



# EVO COMMAND 38 MANUAL



## Installation & Operation

**Read this manual carefully before  
installing or operating this unit**

## Contents

1.	Preface .....	3
2.	Safety Precautions.....	4
3.	Specifications .....	7
3.1	Appearance and Structure of the Unit.....	7
3.2	Specification Data .....	7
3.3	Unit Dimensions.....	8
4.	Installation .....	9
4.1	Application of Heat Pump for Cooling .....	9
4.2	Choosing the Right Unit.....	10
4.3	Installation Location.....	10
4.4	Installation Method.....	10
4.5	Water Loop Connection.....	11
4.6	Power Supply Connection.....	11
4.7	Location of the Unit.....	12
4.8	Transit .....	12
4.9	Inspection Before Trial Running .....	12
4.10	Trial Running.....	13
5.	Usage.....	14
5.1	Function of the Wire Controller .....	14
5.2	Usage of the Wire Controller .....	15
5.2.1	How to use the 'Finger Click' Button.....	15
5.2.2	Starting Up and Shutting Down .....	16
5.2.3	Mode Operation .....	17
5.2.4	System Working State Operation.....	17
5.2.5	Parameter Operation .....	18
5.2.6	Clock Operation .....	18
5.2.7	Timer Operation .....	20
5.2.8	Keyboard Lock .....	25
5.2.9	Malfunction Display .....	25
5.3	Parameter Table.....	25
6.	Maintenance.....	26
6.1	Ordinary Malfunctions and Solutions .....	27
7.	Appendix.....	29
7.1	Install Sketch Map.....	29
7.2	Installation of Automatic Filled-Water.....	30
7.3	The Installation Explanation of the Leakage Pressure Valve .....	31
7.4	The Way of Assistant Heat Source Connection .....	31
7.5	Connections Code of the Main PCB.....	32
7.6	Connection of PCB Installation.....	33
7.7	SYSB Malfunction Table.....	34
7.8	Cautions and Warnings.....	35
7.9	Cable Specifications.....	36

## 1. Preface

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 manufacturer 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 always adhered to. The unit must be installed by qualified personnel.

- The unit can only be repaired by a qualified installer centre, personnel or an authorised dealer.
- Maintenance and operation must be carried out according to the recommended time and frequencies, as stated in this manual.
- Use genuine standard spare parts only.
- Failure to comply with these recommendations will invalidate the warranty.

The Evo Command 38 is a high efficiency, energy saving and environmentally friendly unit which is mainly used for house warming. It can work with any kind of indoor unit such as a fan coil, radiator or floor heating pipe. A single command heat pump can provide the heating and cooling capacity for multiple other indoor units. The Evo Command unit is designed to have heat recovery by using a super heater which can provide hot water for sanitary purposes.

This series of heat pump unit owns following features:

### **Advanced Controlling**

The PC microcomputer-based controller is available for the users to review or set the running parameters of the heat pump. Centralized controlling system can control several units by PC.

### **Nice Appearance**

The heat pump is designed to be aesthetically pleasing. The water pump included which is very easy for installation.

### **Flexible Installation**

The unit has a smart structure with compact body, only a simple outdoor installation is needed.

### **Quiet Operation**

A high quality and efficient compressor, fan and water pump are used to ensure a low noise level.

### **Good Heat Exchange Rate**

The heat pump unit uses a specially designed heat exchanger to enhance the efficiency.



### **Large Working Range**

This series of heat pump is designed to work under different working conditions as low as -15 degrees for heating.






## 2. Safety Precautions



### Mark Notes



Mark	Meaning
 <b>WARNING</b>	Wrong operation may lead to death or heavy injury on people.
 <b>ATTENTION</b>	Wrong operation may lead to harm on people or loss of material.




### Icon notes

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




## Warning





Installation	Meaning
 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 it may cause electrical shock.

Operation	Meaning
 <b>PROHIBITION</b>	DO NOT put fingers or objects into the fans and evaporator of the unit, otherwise harm may occur.
 Shut off the power	When there is something wrong or a strange smell, the power supply needs to be shut off to stop the unit. Continuing to run may cause electrical shortage or fire.

Move and repair	Meaning
 <b>Entrust</b>	When the heat pump needs to be moved or installed again, please entrust dealer or a qualified person to carry it out. Improper installation will lead to water leakage, electrical shock, injury or fire.
 <b>Entrust</b>	When the heat pump needs 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.
 <b>Prohibit</b>	It is prohibited to repair the unit by the user himself, otherwise electrical shock or fire may occur.

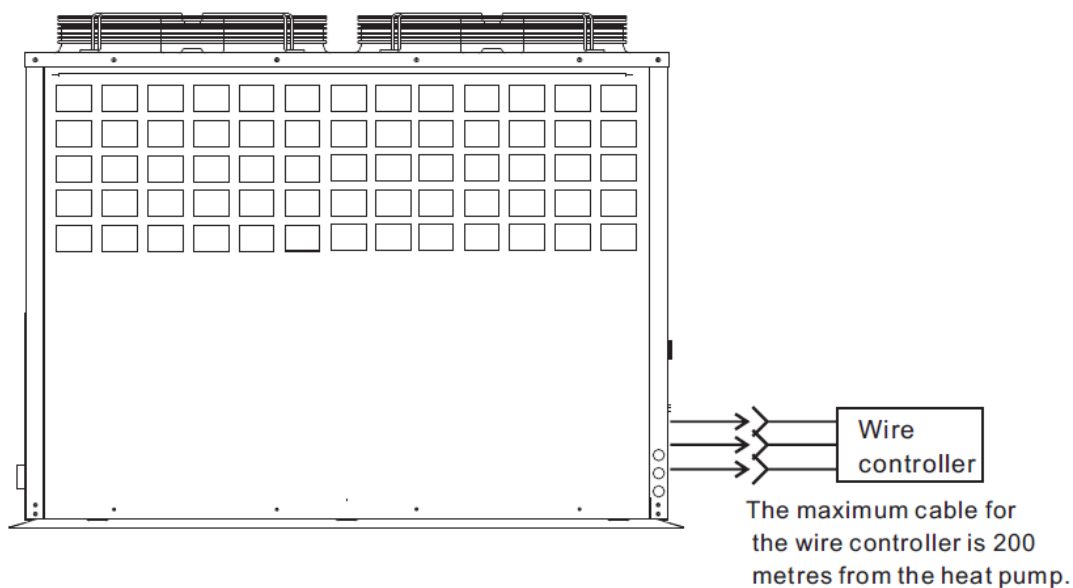
## Attention

Installation	Meaning
 Installation Place	The unit CANNOT be installed near flammable gas. Once there is any leakage of the gas, fire can occur.
 Fix the unit	Make sure that the basement of the heat pump is strong, to avoid any decline or falling 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	Meaning
 Check the installation basement	Please check the installation basement monthly to avoid any decline or damage on the basement, which may hurt people or damage the unit
 Switch off the power	Please switch off the power for cleaning or maintenance.
 Prohibition	It is prohibited to use copper or iron as fuse. The right fuse must be fixed by an electrician for the heat pump.
 Prohibition	It is prohibited to spray flammable gas near the heat pump, as it may cause fire.

## 3. Specifications

### 3.1 Appearance and Structure of the Unit



### 3.2 Specification Data

Unit Model		Evo Command 38
Cooling Capacity	kW	25.2
	Btu/h	87000
Heating Capacity	kW	35.0
	Btu/h	120000
Cooling Power Input	kW	10.2
Heating Power Input	kW	8.5
Running Current (Cooling/Heating)	A	17.6/14.7
Power Supply		415V/3N~ 50Hz
Compressor Quantity		2
Compressort		Scroll
Fan Quantity		2
Fan Power Input	W	390X2
Fan Rotate Speed	RPM	900
Noise	dB (A)	60
Water Pump Input	kW	0.75
Water Head	m	24
Water Connection	inch	1.5
Water Flow Volume	m <sup>3</sup> /h	5.8
Water Pressure Drop	kPa	38
Unit Net Dimensions (L/W/H)	mm	See the drawing of the units
Shipping Dimensions (L/W/H)	mm	See package label
Net Weight	kg	See nameplate
Shipping Weight	kg	See package label

Cooling: Ambient temperature:35°C/24°C,Inter/outlet water temperature:12°C/7°C

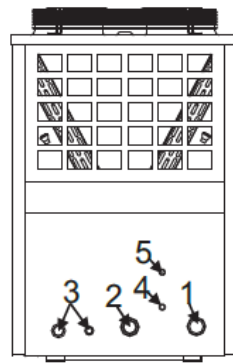
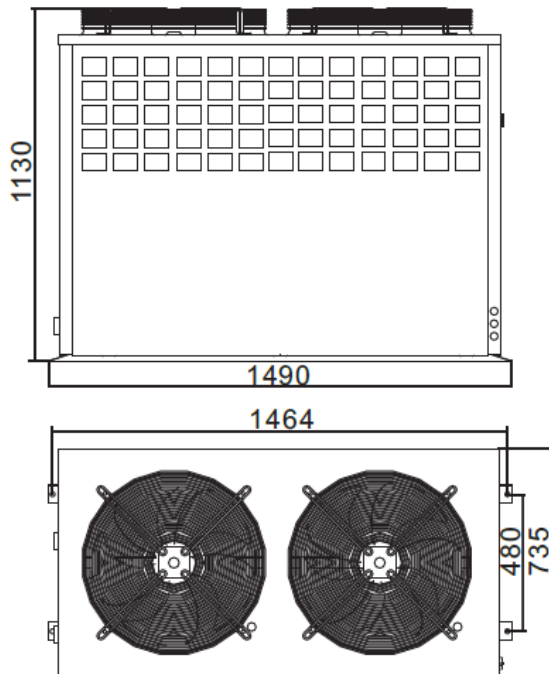
Heating: Ambient temperature:7°C/6°C,Inter/outlet water temperature:30°C/35°C

(Above information just for your reference, Please subject to nameplate on the unit)

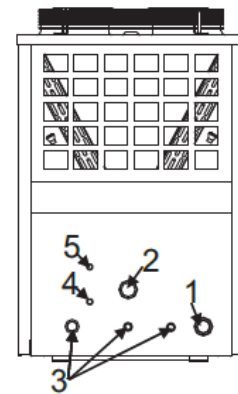


### 3.3 Unit Dimensions

#### Evo Command 38



Without water tank  
of the units



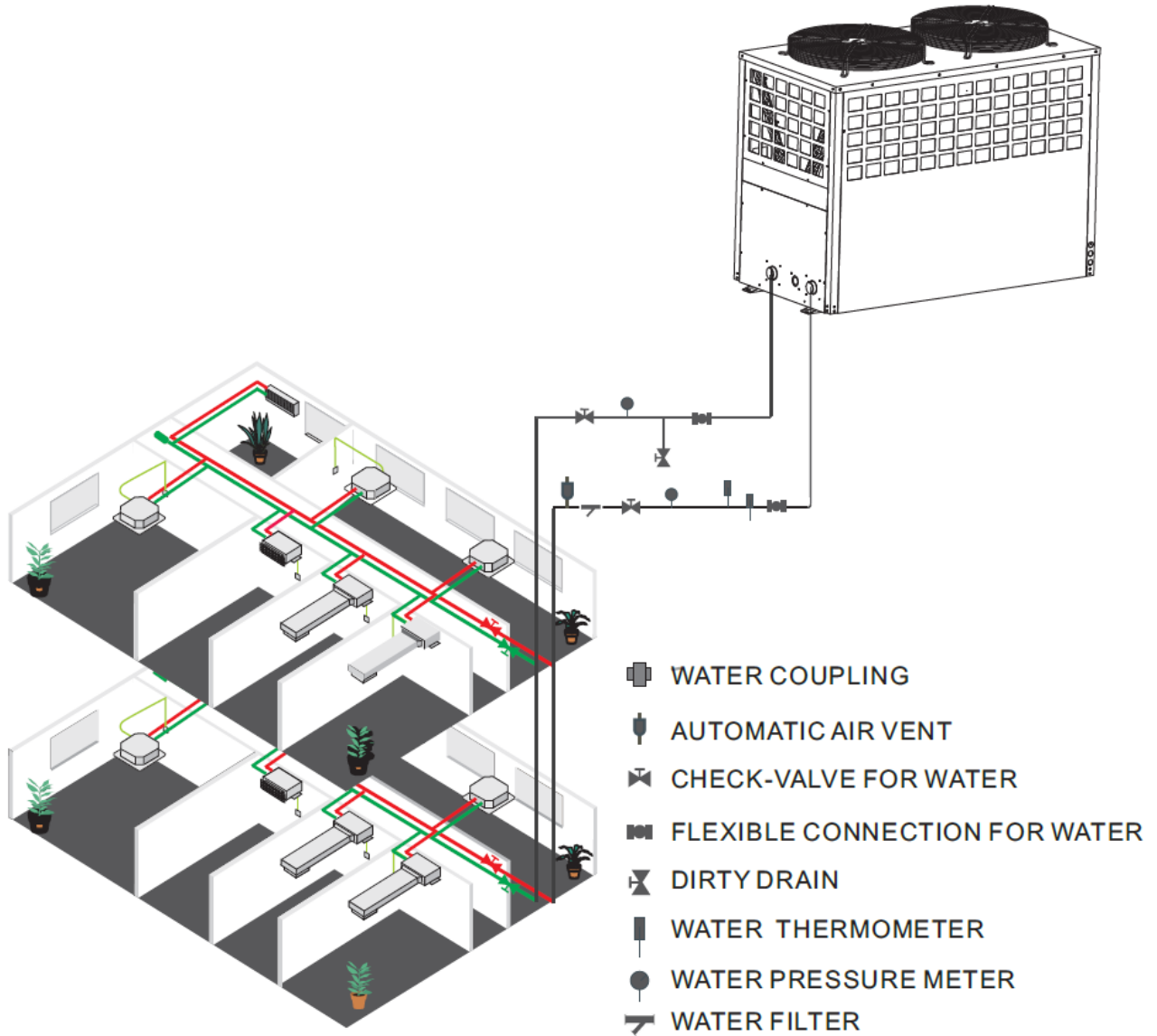
With water tank  
of the units

- Remark: 1—Water inlet  
 2—Water outlet  
 3—Drainage  
 4—Sanitary hot water inlet  
 5—Sanitary hot water outlet



## 4. Installation

### 4.1 Application of Heat Pump for Cooling



## 4.2 Choosing the Right Unit

Based on the local climate conditions, construction features and insulation level, calculate the required cooling (heating) capacity per square meter.

Conclude the total capacity which will be needed by the construction.

According to the total capacity needed, choose the right model by consulting the heat pump features as below:

### Heat Pump Features

*Cooling Only Unit:* chilled water outlet temp. at 5-15°C, maximum ambient temp. at 43°C

*Heating and Cooling Unit:* for cooling chilled water outlet temp. at 5-15°C, maximum ambient temp. at 43°C.

For heating warm water inlet temp. at 40-50°C, minimum ambient temp. at -10°C.

### Unit Application

The Evo Command can be installed in houses, offices, hotels and many more locations which require heating and cooling separating, with each area needing to be controlled independently.

## 4.3 Installation Location

- The unit can be installed in any place outdoors which will be able to support the weight of a heavy unit such as a terrace, roof, the ground and any other places deemed suitable.
- The location must have good ventilation.
- The location must be free from heat radiation and other fire hazards.
- A pall is needed in winter to protect the unit from snow.
- There must be no obstacles near the inlet and outlet of the unit.
- The installation location must be protected from strong winds or air.
- There must be a water channel around the heat pump to drain condensing water.
- Leave enough space around the unit for maintenance.

## 4.4 Installation Method

The heat pump can be installed onto the concrete basement by using expansion screws, or onto a steel frame with rubber feet which can be placed on the ground or the roof. Ensure that the unit is placed horizontally.



#### 4.5 Water Loop Connection

Please pay attention to the below matters when the water pipe is connected.

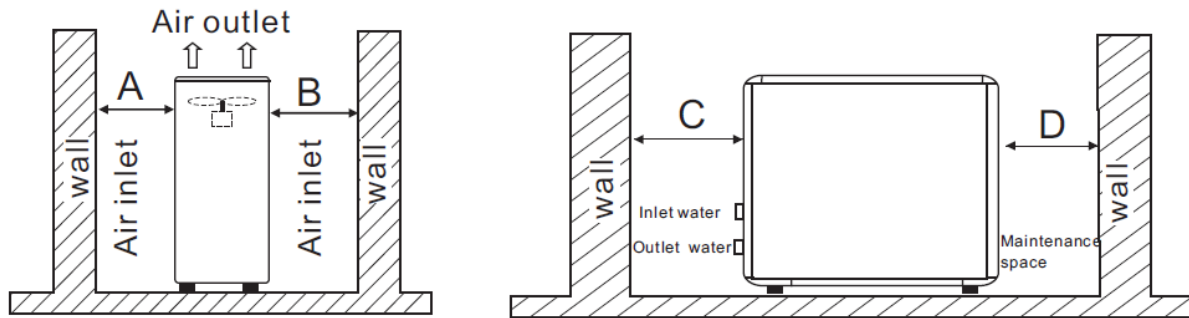
- Try to reduce the resistance to the water from the piping.
- The piping must be clear and free from dirt and blockage. A water leakage test must be carried out to ensure that there is no water leaking before the installation can be made.
- The pipe must be tested by pressure separately. DO NOT test it together with the unit.
- There must be an expansion tank on the top point of the water loop, and the water level inside the tank must be at least 0.5meters higher than the top point of the water loop.
- The flow switch is installed inside of the heat pump, check to ensure that the wiring and action of the switch is normal and controlled by the controller.
- Try to avoid any air from being trapped inside the water pipe, there must be an air vent on the top point of the water loop.
- There must be a thermometer and pressure meter at the water inlet and outlet for easy inspection during running.


#### 4.6 Power Supply Connection

- Open the front panel and open the power supply access.
- The power supply must go through the wire access and be connected to the power supply terminals in the controlling box. Then connect the 3-signal wire plugs of the wire controller and main controller.
- If an external water pump is required, please insert the power supply wire into the wire access and connect it to the water pump terminals.
- If an additional auxiliary heater is needed to be controlled by the heat pump controller, the relay (or power) of the aux-heater must be connected to the relevant output of the controller.



#### 4.7 Location of the Unit



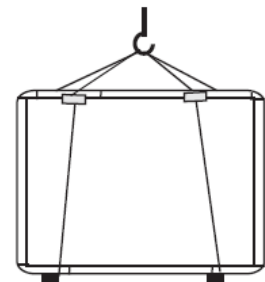


ATTENTION

Requirement:  
 $A > 500\text{mm}$ ;  $B > 500\text{mm}$ ;  
 $C > 1000\text{mm}$ ;  $D > 500\text{mm}$ .

#### 4.8 Transit

If the unit needs to be hung up during installation, an 8-metre cable is required. There must be a soft material between the cable and the unit to prevent damage to the heat pump cabinet (see picture 1).



Picture 1

#### WARNING

**DO NOT** touch the heat exchanger of the heat pump with fingers or other objects!

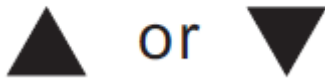
#### 4.9 Inspection Before Trial Running

Inspection before trial running

- Check the indoor unit, make sure that the pipe connection is done correctly, and the relevant valves are open.
- Check the water loop to ensure that the water inside of the expansion tank is filled to an appropriate level, and the water supply is working, and the water loop is full of water and free of trapped air. Make sure there is good insulation for the water pipe.
- Check the electrical wiring. Make sure that the power voltage is normal, the screws are fastened, the wiring is made in line with the diagram and that the earthing is connected.
- Check that the heat pump includes all the screws and components, and that they are in good order. When powering the unit on, review the indicator on the controller to see if there is any indication of failure. The gas gauge can be connected to the check valve to see the high pressure (or low pressure) of the system during trial running.

#### 4.10 Trial Running

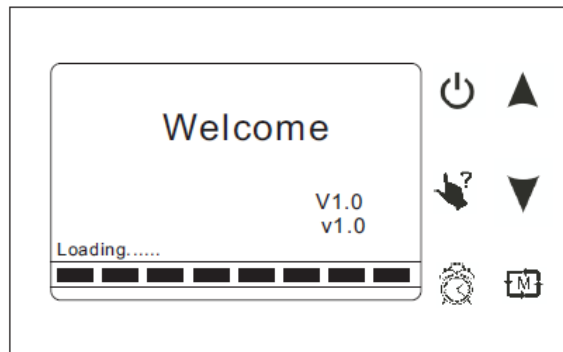
- Start the heat pump by pressing the 'UP' or 'DOWN' arrow key on the controller (see picture 2.) Check whether the water pump is running, if it runs normally there will be 0.2MPa on the water pressure meter.
- When the water pump has ran for a minute, the compressor will start. Listen for any strange sounds from the compressor, if an abnormal sound occurs please stop the unit and check the compressor. If the compressor runs well please look for the pressure meter of the refrigerant.
- Check whether the power input and running current is in line with the manual. If not please stop and check.
- Adjust the valved on the water loop to make sure that the hot (cool) water supply to each door is good and meets the requirements of heating (or cooling).
- Review whether the outlet water temperature is stable.
- The parameters of the controller are set by the factory, the user cannot change these themselves.









(Picture 2)

## 5. Usage


### 5.1 Function of the Wire Controller




Button	Name	Function
	ON/OFF	Press this button to start up/shut off the unit, cancel current operation or back to upper interface.
	HELP	Press this button to check button function or system state.
	MODE	Press this button to change the current mode, page up or confirm current operation.
	CLOCK	Press the button to set the clock, the timer on or timer off
	Up	Press this key to select the upward option or increase
	Down	Press this key to select the downward option or decrease the parameter value.







## 5.2 Usage of the Wire Controller

### 5.2.1 How to use the 'Finger Click' Button

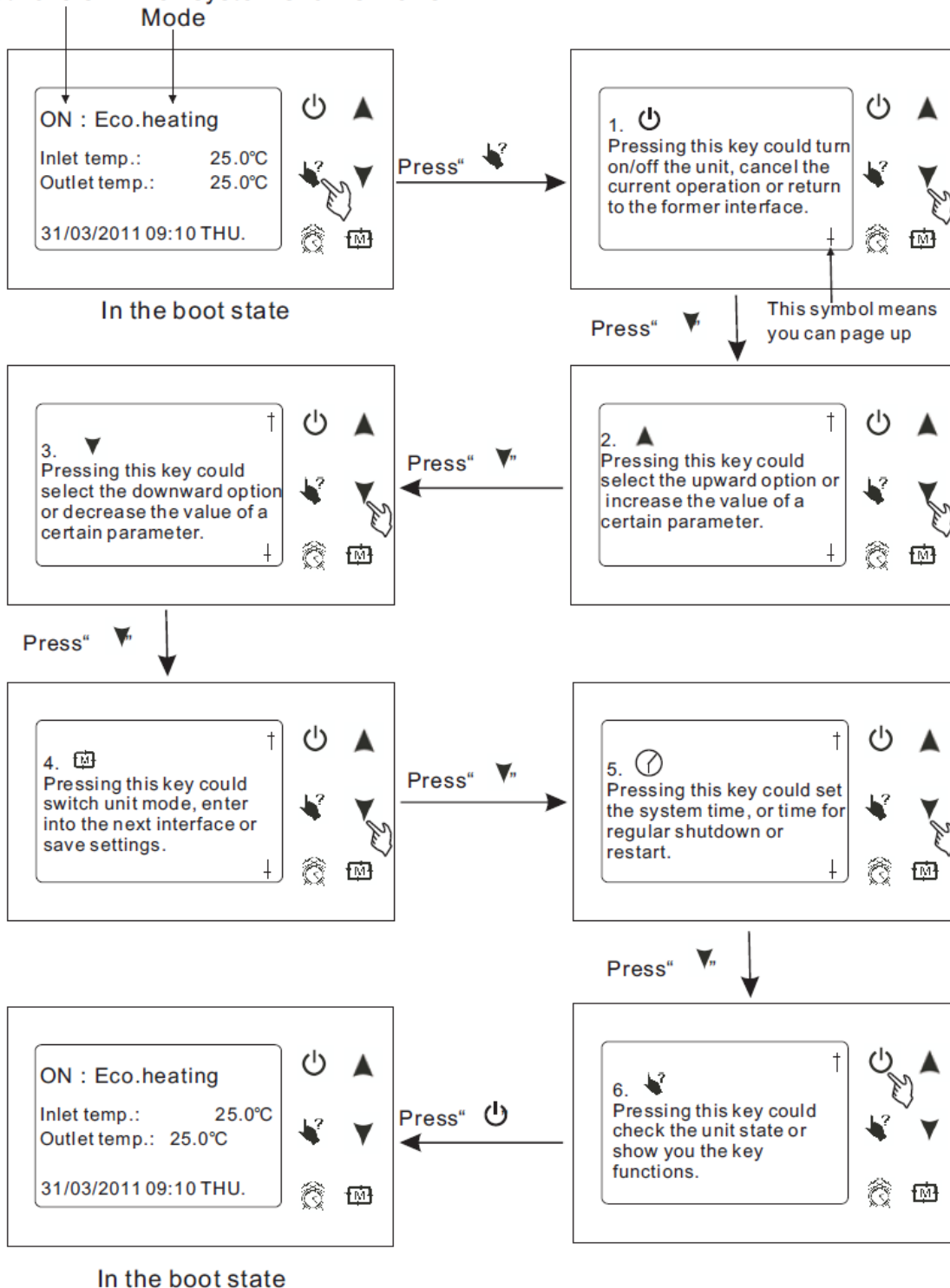
You can use “” at any interface, it will show relevant button function of current interface.


You can press “” to exit the "help" interface.

For example:

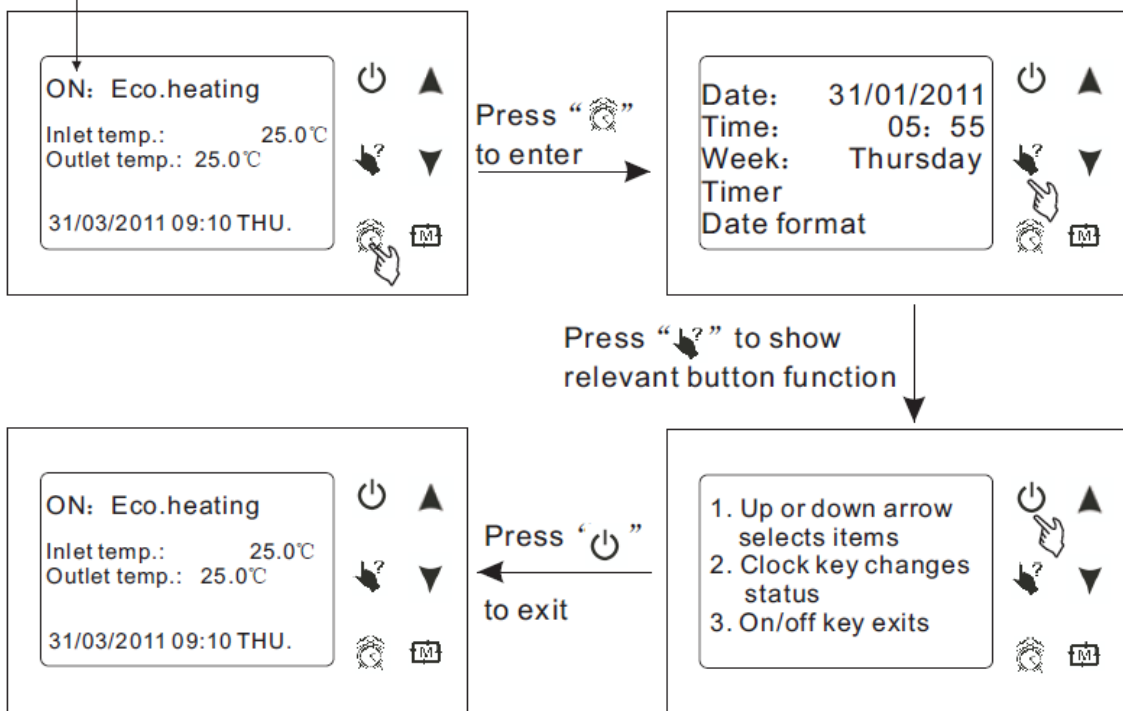
Press “” at main interface, system will show all button function; Press “” at clock interface, system will show “”, “”, “” and “” button function.

Both are OK when system show ON or OFF





Press “” at clock interface, the screen shows as follow:

Both are OK when system shows ON or OFF

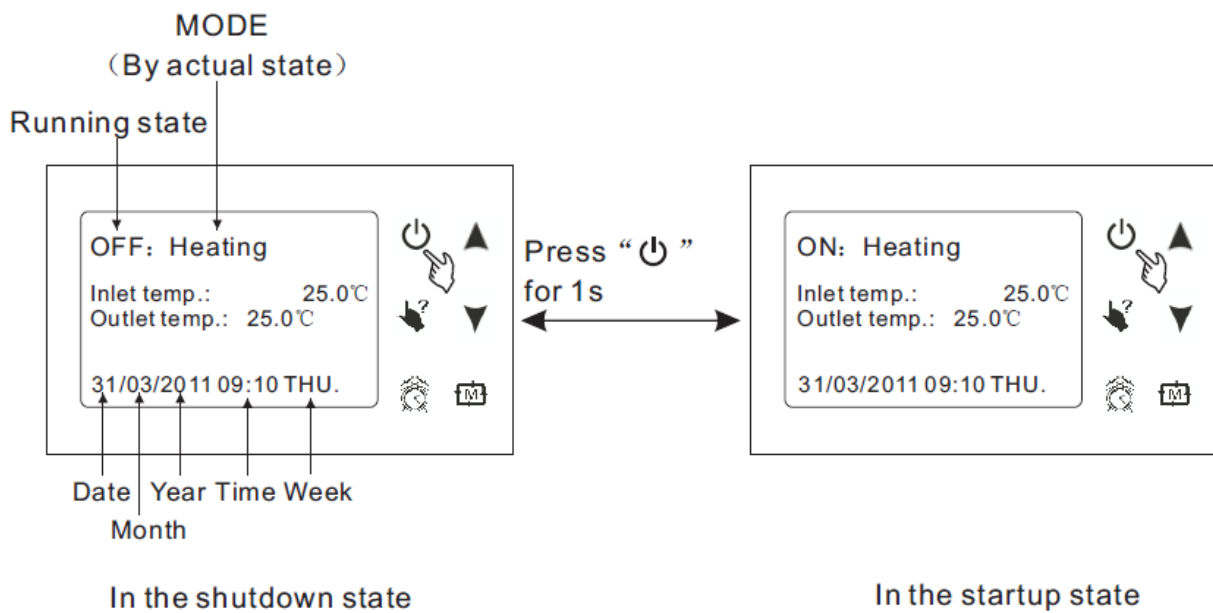


### 5.2.2 Starting Up and Shutting Down

Press “” in the shutdown state for 1s to start up the system;

Press “” in the startup state for 1s to shut down the system.

For example:

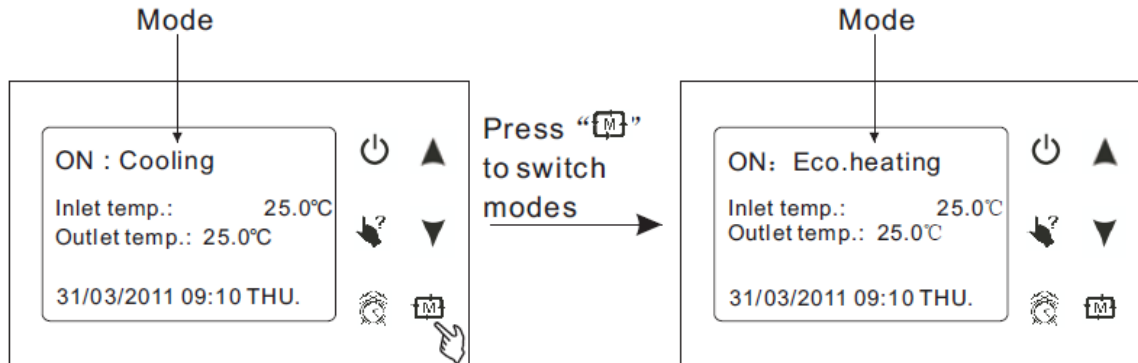




### 5.2.3 Mode Operation

At main interface, you can switch modes of cooling, economic heating, heating, rapid heating by pressing “M”. Or switch modes of cooling, economic heating and automatic. The different unit gets different mode types.

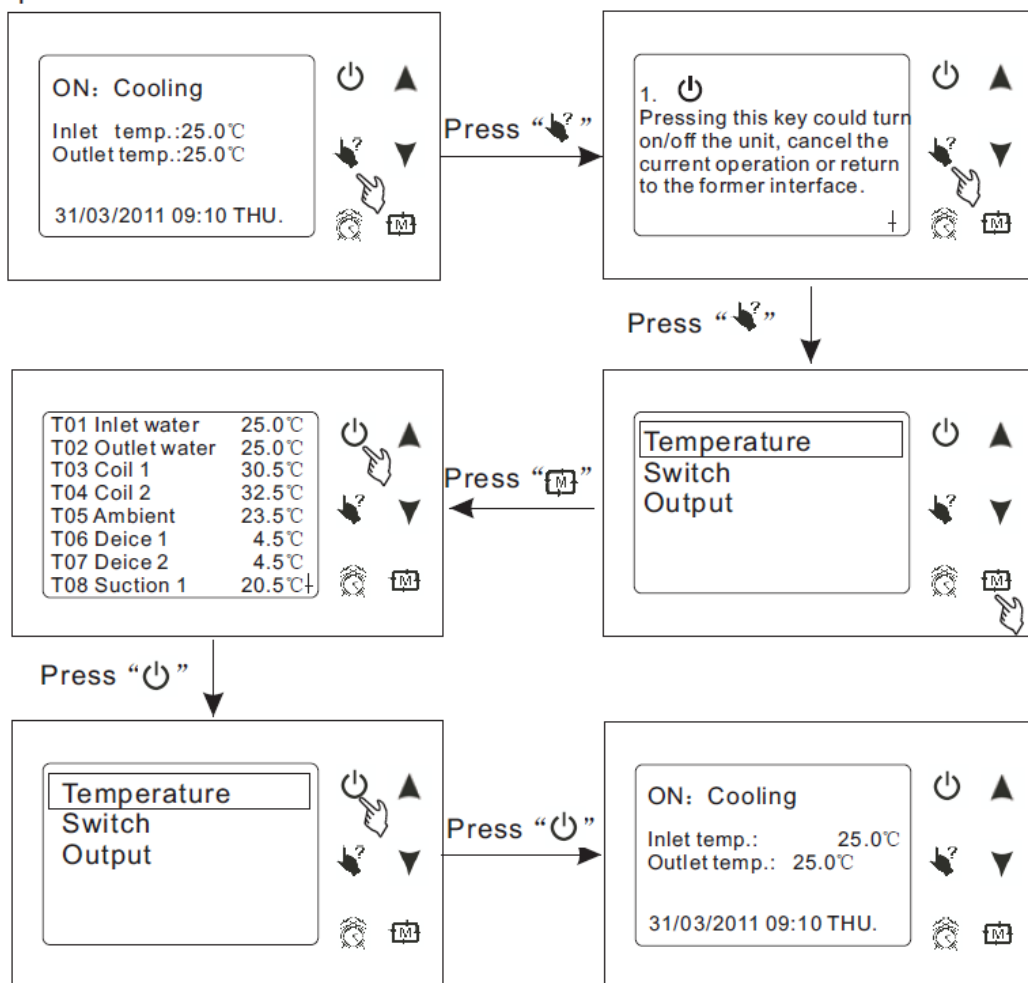
Attention: the operation of mode is invalid when the unit you buy is cooling only or heating only.



### 5.2.4 System Working State Operation

At any interface, you can enter system working state by pressing “?” twice, press “▲” (pageup) or “▼” (pagedown) to select the needing parameter, press “M” to enter, and press “⏻” to exit.

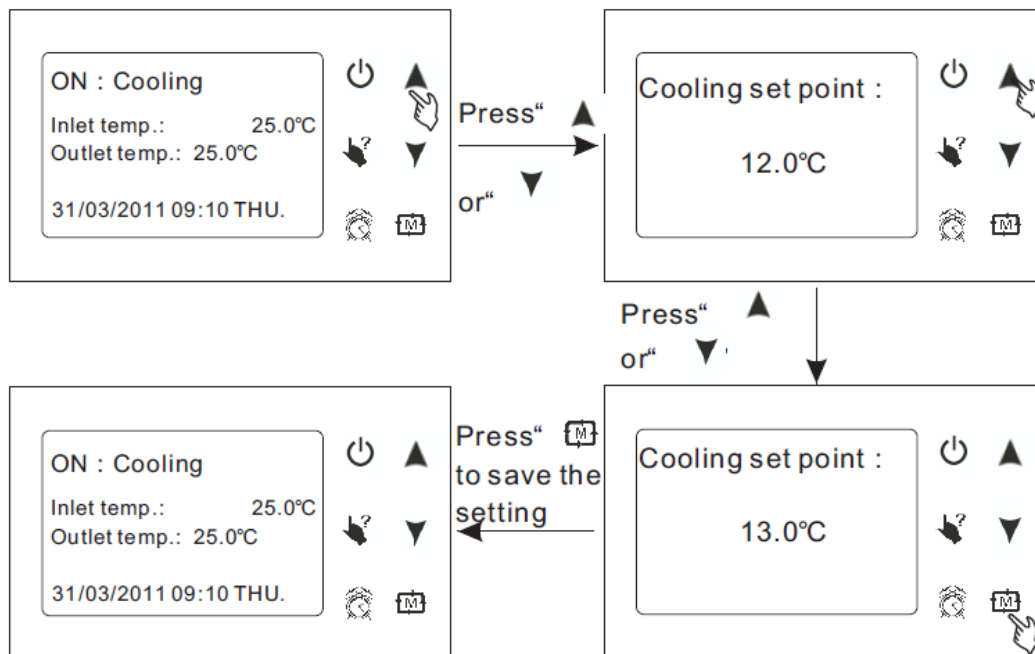
For example:



### 5.2.5 Parameter Operation

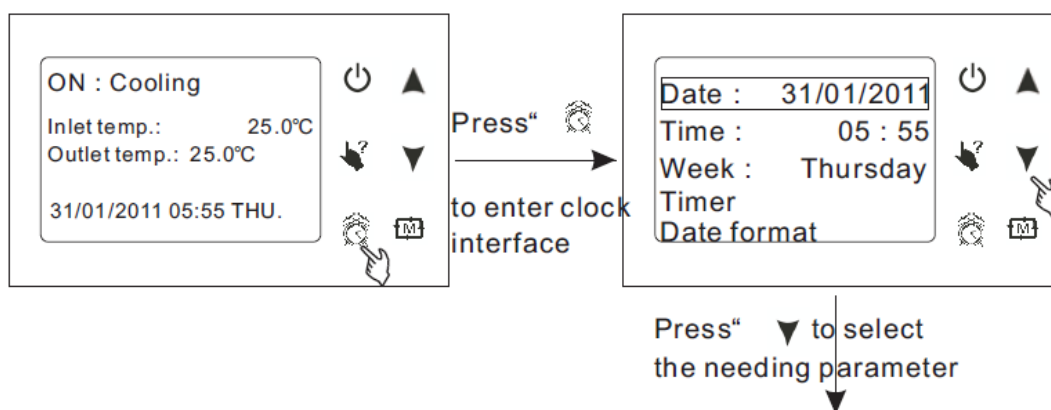
At main interface, press “▲” or “▼” to enter parameter setting interface, press “▲” (increasing) or “▼” (decreasing) can change parameter value, press “M” to save the setting and exit. Press “⏻” can not save the setting but exit. (You can refer to parameter table to set relevant temperature.)

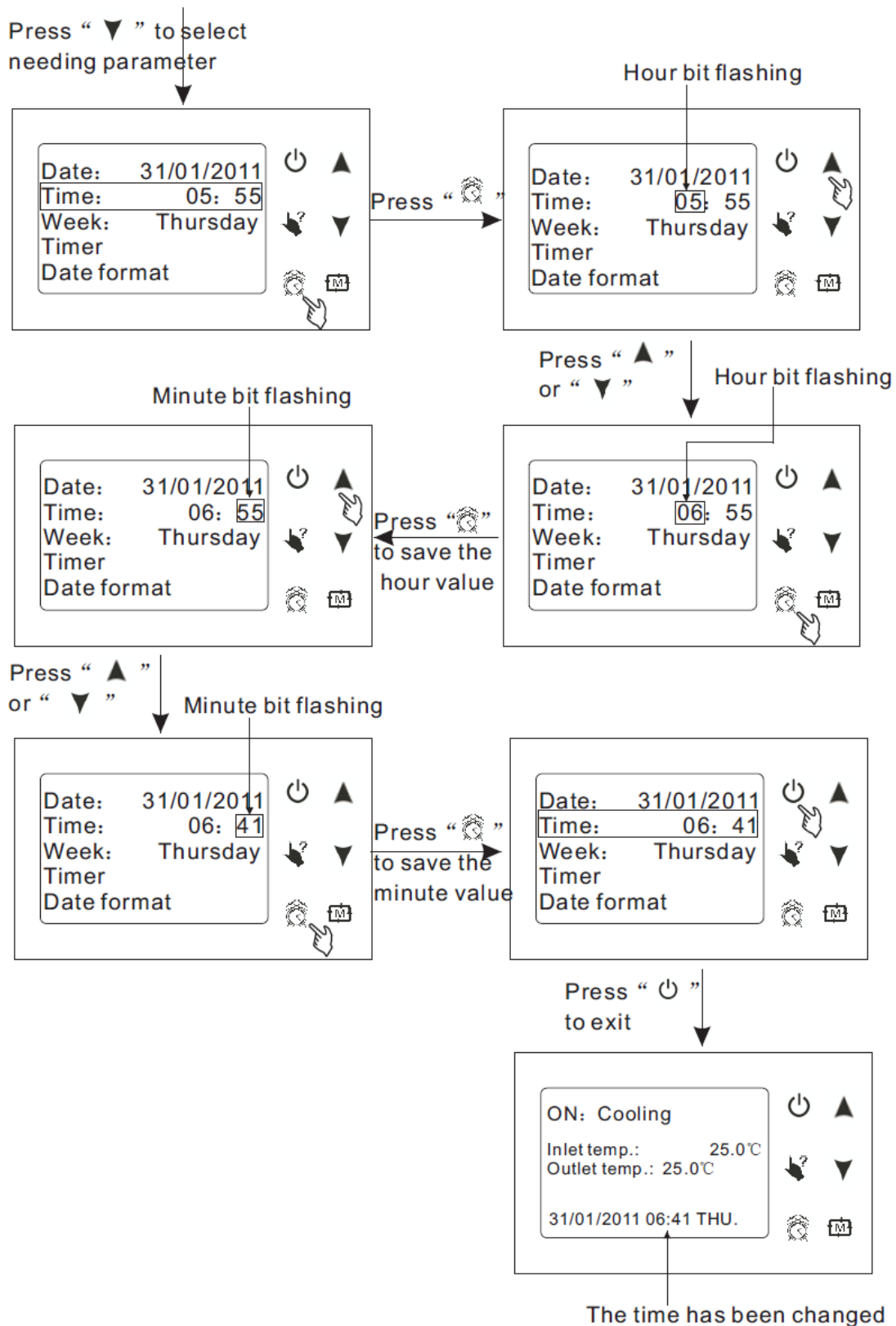
For example:



### 5.2.6 Clock Operation

At main interface, press “⚙️” to enter clock setting interface, select the needing parameter and press “▲” (Increasing) or “▼” (Decreasing) can change parameter value, then press “⚙️” to save, press “⏻” cancel the setting or back to the main interface. (“timer setting” refer to timer operation)



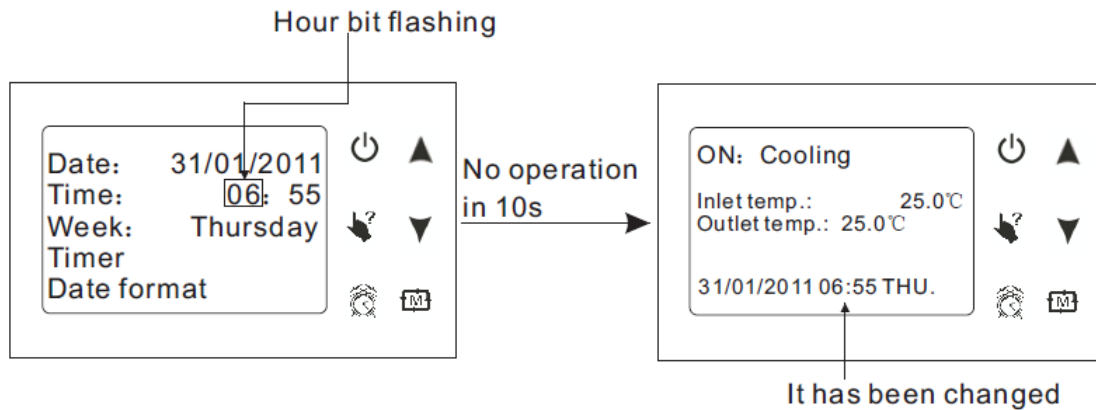


Tips: The setting of date and week is the same with the clock.

If there is no operation in 10 seconds, the system will remember the parameter setting automatically and return back to the main interface.

As follows:





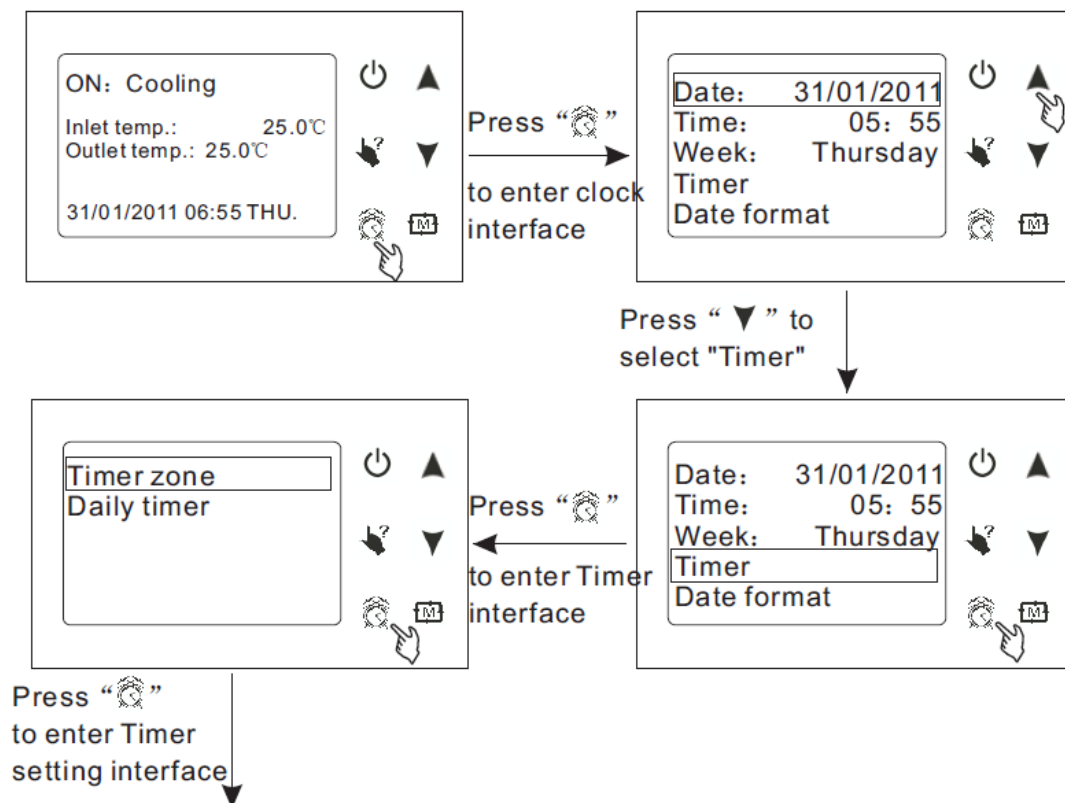
### 5.2.7 Timer Operation

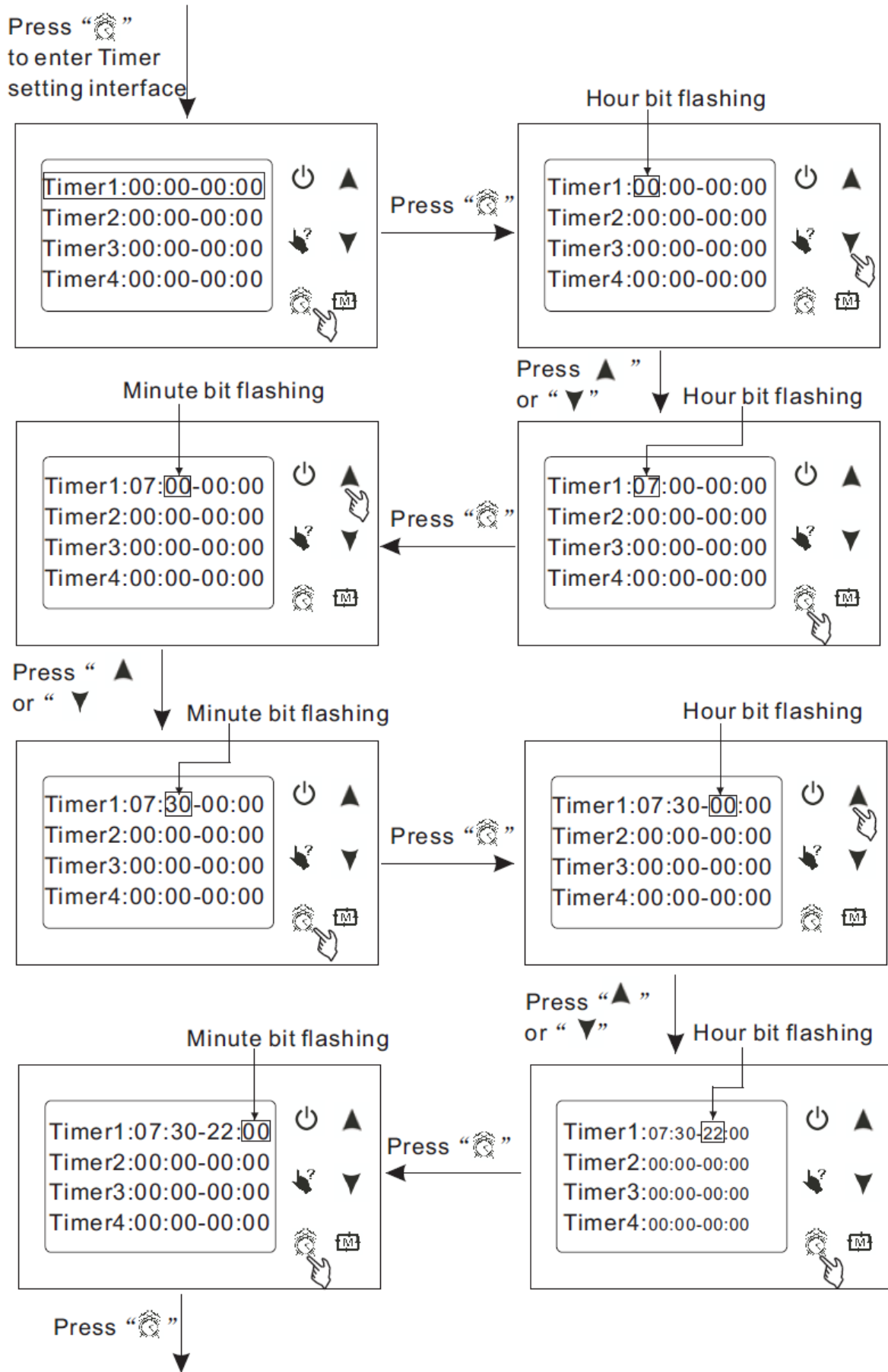
You can set four timer on and timer off according to you needing.

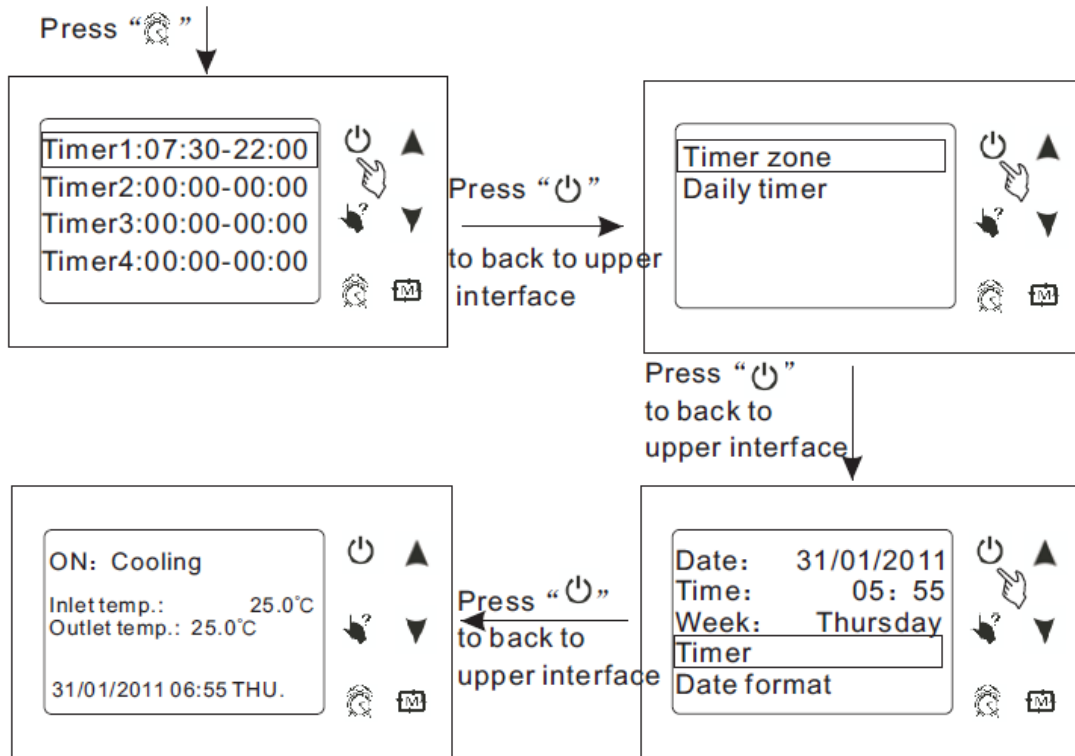
At main interface, press “🕒” to enter timer setting, press “▼” to select “Timer”, then press “🕒” to enter timer setting interface, (timer setting: you can set four timer on and timer off, and the time you set can from Monday to Sunday.), the operation is the same with clock setting.

For example:

#### A. Timer setting

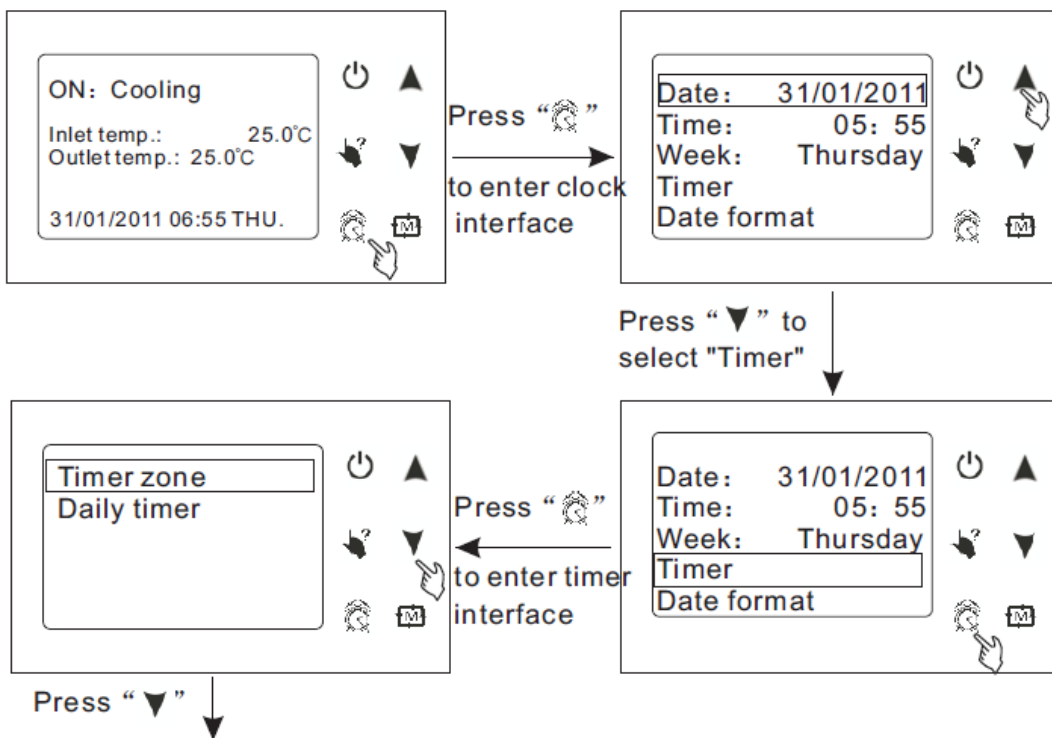


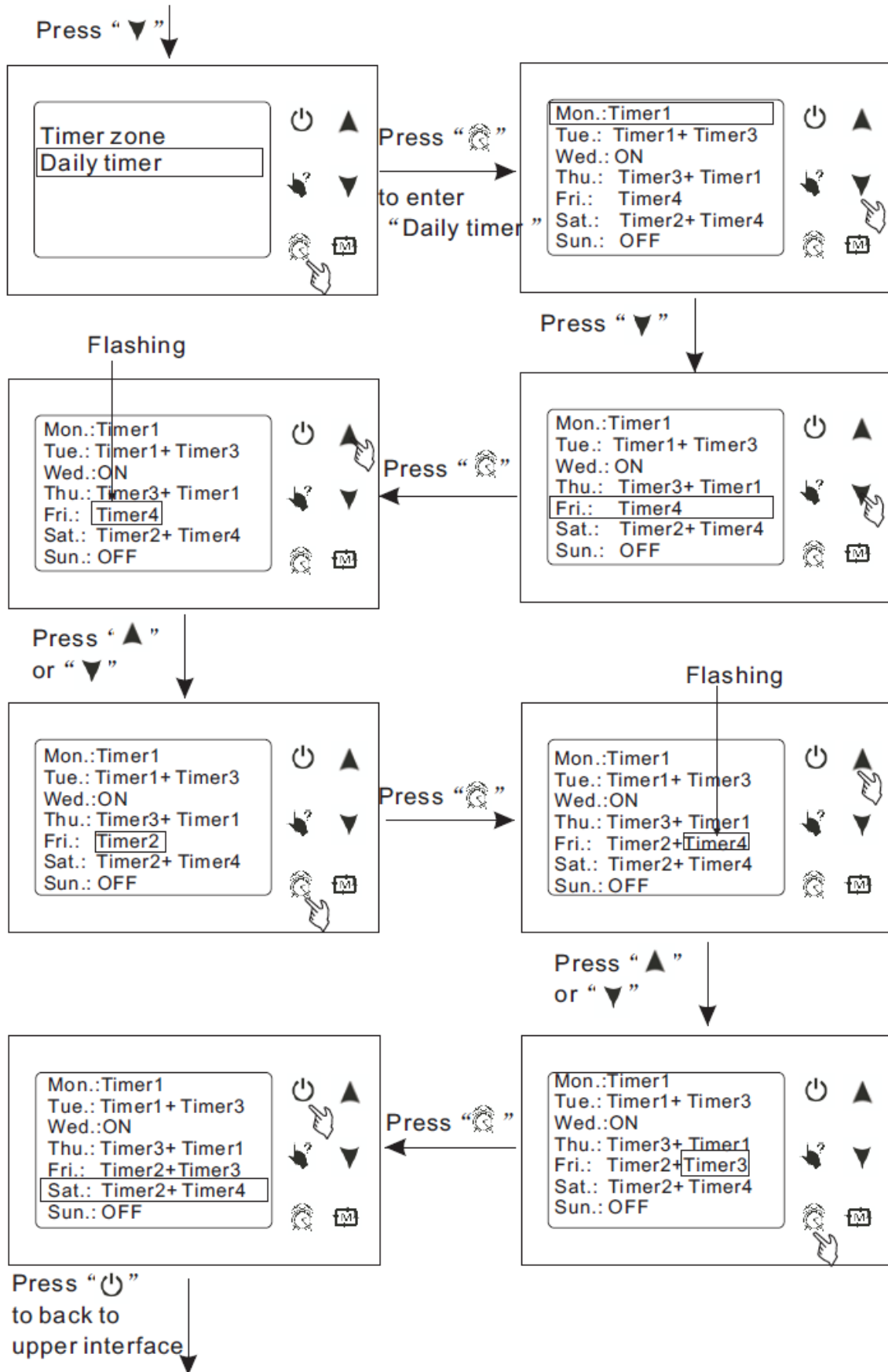


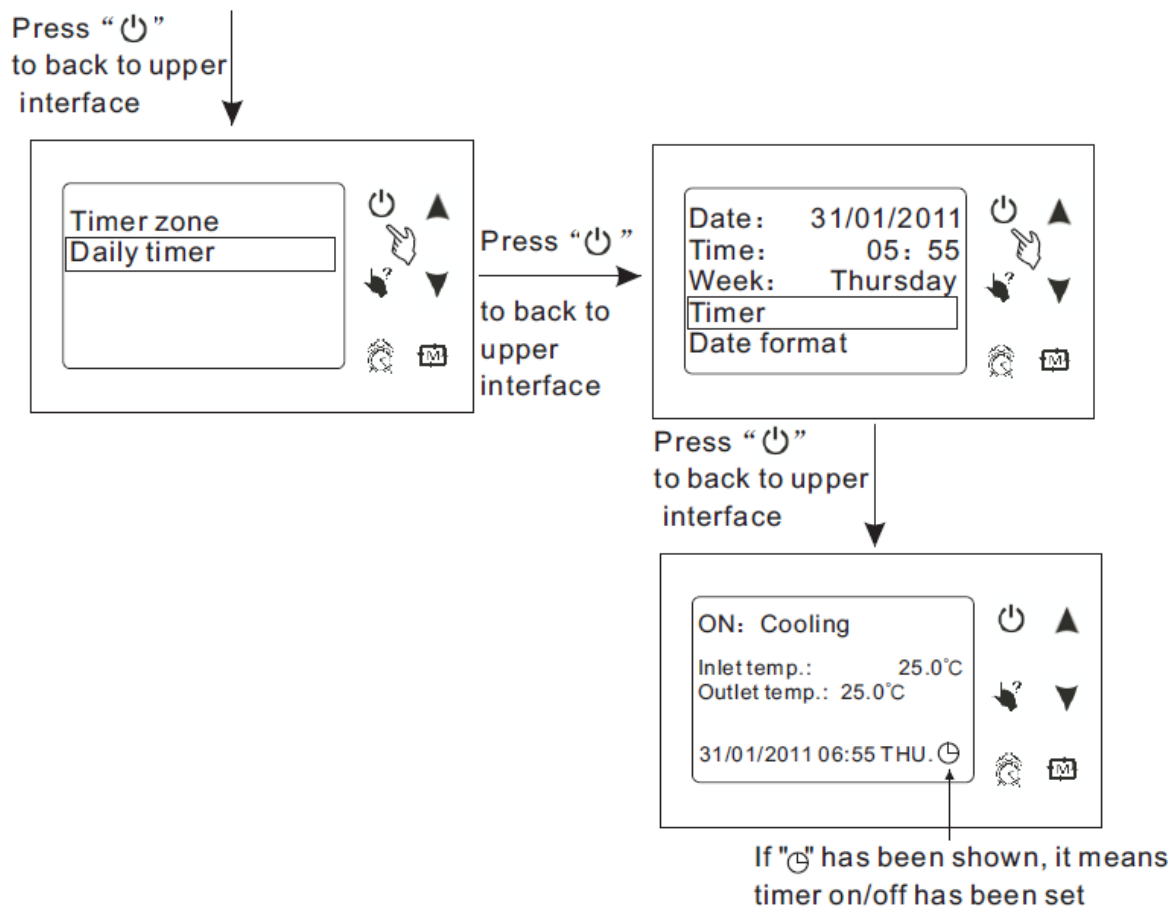


- Tips: 1) The operation of Timer2, Timer3, Timer4 is the same with Timer1;  
 2) Timer1 :07:30-22:00 means system starts up at 7:30, and shut down at 22:00 automatically;  
 3) If there is no operation in 10s, system will memory parameter setting automatically.

B. The operation of daily timer







Tips: The Timer operations of Monday, Tuesday, Wednesday, Thursday, Saturday, Sunday is the same with Friday.

Monday: OFF : means Monday Timer hasn't been set, and the running state is the same with Sunday at 24:00, for example, if system is running at 24:00 on Sunday, then it will be running the whole day on Monday, and vice versa;

Wednesday: ON : means system will be running the whole day on Wednesday

Thursday: OFF : means system will be off the whole day on Thursday;


Saturday: Timer1+Timer2 : means the time to start up and to shut down is according to Timer1 and Timer2.


If there is no operation in 10 seconds, the system will memorise the parameter setting automatically and return back to the main interface.

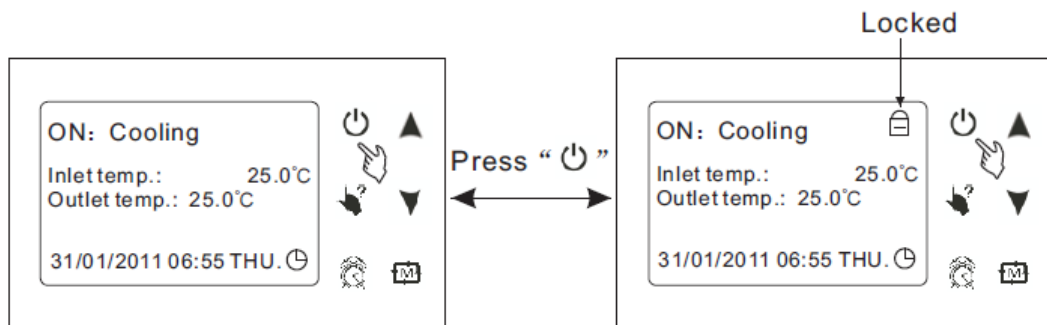


### 5.2.8 Keyboard Lock

To avoid mis-operations, please lock the controller after parameter setting.

At the main interface, pressing “” for 5 seconds, the keyboard will be locked.

When the keyboard is locked, pressing “” for 5 seconds, the keyboard will be unlocked.



#### NOTES:

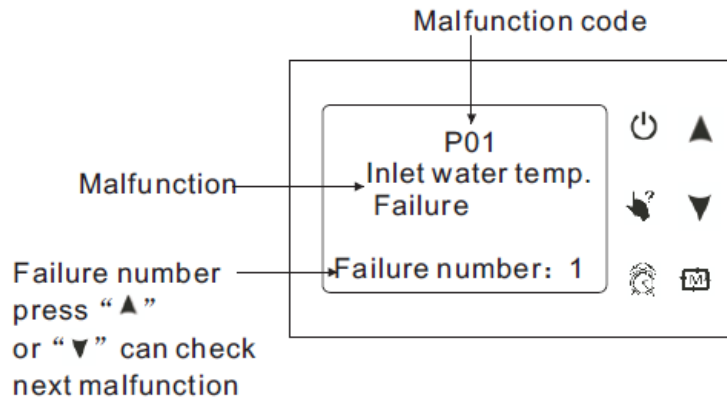
When the unit is in alarming state, the key lock can be removed automatically.

### 5.2.9 Malfunction Display

There will be malfunction code showing on the controller screen when relative malfunction occurs.

You can refer to the malfunction table to find out the failure cause and solution.

For example:



### 5.3 Parameter Table

Meaning	Default	Remarks
Set-point of cooling target temperature	12°C	Adjustable
Set-point of heating target temperature	40°C	Adjustable
Set-point of auto mode target temperature	27°C	Adjustable

## 6. Maintenance

Check the water supply and air vent frequently to avoid any lack of water, or air in the water Loop. Clean the water filter according to a schedule to keep good water quality. Lack of water and dirty water can damage the unit. The heat pump will start the water pump every 72 hours when it is not running to keep it from freezing.

Keep the unit in a place which is dry, clean and has good ventilation. Clean the heat exchanger according to a schedule to keep a good heat exchange rate and save energy.

Check each part of the unit and the pressure of the system. Replace the failing 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 and that the wiring is correct. If there is any part failing with incorrect actions or smell, please replace.

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.

Please drain out the water in the super heater of the heat pump unit in winter when the super heater is not used.

The water loop of the heat pump MUST be protected from freezing in winter time. Please pay attention to below suggestions. Non-observance on below suggestions will invalidate the warranty for the heat pump.

1. Please do not shut off the power supply to the heat pump in winter. When the air temperature is below 0°C, if the inlet water temperature is above 2°C and below 4°C, the water pump will start the freezing protection function, if the inlet water is lower than 2°C, the heat pump will begin heating.
2. Use anti-freezing liquid (glycol water)
  1. Look for below table for the volume of the glycol water
  2. The glycol water can be added into the system from the expansion tank of the water loop.

Glycol Percentage (%)	10	20	30	40	50
Ambient Temperature (Celsius)	-3.0	-8.0	14.0	-22.0	-33.0
Cooling/Heating Capacity Fluctuation	0.991	0.982	0.972	0.961	0.946
Power Input Fluctuation	0.996	0.992	0.986	0.976	0.966
Water Flow Fluctuation	1.013	1.040	1.074	1.121	1.178
Water Drop Fluctuation	1.070	1.129	1.181	1.263	1.308

Note: If there is too much glycol water, the water flow and water pump will be influenced, and the heat exchange rate will decrease. This table is for reference, please use anti-freezing water according to the real conditions of the local climate.



## 6.1 Ordinary Malfunctions and Solutions

MALFUNCTION	DISPLAY	INDICATOR	REASON	RESOLUTION
Power On		Off		
Normal Working		On		
Inlet temp. Sensor failure	P01	1 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Outlet temp. Sensor failure	P01	2 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Recovery temp. Sensor failure	P033	3 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Ambient temp. Sensor failure	P04	4 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Coil 1 temp. Sensor failure	P15	5 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Coil 2 temp. Sensor failure	P25	5 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Suction 1 temp. Sensor failure	P17	7 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Suction 2 temp. Sensor failure	P27	7 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Discharge 1 temp. Sensor failure	P181	8 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Discharge 2 temp. Sensor failure	P281	8 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Antifreezing 1 temp. Sensor failure	P19	9 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
Antifreezing 2 temp. Sensor failure	P29	9 on 1 off	The temp. sensor is broken or short circuit	Check or change the temp. sensor circuit
High pressure1 protection	E11	11 on 1 off	The high-pressure switch is broken	Check the pressure switch and cold circuit
High pressure2 protection	E21	11 on 1 off	The high-pressure switch is broken	Check the pressure switch and cold circuit
Low pressure1 protection	E12	12 on 1 off	The low-pressure switch is broken	Check the pressure switch and cold circuit
Low pressure2 protection	E22	12 on 1 off	The low-pressure switch is broken	Check the pressure switch and cold circuit
Heat source side water flow failure	E031	13 on 1 off	No water/little water in system	Check the pipe water flow and water pump
The use side water flow failure	E032	13 on 1 off	No water/little water in system	Check the pipe water flow and water pump
water flow over-low failure	E035	13 on 1 off	No water/little water in system	Check the pipe water flow and water pump
Electrical-heat over heat failure	E04	14 on 1 off	Electrical overheat	Check or change electrical heat
Compressor 1 overload failure	E101	21 on 1 off	Compressor overload	Check the compressor functionality
Compressor 2 overload failure	E201	21 on 1 off	Compressor overload	Check the compressor functionality
Water-inlet and outlet temp. difference	E06	16 on 1 off	Water flow is not enough and low differential pressure	Check the pipe water flow and whether water system is jammed
The system 1 use side antifreezing protection	E171	17 on 1 off	Water flow is not enough	Check the pipe water flow and whether water system is jammed
The system 2 use side antifreezing protection	E271	17 on 1 off	Water flow is not enough	Check the pipe water flow and whether water system is jammed
The system 1 heat source side antifreezing protection	E172	17 on 1 off	Water flow is not enough	Check the pipe water flow and whether water system is jammed
The system 2 heat source side antifreezing protection	E272	17 on 1 off	Water flow is not enough	Check the pipe water flow and whether water system is jammed
The primary anti-freezing protection	E19	19 on 1 off	The ambient. Temp is low	/
The secondary anti-freezing protection	E29	19 on 1 off	The ambient. Temp is low	/
Discharge Temp. Of system 1 is too high	E182	8 on 1 off	Compressor overload	Check the compressor functionality
Discharge Temp. Of system 2 is too high	P282	8 on 1 off	Compressor overload	Check the compressor functionality
System protection	E05	8 on 1 off	Protection system failure	Check each protection point of the system
Defrosting	/	Flashing	/	/
Communication Failure	E08	/	Communication failure between wire controller and main board	Check the wire connection between remote wire controller and main board

FAILURE	POSSIBLE CAUSES	SOLUTIONS
Heat pump cannot be started	Wrong power supply	Shut off the power and check power supply
	Power supply cable loose	Check power cable and correct the connection
	Circuit breaker open	Check for the cause and replace the fuse or circuit breaker
Water pump is running with high Noise or without water	Lack of water in the piping	Check the water supply and charge water to the piping
	Too much air in the water loop	Discharge the air in the water loop
	Water valves closed	Open the valves in water loop
	Dirt and block on the water filter	Clean the water filter
Heat pump capacity is low, compressor does not stop	Lack of refrigerant	Check for the gas leakage and Recharge the Refrigerant
	Bad insulation on water pipe	Make good insulation on water pipe
	Low heat exchange rate on air Side exchanger	Clean the air side heat exchanger
	Lack of water flow	Clean the water filter
High compressor exhaust	Too much refrigerant	Discharge the redundant gas
	Low heat exchange rate on air side exchanger	Clean the air side heat exchanger
Low pressure problem of the system	Lack of gas	Check the gas leakage and recharge freon
	Block on filter or capillary	Replace filter or capillary
	Lack of water flow	Clean the water filter and discharge the air in water loop
Compressor does not run	Power supply failure	Check off the power supply
	Compressor contactor broken	Replace compressor contactor
	Power cable loose	Tighten the power cable
	Protection on compressor	Check the compressor exhaust temp.
	Wrong setting on return water Temp.	Reset the return water temp
	Lack of water flow	Clean the water filter and discharge the air in water loop
High noise of compressor	Liquid refrigerant goes into Compressor	Bad evaporation check the cause for bad evaporation and get rid of it
	Compressor failure	Use new compressor
Fan does not run	Failure on fan relay	Replace the fan relay
	Fan motor broken	Replace fan motor
The compressor runs but heat Pump has no heating or cooling capacity	No gas in the heat pump	Check system leakage and recharge refrigerant
	Heat exchanger broken	Find out the cause and replace the heat exchanger
	Compressor failure.	Replace compressor
Low outlet water temperature	Low water flow rate	Clean the water filter and discharge the air in water loop
	Low setting for the desired water temp	Reset the desired water temperature
Low water flow protection	Lack of water in the system	Clean the water filter and discharge the air in water loop
	Failure on flow switch	Replace the flow switch

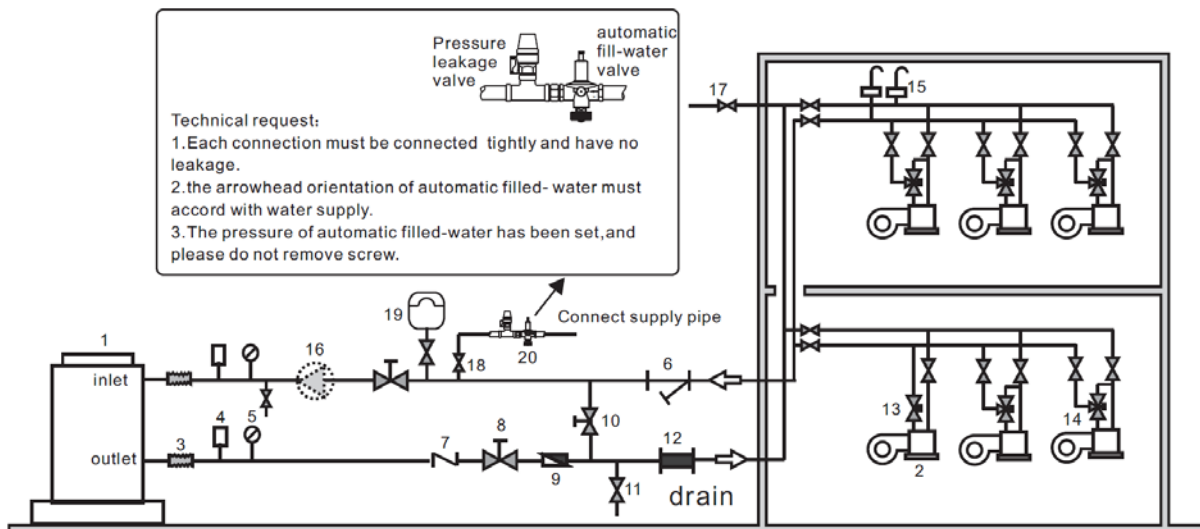
## 7. Appendix

### 7.1 Install Sketch Map

Especial Installation (expandable water tank)

Legend explanation

1. Main Unit	11. Drain
2. Fan Coil	12. Filter
3. Rubber Flexible Connection	13. Two-way Valve
4. Thermometer	14. Three-way Valve
5. Pressure Meter	15. Automatic Ventilation
6. Filter Similar as 'Y'	16. Water Pump
7. Check Valve	17. Ball Valve
8. Ball Valve	18. Ball Valve
9. Flow Meter	19. The close and expandable water tank
10. Bypass Valve	20. Automatically filled-water



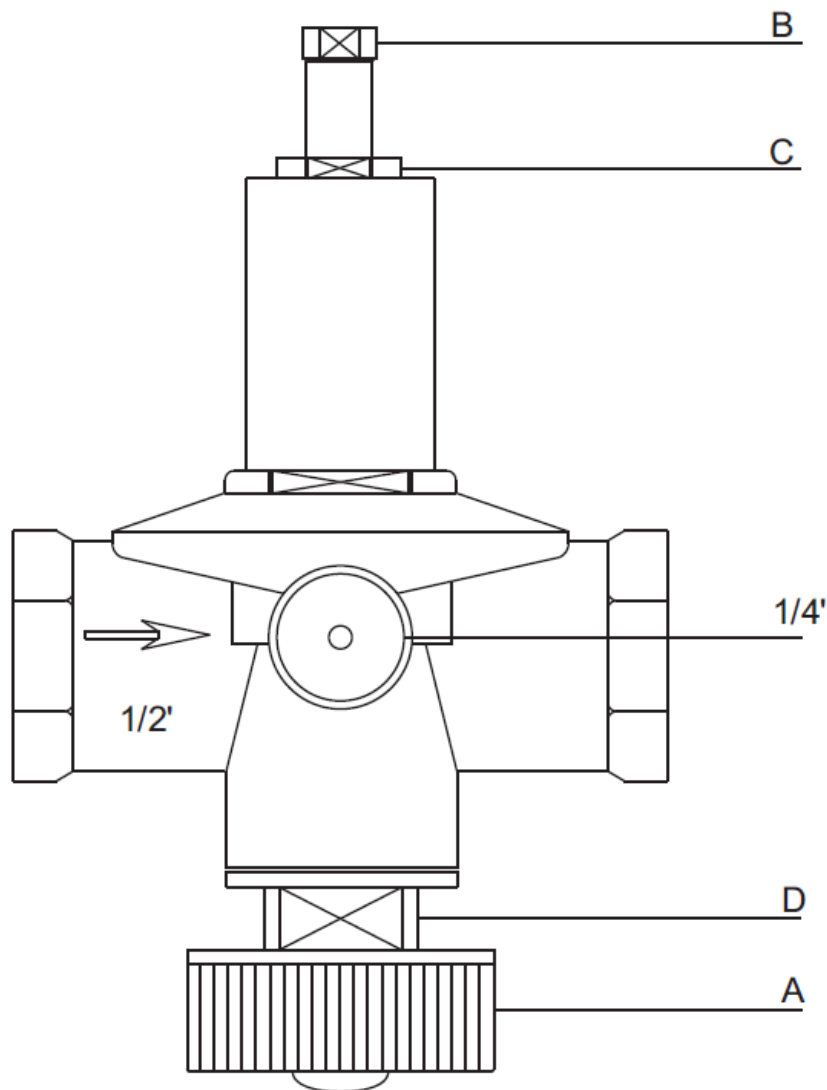
Installation Requests:

1. The Factory only offers main unit in the legend, and the other modules which are indispensable fittings are to be provided by the user or installation company.
2. The unit of which code contains the letter "B" has a water pump inside and an external water pump is not needed.
3. Automatic ventilation (15) is installed on the top point of the water system.
4. The quantity proportion of the two-way valve (13) and the three-way valve (14) is referred to the technical regulation, and there is a three-way valve installed on the farthest place of water system.
5. The ball valve (17) is used when it is swashed, and the water in the water system is filled.

## 7.2 Installation of Automatic Filled-Water

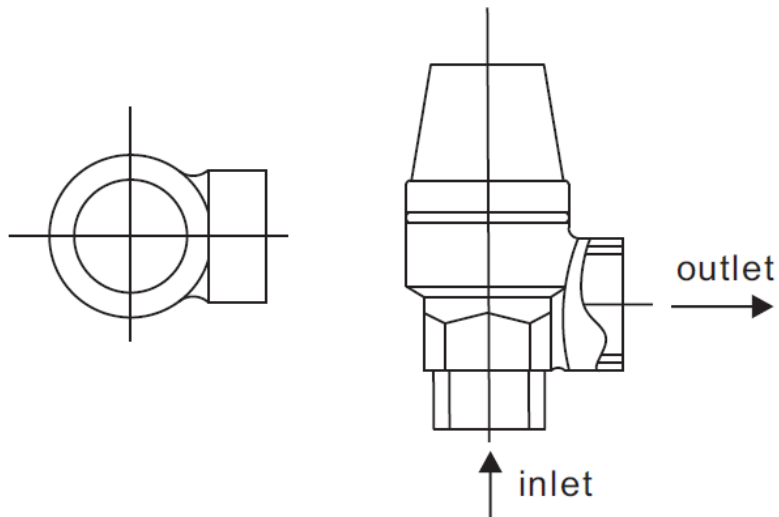
1. When the automatic filled-water valve is installed, the arrowhead orientation of inlet water must accord with the orientation of the valve
2. Automatically filled-water has been adjusted in advance to 21.76psi
3. If readjusting the pressure of inlet water, please operate as follows:
  - a. Open the screw cap ( C )
  - b. If reducing the pressure of water supply, please screw down the pressure to adjust the screw ( B )
  - c. If increasing the pressure of water supply, please screw down the pressure to adjust the screw ( B )
4. When the system needs the water filled first, rest the handle ( A ) of filled water. Then the handle ( A ) can return (close) when the system is full of water.
5. Automatic filled-water valve needs cleaning in a periodic time and then you must close the tap, unscrew the plug ( D ) and remove the inside filter net. Please reassemble them again after cleaning.

NOTE: There are two connections for the water pressure meter in the central section of automatic filled-water, where the water pressure meter can be connected directly and display the set pressure. The screw cap ( C ) must be tweaked after adjusting the filled-water pressure.



### 7.3 The Installation Explanation of the Leakage Pressure Valve

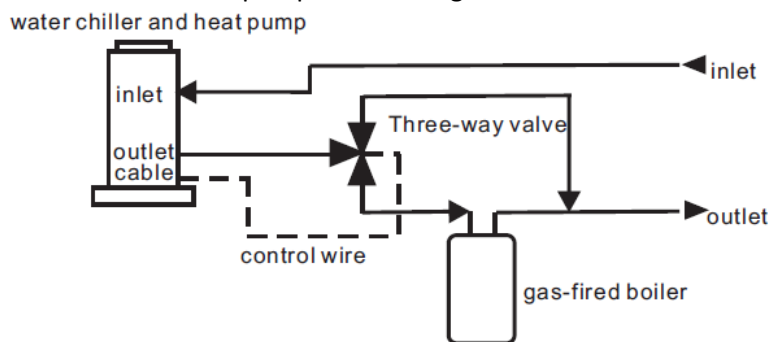
1. The action pressure of the leakage pressure valve is more than 3 bar (valve is open) but the pressure cannot be adjusted.
2. The valve will open automatically to make sure that the water loop of the air-con system is safe when the water pressure in the backwater side is higher than the set pressure.



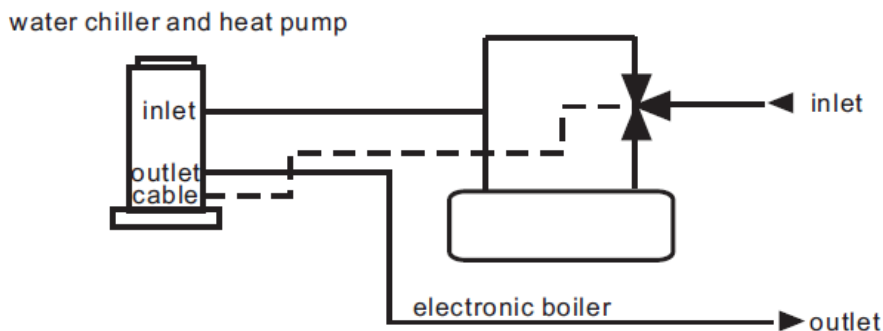
### 7.4 The Way of Assistant Heat Source Connection

Unit provides the connection of assistant heat source which cannot be only for the gas-fired boiler, the also the electronic boiler or warm-net pipe for city accordingly.

1. Water chiller and heat pump + assistant gas-fired boiler



2. Water chiller and heat pump + assistant electronic boiler



## 7.5 Connections Code of the Main PCB

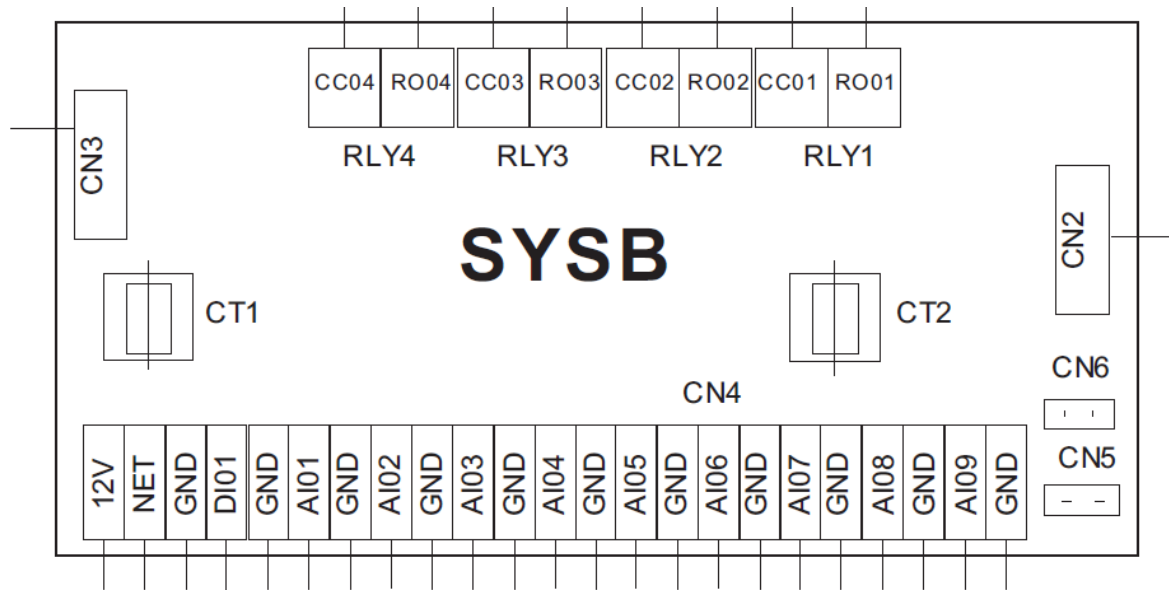
CN6	CN5	CN1	RO09	RO08	RO07	RO06	RO05	RO04	RO03	RO02	RO01	L	N	N															
<b>PC4001</b>																													
DI/DO 1	DI/DO 2	DI 11	DI 10	DI 09	DI 08	DI 07	DI 06	DI 05	DI 04	DI 03	DI 02	AI 12(50K)	AI 11(50K)	AI 10	AI 09	AI 08	AI 07	AI 06	AI 05	AI 04	AI 03	AI 02	AI 01	5V	DI 01	NET	12V		
DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG	DNG

## Connections explanation:

NO.	Symbol	Meaning	NO.	Symbol	Meaning
1	AC-L	Live line	21	DI 07	Water flow switch protection input
2	AC-N	Null line	22	DI 08	Electric heater overload protection input
3	RO 01	Compressor 1 output(220VAC)	23	DI 09	Compressor 1 overload protection input
4	RO 02	Compressor 2 output(220VAC)	24	DI 10	Compressor 2 overload protection input
5	RO 03	High speed of fan output(220VAC)	25	DI 11	System protection input
6	RO 04	Low speed of fan output(220VAC)	26	DI 12	Emergency switch input
7	RO 05	Water pump output(220VAC)	27	AI 01	Water input temperature input
8	RO 06	4-way valve output(220VAC)	28	AI 02	Water output temperature output
9	RO 07	Electric heater output(250VAC)	29	AI 03	System 1 fan coil temperature input
10	RO 08	Spray valve output(220VAC)	30	AI 04	System 2 fan coil temperature input
11	RO 09	Alarm system output(220VAC)	31	AI 05	Ambient temperature input
12	DI/DO 1	Mode indicator output	32	AI 06	System 1 antifreeze temperature input
13	DI/DO 2	Emergency switch output	33	AI 07	System 1 antifreeze temperature input
14	DI 01	Flow rate input	34	AI 08	System 1 suction temperature input
15	DI 02	System 1 high pressure protection input	35	AI 09	System 2 suction temperature input
16	DI 03	System 1 low pressure protection input	36	AI 10	No use
17	DI 04	System 2 high pressure protection input	37	AI 11(50K)	System 1 discharging temperature input
18	DI 05	System 2 low pressure protection input	38	AI 12(50K)	System 2 discharging temperature input
19	NET GND 12V	Connecting to the remote controller	39	CN1	System 2 electric expansion valve output
20	DI 06	Phase sequence protection	40	CN6	System 1 electric expansion valve output



## 7.6 Connection of PCB Installation



Connections explanation:

No.	Symbol	Meaning
1	RO01	System1 mangtic valve outlet ( 220-230VAC )
2	RO02	System2 mangtic valve outlet ( 220-230VAC )
3	RO03	System1 alert outlet ( 220-230VAC )
4	RO04	System2 alert outlet ( 220-230VAC )
5	CC01	System1 mangtic valve inlet ( 220-230VAC )
6	CC02	System2 mangtic valve inlet ( 220-230VAC )
7	CC03	System1 alert inlet ( 220-230VAC )
8	CC04	System2 alert inlet ( 220-230VAC )
9	NET GND 12V	Wire controller
10	DI01 GND	Mode/communication
11	AI01 GND	System 1 anti-freeze temp.(input)
12	AI02 GND	System 2 anti-freeze temp.(input)
13	AI03 GND	System 1 economizer inlet temp.failure(input)
14	AI04 GND	System 1 economizer outlet temp.failure(input)
15	AI05 GND	System 2 economizer inlet temp.failure(input)
16	AI06 GND	System 2 economizer outlet temp.failure(input)
17	AI07 GND	System 1 exhaust temp.(input)
18	AI08 GND	System 2 exhaust temp.(input)
19	AI09 GND	Ambient temp.(input)

## 7.7 SYSB Malfunction Table

Malfunction	Display	Cause	Solution
System 1 exhaust temp. failure	P181	The sensor is open or short circuited	Check or change the sensor
System 2 exhaust temp. failure	P281	The sensor is open or short circuited	Check or change the sensor
Ambient temp. sensor failure	P04	The sensor is open or short circuited	Check or change the sensor
System 1 anti-freeze temp. failure	E171	The sensor is open or short circuited	Check or change the sensor
System 2 anti-freeze temp. failure	E271	The sensor is open or short circuited	Check or change the sensor
System 1 economizer inlet temp. failure	P101	The sensor is open or short circuited	Check or change the sensor
System 2 economizer inlet temp. failure	P201	The sensor is open or short circuited	Check or change the sensor
System 1 economizer outlet temp. failure	P102	The sensor is open or short circuited	Check or change the sensor
System 2 economizer outlet temp. failure	P202	The sensor is open or short circuited	Check or change the sensor
System anti-freeze protection	P19	Water flow volume not enough	Check the flow volume, see if water is jammed or not
System 2 anti-freeze protection	P29	Water flow volume not enough	Check the flow volume, see if water is jammed or not
Communication failure	E08	Communication failure between remote wire controller and main board	Check the wire connection between remote wire controller and main board
System 1 current protection	E151	Current through compressor too heavy	Check through the power supply for compressor or short circuit
System 2 current protection	E251	Current through compressor too heavy	Check through the power supply for compressor or short circuit
System 1 exhaust high temp. protection	P182	Compressor exhaust temp. too high	Check through the refrigerant system
System 2 exhaust high temp. protection	P282	Compressor exhaust temp. too high	Check through the refrigerant system

## 7.8 Cautions and Warnings

The unit can only be repaired by qualified personnel or an authorised dealer.

This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

Please make sure that the unit and power connection have good earthing, otherwise there is a risk of electrical shock.

If the supply cord is damaged, it must be replaced by the manufacturer, our service agent or a similarly qualified person in order to avoid a hazard.

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, and must be taken to a recycling centre for electric and electronic devices or handed back to the dealer when purchasing an equivalent appliance.

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.

The unit CANNOT be installed near flammable gas. If there is any leakage of the gas a fire can occur.

Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire.

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.

The unit can only be repaired by the qualified personnel of an installer center or an authorized dealer.

Installation must be performed in accordance with the NEC/CEC by authorized person only (for North America market)

USE SUPPLY WIRES SUITABLE FOR 75°C.

Caution: Single wall heat exchanger, not suitable for potable water connection.



## 7.9 Cable Specifications

### Single Phase Unit

Nameplate Maximum Current	Phase Line	Earth Line	MCB	Creepage Protector	Signal Line
No more than 13A	2 x 1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	20A	10mA less than 0.1sec	n x 0.5mm <sup>2</sup>
13~25A	2 x 4mm <sup>2</sup>	4mm <sup>2</sup>	40A	10mA less than 0.1sec	
25~30A	2 x 6mm <sup>2</sup>	6mm <sup>2</sup>	40A	10mA less than 0.1sec	
30~40A	2 x 10mm <sup>2</sup>	10mm <sup>2</sup>	63A	10mA less than 0.1sec	
40~55A	2 x 16mm <sup>2</sup>	16mm <sup>2</sup>	80A	10mA less than 0.1sec	
55~70A	2 x 25mm <sup>2</sup>	25mm <sup>2</sup>	100A	10mA less than 0.1sec	

### Three Phase Unit

Nameplate Maximum Current	Phase Line	Neutral Line	Earth Line	MCB	Creepage Protector	Signal Line
No more than 13A	3 x 1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	20A	30mA less than 0.1sec	n x 0.5mm <sup>2</sup>
13~25A	3 x 4mm <sup>2</sup>	4mm <sup>2</sup>	4mm <sup>2</sup>	40A	30mA less than 0.1sec	
25~30A	3 x 6mm <sup>2</sup>	4mm <sup>2</sup>	6mm <sup>2</sup>	40A	30mA less than 0.1sec	
30~40A	3 x 10mm <sup>2</sup>	4mm <sup>2</sup>	10mm <sup>2</sup>	63A	30mA less than 0.1sec	
40~55A	3 x 16mm <sup>2</sup>	4mm <sup>2</sup>	16mm <sup>2</sup>	80A	30mA less than 0.1sec	
55~70A	3 x 25mm <sup>2</sup>	4mm <sup>2</sup>	25mm <sup>2</sup>	100A	30mA less than 0.1sec	

If the unit is to be installed outdoors, please use a UV resistant cable.