



**THERMOTECHNIKA  
CROWN COOL**

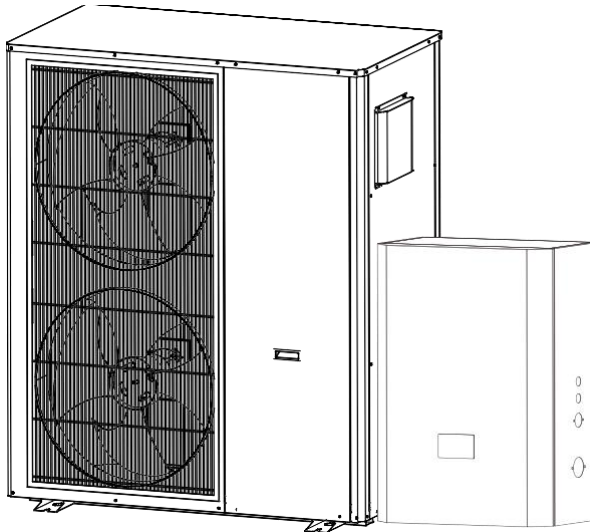


# **DC INVERTER Heat Pump**

## **Installation Manual&User Manual**

### **Air to Water Heat Pump**

### **Heating+Cooling+DHW**



Attention

Thank you for choosing our product, we shall be more than glad to service you. For you to better operate this product and to prevent accidents due to misoperation, please read carefully this user manual before carrying out any installation or operation, also please pay special attention to the warning, prohibition and attention instructions. We are continuously supplementing and upgrading this user manual to better service for you!

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# Part 1. Before Use

## 1. Attentions



**Warning**



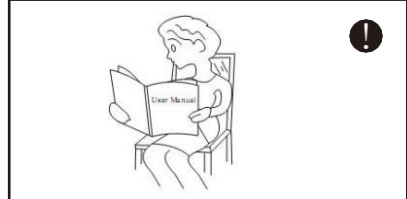
**Caution**



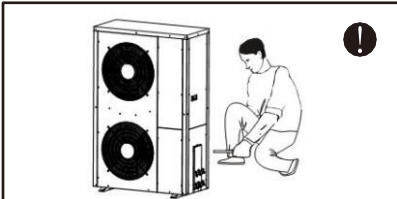
**Prohibition**



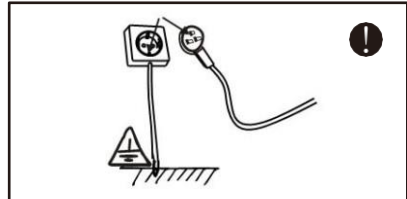
This appliance is not intended for use by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.



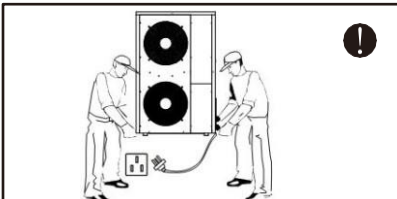
Be sure to read this manual before use.



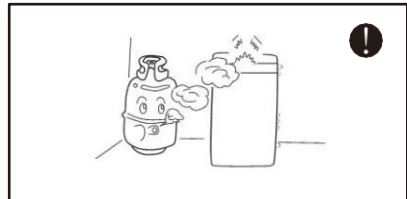
Be sure to read this manual before use. The installation, dismantling and maintenance of the unit must be performed by qualified personnel. It is forbidden to do any changes to the structure of the unit. Otherwise injury of person or unit damage might happen.



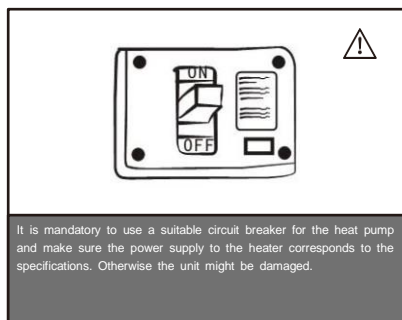
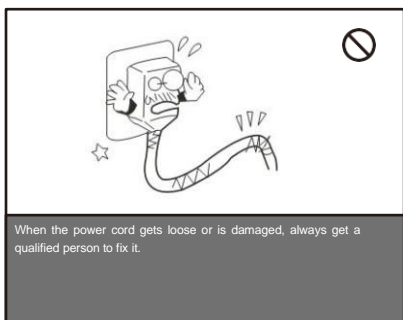
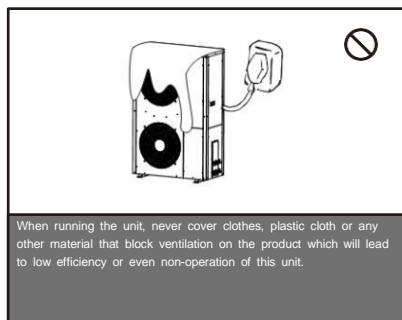
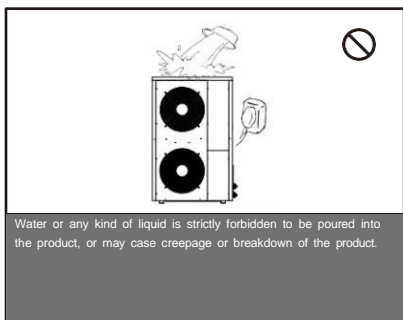
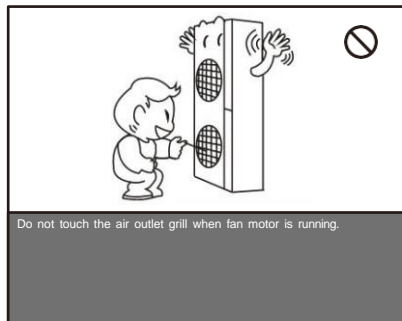
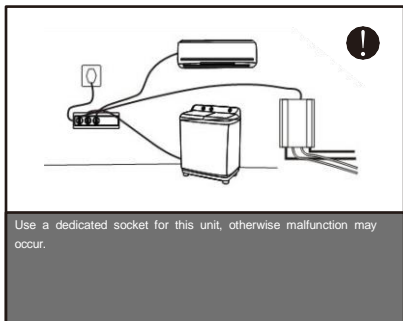
The power supply to the unit must be grounded.



Make sure the power supply to the heat pump unit is off before any operations are done on the unit. When the power cord gets looser or is damaged, always get a qualified person to fix it.



Keep the unit away from the combustible or corrosive environment.



# Safety precaution

## 2. Installation instructions

1. Installation should comply with local regulations and requirements.
2. Choose a suitable space for use (please refer to indoor/outdoor unit location selection).  
The cooling capacity/heating capacity of the heat pump should be compatible with the size, height, and heat insulation effect of the room.
3. Before installation, be sure to confirm the neutral line, L, N, A phase, B phase, C phase, ground line of the user power supply and the neutral line of the heat pump, L, N, A phase, B phase, C phase, ground One correspondence.
4. This heat pump complies with the safety and operation standards issued by the country.
5. When the heat pump needs to be installed or moved. It must be operated by professional refrigeration installation and maintenance personnel. Heat pumps installed by non-professionals are prone to quality or safety problems.
6. The user should provide a power supply that satisfies the installation and use. The allowable range of voltage that can be used by this product is  $\pm 10\%$  of the rated value. If this range is exceeded, it will affect the normal operation of the heat pump. If necessary, use a voltage stabilizer to avoid property damage.
7. The heat pump must have an independent circuit. The independent circuit needs to install a leakage protector and an automatic circuit breaker. Need to be purchased by the user.
8. The heat pump should be installed in accordance with the national wiring regulations.
9. The heat pump must be grounded correctly and reliably, otherwise it may cause electric shock or fire
10. Please do not turn on the power of the heat pump until the piping and wires are connected and carefully checked.

## 3. R290 refrigerant introduction

The heat pump uses environmentally friendly R290 refrigerant. This is a slightly flammable refrigerant. Although it can burn and explode under certain conditions, as long as it is installed in a room of the correct area and used correctly, there will be no danger of combustion and explosion. Compared with ordinary refrigerants, R290 is an environmentally friendly refrigerant that does not destroy the ozone layer, and its greenhouse effect value is also very low.

### R290 heat pump room area requirements

The area of the heat pump installation, operation and storage room should be larger than 4 square meters.

# Safety precaution

## Warning

1. Please read this manual before installation, operate and maintenance.
2. Except as specifically recommended by the manufacturer, pls do not use any method to speed up the defrosting process or clean the frosted part.
3. Pls do not puncture or ignite the heat pump.
4. The heat pump should be stored in a room without a continuous fire source (such as gas appliances ignited by an open flame, electric heaters, etc.).
5. When repairs are required, please contact the nearest after-sales service center. When repairing, you must strictly abide by the operation manual provided by the manufacturer, and it is forbidden to repair by non-professionals.
6. Pls comply with the relevant national gas laws and regulations.
7. The refrigerant in the system needs to be recovered and removed during maintenance or disposal.



R290 refrigerant



Read the manual  
before use

## Repair of sealing elements

When repairing closed components, disconnect the power supply to the equipment before opening the sealed cover. If power supply is necessary during the maintenance process, continuous leak detection should be performed on the most dangerous parts to prevent potentially dangerous situations from happening.

In the following maintenance of electrical components, special care should be taken not to affect the protection level of the enclosure. Improper maintenance methods may cause: damage to cables, excessive connections, terminals not installed according to the original regulations, damage to the seal, incorrect installation of the sealing cover and other dangers. Ensure that the installation of the equipment is safe and reliable. Ensure that the sealing or sealing material will not lose its function of preventing the entry of flammable gas due to aging. Replacement parts should meet the manufacturer's specifications.

**Note:** The use of silicon-containing sealants may reduce the detection capabilities of leak detection equipment. Intrinsically safe components do not need to be isolated before operation.

# Safety precaution

## Maintenance of intrinsically safe components

If it is not possible to ensure that the heat pump does not exceed the allowable voltage and current limits during use, do not use any permanent inductive or capacitive load in the circuit. Intrinsically safe components are the only components that can continue to work in flammable gases. The test instrument should be set in the correct gear.

The replacement components can be only used the parts specified by the manufacturer, other parts may cause the refrigerant leaking in the air to catch fire.

## Cable

Check whether the cable will be affected by wear, corrosion, overpressure, vibration, sharp edges or other adverse environments. The inspection should also consider the influence of aging or continuous vibration of the compressor and fan on the cable.

## Leak inspection of R290 refrigerant

Check for refrigerant leakage should be done in an environment where there is no potential ignition source. Halogen probes (or any other detectors that use open flames) should not be used for detection

## Leak detection method

For systems containing R290 refrigerant, an electronic leak detector can be used for testing. The test should be calibrated in a refrigerant-free environment to ensure that the leak detector does not become a potential source of ignition and is suitable for the refrigerant being tested. The leak detector should be set to the lowest flammable concentration of the refrigerant (expressed as a percentage), calibrated with the refrigerant used and adjusted to the appropriate gas concentration test range (up to 25%).

The fluid used to detect leaks is suitable for most refrigerants, but do not use chlorine-containing solvents to prevent chlorine and refrigerants from reacting and corroding copper pipes.

If a leak is suspected, all open flames should be removed from the scene or the fire should be extinguished.

If welding is required at the location where the leakage occurs, all refrigerants should be recovered, or all refrigerants should be isolated away from the leakage point (use shut-off valves). Oxygen-free nitrogen (OFN) is used to purify the entire system before and during welding.

# Safety precaution

## Remove and vacuum

1. Maintenance or other operations on the refrigeration circuit should be performed in accordance with normal procedures. However, the safety should also be considered, and the following procedures should be followed:
  1. Remove refrigerant;
  2. Purify the pipeline with inert gas;
  3. Vacuum;
  4. Purify the pipeline with inert gas again;
  5. Cut the pipe or weld it.
6. The refrigerant should be recycled into a suitable storage tank. The system should be purged with oxygen-free nitrogen . This process may need to be repeated several times. Do not use compressed air or oxygen for this operation.
7. In the purging process, the system is filled with oxygen-free nitrogen to reach the working pressure under the vacuum state of the system, and then the oxygen-free nitrogen is discharged into the atmosphere, and finally the system is evacuated. Repeat this process until all refrigerant in the system is removed. After filling the oxygen-free nitrogen for the last time, exhaust the gas to atmospheric pressure, and then the system can be welded. The above operations are necessary for pipeline welding operations.
8. Ensure that there is no ignition source near the outlet of the vacuum pump and good ventilation.

Maintenance or other operations on the refrigeration circuit should be performed in accordance with normal procedures. However, the safety should also be considered, and the following procedures should be followed:

## Procedure of refrigerant filling

As a supplement for the conventional procedures, the following requirements have been added:

1. Ensure that when using equipment of refrigerant filling, there will not be the mutual contamination between different refrigerants. The pipeline of refrigerant filling should be as short as possible to reduce the residual amount of refrigerant;
2. When filling refrigerant, there should be without the fire source near the unit;
3. Make sure that the refrigerant system has taken grounding measures before charging the refrigerant;
4. After filling refrigerant (or not finished), stick the label on the system;
5. Must be careful not excessive filling; Perform a pressure test with oxygen-free nitrogen before refilling refrigerant into the system. After filling, a leak test must be carried out before the trial operation. The leak test must be carried out again when leaving the area.



# Safety precaution

## Scrapping

Before proceeding with this procedure, the technician should be fully familiar with the equipment and all of its characteristics. It is recommended to recover safe refrigerant. If it is necessary to re-use the recovered refrigerant, samples of refrigerant and oil should be analyzed before operation.

1. Before testing, please ensure that you have got the required power source. Being familiar with the equipment and its operation;
2. Disconnecting the power supply;
3. Before proceeding with this procedure making sure that:

If necessary, the equipment of mechanical operation should be convenient to operate the refrigerant storage tank;

All personal protective equipment are effective and can be used correctly;

The entire recycling process should be carried out under the guidance of qualified persons; Recycling equipment and refrigerant storage tanks should meet the corresponding standards.

## Maintenance safety matters

### Warning

For repairs or scrapping, please contact the nearest or authorized service center.

Repairs performed by unqualified personnel may be dangerous.

When charging the heat pump with R290 refrigerant and maintaining it, please strictly observe the manufacturer's requirements. This chapter mainly focuses on the special maintenance requirements of R290 refrigeration appliances. Please refer to the after-sales service manual for detailed maintenance operations.

### Qualification requirements for maintenance personnel

1. All operating personnel or refrigeration circuit maintenance personnel should obtain a valid certificate issued by an industry-recognized evaluation agency to determine that they have the qualifications for safe handling of refrigerants as required by the industry-recognized evaluation specifications.
2. The maintenance and repair of the equipment can only be carried out in accordance with the method recommended by the equipment manufacturer. If other professionals are required to assist in maintaining and repairing the equipment, it should be carried out under the supervision of personnel qualified to use flammable refrigerants.

### Site inspection

Before repairing heat pumps using R290 refrigerant, safety inspections must be carried out to ensure that the risk of fire is minimized. When servicing the refrigeration system, the following precautions should be observed before handling the system.

# Safety precaution

## **Operational procedure**

Operations should be carried out under a controlled procedure to ensure that the risk from combustible gases or vapors is minimal during operations.

General operating area All maintenance people and other people in the operation area should be aware of the character of the operation being performed. Avoid working in confined Spaces. Work areas should be properly isolated to ensure safe working conditions within the work area by controlling combustible materials.

## **Check whether the refrigerant is present**

Refrigerant monitors are necessary to be used in the area before and during operations to ensure that technicians are aware of the presence of potentially combustible gases. Ensure that the leak detection equipment used is suitable for R290 refrigerants, such as sparkless, fully sealed, or intrinsically safe.

### Placement of fire extinguishers

The applicable fire extinguisher should be located close to the cooling system or related components during hot working operations. The refrigerant injection area should be equipped with dry powder or carbon dioxide fire extinguisher.

## **No fire**

Any fire sources should not be used when performing work related to exposed pipes that hold or have held R290 refrigerant which may cause a fire or explosion hazard. All sources of fire,

including smoking, should be kept away from the area of installation, repair, removal and disposal of combustible refrigerants that may release into the surrounding environment. Before starting operations, check the environment around the equipment to ensure that there is no danger of flammability or fire. There should be a "no smoking" sign.

## **Ventilated area**

Ensure that the work area is open or fully ventilated before opening the system or performing thermal processing operations. Keep ventilation during operation. Ventilation will safely dilute the leaked refrigerant and quickly discharge it into the atmosphere.

## **Inspection of refrigeration equipment**

If the electrical components are replaced, these electrical components should be installed in accordance with the purpose of use and correct operation regulations. At all times, you should follow the manufacturer's maintenance and repair guidelines. If you have any questions, please consult the manufacturer's technical department. For installations using R290 refrigerant heat pumps, the following inspection items apply:

# Safety precaution

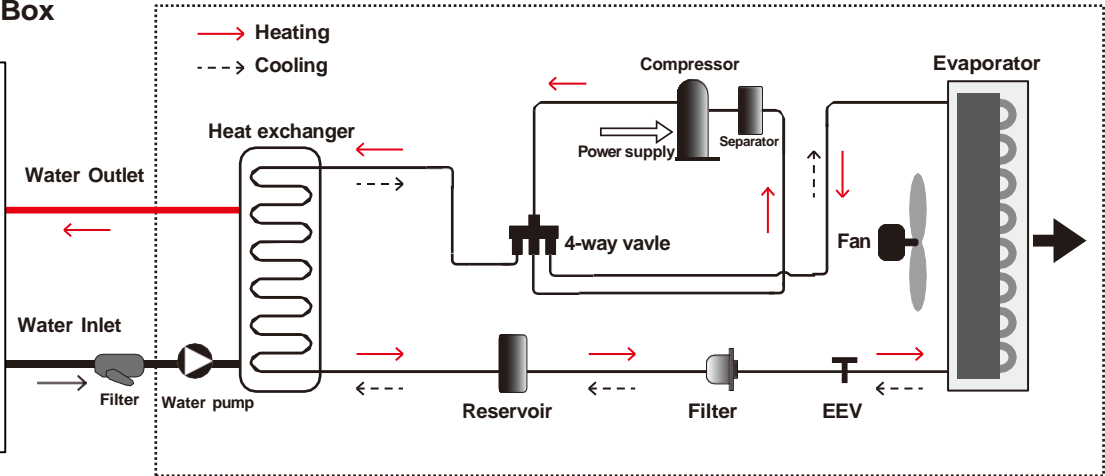
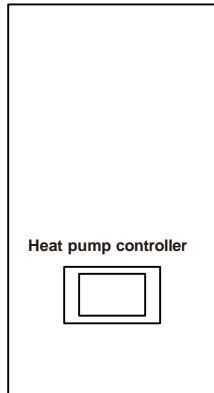
1. The filling amount should be determined according to the marked amount on the heat pump's rating plate.
2. The ventilation equipment should operate normally, and the vents should be unobstructed.
3. If an indirect refrigeration cycle is used, please check whether there is refrigerant in the secondary circuit.
4. The logo or marking on the heat pump should be clearly visible, and the ambiguous signs and symbols should be corrected;
5. Refrigeration piping or electrical components should not be installed in an environment that contains components that may be corrosive to contact the refrigerant, unless the electrical components themselves are made of anti-corrosion materials or take appropriate anti-corrosion measures.



- a. To avoid electrical shock, make sure to disconnect power supply 1 minute or more before operating the electrical part. Even after 1 minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and, before touching, make sure that those voltages are lower than the safety voltage.
- b. Power supply wire line size must be selected according to this manual. And must be grounded.
- c. Don't put in hands or stick to air outlet grill when fan motor are working.
- d. Don't use wet hand touch wire lines, and don't pull any wire lines of the unit.
- e. Water or any other kind liquid is forbidden to poured into the unit.
- f. Select correct air breaker and leakage protection switch.
- g. Don't touch the fin of source side heat exchanger, it may hurt your finger.
- h. If any wire line is loose or damaged, suggest let qualified person to fix i

# 4. Functioning Principles

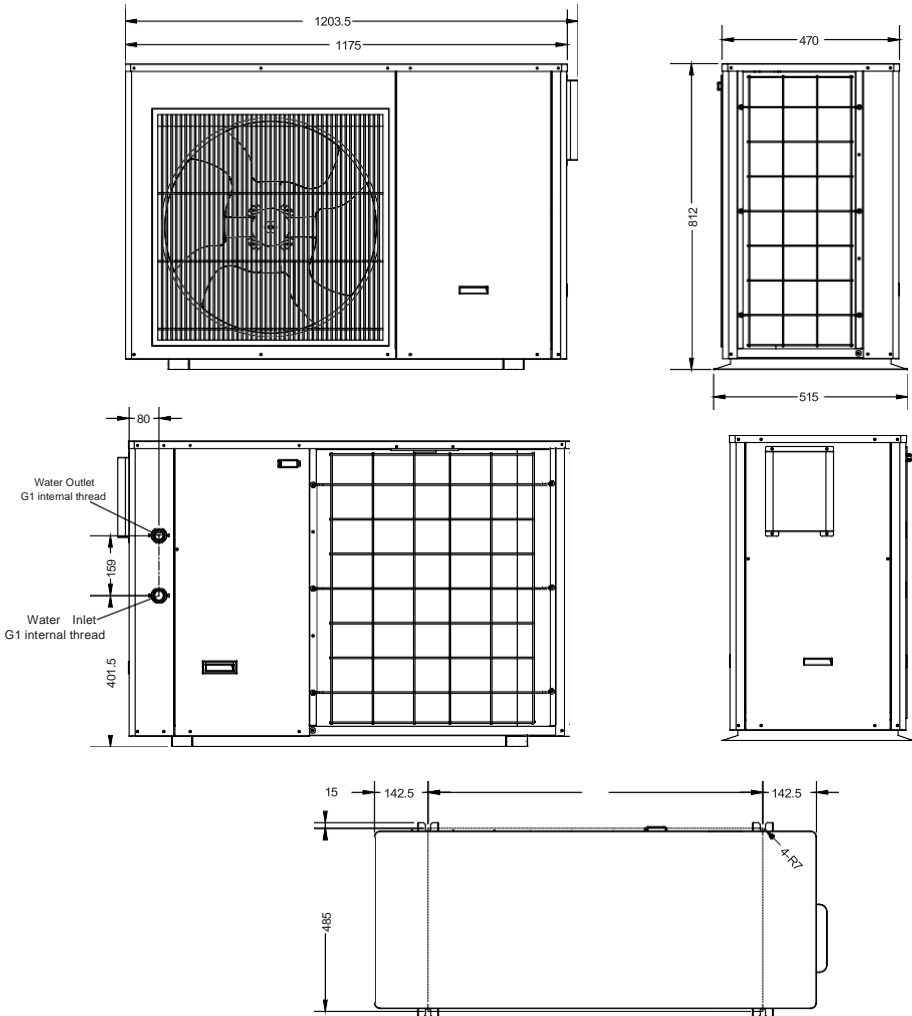
## Indoor Hydronic Box



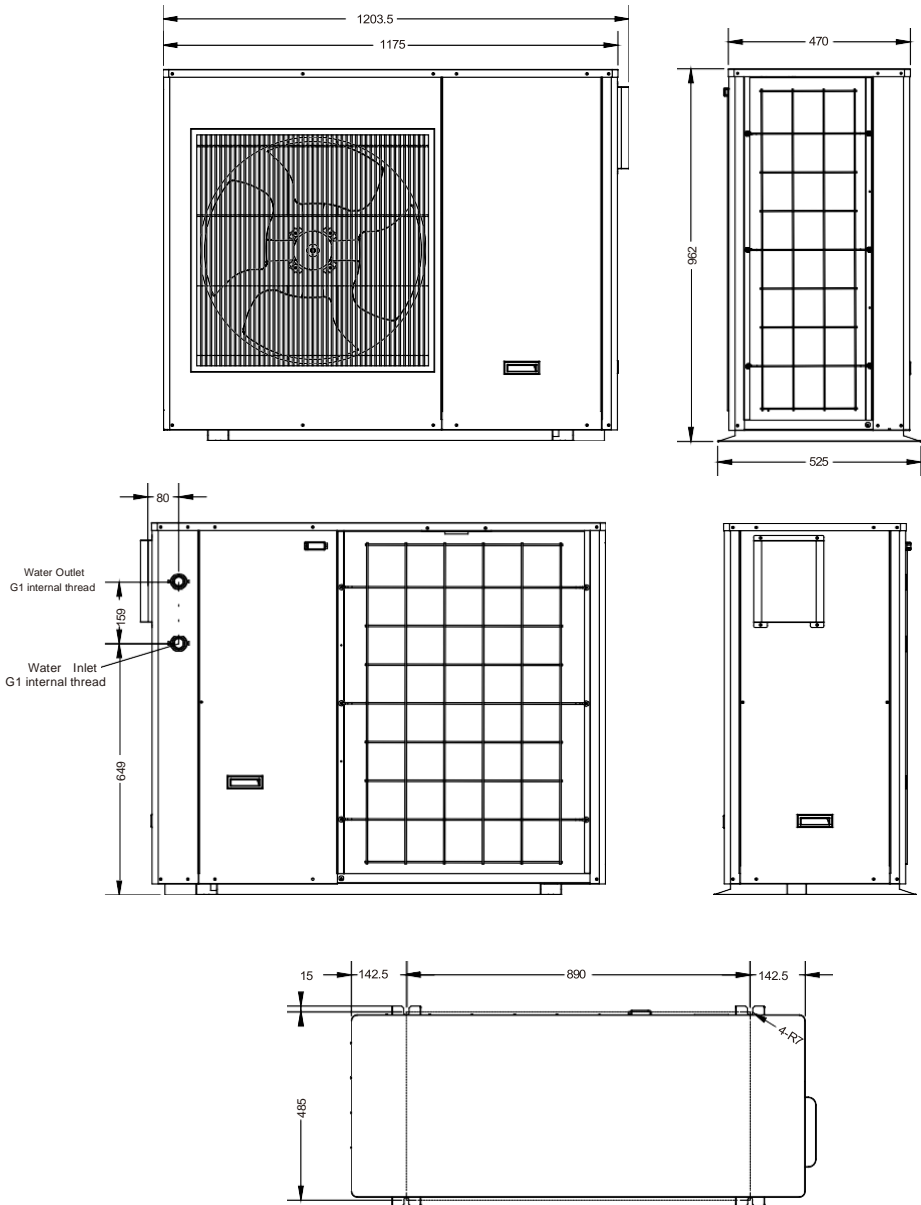
## 5. Emergency switch installation location instructions:

According to the following model diagram, each model has two recommended installation positions. in the recommended box area can be drilled and screwed, the drilling bit or the screwed projection should not exceed 30mm in depth when drilling.

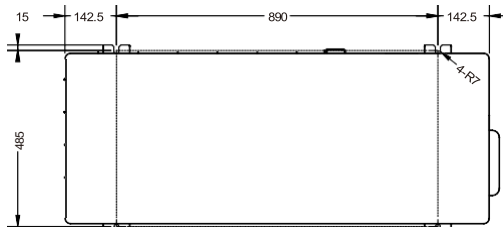
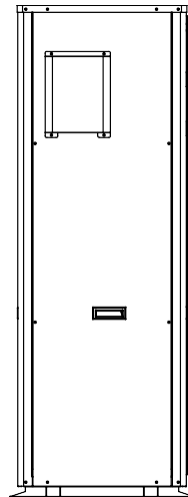
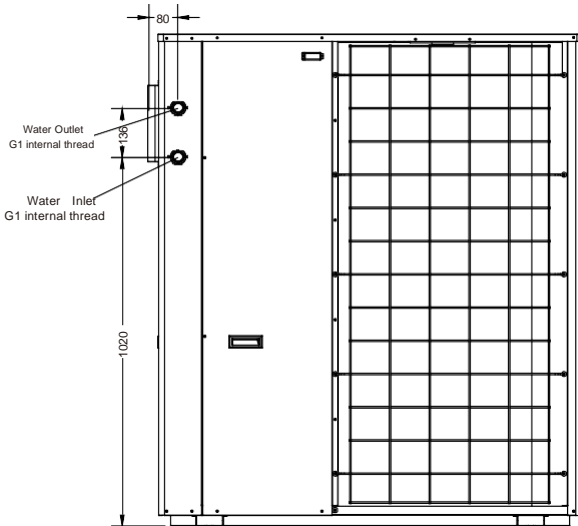
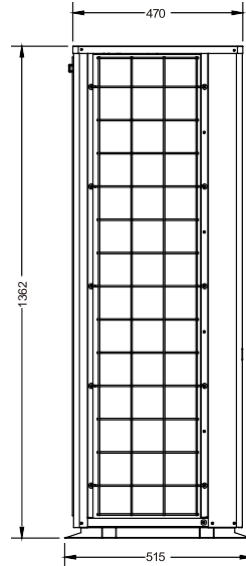
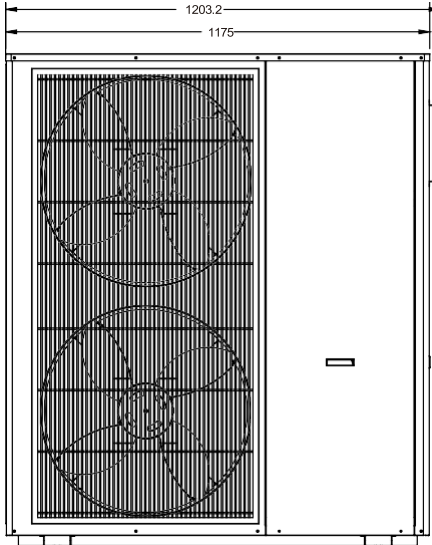
### 9.5kw-12kw



# 15kw



22kw



## Outdoor unit

Model	Power Supply	Size(L*W*H mm)	Net Weight(KG)
TC HeatEco MONO 9,5kW (230V-R290)	220-240VAC/1N/50-60HZ	1204*475*810	99
TC HeatEco MONO 9,5kW (380V-R290)	380-420VAC/3N/50-60HZ	1204*475*810	100
TC HeatEco MONO 12kW (230V-R290)	220-240VAC/1N/50-60HZ	1204*475*810	104
TC HeatEco MONO 12kW (380V-R290)	380-420VAC/3N/50-60HZ	1204*475*810	105
TC HeatEco MONO 15kW (230V-R290)	220-240VAC/1N/50-60HZ	1204*475*960	123
TC HeatEco MONO 15kW (380V-R290)	380-420VAC/3N/50-60HZ	1204*475*960	124
TC HeatEco MONO 22kW (230V-R290)	220-240VAC/1N/50-60HZ	1204*475*1362	139
TC HeatEco MONO 22kW (380V-R290)	380-420VAC/3N/50-60HZ	1204*475*1362	140

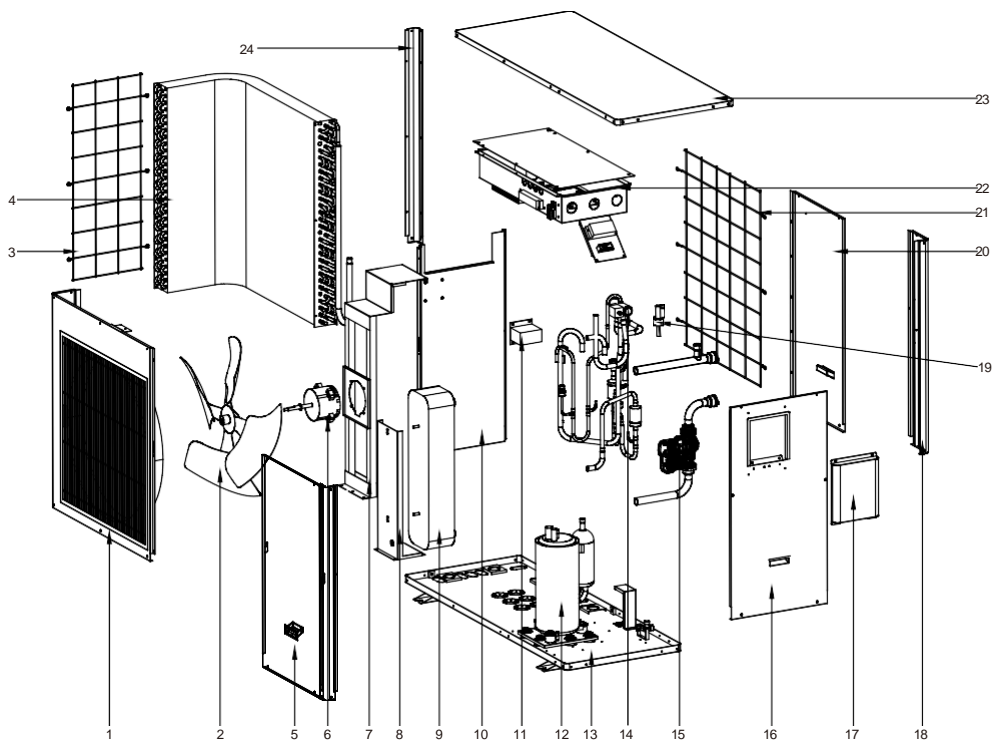
## Indoor Hydronic Box

Model	Power Supply	Size(L*W*H mm)	Net Weight(KG)
HB01	220-240VAC/1N/50-60HZ	600*290*825	31
HB02	220-240VAC/1N/50-60HZ	600*290*825	31
HB03	220-240VAC/1N/50-60HZ	600*290*825	35
HB04	380-420VAC/3N/50-60HZ	600*290*825	32
HB05	380-420VAC/3N/50-60HZ	600*290*825	32
HB06	380-420VAC/3N/50-60HZ	600*290*825	36

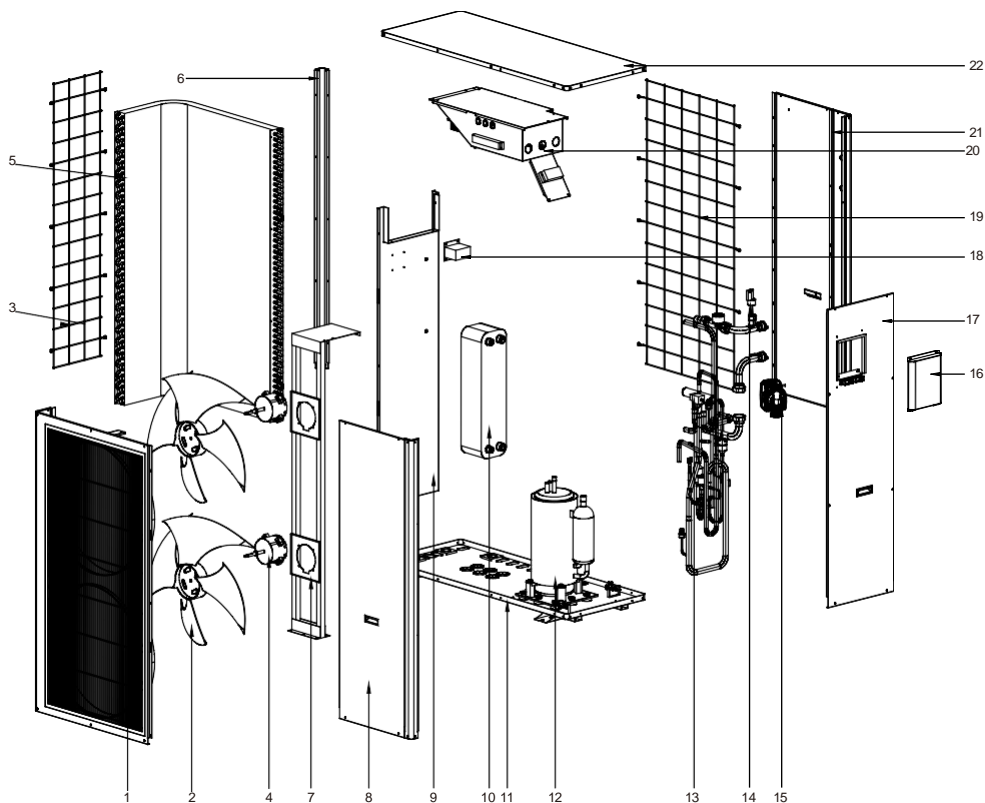
## An experience values for different houses

Apartment (W/m <sup>2</sup> )		Single house (W/m <sup>2</sup> )	
Living room	100~130	Living room	120~150
Bedroom	110~140	Bedroom	120~150
Study room	100~120	Study room	110~130

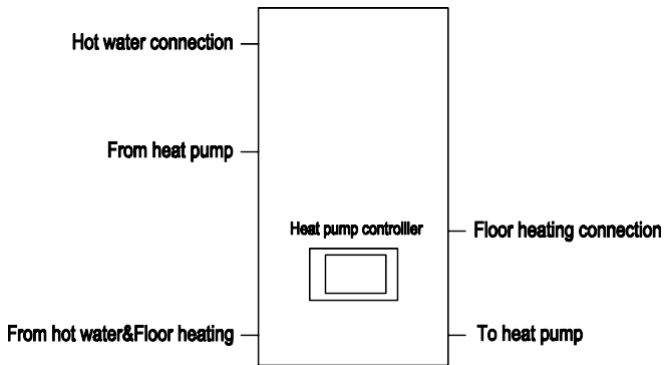




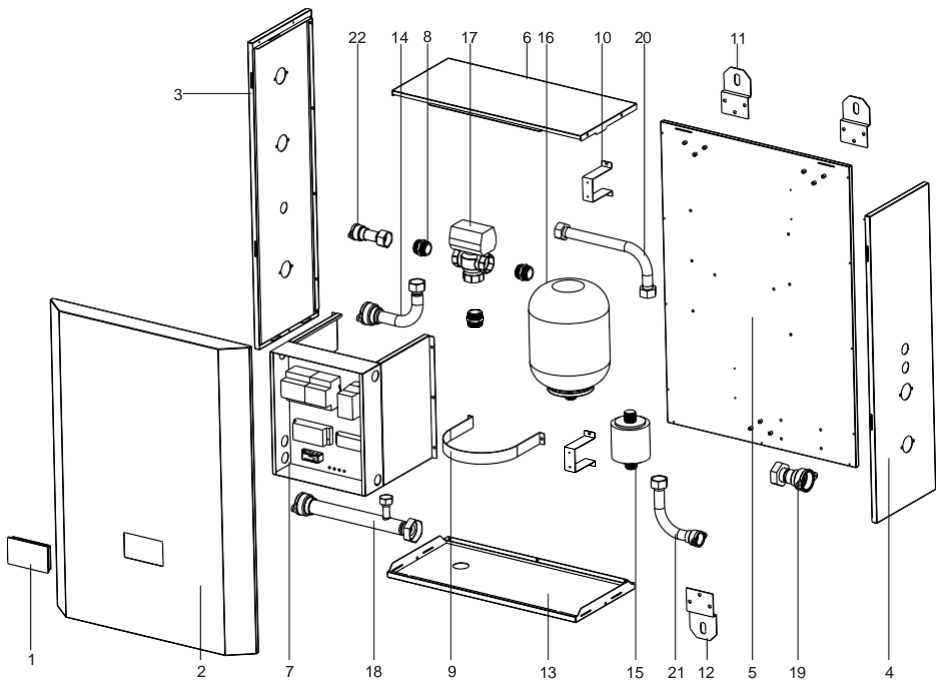
1	Front plate	9	Plate heat exchanger	17	Handle
2	Fan	10	Middle plate	18	Behind right plate
3	Left the protection net	11	Reactance	19	Water switch
4	Evaporator	12	Compressor	20	Behind plate
5	Front right plate	13	Chassis component	21	After the protection net
6	Motor	14	Four-way valve	22	Electronic components
7	Motor support	15	Pump	23	Top cover
8	Heat exchanger support	16	Right plate	24	Left plate



1	Front plate	9	Middle plate	17	Right plate
2	Fan	10	Plate heat exchanger	18	Reactance
3	Left the Protection net	11	Chassis component	19	After the protective net
4	Motor	12	Compressor	20	Electronic components
5	Evaporator	13	Four-way valve	21	Behind plate
6	Left plate	14	Water switch	22	Top cover
7	Motor support	15	Pump		



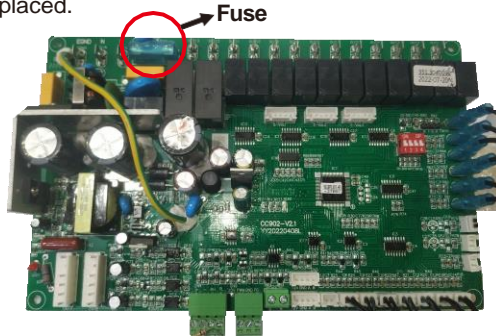
### Indoor Hydronic Box



1	Controller	9	Fix of Expansion tank	17	Three-way valve
2	Front plate	10	Hold of water pipe	18	Inlet Pipe of Pump
3	Left plate	11	Hanger	19	Outlet Pipe of Pump
4	Right plate	12	Hanger2	20	Inlet pipe of electric heater
5	Back plate	13	Lower panel	21	Outlet pipe of electric heater
6	Top Cover	14	Copper connector	22	Connection pipe of three-way valve
7	Electronic components	15	Electric heater		
8	Connection pipe of three-way valve	16	Expansion tank		

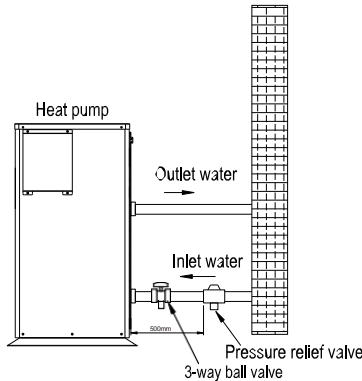
1. Fuses on the main power board:

After the protection of the power fuse on the main board is burned, the whole main board needs to be replaced.



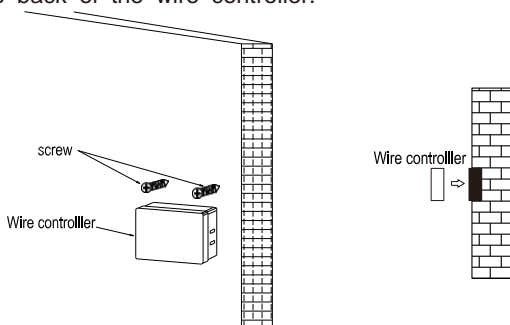
2, the installation location of the water circuit pressure relief valve:

When installing the connecting water system, it is necessary to add a pressure relief valve at the outlet of the machine (distance from the outlet interface not more than 500mm, and ensure that the pressure relief valve is installed in the outdoor, can not be installed in the indoor waterway), the pressure relief valve pressure relief for 0.6MPa (default, adjustable);



3, the Installation of the wire controller:

The wire controller must be embedded in the wall and installed reliably to ensure that it cannot touch the back of the wire controller.



## 6. Water pump

### Pump information



**GPA25-9H-130**



**GPA25-11H**

#### **GPA25-9H-130**

##### Basic parameters

Energy Efficiency Index (EEI )	$\leq 0.21$
Max.delivery head	9m
Max.volume flow	4.5m <sup>3</sup> /h
Rated .volume flow	2.5m <sup>3</sup> /h

##### Power

Main connection	1P 220-240VAC ,50/60Hz
Power(W)	10-95
Electri current(A)	0.1-0.9

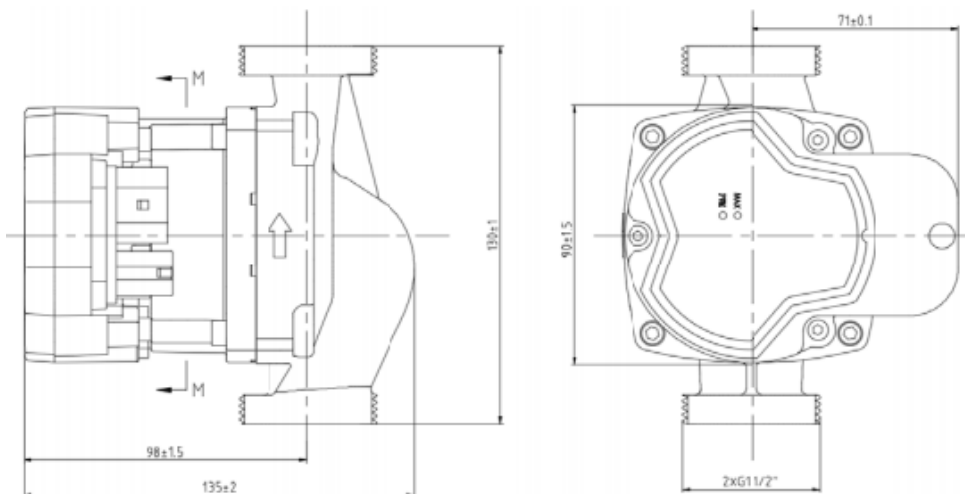
#### **GPA25-11H**

##### Basic parameters

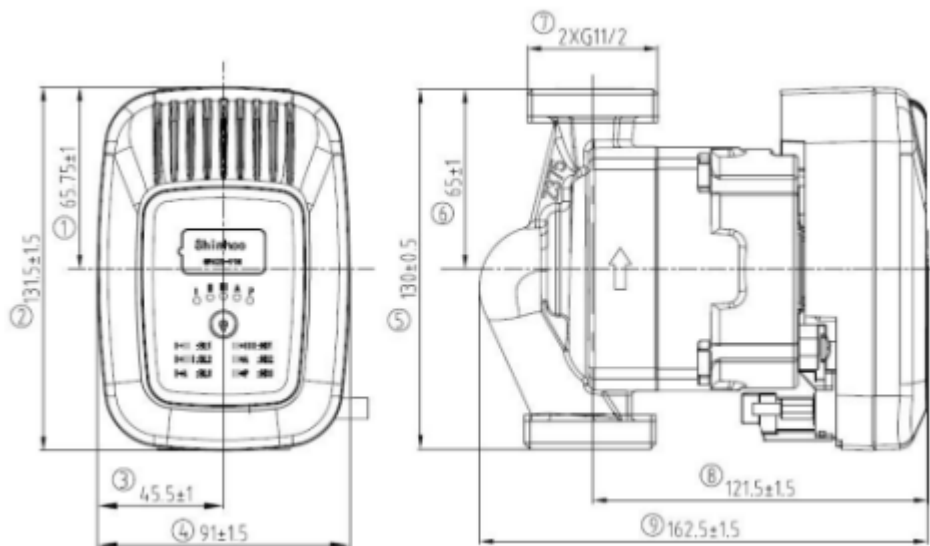
Energy Efficiency Index (EEI )	$\leq 0.21$
Max.delivery head	11m
Max.volume flow	5.5m <sup>3</sup> /h
Rated .volume flow	3.5m <sup>3</sup> /h

Power

Main connection	1P 220-240VAC ,50/60Hz
Power(W)	10-140
Electri current(A)	0.3-1.2



**GPA25-9H-130**



**GPA25-11H**

## 7. Heat pump installation and wiring

### 7.1 Heat pump installation location and attentions

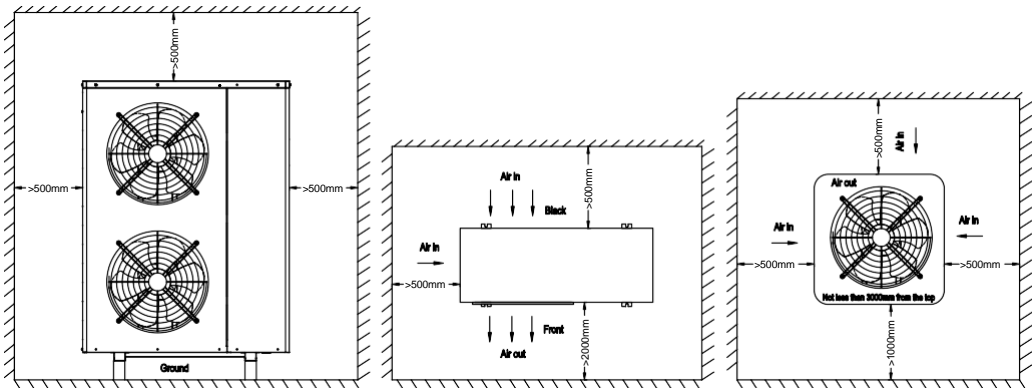
Heat pump is not allowed to be installed in the place where combustible gas may leaks.

Heat pump is not allowed to be installed in the place where there is oil or corrosion gas released.

Heat pump should be installed in a open space, and good ventilating.

Heat pump each side to wall or barrel should be keep certain distance, air outlet to barrel distance should 22m,air inlet distance to wall or barrel 20.5m,bottom distance to ground 20.5m,other side distance should be enough for installation or repairing.

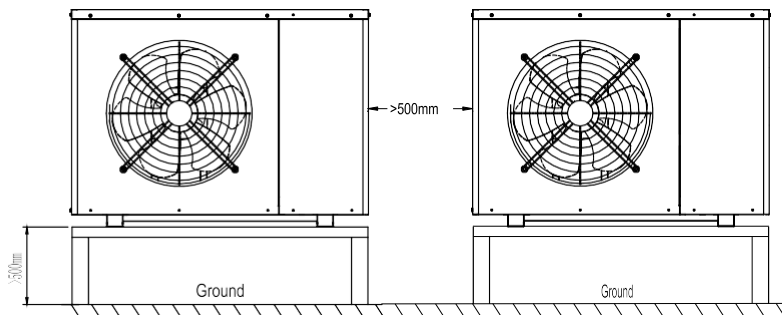
\*Heat pump should be installed on concrete basic or steel bracket, and anti-shock pad should be put between heat pump and basic or bracket. Then use expansion bolt to fix heat pump on bracket. Water drainage pipe and ditch should be set around heat pump and water pipes and water tank. When testing or repairing, maybe need drain plenty of water, and when heat pump is working, there are some condensed water flow down.



1-1

1-2

2-1

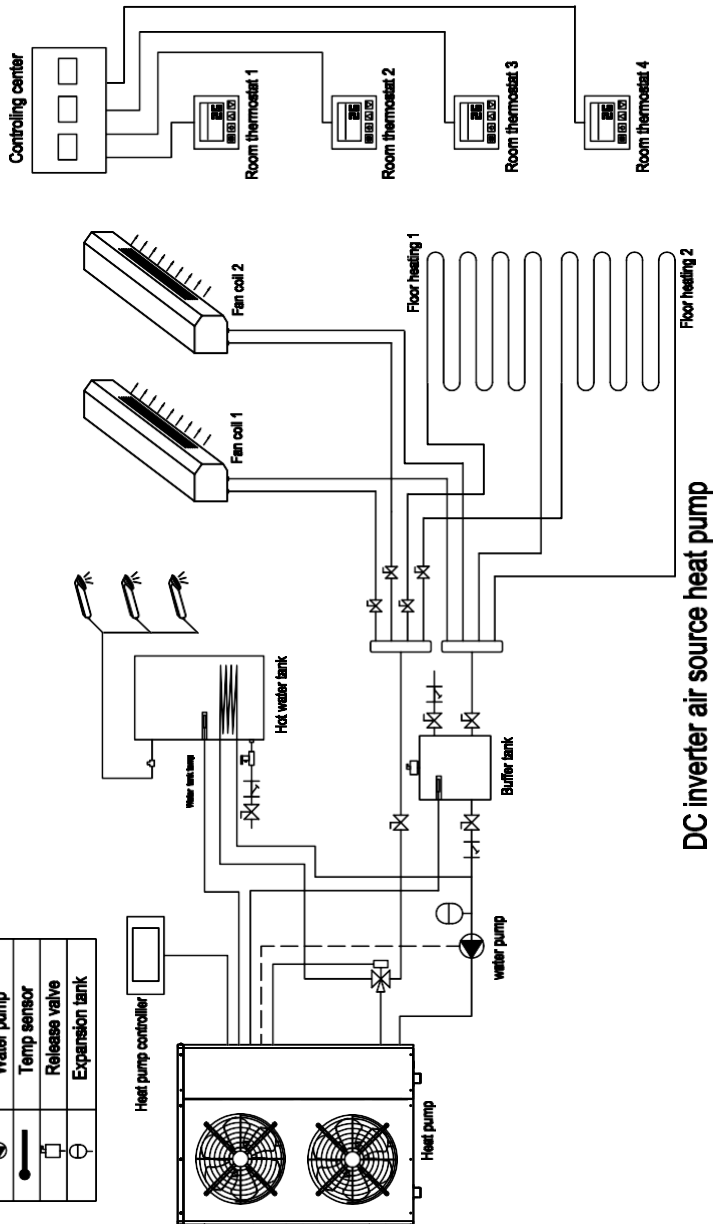


# Primary circulation system

**Notices:**

1. Pls select the right modes according to your demand then install it according to the installation diagram. If only hot water function required, pls select heating-hot water mode and then put the hot water sensor into the hot water tank.
2. Fan coil can be controlled by linkage thermostat shall be installed.
3. This is primary circulation system, if you not need to control the temperature by different zone, you can use this system.

Symbol	Name
	3-way valve
	2-way valve
	Ball valve
	Non-return valve
	Filter
	Water pump
	Temp sensor
	Release valve
	Expansion tank



DC inverter air source heat pump

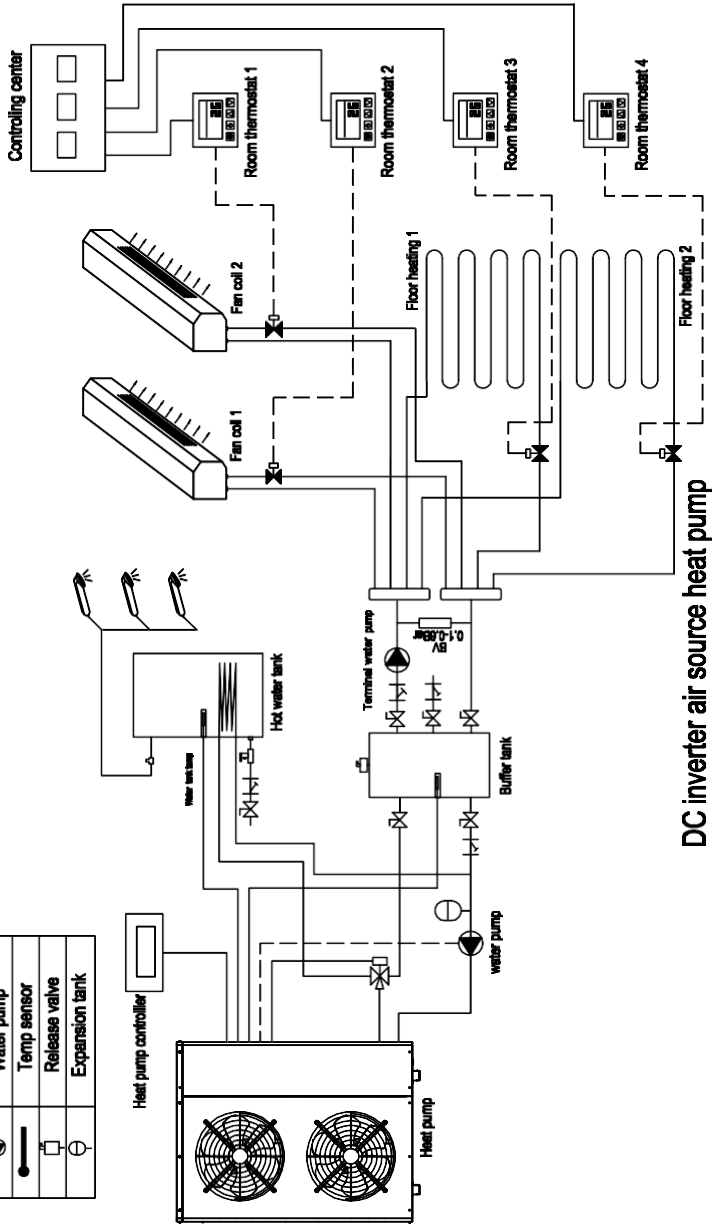


# Secondary circulation system

**Notice:**

1. Pls select the right modes according to your demand then install it according to the installation diagram. If only hot water function required, pls select heating-hot water mode, and then put the hot water sensor into the hot water tank.
2. Two-way valve and BV valve are optional for installation. Only if you need to control the temperature by different zone, then pls install both.
3. Fan coil can be controlled by linkage with the secondary circulation pump. Meanwhile, a passive linkage thermostat shall be installed.

Symbol	Name
	3-way valve
	2-way valve
	Ball valve
	Non-return valve
	Filter
	Water pump
	Temp sensor
	Release valve
	Expansion tank



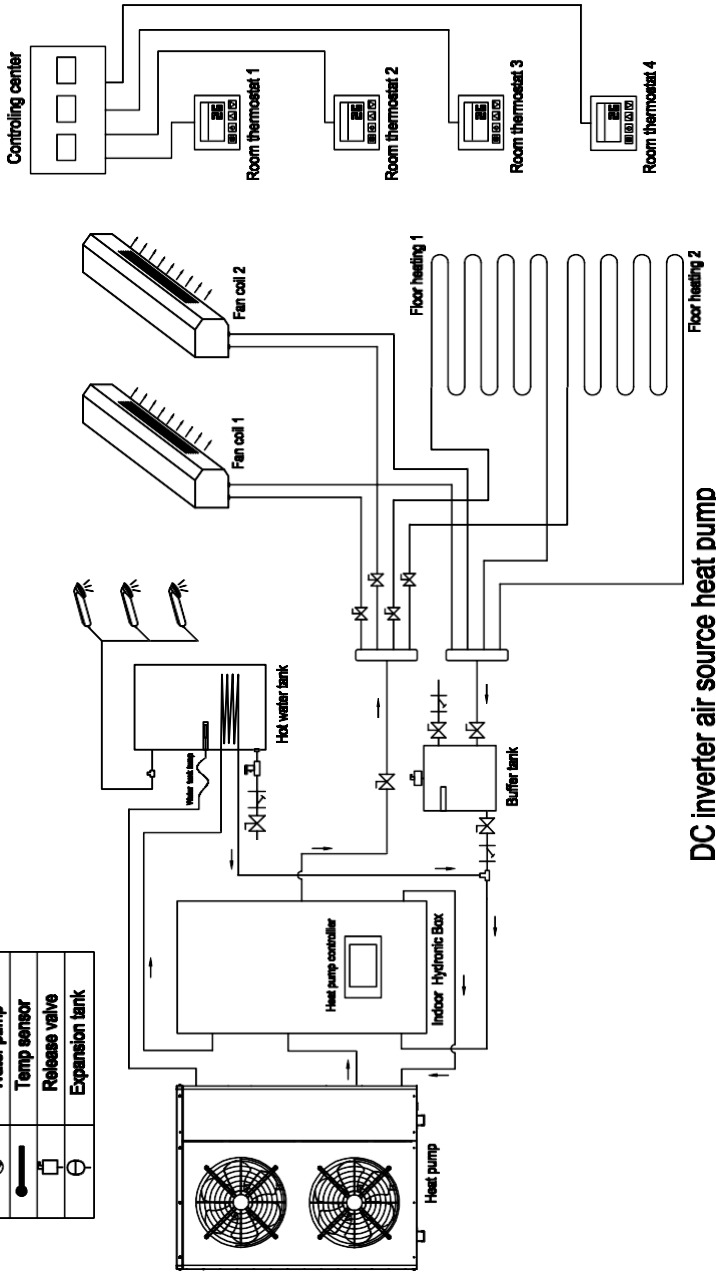
DC inverter air source heat pump

# Heat pump Installation system (outdoor unit & Indoor Hydronic Box)

**Notice:**

1. Pls select the right modes according to your demand then install it according to the installation deagram.If only hot water function required,pls select heating-hot water mode,and then put the hot water sensor into the hot water tank.
2. Fan coil can be controlled by linkage thermostat shall be installed.
3. This is primary circulation system, if you not need to control the temperature by different zone, you can use this system.

Symbol	Name
	3-way valve
	2-way valve
	Ball valve
	Non-return valve
	Filter
	Water pump
	Temp sensor
	Release valve
	Expansion tank



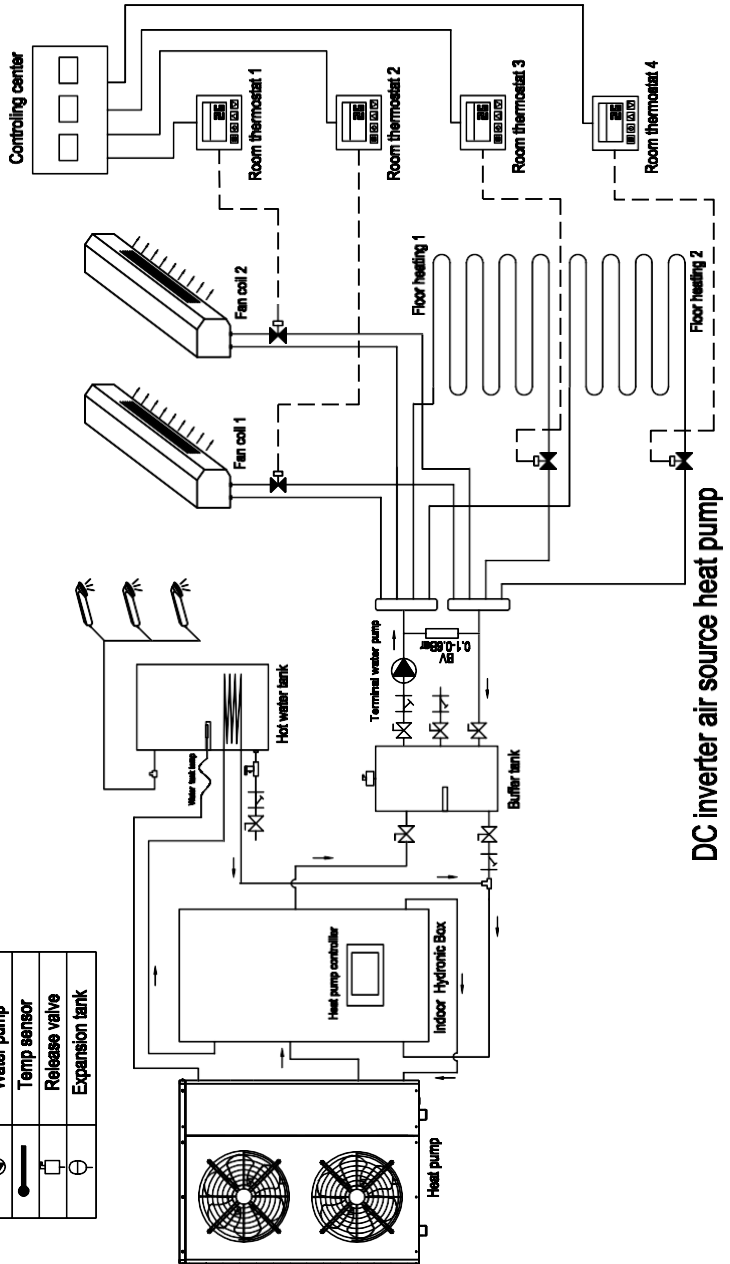
DC inverter air source heat pump

# Heat pump Installation system (outdoor unit & Indoor Hydronic Box)

**Notice:**

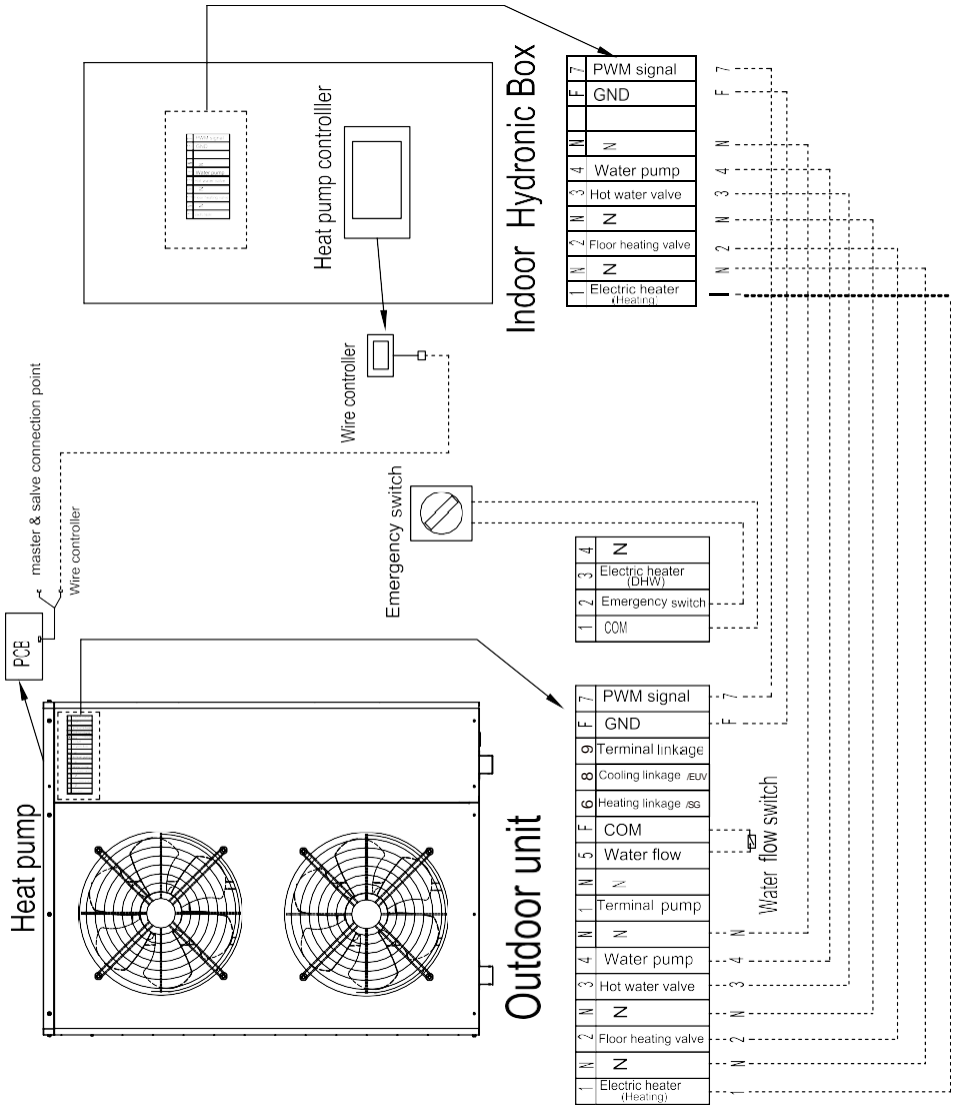
1. Pls select the right modes according to your demand then install it according to the installation diagram. If only hot water function required, pls select heating+hot water mode, and then put the hot water sensor into the hot water tank.
2. Two-way valve and BV valve are optional for installation. Only if you need to control the temperature by different zone, then pls install both.
3. Fan coil can be controlled by linkage with the secondary circulation pump. Meanwhile, a passive linkage thermostat shall be installed.

Symbol	Name
	3-way valve
	2-way valve
	Ball valve
	Non-return valve
	Filter
	Water pump
	Temp sensor
	Release valve
	Expansion tank

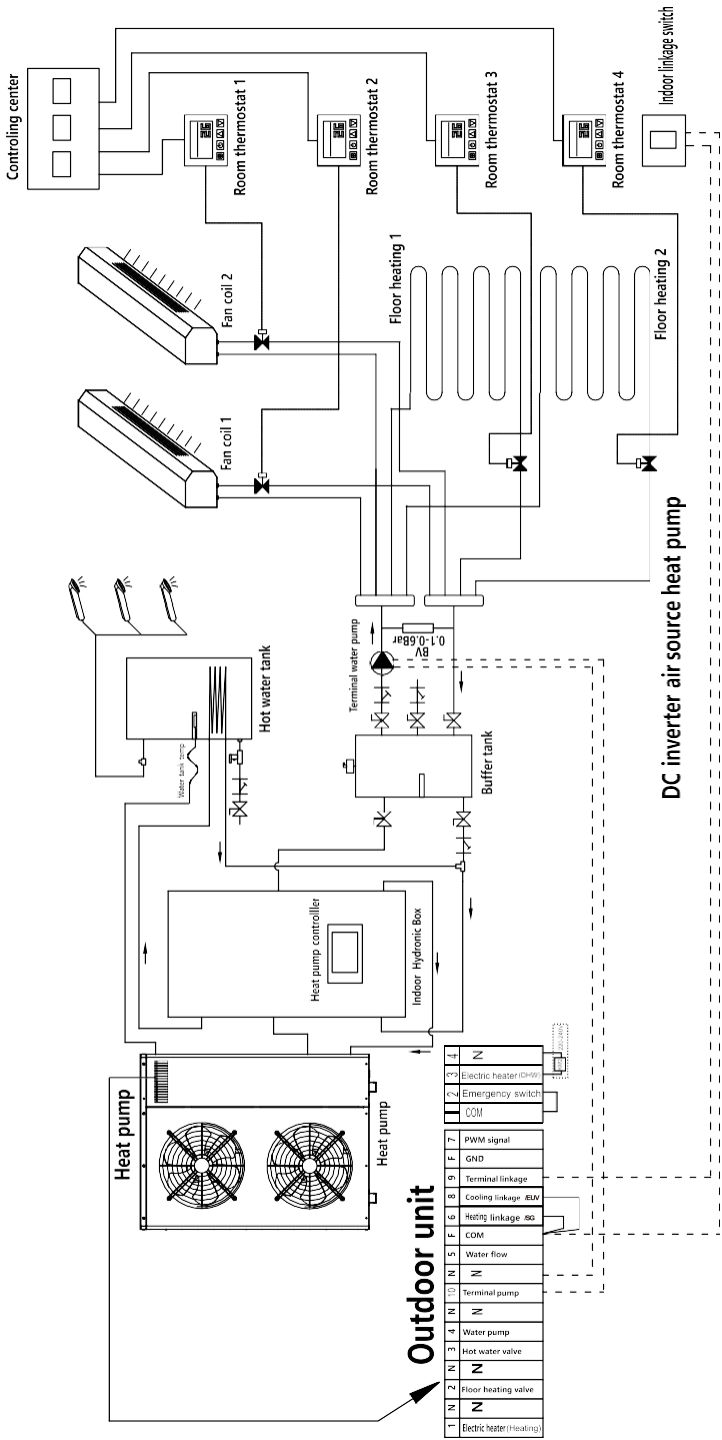


DC inverter air source heat pump

# Electrical wiring connections between the outdoor unit and the indoor unit







## Tips for installation related to the water pipe part:

Install a valve at the highest point of each water circulation for releasing air from water system.

A Y-shape filter is very important in front of circulating water pump of heat pump.

If more pieces heat pump installed in one water pipe system, the connection of these heat pumps can't be in series,only can be in parallel or independent.

## Pre-start up

Checking before pre-start up

Check if the water pipe are connected well and if there is any leakage.The water supply valve are open.

Make sure the water flow is enough and meet the demand of the heat pump selected and water flow smoothly without air. In cold area,pls make sure that the water flow is without freezing.

Check if the power cable is connected well and properly grounded.

Check if fan blade is blocked by the fixing plate of fan blade and fan blade protecting grill.

Check if the tank has been filled with water or enough water volume that can meet the demand of heat pump running.

△ If everything above is OK, the unit can start up. If any of them fails,please improve it.

Pre-start up

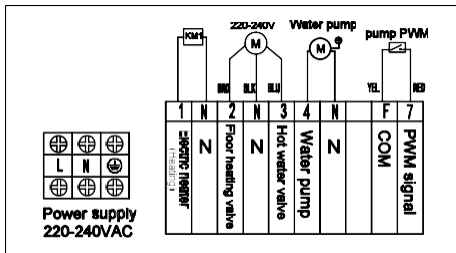
After check completely and confirm no problem for installation, the unit can be power to start up.

After connect power supply, heat pump delay 3mins to start. Check carefully is there is some abnormal noise or vibration or if the working current is normal or if water temp increasing is normal.

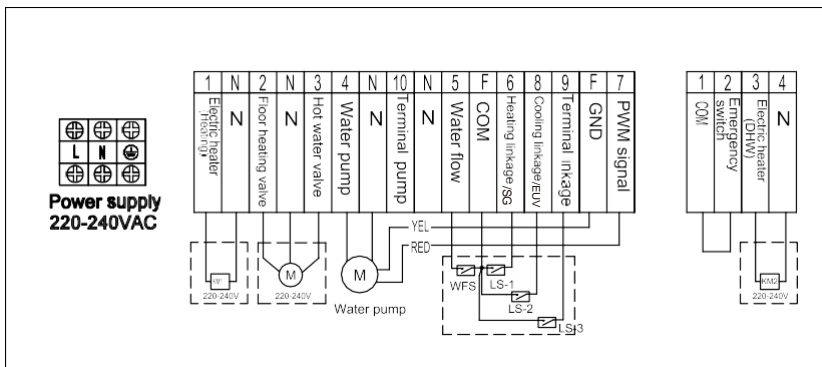
After the unit is working properly for 10 minutes without any problem, then the pre-start up is usefully completed. If not, pls refer to service and Maintenance.

# Terminal connection mode of heat pump

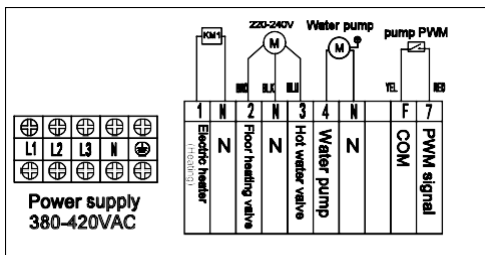
## Indoor unit 220-240VAC



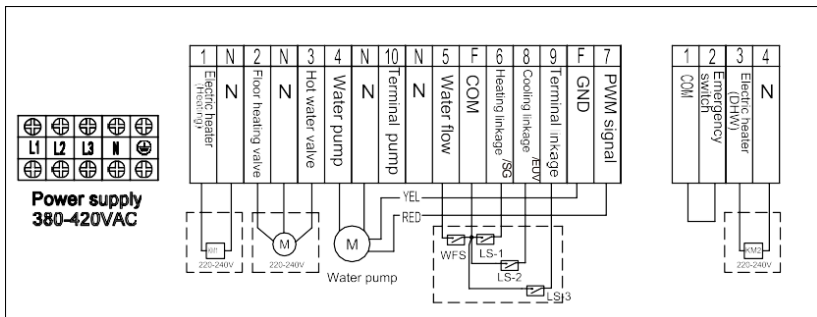
## Outdoor unit 220-240VAC



## Indoor unit 380-420VAC



## Outdoor unit 380-420VAC



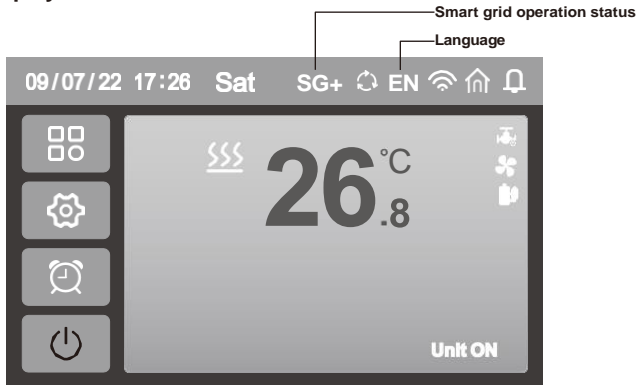


# Part 2. Use


## Operation panel instruction


### 1.Wire Controller Display

#### Display Icon






1、Clock setting:  , Place on the clock position, then enter the clock setting interface.

2、Press  icon to switch between the dynamic main interface/concise main interface.

3、Press  icon to return to the main interface (dynamic/simple).

4、Press  icon to view faults, the icon shows red when there is a current fault.:

5、  : Compressor running;  : fan running;  : water pump running;



The upper part is the inlet water temperature and the lower part is the tank temperature (only available when the model is selected with hot water mode), click on the temperature position to enter the water temperature setting interface.

 : Heating mode;  : Hot water mode;  : Cooling mode;



1、 On/off button, click to set the switch according to the prompt box; the button is white when switched off and red when switched on;



2、 Mode button, click to enter the mode selection screen;



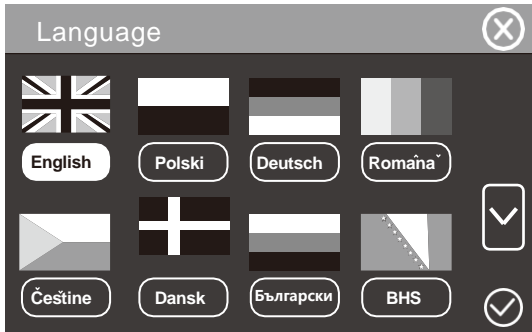
3、 Menu key, click to enter the function menu selection screen;



4、 Timer key, click to enter the timer setting interface; red is displayed when the timer is in use, white is displayed when the timer is not in use

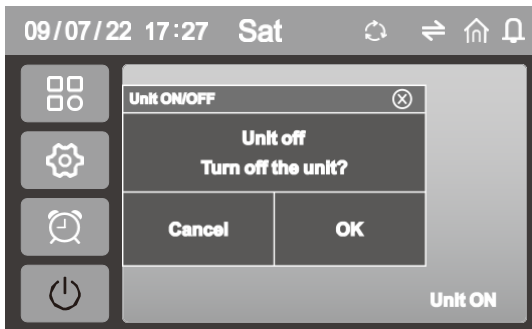
## UNIT BY READY

5、 Language (10 Languages)

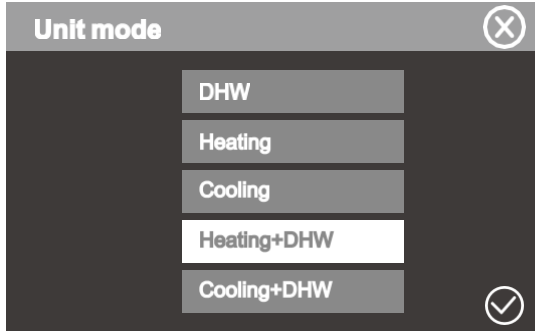




6、 Display the status of the machine;

**Interface for turn on/off. :**

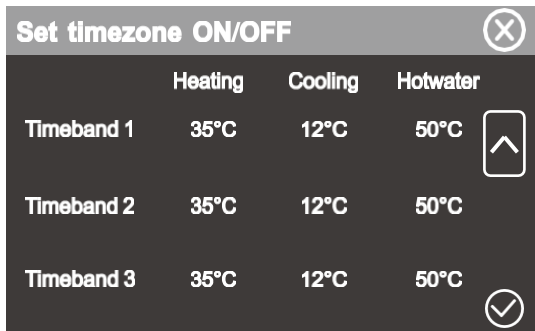





Interface for choose mode. :



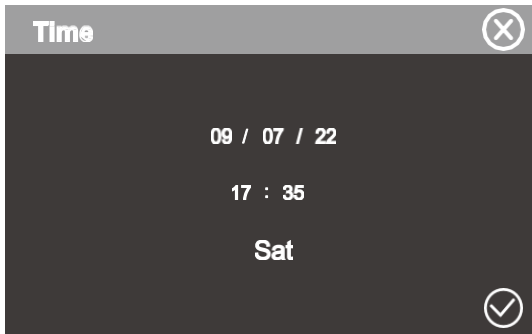
Click on the corresponding mode, select the mode, then click  icon to confirm the mode selection and return to the main screen; or click  icon to cancel the selection and return to the main screen.



Timer settings screen :



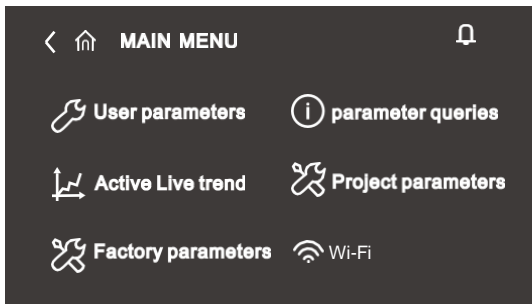
1. Click  icon, Turn on/off the corresponding timer function, with the possibility of setting 3 timer segments.
2. Click on the clock position, and you can set the week, hour, minute, and set temperature corresponding to the timing.
3. Click  or icon, Save settings and return to the main screen.
4. Click  icon, Switch timing page.

Clock setting interface:

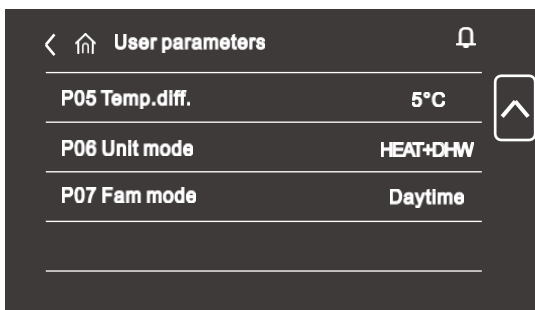
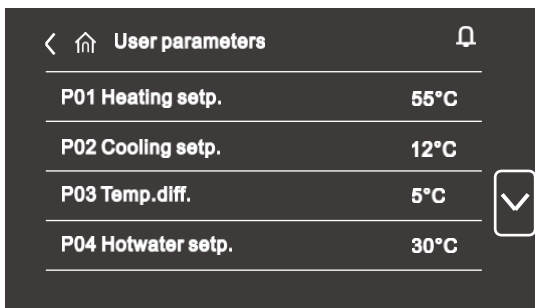


1. Click the corresponding position of the clock to set the clock.
2.  Save the set clock and return to the main interface.
3.  Cancel the setting and return to the main interface.

Main Menu:



User parameter:

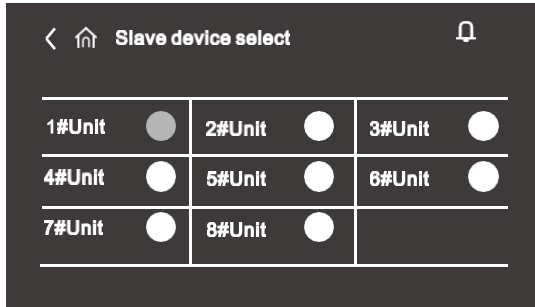




User setting parameter:

Setting of heating temperature, cooling temperature, cooling/heating return temperature, hot water temperature & hot water return temperature (only available in hot water mode)

Parameter	Description	Range	Initial value
P01	Heating setp	10°C~75°C	45°C
P02	Cooling setp	12°C~30°C	12°C
P03	Temp.diff	2°C~18°C	5°C
P04	Hotwater setp	10°C~75°C	50°C
P05	Temp.diff	2°C~18°C	5°C
P06	Unit mode	DHW/Heating/Cooling/Heating+DHW/Cooling+DHW	HEAT+DHW
P07	Fan mode	Daytime mode/ECO mode/Night mode/Test mode	Daytime

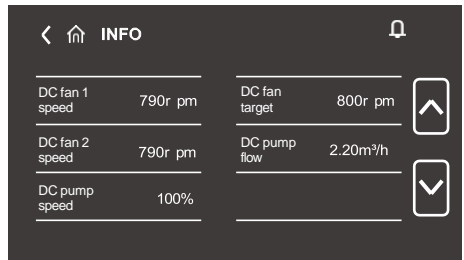
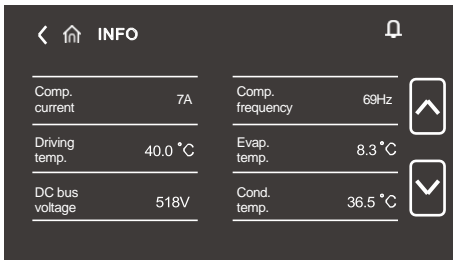
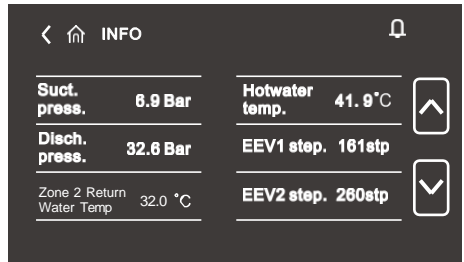
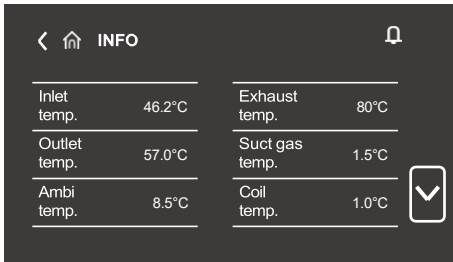
Parameter queries:



Unit heat pump status,  icon indicating that the detection is online,  icon indicating that the detection is offline.

Click the online unit to enter the next level menu, click the offline unit is invalid;

Long press a unit, the corresponding unit enters the forced defrost, if the unit meets the defrost temperature condition can enter the defrost.



< INFO

Power	1728W	Cooling capacity	0W
Heating capacity	0W	COP	0.0
		Comp. running time	0H

↑

↓

< Digital input status

Flow switch	ON	Cooling linkage	ON
Linkage switch	ON	Heating linkage	ON
A/C Linkage switch	ON		

↑

↓

< Digital input status

SG grid signal	OFF		
EUV powered signal	OFF		

↑

↓

< Digital output status

DC Pump	OFF	Three-way valve	OFF
Chassis heater	OFF	Heating heater	OFF
Crank heater	OFF	Hotwater heater	OFF

↑

↓

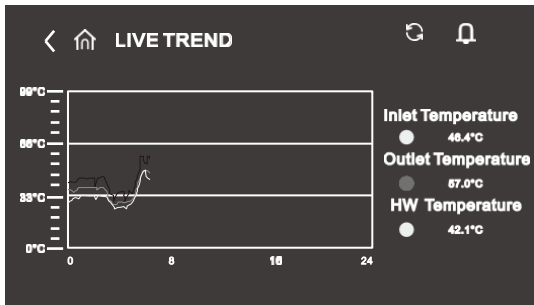
< INFO

A-phase voltage	384V	A-phase current	3.6A
B-phase voltage	384V	B-phase current	4.0A
C-phase voltage	384V	C-phase current	3.7A

↑

↓

Active Live trend:



1. View the temperature for 24 hours, including the inlet water temperature, outlet water temperature and tank temperature (for models with no hot water dispenser selected, the tank temperature is displayed as 0:

2. Click  icon to clear the record:

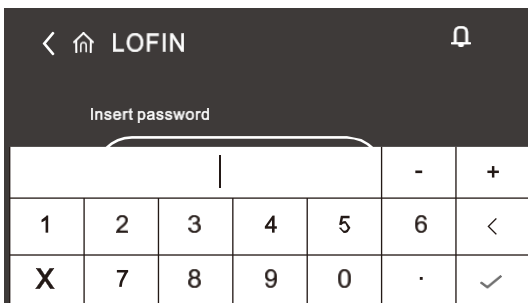
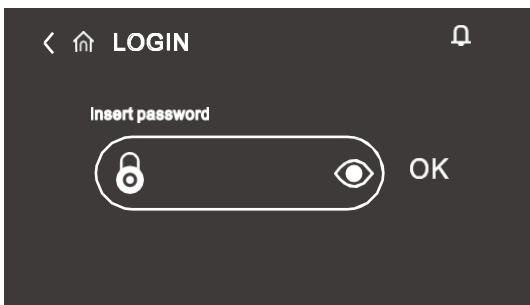
Project parameters:

Enter the password. Set the parameters for economy mode, language setting, germicidal setting and project setting.

factory parameters

Enter the password. Set the settings for the main electronic expansion valve, auxiliary electronic expansion valve, defrost parameters, fan parameters, other parameters and frequency parameters.

Password screen






## History of faults record

Time	Description
24/01/22 17:48	#01 E63 Eco outlet TP failure
24/01/22 17:48	#01 E62 Eco Inlet TP failure
24/01/22 17:48	#02 E27 Water Out TP failure
24/01/22 17:48	#02 E16 Coll TP failure
24/01/22 17:48	#02 E21 Air TP failure
24/01/22 17:48	#02 E14 Water Tank TP failure

The last 6 faults can be displayed.

Click  icon to switch between the current fault screen and the history of faults record.

Click  icon to clear the history of faults .

End pump selection (only available for mode with 2 Zone Temp.control function) :

Parameter F24 is set to 1, and the end pump of zone 2 start running;

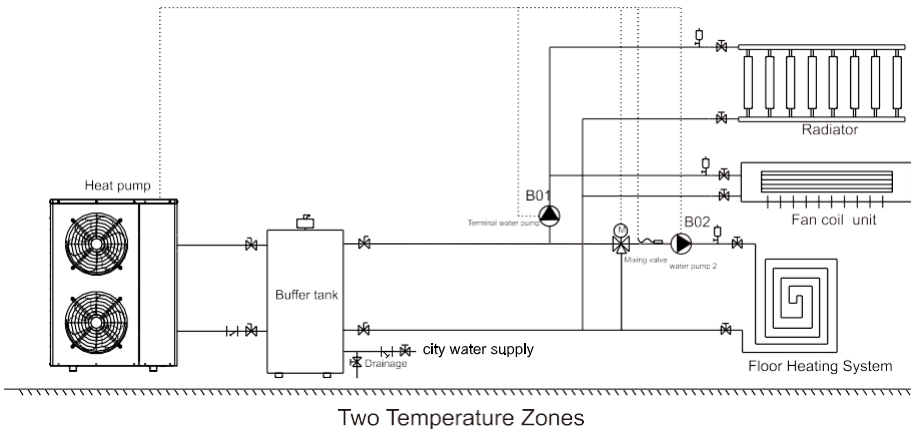
Parameter F24 is set to 0, and the end pump of zone 2 stop running.

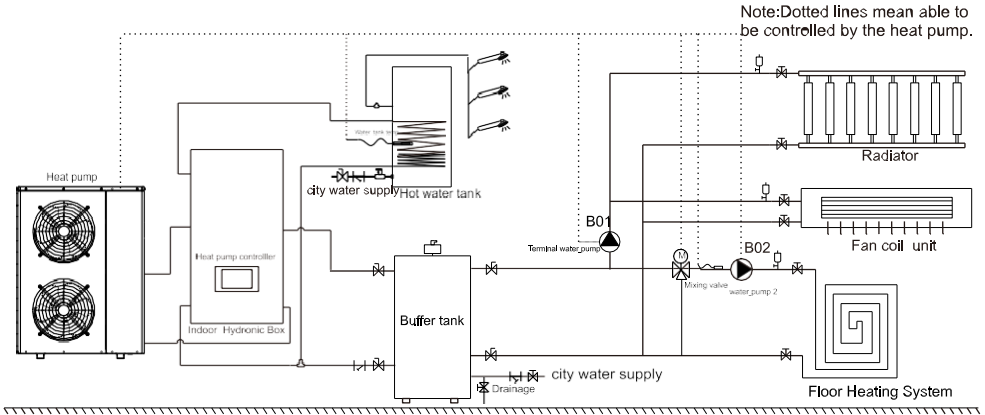
### MAIN MENU → Factory parameters → Other settings.

To enter the parameters of F24-F26, you need to enter a password. Please Contact technical personnel for the password.

Parameter	Definition	Range	Default
F24	Zone 2 function ON /OFF	0 -OFF/1-ON	0
F25	Zone 2 setting Temp	10 - 60°C	40°C
F26	Zone 2 Delta Temp	2 - 18°C	4°C

Note:Dotted lines mean able to be controlled by the heat pump.





## Two Temperature Zones

### SG(SMART GRID) ready Function

When the smart grid parameter G13 is selected as YES, the heat pump starts to operate this function, and the ports are SG and EUV respectively.

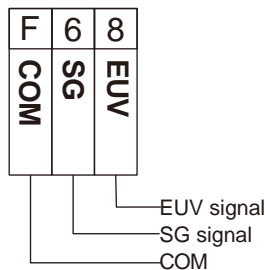
When the smart grid parameter G13 is set to NO, the heat pump stops running this function. .

### MAIN MENU → Project parameters → Project settings.

To enter the parameters of the G13-G23 smart grid, you need to enter a password. Please Contact technical personnel for the password.

Under Heating+DHW, Cooling+DHW, DHW:

SMART GRID			
Running state	SG	EUV	Display on the wire controller
Reduce heating capacity	OFF	OFF	No display
Normal operation	ON	OFF	SG+
Increase heating capacity	ON	ON	SG+
	OFF	ON	SG-



## 2. WIFI remote control (this function is only valid for some models with WIFI function)

### Download APP

- 1. Scan the QR code below, download and install APP, follow the prompts to register and log in, then you can add devices.
- 2. Turn on the Bluetooth function of the phone, the WIFI network needs to be in the 2.4G band (not the 5G band) and also ensure that the WIFI connection has a good signal;

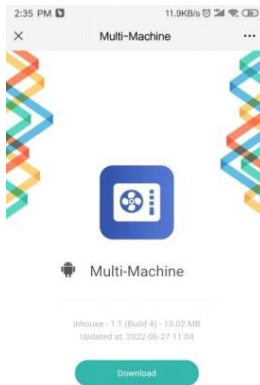
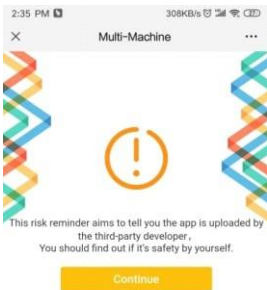


### Multi-Machine

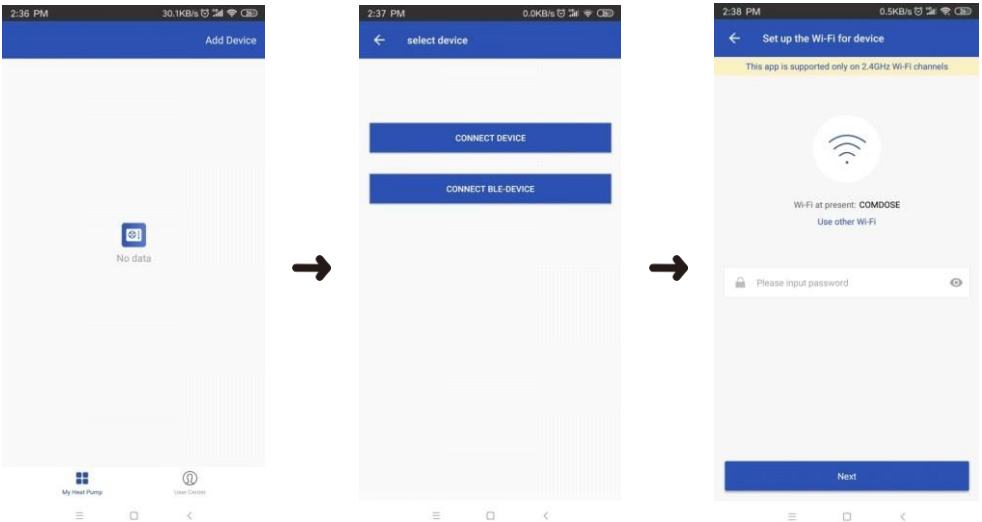
Scan the QR code to download.

Or enter this URL in your mobile browser: <http://d.firm.por/phx9>

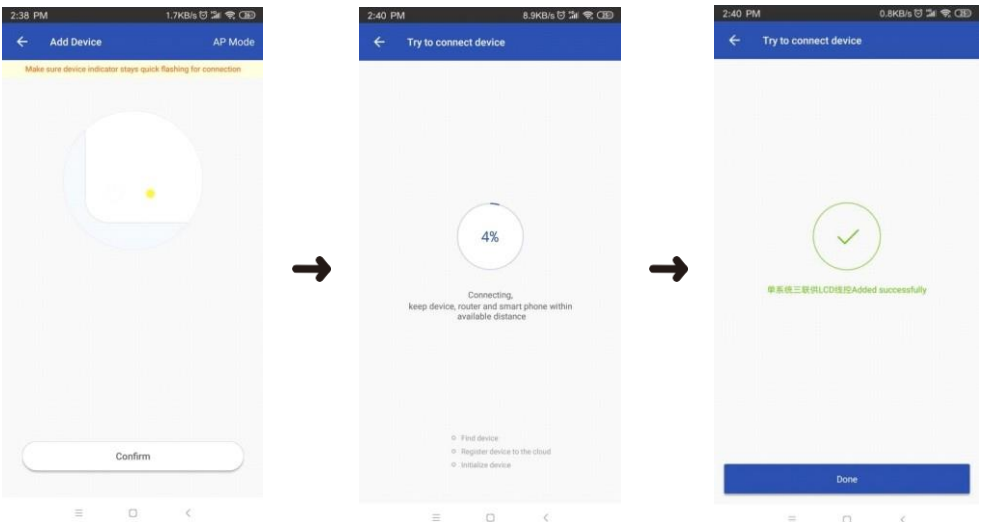
- 3. ① Android users please scan the QR code to enter the link and click "continue", then click "Download" to setup the "Multi-Machine" APP.  
② IOS users please search "Multi-Machine" in the Apple APP store to download.



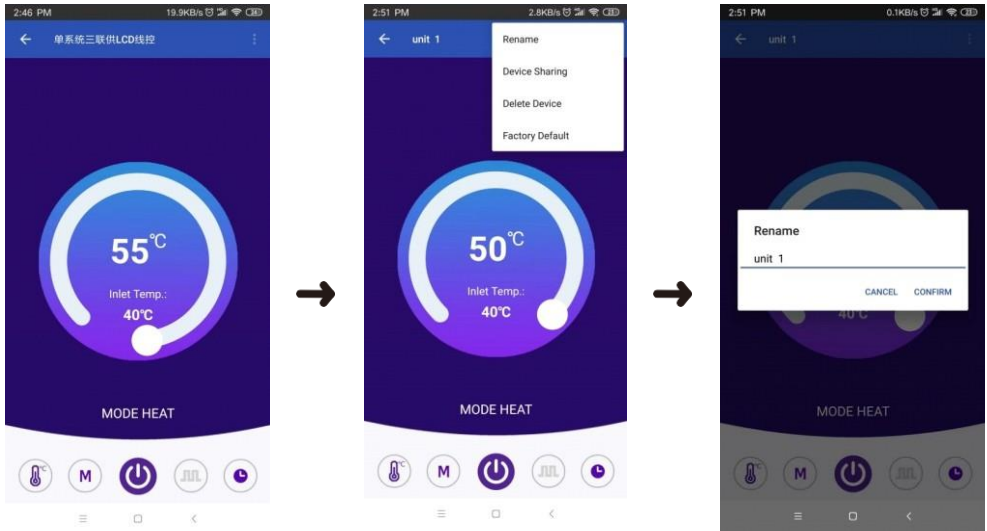
- 4. Click Run APP, the interface click "Add Device" in the upper right corner, the next interface click "CONNECT DEVICE", display the current identified WIFI name, and then enter the current WIFI PASSWORD, and then click "NEXT".



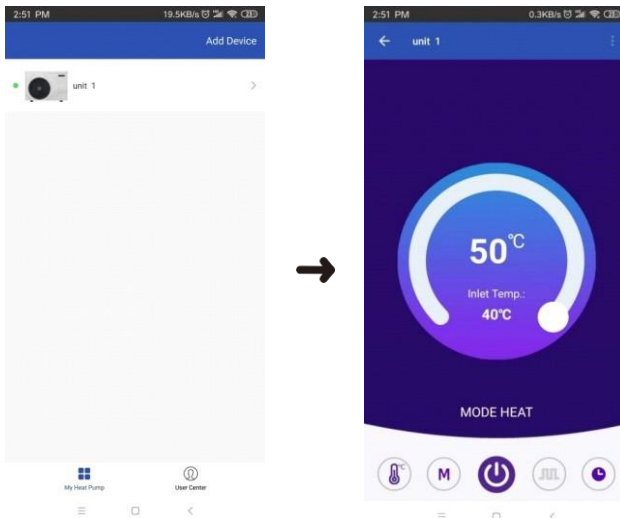
- 5. Then click "Confirm", the APP will automatically search for the current device, and click "Done" when the search is 100%.



- 6. In the operation interface of APP, click "⋮" in the upper right corner and select "rename", change the default name of the machine to English, for example: unit 1.

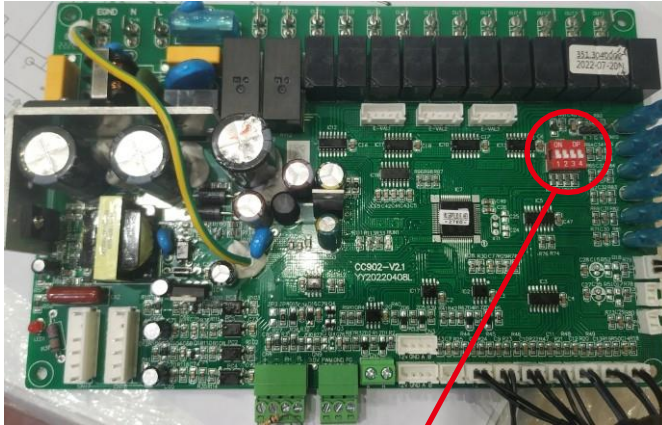


- 7. Click "unit 1" of the device, you can view the actual water temperature of the device through the APP interface, and can set the water temperature, mode, timing time of the device.



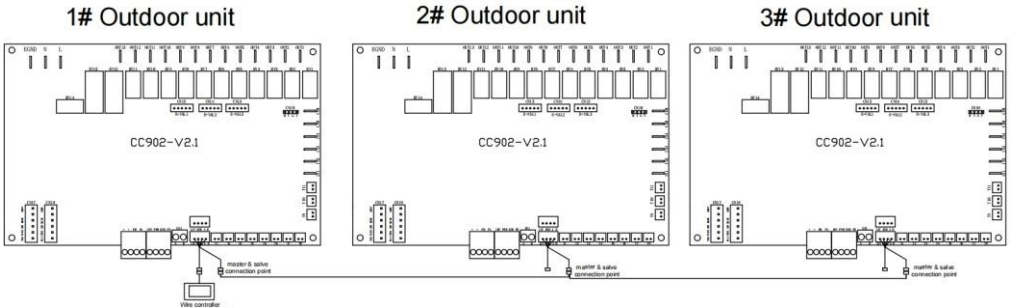
### 3. Cascade Connection (Master & Salve) Operation Instructions


1. the dial switch on the main board need to set well, 1#Unit、2#Unit、 3#Unit、 4#Unit .....The maximum number of salve unit in cascade is 8.

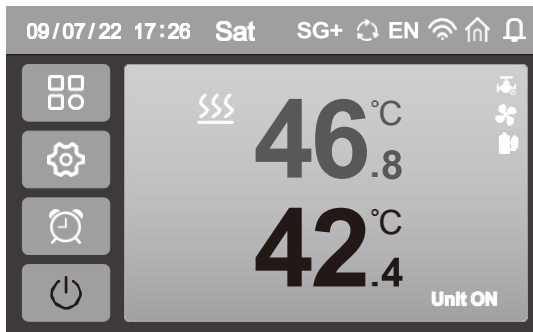


<p>SW1</p> <p>1# Unit</p>	<p>SW1</p> <p>5# Unit</p>
<p>SW1</p> <p>2# Unit</p>	<p>SW1</p> <p>6# Unit</p>
<p>SW1</p> <p>3# Unit</p>	<p>SW1</p> <p>7# Unit</p>
<p>SW1</p> <p>4# Unit</p>	<p>SW1</p> <p>8# Unit</p>

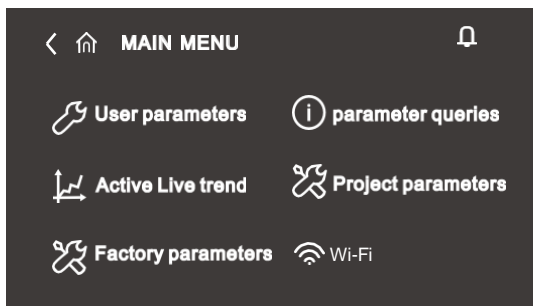
2. The PCB board connection of each heating unit, as shown in the figure below.



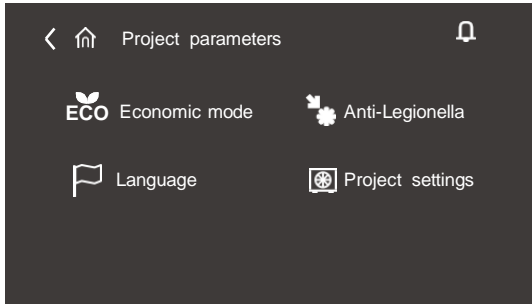
3. Click the “” to enter into the main menu.



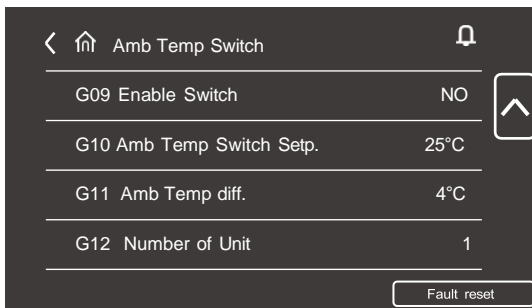
4. Enter the “Project Parameters” from the Main Menu and enter the password 0816.



5. Enter the “Project Settings”



6. Change the “G12 Number of Unit” to 2-8 (The number is setted according to the actual online units required).



7. Finish the cascade setting, can be started.



# Part3.Maintenanceandrepairing.

## 1、 Maintenance Tips

The heat pump unit is a highly automated equipment. The unit status check is carried out regularly during use. If the unit can be maintained and maintained for a long time and effectively, the unit's operational reliability and service life will be unexpectedly improved.

1. Users should pay attention to the use and maintenance of this unit: all safety protection devices in the unit are set before leaving the factory, do not adjust by yourself;
2. Always check whether the power supply and electrical system wiring of the unit is firm, whether the electrical components are malfunctioning, and if necessary, repair and replace them in time;
3. Always check the water system's hydration, the water tank safety valve, the liquid level controller and the exhaust device to work properly, so as to avoid the air circulation into the system and reduce the water circulation, thus affecting the unit's heating capacity and unit operation reliability;
4. The unit should be kept clean and dry and well ventilated. Regularly clean (1-2 months) air-side heat exchangers to maintain good heat transfer;
5. Always check the operation of each component of the unit, check the oil pipe at the pipe joint and the gas valve, and ensure that the refrigerant of the unit is not leaking;
6. Do not stack any debris around the unit to avoid blocking the air inlet and outlet. The unit should be clean and dry and well ventilated.
7. If the downtime is long, the water in the unit piping should be drained, and the power supply should be cut off and the protective cover should be placed. When running again, check the system thoroughly before starting up;
8. If the unit fails and the user cannot solve the problem, please inform the company's special maintenance department in order to send someone to repair it in time;
9. The main unit condenser cleaning, the company recommends using a 50 ° C concentration of 15% hot oxalic acid to clean the condenser, start the host with a circulating water pump for 20 minutes, and finally rinse with tap water 3 times. (It is recommended to reserve a three-way interface when installing the pipe and seal one interface with a wire plug) in case of cleaning. Do not wash the condenser with a corrosive cleaning solution. The water tank needs to be removed after a period of use (usually two months, depending on local water quality).

## 2、Error input and protection alarm

Code	Description	Possible cause	Check & solution
Er 03	Water flow failure	<ol style="list-style-type: none"> <li>1. Pump failure.</li> <li>2. The water pipeline is blocked.</li> <li>3. The water flow of the pump is low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check if water pump broken and replacement needed.</li> <li>2. Clean the pipes of the water circuit.</li> <li>3. Replace the water pump with one with higher water flow.</li> </ol>
Er 04	Antifreeze in winter	Too low ambient temp. and water entering temp.	No action required.
Er 05	High pressure fault	<ol style="list-style-type: none"> <li>1. Too much refrigerant filled in.</li> <li>2. Liquied-like refrigerant flows from evaporator into compressor.</li> <li>3. EE valve failure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discharge certain refrigerant.</li> <li>2. Check and adjust EE valve,make sure EE valve sensor is well connected with return gas pipe.</li> <li>3. Check if EE valve broken and replacement needed.</li> </ol>
Er 06	Low pressure fault	<ol style="list-style-type: none"> <li>1. Check if dry filter jammed.</li> <li>2. Failure of EE valve.</li> <li>3. Lack of refrigerant.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check repair or replace filter.</li> <li>2. Check if EE valve broken and replacement needed.</li> <li>3. Refill certain refrigerant.</li> </ol>
Er 09	Communication failure	Communication failure between PCB and controller.	Check if connection in good condition or replacement needed.
Er 10	Communication failure of frequency conversion module (alarm when communication between outer board and drive board is disconnected)	The communication line between the main board and the driver board is disconnected	Check if connection in good condition or replacement needed.
Er 12	Exhaust temp too high protection	Temp.sensor broken or not enough refrigerant.	Raplace temp.sensor or fill in certain refrigerant.
Er 14	Water tank temperature sensor fault	Temp.sensor short circuit or open circuit.	Check if temp.sensor in good conditions,or replace related sensor.
Er 15	Water inlet temperature sensor fault	Temp.sensor short circuit or open circuit.	Check if temp.sensor in good conditions,or replace related sensor.
Er 16	Evaporator coil temperature sensor fault	Temp.sensor short circuit or open circuit.	Check if temp.sensor in good conditions,or replace related sensor.
Er 18	Exhaust temperature fault	Temp.sensor short circuit or open circuit.	Check if temp.sensor in good conditions,or replace related sensor.
Er 20	Abnormal protection of frequency conversion module	1. Frequency drive failure, need to check the specific fault serial number.	Determine the cause of the fault according to the corresponding fault serial number.
Er 21	Ambient temperature sensor fault	Temp.sensor short circuit or open circuit.	Check if temp.sensor in good conditions,or replace related sensor.
Er 23	Cooling outlet water temperature supercooling protection	<ol style="list-style-type: none"> <li>1. The water pipeline is blocked.</li> <li>2. The water flow of the pump is low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the pipes of the water circuit.</li> <li>2. Replace the water pump with one with higher water flow.</li> </ol>
Er 26	Heat sink temperature fault	<ol style="list-style-type: none"> <li>1. DC fan speed is low or not turning.</li> <li>2. The temperature sensor of radiator is bad.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the DC fan or PCB motherboard.</li> <li>2. Replace the new temperature sensor</li> </ol>
Er 27	Outlet water temperature sensor fault	Temp.sensor short circuit or open circuit.	Check if temp.sensor in good conditions,or replace related sensor.
Er 29	Return gas temperature sensor fault	Temp.sensor short circuit or open circuit.	Check if temp.sensor in good conditions,or replace related sensor.
Er 32	Heating too high outlet water temperature protection	<ol style="list-style-type: none"> <li>1. The water pipeline is blocked.</li> <li>2. The water flow of the pump is low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the pipes of the water circuit.</li> <li>2. Replace the water pump with one with higher water flow.</li> </ol>
Er 33	Coil temperature too high	<ol style="list-style-type: none"> <li>1. DC fan speed is low or not turning.</li> <li>2. The heatsink temperature sensor is bad.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the DC fan or PCB motherboard.</li> <li>2. Replace the temperature sensor.</li> </ol>
Er 34	The temperature of frequency conversion module is too high	<ol style="list-style-type: none"> <li>1. DC fan speed is low or not turning.</li> <li>2. The frequency of compressor is too high.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the DC fan.</li> <li>2. Reduce the speed of compressor.</li> </ol>

Er 42	Cooling coil temperature sensor failure	Temp.sensor short circuit or open circuit.	Check if temp.sensor in good conditions,or replace related sensor.
Er 44	Air temp too low	Low ambient temperature	Suspend use and drain the pipe.
Er 64	DC fan 1 fault	1. Factory parameters of the DC fan parameters are not set correctly. 2. DC fan is bad.	1. Check the factory parameters of the DC fan parameters to change to 1. 2. Replace the DC fan.
Er 66	DC fan 2 fault	1. Factory parameters of the DC fan parameters are not set correctly. 2. DC fan is bad.	1. Check the factory parameters of the DC fan parameters to change to 1. 2. Replace the DC fan.
Er 67	Low pressure switch failure	1. Low pressure pressure sensor is wired incorrectly. 2. Low pressure pressure sensor is bad.	1. Change the low pressure pressure sensor wiring to the correct connection. 2. Replace the low pressure sensor with a new one.
Er 68	High pressure switch failure	1. High pressure pressure sensor is wired wrongly. 2. High pressure pressure sensor is bad.	1. Change the wiring of high pressure pressure sensor to the correct connection. 2. Replace the new low pressure pressure sensor.
Er 69	Too low pressure protection	1. Check if dry filter jammed. 2. Failure of EE valve. 3. Lack of refrigerant.	1. Check repair or replace filter. 2. Check if EE valve broken and replacement needed. 3. Refill certain refrigerant.
Er 70	Too high pressure protection	1. Too much refrigerant filled in. 2. Liquied-like refrigerant flows from evaporator into compressor. 3. EE valve failure.	1. Discharge certain refrigerant. 2. Check and adjust EE valve,make sure EE valve sensor is well connected with return gas pipe. 3. Check if EE valve broken and replacement needed.

### 3、 Other problem and repairing

No	Error	Possible reason	Method
1	Heat pump doesn't run	1. Power supply cable is loose 2. The fuse of power supply is fused.	1. Cut off the power supply to check and repair. 2. Change the fuse.
2	Heating capacity is too small	1. Refrigerant is not enough 2. Water system insulating is not good 3. Air heat exchanger is dirty 4. Water heat exchanger scaled	1. Check leakage and repair and refill gas 2. Improve the insulation 3. Clean air heat exchanger 4. Clean water heat exchanger
3	Compressor doesn't run	1. Power supply has error 2. Cable connecting is loose 3. Compressor is overheat	1. Check reason and solve 2. Check loose and repair 3. Check reason and repair
4	Compressor noise is loud	1. Expansion valve damaged lead to liquid entering compressor 2. The internal parts of compressor damaged 3. Compressor lack of oil	1. Change expansion valve 2. Change compressor 3. Compensate oil for compressor
5	Fan motor doesn't run	1. Fan blade fixing screw is loose 2. Fan motor damaged 3. Fan motor capacitance damaged	1. Tight the screw 2. Change fan motor 3. Change the capacitance
6	Compressor run, but not heat	1. There is not refrigerant at all 2. Compressor damaged	1. Check leakage and repair 2. Change compressor



# Items of warranty

1. Warranty terms: \_\_\_\_\_ ; Within warranty, any problem because of quality, please contact us for support.
2. When repair needed, please show the warranty card and invoice of order or other proof.
3. We don't afford the problem that is caused by re-fitment or adding other function by user.
4. Warranty card and invoice or other purchasing proof will be invalid if alerted.
5. Please keep the warranty card and invoice or other purchasing proofs well, we will need these for service purpose.
6. We will not provide free warranty for below conditions:
  - (1) without proof;
  - (2) errors caused by re-fitment or not correct operating;
  - (3) damage caused by not professional people operating;
  - (4) faulty by moving or falling;
  - (5) faulty caused by natural disaster;
  - (6) After the power failure, the water in the pipeline of the unit was not discharged, which caused the unit to freeze.

# CERTIFICATE

Product Model: \_\_\_\_\_

\_\_\_\_\_

Bar code: \_\_\_\_\_

\_\_\_\_\_

## PRODUCT CERTIFICATE

Product model: See the nameplate of the indoor unit

Factory code: See body barcode

Date of manufacture: See body barcode

Inspection conclusion:

Inspector:

**PASS**  
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