

Air source hot water heat pump

Operation & Installation Manual

Preface

- 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.

- When install the unit and connect the pipe, please carry it out strictly according to the manual.

- Once finish the installation and connection, please make everything ok before power on the unit.

- The installer should explain to the user how to operate and maintain the unit according to the manual, when the unit is installed. And ask the user to read the manual carefully, keep the manual and do the operation in strict accordance with the Manual.

- 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, unnecessary maintenance which is not in line with this manual.

- It is vital that the below instructions are adhered to at all times to keep the warranty.
 - Maintenance and operation must be carried out according to the recommended time and frequency, as stated in this manual.
 - Failure to comply with these recommendations will invalidate the warranty.

- The manual will be changed if there is any improvement on the unit, there will not be advance notice.

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1.Safety Precaution

Safety Precaution

To prevent the users and others from the unpredictable/unexpected hurt of this unit, and avoid damage on the unit or other property, please use the heat pump properly, please read this manual carefully and understand the following information correctly.

Mark	Meaning
 WARNING	A wrong operation may lead to death or heavy injury on people.
 ATTENTION	A wrong operation may lead to hurt on people or loss of material.

Icon	Meaning
	Prohibition. What is prohibited will be nearby this icon.
	Compulsory implement. The listed action need to be taken.
	ATTENTION (include WARNING) Please pay attention to what is indicated.

1.The hurt means no need to be in hospital and cure for a long time, it's injury, burn and get an electric shock.

2.The material lost means property and datum lost.



Installation warning

 Professional installer is required	The heat pump must be installed by qualified personnel, to avoid improper installation which can lead to water leakage, electrical shock or fire.
 Earthing is required	Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.
 Concentration limits	When install the unit in a small room, please take some measures to prevent the asphyxia caused by the leakage of refrigerant. Please consult the dealer for concrete measures.

1.Safety precaution

 Installation place	The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire can be occur.
 Fix the unit	Make sure that the basement of the heat pump is strong enough, to avoid any decline or fall down of the unit.
 Need circuit breaker	Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire.

Operation warning

 Prohibition	Do not put fingers or others into the fans. Children should be supervised to ensure that they do not play with the appliance.
 Shut off the power	When there is something wrong or strange smell, the power supply need to be shut off to stop the unit.

Move and repair

 Entrust	When the heat pump need to be moved or installed again, please entrust dealer or qualified person to carry it out. Improper installation will lead to water leakage, electrical shock, injury or fire.
 Prohibition	It is prohibited to repair the unit by the user himself, otherwise electrical shock or fire may be occur.
 Entrust	When the heat pump need to be repaired, please entrust dealer or qualified person to carry it out. Improper movement or repair on the unit will lead to water leakage, electrical shock, injury or fire.

Operation attention

 Check the install placement	The unit must be installed indoor, and the ambient temperature must be over 0°C, if do not use the unit for a long time and the environment temperature is below 0°C, please drain the water in the tank to prevent
 Shut off the power	When do the clean, must stop the unit and shut off the power, if do not stop the unit, it will cause hurt by the high speed running fan.
 Prohibit	Please use the suitable fuse. If use copper or iron, it will cause failure, even the fire.
 Prohibit	Forbid spraying the flammable aerosols to the unit, otherwise it will cause the fire.

Usage warning

 Usage warning	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. Children shall not play with the appliance .Cleaning and user maintenance shall not be made by children without supervision.
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2.Specs

2.1 Appearance



2.2 Characteristic

● good looking and efficient

Attractive design allows the unit to be placed in the open in finished utility spaces and basements, reducing the cost of remodeling; depending on external condition the cost of operation can be 25% of that of an electric water heater, and can be used in locations unsuitable for solar hot water heating.

● environmentally friendly and safer

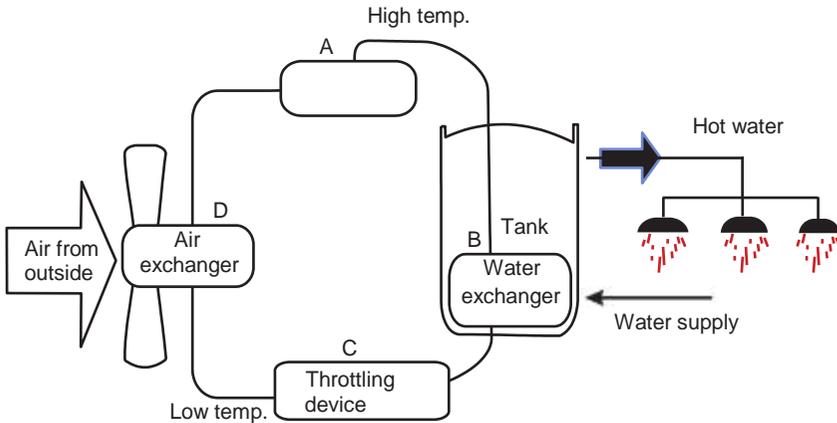
Produces no harmful gas locally from the combustion of oil, coal, or natural gas; free of potential hazards from carbon monoxide, it also can avoid electrical contact with water, and does not provide an open flame, making the device more suitable for installation.

● easy to operate and multiple heat sources

Contains a timer for start and stop, and an adjustment dial for easy setting of the water temperature; depending upon the location of the air exchanger, heat may be taken from the outside environment, from a sun porch or attic space, or from hot areas in light industrial environments.

2. Specs

2.3 principle



System Principle:

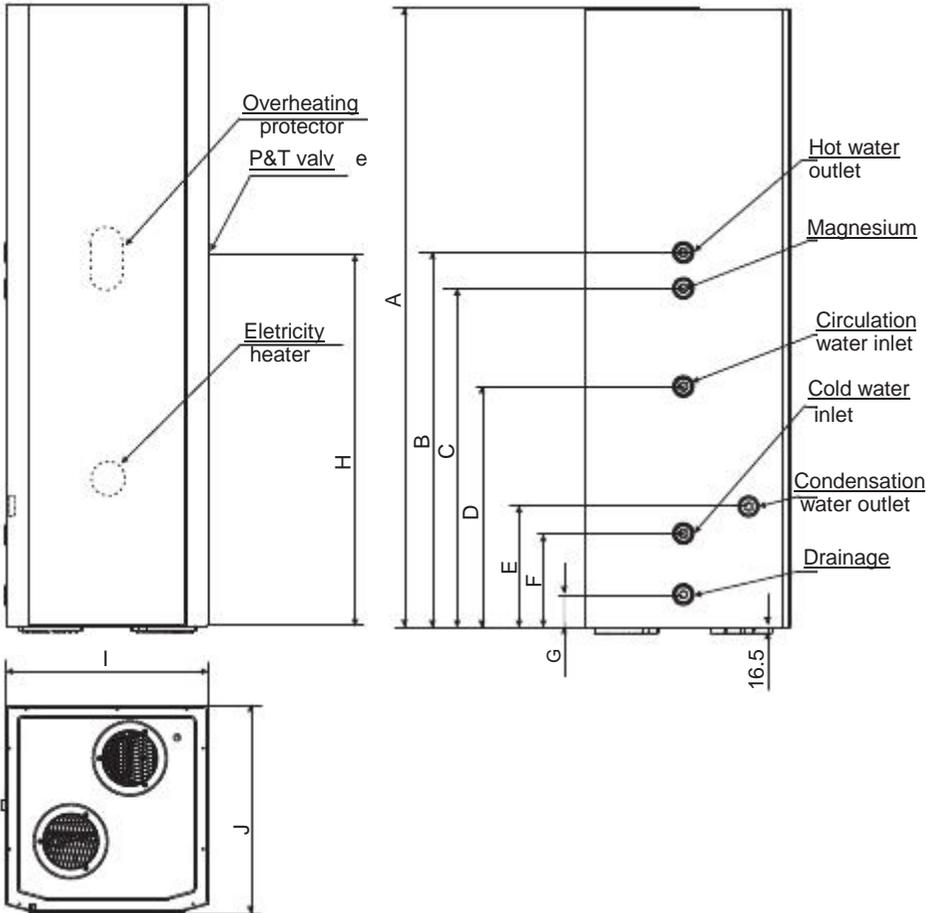
- ① Refrigerant is compressed into vapor with high temperature and high pressure when it goes through the compressor.
- ② On the discharge side of the compressor, the now hot and highly pressurized vapor is cooled down through the heat exchange with the water in the tank until it condenses into a high pressure, moderate temperature liquid.
- ③ Then the pressure of the liquid refrigerant drops as it passes throttling device.
- ④ Finally, refrigerant absorbs heat from the surrounding air and evaporates into vapor with low temperature and low pressure and then it goes into compressor again.
- ⑤ The cooled surrounding air could be blown to the rooms which need fresh cooled air.

2.Specs

2.4 Dimensions

Unit: mm

Model Dimention	PASHW010-200LD	PASHW010-300LD
A	1731	1804
B	1047.5	1180
C	877.5	1010
D	537.5	563
E	369.5	370
F	227.5	253
G	88.5	107
H	1047.5	1180
I	566	642
J	570	654



2.Specs

2.5 Performance Parameter

Mode	PASHW	010-200LD	010-300LD
Heating capacity	kW	2.5	2.5
Water tank capacity	L	200	300
Power input	kW	0.68	0.68
Running current	A	2.96	2.96
Power supply		230V~/50Hz	230V~/50Hz
Compressor Number		1	1
Compressor		rotary	rotary
Rated outlet water Temp.	°C	55	55
Air volume	m ³ /h	350	350
Air pressure	Pa	40	40
Duct diameter	mm	Φ150	Φ150
Nosie	dB(A)	45	45
Water inlet/outlet size	inch	3/4	3/4
*Auxiliary E-heater	kW	1.5	1.5
Net dimensions	mm	See the drawing of the units	
Shipping dimensions	mm	See package label	
Net weight	kg	See nameplate	
Shipping weight	kg	See package label	

Measurement conditions:

Instant heating: Ambient temperature 15°C/13°C, Water inlet 15°C, Water outlet. 45°C

Work range:

(1) Ambient temperature is 0-43°C

Operating parameters

The range of the operating water temperatures: 9~60°C

The range of the operating water pressures: 0.15~0.7MPa

3.Function Presentation

1.Function Presentation

Heating capacity

The unit absorbs energy from outside and releases the heat according to the heat exchanger, if the environment temperature is low, the heating capacity will be attenuation.

3 minutes protection

When the unit stop, if you restart the unit or turn on the manual switch, the unit will not run in 3 minutes, it's the protection for the compressor.

Heating mode running

If the environment temperature is too high, the fan motor will stop running to protect the unit.

Defrosting

Under the heating mode, the unit will defrost automatic to make sure the heating efficiency (it will last 2-10 minutes).

Working condition

In order to use the unit correctly, please run the unit at environment temperature 0°C-40. The unit includes sophisticated electronic devices, prohibited to use water from lake,

Power off

If the power supply is off, the unit will stop running. If the running unit is disturbed by lightening, car radio, power grid fluctuations please cut off the manual power switch , and then power on, press the on / off button.

leakage current protection

There is a leakage current action protection comes with the power supply wire.

Electric heating protection

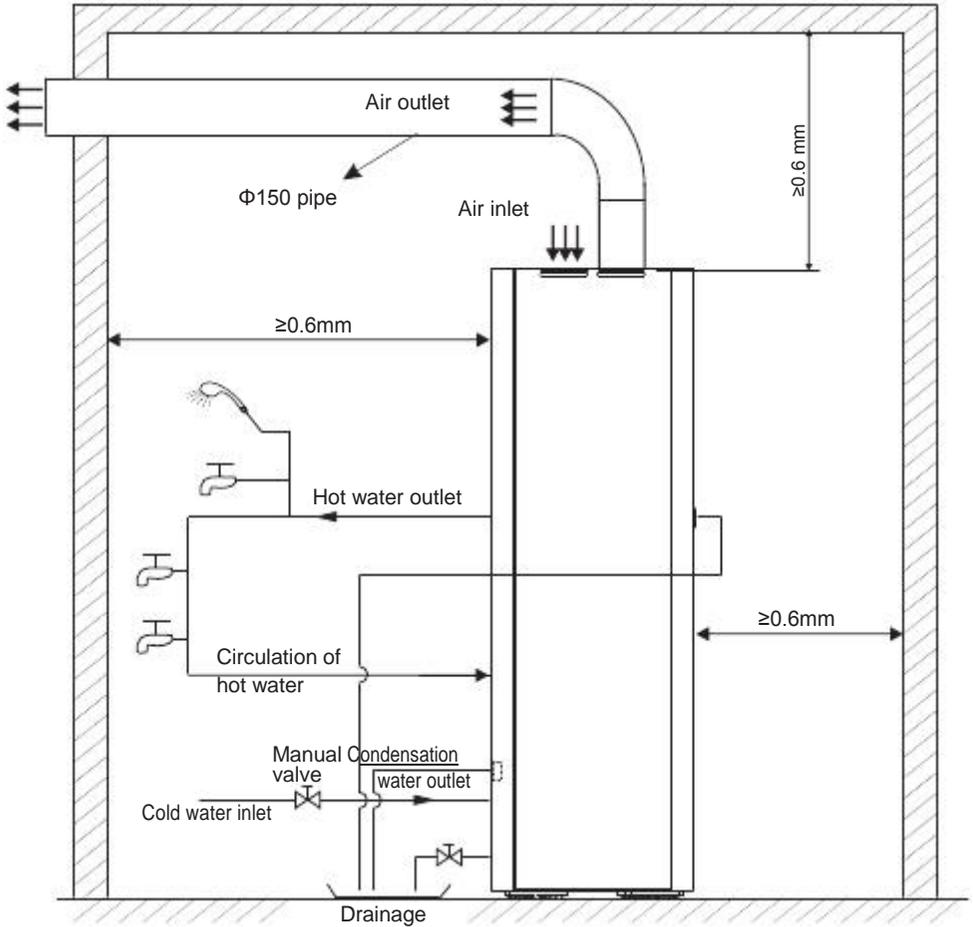
When the water temperature reach 75°C, motor thermal protection will disconnect (can be restored). When the water temperature reach 85°C, electric heating fuse will melt off

Water pressure protection

In the water system will be installed the P&T valve.When the tank pressure reach 0.7MPa,or the temperature reach 99°C, the P&T valve to open sluice。

4. Installation

4.1 Installation Sketch Map



The minimum permissible distances to adjacent structures: In order to the air flow will not be affected, please make sure the distance that between the top of units and ceiling specific parameters.



ATTENTION: The P&T valve attached with the unit must be installed, or it will cause damage to the unit, even hurt the people.

Do not use stainless steel fittings to connect directly with other metals to prevent galvanic corrosion.

4. Installation

4.2 Choose the Suitable Unit

In order to save the energy, please choose the suitable unit.

Person number	Tank capacity
3-4people	200L
More then 6people	300L

Notice: The choice is just for reference, please choose the unit according to native environment and custom.

4.3 Deposited and Transportation

As a rule, the unit is to be stored and/or transported in its shipping container in upright position and without water charge. For a transport over short distance, and provided due care is exercised, an inclination angle of up to 30 degree is permitted. Both during

4.4.1 Transport using a forklift

When transported by a fork lift, the unit must remain mounted on the pallet. The lifting rate should be kept to a minimum. Due to its top-heaviness, the unit must be secured against tipping over. To prevent any damage, the unit must be placed on a level surface!

4.4.2 Manual transport

For the manual transport, the wooden pallet can be used for bottom part. Using ropes or carrying straps, a second or third handling configuration is possible. With this type of handling, care must be taken that the max. Permissible inclination angle of 60 degree is not exceeded. If transport in an inclined position cannot be avoided, the unit should be taken into operation one hour after it has been moved into final position.



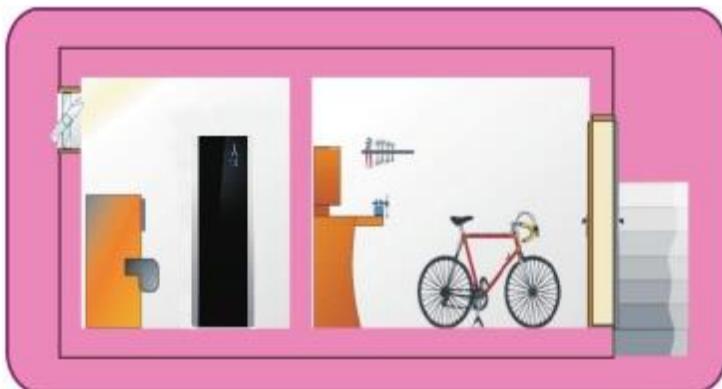
CAUTION: High center of gravity, low overturning moment!

4. Installation

4.5 Installation Position

(1) Waste heat is useful heat (see picture below)

The standard heat exchanger of the hot-water heat pump enables direct connection to a second heat generator, e.g. a solar heating system or a boiler.



(2) Dehumidification in the recirculating air mode (see picture below)

Dehumidified air in the laundry room supports laundry drying and prevents moisture-induced damage.



4. Installation

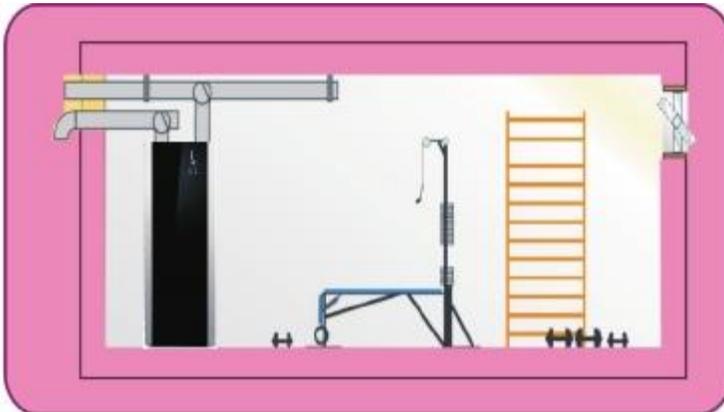
(3) Cooling in the recirculating air mode (see picture below)

The room air is extracted from the storage room or a wine cellar, subsequently cooled and dehumidified in the heat pump and finally re-introduced into the room. Recreation rooms, boiler rooms or utility rooms are ideal installation sites. The air ducts leading through warm sections must be insulated to prevent the formation of condensation.



(4) variable change over of intake air (see picture below)

A duct system with integrated bypass flaps allows for variable utilization of the heat contained in the outside air or room air for the production of hot water.



Installation attentions

1. Choose the right path to move the unit;
2. Try to move the unit as original case;
3. If the unit installed in the building of the metal part, it must work for electrical insulation and comply with the relevant technical standards of electrical equipment.

4. Installation

4.5 Water Loop Connection

Pay attention to these points when connect the water loop pipe:

- ❶ Make sure there is nothing in the pipe and the water loop is smooth, check the pipe carefully to see if there is any leak, then pack the pipe with the insulation.
- ❷ Install the one way valve and safety valve in the water circulation system. The one way valve is to be operated regularly to remove lime deposits and to verify that it is not blocked.
- ❸ The nominal pipe widths of the field-installed sanitary installations must be selected on the basis of the available water pressure and the expected pressure drop within the piping system. The water-side installation has to be executed in compliance with DIN 1988(in case of excessive water pipe pressure, a pressure relief valve is to be provided!)
- ❹ The water pipes may be of the rigid of flexible type to prevent corrosion damage.
- ❺ When installing the pipework on the customer's site, any contamination of the piping system must be avoided(pipes may have to be flushed prior to the connection of the unit).
- ❻ The water may drip from the discharge pipe of the pressure-relief device and that this pipe must be left open to the atmosphere.

4.6 Wire Connection

- ❶ There is wire at the bottom of the unit, it's for power supply of the unit. The spec of the wire is 1.5mm².
- ❷ There must be a switch when connect the unit to power system.
- ❸ 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.

4.7 Trial Running

4.8.1 Inspection before trial running

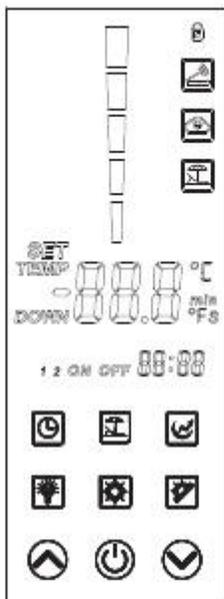
- ❶ Check the water in the tank and the water pipe connection.
- ❷ Check the power system: make sure the power supply is normal and the wire connection is
- ❸ Check the unit: make sure everything is ok before power on the unit, check the light on the wire controller when the unit runs.

4.8.2 Trial running

- ❶ Use the wire controller to start the unit;
- ❷ Listen to the unit carefully when power on the unit, power off the unit at once when you heard deviant noise;
- ❸ Measure the water temp. to check the undulation of the water temp.;
- ❹ When the parameter has been set, the user can't change the parameter optionally, ask for professional person to change the parameter.

5. Usage

5.1 Icons Introduction



5.1.1 Button Icons

No.	Icon	Name	Function
①		ON/ OFF	Turn on/off the unit; Cancel operations; Back to the former state.
②		UP	Select options or increase values.
③		DOWN	Select options or decrease values.
④		Clock	Set the time and timer.
⑤		Vacation Mode	Enable the Vacation Mode.
⑥		High Requirement Mode	Enable the High Requirement Mode.
⑦		Intelligent Mode	Enable the Intelligent Mode.
⑧		Heating Mode	Enable the Heating Mode.
⑨		Eco. Heating Mode	Enable the Eco. Heating Mode.

5. Usage

5. 1. 2 Status Icons

Icon	Name	Meaning
	Wireless router	It means that the unit is connecting to the wireless router.
	Remote server	It means that the unit is connecting to the remote server.
	Downside temperature of the tank	It means that the display shows the downside temperature of the tank.
	Parameter setting	It means that certain parameter is being set.
	Temperature	It means that the display shows the temperature value.
	Timer	It means that the timer is set.
	Hot water available	It shows that the volume of hot water available in the tank.
	Minute	It means that the minute digit number is being set.
	Second	It means that the second digit number is being set.
	Centigrade	It means that the unit of the temperature.
	Fahrenheit	It means that the unit of the temperature.
	Lock	It means that the buttonboard is locked.

5. Usage

5.2.Operation

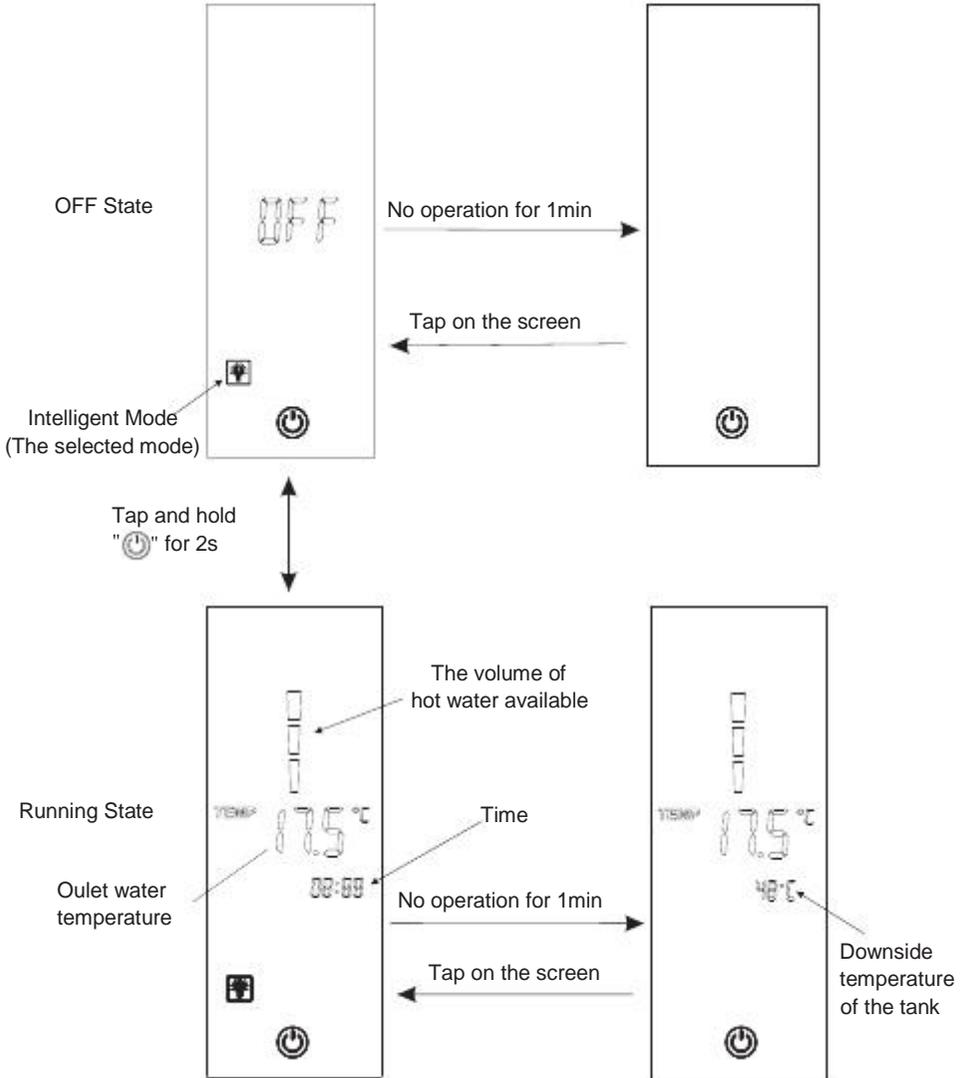
2.1 Turn ON/OFF the Unit

Turn ON/OFF the unit by tapping and holding the icon "  "for 2s.The display will show as below.

Note: 1) When the unit is turned off, the icon "  " will be in blue. If there is no operation for 1 min, the whole display will be light-off.

2) When the unit is turned on, the icon "  " will be in red. If there is no operation for 1min, the button icons will be light-off.

3) When the display is light-off, just tap lightly to wake up the screen.



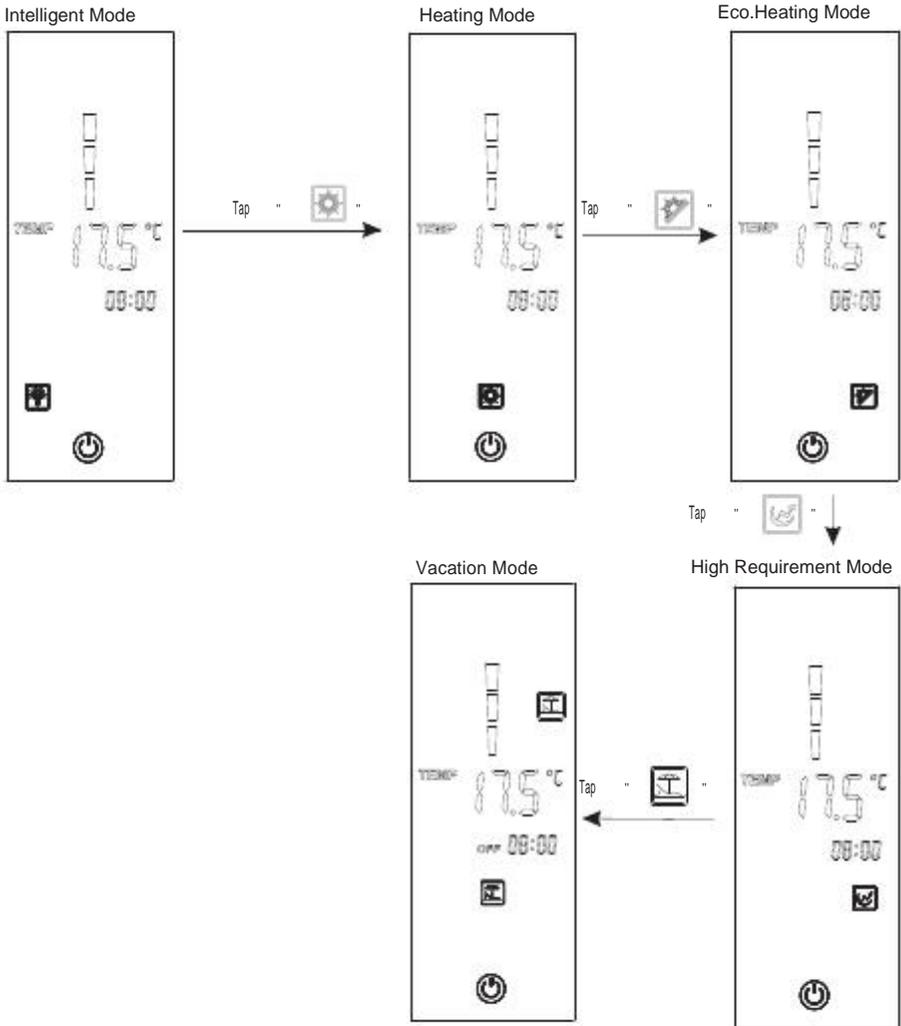
5. Usage

5.2.2 Mode Switching

Switch the modes by tapping on different mode icons when the unit is running.

If the mode is selected, the mode icon will be in red.

For example:

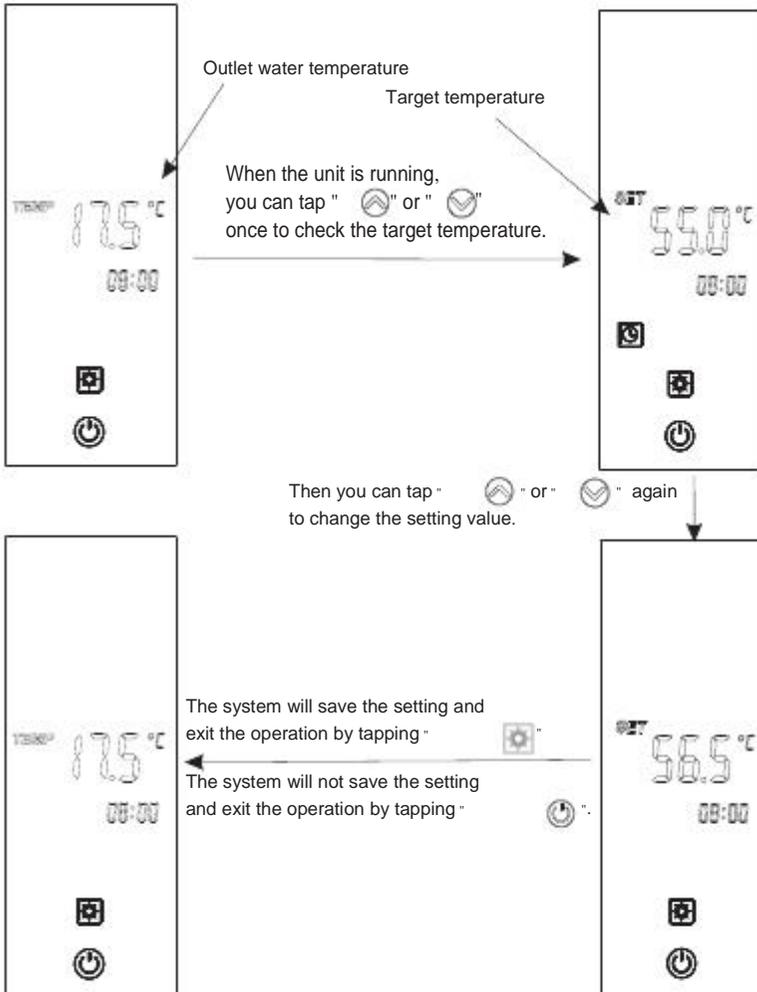


5. Usage

5.2.3 Target Temperature Setting

When the unit is running, you can check the target temperature by tapping "▲" or "▼" once. Tapping "▲" or "▼" again could increase or decrease the target temperature value. During this setting process, tapping "⏻" to make the system exit the operation without saving and tapping "⚙️" to make the system exit the operation with saving the setting value. If there is no operation for 1min during the process, the system will exit the operation automatically with saving the setting value.

For example: Change the target temperature from 55°C to 56.5°C.

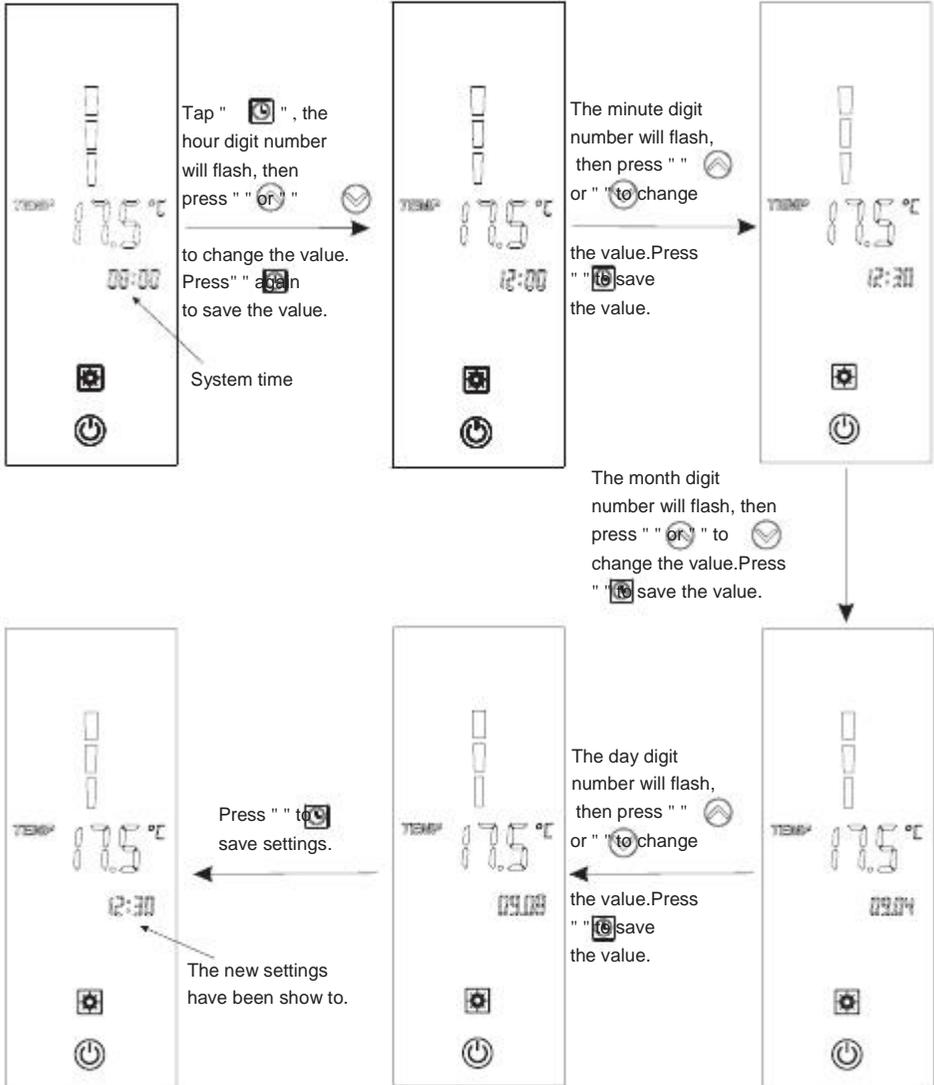


5. Usage

5.2.4 Time Setting

When the unit is running, you can tap and hold "  for 2s to change the current time. At this time, the hour digit number is flashing and you can tap "  or "  to change it. Tap "  to confirm the setting then you can change and confirm the minute digit number in the same way. During the setting process, you can tap "  and the system will exit the operation without saving.

For example: Change the time from 08: 00 to 12: 30.



5. Usage

5.2.5 Timer Setting

You can set two running periods for the system in a day under any modes.

1) Tap and hold "⏸" for 2s, the icon "1" start to flash. Tap "⏸" again, the icon "1" will be light-on and the hour digit number will flash. At this time you can set the starting time for the first running period for the system(Refer to the "2.4 Time Setting").

2) After setting the starting time for the first running period, tap "⏸" to confirm it and then you can set the ending time for the first running period.

3) After confirming the ending time for the first running period, you can continue setting the starting and ending time for the second running period.

4) If there is no need to set the second running period, just tap "⏸", and the system will exit the timer setting.

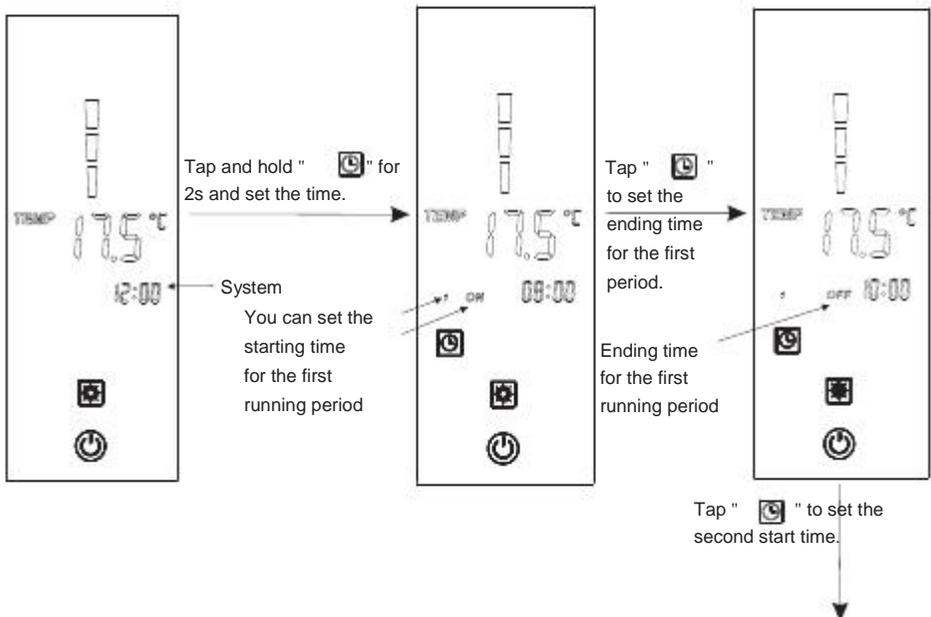
5) After setting the time you need, you can tap "⏸" any time, and the system will exit the timer setting operation.

Note: 1) If there is no operation for 10s, the system will exit "Timer Setting" with saving the settings.

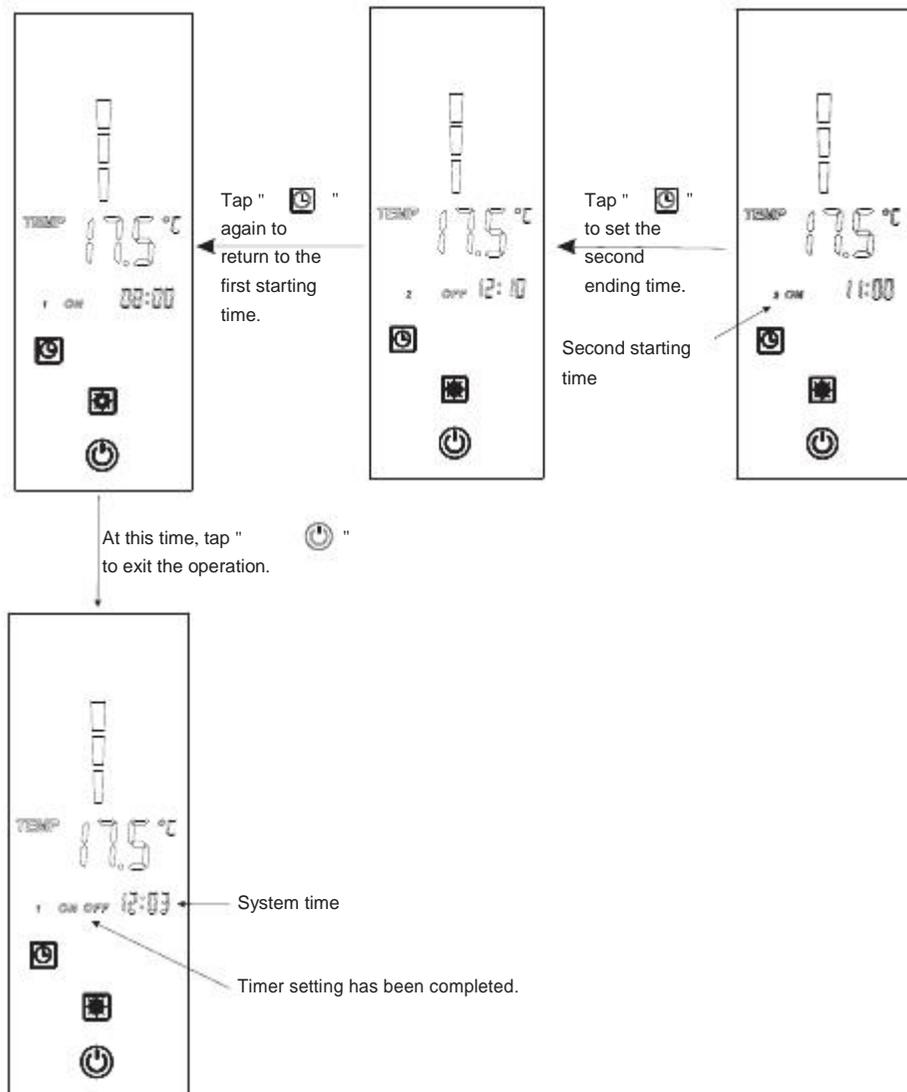
2) You can also select different starting or ending time for setting by just tapping "⏸" or "⏸".

3) Cancelling the timer: You can cancel the timer by tap and hold "⏸" for 2s when the timer icon "1" or "2" or hour digit number is flashing. At this time, it will show "--: --" on the display.

For example:

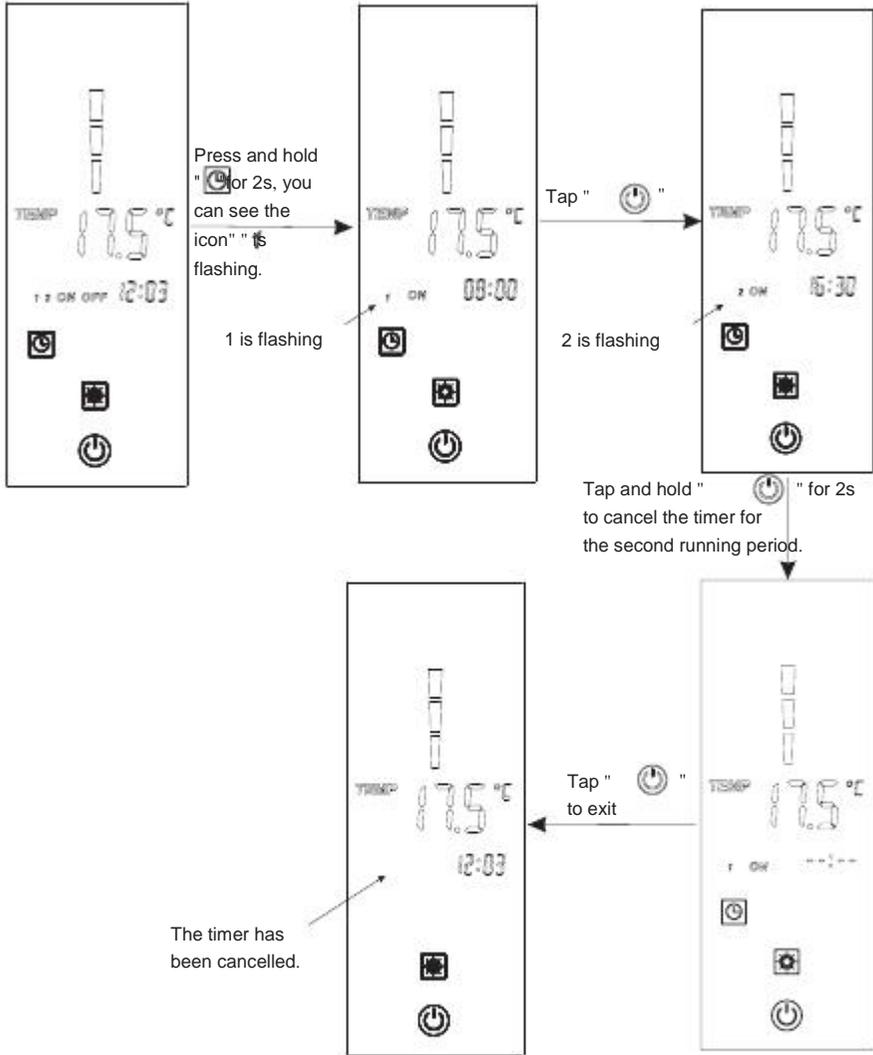


5. Usage



5. Usage

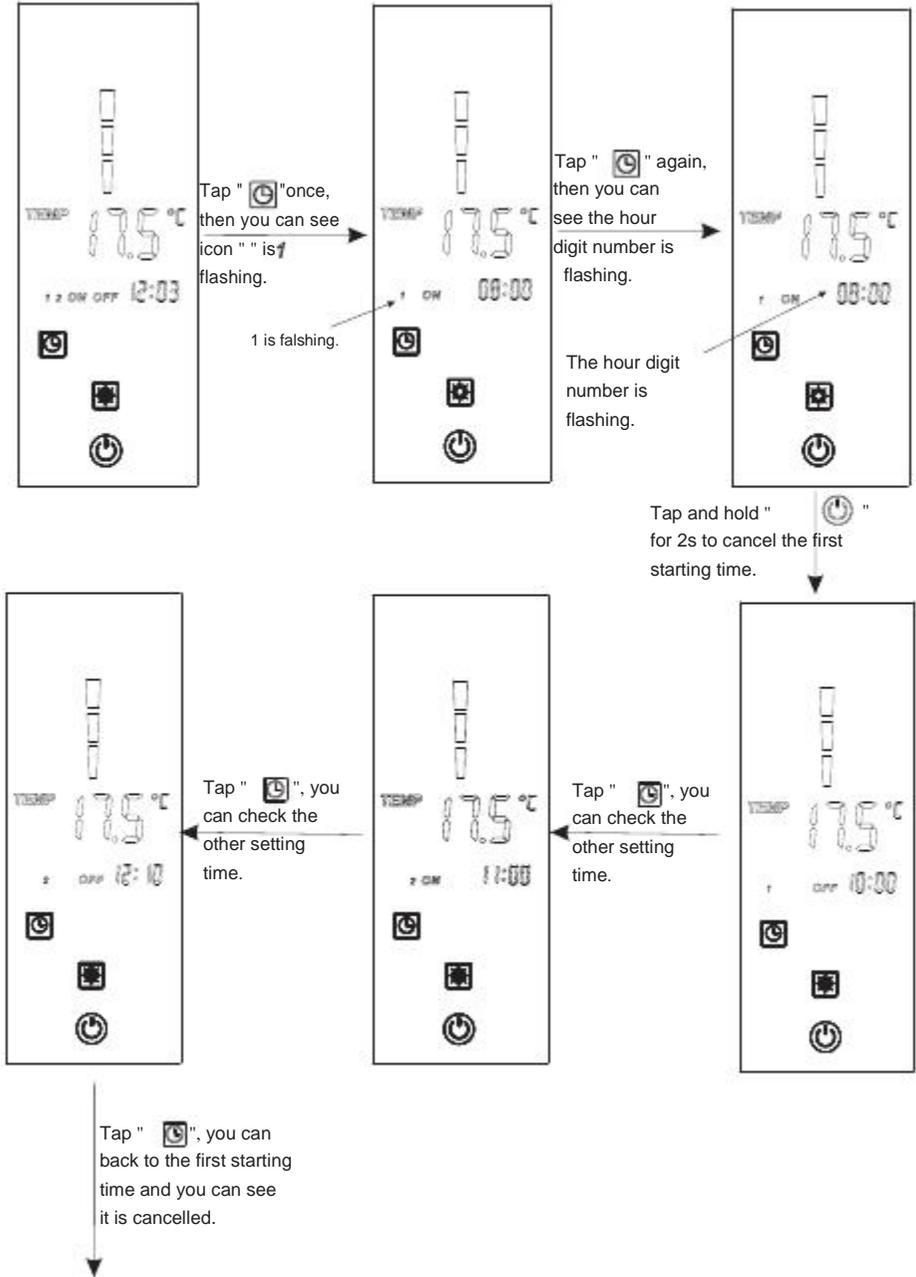
You can follow the following 2 ways to cancel the timer setting.



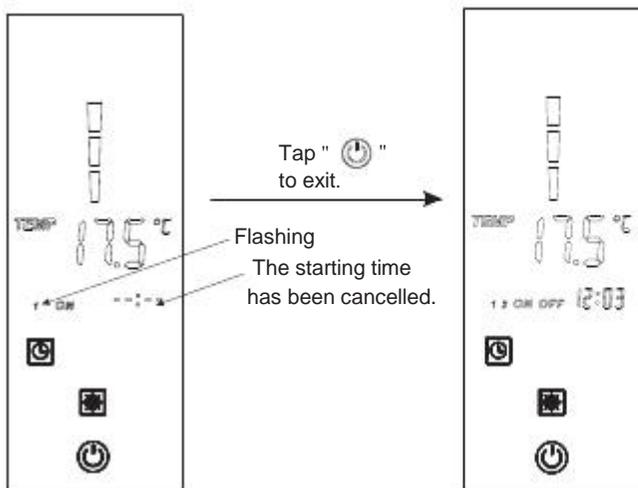
5. Usage

If you just want to cancel only the starting time or ending time, just follow the steps.

Below:



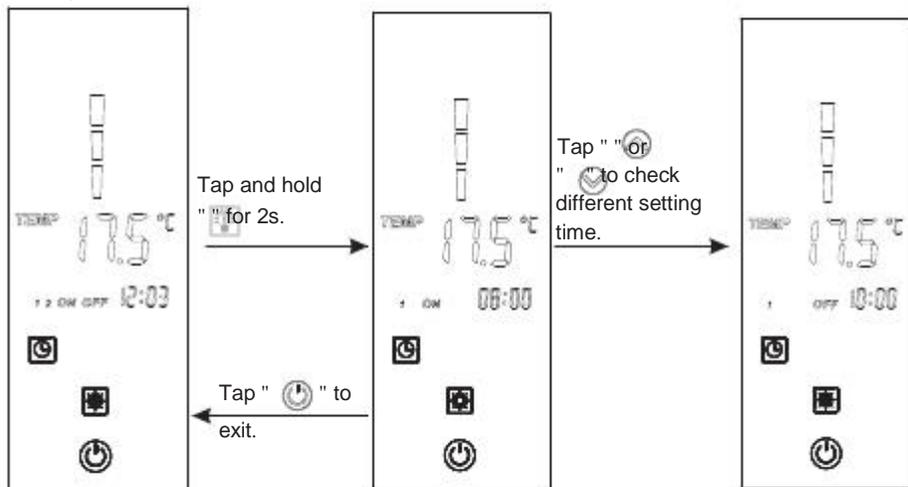
5. Usage



5.2.6 Timer Checking

When the unit is running, tap and hold " [lightbulb icon] " for 2s, then you can see the starting and ending time of different running periods flashing in turns. Also, you can check it by tapping the icon " [up arrow icon] " or " [down arrow icon] ". You can tap " [power icon] " to exit. If there is no operation for 20s, the operation will be exit automatically.

For example:



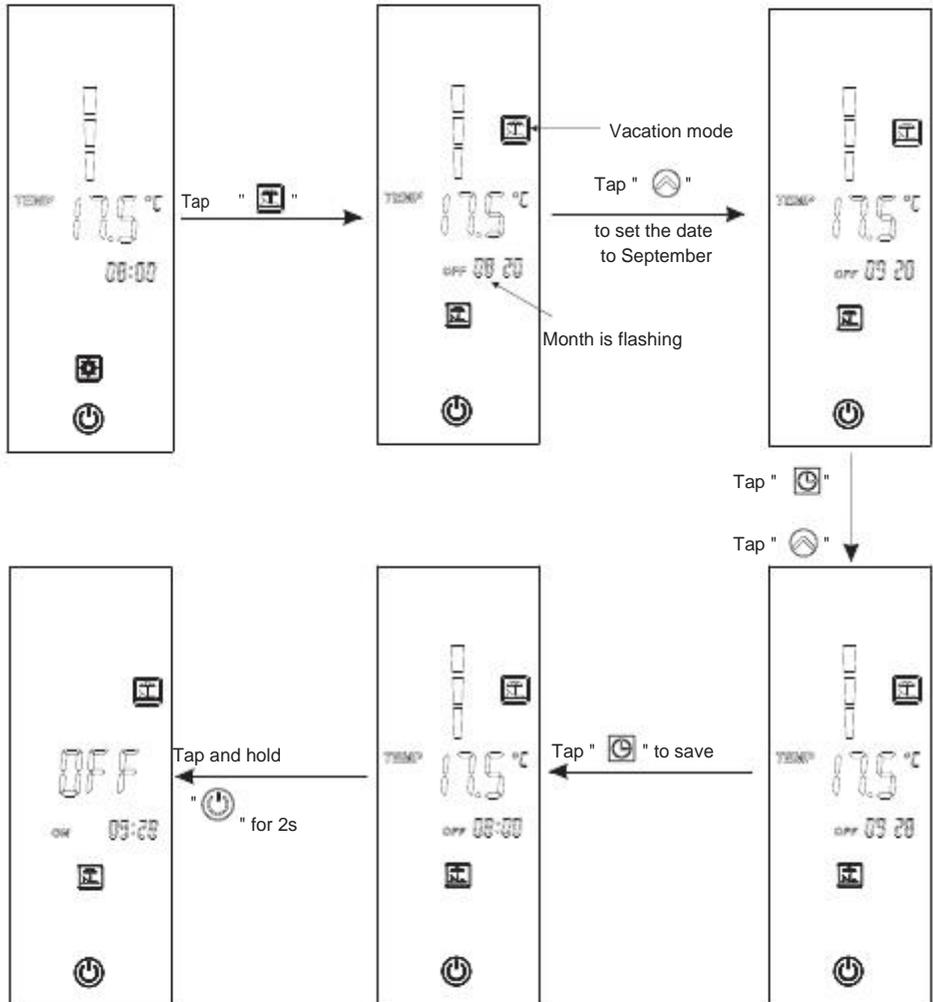
5. Usage

5.2.7 Timing holiday mode

Press "  " to enter into the timer setting interface. The symbol "OFF" and the date parameter are flashing at this time. Then set the date in the same way as "2.7".

Example: Set the start-up date on September 28. (Note: Turn off the unit before going out.)

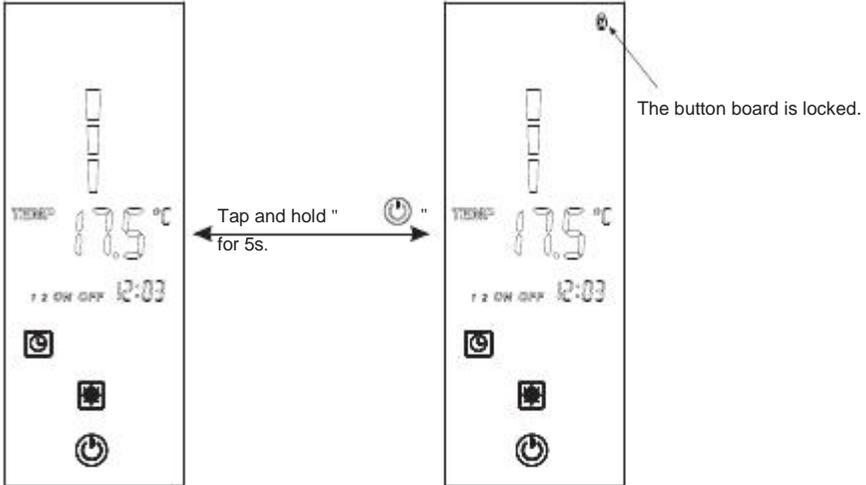
Note:



5. Usage

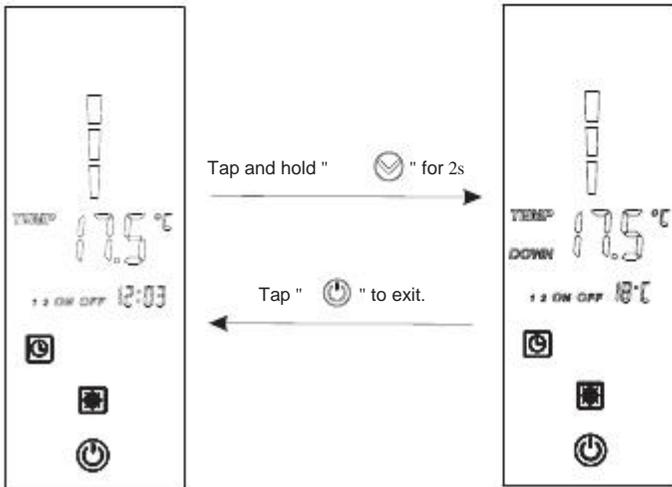
5.2.8 Button board Locking

Tap and hold the icon "  " for 5s to lock and unlock the button board.



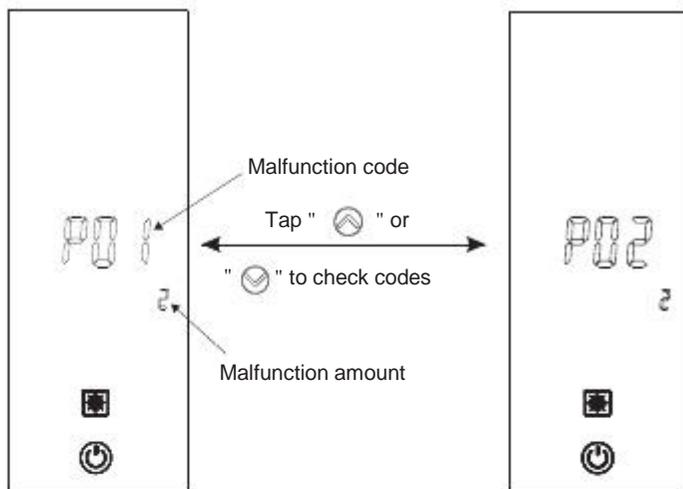
5.2.9 Bottom Temperature Checking

When the unit is running, tap and hold "  " for 2s, the icon "  " will show on the display and here shows the bottom temperature (downside temperature of the tank). This temperature will be lasting for 10s or you can tap "  " to exit. 



5. Usage

5.2.10 Malfunction



5.3. Parameter

Meaning	Default	Remarks
Target Temperature	55°C	Adjustable

6.Maintenance and Repair

6.1 Maintenance

- Check the water supply and air vent frequently, to avoid lack of water or air in the water loop. Clean the water filter in a certain period to keep good water quality. Lack of water and dirty water can damage the unit. The heat pump will start the water pump per 72 hours when it is not running, to avoid freezing.
- Keep the unit in a place which is dry and clean, and has good ventilation. Clean the heat exchanger in 1 or 2 month and keep good heat exchange rate and save energy.
- Check each part of the unit and the pressure of the system. Replace the failure part if there is any, and recharge the refrigerant if it is needed.
- Check the power supply and the electrical system, make sure the electrical components are good, the wiring is well. If there is any part failed with wrong action or smell, please replace in time.
- If the heat pump is not used for a long time, please drain out all the water in the unit and seal the unit to keep it good. Please drain the water from the lowest point of the heat exchanger to avoid freezing in winter. Water recharge and full inspection on the heat pump is needed before it is restarted.
- Don't power off the unit when you use it incontinuity, or the water in the pipe will freeze and split the pipe. We will not answer for this damage.

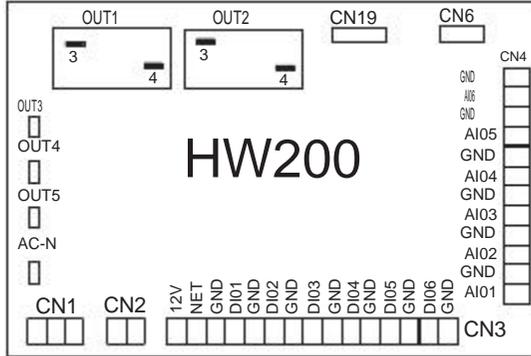
6.2 Trouble Shooting

For any malfunctions, please refer to the table below :

Malfunction	Display	Canse	Solution
Bottom water temp. Failure	P01	The water bottom temp. Sensor is open or short circuit	Check or change the water bottom temp. Sensor
Top tank water temp. Failure	P02	The water top tank temp. sensor is open or short circuit	Check or change the water top tank temp. Sensor
Ambient temp. Failure	P04	The ambient temp. sensor is open or short circuit	Check or change the ambient temp. Sensor
Coil temp. Failure	P05	The pipe temp. sensor is open or short circuit	Check or change the pipe temp. Sensor
Refrigerant absorb temp. Failure	P07	The evaporator temp. Sensor is open or short circuit	Check or change the evaporator temp. Sensor
Anti-freeze temp. Failure	P09	The anti-freeze temp. Sensor is open or short circuit	Check or change the anti-freeze temp. Sensor
High pressure protection	E01	The exhaust pressure is high , high pressure switch action	Check high pressure switch and cooling return circuit
Low pressure protection	E02	The suction pressure is low, Low pressure switch action	Check low pressure switch and cooling return circuit
Water flow failure	E03	No water or litter water in water system	Check the flow volume ,water pump is failure or not
Electric-heater overheat protection	E04	Water flow volume not enough,Water system pressure difference is small	Check the flow volume,water system is jammed or not
Anti-freeze protection	E07	Water flow volume not enough,Water system pressure difference is small	Check the flow volume,water system is jammed or not
Anti-freeze protect level 1	E19	Ambient temperature is too low	
Anti-freeze protect level 2	E29	Ambient temperature is too low	

7.Appendix

Appendix1. Controlling board access

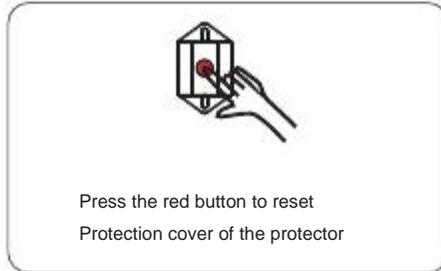


NO.	Symbol	The definition of the ports
1	OUT1	Compressor(output)(220-230VAC)
2	OUT2	Heater (output) (220-230VAC)
3	OUT3	Four way valve (output)(220-230VAC)
4	OUT4	High speed fan/Source pump (output) (220-230VAC)
5	OUT5	Low speed fan /Circulate pump/Solar pump/ Recovery pump/Cooling(output)(220-230VAC)
6	AC-N	Ground
7	NET GND 12V	Remote controller
8	DI01 GND	Remote ON/OFF
9	DI02 GND	Over heat protection
10	DI03 GND	Low pressure protection
11	DI04 GND	High pressure protection
12	DI05 GND	(SPARE)
13	DI06 DND	Flow switch protection
14	AI01 GND	Ambient temp. sensor(input)
15	AI02 GND	Tank of bottom temp.Sensor(input)
16	AI03 GND	Tank of top temp. Sensor(input)
17	AI04 GND	Coil temp. Sensor/Anti-freeze Sensor(input)
18	AI05 GND	Suction temp. sensor(input)
19	AI06 GND	Solar temp.sensor(input)
20	CN6	Running indication/Circulate pump/Solar pump

7.Appendix

Appendix2. Use for overheating protector

Overheating protector is used to prevent safety accident caused by water temperature inside the tank too high in case that the heat pump controller is out of control. When the temperature inside the tank reaches the action value of the protector, the power supply will be cut off. It has to be reset manually so that the unit returns to normal. The operation in detail is as following:



Warning

⚠ Be careful of electric shock when you press red button.



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