

MK3068/MK3069

# **HCW//**

**AIR TO WATER HEAT PUMP  
WATER HEATER**

**Installation & instruction manual**

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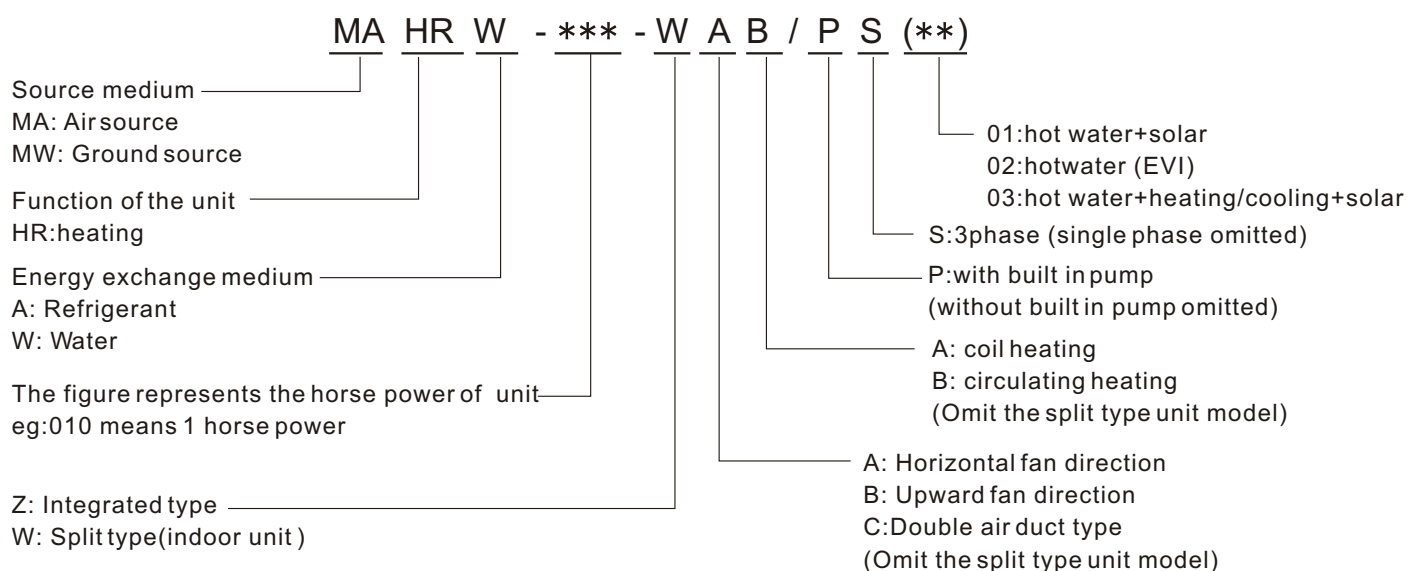
# Air To Water Heat Pump Water Heater

## Notice

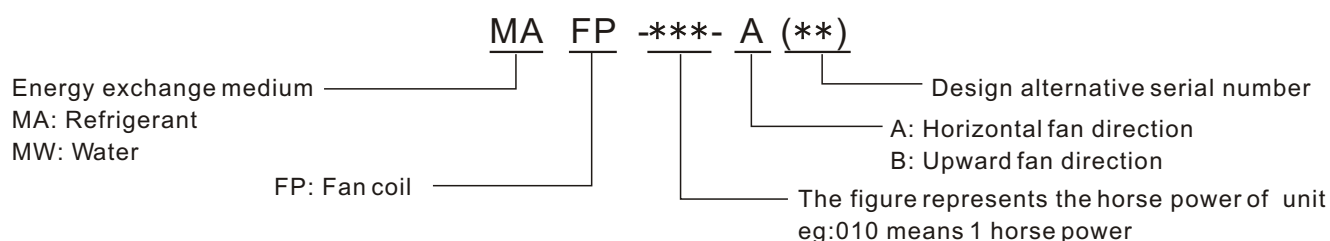
- 1.1 In order to use this product better and safer, please read this instruction carefully before install and operate it. Please pay attention to all the notice in operation and maintenance. Save all manuals and documentation for future reference.
- 1.2 All in one heat pump is a special appliance. Improper 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.

## I、 Specification

### 1、 Model Nomenclature



### Outdoor unit model nomenclature



# Air To Water Heat Pump Water Heater

## 2.Parameter of multi-function air to water heat pump

Indoor Unit Model	MAHRW	020W/P(03)	025W/P(03)	030W/P(03)	035W/P(03)	040W/P(03)
Outdoor Unit Model	MAFP	020A	025A	030A	035A	040A
Rated Cooling Capacity	kW	5.0	6.5	7.5	9.0	10.0
	BTU/h	17100	22200	25600	30800	34200
Rated Input Power	kW	1.55	2.10	2.40	2.90	3.10
Rated Input Current	A	7.0	9.5	10.9	13.2	14.5
Rated Heating Capacity	kW	6.0	7.5	9.0	10.5	12.0
	BTU/h	20500	25600	30800	35900	41000
Rated Input Power	kW	1.75	2.30	2.70	3.10	3.60
Rated Input Current	A	8.0	10.5	12.3	14.1	16.4
Power Supply	V/PH/Hz	(208~230)ACV/1PH/60Hz				
Noise	dB(A)	50	50	50	50	50
Compressor		Rotary	Rotaty	Rotaty	Rotaty	Scroll
Compressor Qty		1	1	1	1	1
Fan Qty		1	1	1	1	1
Refrigerant Liquid Pipe	inch	1/4	1/4	3/8	3/8	3/8
Refrigerant Gas Pipe	inch	1/2	1/2	1/2	1/2	1/2
Water Outlet/Water Inlet	inch	1	1	1	1	1
Water Flow Volume	m <sup>3</sup> /h	2-3	2-3	2-3	2-3	3-4
Refrigerant Gas Type		R410A				
Indoor Unit Net Dimensions(L/M/H)	mm	610×440×750	610×440×750	610×440×750	610×440×750	600×630×785
Indoor Unit Shipping Dimensions (L/M/H)	mm	665×480×770	665×480×770	665×480×770	665×480×770	710×750×915
Outdoor Unit Net Dimensions(L/M/H)	mm	840×350×610	840×350×610	830×380×710	830×380×710	880×420×800
Outdoor Unit Shipping Dimensions (L/M/H)	mm	980×410×665	980×410×665	965×410×750	965×410×750	1020×450×830
Indoor Unit Net Weight	kg	52	53	55	57	100
Indoor Unit Shipping Weight	kg	57	58	60	62	108
Outdoor Unit Net Weight	kg	39	39	45	45	58
Outdoor Unit Shipping Weight	kg	44	44	50	50	65

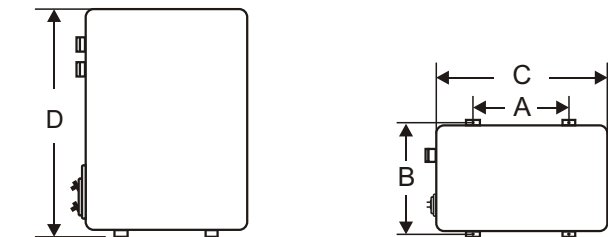
Indoor Unit Model	MAHRW	040W/PS(03)	045W/PS(03)	050W/PS(03)	060W/PS(03)
Outdoor Unit Model	MAFP	040A	045A	050A	060A
Rated Cooling Capacity	kW	10.0	11.5	12.5	15.0
	BTU/h	34200	39300	42700	51200
Rated Input Power	kW	3.20	3.60	4.0	4.70
Rated Input Current	A	5.6	6.3	7.0	8.2
Rated Heating Capacity	kW	12.0	13.5	15.0	18.0
	BTU/h	41000	46100	51200	61500
Rated Input Power	kW	3.6	4.0	4.5	5.30
Rated Input Current	A	6.3	7.0	7.9	9.3
Power Supply	V/PH/Hz	(440~460)ACV/3PH/60Hz			
Noise	dB(A)	50	50	50	50
Compressor		Scroll	Scroll	Scroll	Scroll
Compressor Qty		1	1	1	1
Fan Qty		1	1	2	2
Refrigerant Liquid Pipe	inch	3/8	3/8	3/8	3/8
Refrigerant Gas Pipe	inch	5/8	5/8	5/8	5/8
Water Outlet/Water Inlet	inch	1	1	1	1
Water Flow Volume	m <sup>3</sup> /h	3-4	3-4	3-4	3-4
Refrigerant Gas Type		R410A			
Indoor Unit Net Dimensions(L/M/H)	mm	600×630×785	600×630×785	600×630×785	600×630×785
Indoor Unit Shipping Dimensions (L/M/H)	mm	710×750×915	710×750×915	710×750×915	710×750×915
Outdoor Unit Net Dimensions(L/M/H)	mm	880×420×800	880×420×800	880×470×1250	880×470×1250
Outdoor Unit Shipping Dimensions (L/M/H)	mm	1020×450×830	1020×450×830	1010×525×1280	1010×525×1280
Indoor Unit Net Weight	kg	100	105	110	115
Indoor Unit Shipping Weight	kg	108	112	118	122
Outdoor Unit Net Weight	kg	58	58	60	60
Outdoor Unit Shipping Weight	kg	65	65	75	75

Note: (1)The manual is a technical parameters measured in the following conditions: outdoor dry temperature is 20℃ and wet bulb temperature is 15℃ ,the temperature of water inflow is 15℃ and of water outflow is 55℃.  
(2)Using in ambient temperature:-15℃ ~45℃

# Air To Water Heat Pump Water Heater

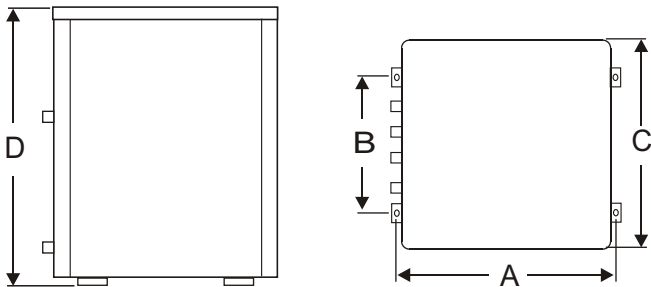
## 3. Product appearance and installation dimension

### 3.1 Installation dimension of integrated type unit



Units: mm

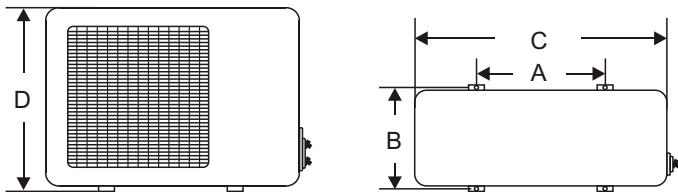
Size \ MODEL	MAHRW020W/P(03) MAHRW030W/P(03) MAHRW025W/P(03) MAHRW035W/P(03)
A	360
B	405
C	550
D	750



Units: mm

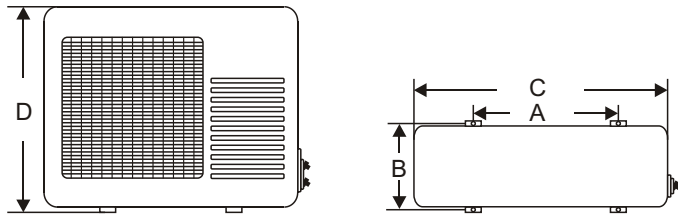
Size \ MODEL	MAHRW040W/P(03) MAHRW050W/PS(03) MAHRW040W/PS(03) MAHRW060W/PS(03)
A	635
B	450
C	780
D	765

### 3.2 Installation dimension of split type unit



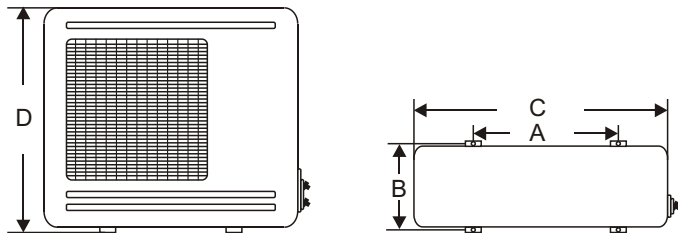
Units: mm

Size \ MODEL	MAFP020A MAFP025A
A	495
B	320
C	840
D	610



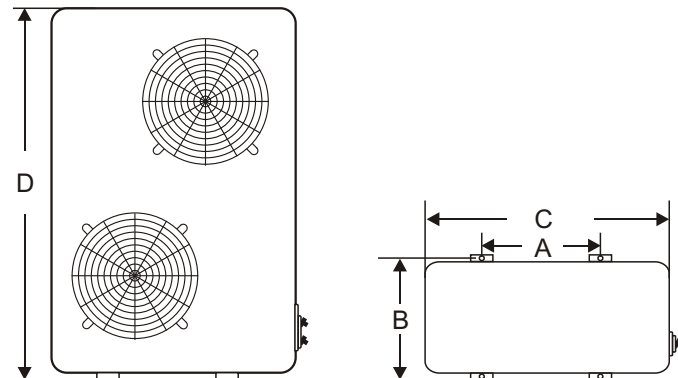
Units: mm

Size \ MODEL	MAFP030A MAFP035A
A	515
B	340
C	830
D	710



Units: mm

Size \ MODEL	MAFP040A MAFP045A
A	615
B	390
C	880
D	800



Units: mm

Size \ MODEL	MAFP050A MAFP060A
A	525
B	440
C	885
D	1250

# Air To Water Heat Pump Water Heater

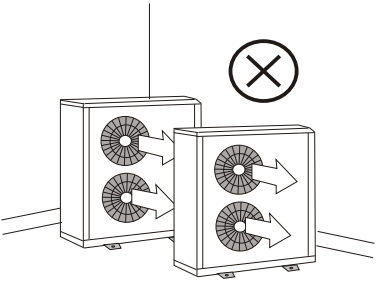
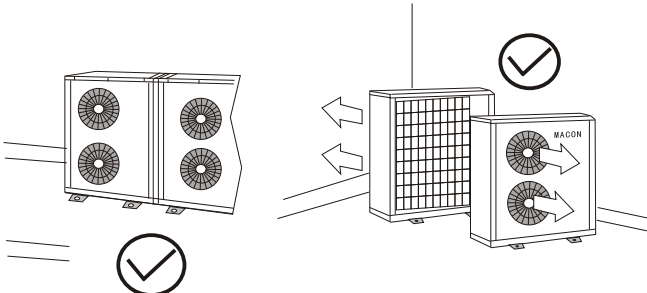
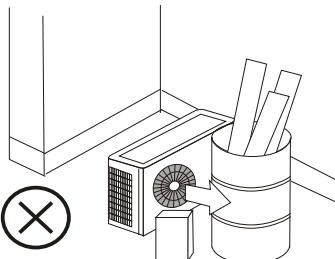
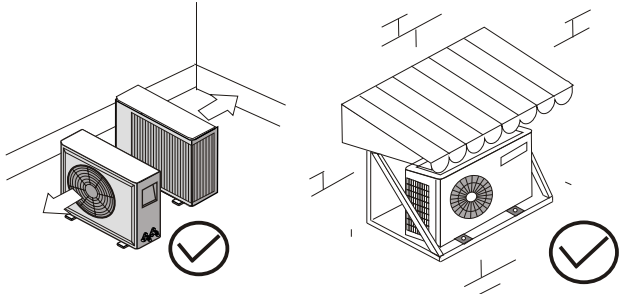
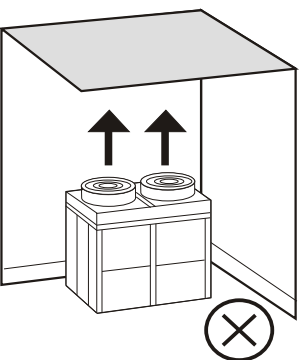
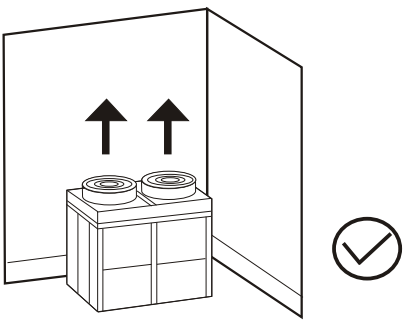
## II、 Installation

### 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:

Wrong	Right
	
	
<p>As the upwards fan direction unit exhausts air upwards, do not place any object up the unit. Please built an introductory equipment if can' t avoid this object.</p> 	



#### 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).

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## 2. The refrigerant piping connection for split type unit

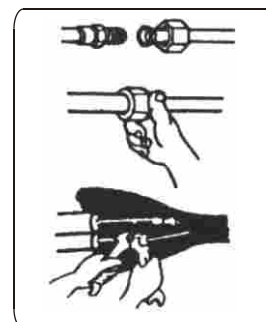
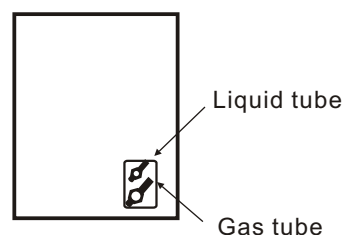
### 2.1 Refrigerant pipe connecting

Connected the indoor unit and outdoor unit through two matched cooper tubes, one small and one larger. And the system should be emptied after connection, so opened the 1 / 4 laps of outdoor unit valve for 5-10 seconds, and then close it, open the large valve needle valve to discharge air in the indoor unit and the pipe, or vacuum it with a vacuum pump, and then close the needle valve; check the connection part if leak, confirmed without leaking, then open all the outdoor unit large and small valve, so that the whole system recycle work, detailed operation as follow.

#### 2.1.1.The indoor unit refrigerant pipe connecting

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.

- Screw off the nut from the valve body indoor unit, remove the pipe head plug.
- Connect the indoor unit and pipe joints
  1. When tightened, first press the trumpet on the connector cone, and keep the out pipe and connection pipe in the same axis;
  2. Gradually use hand to tighten the flare nut in clockwise, and then use the wrench to tighten.
  3. When use a wrench to tighten joints, according to the moment shown in the following table, if not tight it will leak, spin too tightly, may damage the trumpet.



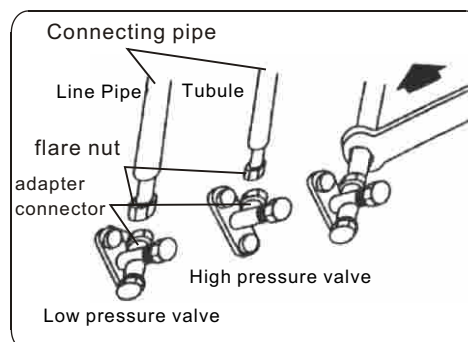
#### **Piping Connection:**

- a. Connect indoor unit pipes with two wrenches. Pay special attention to the allowed torque as shown below to prevent the pipes, connectors and flare nuts from being deformed and damaged.
- b. Pre-tighten them with fingers at first, then use the wrenches.

Pipe size	Torque	Nut width
Liquid Side (Φ 6.35 or 1/4 inch)	1.8kg.m	17mm
Liquid Side (Φ 9.52 or 3/8 inch)	3.5kg.m	22mm
Liquid Side (Φ 12.7 or 1/2 inch)	5.5kg.m	24mm
Gas Side (Φ 9.52 or 3/8 inch)	3.5kg.m	22mm
Gas Side (Φ 12.7 or 1/2 inch)	5.5kg.m	24mm
Gas Side (Φ 15.88 or 5/8 inch)	7.5kg.m	27mm
Gas Side (Φ 19.05 or 3/4inch)	9.5kg.m	30mm

#### 2.1.2.Outdoor pipeline construction

1. Use a wrench to remove the outdoor high and low pressure valve bonnet;
2. Remove the connection pipe's plastic head;
3. 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.

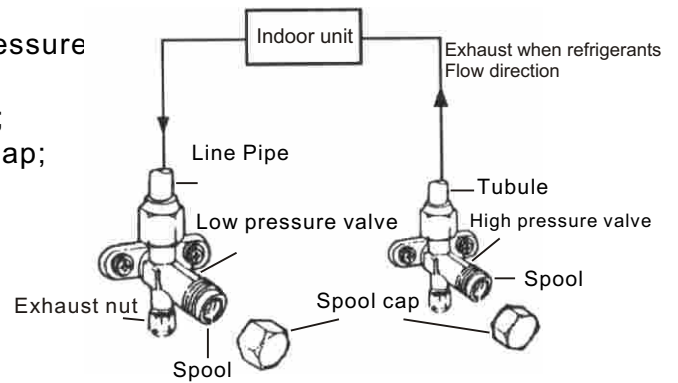


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## 2.1.3. Air discharge (vacuum)

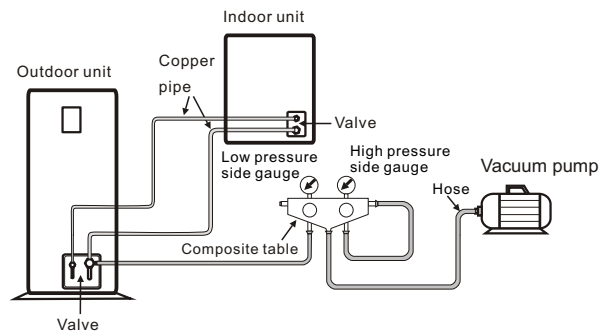
If the system is small, use refrigerant empty way to discharge the pipe and indoor unit air, as the following steps:

1. Remove the high-pressure valve and low pressure valve bonnet;
2. Remove the low-pressure valve exhaust nut;
3. Release the high-pressure valve spool 1 / 4 lap;
4. Open low-pressure valve exhaust spool, exhaust to 15-30 seconds;
5. Tighten the low- pressure valve exhaust nut;
6. Screw the high-pressure valve and low- pressure valve spool to the end;
7. Tighten the spool cap.



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, shown as below:

1. Screw off the outdoor unit low-pressure valve's repair connector nut, connected the compound pressure gauge to repair connector;
2. Connect the vacuum pump to the compound pressure gauge, open the compound pressure gauge and vacuum pump to vacuum the indoor unit and pipe, so that the absolute pressure not higher than 130Pa, and keep the pressure does not rise within 5 minutes after vacuum.
3. After vacuum, turned on the outdoor high and low pressure valve stem, inject the refrigerant into the indoor unit.



Thoroughly discharge the air and moisture within the cooling system



### Attention

if the air and moisture remained in the cooling system, appear the following adverse effects:

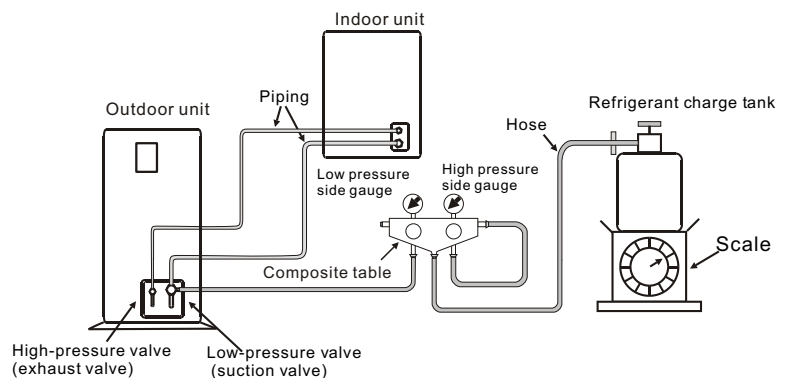
- System pressure increases.
- Cooling (or heating) effect decreased.
- Moisture will freeze plug the cooling system.
- Moisture can rust some parts of the cooling system.

## 2.1.4. Add refrigerant

The outdoor unit already with refrigerant before delivery, but when the pipe is too long, please add additional refrigerant as following formula:

Additional refrigerant amount= (one-way tube length -5) x (0.015-0.02) kg, choose 0.015-0.02 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 diagram bellow:



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## 2.1.5. 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. Refrigerant recovery method

First use hex wrench closed the high-pressure valves (1/2 ") of the unit, and then start hot mode; after the compressor start-up , check the low pressure gage , when the pressure is close to "0" , close the low-pressure valve (3/4 ") quickly , turn off the unit at the same time. the refrigerant recovery will take about 25 seconds.

## 4. Water Pipe connection

- 4.1 Pipe should be a kind of pipe that heat-resistant, rust-proof, uneasy-fouling. and in conformity with national health and safety standards, which can be stainless steel pipe, copper pipe, aluminum water pipe, hot water PPR pipes and so on.
- 4.2 Water tank outlet pipe and overflow pipe is better to installed around the gutter or sewer, so that to convenient to drainage.
- 4.3 The connection of the heat pump unit and water tank must be installed a stop valve or dismountable loose joint, for maintenance use.
- 4.4 Water pipes are arranged reasonably to minimize bending and reduce the pressure loss of water system .
- 4.5 The connection of tap water pipe and water filling connection must install one-way valve, filter, supply water solenoid valve (for tank-type water tank) and pressure relief devices (for close-type valve the parameter value is 0.7MPa), installed when valve body arrow is same as with the flow direction to prevent water block. The cycle water outlet of the heat pump unit should connect to the inlet of water tank , The cycle water inlet of the heat pump unit should connect to the outlet of water tank, the water supply inlet of the tank should connect to the heat water supply outlet . The entire piping system should be clean, no rust and dirt residue to prevent pipe blockage.
- 4.6 After the installation of the water filling pipe and cycle water pipe and hot water supply pipe , all the pipes should take the water tightness test. And ensure that the system is clean. and then cover insulation on the pipe and valve (including the supply water pipes and valves).
- 4.7 For the metal pipe, must be used above 50mm thickness of glass fiber or high-density fire-retardant PE foam to protect (PPR hot water pipe can use 30mm thickness of glass fiber or high-density fire retardant PE foam for thermal insulation).
- 4.8 the unit water inlet and outlet must fit with thermometer, water pressure gage, to facilitate inspection when operate.

Note: 1. tubing pipeline should be separate test pressure, must not test with heat pump unit or tanks.

2. The water system working pressure: 0.2-0.6 MPa.

3. The water system operating temperature: 5~75℃.

## 5. Electric wiring

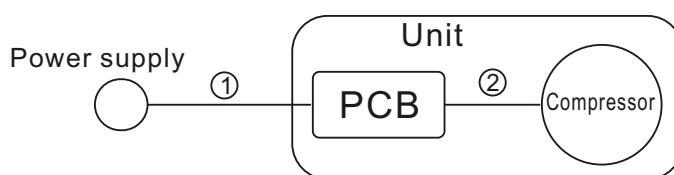
- 5.1 Unit supply cable must be used copper. Power supply voltage should be in line with the rated voltage and the rated current.
- 5.2 The unit, power supply circuit must have a grounding wire, and the power supply ground wire must connect to with the external grounding wire, and an external grounding wire to be effective.
- 5.3 Wiring installation must be installed by professional technicians carried out in accordance with circuit.
- 5.4 Setting up a good leakage protection devices and in accordance with the relevant national technical standards.

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- 5.5 Power line and signal line layout should be neat, rational, strong and weak lines separating cable and Can not interfere with each other, without contact with the connecting pipe and valve.
- 5.6 After the construction of all wiring is completed, carefully check the correct order to connect the power.
- 5.7 Unit electric wire connection: connect to the appropriate terminals according to wiring diagram, and fix it by the pressure line of board in the electrical box.
- 5.8 All the wiring construction is completed, can be plugged in only after careful examination correctly.
- 5.9 Unit control board fuse parameters: 5A/220V.
- 5.10 The unit wire controller must be fixed in the bottom of standard electrical switch box.

## 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

Starting current (A)	The wiring specifications (mm2)						
	Mark①(Heat resistance temperature above 60℃)						Mark②(Heat resistance temperature above120℃)
	within 5m	Within 10m	Within 15m	Within 20m	Within 30m	Within 50m	Within 1m
Below 20	2.0	2.0	2.0	3.5	5.5	8.0	2.0
Below 30	↑	↑	3.5	5.5	↑	14.0	↑
Below 40	↑	3.5	5.5	↑	8.0	↑	↑
Below 50	↑	↑	↑	8.0	14.0	22.0	↑
Below 60	↑	5.5	↑	↑	↑	↑	↑
Below 70	3.5	↑	8.0	14.0	↑	↑	3.5
Below 80	↑	↑	↑	↑	22.0	30.0	↑
Below 90	↑	↑	14.0	↑	↑	↑	↑
Below 100	↑	8.0	↑	↑	↑	38.0	↑
Below 110	↑	↑	↑	↑	↑	↑	↑
Below 120	5.5	↑	↑	22.0	30.0	↑	↑
Below 140	↑	14.0	↑	↑	↑	50.0	5.5
Below 160	↑	↑	22.0	↑	↑	↑	↑
Below 180	↑	↑	↑	↑	38.0	60.0	8.0
Below 200	8.0	↑	↑	30.0	↑	↑	↑
Below 220	↑	↑	↑	↑	50.0	80.0	↑
Below 240	↑	↑	↑	↑	↑	↑	14.0

Power supply installation condition: The touching space of breaker should be more than 3mm, must use copper wire only.

### 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:

6.4a 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.

6.4b When you use the unit by the maximum current please view the specifications, so make sure your home's power supply (current, voltage and cable) to meet the machine's normal load requirements.

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- 6.4c 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.
- 6.4d Do not overload wall plugs or extension the cable. Line overload can cause fire or electric shock.
- 6.5e 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)

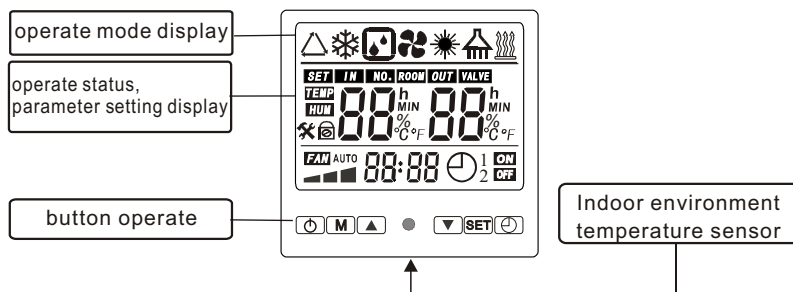
- 7.1 Check before trial operation
  - 7.1a Check the pipe system. Check the whole pipe system. Ensure the water volume in the system is full and the air is exhausted completely. Check whether the valve is open throughout the system and the thermal insulating of the pipe is well.
  - 7.1b Check the power 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 Turn on the circulating water pump by remote control(refer to “IV、Use” ) and check whether the water pump operates normally. Observe and determine whether air pipe is exhausted completely, flow switch is closed, hydraulic pressure indicated in the pressure gauge is more than 0.2MPa.Come to next step after confirm the circulating water system works normally.
  - 7.2b 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.
  - 7.2c 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.
  - 7.2d Observe whether the outlet water temperature is normal.
  - 7.2e Parameter of the remote controller has been set before leave of the factory. Never alternate them personally.

# Air To Water Heat Pump Water Heater

## III、 Use

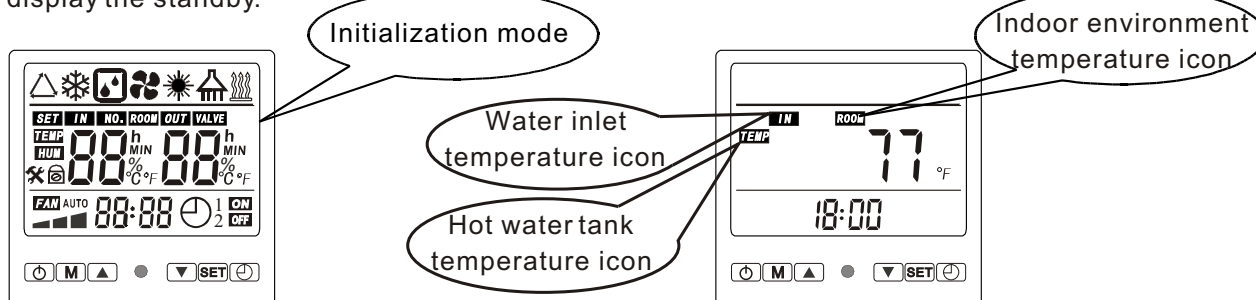
### 1.Function diagram of the remote controller.

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 user interface and function shows as below:

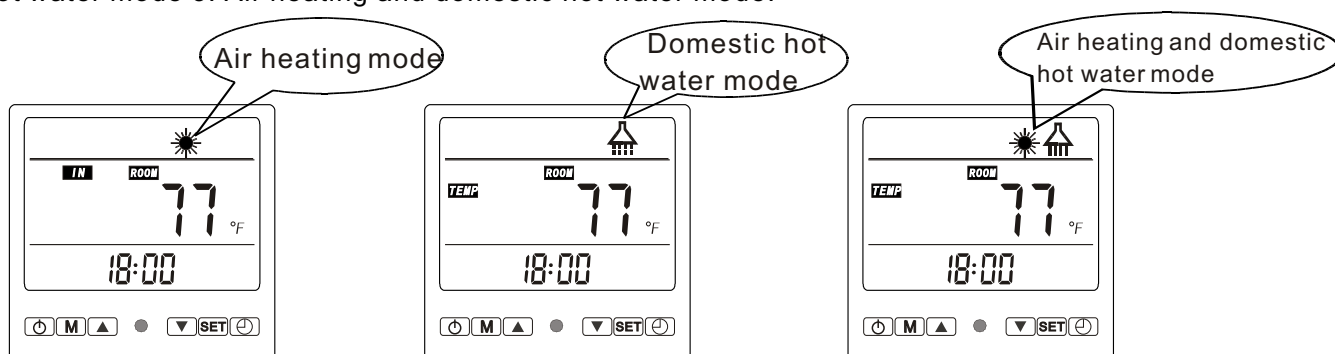


### 2.Use of remote controller

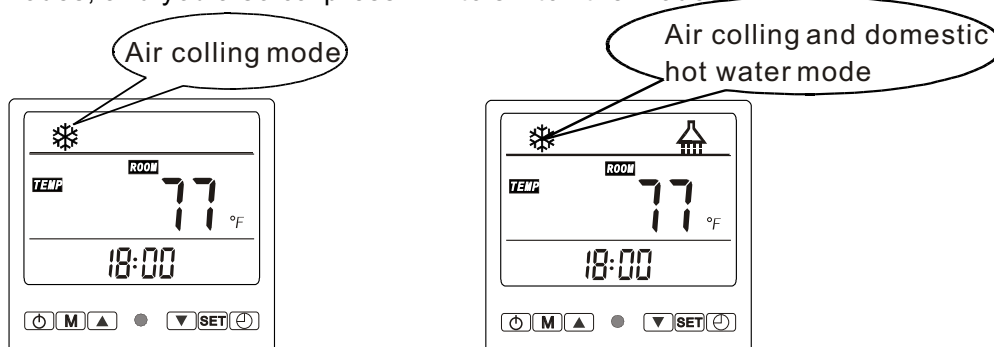
2.1 Initial power on and stand by status: Power on after check and confirm the unit is normal. The remote controller will be full-screen display. The main unit will be on stand by status 10 seconds later. Distance will display the standby.




2.2 Under boot-up status, press 'M' button to switch the running mode, when the parameter 22 is set to '0' to switch off the cooling function, so the unit will have 3 modes at that time: 1. air heating mode 2. domestic hot water mode 3. Air heating and domestic hot water mode.

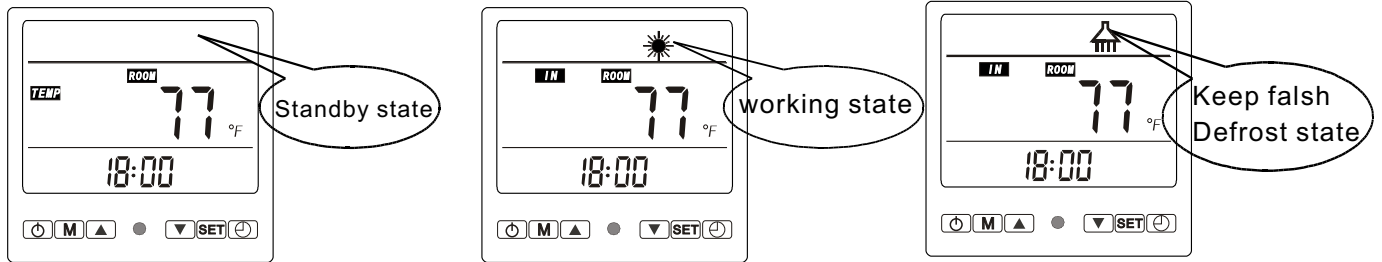









2.3. when the parameter 22 is set to '1' (that means switch on the cooling function), there will be more the following 2 modes, and you also can press 'M' to switch the modes.



















# Air To Water Heat Pump Water Heater










2.3 Power on/off: Press “” button to start the unit, Then the LCD will display the current mode and two temperature value (Both different kinds of temperature value will display 5 seconds each on the interface, one after one to display automatically.)

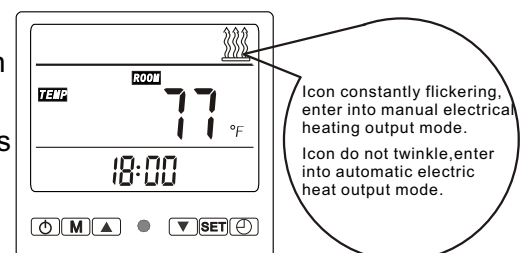






2.4 Clock setting. Press button “”, the place of hour keeps flicking, press “ ” to adjust the setting of hour. Then press button “” and the place of minute will keep flicking. Press the button “ ” to adjust the setting of minute. Press button “” again to complete and exit the time setting mode.

2.5 Timed ON/OFF setting. Press “” button, and the of place hour and “1” Timing ON symbol keep flicking. Press “ ” to adjust the setting of the hour. Press “” button again, and the bit minute flicks. Press “ ” buttons to adjust the setting of minute; Press “” button again and the place of hour and timing OFF symbol flicks. Press “ ” to adjust the setting of hour. Press “” button again, and the bit minute flickers. Press “ ” buttons to adjust the setting of minute. Press “” button, and the of place hour and “2” Timing ON symbol keep flicking. Press “ ” to adjust the setting of the hour. Press “” button again, and the bit minute flicks. Press “ ” buttons to adjust the setting of minute; Press “” button again and the place of hour and timing OFF symbol flicks. Press “ ” to adjust the setting of hour. Press “” button again, and the bit minute flickers. Press “ ” buttons to adjust the setting of minute. Press “” button again to complete and exit the timed ON/OFF setting mode. Cancel timing setting operation. press “” button and press “” button to cancel the timing.

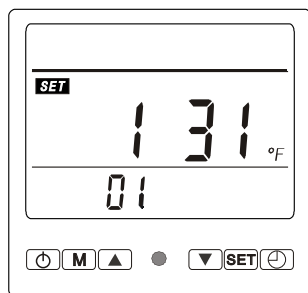
## Note:

- ① The Timing function only can be used under the parameter 26 is set be '1', otherwise, there's no the timing function.
- ② Domestic water tank temperature and indoor environment temperature, and can be modified under standby state or working state, others can be modified under standby state.
- ③ In the working state, press the “ ” buttons can set up the user common use setting parameters, press the “” buttons to switch to modified parameters, press “ ” button to modify the parameters, press the “” buttons, exit the setting interface.
- ④ press the “” button for 5 seconds to switch the display between centigrade degree and fahrenheit.
- ⑤ When boot-strap and on standby, press “” button for 5 seconds for the manual operation electric heater heating output, press the “” button for 5 seconds again, shutdown the manual operation electric heater heating output

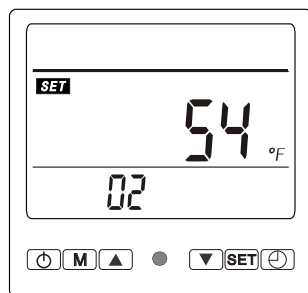


2.7 These settings are for Engineers only, please call if you require to change any of the Optional Parameters. Under the power on or standby status, press “” buttons at the same time for 10 seconds to enter Operation Parameter setting interface. Press “” or “” to view (01-36) parameter, press “” button again to set data you need. Parameter setting as below:

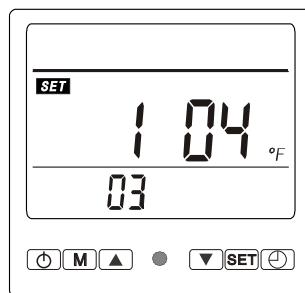
# Air To Water Heat Pump Water Heater



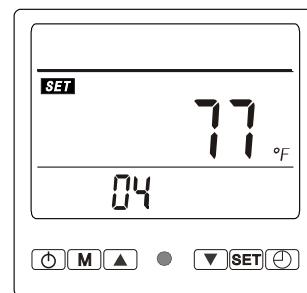
Parameter 01  
Domestic hot watertank  
temperature setting  
Alternative range:  
50°F to 158°F.  
Default: 131°F



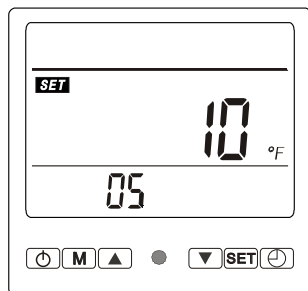
Parameter 02  
Air cooling return water  
temperature setting  
Alternative range:  
46°F to 82°F.  
Default: 54°F



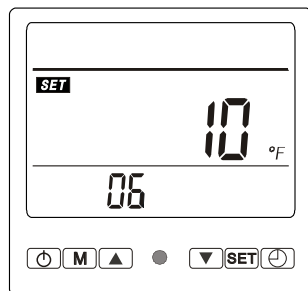
Parameter 03  
Air heating return water  
temperature setting  
Alternative range:  
59°F to 140°F.  
Default: 104°F



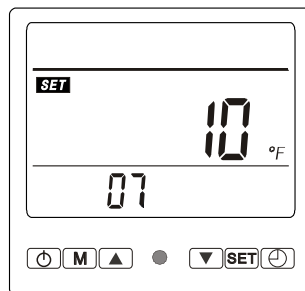
Parameter 04  
Room temperature setting  
Alternative range:  
50°F to 113°F.  
Default: 77°F



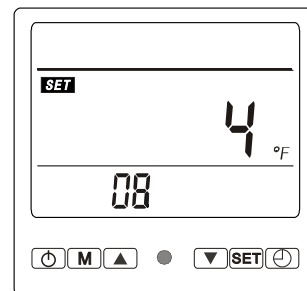
Parameter 05  
Domestic hot water temp.  
difference between the unit stop  
heating and restart heating  
Alternative range: 2°F to 30°F.  
Default: 10°F



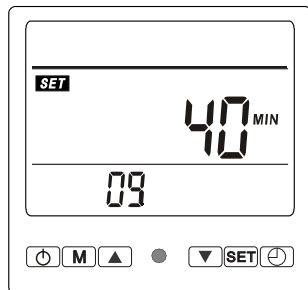
Parameter 06  
Cooling return water temp.  
difference between the unit stop  
heating and restart heating.  
Alternative range: 2°F to 30°F.  
Default: 10°F



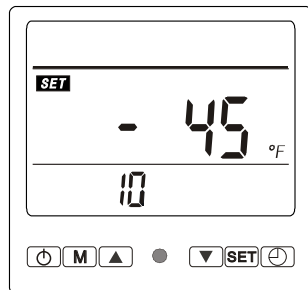
Parameter 07  
Heating return water temp.  
difference between the unit stop  
heating and restart heating.  
Alternative range: 2°F to 30°F.  
Default: 10°F



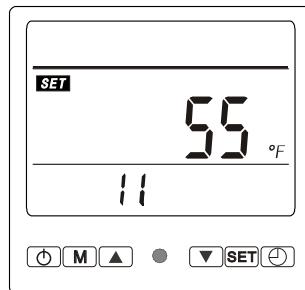
Parameter 08  
Room temp. difference  
between the unit stop heating  
and restart heating.  
Alternative range: 2°F to 30°F.  
Default: 4°F



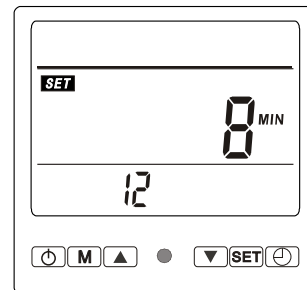
Parameter 09  
Heating defrost cycle  
Alternative range:  
30minutes to 90minutes.  
Default: 40minutes



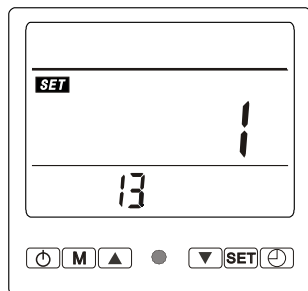
Parameter 10  
Into defrost temperature  
Alternative range: -86°F to 32°F  
Default: -45°F



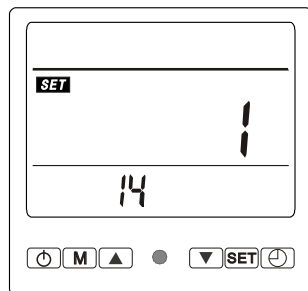
Parameter 11  
Exit defrost temperature.  
Alternative range: 36°F to 86°F.  
Default: 55°F



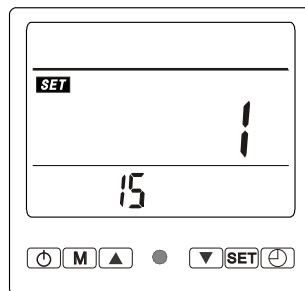
Parameter 12  
Exit defrost time condition  
Alternative range:  
1 minutes to 12 minutes.  
Default: 8 minutes



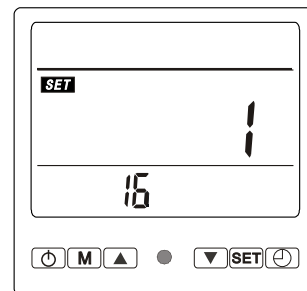
Parameter 13  
Single or double system  
selection.  
1 is single system,  
2 is double system  
Default: 1



Parameter 14  
Whether power-down memory  
1:with memory function  
2:without memory function  
Default: 1

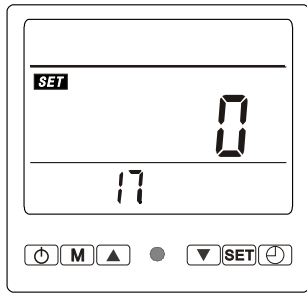


Parameter 15  
wire cotrol sensor or the " multi  
-room switch" Selection.  
1:wire control sensor  
0:multi-room switch  
Default: 1

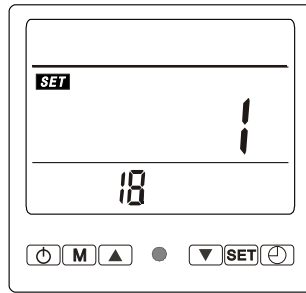


Parameter 16  
Whether turn on automatic  
electric heating function.  
0:Turn off  
1:Turn on  
Default: 1

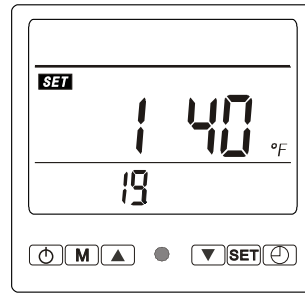
# Air To Water Heat Pump Water Heater



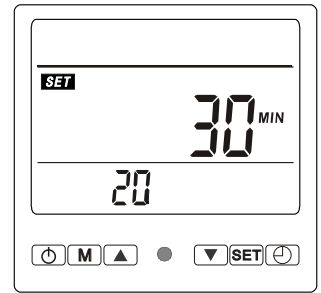
**Parameter 17**  
Domestic hot water priority, or heating and cooling priority  
0: Domestic hot water priority  
1: Air heating and air cooling priority  
Default: 0



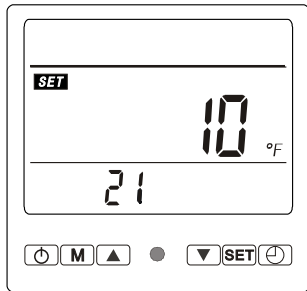
**Parameter 18**  
0: long time working for water pump  
1: water pump turns off after the whole unit power off for 30s  
Default: 1



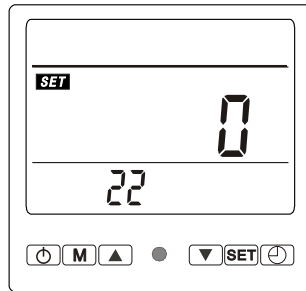
**Parameter 19**  
High-temperature disinfection per week setting,  
Alternative range: 140°F to 194°F  
Default: 140°F  
(The unit have canceled the high-temperature disinfection )



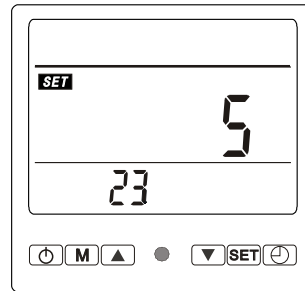
**Parameter 20**  
High-temperature disinfection maintain time,  
Alternative range: 10~90Min.  
Default: 30Min.



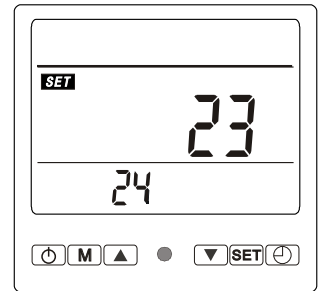
**Parameter 21**  
The room temp. difference setting between non-sleeping status mode and sleeping status mode  
Alternative range: -30°F to 30°F.  
Default: 10°F



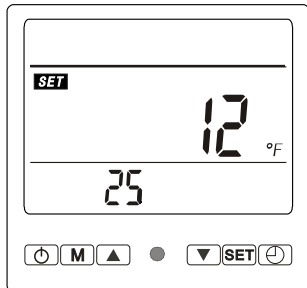
**Parameter 22**  
Whether turn on air cooling function model  
0: turn off  
1: turn on  
Default: 0



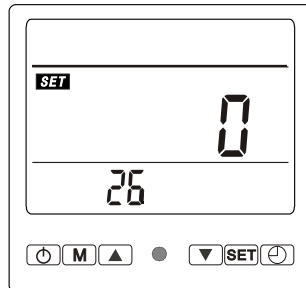
**Parameter 23**  
The start time of non-sleeping status mode.  
Default: 05:00



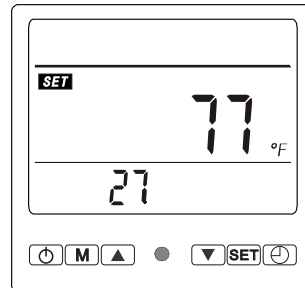
**Parameter 24**  
The end time of non-sleeping status mode.  
Default: 23:00



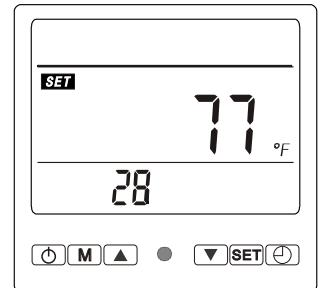
**Parameter 25**  
The temp. difference setting between solar temp. and water tank temp. for turn on the water pump  
Alternative range: 2°F to 40°F  
Default: 12°F



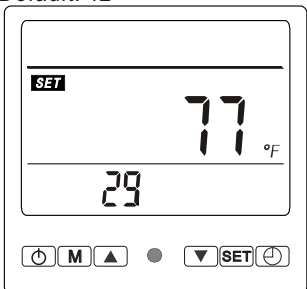
**Parameter 26**  
whether turn on the timing function  
0: Turn off  
1: Turn on  
Default: 0



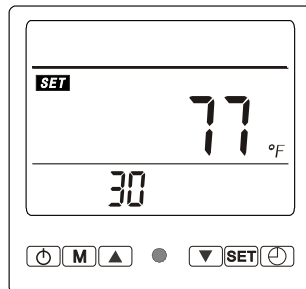
**Parameter 27**  
Domestic hot watertank temp.  
Actual testing value:  
Living hot watertank temperature



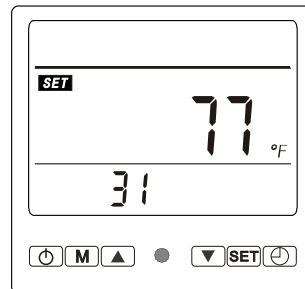
**Parameter 28**  
water return temp.  
Actual testing value:  
Unit inlet water temperature



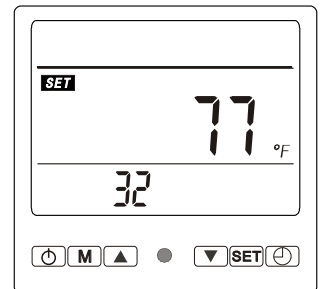
**Parameter 29**  
water outlet temp.  
Actual testing value:  
Unit outlet water temperature



**Parameter 30**  
Indoor environment temp.  
Actual testing value:  
Indoor environment temperature

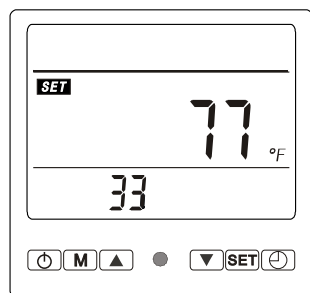


**Parameter 31**  
Out door environment temp.  
Actual testing value:  
Outdoor environment temperature

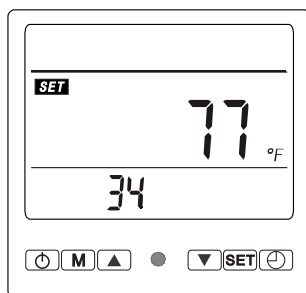


**Parameter 32**  
Pipe temp.1  
Actual testing value:  
pipe temperature (system 1)

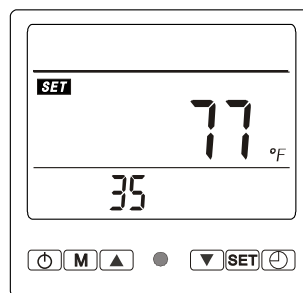
# Air To Water Heat Pump Water Heater



Parameter 33  
Pipe temp.2  
Actual testing value:  
pipe temperature (system2)



Parameter 34  
Exhaust 1 temp.  
Actual testing value:  
exhaust temperature (system1)



Parameter 35  
Exhaust 2 temp.  
Actual testing value:  
exhaust temperature (system2)

## Remark :

- 1) Parameter value 13: 1:single system, 2:double system
- 2) Parameter value 14: 0: without power-down memory, 1: with power-down memory
- 3) Parameter value 15: 0: uncontrolled by the wire controller' s temp. sensor function , 1: controlled by the wire controller' s temp. Sensor function
- 4) Parameter 16: 0: without electric heater auxiliary, 1: with electric hear auxiliary (efficient for the unit with electric heater auxiliary )
- 5) Water pump working way introductions for the parameter value 18: 0:starts 10 seconds before compressor, stops 30 seconds after compressor, 1:always open

## 3:Operation data setting

The unit's operation data can be set on the wire controller.

Please set according to the table below.

Parameter NO .	meaning	explanation of parameters
01	Domestic hot water tank temperature setting	This parameter fortank temp. can be set bythe up and down arrow buttons byuser under boot-state.
02	Air cooling return water temperature setting	This parameter forhot water inlettemp. can controlthe compres-sor ON/OFF whenworking the coolingmode.
03	Air heating return water temperature setting	This parameter for hot waterinlet temp. can control the compres-sor ON/OFF whenworking the heatingmode.
04	Room temperature setting	This parameter canset the roomtemp. and controlthe floor heating water pump ON/OFF by theup and down arrow keys on the wire controller .
05	Domestic hot water temp. difference between the unit stop heating and restart heating	This parameter isused for re-heatingthe water after thermostat stop heating and in hotwater mode bymeans of settinghow many temp. value ofthe hot water tank has been decreased .
06	Air cooling return water temp.difference between the unit stop heating and restart heating .	This parameter isused for re-coolingthe water after thermostat stop cooling and in coolingmode by means of setting how many temp. value ofthe inlet watertemp. has been rise.
07	Air heating return water temp.difference between the unit stop heating and restart heating .	This parameter forre-house heating after thermostat stop heat-ing and in heatingmode by means of setting how many temp. Value of the inletwater temp. has been decrease .
08	Room temp. difference between the unit stop heatingand restart heating .	This parameter forre-working floor heating/coolingwater pump after thermostat stop heating/coolingby means ofsetting how many temp. value of the roomtemp. has been decrease/rise .
09	Heating defrost cycle	Period setting forunit cycle defrost

## Air To Water Heat Pump Water Heater

10	Into defrost temperature setting.	The coil temperature setting for enter into defrost status
11	Exit defrost temperature setting.	The coil temperature setting for exit the defrost status.
12	Exit defrost time condition setting .	The maximum running time for defrost state.
13	Single or double system selection.	Setting for dual system selection.
14	Whether power-down memory .	This parameter is used for setting whether keep the original operation statuses after unit power off and restart.
15	Wire control sensor or the " multi-room switch" Selection.	This parameter is used for setting whether use the sensor on wire controller or use the multi-room switch to control the room temperature.
16	Whether turn on automatic electric heating function.	This parameter is used for setting whether turn on automatic electric heating mode. If ON, there's electric heating after the compressor running for 1 hour.
17	Domestic hot water priority, or heating and cooling priority .	This parameter is used for setting whether priority turn on the heating water mode or priority turn on the cooling water mode.
18	Room temp. difference between the unit stop heating and restart heating .	This parameter is cycle water pump operation setting. when in hot water mode, set it constant temperature closing is the best, when in cooling or heating mode, set it constant temperature starting is the best.
19	High-temperature disinfection per week setting .	The unit has canceled the high temp. sterilization function
20	High-temperature disinfection maintain time.	The unit has canceled the high temp. sterilization function
21	The room temp. difference setting between non-sleeping status mode and sleeping status mode .	The unit has canceled the high temp. sterilization function
22	Whether turn on air cooling function model .	This parameter is whether to open the cooling mode to the user. Press the 'mode' button to set it ON/OFF.
23	The start time of non-sleeping status mode .	This parameter is the start time setting for the non-sleep period.
24	The end time of non-sleeping status mode .	This parameter is the ending time setting for the non-sleep period.
25	The temp. difference setting between solar temp. and water tank temp. for turn on the water pump .	This parameter is the temperature difference setting between solar collector temp. and the water tank temp. , this setting is used for control the solar pump ON/OFF.
26	Whether turn on the timing function.	This parameter is the setting whether open the timing function to user for the user.

# Air To Water Heat Pump Water Heater

## IV、Maintenance and repair

**1.Malfunction Indicating Table. Determine and solve the malfunction by malfunction code as below:**

**1.1.operate display fault code mode:**

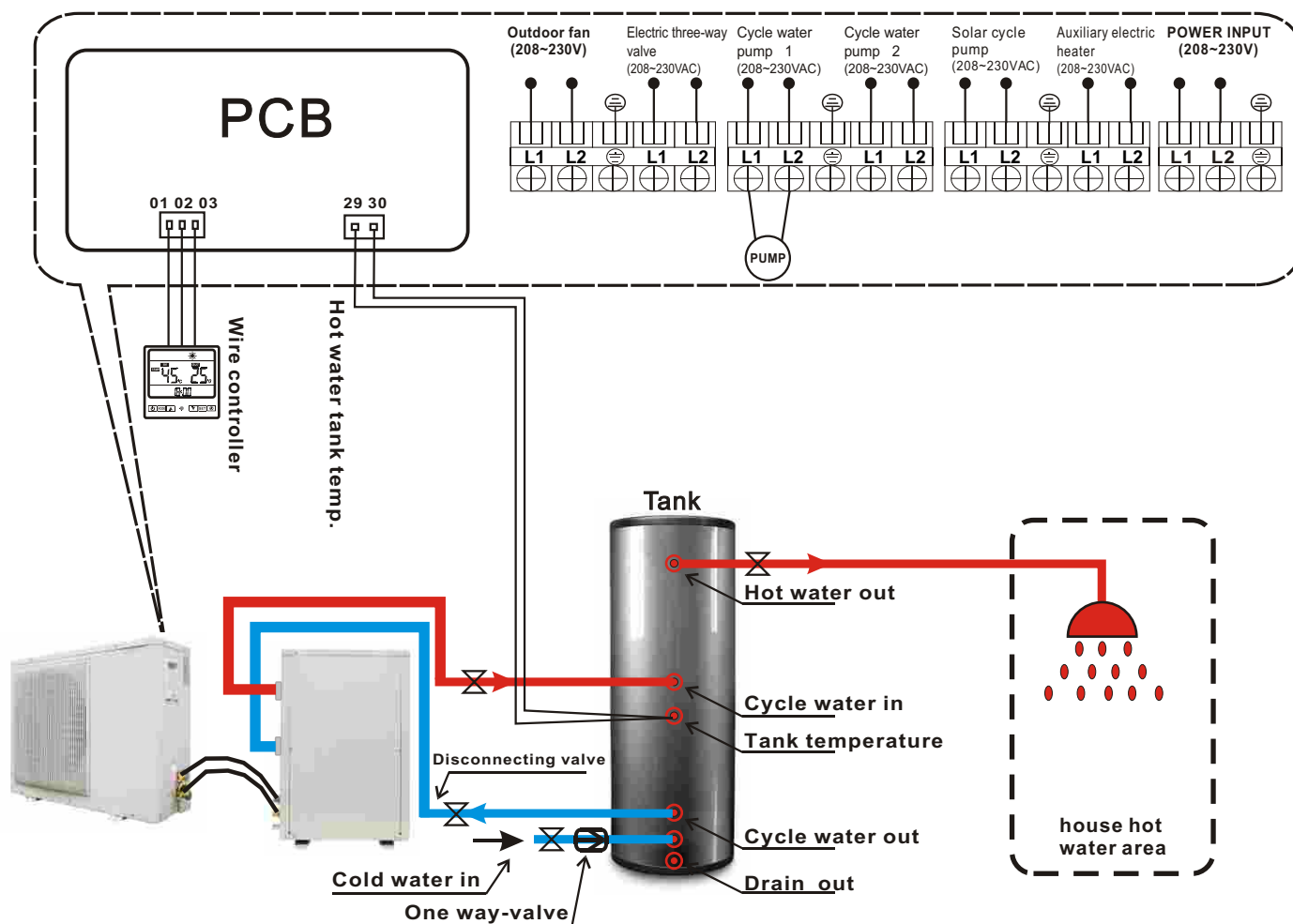
Wire Controller	Malfunction	Reason	Resolution
E01	Tank temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E02	Water inlet temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E03	Water outlet temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E04	System 1 pipe sensor failure	The sensor is open or short circuit	Check or change the sensor
E05	System 2 Pipe sensor failure	The sensor is open or short circuit	Check or change the sensor
E06	Outdoor environment temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E07	Indoor environment temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E08	System 1 discharge sensor failure	The sensor is open or short circuit	Check or change the sensor
E09	System 2 discharge sensor failure	The sensor is open or short circuit	Check or change the sensor
E10	Communication failure	Wire controller and The PCB connection failure.	Check the wire connection
P01	Phase failure protection	Power supply phase failure /lacking	Check whether power supply phase failure or lacking, if failure, please connect it in according to the proper way.
P02	electric heater auxiliary overheating & dry heating protection	The protector open circuit or short circuit	Check the over heating switch normal or not
P03	Flow switch 1 protection	No water/little water in water system.	Check the water flow volume, water pump is failure or not.
P04	Flow switch 2 protection	No water/little water in water system.	Check the water flow volume, water pump is failure or not.
P05	system 1 high pressure protection	High pressure 1 switch protection	Check whether the pressure switch and system return route failure.
P06	system 1 low pressure protection	Low pressure 1 switch protection	Check whether the pressure switch and system return route failure.
P07	system 2 high pressure protection	High pressure 2 switch protection	Check whether the pressure switch and system return route failure.
P08	system 2 low pressure protection	Low pressure 2 switch protection	Check whether the pressure switch and system return route failure.
P09	3 times of excessive temp. differentials of inlet water and outlet water in 30minutes	Water flow volume not enough, water pressure difference is too low	Check the water flow volume, or water system is blocked or not.
P10	Frost-protection	when the outdoor temp. below 0℃ under standby model	after the antifreezing procedure, unit will return to the original state automatically
P11	High discharge 1 temperature protection	1.whether gas of system leak or not 2.the tank temp. Be set too high	1 check the refrigerent amount in the system 2 check whether the tank temp. Setting value too high
P12	High discharge 2 temperature protection	1.whether gas of system leak or not 2.the tank temp. Be set too high	1 check the refrigerent amount in the system 2 check whether the tank temp. Setting value too high

# Air To Water Heat Pump Water Heater

## V、Installation sketch

### 1、The choice of installation ways

#### 1.1 the installation way for domestic hot water model



#### The parameter setting for domestic hot water model:

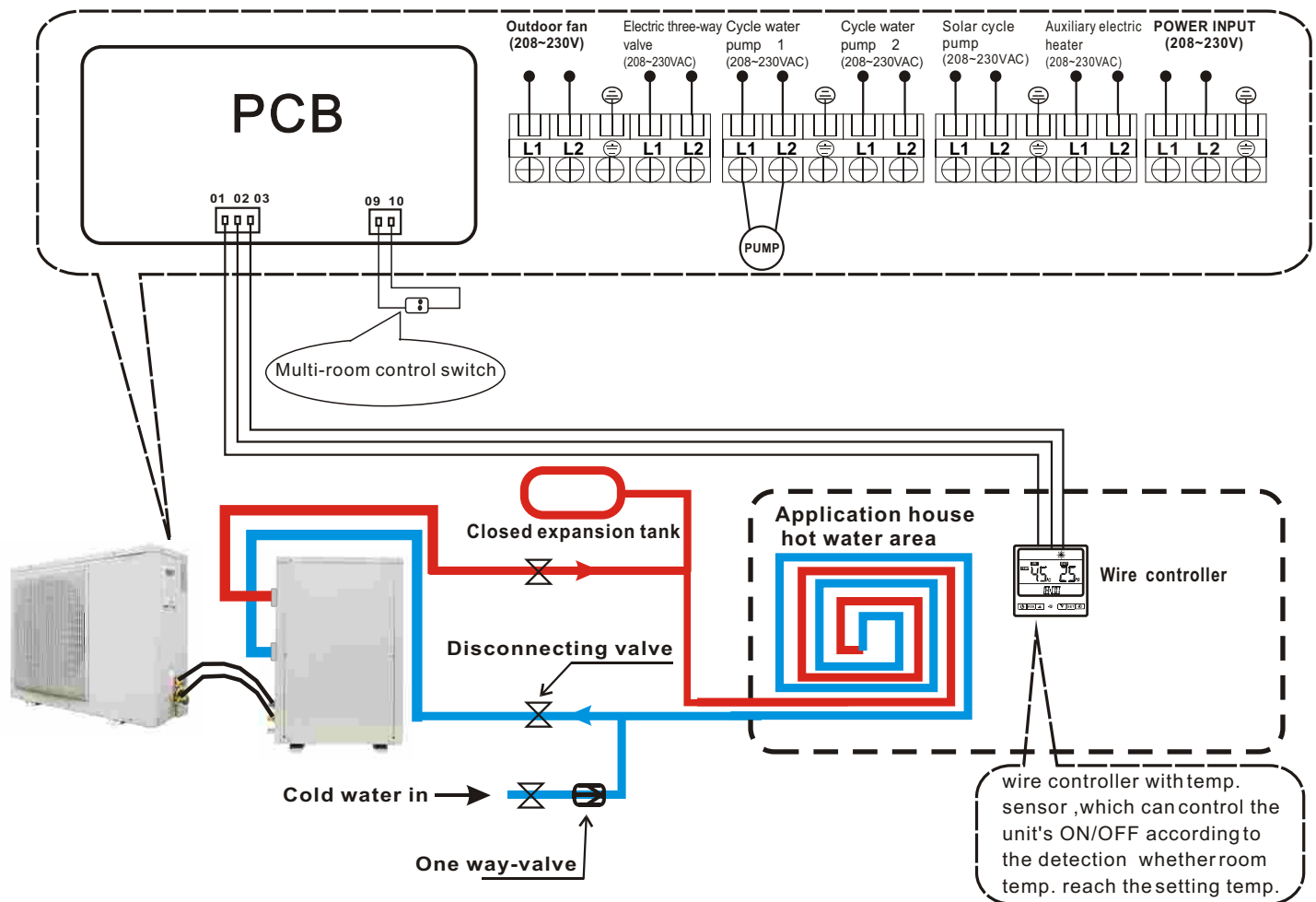
Digit	Meaning	Range	Default	Parameter setting for domestic water mode
01	Domestic hot water tank temperature setting	50°F~140°F	131°F	Adjustable
05	Domestic hot water return temperature	2°F~30°F	10°F	Adjustable
18	Circulating water pump works option	0/1	1	0

Remark :

- 1) In the working state, press the “ ▲ ▼ ” buttons can set up the parameters 1 , at this time you can adjust the setpoint of the water tank temperature,press the “ ⏻ ” buttons,exit the setting interface.
- 2) Circulating water pump working way introductions for the parameter value 18:
  - 0:starts 10 seconds before compressor
  - stops 30 seconds after compressor:
  - 1:always open
- 3) The port of “ 29 30 ” on PCB should connect to the water tank to detect the tank temp.

# Air To Water Heat Pump Water Heater

## 1.2、 the installation way for Air heating model {floor heating model ( one room )}



The parameter setting for floor heating model: (wire controller can control the room temp.)

Digit	Meaning	Range	Default	Parameter setting for Air heating (floor heating )model
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust ( >digit 04)
04	Room temperature setting	59°F~113°F	77°F	Adjust
07	Start Heating difference temperature	2°F~30°F	10°F	Adjust
08	Difference setting back to room temperature	2°F~30°F	4°F	Adjust
15	Wire cotrol sensor or the" multi-room switch" Selection.	0/1	1	1
18	Circulating water pump works option	0/1	1	1

Remark :

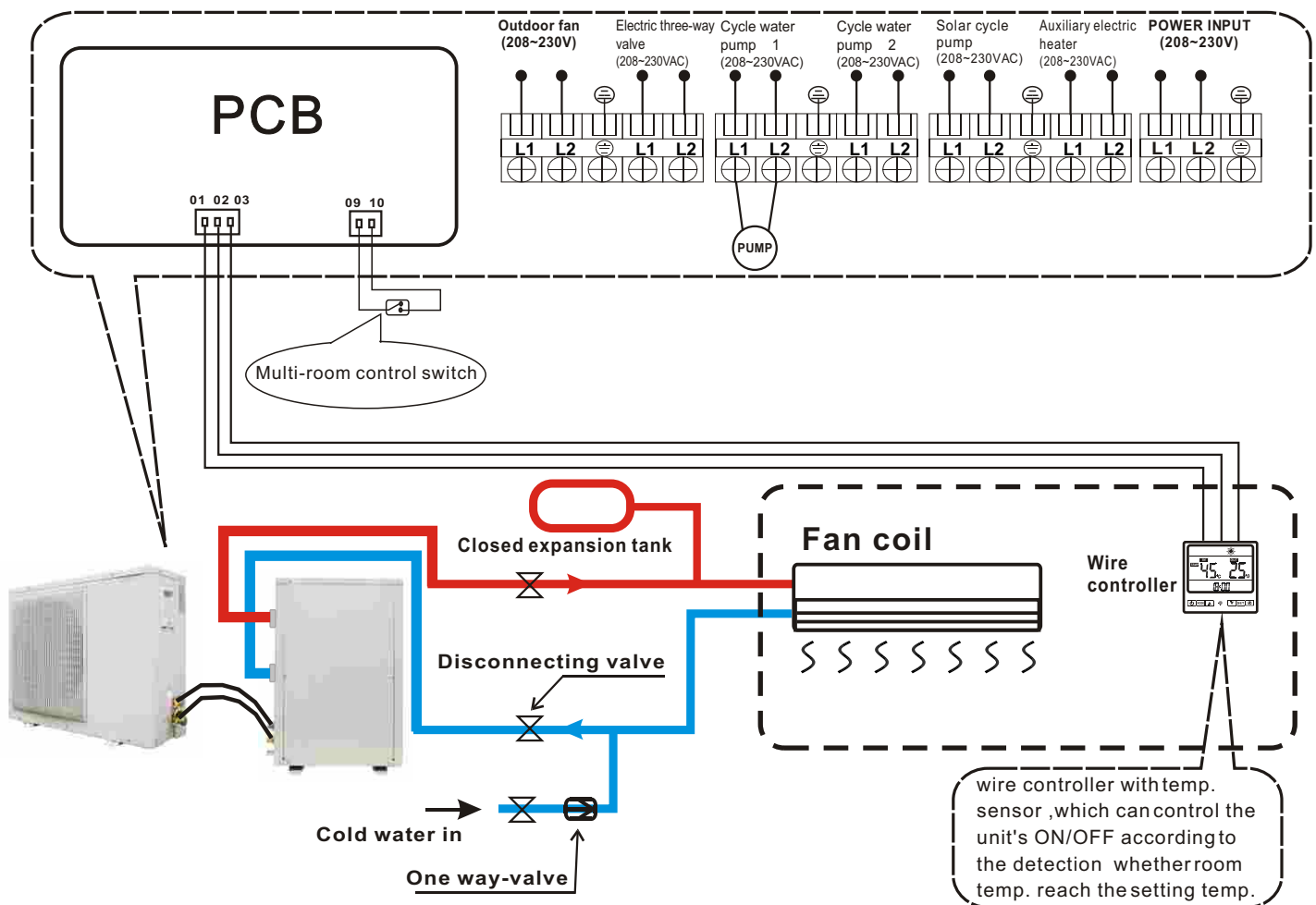
- Parameters 03:the setpoint for heating return watertemperature. This parameter control unitboot or shutdown, note: this parameterrequired bigger thanparameters 04 :the setponit for room temperature.
- Control the temp. differece of the room temp. and setting temp. by thesetting of parameter08 and parameter04 .
- In theworking state, press the “▲ ▼” buttons can setup the parameters3 , at this time you can adjust the setpoint of the heating return water temperature,press the “SET” buttons switch and set up the setpoint for parameter4,press the “⏻” buttons,exit the setting interface.
- Water pump working wayintroductions for the parameter value 18:  
0:starts 10 secondsbefore compressor, stops 30 secondsafter compressor:  
1:always open
- the parametervalue 15 . control introductions :  
This parameter is used for settingwhether use thesensor on wire controller or use the multi-room switch to control the room temp-erature.

NOTE:

When parameter 15set be '0', the rooms house heating/cooling's temp. difference control function is conntroled by this switch, and when it's close, the unit will be cooling/heating.

# Air To Water Heat Pump Water Heater

## 1.3、the installation way for air condition (cooling /heating )model ( one room )



### Parameter setting for air condition (cooling /heating )model ( wire controller can control the room temp ) :

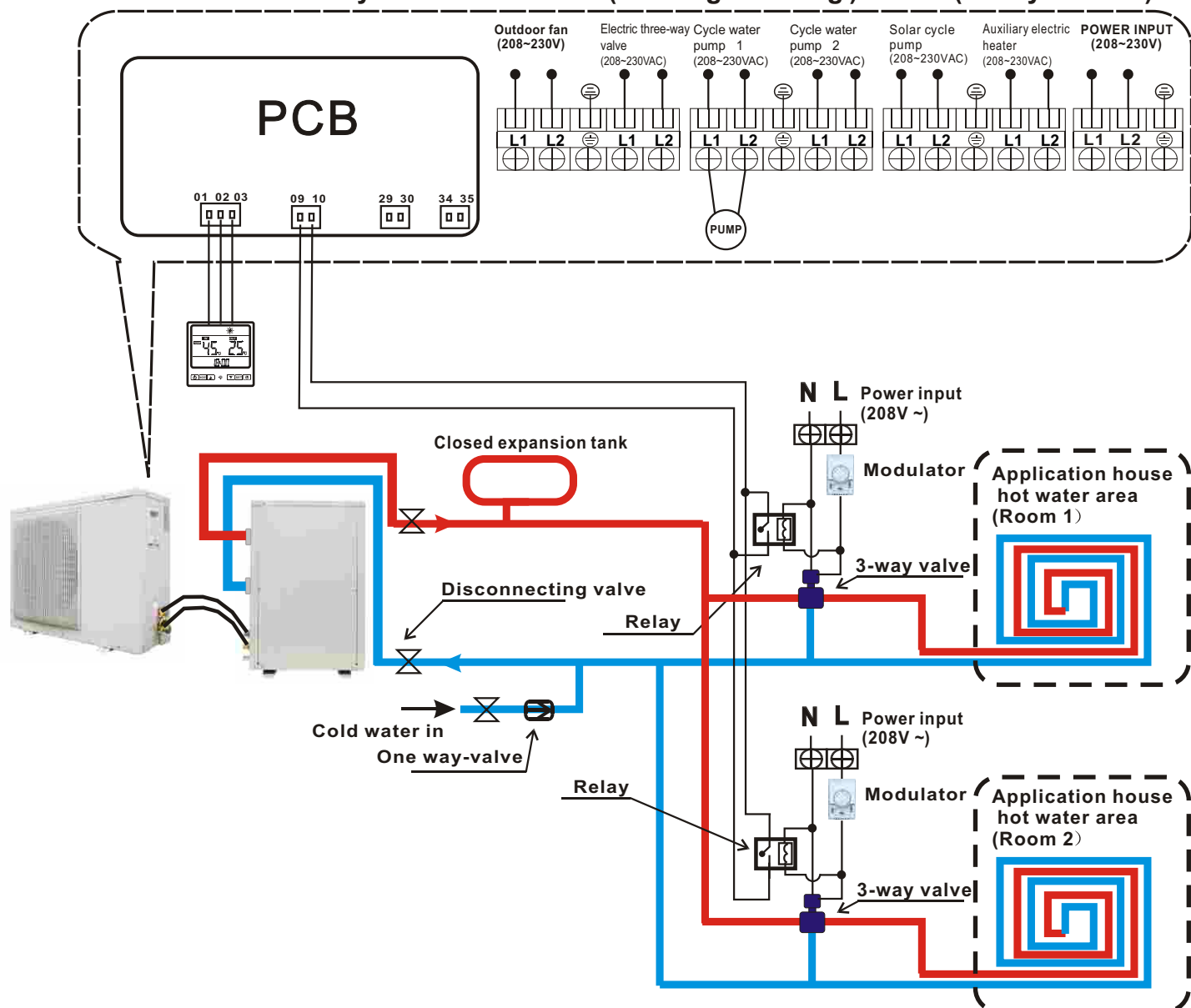
Digit	Meaning	Range	Default	Parameter setting for air condition (cooling /heating )model
02	Air cooling return water temperature setting	46°F~82°F	54°F	Adjust ( <Digit 4( Room temperature setting ) )
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust ( >Digit 4Room temperature setting)
04	Room temperature setting	50°F~113°F	77°F	Adjust
06	Cooling return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
07	Heating return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
08	Room temp. difference between the unit stop heating and restart heating .	2°F~30°F	4°F	Adjust
15	room temperature control option	0/1	1	1
18	Circulating water pump works option	0/1	1	1
22	Whether turn on air cooling function model	0/1	1	1

Remark :

- the parameter value 22 setting introduction  
1:open the cooling mode to the user .Press the 'mode' button to set it ON/OFF.
- Water pump working way introductions for the parameter value 18:  
0:starts 10 seconds before compressor stops 30 seconds after compressor:  
1:always open
- the parameter value 15 ,Room temp. control introductions :  
0 : uncontrolled by the wire controller ' s temp. Sensing (unit will controlled by return water temp.)  
1: controlled by the wire controller ' s temp. Sensing(the wire controller should install in the using scope to sensing the temp. )

# Air To Water Heat Pump Water Heater

## 1.4、 the installation way for air condition (cooling /heating )model ( many rooms )

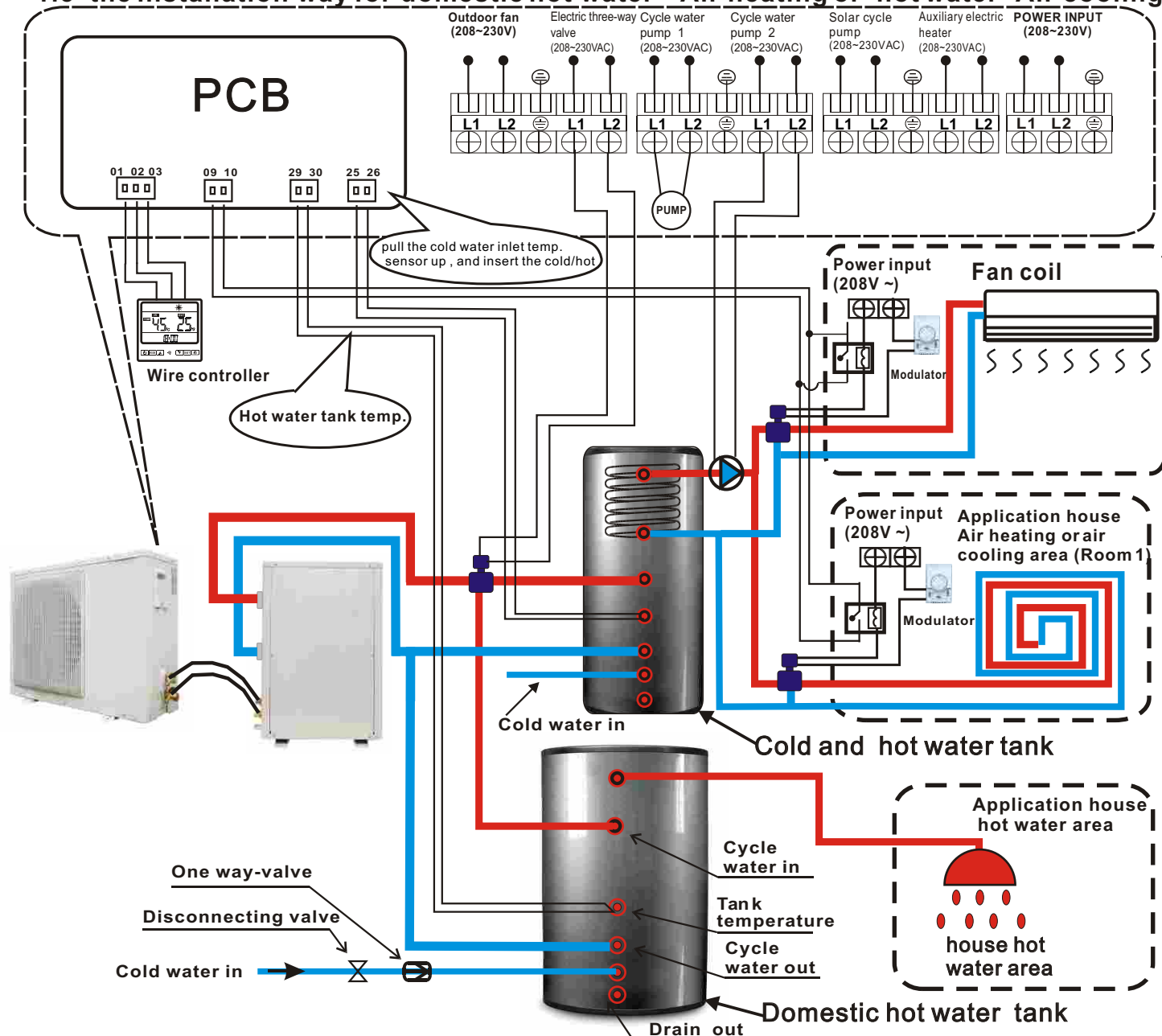


Parameter setting for air condition (cooling /heating )model ,  
(uncontrolled by the wire controller 's room temp. control function )

Digit	Meaning	Range	Default	Parameter setting for air condition (cooling /heating )model
02	Air cooling return water temperature setting	46°F~82°F	54°F	Adjust ( < Digit 4 ( Room temperature setting ) )
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust ( > Digit 4 Room temperature setting )
06	Cooling return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
07	Heating return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
08	Room temp. difference between the unit stop heating and restart heating .	2°F~30°F	4°F	Adjust
15	room temperature control option	0/1	0	0
18	Circulating water pump works option	0/1	1	1
22	Whether turn on air cooling function model	0/1	1	1

# Air To Water Heat Pump Water Heater

## 1.5 the installation way for domestic hot water + Air heating or hot water+Air cooling

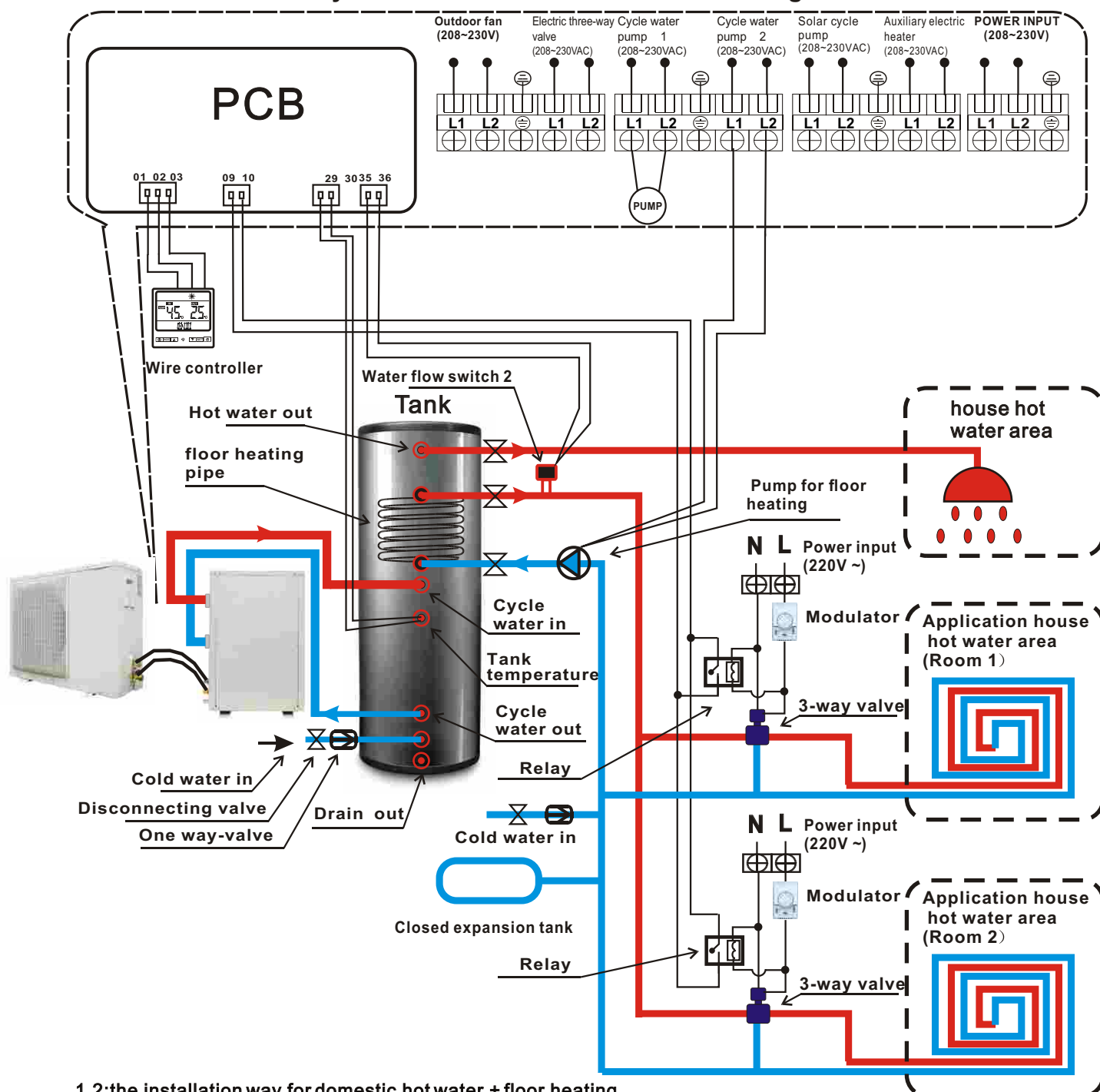


1.1: the installation way for domestic hot water + floor heating

Digit	Meaning	Range	Default	Parameter setting for domestic water mode
01	Domestic hot water tank temperature setting	50°F~140°F	131°F	Adjustable
02	Air cooling return water temperature setting	46°F~82°F	54°F	Adjust ( < Digit 4 (Room temperature setting) )
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust ( > Digit 4 Room temperature setting )
05	Domestic hot water return temperature	2°F~30°F	10°F	Adjustable
06	Cooling return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
07	Heating return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
08	Room temp. difference between the unit stop heating and restart heating .	2°F~30°F	4°F	Adjust
15	room temperature control option	0/1	0	0
18	Circulating water pump works option	0/1	1	1
22	Whether turn on air cooling function model	0/1	1	1

# Air To Water Heat Pump Water Heater

## 1.6、the installation way for domestic hot water + Air heating



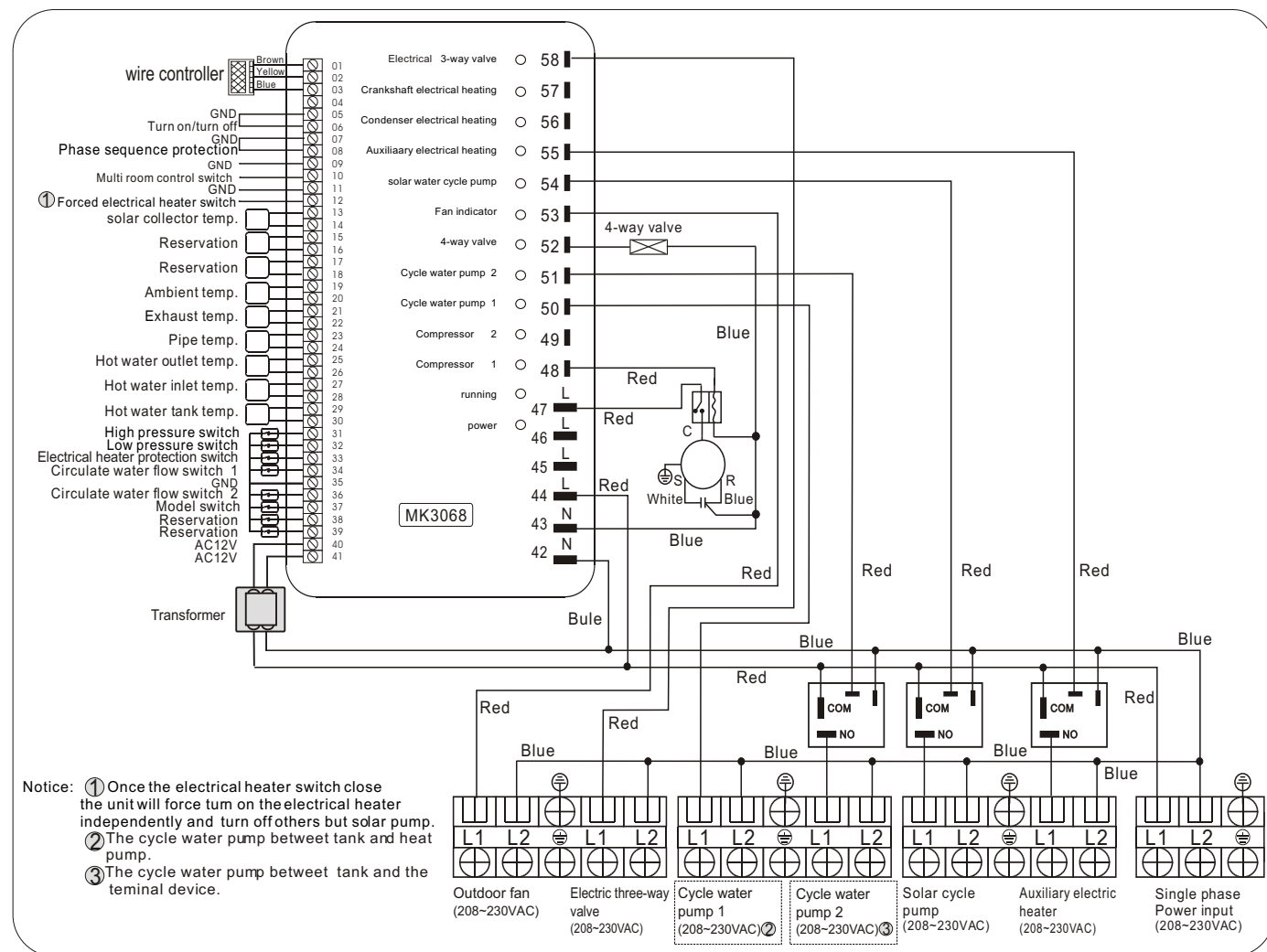
1.2:the installation way for domestic hot water + floor heating

Digit	Meaning	Range	Default	Parameter setting for domestic water mode
01	Domestic hot water tank temperature setting	50°F~140°F	131°F	Adjustable
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust ( > Digit 4 Room temperature setting)
05	Domestic hot water return temperature	2°F~30°F	10°F	Adjustable
07	Heating return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
08	Room temp. difference between the unit stop heating and restart heating .	2°F~30°F	4°F	Adjust
15	room temperature control option	0/1	0	0
18	Circulating water pump works option	0/1	1	1
22	Whether turn on air cooling function model	0/1	1	1

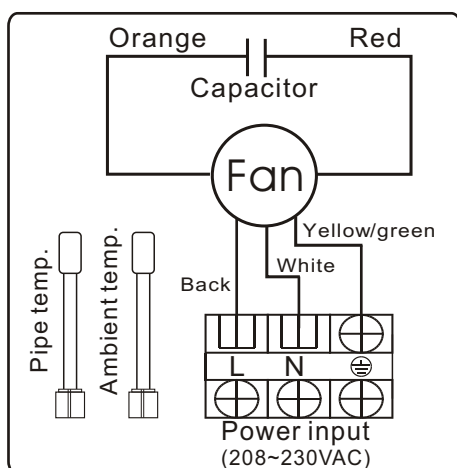
# Air To Water Heat Pump Water Heater

## VI、Appendix

### 1. Indoor unit wiring diagram PCB mode:MK3068



### 2. Outdoor unit wiring diagram





**MK3068/MK3069**

# **AIR TO WATER HEAT PUMP WATER HEATER**

HCW system Head office  
1597 Galt Est, Sherbrooke, Quebec, J1G3H4  
HCW system Warehouse  
745 Rue Longpré, Sherbrooke, Quebec, J1G3H4  
TEL:819-566-9444



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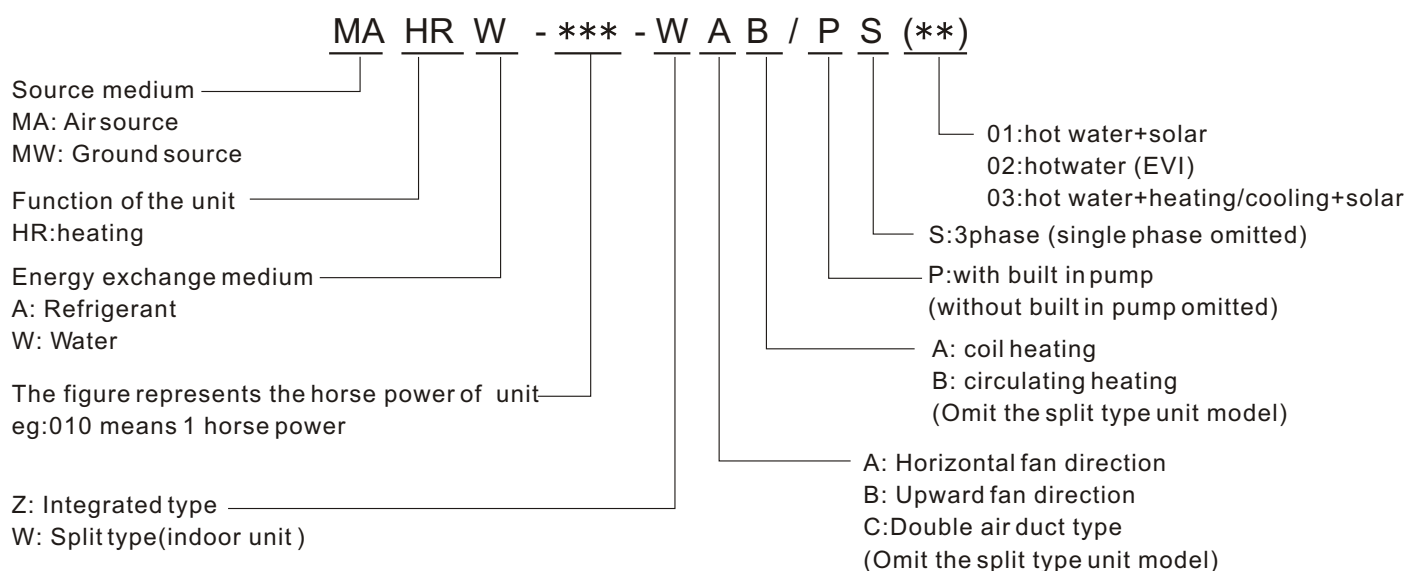
# Air To Water Heat Pump Water Heater

## Notice

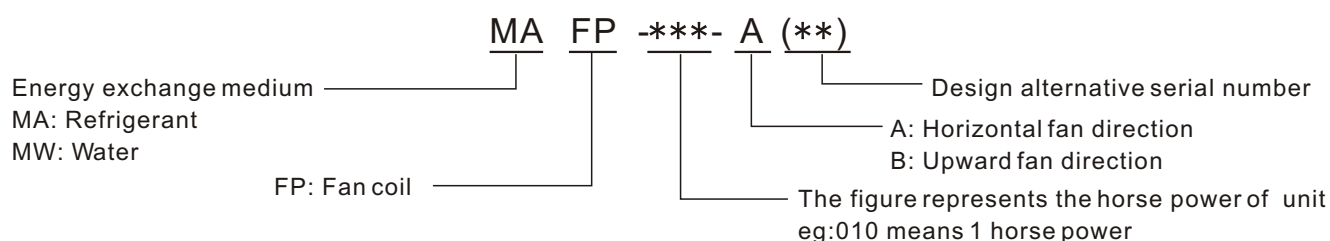
- 1.1 In order to use this product better and safer, please read this instruction carefully before install and operate it. Please pay attention to all the notice in operation and maintenance. Save all manuals and documentation for future reference.
- 1.2 All in one heat pump is a special appliance. Improper 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.

## I、 Specification

### 1、 Model Nomenclature



### Outdoor unit model nomenclature



# Air To Water Heat Pump Water Heater

## 2.Parameter of multi-function air to water heat pump

Indoor Unit Model	MAHRW	020W/P(03)	025W/P(03)	030W/P(03)	035W/P(03)	040W/P(03)
Outdoor Unit Model	MAFP	020A	025A	030A	035A	040A
Rated Cooling Capacity	kW	5.0	6.5	7.5	9.0	10.0
	BTU/h	17100	22200	25600	30800	34200
Rated Input Power	kW	1.55	2.10	2.40	2.90	3.10
Rated Input Current	A	7.0	9.5	10.9	13.2	14.5
Rated Heating Capacity	kW	6.0	7.5	9.0	10.5	12.0
	BTU/h	20500	25600	30800	35900	41000
Rated Input Power	kW	1.75	2.30	2.70	3.10	3.60
Rated Input Current	A	8.0	10.5	12.3	14.1	16.4
Power Supply	V/PH/Hz	(208~230)ACV/1PH/60Hz				
Noise	dB(A)	50	50	50	50	50
Compressor		Rotary	Rotaty	Rotaty	Rotaty	Scroll
Compressor Qty		1	1	1	1	1
Fan Qty		1	1	1	1	1
Refrigerant Liquid Pipe	inch	1/4	1/4	3/8	3/8	3/8
Refrigerant Gas Pipe	inch	1/2	1/2	1/2	1/2	1/2
Water Outlet/Water Inlet	inch	1	1	1	1	1
Water Flow Volume	m <sup>3</sup> /h	2-3	2-3	2-3	2-3	3-4
Refrigerant Gas Type		R410A				
Indoor Unit Net Dimensions(L/M/H)	mm	610×440×750	610×440×750	610×440×750	610×440×750	600×630×785
Indoor Unit Shipping Dimensions (L/M/H)	mm	665×480×770	665×480×770	665×480×770	665×480×770	710×750×915
Outdoor Unit Net Dimensions(L/M/H)	mm	840×350×610	840×350×610	830×380×710	830×380×710	880×420×800
Outdoor Unit Shipping Dimensions (L/M/H)	mm	980×410×665	980×410×665	965×410×750	965×410×750	1020×450×830
Indoor Unit Net Weight	kg	52	53	55	57	100
Indoor Unit Shipping Weight	kg	57	58	60	62	108
Outdoor Unit Net Weight	kg	39	39	45	45	58
Outdoor Unit Shipping Weight	kg	44	44	50	50	65

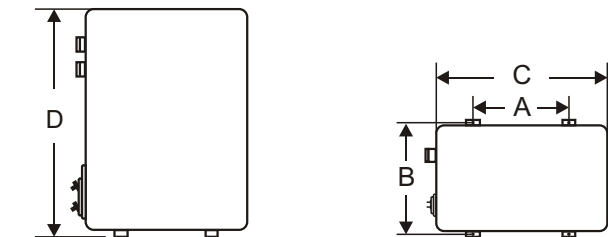
Indoor Unit Model	MAHRW	040W/PS(03)	045W/PS(03)	050W/PS(03)	060W/PS(03)
Outdoor Unit Model	MAFP	040A	045A	050A	060A
Rated Cooling Capacity	kW	10.0	11.5	12.5	15.0
	BTU/h	34200	39300	42700	51200
Rated Input Power	kW	3.20	3.60	4.0	4.70
Rated Input Current	A	5.6	6.3	7.0	8.2
Rated Heating Capacity	kW	12.0	13.5	15.0	18.0
	BTU/h	41000	46100	51200	61500
Rated Input Power	kW	3.6	4.0	4.5	5.30
Rated Input Current	A	6.3	7.0	7.9	9.3
Power Supply	V/PH/Hz	(440~460)ACV/3PH/60Hz			
Noise	dB(A)	50	50	50	50
Compressor		Scroll	Scroll	Scroll	Scroll
Compressor Qty		1	1	1	1
Fan Qty		1	1	2	2
Refrigerant Liquid Pipe	inch	3/8	3/8	3/8	3/8
Refrigerant Gas Pipe	inch	5/8	5/8	5/8	5/8
Water Outlet/Water Inlet	inch	1	1	1	1
Water Flow Volume	m <sup>3</sup> /h	3-4	3-4	3-4	3-4
Refrigerant Gas Type		R410A			
Indoor Unit Net Dimensions(L/M/H)	mm	600×630×785	600×630×785	600×630×785	600×630×785
Indoor Unit Shipping Dimensions (L/M/H)	mm	710×750×915	710×750×915	710×750×915	710×750×915
Outdoor Unit Net Dimensions(L/M/H)	mm	880×420×800	880×420×800	880×470×1250	880×470×1250
Outdoor Unit Shipping Dimensions (L/M/H)	mm	1020×450×830	1020×450×830	1010×525×1280	1010×525×1280
Indoor Unit Net Weight	kg	100	105	110	115
Indoor Unit Shipping Weight	kg	108	112	118	122
Outdoor Unit Net Weight	kg	58	58	60	60
Outdoor Unit Shipping Weight	kg	65	65	75	75

Note: (1)The manual is a technical parameters measured in the following conditions: outdoor dry temperature is 20℃ and wet bulb temperature is 15℃ ,the temperature of water inflow is 15℃ and of water outflow is 55℃.  
(2)Using in ambient temperature:-15℃ ~45℃

# Air To Water Heat Pump Water Heater

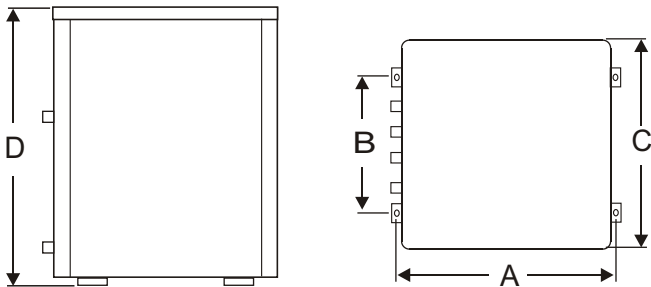
## 3. Product appearance and installation dimension

### 3.1 Installation dimension of integrated type unit



Units: mm

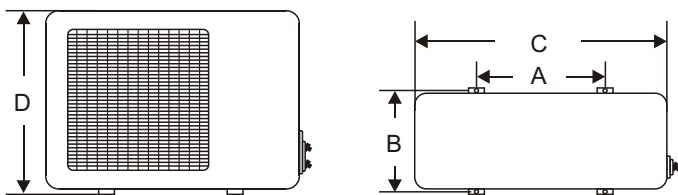
Size \ MODEL	MAHRW020W/P(03) MAHRW030W/P(03) MAHRW025W/P(03) MAHRW035W/P(03)
A	360
B	405
C	550
D	750



Units: mm

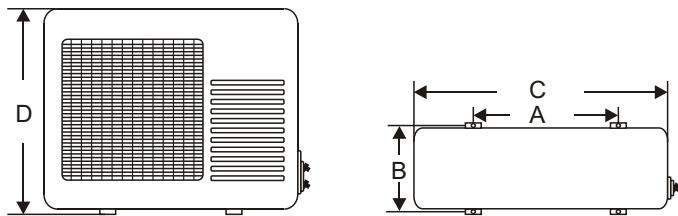
Size \ MODEL	MAHRW040W/P(03) MAHRW050W/PS(03) MAHRW040W/PS(03) MAHRW060W/PS(03)
A	635
B	450
C	780
D	765

### 3.2 Installation dimension of split type unit



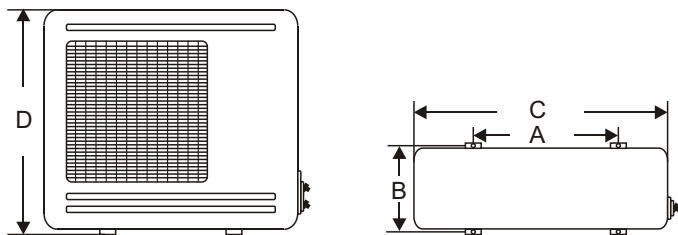
Units: mm

Size \ MODEL	MAFP020A MAFP025A
A	495
B	320
C	840
D	610



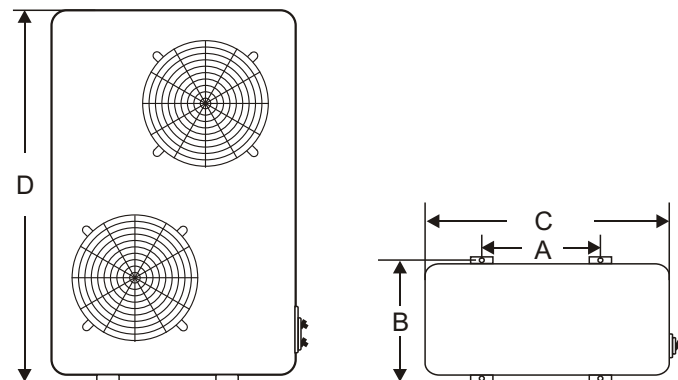
Units: mm

Size \ MODEL	MAFP030A MAFP035A
A	515
B	340
C	830
D	710



Units: mm

Size \ MODEL	MAFP040A MAFP045A
A	615
B	390
C	880
D	800



Units: mm

Size \ MODEL	MAFP050A MAFP060A
A	525
B	440
C	885
D	1250

# Air To Water Heat Pump Water Heater

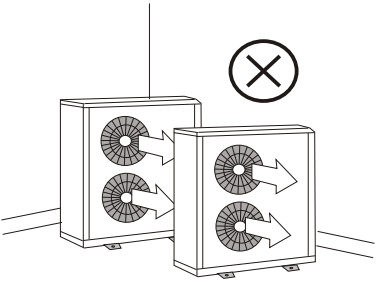
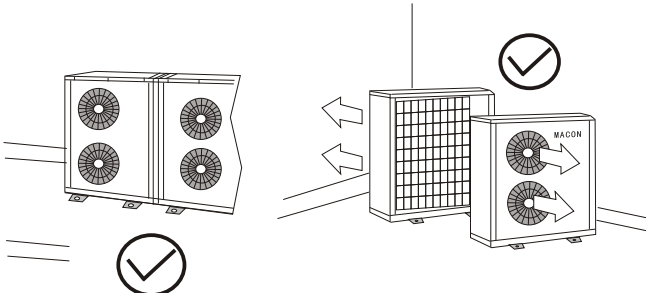
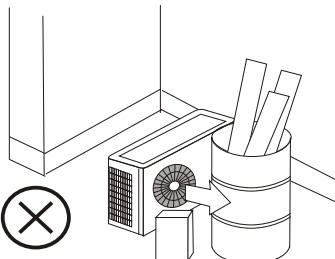
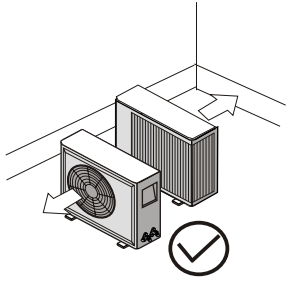
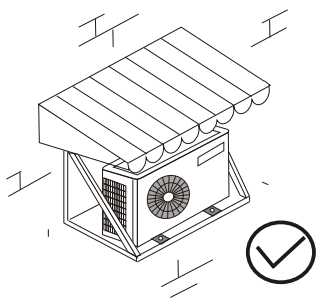
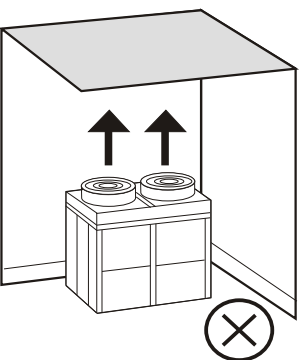
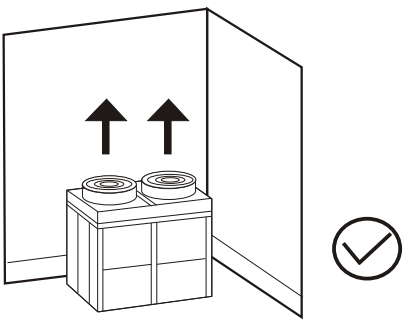
## II、 Installation

### 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:

Wrong	Right
	
	 
<p>As the upwards fan direction unit exhausts air upwards, do not place any object up the unit. Please built an introductory equipment if can' t avoid this object.</p> 	



#### 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).

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## 2. The refrigerant piping connection for split type unit

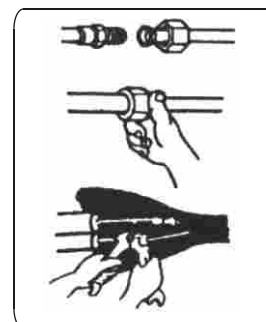
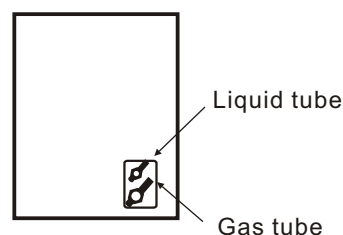
### 2.1 Refrigerant pipe connecting

Connected the indoor unit and outdoor unit through two matched cooper tubes, one small and one larger. And the system should be emptied after connection, so opened the 1 / 4 laps of outdoor unit valve for 5-10 seconds, and then close it, open the large valve needle valve to discharge air in the indoor unit and the pipe, or vacuum it with a vacuum pump, and then close the needle valve; check the connection part if leak, confirmed without leaking, then open all the outdoor unit large and small valve, so that the whole system recycle work, detailed operation as follow.

#### 2.1.1.The indoor unit refrigerant pipe connecting

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.

- Screw off the nut from the valve body indoor unit, remove the pipe head plug.
- Connect the indoor unit and pipe joints
  1. When tightened, first press the trumpet on the connector cone, and keep the out pipe and connection pipe in the same axis;
  2. Gradually use hand to tighten the flare nut in clockwise, and then use the wrench to tighten.
  3. When use a wrench to tighten joints, according to the moment shown in the following table, if not tight it will leak, spin too tightly, may damage the trumpet.



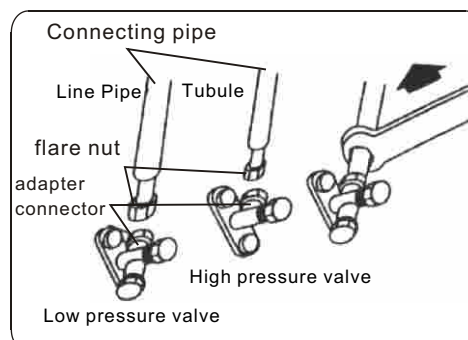
#### **Piping Connection:**

- a. Connect indoor unit pipes with two wrenches. Pay special attention to the allowed torque as shown below to prevent the pipes, connectors and flare nuts from being deformed and damaged.
- b. Pre-tighten them with fingers at first, then use the wrenches.

Pipe size	Torque	Nut width
Liquid Side (Φ 6.35 or 1/4 inch)	1.8kg.m	17mm
Liquid Side (Φ 9.52 or 3/8 inch)	3.5kg.m	22mm
Liquid Side (Φ 12.7 or 1/2 inch)	5.5kg.m	24mm
Gas Side (Φ 9.52 or 3/8 inch)	3.5kg.m	22mm
Gas Side (Φ 12.7 or 1/2 inch)	5.5kg.m	24mm
Gas Side (Φ 15.88 or 5/8 inch)	7.5kg.m	27mm
Gas Side (Φ 19.05 or 3/4inch)	9.5kg.m	30mm

#### 2.1.2.Outdoor pipeline construction

1. Use a wrench to remove the outdoor high and low pressure valve bonnet;
2. Remove the connection pipe's plastic head;
3. 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.

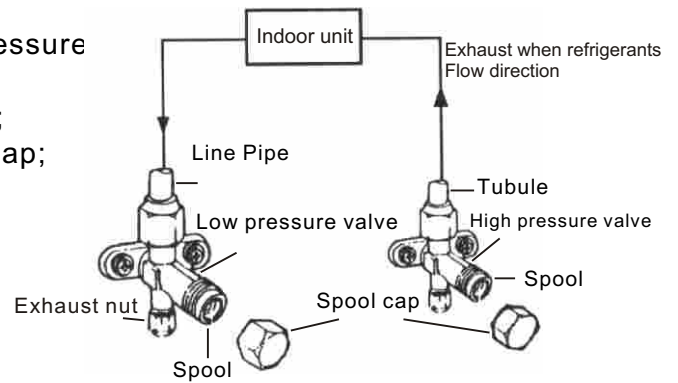


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## 2.1.3. Air discharge (vacuum)

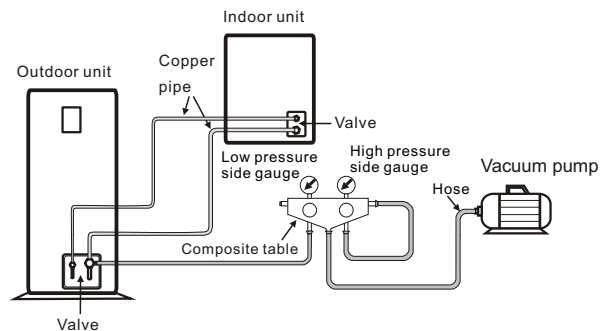
If the system is small, use refrigerant empty way to discharge the pipe and indoor unit air, as the following steps:

1. Remove the high-pressure valve and low pressure valve bonnet;
2. Remove the low-pressure valve exhaust nut;
3. Release the high-pressure valve spool 1 / 4 lap;
4. Open low-pressure valve exhaust spool, exhaust to 15-30 seconds;
5. Tighten the low- pressure valve exhaust nut;
6. Screw the high-pressure valve and low- pressure valve spool to the end;
7. Tighten the spool cap.



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, shown as below:

1. Screw off the outdoor unit low-pressure valve's repair connector nut, connected the compound pressure gauge to repair connector;
2. Connect the vacuum pump to the compound pressure gauge, open the compound pressure gauge and vacuum pump to vacuum the indoor unit and pipe, so that the absolute pressure not higher than 130Pa, and keep the pressure does not rise within 5 minutes after vacuum.
3. After vacuum, turned on the outdoor high and low pressure valve stem, inject the refrigerant into the indoor unit.



Thoroughly discharge the air and moisture within the cooling system



### Attention

if the air and moisture remained in the cooling system, appear the following adverse effects:

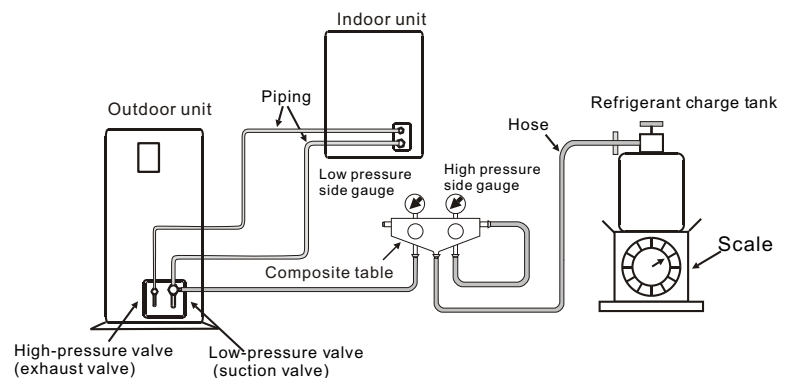
- System pressure increases.
- Cooling (or heating) effect decreased.
- Moisture will freeze plug the cooling system.
- Moisture can rust some parts of the cooling system.

## 2.1.4. Add refrigerant

The outdoor unit already with refrigerant before delivery, but when the pipe is too long, please add additional refrigerant as following formula:

Additional refrigerant amount= (one-way tube length -5) x (0.015-0.02) kg, choose 0.015-0.02 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 diagram bellow:



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## 2.1.5. 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. Refrigerant recovery method

First use hex wrench closed the high-pressure valves (1/2 ") of the unit, and then start hot mode; after the compressor start-up , check the low pressure gage , when the pressure is close to "0" , close the low-pressure valve (3/4 ") quickly , turn off the unit at the same time. the refrigerant recovery will take about 25 seconds.

## 4. Water Pipe connection

- 4.1 Pipe should be a kind of pipe that heat-resistant, rust-proof, uneasy-fouling. and in conformity with national health and safety standards, which can be stainless steel pipe, copper pipe, aluminum water pipe, hot water PPR pipes and so on.
- 4.2 Water tank outlet pipe and overflow pipe is better to installed around the gutter or sewer, so that to convenient to drainage.
- 4.3 The connection of the heat pump unit and water tank must be installed a stop valve or dismountable loose joint, for maintenance use.
- 4.4 Water pipes are arranged reasonably to minimize bending and reduce the pressure loss of water system .
- 4.5 The connection of tap water pipe and water filling connection must install one-way valve, filter, supply water solenoid valve (for tank-type water tank) and pressure relief devices (for close-type valve the parameter value is 0.7MPa), installed when valve body arrow is same as with the flow direction to prevent water block. The cycle water outlet of the heat pump unit should connect to the inlet of water tank , The cycle water inlet of the heat pump unit should connect to the outlet of water tank, the water supply inlet of the tank should connect to the heat water supply outlet . The entire piping system should be clean, no rust and dirt residue to prevent pipe blockage.
- 4.6 After the installation of the water filling pipe and cycle water pipe and hot water supply pipe , all the pipes should take the water tightness test. And ensure that the system is clean. and then cover insulation on the pipe and valve (including the supply water pipes and valves).
- 4.7 For the metal pipe, must be used above 50mm thickness of glass fiber or high-density fire-retardant PE foam to protect (PPR hot water pipe can use 30mm thickness of glass fiber or high-density fire retardant PE foam for thermal insulation).
- 4.8 the unit water inlet and outlet must fit with thermometer, water pressure gage, to facilitate inspection when operate.

Note: 1. tubing pipeline should be separate test pressure, must not test with heat pump unit or tanks.

2. The water system working pressure: 0.2-0 .6 MPa.

3. The water system operating temperature: 5~75℃.

## 5. Electric wiring

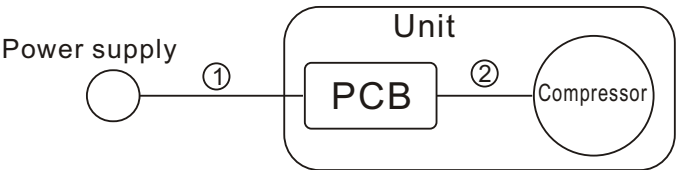
- 5.1 Unit supply cable must be used copper. Power supply voltage should be in line with the rated voltage and the rated current.
- 5.2 The unit, power supply circuit must have a grounding wire, and the power supply ground wire must connect to with the external grounding wire, and an external grounding wire to be effective.
- 5.3 Wiring installation must be installed by professional technicians carried out in accordance with circuit.
- 5.4 Setting up a good leakage protection devices and in accordance with the relevant national technical standards.

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- 5.5 Power line and signal line layout should be neat, rational, strong and weak lines separating cable and Can not interfere with each other, without contact with the connecting pipe and valve.
- 5.6 After the construction of all wiring is completed, carefully check the correct order to connect the power.
- 5.7 Unit electric wire connection: connect to the appropriate terminals according to wiring diagram, and fix it by the pressure line of board in the electrical box.
- 5.8 All the wiring construction is completed, can be plugged in only after careful examination correctly.
- 5.9 Unit control board fuse parameters: 5A/220V.
- 5.10 The unit wire controller must be fixed in the bottom of standard electrical switch box.

## 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

Starting current (A)	The wiring specifications (mm2)						
	Mark①(Heat resistance temperature above 60℃)						Mark②(Heat resistance temperature above120℃)
	within 5m	Within 10m	Within 15m	Within 20m	Within 30m	Within 50m	Within 1m
Below 20	2.0	2.0	2.0	3.5	5.5	8.0	2.0
Below 30	↑	↑	3.5	5.5	↑	14.0	↑
Below 40	↑	3.5	5.5	↑	8.0	↑	↑
Below 50	↑	↑	↑	8.0	14.0	22.0	↑
Below 60	↑	5.5	↑	↑	↑	↑	↑
Below 70	3.5	↑	8.0	14.0	↑	↑	3.5
Below 80	↑	↑	↑	↑	22.0	30.0	↑
Below 90	↑	↑	14.0	↑	↑	↑	↑
Below 100	↑	8.0	↑	↑	↑	38.0	↑
Below 110	↑	↑	↑	↑	↑	↑	↑
Below 120	5.5	↑	↑	22.0	30.0	↑	↑
Below 140	↑	14.0	↑	↑	↑	50.0	5.5
Below 160	↑	↑	22.0	↑	↑	↑	↑
Below 180	↑	↑	↑	↑	38.0	60.0	8.0
Below 200	8.0	↑	↑	30.0	↑	↑	↑
Below 220	↑	↑	↑	↑	50.0	80.0	↑
Below 240	↑	↑	↑	↑	↑	↑	14.0

Power supply installation condition: The touching space of breaker should be more than 3mm, must use copper wire only.

### 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:

- 6.4a 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.
- 6.4b When you use the unit by the maximum current please view the specifications, so make sure your home's power supply (current, voltage and cable) to meet the machine's normal load requirements.

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- 6.4c 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.
- 6.4d Do not overload wall plugs or extension the cable. Line overload can cause fire or electric shock.
- 6.5e 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)

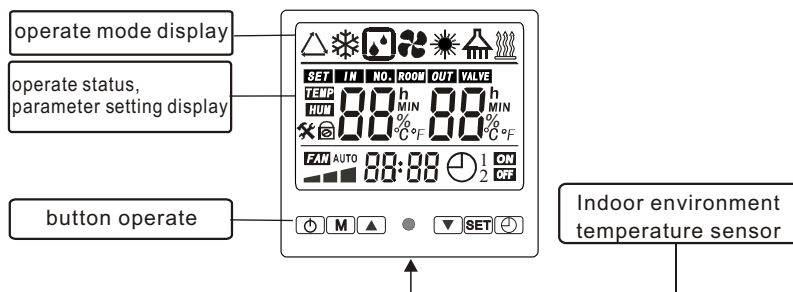
- 7.1 Check before trial operation
  - 7.1a Check the pipe system. Check the whole pipe system. Ensure the water volume in the system is full and the air is exhausted completely. Check whether the valve is open throughout the system and the thermal insulating of the pipe is well.
  - 7.1b Check the power 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 Turn on the circulating water pump by remote control(refer to “IV、Use” ) and check whether the water pump operates normally. Observe and determine whether air pipe is exhausted completely, flow switch is closed, hydraulic pressure indicated in the pressure gauge is more than 0.2MPa.Come to next step after confirm the circulating water system works normally.
  - 7.2b 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.
  - 7.2c 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.
  - 7.2d Observe whether the outlet water temperature is normal.
  - 7.2e Parameter of the remote controller has been set before leave of the factory. Never alternate them personally.

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## III、 Use

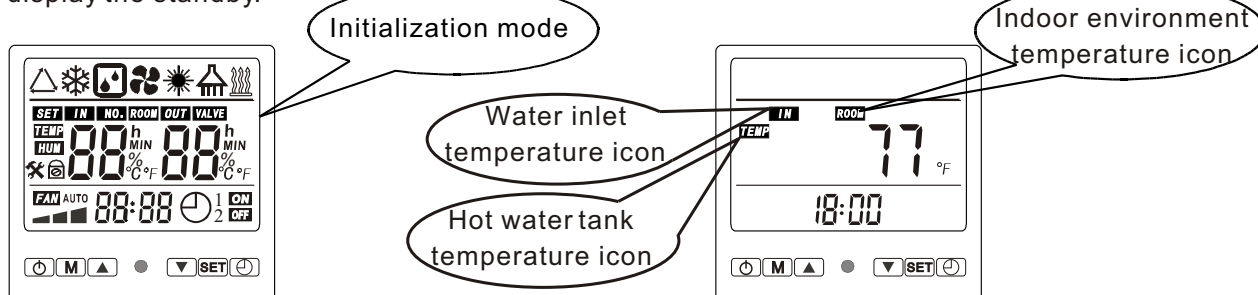
### 1.Function diagram of the remote controller.

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 user interface and function shows as below:

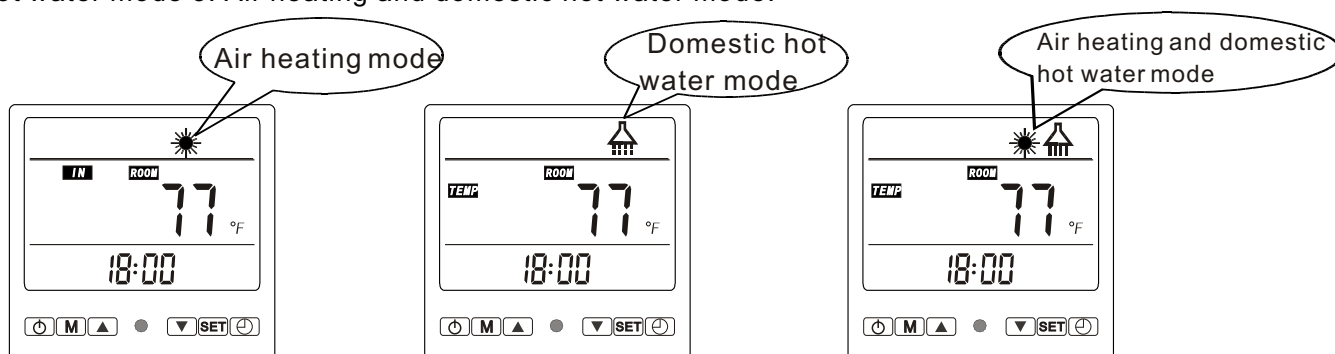


### 2.Use of remote controller

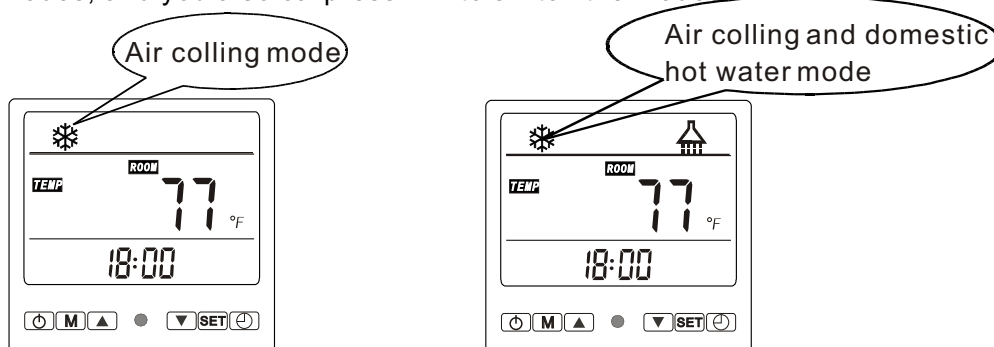
2.1 Initial power on and stand by status: Power on after check and confirm the unit is normal. The remote controller will be full-screen display. The main unit will be on stand by status 10 seconds later. Distance will display the standby.




2.2 Under boot-up status ,press ' M ' button to switch the running mode , when the parameter 22 is set to '0 ' to switch off the cooling function, so the unit will have 3 modes at that time : 1. air heating mode 2. domestic hot water mode 3. Air heating and domestic hot water mode.

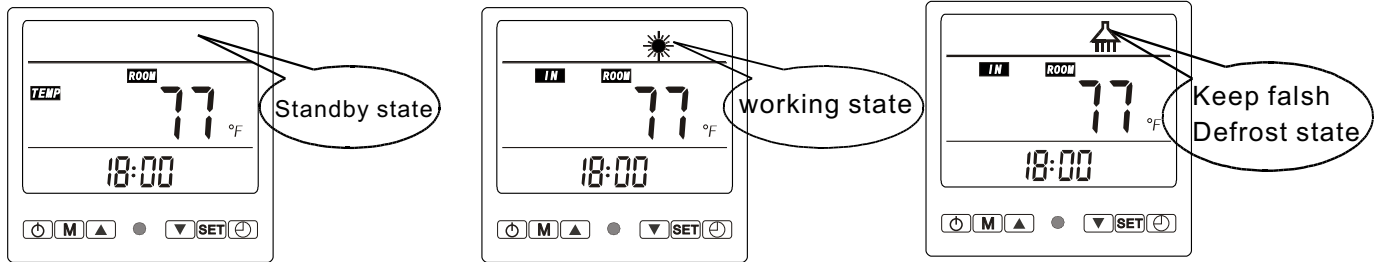









2.3. when the parameter 22 is set to '1 '(that means switch on the cooling function), there will be more the following 2 modes, and you also can press ' M ' to switch the modes.



















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






2.3 Power on/off: Press “” button to start the unit, Then the LCD will display the current mode and two temperature value (Both different kinds of temperature value will display 5 seconds each on the interface, one after one to display automatically.)

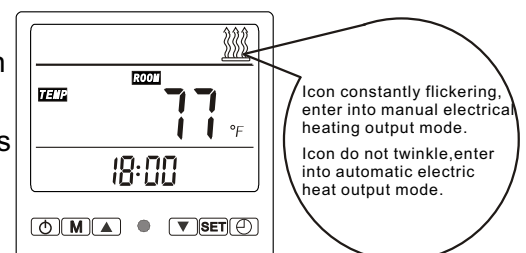






2.4 Clock setting. Press button “”, the place of hour keeps flicking, press “ ” to adjust the setting of hour. Then press button “” and the place of minute will keep flicking. Press the button “ ” to adjust the setting of minute. Press button “” again to complete and exit the time setting mode.

2.5 Timed ON/OFF setting. Press “” button, and the of place hour and “1” Timing ON symbol keep flicking. Press “ ” to adjust the setting of the hour. Press “” button again, and the bit minute flicks. Press “ ” buttons to adjust the setting of minute; Press “” button again and the place of hour and timing OFF symbol flicks. Press “ ” to adjust the setting of hour. Press “” button again, and the bit minute flickers. Press “ ” buttons to adjust the setting of minute. Press “” button, and the of place hour and “2” Timing ON symbol keep flicking. Press “ ” to adjust the setting of the hour. Press “” button again, and the bit minute flicks. Press “ ” buttons to adjust the setting of minute; Press “” button again and the place of hour and timing OFF symbol flicks. Press “ ” to adjust the setting of hour. Press “” button again, and the bit minute flickers. Press “ ” buttons to adjust the setting of minute. Press “” button again to complete and exit the timed ON/OFF setting mode. Cancel timing setting operation. press “” button and press “” button to cancel the timing.

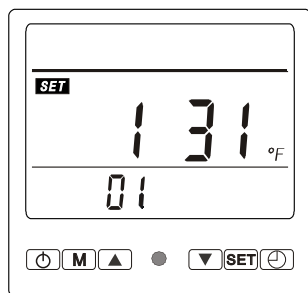
## Note:

- ① The Timing function only can be used under the parameter 26 is set be '1', otherwise, there's no the timing function.
- ② Domestic water tank temperature and indoor environment temperature, and can be modified under standby state or working state, others can be modified under standby state.
- ③ In the working state, press the “ ” buttons can set up the user common use setting parameters, press the “” buttons to switch to modified parameters, press “ ” button to modify the parameters, press the “” buttons, exit the setting interface.
- ④ press the “” button for 5 seconds to switch the display between centigrade degree and fahrenheit.
- ⑤ When boot-strap and on standby, press “” button for 5 seconds for the manual operation electric heater heating output, press the “” button for 5 seconds again, shutdown the manual operation electric heater heating output

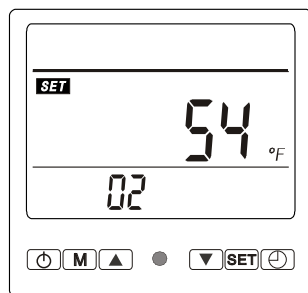


2.7 These settings are for Engineers only, please call if you require to change any of the Optional Parameters. Under the power on or standby status, press “” buttons at the same time for 10 seconds to enter Operation Parameter setting interface. Press “” or “” to view (01-36) parameter, press “” button again to set data you need. Parameter setting as below:

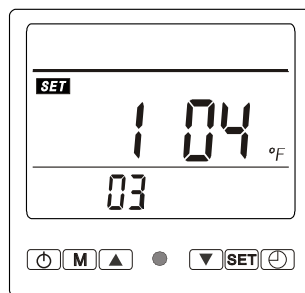
# Air To Water Heat Pump Water Heater



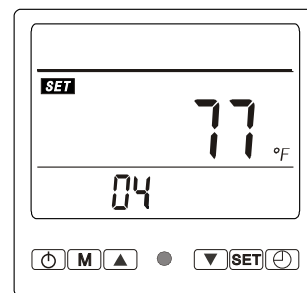
**Parameter 01**  
Domestic hot watertank temperature setting  
Alternative range: 50°F to 158°F.  
Default: 131°F



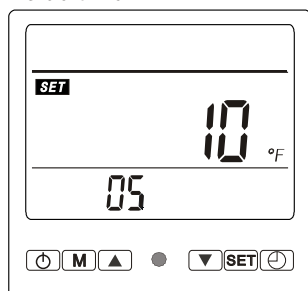
**Parameter 02**  
Air cooling return water temperature setting  
Alternative range: 46°F to 82°F.  
Default: 54°F



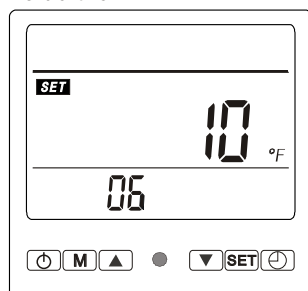
**Parameter 03**  
Air heating return water temperature setting  
Alternative range: 59°F to 140°F.  
Default: 104°F



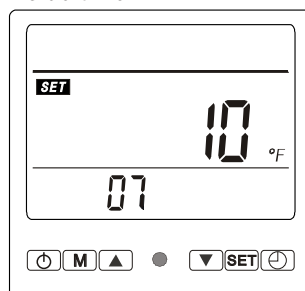
**Parameter 04**  
Room temperature setting  
Alternative range: 50°F to 113°F.  
Default: 77°F



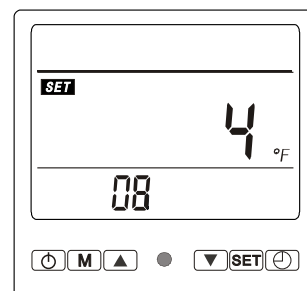
**Parameter 05**  
Domestic hot water temp. difference between the unit stop heating and restart heating  
Alternative range: 2°F to 30°F.  
Default: 10°F



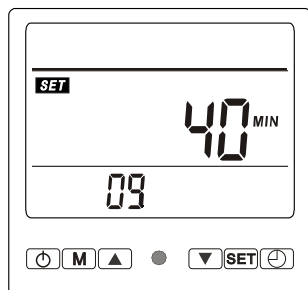
**Parameter 06**  
Cooling return water temp. difference between the unit stop heating and restart heating  
Alternative range: 2°F to 30°F.  
Default: 10°F



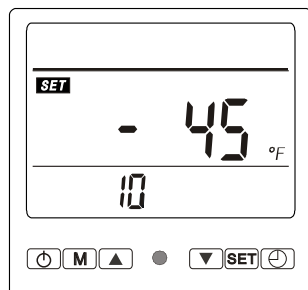
**Parameter 07**  
Heating return water temp. difference between the unit stop heating and restart heating  
Alternative range: 2°F to 30°F.  
Default: 10°F



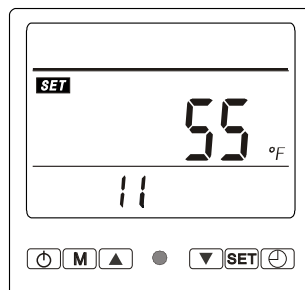
**Parameter 08**  
Room temp. difference between the unit stop heating and restart heating  
Alternative range: 2°F to 30°F.  
Default: 4°F



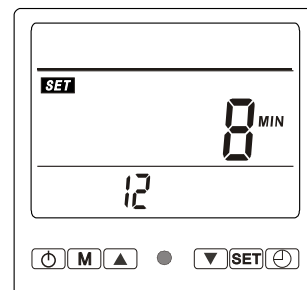
**Parameter 09**  
Heating defrost cycle  
Alternative range: 30minutes to 90minutes.  
Default: 40minutes



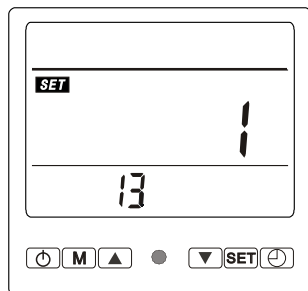
**Parameter 10**  
Into defrost temperature  
Alternative range: -86°F to 32°F  
Default: -45°F



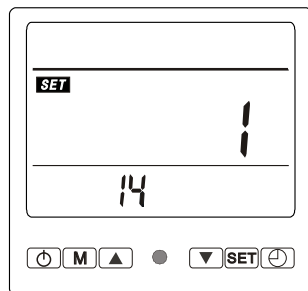
**Parameter 11**  
Exit defrost temperature.  
Alternative range: 36°F to 86°F.  
Default: 55°F



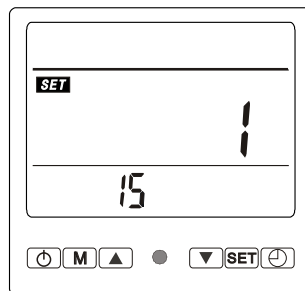
**Parameter 12**  
Exit defrost time condition  
Alternative range: 1 minutes to 12 minutes.  
Default: 8 minutes



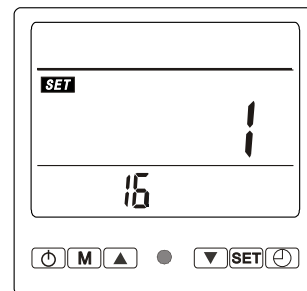
**Parameter 13**  
Single or double system selection.  
1 is single system,  
2 is double system  
Default: 1



**Parameter 14**  
Whether power-down memory  
1:with memory function  
2:without memory function  
Default: 1

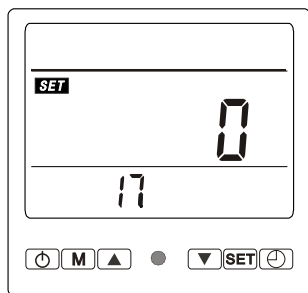


**Parameter 15**  
wire cotrol sensor or the "multi-room switch" Selection.  
1:wire control sensor  
0:multi-room switch  
Default: 1

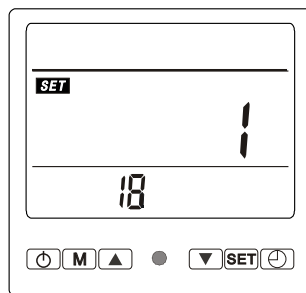


**Parameter 16**  
Whether turn on automatic electric heating function.  
0:Turn off  
1:Turn on  
Default: 1

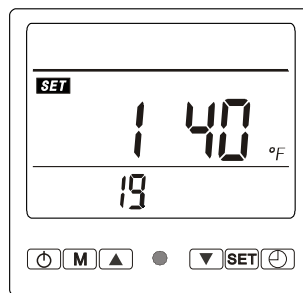
# Air To Water Heat Pump Water Heater



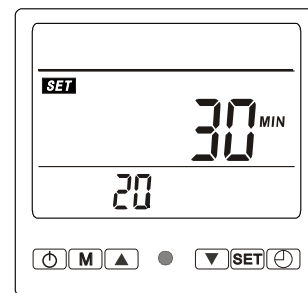
**Parameter 17**  
Domestic hot water priority, or heating and cooling priority  
0: Domestic hot water priority  
1: Air heating and air cooling priority  
Default: 0



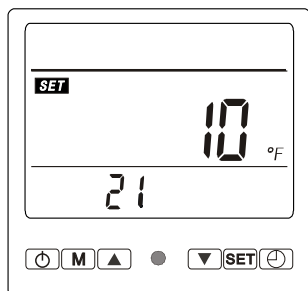
**Parameter 18**  
0: long time working for water pump  
1: water pump turns off after the whole unit power off for 30s  
Default: 1



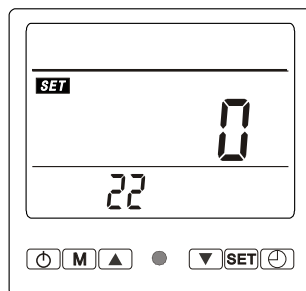
**Parameter 19**  
High-temperature disinfection per week setting,  
Alternative range: 140°F to 194°F  
Default: 140°F  
(The unit have canceled the high-temperature disinfection )



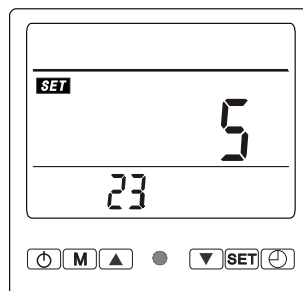
**Parameter 20**  
High-temperature disinfection maintain time,  
Alternative range: 10~90Min.  
Default: 30Min.



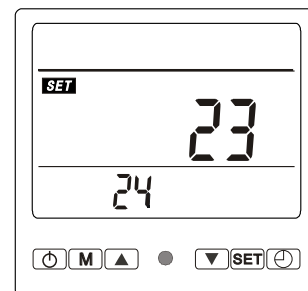
**Parameter 21**  
The room temp. difference setting between non-sleeping status mode and sleeping status mode  
Alternative range: -30°F to 30°F.  
Default: 10°F



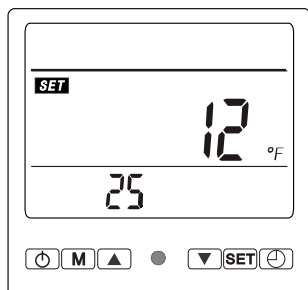
**Parameter 22**  
Whether turn on air cooling function model  
0: turn off  
1: turn on  
Default: 0



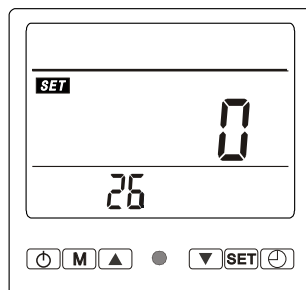
**Parameter 23**  
The start time of non-sleeping status mode.  
Default: 05:00



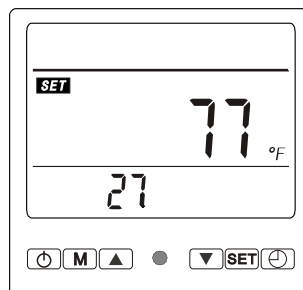
**Parameter 24**  
The end time of non-sleeping status mode.  
Default: 23:00



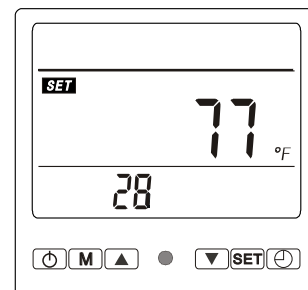
**Parameter 25**  
The temp. difference setting between solar temp. and water tank temp. for turn on the water pump  
Alternative range: 2°F to 40°F  
Default: 12°F



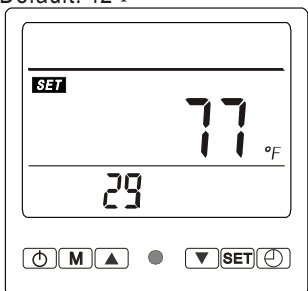
**Parameter 26**  
whether turn on the timing function  
0: Turn off  
1: Turn on  
Default: 0



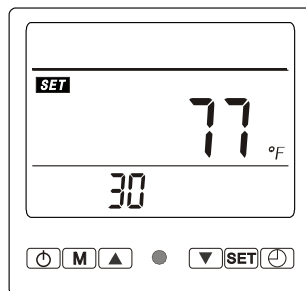
**Parameter 27**  
Domestic hot watertank temp.  
Actual testing value:  
Living hot watertank temperature



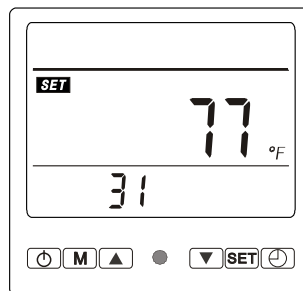
**Parameter 28**  
water return temp.  
Actual testing value:  
Unit inlet water temperature



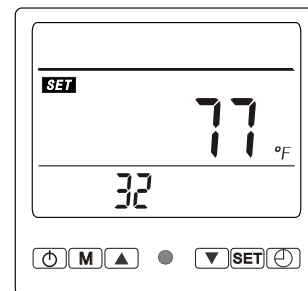
**Parameter 29**  
water outlet temp.  
Actual testing value:  
Unit outlet water temperature



**Parameter 30**  
Indoor environment temp.  
Actual testing value:  
Indoor environment temperature

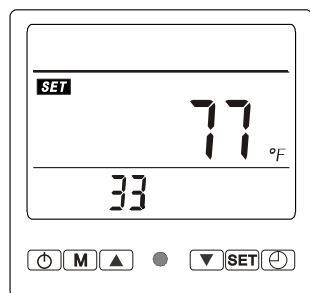


**Parameter 31**  
Out door environment temp.  
Actual testing value:  
Outdoor environment temperature

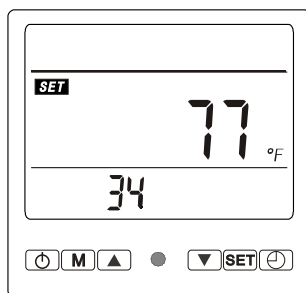


**Parameter 32**  
Pipe temp.1  
Actual testing value:  
pipe temperature (system 1)

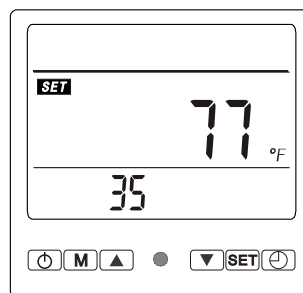
# Air To Water Heat Pump Water Heater



Parameter 33  
Pipe temp.2  
Actual testing value:  
pipe temperature (system2)



Parameter 34  
Exhaust 1 temp.  
Actual testing value:  
exhaust temperature (system1)



Parameter 35  
Exhaust 2 temp.  
Actual testing value:  
exhaust temperature (system2)

## Remark :

- 1) Parameter value 13: 1:single system, 2:double system
- 2) Parameter value 14: 0: without power-down memory, 1: with power-down memory
- 3) Parameter value 15: 0: uncontrolled by the wire controller' s temp. sensor function , 1: controlled by the wire controller' s temp. Sensor function
- 4) Parameter 16: 0: without electric heater auxiliary, 1: with electric hear auxiliary (efficient for the unit with electric heater auxiliary )
- 5) Water pump working way introductions for the parameter value 18: 0:starts 10 seconds before compressor, stops 30 seconds after compressor, 1:always open

## 3:Operation data setting

The unit's operation data can be set on the wire controller.

Please set according to the table below.

Parameter NO .	meaning	explanation of parameters
01	Domestic hot water tank temperature setting	This parameter fortank temp. can be set bythe up and down arrow buttons byuser under boot-state.
02	Air cooling return water temperature setting	This parameter forhot water inlettemp. can controlthe compres-sor ON/OFF whenworking the coolingmode.
03	Air heating return water temperature setting	This parameter for hot waterinlet temp. can control the compres-sor ON/OFF whenworking the heatingmode.
04	Room temperature setting	This parameter canset the roomtemp. and controlthe floor heating water pump ON/OFF by theup and down arrow keys on the wire controller .
05	Domestic hot water temp. difference between the unit stop heating and restart heating	This parameter isused for re-heatingthe water after thermostat stop heating and in hotwater mode bymeans of settinghow many temp. value ofthe hot water tank has been decreased .
06	Air cooling return water temp.difference between the unit stop heating and restart heating .	This parameter isused for re-coolingthe water after thermostat stop cooling and in coolingmode by means of setting how many temp. value ofthe inlet watertemp. has been rise.
07	Air heating return water temp.difference between the unit stop heating and restart heating .	This parameter forre-house heating after thermostat stop heat-ing and in heatingmode by means of setting how many temp. Value of the inletwater temp. has been decrease .
08	Room temp. difference between the unit stop heatingand restart heating .	This parameter forre-working floor heating/coolingwater pump after thermostat stop heating/coolingby means ofsetting how many temp. value of the roomtemp. has been decrease/rise .
09	Heating defrost cycle	Period setting forunit cycle defrost

## Air To Water Heat Pump Water Heater

10	Into defrost temperature setting.	The coil temperature setting for enter into defrost status
11	Exit defrost temperature setting.	The coil temperature setting for exit the defrost status.
12	Exit defrost time condition setting .	The maximum running time for defrost state.
13	Single or double system selection.	Setting for dual system selection.
14	Whether power-down memory .	This parameter is used for setting whether keep the original operation statuses after unit power off and restart.
15	Wire control sensor or the " multi-room switch" Selection.	This parameter is used for setting whether use the sensor on wire controller or use the multi-room switch to control the room temperature.
16	Whether turn on automatic electric heating function.	This parameter is used for setting whether turn on automatic electric heating mode. If ON, there's electric heating after the compressor running for 1 hour.
17	Domestic hot water priority, or heating and cooling priority .	This parameter is used for setting whether priority turn on the heating water mode or priority turn on the cooling water mode.
18	Room temp. difference between the unit stop heating and restart heating .	This parameter is cycle water pump operation setting. when in hot water mode, set it constant temperature closing is the best, when in cooling or heating mode, set it constant temperature starting is the best.
19	High-temperature disinfection per week setting .	The unit has canceled the high temp. sterilization function
20	High-temperature disinfection maintain time.	The unit has canceled the high temp. sterilization function
21	The room temp. difference setting between non-sleeping status mode and sleeping status mode .	The unit has canceled the high temp. sterilization function
22	Whether turn on air cooling function model .	This parameter is whether to open the cooling mode to the user. Press the 'mode' button to set it ON/OFF.
23	The start time of non-sleeping status mode .	This parameter is the start time setting for the non-sleep period.
24	The end time of non-sleeping status mode .	This parameter is the ending time setting for the non-sleep period.
25	The temp. difference setting between solar temp. and water tank temp. for turn on the water pump .	This parameter is the temperature difference setting between solar collector temp. and the water tank temp. , this setting is used for control the solar pump ON/OFF.
26	Whether turn on the timing function.	This parameter is the setting whether open the timing function to user for the user.

# Air To Water Heat Pump Water Heater

## IV、Maintenance and repair

**1.Malfunction Indicating Table. Determine and solve the malfunction by malfunction code as below:**

**1.1.operate display fault code mode:**

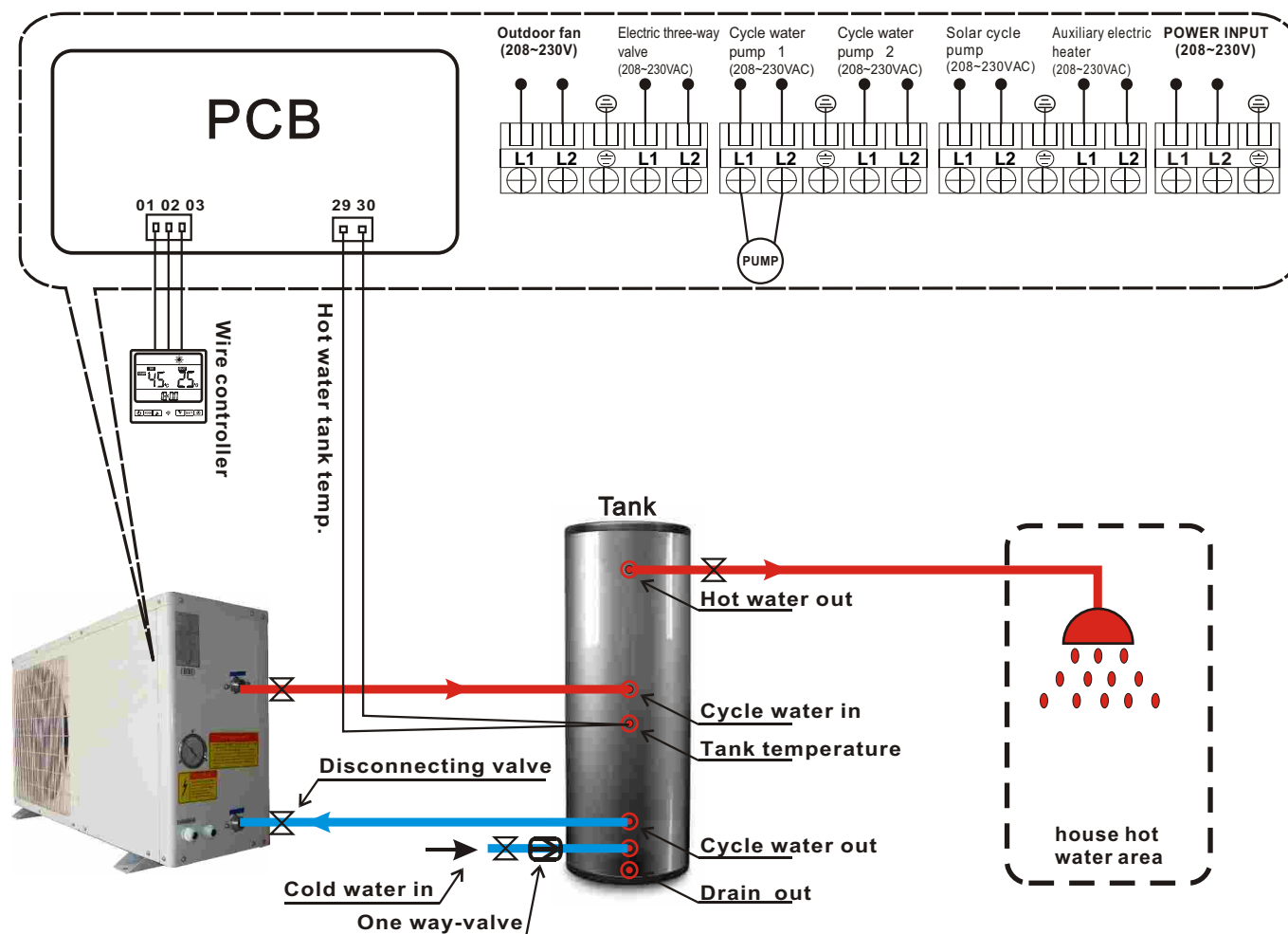
Wire Controller	Malfunction	Reason	Resolution
E01	Tank temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E02	Water inlet temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E03	Water outlet temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E04	System 1 pipe sensor failure	The sensor is open or short circuit	Check or change the sensor
E05	System 2 Pipe sensor failure	The sensor is open or short circuit	Check or change the sensor
E06	Outdoor environment temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E07	Indoor environment temp. Sensor failure	The sensor is open or short circuit	Check or change the sensor
E08	System 1 discharge sensor failure	The sensor is open or short circuit	Check or change the sensor
E09	System 2 discharge sensor failure	The sensor is open or short circuit	Check or change the sensor
E10	Communication failure	Wire controller and The PCB connection failure.	Check the wire connection
P01	Phase failure protection	Power supply phase failure /lacking	Check whether power supply phase failure or lacking, if failure, please connect it in according to the proper way.
P02	electric heater auxiliary overheating & dry heating protection	The protector open circuit or short circuit	Check the over heating switch normal or not
P03	Flow switch 1 protection	No water/little water in water system.	Check the water flow volume, water pump is failure or not.
P04	Flow switch 2 protection	No water/little water in water system.	Check the water flow volume, water pump is failure or not.
P05	system 1 high pressure protection	High pressure 1 switch protection	Check whether the pressure switch and system return route failure.
P06	system 1 low pressure protection	Low pressure 1 switch protection	Check whether the pressure switch and system return route failure.
P07	system 2 high pressure protection	High pressure 2 switch protection	Check whether the pressure switch and system return route failure.
P08	system 2 low pressure protection	Low pressure 2 switch protection	Check whether the pressure switch and system return route failure.
P09	3 times of excessive temp. differentials of inlet water and outlet water in 30minutes	Water flow volume not enough, water pressure difference is too low	Check the water flow volume, or water system is blocked or not.
P10	Frost-protection	when the outdoor temp. below 0℃ under standby model	after the antifreezing procedure ,unit will return to the original state automatically
P11	High discharge 1 temperature protection	1.whether gas of system leak or not 2.the tank temp. Be set too high	1 check the refrigerent amount in the system 2 check whether the tank temp. Setting value too high
P12	High discharge 2 temperature protection	1.whether gas of system leak or not 2.the tank temp. Be set too high	1 check the refrigerent amount in the system 2 check whether the tank temp. Setting value too high

# Air To Water Heat Pump Water Heater

## V、Installation sketch

### 1、The choice of installation ways

#### 1.1 the installation way for domestic hot water model



#### The parameter setting for domestic hot water model:

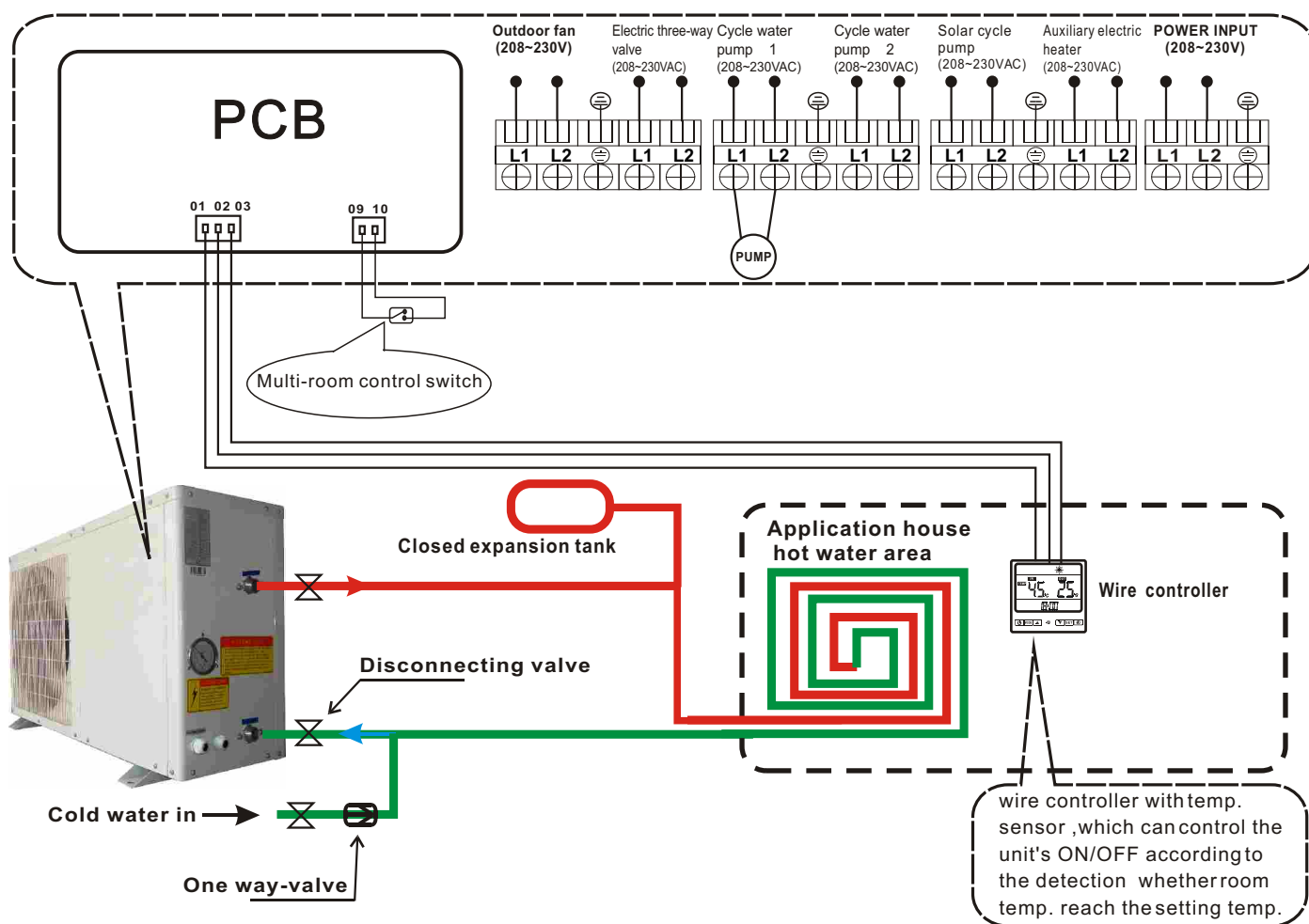
Digit	Meaning	Range	Default	Parameter setting for domestic water mode
01	Domestic hot water tank temperature setting	50°F~140°F	131°F	Adjustable
05	Domestic hot water return temperature	2°F~30°F	10°F	Adjustable
18	Circulating water pump works option	0/1	1	0

Remark :

- 1) In the working state, press the “ ▲ ▼ ” buttons can set up the parameters 1 , at this time you can adjust the setpoint of the water tank temperature, press the “ ⏻ ” buttons, exit the setting interface.
- 2) Circulating water pump working way introductions for the parameter value 18:
  - 0: starts 10 seconds before compressor
  - stops 30 seconds after compressor:
  - 1: always open
- 3) The port of “ 29 30 ” on PCB should connect to the water tank to detect the tank temp.

# Air To Water Heat Pump Water Heater

## 1.2、 the installation way for Air heating model {floor heating model ( one room )}



The parameter setting for floor heating model: (wire controller can control the room temp.)

Digit	Meaning	Range	Default	Parameter setting for Air heating (floor heating) model
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust (>digit 04)
04	Room temperature setting	59°F~113°F	77°F	Adjust
07	Start Heating difference temperature	2°F~30°F	10°F	Adjust
08	Difference setting back to room temperature	2°F~30°F	4°F	Adjust
15	Wire cotrol sensor or the" multi-room switch" Selection.	0/1	1	1
18	Circulating water pump works option	0/1	1	1

Remark :

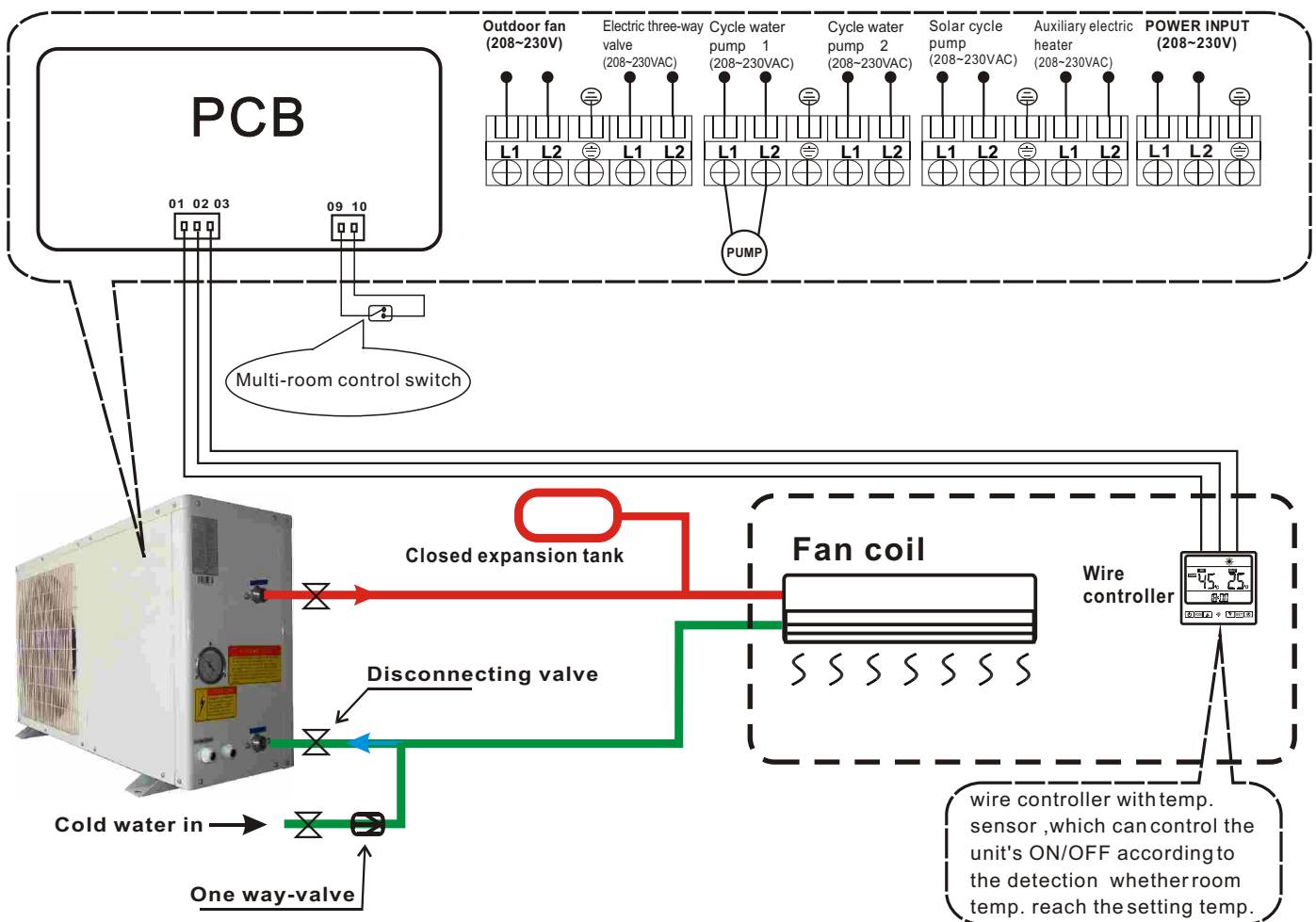
- Parameters 03:the setpoint for heating return watertemperature. This parameter control unitboot or shutdown, note: this parameterrequired bigger than parameters 04 :the setponit for room temperature.
- Control the temp. differece of the room temp. and setting temp. by thesetting of parameter08 and parameter04 .
- In theworking state, press the “▲ ▼” buttons can setup the parameters3 , at this time you can adjust the setpoint of the heating return water temperature,press the “SET” buttons switch and set up the setpoint for parameter4,press the “⏻” buttons,exit the setting interface.
- Water pump working wayintroductions for the parameter value 18:  
0:starts 10 secondsbefore compressor, stops 30 secondsafter compressor:  
1:always open
- the parametervalue 15 . control introductions :  
This parameter is used for settingwhether use thesensor on wire controller or use the multi-room switch to control the room temp-erature.

NOTE:

When parameter 15set be '0', the roomhouse heating/cooling's temp. difference control function is conntroled by this switch, and when it'sclose, the unitwill be cooling/heating.

# Air To Water Heat Pump Water Heater

## 1.3、the installation way for air condition (cooling /heating )model ( one room )



### Parameter setting for air condition (cooling /heating )model ( wire controller can control the room temp ) :

Digit	Meaning	Range	Default	Parameter setting for air condition (cooling /heating )model
02	Air cooling return water temperature setting	46°F~82°F	54°F	Adjust ( <Digit 4( Room temperature setting ) )
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust ( >Digit 4Room temperature setting)
04	Room temperature setting	50°F~113°F	77°F	Adjust
06	Cooling return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
07	Heating return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
08	Room temp. difference between the unit stop heating and restart heating .	2°F~30°F	4°F	Adjust
15	room temperature control option	0/1	1	1
18	Circulating water pump works option	0/1	1	1
22	Whether turn on air cooling function model	0/1	1	1

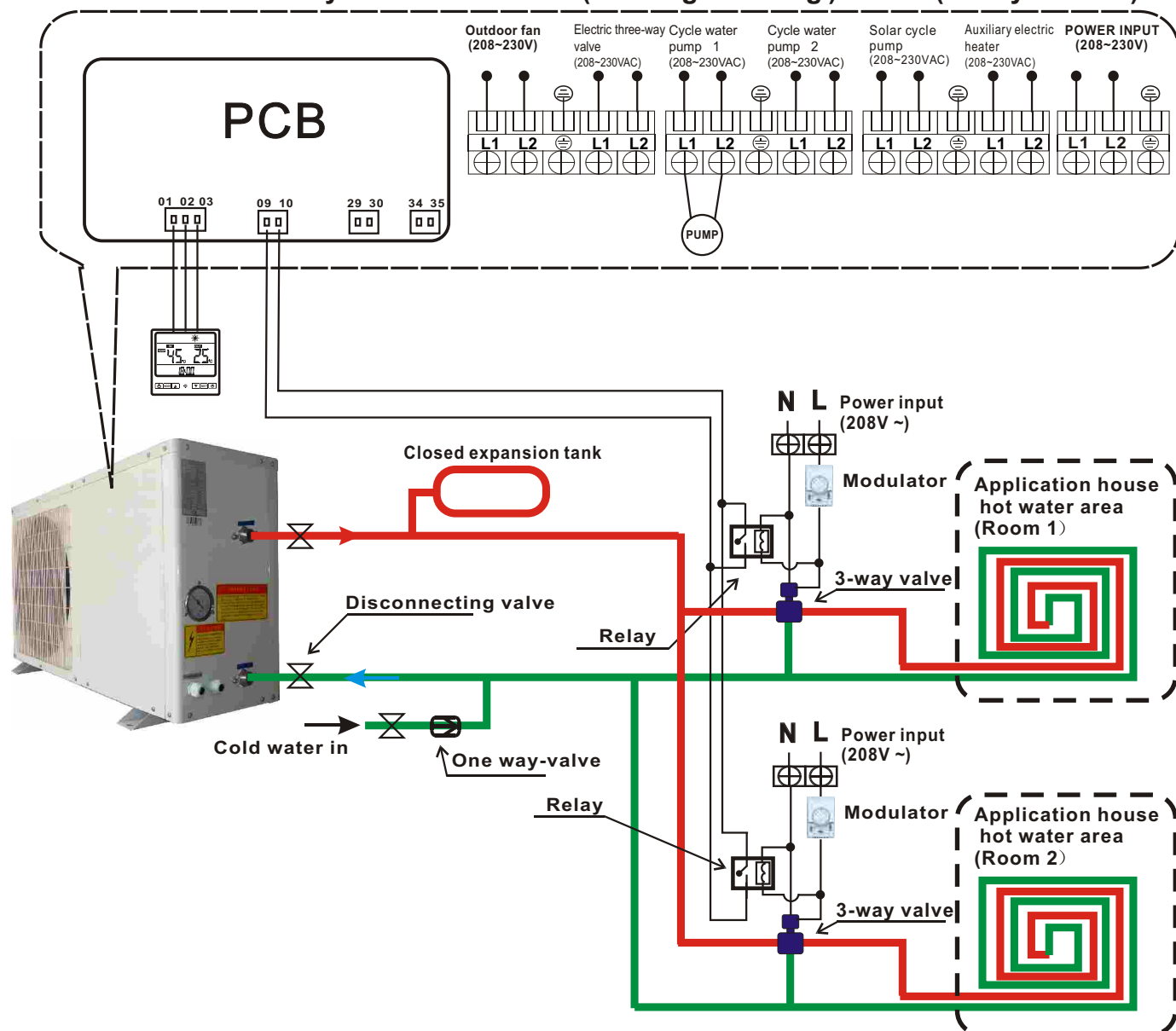
Remark :

- the parameter value 22 setting introduction  
1:open the cooling mode to the user .Press the 'mode' button to set it ON/OFF.
- Water pump working way introductions for the parameter value 18:  
0:starts 10 seconds before compressor  
stops 30 seconds after compressor:  
1:always open

- the parameter value 15 ,Room temp. control introductions :  
0 : uncontrolled by the wire controller ' s temp. Sensing (unit will controlled by return water temp.)  
1: controlled by the wire controller ' s temp. Sensing(the wire controller should install in the using scope to sensing the temp. )

# Air To Water Heat Pump Water Heater

## 1.4、 the installation way for air condition (cooling /heating )model ( many rooms )

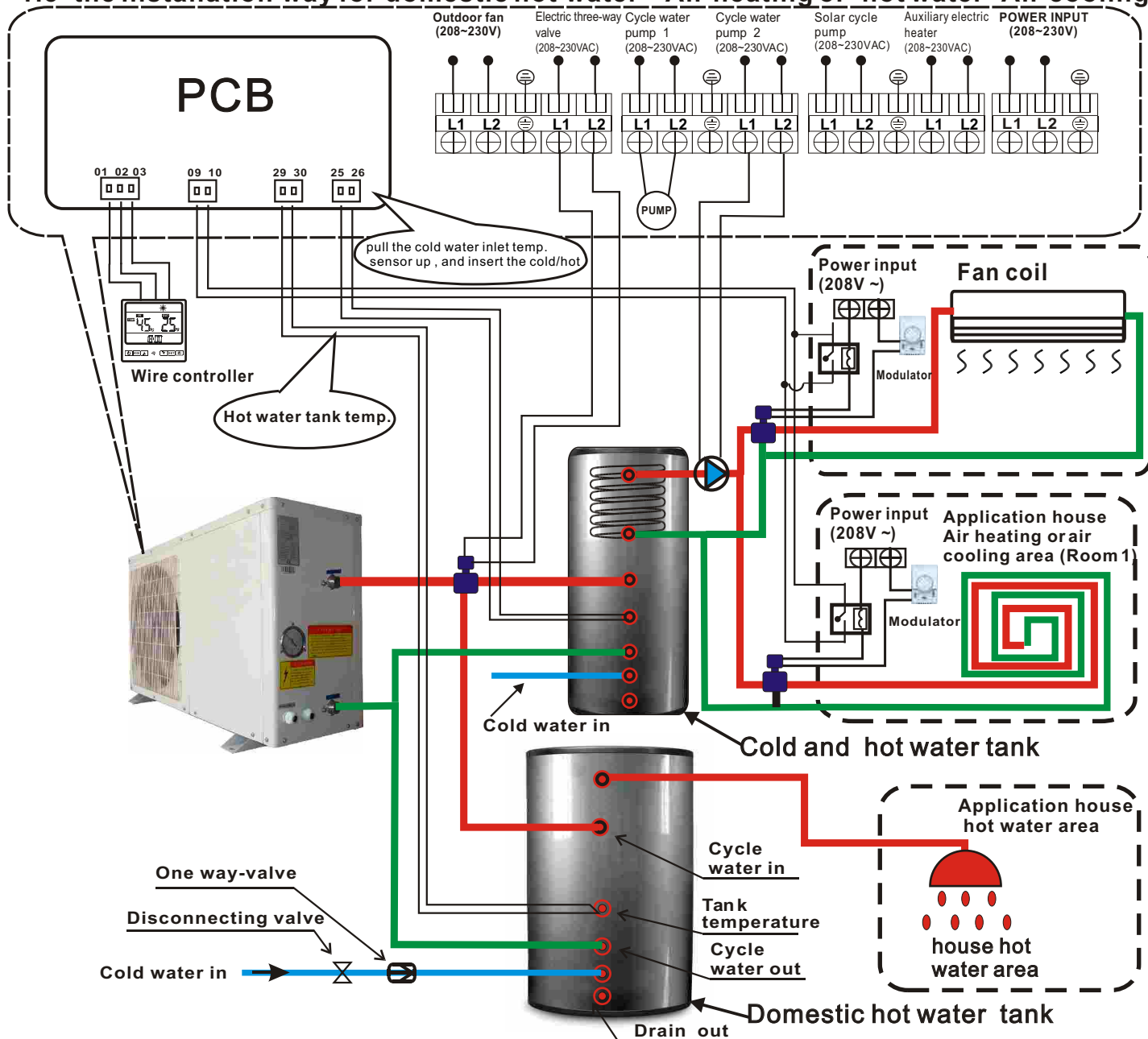


Parameter setting for air condition (cooling /heating )model ,  
(uncontrolled by the wire controller 's room temp. control function )

Digit	Meaning	Range	Default	Parameter setting for air condition (cooling /heating )model
02	Air cooling return water temperature setting	46°F~82°F	54°F	Adjust ( <Digit 4( Room temperature setting) )
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust ( >Digit 4Room temperature setting)
06	Cooling return water temp.difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
07	Heating return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
08	Room temp. difference between the unit stop heating and restart heating .	2°F~30°F	4°F	Adjust
15	room temperature control option	0/1	0	0
18	Circulating water pump works option	0/1	1	1
22	Whether turn on air cooling function model	0/1	1	1

# Air To Water Heat Pump Water Heater

## 1.5 the installation way for domestic hot water + Air heating or hot water+Air cooling

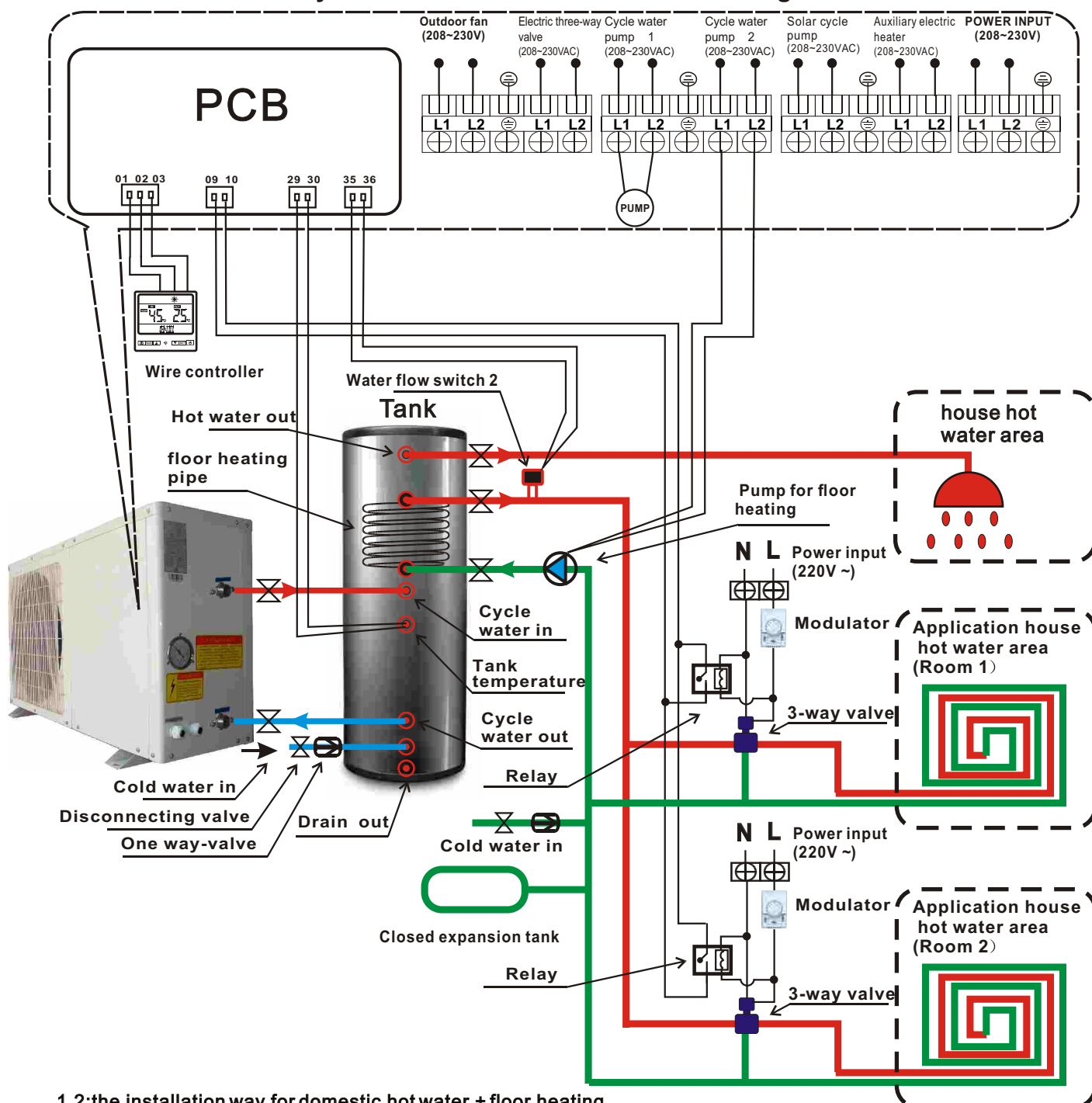


1.1:the installation way for domestic hot water + floor heating

Digit	Meaning	Range	Default	Parameter setting for domestic water mode
01	Domestic hot water tank temperature setting	50°F~140°F	131°F	Adjustable
02	Air cooling return water temperature setting	46°F~82°F	54°F	Adjust ( < Digit 4 (Room temperature setting) )
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust ( > Digit 4 Room temperature setting )
05	Domestic hot water return temperature	2°F~30°F	10°F	Adjustable
06	Cooling return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
07	Heating return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
08	Room temp. difference between the unit stop heating and restart heating .	2°F~30°F	4°F	Adjust
15	room temperature control option	0/1	0	0
18	Circulating water pump works option	0/1	1	1
22	Whether turn on air cooling function model	0/1	1	1

# Air To Water Heat Pump Water Heater

## 1.6、the installation way for domestic hot water + Air heating



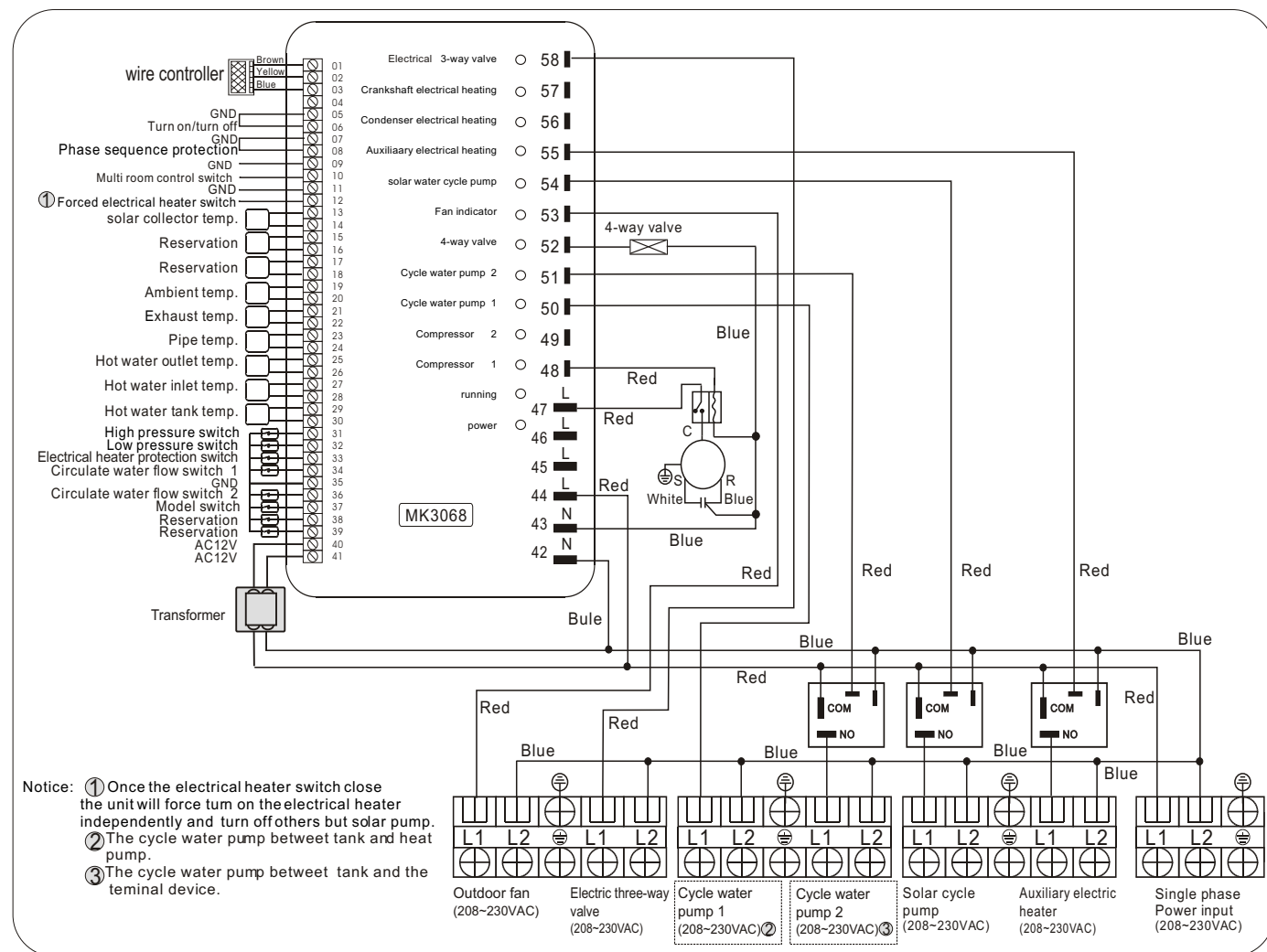
1.2:the installation way for domestic hot water + floor heating

Digit	Meaning	Range	Default	Parameter setting for domestic water mode
01	Domestic hot water tank temperature setting	50°F~140°F	131°F	Adjustable
03	Air heating return water temperature setting	59°F~140°F	104°F	Adjust (>Digit 4Room temperature setting)
05	Domestic hot water return temperature	2°F~30°F	10°F	Adjustable
07	Heating return water temp. difference between the unit stop heating and restart heating .	2°F~30°F	10°F	Adjust
08	Room temp. difference between the unit stop heating and restart heating .	2°F~30°F	4°F	Adjust
15	room temperature control option	0/1	0	0
18	Circulating water pump works option	0/1	1	1
22	Whether turn on air cooling function model	0/1	1	1

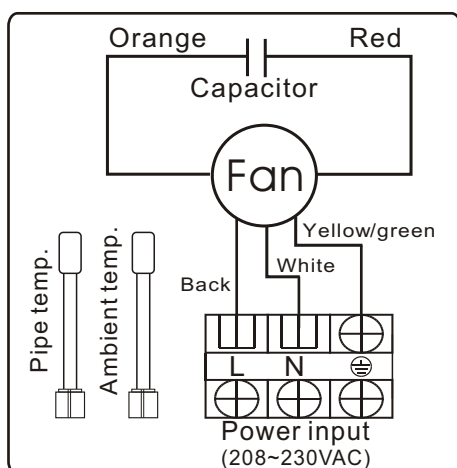
# Air To Water Heat Pump Water Heater

## VI、Appendix

### 1. Indoor unit wiring diagram PCB mode:MK3068



### 2. Outdoor unit wiring diagram





**MK3068/MK3069**

# **AIR TO WATER HEAT PUMP WATER HEATER**

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