

R290 AIR TO WATER HEAT PUMP



Installation and Instruction Manual

WATERWARE

waterware.co.nz

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1. Preface

In order to provide the customers with high quality, strong reliability and good versatility products, this heat pump is produced by strict design and manufacture standards. This manual includes all the necessary information about installation, debugging, discharging and maintenance. Please read this manual carefully before you open or maintain the unit.

The manufacture of this product will not be held responsible if someone is injured or the unit is damaged, as a result of improper installation, debugging, unnecessary maintenance which is not in line with this manual.

The unit must be installed by qualified personnel.

It is vital that the below instructions are adhered to at all times to keep the warranty.

—The unit can only be opened or repaired by a qualified installer or an authorized dealer.

—Maintenance and operation must be carried out according to the recommended time and frequency, as stated in this manual.

—Use genuine standard spare parts only.

Failure to comply with these recommendations will invalidate the warranty.



Inverter air source water heat pump is a kind of high efficiency, energy saving and environment friendly equipment, which is mainly used for house warming. It can work with any kinds of indoor unit such as fan coil, radiator, or floor heating pipe, by providing warm or hot water. One unit of monoblock heat pump can also work with several indoor units.

The air source water heat pump unit is designed to have heat recovery by using super heater which can provide hot water for sanitary purpose.




2. Safety Instructions

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



Mark Notes



Mark	Meaning
 WARNING	A wrong operation may lead to death or grievous injury on people.
 ATTENTION	A wrong operation may lead to harm people or loss of material.




Icon Notes



Icon	Meaning
	Prohibition. What is prohibited will be nearby this icon.
	Compulsory implement. The listed action needed to be taken.
	ATTENTION (include WARNING) Please pay attention to what is indicated.

Warning




Operation	Meaning
 Prohibition	DO NOT put fingers into the fan and evaporator of the unit, otherwise harm may occur.
 Shut off the power.	When there is something wrong or strange smell, the power supply needs to be shut off to stop the unit. Continue running may cause short circuit or fire.


Operation	Meaning
 Prohibition	DO NOT put fingers into the fans and evaporator of the unit, otherwise harm may occur.
 Shut off the power.	When there is something wrong or strange smell, the power supply needs to be shut off to stop the unit. Continue running may cause short circuit or fire.

Move and Repair	Meaning
 Entrust	When the heat pump needs to be moved or installed again, please entrust dealer or qualified people to carry it out. Improper installation will lead to water leakage, electrical shock, injury or fire.
 Entrust	It is prohibited to repair the unit by the user himself, otherwise electrical shock or fire may occur.
 Prohibit	When the heat pump needs to be repaired, please entrust dealer or qualified people to carry it out. Improper movement or repair on the unit will lead to water leakage, electrical shock, injury or fire.

	<p>Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.</p>
	<p>The appliance shall be stored in a room and installed in the environment without continuously operating or potential ignition sources (for example: open flames, an operating gas appliance or an operating electric heater or Electric Spark or hot objects)</p>

ATTENTION

Installation	Meaning
 Installation Place	<p>The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire may occur.</p>
 Fix the unit.	<p>Make sure that the basement of the heat pump is strong enough, to avoid any decline or fall down of the unit</p>
 Need circuit breaker.	<p>Make sure that there is circuit breaker for the unit, lack of circuit breaker may lead to electrical shock or fire.</p>

Operation	Meaning
 Check the installation basement.	<p>Please check the installation basement regularly (once a month), to avoid any decline or damage too the basement, which may hurt people or damage the unit.</p>



Switch off the power.

Please switch off the power when cleaning or maintaining



Prohibition

It is prohibited to using copper or iron as fuse. The right fuse must be fixed by electrician for the heat pump.



Prohibition

It is prohibited to spray the flammable gas to the heat pump, as it may cause fire.

3. Features

This series of heat pump unit owns following features:

3.1. Advanced Controlling

The PC micro-computer based controller is available for the users to review or set the running parameters of the heat pump. Centralized controlling system can control several units by PC.

3.2. Nice Appearance

The heat pump is designed with beautiful looking. The monoblock one has the water pump included which is very easy for installation.

3.3. Flexible Installation

The unit has a smart structure with compact body, just as simple outdoor installation is needed.

3.4. Quiet Running

The heat pump unit use a special designed heat exchanger to enhance whole efficiency.

3.5. Good Heat Exchange Rate

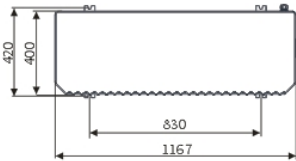
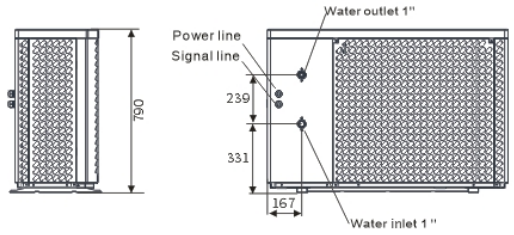
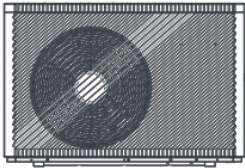
The heat pump unit use a special designed heat exchanger to enhance whole efficiency.

3.6. Large Working Range

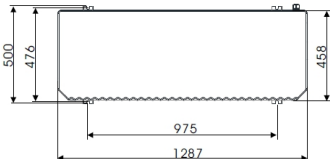
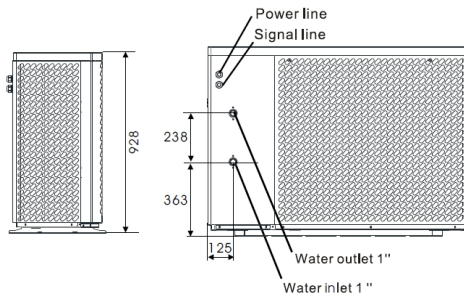
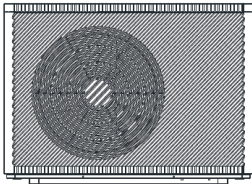
This series of heat pump is designed to work under different working conditions as low as -15 degrees for heating.

4. Unit Dimension(mm)

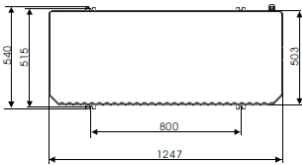
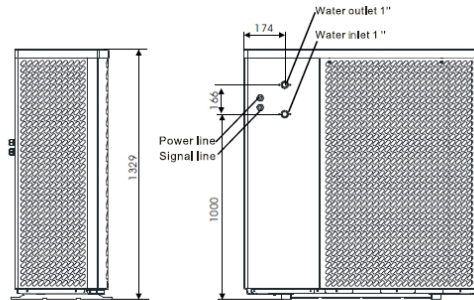
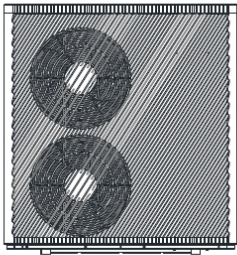
4.1. Models: HPR6HT



4.2. Models: HPR10HT



4.3. Models: HPR17HT



6.2. Choose a right heat pump unit

- (1) Based on the local climate condition, construction features and insulation level, calculate the required cooling(heating) capacity per square meter.
- (2) Conclude the total capacity which will be needed by the construction.
- (3) According to the total capacity needed, choose the right model by consulting the heat.
- (4) Pump features as below:
 - a. Cooling only unit: chilled water outlet temp. at 5-15°C , maximum ambient temp. at 43°C.
 - b. Heating and Cooling unit: for cooling chilled water outlet temp. at 5-15°C, maximum ambient temp. at 43°C. For heating, warm water outlet temp. at 9-75°C, minimum ambient temp. at -25°C.
 - c. Unit application
Inverter air source water heat pump is used for house, office, hotel, and so forth, which need heating or cooling separately, with each area needed to be controlled.

6.3. Installation Method

The heat pump can be installed onto the concrete basement by expansion screws, or onto a steel frame with rubber feet which can be placed on the ground or housetop.

Make sure that the unit is placed horizontally.

6.4. Installation Place

- a. The unit can be installed on any place outdoor which can carry heavy machine such as terrace, housetop, ground and so on.
- b. The location must have good ventilation.
- c. The place is free from heat radiation and other fire flame.
- d. A pall is needed in winter to protect the heat pump from snow.
- e. There must be not obstacles near the air inlet and outlet of the heat pump. A place which is free from strong air blowing.
- f. There must be water channel around the heat pump to drain the condensing water. There must be enough space around the unit for maintenance.
- g. A place which is far away operating or potential ignition sources (for example: open flames, an operating gas appliance or an operating electric heater or Electric Spark or hot object)

6.5. Water Loop Connection

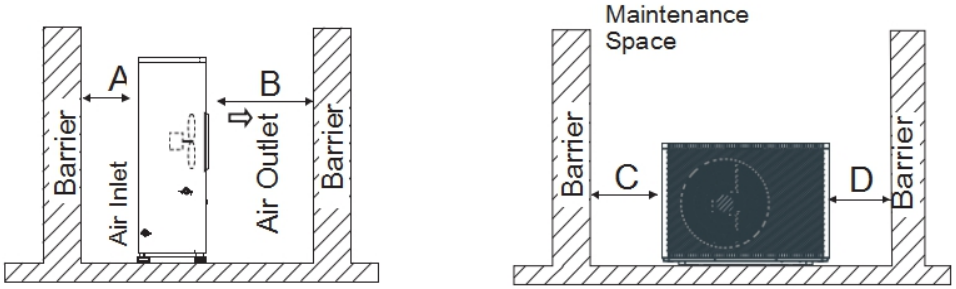
Please pay attention to below matters when the water pipe is connected:

- (1) Try to reduce the resistance to the water from the piping.
- (2) The piping must be clear and free from dirt and blocks. Water leakage test must be carried out to ensure there is no water leaking. And then the insulation can be made.
- (3) Attention that the pipe must be tested by pressure separately. DO NOT test it together with the heat pump.
- (4) There must be expansion tank on the top point of the water loop, and the water level in the tank must be at least 0.5 meter higher than the top point of the water loop.
- (5) The flow switch is installed inside of the heat pump, check to ensure that the wiring and action of the switch is normal and controlled by the controller.
- (6) Try to avoid air stayed inside of the water pipe, and there must be air vent on the top point of the water loop.
- (7) There must be thermometer and pressure meter at the water inlet and outlet, for easy inspection during running.

6.6. Power Supply Connection

- (1) Open the front panel, and open the power supply access.
- (2) The power supply must go through the wire access and be connected to the power supply terminals in the controlling box. Then connect the 3-signal wire plugs of the wire controller and main controller.
- (3) If the outside water pump is needed, please insert the power supply wire into the wire access also and connect to the water pump terminals.
- (4) If an additional auxiliary heater is need to be controlled by the heat pump controller, the relay (or power) of the aux-heater must be connected to the relevant output of the controller.

6.7. Location of the Unit



The picture shows the location of horizontal air outlet unit.



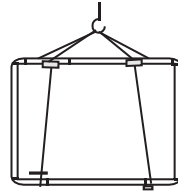
Attention

Requirements:

A>500mm ; B>1500mm ;
C>1000mm ; D>500mm

6.8. Transit

When the unit needs to be hung up during installation, an 8 meters cable is needed, and there must be soft material between the cable and the unit to prevent damage to the heat pump cabinet. (See picture 1)



Picture 1



WARNING

DO NOT touch the heat exchanger of the heat pump with fingers or other objects !

6.9. Trial Running


6.9.1. Inspection before trial running

- (1) Check the indoor unit, and make sure that the pipe connection is right and the relevant valves are open.
- (2) Check the water loop, to ensure that the water inside of the expansion tank is enough, the water supply is good, the water loop is full of water

and without any air. Also make sure there is good insulation for the water pipe.

- (3) Check the electrical wiring. Make sure that the power voltage is normal, the screws are fastened, the wiring is made in line with the diagram, and the earthing is connected.
- (4) Check the heat pump unit including all of the screws and parts of the heat pump to see if they are in good order. When the power is on, review the indicator on the controller to see if there is any failure indication. The gas gauge can be connected to the check valves to see the high pressure (or low pressure) of the system during trial running.

6.9.2. Trial running

- (1) Start the heat pump by press "  " key on the controller. Check whether the water pump is running, if it runs normally there will be 0.2 MPa on the water pressure meter.
- (2) When the water pump runs for 1 minutes, the compressor will start. Hear whether there is strange sound from the compressor. If abnormal sound occurs please stop the unit and check the compressor. If the compressor runs well please look for the pressure meter of the refrigerant.
- (3) Then check whether the power input and running current is in line with the manual. If not please stop and check.
- (4) Adjust the valves on the water loop, to make sure that the hot(cool) water supply to each door is good and meet the requirement of heating (or cooling). Review whether the outlet water temperature is stable.
- (5) The parameters of the controller are set by the factory, it is not allowed to change then by the user himself.

If the water flow rate is lower than 70% of the rated water flow, the defrosting efficiency will be lower. The suggested water flow rate shall be the rated flow rate which is shown on the nameplate.

7. Maintenance

7.1. Precautions for Daily Use

Before starting up the unit for the first time or after a long-time shutdown, the following preparations must be made:

- (1) Thoroughly inspect and clean up the unit.
- (2) Clean the waterway system.
- (3) Check water pump, regulating valve and other waterway equipment.
- (4) Tighten all wire connections.

Do not change the system parameters before consulting the engineer.

Ensure the water refill and exhaust device in the waterway is well, otherwise the performance and reliability of the unit will become worse.

Ensure the waterways are clean and avoid dirt and blockage.

Timely check the electricity, water and replace the faulty parts.

Please use the parts provided or recommended by the company, do not use the unqualified parts.

Refrigerant supplement:

Each unit has been equipped with sufficient refrigerant when leaving the factory. Do not charge or change the refrigerant.

If you need to replenish the refrigerant due to leakage, please contact the engineers or dealers.

7.2. Periodic Maintenance (every 6 months)

Preparation	Before maintenance, please ensure that the unit stop running and cut off the power supply.
Inspection and cleaning of fin heat exchanger	In order to ensure that heat exchangers remain in optimum condition for heat exchange, their surfaces must be clean.
Inspection and cleaning of plate heat exchanger	Every 6 months or when the capacity of the unit drops by more than 10%, check the water-side heat exchanger for scale and clean the heat exchanger.
Check the electrical wiring	Check if the contact point is loose, oxidized, or blocked by sundries, etc., which causes poor contact of the electronic wiring.

7.3. Inspection and Maintenance

7.3.1. Preparing for inspection and maintenance

Danger!

Risk of death caused by fire or explosion if there is a refrigerant leakage!

Only carry out the work if you are competent and have knowledge about the special features and risks of R290 refrigerant.

The product contains combustible refrigerant R290. In the event of a leak, escaping refrigerant may mix with air to form a flammable atmosphere. There is a risk of fire and explosion.

Ensure that space is sufficiently aerated around the product.

Observe the basic safety rules before carrying out inspection and maintenance work or installing spare parts.

Disconnect the product from the power supply but ensure that the product is still earthed.

7.3.2. Cleaning the product

Do not clean the product with a high-pressure cleaner or a direct jet of water.

Clean the product using a sponge and hot water with a cleaning agent.

Do not use abrasive cleaners. Do not use solvents. Do not use any cleaning agents that contain chlorine or ammonia.

7.3.3. Checking the evaporator, fan, and condensate discharge

Check whether there is dirt between the fins or whether depositions have adhered to the fins.

Clean the fins using a soft brush, avoid fins from being bent.

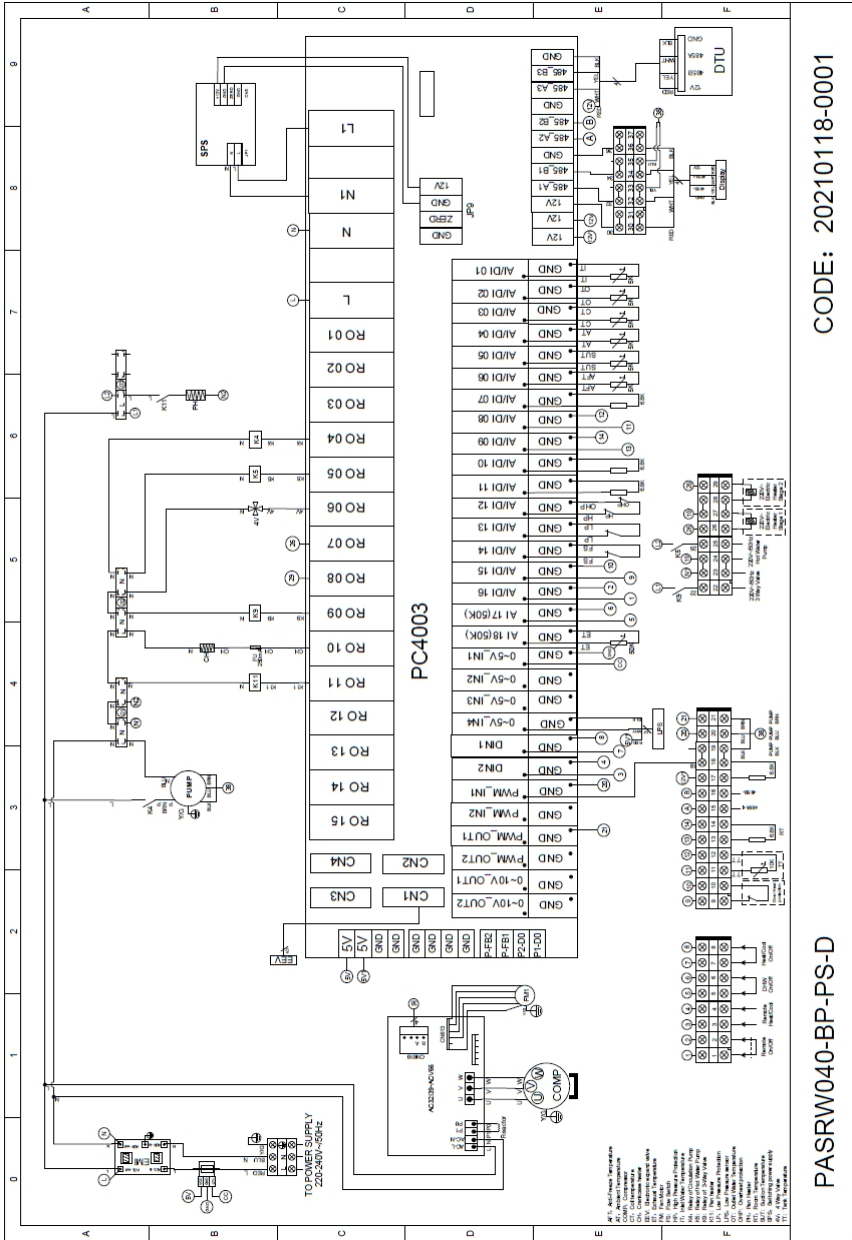
Check whether dirt has been accumulated on the condensate tray or in the condensate discharge pipe.

Check whether the water can drain freely.

8. Parameters

Model		HPR6HT	HPR10HT	HPR17HT
Power Supply	/	230V~/50Hz	230V~/50Hz	230V~/50Hz
Moisture Resistance	IPX	IPX4	IPX4	IPX4
Electrical Shockproof	I	I	I	I
Heating Condition - Ambient Temp. (DB/WB): 7/6°C, Water Temp. (In/Out): 30/35°C				
Heating Capacity Range	kW	3.10~8.90	5.40~14.95	8.00~22.00
Heating Power Input Range	kW	0.65~2.10	1.05~3.85	1.60~6.90
Heating Current Input Range	A	2.9~9.2	4.6~16.9	7.0~30.3
Cooling Condition - Ambient Temp. (DB/WB): 35/24°C, Water Temp. (In/Out): 12/7°C				
Cooling Capacity Range	kW	1.20~5.72	3.60~10.50	4.20~15.00
Cooling Power Input Range	kW	0.65~2.40	1.12~4.47	1.80~7.30
Heating Current Input Range	A	2.9~10.5	4.9~19.6	7.9~32.1
Hot Water Condition - Ambient Temp. (DB/WB): 20/15°C, Water Temp. (In/Out): 15/55°C				
Hot Water Capacity Range	kW	3.92~10.68	6.50~18.50	10.00~27.00
Hot Water Power Input Range	kW	0.78~2.47	1.27~4.65	1.90~7.10
Hot Water Current Input Range	A	3.4~10.8	5.6~20.4	8.3~31.2
Max. Power Input	kW	3.0	5.3	7.5
Max. Current Input	A	13.5	24.5	35.0
Water Flow	m ³ /h	1.0	1.7	2.9
Refrigerant / Proper Input	kg	R290 /0.50kg	R290 / 0.85kg	R290 / 1.30kg
CO ₂ Equivalent	Ton	0.0015	0.0026	0.0039
Sound Pressure (1m)	dB(A)	42	43	47
Sound Power Level (EN12102)	dB	57	57	62
Net Weight	kg	80	160	202
Operation Pressure(Low Side)	MPa	0.8	0.8	0.8
Operation Pressure(High Side)	MPa	3.0	3.0	3.0
Unit Dimension(L/W/H)	mm	1167×407×795	1287×458×928	1287×458×928
Shipping	mm	1300×485×940	1420×540×1080	1420×540×1080
Dimension(L/W/H)				
Compressor	Brand	HIGHLY	HIGHLY	HIGHLY
Circulation Pump	Brand	GRUNDFOS	GRUNDFOS	GRUNDFOS
Operating Ambient Temperature	°C	-25~43	-25~43	-25~43
Fan Quantity	/	1	1	2
Fan Motor Type	/	DC motor	DC motor	DC motor
Fan Motor Power Input (min~max)	W	55~105	60~120	60~160
Fan Speed (RPM)	RPM	300~600	220~600	300~750
Water Connection (inch)	inch	1	1	1
Water Pressure Drop (max)	kPa	40	20	65
Circulation Pump Head	m	7.5	7.5	12.5
Cabinet Type		Galvanized sheet+ ASA	Galvanized sheet+ ASA	Galvanized sheet+ ASA

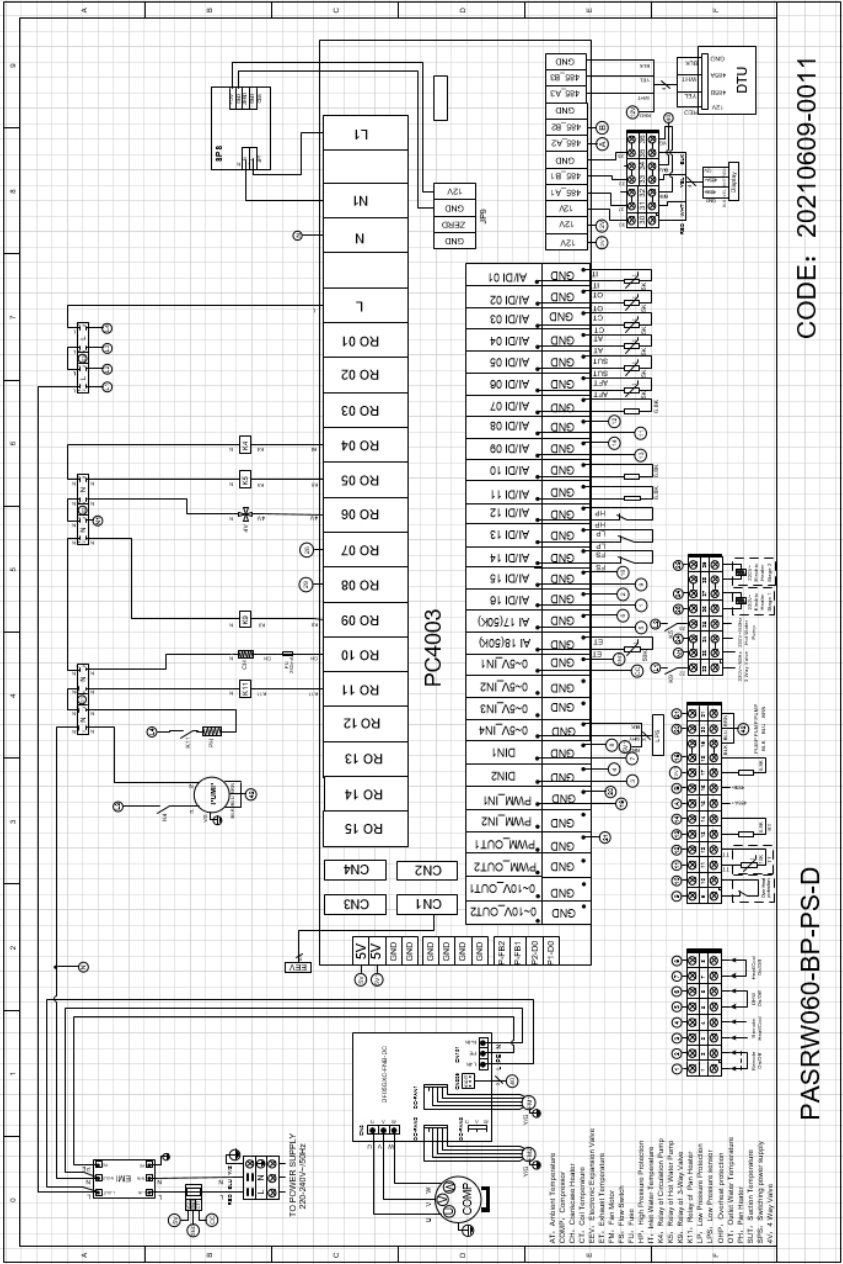
9.2. Model: HPR10HT



CODE: 20210118-0001

PASRW040-BP-PS-D

9.4. Model: HPR17HT



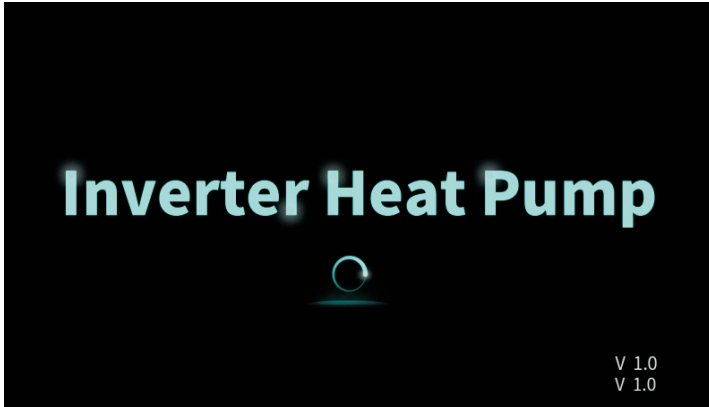
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PASRW060-BP-PS-D

10. Display Operation Guide

10.1. Main Interface Display and Function

(1) Power on Interface



(2) Starting up Interface



Key function

Key number	Key name	Key Function
①	Lock screen	Click this key to lock the screen. White represents not enabled, while blue represents enabled
④	On and off	Click this key to switch ON or OFF. Blue represents ON, while white represents OFF
⑤	Temperature setting	Click this key to set the target temperature
⑮	Mode key	Hot water mode, heating mode, cooling mode, hot water+ heating mode or hot water+ cooling mode can be selected by pressing this key

Note:

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.

⑥ is outlet water temperature or room temperature. If H25=0, the outlet water temperature will be shown. If H25=1, the room temperature will be shown.

⑦ is Target Temperature of No.1 Unit.

⑧ is 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 is defrosting icon. It will display in the defrosting process of the unit.

⑩ is timing mute icon which displays only when activated.

⑪ is timing switch which displays only when activated.

⑫ is ambient temperature.

⑬ is system time.

⑭ is current mode.

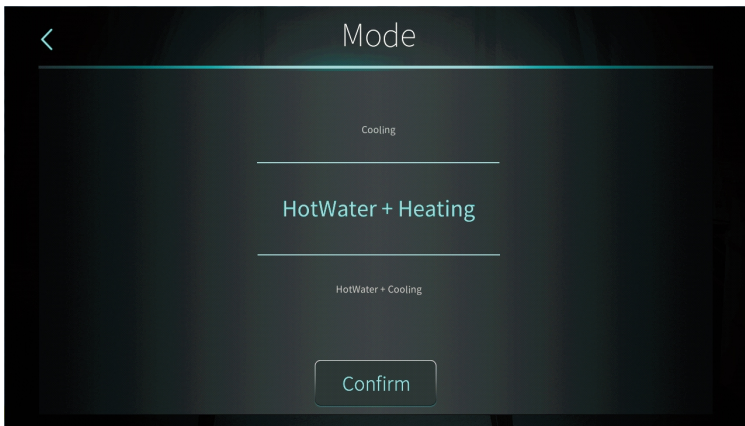
10.2. ON/OFF

(1) In shutting down interface (on/off key is in white status), press on/off key can start up the machine.



(2) In starting up interface (on/off key is in blue status), press on/off key can shut down the machine.

10.2.1. Mode switch



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

(1) selecting hot water mode icon, then the display will change to this mode interface;

- (2) selecting heating mode icon, then the display will enter this mode interface;
- (3) selecting cooling mode icon, then the display will switch to this mode interface;
- (4) selecting hot water+ heating mode icon, then the display will go into hot water+ heating mode interface;
- (5) selecting hot water+ cooling mode icon, then the display will come to hot water+ cooling mode interface;

Note: a) If the machine model you purchased has no cooling function, the key of cooling mode will not be displayed.

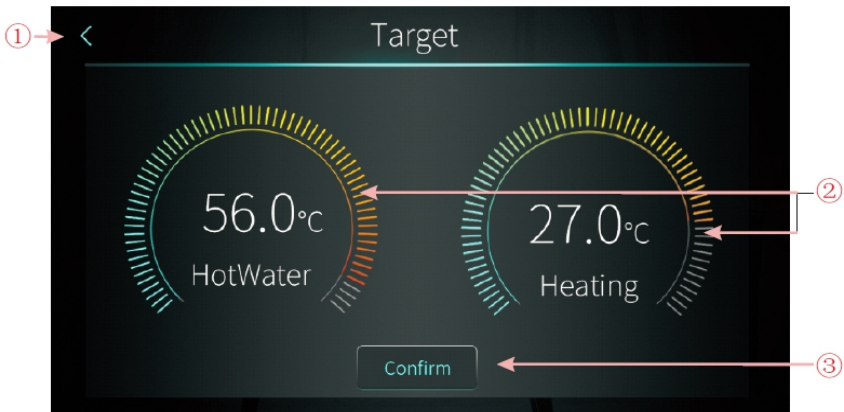
b) If the machine model you purchased has no hot water function, the key of hot water mode function will not be displayed.

In the main interface, there are five modes that can be selected after tapping the mode key.

- (1) tapping hot water mode icon ①, then the display will change to this mode's interface;
- (2) tapping heating mode icon ②, then the display will enter this mode's interface;
- (3) tapping cooling mode icon ③, then the display will switch to this mode's interface;
- (4) tapping hot water + heating mode icon ④, then the display will go into the hot water + heating mode's interface;
- (5) tapping hot water + cooling mode icon ⑤, then the display will come to the hot water + cooling mode's interface;

Note: If your unit is a heating-only model (without a cooling function), the "cooling" key will show on the interface.

10.3. Setting of target temperature

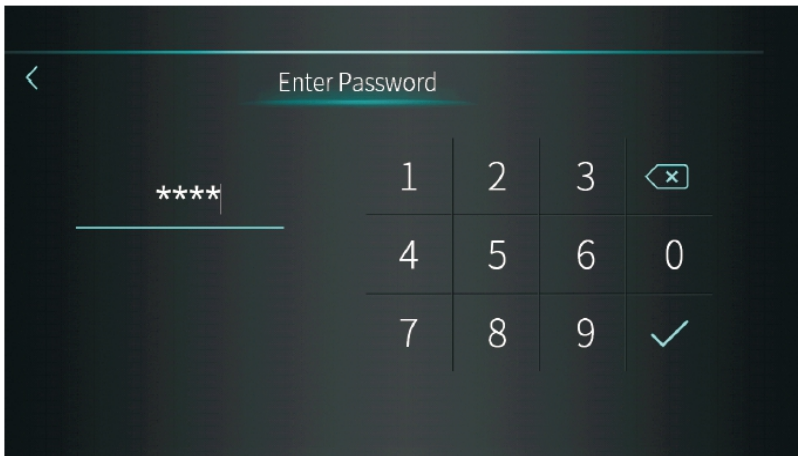


Take hot water + heating mode for example:

- (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.

10.3.1. Unlock screen

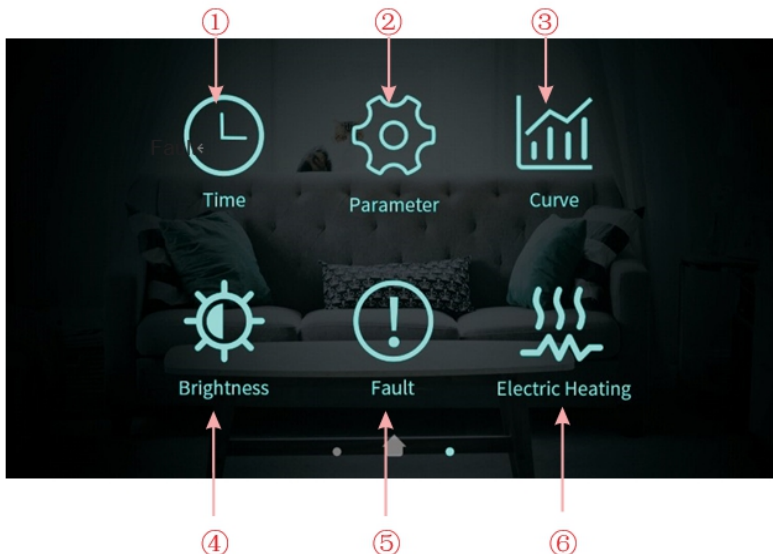
Click the lock screen key again while the screen has been locked, pop-up keyboard is shown as following:



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

10.4. 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.



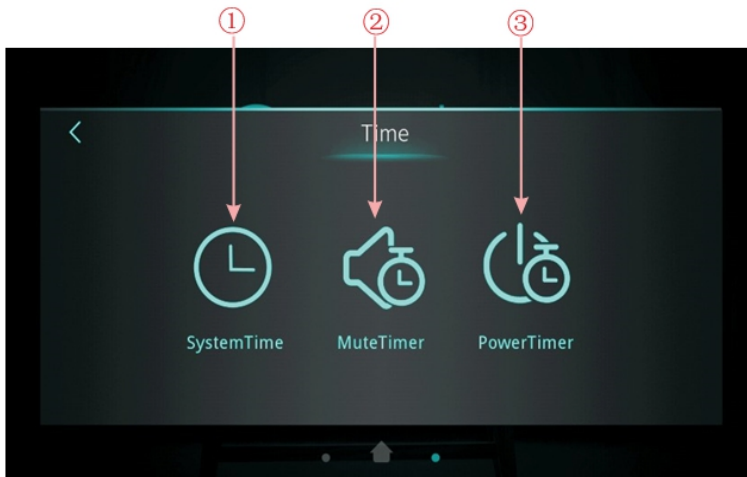
10.4.1. Buttons description

Key number	Key name	Key function
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	Adjust brightness	Click this button to adjust screen brightness
⑤	Fault	Click to view fault history
⑤	One key electric heating	When activate electric heating function, the color of the icon will turn blue, otherwise it will turn white.

10.4.2. Time setting

In the setup interface:

(1) Tapping the button①, then the interface display is shown as follows:



10.4.3. System time setting

In the time setting interface, click ① interface displays as follows:



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: When the temperature unit is? the time format is displayed as: month-day-year hour: minute: second.

10.4.4. Mute Timer setting

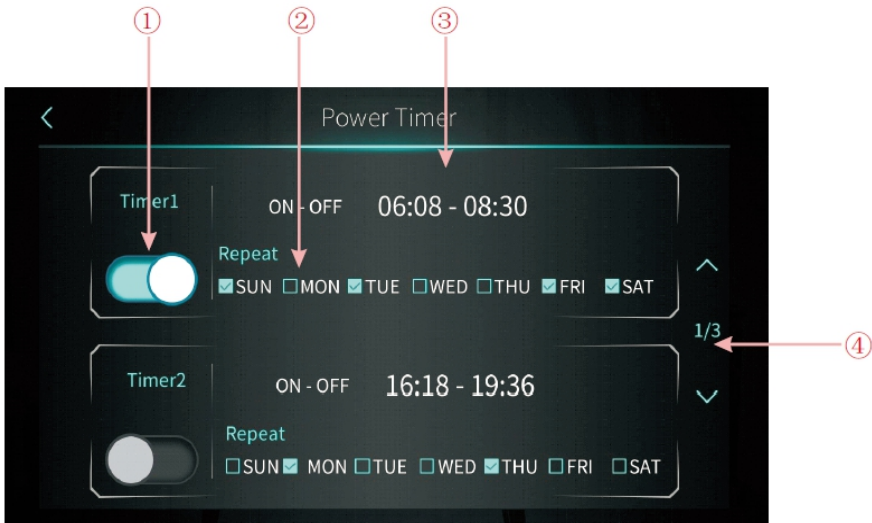
Click the lock screen key again while the screen has been locked, the pop-up keyboard is shown as following:



NO.	Name	Key color	Button function
①	Whether enable the mute timer on function	Enable: Blue Disable: Gray	Click this key to enable or disable the mute timer on function
	Whether enable the mute timer off function	Enable: Blue Disable: Gray	Click this key to enable or disable the mute timer off function
②	The mute timer on setting point		select from 0:00-23:59
	The mute timer off setting point		select from 0:00-23:59
③	The status of mute timer on	Enable: Blue Disable: Gray	The status of mute timer on is shown
	The status of mute timer off	Enable: Blue Disable: Gray	The status of mute timer on is shown

10.4.5. Power Timer setting

In the time setting interface, click ③ interface displays as follows:



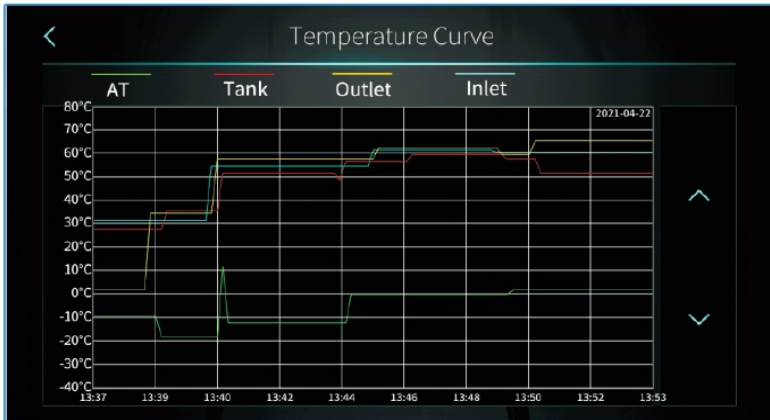
NO.	Name	Button function
①	Timing switch function on	Clicking the button, when the font color is blue, the timing switch is on
②	Week setting	Set the day of the week to activate the timing switch

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

10.4.6. Temperature Curve

In the setup interface:

Tapping operating mode button④, then the interface display is shown as follows:

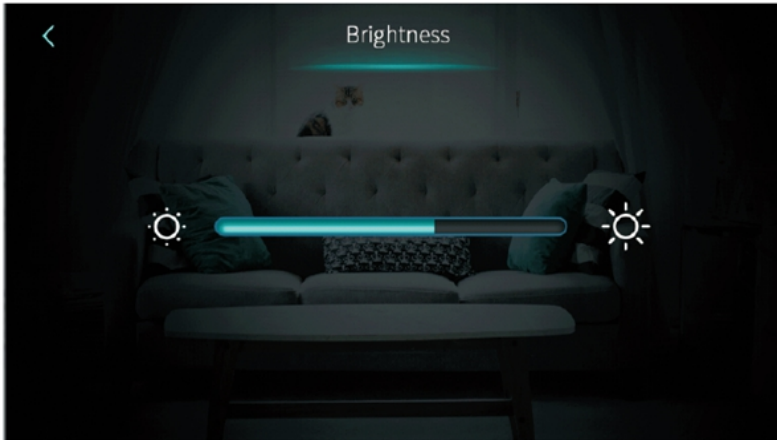


Note:

- 1) This curve function records the water inlet temperature, water outlet temperature, tank water temperature and ambient temperature;
- 2) 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;
- 3) Only curve for power-on status is recorded, and that for power-off will not be saved;
- 4) 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;
- 5) Temperature curve record is provided with power-down memory function.

10.4.7. Color Display Calibration

In the setting interface: Tapping operating mode button⑤, then the interface display is shown as follows:

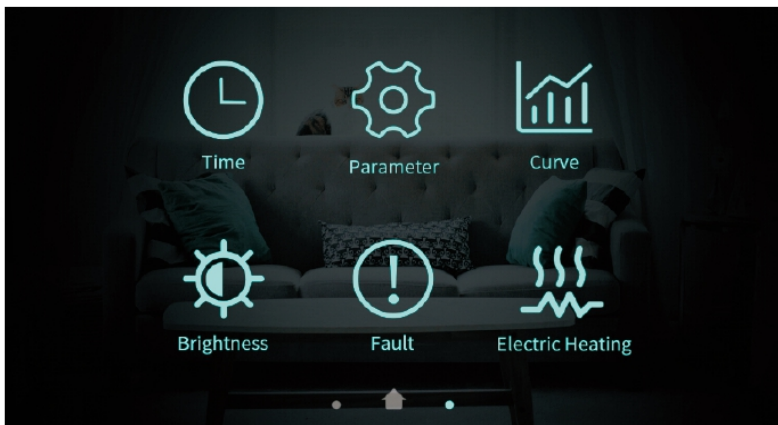


Note:

- 1) The middle display bar can be dragged or clicked to adjust the brightness of the screen with power-down memory.
- 2) Press the back key to return to the previous level and save the brightness setting value.
- 3) 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.
- 4) If there is no operation for another 5 minutes (a consecutive 5 minutes), the screen will enter the screen state.

10.4.8. Electric Heating

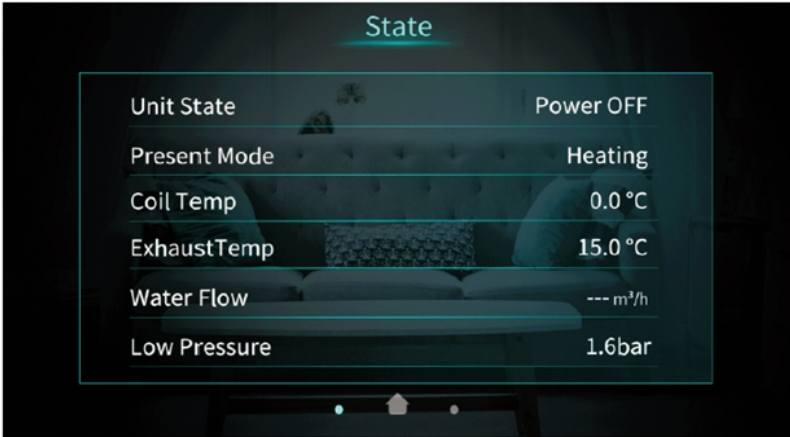
In the setup interface: Tapping operating mode button ⑥, then the interface display is shown as follows:



Note: If you enter one-key electric heating, the icon is blue, otherwise it is gray.

10.5. 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.



10.6. Fault interface display and function



①: Fault code

②: Fault name

③: Occurrence time of the fault: Day an month hour: minute: second Note:
If the current temperature is °F, occurrence time of the fault: Month and day
hour: minute: second.

④: Click this key to clear all fault records

11. Failure List & Troubleshooting

11.1. Failure Handling

Issue	Possible cause	Related components	Solution
Unit tripped when powered on	Short circuit	Terminals Relays Contactors cables	Check all the components' connection Check relays and contactors whether are broken Disconnect the electronic components one by one and powered on to find the problem
Display cannot get power	Cables has disconnected The power input cable is mis-connected	Display cable Power input cable	Check the display cable Check the power cable Check the 3-phase power cable whether connected in right phase sequence
cannot start up the unit	The unit have error Cables has disconnected	Display Cables	Check the display whether shown error Check the cable Reconnect the power cable and check if it works
Display cannot work	The display has been locked The display is broken	Display	Check the display whether shown locked icon Check the cable Reconnect the power cable and check if it works
Heating effect is not good	The compressor running low frequency The fan is not running or speed is too low Leakage problem	Compressor Fan Refrigerant system	Check the compressor frequency Check the fan speed Check the exhaust temperature and low pressure
Shut off while didn't reach the target temperature	Temperature limit (according to ambient temperature)	Control logic	Check the parameters
The evaporator has too much frost and cannot defrosting cleanly	Fan blade or motor issue EEV step is not suitable Refrigerant amount issue Parameter issue	Parameters Fan EEV Refrigerant system	Check the defrosting parameters Check the compressor frequency Check the fan speed Check the exhaust temperature and low pressure
Abnormal noise	Screws issue Fan blade or motor issue Compressor issue Components have collision	Screws Fan Compressor Other components (tubes, cables)	Check the screws Check the fan blade and motor Check the compressor Check other components

11.2. Error Code Instruction

Error code	Error name	Relevant parts information	Review and resolve
E04	Electric heater over heat Protection		<ol style="list-style-type: none"> 1. Check the Electrical heating Overheat protector open or not. 2. Check the Electrical heater.
E08	Communication failure between PCB and display	Communication error between PCB and DISPLAY	<ol style="list-style-type: none"> 1. Check cable connection of PCB and DISPLAY. 2. Check the software version of PCB and DISPLAY.
E11	HP Protection	HP switch is open	<ol style="list-style-type: none"> 1. Check whether showing the error after unit shutdown. 2. Measure the discharge pressure when unit is running. 3. Detect EEV step, suction pressure, inlet/outlet water discharge and suction temp. 4. Release all the gas of the system and refill refrigerant according to the nameplate.
E12	LP Protection	LP switch is open	<ol style="list-style-type: none"> 1. Check whether showing the error after unit shutdown. 2. Measure the suction pressure when unit is running. 3. Detect EEV step, discharge pressure, inlet/outlet water discharge and suction temp. 4. Release all the gas of the system and refill refrigerant according to the nameplate.
E19	Primary Anti-freezing Protection	Ambient temp $\leq 0^{\circ}\text{C}$, A04-2 C \leq water inletsA04 C	It is the protection in winter. Once the water temperature rises up to A04+4 $^{\circ}\text{C}$ or the ambient temp is higher than 1, the error code disappears.
E29	Secondary Anti-freezing Protection	Ambient temp $\leq 0^{\circ}\text{C}$, water inletsA04-2 C	It is the protection in winter. Once the water temperature up to A04+11 $^{\circ}\text{C}$ or the ambient temp is higher than 1, the error code disappears.
E19	Primary Anti-freezing Protection	Ambient temp $\leq 0^{\circ}\text{C}$, 2 C \leq water inlets4 C	It is the protection in winter. Once the water temperature rises up to 8 $^{\circ}\text{C}$ or the ambient temp is higher than 1 $^{\circ}\text{C}$, the error code disappears.
E29	Secondary Anti-freezing Protection	Ambient temp $\leq 0^{\circ}\text{C}$, water inlets2 C	It is the protection in winter. Once the water temperature up to 15 $^{\circ}\text{C}$ or the ambient temp is higher than 1 $^{\circ}\text{C}$, the error code disappears.
E032	Flow Switch Protection	Flow switch is open	<ol style="list-style-type: none"> 1. Detect the connection of cables. 2. Detect the flow switch. 3. Detect the water valve is opened or opened fully. 4. Detect the water pump and the filter. 5. Maybe there is some air in the water route.
E051	Compressor Over current Shutdown Fault	Compressor Over current	<ol style="list-style-type: none"> 1. Check ambient temp. and inlet/outlet water temp.; 2. Turn on the unit. Record and analyze the changing process of high/low pressure, discharge/suction temp. , EEV step, compressor frequency and running current. 3. If they are OK, replace a new compressor driver board.
E065	High water outlet temp. protection		Check if the water flow is too low and the outlet water whether too high
E081	Communication failure between PCB and fan drive board	Communication error between PCB and fan drive board	<ol style="list-style-type: none"> 1. Check the connection between PCB and fan board. All of 12V-12V, GND-GND, A-A, B-B should be closed; 2. If they are closed, turn on the power, then measure the voltage between 12V and GND on fan board, if higher than 15V or lower than 7V, replace a new fan board.

E103	Fan motor overload protection		<ol style="list-style-type: none"> 1. Check if the fan motor running well. 2. Detect the current of fan motor. 3. If the current is more than 1A, it means the motor have problem and need to replace a new one. 4. If the current is less than 1A, it means the motor control module have problem and need to replace a new one.
E171	Anti-freezing Protection	inlet water $\leq A04^{\circ}C$ and the antifreeze temp A04-A05	<ol style="list-style-type: none"> 1. Check the water flow. 2. Check the outlet water temp sensor. 3. Measure the ambient temp. 4. Detect the connection of cables. 5. Check the record of defrosting, whether the defrosting time is too long or too often. <p>Restart the unit.</p> <ol style="list-style-type: none"> 1. Check the changing process of EEV step, high pressure, low pressure, inlet/outlet water temp. 2. Check the connection of U/V/W between compressor and compressor driver board. 3. Check the compressor resistance. 4. Check compressor driver board.
F01	Compressor activation failure		<ol style="list-style-type: none"> 1. Check the changing process of EEV step, high pressure, low pressure, inlet/outlet water temp. 2. Check the connection of U/V/W between compressor and compressor driver board. 3. Check the compressor resistance. 4. Check compressor driver board. <p>Restart the unit.</p> <ol style="list-style-type: none"> 1. Check the power supply connection and voltage supply is stable or not. 2. Replace a new compressor driver board.
F03	PFC Fault		<ol style="list-style-type: none"> 1. Check the power supply connection and voltage supply is stable or not. 2. Replace a new compressor driver board.
F05	DC Bus Over voltage		<ol style="list-style-type: none"> 1. Check the voltage between DCP-IN and DCN-IN, if lower than 300V, the unit will get this protection. 2. Check the input voltage of R/S/T on compressor driver board, if lower than 210V, the unit will get this protection. 3. If they are OK, please replace a new compressor driver board.
F06	DC Bus Under voltage		<ol style="list-style-type: none"> 1. Check the voltage between DCP-IN and DCN-IN, if lower than 300V, it will get this protection; 2. Check the input voltage of R/S/T on compressor driver board, if lower than 210V, it will get this protection; 3. If they are OK, please replace a new compressor driver board
F07	AC Input Under voltage		<ol style="list-style-type: none"> 1. Measure the input voltage of R/S/T of driver board, if lower than 300V, it will get this protection. 2. If it's OK, replace a new compressor driver board.
F08	AC Input Over current		Only in single phase unit. Restart the unit. Check if there is electric leakage. If not, replace a new drive board.
F09	Input voltage sampling fault		<ol style="list-style-type: none"> 1. Make sure power supply not lower than 300V or higher than 500V; 2. If it's OK, please replace a new compressor driver board.
F10	Communication Failure between DSP and PFC		<p>Only in single phase unit.</p> <ol style="list-style-type: none"> 1. Check the inverter board connection. 2. If no problem, replace a new compressor driver board.
F11	Communication Fault between DSP and Communication board		<ol style="list-style-type: none"> 1. Please check the inverter board connection. 2. If no problem, please replace a new compressor driver board
F12	Communication failure between PCB and driver board		<ol style="list-style-type: none"> 1. Check the connection between main control board and compressor driver board. All of 12V-12V, GND-GND, A-A, B-B should be closed. 2. If they are closed, turn on the power, then measure the voltage between 12V and GND on compressor driver board, if higher than 15V or lower than 7V, please replace a new one compressor driver board.

F13	IPM Overheat Stop		<ol style="list-style-type: none"> 1. Check the fans are running or not. 2. Check the installation distance and space. 3. Leave enough distance and space to make heat pump have a good transfer heating condition. 4. Clean the finned heat exchanger. 5. If they are OK, replace a new compressor driver board.
F15	Input voltage Lacking Phase		<ol style="list-style-type: none"> 1. Check the phase of power supply R/S/T to compressor driver board. 2. If it's OK, replace a new compressor driver board.
F16	Compressor weak magnetic protection alarm		<ol style="list-style-type: none"> 1. Check the refrigeration system. 2. If it's OK, replace a new compressor driver board.
F17	Temperature fault of drive board		<ol style="list-style-type: none"> 1. Check the connection of heat sink temp. sensor. 2. Check the resistance of heat sink temp. sensor. 3. If they are OK, please replace a new heat sink and heat sink temp. sensor.
F18	IPM Current Sampling Fault		<ol style="list-style-type: none"> 1. Check ambient temp. and inlet/outlet water temp. 2. Check high/low pressure and discharge temp. and suction temp. 3. Check EEV step. 4. Check the compressor frequency and current. 5. If they are OK, replace a new compressor driver board.
F20	IGBT Power Device Overheat Alarm		<ol style="list-style-type: none"> 1. Check the fans are running or not. 2. Check the installation distance and space. 3. If they are OK, please replace a new compressor driver board. 4. Leave enough distance and space to make heat pump have a good transfer heating condition. 5. Clean air to fin heat exchanger.
F22	AC input over current protection alarm		<p>Only in single phase unit. Restart the unit.</p> <ol style="list-style-type: none"> 1. Check if there is electric leakage. 2. If still have the failure, replace a new drive board.
F23	EEPROM Fault Alarm		<ol style="list-style-type: none"> 1. Check the connection; 2. Replace a new driver board;
F24	Destroyed EEPROM Activation Ban Alarm		
F25	LP 15V Under load Fault		<ol style="list-style-type: none"> 1. Check the power supply is stable or not, and restart unit 2. If the problem still on, please replace a new drive board.
F26	IGBT Power Device Overheat Fault		<ol style="list-style-type: none"> 1. Check the fans are running or not; 2. Check the installation distance and space; 3. Leave enough distance and space to make heat pump have a good transfer heating condition; 4. Clean the finned heat exchanger. 5. If they are OK, please replace a new driver board;
F031	DC Fan Motor 1 Failure		<ol style="list-style-type: none"> 1. Turn off the unit and check the connection. 2. Restart and check if the motor is running normal or the error happens again. 3. Replace a new fan motor.
F032	DC Fan Motor 2 Failure		

Pp1	Exhaust Pressure Sensor Fault		<ol style="list-style-type: none"> 1. Detect the exhaust pressure sensor connection 2. If the connection is OK, please replace a new one.
Pp2	Suction Pressure Sensor Fault		<ol style="list-style-type: none"> 1. Detect the suction pressure sensor connection 2. If the connection is OK, please replace a new one.
TP	Low Ambient Temp. Protection	Ambient temp \leq 30	<ol style="list-style-type: none"> 1. Check the ambient temp 2. When ambient temp \geq-28 °C, the fault will disappear.
P01	Water Inlet Temp. Sensor Fault		
P02	Water Outlet Temp. Sensor Fault		
P04	Ambient Temp. Sensor Fault		
P17	Water Outlet Temp. Sensor Fault		
P032	Hot Water Tank Temp. Sensor Fault		
P42	Room Temp. Sensor Fault		<ol style="list-style-type: none"> 1. Detect the connection 2. Measure the resistance of sensor, if lower than 100Ω or higher than 500kΩ, please replace a new one.
P101	EVI Inlet Temp. Sensor Fault		
P102	EVI Outlet Temp. Sensor Fault		
P153	Coil Temp. Sensor Fault		
P181	Exhaust Temp. Sensor Fault		
P182	Exhaust Over Temp.	(Exhaust temp.) \geq C05 default 110	<ol style="list-style-type: none"> 1. Measure the resistance of sensor, if lower than 100Ω or higher than 500kΩ, please replace a new one. 2. Check the unit find if it has refrigerant leakage.
P191	Antifreeze Temp. Sensor Fault		<ol style="list-style-type: none"> 1. Detect the connection 2. Measure the resistance of sensor, if lower than 100Ω or higher than 500kΩ, please replace a new one.



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