

# Installation & Operation Manual



## Heat Pump Water Heater

Wall-Mounted Model-Vertical

BWHP080WM290

BWHP100WM290

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Thank you for choosing our product, please keep and read this manual carefully before installation.

# NOTES

Dear customers,

Thank you for choosing our products!

The manual aims to inform you about the installation, operation and maintenance of the heat pump and provides you with important information regarding safety. It is highly recommended you read the whole content carefully shown in this manual before the installation and operation of the heat pump, and please keep this manual for the purpose of future reference.

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# 1 Safety Precautions(Please follow the instructions below )

## 1.1 Definition of Signs

Dear customers:

Thank you for choosing our all-in-one heat pump water heater! For the purpose of facilitating your understanding of this manual and the usage of the heater, the explanation of the symbols that appear in the manual is shown as follows:

	Any content with the warning mark, the safety of the product and the personal safety of the user must be strictly operated in accordance with the content of the warning	
	Any content with the prohibited mark, must be absolutely prohibited, otherwise it may cause damage to the machine or endanger the personal safety of the user	
		
Use a power supply with a ground wire and ensure that the water heater is effectively grounded		The ground and neutral wires of the power supply cannot be connected together. Do not connect the ground wire to the gas pipe, water pipe, lightning rod, telephone line
		
Do not install water heaters in a area where there is no drain		Do not insert your hand or any object into the grid to avoid injury or damage to the water heater
		
This water heater is equipped with safety valve, in order to use safety, do not change the installation position without permission, it is strictly prohibited to block its outlet		The water heater should be installed indoor
		
When opening the hot water valve, do not shoot hot water directly at the human body to avoid being scalded by hot water		Children must bathe under the guidance of an adult
		<b>This appliance uses a R290 (propane) refrigerant</b> <b>CAUTION: Risk of Fire</b>

## 1.2 Safety Warnings


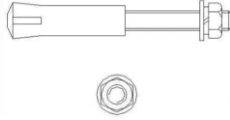


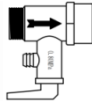
- 1) Before installation, it should be confirmed that the grid voltage is consistent with the voltage required by the unit, and whether the load capacity of the wires and sockets meets the maximum power requirements
- 2) If the stand-up appliance is not equipped with a power cord and plug, and the power supply is not disconnected (its contact spacing is provided in the overvoltage class III The fixed wiring connected to the other devices must be equipped with such a disconnection device according to the wiring rules.

(Note: The fixed wiring connected to it must be equipped with an all-pole disconnect leakage protection device with a contact opening distance greater than 3mm according to the wiring rules)

### 1.3 Arrival inspection

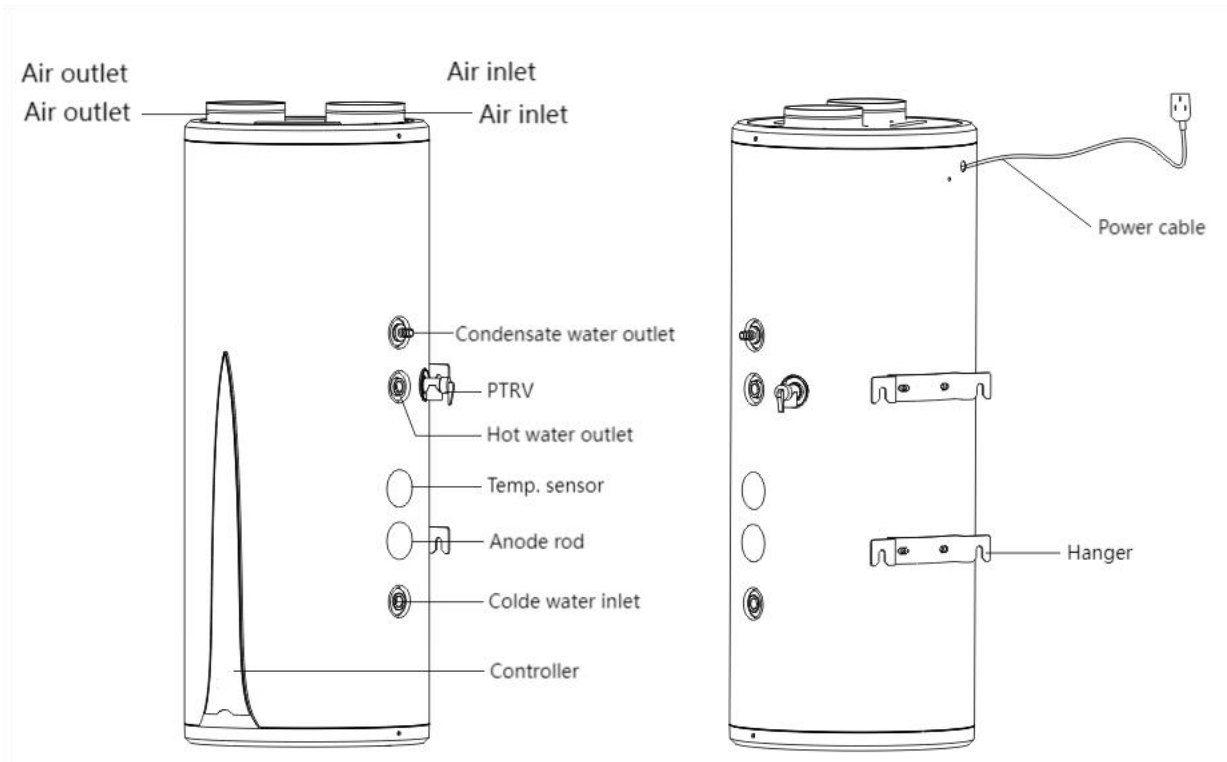
After receiving the product, please follow the following steps to inspect the product upon arrival:

1. Check the outer package: Confirm that there is no damage, deformation, moisture or other phenomena on the outer packaging, and that the seal is intact and undamaged. If there are any issues, please do not open the package and contact your local dealer in a timely manner.
2. Check the product: After opening the package, check whether the product is intact and has any obvious physical damage. Also, verify that the product model, color, quantity, etc. are consistent with the order. If there are any issues, please contact your local dealer in a timely manner.
3. Testing product functions: Conduct a simple test on the various functions of the product according to the instructions on the product manual to ensure that the product works properly. If there are any problems, please contact your local dealer in a timely manner.
4. Check accessories: Please confirm that all accessories are complete and free from any missing or damaged items according to the contents listed in the table below. If there are any issues, please contact your local dealer in a timely manner.

NO.	Name	Shape	Quantity
1	Installation & operation manual		1
2	Expansion bolt		2
3	Hose		1
4	Drainage joint		1
5	Pressure & Temperature Relief Valve (PTRV)		1

## 2 Component Names

### 2.1 Water Heater

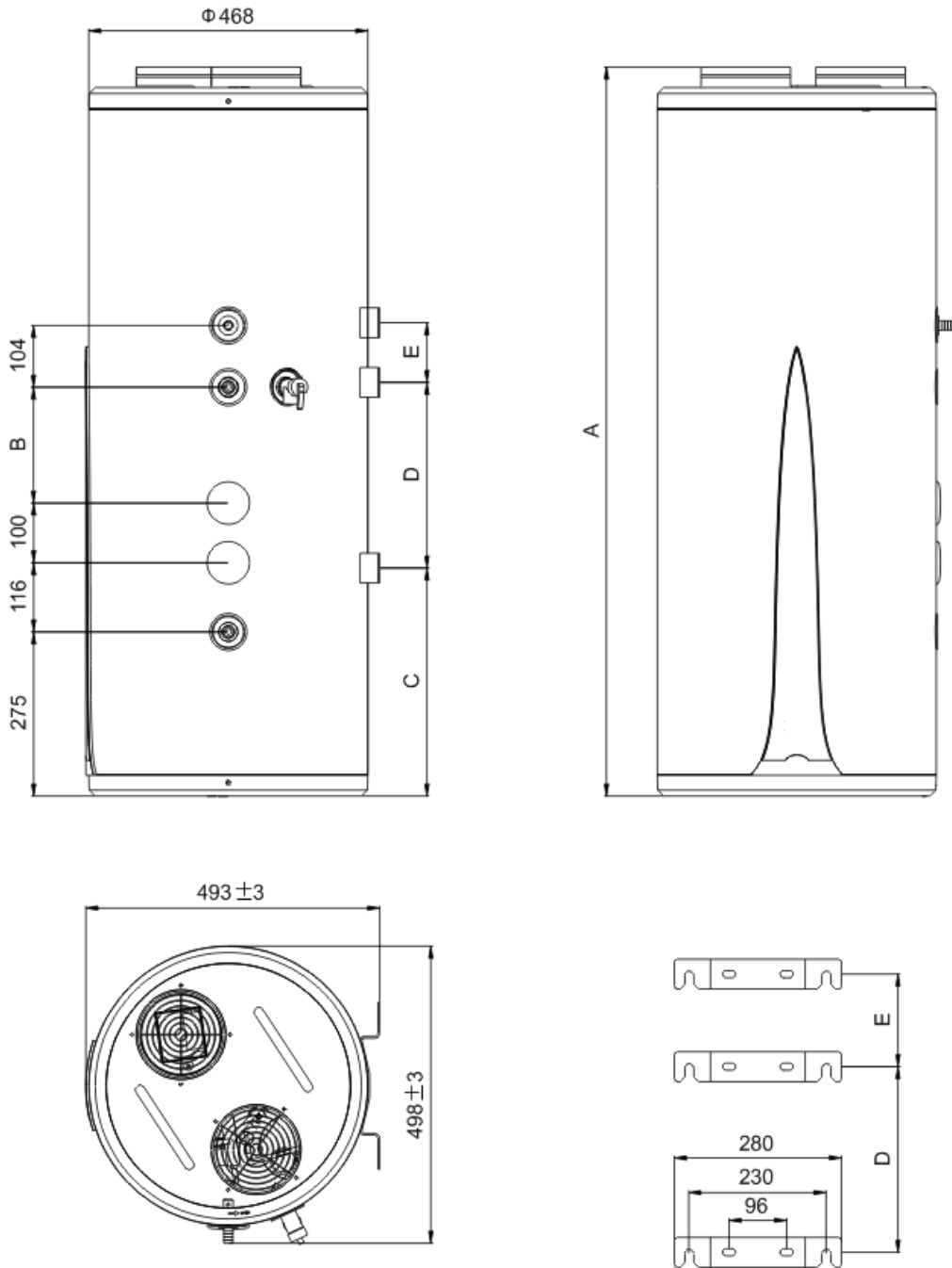


### 2.2 Annex

Model No.	Drain pipe	Corrugated pipe	User manual	Pipe connector	PTRV	Expansion bolt
BWHP080WM290	1	1	1	2	1	2
BWHP100WM290	1	1	1	2	1	2

### 3 Installation Instructions

#### 3.1 Dimensions (Unit: mm)



\* The dimensional deviation range  $\pm 10$ mm

Size (mm)	A	B	C	D	E
Model No.					
BWHP080WM290	1222	194	382	311	/
BWHP100WM290	1442	414	388	370	155

### 3.2 Installation Site Selection

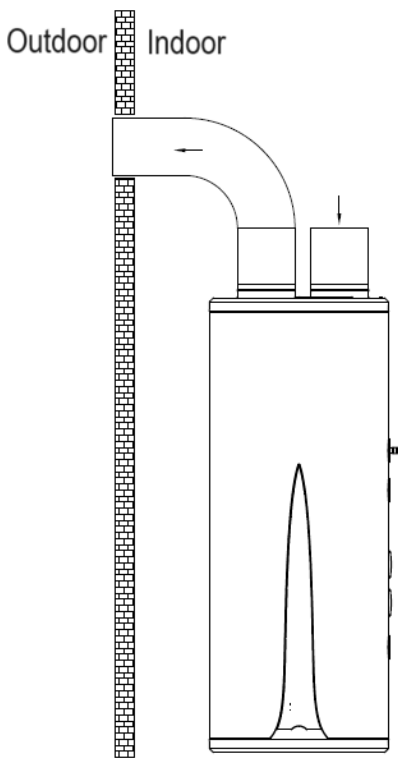
The installation must be carried out by the installer of the company's after-sales department or other designated installers

- 1) Ensure a reasonable airflow distribution, without obstacles affecting the incoming and outgoing airflow, and is not affected by external air as much as possible.
- 2) The support surface is sufficient to support the weight of the machine and drains condensate smoothly.
- 3) The noise of heat pump operation and the exhaust air do not affect the normal life of the user.
- 4) Leave sufficient room for installation and maintenance.
- 5) No strong electromagnetic field interference in the vicinity, so as not to affect the control performance.
- 6) The installation place is free of sulfur gas or mineral oil to prevent corrosion of the body and accessories.
- 7) Ensure that the water heater pipes used in areas with temperatures below 0°C will not freeze.
- 8) Keep away from open flames, high temperature and high pressure areas.

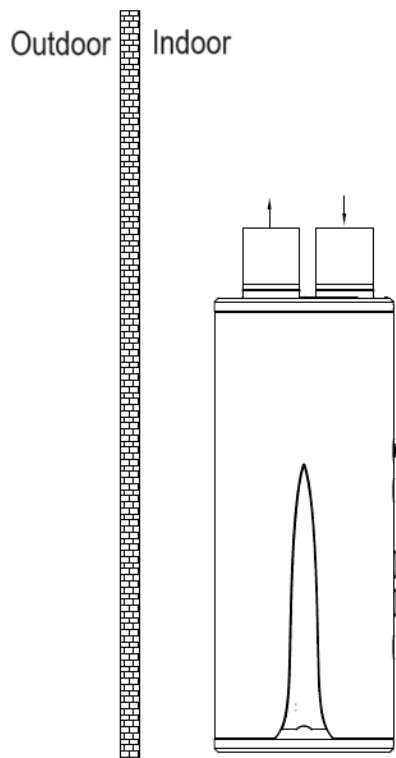
### 3.3 Installation Precautions

1) When installing the water heater, a certain space should be left to ensure that the air intake is normal, and at the same time to facilitate future maintenance, the installation diagram is shown as follows:

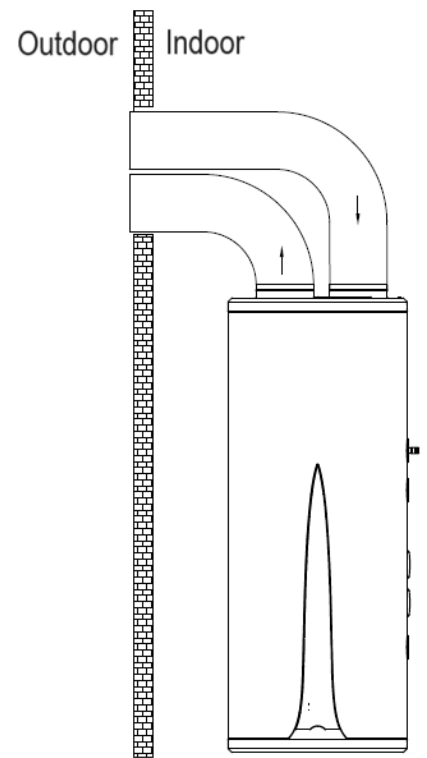
- a Indoor installation, suck indoor air and exhaust outdoors (with air duct) (single air duct)(Figure 1)
- b Indoor installation, suck indoor air and exhaust indoors (no air ducts)(Figure 2)
- c Indoor installation, suck outdoor air and exhaust outdoors(two air ducts)(Figure 3)



(Figure 1)



(Figure 2)



(Figure 3)

2) The water heater should be installed indoors, where the ambient temperature is above 0 °C, and the pipelines should be arranged centrally. The hot water outlet should not be too far away from the hot water use point. The hot water pipeline should be insulated to reduce heat loss.

3)The wall on which the water heater is hung should be strong and sturdy enough to withstand four times the weight of the water heater after being filled. If it is not a load-bearing wall or a hollow brick wall, corresponding protective measures must be taken, brackets must be installed, wall screws must be used, and backboards must be installed.

4)The installation location of the water heater should be selected in a place that is easy to use, maintain, and has floor drains. In the event of a leak in a water heater or water pipe, there will be no damage to nearby or sub-facilities. The installation position should not be installed on the upper part of the toilet, bathtub, washbasin, or door frame as much as possible, so as not to make the user feel depressed or unsafe.

5)The water heater power socket should be placed in a dry place and kept away from water, so as not to affect the normal operation of the machine (preferably equipped with a waterproof box). Do not reverse the inlet and outlet pipes. The safety valve should be installed according to the specified position, and should not be changed without permission, and the pressure relief hole of the safety valve should be kept connected with the atmosphere, and it should not be blocked.

6)Use a voltage tester to measure whether the live wire and neutral line are reversed. After confirming that the machine is filled with water, that there is no water leakage in each joint and that the power supply meets the requirements, the power can be turned on for heating.

7)Water heaters must use dedicated power lines.

8)When installing a water heater, a leakage circuit breaker should be installed.

9)The ground and neutral wires of the power supply must be strictly separated, and it is a mistake to connect the neutral wire to the ground wire.

10)The high-voltage wires are arranged separately from the wire control line and the temperature sensor connection line.

11)If the power cord is damaged, it must be replaced by the manufacturer or its maintenance department or similar dedicated personnel to avoid danger.

12)The installation shall be carried out by the personnel who have obtained the electrical certification in accordance with the wiring rules stipulated in the national standards. In places where water may splash and on walls, the height of the switch should not be less than 1.8 meters, and ensure that water does not splash on the switch.

13)The live wire, neutral wire, and grounding wire in the power socket at home must be connected correctly and reliably, and there must be no internal short circuit. Wrong connection may lead to fire.

### **3.4 Installation and Fixation of Water Heater**

Installation must be carried out by a professional installer or their designated installer.

The water heater is wall-mounted

Steps:

1)Select a strong and firm wall, according to the size of the hook position, use expansion bolts to fix it on the wall, and ensure that the unit is level;

2)The safety valve equipped with the accessory shall be installed at the water inlet position with reference to the installation diagram, and the direction shall be accurate;

3)When the unit is running, there will be condensate discharge, please fix the condensate pipe at the condensate inlet and connect it to the floor drain;

4)After installation, screw on the safety valve drain pipe, and pay attention to adding raw meal belt to seal to prevent water leakage;

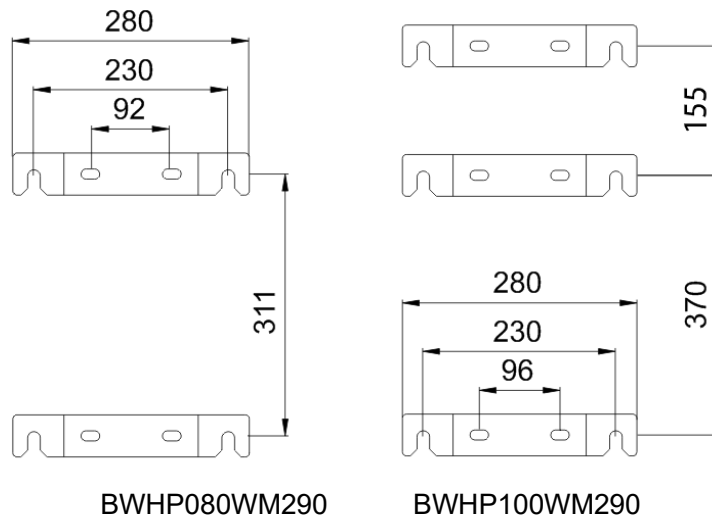
5)When installing the elbow, add the gasket to the union of the elbow. (Note: Elbows and gaskets are sold separately);

6)Determine the installation position of the water heater, drill four holes of  $\phi 12\text{mm}$  and 65mm deep in the wall with a percussion drill according to the size shown in Figure 2, pull out the connection docking terminal on the back of the water heater, and insert the connection terminal ring into one end of a hexagonal nut on

the far right side of the four expansion bolts, insert the expansion bolt into the corresponding wall hole through the wall-hanging plate hole, and fix it. Then lift the water heater and hang the hook behind the water heater on the wall panel accordingly.

7) In order to facilitate the installation and disassembly of the water heater, it is recommended to install G1/2 union at the suitable position of the water heater inlet and outlet pipes. Determine the location of the water supply and connect the inlet and outlet pipes and water pipes to the water use. Fill the inner tank with water to check whether the waterway is leaking, and if there is a leak, it needs to be reconnected.

(Note: Make sure the wall rack is securely hung on the hook before letting go to prevent the water heater from falling, causing personal injury or property damage.)



(Figure 4)

### 3.5 Pipeline Installation

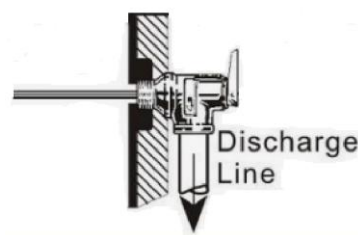
1) Determine the installation position of the water heater, and install each pipeline with PPR pipe according to the overall size drawing and user requirements. Install the safety valve and other accessories according to the figure below. Pay attention to add raw material tape to seal to prevent water leakage.

2) In order to facilitate the installation and disassembly of the water heater, it is recommended to add a flexible connection to the suitable position of the water heater inlet and outlet pipes, determine the position of water supply, and connect the inlet and outlet pipes and tap water pipes to the water use respectively.

3) Do not reverse the inlet and outlet pipes. The safety valve cannot be altered without permission. The following figure is only a schematic pipe diagram of pipeline installation, which can be installed according to the actual situation of users.

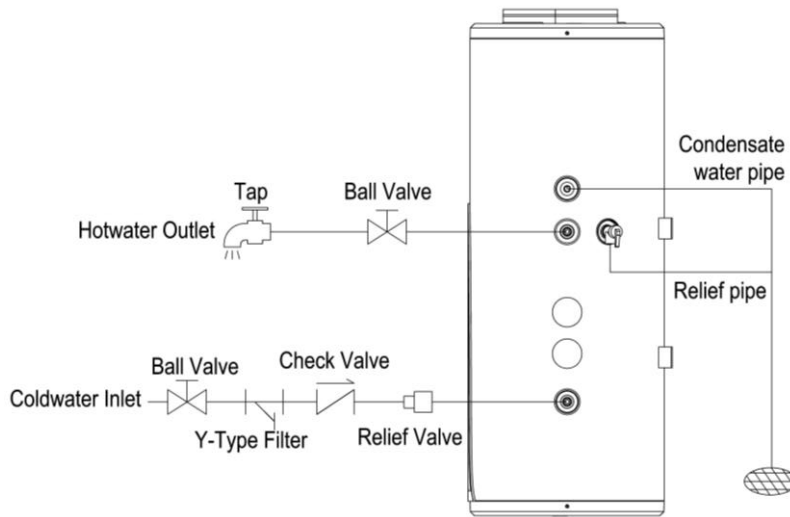
4) The tap water inlet pressure should be 0.1~0.4MPa. If it is less than 0.1 MPa, add a booster pump to the water inlet, and if it is higher than 0.4 MPa, install a pressure reducing valve at the water inlet.

5) Before the first replenishment of the water tank, make sure that the cold water inlet, hot water outlet and the faucet at the farthest end of the water tank are open, and stop the water replenishment after the faucet drains continuously for 10 seconds.









6) Install the safety valve (the interface is G1/2) on the inlet pipe in the direction of the arrow on the piece safety valve (the arrow points to the direction of water flow). When the water heater can be heated electrically, the water in the water tank will be heated and expanded, and a small amount of water droplets will flow out of the pressure relief hole of the safety valve to reduce the water pressure in the tank, which is a normal phenomenon. The pressure relief hole should be kept open to the atmosphere and should never be blocked. Safety valve drain pipe installation method: screw one end of the thin pipe of the tee to the pressure relief hole of the installation haze, and then screw the drainage pipe in the attachment to the thick interface of the tee, according to the actual situation, the drainage pipe can be truncated or lengthened, and the other end of the drainage pipe is connected to the sewer mouth, so as to avoid splashing the room with dripping water during pressure relief. The drain pipe connecting the installation valve should be kept at an incline downward in a continuous downward manner for installation in a frost-free environment.

7) Add rubber pads to the cold water inlet and hot water inlet of the mixing valve and connect them to the tap water pipe and hot water pipe respectively. Make sure the connection is tight and leaking. Connected as shown in the figure below, the handle adjusts the water temperature to the left to gradually increase, and the water temperature to the right to gradually decrease, and pulls the handle back and forth to adjust the water temperature. The handle is pulled up and down to adjust the size of the water flow, the larger the upward pull angle, the more water is out, and vice versa.



(Figure 5)

Before installing the water pipeline of the unit, please purchase the accessory listed in the table below by yourself:

Name	Picture	Type	Function
Ball valve		Diameter according to actual situation	Control water flow on/off
Filter		Diameter according to actual situation/40mesh	Filter impurities in water
Check valve		Diameter according to actual situation	Control the direction of water flow
Auto air vent		DN15	Remove gas from The pipeline
Water pipe and connector		-	Composition Of waterway
PTFE tape		-	Increase the sealing at the interface

## 4 Test Run

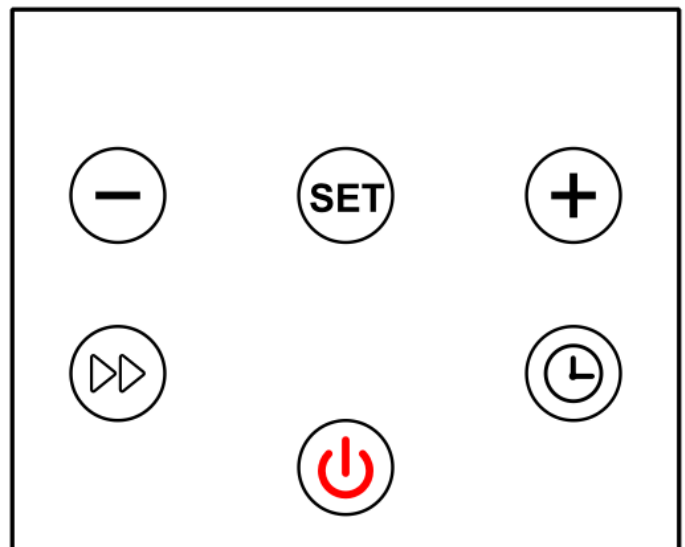
Please use the inspection items of the water heater test run according to the instruction manual, insert check mark in the box

- Is the electrical connection wire securely fixed?
- Is the drain pipe laid out correctly?
- Is the ground wire securely connected?
- Does the power supply voltage comply with electrical regulations?
- Is the control panel displayed properly?
- Is there any unusual noise?
- Is the tank fitted with a pressure relief safety valve (TP valve) or a pressure relief safety check valve?
- Does the material of the hot and cold water pipe (such as PPR, etc.) meet the requirements for the use of hot and cold water?
- Is the water tank filled with water after the water system is installed, and is there water discharged from the hot water line outlet?
- After the water injection pipeline of the water system is filled, check the entire water pipeline, is there any leakage point?
- After the water system is filled, is there any water flowing out after the automatic safety pressure relief valve is manually relieved?
- After the water system is injected with water and leak detection, is all the water lines outside insulated?
- Are the tank drain valves, drain pipes and pressure relief valve drains connected to the sewer and drained smoothly?
- When the water tank is outside, have the water tank drain and pressure relief valve drain been insulated?

## 5 Function



Control Panel




















Buttons


















## 5.1 Display Description

When powered on, the buzzer will sound once, and the display will work normally after about 3 seconds of full display.



When the power is off, the real-time clock (or timer status) and the current water temperature are displayed, and when the power is on, the real-time clock (or timer status), the current water temperature, and the current working mode are displayed.








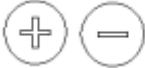


## 5.2 Symbols Description

Symbol	Status	Function or Definition	Note
	Light Off	Currently in shutdown or non-heating mode	Display on/off status
	Light On	Currently turned on and in heating mode	Display on/off status
	Blinking	Entering the heating "STAN" mode: blinking for 3 seconds then exit	Blinking for 3 seconds when pressing SET
	Blinking	Entering the heating "HP" mode: blinking for 3 seconds then exit	Blinking for 3 seconds when pressing SET
	Blinking	Entering the heating "HYB" mode: blinking for 3 seconds then exit	Blinking for 3 seconds when pressing SET
	Blinking	Entering the heating "ELE" mode: blinking for 3 seconds then exit	Blinking for 3 seconds when pressing SET
	Blinking	SG closure EVU(PV) disconnection(That is, query the value of 30: 3)	Optional features
	Blinking	SG, EVU (PV) are closed or SG is off EVU (PV) is closed (i.e., query 30 for a value of 1 or 2)	Optional features
	Blinking	SG Disconnect EVU(PV) Disconnect (i.e. query value of 30: 4)	Optional features
	On	Runtime exceeds F95 in case of SG disconnect and EVU (PV) disconnect (i.e. query value of 30: 5)	Optional features
	On	Start the electric auxiliary heating work	Power on display
	Blinking For 1 Second	Enable the electric auxiliary heat rapid heating mode Note: When the electric heating is turned on when the conditions are met, it will be always on, and it will be turned on if it does not meet the conditions, and it will blink for 1 second.	Power on display
	Blinking For 2 Seconds	Enable the electrically assisted thermal sterilization mode Note: When the electric heating is turned on when the conditions are met, it will be always on, and if it does not meet the conditions, it will be turned on, and the icon will blink for 2 seconds.	Power off/power on display
	Blinking	WIFI pairing	
	On	WIFI connected	
	On	Display actual temperature	
	On	Enter the settings state	

	On	Display the temperature in Celsius	
	On	Display the temperature in Fahrenheit	
88	On	Display actual and set values	
	On	currently powered on and defrosting	
	On	Enter the maintenance state	
	On	A fault alarm is currently occurring	
	On	The current key is locked	
	On	Compressor operating	
	On	Motor fan operating	
	Blinking	Ventilation mode: Fan operating	
	On	Displays real-time time, mode status, or fault codes	
	On	Enable timed work mode	
	On	currently in the boot timed working period	
	Blinking	Setting the start time for working period	
	On	currently in the boot timed non-working period	
	Blinking	Setting the end time for working period	
	On/Out	Timed working periods 1, 2, 3, when setting or when the clock enters this period, it will always be on, and it will be off when the rest of the conditions are on	
	On	Display the exact day of the week	Use as a week calendar




### 5.3 Description of the Key Symbols

Name/icon	Description of the function
On-off button 	<ol style="list-style-type: none"> <li>Press and hold for 1 second to turn on/off;</li> <li>In the query state, tap this key to return to the main interface;</li> <li>In the settings state, tap this key to return to the main interface;</li> <li>After 60 seconds of no operation of the controller, it will automatically return to the main interface, turn off the screen and lock the screen automatically;</li> <li>When the main interface is locked, press and hold for 3 seconds to unlock it first;</li> </ol>
Timer button 	<ol style="list-style-type: none"> <li>Under the main interface, tap to enter the clock settings, tap to switch the time "hours" and "minutes" ;</li> <li>Under the main interface, press and hold for 3 seconds to start (and enter the timer time setting)/turn off the timer mode;</li> <li>In the timed state, tap to switch between hours and minutes;</li> <li>In the timer state, press and hold for 3 seconds to cancel the timer function of the current period;</li> <li>Press and hold for 3 seconds in the clock setting state to enable/disable the</li> </ol>

	week function;
Mode button 	1、 When the device is turned on, tap to switch between modes (STAN/HP/HYB/ELE);
Up button 	1、 Under the main interface, tap to set the temperature when the power is on; 2、 Press and hold for 3 seconds in the main interface to enter the query state; 3、 In the query status, tap the switch status to query the serial number; 4、 modify timing and clock values;
Down button 	1、 Under the main interface, tap to set the temperature when the power is on; 2、 In the main interface, press and hold for 3 seconds to enter the query and maintenance status when it is in the shutdown state; 3、 In the query status, tap the switch status to query the serial number; 4、 Modification of timing and clock values;
Fast heating button 	1、 In the power-on state, press and hold for 3 seconds to turn "Quick Heat" on or off
Power switch + Up button 	Press and hold for 5 seconds to enter the manual intelligent network pairing connection
Power switch + Down button 	Press and hold for 5 seconds to enter the manual AP network connection
Mode + Down button 	Under the main interface of booting, press and hold for 5 seconds to force "Defrost" to turn on or off.
Up button + Down button 	1、 Press and hold for 5 seconds to turn on/off the manual ventilation function 2、 Under the main interface of power on, press and hold for 3 seconds to start the "ventilation" function to start the fan work. 3、 Press and hold again for 3 seconds to exit the "Ventilation" mode and return to the normal state.
Power switch + Timer + Down button 	Press and hold for 3 seconds to turn on or off the "sterilization function"
Power switch + Mode + Up button + Down button 	Within 5 minutes of powering on, press and hold for 5 seconds to restore factory parameter settings. After the "--" flashes 3 times, it returns to the normal interface.






## 5.4 Instructions for key operation

### 5.4.1 Power on/off


If unlocked, press " " for more than 1 second to switch the controller to power on or off. When the machine is turned on, the controller displays the heating symbol normally ""; In the shutdown state, the controller stops the output and the heating symbol "" is off. The controller is powered off when it is

powered on for the first time, and it is in the same state as before the last power off when it is powered on again.

#### 5.4.2 Water Temperature Setting

When unlocked and powered on, press “” or “” to increase or decrease the setting values of water temperature; press “” or “” for more than 1 second to quickly raise or lower the water temperature setpoint, press and release immediately “” or no operation within 5 seconds, it will exit the modification and return to the normal display state, where the water temperature setting will flash when the water temperature setting is modified, and return to the normal display state after 5 seconds.






#### 5.4.3 Setting Working Mode


When unlocked and in the boot state, press on the main interface “” to switch modes between “STAN”、 “HYB”、 “ELE”.


#### 5.4.4 Real-time clock setting

When unlocked


Enter the clock setting: in the main interface state, press “”, The clock area flashes to indicate that the clock setting state has been entered;





Setting a clock: Enter the clock setting state, press “” to switch between hour/minute setting, The set value flashes, press “” or “”, modify the corresponding value, set the value for minutes, and then press “” or “” or 60 seconds of no operation to automatically save the current settings and exit.










Press and hold, while the clock is set “” for 3 seconds to switch on/off week setting; When the "Week" function is enabled, go to the clock setting to enter the "Week" setting first, and then press after the setting




“” to enter hour setting, When the week function is turned off, skip the week setting directly.

#### 5.4.5 Set the timing control of the power on/off




There are 3 groups of timing control, 1~3 groups, each group of timing can be set to "ON", "OFF", the default is "invalid" state, that is, the timing start and timing stop time are the same. When the week function is enabled, the schedule is a weekly cycle, and when the week function is disabled, the schedule is a daily cycle. Enter the timer settings: when unlocked, press and hold, on the main interface, “” for 3 seconds, to enable or cancel timing.

Press “”, "1" at the bottom left of the screen, the clock icon is displayed, and the digital flash at the hour and ON indicates that the setting state of "the first group of timing starts" has been entered, and the digital flash at the hour is displayed, press “” or “” to modify timing , press “” to confirm the





modification and transfer to the minute setting, and the digital flash at the minute and ON will be displayed , then press “” or “” to modify the time, then press “” to confirm the change made; At the same time, enter "1", the clock icon display, set the status, and the digital flash display at the hour and OFF, press “” or “” to modify the time, then press “” to confirm the modification and enter the minute setting, flashing at minutes and OFF, press “” or “” to modify the time, then press “” to confirm the modification and start the "Timing of Period 1", enter the setting of Period 2, and the "Setting Operation of Period 2 and 3" is the same as above.

Exit the timer setting : When setting the timing, press “” or 60 seconds without any operation, the current segment timing will be abandoned and the setting timing state will be exited. Timing display: After setting the timer, the clock will update the current status immediately, and the boot will be performed during the boot period, and the shutdown will be performed outside the timing period, and then it will be executed once when the time comes. When the power is off, “” and “OFF” symbol, when the power is on display “” and the current working session "1/2/3" and "ON" icons






**5.4.6 Fast heating control**

When unlocked, press and hold “” for 3 seconds to start/exit the quick heating function. When the electric heating is on, “” is on; when the electric heating is off “” 1Hz flashing display. Turn off the quick heating function when the on/off operation is performed or when the temperature reaches a constant temperature.

**5.4.7 Forced defrost control**



When unlocked, press and hold “”+ “” for 5s to enter the forced defrosting when the machine is turned on; When the defrosting conditions are met, the icon “” turns on and enter the defrosting state; When the defrosting conditions are not met, the icon “” will exit the defrost state after flashing 2 times.



**5.4.8 Query the running status**

Enter: press and hold “” for 3 seconds or “” for 3 seconds to enter the query of running parameters, Enter the parameter query state, the parameter serial number is displayed in the temperature display area, and the parameter content is displayed in the timing area. View actions and exit: After entering the parameter query, press “” or “” Scrolling the lines to show each "operating parameter"; press “” or 60 seconds without key operation, automatically exit to view the parameter status.

Status	Number display	Notes
Fluorine cycle/water cycle	00	0=Water cycle ; 1=Fluorine cycle
High pressure switch	01	0= Off; 1= On
/	02	/
/	03	/
Measured value of electronic expansion valve	04	Measured values
Coil temperature value	05	Measured values
Ambient temperature value	06	Measured values
Return air temperature value	07	Measured values
Exhaust temperature value	08	Measured values
Water tank temperature	09	Displayed values =Measured values + Compensation values
/	10	/
compressor	11	0=Off; 1=On
Four-way valve	12	0=Off; 1=On
Fans	13	0=Off; 1=On
/	14	/
/	15	/
Electrical heating	16	0=Off; 1=On
The value of the cumulative time of the press operation before defrosting	17	Measured values
/	18	/
The tooling value of the current model	19	Frock 0
/	20	/
/	21	/
Leakage detection	22	0= Normal (or no connection); 1= Leakage;
Detection of water flow (optional)	23	Measured values *10; Unit: L/MIN
SG ready function	30	0: Not enabled (when F94=1 is disabled) 1: EVU、SG both on 1 1 2:EVU on 1 0 3: SG on 0 1 4: EVU、SG both disconnected 0 0 5: EVU、SG both disconnect the delay F95 time after the shutdown

### 5.4.9 WIFI functional setting

Configuration operations: press  +  for 5 second, enter the manual AP configuration network connection;

Press  +  for 5 seconds, enter the manual intelligent network pairing connection;  
For App download and use, please refer to the WiFi function manual;

#### 5.4.10 Factory reset

Within 5 minutes of powered on, press “ +  +  + ” for 5 seconds to reset.

## 6 Maintenance

6.1 This part must be shut down and the power switch must be cut off before maintenance operation

6.2 When cleaning the water heater shell, use a damp cloth dipped in a small amount of neutral detergent and gently wipe it, do not use gasoline or other solutions. Finally, wipe it dry with a dry cloth to keep the water heater dry. Be careful not to scrub with detergents that contain abrasives (e.g., toothpaste), acids, chemical solvents (e.g., alcohol), or polishing agents.

6.3 During the use of the water heater, the safety valve should be checked once a month, the method is: pull the small handle of the safety valve on the side of the inlet pipe (be careful not to hurt your hands), if there is water outflow, the safety valve will work normally, if there is no water outflow, please contact the local after-sales service department, if there is damage, please replace it with the safety valve of the same specification.

6.4 If you need to stop the water heater for a long time, please follow these steps: Close the tap water valve, screw one end of the drain pipe to the pressure relief hole of the safety valve, and open the handle of the safety valve. Open the hot water valve of the water heater to the maximum (unscrew the nozzle from the hose at the same time, be careful not to get burned by the hot water), and drain the water from the bile to prevent freezing and damaging the inner tank in winter.

6.5 When used again, in order to avoid the occurrence of injury accidents, it is recommended to open the hot water valve before turning on the power switch of the water heater to discharge the gas that may exist in the pipeline from the pipeline.

6.6 At this time, no smoking or other open flames should be placed near the open valve, and at the same time, all parts of the water heater should be carefully checked to see if they are in good condition, and the inner tank should be confirmed to be full of water before it can be put into use.

6.7 In order to keep the water heater working efficiently, it is recommended to clean the inner tank once a year. When cleaning, do not damage the protective layer on the surface of the heating pipe and the inner tank, in order to protect the safety of users, this operation must be carried out by professional maintenance personnel authorized by the water heater manufacturer.

## **7 Some Common Situations During the Operation**

### **7.1 Safety Valve Leakage**

The tap water pressure is too high, and the pressure of the water tank is too high after the water heater is heated, and the safety valve automatically relieves the pressure. However, if there is a lot of running water, it may be that the tap water pressure is too high or If the safety valve fails, please contact a professional maintenance personnel.

### **7.2 The Water Heater Does Not Start**

- 1) The water heater is not energized.
- 2 ) The water heater is turned on immediately after the operation is stopped, the water heater cannot run for about 3 minutes, and the compressor has a self-protection function and cannot be started within 3 minutes.

### **7.3 The Temperature of Water Rises Slowly**

- 1) The ambient temperature is low. Because if the ambient temperature is low, the heat absorption capacity of the air energy hot water heater will decrease, and the water temperature will rise slowly, which is a normal phenomenon, but if the user does not use hot water, the heating time is more than 12 hours and the set temperature is not reached, please call the manufacturer's after-sales service center in time.
- 2) The user uses hot water uninterrupted during the heating process of the water heater.

### **7.4 Cold Wind**

When the water heater is working with the heat pump, it is normal for the water heater to blow cold air.

### **7.5 Auto-defrosting**

When the water heater is frosted, it will be automatically defrosted.

### **7.6 Ambient Temperature Conditions for operation**

The working environment temperature of this water heater is  $-7^{\circ}\text{C}\sim 43^{\circ}\text{C}$ . If the range is exceeded, the electric auxiliary heating function will be automatically switched.

### **7.7 Anti-freezing**


When the water heater is turned off, the water heater will automatically heat up for antifreeze protection operation.

## 8 Malfunction and Explanation

### 8.1 Leakage protection

When the controller detects a leakage of strong current under normal display status, it will immediately cut off the strong current power supply. At the same time, the "Fault" symbol flashes and the buzzer sounds 3 alarms, showing the fault code "EB5"

### 8.2 Fail-safe

When the unit fails, " icon flashing and the buzzer rings 3 alarms, the fault code is displayed in the clock display area, and when multiple faults occur, the corresponding fault code is displayed in a cycle of 5 seconds. The fault code exits after the fault is gone.

#### 8.2.1 High pressure protection

- 1) When the high-pressure protection switch is detected to be disconnected for 3 seconds, the compressor will be shut down and the fault will be reported, and when the high-pressure pressure is detected to be closed for 3 seconds, the unit will resume operation. (The compressor must be switched on and off to meet the requirements of 3-minute delay);
- 2) When the high-pressure pressure protection is detected 3 times within 1 hour or continuously disconnected for more than 30 minutes, the unit stops and displays and locks the fault code, and the fault cannot be lifted unless it is manually reset or re-powered on or re-powered on to unlock

#### 8.2.2 Exhaust high temperature protection

- 1) After the compressor is started and running, when the exhaust temperature is detected to be higher than or equal to the exhaust high temperature protection value of 110°C for 10 consecutive seconds, the exhaust high temperature fault will be reported and the compressor will be suspended.
- 2) After the compressor is turned off for 60S, when the exhaust temperature drops to the exhaust high temperature protection value of 90°C, the exhaust high temperature alarm will be released and the normal temperature control function will be restored
- 3) If there are 3 exhaust high temperature fault protection within half an hour, the controller will lock the protection, the compressor will lock in the shutdown protection state, turn on the electric heating, and continue to heat to the set water temperature, at this time, only turn off the machine and restart the machine to unlock.

#### 8.2.3 Ambient Low Temperature Protection (R290 Refrigerant)

When the ambient temperature is  $\leq -9^{\circ}\text{C}$ , the compressor is forbidden to run; When the ambient temperature  $\geq -7^{\circ}\text{C}$ , normal operation is resumed;

### 8.3 Protection when the hot water temperature is too low

8.3.1 In the heating mode, when the temperature of the water tank  $T_x \leq 5^{\circ}\text{C}$  is detected for 5 consecutive seconds, the defrosting operation is prohibited;

8.3.2 In the heating mode, after the compressor runs for 3 minutes, when the temperature of the water tank is detected to be  $\leq 5^{\circ}\text{C}$  for 5 consecutive seconds, the hot water temperature is too low to protect the compressor and the fan will stop running, and the fault code E23 will be displayed In the heating mode, the compressor stops for 3 minutes, and when the water tank temperature is detected  $\geq 7^{\circ}\text{C}$  for 5 consecutive seconds, the hot water temperature is too low protection is withdrawn, and the fault code E23 disappears and enters normal operation;

## 8.4 Anti-freezing Protection

When the controller is powered on, when the ambient temperature is too low, it will enter the anti-freezing mode to avoid the water tank from freezing. When the ambient temperature  $\leq 2^{\circ}\text{C}$  and the water tank temperature  $\leq 5^{\circ}\text{C}$ , the electric heating will be automatically started. When the ambient temperature  $\geq 4^{\circ}\text{C}$  or the water tank temperature  $\geq 10^{\circ}\text{C}$ , stop the electric heating for heating.

## 8.5 Sensors Failure




When the water tank and ambient temperature sensor fail, stop the operation of the whole machine; When the return air and coil temperature sensor fails, electric heating operation is allowed; When the exhaust degree sensor fails, the heat pump is not allowed to start, and the electric heating operation is allowed;

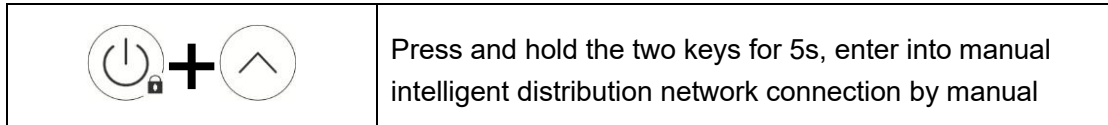
## 8.6 Others

"09E" is displayed when the communication between the main control board and the manual control board is abnormal or the data cable is not connected normally. When a valid clock cannot be obtained, "--:--" is displayed, and the communication indicator of the MPU flashes. When an alarm occurs, the buzzer will automatically silence after 3 sounds, or press any key to alarm and silence.

Malfunction			
Code	Description	Measures	Reposition
E12	Protection when exhaust temperature too high	The exhaust temperature $\geq 110^{\circ}\text{C}$ , stop the compressor and fan, and lock it for more than 3 times	Automatic/Manual
E05	High pressure switch protection	The high-pressure switch is disconnected, the compressor, the fan, locked after 3 times	Automatic/Manual
E09	The PCB and the wire control communication failure	The communication is abnormal or the data cable is not connected properly	Automatic
E16	The coil temperature sensor failure	When the sensor is short-circuited or open-circuited, it shows a fault	Automatic
E21	Ambient temperature sensor failure	When the sensor is short-circuited or broken-circuited, the whole machine is stopped	Automatic
E18	Exhaust sensor failure	When there is a short circuit or open circuit in the sensor: stop the compressor and fan	Automatic
E14	Tank sensor failure	When the sensor is short-circuited or broken-circuited, the whole machine is stopped	Automatic
E29	Return air sensor failure	When the sensor is short-circuited or open-circuited, it shows failure	Automatic
E23	Protection when tank temperature too low	Display the fault, stop the compressor and fan	Automatic
Eb5	Leakage protection	Display the fault and stop all strong load outputs	Power-off reset

## 9 WIFI Function

When connecting Wi-Fi, the symbol "  " will flash, when connect Wi-Fi successfully, the symbol "  " will light up, disconnect Wi-Fi, the symbol "  " not light up.




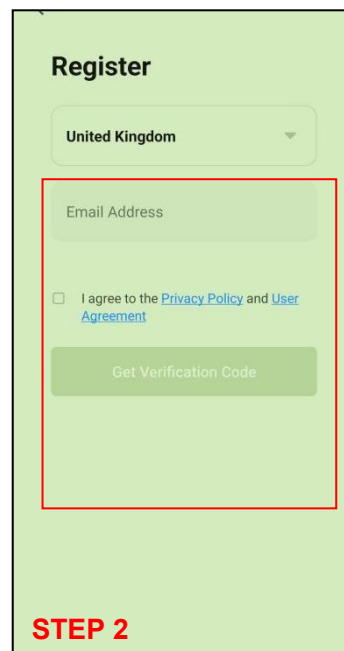
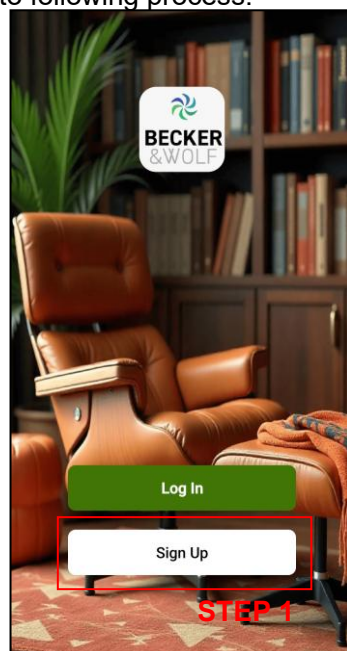
### 9.1 Download and Install the App

1) Scan the QR code to download the "Becker&Wolf" application, or download the application in the application store by mobile phone, and then install the application. (available for Android and iOS system)



2) Sign up

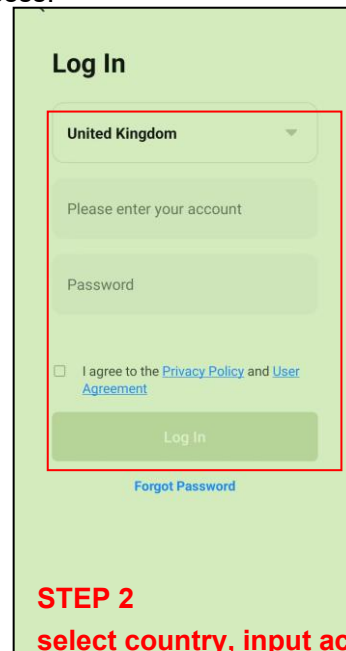
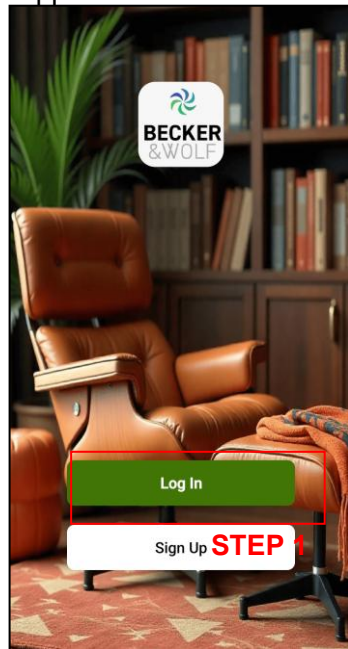
After installing the app, press the "  " icon and open the Becker&Wolf app, if there is no account, should sign up at first time, refer to following process:



**select country, input account and password; select I Agree then I on in**

### 3) Log in

After signing up, log in the application refer to following process:

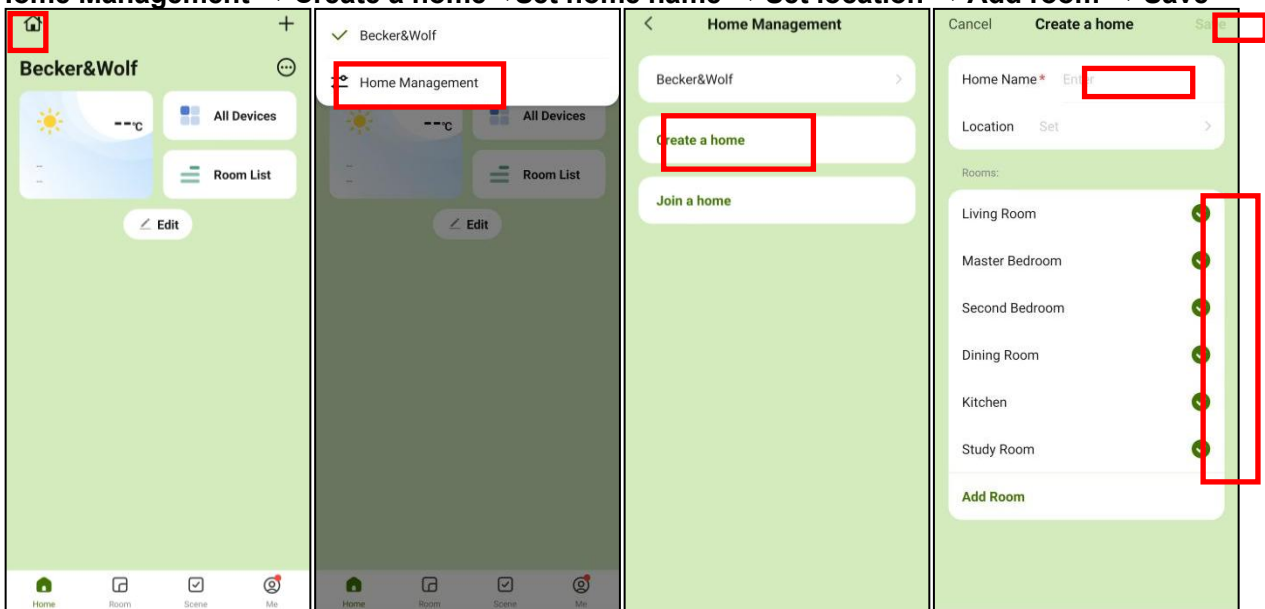


**STEP 2**  
select country, input account and password; select I Agree then Log in

### 4) Create home



After signing up, should create " home ", refer to following process:


**Home Management** → **Create a home** → **Set home name** → **Set location** → **Add room** → **Save**



## 9.2 Connect the WIFI

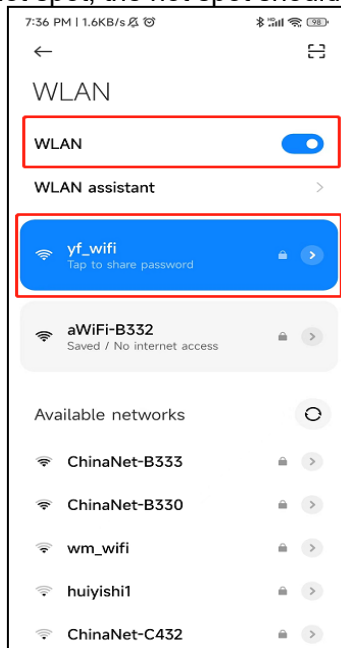
### Method 1 (Intelligent Distribution Mode)

1) Press and hold the two keys  and  for 5s, enter into manual intelligent distribution network

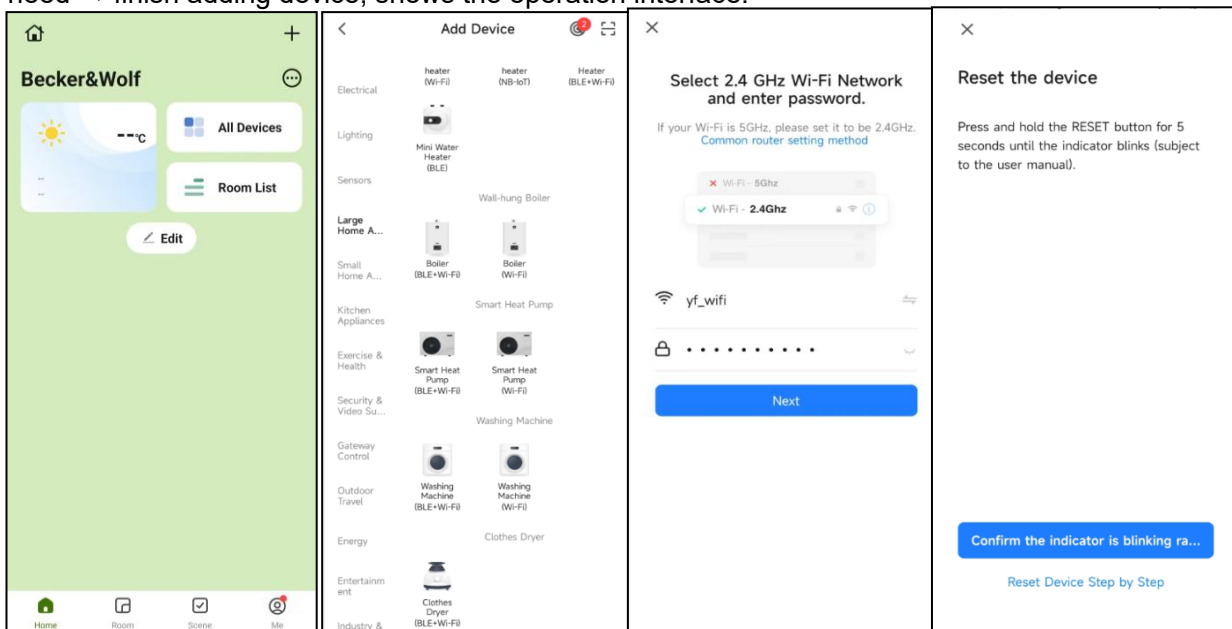
connection, within 3 minutes, wait for connecting, the symbol " " will flash, after three minutes, exit

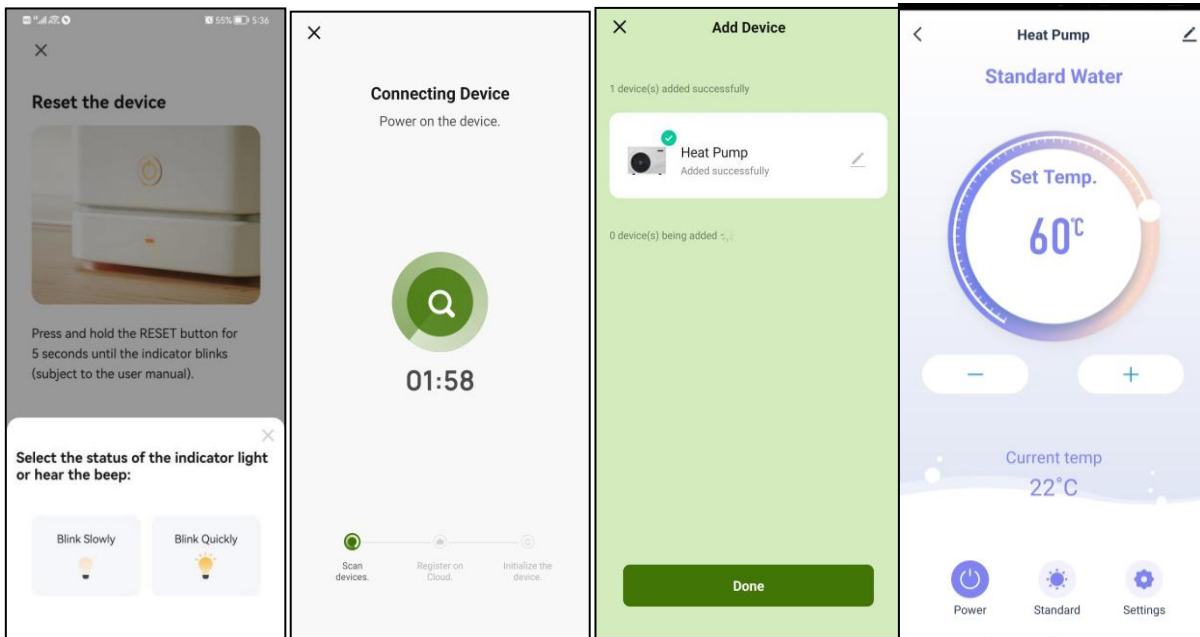
connecting automatically if failed in connecting.

2) Use mobile phone connect the WIFI hot spot, the hot spot should be available for internet.



3) Open the app Becker&Wolf and log in, press the icon " + ", or press " **Add Device** " → find " **Large Home Appliance** " → select the " **Smart Heat Pump (Wi-Fi)** " → enter into WIFI connecting interface, input the WIFI password ( the WIFI account must be same as the WIFI which mobile phone connected), → press " **next** " → press the " **Confirm the indicator is blinking...** " → select the " **Blink Quickly** " → Wait for finding device, until the device appeared → press " + " to add the device, and give a new name of this device if need → finish adding device, shows the operation interface.

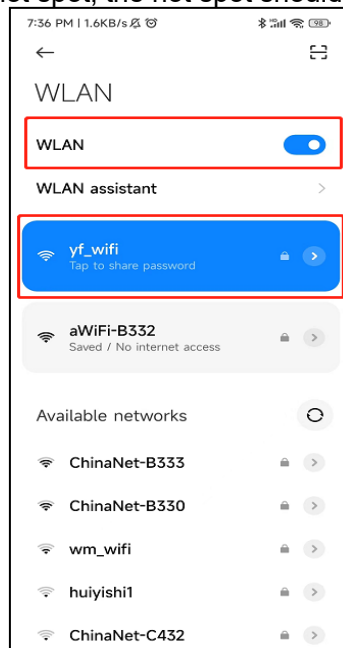




## Method 2 (AP Configuration Mode)

1) Hold both “” and “” for 3 seconds, When the AP is in network configuration mode “” blinking, The phone can start to be networked, exit the configuration state after 3 minutes, “” stops blinking, the WiFi module is no longer configured with the network, and you need to press and hold it again if you want to enter the network again by holding both “” and “” for 3 seconds;

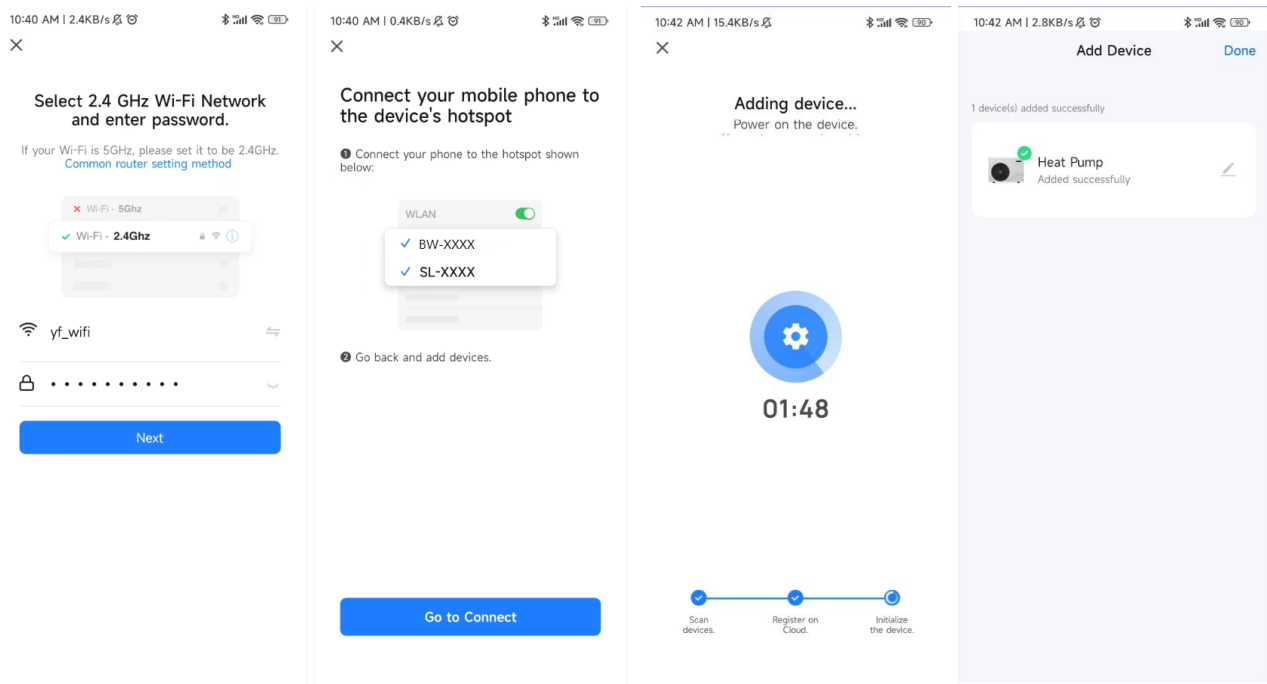
2) Use mobile phone connect the WIFI hot spot, the hot spot should be available for internet.



3) Open the app Becker&Wolf and log in, press the icon " + ", or press " **Add Device** " → find " **Large Home Appliance** " → select the " **Smart Heat Pump (Wi-Fi)** " → enter the WIFI connection interface, enter the WiFi password that the mobile phone has connected to (it must be consistent with the WiFi connected to the mobile phone), click Next, and confirm that the line controller has selected the AP network configuration mode, “” blinking slowly, click "Confirm that the indicator is flashing slowly", then connect the mobile phone wifi to the device hotspot (as shown below), confirm that the connection hotspot is correct, continue to

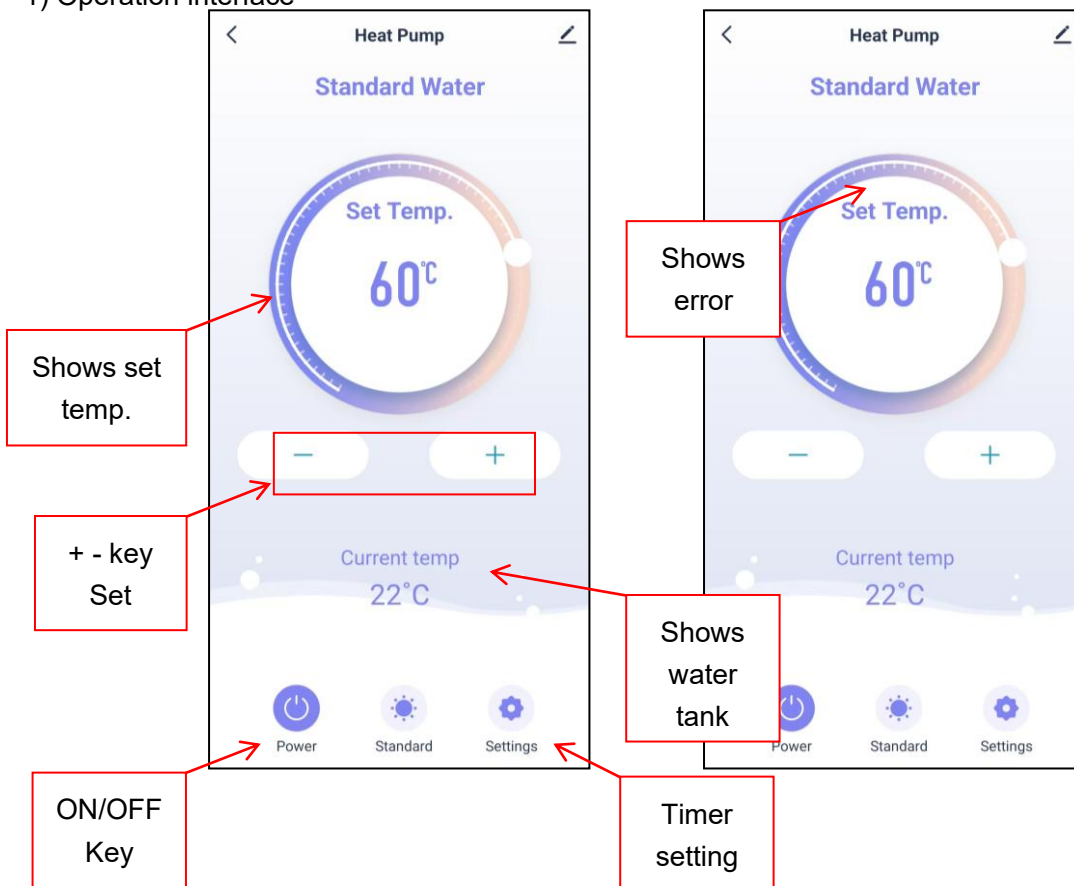
the next step, directly start the device interface, find the device→ register to the cloud→ the device initialization is completed.

Note: When the remote WiFi module is connected to a WiFi hotspot, “”blinks slowly;

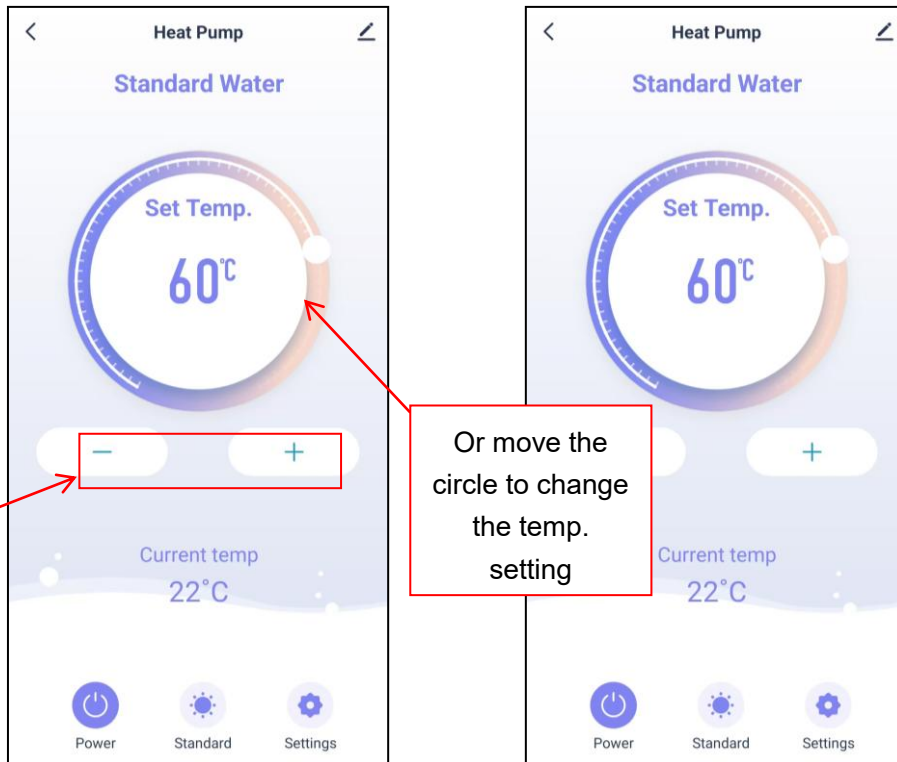


### 9.3 Operation

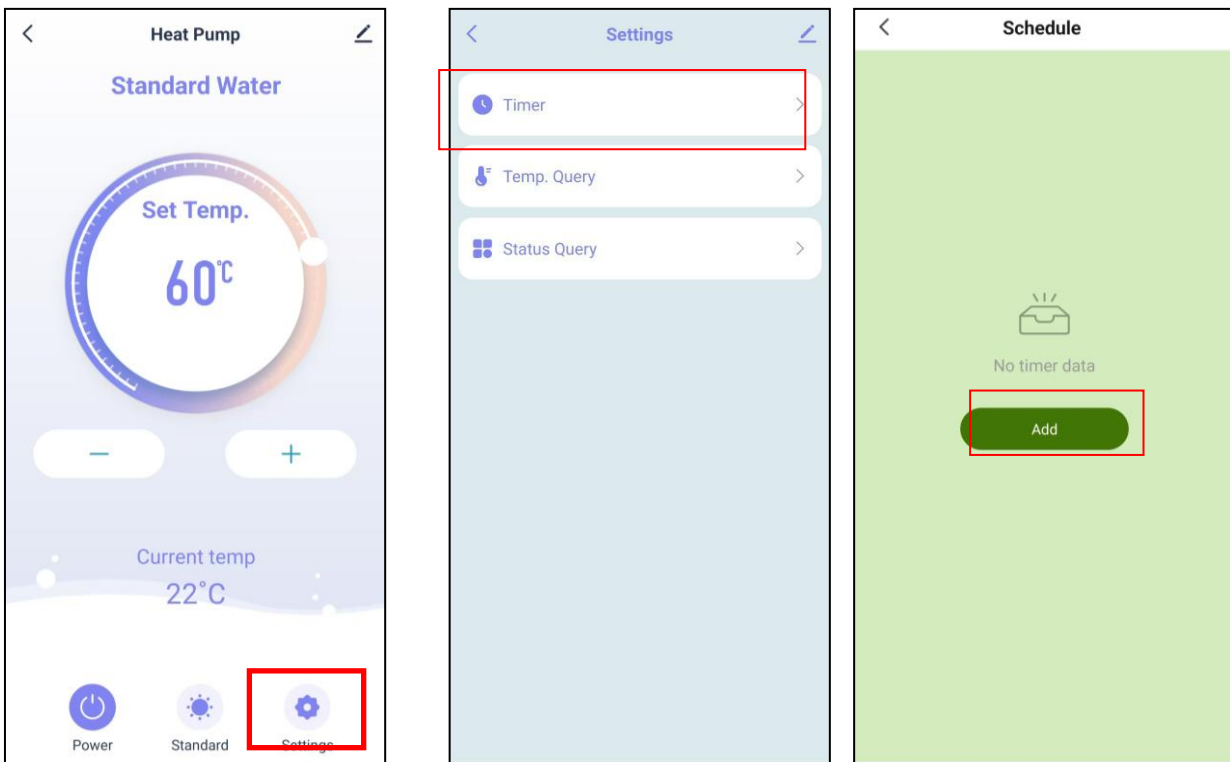
#### 1) Operation interface

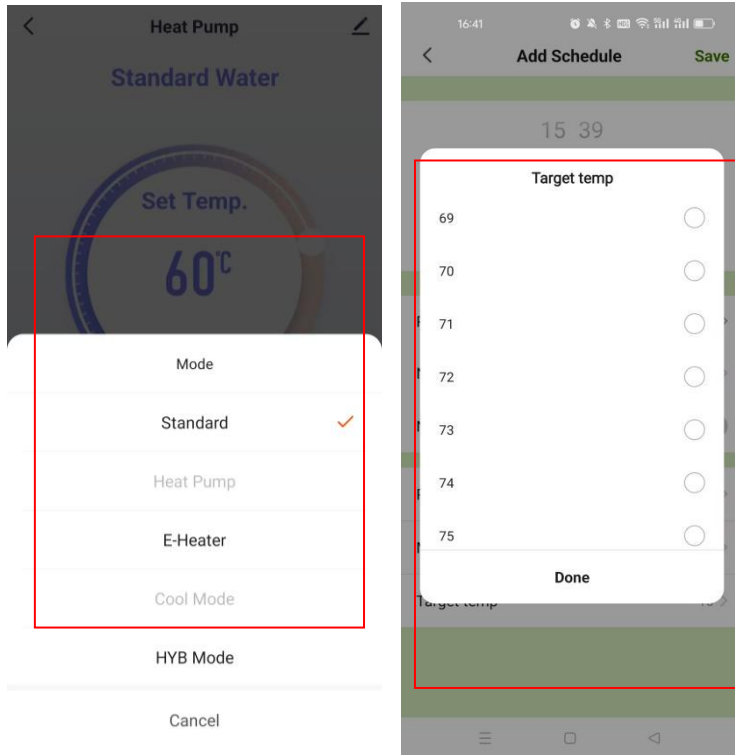
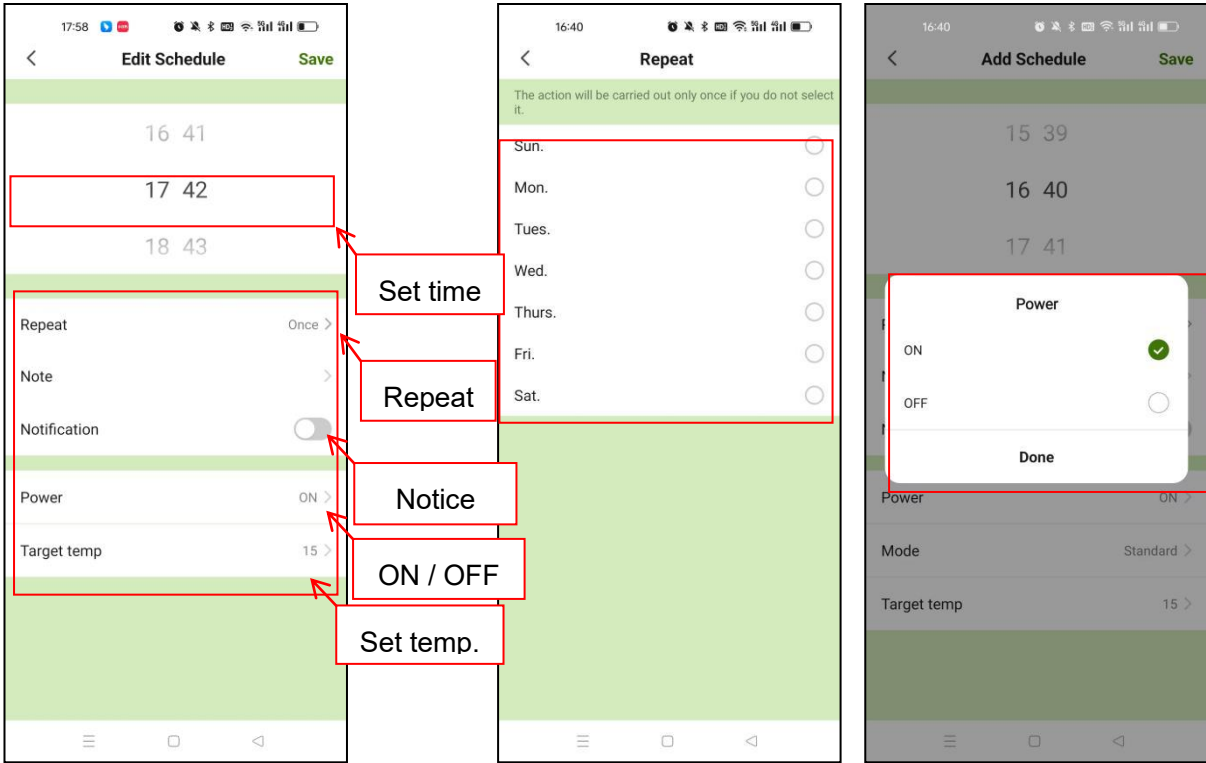


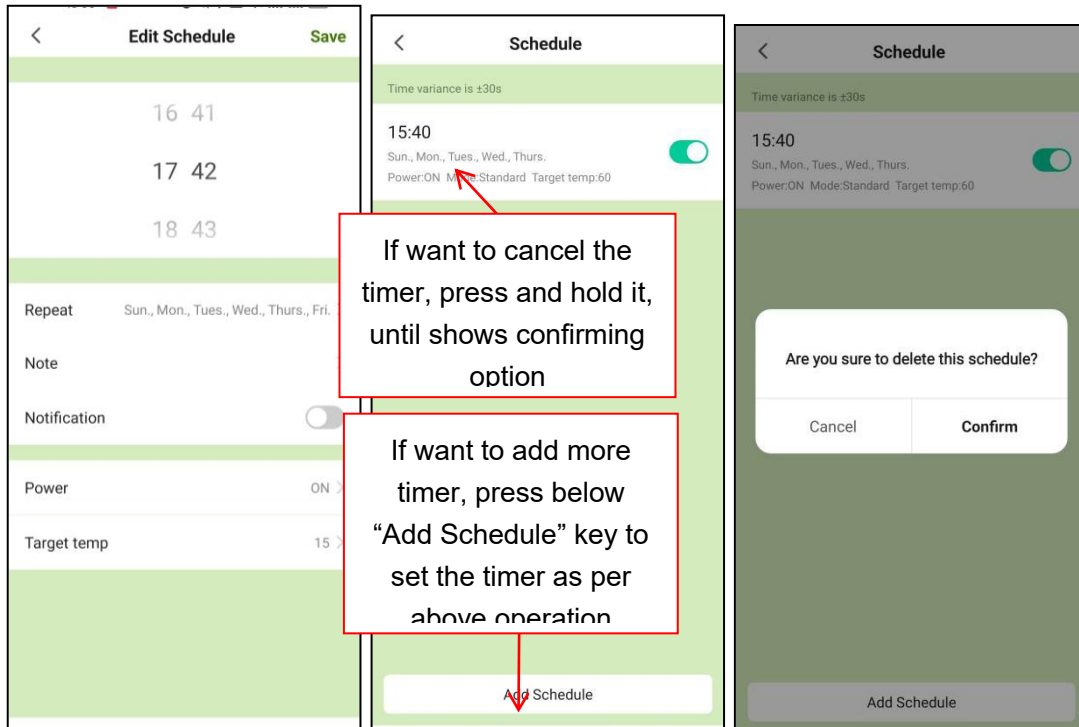
## 2) Set water temperature



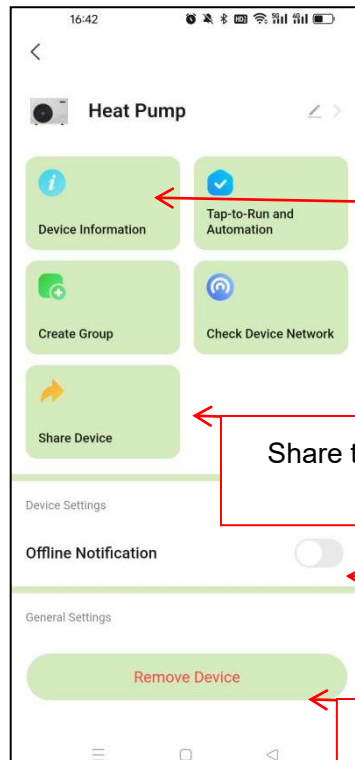
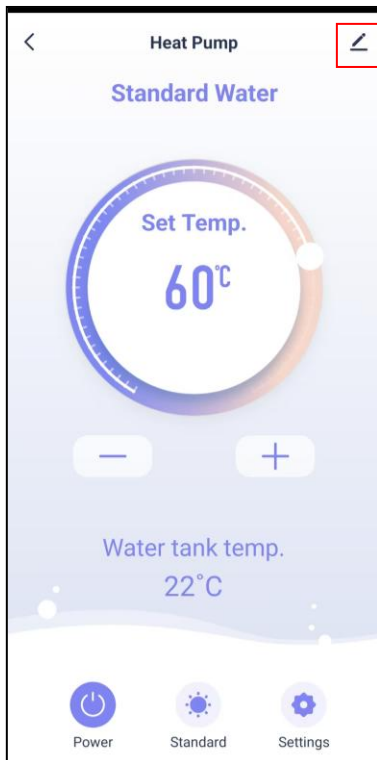
## 3) Set timer







#### 4) Others operation



Modify the device name and location

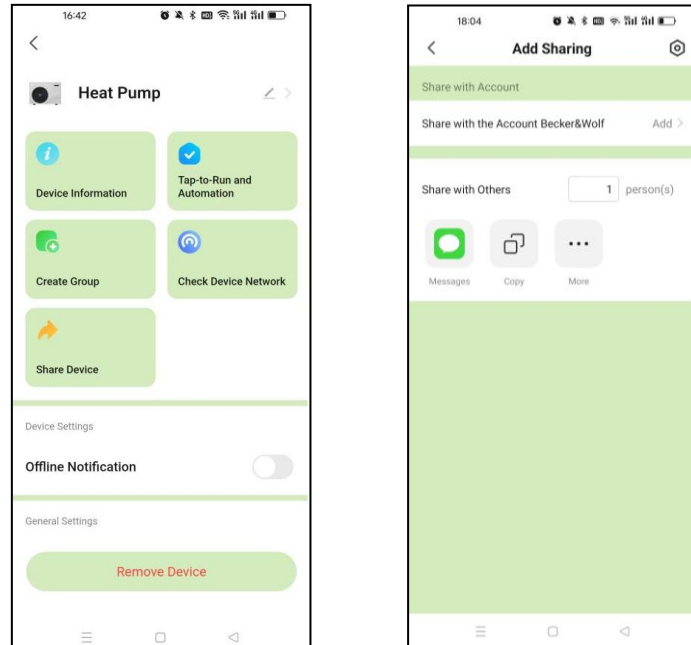
Check device information

Share the device with family members

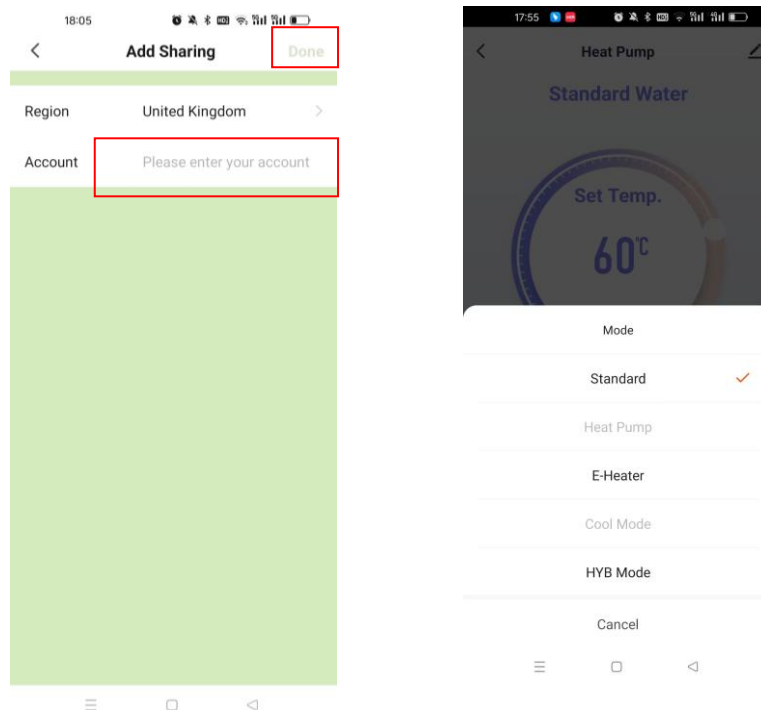
Offline Notification Switch

Remove the device from the account

Device sharing To share a bound device, the sharer operates in the following order: After the sharing is successful, the list will be increased to show the person to be shared. To delete the shared person, you can press and hold the selected user, and the delete interface will pop up, click "Delete". The Sharer interface operates as follows:



Enter the account number of the person you want to share with and click "Done".

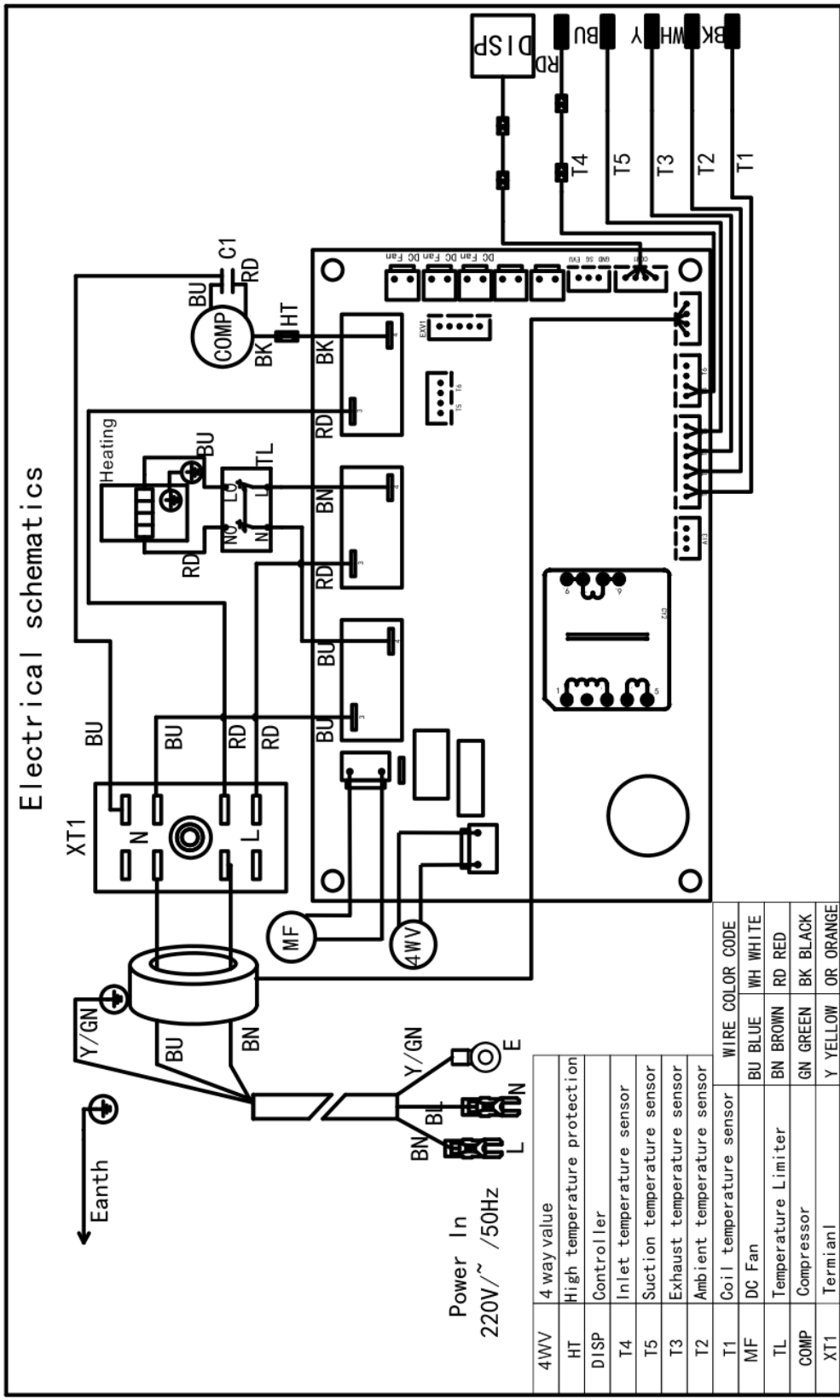


The shared device is displayed on the shared user interface, and you can click on it to operate and control the device.

## 10 Technical Specifications

Model No.	BWHP080WM290	BWHP100WM290
Power Supply	220~240V/1/50Hz	
Heating Capacity at Air 20°C/15°C, Water Temperature from 15°C to 55°C		
Heating Capacity	950W	950W
Power Input	220W	220W
Rated Current	0.98A	0.98A
COP	4.32	4.32
Hot Water Production (in ECO mode)	20L/h	20L/h
Hot Water Production (in HYB mode)	64L/h	64L/h
Refrigerant	R290 / 150g	R290 / 150g
Electric Heating Element	2000W	2000W
Electric Heating current	8.7A	8.7A
Max Power Input	2300W	2300W
Max Current	10.2A	10.2A
Water Tank Volume	80L	100L
Heat Exchanger	Micro-channel / Wrap Around Tank	
Max Water Tank Pressure	0.8MPa	0.8MPa
IP Class	IPX4	IPX4
Operation Water Temperature Range(HP)	20~60°C	20~60°C
Operation Water Temperature Range(ELE)	20~75°C	20~75°C
Working Temperature Range (heat pump)	-7~43°C	-7~43°C
Water Tank Direction	Vertical	Vertical
Noise	48dB	48dB
Installation	Wall Mounted	Wall Mounted
Max. air flow	210 m3/h	210 m3/h
Max. static pressure	85 Pa	85 Pa
Rated air flow (without duct)	180 m3/h	180 m3/h
Water connection	1/2 inch	1/2 inch
Net Size	Φ468mm*1222mm	Φ468mm*1442mm
N.W	48	56

# 11 Electrical Schematic Diagram of Water Heater



## 12 After-sales Service

When your water heater is not functioning properly, you should turn it off immediately and cut off the power supply, and then contact the service center or technical service department.