APHS-60-006-M
APHS-60-009-M
APHS-60-012-M
APHS-60-015-M
APHS-60-018-M

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

Catalogue

1. Before use

1.1 Safety precautions

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 m2 (refer to specifications sheet).

6.The installation of pipe-work shall be kept to a minimum X m2 (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 affets safety means shall only be carried by competent persons.

Gerneral 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)quipment

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.

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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 CO2 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.

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 isabsolutely 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

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.

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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

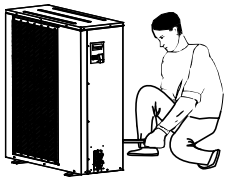
the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working 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

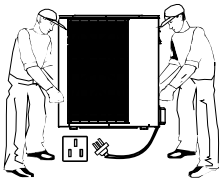
1.1 Safety precautions

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

Warning Caution Prohibition

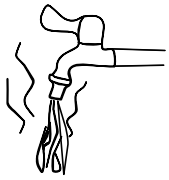


The installation, dismantlement and maintenance of the unit must be performed by qualified personnel. It is forbidden to do any changes to the structure of the unit. Otherwise injury of person or unit damage might happen.

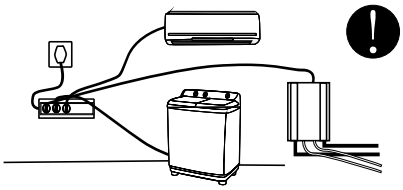


To avoid electrical shock, make sure to disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and, before touching, make sure that those voltages are lower than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

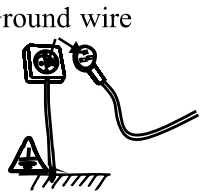
Be sure to read this manual before use.



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

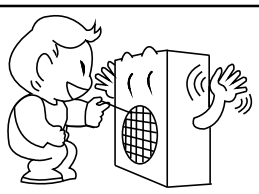


Use a dedicated socket for this unit, otherwise malfunction may occur.

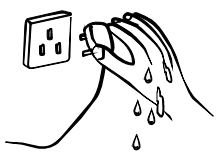


The power supply to the unit must be grounded.

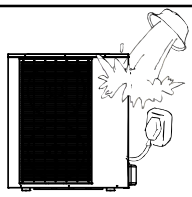
This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.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

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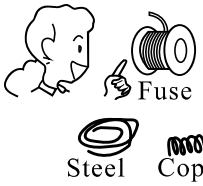
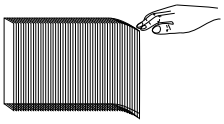
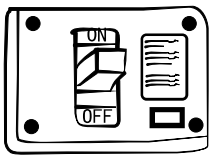
When the power cord gets loose or damaged, always get a qualified person to fix it.



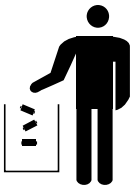
Please select the correct fuse or breaker as per recommended. Steel wire or copper wire cannot be taken as substitute for fuse or breaker. Otherwise, damages maybe caused.



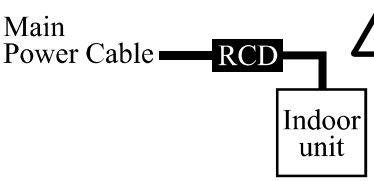
Be aware fingers might be hurt by the fin of the coil.



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.

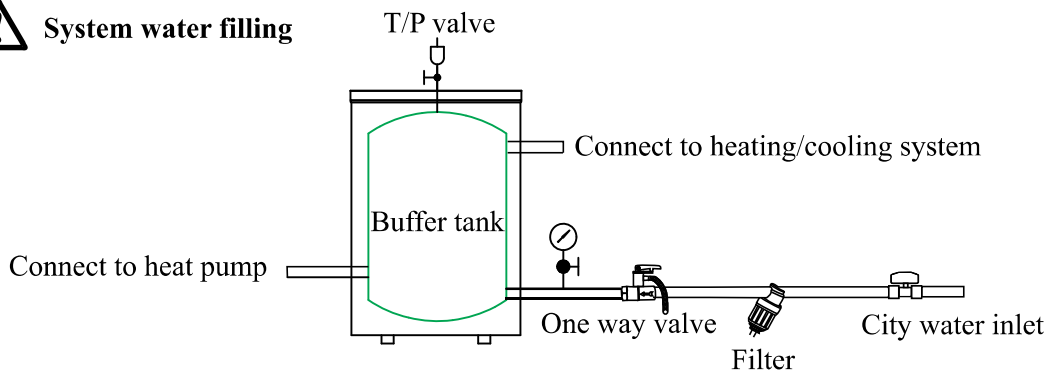


Disposal of Scrap Batteries (if there is). Please discard the batteries as sorted municipal waste at the accessible collection point.



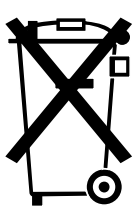
Installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable.

System water filling



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

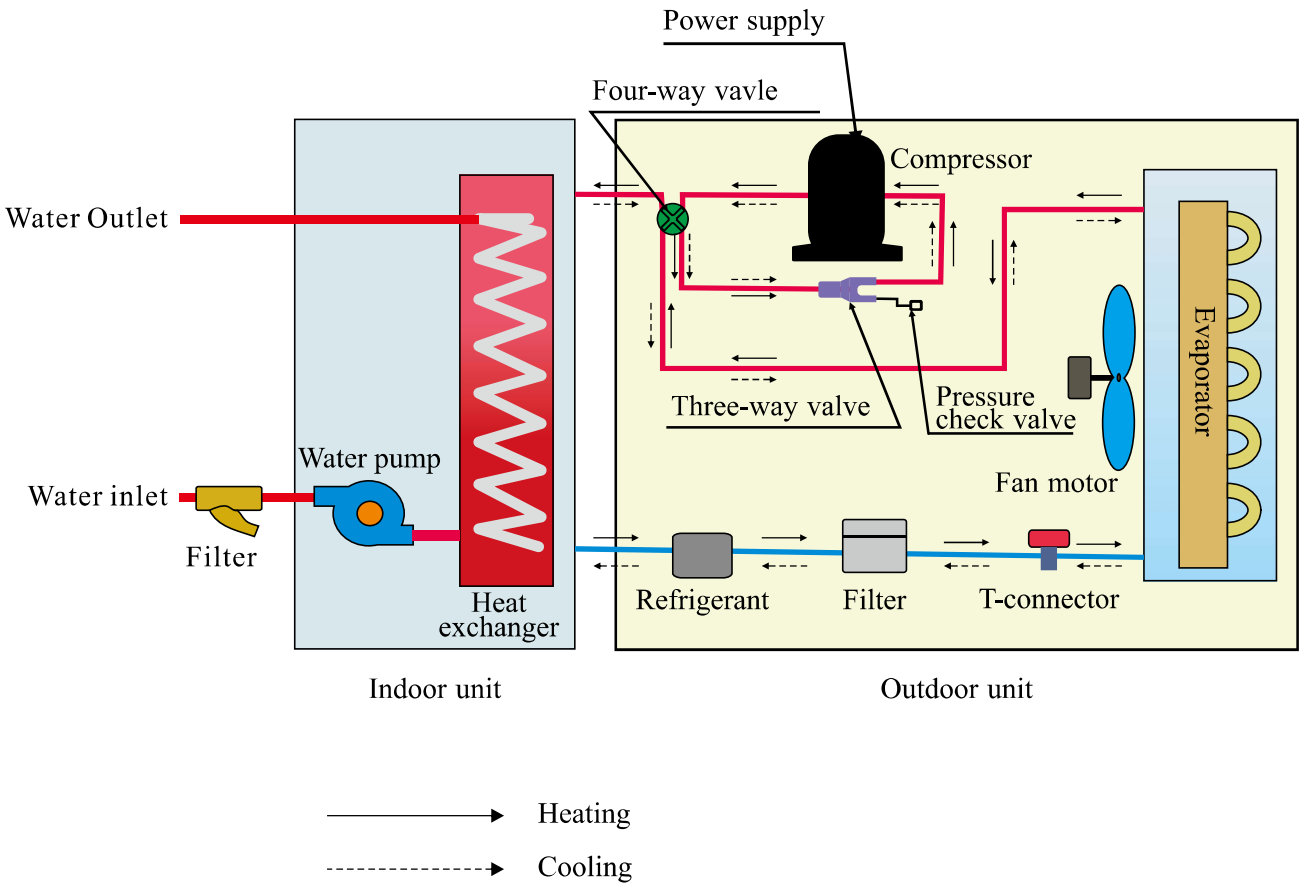
Note: After filling, the system of water system should be 0.15~0.6MPa.



This marking indicates that this product should not be disposed 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.

1. Before use

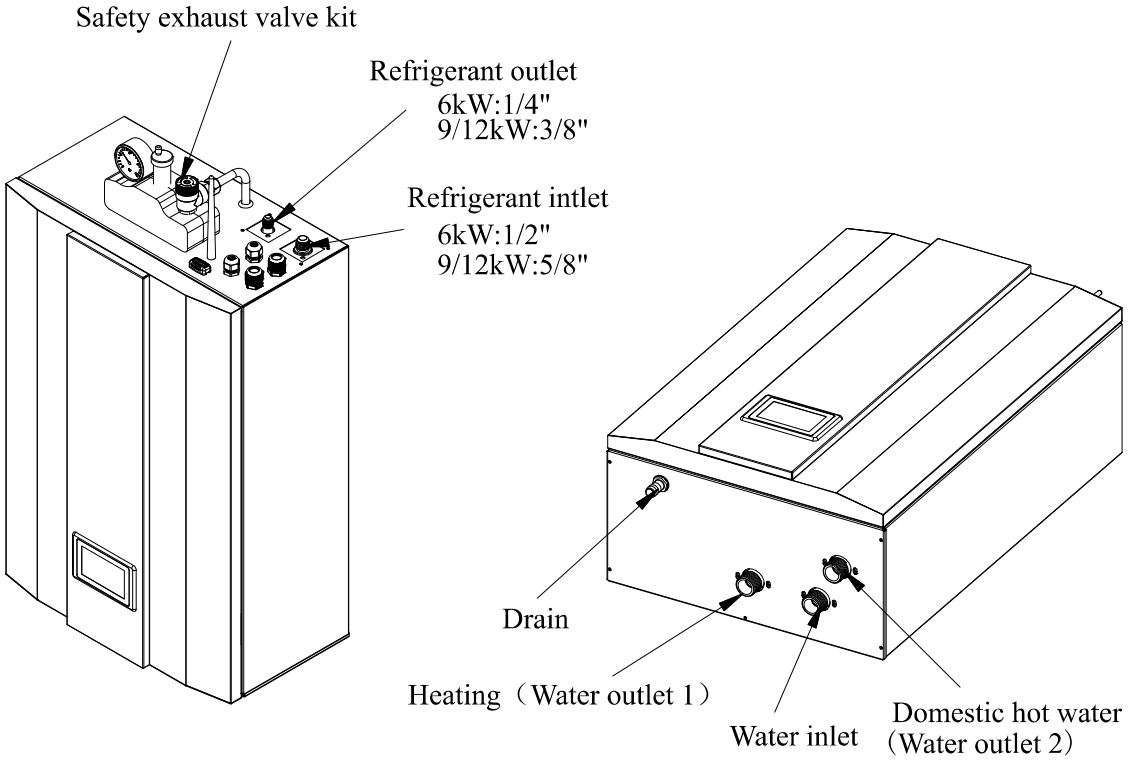
1.2 Working principle

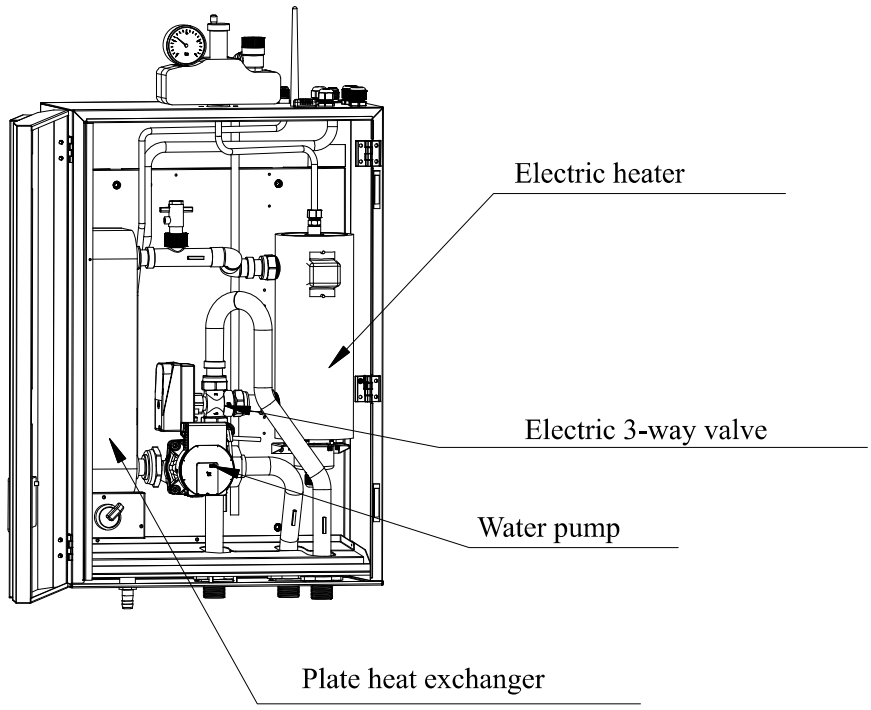


1. Before use

1.3 Main components

1.3.1 Indoor unit APHS-60-006-M
APHS-60-009-M
APHS-60-012-M

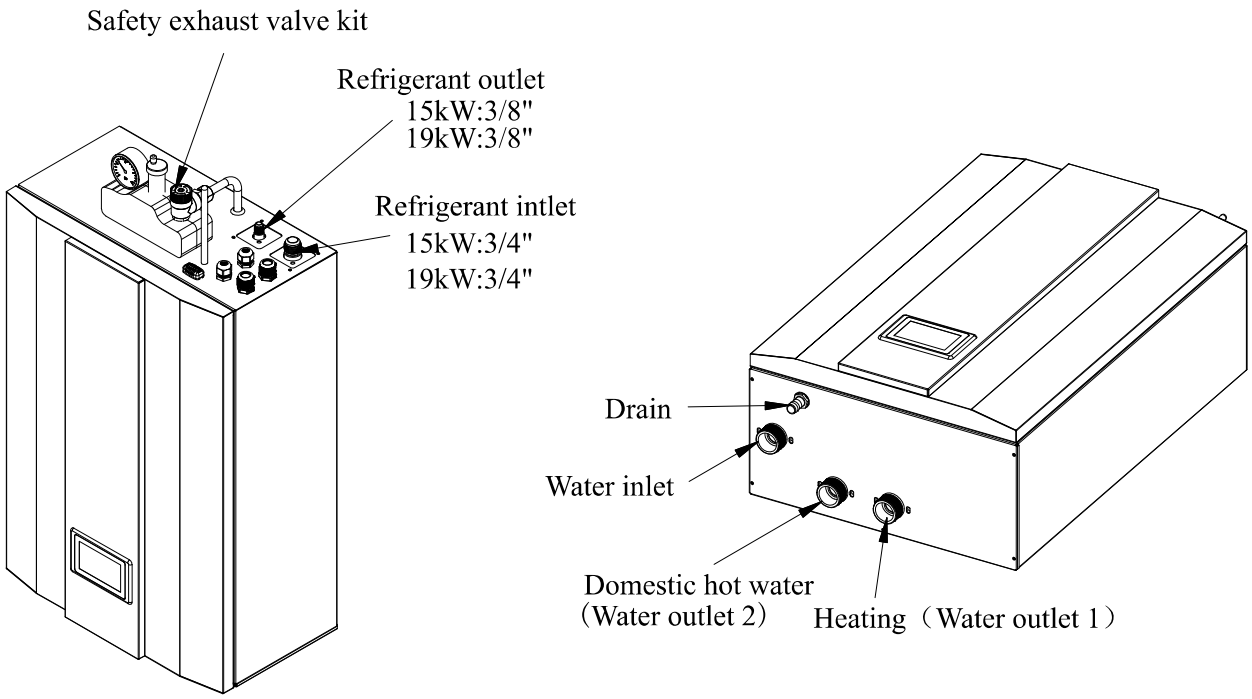


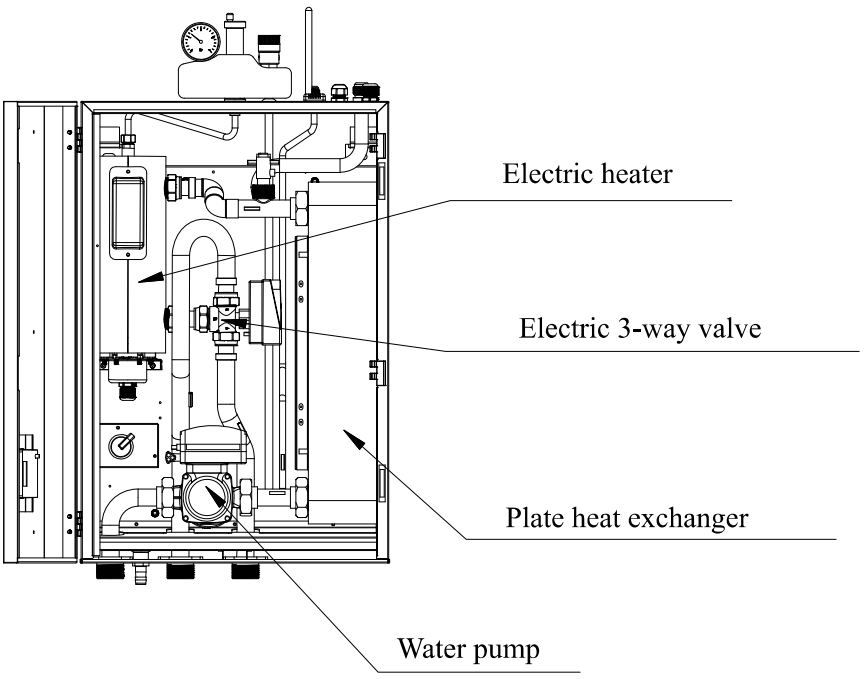


1. Before use

1.3 Main components

1.3.1 Indoor unit **APHS-60-015-M**
APHS-60-018-M





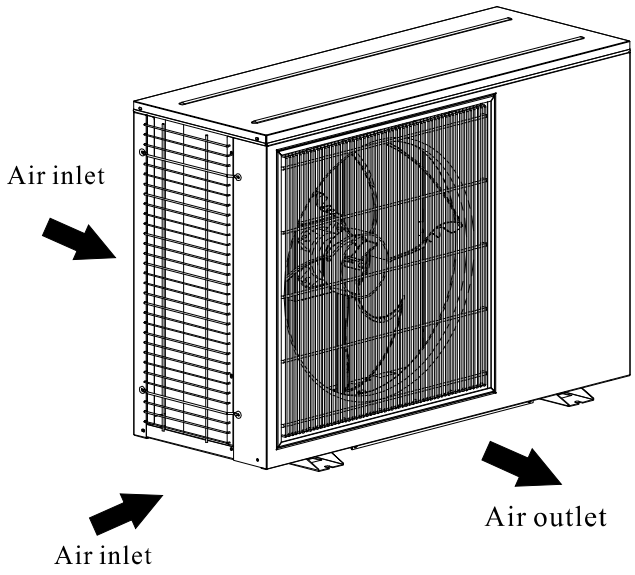
1. Before use

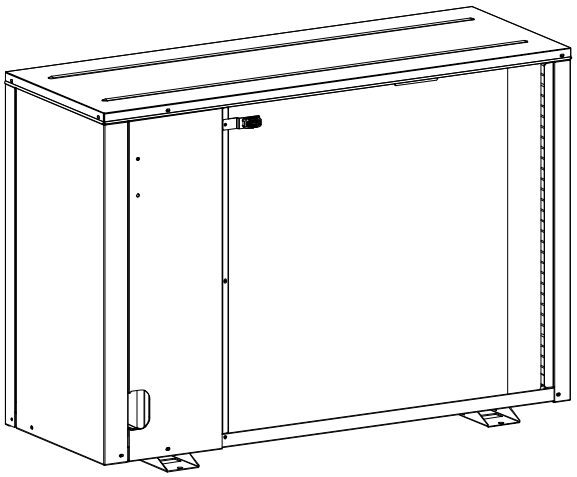
1.3.2 Outdoor unit

APHS-60-006-M

APHS-60-009-M

APHS-60-012-M

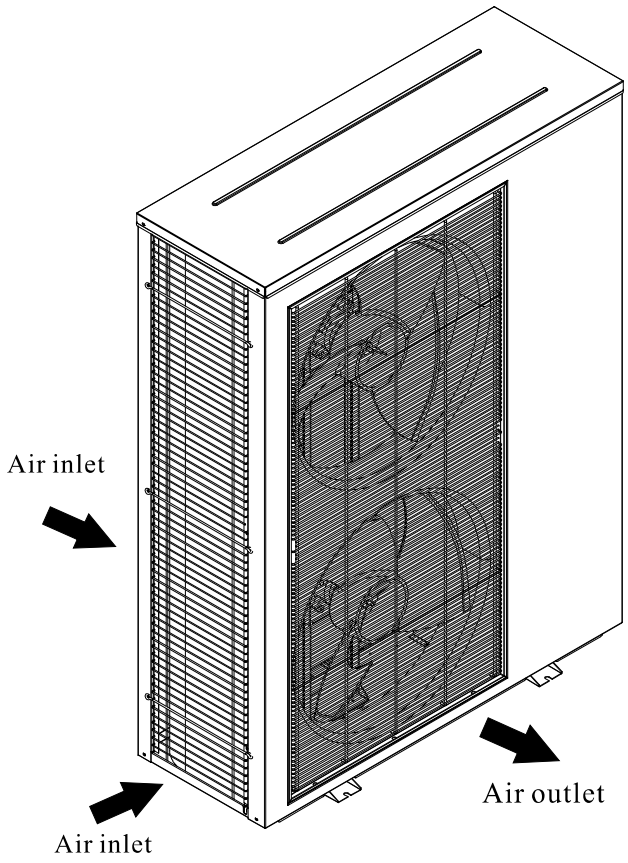


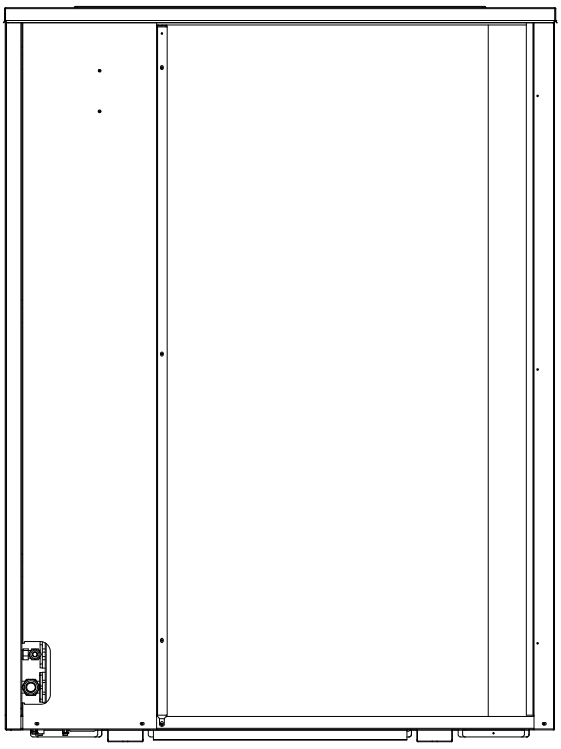


1. Before use

1.3.2 Outdoor unit

APHS-60-015-M
APHS-60-018-M





1. Before use

1.4 Specifications

Model			APHS-60-006-M	APHS-60-009-M	APHS-60-012-M
Power Supply / Refrigerant		V/Hz/Ph	220-240/50/1 - R32		
Max. Heating Capacity (1)		kW	6.5	9.2	11.6
C.O.P (1)		W/W	4.61	4.38	4.3
Heating Capacity Min./Max. (1)		kW	3.5 / 6.5	4.3/9.2	5.5 / 11.6
Heating Power Input Min./Max. (1)		W	758 / 1410	927/2097	1107 / 2683
C.O.P Min./Max. (1)		W/W	4.5 / 4.7	4.38/4.71	4.3 / 4.9
Max. Heating Capacity (2)		kW	6	8.6	11.2
C.O.P (2)		W/W	3.46	3.37	3.45
Heating Capacity Min./Max. (2)		kW	3.15 / 6	3.9/8.6	4.9 / 11.2
Heating power input Min./Max. (2)		W	943 / 1732	1162/2550	1401 / 3263
C.O.P Min./Max. (2)		W/W	3.34 / 3.56	3.37/3.58	3.3 / 3.5
Max. Cooling Capacity (3)		kW	7.45	9.5	9.8
E.E.R (3)		W/W	4.05	4.23	3.9
Cooling Capacity Min./Max. (3)		kW	6.22/7.45	6.7/9.5	7.0/ 9.8
Cooling Power Input Min./Max. (3)		W	1400/1863	1679/2242	1728/ 2510
E.E.R Min./Max. (3)		W/W	4.05/4.45	4.0/4.6	4.0 / 3.8
Max. Cooling Capacity (4)		kW	4.5	7.2	6.5
E.E.R (4)		W/W	2.7	2.8	2.7
Cooling Capacity Min./Max. (4)		kW	3.5/4.5	4.9/7.2	4.9 / 6.5
Cooling Power Input Min./Max. (4)		W	1330/1680	1451/2366	1358 / 2444
E.E.R Min./Max. (4)		W/W	2.5/2.74	2.8/3.1	2.6 / 3.5
Workable Ambient Temperature Range		℃	-25~43		
Min. System Water Temperature (Heating / Cooling)		℃	20 / 7		
Fuse of Circut Board (Indoor / Outdoor PCB)			Indoor: 65TS/T15AL/250V Outdoor: 65TS/T25AL/250V		
Min. Floor Area for installation, operation and storage		m^2	0.8	1.9	3.1
Min. Area of Pipe-work		m^2	0.8	1.9	3.1
Max. Operation High Pressure		MPa	4.2		
Max. Operation Low Pressure		MPa	1.2		
Compressor	Type - Quantity/System		Twin Rotary - 1	Twin Rotary - 1	Twin Rotary - 1
Refrigerant	Type / Amount	- / kg	R32 / 1.0kg	R32 / 1.6kg	R32 / 1.8kg
Fan	Quantity		1	1	1
	Airflow	m^3/h	2500	3150	3150
	Rated power	W	34	45	45
Noise Level	Indoor/Outdoor	dB(A)	44/52	44/53	44/52
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 (LXDXH)	Indoor Unit	mm	800x505x300	800x505x300	800x505x300
	Outdoor Unit	mm	1010x370x735	1165x370x845	1165x370x845
Net Weight	Indoor Unit	kg	37	39	39
	Outdoor Unit	kg	62	73	80

NOTE:

(1) Heating condition: water in/out temperature:30℃/35℃, ambient temperature:DB/WB 7/6℃;

(2) Heating condition: water in/out temperature:40℃/45℃, ambient temperature:DB/WB 7/6℃;

(3) Cooling condition: water in/out temperature:23℃/18℃, ambient temperature:DB/WB35/24℃;

(4) Cooling condition: water in/out temperature:12℃/7℃, ambient temperature:DB/WB35/24℃.

(5) The specifications are subject to change without prior notice.

For actual specifications of the unit, please refer to the specification stickers on the unit.

1. Before use

1.4 Specifications

Model			APHS-60-015-M	APHS-60-018-M
Power Supply / Refrigerant		V/Hz/Ph	380-420/50/3 - R32	
Max. Heating Capacity (1)		kW	15.35	18.5
C.O.P (1)		W/W	4.78	4.47
Heating Capacity Min./Max.(1)		kW	6/15.35	9.2/18.5
Heating Power Input Min./Max.(1)		W	1222/3209	1834/4142
C.O.P Min./Max.(1)		W/W	4.78/5.06	4.47/5.01
Max. Heating Capacity(2)		kW	14.26	18.2
C.O.P (2)		W/W	3.64	3.6
Heating Capacity Min./Max.(2)		kW	5.6/14.26	8.51/18.2
Heating power input Min./Max.(2)		W	1551/3913	2248/4998
C.O.P Min./Max.(2)		W/W	3.64/3.82	3.6/3.82
Max. Cooling Capacity (3)		kW	18.57	22.5
E.E.R (3)		W/W	3.78	3.58
Cooling Capacity Min./Max.(3)		kW	7.23/18.57	8.5/22.5
Cooling Power Input Min./Max.(3)		W	1334/4917	1660/6285
E.E.R Min./Max.(3)		W/W	3.78/5.42	3.58/5.12
Max. Cooling Capacity (4)		kW	13	16
E.E.R (4)		W/W	2.96	2.85
Cooling Capacity Min./Max.(4)		kW	4.46/13	5.5/16
Cooling Power Input Min./Max.(4)		W	2592/4390	2970/5510
E.E.R Min./Max.(4)		W/W	2.96/3.29	2.85/3.2
Workable Ambient Temperature Range		℃	-25~43	
Min. System Water Temperature (Heating / Cooling)		℃	20 / 7	
Fuse of Circut Board (Indoor / Outdoor PCB)			Indoor: 65TS/TI5AL/250V Outdoor: 51NM/10A/250V	
Min. Floor Area for installation, operation and storage		m^2	6.2	8
Min. Area of Pipe-work		m^2	6.2	8
Max. Operation High Pressure		MPa	4.2	
Max. Operation Low Pressure		MPa	1.2	
Compressor	Type - Quantity/System		Twin Rotary - 1	Twin Rotary - 1
Refrigerant	Type/Amount	/kg	R32/2.6kg	R32/3.0kg
Fan	Quantity		2	2
	Airflow	m^3/h	6200	7000
	Rated power	W	90	120
Noise Level	Indoor/Outdoor	dB(A)	44/59	44/61
Water Side Heat Exchanger	Type		Plate Heat Exchanger	Plate Heat Exchanger
	Water Pressure Drop	kPa	26	26
	Piping Connection	Inch	G1-1/4"	G1-1/4"
Allowable Water Flow	Min./Rated./Max.	L/S	0.43/0.71/0.85	0.55/0.92/1.1
Net Dimension(L×D×H)	Indoor Unit	mm	800×505×300	800×505×300
	Outdoor Unit	mm	1085x390x1450	1085×390×1450
Net Weight	Indoor Unit	Kg	42	42
	Outdoor Unit	Kg	120	130

NOTE:

(1) Heating condition: water in/out temperature:30℃/35℃, ambient temperature:DB/WB 7/6℃;

(2) Heating condition: water in/out temperature:40℃/45℃, ambient temperature:DB/WB 7/6℃;

(3) Cooling condition: water in/out temperature:23℃/18℃, ambient temperature:DB/WB35/24℃;

(4) Cooling condition: water in/out temperature:12℃/7℃, ambient temperature:DB/WB35/24℃.

(5) The specifications are subject to change without prior notice.

For actual specifications of the unit, please refer to the specification stickers on the unit.

Locate the Configuration that Meets Your Needs

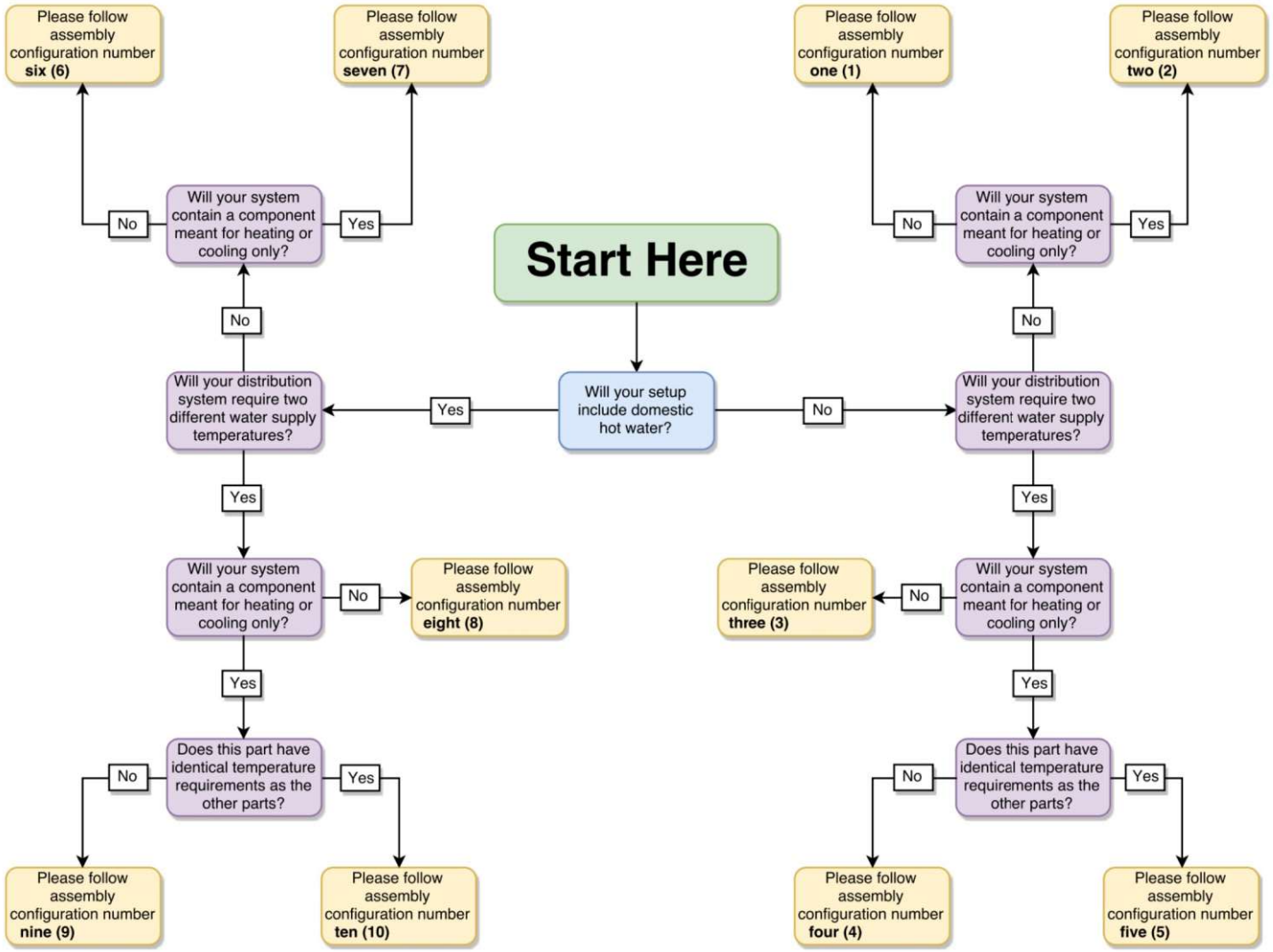
Follow the flowchart on the right in order to locate which of the assembly configuration matches the needs of the end user, each of which contains specific assembly and wiring diagrams, with software instructions.

Beginning from the green "Start Here" bubble, follow the appropriate arrows to each question, which are dependent on the needs of the user.

The corresponding assembly instructions will be found by turning to the page number in the end bubble.

Note: ***The instructions in this*** *section are meant to achieve the minimum requirements for successful system operation only.*

For more in-depth settings explanations, please refer to the user's manual.



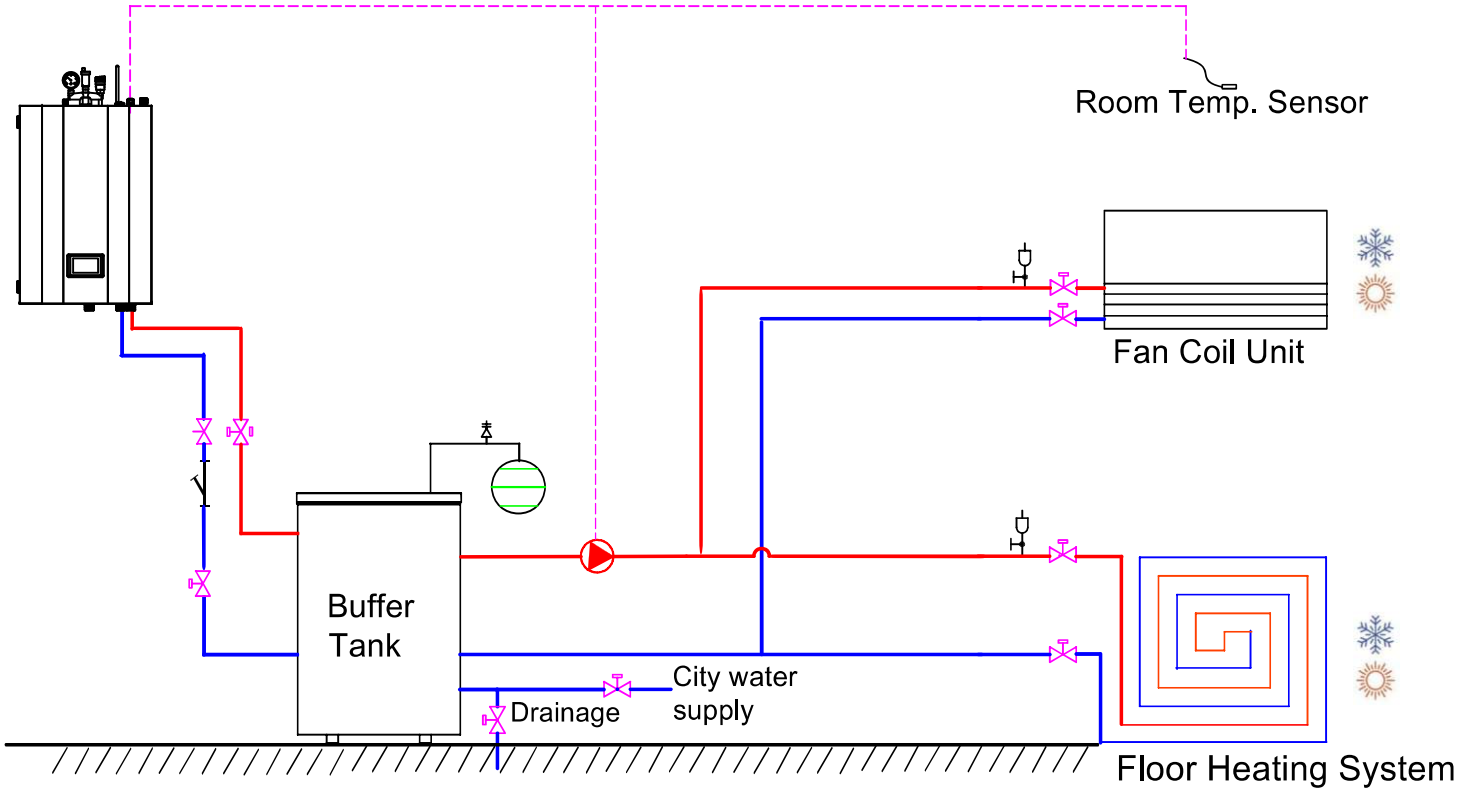
Please ensure that the configuration matches the assembly drawing depicted on the right for a one temperature zone without domestic hot water setup.

Note: Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve			

Note:Dotted lines mean "able to be controlled by the Heat Pump".

Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

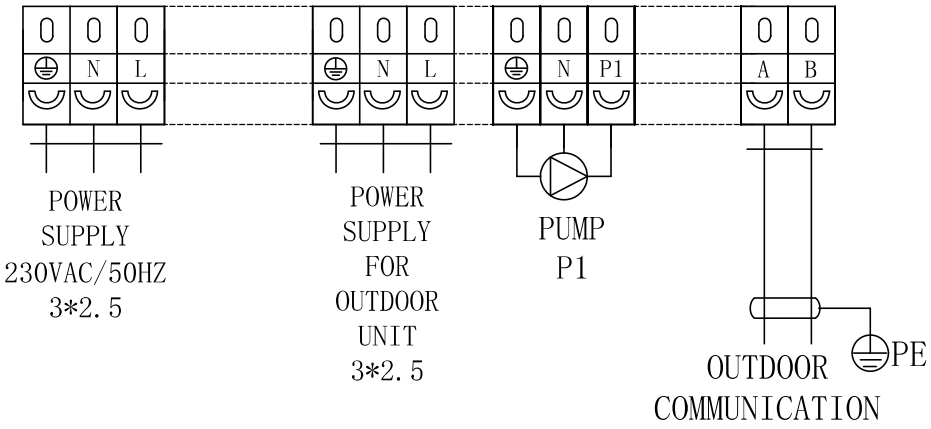


One Temperature Zone ,without DHW

2. Assembly Configurations – Drawing 1

Assembly 1: Wiring Diagram

To achieve successful operation at a minimum, ensure the ports below are properly connected.



Software: Basic Settings

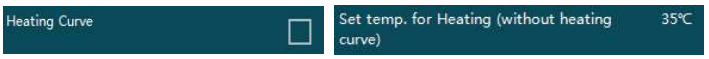
1.Set the needed working modes of the unit via the menu 

2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

H.Configuring the set water heating temperatures:

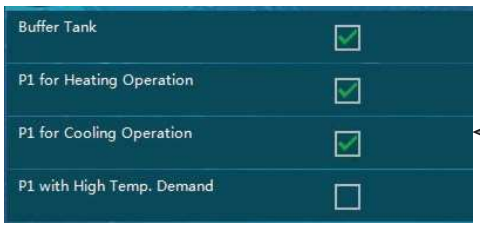
H.1. Setting a heating curve:

H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):

3.Locate and activate the buffer tank and appropriate pumps under 



If cooling function is desired, ensure these sections are configured.

Please ensure that the configuration matches the assembly drawing depicted on the right for a one temperature zone without domestic hot water setup, that includes a component circuit capable of heating or cooling only,through the use of a two-way motorized valve.

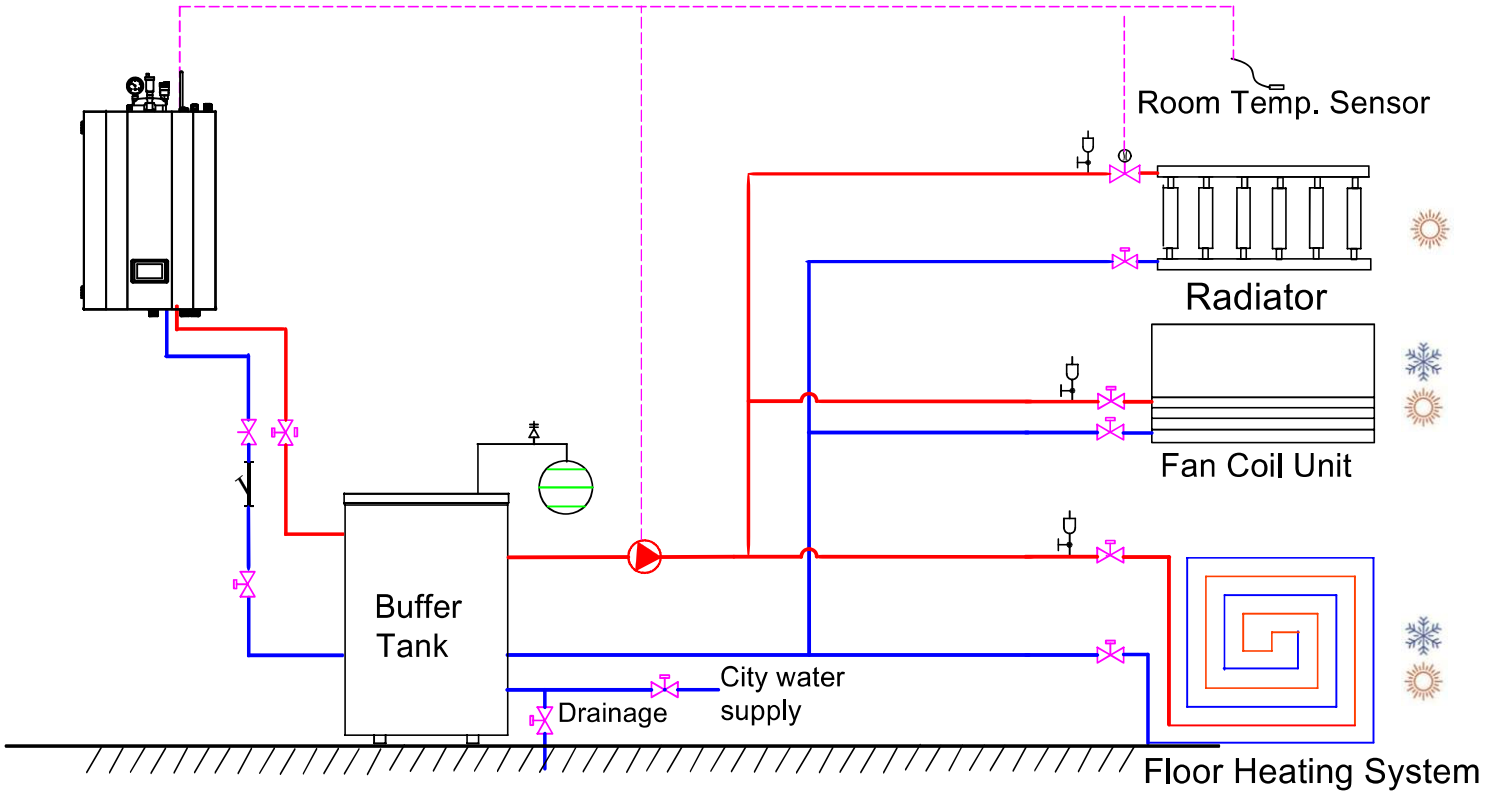
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve			

Note:Dotted lines mean "able to be controlled by the Heat Pump".

Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

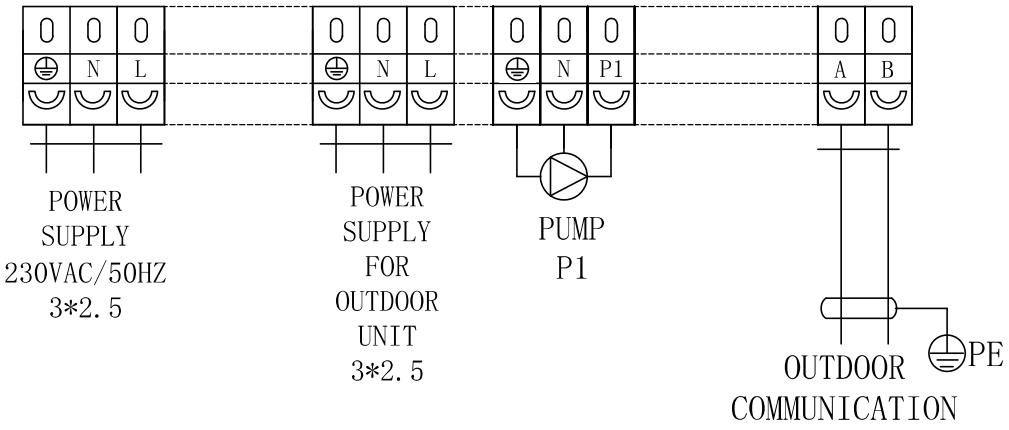


One Temperature Zone ,without DHW,with a heating-only (or cooling-only) circuit,by usage of a motorized 2-way valve

2. Assembly Configurations – Drawing 2

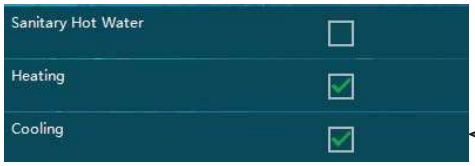
Assembly 2: Wiring Diagram

To achieve successful operation at a minimum, ensure the ports below are properly connected.



Software: Basic Settings

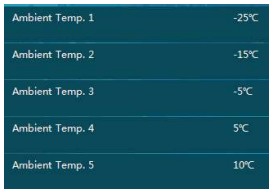
1.Set the needed working modes of the unit via the menu 

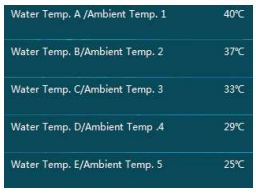


2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

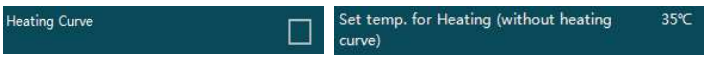
H.Configuring the set water heating temperatures:

H.1. Setting a heating curve:

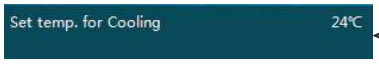


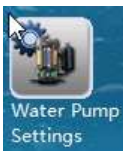


H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):



3.Locate and activate the buffer tank and appropriate pumps under 

If cooling function is desired, ensure these sections are configured.

2. Assembly Configurations – Drawing 2

Software: Basic Settings (continued)

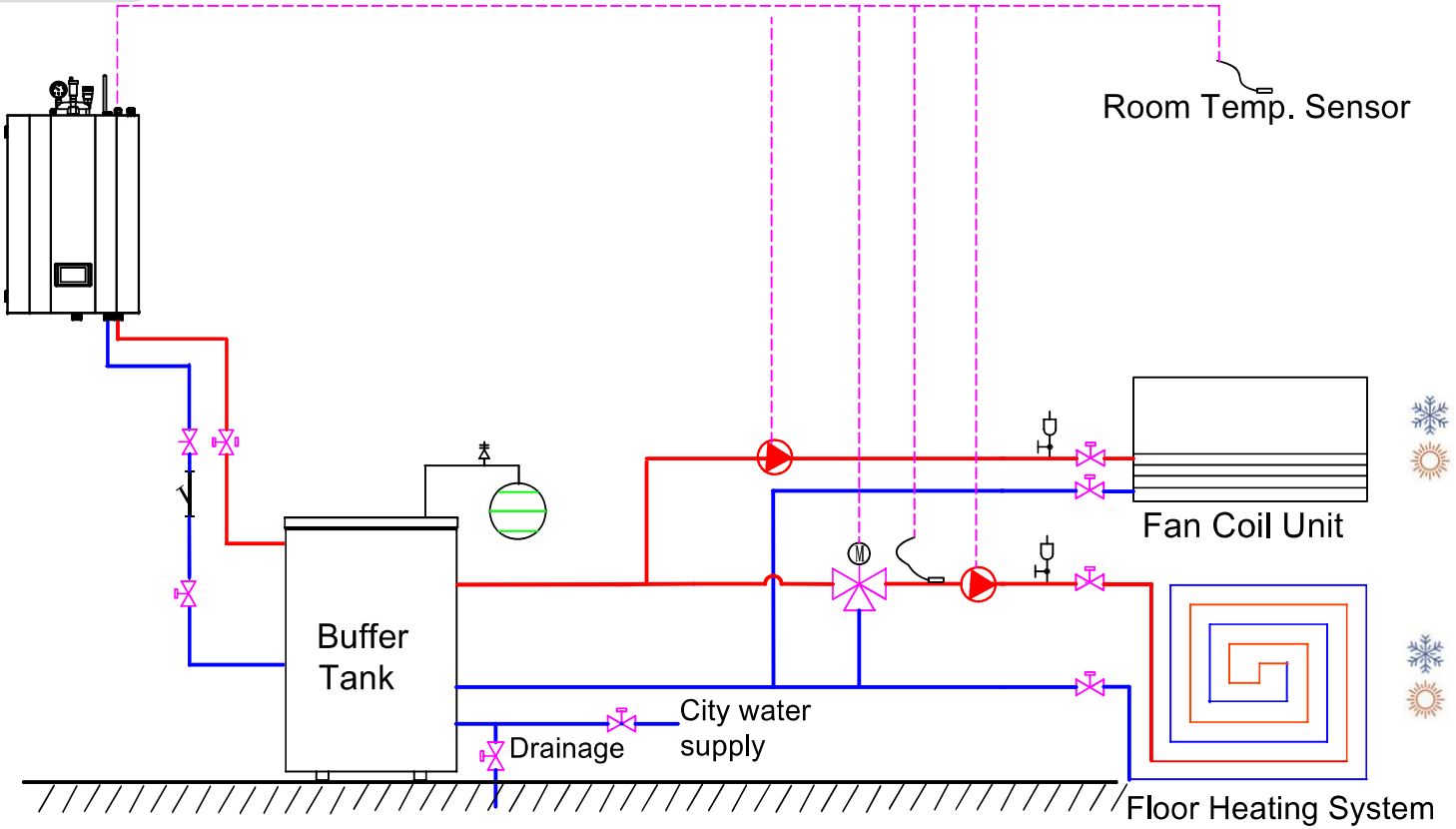
4.The location of the configuration for heating-only or cooling-only system is under

Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone *without domestic hot* water setup.

Note: Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve		Note:Dotted lines mean "able to be controlled by the Heat Pump".	

Notice: The Fan Coil Unit, Floor Heating System,and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

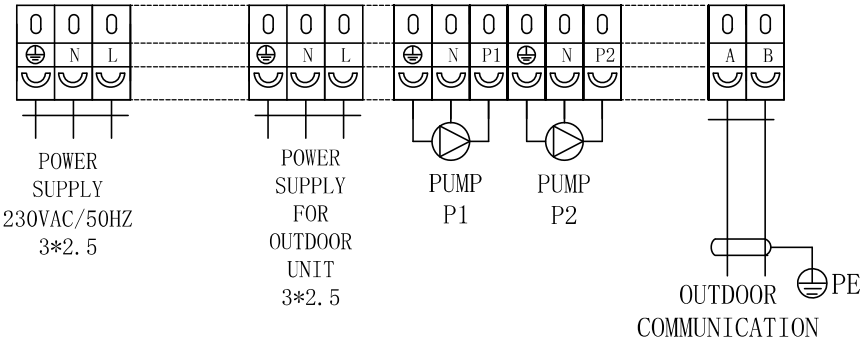


Two Temperature Zones ,without DHW

2. Assembly Configurations – Drawing 3

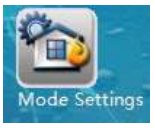
Assembly 3: Wiring Diagram

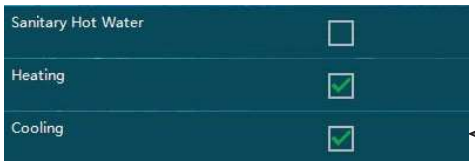
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2,please refers to the appendix A (on page 157-158) of this manual for more information.

Software: Basic Settings

1.Set the needed working modes of the unit via the menu 

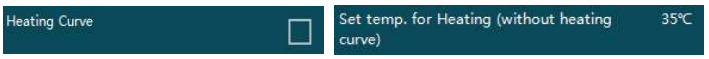


2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

H.Configuring the set water heating temperatures:

H.1. Setting a heating curve:

H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):

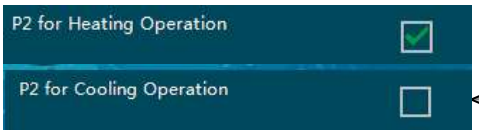
3.Locate and activate the buffer tank and appropriate pumps under 

If cooling function is desired, ensure these sections are configured.

2. Assembly Configurations – Drawing 3

Software: Basic Settings (continued)

3.(cont.) Configure the water pump to operate for heating or cooling:

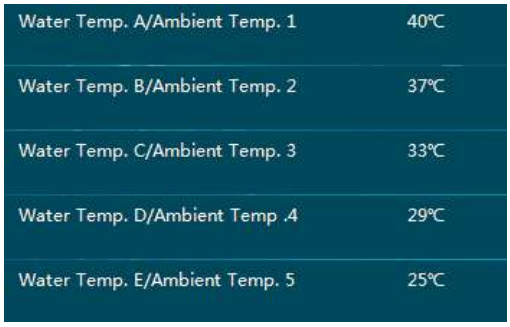


4.Temperature configuration options for Heating/Cooling circuit 2 are found under

Please activate entire Heating/Cooling circuit 2 setting

H. Configuring the set water heating temperatures**:**

H.1. Setting a heating curve**:**



H.2. If no heating curve is desired**:**

C. Configuring the set water cooling temperature (if applicable):

4.1. Activate the mixing valve to manage the second circuit**:**

Note: This pair of settings will interpret "Heating/Cooling Circuit 2 as the low demand distribution system, requiring a lower set temperature for heating and higher set temperature for cooling.

Dependent on whether cooling is needed

Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone without domestic hot water setup, that includes a component circuit capable of heating or cooling only,through the use of a two-way motorized valve.

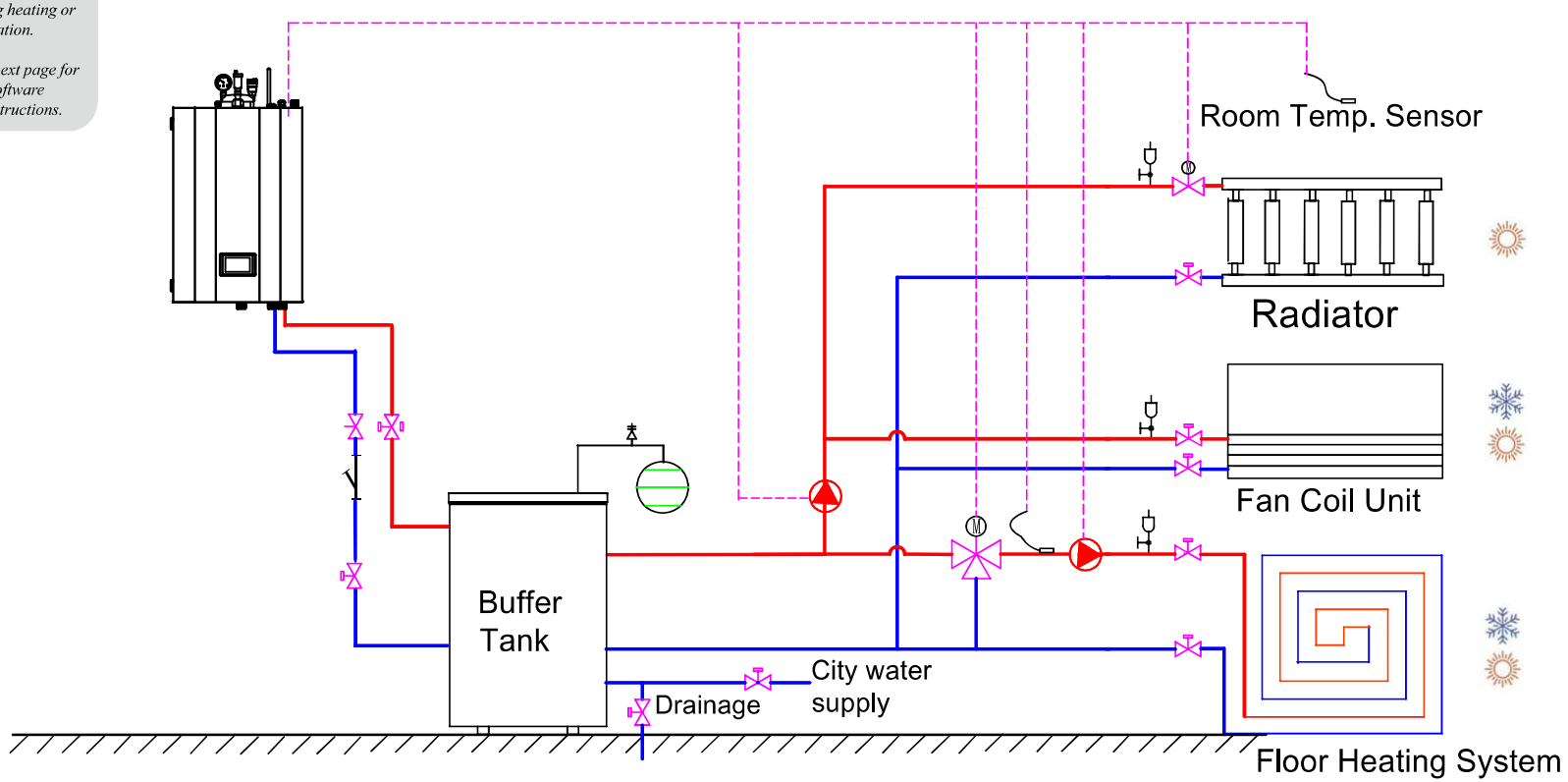
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve			

Note:Dotted lines mean "able to be controlled by the Heat Pump".

Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

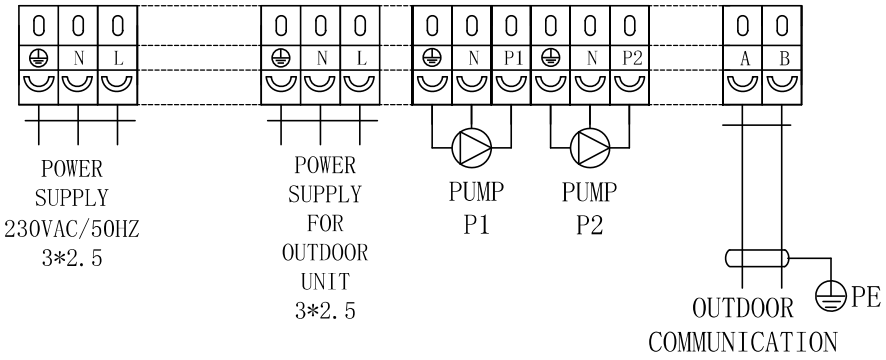


Two Temperature Zones ,without DHW,with a heating-only (or cooling-only) circuit,by usage of a motorized 2-way valve

2. Assembly Configurations – Drawing 4

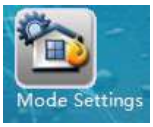
Assembly 4: Wiring Diagram

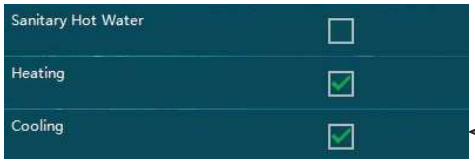
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2,please refers to the appendix A (on page 157-158) of this manual for more information.

Software: Basic Settings

1.Set the needed working modes of the unit via the menu 

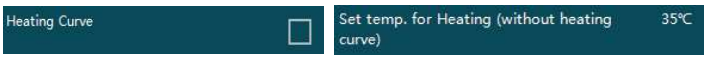


2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

H.Configuring the set water heating temperatures:

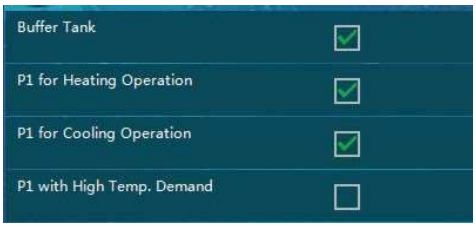
H.1. Setting a heating curve:

H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):

3.Locate and activate the buffer tank and appropriate pumps under 

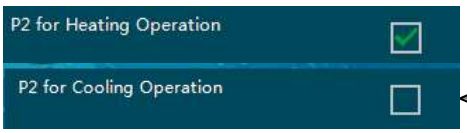


If cooling function is desired, ensure these sections are configured.

2. Assembly Configurations – Drawing 4

Software: Basic Settings (continued)

3.(cont.) Configure the water pump to operate for heating or cooling:

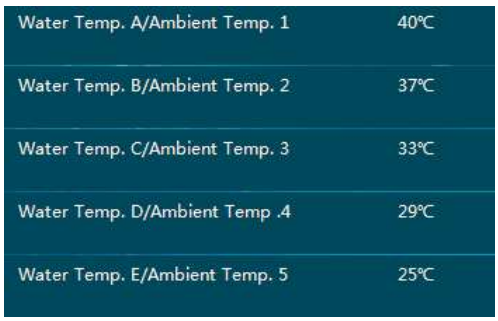


4. The location of the configuration for heating-only or cooling-only system is under

5. Temperature configuration options for Heating/Cooling circuit 2 are found under

H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:



H.2. If no heating curve is desired**:**

C. Configuring the set water cooling temperature (if applicable):

5.1. Activate the mixing valve to manage the second circuit**:**

Note: This pair of settings will interpret "Heating/Cooling Circuit 2 as the low demand distribution system,requiring a lower set temperature for heating and higher set temperature for cooling.

Dependent on whether cooling is needed

Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone without domestic hot water setup, that utilizes the secondary pump for a heating-only operation.

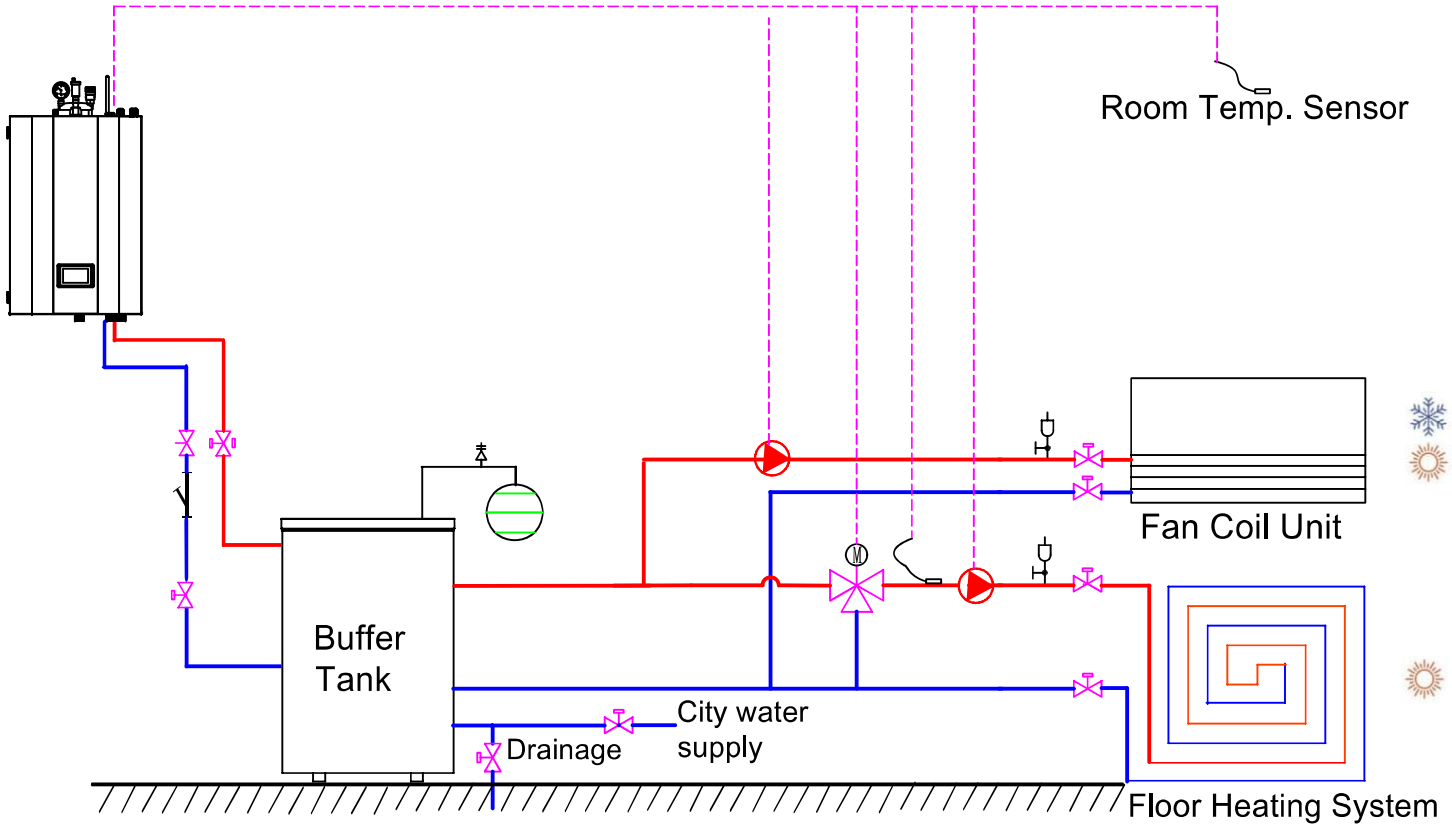
Note: For the heating-only circuit, a motorized two-way valve can be connected to the unit,to cut the water supply during heating operation.

Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve			

Note:Dotted lines mean "able to be controlled by the Heat Pump".

Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

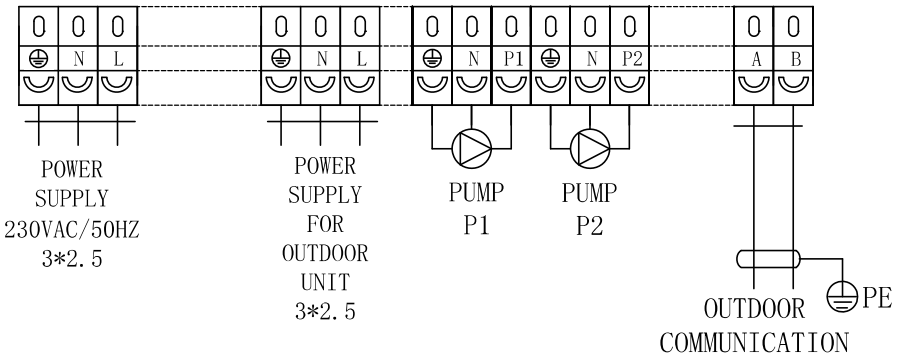


Two Temperature Zones ,without DHW,with a heating-only circuit,enabled by setting the secondary pump to heating-only

2. Assembly Configurations – Drawing 5

Assembly 5: Wiring Diagram

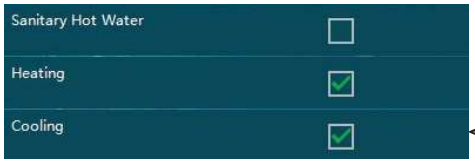
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2,please refers to the appendix A (on page 157-158) of this manual for more information.

Software: Basic Settings

1.Set the needed working modes of the unit via the menu 

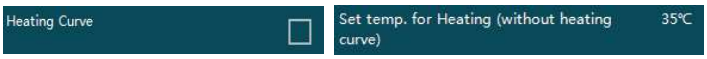


2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

H.Configuring the set water heating temperatures:

H.1. Setting a heating curve:

H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):

3.Locate and activate the buffer tank and appropriate pumps under 

If cooling function is desired, ensure these sections are configured.

2. Assembly Configurations – Drawing 5

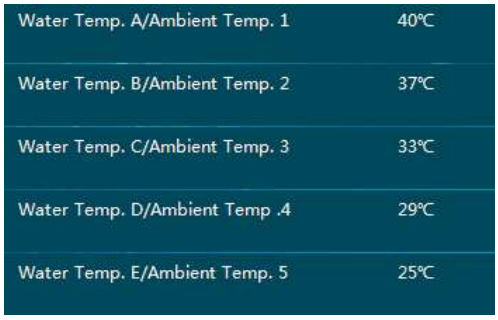
Software: Basic Settings (continued)

3.(cont.) Configure the water pump to operate for heating or cooling:

4. Temperature configuration options for Heating/Cooling circuit 2 are found under

H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:



H.2. If no heating curve is desired**:**

C. Configuring the set water cooling temperature (if applicable):

4.1. Activate the mixing valve to manage the second circuit**:**

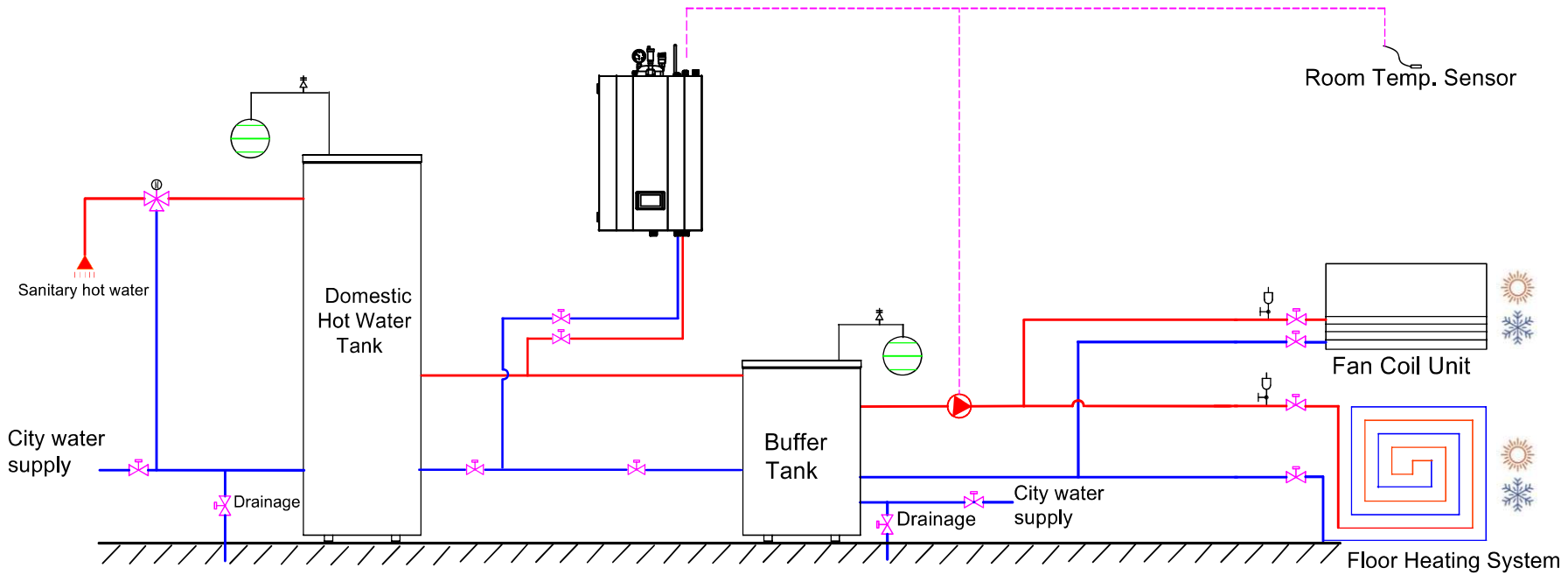
Note: This pair of settings will interpret "Heating/Cooling Circuit 2 as the low demand distribution system,requiring a lower set temperature for heating and higher set temperature for cooling.

Please ensure that the configuration matches the assembly drawing depicted on the right for a one temperature zone setup that includes domestic hot water.

Note: Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve		Note:Dotted lines mean〝able to be controlled by the Heat Pump〞.	

Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

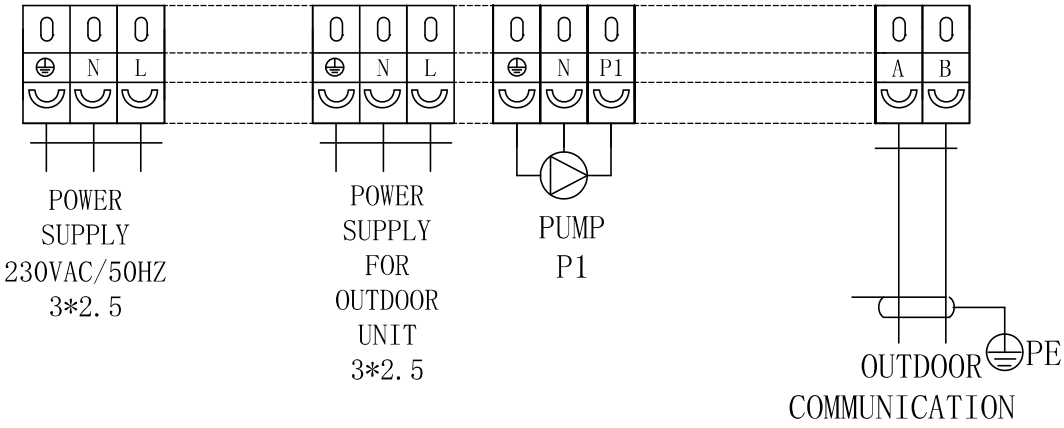


One Temperature Zone ,with DHW

2. Assembly Configurations – Drawing 6

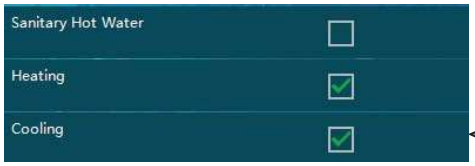
Assembly 6: Wiring Diagram

To achieve successful operation at a minimum, ensure the ports below are properly connected.



Software: Basic Settings

1.Set the needed working modes of the unit via the menu 

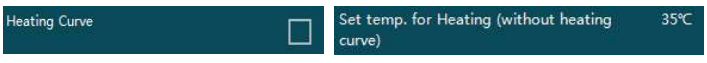


2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

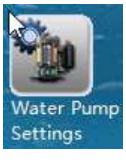
H.Configuring the set water heating temperatures:

H.1. Setting a heating curve:

H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):

3.Locate and activate the buffer tank and appropriate pumps under 

If cooling function is desired, ensure these sections are configured.

2. Assembly Configurations – Drawing 6

Software: Basic Settings (continued)

4. Double-check to ensure that the Domestic Hot Water option is enabled under

5. Configure the desired setpoint for water temperature (default set to 50°C):

Please ensure that the configuration matches the assembly drawing depicted on the right for a one temperature zone setup that *includes domestic hot water,that* also includes a component circuit capable of heating or cooling only, through the use of a two-way motorized valve.

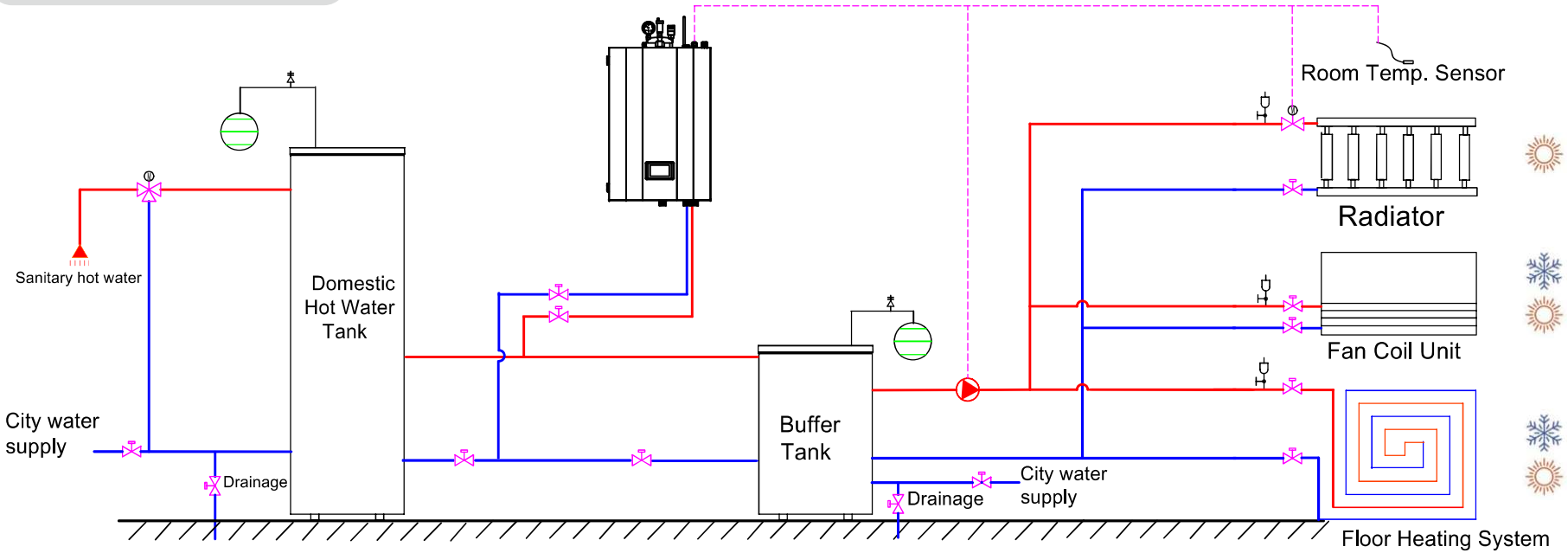
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve			

Note:Dotted lines mean〝able to be controlled by the Heat Pump〞.

Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

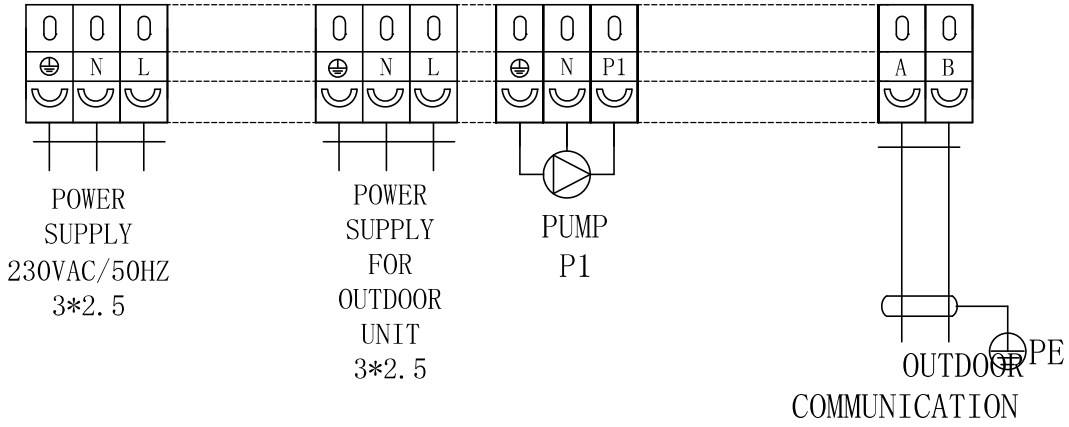


One Temperature Zone ,with DHW,with a heating-only (or cooling-only) circuit,by usage of a motorized 2-way valve

2. Assembly Configurations – Drawing 7

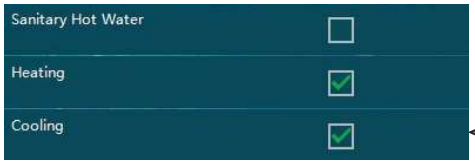
Assembly 7: Wiring Diagram

To achieve successful operation at a minimum, ensure the ports below are properly connected.



Software: Basic Settings

1.Set the needed working modes of the unit via the menu 

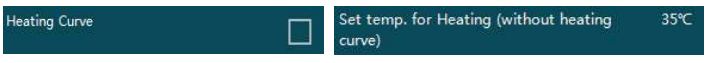


2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

H.Configuring the set water heating temperatures:

H.1. Setting a heating curve:

H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):

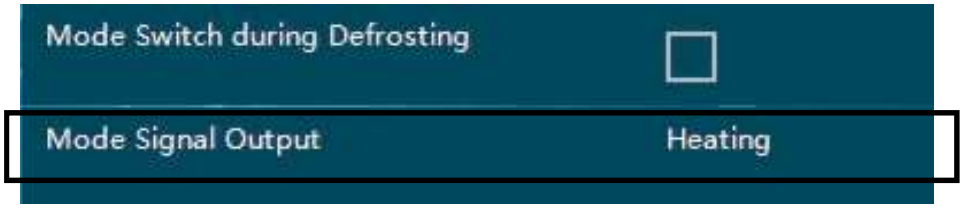
3.Locate and activate the buffer tank and appropriate pumps under 

If cooling function is desired, ensure these sections are configured.

2. Assembly Configurations – Drawing 7

Software: Basic Settings (continued)

4.The location of the configuration for heating-only or cooling-only system is under



5. Double-check to ensure that the Domestic Hot Water option is enabled under

6. Configure the desired setpoint for water temperature (default set to 50°C):

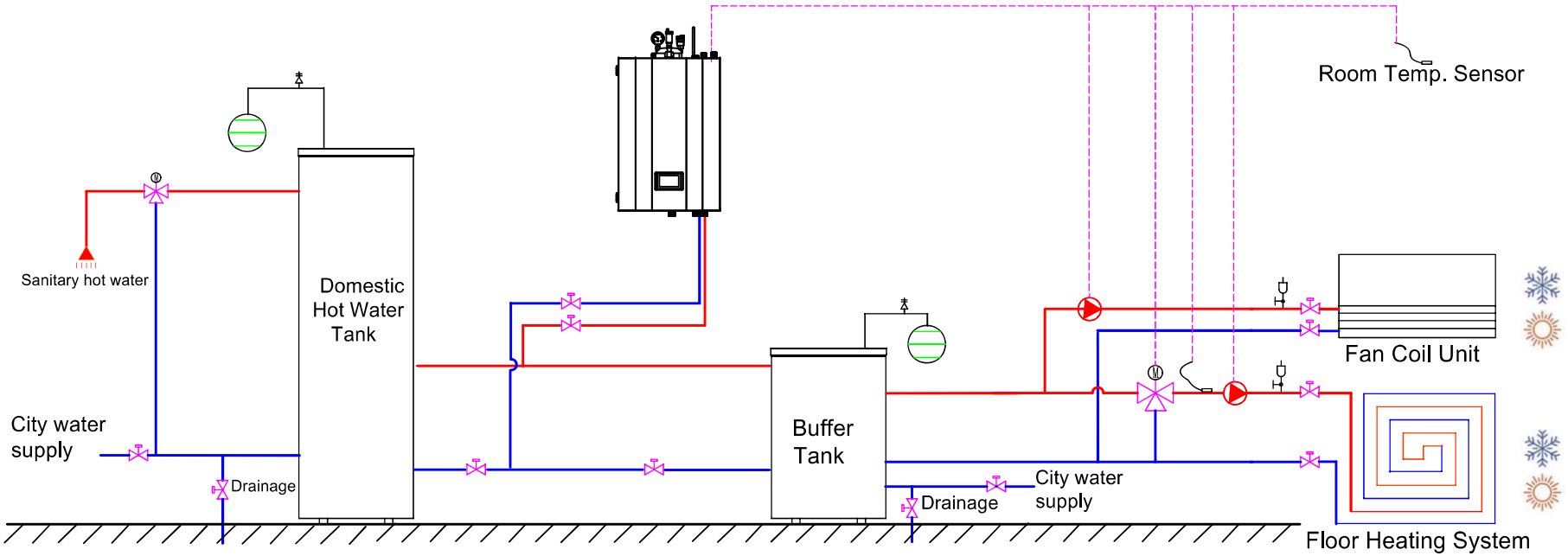
Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone setup that includes domestic hot water.

Note: Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve			

Note:Dotted lines mean "able to be controlled by the Heat Pump".

Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

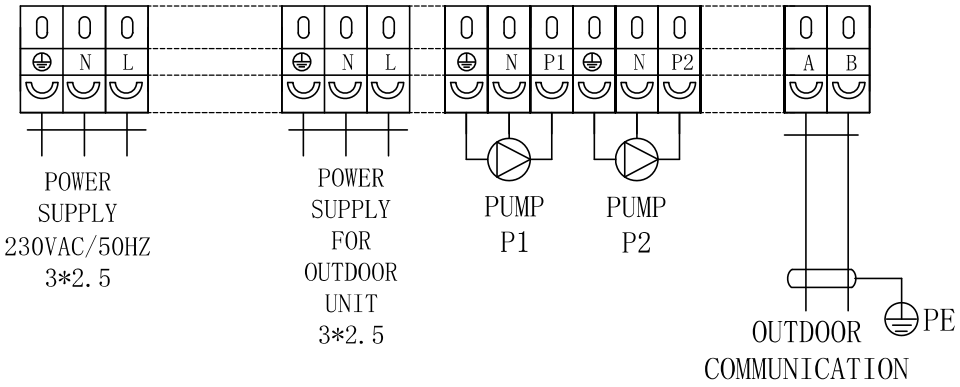


Two Temperature Zone ,with DHW

2. Assembly Configurations – Drawing 8

Assembly 8: Wiring Diagram

To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2,please refers to the appendix A (on page 157-158) of this manual for more information.

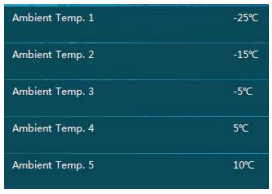
Software: Basic Settings

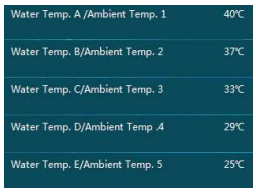
1.Set the needed working modes of the unit via the menu 

2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

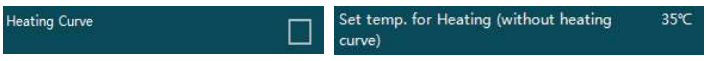
H.Configuring the set water heating temperatures:

H.1. Setting a heating curve:

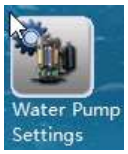




H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):

3.Locate and activate the buffer tank and appropriate pumps under 

If cooling function is desired, ensure these sections are configured.

2. Assembly Configurations – Drawing 8

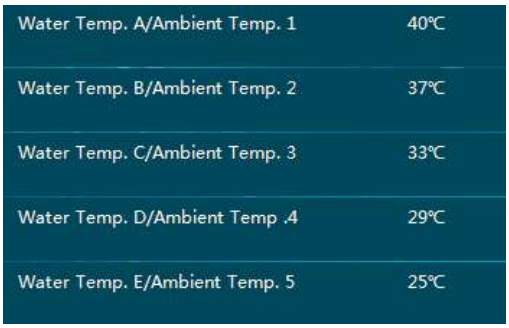
Software: Basic Settings (continued)

3.(cont.) Configure the water pump to operate for heating or cooling**:**

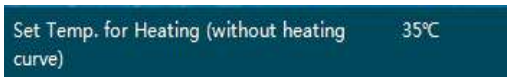
4. Temperature configuration options for Heating/Cooling circuit 2 are found under

H. configuring the set water heating temperatures:

H.1. Setting a heating curve**:**



H.2. If no heating curve is desired:



C. Configuring the set water cooling temperature (if applicable):

Dependent on whether cooling is needed

4.1. Activate the mixing valve to manage the second circuit:

Note: This pair of settings will interpret "Heating/Cooling Circuit 2 as the low demand distribution system,requiring a lower set temperature for heating and higher set temperature for cooling.

5. Double-check to ensure that the Domestic Hot Water option is enabled under

6. Configure the desired setpoint for water temperature (default set to 50°C):

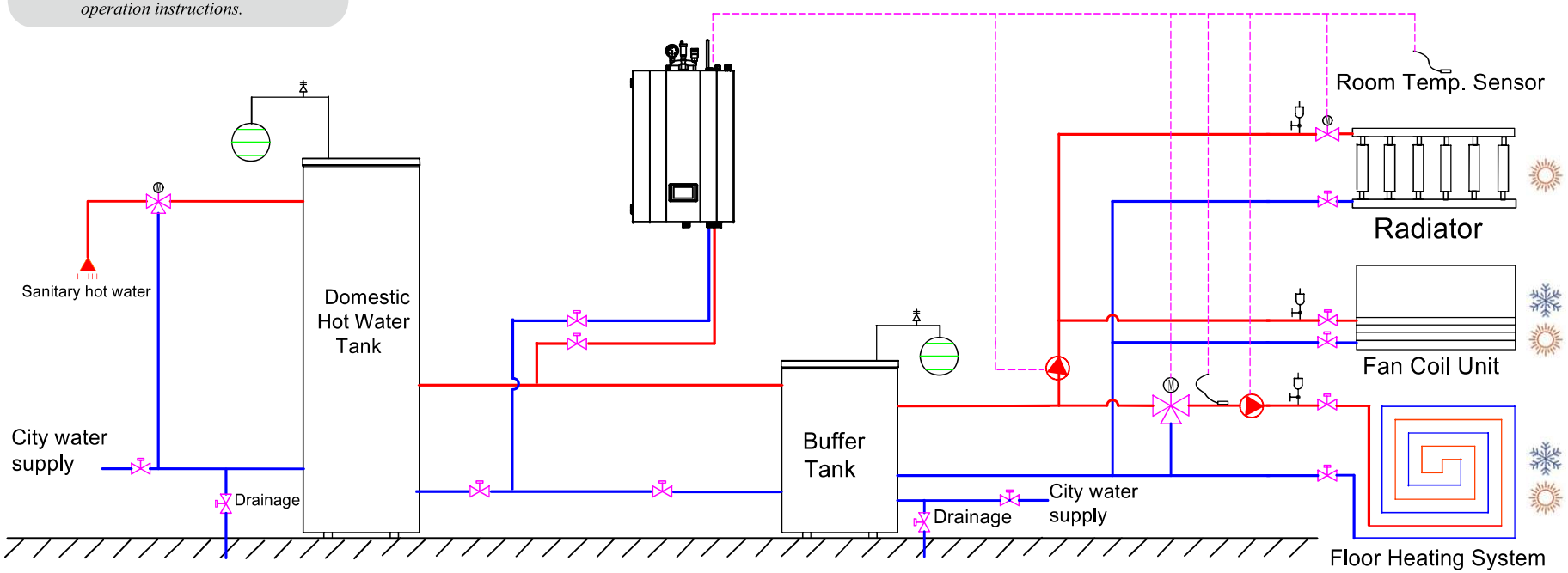
Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone setup that includes domestic hot water, also that includes a component circuit capable of heating or cooling only, through the use of a two-way motorized valve.

Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve		Note:Dotted lines mean〝able to be controlled by the Heat Pump〞.	

Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

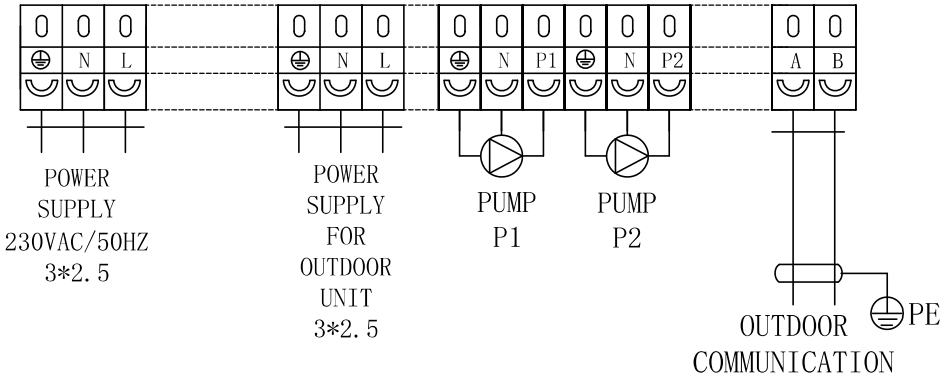


Two Temperature Zones ,without DHW,with a heating-only (or cooling-only) circuit,by usage of a motorized 2-way valve

2. Assembly Configurations – Drawing 9

Assembly 9: Wiring Diagram

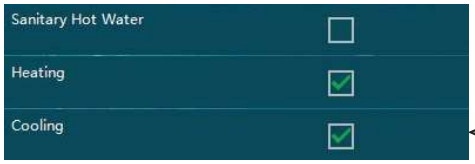
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2,please refers to the appendix A (on page 157-158) of this manual for more information.

Software: Basic Settings

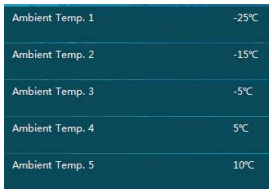
1.Set the needed working modes of the unit via the menu 

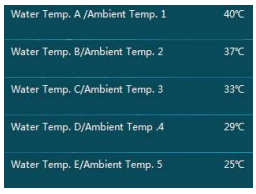


2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

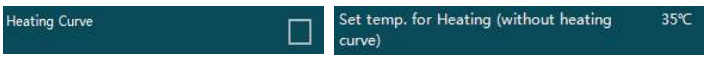
H.Configuring the set water heating temperatures:

H.1. Setting a heating curve:



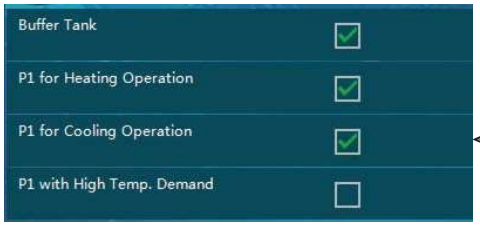


H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):

3.Locate and activate the buffer tank and appropriate pumps under 



If cooling function is desired, ensure these sections are configured.

2. Assembly Configurations – Drawing 9

Software: Basic Settings (continued)

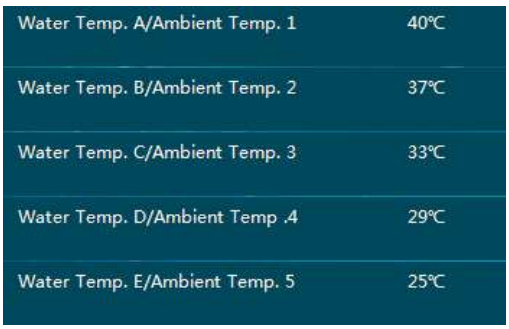
3.(cont.) Configure the water pump to operate for heating or cooling:

4. The location of the configuration for heating-only or cooling-only system is under

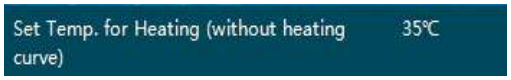
5. Temperature configuration options for Heating/Cooling circuit 2 are found under

H. configuring the set water heating temperatures:

H.1. Setting a heating curve:



H.2. If no heating curve is desired:



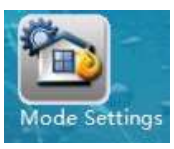
C. Configuring the set water cooling temperature (if applicable):

Dependent on whether cooling is needed

5.1. Activate the mixing valve to manage the second circuit:

Note: This pair of settings will interpret "Heating/Cooling Circuit 2 as the low demand distribution system,requiring a lower set temperature for heating and higher set temperature for cooling.

6. Double-check to ensure that the Domestic Hot Water option is enabled under



7. Configure the desired setpoint for water temperature (default set to 50°C):

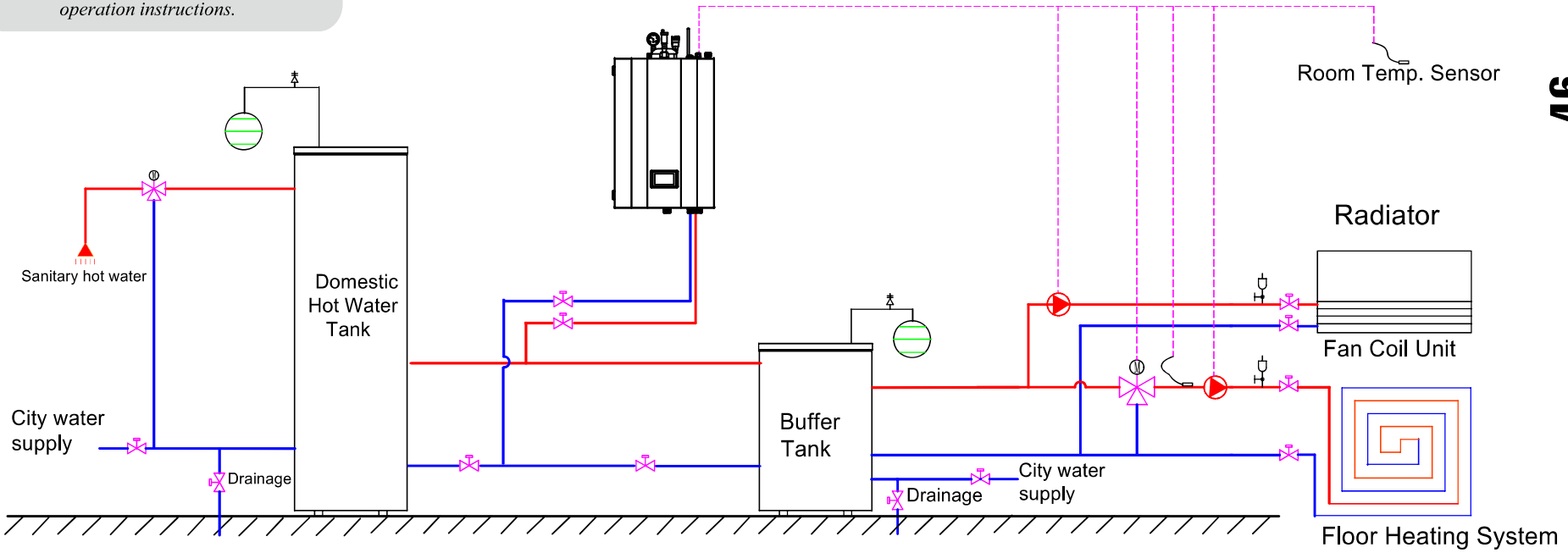
Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone setup that includes domestic hot water, also that utilizes the secondary pump for a heating-only operation.

Note: For the heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating operation.

Refer to the next page for wiring and software operation instructions.

Name	Symbol	Name	Symbol
Temp.Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve		Note:Dotted lines mean "able to be controlled by the Heat Pump".	

Notice : The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

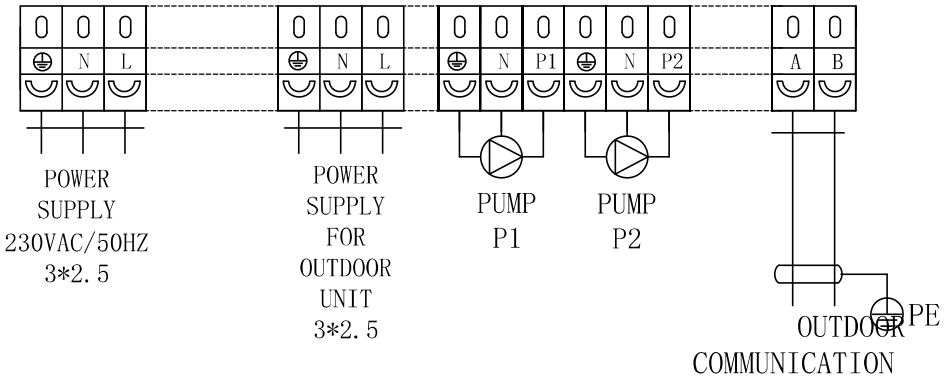


Two Temperature Zones ,without DHW,with a heating-only circuit,by setting the secondary pump to heating-only

2. Assembly Configurations – Drawing 10

Assembly 10: Wiring Diagram

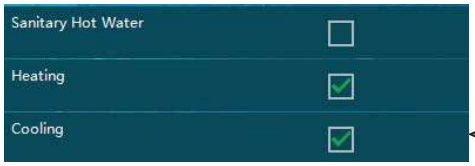
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2,please refers to the appendix A (on page 157-158) of this manual for more information.

Software: Basic Settings

1.Set the needed working modes of the unit via the menu 

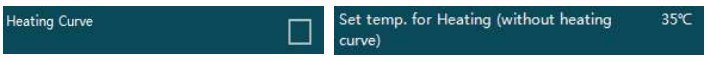


2.Temperature configuration options for Heating/Cooling circuit 1 are found under 

H.Configuring the set water heating temperatures:

H.1. Setting a heating curve:

H.2. If no heating curve is desired:



C.Configuring the set water cooling temperature (if applicable):

3.Locate and activate the buffer tank and appropriate pumps under 

If cooling function is desired, ensure these sections are configured.

2. Assembly Configurations – Drawing 10

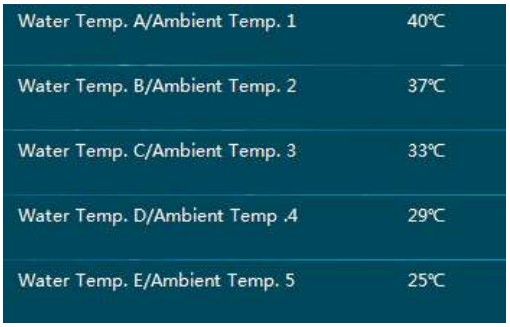
Software: Basic Settings (continued)

3.(cont.) Configure the water pump to operate for heating or cooling**:**

4. Temperature configuration options for Heating/Cooling circuit 2 are found under

H. configuring the set water heating temperatures:

H.1. Setting a heating curve**:**



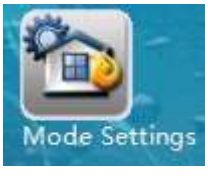
H.2. If no heating curve is desired:

C. Configuring the set water cooling temperature (if applicable):

4.1. Activate the mixing valve to manage the second circuit:

Note: This pair of settings will interpret "Heating/Cooling Circuit 2 as the low demand distribution system,requiring a lower set temperature for heating and higher set temperature for cooling.

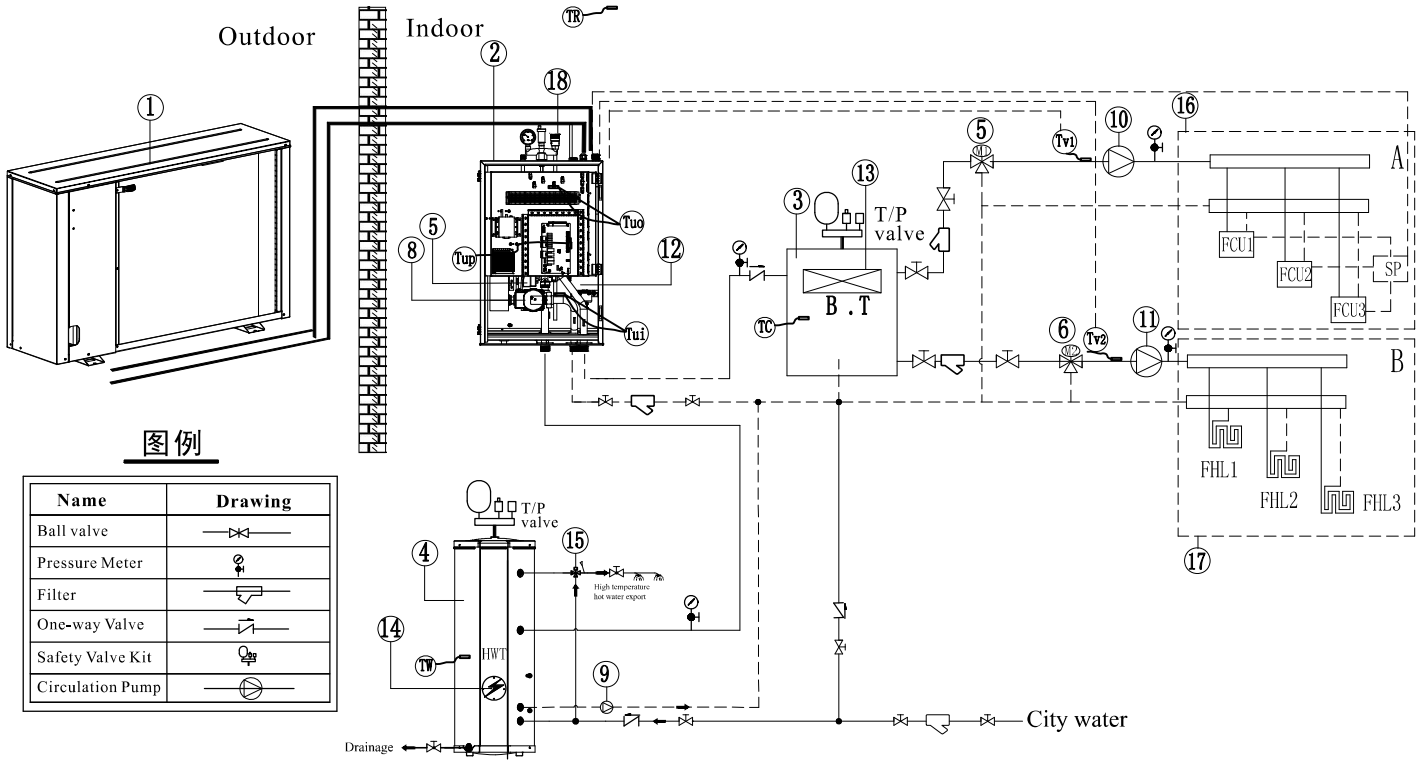
5. Double-check to ensure that the Domestic Hot Water option is enabled under



6. Configure the desired setpoint for water temperature (default set to 50°C):

3. Installation

3.1 General application system introduction



Item	Name
1	Outdoor
2	Indoor
3	Buffer tank
4	Sanitary hot water storage tank
5	3-way diverting valve
6	Mixture valve 1 (0~10V) for circuit 1
7	Mixture valve 2 (0~10V) for circuit 2
8	Circulation pump
9	Sanitary hot water circulation pump(if need)
10	Circulation pump for distribution circuit 1
11	Circulation pump for distribution circuit 2
12	AH-Auxilary heater inside unit
13	HBH-Heating Back-up Heater
14	HWTBH-Hot Water Tank Back-up Heater
15	Sanitary hot water mixture valve

Item	Name
16	Thermostat of district A
17	Thermostat of district B
18	Safety Valve Kit
TW	Hot water temperature
TC	Cooling or heating water temperature
TR	Room temperature
Tuo	Indoor unit outlet water temperature
Tui	Indoor unit return water temperature
Tup	Indoor unit coil temperature
Tv1	Temperature of water after mixture valve 1
Tv2	Temperature of water after mixture valve 2

3.1.2 Heating/cooling distribution system

Note:

Buffer tank is always recommened 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 distribution system, in order to:

1) Ensure heat pump unit has stable and enough water flow rate.
2) Store heat to minimize fluctuation of system heating/cooling load.
3) Extend the water volume of distribution system for proper working of heat pump unit.

If distribution syetem has enough water volume and can ensure the water flow rate of heat pump system, buffer tank can be excluded in the system.But in this way ,please move temperature sensor Tc (Cooling/heating temperature sensor) to water return pipe to minimize the fluctuation of water temperature caused by compressor speed changes.

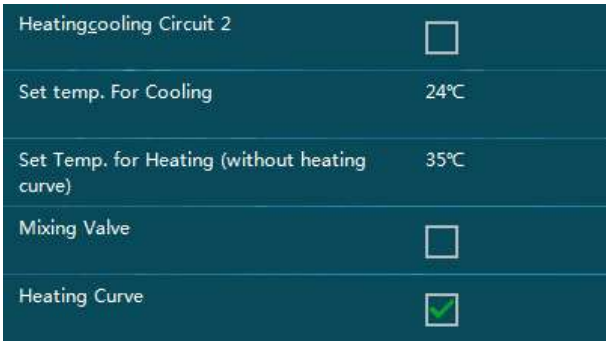
3. Installation

3.1.3 Heating&Cooling Circuits:

This heat pump unit can control two totally different heating/cooling circuit, as shown in the drawing.

Temperature setting can be made via menu “Heating & Cooling Circuit 1” and “Heating & Cooling Circuit 2”.

Of course, if only one circuit is needed, “heating&cooling circuit 2” in system drawing can be omit, and leave the “Heating&cooling Circuit 2” under “heating&cooling circuit 2” set to OFF:



3.1.4 Heating & Cooling Circuit 1

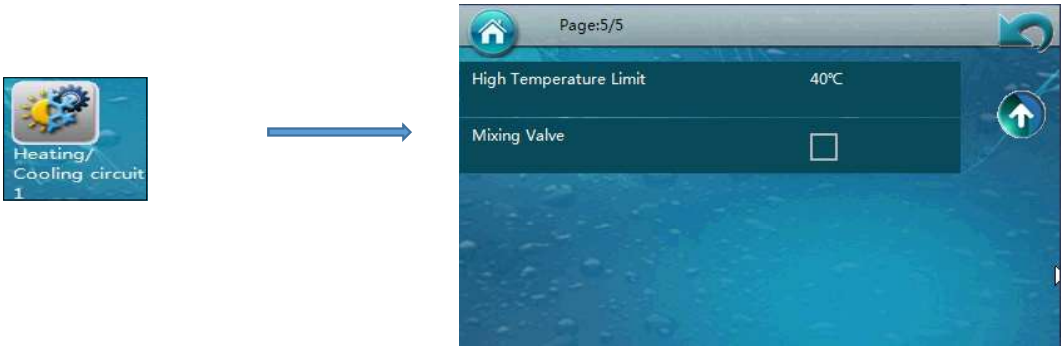
Control of Mixing Valve 1(MV1):

If system water temperature may higher(lower) than temperature that are need for circuit 1 in heating (cooling) operation, then a mixing valve can be add to circuit 1, and connected to MV1 port in indoor unit.

Unit will control the mixing valve, mix the supply and return water of circuit 1 to have the temperature read via sensor TV1 get to value set under menu “Heating & Cooling Settings circuit1”.

If so, TV1 under menu ““Heating & Cooling circuit1” should be activated under installer’s level:

3. Installation



Note: If TV1 is not connected, while it is activated via setting here, unit will show relative failure code.

3.1.5 Heating & Cooling circuit 2

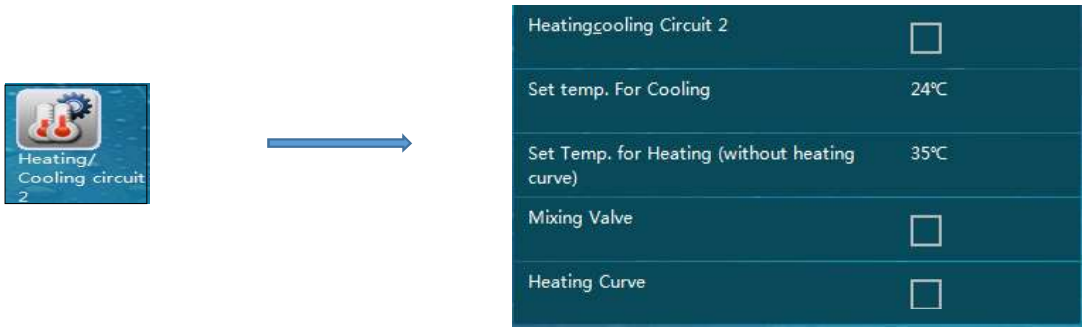
Control of Mixing Valve 2(MV2):

If system water temperature may higher(lower) than temperature that are need for circuit 2 in heating (cooling) operation, then a mixing valve can be added to circuit 2, and connected to MV2 port in indoor unit.

Unit will control the mixing valve, mix the supply and return water of circuit 2 to have the temperature read via sensor TV2 get to value set under menu "Heating & Cooling Settings circuit 2".

If so, TV2 under menu "Heating & Cooling Settings circuit 2" should be activated under installer's level:

Note: If TV2 is not connected, while it is activated via setting here, unit will show relative failure code.



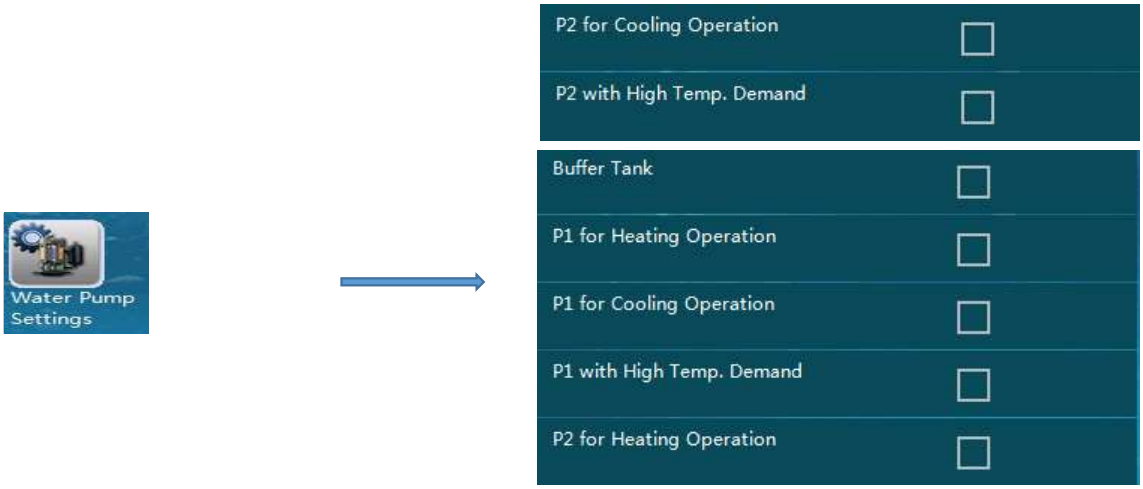
Tips:
When Mixing valve is needed?
In general, if system water temperature may higher(lower) than temperature that are need for this circuit, then a mixing valve is needed.

A.If a system has two circuits, these two circuits may require different water temperatures. Heat pump has to take the higher(lower) setting among two circuits as the set temperature for heat pump when it works in heating(cooling). Thus, a mixing valve is needed for the circuit that with lower(higher) setting to ensure it gets water with correct temperature circulates in the circuit.

B.If a system has other heating source inside that is out the control of heat pump (e.g. Solar system), as the actual water temperature may exceed the set temperature of heat pump, a mixing valve is also needed to ensure the circuit gets water with correct temperature circulates in the circuit.

3. Installation

Control of Circulation Pump for circuit 1&2:



"With/without Buffer Tank": Set whether it has a buffer tank between heat pump unit and distribution system or not.
"P1 for Heating Operation" means circuit pump for circuit 1should work for heating operation.
"P1 for Cooling Operation" means circuit pump for circuit 1should work for cooling operation.
"P2 for Heating Operation" means circuit pump for circuit 2 should work for heating operation.
"P2 for Cooling Operation" means circuit pump for circuit 2 should work for cooling operation.

If "without buffer tank" is set, both P1(circulation pump for circuit 1) and P2(circulation pump for circuit 2) will only work when compressor is working in the same mode as the pump is set to. For example, if P1 is set to "P1 for Heating Operation", P1 will be turned ON only when compressor is working in heating mode. If both "P1for Heating Operation" and "P1 for Cooling Operation" are both selected, P1 will be turned ON when compressor is working in both heating and cooling mode. When heat pump switches to DHW mode or stops after get the set temperature for heating or cooling, pump stops.

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

Actual temperature in buffer tank detected via Tc ≥20℃ in heating. Only 20℃and above can be useful for distribution system in heating operation.
Actual temperature in buffer tank detected via Tc ≤23℃ in cooling. Only 23℃ and belowcan be useful for distribution system in cooling operation.

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

"Working of P1(2) with High Demanding Signal" means whether P1(P2) should stop if signal for "high demanding" is off. For detailed meaning of "High Demanding Signal", please refers to part "D" of "Terminal Block 4" of chapter "2.5.1", "High demanding distribution system switch".

3.1.6 Room temperature sensor:

Room temperature sensor (Tr) is recommended to be placed in a ideal position of the house to check the room temperature. Thus the unit can have room temperature control mode (please refers to 9.04 Basic Operation), and room temperature compensate function (please refers to 1.16 Room temp. effect on Heating Curve).

3. Installation

3.2 Notice before installation of R32 system

1. Preparation

1.1 Before installation, please take measures for anti static purpose, such as wearing antistatic gloves.

1.2 Before installation, please check the system with leakage detector to ensure that no leakage happens.

2. Tools needed

2.1 Tools for installation include screw driver, spanner, pressure gauge, vaccum pump, specific leakage detector for R32 system, etc.

3. Installation

3.1 Requirement

1) Keep good ventilation in the field.

2) Fire and any heat source which may cause fire should be eliminated within 2 meters surrounding the heat pump unit, including soldering work, smoke, oven, etc.

3) During installation, installer should carry out antistatic solution, such as cotton cloths, cotton gloves,etc. Don't use mobile phone within 2 meters surrounding the heat pump unit.

4) Please always try to install heat pump at somewhere easy for service. Make sure that no barrier is blocking air inlet and outlet of heat pump unit and don't put the heat pump close to any heat source or explosive items.

5) In case there is any leakage during installation, close the refrigerant valves on outdoor unit and leave the field (don't stay indoor). Wait until 15 minutes after leakage stops. Check status of heat pump and if it is damaged, send it back to distributor for maintenance. It is forbidden to carry out soldering work for refrigerant system at installation field.

6) Install the indoor unit at place with good ventilation.

7) For track where wiring is going, please try not to put following staffs, including power socket, electrical devices, cabinet, bed, etc.

3.2 Procedure of installation.

1) Refrigerant pipe connection.

Please use lock nut at refrigerant connection of indoor unit. Refer to below pictures.

2) Vacuum the system (same procedures as for R410A system).

3) Extension of refrigerant pipe.

When extension of refrigerant pipe is needed, follow the instruction by manufacturer to add additional refrigerant and coolant when needed.

3.3 Test run

1) Check and verify wiring after installation.

2) Before starting the unit, have a leakage detection of refrigerant system again.

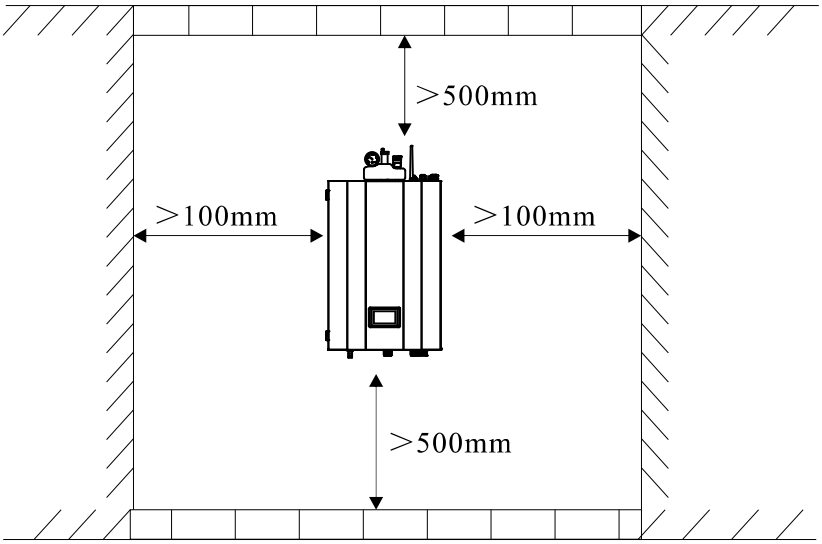
3. Installation

3.3 Installation of the indoor unit

3.3.1 Installation notes

1) The indoor unit should be installed indoors and mounted on the wall, with water outlet downwards.
2) The indoor unit shall be placed in dry and well-ventilated environment.
3) Indoor unit mustn't be installed in an environment where volatile, corrosive or flammable liquid or gas exists.
4) It's recommended to install indoor unit close to water supply system.
5) Enough space should be left around the indoor unit for futher maintenance.

Please choose a suitable position to install the indoor unit as follows:



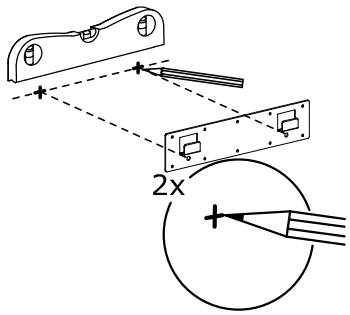
3.3.2 Installation

Indoor unit should be mounted on the wall as per procedures below:

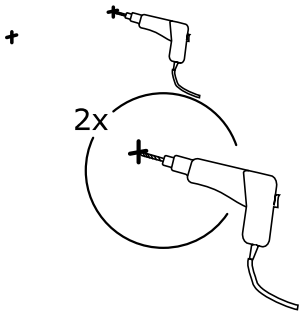
1) Take out the expansion bolts and mounting board from accessory and put the mounting board on the wall horizontally; Mark on the wall the location for bolts through the holes on mounting board.
2) Drill holes with proper diameter for expansion bolts.
3) Unscrew the nuts out from the expansion bolts.
4) Fix the mounting board on the expansion bolts a little bit, but don't be too tight.
5) Use a hammer to pound the expansion bolts into the drilled holes. Fasten the nuts by turning the wrench to fix the mounting board on the wall.
6) Hang the indoor unit onto the mounting board and make sure it's placed well before you let go your hands. The installation is finished.

3. Installation

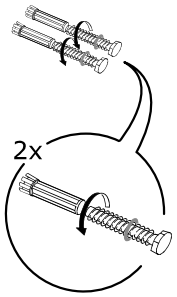
1



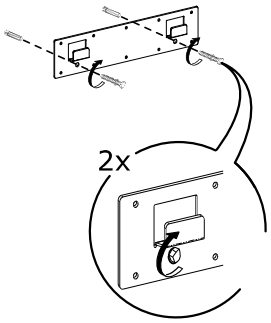
2



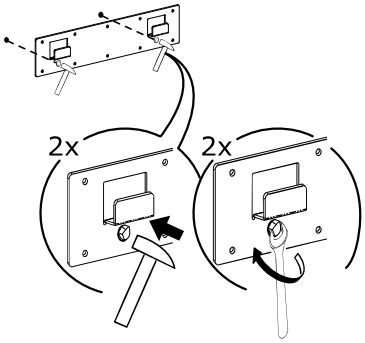
3



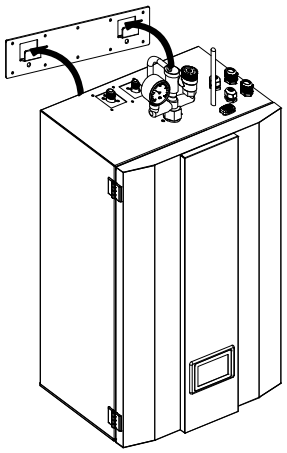
4



5



6



Note:

You must choose very firm wall for installation otherwise the bolts may get loose and unit be damaged!

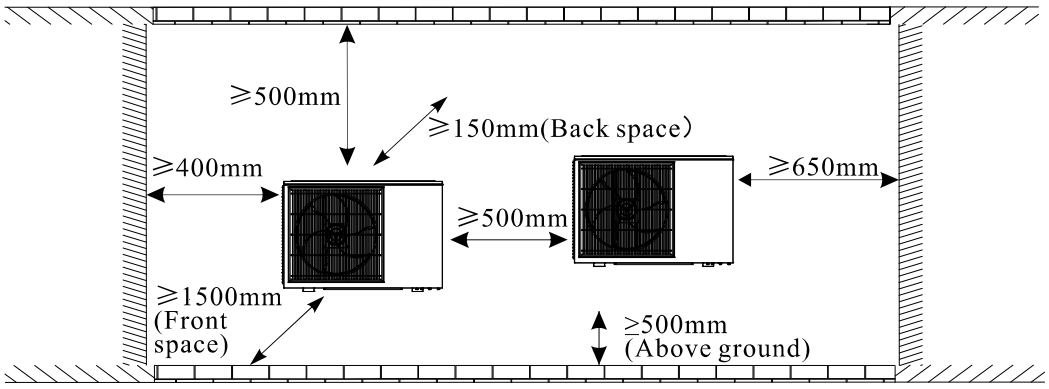
If it's wood wall, please use self-tapping screws in accessory instead of expansion bolts. Please hang the mounting board directly onto the wood wall without drilling holes. The wood wall must be firm enough. Wood walls that are too thin, too brittle or humid are not adequate for installation.

3. Installation

3.4 Installation of the outdoor unit

3.4.1 Installation notes

1) The outdoor unit can be located in a open space, corridor, balcony, and roof or hanged on the wall.
2) The outdoor unit shall be placed in 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 outdoor 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 outdoor 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 lcm/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 indoor and 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 outdoor unit, for better ventilation and maintenance. Please refer to the illustration below.

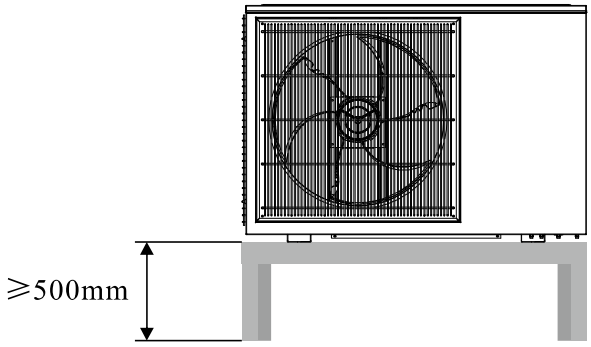


3. Installation

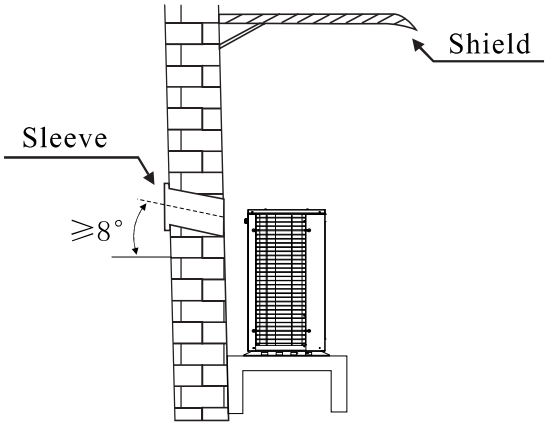
3.4.2 Installation

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 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. Installation

3.5 Accessories

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

Name	Quantity	Picture
User's manual	1	
Drain pipe	1	
Safety valve kit	1	

Name	Quantity	Picture
TR-Room temperature sensor + communication cable	1	
TC-water temperature sensor for cooling and heating + communication cable	1	
TW-water temperature sensor for sanitary hot water + communication cable	1	
TV1-water temperature sensor after mixture valve 1 + communication cable TV2-water temperature sensor after mixture valve 2 + communication cable	1	
Communication cable between indoor and outdoor unit	1	
WIFI antennae	1	
brass screws	2	
Anti-remove nut 1	2	
Anti-remove nut 2	2	
Water connector	1	

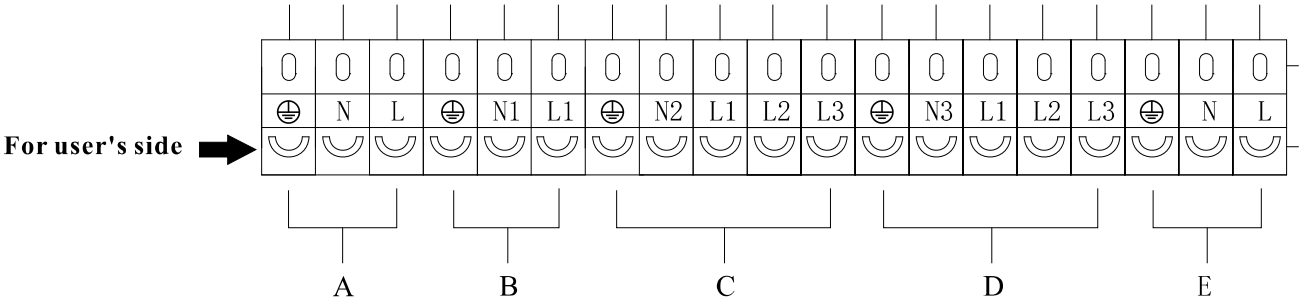
Name	Quantity	Picture
Indoor unit bracket	1	
Expansion bolts	2	
Screws	10	

3. Installation

3.6 Wiring

2.6.1 Explanation of terminals

1) Terminal block 1



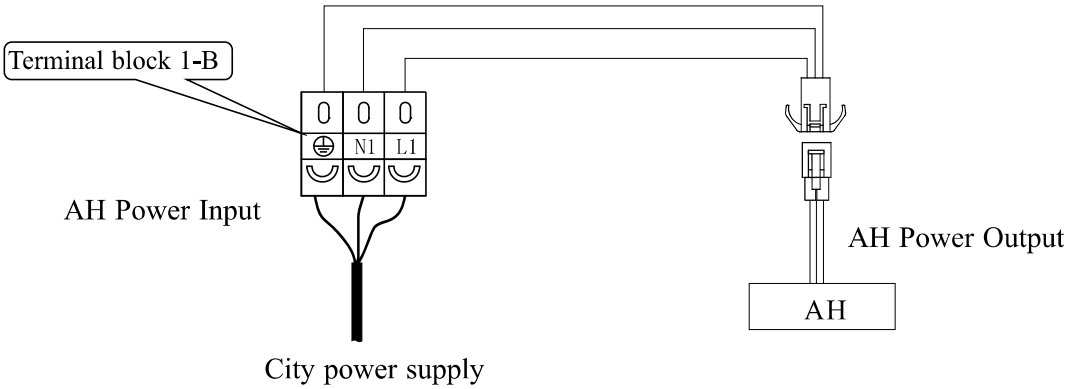
A: Unit power supply

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

6/9/12kW: City power supply should be connected to indoor unit with power cable not thinner than $3\times2.5mm^2$.

B: Power supply for AH-Auxiliary heater inside unit($3\times1.5mm^2$, city power input)

This should be connected to city power supply, 1 phase. It is for giving the power to auxiliary heater inside the indoor unit.

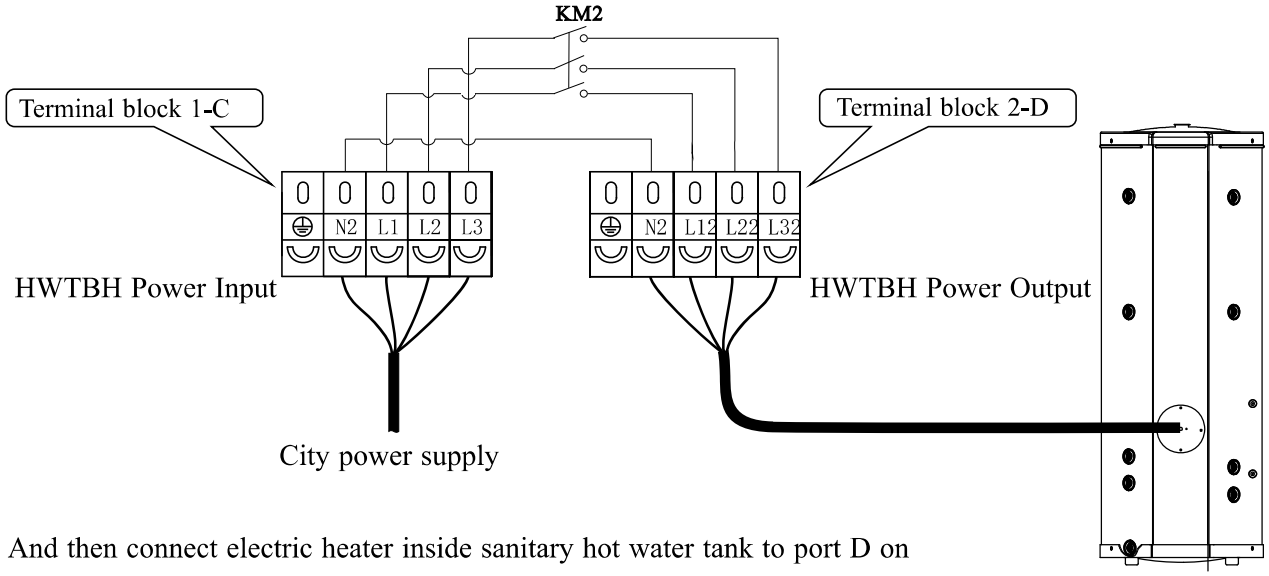


C: Power supply for HWTBH-Hot Water Tank Back-up Heater ($5\times1.5mm^2$, city power input)

If sanitary hot water tank has electric heater inside, one can connect this heater to heat pump unit, so to have it under the control of heat pump.

In that way, city power input (1 phase or 3 phase) should be connected to this port "Electrical Heater Power Supply for Hot Water with cable dimension depending on the El. Heater type[2]".

3. Installation



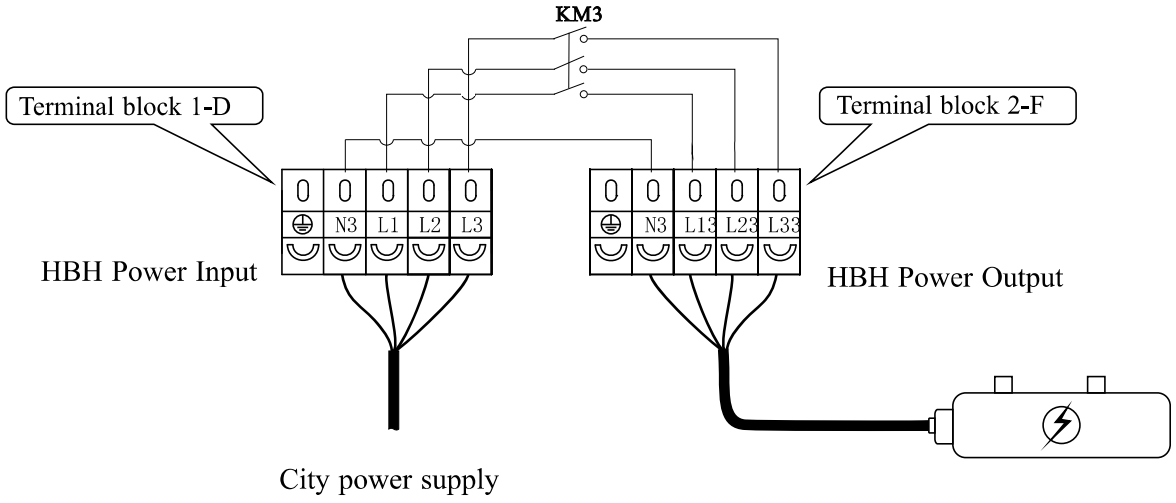
And then connect electric heater inside sanitary hot water tank to port D on terminal block 2.

D: Power supply for HBH-Heating Back-up Heater (5×1.5mm², city power input)

When the house heating system also has a electric heater as a back-up, then this heater can also be connected to heat pump unit and under heat pump' s control.

In that way, city power input (1 phase or 3 phase) should be connected to this port "Reserved Electrical Heater Power Supply 5×1.5mm², and then heater should be connected to port E on terminal block 2.

PS: If external heating source (on house heating circuit or hot water circuit) is not electric heater but other heating sources, we can also connect it to the heat pump like this if they can be controlled by electric signal, to have them under the control of heat pump.

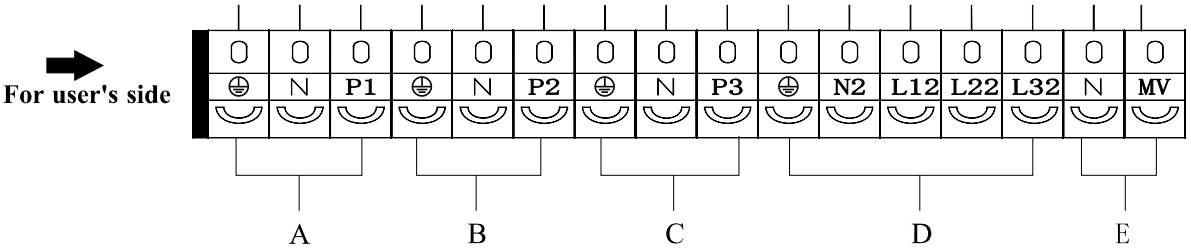


E: Outdoor unit power supply (3×2.5mm², output)

6/9/12kW:Outdoor unit power cable should be connected with these terminals so to get power from indoor unit.

3. Installation

2) Terminal block 2



A, B, C: Water Pump
A-Pump 1: Pump for Heating & Cooling Circuit 1,
B-Pump 2: Pump for Heating & Cooling Circuit 2,
C-Pump 3: Pump for sanitary hot water production

If there is an external water pump in heating, cooling and hot water system, it can be connected to these ports, to be under the control of heat pump,

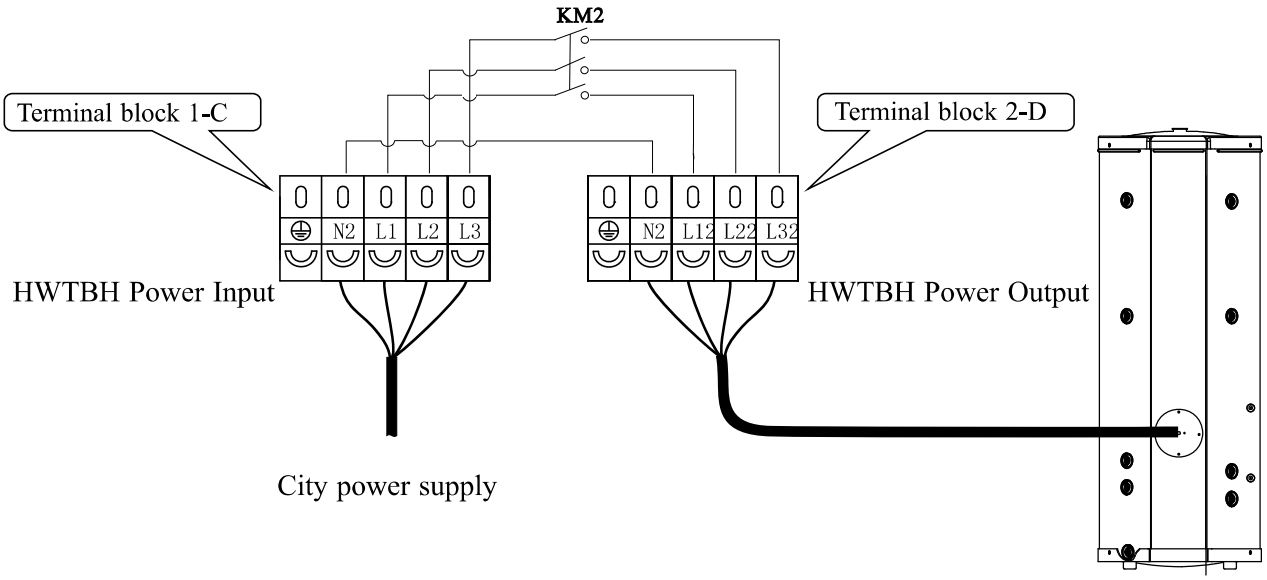
D: Power supply for HWTBH-Hot Water Tank Back-up Heater (power output)
Refer to explanation of port C of terminal block 1.

E: Valve
3-way motorized valve diverting the water.

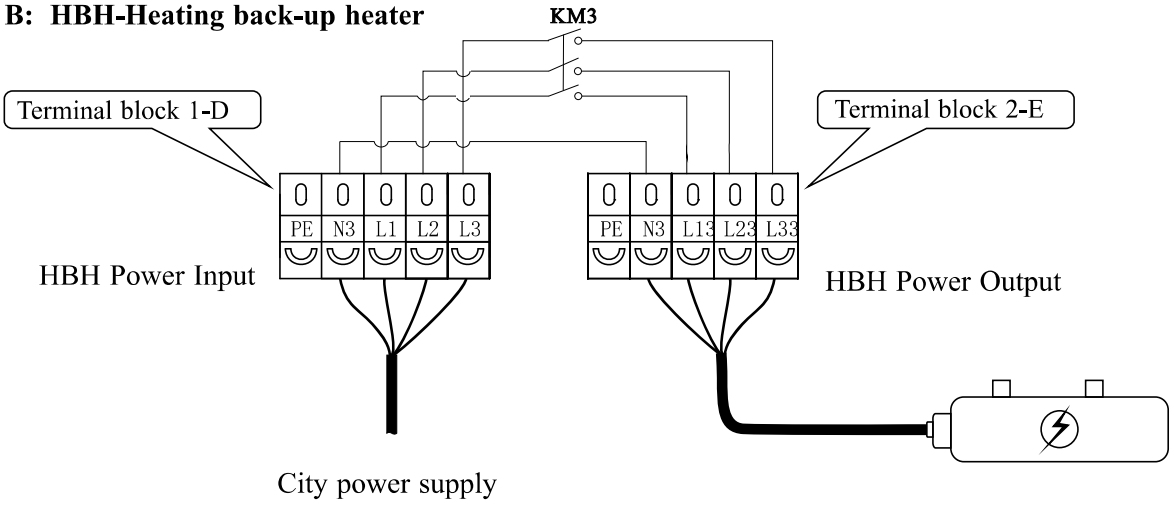
3. Installation

Explanation of connectors for other heating sources

A: HWTBH-Hot water tank back-up heater

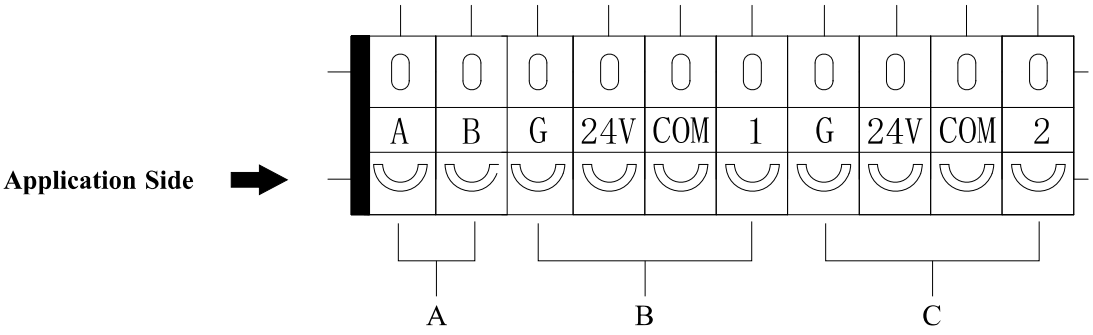


B: HBH-Heating back-up heater



3. Installation

3) Terminal block 3



A: Communication cable to outdoor unit

Please connect A and B together with A and B on outdoor unit.

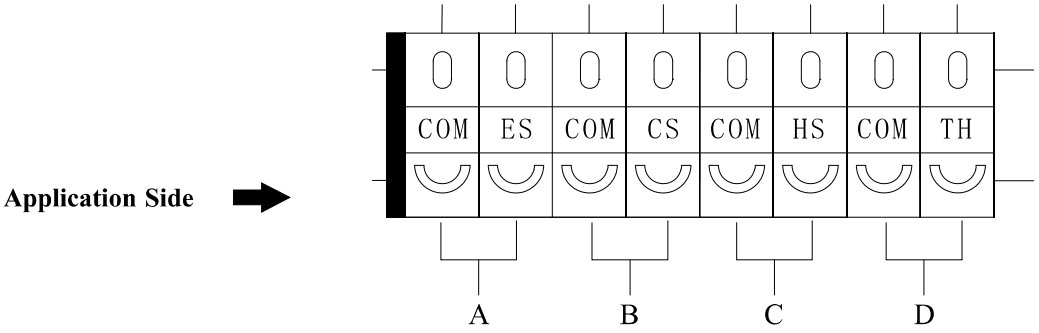
B,C: Motorized mixing valve 1&2:

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

Water mixture valve 1 is for Heating & Cooling circuit 1.
Water mixture valve 2 is for Heating & Cooling circuit 2

3. Installation

4) Terminal block 4



A: Electrical Utility Lock Input

Some electricity companies offer a special rate if the house power consumption is lowered to a certain value during peak time. If the unit is supposed to stop working during this period, one can connect the signal from electricity company to this "External Shutdown" port and use the parameter setting to activate this function.

B, C: Cool model & heat mode switch-over

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

For ambient temperature switching, please refer to part 1.06 of introduction of user's interface for detailed setting.

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

D: High demanding distribution system switch

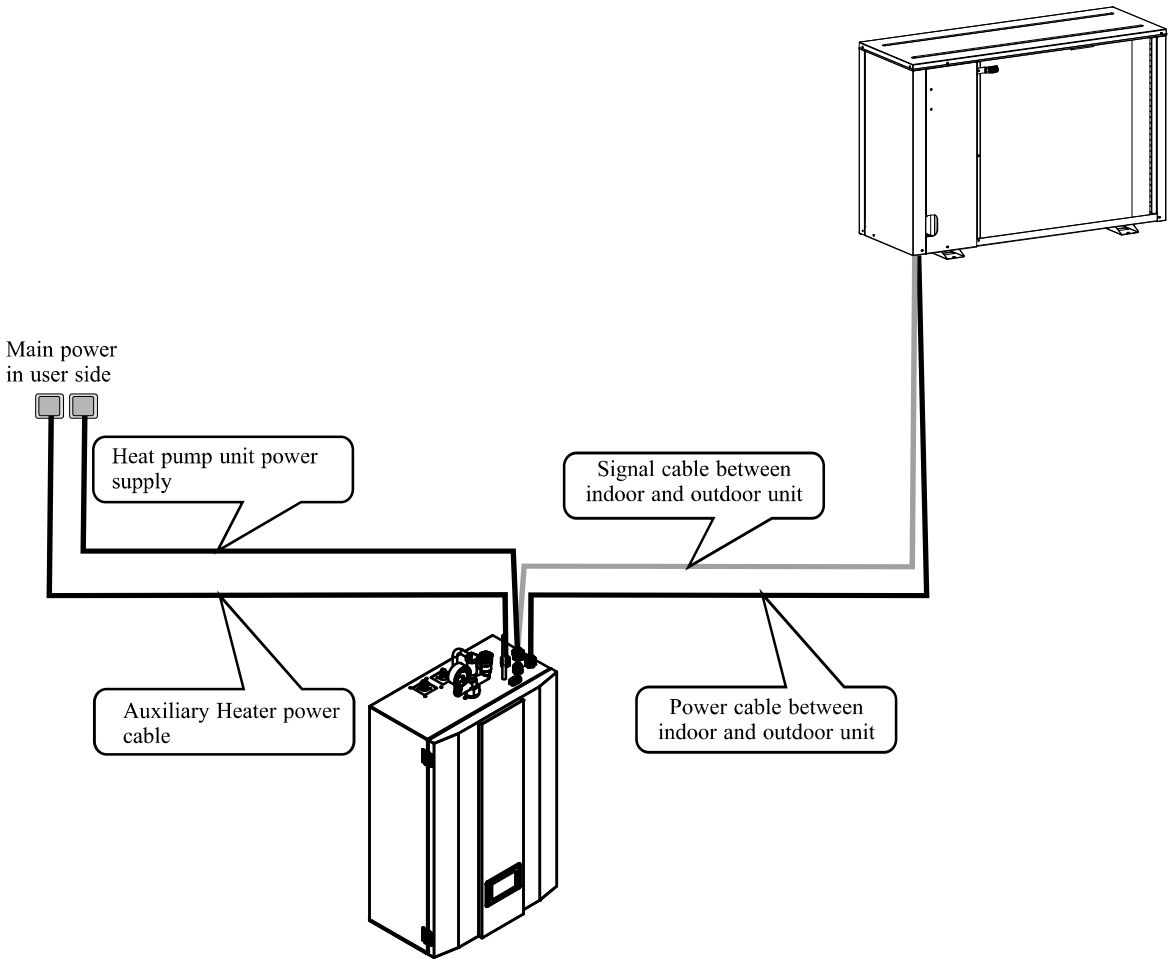
- When two heating distribution systems are connected, unit should always take the set temperature for high demanding circuit, which needs higher temperature in heating and lower temperature in cooling operation, as the set temperature for the heat pump unit.
- However, when this high demanding circuit is not needed or has reached the set temperature, heat pump unit can switch the heat pump set temperature to the values set for the other circuit, for better efficiency.
- This set of connector is used to receive the signal from high demanding circuit, if has.
- When "CLOSE" signal is received, unit works with high demanding.
  When "OPEN" signal is received, unit works with low demanding.

3. Installation

3.6.2 Wiring

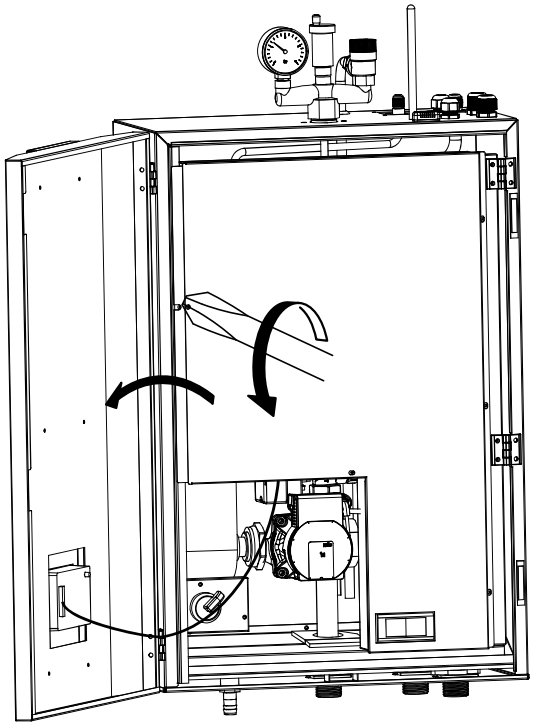
- ◆ It is recommended to use a suitable circuit breaker for the heat pump;
- ◆ The power supply to the heat pump unit must be grounded.
- ◆ The wiring should be done by professional person.
- ◆ The wiring should be complied with the local industry regulation.
- ◆ The wiring should be done after the unit 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.

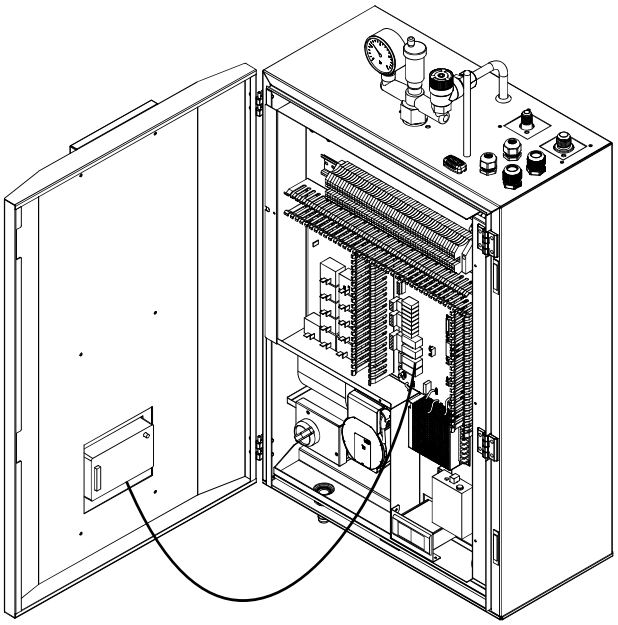
Installation sketch



3. Installation

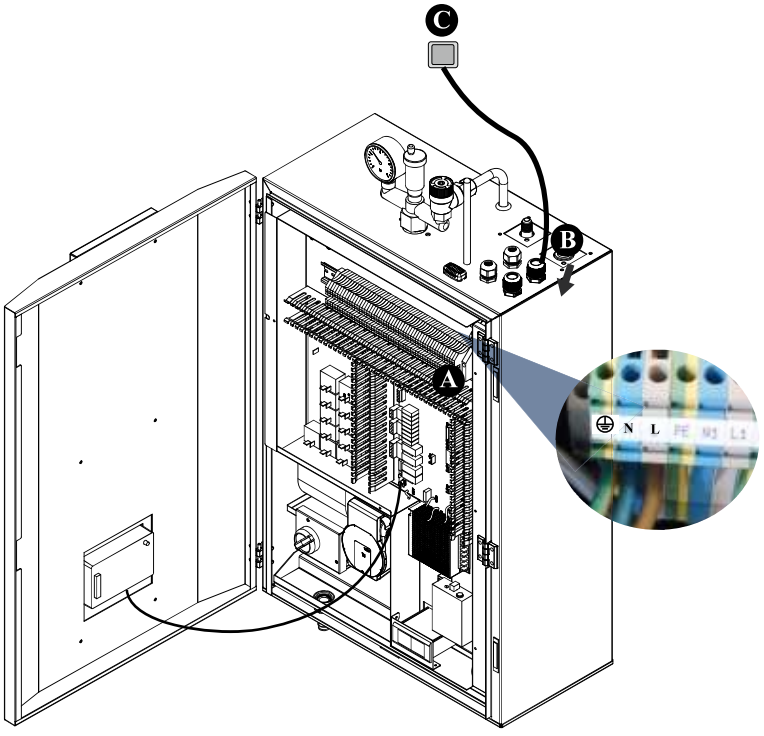
Before wiring, open the indoor unit front panel and take off the electronic box cover.





1) Heat pump unit power supply

Get a power cable in suitable length that complies to the local safety regulations.



A. Insert one end of this cable through the cable gland on bottom of the indoor unit, and connect it with heat pump power supply terminals (PE, N, L).

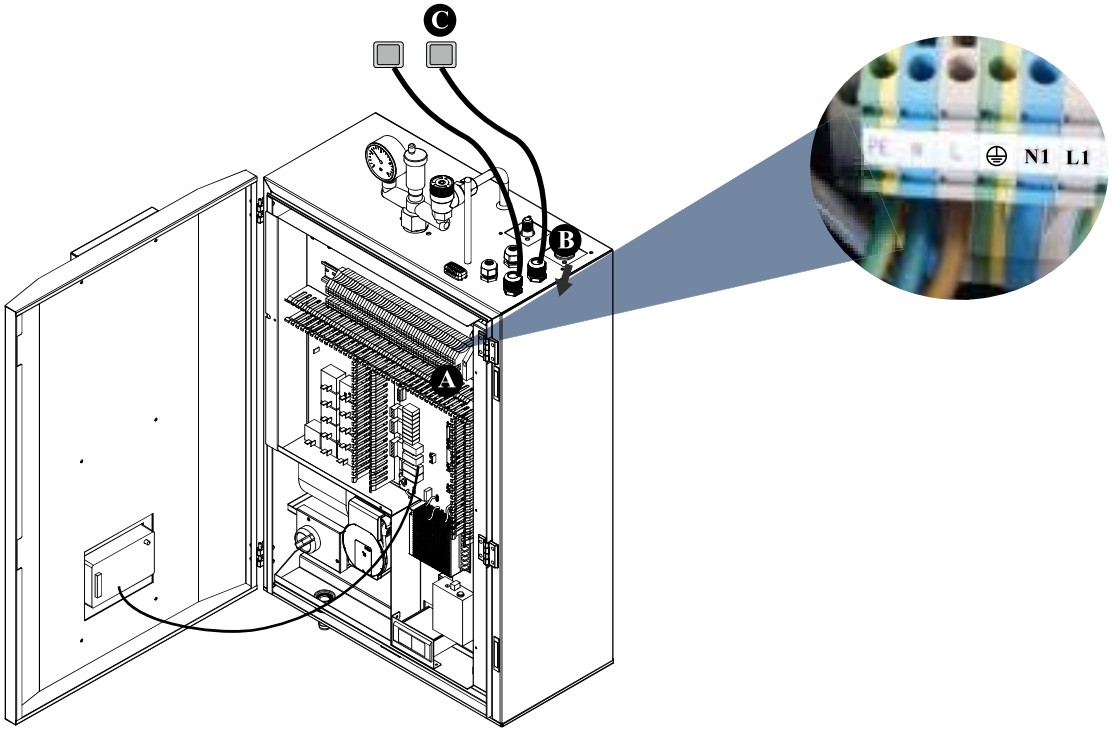
B. Fasten the cable gland to ensure the cable won't get loosen.

C. Connect the other end to the city power supply.

3. Installation

2) Auxiliary Heater power cable

Get a power cable in suitable length that complies to the local safety regulations.



A. Insert one end of this cable through the cable gland on bottom of the indoor unit, and connect it with AH power supply terminals (PE, N1, L1).

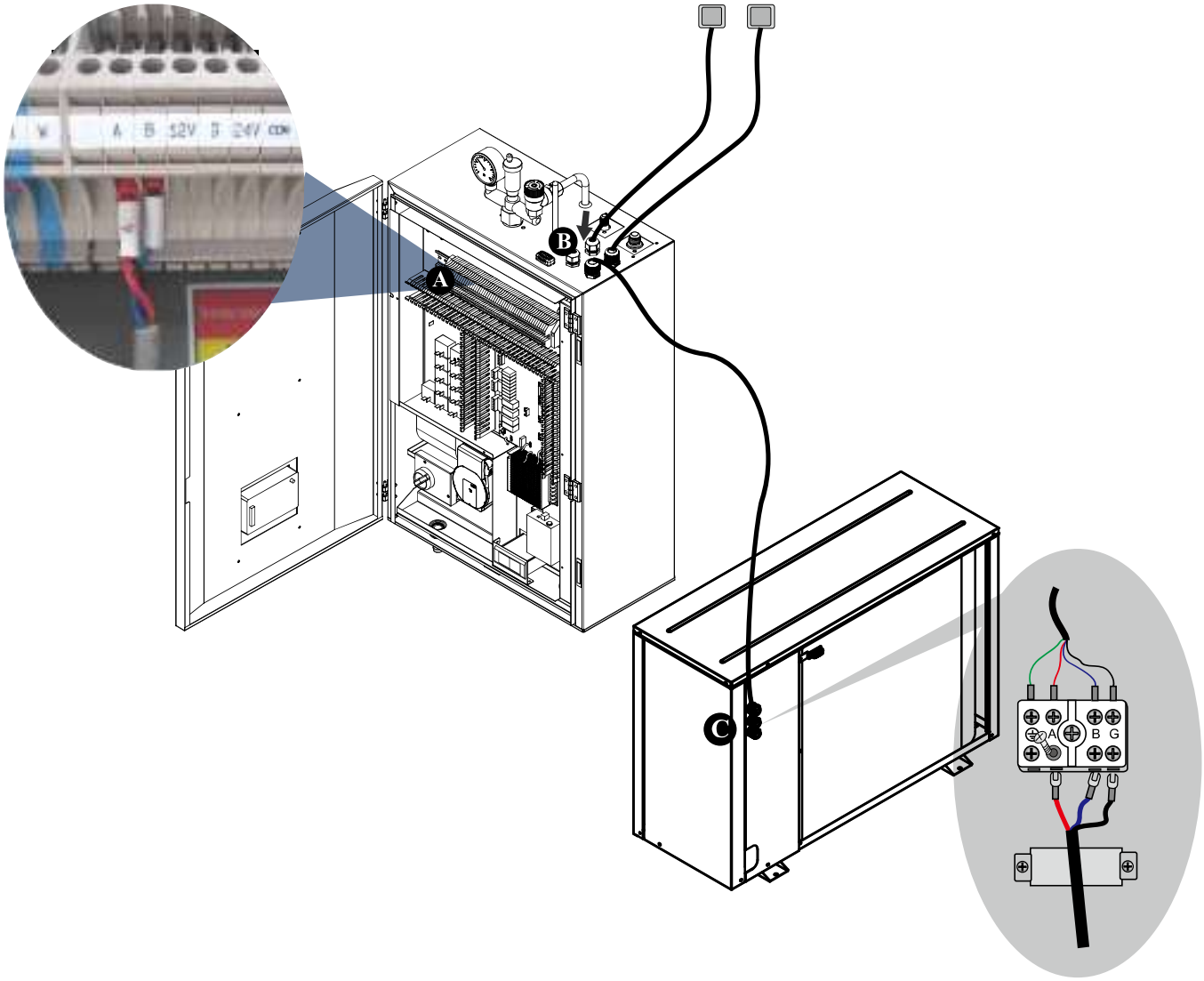
B. Fasten the cable gland to ensure the cable won't get loosen.

C. Connect the other end to the city power supply.

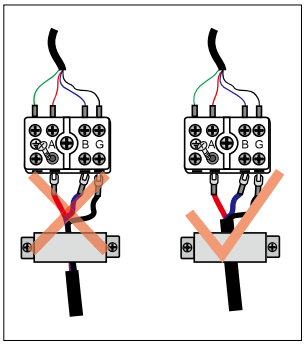
3. Installation

3) Signal cable between indoor and outdoor unit

Take the signal cable out from accessories bag.



Notice: When fixing the power cable with the wire clip, please be careful to clamp on the outer layer insulation, don't clamp on the wires inside, or it may cause damage on insulation layer of one-core wire.



A. Insert one end of this cable through the cable gland on bottom of the indoor unit, and connect this cable to A and B on terminal block.

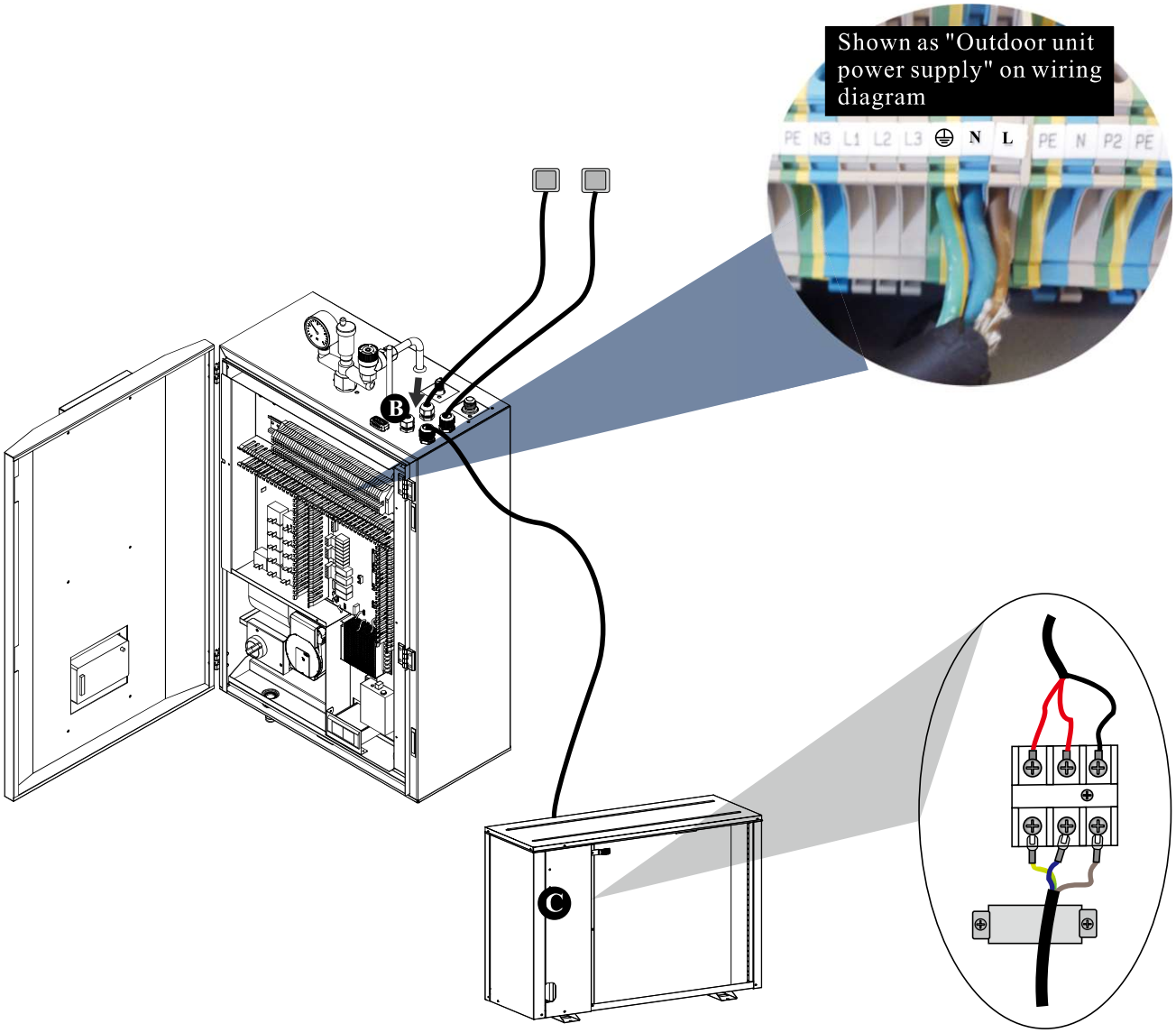
B. Fasten the cable gland to ensure the cable won't get loosen.

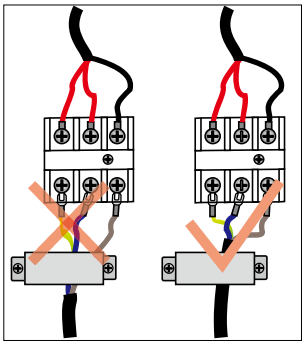
C. Connect the other end to the terminal block on outdoor unit A and B on outdoor unit should be connected with A, B and G on indoor unit, otherwise unit will show communication failure.

3. Installation

4) Power cable between indoor and outdoor unit

Prepare a 3 cores power cable with suitable length that complies the local safety regulations,





Notice: When fixing the power cable with the wire clip, please be careful to clamp on the outer layer insulation, don't clamp on the wires inside, or it may cause damage on insulation layer of one-core wire.

A. Insert one end of this cable through the cable gland on bottom of the indoor unit, and connect this power cable to "Outdoor unit power supply" on indoor terminal block.

B. Fasten the cable gland to ensure the cable won't get loosen.

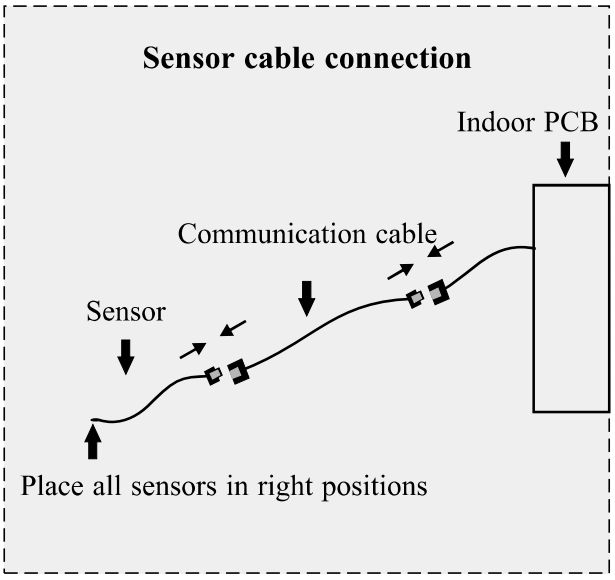
C. Connect the other side of the power cable to the outdoor unit, according to the wiring diagram. Fix the cable with cable fixture, to ensure it won't get loose.

3. Installation

When connecting the power cable between the outdoor unit and indoor unit, cables connected to the terminal block in indoor unit must match these in outdoor unit.
For example, if the terminals and power cables are connected as ⏚→gree/yellow cable, L→ red cable, N→blue cable, S→black cable in indoor unit, the connections in the outdoor unit should be in the same way.

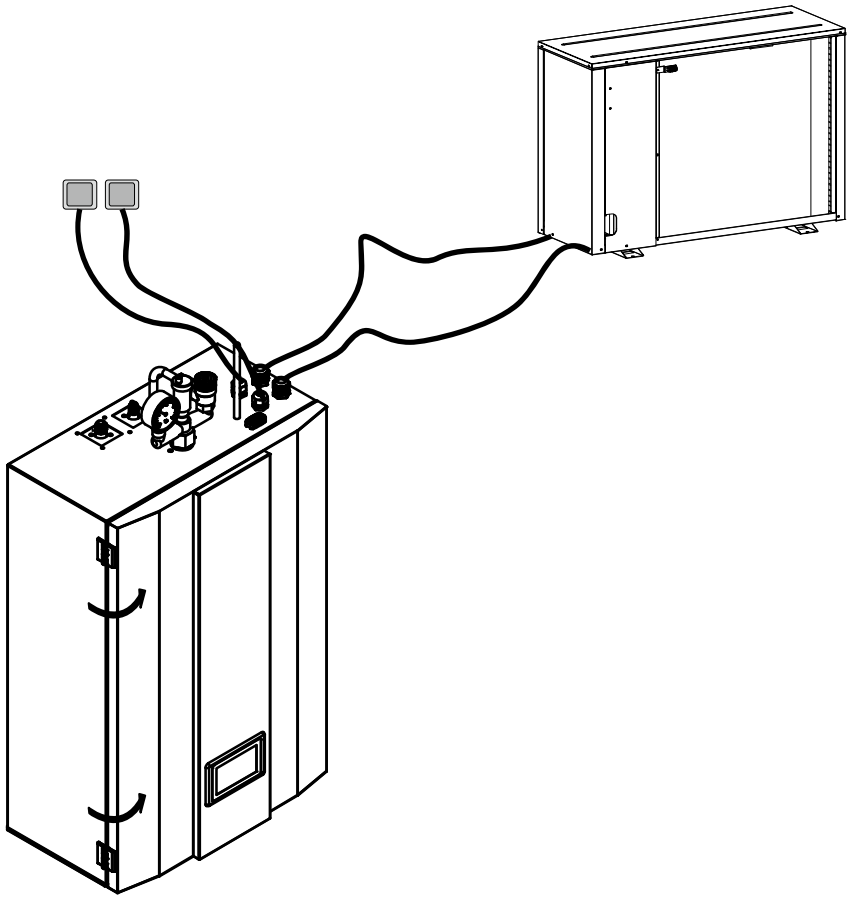
5) Sensor cables

Take all sensors and communication cables out from the accessories bag. Connect the sensors together with the communication cable, and insert the end with connector into the indoor unit through cable gland. Connect them with the quick connector inside the indoor units, and place all sensors in right positions. Fasten the cable gland after installation.



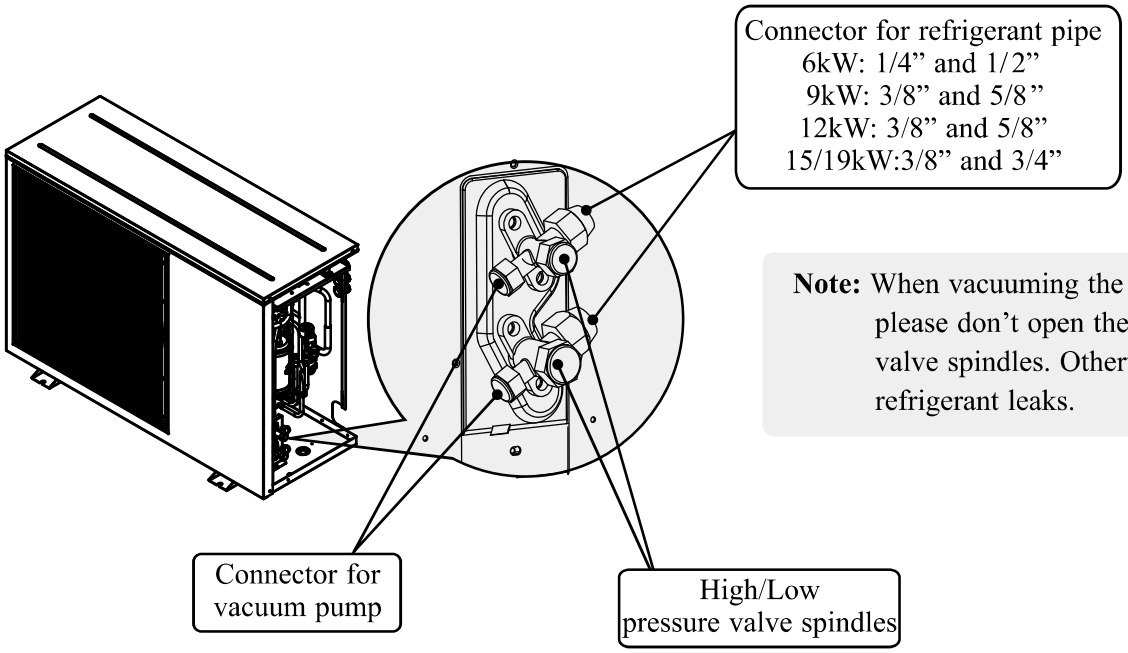
3. Installation

Install the electric box cover on indoor unit and small handle on outdoor unit back, and close the door of indoor unit.



3. Installation

3.7 Connection of refrigerant pipe



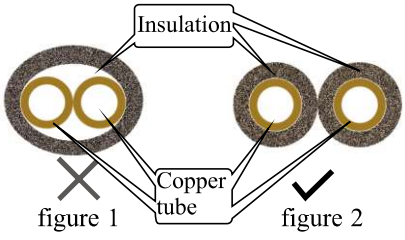
Note: When vacuuming the system, please don't open the high/low valve spindles. Otherwise refrigerant leaks.

3.7.1 Precaution

The refrigerant pipe transfers heat in the whole system. Incomplete vacuum or leakage of refrigeration system will lead to low performance, so please pay special attention to the following:

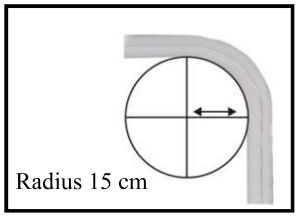
A. Choose high quality refrigerant pipe, which conforms to the pressure requirements of R32
B. Please well insulate the refrigerant pipe before connection.
C. Check strictly the joints of refrigerant pipe, to avoid leakage.
D. Try to avoid excessive bending of the refrigerant pipe, to ensure smooth circulation of refrigerant.
E. Please dry the refrigerant pipe before connection, to avoid moisture in the pipe.
F. If there is a wall between indoor and outdoor unit, please drill a hole on the wall, place a wall sleeve in the hole and then run the refrigerant pipe through the wall sleeve.

G. When insulating the refrigerant pipe, please insulate each pipe separately (refer to figure 2 below), don't insulate the refrigerant pipes together (refer to figure 1 below).



F. **IMPORTANT:**

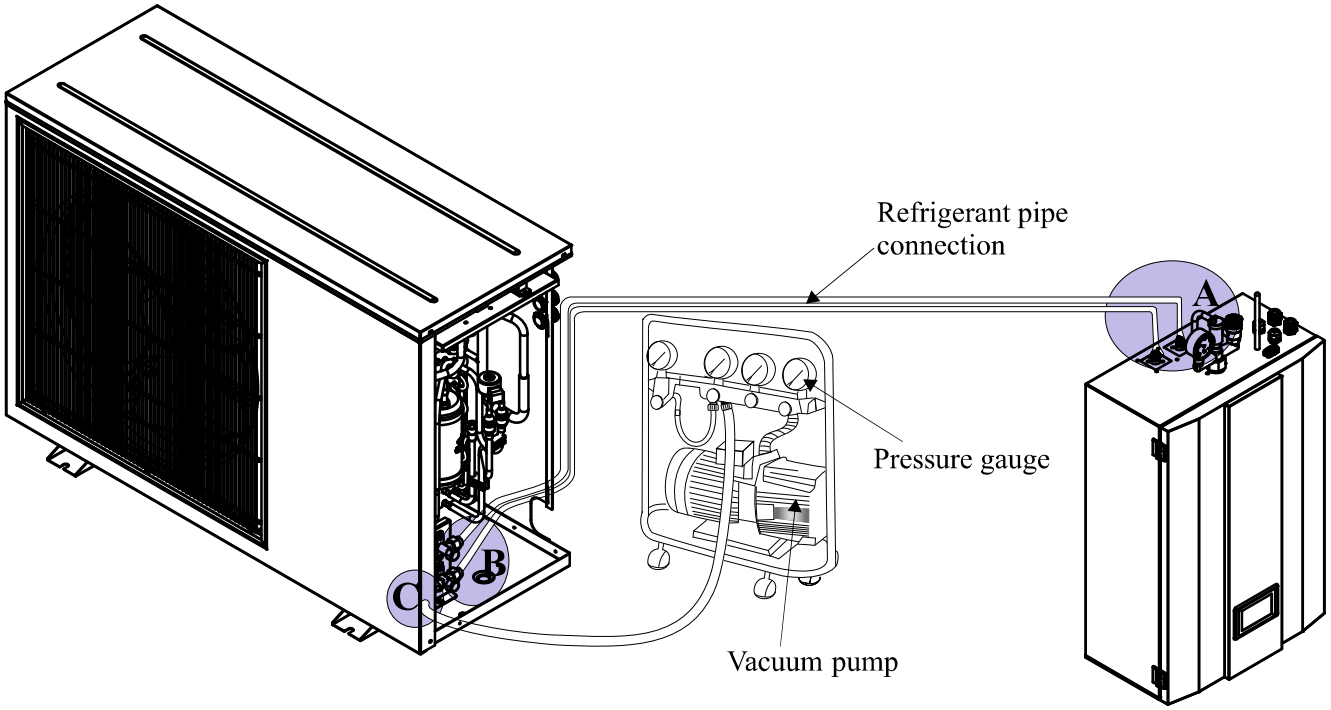
The radius at pipe bends must not be less than 15 cm. Use a cardboard template to check this. Run the power cord along with the pipes. Create the bends gradually and carefully. Do not bend the pipe straight across, for example, to the edge of the hole in the wall.



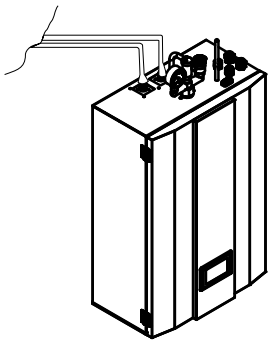
3. Installation

3.7.2 Installation

Please connect the refrigerant pipe as follows:

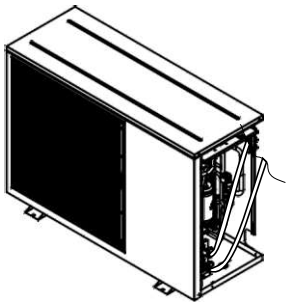


A



Connect the refrigerant piping to the indoor unit.

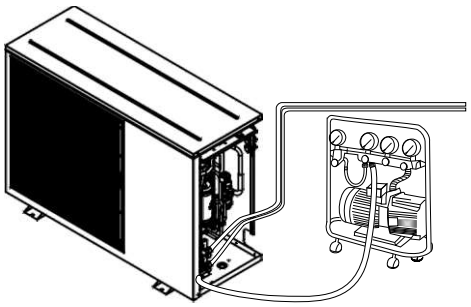
B



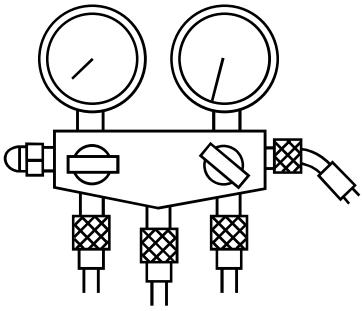
Connect the other ends of the refrigerant pipe to the outdoor unit.

3. Installation

C

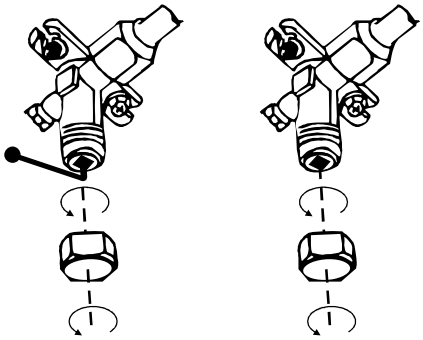


Prepare a vacuum pump and a pressure gauge, connect one tube of the pressure gauge to the vacuum pump. The other side should be connected to high pressure refrigerant connector on outdoor unit.

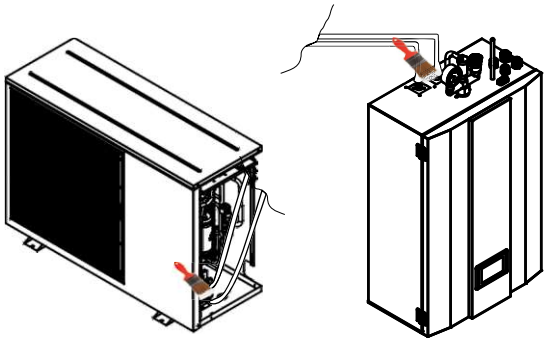


Open pressure gauge, and start the vacuum pump to vacuum the unit for around 10 minutes. When the pressure gauge shows negative pressure, close the pressure gauge and stop vacuuming.

Turn off the vacuum pump, disconnect tubes of pressure gauge, and install the copper nut back to the high pressure connector.



Take off the copper nut of the gas and liquid valves, open the valves with hexagon spanner as much as possible.



Check with leakage detector or soap water if there is any leakage. If not , then put back the copper nuts onto the valves.

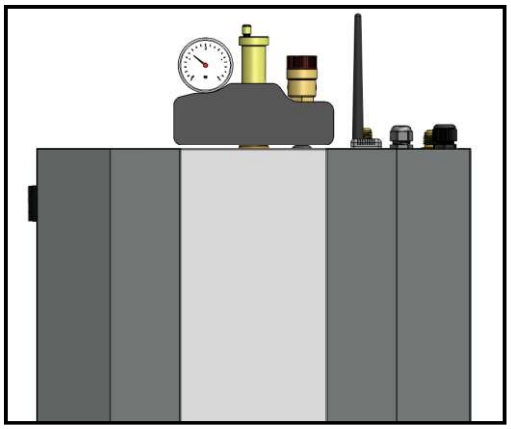
3. Installation

Gas piping length and gas amount for 6/9/12/15/19kW R32 split unit		
Model no.	**R32 gas piping length and gas amount**	**Model no. of compressor oil**
6kW **9kW** **12kW**	1. The gas in the unit is enough for 7.5m long pinping, if the piping is beyond 7.5m, please add 30g per meter. 2. It's recommended that the gas piping should not exceed 20m.	FW68S (The oil in the compressor is enough for 20m long piping)
15kW **19kW**	1. The gas in the unit is enough for 7.5m long pinping, if the piping is beyond 7.5m, please add 50g per meter. 2. It's recommended that the gas piping should not exceed 20m.	

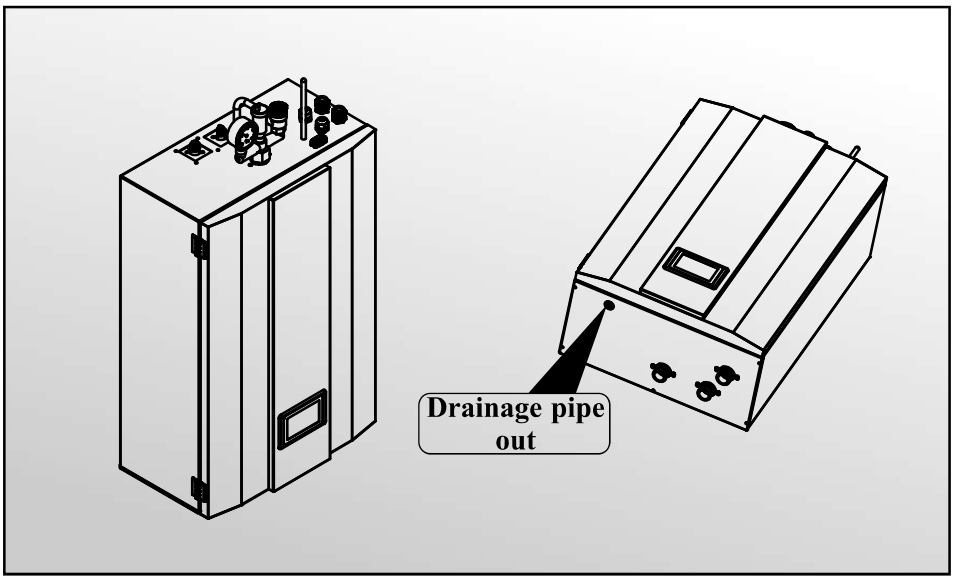
3. Installation

3.8 Installation of safety valve kit

1) Install the safety valve kit to the connector on top of indoor unit.



2) Have the drainage pipe out from the hole on the bottom by going through the unit.



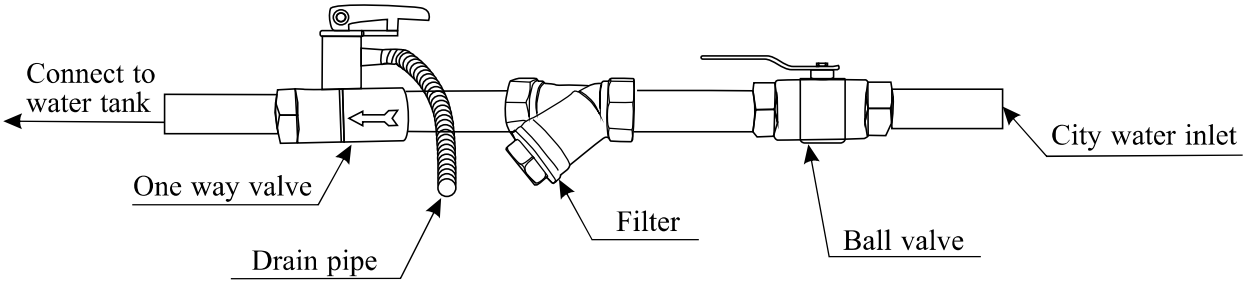
3. Installation

3.9 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℃).
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.

3. Installation

3.10 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 ,otherwise unit may go into protection mode easily.

4. Usage

1. Coil Temp. too low

This is indoor coil temperature too low. This happens in cooling operation of the unit. Too low coil temperature may make the water freeze up inside plate heat exchanger and cause damage. Compressor speed down if coil temp. lower than 2℃; Compressor stops if coil Temp. lower than 1℃; Compressor restarts if coil Temp. higher than 6℃. When this happens, please:

A. Check whether set temperature for cooling is too low; whether system has too small water flow rate; check water system especially the filter.

B. Check whether system has not enough refrigerant inside by measuring the evaporating pressure.

C. Check whether ambient temperature is lower than 15℃.

2. Water flow rate too small

System water flow rate is less than minimum allowable flow rate. Check the water system, especially the filter; check the working status of water pump.

3. Water flow switch failure

Water flow switch should be in open mode when unit circulation pump is working. If not, the unit think the flow switch itself is broken. Check whether flow switch is broken or not well connected. Check whether there has another pump that circulates the water through the unit, when unit circulation pump is working.

4. Communication Failure

Communication failure shown here means the communication between operation panel, indoor PCB and outdoor PCB have been set up, but communication data lost too much. Check whether communication cable is longer than 30M; whether there has a source of the disturbance nearby the unit. Unit recovers when communication recovers.

5 Cooling water Temp. too low

Compressor stops if water outlet is lower than 5℃ in cooling mode. This too low water temperature may make the water freeze up inside plate heat exchanger and cause damage. Check whether temperature sensor Tc is OK and well connected; whether set water temperature too low; whether system flow rate too small.

6. Water outlet Temp. too high

Compressor stops if water outlet is higher than 57℃(This parameter vary with refrigerant.) in heating or hot water mode. This too high water

temperature may make the system has too high condensate pressure inside and cause unit malfunction. Check whether temperature sensor Tc and Tw is OK and well connected; whether set water temperature too high; whether system flow rate too small.

7. Defrosting Failure

If unit continuously failed to finish the defrosting operation for three times, it stops and gives failure code S08 This can only be recovered by re-powering the machine. Please check whether the actual water temperature is too low for the unit to defrost, so the plate heat exchanger has the risk of freezing up.

4. Usage

8. Water outlet Temp. too low
This is also used to protect the safety of the compressor. Compressor stops and AH (or HBH) starts if water outlet temperature is lower than 15℃ in heating and hot water mode. Compressor restarts when this temperature is higher than 17℃.

9. Too small water flow rate failure
If unit stops due to "too small water flow rate" protection (S02) over three times in a half an hour, unit stops and gives S10 failure code. It can only be recovered by re-powering the unit. Check the water system, especially the filter; check the working statue of water pump.

10. Indoor anti-freezing protection failure in cooling
If unit stops due to "Indoor anti-freezing protection in cooling (S01)" over three times in a half an hour, unit stops and gives S11 failure code. It can only be recovered by re-powering the unit.

11.First stage floor-curing operation failure
A fault (S12) will be reported during the first floor heating cycle if the running time of a phase is >120 hours but the unit is still running normally.The code can only be cleared by restarting the unit.

E. ON/ OFF
Press to turn ON/OFF of heat pump operation.
When the unit is powered, home page will be shown on the screen. After repowered, unit will recover its working mode and settings automatically.

4. Usage

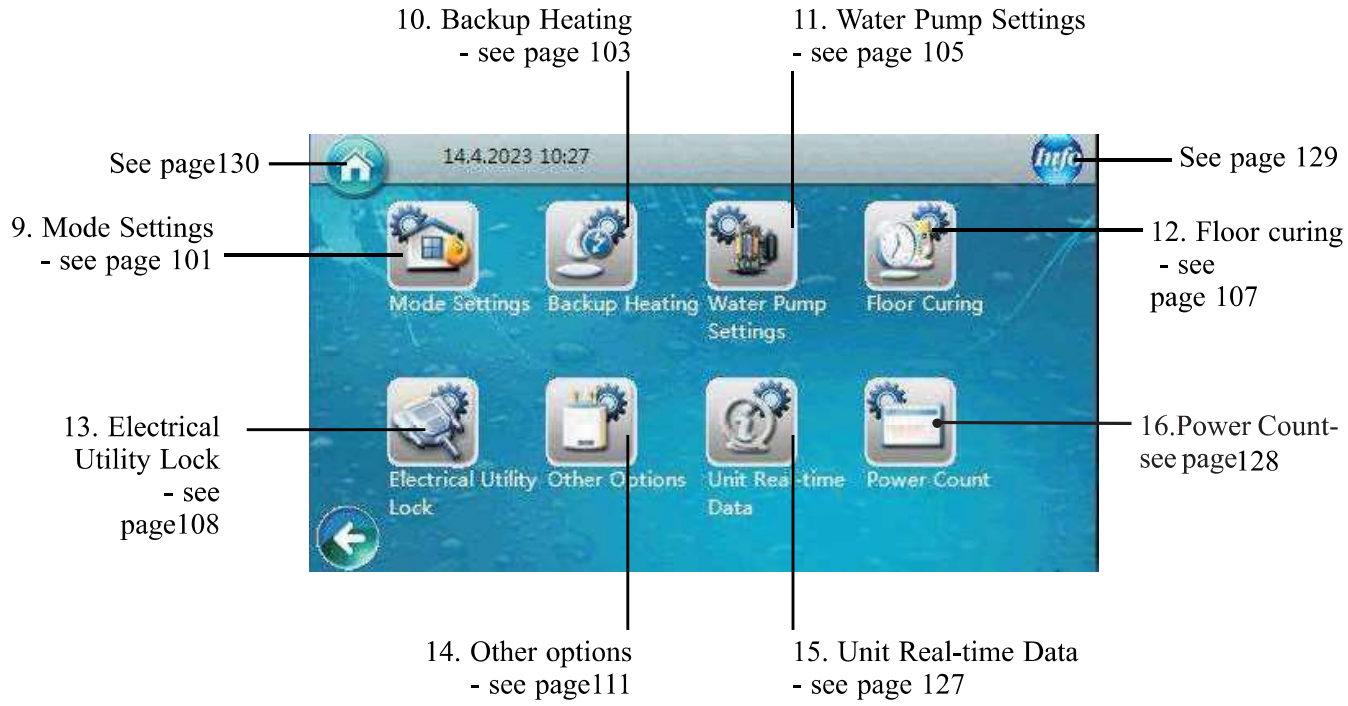
F. Touch screen panel

G. Mode

Press to switch unit working mode(Heating, Cooling, Hot water, Auto, Quickheat). In Auto mode, unit switch its working mode between cooling, heating and sanitary hot water automatically according to setting.

4. Usage

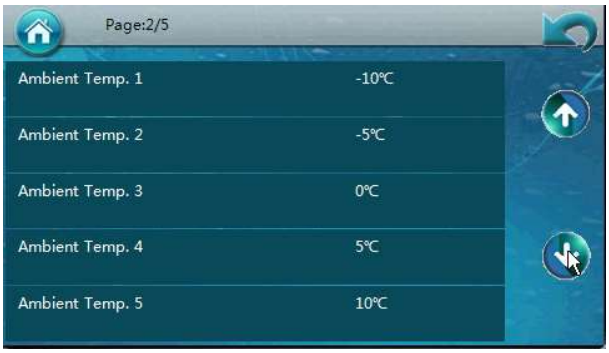
H. Setting: Press to enter into setting menu.

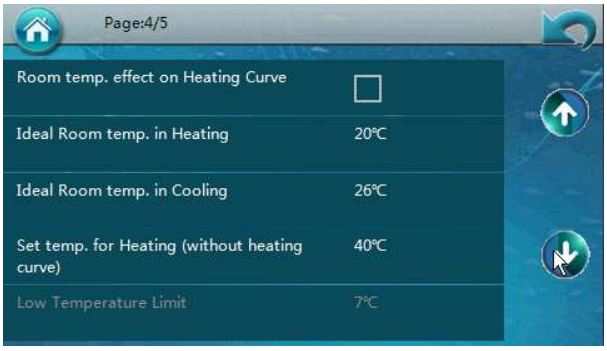


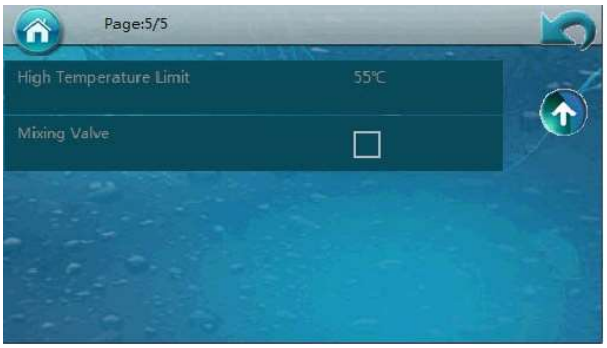
4. Usage

4.2 Operation Instruction

1. Heating/Cooling circuit 1







1.Heating & Cooling Settings 1, HC/CC 1

1.01) Heating or Cooling Stops based on Water ΔT

1.02) Heating or Cooling Stops based on Water ΔT

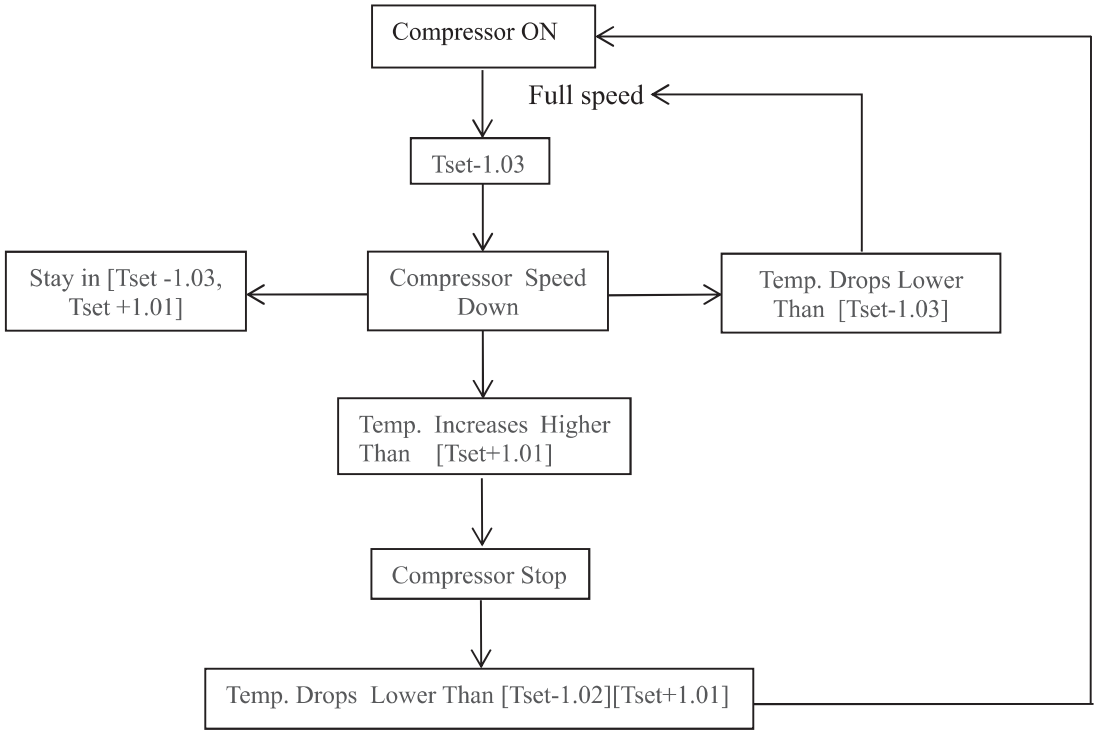
- 1.01: This is to set a temperature to stop unit. Unit stops operation when[Tset+1.01] in heating operation, or [Tset-1.01] in cooling operation is reached.
- 1.02: This is to set a temperature to re-start unit. Unit starts operation again when water temp. drops below [Tset-1.02] in heating operation or increases over [Tset+1.02] in cooling operation.
- Both the set values are based on Δ T.
- For example, in heating mode, if Tset=48, while 1.01=2℃, and 1.02=1℃, when actual water temperature is higher than 50℃ (Tset+1.01), unit stops. When unit stops and actual water temperature drops lower than 47 [Tset-1.02], unit restarts.

1.03） △T Compressor Speed-Reduction

- This parameter is used to set a temperature, at which compressor starts to slow down its speed.
- Also, the set value is based on △T.
- Compressor always works with its maximum allowable speed, if actual water temperature is lower than［Tset-1.03] (in heating mode) or higher than [Tset+1.03]（in cooling mode).
- When actual temperature is between [Tset-1.03, Tset] in heating mode or [Tset, Tset+1.03] in cooling mode, compressor will adjust its working speed, to balance the total heating output and system heating load.
- This setting is to keep a balance between comfort and energy saving. If this value is set too big, even if the room is not warm (or cool) enough, compressor will slow down its speed quite soon to save energy; If this value is set too small, even if the room is warm (or cool) enough, compressor will slow down its speed quite late, which consumes more power.
- It's more like a setting that tells the heat pump unit which temperature range you'd prefer to have the heat pump stayed in.
- For example, in heating mode, if Tset=48, and 1.03=2℃, compressor will work as hard as possible to get 46℃ as as soon as possible. Then compressor will lower its speed. If even the compressor works in its lowest allowable speed, but actual water temperature still goes over [Tset+1.01], unit stops.

Working In Heating

WorkingIn Heating



1.04） Set Temp for Cooling

Set an ideal water temperature for cooling via this parameter.

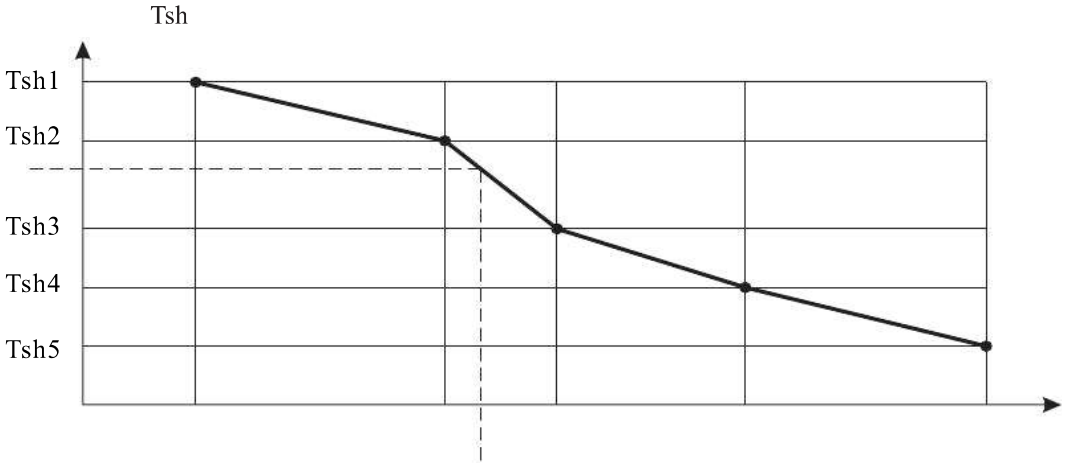
1.05） Heating Curve Function

- Set whether heating curve function is needed or not.
- If heating curve function is not needed, set 1.05=OFF, and then you can set a fixed water set temperature under heating mode via parameter 1.19 "Set Temp For Heating"

1.06~1.15 Set the heating curve
1.06 Ambient Temp. 1
1.07 Ambient Temp. 2
1.08 Ambient Temp. 3
1.09 Ambient Temp. 4
1.10 Ambient Temp. 5
1.11 Water Temp. A/Ambient Temp. 1
1.12 Water Temp. B/Ambient Temp. 2
1.13 Water Temp. C/Ambient Temp. 3
1.14 Water Temp. D/Ambient Temp. 4
1.15 Water Temp. E/Ambient Temp. 5

When 1.05=ON, user can set a heating curve which fits his house, by adjusting the settings of parameter 1.06~1.15

Parameter 1.06~1.10 is used to set 5 different ambient temperatures; while parameter 1.11~1.15 is used to set 5 corresponding set water temperatures VS these 5 ambient temperatures. Then the controller will create a heating curve according to these settings, and try to reach the set water temperature automatically according to actual ambient temperature.



Tips:
Heating curve function is based on the factor that the lower ambient temperature, the higher house heating water temperature needs to be. This heating curve function can help the heat pump unit gain a higher COP, as well as make the house more comfortable.
As house insulation level and people's sense of cold may vary from one another, the factory-set curve may not suit you the best. You can set one curve according to your need.
If you feel too hot, you can lower the settings of water temperatures (parameter 1.11~1.15), which correspond to the ambient temperature parameters (1.06~1.10) . If you feel too cold, then adjust these settings a little higher. You can also adjust the ambient temperature settings, if you think the factory settings are not perfect for your need.

1.16~1.18) Water Temp. Setting Adjustment function
These three parameters work together to gain an ideal water temperature for an ideal room temperature When this function is ON, unit will adjust the set water temperature (a set value or calculated value via heating curve), according to the difference between actual room temperature and idea room temperature.

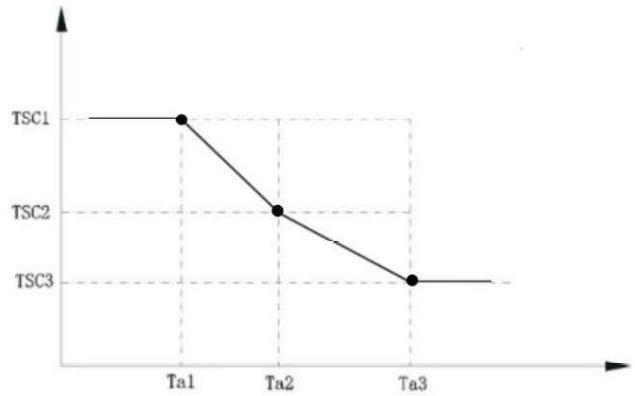
1.16 Room temp. effect on Heating Curve: **Turn ON or OFF this function.**
1.17 Idea Room temp. in Heating: **Set an ideal room temperature in heating.** When in Room Temperature Control mode, this parameter will also be the Room Set Temperature.

1. 18 Idea Room temp. in Cooling: **Set an ideal room temperature in cooling.** When in Room Tempe
rature Control mode, this parameter will also be the Room Set Temperature.
For example
If 1.16 =ON, unit works in heating mode.

4. Usage

If water set temperature in the heating curve is 35℃.
If actual room temperature is 27℃,while parameter 1.17(Ideal Room Temp. in Heating Mode) is set to 22 ℃,then the unit will deduct (27 ℃-22℃)=5℃ from water set temperature, which means unit will take 30 ℃ as the set water temperature.The parameter will be calculated and changed in per 30 minutes.

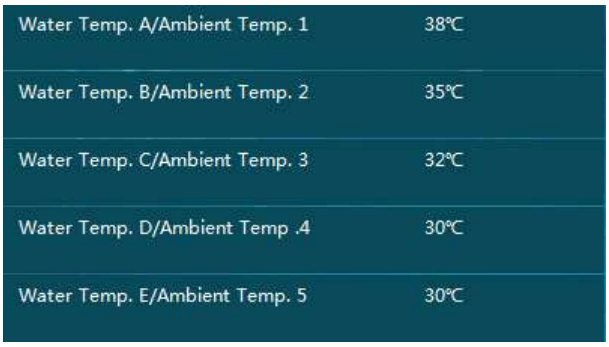
1.19 Set Temp For Heating
If heating curve function is OFF, a fixed water temperature fox heating can be set via" Set Temp For Heating" .
1. 20 Low Temperature Limit
1. 21 High Temperature Limit
These two parameters are used by the installer, to set the set temperature range for circuit 1 for safety purpose.
1. 22 Mixing Valve
Set whether circuit 1 has a mixing valve connected or not. For more details, please refers to chapter 2.1
1.23~1.28 Set the cooling curve
1.23Ambient Temp. 1
1.24 Ambient Temp. 2
1.25 Ambient Temp. 3
1.26 Water Temp. A/Ambient Temp. 1
1.27 Water Temp. B/Ambient Temp. 2
1.28 Water Temp. C/Ambient Temp. 3
When 1.29=ON, user can set a cooling curve which fits his house, by adjusting the settings of parameter 1.23~1.28
1.29 Cooling Curve Function
Set whether cooling curve function is needed or not.
If cooling curve function is not needed, set 1.29=OFF, and then you can set a fixed water set temperature under cooling mode via parameter 1.04" Set Temp For Cooling"
Parameter 1.23~1.25 is used to set 3 different ambient temperatures; while parameter 1.26~1.28 is used to set 3 corresponding set water temperatures VS these 3 ambient temperatures.
Then the controller will create a heating curve according to these settings, and try to reach the set water temperature automatically according to actual ambient temperature.

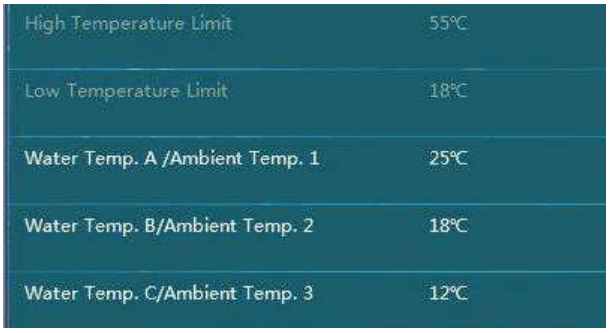


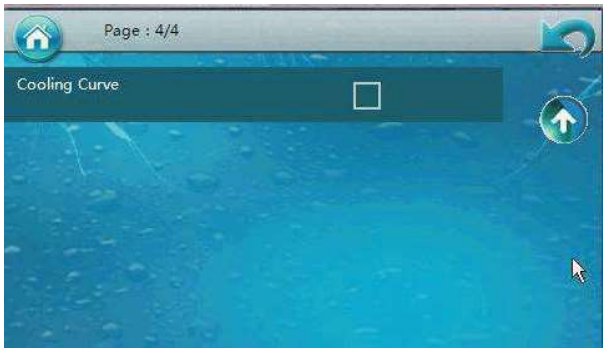
Tips:
Cooling curve function is based on the factor that the higher ambient temperature, the lower house cooling water temperature needs to be. This cooling curve function can help the heat pump unit gain a higher COP, as well as make the house more comfortable.
As house insulation level and people's sense of hot may vary from one another, the factory-set curve may not suit you the best. You can set one curve according to your need.
If you feel too cold, you can higher the settings of water temperatures (parameter 1.26~1.28), which correspond to the ambient temperature parameters (1.23~1.25) . If you feel too hot, then adjust these settings a little lower. You can also adjust the ambient temperature settings, if you think the factory settings are not perfect for your need.

4. Usage

2.Heating / Cooling circuit 2







2.01 Heating&cooling Circuit 2
Set whether the system has the second circuit .

2.02 Set Temp For Cooling
Set the set temperature for cooling operation of circuit 2.

2.03 Set Temp For Heating
If heating curve function is disabled for circuit 2, a fixed value of set water temperature in heating mode can be set here.

2.04 With/Without Mixing Valve 2
Set whether circuit2 has a mixing valve connected. For more details, please refers to chapter 2.1.5

2.05 Heating Curve
Turns ON/OFF of heating curve function for circuit 2.

2.06 Water Temp. A/Ambient Temp. 1
2.07 Water Temp. B/Ambient Temp. 2
2.08 Water Temp. C/Ambient Temp. 3
2.09 Water Temp. D/Ambient Temp. 4
2.10 Water Temp. E/Ambient Temp. 5
Temperature set here is water temperature, it is based on the same ambient temperature settings for circuit 1, parameters 1.06~1.10.
Temperature settings of the heating operation for circuit 2 VS ambient temperatures. Controller will create a heating curve for secondary heating system according to these settings. If parameter 2.05 is OFF, only 2.03 needs setting, and unit will take this set value as fixed set water temperature for secondary heating system.

2.11 High Temperature Limit

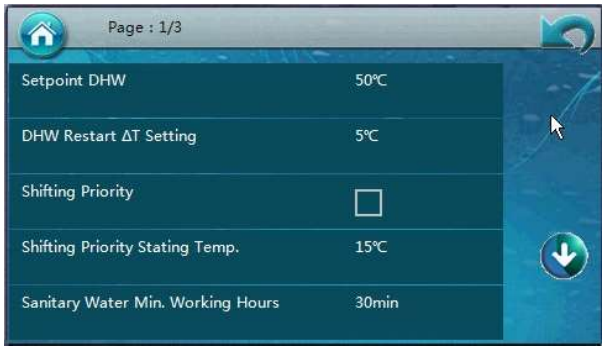
2.12 Low Temperature Limit
These two parameters are used by the installer, to set the set temperature range for circuit 2 for safety purpose.

2.13 Water Temp. A/Ambient Temp. 1
2.14 Water Temp. B/Ambient Temp. 2
2.15 Water Temp. C/Ambient Temp. 3
Temperature set here is water temperature, it is based on the same ambient temperature settings for circuit 1, parameters 1.23~1.25.
Temperature settings of the cooling operation for circuit 2 VS ambient temperatures. Controller will create a cooling curve for secondary cooling system according to these settings. If parameter 2.16 is OFF, only 2.02 needs setting, and unit will take this set value as fixed set water temperature for secondary cooling system.

2.16 Cooling Curve
Turns ON/OFF of cooling curve function for circuit 2.

4. Usage

3. DHW Settings



3.01 Setpoint DHW
Set temperature for sanitary hot water.

3.02 DHW Restart ΔT Setting
Heat pump unit will start working for sanitary hot water again, after temperature drops below Tset-3.02 here.

3.03 Shifting Priority
Turn ON/OFF this function.

Air to water heat pump is an equipment that absorbs heat from surrounding air, and transfers it to water. The lower the ambient temperature is, the less heat the unit absorbs. This makes the unit heating capacity and efficiency drop when ambient temperature drops. The unit takes longer time to heat up the sanitary hot water. However, the lower the ambient temperature is, the more heat the house demands. If the unit does not provide enough heat while it is working for hot water, the temperature inside the house may drop too much, and people in it feel uncomfortable. So parameters 3.03~3.08 try to divide the working time for sanitary hot water into several cycles, after ambient temperature drops below a set value. When this function is ON, AH (Auxiliary Heater) or HWTBH (Hot Water Tank Back-up Heater) or both, depending on their priority, will work individually or together to enhance heat pump's capacity in sanitary hot water mode to heat up the water as soon as possible.

3.04 Shifting Priority Starting Temp.
Set an ambient temperature below which this function starts to work. When shifting priority function is activated, heat pump will try to find a balance between DHW and Heating operation after ambient temperature drops below this temperature.

3.05 Sanitary Water Min. Working Hours
Set the minimum working period for sanitary hot water mode.

3.06 Heating Max. Working Hours
Set the maximum working period for heating mode, after unit enters into heating mode.

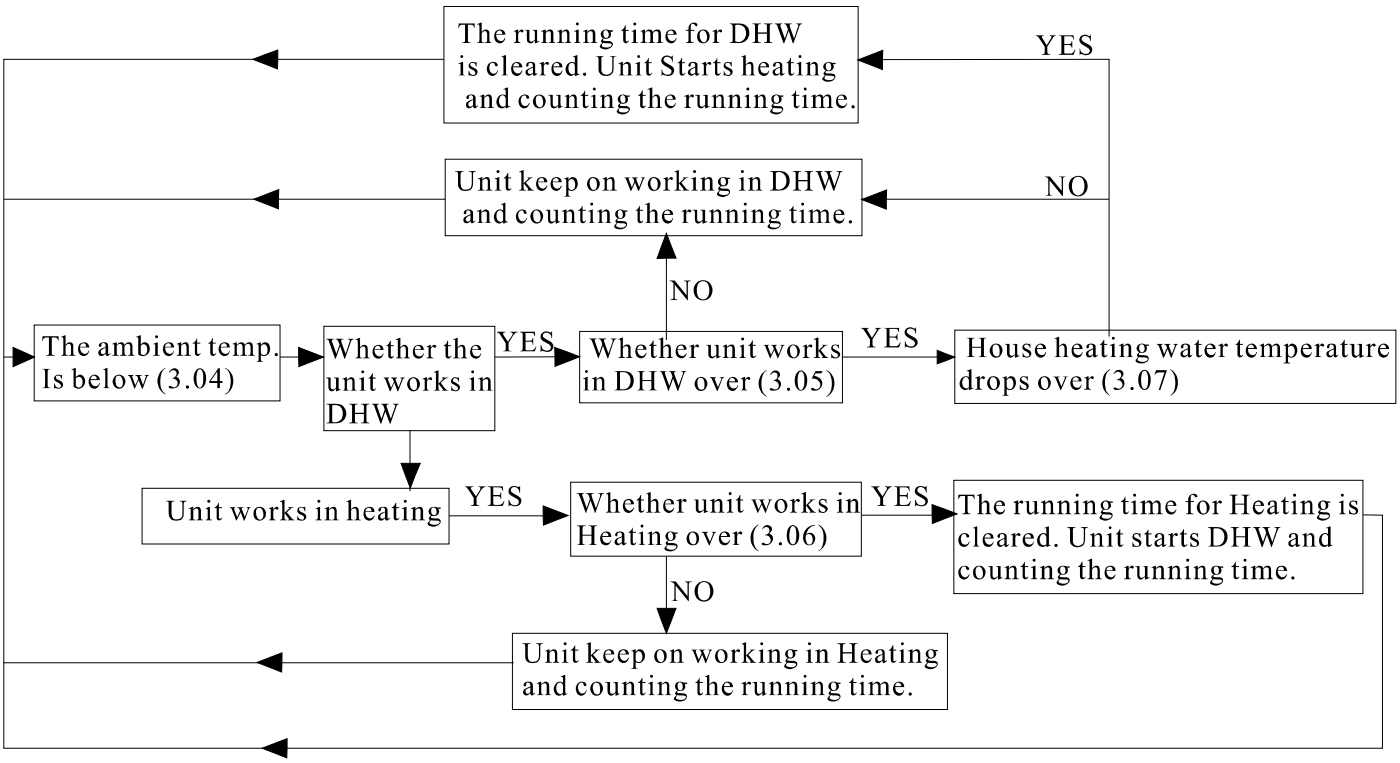
3.07 Allowable Temp Drift in Heating
Set Allowable temperature drift in heating mode.

4. Usage

3.08 DHW Backup Heater for Shifting Priority

Working mode of HWTBH (Hot Water Tank Back-up Heater) in this function. If this parameter is set ON, when heat pump is switching to house heating, HWTBH will keep on working to help the unit heat up hot water as soon as possible.

If shifting priority function function is ON, and ambient temperature is lower than [3.04], unit works as shown below:
House heating water under water temp.

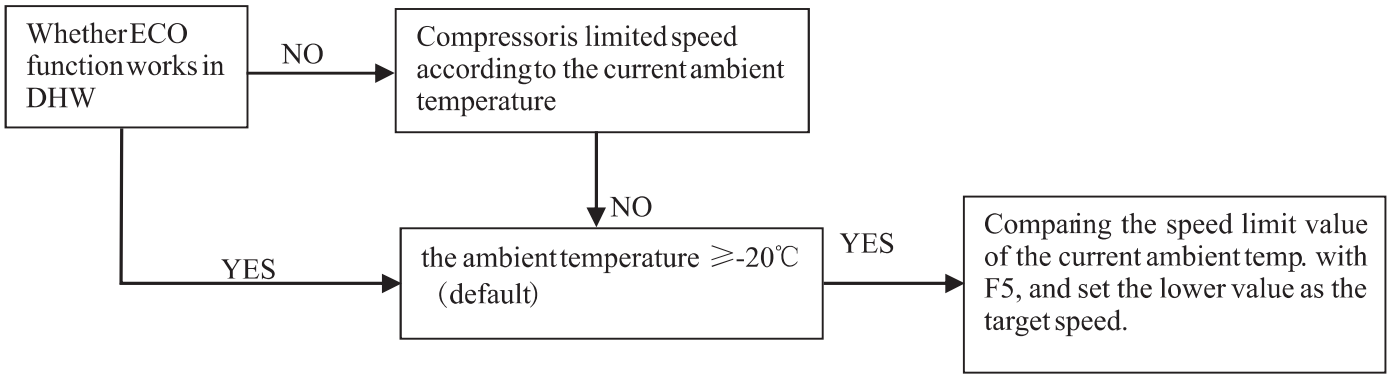


4. Usage

3.09 DHW ECO Operation

Turn ON/OFF this function.
When the ECO mode is OFF, the hot water is heated according to the normal demand;
When the ECO mode is ON, the unit will enter or exit the ECO mode in DHW mode according to the ambient temperature and judgment conditions set by parameter 3.10.

3.10 Ambient Temp. To Start DHW ECO Operation(This value can be set at the installation level).
Function description
In DHW mode, when the ambient temperature sampled by the heat pump is greater than or equal to the set value of parameter 3.10, the heat pump actively limits the compressor frequency to be less than or equal to F5.
Its application mode: for those who still need hot water at high ambient temperature, because the heat pump has high heating capacity at high ambient temperature, in order to make the heat pump more energy efficient, it is enabled.
ECO function, so that the heat pump is in the middle and low frequency operation, and the capacity and energy efficiency are relatively high at this time;



3.11 High temperature limit (DHW)
This parameter is used by the installer， to set the set temperature range for DHW for safety purpose.

4. Usage

4.DHW Storage

Sanitary Hot Water Storage Function

After showers, house usually needs only medium temperature sanitary hot water in day time. This function is used to store high temperature sanitary hot water in low demand time (mid-night, or day time of working days), and reheat the water to medium temperature out of this time period.

4.01 Sanitary Hot Water Storage Function

Turn ON/OFF this function.

4.02 Sanitary Hot Water Storage Timer

Set a working time period for this function, and the unit starts to work towards sanitary hot water set temperature in parameter 3.01 within the set time range.

Different time periods for every day in a week can be set.

4.03 Reheating Function

Turn ON/OFF reheat function.

4.04 Reheating Function Timer

Set a working time period for reheat function, and within this time period, unit will work with a lower set value for DHW (value set in parameter 4.05).

Different time periods for every day in a week can be set.

4.05Reheating Restart ΔT Setting

Set a lower set value for DHW operation. Unit will work with this set value when reheating function is activated in the set time period (time period set in parameter 4.04).

4.06Reheating Set Temp.

Set “reheat restart” water ΔT. When water temperature drops below ΔT based on reheat set temperature within the set reheating time period, unit restarts.

Tips:

- "Sanitary hot water storage function" is the whole timing switch of DHW.
- To start the "Reheat Function" operation, need to check the "Sanitary Hot Water Storage Function" first.
- If the “Reheating function Timer” overlaps with the “Sanitary Hot Water Storage Timer”, the target setting value is the set temperature of the Sanitary Hot Water Storage Function”.

4.07 Quickheat mode

If the Quickhea t mode is selected in the main interface, AH and HWTBH will start.

When the hot water temperature reaches the value of "set point DHW", AH and HWTBH will stop.

This Quickhea t mode will be activated onlyonce after selection.

When the hot water temperature reaches the "set point DHW" value, this mode will exit and the unit will turn to the original operation mode.

4. Usage

5. Reduced Setpoint for Heating

Reduced Setpoint Function: Sometimes the house heating demand maybe lower than normal, like during sleep period or working time. In this way, a reduced value based on standard set value can be set here for better efficiency of the whole system.

Quiet Operation: Also, for a better noise issue, a Quiet Operation can be also set in this menu. After activating this function and setting the time period for quiet operation, unit will try to reduce its noise level.
Note: Unit efficiency in quiet operation mode will be lower than standard working mode.

5.01 Reduced Setpoint
Turn ON/ OFF Reduced Setpoint function.

5.02 Temp. Drop/Rise
Set temperature drop (in heating) or increase (in cooling) based on standard set temperature during Reduced Setpoint operation.

5.03 Timer for Reduced Setpoint Function
Set a working time period for Reduced Setpoint function.
Different time periods for every day in a week can be set.

5.04 Quiet Operation
Turn ON/ OFF Quiet Operaiton function.

5.05 Allowable Temp. Drifting
Set allowable temperature drift during Quiet Operation.
When the unit works in quiet mode, its output may drop because both fan and compressor may need to work in lower speed. However, temperature in the system may drop (in heating) or increase(in cooling)too much due to the lower output. So when actual temperature drift from the standard set value is more than the ΔT set value set here, unit will end this quiet operation, to ensure a comfortable house temperature.

5.06 Timer for Quiet Operation
Set a working time period for Reduced Setpoint function
Different time periods for every day in a week can be set.

5.07 Max. unit operation speed in quiet operation
Parameter: compressor gear setting in silent mode
Function description: When setting the silent mode, you can select and set the compressor frequency gear and gear in the silent mode synchronously.The setting range is F3 to F7.
For applications with low noise requirements, you can choose a lower running gear in silent mode.
Thus reducing the noise of the heat pump.

4. Usage

6 . Anti-Legionella Function

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

6.01 Anti-Legionella Program
Turn ON/ OFF Anti-Legionella function.

6.02 Day and Time
Set at which tim e in which weekday(s) f or the sta rt of anti- legionella oper ation.

6.03 Se tpoint
Set the target sanitary hot water temperature for anti-legionella. Please refers to the local regulation for the correct setting of this temperature .

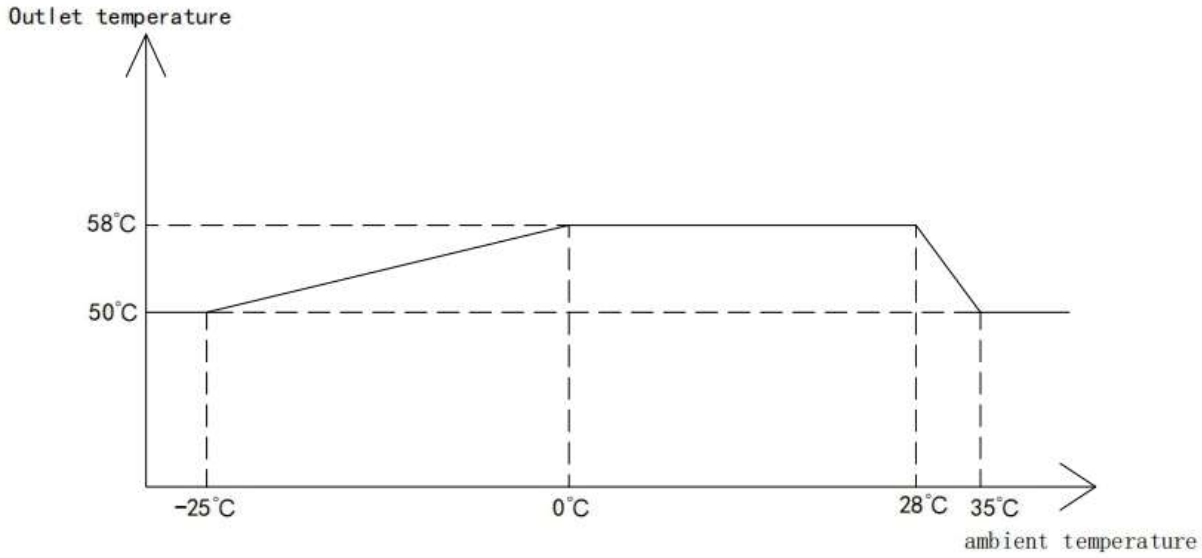
6.04 Duration
Set for how long the unit sho uld try to kee p this se t high tempe rature , to e nsure a ll ba cteria in the sho wer wa te r ta nk ca n be killed.
6.05 Finish Time
Set an en ding tim e for this a nti- le gione lla f unctio n, even it is not fin ished suc ce ssf ully. This time should be longe r tha n wha t it is set in pa ram eter 6. 04 .

Tips: When the anti-legionella function is activated and in the range of [6.02], the compressor heats up as the anti-legionella set temperature (va lue set in par ame te r 6.03) . When the heat exchange water outlet temperature(TUO) reaches the maximum allowable working water temperature(TOMAX) of the compressor, the compressor stops,the unit retains the AH operation until the HWT temperature reaches the anti-legionella temperature.the maximum allowable working water temperature(TOMAX).

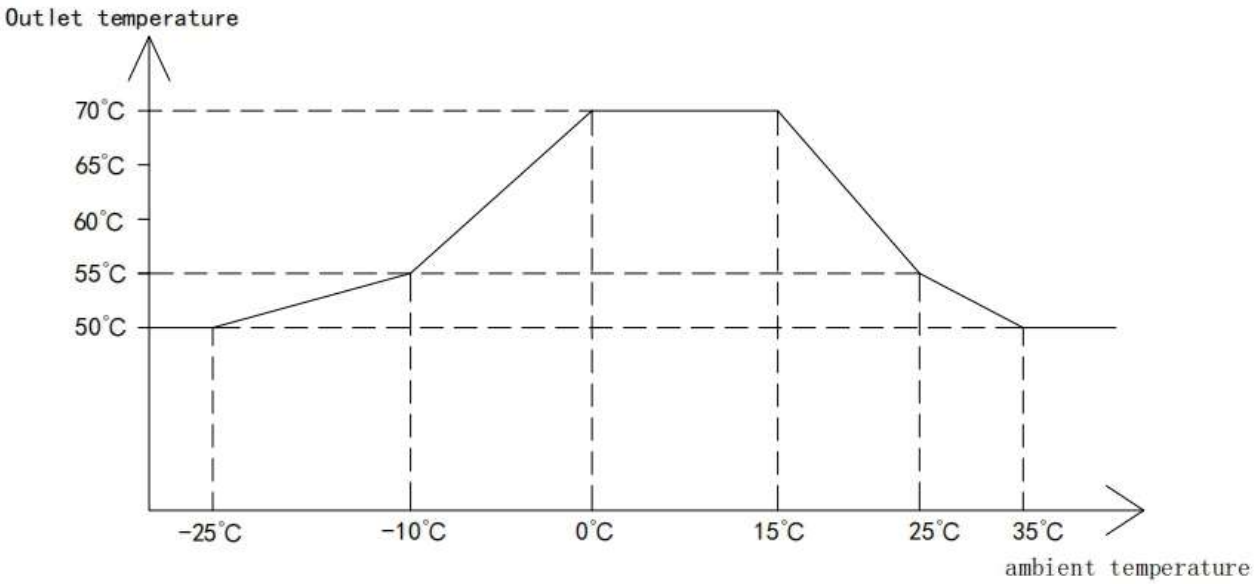
NOTE:The maximum allowable working water temperature (TOMAX) :
This function of parameter is to limit the maximum water temperature in the range of heat pump heating working water temperature.The controller w ill create a curve about the TOMAX ac cording to the actual ambient temperature(TA) and setting heating maximum temperature.

4. Usage

For example,when the setting heating maximum temperature is 58℃ and the refrigerantis R32 or R410A, the curve is as follow:

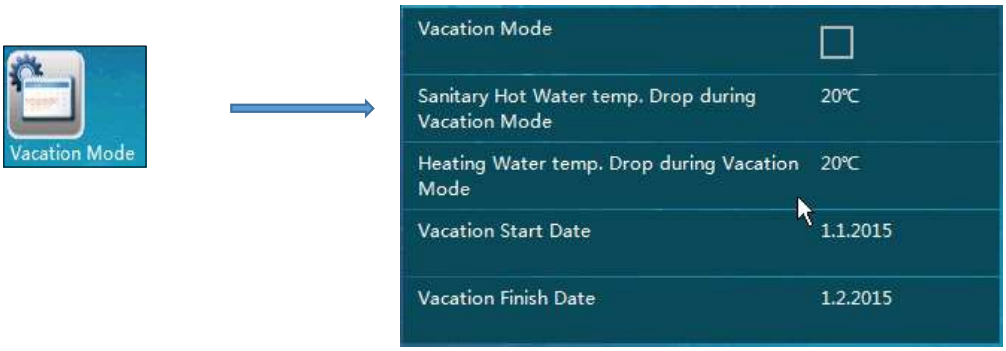


When the setting heating maximum temperature is 70℃ and the refrigerantis R290,thecurve is as follow:



4. Usage

7 . Vacation Mode



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

7.01) Vacation Mode
Turn ON/OFF Vacation Mode.

7.02) Sanitary Hot Water Temp. Drop During Vacation Mode
Set a temperature drop for sanitary hot water based on standard DHW set value during the set time period for vacation mode.

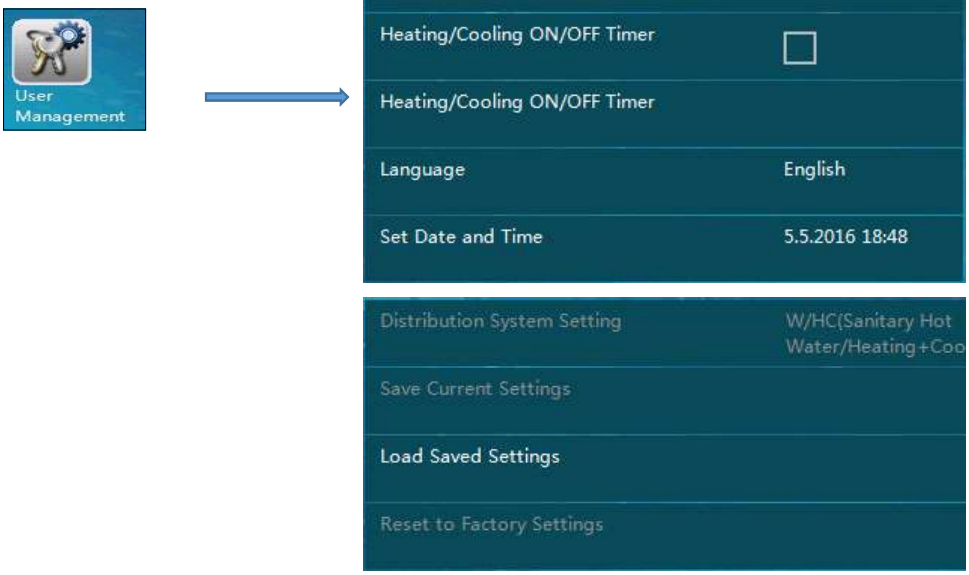
7.03) Heating Water Temp. Drop During Vacation Mode
Set a temperature drop for heating based on standard DHW set value during the set time period for vacation mode.

7.04) Vacation Start Date
Set the date that vacation starts.

7.05) Vacation Finish Date
Set the date that vacation finishes.

4. Usage

8. User Management



8.01) Permission Level

For the safety of the product, some parameters can only be adjusted under installer's permission level. The permission level can be changed in this menu. A password is needed for activating the installer's permission level.

8.02) Heating/Cooling ON/OFF Timer

To turn ON/OFF the timer function for heating/cooling operation.

8.03) Heating/Cooling ON/OFF Timer

Set the ON and OFF timer for the heating/cooling operation. Different time periods for every weekdays in a week can be set.

8.04) Language
Set system language.

8.05) Set Date and Time
Set system clock date and time.

8. 06) Distribution System Setting
The unit is default set to have 3-way motorized valve inside the unit, which has different flow directions for sanitary hot water/cooling+heating mode.

If user needs to have sanitary hot water and heating on the same distribution system, he can set this parameter to "Hot Water+Heating/Cooling".

Note: If it is set to "Sanitary Hot Water+Heating/Cooling", temperature sensor for heating function should be placed either inside an ideal position in HWT, or on the water outlet from HWT for heating distribution system.

8.07) Save Current Settings
This parameter is used by installer to save the current settings as "Installer Settings", so the customer can load the saved settings into the system, when needed.

8.08) Load Saved Settings
Loaded the saved "Installer Settings".

8.09) Reset to Factory Settings
Reset the whole system back to factory default settings.
Note: Saved "***Installer Settings"*** will be cleared.

Note: Most of above menus and parameters are designed for installer only. They should only be adjusted by installer or professional customer under the instruction of installer, otherwise malfunction of the unit may happen.

4. Usage

9. Mode Settings

9.01) Sanitary Hot Water

Set whether the system has sanitary hot water circuit or not. When unit works in Sanitary Water mode, 3-way motorized valve will guide water to HWT automatically.

9.02) Heating

Set whether the system has water circuit for house heating purpose or not. When unit works in heating mode, 3-way motorized valve will guide water to heating circuit automatically.

9.03) Cooling

Set whether the system has water circuit for house cooling purpose or not. When unit works in cooling mode, 3-way motorized valve will guide water to cooling circuit automatically.

Note: As whether the system can work in hot water, heating or cooling mode depend quite much on the distribution system, these setting can only be done under installer level, to ensure the safety of the distribution system.

9.04) Basic Operation Mode

This parameter is used to set the basic operation modes, as “Water Temperature Control” or “Room Temperature Control” .

When "Basic Operation Mode" is activated, unit takes room temperature as control object.

When "Basic Operation Mode" is not activated, unit takes water temperature as control object. Heating or cooling function take water as the control object as default. However when a room temperature sensor is connected to the unit and a more precise control of room temperature where the sensor is placed is preferred, “Room Temperature Control” mode can be selected.

Note: When “Room Temperature Control” mode is selected, system will not operate under the heating curve function and actual water temperature may swing significantly.

9.05) Max Allowed Duration For Min Compressor Speed

When unit output is higher than demand, compressor speed will be reduced. If compressor has continuously work in minimum compressor speed for over time set via "Max Allowed Duration For Min Compressor Speed",unit stops.

9.06) Cooling and Heating Switch

This function is for having the unit start cooling or heating operation automatically, according to:

- If setting="Ambient Temp.", system will automatically choose cooling or heating operation based on the outdoor ambient temperature, compared with parameter set in 9.07 and 9.08.
- If setting="External Signal Control", an external room thermostat or central control system in the building can control the cooling or heating requirements by connecting it to the respective signal ports.
  The signals are simple 1-0(on-off) signal. If cooling port receives the signal, the system switches to cooling; If heating port receives the signal, the system switches to heating. When neither port receives the signal, the system stays in standby mode.
- If setting="Ambient Temp.+External Signal Control", unit will take both the ambient temperature and external signal into consideration for cooling or heating mode selection.

Note: If parameter is set to OFF, auto switch function is not activated. Then make sure that parameter (Heating Water Circuit) and (Cooling Water Circuit) are not set to ON simultaneously, as the system can not determine actual requirement, due to mode conflict.

To avoid mode conflict, if "External Signal Control" is used to take control, please ensure that the external signal will not be activated at the cooling and heating ports at the same time.

9.07) Ambient Temp. To Start Heating

This parameter is used to set the ambient temperature to start the heating operation.
For example, if default value is 18℃, the system will start heating operation automatically when ambient temperature is lower than 18℃.
The setting is only available when parameter "Cooling and Heating Switch"="Ambient Temp." or "Ambient Temp.+External Signal Control".

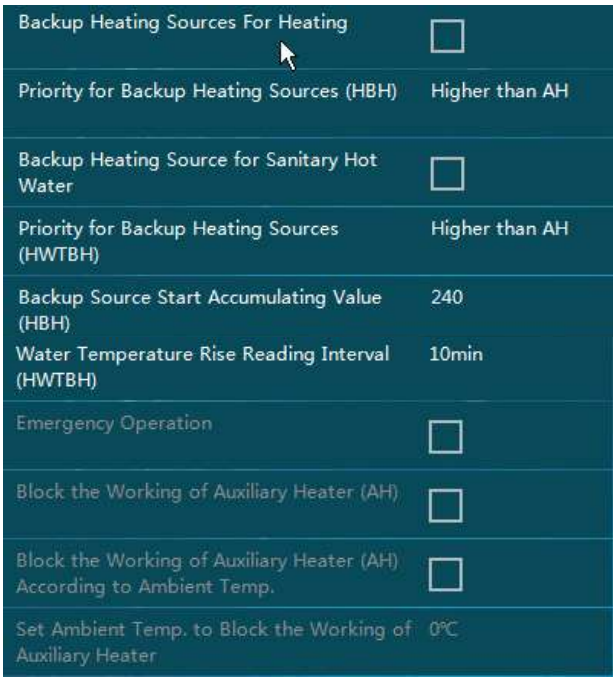
9.08) Ambient Temp. To Start Cooling

This parameter is used to set the ambient temperature to start the cooling operation.
For example, if set value is 28℃, the system will start heating operation automatically when ambient temperature is higher than 28℃.
The setting is only available when parameter "Cooling and Heating Switch"="Ambient Temp. " Or "Ambient Temp.+External Signal Control".

Note:
In order to avoid short cycling between different modes, unit will also take the average temperature in the past time for reference of choosing the working mode.

4. Usage

10. Backup Heating



- AH---Auxiliary Heater inside the indoor unit
- HBH---Heating Back-up Heater
- HWTBH---Hot Water Tank Back-up Heater

10.01 Backup Heating Sources For Heating

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

10.02 Priority for Backup Heating Sources (HBH)

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

10.03 Backup Heating Source for Sanitary Hot Water

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

10.04 Priority for Backup Heating Sources (HWTBH)

Set the priority of HWTBH compared with unit AH (Auxiliary Electric Heater inside the indoor unit). When unit works in hot water, if heat pump unit can't provide enough power, it will turn on AH or HWTBH (which set to have the higher priority) automatically. If after AH or HWTBH is working, that the total output power is still not big enough, unit will turn on the lower priority Backup Heating Source also.

10.05 External Heating Source Start Accumulating Value

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

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

10.06 Water Temperature Rise Reading Interval

Time interval for checking the temperature increase when unit works in DHW mode. If temperature increases too slow during this set interval time, unit will activate other heating source for DHW operation. The smaller the value is set, unit is more likely to activate AH or HWTBH for a fast heating of DHW.

Backup Heating for DHW

If system has no HWTBH（set via parameter 10.03), or HWTBH has lower priority than AH（set via parameter 10.04）:

- If heat pump's capacity is not enough to heat up DHW fast enough, unit starts AH. If after AH starts, it still cannot heat up DHW fast enough, HWTBH starts.
- When the set and actual water temperature is higher than heat pump maximum allowable water temperature, heat pump stops and unit starts AH. If after AH starts, hot water temperature still increases too slow, HWTBH starts.

If system has HWTBH（set via parameter 10.03), and HWTBH has higher priority than AH（set via parameter 10.04):

- When the set and actual water temperature is higher than heat pump's maximum allowable water temperature, HWBTH works ALONE for DHW while heat pump unit will work in heating or cooling mode according to demand.
- When actual water temperature is lower than heat pump's maximum allowable water temperature, heat pump works in hot water mode. If heat pump's capacity is not enough to heat up DHW fast enough, unit starts HWTBH. If after HWTBH starts, hot water temperature still increases too slow, AH starts.

Under shifting priority operation, according to parameter 3.08, AH or AH+HWBH work together with heat pump to heat sanitary hot water to the set value as soon as possible, so heat pump unit can concentrate on heating mode afterwards.

10.07 Emergency Operation

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

Note:

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

10.08 Emergency Operation

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

Note: If this function is activated, customer should check the working status of heat pump unit occasionally, to ensure heat pump unit is functioning well. If this function is activated, the hot water and the heating set temperature will reduce 7℃.

10.09 Block the Working of Auxiliary Heater(AH)

The disabled function of auxiliary electric heating can only be checked when the HBH function is selected effectively;
Note: Only for heating mode.

10.10 Block the Working of Auxiliary Heater(AH)According to Ambient Temp.

This function sets whether auxiliary heater is controlled by ambient temperature .

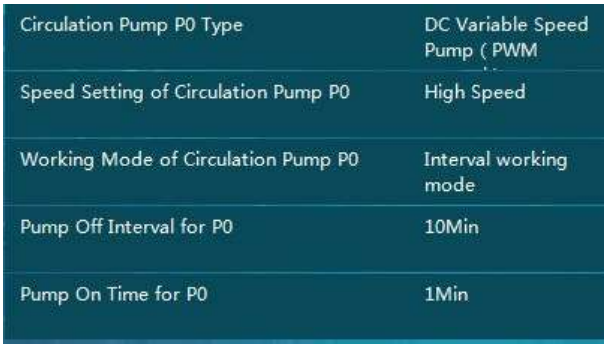
10.11 Set Ambient Temp. to Block the Working of Auxiliary Heater

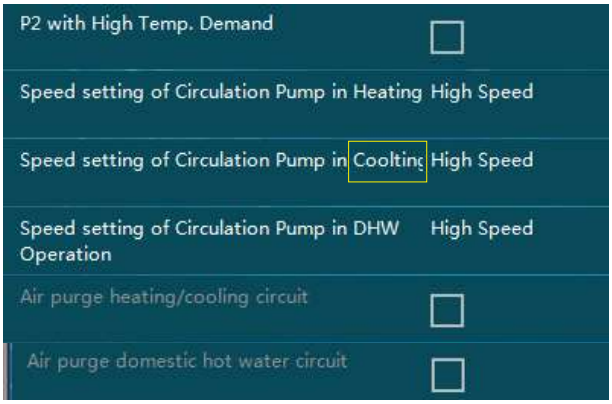
This parameter decides AH whether is activated in current ambient temperature.
AH is not activated when the environmental temperature is higher than this parameter.
So the unit only starts HWTBH /HBH when heat pump capacity can't provide enough power.
AH only allow to start when the ambient temperature is lower than this parameter.

Tips: The parametersof 10.07-10.10are used by the installer.

4. Usage

11.Water Pump Settings





11.1 Circulation Pump P0 Type
This is to set the type of circulation pump inside the unit, P0.

11.2 Speed Setting of Circulation Pump Po
This is to set the working speed of circulation pump inside the unit, P0.

11.3 Working Mode of Circulation Pump Po
This is to set the working mode of circulation pump for cooling/heating operation inside the unit, P0.
P0 can work as the following settings:

1. Interval working mode. In this setting, P0 stops after compressor stops, but runs for a while after stops for an interval period.
2. ON constantly. P0 will work constantly even if compressor stops after reaching the set temperature.
3. OFF with compressor. It means P0 stops after compressor stops.

11.4 Pump OFF Interval
11.5 Pump On Time
If unit circulation pump P0 working mode is set to “Interval working mode”, that means circulation pump stops after compressor stops, but after it stops, it will runs for [11.5] minutes after stops for every [11.4] minutes interval time.

11.6 Buffer Tank
11.7 P1 for Heating Operation
11.8 P1 for Cooling Operation
11.9 P1 with High Temp. Demand
11.10 P2 for Heating Operation
11.11 P2 for Cooling Operation
11.12 P2 with High Temp. Demand
These parameters are used for setting the working of external circulation pump P1 and P2, for heating/cooling circuit, (HC/CC1) and heating/cooling circuit, (HC/CC 2).
For more details, please refers to chapter 2.1.3~2.1.5.

11.13 Speed setting of Circulation Pump in Cooling
11.14 Speed setting of Circulation Pump in DHW Operation
These parameters are used for controlling the speed of circulation P0.The default is high speed.

Tips: The parameters of 11.1-11.14 are used by the installer.

11.15 Air purge heating/cooling circuit
This function is used for automatically purging the air in the waterway of heating/cooling circuit.

11.16 Air purge domestic hot water circuit
This function is used for automatically purging the air in the waterway of hot water circuit.

Tips:The parameters of 11.15-11.16 are used by the installer when the home page main switch off and the unit stops.If there is air in pipe will cause liquid hammer and noise when the pump works.This function prevents the harmful damage to the unit.

4. Usage

12. Floor Curing

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

12.1) Floor Curing

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

12.2) Floor Curing Temperature Setting Stage 1
12.3) Floor Curing Operation Duration Stage 1

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

12.4) Floor Curing Temperature Setting Stage 2
12.5) Floor Curing Operation Duration Stage 2

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

12.6) Floor Curing Running Hours
12.7) Highest Water Temp. in Floor Curing Operation

Three two values are operation data during floor curing operation. Unit will take down the operation time and highest water temperature the system has reached during Floor Curing operation.

Tips:The parameter program for first-stage of floor curing is determined and cannot be changed.

12.8 Temp. to start floor curing 2
12.9 Max. set temp. for floor curing 2
12.10 Running time with max temp. for floor curing 2 (h)

Set the start temperature,max temperature and lasting time for second-stage of Floor Curing operation.

Tips:These parameters of 12.8-12.10 are used by the installer.

Note:
After Floor Curing operation is finished, if water temperature inside the distribution system is still far below the set value of [12.4], it means there has still some water inside the concrete of floor heating system, thus Floor Curing function should be turned ON again, until temperature can increase over [12.4].

4. Usage

13.Electrical Utility Lock

Floor Curing	OFF
Floor Curing Current Stage	0
Floor Curing Current Stage Running Duration	0Hour
Floor Curing Current Stage Set Temperature	0℃
Floor Curing Current Stage Valid Running Duration	0Hour
Floor Curing Total Running Duration	0Hour
Highest Water Temp. in Floor Curing Operation	0℃
Temp. to start floor curing 2	30℃
Max. set temp. for floor curing 2	55℃
Running time with max temp. for floor curing 2 (h)	24Hour

So me e le ctricity c ompa nie s offer a spe cial ra te to the houses w ho lowe red the ir powe r c onsumption during pea k time . Whe n pea k time com es, e le ctricity compa ny will se nd an ON or O FF signal to eve ry house, indica ting that they hope the house ow ner s to turn OFF some e le ctric equipme nts.
This system ca n be conne cted to the un it if the unit is suppose d to stop working dur ing this period, and use the follow ing p ara meter se ttings to ac tivate this function.

13.1 Operation Signal for Ele ctrzical Utility Lock
Se t O N/OFF Elec trica l U tility Loc k function.

13.2 Electrical utility lock signal
Se t the type of signa l fr om elec tric ity compa ny. “N orma lly O pen” mea ns whe n unit c an work as norma l w hen it gets O N signal; th e unit should stop working w hen it rec eives a O FF signal;
“Norm ally Close” mea ns the opposite .

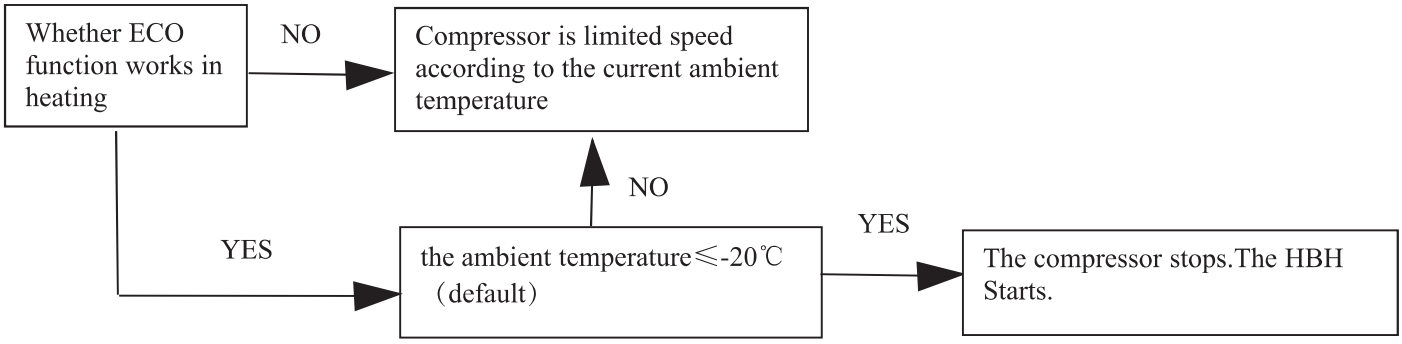
13.3 HBH During Ele ct rical Ut ilit y Lock
Se t w hether turn on H BH (He atin g Ba ck- up He ater), w hen unit is blo cked by E le ctrica l U tility Lock. e . g. gas boile r.

13.4 P0 during Electrical Utility Lock
Se t the w orking of circ ula tion pump w hen unit is blocke d by Ele ctrica l U tility Lock.
If it' s ac tiva te d, the c irculatio n pump w ill kee p on w orking whe n c ompressor stops.
If it' s not activated, the c ir culation pump w ill stop w orking w hen c ompre ssor stops.

13.5 Heating ECO Operation
Se t O N/OFF Heating ECO function.

13.11 Outdoor temp. to start heating ECO operation

Set the temperature of Heating ECO function. If the ambient temperature is lower than the parameter , the compressor stops and the HBH starts.



13.12 Tw Sensor Dropped From its Position

This function is to detect whether the TW sensor has dropped.

The judgment method of TW sensor whether has dropped is as follows:

(1) After the unit runing in ten minutes,a fault shut down is reported if the water outlet temperature minus water tank temperature is ≥ 20℃ .

(2) During the operation of the unit when both AH and HWTBH are turned on, a fault shut down is reported if the water tank temperature does no reduce or increase 1℃ in10 minutes.

13.13 Signal for Cutting Outdoor Unit Power Supply

Set ON/OFF Cutting Outdoor Unit Power Supply function. This function is used for controlling the unit standby power.

13.14 Constant power supply for outdoor unit below(℃)

13.15 SG Ready

Set ON/OFF SG Ready function.This function is used in heating/cooling mode and DHW.This function is activated, then the "Operation Signal for Electrical Utility Lock" (13.1) is invalid.

13.16 Set delta T for heating in SG Ready Mode

Set this parameter to reduce the setting temperature in heating mode when the SG Ready mode is activated and the unit receive signal in the peak electricity consumption.

13.17 Backup heating sources for heating/hot water when SG Ready ON

The HBH/HWTBH is activated after checking this function when the SG Ready is on.

13.18 Set delta T for DHW in SG Ready Mode

Set this parameter to reduce the setting temperature in DHW mode when the SG Ready mode is activated and the unit receive signal in the peak electricity consumption.

13.19 Set delta T for cooling in SG Ready Mode

Set this parameter to increase the setting temperature in cooling mode when the SG Ready mode is activated and the unit receive signal in the peak electricity consumption.

13.20 Backup heating sources for heating/hot water when SG Ready ON

When in situation 4 Grid produces too much power and has to be consumed by heat pump.

In the meantime, if the whole heating system has other non-electric heat sources as standby heat source, such as gas boilers, you can choose to turn off the standby heat source and only turn on the heat pump and AH.

4. Usage

Tips: Smart Grid (SG-ready)

This function can only be used in power supply networks that support the "SG Ready" standard, "SG Ready" is a smart tariff management scheme, in which the heat pump can operate economically under current power grid load through digital signals provided by the electrical grid. The SG ready function is only for the heat pump heating and hot water function.

Based on two inputs to let heat pump work four different modes as recommended by Grid:

SGA	SGB	SG Ready operation requirement
1	0	Insufficient energy from the grid necessitates a forced shutdown of the heat pump. After shutdown, the backup heater can be turned on.
0	0	The heat pump is operating normally
0	1	Grid recommends to consume more power by heat pump. The heat pump will automatically add a set temperature difference on the original set water temperature to get a new set point.
1	1	Grid produces too much power and has to be consumed by heat pump. At this time, heat pump will automatically adjust the set temperature to the maximum set temperature allowed by the system, and the electric heating can be turned on in order to consume more power from Grid.

- Power grid signal input "10"(SGA: closed, SGB: open), power grid overload

Insufficient energy from the grid necessitates a forced shutdown of the heat pump. After shutdown, the backup heater can be turned on.

- Power grid signal input "00"(SGA: closed, SGB: open), power grid load is normal

The heat pump will run according to your settings.

- Power grid signal input "01"(SGA: closed, SGB: closed), power grid power surplus

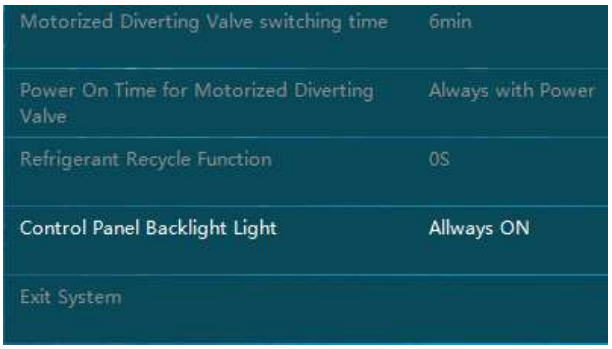
Low power surplus, Grid recommends to consume more power by heat pump. The heat pump will automatically add a set temperature difference (set in below picture) on the original set water temperature to get a new set point.
Such as: original 42 + set temp increasement 3 = new set point 45°C.
Backup heating can be turned on.

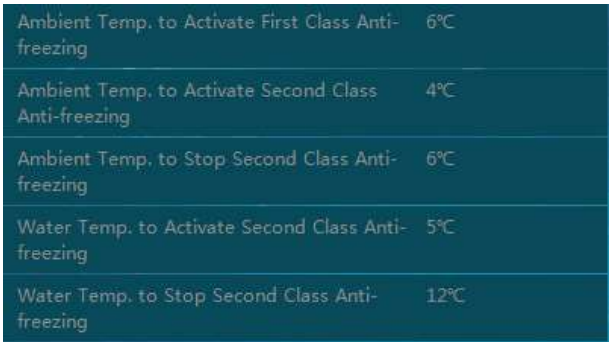
- Power grid signal input "11"(SGA closed, SGB: closed), power grid power surplus0

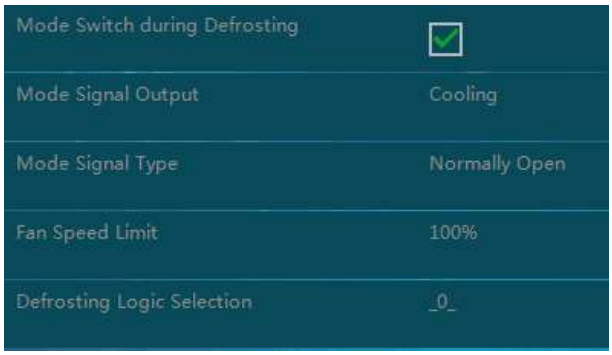
Grid produces too much power and has to be consumed by heat pump. At this time, heat pump will automatically adjust the set temperature to the maximum set temperature allowed by the system, and the electric heating can be turned on in order to consume more power from Grid.
Typically, this signal is sent when there is an overproduction of electric power in the grid and it allows to store thermal energy, to be exploited when there is a demand peak.

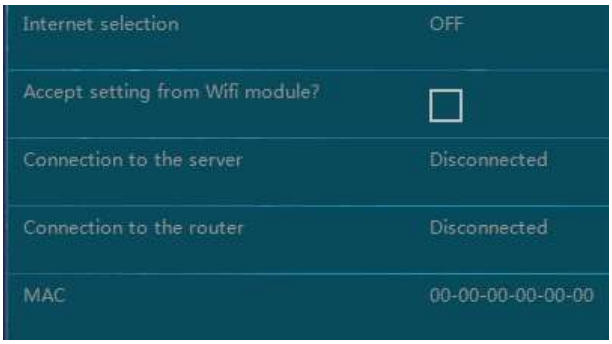
4. Usage

14.Other Options









14.1 Motorized Diverting Valve Switching Time

Set how many minutes as switching time of the motorized diverting valve spending on switching the water flow fully between DHW and Heating/Cooling circuit.
Note: This parameter must comply with the motorized diverting valve. Otherwise unit may not be able to work due to not enough water flow rate.

14.2 Power On Time for Motorized Diverting Valve

Set how long the motorized diverting valve should be powered, for switching the water flow fully between DHW and Heating/Cooling circuit.

14.3 Refrigerant Recycle

This function can be used by installers to recycle the refrigerant in the complete system into condensing unit for service purpose. When it is activated, unit will be forced to work in cooling operation for some time, to push all refrigerant back to condensing unit.

14.4 Control Panel Backlight Light

Set the backlight of touch screen operation panel to be “Always on” or how long before it becomes off for energy saving.

14.5 Exit System

Exit from unit program and returns to WINCE operation system. This is used for software updating.

14.6 Ambient Temp. to activate first class anti-freezing
14.7 Ambient Temp. to activate second class anti-freezing
14.8 Ambient Temp. to stop second class anti-freezing
14.9 Water Temp. to activate second class anti-freezing
14.10 Water Temp. to stop second class anti-freezing

These parameters are used for setting the anti-freezing protection of the unit in winter time, when unit is powered but turned OFF.
When ambient temperature is lower than fist class anti-freezing starting ambient temperature, unit will circulate the water in the system at interval for anti-freezing.
When ambient temperature drops below second class anti-freezing starting ambient, temperature heat pump unit will start either compressor or backup heating sources to maintain the water temperature within the range "Water Temp. to activate second class anti-freezing" and "Water Temp. To stop second class anti-freezing".

Note: This function is provided to the customer FREE OF CHARGE for helping their house heating and DHW water system free from freezing up. Customer should always have his own protection system for preventing the water system from freezing up. We have no responsibility or obligation if any damage has caused by water freezing.

14.11 Mode Switch during Defrosting

If water temperature is too low, the condenser may have the risk of freezing up and cause damage the complete refrigerant system. Thus, if water temperature in current working mode is too low for defrosting, unit will check the water temperature in other circuit. If the water temperature in other circuit is good enough for defrosting, it will switch the water flow to this circuit for defrosting operation automatically.
If there is no other circuit, or the water temp in other circuit is also not high enough for defrosting, unit will stop defrosting and automatically lift up the set water temperature, preparing for the next defrosting cycle.
If defrosting failed for over three times continuously, unit stops and can only be recovered by re-powering the machine. Please check the water system at this moment to ensure everything works properly before re-powering the unit.

Note:
This function can only work with outdoor software higher than AC13I20.WP.V004_T01 or AC13I17.WP.V009_T01, otherwise this function will interrupt the working of the machine during defrosting all the time.

14.12 Fan Speed Limit

14.13 Mode Signal Type

This function is used by installer.This function is only used as the second signal output port, and can be selected as cooling output, heating output, or invalid.

14.14 Fan Speed Limit

This function is a reserved function.

14.15 Defrosting Logic Selection

This parameter is only for display.

14.16 Internet selection

This function is used by installer for selecting the Internet with WIFI Module or Internet Cable.

14.17 Accept setting from Wifi module

WINCE accept setting from Wifi module when the Internet selection is in WIFI Module or Internet Cable.
User can use APP on the phone to connect the wifi module so that control the unit.The detail steps what APP connect with device through WIFI module shows in the WIFI Function of 14.25

14.18 Connection to the server

WINCE whether connect with the server.

14.19 Connection to the Router

WINCE whether connect with the router.

14.20 MAC

This parameter shows the MAC address about WIFI module.This MAC address can be used to manual bind the APP and save the device.If the MAC address shows 00-00-00-00-00-00 means the wrong com connect with wifi module.

14.21 Wifi module IP address

This parameter shows the Wifi module IP address .

14.22 Access code

This parameter is the router password which connect with WIFI module.

14.23 Server address

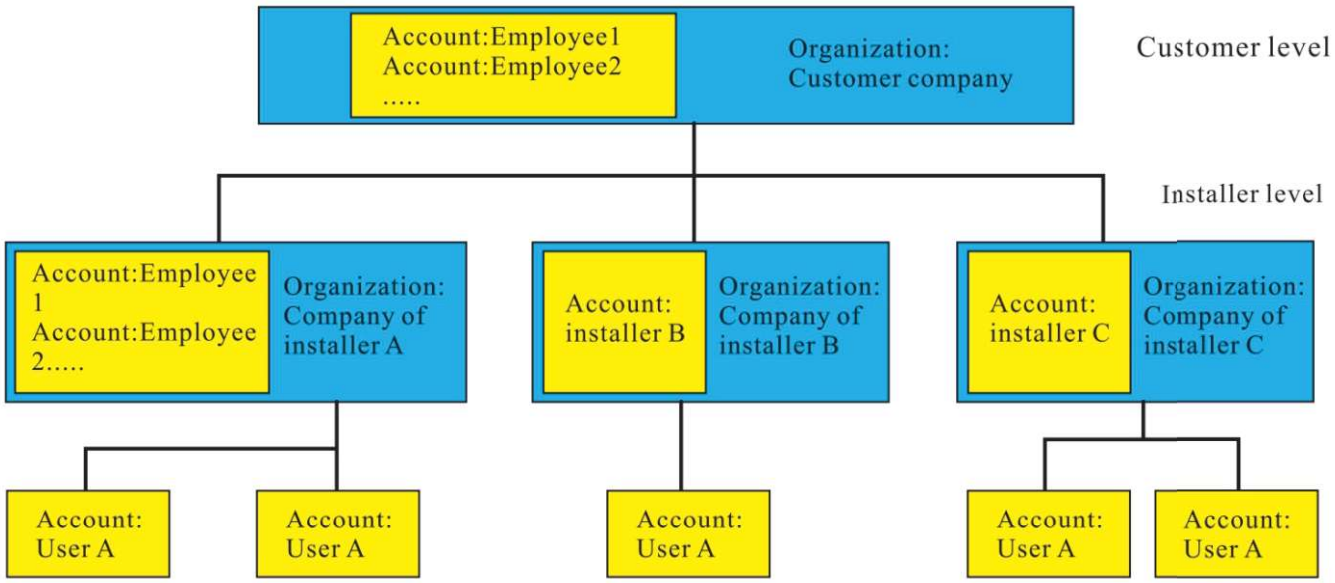
14.24 Server port

These two parameters show the server address and port.

4. Usage

14.25WIFI Function

New website application(AMT customer level)
1.Network diagram of customers、installers and users



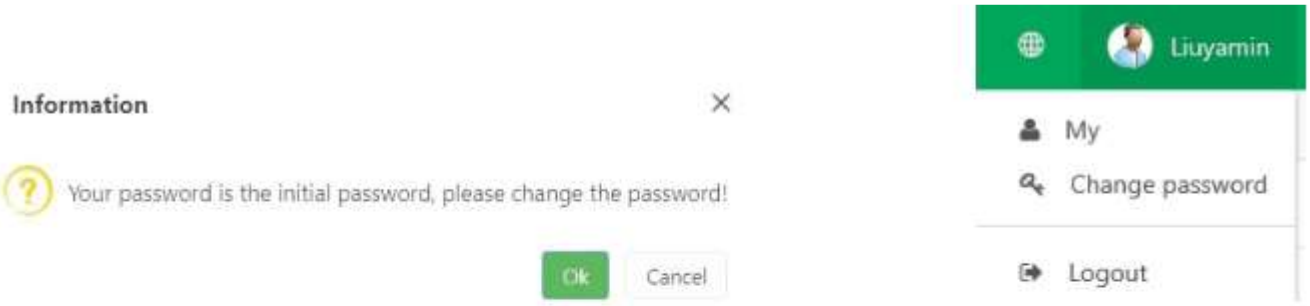
Note:
Organization: The organization framework includes two levels.
Customer level: Created by AMT company based on customer name
There is only one customer level, and many installers can be set under it;
Installer level: It is created by the customer according to the name of its subordinate installer (if the customer has no installer, it also needs to create one (the name is defined by the customer));
There can be many installers at installer level, and many users under the installer level at the same time.
Account: The login account number under each organization (when it is first created, the default password is 123456)
Customer account:
1、Its account number and password are created by AMT according to the requirements of the customer's name, and set it as the Administrator of this company. As the administrator of its company, one can add more accounts for his employees, which has the full rights as administrator's account, except creating other accounts for this company
(can create and edit installer's level organization and accounts)
2、Customer can view or set the unit data information of any installer and their users.
3、 After logging in (using the account provided by AMT), the customer can recreate an account of the same level for management use.
4 、Create the account number of each installer.
Installer account:
1、Its account number and password are created by customer for the installer;
2、installers can view or set any user level unit data information under it;
3、After logging in (using the account number provided by the customer), the installer can recreate an account with the same level for management use;
4.、Create user accounts, and each user account can be bound to one or more heat pumps
(each heat pump should be equipped with WiFi module)
User level: 1、Its account number and password are created by installer.
Users can only view and set the operating parameters of the bounded heat pump unit.

4. Usage

Organization and account creation steps

1.Organization creation of installer level

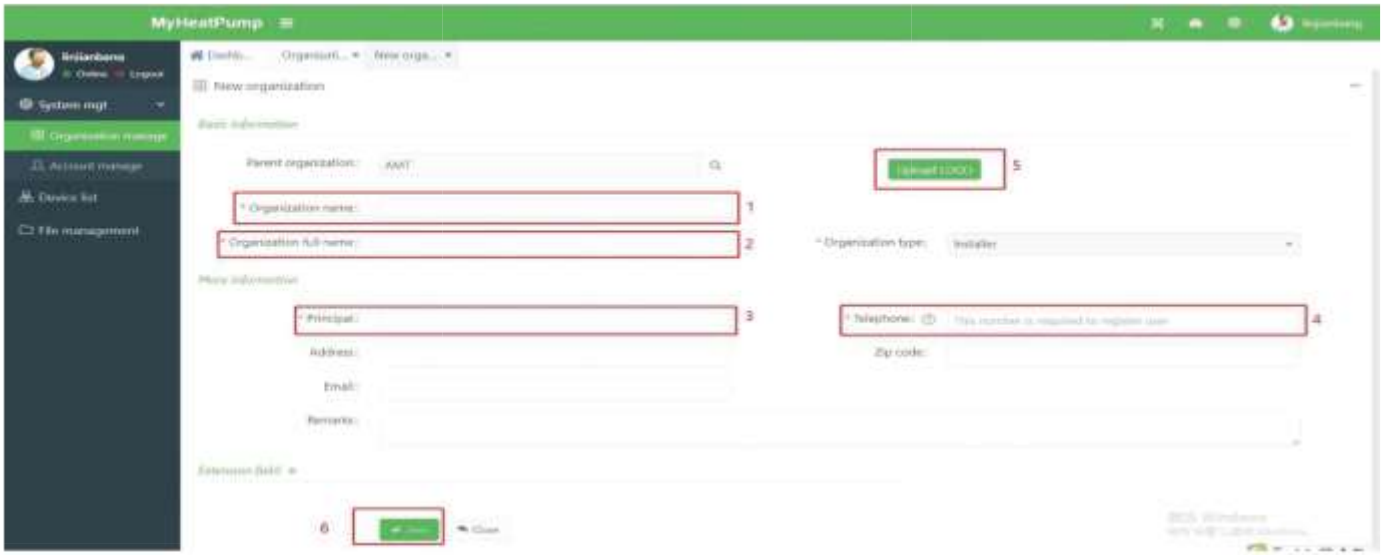
1.1 Use the browser to log in to the website:http://www.myheatpump.com
1.2 Log in to the system with the account and password provided by AMT(123456 by default)
1.3 At this time, the prompt of changing the original password will pop up. You can click Cancel and modify the password under the account name later.



1.4 Add new installer
1.4.1 See below, choose Organization manage, click "AMT"and then choose "+New"

1.4.2 After step1.4.1 the following interface will pop up, and pls fill in according to the following sequence number.
Contents not marked with an asterisk are not necessary;
Contents marked in gray will be automatically filled in by the system
1. Organization name:Fill in the company name or installer name of the installer;
2. Organization full name:Fill in the full name of the installer
3. Principal:Fill in the person in charge for the installer
4.Telephone:Fill in the installer's phone no. (This tel no. should be the same one used to register account)
5. Upload LOGO:The company logo image can be uploaded. No size limitation for the image,the system automatically zooms it.
6. Save:After finishing all above settings, click save.

4. Usage



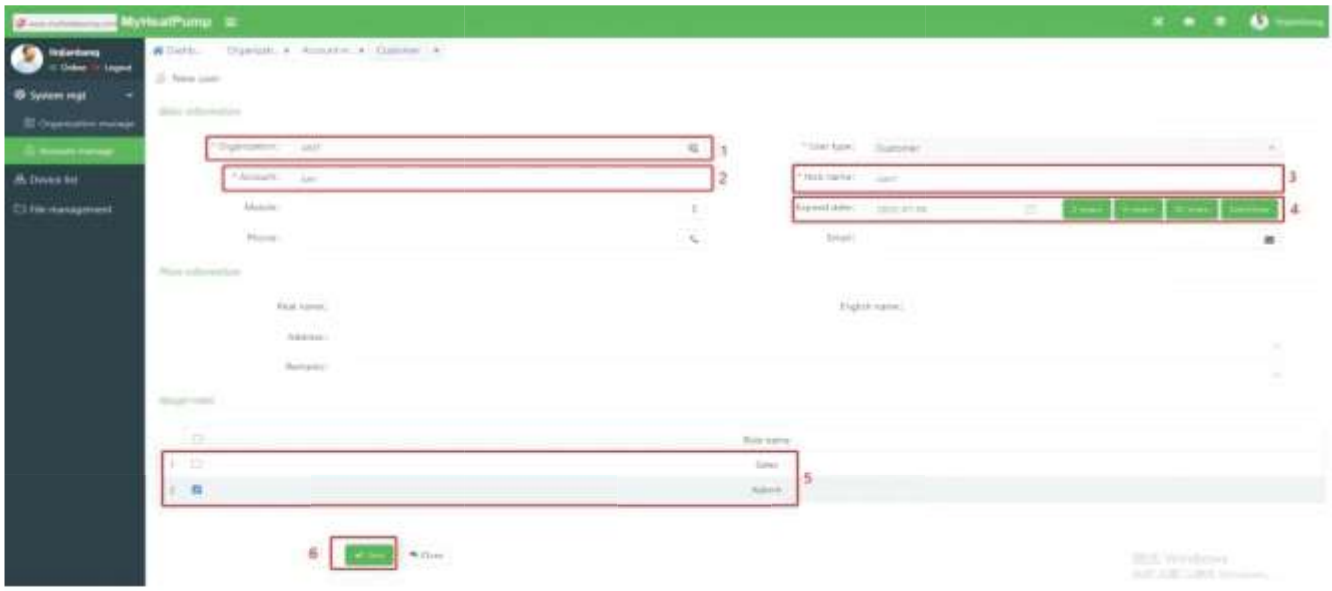
1.4.3 When the setting is saved, the installer organization account is successfully created like below.

2.Account creation(Customer account, installer account and user account)

2.1 Administrator of a organization can follow below steps to create a account for his employees to use:
Choose the account type and apply
2.1.1 +Customer:Click to apply for customer level account
2.1.2 +Installer:Click to apply for installer level account
2.1.3 +User:Click to apply for user level account

4. Usage

2.2 The account creation interface of customer is shown in the following figure (if multiple accounts are not required, the operation on this point can be ignored).
2.2.1 Organization:Select a company, and only one fixed company.
2.2.2 Account:Fill in the second account name that need to login customer level
2.2.3 Nick name:Fill in the name of the customer (only for comments)
2.2.4 Expired date:Select the valid time
2.2.5 Role name:Select permissions of the account (Sales can only view the terminal devices,and admin can also modify related information)
2.2.6 Save:Save the settings, and another new account for customer level is created.



2.3 The account creation interface of installer is shown in the following figure.
2.3.1 Organization:Choose installer, and only installer can be chosen.
2.3.2Account:Fill in the first account name installer level
2.3.3Nick name:Fill in the name of the installer (only for comments)
2.3.4Expired date:Select the valid time;
2.3.5Role name:Select permissions of the account (Sales can only view the terminal devices, and admin can also modify related information)
2.3.6Save:Save the settings, and a new account for installer level is created

4. Usage

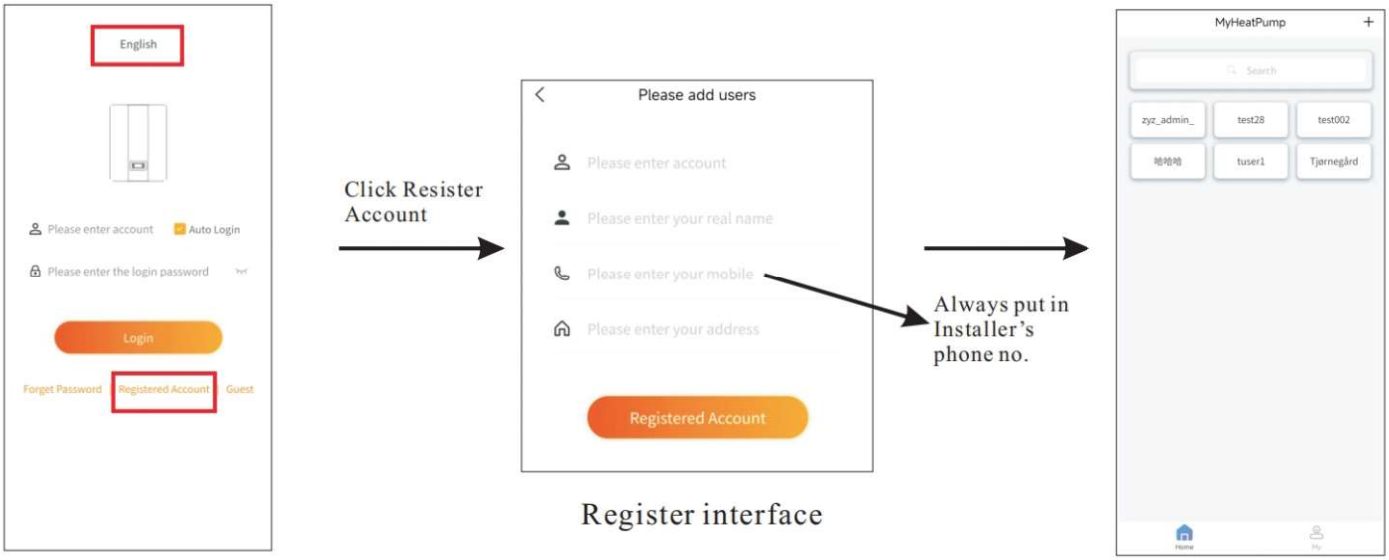
2.4 The account creation interface of user is shown in the following figure.
2.4.1 Organization:Choose installer, and only installer can be chosen.
2.4.2 Account:Fill in the account name of the terminal user used to login website or app
2.4.3 Nick name:Fill in the name of the users (only for comments)
2.4.4 Role name:Select permissions of the account (On the website,users can only view unit information of bounded heat pump)
2.4.5 Save:Save the settings, and a new account for user level is created.

2.5 After finishing above steps 2.2、2.3 and 2.4 three types of login accounts can be created (the default password is 123456).
Customer account:Allow to create three types of accounts-Customer account, installer account and user account.
Installer account:Allow to create two types of accounts--Installer account and user account.
User account:only allow to log in to view the unit information and bind the equipment.

4. Usage

3.Organization creation of installer level

3.1 Two ways to download the App.
For Android system, log in website:http://www.myheatpump.com’use the scanning function of the browser, and scan the QR code at the bottom right of the web page to download and install the app;
For IOS system, please search "myheatpump2" on apple shop to download the App.
3.2 After installing the APP,if the user account has been created on the website, just enter the account and password directly in the login interface
If no account is created on the website, user can click Register on the APP and create a user account according to the instruction;
3.2.1 Register new account in APP



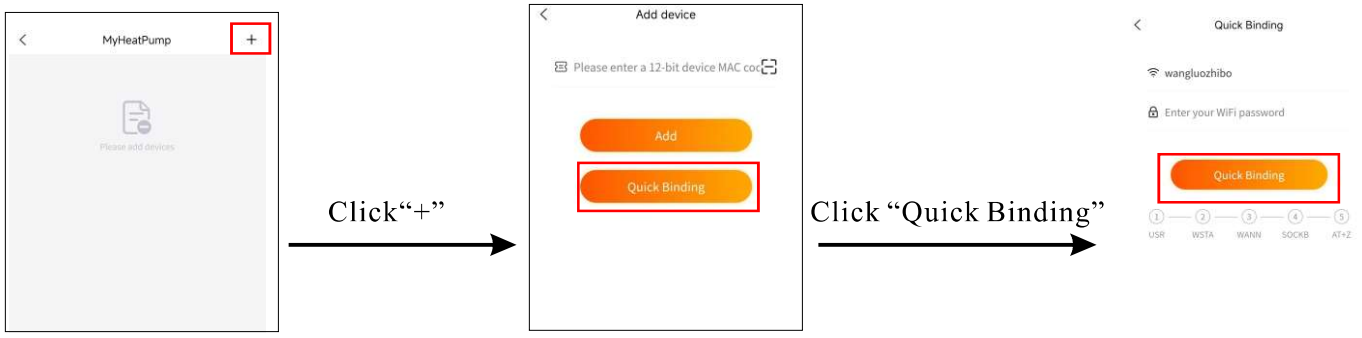
Login interface

Register interface

Register finished

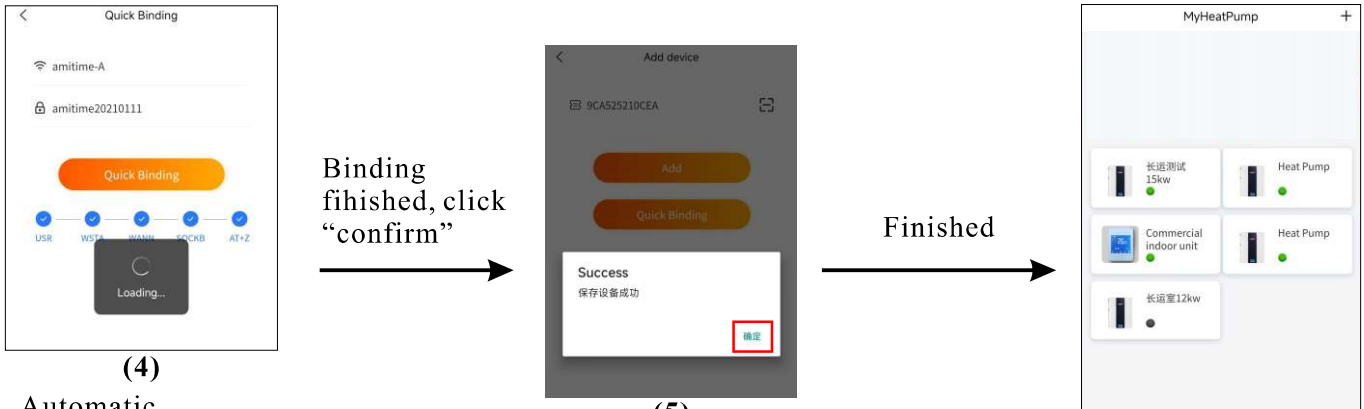
4. Usage

4. Open the app in your mobile phone and perform the following operations after logging in:



(1) **(2)** **(3)**

Input wifi password.Then,click “Quick Binding”,after wait for a while,you will see page 5 as below.



(4)
Automatic Configuration Process

(5)

(6)

If the interface keeps loading for more than 2 minutes during the configuration process,then it means the configuration fails,Please reconfigure it once or manually configure it according to method 2.

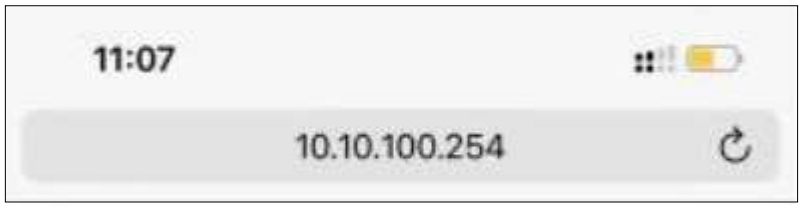
(7)

4. Usage

Method 2: If method 1 failed, bind it by manually entering the MAC address as follows.
Step 1: Press and hold the WIFI module reset button for 5 seconds, connect mobile phone with theWiFi module, then configure WIFI according to the following steps.

1. Turn on your computer or mobile phone WIFI setting, check WIFI ‘USR-C600’and connect it.

2. Turn on the browser and input 10.10.100.254

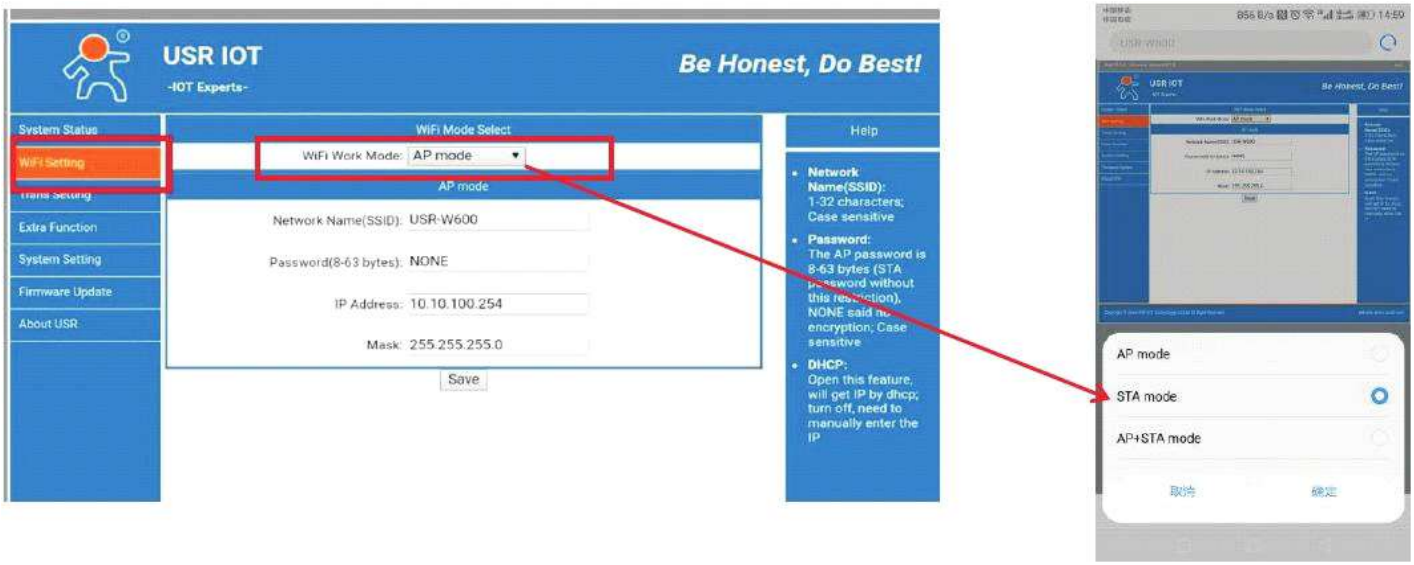


3. Use account “admin” and password “admin” to log-in the web page,then please press “log-in” to confirm the log-in.,

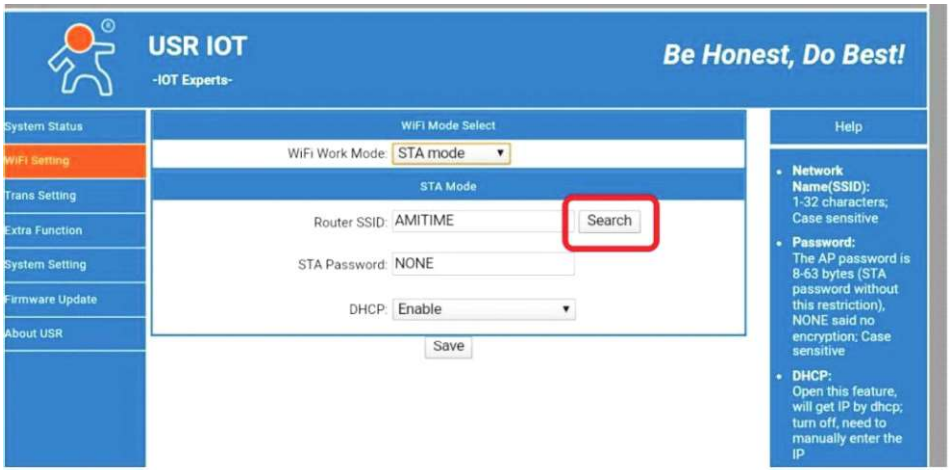
4. Usage

4. You can set the language to English by pressing the button “English” on the upper right corner.

5. Referring to the following drawing, press “WiFi Setting”, please set ‘AP Mode’ to ‘STA Mode’.



6. Press “Search” 'to search the WIFI which can be connected (the wifi that the device should be connected. In a way, the WIFI of your home or office, that is connected to the internet)



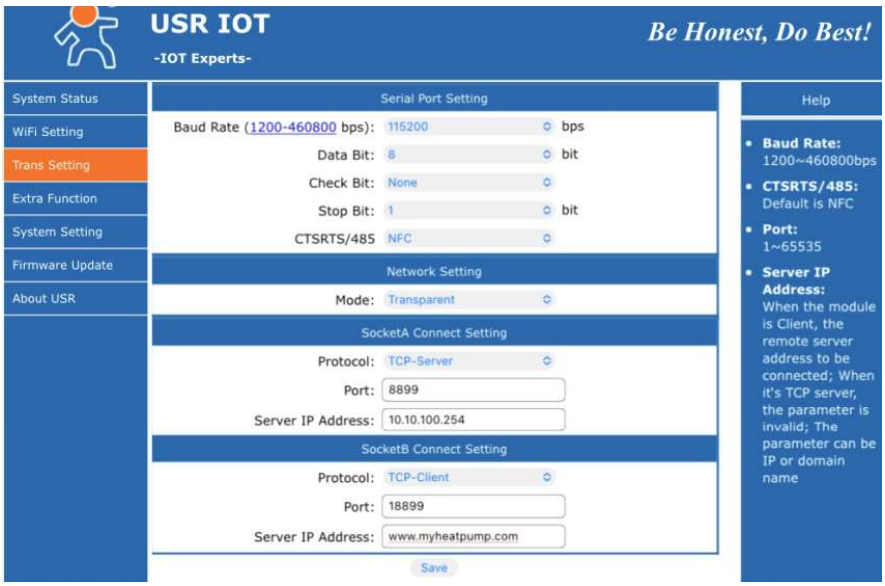
4. Usage

7. Choose the WIFI which will be connected and confirm.

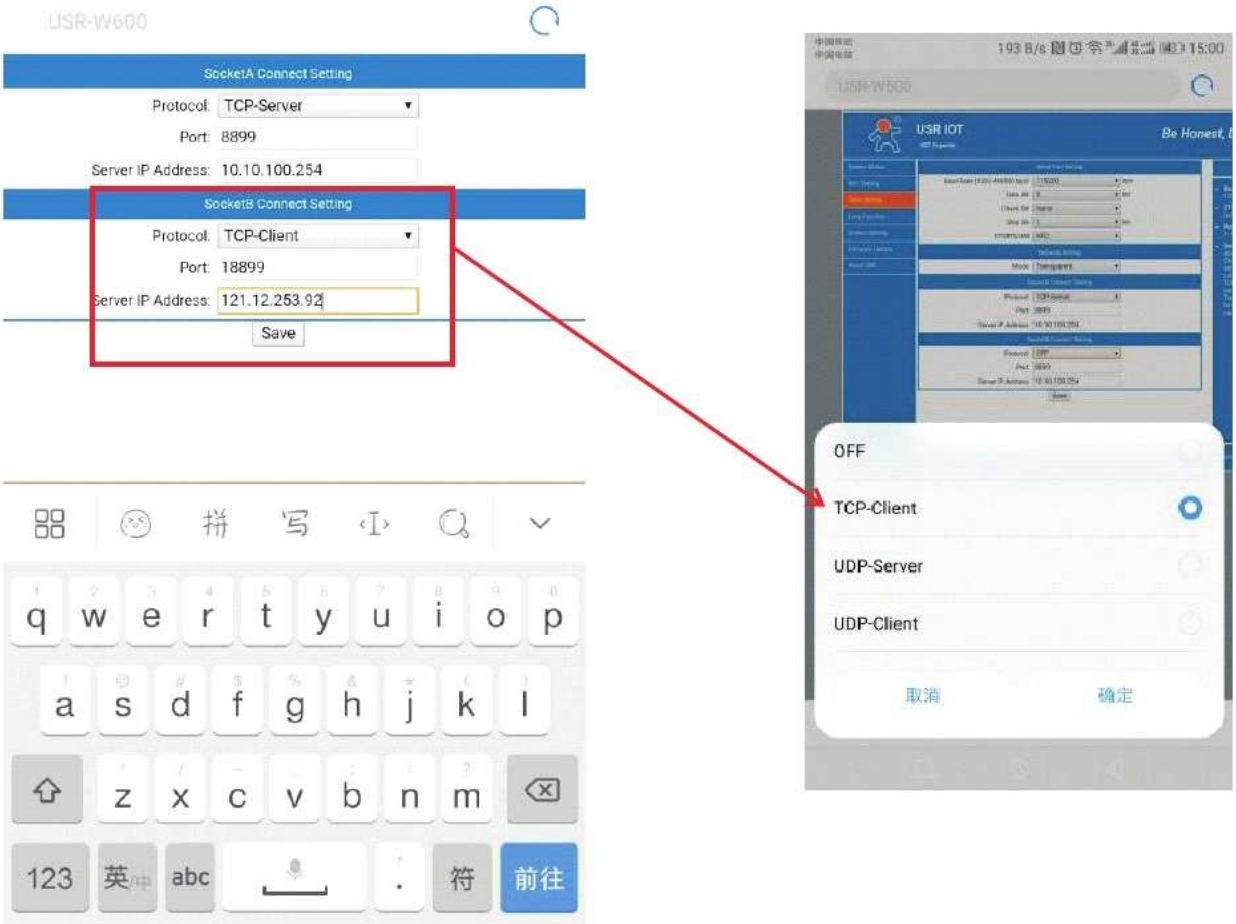
8. If the WIFI you choose need password, input the WIFI password in key position as below picture.
Please remember to press “Save” to confirm the setting.If WiFi is not found, set up manually.

4. Usage

9. Choose and enter “Trans Setting”on the left of the page.

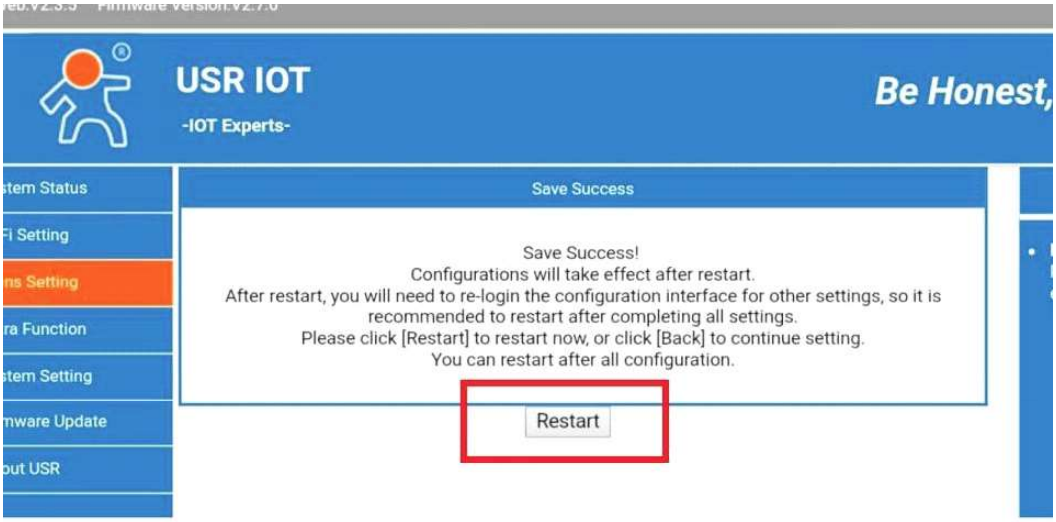


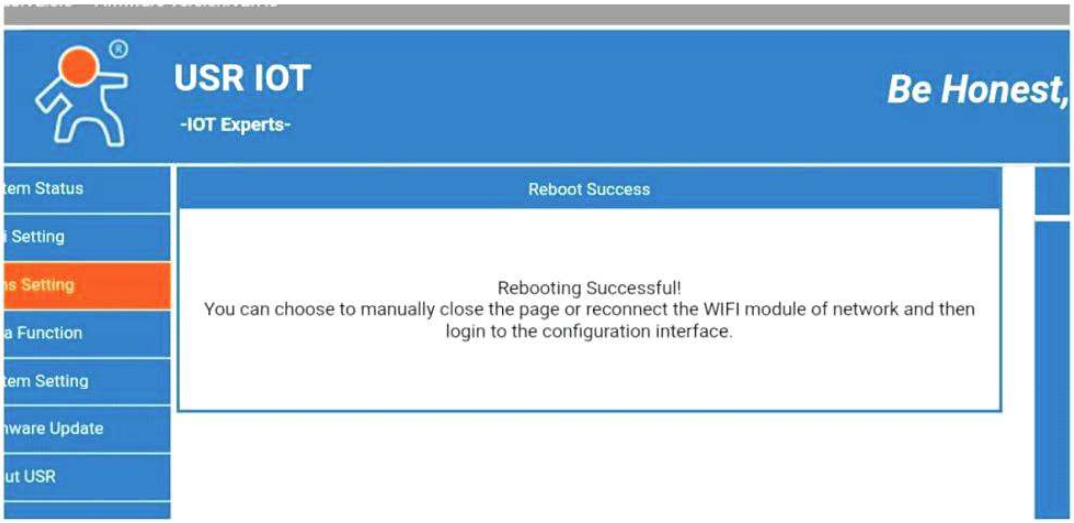
10. Set Socket B from ‘OFF' to ‘TCP-Client' in below page. Set the Port as “18899”.Set the Server IP Address as “www.myheatpump.com”. Then please remember to press “Save” to confirm the setting.



4. Usage

11. Choose “Restart”,to restart the WIFI equipment.



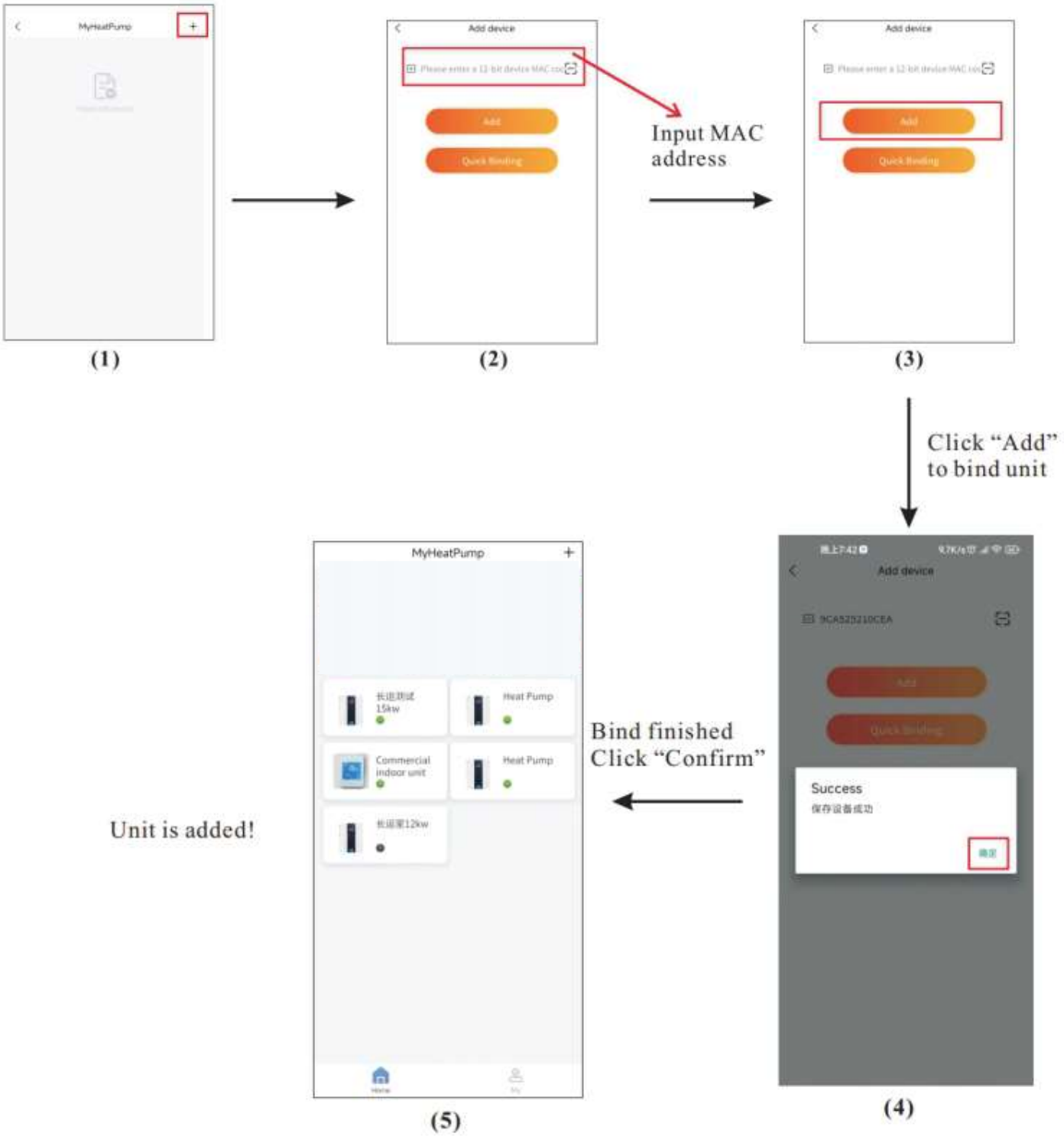


Record the MAC address as below.

4. Usage

After reset, power off and restart the operation panel;
Step 2:Configure manually

1. Log in APP by user account, binding manually, as follows



4. Usage

15. Unit Real-time Data

This menu is designed for viewing the running data of the system. Following parameters that are related to the working of the system can be viewed in this menu:

01): Software Version No.
02): Database Version
03): Heat Exchanger Water Outlet Temperature-Indoor - Tuo
04): Heat Exchanger Water Return Temperature-Indoor - Tui
05): Indoor Coil Temp. - Tup
06): Sanitary Hot Water Temp.– TW
07): Cooling/ Heating Water Temp. –TC
08): Water Flow Rate
09): Compressor Working Speed
10): EEV Openings
11):Average Ambient Temp. in1 Hour
12): Average Ambient Temp. in 4 Hour
13) Average Ambient Temp. in 24 Hour
14) High Pressure – Pd
15): Low Pressure – Ps
16): Discharge Temp. – Td
17): Suction Temp. – Ts
18): Outdoor Coil Temp. – Tp
19):Heat pump accumulated operation time
20):-(reserve)
21): Fan Speed 1
22): Fan Speed 2
23): Outdoor Unit Working Current
24): Voltage
25): EEPROM version No.

4. Usage

16. Power Count

This menu is designed for viewing the power count of the system. Following parameters that are related to the power count of the system can be viewed in this menu:

01):Heating/cooling capacity
This parameter constantly detects and displays the heating/cooling capacity of the heat pump at present.

02): heating/cooling power input
This parameter refers to electricity consumption of the heat pump at present.

03): COP(EER)
This parameter is the ratio of customized heating/cooling capacity(parameter 16.01) to heating/cooling power input(parameter 16.02). This parameter is the ratio of energy conversion efficiency. The higher the energy efficiency ratio, the more electricity is saved.

04): Power consumption of the day
This parameter is the amount of electrical energy consumed by the unit.It is the cumulative value of parameter 16.02 during usage time of the day.

05): Power consumption of the month
This parameter is the amount of electrical energy consumed by the unit in the month .

06): Power consumption of last month
This parameter is the amount of electrical energy consumed by the unit in the last month .

07): Power consumption of the year
This parameter is the amount of electrical energy consumed by the unit in the year .

08): Power consumption of last year
This parameter is the amount of electrical energy consumed by the unit in the last year .

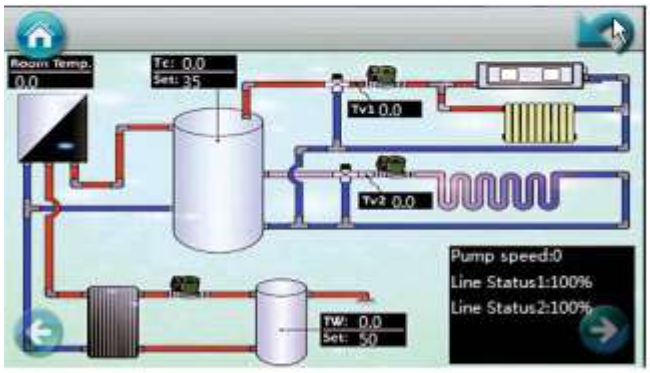
09): Power consumption of last N month
Select the parameters for the last N months about power consumption.

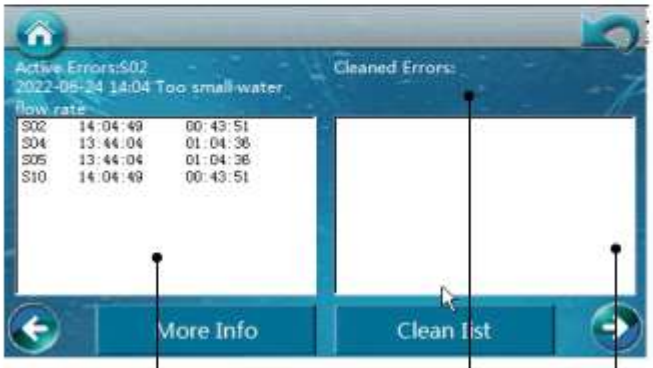
10):Power consumption of month
This parameter(16.10) shows the power consumption which select in "Power consumption of last N month" (parameter 16.09).

4. Usage

Info

Press "Info" to view water system and water system working status.

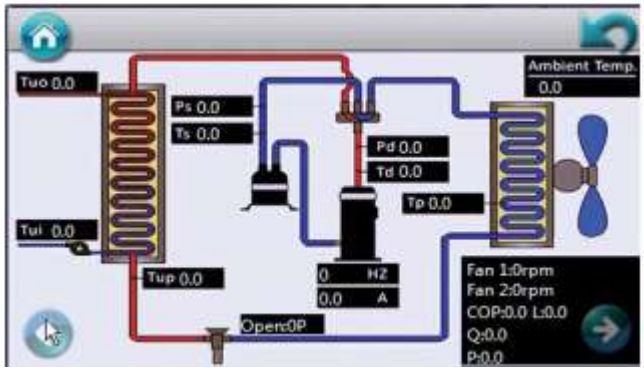


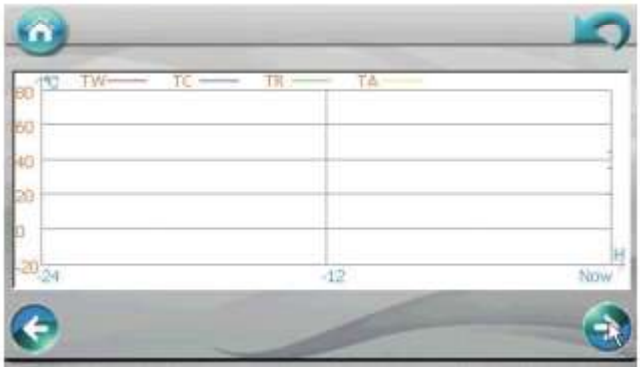


Display of Failure Code

Display of Failure

Record of Previous Failure





TW----Water temperature for Sanitary hot water tank
TC-----Water temperature for buffer tank
TR-----Room temperature
TA-----Ambient temperature

4. Usage

Home

Home: Press this button at any page, operation panel goes back to home page.

4. Usage

4.3 Electric heater

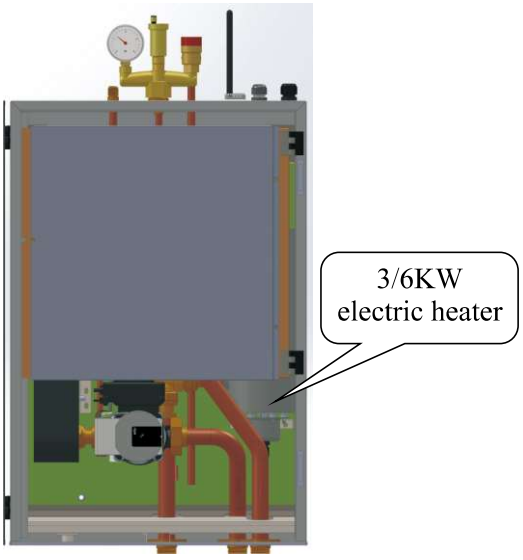
The inbuilt electric heater can be used as a back-up heater or auxiliary heater to our heat pump unit, when ambient temperature is too low, or heat pump fails to work properly, which causes insufficient heat.
This heater will start to work when any of following two conditions is met:

1. Heat pump works properly, but can't provide enough heating capacity.
   Heat pump will turn on the heater(AH) automatically according to the parameter setting in menu "Backup Heating".
2. Heat pump fails to work properly, and emergency switch is turned on to start up electric heater for emergency use.

Customer can set a target temperature for electric heater (AH) on digital thermostat.

⚠ Notice!

There is a separate power cable for electric heater on top of indoor unit. It supplies the power to electric heater directly.
Make sure the unit is full of water before turning it on.
Do not touch it to get burned when it is turned on. High temperature here.
Make sure the power supply to the heater corresponds to the specifications.
The installation, dismantlement and maintenance of the heater must be performed by qualified personnel. It is forbidden to do any changes to the structure of the heater.



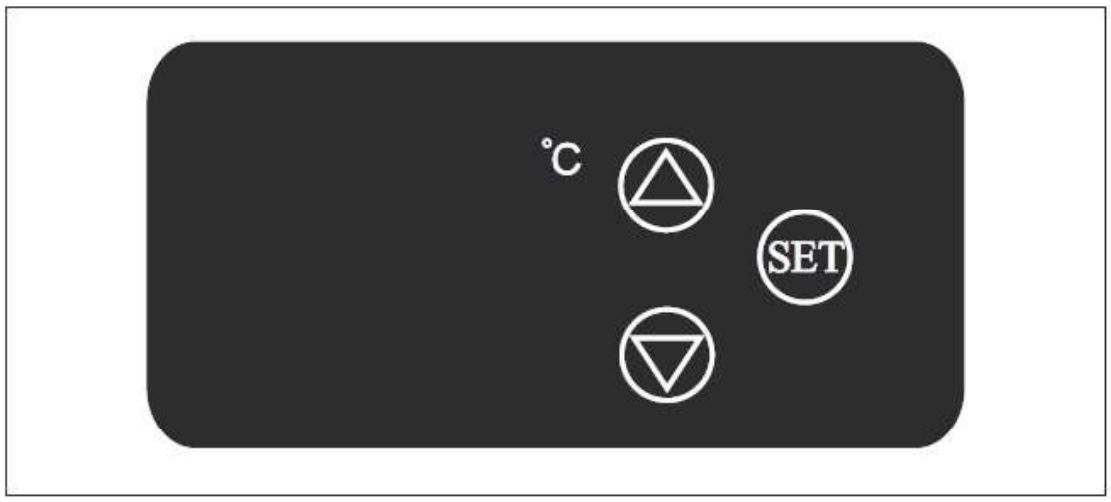
This heater (AH) is controlled by heat pump unit automatically according to the parameter setting in menu "Backup Heating".

In case the heat pump control system breaks down, customer can manual set a set temperature for water circulates through the unit via the digital thermostat for Electric Heater (AH).

Important Notice: Before turn ON the thermostat, system must be full filled with water and correctly air purged, otherwise electric may get over heat and cause fire.

4. Usage

【Operation of digital thermostat】



Power supply:110~240V.
Indicator light OUT
When the electric heater is turned on, the indicator light is always ON.
When the electric heater is turn off, the indicator light is OFF.

1.Temperature setting

Press SET, the set temperature flickers,Press ▲ or ▼ to increase or decrease the set temperature. The controller will save the setting.
Press SET again to exit and show the actual water temperature in the display. If SET is not pressed, the controller will also exit the setting after 3 seconds and show the actual water temperature in the display.

Digital thermostat is default set to 30℃.
Maximum set temperature of digital thermostat is 120℃. But it is strongly suggest not to set the temperature over 75℃, otherwise it may make the unit build up too high pressure inside and cause damage or danger.

2.Control logic

When the thermostat is powered on, the display shows the actual water temperature. When the actual water temperature is lower than (the set tempeture-3℃), the electric haeter is turned on.
When the actual water temperature equals or higher than the set temperature, the electric haeter stops.

3.Failure code

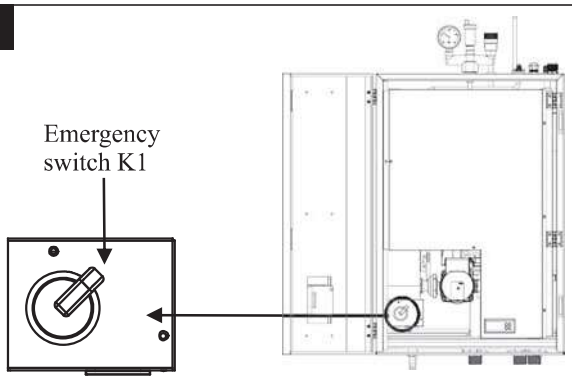
When the actual temperature which senor detects is higer then 120℃ or the sensor for thermostat is short circuit,the display shows the failure code HH, and the electric haeter stops.
When the actual temperature which senor detects is lower then -45℃ or the sensor for thermostat is open circuit,the display shows the failure code LL, and the electric haeter stops.

4. Usage

【Electrical Heater For Emergency】

When heat pump fails, turn on emergency switch to start up electric heater.

1



Switch ON the switch K1 inside the unit, as shown in the picture.

2

OFF

ON

Once the heat pump fails, emergency switch can be set to ON, to start up the Electric heater.
If the water temperature is lower than what is set via the digital thermostat, the Electric heater will be started .

3

OFF

Note:
After problem solved, please don't forget to turn the switch K1 to OFF position, otherwise electric heater will keeps on working if actual water temperature is lower than the set value of the digital thermostat.

4. Usage

3.4 Failure codes

【Outdoor】

Failure code	Failure	Controller Processing	Possible Reasons and Solutions
P01	Input current protection	Compressor stops	When the input current of the unit is greater than the set protection shutdown value on the EEPROM, the unit reports a fault shutdown protection. ① Whether the water temperature is too high and the deviation of the sensor detection temperature from the actual temperature.②The temperature difference between Inlet water and outlet water water is too large (temperature large ≥ 8 degrees), check whether the filter is dirty plug.③Dirty and blocked evaporators or the presence of poor heat dissipation (cooling).④Detect whether the electronic expansion valve has acted, restart the unit after power failure, and touch the electronic expansion valve within a few tens of seconds after power-up to see if it has acted, if not, it needs to be replaced.⑤Check if the parameter configuration of the EEPROM is correct
P02	Compressor phase current protection	Compressor stops	A fault stop is reported when the output current driven to the compressor during operation is greater than the protection value of the drive.①Whether the water temperature is too high and the deviation of the sensor detection temperature from the actual temperature.②The temperature difference between incoming and outgoing water is too large (temperature large ≥8 degrees), check whether the filter is dirty plug. ③Dirty and blocked evaporators or the presence of poor heat dissipation (cooling). ④Detect whether the electronic expansion valve has acted, restart the unit after power failure, and touch the electronic expansion valve within a few tens of seconds after power-up to see if it has acted, if not, it needs to be replaced.
P03	IPM module protection	Compressor stops	During the operation of the compressor, the IPM module is protected against high temperature (protection value generally in the range of 95-100 degrees) due to excessive load, and the unit reports a fault shutdown.①check that the fan is operating normally.②Check the evaporator dirty plug or the existence of poor heat dissipation (cooling)③Check that the drive plate radiator is not loose.④Replacement of the driver board.
P04	Compressor oil return protection	Compressor speed up	If the unit operates in low-frequency F3 for more than 20 minutes,its causes poor oil return,which is normal protection and needs no treatment.
P05	Compressor shut down due to high/ Low pressure switch open caused by abnormal high/low pressure	Compressor stops	A fault shutdown is reported when the compressor starts for 90 seconds and the high pressure switch port is detected as being open for 5 seconds.① Whether the water temperature is too high and the deviation of the sensor detection temperature from the actual temperature.②The temperature difference between incoming and outgoing water is too large (temperature difference ≥8 degrees), check whether the filter is dirty and blocked.③The evaporator is dirty and blocked or there is poor heat dissipation.④Detect whether the electronic expansion valve has acted, restart the unit after power failure, and touch the electronic expansion valve within a few tens of seconds after power-up to see if it has acted, if not, it needs to be replaced.
P06	High pressure protection	Compressor stops	When the high pressure is higher than the system pressure protection value during the operation of the unit, the unit reports a fault shutdown protection.① Whether the water temperature is too high and the deviation of the sensor detection temperature from the actual temperature.②The temperature difference between incoming and outgoing water is too large (temperature difference ≥ 8 degrees), check whether the filter is dirty and blocked.③The evaporator is dirty and blocked or there is poor heat dissipation.④Detect whether the electronic expansion valve has acted, restart the unit after power failure, and touch the electronic expansion valve within a few tens of seconds after power-up to see if it has acted, if not, it needs to be replaced.
P07	Compressor preheating protection	Standard function, doesn't need any treatment	When the unit is powered on, if the ambient temperature is below -5 degrees at this time, the unit will be preheated for 30 minutes, a protection code will be reported, the compressor heating tape will be turned on and the unit will not be allowed to turn on.No treatment required, normal protection logic of the unit, just wait 30 minutes.

4. Usage

Failure code	Failure	Controller Processing	Possible Reasons and Solutions
P08	Too high compressor discharge temp . protection	Compressor stops	When the exhaust gas temperature is greater than the exhaust gas temperature protection stop point during the operation of the unit, the unit reports a fault stop.①At low temperatures, the water temperature is too high, and the deviation of the water temperature sensor from the true temperature is investigated.② Check the system for refrigerant leaks.③Check whether the return air temperature sensor has been installed loosely, resulting in excessive errors in the calculation of superheat.④Check whether the coil temperature sensor detects abnormal temperatures, resulting in the unit not defrosting and causing serious frosting.
P09	Outdoor evaporator coil temp. sensor protection	Compressor stops	In cooling mode, if the external coil temperature is higher than the external coil over temperature protection value, the unit reports a fault shutdown.①Check whether the evaporator is dirty and blocked, resulting in poor heat dissipation.② Check whether the fan is running at an abnormal speed, resulting in poor heat dissipation.③Check the environment in which the unit is installed and whether there is a heat island effect.④The actual operating ambient temperature of the unit is too high, exceeding 45 degrees or more.⑤The water temperature is too low, resulting in the inner coil being too low on restart.⑥Check the system for refrigerant leaks.
P10	AC over high/low voltage protection	Compressor stops	When the unit is energized and the input voltage is detected to be below 140V or above 270V,the unit reports a fault shutdown.①Check whether the voltage of the terminal LN line supplying the unit is within the normal range.②Unplug the DC fan from the main control board and confirm whether the voltage detection is abnormal due to damage to the motor.
P11	Compressor shut down due to too high/low ambient temperature	Compressor stops	Heating made:when the ambient temperature is below -25°C or -30°C,or above 45°C,the unit reports a fault shutdown.Refrigeration mode:when the ambient temperature is lower than -1°Cor higher than 65°C,the unit will report a fault and shut down①Check if the installation position of the environmental sensor is blocked by ice or directly exposed to the sun.②Check if there is a heat island effect at the installation location of the unit;
P12	Compressor speed limit due to too high/low ambient temperature	Compressor speed down	This is a normal protection and doesn't need any treatment.
P13	Compressor speed down due to abnormal low pressure detected by condensing pressure sensor	Compressor stops	If system pressure is too low , it activates this protection. Unit recovers automatically after 3 minutes when it happened the first time.① Check whether the port wiring is short-circuit or open.②Check whether unit has not enough refrigerant or leakage inside(more likely it is not enough refrigerant that caused this abnormal evaporating pressure). ③Check whether the electronic expansion valve is abnormal when the unit is activated,resulting in the low unit pressure . ④Detect whether the electronic expansion valve within a few of seconds after power-up to see if it has acted,if not,it needs to be replaced.
P14	Anti-freezing protection-stage 1 active	Compressor start	When the unit is power off or standby status and the ambient temp.is lower than the protective value,it activates this protection.To avoid the pipe freezing ,the water pump will stop for 10 minutes and start for 1 minute.This is a normal protection and doesn't need any treatment.
P15	Anti-freezing protection-stage 2 active	Compressor start	When the unit is power off or standby status and the ambient temp.is lower than the protective value,it activates this protection.To avoid the pipe freezing ,the three-way valve will switch every three minutes and the water pump will stop for 10 minutes and start for 1 minute.This is a normal protection and doesn't need any treatment.
P16	Refrigerant leak protection	Compressor stops	If the refrigerant leak from automatic exhaust valve to detection of refrigerant sensors in outdoors ,it activates this protection.Use refrigerant leak detector to detect the leak of unit so that repair it.

4. Usage

Failure code	Failure	Controller Processing	Possible Reasons and Solutions
P18	Evaporating pressure too low protection	Compressor stops	①Check whether unit has not enough refrigerant or leakage inside(more likely it is not enough refrigerant that caused this abnormal evaporating pressure)②Check whether the electronic expansion valve is abnormal when the unit is activated,resulting in the low unit pressure . ③Detect whether the electronic expansion valve within a few of seconds after power-up to see if it has acted,if not,it needs to be replaced. ④Check whether the low pressure sensors is failure.
P19	High voltage protection	Compressor stops	When the unit is energized and the input voltage is detected to be above 270V,the unit reports a fault shutdown.①Check whether the voltage of the terminal LN line supplying the unit is within the normal range.②Unplug the DC fan from the main control board and confirm whether the voltage detection is abnormal due to damage to the motor.③Check whether the unit is wired correctly with the power supply
P20	Low voltage protection	Compressor stops	When the unit is energized and the input voltage is detected to be below 140V,the unit reports a fault shutdown.①Check whether the voltage of the terminal LN line supplying the unit is within the normal range.②Unplug the DC fan from the main control board and confirm whether the voltage detection is abnormal due to damage to the motor.③Check whether the unit is wired correctly with the power supply
P21	High current protection	Compressor stops	When the compressor is not started and the input current is detected to be greater than 4A ,a fault stop is reported. Detect whether the actual input current is consistent with the judgement conditions, inconsistent, replace the main-board;consistent, further view the operation of the unit, whether the current is lower than the protection value.
P22	Low current protection	Compressor stops	When the current is less than 1A when the compressor is running above F4,a fault stop is reported. Detect whether the actual input current is consistent with the judgement conditions, inconsistent, replace the main-board;consistent, further view the operation of the unit, whether the current is lower than the protection value.
P23	Insufficient water flow protection	Compressor stops	When the pipe less than 50% of the amount of water flow, a fault shut down is reported. ① Check water line filter for blockages and the water pump operation normally. ②There is air in the water system,causing the pump to idle and causing the water flow switch to operate incorrectly,which can be emptied. ③ The water flowmeter can be cleaned when the water pipe has sediment. ④ If the triangular column of flowmeter is broken,it's necessary to replace the flowmeter.
P26	Service Lock	Compressor stops	The unit can't work at normal setting temp. when service lock protection is activated.It can only maintain the unit's anti-freezing protection function to ensure that the unit is not damaged by freezing.When the protection is activated ,it is necessary to seek the unlocking password from the installer in order to turn off the service lock and operate normally;
P27	Power supply phase protection	Compressor stops	If the power supply lacks of phase or phase sequence error,a fault stop is reported. ①Check whether the wiring diagram is correctly connected.②Check whether the firewire is broken or poor connected.
F01	Outdoor ambient temp.sensor failure	Compressor stops	Check whether ambient temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.
F02	Outdoor evaporator coil temp.sensor failure	Compressor stops	Check whether outdoor coil temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.
F03	Compressor discharge temp. Sensor failure	Compressor stops	①Check whether compressor discharge temperature sensor is open, short-circuit or value drifts too much. ②Replace it if necessary.Detect whether the sensor temperature-sensing head has fallen off the exhaust pipe or is not firmly fixed.
F04	Outdoor Suction temp.sensor failure	Compressor stops	Check whether outdoor suction temperature sensor is open,short-circuit or value drifts too much. Replace it if necessary.
F05	Evaporating pressure sensor failure	Compressor stops	Check whether evaporating temperature sensor is open, short-circuit or broken. Replace it if necessary.

4. Usage

Failure code	Failure	Controller Processing	Possible Reasons and Solutions
F06	Condensing pressure sensor failure	Compressor stops	Check whether condensing temperature sensor is open, short-circuit or broken. Replace it if necessary.
F07	High pressure switch failure	Compressor stops	①Whether the water temperature is too high and the deviation of the sensor detection temperature from the actual temperature. ②The temperature difference between incoming and outgoing water is too large (temperature large ⩾8 degrees), check whether the filter is dirty plug. ③Dirty and blocked evaporators or the presence of poor heat dissipation (cooling). ④Detect whether the electronic expansion valve has acted, restart the unit after power failure, and touch the electronic expansion valve within a few tens of seconds after power-up to see if it has acted, if not, it needs to be replaced.
F08	Low pressure switch failure	Compressor stops	The factory is in a short circuit state. If this fault is reported and cannot be switched on, check whether the short circuit switch is loose or left installed;
F09	DC fan failure (one)	Compressor stops	Single fan systems: when the actual fan speed is less than 20r/min for 20 seconds when the fan is in demand for operation, a fan fault is reported and the unit is shut down. Dual fan system: when the fan is in demand for operation, and the actual fan speed is less than 20r/min for 20 seconds, a fan A fault is reported, but the unit will continue to run at this time, with limited frequency operation.①Check that the airfoil is not jammed by a foreign object.②Checkthe smoothness of the natural rotation of the motor in the event of a power failure.③Check the motor leads for damage.④Check whether the connector between the motor leads and the main control board is loose or has poor contact.⑤Unplug the motor connector and test the voltage of the motor terminals with a multimeter Is it around 310VDC between Vm and GND whether the distance between VCC and GND is around 15VDC.Replacement the main control board if the voltage at these two locations is abnormal.Replacement of the motor if the voltage at these two points is normal.
F10	DC fan failure (two)	Compressor stops	Dual fan system: when the actual speed of both fans is less than 20r/min for 20 seconds when the fans are in demand for operation, a fan B fault is reported and the unit is shut down..①Check that the airfoil is not jammed by a foreign object. ②Checkthe smoothness of the natural rotation of the motor in the event of a power failure. ③ Check the motor leads for damage. ④ Check whether the connector between the motor leads and the main control board is loose or has poor contact. ⑤ Unplug the motor connector and test the voltage of the motor terminals with a multimeter Is it around 310VDC between Vm and GND whether the distance between VCC and GND is around 15VDC.Replacement the main control board if the voltage at these two locations is abnormal.Replacement of the motor if the voltage at these two points is normal.
F11	Evaporation pressure too low fault	Compressor stops	Three times within 30 minutes the unit is protected by low pressure and the unit is shut down.①Check the unit for refrigerant leakage.②The evaporator is dirty and blocked or there is poor heat dissipation.③Whether the unit is seriously frosted. ④Detect whether the electronic expansion valve within a few tens of seconds after power-up,if not,it needs to be replaced. ⑤Is the fan rotating at an abnormal speed (too slow or not rotating (does not exclude wrong parameter setting))
F12	Condenser pressure overload fault	Compressor stops	Three times with 30miutes,the unit is protected by high pressure overload and the unit is shutdown.①Whether the water temperature is too high and the deviation of the sensor detection temperature from the actual temperature. ② The temperature difference between incoming and outgoing water is too large (temperature large ⩾8℃),check whether the filter is dirty or plug,③Dirty and blocked evaporators or the presence of poor heat dissipation (cooling). ④Plate exchange fouling, poor heat transfer;no difference between incoming and outgoing water.⑤Detect whether the electronic expansion valve has acted, restart the unit after power failure, and touch the electronic expansion valve within a few tens of seconds after power-up, if not, it needs to be replaced.

4. Usage

Failure code	Failure	Controller Processing	Possible Reasons and Solutions
F19	Water flow meter failure	Compressor stops	When the pipe less than 50% of the amount of water flow, a fault shut down is reported.①Check water line filter for blockages and the water pump operation normally. ②There is air in the water system,causing the pump to idle and causing the water flow switch to operate incorrectly,which can be emptied. ③ The water flowmeter can be cleaned when the water pipe has sediment.④If the triangular column of flowmeter is broken,it's necessary to replace the flowmeter.
F20	Refrigerant leakage protection three times failure	Compressor stops	F20 fault is displayed when P16 protection is triggered three times in succession within 30 minutes.
F33	Defrosting temp. sensor failure	Compressor stops	Check whether unit defrosting temperature sensor is open,short- circuit or value drifts too much. Replace it if necessary.
E02	Communication between outdoor main control PCB and module PCB	Compressor stops	When the main control board detects no communication with the driver board for 30 seconds, the main control board will report a fault and the driver board will shut down for processing.①Check whether the communication line between the main control board and the driver board is loose or has poor contact.②Replacement of driver board or main control board.
E03	Compressor phase current failure (open/short circuit)	Compressor stops	When a three-phase line break or short is detected in the compressor during start-up or operation,a fault shutdown is reported.①Check whether the compressor leads are loose or have poor contact.②Testing the coils of the compressor for broken phase or short circuits.③Replacement of the driver board.
E04	Compressor phase current overload (over current)	Compressor stops	When the drive board detects that the compressor current exceeds the compressor protection current, the unit reports a fault shutdown.①Check whether the set water temperature of the unit is too high, the deviation of the detected water temperature from the actual value is too large and the load is too large.②Check whether the compressor is running abnormally and whether there are any stuck cylinders.③Replacement of the driver board.
E05	Compressor driver failure	Compressor stops	The unit reports a fault shutdown when the drive board is unable to start the compressor or control it. ①Measure whether the compressor coil resistance is within the normal range. ②Whether the compressor can be turned up when it starts or whether it reports a fault without any response. ③Replacement of the driver board. ④Replacement of the compressor.
E06	Module VDC over high/low voltage failure	Compressor stops	When the voltage after rectification of the drive board itself protects against shutdown.① Check whether the voltage of the terminal LN line supplying the unit is within the normal range(between 140V and 270V). ②Unplug the DC fan the main control board and confirm whether the voltage detection is abnormal due to damage to the motor. ③Replacement of the driver board.
E07	AC current failure	Compressor stops	When the compressor is not started and the input current is detected to be greater than 4A or the current is less than 1A when the compressor is running above F4,a fault stop is reported. ①Detect whether the actual input current is consistent with the judgement conditions, inconsistent, replace the main-board;consistent, further view the operation of the unit, whether the current is lower than the protection value. ②Replacement of the main control board. Replacement of compressor.
E08	EEPROM failure	Compressor stops	The main control chip cannot read the parameters of the off-chip memory chip or the parameters are checked incorrectly,and the unit reports a fault shutdown.Power failure restart,or if after restarting, it is not impossible to clear the fault, replace the main control board.

4. Usage

Failure code	Failure	Controller Processing	Possible Reasons and Solutions
E10	Communication failure between main PCB and driver PCB for fan motor	Compressor stops	The unit reports a fault shutdown when the drive PCB is unable to start the fan motor or control it. ①Measure whether the fan motor coil resistance is within the normal range. ②Whether the fan motor can be turned up when it starts or whether it reports a fault without any response. ③Replacement of the driver board. ④Replacement of the fan motor.
E11	Compressor phase failure	Compressor stops	If the compressor lacks of phase or phase sequence error,a fault stop is reported. ①Check whether the wiring diagram is correctly connected.②Check whether the firewire is broken or poor connected.
E12	Fan motor PCB IPM module temp. failure	Compressor stops	During the operation of the fan motor, the IPM module is protected against high temperature (protection value generally in the range of 95-100 degrees) due to excessive load, and the unit reports a fault shutdown.①check that the fan is operating normally.②Check the evaporator dirty plug or the existence of poor heat dissipation (cooling)③Check that the drive plate radiator is not loose.④ Replacement of the driver board.
S17	Outdoor PCB failure	Compressor stops	It can check the main unit content to click on the “info” on the system diagram.
S18	Communication failure of all outdoor PCB	Compressor stops	If there is no communication of all outdoor PCB within 2 minutes a fault shutdown is reported. ①Check whether the A/B end of the communication line is connected backwards or has poor contact. ②Check whether the power supply of the outer board is normal(220 VAC and the motherboard has flashing lights). ③Check the perimeter of the communication line , whether there are strong sources of interference,such as frequency converters, transformers, high-power motors,etc..
S19	Ambient temp. sensor failure	Compressor stops	The failure reports when all the ambient temp.sensor is broken,Check whether ambient temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.
S20	All outdoor PCB failure	Compressor stops	It can check the main unit content to click on the “info” on the system diagram.
S21	Water flow failure	Compressor stops	S21 fault is displayed when P23 protection is triggered three times in succession within 30 minutes.

4. Usage

Failure code	Failure	Controller Processing	Possible Reasons and Solutions
F13	Room temp. sensor failure	Unit stops	Check whether room temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.
F14	Sanitary hot water temp.sensor failure	Unit stops	Check whether sanitary hot water temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.
F15	Cooling/heating water temp. sensor failure	Unit stops	①Check whether cooling/heating water temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.②Check whether the installation position of the cooling/heating water temperature sensor has fallen down.
F16	Unit water outlet temp.sensor failure	Unit stops	Check whether unit water outlet temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.
F17	Unit water inlet temp.sensor failure	Unit stops	Check whether unit water inlet temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.
F18	Indoor coil temp.sensor failure	Unit stops	Check whether indoor temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.
F21	Mixture valve 1 temperature sensor failure	Unit keep on working, mixture valve 1 output fixed to 0.	The mixing valve function is active,and if the mixing temperature 1 sensor is detected as disconnected or shorted ,a fault is reported,but the unit does not stop.
F22	Mixture valve 2 temperature sensor failure	Unit keep on working, mixture valve 2 output fixed to 0.	The mixing valve function is active,and if the mixing temperature 2 sensor is detected as disconnected or shorted ,a fault is reported,but the unit does not stop.
F27	Indoor EEPROM failure	Unit stops	When the E-side data of the inner board itself cannot be read, a fault is reported and the unit is shut down for processing. Replacement of interior panels.
F28	Water pump PWM signal feedback failure	Unit stops	When then DC pump setting is valid, after 120 seconds of pump operation and no feedback signal is detected, a fault is reported and the unit is shut down. ①Check whether the pump PWM signal line is loose or has poor contact. ②Check that the pump is not jammed. ③Check whether the inner board pump control circuit is abnormal or replace the main board. ④Replacement of the water pump.
F29	Mixture valve 1 failure	Unit keep on working, mixture valve 1 output fixed to 0	When the mixing valve function is effective, when the mixing temperature 1 - system 1 set temperature > 4℃ cooling -4 and the mixing valve is adjusted to 0V for 10 minutes, the three-way valve 1 is reported as faulty,but the unit does not stop. ①Check whether the mixing valve control line is normal and whether there is poor contact.②Check that the mixing valve is not jammed. ③Check that none of the end radiators are turned on, resulting in the inability to mix water.
F30	Mixture valve 2 failure	Unit keep on working, mixture valve 2 output fixed to 0.	When the mixing valve function is effective, when the mixing temperature 2 - system 2 set temperature > 4℃ cooling -4 and the mixing valve is adjusted to 0V for 10 minutes, the three-way valve 1 is reported as faulty,but the unit does not stop.①Check whether the mixing valve control line is normal and whether there is poor contact.②Check that the mixing valve is not jammed. ③Check that none of the end radiators are turned on, resulting in the inability to mix water.
F31	Economizer inlet temp. sensor failure	Unit stops	Check whether the economizer water inlet temperature sensor is open,short-circuit or value drifts too much. Replace it if necessary.
F32	Economizer outlet temp. sensor failure	Unit stops	Check whether the economizer water outlet temperature sensor is open,short-circuit or value drifts too much. Replace it if necessary.

4. Usage

Failure code	Failure	Controller Processing	Possible Reasons and Solutions
F34	Water tank temp. sensor failure	Unit stops	Check whether water tank temperature sensor is open,short- circuit or value drifts too much. Replace it if necessary.
F35	Compressor discharge temp. too high for 3 times protection	Unit stops	F35 fault is displayed when P08 protection is triggered three times in succession within 30 minutes.①At low temperatures, the water temperature is too high, and the deviation of the water temperature sensor from the true temperature is investigated.②Check the system for refrigerant leaks.③Check whether the return air temperature sensor has been installed loosely, resulting in excessive errors in the calculation of superheat.④Check whether the coil temperature sensor detects abnormal temperatures, resulting in the unit not defrosting and causing serious frosting.
P17	Condenser delta T too high	Compressor stops	If the high pressure high than the protect value,it activates this protection. ①Whether the water temperature is too high and the deviation of the sensor detection temperature from the actual temperature. ②Check whether the filter is dirty plug. ③Whether the pump selection is small, the pump has no emptying.
P25	Indoor coil temp. sensor failure in heating	Compressor stops	When the indoor coil temp. higher than protect value ,a fault stop is reported ①.The fan coil filter dust accumulation is too much to cause normal heat dissipation when heating and make the indoor coil temp.too high.②Check whether the end radiator turns on properly, resulting in poor heat dissipation.
S01	Indoor coil anti-freezing protection in cooling	Compressor stops	In cooling mode, a fault shutdown is reported when the evaporating temperature is detected≤1℃ after 3 minutes of compressor start-up operation. ①Whether the actual water temperature is too low(large difference between the sampling display and the actual). ② Whether the water flow is too small, whether the filter is blocked, whether the water flow switch is not working and whether the DC pump is set to run at low speed.③The amount of refrigerant is too low, check the low pressure and determine if the refrigerant needs to be added or if there is a leak in the system.④The initiation of cooling at an ambient temperature below 15℃ may trigger protection.⑤Abnormal electronic expansion valve,to detect its action.
S02	Too small water flow rate	Compressor stops	When the system pump starts running for ≥30 seconds and the water flow switch is detected to be disconnected for a duration of ≥10 seconds, a fault shut down is reported.①The water flow rate is less than 50% of the rated flow rate,Check water line filter for blockages and the water pump operation normally. ②There is air in the water system,causing the pump to idle and causing the water flow switch to operate incorrectly,which can be emptied. ③The water flow switch from the PCB board pulled out of the state, through the multimeter test the water flow switch in the pump running state, if it has been disconnected, then replace the water flow switch.
S03	Water flow switch failure	The unit cannot be activated .	A fault is reported when the water flow switch is detectd as remaining closed for ≥290 seconds after the system pump has stopped running. ①The water flow switch stuck,cannot restore the disconnected state, the water flow switch from the PCB board pulled out of the state,and then through the multimeter test water flow switch in the pump stopped state. ②Water flow switch port was artificially short connection, need to restore the use of normal water flow switch control. ③In the water system, the presence of a third party pump at work, resulting in the water flow switch also remaining closed.
S04	Indoor unit communication failure	Unit stops	No communication between the WINCE screen and the internal board within 2 minutes, then a fault shutdown is reported.① Check whether the A/B end of the communication line is connected backwards or has poor contact. ② Check whether the power supply of the inner board is normal(24VDC and the motherboard has flashing lights). ③Check whether the outdoor unit has G at the A/B communication end, if so, please confirm whether the G line is connected to the indoor board communication G. ④Check the perimeter of the communication line, whether there are strong sources of interference, such as frequency converters, transformers, high-power motors,etc..

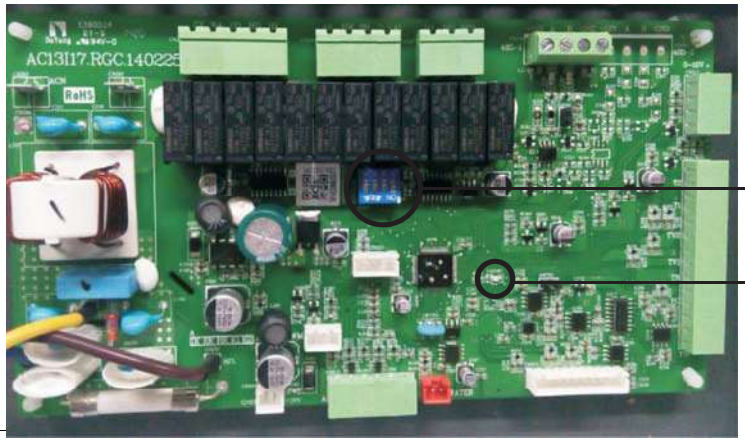
4. Usage

Failure code	Failure	Controller Processing	Possible Reasons and Solutions
S05	Outdoor unit communication failure	Unit stops	If there is no communication between the WINCE screen and the external board within 2 minutes a fault shutdown is reported. ①Check whether the A/B end of the communication line is connected backwards or has poor contact. ②Check whether the power supply of the outer board is normal(220 VAC and the motherboard has flashing lights). ③Check whether the outdoor unit has G at the A/B communication end,if so ,please confirm whether the G line is connected the indoor board communication G. ④Check the perimeter of the communication line , whether there are strong sources of interference,such as frequency converters, transformers, high-power motors,etc..
S06	Water outlet Temp. too low protection in cooling	Compressor stops	A fault shutdown is reported when TUO<5℃ is detected in the cooling mode. ①Check whether the overrides in the water system are dirty and blocked to ensure that the temperature difference between incoming and outgoing water is within 5℃ . ② Check the difference between TC temperature and outlet temperature to ensure that the set temperature is not set too low on the premise of meeting the water temperature requirement.
S07	Water outlet Temp. too high protection in heating/hot water	Compressor stops	In heating or hot water mod ,when the outlet temperature is detected to be > the maximum outlet temperature of the heat pump set by WINCE ,a fault is reported and the compressor system is stopped, but the electric heating can continue to work.① If in hot water mode and set temperature is higher than the protection value, while the electric pipe heating is also on, this protection is shown as normal. ②The water system can be investigated to see if the filter is dirty and blocked to ensure that the temperature difference between incoming and outgoing water is within 5℃.③ Check the difference between the TC temperature and the outlet temperature is not too high on the premise of meeting the water temperature requirement,
S08	Defrosting Failure	Compressor stops	This failure is reported as 3 consecutive triggers of S09(defrost failure protection),thus turning into a fault lockout.① Check that the set water temperature is not too low (below 32℃), causing the water temperature to drop too quickly when defrosting. ②Detect whether the filter of the water system is dirty and blocked to prevent excessive temperature differences between incoming and outgoing water when defrosting. ③If the unit is a newly installed unit ,consider closing part of the end and slowly turning the end on after first allowing the water temperature to rise faster.
S09	Water Outlet Temp. too low protection in heating/hot water	Compressor stops	During defrosting, a fault is reported when TUO<15℃ is detected and defrosting is forced out. ① Check that the set water temperature is not too low (below 32℃), causing the water temperature to drop too quickly when defrosting. ②Detect whether the filter of the water system is dirty and blocked to prevent excessive temperature differences between incoming and outgoing water when defrosting. ③If the unit is a newly installed unit ,consider closing part of the end and slowly turning the end on after first allowing the water temperature to rise faster.
S10	Not enough water flow for 3 times failure	Compressor stops	S10 fault is displayed when S02 protection is triggered three times in succession within 30 minutes. ①Check whether the water line filter is blocked and the water pump operation normally. ②There is air in the water system,causing the pump to idle and causing the water flow switch to operate incorrectly,which can be emptied. ③The water flow switch from the PCB board pulled out of the state, through the multimeter test the water flow switch in the pump running state, if it has been disconnected, then replace the water flow switch.
S11	Indoor coil anti-freezing protection failure in cooling	Compressor stops	S11 fault is displayed when S01 protection is triggered three times in succession within 30 minutes. ①Whether the actual water temperature is too low (large difference between the sampling display and the actual). ②Whether the water flow is too small, whether the water circuit is normal, whether the filter is blocked,whether the water flow switch is not working and whether the DC pump is set to run at low speed. ③The amount of refrigerant is too low ,check the low pressure and determine whether the refrigerant needs to be added or if there is a leak in the system. ④The initiation of cooling at an ambient temperature below 15℃ may trigger protection. ⑤Electronic expansion valve is abnormal, test it for action.

4. Usage

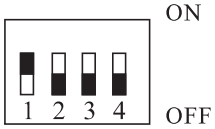
Failure code	Failure	Controller Processing	Possible Reasons and Solutions
S12	Floor-curing operation failure	Unit keep on working.	A fault is reported during the first heat run of the floor when the running time of a phase is >120 hours,but the unit is still running normally. ①More vapour on the floor, more time needed to warm up, which can be followed up with the realization of the situation and another floor curing.② Inappropriate installation position of TC sensor and deviations in temperature sampling.
S13	Four-way valve operation fault	Compressor stops	When the detection function is on, in heating or hot water mode,when the unit runs for 10t to 12 minutes,the difference between the current ambient temperature and the outdoor coil temperature is judged, and when the ambient temperature is less than the outdoor coil temperature, a fault shutdown is reported. ①Detect whether the wiring of the four-way valve coil and the electronic control board is normal. ②Test the four-way valve body,whether there are uneven surfaces,resulting in the valve piece can not be cut over. ③Detect any abnormalities in the installation position of the environmental sensor and the external coil sensor.
S14	Three-way valve operation fault	Compressor stops	When the detection function is on, a fault shutdown is reported when the temperature difference between TC and incoming water or TW and incoming water is >12 degrees in heating or hot water mode.①Test the three-way valve switching direction is normal, that is, heating mode, switch to the buffer tank, hot water mode, switch to the living water tank. ②Detection of abnormalities in the inlet sensor, TC, TW sensor installation position and large deviations in the collected temperature.
S15	Water outlet temperature sensor failure	Compressor stops	Check whether unit water outlet temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.
S16	Water inlet temperature sensor failure	Compressor stops	Check whether unit water inlet temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary.

【Indoor PCB】



1. LED indicator light on Indoor PCB

2. Dip switch on indoor PCB
Factory Default Setting:



5. Maintenance

5.1 General notice before having service on R32 system and some notes

5.1.1 General notice before having service on R32 system

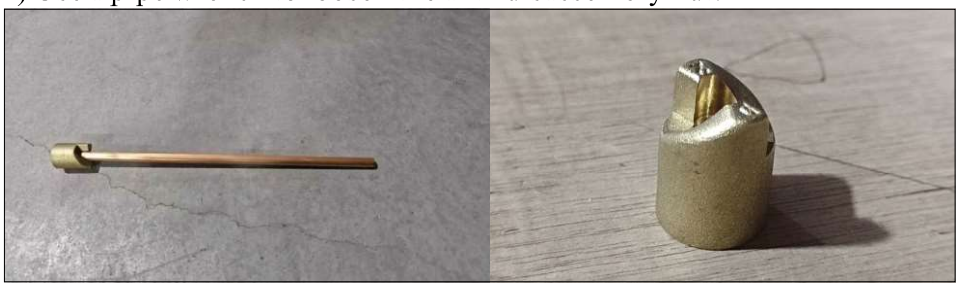
5.1.1.1 Tools needed

Tools for service include specific leakage detector of R32 system, specific vacuum pump, antistatic gloves, warning mark and HP nitrogen.

5.1.1.2 Precautions

When indoor unit is needed to be returned to service shop, break the lock nut on refrigerant connections based on below procedures.

1) Recycle the refrigerant at outdoor unit and close refrigerant valves.
2) Use a pipe wrench to loosen the anti-disassembly nut.



3) After disassembling the anti-disassembly nut,Find out the leakage point and repair it (when needed, take apart some components). Recommend to have maintenance at service shop.

5.1.1.3 Re-installation

1) Connect refrigerant pipes between indoor and outdoor units.
2) Vacuum the system and have a pressure maintaining test.
3) After pressure maintaining test is done, open the refrigerant valves.
   Install lock nut to refrigerant connection of indoor units. (service person should prepare the lock nut before going to service position.)

5.1.1.4 Notes about service

1) Service person should well know the precautions. Try not to carry out service in airtight space. Keep good ventilation. Control and eliminate heating source in order to ensure safety of service work.
2) Before and during service, service person should have monitoring device at field so that they can well realize existing of potential inflammable gas.
3) Fire extinguisher should be placed close to service point when service person will work on components of refrigerant system. Dry powder extinguisher or CO2 fire extinguisher should be placed at position where refrigerant is charged.
4) Ensure that there is no fire or other potential ignition source at service area. Control and keep away the inflammable materials.
5) When replacement of electrical components is needed,carry it out based on requirement of specific parts. So does installation.
6) Before service on electrical parts, please have a safety check on system and different components.
   In case there is any potential danger, shut down the power immediately until problem is solved. If problem can not be solved well but service has to continue service work, a temporary solution should be carried out. Service person should inform and warn the client accordingly.
7) Check status of wires and cables (damage may happen due to abrasion, corrosion, vibration, etc).
8) When leakage check is needed, ensure that there is no fire or potential ignition source. Don't use halogen detector or some other devices which work with ignition device.
   When soldering work is needed at leakage point,first recycle the refrigerant or lock the refrigerant away from leakage point (by service valve). Purify the system with OFN before and during soldering work.

9) When service is needed for refrigerant system, follow below procedures.
A. Remove refrigerant.
B. Purify refrigerant system with inert gas.
C. Vacuum.
D. Purify refrigerant system with inert gas again.
E. Cut the pipe and weld it.

10) For charging of refrigerant, please take care of below notes.
A. Ensure that different refrigerant will not be mixed up. Try to charge from the service point which is reserved in the heat pump unit.
B. Refrigerant tank should be placed vertically.
C. Make sure that refrigerant system is well grounded before charging.
D. Put a mark on the unit after charging is done.
E. Make sure that refrigerant amount is correct based on instruction by manufacturer.
F. Have leakage test after charging to ensure that system is well charged.

11) Emergency plan should be set up. In case there is a serious refrigerant leakage, please follow below suggestions.
A. Turn on ventilation devices. Shut down power of other electrical devices. People should leave from site immediately and stay away for over 20 meters.
B. Inform neighbors and call the police. Set up emergency area and prevent other people from coming.
C. Let the firefighter who wear antistatic clothes find out and stop the leakage.
D. Clear the remaining refrigerant and clean the leakage area with nitrogen, especially for the low place. Check concentration of refrigerant with a portable leakage detector. Only after concentration becomes 0, warning can be released.

5.1.2 Other notes

5.1.2.1 When repair, scrap or recycle the unit, clear the refrigerant at open place. Use a vacuum pump to vacuum the system to ensure that refrigerant is completely cleared.

To carry out service on a unit with potential leakage, lock the refrigerant valves. Release refrigerant in indoor unit to the air. Don't recycle the refrigerant with heat pump unit working. Otherwise, additional air maybe attracted and go into compressor which may cause system failure.

5.1.2.2 Please store the refrigerant with ambient temperature within range -10~50 and good ventilation.

A warning mark should be put on the tanks of refrigerant.

For tools which are used for refrigerant system, they should be stored away from other tools. Tools used for different refrigerant should not be mixed up.

5.1.2.3 Before removal of heat pump unit,, make sure that there is good ventilation at service place. Fire or any other ignition source should be eliminated.

Clear the refrigerant.

Try to take indoor unit along with refrigerant pipes at the same time. If piping is too long, cut it from the external first.

For transportation of heat pump unit, prevent damage to system from hitting, dropping, etc. It is forbidden to put the unit in a sealed space with ignition source.

5. Maintenance

5.2 Attention

1) The user mustn't change the structure or wiring inside the unit.

2) The service and maintenance should be performed by qualified and well-trained technician. When the unit fails to run, please cut off power supply immediately.

3) The smart control system can automatically analyze various protection problems during daily use, and 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.

5.3 Cleaning of water filter

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

5.4 Cleaning of plate heat exchanger

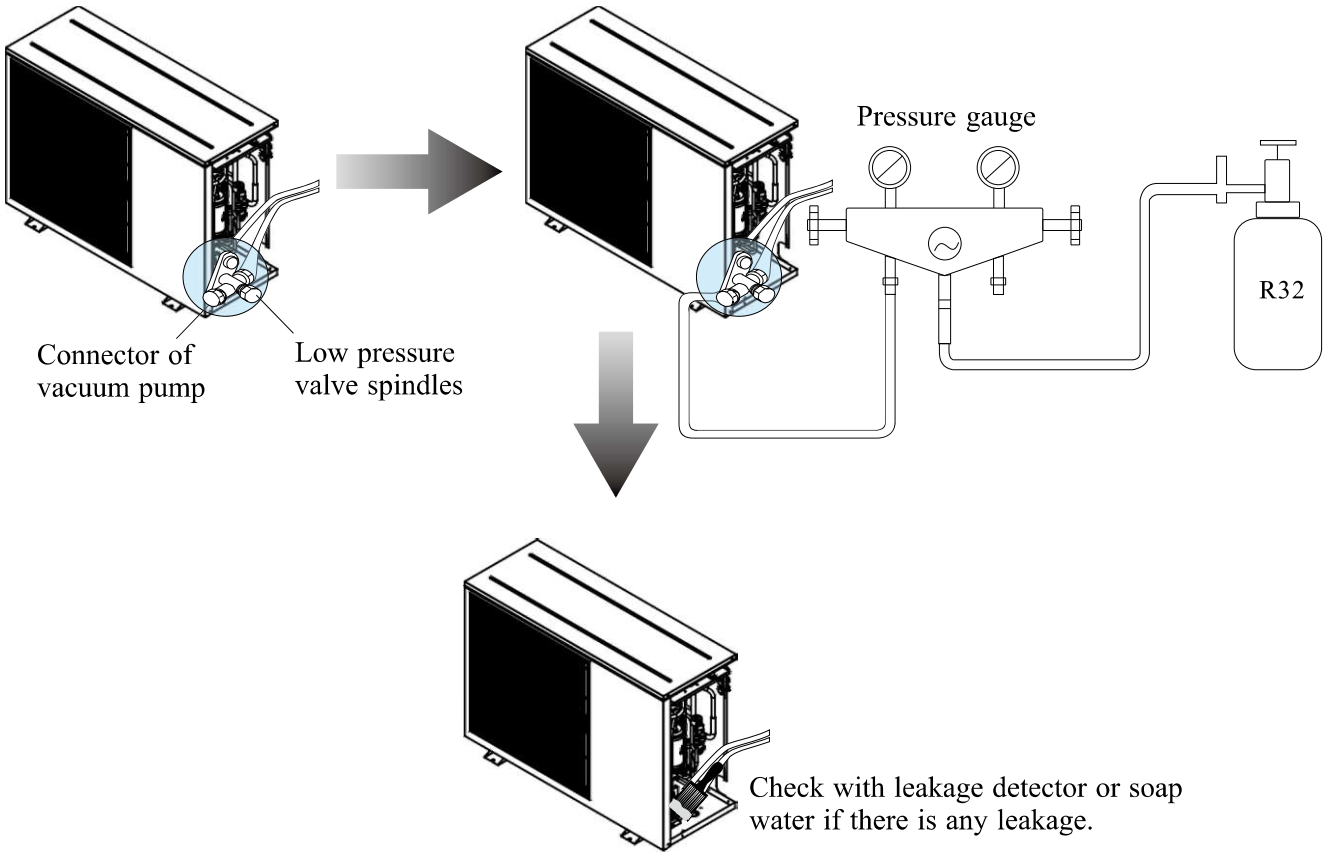
Thanks to the normally very high degree of turbulence in the heat exchanger, there is a self-cleaning effect in the channels. However, in some applications the fouling tendency can be very high, e.g. when using extremely hard water at high temperatures. In such cases it is always possible to clean the exchanger by circulating a cleaning liquid (CIP-Cleaning In Place). Use a tank with weak acid, 5% phosphoric acid or, if the exchanger is frequently cleaned, 5% oxalic acid. Pump the cleaning liquid through the exchanger. This work should be done by qualified person. For further information, please contact your supplier.

5. Maintenance

5.5 Gas charging

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

1) The work should be done by professionals.
2) If the system has not enough refrigerant inside, please check whether the system has leakage inside. If yes, please repair it before gas charging, otherwise unit will lack of refrigerant again after working for a short period.
3) Don't add too much refrigerant than required, or it may cause a lot of failures, such as high pressure and low efficiency.
4) This system uses R32 refrigerant. It is strictly forbidden to charge any refrigerant other than R32 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) The steps are as follows:
   Use 5/8” or 1/2” connector for gas charging and run the unit in cooling mode.



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

5. Maintenance

5.6 Condenser coil

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

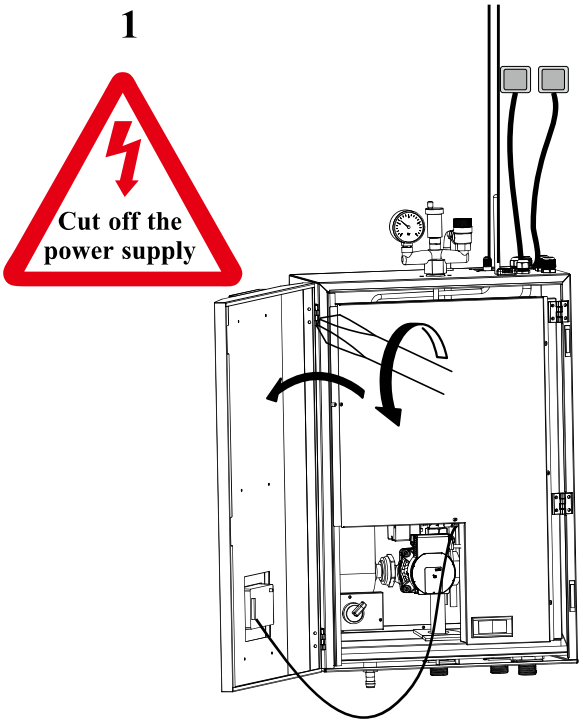
1) Before cleaning, make sure the unit is off.
2) Inner of the unit must be cleaned by qualified person.
3) Do not use gasoline, benzene, detergent etc. to clean the unit. And do not spray with insecticide. Otherwise the unit may be damaged. The cleanser special made for air conditioner cleaning is recommended.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

5.7 Service of indoor unit

5.7.1 Maintenance of the electric components

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

1



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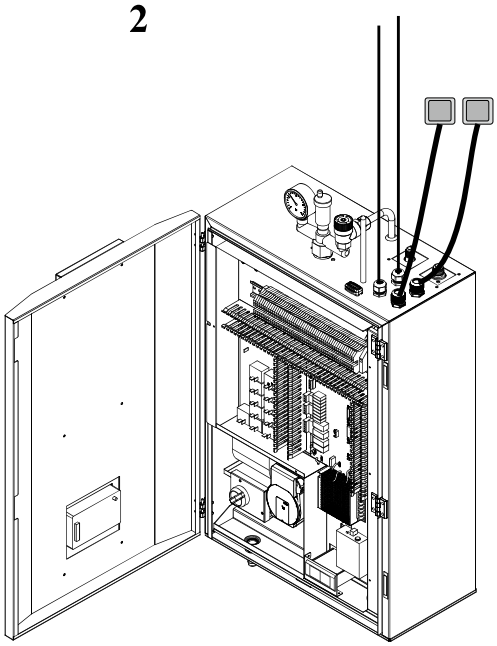
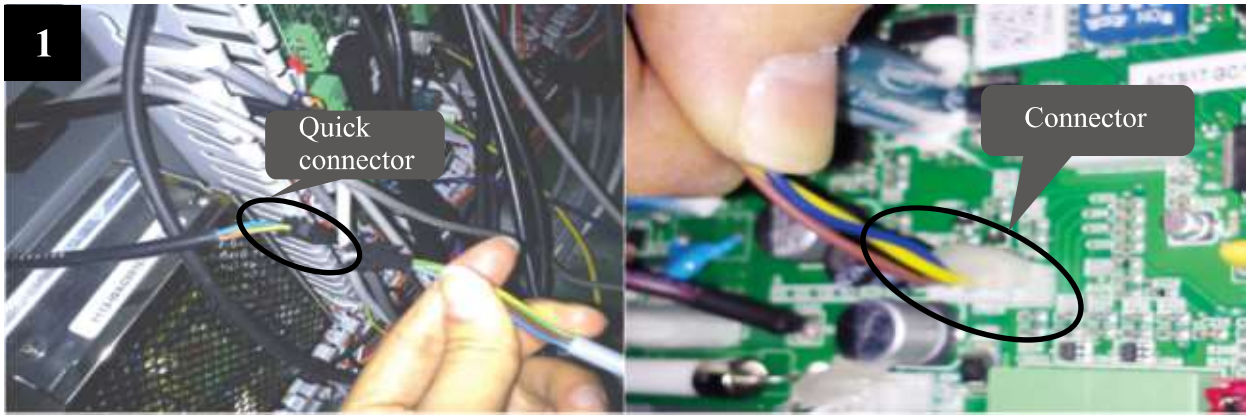
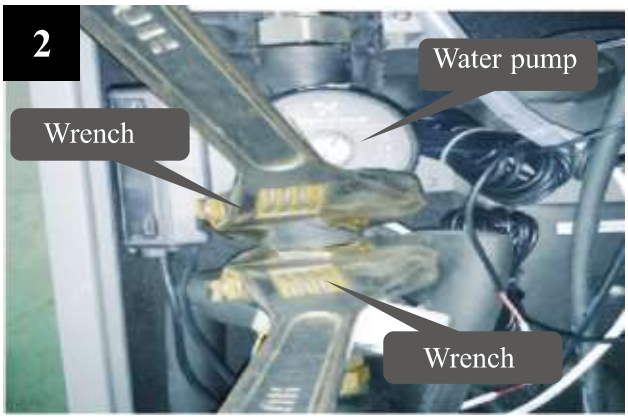


5. Maintenance

5.7.2 Replacement of water pump

1) Cut off the power supply, open the front panel and take off the electric box cover. Disconnect quick connector of water pump power cable, and pull out the signal cable connected to the indoor PCB.
2) Cut water supply to the unit, and drain out water in the indoor 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.



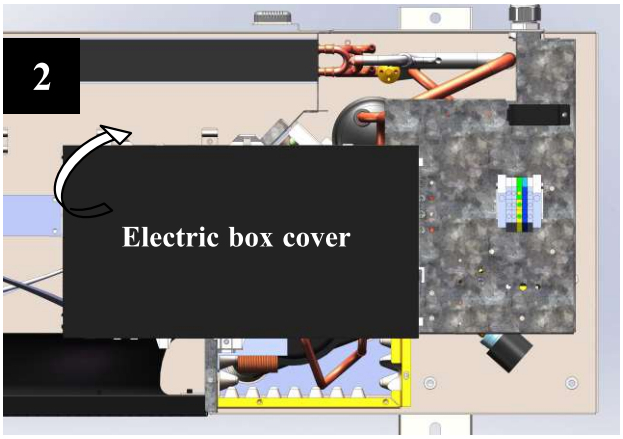


5. Maintenance

5.8 Service of outdoor unit

5.8.1 Maintenance of controller

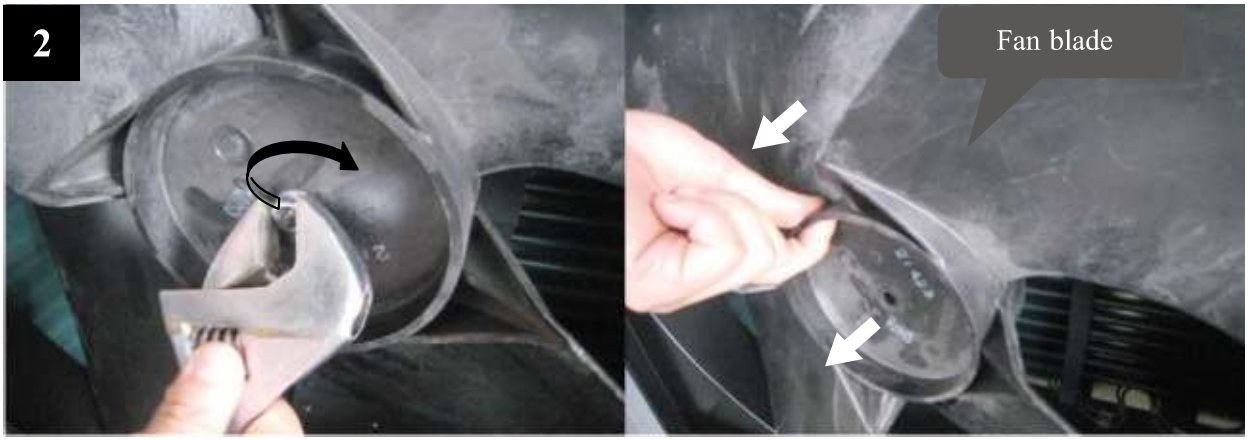
1) Cut off the power supply, take off the top cover of the unit.
2) Take off the electric box cover.
3) Do necessary maintenance work to the controller of outdoor unit .



5. Maintenance

5.8.2 Replacement of fan motor

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



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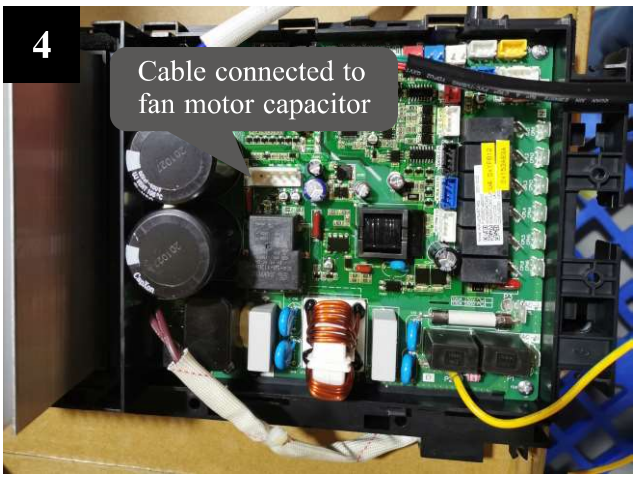


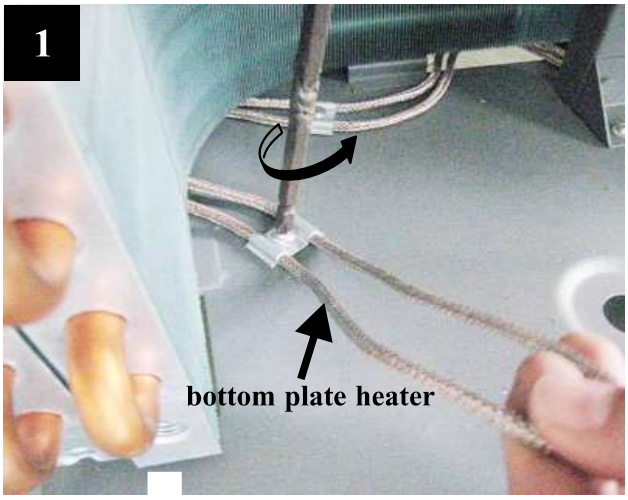
5

5. Maintenance

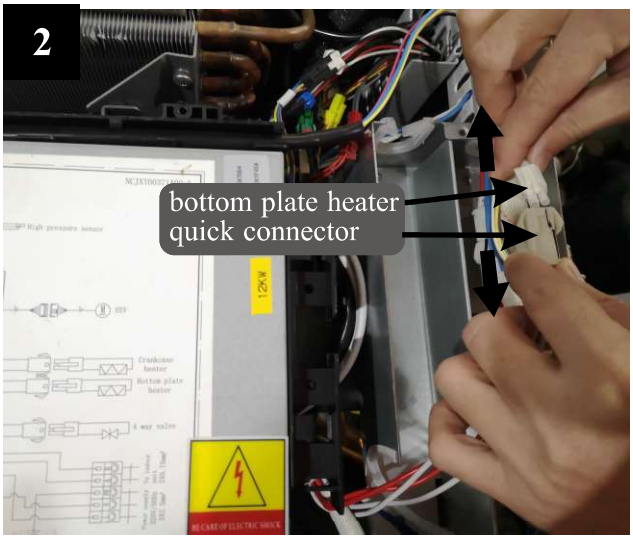
5.8.3 Replacement of bottom plate heater

1) Cut off the power supply, follows 4.7.2 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

1



2



5. Maintenance

5.9 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 refrigerantion 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.

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

6. Attached drawing

6.1 Outlines and dimensions

Indoor ——

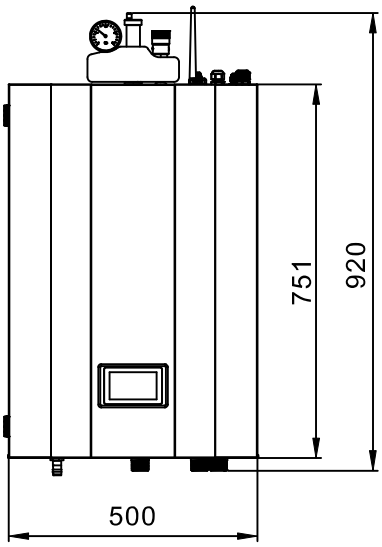
APHS-60-006-M

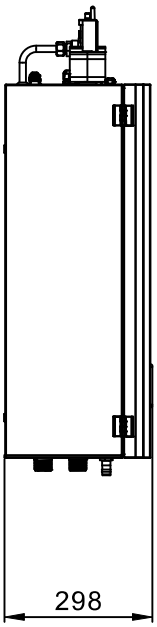
APHS-60-009-M

APHS-60-012-M

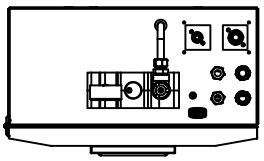
APHS-60-015-M

APHS-60-018-M



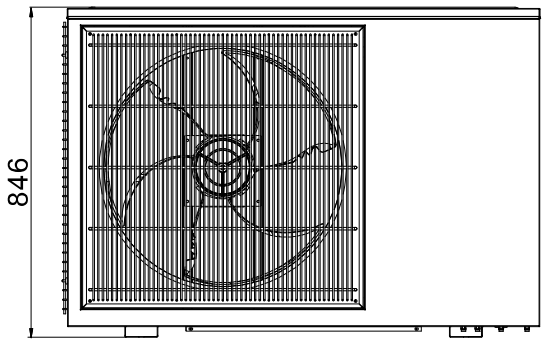


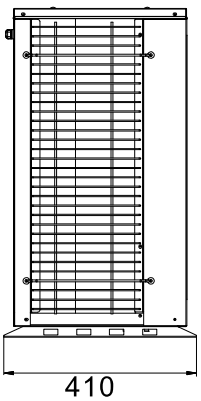
Unit:mm

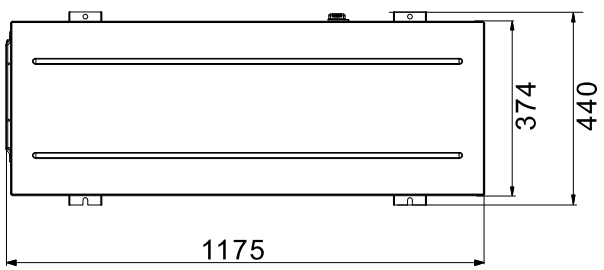


Outdoor —— APHS-60-006-M

Unit:mm



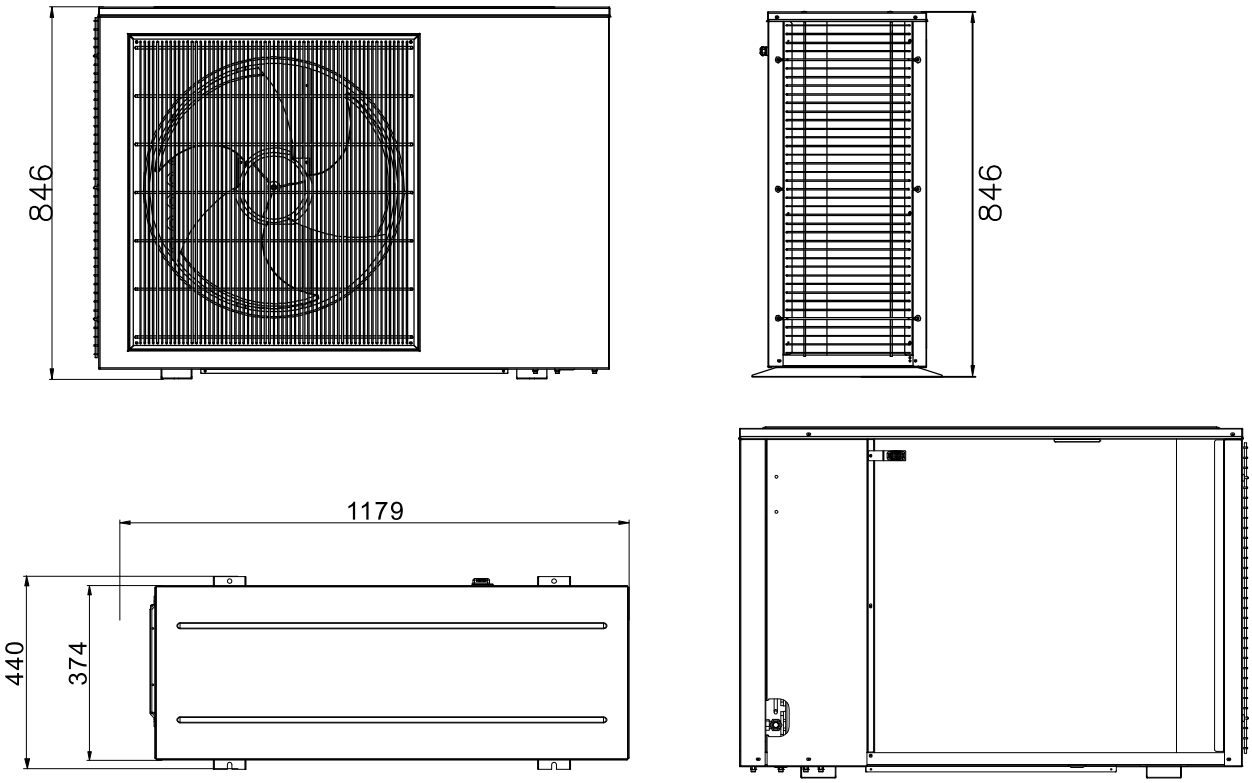




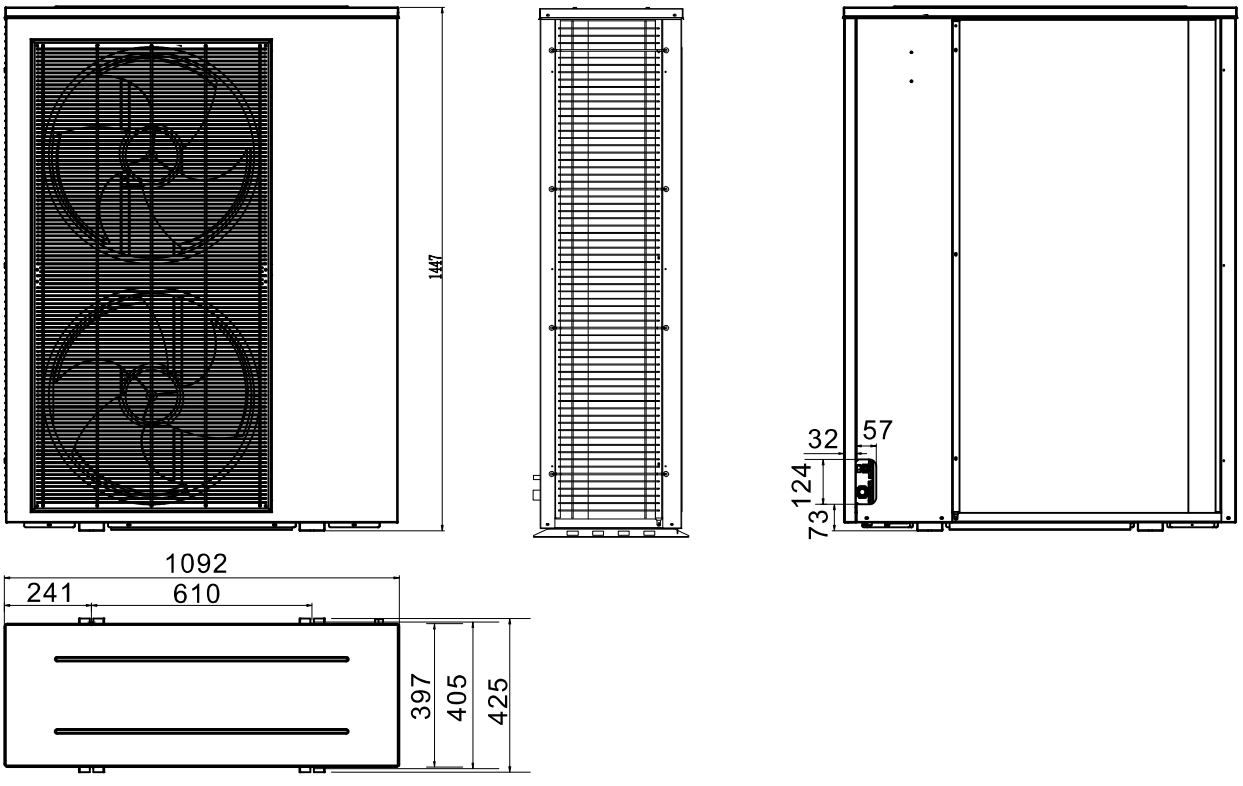
6. Attached drawing

Outdoor —— APHS-60-009-M
APHS-60-012-M

Unit:mm



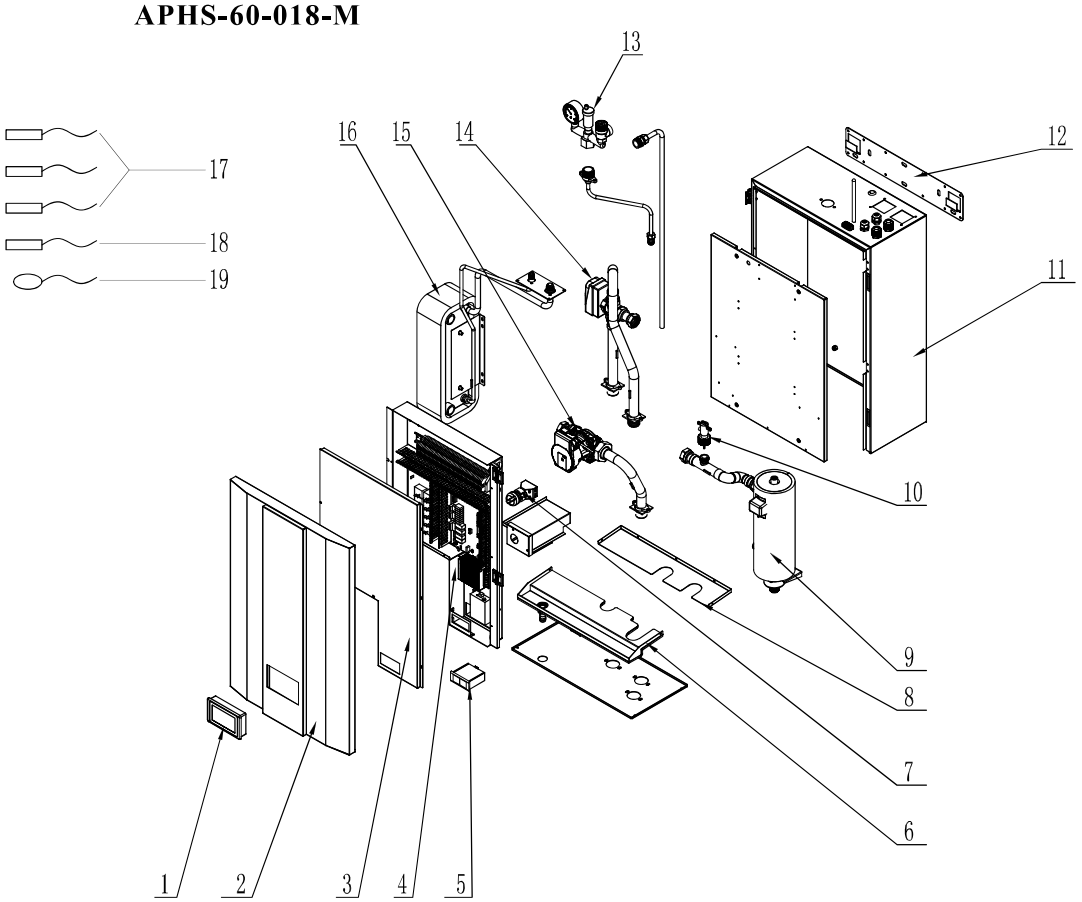
Outdoor ——APHS-60-015-M
APHS-60-018-M



6. Attached drawing

6.2 Exploded view

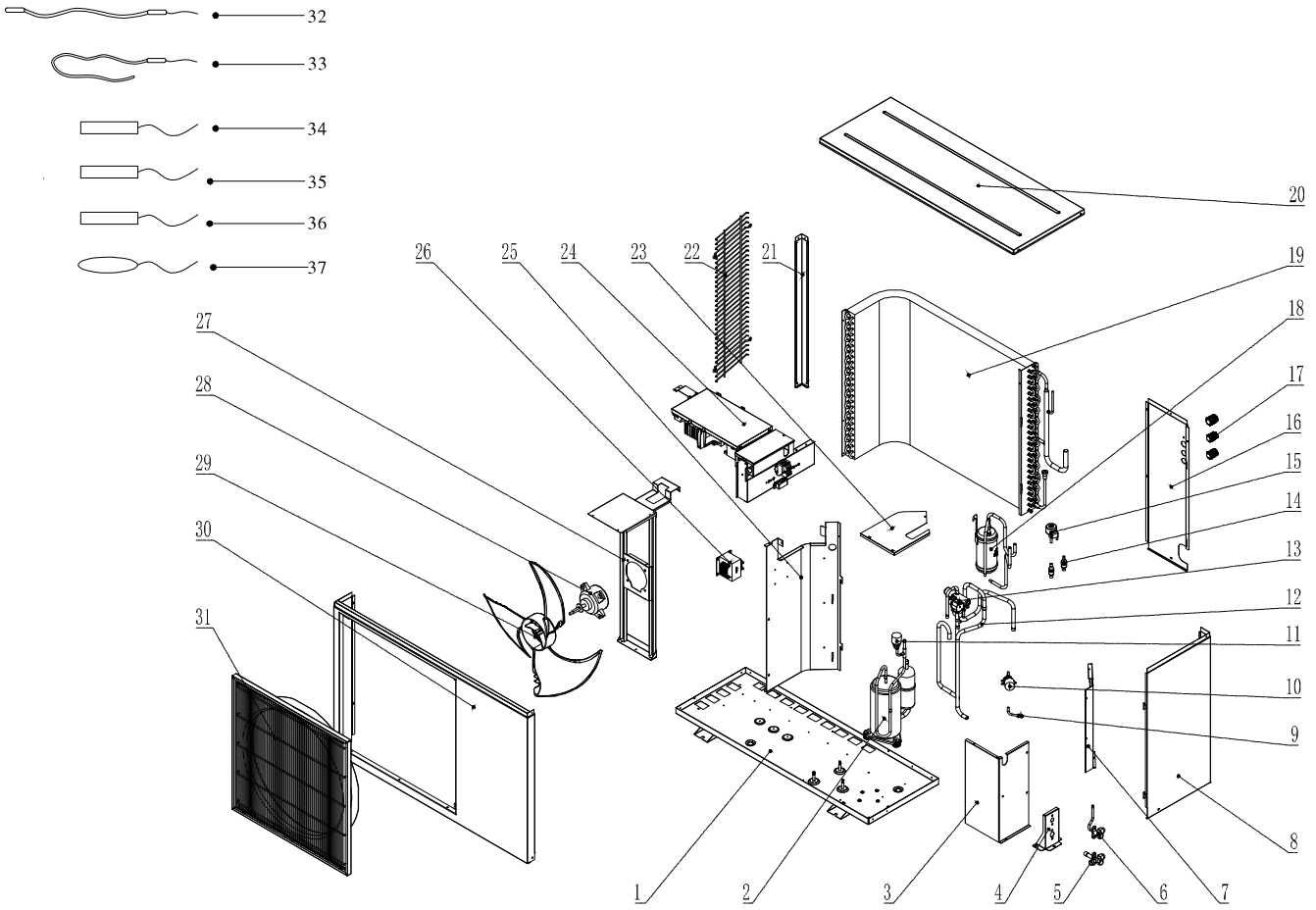
Indoor —— APHS-60-006-M
APHS-60-009-M
APHS-60-012-M
APHS-60-015-M
APHS-60-018-M



NO	Name	NO	Name
1	Operation Panel	11	Casing
2	Door	12	Wall bracket
3	Electric Box Cover	13	Safety kit
4	Electric Box	14	Electrical 3-way valve
5	Digital thermostat	15	Water pump
6	Condensate tray kit 2	16	Plate heat exchanger
7	Emergency switch	17	Sensors (Tc, Tuo and Tui)
8	Condensate tray kit 1	18	Pipe temperature sensor
9	Electric heater	19	room temperature sensor
10	Flow switch		

6. Attached drawing

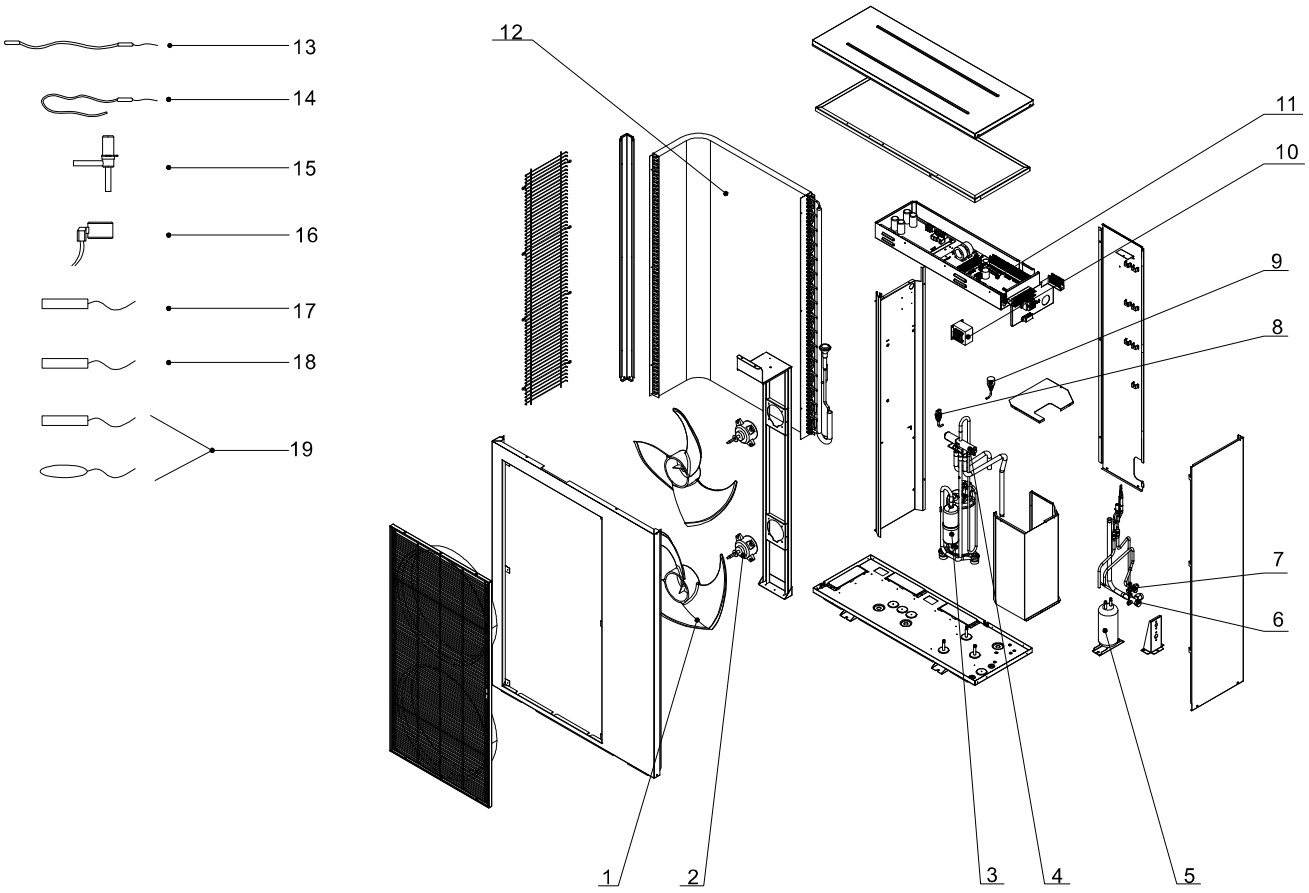
Outdoor —— APHS-60-006-M
APHS-60-009-M
APHS-60-012-M



NO	Name	NO	Name	NO	Name
1	Bottom Plate	13	Terminal assembly of 4-way valve coil	25	Middle board
2	Compressor	14	Filter	26	Single board power frequency inductance
3	Compressor sound enclosure 1	15	Coil of EEV	27	Motor bracket
4	Valve plate	16	Rear side panel	28	DC Fan Motor
5	1/4" Valve	17	Cable fixture	29	Fan Blade
6	3/8" Valve	18	Gas Storage Tank	30	Front Panel
7	Compressor sound enclosure 2	19	Evaporator Coil	31	Air Duct
8	Repair board	20	Top Cover	32	Terminal assembly of heating belt
9	Check valve bend	21	Column	33	Heating belt of condenser
10	Low pressure sensor	22	Side panel	34	Discharge air temp. sensor
11	High pressure sensor	23	Acoustic cover	35	Indoor coil temp. sensor
12	Copper tube	24	PCB board	36	Suction air temp. sensor
				37	Ambient temp. sensor

6. Attached drawing

Outdoor —— APHS-60-015-M
APHS-60-018-M

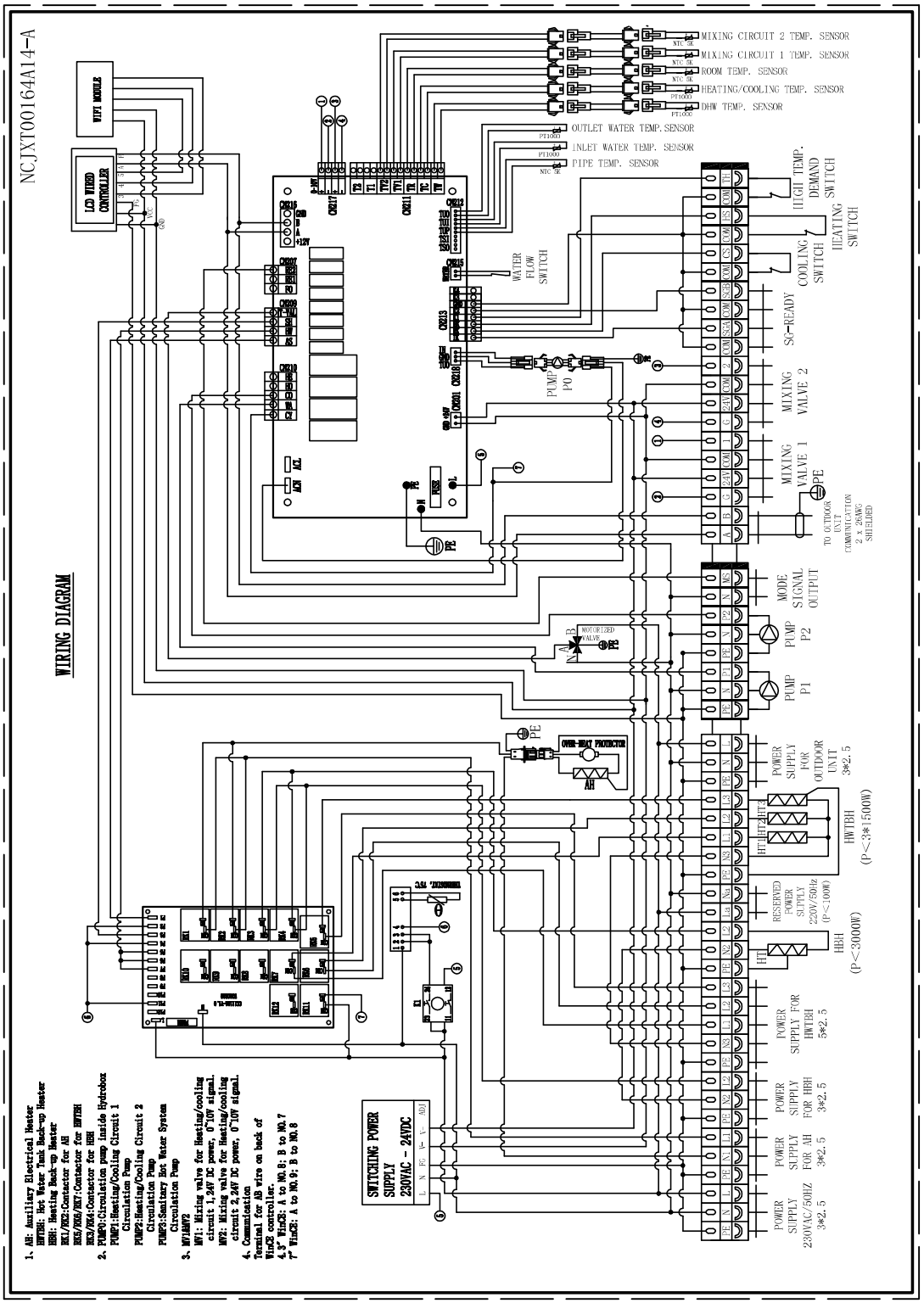


NO	Name	NO	Name
1	Fan Blade	11	Main Control Board
2	Fan Motor		Filtering PCB
3	Compressor		Compressor Driver
4	4-way Valve	12	Evaporator Coil
	4-way Valve Coil	13	Compressor Crankcase Heater
5	Gas Accumulator	14	Bottom Plate Heater
6	Refrigerant Connector 1	15	EEV
7	Refrigerant Connector 2	16	EEV Coil
8	Low Pressure Sensor	17	Compressor Discharge Temp Sensor
9	High Pressure Sensor	18	Compressor Suction Temp Sensor
10	Transducer	19	Outdoor Coil Temp Sensor
			Ambient Temp Sensor

6. Attached drawing

6.3 Wiring diagram

Indoor ——APHS-60-006-M

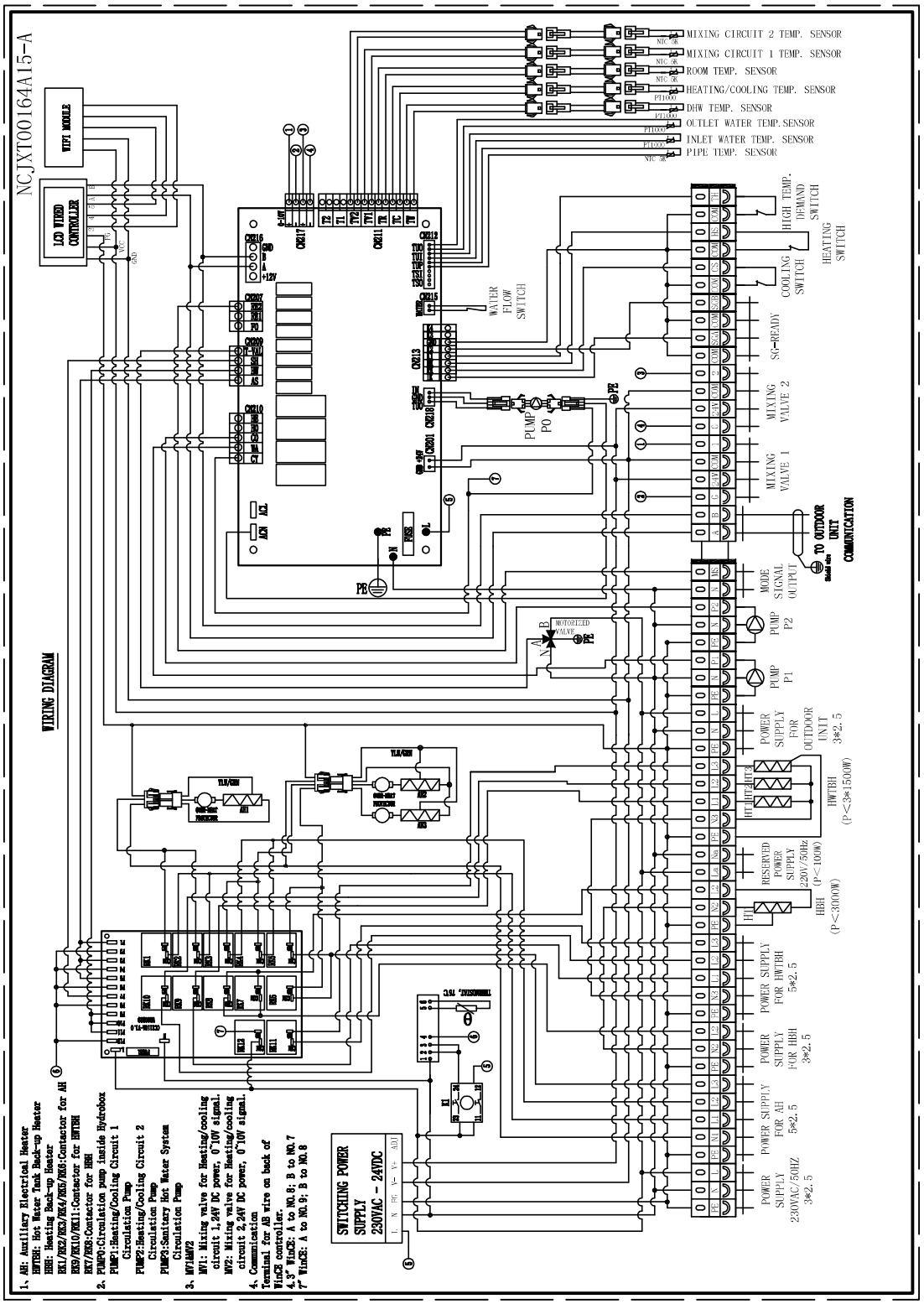


TAKE CARE!
The specifications are subject to change without prior notice.
For actual specifications of the unit, please refer to the specification stickers on the unit.

6. Attached drawing

6.3 Wiring diagram

Indoor ——APHS-60-009-M
APHS-60-012-M



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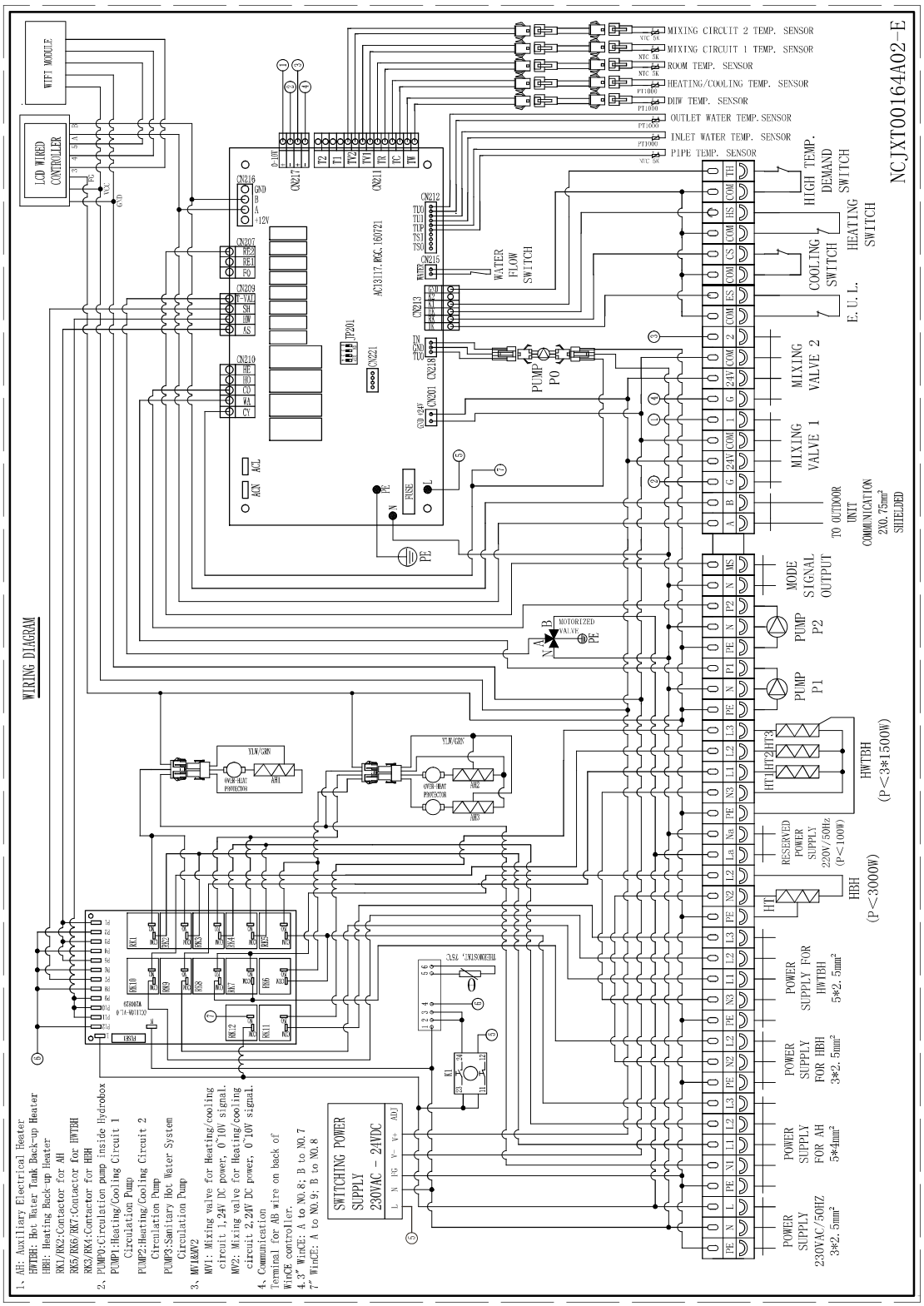
6. Attached drawing

6.3 Wiring diagram

Indoor ——APHS-60-015-M

APHS-60-018-M



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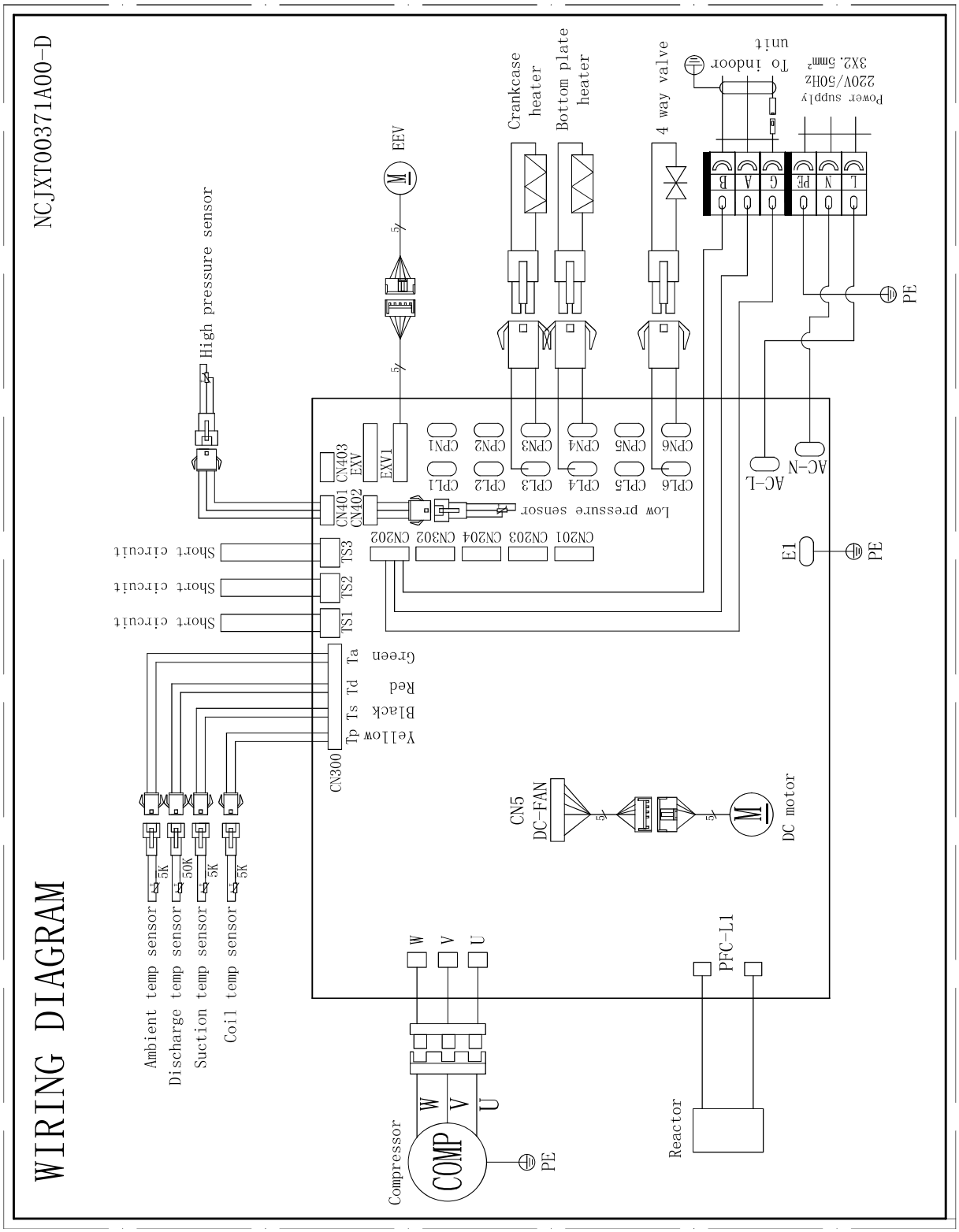
6. Attached drawing

Outdoor ——APHS-60-006-M
APHS-60-009-M
APHS-60-012-M



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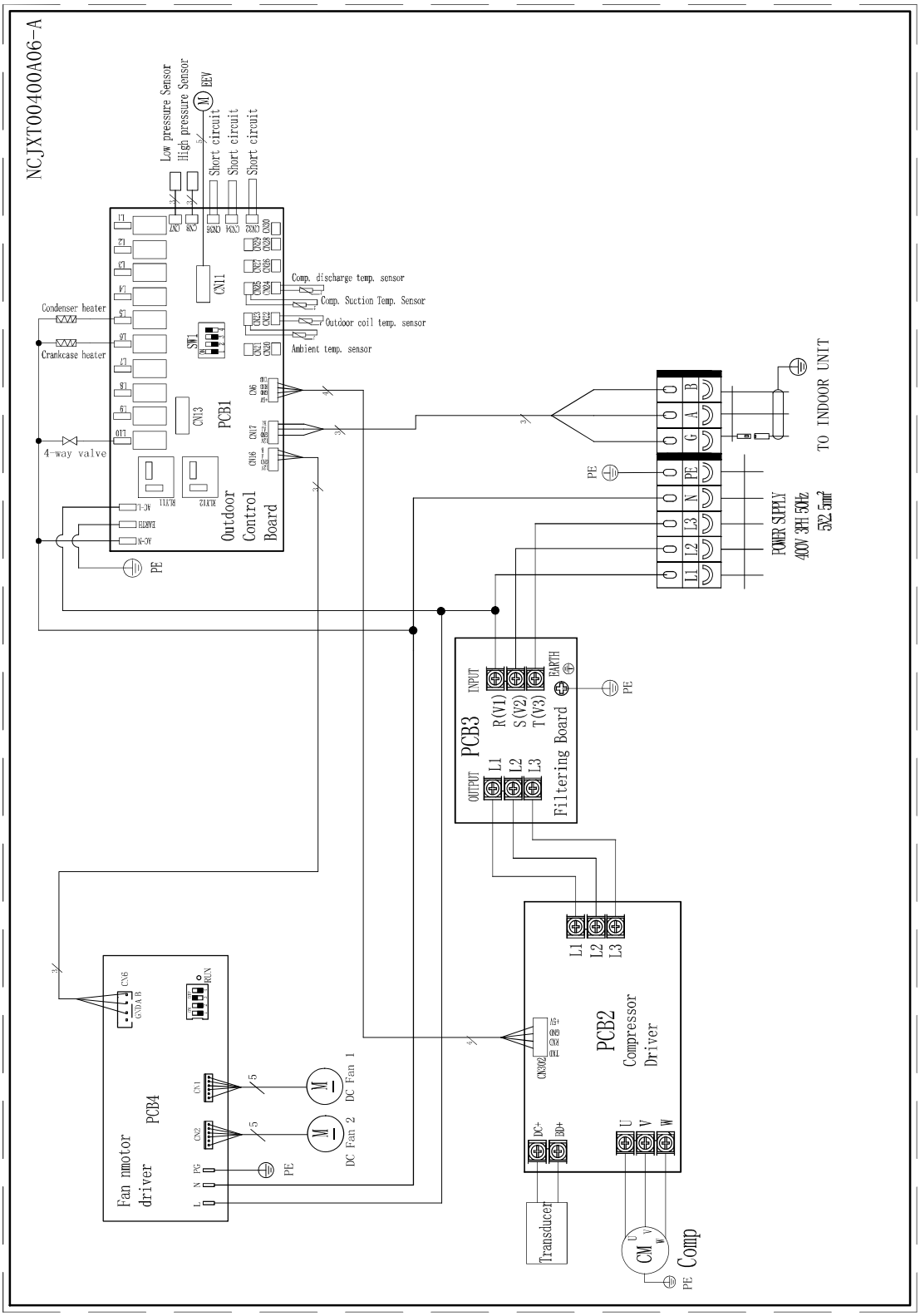
6. Attached drawing

Outdoor ——APHS-60-015-M
APHS-60-018-M



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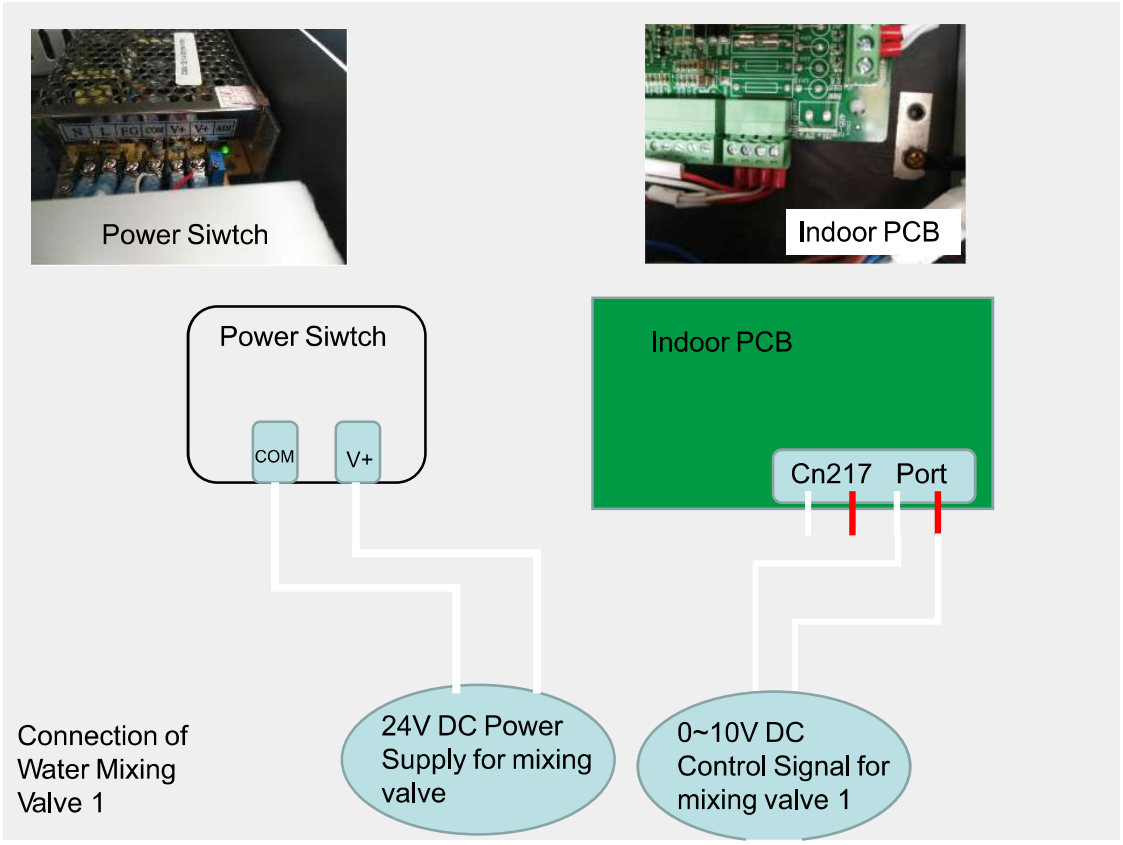
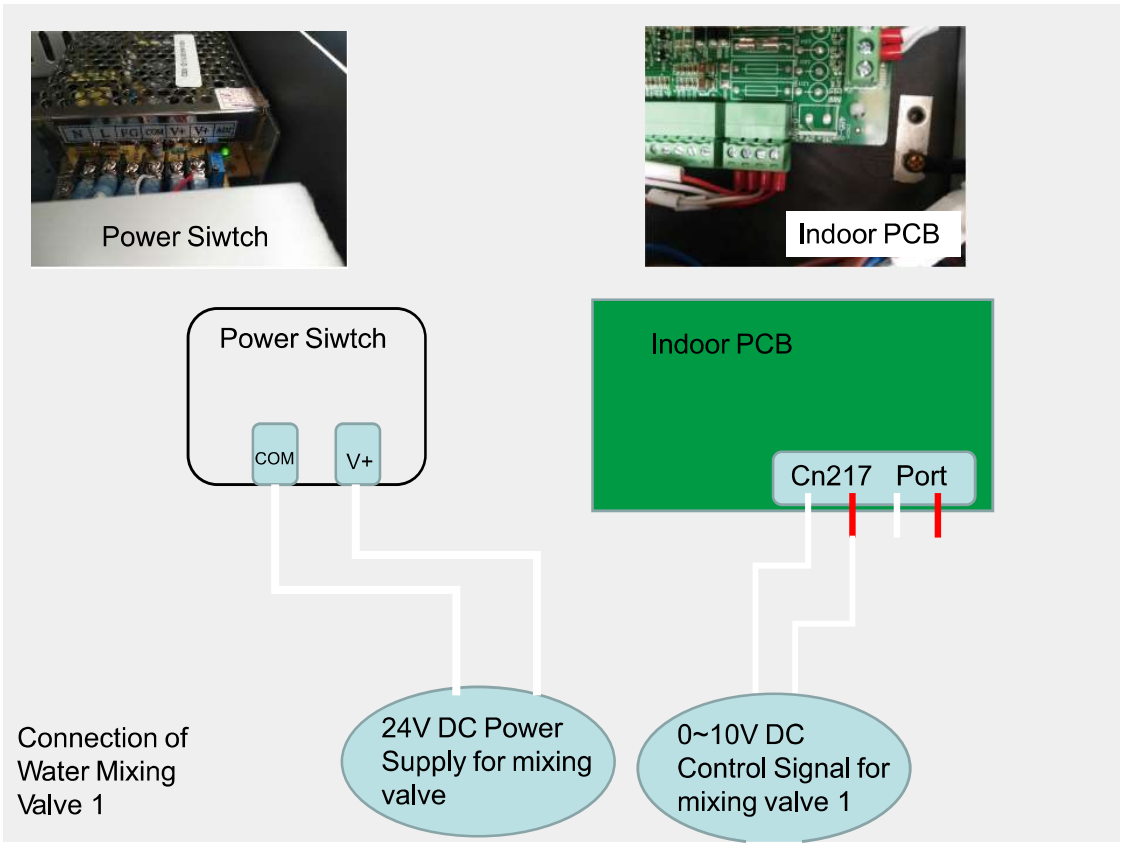
6. Attached drawing

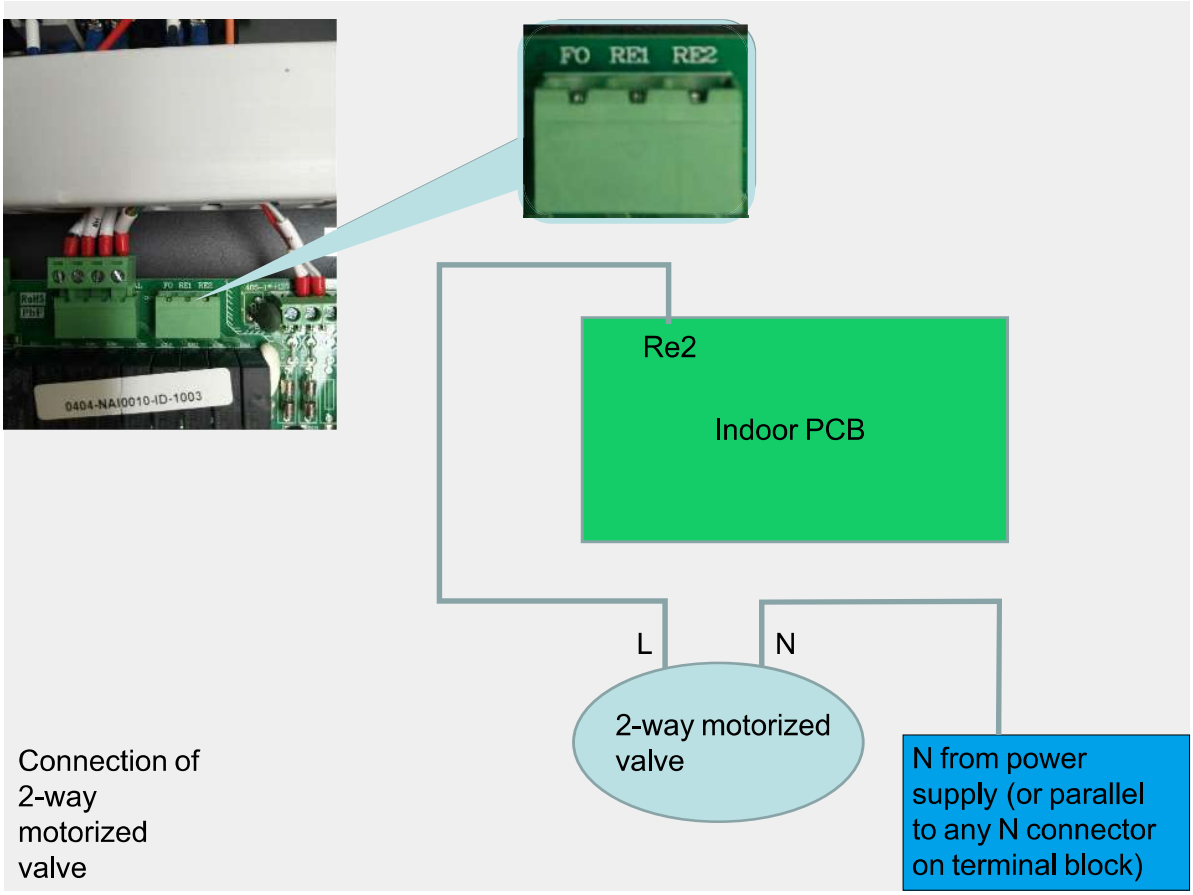
6.4 Appendix A: Wiring





6. Attached drawing

6.4 Appendix A: Wiring



7. Cable specification

(1) Single phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	2 X 1.5mm^2	1.5mm^2	20A	30mA less than 0.1 sec	n X 0.5mm^2
10~16A	2 X 2.5mm^2	2.5mm^2	32A	30mA less than 0.1 sec	
16~25A	2 X 4mm^2	4mm^2	40A	30mA less than 0.1 sec	
25~32A	2 X 6mm^2	6mm^2	40A	30mA less than 0.1 sec	
32~40A	2 X 10mm^2	10mm^2	63A	30mA less than 0.1 sec	
40~63A	2 X 16mm^2	16mm^2	80A	30mA less than 0.1 sec	
63~75A	2 X 25mm^2	25mm^2	100A	30mA less than 0.1 sec	
75~101A	2 X 25mm^2	25mm^2	125A	30mA less than 0.1 sec	
101~123A	2 X 35mm^2	35mm^2	160A	30mA less than 0.1 sec	
123~148A	2 X 50mm^2	50mm^2	225A	30mA less than 0.1 sec	
148~186A	2 X 70mm^2	70mm^2	250A	30mA less than 0.1 sec	
186~224A	2 X 95mm^2	95mm^2	280A	30mA less than 0.1 sec	

(2) Three phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	3 X 1.5mm^2	1.5mm^2	20A	30mA less than 0.1 sec	n X 0.5mm^2
10~16A	3 X 2.5mm^2	2.5mm^2	32A	30mA less than 0.1 sec	
16~25A	3 X 4mm^2	4mm^2	40A	30mA less than 0.1 sec	
25~32A	3 X 6mm^2	6mm^2	40A	30mA less than 0.1 sec	
32~40A	3 X 10mm^2	10mm^2	63A	30mA less than 0.1 sec	
40~63A	3 X 16mm^2	16mm^2	80A	30mA less than 0.1 sec	
63~75A	3 X 25mm^2	25mm^2	100A	30mA less than 0.1 sec	
75~101A	3 X 25mm^2	25mm^2	125A	30mA less than 0.1 sec	
101~123A	3 X 35mm^2	35mm^2	160A	30mA less than 0.1 sec	
123~148A	3 X 50mm^2	50mm^2	225A	30mA less than 0.1 sec	
148~186A	3 X 70mm^2	70mm^2	250A	30mA less than 0.1 sec	
186~224A	3 X 95mm^2	95mm^2	280A	30mA less than 0.1 sec	

When the unti will be installed at outdoor , Pleas use the cable which can against UV.

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.

NCSMS00790A00-A