Function manual

Swimming pool Heat Pump Controller
with Wi-Fi Function
(Model No. CC911A)

Thank you for selecting our air to water heat pump!
This manual is for swimming pool heat pump.
The appearance of the heat pump you buy from us maybe is different from on the manual, but it doesn't affect operating and using.
Before using heat pump, please read the manual carefully.
Please safe keeping the manual for checking in future!

Simple controller of swimming pool heat pump heater Manual

1 General description

1.1 Three operation modes: automation, cooling and heating.

1.2 Single compressor system.

1.3 Controlled by a wire control panel.

1.4 System operation parameters and set parameters can be displayed and changed.

1.5 With automatic protection and automatic failure alarm function;

1.6 System protection: 3 minute compressor protection; high/low pressure protection; sensor protection; water flow detection, etc.

1.7 Communication distance between the unit and the wire control is not shorter than 100m;

1.8 With strong anti-interference, stable and reliable performance.

1.9 When a wire control panel is connected and ON/OFF switch closes. Unit's ON/OFF will be controlled by panel.

1.10 While there is no wire control panel connected, Unit will be ON if ON/OFF switch is closed and unit will be OFF if ON/OFF switch is opened.

1.11 Electric parameter:
Power supply: 220±10%(VAC), 50/60Hz
Senor type: NTC(5KΩ/25°C,B value 3470K)
Mounting size: 99×116×30mm
Display size: 86×86×18mm
Measuring range:-9°C~99°C
Controlling range:-9°C~99°C
Port output capacity: Compressor and water pump: 30A/250VAC   Others: 5A/250VAC

2 Wiring panel manual

Interface

2.1 ⏻ "ON/OFF" key

- Press the key to open or close the unit in any condition.

- Press the key for 10 seconds, with a buzzer sound "Beep", the keys are locked or unlocked.

2.2 [M] "MODE"key

- Press the key to change mode for AUTO△, Cooling❄, Heating☀.

2.3 [⚙] Timer key

- Press the key "[⚙]" to enter clock and timing setting interface. Then press the key "[M]" to enter clock setting interface, With the valve of hour flashing, press "[+]" or "[−]"to reach the valve you want. After setting hour, press "[M]" to switch to minute setting. The steps are the same as the hour settings.

- Press the key "[⚙]" again to enter ON/OFF timing setting interface. Press "[M]" for 3 seconds to choose whether the timing works. With the icon"[☺][⊗]", Press "[M]" again to enter first group ON/OFF timing setting interface. With the valve of hour and the icon "[☺]" flashing, Press "[+]" or"[−]" to set valve of hour. After setting hour, press "[M]" to switch to minute setting. The steps are the same as the hour settings.

- After finishing timing ON setting, press "[M]" to switch to timing OFF setting, with the icon"[⊗]" flashing. The steps are the same as the timing ON setting.

- When the timing is valid, the icons "[☺]" and "[⊗]" are always bright; when the timing is invalid, the icons of "[☺]" and "[⊗]" are not bright.
- There are three timing settings.
- In the clock and timing setting interface, if there is no any operation for 10 consecutive seconds, then return to the main interface.

2.4 [+] & [−] Up and down key

- In the main interface, press "[+]" or "[−]" to change the set temperature for the current mode.

- Together with the key "[M]", it is used to inquire and set various parameters

2.5 Parameter display and setting

- In non parameter inquiry or setting interface, press the key "[M]" for 3 seconds to enter the   parameter inquiry interface. In parameter inquiry interface, press

the key " ⚙ " each time to check the next parameter (circulated inquiry). 30 parameters in total can be checked from 0 to 29.

- In parameter inquiry interface, press the key " M " once again to enter setting interface. With the valve flashing, press the key " + " or " − " to set the parameter. Then press the key " M " again to confirm.
- In parameter inquiry interface, press " ⏻ " or " + " or " − " to return the main interface. If there is no any operation, it will remain in the inquiry interface.

2.6 In main interface, press and hold the key " + " and " ⚙ " at the same time for 5 seconds, with a buzzer sound "Beep", it can enter Wi-Fi configuration.

3 Operation modes

3.1 Cooling mode
- **Temperature setting**
  - ◆ Inlet water temperature set value T, range 8-28℃, Initial set temperature is 27℃;
- **Operation control**
  - ◆ 4-way valve is powered on, water pump opens, Whether compressor open or shutdown is decided by the value of Inlet water temperature T_{IN} and T_{SETC}
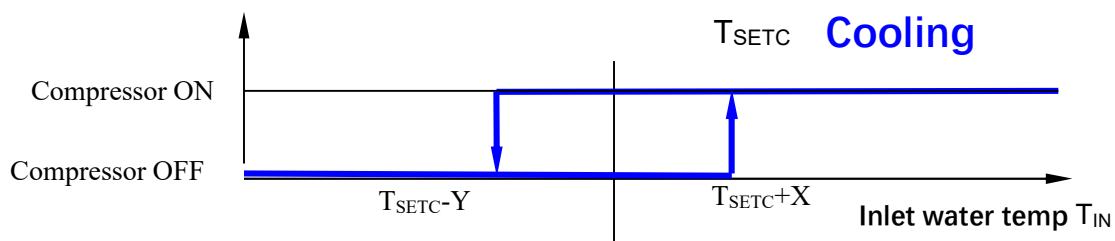
3.2 Heating mode
- **Temperature setting**
  - ◆ Inlet water temperature set value T, range 15-40℃(parameter 9), Initial set temperature is 40℃;
- **Operation control**
  - ◆ 4-way valve is powered off, water pump opens, Whether compressor open or shutdown is decided by the value of Inlet water temperature T_{IN} and T_{SETH}
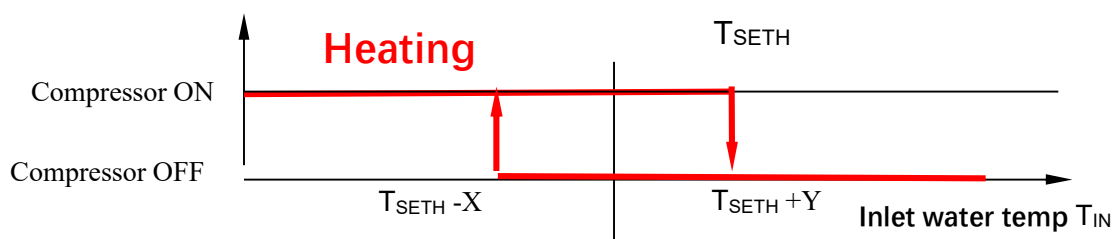
3.3 Auto mode

- **Temperature setting**
  - ◆ Inlet water temperature set value T, range 8-40℃(parameter 9), Initial set temperature is 40℃;
- **Operation control**
  - ◆ Heating: 4-way valve is powered off, water pump opens, Whether compressor open or shutdown is decided by the value of Inlet water temperature T_{IN} and T_{SETA}.
  - ◆ Cooling: 4-way valve is powered on, water pump opens, Whether compressor open or shutdown is decided by the value of Inlet water temperature T_{IN} and T_{SETA}
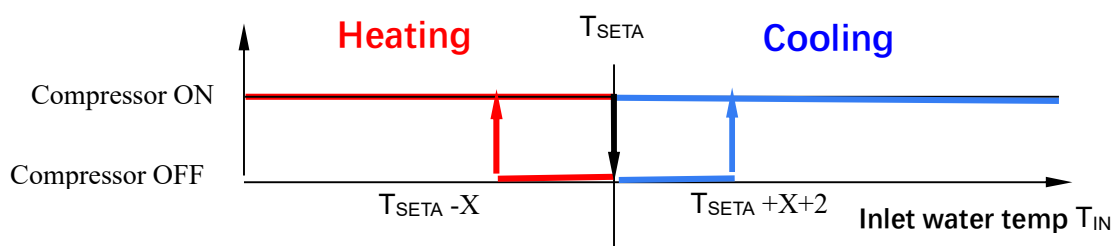
3.4 Defrosting

- **Condition to enter defrosting**

  - ◆ In heating mode, after units operates for a total of 40 minutes (parameter 04, range: 30-90minutes) when coil temperature<20℃(parameter 06,range: 2-30℃) , it enters defrosting when tested coil temperature ≤-7℃,(parameter 05,range: -30-0℃);
  - ◆ When coil temperature failure (P1) occurs, defrosting will be changed to regular defrosting for 8 minutes.

- **Condition to quit from defrosting**
  - ◆ When coil temperature. >20℃ (parameter 06 ,range: 2℃～30℃), or defrosts for 8 minutes   (parameter 07, range:1～12 minutes), it quits from defrosting.

- **Defrosting action**
  - ◆ Following action begins when it meets defrosting condition:
    - ✓ Compressor and outdoor fan stop running. Send the defrosting starting signal to the remote controller
    - ✓ At 25 seconds, the 4-way exchange valve will be powered on;
    - ✓ At 30 seconds, compressor starts;
    - ✓ Water pump operates normally.

  - ◆ Following action begins when it meets defrosting quiting condition:
    - ✓ When system meets the defrosting quitting condition, it quits from defrosting. Compressor stops running and outdoor fan begins to run.

4-way exchange valve will be powered off 25 seconds later.

✓ Compressor starts and recovers to normal heating after fan runs for 30 seconds. The heating operation time is reset. Send the defrosting closing signal to remote controller and stops issuing defrosting signal.
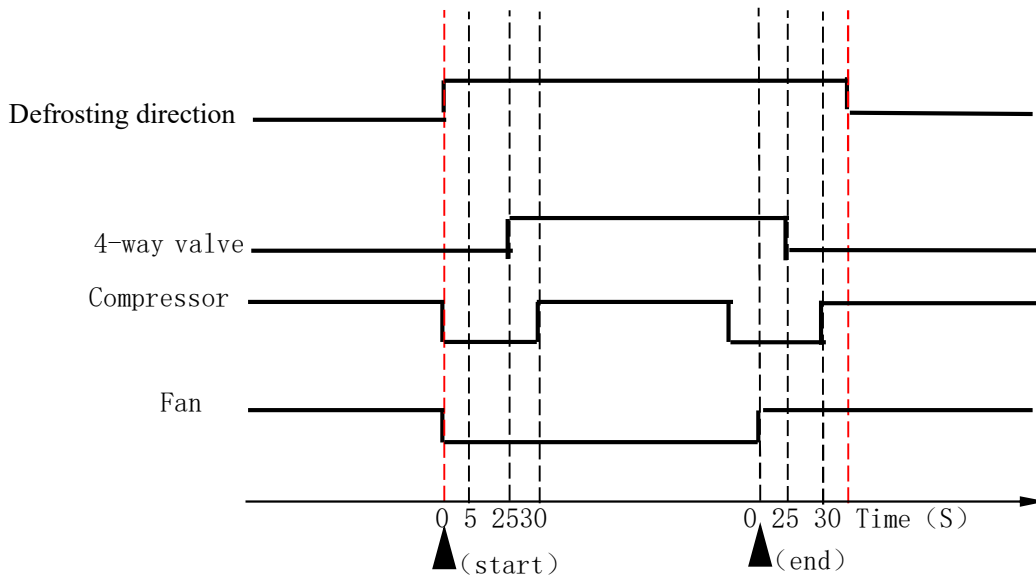
- **Abnormal completion of defrosting**

  ◆ If unit stops during defrosting, it will keep defrosting until defrosting ends.
  ◆ Low pressure protection is shielded during defrosting and it quits from defrosting to normal heating, low pressure switch is detected for 1 minute later.

4 Delay output control

4.1 Compressor
- Safe time of compressor start to stop and start to start (except for defrosting procedure);
- After the same compressor stops, wait 3 minutes to restart.
- There must be a time span of 5 minutes between two starts for the same compressor.
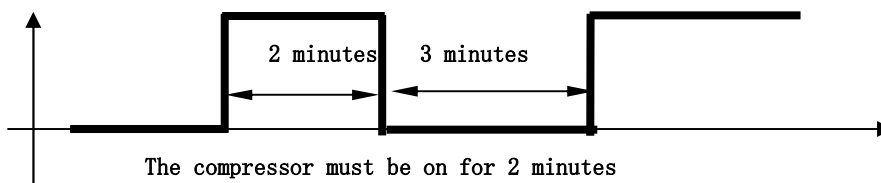
4.2 4-way valve
- It is powered on in cooling mode. When the unit starts, the 4-way valve will turn on with water pump. When system requires unit to turn off, it will turn off in 2 minutes after the compressor stops.
- It delays 2 minutes for the 4-way exchange valve to stop when it changes from cooling mode to heating mode;

- The compressor starts only after the 4-way exchange valve starts for 5 seconds when it changes from heating mode to cooling mode;
- It delays 2 minutes for the 4-way exchange valve to stop when it changes from cooling mode to shutdown.

4.3 Fan

- When the unit starts, the fan will turn on 30 seconds in advance of compressor. When system requires unit to turn off, the fan will stop with compressor.
- When defrosting, it is controlled according to the requirement of defrosting.

4.4 Water pump
- When system requires to start, water pump starts before the compressor for 90 seconds.
- When system requires to stop, water pump stops after the compressor and fan stop for 30 seconds.
- During defrosting, water pump dose not stop running.
- **For normal models (parameter10=0), water pump dose not stop at constant temperature. For special models (parameter 10=1), The water pump stops after the compressor is shut off for 30 seconds. Then stop for 15 minutes (parameter 11) and open for 2 minutes n cycle and cycle.**
- **Note: In the shutdown state, if the pump stops for 12 hours, it needs to be turned on and run for 2 minutes.**

4.5 EEV
- **Operation**
  - ◆ Initial opening steps: 350P. Practical opening steps range:(parameter P5) -500P.
  - ◆ EEV resets first when unit is powered on. It is turned to 550P at the beginning and then is turned to initial opening aperture of 350P.

- **Terms and symbols**
  - ◆ Compressor discharge temperature: TD.
  - ◆ Compressor suction temperature: TS.
  - ◆ Outdoor coil temperature: TC.
- When discharge temperature TD>95℃(parameter 16), EEV should be adjusted for 20 steps additionally. When discharge temperature<95℃ (parameter 16),EEV action step number will be decided by following control logic.

- **Normal control logic**
  - ◆ After compressor starts, EEV action step number will be decided by calculation. (Maximum step limit is ±20P for each action cycle.).
  - ◆ EEV opening aperture variety ▽P= Coefficient KP *(Actual average super heat temperature SH average-Target super heat temperature TSH).
    - ✓ P=P（initial opening aperture）+▽P
    - ✓ When SH average<=-1, KP=3.
    - ✓ When -1< SH average <=0, KP=2.
    - ✓ When SH average >0, KP=1.
    - ✓ SH: super heat temperature calculated value. SH= TS –TC.

- ✓ SH average: average of actual super heat temperature in 45 seconds sampled once every 5 seconds.
- ✓ TSH: Target superheat temperature.
- ✓ P: EEV actual opening steps.
- ✓

● **Confirmation of target super heat temperature TSH**

In normal conditions, TSH is 0℃ (parameter 15).

● **EEV action period:**

EEV acts once every 45 seconds (parameter 14).

● **During refrigeration, defrosting and compulsory defrosting, EEV fixed opening aperture is 400P.**

5 System protection

5.1 Water flow failure

- It begins to detect after water pump starts for 30 seconds. If water flow switch disconnection is detected for continuous 5 seconds, it is determined to be a water flow failure. Compressor and fan stop while water pump dose not stop.
- When water flow failure occurs, if water flow switch closing is detected, unit recovers to normal operation.
- When failure occurs, failure code "PL" is displayed on the wiring panel.

5.2 Anti-freeze protection in winter
- In standby status, detects inlet water temp and ambient temp.
- When ambient temp ≤2℃ and 2℃≤inlet water temp≤4℃, it enters to the one class anti-freeze status. Unit will automatically open the water pump mode.
- If ambient temp. TW≤2℃ and inlet water temp ≤2℃, it enters to the two class anti-freeze status. Unit will automatically open to operate the heating mode.
- When inlet water temp ≥5℃ or ambient temp〉3℃, it quits from anti-freeze protection.
- If ambient temp failure occurs, whether it enters anti-freeze protection is decided by inlet water temp. If inlet water temp failure occurs, whether it enters anti-freeze protection is decided by ambient temp.（Inlet water temp failure occurs，It enters the one class anti-freeze status only）
- If both inlet water temp and ambient temp failure occurs, anti-freeze protection will not be treated.
- While in anti-freeze protection, failure code "PC" is displayed on the wiring panel.

5.3 Excessive cold protection
- This function becomes effective only in cooling mode.
- After compressor operates for 5 minutes, when it is detected that outlet water temp≤5℃, it enters excessive cold protection . Compressor and fan stop running while water pump works as usual
- When excessive cold protection occurs, if it is detected that outlet water temp≥7℃, it will quit from excessive cold protection to normal operation.
- When in excessive cold protection, failure code "P8" is displayed on the wiring panel.

5.4 Excessive temp difference between inlet and outlet water

- This function becomes effective only in cooling mode.
- It detects the temp of inlet water temp and outlet water temp after compressor starts 1 minute. When it is detected that the difference between inlet water temp and outlet water temp exceeds 13℃ for continuous 10 seconds, it will enters excessive difference protection. Unit will stop for protection. Water pump will not close. Failure code "P6" is displayed on the wire control.
- When in excessive temp difference protection, unit will restart 3 minutes later (when it dose not reach the condition that it will not recover unless power off.)
- If this protection occurs three times within 30 minutes, Unit will stop for protection. It will not recover unless power off. Failure code "E2" is displayed on the wiring panel.

5.5 Inlet water temperature sensor failure

- When inlet water temperature sensor is detected to be short-circuited or disconnected at any time, it is determined to be a inlet water temperature sensor failure then unit stops.
- When it is detected that inlet water temperature sensor recovers to normal, unit will recover to normal operation.
- When failure occurs, failure code "P3" is displayed on the wiring panel.

5.6 Outlet water temperature sensor failure

- When outlet water temperature sensor is detected to be short-circuited or disconnected at any time, it is determined to be a outlet water temperature sensor failure then unit stops.
- When it is detected that outlet water temperature sensor recovers to normal, unit will recover to normal operation.
- When failure occurs, failure code "P4" is displayed on the wiring panel.

5.7 Coil temperature sensor failure

- When coil temperature sensor is detected to be short-circuited or disconnected at any time, it is determined to be a coil temperature sensor failure then and unit works normally. Defrosting control will be changed to timer defrosting .
- When it is detected that coil temperature sensor recovers to normal, unit will recover to normal operation.
- When failure occurs, failure code "P1" is displayed on the wiring panel.

5.8 Ambient temperature sensor failure

- When outdoor temperature sensor is detected to be short-circuited or disconnected at any time, it is determined to be a ambient temperature sensor failure then and unit works normally. Anti-freeze protection is decided by inlet water temperature.
- When it is detected that outdoor temperature sensor recovers to normal, unit will recover to normal operation.
- When failure occurs, failure code "P7" is displayed on the wiring panel .

5.9 Discharge temperature sensor failure

- After unit is powered on, if it is detected at any time that discharge temperature sensor short-circuiting occurs or discharge temperature sensor disconnects after

compressor starts and works for 1 minute, it will be determined to a discharge temperature failure and unit will stop for protection.
- This failure can be recovered automatically.
- When failure occurs, failure code "P2" is displayed on the wiring panel.

5.10 Suction temperature sensor failure
- When suction temperature sensor is detected to be short-circuited or disconnected at any time, it is determined to be a suction temperature sensor failure and unit works normally.
- When it is detected that suction temperature sensor recovers to normal, unit will recover to normal operation.
- When failure occurs, failure code "P5" is displayed on the wiring panel.

5.11 Excessive discharge temperature protection
- Detect excessive discharge temperature protection after compressor starts for 1 minute, if it is detected that discharge temperature≥118℃ (parameter 8) for continuous 5 seconds, the unit will stop for protection.
- When it is detected that discharge temperature≤90℃, it will quit from this protection.
- If this failure occurs for 3 times within 30 minutes, it will not be recovered unless it is powered off (the former 2 times can be recovered automatically.).
- When failure occurs, failure code "E3" is displayed on the wiring panel.

5.12 Communication failure
- Within 20 seconds when power on for the first time, if main board dose not receive any communication signal from wiring panel, it is determined to be disconnected with remote control. System controls the operation just according to emergency switch signal
- In normal states ,if wiring panel dose not receive any signal from main board for continuous 2 minutes, it is determined to be a communication failure and failure code "E8" is displayed.

5.13 High pressure protection
- After compressor starts for 15 seconds, if system high pressure switch disconnection is detected for continuous 5 seconds, it is determined to be a system high pressure failure. Then unit stops.
- When high pressure switch closing is detected, unit will quit from failure protection and recover to normal operation (without 3 times of system failure in 30 minutes).
- If system failure occurs for continuous 3 times within 30 minutes, it will not recover unless power off.
- When failure occurs, failure code "E4" is displayed on the wiring panel.

5.14 Low pressure protection
- After compressor starts for 5 minutes, if system low pressure switch disconnection is detected for continuous10 seconds, it is determined to be a system low pressure failure. Then unit stops.
- When low pressure switch closing is detected, unit will quit from failure protection and recover to normal operation (without 3 times of system failure in 30 minutes).
- If system failure occurs for continuous 3 times within 30 minutes, it will not recover unless power off.

- When failure occurs, failure code "P9" is displayed on the wiring panel.

5.15 Power phase protection
- After unit is powered on for 5 seconds, if phase protection switch disconnection is detected for 1 second at any time, it is determined to be a power phase-sequence failure and unit shutdowns for protection.
- When failure occurs, it will not recover unless power off.
- When failure occurs, failure code"E5" is displayed on the wire control panel.

5.16 Low ambient temperature protection
- When it is detected that ambient temperature ≤-15℃(parameter 21), the unit will stop for protection.
- When it is detected that ambient temperature≤15℃(parameter 21)+1℃, it will quit from this protection.
- When failure occurs, failure code"E6" is displayed on the wire control panel

6 Other functions

6.1 Power-off memory

- System will record the parameters all the way.
- System can keep ON/OFF status and electric heating status in memory.
- After abnormal power-off or unit closure, once it is powered on, the system will be in standby status or remaining status before power-off.

6.2 Error code table

Protection/Failure	Failure code	Indicator lamp for unit operation /failure
Standby		Off
Normally operation		light
Excessive difference between inlet and outlet water temp. for three times	E2	
Excessive discharge temperature protection	E3	
High pressure protection	E4	
Phase failure	E5	
Low ambient temperature protection	E6	
Communication failure	E8	
Coil temperature sensor failure	P1	
Discharge temperature sensor failure	P2	
Inlet water temperature sensor failure	P3	
Outlet water temperature sensor failure	P4	
Suction temperature sensor failure	P5	
Excessive temp difference	P6	
Ambient temperature sensor failure	P7	
Excessive cold protection	P8	
Low pressure protection	P9	
One class anti-freeze	PC	
Two class anti-freeze	PC	
Water flow failure	PL	
Defrosting direction	☀ flashing	

6.3 System parameter

code	Meaning	Range	Default	Note
0	Power lost memory	0（no）\1（yes）	1	adjustable
1	Daily cycle mark	0（no）\1（yes）	1	adjustable
2	△T X	2-10℃	2	adjustable
3	△T Y	0-3℃	0	adjustable
4	Defrosting cycle	30-90 min	40 min	adjustable
5	Temperature setting for starting defrosting	-30-0℃	-7℃	adjustable
6	Temperature setting for exiting defrosting	2-30℃	20℃	adjustable
7	defrosting running time setting	1-12 min	8 min	adjustable
8	Setting discharge temperature	95-120℃	118℃	adjustable
9	The max. water set temperature	40~65	40	adjustable
10	water pump running mode	0（normal）\1（special）	1	adjustable
11	Pump stopping duration	3-20 min	15	adjustable
12	Reserved	0\1	1	invalid
13	Model options	0(cooling)\1（C&H）\2（heating）	1	adjustable
14	EEV action period	20s~90s	45	
15	Target superheat temperature	-5℃~10℃	5℃	
16	EEV allowed discharge temperature	80℃~110℃	95℃	
17	Defrosting EEV steps	20~450	400	
18	The min. EEV steps	50~200	100	
19	EEV manual steps	20~450	350	

20	EEV mode	0(Manual) \1(Auto)	0	
21	The min. setting ambient temperature	-20℃~15℃	-15℃	
22	Inlet water temperature	-9℃~99℃		measured value
23	Outlet water temperature	-9℃~99℃		measured value
24	Coil temperature	-9℃~99℃		measured value
25	Discharge temperature	0℃~C5℃		measured value
26	Ambient temperature	-9℃~99℃		measured value
27	Suction temperature	-9℃~99℃		measured value
28	EEV steps	Actual value=show value*10		measured value
29	Reserved	-9℃~99℃	0	measured value

7 Wi-Fi functions

7.1 APP download and installation
● Enter the App Store to search Smart Life APP, then download and install it.

● You also can scan following QR code, download and install Smart Life APP through Android mobile phone or iPhone. But please attention to select "Ordinary Download" when use Android mobile phone.

7.2 Start APP

After installation, click the desktop icon "Smart Life" to launch the software.

7.3 Users registration

● For the first time to use the "Smart Life" software, users need to register.Click "Register" to enter the registration interface, and Register with the mobile phone number or email according to the system prompts.
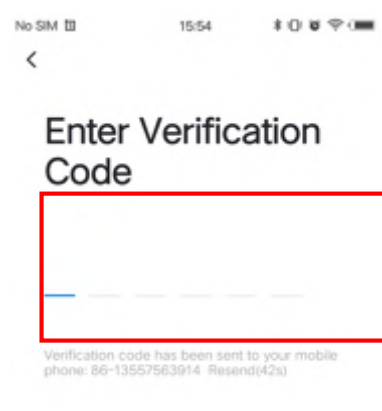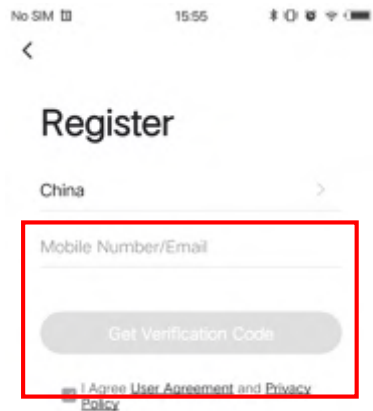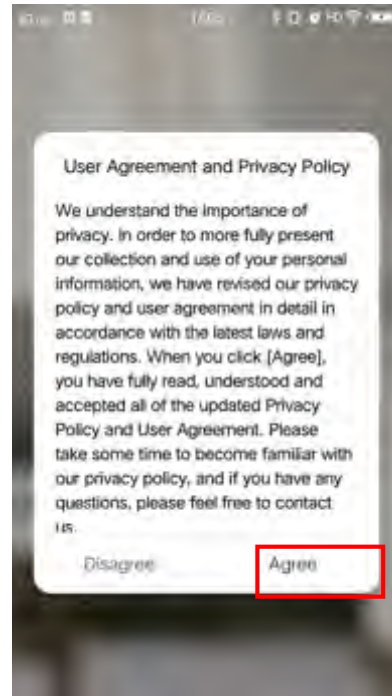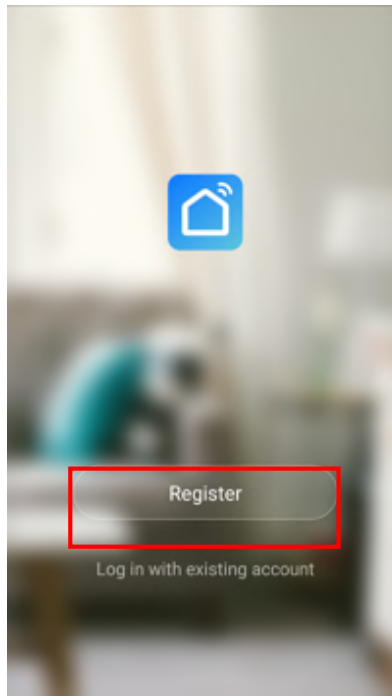
7.4 Create family model

- After successful registration, the software will jump to the "create family" interface.
- Operating as follows : click "create family" →setting "family name"→ setting "family location"→ add room →click "completed"
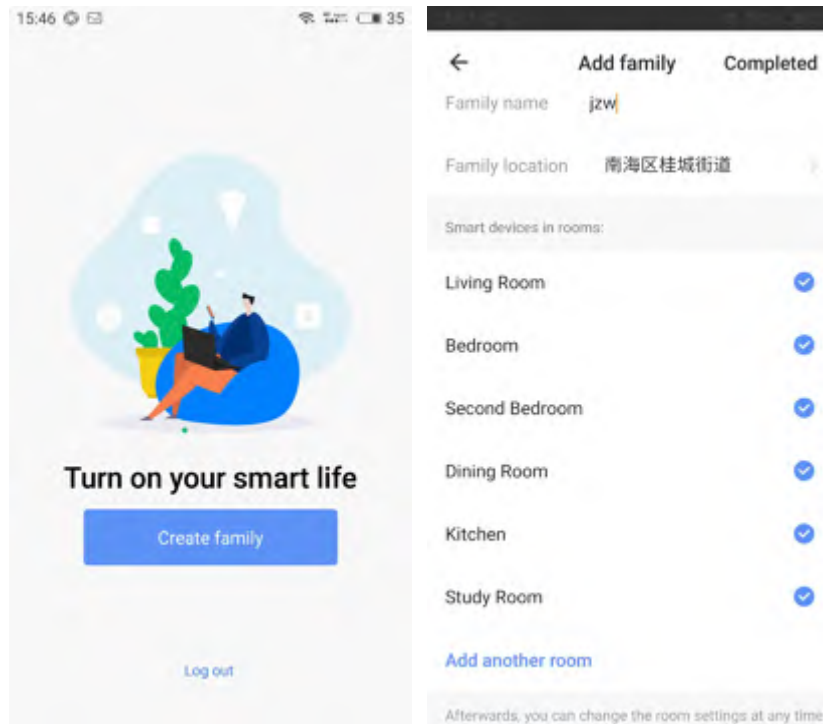
- If you have already registered, simply click "Log om with existing account" to log in.
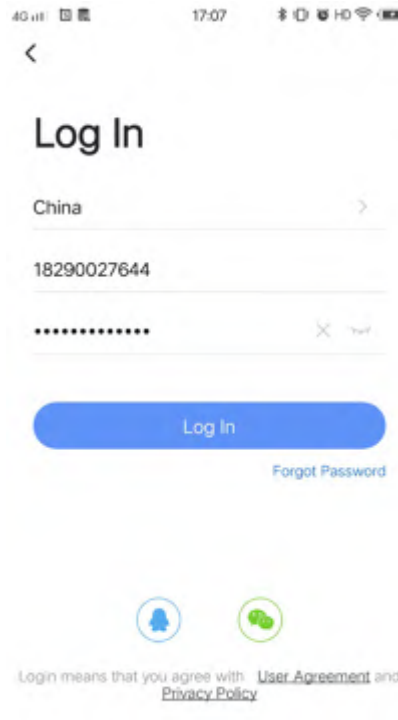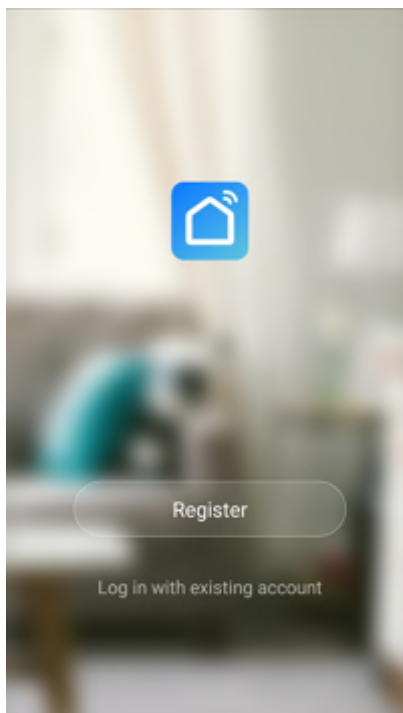
7.5 Device connection process
- ● **Smart configuration mode**
    - ◆ Firstly, in main interface, press and hold the key "⊞" and "⚙" at the same time for 5 seconds, with a buzzer sound "Beep" and the icon "📶"

flashing, it can enter Wi-Fi configuration.
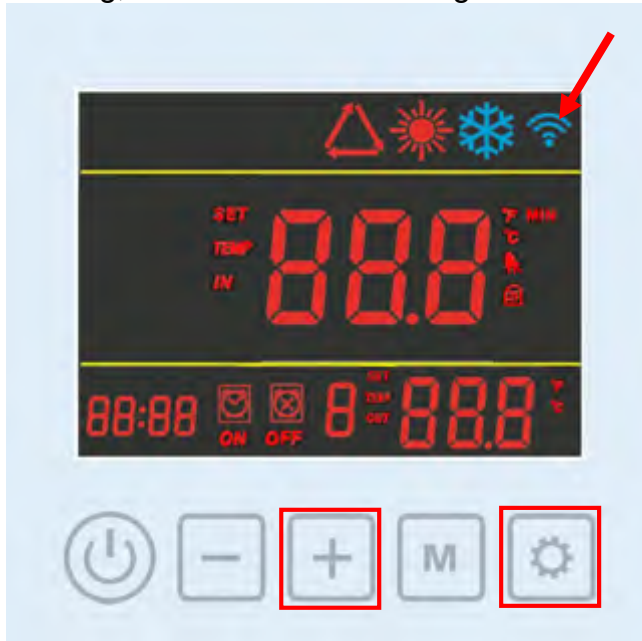
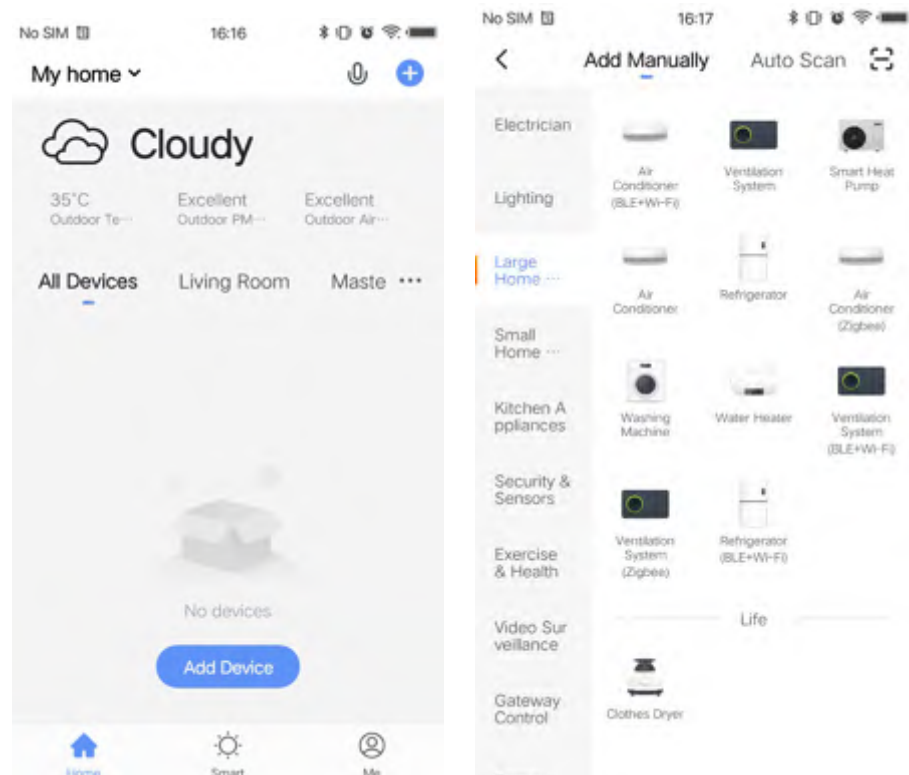◆ Secondary, Turn on the Wi-Fi function of the phone and connect to the Wi-Fi hotspot. The Wi-Fi hotspot must be able to connect to the Internet normally
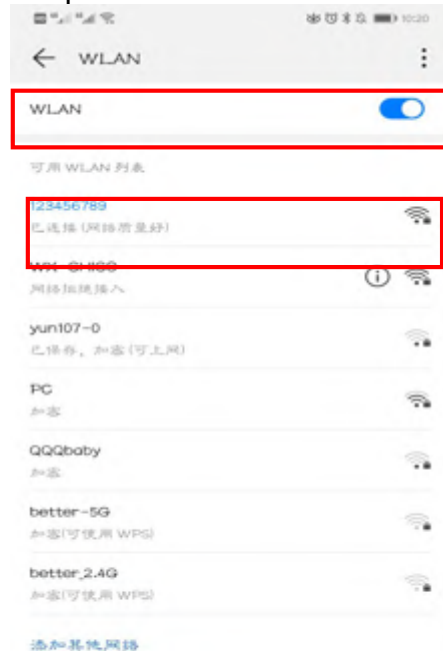
◆ Thirdly, open the APP "Smart Life" into the main interface, and click " ✛"at the top-right corner to enter the devicetype selection interface. Select "Water Heater" from the "Home Appliances" bar.You can also click "Add Device" if no device.
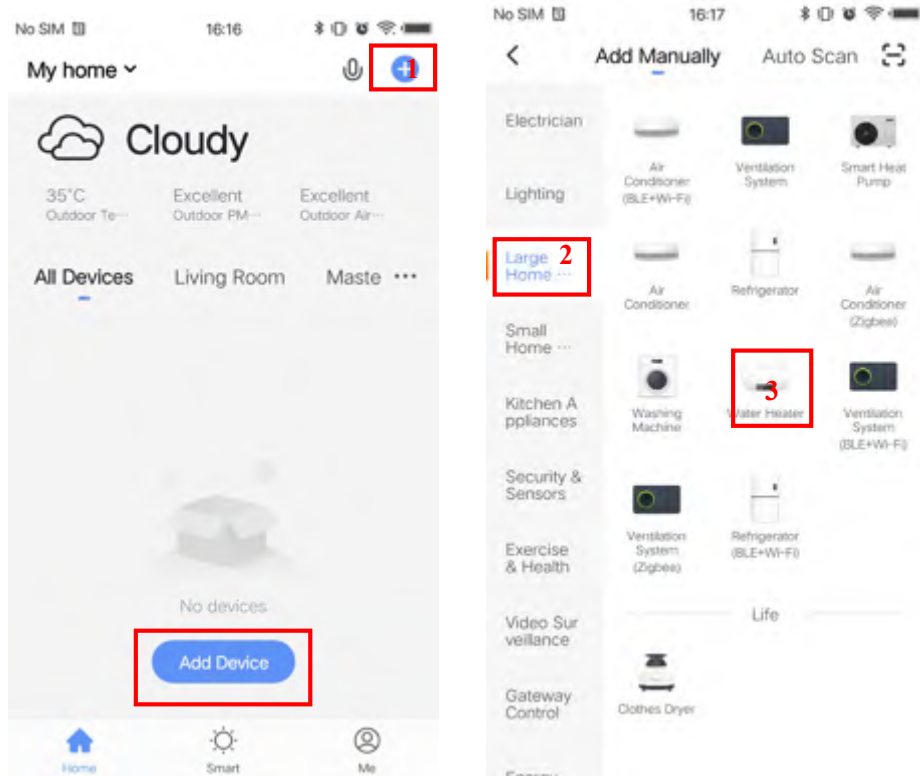
◆ If you have already added devices, the APP main interface is shown in the following figure. You can see all the devices that have been added. The drop-down refreshes the connection status.
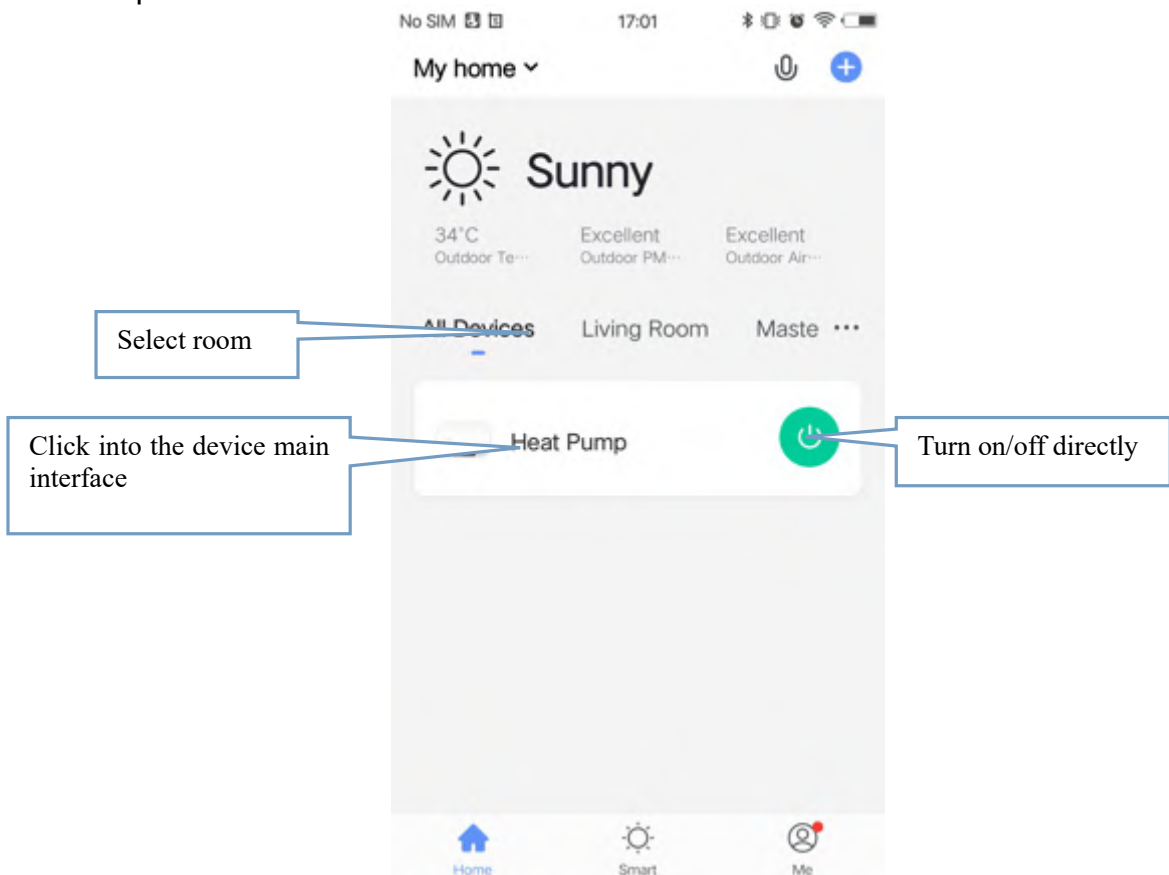
Select room

Click into the device main interface

Turn on/off directly

◆ Fourthly, after entering the interface of adding device, confirm again that the display panel is in the configuration state that the "📶" icon is flashing,and then Click "**Confirm indicator rapidly blink**". The Wi-Fi connection interface pops up, enter the Wi-Fi password (it must be consistent with the Wi-Fi connected by the phone), and click "**Next**" to enter the connection state.
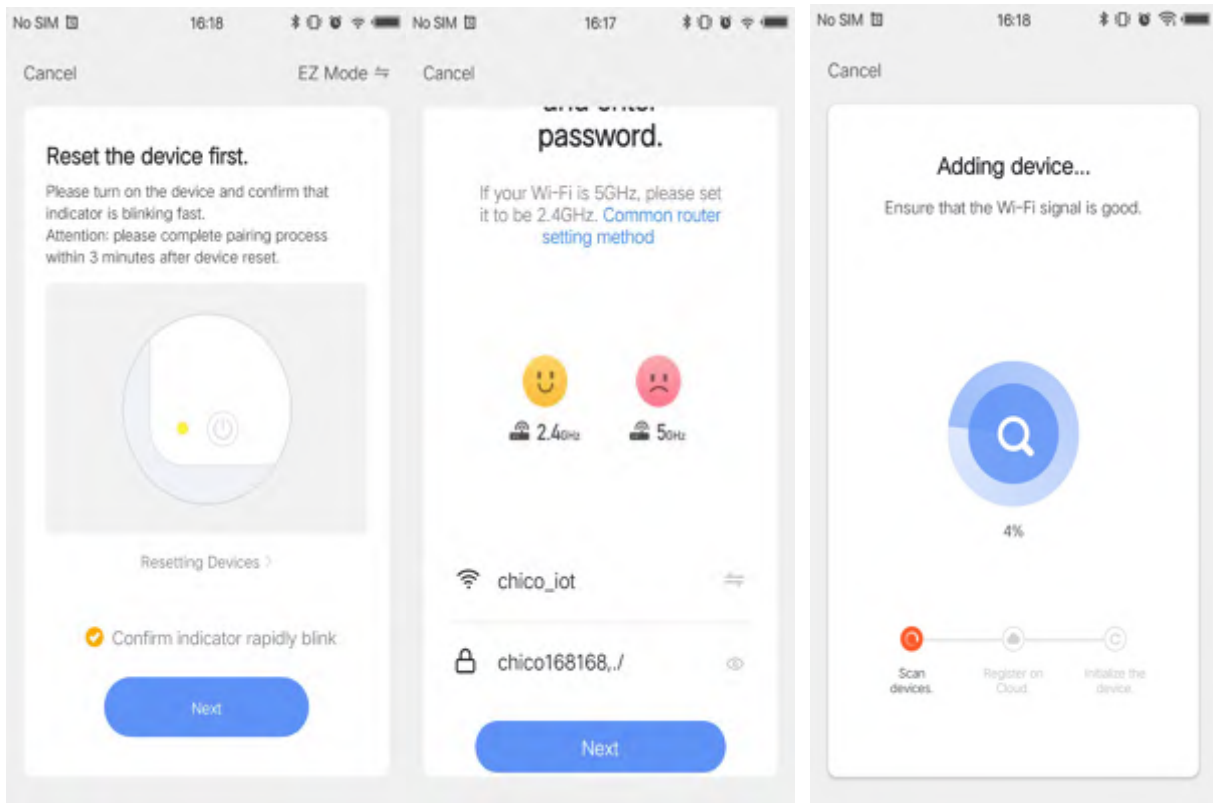
◆ Fifth, when "Scan device", "Register on cloud" and " Initialize the device " are all completed, the connection is successful, and the system prompts "Device added successfully". In the interface,the device name and the device installation location can be set .
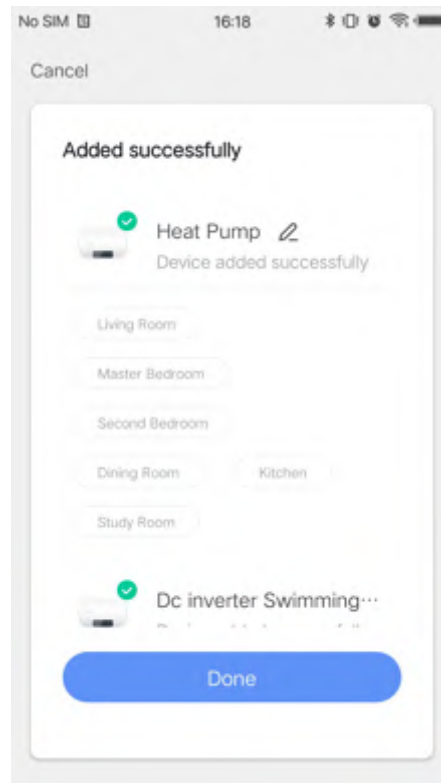
- **AP configuration mode**
  - ◆ Firstly, in main interface, press and hold the key " ⏻ " and " — "and " ⚙ " at the same time for 5 seconds, with a buzzer sound "Beep" and the icon" 📶 " flashing slowly, it can enter Wi-Fi configuration.
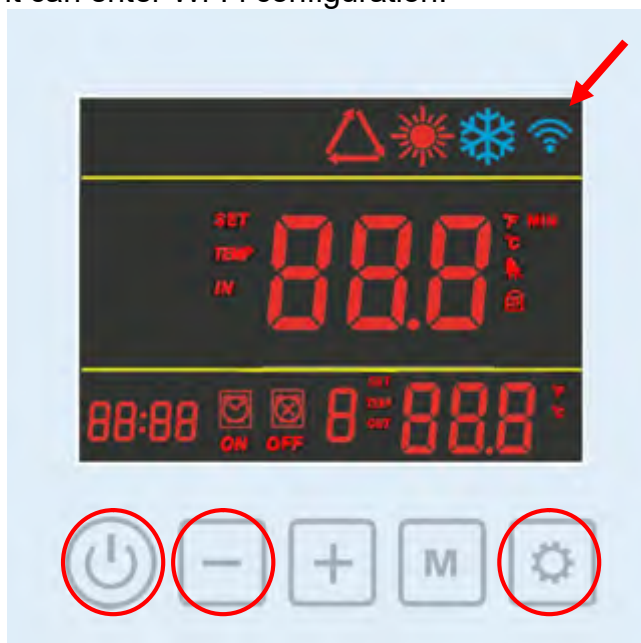

  - ◆ Secondary, Turn on the Wi-Fi function of the phone and connect to the Wi-Fi hotspot. The Wi-Fi hotspot must be able to connect to the Internet normally
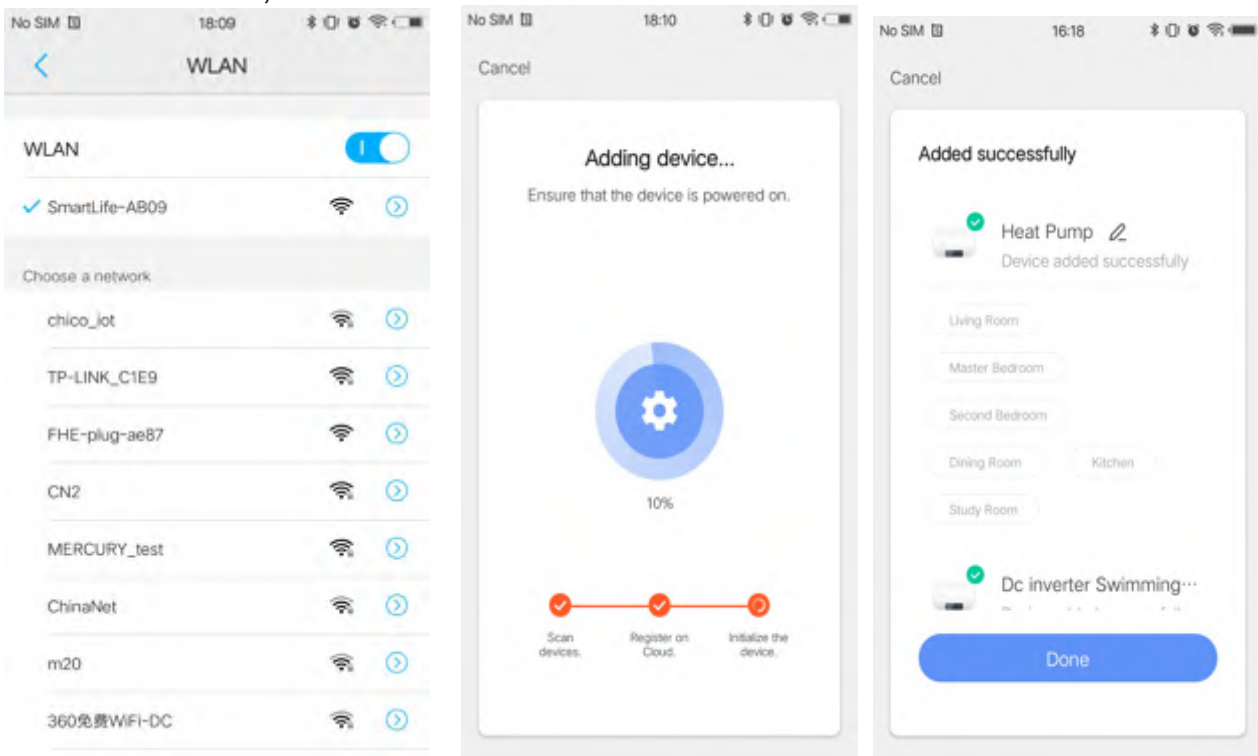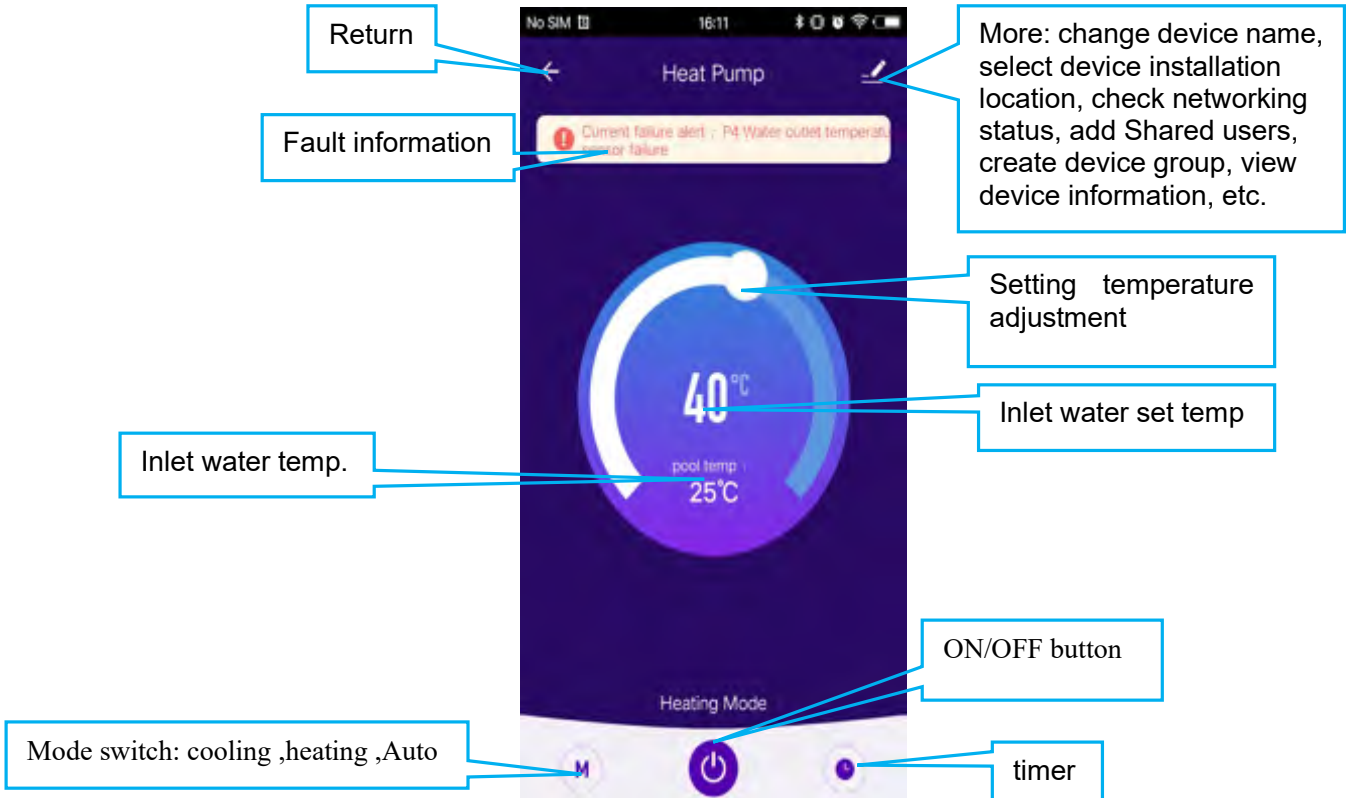
◆ Thirdly, open the APP "Smart Life" into the main interface, and click " ✛"at the top-right corner to enter the devicetype selection interface. Select "Water Heater" from the "Home Appliances" bar.You can also click "Add Device" if no device.

◆ Fourthly, after entering the interface of adding device, confirm again that the display panel is in the configuration state that the " 🛜 " icon is flashing slowly, and then Click "AP mode" at the top-right corner
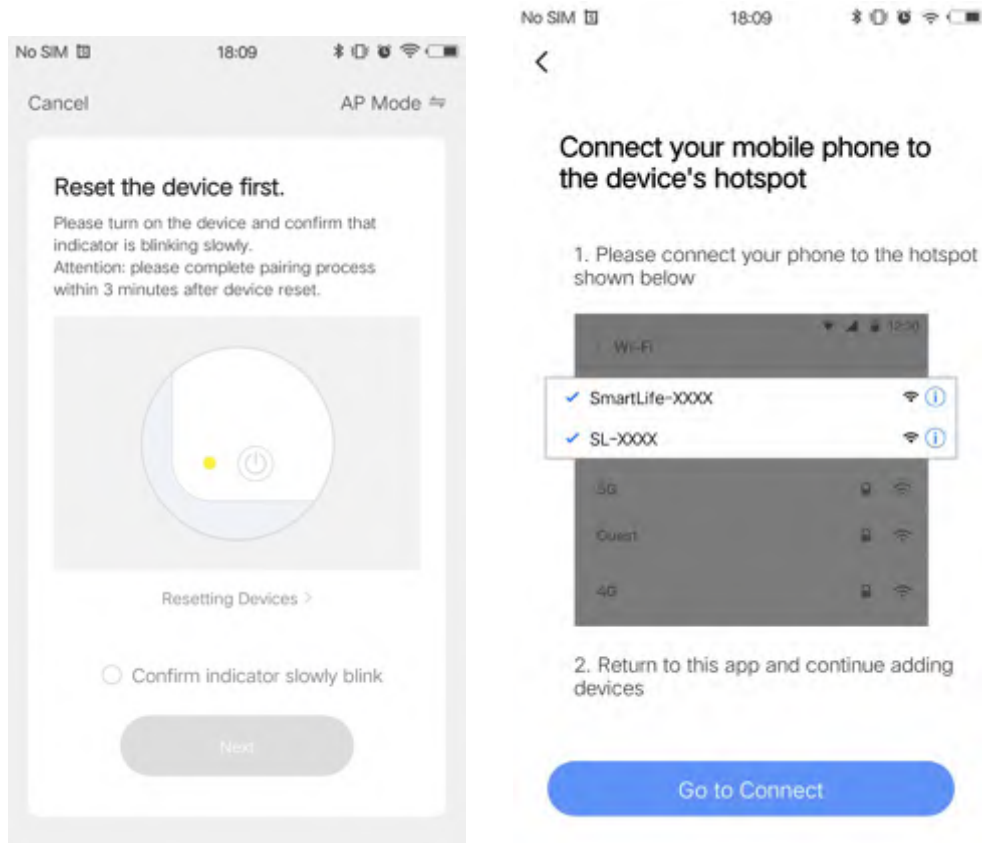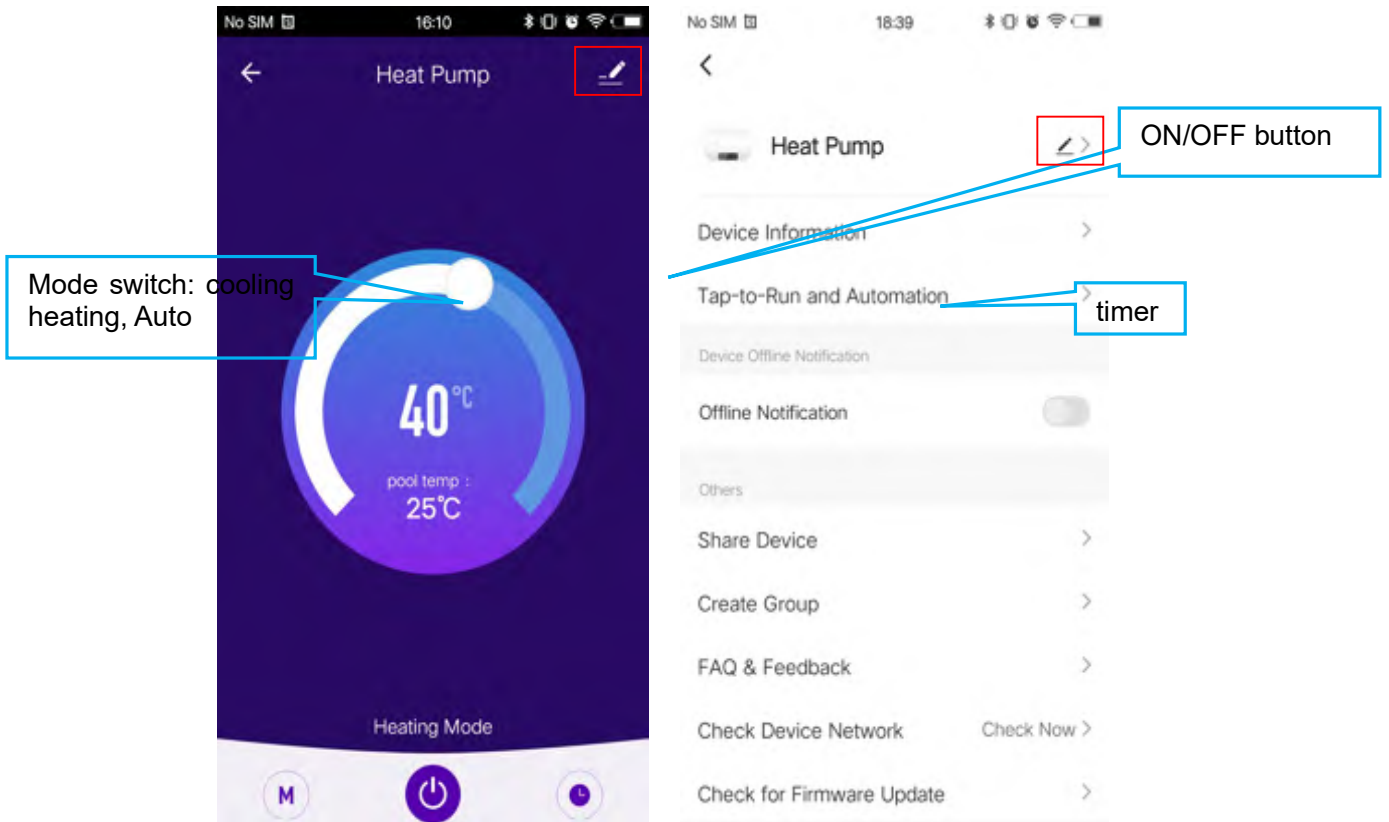
◆ Enter the mobile phone WIFI connection interface and find the SmartLife_XXX to connect, as shown in the figure: SmartLife_AB09,

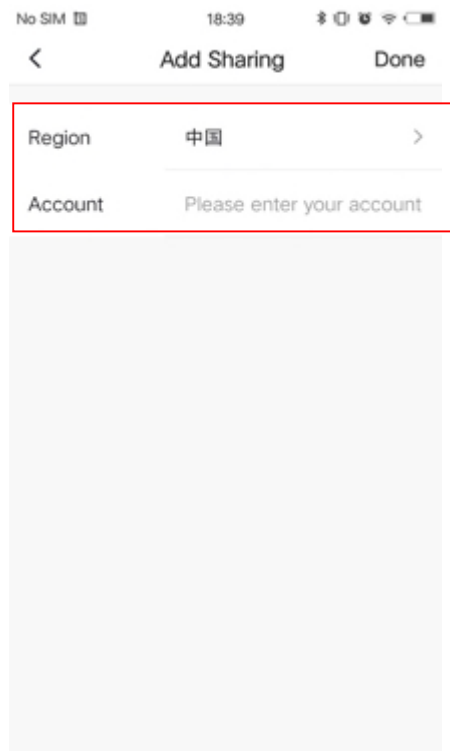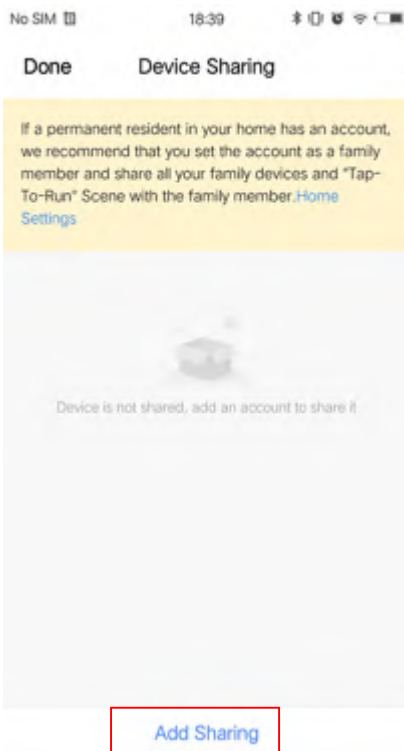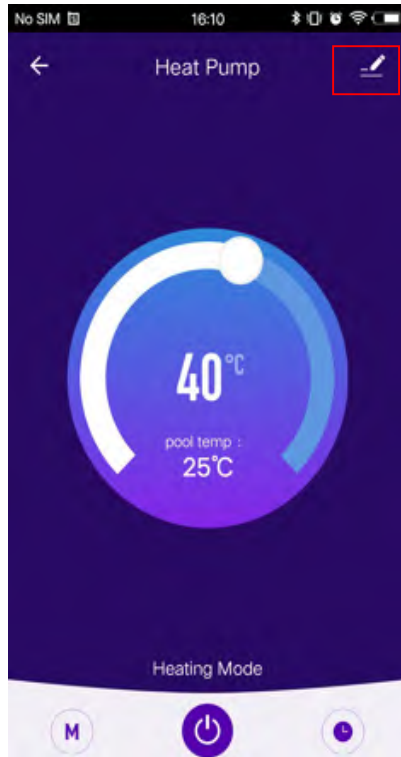◆ Return to the APP, and the APP will automatically enter the device connection state;

7.6 Swimming pool operation interface

Return

Fault information

More: change device name, select device installation location, check networking status, add Shared users, create device group, view device information, etc.

Setting temperature adjustment

Inlet water set temp

Inlet water temp.

ON/OFF button

Mode switch: cooling ,heating ,Auto

timer

● **Modify device name**

Mode switch: cooling heating, Auto
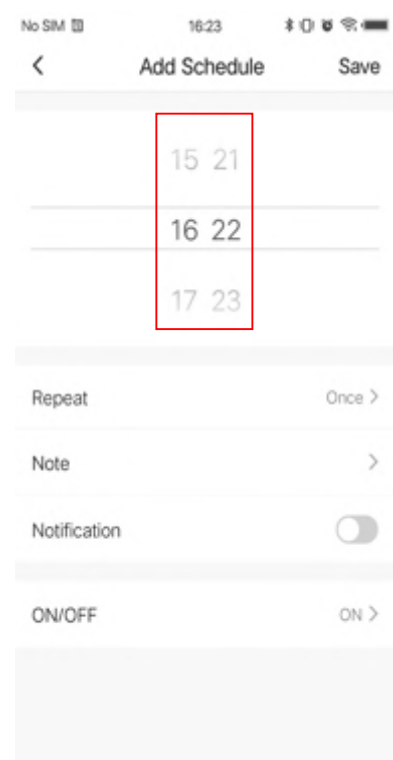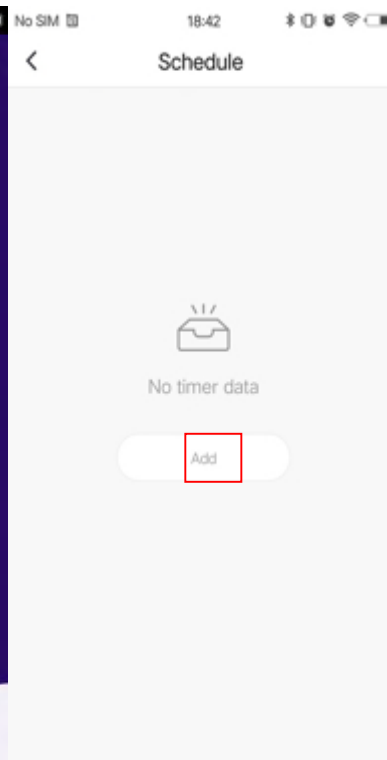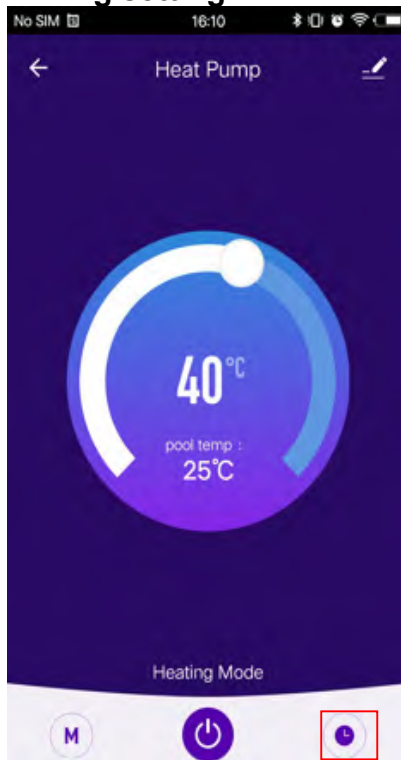
ON/OFF button

timer

● **Share device**

● **Mode setting**
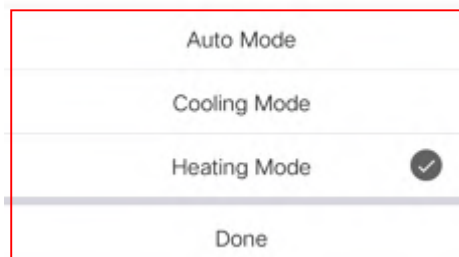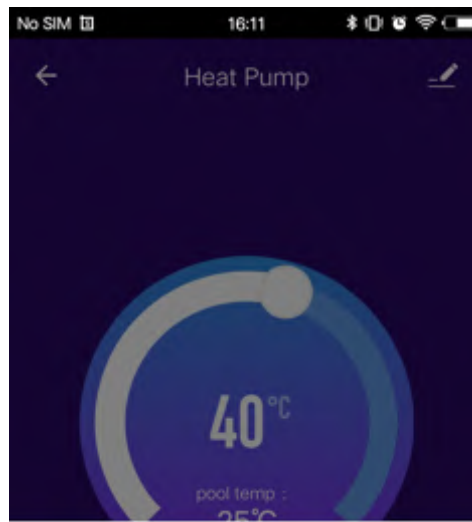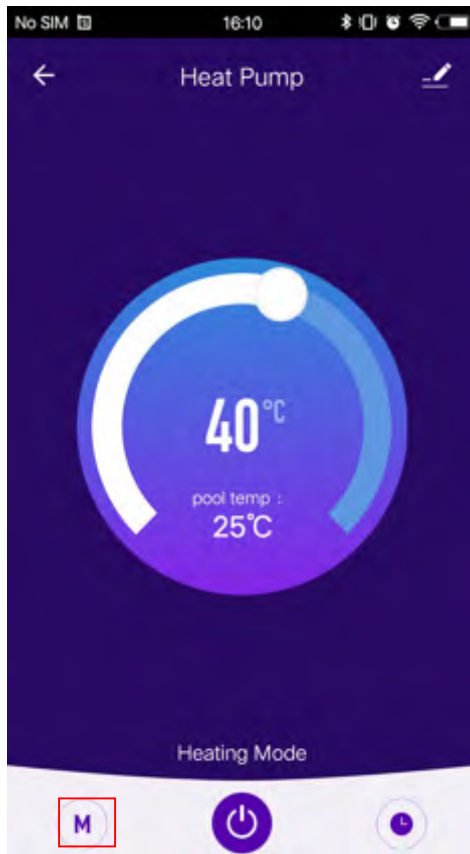
● **Timing setting**

- **Remove device**