NA 15.18 B

05 - 2016

GeoCIAT™ Power

Instruction manual

EN

SOMMAIRE PAGE

Original text: French Version

1. GENERAL INFORMATION

1.1 General information

CIAT would like to thank you for choosing the GeoCIAT^{TM} Power. This geothermal heat pump is designed for heating and hot water production in individual homes. Please read this instruction manual carefully before installing and switching on the unit. CIAT Residential guarantees the GeoCIAT^{TM} Power unit for 24 months from the date it leaves the factory (see general warranty terms and conditions).

1.1.1 Conformity

GeoCIAT^{TM} Power heat pumps comply with the following European directives and standards:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC
  - EN 61000-6-2
  - EN 61000-6-3
- NFC 15-100
- Machinery Directive 2006/42/EC
  - EN 60335-1
  - EN 60335-2-40
- PED Directive 97/23/EC
- WEEE Directive 2012/19/EU
- RoHS 2002/95/EC
- Ecodesign Directive 2009/125/EC
  - Regulation No. 813/2013
  - EN 14825

In accordance with standard 61000-3-11, the user must confirm via the energy supplier that the models below are connected to a supply with an impedance either below or equal to the indicated Zmax value.

Name	Network type	Zmax (Ohm)
GeoCIAT^{TM} Power 50H	Single-phase	0.304
GeoCIAT^{TM} Power 50HT	Three-phase	0.373
GeoCIAT^{TM} Power 65HT	Three-phase	
GeoCIAT^{TM} Power 90HT	Three-phase	
GeoCIAT^{TM} Power 120HT	Three-phase	

1.1.2 Symbols

The pictograms used in the following sections enable the user to quickly and clearly understand the information required to ensure that the machine is used safely.

CAUTION

Paragraphs preceded by this symbol contain very important information and provisions, in particular concerning safety.
Failure to follow this information may result in:
- Danger to operators.
- Loss of the warranty or waiving of the manufacturer's liability.

CROSS REFERENCE
This symbol indicates a cross reference with other manuals or pages in the manual.

INFORMATION
This symbol indicates that useful or additional information is available.

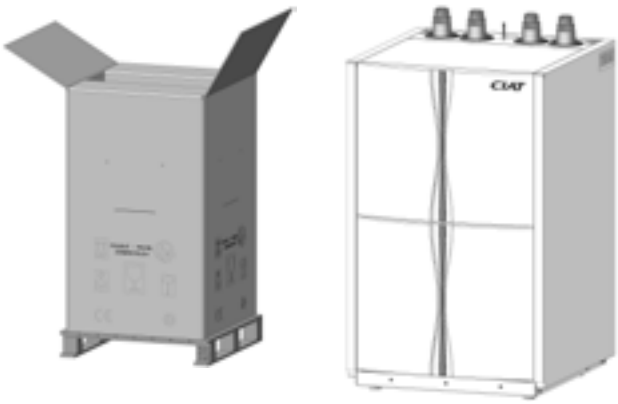
1.1.3 Equipment supplied

- One GeoCIAT^{TM} Power cased unit,
- One HomeConnect wireless control terminal,
- One wired outdoor sensor,
- One user manual,
- One user guide.

1.2 General warnings

1.2.1 Unpacking the equipment

The GeoCIAT^{TM} Power is delivered on a pallet in its own packaging. Even if the packaging appears to be intact, please check that the contents have been supplied in full and are in good condition. In case of problems, enter the necessary details on the delivery note and confirm by registered letter to the shipper within 3 days of delivery.



1.2.2 Removing the shipment protection

1- Remove the 2 front decorative panels (Fig.1), starting with no.① then no. ②. Pull the panel upwards to remove it from the retaining grooves.
2- Carefully slide the front panel acoustic protection out of the casing rails (③ Fig.1).
3- Remove the 2 anchor bolts (Fig.2) and the locking screw (Fig.3) using suitable tools.

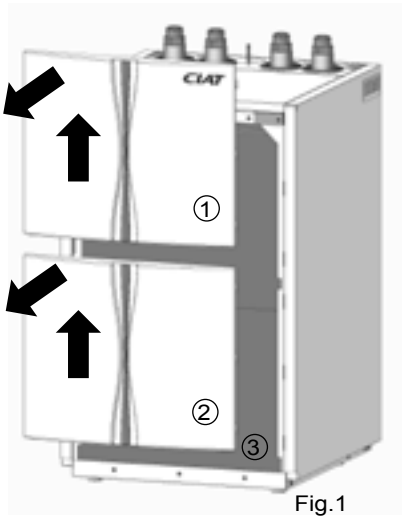


Fig.1

Top view

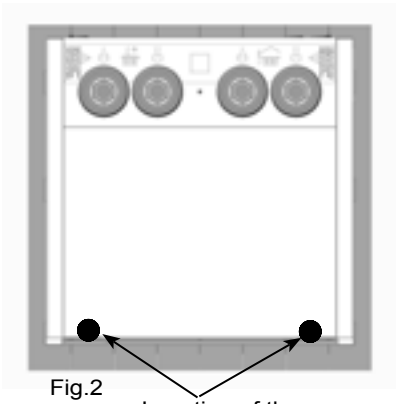


Fig.2

Location of the anchor bolts

Locking screw

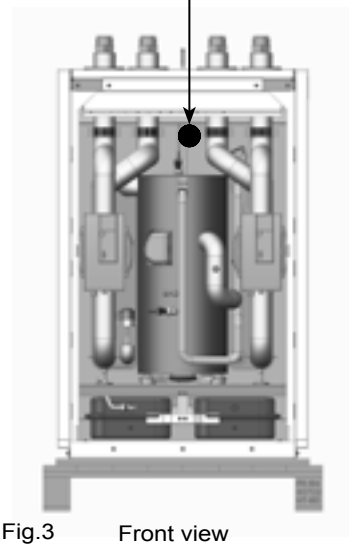


Fig.3 Front view

EN

1.2.3 Identifying the equipment

A legible and indelible data plate listing the specifications of the unit is affixed in a visible location on the unit.

The information on the plate (description and the serial number) must be quoted in all correspondence.

The "HP MAX - PSM" value indicated on the name plate is the maximum operating pressure (= 42 bar).
This value corresponds to the activation pressure for the safety device: the HP pressure switch. A burst test on a representative model is carried out periodically in accordance with standard EN 378-2. The burst pressure must be at least 3 times the operating pressure, i.e. 3 x 42 bar = 126 bar.

1.2.4 Handling

Units on pallets must be transported using a pallet truck.
Warning: the machine must be moved using a suitable means of transport.
The heat pump must not be dragged along the ground directly on its rubber feet, as this may damage the adjustment system.
Wear suitable gloves when handling the unit.

The units are not stackable.

1.2.5 Installation

CIAT units must only be installed by experienced, qualified personnel with the necessary electrical and hydraulic accreditation. The installing company must provide the equipment manager with a declaration of conformity in accordance with current standards and the indications supplied by CIAT in this manual. The recommendations and instructions given in the maintenance brochures and the special instructions on the labels must be followed.
Always comply with applicable standards and regulations.

CIAT accepts no contractual or non-contractual liability for damage caused to persons, animals or property due to installation, maintenance or servicing errors or misuse.
This instruction manual and the user manual form an integral part of the unit, and must therefore be kept safe and ALWAYS handed over if the unit is transferred to a new owner or another system. If a manual is damaged or lost, you can order a new copy by emailing info@ciat.fr

1.3 Basic safety rules

To prevent the risk of accidents during installation, system start-up and adjustment, it is essential to remember that a heat pump contains a pressurised refrigeration circuit and refrigerant, as well as electrical voltage and fluid at a temperature up to 150°C (risk of burns from touching the pipes)
Note that certain basic safety rules apply to the use of this type of unit:
• Before carrying out any work on the equipment, ensure that the supply voltage is switched off (and the capacitors discharged). Any electrical discharge carries a risk of injury.

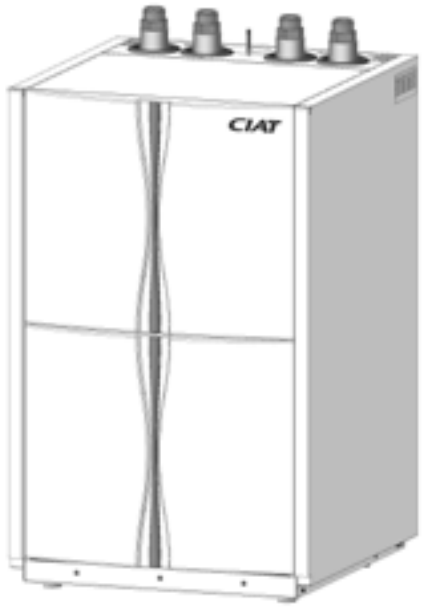
• The unit must not be used by unsupervised people with disabilities or children.
• It is forbidden to touch the unit in bare feet or if any part of the body is wet or damp.
• It is forbidden to modify the safety or adjustment devices without authorisation and instructions from the device manufacturer.
• For work on the machine during or shortly after operation, wear gloves suitable for high temperatures and electrically insulated tools.

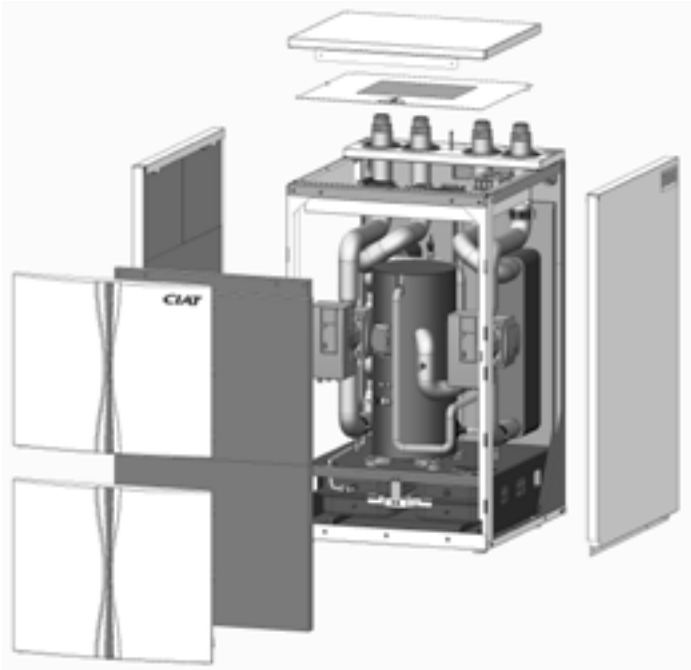
1.4 Waste disposal by users in private waste facilities within the European Union

This symbol indicates that the product and its packaging must not be disposed of in ordinary household waste or in the natural environment. It is your responsibility to ensure your waste is taken to a designated recycling point for electrical and electronic devices. Separating your waste for recycling during disposal helps protect the environment and safeguard health.
To find your nearest recycling centre, contact your local council or waste disposal service.

1.5 Discover GeoCIAT^{TM} Power

1.5.1 GeoCIAT^{TM} Power heat pump





1.5.2 HomeConnect control terminal

EN

1.5.3 GeoCIAT^{TM} Power specifications

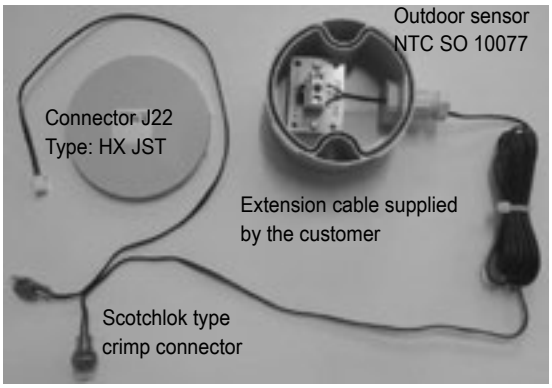
GeoCIAT^{TM} Power heat pump: Glycol/water mix heat pump for new and existing homes. The GeoCIAT^{TM} Power delivers water up to 62°C. NFPAC certified equipment.

HomeConnect control terminal

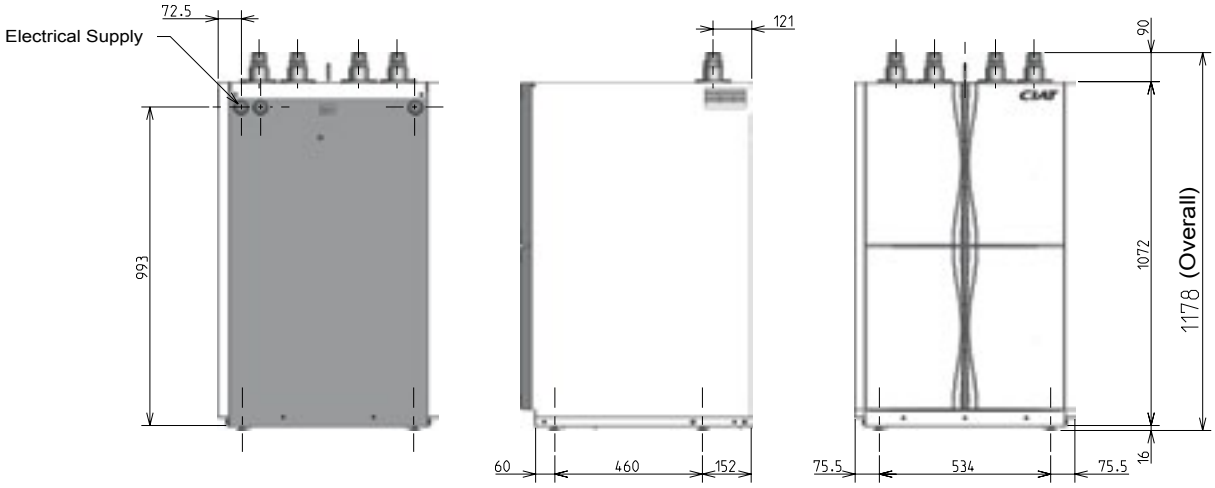
- 868 Mhz wireless link
- IO Homecontrol® radio protocol
- Clock function
- Weather station function
- Room thermostat
- Choice of 3 permanent temperatures in heating mode: frost-free, economy, comfort
- Customisable weekly programming hour by hour and day by day in heating mode
- Customisable weekly programming hour by hour and day by day in domestic hot water production mode
- Absence management
- Turn and click type navigation button
- White backlit hybrid LCD screen
- Dimensions: width: 9 cm, height: 14 cm, thickness: 2.5 cm
- Wall mounting plate support
- Support foot
- Operating temperature from 0°C to 45°C
- Powered by 3 x 1.5V LR06 AA batteries
- Protection rating: IP 30
- Class II insulation
- Supplied with wall bracket, foot and batteries

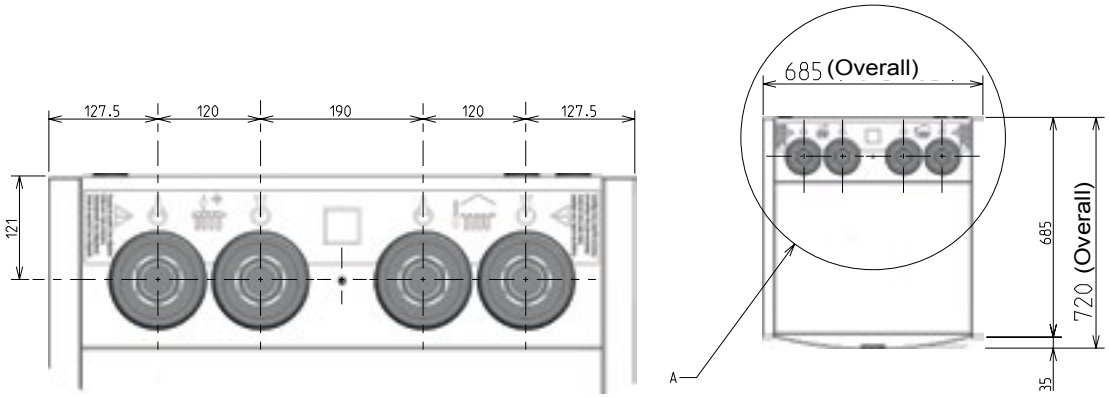
Wired sensor

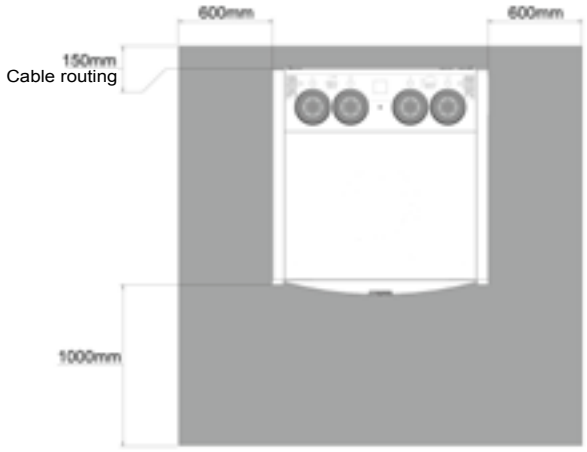
The wired sensor is fitted by the installer. It is placed outdoors with an adequate length of wire (less than 30 m). A radio sensor option is available from CIAT.



1.6 Unit dimensions and clearances (mm)







1.7 Weight (kg)

GeoCIATTM Power	50H/50HT	65HT	90HT/120HT
Weight (empty)*	174 Kg	178 Kg	204 Kg
Weight (in operation)	180 Kg	184 Kg	213 Kg

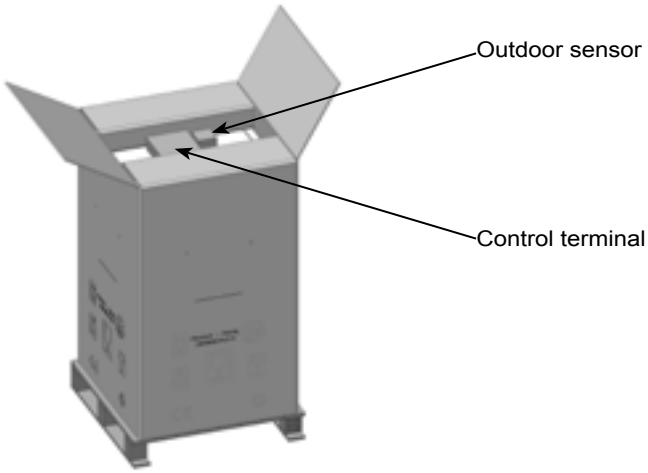
* Excluding shipping pallet + box

2. INSTALLATION

2.1 Location of the control terminal and the heat pump

2.1.1 Control terminal

At delivery, the HomeConnect control terminal is located on the top of the heat pump in the packing box.



Location

Before fixing the control terminal in place, check the range of the radio signal. This should be at the maximum level.
If this is not the case, you can also move the heat pump a few centimetres to ensure optimal transmission of its radio signal.

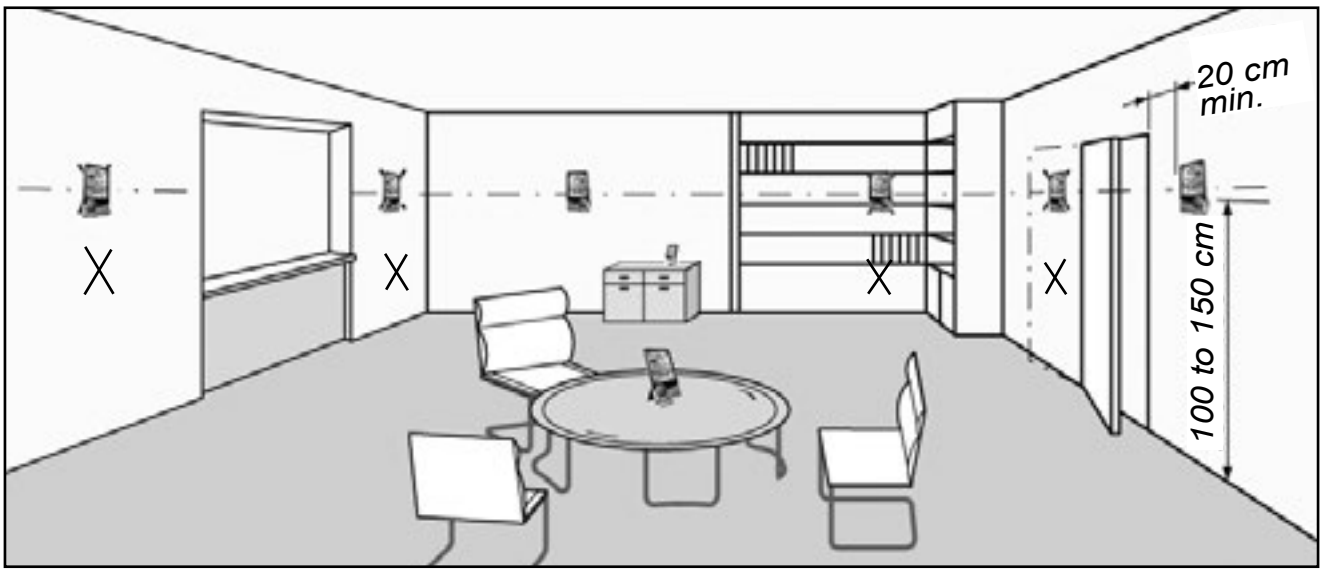
Selecting a location

The terminal operates permanently as a room thermostat. It is therefore essential to place the control terminal inside the home, within the environment to be monitored and away from heat sources (chimney, radiator, sunlight), draughts (windows, doors) and areas of activity.

Mounting

The terminal is supplied with a wall mounting plate (base) and a base.
The wall mounting plate should be affixed using screws and wall plugs (FS Ø 4mm flat head slotted screws, Ø 5mm wall plugs), which are not supplied, using the holes marked on the mounting plate.

The battery compartment has ribs on either side to hold the terminal on its mounting plate.
Once the mounting plate is affixed to the wall, slide the terminal into place.
The terminal is positioned in the same way on the base.

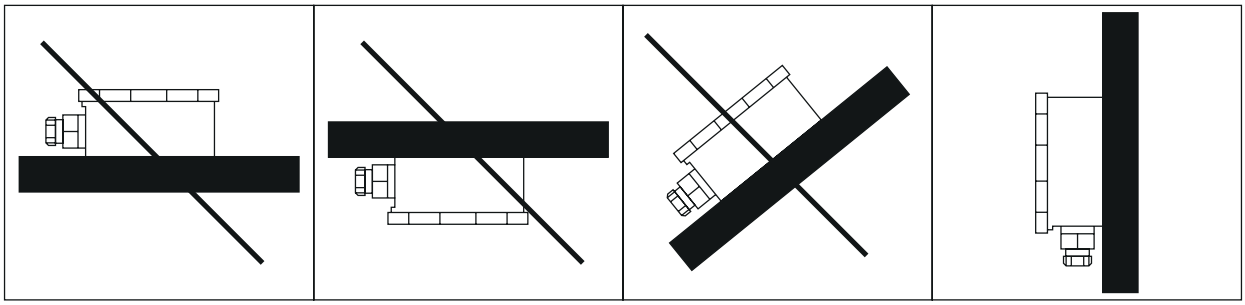


2.1.2 Outdoor sensor

At delivery, the outdoor sensor is located inside its own box (see previous section)

Installation and location

Position the outdoor sensor on the front of the frame, orienting it as far north as possible.
Make sure the outdoor sensor is not exposed to direct sunlight, and place it in a vertical position.



2.1.3 GeoCIAT^{TM} Power heat pump

The GeoCIAT^{TM} Power must only be located inside a machine room, garage or laundry room. Ensure that the structure of the machine room can support the weight of the unit. The module must be perfectly level (adjustable feet under the GeoCIAT^{TM} Power) and installed with the minimum free space as described in paragraph 1.6.

Sound level: our units are designed to operate quietly. However, as soon as you begin designing your system, you should take into consideration its position in your home. The unit **must not** be located near bedrooms.

Placing the unit in a corner will substantially increase its sound level. Ventilation ducts and clearance zones can also transmit noise. If in doubt, have an analysis performed by an acoustical engineer.

Positioning: when positioning the unit, lift it without tilting it too much

Accessibility: leave sufficient room around the unit to allow easy access for installation and maintenance (see diagram in paragraph 1.6).

2.2 Hydraulic connections

2.2.1 Pipes

Adhere to the installation standards and trace the pipe routing carefully:

- observe the drain direction (inlet/outlet) indicated on the unit
- the following accessories are essential to any hydraulic system and must also be installed
  - 3 bar valve-gauge assembly (mandatory)*
  - automatic air bleed valves at high points
  - discharge nozzles at low points
  - balancing valves
  - additional expansion vessels if necessary
  - thermometer pockets, etc.

* the safety valve, which is mandatory on the hydraulic circuit, must be tested manually at least once a year.

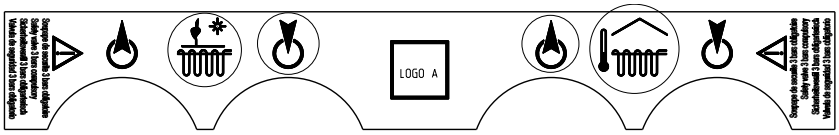
- the pipes and tubes should not transmit any forces or vibrations to the exchangers. Hoses **must** be used to connect water pipes.
- use at least 2 shut-off valves on each circuit in order to isolate the unit
  - screw in the system's flexible connectors/pipes by hand
  - tighten them using two spanners

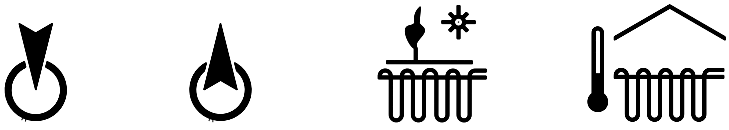
Failure to tighten with two spanners could cause the couplings to rupture and may result in the equipment warranty being voided.

EN

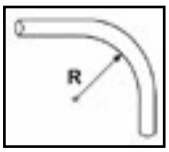
Fasten the water pipes to the walls with brackets lined with highly flexible rubber to prevent the transmission of vibrations.

Insulate the pipes and hoses carefully to prevent heat loss and condensation.





ALWAYS COMPLY WITH
THE HOSE BEND RADIUS



A screen filter must be added to the heat pump's primary and secondary circuits. Failure to follow this instruction may result in blocked or fouled exchangers. CIAT accepts no responsibility for clogging or malfunctioning of the heat pump in the event of failure to install screen filters.

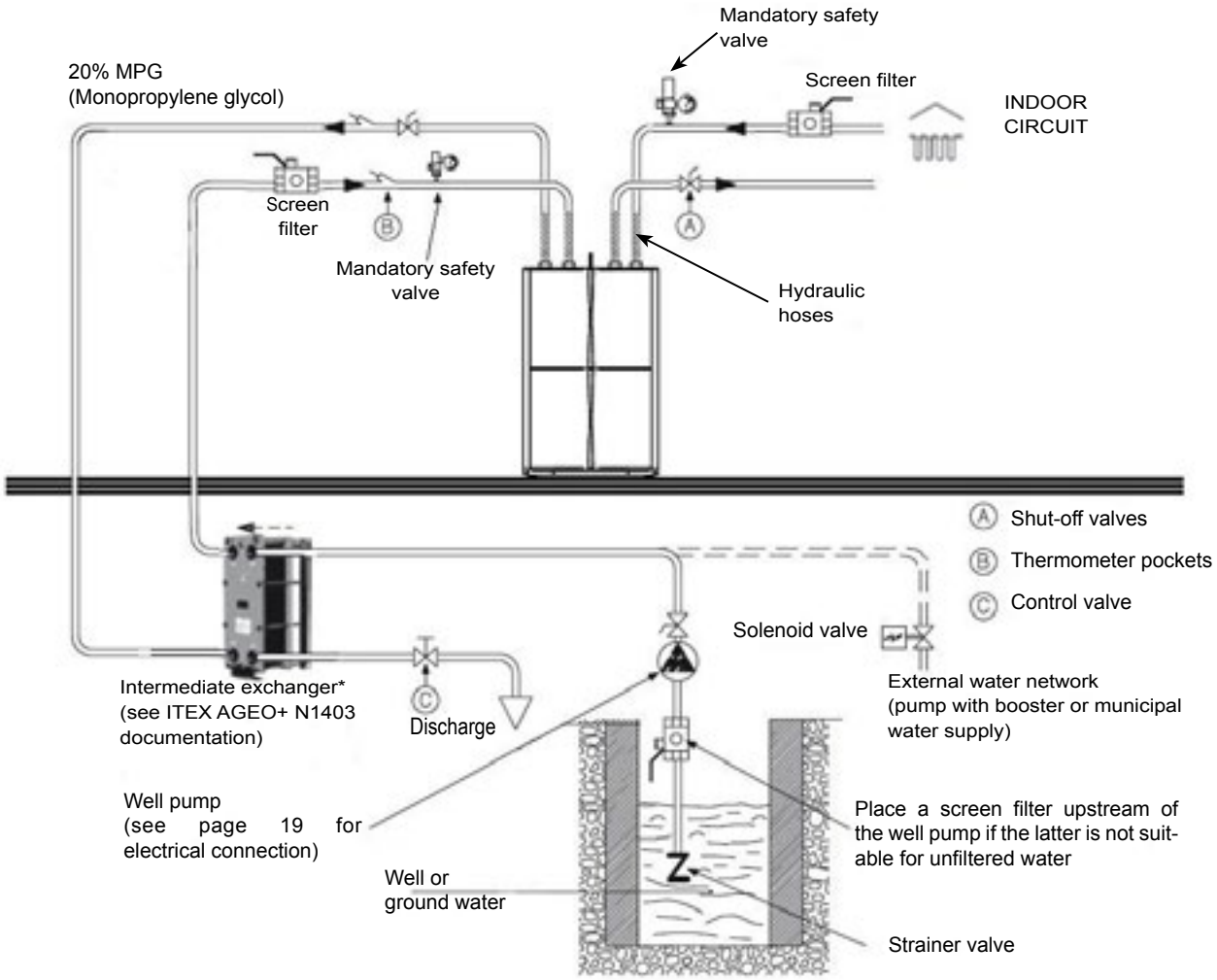
Hydraulic connections at the machine and installation outlet

GeoCIAT™ Power	Inlet/outlet diameter indoor/outdoor circuits		Min. bend radius (R) of hoses (mm) Without/With insulation	Copper pipe hydraulic connection	Steel pipe hydraulic connection	PE (polyethylene) pipe hydraulic connection
50H(T)	Ø G 1"1/4	Male gas nipples	172 /180	36x1	40/49 - DN40	40 x 3.7
65HT				38x1	1"1/2	50 x 4.6
90HT	Ø G 1"1/2		392 / 350	54x1	50/60 - DN50	60 x 5.8
120HT					2"	

Diameters calculated for a 15m hydraulic connection between the heat pump and the system outlet.

2.2.2 Outdoor circuit: Schematic diagram

A- Open circuit - Groundwater or well



*Intermediate exchanger:

This exchanger is **mandatory** for water-to-water operation, and protects your GeoCIAT™ Power from:

- fine suspended solids (risk of clogging) or aggressive water.
- iron, manganese or chlorine (risk of corrosion or deposits)

We therefore recommended that you have the physical and chemical properties of your water analysed (B3C3 type analysis) to determine what types of materials should be used.

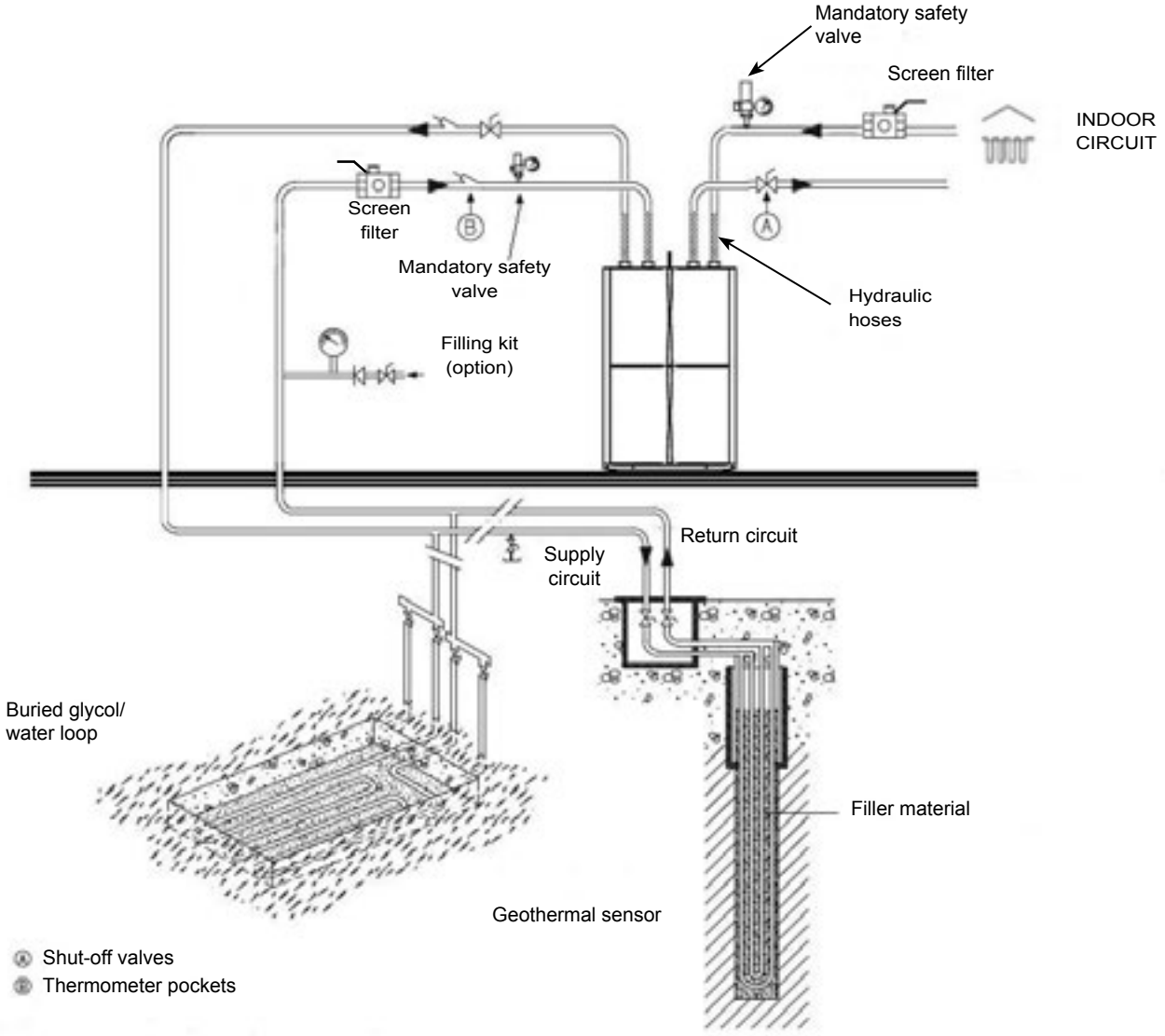
This exchanger also limits the number of times the frost protection is turned on when your system is started up in cold weather or after a prolonged period without use.

CIAT cannot be held liable for any clogging or malfunctions of the exchanger in the GeoCIAT™ Power if this exchanger is not installed.

A constant flow of water must be maintained in the exchangers.

Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute actual installation diagrams.

B- Closed circuit - Underground loop or geothermal loop



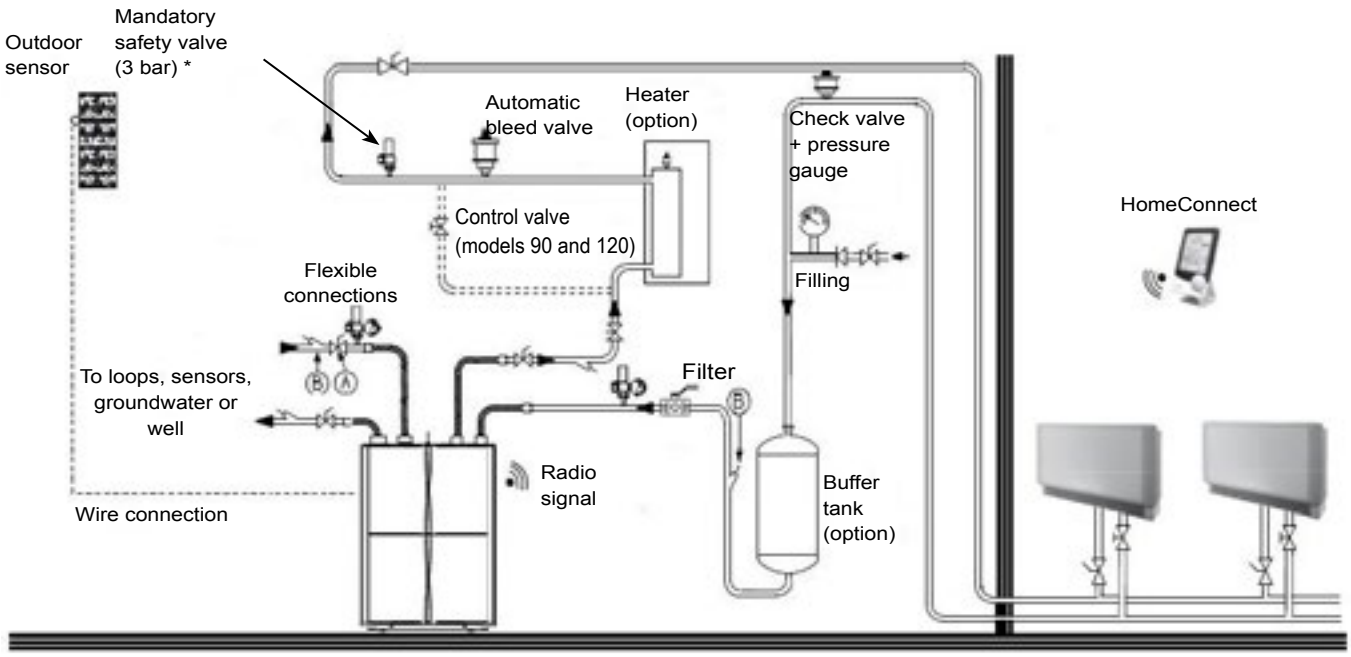
EN

Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute actual installation diagrams.

2.2.3 Indoor circuit - Schematic diagrams

A - Comfort units or radiator*

* The radiators can be replaced with Divio or Major Line fan coil units (CIAT ref.).



(A) Shut-off valve

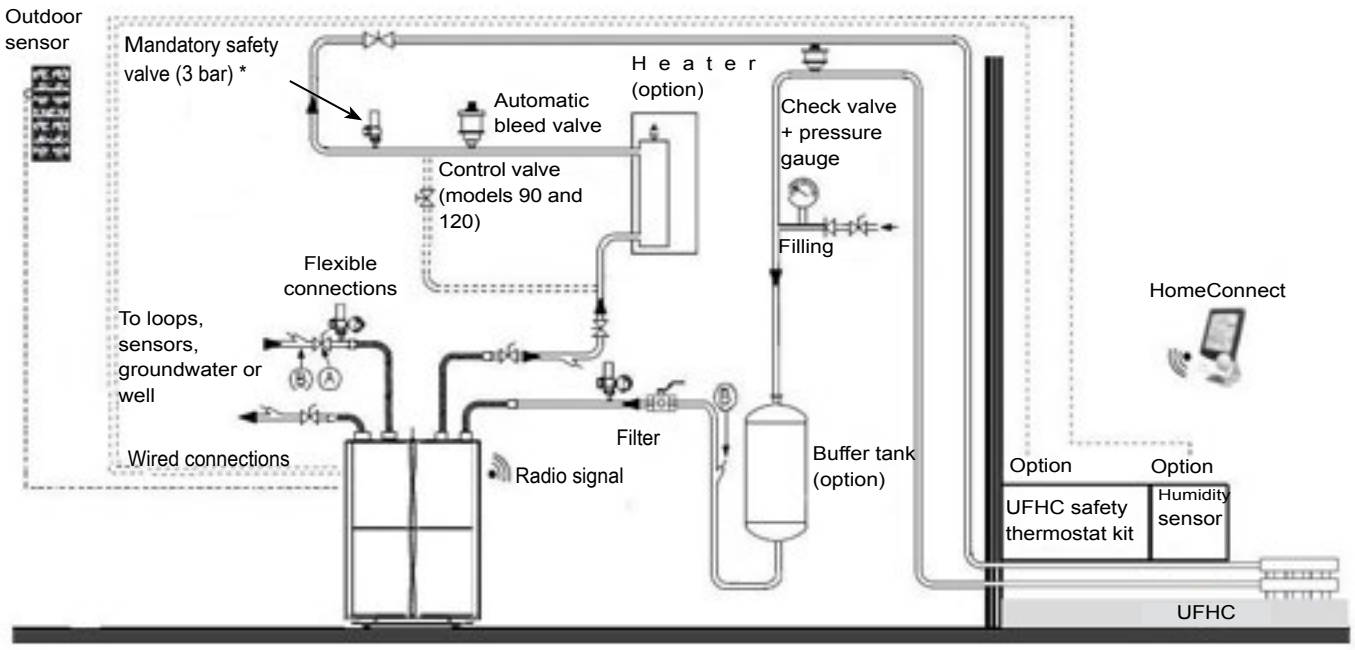
(B) Thermometer pockets

* Only required if the heater can be hydraulically isolated from the circuit.

For operation with radiators, the discharge valve is mandatory to prevent water flow rate faults when the radiators are closed.

Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute actual installation diagrams.

B- Underfloor heating/cooling system

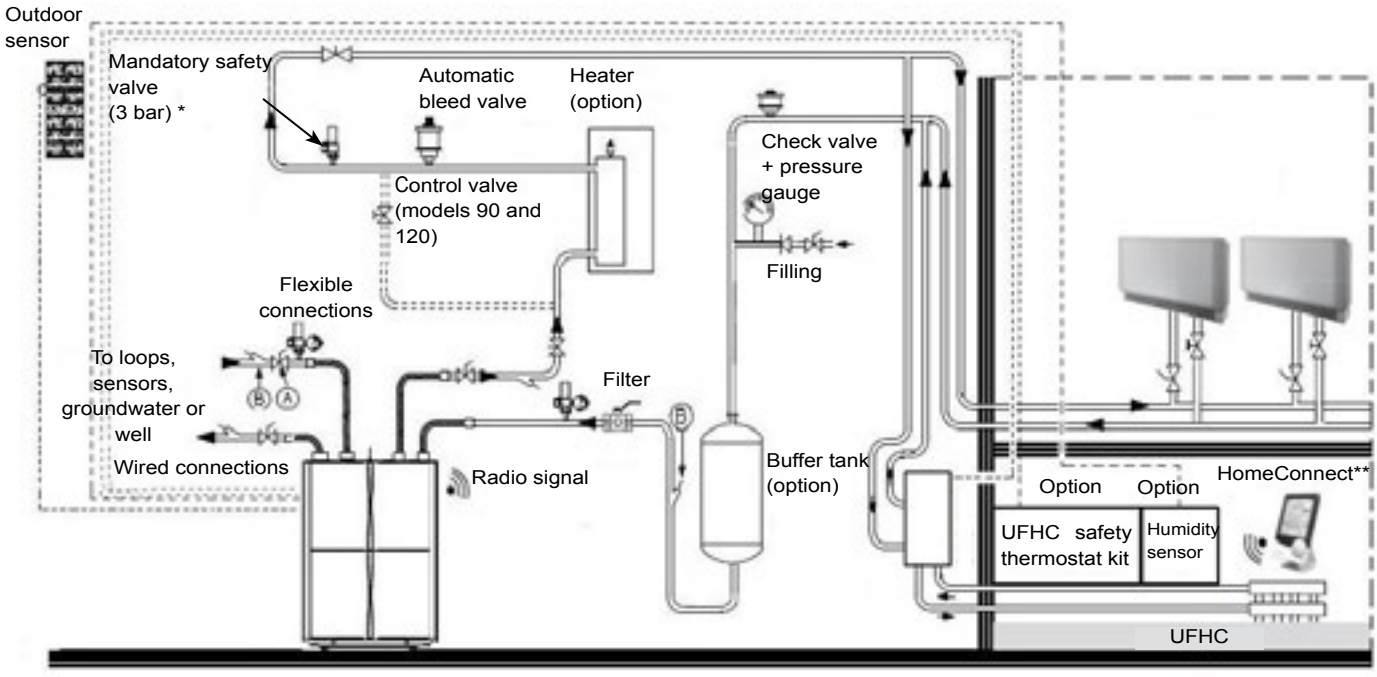


(A) Shut-off valve

(B) Thermometer pockets

* Only required if the heater can be hydraulically isolated from the circuit.

C- Underfloor heating/cooling system + comfort units



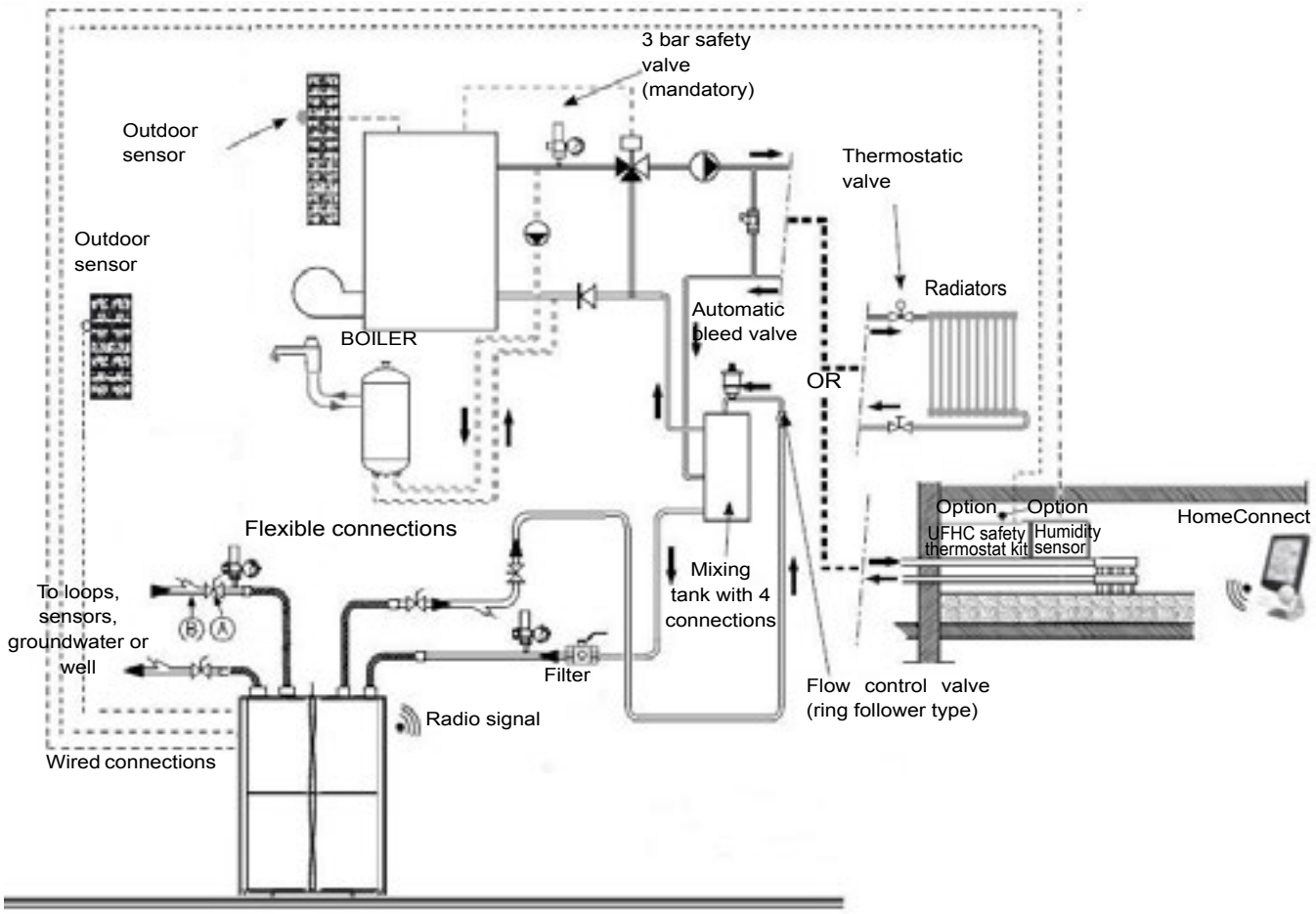
(A) Shut-off valve

(B) Thermometer pockets

* Only required if the heater can be hydraulically isolated from the circuit.
** The control terminal defines the main zone

Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute actual installation diagrams.

D- Connection with boiler back up operation



(A) Shut-off valve

(B) Thermometer pockets

Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute actual installation diagrams.

2.2.4 Water quality

The quality of the water used in the heating system is crucial to ensuring correct operation and energy performance. Poor water quality can lead to scale and corrosion.

- Make sure the hardness of the water in the circuits is less than 35°f.
- Make sure the pH of the water is compatible with all of the installation materials.

2.2.5 Frost protection (for the account of the fitter)

CIRCUITS

Indoor circuit: A glycol/water solution is not necessary in certain areas and if you are absolutely sure that your indoor circuit will always remain above freezing temperature. If in doubt, use 40% MPG (monopropylene glycol).

Outdoor circuit:

Parameter P06 must be set to NO if the outdoor circuit does not contain a glycol solution, to 20% MPEG if the outdoor circuit contains a 20% MPG glycol solution or to 40% MPEG if the outdoor circuit contains a 40% MPG glycol solution.

- Groundwater or well: the loop between the intermediate exchanger and the heat pump must contain a 20% MPG glycol solution.
- Underground loop or geothermal loop: the outdoor circuit must contain a 40% MPG glycol solution.

FROST PROTECTION

- We highly recommend that you drain sections not protected by glycol/water solution (well loop and, if need be, the indoor circuit) if you turn off the heating system intentionally or if there is a risk of it being accidentally turned off.
- Sections that must be protected by glycol/water solution should contain the following proportions of MPG (other antifreeze with the same freezing point may also be used):
  20% MPG: freezing point = -8°C
  40% MPG: freezing point = -25°C

The antifreeze may be mixed with a corrosion inhibitor and even a biocide (follow the instructions of the anti-freeze manufacturer). Ready-mixed solutions and dilutable products may also be used.

PROCEDURE

Preparing the system to be protected:

- **Always flush the system completely and blow it out to remove any remaining water.**
- **Washing the system with a suitable cleaner is recommended** (use a cleaner compatible with the system's materials).
- Follow up the final rinse with a complete drain of the system.

Add the water/antifreeze/corrosion inhibitor mixture and pressurise using the hydraulic pump.

- If you use a concentrated dilutable solution, following the instructions below:

- Always dilute the antifreeze with water before adding it to the system. Never add them separately.
- Always mix the correct amounts of water, antifreeze and corrosion inhibitor in a container before adding them to the system.
- Drain the system thoroughly.
- Allow the mixture to run through the entire system for at least 2 hours before starting the heat pump.
- Use a hydrometer or a refractometer to check the final proportion obtained.
- Using litmus paper or a pH meter, check the pH obtained.

Affix, in a visible location, a label stating:

- that the system contains antifreeze.
- the name of the product and its supplier.
- the proportion and the pH at system start-up.

Do not use products made with monoethylene glycol (which is toxic)
Use a glycerin/glucose free antifreeze.

2.3 Electrical connections

To access the electrics box, see the instructions in paragraph 2.4.

Connect to terminal blocks J1, J2, J3, J4 and J5 according to the HomeConnect board's supply mode (single-phase or three-phase) (see page 19). For a three-phase power supply, use terminals N(J4), L1(J3) and the green/yellow terminal (J5). Make sure the terminals are securely tightened.

Select the supply cable using the table below.

The electrical characteristics of the mains supply must be identical to those on the name plate. The power supply must meet the following requirements:

230 V $^{+ 6\ \%}_{- 10\%}$ 50 Hz for the **50H** single-phase + Neutral + Earth model.

and 400 V $^{+ 6\ \%}_{- 10\%}$ 50 Hz for the **50HT, 65HT, 90HT and 120HT** three-phase + Neutral + Earth models.

It is your responsibility to protect the unit from mains voltage spikes and voltage spikes caused by lightning. Depending on the geographic location and the type of mains network (buried or overhead), you may have to install a lightning rod. Check your local electrical codes and regulations.

IMPORTANT:
- **Connect the unit to earth before making any other electrical connections.**
- **A neutral wire must be placed on all three-phase models.**
- **The system must be fitted with a main cut-off switch**

2.3.1 Electrical specifications

The cross-section of the supply cable must be carefully selected based on:
- the maximum current of the unit and the electric heating element
- the distance between the domestic electrics box and the GeoCIAT^{TM} Power
- the room temperature
- the upstream protection and the neutral operating conditions

GeoCIAT^{TM} Power				50H	50HT	65HT	90HT	120HT
Electrics box maximum temperature			°C	50°C				
Unit supply				Terminals J3, J4, J5	Terminals J1, J2, J3, J4, J5			
Nominal voltage				230V - 1ph + N + E - 50Hz	400V - 3ph + N + E - 50Hz			
Compressor	Maximum operating current		A	26.1	9	17	19	21.1
Accelerator pump	Indoor pump	Capacity	W	Min/Max: 3/180			Min/Max: 16/310	
		Current	A	Min/Max: 0.06/1.4			Min/Max: 0.16/1.37	
	Outdoor pump	Capacity	W	Min/Max: 3/180			Min/Max: 16/310	
		Current	A	Min/Max: 0.06/1.4			Min/Max: 0.16/1.37	
Current of entire unit (max)			A	30.1	12.9	21	23	25
C or D curve thermal magnetic circuit breaker (not supplied)			Am	32	16	25	25	32
Electrical wiring (not supplied)	PVC insulation (1)		mm2	3G10	5G2.5	5G6		
	PVC V2K insulation (2)		mm2	3G6	5G1.5	5G4		
Electric heating element supply				Terminal block J45	Junction blocks			
Rated voltage				230V - 1ph + N + E - 50Hz	400V - 3ph + N + E - 50Hz			
Loop heater power			kW	5	9			
Max current			A	21.7	13			
C or D curve thermal magnetic circuit breaker (not supplied)			A	25	16			
Electrical wiring (not supplied)	PVC insulation (1)		mm2	3G6	4G4			
All or nothing inputs				Terminal blocks J11 and J12				
Input, bypass, absence, Cooling/Heating, DHW, limiter thermostat			mm2	0.2 - 1				
Contacts				Terminal blocks J33, J45 and J46				
Boiler ON contact and 3-way valve			mm2	1.5				

(1) Cable with 3 or 5 conductors for temperatures below 70°C and for a maximum length of 30 m
(2) Cable with 3 or 5 conductors for temperatures below 90°C and for a maximum length of 30 m

Note: all connections must be wired in compliance with the regulations that apply to the location where the system is installed (e.g. NF C 15 -100 in France) and are under the responsibility of the installer. Failure to comply with the requirements of the above standards will invalidate the CIAT warranty.

For terminal J45, the tightening torque must be at least 0.6 Nm.

2.3.2 Accessing the electrical section

1 - Remove the decorative panel from the top of the front panel (Fig.1).
2 - Remove the 2 retaining screws from the front of the roof (① Fig.2), then remove the front section of the roof (② Fig.2).
3 - Remove the retaining screw from the electrical protection cover (① Fig.3), then remove the front section of the roof (② Fig.3).

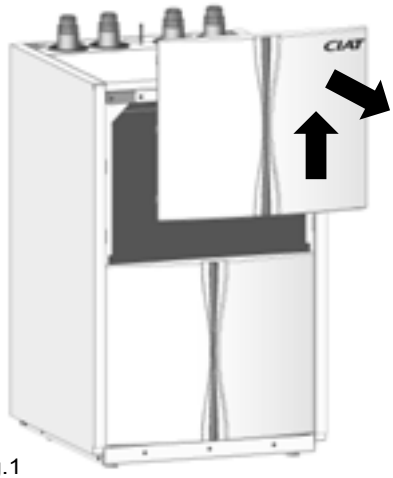


Fig.1

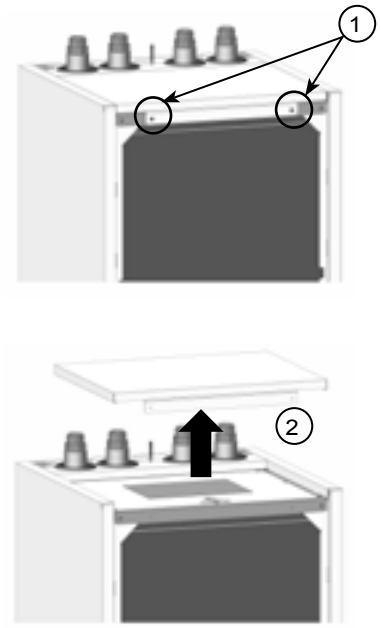


Fig.2

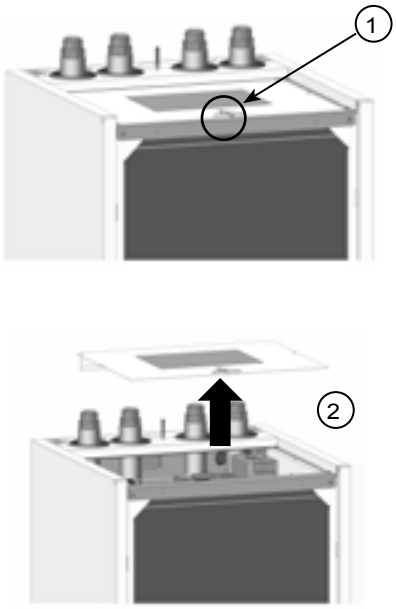


Fig.3

2.3.3 Cable routing

To facilitate the installation of the unit's power supply cables and optional kits, cable trays, Omega type fasteners and cable clamps are provided.

The main heat pump supply must pass through the grommet ① (Fig. 1) then connect to the EMC filter, following the cable route indicated by the dotted lines on Fig. 2 and through the collar.

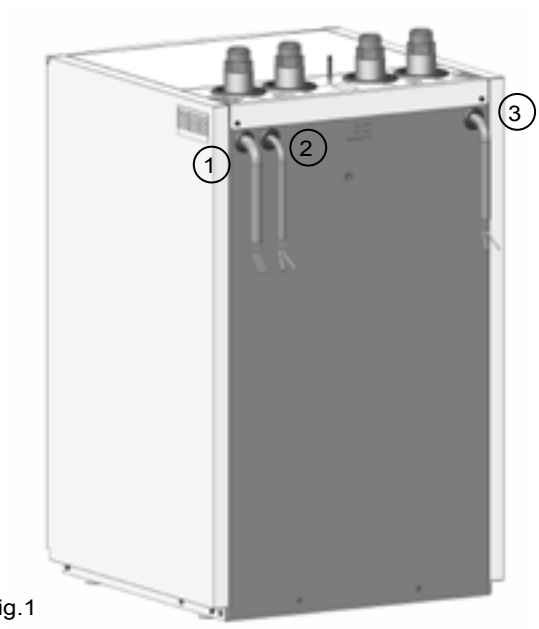


Fig.1

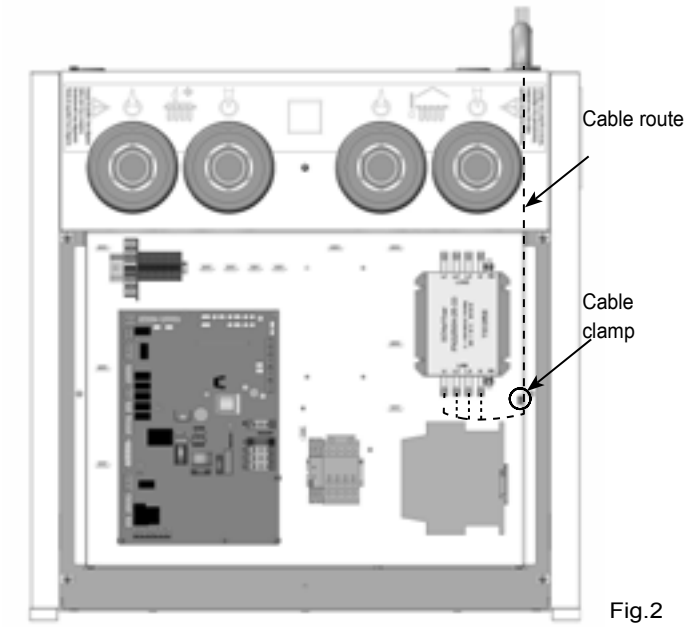
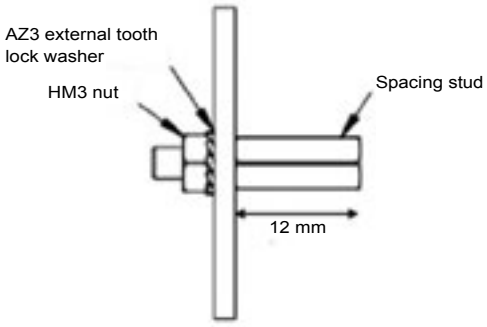


Fig.2

① Electrical power supply and all controls: 230 V or 400 V
② Option control
③ Sensor connection

2.3.4 Control board

The control board is 292 mm x 200 mm. The board is mounted horizontally on the base of the unit's electrics box. The board is affixed using 6 MF3x8-H5X12 threaded metal spacing studs and 4 plastic spacers (Fig.1).



Detail of metal spacers (side view)

Warning: when replacing the HomeConnect board, the screws on the metal spacers must be fitted. They guarantee the performance level to be achieved for EMC (Electromagnetic Compatibility).

Instructions for removing the board

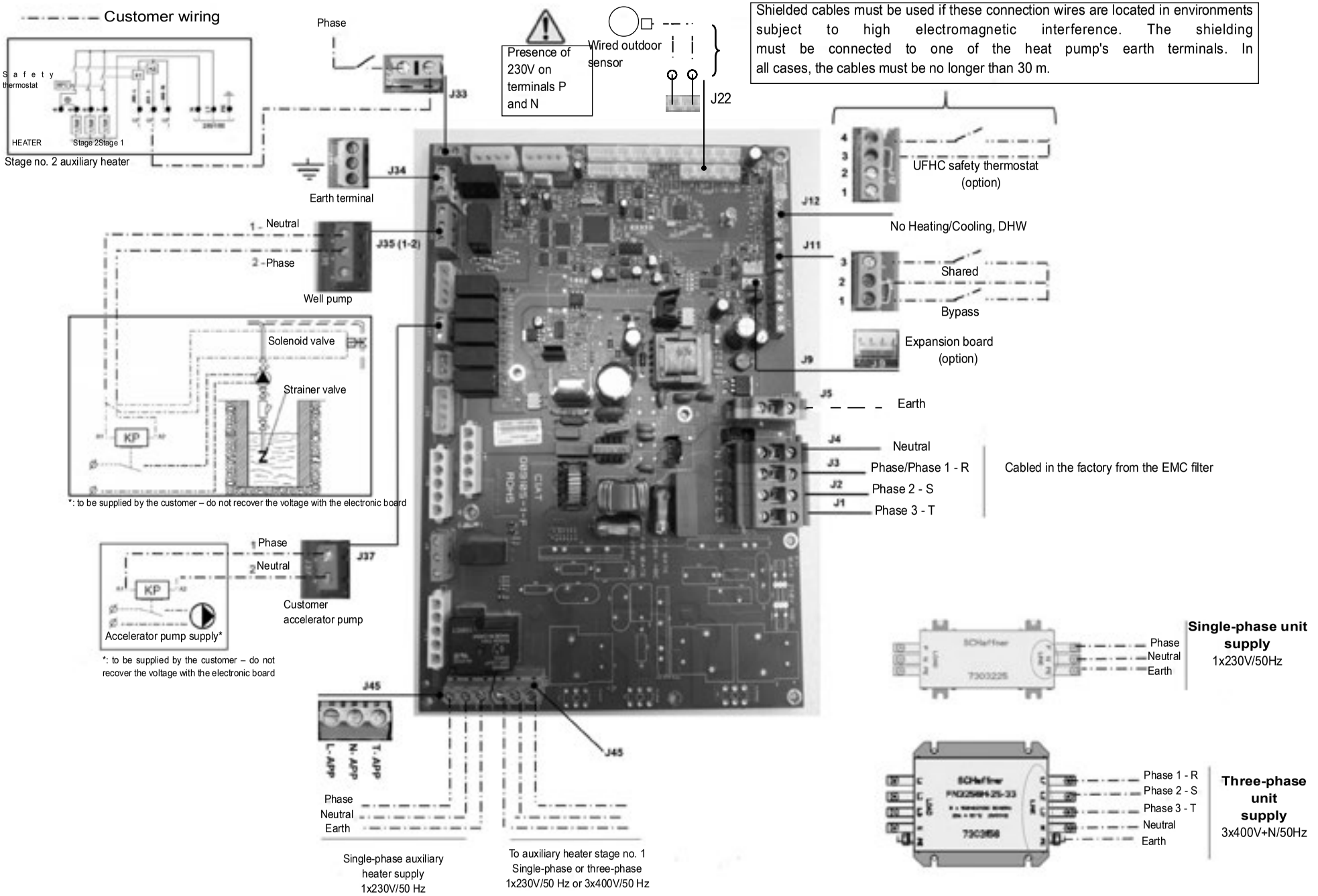
- Power the unit off before carrying out any work.
- Access the electrical section of the heat pump by following the instructions in paragraph 2.4 "accessing and connecting the electrical section").
- Disconnect the electrical components from the board connectors (see page 19).
- Undo the 6 metal screws for the spacing studs.
- Unclip the board from the 4 plastic spacers.

Do not remove the plastic spacers and the spacing studs on the electrics box after removing the board.

Instructions for mounting the board

- Power the unit off before carrying out any work.
- Access the electrical section of the heat pump by following the instructions in paragraph 2.4 "accessing and connecting the electrical section".
- Make sure that the 6 spacing studs and 4 plastic spacers are correctly positioned
- Clip the board onto the 4 plastic spacers.
- Tighten the 6 metal screws onto the spacing studs (mounting holes on the board marked by the symbol).
- Connect the electrical components to the connectors on the board (see page 19).

When operating, the electrics box must be closed to create a barrier to fire and electric shocks. The protective cover must be reattached and screwed to the casing (see § 2.4.1 fig 2).



HomeConnect control board (see p 51 for details)

3. COMMISSIONING

It is advisable not to connect pressure gauges to the cooling circuit when starting up the unit (except in the case of incidents). Taking temperature readings is sufficient in most cases. Refer to the information on the HomeConnect terminal (see Read-only parameters table in paragraph 5.3).

3.1 Checks

- Check for any refrigerant leaks.
- Open the valves on the water circuits and make sure water is flowing through the heat pump.
- Bleed all the air out of the water circuits.
- Check for loose electrical connections.
- Make sure the bleed valves on the expansion vessels are open.
- Make sure that the supply voltage matches the unit voltage and that its value remains within the permissible limits for the nominal voltages.

3.2 Starting up the unit

The procedure below is used to prepare the electronic board for pairing with the control terminal, with the control terminal powered off.

3.2.1 Powering up the terminal

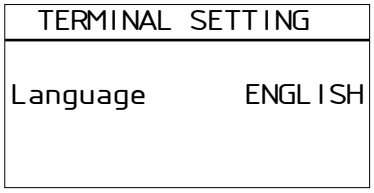
- Place the 3 batteries in the battery compartment located on the rear of the terminal.
- Foolproofing devices prevent the batteries from being incorrectly inserted.
- When the terminal is first powered up, all the pictograms are displayed for 3 seconds before the initialisation phase begins.

Note: remember to remove the plastic tab from the battery compartment in order to power on the terminal.

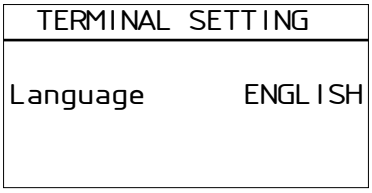
3.2.2 Initialising the terminal

Set the initialisation parameters displayed on the screen, one at a time:

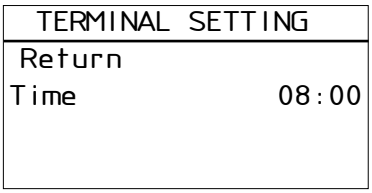
1 - Select the language



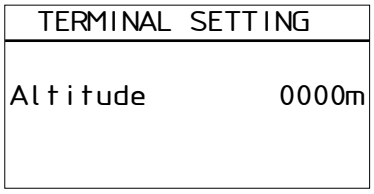
2 - Set the date



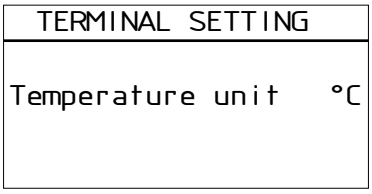
3 - Set the time



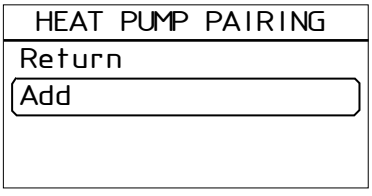
4 - Set the altitude at which the heat pump is installed



5 - Select the temperature unit



Turn the button to change the parameter value.
Confirm by pressing the set parameter value.



On the GeoCIAT^{TM} Power, after setting the temperature unit, the {Heat pump pairing} menu appears on the screen to establish communication between the control terminal and the heat pump.

3.2.3 Heat pump pairing

The unpaired GeoCIAT^{TM} Power, which is supplied with mains power, activates a series of actions to prepare for system start-up:
- Activation of the accelerator pumps to bleed air from the heating circuit and sensor.
- Activation of the auxiliary heaters (if option available) with a setpoint of 25°C.

While the machine is unpaired, the relays on the electronic board are activated to supply the accelerator pumps and the auxiliary heaters*. The only control active in "Unpaired" mode is monitoring of the water return temperature level to obtain a water setpoint of 25°C (hysteresis: 21°C)*.

The accelerator pump supply activates the air bleed sequence (12 hours with the accelerator pump stopping for 5 minutes every 15 minutes):
- Accelerator pump start-up with on/off cycles.
- Temporary inhibition of the flow switch on the GeoCIAT^{TM} Power 90HT and 120HT.

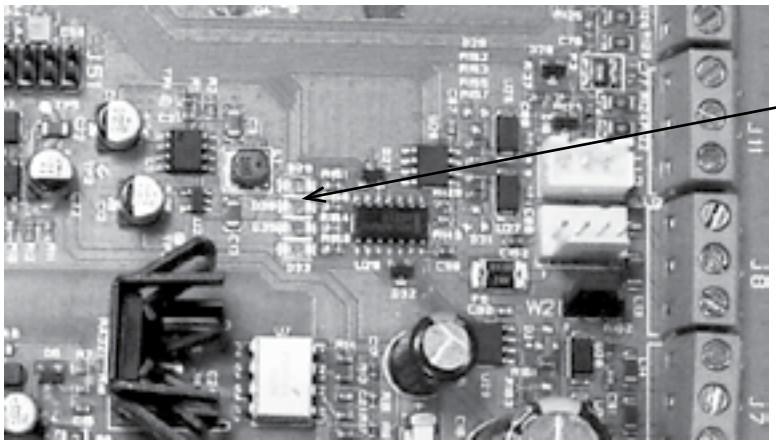
Once the machine has been paired, the latter exits system start-up preparation mode by setting the actuators indicated above to the rest position.

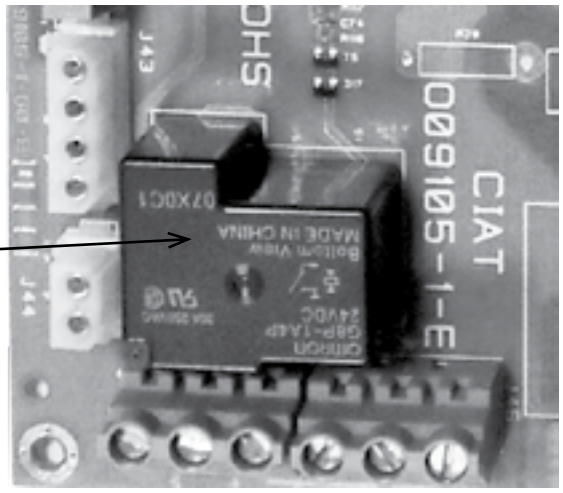
*If 5 kW to 9 kW auxiliary heater kit(s) installed.

Pairing the terminal with the heat pump

During the pairing sequence, the status of LED D30 indicates the status of the HomeConnect board:

- Heat pump unpaired: alternate (3 seconds on, 3 seconds off).
- Heat pump ready to be paired: alternate (0.5 seconds on, 0.5 seconds off + activation of power relay (sound signal indicating successful pairing until the button on the control terminal is pressed to confirm).
- Heat pump paired – board powered up: alternate (1 second on, 1 second off).





Sequence:

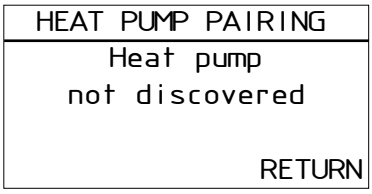
Select "{Pairing}" using the button then .	HEAT PUMP PAIRING Return Add
Select "{Heat pump pairing}" using the button then .	HEAT PUMP PAIRING Return Heat pump pairing SYSTEME pairing Maintenance
Select "{Heat pump}" using the button then .	HEAT PUMP PAIRING Return Heat pump
Select "{Add}" using the button then	HEAT PUMP PAIRING Return Add
The display opposite appears.	TERMINAL SETTING Stimulate the machine (see note) Setting: CANCEL

The display opposite appears. The time counts down on the HMI and the message below appears.	HEAT PUMP PAIRING Machine stimulation turn on the machine 20s XXs
The time counts down on the HMI and the message below appears.	HEAT PUMP PAIRING Machine stimulation turn off the machine 5s XXs
The time counts down on the HMI and the message below appears.	HEAT PUMP PAIRING Machine stimulation turn on the machine 10s XXs
The time counts down on the HMI and the last message below appears.	HEAT PUMP PAIRING Machine stimulation turn off the machine 5s XXs
Select "{CONFIRM}" using the button then .	TERMINAL SETTING turn on the machine Setting: CONFIRM
The display opposite appears. The radio search starts.	TERMINAL SETTING searching and pairing in progress Setting: CONFIRM

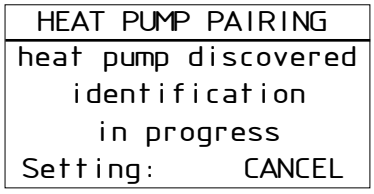
WARNING: **the time between powering off and powering up must be observed to ensure successful pairing.**

3 search results are possible:

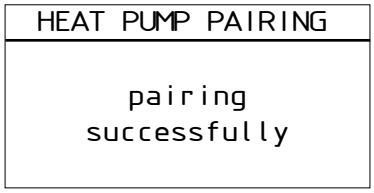
Case 1
No search results. The heat pump has not been identified by the control terminal:
- Repeat the heat pump stimulation procedure.
- Press the button.
- Restart the heat pump pairing sequence by moving closer to it.



Case 2
The search locates the heat pump's radio signal:
- Turn the button to select {CONFIRM}.
- Press the button to end the sequence: LED D30 should flash every 0.5 seconds until the button is pressed to confirm.



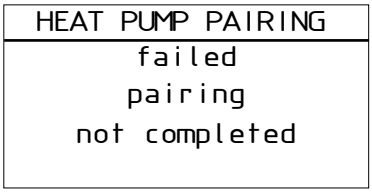
Select "{CONFIRM}" by turning the button then .



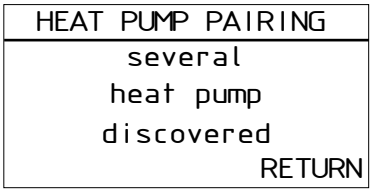
If pairing is successful, the message - {pairing successful} - appears on the screen for 3 seconds, then the terminal returns to the menu {Heat pump pairing}:

- Heat pump pairing is complete.
- The {Heating} , {Operating mode} and {Information} menus appear in the main menu.

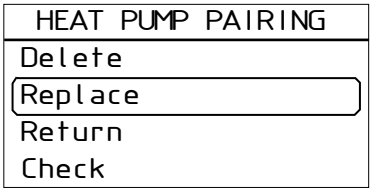
If they do not appear, pairing is unsuccessful and the message - {Failed pairing not completed} - appears on the screen for 3 seconds:
- Repeat the heat pump stimulation procedure.
- Press the button.
- Restart the heat pump pairing sequence, strictly adhering to the powering up and powering off times.



Case 3
The search finds several radio signals from different heat pumps:
- Make sure the heat pump stimulation procedure is only performed on the machine concerned.
- Repeat the heat pump stimulation procedure.
- Press the button.
- Restart the heat pump pairing sequence.



If pairing is successful (scenario 2), the {Add} function disappears from the screen and 3 new functions appear: {Check}/{Delete}/{Replace}.



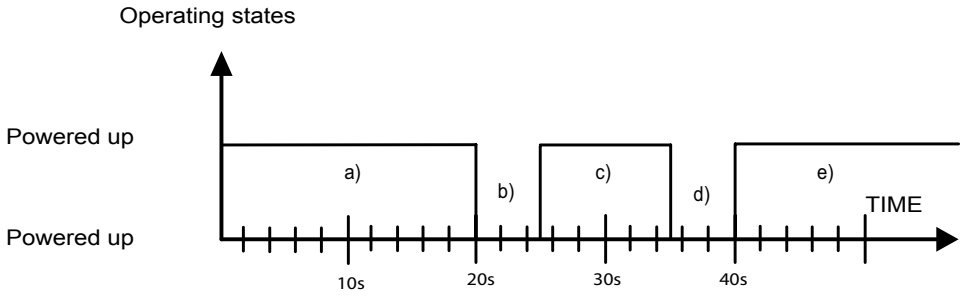
Replacing an HMI on a heat pump that is already paired

In the "{UNIT CONFIGURATION}" tab, select "{Pairing}". The screens below will appear:

Select "{Maintenance}" using the button then .	PAIRING SYSTEM pairing Maintenance Return Heat pump pairing
Select "{Element reset}" using the button then .	MAINTENANCE Range test Element reset Return
Select "{HtPump rst out sys.}" using the button then .	MAINTENANCE Heat pump reset HtPump rst out sys. Return
The display opposite appears. Before confirming, the stimulation procedure below must be started.	MAINTENANCE HtPump rst out sys. warning reset ? Setting: CANCEL

Manual heat pump stimulation procedure to clear the radio memory.

a) power up the unit for 20 seconds,
b) power off the unit for 5 seconds,
c) power back up for 10 seconds,
d) power off for 5 seconds,
e) power back up definitively



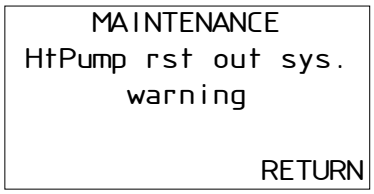
When the pairing sequence is correctly performed, LED D30 flashes every 0.5 seconds (see paragraph 3.2.3). If it does not flash as indicated, restart the manual stimulation sequence.

Select "{Confirm}" using the button then once the pairing sequence is complete.	TERMINAL SETTING HtPump rst out sys. warning reset ? Setting: CANCEL
The display opposite appears	TERMINAL SETTING HtPump rst out sys. in progress RETURN

There are 2 possible scenarios following the above display:

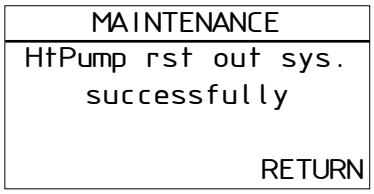
Case 1

If the {HtPump rst out sys.} request fails, the entire sequence must be restarted from this page. The failure is definitely a result of the above manual pairing sequence not being followed.



Case 2

If the {HtPump rst out sys.} request is successful, the radio section is reset and the paired components cleared. At this stage, automatic pairing must be restarted as described on page 21 "pairing the heat pump terminal" and follow the instructions on the HomeConnect control terminal.



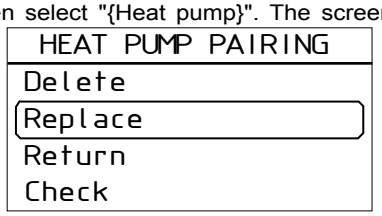
EN

Replacing a HomeConnect board following an electronic fault

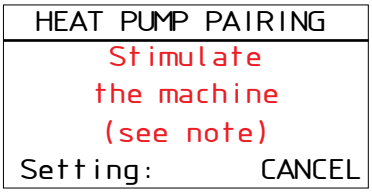
When an electronic board is replaced, the control terminal retains a certain number of components. The following procedure should be performed:

In the "{UNIT CONFIGURATION}" tab, "{Pairing}", "{Heat pump pairing}" then select "{Heat pump}". The screens below will appear:

Select "{Replace}" using the button then



The heat pump stimulation request screen then appears.



Start the manual stimulation procedure indicated in the previous section.

Warning, when the "{Replace}" function is used, all the components must be re-paired in accordance with the rules for replacing components such as the indoor sensor, if dual zone, etc.

3.2.4 Machine configuration

Set the machine parameters according to the type of system (see Machine parameters table in paragraph 5.3).

Lock parameter P99 on YES. Parameter P99 is accessible in the {Mach. parameters} sub-menu of the {Unit configuration} menu.

The on/off icon is displayed in the main menu.

3.2.5 Starting the heat pump

Position the on/off icon in the main menu selection box then confirm by pressing the button. The unit starts up in comfort heating mode by default. The accelerator pumps start up then, once the short cycle protection is completed, the compressor starts up.

Specific to single-phase models:

In order to meet the requirements of French standard NF-C 15 100 on start-up current limits, your unit features a smart system that monitors this current. In order to enable the electronics to self-configure and thus adapt to your system, it may not take place instantaneously when started for the first time (or after a power cut). The unit may attempt to restart, acquire some values and then restart under the best possible conditions.

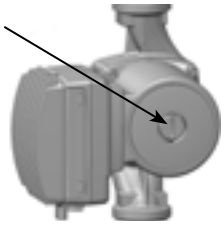
Specific to the three-phase model:

The GeoCIAT^{TM} Power 50HT and 65HT models do not have a phase controller as standard. Electrical connection of the control board may cause the compressor to rotate in reverse. This is not harmful to the compressor **if this process is stopped quickly**. 2 outcomes are possible:

- The sound of the compressor will indicate whether the rotation direction is incorrect.
- The software monitoring leads to a {COMPRESSOR ROTATION} fault.

In both cases, stop the heat pump using the ON/OFF button on the control terminal and reverse the two compressor supply phases on the electronic board (reversal while powered off).

3.2.6 Setting the accelerator pumps



Automatic seizure protection

To prevent the accelerator pumps from seizing when turned off, the control system runs them for 45 seconds every day, regardless of the operating mode.
To keep the automatic seizure protection function active, we strongly advise against powering off your machine. The machine must be turned off using the On/Off button on the control terminal, and not electrically.

On the 50H, 50H(T) and 65HT sizes, the accelerator pumps are equipped with a release screw.
It may be necessary to use it when starting the system or when powering it off for extended periods of time.

Controlling the accelerator pumps

On the GeoCIAT^{TM} Power, the accelerator pumps are EC type. The speed is controlled according to the various scenarios encountered by the control. The variable speed control signal is PWM type.
On the indoor accelerator pump, speed variation usually takes place during unit start-up.
On the outdoor accelerator pump, speed variation takes place according to the sensor's return temperature. There are 2 control parameters accessible from the level 3 access which are used to decrease or increase the default level of the speed thresholds (P122 to P125). This scenario may be applicable if there are loud noises in the pipes.

Stopping the accelerator pumps

The indoor accelerator pump is stopped when**:**
- The unit is turned off: the home screen display shows {UNIT STOP}.
- In absence mode with an outdoor temperature higher than 10°C.
- In heating mode if P120=YES and the outdoor temperature is higher than P194 (factory setting 20°C).
- In heating mode with the boiler heating element if the P121 value is changed to {NO}.

The outdoor accelerator pump is off:
- 3 minutes after the compressor is turned off.
- In heating mode with the boiler heating element if the P121 value is changed to {NO}.

Well pump

The well pump is controlled by the outdoor accelerator pump. It is cabled to connector J35 terminals 1-2.

3.3 Air bleed sequence

To keep your system running smoothly and, more specifically, if your GeoCIAT^{TM} Power is installed at a high point, you must bleed the air contained inside it at the time of commissioning. The machine is not equipped as standard with an automatic air bleed valve. However, it is strongly recommended to install one on the circuit's high point. For optimal efficiency, the hydraulic pressure of the circuit must be monitored and make-up water supplied to re-establish sufficient pressure, if necessary.

The GeoCIAT^{TM} Power is equipped with an automatic function which, when the **heat pump is not paired**, starts the circuit air bleed sequence by electrically connecting the heat pump to the electrical network.

If the heat pump has been paired and there is still air in the circuit, a manual bleed may be requested using the procedure below:

Select the {Air bleed} sequence in the "{Commissioning}" sub-menu of the "{Unit configuration}" menu, then select the value {YES} in the setting field.

The function is activated if the unit is off.

Remember to take the cap off the automatic bleed valve.

FRIDAY 31 JULY 14:58
Time remaining 10 hours
AIR BLEED

the sequence duration is limited to 12 hours with an accelerator pump stoppage of 5 minutes every quarter of an hour to allow the air bubbles to rise. The time remaining for the sequence is displayed on the home screen for information.

The function can be stopped at any time by selecting the value {NO} in the setting field.
At the end of the air bleed sequence, the message {END OF SEQUENCE} appears on the home screen. Always place the cap back on the automatic bleed valve when finished.

FRIDAY 31 JULY 14:58
END OF SEQUENCE
AIR BLEED

3.4 Activating the underfloor heating system

Like the air bleed function, the GeoCIAT^{TM} Power is also equipped with an automatic function which, when the heat pump is not paired, prepares to activate the underfloor heating system by electrically connecting the heat pump to the electrical network.

If the heat pump has been paired and the underfloor heating system has not been activated, a manual request can be issued as follows:

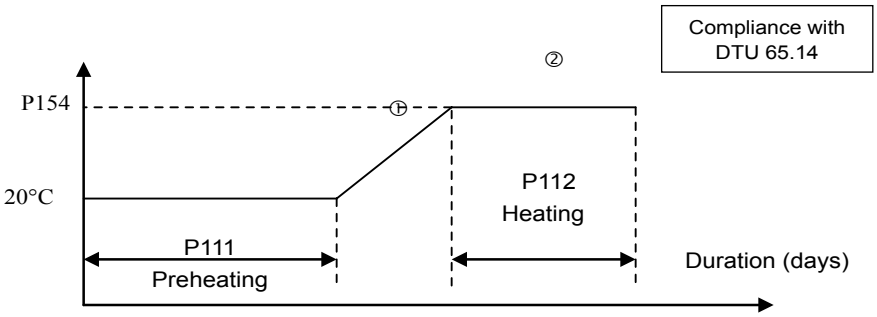
- Select the {UFHC heating} sequence in the {Unit configuration} sub-menu,
- Only installers with level 2 or 3 access may enter this machine configuration mode.

This function is only accessible if parameter P07={UFHC} and if the unit is off.

EN

In the {UNIT CONFIGURATION} menu, select {Commissioning} then confirm with CLIC. The display below appears.	UNIT CONFIGURATION Return Commissioning Mach. parameters Adjust. params
Select {UFHC heating} by turning the button then confirm using CLIC.	COMMISSIONING Air bleed UFHC heating Return
Turn the knob to confirm the setting with {YES}. Confirm your choice with CLIC.	COMMISSIONING UFHC heating NO Setting: YES

Heating setpoint (UFHC water return temperature in °C)



Where:

P111: Tile preheating period. Adjustable from 3 to 7 days in 1 day increments. Default value = 3 days.

P112: Heating period. Adjustable from 4 to 7 days in 1 day increments. Default value = 4 days.

① Temperature rise with a setpoint increase of 1°C every 4 hours,

② Maximum operating temperature maintained.

P154: Maximum operating setpoint. Adjustable from 20 to 40°C in 0.5°C increments. Default value = 35°C.

The time remaining for the sequence is displayed on the home screen for information. At the end of the sequence, the unit operates using the tile preheating setpoint (P110) for safety reasons. The home screen then displays the text {END OF SEQUENCE}.

FRIDAY 31 JULY 14:58
Time remaining 10 hours
UFHC HEATING

FRIDAY 31 JULY 14:58
END OF SEQUENCE
UFHC HEATING

4. SERVICING/MAINTENANCE

4.1 Unit maintenance

To access the various cooling, hydraulic, measurement and control components of the GeoCIAT^{TM} Power, refer to paragraph 1.2.2.

To access the electrics box, refer to paragraph 2.3.2.

Compressor

The compressor is fastened to the platform by four dia. 8 mm screws.

Caution: do not tighten these screws to a torque greater than:

- 13Nm +/-1Nm for compressors fitted on the GeoCIAT^{TM} Power 50H(T).
- 11Nm +/-1Nm for compressors fitted to the GeoCIAT^{TM} Power 65HT, 90HT and 120HT.

If you do not have a torque wrench, tighten them until they are snug then tighten a further 3/4 turn.

Accelerator pump

Certain accelerator pumps are equipped with a release screw. It may be necessary to use it when powering the system off for extended periods of time.

However, the accelerator pumps are EC type. The torque is controlled electronically and therefore should not require manual intervention.

Pressure connections and working on the pressure sensors and HP pressure switch

All of the pressure orifices are equipped with a schrader.

The pressure connections, the LP, HP pressure sensors and the HP pressure switch are accessible from the top and/or front of the cooling unit (Fig1 and 2).

GeoCIATTM Power 50H(T) - 65HT

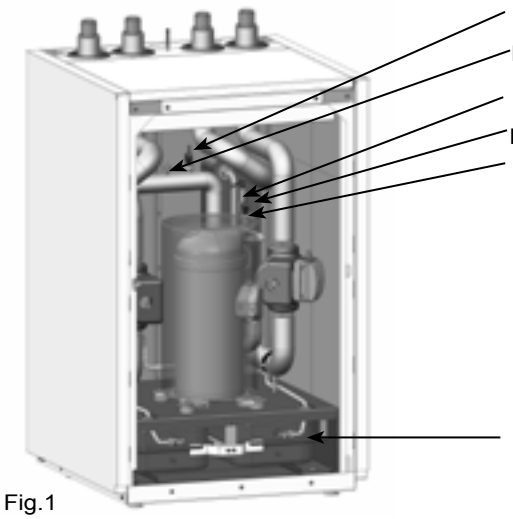


Fig.1

GeoCIATTM Power 90HT - 120HT

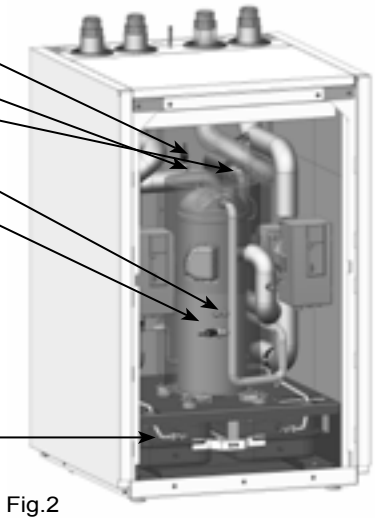


Fig.2

The remote HP pressure switch is mounted on a capillary. Take extra care not to break or damage the capillary when replacing the HP pressure switch.

Working on the expansion vessels

The pressure in the expansion vessels must be checked every year.

Accessing the expansion vessels:

1 - Close the expansion vessel shut-off valves. The handles on the shut-off valves have been removed to prevent the expansion vessels from being isolated. They are located in the a taped bag on the bottom of the unit.

2 - Unscrew the valves on the expansion vessel side.

3 - Remove the expansion vessel locking bracket after removing the 2 retaining screws.

4 - Slide the expansion vessels towards you (Fig.3).

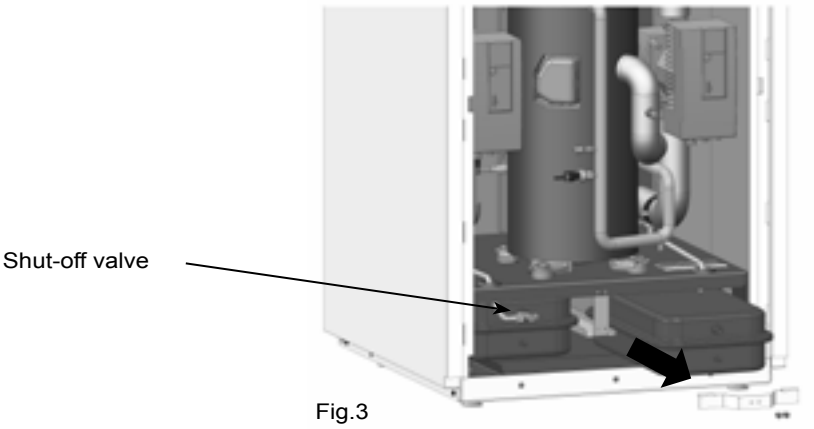


Fig.3

Once the operation on the expansion vessels is complete, the shut-off valves must be reopened and the handles removed to ensure the system is safe.

Electrical panel

The tightening torques for the electrical power wires are as follows (depending on the component to be supplied):

- single-phase starter: 1.2 Nm
- three-phase starter: 1 Nm
- power switch: 1.2. Nm
- 1.5 Nm EMC filter

Specific requirements for refrigerants

Maintenance operations on the heat pump must only be carried out by a maintenance company whose personnel are qualified to handle refrigerant fluids in accordance with order EU No. 517/2014.

R410A refrigerant fluid is a gas which has the following impact on the environment:

1/ No impact on the OZONE layer:
ODP (Ozone Depletion Potential) = 0.

2/ Impact on the greenhouse effect: GWP
(Global Warming Potential) = 2088.

- Units containing over 5 tonnes equivalent CO_2 of refrigerant, or 2.4 kg of R410A (2 kg in France, decree and order of 7 May 2007) must be periodically checked for leaks by qualified maintenance personnel.
- For all systems which contain over 5 tonnes equivalent CO_2 kg of refrigerant, or 2.4 kg of R410A (2 kg in France), users are required to keep a log of the quantities and types of fluids used, added and recovered as well as the dates and results of the sealing tests, the name of the technician and the company concerned. We strongly recommend that you keep this log up to date.
- A leak test must be carried out one month after any leak repairs.
- The maintenance company is responsible for collecting used refrigerant and having it recycled, regenerated or destroyed.

4.2 Checks

Mandatory annual checks:
- Leaks on the refrigeration circuit.
- Check for loose electrical connections.
- Check the glycol mix and pH. Always top up with the same type of mix initially used.
- Screen filter fouling check and manual testing of safety valves on the primary and secondary circuits.
- The filters may need to be checked more frequently.

4.3 User recommendations

To ensure that the unit operates correctly, we recommend that you sign a maintenance contract with your installer or an approved maintenance company. **Consult our list of CIAT Authorised Technical Agents at www.ciat.fr**

With the system running, check it thoroughly for any abnormal visual signs or noises.

Check for water leaks and traces of oil around the unit.

We recommend avoiding the use of pressure gauges on the refrigerant circuit during basic operating checks. A temperature reading is sufficient in most cases.

4.4 Operating readings

Have an approved maintenance company or your installer record the operating readings and carry out the checks shown in the table below at least once a year. Access level 2 or 3 is required to complete this table.

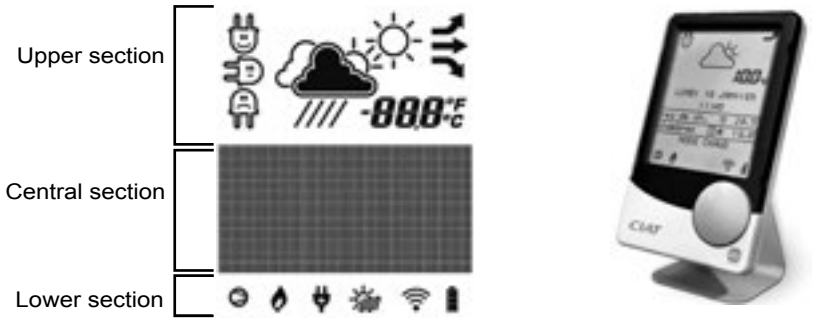
Date/Time							
Ambient air temperature P(251)		°C					
Ambient air temperature P(250)		°C					
Compressor	Low pressure (275)	bar					
	LP sat temp (P268)	°C					
	HP pressure (P277)	bar					
	HP sat temp (P269)	°C					
Indoor heat exchanger	Discharge temperature (P274)	°C					
	Indoor heat exchanger fluid temperature (P271)	°C					
	Indoor heat exchanger water return temperature (P280)	°C					
	Indoor heat exchanger water supply temperature (P281)	°C					
Outdoor heat exchanger	Intake temperature (P273)	m^3/h					
	Outdoor heat exchanger water supply temperature (P283)						
	Geocooling water supply temperature (cooling mode [p282])						
Accelerator pumps	Memo indoor accelerator pump flow rate (P284)	m^3/h					
	Memo outdoor accelerator pump flow rate (P285)						
Electrical supply voltage		V					
Voltage at unit terminals		V					
Compressor input current							
Frost protection triggering temperature (plate heat exchanger frost protection)		°C					
Electrical connection tightness check							
Mechanical inspection: tubes, fastenings, etc.							
Control check							
Differential water pressure switch							
Sealing test on the cooling circuit							
Cleaning the screen filters on the indoor and outdoor circuits							

5. HOMECONNECT CONTROL

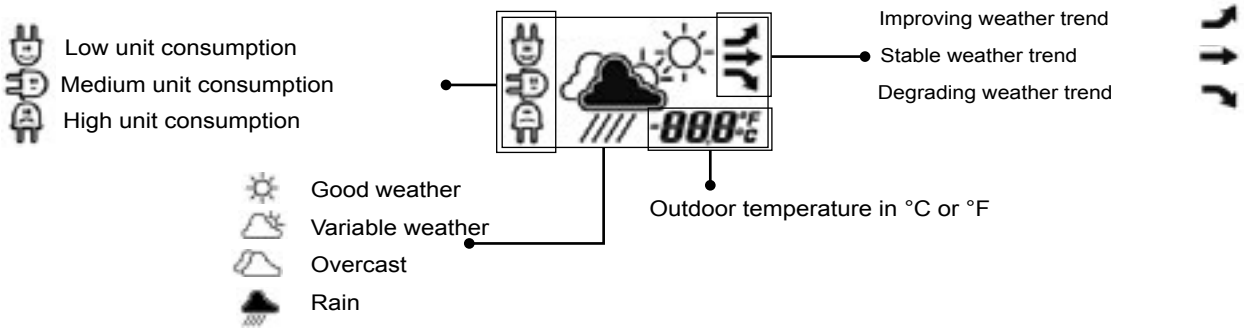
The GeoCIAT^{TM} Power control terminal cannot be used on other heat pumps with HomeConnect control, and vice versa.

5.1 Terminal unit screen display

The graphic screen has two fixed-segment information areas (top and bottom) and an interactive area (centre).

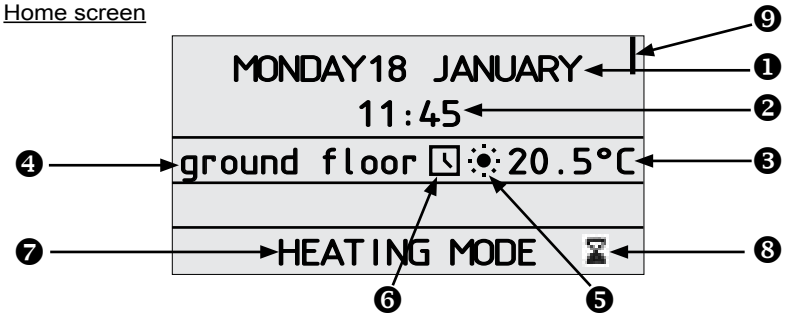


Upper section



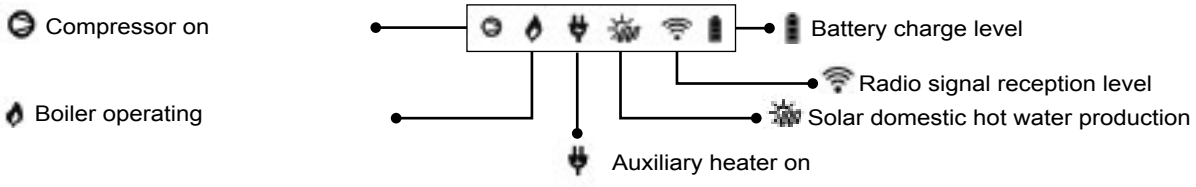
Central section

Home screen



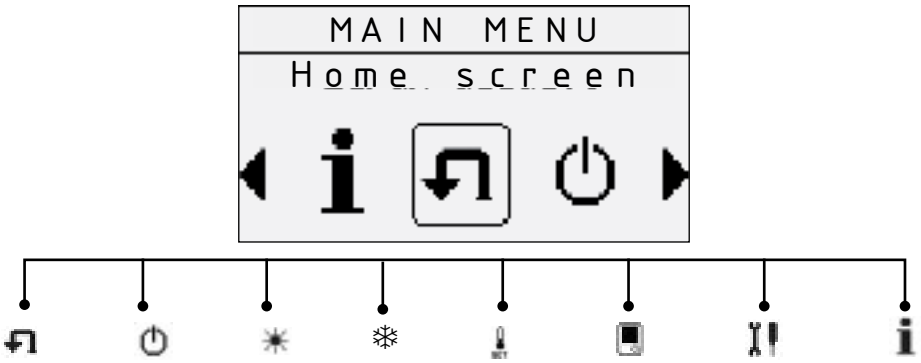
❶ Date display.
❷ Time display.
❸ Heating zone ambient temperature display.
❹ Name of the heating zone (10 characters max.).
❺ Setpoint status indicator (frost-free, economy, comfort).
❻ Programming status indicator (timed, override).
❼ Unit operating mode.
❽ Operation symbol in test mode.
❾ Operating mode in backup mode following loss of indoor or outdoor temperature sensor

Lower section



Main Menu

The {Main menu} is accessed by pressing the button on the home screen.



EN

Home screen: - Back to the home screen

On/Off (not visible if P99=NO, see paragraph 5.3):

- Unit start-up
- Unit turned off

Heating (not visible if the heat pump is not paired, see paragraph 3.2.3 Heat pump pairing):

- Activation of heating mode if the unit is already running

_____(not visible if the heat pump is not paired, see paragraph 3.2.3 Heat pump pairing):

- Geocooling mode activation

Operating mode (not visible if the heat pump is not paired, see paragraph 3.2.3 Heat pump pairing):

- Unit operating mode setting
- Operation type setting (programmed, economy, comfort)
- Temperature setpoint setting
- Programming profile setting

Setting the terminal:

- Language selection
- Date setting
- Time setting
- Heating zone customisation
- Altitude setting
- Temperature unit selection
- Ambient temperature correction
- Backlighting activation/deactivation
- Contrast adjustment

Unit configuration:

- Regulation parameter setting (machine, adjustment, reading and communication)
- Alarm memorisation
- Alarm reset

Information (not visible if the heat pump is not paired, see paragraph 3.2.3 Heat pump pairing):

- Display of values measured by the heat pump sensors and probes

Turn the knob to scroll through the icons. The icon in the centre of the box corresponds to the text on the second line. The previous and next menus are displayed on either side of the box.

Press the CLIC button to confirm the selected icon.

For further information on reading and programming the terminal, refer to the manual provided with it.

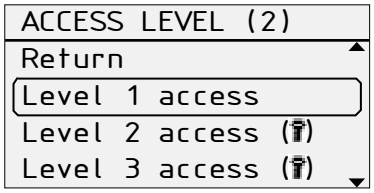
5.2 Accessing the settings

Access levels

Enter the {Unit configuration} menu and select the "{Access level}" sub-menu.

The control terminal has 3 access levels depending on the user's role.

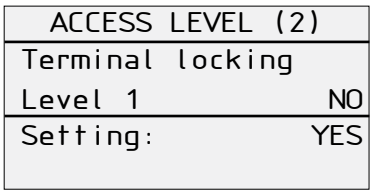
The current access level is shown in brackets.



{Level 1 access} – User access
{Level 2 access} – Installer access
{Level 3 access} – CIAT after-sales access level
The key indicates that a numerical code is required to confirm level 2 or 3 access.
Note: if the terminal is configured with level 2 or 3 access for more than an hour, it reverts automatically to level 1 for safety reasons.

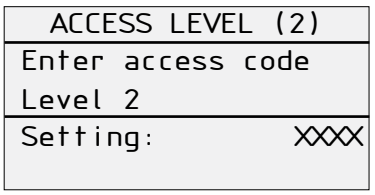
Level 1 locking

IMPORTANT: Once the unit has been started up, the installer must lock it at level 1 access (user):
In the {Level 1 access} sub-menu, select the value {YES} in the setting field and confirm that the control terminal is locked at level 1 access.
Note: this function is only accessible at level 2 or 3 access.

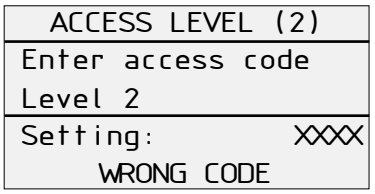


Level 2 access

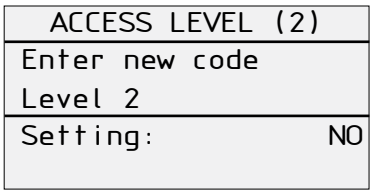
Level 2 is accessed via a numerical code. **The default code is 1234**.
Enter the default code in the {Level 2 access} sub-menu:
- the digit to be adjusted flashes.
- turn the button to increase or decrease the value of the digit (0 ≤ X ≤ 9).
- press the button to confirm the set value, select the next value and finally confirm the code.



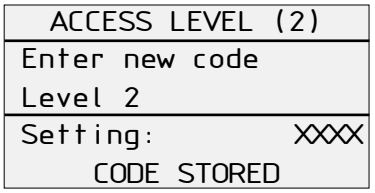
Once the code has been confirmed, if it is incorrect, the message {WRONG CODE} is displayed on the last line for 5 seconds, then the previous screen is displayed again to allow the code to be re-entered.
If the code is entered incorrectly three times, the display reverts to {Level 1 access}.



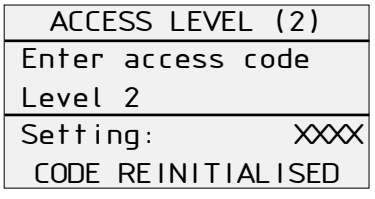
Once the code has been confirmed during initial use, if it is correct the new code can be accessed and set. Select the {YES} setting field. Set the new code. Once the 4th digit has been confirmed, the message {CODE STORED} appears for 5 seconds then the screen reverts to the {Level 1 access} display.



If the installer does not wish to modify the level 2 access code, select the {NO} setting field.



Resetting the password (revert to default code)
In the {Level 2 access} sub-menu (1st digit flashing), press and hold the button for 5 seconds. The message {CODE REINITIALISED} is displayed for 5 seconds, then the screen reverts to the {Level 1 access} display.
This reset can be used if the installer has forgotten his/her password.

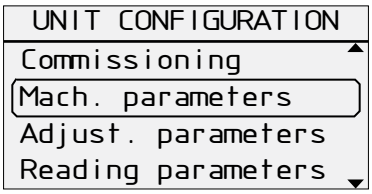


5.3 Configuration

You will have to adjust a number of parameters to suit your particular system and requirements. These parameters (identified by the letter 'P' followed by a digit) will help you to keep your unit operating at its peak performance.

To access the parameters, enter the {Unit configuration} menu on the control terminal.
The parameters are grouped into 3 families:

- **{Mach. parameters}**
- **{Adjust. parameters}**
- **{Reading parameters}**



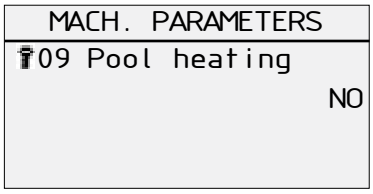
EN

Machine parameters

The {Mach. parameters} are used to quickly configure the heat pump in accordance with the system.
IMPORTANT: Only qualified personnel may access the machine parameters.

No.	Word sequence	Values	Comments	Factory setting
06	{Presence glycol} {outdoor circuit}	{NO} {MPG20%} {MPG40%}	Pure water on the primary circuit Glycol/water mix on the primary circuit, max. glycol content MPEG20% Glycol/water mix on the primary circuit, max. glycol content MPEG40%	{NO}
07	{Heating type}	{UFHC} {FAN} {RADIATOR} {FAN+UHCS*} {RADIATOR+UHCS*} {2 UHCS*}	Underfloor heating system Fan coil units Radiators Fan coil units + Underfloor heating system Radiators + Underfloor heating system 2 Underfloor heating systems	{UFHC}
08	{DHW heating}	{NO} {HEAT PUMP} {SOLAR}	No domestic hot water production Thermodynamic domestic hot water production Solar domestic hot water production	{NO}
09	{Pool heating}	{NO} {YES}	No pool heating Pool heating with heat pump	{NO}
10	{Humidity sensor check}	{NO} {YES}	No humidity check on the underfloor heating and cooling system Humidity sensor connection	{NO}
11	{Backup type}	{NO} {ELECTRIC} {BOILER}	No heating elements on the system Management of electric heating element integrated in the heat pump Installation of heat pump for boiler backup operation	{ELECTRIC}
12	{Boiler operation}	{SIMULTANEOUS} {ALTERNATE}	Boiler controlled by heat pump control Boiler controlled by its own control	{SIMULTANEOUS}
13	{Load shedding control}	{HEAT PUMP} {BACKUP} {HEAT PUMP+BACKUP}	Possibility of heat pump load bypass Possibility of auxiliary bypass Possibility of heat pump and heating element bypass	{HEAT PUMP}
14	{Customer pump management}	{NO} {CONTINUOUS} {SIMULTANEOUS} {REGULATED}	No HomeConnect control management Continuous operation in heating, cooling or absence mode Controlled by operation of the GeoCIAT^{TM} Power accelerator pump Regulated by the room sensor based on the indoor environment control differential setpoints	{NO}
15	{Customer control}	{NOT USED} {COOL/HEATING} {ABSENCE} {DHW}	On/Off input J11 (terminals 2 and 3) not used Input used to force the heat pump to stop or into heating mode Input used to force the heat pump into absence mode Input used to control domestic hot water production	{NOT USED}
16	{Eco mode signal management}	{NO} {YES}	No connection to comfort units (V2000, V30 type, etc.) Management of econo mode signal on comfort units	{NO}
17	{Boiler operating direction of action}	{NO} {NC}	Boiler operating authorisation via opening of heating element contact Boiler operating authorisation via closing of heating element contact	{NC}
18	{Main zone selection}	{UFHC} {RADIATOR} {FAN}	If P07 activated in dual zone mode ({FAN+UHCS} or {RADIATOR+UHCS})	{UFHC}
19	{DHW V3V direction of action}	{NO} {NC}	Supply direction for 3-way valve when DHW mode is active. Power supply logic. When the 3-way valve is supplied, the 3-way valve switches to DHW mode	{NO}
99	{Parameter locking}	{NO} {YES}	Unlocking of the setting range of the machine parameters Locking of the machine parameter values and heat pump operating authorisation	{NO}

Setting P99



For security reasons relating to the operation of the heat pump, parameter P99 is used to lock the machine parameter values .

Once configuration is complete, make sure that machine parameter P99 is locked by selecting the value {YES} in the setting field.
A key symbol appears in front of the machine parameters number to indicate that the parameters are no longer modifiable.

If machine parameter P99 is not locked (P99={NO}), it is not possible to start up the heat pump: The On/Off button is not visible in the main menu.

Adjust. parameters

The Adjustment parameters are used to fine tune the machine according to the user's requirements. Parameters indicated by the symbol can be accessed by the user.

No.	Word sequence	Values	Comments		Factory setting
100	{Cooling mode authorisation}	{NO} {YES}	Cooling mode prohibited Cooling mode authorised		{NO}
101	{Compressor authorisation}	{NO} {YES}	Compressor not authorised to operate Compressor operating authorisation		{YES}
105	{Ind environment compensation}	0 to 5 in increments of 0.5	Correction of the setpoint for water return to the heat pump based on the temperature difference between the air setpoint and the ambient temperature		2 if {UFHC} 3 if {FAN} 5 if {RADIATOR}
106	{Ind environment compensation}	0 to 5 in increments of 0.5	Correction of the setpoint for water return to the heat pump based on the temperature difference between the air setpoint (zone 2) and the ambient temperature (zone 2)		2
110	{Slab preheating setpoint}	15°C to 20°C in increments of 0.5 59°F to 68°F in increments of 1	Water return setpoint for the underfloor heating system(s) during the tile preheating phase		25°C 77°F
111	{Slab preheating time}	3 to 7 days in increments of 1	Tile preheating period during which the water supply setpoint is maintained at value P110		3
112	{UFHC heating time}	4 to 7 days in increments of 1	Duration of the tile heating phase during which the maximum operating temperature is kept constant (see parameter P154)		4
120	{Accelerator pump eco shutdown}	{NO} {YES}	No economy management of indoor accelerator pump Economy stoppage of indoor accelerator pump based on the outdoor temperature (see parameters P193 and P194)		{YES}
121	{Indoor accelerator pump boiler operating}	{NO} {YES}	Indoor accelerator pump stoppages during boiler operation Indoor accelerator pump continuous operation during boiler operation		{YES}
130	{Cool air setpoint}	18 to 30°C in increments of 0.5 64 to 86°F in increments of 1	Setting the ambient air setpoint in comfort mode		22°C 72°C
131	{Cool air setpoint}	P130 to 30°C in increments of 0.5 P130 to 86°C in increments of 1	Setting the ambient air setpoint in economy mode		25°C 72°C
132	{Cold water setpoint}	10 to 28°C in increments of 1 50 to 82°F in increments of 1	Setting the setpoint for water return to the heat pump in comfort mode	for fan coil unit (with or without underfloor heating system)	12°C 54°C
		20 to 25°C in increments of 1 68 to 77°F in increments of 1		For 1 or 2 underfloor heating systems	23°C 73°C
133	{Cold water setpoint}	P132 to 28°C in increments of 1	Setting the setpoint for water return to the heat pump in economy mode	for fan coil unit (with or without underfloor heating system)	12°C
		P132 to 25°C in increments of 1		For 1 or 2 underfloor heating systems	23°C
		P132 to 82°F in increments of 1		for fan coil unit (with or without underfloor heating system)	54°F
		P132 to 77°F in increments of 1		For 1 or 2 underfloor heating systems	73°F
134	{Max cooling drift end water setpoint}	10 to 28°C in increments of 1 50 to 82°F in increments of 1	Setting the maximum setpoint for water return to the heat pump	For an indoor circuit without glycol and for terminal units (fan coil unit)	15°C 59°F
135	{Outdoor air temp cooling drift start}	10 to 40°C in increments of 1 50 to 104°F in increments of 1	Outdoor air temperature above which the water setpoint is maintained (P132 or P133)	for fan coil unit	25°C 77°F
136	{Outdoor air temp end of cooling drift}	P135+5°C to 45 in increments of 1 P135+9°F to 113 in increments of 1	Outdoor air temperature below which the maximum water setpoint is maintained (P134)		35°C 95°F
140	{Cool air setpoint }	18 to 30°C in increments of 0.5 64 to 86°F in increments of 1	Setting the ambient air setpoint in zone 2 in comfort mode		22°C 72°F
141	{Cool air setpoint }	P140 to 30°C in increments of 0.5 P140 to 86°C in increments of 1	Setting the ambient air setpoint in zone 2 in economy mode		25°C 77°F
142	{Cold water setpoint }	15 to 20°C in increments of 1 59 to 68°F in increments of 1	Setting the water supply setpoint in zone 2 in comfort mode		18°C 64°F
143	{Cold water setpoint }	P142 to 20°C in increments of 1 P142 to 68°F in increments of 1	Setting the water supply setpoint in zone 2 in economy mode		18°C 64°F
150	{Hot air setpoint}	15°C to 30°C in increments of 0.5 59°F to 86°F in increments of 1	Setting the ambient air setpoint in comfort mode		21°C 70°F
151	{Hot air setpoint}	15°C to P150 in increments of 0.5 59°F to P150 in increments of 1	Setting the ambient air setpoint in economy mode		19°C 66°F
152	{Hot water setpoint}	20°C to P154 in increments of 0.5 68°F to P154 in increments of 1	Setting the setpoint for water return to the heat pump in comfort mode		20°C 68°F
153	{Hot water setpoint}	20°C to P152 in increments of 0.5 68°F to P152 in increments of 1	Setting the setpoint for water return to the heat pump in economy mode		20°C 68°F

No.	Word sequence	Values	Comments		Factory setting
154	{Max heating drift end water setpt}	20°C to 40°C in increments of 0.5 68°F to 104°F in increments of 1	Setting the maximum setpoint for water return to the heat pump...	for underfloor heating system	35°C 95°F
		20°C to 55°C in increments of 0.5 68°F to 131°F in increments of 1		for terminal units (fan coil units or radiators)	45°C 113°F if {FAN}
		20°C to 70°C in increments of 0.5 68°F to 170°F in increments of 1		for terminal units (fan coil units or radiators) in back up operation	55°C 131°F if {RADIATOR}
155	{Outdoor air temp heating drift start}	-10°C to 30°C in increments of 1 14°F to 86°F in increments of 1	Outdoor air temperature above which the water setpoint (P152 or P153) is maintained.	for terminal units (fan coil units or radiators)	20°C 68°F
		17°C to 25°C in increments of 1 63°F to 77°F in increments of 1		for underfloor heating system	
156	{Outdoor air temp end of heating drift}	-15°C to (P155-5°C) in increments of 1 5°F to (P155-9°F) in increments of 1	Outdoor air temperature below which the maximum water setpoint (P154) is maintained.	for terminal units (fan coil units or radiators)	-7°C 19°F
		-15°C to 8°C in increments of 1 5°F to 46°F in increments of 1		for underfloor heating system	
160	{Hot air comfort setpoint}	15 to 30°C in increments of 0.5°C	Setting the ambient air setpoint in zone 2 in comfort mode		21°C
		59 to 86°F in increments of 1			70°F
161	{Hot air eco setpoint}	15 to P160°C in increments of 0.5	Setting the ambient air setpoint in zone 2 in economy mode		19°C
		59 to P160°F in increments of 1			59°F
162	{Hot water comfort setpoint}	25 to P164°C in increments of 0.5	Setting the water supply setpoint in zone 2 in comfort mode		25°C
		77 to P164°F in increments of 1			77°F
164	{Mx heat drift end water setpt}	25 to 45°C in increments of 0.5°C	Setting the max. water supply setpoint in zone 2		40°C
		77 to 113°F in increments of 1			104°F
165	{Outdoor air temp heating drift start}	17 to 25°C in increments of 1	Outdoor air temperature above which the water setpoint is maintained in zone 2		20°C
		63 to 77°F in increments of 1			68°F
166	{Outdoor air temp end of heating drift}	-15 to 8°C in increments of 1	Outdoor air temperature below which the max. water setpoint is maintained in zone 2		-7°C
		5 to 46°F in increments of 1			19°F
170	{Air setpoint}	8 to 15°C in increments of 0.5 47°F to 59°F in increments of 1	Setting the frost-free air setpoint		10°C 50°F
171	{Air absence setpoint}	8 to P170 in increments of 0.5	Setting the frost-free air setpoint in zone 2		10°C
		47 to P170 in increments of 1			50°F
172	{DHW setpoint}	48 to 70°C in increments of 1 118°F to 152°F in increments of 1	Setting the DHW tank setpoint		65°C 149°F
173	{DHW thermodynamic heating time}	00:00 to 02:00 in increments of 30 mins	Setting the max. DHW tank thermodynamic heating period		01:00
174	{Pool water setpoint}	20°C to 35°C in increments of 0.5 68°F to 95°F in increments of 1	Setting the pool setpoint		28°C 82°F
175	{DHW backup heating time}	00:00 to 04:00 in increments of 30 mins	Setting the max. DHW tank electric heating element thermodynamic heating period		04:00
176	{housing element consumption}	0 to 100W in increments of 10W	Enter the power of the crankcase heater if option to install one		0 W
177	{Back heat consumption}	0 to 5kW in increments of 1kW	Enter the power of the electric heating element if an electric heating element kit is installed		0 kW
178	{Tank sensor present}	{NO}	If there is no sensor in the DHW TANK, the DHW setpoint is controlled via the heat pump water return		{YES}
		{YES}	If there is a sensor in the DHW TANK, the DHW setpoint is controlled via the tank's internal temperature		
180	{Heat pump stage differential}	0.5°C to 5°C in increments of 0.5 1°F to 9°F in increments of 1	Setting the compressor operation differential		4°C 7°F
181	{Backups stage differential}	0.5°C to 10°C in increments of 0.5 1°F to 18°F in increments of 1	Setting the heating element operation differential		2°C 3°F
183	{Boiler operation differential}	0.5°C to 3°C in increments of 1 1°F to 5°F in increments of 1	Setting the operation differential of the boiler controlled by the heat pump control		1°C 2°F
190	{Backup permission out air temp limit}	-20°C to 24°C in increments of 1 -4°F to 75°F in increments of 1	Outdoor air temperature setting below which the heat pump is not authorised to operate		-20°C -4°F
191	{Backup operating outdoor air temp limit}	P190 to 24°C in increments of 1 P190 to 75°F in increments of 1	Outdoor air temperature setting below which the heating elements are authorised to operate		5°C 41°C
193	{Cooling acc pump shutdown outdoor air temp}	20 to 30°C in increments of 1	Outdoor air temperature setting below which the indoor accelerator pump is not authorised to operate		25°C
		68 to 86°F in increments of 1			77°C
194	{Heating acc pump shutdown outdoor air temp}	15°C to 30°C in increments of 1 50°F to 86°F in increments of 1	Outdoor air temperature setting above which the indoor accelerator pump is not authorised to operate		20°C 68°F

Note: Cooling mode on a heat pump can only operate if the emitter (P07) is not a radiator.

Reading parameters

To access rapid reading of the values measured by the heat pump sensors and probes, we recommend that you refer directly to the measurement table accessible in the {Information} menu .

All of the values measured and calculated by the control are available in the {Reading parameters} sub-menu. Parameters indicated by the symbol can be accessed by the user.

No.	Word sequence	Values read		
250	{Outdoor air temp}	Outdoor air temperature		
251	{Room air temp}	Ambient air temperature		
252	{Room air temp }	Ambient air temperature in zone 2		
253	{Corrected water setpoint}	Setpoint for water return to the heat pump corrected by the control		
254	{Corrected water setpoint }	Setpoint for water supply from zone 2 corrected by the control		
255	{Corrected stage differential}	Compressor operation differential corrected by the control		
256	{Compressor s-cyc time delay pro}	Minimum compressor stoppage time before restart authorisation		
268	{LP sat fluid temp}	LP saturating steam temperature		
269	{HP sat fluid temp}	LP saturating steam temperature		
271	{Indoor heat exch fluid temp}	Refrigerant fluid temperature measured at the indoor heat exchanger		
272	{Suction fluid superheating}	Calculated overheating temperature at suction		
273	{Suction fluid temp}	Refrigerant fluid temperature measured at the compressor suction		
274	{Discharge fluid temp}	Refrigerant fluid temperature measured at the compressor discharge		
275	{LP pressure}	Relative pressure of the refrigerant fluid measured at the LP pressure sensor		
277	{HP pressure}	Relative pressure of the refrigerant fluid measured at the HP pressure sensor		
280	{Ind heat ex water return temp}	Temperature of water return to the heat pump measured at the indoor heat exchanger inlet		
281	{Ind heat ex water start temp}	Temperature of water supply to the heat pump measured at the indoor heat exchanger outlet		
283	{Out heat ex water start temp}	Temperature of water supply to the heat pump measured at the outdoor heat exchanger outlet		
284	{memorised indoor heat ex flowrate}	Flow rate of indoor accelerator pump memorised at last flow rate check		
290	{Water start temp }	Zone 2 water supply temperature		
291	{DHW temp}	Water temperature inside the DHW tank		
293	{Pool water temp}	Water temperature measured (in the pool) at the pool water return		
300	{Ind heat ex water frost prot limit}	Water temperature low limit to prevent the risk of the indoor heat exchanger freezing		
302	{Out heat ex water frost prot limit}	P93	Water temperature low limit to prevent the risk of the outdoor heat exchanger freezing	Glycol present on the outdoor circuit
		3°C		No glycol on the outdoor circuit
		37°F		
303	{Out heat ex fluid frost prot limit}	P93-5°C	Refrigerant fluid temperature low limit to prevent the risk of the outdoor heat exchanger freezing	Glycol present on the outdoor circuit
		P93-9°F		
		-2°C		No glycol on the outdoor circuit
		28°F		
305	{Heating mode water return limit}	Low temperature limit for water return to the heat pump in heating mode		
370	{Open percentage main expan valve}	Number of electronic expansion valve half opening steps		

Counters

The heat pump control continuously indicates the compressor's operating time in hours in the various operating modes.

Parameters indicated by the symbol can be accessed by the user.

No.	Word sequence	Counters
310	{Compressor operating}	Operating-hour meter for global compressor operation
312	{Cooling mode operating}	Operating-hour meter for operation in GeoCooling mode (cooling mode)
313	{Heating mode operating}	Operating-hour meter for compressor operation in heating mode
314	{Backups operating}	Operating-hour meter for authorising operation of the heating elements
315	{Unoccupied mode operating}	Operating-hour meter for compressor operation in absence mode
316	{DHW production operating}	Operating-hour meter for compressor operation in domestic hot water thermodynamic production
317	{Pool heating operating}	Operating-hour meter for compressor operation in pool heating mode
320	{No of alarm resets}	Reset counter for alarms occurring on the heat pump
321	{Number of threshold volt limit alarms}	Counter for {THRESHOLD VOLT LIMIT} alarms occurring on the heat pump
322	{Single-phase starter fault no.}	Counter for {SINGLE PHASE STARTER} faults
323	{Starter fault no. discharge}	Counter for {DISCHARGE LIMIT} faults
400	{Comp_inst_elec_power}	Compressor instantaneous electrical power
401	{Energy capacity calorific}	Instantaneous heating capacity
402	{total_input_power_consupt_inst}	Instantaneous total absorbed power
403	{tot_aux_power_consupt_inst}	Instantaneous total auxiliary power
410	{elec_energy_capa_heating}	Electrical energy meter in heating mode
411	{elec_energy_capa_DHW}	Domestic hot water mode electrical energy meter
412	{energy_capacity_calorific}	Heat energy meter
413	{elec_energy_capa_auxiliary}	Auxiliary electrical energy meter
414	{elec_energy_capa_backup}	Heating element electrical energy meter
415	{elec_energy_capa_heat_total}	Heating mode total electrical energy meter
416	{elec_energy_capa_dhw_total}	Domestic hot water mode total electrical energy meter
417	energy_capacity_calo_total}	Total heat energy meter
418	{elec_energy_capa_aux_total}	Auxiliary total electrical energy meter
419	{elec_energy_capa_elem_total}	Electric heating element total electrical energy meter

see document "configuration and list of fault codes" no. 3977127

To monitor the heat pump operating hours and provide optimised management of the operating modes, it is possible to reset the meters, with the exception of P321. To do this, simply place the meter in the reset position and press and hold the terminal button for at least 3 seconds. The counter then reverts to the value **0h.**

Product reference

To find out the software version installed on the heat pump, please refer to the reading parameters below

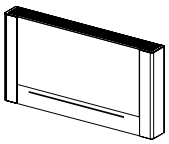
No.	Word sequence	Product reference
450	{CPU board version}	Control board version no.
452	{Terminal version}	Control terminal version no.
460	{Expansion board version}	Expansion board version no. (option management)
470	{Serial no.}	Heat pump serial no.

5.4 Operating modes

Adjust parameter P07 = Type of heating emitter as shown below for your system and the desired operating mode:

HEATING MODE

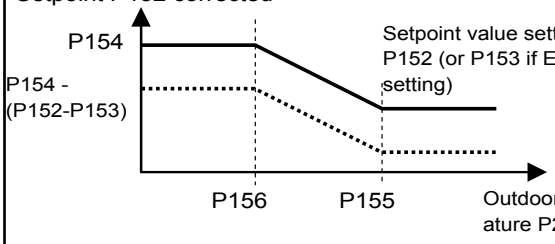
CU type installation: P07 = {FAN} or {RADIATOR} ☀

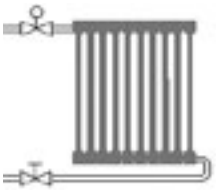


Control without indoor environment compensation P105 = 0 (control on the water return only).

Water ☼ setpoint = P152: heating ☼ setpoint
Water ◐ setpoint = P153: heating ◐ setpoint

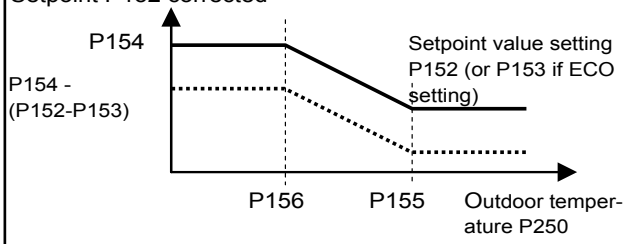
Setpoint P152 corrected





Control with indoor environment compensation (P105 ≠ 0) (control on the water return depending on the difference between the ambient temperature and the air setpoint).
Air ☼ setpoint = P150: hot air ☼ setpoint
Air ◐ setpoint = P151: hot air ◐ setpoint

Setpoint P152 corrected — Corrected control setpoint (P253)

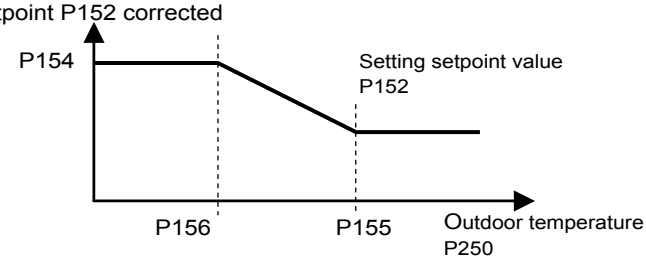


The maximum water setpoint is limited to 55°C if P11 = NO or ELECTRIC
The maximum water setpoint is limited to 70°C if P11 = BOILER

UFHC type installation: P07 = UFHC

Air ☼ setpoint = P150: hot air ☼ setpoint
Air ◐ setpoint = P151: hot air ◐ setpoint

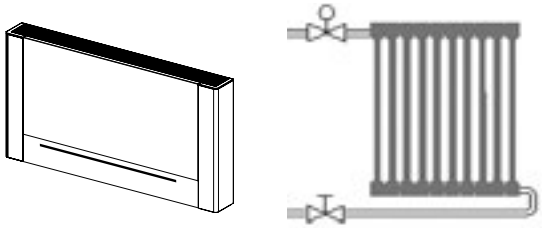
Setpoint P152 corrected



The maximum water setpoint is limited to 40°C

ABSENCE MODE

CU type system: P07 = {FAN} or {RADIATOR}



Heating by heat pump. Water return limited to 27.5°C min.

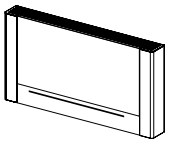
UFHC type installation: P07 = UFHC

Heating by heating elements with no water return limit. If there are no heating elements, heating is provided by the heat pump with a minimum water return temperature of 21°C.

Air ○ setpoint = P170: frost-free ○ setpoint

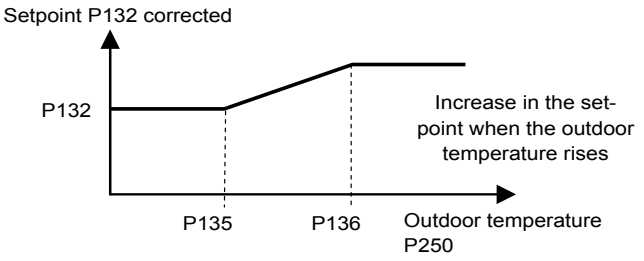
COOLING MODE

CU type installation: P07 = {FAN}



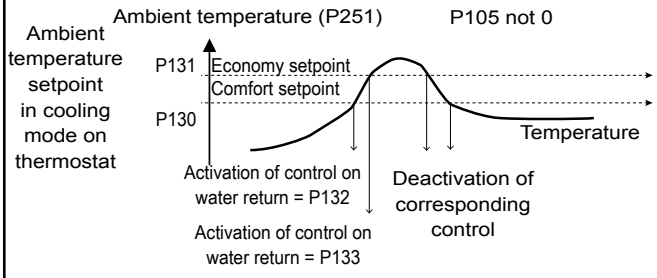
Control without indoor environment compensation P105 = 0 (control on the water return only).

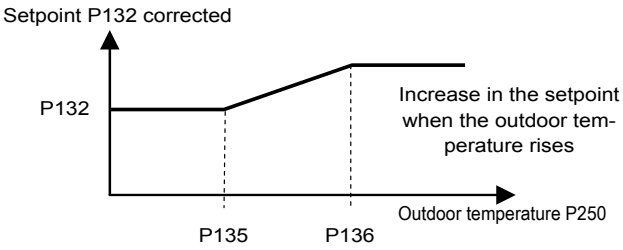
Water ☼ setpoint = P132: cooling ☼ setpoint
Water ◐ setpoint = P133: cooling ◐ setpoint



Control with indoor environment compensation (P105 ≠ 0) (control on the water return depending on the difference between the ambient temperature and the air setpoint).
Air ☼ setpoint = P130: cool air ☼ setpoint
Air ◐ setpoint = P131: cool air ◐ setpoint

The air comfort setpoint P130 activates the water control with P132 as the water comfort setpoint.
The air economy setpoint P131 activates the water control with P133 as the water economy setpoint.

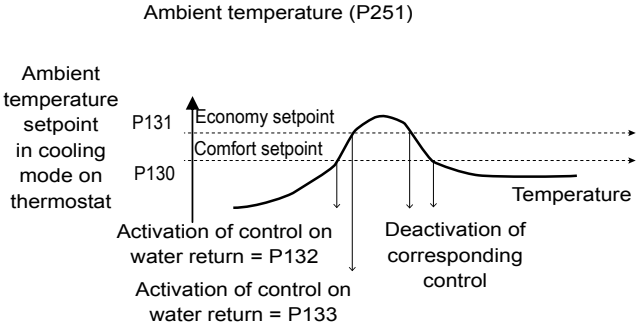




UFHC type installation: P07 = UFHC

The air setpoint activates control. The outdoor temperature does not affect the setpoint value.
The air comfort setpoint P130 activates the water control with P132 as the water comfort setpoint.
The air economy setpoint P131 activates the water control with P133 as the water economy setpoint.

Air ☼ setpoint = P130: cool air ☼ setpoint
Air ◐ setpoint = P131: cool air ◐ setpoint



5.5 Heating elements

Parameter P11 is used to configure the type of heating element installed. Parameter P13 is used to define the type of bypass (see paragraph 5.3).

P11	Backup configuration	Bypass type (by opening of contact on terminal block J11 – terminals 1-2)
{NO}	No backup	Heat pump turned off
{ELECTRIC}	Auxiliary heaters	Only auxiliary heaters turned off
{BOILER}	Boiler auxiliary	Heat pump turned off if boiler heating element in simultaneous operation with the heat pump (see parameter P12)

Heating elements are not authorised:

- If P11 = {NO}.
- If the unit stops due to a {LOW INT WATER FLOW} fault (see paragraph 6.3).
- If {INT WATER INLET SENSR} fault (see paragraph 6.4).

Backups are authorised:

- If P11 ≠ {NO} 80 seconds after compressor operation
- If the compressor is unavailable under conditions other than those indicated above (unless {LOW INT WATER FLOW} fault and P121={NO}).

The heating elements are managed in 2 stages:

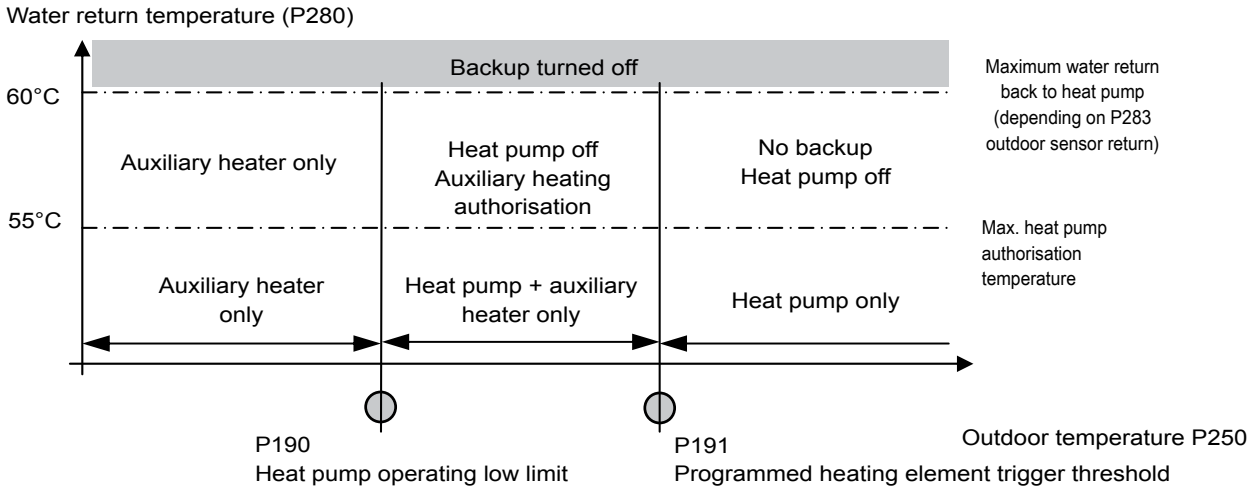
Heating element type	P11={NO}		P11={ELECTRIC}		P11={BOILER}			
Boiler operation (value of P12)	-		-		P12={ALTERNATE}		P12={SIMULTANEOUS}*	
Compressor available	YES	NO	YES	NO	YES	NO	YES	NO
Stage no.1	Comp.	-	Comp	Elec. heating element	Comp.	Boiler	Comp.	Boiler
Stage no.2	-	-	Elec. heating element	-	Boiler	-	Boiler	-

* Boiler and heat pump simultaneous operation

5.5.1 Auxiliary heater (P11 = {ELECTRIC})

The electric heating element is managed in 2 stages. Use of optional 5 kW or 9 kW heating element depending on GeoCIAT™ Power model

Operating limit



5.5.2 Boiler heating element (P11 = {BOILER})

Corrosion of heating sources

Heating sources, such as those made of steel, are susceptible to corrosion. Please contact your boiler manufacturer to determine whether the heating source is compatible with HomeConnect control. (e.g. maximum and minimum operating times, etc.)

A few recommendations

- do not operate the burner and the heat pump simultaneously at water temperatures below 40°C with P13 at {HEAT PUMP+BACKUP}. If in any doubt, set P190 and P191 to the same value.

- Do not short-circuit the boiler corrosion protection systems (e.g. heating accelerator pump kept off until the burner raises the heating source temperature to over 40°C).

5.5.2.1 Boiler controlled by its own control P11 = {BOILER} and P12 = {ALTERNATE}

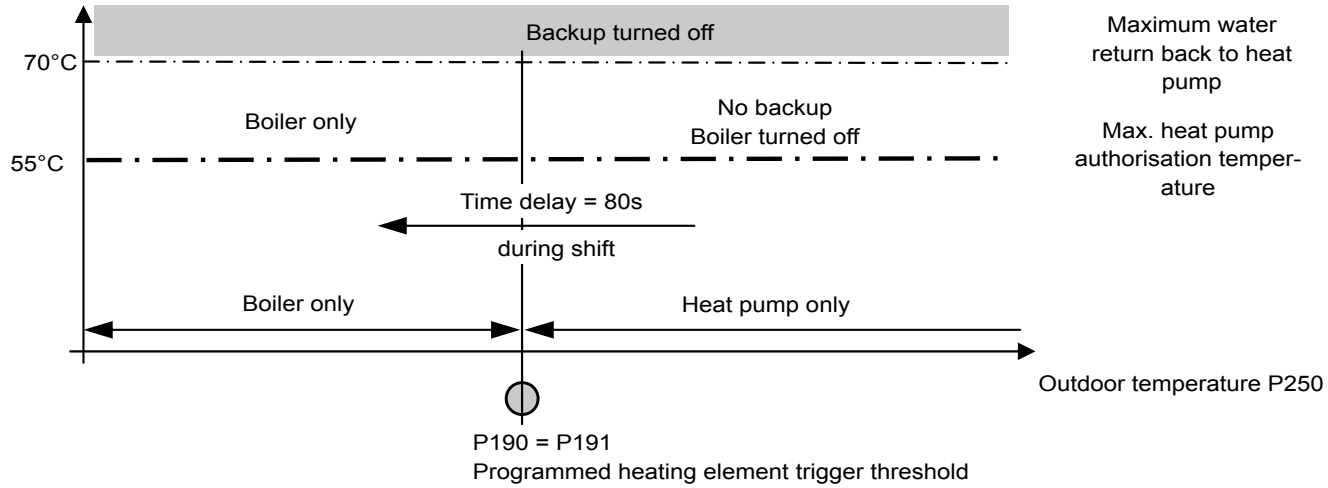
Typical application: boiler equipped with advanced electronic control.

By setting P11 = {BOILER} and P12 = {ALTERNATE} the HomeConnect controller only supplies an operating authorisation contact to the boiler. The direction of action of this contact (terminals L - H. EL J45 and J46) can be adjusted via parameter P17. The boiler is authorised to operate when the outdoor temperature falls below the value of P191 or if the heat pump malfunctions. The boiler burner is then controlled by the boiler's control system.

Boiler heating element contact	P17 values	
	{NO}	**{NC}** (factory value)
Open	Operation authorised	Operation prohibited
Closed	Operation prohibited	Operation authorised

Operating limit

Water return temperature (P280)



EN

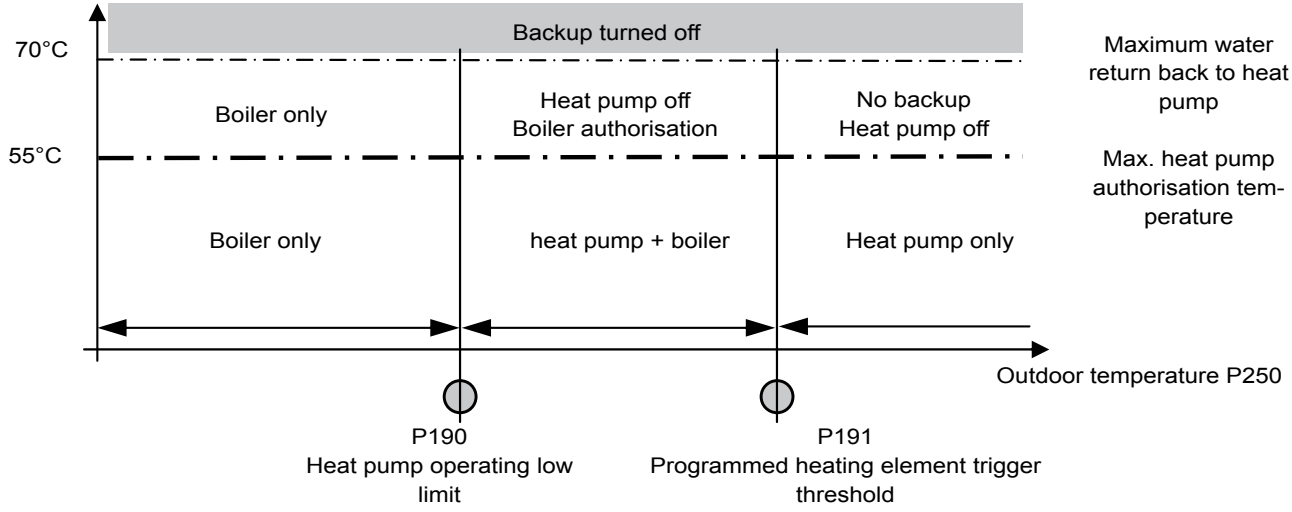
Misc.: The accelerator pump can be stopped using parameter P121:
P121 = {NO}: accelerator pump turned off if boiler operating.
Moreover, a {LOW INT WATER FLOW} fault must not prevent the boiler from operating. Therefore, the boiler is authorised to start up even if this fault appears.
P121 = {YES} (default value): accelerator pump continuous operation.

5.5.2.2 Boiler controlled by its own HomeConnect controller P11 = {BOILER} and P12 = {SIMULTANEOUS}

Typical application: boiler with basic control.
When P11 = {BOILER} and P12 = {SIMULTANEOUS}, the burner and the heat pump are controlled by the HomeConnect controller using the water law entered on the terminal (parameters P152 to P156).
In simultaneous operation, the HomeConnect controller also provides a contact to control the boiler's 3-way distribution valve. This contact (terminal block J33 - terminals 1 and 2) is permanently closed once the controller authorises boiler operation. The contact opens 5 minutes after the boiler operation prohibiting order in order to recover as much heat as possible from the hot water contained in the boiler's heating source.

Operating limit

Water return temperature (P280)



If only the boiler is authorised to operate, the control terminal manages the ambient temperature and the controller controls the boiler operation based on the ambient air setpoint (P150 or P151). Control is then via the P183 differential (factory setting = 1°C).

Example:
Heating mode in comfort mode: P150=21°C and P183=1°C.
The boiler is authorised to operate if the ambient temperature is below 20°C and is turned off once the ambient air setpoint of 21°C is reached.

5.6 On/Off control inputs

5.6.1 Turning off or 'bypassing' your heat pump or the heating elements via remote control

To shut down the heat pump and/or heating elements via remote control, remove the jumper on connector J11 terminals 1 and 2 from the HomeConnect controller. Connect your contact between these two terminals.
Contact quality: compatible with a 10 mA current at 24 V.
1: **contact closed**: normal operation
2: **contact open**:
- In heating mode, the bypass depends on parameter P13 (see table below).
- In absence mode, the bypass is not operational.

Bypass control (value of P13)	Type of bypass (via opening of contact)
{HEAT PUMP}	Heat pump turned off
{BACKUP}	Heating elements turned off
{HEAT PUMP+BACKUP}	Heat pump and heating elements turned off (application example: entire heating system turned off remotely)

5.6.2 Turning on the frost protection via remote control: P15 = {ABSENCE}

To place your system in frost protection mode by remote control, set parameter P15 to {ABSENCE}. Connect a contact to connector J11 terminals 2 and 3 on your unit's HomeConnect controller.
Contact quality: compatible with a 10 mA current at 24 V.
1: contact closed: unit operated by the terminal.
2: contact open: unit operates in Absence mode.

5.6.3 Turning on cooling/heating mode by remote control: P15 = {COOL/HEATING}

To activate heating mode by remote control, set parameter P15 to {COOL/HEATING}. Connect a contact to connector J11 terminals 2 and 3 on your unit's HomeConnect control board.
Contact quality: compatible with a 10 mA current at 24 V.
1: contact closed: forced operation in heating mode.
2: contact open: the heat pump is turned off.
Note: the {Heating} menu is no longer visible in the control terminal's main menu.

5.6.4 Turning on the Domestic Hot Water cycle via remote control: P15 = {DHW}

To turn on the Domestic Hot Water cycle by remote control, set parameter P15 to {DHW}. Connect a contact to connector J11 terminals 2 and 3 on your unit's HomeConnect control board.
Contact quality: compatible with a 10 mA current at 24 V.
1: contact closed: DHW cycle restarted then unit operated by the terminal.
2: contact open: unit operated by the terminal.
Usage example: connection to an off-peak/peak times contact to produce domestic hot water during off-peak times.

6. SPECIFICATIONS

6.1 Technical specifications

GeoCIAT™ Power			50H/50HT	65HT	90HT	120HT
Compressor	Quantity		1			
	Type		On/Off SCROLL			
	Oil capacity (POE)	L	1.2	1.57	2.66	2.66
	R410A charge	kg	1.3	1.3	2.2	2.2
Indoor heat exchanger	Type		Brazed-plate heat exchanger			
	Capacity	L	1.5	1.5	2.7	2.7
Indoor hydraulic module	Expansion vessel capacity	L	12			
	Vessel precharge pressure	bar	1.5			
	Minimum water capacity of system	L	66	83	115	148
	Max. water capacity (40°C) of the system (pure water/glycol/water mix)*	L	250/176	376/265		
	Variable speed accelerator pump - operating pressure	kPa	105/106	94	109	99
Outdoor heat exchanger	Type		Brazed-plate heat exchanger			
	Capacity	L	1.3	1.3	2.2	2.2
Outdoor hydraulic module	Expansion vessel capacity	L	12			
	Vessel precharge pressure	bar	1.5			
	Minimum water capacity of system	L	Depends on catchment area			
	Max. water capacity of the system (pure water/glycol/water mix)*	L	214	321		
	Variable speed accelerator pump. Operating pressure	kPa	70/66	33	91	60

* If greater, install an additional or bigger expansion vessel
** in nominal mode 0/-3°C 30/35°C

6.2 Sound levels

Sound power level in HEATING mode in accordance with NF/heat pump standard

GeoCIAT™ Power		50H/50HT	65HT	90HT	120HT
Sound power	dB(A)	54	52	53	55

6.3 Flow rates

Min. flow rates: these flow rates must be observed. Failure to do so may lead to destruction of the exchanger due to freezing. CIAT shall not be held liable for damage from frost caused by flow rates below the minimum rates specified below.

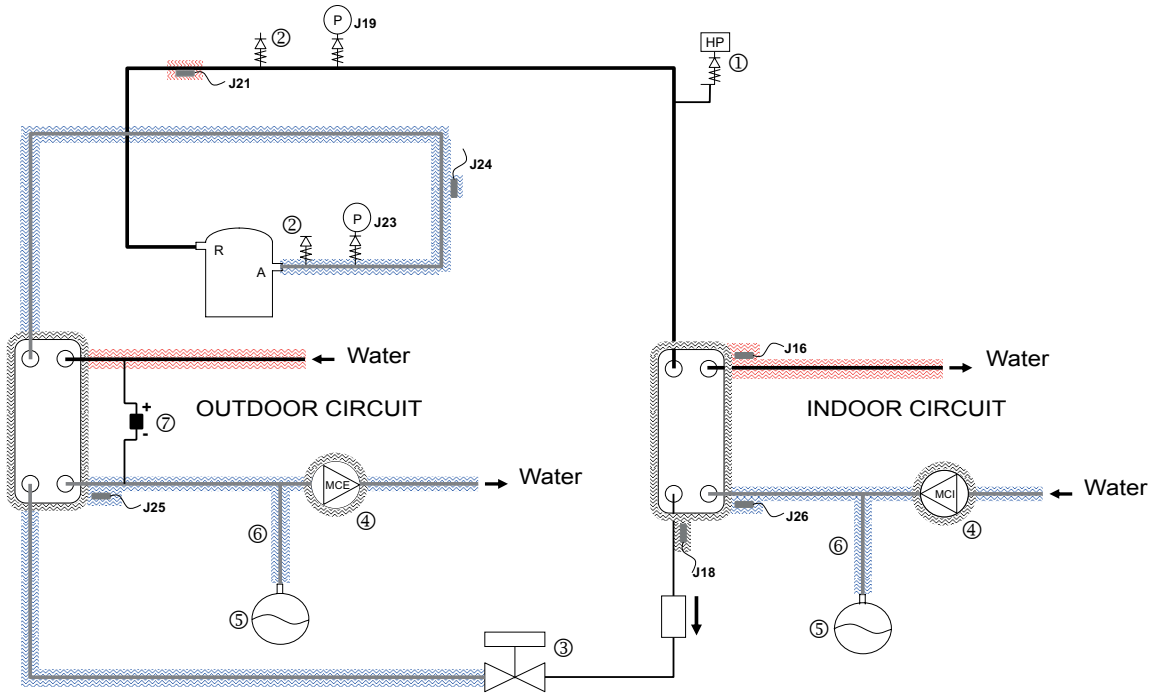
Nominal flow rates: these flow rates must be used to size all of the system's hydraulic components.

To keep your unit running at optimum performance, we recommend using the nominal flow rate.

GeoCIAT™ Power			50H(T)	65HT	90HT	120HT
Outdoor circuit	Minimum flow rate	(m3/h)	1.45	1.85	2.45	3.2
	Nominal flow rate, underground loop heating mode	(m3/h) (1)	2.9	3.7	4.9	6.4
	Nominal flow rate, ground water heating mode	(m3/h) (2)	3.9	4.9	6.7	8.7
Indoor circuit	Minimum flow rate	(m3/h) (1)	1.1	1.35	1.8	2.35
	Nominal flow rate, underground loop heating mode	(m3/h) (1)	2.2	2.7	3.6	4.7
	Nominal flow rate, ground water loop heating mode	(m3/h) (2)	2.9	3.7	4.9	6.4

(1) Heating mode, underground loop, indoor 30/35°C, outdoor 0°C/-3°C.
(2) Heating mode with ground water, indoor 30/35°C/°C, outdoor 10/7°C/°C.

6.4 Refrigerant and hydraulic circuit diagram



DESIGNATION	CONN.
Indoor exchanger water outlet sensor (type NTC 10kΩ)	J16
Indoor exchanger freon sensor (type NTC 10kΩ)	J18
HP pressure sensor	J19
Discharge temperature sensor (type NTC 50kΩ)	J21
LP pressure sensor	J23
Intake temperature sensor (type NTC 10kΩ)	J24
Outdoor exchanger water return sensor (type NTC 10kΩ)	J25
Indoor exchanger water return sensor (type NTC 10kΩ)	J26

① HP safety pressure switch
② Schrader nozzle
③ Electronic expansion valve
④ Accelerator pump
⑤ Expansion vessel
⑥ Drainage flexible connection
⑦ Differential pressure switch on GeoCIAT^{TM} Power
90HT - 120HT

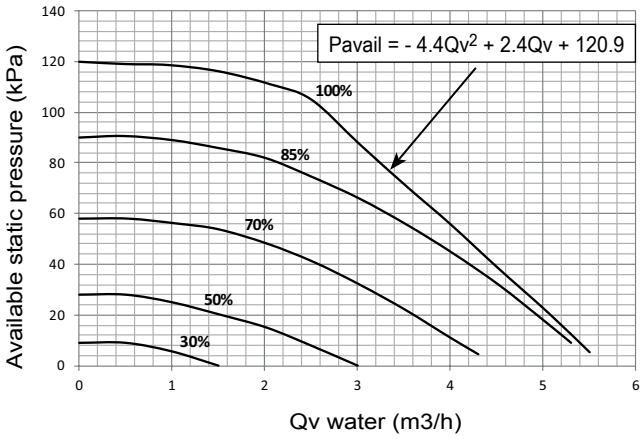
6.5 Available pressure curves (pure water)

To prevent damage to the accelerator pumps and the heat pump, ensure that the water return on the heat pump remains below 60°C. The ambient temperature in the area where the heat pump is installed must be below 40°C to ensure it operates correctly.

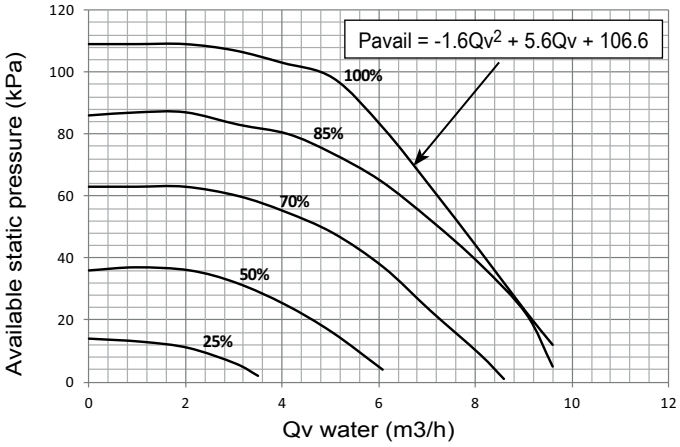
The available pressure curves are given for pure air.
Subtract 5kPa from the available pressures in the case of systems using 40% monopropylene glycol.

Indoor accelerator pumps

GeoCIATTM Power 50H(T) - 65HT

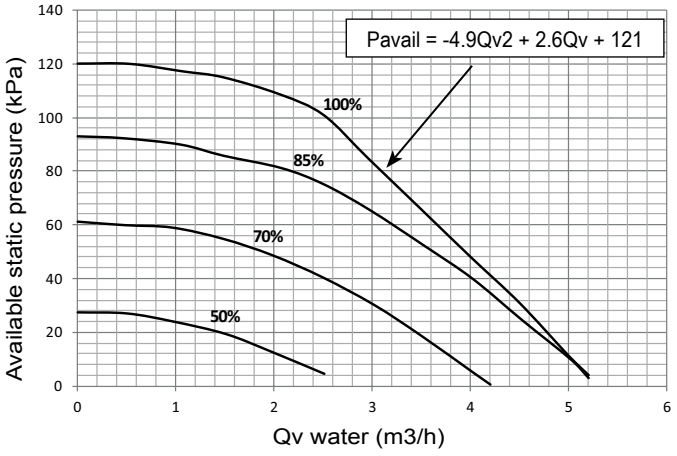


GeoCIAT^{TM} Power 90HT - 120HT

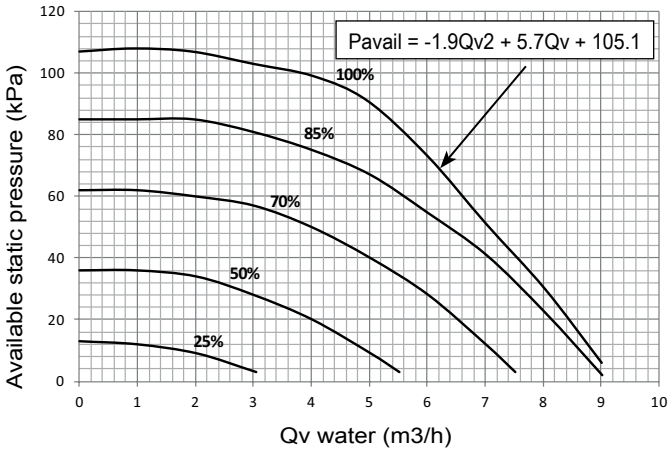


Outdoor accelerator pumps

GeoCIAT^{TM} Power 50H(T) - 65HT



GeoCIAT^{TM} Power 90HT - 120HT



7. FAULTS

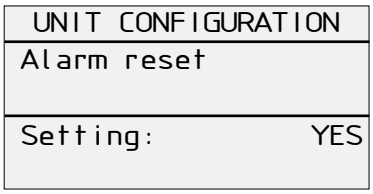
7.1 Fault table

See instructions 3977127 List and description of fault codes.

7.2 Alarm reset - Acknowledging faults

To manually acknowledge an alarm (type 3 fault), enter the {Unit configuration} menu and select {Alarm reset}.

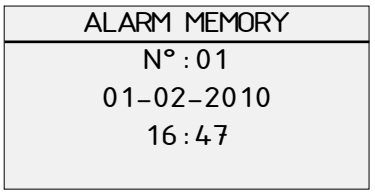
If the cause of the fault has been eliminated, select and confirm the value {YES} in the setting field.



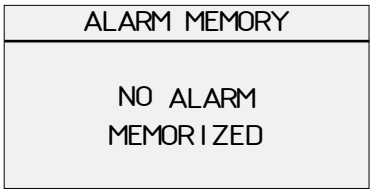
7.3 Alarm memory

The last 10 type 2 and 3 faults that have occurred on the unit are stored in the {Alarm memory} sub-menu.

To access it, enter the {Unit configuration} menu then select {Alarm memory}.
The stored faults are listed from the newest to the oldest.
Fault {No. 01} is therefore the most recent.
The date, time and name of the fault are stored.



If no faults have appeared while the machine is operating, the message {NO ALARMS STORED} is displayed on the screen

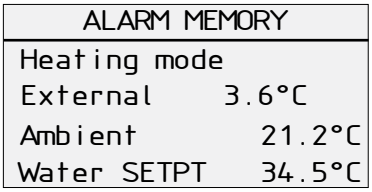


To perform more precise fault diagnostics, the values from the machine's sensors and probes are stored from the moment the fault occurred. To view these values, simply select the stored fault by pressing the terminal button.

A measurement table then appears containing the values stored at the moment the fault occurred.

In addition to the measured values, the operating mode is stored in the first line of the measurement table.
Turn the terminal button to scroll through all the stored values.

To exit the {Alarm memory} sub-menu, simply press the terminal button.



8. FUNCTIONS

8.1 Automatic restart
In the event of a power outage, the unit is restarted automatically in the operating mode active prior to the outage, after a stoppage of at least 3 minutes and when the outdoor sensor sends a new temperature value to the control board.

8.2 Selecting the operating mode
The compressor must be turned off before changing operating modes.

8.3 Short-cycle protection
The compressor is authorised to restart if it has been stopped for at least 3 of the last 5 minutes.

8.4 Automated self-regulating control
This function adjusts the compressor operating time or the stage differential to best adapt the operation of the unit to the type of system.

8.5 Unit winter protection
This function is used to prevent the exchangers from freezing. It is valid in any operating mode.

Indoor accelerator pump

- Accelerator pump operates if outdoor temperature (P250)< P300 and water supply temperature (P281)< P300+5K.
- Accelerator pump stops after at least 3 minutes' operation if P281>P300+10K or if outdoor temperature > P300+2K or P300: indoor exchanger water frost protection limit value

Outdoor accelerator pump

- Accelerator pump operates if outdoor temperature (P250)< P302 and water supply temperature (P283)< P302+2K.
- Accelerator pump stops after at least 3 minutes' operation if P283>P302+7K or if outdoor temperature > P302+2K or P302: outdoor exchanger water frost protection limit value.

9. OPTIONS

9.1 Pool heating
This option allows you to heat your swimming pool

Kit contents:

- Pool kit installation instructions (with adjustment values for parameters + electrical connection diagram).
- One 3-way valve.
- One 10kΩ sensor.
- A table listing the recommended types of exchanger to install (exchanger installed at customer's expense).

We recommend using the CIAT ITEX POOL exchanger.

9.2 Humidity sensor
This humidity sensor makes it possible to:

- Limit the risks of condensation forming on underfloor cooling systems.
- Lower the water setpoint value even further.

Kit contents:

- Specific installation instructions (with adjustment values for parameters).
- Humidity sensor.

9.3 Limiter thermostat
The limiter thermostat limits the water inlet temperature in the underfloor heating system.

Kit contents:

- Specific installation instructions (with adjustment values for parameters).
- A limiter thermostat.

If you connect the machine to an underfloor heating system only (see § 2.2), the thermostat is positioned on the water supply elbow at the outlet of the indoor heat exchanger.
The cable used to connect the thermostat to the HomeConnect board is 1.70m (not supplied).

9.4 Domestic hot water: 300L DHW tank
This option allows you to heat domestic hot water with a hot-water tank with coil.

Kit contents:

- Installation instructions.
- One 300L domestic water tank.
- One 3-way valve.

9.5 Mixer tanks
200L mixer tanks with 8 connections or 400L tanks with 8 connections.

Kit contents:

- Installation instructions.
- One 200L or 400L tank.
- 8 connections.
- Option: 9kW heating element.

9.6 Dual zone heating control
Used to heat 2 zones in the home with different setpoints.

Kit contents:

- Installation instructions.
- A dual zone hydraulic control module.
- One expansion board for controlling the module.
- One wired temperature sensor
- One radio temperature sensor.

9.7 5 kW single-phase or 9 kW three-phase auxiliary heater
Used to provide additional heating.

Kit contents:

- Installation instructions.
- Auxiliary heater with its retaining bracket.

9.8 Passive cooling (Geocooling)
Enables passive cooling of your home without operating the compressor.

Kit contents:

- Installation instructions.
- One insulated heat exchanger.
- One insulated 3-way valve with its servomotor.
- One 10kΩ temperature sensor.
- One set of insulated tubing for installing the Geocooling.
- Electrical accessories to be cabled to the heat pump.
- One wall bracket.

10. TABLE OF SENSOR VALUES

NTC type sensors 10 KΩ at 25°C.

Temperature (°C)	Sensor resistance (in kΩ)	Temperature (°C)	Sensor resistance (in kΩ)	Temperature (°C)	Sensor resistance (in kΩ)
-40	345,3	15	15,58	70	1,724
-35	247,6	20	12,37	75	1,456
-30	179,6	25	10,00	80	1,236
-25	131,8	30	7,958	85	1,053
-20	97,78	35	6,446	90	0,901
-15	73,27	40	5,252	95	0,774
-10	55,44	45	4,305	100	0,667
-5	42,33	50	3,548	105	0,577
0	32,6	55	2,940	110	0,501
5	25,29	60	2,449	115	0,436
10	19,77	65	2,050	120	0,381

NTC type sensors 50 kΩ at 25 °C

Temperature (°C)	Sensor resistance in kΩ	Temperature (°C)	Sensor resistance in kΩ	Temperature (°C)	Sensor resistance in kΩ
-10	276,2	45	21,78	100	3,349
-5	211,2	50	17,94	105	2,895
0	162,9	55	14,87	110	2,512
5	126,7	60	12,38	115	2,187
10	99,23	65	10,36	120	1,909
15	78,32	70	8,705	125	1,672
20	62,36	75	7,346	130	1,469
25	50,00	80	6,226	135	1,294
30	40,27	85	5,299	140	1,143
35	32,63	90	4,529	145	1,012
40	26,59	95	3,887	150	0,899

11. TEST MODE

Test mode allows you to test the system by reducing the time the safety devices are activated.

UNIT CONFIGURATION	
Test mode active	NO
Setting:	YES

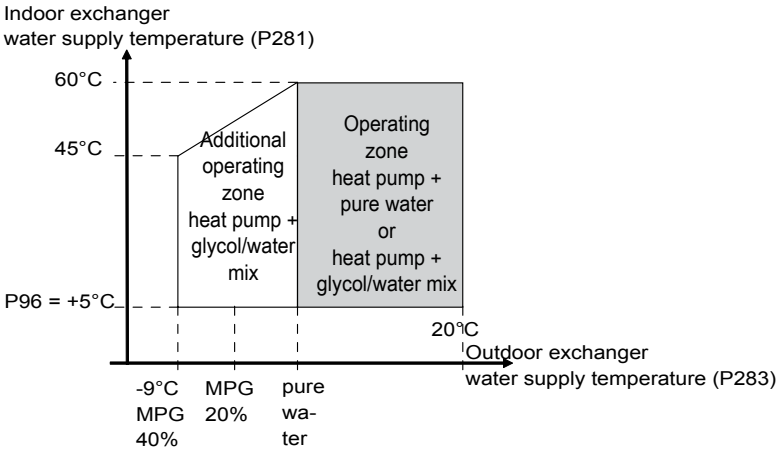
This mode is activated by selecting the value "{YES}" in the setting field of the "{test mode}" sub-menu in menu 4 "{Unit configuration}". Test mode is valid for 1 hour.

Activating test mode results in the following:
- Cancellation of P190 and P191.
- Compressor short-cycle protection lowered to 1 minute.
- The 30-minute waiting period following a {HP PRESSURE SWITCH} fault (or {EXT ECH FLUID SENSOR} fault) is adjusted to match the short cycle protection value.
- The heating element activation time delay is reduced from 80 seconds to 5 seconds.

EN

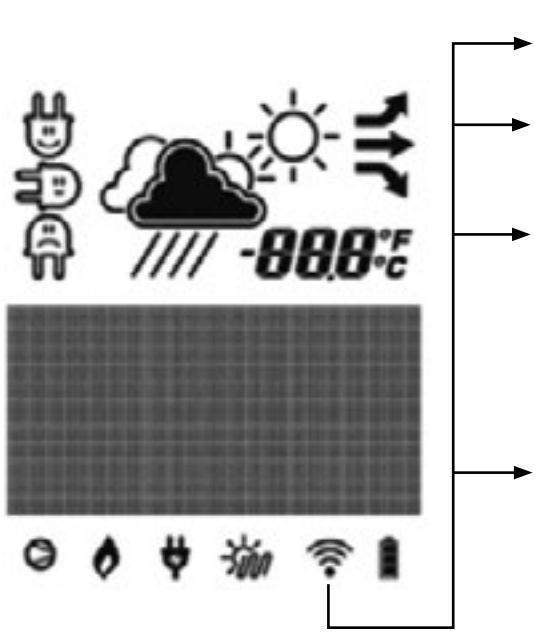
12. OPERATING LIMITS

Heat pump heating mode



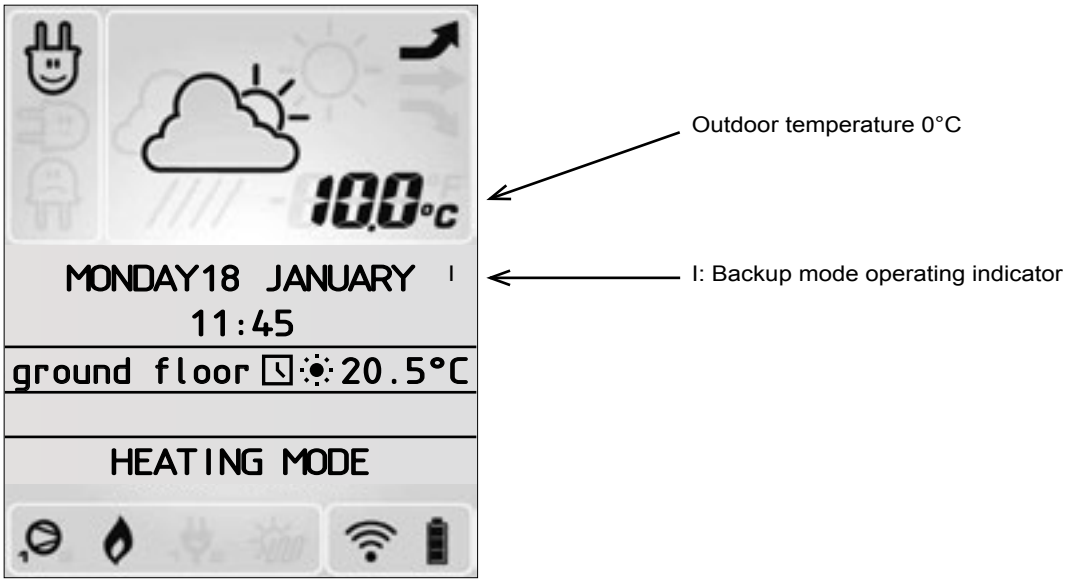
13. RADIO SIGNAL

The control terminal's radio signal reception level is shown at the bottom of the display.



	Radio signal reception level satisfactory.
	The control terminal is located too far from the heat pump. The data sent to the heat pump may not be taken into account. Move the terminal closer to the heat pump to obtain the optimal signal.
	The control terminal is no longer communicating with the heat pump. There is no longer a radio signal between the 2 pieces of equipment. The message {MACHINE COMMUNICATION LOST} appears on the home screen: COMMUNICATION LOST MACHINE Ground floor 23.8°C _____ Move the terminal closer to the heat pump to obtain the optimal signal.

Outdoor radio sensor
Loss of radio signal
If the outdoor sensor's radio signal is lost, the heat pump continues to operate using the same water law and its outdoor temperature setpoint is fixed at 0°C. This is known as backup mode. The control terminal displays:



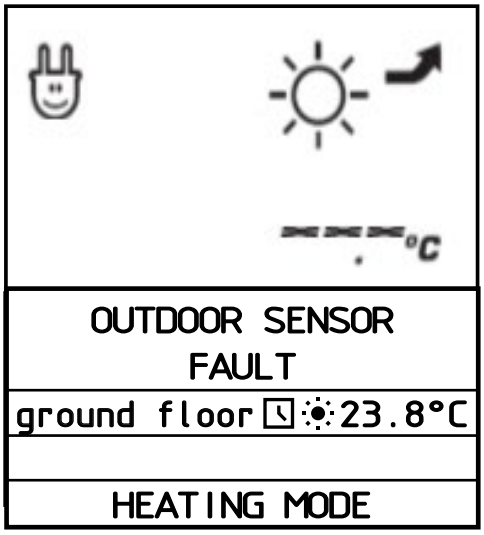
Backup mode is automatically cancelled when the outdoor temperature sensor sends a signal to the heat pump.

Display reads "{Outdoor sensor} fault":

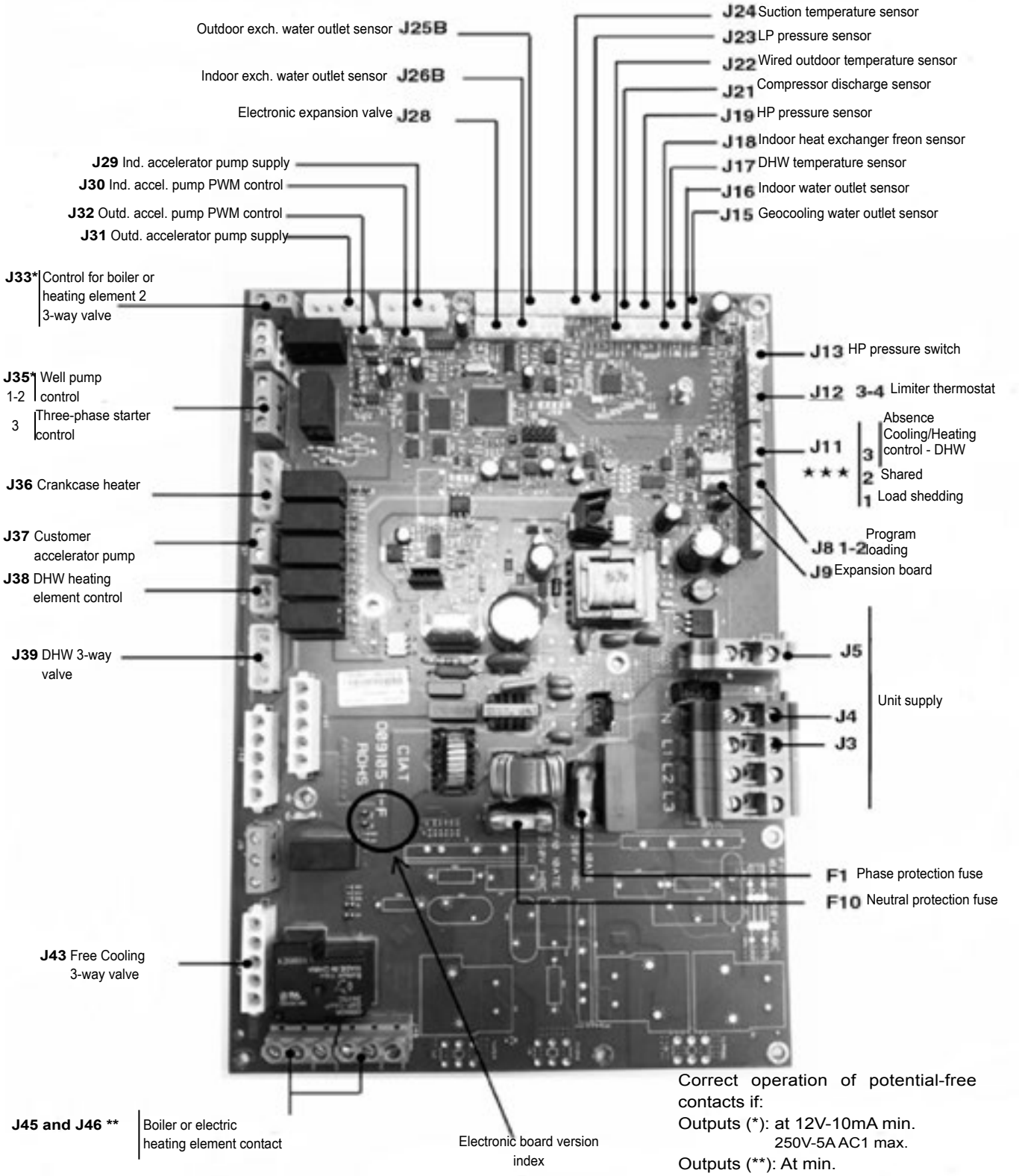
A power outage on the heat pump causes an outdoor sensor fault to be displayed

If an outdoor radio sensor is selected, the outdoor temperature sensor sends a new signal to the electronic board every 30 minutes. To eliminate the fault opposite:

- Wait no longer than 30 minutes for the sensor to send a new signal to the electronic board.
- Remove the batteries from the outdoor sensor, wait several seconds (approx. 5 seconds) then reinsert them to wake the outdoor sensor and enable it to send a new value.



14. CONTROL BOARD



Correct operation of potential-free contacts if:
Outputs (*): at 12V-10mA min.
250V-5A AC1 max.
Outputs (**): At min.
Max. 250V-30A AC1

(***) Provide a good quality contact
Current supplied by the HomeConnect board: 10mA

Fuse holder:
(⅄): 250V-10A_5x20
(⅄⅄): 250V-16A_6.3x32

Head office
Avenue Jean Falconnier B.P. 14
01350 Culoz - France
Tel. : +33 (0)4 79 42 42 42
Fax: +33 (0)4 79 42 42 10
info@ciat.fr - www.ciat.com

Compagnie Industrielle
d'Applications Thermiques
Corporation with a capital of €26,728,480
R.C.S. Bourg-en-Bresse B 545.620.114

ISO9001 • ISO14001
OHSAS 18001

CIAT Service
www.ciat.fr