



GB

High temperature air/water heat pump for heating water up to 65°C and operation with outside temperatures down to -20°C.
Domestic hot water production and built-in water circuit assembly.

r HFC
R-407c

AW HT
0031÷0071

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The following symbols are used in this publication and inside the unit:

U	User		Important		Danger high temperatures
I	Installer		Prohibition		
A	Assistance		Danger voltage		

The manufacturer reserves the right to modify the data in this manual without warning.

GENERAL WARNINGS

U I A

⚠ These appliances have been designed to heat water and must be used in applications compatible with their performance characteristics; these appliances are designed for residential or similar applications. Incorrect installation, regulation and maintenance or improper use absolve the **manufacturer** from all liability, whether contractual or otherwise, for damage to people, animals or things.

Only those applications specifically indicated in this list are permitted

Read this manual carefully. All work must be carried out by qualified personnel in conformity with legislation in force in the country concerned.

The warranty is void if the above instructions are not respected and if the unit is started up for the first time without the presence of personnel authorised by the

Company (where specified in the supply contract) who should draw up a "start-up" report.

The documents supplied with the unit must be consigned to the owner who should keep them carefully for future consultation in the event of maintenance or service.

All repair or maintenance work must be carried out by the Company's Technical Service or qualified personnel following the instructions in this manual.

The air-conditioner must under no circumstances be modified or tampered with as this may create situations of risk. Failure to observe this condition absolves the manufacturer of all liability for resulting damage.

Owner: legal representative of the company or organisation or physical person who owns the system where the Climaveneta unit is installed: this person is responsible for ensuring compliance with all the safety standards described in this manual and the national legislation in force.

Installer: legal representative of the company designated by the owner to position and connect the Climaveneta unit water circuit, electrical circuit, etc. to the system; this person is also responsible for handling and correct installation as described in this manual and by the national legislation in force.

Operator: person authorised by the owner to perform, on the Climaveneta unit, all control operations specified in this manual, acting within the allowed limits as described in this manual.

Technician: person authorised directly by Climaveneta, or in all European Union countries, excluding Italy, designated by the Climaveneta distributor, under its sole responsibility, to perform all routine and special maintenance operations, as well as all adjustments, checks, repairs and replacement of parts that may be required throughout the life of the unit.

WAIVER OF LIABILITY

This publication is the sole property of **Climaveneta**. Any reproduction or disclosure of such is strictly prohibited without the written authorisation of **Climaveneta**.

This document has been prepared with maximum care and attention paid to the content shown. Nonetheless, **Climaveneta** waives all liability deriving from the use of such document.

Read this document carefully. All work must be performed, components selected and materials used in complete accordance with the legislation in force in material in the country concerned, and considering the operating conditions and intended uses of the system, by qualified personnel.

FUNDAMENTAL SAFETY RULES

When operating equipment involving the use of electricity and water, a number of fundamental safety rules must be observed, namely:

- ⊖ **The unit must not be used** by children or by unfit persons without suitable supervision.
 - Do not touch the unit** with bare feet or with wet or damp parts of the body.
 - Never perform any cleaning operations** before having disconnected the unit from the mains power supply.
 - Do not modify safety** or control devices without authorisation and instructions from the manufacturer.
 - Do not pull**, detach or twist the electrical cables coming from the unit, even when disconnected from the mains electricity supply.
 - Do not open doors or panels** providing access to the internal parts of the unit without first switching QF1 to OFF (see the wiring diagram).
 - Do not introduce pointed objects** through the air intake and outlet grills.
 - Do not dispose of**, abandon or leave within reach of children packaging materials (cardboard, staples, plastic bags, etc) as they may represent a hazard.

⚠ **Respect safety distances** between the unit and other equipment or structures. Guarantee adequate space for access to the unit for maintenance and/or service operations.

Power supply: the cross section of the electrical cables must be adequate for the power of the unit and the power supply voltage must correspond with the value indicated on the respective units. All units must be earthed in conformity with legislation in force in the country concerned.

The terminals may be live even when the unit has been disconnected.

Make sure power is not connected before proceeding.

Water connections should be carried out as indicated in the instructions to guarantee correct operation of the unit.

Add glycol to the water circuit if the unit is not used during the winter or the circuit is not emptied.

Handle the unit with the utmost care (see weight distribution table) to avoid damage.

When the items are consigned by the carrier, check that the packaging and the unit are undamaged.

If damage or missing components are noted, indicate this on the delivery note. A formal complaint should be sent via fax or registered post to the After Sales Department within eight days from the date of receipt of the items.

The units are supplied complete with:

- instruction manual;
- guarantee certificate;
- CE declaration;
- list of the main components and sub-assemblies fitted on the product, all enclosed in a plastic envelope (A) attached to the heat pump.
- remote room unit A3 (installation required)
- DHW storage cylinder probe
- outside air temperature sensor (installation required)

The unit must be handled by qualified and suitably equipped personnel only using equipment appropriate for the weight of the unit, in compliance with the safety standards in force (and subsequent amendments.).

If a forklift truck is used, insert the forks under the base, spacing the forks as wide apart as possible.

If a crane is used, pass the cables through the bottom of the base, making sure they do not exert pressure on the unit.

Once the packaging has been removed, the appliance can be lifted and moved by inserting two metal tubes (max. diameter 22mm) into the feet, and using suitable handling equipment.

⚠ The instruction manual is an integral part of the unit and should therefore be read and kept carefully..

The packaging should not be removed until the unit is located in the installation site.

⊘ Do not dispose of packaging materials in the environment or leave them within reach of children as they may represent a hazard.

⚠ The weight of the unit is biased towards the compressor side (side of the packaging with the bar code, see the figure).

During transport, the unit must be kept in a vertical position.

The unit must be stored sheltered from direct sunlight, rain, wind or sand.

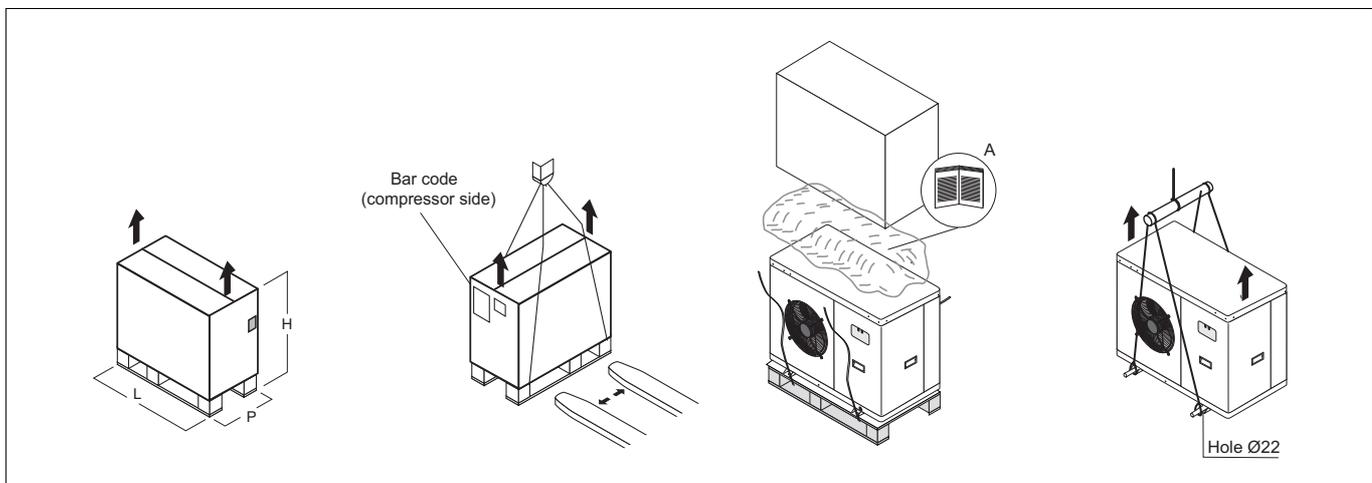
Avoid exposing the unit to direct sunlight, as the pressure inside the refrigerant circuit may reach dangerous values and cause the activation of the safety valves, where fitted.

Check the instructions on the packaging for stacking units.

The packaging must be removed by the operator using suitable protective equipment (gloves, glasses, etc.).

Take special care not to damage the unit.

Observe the local standards in force as regards disposal of the packaging, using specialist collection or recycling centres.

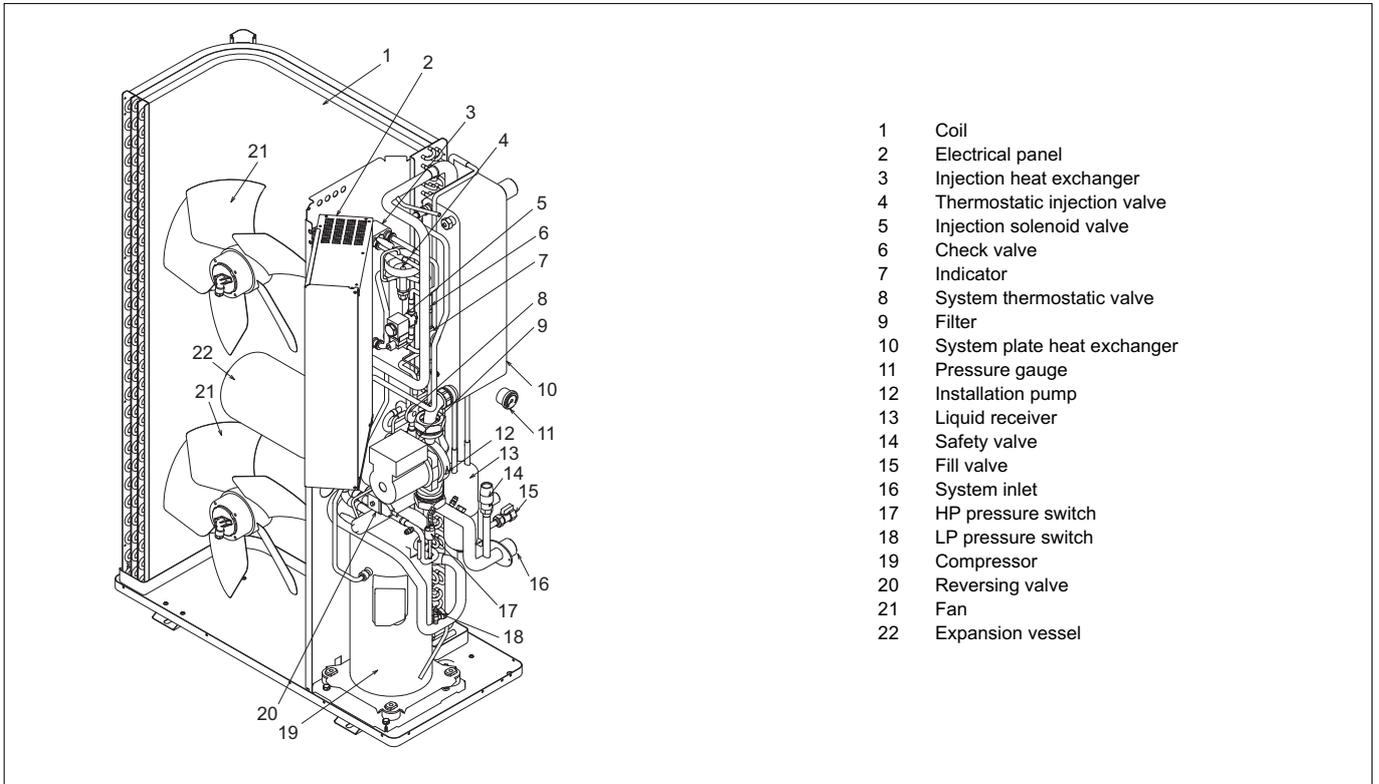


Dimensions AW HT		0031	0041	0061	0071
Dimension W	mm	970	970	970	1530
Dimension P	mm	525	525	525	650
Dimension H	mm	1450	1450	1600	1900
Gross weight	kg	165	175	190	340

The air-cooled units with axial-flow fans for heating only operate on R407C refrigerant and are suitable for outdoor installation.

The units are CE marked, as established by the EU directives, including the latest amendments, and the corresponding approximated national legislation:

They are factory tested and on site installation is limited to water and electrical connections.

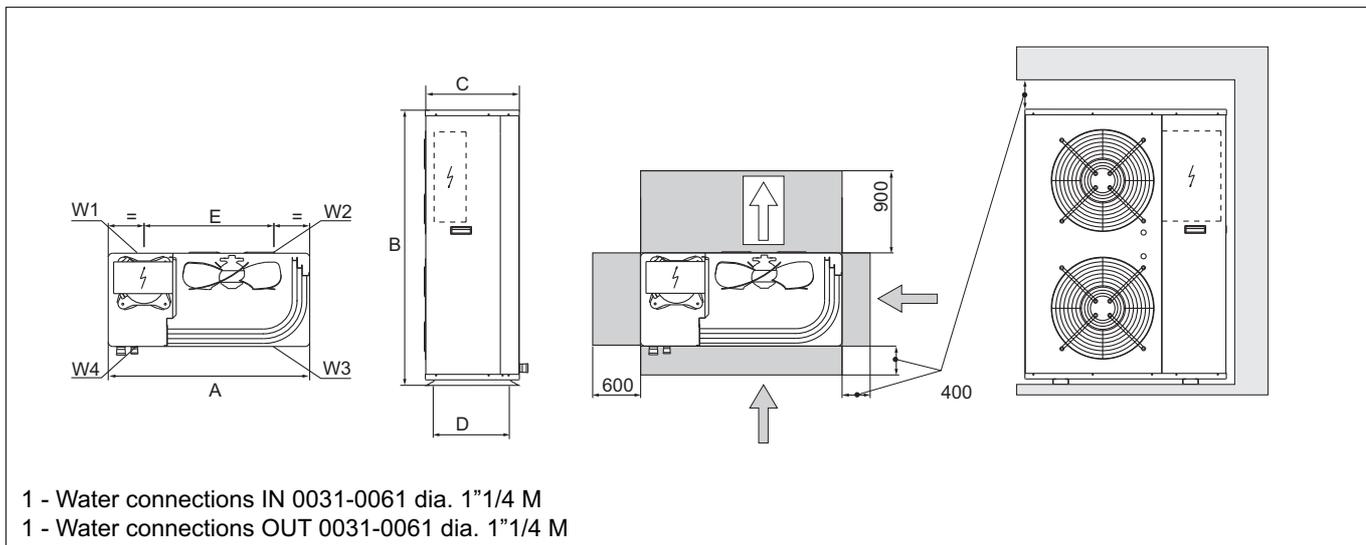


VERSIONS AVAILABLE



AW HT

Air/water heat pump for heating only with domestic hot water production by external 3-way valve (accessory). Built-in water circuit assembly.



Dimensions		0031	0041	0061	0071
A	mm	900	900	900	1470
B	mm	1240	1240	1400	1700
C	mm	420	420	420	570
D	mm	370	370	370	497
E	mm	580	580	580	1477

Weight distribution		0031	0041	0061	0071
W1 rear R	kg	64	65	71	110
W2 rear L	kg	20	22	24	49
W3 front L	kg	18	21	22	46
W4 front R	kg	53	57	63	115
tot	kg	155	165	180	320

CHOICE OF INSTALLATION SITE

Before installing the unit, agree with the customer the site where it will be installed, taking the following points into consideration:

- check that the fixing points are adequate to support the weight of the unit;
- pay scrupulous respect to safety distances between the unit and other equipment or structures to ensure that air entering the unit and discharged by the fans is free to circulate.
- Follow the instructions shown in the chapter on DIMENSIONAL DRAWINGS to allow room for maintenance operations. If installing multiple units the clearances must be doubled.

POSITIONING

Before handling the unit, check the capacity of the lift equipment used, respecting the instructions on the packaging.

To move the unit horizontally, make appropriate use of a lift truck or similar, bearing in mind the weight distribution of the unit.

To lift the unit, insert tubes long enough to allow positioning of the lifting slings and safety pins in the special holes in the base of the unit.

To avoid the slings damaging the unit, place protection between the slings and the unit.

The unit should be installed on special vibration dampers. See the chapter on DIMENSIONAL DRAWINGS for the support positions identified by W1, W2 etc. and the corresponding weights for the correct sizing of the vibration dampers. Fix the unit, making sure it is level and that there is easy access to water and electrical components.

If the site is exposed to strong winds, fix the unit adequately using tie rods if necessary.

In heating mode the unit produces a significant quantity of condensate, which must be suitably drained.

Condensate drainage must not cause problems to objects or people.

If the outside air temperature is less than 0°C, the condensate may freeze; in these case fit a frost protection heater on the drain line.

For correct operation of the unit, avoid the following: obstacles to air flow, leaves that may block the heat exchange coil, strong winds that stop or reinforce air flow, sources of heat too close to the unit, recirculation or stratification of air.

The choice and installation of components is the responsibility of the installer who should follow good working practice and current legislation.

Before connecting the pipes, make sure they do not contain stones, sand, rust, dross or other foreign bodies which might damage the system.

Construction of a bypass is recommended to enable the pipes to be washed through without having to disconnect the unit (see drain valves).

The connection piping should be supported in such a way as to avoid it weighing on the unit.

The following components should be installed in the water circuit:

1. Two pressure gauges with a suitable scale (intake and outlet);
2. Two vibration damper joints (intake and outlet);
3. Two gate valves (normal in intake and calibrating in outlet);
4. **A flow switch (inlet). The flow switch must be calibrated by the installer to a value equal to 70% of rated flow.**
5. Two thermometers (intake and outlet);
6. **An intake filter must be installed as close as possible to the unit and positioned to allow easy access for routine maintenance.**
7. All the pipes must be insulated with suitable material to prevent the formation of condensate and heat loss. The insulating material must be a vapour barrier. Make sure that the control and shut off devices protrude from the insulation.
8. At the lowest points in the system, install drain valves for easy emptying.
9. At the highest points in the system, install automatic or manual air vent valves.
10. The unit is fitted as standard with an expansion vessel; make sure this is correctly sized for the water content of the system and the expected operating temperature, otherwise install an additional expansion vessel.

La mancata installazione dei flussostati non assicura una Failure to install the flow switches will mean the heat exchangers are not protected in the event of no flow of liquid.

Climaveneta cannot be held liable for any damage to the unit and/or the system following the failure to install these devices or the filter.

The correct operation of the components that help ensure the safety of the appliance and the system should be checked regularly. Specifically, this involves cleaning the filters and checking the operation of the flow switches installed.

Make sure that the frost protection heaters on the heat exchanger are powered when the unit is off (unit in standby "StbY")

Water flow to the chiller unit must conform to the values shown in the section on "General Technical Data".

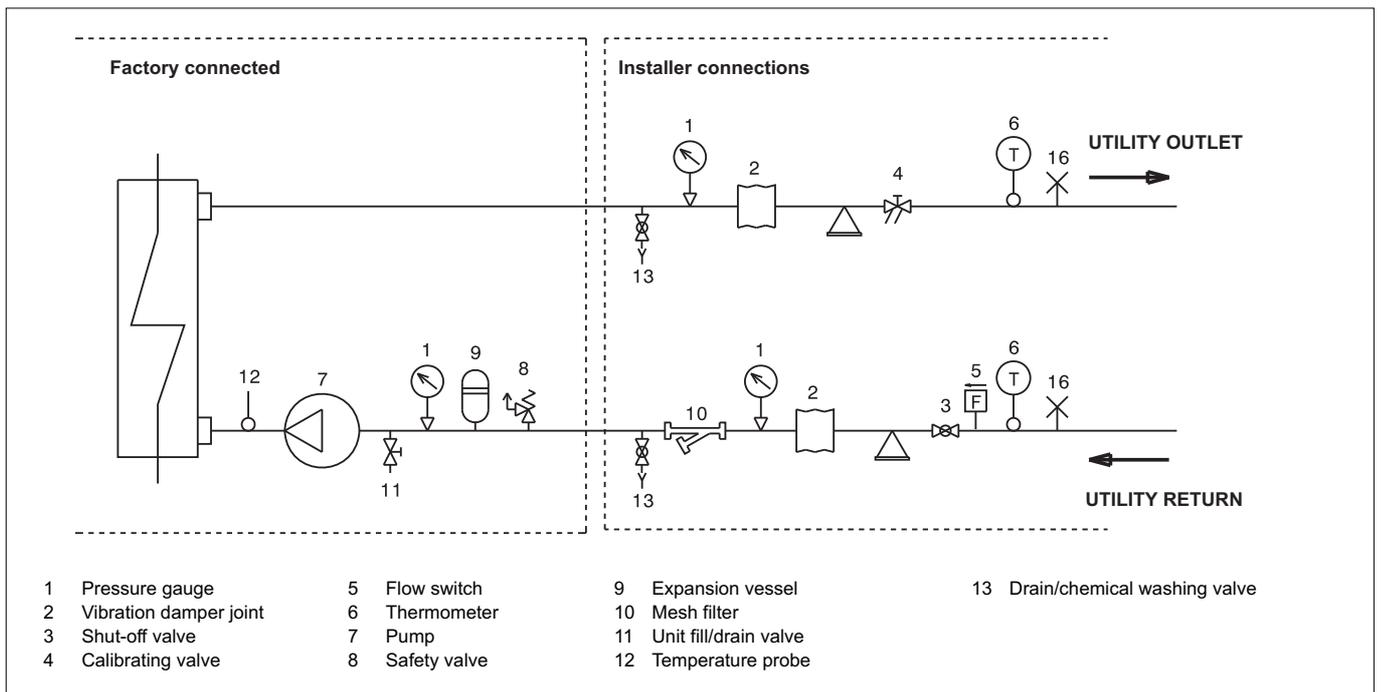
The flow of water must be maintained constant during operation.

The water content of the unit must be such as to avoid disturbing operation of the refrigerant circuits.

The unit must be prevented from freezing at outside air temperatures around 0°C. It is recommended to use suitable percentages of antifreeze (see "Water circuit data"), protect the piping with heating sheaths, and empty the system, making sure there no water remains at the lowest points in the circuit.

It is recommended to use non-toxic food grade antifreeze, compliant with the standards in force in the countries where the unit is used, if domestic hot water production is also featured.

Utility water circuit connection diagram



⚠ **The heat pumps** must be fitted with a filling/top-up system connected to the return line and a drain valve in the lowest part of the system.

Systems containing antifreeze or covered by specific legislation must be fitted with low-loss headers.

⚠ The manufacturer is not liable for obstruction, breakage or noise resulting from the **failure to install filters** or vibration dampers.

Particular types of **water used for filling or topping up** must be treated with appropriate treatment systems.

For reference values, see the table.

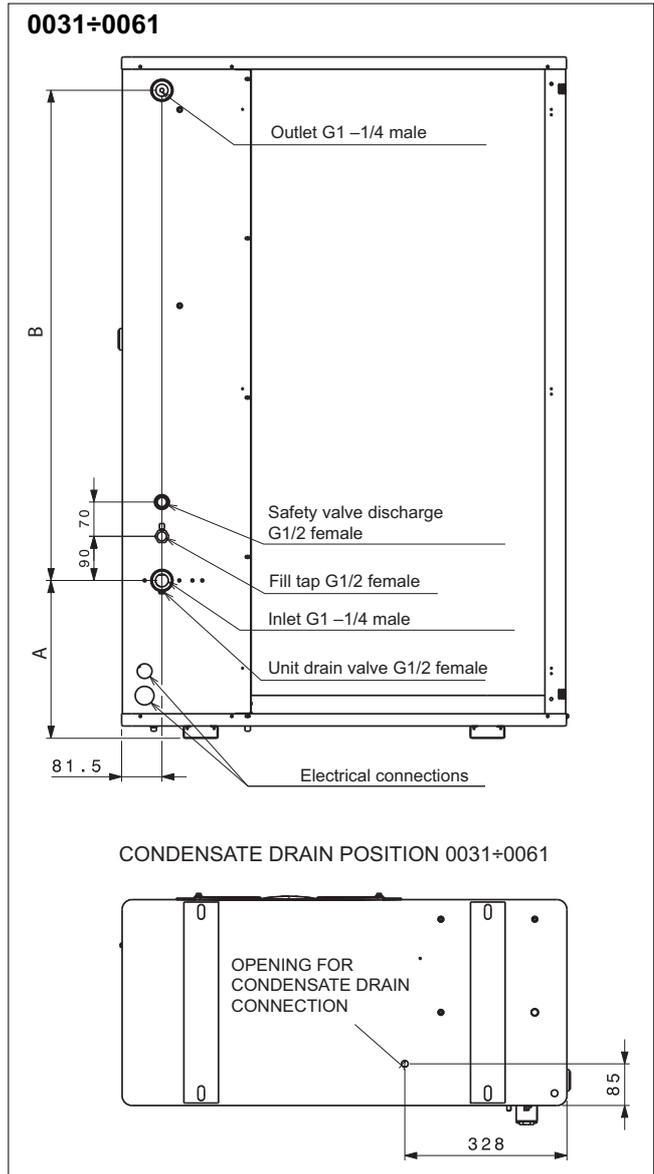
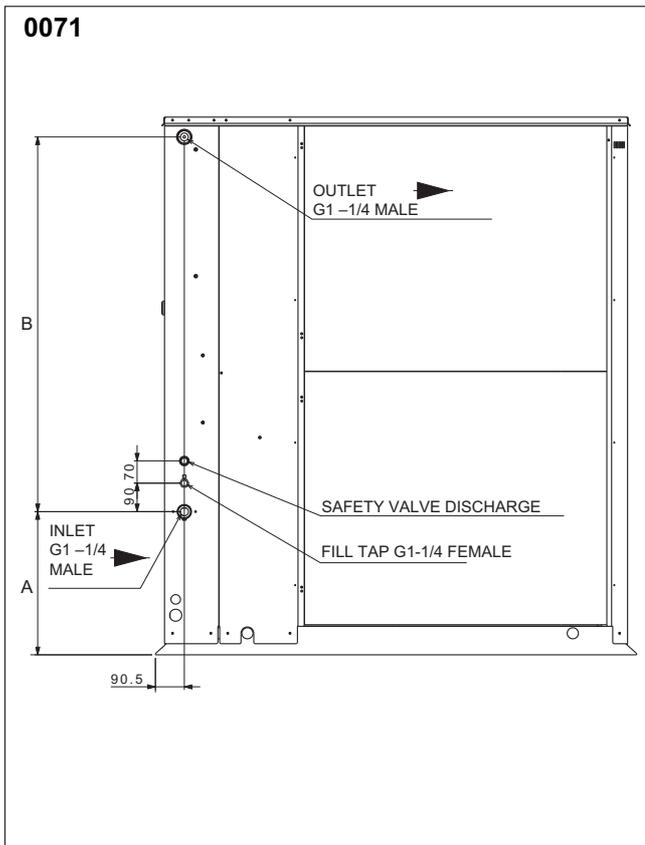
PH	6-8
Electrical conductivity	less than 200 mV/cm (25°C)
Chlorine ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0,3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
Ammonia ions	none
Silicon ions	less than 30 ppm

CONDENSATE DRAIN

The unit is fitted with condensate pan; this must be connected to a drain system to take away the water that forms, see the drawing.

If the outside air temperature is less than 0°C, the condensate may gradually freeze.

The unit must be supported on a suitable structure or brackets to keep it off the ground, with a frost protection heater fitted on the drain line.



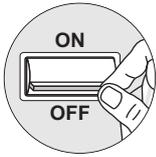
Dimensions		0031	0041	0061	0071
A	mm	210	322	322	452
B	mm	975	1000	1000	1183
Water connections M in/out	∅	1"1/4	1"1/4	1"1/4	1"1/4

FILLING THE SYSTEM



- Before starting to fill, place the unit mains switch QF1 in the OFF position.
- Before filling, check that the system drain valve is **closed**.
- Open all system and terminal air vents.
- Open system shut off valves.
- Start filling by slowly opening the system water fill valve outside the unit.
- When water begins to leak out of the terminal air vent valves, close them and continue filling until the pressure gauge indicates a pressure of 1.5 bars.

EMPTYING THE SYSTEM



- Before starting to empty, place switch QF1 in the **OFF** position
- Make sure the system fill/top-up water valve is closed.
- Open the drain cock outside the unit and all the installation and terminal air vent valves..

⚠ The system must be filled to a pressure of between 1 and 2 bars.

It is recommended that this operation be repeated after the unit has been operating for a number of hours. The pressure should be checked regularly and if it drops below 1 bar, the water content should be topped-up.

Check the tightness of the joints.

⚠ If the fluid in the circuit contains antifreeze, it should not be allowed to drain freely, as it is pollutant.

It should be collected for possible reuse.

When draining after heat pump operation, take care as the water may be hot (up to 50°).

WATER CIRCUIT DATA

I | A

Water content in the system

Size		0031	0041	0061	0071
Minimum water content	l	75	105	130	175

Size		0031	0041	0061	0071
Expansion vessel volume	l	4	5	5	8

Ethylene glycol solutions

Water and ethylene glycol solutions used as a heat carrier in the place of water reduce the performance of the unit.

Multiply the performance figures by the values given in the following table.

Freezing point (°C)						
	0	-5	-10	-15	-20	-25

Percentage of ethylene glycol by weight						
	0	12%	20%	28%	35%	40%
cPf	1	0,985	0,98	0,974	0,97	0,965
cQ	1	1,02	1,04	1,075	1,11	1,14
cdp	1	1,07	1,11	1,18	1,22	1,24

cPf: correction factor refrigerating capacity

cQ: flow rate correction factor

cdp: pressure drop correction factor

Fouling factors

The performance data given refer to conditions with clean evaporator plates (fouling factor = 1).

For different fouling factors, multiply the figures in the performance tables by the coefficient given in the following table.

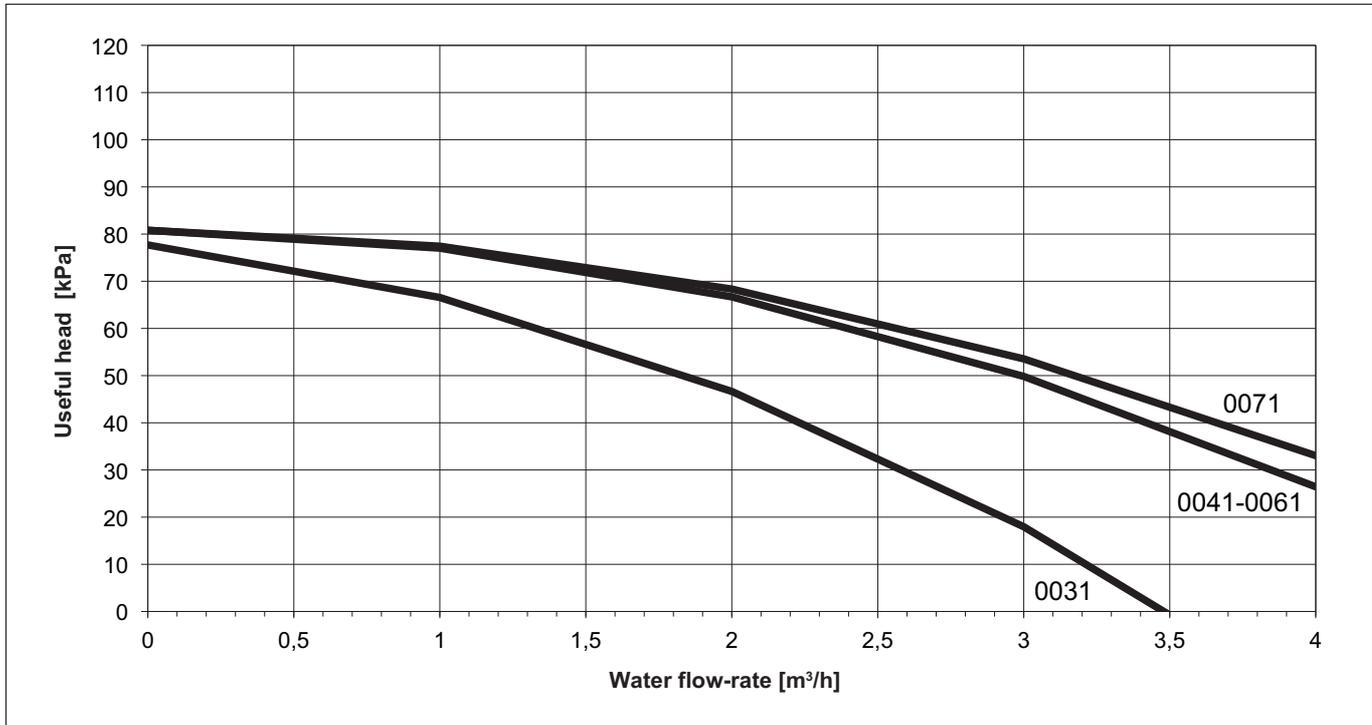
Fouling factors (m ² °C/W)	Evaporator		
	f1	fk1	fx1
4,4 x 10 ⁻⁵	-	-	-
0,86 x 10 ⁻⁴	0,96	0,99	0,99
1,72 x 10 ⁻⁴	0,93	0,98	0,98

f1: capacity correction factor

fk1: compressor power input correction factor

fx1: total power input correction factor

PUMP CURVES



The pressure head refers to the values at the fittings.

The heat pumps must be installed downstream of a main switch (QF1, see wiring diagram), as required by the standards in force in the country where the unit is installed. Connection to the mains power supply and the connection of the flow switch to the corresponding terminals must be performed by authorised personnel in compliance with the standards in force.

For all electrical work, refer to the electrical wiring diagrams in this manual.

It is also recommended to check that:

- The characteristics of the mains electricity supply are adequate for the power ratings indicated in the electrical specifications below, also bearing in mind the possible use of other equipment at the same time.

⚠ Power to the unit must be turned on only after installation work (plumbing and electrical) has been completed.

All electrical connections must be carried out by qualified personnel in accordance with legislation in force in the country concerned

Respect instructions for connecting phase, neutral and earth conductors.

The power line should be fitted upstream with a suitable device to protect against short-circuits and leakage to earth, isolating the installation from other equipment.

⚠ Voltage must be within a tolerance of $\pm 10\%$ of the rated power supply voltage for the unit (for three phase units, the unbalance between the phases must not exceed 3%). If these parameters are not respected, contact the electricity supply company.

For electrical connections, use double insulation cable in conformity with legislation in force in the country concerned.

⚠ A thermal overload switch and a lockable mains disconnect switch, in compliance with the CEI-EN standards (contact opening of at least 3mm), with adequate switching and residual current protection capacity based on the electrical data table shown below, must be installed as near as possible to the appliance.

⚠ An efficient earth connection is obligatory.

The manufacturer cannot be held liable for any damage caused by the failure to correctly earth the unit.

In the case of three phase units, ensure the phases are connected correctly.

⊘ Do not use water pipes to earth the unit.

Electrical data at maximum conditions allowed (full load)

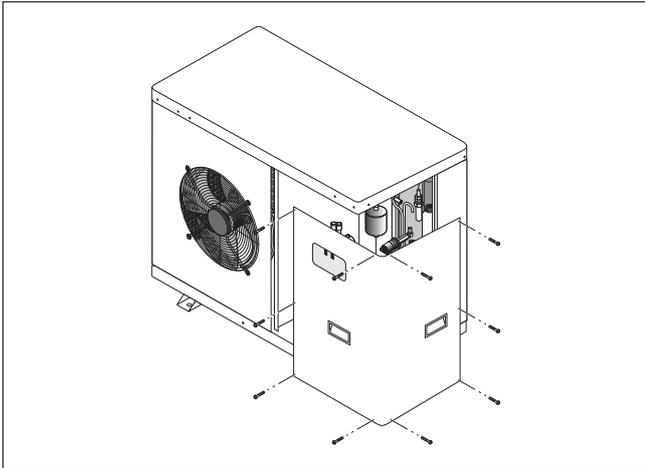
Size	Power supply (V-Ph-Hz)	Maximum values								Fuses (5x20T 250V)		
		Compressor			Fan/fans		Pump		Total		FU1	FU2
		F.L.I. (kW)	F.L.A. (A)	L.R.A. (A)	F.L.I. (kW)	F.L.A. (A)	F.L.I. (kW)	F.L.A. (A)	F.L.I. (kW)	F.L.A. (A)		
0031ms	230~50	3,9	20,8	44	0,2	0,6	0,2	1	4,3	22,4	6,3	6,3
0041ms	230~50	4,8	30	45	0,2	0,6	0,2	1	5,2	31,6	6,3	6,3
0041t	400-3N~50	5,2	10	64	0,2	0,6	0,2	1	5,6	11,6	6,3	6,3
0061t	400-3N~50	6,3	14	101	0,2	0,6	0,2	1	6,7	15,6	6,3	6,3
0071t	400-3N~50	10,2	17,2	99	0,16	0,72	0,41	2,1	11,1	21,5	6,3	6,3
0041ts	400-3N~50	5,2	10	35	0,2	0,6	0,2	1	5,6	11,6	6,3	6,3
0061ts	400-3N~50	6,3	14	55	0,2	0,6	0,2	1	6,7	15,6	6,3	6,3
0071ts	400-3N~50	10,2	17,2	54,5	0,16	0,72	0,41	2,1	11,1	21,5	6,3	6,3

F.L.I. Maximum power input

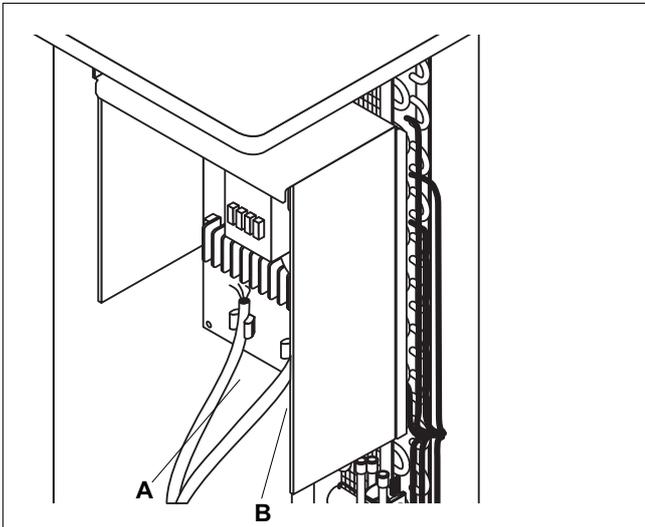
F.L.A. Maximum current input

L.R.A. Start-up current

- Before connecting the unit to the power supply, make sure that switch QF1 is open, suitably padlocked and marked.
- Remove the inspection panel by removing the ten screws.

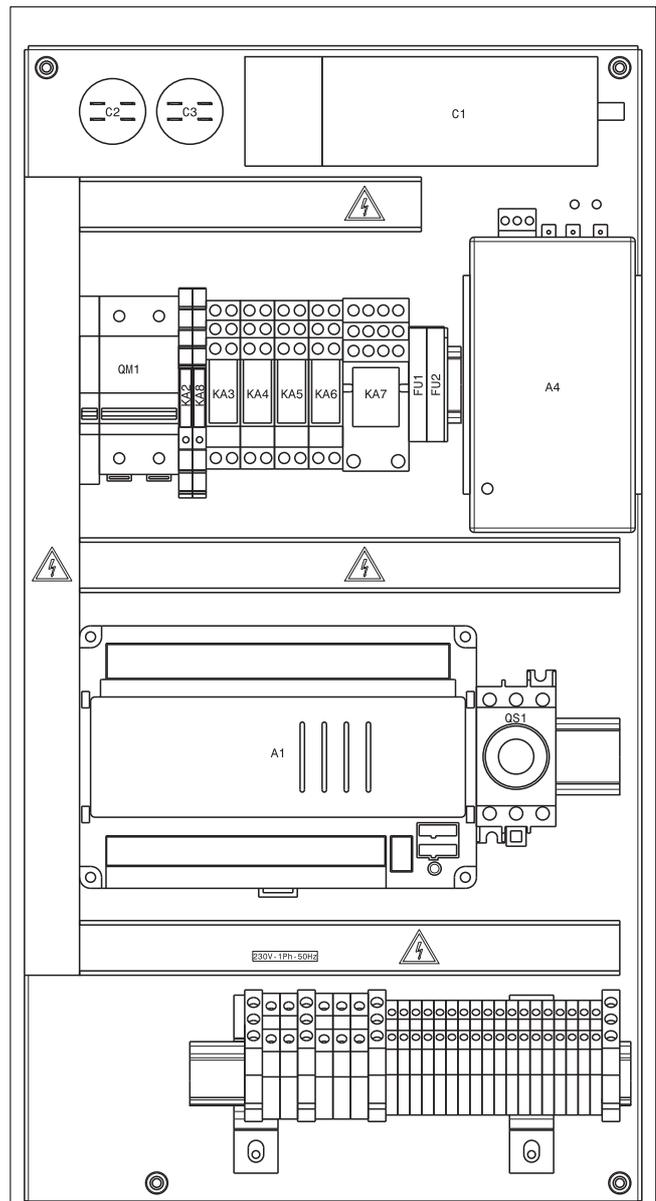


- Use cable gland **A** for the main electrical power cable and cable gland **B** for other external cables to be connected by the installer.



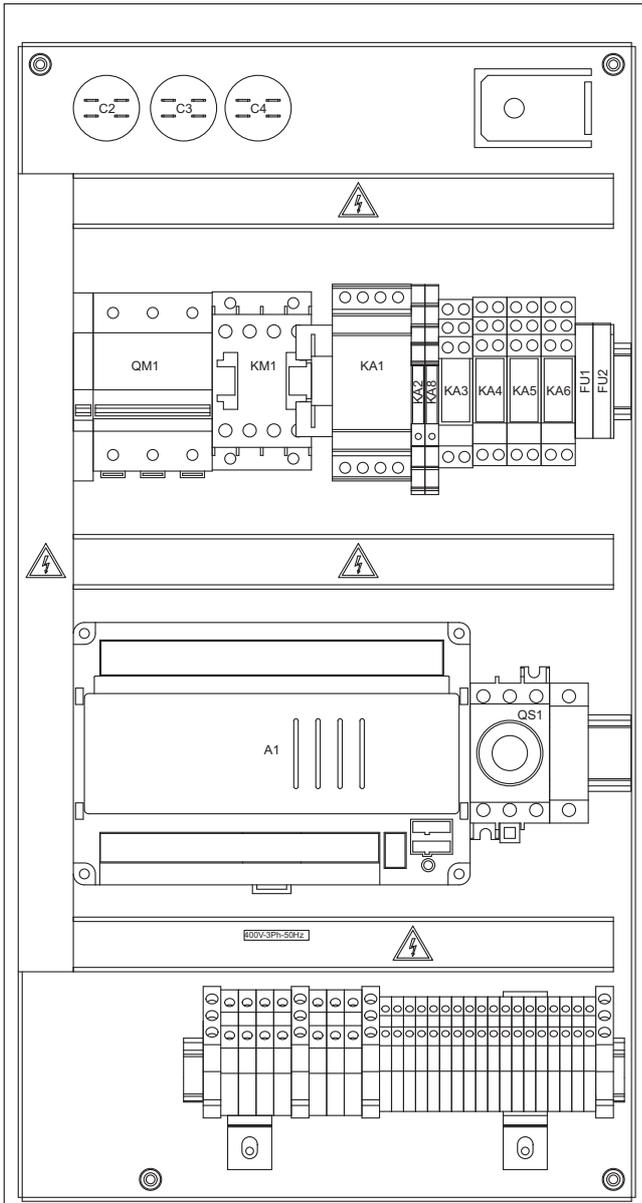
- Identify the terminals used for electrical connections on the layout drawing shown in this manual.
For the functional connection of the unit, bring the power supply cable to the electrical panel inside the unit and connect it to terminals U-N, respecting the (U) phase, (N) neutral and (PE) earth in the case of single phase units (230V~50Hz), or U-V-W phases, N neutral and PE earth in three phase units (400V-3N~ 50 Hz).
- Replace the inspection panel.
- Check that all the covers removed to make the electrical connections have been replaced before powering up the unit.
- Position the main switch QF1 (outside the unit) in the "ON" position.
- The message "Updating Data" is shown on the room unit display.
- The room unit is ready for operation after a few seconds.

ELECTRICAL PANEL LAYOUT AW 0031-0041 HT SINGLE-PHASE WITH PEAK LIMITER



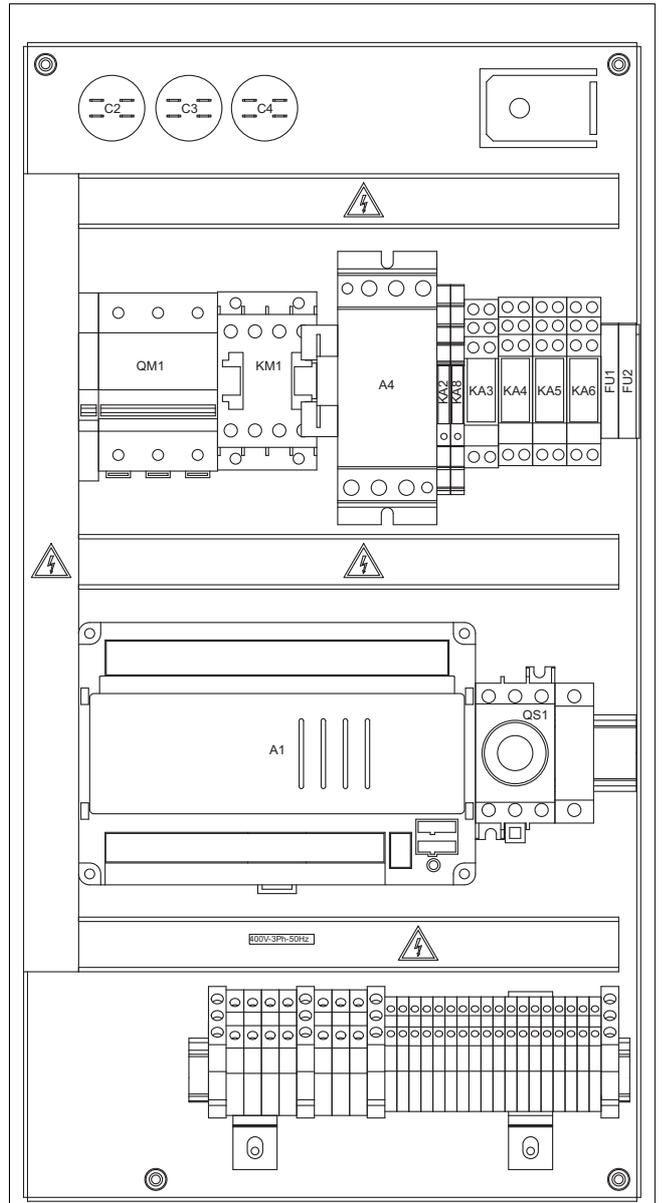
- A1 Electronic controller
- A4 Peak limiter
- C1 Compressor start capacitor
- C2/C3 Fan start capacitor
- FU1 Auxiliary circuit protection fuse "L" 230VAC
- FU2 Auxiliary circuit protection fuse "N" 230VAC
- KA2 Alarm relay (K10)
- KA3 Electric heater control relay (K6)
- KA4 Boiler control relay (K27)
- KA5 High pressure switch relay
- KA6 Steam injection valve bypass relay
- KA7 Compressor control relay (K1)
- KA8 Domestic hot water 3-way valve relay
- QM1 Compressor thermal overload switch
- QS1 Door lock disconnect switch

**ELECTRICAL PANEL LAYOUT
AW 0041-0071 HT THREE-PHASE**



- A1 Electronic controller
- C2/C3/C4 Fan start capacitor
- FU1 Auxiliary circuit protection fuse "L" 230VAC
- FU2 Auxiliary circuit protection fuse "N" 230VAC
- KA1 Phase sequence control relay
- KA2 Alarm relay (K10)
- KA3 Electric heater control relay (K6)
- KA4 Boiler control relay (K27)
- KA5 High pressure switch relay
- KA6 Steam injection valve bypass relay
- KA8 Domestic hot water 3-way valve relay
- KM1 Compressor control contact (K1)
- QM1 Compressor thermal overload switch
- QS1 Door lock disconnect switch

**ELECTRICAL PANEL LAYOUT AW 0041-0071 HT
THREE-PHASE WITH PEAK LIMITER**



- A1 Electronic controller
- A4 Peak limiter
- C2/C3/C4 Fan start capacitor
- FU1 Auxiliary circuit protection fuse "L" 230VAC
- FU2 Auxiliary circuit protection fuse "N" 230VAC
- KA2 Alarm relay (K10)
- KA3 Electric heater control relay (K6)
- KA4 Boiler control relay (K27)
- KA5 High pressure switch relay
- KA6 Steam injection valve bypass relay
- KA8 Domestic hot water 3-way valve relay
- KM1 Compressor control contact (K1)
- QM1 Compressor thermal overload switch
- QS1 Door lock disconnect switch

All the terminals referred to in the following explanations are to be found on the terminal board located inside the electrical panel and called “installer terminal block” or “electronic controller A1 terminals” (see wiring diagram).

INSTALLER TERMINAL BLOCK

REMOTE ALARM (RD1)

For remote display of unit shut-down due to an operating fault, an audible or visual alarm warning device can be connected between terminals 6 and 7.
Connect the phase to terminal 7 and the alarm signal device between terminal 6 and the neutral N.

ELECTRIC HEATER CONTACT (SA1)

To use an electric heater as an auxiliary heating element for the production of domestic hot water.
Follow the instructions shown on the instruction sheet enclosed with the electric heater kit if supplied by Climaveneta, otherwise see the wiring diagram in this manual.
For further details see the chapter “Control”.

BOILER CONTACT (SA2)

To use a boiler as an auxiliary heating element or to replace the heat pump, connect the phase to terminal 11 and the control device, auxiliary relay, between terminal 10 and the neutral N.
For further details see the chapter “Control”.

DEACTIVATION CONTACT FOR EXCESS POWER CONSUMPTION (SA3)

The heat pump accepts a external deactivation signal from contact SA3, if using a system for managing power consumption that disconnects active devices based on set priority, so as to avoid the overload switch on the power meter from being triggered.
Connect the external contact to terminals 16 and 17.
Contact SA3 closed, heat pump operation disabled.
Contact SA3 open, heat pump operation enabled.

REDUCED ELECTRICITY RATE CONTACT (SA4)

The heat pump accepts an external signal from contact SA4 to activate the forced refilling of the reserve storage tanks based on different electricity rates during the day.
During reduced rate periods, the heat pump can be forced on so as to heat the domestic hot water or system storage tank, where fitted.

Connect the external contact to terminals 18 and 19.
Contact SA4 closed, heat pump operation enabled (forced operation during the reduced rate period).
Contact SA3 open, heat pump operation disabled.

CONTACT (SA5)

Not used

COMPRESSOR ON SIGNAL (GN1)

For remote display of the compressor operating status, an audible or visual alarm warning device can be connected between terminals 12 and 13.
Connect the phase to terminal 13 and the signal device between terminal 12 and the neutral.

CONNECTING A FLOW SWITCH (F3)

If a flow switch is used, connect it to terminals 14 and 15 on the installer terminal board, after having removed the jumper.

DOMESTIC HOT WATER 3-WAY VALVE (YV3)

To configure a 3-way for the production of domestic hot water (supplied by Climaveneta), make the following connections as shown on the instruction sheet enclosed with the accessory.
The 3-way valve for the domestic hot water production, if not supplied by Climaveneta, should have the following characteristics:
- Voltage 230V AC, 50/60 Hz
- Opening and closing time 10s.
- P delta 500 kPa
- Fluid temperature 0°C to 90°C
Use three-way valves with a pressure drop below 20 kPa.
For further details, see the chapter on “Operating characteristics”.

ELECTRONIC CONTROLLER TERMINAL BLOCK (A1)

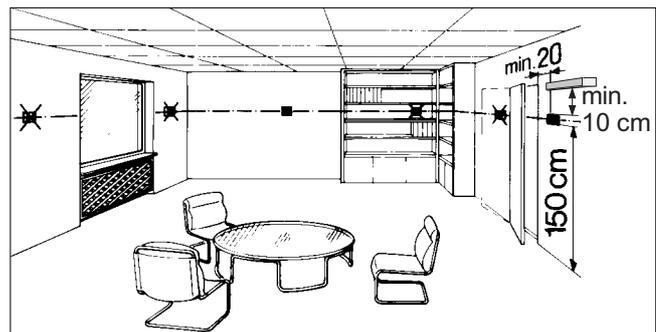
FIXED SET POINT OPERATION CONTACT (SA6)

Contact SA6 allows operation of the heat pump with a fixed outlet set point defined by parameter 5952 (default = 50°C).
Closing the contact disables the outside temperature probe and the room unit, the outlet temperature depends exclusively on the set point set for parameter 5952.

ROOM UNIT (A3)

Installation instructions

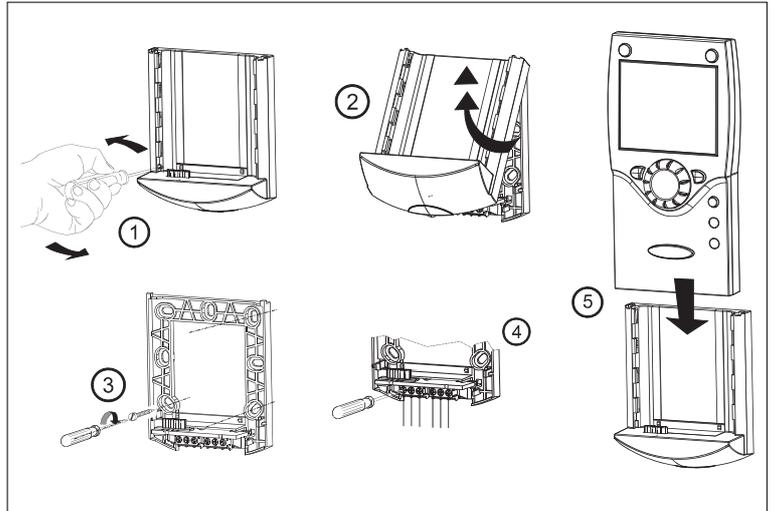
The room unit must be located in a reference room to control the room temperature, keeping in the following factors consideration:



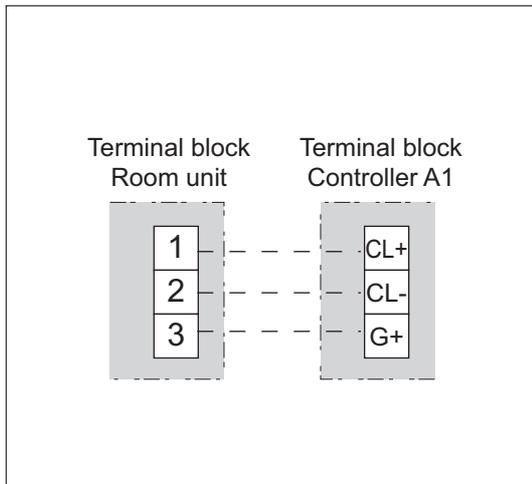
- The room unit must be located around 1.5 metres from the floor, in a part of the room where the sensor can measure the room temperature as precisely as possible; it must be sheltered from streams of cold air, sunlight or other sources of heat.
- If mounted on the wall, at the top of the room unit there must be enough space for assembly and removal when necessary. The room unit, once removed from its base, is no longer powered and consequently is not working.

Installation procedure:

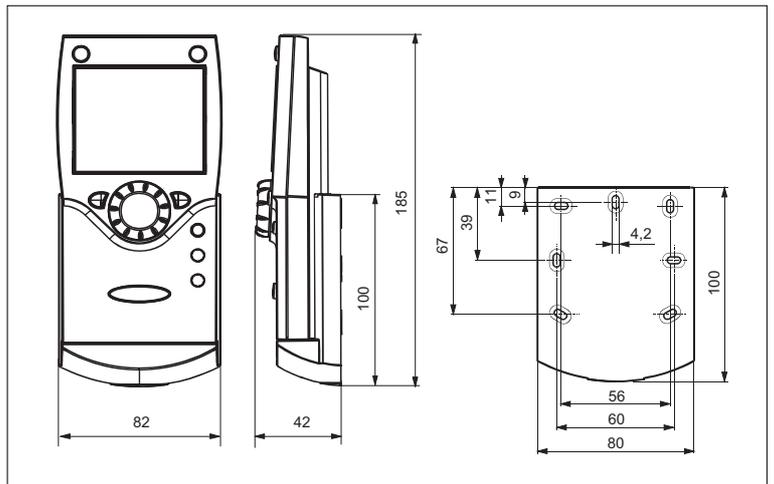
1. Press the plastic hooks, right and left, on the support.
2. Remove the top part of the support
3. Fasten the support to the wall
4. Make the electrical connections, see the wiring diagram, and attach the top part of the support
5. Attach the room unit to the support.



Electrical connection



Room unit dimensions and support drilling template for installation.



Technical specifications	Power supply	Bus
Room temperature measurement	Measurement	0...50 °C
	According to EN 12098: Range 15 to 25 °C	0.8 K tolerance
	Range 0 to 15 °C or 25 to 50 °C Resolution	1.0 K tolerance 1/10 K
Interface	Maximum cable length	200m
	Case index of protection to EN 60 529	IP20 for QAA7 .../ QAA55 ...
	Safety class to EN 60 730	Class 2 low-voltage if correctly installed
	Degree of pollution EN 60 730	Normal pollution
Index of protection and safety class	CE electromagnetic compatibility conformity	89/336/EEC+2004/108/EEC and subsequent amendments
	- Immunity - Emissions Low voltage - Electrical safety	- EN 61000-6-2 - EN 61000-6-3 2006/95/EEC and subsequent amendments - EN 60730-1, EN 50090-2-2
Climate conditions	Storage IEC721-3-1 class 1K3	temperature -20 to 65 °C
	Transport IEC721-3-2 class 2K3	temperature -20 to 75 °C
	Operation IEC721-3-3 class 3K5	temperature 0 to 50 °C (non-condensing)
Weight	Weight (excluding packaging)	170 g

DOMESTIC HOT WATER STORAGE TEMPERATURE SENSOR (BT1)

The domestic hot water temperature inside the storage cylinder is measured using sensor BT1, connected to terminals M and BX1.

OUTSIDE AIR TEMPERATURE SENSOR (BT2)

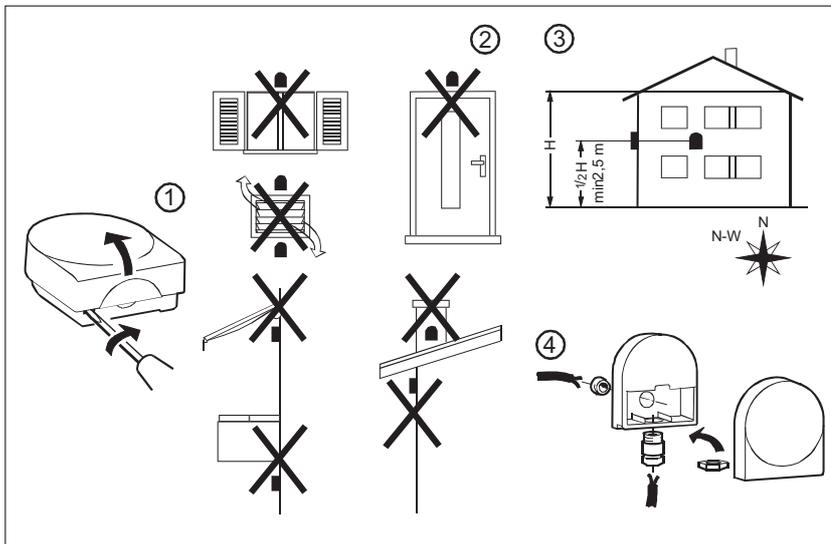
Installation instructions

The outside air temperature sensor must be installed outside of the home in a reference position to correctly measure the temperature, without being affected by sunlight, flue gas, near air outlets, doors and windows.

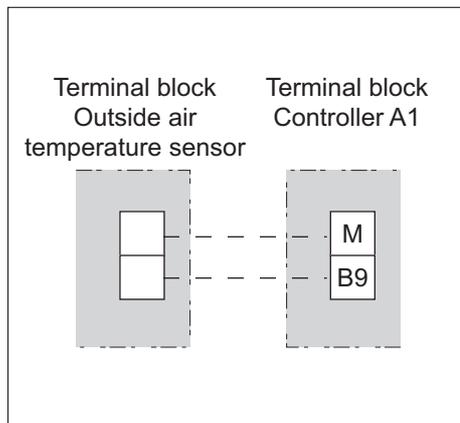
The outside air temperature sensor must be located on a perimeter wall facing north-north-west, minimum 2.5 metres from the ground or maximum half way up the height of the home.

Installation procedure:

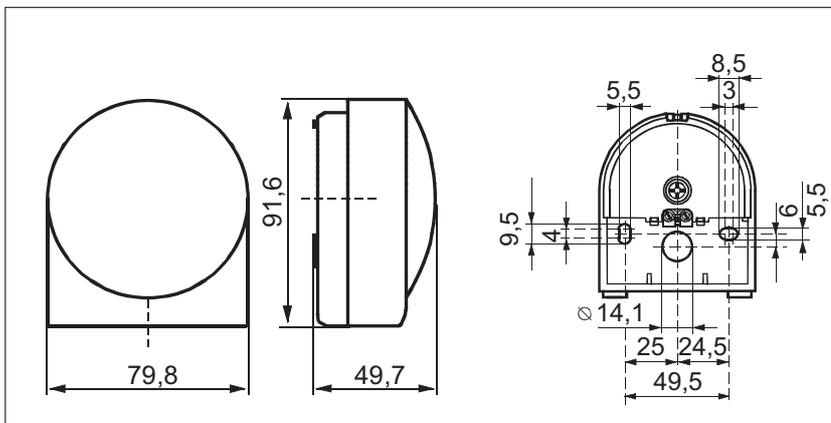
1. Remove the cover from the probe using a special tool
2. Identify the correct installation position for the probe
3. Fasten the probe to the wall at the correct height (see the drawings)
4. Make the electrical connections, see the wiring diagram, and attach the top of the probe.



Electrical connection:

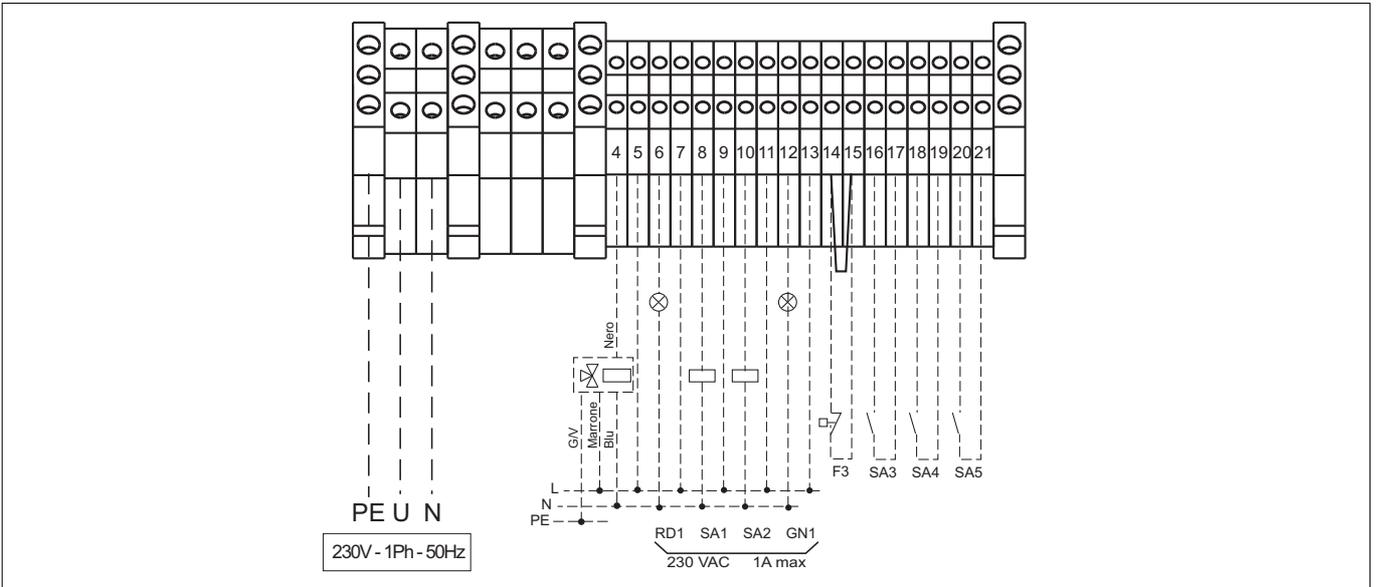


Dimensions:

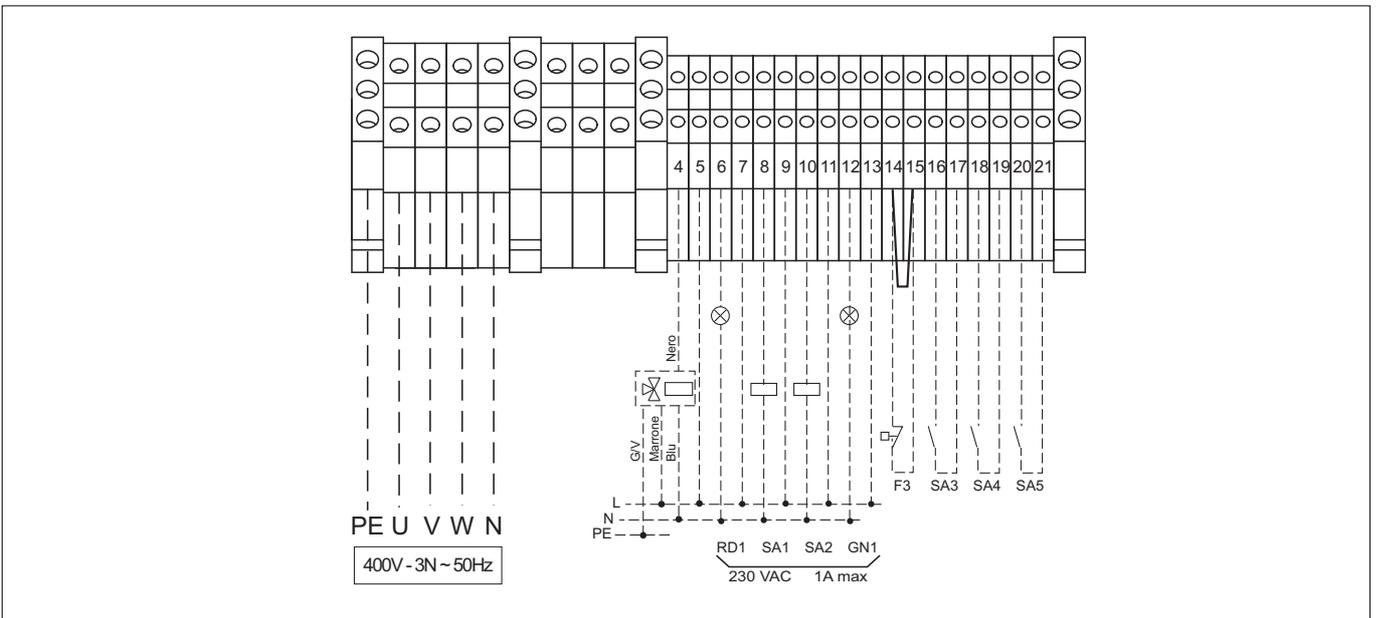


Technical specifications	
Probe	NTC 1000Ω at 25 °C
Index of protection	IP54
Cover colour	RAL 9003
Base colour	RAL 7001
Storage	-20...65 °C
Transport	-20...70 °C
Operation	0...50°C (non-condensing)
Measurement	-50...70°C

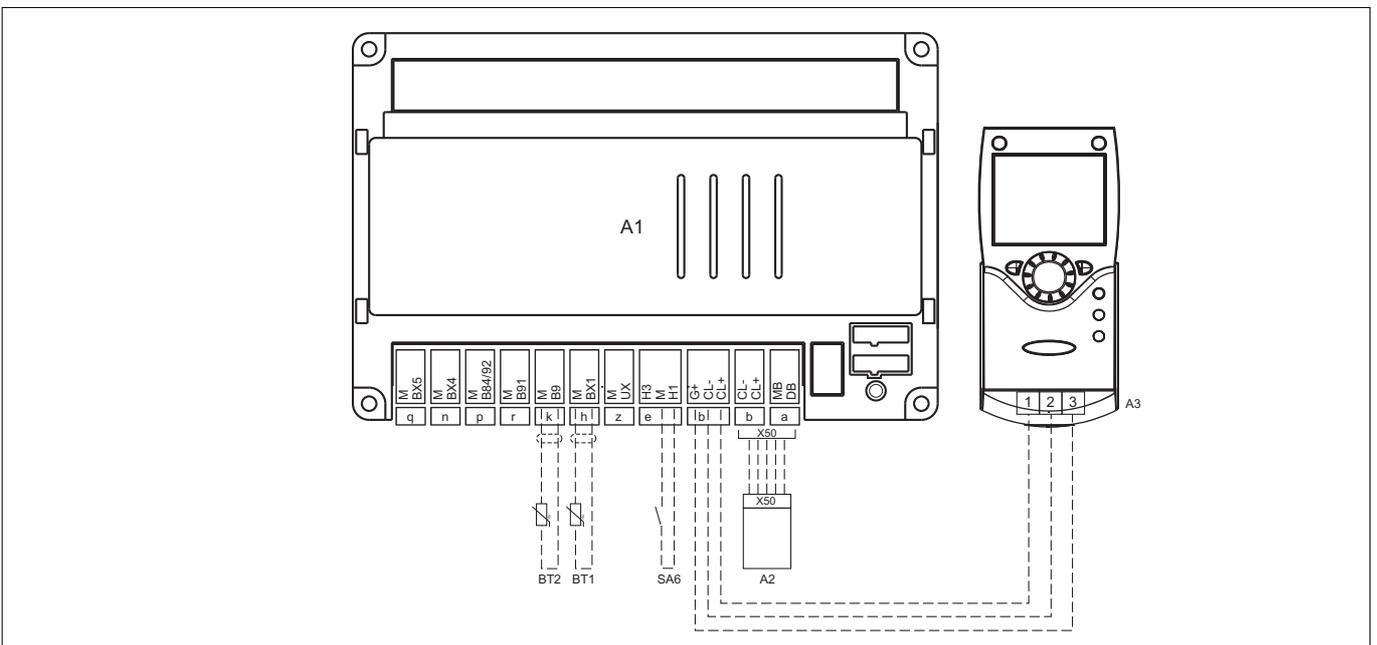
INSTALLER TERMINAL BOARD AW 0031-0041 HT SINGLE-PHASE



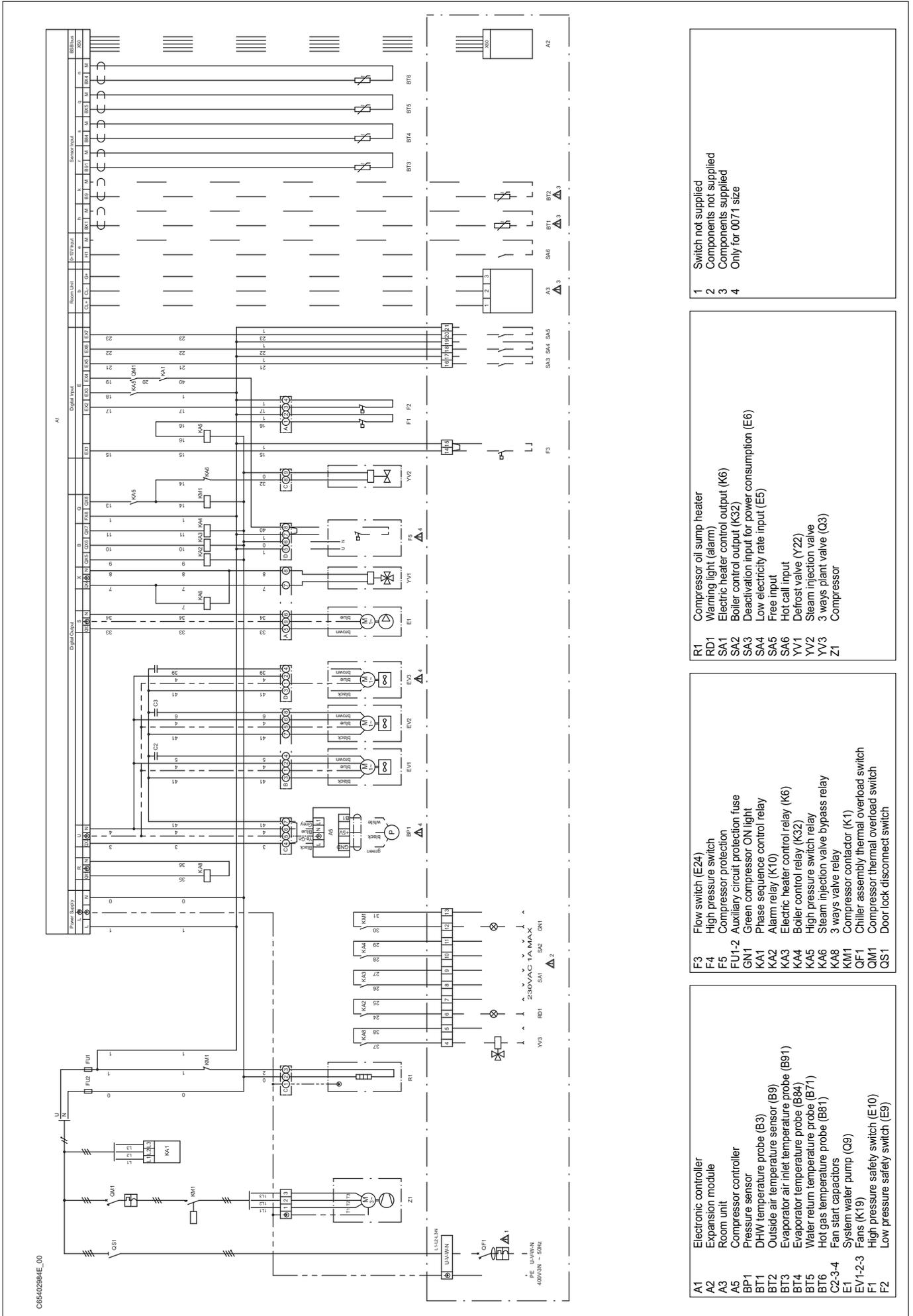
INSTALLER TERMINAL BOARD AW 0041-0071 HT THREE-PHASE



ELECTRONIC CONTROLLER (A1) TERMINAL BLOCK



AW 0041-0071 HT THREE-PHASE



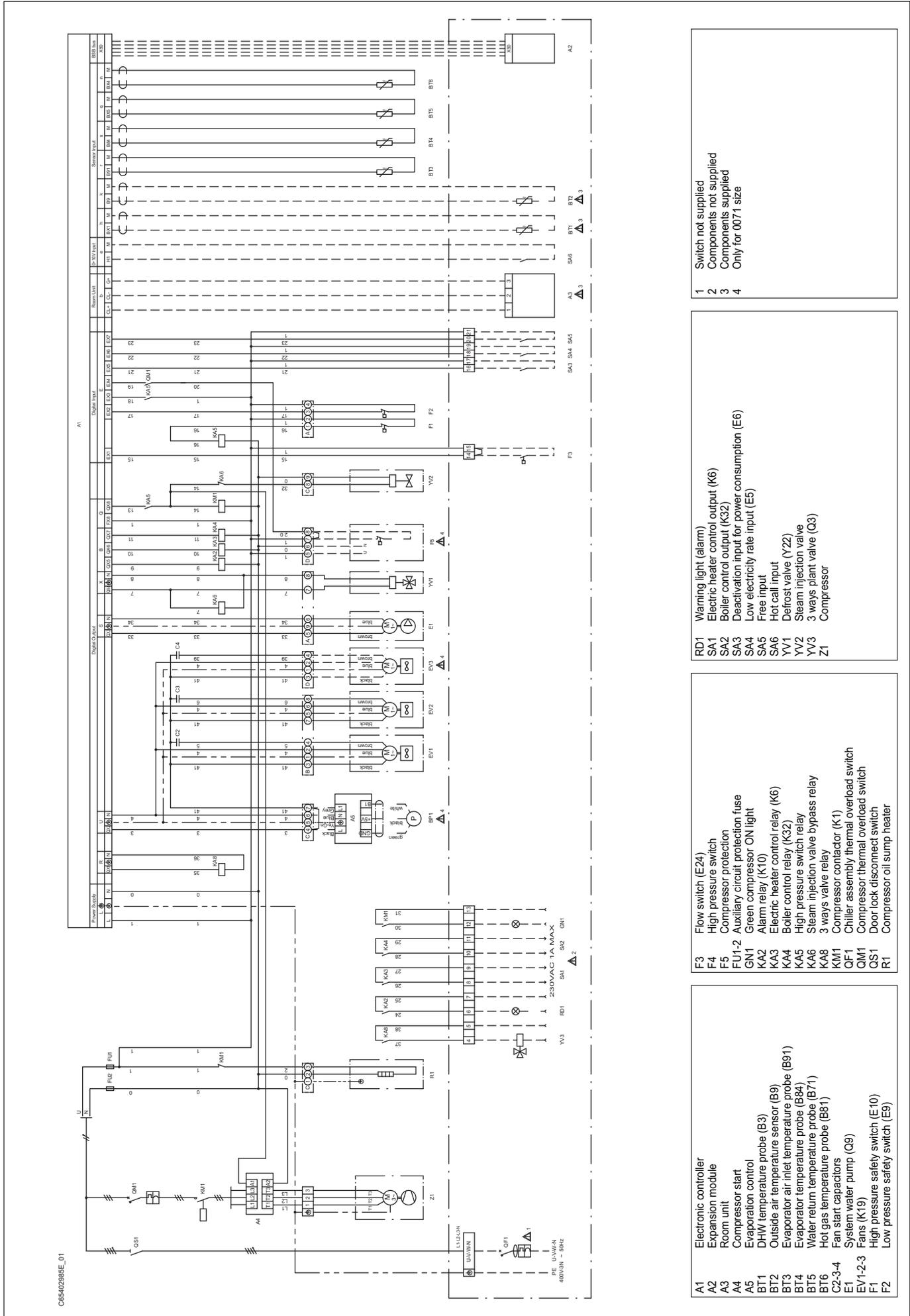
- 1 Switch not supplied
- 2 Components not supplied
- 3 Components supplied
- 4 Only for 0071 size

- R1 Compressor oil sump heater
- RD1 Warning light (alarm)
- SA1 Electric heater control output (K6)
- SA2 Boiler control output (K32)
- SA3 Deactivation input for power consumption (E6)
- SA4 Low electricity rate input (E5)
- SA5 Free input
- SA6 Hot call input
- YV1 Defrost valve (Y22)
- YV2 Steam injection valve
- YV3 3 ways plant valve (Q3)
- Z1 Compressor

- F3 Flow switch (E24)
- F4 High pressure switch
- F5 Compressor protection
- FU1-2 Auxiliary circuit protection fuse
- GN1 Green compressor ON light
- KAT1 Phase sequence control relay
- KAT2 Alarm relay (K10)
- KAT3 Electric heater control relay (K6)
- KAT4 Boiler control relay (K32)
- KAT5 High pressure switch relay
- KAT6 Steam injection valve bypass relay
- KM1 3 ways valve relay
- KM2 Compressor contactor (K1)
- QF1 Chiller assembly thermal overload switch
- QM1 Compressor thermal overload switch
- QS1 Door lock disconnect switch

- A1 Electronic controller
- A2 Expansion module
- A3 Room unit
- A5 Compressor controller
- BP1 Pressure sensor
- BT1 DHW temperature probe (B3)
- BT2 Outside air temperature sensor (B9)
- BT3 Evaporator air inlet temperature probe (B91)
- BT4 Evaporator temperature probe (B84)
- BT5 Water return temperature probe (B71)
- BT6 Hot gas temperature probe (B61)
- C2-3-4 Fan start capacitors
- E1 System water pump (Q9)
- EV1-2-3 Fans (K19)
- F1 High pressure safety switch (E10)
- F2 Low pressure safety switch (E8)

AW 0041-0071ts HT THREE-PHASE WITH PEAK LIMITER



AW HT			0031	0041	0041	0061	0071
Heating capacity	(1)	kW	10,4	14,9	14,1	19,7	26,6
Power input	(1)	kW	2,5	3,5	3,3	4,7	6,1
C.O.P.	(1)		4,16	4,26	4,27	4,19	4,36
Heating capacity	(2)	kW	10,4	15,1	14,3	19,7	27,1
Power input	(2)	kW	3,0	4,2	4,0	5,6	7,4
C.O.P.	(2)		3,47	3,60	3,58	3,52	3,66
Rated water flow	(1)	m ³ /h	1,79	2,56	2,43	3,39	4,58
Useful pressure head	(1)	kPa	54	60	60	49	70
No. of fans		no.	2	2	2	2	3
Air flow-rate		m ³ /s	1,9	2	2	1,8	2,9
Type pf compressor			SCROLL				
Number of compressors		no.	1	1	1	1	1
Number of circuits		no.	1	1	1	1	1
Refrigerant R407c		Kg	2,5	3,0	3,0	4,0	5,9
Oil Mobil EAL ARCTIC 22cc		Kg	1,45	1,89	1,89	1,89	4
Type of pump			circulating				
Number of pumps		no.	1	1	1	1	1
Operating weight		kg	140	160	170	180	320
Water connections		inches	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Sound power EN ISO 3744		dB(A)	70	70	71	74	
Sound pressure level	(3)	dB(A)	55	55	55	56	59
Power supply		V/ph/Hz	230~50			400-3N~50	

Data measured in the following conditions:

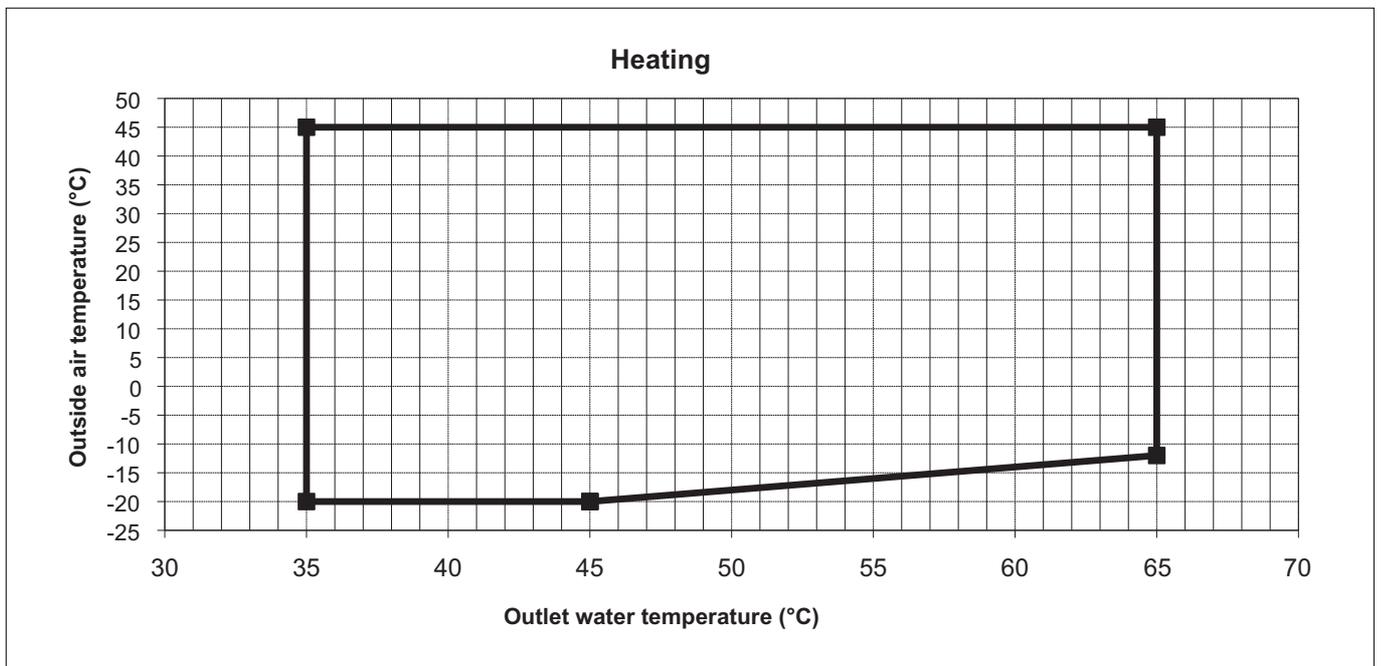
(1) Heat pump operation: Outside air temperature 7°C DB- 6°C WB, water inlet 30°C and outlet 35°C

(2) Heat pump operation: Outside air temperature 7°C DB- 6°C WB, water inlet 40°C and outlet 45°C

(3) Average sound pressure level above one reflecting surgafe (Q=2). The distance refers to the outside dimensions of the unit

The power input does not include the water circulating pump.

OPERATING LIMITS



Water temperature head min/max= 3/8 °C

Water circuit pressure min/max = 1/6 bar

Maximum glycol percentage = 40%

PREPARING FOR FIRST START UP

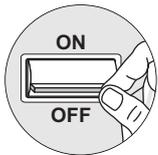
The unit must be started up for the first time by the **Technical Service**.

Before starting up the units, make sure that:

- All safety conditions have been respected;
- The unit is adequately fixed to the surface it rests on;
- Clearances have been respected;
- Water connections have been carried out as indicated in the instruction manual;
- The water circuit is filled and vented. If emptying after heating operation beware of the water temperature;
- The water valves are open;
- Electrical connections have been carried out correctly;
- Voltage is within a tolerance of 10% of the rated voltage for the unit;
- The unit is correctly earthed;
- All electrical connections are tight and all water connections have been carried out correctly.

Before starting up, power up the unit for at least two hours by switching QF1 and QS1 to ON (see the wiring diagram and the control panel in standby) to allow the oil in the compressor sump to heat up.

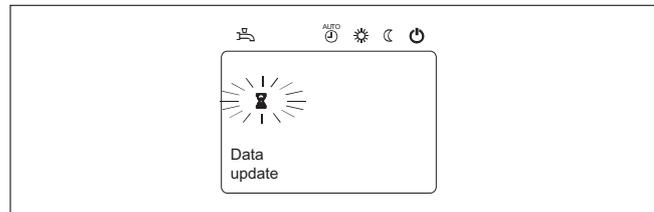
STARTING UP FOR THE FIRST TIME (AFTER TWO HOURS)



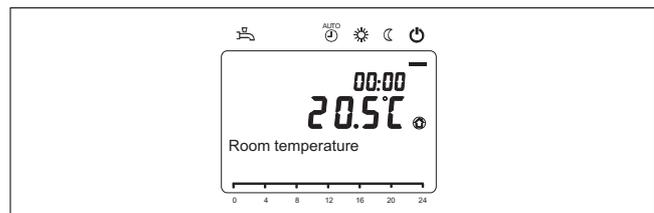
Before starting the unit:

- Make sure the switch QF1 is in the OFF position.
- Make sure the contact of the on/off device SA1 (see the wiring diagram) is open (if featured).
- Make sure the remote keypad "A3" (see wiring diagram) shows OFF (if featured).
- Close the door of the electrical panel.

- Position the main unit switch QS1 in the ON position.
- Move the switch QF1 (outside the unit) to "ON".
- Once the heat pump has been powered up, the room unit display, described in chap. 1, shows the message "Data update".
- The room unit is ready for operation after a few seconds.



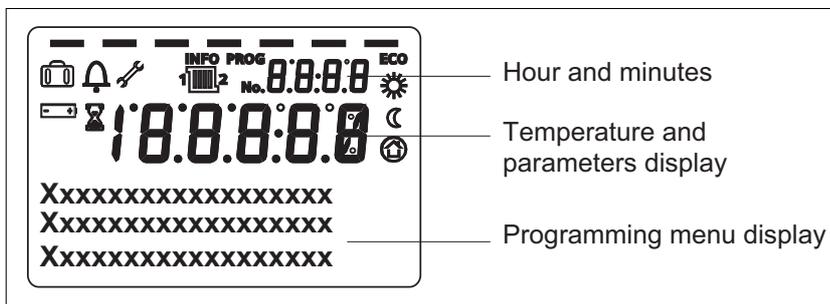
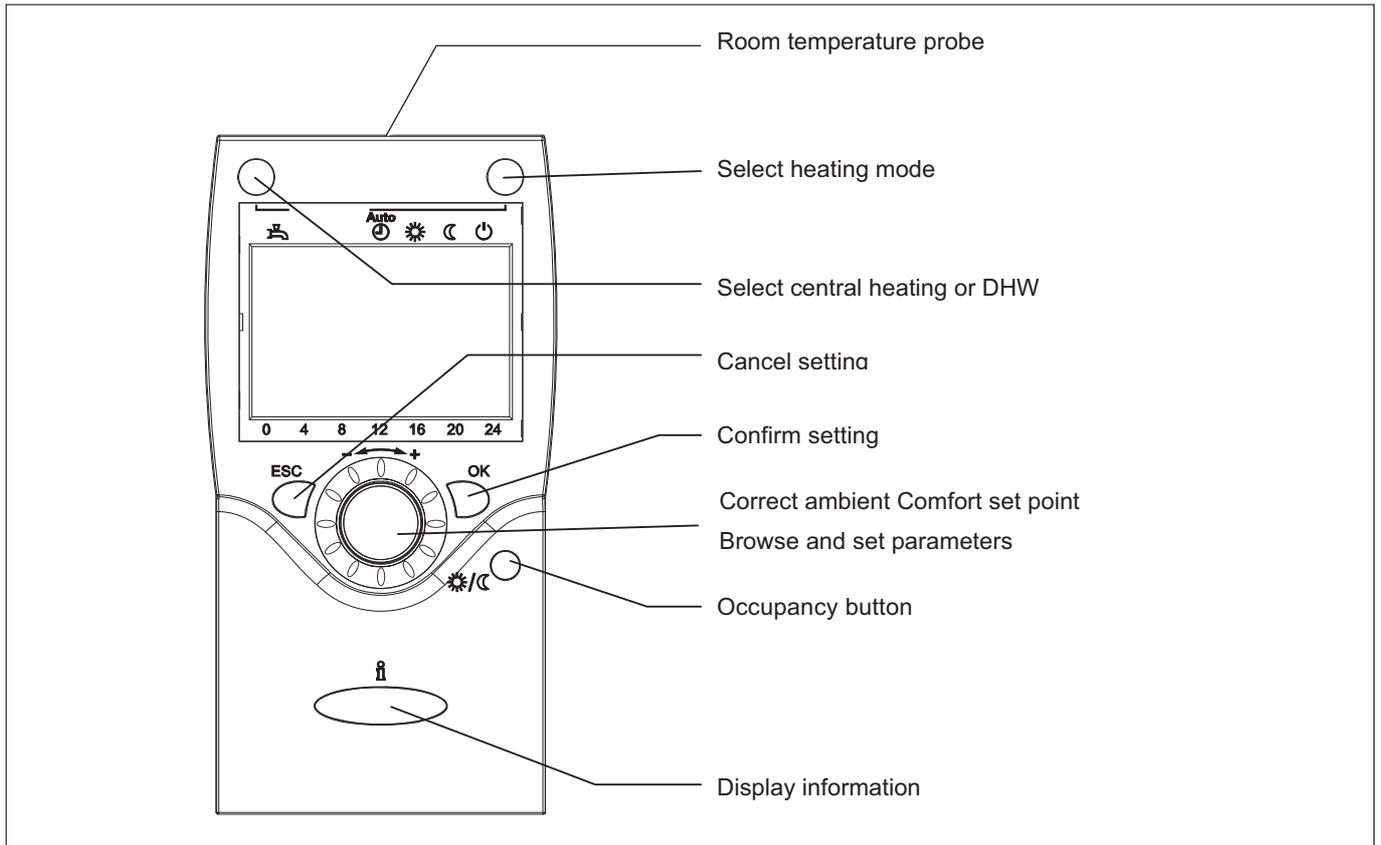
- The room unit is ready for operation after a few seconds.



When commissioning the heat pump, the type of system needs to be configured by the user.

See the chapter "System configuration" and check the diagrams of the applications that the controller can manage.

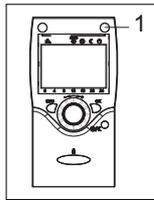
BUTTONS



Display	
	Heating to Comfort set point
	Heating to reduced set point
	Heating to frost protection set point
	Process in progress - please wait
	Replace battery
	Vacation function active
	Reference to heating circuit
	Maintenance / Special functions
	Error messages
INFO	Info level active
PROG	Programming level activated
ECO	Heating temporarily OFF - ECO function active

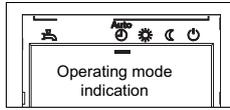
Select heating operating modes

Repeatedly pressing button 1 selects the different heating operating modes:



Automatic heating mode 

Automatic operation controls the room temperature based on the set time program.

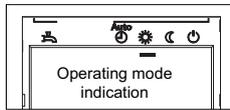


Characteristics of automatic operation:

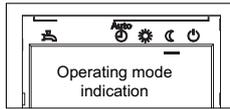
- Characteristics of automatic operation:
- Heating mode based on the time program.
- Temperature set point according to the "Comfort set point" or "Reduced set point" program
- Protection functions active.
- Summer / winter switching (ECO functions) and 24 hour heating limit not active.

Continuous operation  or 

Continuous operation keeps the room temperature constant at the selected level.



	Heating to daytime room temperature setting
	Heating to reduced room temperature setting



Characteristics of continuous operation:

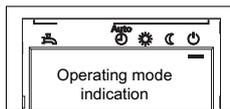
- Heating without considering the time program.
- Protection functions active.
- Summer / winter switching (ECO functions) and 24 hour heating limit not active, for continuous operation with Comfort set point.

Protection mode 

In Protection mode, the heating system is not active.

However the frost protection function is guaranteed (frost protection temperature), as long as the power supply is connected.

On the display the operating mode is indicated by a line under the corresponding symbol.

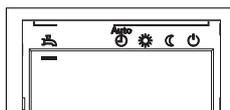
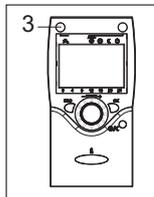


Select domestic hot water mode (DHW)



Operating mode only available only if the three way selector valve is installed as an accessory outside of the unit.

Pressing button 3  starts and stops domestic hot water production.



DHW mode

- Active (indicator shown under the  symbol) Domestic water is heated based on the selected operating program.
- Not active (no indicator shown under the  symbol). No domestic water is heated; the frost protection function is active.

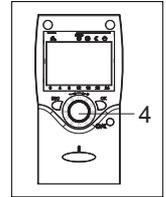
Push DHW

This is activated by pressing the DHW mode button  for at least three seconds.

This manually activates the production of domestic hot water only. Activating this function starts the heat pump in DHW mode until reaching the DHW set point, and cannot be deactivated.

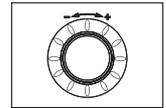
Room temperature control

Knob 4 is used to control the desired room temperature.



Temperature correction in Heating mode:

For the **Comfort set point**  select the temperature value by turning the knob and confirming by pressing OK.



For the **Reduced set point** 

- Press OK.
- Select the "Heating circuit" page
- Set the "Reduced set point" parameter 712.

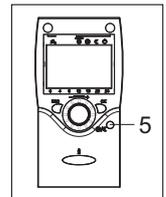
After having made the settings, wait at least 2 hours to allow the desired room temperature to be reached.

Occupancy button (extended absence) /

If the rooms are not used for long periods, the room temperature can be reduced by pressing the occupancy button 5, thus saving energy.

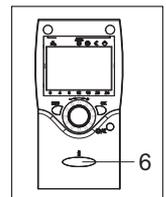
When the rooms are used again, pressing the pressing the occupancy button 5 returns the room temperature to the set value.

- The occupancy button is only enabled in automatic operation.
- The setting remains active until the heating program is next changed.



Information button 

The information button 6 displays different types of information, as described in this manual, such as temperature, heat pump operating status and errors.



In exceptional situations, the display shows the following symbols:

 **Error warning**

This symbol indicates an error in the system.

Press the information button and read the additional information shown on the display. Follow the instructions described in the paragraph "Maintenance and Service".

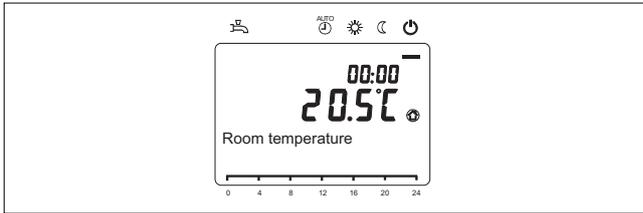
 **Maintenance warning**

This symbol indicates the need for maintenance or a special operating mode.

Press the information button and read the additional information shown on the display.

Follow the instructions described in the paragraph "Maintenance and Service".

The settings that are not available directly using the buttons are managed in programming mode. The individual settings are arranged into operating pages and rows and are divided into levels, “Enduser and Engineer”, so as to allow access only to specific groups of parameters. The “OEM” level is protected against accidental modifications by a password.



The main screen shown in the figure is the starting point for all the settings.

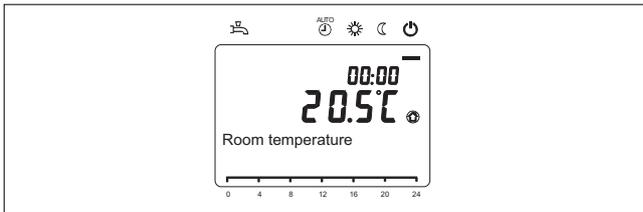
ENDUSER level.

The procedure described below is used to access the operating pages in the “Enduser Level” and set the corresponding group of parameters.

Below is an example of the procedure used to set the language. The same procedure is valid for displaying and setting all the Enduser level parameters.

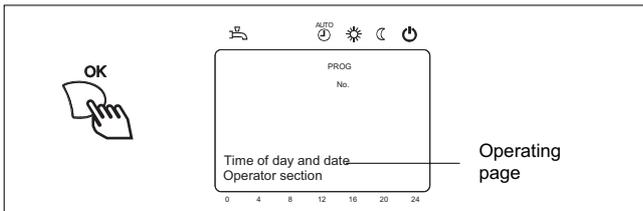
1. Main display

If the main display is not shown, press ESC.



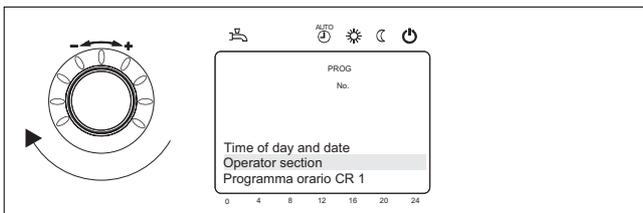
2. Press OK

The operating pages are shown at the bottom of the display.



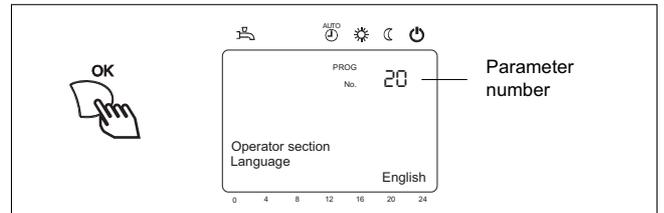
3. Turn the knob and select the desired operating page.

For example Operator section.



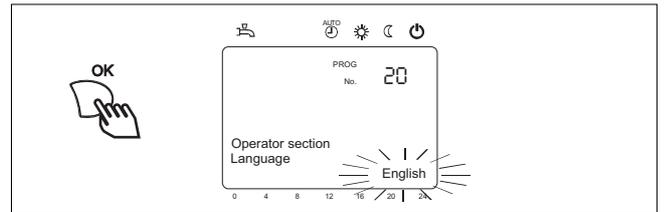
4. Press OK to confirm.

In this example the bottom of the display shows the first row “language” and at the top right the parameter number, “20”.



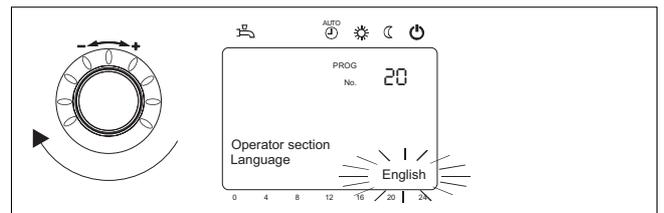
5. Press OK to set the parameter.

The display shows the value flashing, in the example “Italian”.



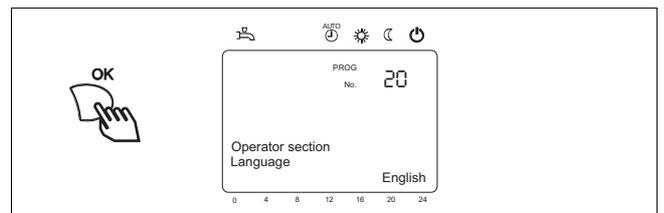
6. Turn the knob and select the desired value of the parameter.

For example, “English”.



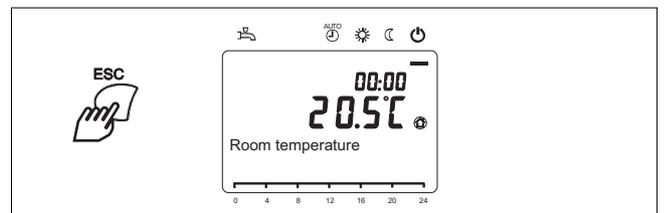
7. Press OK to confirm.

The settings have been saved. The display stops flashing.

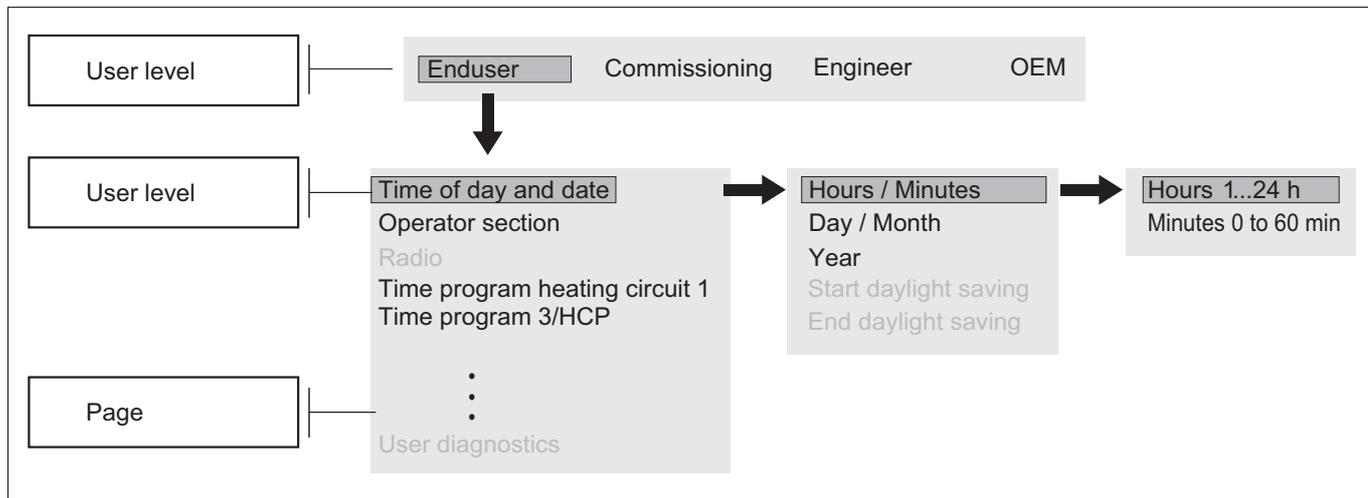


8. Either continue setting other parameters or press ESC

once to access other operating pages twice to return to the main display.



Example of subdivision into Enduser levels, operating pages and rows:



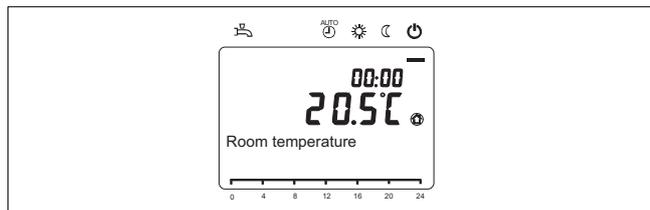
The rows shown in light grey cannot be selected as they are not available in the Enduser level. They can be selected in higher levels.

ENGINEER LEVEL

The procedure shown below is used by authorised personnel to access the operating pages and set the corresponding group of parameters.

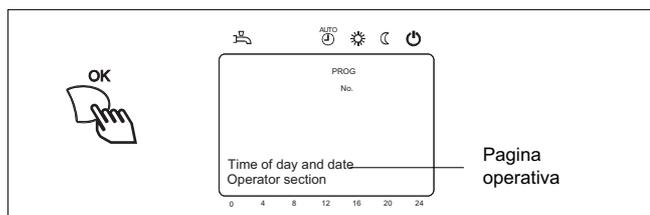
1. Main display.

If the main display is not shown, press ESC.



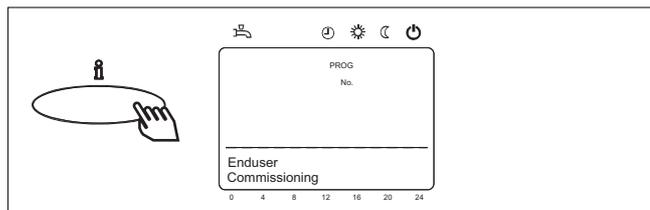
2. Press OK .

The operating pages are shown at the bottom of the display.

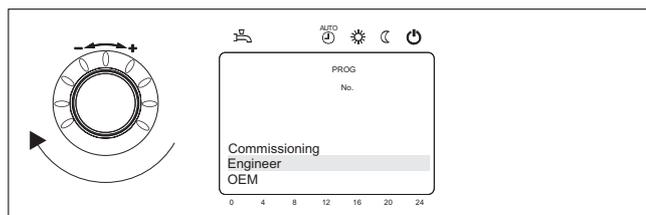


3. Press the info button for 3 seconds.

The operating pages corresponding to the access level are shown at the bottom of the display.



4. Turn the knob and select the operating page corresponding to the ENGINEER level



5. Press OK to display the ENGINEER level operating pages.

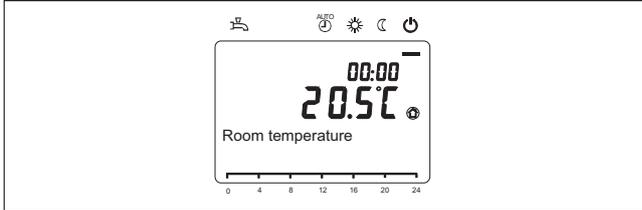
Proceed as described from point 3 to point 8 in the Enduser paragraph, to access the desired operating pages and corresponding parameters.

OEM LEVEL (WITH PASSWORD)

The procedure shown below is used by authorised personnel to access the operating pages and set the corresponding group of parameters.

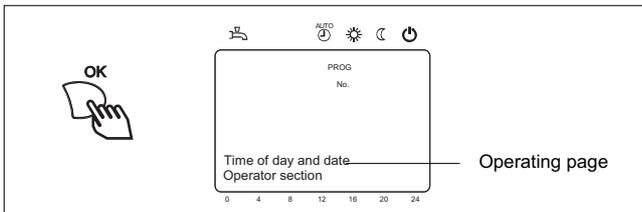
1. Main display.

If the main display is not shown, press ESC.



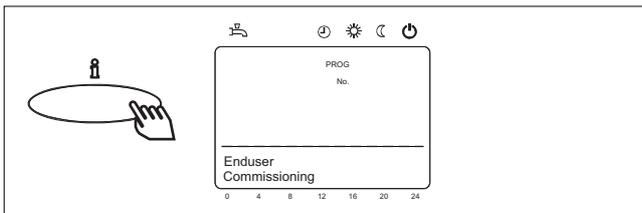
2. Press OK .

The operating pages are shown at the bottom of the display.

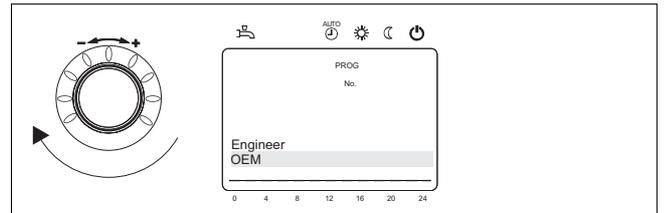


3. Press the info button for 3 seconds.

The operating pages corresponding to the access level are shown at the bottom of the display.



4. Turn the knob and select the operating page corresponding to the OEM level, "Authorised Technician".



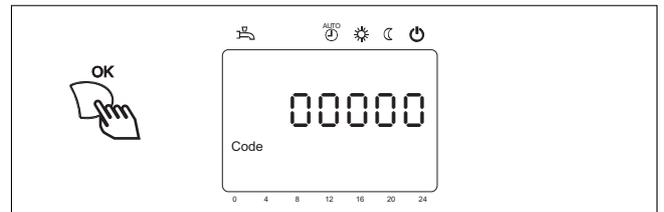
5. Press OK to confirm.

The password contains numbers.

Turn the knob to set the value of the first number and confirm by pressing OK.

Proceed in the same way for the following numbers.

At the end the operating pages corresponding to the "OEM" level will be displayed.



CONTROL AND OPERATING CHARACTERISTICS

A

TEMPERATURE CONTROL

The water outlet temperature to the heating circuit is calculated by the controller based on the following factors:

- slope of the heating curve (see paragraph)
- comfort set point in relation to the room temperature (see the corresponding paragraph)
- reduced set point in relation to the room temperature (see the corresponding paragraph)
- influence of the room temperature (see the corresponding paragraph)
- minimum and maximum limit outlet temperature set point (see the corresponding paragraph)

To display the calculated outlet temperature set point press the info button , and turn the knob until displaying "Flow temp setpoint 1".

COMPRESSOR START UP DELAY

To prevent the compressor from starting up too frequently the minimum time since last shut-down is 5 minutes.

CIRCULATING PUMP

The electronic board has an output for managing the circulating pump. The circulating pump is stopped, after a few minutes, when reaching the room set point plus 0.5°C.

After the first few seconds of pump operation when the water flow is at full speed, the water flow alarm functions are activated (flow switch).

In protection mode  the circulating pump is off.

SETTING THE TIME AND DATE

The controller is fitted with a clock that manages the hour, minutes, month, day of the week and year. To ensure correct operation of the controller, the time and date must be set correctly.

Parameters contained on the TIME OF DAY AND DATE operating page		(Enduser level)
Parameter number	Screen displayed	Description
1		Hour and minutes setting
2		Month and day setting
3		Year setting

AUTOMATIC DAYLIGHT SAVING CHANGEOVER

Parameters contained on the TIME OF DAY AND DATE operating page		(Engineer level)
Parameter number	Screen displayed	Description
5		<p>Setting the start of the summer period ensures automatic changeover of the time.</p> <p>On the first Saturday following to the date set, the time changes from 02:00 (winter) to 03:00 (summer).</p> <p>Default setting: Day 25 Month 03</p>
6		<p>Setting the end of the summer period ensures automatic changeover of the time.</p> <p>On the first Saturday following to the date set, the time changes from 03:00 (summer) to 02:00 (winter).</p> <p>Default setting Day 25 Month 10</p>

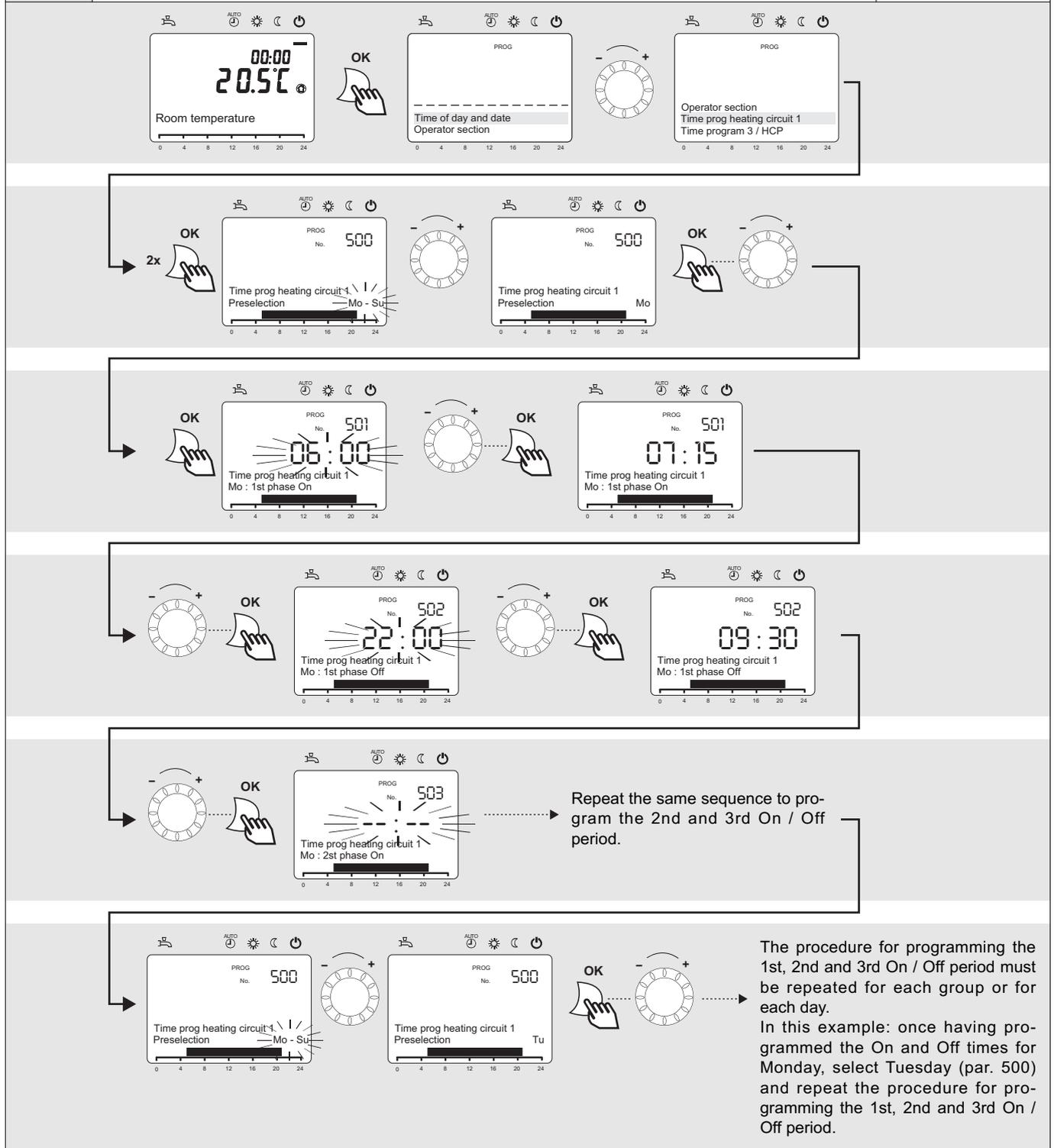
LANGUAGE SETTING

Parameters contained on the OPERATOR SECTION operating page		(Enduser level)
Parameter number	Screen displayed	Description
20		<p>The following languages can be selected:</p> <ul style="list-style-type: none"> German English French Italian <p>Default setting: Italian</p>

TIME BAND PROGRAMMING

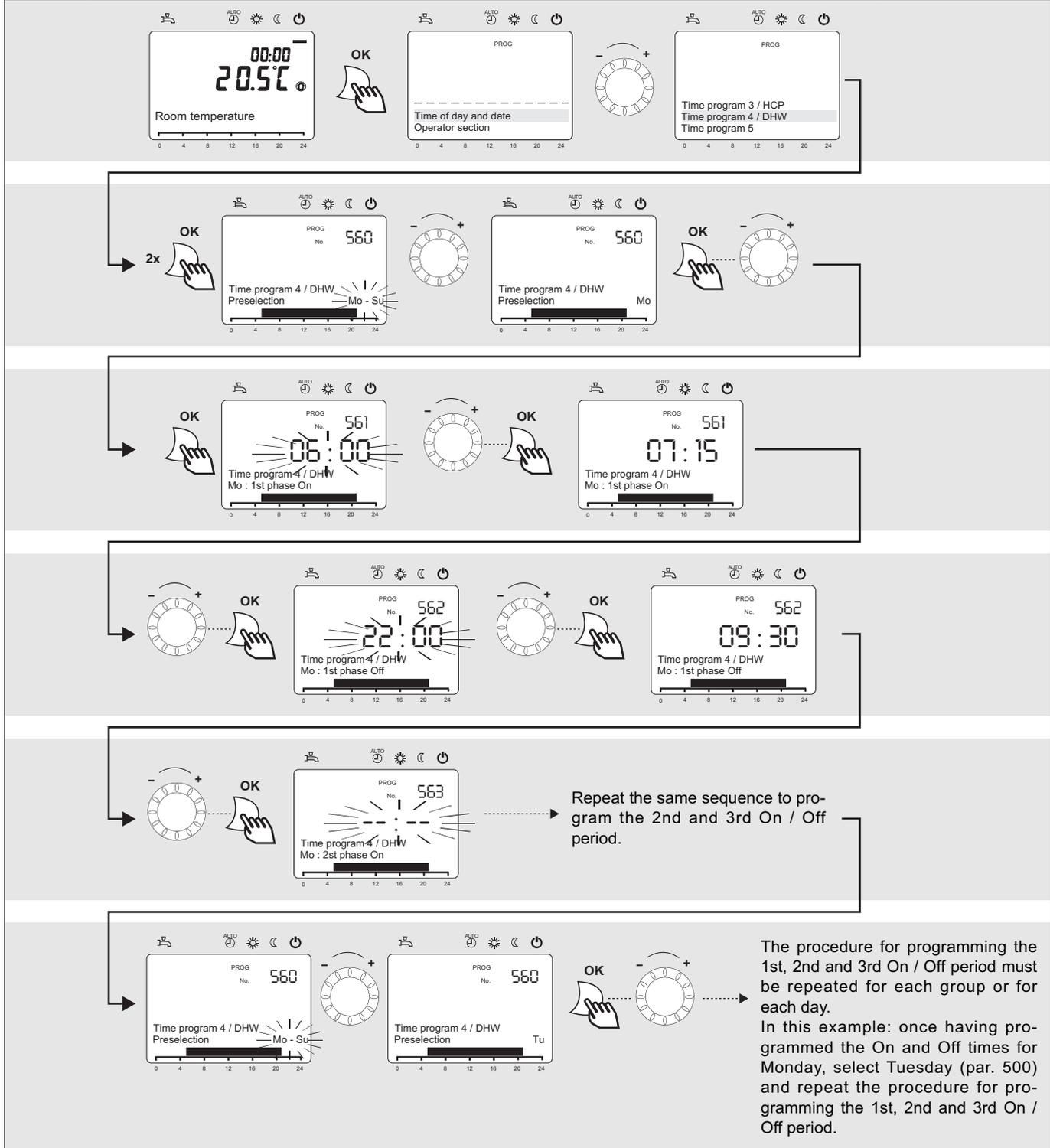
Time prog heating circuit 1

Parameters contained on the TIME PROG HEATING CIRCUIT 1 operating page		(Enduser level)
Parameter number	Description	Default setting
500	The controller manages the heating circuit based on the time and the day of the week. The on and off times can be selected in groups, that is, common for a group of days, or individually, different for each day. The presetting of the days into groups, for example Mon to Fri and Sat-Sun simplifies the time band settings. Groups: Mon-Sun; Mon-Fri; Sat-Sun; Individual: Mon, Tue, Wed, Thu, Fri, Sat, Sun	Mon – Sun
501	1st On Time	6:00 (h:min)
502	1st Off Time	22:00 (h:min)
503	2nd On Time	--:-- (h:min)
504	2nd Off Time	--:-- (h:min)
505	3rd On Time	--:-- (h:min)
506	3rd Off Time	--:-- (h:min)
516	The time programs can be reset to the original values (default setting).	Yes or no



Time program 4/DHW (domestic hot water production)

Parameters contained on the TIME PROGRAM 4/DHW operating page		(Enduser level)
Parameter number	Description	Default setting
560	The controller manages domestic hot water production based on the time and the day of the week. The on and off times can be selected in groups, that is, common for a group of days, or individually, different for each day. The presetting of the days into groups, for example Mon to Fri and Sat-Sun simplifies the time band settings. Groups: Mon-Sun; Mon-Fri; Sat-Sun; Individual: Mon, Tue, Wed, Thu, Fri, Sat, Sun	Mon – Sun
561	1st On Time	6:00 (h:min)
562	1st Off Time	22:00 (h:min)
563	2nd On Time	--:-- (h:min)
564	2nd Off Time	--:-- (h:min)
565	3rd On Time	--:-- (h:min)
566	3rd Off Time	--:-- (h:min)
576	The time programs can be reset to the original values (default setting).	Yes or no



Holidays program

The holidays program can only be used in "Automatic" mode

Parameters contained on the HOLIDAYS HEATING CIRCUIT 1 operating page		(Enduser level)
Parameter number	Description	Default setting
642	Start Vacation period	--:-- (day/month)
643	End Vacation period	--:-- (day/month)
648	Operating modes during the vacation period. The operating modes may be: - Frost protection - Reduced set point (Temperature selected by parameter 712).	Frost protection

The diagram illustrates the navigation sequence for setting the holiday program:

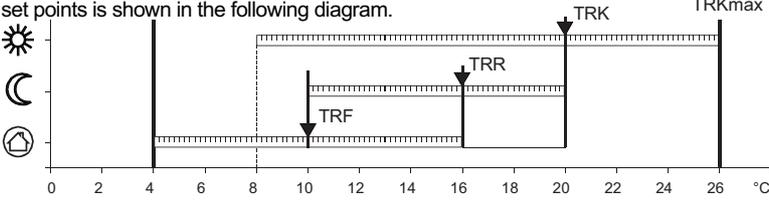
- Room Temperature:** 20.5°C. Press OK to enter the menu.
- PROG No. 642:** Time of day and date Operator section. Press OK to enter the start time.
- PROG No. 642:** Start time: 01:08.
- PROG No. 642:** Press OK to enter the end time.
- PROG No. 642:** End time: 05:08.
- PROG No. 643:** Start time: 01:08. Press OK to enter the end time.
- PROG No. 643:** End time: 26:08.
- PROG No. 648:** Operating level. Press OK to select 'Frost protection' or 'Reduced'.

HEATING CIRCUIT

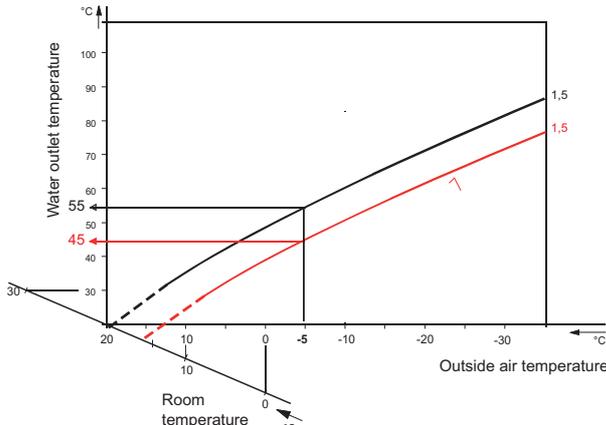
Direct heating circuit

The heat pump is connected directly to the heating circuit (radiant panels, radiators, fan coils). The temperature is controlled by starting and stopping the heat pump.

ROOM TEMPERATURE SET POINT CONTROL

Parameters contained on the HEATING CIRCUIT 1 operating page		(Enduser level)
Parameter number	Description	Default setting
710 712 714 716	<p>The room temperature can be controlled based on different set points, which are active according to the operating conditions selected by button 1, see the paragraph "operation and functions of the room unit using the buttons".</p> <p>This allows different levels of temperature in the room.</p> <p>The range of set points is shown in the following diagram.</p>  <p>TRKmax Maximum comfort set point TRK Comfort set point TRR Reduced set point TRF Frost protection set point</p> <p>Set the following parameters to select the desired room temperature set point: Comfort set point in heating Reduced set point in heating (economy) Room frost protection set point Maximum comfort set point ("OEM level" default setting)</p>	710 = 20°C 712 = 18°C 714 = 8°C 716 = 26°C (Engineer level)

INFLUENCE OF THE ROOM TEMPERATURE

Parameters contained on the HEATING CIRCUIT 1 operating page		(Engineer level)
Parameter number	Description	Default setting
750	<p>The room unit is fitted with a sensor for measuring the room temperature. Parameter 750 is used to select the influence of the room temperature on the calculation of the heating curve.</p> <p>a) 750= - - - % the room temperature is not used for the calculation of the heating curve. The outlet temperature is calculated by the heating curve based solely on the outside temperature.</p> <p>b) 750= 100% the outlet temperature is calculated based on the room temperature set point. The outside air temperature has no influence. A slight increase in the room temperature brings an immediate decrease in the outlet temperature.</p> <p>c) 750= 1...99% The value of the room temperature is used in the calculation of the outlet temperature.</p>  <p>The heating curve selected by parameter 720 will be shifted along an axis in parallel and consequently the outlet temperature will be different The better the reference room temperature (suitable choice of the room and positioning of the room unit), the more readily the room temperature will be satisfied. Example: - If a value of around 60 % is selected for parameter 750, this indicates a reference room temperature and good positioning of the room unit. - If a value of around 20 % is selected for parameter 750, this indicates a less-than-perfect reference room temperature and poor positioning of the room unit. For settings b) and c) there must not be thermostatic valves in the reference room (the same where the room unit is located). If these are present, they must be opened completely.</p>	750= - - - %

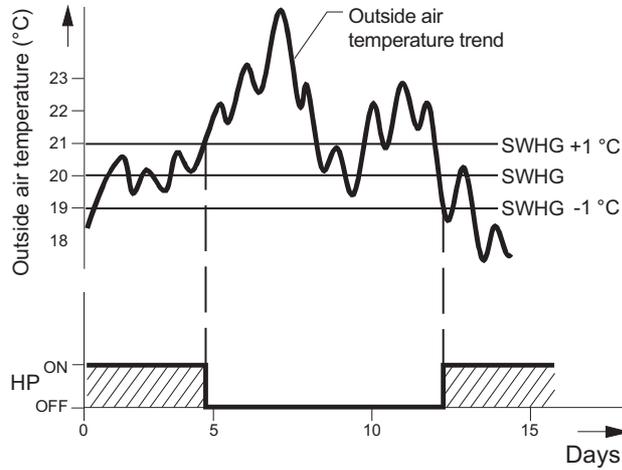
WATER OUTLET SET POINT COMPENSATION BASED ON OUTSIDE AIR TEMPERATURE, HEATING CURVE (SLOPE).

Parameters contained on the HEATING CIRCUIT 1 operating page		(Enduser level)
Parameter number	Description	Default setting
720	<p>The heating curve compares the outside temperature and the water outlet temperature for heating. The slope can be modified to allow correct operation of the heat pump based on the type of heating circuit (radiant panels, radiators etc.).</p> <p>Example: Selecting heating curve 1.5, with an outside air temperature of -5°C, gives a water outlet temperature of +55°C. To display the calculated outlet temperature set point, press the info button, then turn the knob until displaying "outlet set point 1". Select the desired slope of the heating curve using parameter 720. A heating curve that is too high means an excessive outlet temperature, a curve that is too low may mean the desired room temperature is not reached.</p>	720 = 1,5

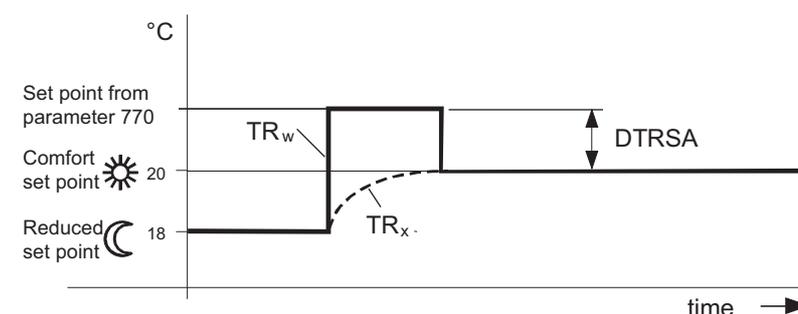
OUTLET TEMPERATURE SET POINT LIMIT

Parameters contained on the HEATING CIRCUIT 1 operating page		(Engineer level)
Parameter number	Description	Default setting
740 741	<p>Parameters 740 and 741 define the temperature limits (minimum and maximum) for the circuit that will never be exceeded, as shown in the following graph:</p> <p>TVw Outlet temperature set point 740 = Tvmin Minimum outlet temperature set point 741 = TVmax Maximum outlet temperature set point</p>	740= 10°C 741= 60°C

SUMMER/WINTER CHANGEOVER LIMIT

Parameters contained on the HEATING CIRCUIT 1 operating page		(Enduser level)
Parameter number	Description	Default setting
730	<p>The limit for summer / winter changeover is used to activate and deactivate the heating circuit throughout the year, based on the outside temperature.</p> <p>In "Automatic" mode, the heating function starts and stops automatically, meaning no manual intervention is required by the user.</p>  <p>SWHG Summer / winter changeover limit parameter 730 SWHG + 1°C SWHG + 1°C Summer / winter changeover limit + hysteresis SWHG - 1°C SWHG - 1°C Summer / winter changeover limit + hysteresis HP Heat pump status</p> <p>- The function is not active in Comfort mode (corresponding to the ☀ symbol) - When reaching an outside temperature of 25°C (730=25°C default setting) the heating function stops and the "ECO" symbol is shown on the display.</p>	730 = 25°C

ACCELERATED HEATING

Parameters contained on the HEATING CIRCUIT 1 operating page		(Engineer level)
Parameter number	Description	Default setting
770	<p>Accelerated heating is used to switch over more rapidly from the reduced set point to the Comfort set point, reaching a new set point (Comfort set point + the value parameter of 770).</p> <p>In this way, the heating operating time is reduced.</p> <p>During accelerated heating, the room temperature set point is increased to the value set for parameter 770.</p> <p>The higher this value, the lower the heating time; the lower the value, the longer the heating time.</p>  <p>TRw Room temperature set point TRx Room temperature DTRSA Increase in the room temperature set point</p> <p>Accelerated heating is only active when switching from the reduced set point to the Comfort set point. To activate the function, set a value from 0 to 20°C.</p>	770 = - - -

ACCELERATED SHUT-DOWN

Parameters contained on the HEATING CIRCUIT 1 operating page		(Engineer level)
Parameter number	Description	Default setting
780	<p>Accelerated shut-down is used to switch over more rapidly from the Comfort set point to the reduced set point, keeping the heat pump off.</p> <p>The function keeps the heating system off until the room temperature reaches the reduced set point or the frost protection set point.</p> <p>When reaching one of these set points, the pump and/or the mixer valve in the heating circuit are reactivated.</p> <p>During the accelerated shut-down phase, the pump in the heating circuit is not operating while, in the case of circuits with radiant panels, the mixer valve is completely closed.</p>	780 = Down to reduced set point

SCREED FUNCTION

Parameters contained on the HEATING CIRCUIT 1 operating page		(Engineer level)
Parameter number	Description	Default setting
850	<p>The screed function must be activated by setting the parameter:</p> <p>850 = Functional/ready-to-lay heating.</p> <p>X Starting day Fh Functional heating Bh Ready-to-lay heating Bh Ready-to-lay heating Tw Water outlet temperature t Time in days</p>	850 = off

DOMESTIC HOT WATER

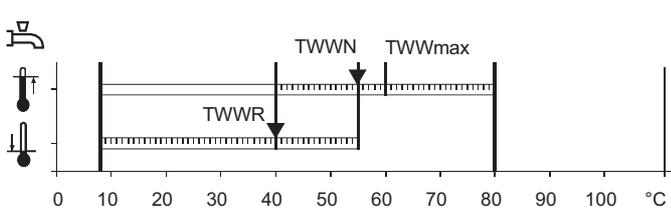
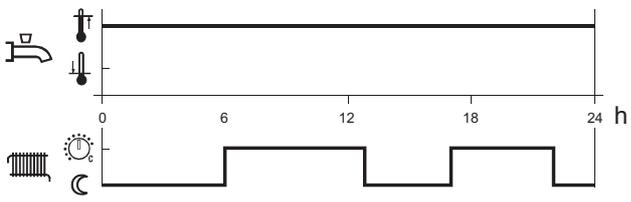
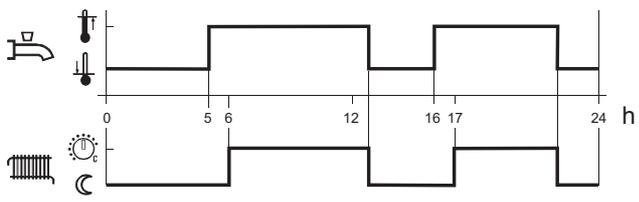
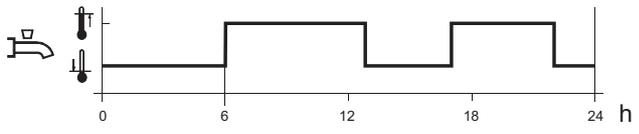
The controller manages domestic hot water production using a 3-way valve installed outside of the unit.

The production of domestic hot water is guaranteed in both summer and winter, according to the operating limits shown in this manual.

An electric heater should be installed inside the DHW storage cylinder to ensure the temperature does not fall below 15/20°C in the event of extended periods of heat pump inactivity (standby).

DHW= Domestic hot water

DHW SET POINT CONTROL AND TIME PROGRAM

Parameters contained on the DOMESTIC HOT WATER operating page		(Engineer level)
Parameter number	Description	Default setting
1610 1612	<p>Select DHW set point</p> <p>The temperature of the domestic hot water inside the storage cylinder can be controlled between a Standard set point and a Reduced set point. This allows a sufficient DHW storage temperature even during production of hot water for the heating system.</p> <p>Set point examples</p>  <p>1610 Nominal DHW set point 1612 Reduced DHW set point TWWmax Maximum standard DHW set point</p>	<p>1610 = 55 1612 = 50 1620 = 24h/day</p>
1620	<p>Select DHW storage fill mode</p> <p>1) Parameter 1620 = 24 hours/day The DHW storage cylinder will be filled whenever the water temperature falls below the standard DHW set point. The filling of the storage cylinder is not associated with a time program.</p> <p>Example</p>  <p>2) Parameter 1620 = Time program HCs The DHW storage cylinder will be filled based on the Comfort and Reduced set points selected and at the same times set for the heating system (time program CR1).</p> <p>Example</p>  <p>3) Parameter 1620 = Time program 4/DHW The DHW storage cylinder will be filled based on the Comfort and Reduced set points selected and at the set times (time program 4/DHW). The production of domestic hot water is independent from the heating system, and in any case always has priority.</p> <p>Example</p> 	

ADDITIONAL ELECTRIC HEATER FOR DHW STORAGE CYLINDER

Parameters contained on the operating page		(Engineer level)
Parameter number	Description	Default setting
5896 5060 5061	<p>The heat pump can manage an additional electric heater used for the DHW storage cylinder, using contact SA1 (see the instruction sheet enclosed with the electric heater kit). The additional electric heater is not enabled in the default settings.</p> <p>- Enable operation of DHW electric heater</p> <p>5896 = Electric heater DHW K6 (select the CONFIGURATION operating page)</p> <p>- Select the operating mode for the DHW electric heater (select the DHW STORAGE TANK operating page)</p> <p>5060 = Substitute The electric heater is activated only in order to reach the temperatures that the heat pump cannot reach on its own. The electric heater is only activated if the domestic hot water set point is >58°C.</p> <p>5060 = Always The domestic hot water is only heated using the electric heater until the set point is reached (parameters 1610 or 1612)</p> <p>- Select DHW electric heater activation mode</p> <p>5061 = 24 hours a day</p>	5896 = none 5060 = substitute 5061 = DHW release
	<p>The electric heater can operate whenever the water temperature falls below the standard DHW set point. The filling of the storage cylinder is not associated with a time program.</p> <p>5061 = DHW release</p>	
	<p>The electric heater is enabled when the production of domestic hot water is enabled.</p> <p>5061 = time program 4/DHW</p>	
	<p>The electric heater works according to time program 4/DHW.</p>	

ANTI-LEGIONELLA FUNCTION

Parameters contained on the DOMESTIC HOT WATER operating page		(Engineer level)
Parameter number	Description	Default setting
1640	Anti-Legionella function The Anti-Legionella function ensures the elimination of the Legionella bacteria that reside in domestic water vessels; such bacteria typically die when the water temperature is above 70°C. The Anti-Legionella function must be activated by an authorised technician. This function is only available if an electric heater is fitted inside the DHW storage cylinder. 1640 = Off 1640 = Periodically. The Anti-Legionella cycle is activated after the time interval (in days) set by parameter 1641. 1640 = Fixed weekday. The Anti-Legionella cycle is activated every week on the same day, selected by parameter 1642. By setting this parameter, heating will be activated to reach the Anti-Legionella set point on the specified day.	1640 = off
1641	1 to 7 days. Time interval between one Anti-Legionella cycle and the next.	7
1642	Monday to Sunday. Anti-Legionella cycle day	Thursday
1644	hh:min. Anti-Legionella cycle time of day	02:00
1645	Anti-Legionella cycle temperature set point	70°C
1646	Minutes. Anti-Legionella cycle duration	60 min.
1647	DHW circulating pump	On

HEAT PUMP OPERATION WITH FIXED SET POINT

Parameters contained on the CONFIGURATION operating page		(OEM level)
Parameter number	Description	Default setting
5950	Digital input SA6 allows operation of the heat pump with a fixed outlet set point, defined by parameter 5952. Closing the contact disables the outside temperature probe and the room unit.	5950 = Minimum flow temperature set point
5952	This is used to select the water outlet temperature set point.	5952=50°C

FROST PROTECTION

Frost protection for system water temperature

The frost protection function is always active, even when the heat pump is off.

If the outlet temperature falls below 5 degrees, the compressor and the heating circuit pump are activated, irrespective of the operating mode.

When the outlet temperature rises back above of 7°C, the controller waits a further 5 minutes and then stops the production of heat and pumps.

Frost protection for room temperature

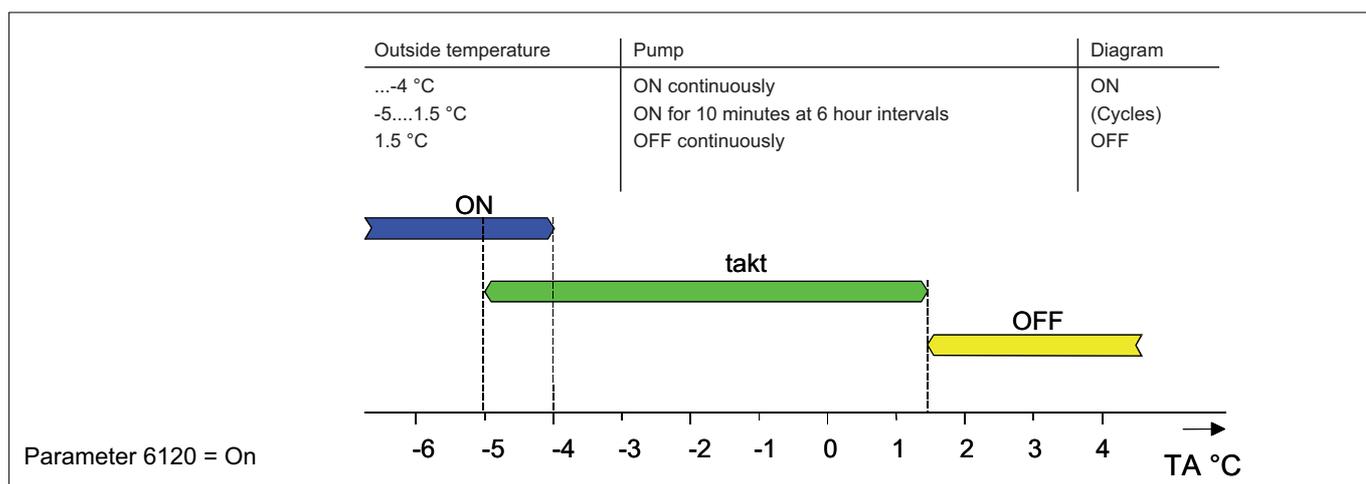
The frost protection function is always active, even when the heat pump is off.

If the inside room temperature falls below 8°C (value set for parameter 714), the heat pump is started to prevent freezing in the pipes inside the home.

Frost protection for outside temperature

The frost protection function is always active, even when the heat pump is off.

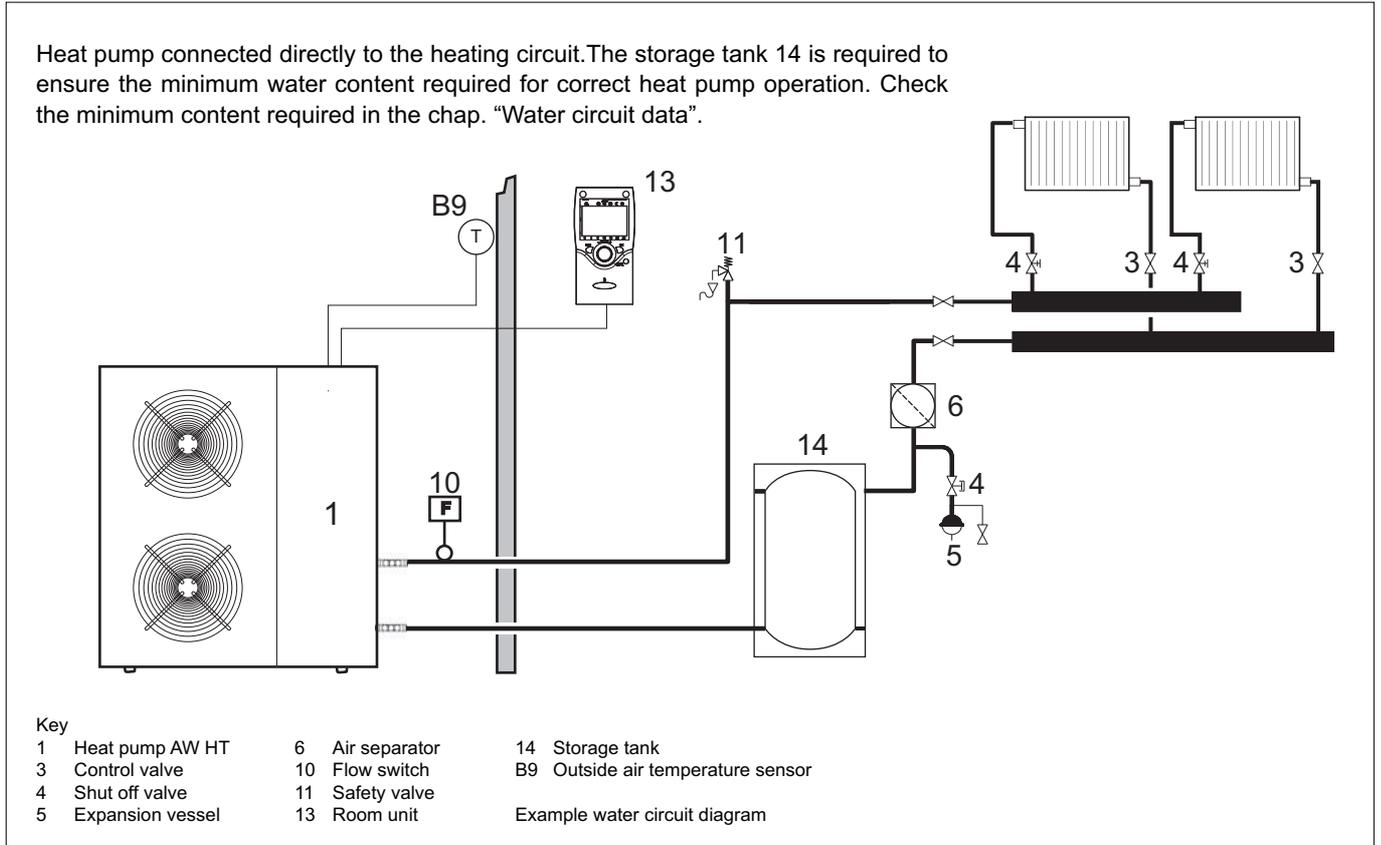
The pump is activated according to the outside temperature, as shown in the following graph:



The system must be configured by the operator.

SYSTEM DIAGRAM WITH DIRECT HEATING

No changes are required to the parameters, simply connect the probes and the utilities as shown in the diagram for correct operation.

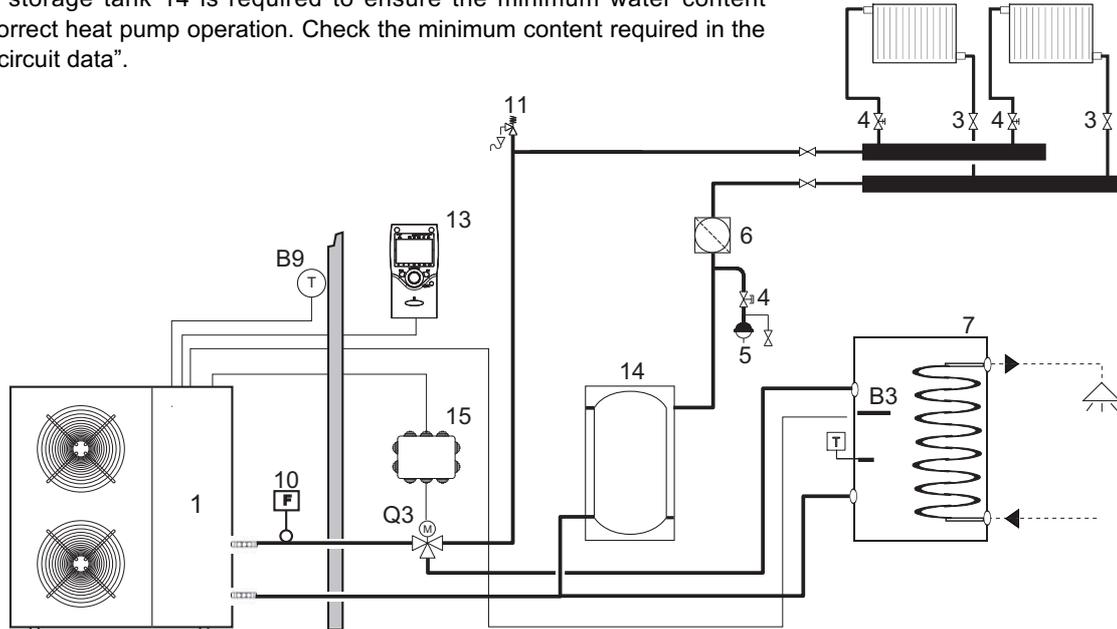


Parameter number	Description	Default setting
	Direct heating system	
	<u>Sensors and utilities to be connected:</u> B9 Outside air temperature sensor 13 Room unit	

SYSTEM DIAGRAM WITH DIRECT HEATING AND DOMESTIC HOT WATER PRODUCTION

No changes are required to the parameters, simply connect the probes and the utilities as shown in the diagram for correct operation.

Heat pump connected directly to the heating circuit with domestic hot water production Q3. The storage tank 14 is required to ensure the minimum water content required for correct heat pump operation. Check the minimum content required in the chap. "Water circuit data".



Key					
1	Heat pump AW HT	10	Flow switch	Q3	3-way valve for domestic hot water production
3	Control valve	11	Safety valve	B3	DHW storage temperature sensor
4	Shut off valve	13	Room unit	B9	Outside air temperature sensor
5	Expansion vessel	14	Storage tank		
6	Air separator	15	Electrical panel for DHW 3-way valve		

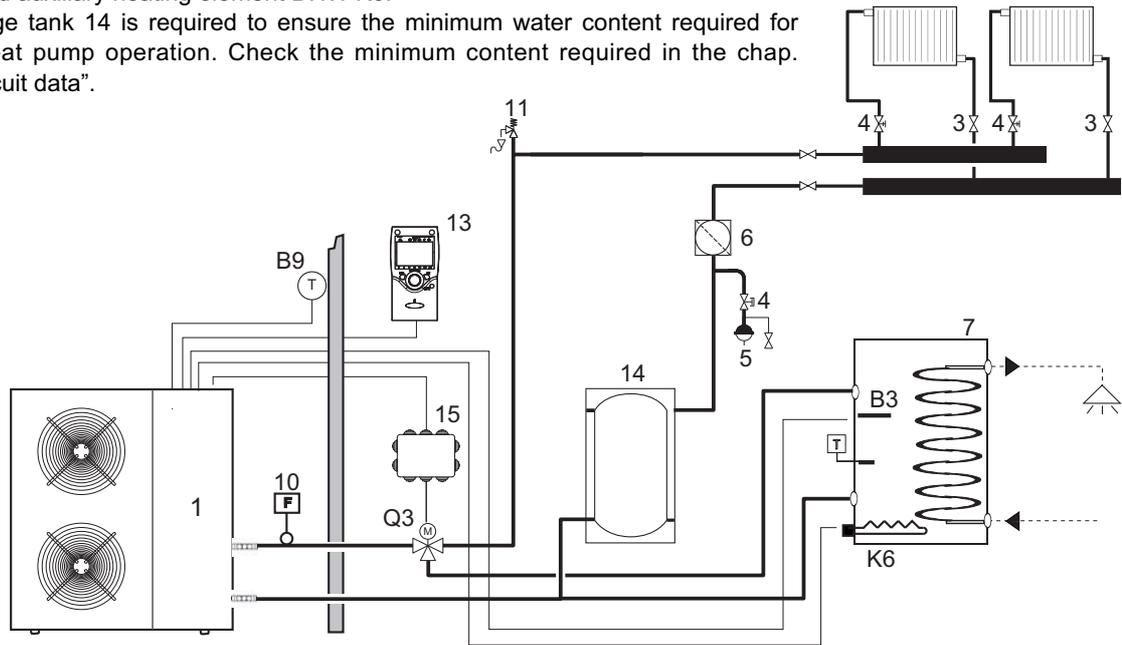
Example water circuit diagram

Parameter number	Description	Default setting
	<p>Direct heating system and DHW storage.</p> <p><u>Sensors and utilities to be connected:</u> B9 outside air temperature sensor B3 DHW storage temperature sensor Q3 3-way valve for domestic hot water production 15 electrical panel for DHW3-way valve 13 Room unit</p>	

SYSTEM DIAGRAM WITH DIRECT HEATING, DOMESTIC HOT WATER PRODUCTION AND ELECTRIC HEATER

Heat pump connected directly to the heating circuit with domestic hot water production Q3 and auxiliary heating element DHW K6.

The storage tank 14 is required to ensure the minimum water content required for correct heat pump operation. Check the minimum content required in the chap. "Water circuit data".



Key

1 Heat pump AW HT	11 Safety valve	B9 Outside air temperature sensor
3 Control valve	13 Room unit	K6 DHW storage electric heater
4 Shut off valve	14 Storage tank	
5 Expansion vessel	15 Electrical panel for DHW 3-way valve	
6 Air separator	Q3 3-way valve for domestic hot water production	
10 Flow switch	B3 DHW storage temperature sensor	

Example water circuit diagram

Parameter number	Description	Default setting
5896	<p>IDirect heating system, with DHW storage and additional electric heater.</p> <p><u>Sensors and utilities to be connected:</u> B9 outside air temperature sensor B3 DHW storage temperature sensor Q3 3-way valve for domestic hot water production 15 electrical panel for DHW 3-way valve 13 Room unit K6 DHW auxiliary heater on terminals 6-7</p> <p><u>Parameter settings:</u> 5896 = electric heater DHW K6 for further information see paragraph "Additional electric heater for DHW storage cylinder"</p>	5896 = electric heater DHW K6

ERROR SIGNALS

When a fault occurs, an error message is displayed  , pressing the  button on the remote unit shows the causes on the display. The following error messages are possible.

No.: error message	Location.	Reset		Heat pump on	Priority
		Man.	Auto		
0: No error					
10: Outside probe	B9	No	No	Yes	6
26: General outlet probe	B10	No	No	Yes	6
30: Outlet probe 1	B1	No	No	Yes	6
31: Outlet probe cooling 1	B16	No	No	Yes	6
32: Outlet probe 2	B12	No	No	Yes	6
33: Outlet probe heat pump	B21	No	No	Yes	6
35: Inlet probe – source	B91	No	No	Not for ground source units	9
36: Outlet probe compressor 1	B81	No	No	Yes	6
37: Outlet probe compressor 2	B82	No	No	Yes	6
38: Outlet probe controller	B15	No	No	Yes	6
39: Evaporator probe	B84	No	No	Not in air	9
44: Heat pump return probe	B71	No	No	Depends on the diagram	6
45: Outlet probe – source	B92	No	No	No in water	9
46: Cascading return probe	B70	No	No	Yes	6
48: Refrigerant probe	B83	No	No	Yes	6
50: Domestic hot water probe 1	B3	No	No	Yes	6
52: Domestic hot water probe 2	B31	No	No	Yes	6
54: Primary control probe	B35	No	No	Yes	6
57: Circulation probe	B39	No	No	Yes	6
60: Room temperature probe 1		No	No	Yes	6
65: Room temperature probe 2		No	No	Yes	6
68: Room temperature probe 3		No	No	Yes	6
70: Storage tank temperature sensor 1	B4	No	No	Depends on the diagram	6
71: Storage tank temperature sensor 2	B41	No	No	Depends on the diagram	6
72: Storage tank temperature sensor 3	B42	No	No	Yes	6
73: Collector probe 1	B6	No	No	Yes	6
74: Collector probe 2	B61	No	No	Yes	6
76: Special probe 1	BX	No	No	Yes	3
81: LPB corto-circuito/comm		No	No	Yes	6
82: LPB collisione indirizzo		No	No	Yes	3
83: BSB corto-circuito		No	No	Yes	8
84: BSB collisione indirizzo		No	No	Yes	3
85: BSB Comunicazioni Radio		No	No	Yes	8
98: Modulo aggiuntivo 1		No	No	Yes	8
99: Modulo aggiuntivo 2		No	No	Yes	8
100: Main time		No	No	Yes	3
102: Clock without backup		No	No	Yes	3
105: Wait prompt		No	No	Yes	5
106: Source temperature too low		Yes	Yes	no	6
107: Superheated gas compressor 1		Yes	Sys. sit.*	No	9
108: Superheated gas compressor 2		Yes	Sys. sit.*	No	9
117: Water pressure too high	H1	No	No	Yes	6
118: Water pressure too low	H1	No	No	No	6
121: Heating circuit 1 outlet temperature too low		No	No	Yes	6
122: Heating circuit 2 outlet temperature too low		No	No	Yes	6
126: Domestic hot water fill control		No	No	Yes	6
127: Anti-Legionella function temperature		No	No	Yes	6
134: Heat pump total disturbance	E20	Yes	Sys. sit.*	No	9
138: No heat pump control probe		No	Yes	No	1
146: Probe configuration		No	No	Yes	3
171: Alarm contact 1 active		No	No	Yes	6
172: Alarm contact 2 active	H2	No	No	Yes	6

No.: error message	Location	Reset		Heat pump on	Priority
		Man.	Auto		
174: Alarm contact 4 active	H3	No	No	Yes	6
176: Water pressure 2 too high	H2	No	No	Yes	6
177: Water pressure 2 too low	H2	No	No	No	6
178: Heating circuit 1 control temperature		No	No	Yes	3
179: Heating circuit 2 control temperature		No	No	Yes	3
201: Frost alarm	B21/71	Yes	No	No	9
204: Fan overload	E16	Yes	Sys. sit.*	No	9
222: High pressure during pump heat operation	E10	Yes	Sys. sit.*	No	9
223: High pressure starting heating circuit	E10	Yes	No	No	9
224: High pressure starting DHW production	E10	Yes	No	No	9
225: Low pressure	E9	Yes	Sys. sit.*	No	9
226: Compressor 1 overload	E11	Yes	Sys. sit.*	No	9
227: Compressor 2 overload	E12	Yes	Sys. sit.*	No	9
228: Water source current control	E15	Yes	Sys. sit.*	No	9
229: Water source pressure control	E15	Yes	Sys. sit.*	No	9
230: Source pump overload	E14	Yes	Sys. sit.*	No	9
241: Outlet probe, solar probe error	B63	No	No	Yes	6
242: Return probe, solar probe error	B64	No	No	Yes	6
243: Pool temperature probe	B13	No	No	Yes	6
247: Defrost disturbance		Yes	Sys. sit.*	No	9
320: DHW fill temperature probe	B36	No	No	Yes	6
321: DHW heater temperature probe instant error	B38	No	No	Yes	6
322: Water pressure 3 too high	H3	No	No	Yes	6
323: Water pressure 3 too low	H3	No	No	No	6
324: BX same probes		No	No	Yes	3
325: BX/same probe as additional module		No	No	Yes	3
327: Same function as additional module		No	No	Yes	3
329: Expansion module / same function as mixing valve assembly		No	No	Yes	3
330: BX1 no function		No	No	Yes	3
331: BX2 no function		No	No	Yes	3
332: BX3 no function		no	No	yes	3
333: BX4 no function		No	No	Yes	3
334: BX5 no function		No	No	Yes	3
335: BX21 no function		No	No	Yes	3
336: BX22 no function		No	No	Yes	3
339: No pump on collector Q5		No	No	Yes	3
340: No pump on collector Q16		No	No	Yes	3
341: No probe on collector B6		No	No	Yes	3
343: No solar connection		No	No	Yes	3
344: No buffer solar K8		No	No	Yes	3
345: No pool solar K18		No	No	Yes	3
350: Buffer address error		No	No	Yes	3
351: Primary control/system pump address error		No	No	Yes	3
352: Hyd comm. address error		No	No	Yes	3
353: No cascading probe B10		No	No	Yes	3
354: Special probe 2	BX	No	No	Yes	3
355: Asymmetrical three-phase current	E21-23	Yes	Sys. sit.*	No	9
356: Consumer current control	E24	Yes	Sys. sit.*	No	9
357: Outlet temperature KK not reached		No	No	Yes	6
358: Soft start	E25	No	No	No	9
359: No cooling valve Y21		No	No	Yes	3
360: No mixer valve Y22		No	No	Yes	3
361: No source inlet B91		No	No	Yes	3
362: No source outlet B92		No	No	Yes	3
363: No evaporator probe B84		No	No	Yes	3
364: Heat pump cooling system false		No	No	Yes	3
365: TWW No pump Q34		No	No	Yes	3

* These system conditions do not directly generate an error signal but rather initially show a status signal
Only when the error occurs the set number of times within the set period is an error signal generated.

Parameters contained on the FAULT operating page		(Engineer level)
Parameter number	Description	Default setting
6710	If the remote alarm contact RD1 is featured, the alarm relay can be reset by setting parameter 6710 = YES. The alarm still remains active.	
6711	The pending error messages originating from the heat pump are reset by setting parameter 6711 = YES.	
6800...6819	Errors should not be reset when the unit is operating. Displaying parameters from 6800 to 6819 shows the last 10 errors saved in the memory For each error, the code, date and time the error occurred are saved.	

MAINTENANCE/SERVICE SIGNAL

The maintenance symbol  shown on the display indicates the need for maintenance or a special operating mode.

Pressing  shows the code and the type of maintenance required.

If a Maintenance/Service signal is displayed, contact the authorised service centre.

The Maintenance/Service messages are:

Parameters contained on the SERVICE/SPECIAL OPERATION operating page		(Engineer level)
Maintenance message	Description	Manual reset
17: HP interval	If the time interval (in months) for performing a routine maintenance operation is exceeded, message 17 is displayed. Time interval disabled by default. Activate the counter by setting the interval in months with parameter 7070.	SI
11: Interval for domestic hot water tank	If the time interval (in months) for performing routine maintenance on the DHW storage cylinder is exceeded, message 11 is displayed. Activate the counter by setting the interval in months with parameter 7090.	SI
12: DHW fill temperature too low	Minimum temperature level for filling the domestic hot water cylinder by the heat pump without interrupting the refill defined by parameter 7092 = 40°C .	NO*

* When refilling the DHW cylinder again, and the minimum DHW storage refill temperature is exceeded, the maintenance signal is cancelled. Nonetheless, if the temperature is not reached again, the maintenance message will remain active.

EMERGENCY OPERATION

Parameters contained on the SERVICE/SPECIAL OPERATION operating page		(Engineer level)
Parameter number	Description	Default setting
7141	If the heat pump is not working correctly, emergency operation can be activated. Emergency operation activates the system using the electric immersion heaters available (outlet, storage, DHW storage). The compressor will remain off. Activate the function by setting 7141 = on	7141= off

OUTSIDE TEMPERATURE SIMULATION

Parameters contained on the SERVICE/SPECIAL OPERATION operating page		(Engineer level)
Parameter number	Description	Parameter number
7150	To simplify commissioning and check for errors during service operations, an outside temperature between -50 and +50 °C can be simulated. The function is deactivated by selecting "-.-" on the corresponding row or automatically after 5 hours. The display shows the maintenance symbol  .	7150 = -.- °C

TEST INPUTS/OUTPUTS

Parameters visible only at the "OEM level" to check the correct operation of the components and sensors connected to the heat pump.

Warning: when testing the inputs/outputs, the limits are not active

TEST RELAY OUTPUTS

Parameters contained on the INPUT/OUTPUT TEST operating page		(OEM level)	
Maintenance message	Description	Manual reset	
7700	Parameter 7700 is used to test all the relays on the controller that are connected to the heat pump components		
	Message displayed for parameter 7700		Component
	No Test		
	Everything Off		
	Relay output QX23 Expansion module		see system diagram
	Relay output QX21 Expansion module		see system diagram
	Relay output QX22 Expansion module		see system diagram
	Relay output QX1		DHW 3-way valve
	Relay output QX2		Fan
	Relay output QX3		Installation pump
	Relay output QX4		Reversing valve
	Relay output QX5		Remote alarm
	Relay output QX6		Electric heater
	Relay output QX7		External heat source (Boiler)
Relay output QX8	Compressor		
WARNING: when testing the inputs/outputs, the limits are not active			

TEST PROBES

Parameters contained on the INPUT/OUTPUT TEST operating page		(OEM level)
Parameters from 7730 to 7831 are used to read the temperatures measured by the probes connected to the controller.		
The values read by the selected probe are updated after a maximum of 5 seconds.		
Parameter number	Description	Default setting
7730	Outside temperature B9	Outside air temperature sensor
7775	Source inlet temperature B91	Evaporator air inlet
7777	Sensor temperature B92, B84	Evaporation temperature
7820	Sensor temperature BX1	DHW probe
7823	Sensor temperature BX4	Compressor outlet temp.
7824	Sensor temperature BX5	System return temp.
7830	Sensor temperature BX21 expansion module 1	See system diagram
7831	Sensor temperature BX22 expansion module 1	See system diagram

TEST AUXILIARY CONTACT INPUT H1

Parameters contained on the INPUT/OUTPUT TEST operating page		(OEM level)
Parameters 7840 and 7841 are used to test auxiliary input H1		
Parameter number	Description	Default setting
7840	H1 voltage signal Describes the value of the 0-10V signal in relation to whether the contact is opened or closed	Open = 0V Closed = 10V
7841	H1 contact state The contact can be configured as Open Closed	7841= open

TEST CONTACT INPUT E

Parameters contained on the INPUT/OUTPUT TEST operating page		(OEM level)
Parameters from 7911 to 7917 are used to test the 'E' group of inputs		
Parameter number	Description	Default setting
7911	Input EX1	Flow switch
7912	Input EX2	Low pressure switch
7913	Input EX3	High pressure switch
7914	Input EX4	Compressor protector for high power input
7915	Input EX5	Remote heat pump off SA3
7916	Input EX6	Low rate signal from electricity company SA4
7917	Input EX7	Not used

The message 0 V indicates that there is no voltage and the corresponding input is currently inactive. The message 230 V indicates that voltage is available at the corresponding input and it can be activated.

PEAK LIMITER ALARM SIGNALS

A

The heat pumps can be fitted with a single-phase or three-phase peak limiter to reduce compressor start-up current.

Peak limiter single-phase

The LED on the peak limiter identifies different operating or alarm conditions based on the sequence of flashes:

- 2 flashes every 5 sec.: line voltage present, correct operation
- LED on for 5 sec. and LED off for 5 sec.: peak limiter faulty
- quick flashes for 10 sec.: line voltage out-of-range

Three-phase peak limiter

The three-phase peak limiter has 2 built-in indicator LEDs.

The green LED indicates line voltage is present and correct operation.

The red LED identifies different alarm conditions based on the sequence of flashes, as shown in the enclosed table.

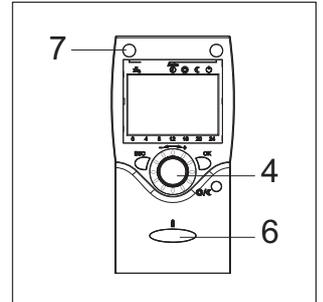
Alarms		
Number of flashes of red LED	Condition	Action
2	Incorrect phase sequence	Reverse phases
3	Line voltage out-of-range	Autoreset with 5 minute reset time
4	Frequency out-of-range	Autoreset with 5 minute reset time
5	Locked rotor (during ramp)	Autoreset with 5 minute reset time
6	Ramp starting > 1 sec	Autoreset with 5 minute reset time
7	Excess temperature	Automatic reset
8	Low current (during bypass)	Autoreset with 5 minute reset time
9	Voltage unbalanced	Autoreset with 5 minute reset time if all three phases (L1, L2, L3) are connected

“ENDUSER LEVEL” SYSTEM OPERATING STATUS”

The operating status of the heat pump in the different modes can be checked as follows:

- Press the INFO button (6)
- Read the message shown on the display
- Turn the knob (4) to display the operating status of each utility (Heat pump, DHW, etc.)
- Press ESC (7) to exit.

The message displayed is shown in the following table under the column **“Enduser (from INFO button)”**.



“ENGINEER LEVEL” SYSTEM OPERATING STATUS

Parameters from 8000 to 8022 are used to check the operating status of the heat pump and the connected utilities.

Accessing the parameters displays the extended message for the operating status of each utility.

The message displayed is shown in the following table under the column “Engineer level (from parameter 8000)”.

Parameters contained on the STATUS operating page		
Parameter number	Description	Default setting
8000	Heating circuit 1 status	
8003	Domestic hot water production status	
8006	Heat pump status	
8010	Buffer storage status	
8022	Additional external source status	

User	Enduser (from INFO button)	Engineer level (from parameter 8000)	
Heating circuit status	The thermostat is off	The thermostat is off	
	Manual control active	Manual control active	
	Ready-to-lay function active	Ready-to-lay function active	
	Restricted heating mode	Restricted heating mode	Excess temperature protection active
			Restricted, boiler protection
			Restricted, domestic water priority
			Restricted, buffer priority
	Forced heating enabled	Forced heating enabled	Forced discharge of storage buffer
			Forced discharge of domestic hot water
			Forced discharge of heat source
			Excess active
	Comfort heating mode	Comfort heating mode	Forced discharge of storage buffer
			Start control + heating boost option
			Optimum start control
			Heating boost
	Reduced heating mode	Reduced heating mode	Comfort heating mode
			Optimum interruption control
	Frost protection active	Frost protection active	Reduced heating mode
			Room frost protection active
			Flow frost protection active
System frost protection active			
Summer operation Off	Summer operation Off	Summer operation	
		Eco 24 hours active	
		Reduced stop	
		Frost protection stop	
		Room temperature limit	
		Off	

User	Enduser (from INFO button)	Engineer level (from parameter 8000)	
Domestic hot water production status	The thermostat is off	The thermostat is off	
	Manual control active	Manual control active	
	Mode without absorption	Mode without absorption	
	Cooling active	Cooling active	Cooling using collector
			Cooling using DHW/HC
	Stop refill active	Stop refill active	Discharge protection active
			Refill period limitation active
			DHW refill blocked
	Forced refill active	Forced refill active	Max forced tank temp
			Maximum forced refill temperature
			Forced Legionella set point
			Forced standard set point
	Refill with electric immersion heater	Refill with electric immersion heater	Electric refill, Legionella set point
			Electric refill, standard set point
			Electric refill, red set point
			Electric refill, defrost set point
			Electric immersion heater activated
	Acceleration active	Acceleration active	Acceleration, Legionella set point
			Acceleration, standard set point
	Refill active	Refill active	Refill, Legionella set point
			Refill, standard set point
			Refill, reduced set point
	Frost protection active	Frost protection active	
	Overload active	Overload active	
	Refill standby	Refill standby	
	Fill	Fill	Fill, maximum tank temperature
Fill, maximum refill temperature			
Fill, Legionella temperature			
Fill, standard temperature			
Fill, reduced temperature			
Off	Off		
Wait	Wait		

User	Enduser (from INFO button)	Engineer level (from parameter 8000)		
Heat pump status	Emergency operation	Emergency operation		
	Fault	Fault		
	Shutdown	Shutdown, Outside temperature		
		Shutdown, Externally		
		Shutdown, economy mode		
	Limitation period active		Asymmetrical three-phase current	
			Low pressure	
			Fan overload	
			Compressor 1 overload	
			Compressor 2 overload	
			Source pump overload	
			Switch outlet to utilities	
			Minimum OT limitation	
			Maximum OT limitation	
			Minimum source water temperature limit	
			Minimum source glycol temperature limit	
			Maximum source temperature limit	
			High pressure in HP operation	
			Switch outlet to heat source	
			Switch pressure to heat source	
			Hot gas limit to compressor 1	
			Hot gas limit to compressor 2	
			Maximum shutdown temperature limit	
			Maximum shutdown temperature limit in cooling	
			Minimum shutdown temperature limit	
			Minimum compressor shutdown period active	
			Compensation for excess heat	
	Frost protection active	Heat pump frost protection		
	Defrost active		Forced compressor defrost	
			Forced fan defrost	
			Forced defrost active	
			Dripping	
			Defrost with compressor	
			Defrost with fan	
			Defrost active	
		Cooling mode active		Minimum compressor on period active
				Compressors 1 and 2 on
				Compressor 1 on
			Compressor 2 on	
			Evaporator cooling	
	Heating mode		Minimum compressor on period active	
			Compensation for lack of heat	
		Pre-heating for defrost		
		Maximum condenser temperature difference limit		
		Minimum condenser temperature difference limit		
		Maximum evaporator temperature difference limit		
		Minimum evaporator temperature difference limit		
		Compressor 1 and electric on		
		Compressors 1 and 2 on		
		Compressor 1 on		
		Compressor 2 on		
		Electric on		
Passive cooling mode		Minimum source temperature limit in cooling		
Frost protection active		System frost protection active		
Off			Flow active	
		Overload active		
		Released, evaporator ready		
		No request		

After deactivating the heat pump:

- Disconnect the unit from the power supply.
- Make sure the remote keypad (if featured) is in the "OFF" position.
- Place QF1 in the OFF position (see wiring diagram).
- Deactivate the indoor terminal units by placing the switch of each unit in the "OFF" position.
- Close the water valves.

⚠ If the outside temperature may fall below zero; there is the risk of freezing.

The water circuit MUST BE EMPTIED AND CLOSED (if draining after operation in heat pump mode, beware that

the water may be hot), or antifreeze must be added in the proportion recommended by the manufacturer.

It is recommended to use non-toxic food grade antifreeze, compliant with the standards in force in the countries where the unit is used, if domestic hot water production is also featured.

If the mains switch is turned to "off" for more than four hours, after turning it on and before reactivating the unit, leave the power on but the unit deactivated for at least two hours to preheat the oil in the compressor sump.

ROUTINE MAINTENANCE

Never perform any cleaning operations before having disconnected the unit from the mains power supply.

Make sure power is not connected before proceeding.

Control maintenance is fundamental to maintain the efficiency of the unit both in terms of operation and energy consumption.

The Technical Service maintenance plan must be observed, with an annual service which includes the following operations and checks:

- Filling of the water circuit;
- Presence of air bubbles in the water circuit;
- Efficiency of safety devices;
- Power supply voltage;

- Electrical power input;
- Tightness of electrical and water connections;
- Condition of the compressor contactor;
- Efficiency of the plate heat exchanger resistor;
- Verification of operating pressure, superheating and sub-cooling
- Efficiency of the compressor heater
- Cleaning of the finned coil every three months
- Cleaning of the fan grills
- Cleaning of condensate drain pan (if installed);

For units installed near the sea, the intervals between maintenance should be halved.

Never perform any cleaning operations before having disconnected the unit from the mains power supply. Make sure power is not connected before proceeding.

REFRIGERANT GAS CHARGE

It is recommended to chemically flush the plate heat exchanger after every 3 years of operation. For instructions on how to carry out this operation, call the toll free number.

REFRIGERANT GAS CHARGE

The chillers are filled with R410A refrigerant gas and tested in the factory.

In normal conditions, there should be no need for the Technical Service to intervene to check the refrigerant gas.

However, over time, small leaks may develop at the joints leading to loss of refrigerant and draining of the circuit, causing the unit to function poorly.

In this case, the leaks of refrigerant must be identified and repaired and the refrigerant circuit recharged.

Proceed as follows:

- Empty and dry the entire refrigerant circuit using a vacuum pump connected to the low and high pressure tap until the vacuum reads about 10 Pa.
Wait a couple of minutes and check that this value does not rise to more than 50 Pa.
- Connect the refrigerant gas cylinder or a filling cylinder to the low pressure line pressure gauge connection
- Charge the quantity of refrigerant indicated on the unit's rating plate.
- Always check the superheating and subcooling values, which should be between 5 and 10°C and 4 and 8°C.
- After a couple of hours operation, check that the liquid indicator indicates a dry circuit (dry-green).

⚠ In the event of partial leaks, the circuit must be completely emptied before being recharged.

The R407C refrigerant must only be charged in the liquid state.

Operating conditions other than rated conditions may produce considerably different values.

Tightness testing or identification of leaks must only be carried out using R407C refrigerant gas, checking with a suitable leak detector.

The refrigerant circuit **must not be charged** with a refrigerant other than that indicated on page 16.

The use of a different refrigerant may cause serious damage to the compressor.

⊘ Oxygen, acetylene or other flammable or poisonous gases must never be used in the refrigerant circuit as they may cause explosion or poisoning.

Oils other than those indicated on page 16 **must not be used**. The use of different oil may cause serious damage to the compressor.

The unit must be disposed of according to the legislation in force in the country concerned

For information on technical assistance and obtaining spare parts, contact

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