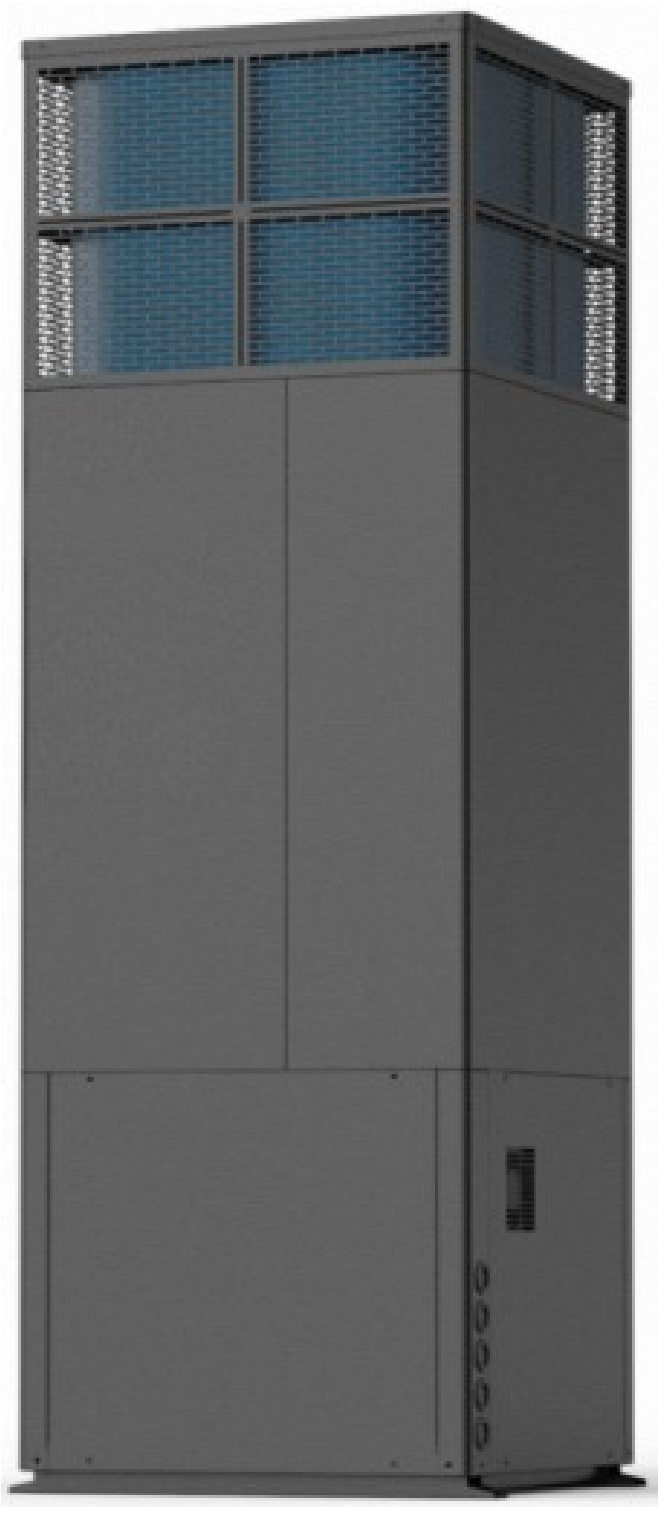
Alchemy Range

WATER MASTERY

Outdoor All-in-One Heat Pump

Integrated Hot Water & Heating - Installation Manual

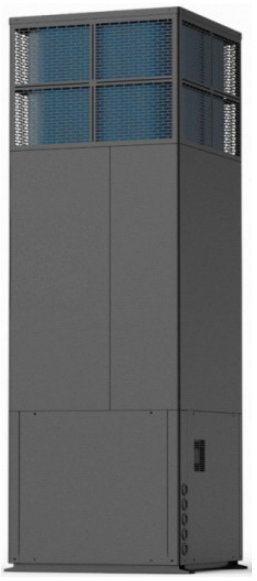
JCM60HC | JCM90HC



Supplied in Ireland by Alchemy Range

Alchemy Range is the trading name of Price King Sales Limited, Blessington, Co. Wicklow. CRO 509453.
alchemyrange.ie | david@alchemyrange.ie | +353 (0) 87 638 2544

Installation must be carried out by a qualified installer. Please read this manual fully and keep it for future reference.



Integrated Hot Water & Heating Heat Pump

Models:

JCM60HC
JCM90HC





NOTE:

Before operating this product, please read the instructions carefully and keep this manual for future use.

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1 Before use

1.1 Advanced Important Notice

Cautions:

1. Do not use means to accelerate the defrosting process or to clean other than those recommended by the manufacturer.
2. The appliance shall be store d in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
3. Do not pierce or burn.
4. Be aware that refrigerants may not contain an odour.
5. Appliance shall be installed, operated and stored in a room with a floor area larger than X m^2 (refer to specifications sheet).
6. The installation of pipe-work shall be kept to a minimum X m^2 (ref er to specifications sheet).
7. Spaces where refrigerant pipes shall be compliance with national gas regulations.
8. Servicing shall be performed only as recommended by the manufacturer.
9. The appliance shall be store d in a well-ventilated area where the room size corresponds to the room area as specified for operation.
10. All working procedure that affects safety means shall only be carried by competent persons.

General Notice:

1.Transport of equipment containing flammable refrigerants

Compliance with the transport regulations

2.Marking of equipment using signs

Compliance with local regulations

3.Disposal of equipment using flammable refrigerants

Compliance with national regulations

4.Storage of equipment/appliances

The storage of equipment should be in accordance with the manufacturer’s instructions.

5.Storage of packed (unsold) equipment

Storage package protection should be constructed such that mechanical damage to the equipment inside the package will not ca use a leak of the refrigerant charge.

The maximum number of pieces of equipment permitted to be store d together will be determined by local regulations.

6.Information on servicing

1)Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

2)Work procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.

3)General work area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.The area around the work space shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

4)Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment being use d is suitable for use with flammable refrigerants i.e., non-sparking, adequately sealed or intrinsically safe.

5)Presence of fire extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

6)No ignition sources

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposing, during which flammable refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

7)Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

8)Checks to the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

•The charge size is in accordance with the room size within which the refrigerant-containing parts are installed;

•The ventilation machinery and outlets are operating adequately and are not obstructed;

•If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

•Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

•Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant-containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

9)Checks for electrical devices

Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

•That capacitors are discharged: this shall be done in a safe manner to avoid the possibility of sparking;

•That there are no live electrical components and wiring exposed while charging, recovering,or purging the system;

•That there is continuity of earth bonding.

7. Repairs to sealed components

1)During repairs to sealed components, all electrical supplies must be disconnected from the equipment being worked on before any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to the equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

2)Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE: The use of silicone sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

8.Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

9.Cabling

Ensure that cabling will not be subject to wear, corrosion, excessive pressure, vibration,sharp edges, or any other adverse environmental effects.The check shall also take into account the effects of aging or continuous vibration from sources such as compressors or fans.

10.Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

11.Leak detection methods

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants.

Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25% maximum) is confirmed.

Leak detection fluids are suitable for use with most refrigerants, but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut-off valves) in a part of the system remote from the leak.

Oxygen-free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

12.Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional

procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

•Remove refrigerant;

•Purge the circuit with inert gas;

•Evacuate;

•Purge again with inert gas;

•Open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be "flushed" with OFN to render the unit safe. This process may need to be repeated several times.

Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system.When the final OFN charge is used,the system shall be vented down to atmospheric pressure to enable work to take place.

This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

13.Charging Procedures

In addition to conventional charging procedures, the following requirements shall be followed.

•Ensure that contamination of different refrigerants does not occur when using charging equipment.

Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.

•Cylinders shall be kept upright.

•Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.

•Label the system when charging is complete (if not already).

•Extreme care shall be taken not to overfill the refrigeration system.

Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

14.Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are recovered safely.

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is require d prior to re -use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.

b) Isolate system electrically.

c) Before attempting the procedure ensure that:

•Mechanical handling equipment is available, if required, for handling refrigerant cylinders;

•All personal protective equipment is available and being used correctly;

•The recovery process is supervised at all times by a competent person;

•Recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in accordance with manufacturer's instructions.

h) Do not overfill cylinders. (No more than 80% volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another refrigeration system unless it ha been cleaned and checked.

15.Labeling

Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant.The label shall be dated and signed.Ensure that there are labels on the equipment stating that the equipment contains flammable refrigerant.

16.Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labeled accordingly (i.e., special cylinders for the recovery of refrigerant).

Cylinders must be equipped with a pressure relief valve and associated shut-off valves in good working order. Empty recovery cylinders should be evacuated and, if possible, cooled before recovery takes place.

The recovery equipment must be in good working order and come with a set of instructions that are readily available. It should be suitable for the recovery of flammable refrigerants. Additionally, a set of calibrated weighing scales must be available and in good working order. Hoses must be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, ensure it is in satisfactory working order, has been properly maintained, and that any associated electrical components are

sealed to prevent ignition in the event of a refrigerant release.

Consult the manufacturer if in doubt. The recovered refrigerant must be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note must be arranged.Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to ensure that flammable refrigerant does not remain within the lubricant. The evacuation process must be carried out prior to returning the compressor to the suppliers.Only electric heating to the compressor body should be used to accelerate this process. When oil is drained from a system, it must be done safely.

1.2 Preliminary Information

Thank you for your purchase of our quality heat pump.

This manual is intended to provide detailed instructions for the successful installation of your newly purchased heat pump product. Please ensure that this manual, along with the User's and Service manuals, are kept in an easy-to-access location for your reference later on.

DISCLA IMER

Proper adherence to the directions provided herein is vital for the smooth operation of this system, as well as for your safety and the safety of those around you. We are not responsible or liable for any losses incurred due to misuse or mishandling of this product, which includes, but is not limited to:

•Purchasing, installing, and/or operating this product with the intention of using it outside of its established, technical purpose.

•Carrying out improper work upon the unit, or any of its components, that has not been given explicit, prior consent in the form of writing.

•Installation attempts of this system by anyone other than a properly trained and licensed professional.

•Negligence in using properly-worn personal protection (safety glasses, gloves, etc.) while performing installation, maintenance, or servicing of this product.

•The operation of this system during ambient temperatures that are below or beyond the intended temperature range (-25°C to 45°C).

SAFETY

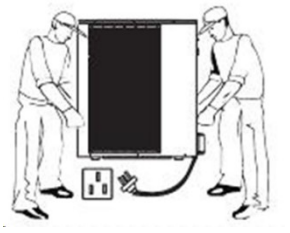
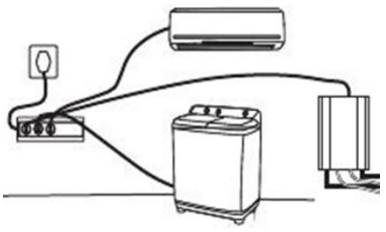
If unsure of what installation procedures to use, please contact your local distributor for information and/or advice. Any accessories used with this product must be official only. Any electrical work must be carried out by certified electricians only.The manufacturer is not responsible for any alterations or modifications that are made without explicit, written approval. The design of this unit complies with and conforms to all necessary and relevant safety regulations, and is otherwise safe to operate for its intended

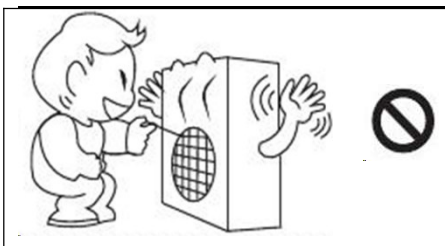
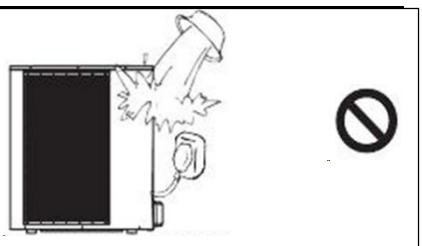
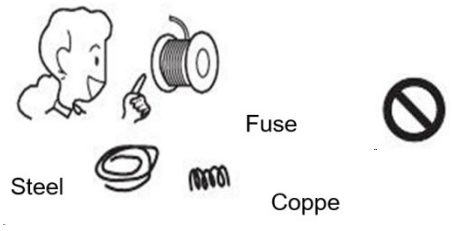
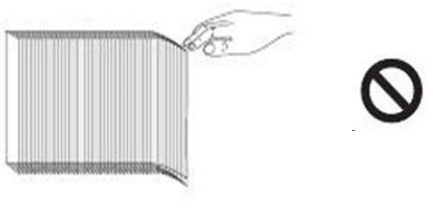
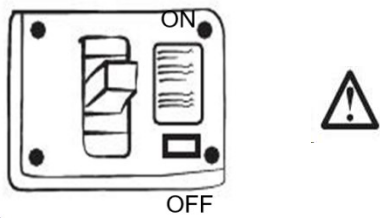
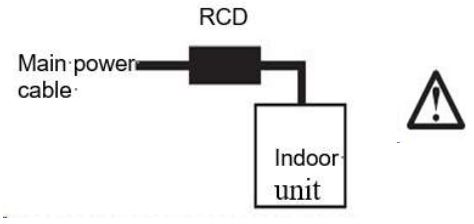
use.

Please pay attention to the following pages, which detail important precautions that should be closely followed, to ensure safe installation and operation.

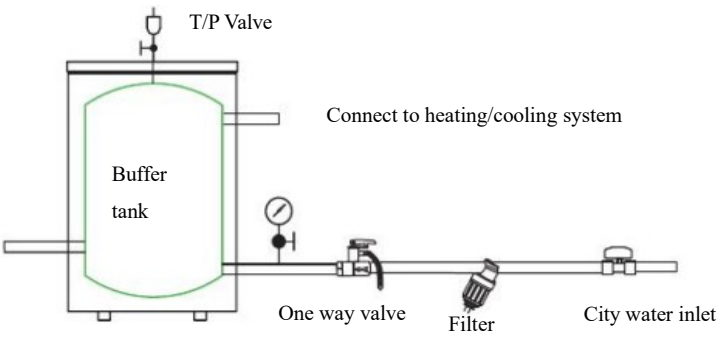
1.3 Safety Precautions

To ensure both your personal safety and the safety of the product, note the symbols below and be sure to understand their correlation to each of the precautions depicted.

Warning	**Caution**	**Prohibition**
		
The installation, dismantlement 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.	To avoid electrical shock, ensure the power supply is turned off for at least 1 minute before servicing the electrical components. Even after waiting for 1 minute, always measure the voltage at the terminals of the main circuit capacitors or electrical components and, before making contact, verify that these voltages are below the safety threshold.	Be sure to read this manual before use.
		
For sanitary hot water, please always add a mixture valve before water tap and set it to proper temperature.	Use a dedicated socket for this unit, otherwise malfunction may occur.	Ground wire The power supply to the unit must be grounded.
	This appliance is suitable for use by children aged 8 and above, as well as individuals with reduced physical, sensory, or mental capabilities, or those lacking experience and knowledge, provided they have been given supervision or instruction on the safe use of the appliance and understand the associated hazards. Children must not play with the appliance. Cleaning and user maintenance should not be performed by children without supervision.	

		
Do not touch the air outlet grill when fan motor is running.	Do not touch the power plug with wet hands. Never pull out the plug by pulling the power cable.	Water or any kind of liquid is strictly forbidden to be poured into the product, or may cause electric creepage or breakdown of the product.
		
When the power cord gets loose or damaged. always get a qualified person to fix it.	Please select the correct fuse or breaker as per recommended. Steel taken as substitute for fuse or maybe caused.	Be aware fingers might be hurt by the fin of the coil.
		
It is mandatory to use a suitable circuit breaker for the heat pump and ensure that the power supply to the unit corresponds to the specifications. Otherwise, the unit might be damaged.	Disposal of Scrap Batteries (if any). Please discard the batteries as sorted municipal waste at the accessible collection point.	Installing a residual current device (RCD) with a rated residual operating current not exceeding 30mA is advisable.

System water filling



1. It's suggested to use pure water for filling the system.
2. If use city water for filling, please soften the water and add a filter.

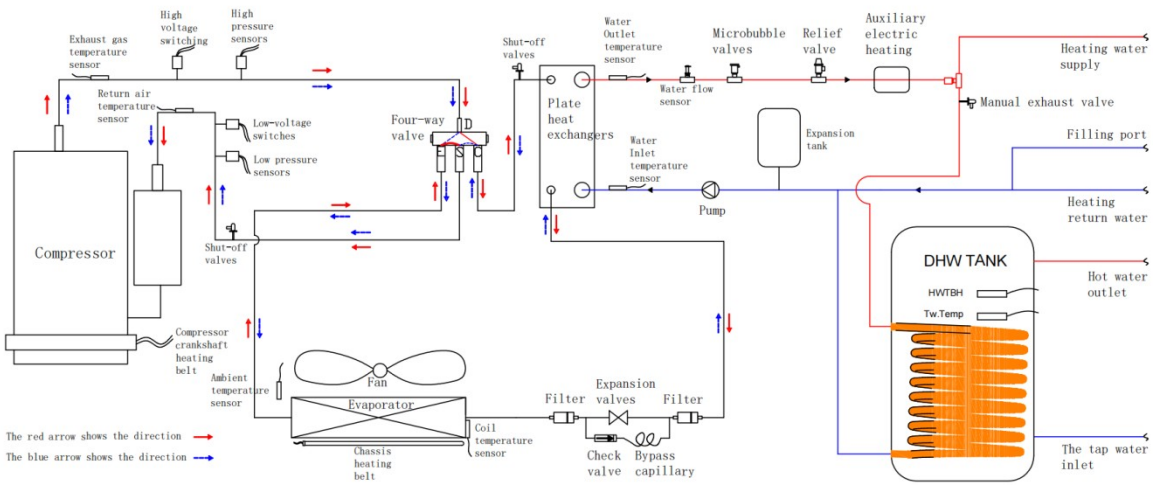
Note:

After filling, the system of water system should be 0.15~0.6MPa.

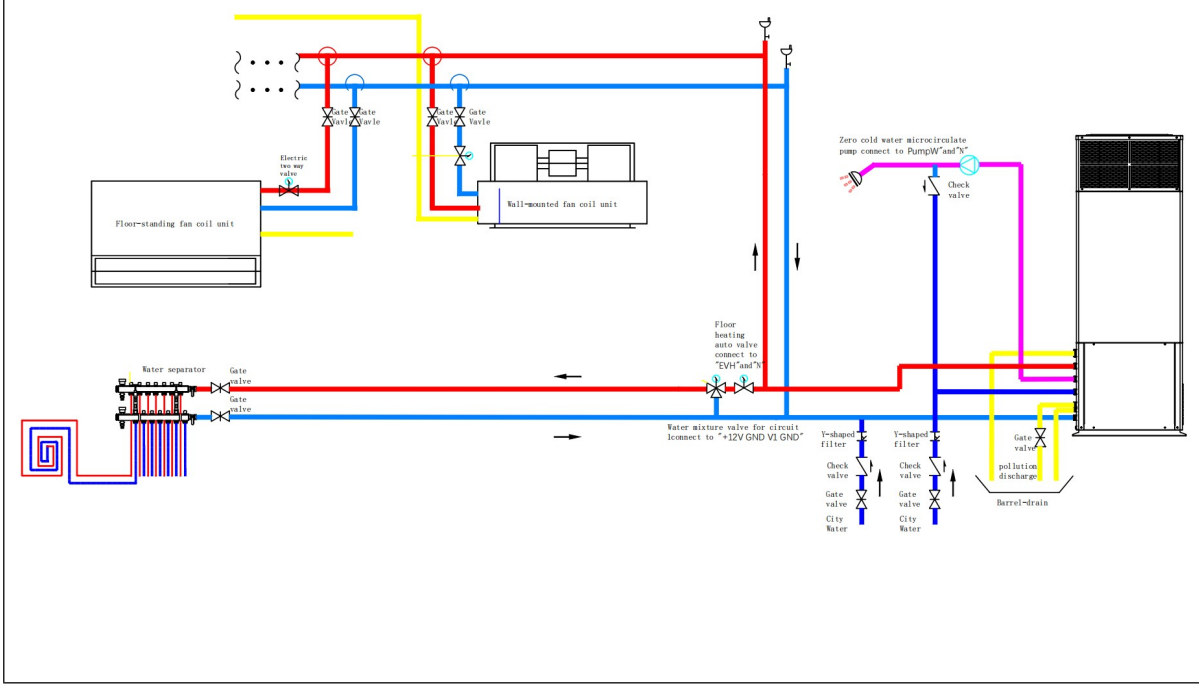


This marking indicates that this product should not be disposed of with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmentally safe recycling.

1.4 Functioning Principles



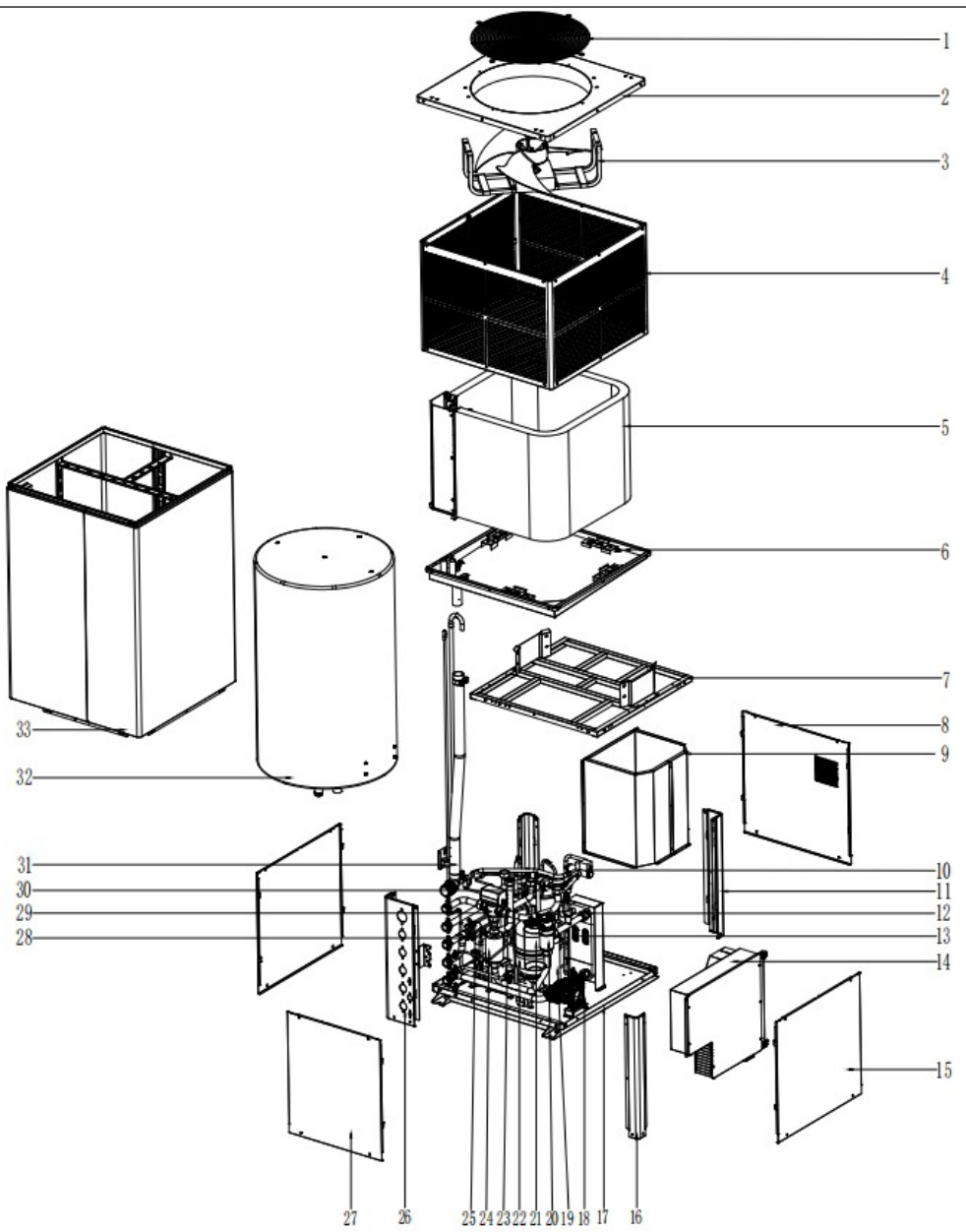
Schematic diagram of Heat pump



Application System Diagram

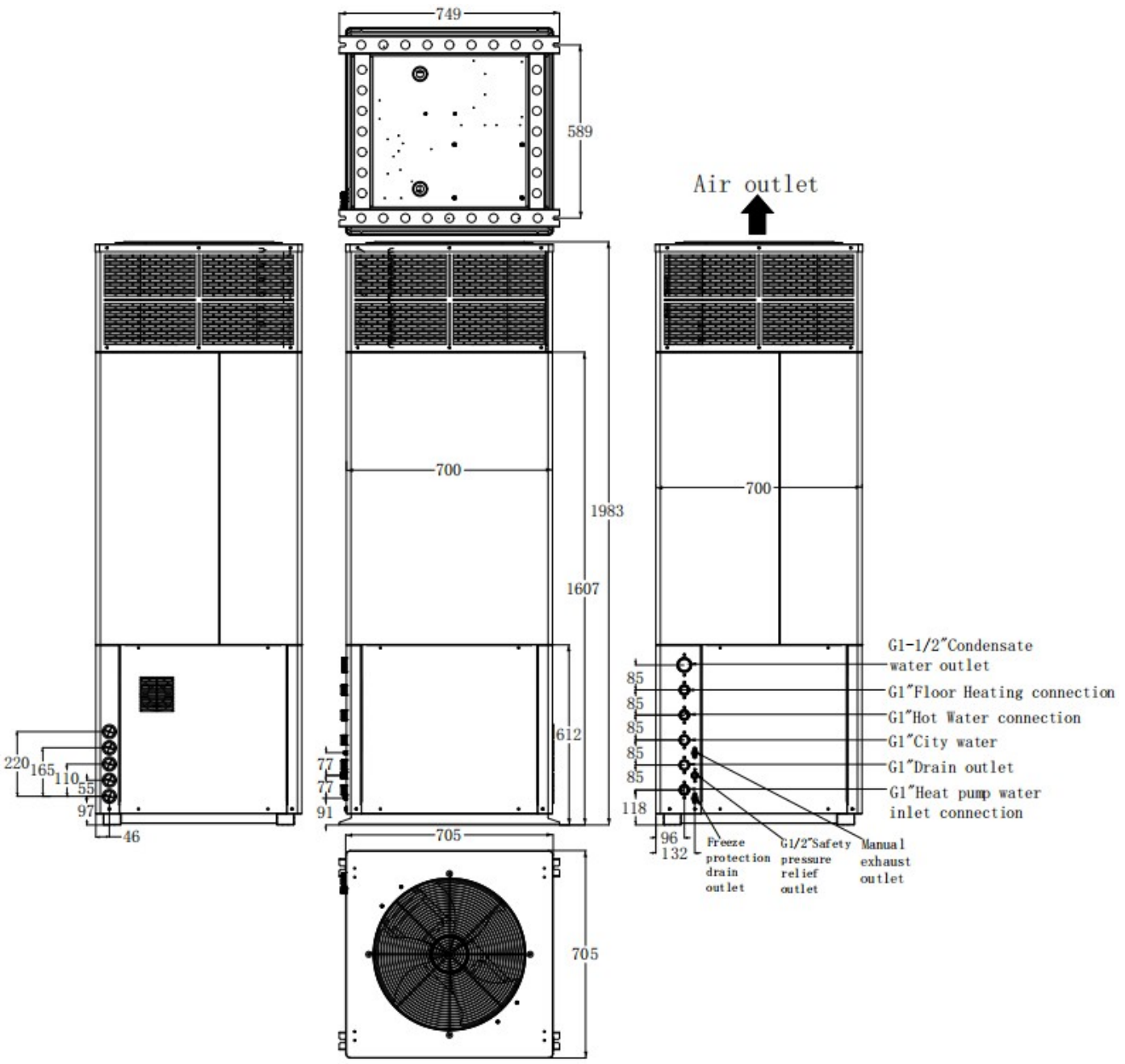
1.5 Main components

JCM60HC/JCM90HC

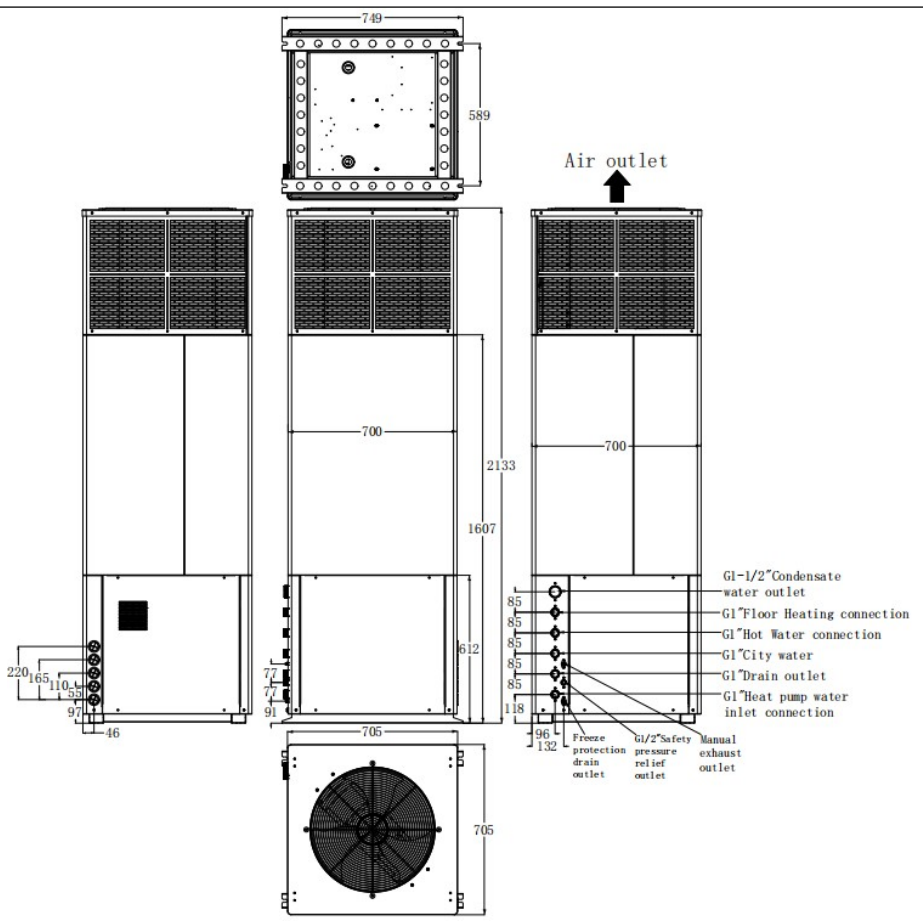


1	Top net	12	Water flow switch	23	Safety relief valve
2	Top cover	13	Plate heat exchanger	24	Electric heating
3	Motor assembly	14	Electronic control module	25	Electronic expansion valve
4	Top frame	15	Front and rear cover plates	26	Fixed plate for water outlet
5	Evaporator	16	Bottom column 2	27	Left panel
6	Water collection tray assembly	17	Chassis assembly	28	Top cover
7	Middle frame component	18	Water pump	29	Three-way valve
8	Drive side cover plate	19	reservoir tank	30	Compressor
9	Right panel	20	Microbubble exhaust valve	31	Drain pipe
10	four-way valve	21	Gas-liquid separator	32	tank
11	Bottom column 1	22	Expansion tank	33	Intermediate box body

JCM60HC


749
589
Air outlet
700
700
1983
1607
612
220
165
110
55
97
46
77
77
91
705
705
85
85
85
85
85
118
96
132
G1-1/2"Condensate water outlet
G1"Floor Heating connection
G1"Hot Water connection
G1"City water
G1"Drain outlet
G1"Heat pump water inlet connection
Freeze protection drain outlet
G1/2"Safety pressure relief outlet
Manual exhaust outlet

JCM90HC



Note:

The models shown together in the explosion diagram and dimension drawing only indicate that the component positions and dimensions are consistent. When installing components, do not assume they are identical.

1.6 Specification

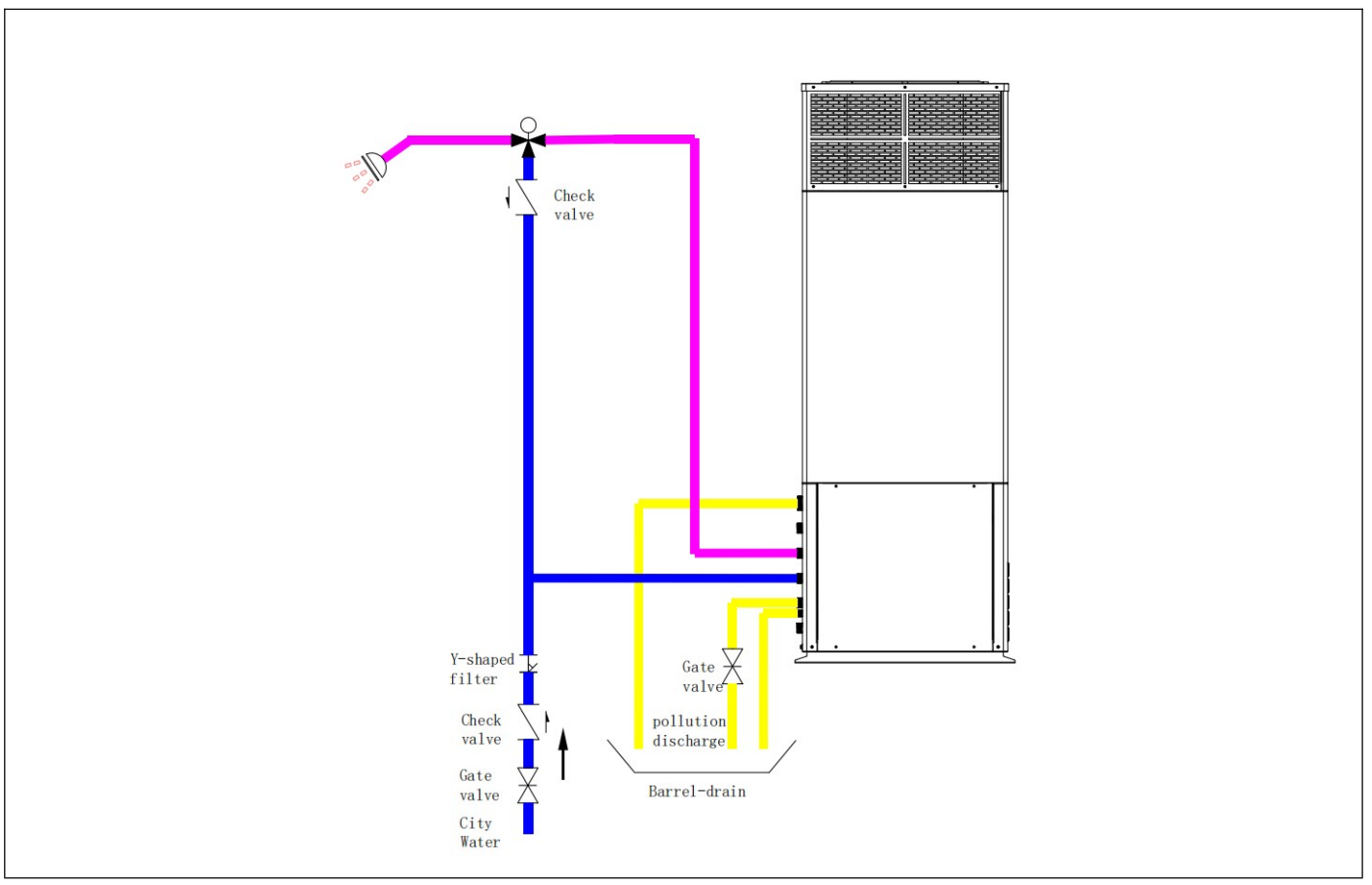
CE			
Air Source Heat Pump			
Model		JCM60HC	JCM90HC
Power Supply		220-240V~ 50Hz	220-240V~ 50Hz
Heating[1]	Capacity	2000~6156W	3000~9240W
	Power input	350~1282W	645~1905W
	Current input	1.52~5.82A	2.8~8.28A
Heating[2]	Capacity	2000~6105W	3500~8680W
	Power input	500~1970W	900~2782W
	Current input	2.17~8.95A	3.91~12.09A
Cooling	Capacity	1500~5180W	2875~7310W
	Power input	500~1780W	900~2520W
	Current input	2.17~8.09A	3.91~10.96A
Max power input		3680W	4830W
Max current input		16A	21A
Circuit breaker		25A	25A
Max COP Heating		4.68	4.85
Max.Outlet Water Temp		75℃	75℃
Operation Ambient Temp		-25~43℃	-25~43℃
Refrigerant Type/Charge		R290/750g	R290/850g
CO_2 Equivalent (GWP)		0.00225t	0.00255t
Operation Pressure (High/Low Side)		3.0/0.85Mpa	3.0/0.85Mpa
Max.Allowable Pressure		3.0Mpa	3.0Mpa
Anti-electric shock class		Class I	Class I
Degree of protection		IPX4	IPX4
Rated Water Flow		17L/Min (1.03m³/h)	26L/Min (1.55m³/h)
Water Piping Connections		G1'	G1'
Water Pressure Drop		12kPa	20kPa
Net Dimensions (mm)		700×700×1985	700×700×2135
Rated Test Conditions: **Heating[1]: Ambient Temp.7℃/6℃(DB/WB).Water-In/Out Temp.30℃/35℃** **Heating[2]: Ambient Temp.7℃/6℃(DB/WB).Water-In/Out Temp.47℃/55℃** **Cooling: Ambient Temp.35℃/24℃(DB/WB).Water-In/Out Temp.12℃/7℃** **Note: For outdoor use only. Installation & service by licensed mechanic only.**			

2 Installation

2.1 General application system

2.1.1 Sanitary Hot Water

For safety purposes, it is recommended to set up the sanitary hot water system as shown below:



After the heat pump is connected directly with the tank, city water will be heated by hot water in the tank when it runs through a long coil inside the tank.

The disadvantage of this application is that heat is transferred from hot water in the tank to city water in the coil, thus it will have a reduced volume of sanitary hot water available compared with other solutions.

The advantages of this application are:

A. The heat pump is connected with the tank directly, which ensures an effective water flow rate inside the heat pump system.

B. Sanitary hot water is heated by passing through the coil, which makes it unnecessary to have sanitization. This helps the system conserve more energy.

It is recommended to add a manual mixture valve between the city water inlet and the water tank sanitary hot water outlet. This can maximize the utilization of hot water in the tank and also ensure that its temperature does not become too high to cause burns.

2.1.2 Complete application system diagram

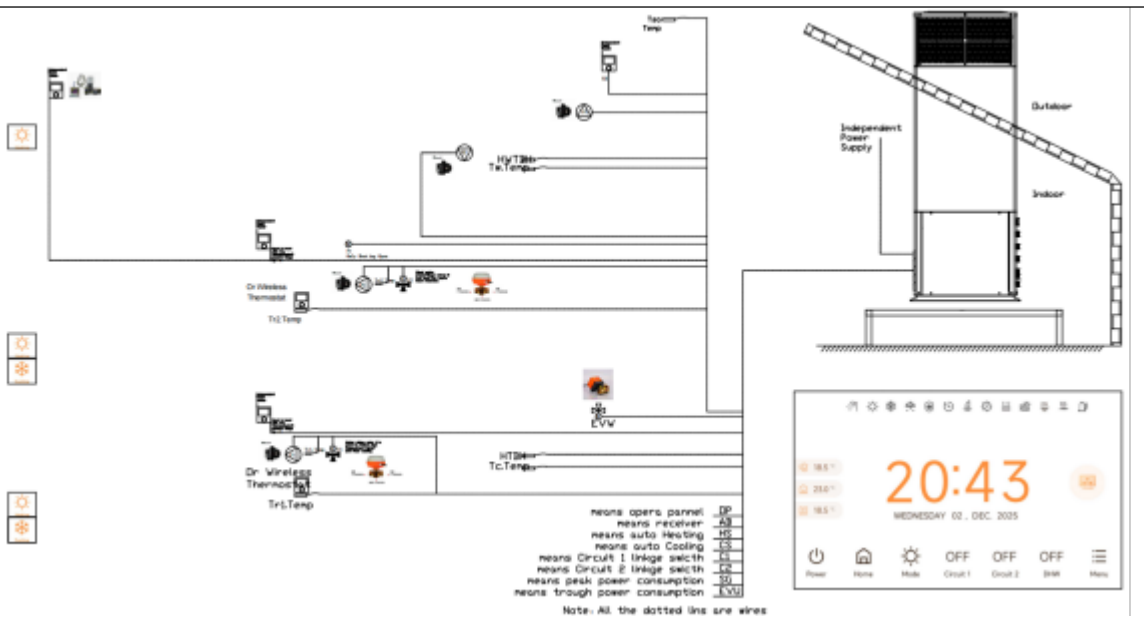
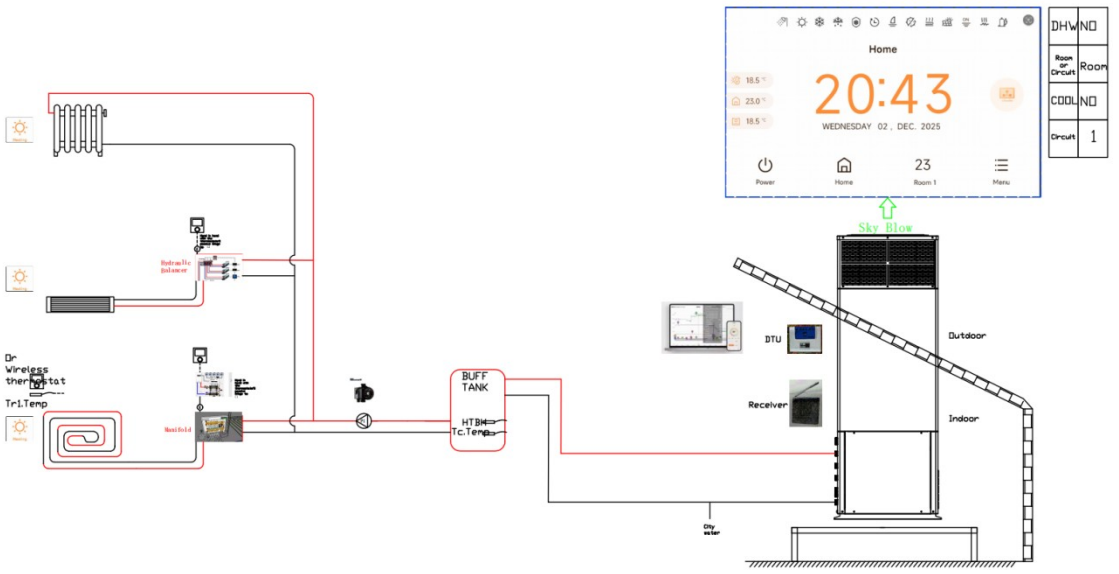
Note:

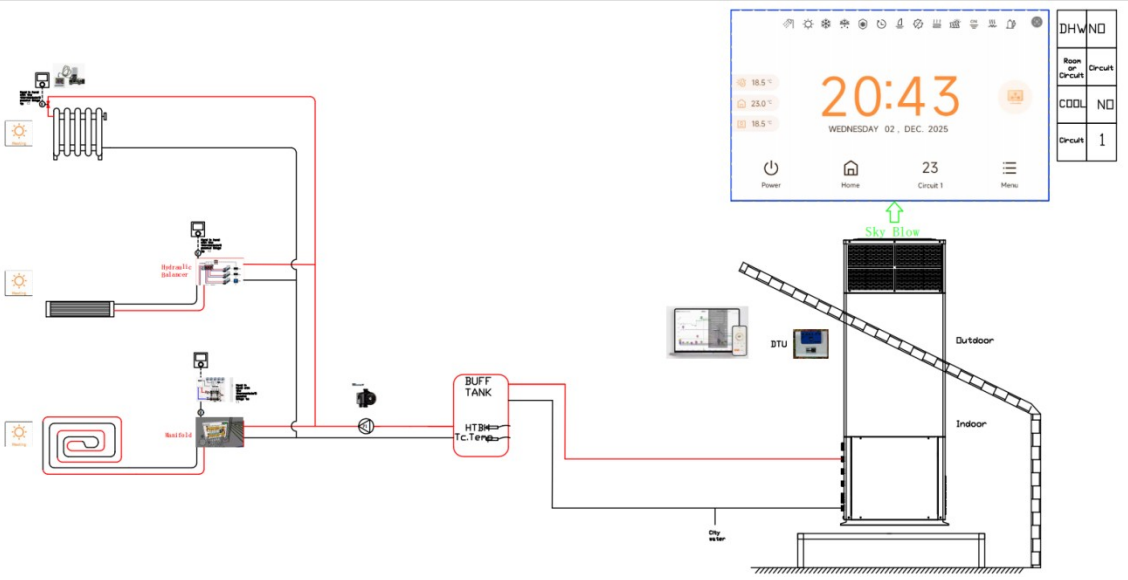
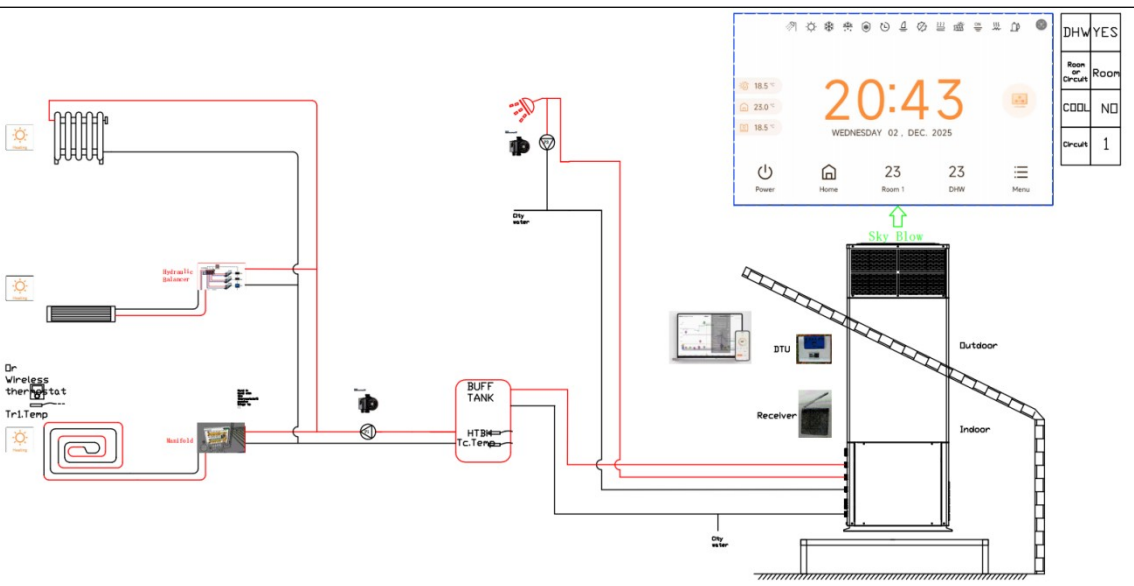
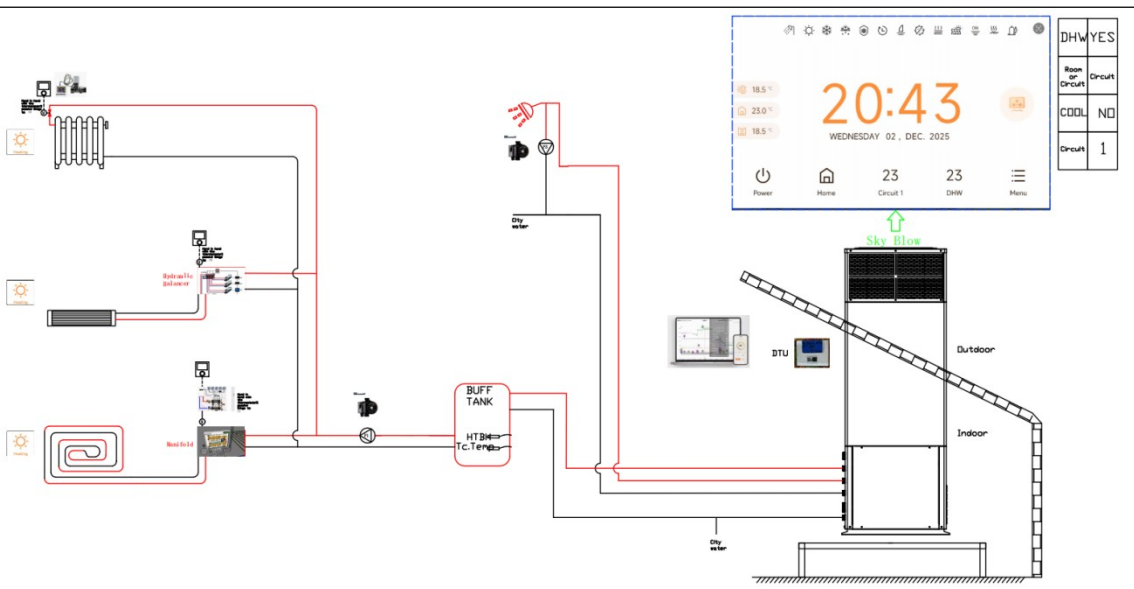
Buffer tank is always recommended to be included in the system, especially when the distribution system has water volume less then 20L/W. It should be installed between heat pump and distribution system, in order to:

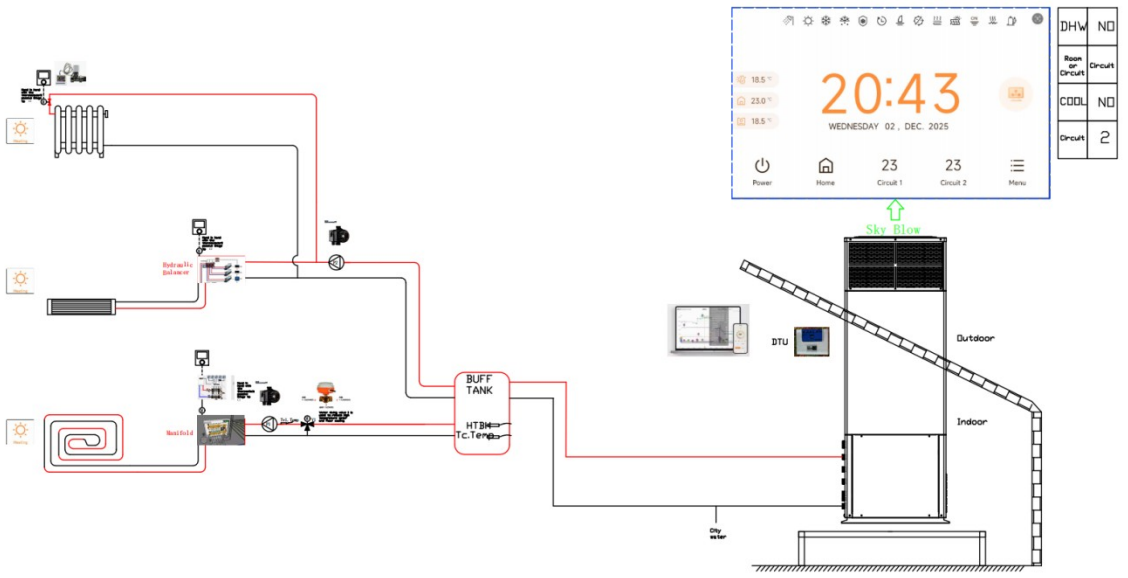
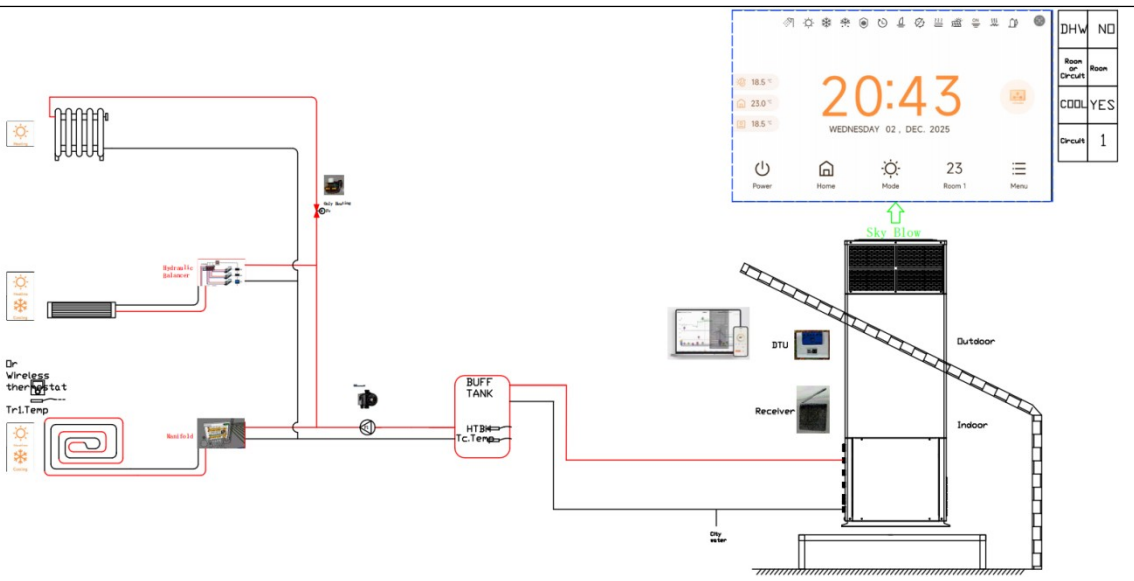
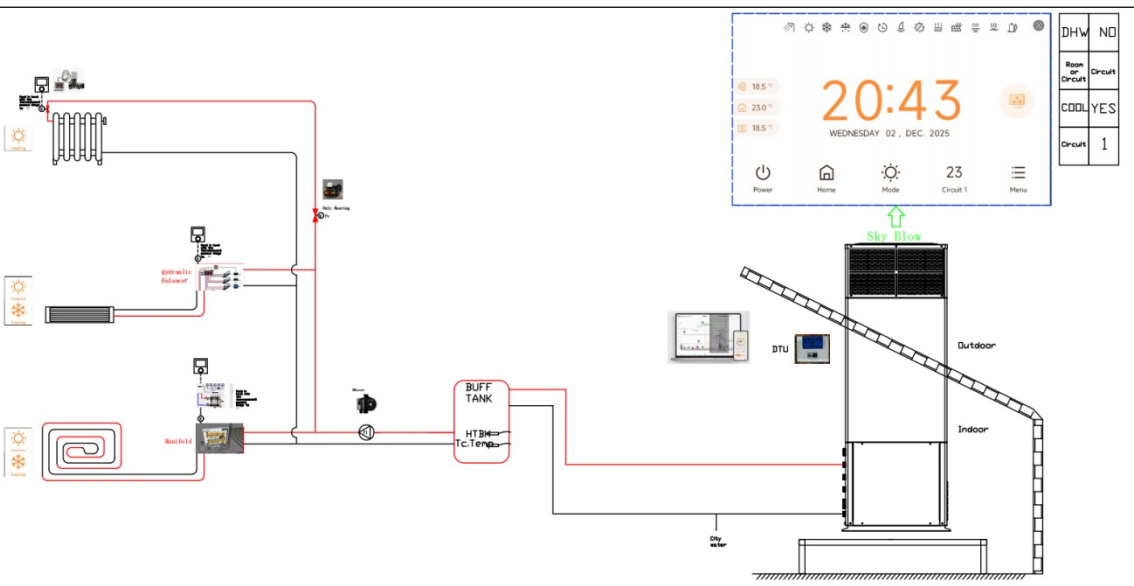
1) Ensure heat pump unit has stable and enough water flow rate.

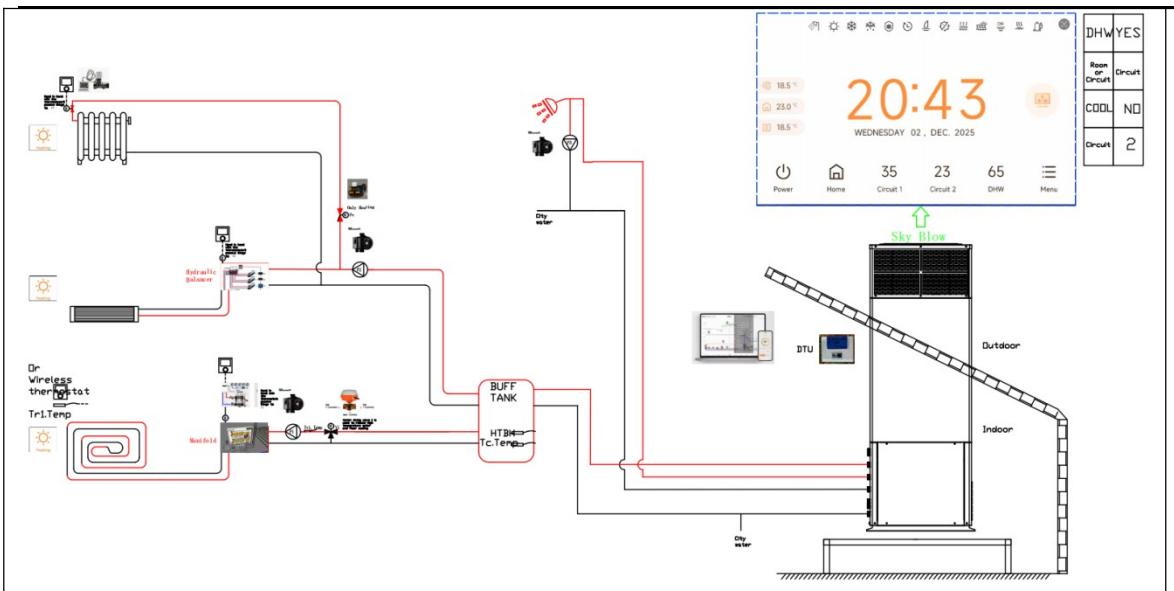
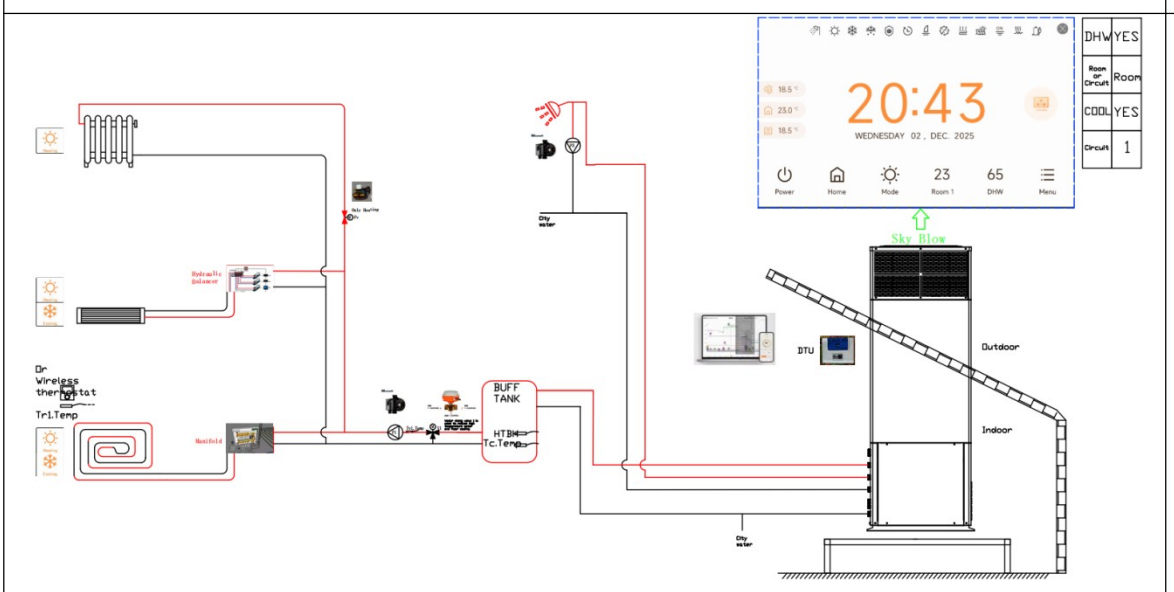
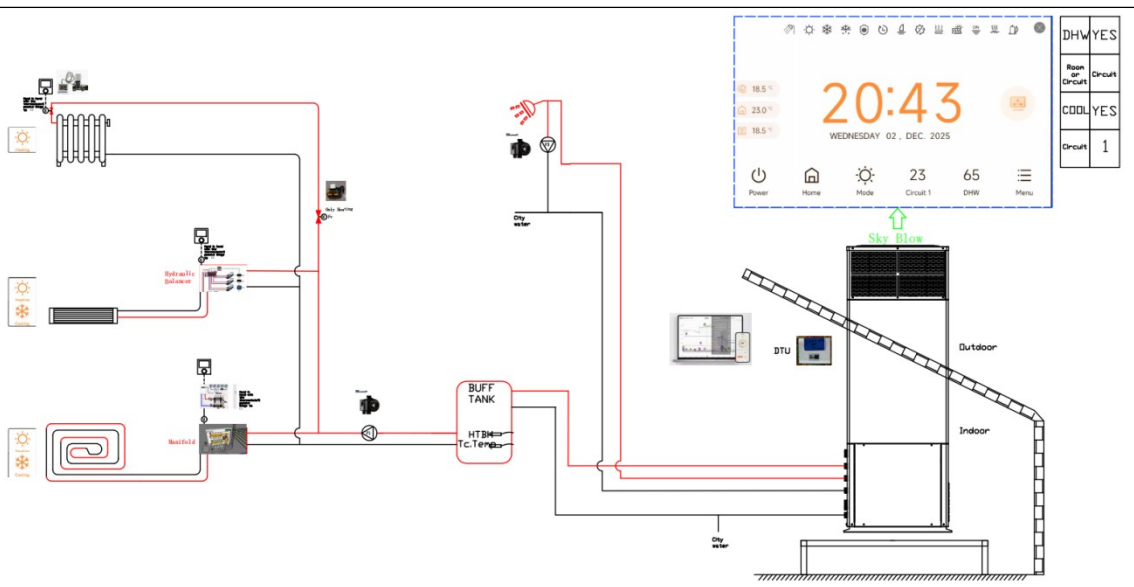
2) Store heat to minimize fluctuation of system heating/cooling load.

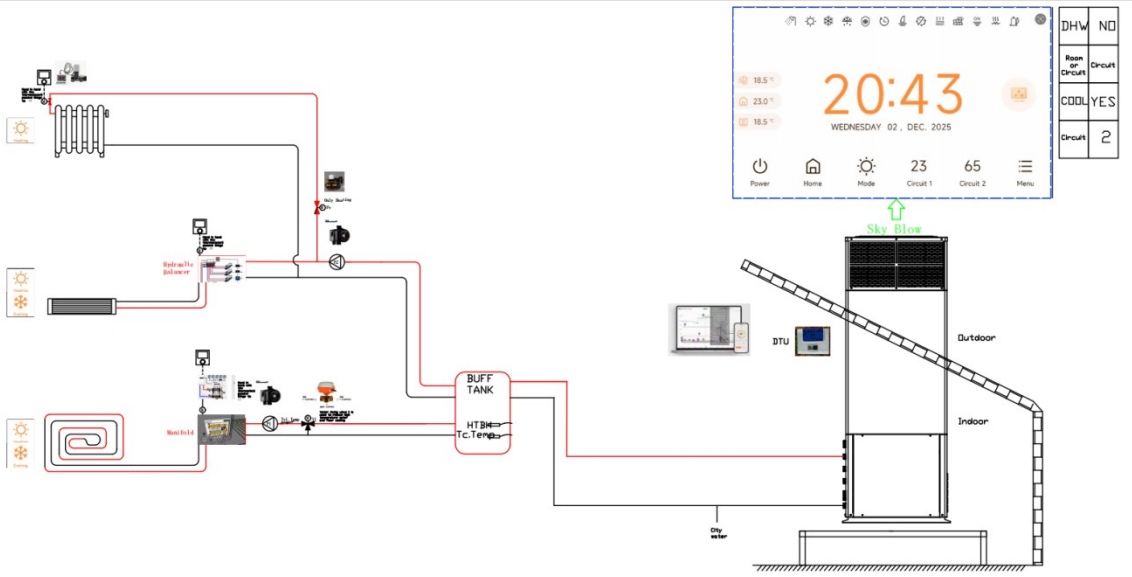
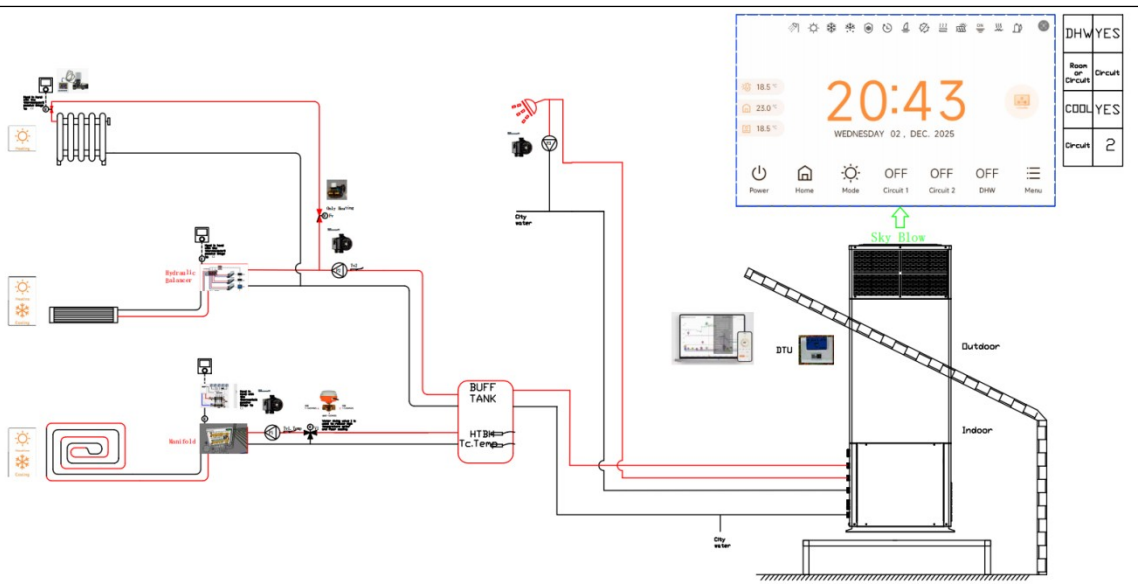
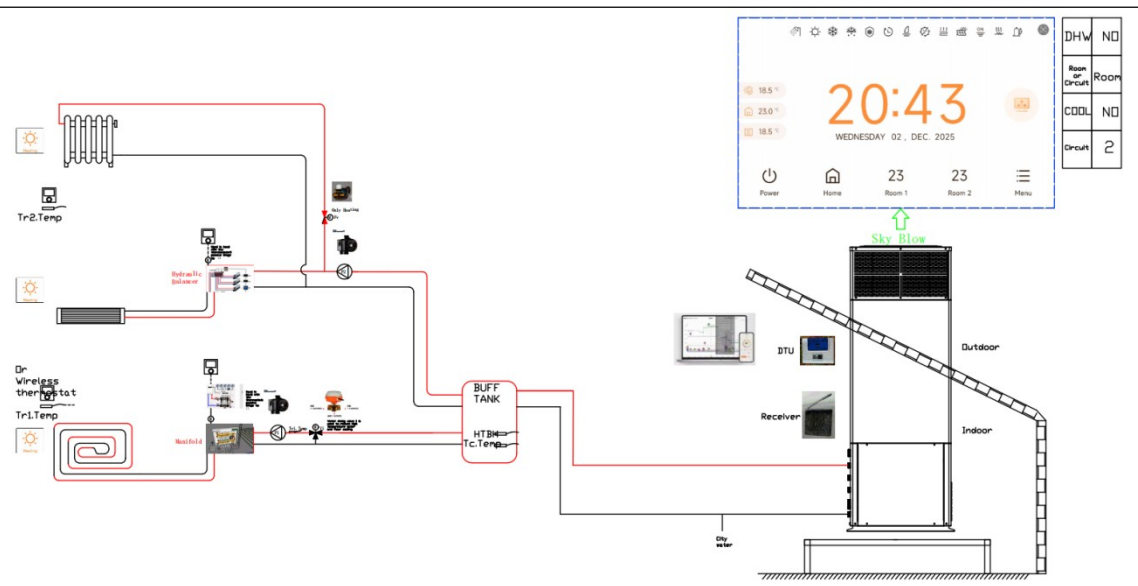
3) Extend the water volume of distribution system for proper working of heat pump unit.

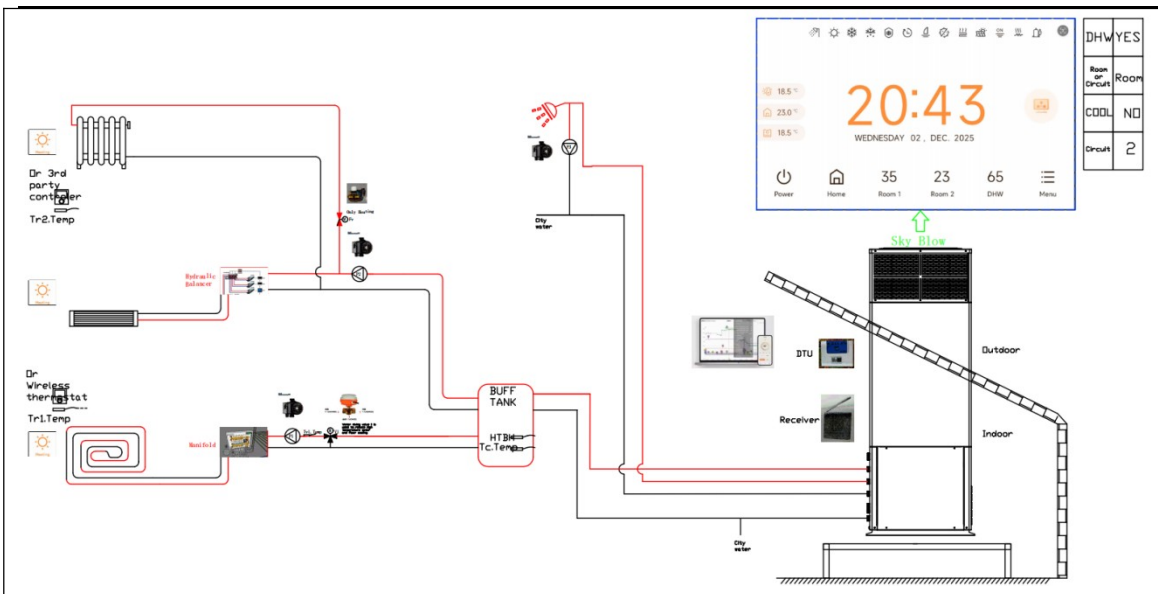
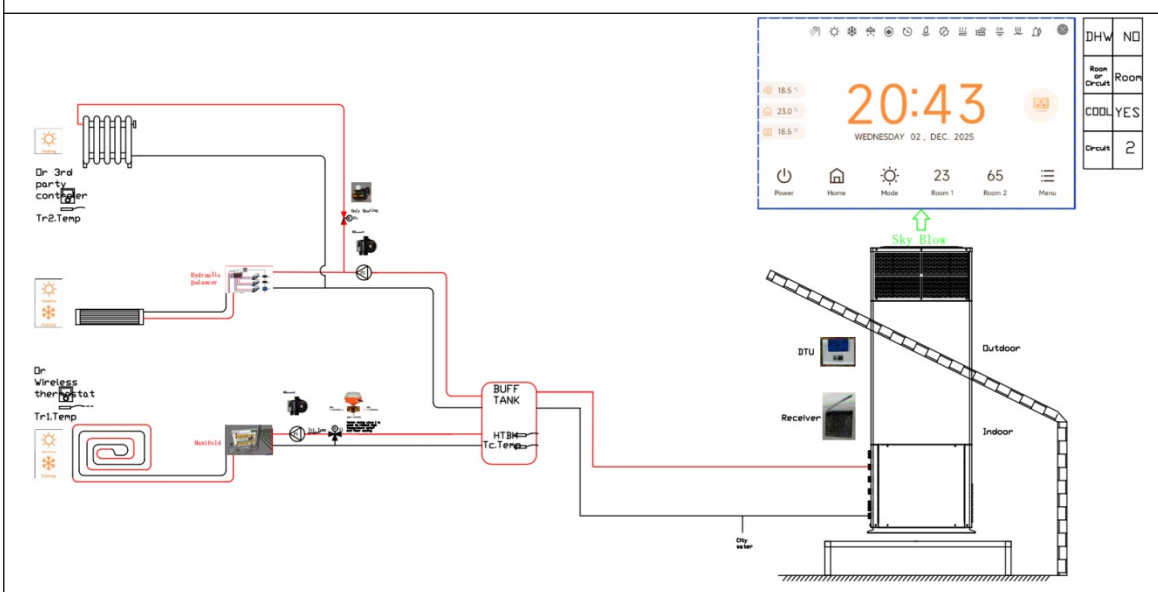
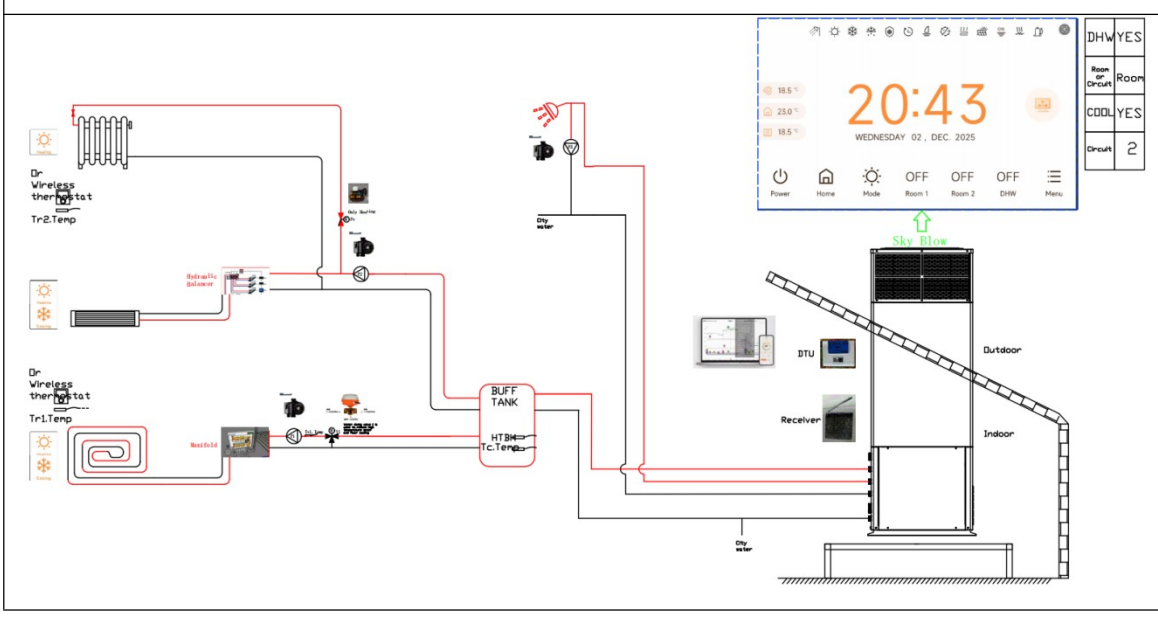
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<td>
</td>
<td>Wiring</td>
</tr>
<tr>
<td>
</td>
<td>Configuration 1
No DHW
One Zone
Room Control
Only Heat</td>
</tr>
</table>

	**Configuration 2** No DHW One Zone Water Control Only Heat
	**Configuration 3** Have DHW One Zone Room Control Only Heat
	**Configuration 4** Have DHW One Zone Water Control Only Heat

	**Configuration 5** No DHW Twin Zone Water Control Only Heat
	**Configuration 6** No DHW One Zone Room Control Heat&Cool
	**Configuration 7** No DHW One Zone Water Control Heat&Cool

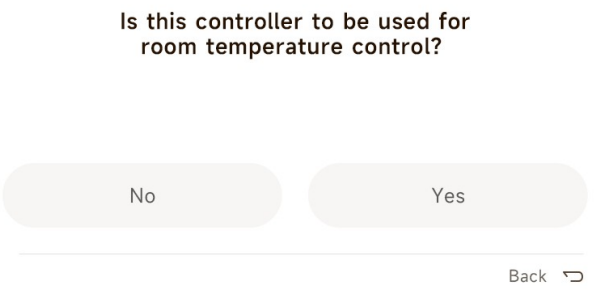
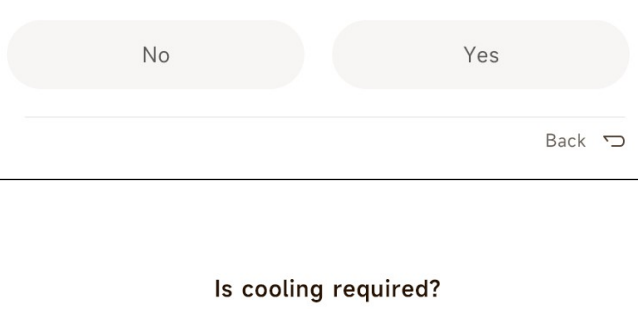
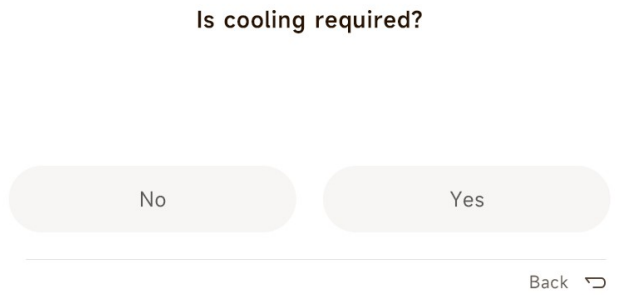
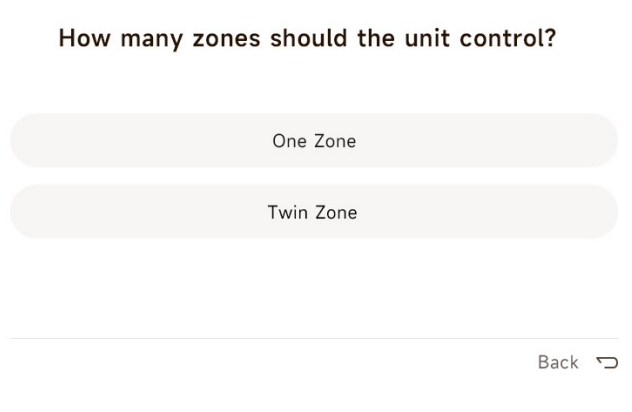
	**Configuration 8** Have DHW Twin Zone Water Control Only Heat
	**Configuration 9** Have DHW One Zone Room Control Heat&Cool
	**Configuration 10** Have DHW One Zone Room Control Heat&Cool

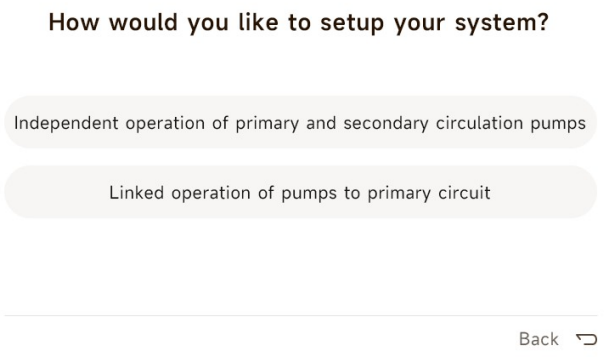
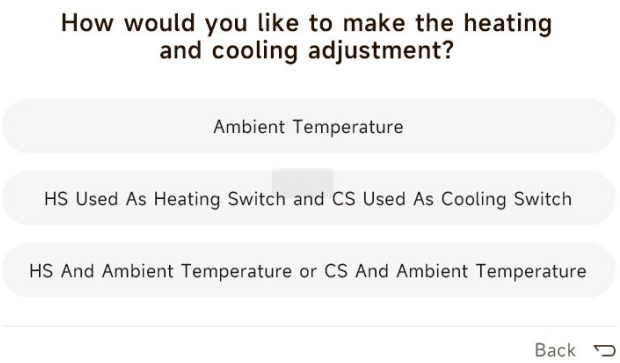
	**Configuration 11** No DHW Twin Zone Water Control Heat&Cool
	**Configuration 12** Have DHW Twin Zone Water Control Heat&Cool
	**Configuration 13** No DHW Twin Zone Room Control Only Heat

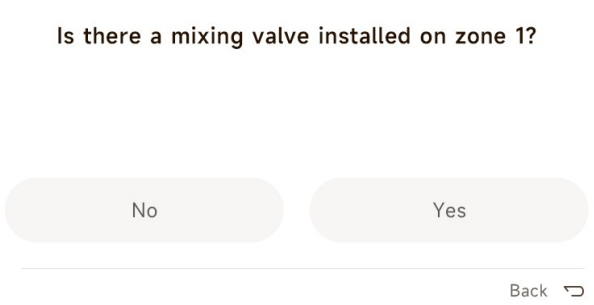
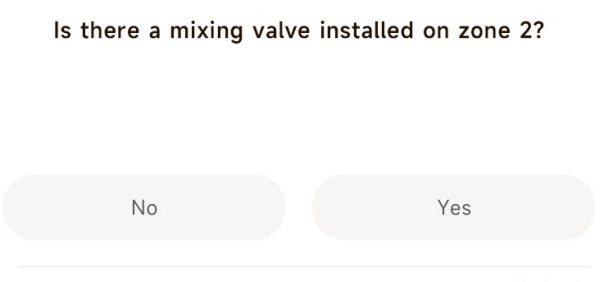
	**Configuration 14** Have DHW Twin Zone Room Control Only Heat
	**Configuration 15** No DHW Twin Zone Room Control Heat&Cool
	**Configuration 16** Have DHW Twin Zone Room Control Heat&Cool

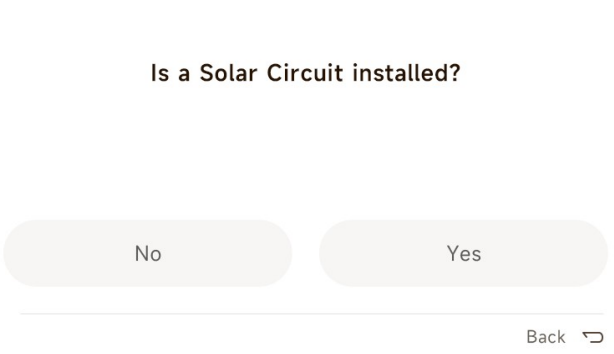
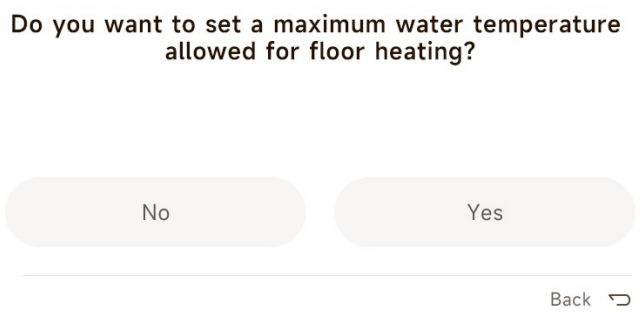
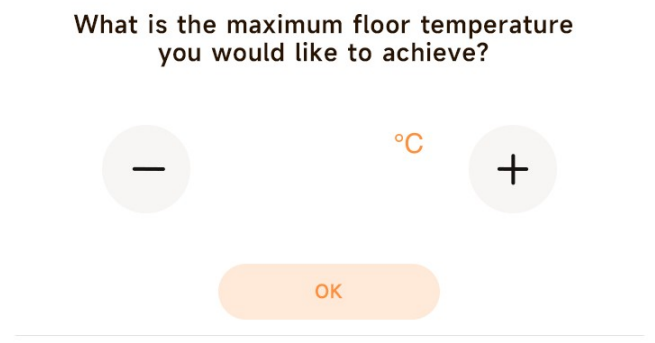
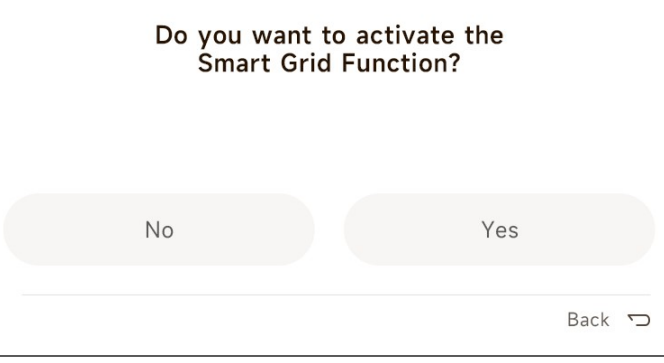
2.1.3 Power-on or system reset for the first time

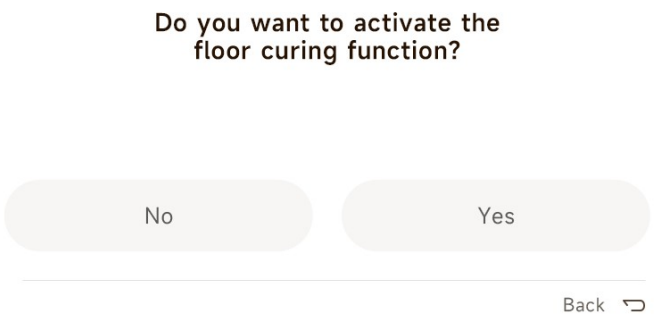
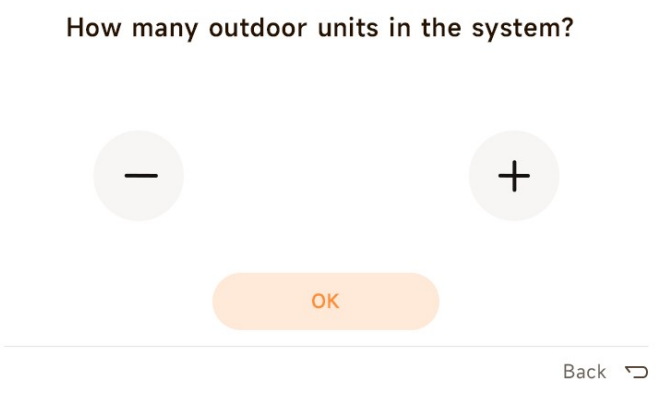
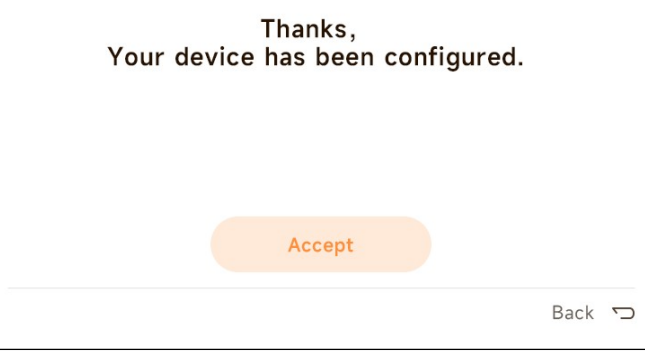
1. Language setting
2. Time setting
3. Configuration Q&A

	The room temperature sensor (Tr and Tr2) should be placed in an ideal location within the house to monitor the room temperature effectively. This allows the unit to utilize room temperature control mode and perform room temperature compensation.
	If a hot water tank is installed, the hot water temperature will appear on the controller main interface, as well as the ability to access the hot water temperature setting to adjust the set value. If "No" is selected, the hot water function will not be shown.
	If cooling fan coil is installed, the main interface of the controller will display mode selection, and the Cooling mode can be selected. Moreover, it is possible to enter the cooling temperature setting to adjust the setting value. If "No" is selected, the cooling function will not be shown.
	This heat pump unit can control two totally different heating/cooling circuit, as shown in the drawing. Of course, if only one circuit is needed, “One Circuit” you can select， than circuit 1 will be running. And then you want to change something, whatever the high temperature circuit is, the program confirm for itself.

	The remote interlocking function is a passive signal. 1. Independent operation. The unit operates as an independent secondary system. The water pump starts/stops with the main unit together, and neither C1 nor C2 needs to be closed. 2. Linked operation. The unit operates as a linked primary system. It requires C1 or C2 to be closed to start. The water pump will run continuously once C1 or C2 is activated, rather than following the main unit.
	The basis for judging the automatic function. 1.Environmental temperature serves as the basis for judgment. 2.When HS and Com “Close”,the unit can run Heating.When CS and Com “Close”,the unit can run Cooling. 3.When HS and Com “Close”,or,When CS and Com “Close”,the unit will select Heating or Cooling. (For a more detailed description of the function, please refer to the subsequent functional description.)

	If the system water temperature may be higher (or lower) than the temperature required for circuit 1 during heating (or cooling) operation, then a mixing valve can be added to circuit 1 and connected to the MV1 port in the Wiring center. The unit will control the mixing valve, mixing the supply and return water of circuit 1 so that the temperature read via sensor Tv1 reaches the value set under the menu “Heating & Cooling Settings for circuit 1”. **Note:** If Tv1 is not connected, while it is activated via settings here, the unit will display a relative failure code. (For a more detailed description of the function, please refer to the subsequent functional description)
	If system water temperature may higher(lower) than temperature that are need for circuit 2 in heating (cooling) ope ration, then a mixing valve can be a dded to circuit 2, and connected to M V2 port in Wiring center. Unit will control the mixing valve, mix the supply and return water of circuit 2 to have the temperature read via sensor Tv2 get to value set under menu “Heating & Cooling Settings circuit 2”. **Note:** If Tv2 is not connected, while it is activated via setting here, unit will show relative failure code. For a more detailed description of the function. (Please refer to the subsequent functional description.)

	The solar water heater interlocking function. Note: If it is not connected, while it is activated via setting here, unit will show relative failure code. (Please refer to the subsequent functional description.)
	Do you need to set high-temperature limitation for floor heating?
	High Temperature limitation of floor heating. The water temperature should not be too high for wood flooring. Otherwise, the wood flooring may be damaged. This is the limited value for the supply water temperature of the underfloor heating system. If it is not wood flooring, there is no need to change it.
	SG Ready. If Yes, the system will adjust the model's performance based on the grid signals from SG and EUV by either enhancing or reducing its operation. When SG is short-circuited, the system enters the reduction mode. When EUV is short-circuited,the system enters the enhancement mode.

	Floor Drying Function. If Yes,after the system configuration is completed, the heating setting temperature will be automatically adjusted by the floor drying function. The setting temperature will rise slowly to gradually dry out the moisture beneath the floor. Especially for new houses, there is more moisture under the floor. New houses that have completed the drying function can save 20% to 30% more energy than those that have not.
	How many outdoor units in the system?
	Complete configuration setting. Once the configuration is successful, even if there is a power outage,the completed Settings will be remained. If Reconfiguration is required,the system needs to be reset too.

2.2 Tools needed

Most people already possess the necessary tools for installation: a spirit level, pencil, crosshead screwdriver, drill, 8 mm concrete drill bit, detection drill, square, tape measure or ruler, tape with a width of 65 mm, a hole saw approximately 80 mm in diameter (variations in size may occur), a knife, and two adjustable spanners or pliers. (Additionally, a torque wrench may be required.)	

The installation of the product should be handled by professional installers or under their instructions.

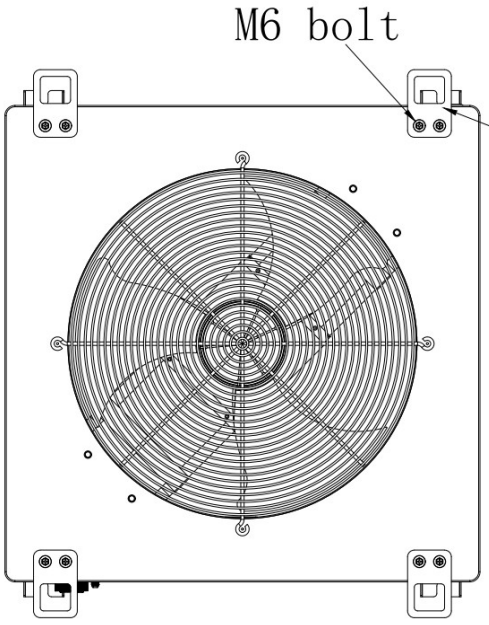
2.3 Hoisting

1) Remove the hoisting limit plate and bolts from the accessories, and install the hoisting limit plate firmly on the top cover as shown in the following figure.

2) Select two suitable lifting strap based on the weight of the unit. The load-bearing capacity of the lifting slings should be more than 1.5 times the weight of the unit.

3) Pass the lifting strap from the bottom footing and upwards, then through the lifting limit plate. Adjust the lifting strap to ensure that both sides are of the same length to prevent the lifting unit from tilting during lifting. Finally, hook the lifting strap onto the crane hook as shown in the following figure.

4) It should be noted that the top lifting limit plate is only used to limit the lifting strap and cannot be used for heavy lifting. When hoisting and moving, it should be moved slowly to maintain the balance of the unit.





2.4 Installation of the monoblock unit

2.4.1 Installation notes

1) The monoblock unit can be located in an open space, corridor, balcony, or on the roof.

2) The monoblock unit should be placed in a dry and well-ventilated environment; if installed in a humid environment, electronic components may corrode or short-circuit due to heavy humidity.

3) The monoblock unit must not be installed in an environment where volatile, corrosive, or flammable liquids or gases are present.

4) Please do not install the monoblock unit close to bedrooms or living rooms, as it can produce noise when running.

5) When installing the unit in harsh climatic conditions, such as sub-zero temperatures, snow, or humidity, raise the unit approximately 50cm above the ground. It is recommended to install an awning above the monoblock unit to prevent snow from clogging the air inlet and outlet and to ensure normal operation.

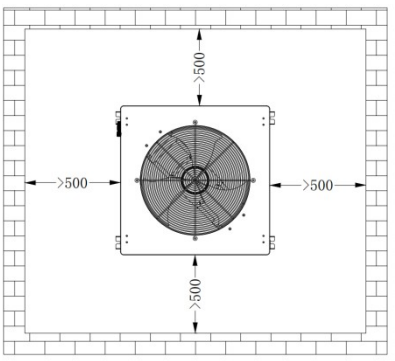
6) Please ensure there is a drainage system around the location to drain condensate water during defrosting mode.

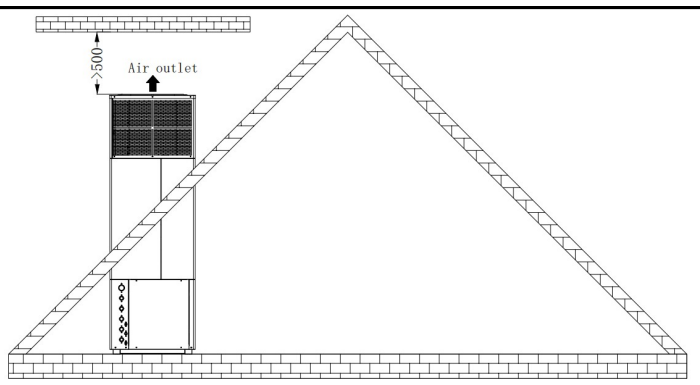
7) When installing the unit, tilt it by 1cm/m for rainwater evacuation.

8) Install the monoblock unit away from the exhaust port of the kitchen to avoid oil smoke entering the monoblock unit and adhering to the heat exchanger, which is difficult to clean.

9) Please do not install the unit in damp locations, as it may cause short-circuiting or corrosion of some components. The unit should be free from corrosive and moist surroundings; otherwise, the lifetime of the unit might be shortened.

10) Please ensure there is enough space around the monoblock unit for better ventilation and maintenance. Please refer to the illustration below.

	Space Need



2.4.2 Installation

The user can either use the dedicated mounting bracket provided by the supplier or prepare a suitable bracket for the unit installation. Ensure that the installation meets the following requirements:

1) The unit must be installed on flat concrete blocks or a dedicated mounting bracket. The bracket should be able to support at least five times the unit's weight.

2) All nuts must be tightened after the bracket is fixed; otherwise, it may cause damage to the equipment.

3) The user should double-check and ensure that the installation of the unit is firm enough.

4) The bracket can be made of stainless steel, galvanized steel, aluminum, or other materials as required by the user.

5) In addition to the mounting bracket, the user can also install the monoblock unit on two concrete blocks or a raised concrete platform. Please ensure that the unit is securely fastened after installation.

6) Please consider the dimensions of the monoblock unit when choosing a suitable wall bracket.

2.5 Accessories

Accessories below are delivered together with the product. Please check in time. If there is any shortage or damage, please contact local distributor.

Name	Quantity	Picture
Installer's Manual	1	
Tc/T2-water temperature sensor for cooling and heating	1	
Tr/T4-Room temperature sensor	1	
Tv1/T5-water temperature sensor after mixture valve 1	1	
Tv2/T6-water temperature sensor after mixture valve 2	1	
Tso/T7-water temperature sensor for solar heater	1	
Tr2/T8-Room 2 temperature sensor	1	
Communication cable between Wiring Center and temperature sensor	6	
Communication cable between Wiring Center and Wire controller unit (All above parts are in the wiring center)	1	
Y three-way fitting	1	
Horseshoe-shaped shock-absorbing rubber	4	
M6 combination bolt	8	
Hoisting limit plate	4	
Wireless Controller Mounting Box	1	
Wireless Controller	1	
DTU External Connection Cable	2	
Drainage outlet	1	

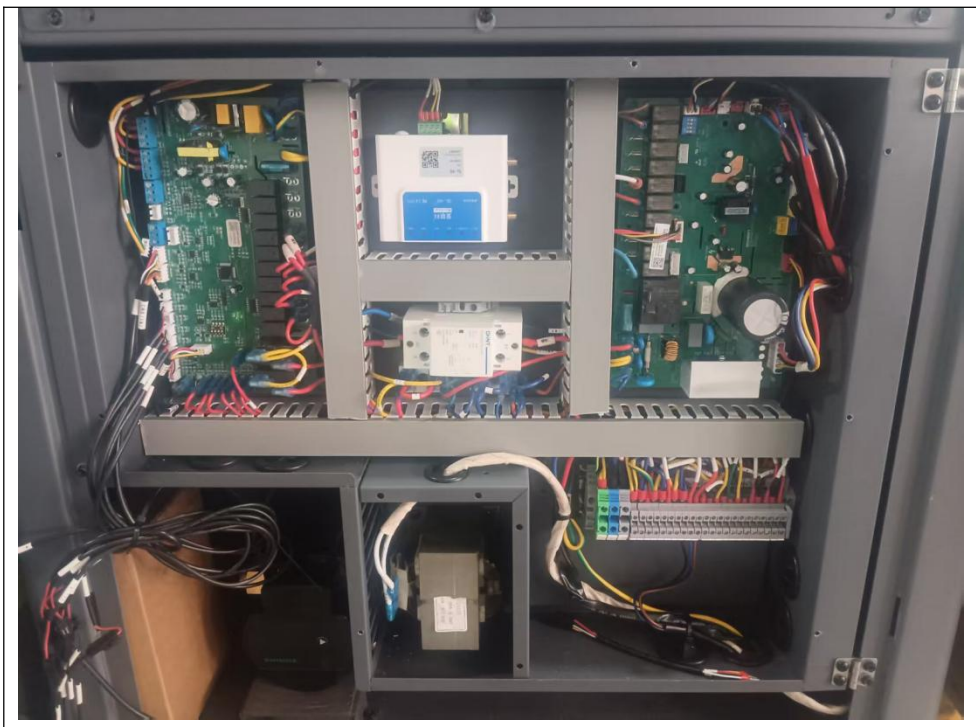
2.6 Wiring

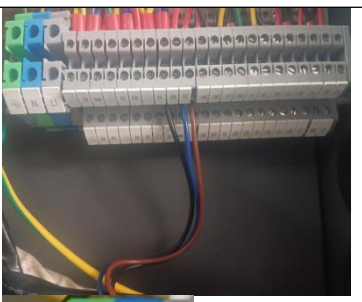
2.6.1 Explanation of terminals (Main electrical box)

1) Terminal block

For user's side

Unit power supply. Should be connected to city power input.







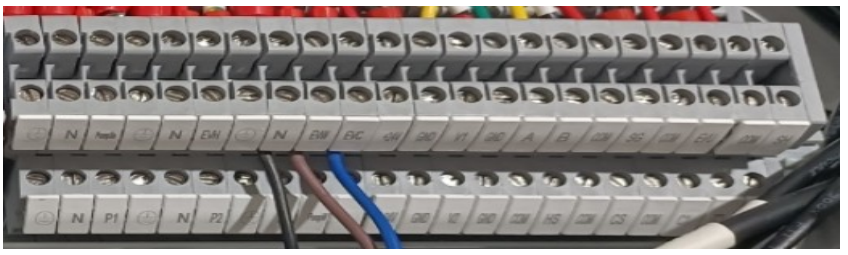
G, N, L

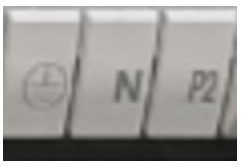
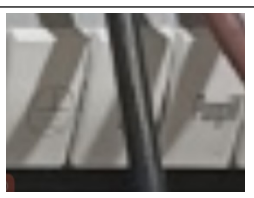
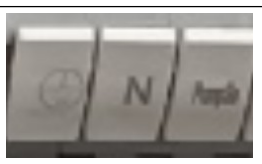
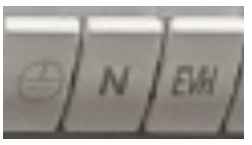
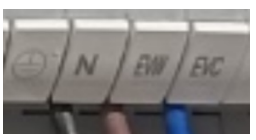
Machine power terminal, recommended power cord 3

2) Terminal block 2

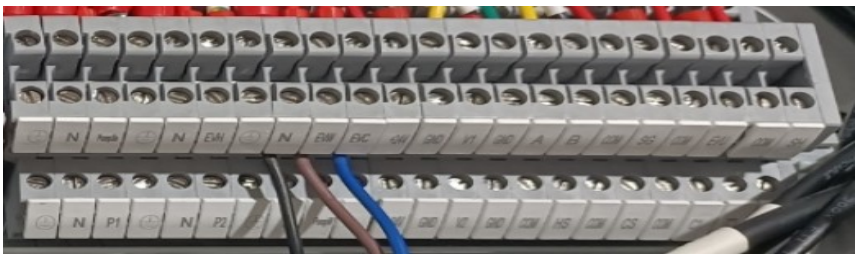
For user's side

Unit power supply. Should be connected to city power input.



 G N P1	**Pump for Heating & Cooling Circuit 1:** The pump operates when the unit is set to Heating or Cooling mode. For Zone 1, the circulation pump is not by default linked to the interlocking signal of Loop 1. Should it be changed to follow the signal, the conditions for starting the Zone 1 pump must include the "passive signal of the thermostat in Circuit 1 being closed (C1 and Com)."
 G N P2	**Pump for Heating&Cooling Circuit 2:** The pump operates when the unit is set to Heating or Cooling mode. For Zone 2, the circulation pump is not by default linked to the interlocking signal of Loop 2. Should it be changed to follow the signal, the conditions for starting the Zone 2 pump must include the "passive signal of the thermostat in Circuit 2 being closed (C2 and Com)."
 G N Pump W	**Pump for DHW Circuit:** The pump operates when the unit set mode is set to DHW. It features a stop-start-stop configuration, where the start time is controlled by the "PumpW micro-circulation start timer" and the stop time is controlled by the "PumpW micro-circulation stop timer."
 G N Pump So	**Pump for Solar Circuit:** The pump operates when the unit set mode is set to DHW, the Solar Panel Circuit is active, and the passive signal of the solar circuit is closed (SH and Com). The hot water has not reached the desired temperature, and the solar water is hotter than the water in the combined heat and power (CHP) hot water tank.
 G N EVH	**Floor Heating Valve:** The valve opens only when the unit set mode is set to Heating. The cooling function is turned off to prevent cold water from entering the floor. Naturally, if the application involves a floor cooling system, this valve should not be connected.
 G N EVW EVC	**Three-Valve Configuration:** EVW Power is on and EVC Power is off when the DHW mode is running, and EVC Power is on and EVW Power is off when the DHW mode is stopped.

3) Terminal block 3 For user's side






+24V GND V1 GND

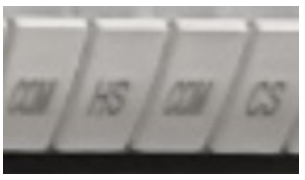
+24V GND V2 GND

Motorized Water mixture valve 1&2:

As explained in System illustration chapters, this unit can have two water mixture valves for distribution system under its control.

Water Mixture Valve 1 for Heating & Cooling circuit 1

Water Mixture Valve 2 for Heating & Cooling circuit 2

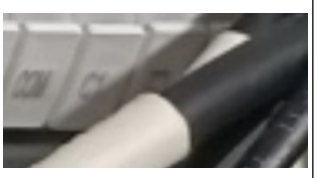


COM HS COM CS

Heat mode & cool mode switch-over (HS CS):

This unit can switch over between heating and cooling functions automatically, according to ambient temperature, or external signal input.

For external signal input, external signal should be connected to “COOL MODEL SWITCH” for cooling operation, and “HEAT MODE SWITCH” for heating operation.



COM C1 COM C2

Twin Zone system switch (C1 C2):

When two heating distribution systems a reconnected, unit should always take the set temperature for high demanding circuit, which needs higher temperature in heating and lower temperature in cooling operation, as the set temperature for the heat pump unit. In the room temperature control mode, there is no need to judge the C1/C2 signals.

The below rules apply only to the circuit water temperature control mode;

When neither C1 nor C2 is closed, the setting temperature is the lower value of the two. If the linkage operation mode (primary system) is also configured at this time, the unit will not start;

◎When C1 is closed and C2 is open, the setting temperature is taken as the C1 value, and the unit starts;

◎When C2 is closed and C1 is open, the setting temperature is taken as the C2 value, and the unit starts;

◎When both C1 and C2 are closed, the setting temperature is the higher value of the two.



COM SG COM EVU

SG Ready (SG:EVU)

Operating state (SG:EVU is 1:0)

When the system enters the reduced mode, it will only maintain the heating mode to prevent people from freezing and will not execute the hot water mode.

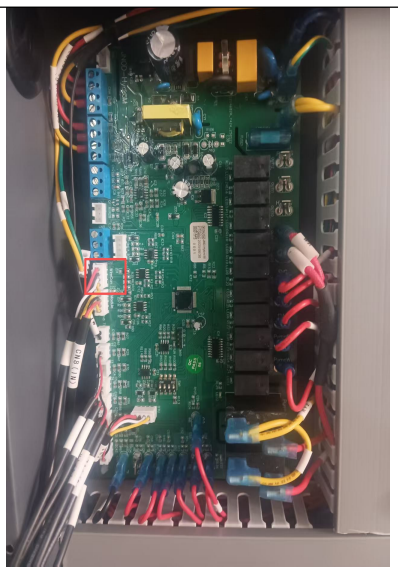
Operating state (SG:EVU is 0:1)

When the system enters the enhanced mode, the electric heating will be activated immediately, and increased the set temperature according to the parameter settings.

 COM SH	**Solar heater link switch (SH)** The interlocking information of the solar water heater: The solar system circulation pump will only start when the solar water heater is turned on.
 A B	**RS485 interface (AB):** ◎When DIP switch 4 on PCB-HydroM of the hydraulic box is set to OFF, it acts as a slave device for data reading by other smart home systems.(default)  ◎When DIP switch 4 on PCB-HydroM is set to ON, it acts as a master device to connect with a specified third-party thermostat receiver.. 

4) Communication Terminal

Communication between Wire Controller and main Wiring Center PCB （By 4pin wires）





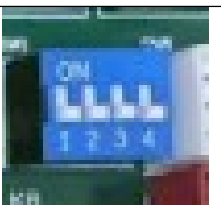
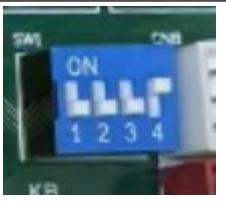


Cascade Connection (Master & Salve) Operation Instructions

The dial switch on the main board need to set well.

The maximum number of salve unit in cascade is 3.



Blue DIP switch of No. 1 machine(Default setting) 1-2-3-4 OFF-OFF-OFF-OFF	
Blue DIP switch of No. 2 machine 1-2-3-4 OFF-OFF-OFF-ON	
Blue DIP switch of No. 3 machine 1-2-3-4 OFF-OFF-ON-OFF	

2.6.2 Wiring

- It is recommended to use a suitable circuit breaker for the heat pump;
- The power supply to the heat pump unit must be grounded.
- The wiring should be done by professional person.
- The wiring should be comply with the local industry regulation.
- The wiring should be done after the unit is powered off.
- Cable should be fixed tightly, to ensure it won’t get loose.
- Don't connect several parts of cables together to use.
- Make sure the power supply in the local coincide with the power supply marked in rating label.
- Make sure power supply, cable and socket can meet the requirement of the input power of the unit.

2.7 Water Pipe Connection

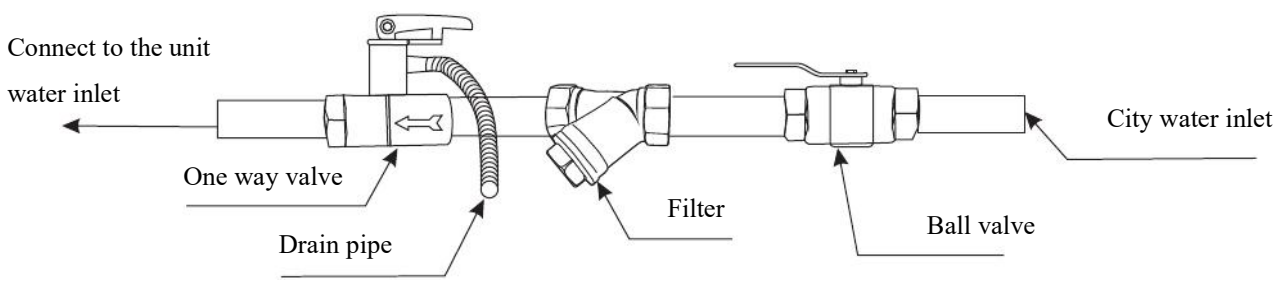
After installing the unit, please connect the water inlet and outlet pipes according to the local regulations.

Please carefully select and operate the water pipes.

After connection, the water piping should be pressure tested, cleaned before use.

1) Filter

A mesh filter must be installed in front of the water inlet of the unit and water tank, to keep the water quality and collect impurity contained in the water. Take care to keep the water filter mesh towards the bottom. Check valve is recommended to be installed at both sides of the filter, so as to clean or change the filter in a easier way.



2) Insulation

All pipes running hot water should be well insulated. The insulation must be tied up tightly without gap (But please don't wrap up the check valve for future maintenance).



Please ensure enough water pressure to send the water to the required height.

If the water pressure is not enough to maintain proper water flow rate for the system, please add a water pump to increase the pumping head.

3) Requirements for Water Quality

A. The chloride content in the water should be less than 300 ppm (at temperatures below 60°C).

B. The pH value of the water should be between 6 and 8.

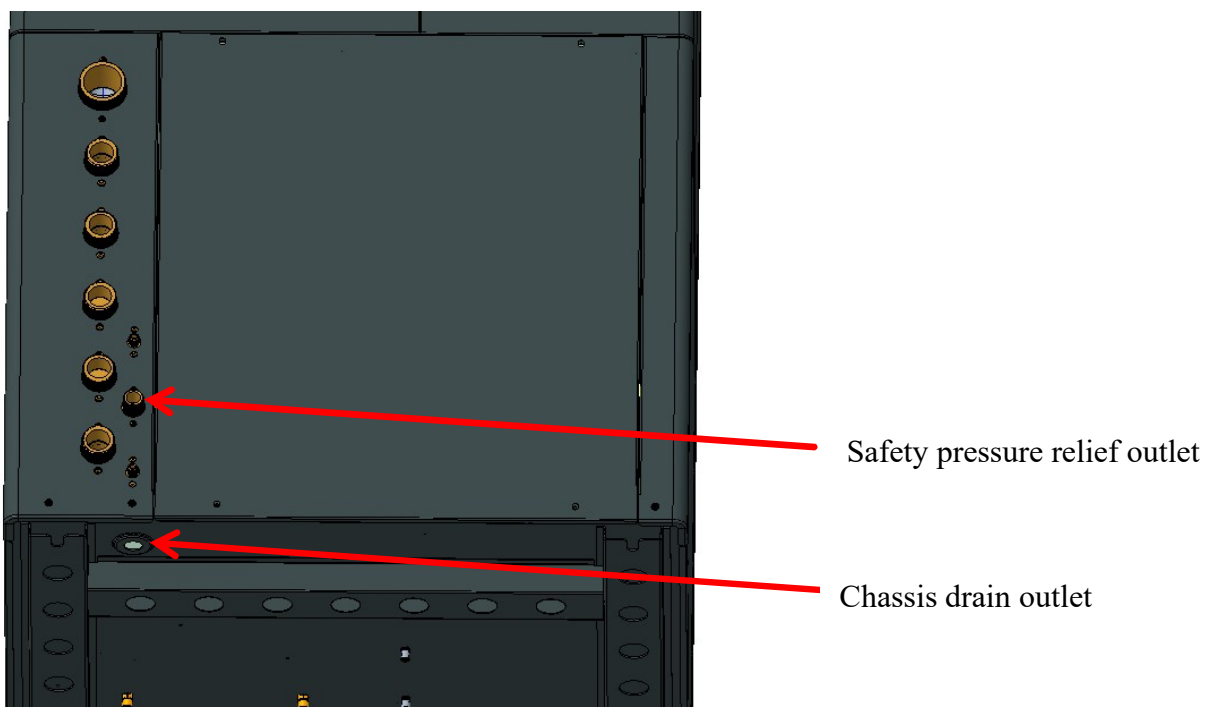
C. Water containing ammonia should not be used for the unit.

If the water quality is poor or the water flow is insufficient, scale formation or clogging may occur after the unit has been running for an extended period. This can lead to reduced efficiency in cooling or heating, or the unit may operate abnormally.

Please ensure to clean the water before use, or opt for purified water. It is essential to maintain good water quality to keep the unit running at high efficiency over the long term.

4) Connecting external drain pipes

When connecting external drain pipes to the Chassis drain outlet and Safety pressure relief outlet, a certain height difference is required. Water pipes must not be higher than the drain outlets to ensure proper water drainage.



2.8 Test Run

After installation is complete, please fill the water system with water and purge any air from the system before starting it up.

Before start up

Before the unit begins operation, a series of verification must be conducted on the installation to ensure optimal performance. The checklist provided below is not comprehensive and should serve as a minimum reference:

A. Ensure the fan rotates freely.

B. Inspect all water piping to confirm flow direction.

C. Verify that all system piping is correct for operation as per installation requirements.

D. Check the voltage of the unit's power supply and ensure it is within the authorized limits.

E. Make certain the unit is properly grounded.

F. Check for the presence of protective and breaking devices.

G. Inspect all electrical connections for tightness.

H. Examine all piping for leaks and ensure air is well ventilated.



If everything above is OK, the unit can start up.

If any of them fails, please fix it.

A. Once the installation of the unit is completed, the water system pipes are well connected, and air purging is done without leakage or other problems, the unit can be powered up to start.

B. Turn on the unit by pressing the on-off button on the operation panel to start the unit. Please check carefully for any abnormal noise or vibration, or if the display of the wired controller is normal.

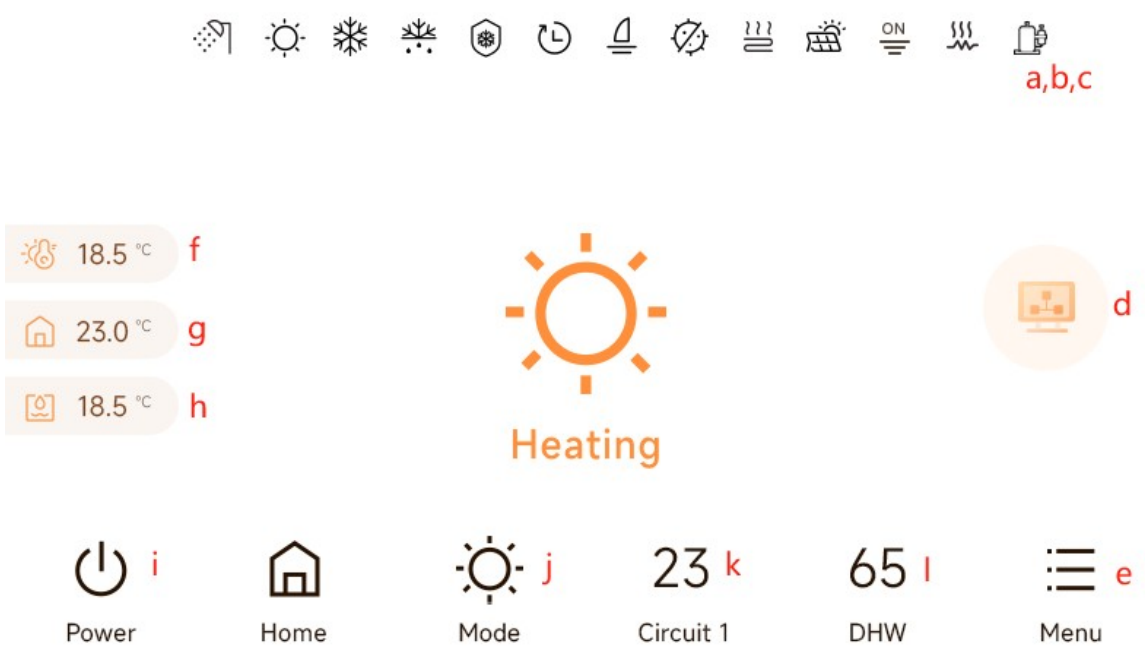
C. After the unit has been operating properly for 10 minutes without any problems, the pre-startup is completed. If issues arise, please refer to the Service and Maintenance chapter in this manual to address them.



It is suggested not to run "Heating" or "Hot Water" mode, when ambient temperature is over 32℃, otherwise the unit may go into protection mode easily.

3 Usage

3.1 Introduction of operation panel



a, Working mode	b, Function
c, Warning	d, Info
e, Menu	f, Ambient temp(Ta)
g, Room temp(Tr)	h, Water temp for cooling/heating(Tc)
i, Power On/Off	j, Mode (if configure cooling mode)
k, Setting temp. and current temp.of Circuit (Room) 1/Circuit (Room) 2	l, Setting temp. and current temp.of DHW
Note Should there be any confusion regarding the above, please refer to the user's manual.	

Timer and schedule:

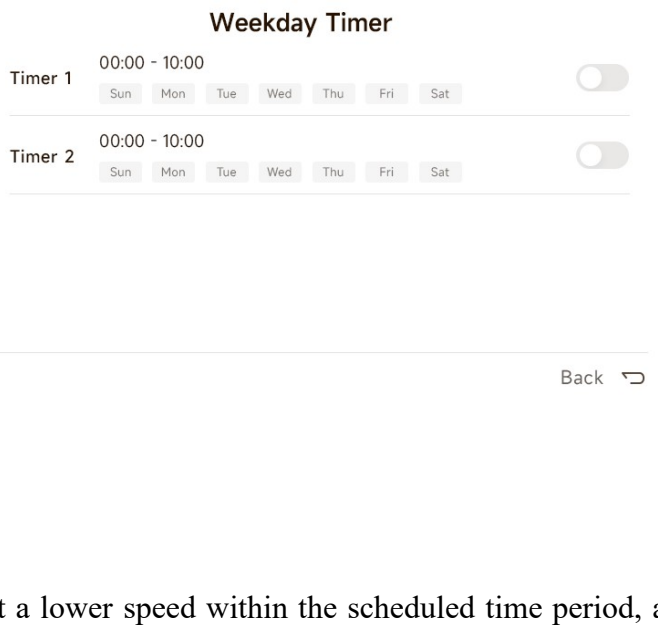
1) Selecting a specific day of the week will activate the timer function.

Set the ON and OFF timer for the Heating/Cooling/DHW/Weekday/Mute operation. Different time periods for every week days in a week can be set.



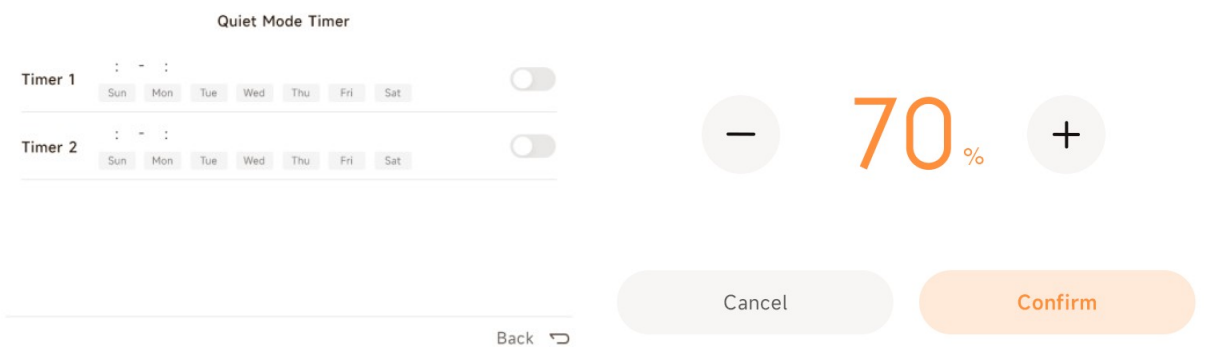
2) Weekday Eco Function

The unit will operate in an energy-saving mode within the scheduled time period, and the set temperature will automatically be reduced by the parameter value “Heating & Cooling Set Temp Drop Weekday.” This means that if no one is at home during work hours, the machine will not shut down but will run at a lower temperature. This is to avoid the longer startup time required for a cold start.



3) Mute Function

The machine will operate at a lower speed within the scheduled time period, and the maximum speed of the compressor will not exceed the “Max Level During Mute Time.” This means that during the quiet hours, the compressor speed will be limited. Normally, this should not affect usage. However, if a cold start occurs, the startup time may be slightly longer. Since we select and configure the machines based on the coldest conditions,ensuring that the system can meet the demand even when the house is cold and the unit is first turned on, it typically operates at medium or low frequencies at other times. Therefore, the main purpose of the quiet mode is to limit the rapid increase in speed during startup.



4) Disinfect Function

If user uses sanitary hot water directly out from the HWT (hot water tank). For the health purpose, it's requested that it needs to heat up the water inside the tank over 60℃ for Disinfect purpose once a week. **Note:** Please always refers to local regulation for a correct usage of this function.

Day and Time:

Set at which time in which week day(s) for the start of Disinfect operation.

Disinfect over temp setting:

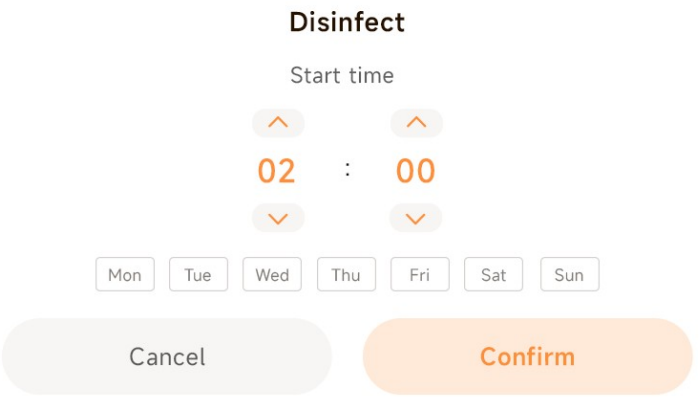
Set the target sanitary hot water temperature for Disinfect. Please refer to the local regulation for the correct setting of this temperature.

Disinfect during time setting:

Set for how long the unit should try to keep this set high temperature, to ensure all bacteria in the shower water tank can be killed.

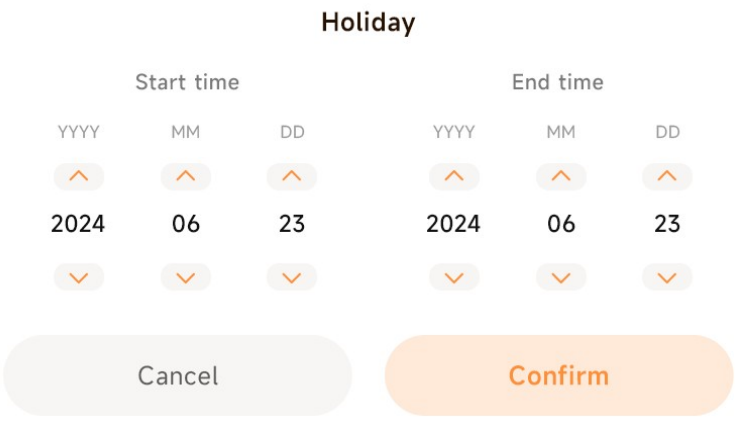
Disinfect max time setting:

Set an ending time for this Disinfect function, even it is not finished successfully. This time should be longer than what it is set in parameter.



5) Holiday Function

If you need to be away from house for some days, you can use this Holiday function to reduce the setting temperatures for both sanitary hot water and house heating, to save more energy.



Day and Time

Turn ON/ OFF Vacation Mode.

DHW Setting Temp. Drop During Holiday.

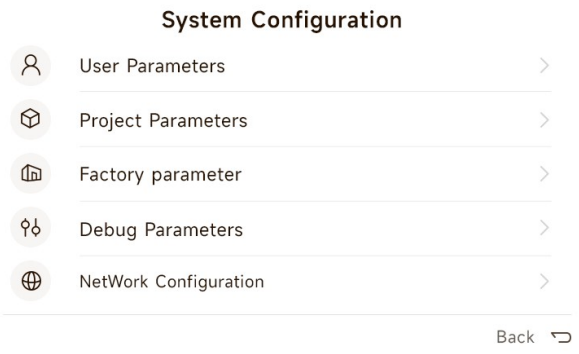
Set a temperature drop for sanitary hot water based on standard DHW setting value during the setting time period for Holiday.

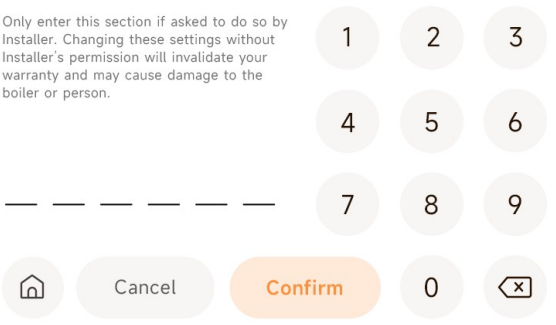
Heating&Cooling Setting Temp. Drop During Holiday.

Set a temperature drop for heating based on standard DHW setting value during the set time period for Holiday.

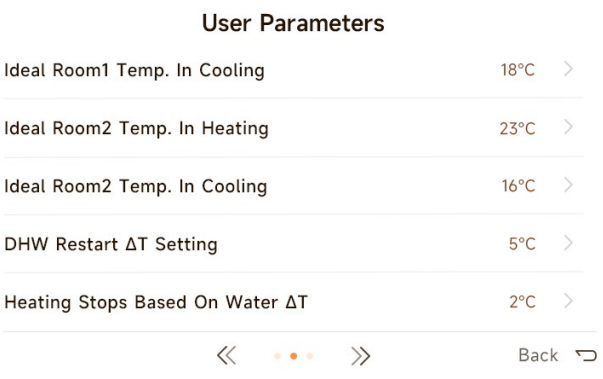
System Configuration

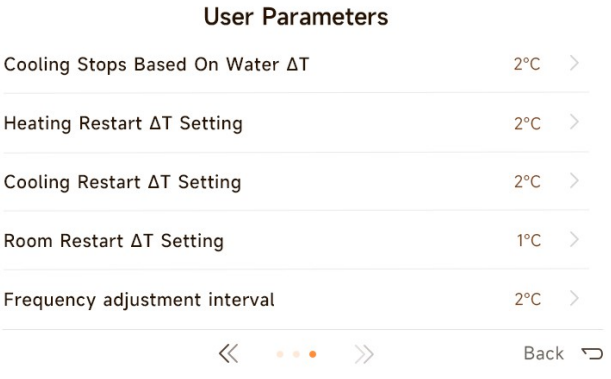
Project Parameters and Factory parameters and Debug Parameters need passwords.





1) User Parameters





DHW Restart Temperature Setting:

Heat pump unit will start working for sanitary hot water again, after temperature drops be low set here.

Heating Stops Based On water AT:

To set a temperature to stop unit. Unit stops operation when [Tset+AT] in heating operation is reached.

Heating Restart Based On water AT:

To set a temperature to re- star t unit. Unit starts operation again when water temp drops be low [Tset-AT] in heating operation.

Cooling Stops Based On water AT:

To set a temperature to stop unit. Unit stops operation when [Tset–AT] in cooling operation is reached.

Cooling Restart Based On water AT:

To set a temperature to re- star t unit. Unit starts operation again when water temp increases over [Tset+set here] in cooling operation.

For example, in heating mode, if Test= 48, while Stops AT= 2℃, and Restart AT= 3℃.

When actual water temperature is higher than 50℃, the unit stops.

When heat pump stops and actual water temperature drops lower than 45℃, the unit restarts.

Frequency adjustment interval AT:

This parameter is used to set a temperature, at which compressor starts to slow down its speed.

Compressor always works with its maximum allow able speed, if actual water temperature is lower than [Tset-AT] (in heating mode) or higher than [Tset+AT] (in cooling mode).

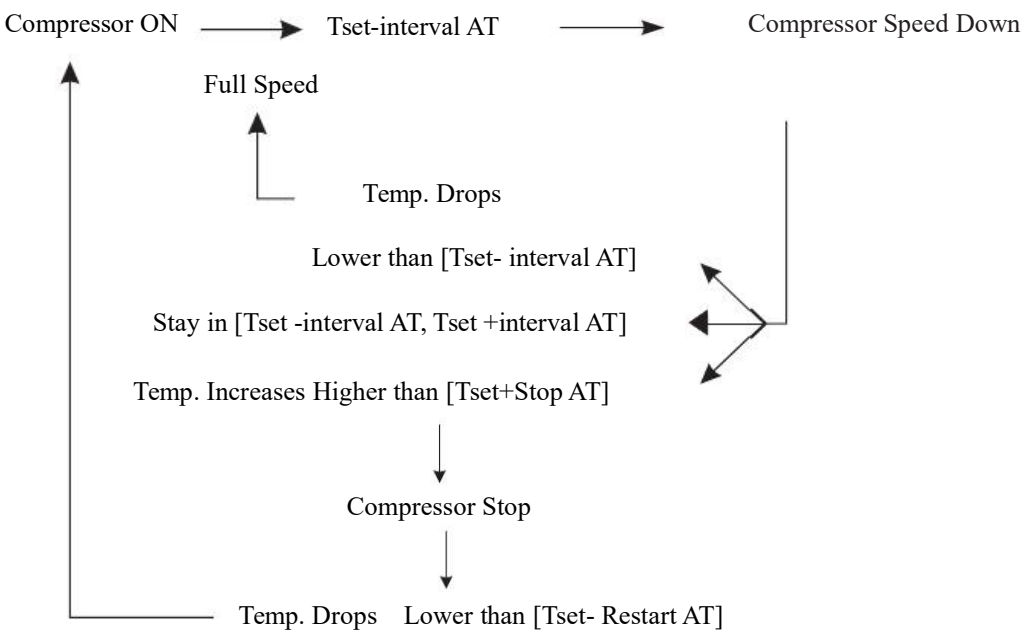
When actual temperature is between [Tset-AT,Tset] in heating mode or [Tset, Tset+AT] in cooling mode, compressor will adjust its working speed, to balance the total heating output and system heating load.

This setting is to keep a balance between comfort and energy saving. If this value is set too big, even if the room is not warm (or cool) enough, compressor will slow down its speed quite soon to save energy. If this value is set too small, even if the room is warm (or cool) enough, compressor will slow down its speed quite late, which consumes more power.

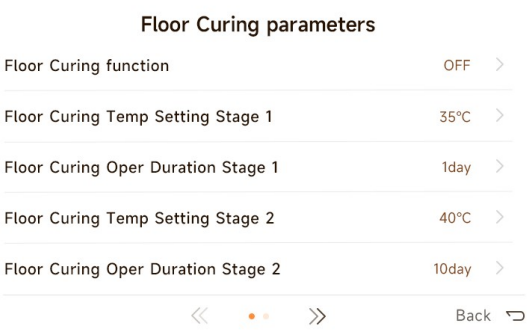
It's more like a setting that tells the heat pump unit which temperature range you' d prefer to have the heat pump stayed in.

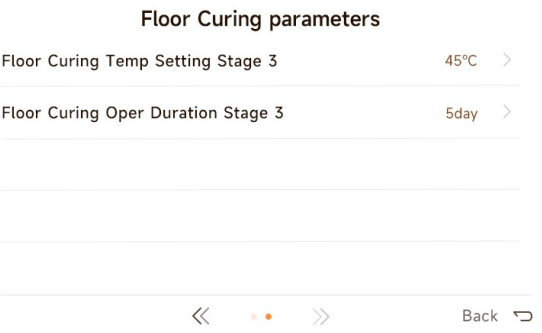
For example, in heating mode, if Tset=48, and AT= 2℃, compressor will work as hard as possible to get 46℃ as soon as possible. Then the compressor will lower its speed. If even the compressor works in its lowest allowable speed, but actual water temperature still goes over [Tset+ AT], unit stops.

Working in Heating:



2) Project Parameters (Password 100890)





After initial installation or long-term non-operation, a floor heating system may be very wet in the concrete. Most of the heating capacity from the heat pump unit is consumed to dry up the water in the concrete for its evaporation. This floor curing function is used to dry the floor to ensure the safety of the heat pump system.

Floor Curing function

Turn ON/OFF this function. For a newly- built floor heating system, floor must be cured before setting the heat pump into standard working mode.

Floor Curing Temperature Setting Stage 1

Floor Curing Operation Duration Stage 1

Set temperature and lasting time for first-stage of Floor Curing operation.

Floor Curing Temperature Setting Stag e 2

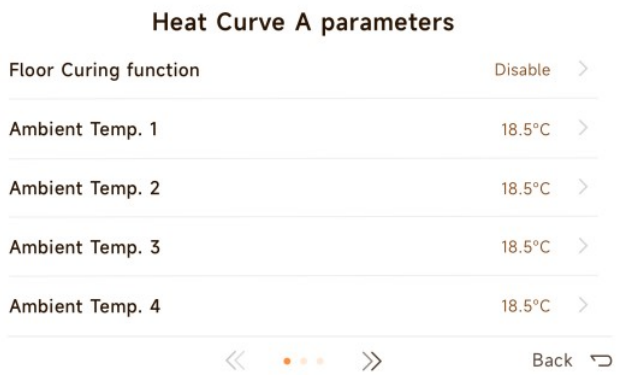
Floor Curing Operation Duration Stage 2

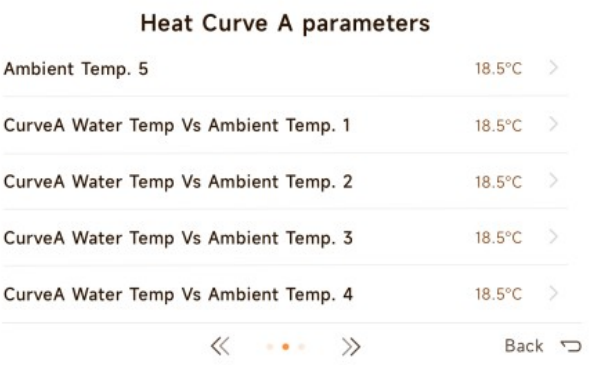
Set temperature and la sting time f or second-stage of Floor Curing operation.

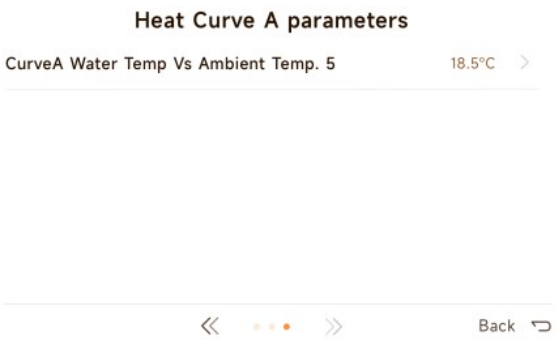
Floor Curing Temperature Setting Stag e 3

Floor Curing Operation Duration Stage 3

Set temperature and lasting time for third-stage of Floor Curing operation.







Heating Curve Function

Set whether heating curve function is needed or not.

If heating curve function is not needed, please set OFF, and then you can set a fixed water setting temperature under heating mode via user parameter or Home “Set Temp. For Heating”

Ambient Temp. 1

Ambient Temp. 2

Ambient Temp. 3

Ambient Temp. 4

Ambient Temp. 5

Curve1 Water Temp Vs Ambient Temp. 1

Curve1 Water Temp Vs Ambient Temp. 2

Curve1 Water Temp Vs Ambient Temp. 3

Curve1 Water Temp Vs Ambient Temp. 4

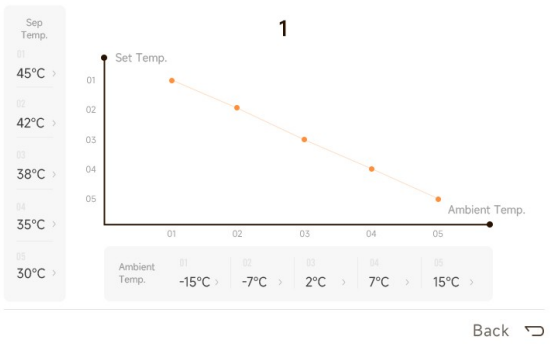
Curve1 Water Temp Vs Ambient Temp. 5

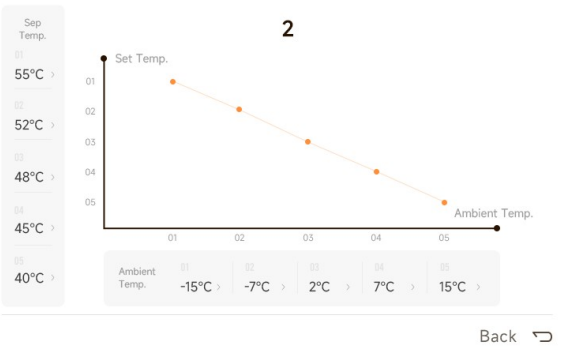
When Curve=ON, user can set a heating curve which fits his house, by adjusting the settings of parameter.

Parameter is used to set 5 different ambient temperatures. While parameter is used to set 5

corresponding setting water temperatures VS these 5 ambient temperatures.

Then the controller will create a heating curve according to these settings, and try to reach the setting water temperature automatically according to actual ambient temperature.





Tips:

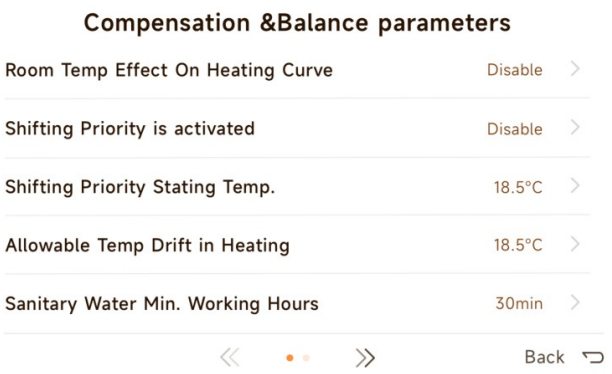
Heating curve function is based on the factor that the lower the ambient, the higher house heating water temperature needs to be. This heating curve function can help the heat pump unit gain a higher COP, as well as make the house more comfortable.

As house insulation level and people's sense of cold may vary from one another, the factory-set curve may not be the most suitable for you. You can set one curve according to your need.

If you feel too hot, you can lower the settings of water temperatures, which correspond to the ambient temperature parameters. If you fee l too cold, adjust these settings a little higher. You can also adjust the ambient temperature settings, if you think the factory settings are not perfect for your need.

Water Temperature Setting Adjustment Function

These three parameters work together to achieve an ideal water temperature for an ideal room temperature. When this function is ON, the unit will adjust the setting water temperature (a setting value or calculated value via heating curve) according to the difference between actual room temperature and ideal room temperature.



Room Temperature Effect on Heating Curve

Turn ON or OFF this function

Ideal Room Temperature in Heating: Set an ideal room temperature for heating.

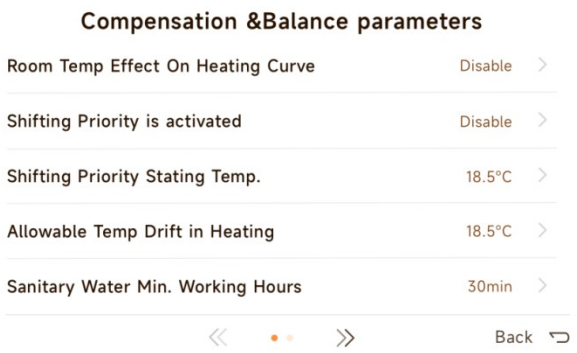
When in Room Temperature Control mode, this parameter will also be the Room Set Temperature.

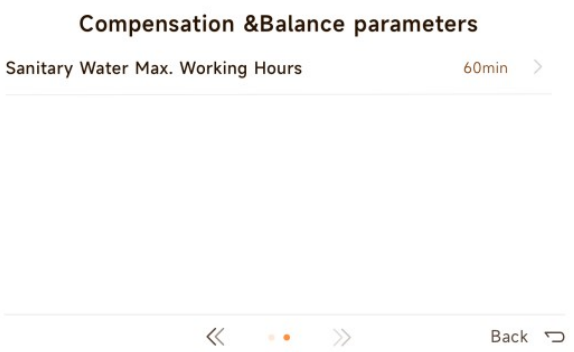
For example:

If Room Temperature Effect = ON, the unit operates in heating mode.

If the water setting temperature in the heating curve is 35℃.

If the actual room temperature is 27℃, while the parameter Ideal Room Temperature in Heating Mode is set to 22℃, then the unit will deduct (27℃-22℃) = 5℃ from the water setting temperature, which means unit will take 30℃ as the setting water temperature.





Shifting Priority

Turn ON/OFF this function.

The air-to-water heat pump is an equipment that absorbs heat from the surrounding air and transfers it to water. The lower the ambient temperature, the less heat the unit absorbs. This causes the unit's heating capacity and efficiency to drop when the ambient temperature drops. The unit takes a longer time to heat up the sanitary hot water. However, the lower the ambient temperature, the more heat the house demands.

If the unit does not provide enough heat while working for hot water, the temperature inside the house may drop too much, and people in it may feel uncomfortable. So, parameters try to divide the working time for sanitary hot water into several cycles, after the ambient temperature drops below a setting value. When this function is ON, AH (Auxiliary Heater) or HWTBH (Hot Water Tank Backup Heater) or both, depending on their priority, will work individually or together to enhance the heat pump’s capacity in sanitary hot water mode to heat up the water as soon as possible.

Shifting Priority Starting Temp：

Set an ambient temperature below which this function starts to work. When the shifting priority

function is activated, the heat pump will try to find a balance between DHW and Heating operation after the ambient temperature drops below this temperature.

Sanitary Water Min. Working Hours：

Set the minimum working period for sanitary hot water mode.

Heating Max. Working Hours：

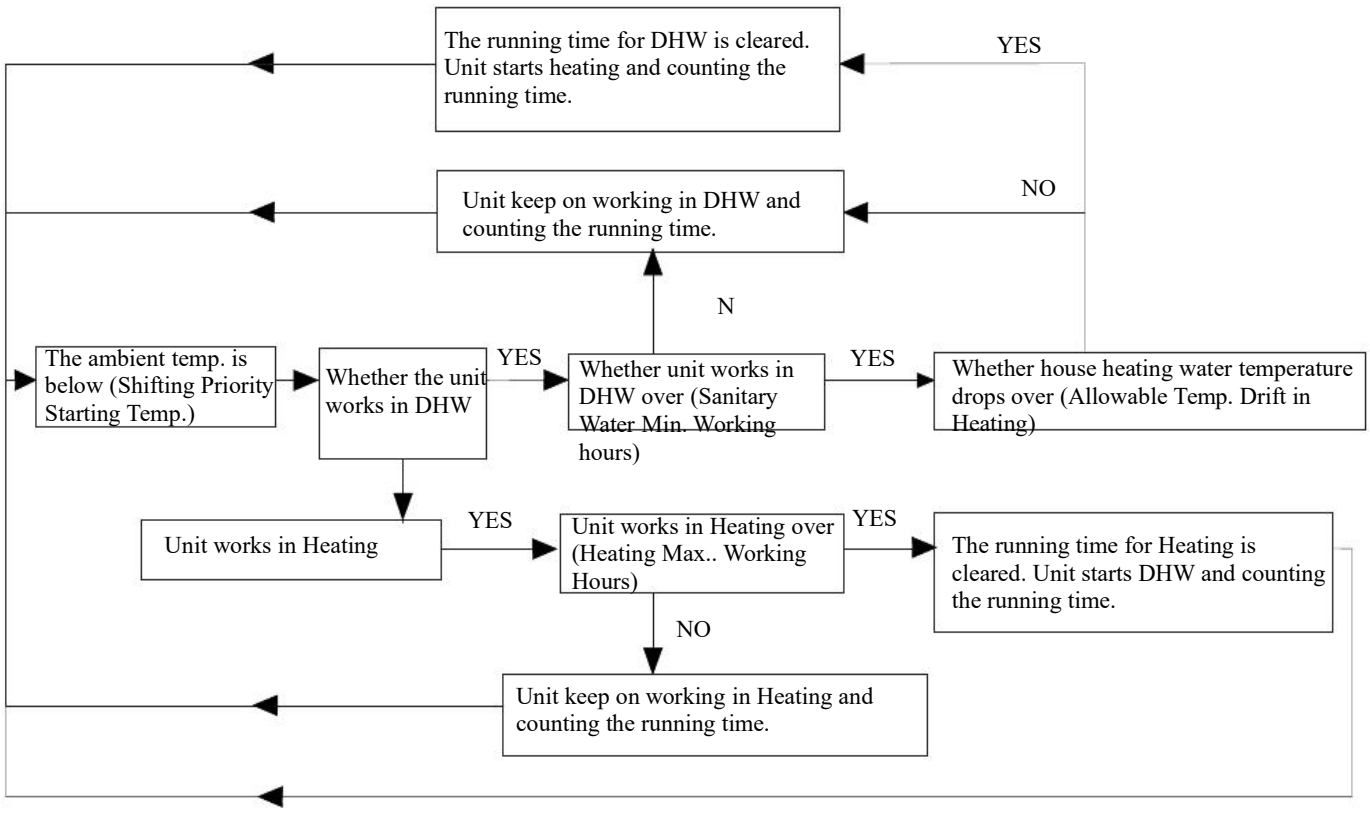
Set the maximum working period for heating mode, after the unit enters into heating mode.

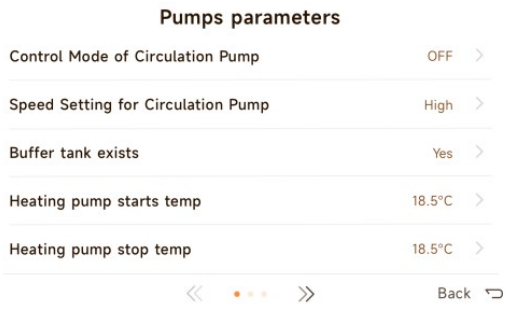
Allowable Temp Drift in Heating：

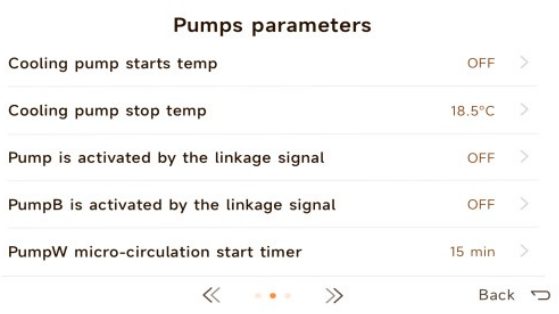
Set allowable temperature drift in heating mode.

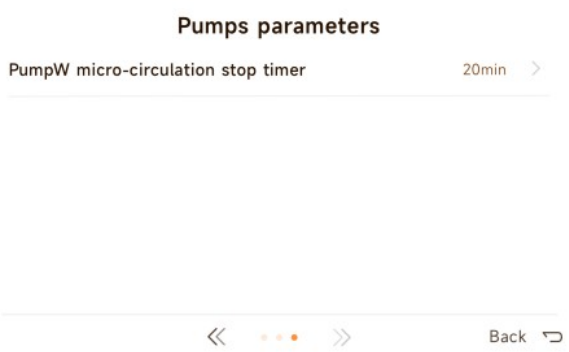
DHW Backup Heater for Shifting Priority：

Working mode of HWTBH (Hot Water Tank Backup Heater) in this function. If this parameter is set ON, when the heat pump is switching to house heating, HWTBH will keep on working to help the unit heat up hot water as soon as possible.If the shifting priority function is ON, and the ambient temperature is lower than [Shifting Priority Starting Temp], the unit works as shown below:House heating water under water temp.









“With/without Buffer Tank”: Set whether it has a buffer tank between heat pump unit and distribution system or not.

“P1 for Heating Operation” refers to the circuit pump for circuit 1, which should work for heating operations.

“P1 for Cooling Operation” refers to the circuit pump for circuit 1, which should work for cooling operations.

“P2 for Heating Operation” refers to the circuit pump for circuit 2, which should work for heating operations.

“P2 for Cooling Operation” refers to the circuit pump for circuit 2, which should work for cooling operations.

If "without buffer tank" is set, both P1 (circulation pump for circuit 1) and P2 (circulation pump for circuit 2) will only work when the compressor is working in the same mode as the pump is set to. For example, if P1 is set to "P1 for Heating Operation," P1 will be turned ON only when the compressor is working in heating mode. If both "P1 for Heating Operation" and "P1 for Cooling Operation" are selected, P1 will be turned ON when the compressor is working in both heating and cooling modes. When the heat pump switches to DHW mode or stops after reaching the set temperature for heating or cooling, the pump stops.

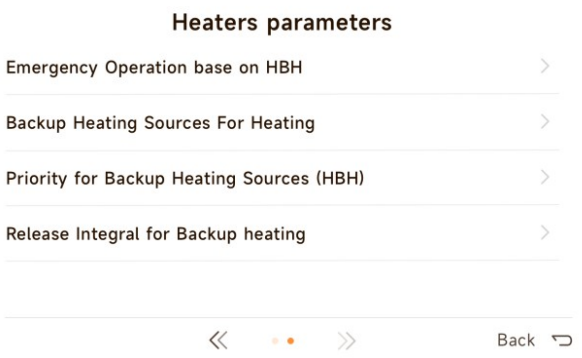
If "with buffer tank" is set, both P1 (circulation pump for circuit 1) and P2 (circulation pump for circuit 2) will operate once the distribution system has a heating or cooling demand, as per the pump setting, and obeys following these rules:

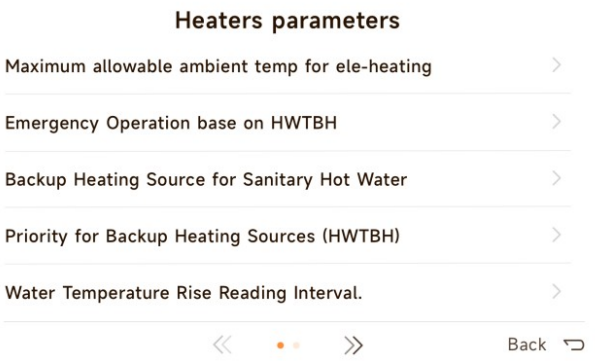
Actual temperature in buffer tank detected via Tc ≥20℃ in heating. Only 2 0℃ and above can be useful for distribution system in heating operation.

Actual temperature in buffer tank detected via Tc ≤23℃ in cooling. Only 23℃ and below can be useful for distribution system in cooling operation.

For example, if P1 is set to "P1 for Heating Operation", P1 will start to work as long as the system has heating demands and Tc reading is no lower than 20 ℃, even if the unit is working in DH W mode or stops after reaching the setting temperature.

“Working of P1(2) with Circuit 1 Signal” means whether P1(P2) should stop if signal for “C1(2) and Com” is “Open”.





AH- Auxiliary Heater inside the unit

HBH- Heating Back-up Heater

HWTBH- Hot Water Tank Back-up Heater

Emergency Operation base on HBH

When heat pump failed to work, whether the unit should turn O N the back- up heating system automatically.

Note: If this function is activated, customer should check the working status of heat pump unit occasionally, to ensure heat pump unit is functioning well.

Backup Sources For Heating

Set whether the system has HBH (Heating Back-up Heater).

Priority for Backup Heating Source s (HBH)

Set the priority of HBH compared with unit AH (Auxiliary Electric Heater inside the unit).

When unit works in heating, if heat pump unit can' t provide enough power, it will turn on AH or HBH (which set to have the higher priority) automatically. If after AH or HBH is working, that the total output power is still not big enough, the unit will turn on the lower priority Backup Heating Source also.

Backup Heating Source f or Sanitary Hot Water

Set whether the system has HWTBH (Hot Water Tank Back-up Heater).

Priority for Backup Heating Sources (HWTBH)

Set the priority of HWTBH compared with unit AH (Auxiliary Electric Heater inside the unit).

When the unit operates in hot water mode, if the heat pump unit cannot provide sufficient power, it will automatically turn on AH or HWTBH (which is set to have the higher priority). If, after AH or HWTBH is working, the total output power is still insufficient, the unit will also turn on the lower priority Backup Heating Source.

Release Integral for Backup heating

Accumulated Value between operation time and set temp. to start other heating source for heating operation.

This is for adjusting how fast Backup Heating Sources for heating operation will be turned ON if the heat pump unit can't provide enough power. The larger value is set, the longer it takes to start the Backup Heating Sources if heat

pump capacity is not enough.

Water Temperature Rise Reading Interval

Time interval for checking the temperature increase when the unit operates in DHW mode. If the temperature increases too slowly during this setting interval, the unit will activate another heating source for DHW operation.

The smaller value is set, the more likely to activate AH or HWTBH for fast heating of DHW.

Backup Heating for DHW

If system has no HWTBH, or HWTBH has lower priority than AH.

If the heat pump capacity is insufficient to heat DHW quickly enough, the unit starts AH. If, after AH starts, it still cannot heat DHW quickly enough, HWTBH starts.

When the setting and actual water temperature is higher than the heat pump's maximum allowable water temperature, the heat pump stops and the unit starts AH. If, after AH starts, the hot water temperature still increases too slowly, HWTBH starts.

If the system has HWTBH, and HWTBH has higher priority than AH.

When the setting and actual water temperature exceeds the heat pump's maximum allowable water temperature, HWTBH operates ALONE for DHW, while the heat pump unit will work in heating or cooling mode according to demand.

When the actual water temperature is lower than the heat pump's maximum allowable water temperature, the heat pump works in DHW mode. If the heat pump's capacity is insufficient to heat up DHW quickly enough, the unit starts HWTBH. If after HWTBH starts, the hot water temperature still increases too slowly, AH starts.

Under shifting priority operation, according to parameters, AH or AH+ HWTBH work together with the heat pump to heat sanitary hot water to the setting value as soon as possible, so the heat pump unit can concentrate on heating mode afterwards.

Note:

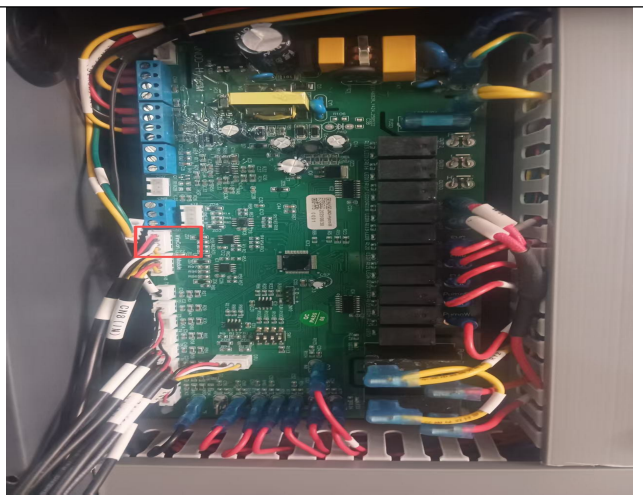
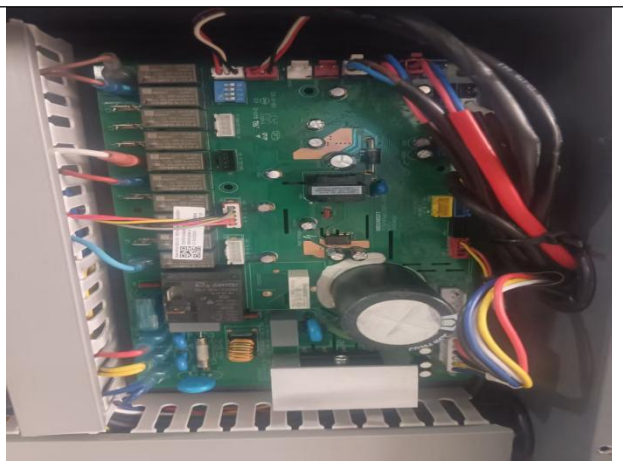
Most of the above mentioned menus and parameters are designed for installers only. They should only be adjusted by an installer or professional customer under the instruction of an installer. Otherwise, malfunction of the unit may occur.

3.2 Error Code Description & Solution

Fault Types

Hardware Fault Type	Software Protection Type
Ambient temperature sensor failure	Unit AC voltage overhigh/ultralow protection (three-phase model input lost phase)
Inlet water temperature sensor failure	Unit AC current protection to shutdown
Outlet water temperature sensor failure	Refrigerant high pressure switch protection
Exhaust temperature sensor failure	Refrigerant low pressure switch protection
Return gas temperature sensor failure	Refrigerant high pressure protection to shutdown
Inner coil temperature sensor failure	Refrigerant low pressure protection to shutdown
Outer coil temperature sensor failure	Exhaust temperature overheat protection to shutdown
Economizer inlet temperature sensor failure	Water flow switch disconnect protection
Economizer outlet temperature sensor failure	Heating inner coil overheat protection to shutdown
Refrigerant high-pressure pressure sensor failure	Cooling inner coil anti-freezing protection to shutdown
Refrigerant low-pressure pressure sensor failure	Cooling outer coil overheat protection to shutdown
Economizer pressure sensor failure	Outlet water temperature overheat protection
DC fan failure	Outlet water temperature ultralow protection
DC water pump failure	Heating ambient temperature overheat protection
Main control board EE failure	Cooling ambient temperature ultralow protection
Communication failure between main control board and the inner board	Inlet and outlet water temperature difference overlarge protection
Outer Driver Board Fault Type	
Communication failure between main control board and the driver board	
Compressor startup abnormal (phase lost, inversion)	
Driver board EE failure	
IPM Module failure	
Compressor overheat switch protection	
IPM overheat protection to shutdown	
Compressor phase current protection to shutdown	
Dc busbar overhigh/ultralow voltage protection	

3.3 PCB Connection

	Main electrical box PCB “HydroM”
	Main electrical box PCB “HiPlus12000-VZM”
	Compressor drive board (in a separate electrical box on the right side of the main electrical box)

4 Maintenance

4.1 Precaution of maintenance for units with flammable refrigerant

1) Requirement about service area and person

Service persons and all other people at site should be well aware about character of maintenance to be carried out. Make sure the service area is not inclosed and keep good ventilation (opening doors and windows). Service area should be properly isolated. And ensure the safety of working conditions in service area by controlling the combustible materials.

2) Monitor status of refrigerant

Before or during the service operation,monitoring device is required to keep checking status of refrigerant so that service persons can keep aware about existing combustible gas.

3) Storage of fire extinguishers

When hot-working treatment is needed for heat pump system or related components, ensure fire extinguisher is placed nearby. The proper fire extinguisher should be type of dry powder or carbon dioxide .

4) Prohibition of fire

Conduct safety inspections at the service area to ensure that there are no flames and potential ignition sources (including smoke) and maintain strict control in isolating combustible materials.

5) Inspection of equipment

If electrical components are to be replaced, they should be installed in accordance with intended use and correct operating regulations.

6) Inspection of electrical elements

The service on electrical components should include a general security check and inspection of electrical elements. If a defect that could threaten personal safety is found, power off the appliance until the defect is properly solved. If the defect cannot be completely eliminated but must continue the operation, appropriate temporary solutions should be well adopted. Please report the situation to the owner of the equipment and warn all relevant personnel.

7) Inspection of cables

Check the status of cables and verify if any defects occur due to abrasion, corrosion, over-pressure, vibration, cuts by sharp edges, or other reasons. This inspection should also consider the effects of cable aging and the continuous vibration of the compressor and the fans.

8) Inspection of flammable refrigerants

Inspection of refrigerant leakage should be carried out in a service area free from fire or any other potential ignition source. This inspection should not be conducted using detectors that involve ignition, such as halogen probes.

If a leak is suspected, all flames should be removed from the service area or extinguished.

Should soldering be required at the leakage point, it is essential to recover all refrigerant or isolate it at a location not close to the leakage point (by service valve). Before or during the soldering process, oxygen-free nitrogen (OFN) should be used to purify the system.

9) Procedures of service on refrigeration system

The refrigeration circuit should be operated according to the proper procedures. Additionally, the flammability of the refrigerant should also be considered. Please follow the procedures below.

- Remove refrigerant;
- Purify the pipeline with inert gas;
- Vacuum the refrigerant system;
- Purify the pipeline with inert gas again;
- Cut or weld the pipeline as required.

10) Refrigerant charging

As a supplement to regular procedures of refrigerant charging, the following requirements are required.

Ensure that there is no mutual contamination between different refrigerants during refrigerant charging.

- The pipeline to fill system with refrigerant should be as short as possible in order to reduce the residual

amount of refrigerant in it;

- The refrigerant tank should be kept vertically upwards;
- Ensure that the refrigeration system has been well grounded before charging;
- Label the system after charging is finished (or not yet completed);
- Overfilling is prohibited;

Before refilling the system,a pressure test should be performed with OFN. After charging, a leakage test is required before test run of heat pump. And please have a leakage test again before leaving the service

area.

11) Precautions of refrigerant charging

Please make sure charging of refrigerant is done with correct amount based on information on unit label.

12) Emergency treatment

An emergency plan should be well prepared at the service site, and daily preventive measures should be carried out. For example, fire is forbidden at the site, and it is prohibited to wear clothing or shoes that can generate static or sparks.

Suggested disposal in case of serious leakage of flammable refrigerant.

a) Turn on the ventilation equipment and cut off the power supply of other devices. Persons should evacuate from the site immediately.

b) Notify and evacuate neighboring people and residents in order to stay away from the site for at least 20 meters. Call the police and set up a warning region forbidding people and vehicles from approaching.

c) On-site treatment should be carried out by professional firefighters with anti-static clothing. Cut off the leakage source.

d) Purge and eliminate flammable refrigerant and residual gas at the leakage point and surrounding area with nitrogen, especially for low-lying areas. Detect and verify the elimination work with a professional detector until the concentration of flammable refrigerant becomes zero. Only after that, can the alarm be cleared.

13) Clearance of refrigerant when maintain, scrap and recycle the equipment

Refrigerant should be cleared when maintaining, scrapping, and recycling equipment. Discharge the refrigerant in an open and ventilated area. After discharging, vacuum the system with a vacuum pump to ensure clearance of residual refrigerant.

When maintaining a unit with potential leakage, lock the service valves of the unit and then disconnect the refrigerant pipes. Release the refrigerant in the unit to the atmosphere. Please note that it is prohibited to recover refrigerant when the unit is working to prevent air from entering the compressor.

14) Requirement about storage of R290 refrigerant

- The refrigerant storage tank should be placed separately in an environment with an ambient temperature between -10 to 50°C and good ventilation. Warning labels should be placed in this area or on the tanks.
- For service tools in contact with the refrigerant, they should be stored and used separately. Service

tools designed for different refrigerants cannot be mixed in use or storage.

15) Operation specification about equipment dismounting

Before dismounting, check and ensure safety at service areas and maintain good ventilation (open doors and windows). Ignition sources are prohibited at the place where equipment is dismounted and combustible materials should be isolated.

● Please clear the refrigerant in the equipment before dismounting.

● For transportation, loading, and unloading of equipment, please be careful and avoid collision and dropping. It is forbidden to store the unit in a confined space or a space with ignition sou

4.2 Attention

1. The user mustn't change the structure or wiring inside the unit.
2. The service and maintenance should be performed by qualified and well-trained technician. When the unit fails to run, please cut off power supply immediately.
3. The smart control system can automatically analyze various protection problems during daily use, and
4. display the failure code on the controller. The unit may recover by itself. Under normal operation, the piping inside the unit don't need any maintenance.
5. In normal ambient conditions, the user only needs to clean the surface of the heat exchanger per month or quarter of a year.
6. If the unit runs in a dirty or oily environment, please clean the heat exchanger by professionals.
7. using specified detergent, to ensure the performance and efficiency of the unit.
8. Please pay attention to the ambient environment, to check if the unit is installed firmly, or whether the air inlet and outlet of unit is blocked.
9. Unless the water pump is damaged, no special service or maintenance should be taken to the water system inside the unit. It's recommended to clean water filter regularly or change it when it's very dirty or blocked.
10. If the unit will not be used in winter for a long time, please drain all the water inside the system, to prevent the water pipes from damage due to freezing.

4.3 Cleaning of water filter

The water filter should be cleaned according to the manual of water filter, to ensure the water flow of the water system. It is recommended that it be cleaned once in the first month, and then, once half a year.

4.4 Cleaning of plate heat exchanger

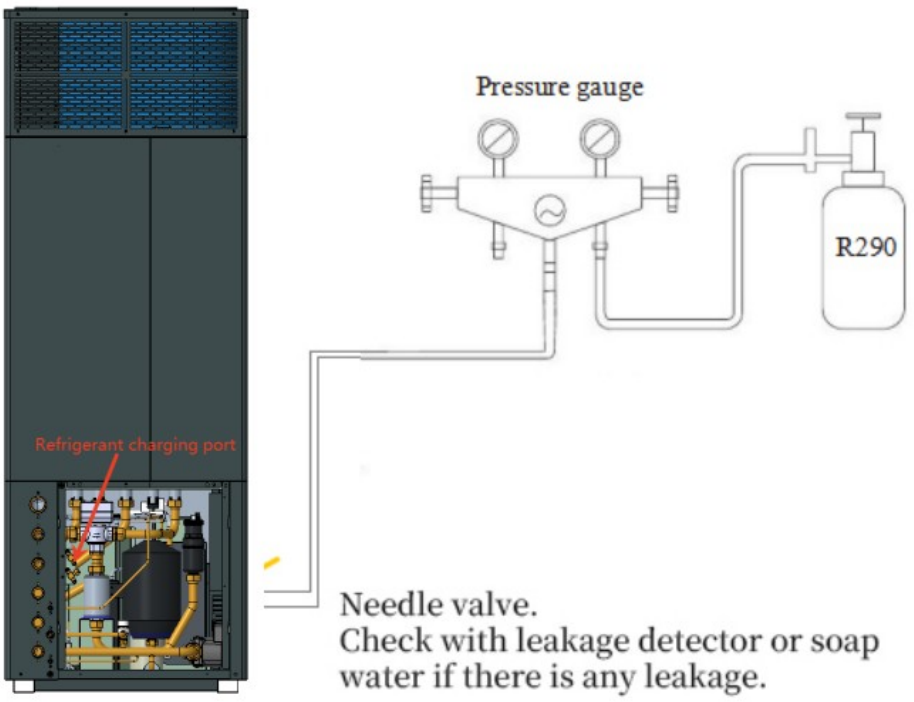
Thanks to the normally very high degree of turbulence in the heat exchanger, there is a self-cleaning effect in the channels. However, in some applications the fouling tendency can be very high, e.g., when using extremely hard water at high temperatures. In such cases it is always possible to clean the exchanger by

circulating a cleaning liquid (CIP-Cleaning In Place). Use a tank with weak acid, 5% phosphoric acid or, if the exchanger is frequently cleaned, 5% oxalic acid. Pump the cleaning liquid through the exchanger. This work should be done by qualified person. For further information, please contact your supplier.

4.5 Gas charging

The refrigerant plays an important role in delivering energy in cooling or heating. Insufficient refrigerant affects directly efficiency of cooling and heating. Please pay attention to the following before adding refrigerant.

1. The work should be done by professionals.
2. If the system has not enough refrigerant inside, please check whether the system has leakage inside.
3. Don't add too much refrigerant than required, or it may cause a lot of failures, such as high pressure and low efficiency.
4. This system uses R290 refrigerant. It is strictly forbidden to charge any refrigerant other than R290 into the system.
5. There must be no air in the refrigerant circulation, because air will cause abnormal high pressure, which will damage the gas piping and lower heating or cooling efficiency.
6. Refrigerant charge can only be done in cooling operation. Please proceed as followings:



Refrigerant charging

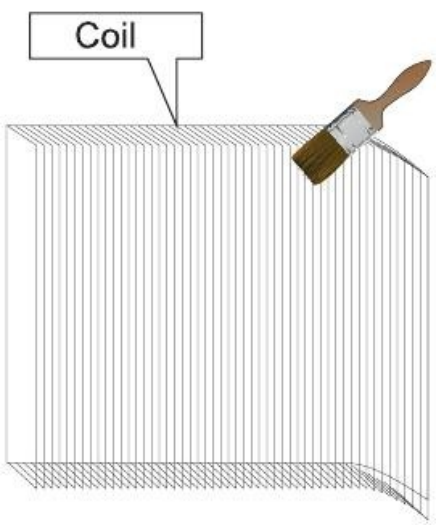
Note:

Always use a weight scale to measure the gas amount charged into the unit.

4.6 Condenser coil

The condenser coils do not require any special maintenance,except when they are clogged by paper or any other foreign objects. Cleaning is by washing with detergent and water at low pressure, and then rinsing with clean water.

1. Before cleaning, make sure the unit is off.
2. Inner of the unit must be cleaned by qualified person.
3. Do not use gasoline, benzene, detergent etc. to clean the unit. And do not spray with insecticide. Otherwise the unit may be damaged. The cleanser special made for air conditioner cleaning is recommended.
4. Spray air conditioner cleanser into the coils. Let the cleaner sit for 5-8 minutes.
5. Then, spray the coil with clean water.
6. An old hairbrush works well for brushing surface dirt and lint off the fins. Brush in the same direction as the slots between the fins so the bristles go between the fins.
7. After cleaning, use a soft and dry cloth to clean the unit.



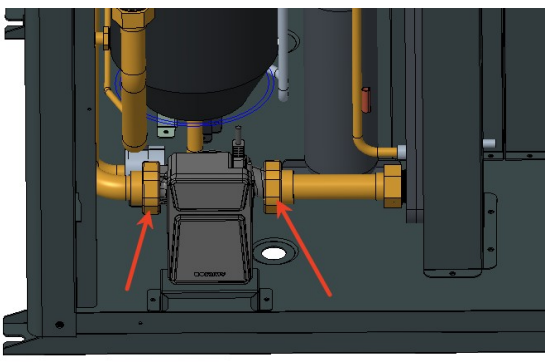
4.7 Service of unit

4.7.1 Maintenance of the electric components

1. Cut off the power supply, open the main electrical box and take off the electronic box cover.
2. Do necessary service to electronics.

4.7.2 Replacement of water pump

1. Cut off the power supply, open the front panel and take off the electric box cover. Disconnect quick connector of water pump power cable, and pull out the signal cable connected to the Main electrical box PCB "HydroM".
2. Cut water supply to the unit, and drain out water in the monoblock unit away. Use a wrench to loosen the connectors of water pump, and take the pump out from the unit.
3. Connect a new pump back to water system and electric system of the unit.

	
1.Use a wrench to remove the G1.5" brass union	2.Locate the Main electrical box PCB "HiPlus12000-VZM". The live wire of the water pump is connected to L1 on the main control board, while the neutral wire of the water pump is connected to the common terminal block. The control wire is on the yellow CN10 terminal.

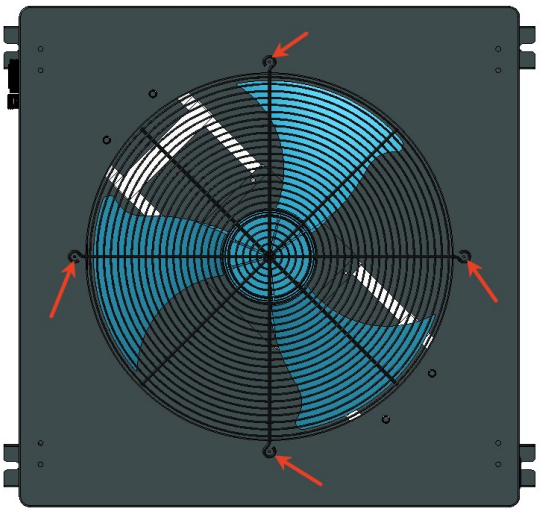
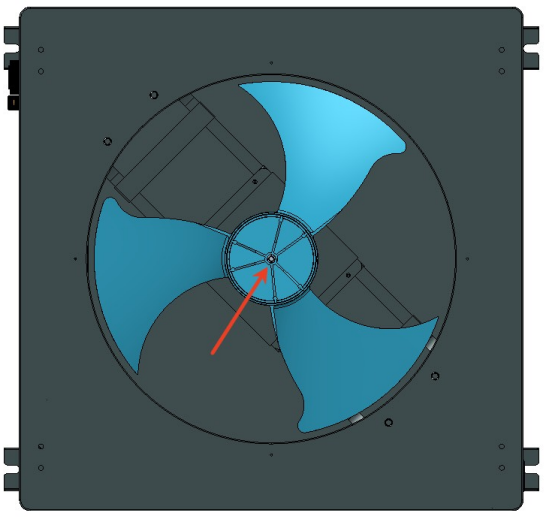
4.8 Service of monoblock unit

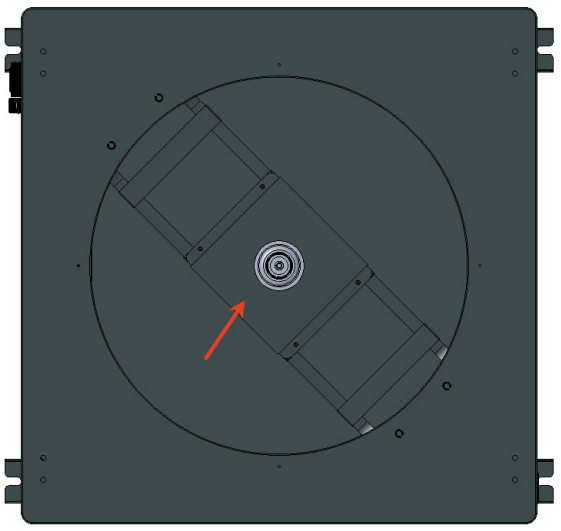
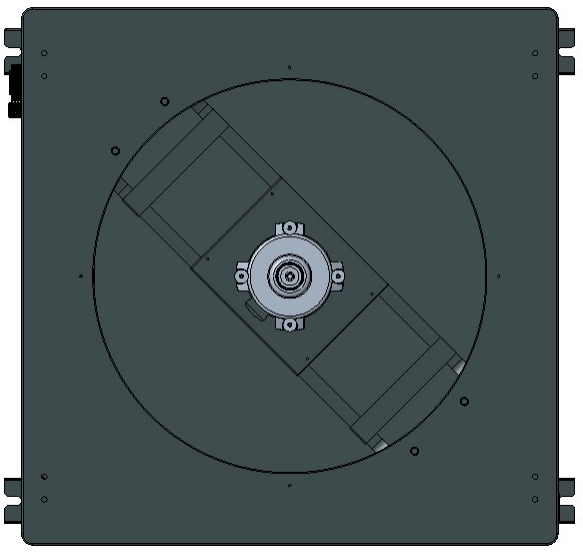
4.8.1 Maintenance of controller

1. Cut off the power supply, take off the top cover of the unit.
2. Take off the electric box cover.
3. Do necessary maintenance work to the Main electrical box PCB"HiPlus12000-VZM".

4.8.2 Replacement of fan motor

1. Cut off the power supply, take off screws of the front grill.
2. Use a wrench to loosen the nut for fan blade and take out the fan blade.
3. Take off the screws of fan motor.
4. Plug out power cable for fan motor from PCB.
5. Put the repaired or new fan motor back and connect all cables back.

	1.Remove the screws on the top air duct and remove the air duct.
	2.After removing the nut, the fan blades can be removed.

	
	3.After removing the motor's sheet metal can the screws used to fix the motor be seen.
	4.Locate the Main electrical box PCB“HiPlus12000-VZM". The live wire of the fan motor is connected to CN300 and CN400.

4.9 Trouble shooting

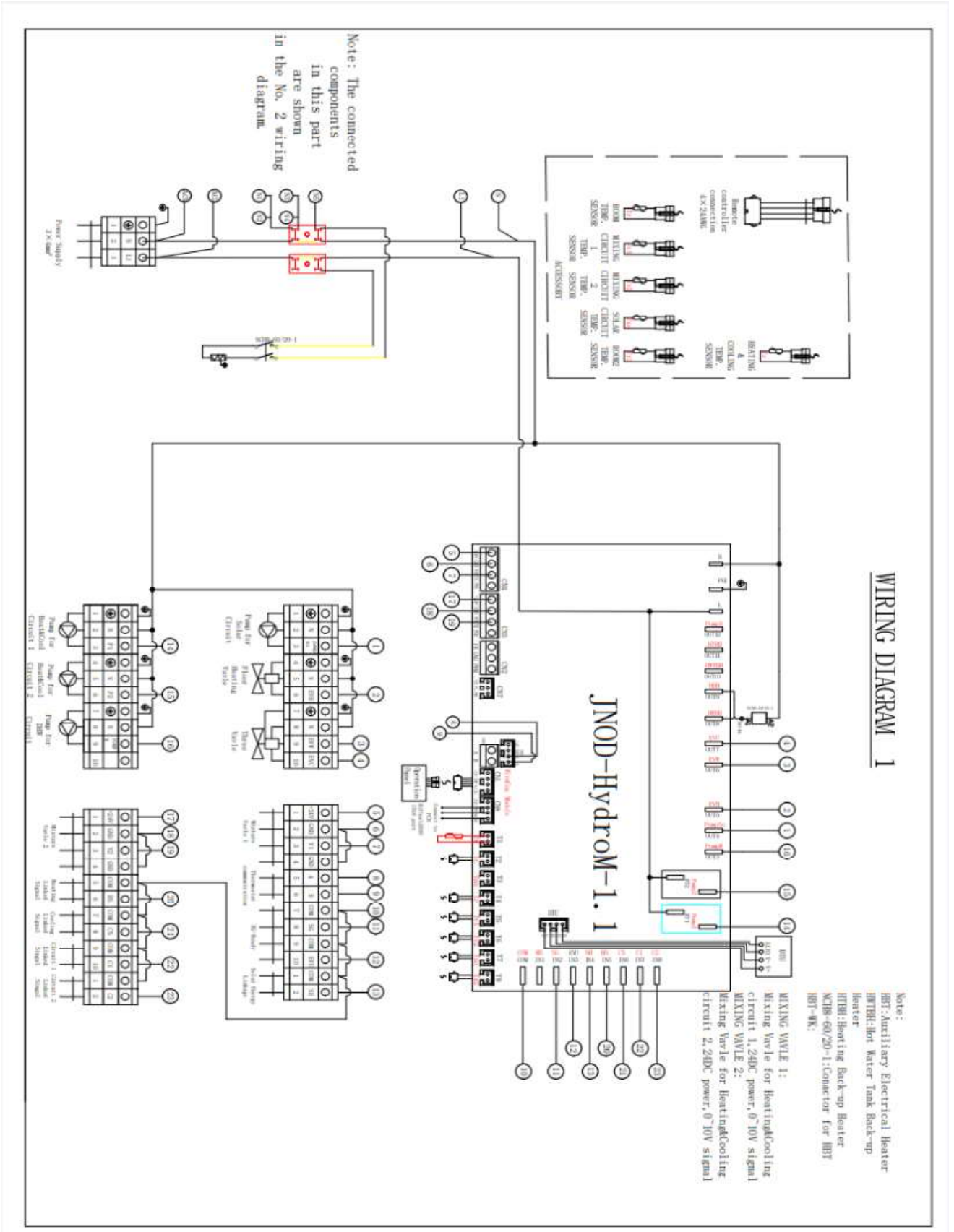
Error input and protection alarm

	Description	Fault analysis	Check method	Solution
1	Water flow protection	1. The system lacks water. 2. The water flow switch failure. 3. The water system is blocked. 4. The temperature difference between inlet water and outlet water is too big.	1. Check whether the water supply valve is closed or the water supply is cut off; 2. Check whether the water flow switch is blocked or interrupted 3. Check whether the Y-filter is clogged.	1. Turn on the valve; 2. Replace new one water flow switch; 3. Clean or replace new filter screen.
2	High pressure protection	1. Water flow is too small; 2. High-pressure switch failure; 3. Refrigeration system is blocked; 4. EEV is locked.	1. Check whether there is water shortage or insufficient water pump flow; 2. Check whether the high-pressure switch is disconnected due to heat pump are turned off; 3. Check whether the refrigeration system is blocked; 4. Check whether the EEV makes a resetting sound when the heat pump is in shutdown mode and the power is turned on or off.	1. Refill water or replace a water pump with a larger flow rate or add a booster pump; 2. Replace new high-pressure switch; 3. Replace new filter; 4. Replace new EEV.
3	Low pressure protection	1. Lack of refrigerant; 2. Refrigeration system is blocked; 3. Exceeding the system working range;	1. Check if the refrigerant system is leaking; 2. Check if the filter is clogged; 3. Check if the ambient temperature or outlet water temperature exceeds the limit.	1. Repair the leakage and refill the refrigerant. 2. Replace new filter; 3. If the system exceeds the operating limit, shut down the unit;
4	Exhaust temperature protection	1.Lack of refrigerant; 2.Exhaust temperature sensor failure.	1. Check if the refrigerant system is leaking; 2. Check whether the exhaust temperature sensor is faulty.	1. Repair the leakage and refill the refrigerant. 2. Replace new exhaust temperature sensor.
5	Refrigerant temperature of plate heat exchanger too low protection	1. Lack of refrigerant; 2. Water system is blocked; 3. Refrigeration system is blocked;	1.Check if the refrigerant system is leaking; 2.Check whether the water system is blocked; 3.Check whether the refrigeration system is blocked;	1. Repair the leakage and refill the refrigerant. 2. Replace new new filter; 3. Clean the refrigerant system.
6	Communication failure	The communication wire is broken or reversed	Check the communication wire	Replace new wire or reconnect it again.
7	Outdoor temperature sensor failure	The temperature sensor has temperature deviation or open circuit.	Check the resistance of the temperature sensor or whether the temperature sensor is disconnected	Replace new temperature sensor or reconnect the wire.
8	Defrosting temperature sensor failure	The temperature sensor has temperature deviation or open circuit.	Check the resistance of the temperature sensor or whether the temperature sensor is disconnected	Replace new temperature sensor or reconnect the wire.

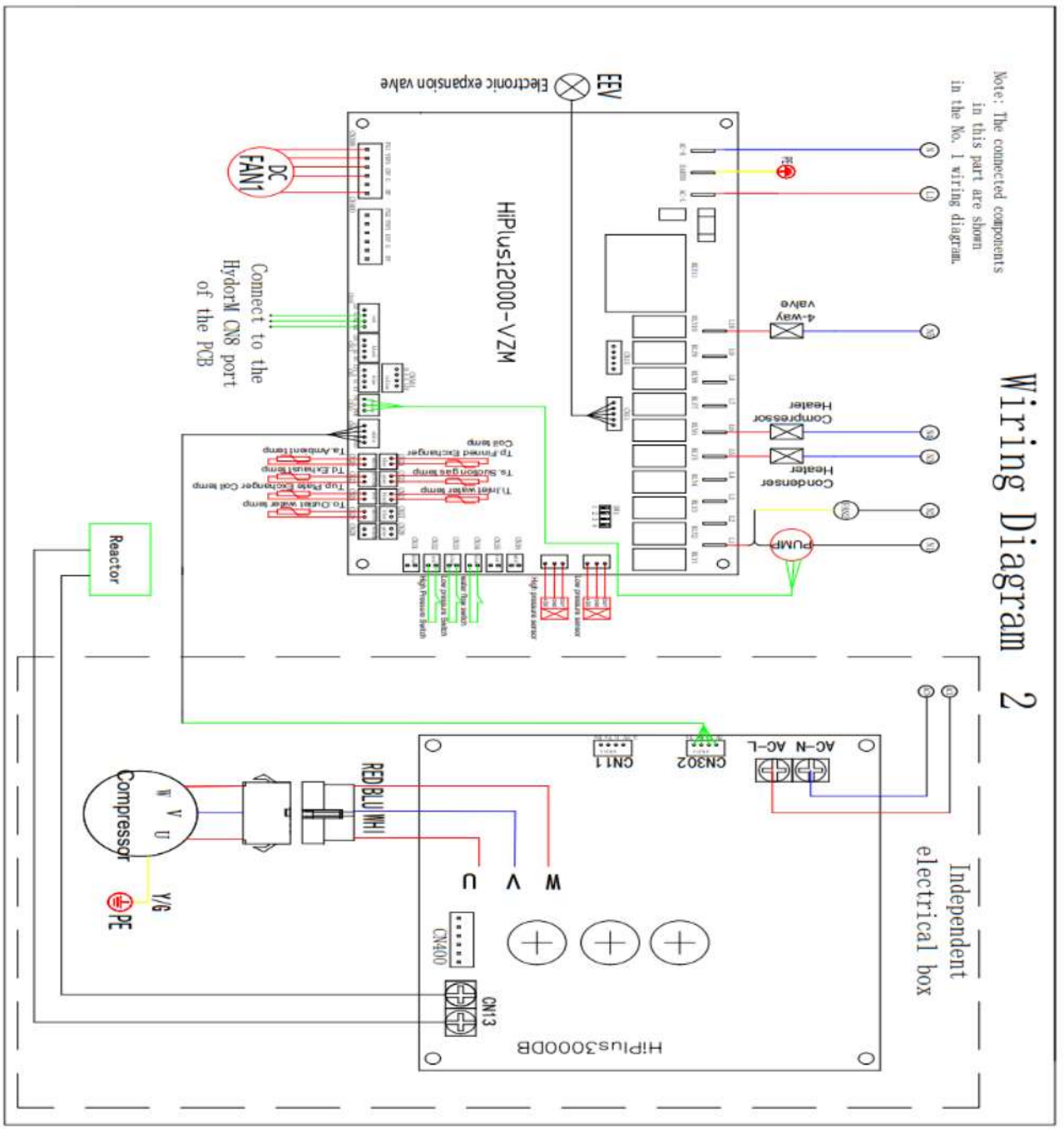
9	Return water temperature sensor failure	The temperature sensor has temperature deviation or open circuit.	Check the resistance of the temperature sensor or whether the temperature sensor is disconnected.	Replace new temperature sensor or reconnect the wire.
10	Outlet water temperature sensor failure	The temperature sensor has temperature deviation or open circuit.	Check the resistance of the temperature sensor or whether the temperature sensor is disconnected.	Replace new temperature sensor or reconnect the wire.
11	Refrigerant outlet temperature sensor failure	The temperature sensor has temperature deviation or open circuit.	Check the resistance of the temperature sensor or whether the temperature sensor is disconnected.	Replace new temperature sensor or reconnect the wire.
12	Refrigerant inlet temperature sensor failure	The temperature sensor has temperature deviation or open circuit.	Check the resistance of the temperature sensor or whether the temperature sensor is disconnected.	Replace new temperature sensor or reconnect the wire.
13	Compressor current protection	Wire connection error or IPM module invalid; Check whether the wire connection is wrong or reconnect the wire or replace the IPM module.		
14	IPM module protection			
15	IPM module temperature sensing internal abnormal circuit			
16	IPM module temperature overheat protection			
17	PFC module protection			
18	PFC module temperature sensing internal abnormal circuit			
19	PFC module temperature overheat protection			
20	Abnormal input current protection			
21	Overlarge input current protection			
22	VDC overlarge voltage protection			
23	VDC ultralow voltage protection			
24	Communication failure			
25	System control exception			
26	Communication failure			
27	Boot failure			
28	Lost phase failure			

5 Attached drawing

5.1 Wiring diagram-1



5.2 Wiring diagram-2



Note:

The company reserves the right to change the wiring diagram, as the one affixed to the machine shall prevail.

6 Thank you

Thank you for choosing our quality product.

Please read this manual carefully before use and follow the instructions to operate the unit in order to prevent damages on the device or injuries to staff.

Specifications are subject to change with product improvements without prior notice. Please refer to the specification sticker on the unit for upgraded specification.