EN

# USER AND INSTALLATION MANUAL

ENERGIE®

THERMODYNAMIC SOLAR ENERGY

# Aquapura HT

**AQUAPURA 8HT**

**AQUAPURA 12HT**

**AQUAPURA 14HT / 14HT T**

**AQUAPURA 22HT T**

Revision:00
Version 00
Date: 14/11/2024

Directives:
2014/35/UE
2014/30/UE
Regulation nº 814/2013
Regulation nº 812/2013

Esteemed Client,

We would like to thank you for your choice when you acquired an equipment for sanitary water heating.

AQUAPURA INVERTER HT aero-thermal system will surely meet all your expectations and provide many years of comfort with maximum power saving.

Our organization dedicates much time, energy and economic resources in order to develop innovations that will promote power saving in our products.

Your choice has demonstrated your good sense and concern with power consumption, a matter that affects the environment.

We have taken on a permanent commitment to conceive innovative and efficient products so that this rational use of energy can actively contribute to the preservation of the environment and natural resources of the planet.

Keep this manual whose objective is to inform, alert and advise about the use and maintenance of this equipment.

Our services are always at your disposal. Feel free to call upon us!

# INDEX

# 1 INFORMATION

This manual is intended as an aid to qualified service personnel for proper installation, operation and maintenance of the Heat Pump.

Read this manual carefully before attempting to install or operate the Heat Pump. Failure to follow these instructions may cause a fault of the Heat Pump, resulting in electrical shock, scald injury and/or property damage.

Installer:

Before leaving the premises, review this manual to be sure the Heat Pump has been installed correctly.

Start or operate the unit and check that the parameters are within the normal operating range.

# 2 SAFETY INFORMATION

To prevent the users and others from the harm of this unit, and avoid damage on the unit or other property, and use the heat pump properly, please read this manual carefully and understand the following information correctly.

The piping connection and wiring should be installed according to the local legal laws and regulations as well as the qualified professional.

| | |
|---|---|
|  DANGER | Any process that the supplier believes may pose a danger of personal injury and/or material damage must be marked with a DANGER SIGN.<br>As a means of further classifying the hazard, the symbol will be accompanied by one of the following words:<br>• DANGER: when the operator and/or people in the vicinity of the equipment are subject to personal injury.<br>• ATTENTION: when nearby equipment and/or materials are subject to material damage. |
|  INFO | All information that the supplier believes can contribute to the best performance and conservation of the equipment must be marked with the information sign. |

| | |
|---|---|
|  WARNNING | Children must not play with the device.<br>Cleaning and maintenance must not be carried out by children without supervision.<br>This appliance can be used by children aged 8 years and over and by people with limited physical, sensory or mental capabilities or lack of experience and knowledge if they are supervised or have received instructions concerning the use of the appliance in a safe way and understand the risks involved; |

## 2.1 Danger Info

**INSTALLATION:**

| | Description |
|---|---|
|  DANGER | The heat pump must be installed by qualified personals, to avoid improper installation which can lead to water leakage, electrical shock or fire. |
| | Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock. |
|  | Unit refrigerant is flammable. |
|  | Carry out brazing or welding only on empty pipes, free from any residual lubricating oil.<br>Do not place flames or other heat sources near pipes that contain refrigerant;<br>Do not operate with an open flame near the unit; |

HP RUNNING:

| | Description |
|---|---|
|  | It is prohibited to place fingers, hands or other objects on the fans. Failure to do so can cause serious injury or equipment destruction. |
|  DANGER | When there is something wrong or strange smell, the power supply needs to be shut off to stop the unit. Continue to run may cause electrical short or fire. |

MAINTENANCE:

| | Description |
|---|---|
|  DANGER | When the heat pump need to be moved or installed again, please entrust dealer or qualified person to carry it out. Improper installation will lead to water leakage, electrical shock, injury or fire. |
|  DANGER | Maintenance or repairs must be carried out by the seller or qualified technician. Improper intervention could cause water leakage, electric shock, injury or fire. |
|  | The user is prohibited from carrying out any intervention at HP. Failure to do so can cause water leakage, electric shock, serious injury or fire. |

## 2.2 Warning Info

**INSTALLATION:**

| | Description |
|---|---|
|  DANGER | The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire can occur. |
| | Make sure that the basement of the heat pump is strong enough, to avoid any decline or fall down of the unit. |
| | Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire. |

**MAINTENANCE:**

| | Description |
|---|---|
|  PERIGO | Please switch off the power for clean or maintenance. |
|  | It is expressly prohibited to make any type of chamfering in the protection fuses.<br>Fuses must be replaced by a qualified person. |
|  | Do not spray BC with flammable liquids, it may cause fire. |
|  | Do not use any cleaning agents containing sand, soda, acid or chloride as these may damage the surface. |

# 3 GENERAL INFO

## 3.1 Manufacturer Responsibility

Our products are produced according to the requirements of various European Standards.

Always concerned with the quality and performance of our products, we strive continuously to improve them. Therefore, we reserve to the right to modify at any time the information described herein.

As manufacturers we are no longer responsible for the malfunction or even damage of the equipment when:

- The instructions for use are not respected.
- The installation instructions are not respected.
- Lack of maintenance (if required).

## 3.2 Installer responsibility

The installer is responsible for proper installation of the equipment and start with its operation. The installer should note the following notes:

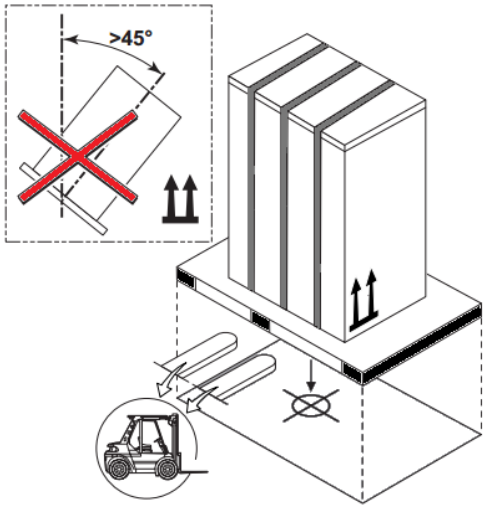
- Carefully read and follow the instructions of the manuals supplied with the equipment;
- Do the installation in accordance with the standards and requirements given by the manufacturer;
- Do the initial startup of the equipment and check all control points:
- Explain to the user how to do the installation and how to use the equipment;
- Warn the user of the obligation to make the checking and maintenance of the equipment when necessary;
- Supply to the user all the documents provided with the equipment (manual and warranty datasheet).

# 4 TRANSPORT

The Heat Pump is packed in a cardboard box without a bottom and is secured to a wood pallet with plastic strapping.

When the heat pump is transported, please keep the unit stand up, otherwise the inner parts of the device may be damaged.

The unit should be transported to the final installation site on a wooden pallet, during transport the heat pump must not be tilted more than 45 (in either direction).




The recommended tools to transport the equipment while it is still on the pallet can be: forklift or pallet.

When transporting the unit make sure that you lift it only from the bottom and always with the unit placed on the pallet. Do not move the unit without assistance.

| | Description |
|---|---|
| WARNNING | The unit has been tested and inspected prior to shipment from the manufacturer for quality assurance. Carefully inspect the equipment components upon receipt to ensure that the equipment has not been damaged in transit.<br>Confirm that all ordered parts have been received as specified and that unit type, size, and voltage are correct. |

# 5 PRINCIPLE OF OPERATION

Ambient air is drawn in by the fan and passed over the evaporator. The evaporator cools the air, i.e. it extracts the heat it contains. In the evaporator, the heat removed is transferred to the working fluid (refrigerant).

With the aid of an electrically driven compressor, the absorbed heat is "pumped" to a higher temperature level through an increase in pressure and given off to the heating water via the condenser (heat exchanger).

In so doing, the electrical energy is used to raise the heat of the environment to a higher temperature level.

Due to the fact that the heat energy extracted from the air is transferred to the heating water, this type of appliance is referred to as an air to water heat pump.

The air to water heat pump consists of the following main components: Evaporator, fan, expansion valve, low-noise scroll compressor, condenser and the control unit.

In the case of low ambient temperatures, air humidity may accumulate on the evaporator in the form of frost, impairing the heat transfer. The evaporator is automatically defrosted by the heat pump, as required, with the possibility of vapor plumes forming at the air outlet.

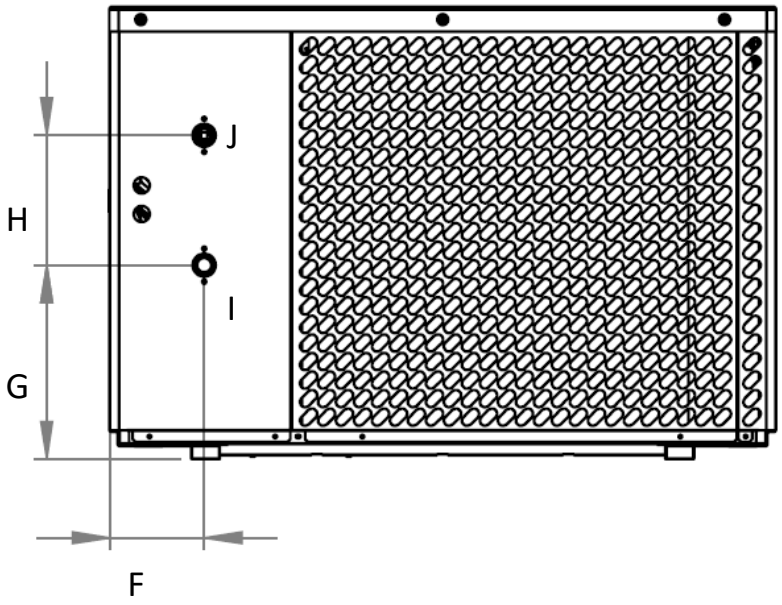
# 6 UNIT OVERVIEW

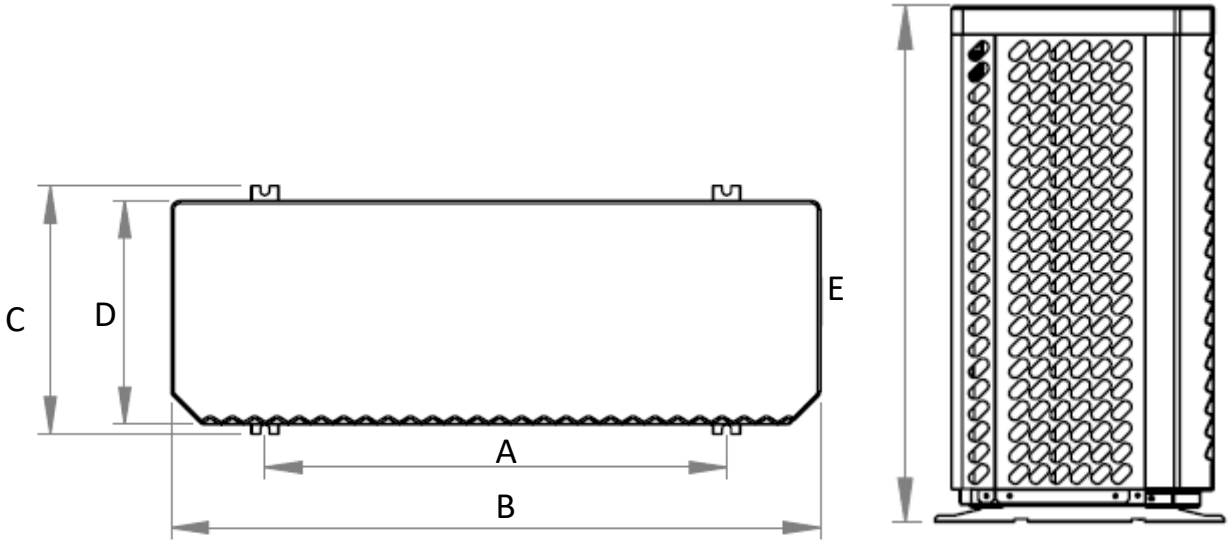

Display (user interface)

Air outlet (horizontal)

# 7 UNIT DIMENSIONS

## 7.1 Aquapura 8HT

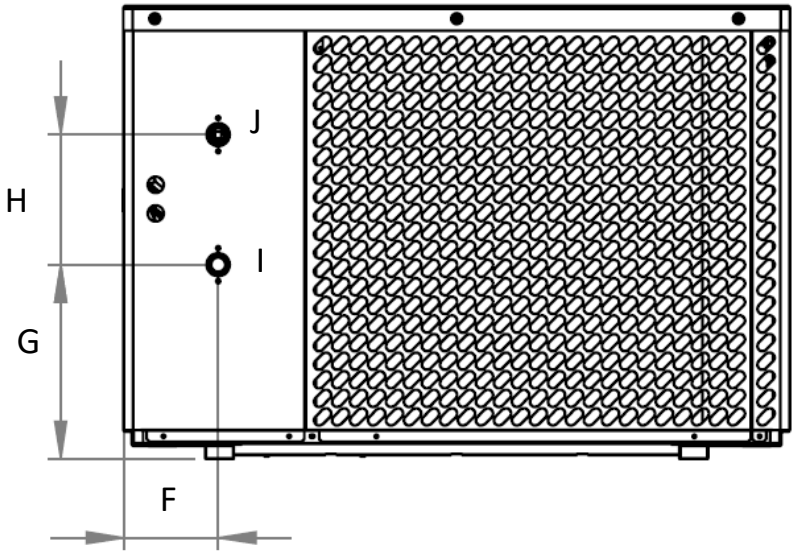


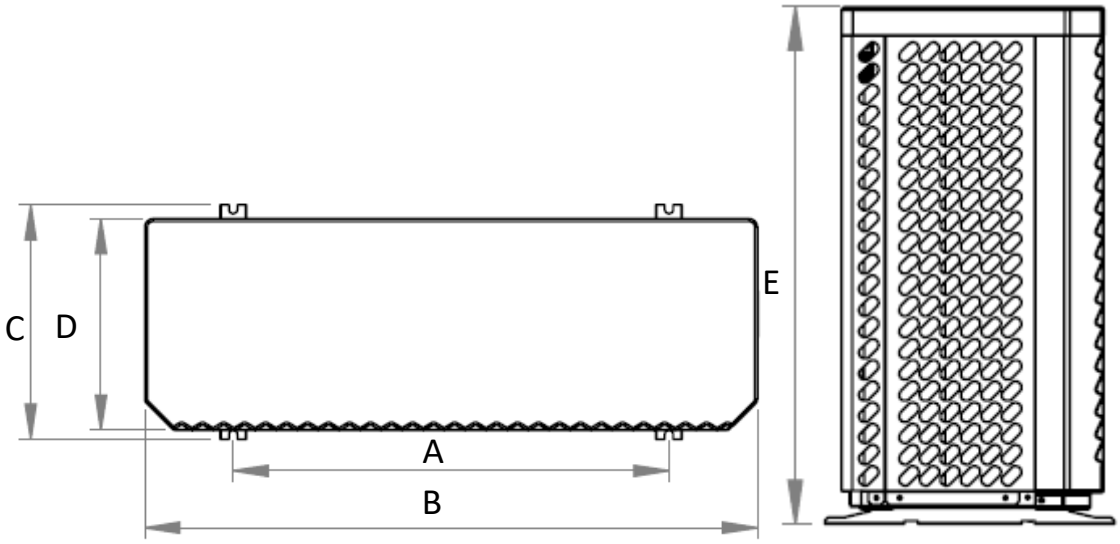




| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| Dimension (mm) | 830 | 1167 | 445 | 428 | 795 | 166 | 339 | 229 |

| | I (Inlet Water) | J (Outlet Water) |
|---|---|---|
| Dimension (Inches) | 1” | 1” |

## 7.2 Aquapura 12 HT

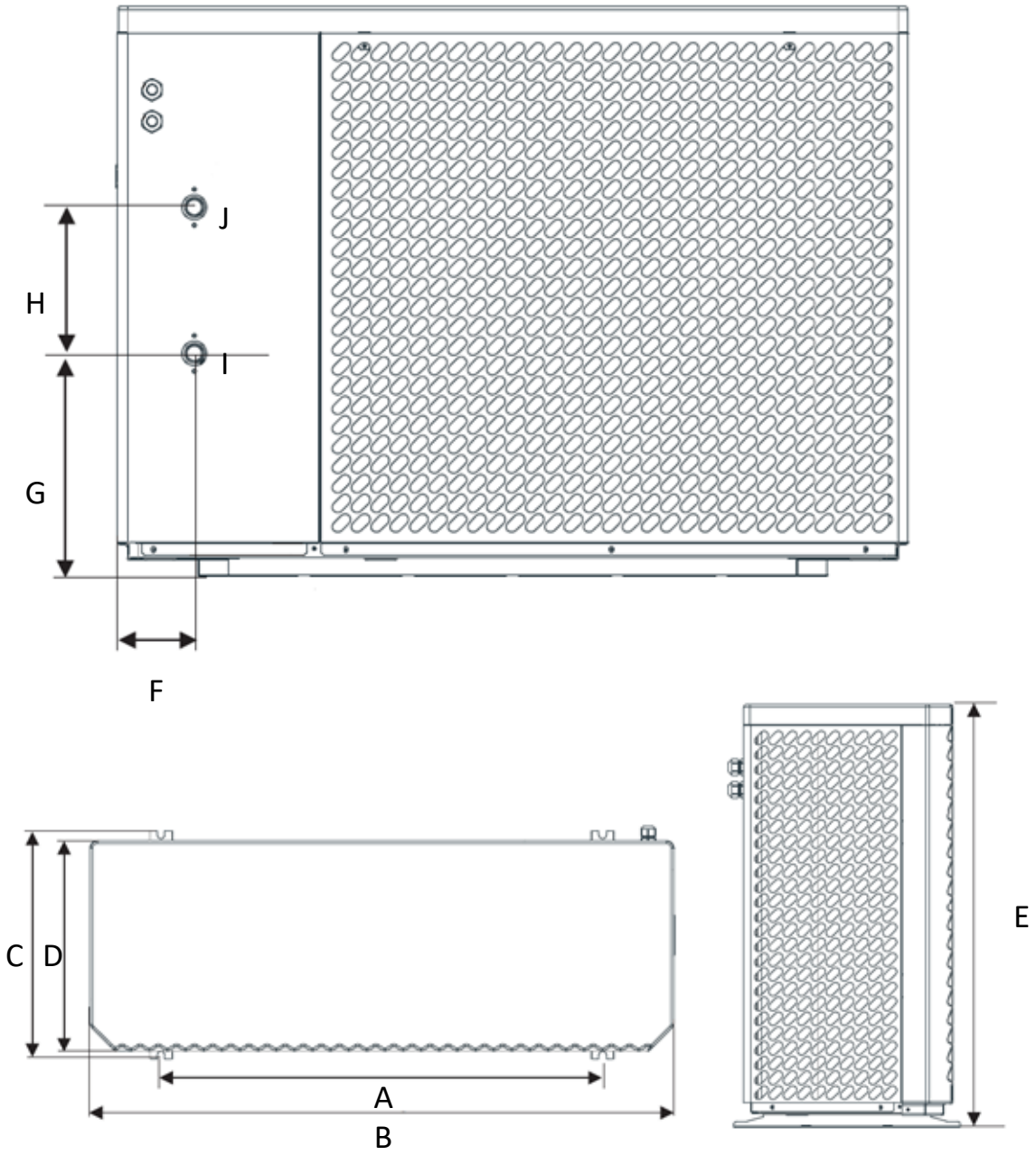



| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| Dimension (mm) | 830 | 1167 | 420 | 400 | 790 | 176 | 331 | 239 |

| | I (Inlet Water) | J (Outlet Water) |
|---|---|---|
| Dimension (Inches) | 1” | 1” |

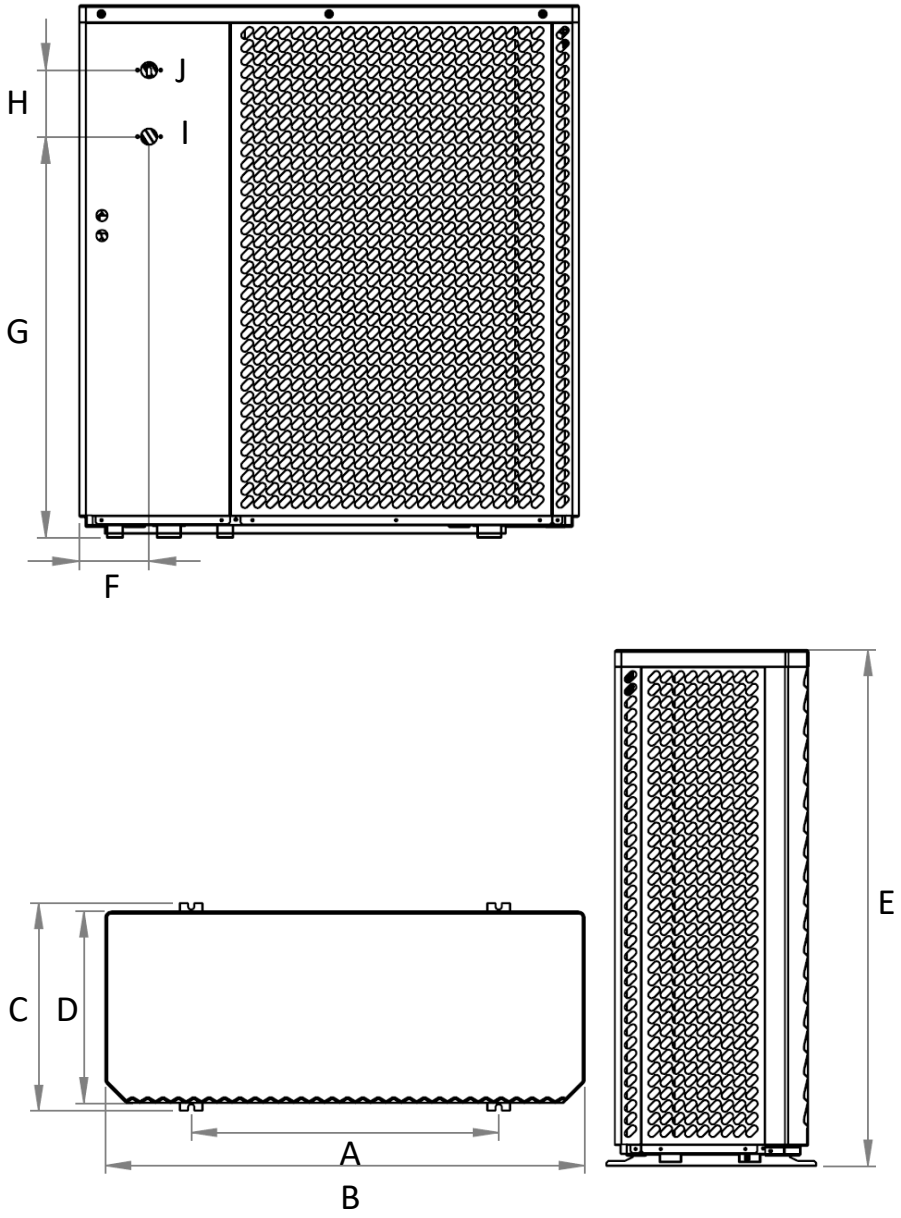
## 7.3 Aquapura 14HT




| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| Dimension (mm) | 975 | 1287 | 500 | 458 | 928 | 125 | 363 | 238 |

| | I (Inlet Water) | J (Outlet Water) |
|---|---|---|
| Dimension (Inches) | 1” | 1” |

## 7.4 Aquapura 22 HT T




| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| Dimension (mm) | 800 | 1247 | 540 | 503 | 1329 | 216 | 985 | 155 |

| | I (Inlet Water) | J (Outlet Water) |
|---|---|---|
| Dimension (Inches) | 1” | 1” |

# 8 TECHNICAL INFO

| | | Aquapura 8HT |
|---|---|---|
| Power supply | / | 240V~/50Hz |
| Refrigerant / Charge | / Kg | R290 / 0,500 / 0,0015 |
| **Heating** | | |
| Heating capacity range (min/ max) | kW | 4,67 ~ 10,3 |
| Electrical power range | kW | 0,71 ~ 2,9 |
| Rated thermal power supplied [1] | kW | 8.95 |
| Rated electrical power consumption[1] | kW | 1,86 |
| COP[1] | / | 4,8 |
| **Cooling** | | |
| Cooling capacity range (min / max) | kW | 1,6 ~ 8,51 |
| Electrical power range | kW | 0, 78 ~ 2,95 |
| Rated thermal power supplied [2] | kW | 5,98 |
| Rated electrical power consumption [2] | kW | 1,64 |
| EER[2] | / | 3,65 |
| **Technical specifications** | | |
| Maximum temperature – heating | ºC | 70 |
| Backup electrical heater | / | Not integrated |
| Maximum operating current | A | 13,5 |
| Maximum power consumed | kW | 3,0 |
| Number of compressors | / | 1 |
| Compressor typology | / | DC Inverter |
| Water pump | / | Integrated/ 5 |
| Minimum water flow | $m^3/h$ | 1,0 |
| Internal water pressure drop | kPa | 20 |
| Number of fans | / | 1 |
| Hydraulic connections (inlet/outlet) | Pol. | 1'' / 1'' |
| Sound pressure at 1m | dB(A) | 43 |
| Sound Power | dB | 57 |
| Net weight | Kg | 80 |
| Net dimensions (L/ A/ P) | mm | 795/ 1167/ 455 |
| **Erp / Performance in accordance with EN 14825 – Average climate** | | |
| Energy efficiency class (35°C) | -- | A+++ |
| SCOP/ɳ | -- / % | 5,00 / 197 |
| Energy efficiency class (55°C) | -- | A++ |
| SCOP/ɳ | -- / % | 3,71 / 146 |

1) Air temperature (DB/WB) 7°C/6°C; Water temperature (inlet/outlet) 30°C/35°C

2) Air temperature (DB/WB) 35°C/ 24°C; Water temperature (inlet/outlet) 12°C/ 7°C

| | | **Aquapura 12HT** |
|---|---|---|
| Power supply | / | 240V~/50Hz |
| Refrigerant / Charge | / Kg | 0,8 / 0,002 |
| **Heating** | | |
| Heating capacity range (min/ max) | kW | 6,2-14,5 |
| Electrical power range | kW | 2,2-3,16 |
| Rated thermal power supplied [1] | kW | 12,3 |
| Rated electrical power consumption[1] | kW | 2,5 |
| COP[1] | / | 4,92 |
| **Cooling** | | |
| Cooling capacity range (min / max) | kW | 4,8-11,6 |
| Electrical power range | kW | 2,1-4,3 |
| Rated thermal power supplied [2] | kW | 10,14 |
| Rated electrical power consumption [2] | kW | 2,61 |
| EER[2] | / | 3,88 |
| **Technical specifications** | | |
| Maximum temperature – heating | ºC | 70ºC |
| Backup electrical heater | / | Não integrado |
| Maximum operating current | A | 22,0 |
| Maximum power consumed | kW | 5,1 |
| Number of compressors | / | 1 |
| Compressor typology | / | Rotary |
| Water pump | / | Integrada/ 6,8 |
| Minimum water flow | $m^3/h$ | 1,38 |
| Internal water pressure drop | kPa | 15 |
| Number of fans | / | 1 |
| Hydraulic connections (inlet/outlet) | Pol. | 1”/1” |
| Sound pressure at 1m | dB(A) | 46 |
| Sound Power | dB | 61 |
| Net weight | Kg | 120 |
| Net dimensions (L/ A/ P) | mm | 1167 / 790/ 420 |
| **Erp / Performance in accordance with EN 14825 – Average climate** | | |
| Energy efficiency class (35°C) | -- | A+++ |
| SCOP/ɳ | -- / % | 4,82/ 190 |
| Energy efficiency class (55°C) | -- | A++ |
| SCOP/ɳ | -- / % | 3,53/ 138 |

1) Air temperature (DB/WB) 7°C/6°C; Water temperature (inlet/outlet) 30°C/35°C

2) Air temperature (DB/WB) 35°C/ 24°C; Water temperature (inlet/outlet) 12°C/ 7°C

| | | **Aquapura 14HT** | **Aquapura 14HT-T** |
|---|---|---|---|
| Power supply | / | 240V~/50Hz | 400V~/3P+N/50Hz |
| Refrigerant / Charge/CO2 Eq. | / Kg/ton | R290 / 0,850/0,0025 | |
| Heating | | | |
| Heating capacity range (min/ max) | kW | 6,18~ 16,70 | 6,18~ 16,70 |
| Electrical power range | kW | 1,45 ~ 4,67 | 1,45 ~ 4,67 |
| Rated thermal power supplied [1] | kW | 14,21 | 14,21 |
| Rated electrical power consumption[1] | kW | 2,83 | 2,83 |
| COP[1] | / | 5,02 | 5,02 |
| Cooling | | | |
| Cooling capacity range (min / max) | kW | 3,35 ~ 11,61 | 3,35 ~ 11,61 |
| Electrical power range | kW | 1,52 ~ 4,98 | 1,52 ~ 4,98 |
| Rated thermal power supplied [2] | kW | 9,71 | 9,71 |
| Rated electrical power consumption [2] | kW | 2,45 | 2,45 |
| EER[2] | / | 3,96 | 3,96 |
| Technical specifications | | | |
| Maximum temperature – heating | ºC | 70 | 70 |
| Backup electrical heater | / | Not provided | Not provided |
| Maximum operating current | A | 24,5 | 10,5 |
| Maximum power consumed | kW | 5,3 | 5,3 |
| Number of compressors | / | 1 | 1 |
| Compressor typology | / | DC Inverter | DC Inverter |
| Water pump | / | Integrated | Integrated |
| Minimum water flow | $m^3/h$ | 1,6 | 1,6 |
| Internal water pressure drop | kPa | 30 | 30 |
| Number of fans | / | 1 | 1 |
| Hydraulic connections (inlet/outlet) | Pol. | 1'' / 1'' | 1'' / 1'' |
| Sound pressure at 1m | dB(A) | 42 | 42 |
| Sound Power | dB | 58 | 58 |
| Net weight | Kg | 160 | 160 |
| Net dimensions (L/ A/ P) | mm | 1287/ 928/ 485 | 1287/ 928/ 485 |
| Erp / Performance in accordance with EN 14825 – Average climate | | | |
| Energy efficiency class (35°C) | -- | A+++ | A+++ |
| SCOP/ɳ | -- / % | 4,90 / 193 | 4,92 / 194 |
| Energy efficiency class (55°C) | -- | A+++ | A+++ |
| SCOP/ɳ | -- / % | 3,76 / 147 | 3,78 / 148 |

1) Air temperature (DB/WB) 7°C/6°C; Water temperature (inlet/outlet) 30°C/35°C

2) Air temperature (DB/WB) 35°C/ 24°C; Water temperature (inlet/outlet) 12°C/ 7°C

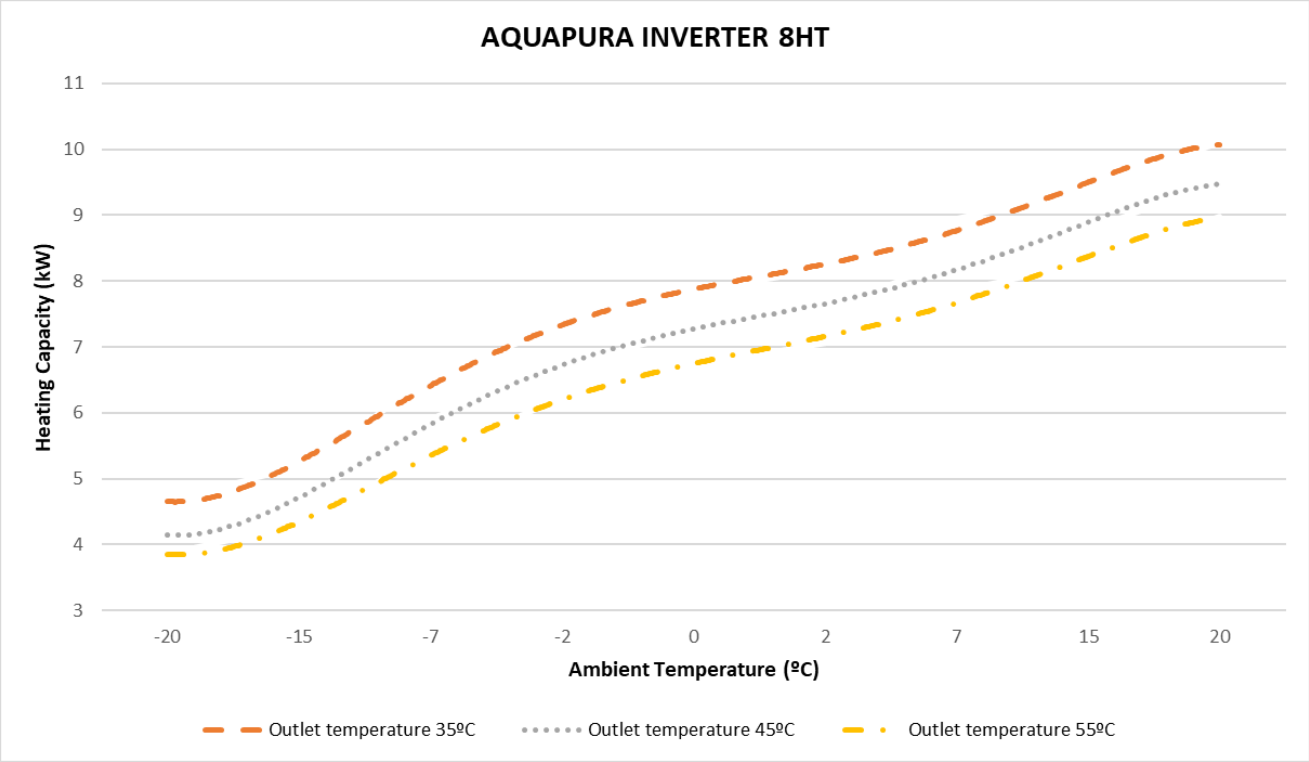
| | | **Aquapura 22HT T** |
|---|---|---|
| Power supply | / | 380-415V/3N~/50Hz |
| Refrigerant / Charge | / Kg | R290 / 1,30 |
| Heating | | |
| Heating capacity range (min/ max) | kW | 9,67 ~ 25,47 |
| Electrical power range | kW | 1,60 ~ 8,31 |
| Rated thermal power supplied [1] | kW | 22,00 |
| Rated electrical power consumption[1] | kW | 4,94 |
| COP[1] | / | 4,45 |
| Cooling | | |
| Cooling capacity range (min / max) | kW | 4,20 ~ 17,16 |
| Electrical power range | kW | 1,80 ~ 8,57 |
| Rated thermal power supplied [2] | kW | 16,04 |
| Rated electrical power consumption [2] | kW | 4,44 |
| EER[2] | / | 3,61 |
| Technical specifications | | |
| Maximum temperature – heating | ºC | 75 |
| Backup electrical heater | / | No integrate |
| Maximum operating current | A | 15,80 |
| Maximum power consumed | kW | 9,00 |
| Number of compressors | / | 1 |
| Compressor typology | / | DC Inverter |
| Water pump | / | Integrated |
| Minimum water flow | $m^3/h$ | 2,90 |
| Internal water pressure drop | kPa | 61 |
| Number of fans | / | 2 |
| Hydraulic connections (inlet/outlet) | Pol. | 1'' |
| Sound pressure at 1m | dB(A) | 46 |
| Sound Power | dB | 61 |
| Net weight | Kg | 202 |
| Net dimensions (L/ A/ P) | mm | 1250 x 540 x 1330 |
| Erp / Performance in accordance with EN 14825 – Average climate | | |
| Energy efficiency class (35°C) | -- | A+++ |
| SCOP/ɳ | -- / % | 4,91 / 193 |
| Energy efficiency class (55°C) | -- | A++ |
| SCOP/ɳ | -- / % | 3,70/ 145 |

1) Air temperature (DB/WB) 7°C/6°C; Water temperature (inlet/outlet) 30°C/35°C

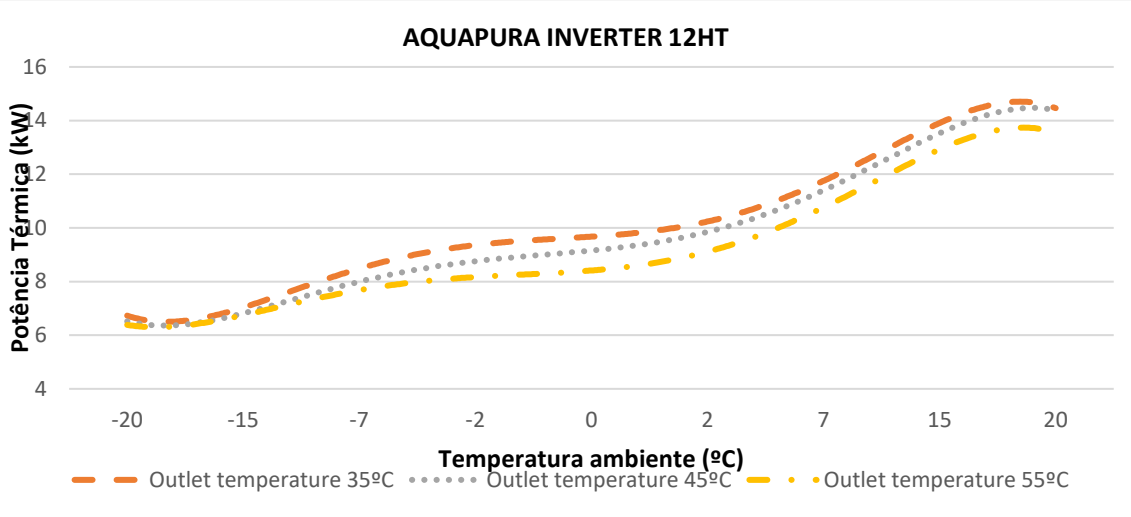
2) Air temperature (DB/WB) 35°C/ 24°C; Water temperature (inlet/outlet) 12°C/ 7°C

# 9 PERFORMANCE

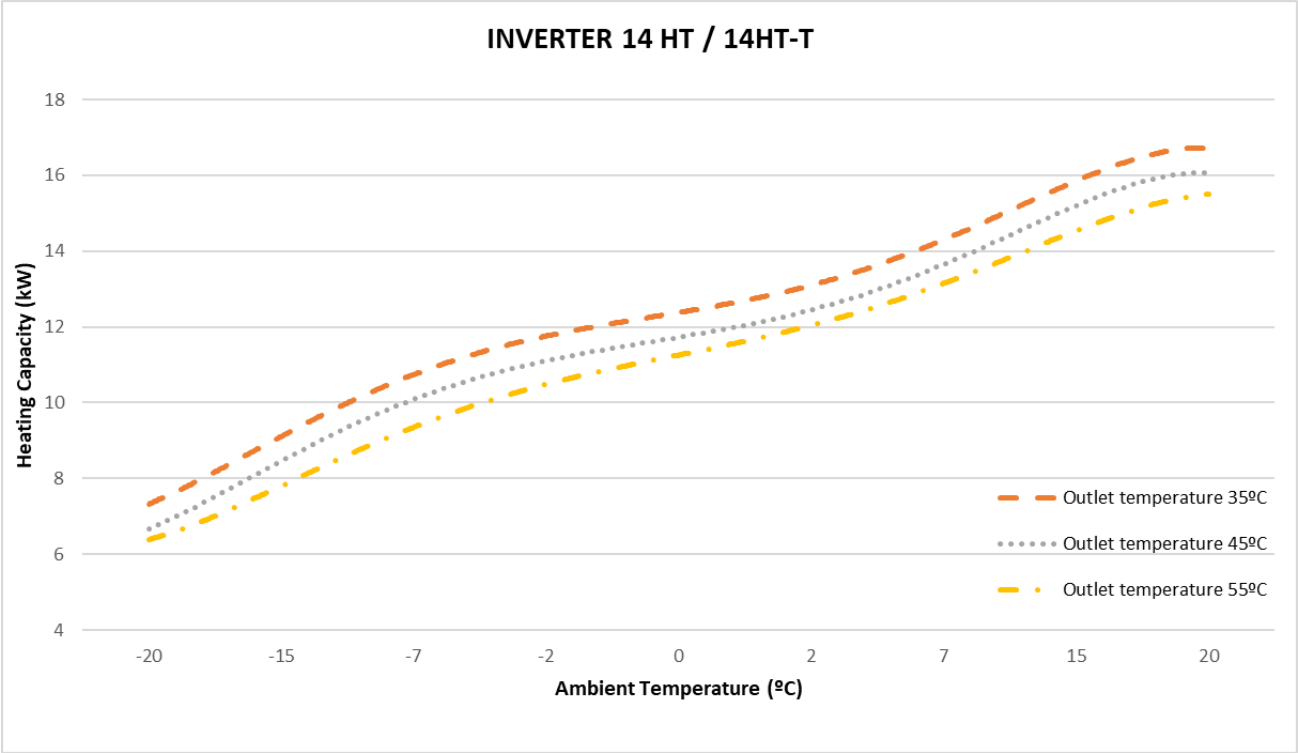
## 9.1 Aquapura 8HT



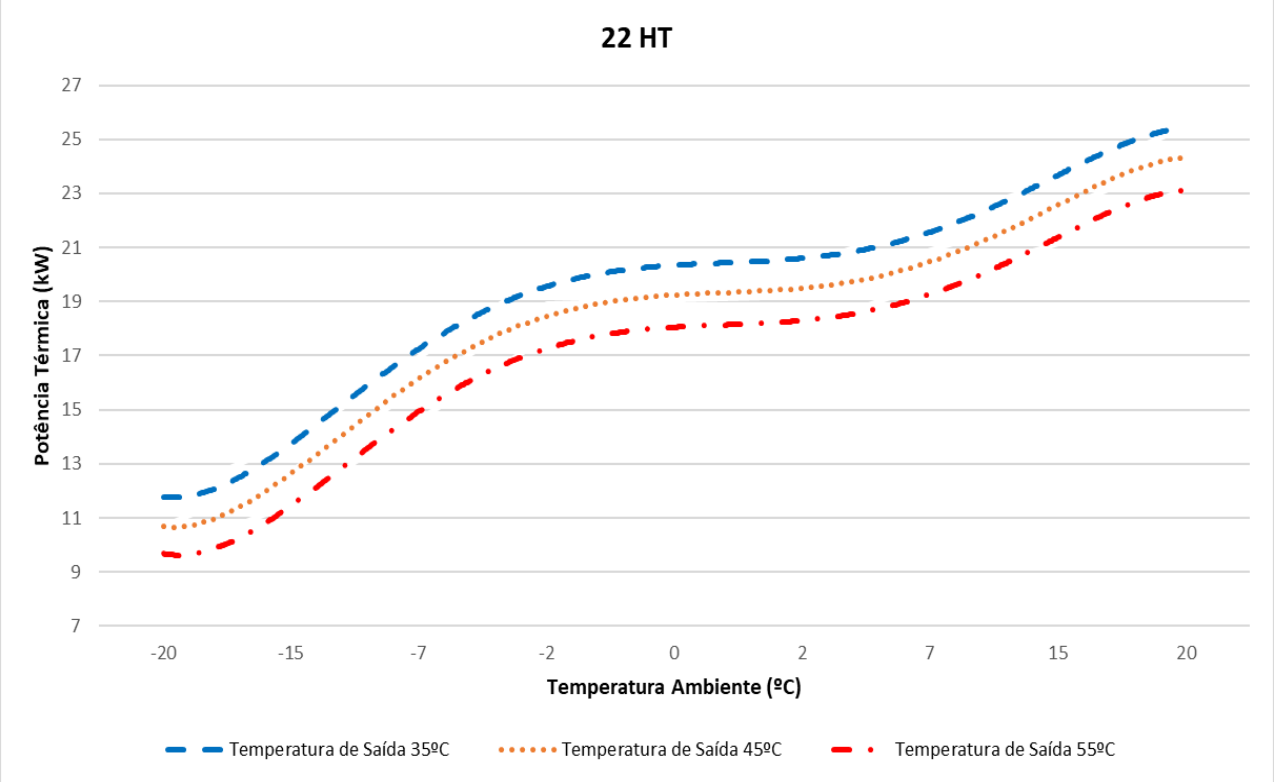

## 9.2 Aquapura 12 HT



## 9.3 Aquapura 14HT/ Aquapura 14 HT T




## 9.4 Aquapura 22 HT T



# 10 INSTALLATION

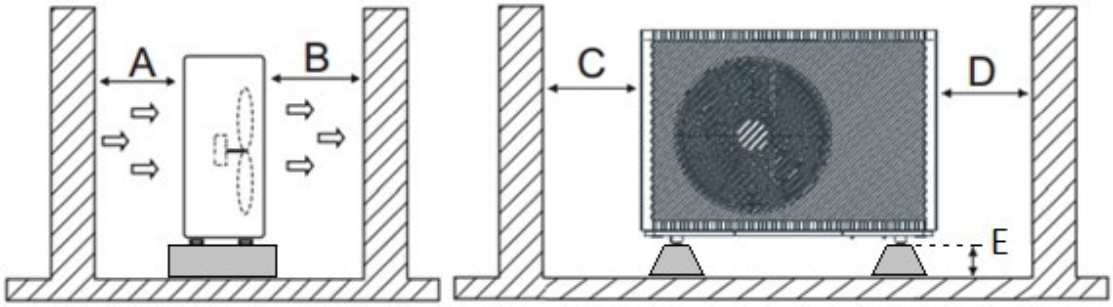
## 10.1 Installation place

Before starting any installation procedure, check that the base of the place where the equipment will be placed is perfectly level. This prevents the compressor lubricating oil from working outside the indicated levels.

Look for a place with an even, safe and resistant floor, preferably in concrete, taking into account the weight of the machine. At a minimum, the concrete base should have a thickness of 150mm and if possible above ground level (100mm)

During its operation, the heat pump can create water originated by the condensation of the evaporator, being necessary to prepare the installation site with a drain point to facilitate its drainage.

Another important point is the minimum distances that the equipment must comply with in relation to walls, ceilings or any type of obstacles that may impair its performance and make access difficult, both during installation and in any maintenance operations.




| | **A heat pump must be installed at least 200 mm from the ground.** | | | | |
|---|---|---|---|---|---|
| | Requirements | | | | |
| | A | B | C | D | E |
| | >500mm | >1500mm | >1000mm | >500mm | >200mm |

The walls and roof of the technical room can be insulated with sound absorption panels if the noise level of the heat pump is too high.

The feet of the HP must be fixed to the base, preventing the equipment from moving with the vibrations caused by its normal operation.

## 10.2 Condensate drainage

In normal operation, water is produced as a result of condensation in the evaporator and defrost cycles. Prepare a good drainage system to prevent the formation of ice on the floor, thus avoiding possible falls. The drain tube must have a diameter of min. 50mm, the water discharge must be carried out to the sewer and must not be exposed in places with frost formation.

## 10.3 Hydraulic installation

Take the following points into account when executing the hydraulic circuit:

- Reduce as much as possible the number of bends in the pipes to reduce pressure drops in the installation;
- Ensure system fittings, dowels, water pumps and valves are designed for full flow through the facility. Obstructions can impact the unit's performance and the effectiveness of the central heating system;
- The piping must be free from dirt, if possible, clean the installation;
- Load the installation to check for possible leaks and then isolate the entire installation;
- Place an expansion vessel in the installation, the pressure in the expansion vessel must be 0.5 bar higher than that of the installation;
- Check if the equipment's flow switch is working properly. Simulate a flow failure by closing a strainer and check if the controller stops the BC operation and issues an alarm message;
- The hydraulic connections between the BC and the central heating circuit must be made with a flexible tube to avoid the transmission of vibrations;
- Before putting the BC into operation, check that the hydraulic circuit is full and properly bled. If the hydraulic circuits are sectioned, each circuit must be bled, ensuring that it eliminates all air pockets in the installation;
- Place a thermometer and a pressure gauge at the water inlet and outlet to facilitate inspection;
- The pressure placed on the hydraulic circuit must be between the following values: Min. 1.5 bar and Max. 2 bar.

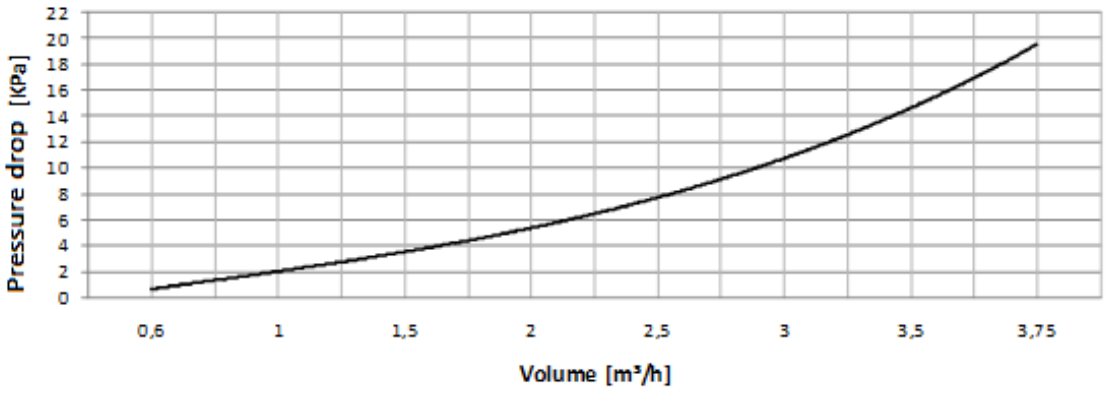
| | |
|---|---|
|  warnning | The hydraulic connection should be installed according to the local legal laws and regulations as well as the qualified professional |

## 10.4 Water filter

The filter allows block any impurities present in the hydraulic circuits. Residue left in the heater pipes will damage the heat exchangers and cause the heat pumps to malfunction. It is recommended install the filter in the heater return line, especially if no buffer storage is present. It is indispensable in order to prevent serious damage to the heat exchanger.

**Note 1:** The filter must contain a filtering mesh with holes that do not exceed one millimeter.

**Note 2;** The filter should be kept cleaned and inspected periodically to maintain your condition, cleanliness and ensuring the proper functioning of Heat pump



## 10.5 Circuit water quality

The composition and quality of the water in the system has a direct effect on the performance of the entire system and the lifetime of the heat pump.

For the initial charging and backfill of the system, usually normal tap water with a pH value of 7-8 can be used as long as the water is not highly corrosive (chloride content > 150 mg/l) or hard (>14°dH; degree of hardness IV). A drinking water analysis can be requested from the local water supply company.

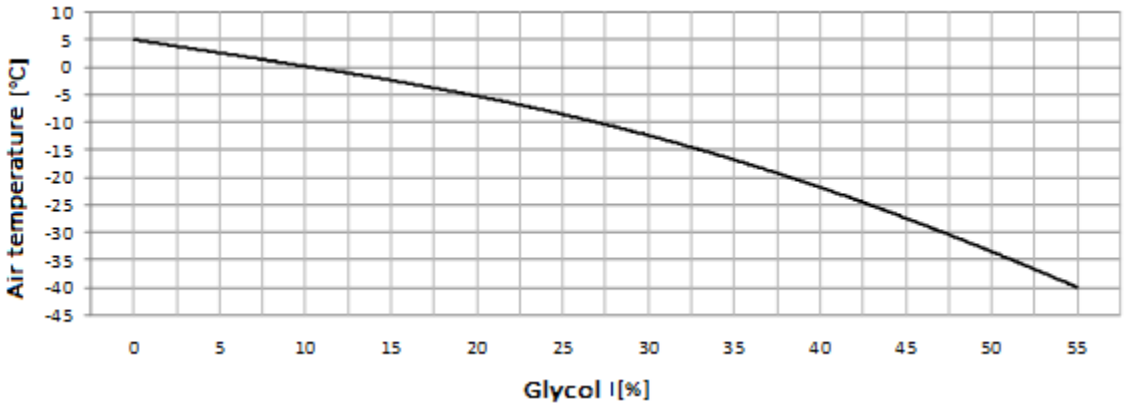
If the specific system volume is greater than 25 liters/kW heating output (e.g. through the installation of a hot water buffer storage), then the maximum permissible calcium carbonate input from the charging and backfilling water should be calculated in accordance with the VDI guideline 2035. In some cases, the charging water has to be softened.

| Criteria | Max. value | Effects of non-compliance |
|---|---|---|
| PH - Wert | 7-8 | Danger of corrosion in boiler parts and heating system |
| Degree of hardness | < 14dH | - Increased lime deposits<br>- Reduced lifetime of boiler |
| Chloride content | < 150mg/l | Corrosion of alloyed materials |

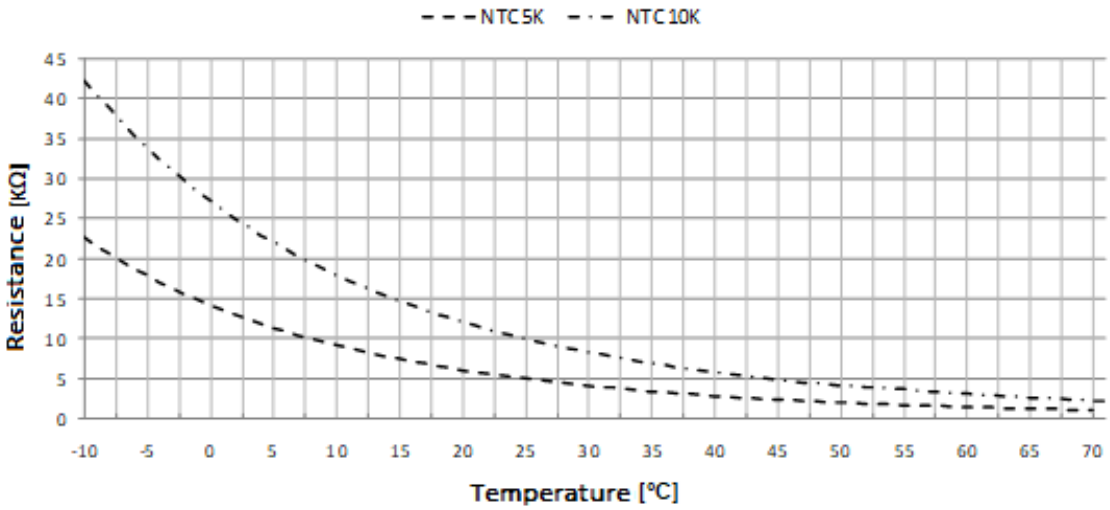
## 10.6 Glycol (%)

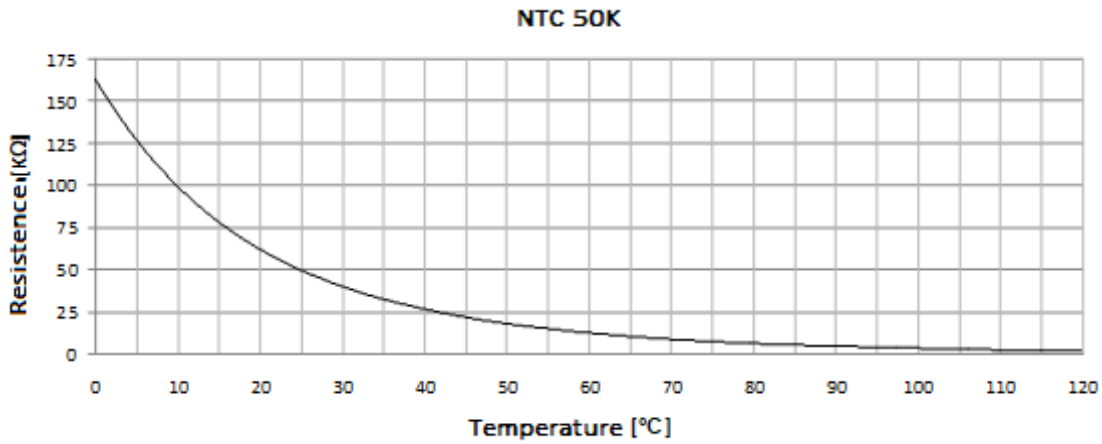
Glycol is used as an effective antifreeze in cooling and heating applications.

The percentage of glycol to be added to the hydraulic circuit is calculated as a function of the ambient air temperature, considering for this purpose -5 °C. Using this value as a reference, the installer must add 20% Ethylene Glycol to the hydraulic circuit.



## 10.7 Temperature probes info




# 11 ELECTRICAL REQUIREMENTS

## 11.1 Main specifications

| | Description |
|---|---|
| WARNNING | • The installation of the electrical network must be carried out in accordance with local regulations in force and by a qualified professional.<br>• The installer must not make any kind of electrical changes to the equipment. |

Before making any type of connection, check that the supply voltage matches the characteristics of the appliance.

The equipment must be connected directly to the general electrical distribution board. Dedicated protection systems must be installed for the BC (circuit breaker and differential), connecting the equipment together with others can cause voltage drops, impairing the equipment's operation.

Pay attention to the losses caused by the device's power cables, the smaller the cable section

area, the smaller the recommended maximum length. Make a note of the reference values for the electrical consumption of the equipment and the distance from it to the power supply and consult an electrician for advice on the diameter and type of cable to be used.

To make the electrical connection, open the side panel and connect the general power cable in the indicated places.

| | Description |
|---|---|
|  WARNNING | • The equipment must be earthed in accordance with the relevant regulations.<br>• The manufacturer is not responsible for any damage caused by the equipment's lack of earth connection or by an anomaly in the electrical supply. |

## 11.2 Electrical main spcifications/ protection devices

| Model | Power source | Max. current | * cable section |
|---|---|---|---|
| Aquapura 8HT | 240V/50Hz | 14A | 2,5mm$^2$ |
| Aquapura 12HT | 240V~ /50Hz | 22A | 4 mm$^2$ |
| Aquapura HT 14 | 240V~ /50Hz | 25 A | 4 mm$^2$ |
| Aquapura HT 14 T | 400V~/ 50Hz | 11 A | 2,5 mm$^2$ |
| Aquapura 22 HT T | 400V~/ 50Hz | 15A | 2,5 mm$^2$ |

The section of the wires above was selected in accordance with current regulations, considering a cable distance of 10 meters.

**NOTE**: Follow local regulations when selecting ground wires and circuit breakers.

Select protection systems according to the following table:

| Model | Power source | Max. current | CB | ELB (nº pólos/A/mA) |
|---|---|---|---|---|
| Aquapura 8HT | 240V~/50Hz | 14A | 20A | 1F+N/20/30 |
| Aquapura 12 HT | 240V~/50Hz | 22A | 32A | 1F+N/ 32/ 30 |
| Aquapura HT 14 | 240V~/50Hz | 25 A | 32A | 1F+N/ 32/ 30 |
| Aquapura HT 14 T | 400V~/ 50Hz | 11A | 16 A | 3F+N / 16/ 30 |
| Aquapura 22 HT T | 400V~/ 50Hz | 15A | 32A | 3F+N / 32/ 30 |

CB - Circuit Breaker; ELB – Differential

## 11.3 Connection between external unit and display (user interface)


The equipment is supplied with a 12 meter cable to interconnect the outdoor unit with the display.

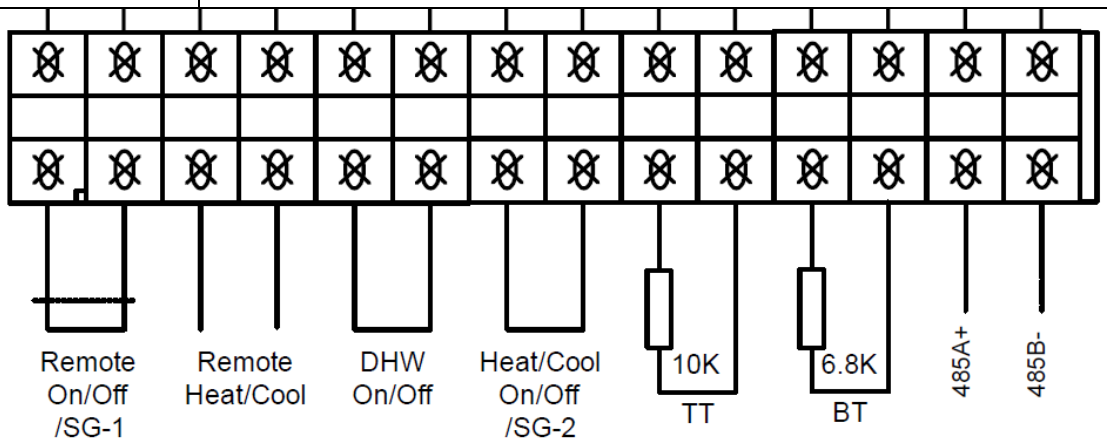
If the supplied cable is not long enough and the distance between the outdoor unit and the display is less than 50 meters, we recommend installing a straight-through cable.

The cable must have at least 4 conductors with a section of 0,5mm and protected with a mesh to avoid interference.

| | Description |
|---|---|
| WARNING |  The cable screen must be connected directly to the equipment ground connection. |

## 11.4 Connection terminals - Inputs

| | Description |
|---|---|
| WARNNING | The digital inputs mentioned are dry contacts (voltage free). Do not connect (220/240V~) to the terminals, otherwise it may cause irreversible damage to the controller and loss of warranty. |




*Note: The position of these terminals may vary with different models. Please check your electric scheme.

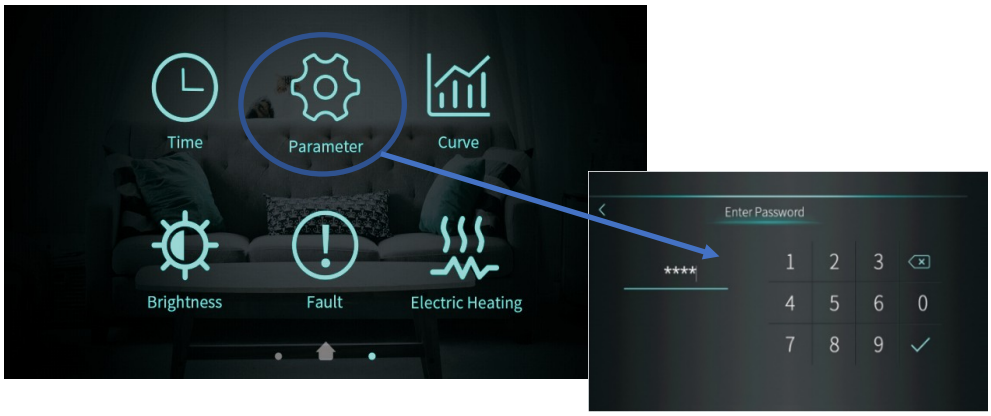
| | Description |
|---|---|
| Terminal REMOTE ON/OFF | Switching remotely ON or OFF.<br>• Contact open --- System OFF<br>• Contact closed --- System ON |
| Terminal REMOTE HEAT/COOL | Switching remotely to heating or cooling mode;<br>• Contact open --- Cooling mode;<br>• Contact closed --- Heating mode |
| Terminal DHW ON/OFF | Switching remotely DHW function;<br>• Contact open --- DHW inactive;<br>• Contact closed --- DHW active |
| Terminal HEAT/ COOL ON/OFF | Switching remotely to turn ON or OFF the Heating or Cooling operation;<br>• Contact open --- Heating or Cooling operation ON;<br>• Contact closed --- Heating or Cooling operation OFF |
| Terminal TT | Connection terminal for DHW temperature probe (probe NTC10K |
| Terminal 485A+/485B- | RS485- Modbus |

| | Description |
|---|---|
| WARNNING | By default, the digital inputs are inactive<br>To activate the digital inputs, contact a specialized technician or configure them according to the indicated procedure. |
| WARNNING |  <br>**ATTENTION:**<br>• **Use shielded cable in the connections of the digital inputs, in this way we protect the digital inputs against noise coming from the compressor.**<br>• **Not use this type of cable can lead to abnormal behavior in the operation of the equipment.**<br>• **The shielded must be connected to the equipment ground.** |

## 11.5 Digital input configuration

To activate the digital inputs, proceed as follows:

1st Access the user interface, click on the “Parameter” icon and enter the password 022;

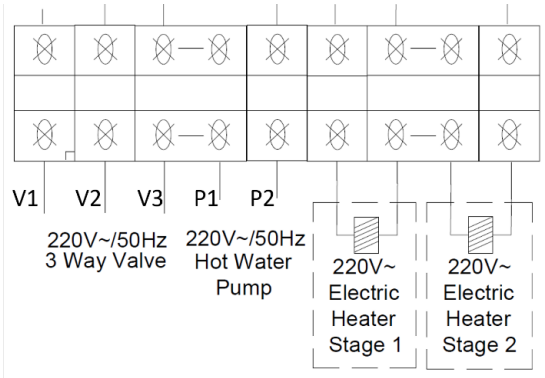



2nd Access the “Parameter” menu;

3rd In the “system” menu, change the following parameter:

| Paramater | configuration |
|---|---|
| H07 – Control Mode | Display |
| Change to: | |
| H07 – Control Mode | Dry contact |

## 11.6 Connections terminals – Outputs




*Note: The position of these terminals may vary with different models. Please check your electric scheme.

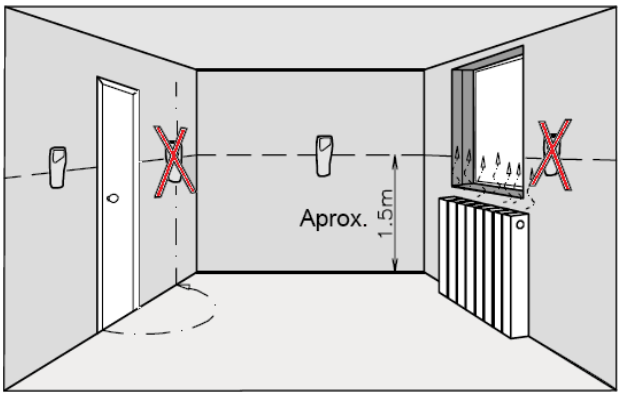
| | Descrição |
|---|---|
| Terminal<br>V1 - Permanent phase<br>V2 – Phase | Connection terminal for 3-way valve. Voltage polarized output (230V~) when the DHW function is active. |

| | |
|---|---|
| V3 - Neutral | |
| Terminal<br>P1 – Neutral<br>P2 - Phase | Connection terminal for DHW circulating pump. Voltage polarized output (230V~) when the DHW function is active. |

# 12 ROOM THERMOSTAT INSTALLATION

The simplest way to improve and control the comfort level of your installation is through an ambient thermostat.

Your installation location is extremely important, following a series of requirements as we can see in the figure below.

- 


The thermostat must be installed:

- An interior wall about 1.5m from floor level;
- A place where the temperature is uniform;
- A place where have a good circulation of air around the thermostat.

The thermostat cannot be installed:

- In exterior walls;
- Near the radiators, convectors, windows, etc.;
- Behind or near the doors

| | Description |
|---|---|
|  <br>WARNNING | The room thermostat contact must be free of tension. Connecting a tension on this contact will cause destruction of the controller. |

# 13 MAIN CONTROLLER --- USER INTERFACE

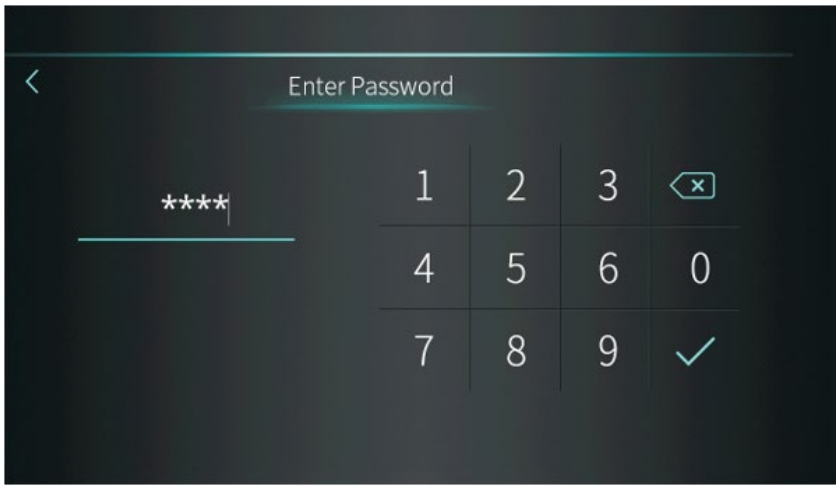
## 13.1 User interface description


| Number | Function |
|---|---|
| 1 | Lock screen. Click this key to lock the screen. White represents not enabled, while blue represents enabled |
| 2 | Is home icon. This Icon is shown by sliding the main interface. |
| 3 | Is tank water temperature. The machine is in hot water mode when this icon is shown; otherwise, this icon is not shown. |
| 4 | On and off. Click this key to switch ON or OFF.<br>Blue represents ON, while white represents OFF |
| 5 | Temperature setting. Click this key to set the target temperature. |
| 6 | Outlet water temperature. |
| 7 | Target temperature. |
| 8 | Fault icon. This Icon will flash when there is an error shown up, then the display will enter Failure record interface after tapping this icon; |
| 9 | Defrosting icon. It will display in the defrosting process of the unit. |
| 10 | Timing mute icon which displays only when activated. |
| 11 | Timing switch ON/OFF of unit which displays only when activated. |
| 12 | Mode&temp.&power timer icon: This icon will be displayed when enters this timer |
| 13 | SG Ready Icon: This icon will be displayed when enters SG Ready, SG Ready includes five modes: Solar Sleep Mode, Solar Low Mode, Solar Medium Mode, Solar High Mode, Normal Mode |
| 14 | External temperature (AT) |

| | |
|---|---|
| 15 | System time |
| 16 | Operation mode |
| 17 | Mode key:<br>• Domestic Hot water mode;<br>• Heating mode;<br>• Cooling mode;<br>• Domestic hot water + heating mode;<br>• Domestic hot water + cooling mode.<br>Can be selected by pressing this key. |

## 13.2 Unlock screen

Click the lock screen key again while the screen has been locked, pop-up keyboard is shown as following:




Input the password of 22 or 022, click the enter key and the screen will be unlocked.

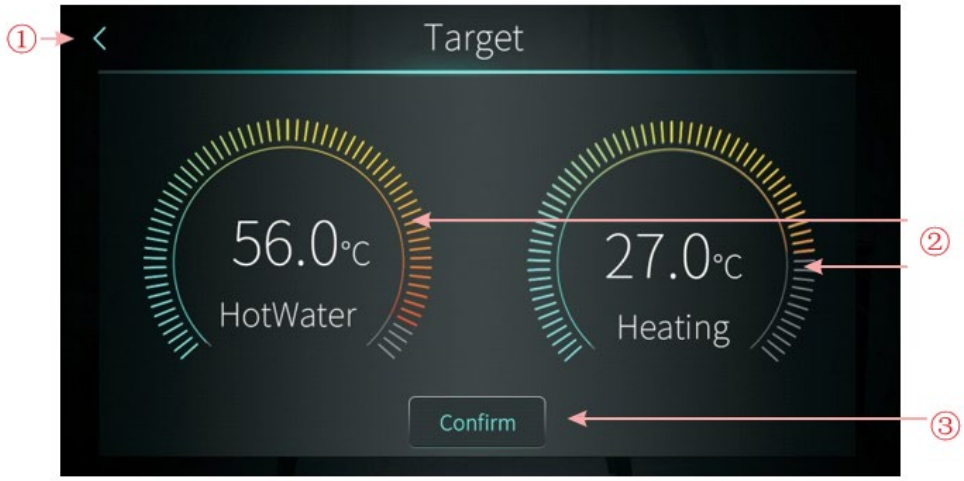
## 13.3 Operation mode switch

There are five modes can be selected after sliding the mode icon.

| Operation mode | Description |
|---|---|
| “Hot water” | Domestic hot water mode |
| “Heating” | Heating mode |
| “Cooling” | Cooling mode |
| “Hot water + Heating” | Domestic hot water + Heating mode |
| “Hot water + Cooling” | Domestic hot water + Cooling mode |

| | Description |
|---|---|
| WARNING | Domestic hot water mode has priority |

## 13.4 Setting target temperature




Take hot water + heating mode for example:

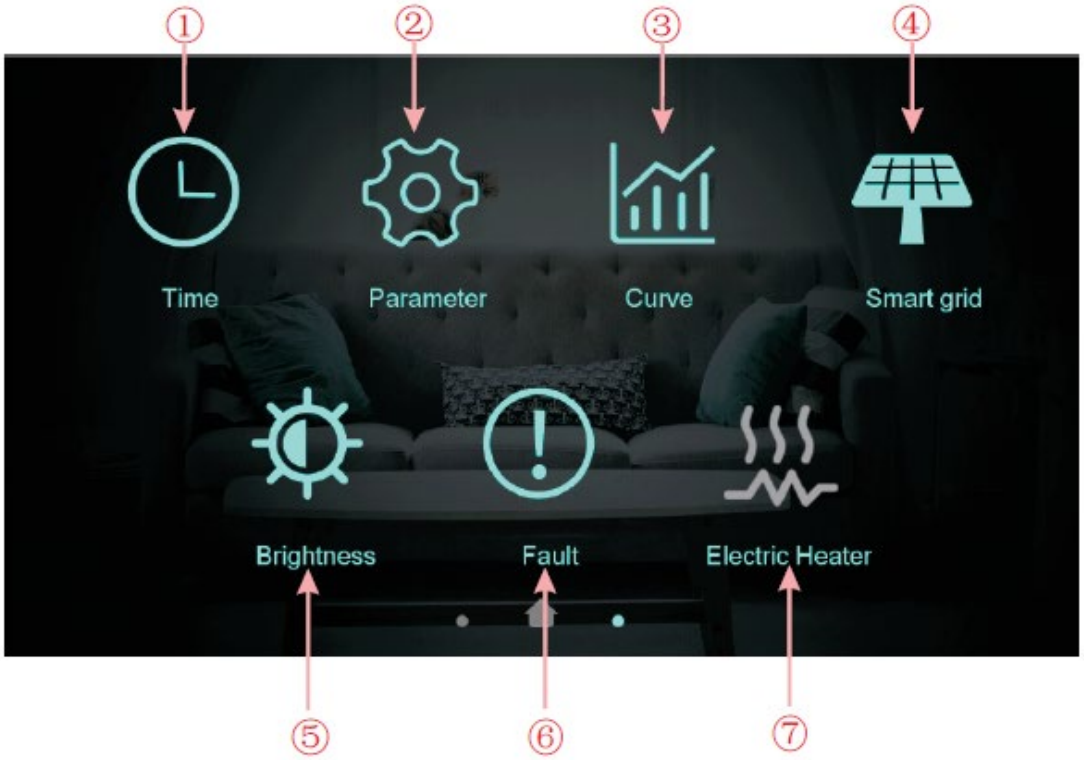
(1) Tapping ①, the wire controller back to main interface;

(2) Sliding ②, the target temperature can be adjusted in the clockwise or counter clock wise direction;

(3) Tapping ③ the target temperature can be saved.

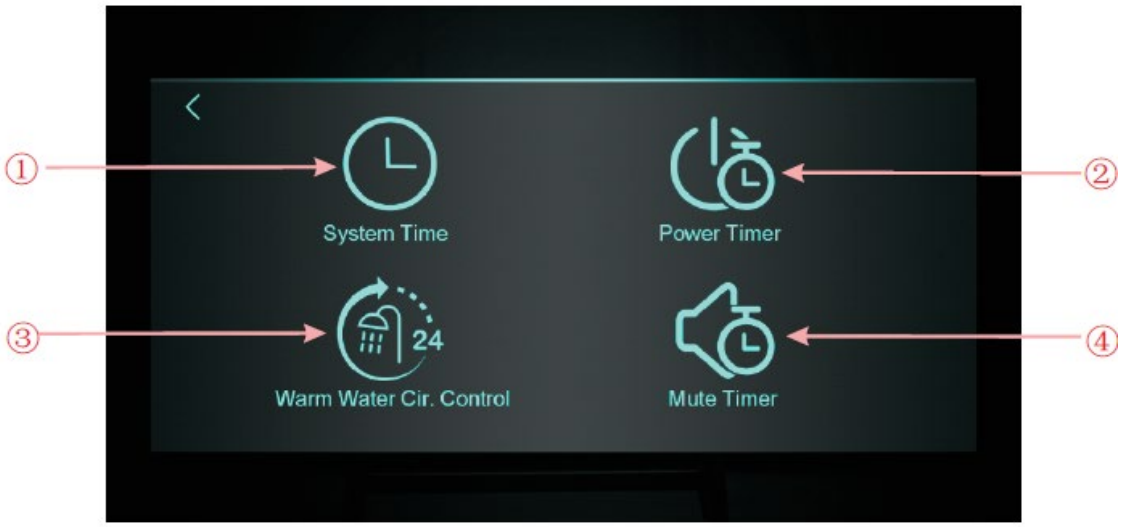
## 13.5 Setting interface display and function

Swipe from right to left on the main interface to enter the function setting interface, and swipe from left to right on the function setting interface to return to the main interface. The function setting interface is shown in the figure below.




| | Descrição |
|---|---|
| 1 | Time setting. Click this key to set the time function. |
| 2 | Factory parameter. Click the key and enter the password to enter the factory parameter settings and status parameters interface. |
| 3 | Curve key. Click this key to view the temperature curve. |
| 4 | Smart grid(SG READY) function options and control |
| 5 | Adjust brightness. Click this button to adjust screen brightness |
| 6 | Fault. Click to view fault history |
| 7 | Electric heating. When activate electric heating function, the color of the icon will turn blue, otherwise it will turn white. |

## 13.6 Time setting



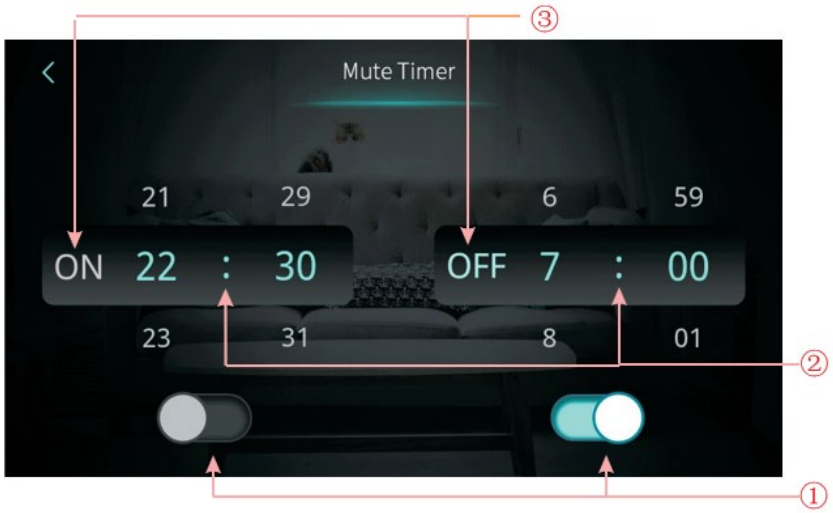

| Num. | Description |
|---|---|
| 1 | System time setting |
| 2 | Mute timer |
| 3 | Click to set warm water pump timed cycle, hide the icon when H40=0/2, show the icon when H40=1 |
| 4 | Click to set timed mute, hide the icon when H22=0, show the icon when H22=1 |

### 13.6.1 System time setting


When entering the page of system time setting, the system time will be initialized to the time at the moment when the system time setting button is pressed, and you can adjust the time by sliding up and down.

Note: The time format is displayed as: month-day-year hour: minute: second

### 13.6.2 Mute timer setting



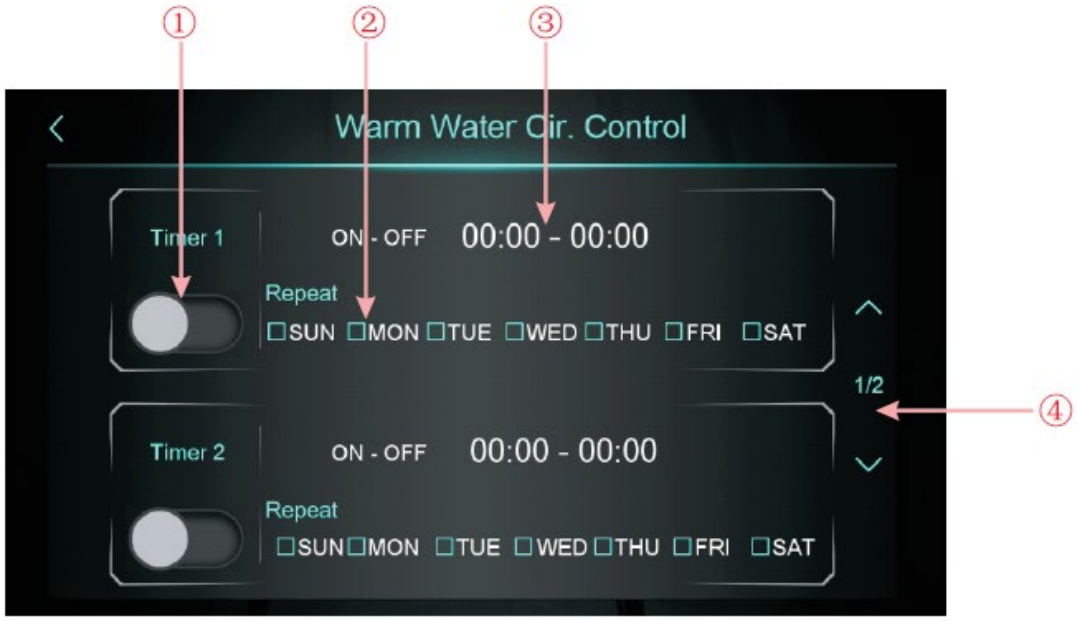

| Num. | Descrição |
|---|---|
| 1 | Whether enable the mute timer ON/ OFF function<br>key color: Enable - Blue ON / Disable: Gray OFF |
| 2 | The mute timer ON/ OFF setting point. Select from 00:00 to 23:59 |
| 3 | The status of mute timer:<br>key color: Enable - Blue ON / Disable: Gray OFF |

### 13.6.3 Power timer setting


| Num. | Description |
|---|---|
| 1 | Timing switch function on. Clicking the button, when the font color is blue, the timing switch is on. |
| 2 | Week setting. Set the day of the week to activate the timing switch |
| 3 | Time period setting. Set the time to turn on and the time to turn off |
| 4 | Turn page. A total of 6 timing switch time periods can be set which can be selected by turning the page |

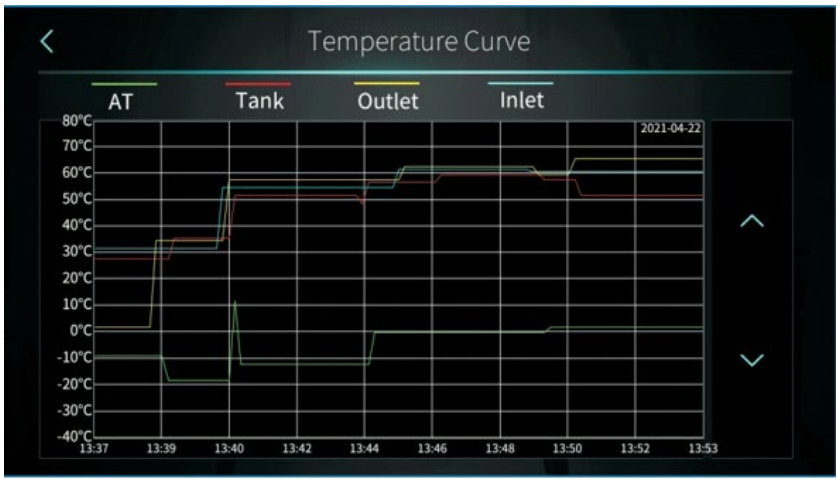
### 13.6.4 Warm water circulation control setting

Note: To activate this function you need to set the parameter H40=1




| Num. | Description |
|---|---|
| **1** | Slider to activate the current time setting(ON – Blue icon/OFF – Grey icon) |
| **2** | Set week day for the timer |
| **3** | Set the time of day, hour a minute, that you want this timer to activate |
| **4** | Use the arrows to check the timers on all the pages. 3 different working periods can be set this way. |

## 13.7 Temperature curve




This curve function records the water inlet temperature, water outlet temperature, tank water temperature and ambient temperature;

Temperature data is collected and saved every five minutes. Timekeeping is made from the latest data saving, if the power is disrupted when the time is less than five minutes, the data during such period will not be saved;

Only curve for power-on status is recorded, and that for power-off will not be saved;

The value of the abscissa indicates the time from the point on the curve to the current time point. The rightmost point on the first page is the latest temperature record;

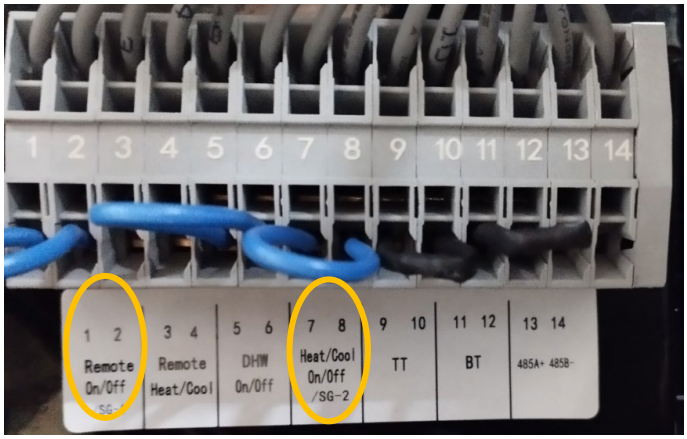
Temperature curve record is provided with power-down memory function.

## 13.8 Smart Grid


| Num. | Description |
|---|---|
| 1 | Select this icon to check the state of the SG ready function |
| 2 | Select this icon to set timers for the mode and temperature of the SG ready function |

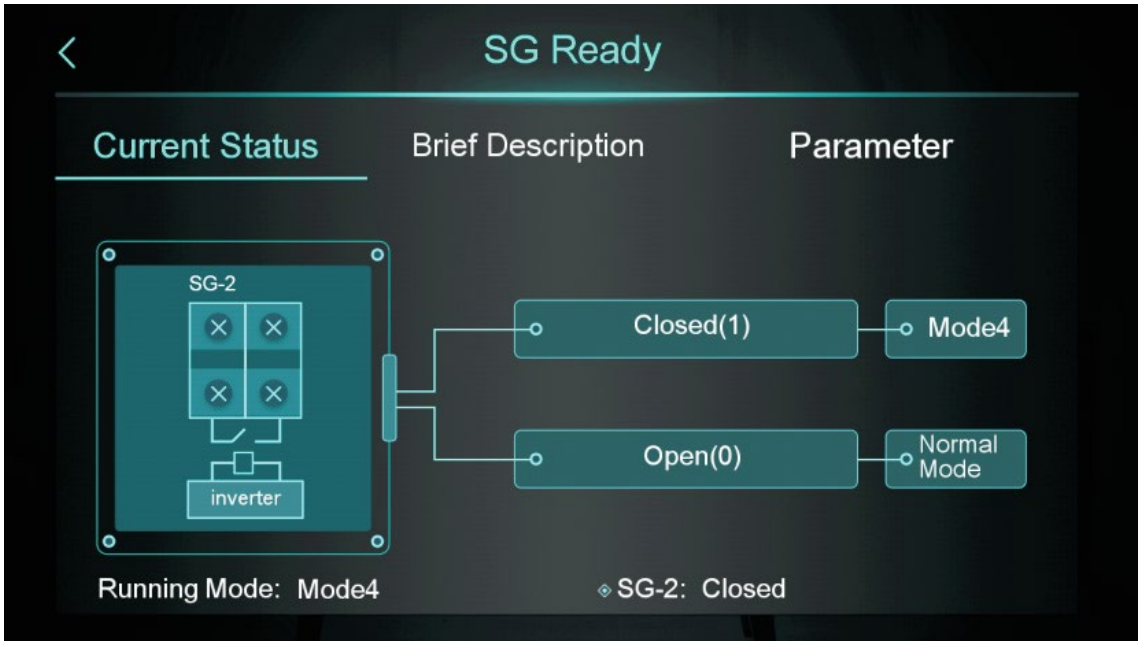
This function can be activated by changing the parameter Z01=1/2. If Z01=0, this function is deactivated.

To control this function, two dry contacts can be used(SG1 and SG2) or just one dry contact(SG2). These contacts are signaled on the electric connections of the heat pump.

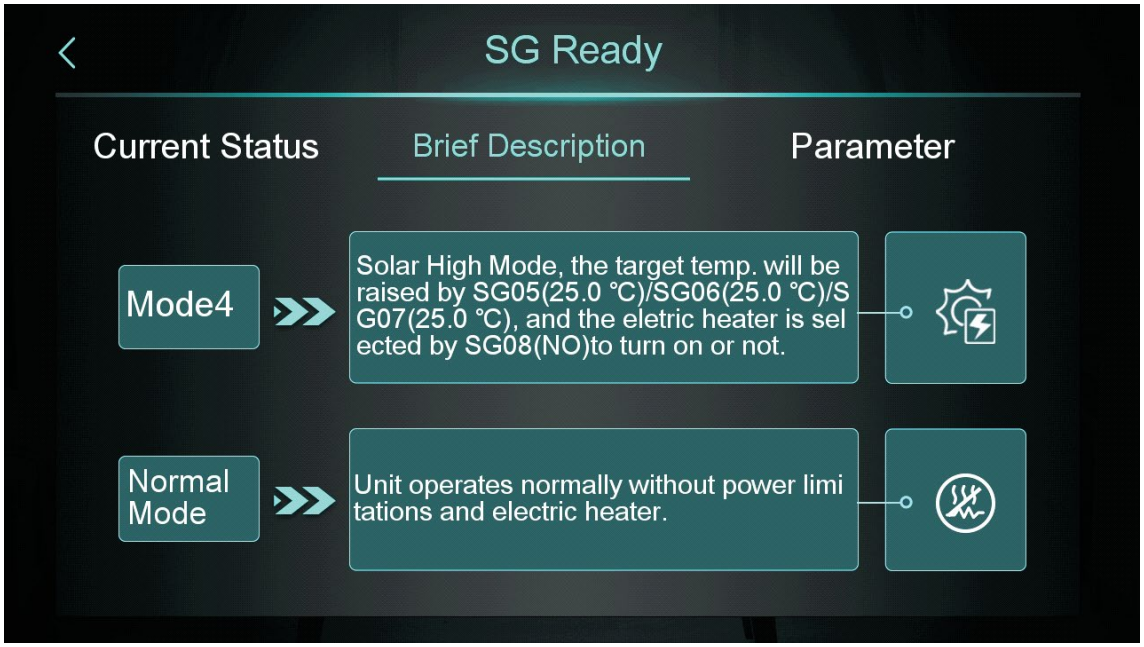


### 13.8.1 Parameter Z01=1

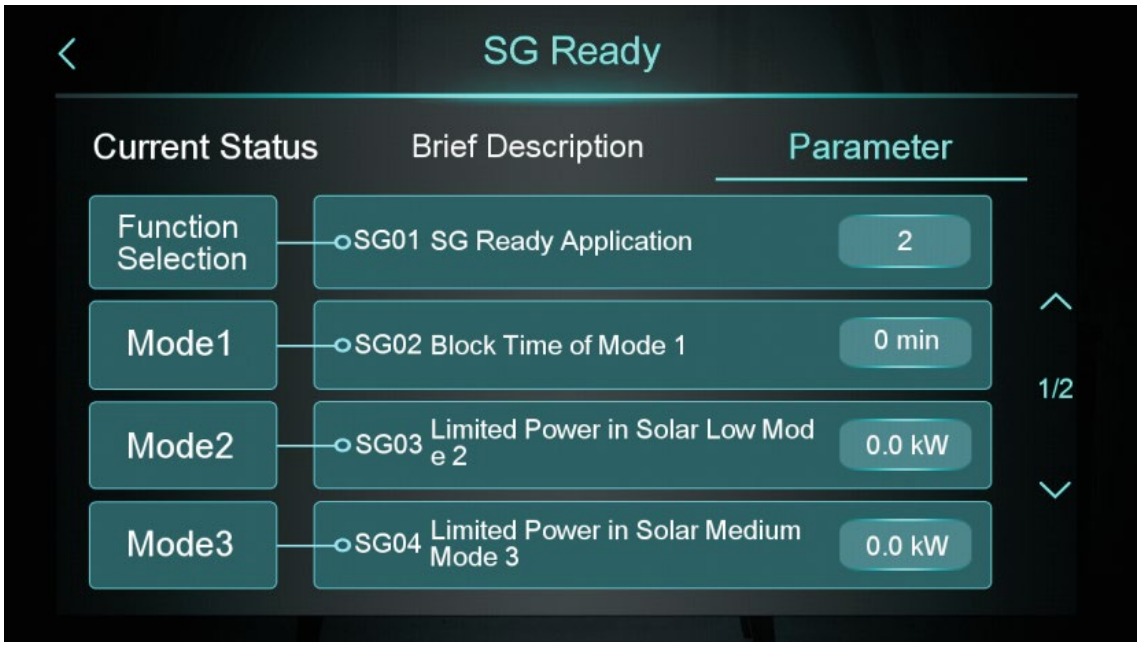
When only one dry contact is used, the display will show:




Select the button “Brief description” to check the various available modes of this function.

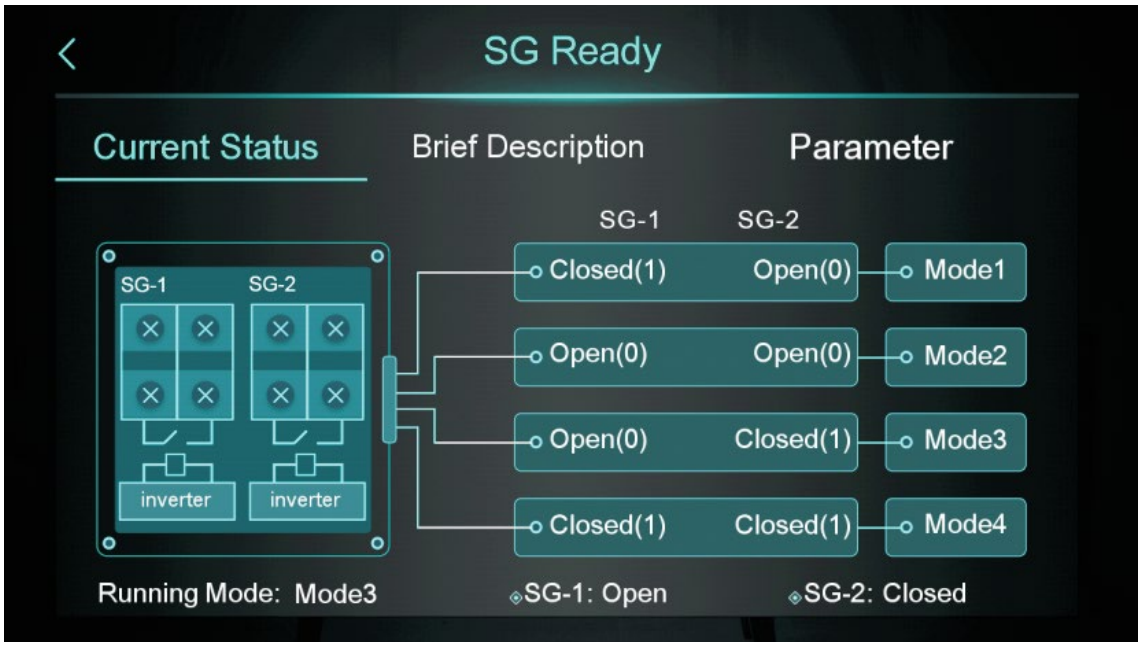



Select the button “parameter” with the installer password and access the control of the various modes of the SG ready function.




### 13.8.2 Parameter Z01=2

It is possible to use two dry contacts allowing thus to define 4 different modes of the SG ready function instead of 2. Its possible to define then the functioning of the heat pump according to the energy produced by the solar panels (High, Medium, Low).




### 13.8.3 Mode & temp & power timer

It’s possible to define different working modes and setpoints during different periods of time through a timer available on this function. With the SG ready function active(check 13.8.1 or 13.8.2) it is also possible to set the maximum working power.


| Num | Name | Description |
|---|---|---|
| 1 | Activate/deactivate | Enable the timer, when the font colour is blue, the timer is active |
| 2 | Function description | Select to read about this function |
| 3 | Time setting | Set the timer time |
| 4 | Mode | Set the target mode. If you do not need to set a mode please write “/” |
| 5 | Target Temp. | Set the temperature target |
| 6 | Max. Power | Set the power limitation. If you don’t need to limit the power, please set “Max. Power” to 0. |
| 7 | Week setting | Set the timer date |
| 8 | Turn page | A total of 6 timers may be set which can be checked by turning the page |

## 13.9 Color display calibration

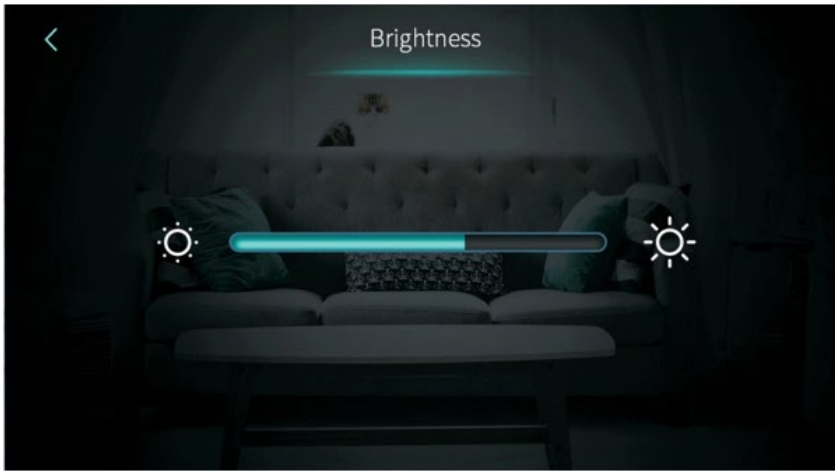
The middle display bar can be dragged or clicked to adjust the brightness of the screen, with power-down memory.

Press the back key to return to the previous level and save the brightness setting value.

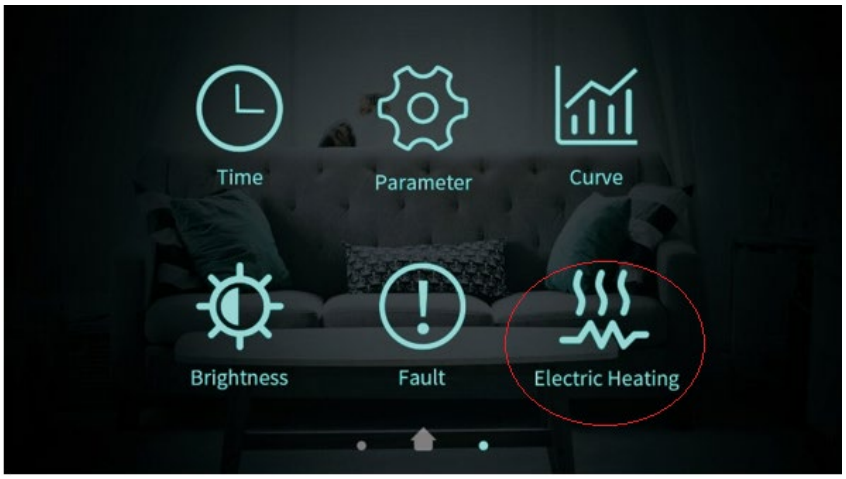
The screen has the function of automatic on and off, if there is no operation for 30s, the screen will enter the half-time screen state.

If there is no operation for another 5 minutes (a consecutive 5 minutes), the screen

will enter the screen state.




## 13.10 Electric Heating



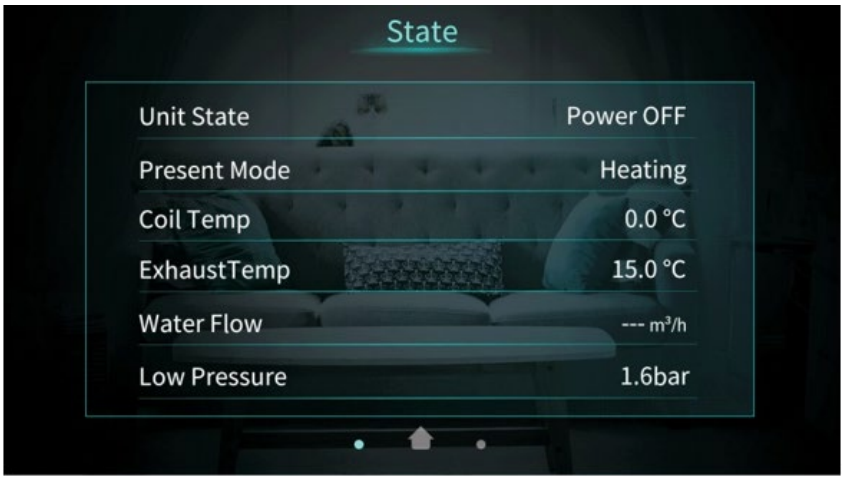

In heating operating mode, tap the “Electric Heating” icon to activate/deactivate the backup resistor (blue resistor icon active/ gray resistor icon deactivates)

**Note: Resistance is not an integral part of the equipment. Its installation will have to be done separately.**

## 13.11 Status interface display

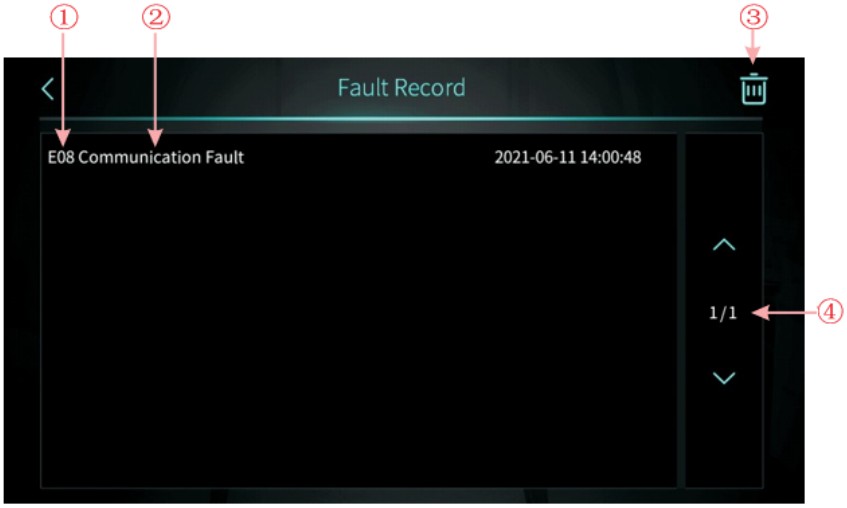
Swipe from left to right on the main interface to enter the status interface, and swipe from right to left on the status interface to return to the main interface.

The status interface is shown in the figure below.




## 13.12 Fault list

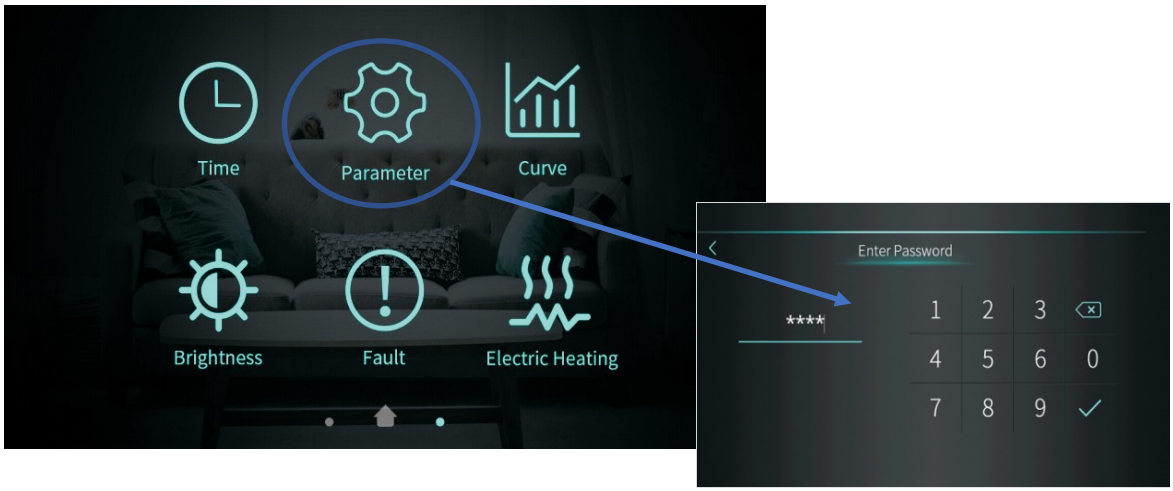
Click the alarm icon on the main interface to access the following interface:




| Num. | Description |
|---|---|
| 1 | Fault code |
| 2 | Fault description and date/ time |
| 3 | Clear all fault records; |
| 4 | Number of pages with fault records. |

# 14 MAIN CONTROLLER –INSTALLER INTERFACE

To access the user interface, click on the “Parameter” icon and enter the password 022.




After entering the password, you will have access to the following menu:


| “ICON” | Description |
|---|---|
| **Client Parameters** | Installer parameters |
| **Defrosting** | Force defrost cycle |
| **(AT) Compensation** | Ambient temperature compensation |
| **State** | Status of the main outputs of the equipment (compressor, fan, etc.) |
| **About** | Software version |
| **Manual load control** | Activate each of the units components manually |

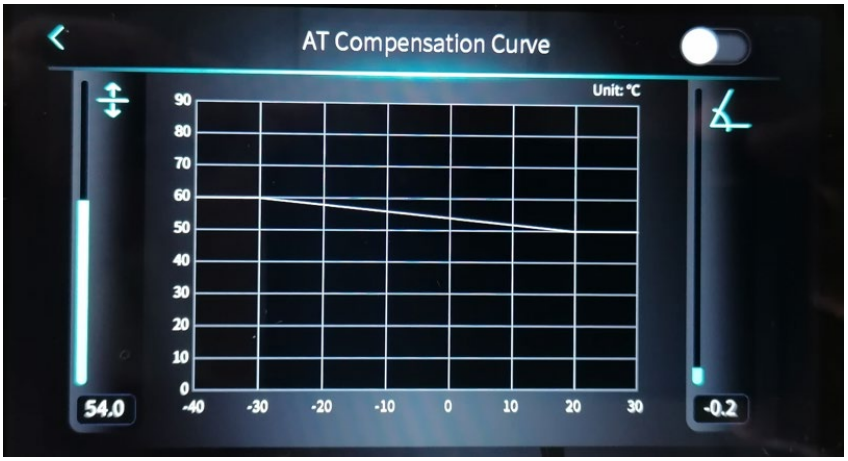
## 14.1 Installer parameters

| | **Description** | State / **configuration** |
|---|---|---|
| **"System"** | H05 – Enable Cooling Function | YES |
| | H07 – Control Mode | Display |
| | H10 – Unit Address | 1 |
| | H18 – Electric heater | Stage 3 |
| | H20 – 3-way valve polarity | ON for DHW<br>ON – output (230Vac)<br>OFF – output (0V). |
| | H21 – Temperature Unit | °C |
| | H22 – Enable silent mode | YES |
| | H25 – Temp. Control Selection | Outlet Water Temp. |
| | H28 – Heating/Cooling and Hot Water Function Enabled | Yes |
| | H30 – Indoor Unit Type | No |
| | H32 – Force Switch Mode Time | 120 min |
| | H36 – Enable Positive Weather Compensation | No |
| | H37 – DHW Temp. Sourcing | DHW Tank Sensor |
| | H38 – Language | English |
| | H40 – External pump selection | 0 |
| | H43 – Normal/Eco | Normal |
| "Protect" | A04 – Antifreeze temp | 4°C |
| | A23 – Min. Outlet Water Temp. Protect | 5°C |
| | A27 – Temp. Diff. of Limiting Frequency | 7°C |
| | A28 – Temp. Diff. Between Outlet and DHW Temp. | 7°C |
| | A31 – Electric heater on AT | 7°C |
| | A32 – Electric heater delays comp. On time | 30 min |
| | A33 – Electric heater opening temp. diff | 2°C |
| | A34 – Crank preheating Time | 0 min |
| | A35 – Electric heater OFF temp. diff | 0°C |
| "Defrost" | D03 – Interval Time Between Defrosting Cycles | 45 min |
| | D17 – Coil Temp. of Exit Defrosting | 13° C |
| | D19 – Max. Defrosting Time | 8 min |
| | D24 – Defrosting Heating Source in Heating/DHW Mode | Heating Circuit |
| | D26 – Enable defrosting communication in cascade | NO |
| "Temp" | R01 – DWH Target Temp. | 52°C |
| | R02 – Heating Target Temp. | 55°C |

| | | |
|---|---|---|
| | R03 – Cooling Target Temp. | 7°C |
| | R04 – Temp. Diff. for Power-on in Heating | 5°C |
| | R05 – Temp. Diff. for Standby in Heating | 1°C |
| | R06 – Temp. Diff. for Power in Cooling | 5°C |
| | R07 – Temp. Diff. for Standby in Cooling | 1°C |
| | R16 – Temp. Diff. for Power on in DWH | 5°C |
| | R17 – Temp. Diff. for Standby in DWH | 2°C |
| | R35 – Location of Electric Heater | NO |
| | R70 – Target Room Temp. | 20°C |
| | R71 – Room Temp. Diff. for Power on in Heating | 20°C |
| | R72 – Room Temp. Diff. for Standby in Heating | 0.5°C |
| | R73 – Room Temp. Diff. for Power on in Cooling | 0.5°C |
| | R74 – Room Temp. Diff. for Standby in Cooling | 0.5°C |
| “Pump” | P01 – Main Circulation Pump Operation Mode | Interval |
| | P05 – DHW Pump Operation Mode | Interval |
| | P06 – Main Circulation Pump Manual Control | NO |
| | P09 – Circulation Pump Protection Period | 0 Days |
| “Disinfection” | G01 – Disinfection Water Temp. | 63°C |
| | G02 – Time Duration of Disinfection | 0 min |
| | G03 – Disinfection Starting Time | 1 H |
| | G04 – Interval Period of Disinfection | 30 days |
| | G05 – Enable Disinfection | Yes |
| Zone | Z01 – Enable multi zone control | 0 |

| | Description |
|---|---|
|  WARNNING | Changing settings/parameters without consulting a specialized technician may cause malfunction or irreversible damage to the equipment. |

## 14.2 Compensation curve - Outdoor temperature Vs setpoint

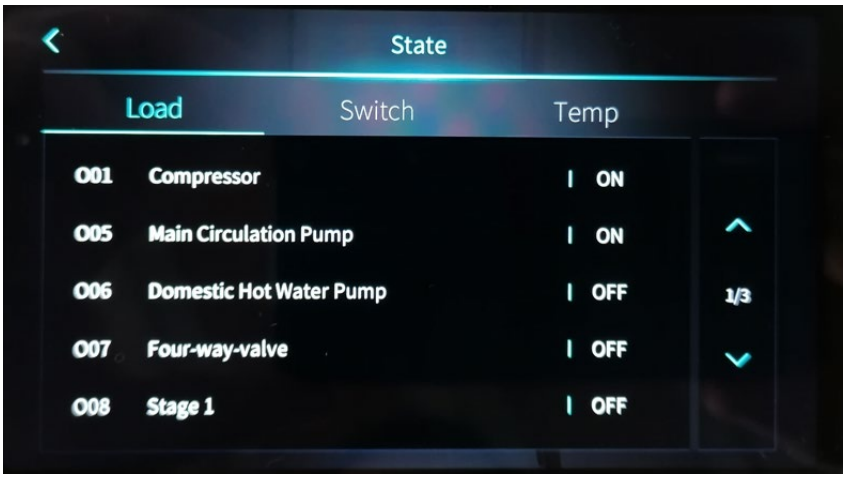



When activating the compensation function for outdoor temperature Vs flow water temperature for the central heating circuit, take into account that the setpoint will be adjusted as a function of the temperature defined in the graph.

Vertical axis - Impulse water temperature

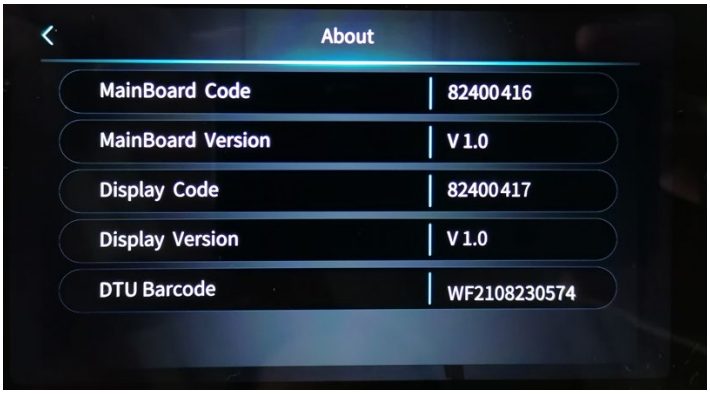
Horizontal axis - Outdoor temperature

## 14.3 Output/ input state of digital / analogic contacts



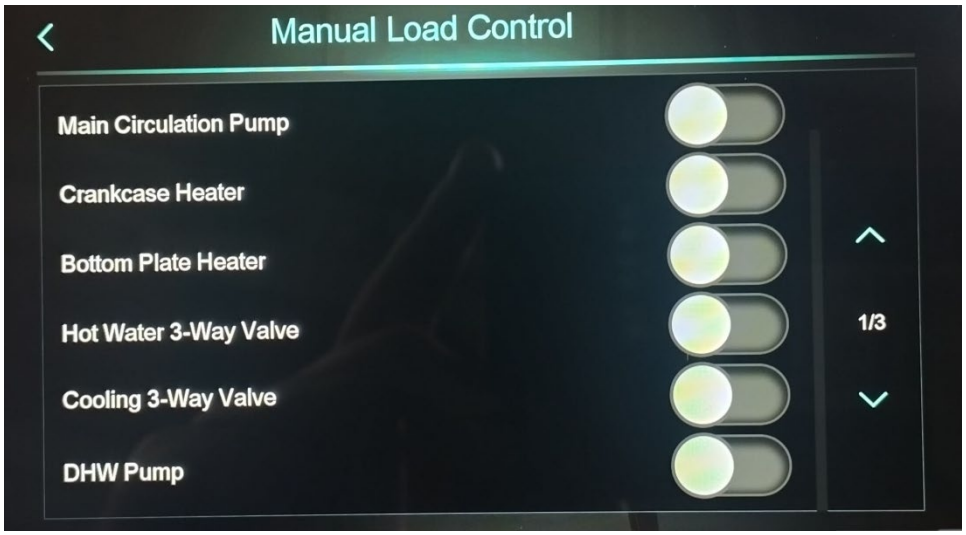

In this interface, you can check the status of the main equipment variables, such as: compressor status, water pump, 3-way valve, flow switch, pressure switches, temperature values, pressure values, current consumed by the compressor, etc.

## 14.4 Info of software version



## 14.5 Manual testing

The unit allows the activation of each of its components at a time to check if they are working properly helping with the installation of the machine. This function can be used only when the machine is turned off.



# 15 ALARM

## 15.1 Alarm – Electronic control fault table

| Protect/fault | Fault display | Reason | Elimination methods |
|---|---|---|---|
| Inlet Temp Sensor Fault | P01 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Heating returning water temp. sensor fault | P013 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| DHW returning water temp sensor fault | P018 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Heating leaving water temp. sensor fault | P023 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| DHW leaving water temp. sensor fault | P028 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Outlet Temp Sensor Fault | P02 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Water Tank Temp Sensor | P03 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| AT Sensor Fault | P04 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Syst1: Suction temp Sensor | P17 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Room Temp Sensor Fault | P42 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Syst1: Inlet Sensor (EVI) | P101 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Syst1: Outlet Sensor(EVI) | P102 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Distributor tube temp. sensor fault | P152 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Syst1: Coil temp Sensor | P153 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Syst1: Exhaust temp. Sensor | P181 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Syst1: Exhaust Overtempt | P182 | The compressor is overload | Check whether the system of the compressor running normally |
| Anti-freezer sensor | P191 | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Outlet Water Temp Sensor Fault of Water mixer | P02a | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Buffer tank temperature probe | P03a | The temp. Sensor is broken or short circuit | Check or change the temp. Sensor |
| Syst1: Pressure Sensor Fault | PP11 | The pressure Sensor is broken or short circuit | Check or change the pressure Sensor or system pressure |
| High pressure sensor | PP12 | The pressure Sensor is broken or short circuit | Check or change the pressure Sensor or system pressure |
| Low AT Protection | TP | The ambient temp. is low | Check the ambient temp value |
| No cooling at low ambient | TC | The temp sensor is not | Check or change the ambient |

| | | | |
|---|---|---|---|
| temperature protection | | working correctly or the ambient temperature is below A30 | temperature sensor |
| Aux Superheat Protection | E04 | The electric-heater protection switch is broken | Check to see whether the electric heater has been running under the temperature over 150 for a long time |
| Excess difference between inlet and outlet | E06 | Water flow is not enough and there is now differential pressure | Check the pipe water flow to see if water is jammed on the circuit |
| Communication Fault | E08 | Communication failure between wire controller and mainboard | Check the wire connection between remote wire controller and main board |
| Communication fault with hydraulic Module | E08c | Hydraulic module and main board communication fault | Check the communication connection |
| Zone 1 thermostat communication fault | E08g | Thermostat is not connected or not working properly, or the parameters set are wrong | Check the thermostat terminals or replace the thermostat or check the set parameters |
| Zone 2 thermostat communication fault | E08h | Thermostat is not connected or not working properly, or the parameters set are wrong | Check the thermostat terminals or replace the thermostat or check the set parameters |
| Communication Fault (speed control module1) | E081 | Speed control module and main board communication fail | Check the communication connection |
| Syst1: HP Protection | E11 | The high-pressure switch is broken | Check the pressure switch and cold circuit |
| Syst1: LP Protection | E12 | The low-pressure switch is broken | Check the pressure switch and cold circuit |
| Prim Anti-freezing protection | E19 | The ambient temp. is low | Check the ambient temp value |
| Secondary anti freezing protection | E29 | The ambient temp is low | Check the ambient temp value |
| Insufficient defrosting water flow alarm | E030 | The unit flow rate is lower than the minimum value | Check or change the hydraulic system to provide water flow |
| Flow switch fault | E032 | Very low or no water flow in the system | Check the water hose and pump for water flow |
| Low water flow protection | E035 | Water flow is too low | Increase the water flow in the system |
| Syst1: Antifreeze | E171 | Use side water system temp. is low | Check the water temp. or change the temp. Sensor.<br>Check the pipe water flow and whether water system is jammed or not |
| Fan Motor 1 Fault | F031 | 1. Motor is in locked-rotor state 2. The wire connection between DC-fan motor module and fan motor is in bad contact | Change a new fan motor.<br>Check the wire connection and make sure they are in good contact |
| Fan Motor 2 Fault | F032 | 1. Motor is in locked-rotor state 2. The wire connection between DC-fan motor module and fan | Change a new fan motor.<br>Check the wire connection and make sure they are in good contact |

| | | | |
|---|---|---|---|
| | | motor is in bad contact | |
| Compressor Overcurrent Shutdown Fault | E051 | The compressor is overload | Check whether the system of the compressor running normally |
| Outlet Water Over temp. | E065 | No water/little water in water system | Check the pipe water flow and water pump |
| Outlet Water Low temp. | E071 | No water/little water in water system | Check the pipe water flow and water pump |
| The Wire Controller Does Not Match the Mainboard | E084 | The wire controller software is not matching with mainboard software | Check the wire control software number and the mainboard software number |
| Communication Fault (speed control module2) | E082 | Speed control module and main board communication fail | Check the communication connection |
| Display and pcb communication fault | E084 | The display software does not match the electric board software | Check the display and electric board versions |

## 15.2 Alarm – Frequency conversion board fault table

| Protect/fault | Fault display | Reason | Elimination methods |
|---|---|---|---|
| IPM Overcurrent Shutdown Fault | F00 | IPM Input current is large | Check and adjust the current measurement |
| Compressor Activation Failure | F01 | Lack of phase, step or drive hardware damage | Check the measuring voltage check frequency conversion board hardware |
| PFC Fault | F03 | The PFC circuit protection | Check the PFC switch tube short circuit or not |
| DC Bus Overload | F05 | DC bus voltage>Dc bus Overload-voltage protection value | Check the input voltage measurement |
| DC Bus Underload | F06 | DC bus voltage<Dc bus Underload-voltage protection value | Check the input voltage measurement |
| AC Input Underload | F07 | The input voltage is low, causing the input current is low | Check the input voltage measurement |
| AC Input Overload | F08 | The input voltage is too high, more than outage protection current RMS | Check the input voltage measurement |
| Input voltage Sample Fault | F09 | The input voltage sampling fault | Check and adjust the current measurement |
| AC power overvoltage fault | F10 | Input voltage is over the maximum value | Check if the input voltage is above than 265V |
| Communication Fault (DSP) | F11 | DSP and Inverter board communication failure | Check the communication connection |
| Communication Fault | F12 | Frequency conversion board | Check the communication connection |

| | | | |
|---|---|---|---|
| (Inverter Board) | | and main board communication failure | |
| IPM Overheat Stop | F13 | The IPM module is overheat | Check and adjust the current measurement |
| Input voltage Lacking Phase | F15 | The input voltage lost phase | Check and measure the voltage adjustment |
| Weak Magnetic Warn | F16 | Compressor magnetic force is not enough | Check and adjust the current measurement |
| Sensor Fault of Module/ Radiator | F17 | The transducer is over heat | Check and adjust the current measurement |
| IPM Current Sample Fault | F18 | IPM sampling electricity is fault | Check and adjust the current measurement |
| IGBT Power Device Overheat Alarm | F20 | The IGBT is overheat | Check and adjust the current measurement |
| Current overload | F21 | Compressor is running abnormally | Check if the compressor cable is normal or blocked |
| AC Input Overcurrent Alarm | F22 | Input current is too large | Check and adjust the current measurement |
| EEPROM Error Warn | F23 | MCU error | Check whether the chip is damaged Replace the chip |
| Destroyed EEPROM Activation Ban Alarm | F24 | MCU error | Check whether the chip is damaged Replace the chip |
| V15V Over/Undervoltage Fault | F25 | The V15V is overload or undervoltage | Check the V15V input voltage in range 13.5v~16.5v or not |
| IGBT Power Device Overheat Fault | F26 | The IGBT is overheat | Check and adjust the current measurement |
| Compressor Current Frequency Reduction Alarm | F33 | The Compressor Current Frequency Reduction | Check and adjust the current measurement |
| Ventilator driver is lacking phase power | F101 | The ventilator has no power | Check if the cables are connected properly |
| Ventilator driver(IPM) overheat fault | F106 | The ventilator driver(IPM) plate has poor heat dissipation | Check the heat dissipation conditions |
| Ventilator overspeed fault | F109 | The ventilator speed is to high | Check the ventilator drive board |
| Ventilator driver current sampling fault | F112 | The current on the ventilator drive is faulty | Check if the ventilator drive is abnormal |
| Ventilator drive overcurrent fault | F113 | The ventilator running current is too large | Check if the ventilator is blocked |
| Ventilator drive temp sensor fault | F120 | Check if the temp sensor is broken | Check or change the temp sensor |
| Compressor driver and PCB communication fault | F151 | DPS and mainboard communication failure | Check the communication connection |

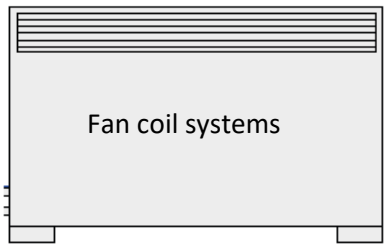
# 16 TROUBLESHOOTING

| Failure | Possible causes for the failure | Solutions |
|---|---|---|
| BC does not work, display without information | Power supply failure:<br>2) Circuit breaker off;<br>3) Power cable not properly connected;<br>4) Swapped phases;<br>5) Blown controller fuse | 1) Check the power supply.<br>2) Check if there is an anomaly and turn the circuit breaker back on.<br>3) Connect the power cord correctly.<br>4) Change one of the phases.<br>5) Check the fuse |
| Water pump is running with high noise or without water | 1) Lack of water. in the hydraulic circuit,<br>2) Air in the installation<br>3) Valves closed<br>4) Dirty or clogged water filter | 1) Check that there is no water leak. Fill the circuit<br>2) Purge the hydraulic circuit.<br>3) Open the valves<br>4) Clean the filter |
| Heat pump capacity is low, compressor do not stop | 1) Lack of refrigerant;<br>2) Bad insulation on water pipe;<br>3) Low heat exchange rate on air side exchanger;<br>4) Lack of water flow | 1) Check for the gas leakage and recharge the refrigerant;<br>2) Make good insulation on water pipe;<br>3) Clean the air side heat exchanger;<br>4) Clean the water filter |
| High compressor exhaust | 1) Too much refrigerant;<br>2) Low heat exchange rate on air side exchanger. | 1) Discharge the redundant gas;<br>2) Clean the air side heat exchanger |
| Low pressure problem of the system | 1) Lack of refrigerant gas<br>2) Outside temperature too low.<br>3) Obstruction of the refrigerant circuit. | 1) Check the gas leakage and recharge freon;<br>2) Replace filter or capillary;<br>3) Clean the water filter and discharge the air in water loop. |
| Compressor do not run | 1) Power supply failure;<br>2) Compressor contactor broken;<br>3) Power cable loose;<br>4) Protection on compressor;<br>5) Wrong setting on return water temp.<br>6) Lack of water flow. | 1) Check off the power supply;<br>2) Replace compressor contactor;<br>3) Tighten the power cable;<br>4) Check the compressor exhaust temp.;<br>5) Reset the return water temp.;<br>6) Clean the water filter and discharge the air in water loop. |
| High noise of compressor | 1) Liquid refrigerant goes into compressor<br>2) Compressor failure | 1) Bad evaporation, check the cause for bad evaporation and get rid of this;<br>2) Replace the compressor; |
| Fan do not run | Failure on fan relay or fan motor broken | Replace the fan relay or replace fan motor. |

| | | |
|---|---|---|
| The compressor runs but heat pump has not heating or cooling capacity | 1) No gas in the heat pump;<br>2) Heat exchanger broken;<br>3) Compressor failure. | 1) Check system leakage and recharge<br>2) Refrigerant; find out the cause and replace the heat exchanger;<br>3) Replace compressor. |
| Low outlet water temperature | 1) Low water flow rate;<br>2) Low setting for the desired water temp.; | 1) Clean the water filter and discharge the air in water loop.<br>2) Reset the desired water temperature. |
| Low water flow protection | 1) Lack of water in the system;<br>2) Failure on flow switch | 1) Clean the water filter and discharge the air in water loop.<br>2) Replace the flow switch. |

# 17 APPENDIX 1 – HYDRAULIC SCHEMES

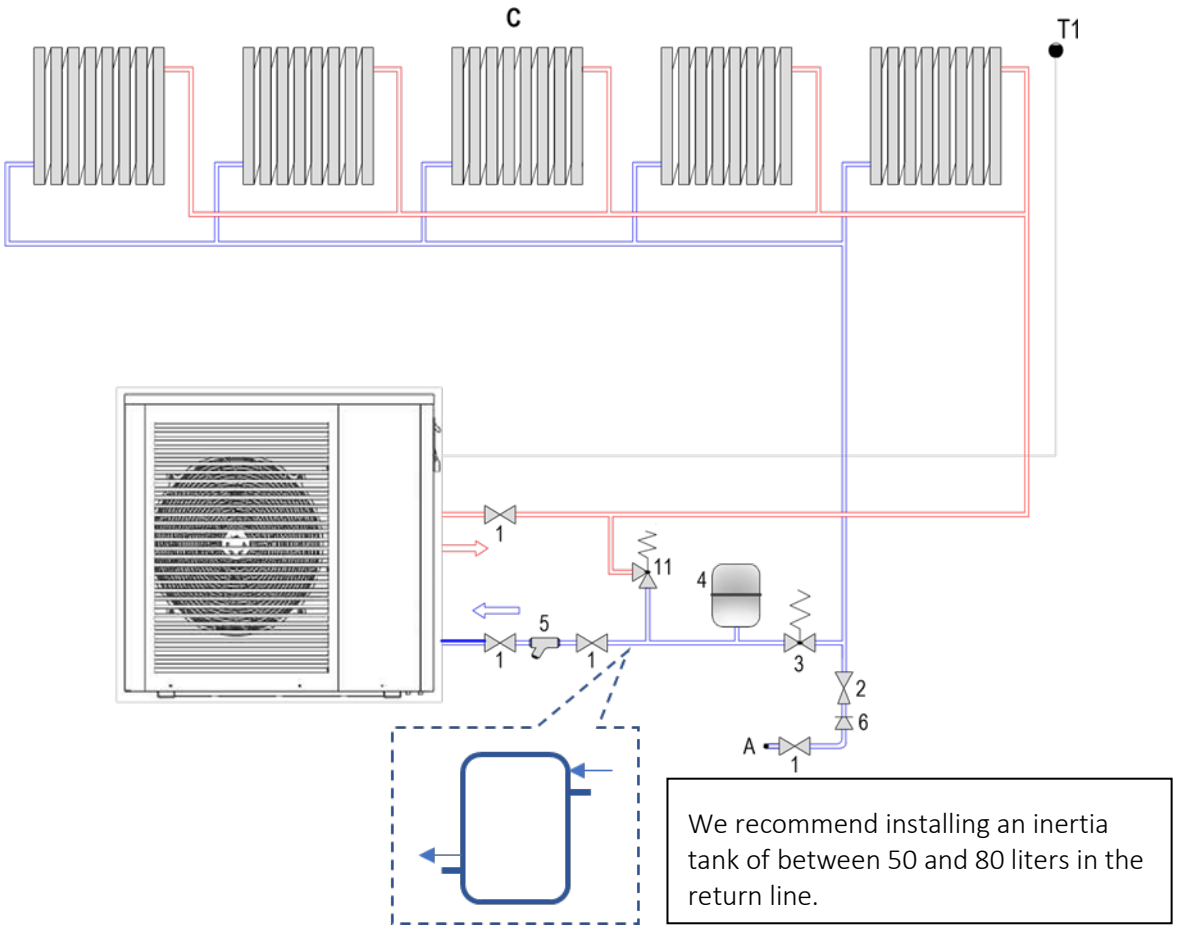
| | Description |
|---|---|
| WARNNING | • This drawing just shows the core parts and main principle of the application, there are many parts can be installed such as water pressure meters, water temperature meter, drainage etc.<br>• The hot water circuit, when implemented, has priority over the air conditioning circuit. |

| | Description |
|---|---|
| INFO | The heat dissipation source shown in the diagrams is merely representative. The equipment can be installed with radiators, radiant floor systems, fan coils, etc.<br>  <br>radiant floor systems<br>  |

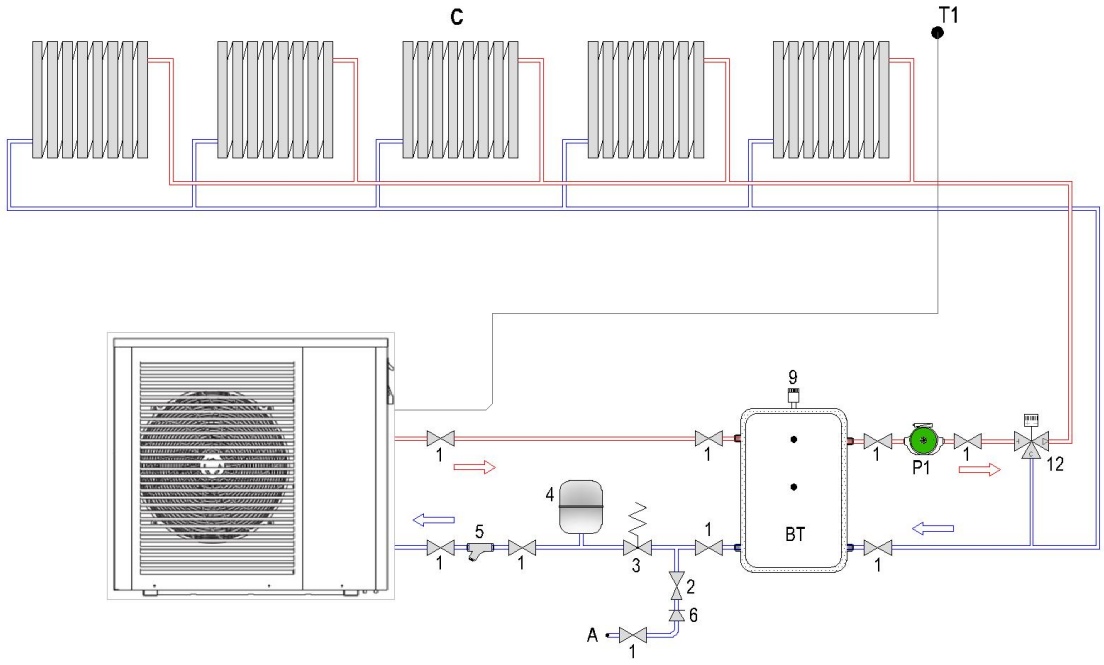
## 17.1 Hydraulic schemes glossary

| | | | |
|---|---|---|---|
| 1 | Shutoff valve | 11 | Differential bypass valve |
| 2 | Filling valve | A | Water inlet (central heating) |
| 3 | Safety valve | A1 | Cold water inlet (DHW) |
| 4 | Expansion vessel | B | Central heating (radiators, floor heating or fan coils) |
| 5 | Filter | C | Hot water outlet (DHW) |
| 6 | Valve (non-return) | BT | Buffer tank |
| 7 | Water tank (DHW) | P1 | Circulating pump |
| 8 | 3 way valve | T1 | Room thermostat |
| 9 | Automatic air vent | TT | DHW temperature probe |
| 10 | Pressure reducing valve | 12 | Thermostatic valve |

## 17.2 Central Heating and Cooling

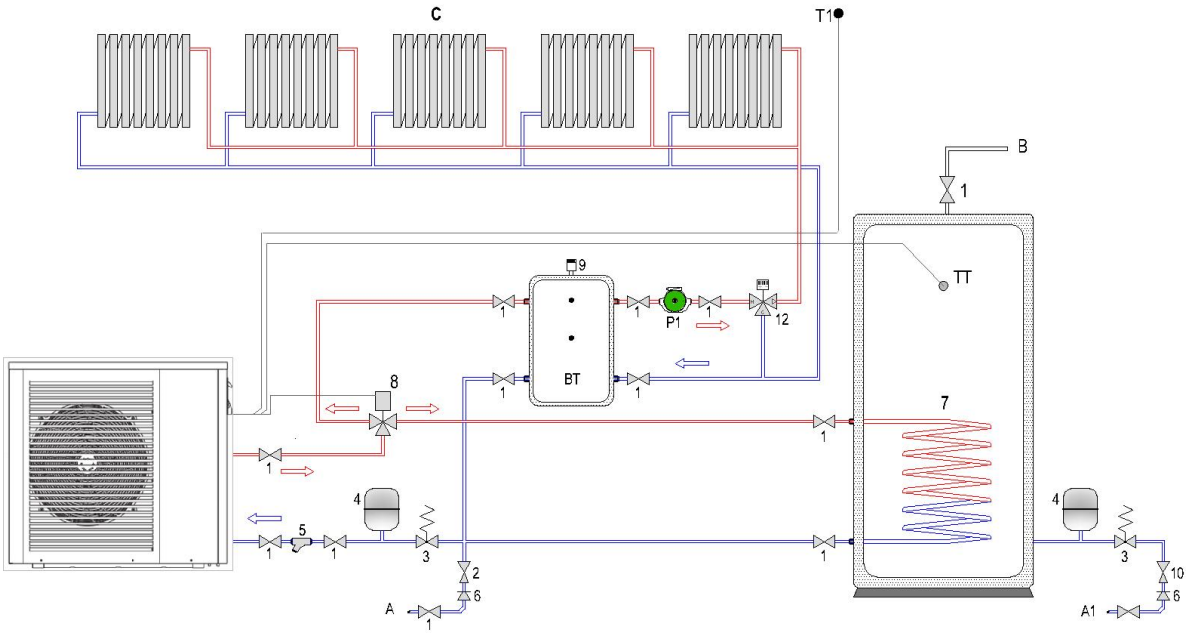



## 17.3 Central Heating and Cooling with buffer tank



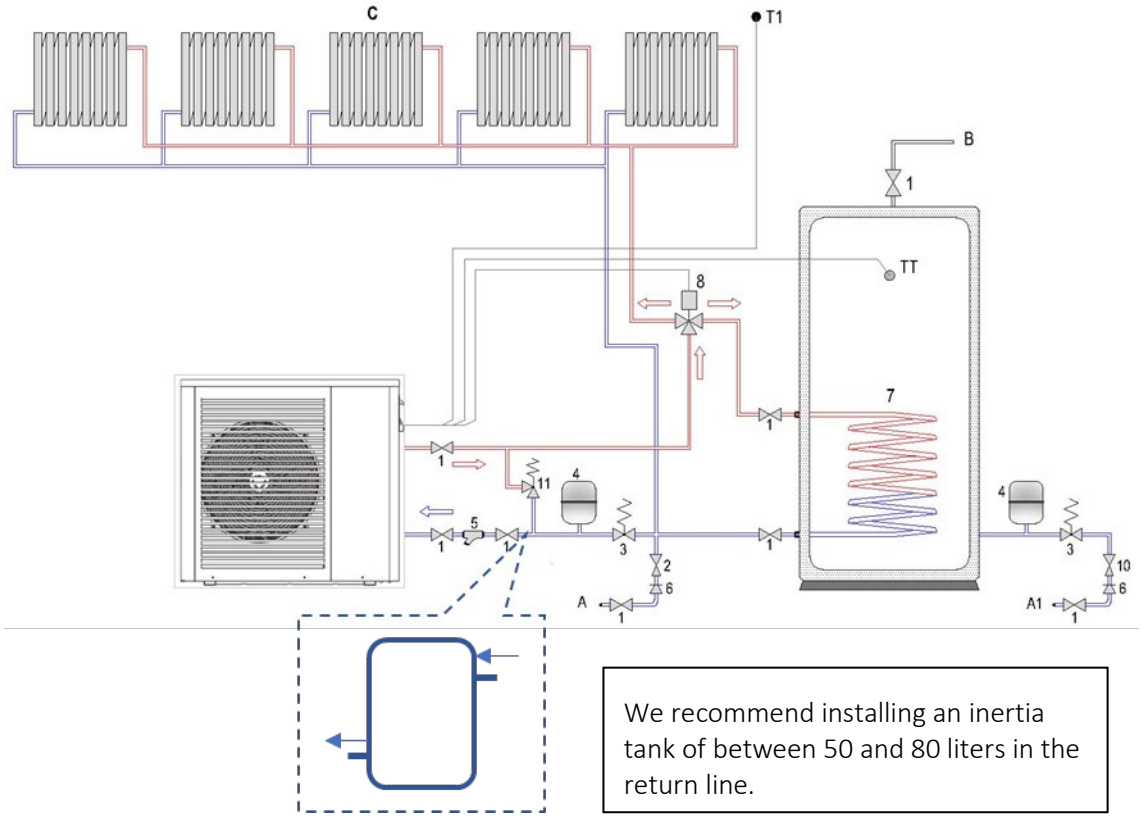
| | Description |
|---|---|
| ATTENTION | The heat pump does not control the pump “P1”, its control must be carried out separately. |

## 17.4 Central Heating and Cooling with buffer tank + DHW




| | Description |
|---|---|
| ATTENTION | The heat pump does not control the pump “P1”, its control must be carried out separately<br>The heat pump manages the three-way valve depending on the requested request (Central heating or DHW).<br>The DHW temperature probe is provided with system. The temperature probe is located inside the installation kit |

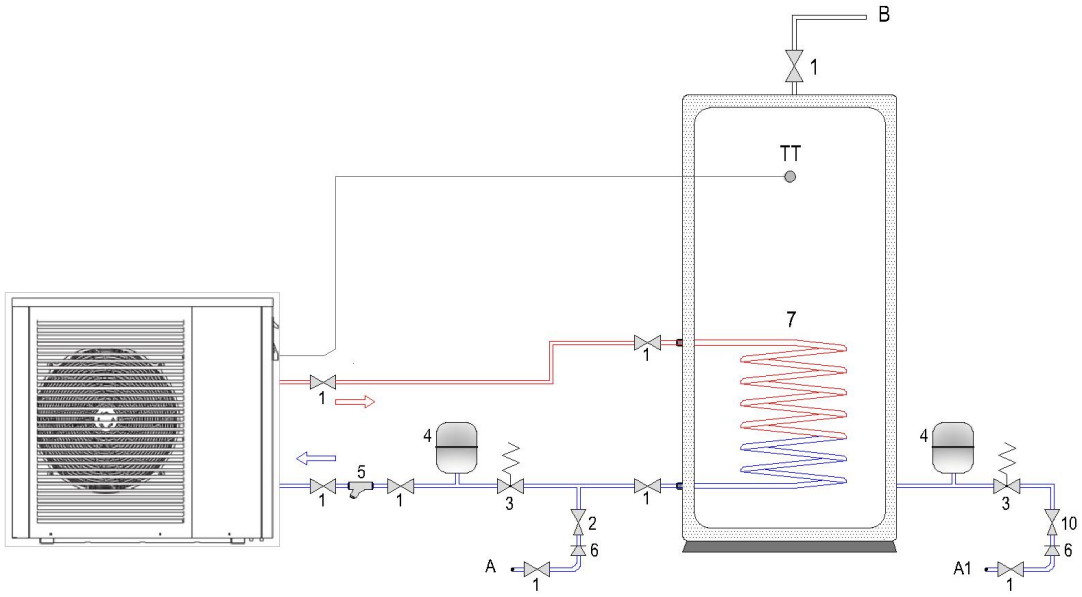
## 17.5 Central Heating and Cooling + DHW




We recommend installing an inertia tank of between 50 and 80 liters in the return line.

| | Description |
|---|---|
| ATTENTION | The heat pump manages the three-way valve depending on the requested request (Central heating or DHW).<br>The DHW temperature probe (TT) is provided with system. The temperature probe is located inside the installation kit |

## 17.6 Domestic hot water




| | Description |
|---|---|
| ATTENTION | The DHW temperature probe (TT) is provided with system. The temperature probe is located inside the installation kit |

# 18 WARRANTY

This warranty covers all defects to the confirmed materials, excluding the payment of any type of personal damage indemnity caused directly or indirectly by the materials.

The periods indicated below start from the purchase date of the apparatus, 6 months at the latest from the leaving date from our storage warehouses.

| Component | Warranty period |
|---|---|
| Water Cylinder (domestic or industrial application) | 3 (three) years with an extension of + 2 (two) years * |
| Heat pump | 3 (three) years |

* The warranty extension of 3 years is conditioned to the submission of:

- Warranty and Check Sheet at maximum 15 days after the installation;
- Documental evidence of the magnesium anode replacement;
- Pictures of the installation where it's shown safety group, expansion vessel, hydraulic and electrical connections.

In case of warranty, the parts replaced are property of the manufacturer.

A repair under the warranty is not reason for an extension of its term.

## Warranty Exclusions

The warranty ceases to be effective when the apparatus is no longer connected, used or assembled in accordance with manufacturer instructions, or if there has been any form of intervention by unauthorized technicians, has the appearance of modifications and/or if the series number appears to have been removed or erased. The equipment should be installed by qualified technicians according to the rules in effects and/or the rules of the trade, or the instructions of our technical services. Further exclusions from warranty:

- Hot water tanks have been operating in water with the following indexes:
  - Active chlorine > 0.2 ppm;
  - Chlorides > 50 mg/l (Inox);
  - Hardness > 200 mg/l;
  - Conductibility > 600 µS/cm (20 ºC);
  - 5,5 > PH and PH > 9 (Sorensen at 20ºC);
  - If one of the water parameters has a greater value than stipulated by directive 236/98 (Portugal) or equivalent standard in the costumer's country.
- Parts are subject to natural wear and tear – levers, switches, resistances, programmers, thermostats, etc;
- Breakdown due to incorrect handling, electrical discharges, flooding, humidity or by improper use of the apparatus;
- The warranty lapses if it is transferred to another owner, even if within the guarantee

period;

- The warranty lapses if this certificate is incorrectly filled in, if it is violated or if it is returned after more than 15 days have passed since the purchase date of the apparatus.
- Water cylinder that are working in waters with the following indices:
- active chlorine > 0,2 p.p.m

If you have any question about the operation and maintenance of the unit that are not addressed in this manual, or if you feel that something in the manual is unclear, please contact us.