ATECPOOL
INTERNACIONAL ESPAÑA

SWIMMING POOL HEAT PUMP UNIT

Installation & Instruction Manual

CONTENTS

1. PREFACE

1.1 PREFACE

- In order to provide our customers with quality, reliability and versatility, this product has been made to strict production standards. This manual includes all the necessary information about installation, debugging, discharging and maintenance. Please read this manual carefully before you open or maintain the unit. The manufacture of this product will not be held responsible if someone is injured or the unit is damaged, as a result of improper installation, debugging, or unnecessary maintenance. It is vital that the instructions within this manual are adhered to at all times. The unit must be installed by qualified personnel.

- The unit can only be repaired by qualified installer centre , personnel or an authorised dealer.

- Maintenance and operation must be carried out according to the recommended time and frequency, as stated in this manual.

- Use genuine standard spare parts only.
  Failure to comply with these recommendations will invalidate the warranty.

- Swimming Pool Heat Pump Unit heats the swimming pool water and keeps the temperature constant. For split type unit, The indoor unit can be Discretely hidden or semi-hidden to suit a luxury house.

  Our heat pump has following characteristics:

  1 Durable
  The heat exchanger is made of PVC & Titanium tube which can withstand prolonged exposure to swimming pool water.
  2 Installation flexibility
  The unit can be installed outdoors or indoors.
  3 Quiet operation
  The unit comprises an efficient rotary/ scroll compressor and a low-noise fan motor, which guarantees its quiet operation.
  4 Advanced controlling
  The unit includes micro-computer controlling, allowing all operation parameters to be set. Operation status can be displayed on the LED wire controller. Remote controller can be chosen as future option.

1.2 Safety precautions

ELECTRICAL POWER MUST BE SWITCHED OFF
BEFORE STARTING ANY WORK ON JUNCTION BOXES

The aim of this manual is to provide instructions for installation, commissioning, operation.

WARNING !
The installation, commissioning and maintenance of these machines should be performed by qualified personnel having a good knowledge of standards and local regulations, as well as experience of this type of equipment.

WARNING !
Any wiring produced on site must comply with local electrical regulations.

WARNING !
Ensure that the electrical supply corresponds to the specification indicated on the unit's maker's plate before proceeding with the connection in accordance with the wiring diagram supplied.

WARNING !
The unit must be EARTHED to avoid any risks caused by insulation defects.

WARNING !
No wiring must come in contact with the heat source or the fan rotating parts.

WARNING !
Preparation for shutting down the unit for a prolonged period if the installation does not contain glycol, the evaporator and the chilled water pipes need to be carefully and completely drained of water.

WARNING!
In preparation for shutting down the unit for a prolonged period the condenser and the chilled water pipes on the reversible unit need to be carefully flushed with fresh water(during 15 minutes by the outlet) and then completely drained of water.

Take care !
The unit should be handled using lifting and handling equipment appropriate to the unit's size and weight.

Take care !
It is forbidden to start any work on the electrical components without switching off the electrical supply to the unit.

Take care !
It is forbidden to start any work on the electrical components if water or high humidity is present on the installation site.

Take care !
When the unit is being connected, ensure that no impurities are introduced into the pipe work and the water circuits.

Take care!
The setting water temperature can not over 40℃, (105°F)to assure the unit running safety.

Take care!
An insulated pipe for protection must be used for the 3-core signal wire at the wire outlet for outdoor installation.

Take care!
Use copper supply wires.

The Manufacturer's warranty will not apply if the installation recommendations listed in this manual are not followed.

2.SPECIFICATION

2.1 Performance data of Swimming Pool Heat Pump Unit

*** REFRIGERANT : R410A

Unit		AMHP170
Cooling Capacity（Boost Mode)	kW	96
	BTU/h	327645
Cooling Capacity	kW	59.4-73.4
	BTU/h	202673-250441
Cooling Power Input	kW	13.81-13.85
Heating Capacity(Boost Mode)	kW	175
	BTU/h	597269
Heating Capacity	kW	28.2-130
	BTU/h	96218-443560
Heating Power Input	kW	1.76-20.97
Running Current	A	47
Power Supply		380V/3N～/50Hz
Compressor Quantity		2
Compressor		Rotary
Fan Quantity		2
Fan Power Input	W	1300×2
Fan Rotate Speed	RPM	850
Fan Direction		vertical
Noise	dB(A)	63
Water Connection	mm	110
Water Flow Volume	m^3/h	45
Water Pressure Drop(MAX)	kPa	25
Unit Net Dimensions(L/W/H)	mm	see the drawing of the units
Unit Shipping Dimensions(L/W/H)	mm	see package label
Net Weight/shipping Weight	kg	see nameplate/see package label

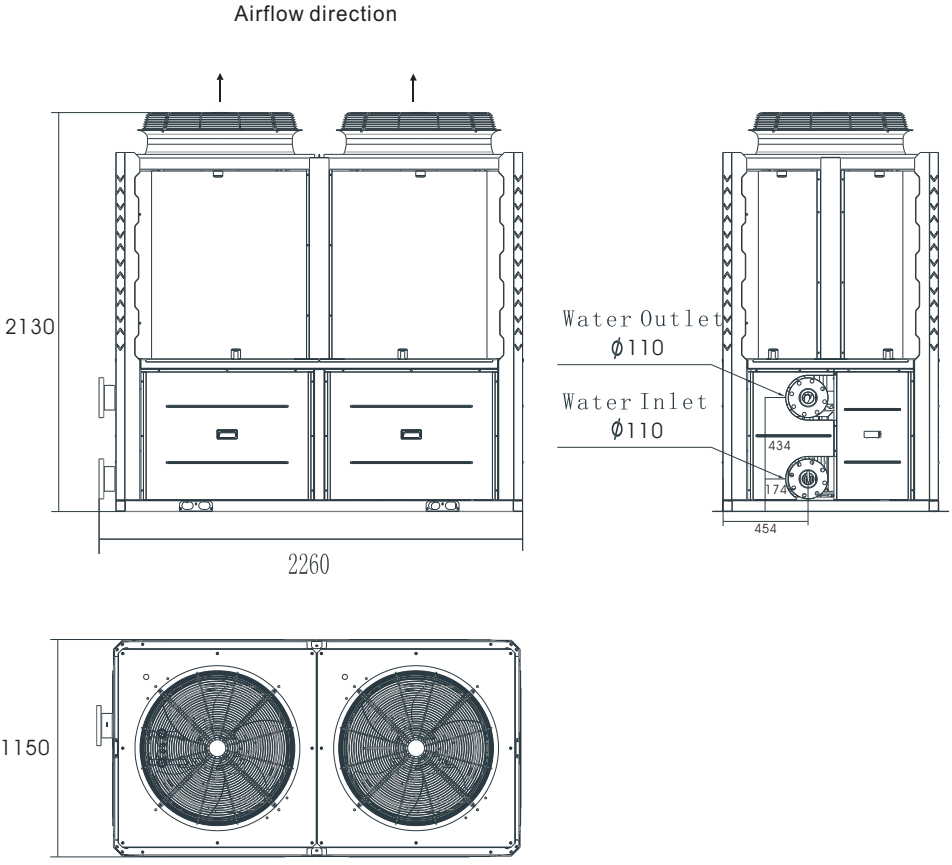
Measurement conditions of table :
Cooling: Outdoor air temp:43℃ ,Inlet water temp:26℃
Heating:Outdoor air temp:27℃ ,Inlet water temp:26℃
Models, parameters, performance will change for the improvement of product, please forgive for
no especial notice. Specific parameters is on the base of nameplate

2.SPECIFICATION

2.2 The dimensions for Swimming Pool Heat Pump Unit

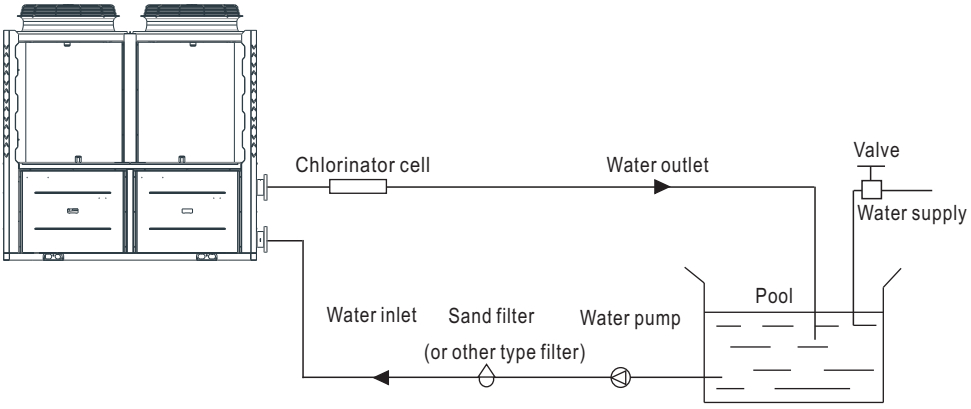
Model: AMHP170

unit：mm



3.INSTALLATION AND CONNECTION

3.1 Installation illustration



Installation items:

The factory only provides the main unit and the water unit; the other items in the illustration are necessary spare parts for the water system ,that provided by users or the installer.

Attention:

Please follow these steps when using for the first time
1.Open valve and charge water.
2.Make sure that the pump and the water-in pipe have been filled with water.
3.Close the valve and start the unit.
ATTN: It is necessary that the water-in pipe is higher than the pool surface.

The schematic diagram is for reference only. Please check the water inlet/outlet label on the heat pump while plumbing installation.

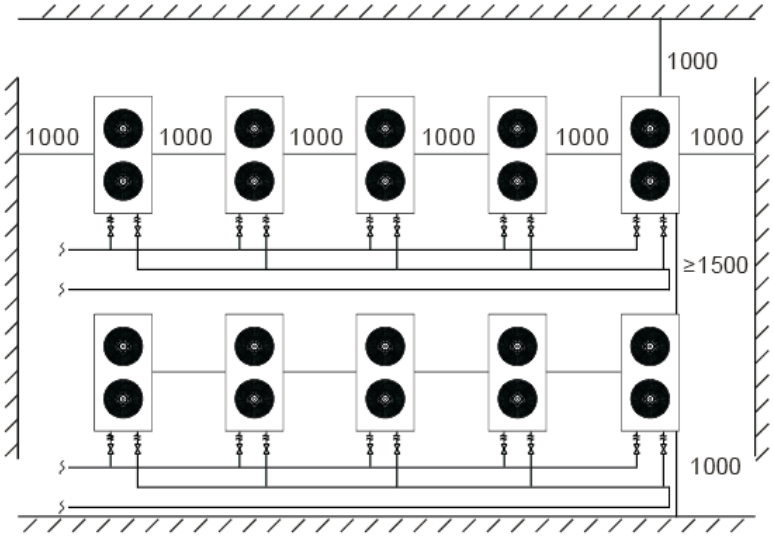
3.2 Swimming Pool Heat Pumps Location

The unit will perform well in any outdoor location provided that the following three factors are presented:

1. Fresh Air - 2. Electricity - 3. Pool filter piping

The unit may be installed virtually anywhere outdoors. For indoor pools please consult the supplier. Unlike a gas heater, it has no draft or pilot light problem in a windy area.

DO NOT place the unit in an enclosed area with a limited air volume, where the units discharge air will be re-circulated.
DO NOT place the unit to shrubs which can block air inlet. These locations deny the unit of a continuous source of fresh air which reduces it efficiency and may prevent adequate heat delivery.



3.3 How Close To Your Pool?

Normally, the pool heat pump is installed within 7.5 metres of the pool. The longer the distance from the pool, the greater the heat loss from the piping. For the most part ,the piping is buried. Therefore, the heat loss is minimal for runs of up to 15 meters(15 meters to and from the pump = 30 meters total), unless the ground is wet or the water table is high. A very rough estimate of heat loss per 30 meters is 0.6 kW-hour,(2000BTU) for every 5 ℃ difference in temperature between the pool water and the ground surrounding the pipe, which translates to about 3% to 5% increase in run time.

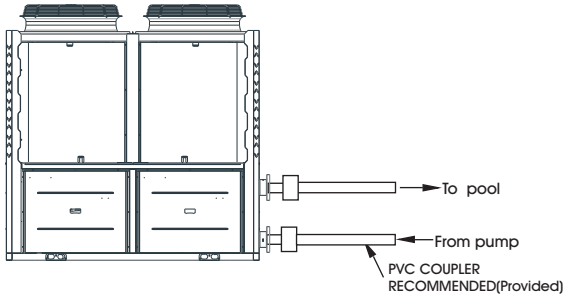
3.4 Swimming Pool Heat Pumps Plumbing

The Swimming Pool Heat Pumps exclusive rated flow titanium heat exchanger requires no special plumbing arrangements except bypass(please set the flow rate according to the nameplate). The water pressure drop is less than 10kPa at max. Flow rate. Since there is no residual heat or flame Temperatures, The unit does not need copper heat sink piping. PVC pipe can be run straight into the unit.

Location: Connect the unit in the pool pump discharge (return) line downstream of all filter and pool pumps, and upstream of any chlorinators, ozonators or chemical pumps.

Standard model have slip glue fittings which accept 40mm NB PVC pipe for connection to the pool or spa filtration piping. By using a 50 NB to 40NB you can plumb 50NB PVC piping

Give serious consideration to adding a quick coupler fitting at the unit inlet and outlet to allow easy draining of unit for winterizing and to provide easier access should servicing be required.



Condensation: Since the Heat pump cools down the air about 4 -5℃, water may condense on the fins of the horseshoe shaped evaporator. If the relative humidity is very high, this could be as much as several litres an hour. The water will run down the fins into the basepan and drain out through the barbed plastic condensation drain fitting on the side of the basepan. This fitting is designed to accept 20mm clear vinyl tubing which can be pushed on by hand and run to a suitable drain. It is easy to mistake the condensation for a water leak inside the unit.

NB: A quick way to verify that the water is condensation is to shut off the unit and keep the pool pump running. If the water stops running out of the basepan, it is condensation. AN EVEN QUICKER WAY IS to TEST THE DRAIN WATER FOR CHLORINE - if the is no chlorine present, then it's condensation.

3.INSTALLATION AND CONNECTION

3.5 Swimming Pool Heat Pumps Electrical Wiring

NOTE: Although the unit heat exchanger is electrically isolated from the rest of the unit, it simply prevents the flow of electricity to or from the pool water. Grounding the unit is still required to protect you against short circuits inside the unit. Bonding is also required.

The unit has a separate molded-in junction box with a standard electrical conduit nipple already in place. Just remove the screws and the front panel, feed your supply lines in through the conduit nipple and wire-nut the electric supply wires to the three connections already in the junction box (four connections if three phase). To complete electrical hookup, connect Heat Pump by electrical conduit, UF cable or other suitable means as specified (as permitted by local electrical authorities) to a dedicated AC power supply branch circuit equipped with the proper circuit breaker, disconnect or time delay fuse protection.

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

3.6 Initial startup of the Unit

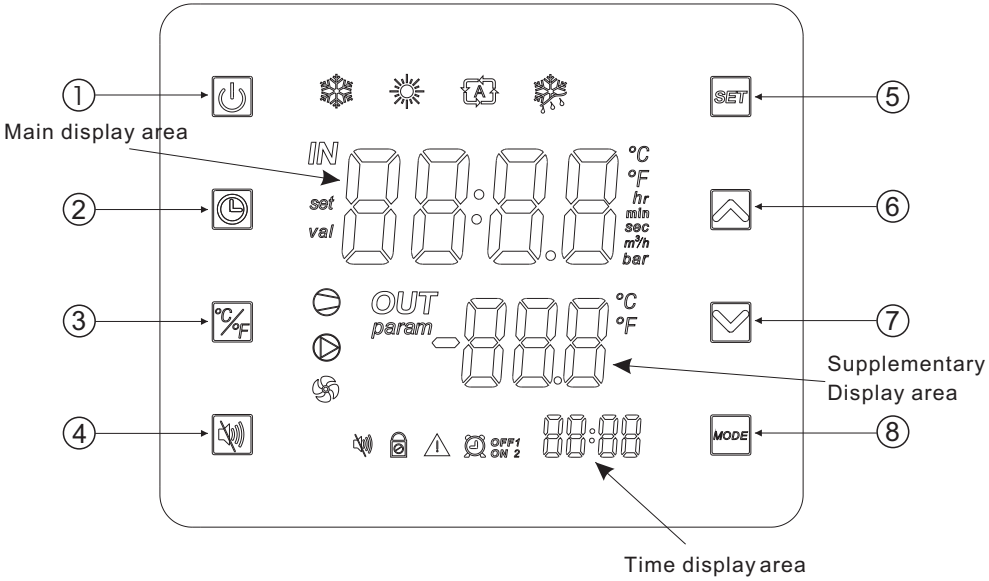
NOTE- In order for the unit to heat the pool or spa, the filter pump must be running to circulate water through the heat exchanger.

Start up Procedure - After installation is completed, you should follow these steps:
1. Turn on your filter pump. Check for water leaks and verify flow to and from the pool.
2. Turn on the electrical power supply to the unit, then press the key ON/OFF of wire controller, It should start in several seconds.
3. After running a few minutes make sure the air leaving the top(side) of the unit is cooler(Between 5-10 ℃)
4. With the unit operating turn the filter pump off. The unit should also turn off automatically,
5. Allow the unit and pool pump to run 24 hours per day until desired pool water emperature is reached. When the water-in temperature reach setting, The unit just shuts off. The unit will now automatically restart (as long as your pool pump is running)when the pool temperature drops more than 2℃ below set temperature.

Time Delay- The unit is equipped with a 3 minute built-in solid state restart delay included to protect control circuit components and to eliminate restart cycling and contactor chatter. This time delay will automatically restart the unit approximately 3 minutes after each control circuit interruption. Even a brief power interruption will activate the solid state 3 minute restart delay and prevent the unit from starting until the 5 minute countdown is completed. Power interruptions during the delay period will have no effect on the 3 minute countdown.

4.USAGE AND OPERATION

1.Function introduction of line controller



1）Button function

No.	Button Icon	Button Name	Function
①		Power On/off	Using for power on/off, cancel present operation And back to the last operation
②		Time	Using for time setting and timing setting
③		Temp unit Switch	Using for switching between fahrenheit and celcius
④		Mute	Using for turning on/off mute function, turn off timing Low speed function.(referring to actual units)
⑤	SET	Setting	Using for temp setting and saving setting
⑥		Up	Using for choose upper page or increase values
⑦		Down	Using for choose following page or decrease values
⑧	MODE	Mode	Using for switching mode

2）Display function

Icon	Meaning	Function
	Cooling	Display at cooling mode
	Heating	Display at heating mode
	Automatic Mode	Display at automatic mode
	Defrosting	Lighted on when defrosting
IN	Water inlet	Lighted on when main display area shows inlet water temp
OUT	Water outlet	Lighted on when supplementary display area shows outlet water temp
set	Setting	Lighted on when parameters are adjustable
val	Parameter value	Lighted on when main display area shows parameter value
param	Parameter category	Lighted on when supplementary display area shows parameter Category
°C	Celcius	Lighted on when the main or auxiliary area display degree Centigrade parameter
°F	Fahrenheit	Lighted on when the main or auxiliary area display degree Fahrenheit parameter
hr	Hour	Display when the main area displays hour parameter.
min	Minute	Display when the main area displays minute parameter.
sec	Second	Display when the main area displays second parameter.
m^3/h	Water flow	Display when the main area displays the rate of flow parameter.
bar	Pressure	Display when the main area displays pressure parameter.
	Compressor	Display while the compressor is on
	Water pump	Display while the water pump is on
	Fan motor	Display while the fan motor is on
	Mute	Display while the function or timing low speed is on
	Lock	Display when keyboard is locked
	Fault	Display when fault occurs
	Timing power on	Display when timing power on started
	Timing power off	Display when timing power off started

4.USAGE AND OPERATION

4.2Usage of the controller

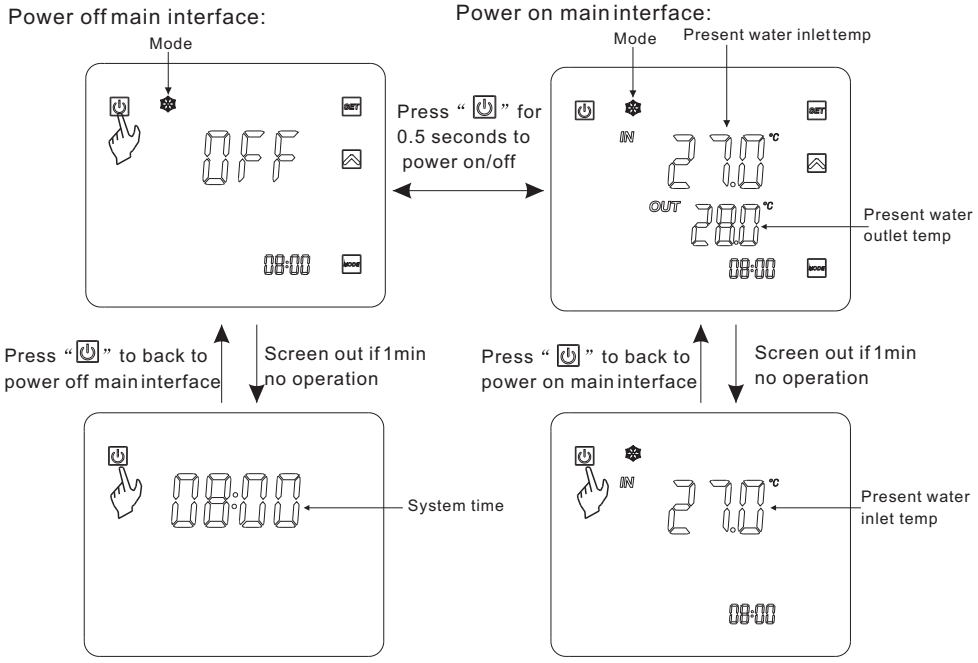
2.1 Power on/off

At the power on state, press " ⏻ " for 0.5s to power off, the screen displays units mode, main display area shows OFF;

At the power off state, press " ⏻ " for 0.5s to power on, the screen displays units mode, main display area shows inlet water temp, supplementary display area shows outlet water temp.

Attention: power on/off operation could only be done at power on/off main interface.

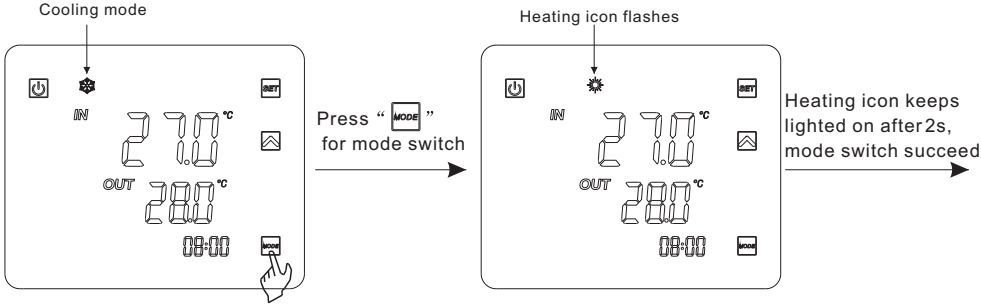
For example:

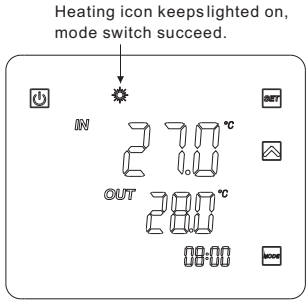


2.2 Mode switch

At power on/off main interface, continually press " MODE " to circularly switch between heating, cooling and automatic mode.

Attention: If your units are single cooling or single heating type, the mode switch is invalid.





2.3 Target temp setting

You can set suitable cooling target temp, heating target temp, automatic mode target temp (Target temp default referring to parameter table)

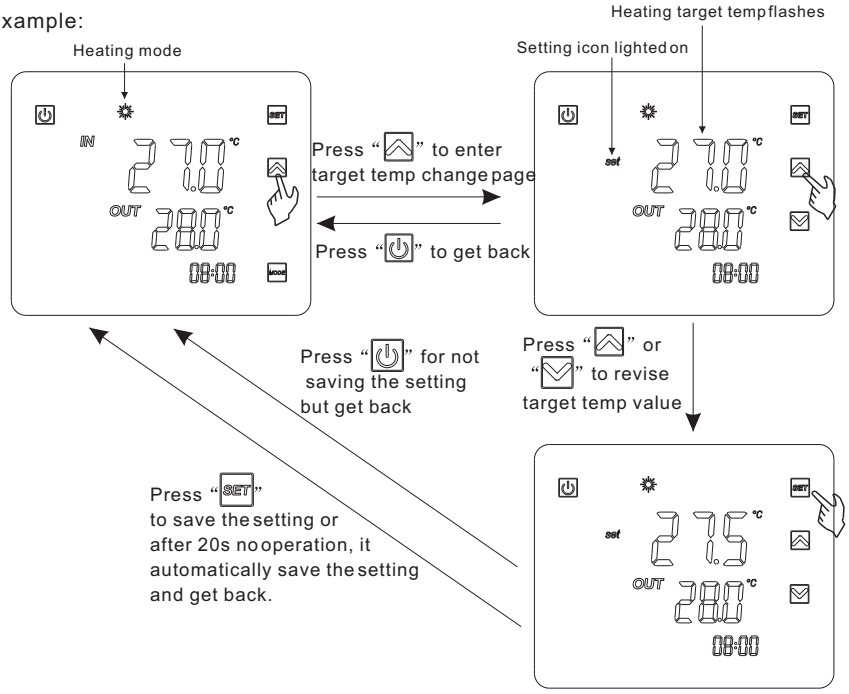
Automatic mode target temp: when the actual inlet water temp higher than the target temp, the units start cooling; When the actual inlet water temp lower than the target temp, the units start heating(target temp default referring to parameter table)

At power on/off main interface, press " " present mode target temp flashes, press " " to make the value increase. Press " " to make the value dncrease. Press " SET " to save the setting and back to power on/off main interface

Press " " will not save the setting but get back to power on/off main interface

Attention：20s no operation, the system will remember the parameter setting and back to power on/off main interface.

For example:



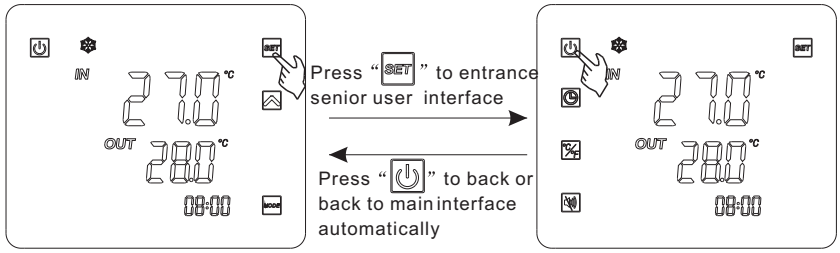
2.4 Advanced user interface

At the advanced user interface, you can set the time of system, switch the temperature from centigrade to fahrenheit, sound on/off, timer setting, status inquiry.

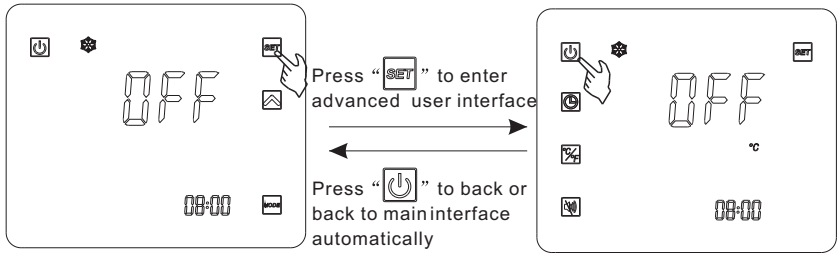
On the main interface, press " SET " to entrance senior interface.

For example:

Power on main interface:



Power off main interface:

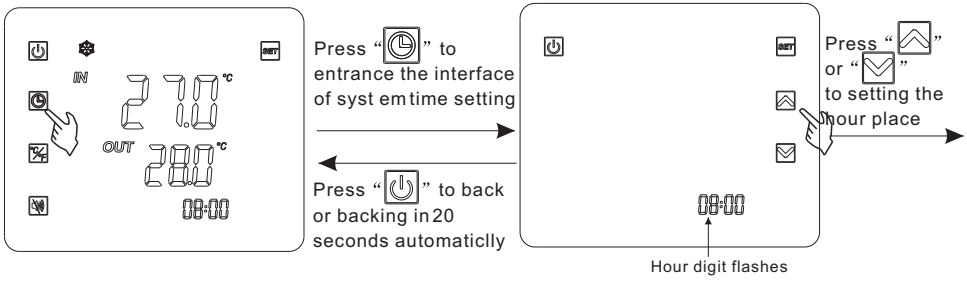


2.4.1 System time setting

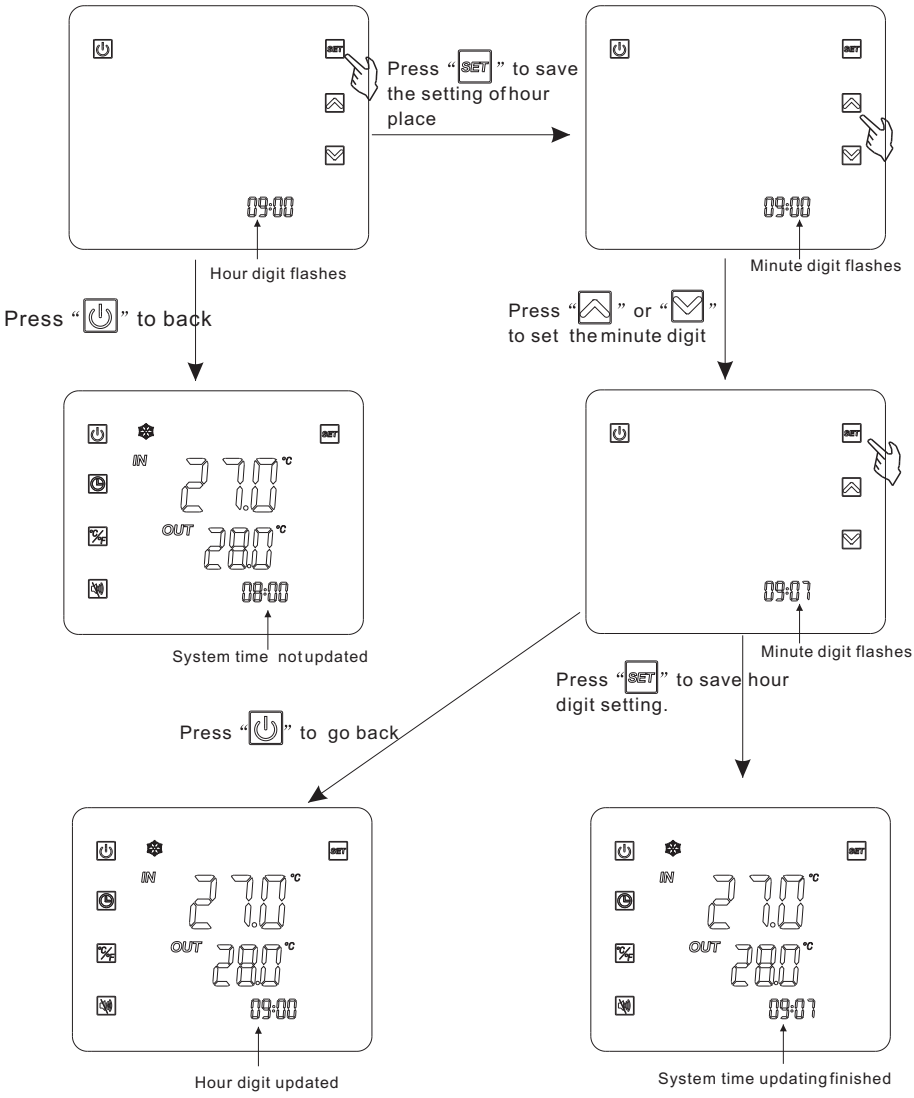
At the advanced interface, press the clock " " ,and the hour digit start to flash, and then press " " or " " to change the hour, press " SET " to save the change, use the same way to change the minute.

During the setting, press " " to exit system time setting and will not save the setting before, if 20s no operation, the system will remember the setting automatically and back to the power on/off interface.

For example:



4.USAGE AND OPERATION



2.4.2 Timing power on/off and timing low speed setting

1). Timing power on/off setting

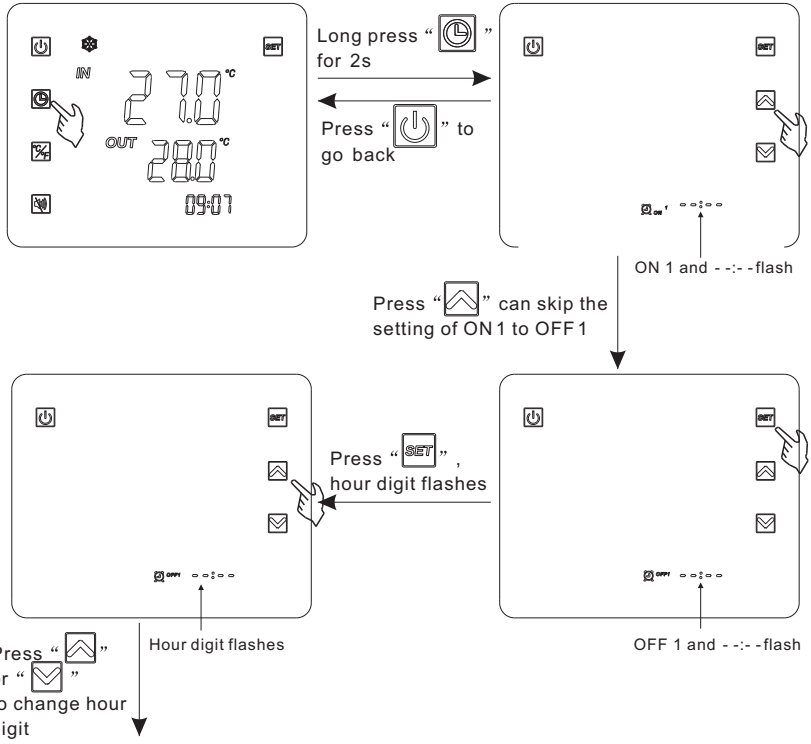
At the advanced user interface, long press "⏲" for 2s to enter timer 1 power on setting interface, ON 1 in the timing display area and the time display area will flash (press "∧" or "∨" to change between OFF 1, ON 2, OFF 2 and timing low speed, press "SET", hour digit flashes, the setting method is the same as "2.4.1 System time setting". The ON1 power on time of timer 1 setting finished, OFF 1 will flash automatically, at this time, the OFF 1 ending time of timer 1 can be set, setting method is the same as ON1.

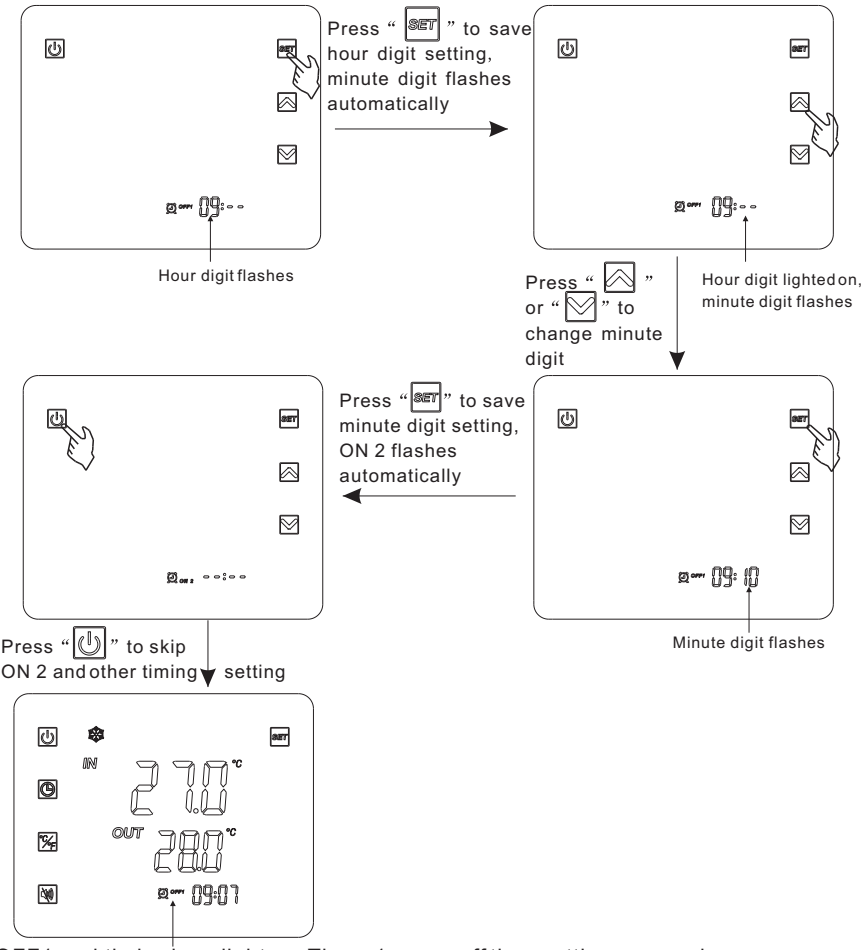
If you do not need to set the OFF1 power off time of timer 1, after finish the setting of On1 power on time of timer 1, OFF1 flashes, at this time, press "⏻" to skip the setting of OFF1 power off time of timer1 and exit.

20s no operation, the system will remember the setting automatically and back to the power on/off interface.

Cancel the timing: it should be done during the hour or minute digit flashing state, press "⏻", referring to 2.4.3 for details.

For example:



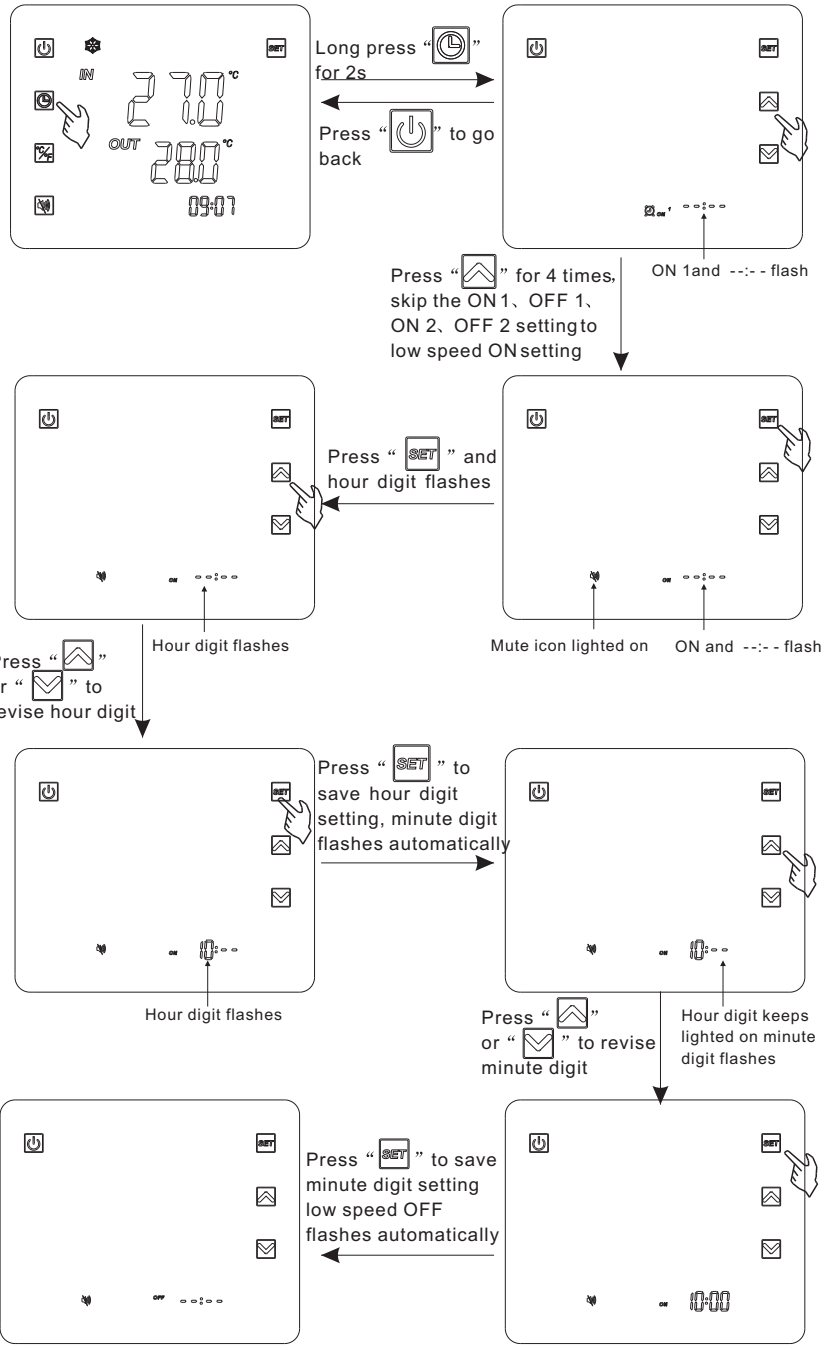


2). Low speed timing and mute setting

At night or break time, if the units noise bothered the resting, low speed timing and mute function can be turned on.

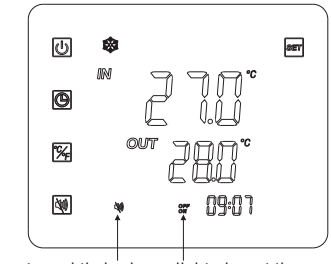
At the advanced users interface, long press " " for 2s to enter timer 1 power on setting interface. ON 1 in the timing display area and the time display area will flash, press " " for 4 times to change to timing low speed start time setting, press " " again to change to timing low speed ending time setting, press " SET " , hour digit flashes, method is the same as "Timing power on/off setting" .Cancel timing low speed setting: at the advanced user interface, press " " can cancel timing low speed setting

4.USAGE AND OPERATION



The setting of low speed OFF is the same as low speed ON

When timing low speed setting finished, mute and timing icons lighted on at the same time:

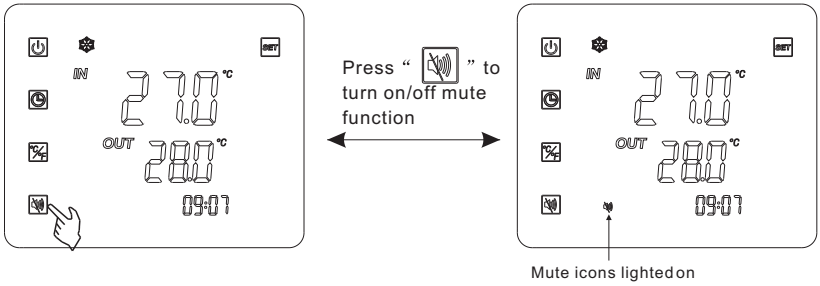


mute and timing icons lighted on at the same time

Mute function: same to timing low speed except that the mute function will be turned off after 8h if the users have not turned off it for a long time.

At the advanced user interface, press " " to turn on mute function. And press " " again to turn off.

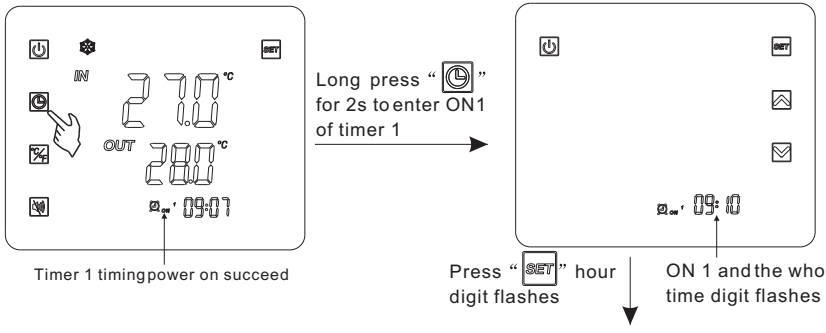
Attention: if turned on mute and timing low speed at the same time, when press " ", it will cancel both the two functions. For example

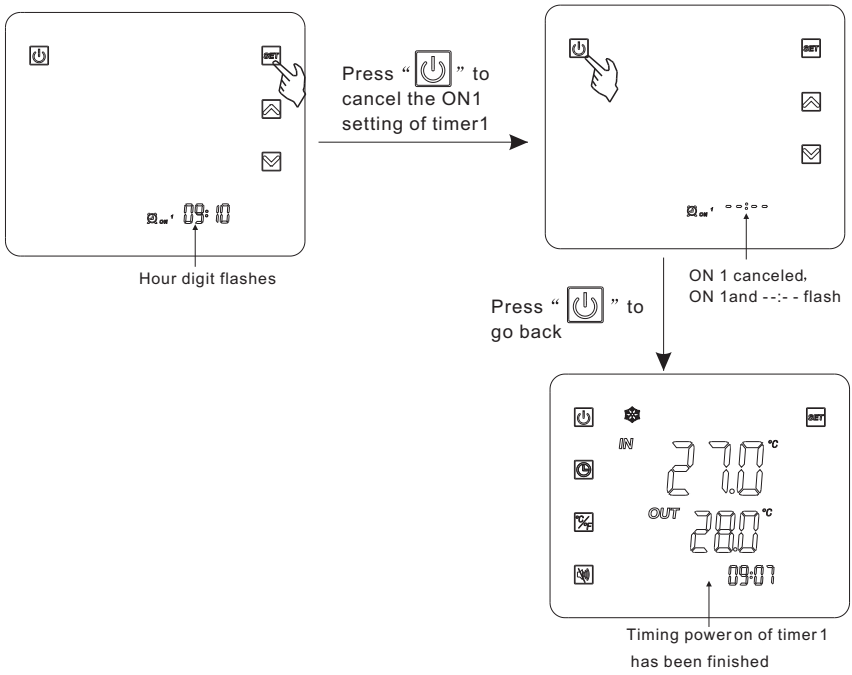


2.4.3 Cancel the timing setting

The hour or minute must be in flashing when cancel the timing setting. Press " " to cancel.

For example:

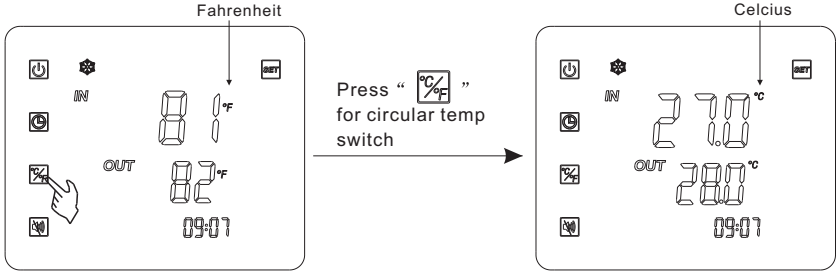




2.4.4 Switch between Fahrenheit and Celcius

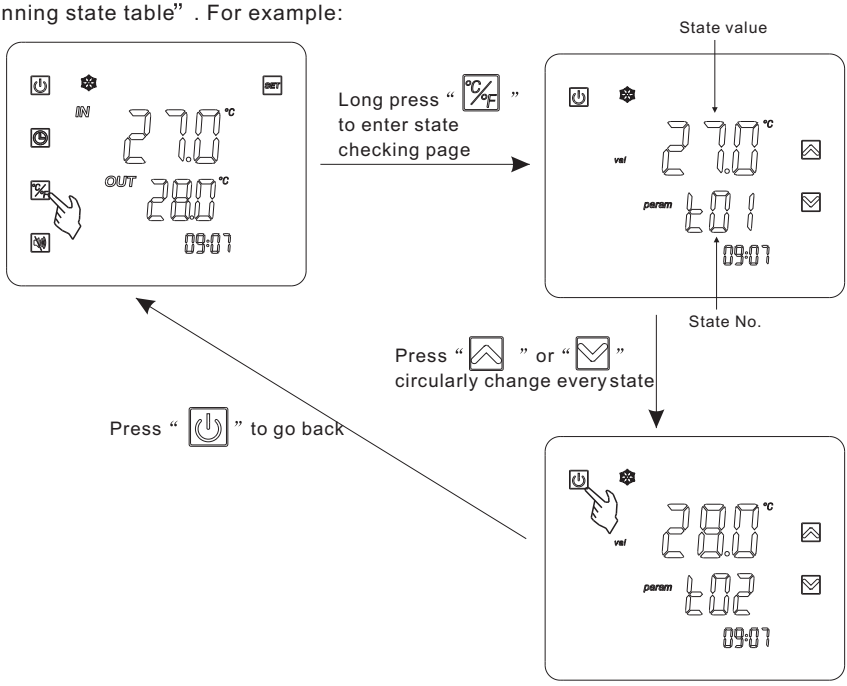
At the advanced user interface, press " " to circularly change between fahrenheit and celcius.

For example:



2.4.5 Units running state check

At the advanced user interface, long press " ℃/℉ " for 2s to enter running state page, press " ⌃ " or " ⌄ " to circularly change every state. Specific meaning please refer to "Running state table". For example:

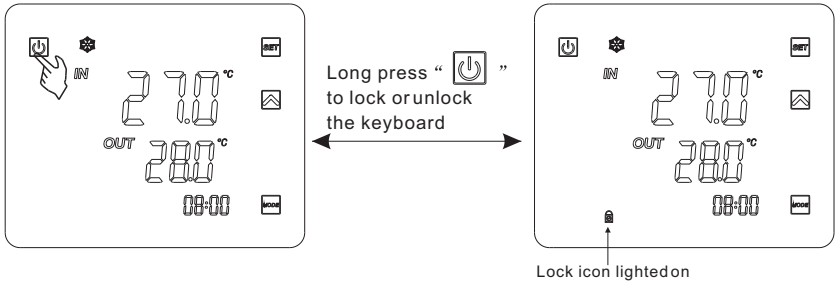


2.4.6 Keyboard lock

In order to avoid mis-operation by others, please lock the keyboard when finished the setting.

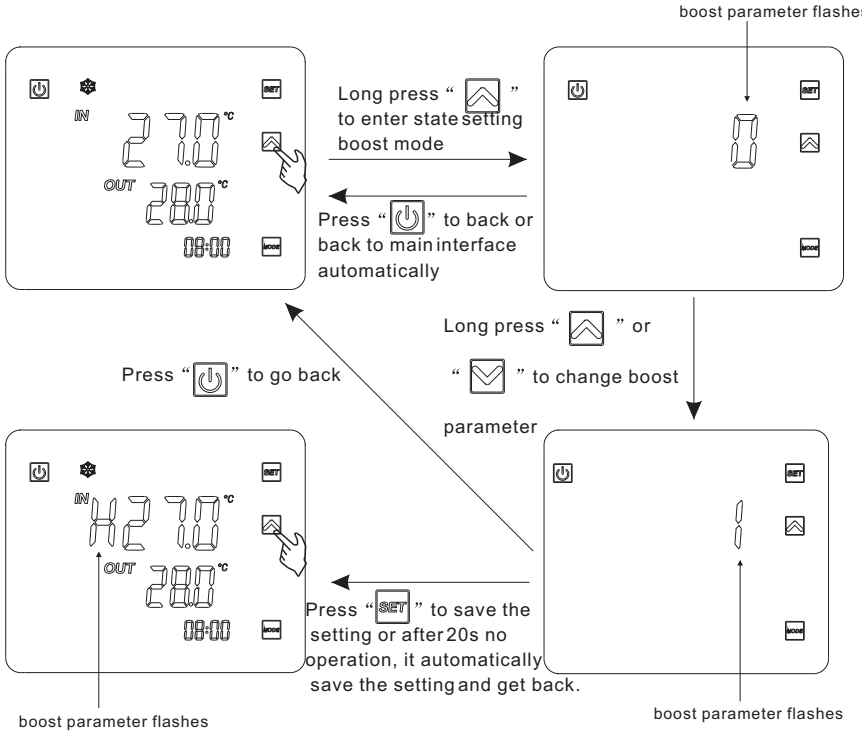
At power on/off main interface, long press " ⏻ " for 5s to lock the keyboard. At the keyboard locked state, long press " ⏻ " for 5s to unlock it.

Attention: if the units enter the alert interface or recharge it after power out, the keyboard will be unlocked automatically.



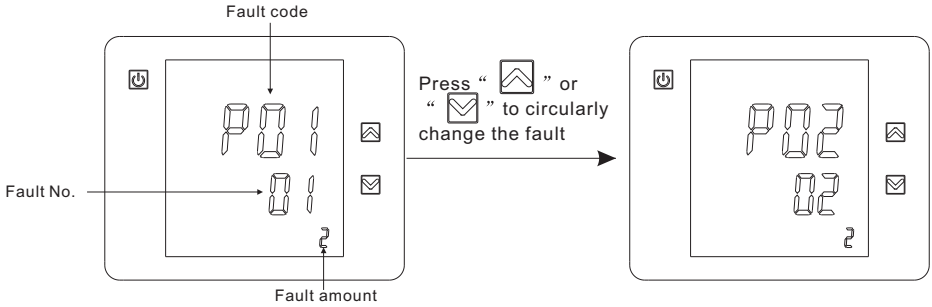
2.4.7 Setting boost mode

At power on/off main interface, long press " ^ " to enter state setting boost mode.
At the setting boost state, press " ^ " or " v " to change it.



2.4.8 Fault display

When the units break down, it will display the relevant code according to the fault reason. Refer to the "Fault table" for detailed code meaning. For example:



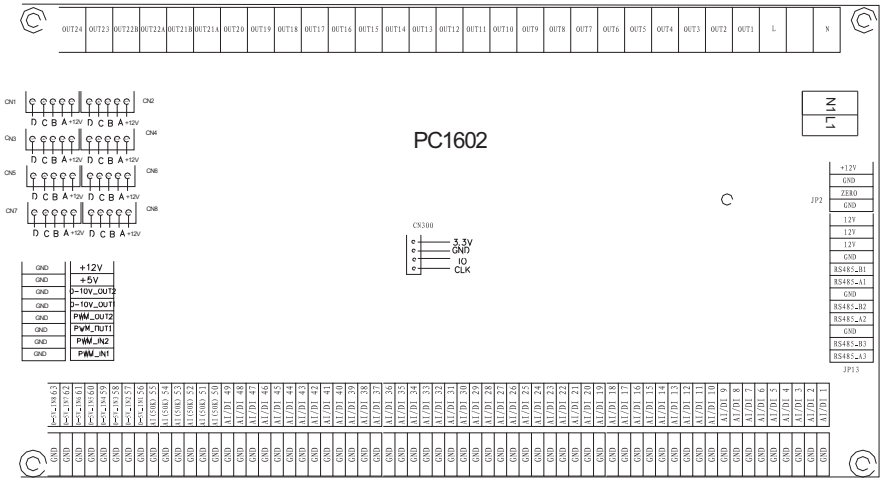
4.3 Parameter table

Meaning	Default	Remark
Heating inlet target temp.	27℃	Adjustable
Cooling inlet target temp.	27℃	Adjustable
Auto inlet target temp.	27℃	Adjustable

4.4 Running status table

No.	Status	Meaning	Status No.	Status Value
1	t	Return air temp.	t01	Actual detected value
2		Inlet water temp.	t02	
3		outlet water temp.	t03	
4		Coil temp.	t04	
5		Ambient temp.	t05	
6		Exhaust temp.	t06	
7	S	Emergency switch	S01	OPEN / CLOS
8		Water flow switch	S02	
9		Low pressure switch	S03	
10		High pressure switch	S04	
11		Mode switch	S05	
12		Master-slave unit switch	S06	
13	O	Compressor output	O01	ON / OFF
14		Water pump output	O02	
15		4-way-valve output	O03	
16		Fan high-speed output	O04	
17		Fan low-speed output	O05	
18		Step number for EEV	O06	Actual detected value
19		Inlet water flow volume	O07	Actual detected value

4.5 Controller interface diagram and definition



5. MAINTENANCE AND INSPECTION

- Check the water supply device and the release often. You should avoid the condition of no water or air entering into system, as this will influence unit's performance and reliability. You should clear the pool/spa filter regularly to avoid damage to the unit as a result of the dirty of clogged filter.
- The area around the unit should be dry, clean and well ventilated. Clean the side heating exchanger regularly to maintain good heat exchange as conserve energy .
- The operation pressure of the refrigerant system should only be serviced by a certified technician .
- Check the power supply and cable connection often,. Should the unit begin to operate abnormally, switch it off and contact the qualified technician.
- Discharge all water in the water pump and water system ,so that freezing of the water in the pump or water system does not occur. You should discharge the water at the bottom of water pump if the unit will not be used for an extended period of time. You should check the unit thoroughly and fill the system with water fully before using it for the first time after a prolonged period of no usage.

6.APPENDIX

6.1 Caution & Warning

1. The unit can only be repaired by qualified installer centre personnel or an authorised dealer(for Europe market).
2. This appliance can used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved(for Europe market).
   Children shall not play with the appliance .Cleaning and user maintenance shall not be made by children without supervision.
3. Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.
4. If the supply cord is damaged, it must be replaced by the manufacturer or our service agent or similarly qualified person in order to avoid a hazard.
5. Directive 2002/96/EC (WEEE):
   The symbol depicting a crossed-out waste bin that is underneath the appliance indicates that this product, at the end of its useful life, must be handled separately from domestic waste, must be taken to a recycling centre for electric and electronic devices or handed back to the dealer when purchasing an equivalent appliance.
6. Directive 2002/95/EC (RoHs): This product is compliant with directive 2002/95/EC (RoHs) concerning restrictions for the use of harmful substances in electric and electronic devices.
7. The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas , fire can be occur.
8. Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire.
9. The heat pump located inside the unit is equipped with an over-load protection system. It does not allow for the unit to start for at least 3 minutes from a previous stoppage.
10. The unit can only be repaired by the qualified personnel of an installer center or an authorized dealer(for North America market).
11. Installation must be performed in accordance with the NEC/CEC by authorized person only (for North America market).
12. Use supply wires suitable for 75℃.
13. Caution: Single wall heat exchanger is not suitable for potable water connection.
14. The appliance shall be installed in accordance with national wiring regulations.
15. The appliance must be fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III conditions, and these means must be incorporated in the fixed wiring in accordance with the wiring rules.
16. An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

6.2 Cable specification

(1) Single phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	2×1.5mm^2	1.5mm^2	20A	30mA less than 0.1 sec	n×0.5mm^2
10~16A	2×2.5mm^2	2.5mm^2	32A	30mA less than 0.1 sec	
16~25A	2×4mm^2	4mm^2	40A	30mA less than 0.1 sec	
25~32A	2×6mm^2	6mm^2	40A	30mA less than 0.1 sec	
32~40A	2×10mm^2	10mm^2	63A	30mA less than 0.1 sec	
40~63A	2×16mm^2	16mm^2	80A	30mA less than 0.1 sec	
63~75A	2×25mm^2	25mm^2	100A	30mA less than 0.1 sec	
75~101A	2×25mm^2	25mm^2	125A	30mA less than 0.1 sec	
101~123A	2×35mm^2	35mm^2	160A	30mA less than 0.1 sec	
123~148A	2×50mm^2	50mm^2	225A	30mA less than 0.1 sec	
148~186A	2×70mm^2	70mm^2	250A	30mA less than 0.1 sec	
186~224A	2×95mm^2	95mm^2	280A	30mA less than 0.1 sec	

(2) Three phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	3×1.5mm^2	1.5mm^2	20A	30mA less than 0.1 sec	n×0.5mm^2
10~16A	3×2.5mm^2	2.5mm^2	32A	30mA less than 0.1 sec	
16~25A	3×4mm^2	4mm^2	40A	30mA less than 0.1 sec	
25~32A	3×6mm^2	6mm^2	40A	30mA less than 0.1 sec	
32~40A	3×10mm^2	10mm^2	63A	30mA less than 0.1 sec	
40~63A	3×16mm^2	16mm^2	80A	30mA less than 0.1 sec	
63~75A	3×25mm^2	25mm^2	100A	30mA less than 0.1 sec	
75~101A	3×25mm^2	25mm^2	125A	30mA less than 0.1 sec	
101~123A	3×35mm^2	35mm^2	160A	30mA less than 0.1 sec	
123~148A	3×50mm^2	50mm^2	225A	30mA less than 0.1 sec	
148~186A	3×70mm^2	70mm^2	250A	30mA less than 0.1 sec	
186~224A	3×95mm^2	95mm^2	280A	30mA less than 0.1 sec	

When the unit will be installed at outdoor, please use the cable which can against UV.

Note:

Note:

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