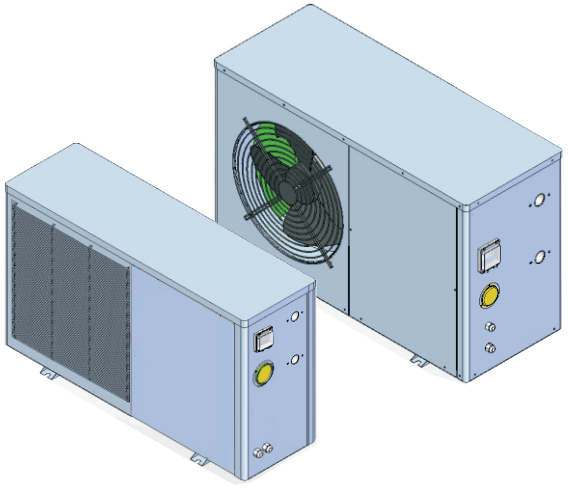
Air To Water Heat Pump

USER MANUAL

Thanks for Your Choice



MODEL: YASBP-78HL
YASBP-95HL

Content

1.Safety Precautions

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

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

WARNING!

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

WARNING!

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

WARNING!

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

WARNING!

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

WARNING!

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

WARNING!

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

TAKE CARE!

The unit should be handled using lifting and handing equipment appropriate to the unit’s size and weight.

TAKE CARE!

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

TAKE CARE!

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

TAKE CARE!

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

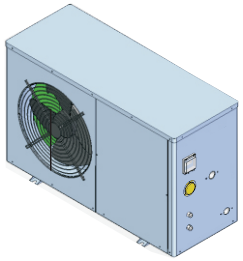
TAKE CARE!

A mesh filer must be provided on the hydraulic pump and in exchanger water inlets.

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

2.Packing list

Please verify that the following listed accessories are included in the packaging.
If they are damaged or lost, please contact your local distributor or agent immediately.



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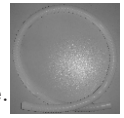
Installation & instruction manual:

It include basic product information, guidance of proper usage methods and maintenance.

X1

Water drainage pipe(1m)

Only horizontal discharge units have water drainage pipe to drain out the condensed water from the bottom plate.



X1

Drainage connection

Only horizontal discharge units have it to connect the drainage pipe and bottom plate.

X1

Anti-vibration rubber pads:

Put it under the four installation points to reduce the vibration and noise produced during operation.

X4

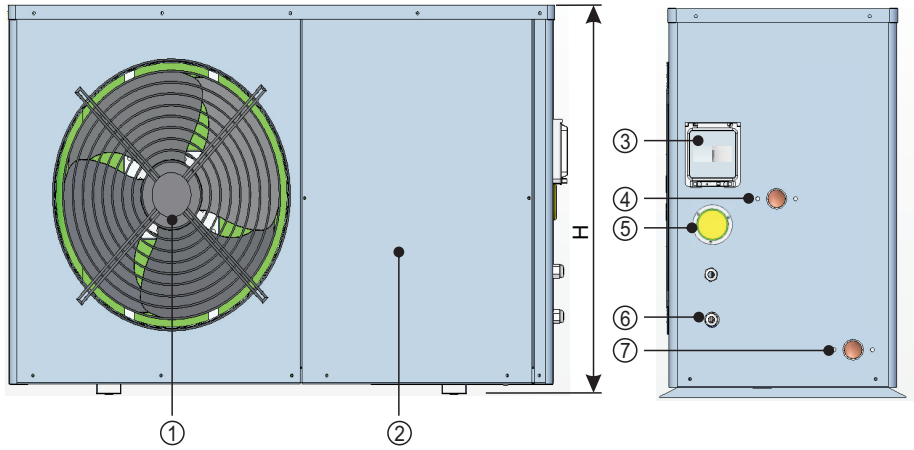
Expansion screws:

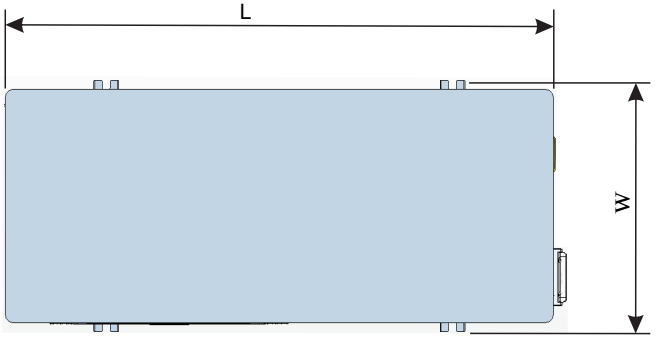
Install it on the four points of the bottom plate to fix the unit to the foundation.

X4

3.Structure

● Outer Structure





1.Fan and Motor
2.Maintenance Door
3.Wire Controller And Waterproof Box
4.Water Outlet
5.Pressure Gauge
6.Power Supply
7.Water Inlet

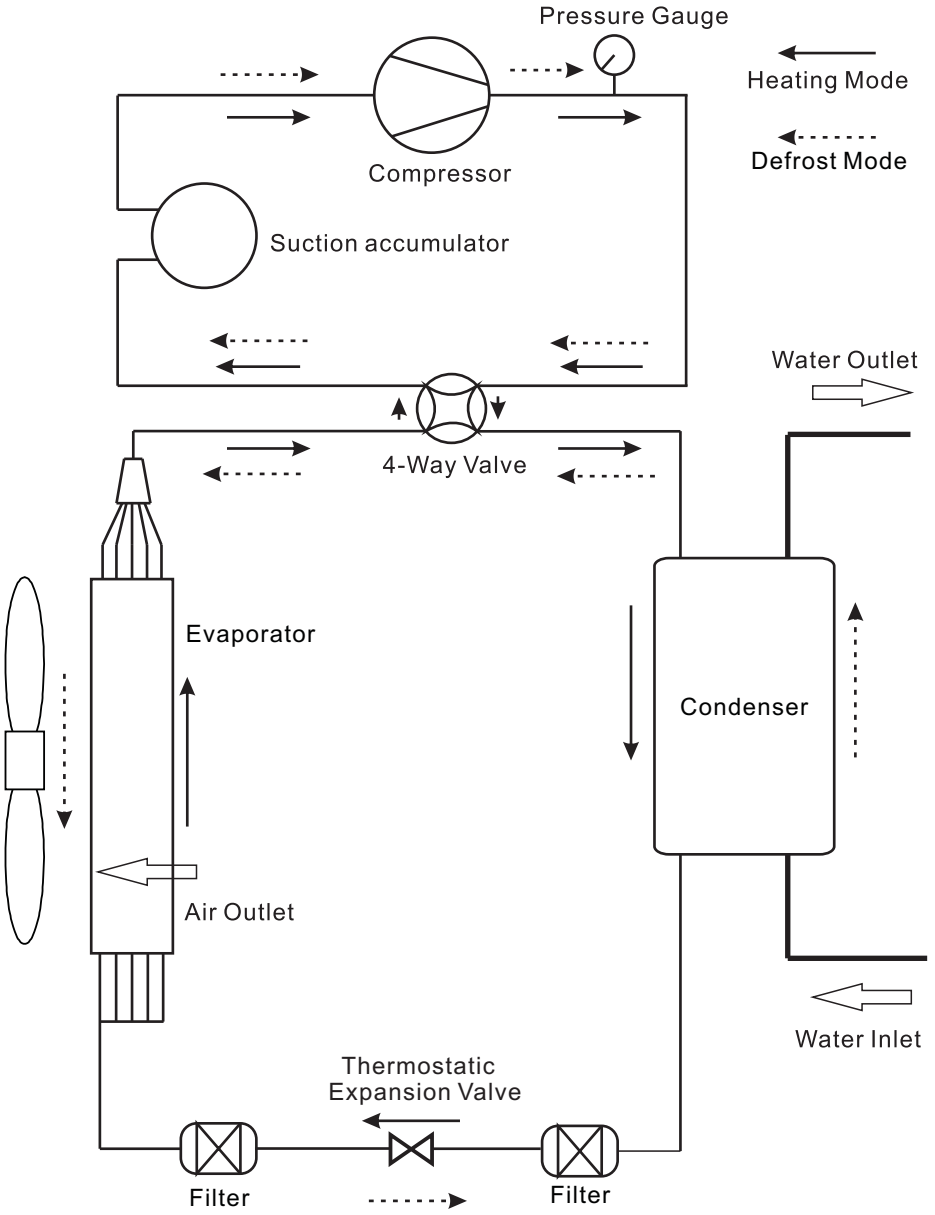
Model	Demension		
	L	W	H
YASBP-78HL	1010	370	615
YASBP-95HL	1110	460	687

4.Specifications

Model		YASBP-78HL	YASBP-95HL
Heating capacity	KW	7.3	9.3
Heating power input	KW	2.1	2.3
Power supply	V/Ph/Hz	220/1/50	220/1/50
Compressor type		Rotary	Scroll
Compressor quantity		1	1
Fan power input	KW	0.12	0.12
Fan quantity		1	1
Fan Speed	Rpm	670	670
Noise level	dB[A]	54	58
Water Flow Volume	m3/h	1.5	2
Water connections	Inch	1	1
Water Pressure Drop	Kpa	24	24
Refrigerant		R410a	R410a
Unit dimensins(L/W/H)	mm	1010*370*615	1110*460*687

Measurement conditions:
Outdoor air temp: 7℃/6℃， Inlet/Outlet water temp: 40℃/45℃

5.System Drawing



6.Installation

6. 1. The unit installation instruction

1. Please read the manual carefully before installation.
2. The installation location should be convenient for adjusting and repairing. **Enough space should be left for checking and repairing the unit.**
3. The installation location should be far away from the places affected by **artificial strong electricity, magnetic field.**
4. The unit should be installed in the indoor environment; if it is installed **outside environment, it is a must to built a cover for it.**
5. **There is no water flow switch when ex-works,if user need it, they should install water flow switch by themselves. a water flow switch output has been left on the controller , but two terminals of water flow switch were connected when ex-works. so water flow switch alarm will not happen.**
6. The vibration damping device should be installed to prevent the vibration **from the building.**
7. Flexible connection must be used on water inlet and outlet, water **system supply and returned pipe. So is the recycle water pump, which prevents vibration from spreading to the building.**
8. Y-style filter should be installed on the water pump inlet of evaporator **and condenser to prevent the welding slag and the impurity from destroying the unit.**
9. An air discharge valve must be connected at the top of the water system **and drainage valve must be installed at the bottom of the water pipe of the unit.**
10. Please install the water pressure gauge and thermometer to make **care and maintenance easy.**
11. The water pipe should be insulated well in order to prevent the energy **from losing and forming condensed water.**

6.2. The unit installation precaution

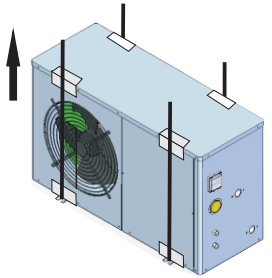
1. Please install the air discharge valve on the top of the water system.
2. Install the appropriate drainage valve at the bottom of the water system.
3. Be equipped with the expansion water tank to adapt the changing water volume because of the changing water temperature in water system.
4. It is better for recycled water to use the softening water tap.
5. The bypass pipe should be reserved on the water supply pipe and returned water pipe in order to wash the unit easily and avoid the melting slag and impurity going into heat exchanger.
6. When connecting the pipe, absolutely don't permit to interchange the outlet and inlet of the evaporator and condenson.
7. The water flow in evaporator and condenser should be the same as the marked; absolutely prohibit from exchange water outlet and inlet, or the unit will not run even will be destroyed.
8. The repairing and insulation of Y-style filter should made to be split one, which is convenient to wash and repair for the system
9. Regarding to the water system, advise the client to check it every month.

6.3.Lifting the unit

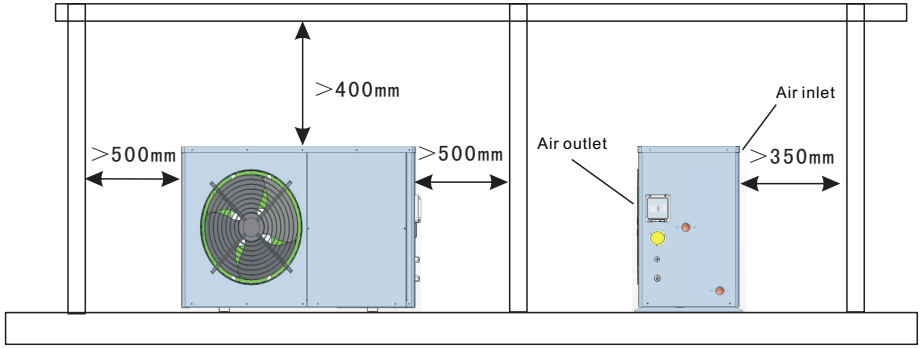
A. Please lift the unit by four steel wires(over 6mm).

B. Please carry or lift the unit as the following drawings.

Note: Please put sponge and cardboard between steel wire and surface of the unit in order to avoid scratch or distortion.



6.4. Space for installation



6.5. Space for installation

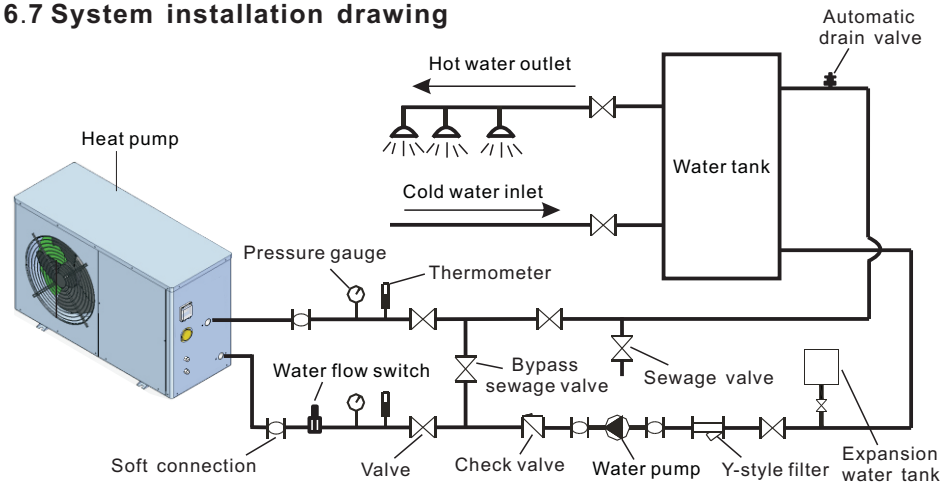
1. The outdoor unit can be installed beside the balcony, on the roof, on the ground or any other places where is convenient of installation and can bear the weight of the unit.
2. a ventilated place
3. no heat radialization or other heat resource place
4. need to build a anti-snow shed
5. enough space should be left around the outdoor unit
6. no barrier beside the air inlet and air outlet
7. no strong wind at the air inlet
8. there should be drainage pipe for condensate draining
9. hot water tank should be install where running water is provided or near to using side.

NOTE: It should be installed where can bear the weight of the unit and can insulate noise and vibration.
If the unit is in a bad operating condition, such as in a place be of oil -resource or poor water quality. This may lead to breakdown

6. 6. Water pipe connection

1. The resistance of water pipe should be decrease as possible as we can.
2. All the pipeline should be clean, no rust dreg, avoid blocking the pipe. When finished all the pipe and you should test all the water pipe work well. No leaking and then pack insulation materials
3. **Note:** ductwork pressure testing should be made alone, it is not allowed to test together with the unit
4. Expansion tank should be installed at the top of ductwork, the water surface in the expansion tank need to be higher by 0.5m than the top of ductwork.
5. Water outlet outside the unit should install water flow switch, ensure that there is water in the pipe when the unit are running. Controlling line of the water flow switch should connect to terminal blocks accordingly into the control box, and to be control together with the unit
6. It should be avoided that air lies in the water pipe, at the top of the pipe, it should install a auto drain tap
7. By the side of water inlet and water outlet, thermometer and pressure gauge should be installed, so that it will be check easily during the operation.

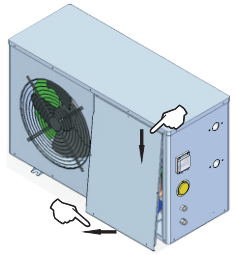
6.7 System installation drawing



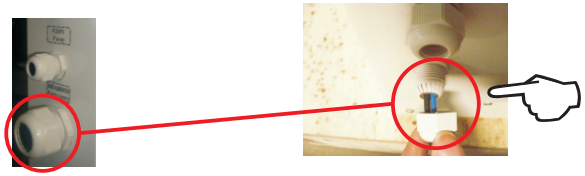
Attention: the pictures above is only for reference, the practical project must be carried out by professionals according to the standard and design requirement.

6. 8. Electric circuit connection processure.

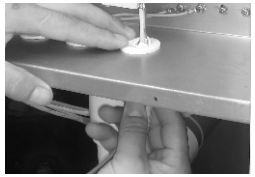
1. see the follow figure, take off four screws from the maintenance panel and then take off the panel as the instruction figure do.



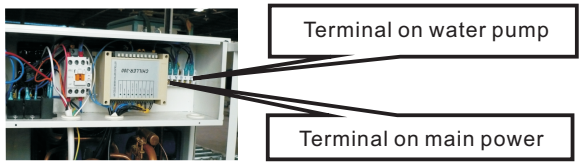
2. Go in for the operation of wiring connection. Wring the connector of power line under the unit loosely, then thread the power line through the connector and enter into the unit. at last, wring the connector tightly. See the follow figure



3. Thread the power line through a rubber jacket under electrical box and to the inner electrical box. See the follow figure.



4. Connect the power lines to the terminals according to the fixed phase. Live line connect “L”, neutral line connect “N”, earth line connect “ ⏚ ”.See the follow figure .



5. If water pump is required, connect the water pump power line to the right terminal in the electrical box. (note: water pump rated current ＜3A; if current ≥3A,must use AC contactor）.

6. After verifying the connection is right, the power can be on.

6. 9. Run the unit

1.Check it before start the unit.
Check the piping system: check whether all the valve is open and the valve of automatic control gorge is in a regularly range. Check whether the insulation of pipes is good.
Check the power supply system: check whether the voltage is regular, any parts are screwed tightly and the power is supplied as the wiring diagram. Check whether ground line is connected well.
Check the unit: check whether all the screw on the unit is loose.
When switch on, check whether there are indicator malfunctions on main control.
Connect the pressure gauge to the freon connection in order to measure the system pressure when running the unit.

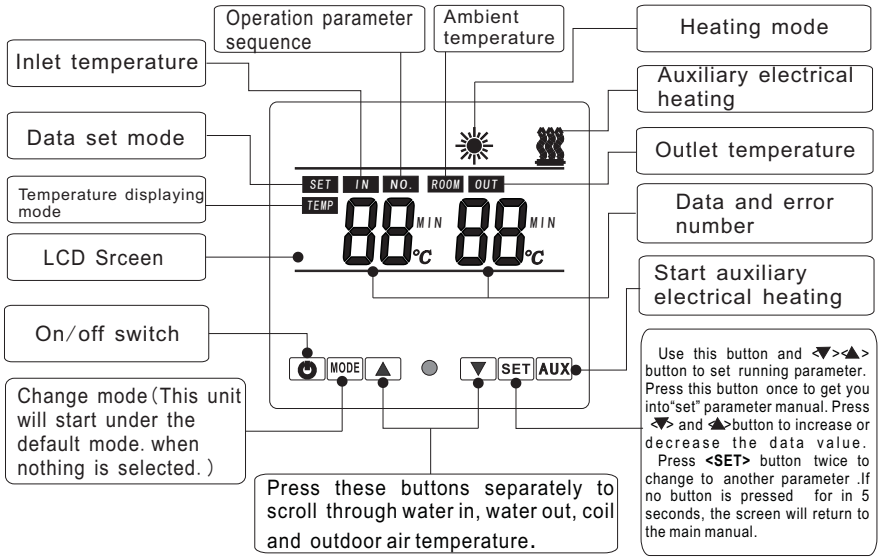
2.Try to run the unit
The compressor will start. Check whether the unit sounds unregularly by hearing, switch off and check if it has. If it doesn't have, keep it running, at the same time pay attention to whether the cooling system pressure is regular. And then check whether the power input and current corresponds to the performance data in user manual. If not, please stop to check it.
The remote controller parameter has been set when ex-factory, don't adjust it at random. And it should be adjusted by professional personnel if needed.
Regarding to the several connected modular units, the technical parameter should adjusted by professional construction personnel.

3.Running
The following rules should be followed strictly when running the unit:
When the unit is running, keep the piping system and environment in a regular state.
The sudden change of system and the environment can cause the motor current change, When serious, it can exceed the rated current and can cause negative consequences.

7.Controller

The unit can be pre-programmed by the wire controller and will then be run automatically.

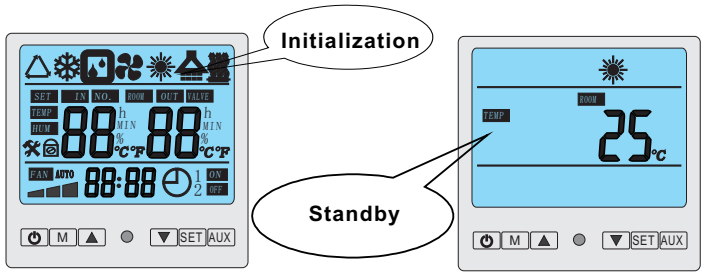
6.1 The appearance of wire controller and its key functions



6.2 Application range.

This intelligent wire controller can be used to control the air-cooled heat pump series. By using it, you can choose single compressor system or two compressors system.

6.3 Initialization and standby state.

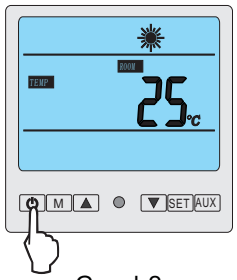


Graph1-1 Graph1-2

a. When you turn on wire controller, it will display the data full screen. Meanwhile, the wire controller will get a communication connection with the heat pump. If the connection can not be successful within ten seconds, that is to say, the connection failed. The heat pump can only be control by its own emergency switch. On the contrary, if the connection can be successful within ten seconds, the wire controller can also work as well as the heat pump's own emergency switch.

b. In the standby state, the wire controller displays the environmental temperature and the current running mode.

7.4 Press ON/OFF button to turn on/off the heat pump.



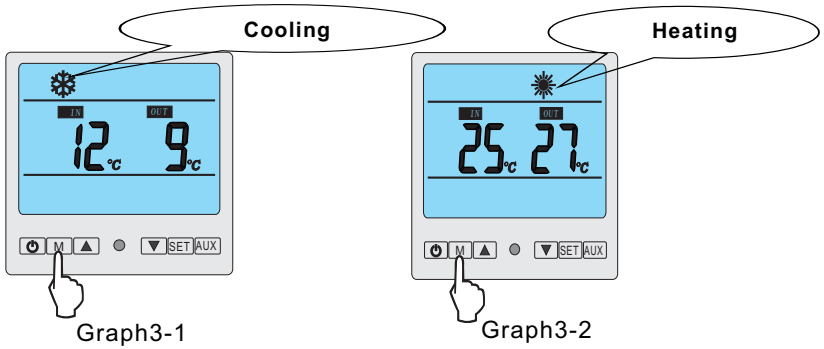
Graph2

7.5 Mode selection.

a. In the ON or standby state, press“MODE”button to choose the heating or cooling mode as the graph3-1 and 3-2 shows.

b. In the ON state the wire controller can display water inlet temperature, water outlet temperature and its running mode

c. In the OFF state, the wire controller environmental temperature and current running mode.



Graph3-1 Graph3-2

:this symbol is meant to be in a heating mode.

:this symbol is meant to be in a cooling mode.

the swimming pool heat pump parameter default setting is in the single heating mode, so as long as you press the ⏻ button, the heating symbol will appear.

7.6 Temperature setting.

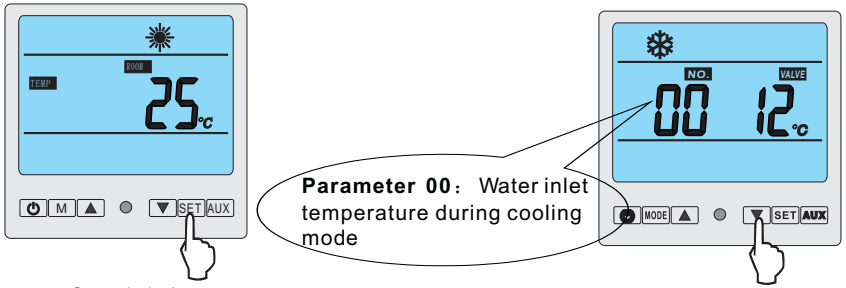
a. In the standby mode, press “SET” button to enter into the parameter setting page.（as graph 4-1 shows）

b. Press“▲”or“▼”button to set the parameters. “00” stands for the water inlet temperature setting in cooling mode. as the graph4-2 shows, “12 ℃” is real water inlet temperature.

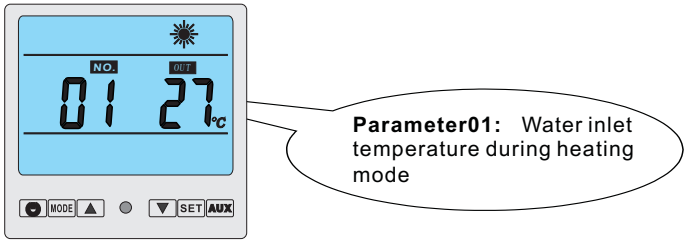
c. After setting the water inlet temperature, press “SET” button to turn to the next setting page. “01” stands for the water inlet temperature setting in heating mode. as the graph4-3 shows, “27 ℃” is real water inlet temperature. And press“▲”or“▼”button to choose parameter you want

d. The screen will return to main page if you don't press any button within five seconds and the screen display the water inlet temperature or water outlet temperature in the ON state or environmental temperature in the OFF state.

f. In the ON state, you can see the current data of all kinds of parameters, but you can not change it.



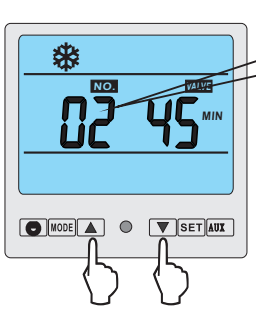
Graph4-1 Graph4-2



Graph4-3

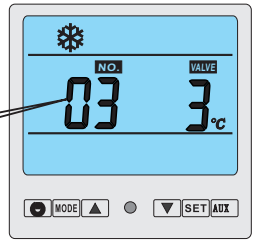
7.7 Other parameters setting.

a. In the standby state, press “SET” button to enter into parameters setting page as the graph 4-1 shows.
b. Press “▲”and“▼”button at the same time, when you hear “tick” sound, release the buttons and press “▲”or“▼”button again to set the current page parameter as graph 5-1 shows.
c. After setting it, press “SET” button to enter another parameters setting page, press “▲”or“▼”button to set the parameter of the current page.
d. Repeat the above steps to alter other parameter setting. The screen will return to main page if you don't press any button within five seconds and the screen display the water inlet temperature or water outlet temperature in the ON state or environmental temperature in the OFF state.
f. In the ON state, you can see the current data of all kinds of parameters, but you can not change it.



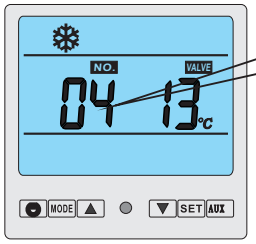
Parameter 02: Defrosting cycle

Parameter 03: Initial defrosting temperature



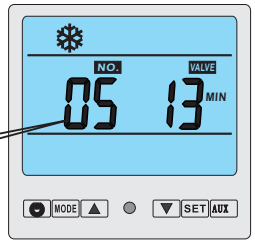
Graph5-1

Graph5-2



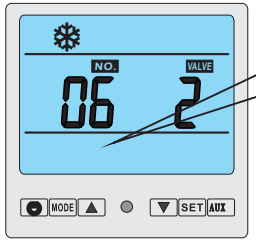
Parameter 04: Final defrosting temperature

Parameter 05: End time of defrosting



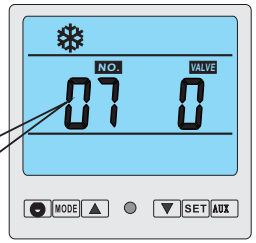
Graph5-3

Graph5-4



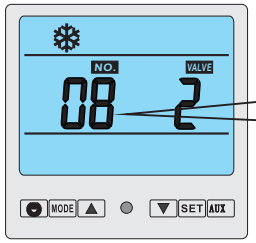
Parameter 06: Number of system:
“1" stands for single system
“2" stands for double system

Parameter 07: Power down memory function:
“0" stands for on
“1" stands for yes



Graph5-5

Graph5-6

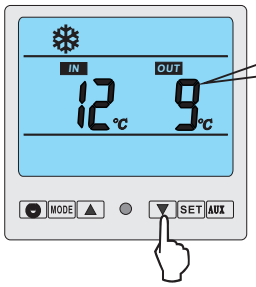


Parameter 08: Model
“0" stands for cooling only
“1" stands for heating and cooling machine
“2" stands for electrothermal machine
“3" stands for heating only

Graph5-7

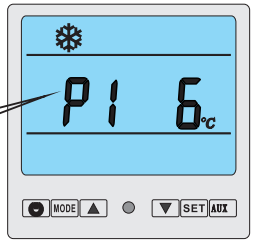
7.8 Parameters display.

a. In the “ON” or “OFF” state, press “▲”or“▼”button, you can see all kinds of temperature parameters.
b. You can see the water inlet/ outlet temperature, defrosting temperature sensor 1,defrosting temperature sensor 2 and environmental temperature.
c. If you don't press any button within five seconds, screen will return to main page and display water inlet/outlet temperature in the “ON” and display the ambient temperature in the “OFF” state.



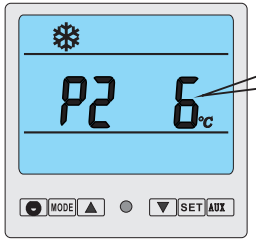
Water inlet/outlet temperature

Defrosting temperature sensor 1



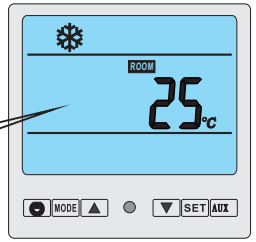
Graph6-1

Graph6-2



Defrosting temperature sensor 2

Ambient temperature

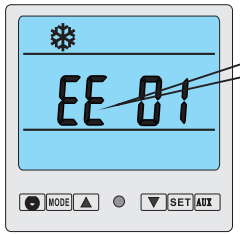


Graph6-3

Graph6-4

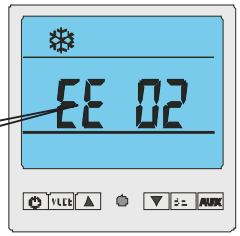
7.9 Fault and protection

a. When E1, E2, E3, E4, E8 faults happened, the wire controller will display fault code accordingly. As the graphs show:



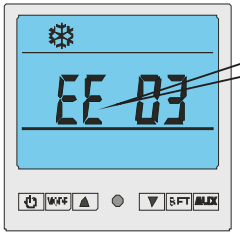
Fault EE01:
Fault in system 1

Graph7-1



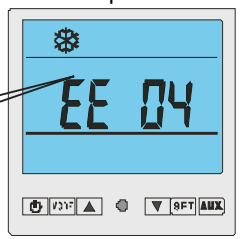
Fault EE02:
Fault in system 2

Graph7-2



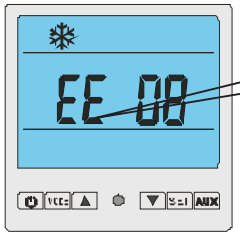
Fault EE03:
Water flow fault

Graph7-3



Fault EE04:
High/Low pressure fault function

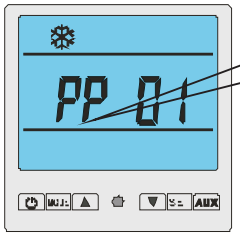
Graph7-4



Fault EE08:
Fault in communication connection

Graph7-5

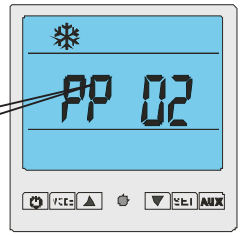
b. When P1, P2, P3, P4, P5, P7 protection take place, wire controller will display the protection code accordingly. As the graphs show:



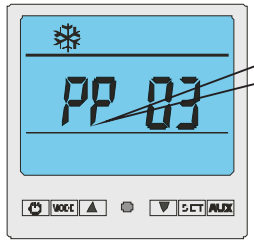
Fault PP01:
Fault water inlet temperature sensor

Fault PP02:
Fault water outlet temperature sensor

Graph8-1



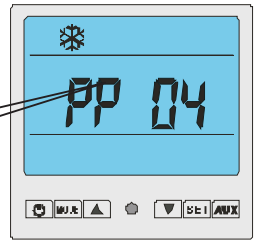
Graph8-2



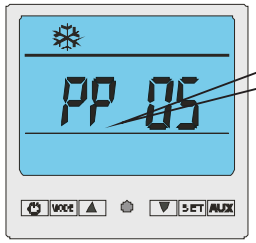
Fault PP03:
Fault in defrosting temperature sensor 1

Fault PP04:
Fault in defrosting temperature sensor 2

Graph8-3



Graph8-4



Fault PP05:
Fault in ambient temperature sensor

Graph8-5

7.10 Defrosting

1 The condition of the entrance to defrosting.
When the unit heating continuously for 40 minutes, and condenser is frosting, at that time, the defrosting system will run as long as Tp1(coil temperature) ≤-3℃. As the parameter 03 showed (Parameter 03 symbolizes coil temperature.

2. The condition to quit from defrosting.
When the Tp1 （coil temperature）>13℃ or defrosting time get to 8 minutes. The system will quit from defrosting.

7.11 Defrost process

1.The following process will happen when the defrosting condition is satisfied.
1) Compressor and outdoor fan stop.
2) 25 seconds later, four-way valve power off.
3) 30 seconds later, compressor will run
4) Water pump run normally..

2.When the exist condition of defrosting is satisfied, the following process will happen.
1) When the exist condition of defrosting is satisfied, defrosting stop, and compressor stop running accordingly, but the outdoor fan start to run, 5 seconds later, four- way valve power on.
2) After the fan run for 30 seconds, the system will recover to heating normally.

8. Maintenance

Before doing any maintenance cut off the power supply of the machine.

[1]Air Passage

To clean the air passage, take off the sound absorption hood and remove leaf and dirt from the evaporator and air way. Clean the evaporator from dust, to keep it`s performance high. There are two ways of cleaning the evaporator.

(1) Choose a detergent which is available in specialised trade and follow the instructions of it`s user manual. Spray the detergent between the fins of the evaporator, wait the stated time and wash it out with tap water.

(2) Use a pressure washer to clean the fins from dust.
Note: The fan can stand splash water. Be very cautious during washing the thin fins, they can be easily bend.

[2]Water Cycle

To assure sufficient water flow volume, wash (or change) the water filter regularly, depending on the pureness and the amount of the heating-circuit water. To wash the water circuit inside the machine, choose a specialist company to do the maintenance.

Avoid frozen water in the water cycle at any time, to prevent the water components from cracking. When the ambient temperature lowers to less than 2℃ the heat pump must be switched on, to avoid freezing.
If the machine is switched off or there is a electrical power outage, the water has to be drained to protect the system. There for open the drainage valves inside the building to drainage the connection pipes. Open the circulation water drainage at the heat pump. Open the drain screw below the water pump inside the heat pump. Close the drains after all water went out.

[3]Disposal

To dispose the heat pump refer to the local regulations. Especially take care for disposing the refrigerant and the compressor oil.

9. Trouble shouting

9.1 Please refer to the below diagram to judge and manage failures:

Failure	Possible causes	Solutions
No running of the unit	1. Power source failure	1. turn off the switch and check the power source
	2. Loosened wiring	2. find the caused and repair
	3. The power fuse has broke	3. change a new fuse
The pump is running without water recycling or with high noise	1. Water leakage of the water system	1. check the water supply device and inject water
	2. There is air in the system	2. Discharge the air
	3. the valves are not open entirely	3. open the valves completely
	4. Filter blockage	4. Wash the filter
Low refrigerant capacity while compressors are running	1. refrigerant shortage	1. check leakage and supply refrigerant
	2. bad water thermal insulation	2. Improve the insulation
	3. bad heat elimination of air heat exchanger	3. wash the heat exchanger and improve condensing
	4. Water flow shortage	4. Wash the filter
Over-high outlet pressure of compressors	1. Excessive refrigerant	1. discharge unwanted refrigerant
	2. Bad heat elimination of air heat exchanger	2. Wash the heat exchanger and improve condensing
Over-low inlet pressure of compressors	1. refrigerant shortage	1. check leakage and supply refrigerant
	2. filter or capillary blockage	2. change new filter or capillary
	3. water flow shortage	3. wash the filter or discharge the air in the system
	4. Capillary in the expansion valve cracks	4. change the expansion valve
No running of compressors	1. power source failure	1. examine the power source and eliminate the failure
	2. compressor contactor failure	2. change the contactor
	3. loosened wiring	3. check and repair it
	4. Compressor over loading protection	4. compressor over loading protection
	5. wrong setting for inlet water temperature	5. Reset it
	6. Water flow shortage	6. Wash the filter or discharge the air in the system

Failure	Possible causes	Solutions
High noise of compressor	1. Liquid refrigerant into the compressor	1. Check the cause and eliminate it
	2. compressor crash	2. change the compressor
No running of fan motors	1.Relay failure	1. change the relay
	2. fan motor destroyed	2. change the fan motor
The compressors are running, but the unit is not cooling/heating	1. completely leakage of refrigerant	1. examine leakage and supply refrigerant
	2. Tube-in-tube heat exchanger ruined	2. change the tube-in-tube heat exchanger
	3. Compressors fault	3. Change compressors
Low water temperature protection	1. water flow shortage	1. Wash the filter or discharge the air in the system
	2. Low setting value on temperature	2. Reset the temperature
Low water flow protection	1. water flow shortage	1. wash the filter or discharge the air in the system
	2. water switch damage	2. Change the switch

9.2 Parameter

Parameter	Function	Range	Value
00	Water inlet temperature during cooling mode	8-28℃	12℃
01	Water inlet temperature during heating mode	15-40℃	45℃
02	Defrosting cycle	30-90Min	40Min
03	Initial defrosting temperature	0--30℃	-3℃
04	Final defrosting temperature	2-30℃	13℃
05	End time of defrosting	1-12Min	8Min
06	Number of system	1-2	1
07	Power down memory function	0-1	0
08	Model	0-3	3

10. Wiring diagram

MODEL: EARW085TTRF