

ATECPOOL

Climatic Water/Water Heat Pump



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Preface

- Thank you so much for choosing our products!
Please read this manual carefully before install and use this unit! And keep this manual for further consultation.

Position, installation and commissioning must be carried out by trained personnel working in accordance with these works.

Our company will not take any responsibility if someone is injured or the unit is damaged, as a result of improper installation, debugging, unnecessary maintenance

- Features:

- 1、Heat source stable and reliable

For the ground source temperature is stable, the ground source heat pump runs more reliable and there is no need to defrost in winter.

- 2、C&S heat exchanger, which is higher efficiency.

C&S heat exchanger has screw coil, which can makes water flow patency and convenient to clean; And the refrigeration circuit has little gap with shell. Water loop coil without joint, which can decrease leakage.

- 3、Controller with touch screen, which is more humanity



The system uses new intelligent controller with touch screen, this make your operation more comfort.






Safety Precaution

Safety Precaution :

To prevent the users and other from the harm 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	Wrong operation may lead to death or heavy injury on people.
 Attention	Wrong operation may lead to harm 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. 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.









Safety Precaution

INSTALLATION WARNING	 Professional installer is required	The heat pump must be installed by qualified personals, 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 eletrical 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.

INSTALLATION ATTENTION	 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.

WARNING	 Shut off the power	When there is something wrong or strange smell, the power supply need to be shut off to stop the unit. Continue to run may cause electrical short or fire.
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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.
	 Prohibit	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 installation	Check installation to avoid unit displacement, water pipe malposition, distort and water leakage.
	 Shut off the power	When do the clean, must stop the unit and shut off the power, if don't 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.



Specification

3.1

Specification		Model / Code			
		ATWSHP210	ATWSHP230	ATWSHP270	
Heating Capacity*	kW	33.6	67.1	134.2	
Cooling Capacity*	kW	25.5	50.9	101.9	
Power Input*	kW	7.9	15.8	31.6	
COP*	W	4.24	4.24	4.24	
EER*	W	3.16	3.20	3.22	
Heating Capacity**	kW	28.9	57.8	115.6	
Cooling Capacity**	kW	18.9	37.8	75.6	
Power Input**	kW	10.4	20.8	41.7	
COP**	W	2.77	2.77	2.77	
EER**	W	1.78	1.81	1.82	
Max. Power Input	kW	15	25	46	
Max. Running Current	A	25	45	90	
Power Supply	V / Ph / Hz	380~415V/3N~/50Hz			
Compressor Type		Copeland ZWI50KBE-TFP-522 Scroll Compressor			
Compressor Quantity		1	2	4	
Evaporator	Type	Tube in Shell Heat Exchanger			
	Water Flow	m³/h	5.0	10.0	20.0
	Water Pressure Drop	kPa	20.4	38.6	54.5
	Water Connection		DN32	DN80	DN80
Condenser	Type	Tube in Shell Heat Exchanger			
	Water Flow	m³/h	4.6	9.1	18.2
	Pressure Drop	kPa	16.5	30.9	41.5
	Water Connection		DN32	DN80	DN80
Noise	dB(A)	65.0	68.0	69.0	
Refrigerant		R134A			
Controller		Multi-function Controller			
Display		5 Inch Colorful Touch Display			
Max Outlet Water Temperature	°C	80			
Cabinet		Eco-friendly Galvanized Metal / Stainless Steel for option			
Net Weight	kg	202	441	866	
Net Dimensions (L/W/H)	mm	1030 / 640 / 730	1172 / 900 / 1365	1600 / 1130 / 1500	
Shipping dimensions (L/W/H)	mm	1130 / 710 / 910	1360 / 960 / 1520	1790 / 1210 / 1670	

Note:

*Testing Condition Evaporator Side inlet/outlet: 20/15°C; Condenser Side inlet/outlet: 45/55°C

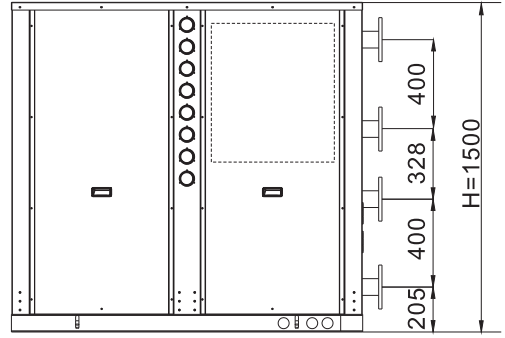
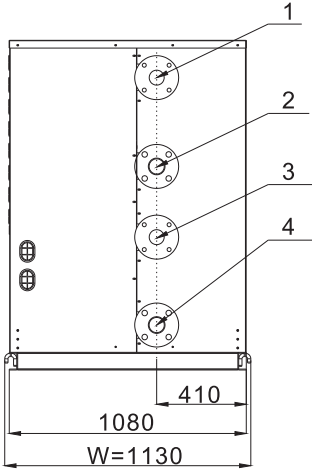
**Testing Condition Evaporator Side inlet/outlet: 20/15°C; Condenser Side inlet/outlet: 65/75°C



Specification

3.2 Dimension

ATWSHP270

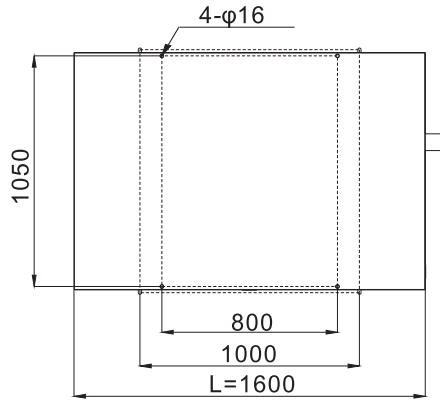


L(mm)

W(mm)

H(mm)

Unit model		ATWSHP270
Unit dimension	L(mm)	1600
	W(mm)	1130
	H(mm)	1500
Number	Name	Pipe diameter
1	HEAT WATER OUTLET	DN65
2	HEAT WATER INLET	DN65
	COLD WATER INLET	DN65
3	COLD WATER INLET	DN65
	COLD WATER OUTLET	DN65
4		



Installation

4.1 Unit Option

- Consider the per unit heating/cooling according to climate, building performance and thermal insulation;
- Get Gross load by per unit load and total area.

4.2 Installation occasions

- The unit can be installed on basement or any place which can carry heavy machine.
- The place is free from heat radiation and other fire flame.
- A pall is needed in winter to protect the heat pump.
- There must be enough space around the unit for maintenance.
- There must be some lighting protection if the unit is put in the lightning strike area.

4.3 Installation method

- The 8P or below heat pumps can be installed onto the concrete basement by expansion screws, or onto a steel frame with rubber feet which can be placed on the ground or housetop. Make sure that the unit is placed horizontally.
- The 8P above heat pumps need to weld unit base to the mounting base or use concrete to fix .

4.4 Water loop connection

- Please pay attention to 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 dirty and blocks. Water leakage test must be carried out to ensure there is no water leaking. And then the insulation can be made. Attention: the pipe must be tested by pressure separately. DO NOT test it together with the heat pump.
- There must be expansion tank on the top point of the water loop, and the water level in the tank must be at least 0.5 meter higher than the top point of the water loop.
- Make sure the unit pipes are full of water, and do the thermal insulation to pipes which are outside the unit.
- Try to avoid air stayed inside of the water pipe, and there must be air vent on the top point of the water loop.
- There must be thermometer and pressure meter at the water inlet and outlet, for easy inspection during running.
- If there is no water flow switch in unit, take the water flow switches in attachment and separately install them to the outlet pipe on heat source side and use side.

4.5 Electrical wire 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 the outside water pump is needed, please insert the power supply wire into the wire access also and connect to the water pump terminals.
- If an additional auxiliary heater is need 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.

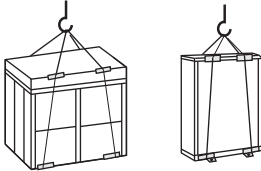


Installation

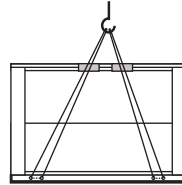
4.6 Transit

When the unit below 8P need to be hung up during installation, 2 cables 8 meters of is needed, and there must be soft material between the cable and the unit to prevent damage to the heat pump cabinet. (See picture 1)

When the unit above 8P need to be hung up during installation, 4 cables 8 meters of is needed and lifting eyes in the unit base should be full used. There must be soft material between the cable and the unit to prevent damage to the heat pump cabinet. (See picture 2)



Picture 1



Picture 2

4.7 Trial running

Inspection before trial running

- Check the water loop
To ensure that the water inside of the expansion tank is enough, the water supply is good, the water loop is full of water and without any air. Also 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 the earthing is connected.
- Check the heat pump unit
- Check the heat pump unit including all of the screws and parts of the heat pump to see if they are in good order. When power on, review the indicator on the controller to see if there is any failure indication. The gas gauge can be connected to the check valve to see the high pressure(or low pressure) of the system during trial running.

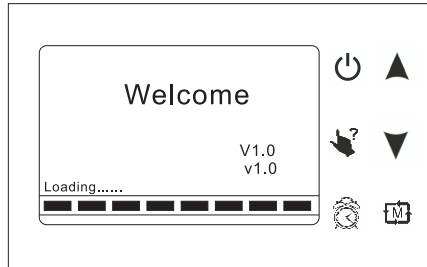
Trial running







- Start the heat pump by press " on/off " key on the controller. Check whether the water pump is running, if it runs normally there will be 0.2 MPa on the water pressure meter. When the water pump runs for a while, the compressor will start. Hear whether there is strange sound from the compressor. If 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.
- Then check whether the power input and running current is in line with the manual. If not please stop and check.
- Adjust the valves on the water loop, to make sure that the hot(cool) water supply to each door is good and meet the requirement of heating(or cooling).
- Review whether the outlet water temperature is stable.
- The parameters of the controller are set by the factory, it is not allowed to change by user himself.
- For the many module unit running in parallel, the parameters need to be debugged by professional man.



Usage

5.1 Function of 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 the parameter value.
	Down	Press this key to select the downward option or decrease the parameter value.



Usage

5.2 Usage of wire controller

5.2.1 The way to use

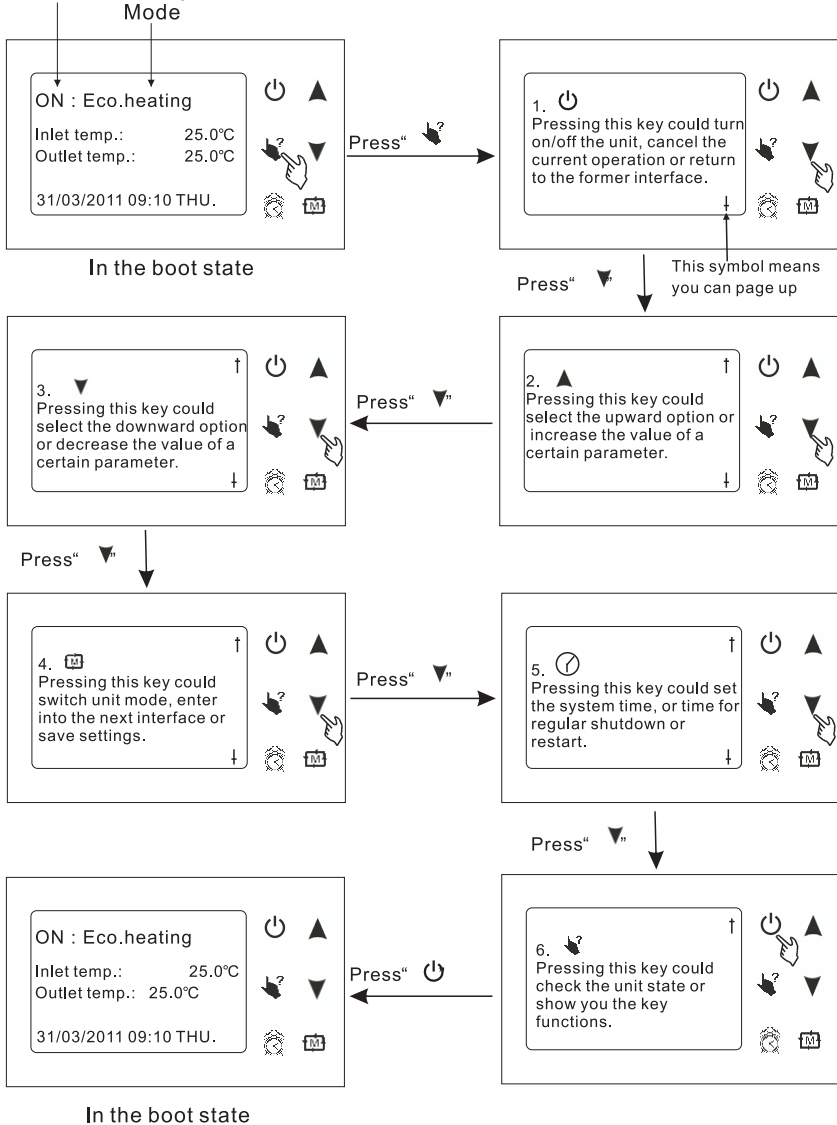
You can use " " at any interface, it will show relevant button function of current interface.

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

For example :

Press " " at main interface, system will show " " button function; Press " " at clock interface, system will show " " and " " button function.

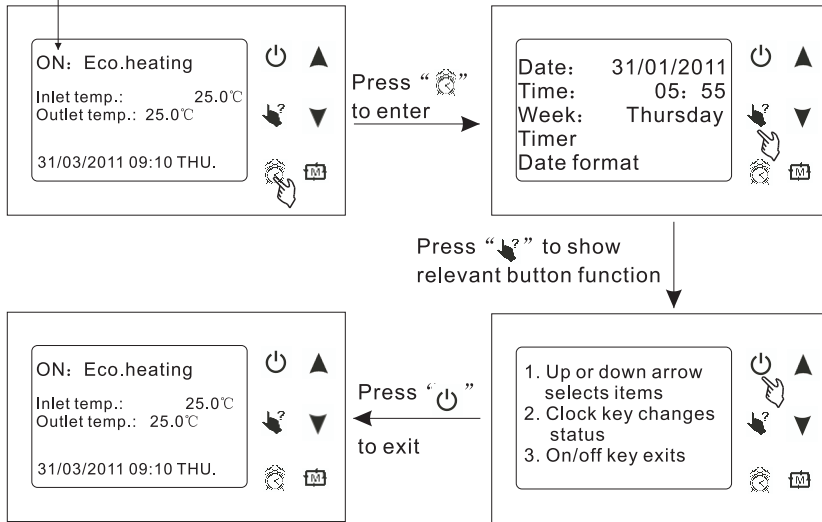
Both are OK when system show ON or OFF



Usage

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

Both are OK when system shows ON or OFF

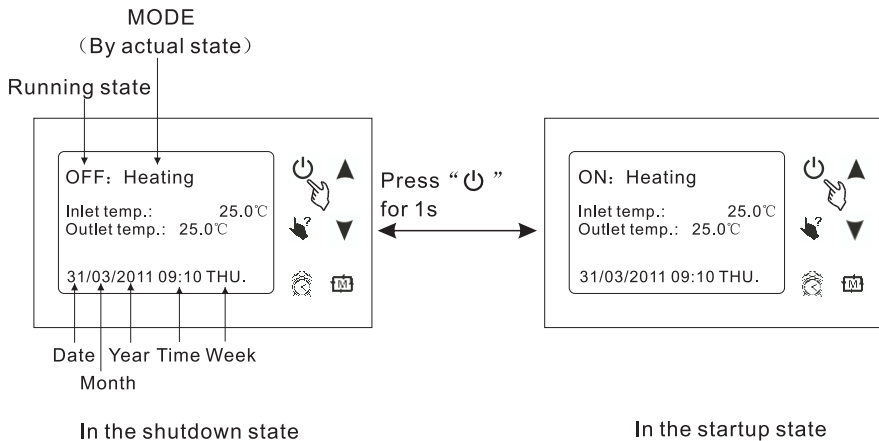


5.2.2 Starting up and shutting down

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:

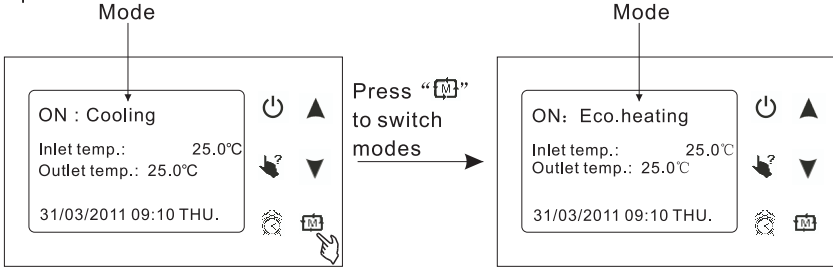


Usage

5.2.3 The operation of mode switching

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.

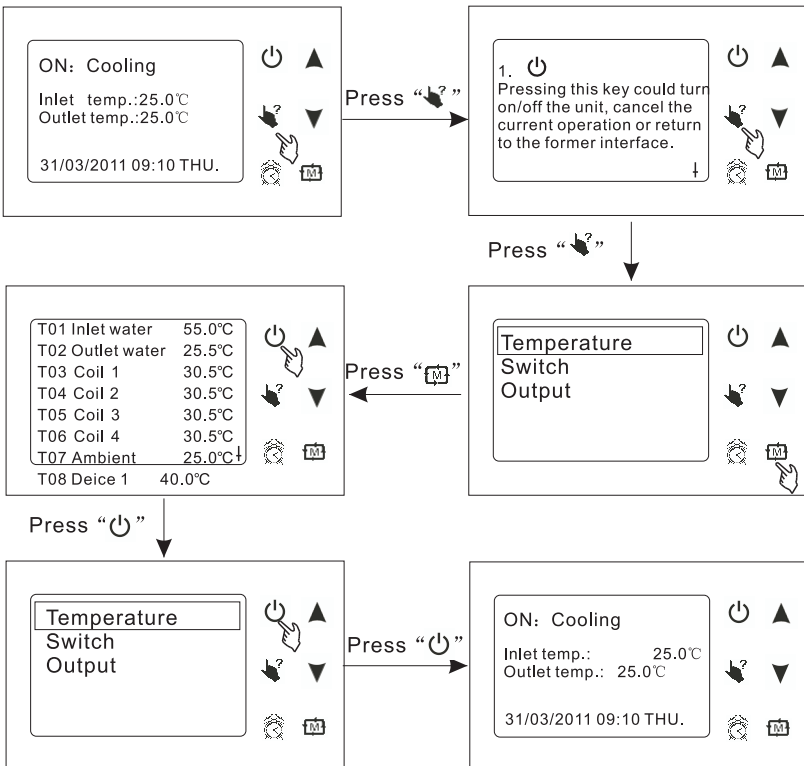
Attention: the operation of mode is invalid when the unit you buy is cooling only or heating only. For example:



5.2.4 The operation of system state

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.

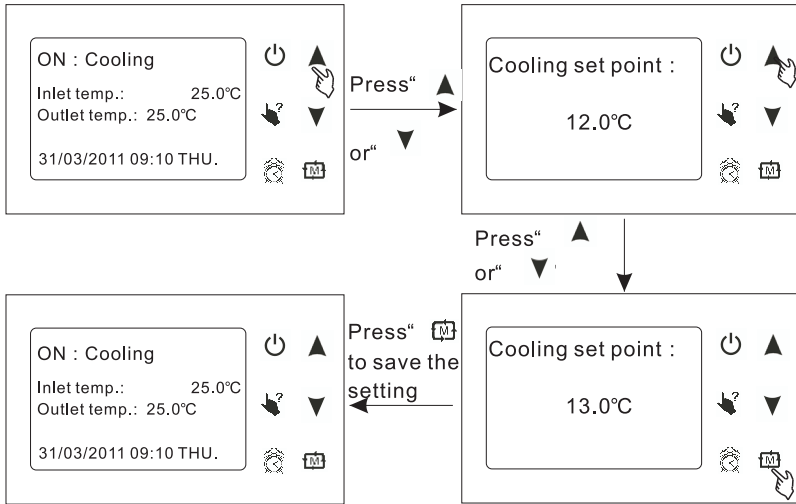
For example:



Usage

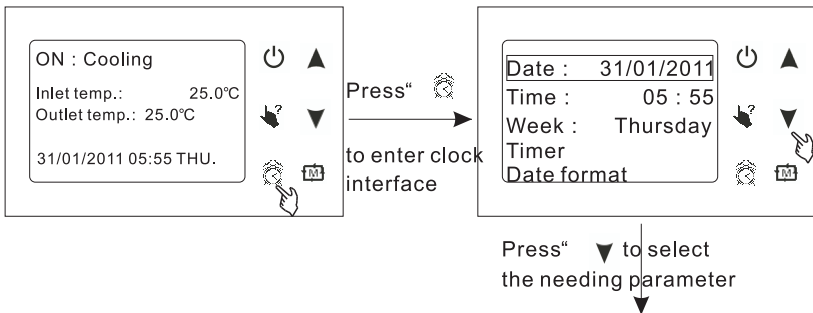
5.2.5 The operation of parameter

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

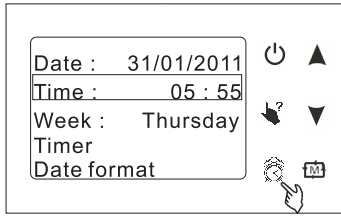


5.2.6 The operation of clock

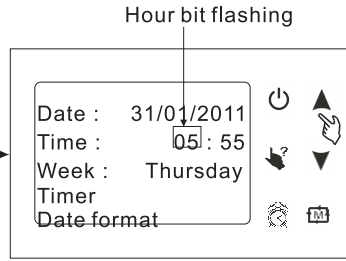
At main interface, press “C” to enter clock setting interface, select the needing parameter and press “▲” or “▼”, at this time, parameter value flashing, press “▲” (increasing) or “▼” (Decreasing) can change parameter value, then press “C” to save, press “C” to cancel the setting or back to the main interface. (“timer setting” refer to timer operation)



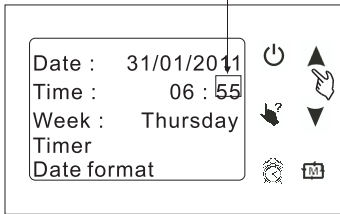
Press "▼" to select
needing parameter



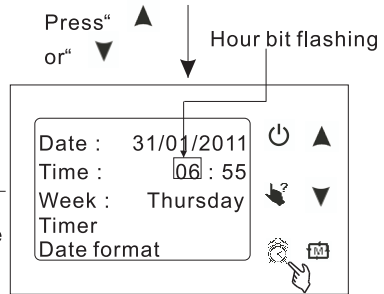
Press "Enter" to save the hour value



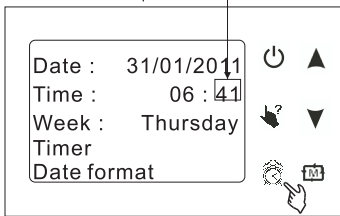
Minute bit flashing



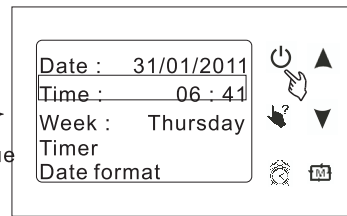
Press "Enter" to save the minute value



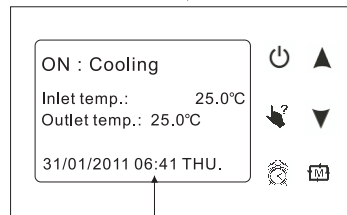
Press "▲" or "▼" to select



Press "Enter" to save the minute value



Press "Power" to exit



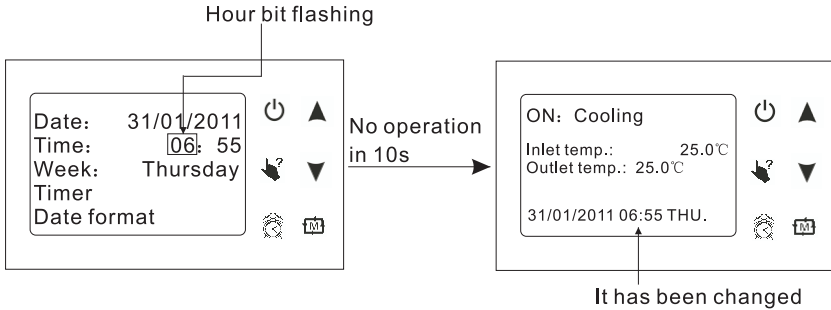
The time has been changed

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

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

As follow :





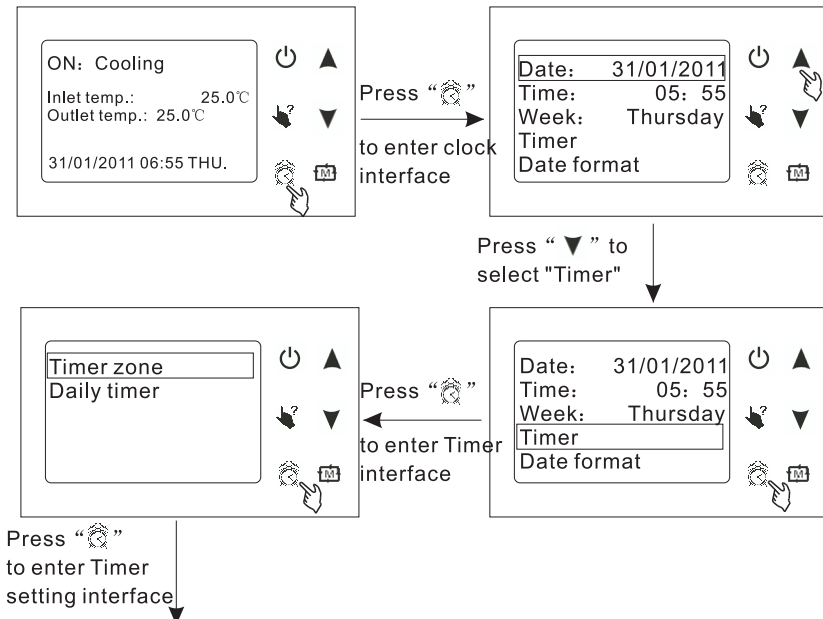
5.2.7 The operation of timer

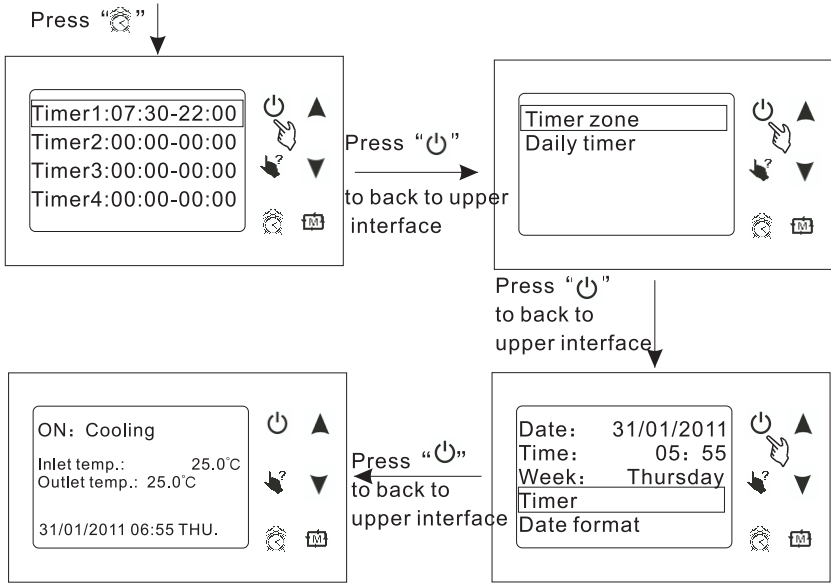
You can set four timer on and timer off according to you needing.

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:

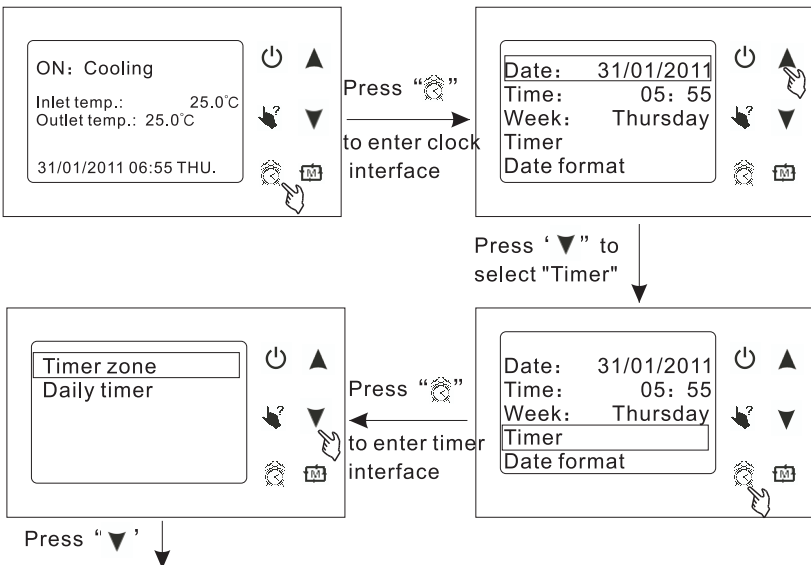
A. Timer setting

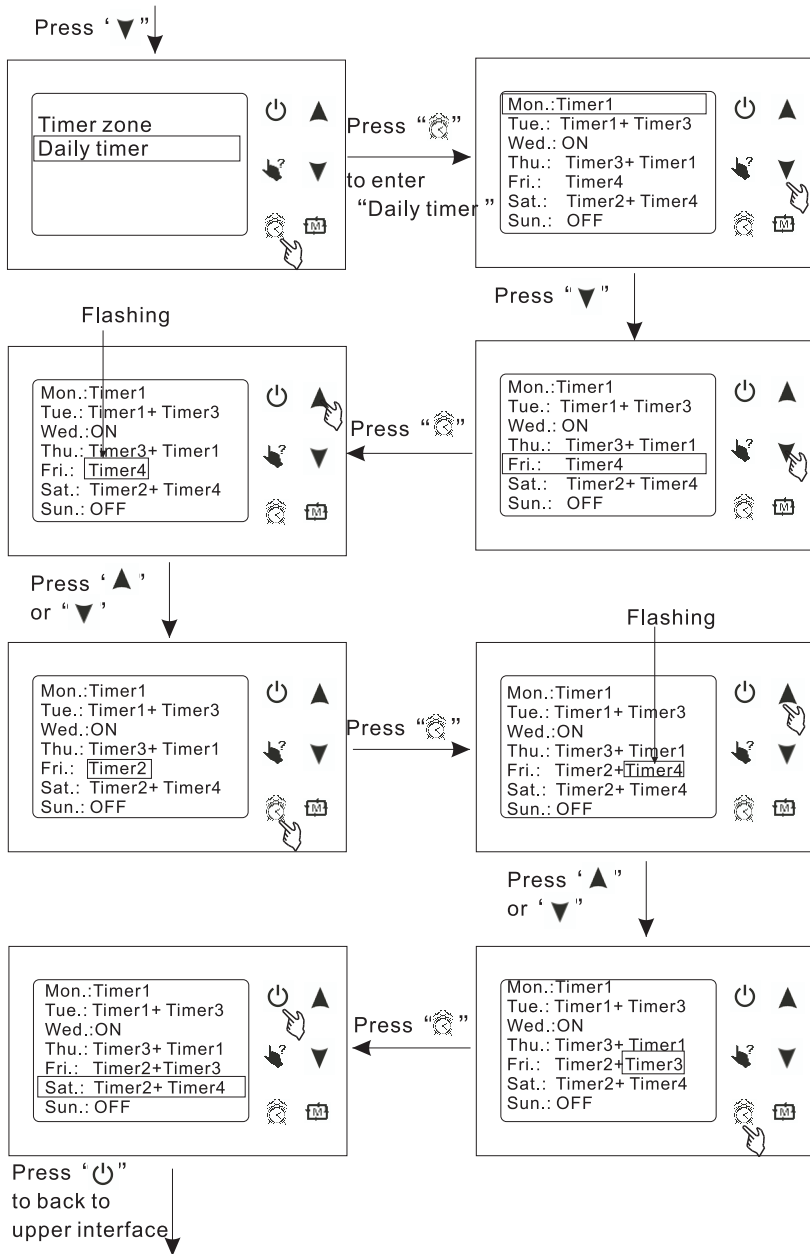




- Tips: 1) The operation of Timer2, Timer3, Timer4 is the same with Timer1;
 2) Timer1 :07:30-22:00 means system starts up at 7:30, and shut down at 22:00 automatically;
 3) If there is no operation in 10s, system will memory parameter setting automatically.

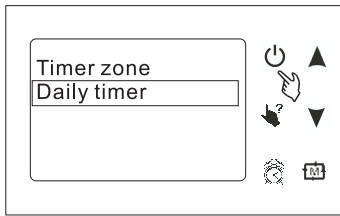
B. The operation of daily timer



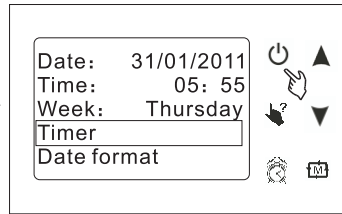


Usage

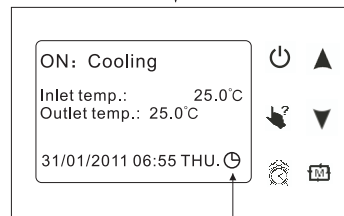
Press "⏻"
to back to upper
interface



Press "⏻"
to back to upper
interface



Press "⏻"
to back to upper
interface



If "⏻" has been shown, it means
timer on/off has been set

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 10s, system will memory the parameter setting automatically and back to main interface.

Remark:

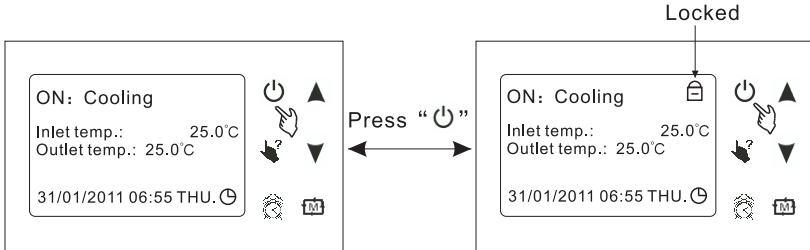
The wire controller can display the temperature unit as "F" or "°C" according to the unit model you bought.



Usage

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.



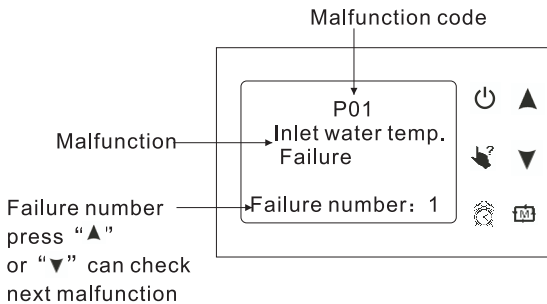
NOTES:

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 temp.	12°C	Ajustable
Set-point of heating target temp.	40°C	Ajustable
Set-point of auto mode target temp.	27°C	Ajustable



5.4 Malfunction table

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

Malfunction	Display	Reason	Resolution
Power on			
Normal working			
Inlet temp. Sensor failure	P01	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Outlet temp. Sensor failure	P02	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Ambient temp. Failure	P04	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
System 1/2/3/4 Coil temp. Failure	P15(system1),P25(system2) P35(system3),P45(system4)	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
System 1/2/3/4 absorb Temp. Failure	P17(system1),P27(system2) P37(system3),P47(system4)	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
System 1/2/3/4 anti-freeze Temp. Failure	P19(system1),P29(system2) P39(system3),P49(system4)	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Using side system 1 /2/3/4 Anti-freeze temp. Failure	P191(system1),P291(system2) P391(system3),P491(system4)	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
System 1/2/3/4 coil inlet Temp. Failure	P151(system1),P251(system2) P351(system3),P451(system4)	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
System 1/2/3/4 high Pressure protection	E11(system1),E21(system2) E31(system3),E41(system4)	The high-pressure switch is broken	Check the pressure switch and cold circuit
System 1/2/3/4 low Pressure protection	E12(system1),E22(system2) E32(system3),E42(system4)	The low-pressure switch is broken	Check the pressure switch and cold circuit
Water flow failure	E03	No water/little water in water system	Check the pipe water flow and water pump
Electric-heater Overheat protection	E04	Electrical-heat is over heat	Check or change electrical-heat
Water 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
System 1/2/3/4 anti-freeze Protection	E06	Water flow is not enough and low differential pressure	Check the pipe water flow and whether water system is jammed or not
System 1/2/3/4 source side Anti-freeze protection	E17(system1),E27(system2) E37(system3),E47(system4)	Water flow is not enough	Check the pipe water flow and whether water system is jammed or not
System 1/2/3/4 using side Anti-freeze protection	E171(system1),E271(system2) E371(system3),E471(system4)	Water flow is not enough	Check the pipe water flow and whether water system is jammed or not
Anti-freeze protect level 1	E19	The ambient temp. Is low	/
Anti-freeze protect level 2	E29	The ambient temp. Is low	/
System protection	E05	The protection system is failure	Check each protection point of the system
Communication failure	E08	Communication failure between wire controller and main board	Check the wire connection between remote wire controller and main board



BHB10 malfunction Table

1 The common failure cause and solution.

Malfunction	Digital display	Detector display	Causes	Solution
System 1 exhaust temp.failure	81	P181	The sensor is open or short circuit	Check or change the sensor
System 2 exhaust temp.failure	81	P281	The sensor is open or short circuit	Check or change the sensor
Ambient temp.sensor failure	4	P04	The sensor is open or short circuit	Check or change the sensor
System 1 anti-freeze temp.failure	9	E171	The sensor is open or short circuit	Check or change the sensor
System 2 anti-freeze temp.failure	9	E271	The sensor is open or short circuit	Check or change the sensor
System 1 economizer inlet temp.failure	01	P101	The sensor is open or short circuit	Check or change the sensor
System 2 economizer inlet temp.failure	01	P201	The sensor is open or short circuit	Check or change the sensor
System 1 economizer outlet temp.failure	02	P102	The sensor is open or short circuit	Check or change the sensor
System 2 economizer outlet temp.failure	02	P202	The sensor is open or short circuit	Check or change the sensor
System 1 anti-freeze protection	71	P19	Water flow volume not enough	Check the flow volume,water system is jammed or not
System 2 anti-freeze protection	71	P29	Water flow volume not enough	Check the flow volume,water system 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	51	E151	Current through compressor too heavy	Check through the power supply for compressor or short circuit
System 2 current protection	51	E251	Current through compressor too heavy	Check through the power supply for compressor or short circuit
System 1 exhaust high temp.protection	82	P182	Compressor exhaust temp.too high	Check through the refrigerant system
System 2 exhaust high temp.protection	82	P282	Compressor exhaust temp.too high	Check through the refrigerant system

2 The indicator light display of failure cause.

Malfunction	Indicator light
System 1 failure	1 on 1 off
System 1 failure	2 on 1 off
Ambient failure	3 on 1 off



Maintenance and repair

6.1 The way to remove malfunction

Failure	Possible causes for the failure	Solutions
Heat pump cannot be started	1 wrong power supply 2 power supply cable loose 3 circuit breaker open	1 shut off the power and check power supply; 2 check power cable and make right connection 3 check for the cause and replace the fuse or circuit breaker
Water pump is running with high noise or without water	1 lack of water in the piping 2 much air in the water loop 3 water valves closed 4 dirt and block on the water filter	1 check the water supply and charge water to the piping; 2 discharge the air in the water loop; 3 open the valves in water loop; 4 clean the water filter.
Heat pump capacity is low, compressor do not stop	1 lack of refrigerant; 2 bad insulation on water pipe; 3 low heat exchange rate on air side exchanger; 4 lack of water flow	1 check for the gas leakage and recharge the refrigerant; 2 make good insulation on water pipe; 3 clean the air side heat exchanger; 4 clean the water filter
High Compressor exhaust	1 too much refrigerant 2 low heat exchange rate on air side exchanger	1 discharge the redundant gas 2 clean the air side heat exchanger
Low pressure problem of the system	1 lack of gas 2 block on filter or capillary 3 lack of water flow	1 check the gas leakage and recharge freon; 2 replace filter or capillary; 3 clean the water filter and discharge the air in water loop.
Compressor do not run	1 power supply failure 2 compressor contactor broken 3 power cable loose 4 protection on compressor 5 wrong setting on return water temp. 6 lack of water flow	1 check off the power supply; 2 replace compressor contactor; 3 tighten the power cable; 4 check the compressor exhaust temp. 5 reset the return water temp.; 6 clean the water filter and discharge the air in water loop.
High noise of compressor	1 liquid refrigerant goes into compressor 2 compressor failure	1 bad evaporation, check the cause for bad evaporation and get rid of this; 2 use new compressor;
Fan do not run	1 failure on fan relay 2 fan motor broken	1 replace the fan relay; 2 replace fan motor.
The compressor runs but heat pump has not heating or cooling capacity	1 no gas in the heat pump; 2 heat exchanger broken; 3 compressor failure.	1 check system leakage and recharge refrigerant; 2 find out the cause and replace the heat exchanger; 3 replace compressor.
Low outlet water temperature	1 low water flow rate; 2 low setting for the desired water temp.;	1 clean the water filter and discharge the air in water loop. 2 reset the desired water temperature.
Low water flow protection	1 lack of water in the system; 2 failure on flow switch	1 clean the water filter and discharge the air in water loop. 2 replace the flow switch.

6.2 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.

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.

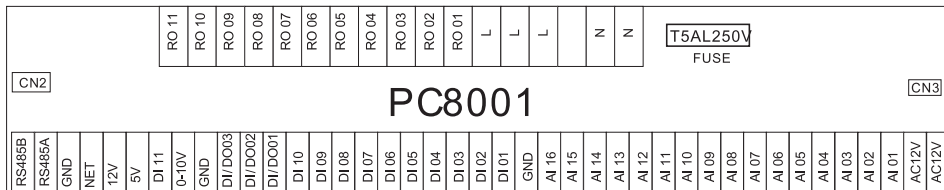
The water loop of the heat pump MUST be protected from freezing in winter time. Please pay attention to below suggestions. Nonobservance on below suggestion will invalid the warranty for the heat pump.

1. Please do not shut off the power supply when the water temperature is lower;
2. the glycol water can be added into the system from the expansion tank of the water loop:
 - A. According to the locally ambient temperature, get the injection of the glycol water;
 - B. After the pressure test and cleaning of the water system, get off the water and add the glycol water;
 - C. Inject water to tank and clean system glycol residue by pump.



Appendix

7.1 Connection of PCB illustration



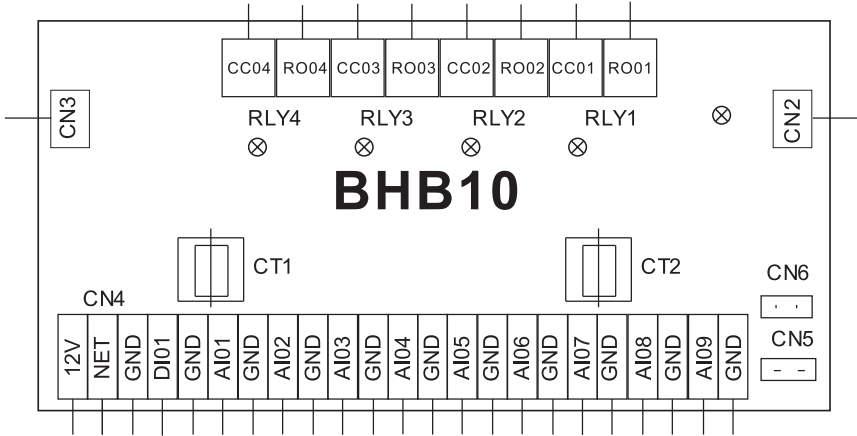
Connections explanation:

NO.	Symbol	Meaning	NO.	Symbol	Meaning
1	L	Live line	27	DI11	System protection signal
2	N	Null line	28	AI 01	Water input temperature input
3	RO 01	Compressor 1 output(220VAC)	29	AI 02	Water output temperature output
4	RO 02	Compressor 2 output(220VAC)	30	AI 03	System 1 source inlet temperature input
5	RO 03	Compressor 3 output(220VAC)	31	AI 04	System 2 source inlet temperature input
6	RO 04	Compressor 4 output(220VAC)	32	AI 05	System 3 source inlet temperature input
7	RO 05	High speed /souce pump output(220VAC)	33	AI 06	System 4 source inlet temperature input
8	RO 06	Low speed output (220VAC)	34	AI 07	Ambient temperature input
9	RO 07	Water pump output(220VAC)	35	AI 08	System 1 source outlet temperature input
10	RO 08	4-way valve output(220VAC)	36	AI 09	System 2 source outlet temperature input
11	RO 09	Electric heater output(250VAC)	37	AI 10	System 3 source outlet temperature input
12	RO 10	Spray valve output(220VAC)	38	AI 11	System 4 source outlet temperature input
13	RO 11	Alarm system output(220VAC)	39	AI 12	System 1 suction temperature input
14	DI/DO 1	Emergency switch output	40	AI 13	System 2 suction temperature input
15	DI/DO 2	Mode indicator output	41	AI 14	System 3 suction temperature input
16	DI/DO 3	Emergency switch input	42	AI 15	System 4 suction temperature input
17	DI 01	System 1 high pressure protection input	43	AI 16	No use
18	DI 02	System 2 high pressure protection input	44	GND	Connecting to the remote controller
19	DI 03	System 3 high pressure protection input	45	NET	
20	DI 04	System 4 high pressure protection input	46	12V	
21	DI 05	System 1 low pressure protection input	47	RS485A	485 connection
22	DI 06	System 2 low pressure protection input	48	RS485B	
23	DI 07	System 3 low pressure protection input	49	AC12V	12V power input
24	DI 08	System 4 low pressure protection input	50	AC12V	
25	DI 09	Water flow switch protection input	51	CN2	System 1 electric expansion valve output
26	DI 10	Electric heater overload protection input	52	CN3	System 2 electric expansion valve output



Appendix

7.2 Connection of SYSB illustration



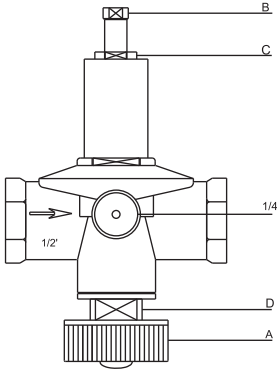
Connections explanation:

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)



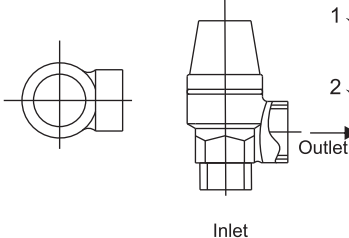
Appendix

7.3 The installation of make-up valve



- 1、 The inlet way is in accord with arrow in valve;
 - 2、 The pressure of make-up valve has adjusted to 1.5bar;
 - 3、 If the pressure need to be adjusted again, please do follow:
 - * Unscrew nut cap (C) ;
 - * To decrease the pressure, unscrew pressure screwstem (B) ;
 - * To increase the pressure, screw pressure screwstem (B) .
 - 4、 The first time to make up water, unscrew the make-up hand shank (A) , and after the system is fulfilled, reset the hand shank (A) (It is closed in the reset state)
 - 5、 When cleaning auto make-up valve, close tap, unscrew plug (D) and install it as former.
- Attention: There are two reserved port in the middle of make-up valve which can connect with water pressure gauge, you can read the value from this gage. After the adjustment, screw the nut cap (C).

7.4 The installation of pressure relief



- 1、 The setting pressure of relief valve $\geq 3\text{bar}$ (open) , at this pressure value, there is no adjustment can be done.
- 2、 When the return side pressure is higher than the setting value, the relief valve will open automatic, to make sure safety of system water loop.



Appendix

7.5 Caution & Warning

1. The unit can only be repaired by qualified installer centre personnel or an authorised dealer. (for Europe market)
2. 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. (for Europe market)
Children should be supervised to ensure that they do not play with the appliance.
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, not suitable for potable water connection.



Appendix

7.6 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	2×6mm ²	10mm ²	63A	30mA less than 0.1 sec	
40~63A	2×10mm ²	16mm ²	80A	30mA less than 0.1 sec	
63~75A	2×16mm 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	2×25mm ²	35mm ²	160A	30mA less than 0.1 sec	
123~148A	2×35mm ²	50mm ²	225A	30mA less than 0.1 sec	
148~186A	2×35mm ²	70mm ²	250A	30mA less than 0.1 sec	
186~224A	2×50mm ²	95mm ²	280A	30mA less than 0.1 sec	
	2×70mm ²				

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	3×6mm ²	10mm ²	63A	30mA less than 0.1 sec	
40~63A	3×10mm ²	16mm ²	80A	30mA less than 0.1 sec	
63~75A	3×16mm 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	3×25mm ²	35mm ²	160A	30mA less than 0.1 sec	
123~148A	3×35mm ²	50mm ²	225A	30mA less than 0.1 sec	
148~186A	3×35mm ²	70mm ²	250A	30mA less than 0.1 sec	
186~224A	3×50mm ²	95mm ²	280A	30mA less than 0.1 sec	
	3×70mm ²				

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





