



HiHeat Hot Water Heat Pump

HIGH TEMPERATURE UNITS

Installation & Instruction Manual

ATHP30

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Preface

Welcome to air source water heat pump. Your decision to purchase heat pump will reward you for many years. This is your assurance that you have purchased quality heat pump system available, one that is manufactured in a state-of-the-art facility and goes with innovation.



Necessary reading

Read these operating and installation instructions carefully and keep them safe. Should the equipment change hands, pass these instructions to the subsequent owner. Pass them to the trained contractors for servicing purposes.



Qualified only

Positioning, installation and commissioning must be carried out by trained personnel working in accordance with these operating and installation instructions.



Protection

Where children or persons with limited physical, sensory or mental capabilities are to be allowed to control this equipment ensure that this will only happen under supervision or after appropriate instructions by a person responsible for their safety. Children should be supervised to ensure that they do not play with the equipment.



For information

The pictures and drawings in this manual are for your information only. The manufacturer has the right to change or improve the product when it is needed, without prior notification to the users of this device.



Quality check at first receipt of this product

When the product is delivered to the users, please check whether there is any damage on the unit during transportation; If any please talk with the forwarder or the contractor.

If the heat pump unit can just be installed a while later, please keep it free from damage, rust or abrasion by following methods.

1. all the access like the water connections must be sealed correctly;
2. the unit must be free from sunshine, and placed under 45°C;
3. the unit must be free from heavy dust to avoid dirty on the evaporator;
4. the unit must be placed free from chaos to avoid accident;
5. please check the unit during stock.

Overall Information of the Heat Pump

2.1 Device description

The air source heat pump extracts heat from ambient air and transfers it to water. By circulating the water, the energy is used to warm the house efficiently. Through the usage of floor heating, the heat pump COP can be as high as 4.5.

In reverse, cooling is also available when it is needed.

Compared with oil boiler, gas boiler and electrical heater, heat pump is the best solution with high efficiency, safety and environment protect.

This high temperature air source heat pump uses advanced heating technology and intelligent control system to produce hot water at more than 65°C. So it can work with the floor heating pipe, the fan coil or the radiator, and replace the boiler directly.

In addition, the high temperature heat pump can be used to provide hot water for sanitary use, like kitchen, shower, etc.

2.2 Features of the high temperature heat pump

1. Save our planet---earth, by green technology

Heat pump transfers heat from air to the space for heating, so that there is no burning, no waste, no dirty gas, which maintains good environment for human and saves earth from waste.

2. Serve people by high efficiency and money saving

The heat pump is driven by electricity, and annually average efficiency can be higher than 4. By timer function, users can make use of the electric power at the low point of a day and save money for every family.

3. Good for life with safe running

To use heat pump for heating can avoid electrical shot and burning and keep people free from explosion or poisoning.

4. Easy operation

Heat pump is controlled and protected by micro-computer based controller, the desired water temperature is set according to real requirement. System protection program will guarantee the unit to be run at hard environment.

Overall information of the Heat Pump

2.3 Specification data

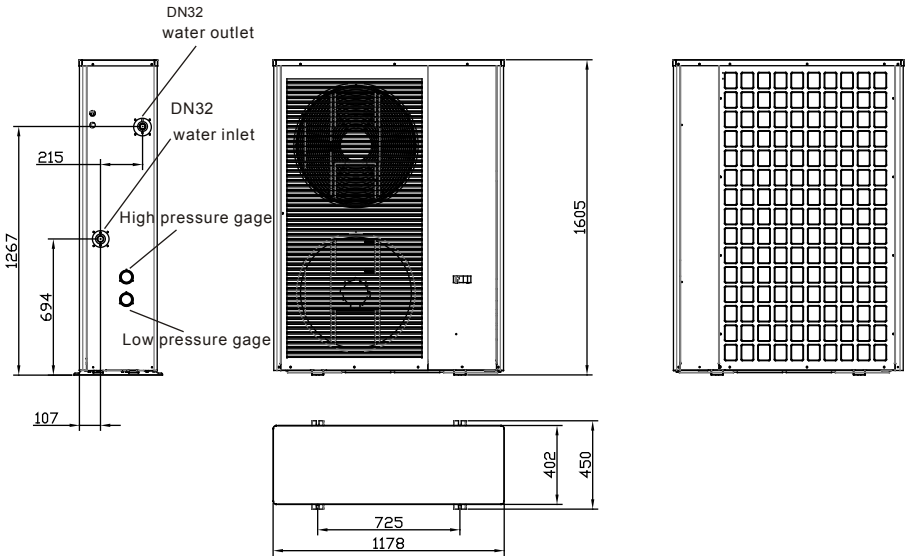
Unit	Model	ATHP30
Rated heating capacity	kW	19
Rated hot water capacity	L/h	326
Rated heating power input	kW	5.3
Rated heating current input	A	9.2
COP		3.58
Power supply		380-415V/3N ~ /50Hz
Compressor quantity	pcs	1
Compressor type		Scroll
Fan quantity		2
Fan power input	W	200×2
Fan rotate speed	RPM	800
Noise	dB(A)	58
Water pipe outlet/inlet		DN32/DN32
Unit dimension (L/W/H)	mm	See the drawing of the units
Net Weight	kg	see nameplate
Gross weight	kg	see package label

- Operating Conditions for Testing: Temperature of external dry/wetbulb: 20°C/15°C; temperature of water inlet: 15°C; temperature of water outlet: 65°C
- Due to product improvement, the machine model designation, parameters or performance may be subject to change without prior notice. The specific configuration shall be based on the name plate on the product.

Overall information of the heat pump

2.4 Heat pump dimension and view

Unit Models: ATHP30





Installation and Maintenance

3.1 Cautions and Warning




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

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

Mark Notes



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



Icon Notes




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

Installation and Maintenance

Warning




Installation	Meaning
 Professional installer is required.	The heat pump must be installed by qualified personals, to avoid improper installation which can lead to water leakage, electrical shock or fire.
 Earthing is required	Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.





Operation	Meaning
 PROHIBITION	DO NOT put fingers or others into the fans and evaporator of the unit, otherwise harm may be occurred.
 Shut off the power	When there is something wrong or strange smell, the power supply need to be shut off to stop the unit. Continueto run may cause electrical short or fire.

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

Installation and Maintenance

Attention

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

Operation	Meaning
 Check the installation basement	Please check the installation basement in a period (one month), to avoid any decline or damage on the basement, which may hurt people or damage the unit.
 Switch off the power	Please switch off the power for clean or maintenance.
 Prohibition	It is prohibited to use copper or iron as a fuse. The right fuse must be fixed by an electrician for the heat pump.
 Prohibition	It is prohibited to spray flammable gas to the heat pump, as it may cause fire.

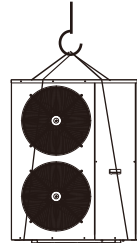
Installation and Maintenance

3.2 Transit

When the heat pump is transported please keep the unit stand up. The unit cannot be laid down, otherwise the inner parts of the device may be damaged.




When the unit needs to be hung up during installation, an 8-meter 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

Or please use a forklift, since there is a wood chassis as a package.

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

3.3 Installation occasions

- The unit can be installed on any place outdoors which can carry heavy machinery such as a terrace, house top, ground, and so on.
- The location must have good ventilation.
- The place is free from heat radiation and other fire flames.
- There must be no obstacles near the air inlet and outlet of the heat pump.
- There must be a water channel around the heat pump to drain the condensing water.
- A place which is free from strong air blowing.
- There must be enough space around the unit for maintenance.

3.4 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 house top. Make sure that the unit is placed horizontally.

Installation and Maintenance

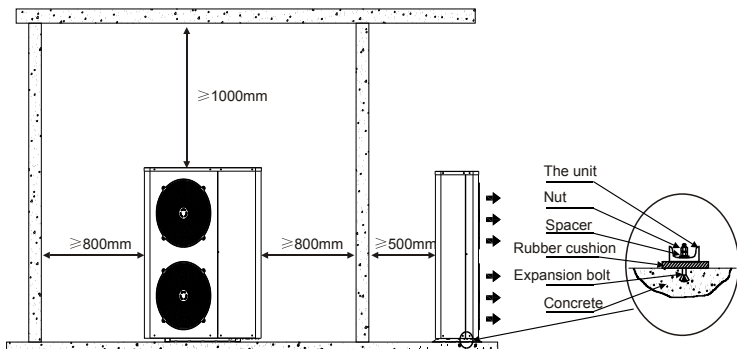
3.5 Waterloop connection

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

- Try to reduce the resistance to the water from the piping.
- The piping must be clear and free from dirty and blocks. Water leakage test must be carried out to ensure there is no water leaking. And then the insulation can be made.
- Attention that the pipe must be tested by pressure separately. DO NOT test it together with the heat pump.
- 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.
- 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.
- The connection between the heat pump and the construction is better to be flexible type, to avoid vibration transfer. The support to the water pipe must be separate, but not rely on the heat pump unit.
- Try to avoid air stayed inside of the water pipe, and there must be air vent on the top point of the water loop.
- There must be thermometer and pressure meter at the water inlet and outlet, for easy inspection during running.
- There must be drainage on the low points of the water system, and there is already drainage on the chassis of the heat pump. The water in the system must be drain out during winter if the heat pump is not running. And there must be air vent on the high point of the water system to drive air of the water. Drainage and air vent need not to be insulated, in order to maintain.

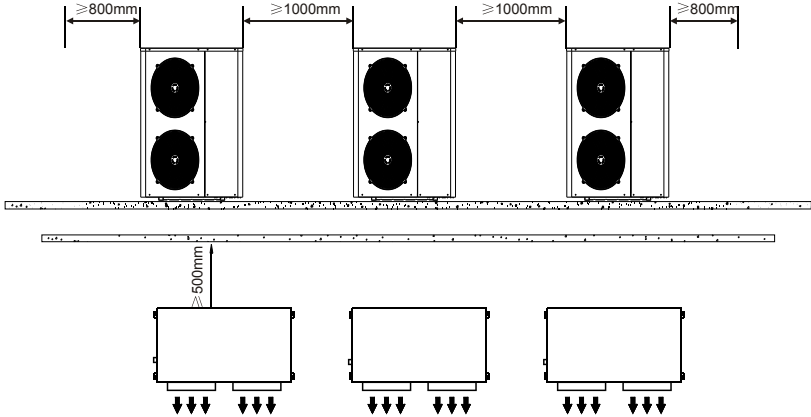
3.6 Location of the unit

Single unit (Picture 1)



Installation and Maintenance

Multi-units (Picture 2)



3.7 Power supply connection

- Open the front panel, and open the power supply access.
- 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.
- 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.
- If an additional auxiliary heater is needed 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.

3.8 Cable and switch

Attention:

- The unit should use independent power supply, Wiring required by Table 6.1, Power supply voltage must in line with rated voltage.
- Power supply circuit must be equipped with an All-pole disconnect device have at least 3mm contact opening distance.
- The wiring must be completed by professional technicians in accordance with circuit diagram.
- Power supply circuit must have earth wire, the earth wire of power should be connected with external earth wire safely. And the external earth wire must be in order.
- The creepage protection device must be settled in accordance with the relevant national technical standards for electronic equipment.
- The power wire and signal wire should be neatly arranged. High voltage wire and low voltage wire must be separated and free from any interference, and they must be free from any pipe and valves of the unit.
- When all the wiring is completed, the power can only be connected after a double check.

Power Specifications

Unit Model \ Items	Power Supply	Cable		Creepage Protector
ATHP30	380-415V/3N~/50Hz	3*2.5mm ²	2*2.5mm ²	30mA Less Than 0.1 SET

3.9 Trial running

Inspection before trial running

- Check the indoor unit, and make sure that the pipe connection is right and the relevant valves are open .
- 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.
- 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.
- 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 power on, review the indicator on the controller to see if there is any failure indication. The gas gauge can be connected to the check valve to see the high pressure(or low pressure) of the system during trial running.
- Start the heat pump . Check whether the water pump is running, if it runs normally there will be 0.2 MPa on the water pressure meter.
- 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.
- Then check whether the power input and running current is in line with the manual. If not please stop and check.
- 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.
- The parameters of the controller are set by the factory, it is not allowed to change then by user himself.

Installation and Maintenance

3.10 Maintenance

- Check the water supply and air vent frequently, to avoid lack of water or air in the water loop.
- Clean the water filter in a certain period to keep good water quality. Lack of water and dirty water can damage the unit. The heat pump will start the water pump per 72 hours when it is not running, to avoid freezing.
- Keep the unit in a place which is dry and clean, and has good ventilation. Clean the heat exchanger in 1 or 2 months and keep good heat exchange rate and save energy.
- Check each part of the unit and the pressure of the system. Replace the failure part if there is any, and recharge the refrigerant if it is needed.
- Check the power supply and the electrical system, make sure the electrical components are good, the wiring is well. If there is any part failed with wrong action or smell, please replace in time.
- If the heat pump is not used for a long time, please drain out all the water in the unit and seal the unit to keep it good. Please drain the water from the lowest point of the heat exchanger to avoid freezing in winter. Water recharge and full inspection on the heat pump is needed before it is restarted.
- Please drain out the water in the super heater of the heat pump unit in winter, when the super heater is not used, in case it is heat pump with super heater.
- The water loop of the heat pump MUST be protected from freezing in winter time. Please pay attention to below suggestions. Nonobservance on below suggestion will invalidate the warranty for the heat pump.
- Please do not shut off the power supply to the heat pump in winter. When the air temperature is below 0 °C, if the inlet water temperature is above 2 °C and below 4 °C, the water pump will start for freezing protect, if the inlet water is lower than 2 °C, the heat pump will run for heating.

Operation and Use

4.1. Main interface display and function

(1) Electricity Interface



Fig.1 Electricity interface

(2) Main interface of power-off interface

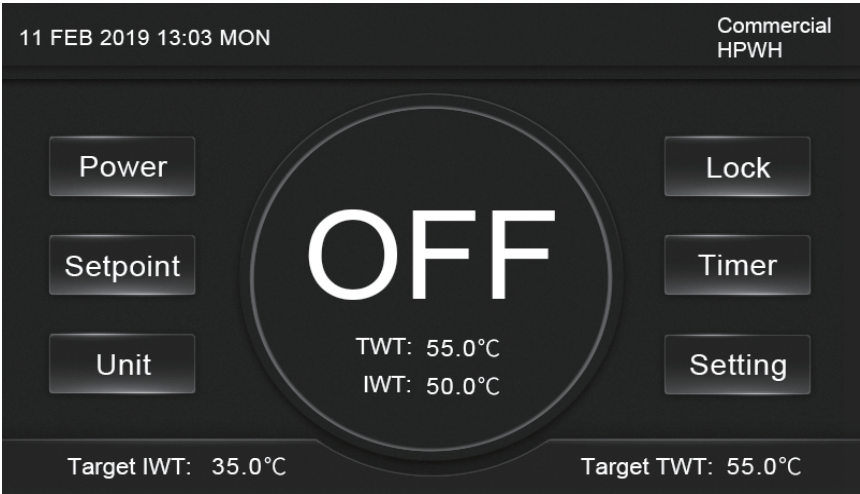


Fig.2 Power-off interface

Operation and Use

(3) Main interface of power-on

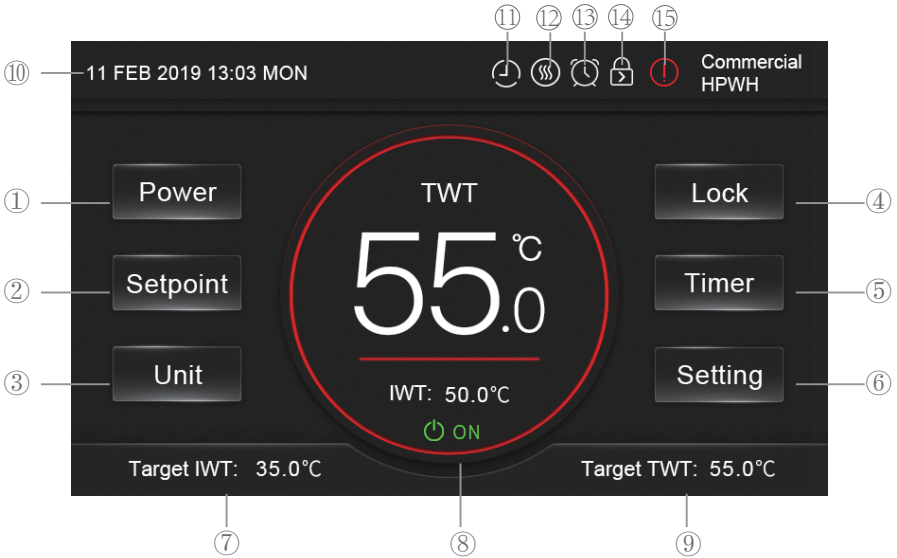




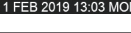





Fig.3 Power-on interface

Button function

No.	Name	Function
①	Power	Press to switch Control 4 units with communication to fully open and close
②	Setpoint	Press to set the target temperature
③	Unit	Press to Enter the unit state of 4 circulating machines
④	Lock	Press to lock or unlock screen
⑤	Timer	Press to Enter the timing setting interface (Power Timer, Return Water Valve Timer,Temp Timer)
⑥	Setting	Press to enter function setting interface (Parameter,Failure, Status Time,Electric Heating,Temp Curve)

Operation and Use

Running status icons description

No.	Icon	Description
⑦		Set target return water temperature
⑧	Display circle	Indicating the operating status: red-heating mode; grey-power-off mode.
⑨		Set target water tank temperature
⑩		Indicating the date and time
⑪		Indicating the Temp Timer function is activated
⑫		Indicating that the electric auxiliary heating mode is activated
⑬		Indicating that the power timer mode is activated
⑭		Indicating the lock screen status
⑮		Failure alarm icon. Indicating that while the failure occurs, the icon blinks; after the failure is removed, the icon is no longer displayed

4.2 Instructions for operation of wire controller

(1) Power on/ off

In the main interface, press “Power” button ① to power on/ off the unit.



(2) Target temperature setting

To adjust the target temperature value, press the "set point" button ② to enter the corresponding target temperature setting interface, click different buttons to set different temperatures respectively, and then input the required parameters according to the effective range displayed at the bottom of the screen.

(3) Unit selection

In the main interface, press “Unit ” button ③ Enter the unit status check of 4 circulating machines.

(4) Lock screen function

In the main interface, press “Lock” button to activate the lock screen function, status icon  ⑭ will light; press “Lock” button again and enter the password 22 to unlock the screen and the status icon  will not be displayed.

(5) Timer setting

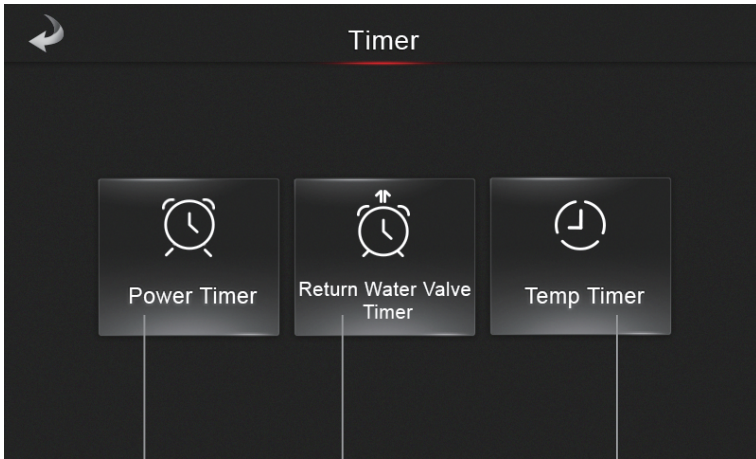


Fig. 4 Timer interface

Button function

No.	Name	Function
①⑥	Power Timer	Press to jump to the timing switch setting interface
①⑦	Return Water Valve Timer	Press to jump to the return valve timing setting interface
①⑧	Temp Timer	Press to jump to the time-sharing temperature control setting interface

● Power Timer

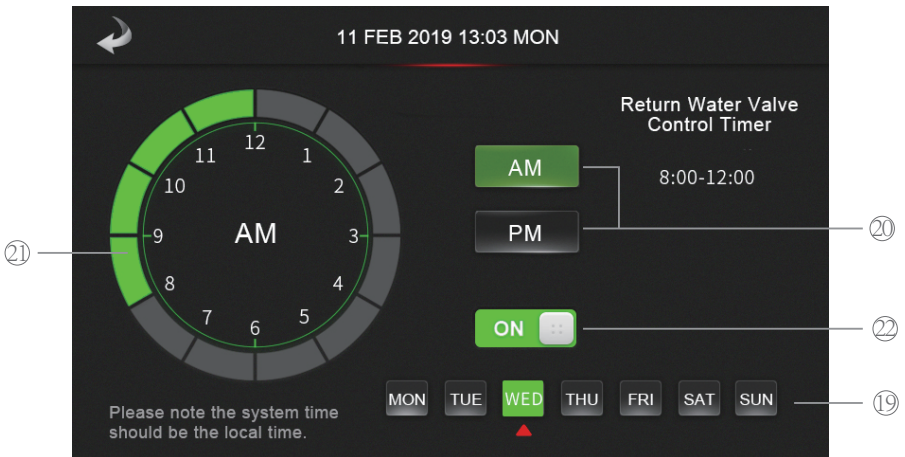


Fig. 5 Power timer interface

Operation and Use

Power Timer function allows you to set the opening time of the unit for each day of the week, while this function is enable, the main interface displays “🕒”.

To enable Power Timer function, firstly press Timer button ⑤ in the main interface, secondly press Power Timer button ⑯ (Fig.4), it jumps to Power timer interface (Fig.5), press ⑰ to select the day of the week, press ⑱ to select AM or PM, then press ⑲ to select the time, and lastly press ⑳ to enable or turn off the setting.

Note: green: enable; grey: not enable.

- Return Water Valve Timer

The timing interface of return valve is similar to that of time switch machine.

- Temp Timer

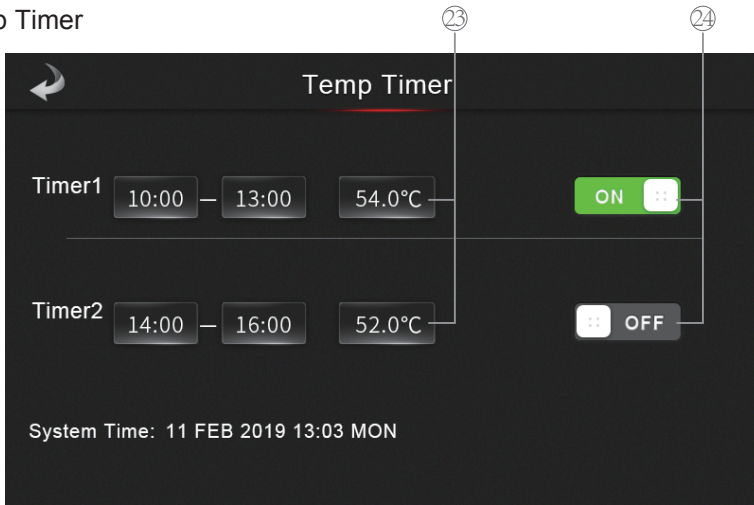


Fig. 6 Temp timer interface

Temp Timer function means time-sharing temperature control, which is two segments of staggered peak temperature control, and the target temperature of two segments of different time periods can be set according to different modes. When the system time enters the staggered peak time and the time-sharing temperature control function is enabled, the main interface displays “🕒”.

To enable Temp Timer function, firstly press Timer button ⑤ in the main interface (Fig.4), secondly press Temp Timer button ⑱ it jumps to Temp timer interface (Fig.6), then enter the starting, ending time and target temperature setpoint value ⑲, and lastly press ⑳ to enable or turn off the setting.

Note: green: enable; grey: not enable.

Operation and Use

(6) Setting function

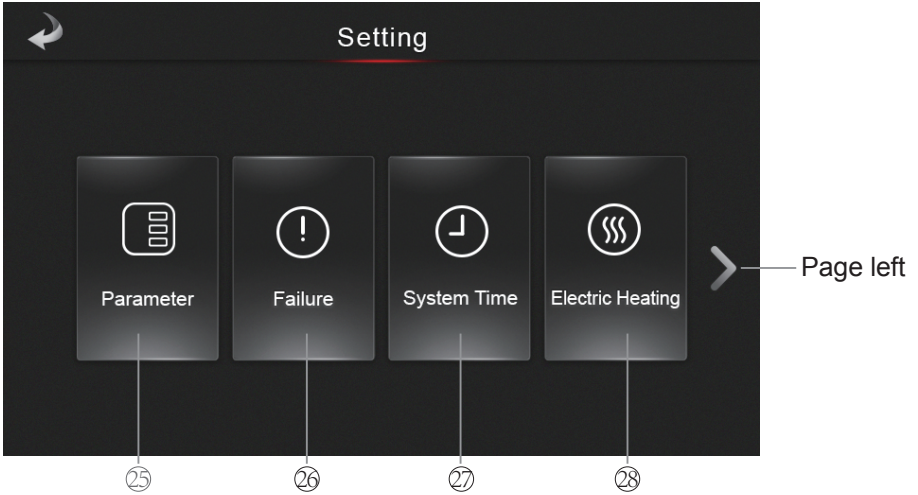


Fig. 7-1 Setting interface

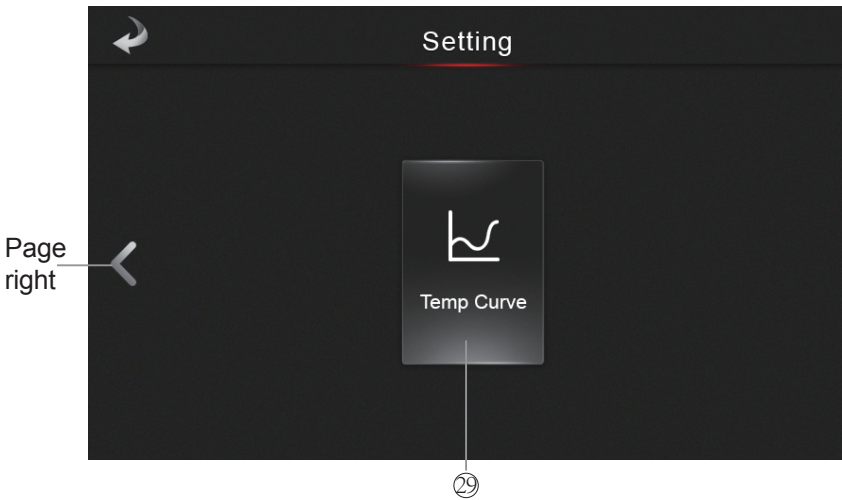


Fig. 7-2 Setting interface

Operation and Use

Button function

No.	Name	Function
25	Parameter	Press and enter password “22” to inquire installer parameter
26	Failure	Press to inquire failure record
27	Time	Press to jump to the Time Setting interface and adjust system time parameter
28	Electric Heating	Press to turn on/off the electric heating mode
29	Temp Curve	Press to inquire the temperature curve

- **Setting interface**
In the main interface, press Setting button ⑥ to jump to Setting interface (Fig.7).
- **Parameter inquiry function**
Parameter inquiry function is only applicable to after-sales maintenance.
- **Failure record inquiry function**
While failure occurs, the icon ① is flashing in the main interface. In the Setting interface (Fig.7), press Failure button ⑫ to jump to Failure Record interface for inquiring the current failure records. after the maintenance is done, press **Clear** to delete all the history failure records. Ordinary solution see 5.3.
- **System time setting**
In the Setting interface (Fig.7), press Time button ⑰ to jump to Time Setting interface (Fig.8), click on the input field and enter time digital, press **Save** to save the settings.

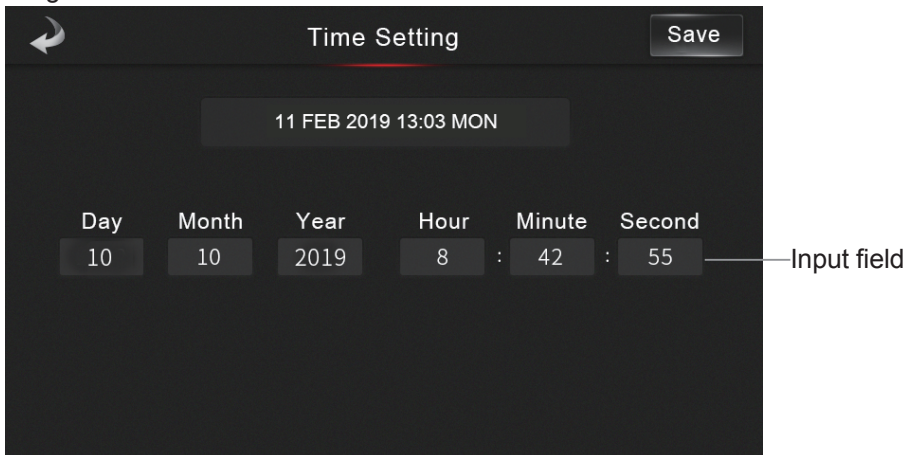


Fig.8 Time Setting interface

Operation and Use

- Electric Heating function

In the Setting interface (Fig.7), while the button 28 displays “OFF Electric Heating”, firstly make sure the unit is operated in heating mode, then press Electric Heating button 28 to jump to Electric Heating interface (Fig.9), click the ON button to turn on the electric auxiliary heating mode; while the unit is in running in electric auxiliary heating mode, turn off the electric heating function by the same operation steps.

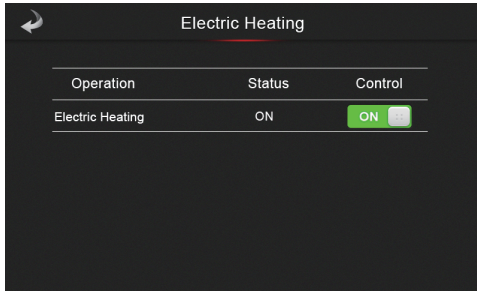


Fig.9 Electric Heating interface

Note: Electric auxiliary heating is only available when this function is enable and in heating mode.

- Temp Curve inquiry function

In the Setting interface (Fig.7), press Parameter button 29 to view the water outlet temperature curve.

- This curve function records the water inlet temperature and water outlet temperature;
- Temperature data is collected every 5 minutes and the 12 sets of temperature data are saved every hour. Timekeeping is made from the latest data saving, if the power is disrupted when the time is less than 1 hour (12 sets), the data during such period will not be saved.
- Only curve for electricity status is recorded, and that for outage status will not be saved;
- The value of the abscissa indicates the time from the point on the curve to the current time point. The leftmost point on the first page (0 on the abscissa) is the latest temperature record;
- Temperature curve record is provided with power off memory function

In case of disturbed curve recording and display, after the next power on, the wire controller will automatically clear the history curve record and the curve recording function will restore to a normal state.

Operation and Use

4.3 Electronic control failure code and troubleshooting table

Failure code and troubleshooting table

Protection/failure	Codes	Causes	Removal methods
Communication Fault	E08	Abnormal communication between wire controller and the main board	Inspect whether the wire controller, the main board and the connection thereof are reliable
Controller Main Board Not Match	E084	The wire contrware isnot match the mainboard software	Check the wire control software number and the mainboard software number
Communication Fault (Speed Module)	E081	Communication of the speed regulation module 1 with main board is abnormal	"Check the speed regulation module 1 and the main board and if their connections are normal and reliable."
Syst1: High Pressure Prot.	E11	The high-voltage switch of the system is disconnected	Inspect System 1 voltage switch and refrigerating circuit for any failure
Syst2: High Pressure Prot.	E21	The high-voltage switch of the system is disconnected	Inspect System 2 voltage switch and refrigerating circuit for any failure
Syst1: Low Pressure Prot.	E12	The low-voltage switch of the system is disconnected	Inspect System 1 voltage switch and refrigerating circuit for any failure
Syst2: Low Pressure Prot.	E22	The low-voltage switch of the system is disconnected	Inspect System 2 voltage switch and refrigerating circuit for any failure
Water(Out) Low Temp Prot.	E071	Excessively low water outlet temperature	Check the outlet water temperature
Electric Heater Overheating.	E04	Electric heating overheat protection switch is disconnected	Inspect whether the electric heating is under operation condition of over 150 C. for a long time
Level 1 Winter Antifreezing Prot.	E19	Excessively low environment temperature	Check the ambient temp value
Level 2 Winter Antifreezing Prot.	E29	Excessively low environment temperature	Check the ambient temp value
Syst 1: Antifreezing Prot.	E171	The water flow of the system is insufficient	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage
Syst 2: Antifreezing Prot.	E271	The water flow of the system is insufficient	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage
Heating-Water(Out) High Temp Prot.	E065	Excessively high water outlet temperature	Check the outlet water temperature
TP Low A.T. Prot.	TP	Excessively low environment temperature	Check the ambient temp value
Communication Fault (Speed Module2)	E082	Communication of the speed regulation module 2 with main board is abnormal	Check the speed regulation module 2 and the main board and if their connections are normal and reliable.
Syst1: Exhaust Air High Temp Prot.	P182	The system compressor is overloaded	Inspect whether the operation of System 1 compressor is normal
Syst2: Exhaust Air High Temp Prot.	P282	The system compressor is overloaded	Inspect whether the operation of System 2 compressor is normal
Syst2: Exhaust Air Temp Sensor Fault	P281	Open circuit or short circuit of the temperature sensor	Inspect and replace System 2 exhaust temperature sensor
Syst2: Low Pressure Sensor Fault	PP21	Open circuit or short circuit of the sensor	Inspect and replace System 2 low-voltage sensor
Water Tank Temp Sensor Fault	P03	Open circuit or short circuit of the temperature sensor	Inspect and replace water tank temperature sensor
Syst2: EVI(In) Temp Sensor Fault	P201	Open circuit or short circuit of the temperature sensor	Inspect and replace System 2 enthalpy inlet temperature sensor
Syst2: EVI(Out) Temp Sensor Fault	P202	Open circuit or short circuit of the temperature sensor	Inspect and replace System 2 enthalpy outlet temperature sensor
Syst 1: High Pressure Prot. 3+	E11	The high-voltage switch of the system is disconnected	Inspect System 1 voltage switch and refrigerating circuit for any failure
Syst 2: High Pressure Prot. 3+	E21	The low-voltage switch of the system is disconnected	Inspect System 2 voltage switch and refrigerating circuit for any failure
Syst1: Low Pressure Prot. 3+	E12	The low-voltage switch of the system is disconnected	Inspect System 1 voltage switch and refrigerating circuit for any failure
Syst2: Low Pressure Prot. 3+	E22	The low-voltage switch of the system is disconnected	Inspect System 2 voltage switch and refrigerating circuit for any failure

Operation and Use

Protection/fault	Codes	Causes	Removal methods
Electric Heater Overheating 3+	E04	Electric heating overheat protection switch is disconnected	Inspect whether the electric heating is under operation condition of over 150 °C for a long time
Syst 1: Antifreezing Prot. 3+	E171	The water flow of the system is insufficient	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage
Syst 2: Antifreezing Prot. 3+	E271	The water flow of the system is insufficient	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage
Heating Water(Out) High Temp Prot. 3+	E065	Excessively high water outlet temperature	Check the outlet water temperature Inspect whether the operation of System 1
Syst1: Exhaust Air High Temp Prot. 3+	P182	The system compressor is overloaded	Compressor is normal Inspect whether the operation of System 2
Syst2: Exhaust Air High Temp Prot. 3+	P282	The system compressor is overloaded	Compressor is normal
Water(Out) Low Temp Prot. 3+	E071	Excessively low water outlet temperature	Check the outlet water temperature
Water(In) Sensor Fault	P01	The temperature sensor is open or short circuited	Check and replace inlet water temperature sensor
Water(Out) Sensor Fault	P02	The temperature sensor is open or short circuited	Check and replace outlet water temperature sensor
Syst 1: Coil Sensor Fault	P150	The temperature sensor is open or short circuited	Check and replace the system 1 coil 1 temperature sensor
A.T. Sensor Fault	P04	The temperature sensor is open or short circuited	Check and replace the ambient temperature sensor
Syst1: Suction Temp Sensor Fault	P17	The temperature sensor is open or short circuited	Check and replace the system 1 return air temperature sensor
Syst1: Exhaust Air Temp Sensor Fault	P181	The temperature sensor is open or short circuited	Check and replace the system 1 exhaust temperature sensor
Water Level Sensor Fault	E036	Open circuit or short circuit of the water level sensor	Inspect and replace water level sensor
Syst1: Low Pressure Sensor Fault	PP11	The sensor is open or short circuited	Check and replace the system 1 low pressure sensor
Syst 2: Return Air Temp Sensor Fault	P27	The temperature sensor is open or short circuited	Check and replace the system 2 return air temperature sensor
Syst 2: Antifreezing TempSensor Fault	P291	Temperature sensor fault	Check if the temperature sensor is working properly
Syst1: High Pressure Sensor Fault	PP12	The sensor is open or short circuited	Check and replace the system 1 high pressure sensor
Syst2: High Pressure Sensor Fault	PP22	The sensor is open or short circuited	Check and replace the system 2 high pressure sensor
Syst 1: EVI (In) Temp Sensor Fault..	P101	The temperature sensor is open or short circuited	Check and replace Syst 1: EVI (In) temp. sensor
Syst 1: EVI (Out) Temp Sensor Fault.	P201	The temperature sensor is open or short circuited	Check and replace Syst 1: EVI (Out) temperature sensor
Syst 1: Antifreezing Temp Sensor 1 Fault.	P19	The temperature sensor is open or short circuited	Check and replace Syst 1: Antifreezing temperature sensor
Syst 2: Coil Temp Sensor Fault	P25	The temperature sensor is open or short circuited	Check and replace Syst 2: Coil temperature sensor
Make-up Water Temp. Sensor Fault.	P036	The temperature sensor is open or short circuited	Check and replace Make-up Water temperature sensor
Outlet Water Temp. Sensor Fault.	P037	The temperature sensor is open or short circuited	Check and replace Outlet Water temperature sensor
End Side Return Water Temp. Sensor Fault.	P038	The temperature sensor is open or short circuited	Check and replace End Side Return temperature sensor
DC Fan 1 Fault.	E012	DC Fan 1 fault	Check if fan 1 is running normally
DC Fan 2 Fault.	E022	DC Fan 2 fault	Check if fan 2 is running normally

Operation and Use

Protection/fault	Codes	Causes	Removal methods
Syst 1: Comp. Overcurrent Prot.	E101	System 1 compressor running current is too large	Check if the current is too high
Syst 2: Comp. Overcurrent Prot.	E201	System 2 compressor running current is too large	Check if the current is too high
Syst 1: Comp. Overcurrent Prot. 3+	E101	System 1 compressor running current is too large	Check if the current is too high
Syst 2: Comp. Overcurrent Prot. 3+	E201	System 2 compressor running current is too large	Check if the current is too high
Water Flow Switch Prot.	E03	No water/little water in water system	Check the pipe water flow and water pump
Water Flow Switch Prot. 3+	E03	No water/little water in water system	Check the pipe water flow and water pump
Fan 1 Overcurrent Speed Limit.	E008	Blocked rotation of DC fan	Check whether the DC fan runs normally
Fan 2 Overcurrent Speed Limit.	E009	Blocked rotation of DC fan	Check whether the DC fan runs normally
Syst 1: Incrustation Alarm.	E502	Scaling of casing 1	Cleaning casing
Syst 2: Incrustation Alarm.	E503	Scaling of casing 2	Cleaning casing
AC Fan Overload Prot.	E00A	The AC fan is locked	Check whether the AC fan runs normally
AC Fan Overload Prot. 3+	E00A	The AC fan is locked	Check whether the AC fan runs normally
Master & Slave Communication Fault	E085	Abnormal communication between master and slave	Check whether the master and slave machines and their connections are normal and reliable
Abnormal Poweroff Alarm	EE1	Loss of power when power on	Automatic recovery after 3 minutes of power on

Trouble shooting and extra information

5.1 Electronic control fault table

Can be judged according to the remote controller failure code and troubleshooting

Protect/fault	Fault display	Reason	Elimination methods
Standby	Non		
Normal boot	Non		
Inlet TempSensor Fault	P01	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Outlet TempSensor Fault	P02	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Water Tank TempSensor	P03	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
AT SensorFault	P04	The ambient temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Coil temp1 Sensor	P153	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Coil temp2 Sensor	P154	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Suction temp Sensor	P17	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Antifreeze Sensor1(US)	P191	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Antifreeze Sensor2(US)	P193	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Antifreeze Sensor4(HSS)	P195	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Inlet Sensor(EVI)	P101	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Outlet Sensor(EVI)	P102	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Exhaust temp Sensor	P181	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Pressure Sensor fault	PP11	The system 1 pressure Sensor is broken or short circuit	Check or change the pressure Sensor or pressure
Syst2:Coil temp Sensor	P25	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst2:Suction temp Sensor	P27	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst2:Antifreeze Sensor1(US)	P291	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst2:Antifreeze Sensor2(US)	P293	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst2:Antifreeze Sensor1(HSS)	P292	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst2:Antifreeze Sensor2(HSS)	P296	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst2:Exhaust TempSensor	P281	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst2:Pressure Sensor fault	PP21	The system 2 pressure Sensor is broken or short circuit	Check or change the pressure Sensor or pressure
Syst2:Inlet Sensor(EVI)	P201	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst2:Outlet Sensor(EVI)	P202	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Syst1:Exhaust Overtemp	P182	The compressor is overload	Check whether the system of the compressor running normally
Syst2:Exhaust Overtemp	P282	The compressor is overload	Check whether the system of the compressor running normally
Low ATProtection	TP	The ambient temp. is low	Check the ambient temp value
Fan Motor1 Fault	F031	1. Motor is in locked-rotor state 2. The wire connection between DC-fan motor module and fan motor is in bad contact	1. Change a new fan motor 2. Check the wire connection and make sure they are in good contact
Fan Motor2 Fault	F032	1. Motor is in locked-rotor state 2. The wire connection between DC-fan motor module and fan motor is in bad contact	1. Change a new fan motor 2. Check the wire connection and make sure they are in good contact
Communication Fault (speed control module)	E081	Speed control module and main board communication fail	Check the communication connection

Trouble shooting and extra information

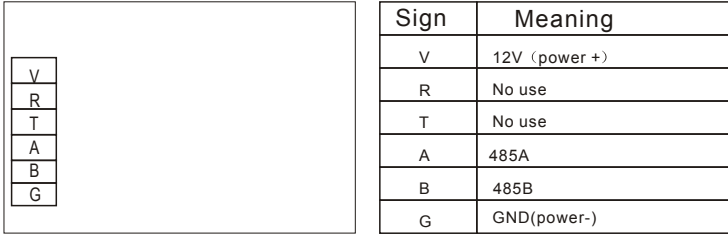
Protect/fault	Fault display	Reason	Elimination methods
Communication Fault	E08	Communication failure between wire controller and mainboard	Check the wire connection between remote wire controller and main board
Syst1:Comp Overcurrent	E101	The compressor is overload	Check whether the system of the compressor running normally
Syst2:Comp Overcurrent	E201	The compressor is overload	Check whether the system of the compressor running normally
Syst1: HP Protection	E11	The high-pressure switch is broken	Check the pressure switch and cold circuit
Syst2: HP Protection	E21	The high-pressure switch is broken	Check the pressure switch and cold circuit
Syst1: LP Protection	E12	The high-pressure switch is broken	Check the pressure switch and cold circuit
Syst2: LP Protection	E22	The high-pressure switch is broken	Check the pressure switch and cold circuit
Flow Switch Protection	E032	No water/little water in water system	Check the pipe water flow and water pump
Aux Superheat Protection	E04	The electric-heater protection switch is broken	Check to see whether the electric heater has been running under the temperature over 150°C for a long time
Prim Anti-freezing Prot	E19	The ambient temp. is low	Check the ambient temp value
Secondary Anti-freezing Prot	E29	The ambient temp. is low	Check the ambient temp value
Syst1:Antifreeze(US)	E171	Use side water system temp. is low	1. Check the US water temp. or change the temp. Sensor 2. Check the pipe water flow and whether water system is jammed or not
Syst2:Antifreeze(US)	E271	Use side water system temp. is low	1. Check the US water temp. or change the temp. Sensor 2. Check the pipe water flow and whether water system is jammed or not
Syst1:Antifreeze(HSS)	E172	Heat side water system temp. is low	1. Check the HSS water temp. or change the temp. Sensor 2. Check the pipe water flow and whether water system is jammed or not
Syst2:Antifreeze(HSS)	E272	Heat side water system temp. is low	1. Check the HSS water temp. or change the temp. Sensor 2. Check the pipe water flow and whether water system is jammed or not
Fan Motor1 Overload Prot	E103	The fan is overload	Check whether the system of the fan running normally
Fan Motor2 Overload Prot	E203	The fan is overload	Check whether the system of the fan running normally
Excess Water Temp Diff	E06	Water flow is not enough and low pressure difference	Check the pipe water flow and whether water system is jammed or not
System1 Scaling warning	E051	Water heat exchanger 1 have the water scale	Please clean the water heat exchanger
System2 Scaling warning	E052	Water heat exchanger 2 have the water scale	Please clean the water heat exchanger
Water Heating Overheat Protect	E073	Water flow is not enough and low pressure difference	Check the pipe water flow and whether water system is jammed or not
Syst1:High pressure Sensor fault	PP12	The system 1 high pressure Sensor is broken or short circuit	Check or change the pressure Sensor or pressure
Syst2:High pressure Sensor fault	PP22	The system 2 high pressure Sensor is broken or short circuit	Check or change the pressure Sensor or pressure

5.2 Parameter list

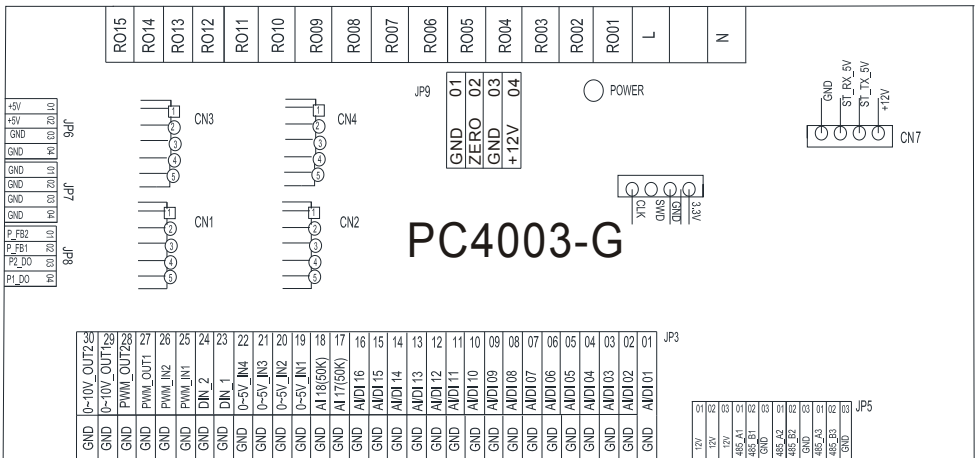
Meaning	Default	Remarks
Cooling target temperature set point	12°C	Adjustable
Heating the target temperature set point	50°C	Adjustable
Hot water target temperature set point	55°C	Adjustable

The main controller terminals

6.1 Wire control interface diagram and definition



6.2 Controller interface diagram and definition



The main controller terminals

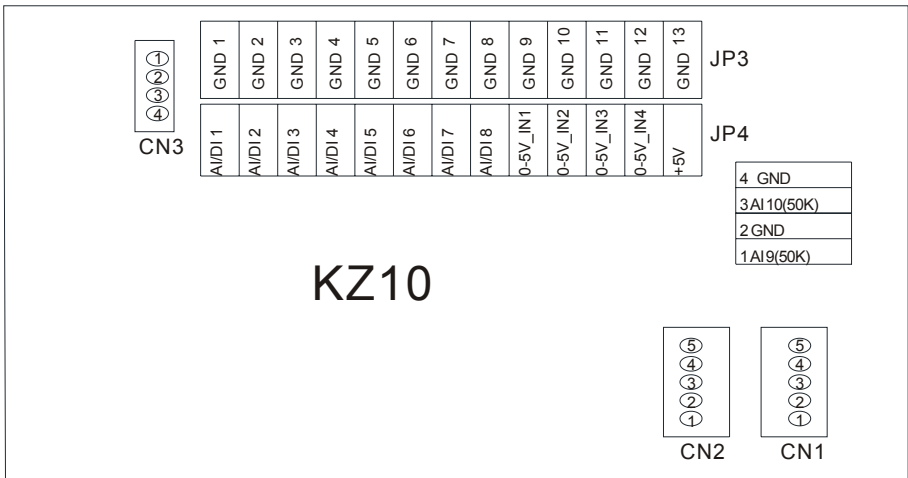
Main board of the input and output interface instructions below

Number	Sign	Meaning
01	AI/DI01	Water input temperature
02	AI/DI02	Water output temperature
03	AI/DI03	System 1 coil temperature
04	AI/DI04	Ambient temperature
05	AI/DI05	System 1 suction temperature
06	AI/DI06	System1 Antifreeze 1 Temperature/ System 1 Coil temperature2
07	AI/DI07	System1 Antifreeze 2 Temperature
08	AI/DI08	Water tank Temperature
09	AI/DI09	System1 Antifreeze 4 Temperature
10	AI/DI10	Temperature of the EVI inlet of system 1
11	AI/DI11	Temperature of the EVI outlet of system 1
12	AI/DI12	The high-pressure switch 1
13	AI/DI13	The low-pressure switch 1
14	AI/DI14	Water flow switch protection
15	AI/DI15	Emergency switch output
16	AI/DI16	Mode switch
17	AI17 (50K)	Overload switch of electric heater
18	AI18 (50k)	System Exhaust temperature 1
19	0~5V_IN1	System 1 compressor current detection
20	0~5V_IN2	Reserved
21	0~5V_IN3	pressure sensor 1
22	0~5V_IN4	Reserved
23	DIN_1	Air conditioning switch
24	DIN_2	Hot water switch
25	PWM_IN1	System flow meter (Reserved)
26	PWM_IN2	Reserved
27	PWM_OUT1	AC Fan control output
28	PWM_OUT2	Reserved
29	0~10V_OUT1	Reserved
30	0~10V_OUT2	Reserved
31	CN1	Electronic expansion valve 1
32	CN2	Electronic expansion valve of EVI in system 1
33	CN3	Reserved
34	CN4	Reserved
35	CN7	Communication ports on the expansion board
36	485_A1	Wire control communication port
37	485_B1	
38	485_A2	Centralized control communication port
39	485_B2	
40	485_A3	DTU module
41	485_B3	
44	RO13	Reserved

The main controller terminals

45	RO12	Reserved
46	RO11	Electromagnetic three-way valve 2
47	RO10	Electromagnetic three-way valve 1
48	RO09	Hot water pump
49	RO08	Alarm output
50	RO07	AUX superheat
51	RO06	4-way valve
52	RO05	Water pump
53	RO04	Fan 2 /Fan low speed
54	RO03	Fan 1 /Fan high speed
55	RO02	Compressor 2
56	RO01	Compressor 1

6.3 Interface drawing and definition of the extended module



The description of the input and output interface of the extended module is as follows

AI/DI01	System 2 fan coil temperature	AI 10(50K)	Reserved
AI/DI02	System 2 suction temperature	GND	Ground
AI/DI03	System2 Antifreeze 1 Temperature	AI 9(50K)	System 2 Exhaust temperature
AI/DI04	System2 Antifreeze 2 Temperature	CN1	Electronic expansion valve A
AI/DI05	System2 Antifreeze 3 Temperature (Temperature of the EVI inlet of system 2)	CN2	Electronic expansion valve of EVI in system 2
AI/DI06	System2 Antifreeze 4 Temperature (Temperature of the EVI outlet of system 2)	CN3	Communication port
AI/DI07	System 2 the high-pressureswitch	5V	+5V
AI/DI08	System 2 the low-pressureswitch		
0-5V_IN1	System 2 compressor current detection		
0-5V_IN2	System 2 pressure sensor		
0-5V_IN3	Reserved		
0-5V_IN4	Reserved		

Appendix

7.1 Caution & Warning

- 7.1.1 The unit can only be repaired by qualified installer centre personnel or an authorised dealer. (for Europe market) 8.
- 7.1.2 This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. (for Europe market)
Children should be supervised to ensure that they do not play with the appliance.
- 7.1.3 Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.
- 7.1.4 If the supply cord is damaged, it must be replaced by the manufacturer or our service agent or similarly qualified person in order to avoid a hazard.
- 7.1.5 Directive 2002/96/EC (WEEE):
The symbol depicting a crossed-out waste bin that is underneath the appliance indicates that this product, at the end of its useful life, must be handled separately from domestic waste, must be taken to a recycling centre for electric and electronic devices or handed back to the dealer when purchasing an equivalent appliance.
- 7.1.6 Directive 2002/95/EC (RoHs): This product is compliant with directive 2002/95/EC (RoHs) concerning restrictions for the use of harmful substances in electric and electronic devices.
- 7.1.7 The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire can occur.
- 7.1.8 Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire.
- 7.1.9 The heat pump located inside the unit is equipped with an over-load protection system. It does not allow for the unit to start for at least 3 minutes from a previous stoppage.
- 7.1.10 The unit can only be repaired by the qualified personnel of an installer center or an authorized dealer. (for North America market)
- 7.1.12 Installation must be performed in accordance with the NEC/CEC by authorized person only. (for North America market)
- 7.1.13 USE SUPPLY WIRES SUITABLE FOR 75°C.
- 7.1.14 Caution: Single wall heat exchanger, not suitable for potable water connection.

Appendix

7.2 Cables specification

7.2.1 Single phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	2×1.5mm ²	1.5mm ²	20A	30mA less than 0.1 sec	n×0.5mm ²
10~16A	2×2.5mm ²	2.5mm ²	32A	30mA less than 0.1 sec	
16~25A	2×4mm ²	4mm ²	40A	30mA less than 0.1 sec	
25~32A	2×6mm ²	6mm ²	40A	30mA less than 0.1 sec	
32~40A	2×10mm ²	10mm ²	63A	30mA less than 0.1 sec	
40~63A	2×16mm ²	16mm ²	80A	30mA less than 0.1 sec	
63~75A	2×25mm ²	25mm ²	100A	30mA less than 0.1 sec	
75~101A	2×25mm ²	25mm ²	125A	30mA less than 0.1 sec	
101~123A	2×35mm ²	35mm ²	160A	30mA less than 0.1 sec	
123~148A	2×50mm ²	50mm ²	225A	30mA less than 0.1 sec	
148~186A	2×70mm ²	70mm ²	250A	30mA less than 0.1 sec	
186~224A	2×95mm ²	95mm ²	280A	30mA less than 0.1 sec	

7.2.2 Three phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	3×1.5mm ²	1.5mm ²	20A	30mA less than 0.1 sec	n×0.5mm ²
10~16A	3×2.5mm ²	2.5mm ²	32A	30mA less than 0.1 sec	
16~25A	3×4mm ²	4mm ²	40A	30mA less than 0.1 sec	
25~32A	3×6mm ²	6mm ²	40A	30mA less than 0.1 sec	
32~40A	3×10mm ²	10mm ²	63A	30mA less than 0.1 sec	
40~63A	3×16mm ²	16mm ²	80A	30mA less than 0.1 sec	
63~75A	3×25mm ²	25mm ²	100A	30mA less than 0.1 sec	
75~101A	3×25mm ²	25mm ²	125A	30mA less than 0.1 sec	
101~123A	3×35mm ²	35mm ²	160A	30mA less than 0.1 sec	
123~148A	3×50mm ²	50mm ²	225A	30mA less than 0.1 sec	
148~186A	3×70mm ²	70mm ²	250A	30mA less than 0.1 sec	
186~224A	3×95mm ²	95mm ²	280A	30mA less than 0.1 sec	

When the unit will be installed at outdoor, please use the cable which can against UV.



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