



ATECPOOL
INTERNACIONAL ESPAÑA

SWIMMING POOL HEAT PUMP UNIT

Installation & Instruction Manual

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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. PREFACE

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°C , (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		AMHP110
Cooling Capacity	KW	8.2-18.4
	BTU/h	27978-62781
Cooling Power Input	kW	2.02-6.28
Heating Capacity	kW	12.2-65
	BTU/h	41626-221780
Heating Power Input	kW	0.76-10.65
Running Current	A	21
Power Supply		380V~415V~/3PH~/50Hz
Compressor Quantity		1
Compressor		Rotary
Fan Quantity		2
Fan Power Input	W	200×2
Fan Rotate Speed	RPM	850
Fan Direction		vertical
Noise	dB(A)	60
Water Connection	mm	63
Water Flow Volume	m ³ /h	25
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:53°C/43°C ,Inlet water temp:35°C/26°C

Heating:Outdoor air temp:27°C/15°C ,Inlet water temp:26°C

Models, parameters, performance will change for the improvement of product, please forgive for

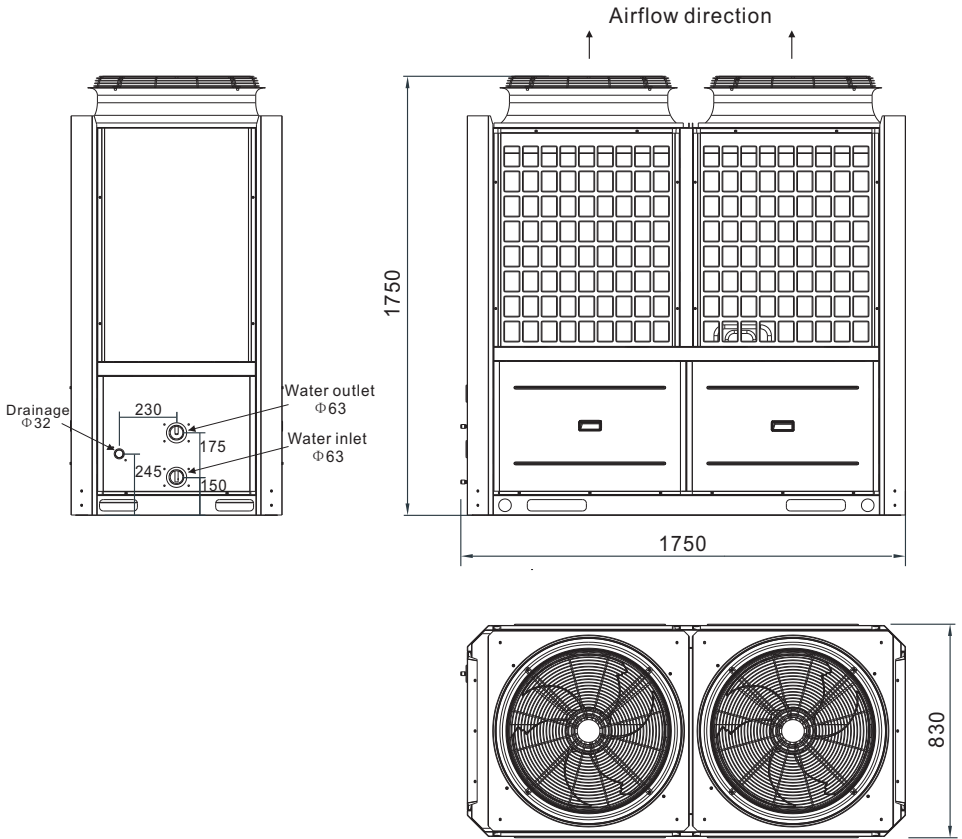
no especial notice. Specific parameters is on the base of nameplate

2.SPECIFICATION

2.2 The dimensions for Swimming Pool Heat Pump Unit

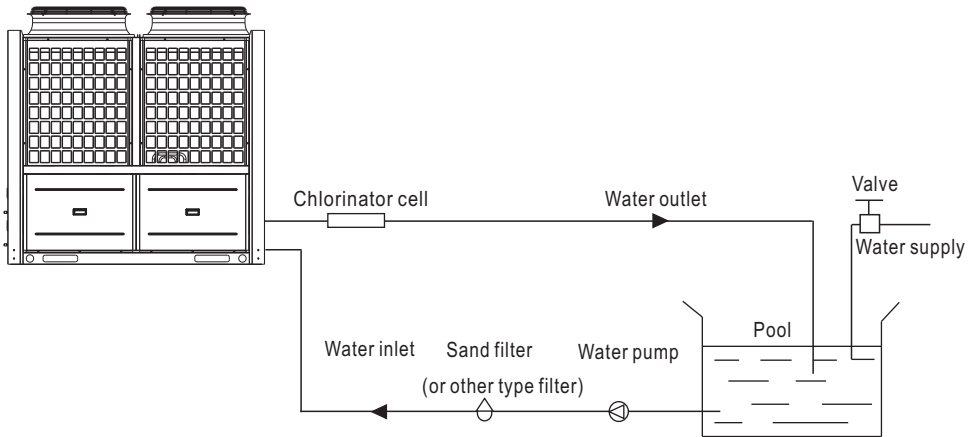
Model: AMHP110

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.INSTALLATION AND CONNECTION

3.2 Swimming Pool Heat Pumps Location

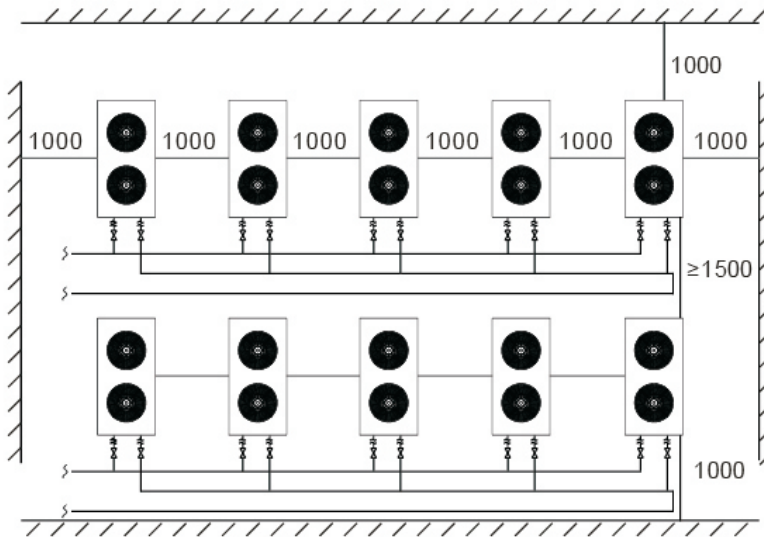
The unit will perform well in any outdoor location provided that the following three factors are presented:

- 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 °C 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.INSTALLATION AND CONNECTION

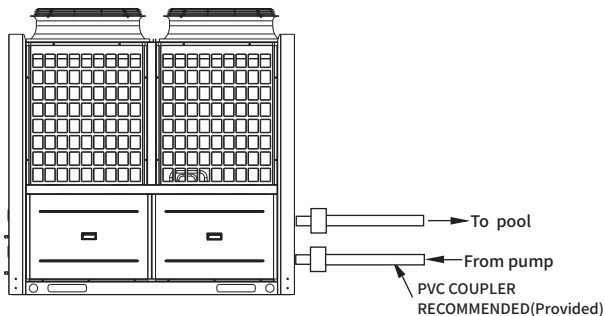
3.4 Swimming Pool Heat Pumps Plumbing

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°C, 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 there 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.

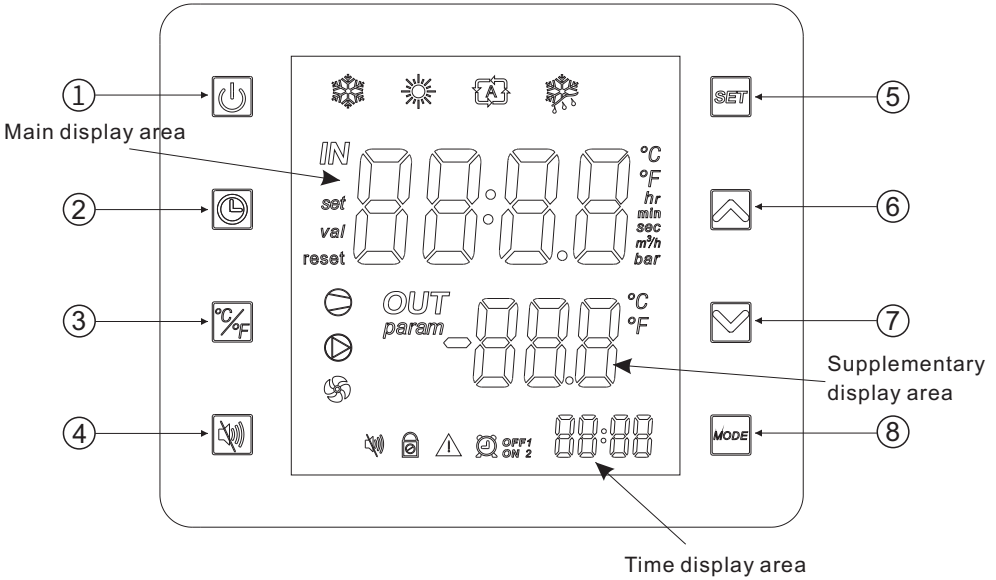
Start up Procedure - After installation is completed, you should follow these steps:

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 °C)
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 temperature 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°C 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.

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 Celsius
④		Mute	Using for turning on/off mute function, turn off timing mute function.(referring to actual units)
⑤		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	Using for switching mode

USAGE AND OPERATION


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
reset	Parameter recovery	Lighted on when parameters are uploaded and downloaded
param	Parameter category	Lighted on when supplementary display area shows parameter Category
°C	Celsius	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

USAGE AND OPERATION

2. Usage of the controller

2.1 Power on/off

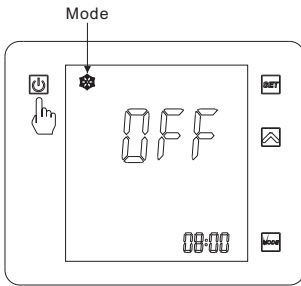
At the power on state, press  for 0.5s to power off, the screen displays units mode, main display area shows OFF.


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.

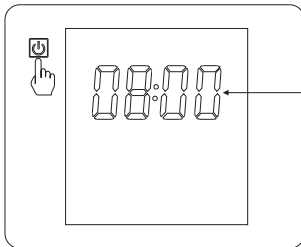
For example:

Power off main interface:

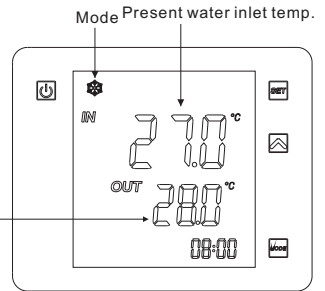



Press  to back to power off main interface.

Screen out if no operation for 1min.

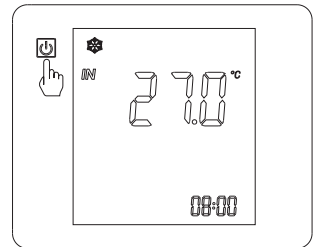



Power on main interface:



Press  to back to power on main interface.

Screen out if no operation for 1min.



Press  for 0.5 s to power on/off

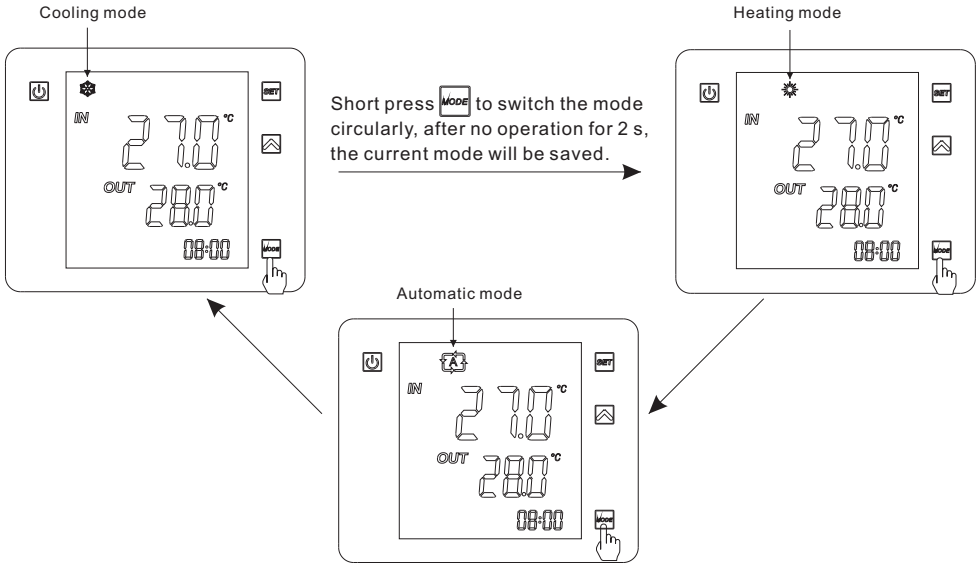
Present water outlet temp.

USAGE AND OPERATION

2.2 Mode switch

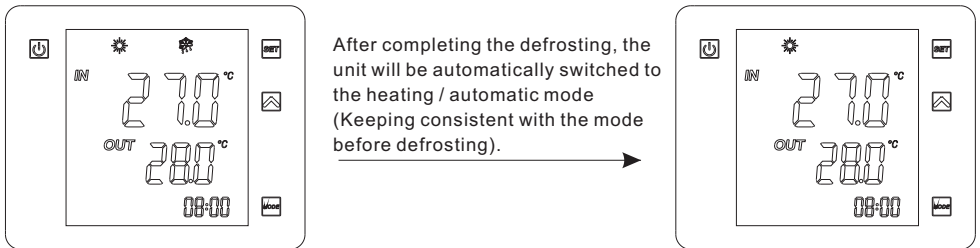
At power on/off main interface, continually press **MODE** to circularly switch among cooling, heating and automatic mode.

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



Operation descriptions:

- 1). Mode switch operation can only be conducted in the main interface.
- 2). When the unit is under the defrosting state, the defrosting symbol is on, with the display interface as follows:



Notes:

During the defrosting, mode switch is available. And when switching the mode, the unit will not work under a new mode until defrosting is completed.

USAGE AND OPERATION

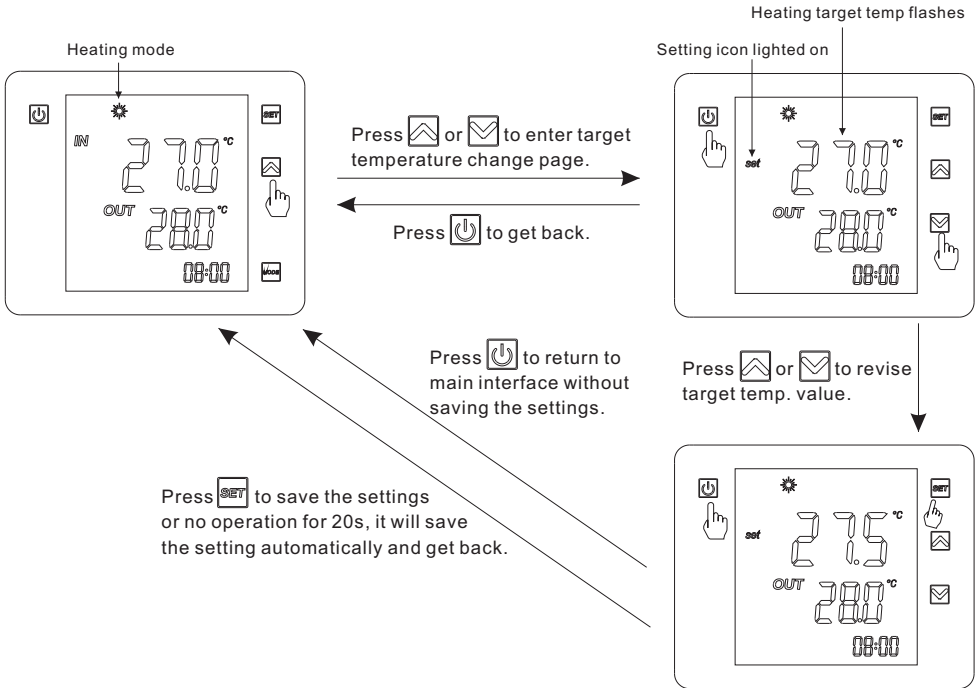
2.3 Target temp. setting

At power on/off main interface, press or and present mode target temp. flashes, press to make the value increase. Press to make the value decrease. Press 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: If there is no operation for 20s, the system will remember the settings and back to power on/off main interface.

For example:




Remark:

Operation	Short press or to change each time	Long press or to change each time
Range of temp. variation	0.5°C	0.5°C

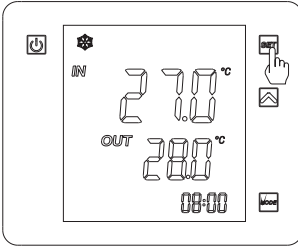
USAGE AND OPERATION


2.4 Advanced user interface


At the advanced user interface, you can set the time of system, sound on/off, timer setting. At the main interface, press  to enter advanced user interface.

For example:

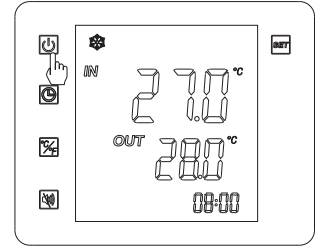
Power on main interface:



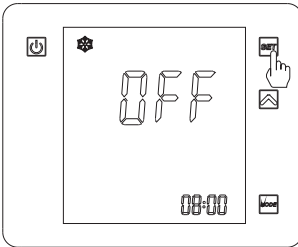
Press  to enter the advanced user interface.


Press  to back to power on interface automatically.


Advanced user interface:



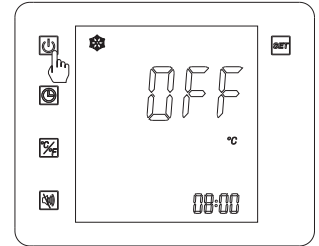
Power off main interface:



Press  to enter the advanced user interface.


Press  to back to power off interface automatically.

Advanced user interface:



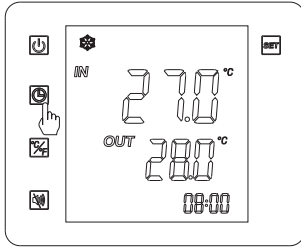
2.4.1 System time setting

At the advanced interface, press the clock , and the hour digit start to flash, and then press  or  to change the hour, press  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 settings, if no operation for 20s, the system will remember the settings automatically and back to the power on/off interface.

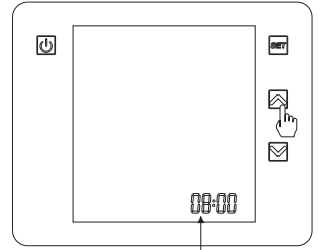
For example:

USAGE AND OPERATION



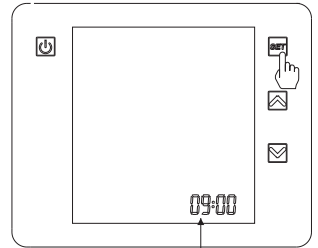
Press to enter the interface of system time setting.

Press or no operation for 20s to back to the power on/off interface.



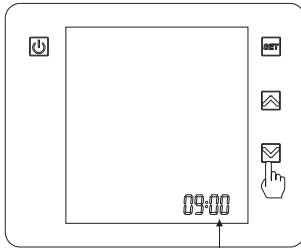
Hour digit flashes

Press or to set the hour digit.



Hour digit flashes

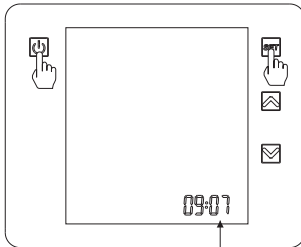
Press to go back.



Press to save the settings of hour digit.

Press or to set the minute digit.

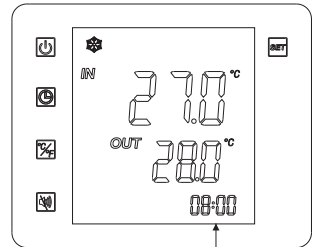
Minute digit flashes



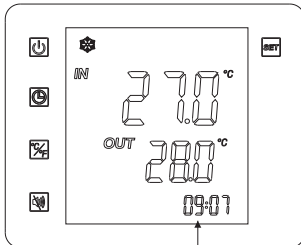
Minute digit flashes

Press to save the minute digit setting.

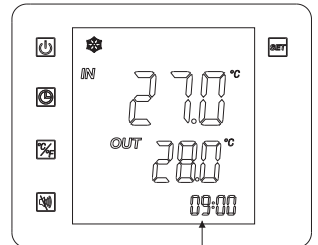
Press to go back.



System time is not updated



System time update finished








Hour digit update

USAGE AND OPERATION

2.4.2 Timing power on/off and timing mute setting


1). Timing power on/off setting

At the advanced user interface, 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 among ON1, OFF 1, ON 2, OFF 2 and timing low speed. Press  and then 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.

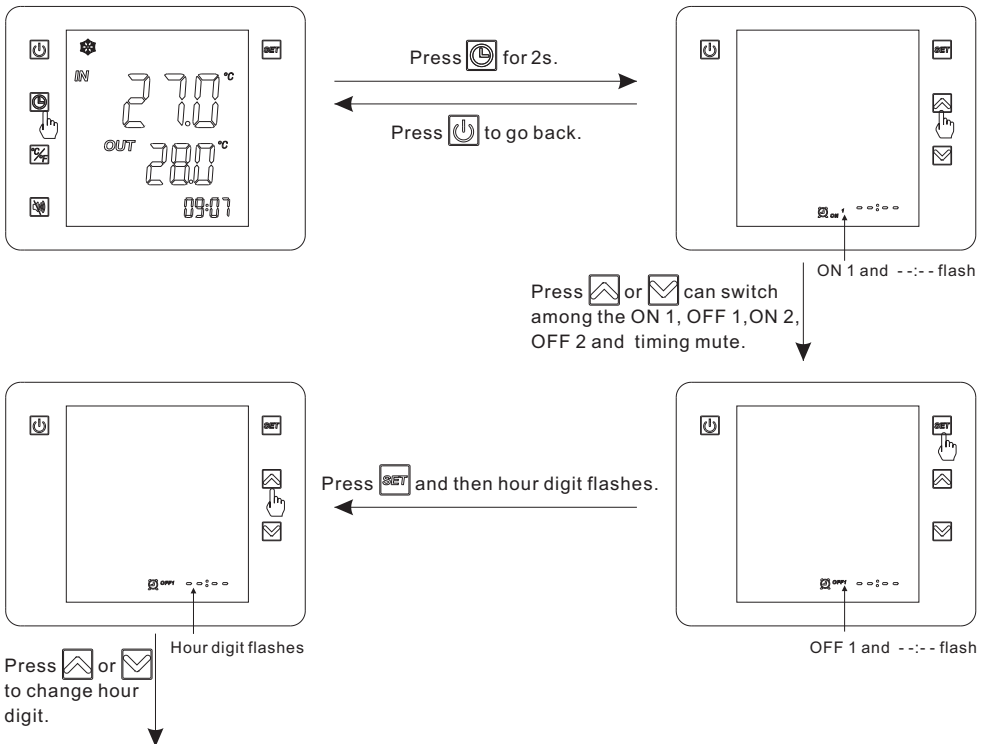
If you do not need to set the OFF1 power off time of timer 1, after finishing the setting of On1 power on time of timer 1, OFF1 flashes , at this time, press  to skip the setting of OFF1 power off time of timer 1 and exit.

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

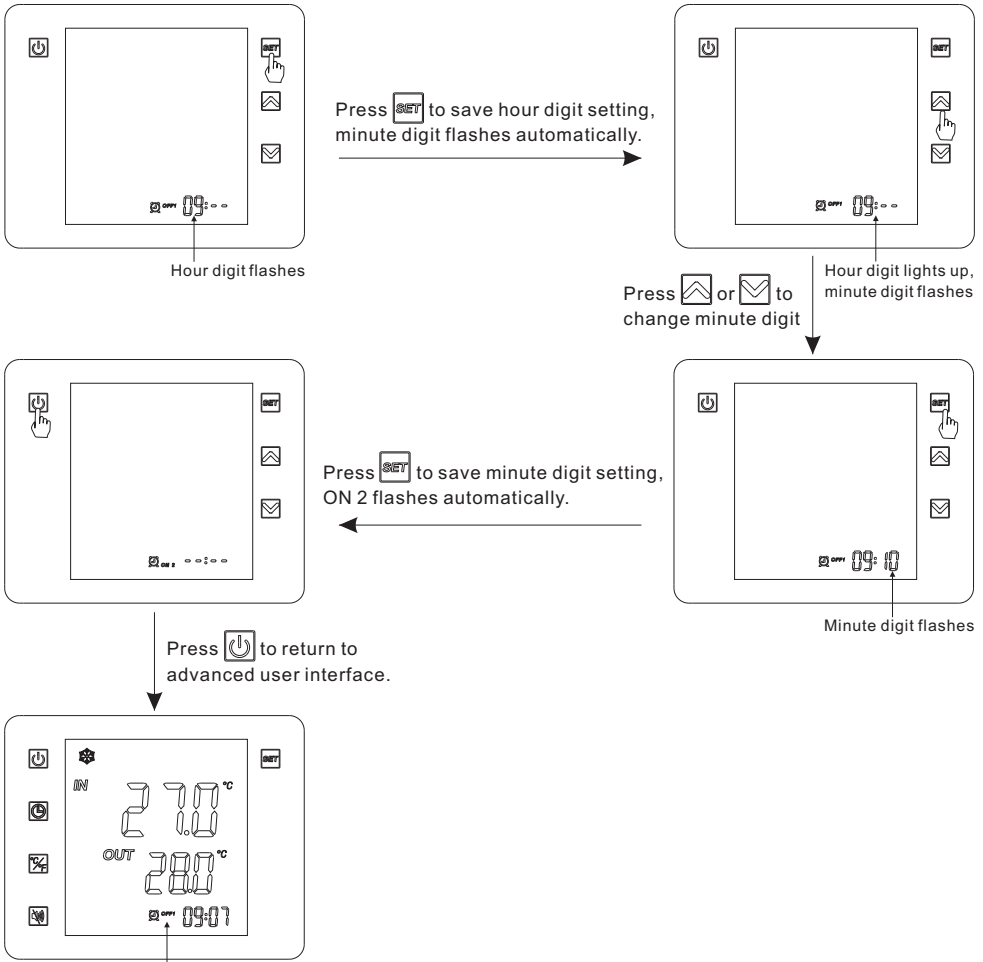
Cancel the timing:

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

For example:



USAGE AND OPERATION



OFF1 and timing icon light on, Timer 1 power off time setting succeed.

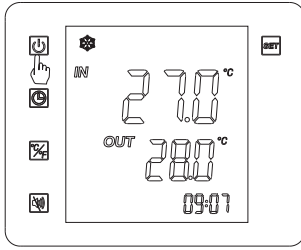
The units will be power off at 9:10 automatically, meanwhile, OFF 1 and timing icon light off.

Timing power off mission accomplished.

2). Timing mute setting

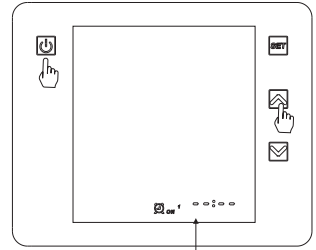
At the advanced users interface, long press **⏻** for 2s to enter timer 1 power on setting interface. ON 1 in the timing display area and the time display area will flash, press **▲** for 4 times to change to timing mute start time setting, press **▲** again to change to timing mute ending time setting,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

USAGE AND OPERATION

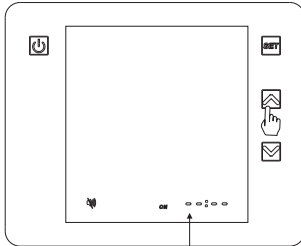


Press for 2s.

Press to go back.

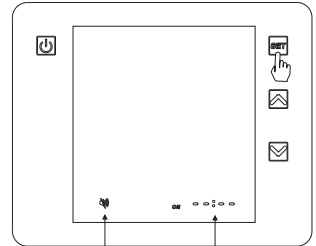


Press for 4 times, skip the ON 1, OFF 1, ON 2, OFF 2 setting to mute ON setting.

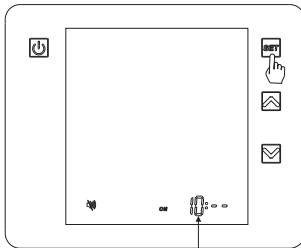


Press or to revise hour digit.

Press and then hour digit flashes.

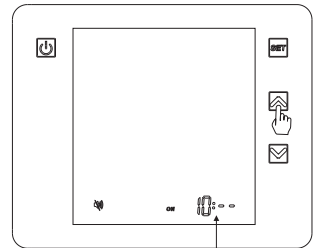


Mute icon lighted on ON and --- flash



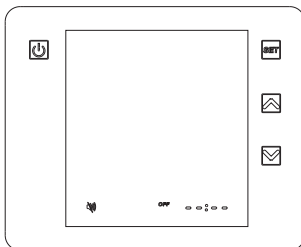
Hour digit flashes

Press to save hour digit setting, minute digit flashes automatically.

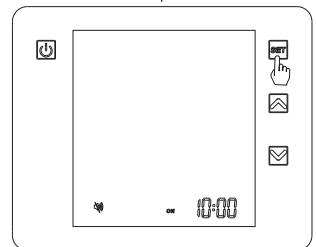


Press or to revise minute digit.

Hour digit keeps lighted on minute digit flashes



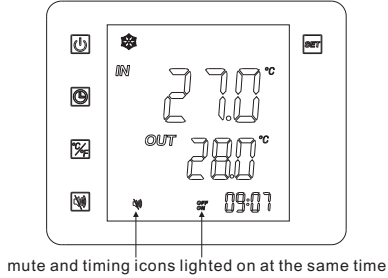
Press to save minute digit setting mute OFF flashes automatically.





The setting of mute OFF is the same as mute ON.


USAGE AND OPERATION

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

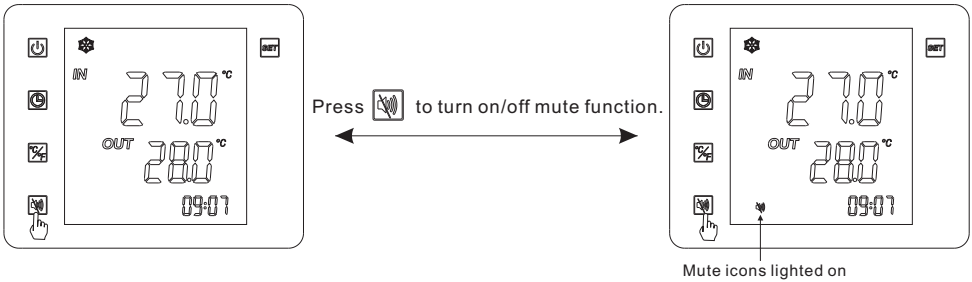


Mute function: The same as timing mute, but if the user does not turn off the mute function for a long time, it will turn off after 8 hours.

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


Attention: if turn on mute and timing mute at the same time, when press , it will cancel both the two functions.

For example:

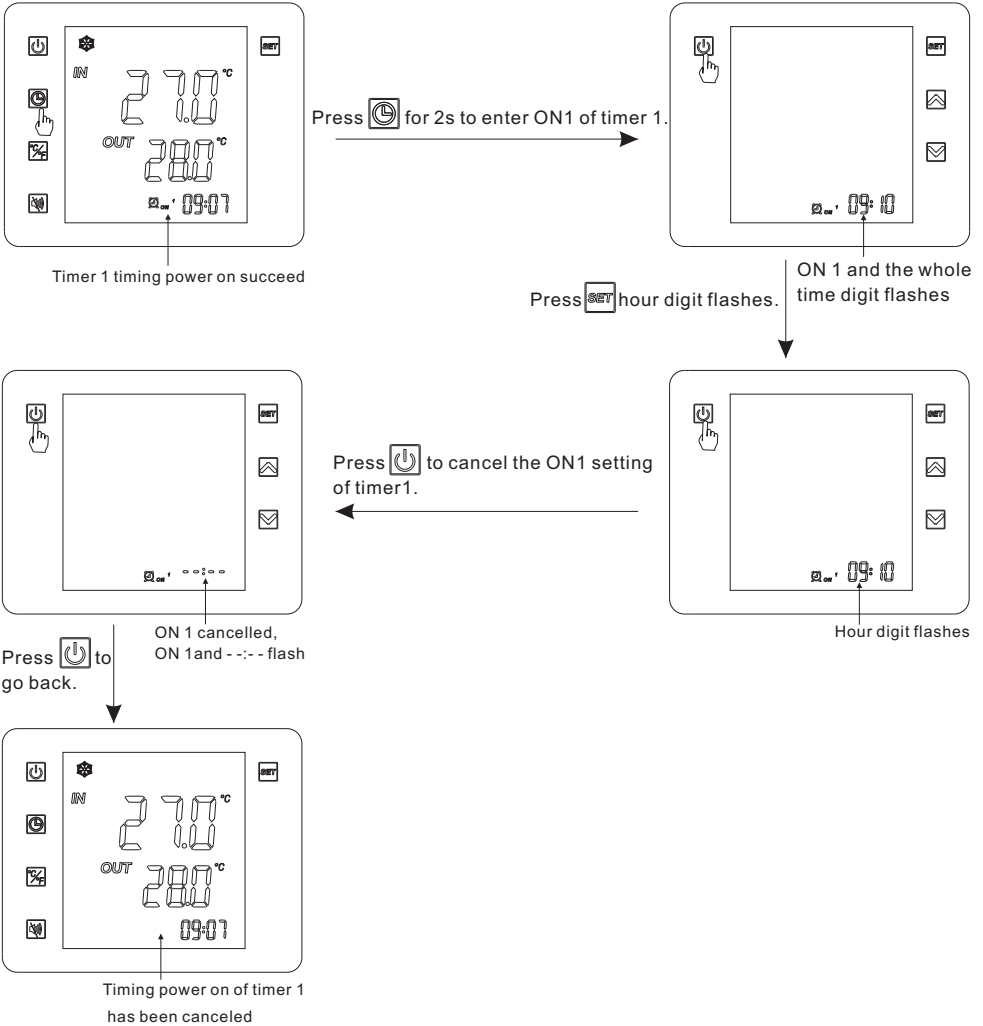


USAGE AND OPERATION

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:

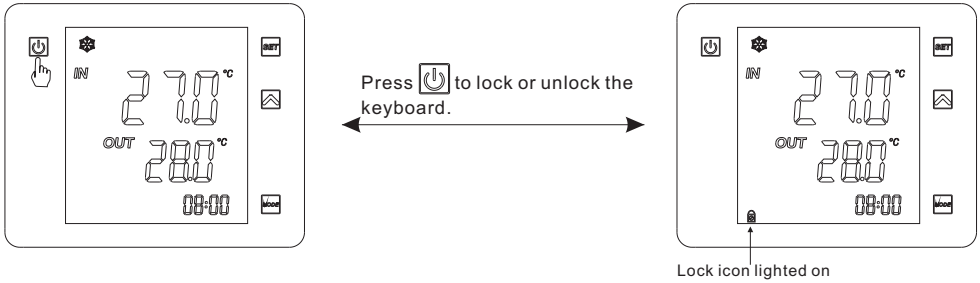


USAGE AND OPERATION




2.5 Keyboard lock

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.

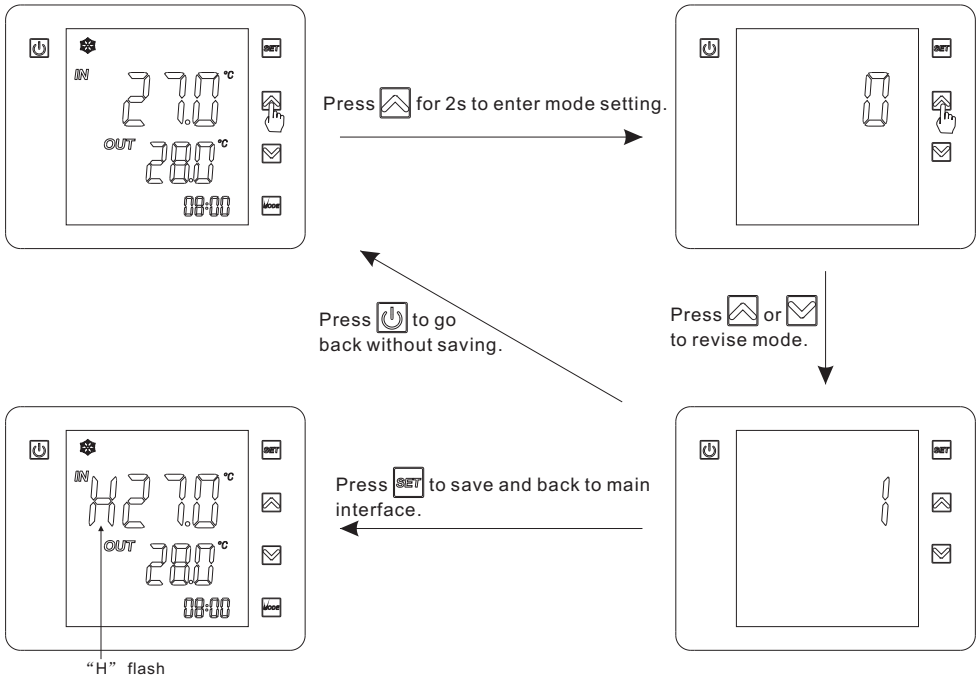
Attention: At the lock interface, can only unlock the unit, other operations are invalid.



2.6 Boost Mode setting

At power on/off main interface, press  for 2 s to enter the Boost mode setting interface. Boost mode can be modified by  and .

Attention: At Boost mode setting interface, if there is no operation for 20s, the system will remember the settings and back to power on/off main interface.

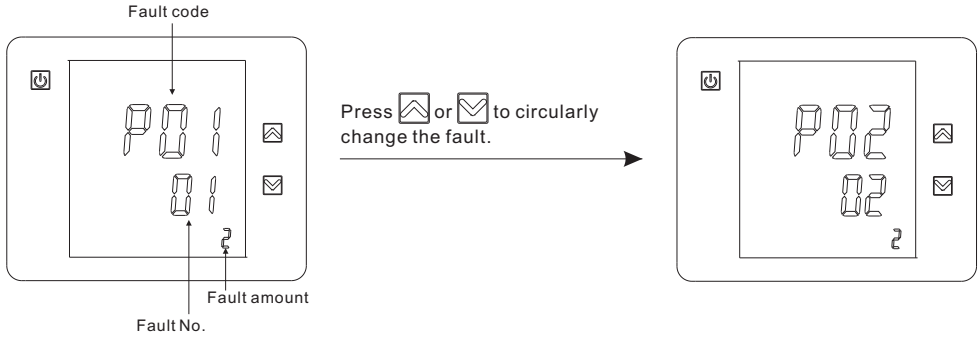


USAGE AND OPERATION

2.7 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:



USAGE AND OPERATION

3. Parameter list and breakdown table

(1) Electronic control fault table

Can be judged according to the remote controller failure code and troubleshooting

Protect/fault	Fault display	Reason	Elimination methods
Inlet Temp. Sensor Fault	P01	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Outlet Temp. Sensor Fault	P02	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Ambient Temp. Sensor Fault	P04	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Coil 1 Temp. Sensor Fault	P05	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Coil 2 Temp. Sensor Fault	P15	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Suction Temp. Sensor Fault	P07	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Discharge Temp. Sensor Fault	P081	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Exhaust Air over Temp Prot.	P082	The compressor is overload	Check whether the system of the compressor running normally
Antifreeze Temp. Sensor Fault	P09	Antifreeze temp sensor is broken or short circuited	Check and replace this temp sensor
Pressure sensor Fault	PP	The pressure Sensor is broken	Check or change the pressure Sensor or pressure
High Pressure Prot.	E01	The high-pressure switch is broken	Check the pressure switch and cold circuit
Low Pressure Prot.	E02	Low pressure1 protection	Check the pressure switch and cold circuit
Flow Switch Prot.	E03	No water/little water in water system	Check the pipe water flow and water pump
Waterway Anti-freezing Prot.	E05	Water temp. or ambient temp. is too low	Check Water temp. or ambient temp.
Inlet and outlet temp. too big	E06	Water flow is not enough and low differential pressure	Check the pipe water flow and whether water system is jammed or not
Anti-freezing Prot.	E07	Water flow is not enough	Check the pipe water flow and whether water system is jammed or not
Primary Anti-freezing Prot.	E19	The ambient temp. is low	Check the ambient temp.
Secondary Anti-freezing Prot.	E29	The ambient temp. is low	Check the ambient temp.
Comp. Overcurrent Prot.	E051	The compressor is overload	Check whether the system of the compressor running normally
Communication Fault	E08	Communication failure between wire controller and mainboard	Check the wire connection between remote wire controller and main board
Communication Fault (speed control module)	E081	Speed control module and main board communication fail	Check the communication connection
Low AT Protection	TP	Ambient temp is too low	Check the ambient temp.
EC fan feedback Fault	F051	There is something wrong with fan motor and fan motor stops running	Check whether fan motor is broken or locked or not
Fan Motor1 Fault	F031	1. Motor is in locked-rotor state 2. The wire connection between DC-fan motor module and fan motor is in bad contact	1. Change a new fan motor 2. Check the wire connection and make sure they are in good contact
Anti-condensation Prot.	E174	The inlet water temp is in the fault area	Check the Inlet water Temp.

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Fan Motor2 Fault	F032	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact
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Frequency conversion board fault table:

Protection/fault	Fault display	Reason	Elimination methods
Drv1 MOP alarm	F01	MOP drive alarm	Recovery after the 150s
Inverter offline	F02	Frequency conversion board and main board communication failure	Check the communication connection
IPM protection	F03	IPM modular protection	Recovery after the 150s
Comp. Driver Failure	F04	Lack of phase, step or drive hardware damage	Check the measuring voltage check frequency conversion board hardware
DC Fan Fault	F05	Motor current feedback open circuit or short circuit	Check whether current return wires connected motor
IPM Overcurrent	F06	IPM Input current is large	Check and adjust the current measurement
Inv. DC Overvoltage	F07	DC bus voltage>Dc bus over-voltage protection value	Check the input voltage measurement
Inv. DC Lessvoltage	F08	DC bus voltage<Dc bus over-voltage protection value	Check the input voltage measurement
Inv. Input Lessvolt.	F09	The input voltage is low, causing the input current is high	Check the input voltage measurement
Inv. Input Overvolt.	F10	The input voltage is too high, more than outage protection current RMS	Check the input voltage measurement
Inv. Sampling Volt.	F11	The input voltage sampling fault	Check and adjust the current measurement
Comm. Err DSP-PFC	F12	DSP and PFC connect fault	Check the communication connection
Input Over Cur.	F26	The equipment load is too large	Check the input current of the unit whether is bigger than the rate current
PFC fault	F27	The PFC circuit protection	Check the PFC switch tube short circuit or not
IPM Overheating	F15	The IPM module is overheat	Check and adjust the current measurement
Weak Magnetic Warn	F16	Compressor magnetic force is not enough	Check the input voltage of the inverter board(single phase unit :230V , three phase unit :400V)
Inv. Input Out Phase	F17	The input voltage lost phase	Check and measure the voltage adjustment
IPM Sampling Cur.	F18	IPM sampling electricity is fault	Check and adjust the current measurement
Inv. Temp. Probe Fail	F19	Sensor is short circuit or open circuit	Inspect and replace the sensor
Inverter Overheating	F20	The transducer is overheat	Check and adjust the current measurement
Inv. Overheating Warn	F22	Transducer temperature is too high	Check and adjust the current measurement
Comp. Over Cur. Warn	F23	Compressor electricity is large	The compressor over-current protection
Input Over Cur. Warn	F24	Input current is too large	Check and adjust the current measurement
EEPROM Error Warn	F25	MCU error	Check whether the chip is damaged Replace the chip
V15V over/undervoltage fault	F28	The V15V is overload or undervoltage	Check the V15V input voltage in range 13.5v~16.5v or not

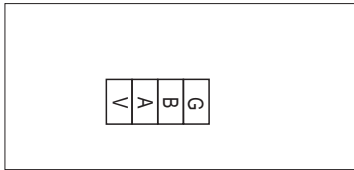
OPERATION AND USE

4. Parameter table

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

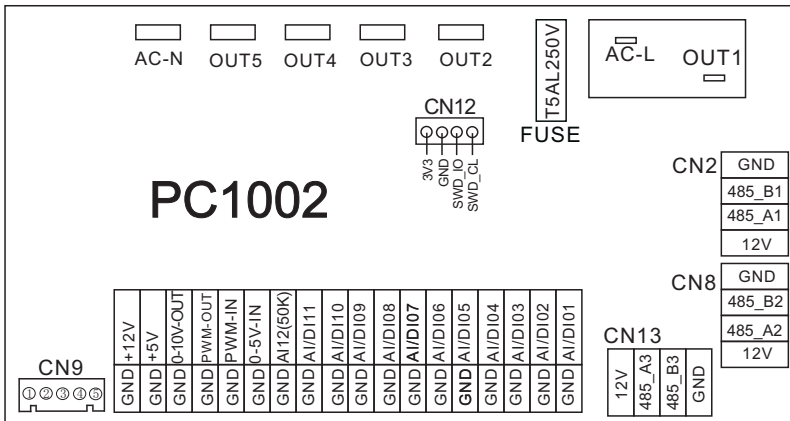
5. Interface drawing

5.1 Wire control interface diagram and definition



Sign	Meaning
V	12V (power +)
A	485A
B	485B
G	GND (power -)

5.2 Controller interface diagram and definition



OPERATION AND USE

Main board of the input and output interface instructions below

Number	Sign	Meaning
01	OUT1	Compressor (output 220-230VAC)
02	OUT2	Water pump (output 220-230VAC)
03	OUT3	4-way valve (output 220-230VAC)
04	OUT4	Chassis heating belt
05	OUT5	Electrical heating
06	AC-L	Live wire (input 220-230VAC)
07	AC-N	Neutral wire (input 220-230VAC)
08	AI/DI01	Emergency switch (input)
09	AI/DI02	Water flow switch (input)
10	AI/DI03	System low pressure (input)
11	AI/DI04	System high pressure (input)
12	AI/DI05	System suction temperature (input)
13	AI/DI06	Water input temperature (input)
14	AI/DI07	Water output temperature (input)
15	AI/DI08	System 1 coil temperature (input)
16	AI/DI09	Ambient temperature (input)
17	AI/DI10	Mode switch/System 2 coil temperature (input)
18	AI/DI11	Master-slave machine switch / Antifreeze temperature (input)
19	AI/DI12(50K)	System exhaust temperature (input)
20	0_5V_IN	Compressor current detection/Pressure sensor(input)
21	PWM_IN	Master-slave machine switch / Feedback signal of EC fan (input)
22	PWM_OUT	AC fan control (output)
23	0_10V_OUT	EC fan control (output)
24	+5V	+5V (output)
25	+12V	+12V (output)
26	CN2	Frequency conversion board communications
27	CN8	5 inch color display Wifi module DC fan module
28	CN9	Electronic expansion valve
29	CN12	Program port
30	CN13	Centralized control communication port

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 or 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 and 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 the 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°C.
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.APPENDIX

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: _____

