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# Installation & Operation Manual



**Model: HU-3K/6L HU-9K/6L**

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# 1 Unit Information

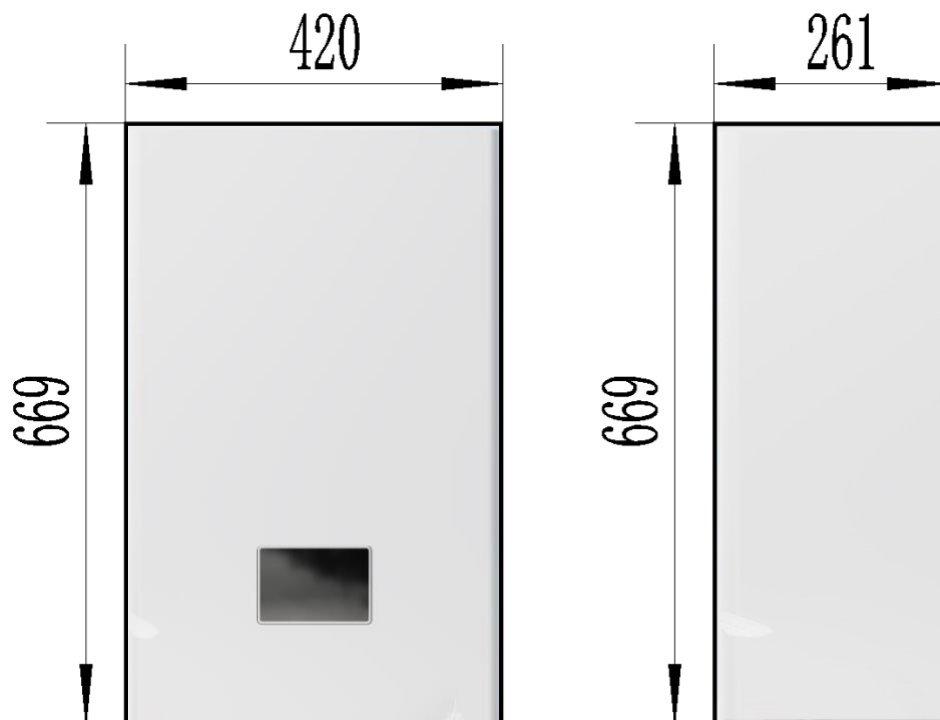
## 1.1 Appearances



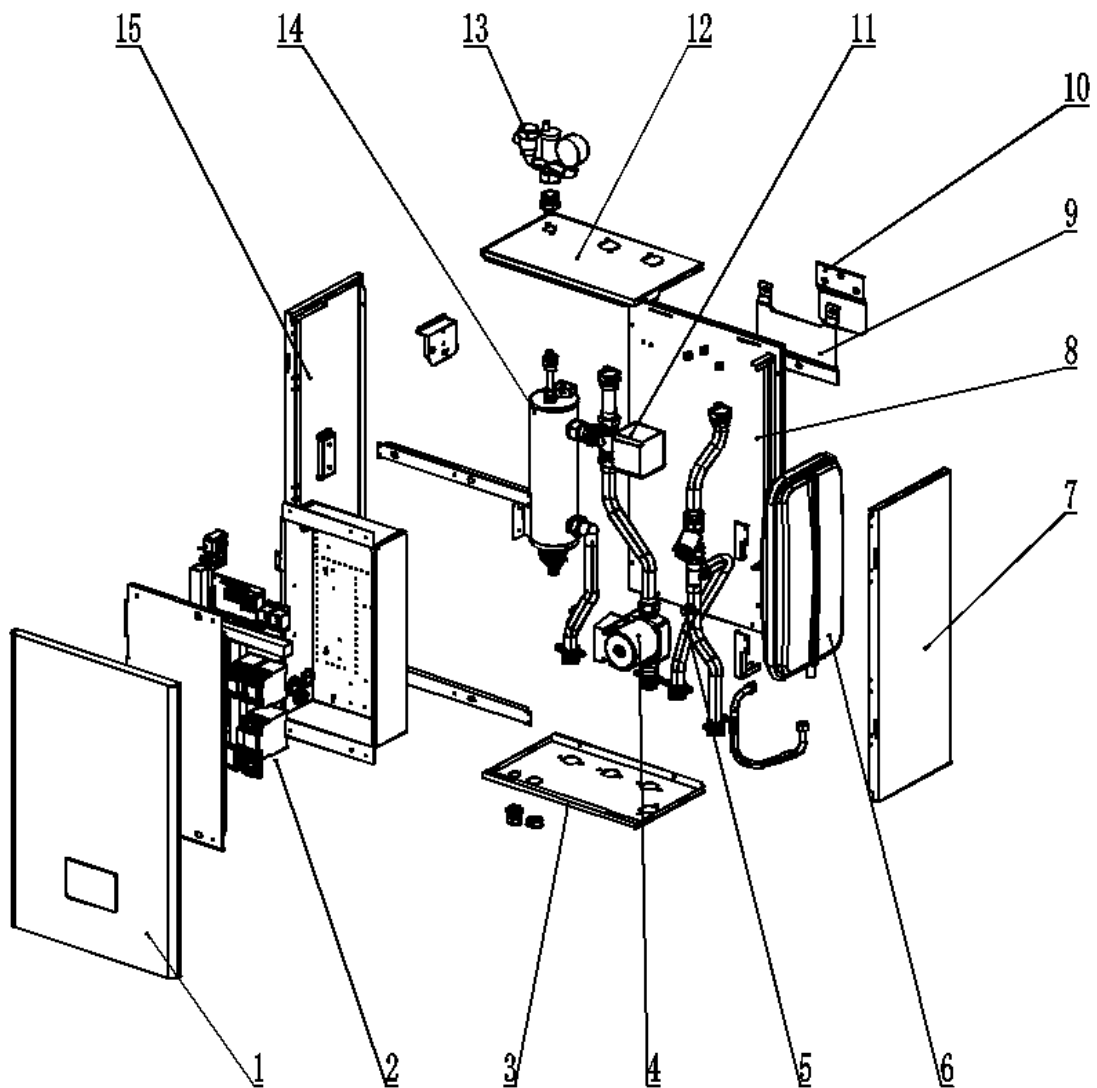
## 1.2 Model Specification

| NO. | Model   | Unit              | HU-3K/6L     | HU-9K/6L     |
|-----|---|-------------------|--------------|--------------|
| 1   | Damage Size (L×W×H)                               | mm                | 420/261/669  | 420/261/669  |
| 2   | Package Connection (L×W×H)                        | mm                | 480/341/770  | 480/341/770  |
| 3   | Unpacked Weight                                   | kg                | 34           | 34           |
| 4   | Packed Weight                                     | kg                | 37           | 37           |
| 5   | Unit Cycle In/Outlet                              | inch              | G1 Male      | G1 Male      |
| 6   | Life Hot Water Enters/Outlet                      | inch              | G1 Male      | G1 Male      |
| 7   | Cushion Water Tank In/Outlet                      | inch              | G1 Female    | G1 Female    |
| 8   | Rated Water Flow                                  | m <sup>3</sup> /h | 2.5          | 2.5          |
| 9   | Pressure Drop At Rating Water Flow                | kPa               | 10           | 10           |
| 10  | Water Side Work<br>Minimum/Maximum Water Pressure | MPa               | 0.1/0.3      | 0.1/0.3      |
| 11  | IP Class  | /                 | IPX0         | IPX0         |
| 12  | Operating Temperature<br>Range(Heating Mode)      | °C                | -25~45       | -25~45       |
| 13  | Sound Pressure At 1m Distance                     | dB(A)             | 35           | 35           |
| 14  | Power Supply                                      | V/Ph/Hz           | 220~240/1/50 | 380~415/3/50 |
| 15  | Element Heating                                   | kW                | 3            | 3/6/9        |
| 16  | Life Hot Water Growth Pump                        | individual        | Yes          | Yes          |
| 17  | Expansion Tank                                    | L                 | 6            | 6            |
| 18  | Life Hot Water Three -Way Valves                  | individual        | Yes          | Yes          |

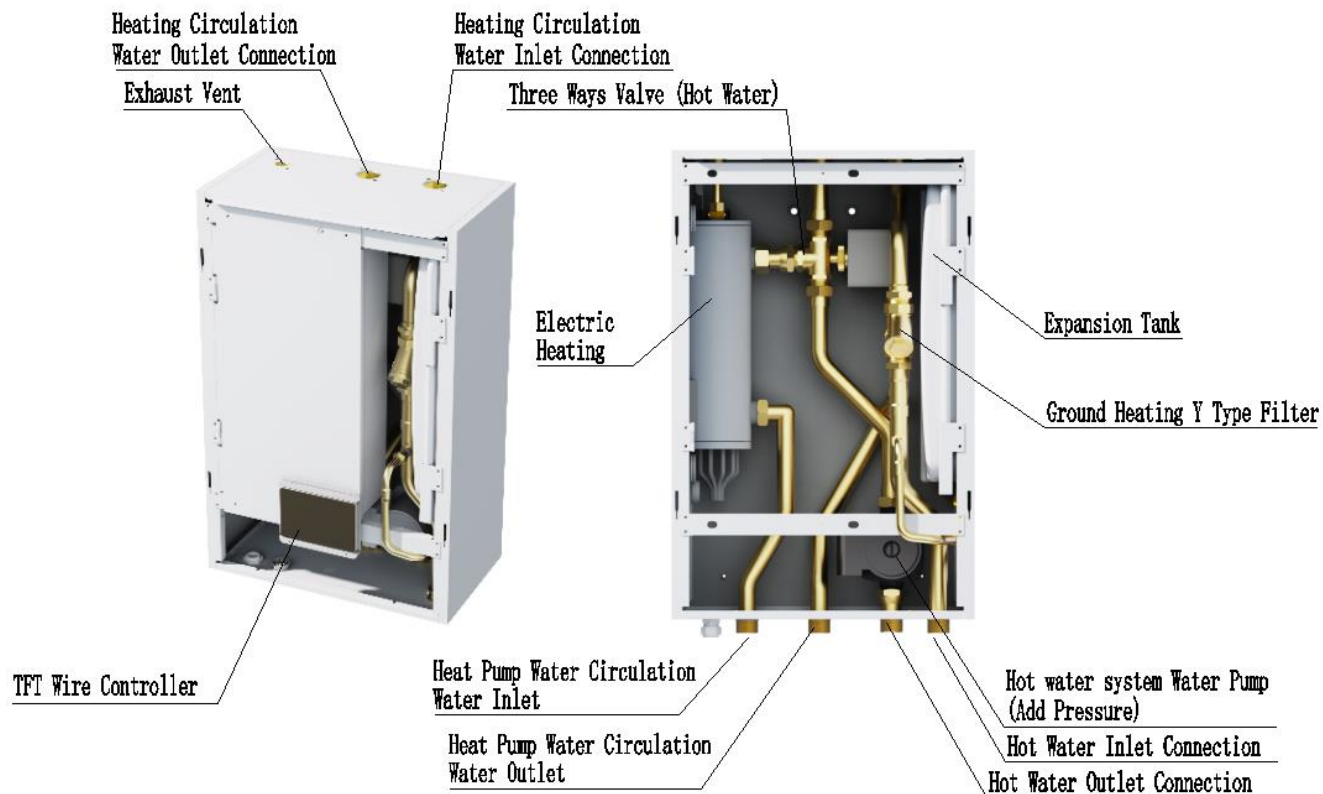
## 1.3 Unit Dimension



## 1.4 Exploded View



| NO. | Name              | NO. | Name                 |
|-----|-------------------|-----|----------------------|
| 1   | Front Panel       | 9   | Fixed Hanging Panel  |
| 2   | Electric Assembly | 10  | Rear Panel           |
| 3   | Chassis           | 11  | Electric 3-Way Valve |
| 4   | Water Pump        | 12  | Top Cover            |
| 5   | Pipe Assembly     | 13  | Security Assembly    |
| 6   | Expansion Tank    | 14  | Electric Heating     |
| 7   | Right-Side Panel  | 15  | Left Panel           |
| 8   | Front Panel       |     |                      |



## 1.5 Accessories

| NO. | Name                            | Quantity |
|-----|---------------------------------|----------|
| 1   | Installation & Operation Manual | 1        |
| 2   | Wire-controller                 | 1        |
| 3   | Screw                           | 3        |

## 1.6 Range of application

**Model: HU-3K/6L**

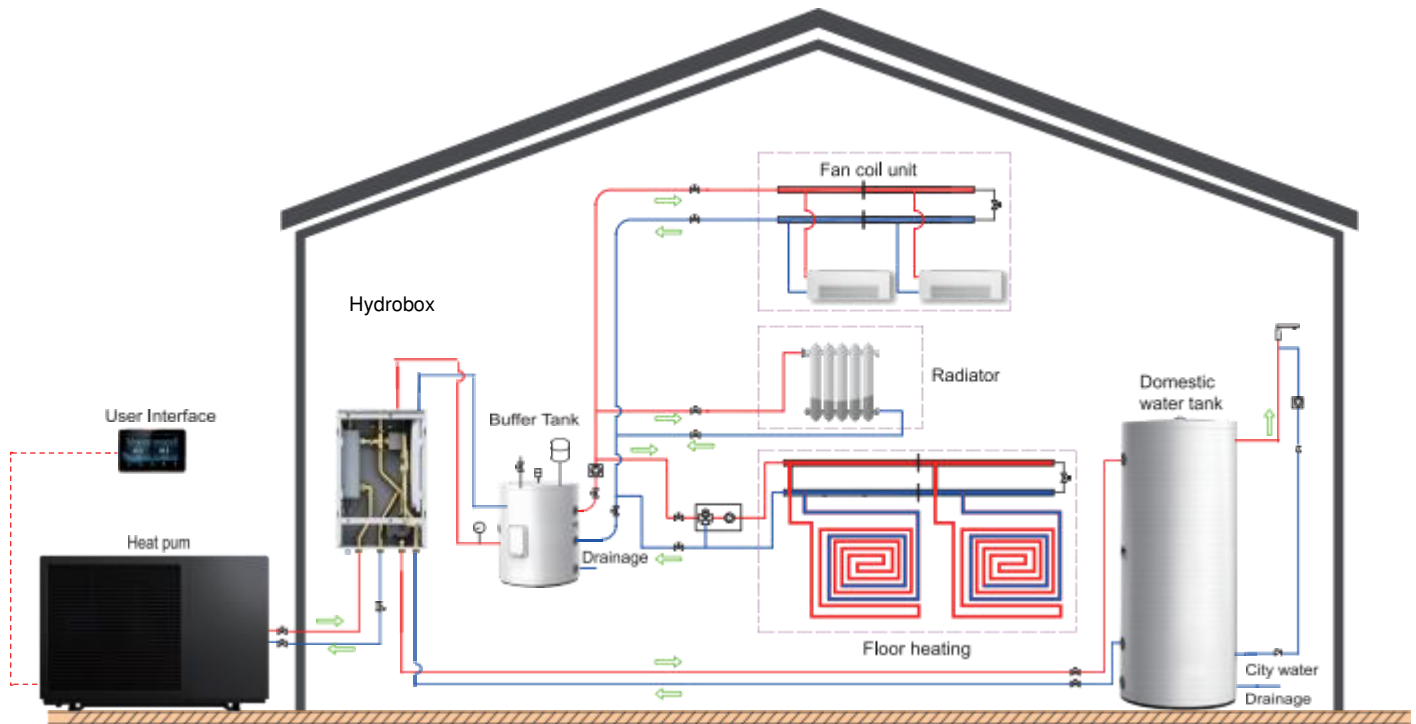
- 1.Power supply: 220V-240V/1N~50Hz;
- 2.Ambient temperature: -25°C~45°C;
- 3.Rated Water Flow: 2.5m<sup>3</sup>/h。

**Model: HU-9K/6L**

- 1.Power supply: 380-415V/3N~50Hz;
- 2.Ambient temperature: -25°C~45°C;
- 3.Rated Water Flow: 2.5m<sup>3</sup>/h。

## 2 Running Principle

### 2.1 Running Principle Diagram



### 2.2 Running Principle Description

The hydro box integrates water pumps, valves, safety components, electric heater and other components. Compared with the traditional complex and cumbersome piping system layout, its installation area is small; it saves installation time and costs; it can reduce human factors and environmental factor damage, and maintenance is simple.

The cold/hot water provided by the heat pump is pressurized and supplied to the buffer water tank and the domestic hot water tank through a water pump inside the hydraulic box. When the water in the buffer water tank and the domestic hot water tank reaches a certain temperature, the temperature control probe feedback signal is used. The return water pipes on each water tank return to the heat pump through the hydraulic box for heat treatment, forming a cycle in the system.

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## 3 Installation

### 3.1 Precautions Before Installation

1. Make sure the wall is strong enough, avoid installation in unstable places.
2. Make sure there is enough space for installation and maintenance, avoid installation near flammable items.
3. Avoid installation in locations with serious power supply voltage fluctuation.
4. Install in a dry well-ventilated place ,avoid installation in locations with harsh environmental conditions.
5. Check the model, number, name etc, to avoid incorrect installation.
6. The power supply and diameter of the cables used must be in accordance with the electrical installation requirements.
7. Electrical installation must comply with the relevant technical standards of electrical equipment, and electrical insulation work must be done.
8. The heat pump cooling and heating water system should be a closed system, if using antifreeze or other refrigerant, please consult the manufacturer.

### 3.2 Disclaimer

1. This product must use the copper-core power supply line that meets the required wire diameter to supply power independently, and the unit needs to have a reliable grounding wire; if the wiring does not meet the requirements, causing the unit not to work properly, the manufacturer will not be held responsible for this.
2. When cleaning the unit, you must stop the machine and cut off the power switch; if the unit is running with electricity for cleaning, causing electric shock and personal safety injuries, the manufacturer will not be responsible for this.
3. In winter or when the ambient temperature is below 2°C, if the machine is shutdown for a long time and not in use, make sure to empty the water in the water circuit and water tank to prevent the water from freezing and expanding, which will crack the water circuit and water tank and damage the machine. If the unit is damaged by freezing due to power failure and stopping the antifreeze protection of the unit, the manufacturer will not be responsible for this.

### 3.3 Warning

1. Before installation, it should be confirmed that the voltage of the power grid is the same as the required voltage of the unit, and whether the through-load capacity of the wires and sockets meets the maximum power requirements.
2. If the standing appliance is not equipped with power cord and plug, and there is no other device to disconnect the power supply (its contact opening distance provides a full disconnection under overvoltage class III), the fixed wiring connected to it must be equipped



with an all-pole disconnecting earth leakage protection device with a contact opening distance of more than 3mm in accordance with the rules of wiring.

3. Please commission the dealer or professional installation; the installer must have the relevant professional knowledge, self-installation, if the wrong operation will lead to water leakage, fire, electric shock, injuries and so on.

4. Make sure to use our designated products for locally purchased auxiliary items.

5. When connecting the power supply, please comply with the regulations of the local electric company; confirm whether it is correctly grounded or not, if the grounding is not perfect, it may cause electric shock to the personnel.

6. Do not remove any permanent instructions, labels or nameplates on the inside of the heat pump unit casing or various panels.

7. The power supply wiring must be equipped with a leakage protector whose rated current value is not lower than the high operating current of the unit, and the grounding must be reliable and kept dry to prevent leakage. Please always check the wiring is good with, if the contact is poor, it will lead to overheating and burn the device, and even cause fire and other personal injury accidents.

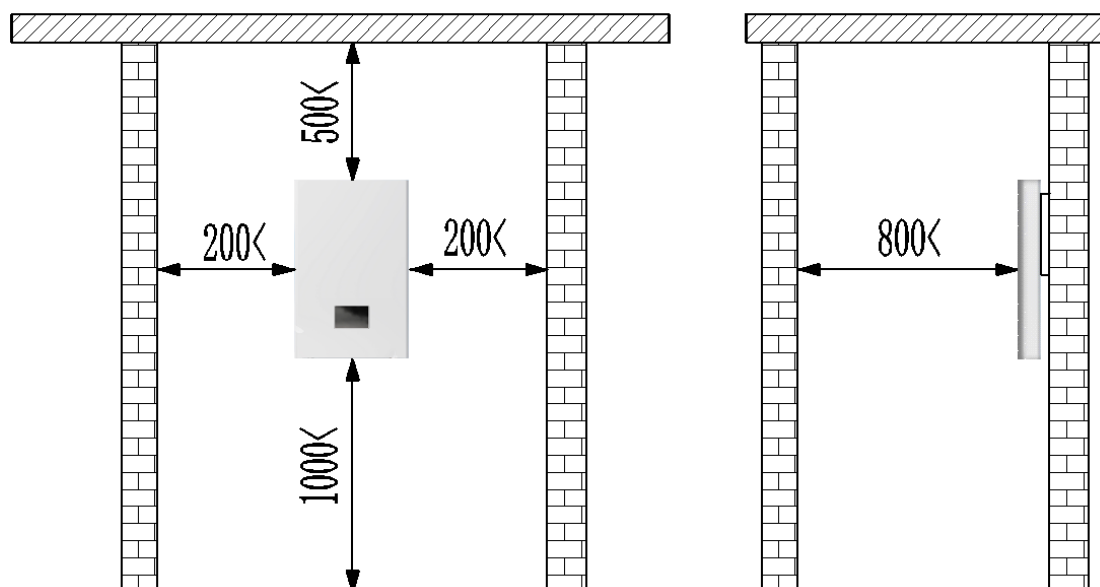
8. In the place where water may splash to and on the wall, the installation height of the power socket should not be lower than 1.8 meters, and make sure that the water will not splash to the socket and should not be installed in the place where children may reach.

9. If the parts of the unit are damaged, please leave them to professional maintenance and use the special maintenance parts provided by the company.

10. When an abnormality occurs (burning odor), you should immediately cut off the manual power switch, stop running, and contact the manufacturer's after-sales service department.

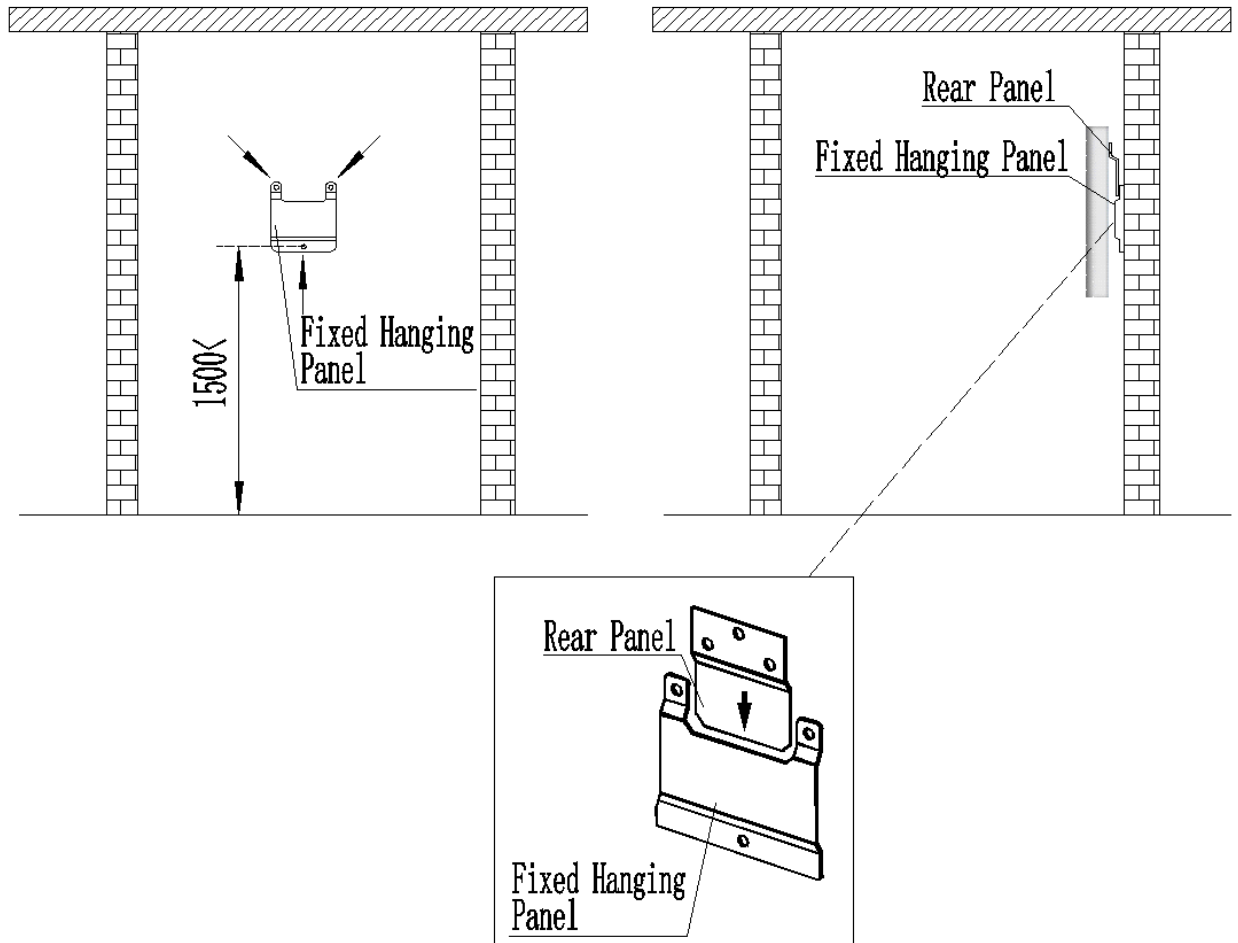
### 3.4 Installation Location

Unit: mm



### 3.5 Chassis Assembly Installation and fixation

Unit: mm



1. Make sure the wall is strong enough, as indicated by the arrow use  $\Phi 10$  expansion bolts firmly fix the fixed hanging plate to the wall.
2. Insert the rear panel of the hydro box into the fixed hanging panel, and adjust the hydro box to be perpendicular to the ground.

### 3.6 Installation of the pipeline

1. According to running principle diagram (See Figure 1) and exploded view (See Figure 2), connect the pipelines of each system step by step.

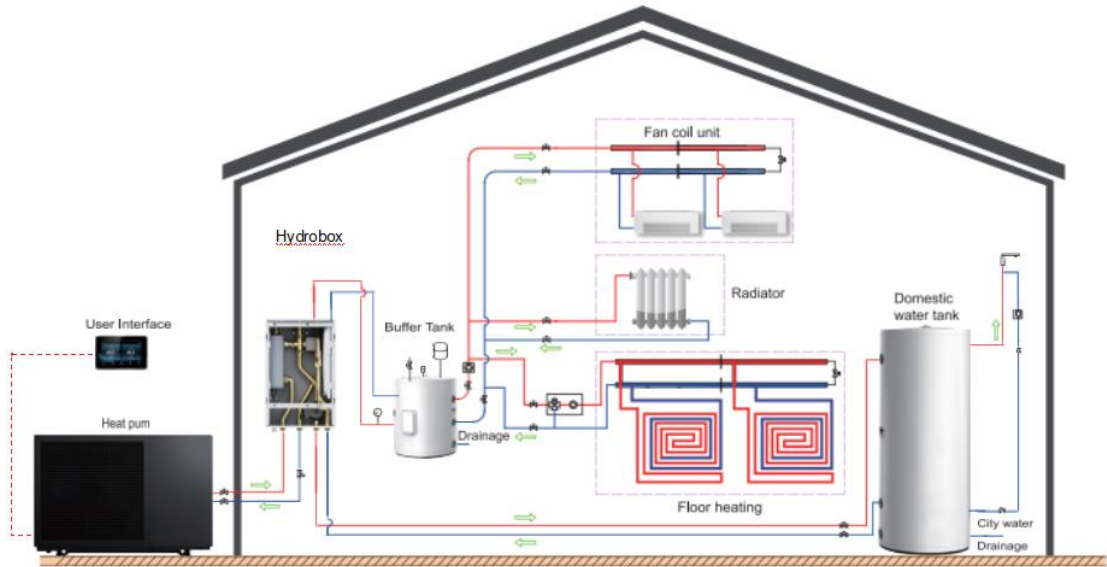


Figure1

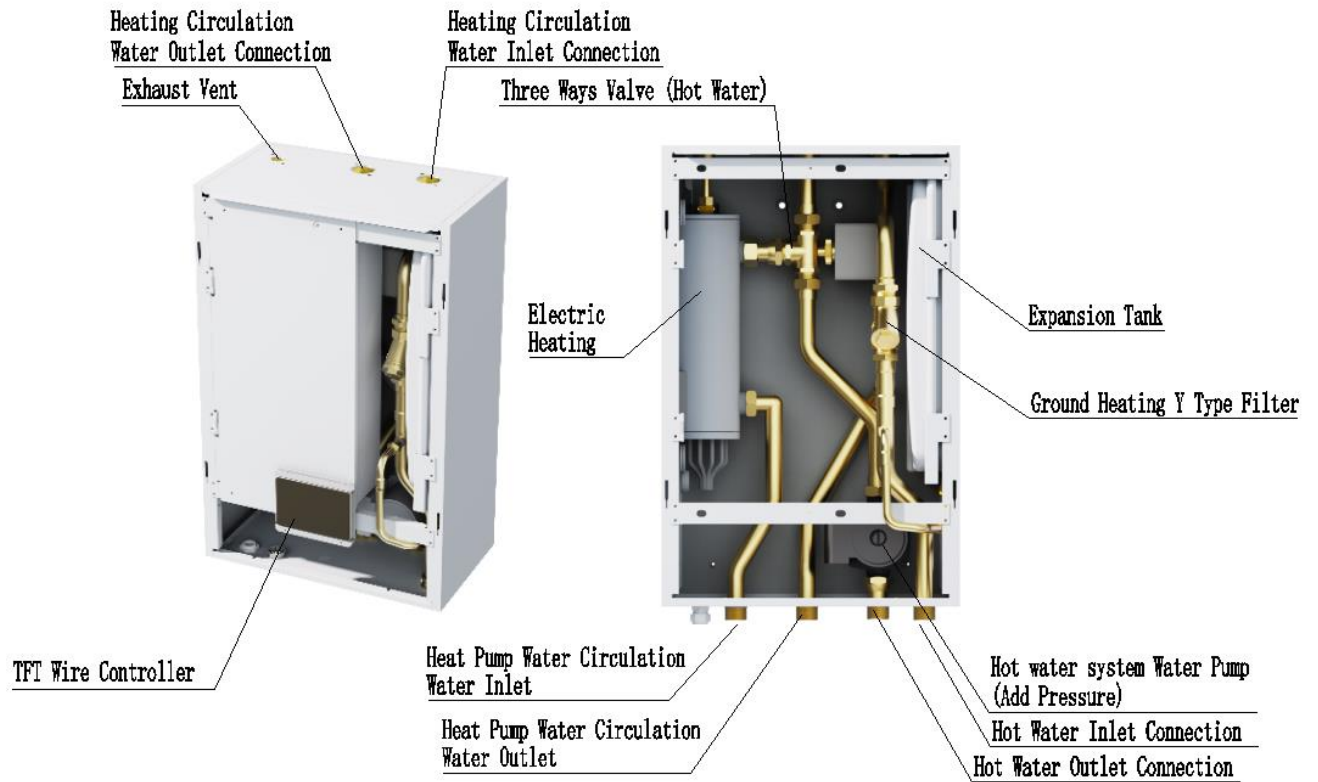


Figure 2

2. When connecting the water inlet and outlet pipes, use two pipe wrenches to adjust the two parts of the pipes, and make sure the water inlet and outlet pipes do not twist (see Figure 3).

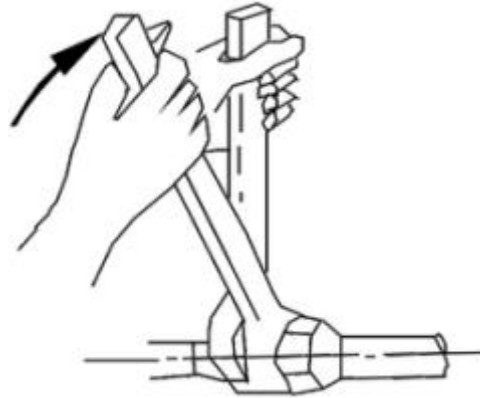


Figure 3

3. Heat pump、 hydro box、 buffer tank and hot water tank should be installed as close as possible.If they are far apart, the pressure drop of the pipeline will increase, it need to calculate whether the head of the water pump meets the normal operation of the system.

4. The connection of pipelines and components should comply with the following regulations:

1)The bending radius of plastic pipes should not be less than 8 times the outer diameter of the pipeline, and the bending radius of composite pipes should not be less than 5 times the outer diameter of the pipeline.

2) The slope of pipeline laying should be 3 ‰, and should not be less than 2 ‰. Equipment or exhaust valves with exhaust function should be installed at the highest point.

5. Pipelines connection between equipment, and valves should comply with the following regulations:

1) The connectors should use specialized connectors that are suitable for the pipes used.

2) When using plastic pipe hot melt connection, the working environment temperature of the hot melt connection should meet the technical requirements of the pipe material.

3) The outer surface of the hot melt connection socket and the inner surface of the socket should be scraped with a small diameter of 0.2mm. The oxygen blocking layer of the oxygen blocking pipeline must be scraped during the hot melt connection.

4) The allowable error in concentricity after hot melt connection should be 2%, and the misalignment at the interface should be less than 10% of the pipe wall thickness.

5)The hot melt device should use a digital temperature dial, and its hot melt temperature should be executed according to the regulations of the pipeline manufacturer.

6) Isolation measures should be taken between plastic pipes and composite pipes and metal supports and hangers, and direct contact should not be allowed. Non metal pads or sleeves should be added between the pipes and supports, and the spacing between supports and hangers should meet the design requirements. When there are no design requirements, the maximum spacing between plastic pipes and composite pipe supports should comply with the provisions of Table 3.6.1.

**Table 3.6.1 the maximum spacing between plastic pipes and composite pipe supports**

| <b>Diameter(mm)</b>                   | 20  | 25   | 32   | 40   | 50   |
|---------------------------------------|-----|------|------|------|------|
| <b>Horizontal Maximum Spacing(mm)</b> | 300 | 350  | 400  | 500  | 600  |
| <b>Vertical Maximum Spacing(mm)</b>   | 900 | 1000 | 1100 | 1300 | 1600 |

7) Pipelines connection between valves, and metal connectors should be of the compression type, sliding type, or sleeve type.

6. Water Pressure should comply with the following regulations:

1) The components of the water system shall be tested for their strength and tightness.

2) After the installation and connection of the water system pipeline, a hydraulic test should be conducted. The water temperature for the hydraulic test should be between 5 °C and 40 °C, the pressure accuracy is greater than 0.01Mpa. The test pressure is 1.5 times the working pressure and not less than 0.6MPa, Stabilize the pressure for 10 minutes without any decrease in pressure. After the pressure test is completed, reduce the system pressure to the working pressure, and the pressure should not decrease within 60 minutes, there shall be no leakage at each connection.

3) Reliable antifreeze measures should be taken during the water pressure test in winter. After the pressure test is completed, the water should be drained in a timely manner. If necessary, compressed air should be used to blow out the water stored at the low points of the water system.

7. The flushing test should comply with the following regulations:

1) When cleaning the water system, it must be separated from the host and cleaned separately to ensure that there are no impurities in the water system before connecting the water system to the host.

2) Flushing tests should be conducted on different loops of the water system one by one. After flushing, it should be ensured that the water and flushing fluid in the pipelines and equipment are completely drained. After cleaning, the filter should be promptly removed and cleaned.

8. During the installation process of all winter projects, it is strictly prohibited to inject water into the system until the unit has no normal antifreeze protection capacity to prevent freezing and damage to water pipelines and end equipment. The residual water in the pipeline and equipment during the hydrostatic test must be blown clean with compressed air. Water filling and antifreeze should be injected after the system flushing and pressure testing are completed, and the concentration of antifreeze should meet the antifreeze requirements. Antifreeze solution can be configured according to its concentration or density. During the preparation process, corresponding protective measures should be taken according to the requirements of the antifreeze product manual.

9. The system drain valve should be installed at the lowest point of the system return pipeline. In cold regions, it is advisable to consider the automatic drainage function. When the main engine is powered off, it can automatically empty the water in the system to prevent the system pipeline from freezing and cracking.

10. The system should be equipped with a water leakage protection device, which should have

active power outage protection and alarm functions. When there is water leakage in the system water pipeline, the water leakage protection device should automatically cut off the water supply and issue an alarm and drainage signal.

### 3.7 Water Pipe Insulation And Freeze Protection

1. Water Pipe Insulation And Freeze Protection shall comply with the following regulations:

- 1) The insulation layer material and thickness shall be executed according to the construction drawings.
- 2) When using non-closed hole material, the outer surface shall be provided with a protective layer.
- 3) Between pipes and supports, take measures to prevent "hot bridge" or "cold bridge" through the wall and floor.
- 4) If the drawing are not clear, the minimum insulation thickness of the pipeline and equipment can be selected according to Table 3.7.1.

**Table 3.7.1 the minimum insulation thickness of the pipeline and equipment**

| heat-insulating material |   | Flexible foam rubber |           |       |
|--------------------------|---|----------------------|-----------|-------|
|                          | nominal bore  | ≤DN20                | DN25~DN40 | ≤DN50 |
| <b>Indoor</b>            | the minimum insulation thickness of the pipeline(mm)  | 25                   | 28        | 32    |
|                          | the minimum insulation thickness of the equipment(mm) | 45                   |           |       |

2. For insulation materials and their products, product quality inspection report and factory certificate shall be provided, and their specifications and performance shall meet the provisions of relevant technical standards and design documents.

### 3.8 Pressure Regulation、Anticorrosive And Wash

1. Pressure Regulation

System hydraulic test: after the system is installed, the hydraulic test should be carried out before the pipe insulation.

- 1) Before the test, the pipeline should be fixed, the joints need to be laid openly, and should not be connected to the water distribution apparatus;
- 2)The pressure gauge is installed in the lowest part of the test pipe section, and the pressure accuracy is 0.01Mpa;
- 3) From the lowest pipe section slowly to the pipeline water, fully exclude the air inside the pipeline, water tightness test;
- 4)Slowly pressurize the pipeline, pressurization is appropriate to use a hand pump, pressurization time is not less than 10Min;
- 5)Pressure test shall meet the following requirements:
  - (a) For steam and hot water heating system, the working pressure at the top plus 0.1MPa, and the test pressure at the top of the system shall not be less than 0.3MPa.

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(b) For the high temperature hot water heating system, the test pressure shall add 0.4MPa to the peak working pressure of the system.

(c) Hot water heating system using plastic pipe and composite pipe; the hydraulic test shall be conducted with the system peak working pressure plus 0.2MPa, and the test pressure at the system apex shall be no less than 0.4MPa.

6)Method of calibration:

(a) The heating system using steel pipe and composite pipe shall have the pressure drop not more than 0.02MPa within 10min under the test pressure, and check after the heating pressure is reduced to the working pressure without seepage or leakage.

(b) The heating system using plastic pipe should have the pressure drop of no more than 0.05MPa within 1h under the test pressure, then reduce the pressure to 1.15 times of the working pressure, stabilize the pressure for 2h, the pressure drop should not be greater than 0.03MPa, and each connection should not leak or leak.

(c) Within 30 minutes, allow two times to make up the pressure, up to the specified test pressure.

2. Anticorrosive

After the system passes the pressure test, remove the rust on the pipe surface, the pipe and its welding place and all the support and hanger are painted with red Dan antirust paint.

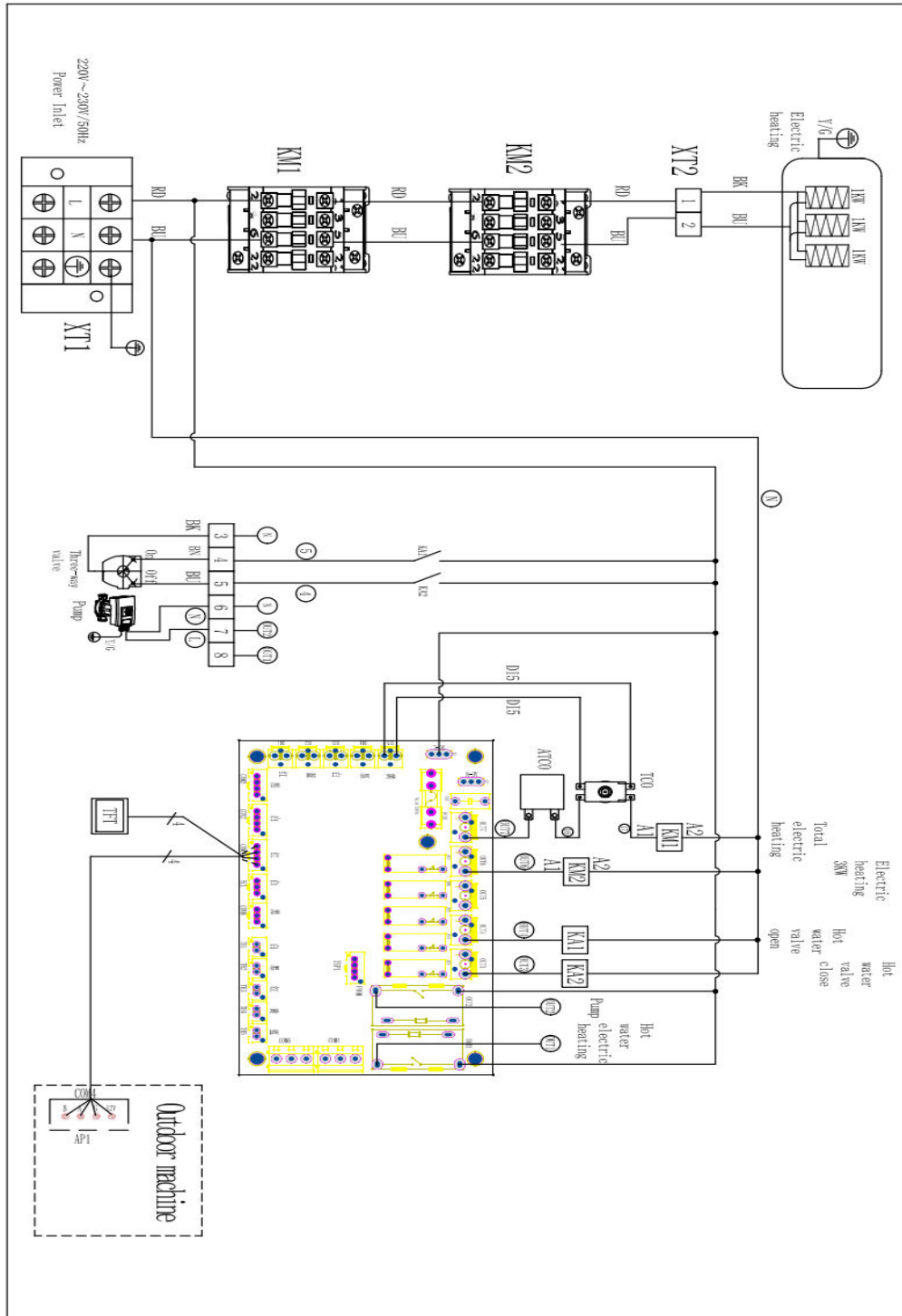
3. Wash

After the pressure test of the system, the system shall wash and clean the filter and decontamination device until the water is free of impurities such as sediment, iron chips and other impurities, and the water is not cloudy.

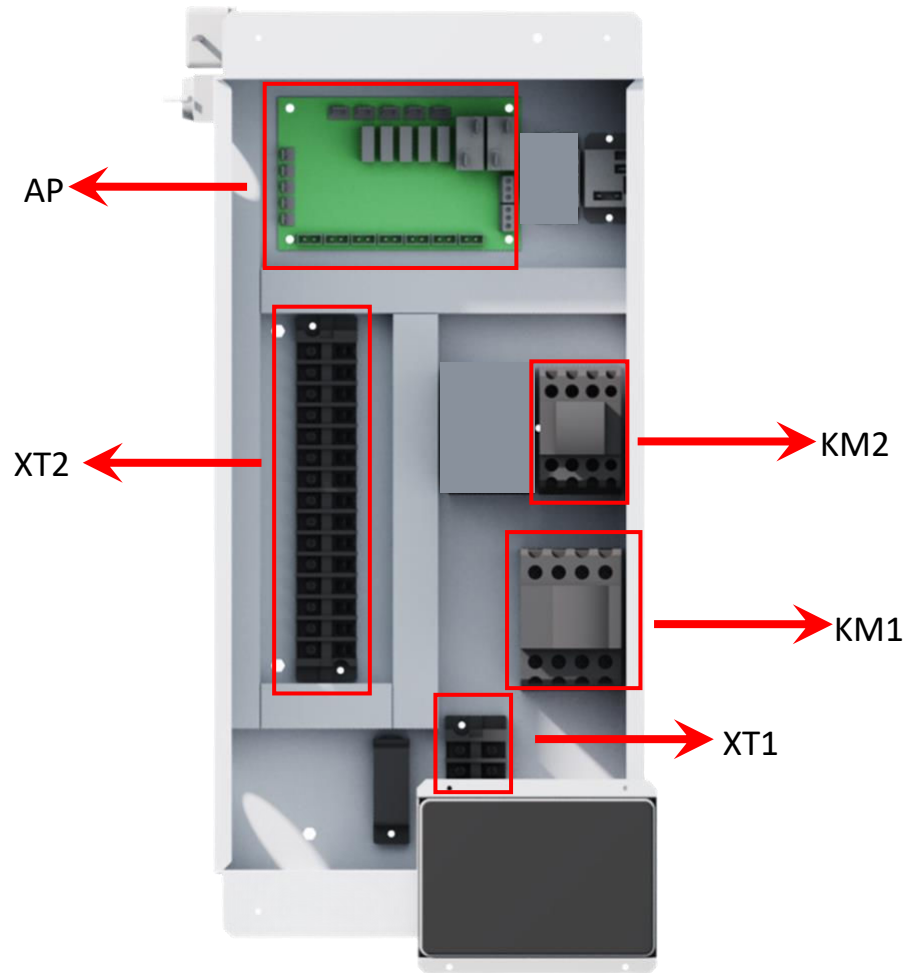
# 4 Electrical Connection

## 4.1 Wire Diagram

1.Model:HU-3K/6L

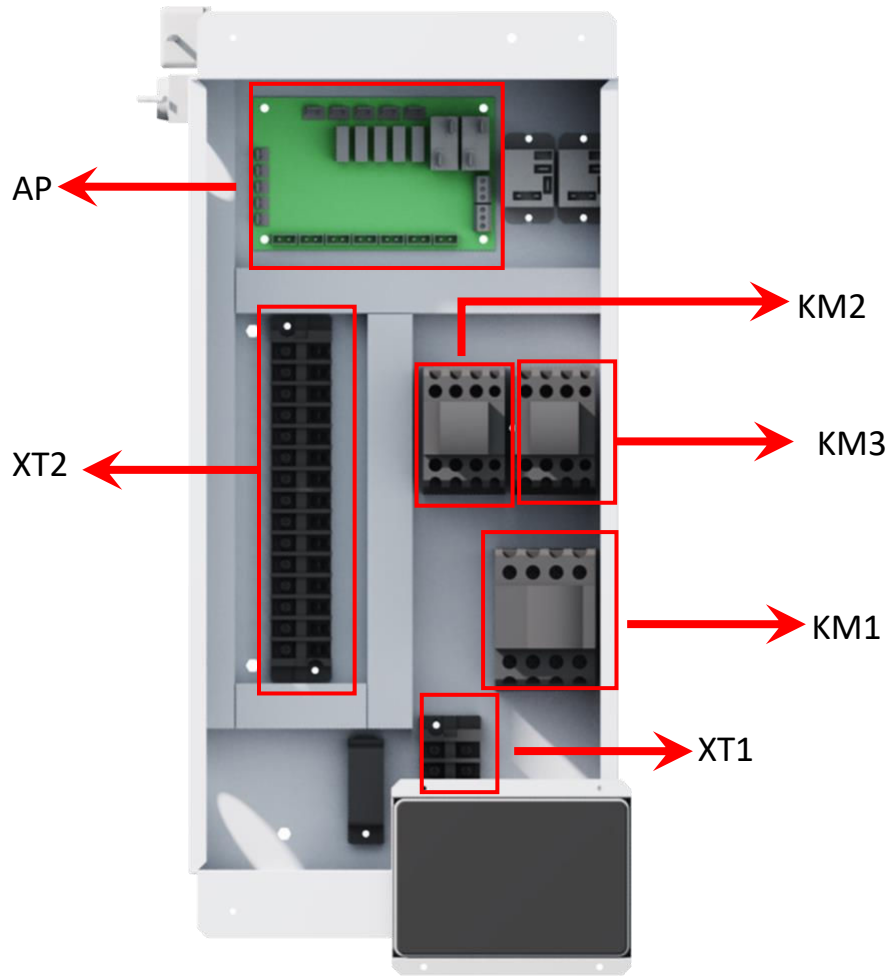






| NO. | Description           |
|-----|-----------------------|
| XT2 | Terminal              |
| AP  | Motherboard           |
| XT1 | Power Supply Terminal |
| KM1 | Contactora            |
| KM2 | Contactora            |

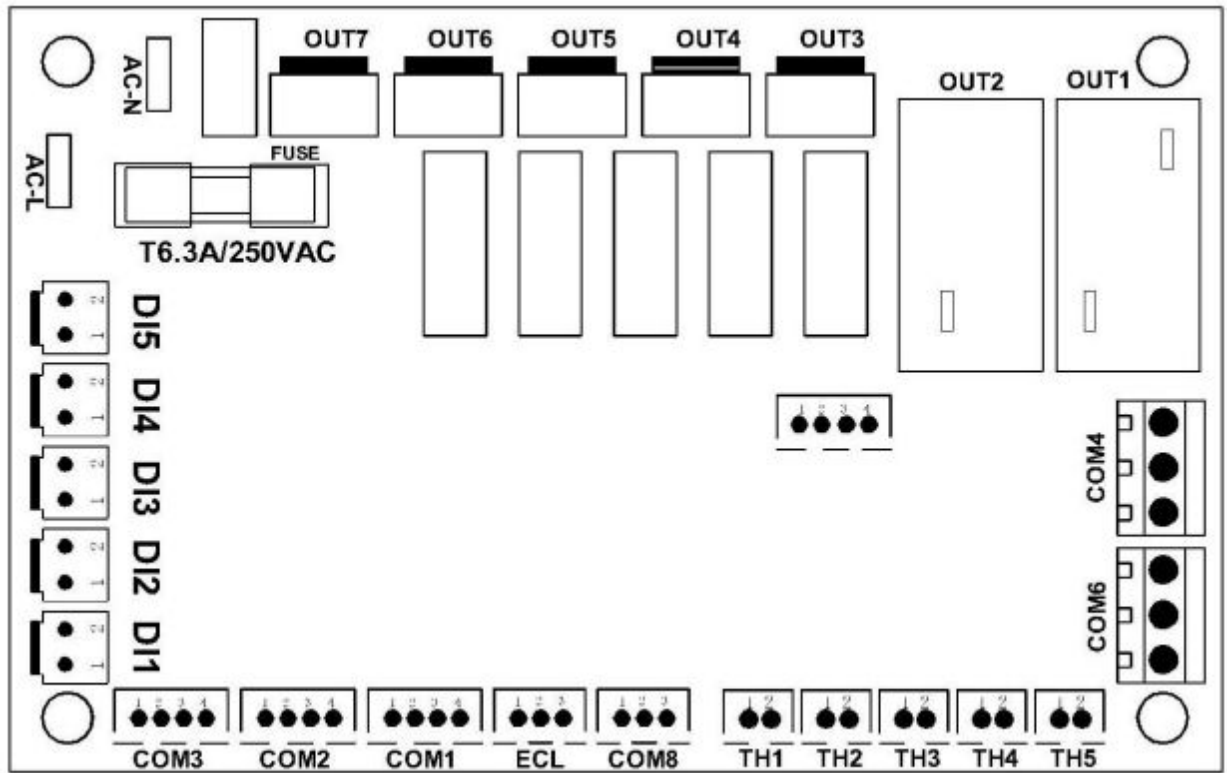




| NO. | Description           |
|-----|-----------------------|
| XT2 | Terminal              |
| AP  | Motherboard           |
| XT1 | Power Supply Terminal |
| KM1 | Contactora            |
| KM2 | Contactora            |
| KM3 | Contactora            |

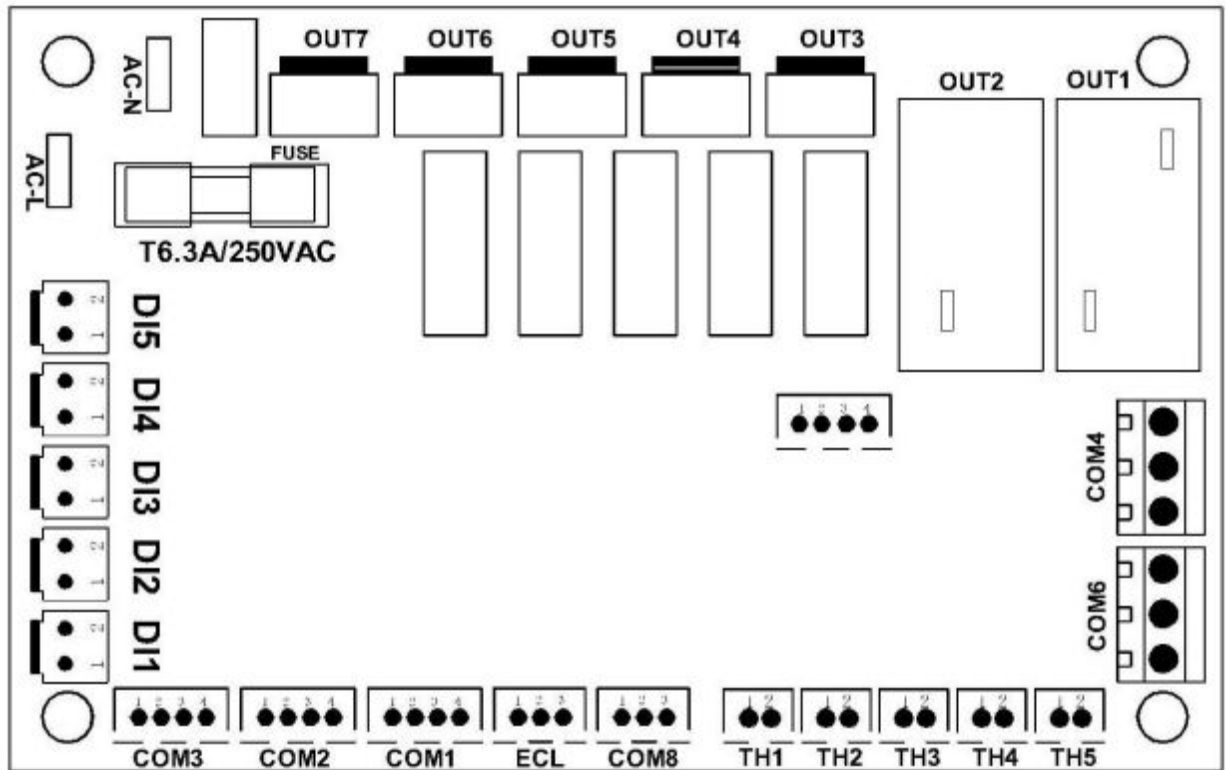
## 4.2 Motherboard Port Definition

### 1.Model:HU-3K/6L



| Port | Description                  | Port | Description             |
|------|------------------------------|------|-------------------------|
| OUT1 | Hot Water Electric Heater    | DI5  | Reserve                 |
| OUT2 | Water Pump                   | DI4  | Reserve                 |
| OUT3 | 3-Way Valve (Off)            | DI3  | Reserve                 |
| OUT4 | 3-Way Valve (On)             | DI2  | Reserve                 |
| OUT5 | Reserve                      | DI1  | Reserve                 |
| OUT6 | 3KW Electric Heater          | TH1  | Reserve                 |
| OUT7 | Total Electric Heater        | TH2  | Reserve                 |
| COM3 | RS485                        | TH3  | Reserve                 |
| COM2 | RS485                        | TH4  | Reserve                 |
| COM1 | RS485                        | TH5  | Reserve                 |
| AC-L | Power Input L                | COM8 | Reserve                 |
| AC-N | Power Input N                | COM6 | P_a Water Pump PWM Port |
| ECL  | Motherboard Communicate Port | COM4 | P_b Water Pump PWM Port |

2.Model:HU-9K/6L



| Port | Description                  | Port | Description             |
|------|------------------------------|------|-------------------------|
| OUT1 | Hot Water Electric Heater    | DI5  | Reserve                 |
| OUT2 | Water Pump                   | DI4  | Reserve                 |
| OUT3 | 3-Way Valve (Off)            | DI3  | Reserve                 |
| OUT4 | 3-Way Valve (On)             | DI2  | Reserve                 |
| OUT5 | 6KW Electric Heater          | DI1  | Reserve                 |
| OUT6 | 3KW Electric Heater          | TH1  | Reserve                 |
| OUT7 | Total Electric Heater        | TH2  | Reserve                 |
| COM3 | RS485                        | TH3  | Reserve                 |
| COM2 | RS485                        | TH4  | Reserve                 |
| COM1 | RS485                        | TH5  | Reserve                 |
| AC-L | Power Input L                | COM8 | Reserve                 |
| AC-N | Power Input N                | COM6 | P_a Water Pump PWM Port |
| ECL  | Motherboard Communicate Port | COM4 | P_b Water Pump PWM Port |

### 4.3 Electrical wiring

1. Special outdoor power supply line should be used, and the power supply voltage meets the rated voltage requirement.
2. The power supply line of the unit must have a grounding line, and the power supply ground line should be reliably connected with the external grounding line, and the external grounding is effective.
3. The user's incoming power supply must be installed with leakage protection device.
4. The wiring construction must be connected by professional installation technician according to the circuit diagram.
5. The power supply cable and signal cable should be neatly and reasonably arranged, not interfering with each other, not in contact with the connecting pipe and valve body and ensure that the minimum distance between the strong and weak power is more than 25MM.
6. he wire controller should be installed in the place where it is easy to observe the operation and should not be installed in the place where there is water and humidity.
7. The connection lines in the host have been installed in the factory, the user does not need to connect again, but only need to check whether the connection lines are connected properly, there is no damage or fall off.
8. After all wiring connections have been completed, check them again carefully before switching on the power.




| Model    | Power Supply Wires   |                      |               |
|----------|----------------------|----------------------|---------------|
|          | Power Supply         | Cable Diameter       | Specification |
| HU-3K/6L | 220-240V~/ 50Hz      | 3*2.5mm <sup>2</sup> | AWG 14        |
| HU-9K/6L | 380V-415V/3N ~/ 50Hz | 5*6mm <sup>2</sup>   | AWG 10        |

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## 5 Wire Controller & Parameters Settings

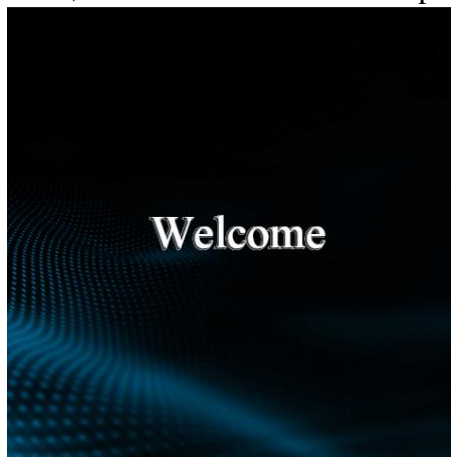
### 5.1 Interface

#### 1. On the electric display

As shown in the following figure, select the corresponding language option and click “” to enter the system. If the language is not selected for more than 2min, it will automatically enter the system by the currently selected language and break the screen.



After entering the system, the following page is displayed. After 3S, the communication normally enters the normal page, and the communication failure keeps the display. Touch will be accompanied by the sound of the button, bright screen 2min no touch operation automatically extinguish the screen, click the screen to wake up.

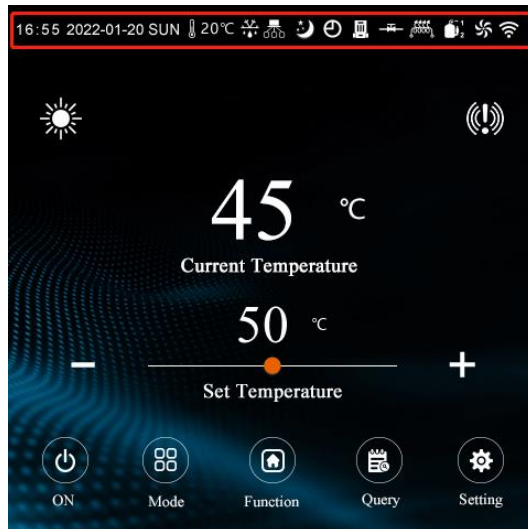



#### 2. Interface Display




### 3. Icon description


The interface is displayed from left to right respectively: time, day-month-year, week, defrosting, cascade, mute, water pump, return valve, electric heating, compressor, fan, WIFI;





**Frost display:** When the unit enters the frost mode, “” is always displayed and flashes when the refrigerant is recycled;


**Cascade display:** When the unit enters the Cascade mode, “” is always displayed;

**Silent mode display:** When the unit enters the silent mode, “” is always displayed;

**Timing display:** When the unit enters the silent mode, “” is always displayed;

**Water pump display:** When the pump is running, “” is always displayed;


**Return water display:** When the return water valve is open, “” is always displayed; when the return water valve is close and the return water timing is set, it is flashing display;

**Electric heater display:** When electric heater is running, “” is always displayed; when the




electric heater is close and the quick-heat function is enabled, it is flashing display 1Hz; when the electric heater is close and the sterilization function is enabled, it is flashing display 0.5Hz;

**Compressor display:** When the compressor is running, “” is always displayed;

**Fan display:** When the fan is running, “” is always displayed;


**WIFI display:** When the unit links the WIFI successfully, “” is always displayed;






**Fault display:** When unit fault exists, “” is flashing display, click the icon to enter the real-time fault / fault record; when the fault is eliminated, the icon will be extinguished; click the icon to enter the fault query page; it can display 20 real-time faults and 50 historical faults.



**Mode / shutdown display:** display the current operation mode, on the top of the left of the main interface; operation mode is not displayed during shutdown.



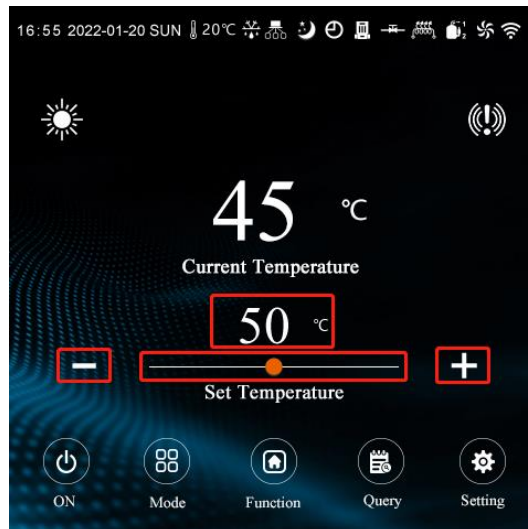
|   |               |
|---|---------------|
|  | Floor heating |
|  | Hot water     |

|   |                         |
|---|-------------------------|
|  | Heating                 |
|  | Cooling                 |
|  | Hot wate+Heating        |
|  | Hot water+Floor heating |
|  | Hot water+Cooling       |

#### 4. Temperature setting

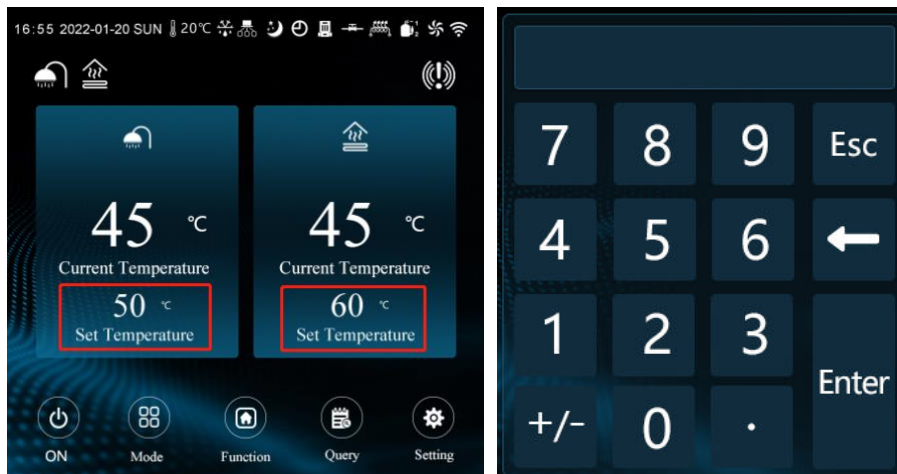
Single mode (Heating、Cooling、Floor heating、Hot water)

- ① You can click“+”“-” adjust the set temperature of the current mode;
- ② The slide can also set the setting temperature for the current mode;
- ③ Click the temperature value and set temperature, press“Enter”to determine the modification.





Combination mode (Hot water+Cooling、Hot wate+Heating、Hot water+Floor heating)

Click the set temperature value and enter the set temperature and press“Enter” to determine the modification.




## 5.2 Mode Setting

### 1.Switch key

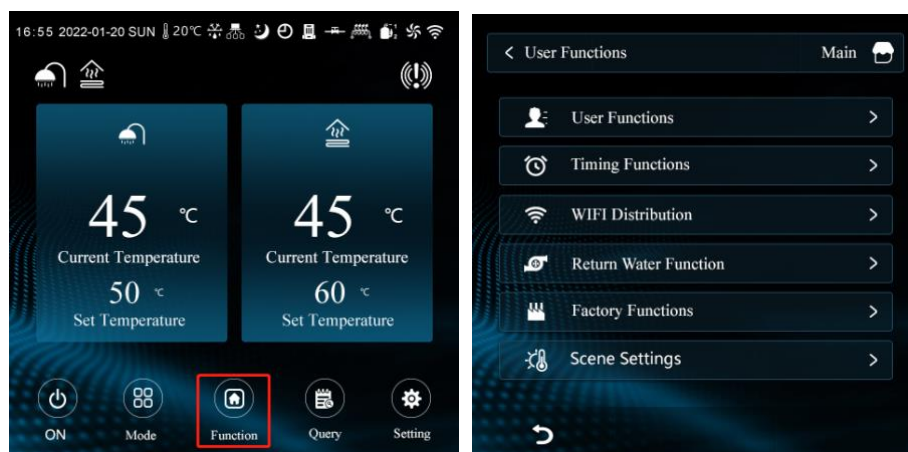
In bright screen state, click on key “The image shows the home screen of a smart home app. At the top, it displays the time '16:55', date '2022-01-20 SUN', and weather '20°C'. Below this are two large cards showing 'Current Temperature' and 'Set Temperature' for two different zones. The left zone shows 45°C current and 50°C set, while the right zone shows 45°C current and 60°C set. At the bottom, there is a navigation bar with five icons: 'ON' (power), 'Mode', 'Function', 'Query', and 'Setting'. The 'ON' icon is highlighted with a red square.

### 2.Mode menu


In bright screen state, press“




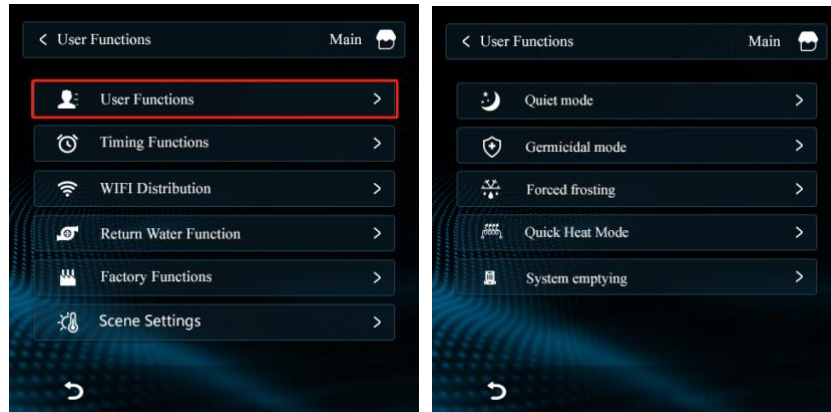
### 3.Function menu




### 1) User command operation



On the main screen, click “” button to enter the function selection page; then click

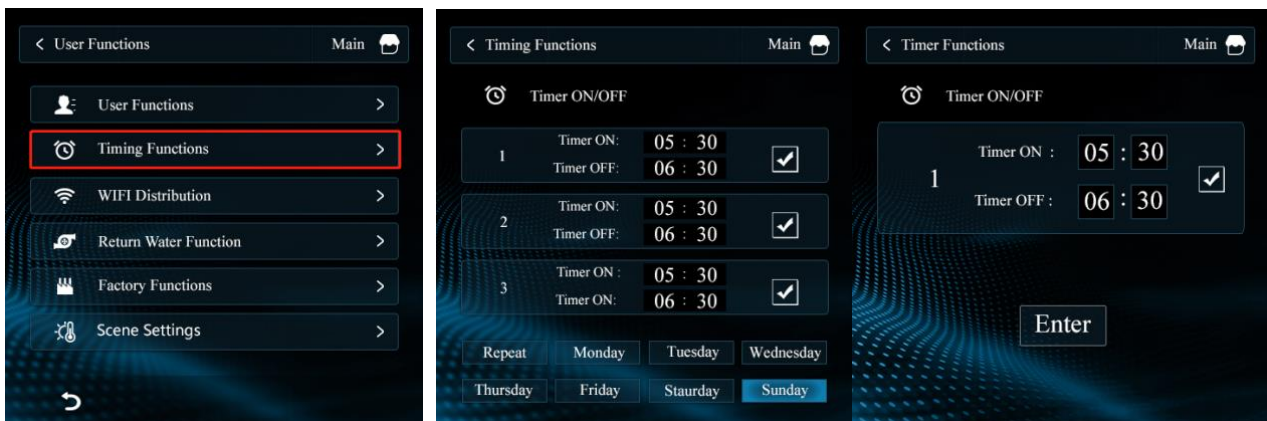
“” enter user command operation from top to bottom are silent mode, high temperature sterilization, forced defrosting, manual heat, system emptying; click the corresponding button to start / close the corresponding function.



### 2) Switch machine timing control


In the bright screen state, click “” button to enter the function selection page; then click

“” to enter the switch timing viewing page; if you need to enable the weekly timing, click any button of week 1-Sunday to start the weekly timing; Click the time period to enter the time setting of this period, Enter the time through the keyboard, click the enabling button “” to start / close the period, and press "Enter" to save after setting.

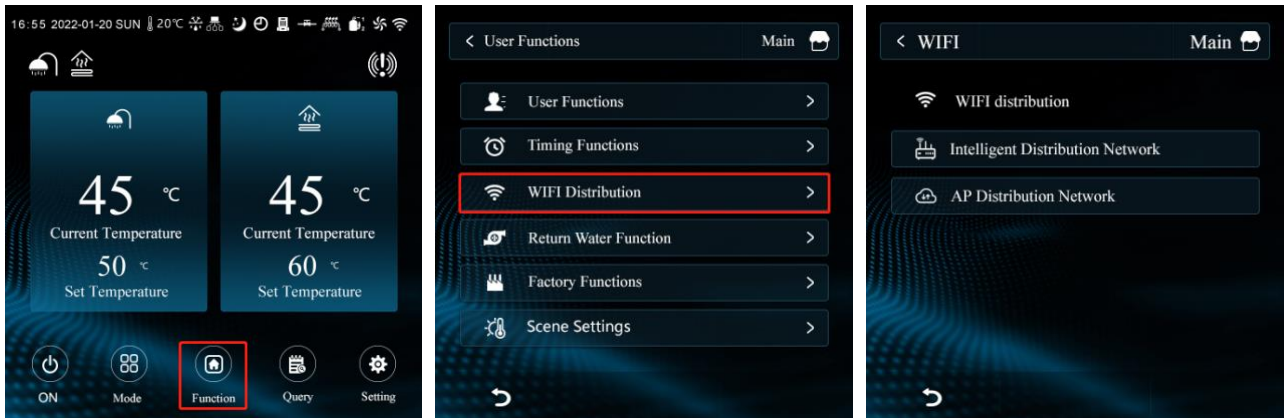


### 3) WIFI



In the bright screen state, click the “” button to enter the function selection page, click

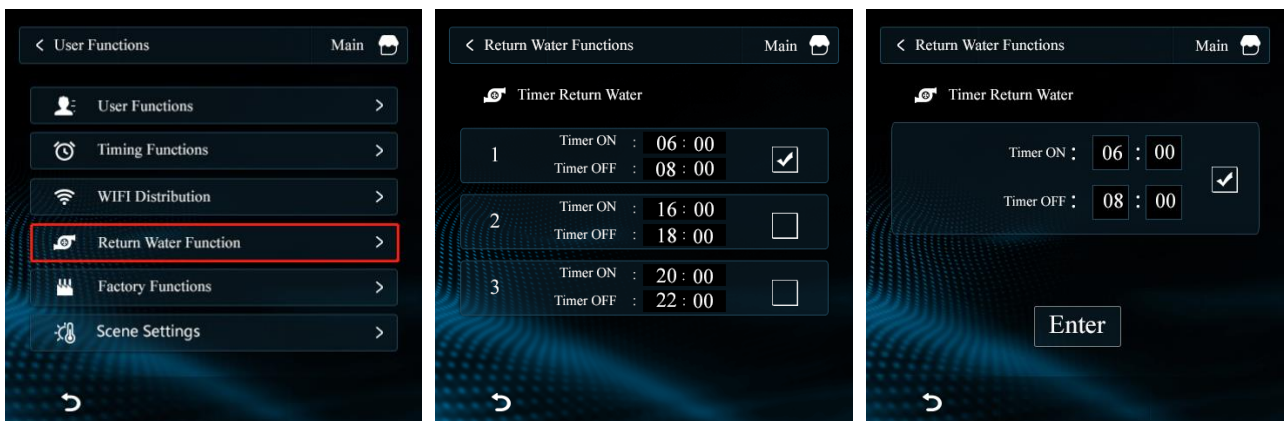
“” to enter the WIFI operation interface, click to enter the corresponding WiFi distribution network mode (intelligent distribution network mode is recommended), and the corresponding button is lit up (WIFI distribution network time is 3min,

timeout exit distribution network mode).



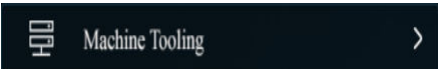


#### 4) Timed backwater temperature setting



On bright screen, click “” button to enter the function selection page; then click “” enter the backwater timing view page, the setting method is similar to the switch timing.



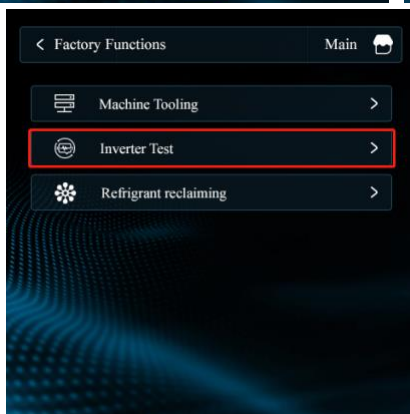
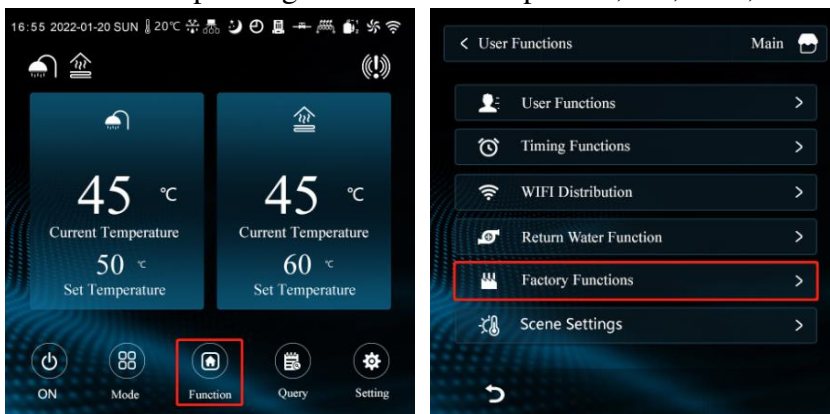
#### 5) Factory function


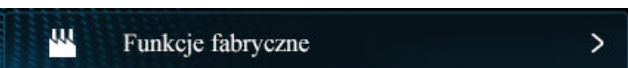
Unit assembly number setting: in the bright screen state, click “” push button to enter the function selection page; click “” type “1122” on the outgoing keyboard, press “Enter” enter the factory function point “” to enter the unit assembly number setting interface, where you can see and modify the current unit assembly number.



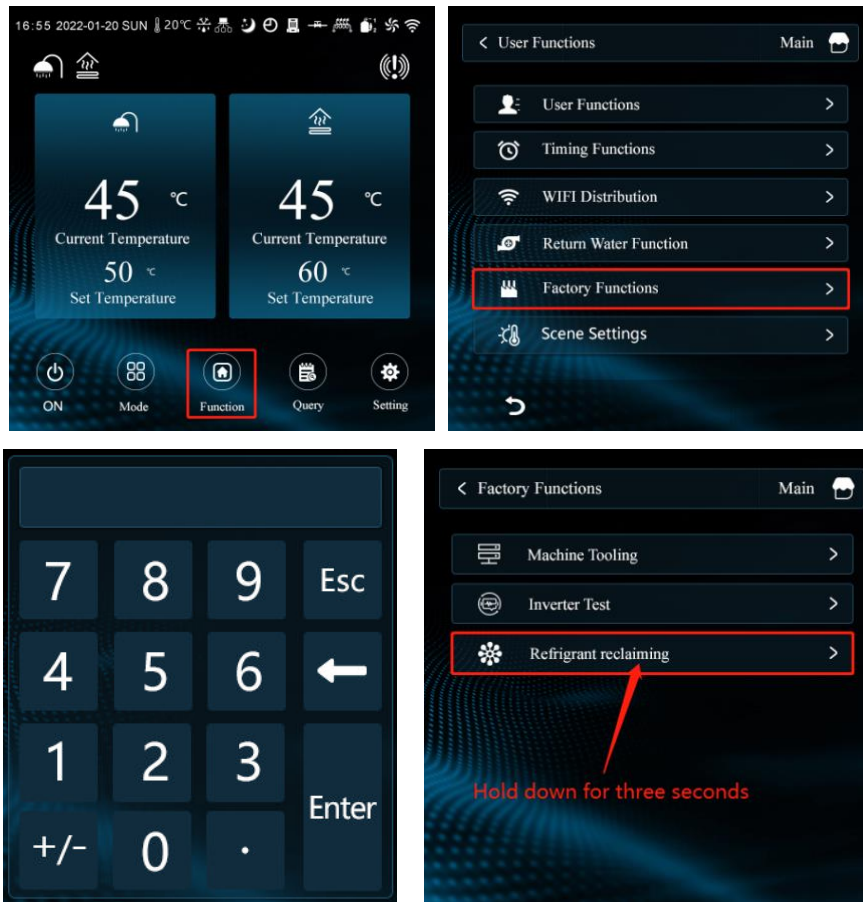
Frequency converter experiment test for:, in the bright screen state, click“”push button to enter the function selection page; then click“”type “1122” on the outgoing keyboard, click“ Enter ”to enter the factory function point

“”enter the factory test interface, it can manually control the operating status of the compressor, fan, EEV, EVI and enter the IPLV test mode.



Refrigerator recycling: On the bright screen state, click“”push button to enter the function selection page; then click“”enter “1122”on the pop keyboard, press“Enter”to enter the factory function long

press “ Refrigerant reclaiming >” above 3S, release and enter the refrigerant for recovery.







Service life password setting:

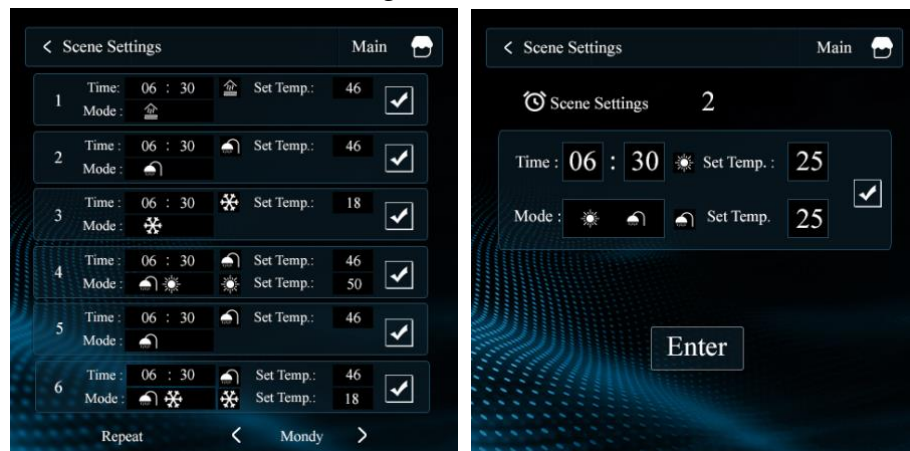
- ① Click on the function button under the main page;
- ② Click on the factory function and enter the password “8563”;
- ③ Entered the service life interface.





## 6) Scenario setting

On the bright screen state, click “” to the function selection page;

click “ Scene Settings >” enter the scene setting interface; 6 scene settings per day, with daily timing and weekly cycle timing .Click “” it can be started / cancelled. Click the scene segment to be modified to enter the scene modification, and click the mode area “” can change the pattern, click on the corresponding numerical value can be modified by the keyboard input, click “” to start / cancel the scene setting, and press "Enter" to save the confirmation . Scene operation: When the time is brought to the set time, the operation mode and set temperature are automatically switched to the value set by the scene, but the state of the switch machine is not changed.



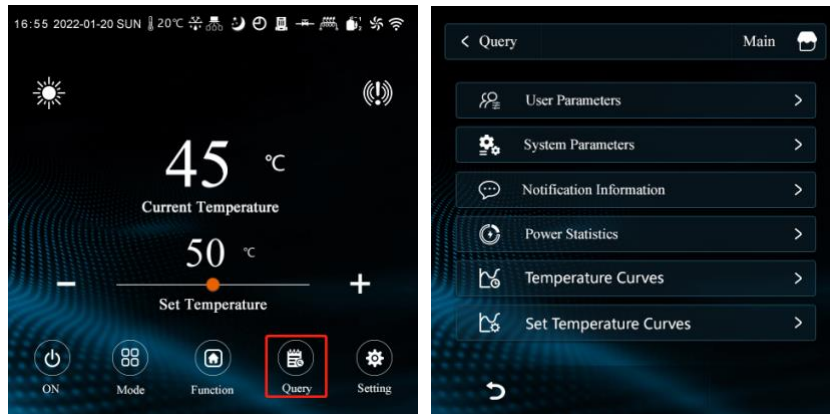
#### 7) Double temperature area

In the bright screen state, click “” to the function selection page; click “>” to turn the page, click “ Double temperature zone >” to enter the temperature setting interface of the double temperature zone.





#### 4 Query menu

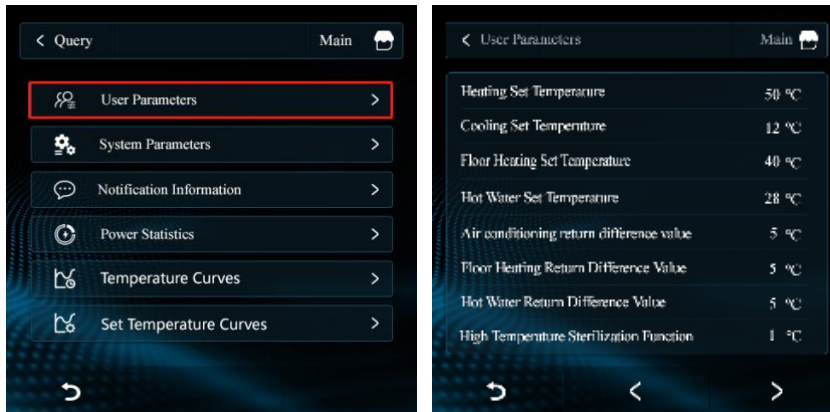





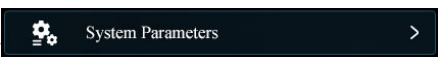

### 1) Parameter query

Set the temperature, return difference, backwater temperature, antivirus in the bright screen

state, Click “” to enter the query page, click “” again to enter the user parameter list, and the modification method refers to the factory parameter setting .

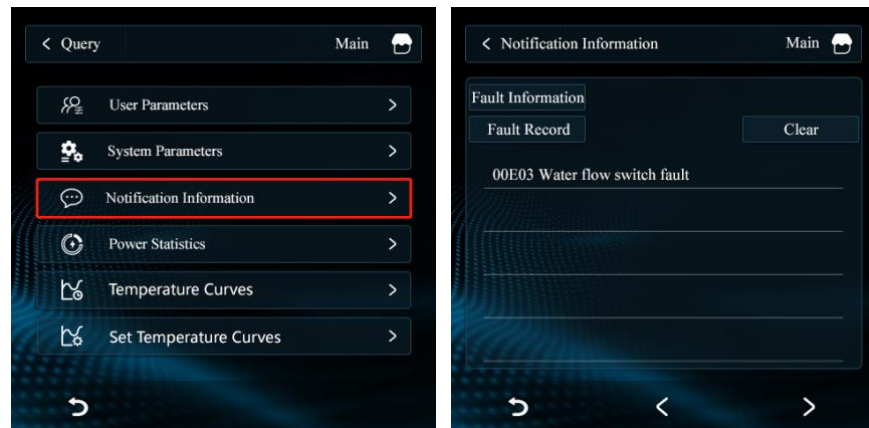







### 2) Operational factor

In the bright screen state, click “” to enter the query page, Click “” to enter the temperature state to view; When the network is running, click “” to enter the unit number and click the corresponding online unit number to enter the temperature status query of the corresponding unit .Gray unit representative is not online .Operating parameters are detailed in the attached table.



### 3) Fault displays




In the bright screen state, click “” to enter the query page, click “ Notification Information >” and “ Fault Record” to view historical failures, Click “ Fault Information” to query the current fault, click “ Clear” to clear the historical faults.


Failure represents significance:

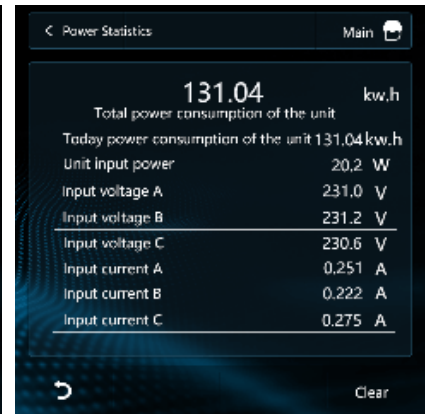
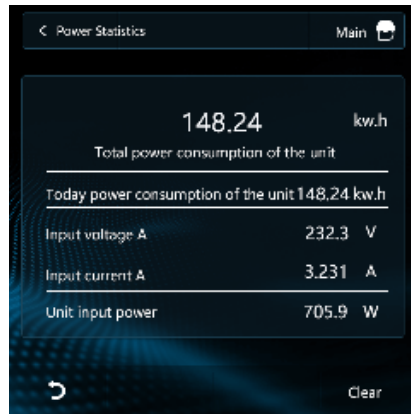
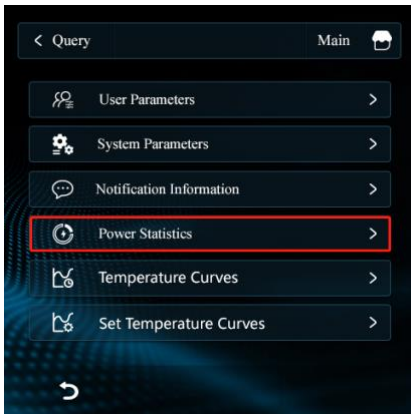
00E03: 00 Represents “Main engine”, 01.02.03..... Represents “Slave”

00E03: E03 Represents “Fault code”

### 4) Power module parameter query (optional)

When the machine is equipped with a power module, in the bright screen state, click “” to


enter the query page, click “ Power Statistics >” to enter the unit electricity consumption information query, query the total power consumption, current power, voltage and current parameters.

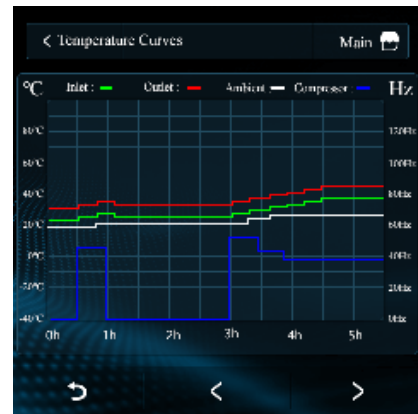
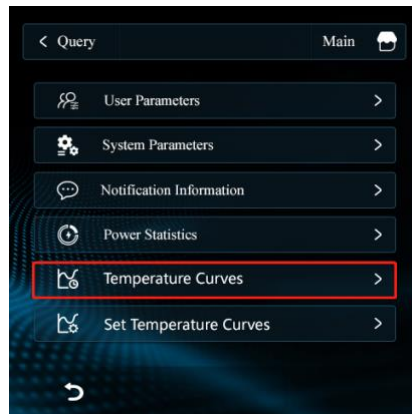


(Single-phase charge volume module) (Three-phase electric power module)

### 5) Curve query





In the bright screen state, click “” to enter the query page and

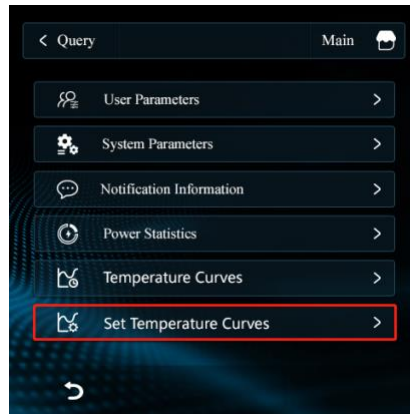
click “ Temperature Curves >” to enter the curve query, you can record the curve of inlet water, outlet water, compressor frequency and ambient temperature within 24 hours .



### 6) Temperature curve setting

In the bright screen state, click “” to enter the query page and

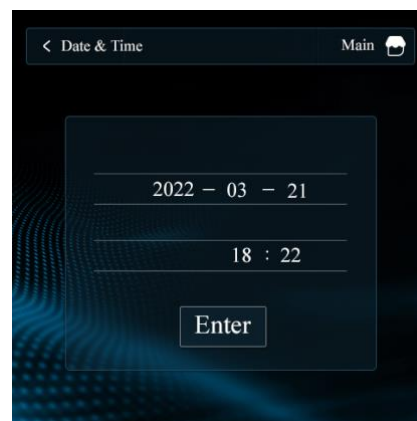
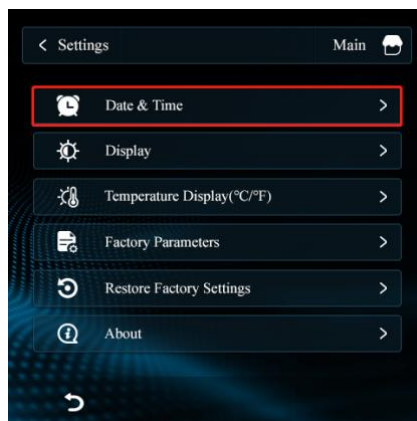
click “ Set Temperature Curves >” to enter the curve setting, Click “” “” below to switch curve settings for different modes; click “” to select the different curve controls, and the specific parameters of the current curve are displayed in the curve area.



## 5 Set the menu




### 1) Clock Settings



In the bright screen state, click “” to enter the Settings page and click



“ Date & Time >” to enter the time setting page click the corresponding date through the keyboard, and finally press "Enter" to save the time.

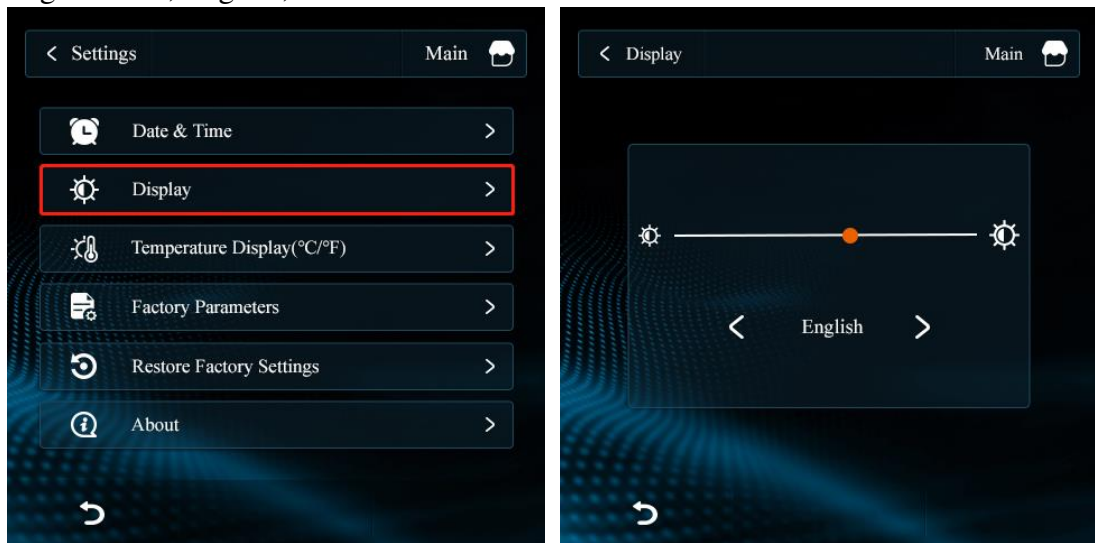
### 2) Wire controller brightness and language settings

In the bright screen state, click “” to enter the Settings page and



click “ Display >” to enter the brightness setting interface, the

sliding bar can set different brightness; click “>” “<” to switch to different languages, including Chinese, English, and Polish.



### 3) parameter setting

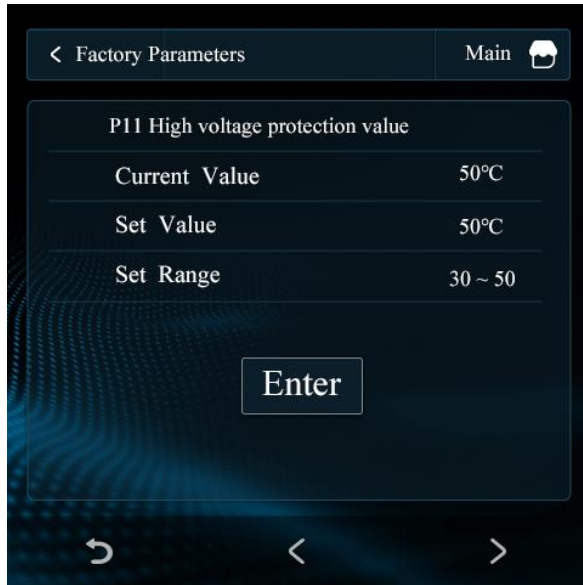
In the bright screen state, click “” to enter the settings page and

click “ Factory Parameters >” to enter the parameter settings page;

When the network is running, click “ Factory Parameters >” to enter the unit number, select and click the corresponding online unit number to enter the parameter setting of the corresponding unit . Gray unit representative is not online .



click “>” “<” to turn the page for the values of each parameter, click on the parameters to be modified to go to the modified parameters page, on this page, the parameter number, the current parameter value, setting value, and setting range are displayed, click the parameter value in the pop keyboard input set value press "Enter", save the parameters on the following page。 On this page click “>” “<” to Switch over the next parameter.

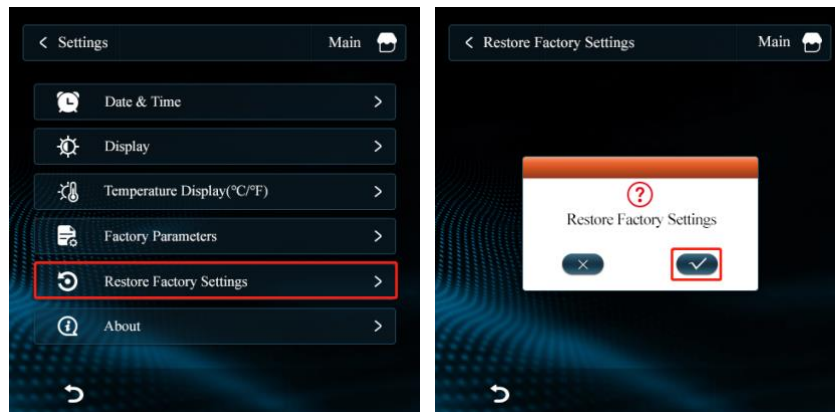


#### 4) Factory reset

In the bright screen state, click “” to enter the settings page, and

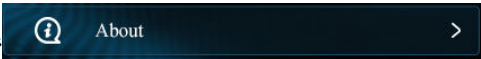
click “” to enter the Recovery factory Settings

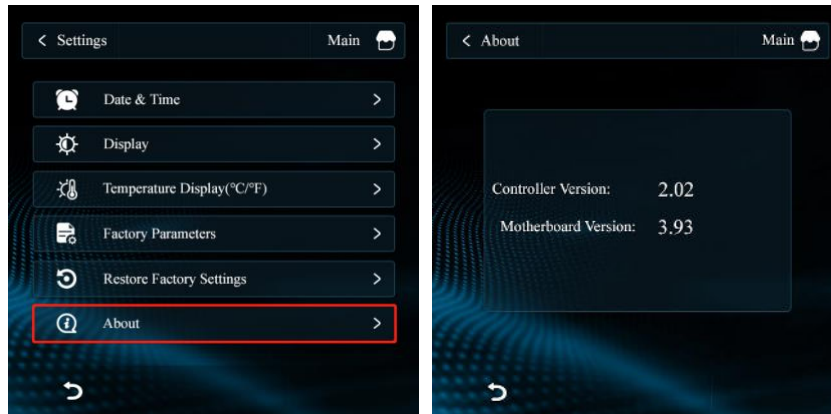
page, click “”, factory Settings can be restored.



#### 5) The program version is viewed

In the bright screen state, click “” to enter the settings page, and

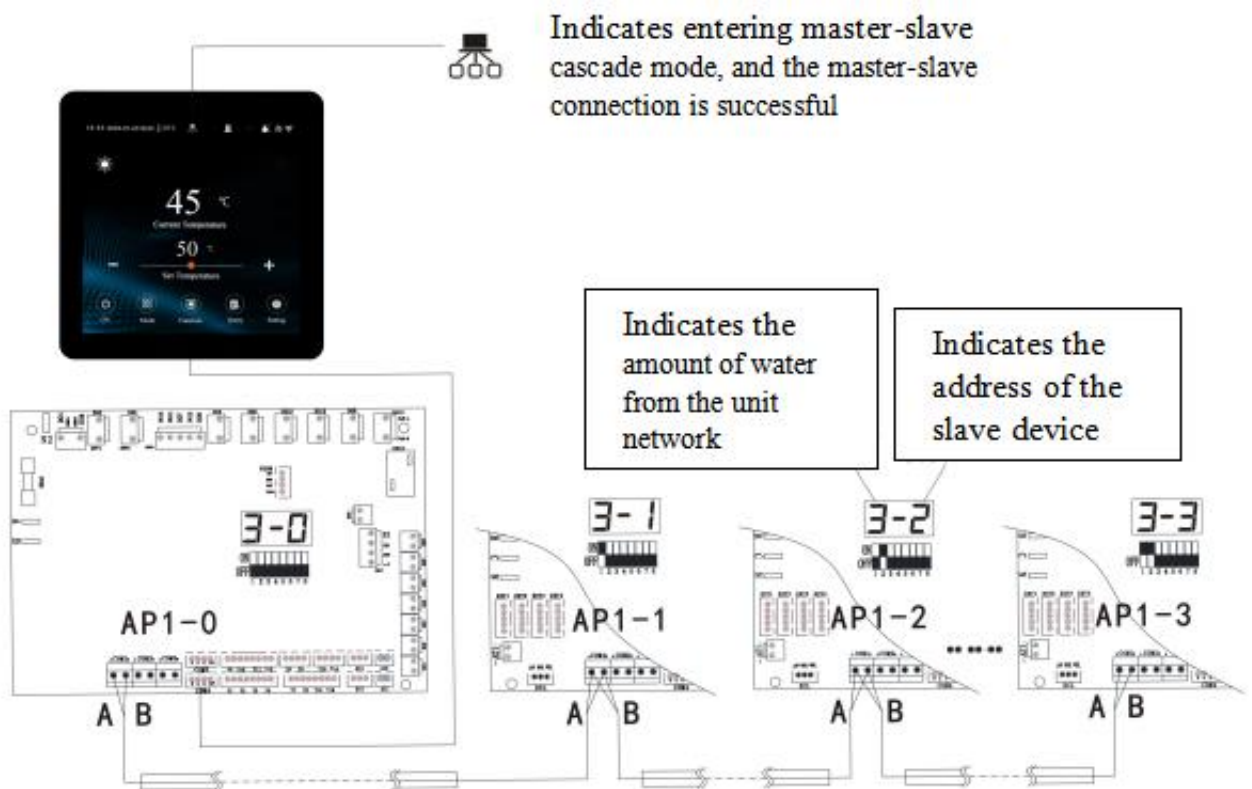
click “” to view the program version number of the display screen and the motherboard.



## 5.3 Other Setting

1. Unit cascade hardware wiring and dialing settings

1) The COM1 communication port between the main board of the host and the slave, using the connecting cable A and A, B and B connected.



2) Dial switch to the corresponding equipment address

00 Represents "Main engine", 01.02.03..... Represents "Slave"

| Address | 1 | 2 | 3 | 4 |
|---------|---|---|---|---|
| 0       | X | X | X | X |
| 1       | √ |   |   |   |
| 2       |   | √ |   |   |
| 3       | √ | √ |   |   |
| 4       |   |   | √ |   |
| 5       | √ |   | √ |   |
| 6       |   | √ | √ |   |
| 7       | √ | √ | √ |   |
| 8       |   |   |   | √ |
| 9       | √ |   |   | √ |
| 10      |   | √ |   | √ |
| 11      | √ | √ |   | √ |
| 12      |   |   | √ | √ |
| 13      | √ |   | √ | √ |
| 14      |   | √ | √ | √ |
| 15      | √ | √ | √ | √ |

3) The unit needs to be repowered on.

Run status parameter table:

| Error Code | Interpretation                                | Indication Range |
|------------|---|------------------|
| 1          | Compressor operating frequency                | 0~150Hz          |
| 2          | Fan running frequency/speed                   | 0~999Hz          |
| 3          | Electronic expansion valve steps              | 0~480P           |
| 4          | EVI valve steps                               | 0~480P           |
| 5          | AC input voltage                              | 0~500V           |
| 6          | AC input current                              | 0~50.0A          |
| 7          | Compressor phase current                      | 0~50.0A          |
| 8          | Compressor IPM temperature A, C input current | -40~140°C        |
| 9          | High pressure saturation temperature          | -50~200°C        |
| 10         | Low pressure saturation temperature           | -50~200°C        |
| 11         | External ambient temperature                  | -40~140°C        |
| 12         | Outer coil temperature                        | -40~140°C        |
| 13         | Inner coil temperature                        | -40~140°C        |
| 14         | Return air temperature                        | -40~140°C        |
| 15         | Exhaust temperature                           | 0~150°C          |
| 16         | Return water temperature                      | -40~140°C        |
| 17         | Discharge temperature                         | -40~140°C        |



|    |  |            |
|----|--|------------|
| 18 | Economizer inlet pipe temperature                    | -40~140°C  |
| 19 | Economizer outlet pipe temperature                   | -40~140°C  |
| 20 | Unit Tooling Number                                  | 0~120      |
| 21 | Water tank temperature                               | -40~140°C  |
| 22 | Fluorine circuit plate heat exchange out temperature | -40~140°C  |
| 23 | Driver manufacturer                                  | 0~10       |
| 24 | Water pump speed PWM                                 | 0~100%     |
| 25 | Water flow rate                                      | 0~100L/min |
| 26 | User return water temperature                        | -40~140°C  |
| 51 | Hot Water heat source temperature                    | -40~140°C  |
| 52 | Heating heat source temperature                      | -40~140°C  |
| 53 | Heating water tank temperature                       | -40~140°C  |
| 54 | All outlet water temperature                         | -40~140°C  |

Factory setting parameters table:

| NO  | Interpretation                               | Range   |
|-----|--|---------|
| P00 | External ambient temperature sensor          | 0~1     |
| P01 | High voltage switch setting                  | 0~1     |
| P02 | Low pressure switch setting                  | 0~1     |
| P03 | Water flow switch setting                    | 0~1     |
| P04 | Thermal overload protection switch setting   | 0~1     |
| P05 | Linkage switch setting                       | 0~2     |
| P06 | Fan type setting                             | 0~1     |
| P07 | High voltage protection lockout setting      | 0~1     |
| P08 | Low pressure protection lockout setting      | 0~1     |
| P09 | Exhaust protection lockout setting           | 0~1     |
| P10 | Water flow switch protection lockout setting | 0~1     |
| P11 | High voltage protection value                | 40~70   |
| P12 | High-voltage frequency limit value           | 40~70   |
| P13 | Low-voltage protection value                 | -50~-10 |
| P14 | Low voltage frequency limit value            | -50~-10 |
| P15 | Exhaust temperature protection value         | 100~120 |
| P16 | Exhaust temperature frequency limit value    | 90~120  |
| P17 | Cooling fan speed up value                   | 0~60    |
| P18 | Cooling fan speed down value                 | 0~60    |
| P19 | Heating fan speed down value                 | 0~60    |
| P20 | Heating fan speed up value                   | 0~60    |

|     |   |          |
|-----|---|----------|
| P21 | Unit forbidden to start low temperature value                         | -40~-10  |
| P22 | Electric heating start ambient temperature                            | -15~40   |
| P23 | Inlet and outlet water temperature difference excessive value         | 10~30    |
| P24 | Return water temperature compensation value                           | -10~10°C |
| P25 | Outlet water temperature compensation value                           | -10~10°C |
| P26 | Air conditioning return difference value                              | 0~10°C   |
| P27 | Floor heating return difference value                                 | 0~10°C   |
| P28 | Pump control when reaching temperature shutdown                       | 0~1      |
| P29 | Anti-freeze pump running time (every 10min)                           | 0~10min  |
| P30 | Defrost mode selection  | 0~2      |
| P31 | Enter defrost cumulative run time threshold                           | 0~120    |
| P32 | Enter defrost coil temperature value                                  | -30~0    |
| P33 | Enter defrost temperature difference 1                                | 0~20     |
| P34 | Enter defrost temperature difference 2                                | 0~20     |
| P35 | Maximum defrost time  | 0~30     |
| P36 | Exit defrost coil temperature   | 0~30     |
| P37 | Temperature stop mode   | 0~2      |
| P38 | Heating main valve initial opening constant                           | -999~999 |
| P39 | Pressure sensor setting   | 0~1      |
| P40 | Refrigeration target superheat correction value                       | -5~10    |
| P41 | Heating high pressure protection and frequency limit correction value | -10~10   |
| P42 | Heating target superheat correction value                             | -5~10    |
| P43 | Medium pressure switch setting  | 0/1      |
| P44 | Water flow switch failure detection setting                           | 0/1      |
| P45 | Communication address code  | 1~16     |
| P46 | Return difference of liquid injection solenoid valve opening          | 0~15     |
| P47 | EVI target superheat constant   | 0~12     |
| P48 | Tank temperature probe enabled or not                                 | 0~1      |
| P49 | Hot water frequency running percentage                                | 30%~100% |
| P50 | Refrigeration target frequency constants                              | -100~100 |
| P51 | Refrigeration minimum frequency limit                                 | 15-60Hz  |
| P52 | Refrigeration target frequency upper limit                            | 40-120Hz |
| P53 | Refrigeration target frequency lower limit                            | 15Hz-P52 |
| P54 | Heating target frequency constant                                     | -100~100 |
| P55 | Heating target frequency upper limit                                  | 50-120Hz |
| P56 | Heating target frequency lower limit                                  | 20Hz-P55 |

|     |   |          |
|-----|---|----------|
| P57 | Heating minimum frequency1                        | 15-60Hz  |
| P58 | Heating minimum frequency2                        | 15-60Hz  |
| P59 | Heating minimum frequency3                        | 15-60Hz  |
| P60 | Hot water target frequency constants              | -100~100 |
| P61 | Hot water target frequency upper limit            | 50-120Hz |
| P62 | Hot water target frequency lower limit            | 15Hz-P61 |
| P63 | Hot water minimum frequency 1                     | 15-60Hz  |
| P64 | Hot water minimum frequency 2                     | 15-60Hz  |
| P65 | Hot water minimum frequency 3                     | 15-60Hz  |
| P66 | DC fan initial frequency                          | 20-60Hz  |
| P67 | DC fan machine heating minimum frequency          | 20-60Hz  |
| P68 | DC blower heating max frequency                   | 20-60Hz  |
| P69 | DC fan cooling minimum frequency                  | 20-60Hz  |
| P70 | DC fan cooling maximum frequency                  | 20-60Hz  |
| P71 | Turn on enthalpy control frequency                | 20-80Hz  |
| P72 | Stop enthalpy frequency                           | 20-80Hz  |
| P73 | Refrigeration main valve initial opening 1        | 20~480   |
| P74 | Refrigeration main valve initial opening 2        | 20~480   |
| P75 | Refrigeration main valve initial opening 3        | 20~480   |
| P76 | Refrigeration main valve minimum opening          | 0~300    |
| P77 | Heating main valve minimum opening                | 0~300    |
| P78 | Main valve maximum opening                        | 100~500  |
| P79 | Main valve initial opening constant c             | 50~300   |
| P80 | Main valve initial opening coefficient a          | -999~999 |
| P81 | Main valve initial opening coefficient b          | -999~999 |
| P82 | Max. opening of auxiliary valve                   | 100~500  |
| P83 | Minimum opening of auxiliary valve                | 50~300   |
| P84 | Main valve adjustment period                      | 10-120   |
| P85 | Initial opening constant of auxiliary valve c     | -200~900 |
| P86 | Initial opening coefficient of auxiliary valve a  | -999~999 |
| P87 | Initial opening coefficient of auxiliary valve b  | -999~999 |
| P88 | Quiet mode compressor frequency                   | 20-70Hz  |
| P89 | Quiet mode fan frequency                          | 20-60Hz  |
| P90 | Enthalpy increase into the ambient temperature    | 0-45     |
| P91 | Prohibition of enthalpy entry time                | 0-30     |
| P92 | Enthalpy entry temperature difference             | 0-60     |
| P93 | Enthalpy entering press continuous operation time | 0-20     |

|      |   |          |
|------|---|----------|
| P94  | Auxiliary valve adjustment cycle                                | 10-120   |
| P95  | Group network pump operation mode                               | 0-1      |
| P96  | Hot water return difference value (host)                        | 0~10°C   |
| P97  | Water tank temperature automatic compensation (host)            | 0~1      |
| P98  | Water tank temperature manual compensation value (host)         | -10~10°C |
| P99  | Water pump speed regulation temperature difference              | 2~10°C   |
| P100 | PWM pump minimum speed  | 20~80%   |
| P101 | Water pump control mode (host)                                  | 0~1      |
| P102 | Four-way valve control mode                                     | 0~1      |
| P103 | Mode switching minimum running time                             | 0~10min  |
| P104 | Operating frequency percentage at mode switching                | 20-100%  |
| P105 | Cooling mode running loop temperature limit (main unit)         | 10~60°C  |
| P106 | Heating mode running ring temperature limit (host)              | 10~60°C  |
| P107 | Hot water mode operation ring temperature limit value (host)    | 10~60°C  |
| P108 | Hot water set temperature upper limit value (host)              | 30~80°C  |
| P109 | Hot water set temperature lower limit value (main unit)         | 10~30°C  |
| P110 | Heating setting temperature upper limit (main unit)             | 30~60°C  |
| P111 | Heating setting temperature lower limit (main unit)             | 15~30°C  |
| P112 | Refrigeration setting temperature upper limit (main unit)       | 20~40°C  |
| P113 | Refrigeration setting temperature lower limit value (main unit) | 5~20°C   |
| P114 | Number of pressesors to choose                                  | 1~2°C    |
| P115 | Machine type selection (main machine)                           | 0~5      |
| P116 | Unit temperature control mode (host)                            | 0~1      |
| P117 | Anti-freeze entry ring temperature                              | 0~10°C   |
| P118 | Anti-freeze entry outlet water temperature                      | 0~20°C   |
| P119 | Refrigerant type  | 0~20     |
| P120 | Low temperature start limit                                     | 0~1      |
| P121 | Heating frequency shield 1 section low value                    | 0-120    |
| P122 | Heating frequency shield 1 high                                 |          |
| P123 | Heating frequency shield 2 low                                  |          |
| P124 | Heating frequency shield 2 high                                 |          |
| P125 | Heating frequency shield 3 low                                  |          |
| P126 | Heating frequency shield 3 segment high value                   |          |
| P127 | Refrigeration frequency shield 1 segment low value              |          |
| P128 | Refrigeration frequency shield 1 segment high value             |          |
| P129 | Refrigeration frequency shield 2 low                            |          |
| P130 | Refrigeration frequency shielding 2-segment high value          |          |

|      |   |          |
|------|---|----------|
| P131 | Refrigeration frequency shield 3-segment low value                        |          |
| P132 | Refrigeration frequency shield 3-segment high value                       |          |
| P133 | Fan module  | 0~1      |
| P134 | Water flow rate too low protection value                                  | 0~100    |
| P135 | Anti-condensation start temperature difference                            | 0~50     |
| P136 | Throttle bypass valve opening loop temperature                            | -20~50   |
| P137 | Throttle bypass valve delay press   | 0~999    |
| P138 | Defrosting press frequency  | 40~120   |
| P139 | Air conditioning electric heating options                                 | 0/1      |
| P140 | Hot water electric heating options  |          |
| P141 | Frost dew point duration  | 0~60     |
| P142 | Frosting dew point constant   |          |
| P143 | Frost accessible water temperature  |          |
| P144 | Frost-accessible ring temperature   | -20~30   |
| P145 | Frost protection value of water outlet                                    | -30~10   |
| P146 | Water pump range setting value  | 0~100    |
| P147 | Refrigeration anti-freeze mode  | 2000/1/2 |
| P148 | Refrigeration anti-freeze temperature value                               | -40      |
| P149 | Water out of the high limit frequency value                               | 40-80    |
| P150 | Secondary heating pump selection  | 2        |
| P151 | Hot water heat source return difference                                   | 0        |
| P152 | Heating heat source return difference                                     | 0        |
| P153 | Combined hot water heat source upper temperature limit                    | 70       |
| P154 | Combined heating heat source upper temperature limit                      | 60       |
| P155 | Compressor code   | 0        |
| P156 | Auxiliary electronic expansion value selection                            | 0        |
| P157 | Auxiliary electronic expansion value to reduce the temperature difference | 0        |
| P158 | Heating limit water temperature, start the ambient temperature            | -15      |
| P159 | Limit temperature constant  | 68       |
| P160 | Limit temperature coefficient   | 14       |
| P161 | Auxiliary pump selection  | 0        |
| P162 | Anti-freezing interval for hot water pipes                                | 90       |
| P163 | Minimum feedback of pump speed regulation                                 | 30       |
| P164 | Level control   | 3        |
| P165 | Load return difference  | 3        |
| P166 | Lightening back to the poor   | 2        |

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|------|--|-----|
| P167 | Stop back to the poor                      | 3   |
| P168 | Hot water mode start ratio                 | 50  |
| P169 | Non-hot water mode start ratio             | 100 |
| P170 | Loading cycle                              | 7   |
| P171 | Shield low voltage switch ring temperature | -30 |

Fault code sheet:

|     |   |
|-----|---|
| E01 | Wrong phase fault   |
| E02 | Out of phase fault  |
| E03 | Water flow switch fault   |
| E04 | Main board and 4G module communication fault                          |
| E05 | High pressure switch protection                                       |
| E06 | Low pressure switch protection  |
| E09 | Line controller and motherboard communication failure                 |
| E11 | Time limit protection   |
| E12 | Exhaust gas temperature too high fault                                |
| E14 | Hot water tank temperature failure                                    |
| E15 | Water inlet temperature sensor failure                                |
| E16 | Coil sensor failure   |
| E18 | Exhaust gas sensor failure  |
| E21 | Environmental sensor failure  |
| E22 | User return water sensor failure                                      |
| E23 | Cooling subcooling protection   |
| E24 | Plate heat exchanger out temperature fault                            |
| E26 | Plate heat exchanger for anti-freeze sensor failure                   |
| E27 | Out of the water sensor failure                                       |
| E29 | Return gas sensor failure   |
| E33 | High pressure sensor failure  |
| E34 | Low pressure sensor failure   |
| E37 | Inlet and outlet water temperature difference is too large protection |
| E38 | DC fan 1 failure  |
| E39 | DC fan 2 failure  |
| E42 | Cooling Coil Sensor 1 failure   |
| E47 | Economizer inlet sensor failure                                       |
| E49 | Economizer outlet sensor failure                                      |
| E51 | High pressure over high protection                                    |
| E52 | Low pressure over low protection                                      |

|     |  |
|-----|--|
| E55 | Expansion board communication failure                        |
| E80 | Power supply error   |
| E94 | Water pump feedback failure                                  |
| E96 | Press 1 driver and main control board communication abnormal |
| E98 | Fan 1 driver and main control board communication abnormal   |
| E99 | Fan 2 driver and main control board communication abnormal   |
| EA0 | Plate heat exchanger temperature failure                     |
| EA1 | Network model error  |
| EA2 | Hot water heat source sensor failure                         |
| EA3 | Heating heat source sensor failure                           |
| EA4 | Heating water tank sensor failure                            |
| EA5 | Total out of the water sensor failure                        |

|         |     |   |
|---------|-----|---|
| E88/E89 | P1  | IPM overcurrent/IPM module protection                     |
|         | P2  | Compressor drive failure                                  |
|         | P3  | Bit0:Compressor overcurrent alarm                         |
|         | P4  | Input voltage out of phase                                |
|         | P5  | IPM current sampling failure                              |
|         | P6  | Power component overheating shutdown.                     |
|         | P7  | Pre-charge failure  |
|         | P8  | DC bus over-voltage                                       |
|         | P9  | DC bus undervoltage                                       |
|         | P10 | AC input undervoltage                                     |
|         | P11 | AC input overcurrent                                      |
|         | P12 | Input voltage sampling fault                              |
|         | P13 | DSP and PFC communication fault                           |
|         | P14 | Heat sink temperature sensor failure                      |
|         | P15 | Communication failure between DSP and communication board |
|         | P16 | Abnormal communication with main control board            |
|         | P17 | Compressor over current alarm                             |
|         | P18 | Compressor weak magnetic protection alarm                 |
|         | P19 | PIM overheat alarm  |
|         | P20 | PFC overheat alarm  |
|         | P21 | AC input overcurrent alarm                                |
|         | P22 | EEPROM failure alarm                                      |
|         | P24 | EEPROM refresh completed                                  |
|         | P25 | Temperature sensing fault frequency limit.                |

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|--|-----|--|
|  | P26 | AC undervoltage frequency limit protection alarm |
|  | P33 | IPM module overheating shutdown                  |
|  | P34 | Compressor out of phase                          |
|  | P35 | Compressor overload                              |
|  | P36 | Input current sampling fault                     |
|  | P37 | PIM supply voltage failure                       |
|  | P38 | Precharge circuit voltage failure                |
|  | P39 | EEPROM fault                                     |
|  | P40 | AC input overvoltage fault                       |
|  | P41 | Microelectronics fault                           |
|  | P42 | Compressor type code fault                       |
|  | P43 | Current sampling signal overcurrent              |



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# 6 Initial operation and settings

## 6.1 Attention

1. Do adjustment after electrical safety inspection.
2. After the power is switched on, start the test running of heat pump, to see if it can function well.
3. Forced operation is forbidden, because it is very dangerous to work without protector.

## 6.2 Preparation Before Adjustment

1. Check that the system is installed correctly.
2. Pipes and cables are connected correctly.
3. Check that accessories are installed.
4. Make sure the drainage is working properly.
5. Make sure the system piping and connections are properly insulated.
6. Check that ground/earth connection had been made correctly.
7. Check that supply voltage can meet the requirement of rated voltage.
8. Check that the electrical leakage protector works correctly.

## 6.3 Adjustment Process

1. Check that switch of display controller works properly.
2. Check that function keys on display controller work properly.
3. Check that indicator lights work properly.
4. Check that drainage works properly.
5. Check that system works correctly after starting up.
6. Check that water outlet temperature is acceptable.
7. Check if there are vibrations or abnormal sounds when the system is functioning.

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# 7 Operation and Maintenance

## 7.1 Operation

1. Conduct regular maintenance according to the user manual instruction, to make sure the unit running is in good condition.
2. If there is a fire, disconnect the power immediately and put the fire out with fire extinguisher.
3. The unit's operating environment should be free of gasoline, ethyl alcohol and other flammable materials to avoid explosions or fire.
4. if any malfunction occurs, find the reason, fix it and then reboot the unit. Never reboot the unit forcibly if the cause of the malfunction has not been eliminated. If there is refrigerant leakage or frozen liquid leakage, switch the unit off. If it is not possible to turn the unit off from the controller then disconnect the main power supply.
5. Never short connect the wire for device protection otherwise, in case unit malfunction, the unit will not be protected normally and could be damaged.

## 7.2 Maintenance

The heat pump should be installed and operated by qualified professionals. To ensure the continued correct functioning of the system it is recommended that it should be checked and maintenance should be carried out at regular. During maintenance, please pay attention to the points below:

1. Check that all parameters are normal during system operation.
2. Check for loose electrical connections and fix if necessary.
3. Check electrical components and replace if necessary.
4. After restarting the unit following a long period of inactivity, please do the following: examine and clean the equipment carefully, clean the water pipe system, check the water pump and fasten all the wire connections.
5. During leak detection and air tightness experiment, never allow oxygen, ethane or other harmful flammable gases to enter the system: only compressed air, fluoride or refrigerant can be used for such a test.