Spa Heat Pump
User and Service Manual

INDEX

Thank you for using our heat pump for the heating of your spa, it will heat your spa water and keep a constant temperature when the ambient air temperature is at -25~43℃

⚠ **ATTENTION: This manual includes all the necessary information about the use and the installation of your heat pump.**
The installer must read the manual and attentively follow the instructions of implementation and maintenance.
The installer is responsible for the installation of the product and should follow all the instructions of the manufacturer and the regulations in application. Incorrect installation against the manual implies the exclusion of the entire guarantee.
The manufacturer declines any responsibility for the damage caused by people, objects and errors due to the installation against the manual. Any use that isn't in accordance with the origin of its manufacturing will be regarded as dangerous.

WARNING：
Do not use means to accelerate the defrosting process, other than those recommended by the manufacturer.
The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.)
Do not pierce or burn.
Be aware that refrigerants may not contain an odour.
This heat pump shall be installed, operated and stored in a open room larger than 3 m^3 .
Note the manufacturer may provide other suitable examples or may provide additional information about the refrigerant odour.

WARNING: If you power off heat pump, please empty the water in heat pump always during winter time or when the ambient temperature drops below 0℃, or else the titanium heat exchanger will be damaged because of being frozen, in such case, your warranty will be lost.

WARNING: Please always cut the power supply if you want to open the cabinet to reach inside the heat pump, because there is high voltage electricity inside.

WARNING: Please keep the display controller in a dry area, or close the insulation cover to protect the display controller from being damaged by humidity.

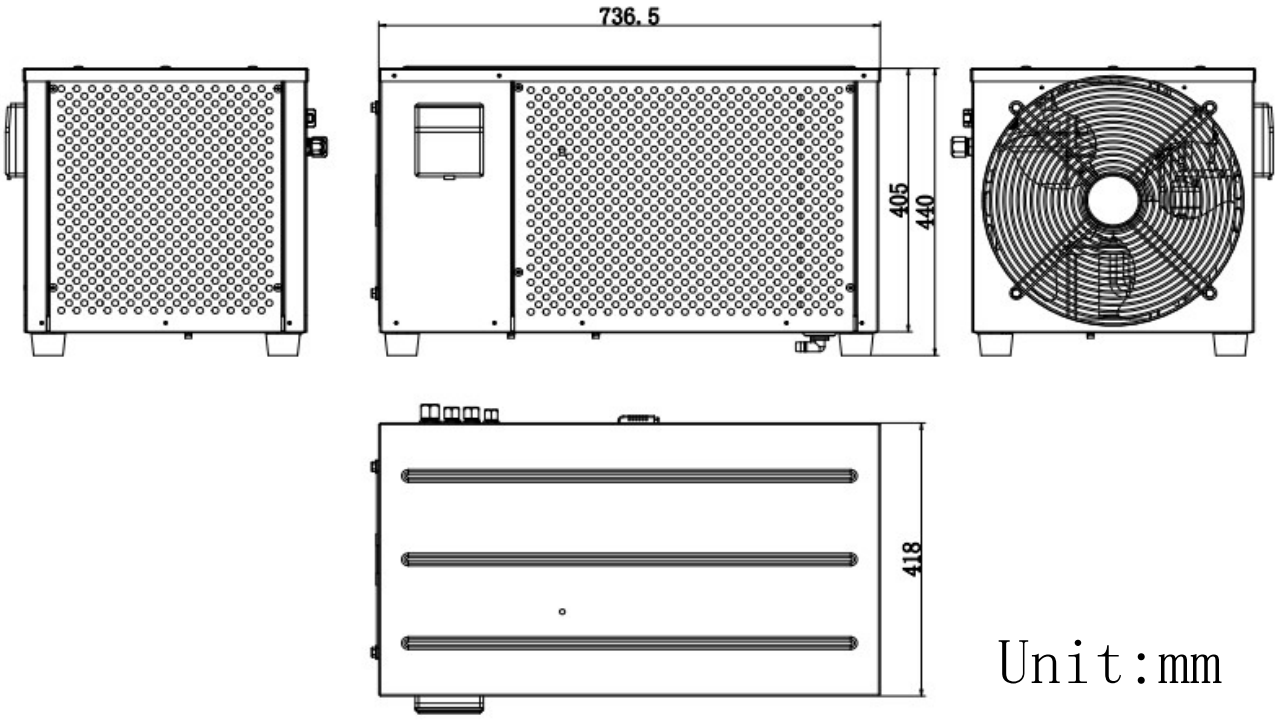
Specifications

Product model			NE100
Parameters	Heating*	Heating capacity (KW)	3.56-6.9
		Input power (kW)	0.3-1.18
		COP	11.86-5.86
	Heating**	Heating capacity (kW)	2.7-5.03
		Input power (kW)	0.41-1.13
		COP	6.6-4.46
	Rated current (A)		8.05
	Minimum fuse current (A)		7.25
	Advised water flow (m^3/h)		4.1
	IP Grade (Water proof rate)		IPX4
	Anti-electric shock rate		I
	Noise (dB(A))		48
	Net weight/Gross weight (kg)		40/45
	Water connection(mm)		50
Standard Configuration	Cabinet material		Galvanized steel (painted in dark gray)
	Body size (W*D*H) (mm)		740*472*445
	Compressor		Rotary
	Refrigerant		R32
	Power supply		220V-240V/50Hz
	Condenser		Titanium tube in PVC shell

Remark:
Heating*: Inlet water temperature 26℃, Outlet water temperature 28℃, Dry/wet bulb temperature 27℃/24.3℃.
Heating**: Inlet water temperature 26℃, Outlet water temperature 28℃, Dry/wet bulb temperature 15℃/12℃.

* Above data are subjects to modification without notice.

1. Dimensions



2. Installation and connection

2.1. Notes

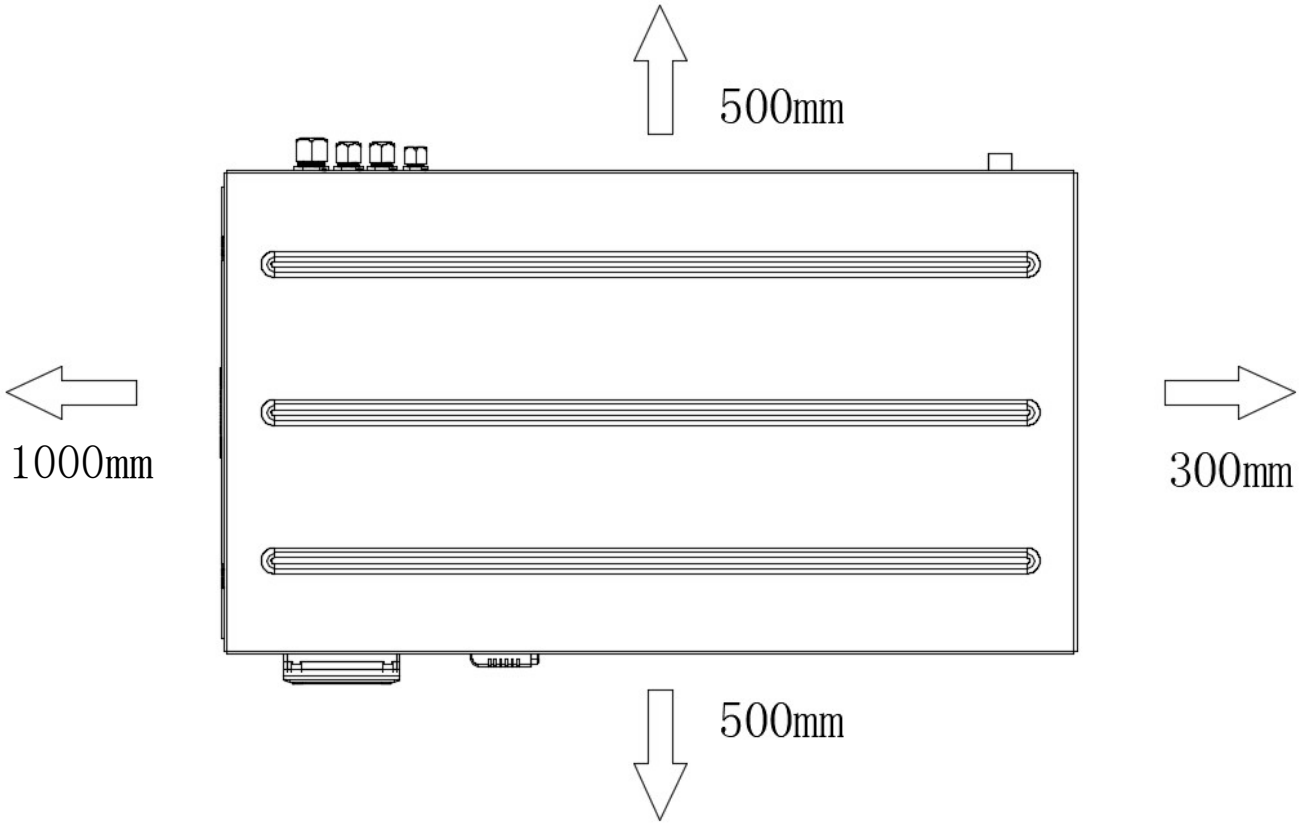
The factory only supplies the heat pump. All other components must be provided by the user or the installer.

Attention:
Please observe the following rules when installing the heat pump:

1. Any addition of chemicals must take place in the piping located **downstream** from the heat pump.
2. Always place the heat pump on a solid foundation and use the provided rubber feet to avoid vibration and noise.
3. Always hold the heat pump upright. If the unit has been held at an angle, wait at least 24 hours before starting the heat pump.

2.2. Heat pump's location

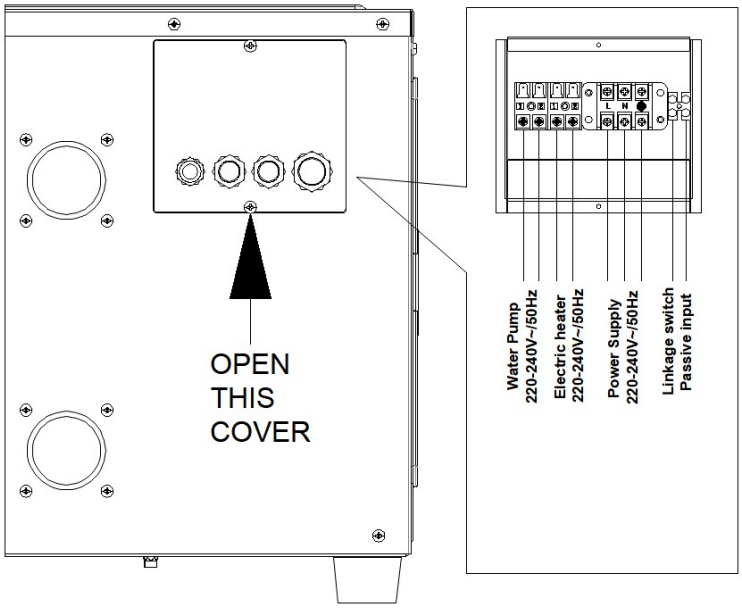
Never install the unit in a closed room with a limited air volume in which the air expelled from the unit will be reused, or close to shrubbery that could block the air inlet. Such locations impair the continuous supply of fresh air, resulting in reduced efficiency and possibly preventing sufficient heat output.
See the drawing below for minimum distances.


500mm
1000mm
300mm
500mm

2.3. Electrical connection

Note: Earthing is required for protection against short-circuits inside the unit. Always provide a good earth connection.

Before connecting the unit, verify that the supply voltage matches the required voltage of the heat pump.
It is recommended to connect the heat pump to a circuit with its own fuse or circuit breaker.
An auxiliary electric heater and water pump (max. 5 A / 240 V) can be connected to the terminal block below. This allows the water pump or electric heater to be controlled by the heat pump.



2.4. Initial operation

Note: In order to heat the water in the pool (or hot tub), the water pump must be running to cause the water to circulate through the heat pump. The heat pump will not start up if the water is not circulating.

After all connections have been made and checked, carry out the following procedure:

1. Switch on the water pump. Check for leaks and verify that water is flowing from and to the pool.
2. Connect power to the heat pump and press the On/Off button on the electronic control panel. The unit will start up after the time delay expires (see below).
3. After a few minutes, check whether the air blowing out of the unit is cooler.
4. When you turn off the water pump , the unit should also turn off automatically, if not adjust the flow switch.
5. Allow the heat pump and the water pump to run 24 hours a day until the desired water temperature is reached. The heat pump will stop running at this point. After this, it will restart automatically (as long as the water pump is running) whenever the pool water temperature drops 1 degree below the set temperature.

Depending on the initial temperature of the water in the pool and the air temperature, it may take many hours or even more than one day to heat the water to the desired temperature. A good pool cover can dramatically reduce the required length of time.

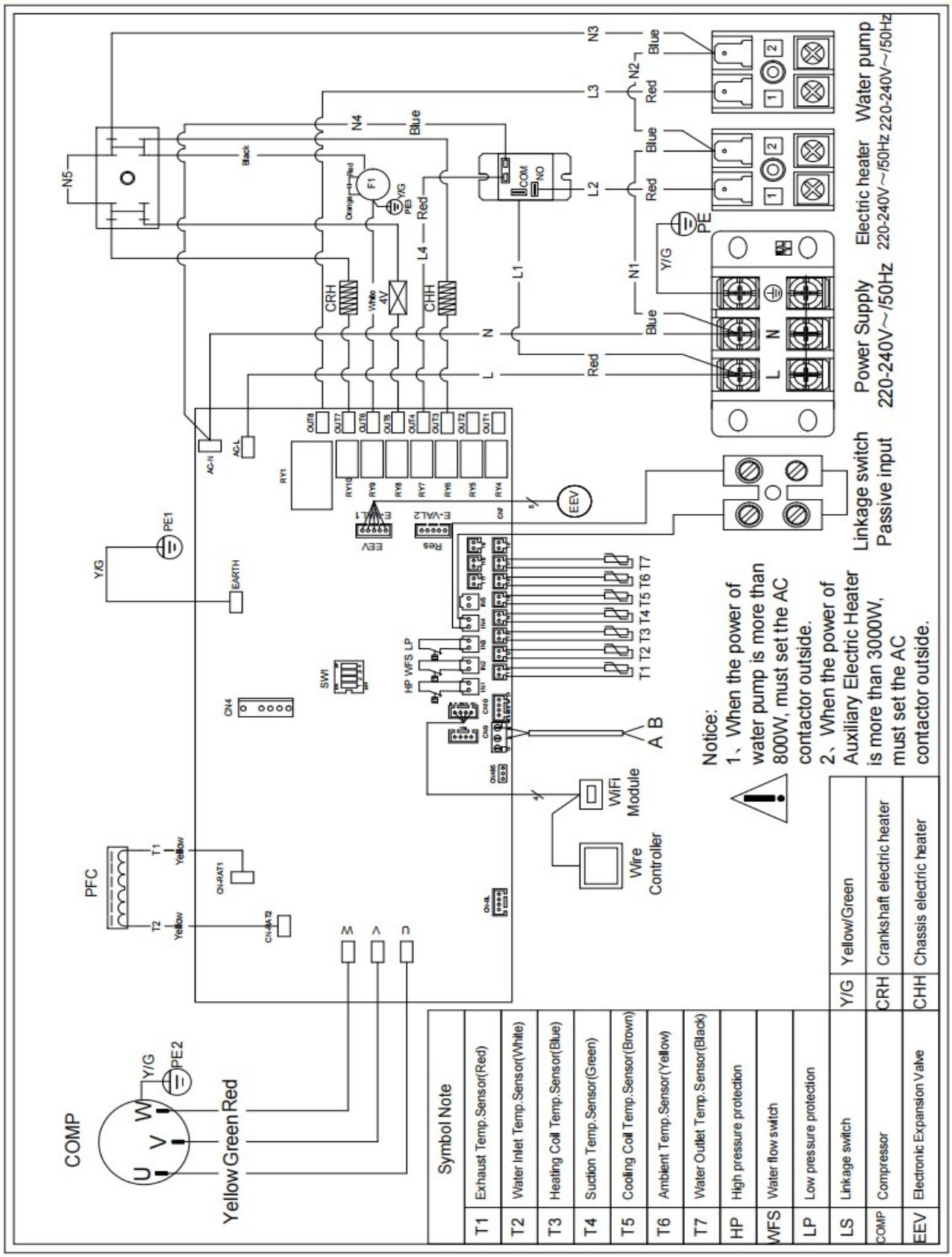
Water Flow Switch:
It is equipped with a flow switch to prevent the heat pump of running with inadequate water flow rate. It will turn on when the pool pump runs and shuts off when the pump shuts off. If the pool water level is more than 1m above or below the heat pump's automatic adjustment knob, your dealer may need to adjust its initial startup.

Time delay -The heat pump has a built-in 3-minute start-up delay to protect the circuitry and avoid excessive contact wear. The unit will restart automatically after this time delay expires. Even a brief power interruption will trigger this time delay and prevent the unit from restarting immediately. Additional power interruptions during this delay period do not affect the 3-minute duration of the delay.

2.5. Condensation

The air drawn into the heat pump is strongly cooled by the operation of the heat pump for heating the pool water, which may cause condensation on the fins of the evaporator. The amount of condensation may be as much as several liters per hour at high relative humidity. This is sometimes mistakenly regarded as a water leak.

3. Electrical Wiring



NOTE:
(1)The above electrical wiring diagrams are only for your reference, please subject the heat pump to the posted wiring diagram.
(2)The heat pump must be earthed well.Earthing the unit is still required to protect you against short circuits inside the unit.

Disconnect: A disconnector (circuit breaker, fused or un-fused switch) should be located within sight of and easily accessible from the unit .This is common practice on commercial and residential heat pumps. It prevents remotely-energizing unattended equipment and permits turning off power to the unit while the unit is being serviced.

5.Remote controller operation guidance

5.1. Control Panel Diagram

5.2. Key Operating Instruction

- **ON/OFF**

Pressing ⏻ to control system ON / OFF.

In other interfaces, short press ⏻ to exit and return to the main interface.

- **Select Mode**

In the start-on state,press MODE to change mode : Heating Mode or Cooling Mode.

- **Set Temperature**

In the start-on state,press ∨ to set the temperature drop adjustment,press ∧ to set the temperature rise adjustment.

- **Set Clock**

At the main interface,press CHECK enter “Main Menu”. Then press “Date &Clock” enter the clock setting interface, press “Confirm” to confirm the clock.

- **Timer Set**

At the main interface, press CHECK enter “Main Menu”. Then press TIMER enter the timing setting. Pressing ∧ and ∨ to adjust.

- **Switch Frequency Mode**

At the main interface,press SMART to switch to smart, silent or powerful mode.

- **Unit Parameters Query**

At the main interface, press CHECK enter “Main Menu”. Pressing “Machine Status” can query the unit status parameter.

5.3.System Status

Code	Meanings	Range
01	Water inlet temperature	-20~99℃
02	Water outlet temperature	-20~99℃
03	Ambient temperature	-20~99℃
04	Exhaust temperature	0~125℃
05	Suction temperature	-20~99℃
06	Outer coil temperature	-20~99℃
07	Inner coil temperature	-20~99℃
08	Main EEV steps	
09	Enthalpy EEV valve	
10	Compressor current	
11	Radiator temp.	
12	DC bus voltage value	
13	Actual speed of compressor	
14	DC fan speed	

5.4.Error Code

Code	Description	Reservations
Er 03	Water Flow Protection	Check water flow switch, change the switch if necessary
Er 04	Winter Anti-Freezing	Water pump will run automatically for first grade antifreeze
Er 05	High Pressure Protection	Measure the pressure value when heat pump is heating(cooling), if it's higher than 44.0 bar, it means heat pump has got really higher pressure protection: 1. Detect EEV step, low pressure and suction temp; 2. Detect the inlet/outlet water temp,; 3. Maybe there is some air in the refrigeration system; 4.Clean the water exchanger or water filter
Er 06	Low Pressure Protection	(According to actual model) Measure the pressure value when heat pump is heating(cooling), if it's lower than 6 bar, it means heat pump has got really lower pressure protection: 1.Maybe there is some leakage in the refrigeration system; 2.Ambient temp. is too low; 3.There is some blockages on the refrigerant system; 4.Clean the fin heat exchanger.
Er 09	Communication Fault between Display and PCB	1.Check if the communication connection wire between display and PCB is well . Change or mend the wire if necessary . Check the PCB or display. If damaged, Change the corresponding part .
Er 10	Communication Fault Of Frequency Conversion Module(alarm when communication between display and PCB is disconnected)	Change PCB.
Er 12	High Exhaust Temp. Protection	1.Replace the compressor exhaust Temp. sensor. 2.Reconnect or clean compressor exhaust Temp. sensor and wrap it with insulation tape. 3.Replace the controller or PC Board.
Er 15	Water Inlet Temp. Fault	Check the connection, change the sensor if necessary.
Er 16	External Coil Temp. Fault	Check the connection, change the sensor if necessary.
Er 18	Exhaust Temp. Fault	Check the connection, change the sensor if necessary.
Er 19	DC Fan Motor Fault	1.Check DC fan motor. Change it if damaged. Check output port of DC fan motor on PCB. Change the PCB if there is no output.

Er 20	Abnormal Protection of Frequency Conversion Module	Solve it according to the subsidiary error codes in the following table.
Er 21	Ambient Temp. Fault	Check the connection, change the sensor if necessary.
Er 23	Low Outlet Water Temp Protection when Cooling	Check the water flow and water system,mend it if necessary.
Er 27	Water Outlet Temp. Fault	Check the connection, change the sensor if necessary.
Er 28	CT Over Current Protection	
Er 29	Suction Temp. Fault	Check the connection, change the sensor if necessary.
Er 32	High Outlet Water Temp. Protection when Heating	Check the water flow and water system,mend it if necessary
Er 33	Outdoor Coil High Temp. Protection	Wait for the ambient Temp. drops and restart the unit.
Er 42	Internal Coil Temp. Fault	

- E20 fault will display the following error codes at the same time, the error codes will switch every 3 seconds. Among them, error codes 1-128 appear in priority. When error codes 1-128 don't appear, then it will show error codes 257-384. If two or more error codes appear at the same time, then display error codes accumulation. For example, 16 and 32 occur at the same time, it will show 48.

Code	Parameters Meaning	Fault Solution
1	Compressor over-current	1. The compressor is temporarily overloaded (for example, liquid compression) 2. The program does not match the compressor 3. The U, V, and W lines of the compressor are inversely connected, and the compressor reverses 4. Compressor wear (lack of oil, liquid compression lead to wear cylinder block)
2	Compressor out of step	1. The compressor is temporarily overloaded (for example, liquid compression) 2. The program does not match the compressor 3. The compressor start pressure difference is too high and low.
8	Compressor phase loss	1. Cables U, V, and W of the compressor are missed or improperly connected 2. The program does not match the compressor 3. The compressor starts too high and low pressure difference
16	Low DC voltage	1. Check whether the AC voltage is abnormal 2. AC power is suddenly cut off, and the DC voltage will be too low when the converter capacitor is left for the chip to work
32	High DC voltage	Check whether the AC voltage is abnormal

257	Communication is abnormal	1. Check whether the communication cable is improperly connected 2. Check whether the baud rate and communication address code are set according to the communication protocol 3. Replace the driving board for testing
258	AC phase loss or CT is disconnected	1. The current transformer on the driving board is damaged during transportation 2. Check whether the current transformer is improperly inserted during production 3. The AC current at the frequency above 40Hz is very small, resulting in abnormal detection of the current transformer
260	AC over-current or compressor overpower	1. AC overcurrent (currently available for external models with a separate filter board), the load is suddenly too large to reduce the frequency 2. Compressor overpower (combined plate, three-phase 380V, no single filter plate model) the load is suddenly too large to reduce the frequency too late 3. Compressor overpower (combined plate, three-phase 380V, models without separate filter plate) The compressor starts too high and low pressure difference
288	IPM over heat protection	1. The heat dissipation is poor. The condensing fan rotates at a low speed or stops unexpectedly 2. The ambient Temp. rises too fast, leading to too late reaction of over-Temp. frequency reduction
320	Compressor current protection	1. The compressor is temporarily overloaded (for example, liquid compression) 2. The program does not match the compressor 3. The U, V, and W lines of the compressor are inversely connected, and the compressor reverses 4. Compressor wear (lack of oil, liquid compression lead to wear cylinder block)
384	PFC module over heat protection	1. The heat dissipation is poor. The condensing fan rotates at a low speed or stops unexpectedly 2. The loop Temp. rises too fast, leading to too late reaction of over-Temp. frequency reduction

5.5. Other Malfunctions and Solutions (No display on wire controller)

Malfunctions	Observation	Reasons	Solution
Heat pump is not running	Wire controller shows no display	No power supply	Check whether cable and circuit breaker are connected
	Wire controller displays the actual time	Heat pump under standby status	Start up heat pump to run.
	Wire controller displays the actual water temperature	1. Water temperature is reaching set value, heat pump under constant temperature status 2. Heat pump just starts to run 3. Under defrosting	1. Verify water temperature setting 2. Start up heat pump after a few minutes 3. Wire controller should display "Defrosting"
Water temperature is cooling when heat pump runs under heating mode	Wire controller displays actual water temperature and no error code displays	1. Chose the wrong mode 2. Figures show defects 3. Controller defect	1. Adjust the mode 2. Replace the defect wire controller, and then check the status after changing the running mode, verifying the water inlet and outlet temperature 3. Replace or repair the heat pump

Short running	Wire controller displays actual water temperature,no error code displays	1. Fan can’t run 2. Not enough air ventilation3.Not enough refrigerant	1. Check the cable connectionsbetween the motor and fan, if necessary, they should be replaced 2. Check the location of the heatpump, and eliminate all obstacles to assure a good air ventilation 3 Replace or repair the heat pump
Water stains	Water stains on heat pumpunit	1. Condensed water 2. Water leakage	1. No action 2. Check the titanium heat exchanger carefully if it showsany defects
Too much iceon evaporator	Too much ice onevaporator		1. Check the location of heat pump, and eliminate all obstacles to assure a good airventilation 2. Replace or repair the heat pump

6. WI-FI Module and APP user instruction

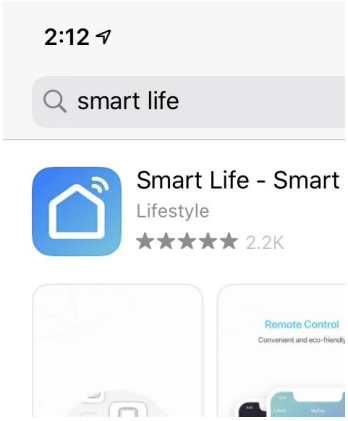
6.1. Wi-Fi Box

NO.	Icon	Key Name	Key Function
1		Network distribution button	Long press 3 seconds to enter EZ mode; After powering on for 10 seconds, you can press the button for 5 times within 5 seconds to enter AP mode.
2		Power indicator	When power is on, the lower indicator lights up.
3		Wi-Fi connection indicator	After Wi-Fi is connected, the lower indicator light is always on;
4		Communication indicator	1. when entering EZ mode, the lower indicator flashes quickly; 2. When entering AP mode, the lower indicator slowly; 3. After the distribution network connection is successful, the lower indicator represents the main control power on and off status.

6.2. WIFI Settings

Software Installation

Method 1: Search”Smart life” in your APP store ,install “ ”.Click “GET” to install.

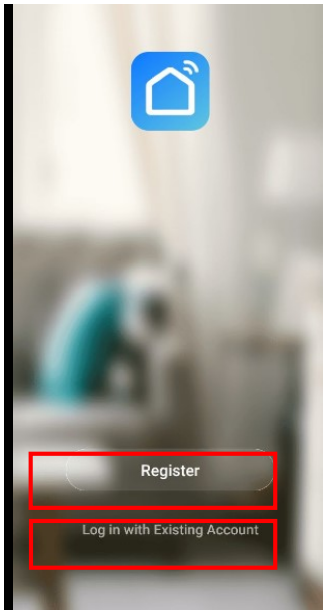


Method 2: Scan the QR code below.

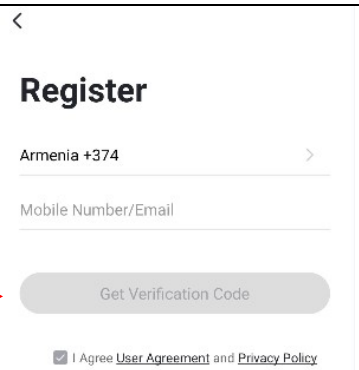
Click "Create a new user" link to enter the registration method interface

registration method interface

If you already have an account, click directly to sign in



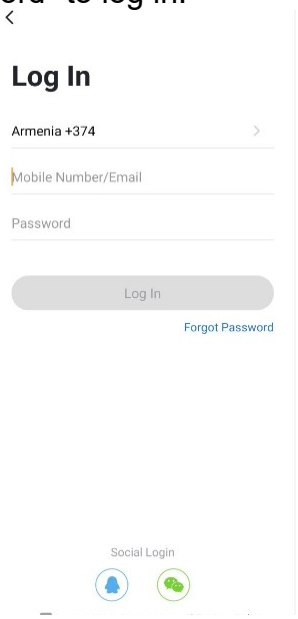
When a user enters the registration page, please follow the page prompt to register



Follow the prompts to complete the registration

User Login:

Once the registration is successful, the software will jump to the login screen and enter the correct "user name" and "password" to log in.



Select the correct

Enter the correct username

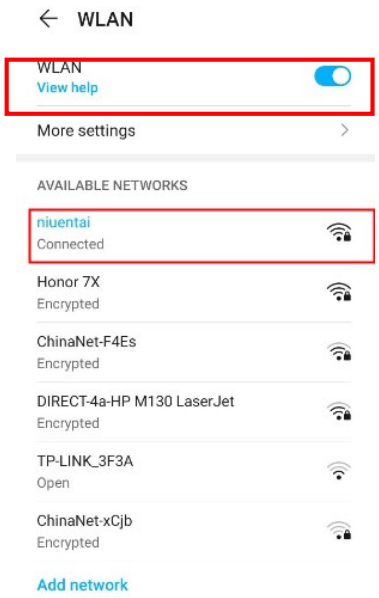
Enter the correct password

Click the login button to sign in

Mobile phone first needs to connect to the network via WIFI

Open"WLAN"

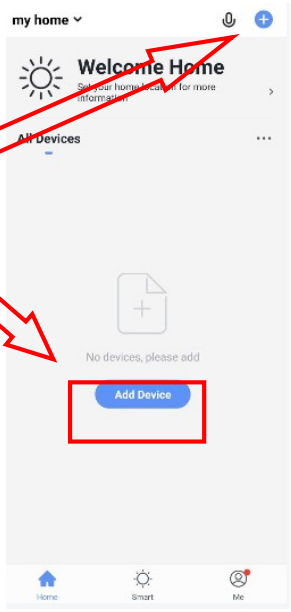
Connect Wi-Fi interne



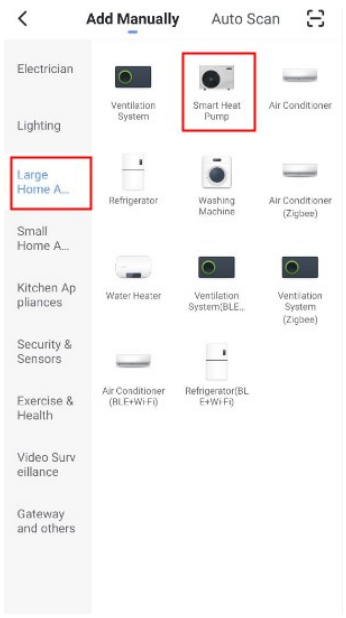
This WIFI is not the WIFI inside the module but WIFI that can be connected to the Internet;

After the user logs on to the software,
Device binding
Click on the top right corner for Make a binding "+"or"Add a device"

Click to enter the "Add Device Type" interface



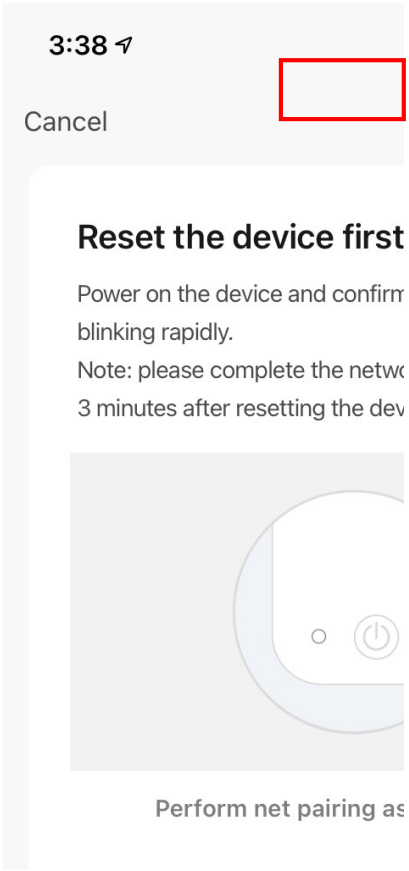
Go to the right interface



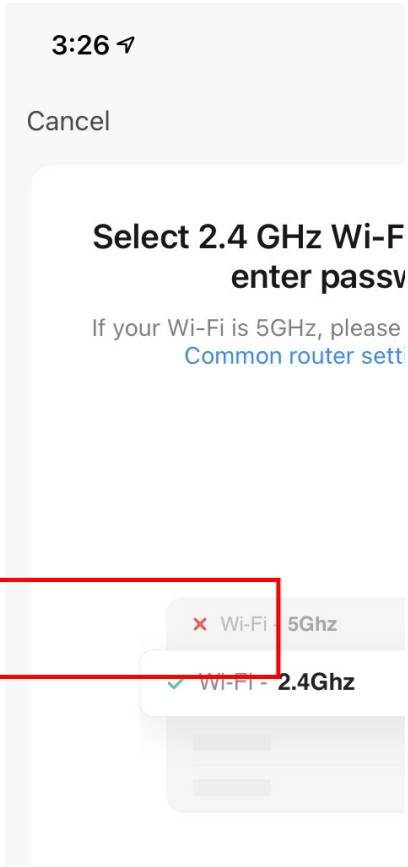
When select device type,Go to Add "Device Interface".

When power is on, if there is no distribution network, it will automatically connect through the EZ mode by default. At this moment,the indicator light under “” flashes rapidly (2 times per second), mobile phone can connect it.

Manually enter the EZ mode:10s after power on,long press on “” for 3s to enter EZ mode, the indicator light under “” flashes rapidly (2 times per second), mobile phone can connect it.

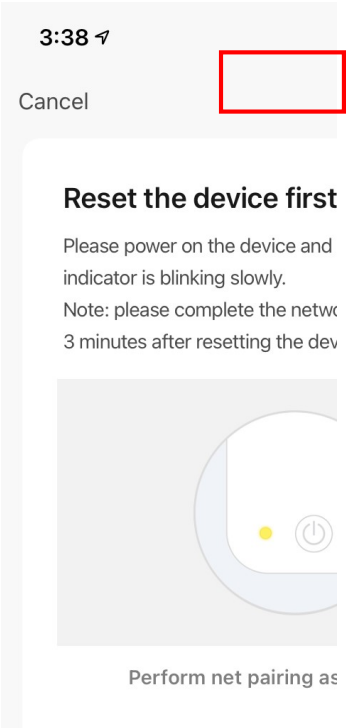


Switch to EZ Mode



Enter the correct Wi-Fi password,
Click “Comfirm” after input

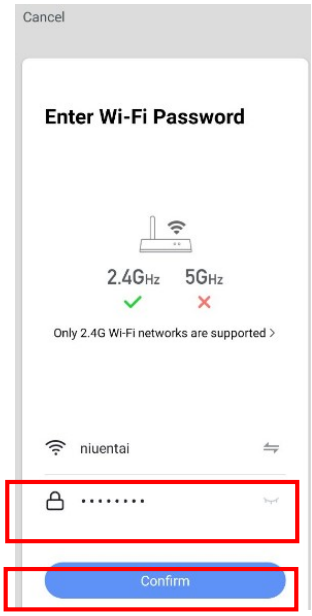
Manually enter AP mode:10s after power on, click “” 5 times within 5s to enter AP mode. The indicator under “” flashes slowly (1 time every 3s), mobile phone can connect it.



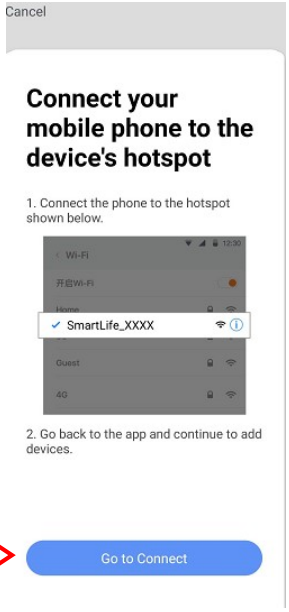
Switch to AP Mode

Enter the correct Wi-Fi password

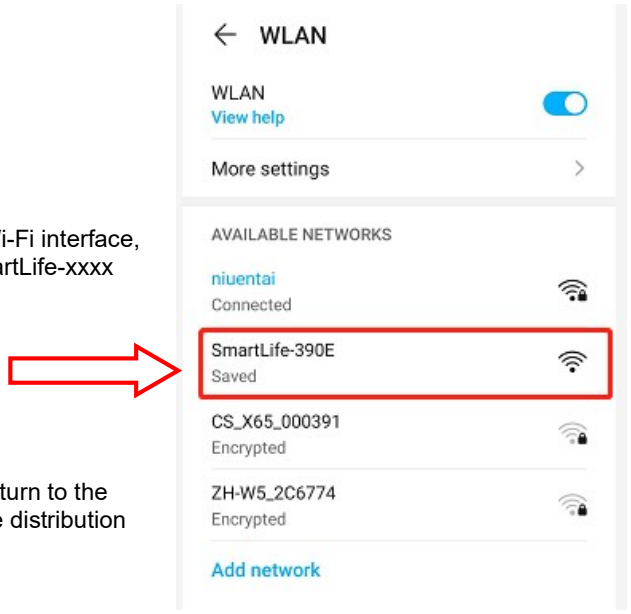
Click “Comfirm” after input



Follow tips to connect device hotspots

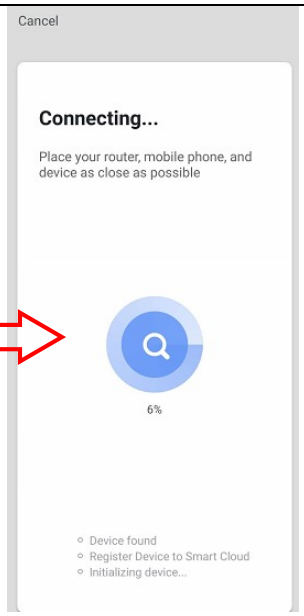


Click to connect to go to Wi-Fi interface, choose the wifi name :SmartLife-xxxx

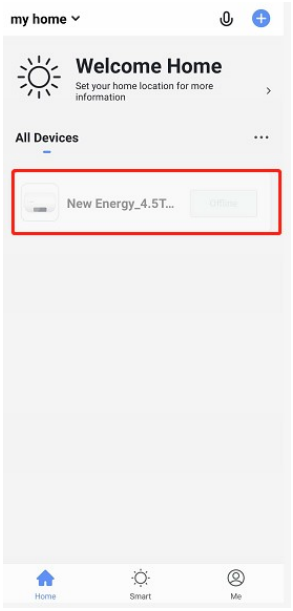


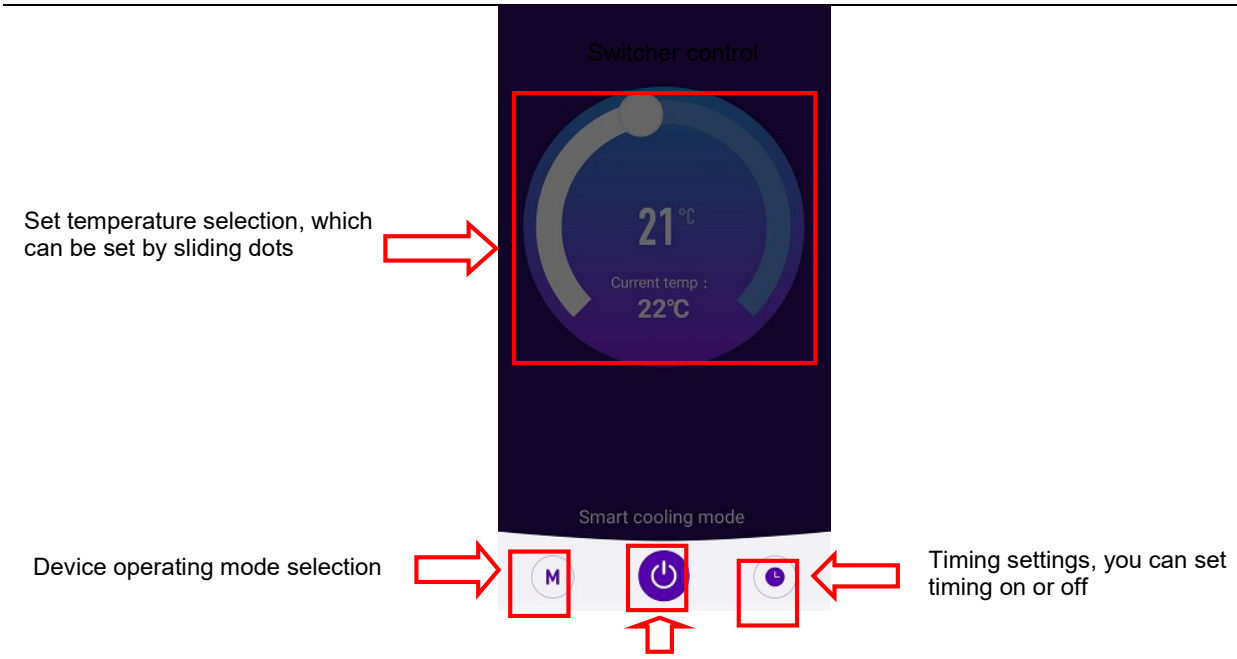
Select and connect and return to the APP interface,Entering the distribution network process

Wait for the pairing progress to end interface,Entering the distribution network process



Add success,Show device
Successfully bound devices
Click to enter control




Switcher control
21 ℃
Current temp :
22℃
Smart cooling mode
M
Set temperature selection, which can be set by sliding dots
Device operating mode selection
Timing settings, you can set timing on or off