DC Inverter Air to Water Heat Pump

User’s manual

Model: XDASH06C / XDASH09C / XDASH12C / XDASH15D/ XDASH20D

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

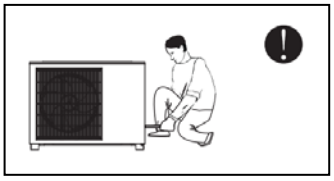
Catalogue

1.Before use

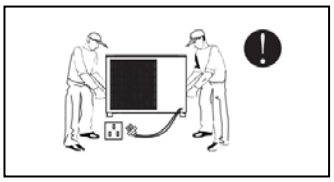
1.1 Safety precautions

The following symbols are very important. Please be sure to understand their meaning, which concerns the product and your personal safety.

Warning Caution Prohibition

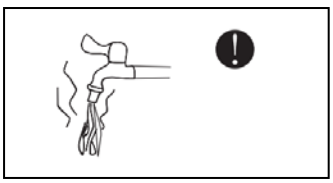


The installation, dismantlement and maintenance of the unit must be performed by qualified personnel. It is forbidden to do any changes to the structure of the unit.Otherwise injury of person or unit damage might happen.

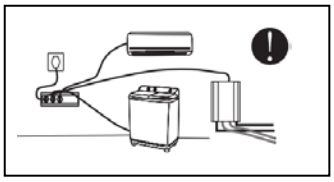


To avoid electrical shock, make sure to disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and, before touching, make sure that those voltages are lower than the safety voltage.

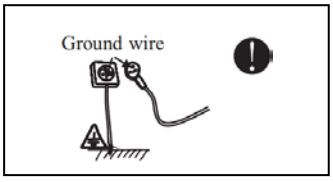
Be sure to read this manual before use.



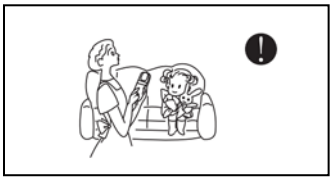
For sanitary hot water, please always add a mixture valve before water tap and set it to a proper temperature.



Use a dedicated socket for this unit, otherwise malfunction may occur.

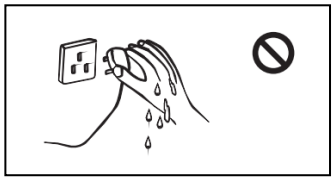


The power supply to the unit must be grounded.

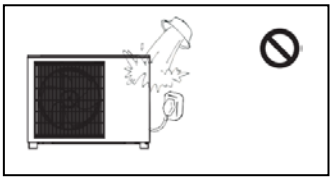


This appliance can be used by children aged from 8 years and above, persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

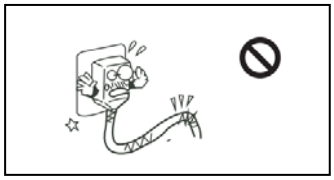
Do not touch the air outlet grill when fan motor is running.



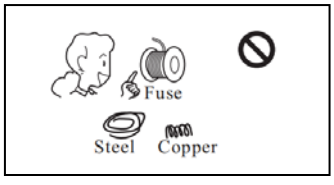
Do not touch the power plug with wet hands. Never pull out the plug by pulling the power cable.



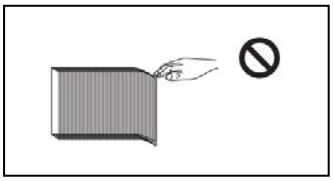
Water or any kind of liquid is strictly forbidden to be poured into the product, or may cause electric creepage or breakdown of the product.



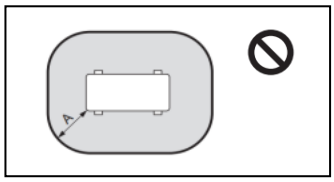
When the power cord gets loose or damaged, always get a qualified person to fix it.



Please select the correct fuse or breaker as per recommended. Steel wire or copper wire cannot be taken as substitute for fuse or breaker. Otherwise, damages maybe caused.



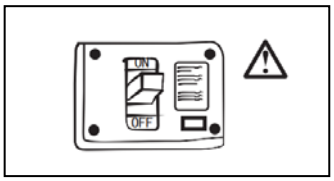
Be aware fingers might be hurt by the fin of the coil.The appliance shall be installed in accordance with national wiring regulations.



A 1000 mm

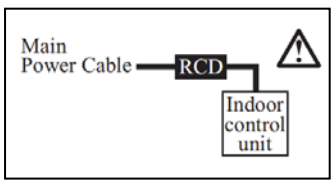
The product contains R290 refrigerant. In the event of a leak, escaping refrigerant may mix with air to form a flammable atmosphere. There is a risk of fire and explosion.Note that this refrigerant has a higher density than air. In the event of a leak, escaping refrigerant may collect near the ground. The refrigerant must not collect in any way that may lead to a dangerous, explosive, suffocating or toxic atmosphere. The refrigerant must not get inside the building via building openings. The refrigerant must not collect in grooves. Refrigerant must only be disposed of by an authorized competent person.

A protective zone is defined around the product. There must be no windows, doors, light shafts, cellar entrances, escape hatches, flat-roof windows or ventilation openings in the protective zone. There must be no ignition sources, such as plug sockets, light switches, lamps, electrical switches or other permanent ignitions sources in the protective zone.

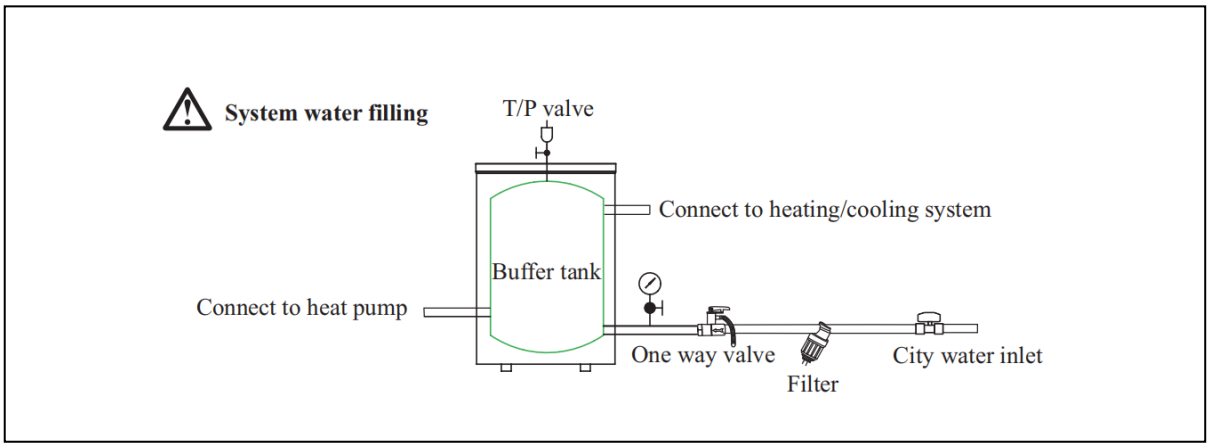


It is mandatory to use a suitable circuit breaker for the heat pump and make sure the power supply to the unit corresponds to the specifications. Otherwise the unit might be damaged.

Disposal of Scrap Batteries(if there is).Please discard the batteries as sorted municipal waste at the accessible collection point.

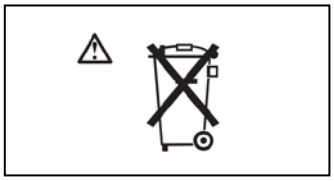


Installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable.



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 pressure of water system should be 0.15~0.6MPa.



This marking indicates that this product should not be disposed 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 environmental safe recycling.

Read operator' s manual

Operator's manual ; operating instructions

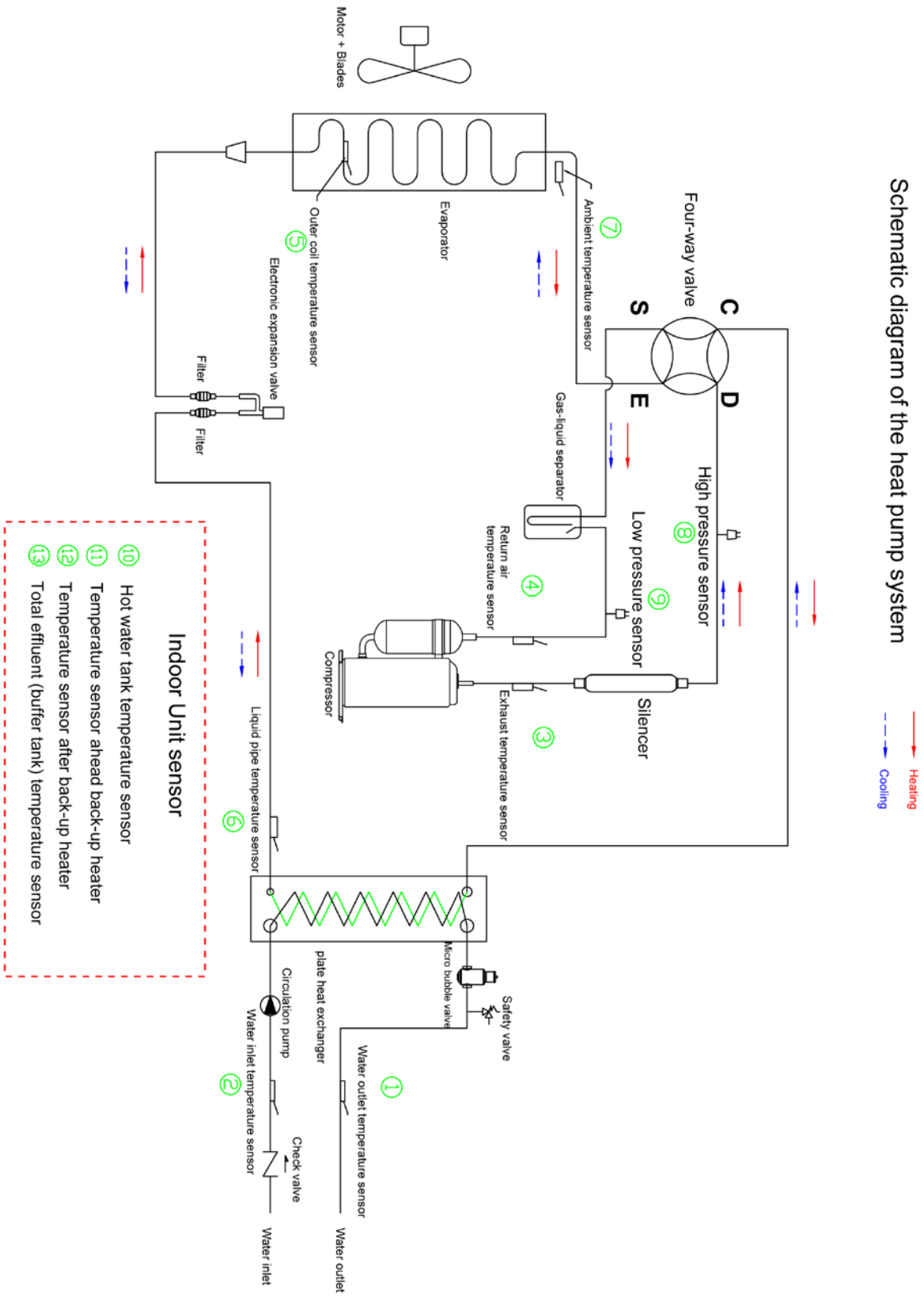
Service indicator, read technical manual

safety group per ISO 817

[symbol ISO 7010-W021 (2011-05) plus the safety group per ISO 817 not less than 1/3 of the height of the symbol adjacent to the symbol]

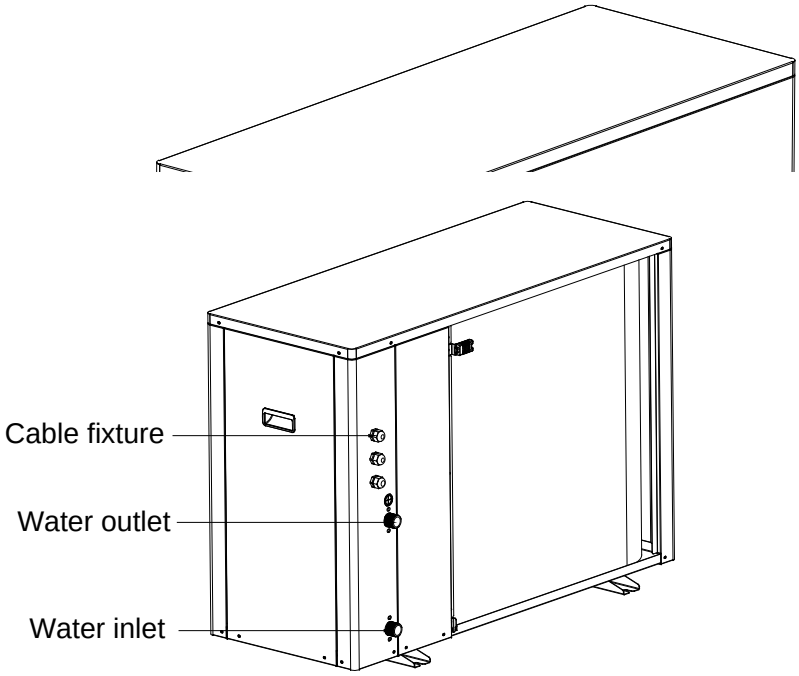
warning; flammable material

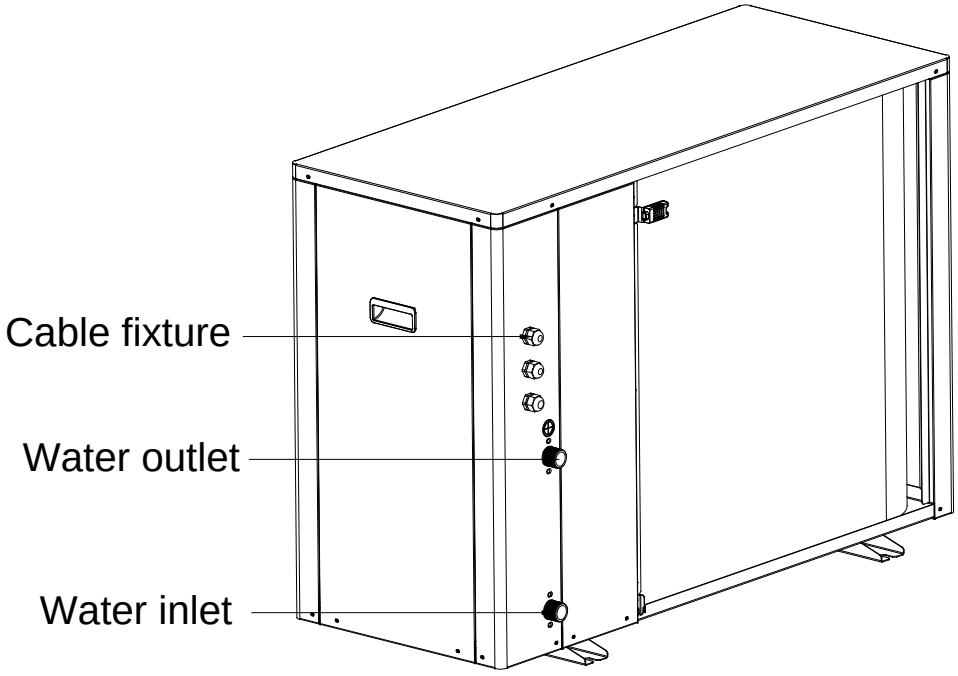
1.2 Working principle



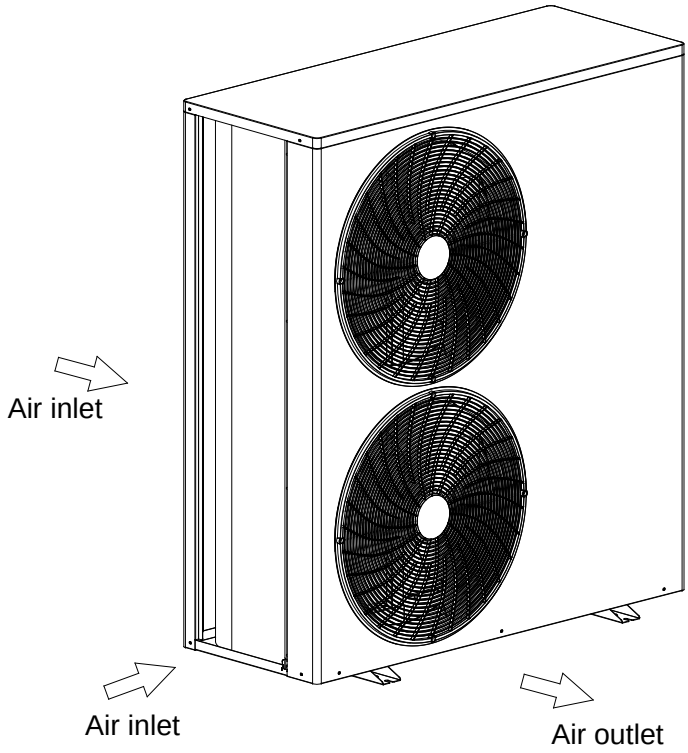
1.3 Main components

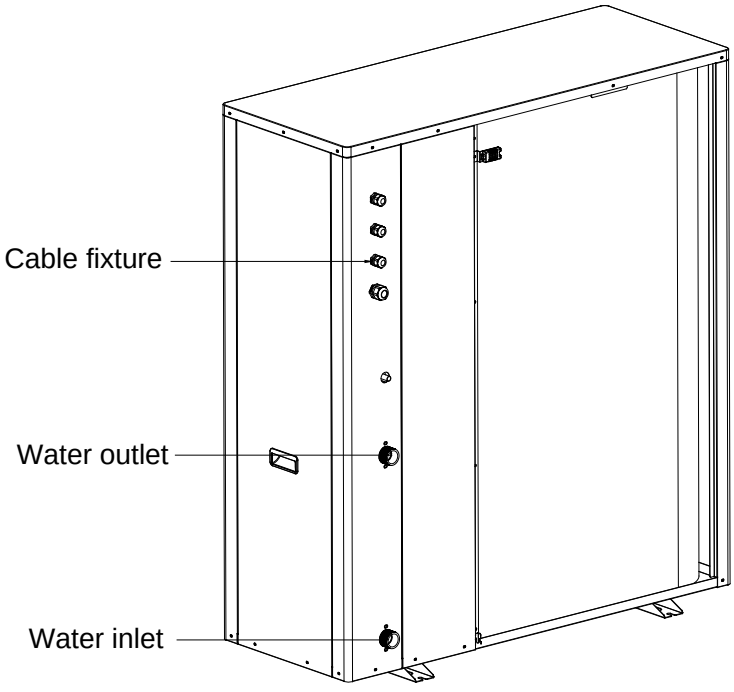
XDASH04C3 / XDASH06C3 / XDASH09C3 / XDASH12C3





XDASH15D3 / XDASH20D3





1.4 Specifications

Model			XDASH04C3	XDASH06C3	XDASH09C3
Power Supply					
Power Supply		V / Hz /ph	220~240 / 50 /1ph	220~240 / 50 /1ph	220~240 / 50 /1ph
Energy class (35℃ SCOP)		/	A+++	A+++	A+++
Energy class (55℃ SCOP)		/	A++	A++	A++
Performance					
Min/max heating capacity (1)		KW	2.19~4.46	2.47~6.82	2.99~8.86
El. heating power input min/max (1)		W	426~943	480~1572	582~2374
C.O.P min/max(1)		W/W	4.73~5.14	4.35~5.15	3.73~5.13
Min/max cooling capacity (2)		KW	2.31~4.90	0.85~4.71	2.92~7.44
El. cooling power input min/max (2)		W	601~1172	347~1615	676~2304
E.E.R min/max(2)		W/W	3.85~4.18	3.81~4.23	3.81~4.01
Workable Ambient Temperature Range		℃	-25~43	-25~43	-25~43
Max flow temp. in heating mode		℃	75	75	75
Min flow temp. in heating mode		℃	20	20	20
Min flow temp. in cooling mode		℃	7	7	7
External static pressures			0.07MPa~0.15MPa		
Noise Level (Sound power)	Indoor / Outdoor	dB(A)	42/56	42/56	42/58
Refrigerant	Type / Amount	Brand	R290/0.4kg	R290/0.55kg	R290/0.66kg
Water Connection		Inch	G1"	G1"	G1"
Dimensions and weight					
Net Dimension (L×D×H)	Indoor	mm	550×280×680	550×280×680	550×280×680
	Outdoor	mm	1150×520×755	1150×520×755	1200×550×855
Net weight	Indoor	kg	30	30	30
	Outdoor	kg	62	85	105
Packaging Dimensions (LxDxH)	Indoor	mm	600×310×780	600×310×780	600×310×780
	Outdoor	mm	1200×545×885	1200×545×885	1250×575×985
Net weight	Indoor	kg	35	35	35
	Outdoor	kg	62	105	125

Model	XDASH12C3	XDASH15D3	XDASH20D3

Power Supply					
Power Supply		V / Hz /ph	220~240 / 50 / 1ph	380~415 / 50 / 3ph	380~415 / 50 / 3ph
Energy class (35℃ SCOP)		/	A+++	A+++	A+++
Energy class (55℃ SCOP)		/	A++	A++	A+++
Performance					
Min/max heating capacity (1)		KW	4.58~11.83	5.64~15.72	7.81~22.32
El. heating power input min/max (1)		W	900~2935	1121~4041	1603~5818
C.O.P min/max(1)		W/W	4.03~5.09	3.89~5.03	3.84~5.12
Min/max cooling capacity (2)		KW	2.17~7.05	4.81~9.87	6.52~13.71
El. cooling power input min/max (2)		W	714~2791	1558~3584	2149~4943
E.E.R min/max(2)		W/W	3.81~4.04	3.81~4.02	3.85~4.11
Workable Ambient Temperature Range		℃	-25~43	-25~43	-25~43
Max flow temp. in heating mode		℃	75	75	75
Min flow temp. in heating mode		℃	20	20	20
Min flow temp. in cooling mode		℃	7	7	7
External static pressures			0.07MPa~0.15MPa		
Noise Level (Sound power)	Indoor / Outdoor	dB(A)	42/62	42/65	42/65
Refrigerant	Type / Amount	Brand	R290/0.8kg	R290/1.1kg	R290/1.5kg
Water Connection		Inch	G1"	G1"	G1-1/4"
Dimensions and weight					
Net Dimension (L×D×H)	Indoor	mm	550×280×680	550×280×680	550×280×680
	Outdoor	mm	1200×550×855	1250×550×1420	1250×550×1420
Net weight	Indoor	kg	30	30	35
	Outdoor	kg	120	160	185
Packaging Dimensions (LxDxH)	Indoor	mm	600×310×780	600×310×780	600×310×780
	Outdoor	mm	1250×575×985	1350×575×1550	1350×575×1550
Net weight	Indoor	kg	35	35	35
	Outdoor	kg	145	180	213

Note:

(1) Heating condition: water inlet/outlet temperature: 30℃/35℃; Ambient temperature: DB 7℃/WB 6℃;

(2) Cooling condition: water inlet/outlet temperature: 12℃/7℃; Ambient temperature: DB 35℃/WB 24℃;

The specifications are subject to change without prior notice. For actual specifications of unit, please refer to the stickers on the unit.

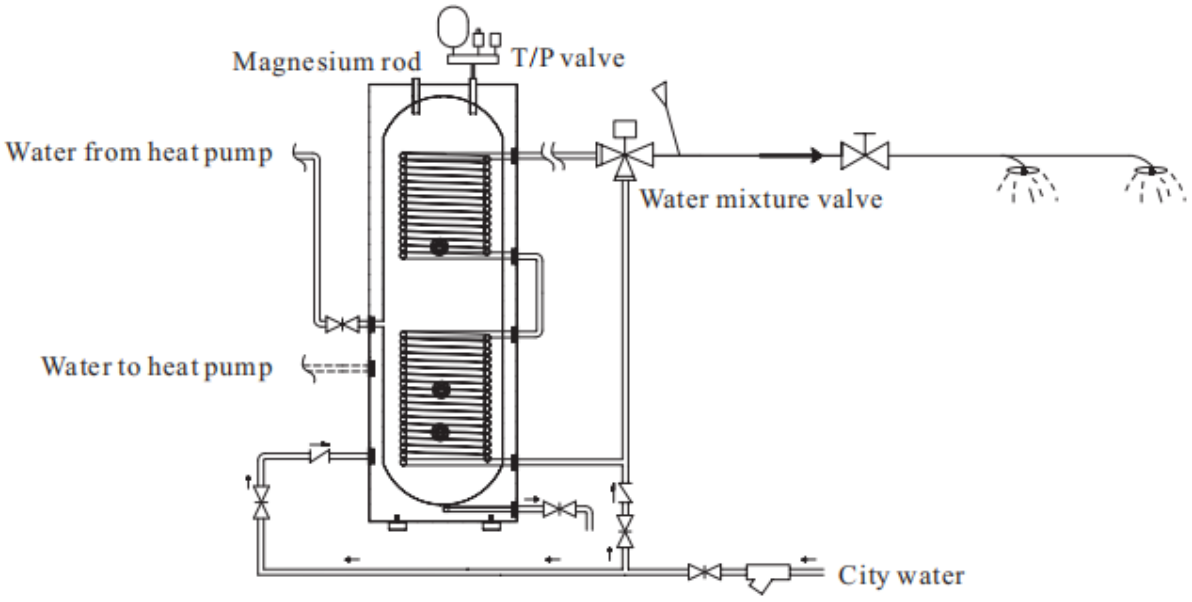
2. Installation

2.1 General application system introduction

2.1.1 Sanitary hot water

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

1) Application 1



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

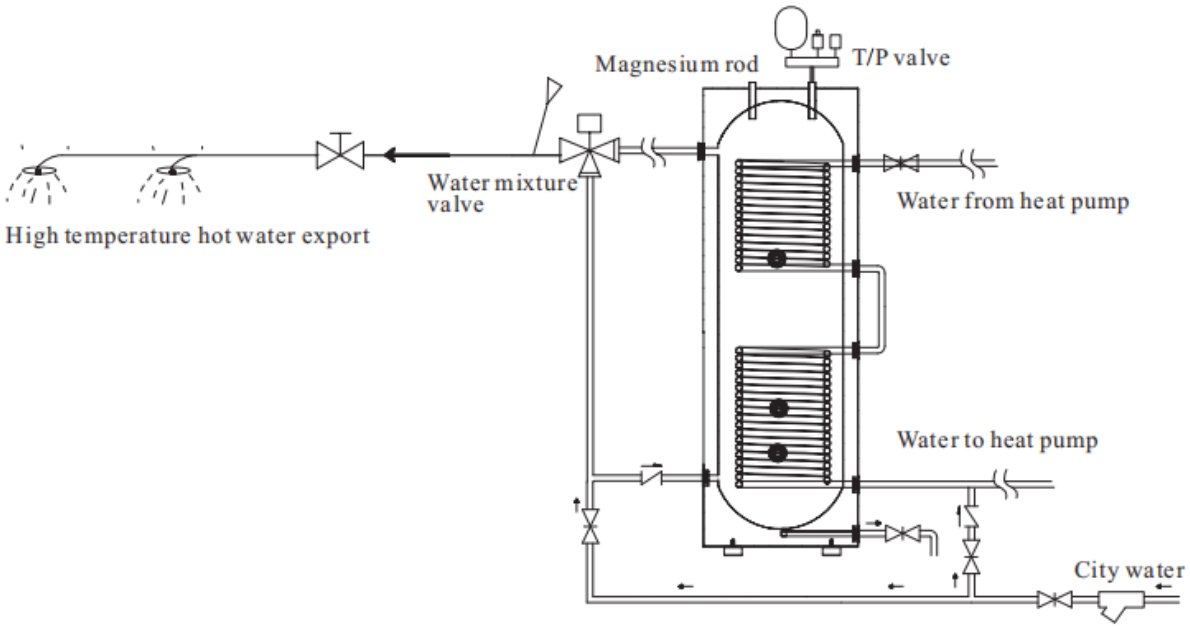
Disadvantage of this application is that heat is transferred from hot water in the tank to city water in the coil, thus it will have less volume of sanitary hot water available.

Compared with other solutions, the advantages of this application is:

A. Heat pump is connected with tank directly, so it can effectively ensures the water flow rate inside heat pump system.

B. Sanitary hot water is heated up by going through the coil, which makes it unnecessary to have sanitization. This will help the system save more energy.

2) Application 2



By connecting the set of coil with heat pump directly, the safety of sanitary hot water inside the tank is also ensured.

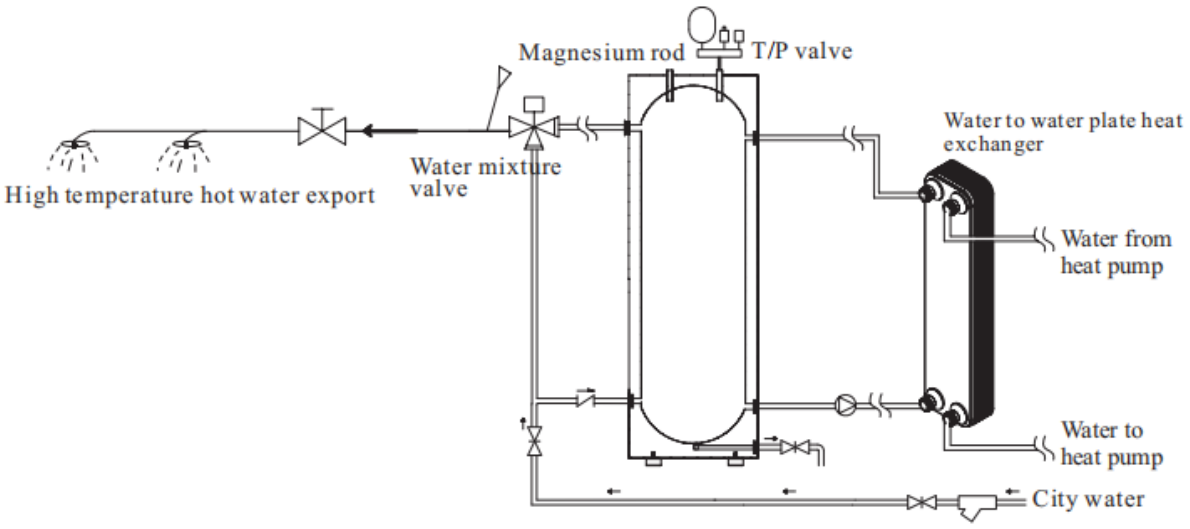
However, the capacity of the coil should be bigger than the maximum output of the unit (heat pump output at A7/W45). Usually this solution is used for working together with a heat pump whose capacity is less than 14kW.

The advantage of this application is that it can supply bigger volume of sanitary hot water.

The disadvantage of this application is that this coil may create big water flow resistance to heat pump water circuit. Thus it may need to add a secondary water pump to ensure the flow rate of heat pump unit, otherwise it may affect unit efficiency or make the unit work improperly.

3) Application 3

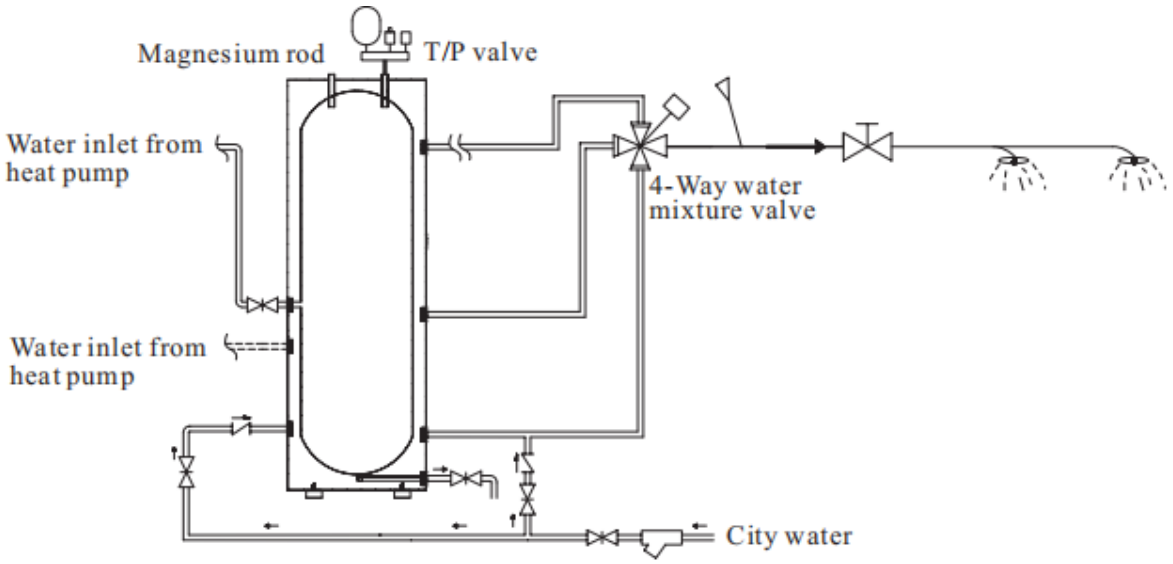
A water to water plate heat exchanger can be used instead of the coil inside water tank, as shown below:



With this application, it can not only ensure the volume of high temperature hot water, but also ensure the water flow rate of heat pump system. But the total cost will be higher than other two applications by add the cost of the plate heat exchanger.

For all these three applications, it is recommended to add a manual mixture valve between city water inlet and water tank sanitary hot water outlet. This can maximize the utilization of hot water in the tank and also ensures its temperature won't be too high to burn people.

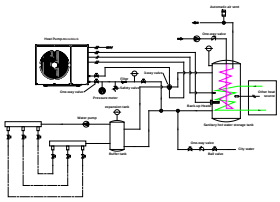
If the structure of the tank permits, it is suggested to use a manual 4-way mixture valve in sanitary hot water system as shown below. This can further improve the utilization of hot water in the tank.

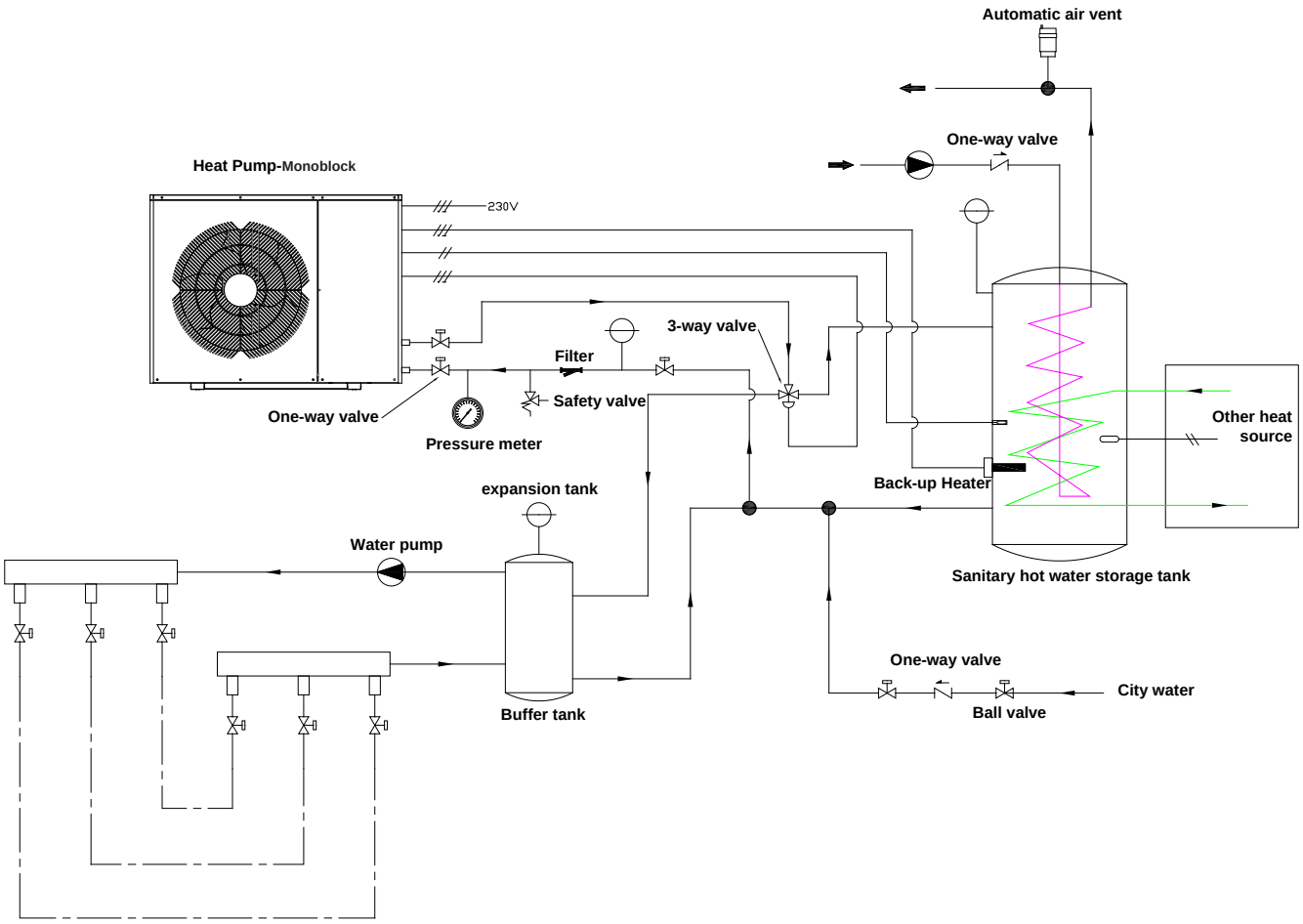


2.1.2 Heater /cooling distribution system

Note:

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





2.2 Tools needed

Most people already have the tools needed for installation: spirit level, pencil, cross head screwdriver, drill, 8 mm concrete drill bit, detection drill, square, tape measure or ruler, tape width 65 mm, hole saw about 80 mm (deviation in size may occur), knife and two adjustable spanners or pliers (and possibly torque wrench).

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

2.3 Packing list

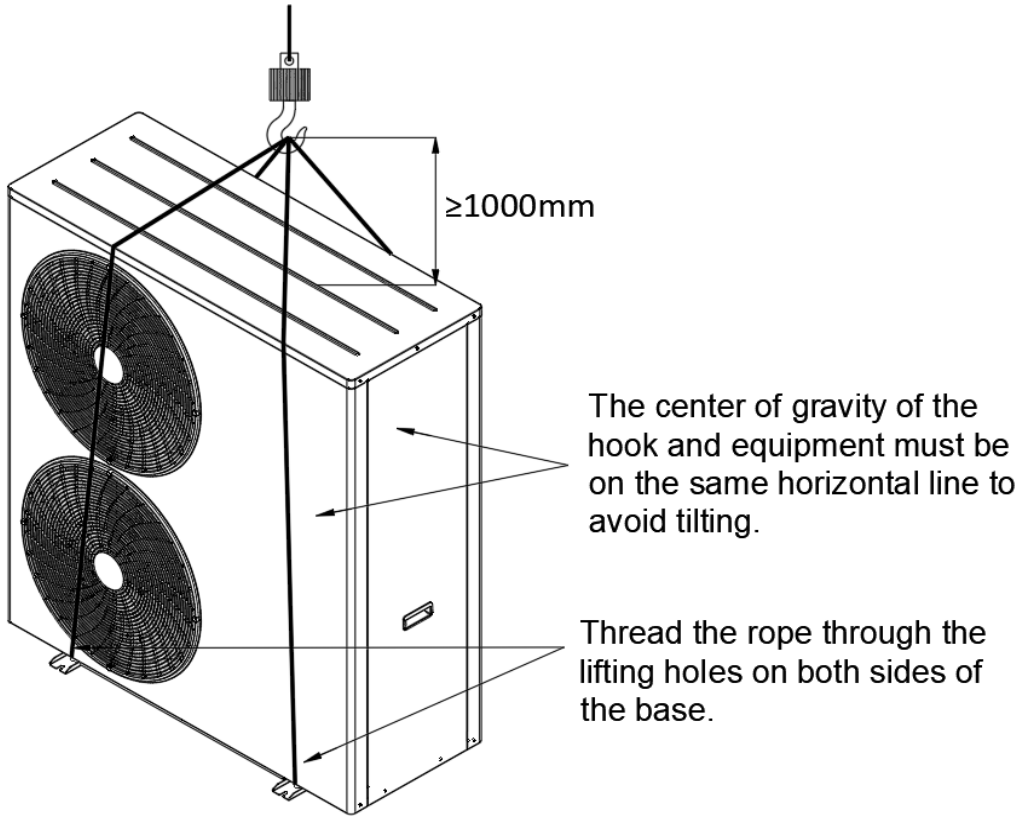
Accessories				
NO.	Item	Spec.	PCS	Picture
1	DHW temperature sensor	1.2 meter	1	
2	Controller extension cable	10 meter	1	
3	Heat pump controller	4"	1	

3.0 Monoblock heat pump Installation

3.1 Before installation

Please make sure to check the model name and serial number of the equipment, as well as the shell and finned heat exchanger for any damage or other issues.

Due to its large size and heavy weight, the equipment can only be transported using lifting tools with slings. The sling can be installed on the sleeve provided on the base and specifically designed for this purpose.



1) The outdoor unit can be located in a open space, corridor, balcony, and roof.

2) The unit shall be placed in a dry and well-ventilated environment. If the outdoor unit is installed in humid environment, electronic components may get corroded, or short-circuited because of heavy humidity.

3）Outdoor unit mustn't be installed in an environment where volatile, corrosive or flammable liquid or gas exists.

4）Please don't install unit close to bedroom or living room, because there is some noise when

it's running.

5）When installing the unit in harsh climatic conditions, sub-zero temperatures, snow, humidity..., please raise the unit above the ground by about 50cm.It's recommended to install an awning above the unit to protect the snow from clogging in the air inlet and outlet and ensure the normal running.

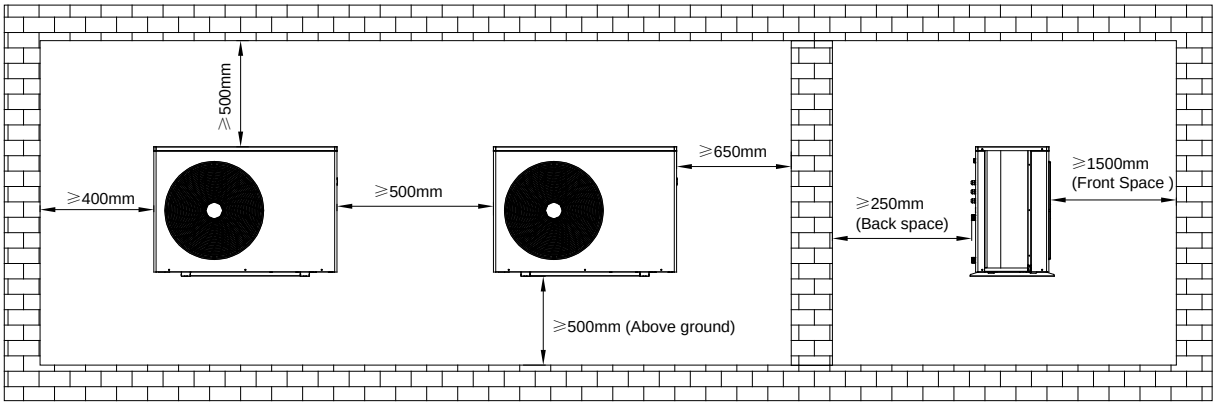
6）Please ensure there is drainage system around the location, to drain the condensate water under defrosting mode.

7）When installing the unit, tilt it by l cm/m for rain water evacuation.

8）Install outdoor unit far away from the exhaust port of kitchen, to avoid oil smoke entering into outdoor unit and adhering to heat exchanger. It's hard to clean up.

9）Please don't install the outdoor unit in damp locations, otherwise it may cause short-circuit or corrosion of some components. The unit should be free from corrosive and moisture surrounding, otherwise the lifetime of the unit might be shortened.

10）Please ensure enough space around the unit, for better ventilation and maintenance.



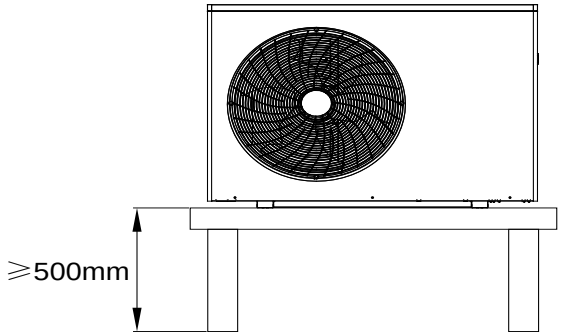
3.2 Installation notes

User can either use the dedicated mounting bracket from the supplier, or prepare a suitable bracket for the unit installation. Make sure the installation meets following requirements:

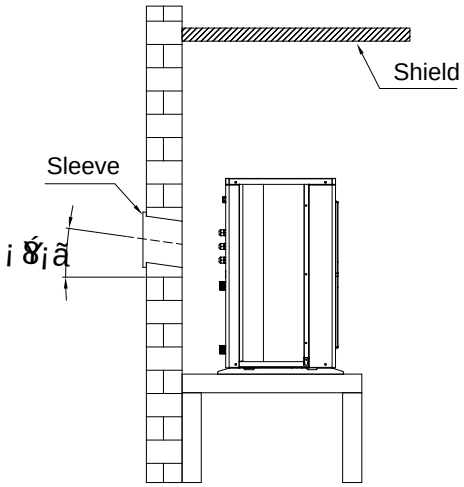
1) The unit must be installed on flat concrete blocks, or a dedicated mounting bracket. The bracket should be able to support at least 5 times of unit’s weight.
2) All nuts must be tightened after the bracket is fixed; otherwise, it may cause damage to the equipment.
3) User should double check and make sure the installation of unit is firm enough.
4) The bracket can be of stainless steel, galvanized steel, aluminum and other materials as required by the user.

5) Besides the mounting bracket, the user can also install the outdoor unit on two concrete blocks, or a raised concrete platform. Please make sure that the unit is securely fastened after installation.

6) Please see the dimensions of outdoor unit when choose a suitable wall bracket.

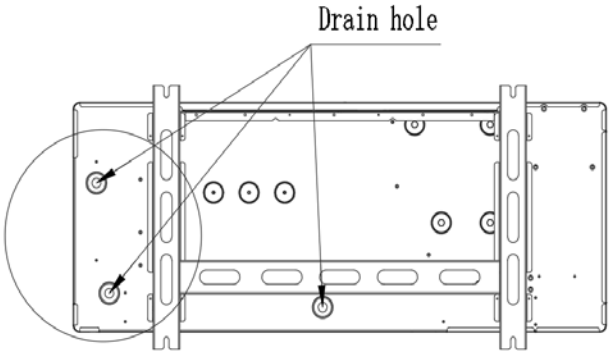


◆Hole for piping kits should lean to outside a little bit (≥8 degrees), to keep rain water or condensate water from flowing back indoors.



3.2.1 condensate drain outlet

The drainage hole is installed with three drainage nozzles from the random assembly accessory package and connected to the drainage pipe. If in cold weather, condensation water freezes and cannot be discharged, an electric heating belt needs to be installed.



3.2.2 Buffer Tank Installation

Site Selection

◆The Buffer tank should be installed indoors

◆ When there is a chance of freezing, glycol/water mixture should be used in the buffer tank.

◆The buffer tanks should be installed on a concrete pad and comply with local codes, so the tanks remain upright and stable.

◆ Some building codes require seismic restraint. Consider restraining the buffer tanks with stainless steel bands.

◆ Ensure the specification label is visible.

◆A pressure limiting valve (pressure release valve) must be fitted with buffer tanks,consult local building codes.

◆ A pressure and temperature relief valve must be supplied with the domestic hot water tank, consult local building codes

◆A tempering (mixing?) valve for hot water supply to bathrooms may be required by some local codes

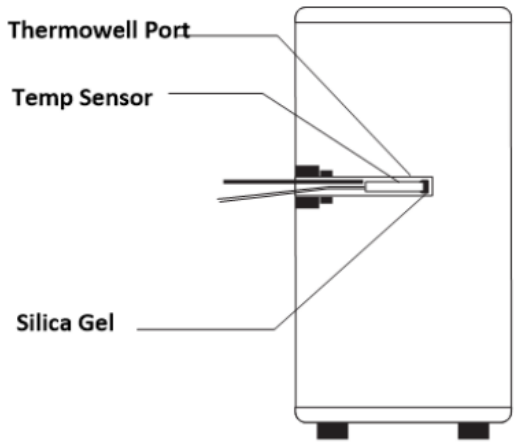
◆ Adrain must be included to allow full and complete draining of the tank.

◆ It is recommended that the hot water outlet pipes are fully insulated with weather proof insulation such as Armaflex or equivalent, to prevent heat loss externally

◆ The hot water outlet pipes should be angled down by 15 deg C minimum for the first 250mm (10 inches)
after exiting from the hot water storage or buffer tanks. This will create a heat trap that will avoid any thermal siphoning from the tanks.

◆Fill the storage and buffer tanks by opening the pressure release or air release valve on top of tank to release buildup of air pressure in the tank as fluid volume enters tank. Check all pipes for any signs of leaks.
Power should not be turned on until the tanks are completely filled with water.

3.2.3 Temperature sensor installation



Buffer Tank

1. Firstly, place a small amount of heat conductive silicone onto the front of the temperature sensor, then insert it into the temperature thermowell port.

2. Next, push the temperature sensor through to the end of the thermowell, then mark the depth of the pinon the sensor wire.
3. Next, pull the senor and check that the position of mark is at the same depth as the end of the sensor well to ensure the sensor is inserted into the sensor well all the way (use a thin wire to check depth of sensor well).
4. Finally, seal the inlet of the temperature detector with silicone.

3.2.4 Installation of Indoor Heating and Cooling Equipment

◆Indoor heating and cooling equipment such as fan coils, radiator heatingor floor heating, should beinstalled in accordance with relevant regulatory requirements, engineering design drawings, and the manufacturer's installation instructions.

◆ Use flexible piping to connect the heat pump and indoor heating and cooling equipment, such as PEX or flexible stainless steel or flexible cooper.

◆ If using fan coils to cool be sure to install condensate water drain pipes to the indoor fan coil units with smooth drainage lines for the condensate water to flow easily.

3.3 Water Pipe Connections

After installing the unit, please connect the water inlet and outlet pipe according to the local regulations. Please carefully select and operate the water pipe.
After connection, the water piping should be pressure tested, cleaned before use.

◆Water pipe material should be heat resistant and rust-proof. This can be stainless steel, copper, aluminum, hot water PEX pipes, etc., according to local standards.

◆ The pipework of the system should follow the relevant standards, and transition to matchthe connection size of the heat pump

◆ The hot water storage and buffer tank drain port and pressure and temperature relief valve should be installed to allow for proper drainage according to relevant standards.

◆ The pump is installed INDOORS located onthe water inlet line (lower line) with arrow on pump flowing to the heat pump. Be sure to add an isolation shut off valves to service pump in the future.

◆The hot water storage and buffer tank must be installed with an isolating valve to allow for maintenance.

◆ The water pipes should be arranged with minimal bends to reduce pressure loss in the system.

◆The water inlet should be fitted with a one-way check valve (found in the UPC 26-99fc pump) and isolating valves for service

◆After all the pipes are connected, the system should be tested at water supply pressure for 24 hours to ensure that the system does not leak. Then insulate relevant hot water and cold pipes, and ther plumbing fittings.

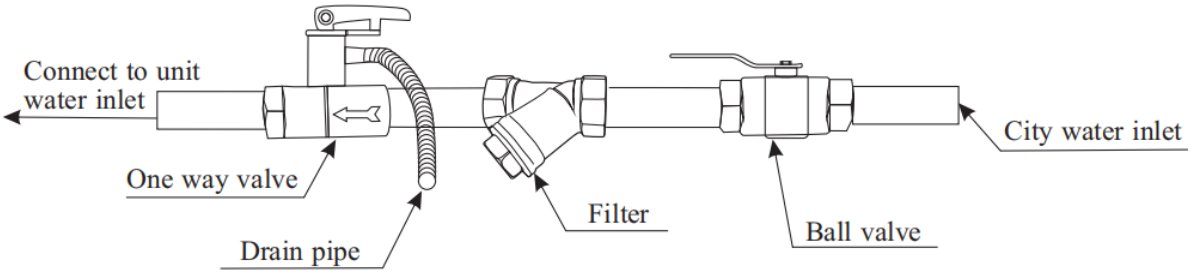
◆ In order to discharge all air from the water pipeline, the watersupply return pipe should have an automatic air bleeding valve installed at the highest point.

◆ An expansion tank must be installed into the system to absorb expansion of the closed loop as temperature increases in the system. It should be installed on suction side of pump.

◆It is recommended to install in the water flow and return a thermometer and water pressure gauge to enable monitoring of key operational parameters.

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 lift.

3) Requirements of water quality

A. Chloridion element in the water should be less than 300ppm(temperature is less than 60℃).
B. PH value of water should be from 6 to 8.
C. The water with ammonia can't be used for the unit.

If the water quality is bad, or water flow too small, scale formation or clogging may happen after unit running for a long time, then the efficiency of cooling or heating will be low or the unit will work abnormally.
Please clean water before use, or use purified water. Make sure the water quality is good enough to keep the unit long-term running in high efficiency.

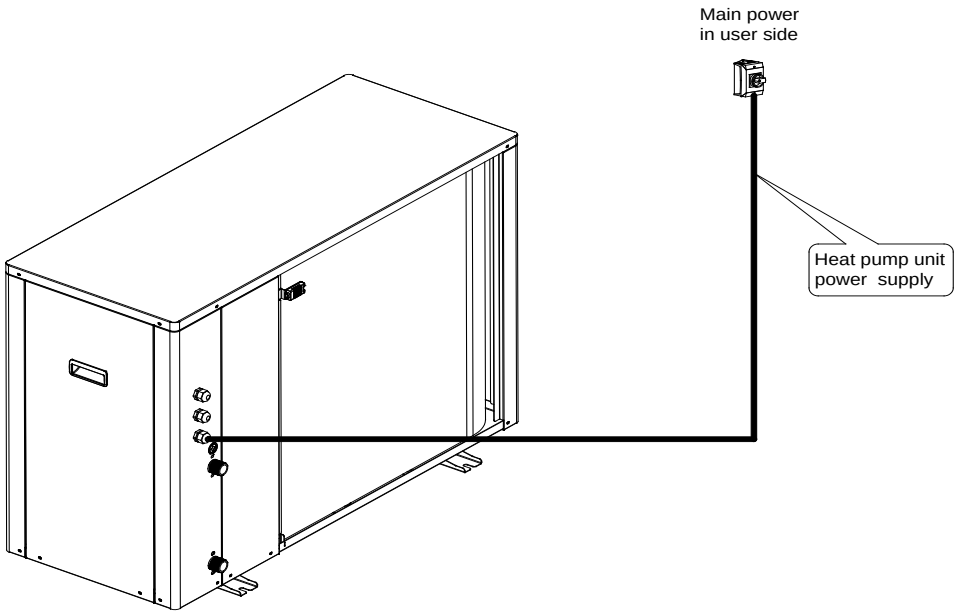
Note：

1. The recommended pressure of the heat pump loop should be 11-20 psi.
2. The water pipes should be subjected to a pressure test before operation of the heat pump twice the operating pressure.
3. A drainage pipe should be installed to drain from the pressure and temperature relief valve.

4. The pressure and temperature relief valve should be periodically exercised by gently pulling the lever up.This will help to remove possible accumulation of calcium carbonate and ensure that the valve is working properly.
5. Install one-way (check) valves, shut on valves, pressure and temperature relief valves, and any other plumbing fittings consistently with the marked flow direction and in accord with relevant local standards.

3.4 Electrical Wiring

Get a power cable in suitable length that complies to the local safety regulations.Should be connected to city power supply.



◆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.
◆The heat pump should use dedicated power cable with voltage and current capacity following the electrical code given the voltage and amperage rating of the heat pump and circulating pump Outdoor rated disconnect must be installed near the heat pump as per local codes.
◆The power cable for the heat pump must be outdoor rated and protected in a metal jacket or conduit.
◆ The heat pump power supply circuit must have a grounding wire, which should connectwith a reliable and effective external ground wire.Wiring must be installed by qualified electrician with reference to the circuit diagram.

◆The layout of power wires/cables and control cables should be neat, well supported and with power and control cables separated so they cannot interfere with each other.

◆ When power lines and control cables are parallel, the wires must be placed inside conduit, with appropriate distance between the cables.

◆ For electrical connection of the heat pump, pull the following wiring through the wiring hole of the electrical box, then connect to the appropriate terminals in the electrical box according to wiring diagram.

3.4.1 Electrical Wire Selection – Warning

◆The internal compressor motor insulation does not protectthe compressor against all possible conditions. Please be sure that the system is properly grounded when installed in the field.

◆ To avoid fire, electric shock and other accidents, only use the power supply voltage indicated on the label.

◆ To protect the power cables, they should be secured appropriately so that they cannot become damaged and people cannot trip over them. Outdoor rated wire should be used from the disconnect to the heat pump

◆ Dedicated circuits should be used to avoid overloading breakers from other appliances.

Specification Table of Power Code

Mode	Power	Amps	Circuit breaker	Wire size
XDASH06C3	208-240V~/1PH/50Hz	10.8	20 Amps	14 AWG
XDASH09C3		11.5	25 Amps	12 AWG
XDASH12C3		12.3	25 Amps	12 AWG
XDASH15D3	380-400V~/3PH/50Hz	16.5	30 Amps	12 AWG
XDASH20D3		18	30 Amps	12 AWG

3.5 Waterway antifreeze protection

Due to long-term exposure of the unit outdoors, in winter when the ambient temperature is relatively cold, it may freeze and damage the water pipeline system. Therefore, preventive measures must be taken to avoid the risk of system freezing

All external water pipeline components need to be insulated to reduce heat loss, and insulation must also be applied to the pipelines on site.

The unit control system comes with antifreeze protection function. When the water temperature in the system drops to a certain value, the equipment uses heat pumps, electric heaters, or auxiliary heaters to heat the water. The antifreeze protection function is only turned off when the temperature rises to a certain value

If an unexpected power outage occurs, none of the above functions can protect the device from freezing damage.

ethylene glycol

Due to the potential power outage of the equipment without monitoring, it is recommended that customers add antifreeze to the water system. Please refer to the following precautions for using ethylene glycol.

Warning

Use ethylene glycol in devices with domestic hot water tanks: Only ethylene glycol with toxicity level 1 can be used, as shown in "Commercial Product Clinical Toxicology, 5th Edition", and then reduce the maximum water injection amount according to the numbers in the table.
If the pressure is too high when using ethylene glycol, please connect the safety valve to the drainage tray to recover the ethylene glycol.

Based on the expected minimum outdoor temperature, ensure that the concentration of ethylene glycol filled in the water system meets the specifications in the table below.Adding ethylene glycol to the system will affect the performance of the equipment. The correction factors for system capacity, flow rate, and pressure drop are shown in the table below.

Ethylene glycol dosage/%	Weighting coefficient				solidifying/° C
	Refresh ability repair	Power correction	Water Resistant	Water flow correction	
0	1.000	1.000	1.000	1.000	0.000
10	0.984	0.998	1.118	1.019	-4.000
20	0.973	0.995	1.268	1.051	-9.000
30	0.965	0.992	1.482	1.092	-16.000
40	0.960	0.989	1.791	1.145	-23.000
50	0.950	0.983	2.100	1.200	-37.000

Proopylene OpyleneL

Propylene glycol dosage/%	Weighting coefficient				solidifying/° C
	Refresh ability repair	Power correction	Water Resistant	Water flow correction	
0	1.000	1.000	1.000	1.000	0.000
10	0.976	0.996	1.071	1.000	-3.000
20	0.961	0.992	0.189	1.016	-7.000
30	0.948	0.988	1.380	1.034	-13.000
40	0.938	0.984	1.728	1.078	-22.000
50	00.925	0.975	2.150	1.125	-35.000

If ethylene glycol is not added, the water in the pipeline must be drained during severe winter weather and power outages.

Warning

Ethylene glycol and propylene glycol are toxic and must be used with caution..
The concentration shown in the table above will not prevent freezing, but it helps prevent pipeline circuit rupture.

System corrosion caused by ethylene glycol

◆Unsuppressed ethylene glycol becomes acidic under the influence of oxygen, and the presence of copper and higher temperatures accelerate this ◆process.Unsuppressed acidic ethylene glycol can attack metal surfaces and form galvanic corrosion points, severely damaging the system.

The following points are very important:

◆Water treatment should be carried out correctly by qualified water experts.

◆Choose ethylene glycol containing corrosion inhibitors to counteract the acid formed by ethylene glycol oxidation.

◆If a domestic hot water tank is installed, only propylene glycol should be used.In other devices, ethylene glycol can be used.

◆Do not use automotive ethylene glycolas its corrosion inhibitor has a limited ◆lifespan and contains silicates that can clog or hinder the system.

◆Do not use galvanized pipes in ethylene glycol systems as this may cause some sediment to settle

◆Ensure compatibility between ethylene glycol and the materials used in the system

3.6 Test run

After installation finished, please fulfill the water system with water and purge out air in the system before start-up.

1) Before start-up

Before the unit starts up, a certain number of verifications must be performed on the installation to ensure that the unit will operate under the best possible conditions. The check list below is not exhaustive and should only be used as a minimum reference basis:

A. Make sure fan rotates freely;
B. Inspect all water piping for flow direction;
C. Verify all system piping is correct for operation as per installation requirements;
D. Check voltage of the unit power supply and make sure the voltage is within authorized limitations;
E. Make sure the unit is properly grounded;
F. Check the presence of protective and breaking devices;
G. Check all electric connections for tightness.
H. Check all piping for leaks and air is well ventilated.

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

2) Pre-start up

A. When the installation of unit is completed, water system pipes are well connected and air purging is done, no leakage or other problems, the unit can be powered to start up.
B. Turn on the unit, press the on-off button on the operation panel to start the unit. Please check carefully if there is some abnormal noise or vibration, or the display of wired controller is normal or not.

C. After the unit is working properly for 10 minutes, without any problem, then the pre-start up is completed; If not, please refer to the Service and Maintenance chapter in this manual to solve the problems

It is suggested not to run "heating" or "hot water" mode, when ambient temperature is above 32 ℃,otherwise unit may go into protection mode easily.

4. Maintenance

4.1 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 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.
4) In normal ambient conditions, the user only needs to clean the surface of the outdoor heat exchanger per month or quarter of a year.
5) If the unit runs in a dirty or oily environment, please clean the outdoor heat exchanger by professionals, using specified detergent, to ensure the performance and efficiency of the unit.
6) Please pay attention to the ambient environment, to check if the unit is installed firmly, or whether the air inlet and outlet of the outdoor unit is blocked.
7) 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.
8) 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.

4.2 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 to clean once in the first month, and then, once half a year.

4.3 Cleaning of plate heat exchanger

Due to the normally high degree of turbulence in the plate 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, 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.

4.4 refrigerant 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 refrigerant charging :

1) The work should be done by professionals.

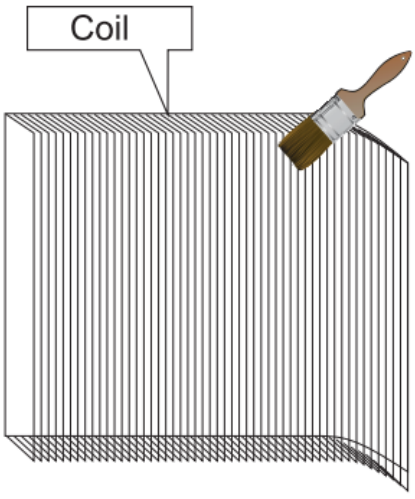
2) If the system do not have enough refrigerant inside, please check whether the system has leakage inside. If yes, please repair it before gas charging, otherwise unit will lack of refrigerant again after working for a short period.
3) Don't charge refrigerant volume over than required, or it may cause 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) If the refrigerant leaks inside the house, please keep windows open for few minutes even R290 refrigerant do no harm to health.
7) Refrigerant charge can only be done in cooling operation.

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

4.5 Cleaning the 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.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.



4.6 Service of indoor control unit

4.6.1 Maintenance of the electric components

1) Cut off the power supply, open the indoor control unit front panel and take off the electronic box cover.
2) Do necessary service to electronics.

4.6.2 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 indoor control PCB.
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.

4.7 Service of outdoor unit

4.7.1 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 controller of monoblock outdoor unit .

4.7.2 Replacement of fan motor

1) Cut off the power supply,take off screws of the fan guard.
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.

4.7.3 Replacement of bottom plate heater

1) Cut off the power supply, take out the fan blade.
2) Take off the fixture of bottom plate heater.
3) Disconnect the quick connector for bottom plate heater and take the heater out .
4) Put a new bottom plate heater back, and connect it to the quick connector.

4.8 Trouble shooting

Failure	Cause	Solution
Unit can’t start up	1. No power supply	1. Check the power supply
	2. Fuse is broken or circuit breaker is disconnected	2. Check if it's open circuit or if the unit is earthed. Then change a fuse and reset the breaker, check if the circuit is stable or the connection is well.
	3. Some kind of protection works	3. Check which protection is working, and clear the protection, then restart the unit.
	4. Wiring is loose	4. Check the wire connection and tighten the screws on the terminal
	5. Compressor fails	5. Change a compressor
Fan fails to run	1. Fan motor wire loose	1. Check the wire connections.
	2. Fan motor failure	2. Change fan motor.
Low heating	1. The coil fins are very dirty	1. Clean the evaporator coil

performance	2. Air inlet is blocked	2. Remove any object that blocks the air circulation of the unit.
	3. Insufficient of refrigerant	3. Inspect the unit for leakage and fix it if any.Discharge all refrigerant and charge the unit again with correct amount.
Too high noise from the water pump, or no water flow when the water pump is running	1. Lacking of water in water system	1. Check the water filling device. Fill the system with enough water.
	2. Air exists in water system	2. Purging the air out.
	3. Valves in water system are not completely opened	3. Check all the valves to ensure they are fully opened.
	5.Water filter is dirty or blocked	4. Clean the water filter
Too high compressor discharge pressure	1. Too much refrigerant	1.Discharge all refrigerant and charge the unit again with right amount.
	2. Air exists in refrigerant system	2. Discharge all refrigerant and charge the unit again with right amount.
	3. Inadequate water flow	3. Check the water flow of the system. Use a bigger pump to increase the water flow if necessary.
	4.Too high water temperature	4. Check the value of the water temperature sensor, to ensure it works properly.
Too low suction pressure	1. Drier filter is blocked	1. Change a new one
	2. Electronic expansion valve is not opened	2. Repair or change a new one
	3. Leakage of refrigerant	3.Inspect the unit for leakage and fix it if any. Discharge all refrigerant and charge the unit again with right amount.
Unit can not defrost properly	1. Coil temperature sensor failure	1. Check the position and value of the coil temperature sensor. Replace it if necessary.
	2. Air inlet/outlet is blocked	2.Remove any object that blocks the air circulation of the unit. Clean the evaporator coil occasionally.

The following phenomenon may not be problems of unit itself.
Please contact with a professional maintenance staff for help.

Number	Failure	Solution
1	The unit is not running	When the unit restarts, the compressor will start 3 minutes later (self-protection of compressor), please check if the circuit breaker is disconnected, and if there is normal power supply for the wire controller.

2	Low capacity	Check if the air inlet or outlet is blocked in outdoor unit; check if the setting temperature is too high in cooling mode, or too low in heating mode.

4.9 Warning

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 minimised.
For repair to the **REFRIGERANTING SYSTEM**, the following precaution shall be completed prior to conducting work on the system.

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

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.

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 toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

Presence of fire extinguisher
If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

No ignition sources
No person carrying out work in relation to a **REFRIGERATING SYSTEM** which involves exposing any pipe work 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 disposal, during which 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.

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.

Checks to the refrigerating 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 actual **REFRIGERANT CHARGE** 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.

-The refrigerating 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.

Checks to electrical devices

Repair and maintenance to 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:

-The capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;

-The no live electrical components and wiring are exposed while charging, recovering or purging the system;

-There is continuity of earth bonding.

Repairs to sealed components

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to 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.

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 the apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded to the point 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.

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.

Cabling

Check 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 continual vibration from sources such as compressors or fans.

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.
The following leak detection methods are deemed acceptable for all refrigerant systems.
Electronic leak detectors may be used to detect refrigerant leaks but, in the case of **FLAMMABLE REFRIGERANTS**, 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 also 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.
– bubble method,
– fluorescent method agents.
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. Removal of refrigerant shall be according to removal and evacuation.

Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:
a) safely remove refrigerant following local and national regulations;
b) purge the circuit with inert gas;
c) evacuate;
d) purge with inert gas;
e) open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times.
Compressed air or oxygen shall not be used for purging refrigerant systems.
For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen 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 oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

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 minimise the amount of refrigerant contained in them.
-Cylinders shall be kept in an appropriate position according to the instructions.
-Ensure that the refrigerating 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 refrigerating system.
Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. 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.

Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. 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 required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.
Become familiar with the equipment and its operation.
Isolate system electrically.
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;
-the recovery equipment and cylinders conform to the appropriate standards.
Pump down refrigerant system, if possible.
If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
Make sure that cylinder is situated on the scales before recovery takes place.
Start the recovery machine and operate in accordance with instructions.
Do not overfill cylinders (no more than 80 % volume liquid charge).
Do not exceed the maximum working pressure of the cylinder, even temporarily.

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.
Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

Labelling
Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing **FLAMMABLE REFRIGERANTS**, ensure that there are labels on the equipment stating the equipment contains **FLAMMABLE REFRIGERANT**.

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 labelled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, FLAMMABLE REFRIGERANTS. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that 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 manufacturer if in doubt.

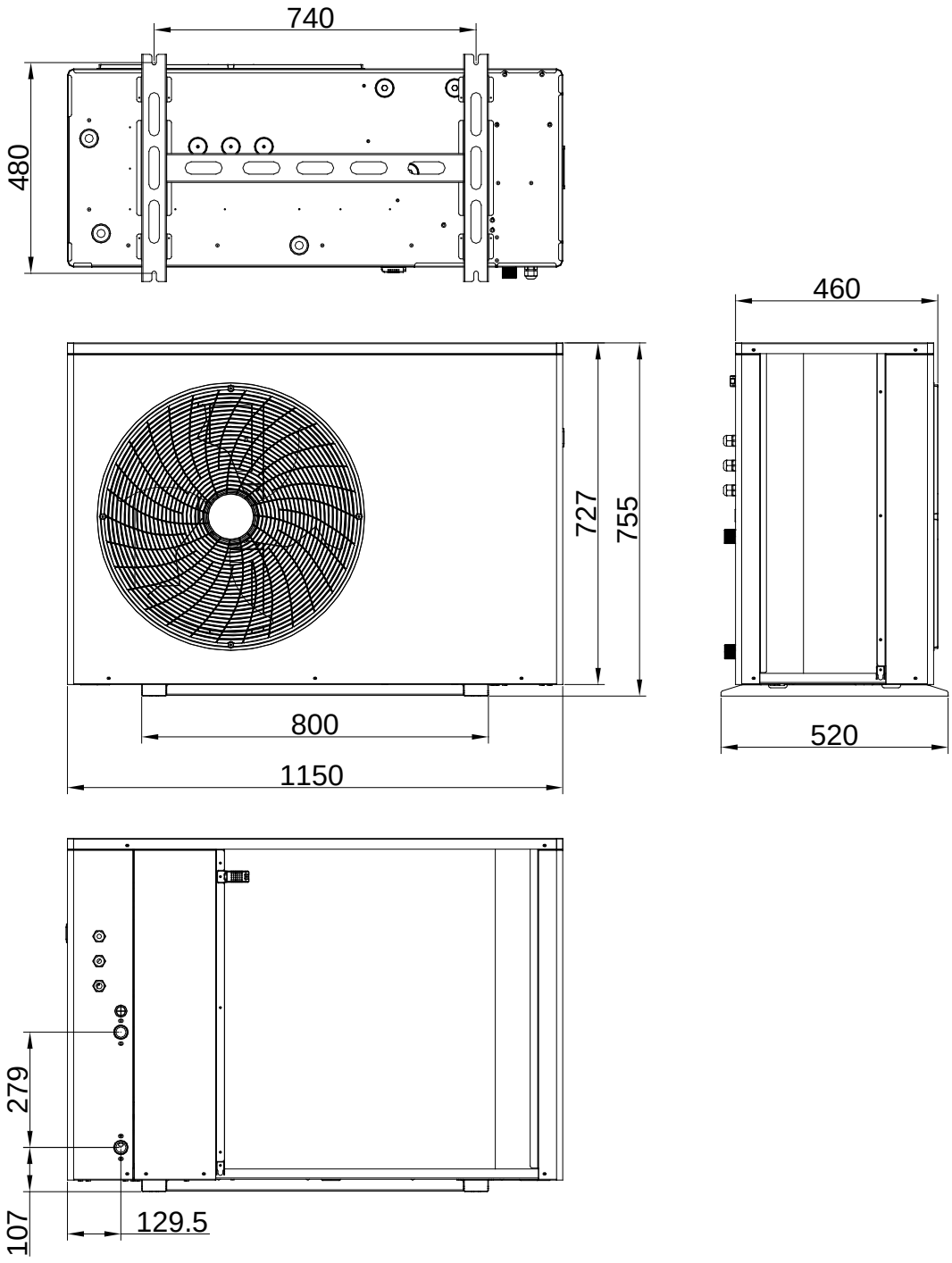
The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

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

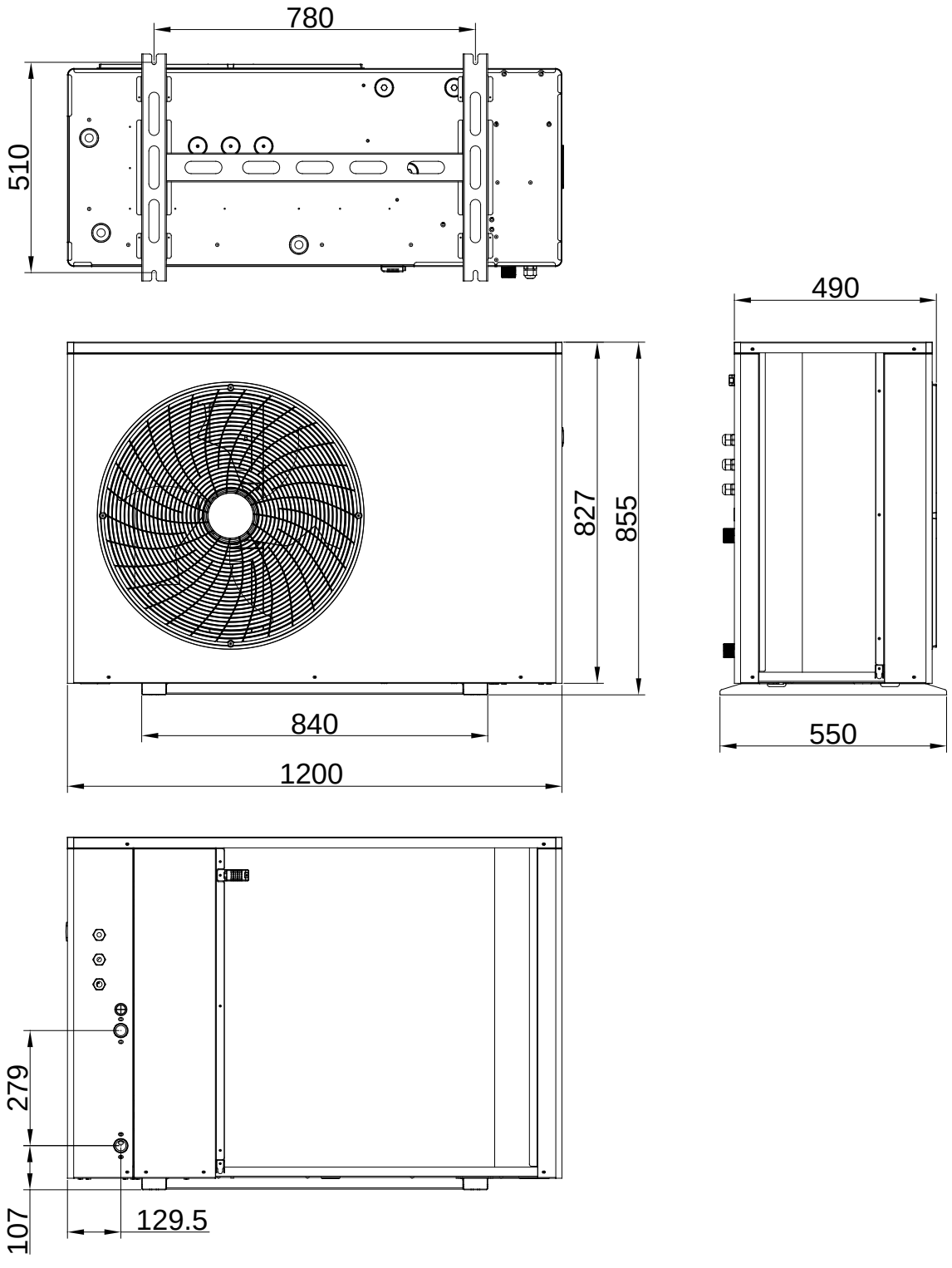
5.Attached drawing

5.1 Outlines and dimensions (Unit:mm)

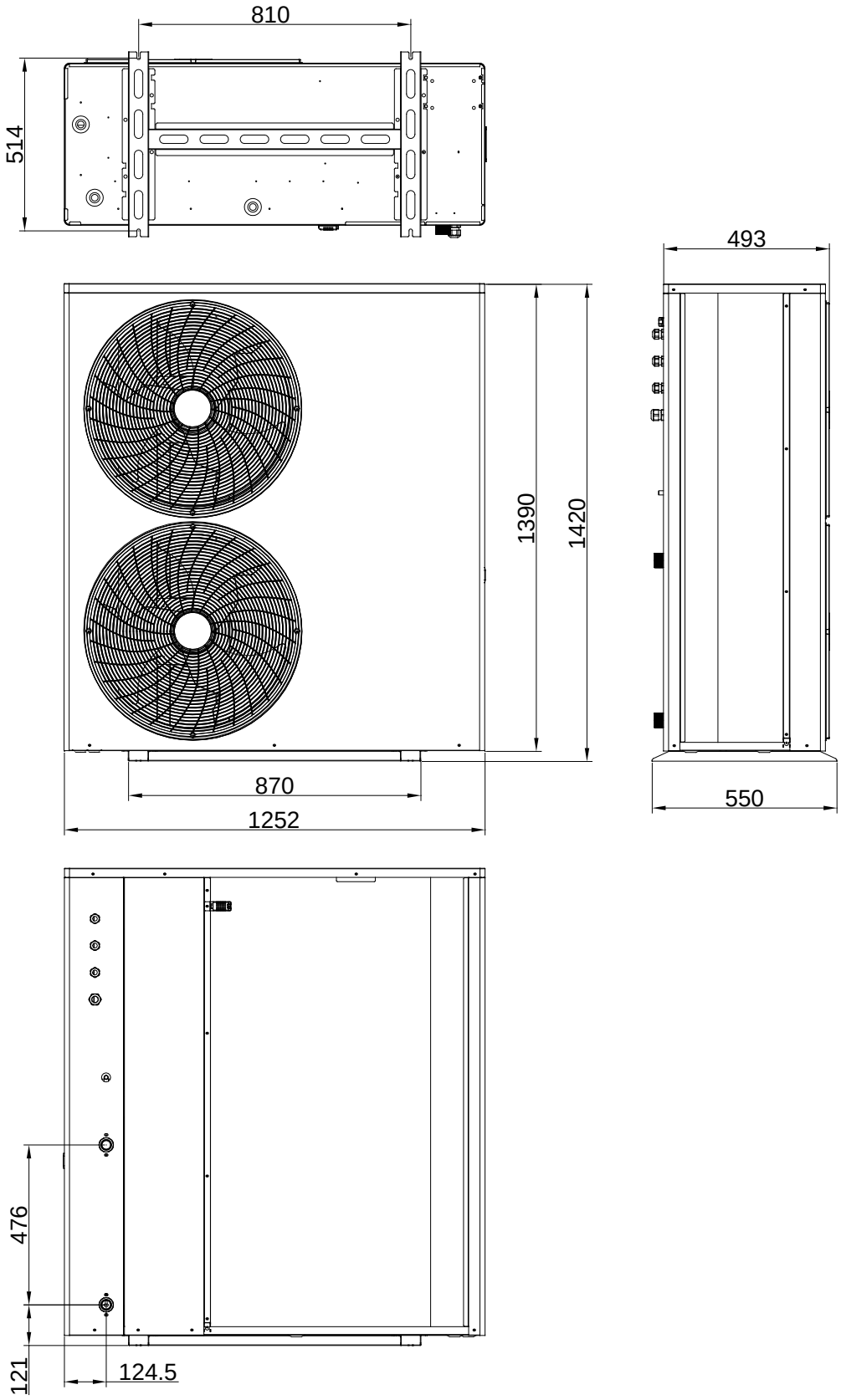
XDASH04C3 / XDASH06C3



XDASH09C3 / XDASH12C3

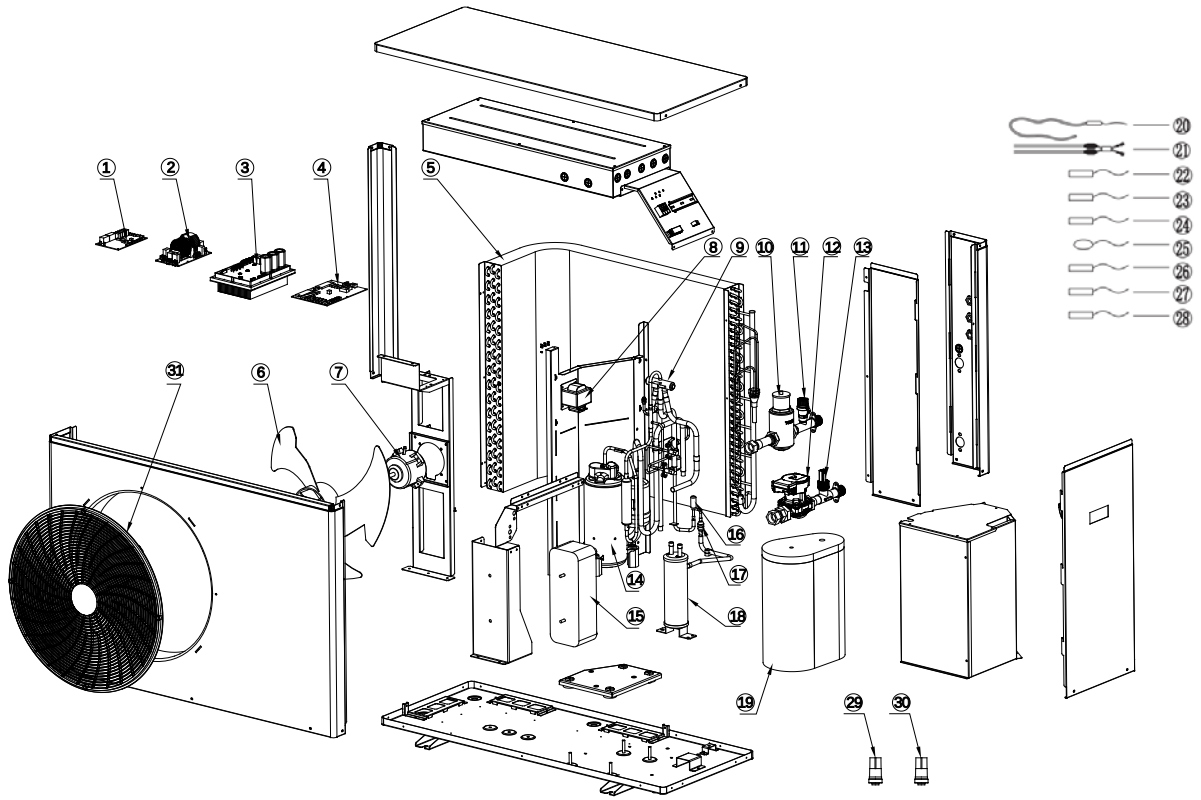


XDASH15D3 / XDASH20D3



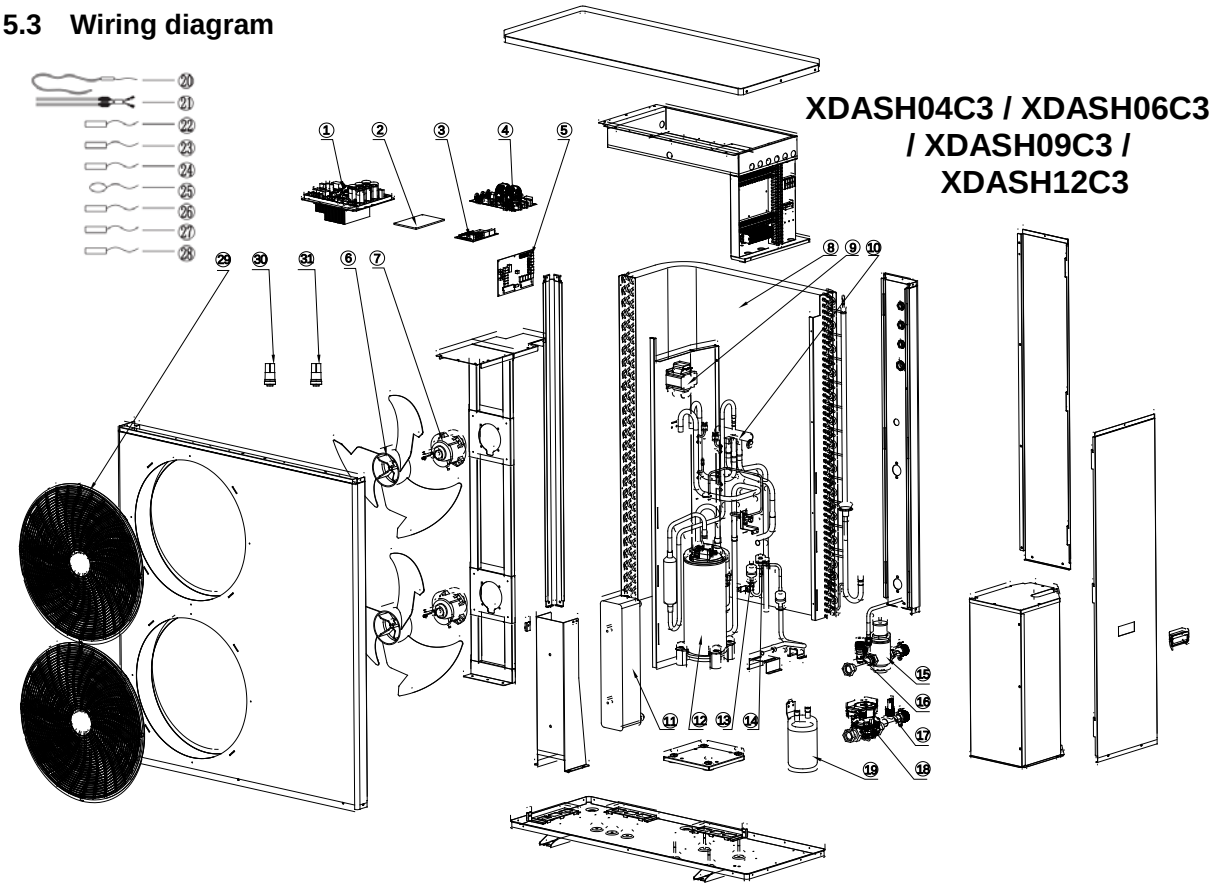
5.2 Exploded view

XDASH09C3 / XDASH12C3

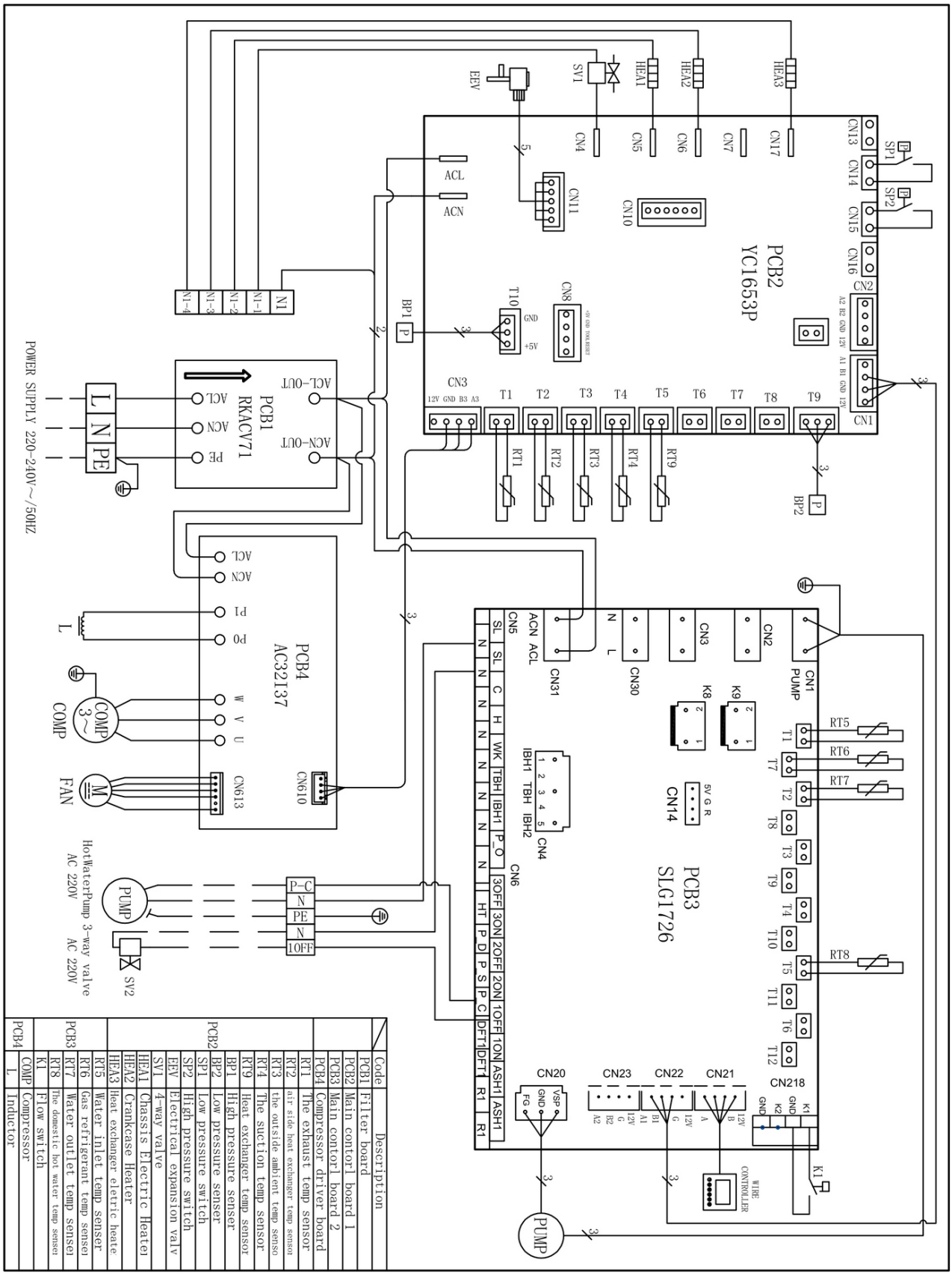


No.	Part Name	No.	Part Name
1	Fan Control board	17	Filter
2	Filter PCB	18	Gas liquid separator
3	Drive PCB	19	Acoustic cover
4	Main controller PCB	20	Compressor heater
5	Finned heat exchanger	21	Bottom tray heater
6	Fan blower	22	Discharge temp.sensor
7	Fan motor	23	Suction temp. sensor
8	Reactance	24	Evaporating coil temp. sensor
9	Four-way valve	25	Ambient temp. sensor
10	Micro bubble valve	26	Water inlet temp. sensor
11	Expansion relief valve	27	Water outlet temp. sensor
12	Water pump	28	Condensing coil temp. sensor
13	Water flow switch	29	High pressure sensor
14	Compressor	30	Low pressure sensor
15	Plate heat exchanger	31	Fan guard
16	Electronic expansion valve		

5.3 Wiring diagram

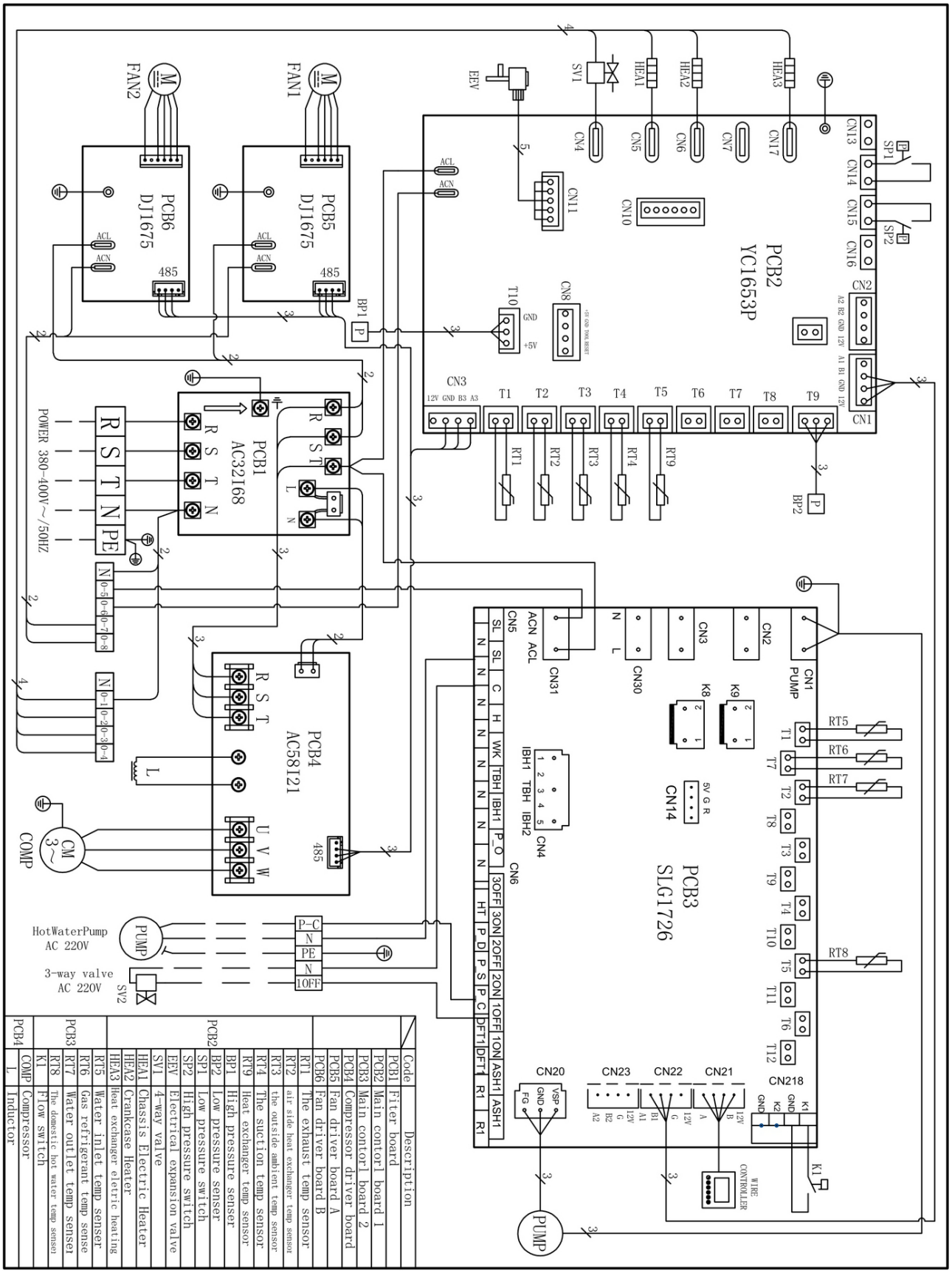


No.	Part Name	No.	Part Name
1	Drive PCB	17	Water flow switch
2	Main controller PCB1	18	Water pump
3	Fan Control board	19	Gas liquid separator
4	Filter PCB	20	Compressor heater
5	Main controller PCB2	21	Bottom tray heater
6	Fan blower	22	Discharge temp.sensor
7	Fan motor	23	Suction temp. sensor
8	Finned heat exchanger	24	Evaporating coil temp. sensor
9	Reactance	25	Ambient temp. sensor
10	Four-way valve	26	Water inlet temp. sensor
11	Plate heat exchanger	27	Water outlet temp. sensor
12	Compressor	28	Condensing coil temp. sensor
13	Filter	29	Fan guard
14	Electronic expansion valve	30	High pressure sensor
15	Micro bubble valve	31	Low pressure sensor
16	Expansion relief valve		



	Code	Description
PCB2	PCB1	Filter board
	PCB2	Main contorl board 1
	PCB3	Main contorl board 2
	PCB4	Compressor driver board
	RT1	The exhaust temp sensor
	RT2	air side heat exchanger temp sensor
	RT3	the outside ambient temp senso
	RT4	The suction temp sensor
	RT9	Heat exchanger temp sensor
	BP1	High pressure senser
	BP2	Low pressure senser
	SP1	Low pressure switch
	SP2	High pressure switch
	EEV	Electrical expansion valv
	SV1	4-way valve
	HEA1	Chassis Electric Heater
	HEA2	Crankcase Heater
	HEA3	Heat exchanger eletric heate
PCB3	RT5	Water inlet temp senser
	RT6	Gas refrigerant temp sensor
	RT7	Water outlet temp sensor
	RT8	The domestic hot water temp senser
PCB4	K1	Flow switch
	COMP	Compressor
	L	Inductor

XDASH15D3 /XDASH20D3



	Code	Description
PCB2	PCB1	Fiter board
	PCB2	Main contorl board 1
	PCB3	Main contorl board 2
	PCB4	Compressor driver board
	PCB5	Fan driver board A
	PCB6	Fan driver board B
	RT1	The exhaust temp sensor
	RT2	air side heat exchanger temp sensor
	RT3	the outside ambient temp sensor
	RT4	The suction temp sensor
	RT9	Heat exchanger temp sensor
	BP1	High pressure senser
	BP2	Low pressure senser
	SP1	Low pressure switch
	SP2	High pressure switch
	EEV	Electrical expansion valve
	SV1	4-way valve
	HEA1	Chassis Electric Heater
	HEA2	Crankcase Heater
	HEA3	Heat exchanger eletric heating
PCB3	RT5	Water inlet temp senser
	RT6	Gas refrigerant temp sense
	RT7	Water outlet temp sensei
	RT8	The domestic hot water temp sensei
PCB4	K1	Flow switch
	COMP	Compressor
	L	Inductor

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 specifications.

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