

# Technical Training

-INVER X7





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1 Product Structure

2 Refrigerant System

3 Electrical System

4 Installation

5 Troubleshooting



# 1 Product Structure

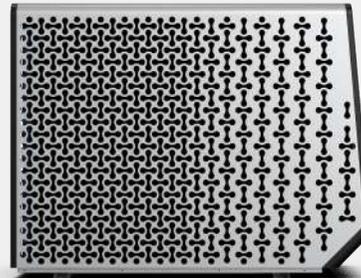
1.1 Appearance

1.2 Special Design

1.3 Internal Structure Overview

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# 1.1 Appearance



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## 1.2 Special Design

### Compressor Anti-Vibration Rubber

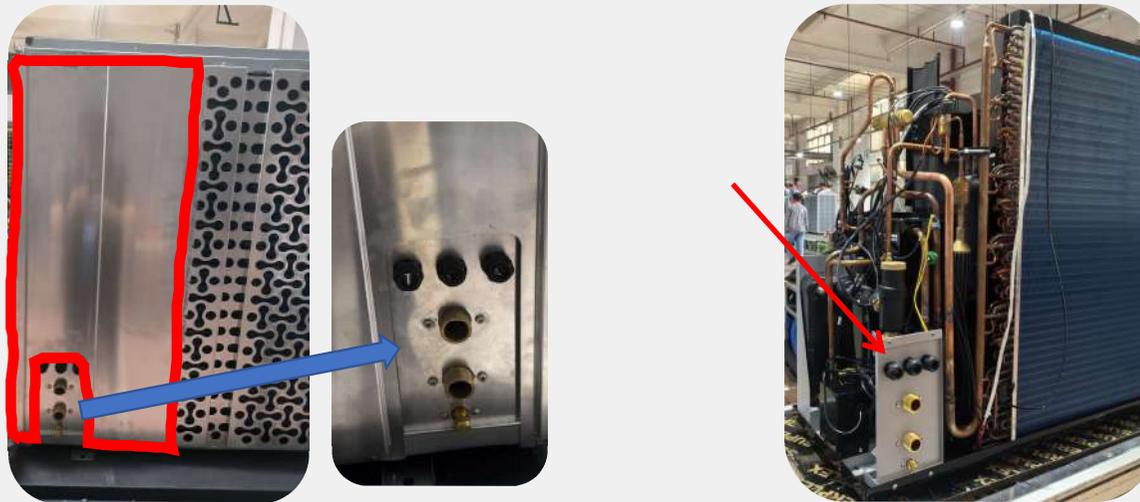
During operation, it can reduce noise generated by compressor and also protect the unit's normal running.



## 1.2 Special Design

### Independent Water Connection Design

This greatly conveniences installer in installing and maintaining the unit

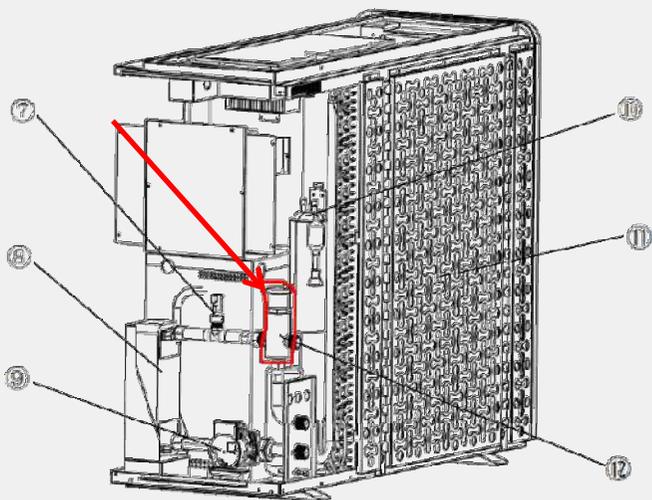


## 1.2 Special Design

### Built-in gas separator

Unlike other manufacturers who supply it as an component, we integrate it directly into the unit.

The primary function of the gas separator is to automatically discharge air from the water circuit system, preventing its impact on the unit. In critical situations, it can discharge refrigerant that has leaked into the water, preventing safety accidents.



## 1.3 Internal Structure Overview



## 1.3 Internal Structure Overview

### Accessories



Temperature Sensor &  
Communication Cable



Display



Rubber base



Anti-freeze valve &  
related components





## 2 Refrigerant System

2.1 Key Components

2.2 Refrigeration System  
Diagram

## 2.1 Key Components

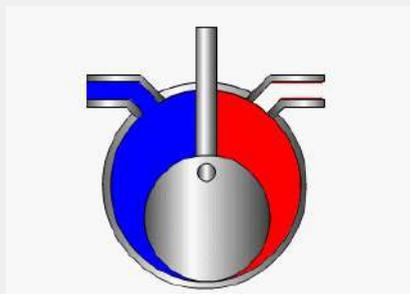
### Compressor

It is the heart of the heat pump system, turning low-temperature, low-pressure refrigerant gas into high-temperature, high-pressure gas.

Brand: GMCC

Model: EDTQ580D20EN5B

Oil Charged: PAG VG60\*1100ml

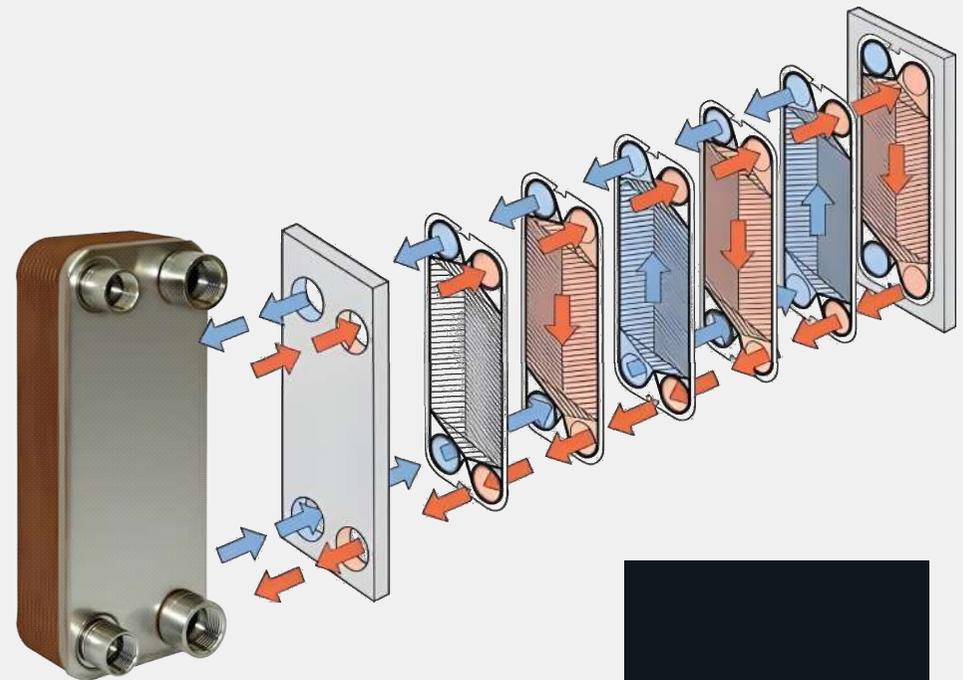


## 2.1 Key Components

### Plate Heat Exchanger

It is the place where heat exchange between the refrigerant and water. In heating mode, high-temperature, high-pressure refrigerant transfers heat to the water here.

Brand: Danfoss

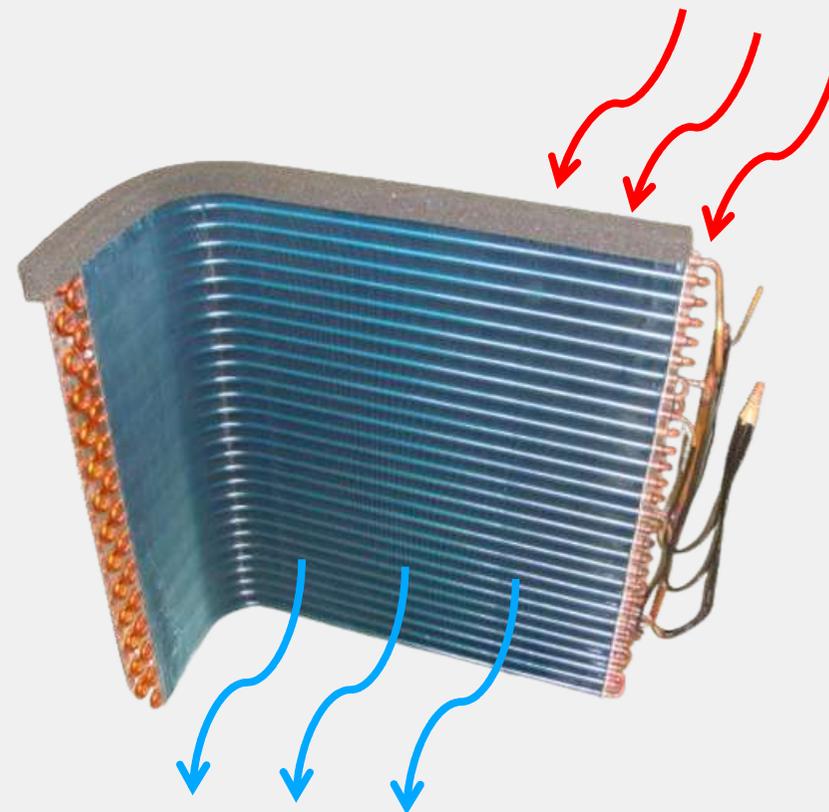


## 2.1 Key Components

### Finned heat Exchanger

It is the place where the refrigerant exchanges heat with the air. In heating mode, the low-temperature, low-pressure gas-liquid mixture refrigerant absorbs heat from the air here.

Brand: Self-developed and produced

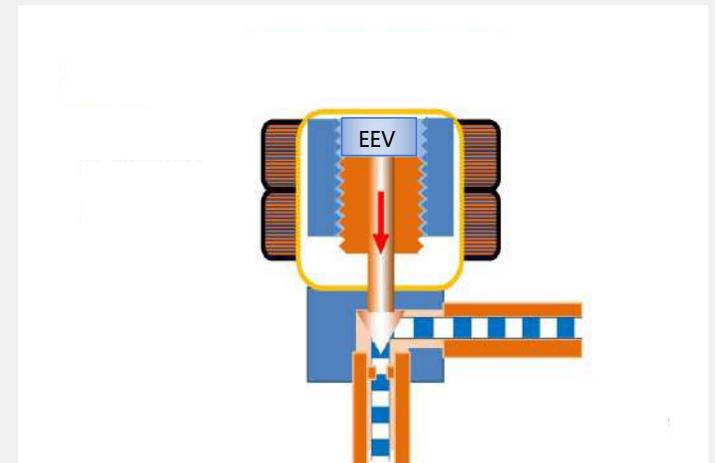
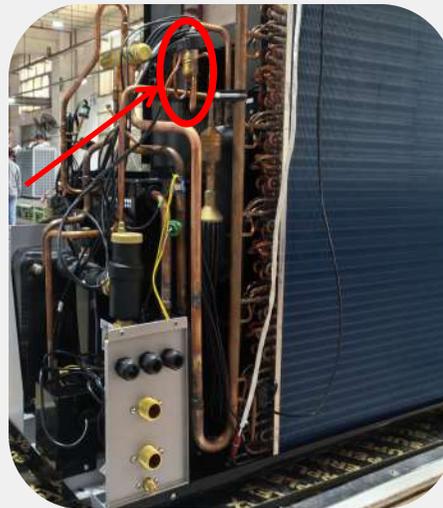
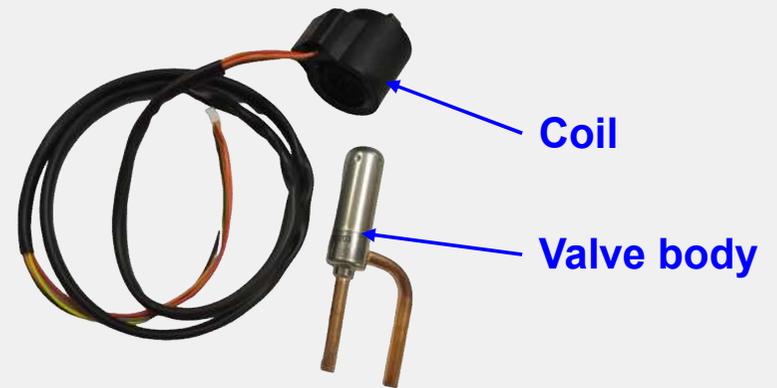


## 2.1 Key Components

### Electronic Expansion Valve

Its function is to reduce refrigerant pressure and regulate refrigerant flow, enabling the heat pump to deliver outstanding performance across a wider range of ambient temp.

Brand: Sanhua



## 2.1 Key Components

### Four-Way Valve

Its function is to change the flow direction of the refrigerant, enabling the heat pump to achieve the cooling mode/defrosting

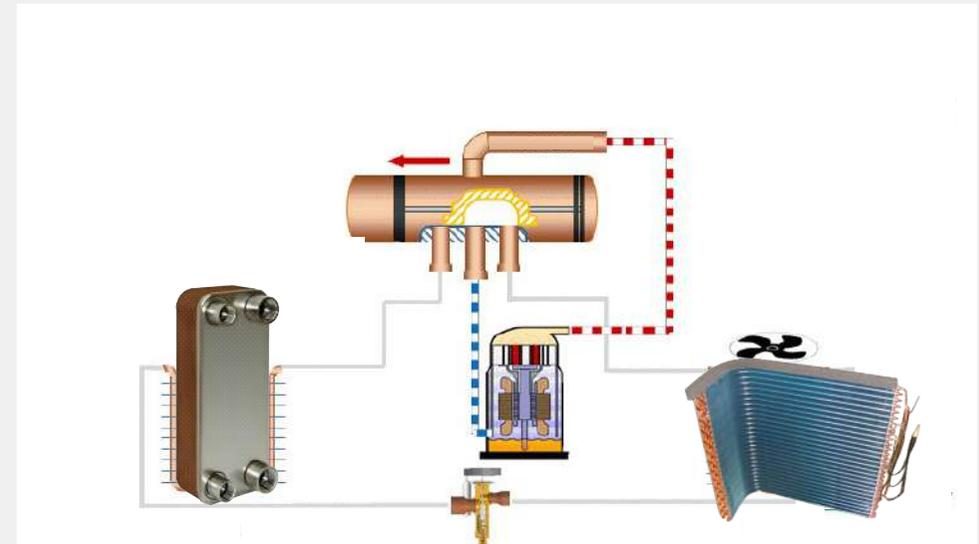
Brand: Sanhua



Valve body



Coil

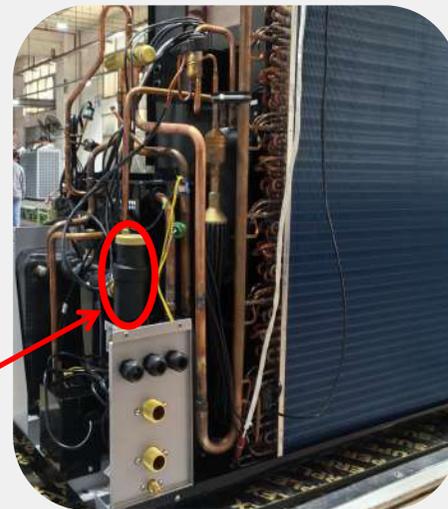


## 2.1 Key Components

### Gas Separator

Its function is to vent air from the water circuit system, especially in emergency situations where refrigerant leaks into the water circuit, allowing all refrigerant to be discharged outdoor.

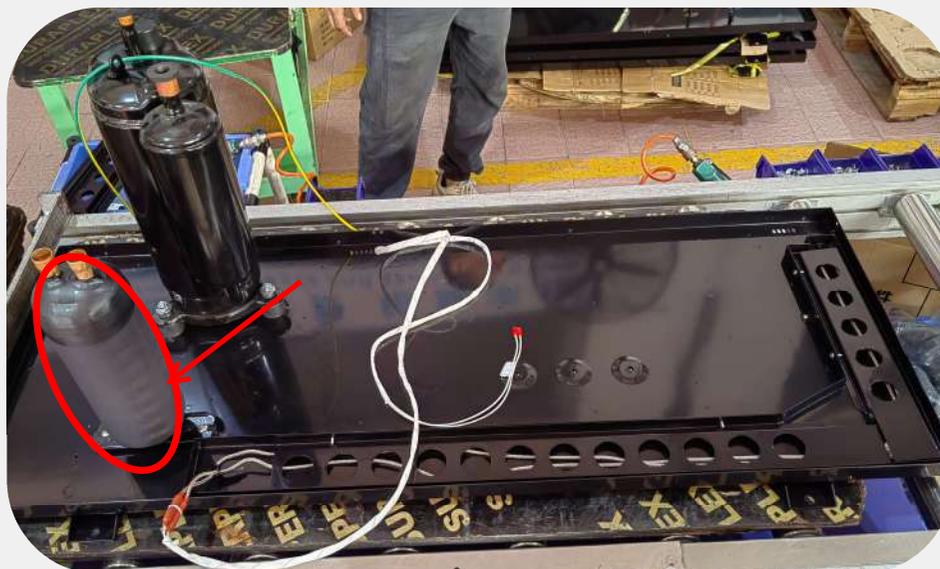
Brand: ACOL



## 2.1 Key Components

### Refrigerant Storage Tank

Its function is to automatically adjust the refrigerant circulation quantity based on the different demands of heating and cooling mode.



## 2.1 Key Components

### Main Circulation Pump

Its function is to drive the circulation of water, responsible for the circulation between the heat pump and the end load (such as underfloor heating, radiators, etc.).

Brand: Wilo

Model: Para 25-130/8-75/IPWM1-12

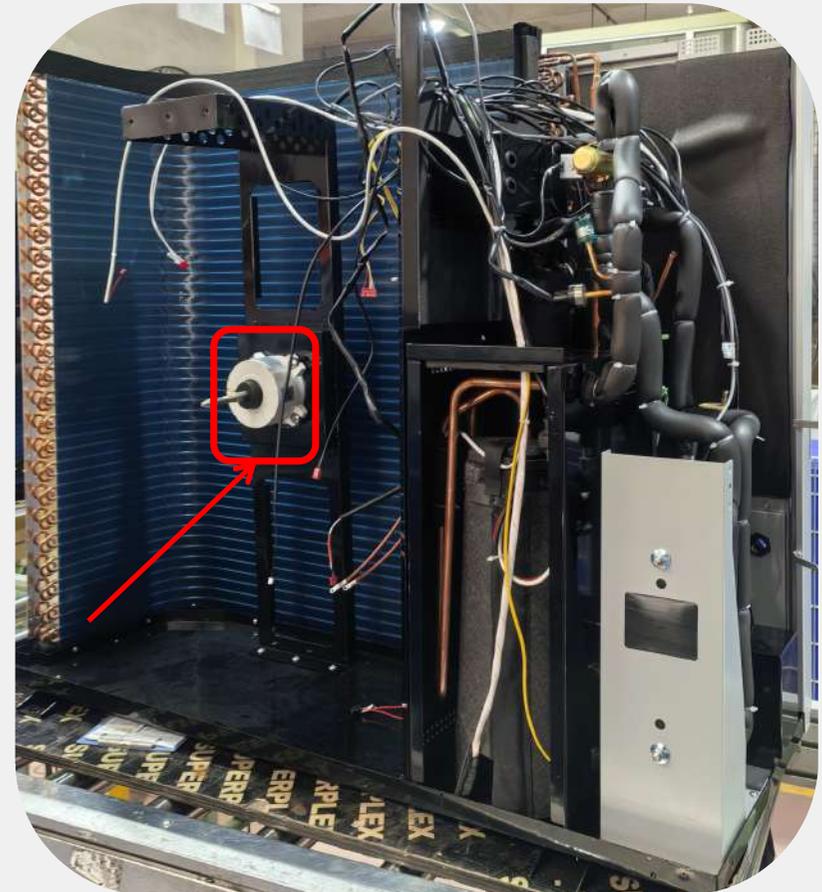


## 2.1 Key Components

### Fan Motor

Its function is to force the fan blades to operate, driving air circulation and promoting heat exchange between the air and refrigerant within the finned heat exchanger.

Brand: Match-Well



## 2.1 Key Components

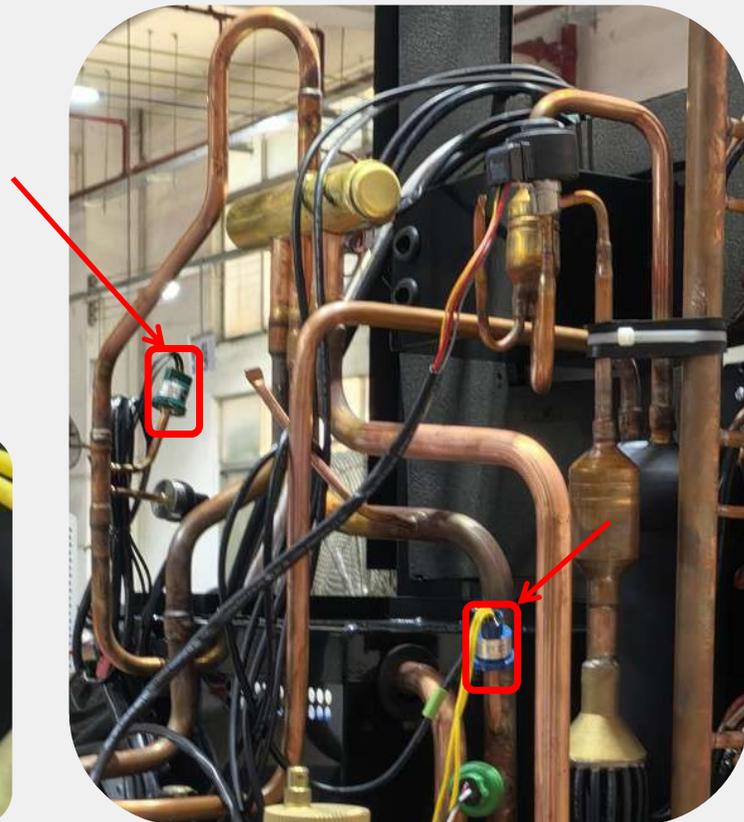
### High/Low Pressure Switch

Their function is to monitor refrigerant system pressure and protect the normal operation of heat pump system

Brand: Match-Well

High pressure:  
**OPEN:** 3.2MPa  
**CLOSE:** 2.4MPa

Low pressure:  
**OPEN:** 0.02MPa  
**CLOSE:** 0.15MPa



## 2.1 Key Components

### High/Low Pressure Sensor

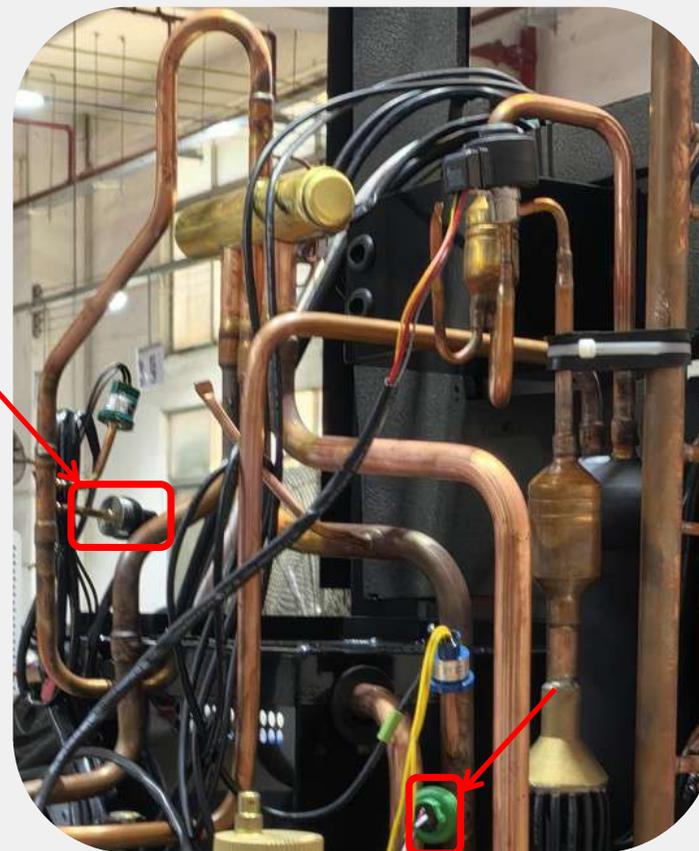
Their function is to monitor the high/low pressure of the refrigerant system, participate in unit control, and ensure the safe operation of the heat pump.



High pressure sensor



Low pressure sensor



## 2.1 Key Components

### Flow Switch

Its function is to monitor the water flow during unit operation, ensuring the normal running of the heat pump system.

Brand: ACOL

Model	Rated Water Flow Rate	Minimum Water Flow Rate to be Guaranteed
iGXC08	1.50m <sup>3</sup> /h	1.05m <sup>3</sup> /h
iGXC11	1.80m <sup>3</sup> /h	1.26m <sup>3</sup> /h
iGXC11T	1.80m <sup>3</sup> /h	1.26m <sup>3</sup> /h
iGXC13	2.20m <sup>3</sup> /h	1.54m <sup>3</sup> /h
iGXC13T	2.20m <sup>3</sup> /h	1.54m <sup>3</sup> /h
iGXC16	3.00m <sup>3</sup> /h	2.10m <sup>3</sup> /h
iGXC16T	3.00m <sup>3</sup> /h	2.10m <sup>3</sup> /h

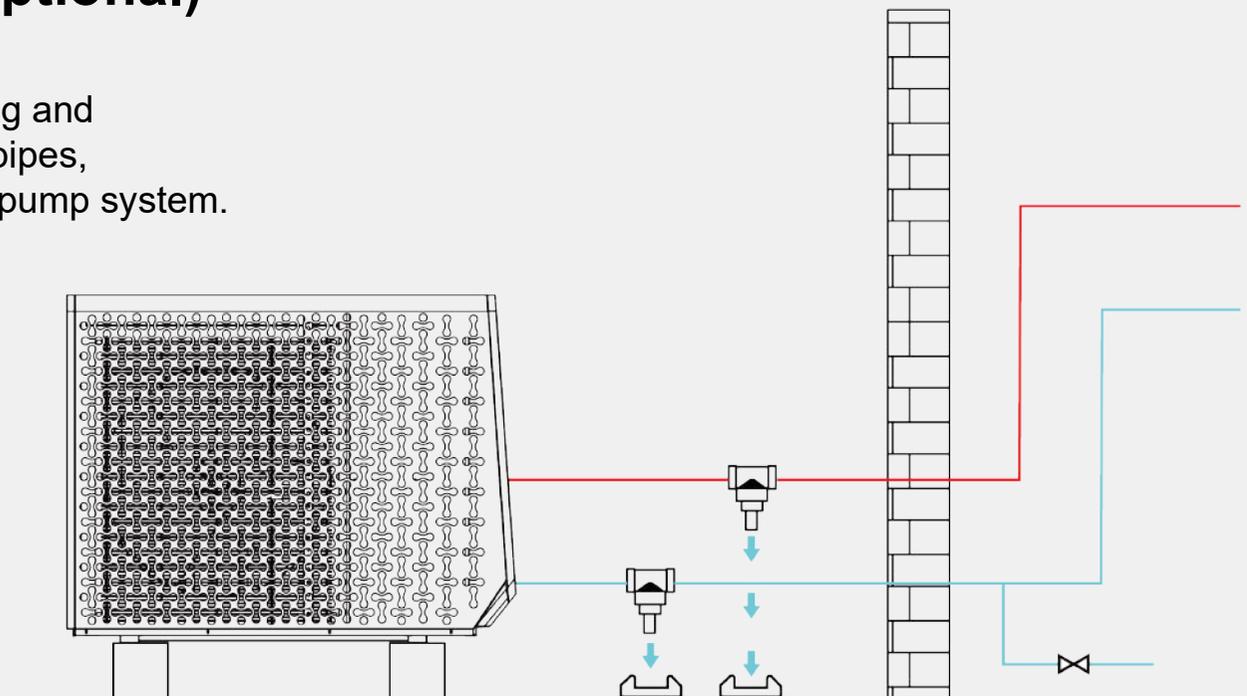


## 2.1 Key Components

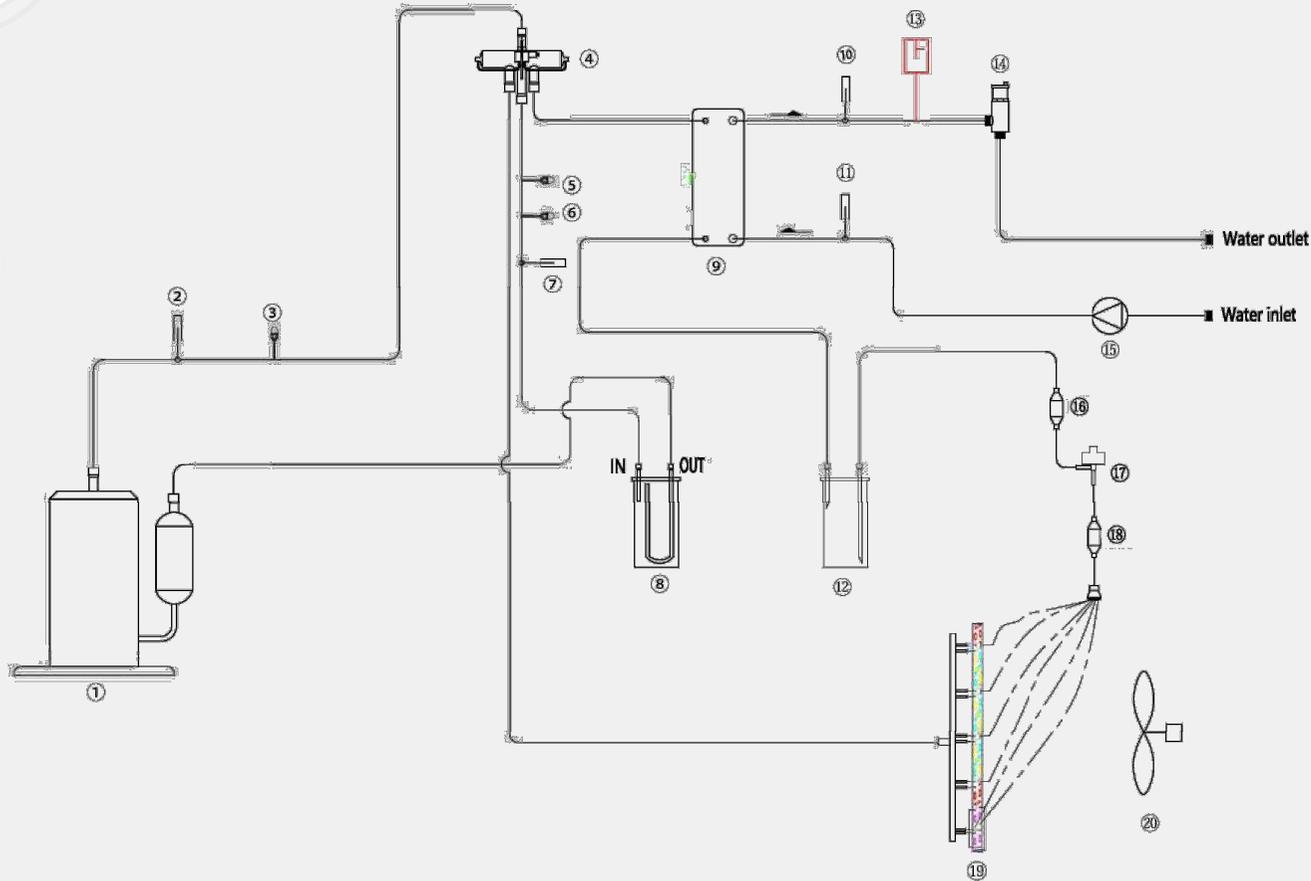
### Anti-freeze Valve (optional)

Its function is to prevent freezing and expansion cracking of units or pipes, ensuring the safety of the heat pump system.

Brand: ACOL



## 2.2 Refrigeration System Diagram



No.	Part name
①	Compressor
②	Temperature sensor (Compressor exhaust temperature)
③	High pressure sensor/switch
④	4-way valve
⑤	Low pressure switch
⑥	Low pressure sensor
⑦	Temperature sensor (Compressor suction temperature)
⑧	Gas-liquid separator
⑨	Plate heat exchanger
⑩	Temperature sensor (Water outlet)
⑪	Temperature sensor (Water inlet)
⑫	Refrigerant storage tank
⑬	Flow switch
⑭	Gas separator
⑮	Main circulation pump
⑯	Filter
⑰	Electronic expansion valve (EEV)
⑱	Filter
⑲	Finned heat exchanger
⑳	Fan

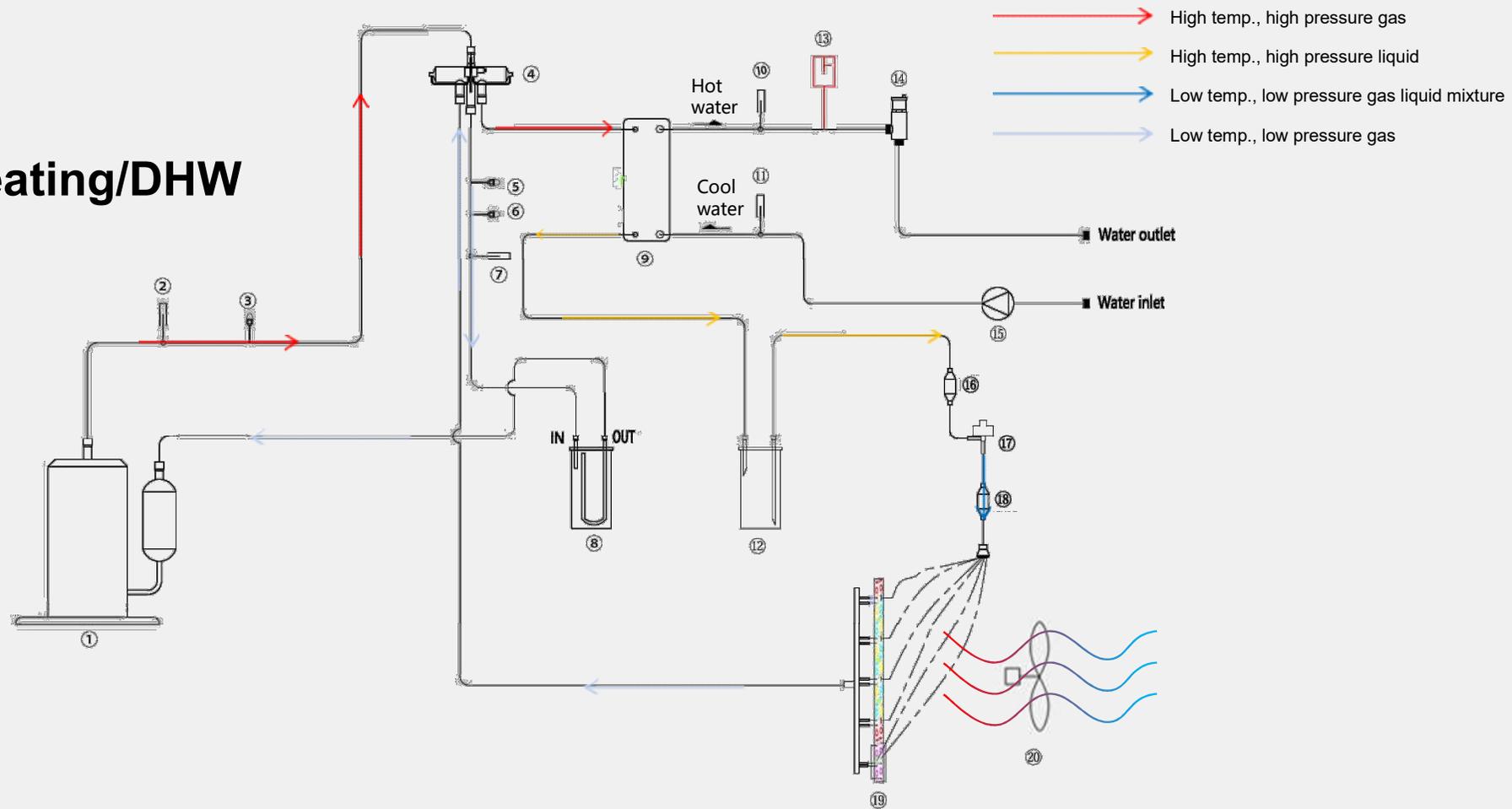




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## 2.2 Refrigeration System Diagram

Heating/DHW

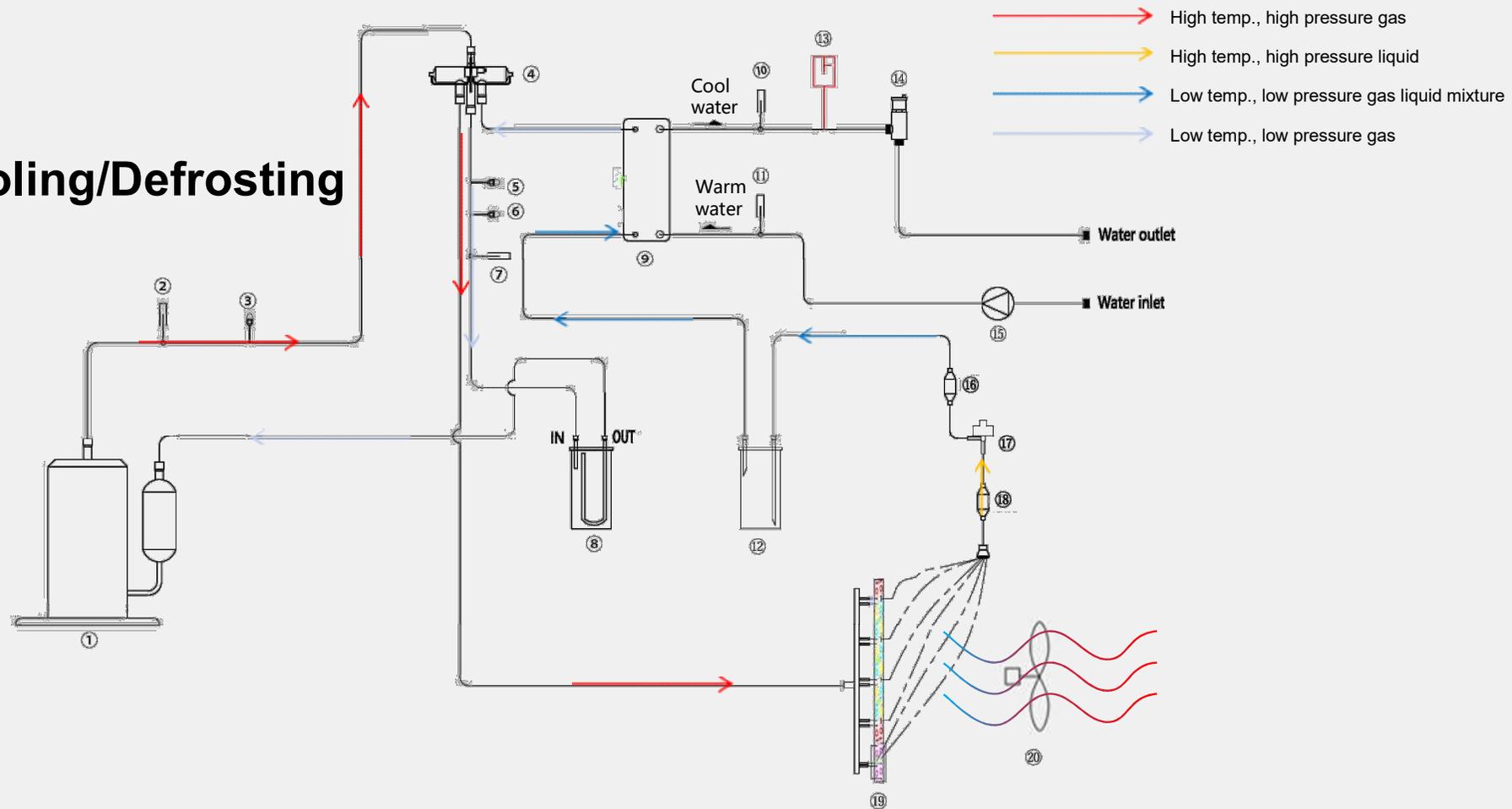




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## 2.2 Refrigeration System Diagram

Cooling/Defrosting





## 3 Electrical System

3.1 Wiring Diagram

3.2 PCB and Terminals

3.3 Display

3.4 Logic and Function

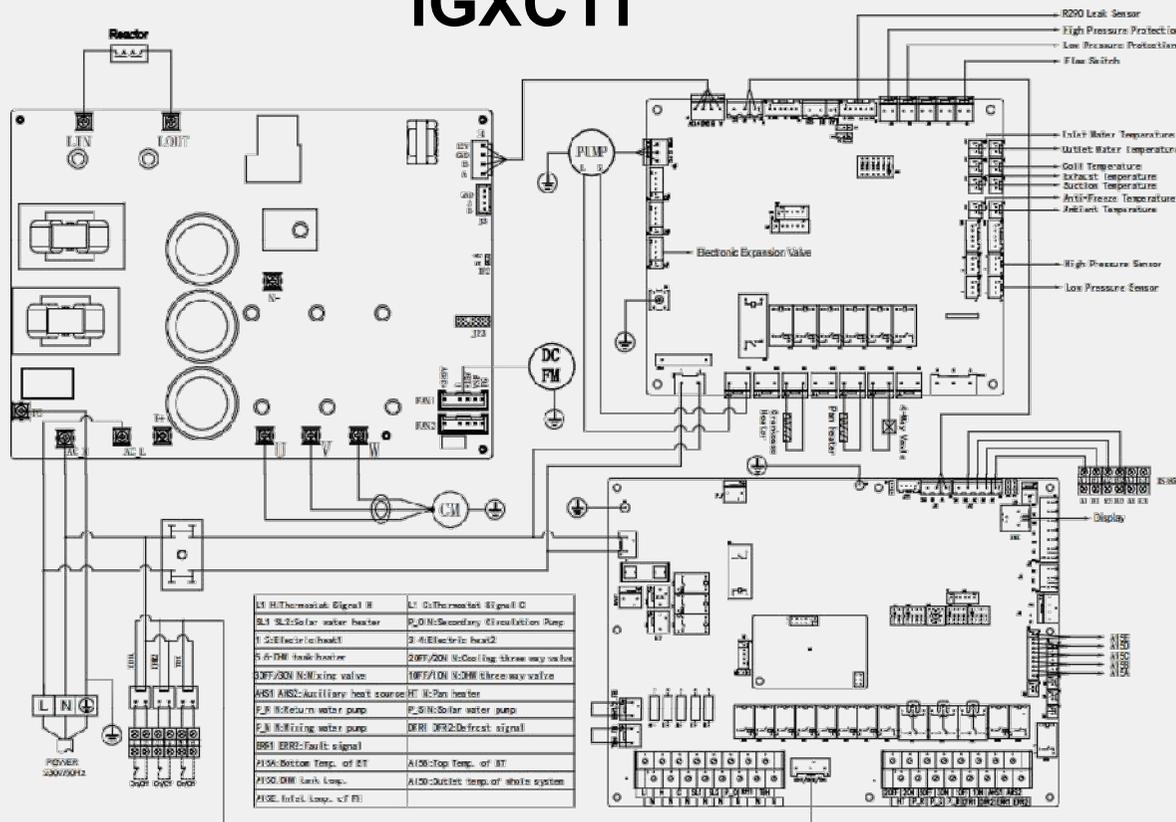
3.5 APP and IOT Platform

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# 3.1 Wiring Diagram

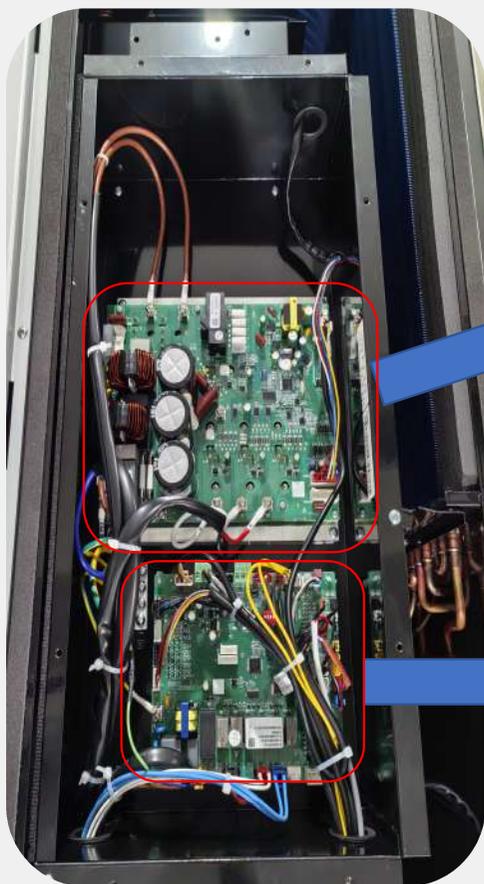
## iGXC11







## 3.2 PCB and Terminals



Inverter PCB



Main Control PCB



### 3.2 PCB and Terminals

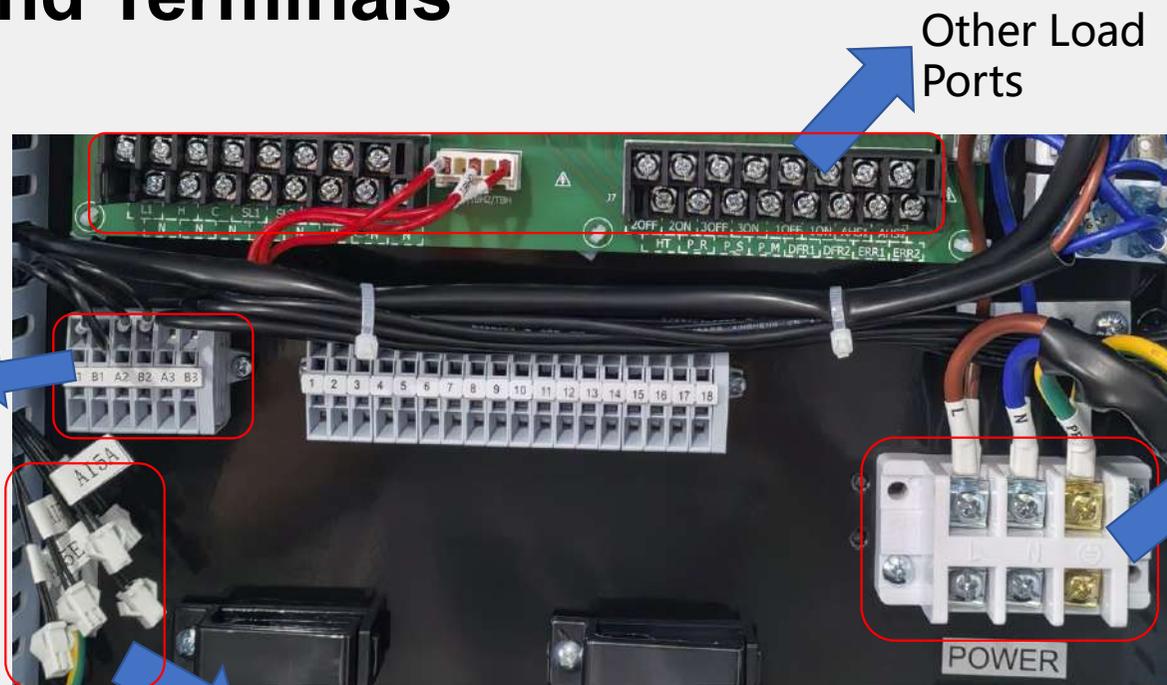


Relay



Expansion PCB

## 3.2 PCB and Terminals



RS485  
Communication  
Port

Other Load  
Ports

Power  
Supply

Temperature  
Sensor

- AI5A:**Bottom Temp. of BT(Reserved)
- AI5B:**Top Temp. of BT
- AI5C:**DHW tank temp
- AI5D:**Outlet temp.of whole system(Reserved)
- AI5E:**Inlet temp. of FH(Reserved)



## 3.2 PCB and Terminals



**L1 H**:Thermostat Signal H  
**L1 C**:Thermostat Signal C  
**P\_O N**:Secondary Circulation Pump  
**SL1 SL2**:Solar water heater  
**IBH1**:Electric heat1  
**IBH2**:Electric heat2  
**TBH**:DHW tank heater

**20FF/20N N**:Cooling 3 way valve  
**30FF/30N N**:Mixing 3 way valve  
**10FF/10N N**:DHW 3 way valve  
**AHS1 AHS2**:Auxiliary heat source  
**HT N**:Bottom heater  
**P\_R N**:Return water pump  
**P\_M N**:Mixing water pump  
**P\_S N**:Solar water pump  
**DFR1 DFR2**:Defrost signal  
**ERR1 ERR2**:Error signal



### 3.3 Display



No.	Meaning	Description
①	Menu	After clicking this button, the unit will enter the function menu interface, where you can configure various custom modes.
②	Mode setting	After clicking this button, you can configure the unit mode settings. There are three modes available: Heating, Cooling, and Auto.
③	Power consumption	The number indicates real-time power consumption, while the bar chart shows hourly power consumption for the current day. If power consumption is not enabled, the main screen will not show.
④	Screen lock	After locking, the display cannot be operated; Press the button again to unlock the screen.
⑤	Operating strategy	After clicking this button, you can select the unit's operating strategy. There are three strategies available: Turbo, Standard, and Silent.



### 3.3 Display



No.	Meaning	Description
⑥	100% Green enable button	After clicking this button, the unit will operate in conjunction with the solar inverter device. Note: This function requires the installation of Fairland's Inverter to be enabled.
⑦	DHW setting	Upper shows the target DHW temperature. You can slide the ring to set the target temperature or click the target temperature to set it. Lower shows the actual temperature of the hot water tank.
⑧	DHW switch	You can turn the DHW function on or off.
⑨	Fault icon	When a fault occurs, this icon will appear. Clicking it will take you to the fault log interface for viewing.
⑩	WiFi icon	It indicates the current network settings status. Clicking this icon to access the network settings interface.





### 3.3 Display

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No.	Meaning	Description
⑪	SG Ready icon	When the SG Ready function is enabled, this icon will be illuminated, otherwise, it will be dim.
⑫	Defrosting icon	When the Defrosting is enabled, this icon will be illuminated, click can enable the forced defrost.
⑬	System time	Shows the date and time. Click can modify the date and time.
⑭	100% Green icon	When the 100% Green function is enabled, this icon will be illuminated.
⑮	Ambient temp.	It shows the current ambient temperature.



### 3.3 Display



User Manual for  
iGXC11(T)-11.28

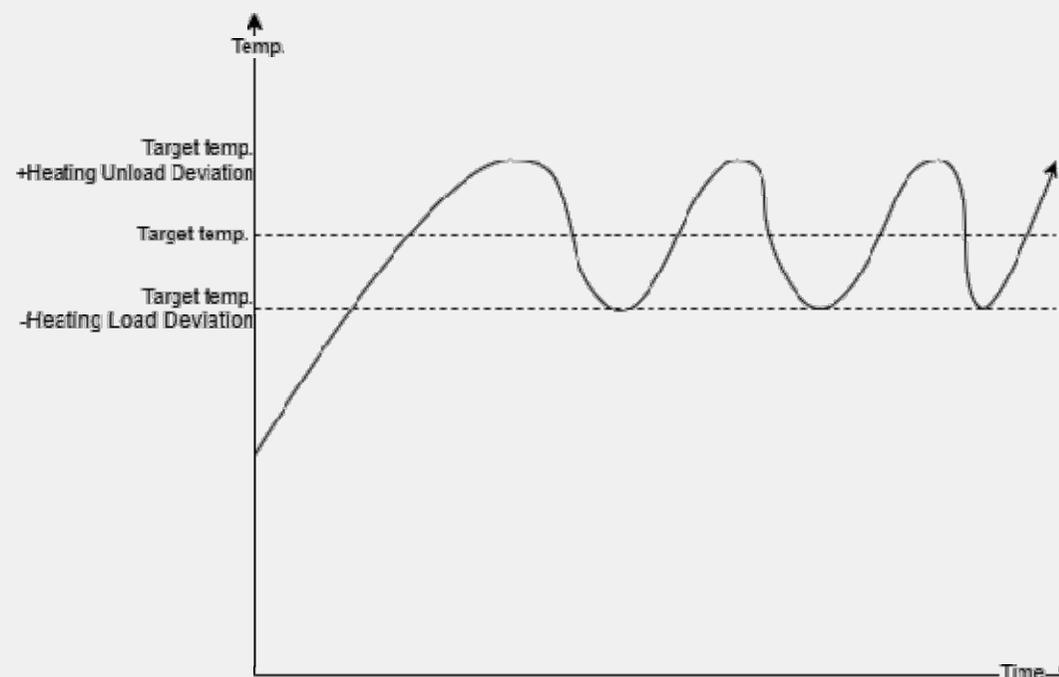
No.	Meaning	Description
⑩⑥	Electric heater	When the Electric heater is enabled, this icon will be illuminated, otherwise, it will be dim. Click the icon to access the forced opening settings
⑩⑦	Operating strategy icon	It shows the current Operating strategy
⑩⑧	On/off timer icon	When the Timer function is enabled, this icon will be illuminated. Click this icon to access the timer settings interface.
⑩⑨	Heating/Cooling On/Off	You can turn the cooling/heating on or off.
⑩⑩	Cooling/Heating Temperature Setting	It will show the current cooling/heating target temperature. Slide the ring to set the target temperature. You can also set the target temperature by tapping it; after tapping, the device will enter the target temperature setting interface. Current Temperature: shows the current temperature.

## 3.4 Logic and Function

### Heating Mode

When the outlet water temperature  $<$  target temperature - [Heating Load Deviation], the unit will **start**.

When the outlet water temperature  $>$  target temperature + [Heating Load Deviation], the unit will **stop**.

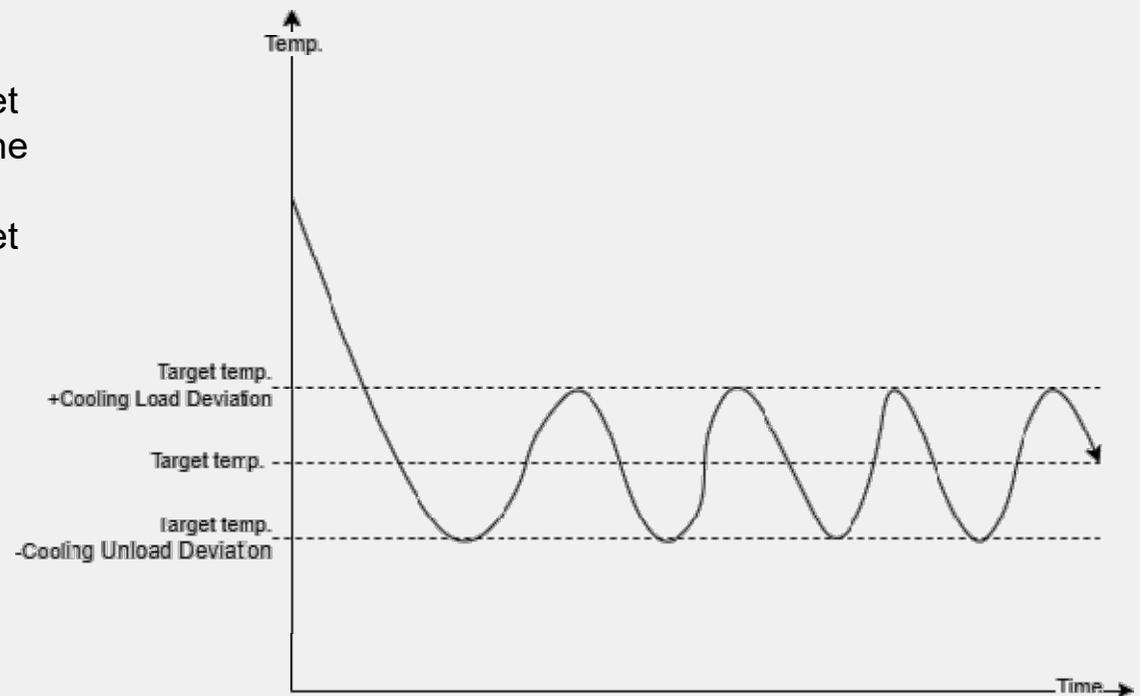
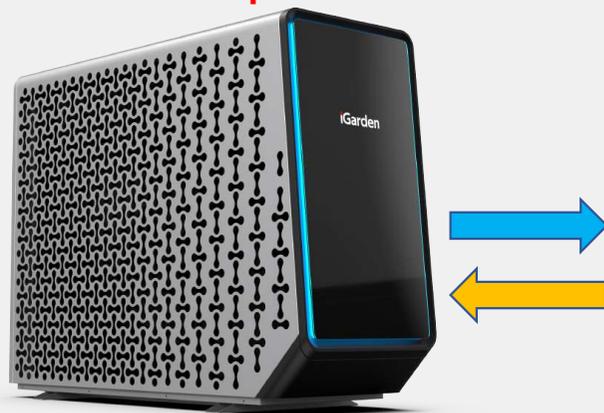


## 3.4 Logic and Function

### Cooling Mode

When the outlet water temperature  $>$  target temperature + [Cooling Load Deviation], the unit will **start**.

When the outlet water temperature  $<$  target temperature - [Cooling Unload Deviation], the unit will **stop**.

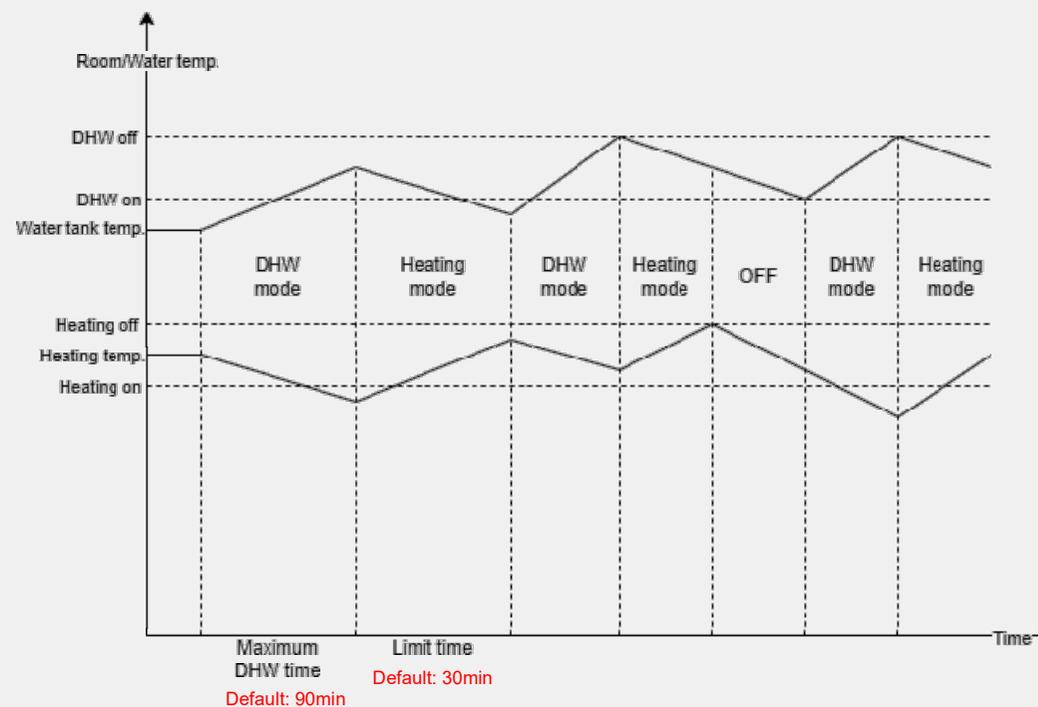


## 3.4 Logic and Function

### DHW Priority

When the unit is first started, it will operate in DHW mode first. Once the DHW tank temperature reaches the target temperature or exceeds the maximum DHW time, the unit will switch to heating/cooling mode.

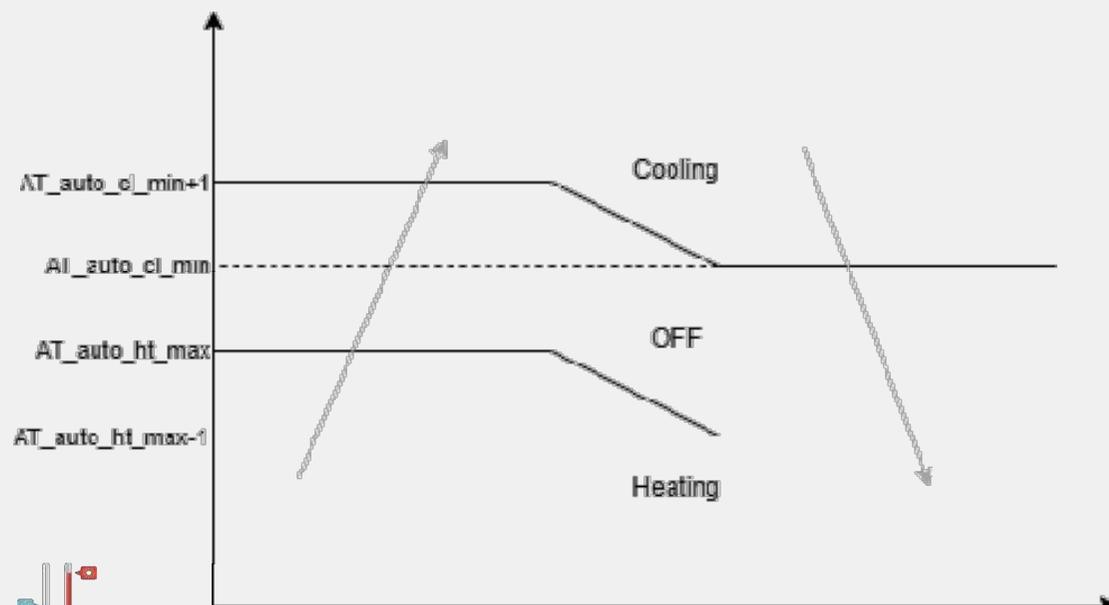
After reaching the heating/cooling target temperature, the unit will switch back to DHW mode.



## 3.4 Logic and Function

### Automatic function

When the user selects the automatic mode, the operation mode is automatically switched according to ambient temperature



## 3.4 Logic and Function

### Electric heater

Starting Conditions(**AND**):

- ① Ambient temperature < [Electric Heater Activation Ambient Temp.] - 1,
- ② Water temperature < target temp. - [Heating Load Deviation]
- ③ Electric heater shutdown time exceeds [Electric Heater Activation Delay Time]

Shutdown Conditions(**OR**):

- ① Water temperature reaches target temp. + [Heating Unload Deviation]
- ② Ambient temperature  $\geq$  [Electric Heater Activation Ambient Temp.].

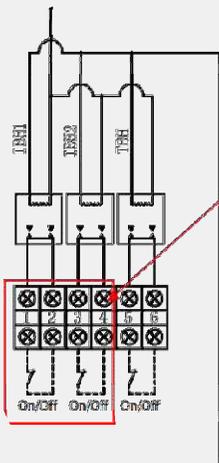
Note: [Electric Heater Activation Ambient Temp.] =  $-5^{\circ}\text{C}$   
[Electric Heater Activation Delay Time] = 30min



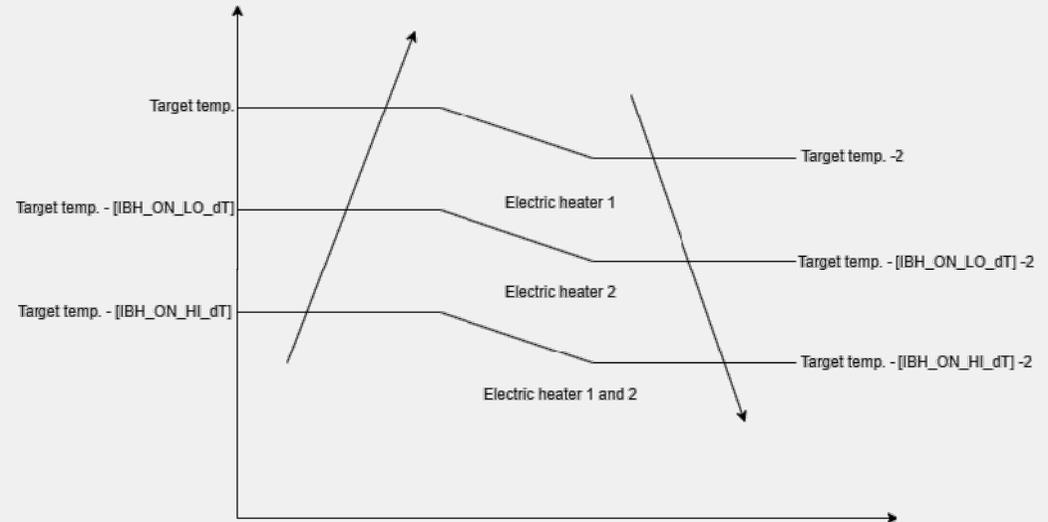
## 3.4 Logic and Function

### Electric heater level control

When you connect two electric heaters, they will activate step by step as below,



L1 H:Thermostat Signal H	L1 O:Thermostat Signa.
SL1 SL2:Solar water heater	P O N:Secondary Circulat
1 2:Electric heat1	3 4:Electric heat2
5 6:DHW tank heater	20FF/20N N:Cooling three
30FF/30N N:Mixing valve	10FF/10N N:DHW three way
AHS1 AHS2:Auxiliary heat source	HT N:Pan heater
P_R N:Return water pump	P_S N:Solar water pump
P_M N:Mixing water pump	DFR1 DFR2:Defrost signal
ERR1 ERR2:Fault signal	
A15A:Bottom Temp. of BT	A15B:Top Temp. of BT
A15C:DHW tank temp.	A15D:Outlet temp. of whol
A15E:Inlet temp. of FH	



**Note:** If the compressor is in a state where it cannot be started (start-up restricted or in failure), the electric heater will immediately activate and replace the compressor in heating water.

## 3.4 Logic and Function

### Rapid DHW Mode

Starting Conditions(**AND**):

- ① Enter Rapid DHW Mode Control
- ② Hot water tank temperature < [DHW target temperature] - 1°C

Shutdown Conditions(**OR**):

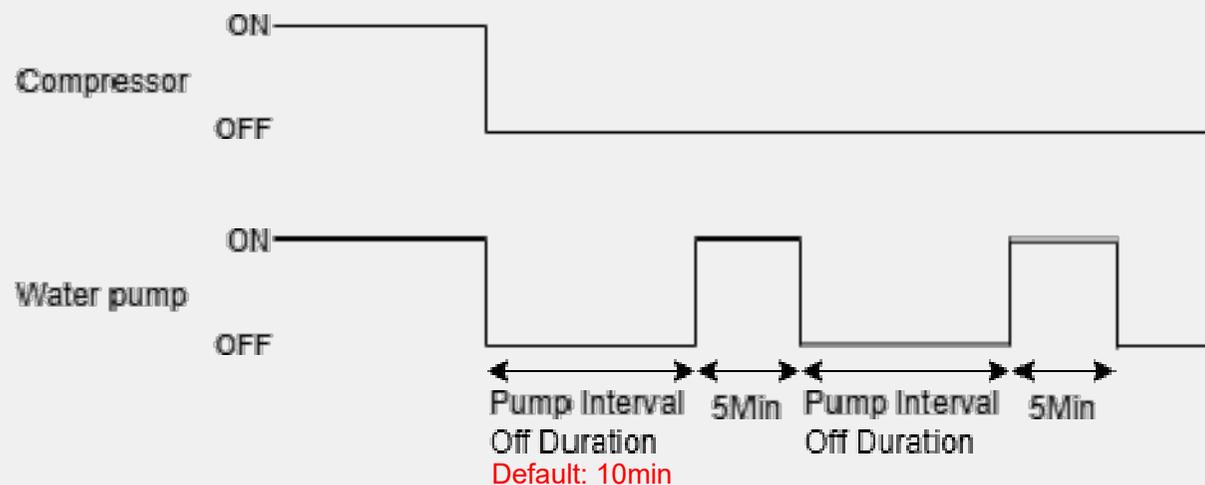
- ① Hot water tank temperature ≥ [DHW target temperature]
- ② Received DHW mode shutdown command
- ③ Exiting Rapid hot water mode

**Note:** The Rapid Hot Water Function will automatically switch the system to DHW mode. During this time, the heat pump, electric heater, DHW tank heater, and other heat sources will all start up to meet the hot water demand.

## 3.4 Logic and Function

### Main circulation pump

1. When the mode is set to "Keep Running", the water pump will run continuously after the heat pump off.
2. When the mode is set to "Temperature-to-Stop", it will stop running once the target temperature is reached.
3. When the mode is set to "**Interval Operation**", it will follow this cycle during shutdown periods: Run for 5 minutes, then stop for [pump intermittent shutdown duration], as shown below.

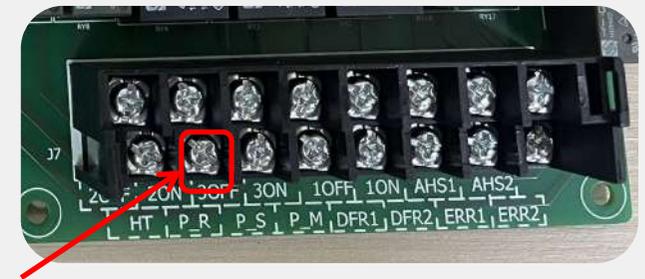


## 3.4 Logic and Function

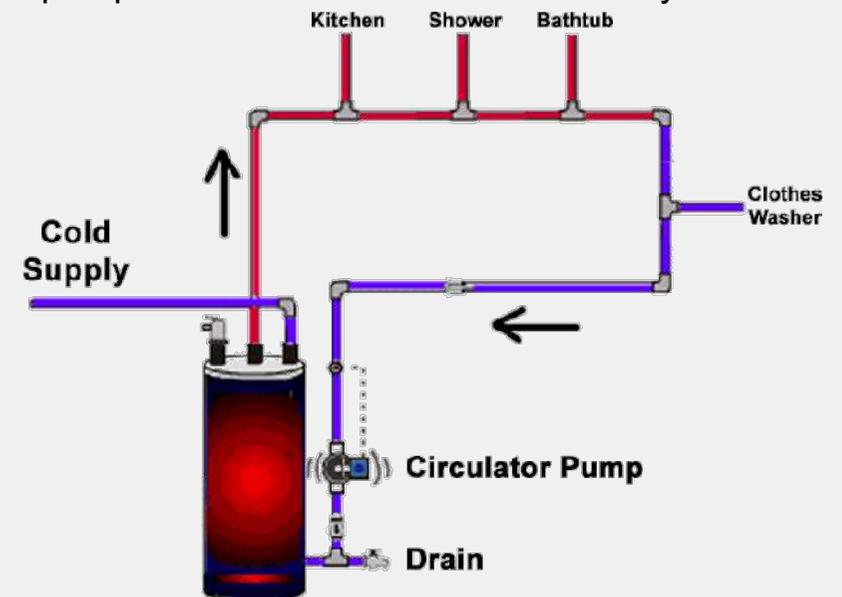
### DHW Pump

If [DHW Pump Timer] is set to 'Enabled'

When the time reaches the DHW pump start time, the DHW pump will turn on and run continuously for a set time, then off.



DHW Pump Timer			
NO.	START	NO.	START
<input type="checkbox"/> 1	00:00	<input type="checkbox"/> 7	00:00
<input type="checkbox"/> 2	00:00	<input type="checkbox"/> 8	00:00
<input type="checkbox"/> 3	00:00	<input type="checkbox"/> 9	00:00
<input type="checkbox"/> 4	00:00	<input type="checkbox"/> 10	00:00
<input type="checkbox"/> 5	00:00	<input type="checkbox"/> 11	00:00
<input type="checkbox"/> 6	00:00	<input type="checkbox"/> 12	00:00



## 3.4 Logic and Function

### Solar Water Pump

Starting Conditions(**OR**):

- ① If the [Solar Temperature sensor] is set to "Disabled," the solar pump will activate when a solar signal is detected.
- ② If the [Solar Temperature Sensor] is set to 'Enabled', the solar pump will activate when the solar temperature reaches the [Solar Pump Activation Temperature], and the solar temperature > hot water tank temperature + 1°C.

Shutdown Conditions(**OR**):

- ① The solar signal is lost
- ② The hot water tank temperature reaches the target temperature
- ③ The solar temperature drops below the hot water tank temperature

Note: [Solar Pump Activation Temperature]=70°C

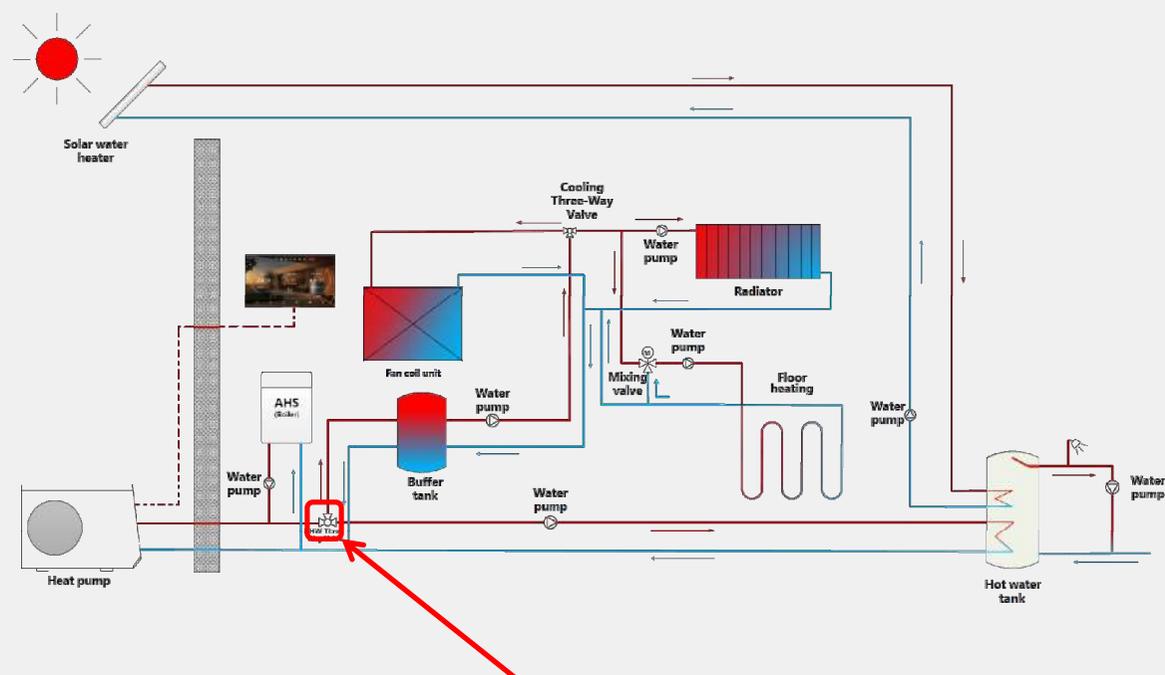
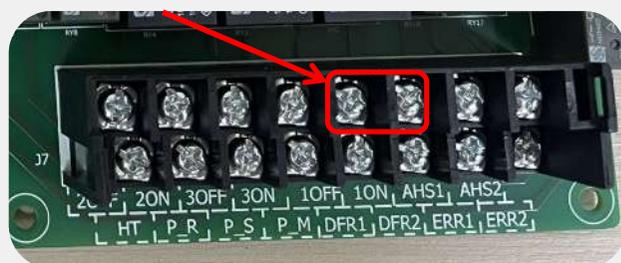


## 3.4 Logic and Function

### DWH three-way valve

When the unit operates in cooling (or heating) mode, the DWH three-way valve maintains an **OFF** output.

When the unit operates in DWH mode, the DWH three-way valve maintains an **ON** output.

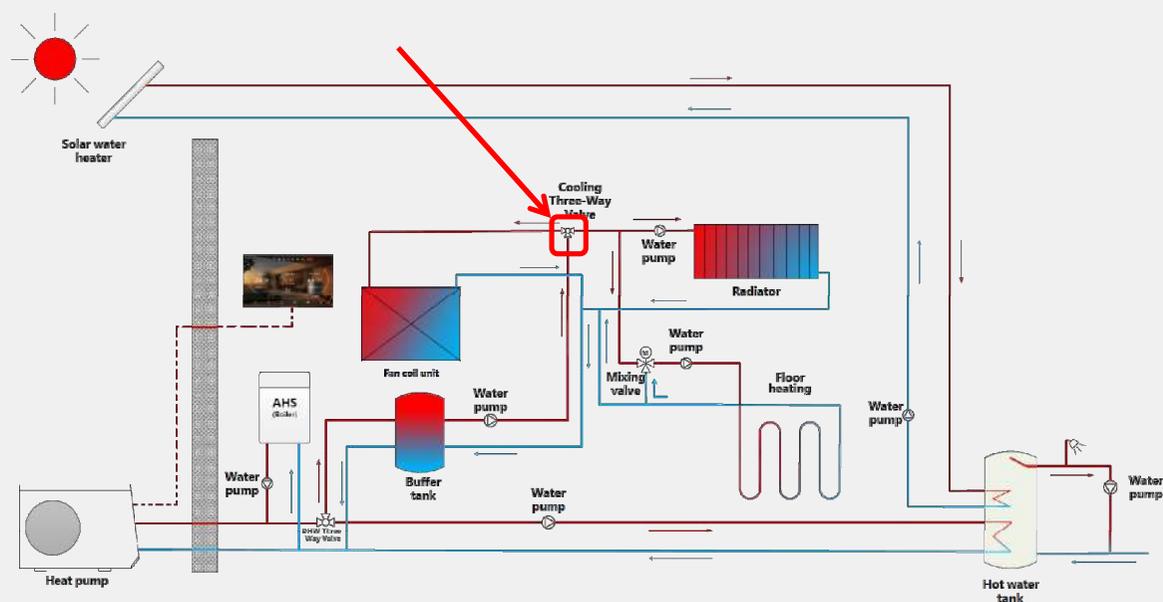
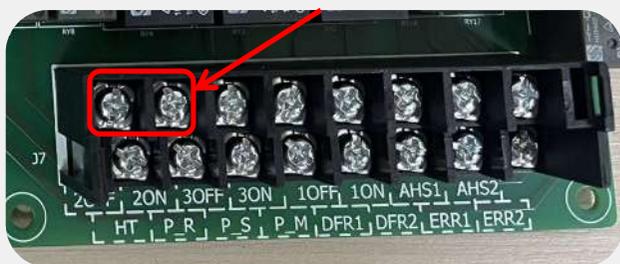


## 3.4 Logic and Function

### Cooling three-way valve

When the heat pump operates in heating (DHW) mode, the cooling three-way valve maintains an **OFF** output.

When the heat pump operates in cooling mode, the cooling three-way valve maintains an **ON** output

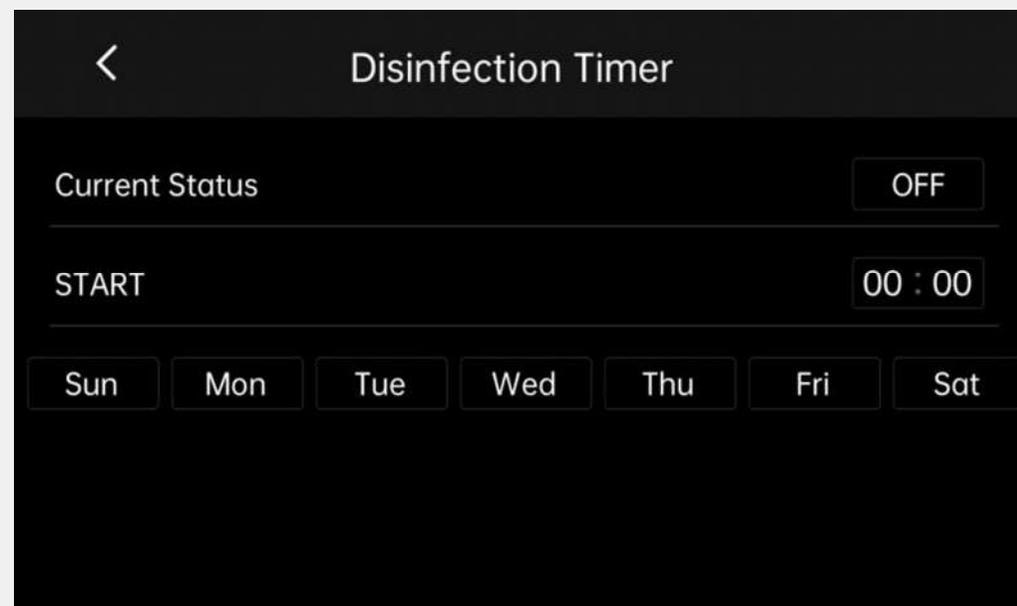


## 3.4 Logic and Function

### Disinfection function

When the current time reaches the "Disinfection Time Point":

The unit will turn on the compressor and DHW electric heater to heat water for disinfection until the hot water tank reaches the disinfection temperature(**65°C**) and maintain it for **15 min.**



## 3.4 Logic and Function

### Holiday away mode

During the holiday away period, the unit will operate heating/hot water functions at a lower target water temperature to meet water circuit antifreeze and energy-saving requirements.

If the unit has a timed disinfection function, it will perform a single disinfection only on the final day of the holiday away period.

The screenshot shows a dark-themed control interface for the 'Holiday Away' mode. At the top left is a back arrow, and at the top right is the title 'Holiday Away'. Below the title are several settings, each with a label on the left and a control button on the right:

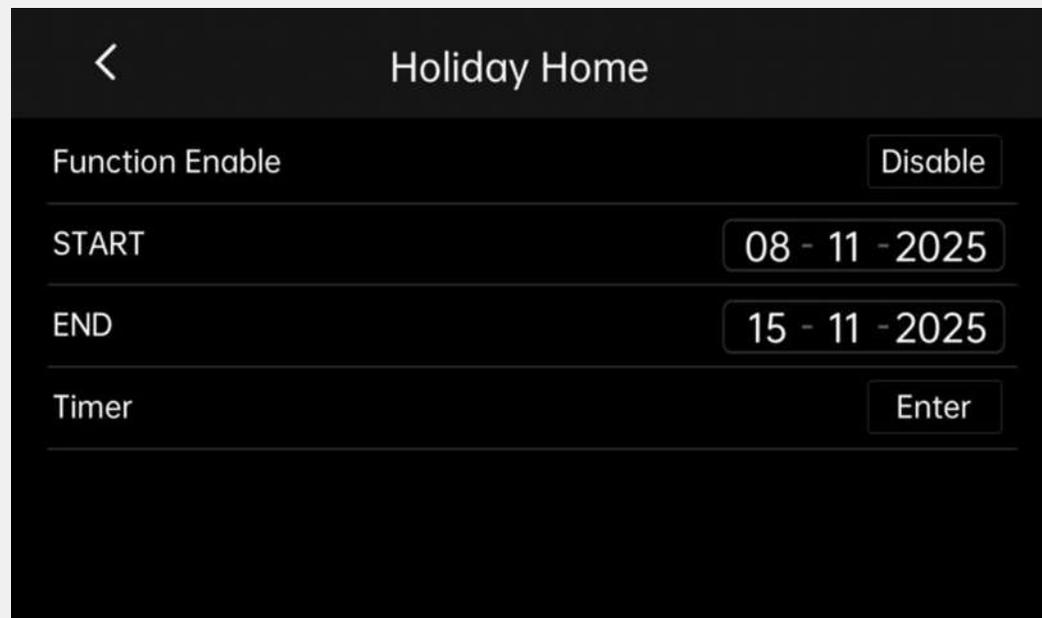
Function Enable	Disable
START	19 - 11 - 2025
END	26 - 11 - 2025
Heating Mode Enable	Enable
DHW Mode Enable	Enable
Disinfection Enable	Enable

## 3.4 Logic and Function

### Holiday stay mode

During the period of holiday stay, the unit will start and stop daily according to the preset time periods and operating modes.

Holiday away mode and holiday stay mode cannot run at the same time, and holiday away mode has higher priority than holiday stay mode.



The screenshot displays the 'Holiday Home' settings menu. It includes a back arrow, a 'Function Enable' toggle set to 'Disable', a 'START' date field set to '08 - 11 - 2025', an 'END' date field set to '15 - 11 - 2025', and a 'Timer' field with an 'Enter' button.

Field	Value
Function Enable	Disable
START	08 - 11 - 2025
END	15 - 11 - 2025
Timer	Enter



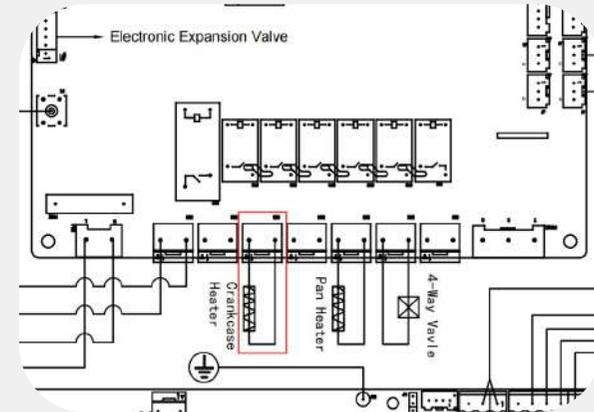
## 3.4 Logic and Function

### Crankcase heater

If compressor is not running, and the ambient temperature is  $<$  [Crankcase Heater On Ambient Temperature] , the unit will turn on the crankcase electric heater.

If the compressor is running, or the ambient temperature is  $\geq$  [Crankcase Heater Off Ambient Temperature] , the unit will turn off the crankcase electric heater.

Note: [Crankcase Heater On Ambient Temperature]= $12^{\circ}\text{C}$   
[Crankcase Heater Off Ambient Temperature]= $14^{\circ}\text{C}$



## 3.4 Logic and Function

### Bottom heater(Two options)

#### Defrost Bottom Electric Heater(default):

During defrosting:

- If  $AT \leq [\text{Bottom Heater Activation Ambient Temp.}]$ , the bottom electric heater will turn on.
- If  $AT > [\text{Bottom Heater Activation Ambient Temp.}] + 2$ , the bottom electric heater will turn off.

After defrosting: The bottom electric heater will turn off after 6min delay.

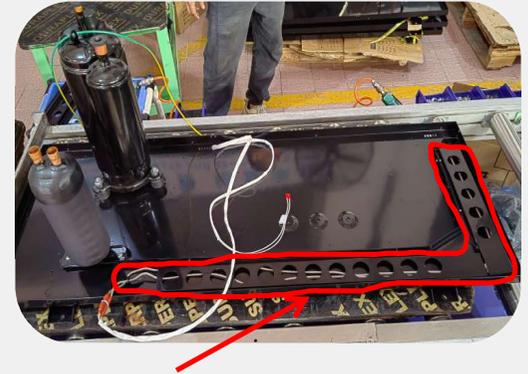
#### Low AT Bottom Electric Heater:

When the compressor is running:

- If  $AT \leq [\text{Bottom Heater Ambient Temperature}]$ , the bottom electric heater will turn on.
- If  $AT > [\text{Bottom Heater Ambient Temperature}] + 2$ , the bottom electric heater will turn off.

When the compressor is off: The bottom electric heater will turn off after 6min delay.

Note:  $[\text{Bottom Heater Ambient Temperature}] = 7^\circ\text{C}$



## 3.4 Logic and Function

### Water circuit anti-freeze protection

When the unit in **standby**,

- ① If heat pump outlet temperature  $\leq$  [Pump Anti-Freeze Temperature], the unit will only turn on the main circulation pump.
- ② If heat pump outlet temperature  $\leq$  [Electric Heater Anti-Freeze Temperature], the unit will turn on the electric heater.
- ③ If heat pump outlet temperature  $\leq$  [Compressor Anti-Freeze Temperature], the unit will run in heating/DHW mode

Note: [Pump Anti-Freeze Temperature]=18°C  
[Electric Heater Anti-Freeze Temperature]=12°C  
[Compressor Anti-Freeze Temperature]=10°C

## 3.4 Logic and Function

### Anti-freeze function in cooling

Outlet temperature:

If the outlet water temperature  $<$  [Cooling Outlet Temperature Limit], the heat pump will turn off.

If the outlet water temperature  $>$  [Cooling Outlet Temperature Limit] + [Exit Protection Temperature Difference] + 2°C, the heat pump will return to normal operation.

Note: [Cooling Outlet Temperature Limit]=4°C  
[Exit Protection Temperature Difference]=5°C

## 3.5 APP and IOT Platform

### 01 Full Device Integration

Garden will integrate all categories of devices

### 02 Scenario Linkage

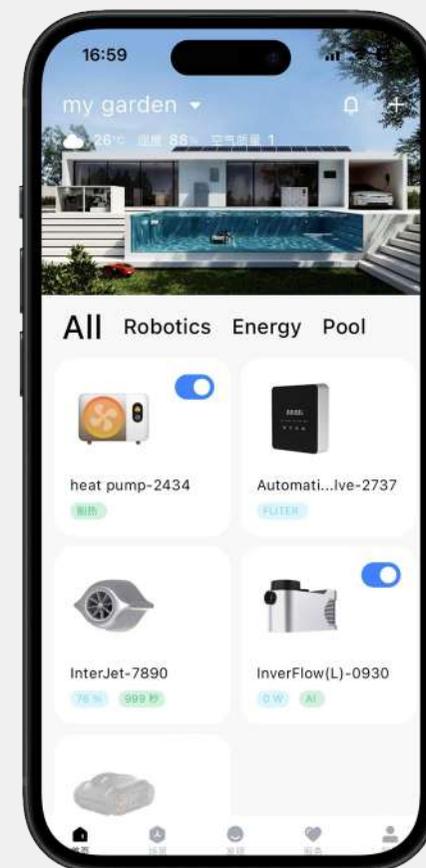
Collaborate with iGarden's multi-category ecological products to build smart courtyard solutions

### 03 After-Sales Service

Product manuals, guidance videos, and a fully connected after-sales link

### 04 AI Application

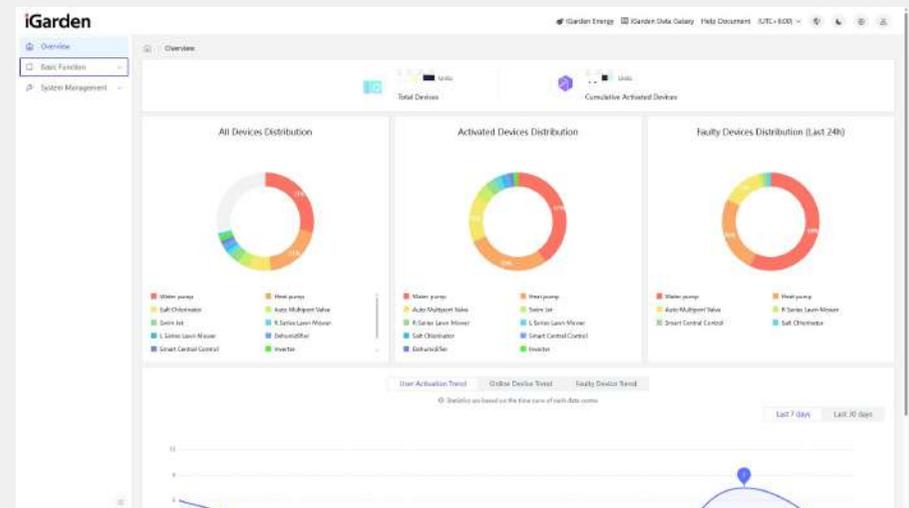
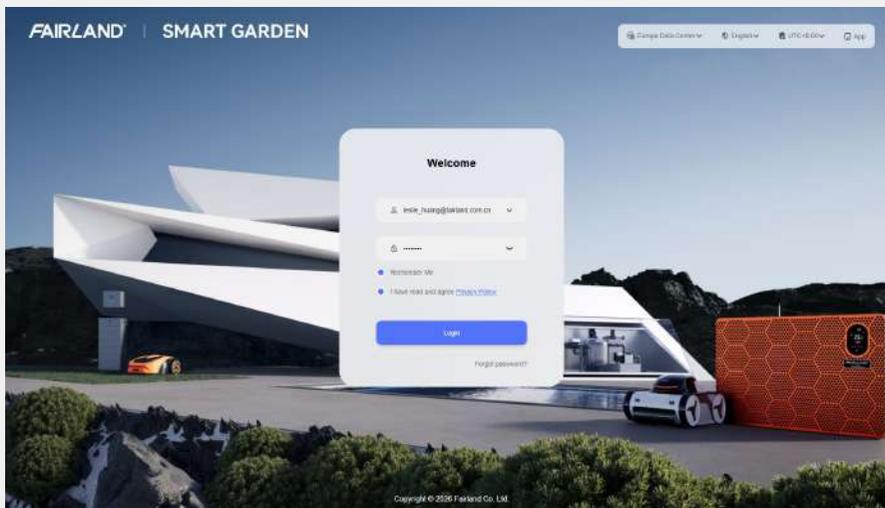
AI voice application that supports device control, weather inquiries, fault solution redirection, etc.



## 3.5 APP and IOT Platform

### IOT Platform

An IoT platform can collect and analyze the operating data of heat pump, achieve remote control and fault check, and protect the normal operation of heat pump.



## 3.5 Network and Update



How to Update  
the Mainboard wi



How to Update  
the Mainboard wi





## 4 Installation

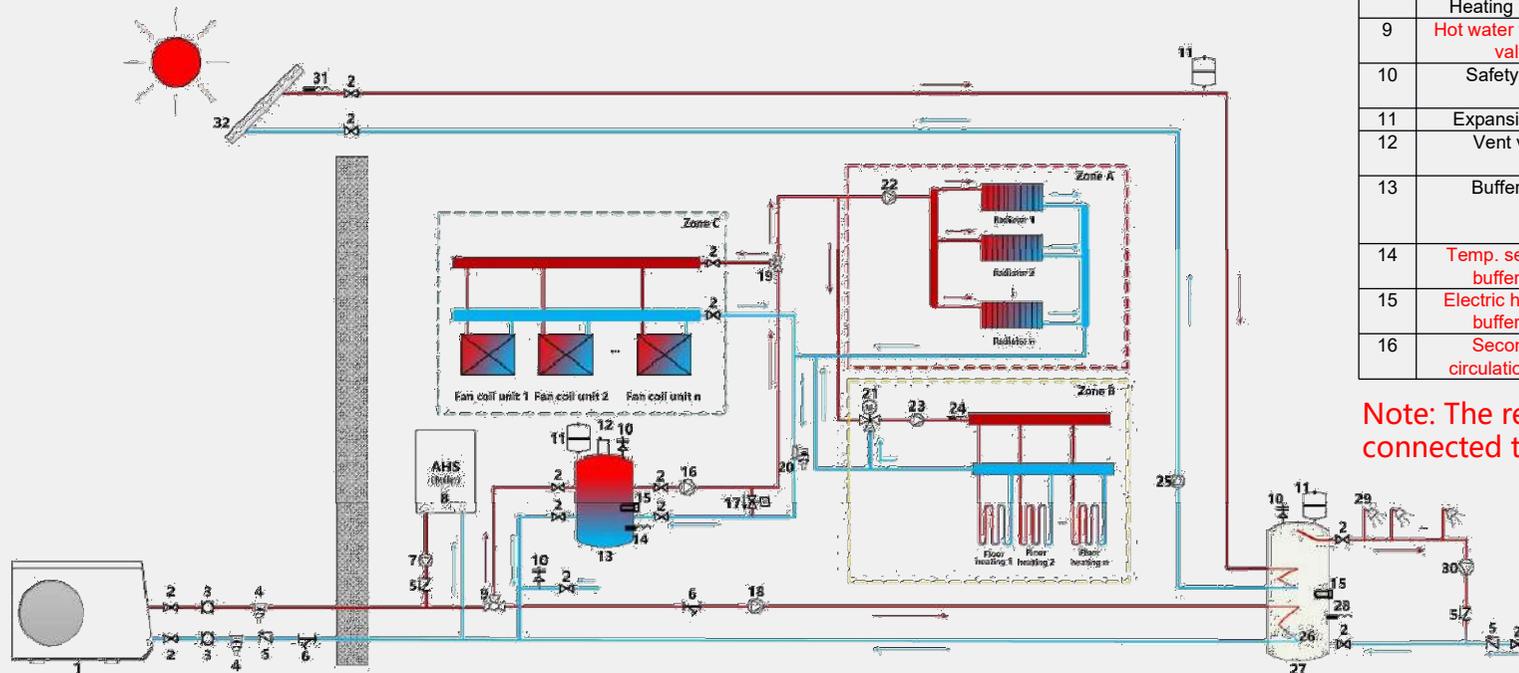
4.1 Application Installation  
Diagram

4.2 Installation Notes

4.3 Issue when New Installation

---

# 4.1 Application Installation Diagram



NO.	Item	NO.	Item
1	Heat pump	17	Bypass valve
2	Stop valve	18	Water pump for DHW
3	Flexible pipe	19	Cooling three-way valve
4	Antifreeze valve	20	Magnetic filter
5	Check valve	21	Mixing valve
6	Y-filter	22	Water pump for radiator
7	Water pump for AHS	23	Water pump for floor heating
8	AHS(Auxiliary Heating Source)	24	Temp. sensor for after mixing water outlet
9	Hot water three way valve	25	Water pump for solar heater
10	Safety valve	26	heat exchange coil for hot water tank
11	Expansion tank	27	Hot water tank
12	Vent valve	28	Temp. sensor for hot water tank
13	Buffer tank	29	Domestic hot water, such as for bathrooms, etc.
14	Temp. sensor for buffer tank	30	Return water pump
15	Electric heater for buffer tank	31	Temp. sensor for solar heater
16	Secondary circulation pump	32	Solar heater

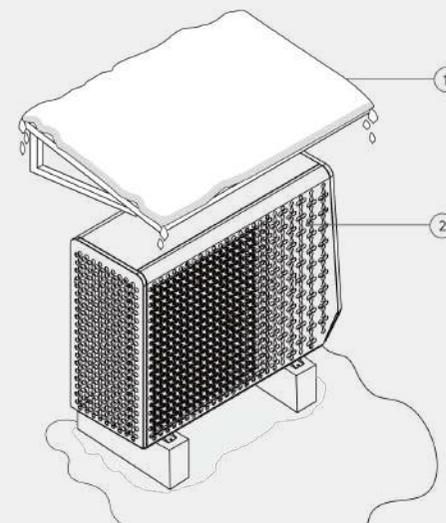
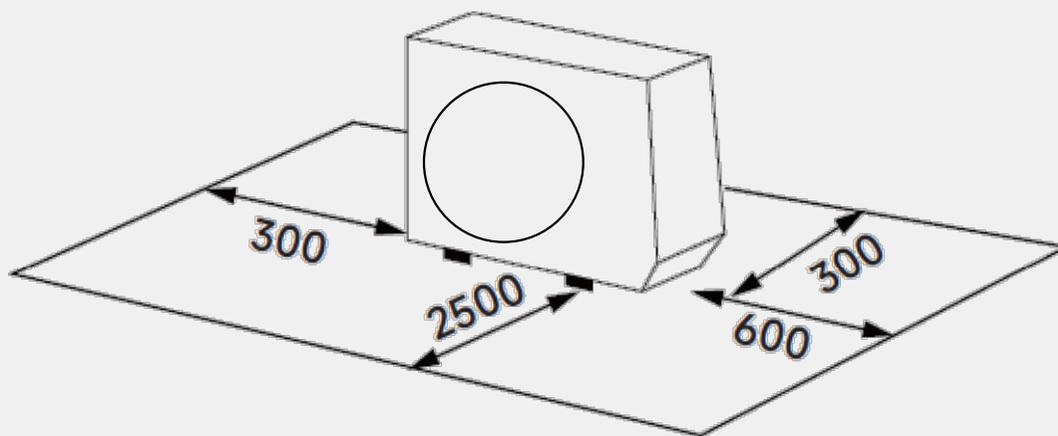
Note: The red components can be connected to the heat pump.



## 4.2 Installation Notes

### Unit Installation-Single

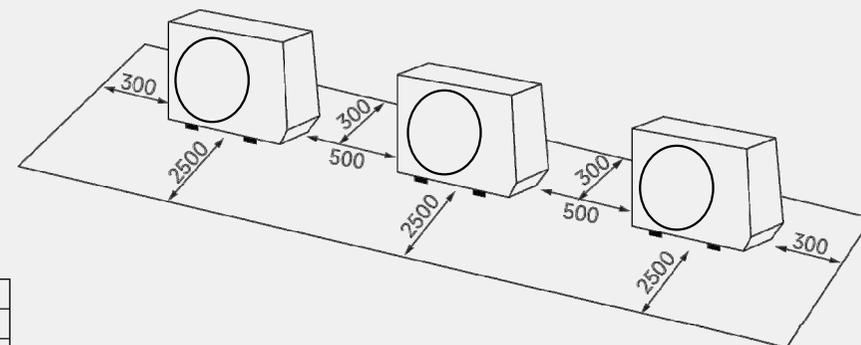
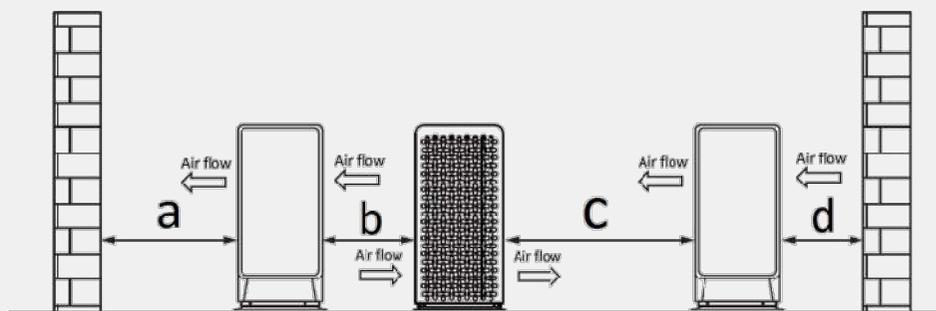
It is recommended to maintain the installation distances shown in the pic. when installing the heat pump



## 4.2 Installation Notes

### Unit Installation-Cascade

It is recommended to maintain the installation distances shown in the pic. when installing the heat pump in cascade



Model	a(mm)	b(mm)	c(mm)	d(mm)
iGXC08	2500	800	5000	300
iGXC11	2500	800	5000	300
iGXC11T	2500	800	5000	300
iGXC13	2500	800	5000	300
iGXC13T	2500	800	5000	300
iGXC16	3000	1000	6000	300





## 4.2 Installation Notes

### Hydraulic installation-Water Flow

Ensure the water flow meets the unit's rated water flow requirement. If not, the unit may be damaged due to long-term operation with insufficient water flow.

Model	Rated Water Flow Rate	Minimum Water Flow Rate
iGXC08	1.50m <sup>3</sup> /h	1.05m <sup>3</sup> /h
iGXC11	1.80m <sup>3</sup> /h	1.26m <sup>3</sup> /h
iGXC11T	1.80m <sup>3</sup> /h	1.26m <sup>3</sup> /h
iGXC13	2.20m <sup>3</sup> /h	1.54m <sup>3</sup> /h
iGXC13T	2.20m <sup>3</sup> /h	1.54m <sup>3</sup> /h
iGXC16	3.00m <sup>3</sup> /h	2.10m <sup>3</sup> /h
iGXC16T	3.00m <sup>3</sup> /h	2.10m <sup>3</sup> /h

**FAIRLAND® Air to Water Heat Pump**  
**Model:**   
**iGXC11**

<b>Air 7°C/6°C Water 35°C</b>	
Normal capacity (kW)	11.00
Heating capacity (kW)	3.75-13.45
Power Input (kW)	0.57-3.77
<b>Air 2°C/1°C Water 35°C</b>	
Normal capacity (kW)	10.50
Heating capacity (kW)	3.45-13.30
Power Input (kW)	0.69-3.74
<b>Air 7°C/6°C Water 55°C</b>	
Normal capacity (kW)	10.60
Heating capacity (kW)	3.32-13.06
Power Input (kW)	0.75-4.05
Operating air temperature (°C)	-25-43
Power supply	230V~/1Ph/50Hz
Sound pressure at 1m dB(A) (7°C/35°C)	44
Sound pressure at 3m dB(A) (7°C/35°C)	30
Max input current(A)	24.8
CO <sub>2</sub> equivalent (tonnes)	0.000035
Flow rate (m <sup>3</sup> /h)	1.8
Maximum power (kW)	5.8
Refrigerant R290 (g)	1250
GWP	0.02
Weight (kg)	160

 **A3**  
 Caution: Risk of fire  


## 4.2 Installation Notes

### Hydraulic installation-Antifreeze(glycol)

Glycol can lower the freezing point of water.

The required ethylene glycol concentration depends on the lowest expected outdoor temperature, as well as whether the goal is to protect the system from bursting or from freezing.

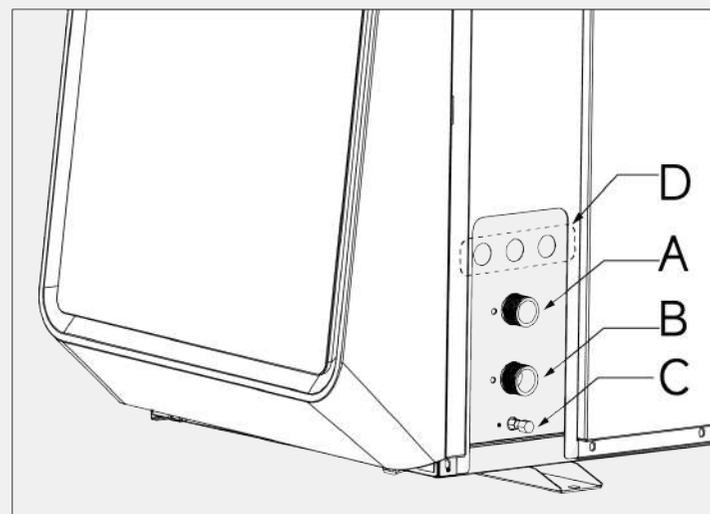
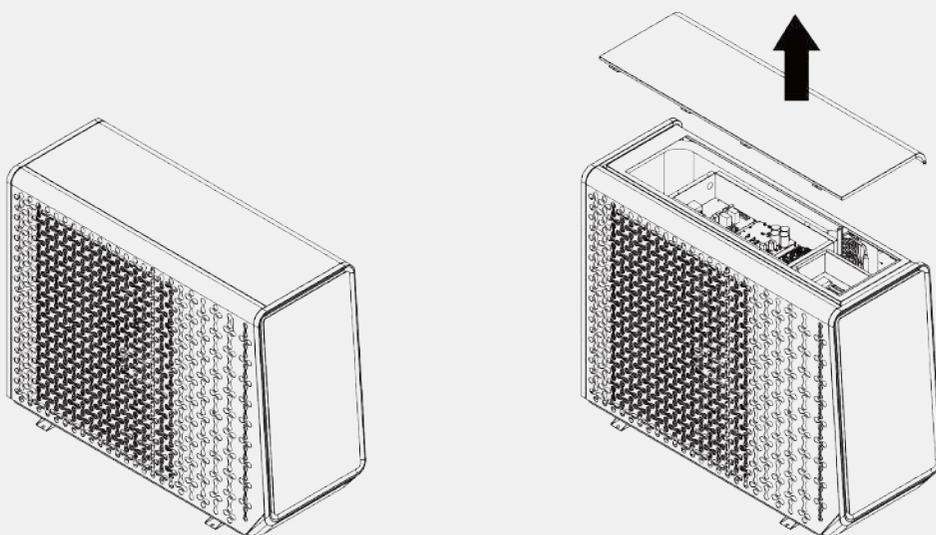
Ethylene	
Lowest Expected Outdoor Temperature	Mixing Ratio
-5°C	10%
-10°C	15%
-15°C	20%
-20°C	25%
-25°C	30%
-30°C	35%

Propylene	
Lowest Expected Outdoor Temperature	Mixing Ratio
-3°C	10%
-7°C	20%
-13°C	30%
-25°C	40%
-37°C	50%

## 4.2 Installation Notes

### Wiring Installation

When connecting wires to the heat pump, ensure that high-voltage and low-voltage wires are properly separated.

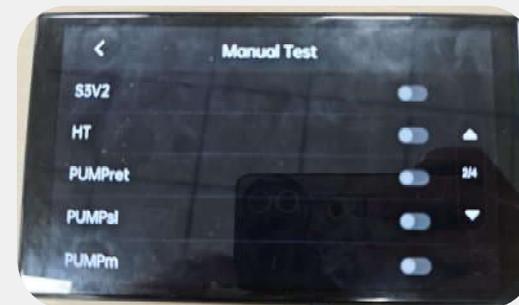
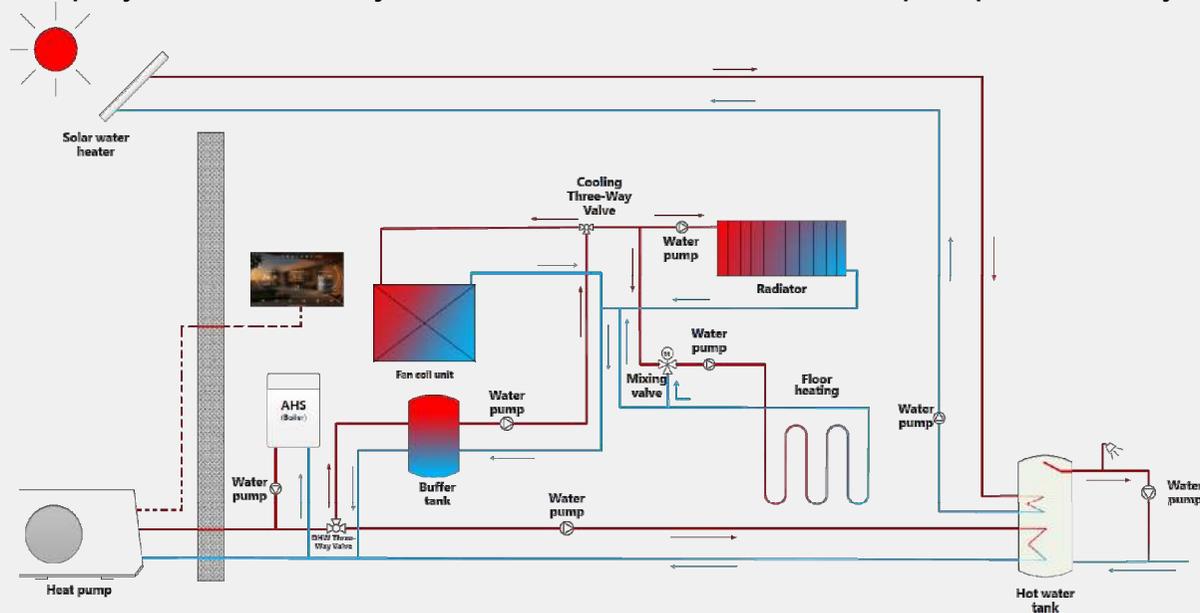


- A Outlet water
- B Inlet water
- C Drainage
- D Cable hole

## 4.2 Installation Notes

### Commissioning

After finishing the installation of heat pump, you can use the manual test function on the display to test and adjust the load, such as the water pump, three-way valve, etc.

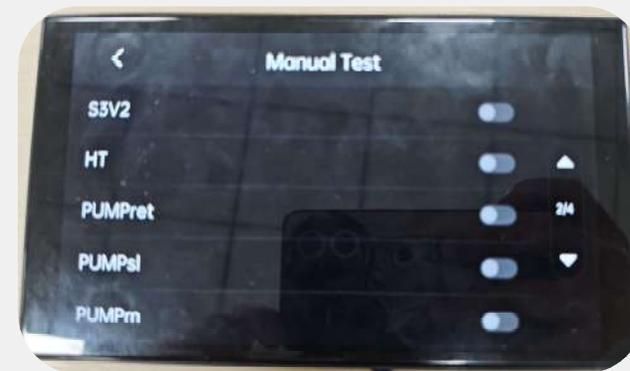


## 4.3 Issue when New Installation

### Water Flow Protection

After a unit is newly installed, there will be a lot of air inside the pipes, water tanks, so it's necessary to get the air out of the system. Otherwise the water flow will be unstable, and abnormal noise will occur.

Note: you can use the manual test function to activate the water pump for air venting.



## 4.3 Issue when New Installation

### HP fault or outlet temp. overheat protection

Due to insufficient water flow, the water temperature rapidly increased within a short time, then triggered HP fault or outlet temp. overheat protection.

Note: you need to check whether the water flow is much lower than the rated water flow.

Model	Rated Water Flow Rate	Minimum Water Flow Rate
iGXC08	1.50m <sup>3</sup> /h	1.05m <sup>3</sup> /h
iGXC11	1.80m <sup>3</sup> /h	1.26m <sup>3</sup> /h
iGXC11T	1.80m <sup>3</sup> /h	1.26m <sup>3</sup> /h
iGXC13	2.20m <sup>3</sup> /h	1.54m <sup>3</sup> /h
iGXC13T	2.20m <sup>3</sup> /h	1.54m <sup>3</sup> /h
iGXC16	3.00m <sup>3</sup> /h	2.10m <sup>3</sup> /h
iGXC16T	3.00m <sup>3</sup> /h	2.10m <sup>3</sup> /h





## 5 Troubleshooting

5.1 Issues Without Code

5.2 Issues With Code

5.3 Request Service

---

## 5.1 Issues Without Code

### Unit cannot heating or cooling well

Possible causes	Solution
1.The temperature setting is NOT correct	Check the temperature setting on the remote controller.
2.Mismatch between unit capacity and demand, too small	Re-select the suitable unit
3.Fins are dirty	Clean the evaporator coil
4.Air inlet blocked	Remove any objects blocking air circulation of the unit.
5.Insufficient refrigerant	Check the unit for leaks, repair if any. Evacuate all refrigerant and recharge the unit with correct amount.

## 5.1 Issues Without Code

### The compressor does NOT start

Possible causes	Solution
1.No power supply	Check the power supply
2.Fuse blown or circuit breaker tripped	Check if the unit is open-circuited or grounded. Then replace the fuse, reset the circuit breaker, and check if the circuit is stable or well connected.
3.Some protection activated	Check which protection is working, clear the protection, then restart the unit.
4.Loose wiring	Check wire connections and tighten screws on terminals
5.Compressor failure	Replace the compressor

## 5.1 Issues Without Code

### The pressure relief valve opens

Possible causes	Solution
1.The expansion vessel is broken	Replace the expansion vessel.
2.The valve (if equipped) of the water circuit towards the expansion vessel is closed.	Open the valve.
3.The water volume in the installation is too high	Make sure that the water volume in the installation is below the maximum allowed value
4.Water pressure in the installation higher than 0.3MPa.	Make sure that the water pressure in the installation is within 0.10 to 0.20 MPa.

## 5.1 Issues Without Code

### The water system is making noises

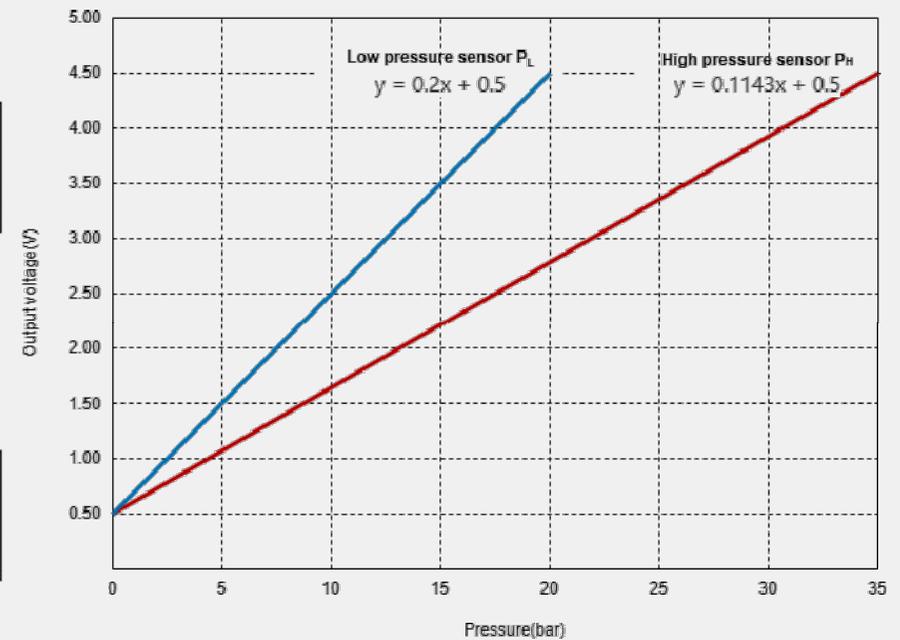
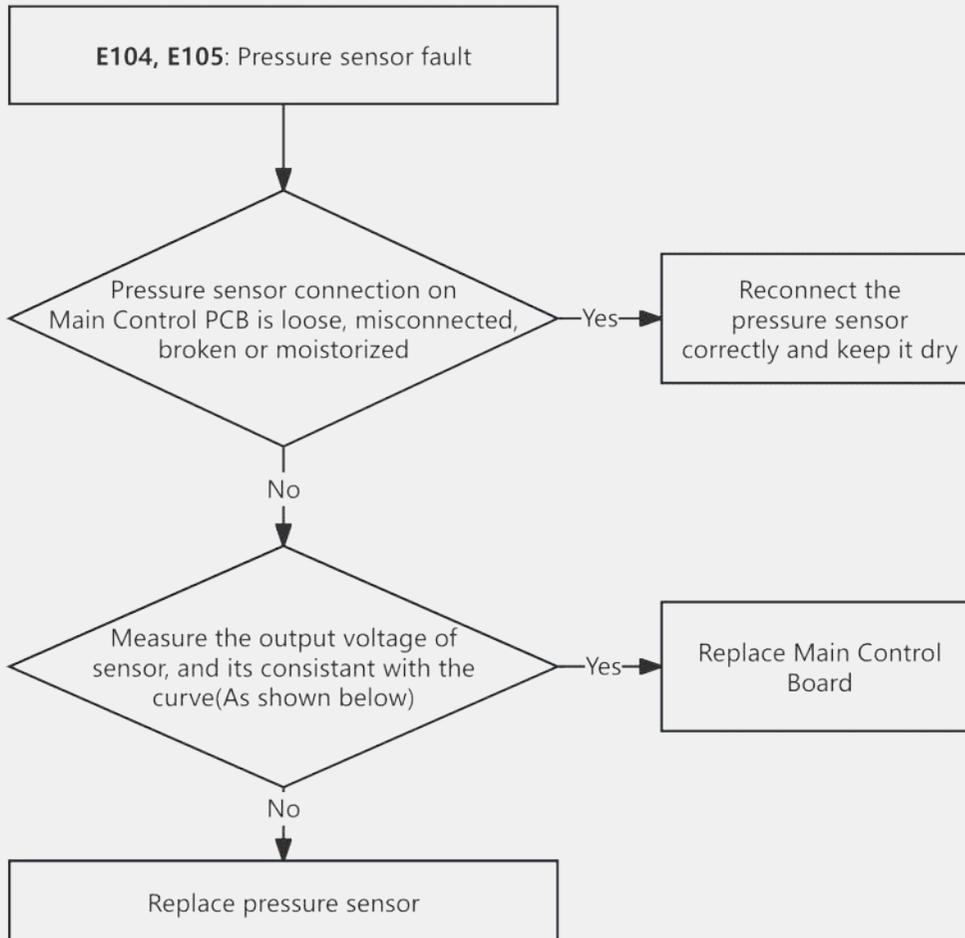
Possible causes	Solution
1. There is air in the system.	Vent air from the system.
3. Some protection activated	Check which protection is working, clear the protection, then restart the unit.
3. Valves in the water system are not fully open	Check all valves to ensure they are fully open
4. Water filter dirty or block	Clean the water filter



## 5.2 Issues With Code-E104,E105

Error code	Description	Port	Location (Main Control PCB)
E104	High Pressure Sensor Fault	J5	<p>Inlet Water Temperature                      Outlet Water Temperature                      Coil Temperature                      Exhaust Temperature                      Suction Temperature                      Anti-Freeze Temperature                      Ambient Temperature                      High Pressure Sensor                      Low Pressure Sensor</p>
E105	Low Pressure Sensor Fault	J6	

## 5.2 Issues With Code



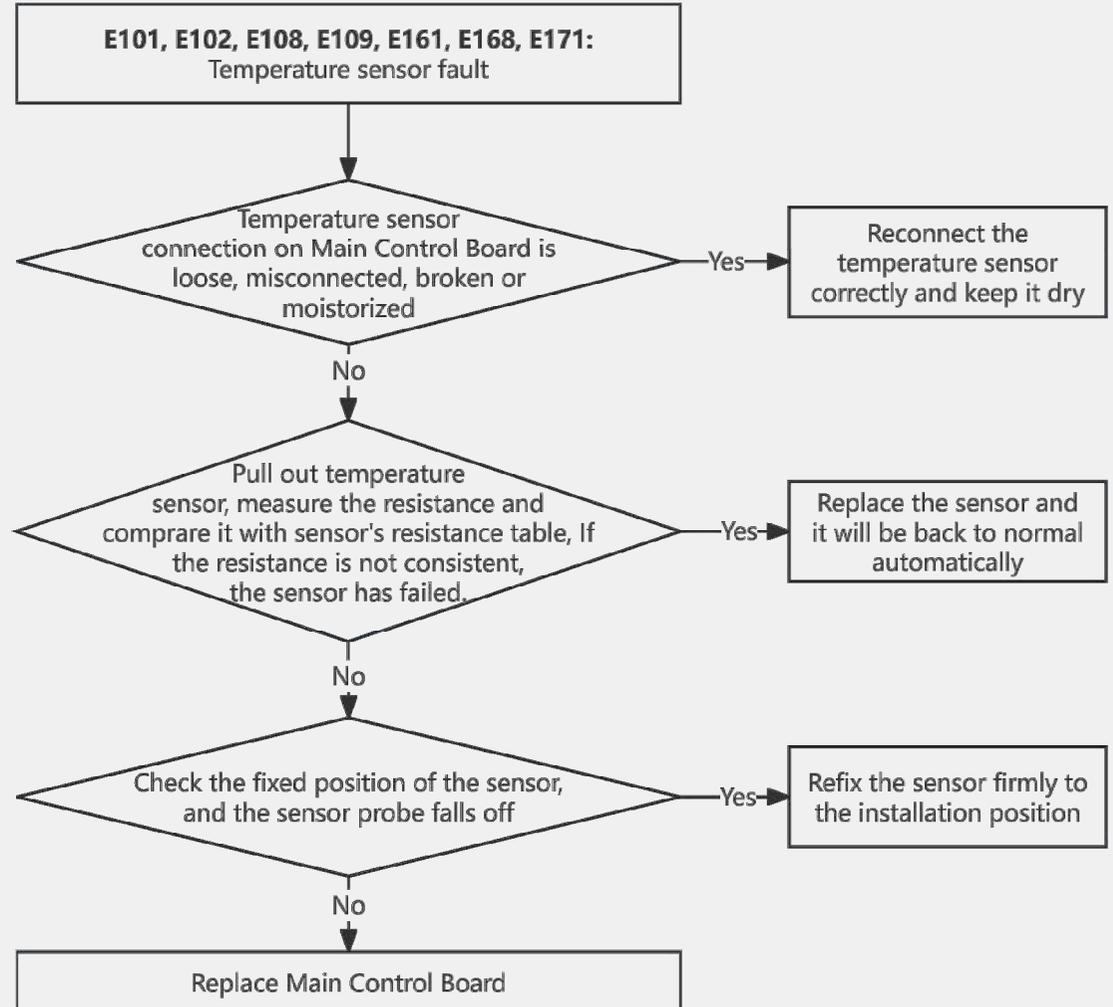
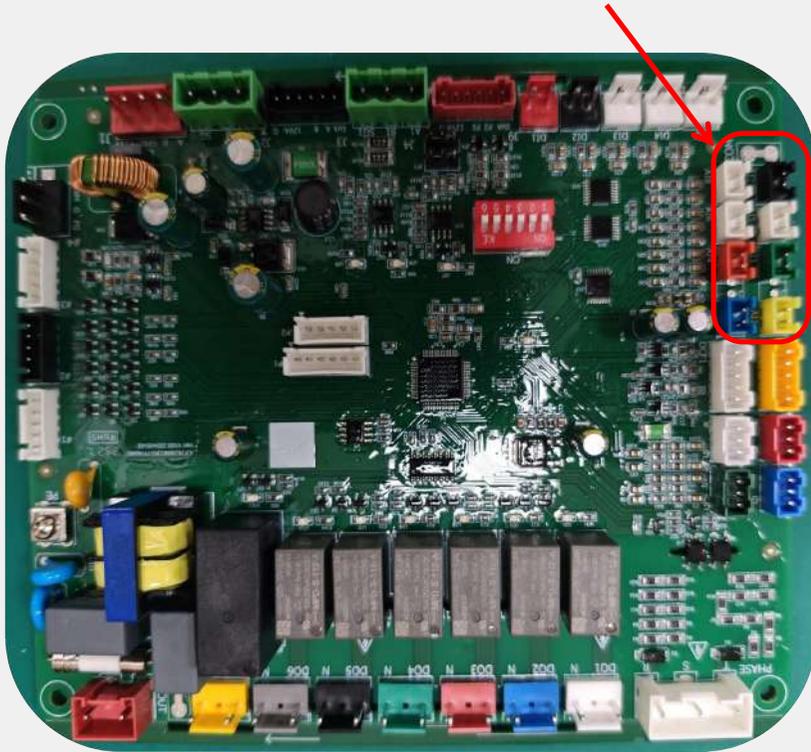


## 5.2 Issues With Code-E101/2/8/9,E161/8,E171

Error code	Description	Port	Location (Main Control PCB)
E101	Coil Temp. Sensor Fault	AI5	<p>                     R290 Leak Sensor                      High Pressure Protection                      Low Pressure Protection                      Flow Switch                      Inlet Water Temperature                      Outlet Water Temperature                      Coil Temperature                      Exhaust Temperature                      Suction Temperature                      Anti-Freeze Temperature                      Ambient Temperature                      High Pressure Sensor                      Low Pressure Sensor                      Electronic Expansion Valves                 </p>
E102	Exhaust Temp. Sensor Fault	AI4	
E108	Suction Temp. Sensor Fault	AI3	
E109	Anti-freeze Temp. Sensor Fault	AI2	
E161	Ambient Temp. Sensor Fault	AI1	
E168	Plate Heat Exchanger Outlet Temp. Sensor Fault	AI7	
E171	Plate Heat Exchanger Inlet Temp. Sensor Fault	AI8	



## 5.2 Issues With Code



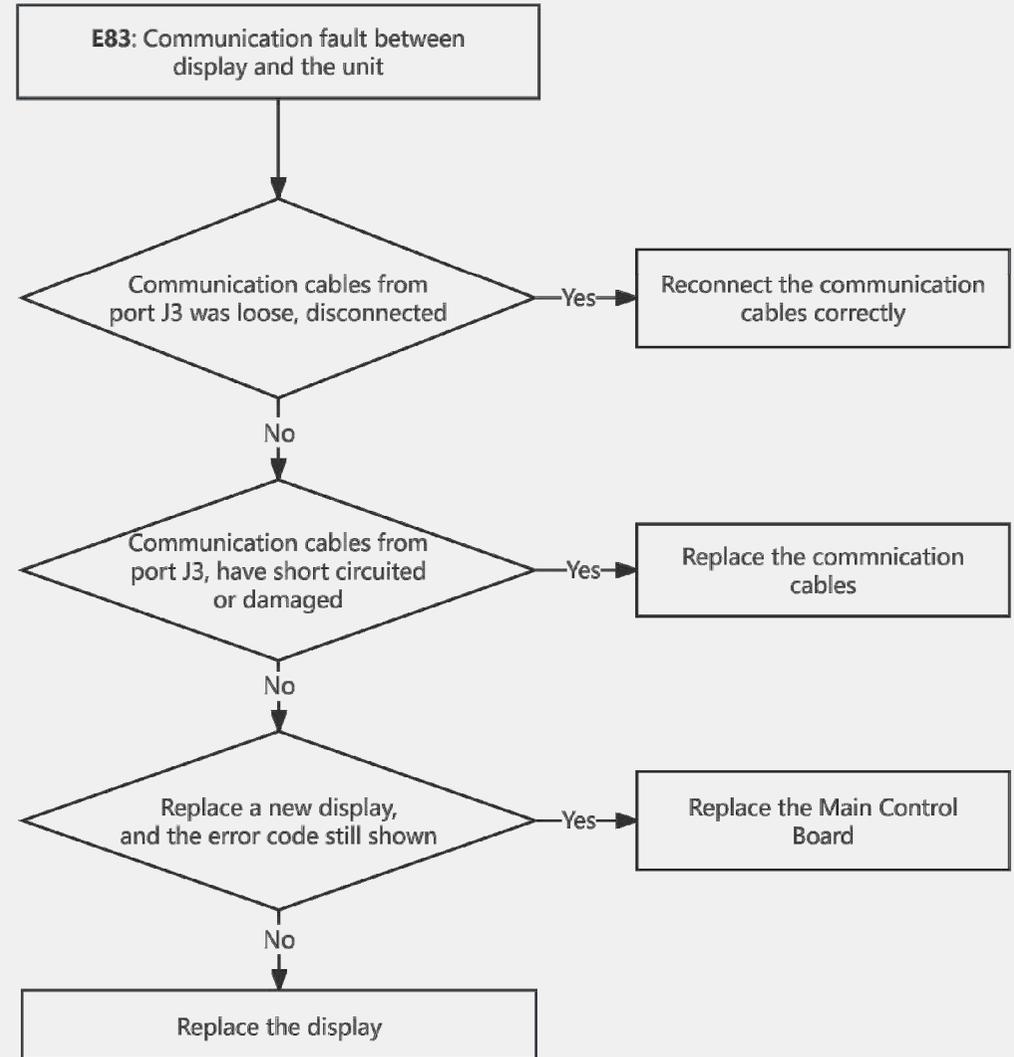
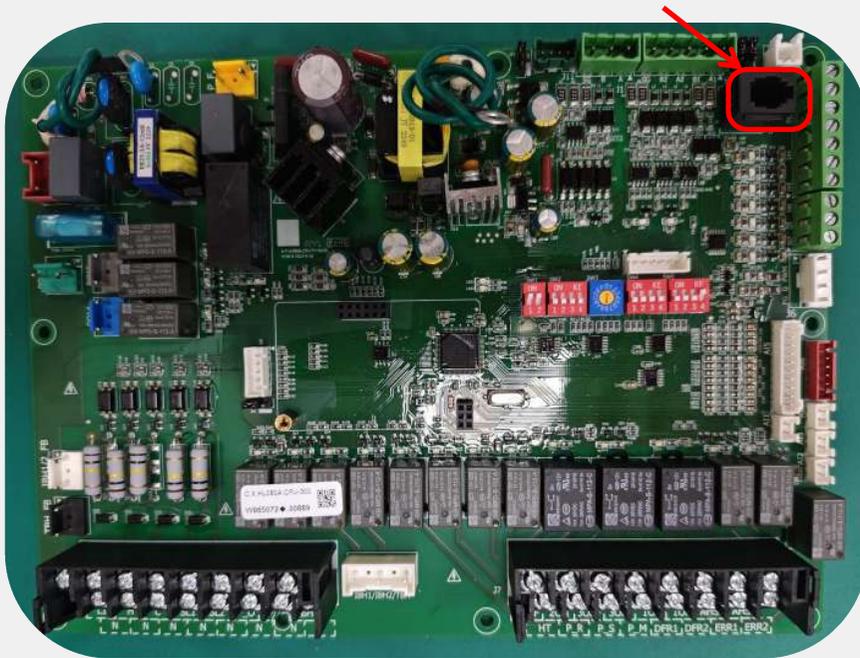


## 5.2 Issues With Code-E83

Error code		E83
Description		Communication fault between display and Main Control Board
Triggering		Main Control Board side: Communication failure with display lasts 2 min Display side: No communication reply from Main Control PCB for 1 min
Relative ports and locations	J3	



## 5.2 Issues With Code



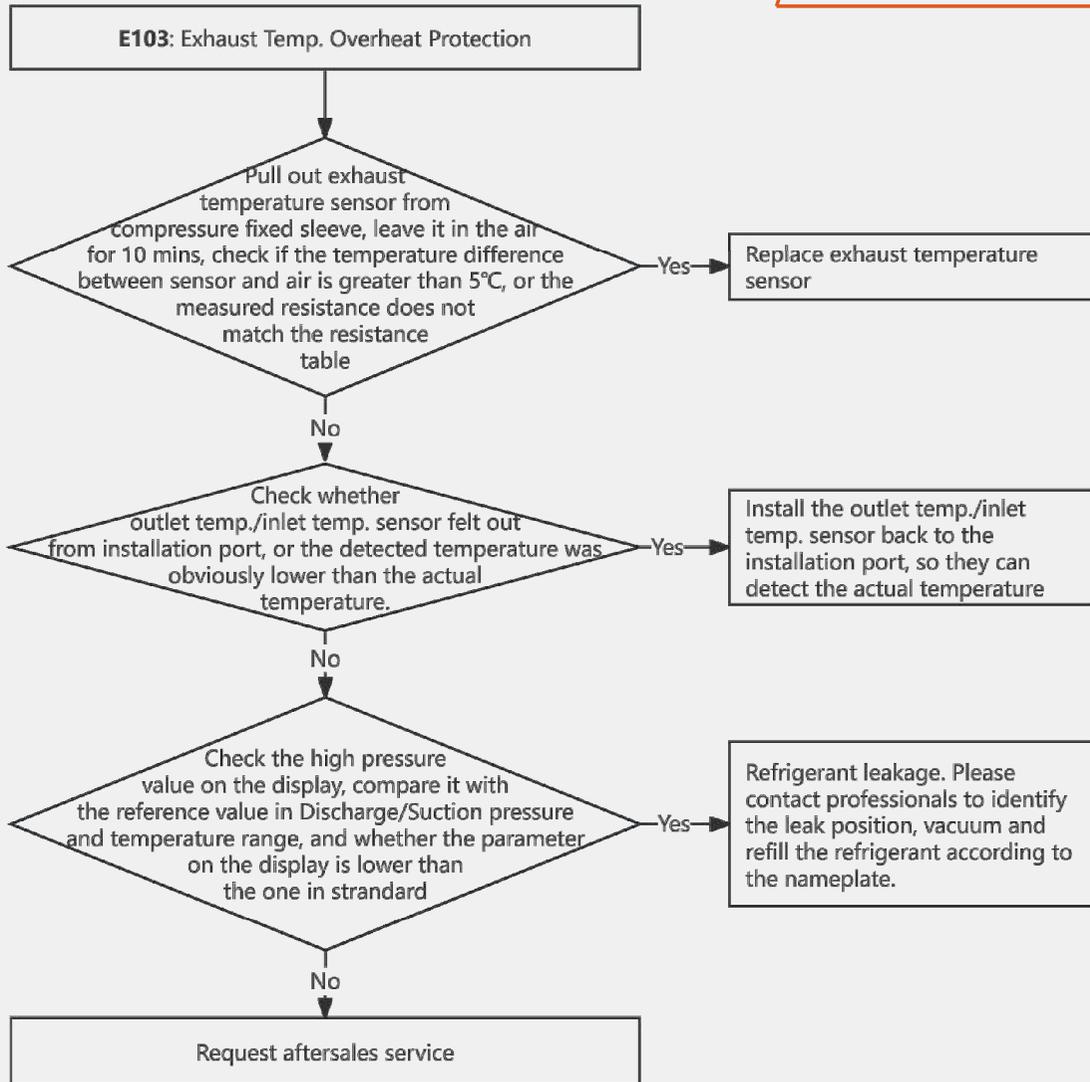
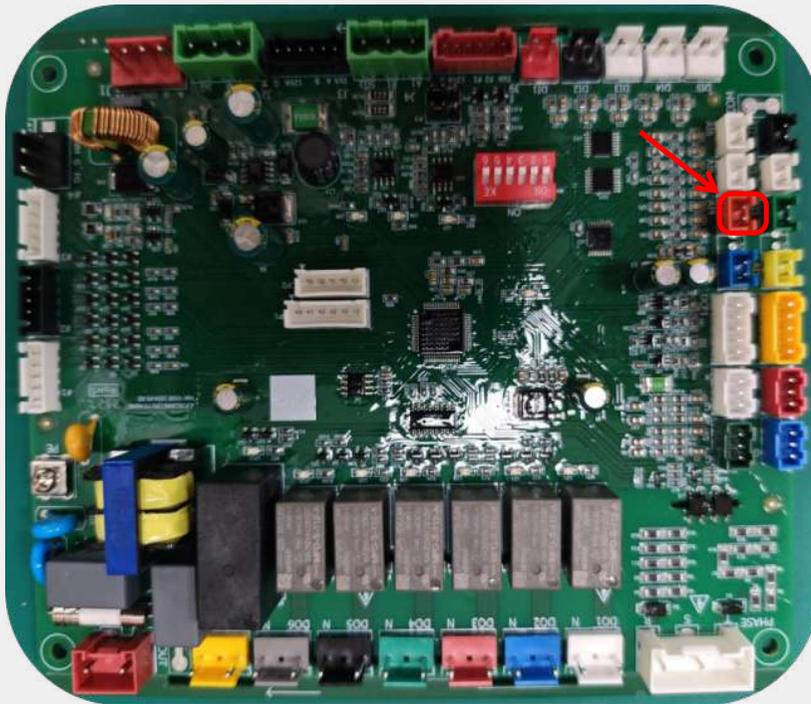
## 5.2 Issues With Code-E103

Error code		E103
Description		The protection for overheat exhaust temperature of Compressor
Triggering		The Main Control PCB detected that the compressor exhaust temperature was $\geq 110^{\circ}\text{C}$
Relative ports and locations	AI4	





## 5.2 Issues With Code



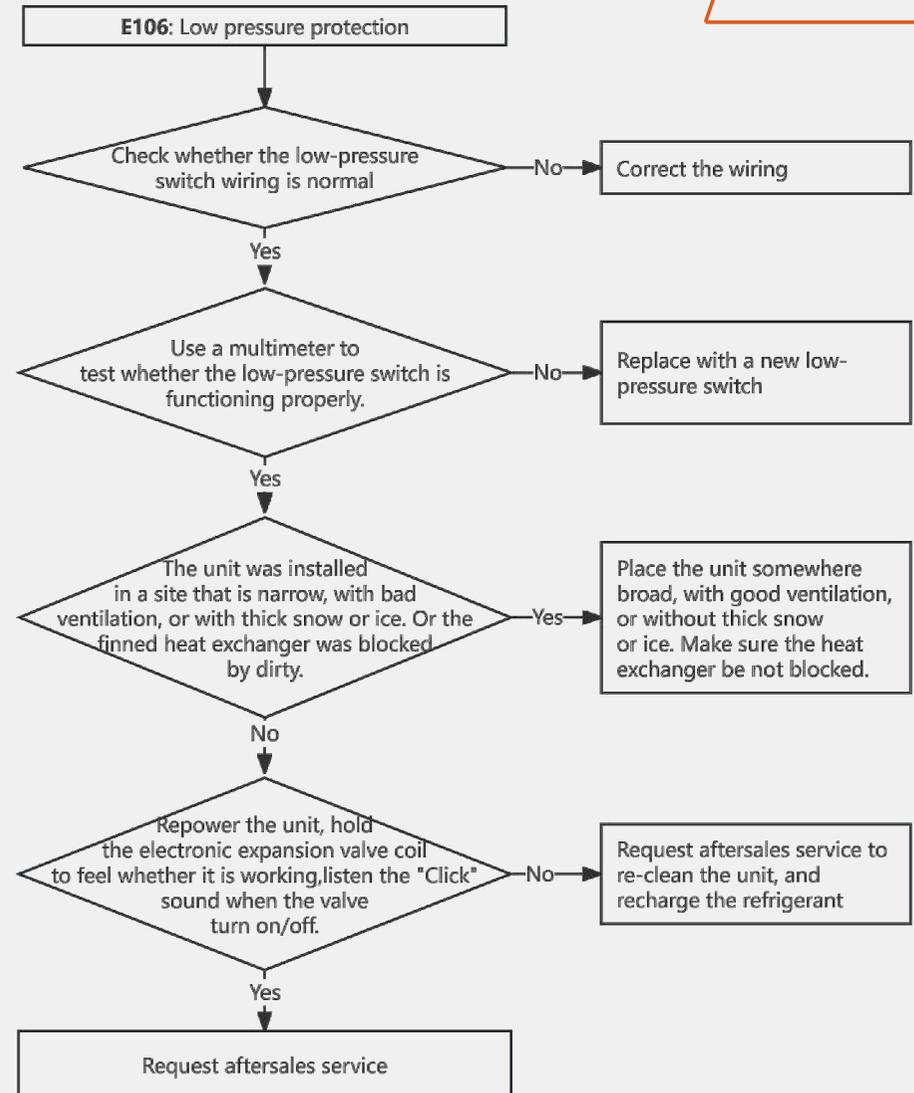
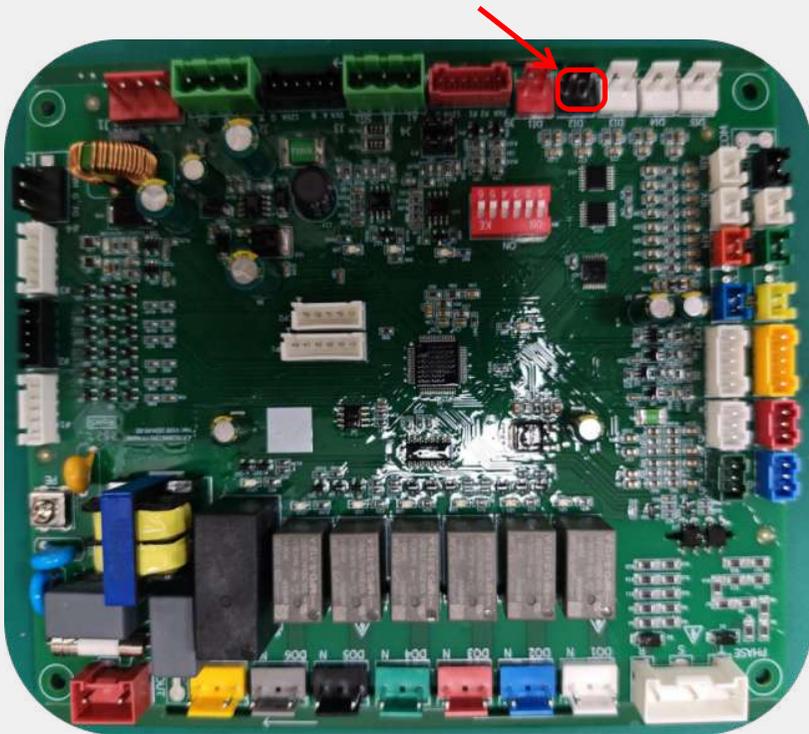


## 5.2 Issues With Code-E106

Error code		E106
Description		Low pressure protection
Triggering		The Main Control Board detected that the low pressure switch has been triggered.
Relative ports and locations	DI2	<p>                     R290 Leak Sensor                      High Pressure Protection                      Low Pressure Protection                      Flow Switch                      Inlet Water Temperature                      Outlet Water Temperature                      Coil Temperature                      Exhaust Temperature                      Suction Temperature                      Anti-Freeze Temperature                      Ambient Temperature                      High Pressure Sensor                      Low Pressure Sensor                 </p> <p>                     Isolation Valve                      1                 </p>



## 5.2 Issues With Code





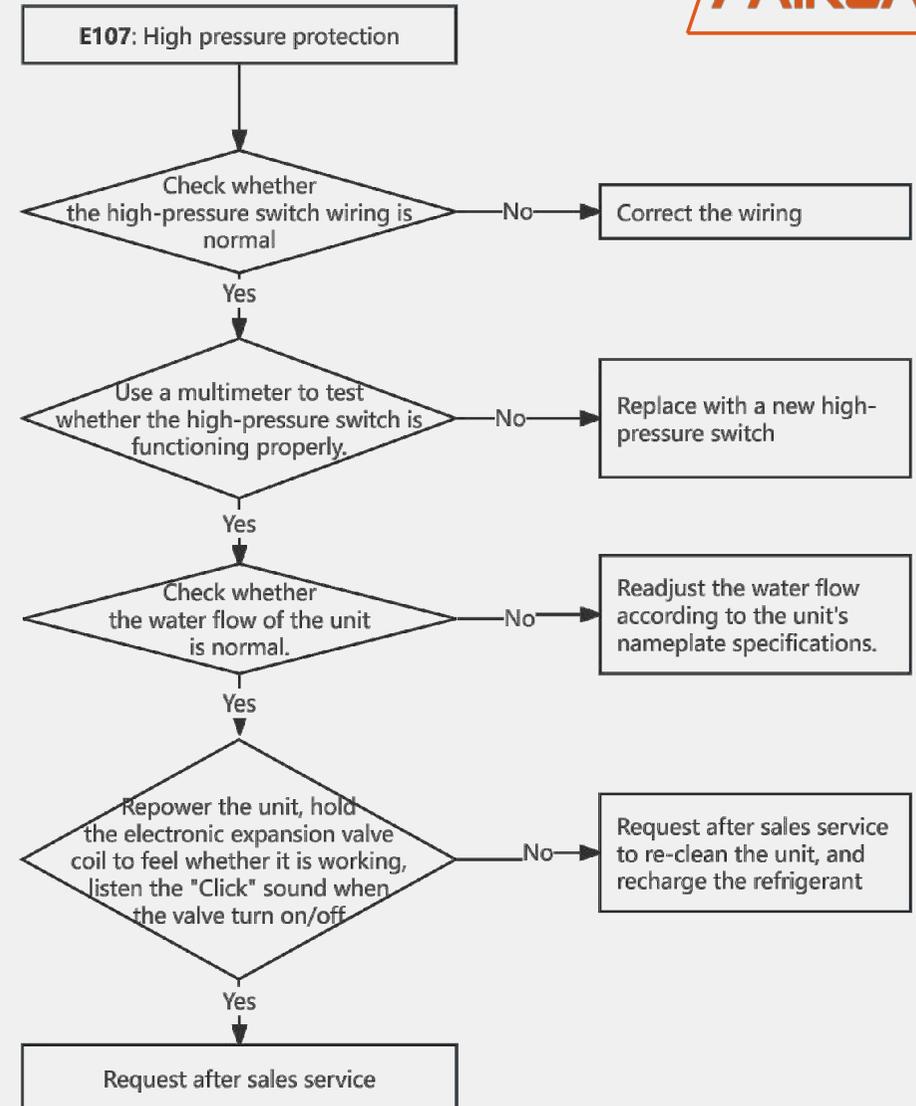
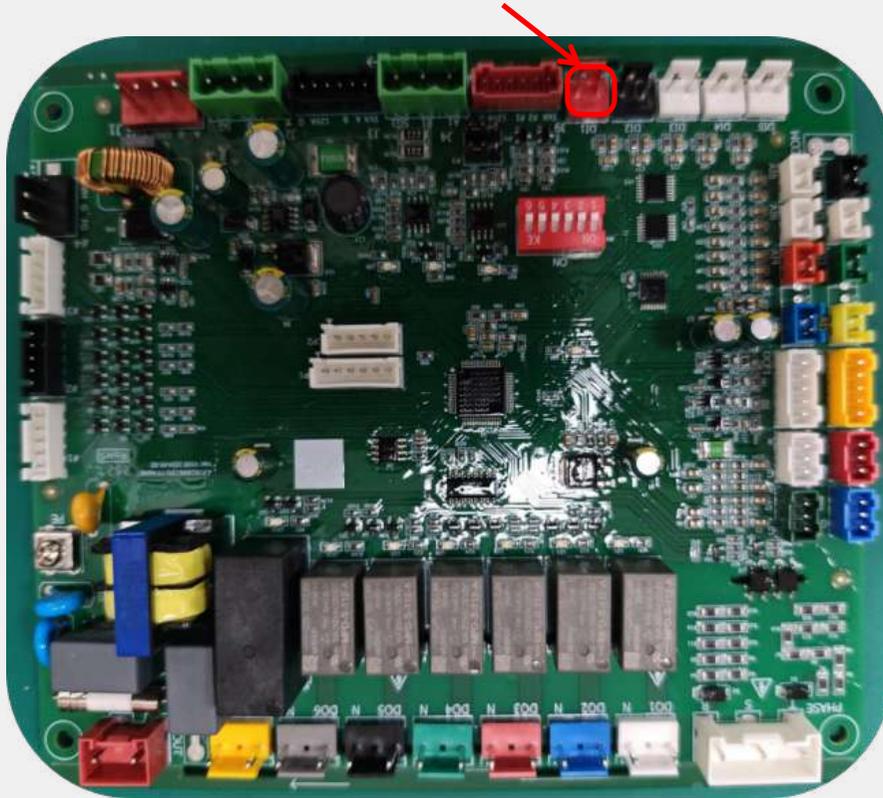
## 5.2 Issues With Code-E107

Error code		E107
Description		High pressure protection
Triggering		The Main Control Board detected that the high pressure switch has been triggered.
Relative ports and locations	DI1	<p>The diagram shows a control board with various sensors connected to it. A red arrow points to the High Pressure Protection sensor on the DI1 board. The sensors are labeled as follows:</p> <ul style="list-style-type: none"> <li>R290 Leak Sensor</li> <li>High Pressure Protection</li> <li>Low Pressure Protection</li> <li>Flow Switch</li> <li>Inlet Water Temperature</li> <li>Outlet Water Temperature</li> <li>Coil Temperature</li> <li>Exhaust Temperature</li> <li>Suction Temperature</li> <li>Anti-Freeze Temperature</li> <li>Ambient Temperature</li> <li>High Pressure Sensor</li> <li>Low Pressure Sensor</li> <li>Electronic Expansion Valve</li> </ul>



FAIRLAND

## 5.2 Issues With Code



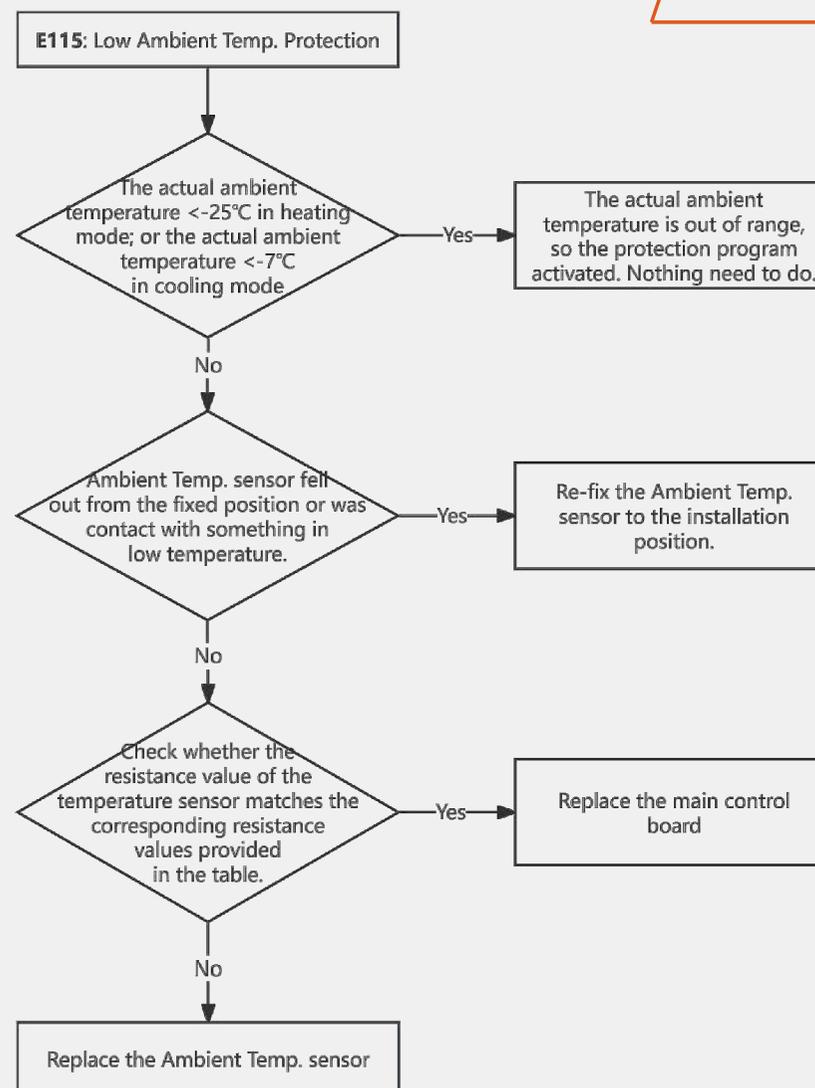
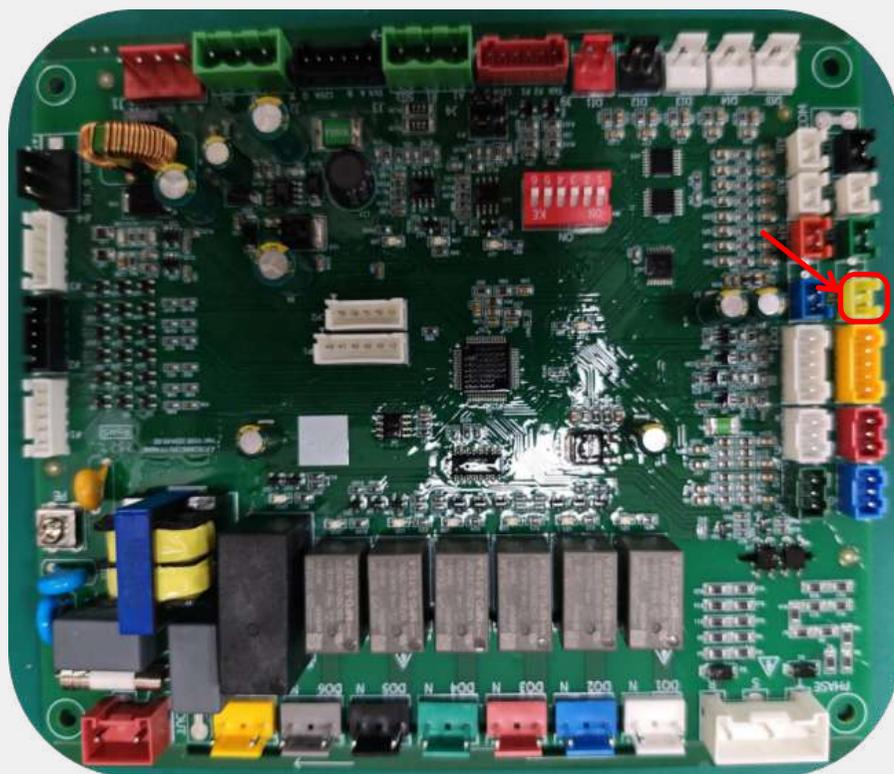


## 5.2 Issues With Code-E115

Error code		E115
Description		Low Ambient Temp. Protection
Triggering		In heating/ DHW mode, the error occurs when Ambient Temp. < -25°C In cooling mode, the error occurs when Ambient Temp. < -7°C
Relative ports and locations	A11	<p>                     R290 Leak Sensor                      High Pressure Protection                      Low Pressure Protection                      Flow Switch                      Inlet Water Temperature                      Outlet Water Temperature                      Coil Temperature                      Exhaust Temperature                      Suction Temperature                      Anti-Freeze Temperature                      Ambient Temperature                      High Pressure Sensor                      Low Pressure Sensor                      Electronic Expansion Valve                 </p>



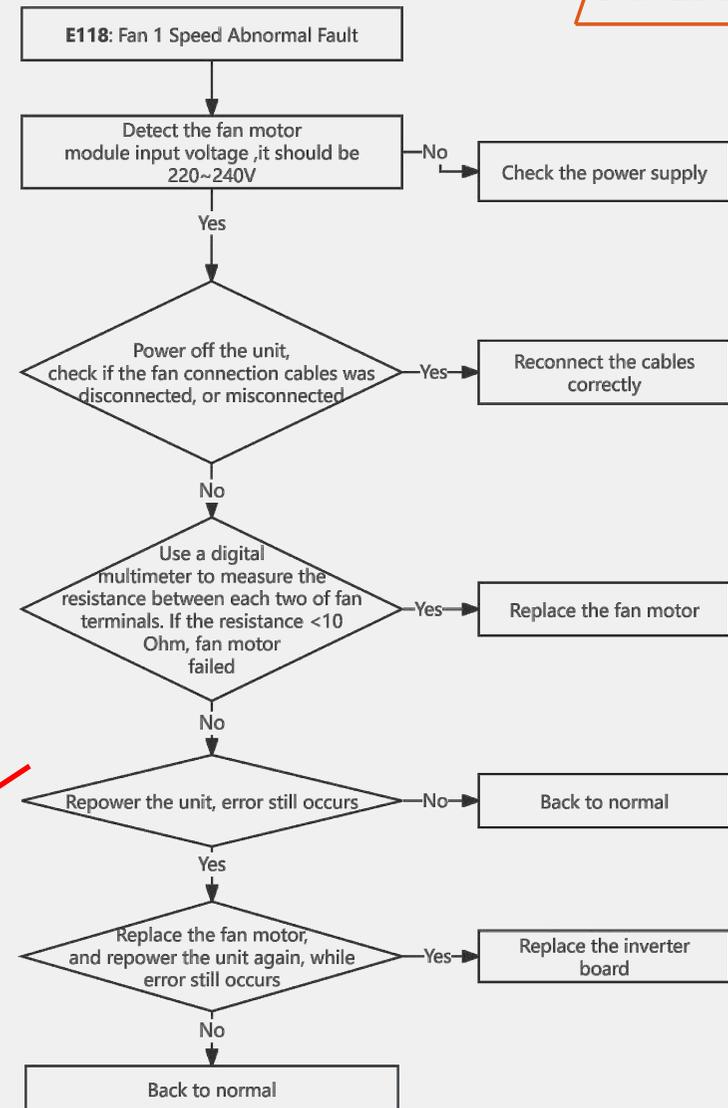
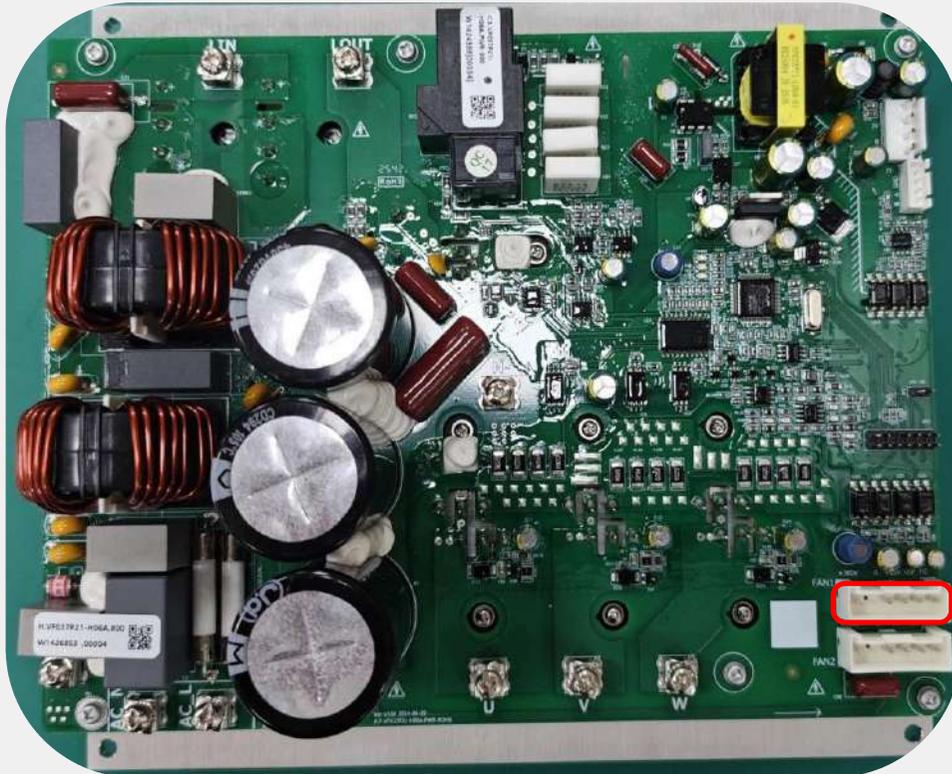
## 5.2 Issues With Code







## 5.2 Issues With Code



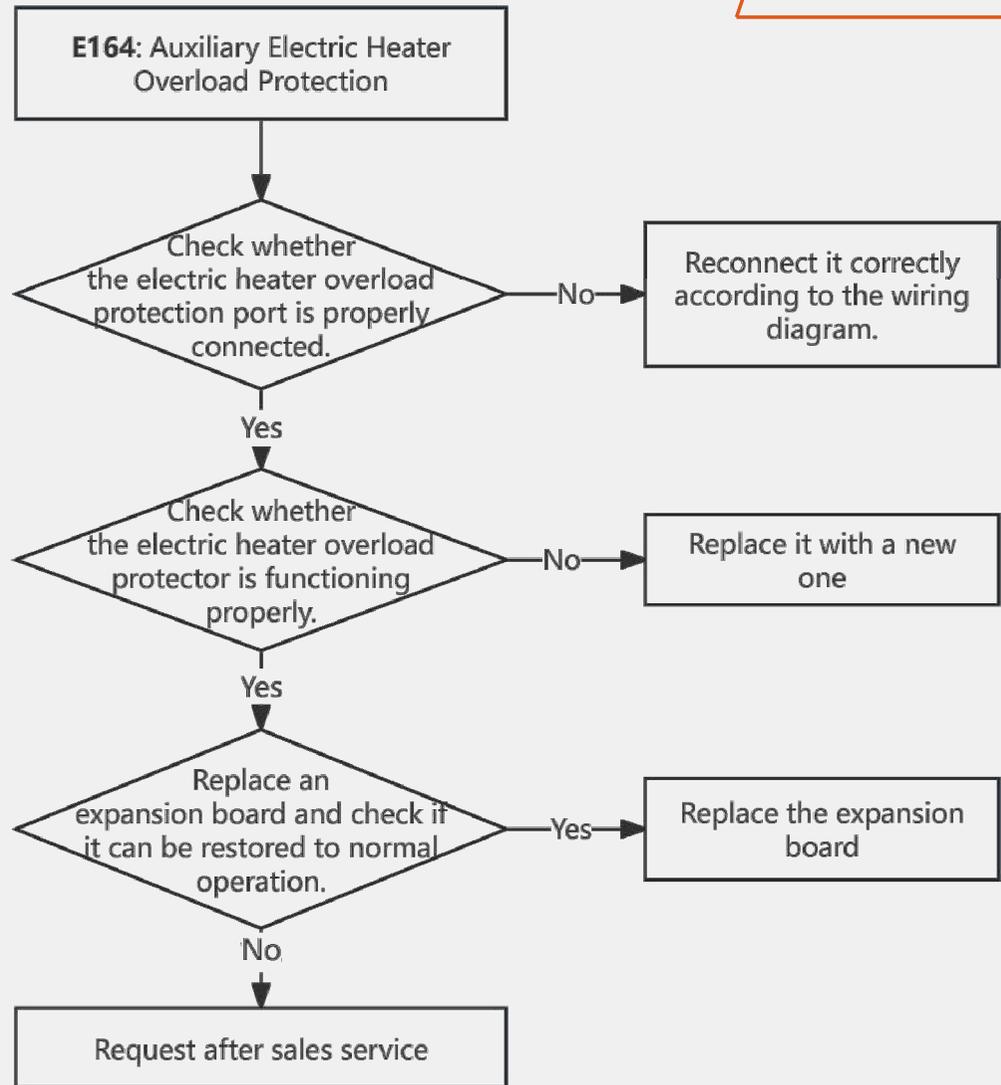
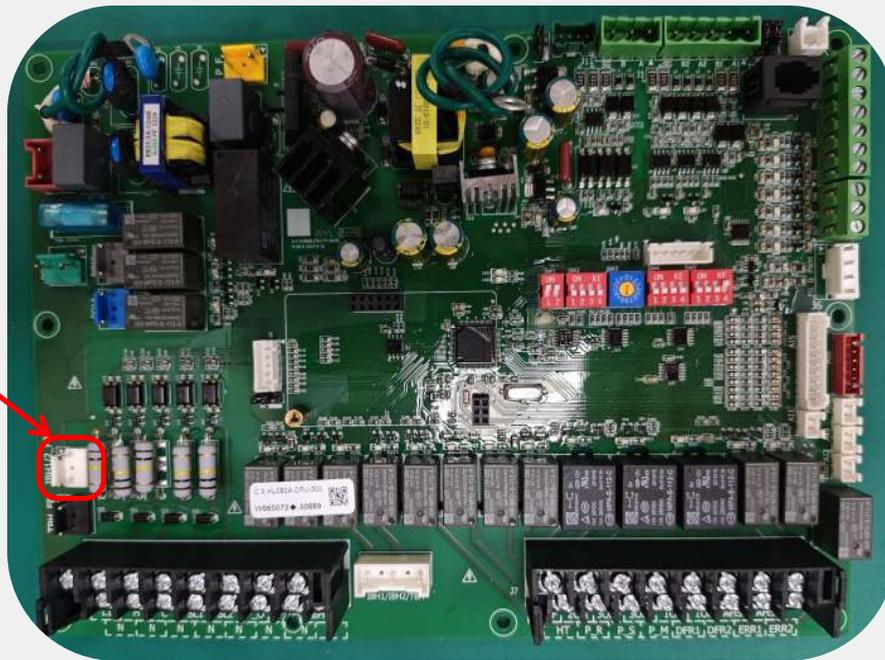


## 5.2 Issues With Code-E164

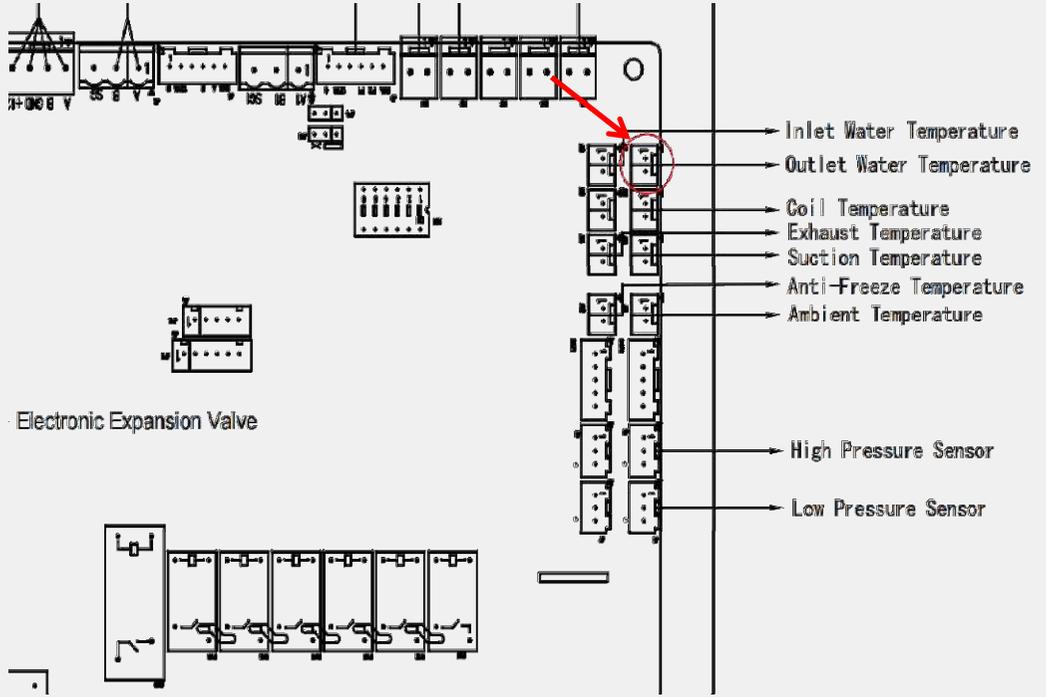
Error code		E164
Description		Electric Heater Overload Protection
Triggering		After enabling the electric heater function, the heat pump will detect the electric heater overload protection port. If it is disconnected, a fault will be reported.
Relative ports and locations	IBH1/2_F B	



## 5.2 Issues With Code



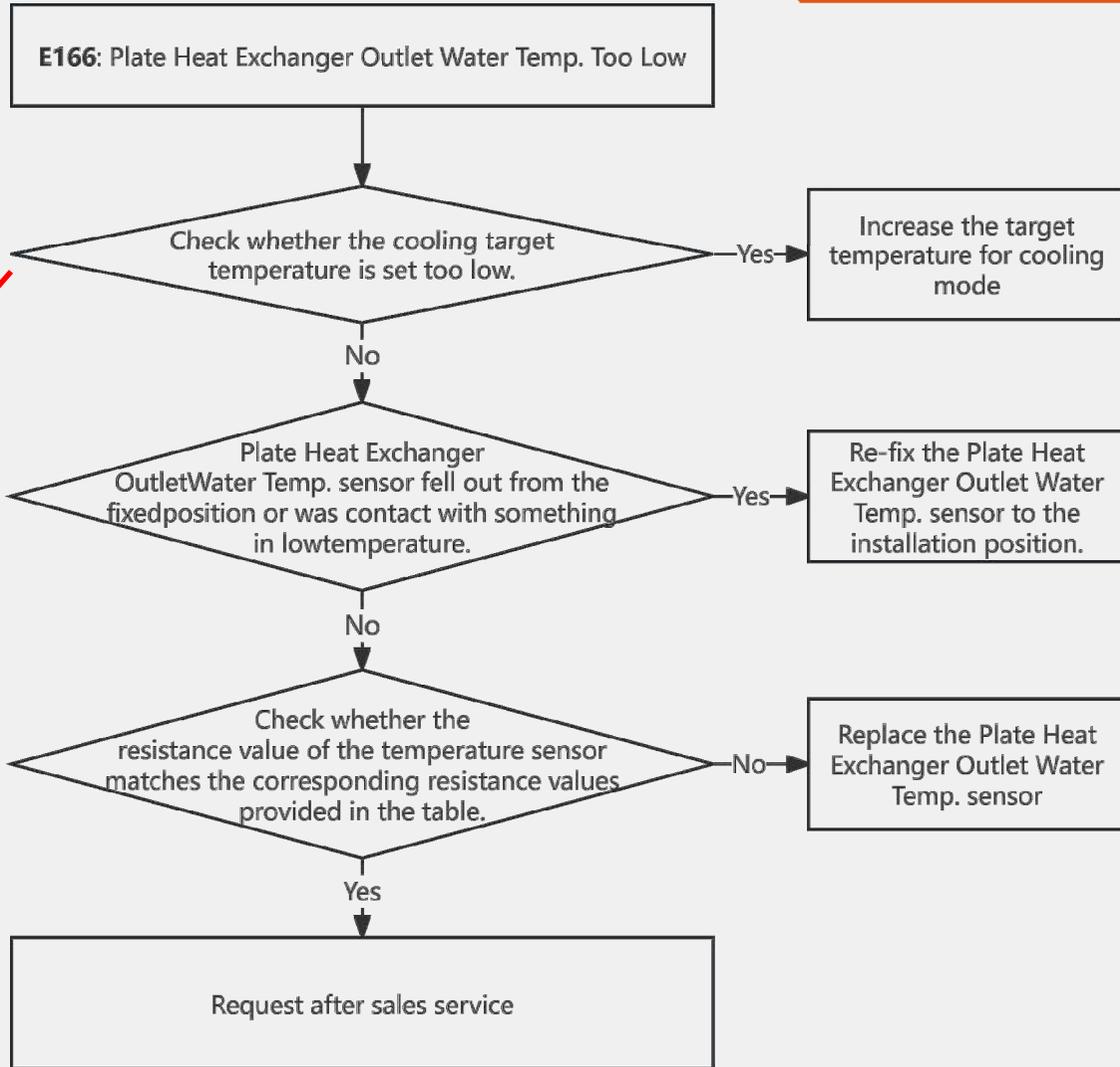
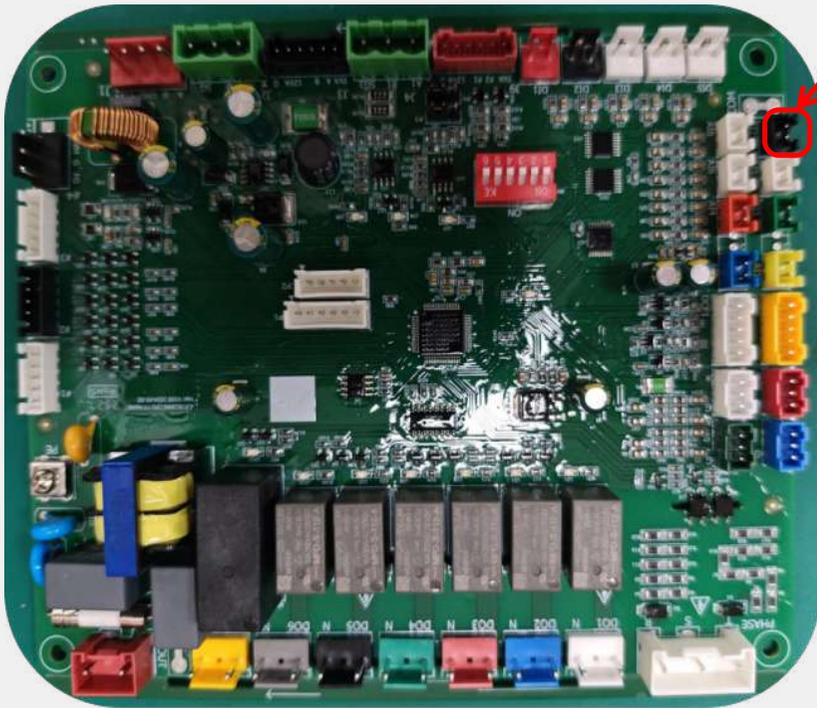
## 5.2 Issues With Code-E166

Error code		E166
Description		Plate Heat Exchanger Outlet Water Temp. Too Low
Triggering		When the plate heat exchanger outlet water temperature < [ Cooling outlet temperature too low ], this protection is triggered.
Relative ports and locations	AI7	 <p>The diagram shows a plate heat exchanger with various ports and sensors. A red arrow points to the 'Outlet Water Temperature' sensor. The labels on the right side of the diagram are:</p> <ul style="list-style-type: none"> <li>Inlet Water Temperature</li> <li>Outlet Water Temperature</li> <li>Coil Temperature</li> <li>Exhaust Temperature</li> <li>Suction Temperature</li> <li>Anti-Freeze Temperature</li> <li>Ambient Temperature</li> <li>High Pressure Sensor</li> <li>Low Pressure Sensor</li> </ul> <p>Other components shown include an Electronic Expansion Valve and a control panel with multiple buttons.</p>





## 5.2 Issues With Code



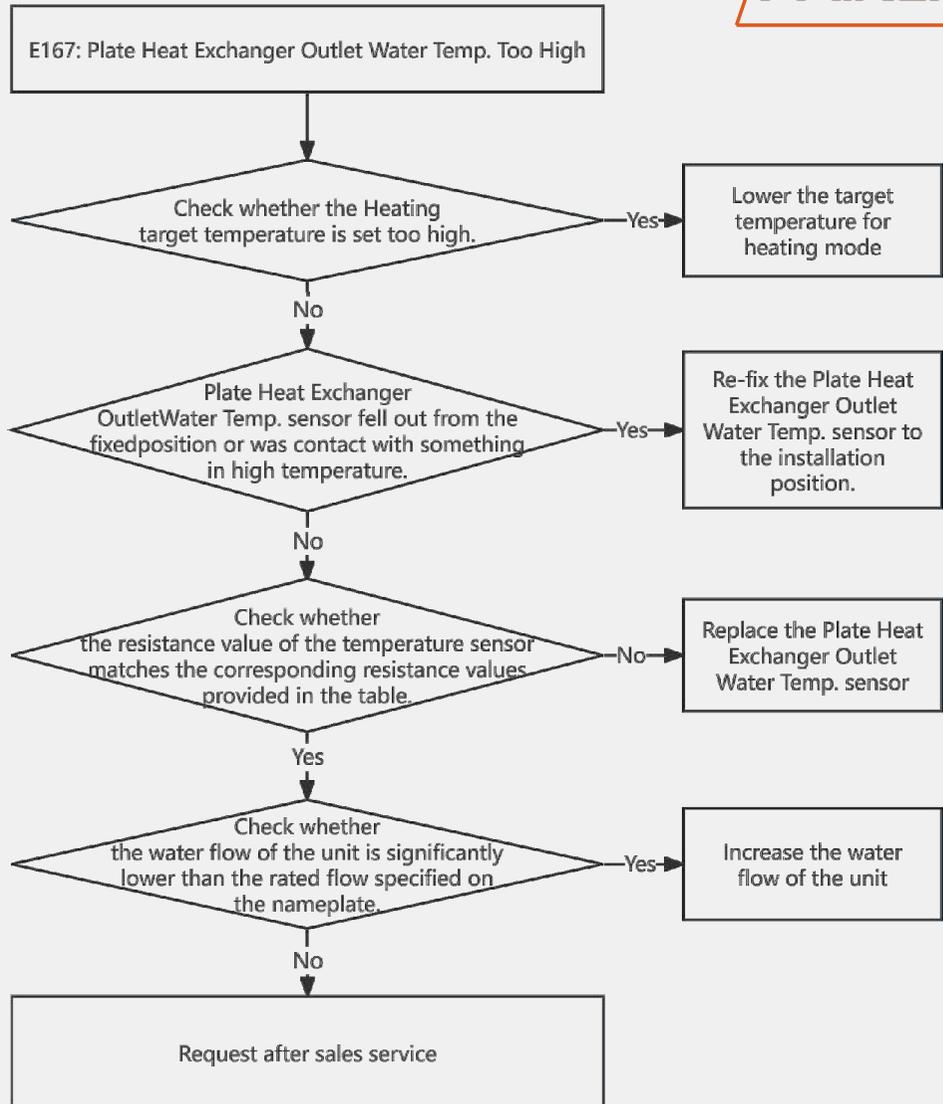
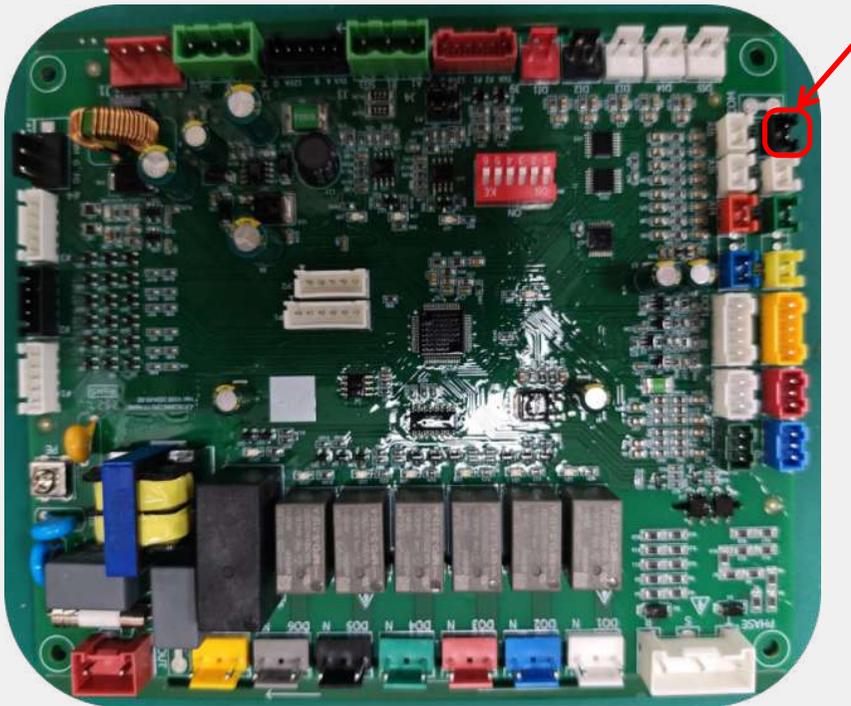
## 5.2 Issues With Code-E167

Error code		E167
Description		Plate Heat Exchanger Outlet Water Temp. Too High
Triggering		When the plate heat exchanger outlet water temperature $\geq$ [Heating outlet temperature too high ], this protection is triggered.
Relative ports and locations	AI7	<p>The diagram shows a complex system of components including a plate heat exchanger, an electronic expansion valve, and various sensors. The labels on the right side of the diagram are:</p> <ul style="list-style-type: none"> <li>Inlet Water Temperature</li> <li>Outlet Water Temperature (highlighted with a red circle)</li> <li>Coil Temperature</li> <li>Exhaust Temperature</li> <li>Suction Temperature</li> <li>Anti-Freeze Temperature</li> <li>Ambient Temperature</li> <li>High Pressure Sensor</li> <li>Low Pressure Sensor</li> </ul> <p>Other components shown include the Electronic Expansion Valve and a control panel with multiple indicator lights.</p>





## 5.2 Issues With Code



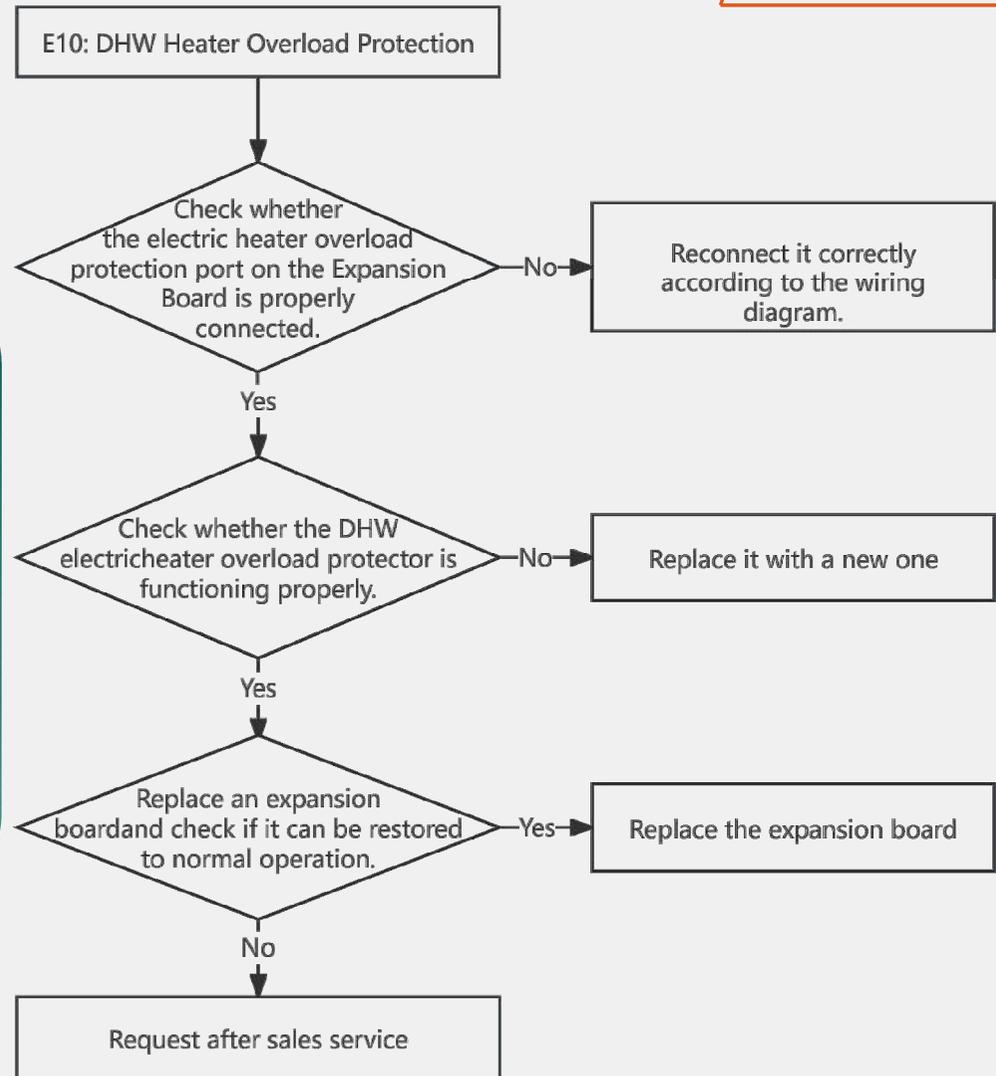
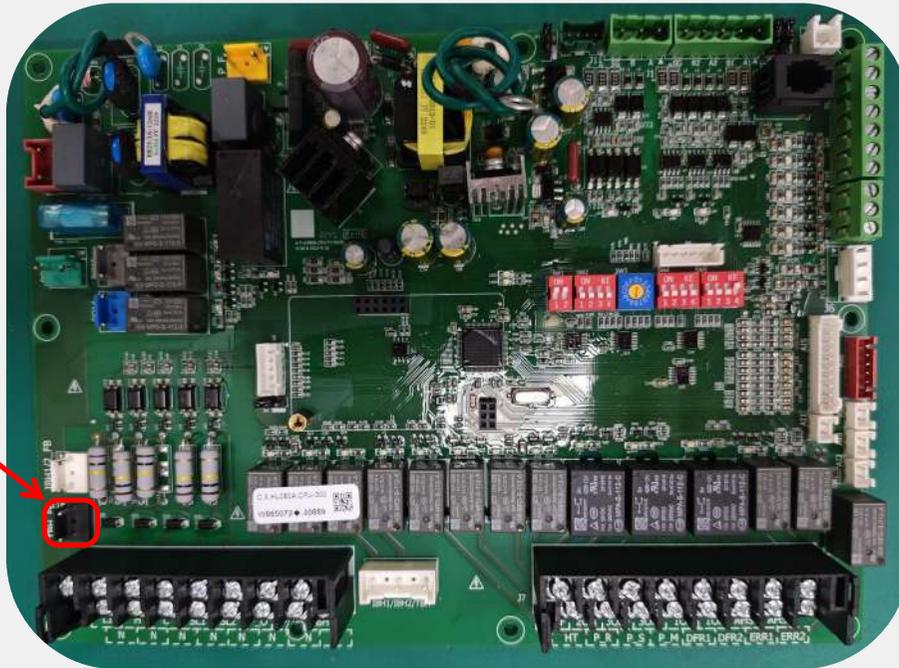


## 5.2 Issues With Code-E10

Error code		E10
Description		DHW Heater Overheat Protection
Triggering		After enabling the DHW electric heater function, the heat pump will detect the DHW electric heater overload protection port. If it is disconnected, a fault will be reported.
Relative ports and locations	TBH_FB	



## 5.2 Issues With Code





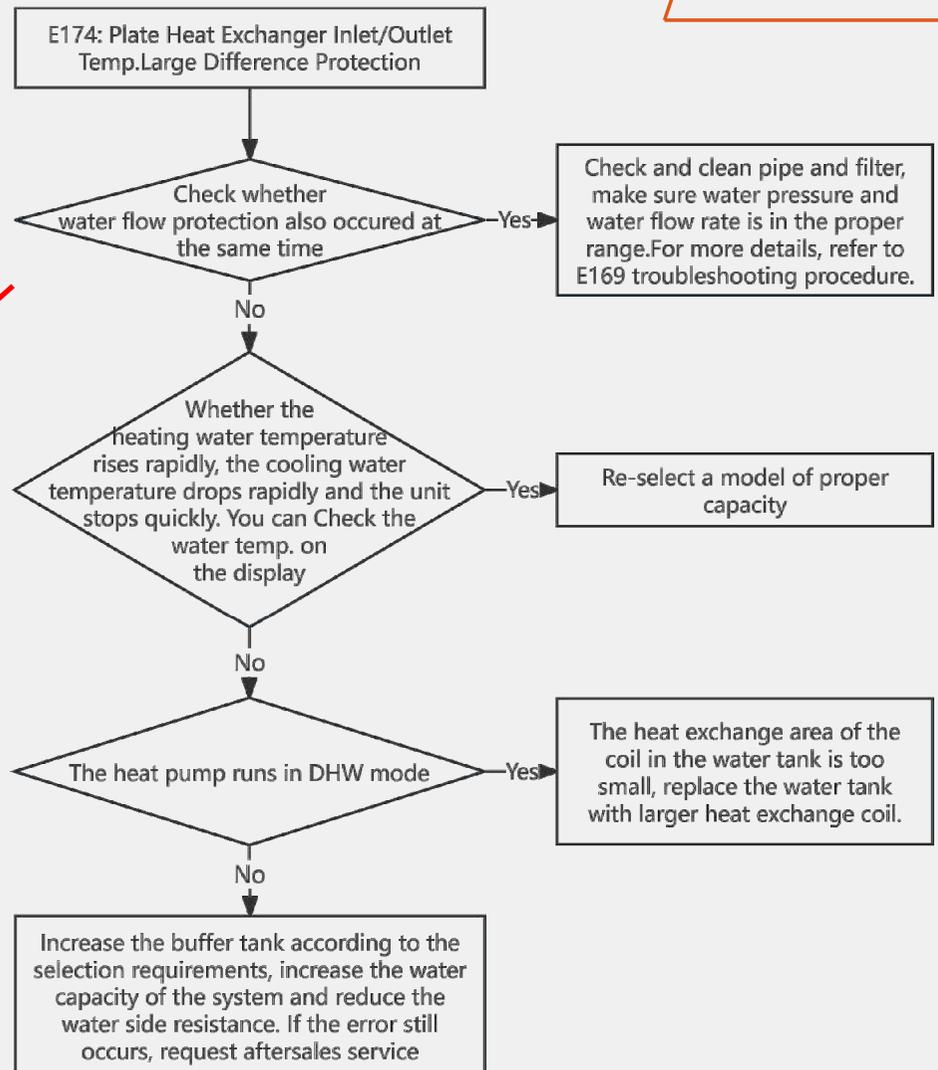
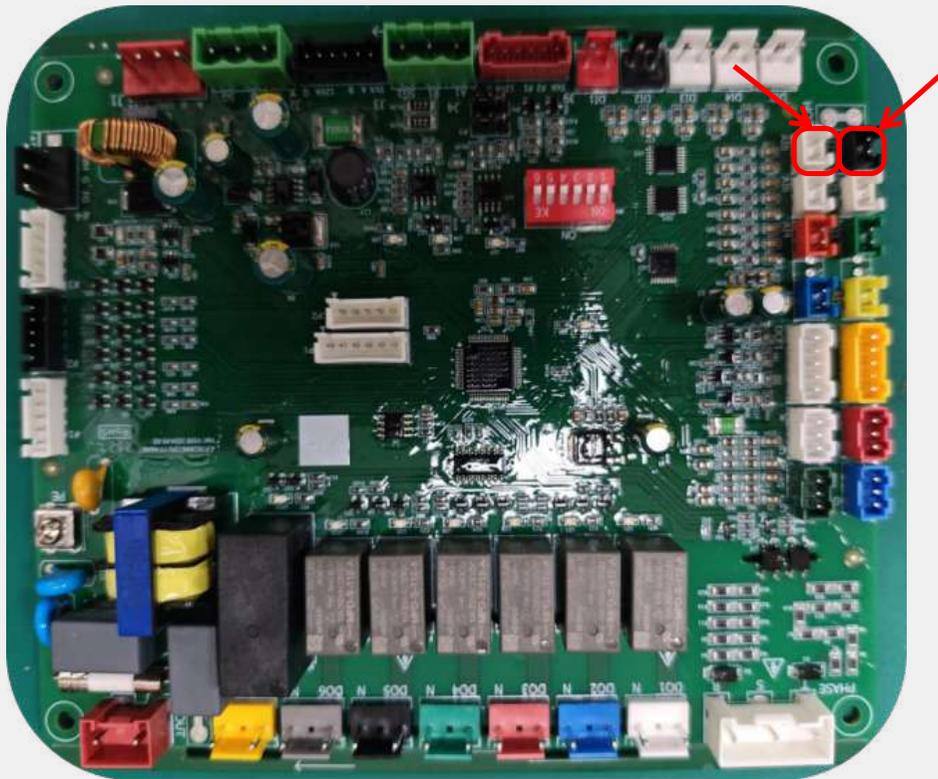
## 5.2 Issues With Code-E174

Error code		E174
Description		Plate Heat Exchanger Inlet/Outlet Temp.Large Difference Protection
Triggering		When the inlet-to-outlet temperature difference of the plate heat exchanger exceeds [Excessive Inlet-to-Outlet Temperature Difference], an alarm will be triggered.
Relative ports and locations	A17&A18	<p>                     R290 Leak Sensor                      High Pressure Protection                      Low Pressure Protection                      Flow Switch                      Inlet Water Temperature                      Outlet Water Temperature                      Coil Temperature                      Exhaust Temperature                      Suction Temperature                      Anti-Freeze Temperature                      Ambient Temperature                      High Pressure Sensor                      Low Pressure Sensor                      Expansion Valve                 </p>



FAIRLAND

## 5.2 Issues With Code





## 5.2 Issues With Code-E169

Error code		E169
Description		Water Flow Protection
Triggering		When the flow switch detects insufficient water flow, it will trigger this alarm.
Relative ports and locations	DI5	<p>                     R290 Leak Sensor                      High Pressure Protection                      Low Pressure Protection                      Flow Switch                      Inlet Water Temperature                      Outlet Water Temperature                      Coil Temperature                      Exhaust Temperature                      Suction Temperature                      Anti-Freeze Temperature                      Ambient Temperature                      High Pressure Sensor                      Low Pressure Sensor                      Valve                 </p>

## 5.2 Issues With Code

### Water Flow Protection

#### Step 1:

If the error code E169(\*\*%) shown on the display, and the percentage is between 0%-100%, please refer to the table below for reference.

Percentage	Water pump model	Brand	Description
0%	Para 25-130/8-75/IPWM1-12	WILO	IPWM connection port short circuited
2%			Pump Standby
80%			Undervoltage<160/170-194V, and Pump keeps running
85%			Undervoltage<160/170V, Overvoltage>253V-264V; Motor overload; module overheat; external pump flow rate larger than internal pump flow rate, Pump stops running
90%			Motor overspeed; over current; underspeed; pump stalling, and pump stops running
95%			Pump damaged; circuit damaged; terminal damaged, and pump stops running
100%			IPWM connection port open circuited

## 5.2 Issues With Code

### Step 2:

Check the water pump indicator lights, and it will show water pump whether it is normal (green light indicates normal)

PWM Feedback	LED Status	Fault Name	Fault Type	Protection Activation	Pump Action
95%	Red light always on	Drive failure	Final fault	Driver internals error	Try to reset the pump
95%	Red light always on	Missing motor or winding contacts, or electrical box not connected	Final fault	During startup, electrical box & motor connection is disconnected	Try to reset the pump
95%	Red light always on	Stuck (Not Rotating)	Final fault	Rotor is not rotating; anti-jam program has been activated but failed	Rotor is permanently stuck, no longer reset the pump
90%	Red light flashing	Over-current	Fault	Motor phase current exceeds maximum allowable value	Try to reset the pump
90%	Red light flashing	Over-speed	Fault	Motor speed exceeds maximum allowable value	Try to reset the pump
85%	Red light flashing	Input voltage too low	Fault	Input voltage < 160Vac	To prevent damage to electronic components, allow the pump to stop running
85%	Red light flashing	Input voltage too high	Fault	Input voltage > 253Vac (230V+10%)	253-263V: Do not stop the pump, allow reduction of some hydraulic performance >263V: To prevent damage to electronic components, allow the pump to stop running. Alarm signal (PWM, LED) is only reported when the pump is stopped
85%	Red light flashing	Motor overload	Fault	Overload occurs; actual speed is lower than the minimum operable speed on motor	Try to reset the pump
85%	Red light flashing	Electrical box temperature too high	Fault	Temperature exceeds maximum allowable value	Pump stops when temperature is too high
85%	red and green lights flashing	Generator mode operation	Alarm	External water flow causes the generator to run	Run continuously
80%	red and green lights flashing	Voltage too low	Alarm	Voltage lower segment: 160Vac < U < 190Vac; Voltage upper segment: 170Vac < U < 195Vac	Run continuously, output performance may be reduced

## 5.2 Issues With Code

### Step 3:

Check whether the water circuit is abnormal,

1. The ball valve which is connected to the unit is not opened
2. Water inlet and outlet pipe connected reversely.
3. Y-type filter is dirty block
4. The power cable(DO0) or feedback signal cable(#4) of water pump is not connected properly
5. The water circuit contains air

### Solution:

1. Open the waterway ball valve which is connected to the unit
2. Make sure water inlet and outlet pipe connected correctly.
3. Clean the Y-type filter.
4. Connect the power cable or feedback signal cable correctly.
5. Fill the water circuit first and then release the air. If necessary, we can quickly release the air from the air purge valve by unscrewing black nut



## 5.2 Issues With Code

### Step 4:

Check whether the Water flow switch, and it is damaged,

1. Flow switch(DI5) is not connected properly.
2. The water flow in the pipe is not consistent with arrow on the flow switch.
3. Remove the water flow switch from the pipeline, manually dial the water flow switch rake to closed status, and use a digital multimeter with buzzer to measure. if it does not beep, the water flow switch damaged.

### Solution:

1. Insert the plug of the water flow switch correctly
2. Adjust the direction of water flow in the pipe to be the same as the arrow on the flow switch
3. When you manually dial the water flow switch to the closed status, use a digital multimeter with buzzer to measure. If buzzer sounds, the water flow switch is normal. Otherwise, it's damaged and replace with a new water flow switch.



## 5.2 Issues With Code

### Step 5:

For more error information of water pump and flow switch, please check the info to solve the problem below.  
If the error still occurs, request aftersales service

Error information of water pump		
Possible cause	Solution	Description
Water pump leak	Replace the sealing ring	Error occurs at the first time running
Water inlet and outlet pipe connected reversely	Connect the pipe correctly.	
The power cable (DO0) is not connected properly	Connect the power cable correctly.	
The feedback signal cable (#4) is not connected properly	Connect the feedback signal cable correctly.	
Pump stalling	Remove the water pump, Rotate the impeller manually until it can move freely. And then install it back. (If it's too hard to rotate the impeller manually, replace the water pump)	Error occurs at the first time running or after running for a while
Power supply is abnormal	Check the power supply	Error occurs after running for a while
E169 occurs after water pump running for a while	Fill the water circuit first and then release the air.	
Motor stall, and it can not be rotated manually	Replace water pump	Error occurs at the first time running or after running for a while
Water pump connection is correct, the water pump icon on the display is lit. While no indicator lights on water pump is lit.	Replace water pump	Error occurs at the first time running

## 5.2 Issues With Code

**The possible causes of water flow switch failure and solutions**

Possible cause	Solution	Description
The water flow in the pipe is not consistent with arrow on the flow switch.	Adjust the direction of water flow in the pipe to be the same as the arrow on the flow switch	Error occurs at the first time running
Flow switch (DI5) is not connected properly.	Insert the plug of the water flow switch correctly	
External pump starts before internal pump(PUMPI) starts	Start internal pump first, make sure water flow is sufficient for external pump	
Flow switch not installed properly	Reinstall the flow switch correctly	Error occurs at the first time running or after running for a while
Flow switch leak	Replace the sealing ring	
flow switch rake blocked	Clean the obstacles	
flow switch rake damaged	Replace the flow switch	
The flow switch contact can not be completely closed	Replace the flow switch	
The flow switch contact can not be completely open	Replace the flow switch	
The flow switch model did not match	Replace the flow switch	



## 5.3 Request Service

If there is an issue that cannot be resolved, it would be very helpful if you could provide the following information:

1. Serial number of the heat pump.
2. photos or video of the issue.

Note: If labor costs are included, please kindly provide the heat pump installation documentation.

