



INSTALLATION & INSTRUCTION MANUAL

DC INVERTER AIR TO WATER HEAT PUMP



Notice

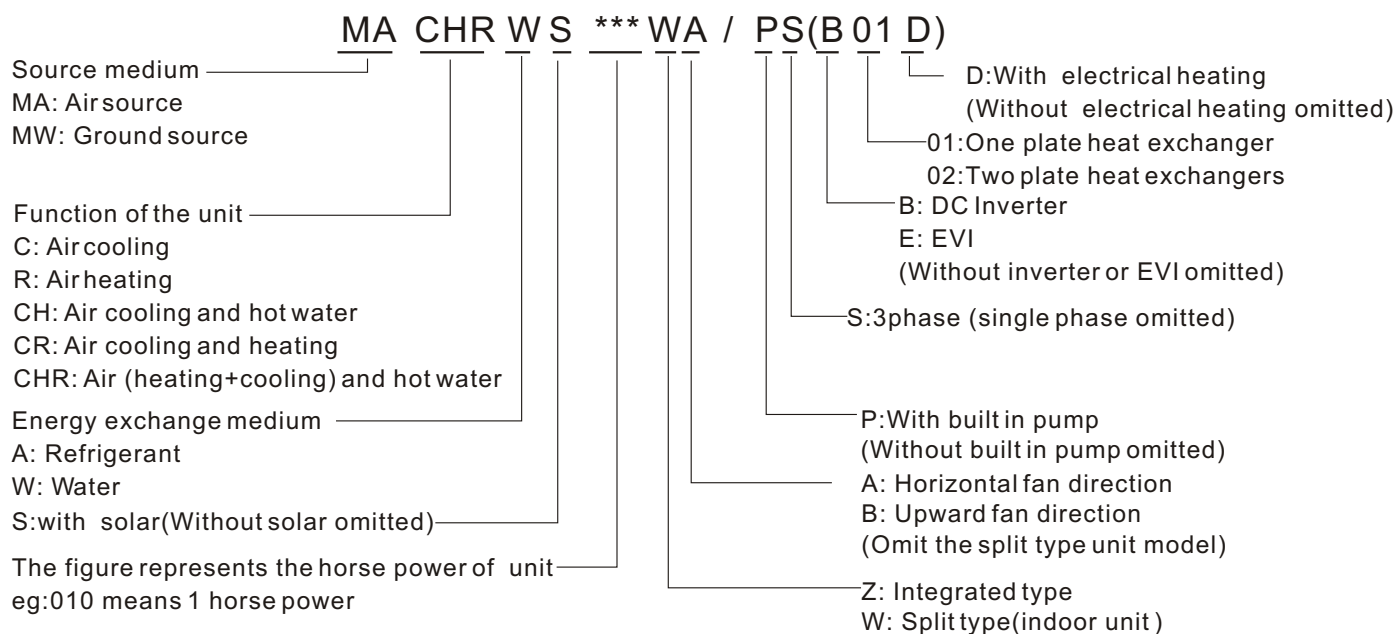
- 1.1 In order to use this product better and safer, please read this instruction carefully before install and operate it. Please pay attention to all the notice in operation and maintenance. Save all manuals and documentation for future reference.
- 1.2 Air to water pump is a special appliance. Improper installation will cause damage and danger. It should be installed and maintained by the professionals. Please contact our authorized local service point for installation and maintenance. Please read and follow this instruction carefully before and during installation.
Remarks:
We will not bear the responsibility for any personal injury or unit damage caused by non-Compliance of the regulations and instruction in this manual.
- 1.3 Please check whether the distribution power capacity, switch and socket are compliance with the requirements of our unit power. Details please refer to the rating label or parameter table in this manual.
- 1.4 The power should be equipped with leakage protection separately.
Power cable should be chosen in accordance with the operation requirements of the unit.
- 1.5 The unit must be grounded safely. Do not use the unit if grounded unsafely.
Do not connect the ground line to the neutral and or tap water pipe.
- 1.6 The wire must be joined in compliance with the requirements of the wiring chart.
Do not alternate and or repair the unit personally.
- 1.7 Do not install the unit closed to inflammable, explosive and naked light spot.
- 1.8 To ensure the unit operate properly, please equipped with a filter in the water input when installation.

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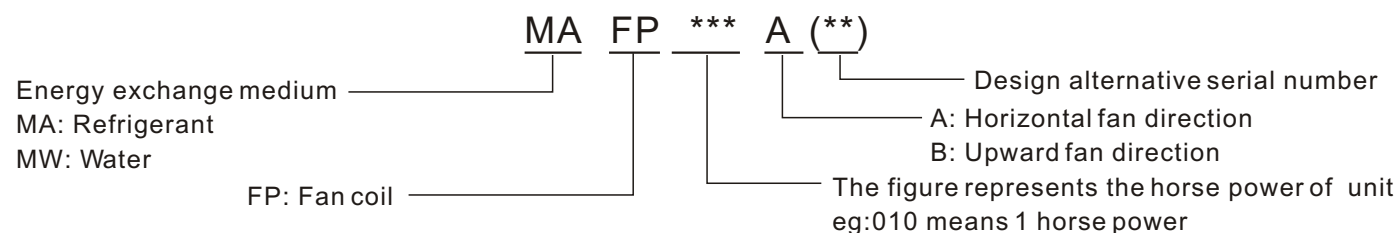
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1. Model Nomenclature

Indoor unit model nomenclature



Outdoor unit model nomenclature



2.Parameters of air to water heat pump

INDOOR UNIT	MACHRW	010W/(B01)	020W/(B01)	030W/(B01)
Rated Cooling Capacity	kW	2.5	5.0	7.5
	BTU/h	8600	19200	25600
Rated Input Power(Cooling)	kW	0.78	1.56	2.34
Rated Input Current(Cooling)	A	3.6	7.25	10.7
Rated Heating Capacity ①	kW	3.5	7.0	10.5
	BTU/h	12000	23900	35800
COP ①		4.15	4.15	4.15
Rated Input Power(Heating) ①	kW	0.85	1.69	2.53
Rated Input Current(Heating) ①	A	3.8	7.6	11.5
Rated Heating Capacity ②	kW	2.8	5.6	8.3
	BTU/h	9600	19200	28400
COP ②		3.6	3.6	3.6
Rated Input Power(Heating) ②	kW	0.76	1.52	2.29
Rated Input Current(Heating) ②	A	3.5	7.0	10.4
Auxiliary electric heater Power (Optional)	KW	/	7.5	7.5
Auxiliary electric heater Current	A	/	36	36
Maximum input Current	A	5.8	11.6	17.3
Power Supply	V/PH/Hz	208~230V/1PH/60Hz		
Compressor		DC Inverter		
Compressor Qty		1	1	1
Noise	dB(A)	46	47	48
Water outlet/water inlet	inch	1 "	1 "	1 "
Water Flow Volume	m³/h	0.62	1.21	1.81
Refrigerant Gas Type		R410A		
Indoor unit Net Dimensions(L/M/H)	mm	600/440/740	600/440/740	600/440/740
Indoor unit Shipping Dimensions (L/M/H)	mm	650/500/780	650/500/780	650/500/780
Outdoor unit Net Dimensions(L/M/H)	mm	830/380/710	830/380/710	830/380/710
Outdoor unit Shipping Dimensions (L/M/H)	mm	880/430/810	880/430/810	880/430/810
Indoor unit Net Weight	kg	45	50	60
Indoor unit Shipping Weight	kg	53	58	70
Outdoor unit Net Weight	kg	35	35	35
Outdoor unit Shipping Weight	kg	40	40	40

Note:(1)Cooling:Outdoor air temp:DB 35℃/WB 24℃,Outlet water temp:7℃,Inlet water temp:12℃;

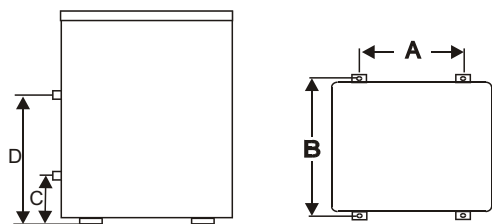
(2)①Outdoor ambient temp:DB 20℃/WB 15℃,water tank water temp from 15℃ to 55℃

(3)②Outdoor ambient temp:DB 7℃/WB 6℃,water outlet temp:45℃,water inlet temp:40℃

(4)Using in ambient temperature:-15℃~43℃.

3. Product appearance and installation dimension

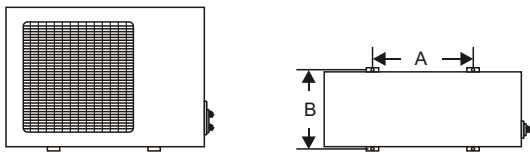
3.1Dimension of indoor unit



Units: mm

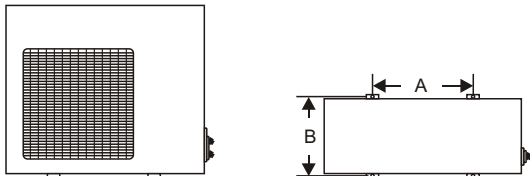
Size \ MODEL	MACHRW010W/(B01) MACHRW020W/(B01D) MACHRW030W/(B01D)
A	390
B	405
C	106
D	500

3.2 Dimension of outdoor unit



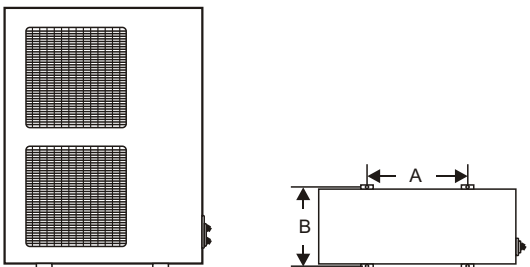
Units: mm

Size \ MODEL	MAFP020A
A	615
B	395



Units: mm

Size \ MODEL	MAFP040A
A	615
B	395



Units: mm

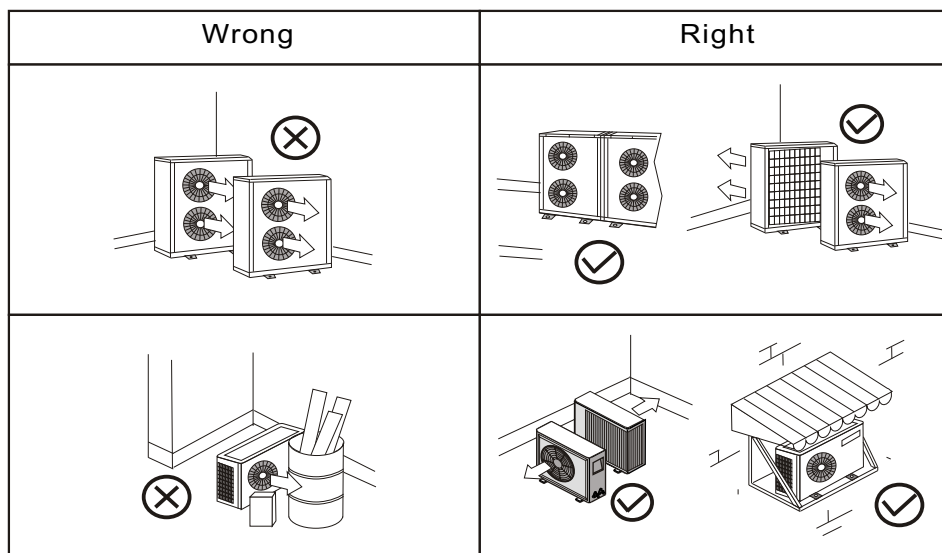
Size \ MODEL	MAFP060A
A	575
B	415

II. Installation

1. unit installation position

The pretty high condensation temperature (cooling) and pretty low evaporation temperature (heating) will affect the operation of outdoor unit. To achieve maximum efficiency, please select the installation position under below regulations:

To avoid ventilation short, the outdoor unit discharged air should not return when installation. Please keep enough space around the outdoor unit for repair. Right and wrong means as below:



Notice:

- 1.To get enough air for ventilation of the unit, the installation position should be with good ventilation.
- 2.The installation position can hold the outdoor unit without noise and shake.
- 3.No sunlight to the unit. Set an awning if necessary.
- 4.The water from rain and defrosting can be discharged in the installation position.
- 5.The unit will not be covered by snow in the installation position.
- 6.The discharged air will not face strong air in the installation position.
- 7.Assure the noise caused by the unit ventilation and operation will not affect the neighbor.
- 8.The installation position will not be affected by garbage, oil and mist.
- 9.The outdoor unit will be damaged under the condition with oil(engine oil), salt(sea area) and sulfide air(near thermal spring and refining factory).

2. The refrigerant piping connection for split type unit

2.1 Each component's names and function of refrigerant stop valve

● Adapter connector

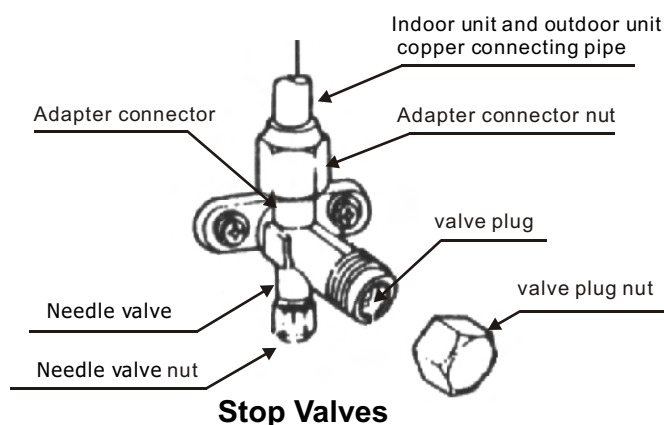
The connecting pipe joint of indoor unit and outdoor unit .

● Needle valve

To discharge the air in the connecting pipe and outdoor unit by refrigerant pressure or connect a vacuum pump.

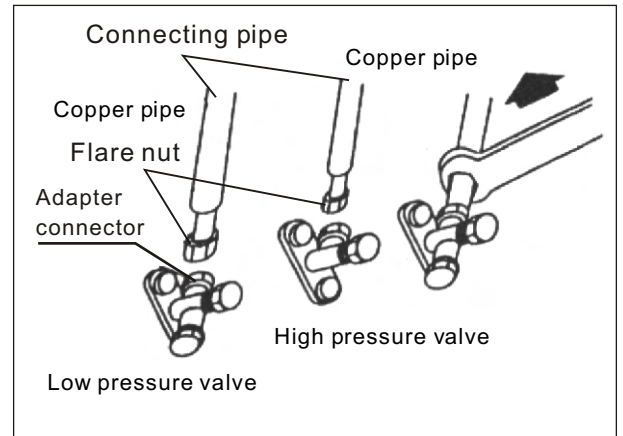
● Valve plug

Turn on or turn off the stop valves.



2.2 The unit refrigerant pipe connecting

- A:** According to the indoor and outdoor unit fixed location and location of holes through the wall, choose a good direction lead to pipe. Then begin the indoor pipe connection work.
- B:** Use a wrench to remove the adapter connector nut;
- C:** As shown on the right, press the trumpet on the connector cone, then hold the connection pipe with one hand, so that keep the connector axis in the first line, the other hand the gradually screw the flare nut on the connector, then tighten with wrench.



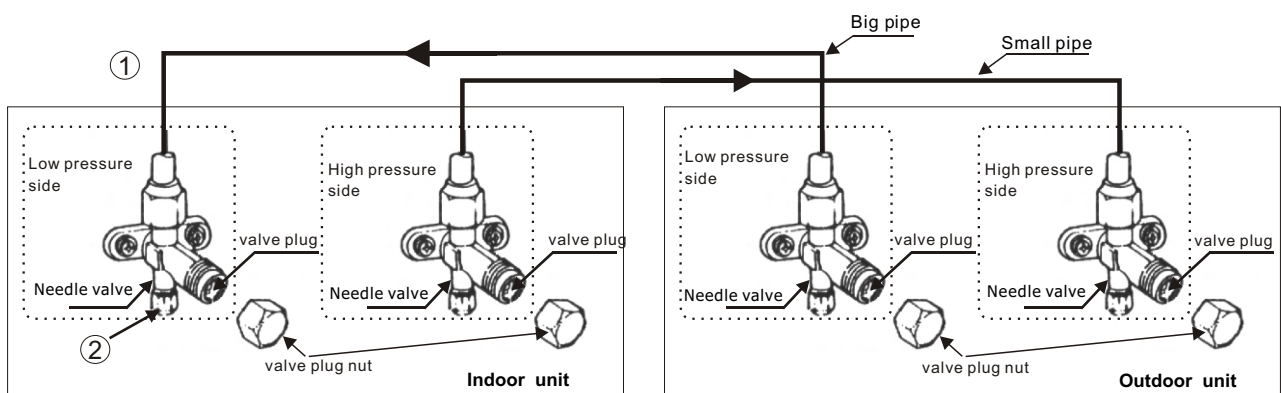
2.3 Air discharge (by indoor unit refrigerant)

If the system is small, use refrigerant empty way to discharge the pipe and outdoor unit air, to discharge the air in the connecting pipe and outdoor unit, when there's refrigerant in the pipes originally, just open the low pressure side needle valve of indoor unit to discharge the air by refrigerant pressure.

As the following steps:

- A:** Unscrew the valve plug nut on the stop valve , and unscrew the needle nut on the indoor unit low pressure side.
- B:** Open the stop valve at outdoor unit high/low pressure side by valve plug.
- C:** Open the stop valve at indoor unit's high pressure side by valve plug,
Note: don't open the one at low pressure side.
- D:** Open the needle valve by small screwdriver , and this outlet will discharge the air in connecting pipe and outdoor unit at the same time.
- E:** Close the needle valve after open it about 10-20 seconds ,The time is according to the size of outdoor unit and the length of the connecting pipe.
- F:** After the air discharging, open the stop valve at the indoor unit low pressure side.
- G:** Screw and close the screw cap on the stop valve.

As the picture show



NOTE ① : The direction of the arrow is the air discharging flow direction which is same as the refrigerant flow direction.

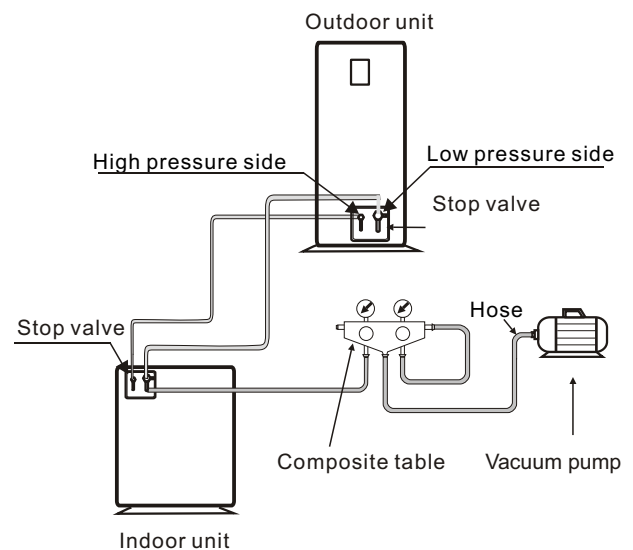
NOTE ② : The air is discharged from this outlet.

2.4 Air discharge (by vacuum pump)

If the system large or after maintenance of outdoor system, should use the vacuum pump discharge way to empty the air and water within the system.

As the following steps:

- A:** As the picture show, connect the vacuum pump with the pressure gauge, and then connect the vacuumed connecting pipe with the needle valve on the indoor unit low pressure side.
- B:** Unscrew the valve plug nut on the stop valve , and unscrew the needle nut on the indoor unit low pressure side.
- C:** Open the stop valve at outdoor unit high/low pressure side by valve plug.
Note: Do not open the indoor unit high/low pressure side stop valve.
- D:** Open the compound pressure gauge and vacuum pump to vacuum the outdoor unit and pipe, so that the absolute pressure not higher than 130Pa, and keep the pressure does not rise within 5 minutes after vacuum.
- E:** After the air discharging(vacuuming),disconnect the connecting between the pressure gauge and indoor unit stop valve .
- F:** Open the stop valve at indoor unit high/low pressure side by valve plug, then let the indoor unit's refrigerant flow in outdoor unit(if need to add more refrigerant, please refer to 2.4).



2.5 Add refrigerant

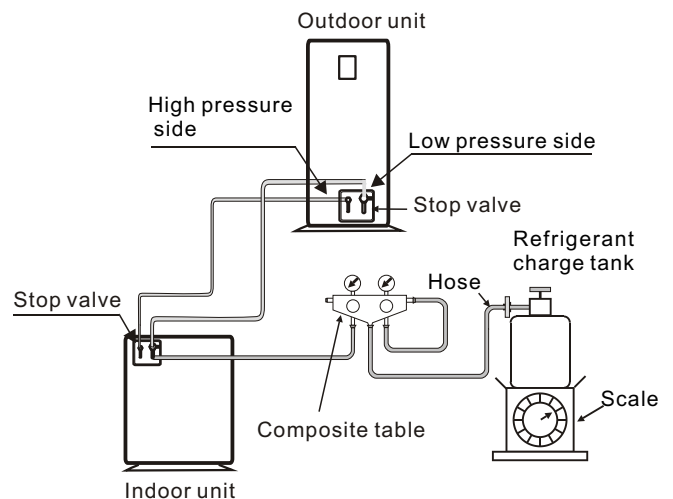
When the pipe is too long, please add additional refrigerant as following formula:

Additional refrigerant amount=
(one-way tube length -5)m x (0.015~0.02) kg,
choose 0.015 or 0.02 according to the size
of diameter.

When the tracheal diameter = 12.7,
choose 0.015;

when the diameter = 15.88, choose 0.02 .

The methods to add refrigerant
refer to the right diagram :



2.6 Leak check

After discharge the air, use electronic leak detector or soapy water to test all the connectors in the indoor and outdoor unit.

3. Installation of terminal equipment

- 3.1. Indoor terminal equipment installation (such as: fan coil, radiator heater or floor heating), the equipment should be installed in accordance with relevant regulatory requirements.
- 3.2. In accordance with the requirements of engineering design drawings, installation and construction.
- 3.3. Use a soft connector to connect the unit and fan coil inlet and outlet pipes; install fan coil condensate drain pipe, connect the condensate drain interface, and to ensure smooth drainage of condensate water.

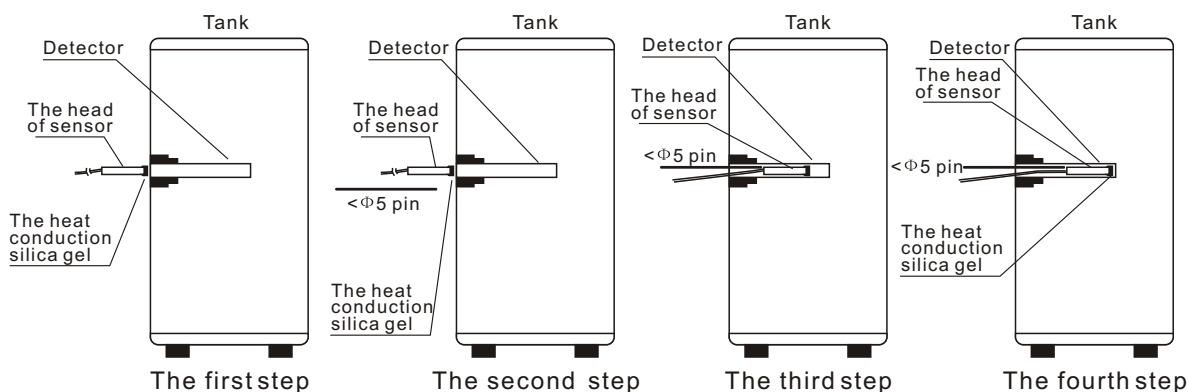
4. Pipe connection

- 4.1. Pipe material selection, can be stainless steel pipe, copper pipe, aluminum water pipe, hot water PPR pipes and so on, according with national health and safety standards, heat-resistant, rust-proof, no scaling pipe.
- 4.2. The choice of pipe sizes can be used the one which matches the heat pump inlet and outlet main pipe, and, respectively connect to heat pump inlet and outlet, and follow the proper construction of plumbing standards.
- 4.3. Water tank outlet pipe and overflow pipe installed in the gutter or outlet position as far as possible, where convenient to drainage.
- 4.4. The unit and the junction to the tank must be installed valve or demolition loose joint, for maintenance use.
- 4.5. Water pipes are arranged reasonably to minimize bending and reduce the pressure loss of water system
- 4.6. The unit air-conditioning side and the hot water side circle inlet must be installed a above 50 mesh water filter to reduce the water system resistance loss.
- 4.7. The unit air-conditioning side and the hot water side which connect to running water must be installed a one-way valve, filter and pressure relief devices (pressure relief devices used on the closed water tank, water tank accessories in general, the parameter value $\leq 0.7\text{MPa}$), in accordance with the flow and valve arrow direction, to avoid flow be obstructed.
- 4.8. The unit hot water side circle outlet connect to tank circle inlet, and the host hot water side circle inlet connect to tank circle outlet, tank hot water supply connect to hot water pipe.
- 4.9. Air-conditioning side buffer tank in series installed on the outlet of the main pipe.
- 4.10. After hot water side and air-conditioning side water system pipes, circulated pipes, hot water supply pipes connected, it must be pipe connection rigorous testing , plus 0.7Mpa pressure testing 24 hours, system pipes connector no leakage and clean and sewage pipes, to ensure that the system clean, no debris. No leakage after the test, then pack the pipe and valve with insulation (including the replenishment pipes and valves).
- 4.11. In order to discharge the water system air clean, avoid air trapping in the pipeline, the water supply return pipe highest point should be set up a automatically exhaust valve.
- 4.12. The water system expansion tank, automatic water valve and stop valve should be installed indoors, to prevent water pipes and valves crack when not use in the winter.
- 4.13. The metal pipe must be used above 50mm thickness of glass fiber or high-density fire retardant PE for thermal insulation and moisture, PPR water pipe can be used 30mm thickness of glass fiber or high-density fire retardant PE for thermal insulation and moisture to prevent cold, heat loss and condensation.
- 4.14. The unit water inlet and outlet must install a thermometer, water pressure gage, to facilitate inspection when operate.

Note:

- 1) Tubing pipeline should be separate test pressure, must not test with hot water unit or tanks.
- 2) The Water system allows working pressure range: 0.2-0.7 MPa.
- 3) The Water system allows working temperature range: 5-60 °C.
- 4) Water can drain from the pressure relief device drainage pipe, and the pipe keep open to atmosphere.
- 5) The pressure relief device regularly move to remove the calcium carbonate, and prove that the device is not plugged.
- 6) Installation of one-way valves, filters and pressure relief device, valve body arrow as same as flow direction .
- 7) The pressure relief device discharge pipe should be installed in the frost-free environment in A continuous down way.

5. Installation of the temp detector



- 5.1. The first step: Daub the heat conduction silica gel spreads in the front of sensor, and insert into the detector.
- 5.2. The second step: use $\phi 5$ pin to push the detector into the end of the detector against the end of the sensor, and marks on level of the pin and the detector.
- 5.3. The third step: putout the pin, the position of mark to be at the same level with the inlet of detector, check whether the sensor is inserted to the pipe terminal.
- 5.4. The fourth step: the inlet of the detector is sealed with the glass silica gel, and keep the inlet of the detector upwards and uprightness about an hour.

6. Selection of Electrical Wire

6.1 Voltage drop may occur due to the large current draw during compressor starting, and may be result in the compressor is difficult to stat. So we recommend selecting the wire specification from the table below.

6.2 Specification Table of Electrical Wire

Mode:MACHRW	Wire Specification	Circuit breaker	Voltage
010W/(B01)	2.5mm ²	10AMP	208~230V/1PH/50Hz
020W/(B01)	2.5mm ²	14AMP	208~230V/1PH/50Hz
030W/(B01)	2.5mm ²	20AMP	208~230V/1PH/50Hz

6.3 Caution of Ground The internal motor protector does not protect the compressor against all possible conditions. Please be sure that the system utilizes the ground connection when installed in the field.

6.4 Warning: To avoid fire, electric shock and other accidents, keep in mind about these tips:

- A:** Only use power supply voltage indicated on the label, if you do not know the family of voltage, contact the dealer or local power company.
- B:** When you use the unit by the maximum current please view the specifications, so make sure our home's power supply (current, voltage and cable) to meet the machine's normal load requirements.
- C:** To protect the power lines. Power lines should be fixed, so that people will not be trip over or the lines damaged by other things. Paying particular attention to plugs, which should be easily plug into the socket, careful the plug position.
- D:** Do not overload wall plugs or extension the cable. Line overload can cause fire or electric shock.
- E:** To ensure your safety, you must plug the power lines into the socket with a grounded three-phase, and check to ensure your socket is accurate and reliable grounding.

7. Trial operation(should be operated by professionals)

7.1 Check before trial operation

7.1a Check the pipe system. Check the whole pipe system. Ensure the water volume in the system is full and the air is exhausted completely. Check whether the valve is open throughout the system and the thermal insulating of the pipe is well.

7.1b Check the power supply and distribution system. Check whether the power supply voltage is normal, the power distribution accessory screws all tighten, supply power is in compliance with the wiring diagram and the wire is grounded well.

7.1c Check the air cooled water chiller. Check whether any screw loose. Check the signal indicator light(green) of the outdoor unit control panel is illuminated normally and the fault indicating lamp(red) is illuminated. Connect the pressure gauge to the freon feed mouth for checking the pressure during operation. Disconnect them after test is ok.

7.2 Trial operation

7.2a Press “on/off” in the remote controller, the water pump and fan start immediately. The compressor start after the unit operates for some time. Observe and determine if there' s any abnormal sound during operation. Stop to check the unit if there' s abnormal sound. The unit can continue to run only when there' s no abnormal sound. Check whether the cooling system pressure is normal at the same time.

7.2b Check whether the input power and current of the unit are compliance with the parameter in this Instruction. If not, stop to check the unit.

7.2c Observe whether the outlet water temperature is normal.

7.2d Parameter of the remote controller has been set before leave of the factory. Never alternate them personally.

III. USE

1. Wire controller device installation

The remote controller is designed and employed standard electrical box dimensions(86*86, fixed hole distance 60mm). The electrical box and three core can be built in the wall before decoration, which makes the interior decoration more perfect. The illustration shows as below:

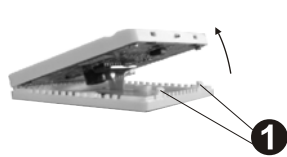


Illustration 1

- ① Use flat screwdriver to press down the two back-off and lift open the face covering.

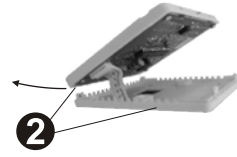


Illustration 2

- ② Remove the top covering leftwards to disengage two top back-off.

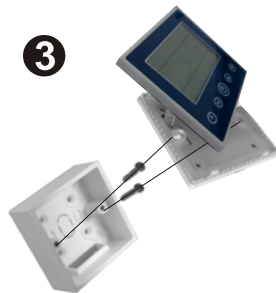


Illustration 3

- ③ Put the remote controller in the electrician base . box and tighten the two setscrews.

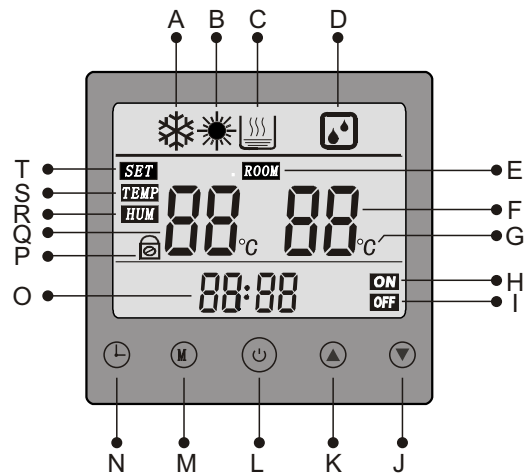


Illustration 4

- ④ Cover the face covering in the reverse procedures as shown in Illustration 2 and Illustration 1 to complete the mounting of the remote controller.

2.The user interface and function shows as below.

符号	图标	说明
A		Cooling mode icon
B		Heating mode icon
C		Hot water tank mode icon
D		Defrost icon
E		Air condition mode icon ①
F		The actual temperature ②
G		Celsius units
H		Timer on icon
I		Timer off icon
J		Down setting button
K		Up setting button
L		Turn on / off button
M		Model select setting button
N		Timer and clock setting button
O		Time display area
P		Button lock icon
Q		The setting temperature ③
R		Auxiliary electrical heating icon ④
S		Temperature icon
T		Setting icon



Note①: This icon is to show whether it is under hot water tank mode or air condition mode. When this icon appears, it shows that the unit is running air condition mode.

Note②: In standby mode, this temperature meaning the ambient temperature. In hot water tank mode, this temperature meaning hot water tank temperature. In air condition mode, this temperature meaning water inlet temperature.

Note③: In standby state, it will not show here. In the hot water tank mode, it is hot water tank temperature. In air conditioning mode, it is inlet water temperature.

Note④: When manually open auxiliary electrical heating, the icon will flash.

3. Use of wire controller

3.1 Keyboard locking / unlocking operation

Without operation for the controller in 30 seconds, The icon  will display on wire controller. It mean that keyboard are lock. And press  button for 3 second. Keyboard are unlock.

3.2 Turn on/turn off the unit

Under standby status ,press the  button turn on the unit, the operation mode icon display on the wire controller. the unit is running operation mode. Show as the picture 1 .press the  button again , turn off the unit. Show as the picture 2.



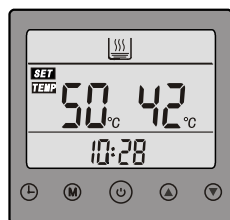
Picture 1



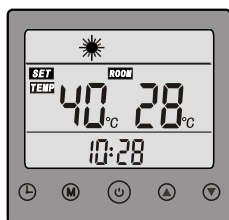
Picture 2

3.2 Model select operation

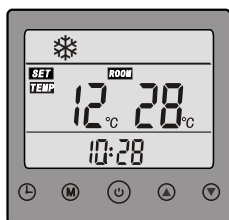
Under the running status, press the  button change the running mode.



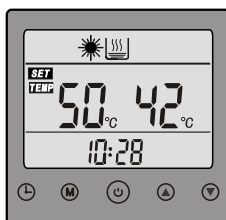
Hot water mode



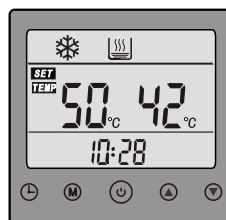
Heating mode



Cooling mode



Hot water +
Heating mode



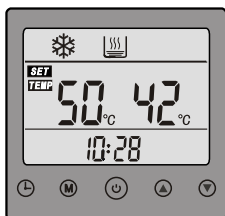
Hot water +
Cooling mode



Hot water mode, the temperature on the left side of the wire controller is the set temperature of hot water tank, and on the right side is the actual temperature of the hot water tank.



Air condition mode(including heating mode and cooling mode), the temperature on the left side of the wire controller is the set temperature of water inlet(heating or cooling), and on the right side is the actual temperature of water inlet.



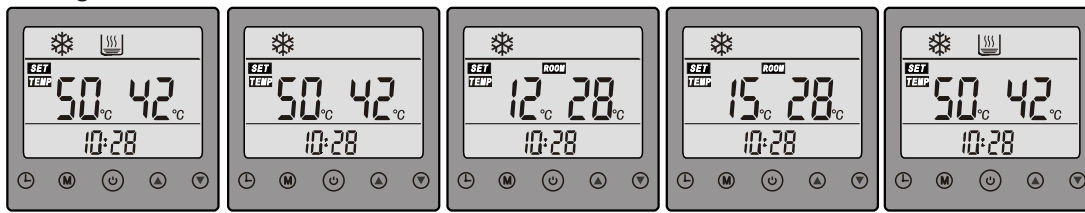
Hot water mode & Air condition mode, the unit default priority hot water mode, So the unit running hot water mode at first, the temperature on the left side of the wire controller is the set temperature of hot water tank, and on the right side is the actual temperature of the hot water tank. When the hot water tank temperature reaches set temperature, the unit will running air condition mode automatic. This moment the temperature on the left side of the wire controller is the set temperature of water inlet(heating or cooling), and on the right side is the actual temperature of the water inlet.

3.3 Modify the set temperature

Under the hot water mode, press  button and  button, can modify the set temperature of hot water. Under the air condition mode, press  button and  button, can modify the set temperature of water inlet.

Under the hot water & air condition mode, press ▲ button and ▼ button, can modify the set temperature of the current operation mode. If the unit is running hot water mode, and you want to modify the set temperature of water inlet(heating or cooling), you can follow the steps below.

For example, wire controller display hot water mode & cooling mode. The unit is running hot water mode, but I want to modify the set temperature of water inlet under the cooling mode. Now I will be following



Picture 1

Picture 2

Picture 3

Picture 4

Picture 5

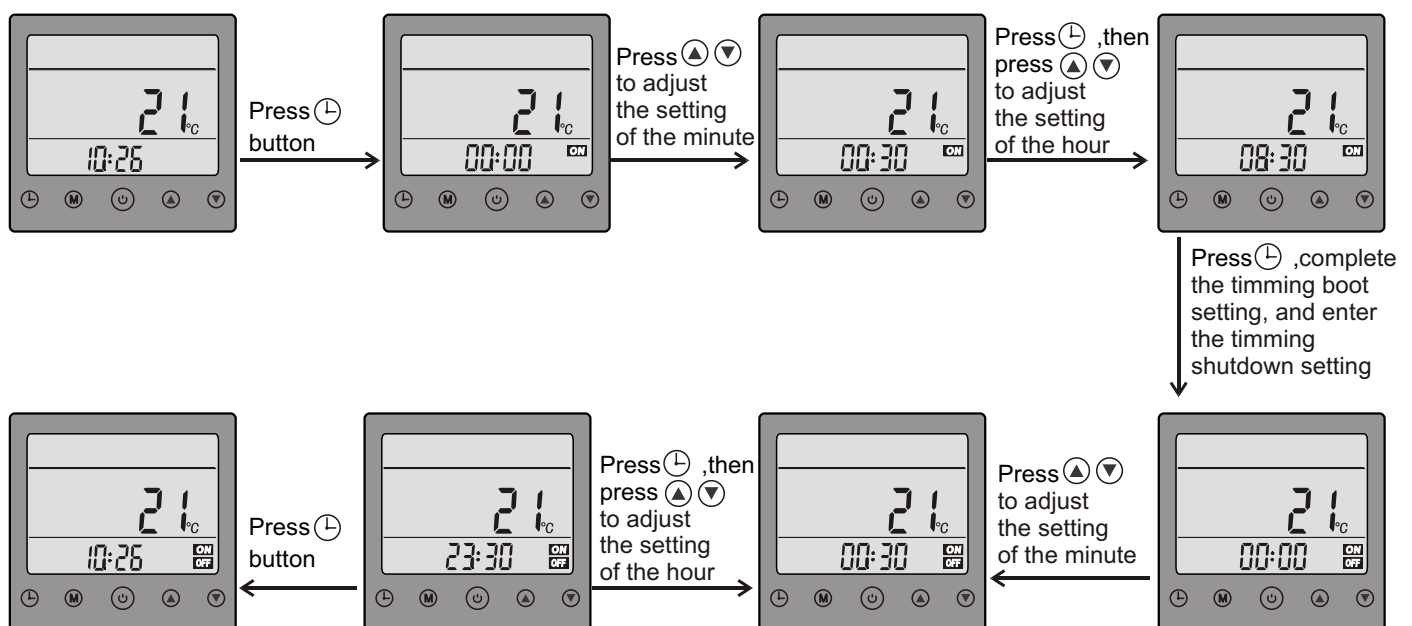
Press (M) button until wire controller appear ❄ icon. Two seconds later, the display temperature on the wire controller will change(refer to picture 2 and picture 3). Now you can press ▲ button and ▼ button modify the set temperature of water inlet under the cooling mode. After modification, press button to revert to the former mode.

3.4 Clock setting

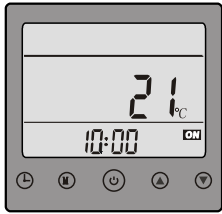
Press the (⌚) button for 3 seconds, the place of minute keeps flicking, press ▲ ▼ button to adjust the setting of minute. Then press (⌚) button and the place of hour will keep flicking. Press the button ▲ ▼ to adjust the setting of hour. Press (⌚) button again to complete and exit the time setting mode.

3.5 Unit turn on /turn off timer setting

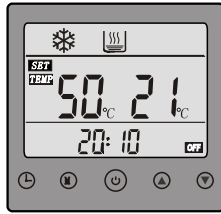
Press (⌚) button, the **ON** symbol flickers and the minute display flickers, you can press ▲ ▼ button to adjust the setting of minute. Press (⌚) again, the hour display flickers. Press the ▲ ▼ button to adjust the setting of the hour. Press (⌚) button again to complete the timing boot setting, and enter the timing shutdown setting, by this time, the hour and the **OFF** symbol flickers. You can press ▲ ▼ button to adjust the setting of minute. Press (⌚) again, the hour display flickers. Press the ▲ ▼ button to adjust the setting of the hour. Finally, press (⌚) button to exit the timer ON/OFF setting. The following example shows the heat pump set to turn on at 8:30 every morning, and turn off at 23:30 every night.



NOTE①: Every time manually turned on or turn off, it will clear all timer settings.



Only set
unit timer on.



Only set
unit timer off.

3.8. Checking of state parameter

Press and button at the same time to enter the state parameter interface. Then, press or button to check the state parameters.

Display	Meaning	Display	Meaning
d01	DC inverter compressor frequency	d07	Discharge temperature
d02	Current	d08	Outdoor ambient temperature
d03	Water inlet temperature	d09	Coil temperature
d04	Water tank temperature	d10	Suction temperature
d05	Water outlet temperature	d11	Cooling coil temperature
d06	Indoor ambient temperature	d12	Electronic expansion valves efficiency

4. Parameters Setting

These settings are for Engineers only, please call if you require to change any of the system parameters.

Press and button at the same time to enter the system parameter setting interface.. Press or to view P1-P19 parameter. Press button again to set value you need. Parameter setting as below:

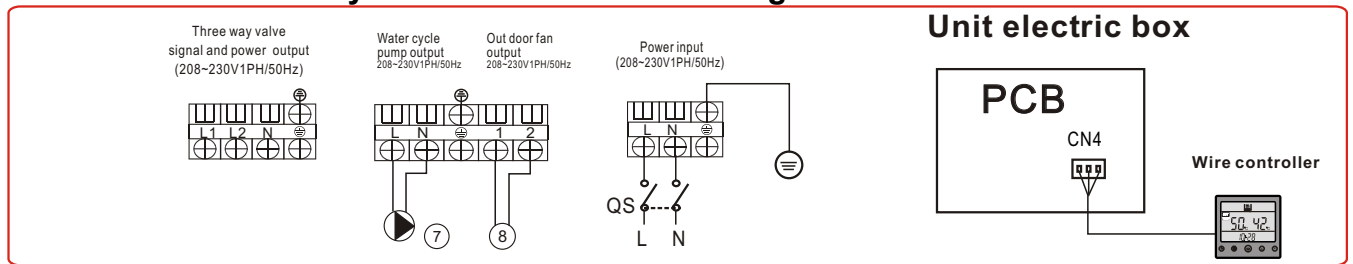
Number	Means	Range	Default
P1	The water tank temperature setting of hot water tank mode	20°C~55°C	55°C
P2	The water inlet temperature setting of heating mode	15°C~45°C	40°C
P3	The water inlet temperature setting of cooling mode	5°C~35°C	12°C
P4	Hot water tank mode, water tank temperature difference between the unit stop heating and restart heating	1°C~10°C	5°C
P5	Heating mode, water inlet temperature difference between the unit stop heating and restart heating	1°C~10°C	5°C
P6	The setting temp. and real temp. difference began to keep constant temp.	0°C~6°C	2°C
P7	The optional of auxiliary electric heater 0:heating mode electric heater 1:without electric heater	0/1	0/1①
P8	Water tank electric heater stared temperature	30°C~55°C	50°C
P9	The auxiliary electric heater start delay time(the time to delay after compressor turn on	2~90min	30min
P10	The limit of heating mode set temperature	20°C~55°C	45°C
P11	The ambient temperature setting of ambient temperature too low protection	-25°C~-1°C	-15°C
P12	The control mode of defrost 0:automatic 1:manual	0/1	0

Number	Means	Range	Default
P13	Enter the defrost status setting of coil temperature	-20℃~10℃	-7℃
P14	Exit the defrost status setting of coil temperature	5℃~45℃	13℃
P15	Heating defrost cycle setting	25min~70min	45min
P16	The maximum time of defrost status	2min~20min	8min
P17	The compensation of hot water tank temperature	-5℃~5℃	0℃
P18	The compensation of water inlet and outlet temperature	-5℃~5℃	0℃
P19	The difference setting of solar cycle pump start working	3℃~15℃	10℃
P20	Model: 0:Hotwater/1:Heat/2:Hotwater&Heat/3:Cool/4:Heat&Cool/ 5:Hotwater&Cool/6:Multifunction	0~6	6

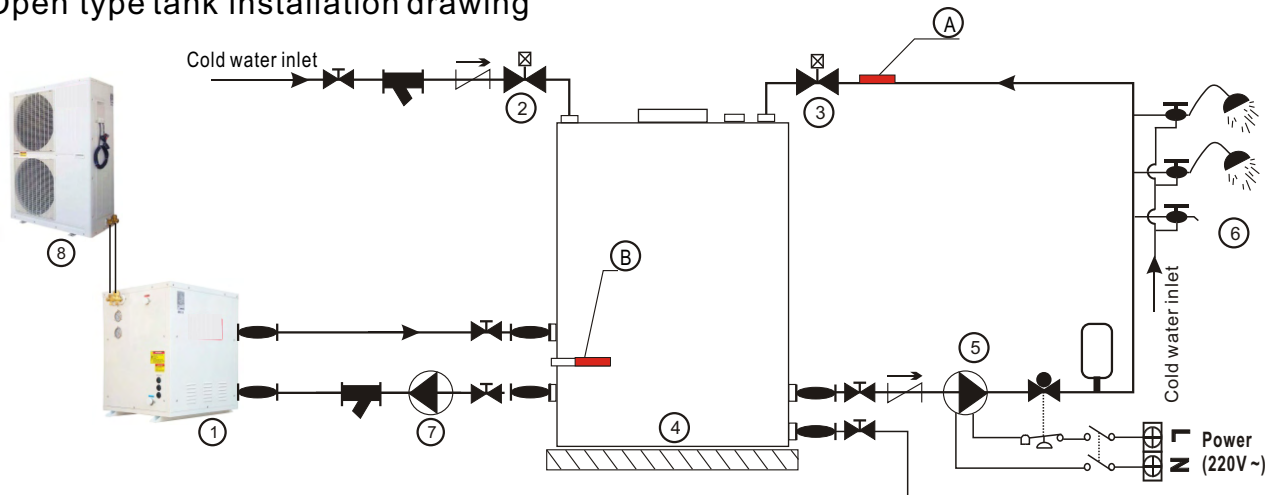
Note:①If the unit is with electric heater, this parameter is 1, otherwise is 0.

IV. Installation sketch

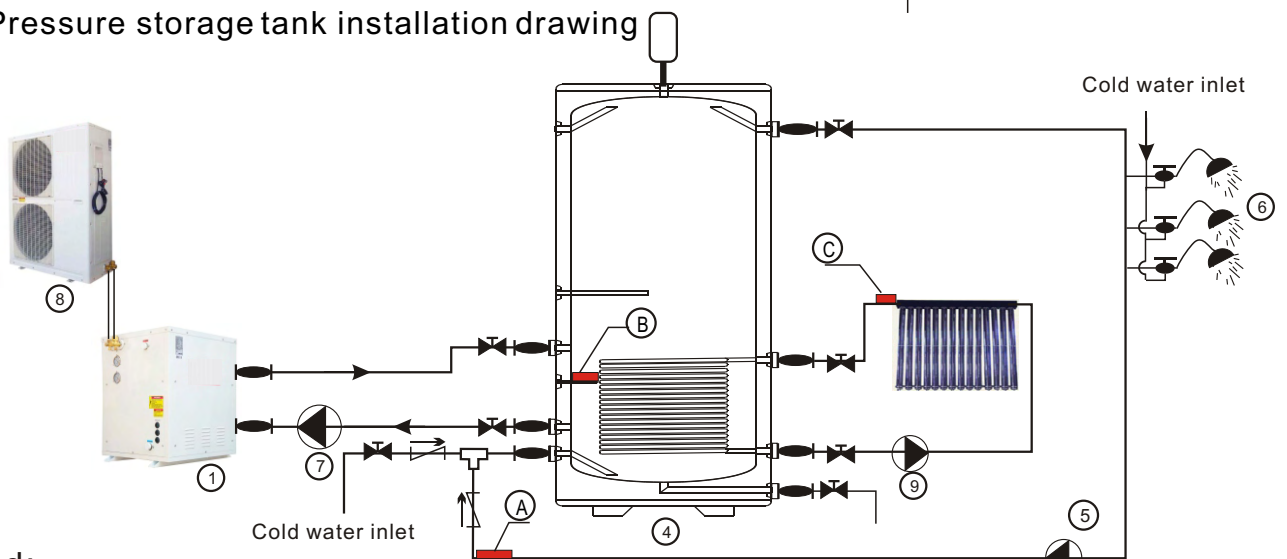
1. Hot water side water system installation drawing



A: Open type tank installation drawing



B: Pressure storage tank installation drawing

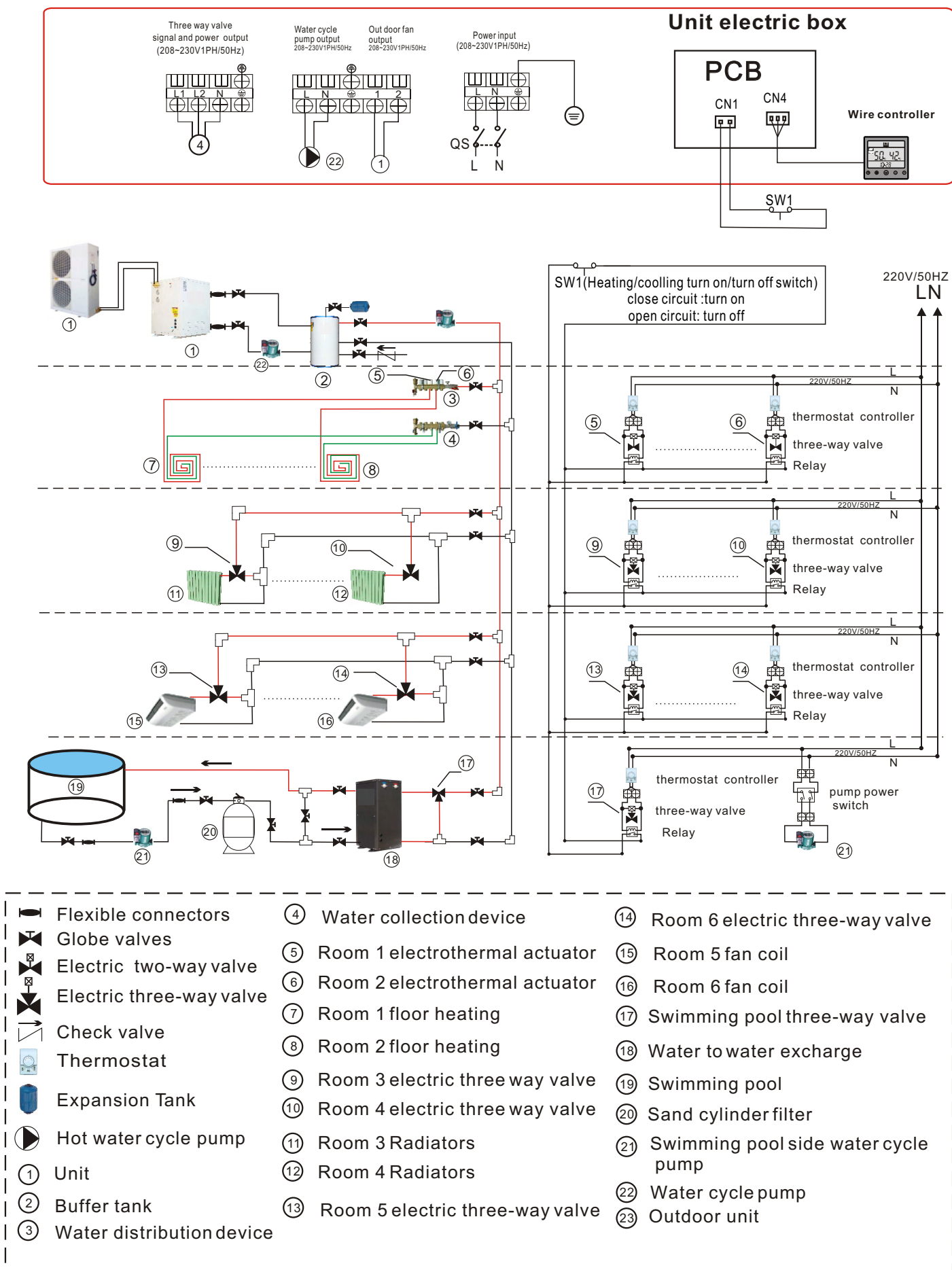


Legend:

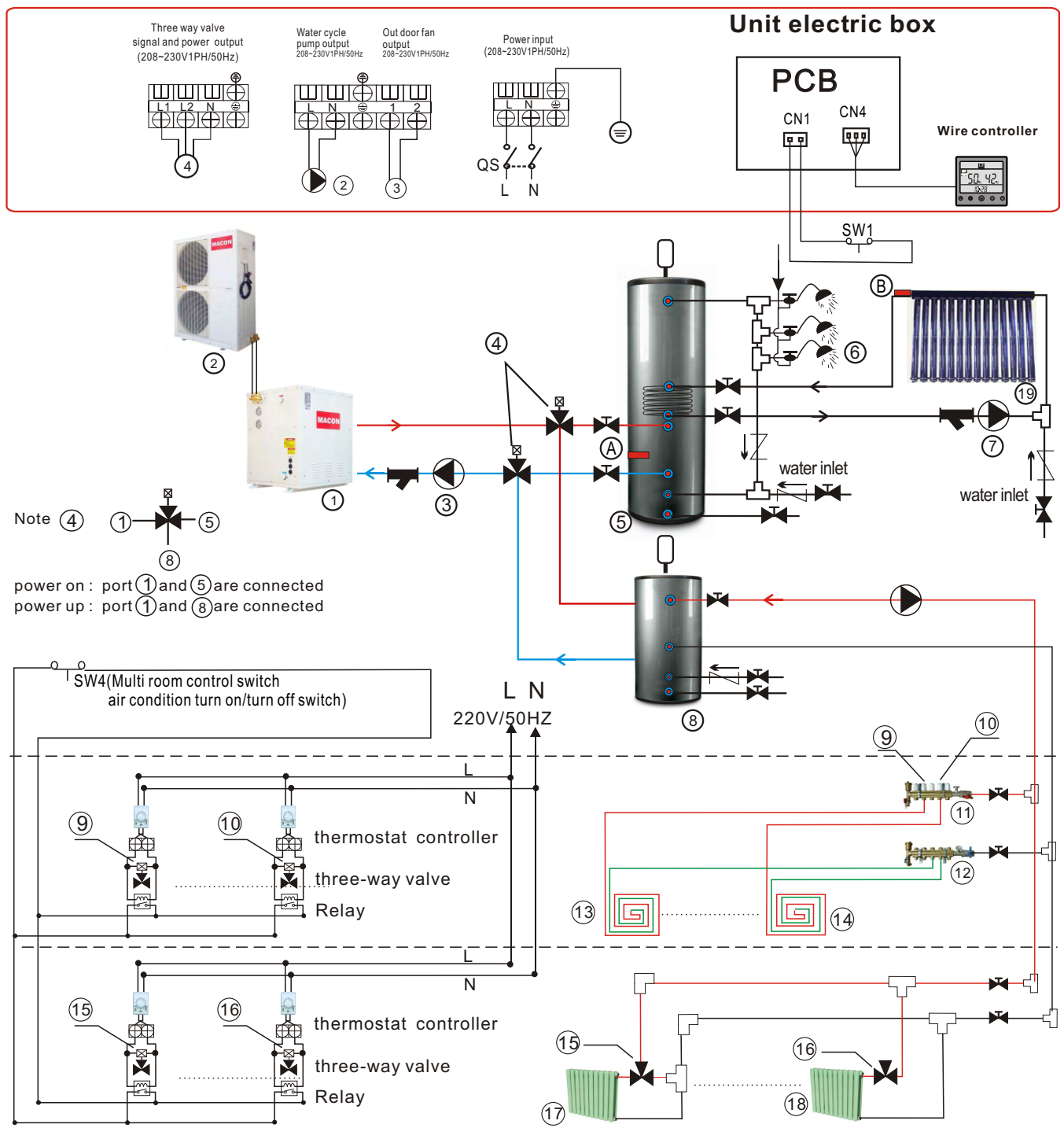
	Globe valves		Shower head		Outdoor unit
	Electric driven two-way valve		Unit		Solar water cycle pump
	Check valve		Water filling valve		Water supply return temp.
	Water pressure switch		Water supply return valve		Hot water tank temp.
	Air-break switch		Hot water tank		Solar collector temp.
	Water temp. sensor		Water supply cycle pump		
	Expansion Tank		Bath room		
			Hot water cycle pump		

Note②: Solar water cycle pump and solar collector temperature effective for the unit with the solar function.

2. Air condition / floor heating side water system installation drawing



5.4.Hot water side and floor heating side system installation drawing by three way valve



Legend:

Flexible connectors	③ Hot water cycle pump	⑫ Water collection device
Globe valves	④ Water system three way valve	⑬ Room 1 floor heating
Electric three-way valve	⑤ Hot water tank	⑭ Room 2 floor heating
Check valve	⑥ Bath room	⑮ Room 3 electric three way valve
Thermostat	⑦ Solar water cycle pump	⑯ Room 4 electric three way valve
Expansion Tank	⑧ Buffer tank	⑰ Room 3 Radiators
Water cycle pump	⑨ Room 1 electrothermal actuator	⑱ Room 4 Radiators
① Indoor unit	⑩ Room 2 electrothermal actuator	⑲ Solar
② Outdoor unit	⑪ Water distribution device	A Hot water tank temp.
		B Solar collector temp.

V.Maintenance and repair

1.Note

- 1.1 Check whether the exhaust equipment is normal. Avoid cutting of the water supply and or air entering into the system, or it will influence the performance and reliability of the unit. The water filter should be cleaned regularly. Keep the water clean in case of any damage to the unit due to filter's dirty and jam.
- 1.2 Keep the unit environment dry, clean and well ventilation. Clean the side air exchanger regularly(once per 1-2 months) in order to maintain high exchange efficiency and save energy.
- 1.3 Often check the performance of all the parts in the unit. Check whether the working pressure of the refrigerant system is normal. Repair and change the parts timely if there's any abnormality.
- 1.4 Often check whether the wiring of the power and electric system is tightened and or electric parts perform abnormally or smells. Repair and change the parts timely if there's any abnormality.
- 1.5 Care the unit if the unit stops for a long time. Discharge all the water in the pump and throughout the pipe route in case breakdown to the water pump and pipe caused by frost and freeze. Discharge the water from the water pump and tube exchange Button drain. Check the unit thoroughly and flood water into the system before the unit power on again.
- 1.6 To check the operation of every process in the unit, the operation pressure of the refrigerant system. You should maintain or change it in time.
- 1.7 To check the power supply and cable connection often, there is abnormal action or bad smell about the electrical component. If there is, please maintain or change it in time.
- 1.8 This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons. The instructions includes a warning to disconnect the appliance from its power source during service and when replacing.

2.Malfunction Indicating Table.

Determine and solve the malfunction by malfunction code as below:

Wire Controller display	Means	Resolution
E1	Failure to read and write EEPROM of wired remote control	Reconnect the power after connected the power for five second. If several attempts are still fault, replace the wired remote control.
E2	Water tank temperature sensor fault	Please check if the water tank temperature sensor short circuit or disconnect.
E3	Water outlet temperature sensor fault	Please check if the water outlet temperature sensor short circuit or disconnect.
E4	Water inlet temperature sensor fault	Please check if the water inlet temperature sensor short circuit or disconnect.
E5	Coil temperature sensor fault	Please check if the coil temperature sensor short circuit or disconnect.
E6	Ambient temperature sensor fault	Please check if the ambient temperature sensor short circuit or disconnect.
E7	Discharge temperature sensor fault	Please check if the compressor discharge temp. Sensor connected circuit or disconnect.
E8	Communication fault between the wired remote control and adapter plate	Please check the remote control, adapter plate and the wired, to see if all normal.
E14	Water flow fault	Check the water flow volume, water pump is failure or not.
E15	System high pressure protection The system's high pressure is open	1. Testing the water system, to see if it is dirty, blocked or not. 2. Fin of fans outside is dirty or not, not good for heat exchange. 3. If you have refilled the refrigerant, pls check if fill too much refrigerant. 4. Pls check if the setting temp of hot water hot water is too high.

E15	System low pressure protection The system's low pressure is open	1. Check the unit, to see if there is leak of refrigerant; Check if the pressure of the system too low when the unit is running. 2. Repairing the leak and vacuumize the system, pls refill the refrigerant.
E19	Suction temperature sensor fault	Please check if the suction temperature sensor short circuit or disconnect.
E20	Cold coil temperature sensor fault	Please check if the cold coil temperature sensor short circuit or disconnect.
E21	Inlet water/outlet water temperature too high protection	Please check if the inlet/outlet water temperature > Parameter P10 in heating mode
E22	Under cooling mode the outlet water temperature too low protection	Please check if the water outlet temperature <5℃
E23	Inlet and outlet water temperature difference too large protection	Please check if the water flow enough, inlet and outlet water temperature difference >13℃
E24	Freezing protection	The system recover automatically after running antifreeze process.

3. Judgement and solution of malfunctions

Malfunction	Reason	Solution
Unit does not work	1.Power failure 2.Loose power wire connection 3.Fuse of controller burn-out	1.Turn off power and inspect power supply 2.Identify the cause and rectify 3.Identify the cause and replace with new fuse
The pump is operating, but water isn't circulatory or the noise of pump is too loud	1.Shortage of water or air in the water system 2.Water pump damage 3.Water supply valve not fully open 4.Water filter is blocked	1.Check water supply equipment and replenish water remove the air of the water system 2.Change another pump. 3.Open the valve of the water system 4.Clean the water filter and the pump
Unit heating capacity is low or compressor working too long	1.Shortage of refrigerant or leakage 2.Poor thermal insulation of water system 3.Poor air flow into the air heat exchanger 4.Shortage of water flow	1.Check the system for leakage, fix leak and re-gas 2.Improve thermal insulation of the system pipeline 3.Clean the fin coil with water and improve air flow 4.Check the line strainer on the water inlet and clean it
Compressor discharge pressure too high	1. Water pump is not working 2. There is air in the water system 3. Excessive refrigerant (from repair / re-gas) 4.Heat exchanger not working properly	1. Check / fix power supply to the water pump 2. Open hot water taps, run water until all air expelled 3. Call refrigeration mechanic to reduce refrigerant 4. Call Siddons Service Centre
Compressor suction pressure too low	1.Shortage of refrigerant or leakage 2.Filter or capillary blocked 3.Poor condenser heat dissipation	1.Call refrigeration mechanic to check the system for leakage, fix the leak and re-gas the heat pump 2.Replace capillary tube or filter 3.Clean the heat exchanger.
Compressor will not turn on	1.Power failure 2.Compressor contactor malfunctions 3.Loose connection 4.Overload protection of compressor activates 5.Incorrect setting of the return water temperature in the water tank	1.Check the power supply and restore 2.Replace the contactor 3.Check for loose wires and re-connect 4.Check that the current / Amp draw of compressor is within specification, may require replacement of the compressor 5.Reset the return water temperature

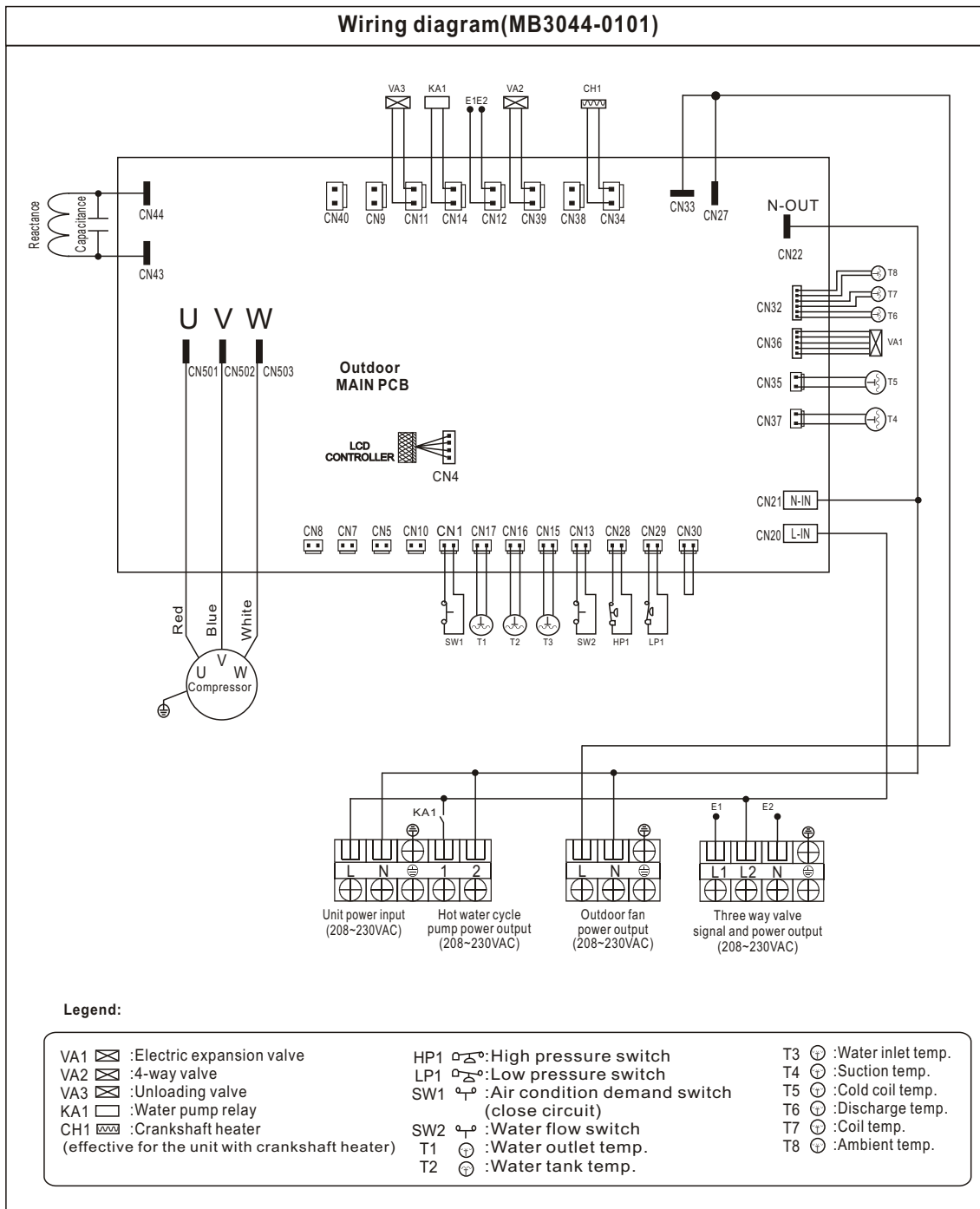
3.Determine and solve malfunction by below table:

Malfunction	Reason	Solution
Unit does not work	1.Power failure 2.Loose power wire connection 3.Fuse of controller burn-out	1.Turn off power and inspect power supply 2.Identify the cause and rectify 3.Identify the cause and replace with new fuse
The pump is operating, but water isn't circulatory or the noise of pump is too loud	1.Shortage of water or air in the water system 2.Water pump damage 3.Water supply valve not fully open 4.Water filter is blocked	1.Check water supply equipment and replenish water remove the air of the water system 2.Change another pump. 3.Open the valve of the water system 4.Clean the water filter and the pump
Unit heating capacity is low or compressor working too long	1.Shortage of refrigerant or leakage 2.Poor thermal insulation of water system 3.Poor air flow into the air heat exchanger 4.Shortage of water flow	1.Check the system for leakage, fix leak and re-gas 2.Improve thermal insulation of the system pipeline 3.Clean the fin coil with water and improve air flow 4.Check the line strainer on the water inlet and clean it
Compressor discharge pressure too high	1. Water pump is not working 2. There is air in the water system 3. Excessive refrigerant (from repair / re-gas) 4.Heat exchanger not working properly	1. Check / fix power supply to the water pump 2. Open hot water taps, run water until all air expelled 3. Call refrigeration mechanic to reduce refrigerant 4. Call Siddons Service Centre
Compressor suction pressure too low	1.Shortage of refrigerant or leakage 2.Filter or capillary blocked 3.Poor condenser heat dissipation	1.Call refrigeration mechanic to check the system for leakage, fix the leak and re-gas the heat pump 2.Replace capillary tube or filter 3.Clean the heat exchanger.
Compressor will not turn on	1.Power failure 2.Compressor contactor malfunctions 3.Loose connection 4.Overload protection of compressor activates 5.Incorrect setting of the return water temperature in the water tank 6.Compressor capacitor malfunctions	1.Check the power supply and restore 2.Replace the contactor 3.Check for loose wires and re-connect 4.Check that the current / Amp draw of compressor is within specification, may require replacement of the compressor 5.Reset the return water temperature 6.Replace the capacitor
Loud compressor noise	1.Liquid refrigerant enters the compressor 2.Compressor breaks down	1.Check the cause for flooding of the compressor and solve the problem 2.Replace the compressor
Blower is out of operation	1.The relay or capacitor of the blower breaks down 2.The Blower motor seizes or burns out	1.Replace the blower relay or capacitance 2.Replace the blower motor
The compressor is in operation but the unit does not heat	1.The refrigerant has leaked out 2.Compressor breaks down	1.Check the system for refrigerant leakage and tell tale signs of oil, repair leak and re-gas 2. Check the reason and replace the compressor

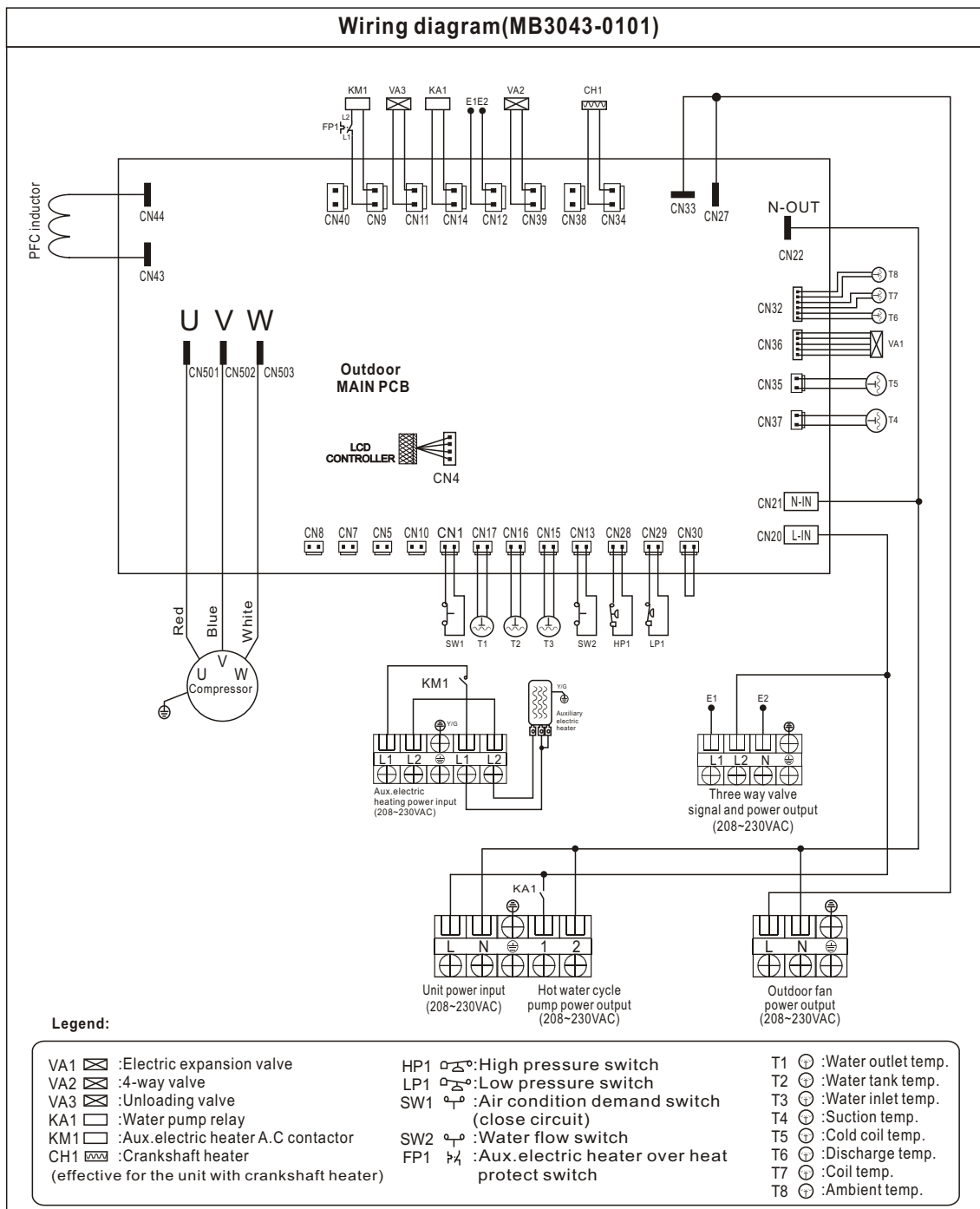
VI. Wiring diagram

1. Indoor unit wiring diagram

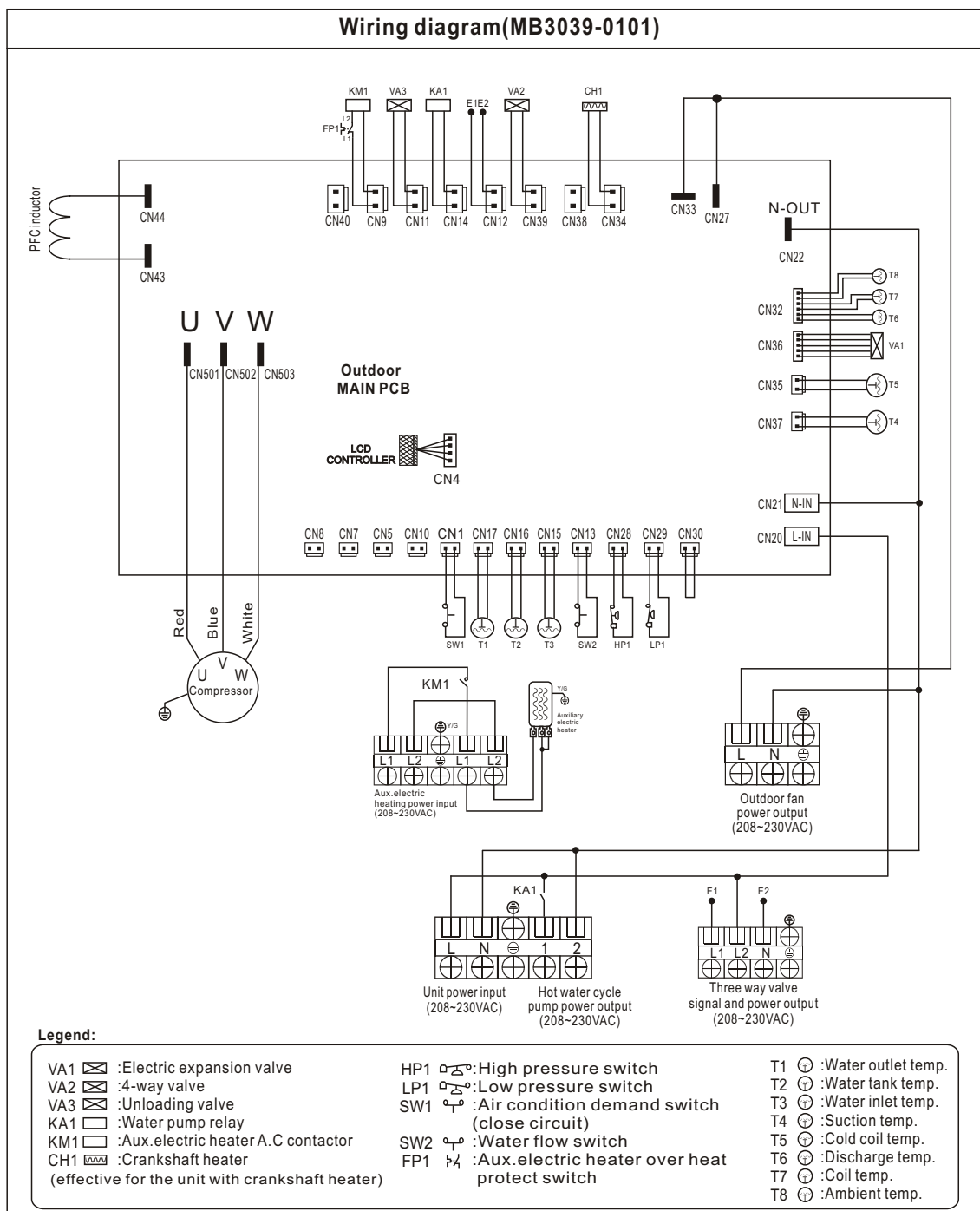
1.1 Wiring diagram MB3044-0101 effective for the mode of : MACHRW010W/(B01)



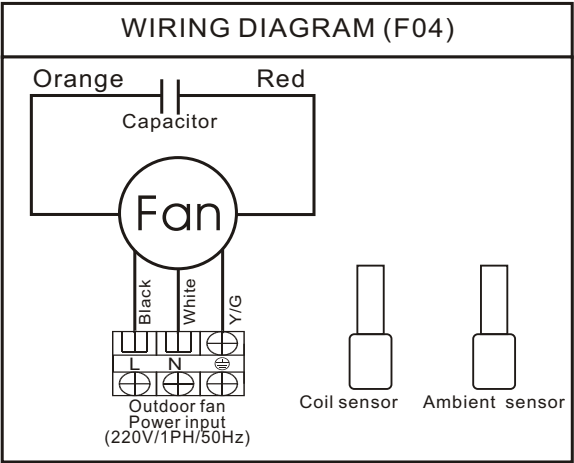
1.2 Wiring diagram MB3043-0101 effective for the mode of : MACHRW020W/(B01D)



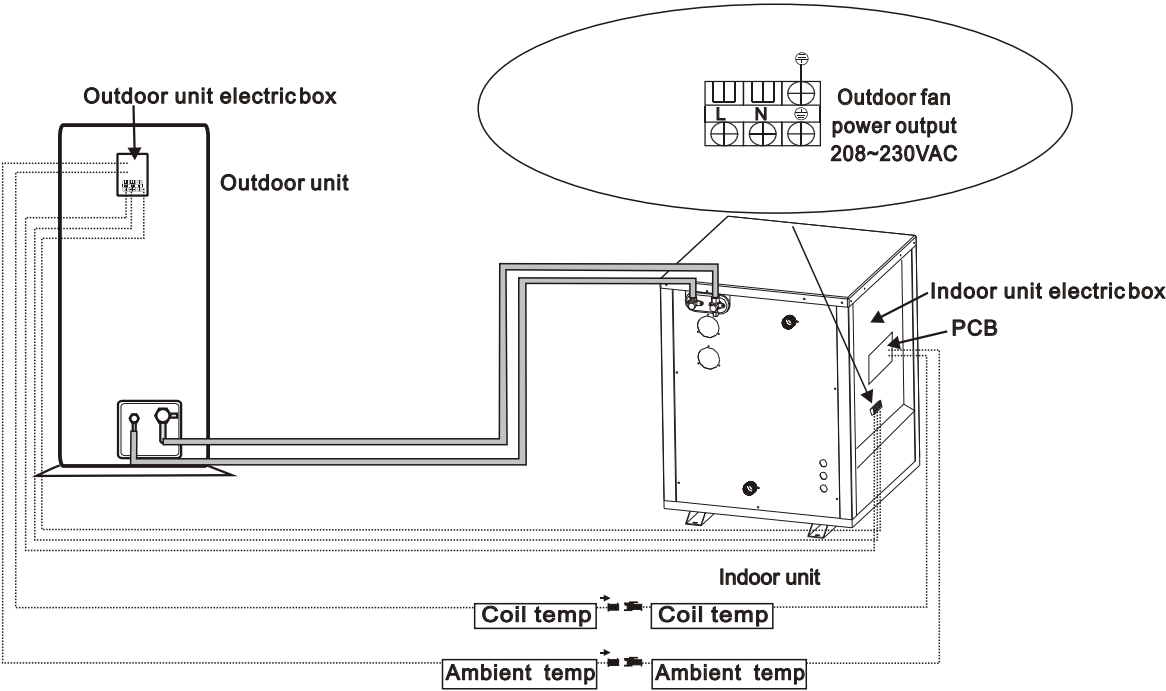
1.3 Wiring diagram MB3039-0101 effective for the mode of : MACHRW030W/(B01D)



2.Outdoor unit wiring diagram

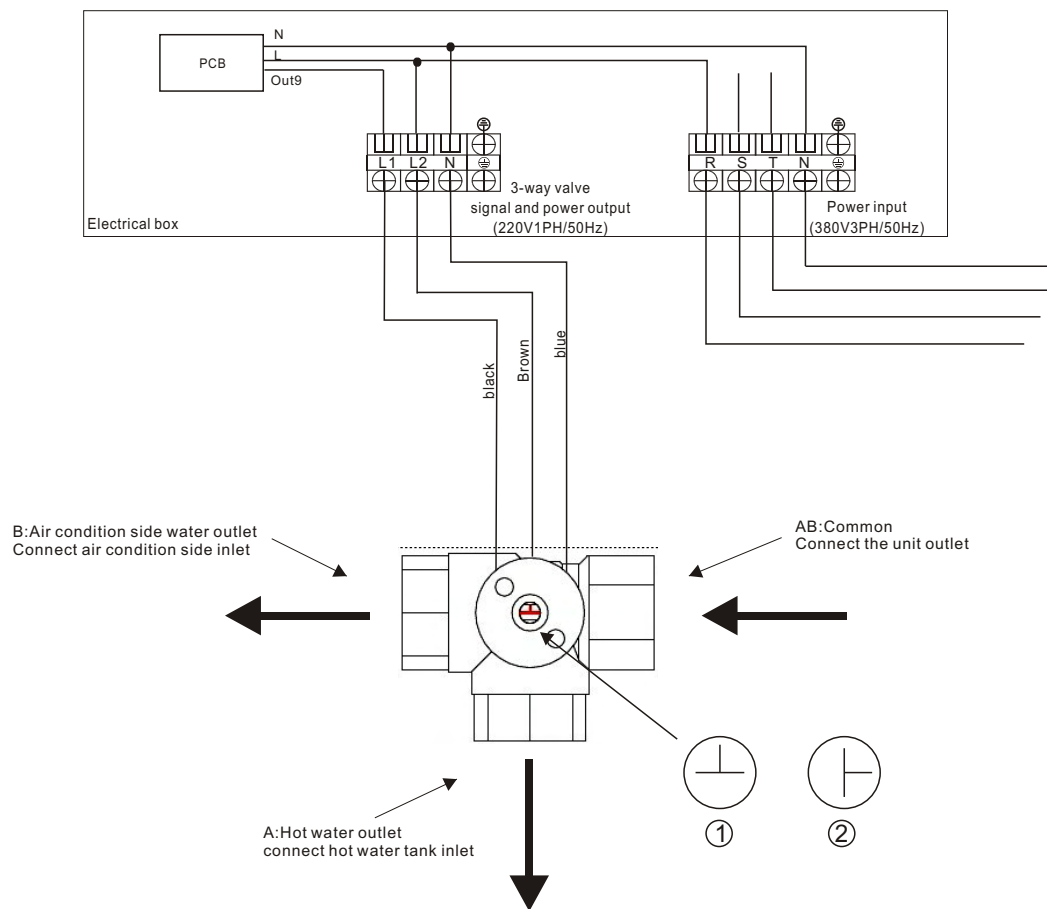


3. Between outdoor unit and indoor unit connection



4. Three way valve wiring diagram

Model for the WRA-6320A WRA-6310A WRA-6302A wiring instructions (unit for the three-phase power)



Attention and Explanation:

- 1: Check whether the model of electric three-way valve is that mention above.
- 2: Check whether electric three-way valve T port is as shown in the picture ①.
If not, Please adjust the 3-way valve T port with forceps as shown in the picture ①.
- 3: Electric three-way valve has three wires:
Brown line for single-phase power supply firewire input.
Blue line for single-phase power supply zero line input.
Black line is signal line, when the black line connect to single-phase power supply firewire input, the three-way valve will Anti-clockwise rotate 90 degrees.
- 4: When the PCB is the R-phase power supply, the three-way valve power output L2 terminals must be received R-phase
- 5: When the unit running hot water mode, T for three way valve shown in figure② the water inflow from the AB, and outflow from A.
When the unit running air condition mode, T for three way valve shown in figure① the water inflow from the AB, and outflow from B.

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