heat pump combination heater: / Apparecchio misto a pompa di calore:                                                                                                                                                       | -       | YES                                       | YES                                       | YES                                       | YES                                       | YES                                       |
| ah | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Prated  | 16                                        | 5                                         | 6                                         | 8                                         | 10                                        |
| ai | Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente                                                                                                                   | ηs      | 193                                       | 202                                       | 203                                       | 210                                       | 208                                       |
| aj | Tj = - 7 °C                                                                                                                                                                                                                | Pdh     | 13,82                                     | 4,74                                      | 5,51                                      | 7,15                                      | 8,45                                      |
| ak | Tj = + 2 °C                                                                                                                                                                                                                | Pdh     | 8,55                                      | 147                                       | 3,30                                      | 4,65                                      | 5,23                                      |
| al | Tj = + 7 °C                                                                                                                                                                                                                | Pdh     | 5,88                                      | 1,99                                      | 2,24                                      | 2,91                                      | 3,47                                      |
| am | Tj = + 12 °C                                                                                                                                                                                                               | Pdh     | 3,67                                      | 1,45                                      | 1,45                                      | 1,85                                      | 1,96                                      |
| an | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | Pdh     | 13,82                                     | 4,74                                      | 5,51                                      | 7,15                                      | 8,45                                      |
| ao | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | Pdh     | 12,64                                     | 5,21                                      | 5,80                                      | 6,42                                      | 7,38                                      |
| ap | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | Pdh     | -                                         | -                                         | -                                         | -                                         | -                                         |
| aq | Bivalent temperature / Temperatura bivalente                                                                                                                                                                               | Tbiv    | -7                                        | -7                                        | -7                                        | -7                                        | -7                                        |
| ar | Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento                                                                                                                        | Pcych   | -                                         | -                                         | -                                         | -                                         | -                                         |
| as | Degradation co-efficient (**) / Coefficiente di degradazione (**)                                                                                                                                                          | Cdh     | 0,90                                      | 0,9                                       | 0,9                                       | 0,9                                       | 0,9                                       |
| at | Tj = - 7 °C                                                                                                                                                                                                                | COPd    | 2,86                                      | 3,15                                      | 3,13                                      | 3,30                                      | 3,18                                      |
| au | Tj = + 2 °C                                                                                                                                                                                                                | COPd    | 4,59                                      | 4,96                                      | 4,91                                      | 5,17                                      | 5,03                                      |
| av | Tj = + 7 °C                                                                                                                                                                                                                | COPd    | 7,13                                      | 6,81                                      | 7,11                                      | 7,08                                      | 7,33                                      |
| aw | Tj = + 12 °C                                                                                                                                                                                                               | COPd    | 9,95                                      | 8,94                                      | 8,94                                      | 9,46                                      | 9,94                                      |
| ax | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | COPd    | 2,86                                      | 3,15                                      | 3,13                                      | 3,30                                      | 3,18                                      |
| ay | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | COPd    | 2,59                                      | 2,86                                      | 2,70                                      | 3,06                                      | 2,97                                      |
| az | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | COPd    | -                                         | -                                         | -                                         | -                                         | -                                         |
| ba | For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio                                                                                             | TOL     | -10                                       | -10                                       | -10                                       | -10                                       | -10                                       |
| bb | Cycling interval efficiency / Efficienza della ciclicità degli intervalli                                                                                                                                                  | COPcych | -                                         | -                                         | -                                         | -                                         | -                                         |
| bc | Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua                                                                                                                    | WTOL    | 65                                        | 65                                        | 65                                        | 65                                        | 65                                        |
| bd | Off mode / Modo spento                                                                                                                                                                                                     | POFF    | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| be | Thermostat-off mode / Modo termostato spento                                                                                                                                                                               | PTO     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| bf | Standby mode / Modo stand-by                                                                                                                                                                                               | PSB     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     | 0,015                                     |
| bg | Crankcase heater mode / Modo riscaldamento del carter                                                                                                                                                                      | PCK     | 0,000                                     | 0                                         | 0                                         | 0                                         | 0                                         |
| bh | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Psup    | 34                                        | 34                                        | 34                                        | 34                                        | 34                                        |
| bi | Type of energy input / Tipo di alimentazione energetica                                                                                                                                                                    |         | Natural gas / Gas naturale                | Natural gas / Gas naturale                | Natural gas / Gas naturale                | Natural gas / Gas naturale                | Natural gas / Gas naturale                |
| bj | Capacity control / Controllo della capacità                                                                                                                                                                                |         | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      | Variable / Variabile                      |
| bl | Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno                                                                                                                                | LWA     | 41/66                                     | 41/55                                     | 41/57                                     | 41/58                                     | 41/60                                     |
| bl | Annual energy consumption / Consumo energetico annuale                                                                                                                                                                     | kWh     | 6602                                      | 2161                                      | 2502                                      | 3141                                      | 3747                                      |
| bm | For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno                                                                                               |         | 6500                                      | 2750                                      | 3000                                      | 4750                                      | 5000                                      |
| bn | For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno |         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bo | Declared load profile / Profilo di carico dichiarato                                                                                                                                                                       |         | -                                         | -                                         | -                                         | -                                         | -                                         |
| bp | Daily electricity consumption / Consumo quotidiano di energia elettrica                                                                                                                                                    | Qelec   | -                                         | -                                         | -                                         | -                                         | -                                         |
| bq | Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua                                                                                                                                        | ηwh     | -                                         | -                                         | -                                         | -                                         | -                                         |
| br | Daily fuel consumption / Consumo quotidiano di combustibile                                                                                                                                                                | Qfuel   | -                                         | -                                         | -                                         | -                                         | -                                         |
| bs | Annual electricity consumption / Consumo annuo di energia elettrica                                                                                                                                                        | AEC     | -                                         | -                                         | -                                         | -                                         | -                                         |
| bt | Annual fuel consumption / Consumo annuo di combustibile                                                                                                                                                                    | AEF     | -                                         | -                                         | -                                         | -                                         | -                                         |

| ID | Description                                                          | Symbol | A - 2.1 - 24kW                          | A - 3.1 - 24kW                          | A - 4.1 - 24kW                          | A - 5.1 - 24kW                          | B - 6.1 - 34kW                          | C - 7.1 - 34kW                          |
|----|----------------------------------------------------------------------|--------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| ca | SERIES / Serie                                                       | -      | SPHERA EVO 2.0<br>EASYHybrid            | SPHERA EVO 2.0<br>EASYHybrid            | SPHERA EVO 2.0<br>EASYHybrid            | SPHERA EVO 2.0<br>EASYHybrid            | SPHERA EVO 2.0<br>EASYHybrid            | SPHERA EVO 2.0<br>EASYHybrid            |
| cb | Model / Modello                                                      | -      | SQKN-YEE 1 BH 24kW<br>MISAN-YEE 1 S 2.1 | SQKN-YEE 1 BH 24kW<br>MISAN-YEE 1 S 3.1 | SQKN-YEE 1 BH 24kW<br>MISAN-YEE 1 S 4.1 | SQKN-YEE 1 BH 24kW<br>MISAN-YEE 1 S 5.1 | SQKN-YEE 1 BH 34kW<br>MISAN-YEE 1 S 6.1 | SQKN-YEE 1 BH 34kW<br>MISAN-YEE 1 S 7.1 |
| cc | Size / Grandezza                                                     | -      | A - 2.1 - 24kW                          | A - 3.1 - 24kW                          | A - 4.1 - 24kW                          | A - 5.1 - 24kW                          | B - 6.1 - 34kW                          | C - 7.1 - 34kW                          |
| cd | Medium-temperature application /<br>Applicazione a media temperatura | °C     | 55                                      | 55                                      | 55                                      | 55                                      | 55                                      | 55                                      |
| ce | Low-temperature application /<br>Applicazione a bassa temperatura    | °C     | 35                                      | 35                                      | 35                                      | 35                                      | 35                                      | 35                                      |
| cf | DHW profile / Profilo ACS                                            | -      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| cg | Medium-temperature class / Classe a media<br>temperatura             | -      | A++                                     | A++                                     | A++                                     | A++                                     | A++                                     | A++                                     |
| ch | Low-temperature class / Classe a bassa temperatura                   | -      | A+++                                    | A+++                                    | A+++                                    | A+++                                    | A+++                                    | A+++                                    |
| ci | DHW class / Classe ACS                                               | -      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| cj | Ptn                                                                  | kW     | 4                                       | 6                                       | 7                                       | 9                                       | 12                                      | 13                                      |
| ck | Qhe_ambiente                                                         | kWh    | 2161                                    | 2502                                    | 3141                                    | 3747                                    | 4994                                    | 5868                                    |
| cl | Qhe_acs                                                              | kWh    | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| cm | ηs                                                                   | %      | 130                                     | 139                                     | 146                                     | 146                                     | 140                                     | 138                                     |
| cn | ηs_wh                                                                | %      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| co | LwA_in                                                               | dB(A)  | 41                                      | 41                                      | 41                                      | 41                                      | 41                                      | 41                                      |
| cp | FOM                                                                  | -      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| cq | P th_colder                                                          | kW     | 5                                       | 6                                       | 8                                       | 10                                      | 13                                      | 14                                      |
| cr | P th_warmer                                                          | kW     | 7                                       | 8                                       | 10                                      | 12                                      | 15                                      | 16                                      |
| cs | Q HE_colder                                                          | kWh    | 3245                                    | 3830                                    | 4808                                    | 5737                                    | 7648                                    | 8987                                    |
| ct | Q HE_warmer                                                          | kWh    | 1513                                    | 1750                                    | 2194                                    | 2615                                    | 3483                                    | 3670                                    |
| cu | Q HE_colder_wh                                                       | kWh    | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| cv | Q HE_warmer_wh                                                       | kWh    | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| cw | ηs_colder                                                            | %      | 163                                     | 164                                     | 169                                     | 168                                     | 159                                     | 156                                     |
| cx | ηs_warmer                                                            | %      | 241                                     | 242                                     | 250                                     | 248                                     | 235                                     | 231                                     |
| cy | ηs_colder_wh                                                         | %      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| cz | ηs_warmer_wh                                                         | %      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| da | LwA_out                                                              | dB(A)  | 55                                      | 57                                      | 58                                      | 60                                      | 63                                      | 64                                      |
| db | Device class                                                         | -      | VIII                                    | VIII                                    | VIII                                    | VIII                                    | VIII                                    | VIII                                    |
| dc | ηs                                                                   | %      | 5                                       | 5                                       | 5                                       | 5                                       | 5                                       | 5                                       |
| dd | II                                                                   | -      | 0,57                                    | 0,47                                    | 0,40                                    | 0,33                                    | 0,34                                    | 0,31                                    |
| de | III                                                                  | -      | 7                                       | 5                                       | 4                                       | 3                                       | 2                                       | 2                                       |
| df | IV                                                                   | -      | 3                                       | 2                                       | 2                                       | 1                                       | 1                                       | 1                                       |
| dg | V                                                                    | -      | 12,0                                    | 13,0                                    | 14,0                                    | 13,4                                    | 12,6                                    | 13,0                                    |
| dh | VI                                                                   | -      | 33                                      | 35                                      | 37                                      | 38                                      | 35                                      | 35                                      |
| di | ηs_caldaia                                                           | %      | 97                                      | 97                                      | 97                                      | 97                                      | 97                                      | 97                                      |
| dj | Collector / Collettore                                               | m2     | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| dk | V serbatoio                                                          | m3     | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| dl | η collettore                                                         | %      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| dm | Storage Tank Class / Classe serbatoio                                | -      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| dn | Energy Efficiency / Efficienza energetica                            | %      | 147                                     | 158                                     | 170                                     | 177                                     | 168                                     | 168                                     |
| do | Energy Efficiency C / Efficienza energetica C                        | %      | 144                                     | 156                                     | 168                                     | 176                                     | 167                                     | 167                                     |
| dp | Energy Efficiency W / Efficienza energetica W                        | %      | 159                                     | 171                                     | 184                                     | 190                                     | 181                                     | 181                                     |
| dq | II                                                                   | -      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |
| dr | III                                                                  | -      | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       |

| ID | Description                                                          | Symbol         | C - 8.1 - 34kW                          | A - 2.1 - 34kW                          | A - 3.1 - 34kW                          | A - 4.1 - 34kW                          | A - 5.1 - 34kW                          |
|----|----------------------------------------------------------------------|----------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| ca | SERIES / Serie                                                       | -              | SPHERA EVO 2.0<br>EASYHybrid            | SPHERA EVO 2.0<br>EASYHybrid            | SPHERA EVO 2.0<br>EASYHybrid            | SPHERA EVO 2.0<br>EASYHybrid            | SPHERA EVO 2.0<br>EASYHybrid            |
| cb | Model / Modello                                                      | -              | SQKN-YEE 1 BH 34kW<br>MISAN-YEE 1 S 8.1 | SQKN-YEE 1 BH 34kW<br>MISAN-YEE 1 S 2.1 | SQKN-YEE 1 BH 34kW<br>MISAN-YEE 1 S 3.1 | SQKN-YEE 1 BH 34kW<br>MISAN-YEE 1 S 4.1 | SQKN-YEE 1 BH 34kW<br>MISAN-YEE 1 S 5.1 |
| cc | Size / Grandezza                                                     | -              | C - 8.1 - 34kW                          | A - 2.1 - 34kW                          | A - 3.1 - 34kW                          | A - 4.1 - 34kW                          | A - 5.1 - 34kW                          |
| cd | Medium-temperature application /<br>Applicazione a media temperatura | °C             | 55                                      | 55                                      | 55                                      | 55                                      | 55                                      |
| ce | Low-temperature application /<br>Applicazione a bassa temperatura    | °C             | 35                                      | 35                                      | 35                                      | 35                                      | 35                                      |
| cf | DHW profile / Profilo ACS                                            | -              | -                                       | -                                       | -                                       | -                                       | -                                       |
| cg | Medium-temperature class / Classe a media<br>temperatura             | -              | A++                                     | A++                                     | A++                                     | A++                                     | A++                                     |
| ch | Low-temperature class / Classe a bassa temperatura                   | -              | A+++                                    | A+++                                    | A+++                                    | A+++                                    | A+++                                    |
| ci | DHW class / Classe ACS                                               | -              | -                                       | -                                       | -                                       | -                                       | -                                       |
| cj | P <sub>tn</sub>                                                      | kW             | 13                                      | 4                                       | 6                                       | 7                                       | 9                                       |
| ck | Q <sub>he_ambiente</sub>                                             | kWh            | 6602                                    | 2161                                    | 2502                                    | 3141                                    | 3747                                    |
| cl | Q <sub>he_acs</sub>                                                  | kWh            | -                                       | -                                       | -                                       | -                                       | -                                       |
| cm | η <sub>s</sub>                                                       | %              | 136                                     | 130                                     | 139                                     | 146                                     | 146                                     |
| cn | η <sub>s_Wh</sub>                                                    | %              | -                                       | -                                       | -                                       | -                                       | -                                       |
| co | L <sub>WA_in</sub>                                                   | dB(A)          | 41                                      | 41                                      | 41                                      | 41                                      | 41                                      |
| cp | FOM                                                                  | -              | -                                       | -                                       | -                                       | -                                       | -                                       |
| cq | P <sub>th_colder</sub>                                               | kW             | 16                                      | 5                                       | 6                                       | 8                                       | 10                                      |
| cr | P <sub>th_warmer</sub>                                               | kW             | 17                                      | 7                                       | 8                                       | 10                                      | 12                                      |
| cs | Q <sub>HE_colder</sub>                                               | kWh            | 10111                                   | 3245                                    | 3830                                    | 4808                                    | 5737                                    |
| ct | Q <sub>HE_warmer</sub>                                               | kWh            | 3914                                    | 1513                                    | 1750                                    | 2194                                    | 2615                                    |
| cu | Q <sub>HE_colder_Wh</sub>                                            | kWh            | -                                       | -                                       | -                                       | -                                       | -                                       |
| cv | Q <sub>HE_warmer_Wh</sub>                                            | kWh            | -                                       | -                                       | -                                       | -                                       | -                                       |
| cw | η <sub>s_colder</sub>                                                | %              | 155                                     | 163                                     | 164                                     | 169                                     | 168                                     |
| cx | η <sub>s_warmer</sub>                                                | %              | 230                                     | 241                                     | 242                                     | 250                                     | 248                                     |
| cy | η <sub>s_colder_Wh</sub>                                             | %              | -                                       | -                                       | -                                       | -                                       | -                                       |
| cz | η <sub>s_warmer_Wh</sub>                                             | %              | -                                       | -                                       | -                                       | -                                       | -                                       |
| da | L <sub>WA_out</sub>                                                  | dB(A)          | 66                                      | 55                                      | 57                                      | 58                                      | 60                                      |
| db | Device class                                                         | -              | VIII                                    | VIII                                    | VIII                                    | VIII                                    | VIII                                    |
| dc | η <sub>s</sub>                                                       | %              | 5                                       | 5                                       | 5                                       | 5                                       | 5                                       |
| dd | II                                                                   | -              | 0,30                                    | 0,67                                    | 0,58                                    | 0,52                                    | 0,45                                    |
| de | III                                                                  | -              | 2                                       | 7                                       | 5                                       | 4                                       | 3                                       |
| df | IV                                                                   | -              | 1                                       | 3                                       | 2                                       | 2                                       | 1                                       |
| dg | V                                                                    | -              | 12,4                                    | 12,0                                    | 13,0                                    | 14,0                                    | 13,4                                    |
| dh | VI                                                                   | -              | 35                                      | 33                                      | 35                                      | 37                                      | 38                                      |
| di | η <sub>s_caldaia</sub>                                               | %              | 97                                      | 97                                      | 97                                      | 97                                      | 97                                      |
| dj | Collector / Collettore                                               | m <sup>2</sup> | -                                       | -                                       | -                                       | -                                       | -                                       |
| dk | V serbatoio                                                          | m <sup>3</sup> | -                                       | -                                       | -                                       | -                                       | -                                       |
| dl | η collettore                                                         | %              | -                                       | -                                       | -                                       | -                                       | -                                       |
| dm | Storage Tank Class / Classe serbatoio                                | -              | -                                       | -                                       | -                                       | -                                       | -                                       |
| dn | Energy Efficiency / Efficienza energetica                            | %              | 170                                     | 136                                     | 146                                     | 156                                     | 164                                     |
| do | Energy Efficiency C / Efficienza energetica C                        | %              | 169                                     | 134                                     | 145                                     | 155                                     | 162                                     |
| dp | Energy Efficiency W / Efficienza energetica W                        | %              | 182                                     | 148                                     | 159                                     | 170                                     | 177                                     |
| dq | II                                                                   | -              | -                                       | -                                       | -                                       | -                                       | -                                       |
| dr | III                                                                  | -              | -                                       | -                                       | -                                       | -                                       | -                                       |

Media temperatura (Tower) / medium-temperature (Tower)

| ID | Description                                                                                                                                                                                                                | Symbol  | A - 2.1 - 24kW               | A - 3.1 - 24kW               | A - 4.1 - 24kW               | A - 5.1 - 24kW               | B - 6.1 - 34kW               | C - 7.1 - 34kW               |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
|    |                                                                                                                                                                                                                            |         | SQKN-YEE 1 BH A 24kW<br>150L | SQKN-YEE 1 BH A 24kW<br>150L | SQKN-YEE 1 BH A 24kW<br>150L | SQKN-YEE 1 BH A 24kW<br>150L | SQKN-YEE 1 BH B 34kW<br>150L | SQKN-YEE 1 BH C 34kW<br>150L |
| aa | Model(s): / Modelli:                                                                                                                                                                                                       | -       | MISAN-YEE 1 S 2.1            | MISAN-YEE 1 S 3.1            | MISAN-YEE 1 S 4.1            | MISAN-YEE 1 S 5.1            | MISAN-YEE 1 S 6.1            | MISAN-YEE 1 S 7.1            |
| ab | Air-to-water heat pump: / Pompa di calore aria/acqua:                                                                                                                                                                      | -       | YES                          | YES                          | YES                          | YES                          | YES                          | YES                          |
| ac | Water-to-water heat pump: / Pompa di calore acqua/acqua:                                                                                                                                                                   | -       | NO                           | NO                           | NO                           | NO                           | NO                           | NO                           |
| ad | Brine-to-water heat pump: / Pompa di calore salamoia/acqua:                                                                                                                                                                | -       | NO                           | NO                           | NO                           | NO                           | NO                           | NO                           |
| ae | Low-temperature heat pump: / Pompa di calore a bassa temperatura:                                                                                                                                                          | -       | NO                           | NO                           | NO                           | NO                           | NO                           | NO                           |
| af | Equipped with a supplementary heater: / Con riscaldatore supplementare:                                                                                                                                                    | -       | YES                          | YES                          | YES                          | YES                          | YES                          | YES                          |
| ag | Heat pump combination heater: / Apparecchio misto a pompa di calore:                                                                                                                                                       | -       | YES                          | YES                          | YES                          | YES                          | YES                          | YES                          |
| ah | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Prated  | 4,1                          | 5,6                          | 6,9                          | 8,6                          | 11,7                         | 12,6                         |
| ai | Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente                                                                                                                   | ηs      | 130                          | 139                          | 146                          | 146                          | 140                          | 138                          |
| aj | Tj = - 7 °C                                                                                                                                                                                                                | Pdh     | 3,61                         | 4,97                         | 6,09                         | 7,58                         | 10,35                        | 11,12                        |
| ak | Tj = + 2 °C                                                                                                                                                                                                                | Pdh     | 2,16                         | 3,02                         | 3,94                         | 4,44                         | 6,62                         | 6,82                         |
| al | Tj = + 7 °C                                                                                                                                                                                                                | Pdh     | 1,54                         | 2,00                         | 2,52                         | 2,92                         | 4,45                         | 4,73                         |
| am | Tj = + 12 °C                                                                                                                                                                                                               | Pdh     | 1,29                         | 1,30                         | 1,72                         | 1,74                         | 3,04                         | 3,03                         |
| an | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | Pdh     | 3,61                         | 4,97                         | 6,09                         | 7,58                         | 10,35                        | 11,12                        |
| ao | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | Pdh     | 3,91                         | 5,27                         | 4,97                         | 5,46                         | 9,59                         | 9,88                         |
| ap | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompa di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | Pdh     | -                            | -                            | -                            | -                            | -                            | -                            |
| aq | Bivalent temperature / Temperatura bivalente                                                                                                                                                                               | Tbiv    | -7                           | -7                           | -7                           | -7                           | -7                           | -7                           |
| ar | Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento                                                                                                                        | Pcych   | -                            | -                            | -                            | -                            | -                            | -                            |
| as | Degradation co-efficient (**) / Coefficiente di degradazione (**)                                                                                                                                                          | Cdh     | 0,9                          | 0,9                          | 0,9                          | 0,9                          | 0,9                          | 0,9                          |
| at | Tj = - 7 °C                                                                                                                                                                                                                | COPd    | 2,02                         | 2,12                         | 2,27                         | 2,02                         | 2,05                         | 2,06                         |
| au | Tj = + 2 °C                                                                                                                                                                                                                | COPd    | 3,21                         | 3,41                         | 3,56                         | 3,63                         | 3,51                         | 3,41                         |
| av | Tj = + 7 °C                                                                                                                                                                                                                | COPd    | 4,43                         | 4,82                         | 4,70                         | 4,95                         | 4,77                         | 4,85                         |
| aw | Tj = + 12 °C                                                                                                                                                                                                               | COPd    | 6,20                         | 6,32                         | 9,71                         | 9,87                         | 6,43                         | 6,43                         |
| ax | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | COPd    | 2,02                         | 2,12                         | 2,27                         | 2,02                         | 2,05                         | 2,06                         |
| ay | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | COPd    | 1,68                         | 1,64                         | 1,88                         | 1,87                         | 1,85                         | 1,86                         |
| az | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompa di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | COPd    | -                            | -                            | -                            | -                            | -                            | -                            |
| ba | For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio                                                                                             | TOL     | -10                          | -10                          | -10                          | -10                          | -10                          | -10                          |
| bb | Cycling interval efficiency / Efficienza della ciclicità degli intervalli                                                                                                                                                  | COPcych | -                            | -                            | -                            | -                            | -                            | -                            |
| bc | Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua                                                                                                                    | WTOL    | 65                           | 65                           | 65                           | 65                           | 65                           | 65                           |
| bd | Off mode / Modo spento                                                                                                                                                                                                     | POFF    | 0,015                        | 0,015                        | 0,015                        | 0,015                        | 0,015                        | 0,015                        |
| be | Thermostat-off mode / Modo termostato spento                                                                                                                                                                               | PTO     | 0,015                        | 0,015                        | 0,015                        | 0,015                        | 0,015                        | 0,015                        |
| bf | Standby mode / Modo stand-by                                                                                                                                                                                               | PSB     | 0,015                        | 0,015                        | 0,015                        | 0,015                        | 0,015                        | 0,015                        |
| bg | Crankcase heater mode / Modo riscaldamento del carter                                                                                                                                                                      | PCK     | 0                            | 0                            | 0                            | 0                            | 0                            | 0                            |
| bh | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Psup    | 24                           | 24                           | 24                           | 24                           | 34                           | 34                           |
| bi | Type of energy input / Tipo di alimentazione energetica                                                                                                                                                                    |         | Natura gas / Gas naturale    | Natura gas / Gas naturale    | Natura gas / Gas naturale    | Natura gas / Gas naturale    | Natura gas / Gas naturale    | Natura gas / Gas naturale    |
| bj | Capacity control / Controllo della capacità                                                                                                                                                                                |         | Variable / Variabile         | Variable / Variabile         | Variable / Variabile         | Variable / Variabile         | Variable / Variabile         | Variable / Variabile         |
| bl | Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno                                                                                                                                | LWA     | 41/55                        | 41/57                        | 41/58                        | 41/60                        | 41/63                        | 41/64                        |
| bl | Annual energy consumption / Consumo energetico annuale                                                                                                                                                                     | kWh     | 2542                         | 3283                         | 3824                         | 4749                         | 6793                         | 7380                         |
| bm | For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno                                                                                               |         | 2750                         | 3000                         | 4750                         | 5000                         | 6000                         | 6250                         |
| bn | For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno |         | -                            | -                            | -                            | -                            | -                            | -                            |
| bo | Declared load profile / Profilo di carico dichiarato                                                                                                                                                                       |         | L                            | L                            | L                            | L                            | L                            | L                            |
| bp | Daily electricity consumption / Consumo quotidiano di energia elettrica                                                                                                                                                    | Qelec   | 4,128                        | 4,128                        | 4,272                        | 4,272                        |                              |                              |
| bq | Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua                                                                                                                                        | ηwh     | 115                          | 115                          | 115                          | 115                          | 91                           | 91                           |
| br | Daily fuel consumption / Consumo quotidiano di combustibile                                                                                                                                                                | Qfuel   | -                            | -                            | -                            | -                            | -                            | -                            |
| bs | Annual electricity consumption / Consumo annuo di energia elettrica                                                                                                                                                        | AEC     | 852                          | 852                          | 880                          | 880                          | 1128                         | 1128                         |
| bt | Annual fuel consumption / Consumo annuo di combustibile                                                                                                                                                                    | AEF     | -                            | -                            | -                            | -                            | -                            | -                            |



| ID        | Description                                                                                                                                                                                                                       | Symbol  | C - 8.1 - 34kW               | A - 2.1 - 34kW               | A - 3.1 - 34kW               | A - 4.1 - 34kW               | A - 5.1 - 34kW               |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
|           |                                                                                                                                                                                                                                   |         | SQKN-YEE 1 BH D 34kW<br>150L | SQKN-YEE 1 BH A 34kW<br>150L | SQKN-YEE 1 BH A 34kW<br>150L | SQKN-YEE 1 BH A 34kW<br>150L | SQKN-YEE 1 BH A 34kW<br>150L |
| <b>aa</b> | <b>Model(s): / Modelli:</b>                                                                                                                                                                                                       | -       | MISAN-YEE 1 S 8.1            | MISAN-YEE 1 S 2.1            | MISAN-YEE 1 S 3.1            | MISAN-YEE 1 S 4.1            | MISAN-YEE 1 S 5.1            |
| <b>ab</b> | <b>Air-to-water heat pump: / Pompa di calore aria/acqua:</b>                                                                                                                                                                      | -       | YES                          | YES                          | YES                          | YES                          | YES                          |
| <b>ac</b> | <b>Water-to-water heat pump: / Pompa di calore acqua/acqua:</b>                                                                                                                                                                   | -       | NO                           | NO                           | NO                           | NO                           | NO                           |
| <b>ad</b> | <b>Brine-to-water heat pump: / Pompa di calore salamoia/acqua:</b>                                                                                                                                                                | -       | NO                           | NO                           | NO                           | NO                           | NO                           |
| <b>ae</b> | <b>Low-temperature heat pump: / Pompa di calore a bassa temperatura:</b>                                                                                                                                                          | -       | NO                           | NO                           | NO                           | NO                           | NO                           |
| <b>af</b> | <b>Equipped with a supplementary heater: / Con riscaldatore supplementare:</b>                                                                                                                                                    | -       | YES                          | YES                          | YES                          | YES                          | YES                          |
| <b>ag</b> | <b>Heat pump combination heater: / Apparecchio misto a pompa di calore:</b>                                                                                                                                                       | -       | YES                          | YES                          | YES                          | YES                          | YES                          |
| <b>ah</b> | <b>Rated heat output (*) / Potenza termica nominale (*)</b>                                                                                                                                                                       | Prated  | 13,3                         | 4,1                          | 5,6                          | 6,9                          | 8,6                          |
| <b>ai</b> | <b>Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente</b>                                                                                                                   | ηs      | 136                          | 130                          | 139                          | 146                          | 146                          |
| <b>aj</b> | <b>Tj = - 7 °C</b>                                                                                                                                                                                                                | Pdh     | 11,79                        | 3,61                         | 4,97                         | 6,09                         | 7,58                         |
| <b>ak</b> | <b>Tj = + 2 °C</b>                                                                                                                                                                                                                | Pdh     | 7,05                         | 2,16                         | 3,02                         | 3,94                         | 4,44                         |
| <b>al</b> | <b>Tj = + 7 °C</b>                                                                                                                                                                                                                | Pdh     | 4,73                         | 1,54                         | 2,00                         | 2,52                         | 2,92                         |
| <b>am</b> | <b>Tj = + 12 °C</b>                                                                                                                                                                                                               | Pdh     | 3,03                         | 1,29                         | 1,30                         | 1,72                         | 1,74                         |
| <b>an</b> | <b>Tj = bivalent temperature / Temperatura bivalente</b>                                                                                                                                                                          | Pdh     | 11,79                        | 3,61                         | 4,97                         | 6,09                         | 7,58                         |
| <b>ao</b> | <b>Tj = operation limit temperature / Temperatura limite di esercizio</b>                                                                                                                                                         | Pdh     | 10,67                        | 3,91                         | 5,27                         | 4,97                         | 5,46                         |
| <b>ap</b> | <b>For air-to-water heat pumps: Tj = - 15 °C (if TOL &lt; - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL &lt; - 20 °C)</b>                                                                                   | Pdh     | -                            | -                            | -                            | -                            | -                            |
| <b>aq</b> | <b>Bivalent temperature / Temperatura bivalente</b>                                                                                                                                                                               | Tbiv    | -7                           | -7                           | -7                           | -7                           | -7                           |
| <b>ar</b> | <b>Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento</b>                                                                                                                        | Pcych   | -                            | -                            | -                            | -                            | -                            |
| <b>as</b> | <b>Degradation co-efficient (**) / Coefficiente di degradazione (**)</b>                                                                                                                                                          | Cdh     | 0,9                          | 0,9                          | 0,9                          | 0,9                          | 0,9                          |
| <b>at</b> | <b>Tj = - 7 °C</b>                                                                                                                                                                                                                | COPd    | 2,04                         | 2,02                         | 2,12                         | 2,27                         | 2,02                         |
| <b>au</b> | <b>Tj = + 2 °C</b>                                                                                                                                                                                                                | COPd    | 3,34                         | 3,21                         | 3,41                         | 3,56                         | 3,63                         |
| <b>av</b> | <b>Tj = + 7 °C</b>                                                                                                                                                                                                                | COPd    | 4,85                         | 4,43                         | 4,82                         | 4,70                         | 4,95                         |
| <b>aw</b> | <b>Tj = + 12 °C</b>                                                                                                                                                                                                               | COPd    | 6,43                         | 6,20                         | 6,32                         | 9,71                         | 9,87                         |
| <b>ax</b> | <b>Tj = bivalent temperature / Temperatura bivalente</b>                                                                                                                                                                          | COPd    | 2,04                         | 2,02                         | 2,12                         | 2,27                         | 2,02                         |
| <b>ay</b> | <b>Tj = operation limit temperature / Temperatura limite di esercizio</b>                                                                                                                                                         | COPd    | 1,84                         | 1,68                         | 1,64                         | 1,88                         | 1,87                         |
| <b>az</b> | <b>For air-to-water heat pumps: Tj = - 15 °C (if TOL &lt; - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL &lt; - 20 °C)</b>                                                                                   | COPd    | -                            | -                            | -                            | -                            | -                            |
| <b>ba</b> | <b>For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio</b>                                                                                             | TOL     | -10                          | -10                          | -10                          | -10                          | -10                          |
| <b>bb</b> | <b>Cycling interval efficiency / Efficienza della ciclicità degli intervalli</b>                                                                                                                                                  | COPcych | -                            | -                            | -                            | -                            | -                            |
| <b>bc</b> | <b>Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua</b>                                                                                                                    | WTOL    | 65                           | 65                           | 65                           | 65                           | 65                           |
| <b>bd</b> | <b>Off mode / Modo spento</b>                                                                                                                                                                                                     | POFF    | 0,015                        | 0,015                        | 0,015                        | 0,015                        | 0,015                        |
| <b>be</b> | <b>Thermostat-off mode / Modo termostato spento</b>                                                                                                                                                                               | PTO     | 0,015                        | 0,015                        | 0,015                        | 0,015                        | 0,015                        |
| <b>bf</b> | <b>Standby mode / Modo stand-by</b>                                                                                                                                                                                               | PSB     | 0,015                        | 0,015                        | 0,015                        | 0,015                        | 0,015                        |
| <b>bg</b> | <b>Crankcase heater mode / Modo riscaldamento del carter</b>                                                                                                                                                                      | PCK     | 0                            | 0                            | 0                            | 0                            | 0                            |
| <b>bh</b> | <b>Rated heat output (*) / Potenza termica nominale (*)</b>                                                                                                                                                                       | Psup    | 34                           | 34                           | 34                           | 34                           | 34                           |
| <b>bi</b> | <b>Type of energy input / Tipo di alimentazione energetica</b>                                                                                                                                                                    |         | Natura gas / Gas naturale    | Natura gas / Gas naturale    | Natura gas / Gas naturale    | Natura gas / Gas naturale    | Natura gas / Gas naturale    |
| <b>bj</b> | <b>Capacity control / Controllo della capacità</b>                                                                                                                                                                                |         | Variable / Variabile         | Variable / Variabile         | Variable / Variabile         | Variable / Variabile         | Variable / Variabile         |
| <b>bl</b> | <b>Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno</b>                                                                                                                                | LWA     | 41/66                        | 41/55                        | 41/57                        | 41/58                        | 41/60                        |
| <b>bl</b> | <b>Annual energy consumption / Consumo energetico annuale</b>                                                                                                                                                                     | kWh     | 7915                         | 2542                         | 3283                         | 3824                         | 4749                         |
| <b>bm</b> | <b>For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno</b>                                                                                               |         | 6500                         | 2750                         | 3000                         | 4750                         | 5000                         |
| <b>bn</b> | <b>For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno</b> |         | -                            | -                            | -                            | -                            | -                            |
| <b>bo</b> | <b>Declared load profile / Profilo di carico dichiarato</b>                                                                                                                                                                       |         | L                            | L                            | L                            | L                            | L                            |
| <b>bp</b> | <b>Daily electricity consumption / Consumo quotidiano di energia elettrica</b>                                                                                                                                                    | Qelec   |                              | 4,128                        | 4,128                        | 4,272                        | 4,272                        |
| <b>bq</b> | <b>Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua</b>                                                                                                                                        | ηwh     | 91                           | 115                          | 115                          | 115                          | 115                          |
| <b>br</b> | <b>Daily fuel consumption / Consumo quotidiano di combustibile</b>                                                                                                                                                                | Qfuel   | -                            | -                            | -                            | -                            | -                            |
| <b>bs</b> | <b>Annual electricity consumption / Consumo annuo di energia elettrica</b>                                                                                                                                                        | AEC     | 1128                         | 852                          | 852                          | 880                          | 880                          |
| <b>bt</b> | <b>Annual fuel consumption / Consumo annuo di combustibile</b>                                                                                                                                                                    | AEF     | -                            | -                            | -                            | -                            | -                            |

| ID | Description                                                          | Symbol | A - 2.1 - 24kW                      | A - 3.1 - 24kW                      | A - 4.1 - 24kW                      | A - 5.1 - 24kW                      | B - 6.1 - 34kW                      | C - 7.1 - 34kW                      |
|----|----------------------------------------------------------------------|--------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| ca | SERIES / Serie                                                       | -      | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        |
| cb | Model / Modello                                                      | -      | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S |
| cc | Size / Grandezza                                                     | -      | A - 2.1 - 24kW                      | A - 3.1 - 24kW                      | A - 4.1 - 24kW                      | A - 5.1 - 24kW                      | B - 6.1 - 34kW                      | C - 7.1 - 34kW                      |
| cd | Medium-temperature application /<br>Applicazione a media temperatura | °C     | 55                                  | 55                                  | 55                                  | 55                                  | 55                                  | 55                                  |
| ce | Low-temperature application /<br>Applicazione a bassa temperatura    | °C     | 35                                  | 35                                  | 35                                  | 35                                  | 35                                  | 35                                  |
| cf | DHW profile / Profilo ACS                                            | -      | L                                   | L                                   | L                                   | L                                   | L                                   | L                                   |
| cg | Medium-temperature class / Classe a media<br>temperatura             | -      | A++                                 | A++                                 | A++                                 | A++                                 | A++                                 | A++                                 |
| ch | Low-temperature class / Classe a bassa temperatura                   | -      | A+++                                | A+++                                | A+++                                | A+++                                | A+++                                | A+++                                |
| ci | DHW class / Classe ACS                                               | -      | A+                                  | A+                                  | A+                                  | A+                                  | A                                   | A                                   |
| cj | Ptn                                                                  | kW     | 4                                   | 6                                   | 7                                   | 9                                   | 12                                  | 13                                  |
| ck | Qhe_ambiente                                                         | kWh    | 2542                                | 3283                                | 3824                                | 4749                                | 6793                                | 7380                                |
| cl | Qhe_acs                                                              | kWh    | 852                                 | 852                                 | 880                                 | 880                                 | 1128                                | 1128                                |
| cm | ηs                                                                   | %      | 130                                 | 139                                 | 146                                 | 146                                 | 140                                 | 138                                 |
| cn | ηs_wh                                                                | %      | 115                                 | 115                                 | 115                                 | 115                                 | 91                                  | 91                                  |
| co | LwA_in                                                               | dB(A)  | 41                                  | 41                                  | 41                                  | 41                                  | 41                                  | 41                                  |
| cp | FOM                                                                  | -      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| cq | P th_colder                                                          | kW     | 4                                   | 5                                   | 7                                   | 8                                   | 11                                  | 12                                  |
| cr | P th_warmer                                                          | kW     | 5                                   | 7                                   | 9                                   | 11                                  | 15                                  | 16                                  |
| cs | Q HE_colder                                                          | kWh    | 3164                                | 4087                                | 4761                                | 5914                                | 8459                                | 9191                                |
| ct | Q HE_warmer                                                          | kWh    | 1719                                | 2217                                | 2581                                | 3204                                | 4578                                | 4973                                |
| cu | Q HE_colder_wh                                                       | kWh    | 985                                 | 985                                 | 1205                                | 1205                                | 1545                                | 1545                                |
| cv | Q HE_warmer_wh                                                       | kWh    | 826                                 | 826                                 | 759                                 | 759                                 | 973                                 | 973                                 |
| cw | η s_colder                                                           | %      | 118                                 | 126                                 | 132                                 | 133                                 | 127                                 | 125                                 |
| cx | η s_warmer                                                           | %      | 163                                 | 174                                 | 183                                 | 184                                 | 175                                 | 173                                 |
| cy | η s_colder_wh                                                        | %      | 104                                 | 104                                 | 85                                  | 85                                  | 76                                  | 76                                  |
| cz | η s_warmer_wh                                                        | %      | 124                                 | 124                                 | 135                                 | 135                                 | 106                                 | 106                                 |
| da | LwA_out                                                              | dB(A)  | 55                                  | 57                                  | 58                                  | 60                                  | 63                                  | 64                                  |
| db | Device class                                                         | -      | VIII                                | VIII                                | VIII                                | VIII                                | VIII                                | VIII                                |
| dc | η s                                                                  | %      | 5                                   | 5                                   | 5                                   | 5                                   | 5                                   | 5                                   |
| dd | II                                                                   | -      | 0,57                                | 0,47                                | 0,40                                | 0,33                                | 0,34                                | 0,31                                |
| de | III                                                                  | -      | 7                                   | 5                                   | 4                                   | 3                                   | 2                                   | 2                                   |
| df | IV                                                                   | -      | 3                                   | 2                                   | 2                                   | 1                                   | 1                                   | 1                                   |
| dg | V                                                                    | -      | 12,0                                | 13,0                                | 14,0                                | 13,4                                | 12,6                                | 13,0                                |
| dh | VI                                                                   | -      | 33                                  | 35                                  | 37                                  | 38                                  | 35                                  | 35                                  |
| di | η s_caldaia                                                          | %      | 97                                  | 97                                  | 97                                  | 97                                  | 97                                  | 97                                  |
| dj | Collector / Collettore                                               | m2     | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dk | V serbatoio                                                          | m3     | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dl | η collettore                                                         | %      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dm | Storage Tank Class / Classe serbatoio                                | -      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dn | Energy Efficiency / Efficienza energetica                            | %      | 116                                 | 124                                 | 131                                 | 135                                 | 131                                 | 131                                 |
| do | Energy Efficiency C / Efficienza energetica C                        | %      | 114                                 | 122                                 | 130                                 | 134                                 | 130                                 | 130                                 |
| dp | Energy Efficiency W / Efficienza energetica W                        | %      | 128                                 | 137                                 | 145                                 | 149                                 | 144                                 | 144                                 |
| dq | II                                                                   | -      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dr | III                                                                  | -      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |

| ID | Description                                                          | Symbol         | C - 8.1 - 34kW                      | A - 2.1 - 34kW                      | A - 3.1 - 34kW                      | A - 4.1 - 34kW                      | A - 5.1 - 34kW                      |
|----|----------------------------------------------------------------------|----------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| ca | SERIES / Serie                                                       | -              | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        |
| cb | Model / Modello                                                      | -              | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MiSAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S |
| cc | Size / Grandezza                                                     | -              | C - 8.1 - 34kW                      | A - 2.1 - 34kW                      | A - 3.1 - 34kW                      | A - 4.1 - 34kW                      | A - 5.1 - 34kW                      |
| cd | Medium-temperature application /<br>Applicazione a media temperatura | °C             | 55                                  | 55                                  | 55                                  | 55                                  | 55                                  |
| ce | Low-temperature application /<br>Applicazione a bassa temperatura    | °C             | 35                                  | 35                                  | 35                                  | 35                                  | 35                                  |
| cf | DHW profile / Profilo ACS                                            | -              | L                                   | L                                   | L                                   | L                                   | L                                   |
| cg | Medium-temperature class / Classe a media<br>temperatura             | -              | A++                                 | A++                                 | A++                                 | A++                                 | A++                                 |
| ch | Low-temperature class / Classe a bassa temperatura                   | -              | A+++                                | A+++                                | A+++                                | A+++                                | A+++                                |
| ci | DHW class / Classe ACS                                               | -              | A                                   | A+                                  | A+                                  | A+                                  | A+                                  |
| cj | P <sub>th</sub>                                                      | kW             | 13                                  | 4                                   | 6                                   | 7                                   | 9                                   |
| ck | Q <sub>he_ambiente</sub>                                             | kWh            | 7915                                | 2542                                | 3283                                | 3824                                | 4749                                |
| cl | Q <sub>he_acs</sub>                                                  | kWh            | 1128                                | 852                                 | 852                                 | 880                                 | 880                                 |
| cm | η <sub>s</sub>                                                       | %              | 136                                 | 130                                 | 139                                 | 146                                 | 146                                 |
| cn | η <sub>s_Wh</sub>                                                    | %              | 91                                  | 115                                 | 115                                 | 115                                 | 115                                 |
| co | L <sub>W</sub> A <sub>in</sub>                                       | dB(A)          | 41                                  | 41                                  | 41                                  | 41                                  | 41                                  |
| cp | FOM                                                                  | -              | -                                   | -                                   | -                                   | -                                   | -                                   |
| cq | P <sub>th_colder</sub>                                               | kW             | 13                                  | 4                                   | 5                                   | 7                                   | 8                                   |
| cr | P <sub>th_warmer</sub>                                               | kW             | 17                                  | 5                                   | 7                                   | 9                                   | 11                                  |
| cs | Q <sub>HE_colder</sub>                                               | kWh            | 9857                                | 3164                                | 4087                                | 4761                                | 5914                                |
| ct | Q <sub>HE_warmer</sub>                                               | kWh            | 5333                                | 1719                                | 2217                                | 2581                                | 3204                                |
| cu | Q <sub>HE_colder_Wh</sub>                                            | kWh            | 1545                                | 985                                 | 985                                 | 1205                                | 1205                                |
| cv | Q <sub>HE_warmer_Wh</sub>                                            | kWh            | 973                                 | 826                                 | 826                                 | 759                                 | 759                                 |
| cw | η <sub>s_colder</sub>                                                | %              | 124                                 | 118                                 | 126                                 | 132                                 | 133                                 |
| cx | η <sub>s_warmer</sub>                                                | %              | 171                                 | 163                                 | 174                                 | 183                                 | 184                                 |
| cy | η <sub>s_colder_Wh</sub>                                             | %              | 76                                  | 104                                 | 104                                 | 85                                  | 85                                  |
| cz | η <sub>s_warmer_Wh</sub>                                             | %              | 106                                 | 124                                 | 124                                 | 135                                 | 135                                 |
| da | L <sub>W</sub> A <sub>out</sub>                                      | dB(A)          | 66                                  | 55                                  | 57                                  | 58                                  | 60                                  |
| db | Device class                                                         | -              | VIII                                | VIII                                | VIII                                | VIII                                | VIII                                |
| dc | η <sub>s</sub>                                                       | %              | 5                                   | 5                                   | 5                                   | 5                                   | 5                                   |
| dd | II                                                                   | -              | 0,30                                | 0,67                                | 0,58                                | 0,52                                | 0,45                                |
| de | III                                                                  | -              | 2                                   | 7                                   | 5                                   | 4                                   | 3                                   |
| df | IV                                                                   | -              | 1                                   | 3                                   | 2                                   | 2                                   | 1                                   |
| dg | V                                                                    | -              | 12,4                                | 12,0                                | 13,0                                | 14,0                                | 13,4                                |
| dh | VI                                                                   | -              | 35                                  | 33                                  | 35                                  | 37                                  | 38                                  |
| di | η <sub>s_caldaia</sub>                                               | %              | 97                                  | 97                                  | 97                                  | 97                                  | 97                                  |
| dj | Collector / Collettore                                               | m <sup>2</sup> | -                                   | -                                   | -                                   | -                                   | -                                   |
| dk | V serbatoio                                                          | m <sup>3</sup> | -                                   | -                                   | -                                   | -                                   | -                                   |
| dl | η collettore                                                         | %              | -                                   | -                                   | -                                   | -                                   | -                                   |
| dm | Storage Tank Class / Classe serbatoio                                | -              | -                                   | -                                   | -                                   | -                                   | -                                   |
| dn | Energy Efficiency / Efficienza energetica                            | %              | 131                                 | 113                                 | 120                                 | 126                                 | 129                                 |
| do | Energy Efficiency C / Efficienza energetica C                        | %              | 130                                 | 110                                 | 118                                 | 124                                 | 128                                 |
| dp | Energy Efficiency W / Efficienza energetica W                        | %              | 143                                 | 125                                 | 133                                 | 140                                 | 143                                 |
| dq | II                                                                   | -              | -                                   | -                                   | -                                   | -                                   | -                                   |
| dr | III                                                                  | -              | -                                   | -                                   | -                                   | -                                   | -                                   |

Bassa temperatura (Tower) / low-temperature (Tower)

| ID | Description                                                                                                                                                                                                                | Symbol  | A - 2.1 - 24kW                                    | A - 3.1 - 24kW                                    | A - 4.1 - 24kW                                    | A - 5.1 - 24kW                                    | B - 6.1 - 34kW                                    | C - 7.1 - 34kW                                    |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| aa | Model(s): / Modelli:                                                                                                                                                                                                       | -       | SQKN-YEE 1 BH A 24kW<br>150L<br>MISAN-YEE 1 S 2.1 | SQKN-YEE 1 BH A 24kW<br>150L<br>MISAN-YEE 1 S 3.1 | SQKN-YEE 1 BH A 24kW<br>150L<br>MISAN-YEE 1 S 4.1 | SQKN-YEE 1 BH A 24kW<br>150L<br>MISAN-YEE 1 S 5.1 | SQKN-YEE 1 BH B 34kW<br>150L<br>MISAN-YEE 1 S 6.1 | SQKN-YEE 1 BH C 34kW<br>150L<br>MISAN-YEE 1 S 7.1 |
| ab | Air-to-water heat pump: / Pompa di calore aria/acqua:                                                                                                                                                                      | -       | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               |
| ac | Water-to-water heat pump: / Pompa di calore acqua/acqua:                                                                                                                                                                   | -       | NO                                                | NO                                                | NO                                                | NO                                                | NO                                                | NO                                                |
| ad | Brine-to-water heat pump: / Pompa di calore salamoia/acqua:                                                                                                                                                                | -       | NO                                                | NO                                                | NO                                                | NO                                                | NO                                                | NO                                                |
| ae | Low-temperature heat pump: / Pompa di calore a bassa temperatura:                                                                                                                                                          | -       | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               |
| af | Equipped with a supplementary heater: / Con riscaldatore supplementare:                                                                                                                                                    | -       | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               |
| ag | Heat pump combination heater: / Apparecchio misto a pompa di calore:                                                                                                                                                       | -       | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               |
| ah | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Prated  | 5,4                                               | 6,2                                               | 8,1                                               | 9,6                                               | 12,1                                              | 13,9                                              |
| ai | Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente                                                                                                                   | ηs      | 202                                               | 203                                               | 210                                               | 208                                               | 197                                               | 193                                               |
| aj | Tj = - 7 °C                                                                                                                                                                                                                | Pdh     | 4,74                                              | 5,51                                              | 7,15                                              | 8,45                                              | 10,69                                             | 12,33                                             |
| ak | Tj = + 2 °C                                                                                                                                                                                                                | Pdh     | 135,00                                            | 3,30                                              | 4,65                                              | 5,23                                              | 6,57                                              | 7,97                                              |
| al | Tj = + 7 °C                                                                                                                                                                                                                | Pdh     | 1,99                                              | 2,24                                              | 2,91                                              | 3,47                                              | 4,48                                              | 5,21                                              |
| am | Tj = + 12 °C                                                                                                                                                                                                               | Pdh     | 1,45                                              | 1,45                                              | 1,85                                              | 1,96                                              | 3,67                                              | 3,67                                              |
| an | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | Pdh     | 4,74                                              | 5,51                                              | 7,15                                              | 8,45                                              | 10,69                                             | 12,33                                             |
| ao | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | Pdh     | 5,21                                              | 5,80                                              | 6,42                                              | 7,38                                              | 10,95                                             | 11,90                                             |
| ap | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | Pdh     | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| aq | Bivalent temperature / Temperatura bivalente                                                                                                                                                                               | Tbiv    | -7                                                | -7                                                | -7                                                | -7                                                | -7                                                | -7                                                |
| ar | Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento                                                                                                                        | Pcych   | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| as | Degradation co-efficient (**) / Coefficiente di degradazione (**)                                                                                                                                                          | Cdh     | 0,90                                              | 0,90                                              | 0,90                                              | 0,90                                              | 0,90                                              | 0,90                                              |
| at | Tj = - 7 °C                                                                                                                                                                                                                | COPd    | 3,15                                              | 3,13                                              | 3,30                                              | 3,18                                              | 3,07                                              | 2,87                                              |
| au | Tj = + 2 °C                                                                                                                                                                                                                | COPd    | 4,96                                              | 4,91                                              | 5,17                                              | 5,03                                              | 4,68                                              | 4,62                                              |
| av | Tj = + 7 °C                                                                                                                                                                                                                | COPd    | 6,81                                              | 7,11                                              | 7,08                                              | 7,33                                              | 6,90                                              | 7,07                                              |
| aw | Tj = + 12 °C                                                                                                                                                                                                               | COPd    | 8,94                                              | 8,94                                              | 9,46                                              | 9,94                                              | 9,96                                              | 9,95                                              |
| ax | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | COPd    | 3,15                                              | 3,13                                              | 3,30                                              | 3,18                                              | 3,07                                              | 2,87                                              |
| ay | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | COPd    | 2,86                                              | 2,70                                              | 3,06                                              | 2,97                                              | 2,79                                              | 2,69                                              |
| az | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | COPd    | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| ba | For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio                                                                                             | TOL     | -10                                               | -10                                               | -10                                               | -10                                               | -10                                               | -10                                               |
| bb | Cycling interval efficiency / Efficienza della ciclicità degli intervalli                                                                                                                                                  | COPcych | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| bc | Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua                                                                                                                    | WTOL    | 65                                                | 65                                                | 65                                                | 65                                                | 65                                                | 65                                                |
| bd | Off mode / Modo spento                                                                                                                                                                                                     | POFF    | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             |
| be | Thermostat-off mode / Modo termostato spento                                                                                                                                                                               | PTO     | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             |
| bf | Standby mode / Modo stand-by                                                                                                                                                                                               | PSB     | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             |
| bg | Crankcase heater mode / Modo riscaldamento del carter                                                                                                                                                                      | PCK     | 0                                                 | 0                                                 | 0                                                 | 0                                                 | 0                                                 | 0                                                 |
| bh | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Psup    | 24                                                | 24                                                | 24                                                | 24                                                | 34                                                | 34                                                |
| bi | Type of energy input / Tipo di alimentazione energetica                                                                                                                                                                    |         | Natural gas / Gas naturale                        | Natural gas / Gas naturale                        | Natural gas / Gas naturale                        | Natural gas / Gas naturale                        | Natural gas / Gas naturale                        | Natural gas / Gas naturale                        |
| bj | Capacity control / Controllo della capacità                                                                                                                                                                                |         | Variable / Variabile                              | Variable / Variabile                              | Variable / Variabile                              | Variable / Variabile                              | Variable / Variabile                              | Variable / Variabile                              |
| bl | Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno                                                                                                                                | LWA     | 41/55                                             | 41/57                                             | 41/58                                             | 41/60                                             | 41/63                                             | 41/64                                             |
| bl | Annual energy consumption / Consumo energetico annuale                                                                                                                                                                     | kWh     | 2161                                              | 2502                                              | 3141                                              | 3747                                              | 4994                                              | 5868                                              |
| bm | For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno                                                                                               |         | 2750                                              | 3000                                              | 4750                                              | 5000                                              | 6000                                              | 6250                                              |
| bn | For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno |         | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| bo | Declared load profile / Profilo di carico dichiarato                                                                                                                                                                       |         | L                                                 | L                                                 | L                                                 | L                                                 | L                                                 | L                                                 |
| bp | Daily electricity consumption / Consumo quotidiano di energia elettrica                                                                                                                                                    | Qelec   | 4,128                                             | 4,128                                             | 4,272                                             | 4,272                                             |                                                   |                                                   |
| bq | Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua                                                                                                                                        | ηwh     | 115                                               | 115                                               | 115                                               | 115                                               | 91                                                | 91                                                |
| br | Daily fuel consumption / Consumo quotidiano di combustibile                                                                                                                                                                | Qfuel   | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| bs | Annual electricity consumption / Consumo annuo di energia elettrica                                                                                                                                                        | AEC     | 852                                               | 852                                               | 880                                               | 880                                               | 1128                                              | 1128                                              |
| bt | Annual fuel consumption / Consumo annuo di combustibile                                                                                                                                                                    | AEF     | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |

| ID | Description                                                                                                                                                                                                                | Symbol  | C - 8.1 - 34kW                                    | A - 2.1 - 34kW                                    | A - 3.1 - 34kW                                    | A - 4.1 - 34kW                                    | A - 5.1 - 34kW                                    |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| aa | Model(s): / Modelli:                                                                                                                                                                                                       | -       | SQKN-YEE 1 BH D 34kW<br>150L<br>MISAN-YEE 1 S 8.1 | SQKN-YEE 1 BH A 34kW<br>150L<br>MISAN-YEE 1 S 2.1 | SQKN-YEE 1 BH A 34kW<br>150L<br>MISAN-YEE 1 S 3.1 | SQKN-YEE 1 BH A 34kW<br>150L<br>MISAN-YEE 1 S 4.1 | SQKN-YEE 1 BH A 34kW<br>150L<br>MISAN-YEE 1 S 5.1 |
| ab | Air-to-water heat pump: / Pompa di calore aria/acqua:                                                                                                                                                                      | -       | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               |
| ac | Water-to-water heat pump: / Pompa di calore acqua/acqua:                                                                                                                                                                   | -       | NO                                                | NO                                                | NO                                                | NO                                                | NO                                                |
| ad | Brine-to-water heat pump: / Pompa di calore salamoia/acqua:                                                                                                                                                                | -       | NO                                                | NO                                                | NO                                                | NO                                                | NO                                                |
| ae | Low-temperature heat pump: / Pompa di calore a bassa temperatura:                                                                                                                                                          | -       | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               |
| af | Equipped with a supplementary heater: / Con riscaldatore supplementare:                                                                                                                                                    | -       | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               |
| ag | Heat pump combination heater: / Apparecchio misto a pompa di calore:                                                                                                                                                       | -       | YES                                               | YES                                               | YES                                               | YES                                               | YES                                               |
| ah | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Prated  | 15,6                                              | 5,4                                               | 6,2                                               | 8,1                                               | 9,6                                               |
| ai | Seasonal space heating energy efficiency / Efficienza energetica stagionale del riscaldamento d'ambiente                                                                                                                   | ηs      | 193                                               | 202                                               | 203                                               | 210                                               | 208                                               |
| aj | Tj = - 7 °C                                                                                                                                                                                                                | Pdh     | 13,82                                             | 4,74                                              | 5,51                                              | 7,15                                              | 8,45                                              |
| ak | Tj = + 2 °C                                                                                                                                                                                                                | Pdh     | 8,55                                              | 147                                               | 3,30                                              | 4,65                                              | 5,23                                              |
| al | Tj = + 7 °C                                                                                                                                                                                                                | Pdh     | 5,88                                              | 1,99                                              | 2,24                                              | 2,91                                              | 3,47                                              |
| am | Tj = + 12 °C                                                                                                                                                                                                               | Pdh     | 3,67                                              | 1,45                                              | 1,45                                              | 1,85                                              | 1,96                                              |
| an | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | Pdh     | 13,82                                             | 4,74                                              | 5,51                                              | 7,15                                              | 8,45                                              |
| ao | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | Pdh     | 12,64                                             | 5,21                                              | 5,80                                              | 6,42                                              | 7,38                                              |
| ap | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | Pdh     | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| aq | Bivalent temperature / Temperatura bivalente                                                                                                                                                                               | Tbiv    | -7                                                | -7                                                | -7                                                | -7                                                | -7                                                |
| ar | Cycling interval capacity for heating / Ciclicità degli intervalli di capacità per il riscaldamento                                                                                                                        | Pcych   | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| as | Degradation co-efficient (**) / Coefficiente di degradazione (**)                                                                                                                                                          | Cdh     | 0,90                                              | 0,9                                               | 0,9                                               | 0,9                                               | 0,9                                               |
| at | Tj = - 7 °C                                                                                                                                                                                                                | COPd    | 2,86                                              | 3,15                                              | 3,13                                              | 3,30                                              | 3,18                                              |
| au | Tj = + 2 °C                                                                                                                                                                                                                | COPd    | 4,59                                              | 4,96                                              | 4,91                                              | 5,17                                              | 5,03                                              |
| av | Tj = + 7 °C                                                                                                                                                                                                                | COPd    | 7,13                                              | 6,81                                              | 7,11                                              | 7,08                                              | 7,33                                              |
| aw | Tj = + 12 °C                                                                                                                                                                                                               | COPd    | 9,95                                              | 8,94                                              | 8,94                                              | 9,46                                              | 9,94                                              |
| ax | Tj = bivalent temperature / Temperatura bivalente                                                                                                                                                                          | COPd    | 2,86                                              | 3,15                                              | 3,13                                              | 3,30                                              | 3,18                                              |
| ay | Tj = operation limit temperature / Temperatura limite di esercizio                                                                                                                                                         | COPd    | 2,59                                              | 2,86                                              | 2,70                                              | 3,06                                              | 2,97                                              |
| az | For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C) / Per le pompe di calore aria/ acqua: Tj = - 15 °C (se TOL < - 20 °C)                                                                                         | COPd    | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| ba | For air-to-water heat pumps: Operation limit temperature / Per le pompe di calore aria/ acqua: temperatura limite di esercizio                                                                                             | TOL     | -10                                               | -10                                               | -10                                               | -10                                               | -10                                               |
| bb | Cycling interval efficiency / Efficienza della ciclicità degli intervalli                                                                                                                                                  | COPcych | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| bc | Heating water operating limit temperature / Temperatura limite di esercizio di riscaldamento dell'acqua                                                                                                                    | WTOL    | 65                                                | 65                                                | 65                                                | 65                                                | 65                                                |
| bd | Off mode / Modo spento                                                                                                                                                                                                     | POFF    | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             |
| be | Thermostat-off mode / Modo termostato spento                                                                                                                                                                               | PTO     | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             |
| bf | Standby mode / Modo stand-by                                                                                                                                                                                               | PSB     | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             | 0,015                                             |
| bg | Crankcase heater mode / Modo riscaldamento del carter                                                                                                                                                                      | PCK     | 0                                                 | 0                                                 | 0                                                 | 0                                                 | 0                                                 |
| bh | Rated heat output (*) / Potenza termica nominale (*)                                                                                                                                                                       | Psup    | 34                                                | 34                                                | 34                                                | 34                                                | 34                                                |
| bi | Type of energy input / Tipo di alimentazione energetica                                                                                                                                                                    |         | Natural gas / Gas naturale                        | Natural gas / Gas naturale                        | Natural gas / Gas naturale                        | Natural gas / Gas naturale                        | Natural gas / Gas naturale                        |
| bj | Capacity control / Controllo della capacità                                                                                                                                                                                |         | Variable / Variabile                              | Variable / Variabile                              | Variable / Variabile                              | Variable / Variabile                              | Variable / Variabile                              |
| bl | Sound power level, indoors/outdoors / Livello della potenza sonora, all'interno/all'esterno                                                                                                                                | LWA     | 41/66                                             | 41/55                                             | 41/57                                             | 41/58                                             | 41/60                                             |
| bl | Annual energy consumption / Consumo energetico annuale                                                                                                                                                                     | kWh     | 6602                                              | 2161                                              | 2502                                              | 3141                                              | 3747                                              |
| bm | For air-to-water heat pumps: Rated air flow rate, outdoors / Per le pompe di calore aria/ acqua: portata d'aria, all'esterno                                                                                               |         | 6500                                              | 2750                                              | 3000                                              | 4750                                              | 5000                                              |
| bn | For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger / Per le pompe di calore acqua/acqua e salamoia/acqua: flusso di salamoia o acqua nominale, scambiatore di calore all'esterno |         | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| bo | Declared load profile / Profilo di carico dichiarato                                                                                                                                                                       |         | L                                                 | L                                                 | L                                                 | L                                                 | L                                                 |
| bp | Daily electricity consumption / Consumo quotidiano di energia elettrica                                                                                                                                                    | Qelec   |                                                   | 4,128                                             | 4,128                                             | 4,272                                             | 4,272                                             |
| bq | Water heating energy efficiency / Efficienza energetica di riscaldamento dell'acqua                                                                                                                                        | ηwh     | 91                                                | 115                                               | 115                                               | 115                                               | 115                                               |
| br | Daily fuel consumption / Consumo quotidiano di combustibile                                                                                                                                                                | Qfuel   | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |
| bs | Annual electricity consumption / Consumo annuo di energia elettrica                                                                                                                                                        | AEC     | 1128                                              | 852                                               | 852                                               | 880                                               | 880                                               |
| bt | Annual fuel consumption / Consumo annuo di combustibile                                                                                                                                                                    | AEF     | -                                                 | -                                                 | -                                                 | -                                                 | -                                                 |

| ID | Description                                                          | Symbol | A - 2.1 - 24kW                      | A - 3.1 - 24kW                      | A - 4.1 - 24kW                      | A - 5.1 - 24kW                      | B - 6.1 - 34kW                      | C - 7.1 - 34kW                      |
|----|----------------------------------------------------------------------|--------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| ca | SERIES / Serie                                                       | -      | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        |
| cb | Model / Modello                                                      | -      | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S |
| cc | Size / Grandezza                                                     | -      | A - 2.1 - 24kW                      | A - 3.1 - 24kW                      | A - 4.1 - 24kW                      | A - 5.1 - 24kW                      | B - 6.1 - 34kW                      | C - 7.1 - 34kW                      |
| cd | Medium-temperature application /<br>Applicazione a media temperatura | °C     | 55                                  | 55                                  | 55                                  | 55                                  | 55                                  | 55                                  |
| ce | Low-temperature application /<br>Applicazione a bassa temperatura    | °C     | 35                                  | 35                                  | 35                                  | 35                                  | 35                                  | 35                                  |
| cf | DHW profile / Profilo ACS                                            | -      | L                                   | L                                   | L                                   | L                                   | L                                   | L                                   |
| cg | Medium-temperature class / Classe a media<br>temperatura             | -      | A++                                 | A++                                 | A++                                 | A++                                 | A++                                 | A++                                 |
| ch | Low-temperature class / Classe a bassa temperatura                   | -      | A+++                                | A+++                                | A+++                                | A+++                                | A+++                                | A+++                                |
| ci | DHW class / Classe ACS                                               | -      | A+                                  | A+                                  | A+                                  | A+                                  | A                                   | A                                   |
| cj | Ptn                                                                  | kW     | 4                                   | 6                                   | 7                                   | 9                                   | 12                                  | 13                                  |
| ck | Qhe_ambiente                                                         | kWh    | 2161                                | 2502                                | 3141                                | 3747                                | 4994                                | 5868                                |
| cl | Qhe_acs                                                              | kWh    | 852                                 | 852                                 | 880                                 | 880                                 | 1128                                | 1128                                |
| cm | ηs                                                                   | %      | 130                                 | 139                                 | 146                                 | 146                                 | 140                                 | 138                                 |
| cn | ηs_wh                                                                | %      | 115                                 | 115                                 | 115                                 | 115                                 | 91                                  | 91                                  |
| co | LwA_in                                                               | dB(A)  | 41                                  | 41                                  | 41                                  | 41                                  | 41                                  | 41                                  |
| cp | FOM                                                                  | -      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| cq | P th_colder                                                          | kW     | 5                                   | 6                                   | 8                                   | 10                                  | 13                                  | 14                                  |
| cr | P th_warmer                                                          | kW     | 7                                   | 8                                   | 10                                  | 12                                  | 15                                  | 16                                  |
| cs | Q HE_colder                                                          | kWh    | 3245                                | 3830                                | 4808                                | 5737                                | 7648                                | 8987                                |
| ct | Q HE_warmer                                                          | kWh    | 1513                                | 1750                                | 2194                                | 2615                                | 3483                                | 3670                                |
| cu | Q HE_colder_wh                                                       | kWh    | 985                                 | 985                                 | 1205                                | 1205                                | 1545                                | 1545                                |
| cv | Q HE_warmer_wh                                                       | kWh    | 826                                 | 826                                 | 759                                 | 759                                 | 973                                 | 973                                 |
| cw | η s_colder                                                           | %      | 163                                 | 164                                 | 169                                 | 168                                 | 159                                 | 156                                 |
| cx | η s_warmer                                                           | %      | 241                                 | 242                                 | 250                                 | 248                                 | 235                                 | 231                                 |
| cy | η s_colder_wh                                                        | %      | 104                                 | 104                                 | 85                                  | 85                                  | 76                                  | 76                                  |
| cz | η s_warmer_wh                                                        | %      | 124                                 | 124                                 | 135                                 | 135                                 | 106                                 | 106                                 |
| da | LwA_out                                                              | dB(A)  | 55                                  | 57                                  | 58                                  | 60                                  | 63                                  | 64                                  |
| db | Device class                                                         | -      | VIII                                | VIII                                | VIII                                | VIII                                | VIII                                | VIII                                |
| dc | η s                                                                  | %      | 5                                   | 5                                   | 5                                   | 5                                   | 5                                   | 5                                   |
| dd | II                                                                   | -      | 0,57                                | 0,47                                | 0,40                                | 0,33                                | 0,34                                | 0,31                                |
| de | III                                                                  | -      | 7                                   | 5                                   | 4                                   | 3                                   | 2                                   | 2                                   |
| df | IV                                                                   | -      | 3                                   | 2                                   | 2                                   | 1                                   | 1                                   | 1                                   |
| dg | V                                                                    | -      | 12,0                                | 13,0                                | 14,0                                | 13,4                                | 12,6                                | 13,0                                |
| dh | VI                                                                   | -      | 33                                  | 35                                  | 37                                  | 38                                  | 35                                  | 35                                  |
| di | η s_caldaia                                                          | %      | 97                                  | 97                                  | 97                                  | 97                                  | 97                                  | 97                                  |
| dj | Collector / Collettore                                               | m2     | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dk | V serbatoio                                                          | m3     | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dl | η collettore                                                         | %      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dm | Storage Tank Class / Classe serbatoio                                | -      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dn | Energy Efficiency / Efficienza energetica                            | %      | 147                                 | 158                                 | 170                                 | 177                                 | 168                                 | 168                                 |
| do | Energy Efficiency C / Efficienza energetica C                        | %      | 144                                 | 156                                 | 168                                 | 176                                 | 167                                 | 167                                 |
| dp | Energy Efficiency W / Efficienza energetica W                        | %      | 159                                 | 171                                 | 184                                 | 190                                 | 181                                 | 181                                 |
| dq | II                                                                   | -      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |
| dr | III                                                                  | -      | -                                   | -                                   | -                                   | -                                   | -                                   | -                                   |

| ID | Description                                                          | Symbol | C - 8.1 - 34kW                      | A - 2.1 - 34kW                      | A - 3.1 - 34kW                      | A - 4.1 - 34kW                      | A - 5.1 - 34kW                      |
|----|----------------------------------------------------------------------|--------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| ca | SERIES / Serie                                                       | -      | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        | SPHERA EVO 2.0<br>EASYHybrid        |
| cb | Model / Modello                                                      | -      | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S | SQKN-YEE 1 BH 150L<br>MISAN-YEE 1 S |
| cc | Size / Grandezza                                                     | -      | C - 8.1 - 34kW                      | A - 2.1 - 34kW                      | A - 3.1 - 34kW                      | A - 4.1 - 34kW                      | A - 5.1 - 34kW                      |
| cd | Medium-temperature application /<br>Applicazione a media temperatura | °C     | 55                                  | 55                                  | 55                                  | 55                                  | 55                                  |
| ce | Low-temperature application /<br>Applicazione a bassa temperatura    | °C     | 35                                  | 35                                  | 35                                  | 35                                  | 35                                  |
| cf | DHW profile / Profilo ACS                                            | -      | L                                   | L                                   | L                                   | L                                   | L                                   |
| cg | Medium-temperature class / Classe a media<br>temperatura             | -      | A++                                 | A++                                 | A++                                 | A++                                 | A++                                 |
| ch | Low-temperature class / Classe a bassa temperatura                   | -      | A+++                                | A+++                                | A+++                                | A+++                                | A+++                                |
| ci | DHW class / Classe ACS                                               | -      | A                                   | A+                                  | A+                                  | A+                                  | A+                                  |
| cj | Ptn                                                                  | kW     | 13                                  | 4                                   | 6                                   | 7                                   | 9                                   |
| ck | Qhe_ambiente                                                         | kWh    | 6602                                | 2161                                | 2502                                | 3141                                | 3747                                |
| cl | Qhe_acs                                                              | kWh    | 1128                                | 852                                 | 852                                 | 880                                 | 880                                 |
| cm | ηs                                                                   | %      | 136                                 | 130                                 | 139                                 | 146                                 | 146                                 |
| cn | ηs_wh                                                                | %      | 91                                  | 115                                 | 115                                 | 115                                 | 115                                 |
| co | LwA_in                                                               | dB(A)  | 41                                  | 41                                  | 41                                  | 41                                  | 41                                  |
| cp | FOM                                                                  | -      | -                                   | -                                   | -                                   | -                                   | -                                   |
| cq | P th_colder                                                          | kW     | 16                                  | 5                                   | 6                                   | 8                                   | 10                                  |
| cr | P th_warmer                                                          | kW     | 17                                  | 7                                   | 8                                   | 10                                  | 12                                  |
| cs | Q HE_colder                                                          | kWh    | 10111                               | 3245                                | 3830                                | 4808                                | 5737                                |
| ct | Q HE_warmer                                                          | kWh    | 3914                                | 1513                                | 1750                                | 2194                                | 2615                                |
| cu | Q HE_colder_wh                                                       | kWh    | 1545                                | 985                                 | 985                                 | 1205                                | 1205                                |
| cv | Q HE_warmer_wh                                                       | kWh    | 973                                 | 826                                 | 826                                 | 759                                 | 759                                 |
| cw | ηs_colder                                                            | %      | 155                                 | 163                                 | 164                                 | 169                                 | 168                                 |
| cx | ηs_warmer                                                            | %      | 230                                 | 241                                 | 242                                 | 250                                 | 248                                 |
| cy | ηs_colder_wh                                                         | %      | 76                                  | 104                                 | 104                                 | 85                                  | 85                                  |
| cz | ηs_warmer_wh                                                         | %      | 106                                 | 124                                 | 124                                 | 135                                 | 135                                 |
| da | LwA_out                                                              | dB(A)  | 66                                  | 55                                  | 57                                  | 58                                  | 60                                  |
| db | Device class                                                         | -      | VIII                                | VIII                                | VIII                                | VIII                                | VIII                                |
| dc | ηs                                                                   | %      | 5                                   | 5                                   | 5                                   | 5                                   | 5                                   |
| dd | II                                                                   | -      | 0,30                                | 0,67                                | 0,58                                | 0,52                                | 0,45                                |
| de | III                                                                  | -      | 2                                   | 7                                   | 5                                   | 4                                   | 3                                   |
| df | IV                                                                   | -      | 1                                   | 3                                   | 2                                   | 2                                   | 1                                   |
| dg | V                                                                    | -      | 12,4                                | 12,0                                | 13,0                                | 14,0                                | 13,4                                |
| dh | VI                                                                   | -      | 35                                  | 33                                  | 35                                  | 37                                  | 38                                  |
| di | ηs_caldaia                                                           | %      | 97                                  | 97                                  | 97                                  | 97                                  | 97                                  |
| dj | Collector / Collettore                                               | m2     | -                                   | -                                   | -                                   | -                                   | -                                   |
| dk | V serbatoio                                                          | m3     | -                                   | -                                   | -                                   | -                                   | -                                   |
| dl | η collettore                                                         | %      | -                                   | -                                   | -                                   | -                                   | -                                   |
| dm | Storage Tank Class / Classe serbatoio                                | -      | -                                   | -                                   | -                                   | -                                   | -                                   |
| dn | Energy Efficiency / Efficienza energetica                            | %      | 170                                 | 136                                 | 146                                 | 156                                 | 164                                 |
| do | Energy Efficiency C / Efficienza energetica C                        | %      | 169                                 | 134                                 | 145                                 | 155                                 | 162                                 |
| dp | Energy Efficiency W / Efficienza energetica W                        | %      | 182                                 | 148                                 | 159                                 | 170                                 | 177                                 |
| dq | II                                                                   | -      | -                                   | -                                   | -                                   | -                                   | -                                   |
| dr | III                                                                  | -      | -                                   | -                                   | -                                   | -                                   | -                                   |

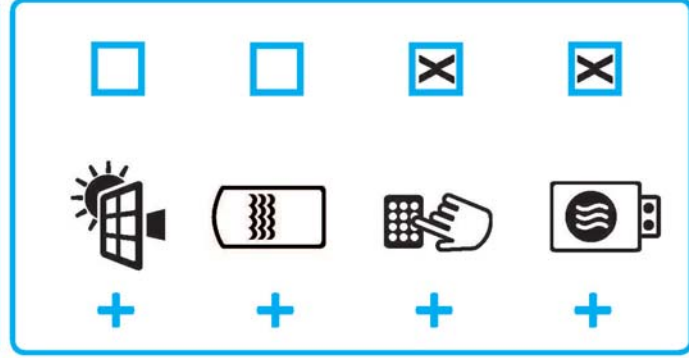


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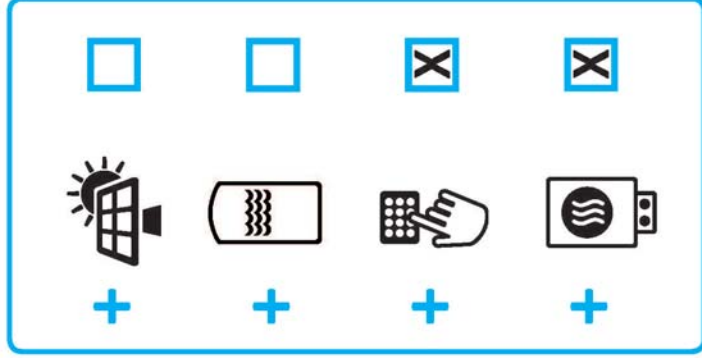
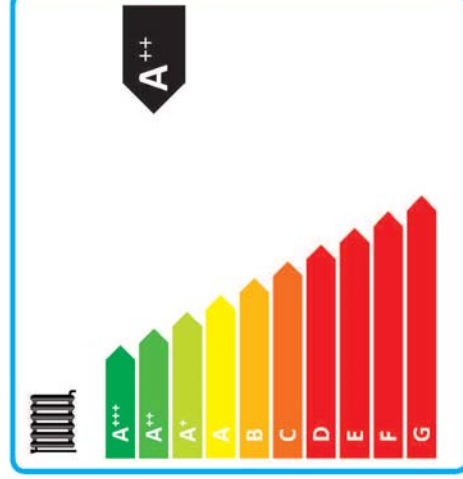
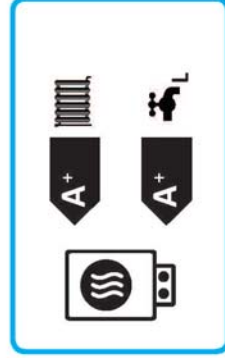


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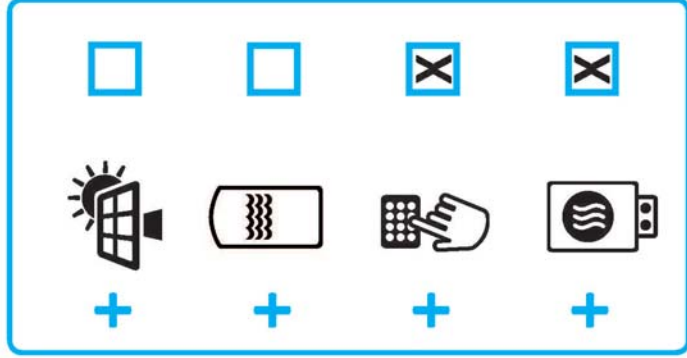
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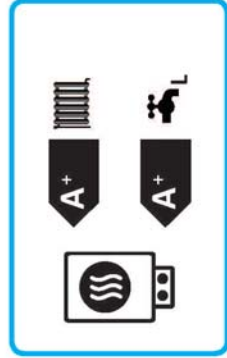


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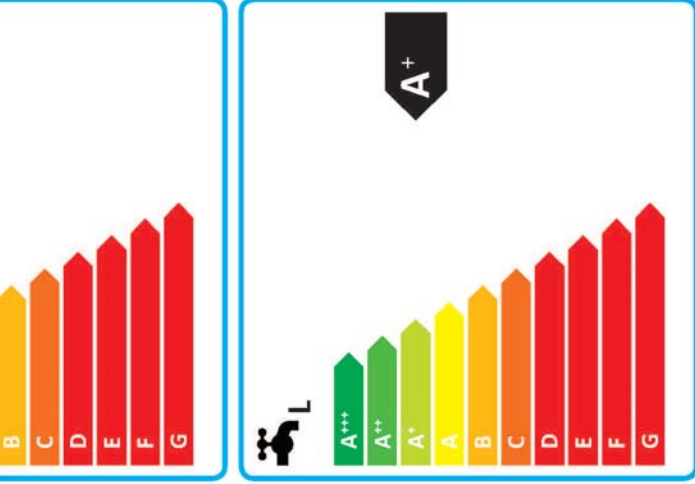
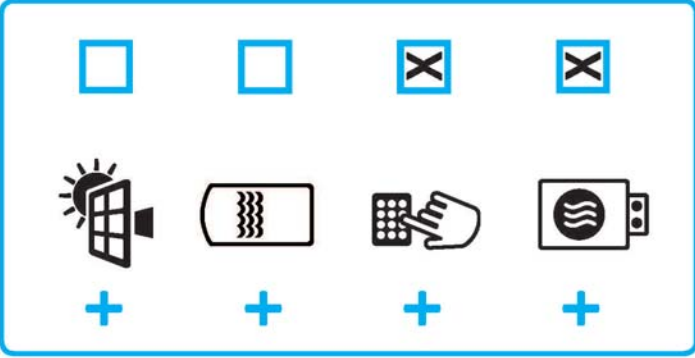
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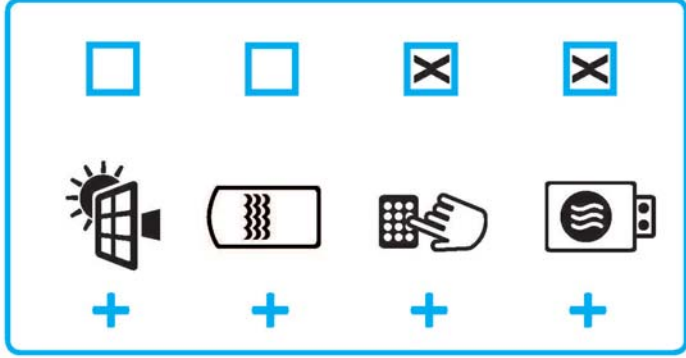


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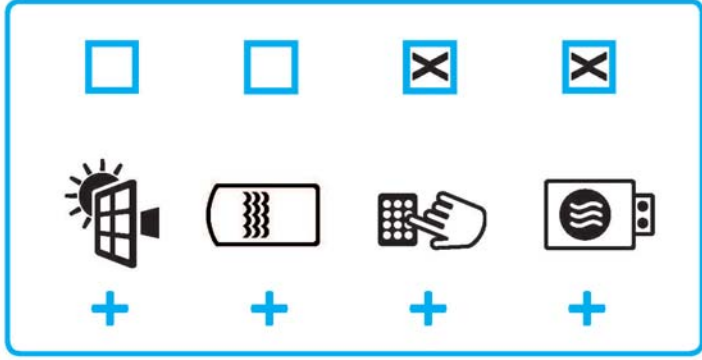
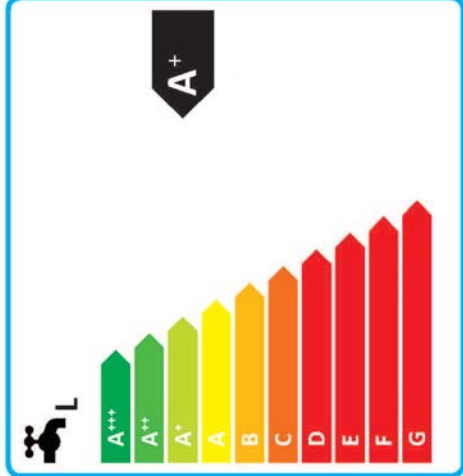
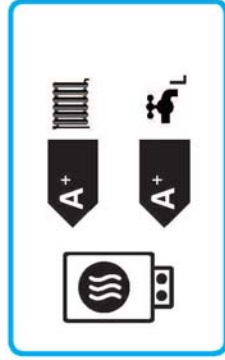


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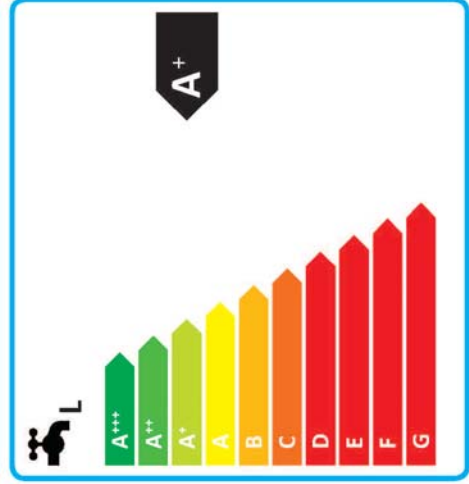
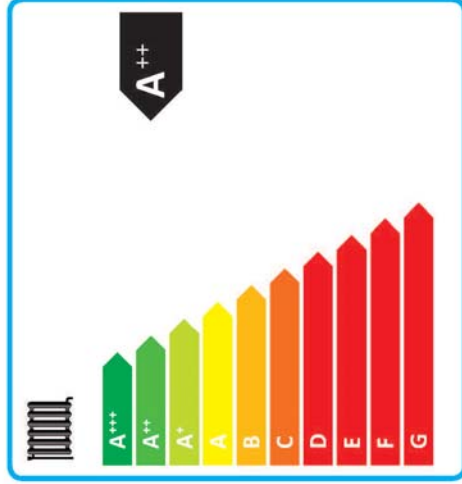
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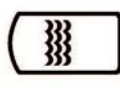
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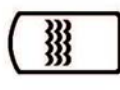
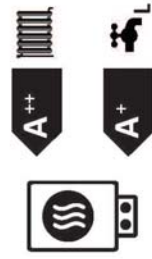
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Clivet S.p.A.

SQKN-YEE 1 BH B 34kW +  
MISAN-YEE 1 S 6.1



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OL + MISAN-YEE 1 S 6.1



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Clivet S.p.A.

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