EN

INSTRUCTION AND USER MANUAL

ENERGIE®

THERMODYNAMIC SOLAR ENERGY

Aquapura X60 HT

R290
ECO Friendly

Revision: 0
Version: 1
Date: 16/11/2023

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

CE

Dear Client,

We appreciate your preference when purchasing equipment designed to heat sanitary water.

The X60 Aerothermal System will certainly satisfy all your expectations and provide you with many years of comfort with maximum energy savings.

Our organization dedicates a lot of time, energy and economic resources to develop innovations that promote energy savings in our products.

With your choice, you have just demonstrated your sensitivity and attention to energy consumption that affects the environment.

We are permanently committed to designing innovative and efficient products so that this rational use of energy can actively contribute to safeguarding the planet's environment and natural resources.

Keep this manual, which aims to inform, warn and advise on the use and maintenance of this equipment.

Our services are always at your disposal.

INDEX

INDEX 3
1 INFORMATION 5
2 SECURITY INFORMATION 5
2.1 Danger 6
2.2 Notice 7
3 GENERAL 8
3.1 Manufacturer's responsibility 8
3.2 Installer's responsibility 8
4 TRANSPORT 9
5 OPERATION PRINCIPLE 10
6 CHARACTERISTICS OF THE HEAT PUMP 11
7 Operating Conditions 11
7.1 Heating Mode 11
7.2 Cooling Mode 11
8 UNIT OVERVIEW 12
9 DIMENSIONS 12
9.1 Dimensions of Unit 12
9.2 Fixation of Pump in Place 13
10 TECHNICAL INFORMATION 14
11 INSTALLATION 15
11.1 Heat Pump Location 15
11.2 Installation Zone 17
11.3 Refrigerant Charging 17
11.4 Hydraulic installation 18
11.5 Condensate drainage system 19
11.6 Water filter 19
11.7 Water quality 20
11.8 Glycol (%) 20
11.9 Temperature probe information 21
12 ELECTRICAL INSTALLATION 22
12.1 General specifications 22
12.2 Electrical network specifications/protection devices 23
12.3 Connection outdoor unit with display 23
12.4 Connection terminals – Inputs 24
13 ENVIRONMENTAL THERMOSTAT INSTALLATION 25
14 CONTROL PANEL – MAIN MENU 26

14.1 Description of the Main Panel 27
14.2 Instructions for operating the controller 28
14.3 Function menu – Setting 29
14.3.1 Check equipment status 29
14.3.2 Consult Alarm List 30
14.3.3 Set Date/Time 31
14.3.4 Temperature Graph 31
14.3.5 Activate Support Electrical Resistance 32
14.3.6 Compensation curve - Outdoor temperature vs. Setpoint 33
14.3.7 Preheat function 33
14.3.8 Quick Mute Function 34
14.4 Function menu – Timer 34
14.4.1 Set temperature setpoint for a specific period [Button 20] 34
14.4.2 Set opening hours in ON/OFF mode [Button 21] 35
14.4.3 Set opening hours in silent mode [Button 22] 35
15 ALARMS 36
15.1 Alarms – Electronic control 36
16 PROBLEM SOLVING 40
17 ANNEX 1 – INSTALLATION PLANTS 42
17.1 Central Heating 42
17.2 Central Heating with Inertia 43
17.3 Sanitary Hot Water 43
17.4 Domestic Hot Water with Inertia 44
17.5 Domestic Hot Water with Inertia (Modular Installation) 44
18 Interface Diagram 45
18.1 Control Board Diagram 45
18.2 Display Diagram 46
18.3 Entry and Exits 46
19 WARRANTY CONDITIONS 48
20 WARRANTY EXCLUSIONS 49

1 INFORMATION

This manual is an aid for qualified technicians to correctly install, operate and carry out maintenance services on the heat pump.
Read this manual carefully before attempting to install, operate or carry out any intervention on the heat pump. Failure to follow these instructions may cause heat pump failure, electric shock, injury or property damage.

Installer:

Before leaving the premises, double-check the manual to make sure the heat pump was installed correctly. Start the unit and verify that the equipment is operating within normal parameters.

2 SECURITY INFORMATION

In order to protect the physical integrity of the operator, as well as the equipment, it is essential that all safety information noted in this manual is taken into account.
Hydraulic and electrical connections must comply with current regulations at the installation site.

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

 NOTICE	Children must not play with the appliance. Cleaning and maintenance must not be carried out by children without supervision. 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 use of the appliance in a safe way and understand the risks. involved;

2.1 Danger

INSTALLATION:

	Description
 DANGER	The heat pump must be installed by qualified technicians. Improper installation may cause water leaks, electric shocks or fires.
	Make sure that the BC ground connection is properly connected. A bad connection can cause an electric shock.
	**The refrigerant in the unit is flammable.**
	• Carry out brazing or welding only on empty pipes that are clean of any lubricating oil residues; • Do not bring flames or other heat sources close to pipes containing refrigerant fluid; • Do not operate with an open flame near the unit;

WORKING :

	Description
	It is prohibited to place fingers, hands or other objects on the fans. Failure to comply may cause serious injury or destruction of equipment.
 DANGER	If you detect something wrong with your BC such as a burning smell, too much noise, etc. immediately turn off the power supply. Leaving the BC operating could result in fire or destruction of the equipment.

MAINTENANCE:

	Description
 DANGER	If you need to move the BC to another location, please contact the salesperson or qualified technician. Improper installation may cause water leakage, electric shock, injury or fire.
 DANGER	Maintenance or repairs must be performed by the dealer or qualified technician. Poor intervention could cause water leaks, electric shocks, injuries or fire.
	The user is prohibited from carrying out any intervention on the BC. Failure to do so may cause water leakage, electric shock, serious injury or fire.

2.2 Notice

INSTALLATION:

	Description
 DANGER	The BC cannot be installed in places with flammable gas. The occurrence of a gas leak could cause an explosion or fire.
	Make sure that the base where you are going to install the BC is sufficiently solid, thus avoiding cracks or even falling of the BC.
	Make sure you install a separate circuit breaker for the BC. The lack of a circuit breaker can cause an overload in the circuit and, consequently, the risk of fire in the installation.

MAINTENANCE:

	Description
 DANGER	Before carrying out any intervention on the BC such as cleaning, maintenance, etc. disconnect it from the electrical network.
	It is expressly prohibited to make any type of blackout on the protection fuses. Fuses must be replaced by a qualified person.

	Do not spray the BC with flammable liquids, this may cause a fire.
	Do not use cleaning agents that contain sand, acid or chlorides, as these may damage the surface of the BC.

3 GENERAL

3.1 Manufacturer's responsibility

Our products are manufactured respecting the requirements of the various directives Europeans .

Ever worried about the quality and performance of ours products, we continually strive to improve them . Therefore, we reserve the right of modify at any moment the information described in this document .

As manufacturers, we are no longer responsible for the malfunction or even breakdown of equipment whenever:

- Instructions for use are not followed.
- No respect the instructions installation.
- Lack in maintenance (if required).

3.2 Installer's responsibility

The installer is responsible for correctly installing the equipment and starting its operation. The installer must pay attention to the following notes:

- Read and carefully follow the instructions in the manuals supplied with the device.
- Carry out the installation in accordance with the standards in force and required by the manufacturer.
- Perform the initial start-up of the equipment and check all control points.
- Explain the installation to the user and how to use the equipment.
- Warn the user of the obligation, if required, to carry out inspection and maintenance operations on the equipment.

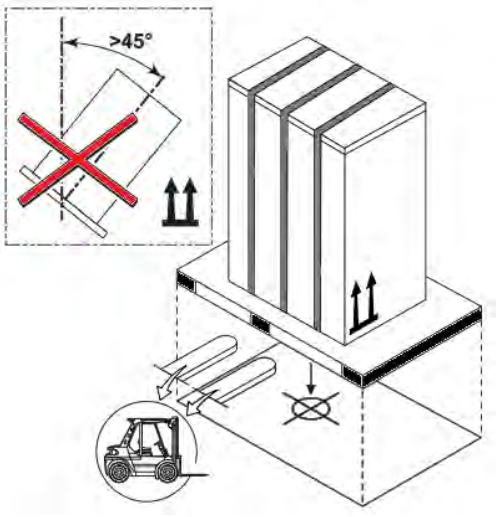
- Provide the user with all documentation provided with the equipment (manuals and warranty certificate).

4 TRANSPORT

The Heat Pump is packed in a bottomless cardboard box and is fixed to a treated pine wood pallet with plastic straps.

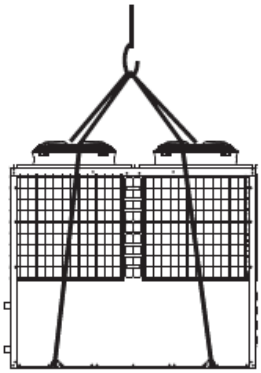
When transporting, the BC must be kept vertical, otherwise damage could occur to the equipment's interior/exterior components.

The BC must be transported to the installation location on a pallet. During transport, keep the equipment as level as possible, without tilting more than 45º.



The recommended tool for transporting the unit while it is still on the pallet is a forklift. When transporting the unit, be sure to lift it only from the bottom and always with the unit placed on the pallet. Do not attempt to move the unit without assistance.

If you need to lift the pump, an 8m cable is needed and place a shock absorber between the cables and the pump to avoid damaging it when it is being lifted.



	Description
NOTICE	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 was not damaged during transportation. Confirm that all parts ordered were received as specified and that the unit type, size and voltage are correct.

5 OPERATION PRINCIPLE

The heat pump works based on a working fluid (refrigerant R290), which changes state (gas / liquid) in a continuous cycle, absorbing and releasing heat.

The ambient air is drawn in by the fan, passing it through the evaporator. The air passing through the evaporator transfers all its energy to the working fluid (the refrigerant) changing its state from liquid to gas.

With the aid of an electrically driven compressor, the refrigerant, now vaporized but still cold, is compressed and thus heated.

The refrigerant leaves the compressor in the form of a hot gas and, as it passes through the condenser, releases energy to the heating system, condenses and leaves the refrigerant in the form of a hot liquid. With this, the water in the heating system is heated to the desired temperature.

At the exit of the condenser, the gas is already in a liquid state and is transferred to the expansion valve. In the expansion valve, the pressure is reduced suddenly, consequently also lowering the temperature of the liquid quickly. The cold liquid refrigerant is transferred to the

evaporator and the cycle begins again.

6 CHARACTERISTICS OF THE HEAT PUMP

1- **Advanced Control**

Centralized control that allows you to control many parameters remotely via Wi-Fi or Bus mode.

2- **Installation Flexibility**

It has an elegant and compact structure, making it quite simple to install.

3- **Noise level**

High efficiency of the compressor, fan and water pump allow for a low noise level.

4- **Eco-Friendly Refrigerant**

Refrigerant that is less harmful to the ozone layer.

5- **Economic**

Compared to a diesel boiler, gas boiler or electric heater, the heat pump provides quality of life, with low operating costs, thanks to its high efficiency.

6- **Installation Environment**

R290 refrigerant is inflatable and explosive. It is prohibited to be installed in an environment with potential sources of ignition.

7 Operating Conditions

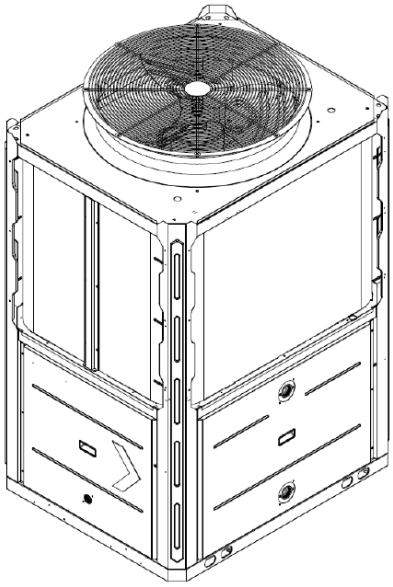
7.1 Heating Mode

- Minimum ambient temperature -25°C;
- Inlet water temperature from 15°C to 55°C.

7.2 Cooling Mode

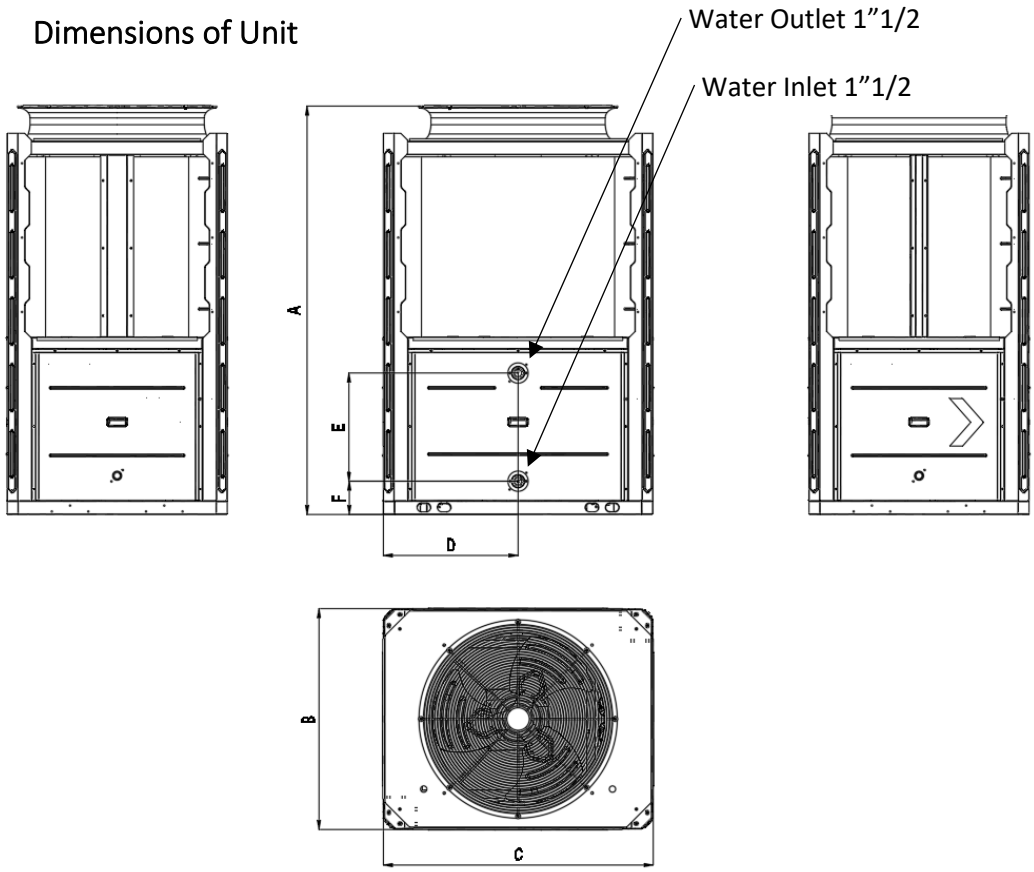
- Maximum ambient temperature 43°C;
- Inlet water temperature from 25°C to 8°C.

8 UNIT OVERVIEW



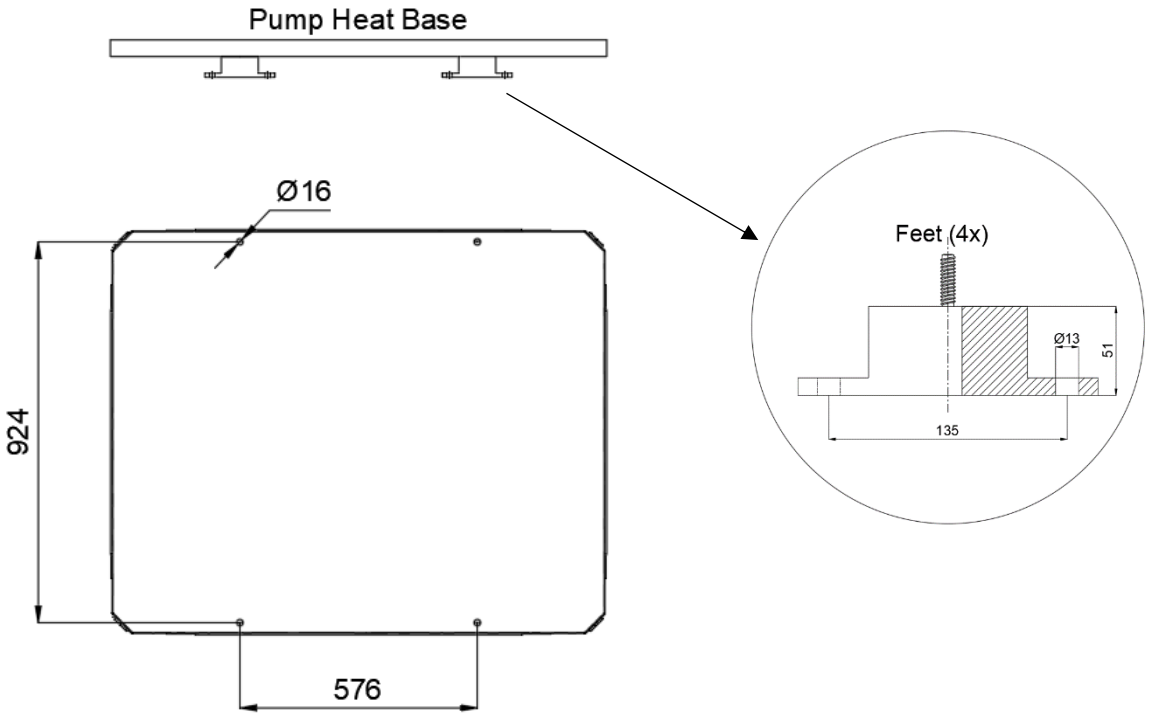
9 DIMENSIONS

9.1 Dimensions of Unit



Item	Dimension(mm)	Item	Dimension(mm)	Item	Dimension(mm)
A	1816	C	1198	E	480
B	980	D	598	F	148

9.2 Fixation of Pump in Place



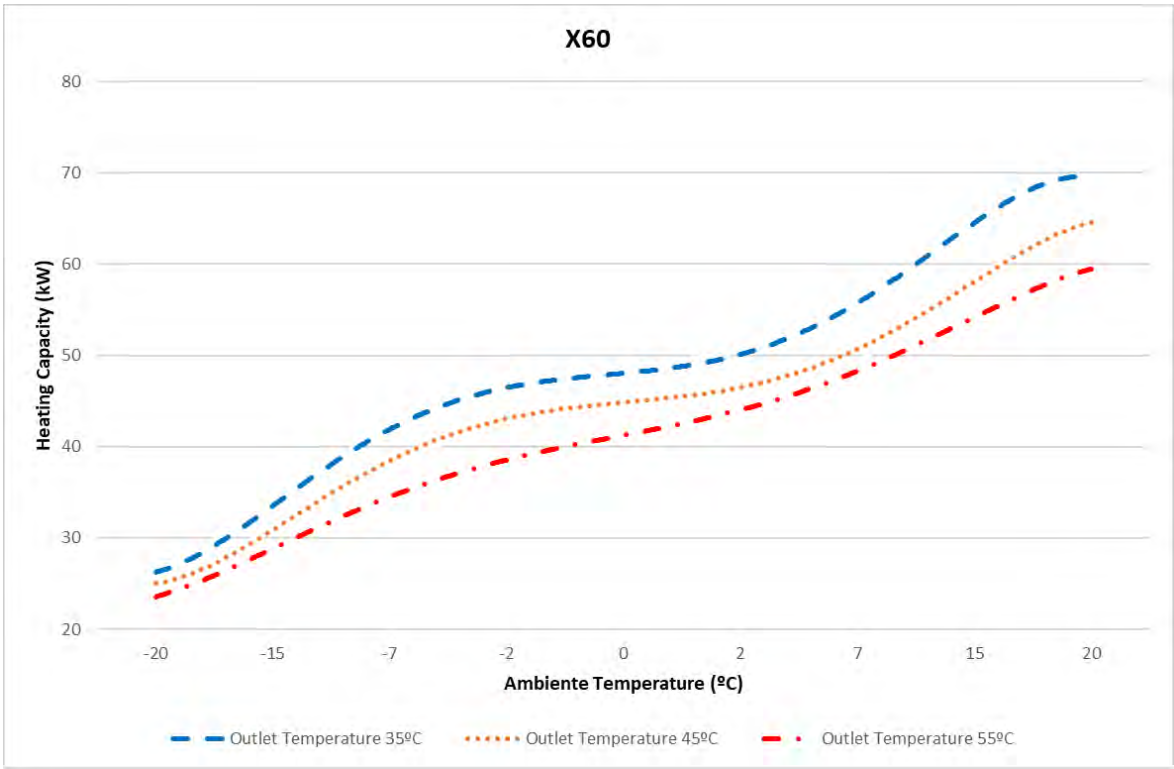
10 TECHNICAL INFORMATION

Technical Data		**units**	**Aquapura X60HT**
Electrical Supply			380-415V/3N~ / 50Hz
Power Provided	Heating (Nominal/ Max)	kW	55,3 / 69,5
	Cooling (Nominal/ Max)	kW	36 / 51,8
Power Consumed	Heating (Nominal/ Max)	kW	11,74 / 17,2
	Cooling (Nominal/ Max)	kW	10,16 / 17,8
COP [1]	Nominal		4,71
ERROR [1]	Nominal		3,54
Energy Class at 35°C			A+++
SCOP Seasonal Efficiency at 35°C			4,53
Energy Class at 55ºC			A++
SCOP Seasonal Efficiency at 55°C			3,27
Maximum temperature		°C	70
Maximum Consumption		kW	19,4
Maximum Operating Current		A	30
Refrigerator		g	1500x2
Refrigerant / CO2 Equivalent		T	0,0092
Compressor			DC Inverter
Sound Pressure		dB(A)	58
Hydraulic Connections		Inches	1”1/2
Water Flow		m3 / h	9.0
Load Loss Hydraulic Circuit		kpa	80
Room temperature		°C	-25 to 43
Dimensions (HxWXD)		mm	1816x1198x980
Weight		kg	363

1: Ambient temperature (Dry/wet bulb temperature): 7 ℃ /6 ℃ , Water temperature (inlet/outlet): 30°C/35°C.

10.1 Performance curve

It's possible to check the heat pump performance at different temperatures in the following graph.



11 INSTALLATION

11.1 Heat Pump Location

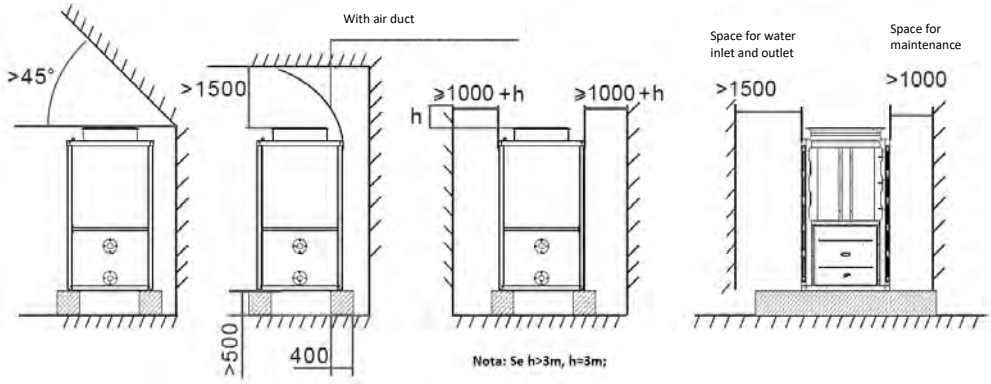
Before starting any installation procedure, check that the base of the location where the equipment will be placed is perfectly level. This prevents the compressor lubricating oil from working outside the indicated levels.

Look for a place with a regular, safe and resistant floor, preferably concrete, taking into account the weight of the machine. At least the concrete base must be 400mm thick and if possible above ground level (>500mm)

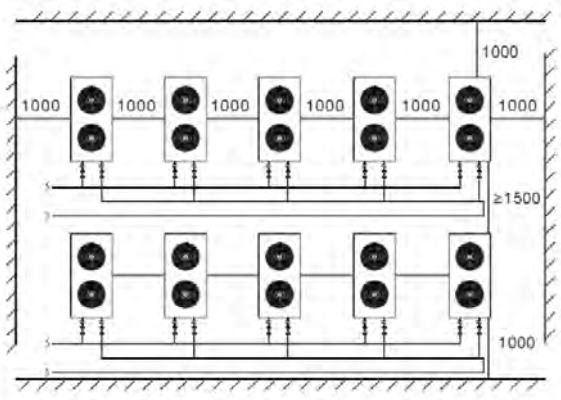
During its operation, the heat pump can create water caused by condensation from the evaporator, making it necessary to prepare the installation site with a drain point to facilitate its drainage.

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

Installing a unit:



Multiple unit installation (same pipe length [mm]):



Grades:

- The walls and ceiling of the technical room can be insulated with sound absorption panels if the noise level of the heat pump is too high.
- The BC's feet must be fixed to the base, preventing the equipment from moving due to the vibrations caused by its normal operation.
- Do not cover the unit’s air outlet.
- If there is a barrier above the unit, keep it 3m above it.
- If there are objects stacked around the unit, keep them at a height lower by at least 0.4m from the top of the unit.
- If you install it in small rooms, you must take measures to prevent refrigerant leaks that

could cause suffocation. Consult the seller to specify the measurements.

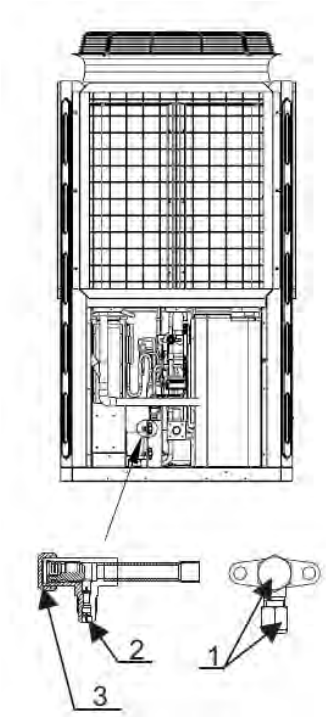
11.2 Installation Zone

- The unit can be installed outside, as long as the location can support the weight of the machine.
- The location must have good ventilation.
- The location must be free from any heat radiation.
- A cover is necessary in winter to protect the Pump from snow.
- There must be no obstacles to the air inlet and outlet of the heat pump.
- A place free from strong drafts.
- There must be piping nearby to drain condensate.
- There must be sufficient space around the Heat Pump for Maintenance work.
- The location must be away from sources with potential for ignition (for example: gas-operated equipment, electric heaters, hot objects... etc.).

11.3 Refrigerant Charging

The heat pump is charged at high pressure with R290, please follow the following steps to charge the refrigerant if necessary:

1- Preparation



1.1- Make sure you are in a well-ventilated area.

1.2- Keep the Heat Pump away from ignition sources.

1.3- Disconnect the Heat Pump from the power source.

2- The Heat Pump must be charged at approximately 30Bar of nitrogen. Measure the pressure and check potential leakage areas before charging the R290. Using a wrench, remove nuts 1 and 3, and then, using a 5mm wrench, open valve 2. If high-pressure gas is coming out, it means there are no leaks).

3- All nitrogen is removed from the machine by opening Valve 2.

4- The circuit is vacuumed. Connect the vacuum pump to valve 2, keeping it running until the pressure drops to 30Pa or it has been running for more than an hour.

5- Charge the circuit with R290. Make sure it is in a liquid state and charge strictly with the amount defined in the machine's technical characteristics.

6- Once loading is complete, close valve 2 and tighten nuts 1 and 3.

11.4 Hydraulic installation

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

- Reduce the number of bends in the pipes as much as possible to reduce pressure losses in the installation;
- Make sure that the system's accessories, strainers, water pumps and valves are designed for the full flow of the installation. Obstructions can impact the performance of the unit and the effectiveness of the central heating system;
- The pipes must be free of 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 0.5bar higher than that in the installation;
- Check that the equipment's flow switch is working correctly. Simulate a flow failure by closing a filter and check whether 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 pipe to avoid the transmission of vibrations;
- Before putting the BC into operation, check that the hydraulic circuit is full and properly vented. If the hydraulic circuits are isolated, each circuit must be purged, ensuring that all air pockets are eliminated from the installation;
- Place a thermometer and pressure gauge at the water inlet and outlet to facilitate inspection;
- The pressure placed in the hydraulic circuit must be between the following values: Min. 1.5 bar and Max . 2 bar.

	Description
 NOTICE	The installation of the hydraulic network must be carried out by a competent professional, always respecting the hydraulic connection diagram presented by the manufacturer.

11.5 Condensate drainage system

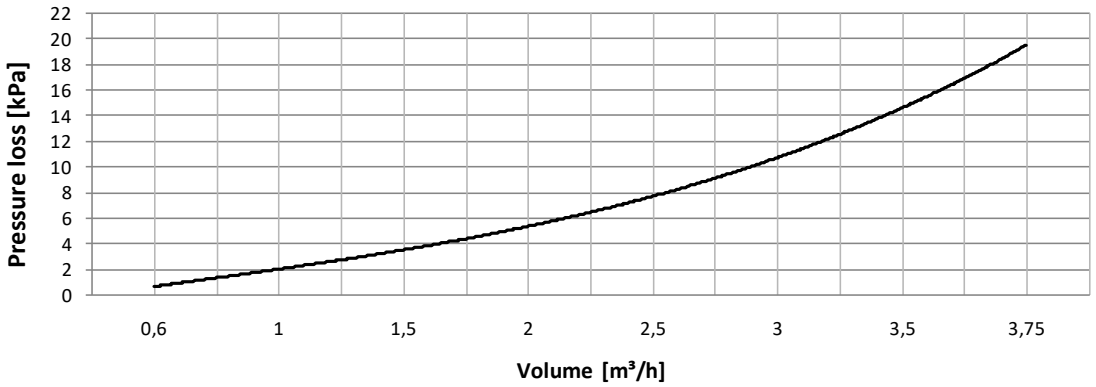
In normal operation, water is produced as a result of condensation in the evaporator and defrosting cycles. Prepare a good drainage system to prevent ice from forming on the floor, thus preventing possible falls. The drainage pipe must have a minimum diameter of 50mm, the water discharge must be carried out into the sewer and must not be exposed in places where frost forms.

11.6 Water filter

The filter blocks any impurities present in the hydraulic circuits. Residues left in the heating pipes can damage the heat exchangers and cause the BC to not work properly. It is mandatory to install the filter in the heating circuit return line, especially if the installation does not have an inertia tank.

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

Note 2: The filter must be kept clean and inspected periodically in order to maintain its condition, cleanliness and ensure the proper functioning of the BC.



11.7 Water quality

Water composition and quality have a direct effect on the performance of the entire system and the lifespan of the heat pump.

Normally the initial filling of the circuit is done with normal tap water. The water must have a pH value between 7-8 and be non-corrosive (chloride content > 150 mg/ l) or hardness (> 14 ° dH , hardness degree IV).

To eliminate any doubts, we advise you to request a water analysis.

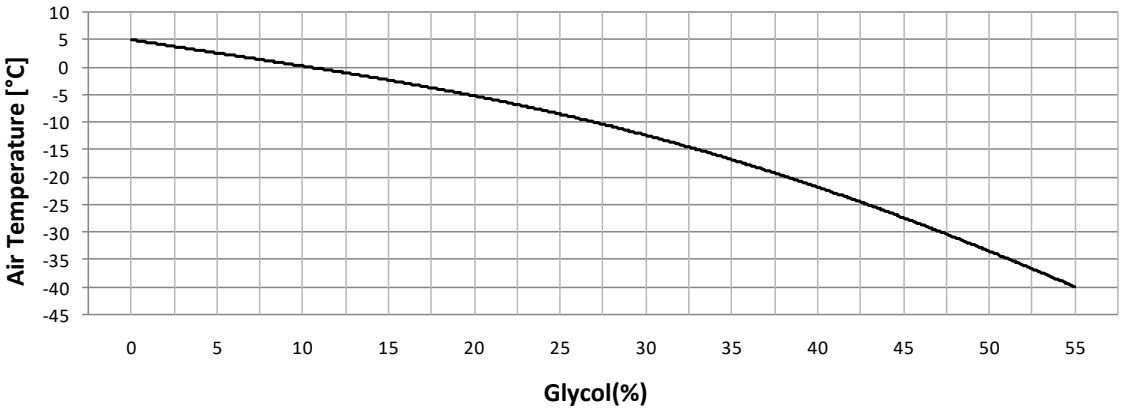
Note: The use of chemical anti-corrosive agents is not permitted.

Criterion	**Max value _**	**Consequences**
PH	7-8	Danger of corrosion on parts of the heating system.
Degree of hardness	< 14dH	Increased limescale deposit. Reduction in BC useful life.
Chloride content	< 150mg/l	Corrosion of materials.

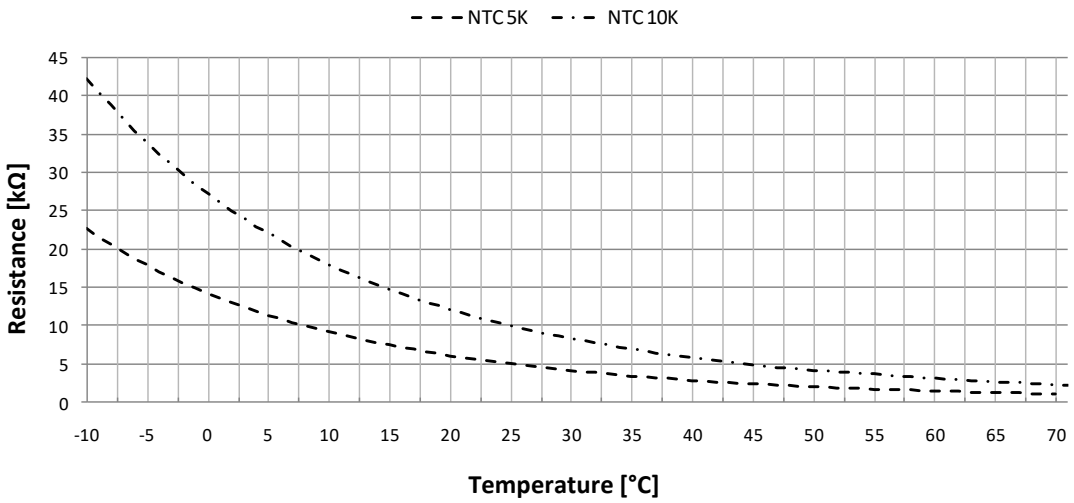
11.8 Glycol (%)

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

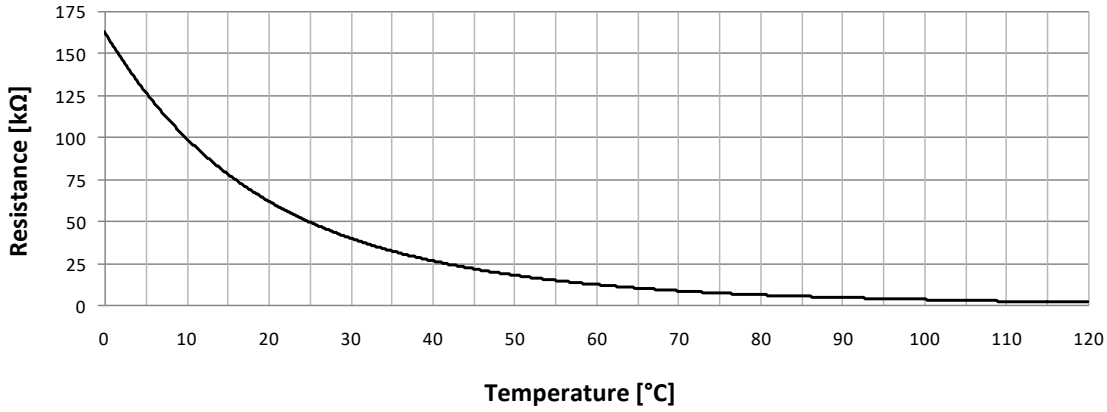
The percentage of glycol to be added to the hydraulic circuit is calculated according to the ambient air temperature, considering -5 °C. Taking this value as a reference, the installer must add 20% Ethylene Glycol to the hydraulic circuit.



11.9 Temperature probe information



NTC 50KΩ



12 ELECTRICAL INSTALLATION

12.1 General specifications

	Description
 NOTICE	• The installation of the electrical network must be carried out in accordance with current local regulations and by a qualified professional. • The installer must not make any type of electrical changes to the equipment.

Before making any type of connection, check that the supply voltage corresponds to the characteristics of the device.

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 functioning of the equipment.

Pay attention to conduction losses in the device's power cables; the smaller the cable's cross-sectional area, the shorter the recommended maximum length. Take note of the electrical consumption reference values of the equipment and its distance from the power source and consult an electrical technician to advise on the diameter and type of cable to be used.

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

	Description
 NOTICE	• The equipment must be earthed in accordance with the relevant standards for this purpose. • The manufacturer is not responsible for any damage caused by a lack of earthing of the equipment or an abnormality in the electrical supply.

12.2 Electrical network specifications/protection devices

Model	Electrical supply	Max current.	* Cable section
X60	380-415V /~ 50-60Hz	30A	6 mm²

The wire section above was selected in accordance with current standards, considering a cable distance of 10 meters.

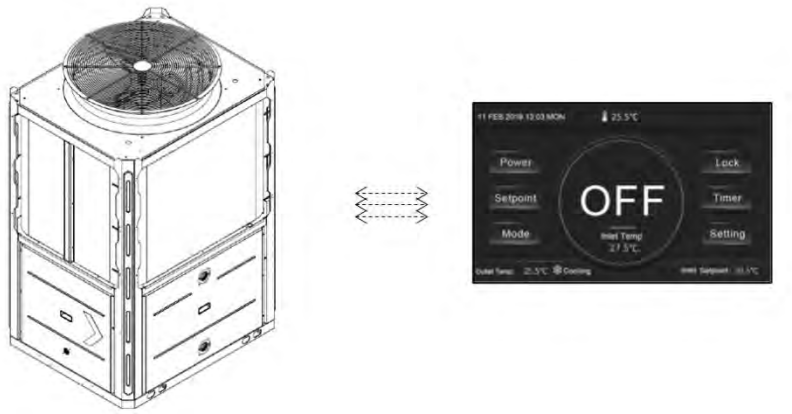
NOTE: Follow local regulations when selecting ground wires and circuit breakers.

Select protection systems according to the following table:

Model	Electrical supply	Max current.	CB	ELB (number of poles /A/ mA)
X60	380-415V /~ 50-60Hz	30A	40A	3F+N/ 40/ 30

CB – Circuit breaker; ELB – Differential

12.3 Connection outdoor unit with display



A cable comes with the equipment, which if it is not long enough and the distance between the outdoor unit and the display is less than 50 meters, we recommend installing a direct cable.
The cable must have at least 4 conductors with a section of 0.5mm and protected with a shield to avoid interference, with a maximum length of 200m.

- The power source must be through a wire that is connected to power source terminals on the control box.
- If the pump is located outside, place the power wire inside a cable also connected to the

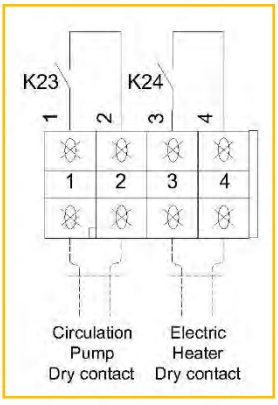
heat pump terminals.

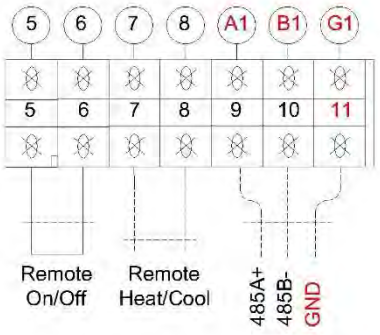
- If an external heat source is added, it must be controlled by the heat pump controller, with a relay for auxiliary heat sources connected to an output of the controller.

	Description
NOTICE	 The cable shield must be connected directly to the equipment's ground connection.

12.4 Connection terminals – Inputs

	Description
NOTICE	The digital inputs mentioned are dry contacts (no voltage). Do not turn on (380-415V/~50-60Hz) on the terminals, otherwise it may cause irreversible damage to the controller and void the warranty.





Note: The connections marked in yellow above do not have voltage, that is, when the circulation pump is activated by the machine (K23) the circuit closes, but there is no voltage in this circuit. To connect the circulation pump to this contact, electrical current must be supplied from an external source. A relay must be used, which is controlled by the circulation pump contacts. This operation is similar to electrical resistance contacts.

***Note:** The position of these terminals may vary depending on the model. Please check the electrical diagram of the machine

	Description

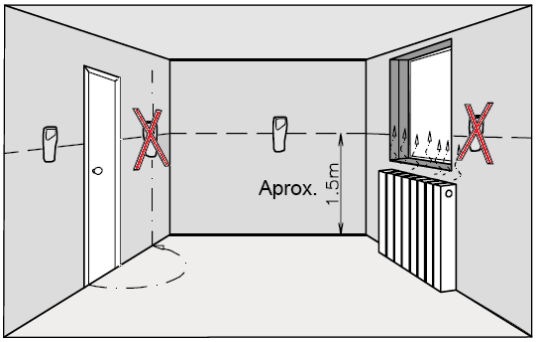
REMOTE ON/OFF terminal	Turn equipment on or off remotely. • Contact open, BC OFF; • Contact closed, BC ON;
REMOTE HEAT/COOL terminal	Select Hot or Cold operating mode; • Open contact, BC in Cooling mode ; • Contact closed, BC in Heating mode ;
Terminal 485A+/485B-	Connection for RS485/ Modbus communication .
1-2	Output for Circulating Pump.
3-4	Command for Support Resistance.

	Description
NOTICE	ATTENTION: The digital inputs are inactive by default, giving priority to settings made via the console. To activate the digital inputs, you must contact a specialized technician or configure them according to the procedure indicated.
NOTICE	 • Use cable protected with steel mesh in the digital input connections, this way we protect the digital inputs against noise coming from the compressor, electrical network, etc. • Failure to use this type of cable may cause abnormal behavior in the operation of the equipment. • The mesh must be connected to the equipment earth.

13 ENVIRONMENTAL THERMOSTAT INSTALLATION

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

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



The thermostat must be installed:

- On an interior wall approximately 1.5m from the floor level;
- In a place where the temperature is as uniform as possible;
- Where there is good air recirculation around the thermostat.

Installing the thermostat should be avoided:

- On exterior walls, near windows or behind doors;
- Near heat emitters (radiators, convectors, etc.);
- Behind or near doors

14 CONTROL PANEL – MAIN MENU

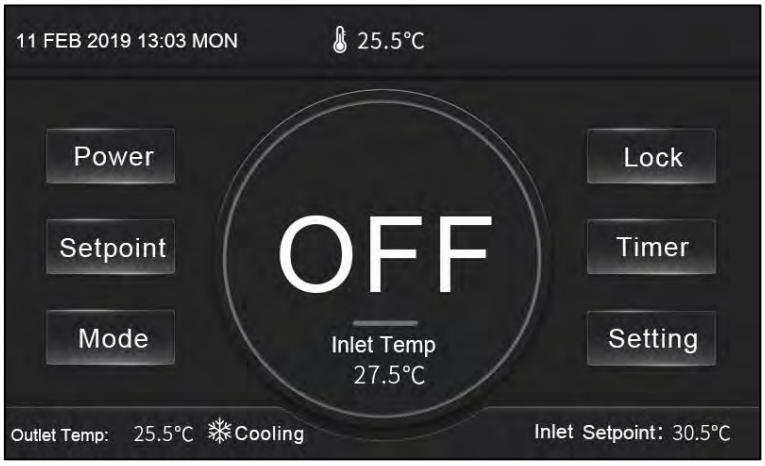


Figure 1 - Menu Principal

14.1 Description of the Main Panel

Figure 2 - Descrição do Menu Principal

Button Function:

No.	Name	Function
1	*Power*	Click this button to turn ON or OFF
2	*Setpoint*	Click to set the temperature set-point
3	*Mode*	Click to set Cool Mode or Warm Mode
4	*Lock*	Click to Lock or Unlock the Display
5	*Timer*	Click to time Silent, On / Off , Temperature modes
6	*Setting*	Click to access Parameters

Description of Icons:

No.	Name	Description
7	ON	Indicates that the Heat Pump is on
8	Heating / Cooling	Indicates which mode it is in: Hot or Cold
9	Circle Display	Indicates the operating mode: blue – cold mode; red – hot mode; gray - off
10	Inlet Setpoint:	Indicates the water inlet temperature
11	*Date/Time*	Indicates the Date and Time
12	25.5°C	Indicates the ambient temperature
13		Indicates that the temperature timer is active
14		Indicates that silent mode is activated

15		Indicates that defrost mode is activated
16		Indicates that the resistance is on
17		Indicates that the power timer is active
18		Indicates that the screen is locked
19		Indicates the existence of a fault. When the fault is removed the icon disappears

14.2 Instructions for operating the controller

1- Power On / Off

In the main menu, click on " Power " to turn the unit on/off.

2- Operating Mode Selection

In the main menu click " Mode " to select cold or hot mode. Depending on the mode chosen, the circle on the display will change color.

There are two modes that can be selected by swiping on the options:

Function	Description
" Heating " **Heating Function**	Heat pump working for room air conditioning – Heating mode
" Cooling " **Cooling function**	Heat pump working for room air conditioning – Cooling mode

3- Temperature Set-Point Selection

You must first define the operating mode (cold or hot), then click on *"Set-Point"* and go to the parameters interface and enter the temperature value defined according to the existing range on the display.

4- Lock Screen

On the main interface , click *" Lock "* to lock the screen. To unlock, you must click on *" Lock " again* and enter password 22.

14.3 Function menu – Setting

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

The function conFiguretion interface is shown in the figure below.

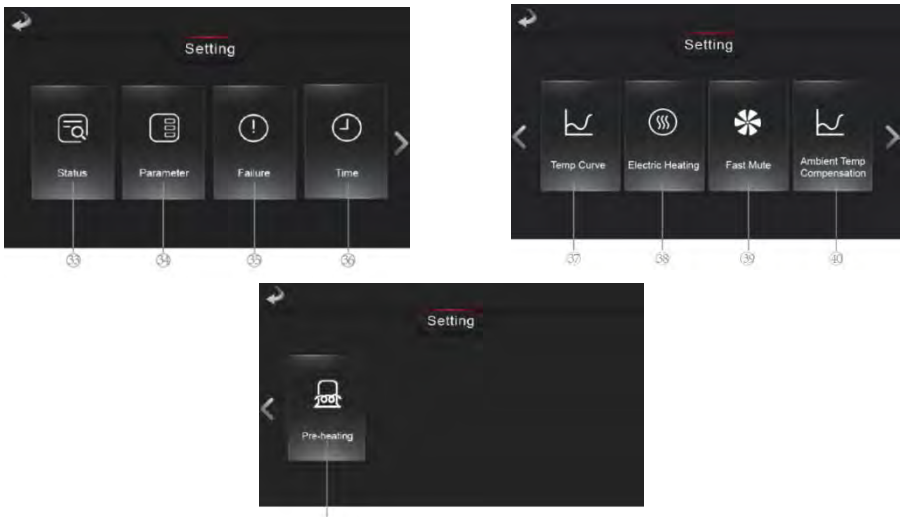


Figure 3 - Menu Setting

No.	Function
33	Status of the main equipment outputs (compressor, fan, etc.)
34	Click the key and enter the password “22” to enter the factory parameter settings and status parameter interface.
35	Click to view failure history
36	Click to open the operating timing parameters
37	Click to see the temperature curve
38	Turning the electrical resistance mode on and off
39	Turning Fast Switch mode on and off
40	Click to open the weather compensation parameters menu
41	Click to open the resistance menu and turn on the resistance function

14.3.1 Check equipment status

Setting ” menu , click on status to open the following menu:

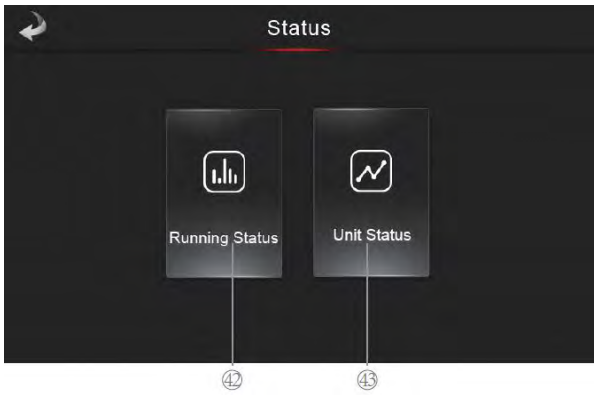


Figure 4 - Menu Status

Click on button nº42 to check the heat pump's operating status. Click on button nº43 to consult the main variables of the equipment, such as: status of the compressor, water pump, 4-way valve, flow switch , pressure switches , temperature values, pressure values, current consumed by the compressor, etc.

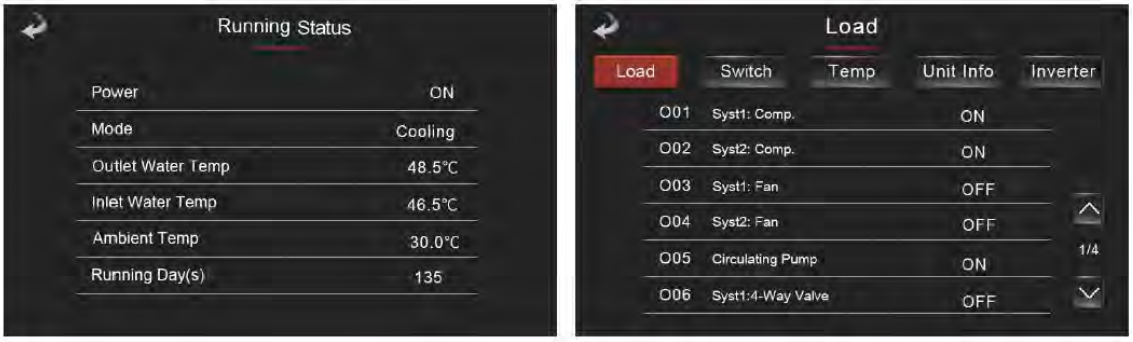


Figure 5- Heat Pump Operating Status

14.3.2 Consult Alarm List

" Setting " menu , click on *" Failure "* to open the following menu:

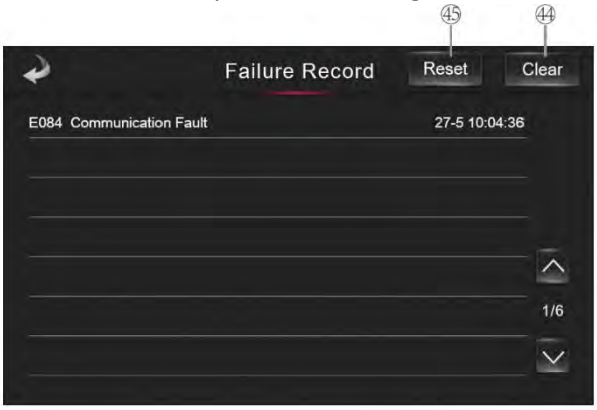


Figure 6 - Lista de Erros

After the fault that caused the alarm has been resolved:

1- The fault code, name, and date of occurrence will be saved.
2- Click on button nº44 “Clear” to clear the error in this menu.

14.3.3 Set Date/Time

Setting ” menu , click on “Time” to open the menu. Click on each of the fields, enter the desired value and click on the “Save” button.

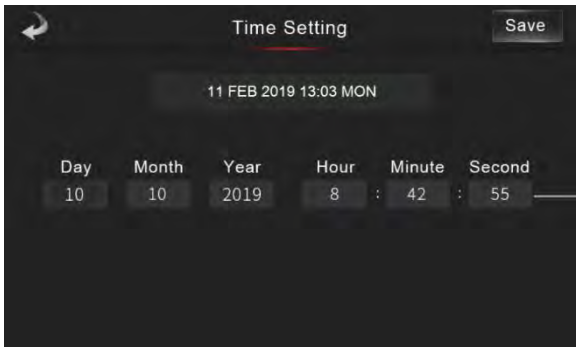


Figure 7 - Menu para Definição da Data/Hora

14.3.4 Temperature Graph

Setting ” menu , click on “ Temp Curve” to open the menu.

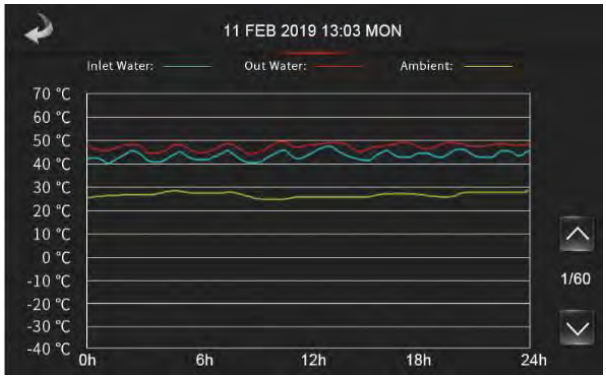


Figure 8 - Menu para Consultar Gráfico das Temperaturas

This function records the inlet water temperature, outlet water temperature, DHW tank water temperature and ambient temperature.

Temperature data is acquired every five minutes. Timing is done from the last data record , if power is interrupted for a period of time less than 1 hour, data during that period will not be saved.

Temperature recordings only occur when the equipment is turned on .

14.3.5 Activate Support Electrical Resistance

" Setting " menu , click on *" Electrical Heating "* to open the menu.

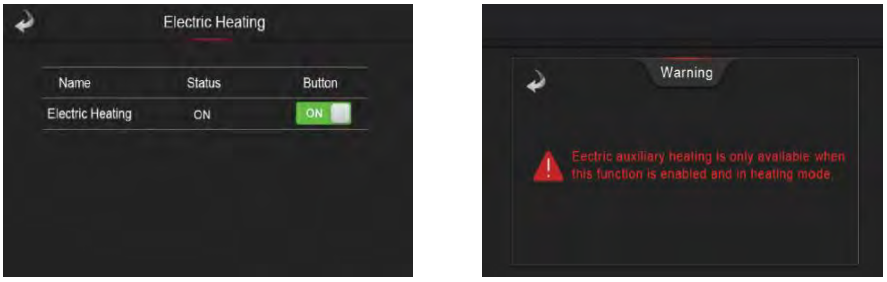


Figure 9 - Menu para Ativar Resistência Elétrica

In heating operating mode, tap the " On " icon to activate/deactivate the support resistance (green icon active resistance/gray icon deactivate resistance)

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

Note: This function is deactivated at the factory. If you want to activate this function, you must access the settings with the code "022" and activate parameter R15.

14.3.6 Compensation curve - Outdoor temperature vs. Setpoint

In the “ Setting ” menu, click on “ Ambient Temp Compensation ” to open the menu.

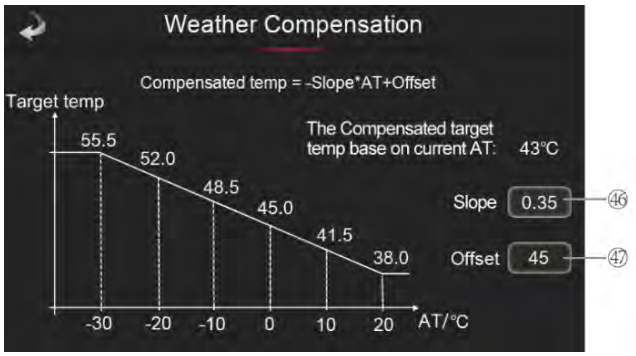


Figure 10 - Menu com a Curva de Compensação

The function of compensating outdoor temperature vs leaving water temperature for the central heating circuit must take into account that the setpoint will be adjusted depending on the temperature defined in the graph.

Vertical axis – Leaving water temperature;

Horizontal axis – Outdoor temperature;

Click on nº46 “ Slope ” and nº47 “Offset” to define the parameters;

When this function is not available, “---” appears in “target temp ”;

note: This function is deactivated at the factory, so if you want to activate this function you must access the settings using the code “022” and activating parameter H41

14.3.7 Preheat function

Setting ” menu , click on “ Pre-Heating ” to activate the function and appears, click on the button again to turn off this function and appears. Preheats the compressor to prevent damage from cold starts, especially after long periods of stoppage.

Figure 11 - Menu de Pré-Aquecimento

Note: This function can only be activated when the machine is turned off.

14.3.8 Quick Mute Function

Setting ” menu , click on “ Fast Mute ” to activate the function and appears, click on the button again to turn off this function and appears. Only available if the “Mute” function is available.

14.4 Function menu – Timer

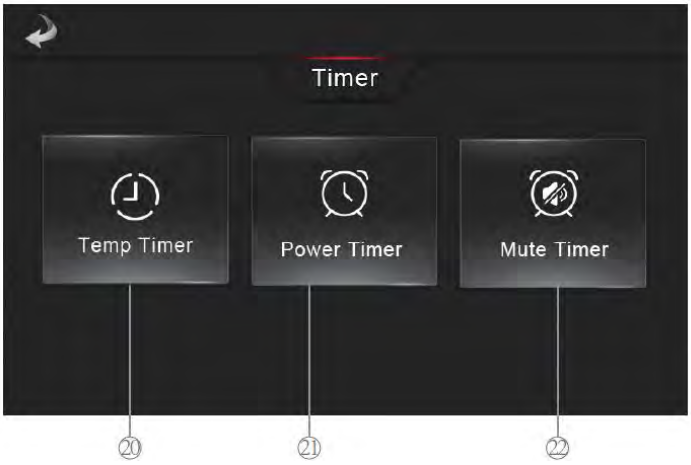


Figure 12 - Menu Timer

No.	Description
20	Set temperature setpoint for a given period
21	Define Equipment Operation Period
22	Setting the period of operation in silent mode. In this operating mode, the compressor and fan will work at low frequencies

14.4.1 Set temperature setpoint for a specific period [Button 20]

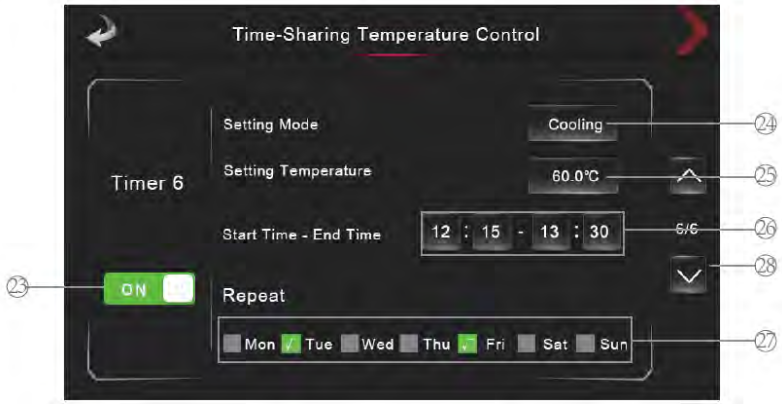


Figure 13 - Menu Temp Timer

No.	Description
23	Enable temperature control. In green it is active and in gray it is off
24	Set the Work Mode
25	Define the Set-Point for temperature control
26	Set the Time interval for temperature control
27	Setting the day of the week
28	Define other Periods

14.4.2 Set opening hours in ON/OFF mode [Button 21]

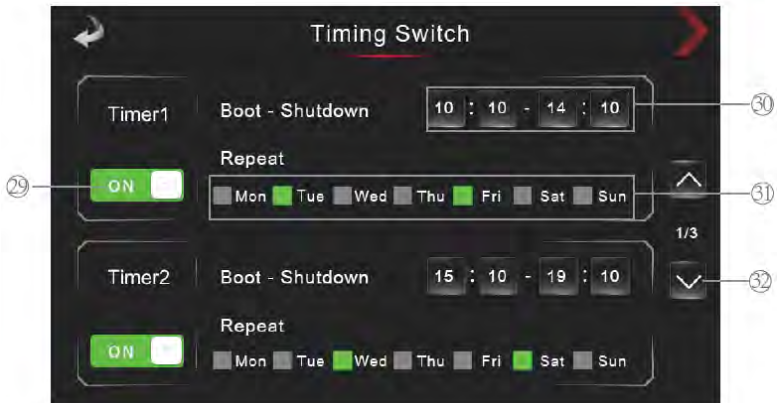


Figure 14 - Menu Power Time

No.	Description
29	Click on the key to activate the start of the period (ON – blue icon / OFF – gray icon)
30	Set the time interval for power control
31	Setting the day of the week
32	Consult other Periods

14.4.3 Set opening hours in silent mode [Button 22]

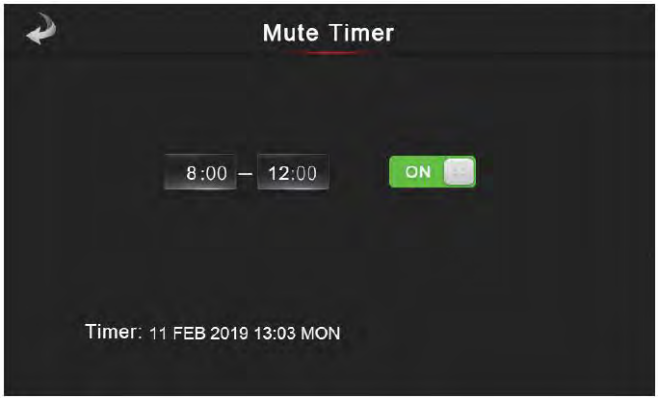


Figure 15- Mute Timer Menu

To start the sound timer, you must first click on button nº5 in the main menu. Then click on button nº22, and you will go to the “Mute Timer” menu where you will define the interval for which it will be active. Finally, click the On / Off button .

If the unit does not have this function, this operation is unavailable.

Note: This function is deactivated at the factory, please contact us if you wish to activate it.

NOTICE	Changing settings/parameters without consulting a specialized technician may cause malfunctions or cause irreversible damage to the equipment.

15 ALARMS

15.1 Alarms – Electronic control

Anomaly	Code	Problem	Problem resolution
Communication failure	E08	Communication failure between control board and inverter drive.	Check the connections between the control board and inverter drive.
Display does not match the installed control board	E084	Display software version incompatible with the software version installed on the main board.	
System 1 - High pressure switch	E11	Damaged pressure switch or excess pressure in the circuit.	Check the status of the pressure switch and the pressure in the circuit.
System 2 - High pressure switch	E21	Damaged pressure switch or excess pressure in the circuit.	Check the condition of the pressure switch and the pressure in the circuit.
System 1 - Low pressure switch	E12	Damaged pressure switch or low pressure in the circuit.	Check the condition of the pressure switch and the pressure in the circuit.
System 2 - Low pressure switch	E22	Damaged pressure switch or low pressure in the circuit.	Check the condition of the pressure switch and the pressure in the circuit.
Flow switch	E032	Lack of water in the hydraulic circuit, excess air or clogged filter	Check the hydraulic circuit.
Overheating protection	E04	Resistance safety thermostat is damaged or water is too hot.	Check that the compressor is working correctly.
Anti-ice protection circuit 1	E19	Anti-freeze protection (2ºC < return water temp < 4ºC and ambient temp ≤ 0ºC).	Check room temperature.
Anti-ice protection circuit 2	E29	Anti-freeze protection (2ºC < return water temp < 4ºC and ambient temp ≤ 0ºC).	Check room temperature.
System 1: Hydraulic circuit anti-ice protection	E171	Leaving water temp ≤ 4ºC.	Check water flow. temp probe connections . of the leaving water.
System 2: Hydraulic circuit anti-ice protection	E271	Leaving water temp ≤ 4ºC.	Check water flow. temp probe connections . of the leaving water.
Temp . very high outlet water	E065	Hydraulic circuit without water or low flow.	Check the pump and pressure in the hydraulic circuit.
Fan 1 with excess temperature	E103	Check that the fan motor is working properly.	
Fan 2 with excess temperature	E203	Check that the fan motor is working properly.	
Temp . very low outlet water	E071	Hydraulic circuit without water or low flow.	Adjust the leaving water temperature to ≥ 8ºC.
Low Water Flow	E035	System is not receiving enough water.	Check whether the water flow meets the requirements and whether the water pump is damaged.
System 1 – 4-way valve	E121	4-way valve failure.	Check whether the valve status is in the desired positioning.
System 2 – 4-way valve	E221	4-way valve failure.	Check whether the valve status is in the desired positioning.

Inlet water temperature	P01	Temperature probe failure.	Check or replace probe.
Leaving water temperature	P02	Leaving water temperature probe failure.	Check or replace probe.
System 1 – Temperature Probe 1 Evaporator	P150	Evaporator temperature probe failure.	Check or replace probe.
System 2 – Temperature Probe 1 Evaporator	P250	Evaporator temperature probe failure.	Check or replace probe.
Ambient Temperature - AT	P04	Room temperature probe failure.	Check or replace probe.
System 1 – Suction Temperature	P17	Suction temperature probe failure.	Check or replace probe.
System 2 – Suction Temperature	P27	Suction temperature probe failure.	Check or replace probe.
System 1 – Evaporator Exit Temperature	P152	Failure to probe .	Check or replace probe.
System 2 - Evaporator Exit Temperature	P252	Failure to probe .	Check or replace probe.
System 1 -Temp. EVI input	P101	Failure to probe .	Check or replace probe.
System 1 - Temp. EVI output	P102	Failure to probe .	Check or replace probe.
System 2 -Temp. EVI input	P201	Failure to probe .	Check or replace probe.
System 2 - Temp. EVI output	P202	Failure to probe .	Check or replace probe.
System 1 - Discharge Temperature	P181	Compressor discharge temperature probe failure	Check or replace probe
System 2 - Discharge Temperature	P281	Compressor discharge temperature probe failure	Check or replace probe
System 1 – Aspiration Sensor	PP11	pressure transducer or lack of refrigerant.	Check or replace sensor. Check the pressure in the circuit.
System 2 – Aspiration Sensor	PP21	pressure transducer or lack of refrigerant.	Check or replace sensor. Check the pressure in the circuit.
System 1 – Discharge Sensor	PP12	pressure transducer or excess refrigerant.	Check or replace sensor. Check the pressure in the circuit.
System 2 – Discharge Sensor	PP22	pressure transducer or excess refrigerant.	Check or replace sensor. Check the pressure in the circuit.
Outdoor Temperature (AT)	TP	Low outside temperature.	Check or replace probe.
System 1 – Temperature Probe 2 Evaporator	P154	Evaporator temperature probe failure.	Check or replace probe.
System 2 – Temperature Probe 2 Evaporator	P254	Evaporator temperature probe failure.	Check or replace probe.
Fan 1 Communication Failure with the Power Board	E081	Speed communication with the control board is abnormal	Check speed regulation on control board and check connections
Fan 2 Communication Failure with the Power Board	E082	Speed communication with the control board is abnormal	Check speed regulation on control board and check connections
System 1 - Inverter drive communication failure.	F151	Communication failure between the inverter drive and the control board.	Check communication between the inverter drive and the control board.

System 2 - Inverter drive communication failure	F251	Communication failure between the inverter drive and the control board.	Check communication between the inverter drive and the control board.
System 1: Compressor start failure	F152	Compressor fails to start.	Check if system 1 is blocked or if the compressor line is normal.
System 2: Compressor start failure	F152	Compressor fails to start.	Check if system 2 is blocked or if the compressor line is normal.
System 1: IPM Protection Failure at compressor start-up	F153	Current is too high when starting the compressor.	Check whether the high pressure is excessive and whether the compressor line is blocked.
System 2: IPM Protection Failure at compressor start-up	F253	Current is too high when starting the compressor.	Check whether the high pressure is excessive and whether the compressor line is blocked.
System 1: IPM Protection Failure during compressor operation	F154	Current is too high when operating the compressor.	Check if the pressure ratio is too high.
System 2: IPM Protection Failure during compressor operation	F254	Current is too high when operating the compressor.	Check if the pressure ratio is too high.
System 1: Protection due to excess current in the compressor	F156	Compressor operating current is too high.	Check if the pressure ratio is too high.
System 2: Protection due to excess current in the compressor	F256	Compressor operating current is too high.	Check if the pressure ratio is too high.
System 1: IPM Inverter Drive Failure	F155	Inverter compressor drive has low heat dissipation.	Check if there is a leak in the Inverter drive.
System 2: IPM Inverter Drive Failure	F255	Inverter compressor drive has low heat dissipation.	Check if there is a leak in the cold circuit.
System 1: High voltage protection in the inverter drive	F157	Voltage is too high.	Check if the voltage is higher than 480V.
System 2: High voltage protection in the inverter drive	F257	Voltage is too high.	Check if the voltage is higher than 480V.
System 1: Low voltage protection in the inverter drive	F158	Voltage is too high.	Check if the voltage is lower than 250V
System 2: Low voltage protection in the inverter drive	F258	Voltage is too high.	Check if the voltage is lower than 250V
Protection due to lack of phase in fan1 on the DC bus	F101	Failed to start the fan.	Check if the ventilation line is normal.
Protection due to lack of speed in fan 1 on the DC bus	F102	Failed to start the fan.	Check if the engine is blocked.
IPM start protection on fan 1 DC bus	F103	Fan starting current is too high.	Check if the engine is blocked.
Protection of IPM operation on fan 1 on the DC bus	F104	Fan starting current is too high.	Check if the engine is blocked.
Protection due to excess current in fan 1 on the DC bus	F105	Fan starting current is too high.	Check if the engine is blocked.
Overtemperature protection on fan 1 on the DC bus	F106	Inverter Drive Fan 1 has low heat dissipation.	Check conditions for heat dissipation
Protection due to excess voltage of fan 1 on the DC bus	F107	Voltage is too high.	Check if the voltage is higher than 480V

Low voltage protection for fan 1 on the DC bus	F108	Voltage is too low.	Check if the voltage is lower than 250V
Protection due to lack of fan 2 output phase on the DC bus	F201	Fan start failure.	Check if the fan line is normal
Protection due to lack of fan 2 output speed on the DC bus	F202	Fan start failure.	Check if the engine is blocked.
IPM start protection on fan 2 DC bus	F203	Fan starting current is too high.	Check if the engine is blocked.
Protection of IPM operation on fan 2 on the DC bus	F204	Fan starting current is too high.	Check if the engine is blocked.
Overcurrent protection for fan 2 on the DC bus	F205	Fan starting current is too high.	Check if the engine is blocked.
Overtemperature protection on fan 2 on the DC bus	F206	Inverter Drive Fan 1 has low heat dissipation.	Check conditions for heat dissipation.
Overvoltage protection for fan 2 on the DC bus	F207	Voltage is too high.	Check if the voltage is higher than 480V.
Low voltage protection for fan 2 on the DC bus	F208	Voltage is too low.	Check if the voltage is lower than 250V.
Abnormal power failure	EE1	Energy failure.	The fault is cleared by the controller after 3 minutes
Current failure in fan motor 1 on the DC bus	F112	Fan 1 current is abnormal.	Check if the fan motor is blocked
Current failure in fan motor 2 on the DC bus	F212	Fan 1 current is abnormal.	Check whether the fan motor is blocked.
Overspeed protection for fan motor 1 on the DC bus	F109	Speed too high.	Check if the fan motor is blocked
Overspeed protection for fan motor 2 on the DC bus	F209	Speed too high.	Check if the fan motor is blocked
Protection due to low speed in fan motor 1 on the DC bus	F110	Speed is incorrect.	Check whether the fan motor is blocked.
Low speed protection for fan motor 2 on the DC bus	F210	Speed is incorrect.	Check whether the fan motor is blocked.
Compressor type error	F088	Compressor model is wrong.	Check whether the compressor parameters are consistent with the chosen model.
Low Temperature does not allow cooling	TC	Ambient temperature too low.	Check whether the ambient temperature probe is working correctly.
Protection for abnormal water inlet and outlet temperature	E064	Temperature differences that are too high.	Check water inlet and outlet probes.

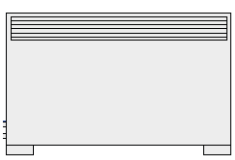
16 PROBLEM SOLVING

Problem	Possible cause	Solution
BC does not work, display has no information	• Electrical supply failure. • Circuit breaker off. • Power cord not properly connected. • Phases switched. • Blown controller fuse	• Check the electrical power supply. • Check if there is any anomaly and turn the circuit breaker back on. • Correctly connect the power cord. • Change one of the phases. • Check the fuse
Circulator pump makes a lot of noise or there is no water	• Lack of water. in the hydraulic circuit, • Air in the installation • Closed valves • Dirty or blocked water filter	• Check that there is no water leak. Fill the circuit • Purge the hydraulic circuit. • Open the valves • Clean the filter
High compression temperature	• Too much refrigerant gas; • Low heat exchange in the evaporator	• Rectify the refrigerant gas charge; • Check and clean the evaporator. Faulty fan.
Low pressure alarm	• Lack of refrigerant gas • Very low outside temperature. • Obstruction of the refrigerant circuit.	• Refrigerant gas leak. • Check that the evaporator is not clogged with ice. • Check the filters
Compressor does not start	• Compressor electrical supply failure • contactor . • Compressor thermal active. • Return temperature probe faulty. • Lack of flow	• Check the electrical power cable for compressor. • Replace the contactor . • High compression temperature. • Replace temperature probe. • Circulator pump turned off. Clean the water filter.
Compressor makes a lot of noise	• Return of liquid to the compressor. • Compressor broken.	• Clogged evaporator. Fan off. • Replace compressor.
Fan doesn't work	• Faulty fan relay. • Faulty fan.	• Replace the relay. • Replace the fan
Compressor works, but does not heat or cool.	• Lack of refrigerant gas. • Clogged heat exchanger. • Damaged compressor.	• Check that there are no leaks. Charge refrigerant gas. • Replace the condenser. • Replace the compressor.

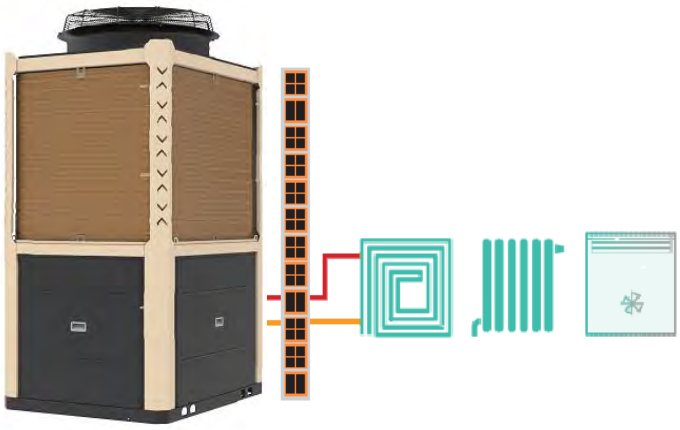
Low leaving water temperature	• Lack of flow • Low operating setpoint .	• Clean the filter and bleed the air from the hydraulic system. • Adjust the operating setpoint .
Flow switch alarm	• Obstruction of the hydraulic circuit. • Faulty flow switch.	• Clean the filter and bleed the air from the hydraulic system. • Replace the flow switch.

17 ANNEX 1 – INSTALLATION PLANTS

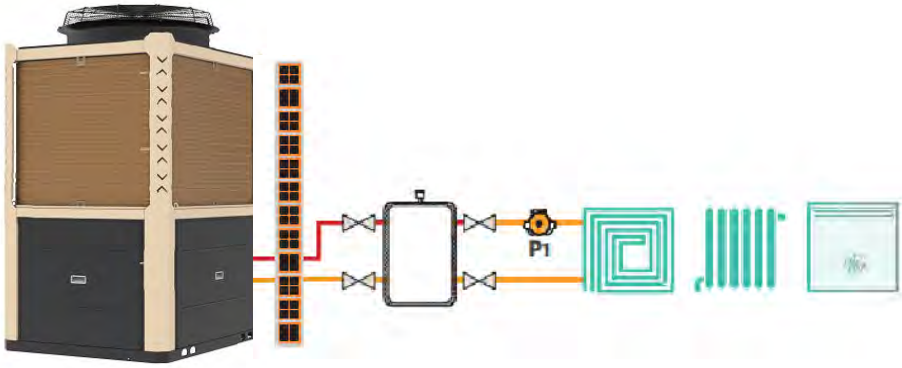
	Description
NOTICE	• Hydraulic diagrams represent only the central components of the application. There are many components that can be installed, such as water pressure sensors, temperature sensors, drainage, differential valve, etc. • The sanitary hot water circuit, when implemented, has priority over the air conditioning circuit. • Hydraulic diagrams represent only the central components of the application.

	Description
INFORMATION	The heat dissipation source represented in the diagrams is merely representative. The equipment can be installed with radiators, underfloor heating, fan coil units, etc. Ventilo convetor  Radiant floor 

17.1 Central Heating

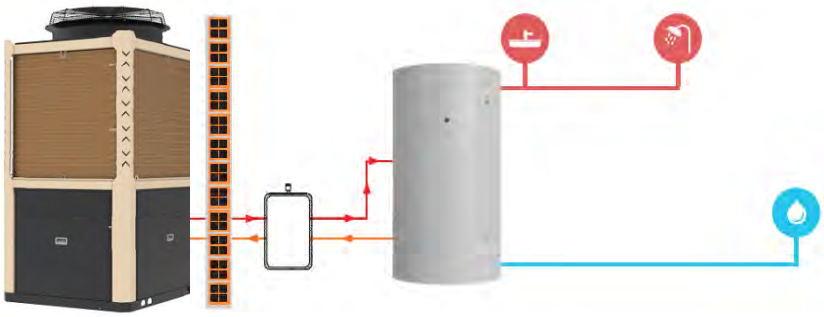


17.2 Central Heating with Inertia

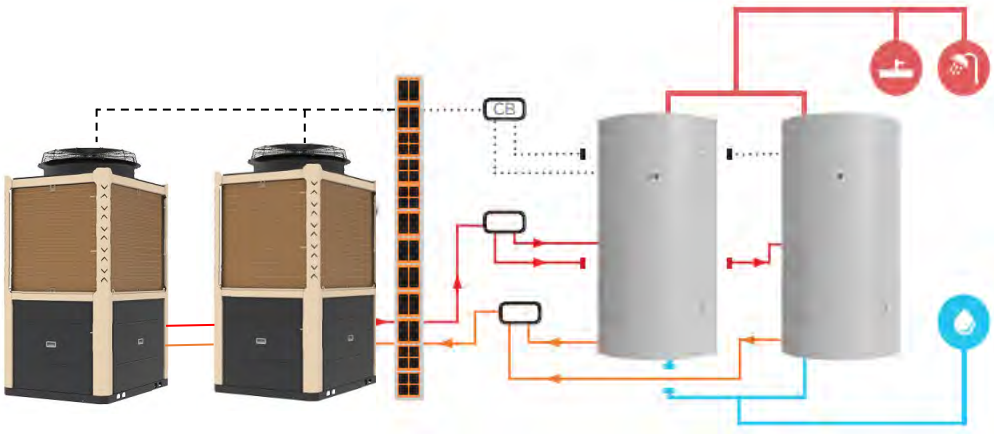


17.3 Sanitary Hot Water

17.4 Domestic Hot Water with Inertia



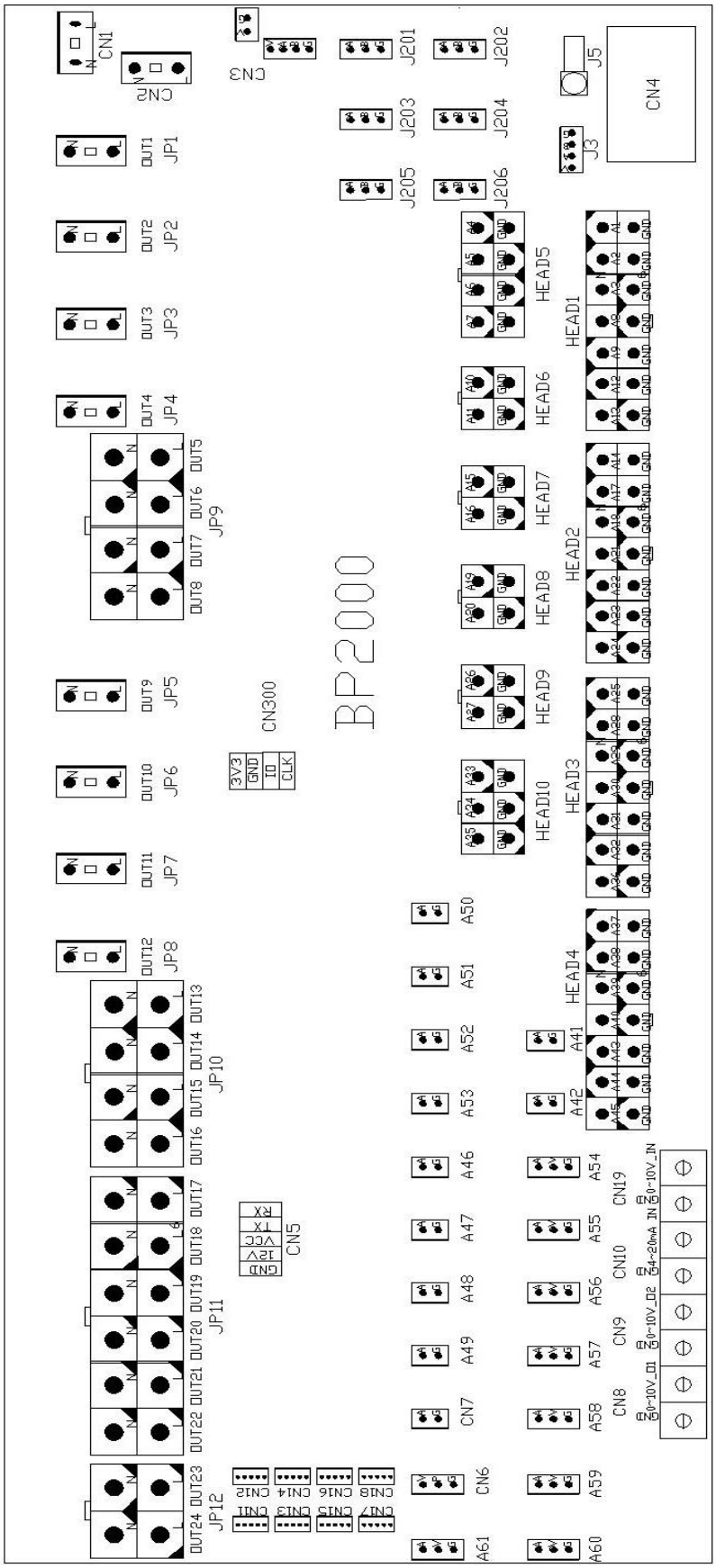
17.5 Domestic Hot Water with Inertia (Modular Installation)



*Up to 4 units

18 Interface Diagram

18.1 Control Board Diagram



18.2 Display Diagram

Symbol	Meaning
V	12 (power+)
R	Do not use
T	Do not use
A	485A
B	485B
G	GND (power-)

18.3 Entry and Exits

No.	Simb .	Description	No.	Simb .	Description
1	**TO 1**	System. 1: Anti- Freeze Temperature	**58**	**A58**	System. 1: Pressure Low
2	**A2**	System. 1: Evaporator Temperature 1	**59**	**A59**	System. 2: Pressure Low
3	**A3**	System. 1: Evaporator Temperature 2	**60**	**A60**	Reserved
4	**A4**	Flow switch	**61**	**A61**	Reserved
5	**A5**	Emergency	**62**	**CN1**	220V input
6	**A6**	Mode	**63**	**CN2**	220V output
7	**A7**	Resistance Overheating Protection	**64**	**CN3**	12V input
8	**A8**	System . 1: Evaporator Outlet Protection	**65**	**CN4**	PCIe DTU
9	**A9**	System. 1 : Suction Temperature	**66**	**CN5**	Power Source
10	**A10**	System . 1: High Pressure Switch	**67**	**CN6**	Reserved
11	**A11**	System . 1: Low Pressure Switch	**68**	**CN7**	Reserved
12	**A12**	Reserved	**69**	**CN8**	Reserved
13	**A13**	Reserved	**70**	**CN9**	Reserved
14	**A14**	System. 2: Anti- Freeze Temperature	**71**	**CN10**	Reserved
15	**A15**	System . 2: High Pressure Switch	**72**	**CN11**	System 1: Electronic Expansion Valve
16	**A16**	System . 2: Low Pressure Switch	**73**	**CN12**	Reserved

17	**A17**	System. 2: Evaporator Temperature 1	**74**	**CN13**	System. 2: Valve Expansion Electronics
18	**A18**	System. 2: Evaporator Temperature 2	**75**	**CN14**	Not Used
19	**A19**	Reserved	**76**	**CN15**	Not Used
20	**A20**	Reserved	**77**	**CN16**	Not Used
21	**A21**	System . 2: Evaporator Outlet Protection	**78**	**CN17**	Reserved
22	**A22**	System. 2 : Suction Temperature	**79**	**CN18**	Not Used
23	**A23**	Reserved	**80**	**CN19**	Reserved
24	**A24**	Reserved	**81**	**CN23**	Reserved
25	**A25**	Reserved	**82**	**CN300**	Program Port
26	**A26**	Reserved	**83**	**J1**	DU
27	**A27**	Reserved	**84**	**J201**	Compressor 1 Inverter Drive
28	**A28**	Reserved	**85**	**J202**	Compressor 2 Inverter Drive
29	**A29**	Reserved	**86**	**J203**	1 DC Fan Driver
30	**A30**	Reserved	**87**	**J204**	Reserved
31	**A31**	Reserved	**88**	**J205**	Controller Cable
32	**A32**	Reserved	**89**	**J206**	Reserved
33	**A33**	Water inlet temperature	**90**	**J3**	Centralized Controller Communication Port
34	**A34**	Water leaving temperature	**91**	**OUT1**	Reserved
35	**A35**	Room temperature	**92**	**OUT2**	Reserved
36	**A36**	Reserved	**93**	**OUT3**	Reserved
37	**A37**	Reserved	**94**	**OUT4**	Reserved
38	**A38**	Reserved	**95**	**OUT5**	System. 1: Fan 1 Resistance
39	**A39**	Reserved	**96**	**OUT6**	System. 2: Fan 2 Resistance
40	**A40**	Reserved	**97**	**OUT7**	Reserved
41	**A41**	Not Used	**98**	**OCT8**	Reserved
42	**A42**	Not Used	**99**	**OCT9**	System . 1: 4-way valve
43	**A43**	Reserved	**100**	**OCT10**	System. 2: 4-way valve
44	**A44**	Reserved	**101**	**OCT11**	Reserved

45	**A45**	Reserved	**102**	**OCT12**	Reserved
46	**A46**	Reserved	**103**	**OCT13**	Anti-freeze resistances Pump Base
47	**A47**	Reserved	**104**	**OCT14**	Reserved
48	**A48**	Reserved	**105**	**OCT15**	Reserved
49	**A49**	Reserved	**106**	**OCT16**	Reserved
50	**A50**	System. 1 : Discharge Temperature	**107**	**OCT17**	Not Used
51	**A51**	System. 2 : Discharge Temperature	**108**	**OCT18**	Not Used
52	**A52**	Reserved	**109**	**OCT19**	Not Used
53	**A53**	Reserved	**110**	**OCT20**	Not Used
54	**A54**	Not Used	**111**	**OCT21**	Not Used
55	**A55**	Not Used	**112**	**OCT22**	Not Used
56	**A56**	Reserved	**113**	**OCT23**	Circulation Pump
57	**A57**	Reserved	**114**	**OCT24**	Resistance Electrical

19 WARRANTY CONDITIONS

This warranty covers confirmed defects in materials, excluding the payment of any compensation for personal or material losses that may be caused directly or indirectly.
The deadlines indicated below start from the date of purchase of the device, no later than 6 months after the date it leaves the warehouse.

Component	**Warranty period**
Water heater (domestic or industrial use)	3 (three) years with an extension of + 2 (two) years*
Heat pump, electrical components and removable parts	3 (three) years.

* The warranty extension of another 2 years is subject to the shipment of:

- Control and Warranty Sheet within a maximum of 15 days after installation.
- Documentary proof of magnesium anode replacement.
- Photos of the installation showing the safety group, expansion vessel, hydraulic and electrical connections.

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

Repairs under warranty do not give rise to an extension of the period.

20 WARRANTY EXCLUSIONS

The warranty ends as long as the devices are not connected, used or assembled in accordance with the manufacturer's instructions, or have been operated by third-party technicians, have been modified and/or even if their serial number has been torn off or erased. The equipment must be installed by qualified technicians in accordance with current standards and/or the rules of art, or prescribed by our technical services. The following are also excluded from the warranty:

- Water heaters that are working in water with the following indexes:
    - Active chlorine > 0.2 ppm
    - Chlorides > 50 mg/l (Inox)
    - Hardness > 200 mg/l
    - Conductivity > 600 µS /cm (20 ºC)
    - 5.5 > PH and PH > 9 (Sorensen scale at 20ºC)
    - And all Waters with a value higher than the VMA, by Decree-Law 236/98 (Portugal).
- Parts subject to natural wear and tear – handles, switches, resistors, programmers, thermostats and others.
- Damages resulting from shocks or transportation, electrical discharges, floods, humidity, or caused by improper use of the device.
- The warranty expires when the device is transferred to another owner, even within the warranty period.
- The warranty expires if this certificate is incorrectly filled out, corrupted or returned after 15 days from the date of purchase.

ATTENTION:

The technician's travel, even within the warranty period, is paid by the customer (km and travel time).

If there is no fault justifying the technician's travel, the customer will pay for the lost travel time.


ENERGIE®