SWIMMING POOL HEAT PUMP UNIT

Installation & Instruction Manual

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1. PREFACE

- In order to provide our customers with quality, reliability and versatility, this product has been made to strict production standards. This manual includes all the necessary information about installation, debugging, discharging and maintenance. Please read this manual carefully before you open or maintain the unit. The manufacture of this product will not be held responsible if someone is injured or the unit is damaged, as a result of improper installation, debugging, or unnecessary maintenance. It is vital that the instructions within this manual are adhered to at all times. The unit must be installed by qualified personnel.

- The unit can only be repaired by qualified installer centre , personnel or an authorised dealer.

- Maintenance and operation must be carried out according to the recommended time and frequency, as stated in this manual.

- Use genuine standard spare parts only.
  Failure to comply with these recommendations will invalidate the warranty.

- Swimming Pool Heat Pump Unit heats the swimming pool water and keeps the temperature constant. For split type unit, The indoor unit can be Discretely hidden or semi-hidden to suit a luxury house.

  Our heat pump has following characteristics:

  1 Durable
  The heat exchanger is made of PVC & Titanium tube which can withstand prolonged exposure to swimming pool water.
  2 Installation flexibility
  The unit can be installed outdoors or indoors.
  3 Quiet operation
  The unit comprises an efficient rotary/ scroll compressor and a low-noise fan motor, which guarantees its quiet operation.
  4 Advanced controlling
  The unit includes micro-computer controlling, allowing all operation parameters to be set. Operation status can be displayed on the LCD wire controller. Remote controller can be chosen as future option.

2.SPECIFICATION

2.1 Performance data of Swimming Pool Heat Pump Unit

*** REFRIGERANT : R410A

UNIT		PASRW010	PASRW015
Heating capacity (27/24.3℃)	kW	4.12	5.95
	Btu/h	14008	20230
Heating Power Input	kW	0.73	1.04
Running Current	A	3.4	4.8
Heating capacity (24/19℃)	kW	3.82	5.36
	Btu/h	12988	18224
Heating Power Input	kW	0.75	1.05
Running Current	A	3.5	4.9
Heating capacity (15/12℃)	kW	3.05	4.25
	Btu/h	10370	14450
Heating Power Input	kW	0.74	1.0
Running Current	A	3.4	4.6
Power Supply		230V～/50Hz	230V～/50Hz
Compressor Quantity		1	1
Compressor		rotary	rotary
Fan Number		1	1
Fan Power Input	W	90	90
Fan Rotate Speed	RPM	850	850
Fan Direction		horizontal	horizontal
Noise	dB(A)	48	50
Water Connection	mm	50	50
Water Flow Volume	m^3/h	1.5	2.3
Water Pressure Drop(max)	kPa	2	2.4
Unit Net Dimensions(L/W/H)	mm	See the drawing of the units	
Unit Ship Dimensions(L/W/H)	mm	See package lable	
Net Weight	kg	see nameplate	
Shipping Weight	kg	see package label	

Heating: Outdoor air temp: 27℃/24.3℃, Inlet water temp:26℃

Outdoor air temp: 24℃/19℃, Inlet water temp:26℃

Outdoor air temp: 15℃/12℃, Inlet water temp:26℃

2.SPECIFICATION

2.1 Performance data of Swimming Pool Heat Pump Unit

*** REFRIGERANT : R410A

UNIT		PASRW020	PASRW030
Heating capacity (27/24.3℃)	kW	8.47	11.6
	Btu/h	28798	39440
Heating Power Input	kW	1.45	1.98
Running Current	A	6.5	9.1
Heating capacity (24/19℃)	kW	7.74	10
	Btu/h	26316	34000
Heating Power Input	kW	1.48	1.90
Running Current	A	6.6	8.7
Heating capacity (15/12℃)	kW	6.01	8.0
	Btu/h	20434	27200
Heating Power Input	kW	1.4	1.8
Running Current	A	6.3	8.2
Power Supply		230V～/50Hz	230V～/50Hz
Compressor Quantity		1	1
Compressor		rotary	rotary
Fan Number		1	1
Fan Power Input	W	90	120
Fan Rotate Speed	RPM	850	850
Fan Direction		horizontal	horizontal
Noise	dB(A)	52	54
Water Connection	mm	50	50
Water Flow Volume	m^3/h	3	4.5
Water Pressure Drop(max)	kPa	3.2	3.5
Unit Net Dimensions(L/W/H)	mm	See the drawing of the units	
Unit Ship Dimensions(L/W/H)	mm	See package lable	
Net Weight	kg	see nameplate	
Shipping Weight	kg	see package label	

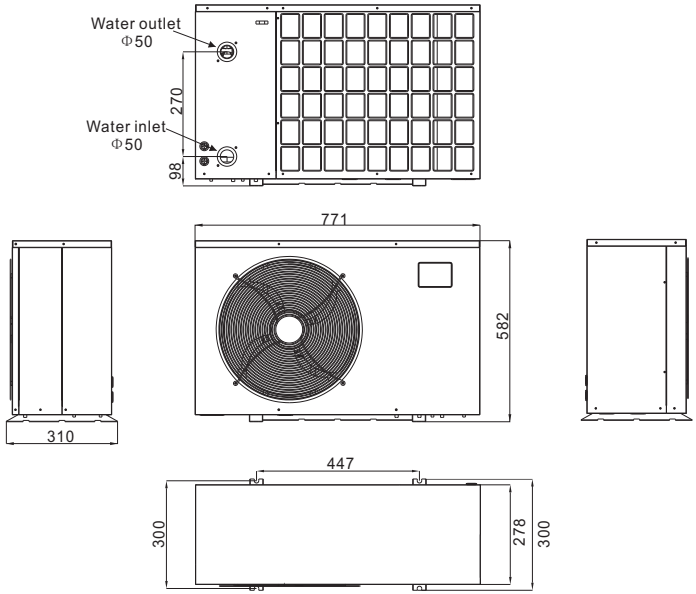
Heating: Outdoor air temp: 27℃/24.3℃, Inlet water temp:26℃

Outdoor air temp: 24℃/19℃, Inlet water temp:26℃

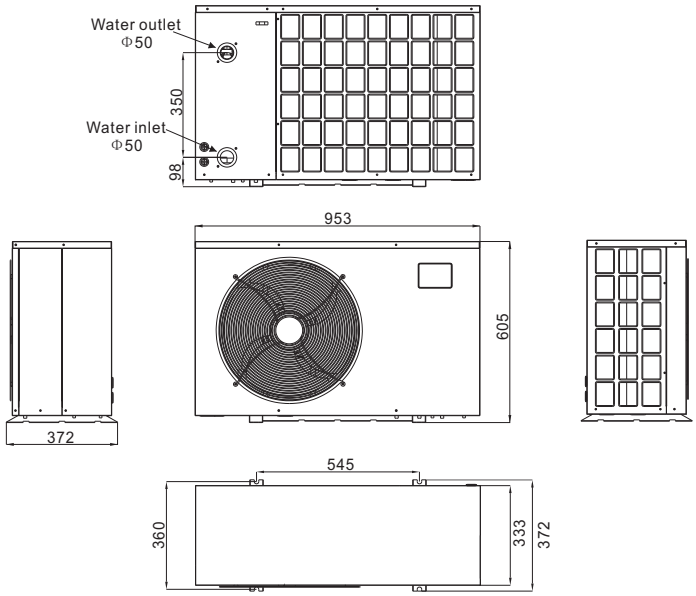
Outdoor air temp: 15℃/12℃, Inlet water temp:26℃

2.2 The dimensions for Swimming Pool Heat Pump Unit

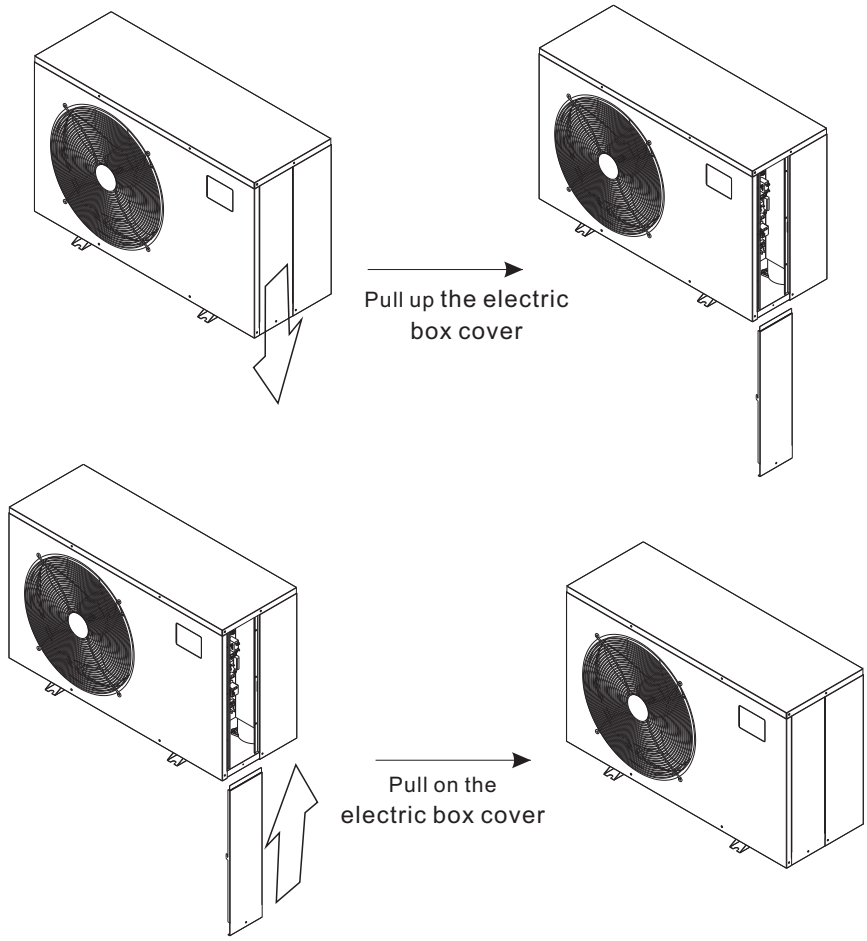
PASRW010/015



PASRW020/030



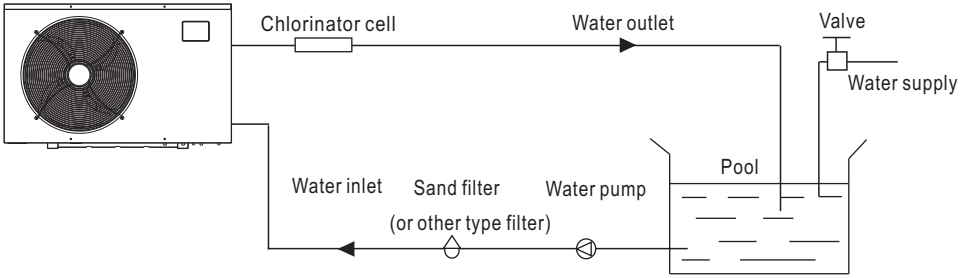
2.3How to separate and install the electric box cover



Attention: 1. Please be careful when handle with the electric box cover in case of damage;
2. During installation to buckle matched with the clamping groove of the electric box cover, so that it can cover the electric box cover.

3.INSTALLATION AND CONNECTION

3.1 Installation illustration



Installation items:

The factory only provides the main unit and the water unit; the other items in the illustration are necessary spare parts for the water system ,that provided by users or the installer.

Attention:

Please follow these steps when using for the first time
1.Open valve and charge water.
2.Make sure that the pump and the water-in pipe have been filled with water.
3.Close the valve and start the unit.
ATTN: It is necessary that the water-in pipe is higher than the pool surface.

The schematic diagram is for reference only. Please check the water inlet/outlet label on the heat pump while plumbing installation.

3.INSTALLATION AND CONNECTION

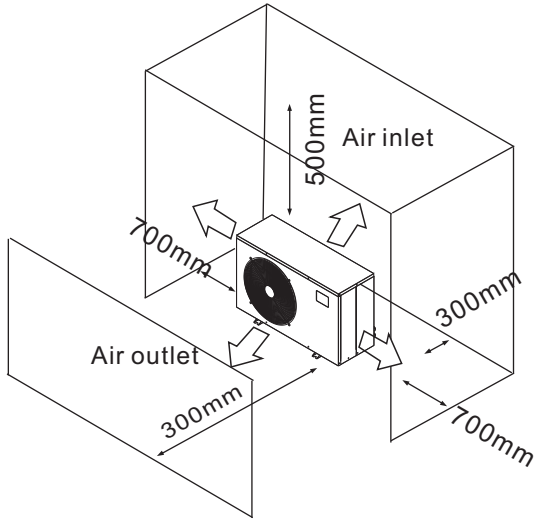
3.2 Swimming Pool Heat Pumps Location

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

1. Fresh Air - 2. Electricity - 3. Pool filter piping

The unit may be installed virtually anywhere outdoors. For indoor pools please consult the supplier. Unlike a gas heater, it has no draft or pilot light problem in a windy area.

DO NOT place the unit in an enclosed area with a limited air volume, where the units discharge air will be re-circulated.
DO NOT place the unit to shrubs which can block air inlet. These locations deny the unit of a continuous source of fresh air which reduces it efficiency and may prevent adequate heat delivery.



3.3 How Close To Your Pool?

Normally, the pool heat pump is installed within 7.5 metres of the pool. The longer the distance from the pool, the greater the heat loss from the piping. For the most part ,the piping is buried. Therefore, the heat loss is minimal for runs of up to15 meters(15 meters to and from the pump = 30 meters total), unless the ground is wet or the water table is high. A very rough estimate of heat loss per 30 meters is 0.6 kW-hour,(2000BTU) for every 5 ℃ difference in temperature between the pool water and the ground surrounding the pipe, which translates to about 3% to 5% increase in run time.

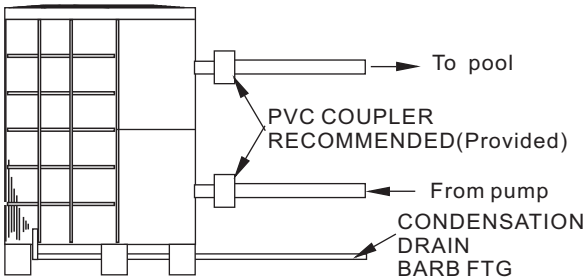
3.4 Swimming Pool Heat Pumps Plumbing

The Swimming Pool Heat Pumps exclusive rated flow titanium heat exchanger requires no special plumbing arrangements except bypass(please set the flow rate according to the nameplate). The water pressure drop is less than 10kPa at max. Flow rate. Since there is no residual heat or flame Temperatures, The unit does not need copper heat sink piping. PVC pipe can be run straight into the unit.

Location: Connect the unit in the pool pump discharge (return) line downstream of all filter and pool pumps, and upstream of any chlorinators, ozonators or chemical pumps.

Standard model have slip glue fittings which accept 32mm or 50 mm PVC pipe for connection to the pool or spa filtration piping. By using a 50 NB to 40NB you can plumb 40NB

Give serious consideration to adding a quick coupler fitting at the unit inlet and outlet to allow easy draining of unit for winterizing and to provide easier access should servicing be required.



Condensation: Since the Heat pump cools down the air about 4 -5℃, water may condense on the fins of the horseshoe shaped evaporator. If the relative humidity is very high, this could be as much as several litres an hour. The water will run down the fins into the basepan and drain out through the barbed plastic condensation drain fitting on the side of the basepan. This fitting is designed to accept 20mm clear vinyl tubing which can be pushed on by hand and run to a suitable drain. It is easy to mistake the condensation for a water leak inside the unit.

NB: A quick way to verify that the water is condensation is to shut off the unit and keep the pool pump running. If the water stops running out of the basepan, it is condensation. AN EVEN QUICKER WAY IS to TEST THE DRAIN WATER FOR CHLORINE - if the is no chlorine present, then it's condensation.

3.INSTALLATION AND CONNECTION

3.5 Swimming Pool Heat Pumps Electrical Wiring

NOTE: Although the unit heat exchanger is electrically isolated from the rest of the unit, it simply prevents the flow of electricity to or from the pool water. Grounding the unit is still required to protect you against short circuits inside the unit. Bonding is also required.

The unit has a separate molded-in junction box with a standard electrical conduit nipple already in place. Just remove the screws and the front panel, feed your supply lines in through the conduit nipple and wire-nut the electric supply wires to the three connections already in the junction box (four connections if three phase). To complete electrical hookup, connect Heat Pump by electrical conduit, UF cable or other suitable means as specified (as permitted by local electrical authorities) to a dedicated AC power supply branch circuit equipped with the proper circuit breaker, disconnect or time delay fuse protection.

Disconnect - A disconnect means (circuit breaker , fused or un-fused switch) should be located within sight of and readily accessible from the unit, This is common practice on commercial and residential air conditioners and heat pumps. It prevents remotely-energizing unattended equipment and permits turning off power at the unit while the unit is being serviced.

3.6 Initial startup of the Unit

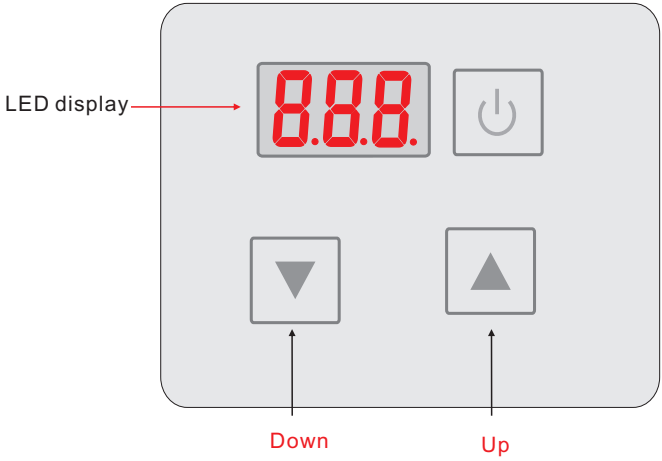
NOTE- In order for the unit to heat the pool or spa, the filter pump must be running to circulate water through the heat exchanger.

Start up Procedure - After installation is completed, you should follow these steps:
1. Turn on your filter pump. Check for water leaks and verify flow to and from the pool.
2. Turn on the electrical power supply to the unit, then press the key ON/OFF of wire controller, It should start in several seconds.
3. After running a few minutes make sure the air leaving the top(side) of the unit is cooler(Between 5-10 ℃)
4. With the unit operating turn the filter pump off. The unit should also turn off automatically,
5. Allow the unit and pool pump to run 24 hours per day until desired pool water emperature is reached. When the water-in temperature reach setting, The unit just shuts off. The unit will now automatically restart (as long as your pool pump is running)when the pool temperature drops more than 2℃below set temperature.

Time Delay- The unit is equipped with a 3 minute built-in solid state restart delay included to protect control circuit components and to eliminate restart cycling and contactor chatter. This time delay will automatically restart the unit approximately 3 minutes after each control circuit interruption. Even a brief power interruption will activate the solid state 3 minute restart delay and prevent the unit from starting until the 5 minute countdown is completed. Power interruptions during the delay period will have no effect on the 3 minute countdown.

4.USAGE

4.1. Function of wire controller

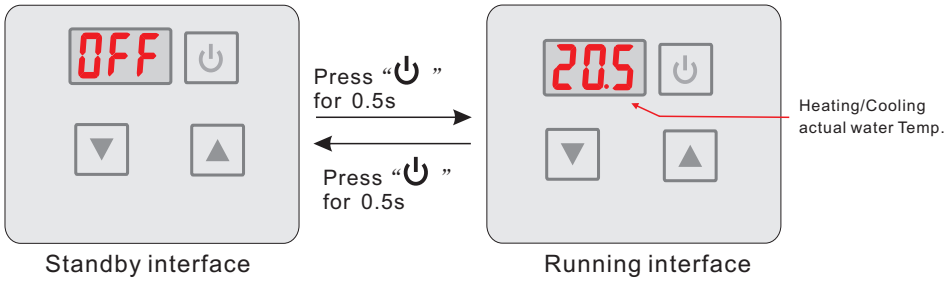


Key	Key name	Key function
⏻	ON/OFF	Press this key to turn on/off the unit.
▲	Up	Press this key to select the upward option or increase the parameter value.
▼	Down	Press this key to select the downward option or decrease the parameter value.

4.2. Usage of wire controller

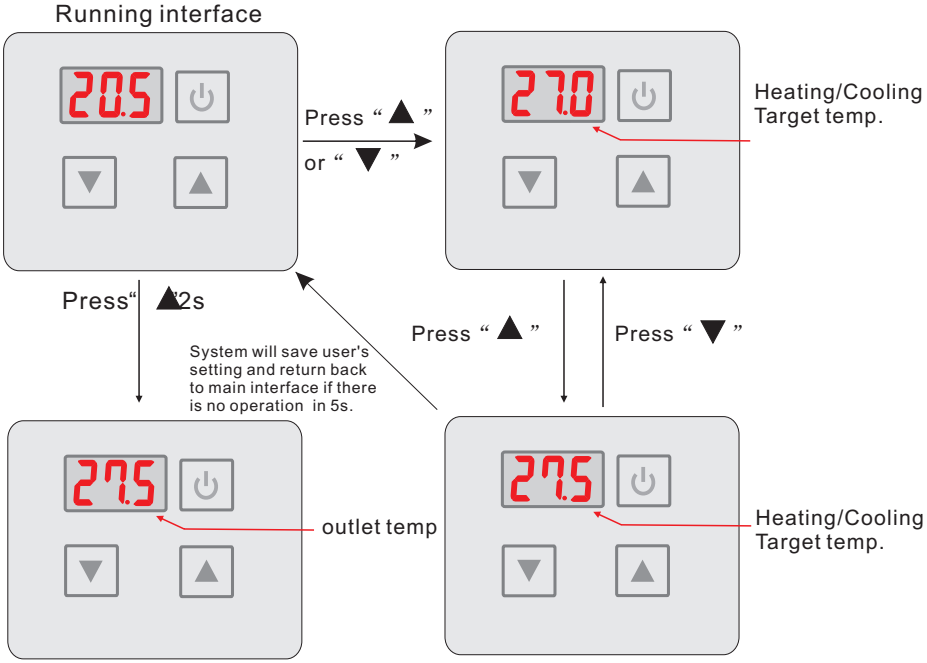
4.2.1 Turn ON/OFF the unit

When the unit is off, press the key " ⏻ " and hold on for 0.5s to turn on the unit;
When the unit is on, press the key " ⏻ " and hold on for 0.5s to turn off the unit;



4.2.2 Setting temperature

In the running interface, press " ▲ " or " ▼ " then the current mode target-tem flashes, then pres ▲ " " to increase the temp. value ▼ or press " " to decr
Press "⏻ " will not save setting parameter but back to the main interface;
Attention: If there is no operation for 5s, system would remember parameter setti back to the main interface.
In the main interface, press ? " ▲ " for 2s you can see the outlet temp.The parameter is then flashed and the display is back to the main interface after 10s.

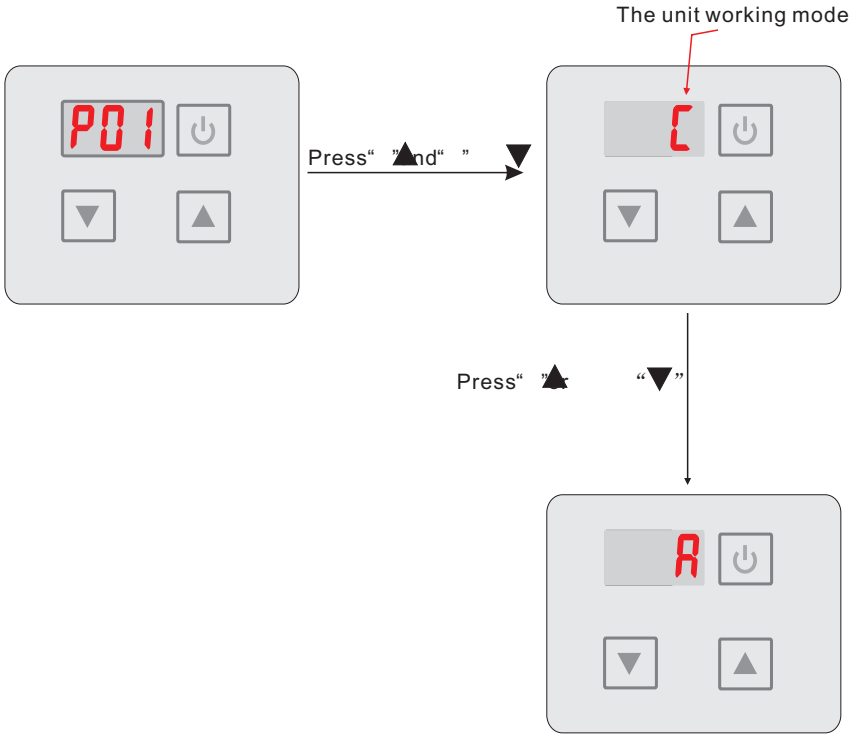


4.2.3 Mode switch

In the main interface,press “▲”and “▼ for 0.5s can set the mode,press “ ▲ or “▼” to change the current mode,you can switch different modes of colling, heating and auto mode.

If there is no operation for 5s system will save the current mode and back to the main interface,press “ ⏻ can not save setting

The modes switching is useless of the unit you buy is singel-cold/single-heat unit



4.2.4 Keyboard lock

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

At the main interface, pressing “ ⏻for 5 seconds,when hearing one sound, the keyboard is locked.

When the keyboard is locked, pressing “ ⏻for 5 seconds，when hearing one sound, the keyboard lock is open.

NOTES: When the unit is in alarming state, the key lock can be removed automaticly.

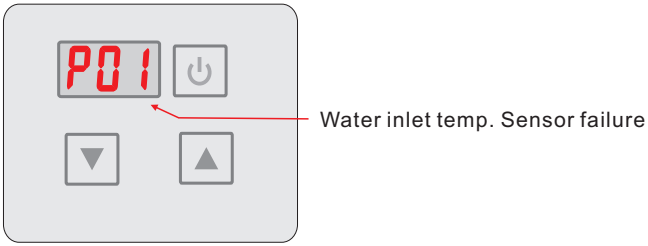
4.2.5 Malfunction display

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

If there are more than one malfuctions occurs at the same time, you can check the current error codes list by pressing “▲” or “▼” key.

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

For example：



4.3. Parameter table

Meaning	Default	Remarks
Set-point of auto mode target temp.	27℃	Ajustable

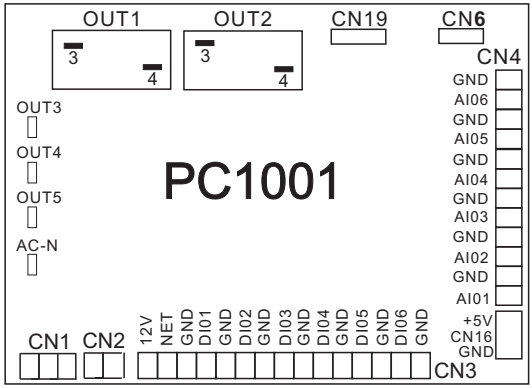
4.4. Malfunction Table

The common failure cause and solution.

Malfunction	Display	Canse	Solution
Water inlet temp. Sensor failure	P01	The water inlet temp. Sensor is open or short circuit	Check or change the water inlet temp. Sensor
Water outlet temp. Sensor failure	P02	The water outlet temp. sensor is open or short circuit	Check or change the water outlet temp. Sensor
Ambient temp. Sensor failure	P04	The ambient temp. sensor is open or short circuit	Check or change the ambient temp. Sensor
Pipe temp. Sensor failure	P05	The pipe temp. sensor is open or short circuit	Check or change the pipe temp. Sensor
Evaporator temp.Sensor failure	P07	The evaporator temp. Sensor is open or short circuit	Check or change the evaporator temp. Sensor
High pressure protect	E01	The exhaust pressure is high , high pressure switch action	Check high pressure switch and cooling return circuit
Low pressure protect	E02	The suction pressure is low, Low pressure switch action	Check low pressure switch and cooling return circuit
Flow switch failure	E03	No water or litter water in water system	Check the flow volume ,water pump is failure or not
Temp. is too much different between water-inlet and outlet	E06	Water flow volume not enough, Water system pressure difference is small	Check the flow volume,water system is jammed or not
Antifreezing under cooling mode	E07	Water flow volume not enough	Check the flow volume,water system is jammed or not
The primary anti-freezing protection start.	E19	Ambient temperature is too low	
The second anti-freezing protection start	E29	Ambient temperature is too low	
Communication failure	E08	Communication failure between remote wire controller and main board	Check the wire connection between remote wire controller and main board

5.PCB Connection

Connection of PCB illustration



Connections explanation：

No.	Symbol	Meaning
1	OUT1	Compressor of system1（220-230VAC）
2	OUT2	Water pump（220-230VAC）
3	OUT3	4way valve （220-230VAC）
4	OUT4	High speed of fan motor（220-230VAC）
5	OUT5	Low speed of fan motor（220-230VAC）
6	AC-N	Neutral wire
7	NET GND 12V	Wire controller
8	DI01 GND	On/Off Switch(input)(no use)
9	DI02 GND	Flow switch (input)(normal close)
10	DI03 GND	Low pressure protect
11	DI04 GND	High pressure protect
12	DI05 GND	No use
13	DI06 GND	No use
14	AI01 GND	Suction temp.(input)
15	AI02 GND	Water in temp.(input)
16	AI03 GND	Water out temp.(input)
17	AI04 GND	Temp. Of coil (input)
18	AI05 GND	Ambient temp.(input)
19	AI06 GND	Adjustable fan speed/Exhaust temperature
20	CN1	Primary transformer
21	CN2	Secondary transformer
22	CN6	Without use
23	CN19	Electronic expansion valve
24	5V CN16 GND	Flow meter

6.APPENDIX

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

6.APPENDIX

Cable specification

1. Single phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	2×1.5mm^2	1.5mm^2	20A	30mA less than 0.1 sec	n×0.5mm^2
10~16A	2×2.5mm^2	2.5mm^2	32A	30mA less than 0.1 sec	
16~25A	2×4mm^2	4mm^2	40A	30mA less than 0.1 sec	
25~32A	2×6mm^2	6mm^2	40A	30mA less than 0.1 sec	
32~40A	2×10mm^2	10mm^2	63A	30mA less than 0.1 sec	
40~63A	2×16mm^2	16mm^2	80A	30mA less than 0.1 sec	
63~75A	2×25mm^2	25mm^2	100A	30mA less than 0.1 sec	
75~101A	2×25mm^2	25mm^2	125A	30mA less than 0.1 sec	
101~123A	2×35mm^2	35mm^2	160A	30mA less than 0.1 sec	
123~148A	2×50mm^2	50mm^2	225A	30mA less than 0.1 sec	
148~186A	2×70mm^2	70mm^2	250A	30mA less than 0.1 sec	
186~224A	2×95mm^2	95mm^2	280A	30mA less than 0.1 sec	

2. Three phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	3×1.5mm^2	1.5mm^2	20A	30mA less than 0.1 sec	n×0.5mm^2
10~16A	3×2.5mm^2	2.5mm^2	32A	30mA less than 0.1 sec	
16~25A	3×4mm^2	4mm^2	40A	30mA less than 0.1 sec	
25~32A	3×6mm^2	6mm^2	40A	30mA less than 0.1 sec	
32~40A	3×10mm^2	10mm^2	63A	30mA less than 0.1 sec	
40~63A	3×16mm^2	16mm^2	80A	30mA less than 0.1 sec	
63~75A	3×25mm^2	25mm^2	100A	30mA less than 0.1 sec	
75~101A	3×25mm^2	25mm^2	125A	30mA less than 0.1 sec	
101~123A	3×35mm^2	35mm^2	160A	30mA less than 0.1 sec	
123~148A	3×50mm^2	50mm^2	225A	30mA less than 0.1 sec	
148~186A	3×70mm^2	70mm^2	250A	30mA less than 0.1 sec	
186~224A	3×95mm^2	95mm^2	280A	30mA less than 0.1 sec	

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

Code : 20150309-0001