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中性英文, 6、9、12KW 商超机——PAVH-06、09、12V1FXC 说明书 技术要求

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设计	校对	审核	批准	存档	型号、规格	中性英文, 6、9、12KW 商超机——PAVH-06、09、12V1FXC 说明书	
					首次使用机型		1/1

PAVH-06V1FXC  
PAVH-09V1FXC  
PAVH-12V1FXC



# DC Inverter Air to Water Heat Pump



## User's manual

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





# Catalogue

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# 1. Before use

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## **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 stored 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<sup>2</sup> (refer to specifications sheet).
6. The installation of pipe-work shall be kept to a minimum X m<sup>2</sup> (refer 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 stored 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 cause a leak of the refrigerant charge.

The maximum number of pieces of equipment permitted to be stored 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 minimised. 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 minimise the risk of a flammable gas or vapour being present while the work is being performed.

# 1. Before use

## 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 workspace 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 used 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<sub>2</sub> 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 disposal, 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.

# 1. Before use

## 9) 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:

- .That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- .That there no live electrical components and wiring are 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 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.

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 silicon 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.

# 1. Before use

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## 9.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.

## 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.



# 1. Before use

## 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 minimise 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 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 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 has been cleaned and checked.

## 15. Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating 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

# 1. Before use

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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 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.

# 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.



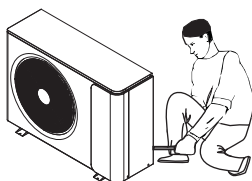
Warning



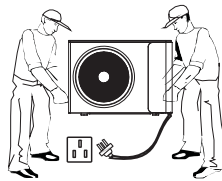
Caution



Prohibition



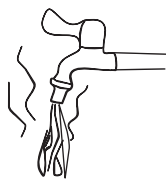
The installation, dismantlement and maintenance of the unit must be performed by qualified personnel. It is forbidden to do any changes to the structure of the unit. Otherwise injury of person or unit damage might happen.



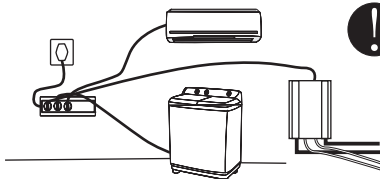
To avoid electrical shock, make sure to disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and, before touching, make sure that those voltages are lower than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



Be sure to read this manual before use.

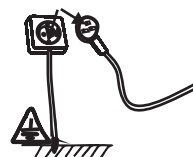


For sanitary hot water, please always add a mixture valve before water tap and set it to proper temperature.



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

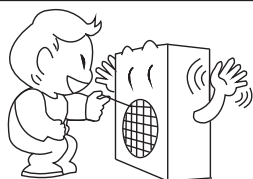
Ground wire



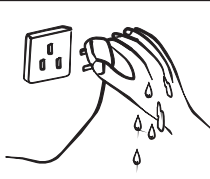
The power supply to the unit must be grounded.



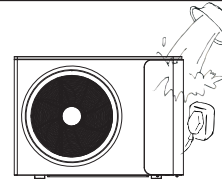
This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. 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.


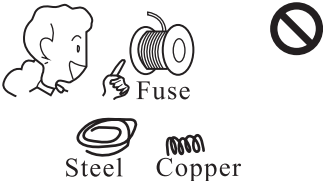
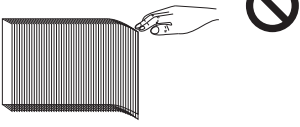


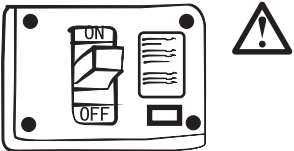
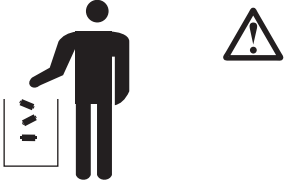
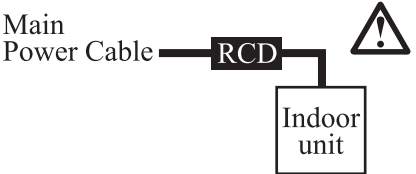
Do not touch the power plug with wet hands. Never pull out the plug by pulling the power cable.



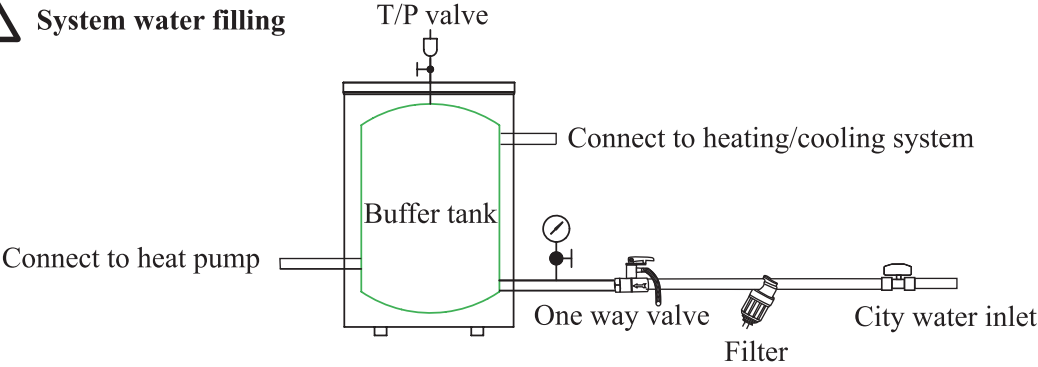
Water or any kind of liquid is strictly forbidden to be poured into the product, or may cause electric creepage or breakdown of the product.

# 1. Before use

 <p>When the power cord gets loose or damaged, always get a qualified person to fix it.</p>	 <p>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 may be caused.</p>	 <p>Be aware fingers might be hurt by the fin of the coil.</p>
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 <p>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.</p>	 <p>Disposal of Scrap Batteries(if there is). Please discard the batteries as sorted municipal waste at the accessible collection point.</p>	 <p>Installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable.</p>
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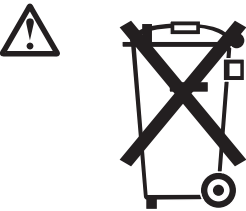
**System water filling**



1. It's suggested to use pure water for filling the system.

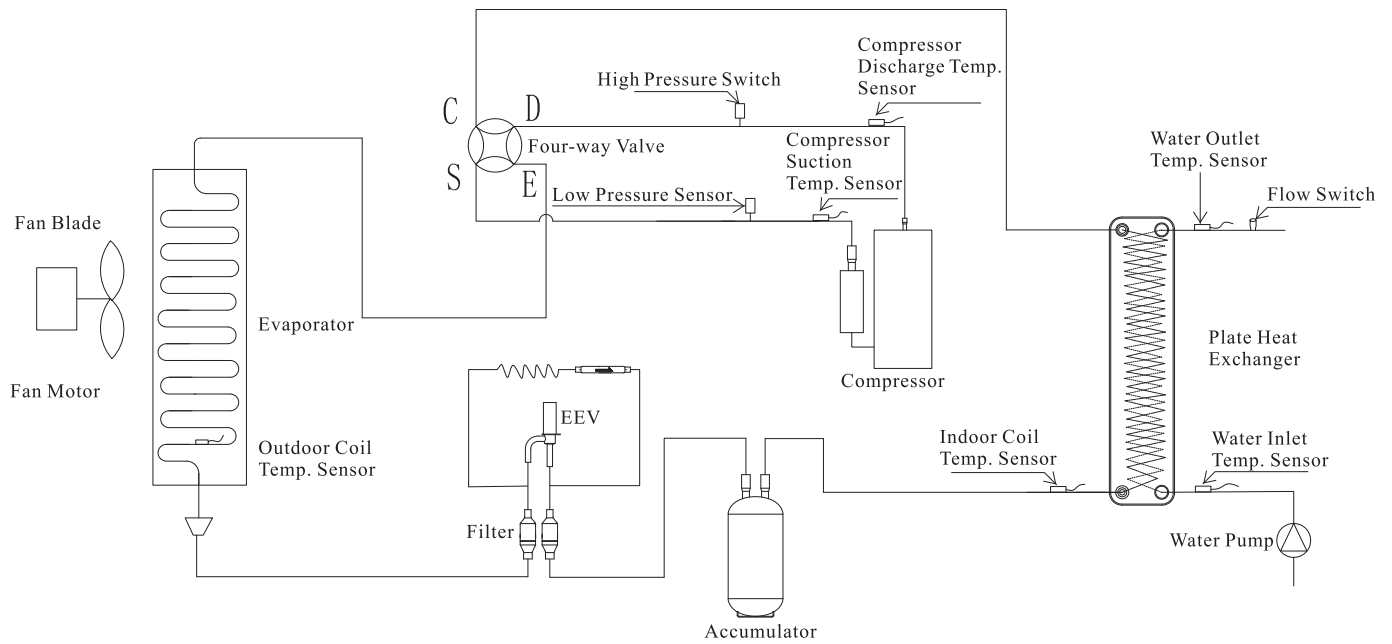
2. If use city water for filling, please soften the water and add a filter.

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

	<p>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.</p>
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# 1. Before use

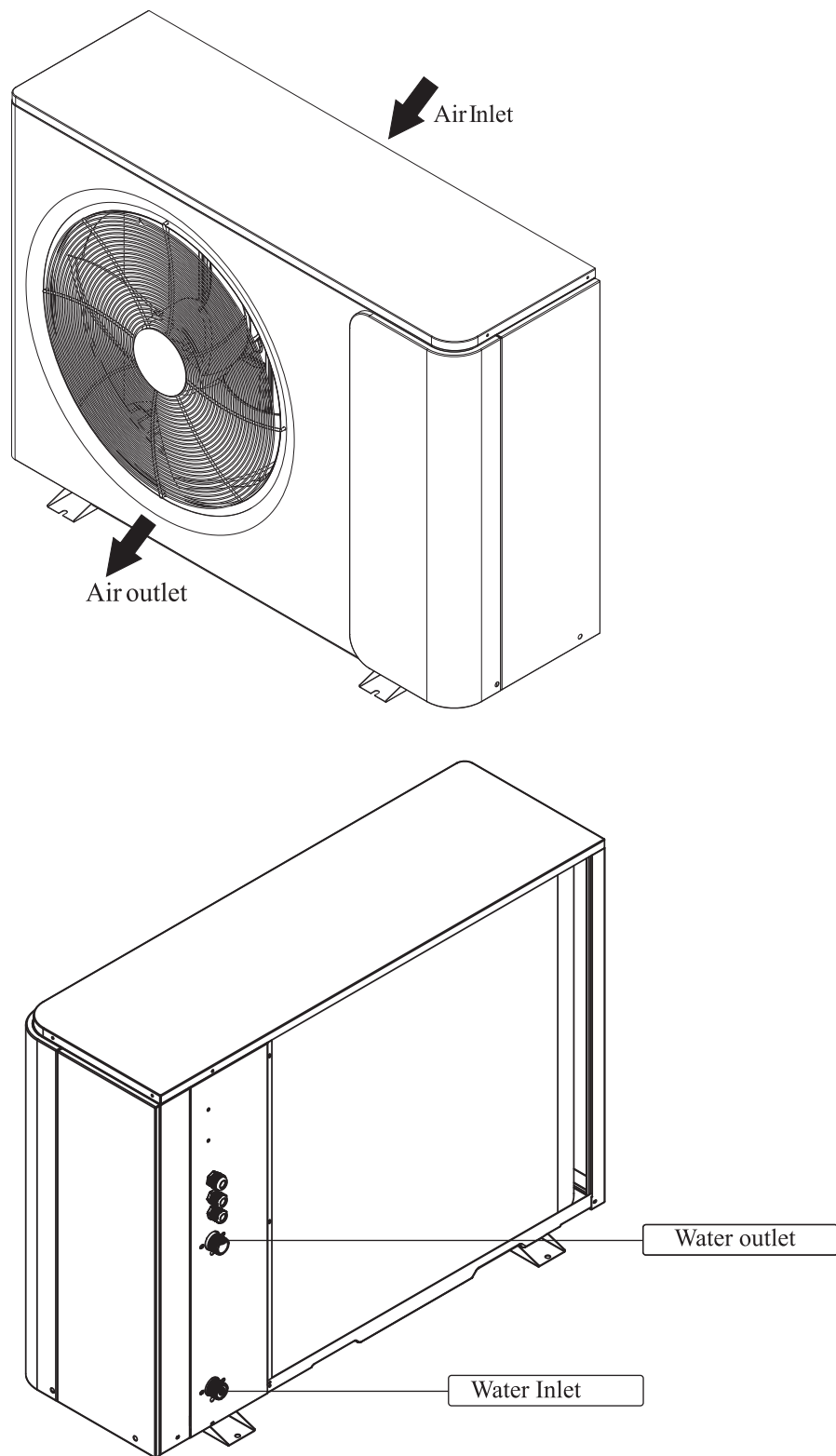
## 1.2 Working principle



# 1. Before use

## 1.3 Main components

PAVH-06V1FXC  
PAVH-09V1FXC  
PAVH-12V1FXC





# 1. Before use

## 1.4 Specifications

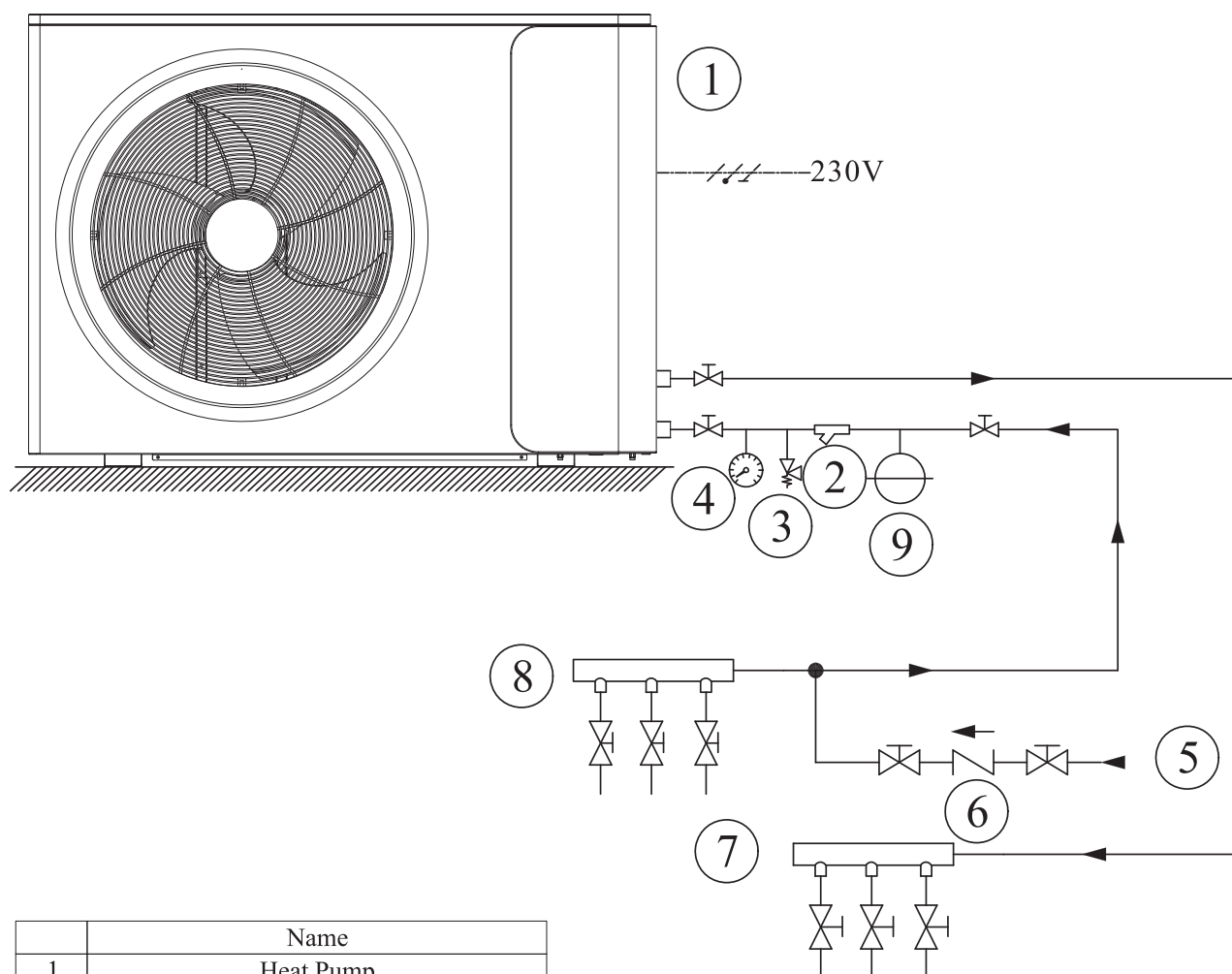
Model			PAVH-06V1FXC	PAVH-09V1FXC	PAVH-12V1FXC
Power Supply / Refrigerant		V/Hz/Ph	220~240/50/1-R32		
Workable Ambient Temperature Range		℃	-25~43		
Min. System Water Temperature (Heating / Cooling)		℃	20/7		
Fuse of circuit (Board Outdoor PCB)			T30AL/250V		
Min. Floor Area for installation, operation and storage		m <sup>2</sup>	7	17	28
Min. Area of Pipe-work		m <sup>2</sup>	7	17	28
Max. Operation High Pressure		MPa	4.2		
Max. Operation Low Pressure		MPa	1.4		
Refrigerant	Type / Amount	-/kg	R32/0.75kg	R32/1.15kg	R32/1.3kg
Compressor	Type - Quantity/System		Twin Rotary -1	Twin Rotary -1	Twin Rotary -1
Fan	Quantity		1	1	1
	Airflow	m <sup>3</sup> /h	2500	3150	3150
	Rated power	W	34	45	45
Noise Level	Outdoor	dB(A)	52	52	53
Water Side Heat Exchanger	Type		Plate Heat Exchanger	Plate Heat Exchanger	Plate Heat Exchanger
	Water Pressure Drop	kPa	26	26	26
	Piping Connection	Inch	G1"	G1"	G1"
Allowable Water Flow	Min./Rated./Max.	L/S	0.21/0.29/0.35	0.26/0.43/0.52	0.34/0.57/0.68
Net Dimension (L*D*H)	Outdoor Unit	mm	1015x380x700	1175x380x845	1175x380x845
Net Weight	Outdoor Unit	Kg	70	79	82

Note: (1) 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

#### HEAT PUMP WITH DIRECT CONNECTION



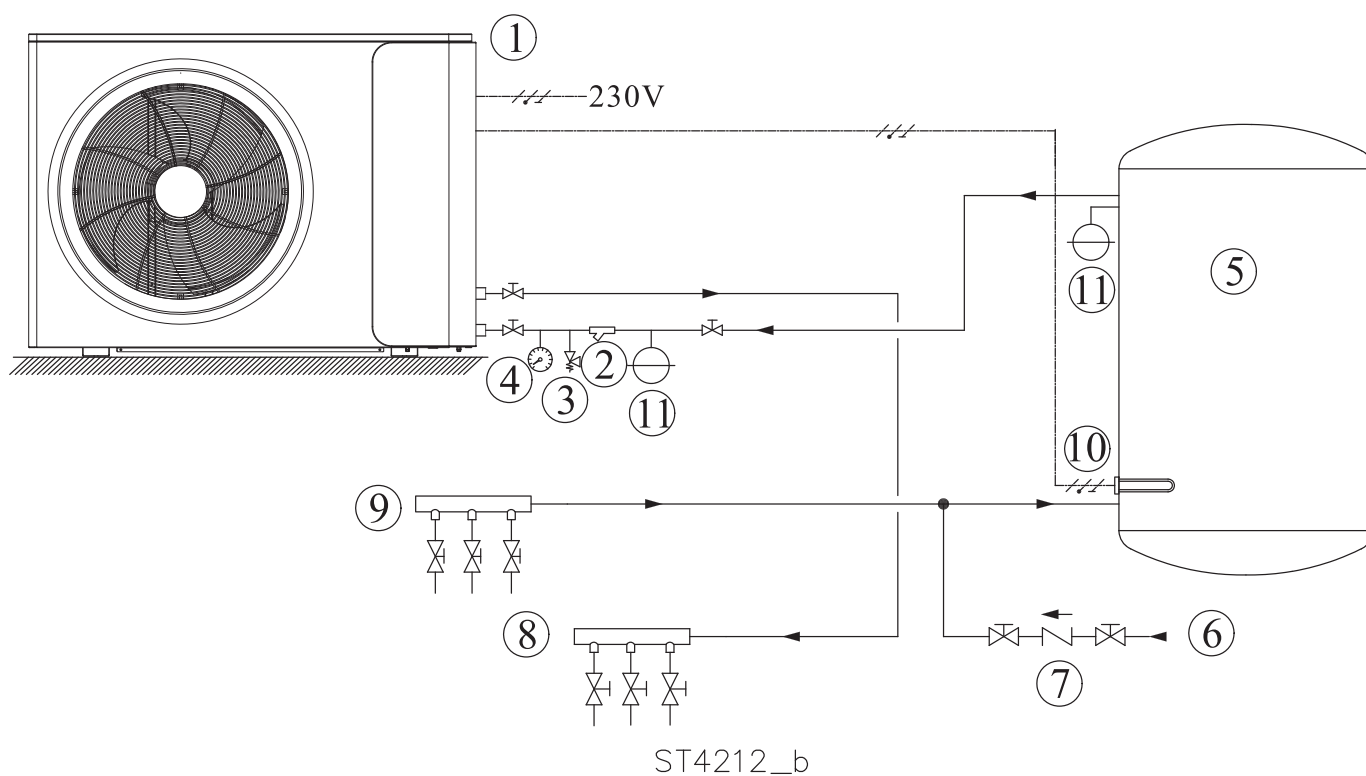
ST4212\_a

	Name
1	Heat Pump
2	Filter
3	Safe Valve
4	Water pressure gauge
5	Water inlet
6	One way valve
7	Supply to manifold heating/cooling
8	Return from manifold heating/cooling
9	Expansion vessel

**NOTE:** It is not necessary to change any settings for operation with this scheme.

## 2. Installation

### HEAT PUMP WITH SERIES BUFFER

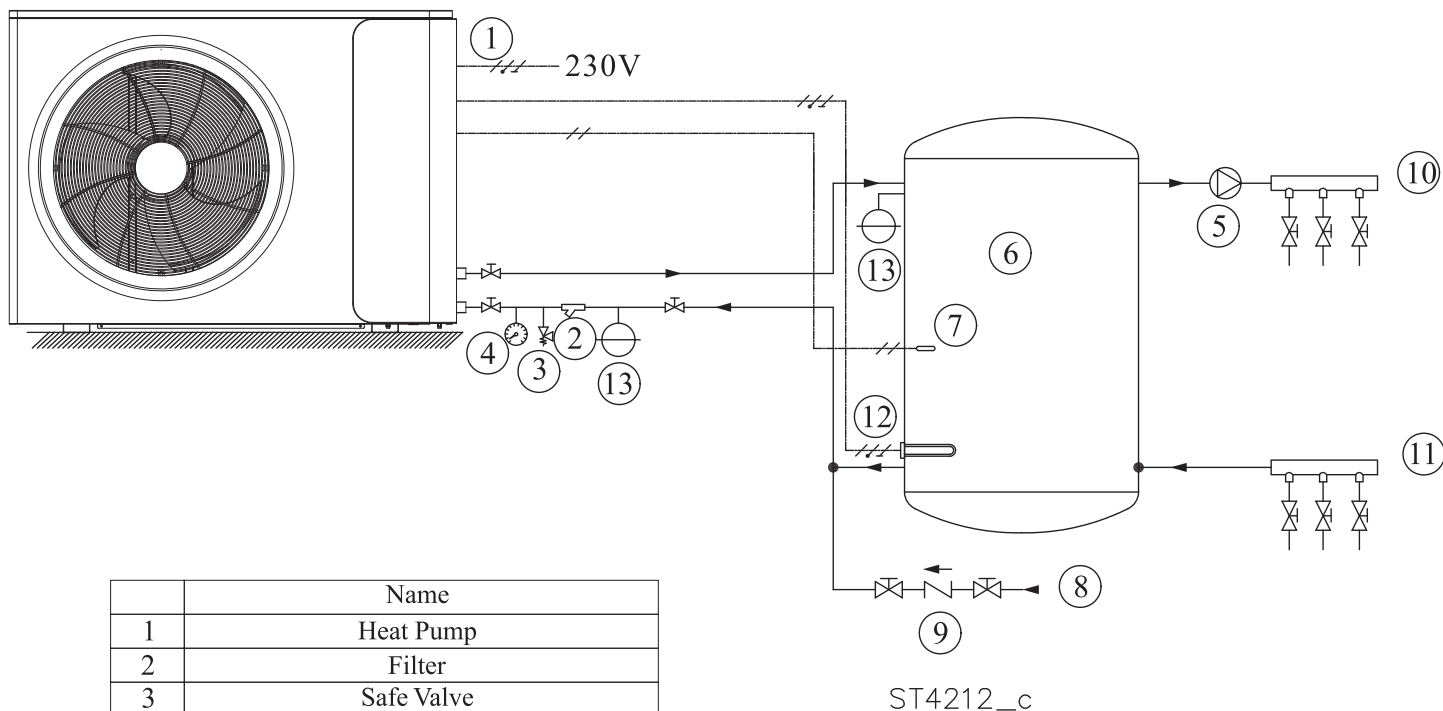


	Name
1	Heat Pump
2	Filter
3	Safe valve
4	Water pressure gauge
5	Buffer tank
6	Water inlet
7	One way valve
8	Supply to manifold heating/cooling
9	Return from manifold heating/cooling
10	Electrical heater (optional)
11	Expansion vessel

**NOTE:** It is not necessary to change any settings for operation with this scheme.  
Connect the electrical heater (10 – optional) with a correct relay .

## 2. Installation

### HEAT PUMP WITH PARALLEL BUFFER



	Name
1	Heat Pump
2	Filter
3	Safe Valve
4	Water pressure gauge
5	Circulation pump
6	Buffer tank
7	“Tw” Tank temperature sensor
8	Water inlet
9	One way valve
10	Supply to manifold heating/cooling
11	Return from manifold heating/cooling
12	Electrical heater (optional)
13	Expansion vessel

#### NOTE:

The probes “Tw” (7) are assembled inside the appliance on the supply tube.  
For put them on the tank it's necessary remove the top and front cover of appliance, remove the probes and with the extension cable put them on the tank..

Connect the electrical heater (12 – optional) with a correct relay .

Change the setting of the internal pump, in this way the pump turn off after 60 seconds from the shutdown of the compressor;

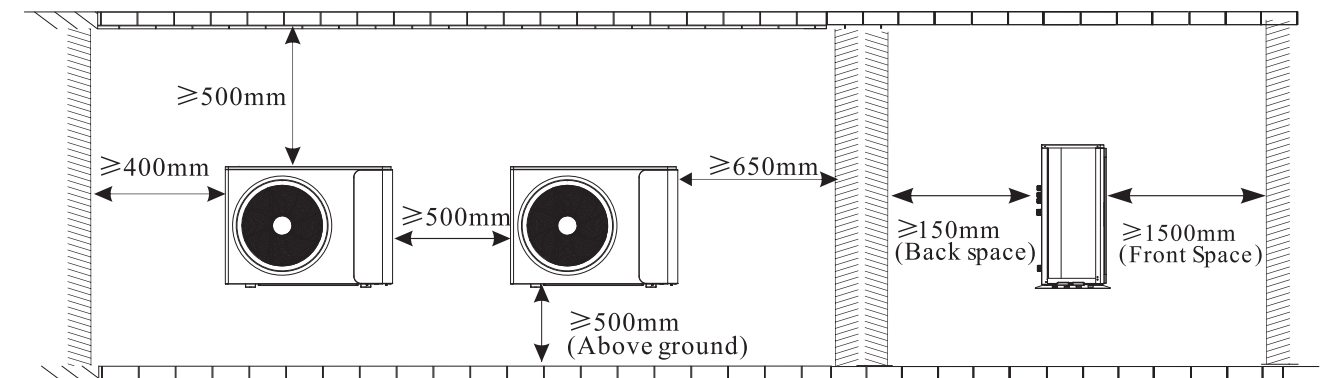
Group A, parameter A1, set the value at 0.

## 2. Installation

### 2.2 Installation of the monoblock unit

#### 2.2.1 Installation notes

- 1) The monoblock unit can be located in a open space, corridor, balcony, and roof.
- 2) The monoblock unit shall be placed in dry and well-ventilated environment; If the monoblock unit is installed in humid environment, electronic components may get corroded, or short-circuited because of heavy humidity.
- 3) Monoblock unit mustn't be installed in an environment where volatile, corrosive or flammable liquid or gas exists.
- 4) Please don't install monoblock 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 monoblock 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 1cm/m for rain water evacuation.
- 8) Install monoblock unit far away from the exhaust port of kitchen, to avoid oil smoke entering into monoblock unit and adhering to heat exchanger. It's hard to clean up.
- 9) Please don't install the indoor control unit and monoblock 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 monoblock unit, for better ventilation and maintenance.  
Please refer to the illustration below.

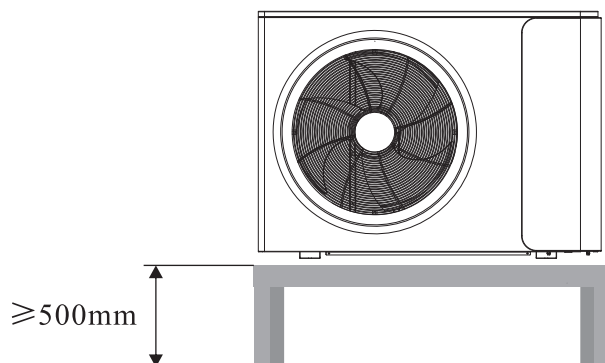


## 2. Installation

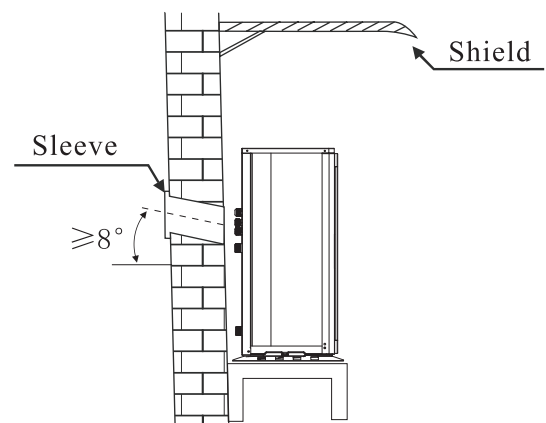
### 2.2.2 Installation

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 monoblock 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 monoblock unit when choose a suitable wall bracket.



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








## 2. Installation

### 2.3 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
Manual	1	

Name	Quantity	Picture
Operation Panel	1	
Extension Cable (10 meters as standard)	1	

## 2. Installation

---

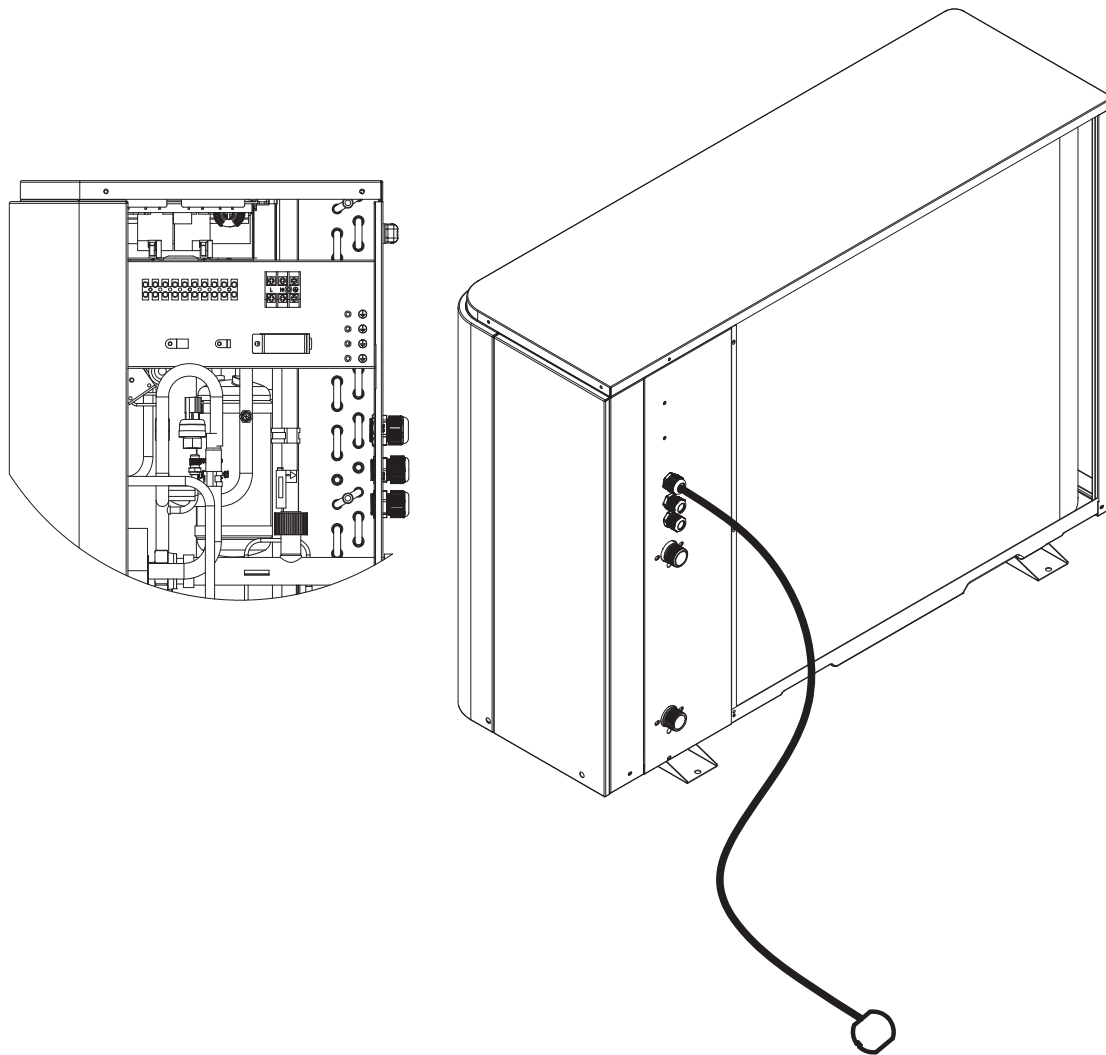
### 2.4 Wiring

- ◆ 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. Installation

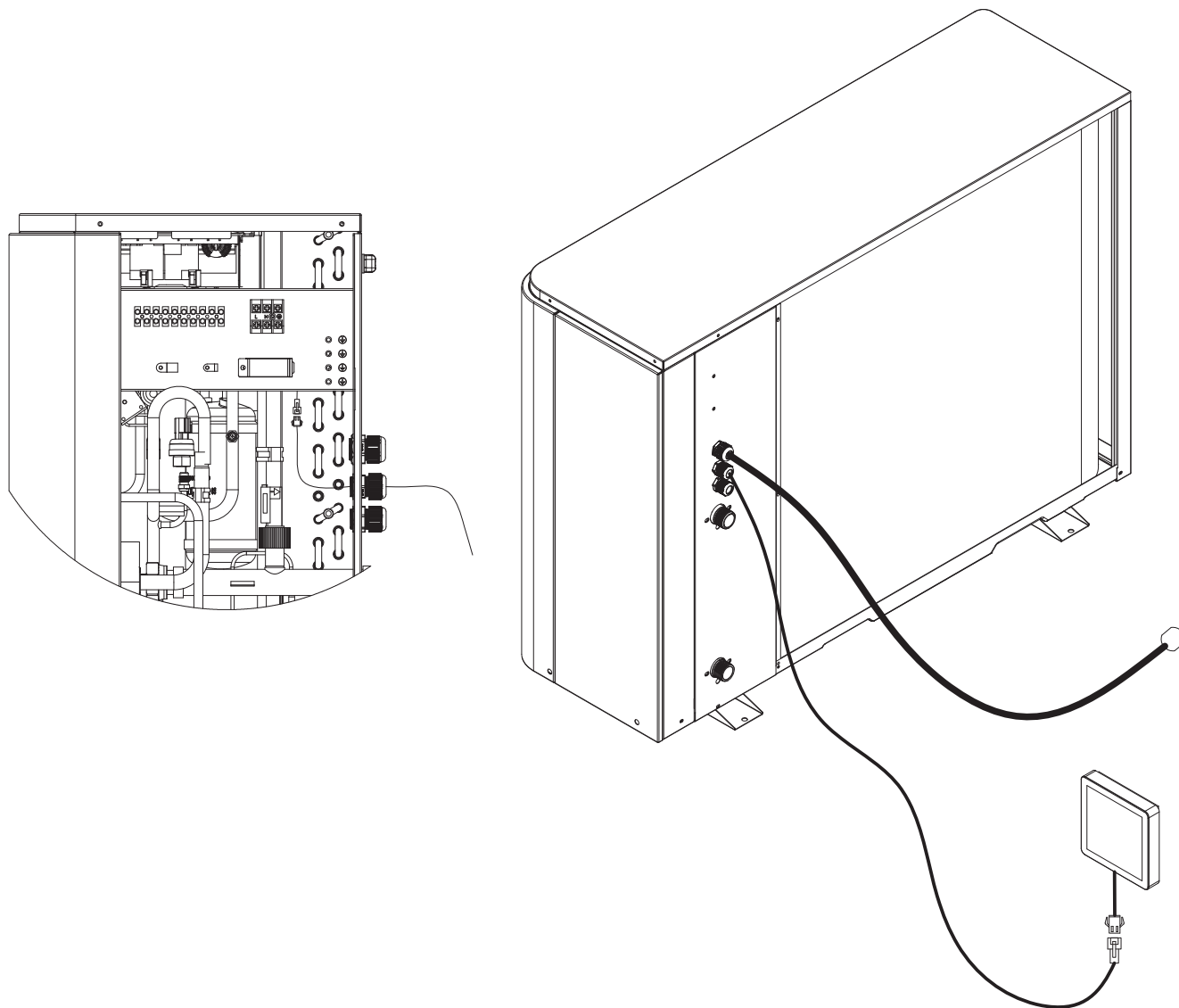
### 2.4.1 Connect power cable



- A. Dismantle the service panel.
- B. Insert one end of this cable through the cable gland.
- C. Connect this cable to A, B, and G on terminal block.

## 2. Installation

### 2.4.2 Connect operation panel



- A. Take operation panel and its extension cable out from accessories bag.
- B. Insert one end of the extension cable through cable gland, and have it connected to the terminal block on the unit, and the other end connect to operation panel.
- C. Fix the operation panel to the wall. NOTE: Operation panel is not water proof type. Add a water proof box if operation panel need to be placed outside the house.
- D. Install the service panel back.

## 2. Installation

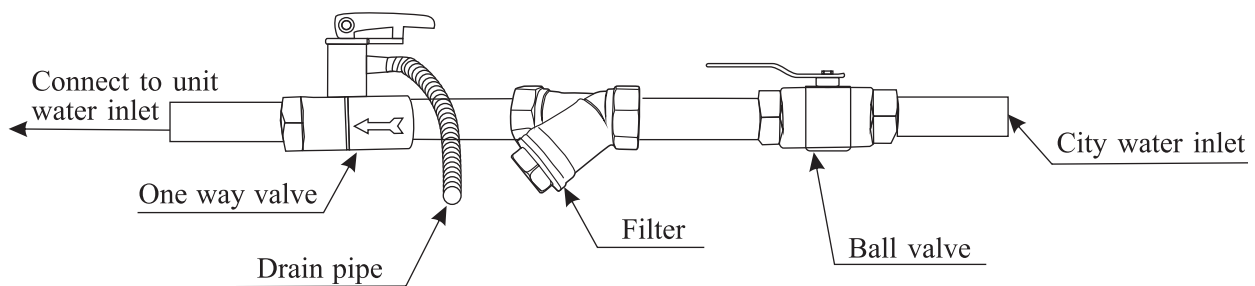
### 2.5 Water pipe connection

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.

#### 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 of water quality

- A. Chloridion element in the water should be less than 300ppm(temperature is less than 60°C).
- 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 little, 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.

## 2. Installation

### 2.6 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 certain 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 over 32 °C, otherwise unit may go into protection mode easily.**



## 3. Usage

### 3.1 Introduction of operation panel



Press: Press that release within one second








Long Press: Keep on pressing for more than one second

Symbol	Function	Explanation
	ON/OFF	1.Button switch the entire unit on and off; 2.Lock/Unlock; 3.Return to Main Page;
	SET	1.Enter the operation mode modification interface and modify the operation mode; 2.The user Parameter List interface is displayed. 3.Set parameters, confirm parameter modification, set the temperature modification object;
	TIME/TIMER	1.Enter into Time setting; 2.Enter into Timer setting; 3.Switch between password switch/current time;
	UP	1.Enter into temperature setting menu; 2.Adjust parameter sequence and value;
	DOWN	1.Enter into temperature setting menu; 2.Adjust parameter sequence and value;
+	Combination 1	Activate password input menu. Valid in both ON and Standby statue.
+	Combination 2	Activate running parameter inquiry menu. Valid in both ON and Standby statue.
+	Combination 3	WIFI setting menu. Valid in both ON and Standby statue.
+	Combination 4	Turn on the WIFI network normal configuration function, power on and off are effective;
+	Combination 5	Forced defrost mode,power on and off are effective;








## 3. Usage

### 3.2 Introduction of the operation panel icon and the description of the function

※ Note: Flashes slowly: Light up for 2 seconds, turn off for 1 second, and cycle continuously;  
Flash: Light up for 0.5 seconds, turn off for 0.5 seconds, and cycle continuously;

Icon	Meaning	Description of the function
	Heating mode	1.If the icon is off,means no heating mode demand; 2.If the icon is always on, means it has heating mode demand, but hasn't entered it; 3.If the icon is flashes slowly,means it has heating mode demand,and has entered it;
	Cooling mode	1.If the icon is off, means no cooling mode demand; 2.If the icon is always on, means it has cooling mode demand, but hasn't entered it; 3.If the icon is flashes slowly, means it has cooling mode demand, and has entered it;
	Hot water mode	1.If the icon is off,means no hot water mode demand; 2.If the icon is always on,means it has hot water mode demand ,but hasn't entered it; 3.If the icon is flashes slowly,means it has hot water mode demand,and has entered it;
	Hot water+ Heating mode	1.If both of it are off,means no hot water and heating mode demand; 2.If hot water icon and heating icon is always on,means it has hot water and heating mode demand,but hasn't entered the hot water or heating mode; 3.If the hot water icon is always on,heating icon flashes slowly,means it has hot water and heating mode demand,and has entered it; 4.If the hot water icon is flashes slowly and the heating icon is always on,means it has hot water and heating mode demand,and has entered the hot water mode;
	Hot water+ Cooling mode	1.If both of the icons are off, means no hot water and cooling mode demand; 2. If the hot water icon and the cooling icon is always on, means it has hot water and cooling mode demand, but hasn't entered the hot water or cooling mode; 3.If the hot water icon is always on and the cooling icon is flashed slowly, means it has hot water and cooling mode demand, and has entered the cooling mode; 4.If the hot water icon is flashes slowly and the cooling icon is always on, means it has hot water and cooling mode demand, and has entered the hot water mode;
	Defrosting	1.If the icon is off,means no defrost demand; 2.If the icon is flashes slowly,means defrosting;
	Auxiliary Heater	1.If the icon is off,means there is no need for auxiliary electric heating to start up; 2.If the icon is flashes slowly,means the auxiliary electric heating is being initiated;

### 3. Usage

Icon	Meaning	Description of the function
	WIFI indicator	<p>1. When the WIFI configuration function is activated, the icon flashes to indicate that the WIFI network is being configured;</p> <p>2. When the WIFI configuration feature is not enabled:</p> <p>When the WIFI module successfully connects to the server, the icon is solid, indicating that the connection to the server is normal;</p> <p>When the WIFI module does not connect successfully to the server, the icon turns off, indicating that the WIFI network is not configured;</p> <p>When the WIFI configuration is successful, but there is a problem with the communication with the server (there is no normal communication for 5 consecutive minutes), the icon flashes slowly, indicating that the wire controller is out of contact with the server;</p>
	Parameter indicator	<p>1. In the main interface, the icon is off, indicating that the current display is not a list parameter;</p> <p>2. In the parameter list, when the parameter is modified, the icon will flash slowly, indicating that the list parameter is being modified;</p> <p>3. In the parameter list and running status list, when viewing the parameters and running status, the icon is always on, indicating that the list parameters are being queried;</p>
	Lock key	<p>1. If there is no button operation on the operation panel for 60 seconds, the icon will be on, all icons and button lights will be off, indicating that the screen saver state is entered;</p> <p>2. In the screen saver state, press any button, the "on/off" button light and the screen will light up (at this time, other buttons are invalid except the "on/off" button), and there is no operation for 30 seconds, the screen saver status will be entered again;</p> <p>3. Press and hold the "On/Off" button for 5 seconds, the icon will go out, and all button lights will light up, indicating that the screen saver status is exited, and the operation panel can operate normally;</p>
	Operation values	<p>1. According to the response mode of the unit, display the temperature of the corresponding mode;</p> <p>2. In the parameter list and running status list, the corresponding parameter values and running status values are displayed; when displaying the temperature value, it is accurate to one decimal place, and when the value is greater than or equal to 100, no decimals need to be displayed;</p> <p>3. When the list is scheduled, the list number will be displayed;</p>
	Degrees in Celsius of Fahrenheit	<p>1. When the temperature value is displayed, the corresponding unit icon is always on, indicating that the currently displayed value is the temperature value;</p> <p>2. When the non-temperature value is displayed, both icons are off, indicating that the currently displayed value is a non-temperature value;</p> <p>(Note: toggle and display between Fahrenheit and Celsius)</p>
	Rated operation and Quiet operation indicator	<p>1. The icon goes out, indicating that the fan is not running;</p> <p>2. The icon only lights up the left half, indicating that the fan is running with low noise;</p> <p>3. The icon is fully lit, indicating that the fan is running at rated value;</p>
	Compressor indicator	<p>1. All the icons are off, indicating that the compressor is not running;</p> <p>2. The left side of the icon is always on, and the others are off, indicating that the compressor is running at low frequency;</p> <p>3. The middle side, and the others are off, indicating that the compressor is running at an intermediate frequency;</p> <p>4. The right side of icon, indicating that the compressor is running at high frequency;</p>

## 3. Usage

Icon	Meaning	Description of the function
	Water pump running indicator	1.The icon goes out, indicating that the pump is not running; 2.The icon is always on, indicating that the pump is running;
	Clock indicator	1.In the main interface, after setting the clock, press 24 hours to display normally; 2.In the parameter list, the corresponding parameter number is displayed; 3.In the timed list, the list parameter values are displayed.
	Timer	Set timer

### 3.3 Instructions of the button operation panel

#### 3.3.1 Power on/off operation:

1)Unlock:

Press any button, the screen of the the operation panel lights up. Press and hold the button for 5 seconds, the operation panel exits LOCK state;

2)ON OFF:

After unlock, press the button , to turn ON or OFF the unit.

#### 3.3.2 Woking modes setting operation:

When the unit is ON, press in the main interface to enter working mode setting interface.

Current working mode is shown, flickers.

For each time is pressed, working mode is changed by the below sequence. Stop pressing for 3s. selected working mode is set.



Exit the working mode setting interface after finish.

Working Modes	Symbol	Setting value
Heating only		2
Cooling only		3
Hot water		1
Hot water + heating	+	5
Hot water + cooling	+	6

## 3. Usage

### 3.3.3 Temperature setting:

#### 1. Temperature setting interface


When the operation panel is ON, press  or  in the main interface to enter temperature setting interface (The setting temperature to be modified is for current working mode). The screen will show the current setting temperature for current working mode, flickers.


The current working mode is shown,  flickers.

#### 2. Temperature setting operation

##### 1. Single working mode

Adjust the set temperature by:

Press  to increase the set temperature by 1°C.

Press  to decrease the set temperature by 1°C.


Press  for 2s, to increase 1°C in every 0.5s.

Press  for 2s, to decrease 1°C in every 0.5s.

Press  to store setting and exit.



##### 2. Combined working mode


Adjust the set temperature by:

When combine working mode is selected, unit will switch between selected working modes. For example heating +hot water, unit will switch between space heating and hot water operation. Press  to activate the temperature setting. The working mode symbol that is being adjust, flickers.

Adjust the temperature setting bu using the  /  arrows. Press  to store setting and exit.

#### 3. Exit of Temperature Setting Modification interface:

a. in the modification process, press  to save the data and exit to the home page, the light of icon  off;

b. in the modification process, no button operation for 30 seconds, save the data and exit to the home page, the light of icon  off;

## 3. Usage



Heating Temperature Setting:

1) When the heating curve is on, execute the curve shift function (at this time the set temperature cannot be directly modified to the protocol address) ----- record the set temperature value before modification and the set temperature value after modification, obtain the difference between the two set temperatures, then add the difference to the value of the address;







### 3.3.4. Time Setting:

(display only 24-hour clock)




#### 1) Entering the system time modification interface:

When the operation panel is on or off, press  to enter the system time modification interface. At this time, time number of parameter in hour part and icon  start flashing slowly, the time number of parameter in minute part is on.

#### 2) Operation of system time modification interface:

- a. when the time number of parameter in hour part flash slowly, Keep pressing  or  for 2 seconds, number parameter can be increased or decreased continuously in each 0.5 second.
- b. press  to enter the time number of parameter in minute part.
- c. when the time number of parameter in minute part flash slowly, Keep pressing  or  for 2 seconds, number parameter can be increased or decreased continuously in each 0.5 second;
- d. after finish time setting, press  switch to save the setting and return to main page.


#### 3)Exit the menu:

- a. After setting is finished, press . Setting will be saved automatically and then go back to main menu. Icon  disappears;
- b. If there is no operation within 30 seconds. Current setting will be saved automatically and then go back to main menu. Icon  disappears;







## 3. Usage



### 3.3.5 User level parameter:



#### 1) Access to user level parameter list:

No matter the unit is ON or off, stay in main menu of operation panel, keep pressing  button for 5 seconds to access to user level parameter list. The sequence of parameter list will be shown in position from MINUTE of clock **88:88** and starts from sequence “1”, Value of parameters will be shown in position of temperature zone **88.8<sup>°C</sup><sub>F</sub>**. Sequence and value of parameters will stay ON during this operation.




#### 2) Check and setting of user level parameter:

- Press  or  button to view all parameters in sequence;
- When the value of parameter needs to be adjusted, press  button to activate the setting of this parameter. You will see the value, and the icon  start blinking. Use  or  buttons to adjust the setting.

Keep pressing  or  for 2 seconds, values can be increased or decreased continuously in each 0.5 second.



- After setting is finished, press  to save settings and go back to sequence of parameters. The icon  will disappeared if the setting is saved.

#### 3) Exit the menu of user level parameter:

- After setting is finished, press  button. Setting will be saved automatically and then go back to main menu. Icon  disappears;
- If there is no operation within 30 seconds. Current setting will be saved automatically and then go back to main menu. Icon  disappears;

### 3.3.6 Parameter list of working status:

#### 1) Access to parameter list of working status:




No matter the unit is ON or off, stay in main menu of operation panel, keep pressing   buttons at the same time for 5 seconds to access to parameter list of working status. The sequence of parameter list will be shown in position from MINUTE of clock **88:88** and starts from sequence “1”. Value of parameters will be shown in position of temperature zone **88.8<sup>°C</sup><sub>F</sub>**. Sequence and value of parameters will stay ON during this operation.

#### 2) Operation to parameter list of working status:

Press  or  button to view all parameters in sequence;

## 3. Usage




### 3) Exit of the running state parameter list:

- a. After setting is finished, press  button. Setting will go back to main menu. Icon  disappears;
- b. If there is no operation within 30 seconds. Current setting will go back to main menu. Icon  disappears;

System running datas			
NO.	Description	NO.	Description
1	Ambient temp.	14	External coil temp. in system 1
2	Hot water temp.	15	Discharge temp. in system 1
3	Heating temp.	16	Suck temp. in system 1
4	Cooling temp.	17	Defrosting temp. in system 1
5	Room temp.	18	Evaporator pressure in system 1
6	Water outlet temp.	19	Condenser pressure in system 1
7	Water inlet temp.	20	EEV main valve opening in system 1
8	Water tank temp.	21	EEV slave valve opening in system 1 ( show 0)
9	Internal coil temp. in system 1	22	Economizer inlet temp. ( show 0)
10	Voltage in system 1	23	Economizer outlet temp. ( show 0)
11	Current in system 1	24	Software version number for main PCB
12	Compressor frequency in system 1	25	EE version number for main PCB
13	Fan speed in system 1	26	Operation panel version number

### 3.3.7 Timer Setting:

#### 1) Entry to time setting:


No matter the unit is ON or off, stay in main menu of operation panel, keep pressing  button for 5 seconds to access to timer setting. At this time,  icon is always on, the rightmost digital tube in the temperature display area of the display screen displays the serial number "0", the position of the clock running value shows the switch value of the heating timing function and is always on.  icon is always on, **ON 1** icon goes out;  
**OFF 2**




### 3. Usage

#### 2) Modification of timer setting list:


A.Press  or  button to view all parameters in sequence;

a)When the parameter currently queried is "timing function switch",  icon is always on, **ON 1**  
**OFF 2**  
icon goes out;


b)When the parameter currently queried is “timed on/of”, icon  the corresponding time icon(1or2)  
and switch icon (ON or OFF) will stay ON during this operation;

B.Select the target parameter to be modified,short press the  key, to enter the modification state:

a)When the selected parameter is a switch value:




The serial number of the parameter will be shown in position of temperature zone, which is constant  
ligh. You will see the parameter value displayed in the position of clock value.as well as  icon flash  
slowly;

b)When the selected parameter is a time value:






The serial number of the parameter will be shown in position of temperature zone, with constant light.  
You will see the parameter value displayed in the position of clock value and  icon flash slowly;



C.Under the modify state:

a)When the modified parameter is a switch value:

When icon  blick, press  or  to adjust the corresponding switch value (0or1);


b)When the modified parameter is a time value:

When icon  blick, press  or  to adjust the timing time step by step. When you press shortly  
once, timing time increase or decrease by 30min, regulation of the cycle 00:00~23:30 Long press  
 key or  key after 2s, increases or decreases by one unit parameter value (30min) per 0.5s.

D.Under the modify state, short press , confirm the change of parameter value, and return to  
query state, parameter value and  icon change from flash slowly to constant light.

3)Exit of timer function parameter list:

a.In the process of modification or query, press  key to save data and exit to the main interface  
 icon goes off;

b.In the process of modification or query, no operation for 30 seconds, save the data and exit to the main  
interface,  icon goes off,




## 3. Usage

### ※※Notice※※




1. When both timings of the same mode are valid, the function in the timer takes priority;
2. When function switch=0, timing is invalid;
3. Timing is valid and within the time of heating, cooling, hot water timing on ~ timing off, set the corresponding mode valid value to 1;  
Timing is valid and out of the time of heating, cooling, hot water timing on ~ timing off, set the corresponding mode valid value to 0;
4. Timing is valid and within the time of low noise timing on ~ timing off, set the valid value of low noise mode to 1;  
Timing is valid and out of the time of low noise timing on ~ timing off, set the valid value of low noise mode to 0.

### 3.3.8 WIFI function:

#### 1)WIFI Setting-1:

1. Install and activate APP in mobile, search and connect correspondent WIFI, input WIFI password.
2. Long press  and  at the same time, till  symbol blinks (quickly).
3. Pair the unit with WIFI in APP within 1 minute after step 1, then the unit will be connected.

#### 2)WIFI Setting-2:

1. Long press  and  till  blinks (slowly), means operation panel is standby for WIFI connection.
2. Use mobile or computer, search WIFI hot-spot “USR-C210”, and browser “10.10.100.254”, typing Login Name and Password (default set to “admin” for both), to enter into the device, and take down the MAC address.
3. Choose “WIFI Parameter” on left part of the web, change the “Working Mode” to “STA Mode”, and choose “Search” in “SSID” menu, and select the WIFI the device should connect to, typing the correct WIFI password to set up the connection. Choose “Save” and “Restart” to save the setting and restart the device. After done, send the MAC address to your distributor, so he can add it to the server.

## 3. Usage

### ■ 3.4 Other functions of the operation panel

1.Power-down memory function: Save some of the parameter values that need to be saved by the operation panel;

2.Buzzer function:

Frequency of buzzer sound: ring for 1seconds, wait 1seconds;

1)When the time of the single button or combination button function of the operation panel is up, the buzzer will sound;

2)When the operation panel reports a fault, each fault will sound five times;

3.Fault display(General Fault Codes):

When the unit is faulty, the ten digits of the hour part of the main interface clock don't display the value, the single digits display the corresponding faulty letters, and the minute part displays the corresponding faulty digits with a constant light display. The digital tube in the temperature display area of the main interface is displayed normally;

When multiple faults appear at the same time, each fault is displayed for 5 seconds, and all faults are displayed in a cycle all the time. After cycling through all faults, a 5-second clock message is displayed, and then all faults are cycled through again;

※※**Notice**※※

1)【 S04-operation panel and indoor controller communication failure 】. The communication between the operation panel and main controller fails continuously for 1 minute, and this fault is reported;

2)Fault mask:

1.When the model is “single hot water”, the operation panel is shielded, and the heating water/cooling water/room temperature sensor is faulty;

2.When the model is “cool and heat”, the operation panel is shielded, and the hot water/room temperature sensor is faulty;

3.When the model is “triple supply”, the operation panel is shielded, and the room temperature sensor is faulty;

4.When the model is “single heating”, the operation panel is shielded, and the hot water/cooling water/room temperature sensor is faulty;

5.When the model is “hot water + heating”, the electronic controller shields the cooling water/room temp,sensor failure;

6.When【 F11--System evaporating pressure too low 】 is triggered, shield【 P18--Indoor coil temp. sensor failure】;

7.When【 F12--System condensing pressure too high 】 is triggered, shield【 P06--Compressor speed down due to abnormal high pressure detected by condensing pressure sensor】;

8. When【 S10-Too small water flow rate failure 】 is triggered, shield【 S02--The small water flow switch rate】;

9.When【 S11--Indoor anti-freezing protection failure in cooling 】 is triggered, shield【 S0--Indoor anti-freezing protection in cooling】;

### 3. Usage

Fault Code	Description
E01	Communication between indoor main control PCB and outdoor main control PCB
E02	Communication between outdoor main control PCB and compressor driver board
E03	Compressor phase current failure (open/short circuit)
E04	Compressor phase current overload (over current)
E05	Compressor driver failure
E06	Compressor driver board over high/low voltage failure
E07	Input current failure
E08	Outdoor EEPROM failure
F01	Outdoor ambient temp.sensor failure
F02	Outdoor evaporator coil temp.sensor failure
F03	Outdoor discharge temp.sensor failure
F04	Outdoor suction temp.sensor failure
F05	Evaporating pressure sensor failure
F06	Condensing pressure sensor failure
F07	High pressure switch failure
F08	Low pressure switch failure
F09	DC fan failure (A)
F10	DC fan failure (B)
F11	System evaporating pressure too low
F12	System condensing pressure too high
F14	Heating water temp.sensor failure
F15	Cooling water temp.sensor failure
F16	Unit water outlet temp.sensor failure
F17	Unit water inlet temp.sensor failure
F18	Indoor coil temp.sensor failure
F23	Heating water temp.sensor failure
F27	Indoor EEPROM failure

Fault Code	Description
P01	Main line current protection
P02	Compressor phase current protection
P03	IPM module protection
P04	Compressor oil return protection
P05	Compressor shut down due to high pressure switch open caused by abnormal high/low pressure
P06	Compressor speed down due to abnormal high pressure detected by condensing pressure sensor
P07	Compressor preheating
P08	Compressor discharge temp.too high protection
P09	Outdoor evaporator coil temp.sensor protection
P10	AC over high/low voltage protection
P11	Compressor shut down due to too high/low ambient temperature
P13	Compressor speed down due to abnormal low pressure detected by evaporating pressure sensor
P14	Primary freeze protection
P15	Secondary freeze protection
P18	Compressor speed down due to abnormal low pressure detected by condensing pressure sensor
S01	Indoor anti-freezing protection in cooling
S02	The small water flow switch rate
S03	Water flow switch failure
S04	Communication failure
S06	Water outlet temp.too low protection in cooling
S07	Water outlet temp.too high protection in heating/hot water
S09	Defrosting failure
S10	Too small water flow rate failure
S11	Indoor anti-freezing protection failure in cooling

## 4. Maintenance

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### 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 that it be cleaned once in the first month, and then, once half a year.

### 4.3 Cleaning of plate heat exchanger

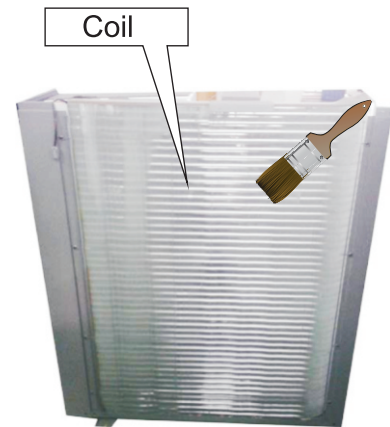
Thanks to the normally very high degree of turbulence in the heat exchanger, there is a self-cleaning effect in the channels. However, in some applications the fouling tendency can be very high, e.g. when using extremely hard water at high temperatures. In such cases it is always possible to clean the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

### 4.4 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. Maintenance

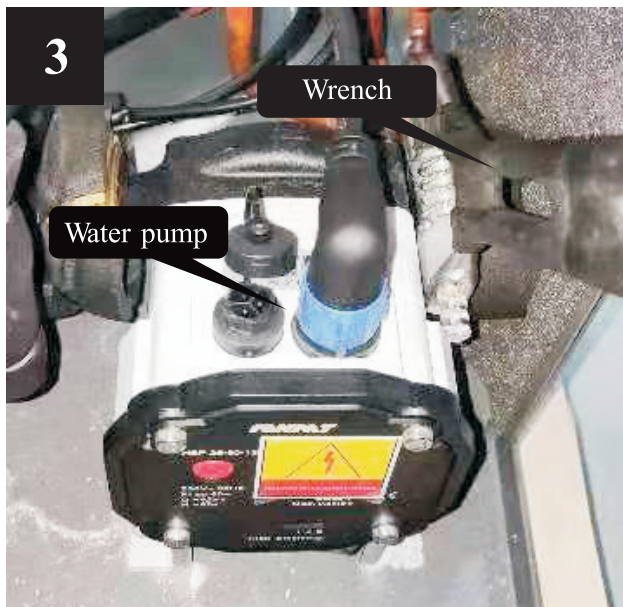
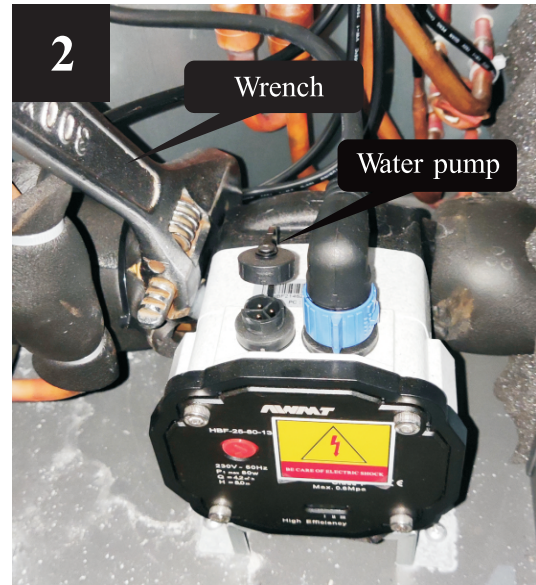
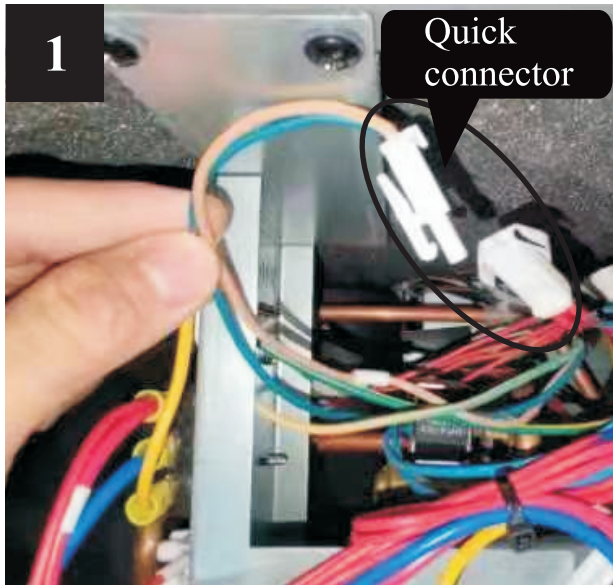
### 4.5 Service Of Monoblock Unit

#### 4.5.1 Service Of Water pump

A. Cut unit power supply, dismantle the service panel, and disconnect the quick connector of pump cable.

B. Cut unit water supply, drain the system, and dismount the pump with wrench.

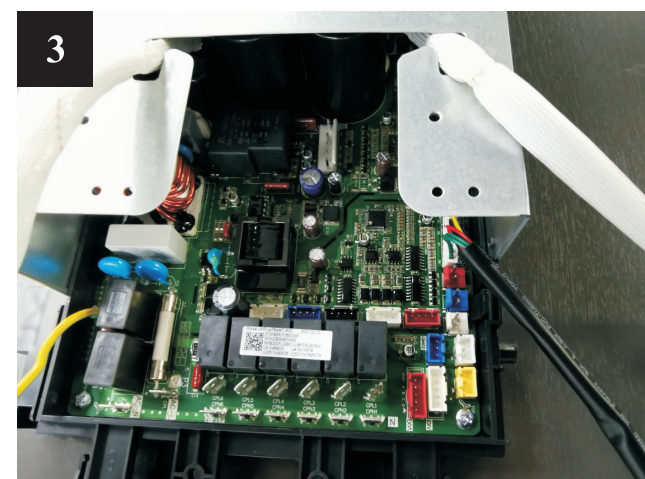
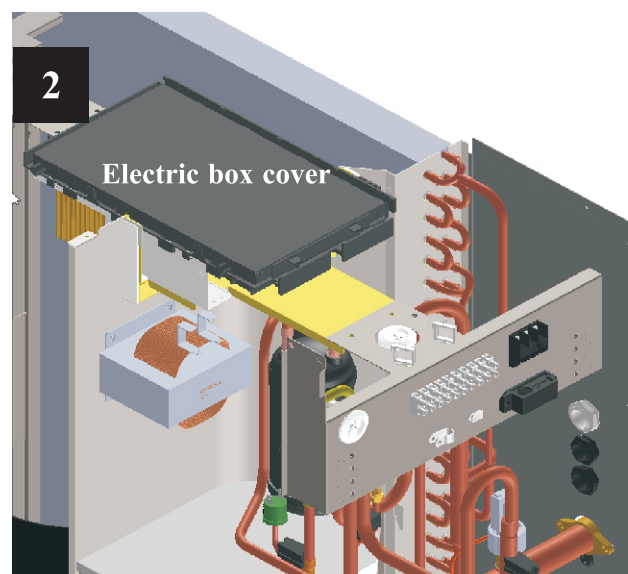
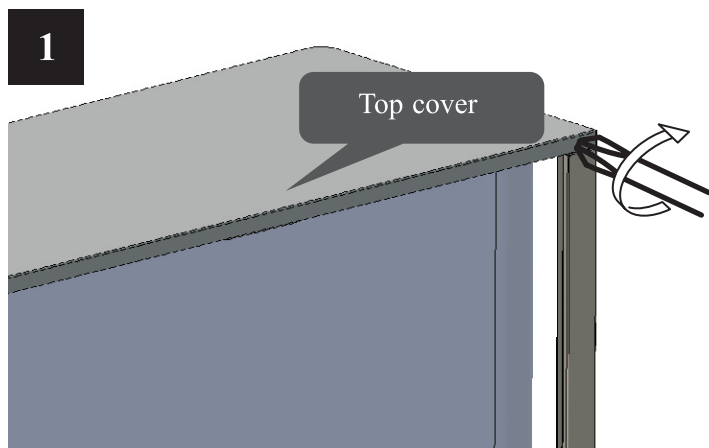
C. Install the new pump back, connect the cable with quick connector.



## 4. Maintenance

### 4.5.2 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 outdoor unit .

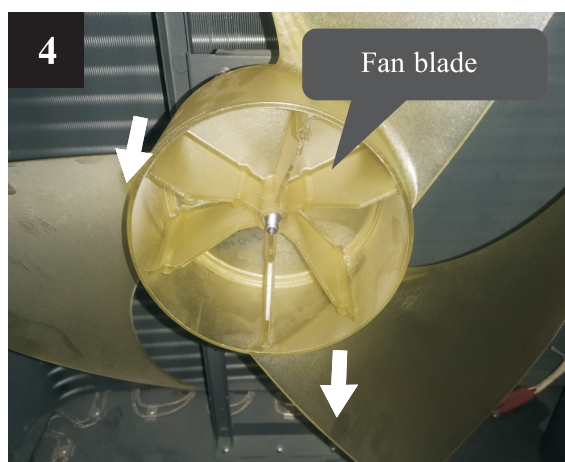




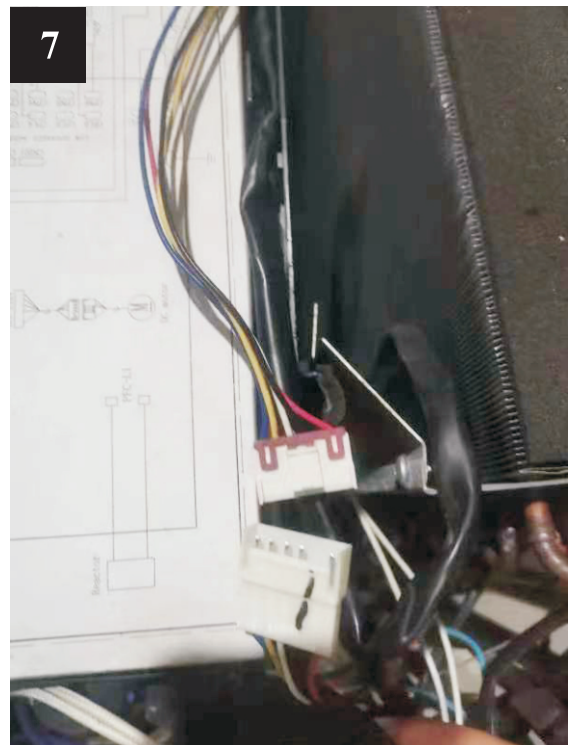
## 4. Maintenance

### 4.5.3 Replacement of fan motor

- 1) Use a wrench to loosen the nut for fan blade and take out the fan blade.
- 2) Take off the screws of fan motor.
- 3) Put the repaired or new fan motor back and connect all cables back.



## 4. Maintenance

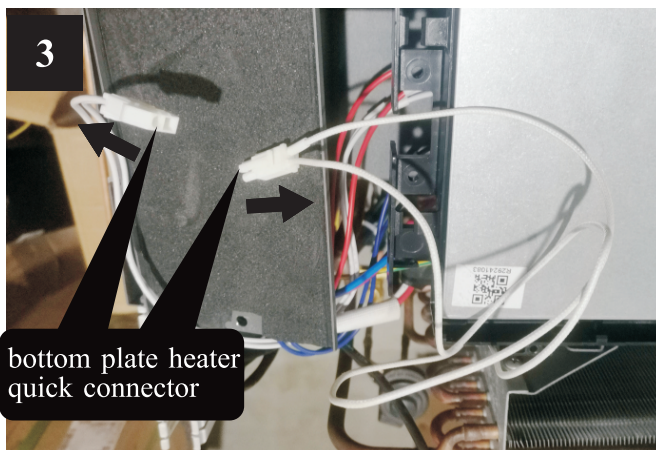
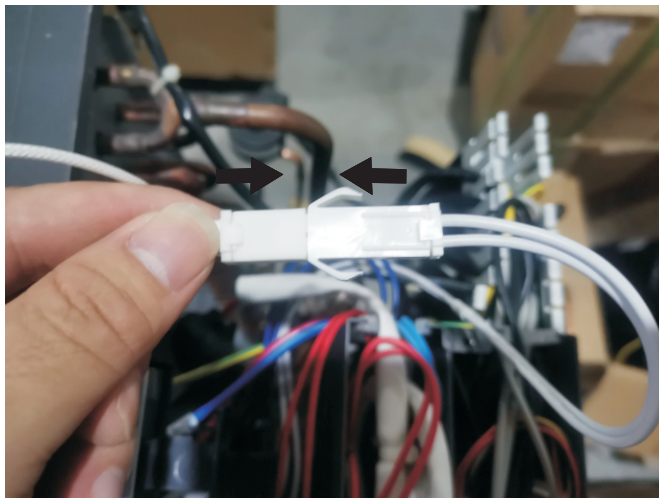
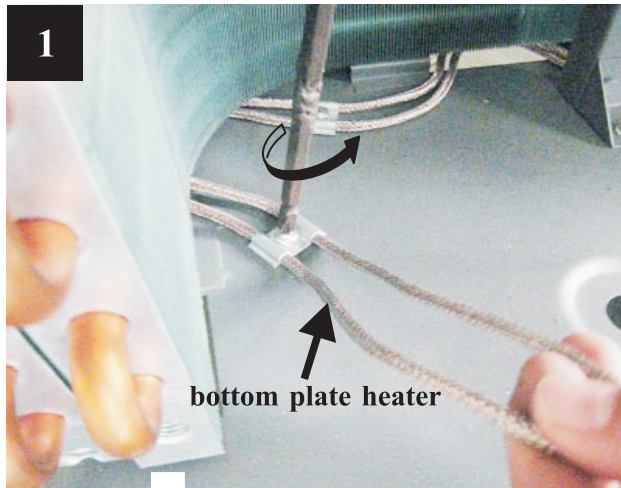




## 4. Maintenance

### 4.5.4 Replacement of bottom plate heater

- 1) Cut off the power supply, follows 4.5.3 to take out the fan blade.
- 2) Take off the fixture of bottom plate heater(see picture 1).
- 3) Disconnect the quick connector for bottom plate heater and take the heater out (see picture 2).
- 4) Put a new bottom plate heater back, and connect it to the quick connector(see picture 3).



## 4. Maintenance

### 4.6 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 performance	1. The coil fins are very dirty	1. Clean the evaporator coil
	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.
	4. 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 refrigeration 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.

## 4. Maintenance

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; unit; check if the setting temperature is too high in cooling mode, or too low in heating mode.

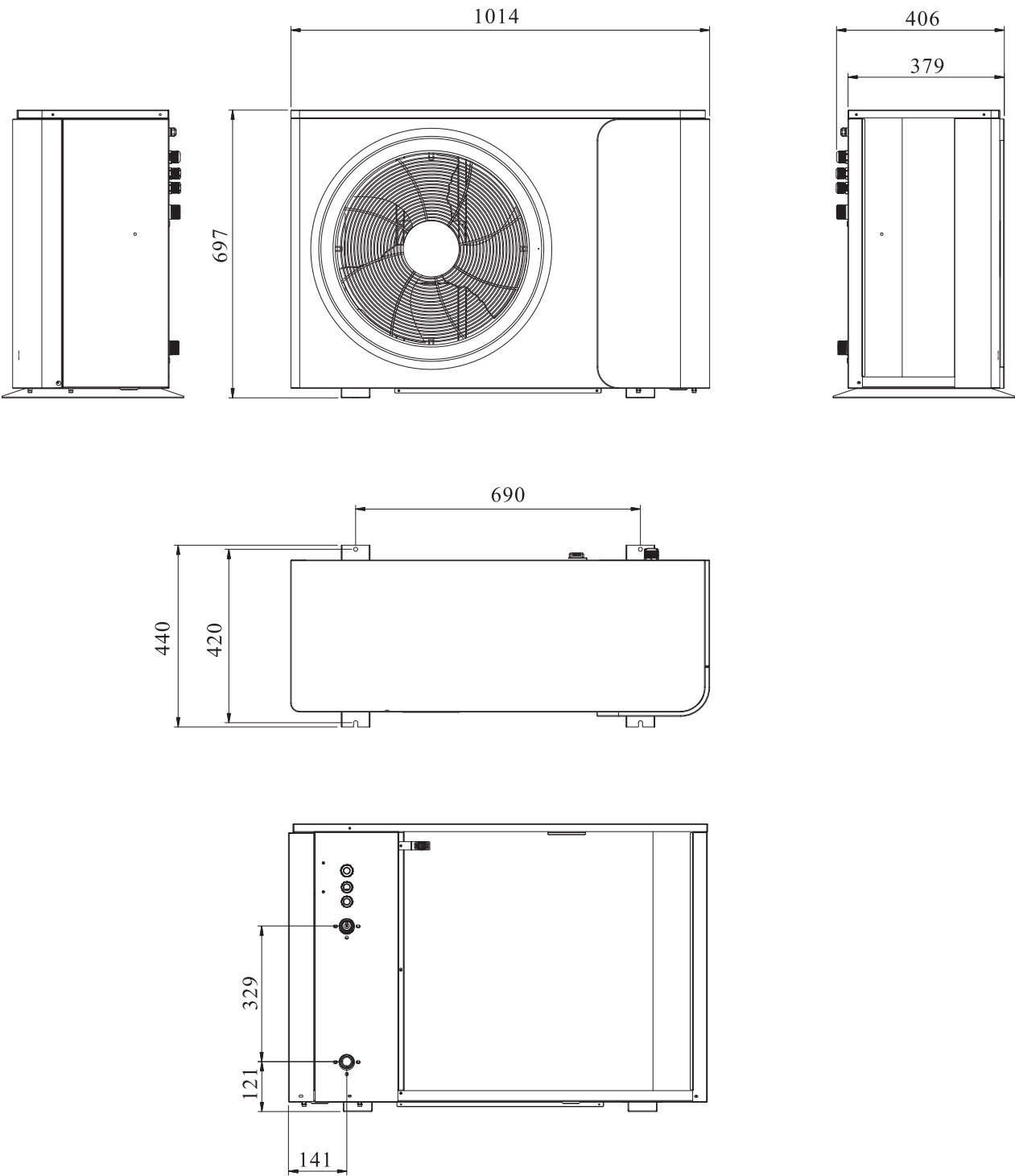
# 5. Attached drawing

## 5.1 Outlines and dimensions

Monoblock — PAVH-06V1FXC

Pipe Connection: 1”

Unit: mm

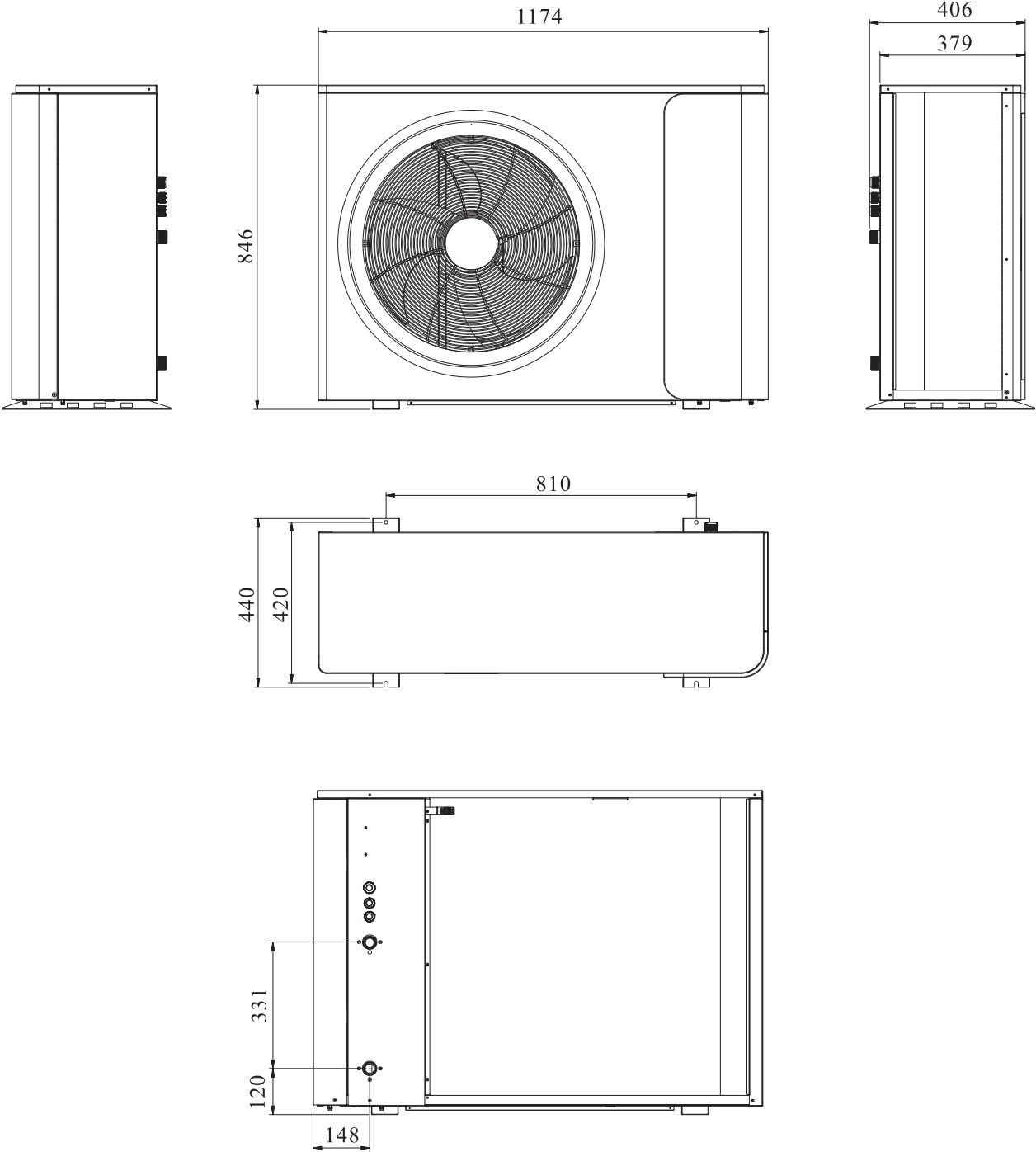


# 5. Attached drawing

Monoblock — PAVH-09V1FXC / PAVH-12V1FXC

Pipe Connection: 1"

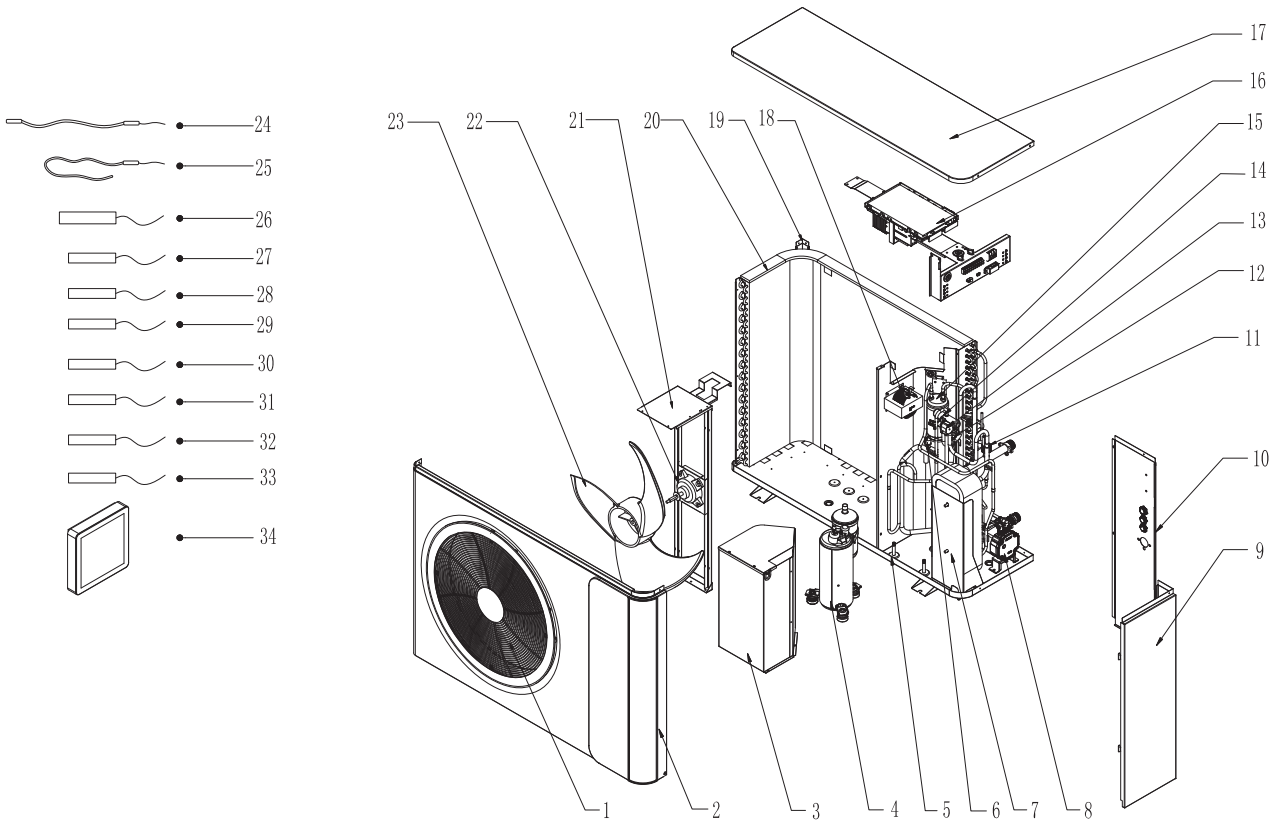
Unit: mm



# 5. Attached drawing

## 5.2 Exploded View

Monoblock — PAVH-06V1FXC  
PAVH-09V1FXC  
PAVH-12V1FXC



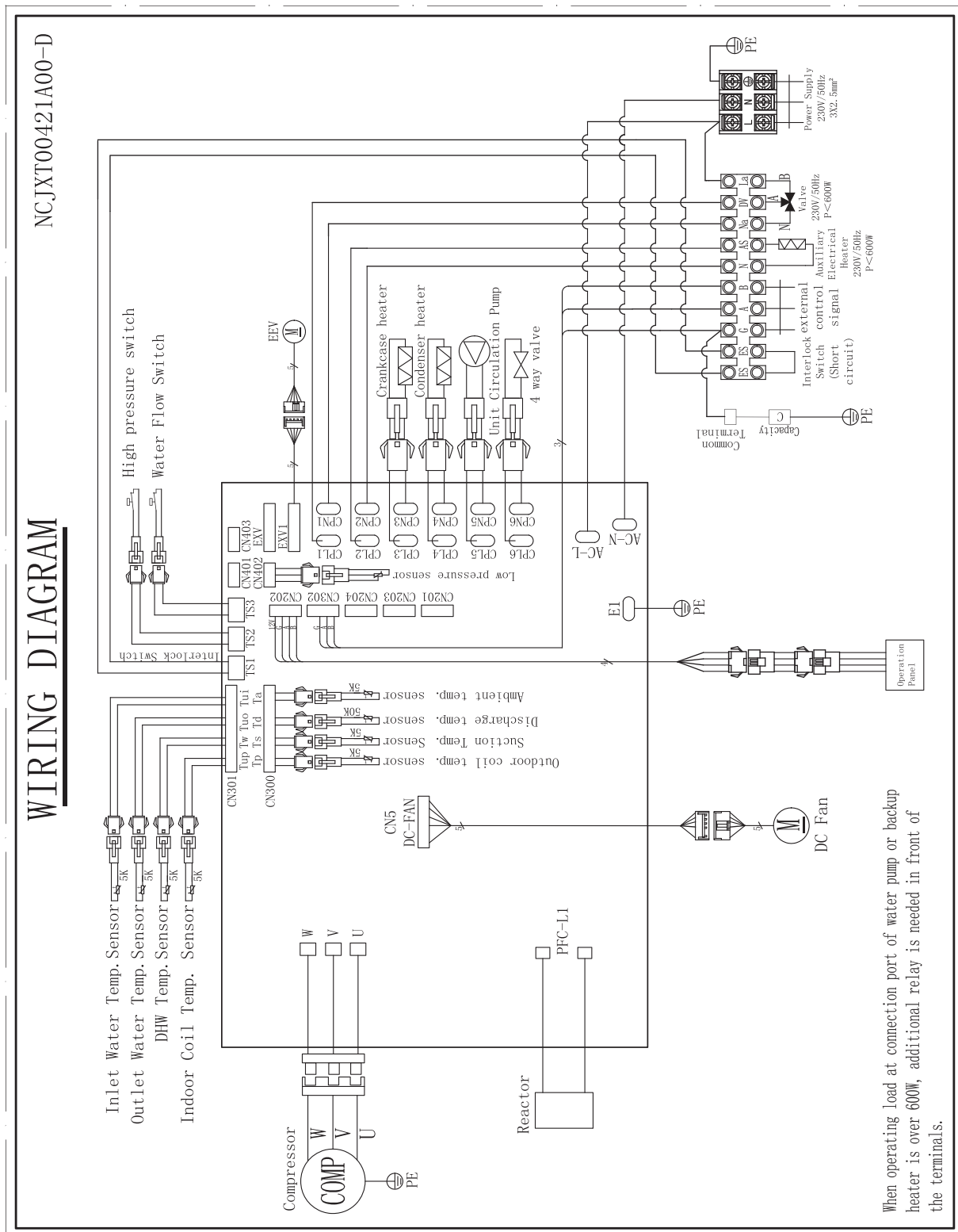
NO	Name	NO	Name
1	Fan Grill	18	Transducer
2	Front Panel	19	Back Column
3	Compressor Houseing	20	Evaporator
4	Compressor	21	Fan Motor Bracket
5	Bottom Plate	22	Fan Motor
6	High Pressure Switch	23	Fan Blade
7	Plate Heat Exchanger	24	Bottom Plate Heater
8	Water Pump	25	Comprssor Crankcase Heater
9	Service Panel	26	Comprssor Discharge Temp. Sensor
10	Back Panel	27	Compressor Suction Temp. Sensor
11	Flow Switch	28	Outdoor Coil Temp. Sensor
12	Low Pressure Sensor	29	Ambient Temp. Sensor
13	4-way Valve Coil	30	Water Inlet Temp. Sensor
14	4-way Valve	31	Water Outlet Temp. Sensor
15	Accumulator	32	DHW Temp. Sensor Tw
16	Control PCB	33	Indoor Coil Temp. Sensor
17	Top Panel	34	Operation Panel



## 5. Attached drawing

### 5.3 Wiring Dirgram

Monoblock — PAVH-06V1FXC / PAVH-09V1FXC / PAVH-12V1FXC



**TAKE CARE!**

This diagram is subject to change with improvement of the unit. Always refer to the diagram supplied with the product.



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.