



AW6/9/12/15/19-R32-M
AWC6/19-R32-M
AWCV5+ 6/19-R32-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.

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1. Before use

1.1 Advanced Important Notice

Cautions:

1. Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. (Annex DD.1)
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.). (Annex DD.1)
3. Do not pierce or burn. (Annex DD.1)
4. Be aware that refrigerants may not contain an odour. (Annex DD.1)
5. Appliance shall be installed, operated and stored in a room with a floor area larger than X m² (refer to specifications sheet). (Annex DD.1)
6. The installation of pipe-work shall be kept to a minimum X m² (refer to specifications sheet). (Annex DD.2.1)
7. Spaces where refrigerant pipes shall be compliance with national gas regulations. (Annex DD.2.1)
8. Servicing shall be performed only as recommended by the manufacturer. (Annex DD.2.1)
9. The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation. (Annex DD.2.2)
10. All working procedure that affects safety means shall only be carried by competent persons. (Annex DD.2.3)

General Notice:

1. Transport of equipment containing flammable refrigerants (Annex CC.1)

Compliance with the transport regulations

2. Marking of equipment using signs (Annex CC.2)

Compliance with local regulations

3. Disposal of equipment using flammable refrigerants (Annex CC.3)

Compliance with national regulations

4. Storage of equipment/appliances (Annex CC.4)

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

5. Storage of packed (unsold) equipment (Annex CC.5)

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 (Annex DD.3)

1) Checks to the area

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

2) Work procedure

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

1. Before use

3) General work area

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

4) Checking for presence of refrigerant

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

5) Presence of fire extinguisher

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

1. Before use

9) Checks to electrical devices

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

Initial safety checks shall include:

- .That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- .That there no live electrical components and wiring are exposed while charging, recovering or purging the system;
- .That there is continuity of earth bonding.

7.Repairs to sealed components (Annex DD.4)

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

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

Ensure that apparatus is mounted securely.

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

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

8.Repair to intrinsically safe components (Annex DD.5)

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 (Annex DD.6)

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 (Annex DD.7)

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 (Annex DD.8)

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 (Annex DD.9)

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 (Annex DD.10)

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 (Annex DD.11)

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 (Annex DD.12)

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 (Annex DD.13)

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.

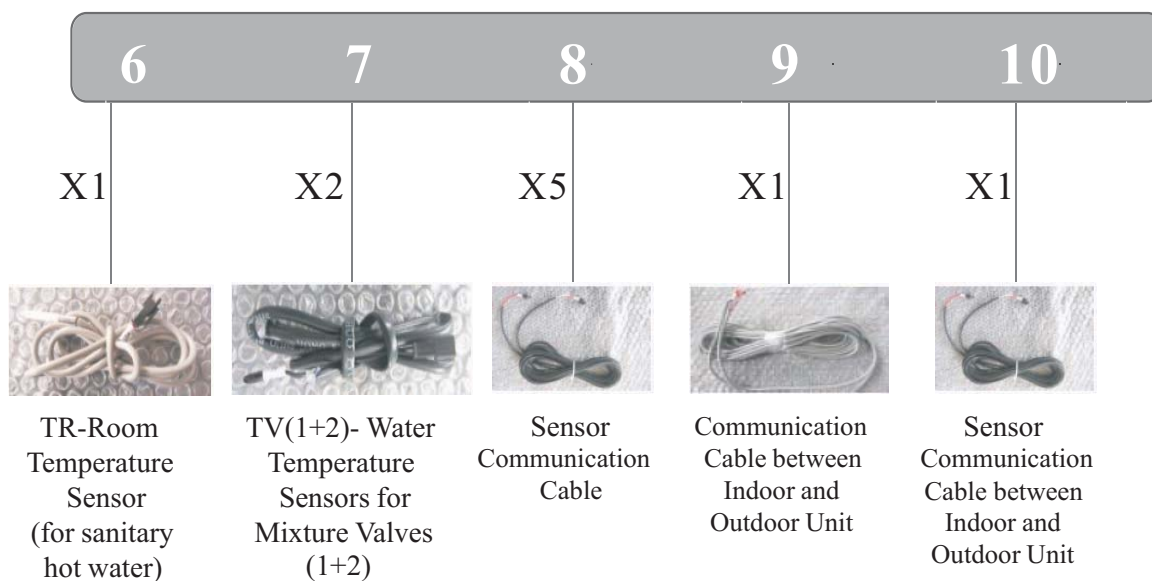
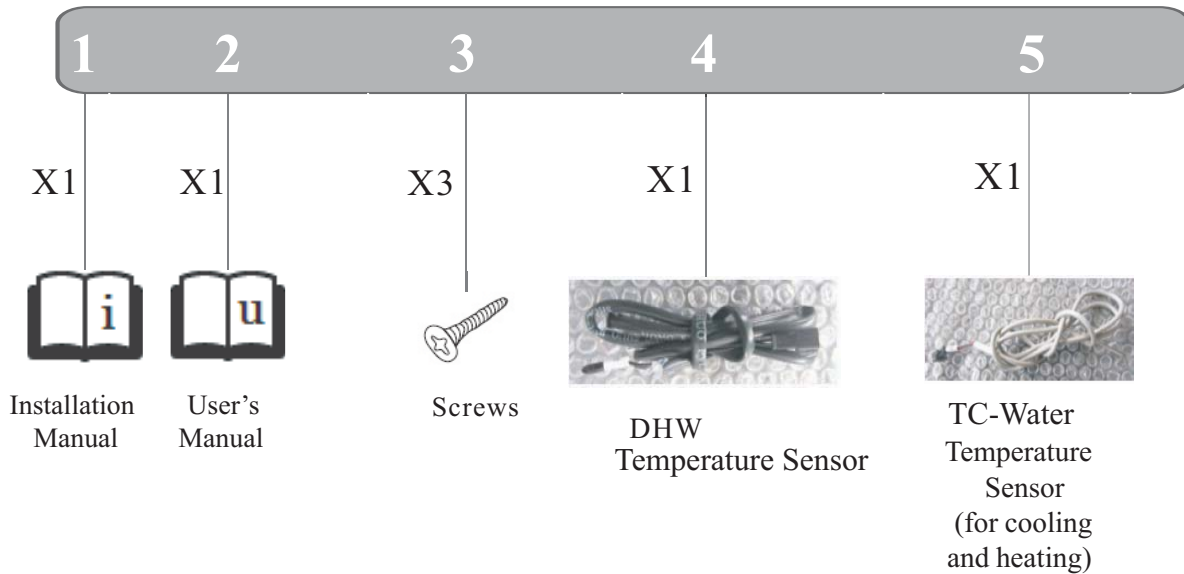
The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

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.

Included Accessories



Below are the accessories that are included with your purchase.
Please check to ensure that none are missing or damaged.
If so, please contact your local distributor.



2. Introduction

2.1 Preliminary Information

Thank you for your purchase of our quality heat pump.

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

DISCLAIMER

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

- Purchasing, installing, and/or operating this product with the intention of using it outside of its established, technical purpose.
- Carrying out improper work upon the unit, or any of its components, that has not been given explicit, prior consent in the form of writing.
- Installation attempts of this system by anyone other than a properly trained and licensed professional.
- Negligence of properly-worn personal protection (safety glasses, gloves, etc.) while performing installation, maintenance, or servicing of this product.
- The operation of this system during ambient temperatures which are below or beyond the temperature range intended (-25°C to 45°C)

SAFETY

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

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

2. Introduction

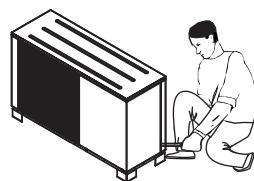
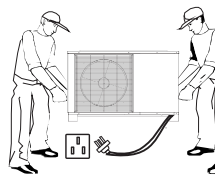

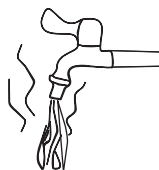
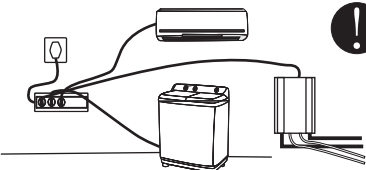
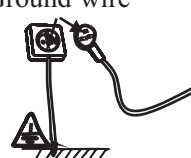

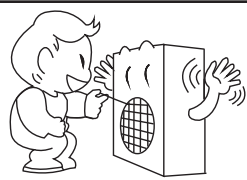
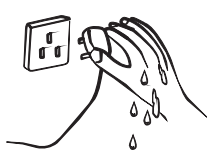
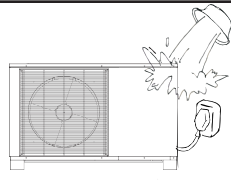
2.2.Safety Precautions

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

 Warning

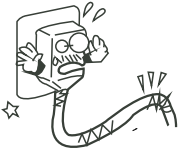
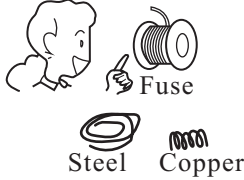
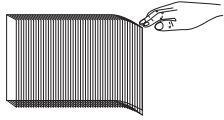
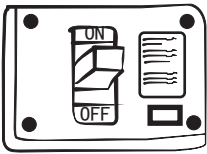

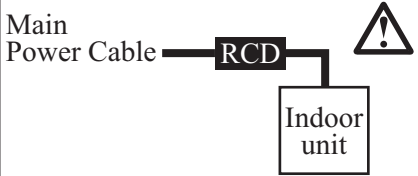

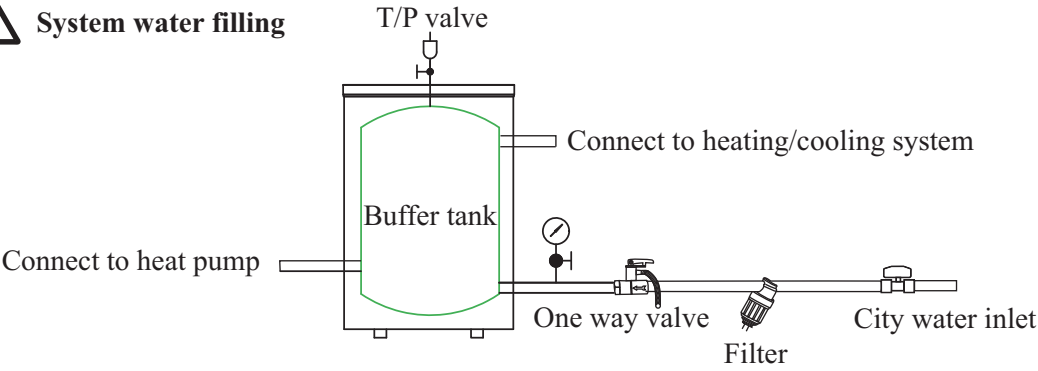


 Caution

 Prohibition

 <p>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.</p>	 <p>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.</p>	 <p>Be sure to read this manual before use.</p>
 <p>For sanitary hot water, please always add a mixture valve before water tap and set it to proper temperature.</p>	 <p>Use a dedicated socket for this unit, otherwise malfunction may occur.</p>	<p>Ground wire</p>  <p>The power supply to the unit must be grounded.</p>
 <p>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.</p>		
 <p>Do not touch the air outlet grill when fan motor is running.</p>	 <p>Do not touch the power plug with wet hands. Never pull out the plug by pulling the power cable.</p>	 <p>Do not operate your air conditioner in a wet room such as a bathroom or laundry room. 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.</p>

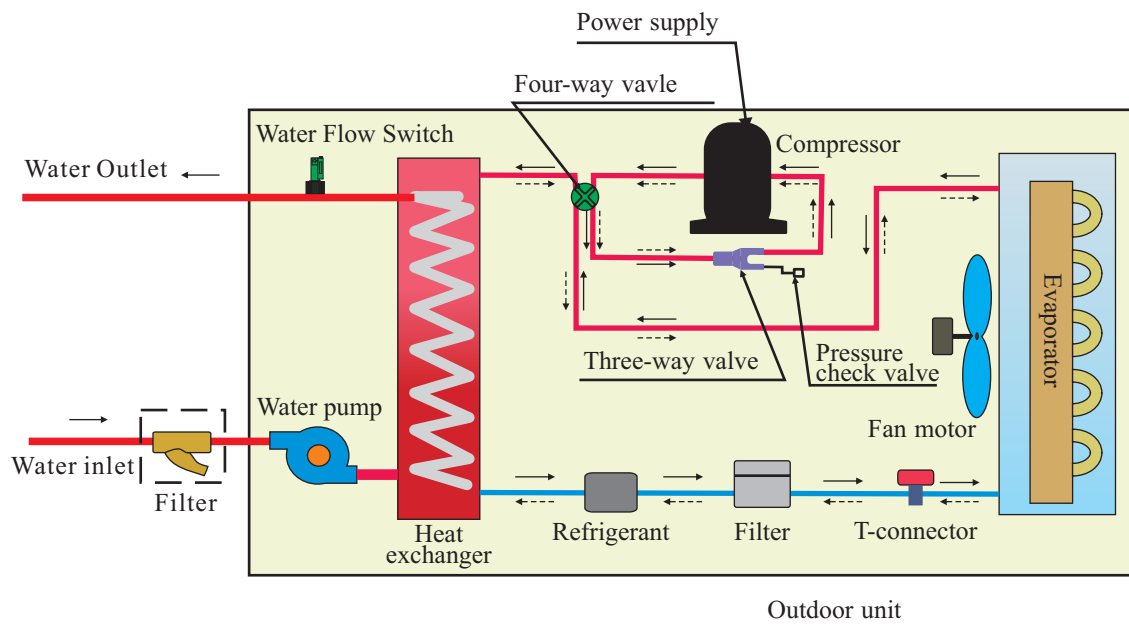
2. Introduction

2.2.Safety Precautions

 <p>When the power cord gets loose or damaged, always get a qualified person to fix it.</p>	 <p>Please select the correct fuse or breaker as per recommended. Steel wire or copper wire cannot be taken as substitute for fuse or breaker. Otherwise, damages maybe caused.</p>	 <p>Be aware fingers might be hurt by the fin of the coil.</p>
 <p>It is mandatory to use a suitable circuit breaker for the heat pump and make sure the power supply to the unit corresponds to the specifications. Otherwise the unit might be damaged.</p>	 <p>Disposal of Scrap Batteries (if there is) . Please discard the batteries as sorted municipal waste at the accessible collection point.</p>	 <p>Installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable.</p>
<p> System water filling</p> 		
<p>1. It's suggested to use pure water for filling the system. 2. If use city water for filling, please soften the water and add a filter. Note: After filling, the system of water system should be 0.15~0.6MPa.</p>		
<p> </p> <p>This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.</p>		

2. Introduction

2.3. Functioning Principles



2. Introduction

2.4. Water Pump

Pump information



basic parameters

Energy Efficiency Index (EEI)	≤ 0.21
Max. delivery head	9 m
Max. volume flow	4,50 m ³ /h

Power

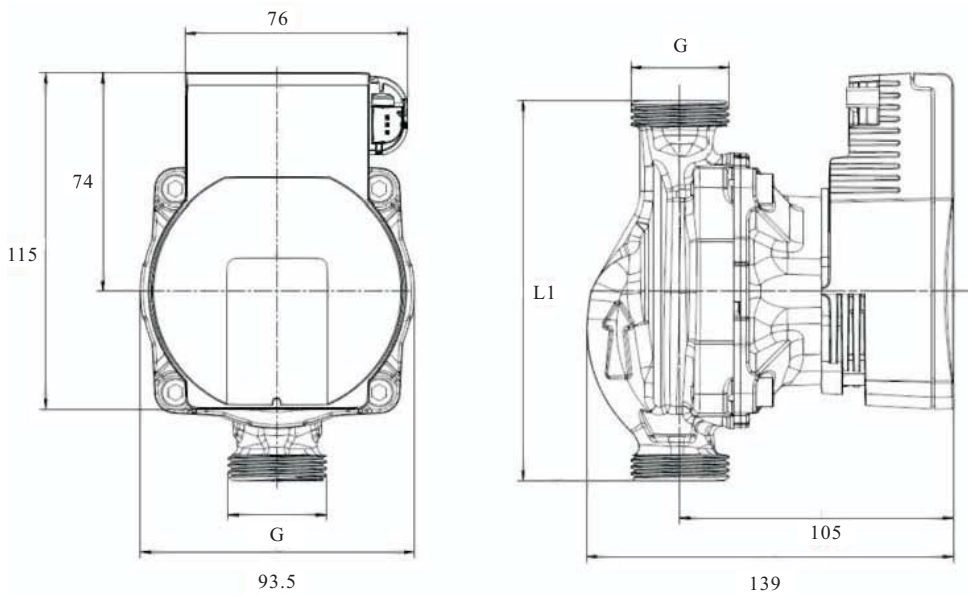
Mains connection	1~230 V +10%/-15%, 50/60 Hz (IEC 60038 standard voltage)
Power (W)	3-87
Electric current (A)	0.03-0.66

Permitted field of application

Temperature range for applications in HVAC systems at max. ambient temperature. Limit values for continuous operation at maximum rated power	Of 50°C = 0 to 105°C
	Of 55°C = 0 to 90°C
	Of 60°C = 0 to 77°C
	Of 65°C = 0 to 60°C
Maximum static pressure	Pn10

2. Introduction

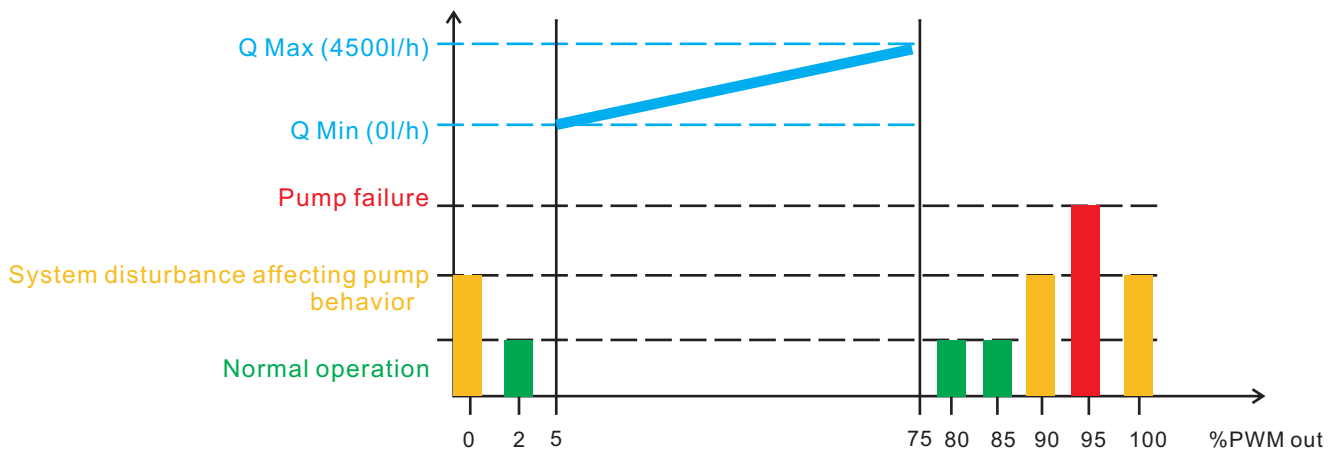
2.4. Water Pump



Type	G	L1	Weight
		mm	kg
25-130/9	G11/2	130	2
25-180/9	G11/2	180	2.2

Pump control

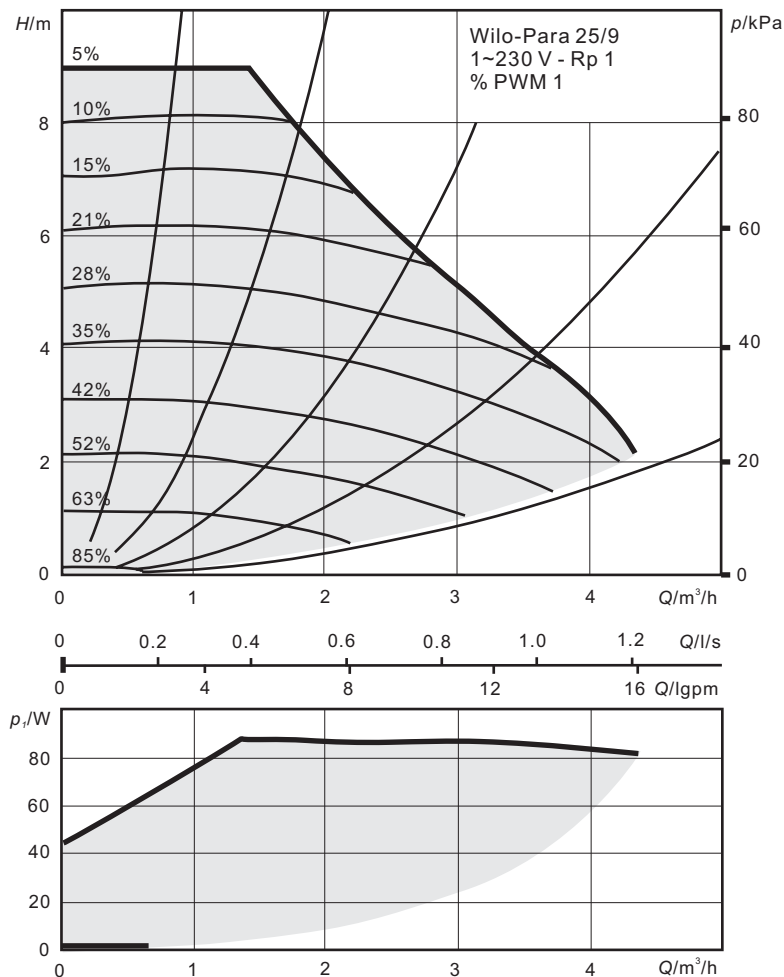
iPWM-out signal logic (heating) (%)



2. Introduction

2.4. Water Pump

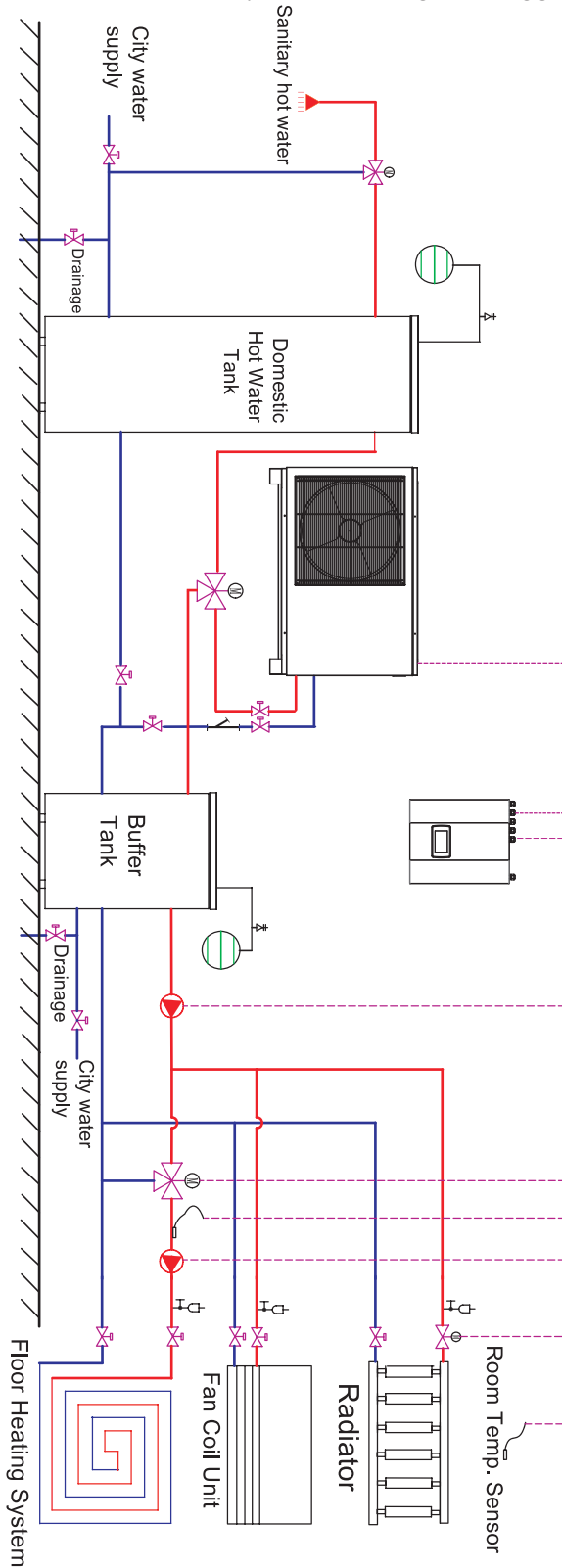
%PWM- out	Status	Potential causes
0	Pump output iPWM interface damaged	iPWM interface in short circuit
2	Stand-by, pump is ready to run	/
5-75	Pump is running normally, flow information is supplied	/
80	Abnormal running mode Pump is running but not at optimal performance	-Undervoltage 160/170-194V -Self thermal protecting mode
85	Abnormal function mode Pump has stopped but is still functional	-Undervoltage < 160/170V -Overvoltage -Unexpected external flow
90	Abnormal function mode Pump has stopped but is still functional Check the installation setup and medium	-Failure on another component than pump -Debris in the installation -Bad temperature setup
95	The pump has stopped due to permanent failure	-Pump blocked -Electronic module out of order
100	Problem of iPWM connection	iPWM interface in open circuit



2. Introduction

2.5. Product Components Diagram

Below is a general system application of the heat pump. Any specific configurations should be a variation of this “master” system drawing. All suggested assembly variations are given in Chapter 3.



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”.

2. Introduction

2.6.DATA SHEET R32 MONOBLOCK

Model			AW6-R32-M	AW9-R32-M	AW12-R32-M	AW15-R32-M	AW19-R32-M
Type	Outdoor unit		Air/water 6kW R32 Monobloc outdoor unit Grey	Air/water 9kW R32 Monobloc outdoor unit Grey	Air/water 12kW R32 Monobloc outdoor unit Grey	Air/water 15kW R32 Monobloc outdoor unit Grey	Air/water 19kW R32 Monobloc outdoor unit Grey
Article No ES			120290	120291	120292	120293	120294
IP rating		IPXX	IP34	IP34	IP34	IP34	IP34
Indoor unit controll box							
Model	Indoor unit controll box		AWC6/19-R32-M				
Type			Air/water/ 6-19kW Monobloc indoor unit White				
Article no ES			120295				
IP rating		IPXX	IP34				
Indoor unit controll box V5+							
Model	Indoor unit controll box V5+		AWC V5+ 6/19-R32-M				
Type			Air/water 6-19 kW Monobloc indoor controller V5+ White				
Article no ES			120299				
IP rating		IPXX	IP34				
Min/max heating capacity(1)		kW	3.5 / 6.5	4.3/9.2	5.5 / 11.6	6/15.3	9.2/18.5
El. heating power input min/max(1)		W	758 / 1410	927/2097	1107 / 2683	1223/3209	1834/4142
C.O.P min/max(1)		W/W	4.5 / 4.7	4.38/4.71	4.3 / 4.9	4.78/5.06	4.47/5.01
Min/max heating capacity(2)		kW	3.15 / 6	3.9/8.6	4.9 / 11.2	5.6/14.3	8.5/18.2
El. heating power input min/max(2)		W	943 / 1732	1162/2550	1401 / 3263	1551/3914	2248/4998
C.O.P min/max(2)		W/W	3.34 / 3.56	3.37/3.58	3.3 / 3.5	3.6/3.82	3.6/3.82
SCOP - Average climate, low temperature		W	4.74	4.73	4.71	4.98	4.85
Energy class			A+++	A+++	A+++	A+++	A+++
Min/max cooling capacity(3)		kW	6.22/7.45	6.7/9.5	- / 9.8	7.2/18.5	8.5/22.5
El. cooling power input min/max(3)		W	1400/1863	1679/2242	- / 2510	1334/4917	1660/6285
E.E.R. min/max(3)		W/W	4.05/4.45	4.0/4.6	- / 3.8	3.78/5.42	3.58/5.12
Min/max cooling capacity(4) (A35/W7)		kW	3.5/4.5	4.9/7.2	4.9 / 6.5	4.5/13	5.5/16
El. cooling power input min/max(4)		W	1330/1680	1451/2366	1358 / 2444	2590/4390	2970/5510
E.E.R. min/max(4)		W/W	2.5/2.74	2.8/3.1	2.6 / 3.5	2.96/3.26	2.85/3.2
Min/max ambient working temp. in heating mode		°C	-25~45				
Min/max ambient working temp. in cooling mode		°C	-1~65				
Max flow temp. in heating mode		°C	58				
Min flow temp. in heating mode		°C	20				
Min flow temp. in cooling mode		°C	7				
WiFi module integrated			yes				
Defrost upon demand			yes				
Heating cable for defrosting			yes				
Compressorpre-heat			yes				
Electronic expansion valve			yes				
Max. Operation High Pressure		bar	42				
Min. Operation Low Pressure		bar	14				
PS Hydraulicscircuit		bar	3				
Min. Floor Area for installation, operation and storage		m2	3.1				
Min. Area Pipe-work		m2	3.1				
Anti-Freeze el. heater	Power supply	V/Hz/	230V/1PH/50Hz				
Anti-Freeze el. heater	Rated power	kW	0.08				

2. Introduction

Model			AW6-R32-M	AW9-R32-M	AW12-R32-M	AW15-R32-M	AW19-R32-M
ErP approved circulation pump	Manufacturer		Wilo	Wilo	Wilo	Wilo	Wilo
	type		Para 25-130/9-87/IPWM1	Para 25-130/9-87/IPWM1	Para 25-130/9-87/IPWM1	Para 25-130/9-87/IPWM1	Para 25-130/9-87/IPWM1
Compressor	Manufacturer		Mitsubishi	Mitsubishi	Mitsubishi	Mitsubishi	Mitsubishi
	type		DC inverter (twin rotary)				
Fan	Quantity	pcs	1	1	1	2	2
	Airflow	m ³ /h	2500	3150	3150	6200	7000
	Rated power	W	34	45	45	90	120
	Blade diameter	mm	φ 496	φ 550	φ 550	φ 550	φ 550
	Fan rotation	Direction	counter-clockwise	counter-clockwise	counter-clockwise	counter-clockwise	counter-clockwise
Sound power level	Outdoor unit	dB (A)	52	53	52	58	61
	Indoor unit controll box	dB (A)	0	0	0	0	0
	Indoor unit controll box V5+	dB (A)	0	0	0	0	0
Plate heat exchanger	Manufacturer		SWEP				
	Water press. drop	kPa	26	26	26	26	26
	Piping connection	Inch	G1"	G1"	G1"	G1-1/4"	G1-1/4"
Minimum water flow for triggering the flow switch		m ³ /h - l/s	0.75/0.21	0.94/0.26	1.44/0.40	2.23/0.62	2.66/0.74
Nominal water flow		m ³ /h	1.04	1.55	2.05	2.62	3.3
Residual current device and overvoltage protection			Required				
Power supply (grounded) Outdoor unit	Outdoor unit	V / Hz / Ph	230/50/1	230/50/1	230/50/1	400/50/3	400/50/3
	Fuse Outdoor unit	A	10A/C	16A/C	16A/C	3P/16A/C	3P/16A/C
Power supply (grounded) Indoor unit controll box	Indoor unit controll box	V / Hz / Ph	230/50/1	230/50/1	230/50/1	230/50/1	230/50/1
	Fuse Indoor unit controll box	A	10A	10A	10A	10A	10A
Power supply (grounded) Indoor unit controll box V5+	Indoor unit controll box V5+	V / Hz / Ph	230/50/1	230/50/1	230/50/1	230/50/1	230/50/1
	Fuse Indoor unit controll box V5+	A	10A	10A	10A	10A	10A
Refrigerant	type		R 32				
	charge	kg	0.9	1.4	1.8	2.55	2.6
	GWP (global warming potential)	GWP	GWP: 675	GWP: 675	GWP: 675	GWP: 675	GWP: 675
	Quantity of hydrofluorocarbons in tonnes of CO ₂ equivalent	t CO ₂ Equiv.	0.608	0.945	1.215	1.721	1.755
Dimensions net (L x D x H)	Outdoor unit	mm	1010x370x735	1165x370x885	1165x370x885	1085x390x1450	1085x390x1450
	Indoor unit controll box	mm	450x135x380				
	Indoor unit controll box V5+	mm	300x120x400				
Dimensions Brutto (L x D x H) including carton box and palette	Outdoor unit	mm	1040x455x765	1210x455x915	1210x455x915	1140x475x1605	1140x475x1605
	Indoor unit controll box	mm	520x410x170				
	Indoor unit controll box V5+	mm	335x185x455				
Net weight	Outdoor unit	kg	67	80	85	120	140
	Indoor unit controll box	kg	10				
	Indoor unit controll box V5+	kg	8				
Brutto weight including carton box, added manuals, sensors and palette	Outdoor unit	kg	78	95	105	140	155
	Indoor unit controll box	kg	12				
	Indoor unit controll box V5+	kg	10				

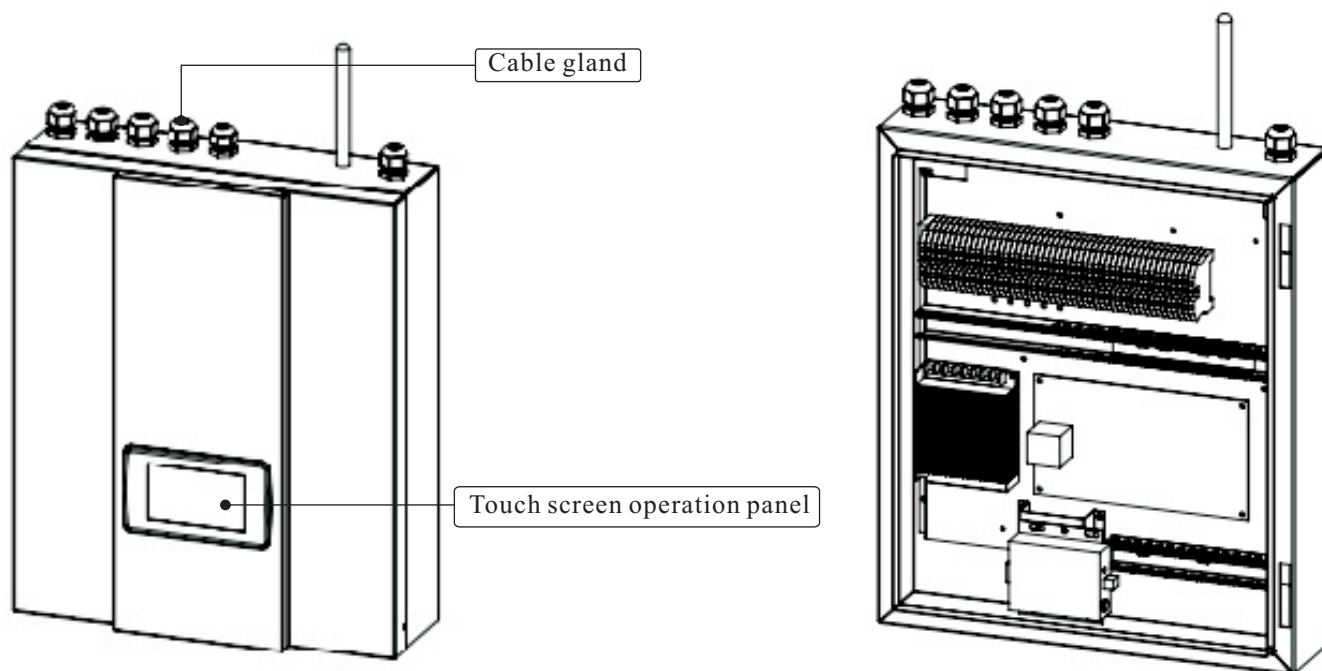
- (1) Heating condition: water inlet/outlet temperature: 30 °C/35 °C, Ambient temperature: DB 7 °C /WB 6 °C
- (2) Heating condition: water inlet/outlet temperature: 40 °C/45 °C, Ambient temperature: DB 7 °C /WB 6 °C
- (3) Cooling condition: water inlet/outlet temperature: 23 °C/18 °C, Ambient temperature: DB 35 °C /WB 34 °C
- (4) Cooling condition: water inlet/outlet temperature: 12 °C/7 °C, Ambient temperature: DB 35 °C /WB 34 °C

3. Overview of the Units

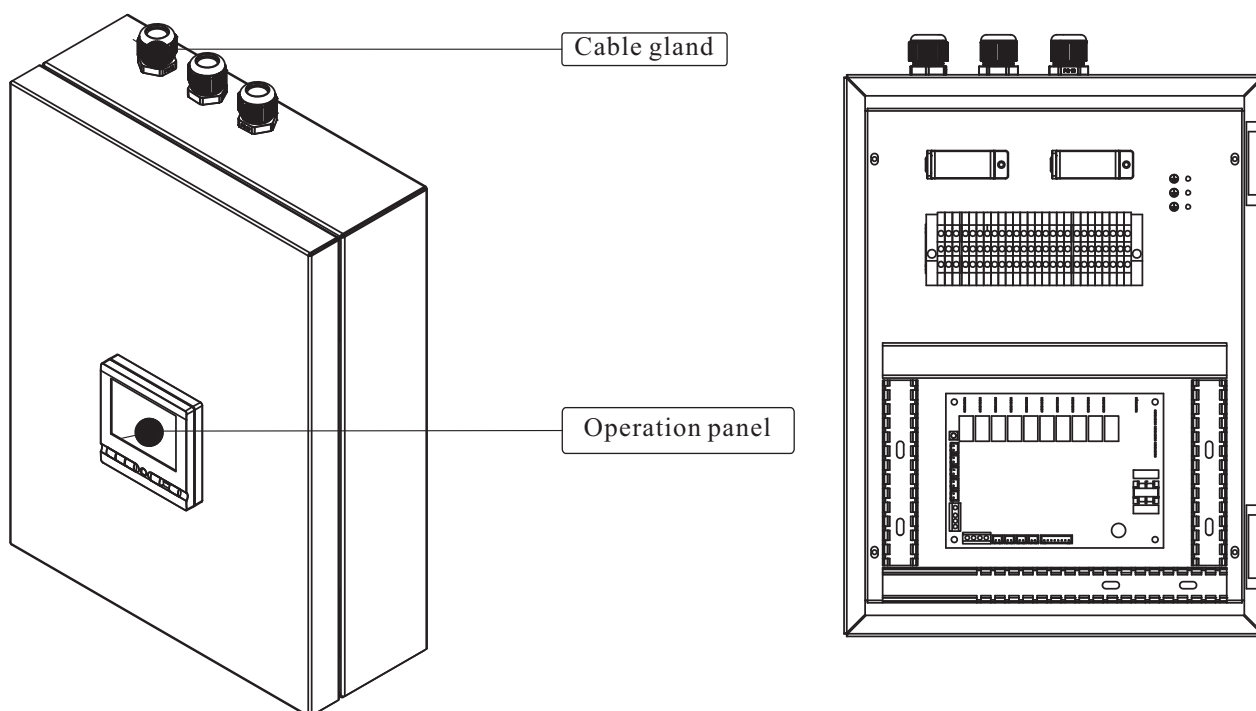
3.1. Functional Diagrams

Indoor unit

AWC6/19-R32-M



AWC V5+ 6/19-R32-M

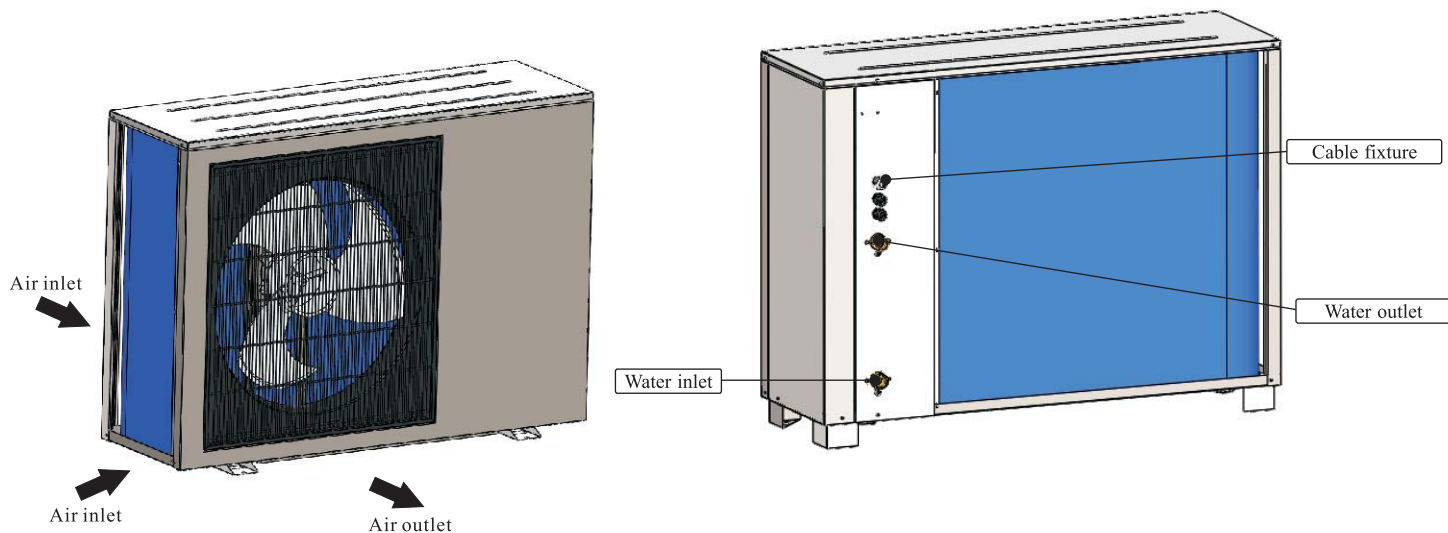


3. Overview of the Units

3.1. Functional Diagrams

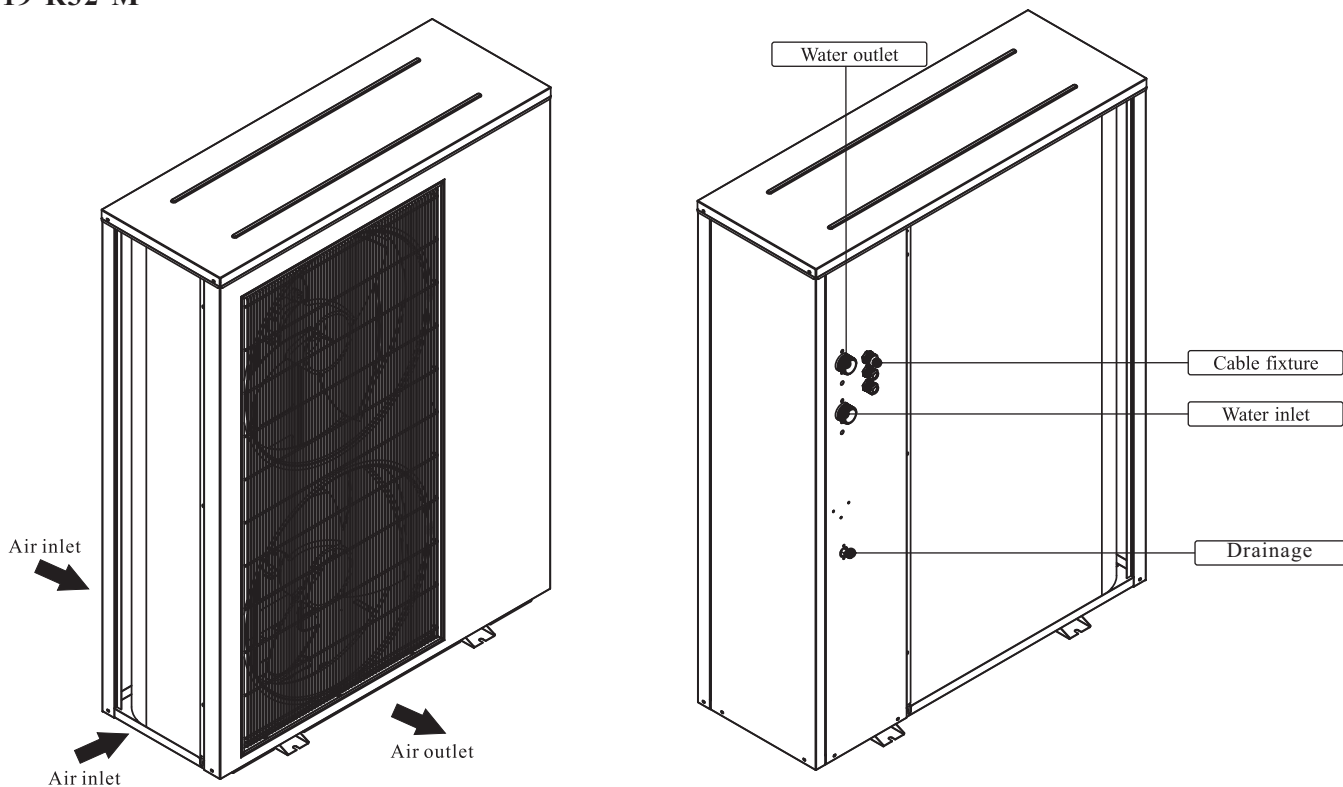
Outdoor unit

AW6/9/12-R32-M



AW15-R32-M

AW19-R32-M



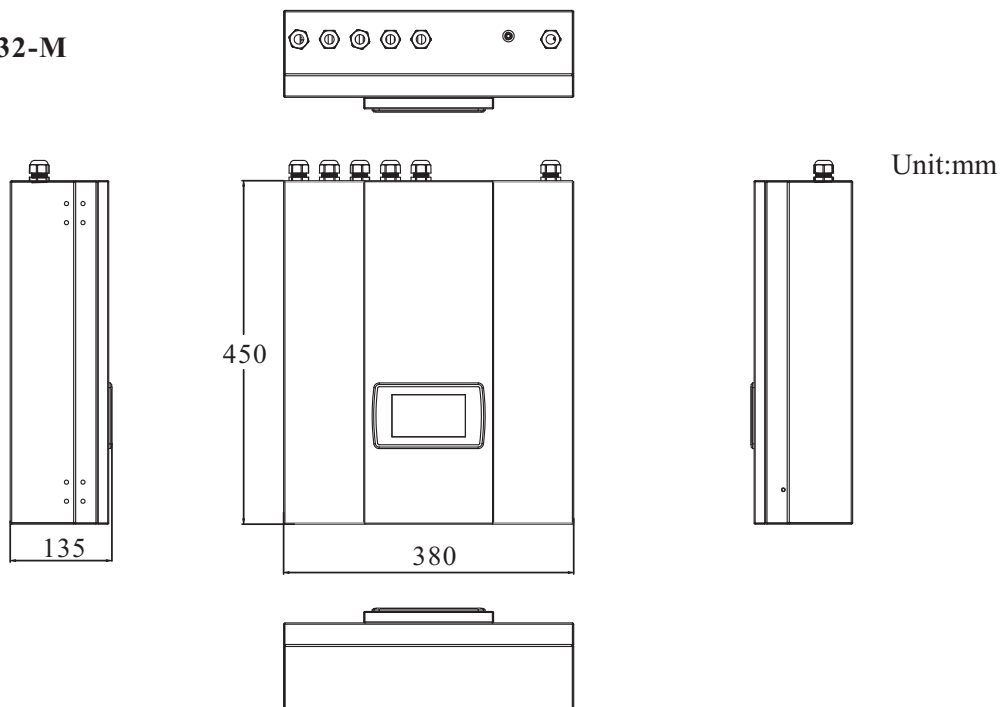
3. Overview of the Units

3.2.Outlines and Dimensions

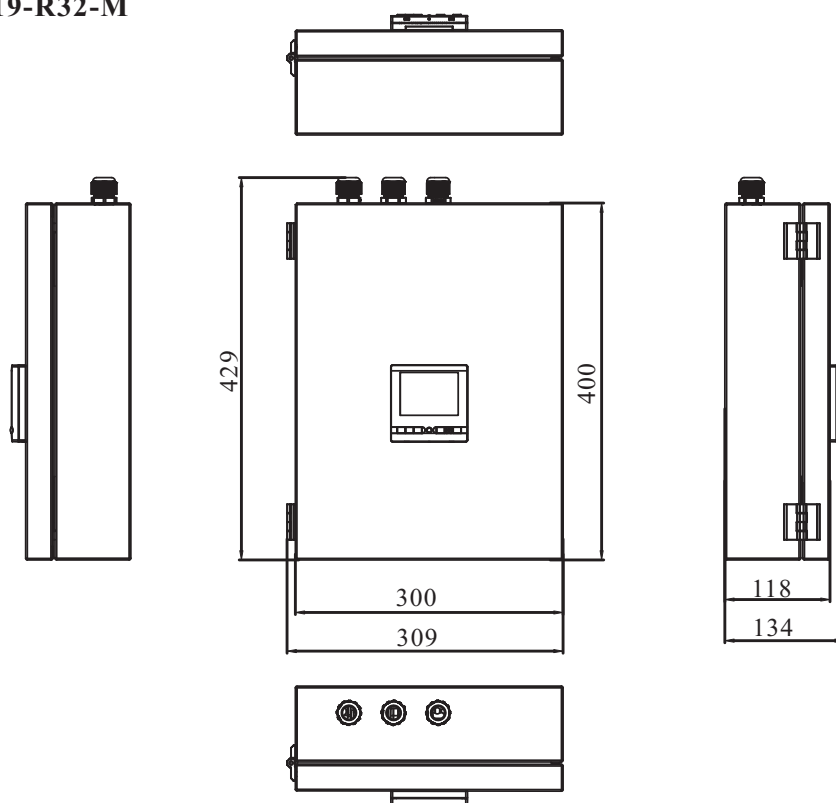
Outlines and dimensions

Indoor

AWC6/19-R32-M



AWC V5+ 6/19-R32-M



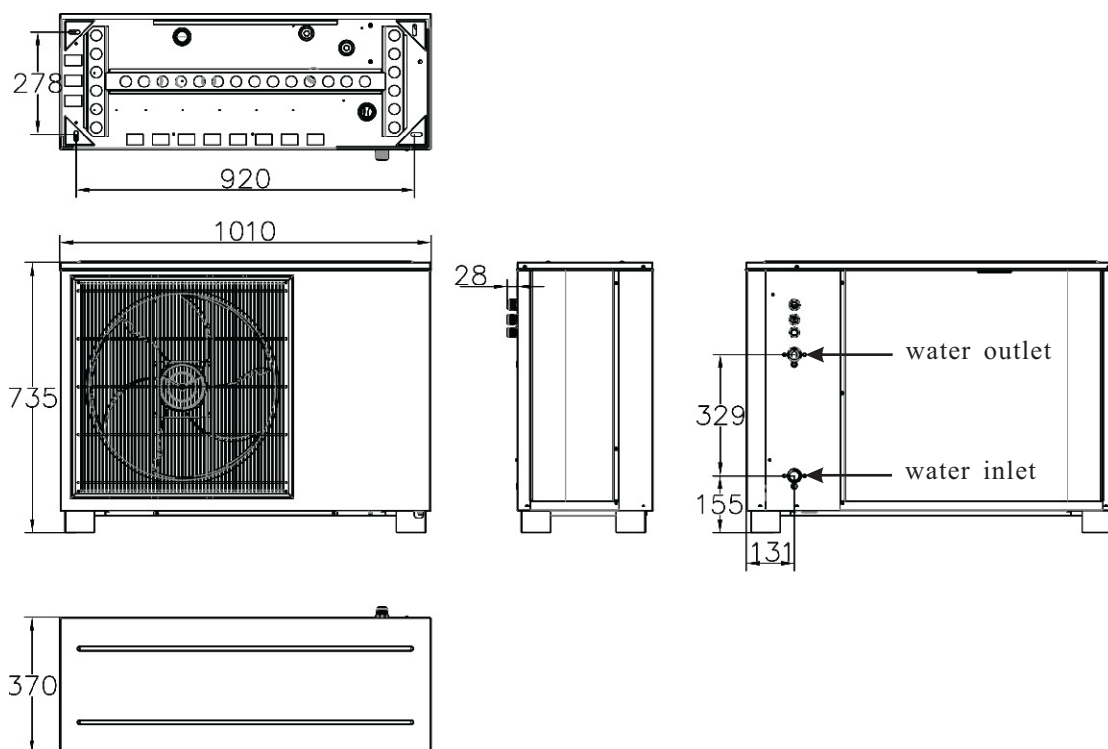
3. Overview of the Units

3.2. Outlines and Dimensions

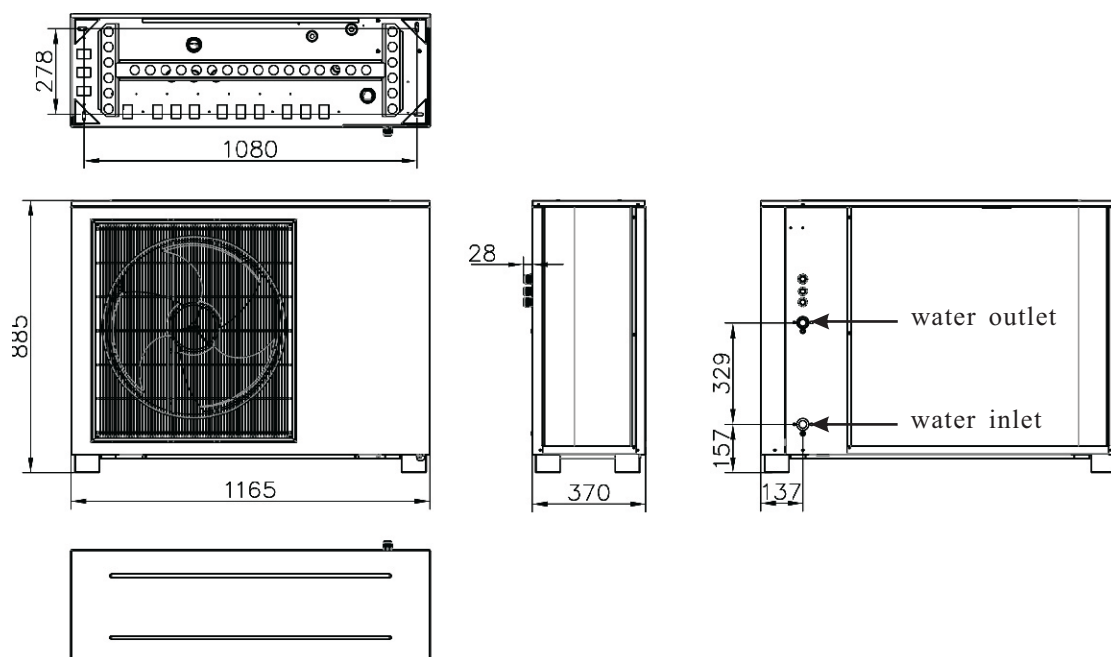
Outdoor

AW6-R32-M

Unit:mm



AW9/12-R32-M



3. Overview of the Units

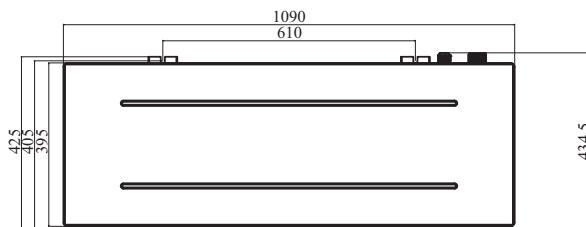
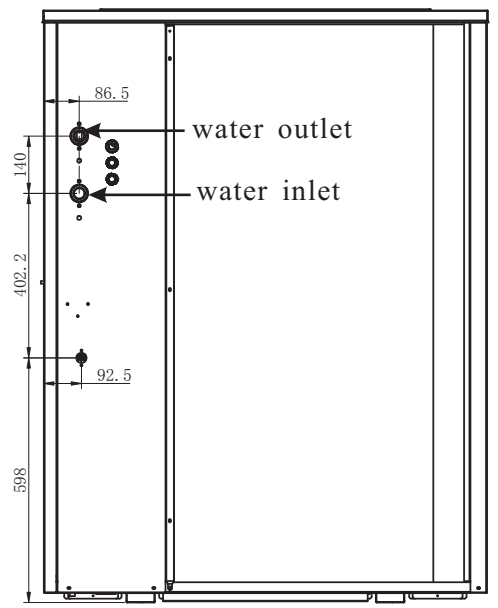
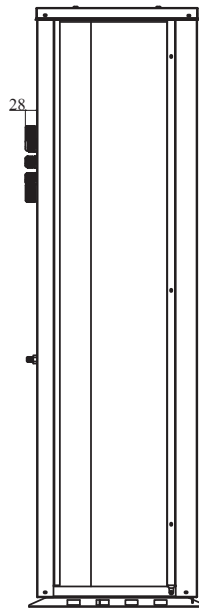
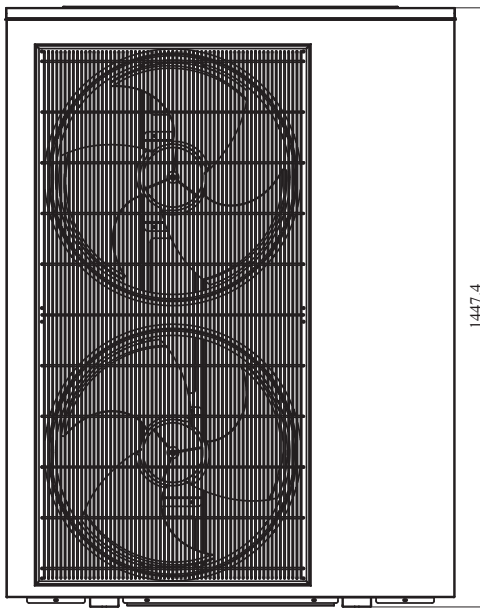
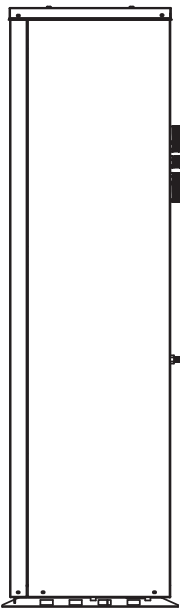
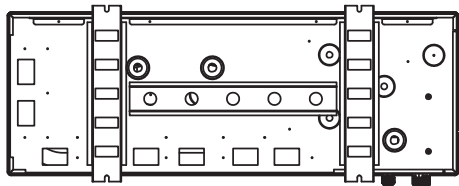
3.2.Outlines and Dimensions

Outdoor

AW15-R32-M

AW19-R32-M

Unit:mm

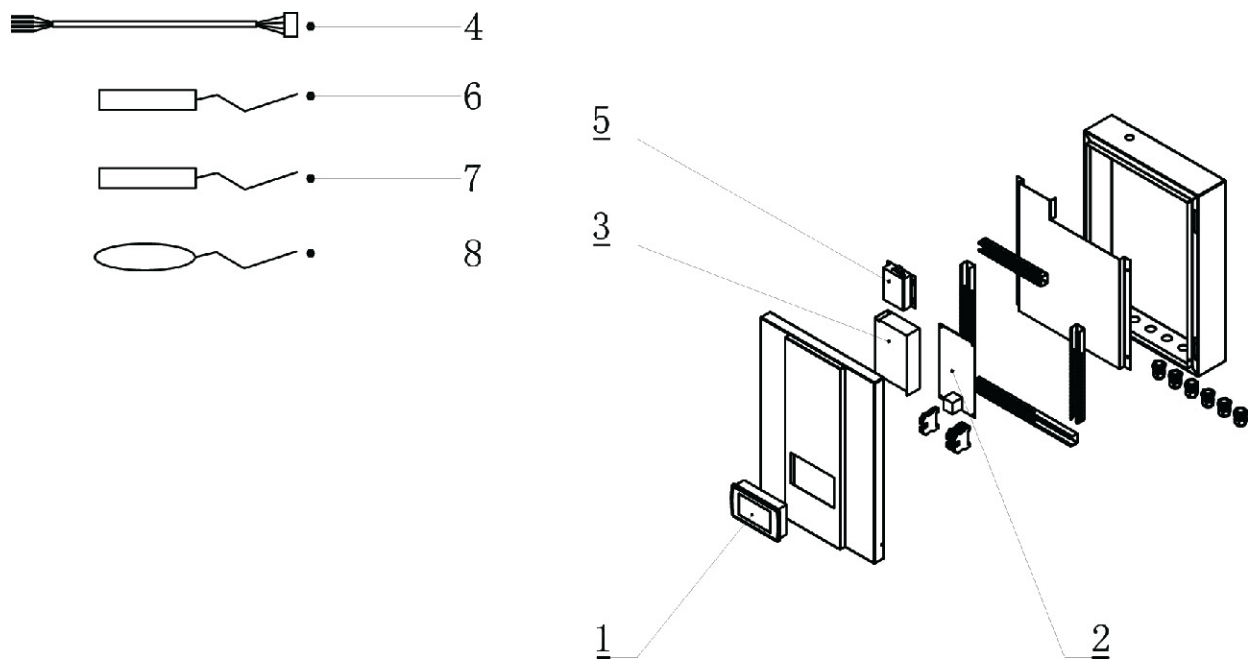


3. Overview of the Units

3.3. Exploded view

Indoor

AWC6/19-R32-M



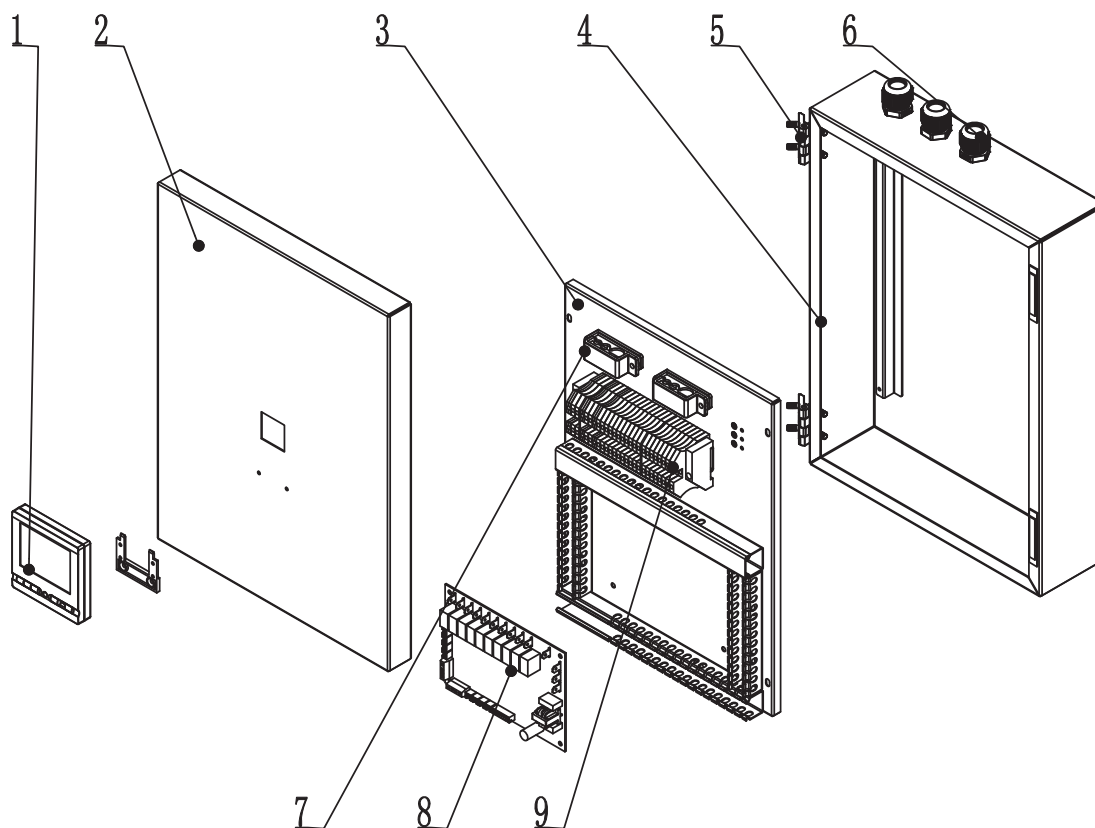
NO	Name
1	Touch screen operation panel
2	Indoor PCB
3	Power switch
4	Wifi cable
5	Wifi module
6	Water inlet/outlet/TH/TC/TW temperature sensor
7	MV1/MV2 temperature sensor
8	MIXING CIRCUIT 2 TEMP. SENSOR

3. Overview of the Units

3.3. Exploded view

Indoor

AWC V5+ 6/19-R32-M

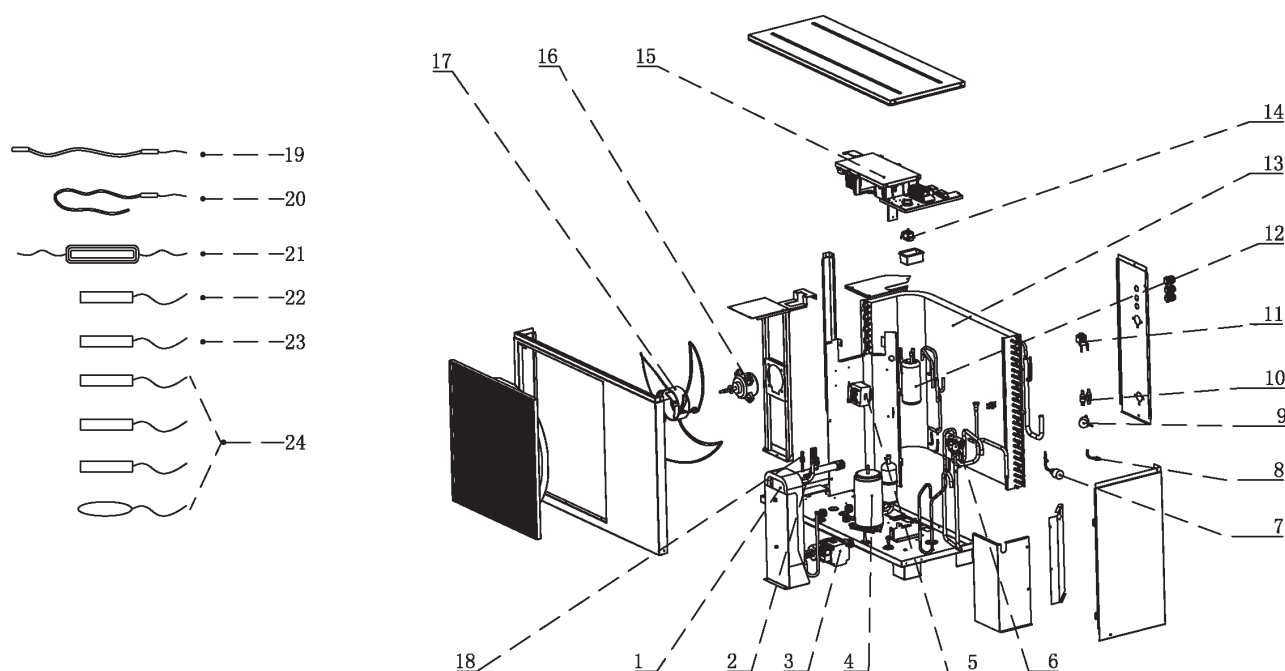


NO	Name	NO	Name
1	Operation panel	6	Cable gland
2	Front panel	7	Cable clip
3	Fixing plate	8	Indoor PCB
4	Casing	9	Terminal block
5	Hinge		

3. Overview of the Units

3.3. Exploded view

Outdoor
AW6/9/12-R32-M

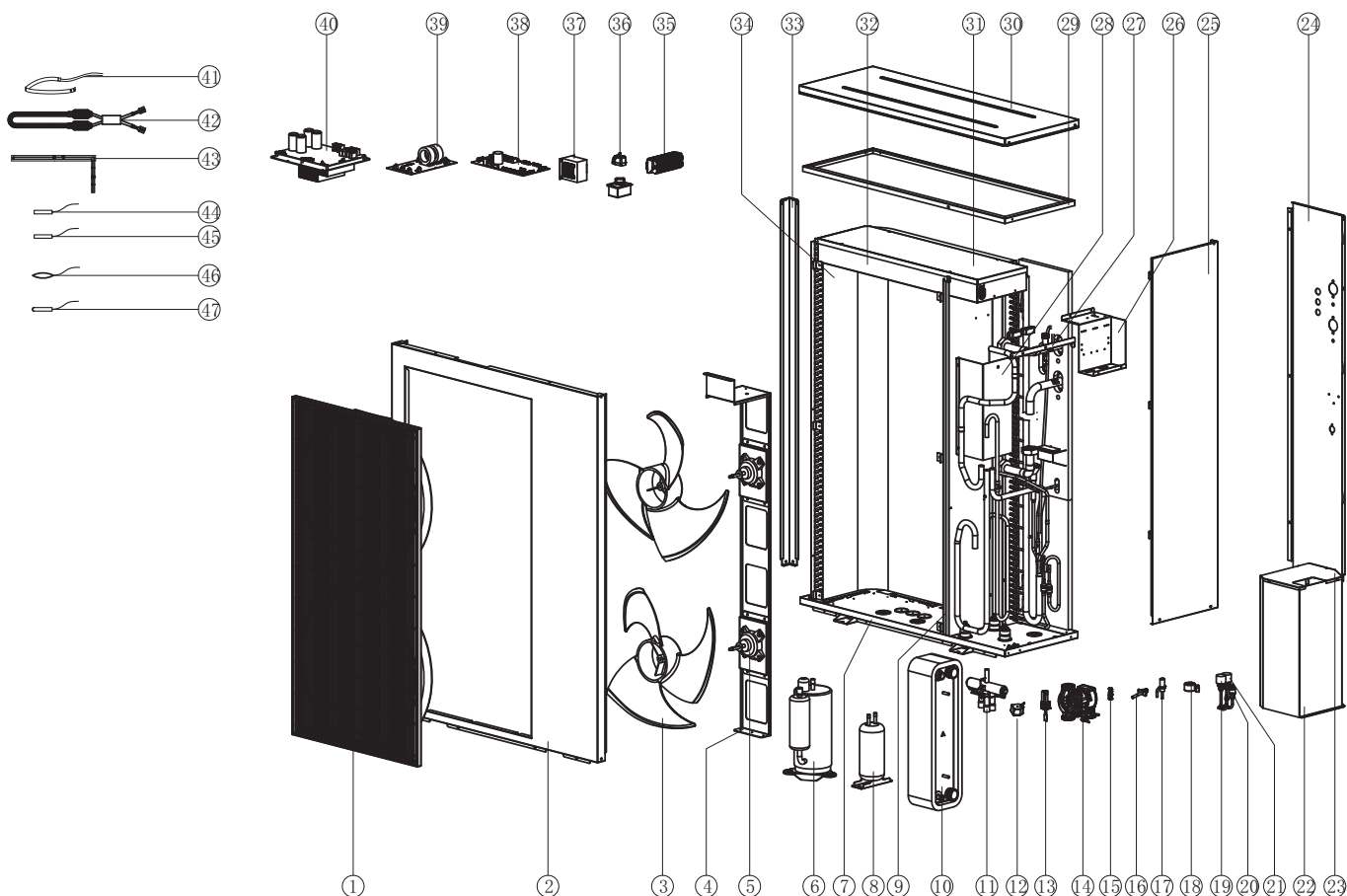


NO	Name	NO	Name	NO	Name
1	Plate heat exchanger	10	Filter	19	Bottom tray heater
2	Water flow switch	11	Electronic expansion valve	20	Electronic heater for Compressor
3	water pump	12	Electronic expansion valve coil		
4	Compressor	13	Evaporator	21	Electronic heater for Plate
5	PFC transducer	14	Mechanical thermostat	22	Water inlet temp sensor
6	Four-way valve	15	Outdoor PCB	23	Water outlet temp sensor
7	High pressure sensorl	16	DC fan motor	24	Ambient/coil/compressor discharge/suction Needle valve temp. sensor
8	Check valve	17	Fan		
9	Low pressure sensor	18	Air purging valve		

3. Overview of the Units

3.3. Exploded view

Outdoor
AW15-R32-M
AW19-R32-M



NO	Name	NO	Name	NO	Name
1	Air guide	17	Electronic expansion valve coil	33	Column support
2	Front panel	18	Electronic expansion valve coil	34	Evaporater
3	Fan	19	Low pressor sensor	35	Teminal block
4	Fan motor bracket	20	High pressor switch	36	Terminal switch
5	DC Fan Motor	21	High pressor sensor	37	PFC
6	Compressor	22	Cabinet for compressor	38	Outdoor PCB
7	Bottom plate	23	Cabinet cover for compressor	39	
8	Liquid receiver	24	Back side panel	40	
9	Bulkhead	25	Service panel	41	Bottom tray heater
10	Plate heat exchanger	26	Fixing plate 1 for terminal block	42	Electronic heater for Compressor
11	Four-way valve	27	Fixing plate 2 for terminal block	43	Electronic heater for Plate
12	Four-way valve coil	28	Fixing plate for plate heat exchanger	44	Compressor discharge sensor (50K)
13	Water flow switch	29	Fixing plate	45	suction/coil/water inlet/water outlet
14	Water pump	30	Top cover	46	ambient temperature sensor
15	Air purging valve	31	Electric box cover	47	water inlet/water outlet sensor (Pt1000)
16	Drainage valve	32	Electric box		

Locate the Configuration that Meets Your Needs

4. Assembly Configurations - Flowchart

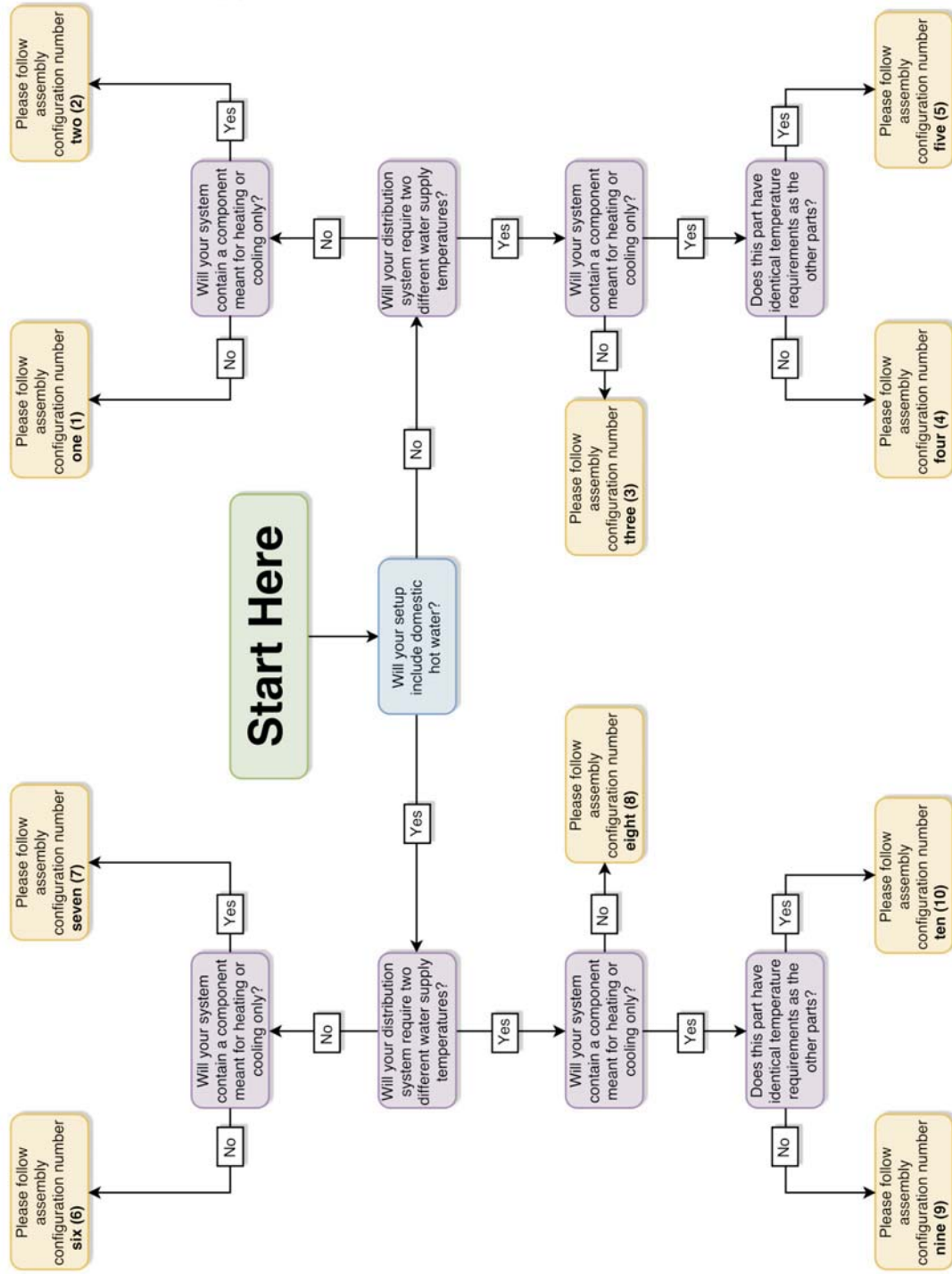
Follow the flowchart on the right in order to locate which of the assembly configuration matches the needs of the end user, each of which contains specific assembly and wiring diagrams, with software instructions.

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.



4. Assembly Configurations – Drawing 1

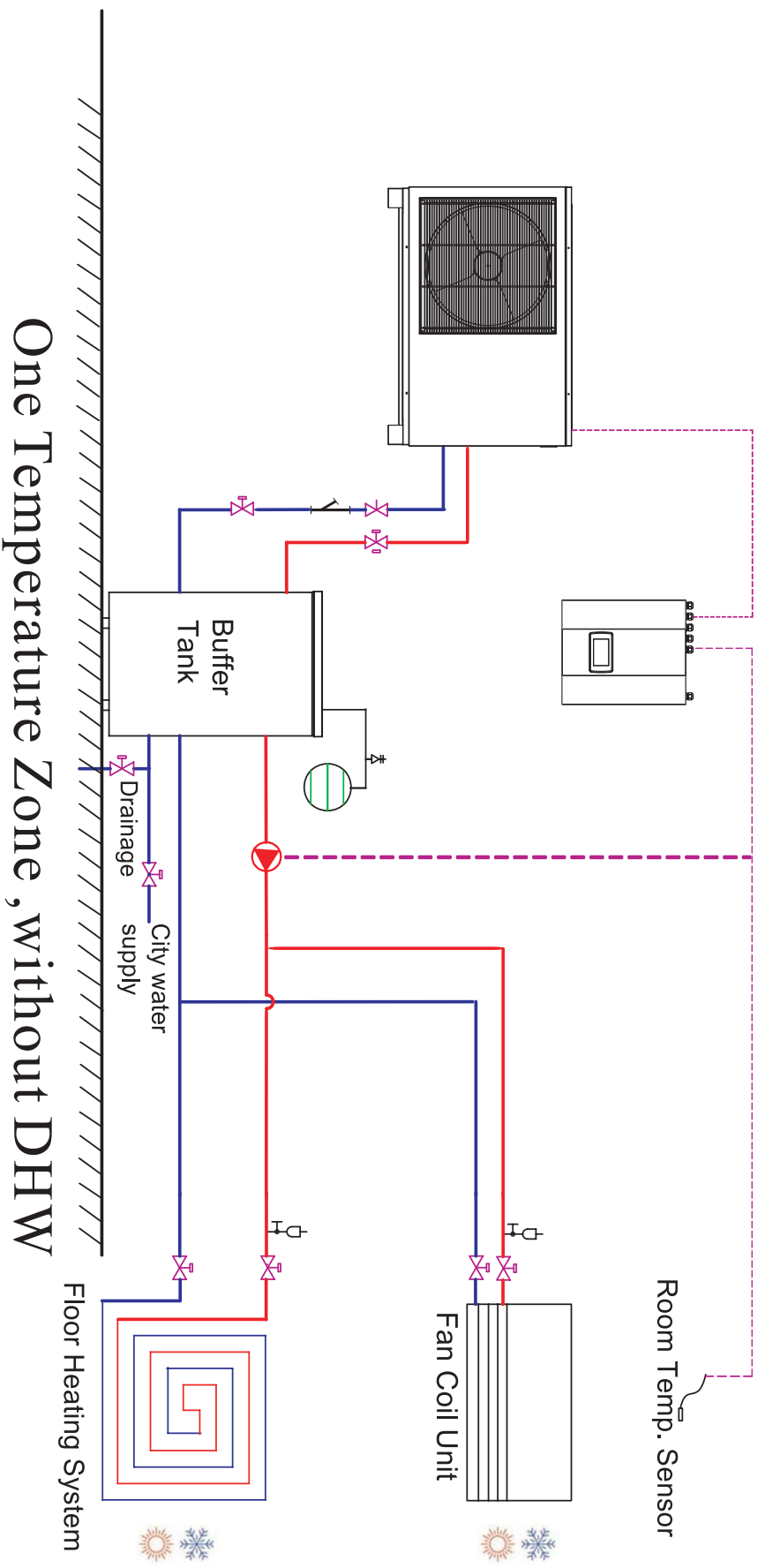
Please ensure that the configuration matches the assembly drawing depicted on the right for a one temperature zone without domestic hot water setup.

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			

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.

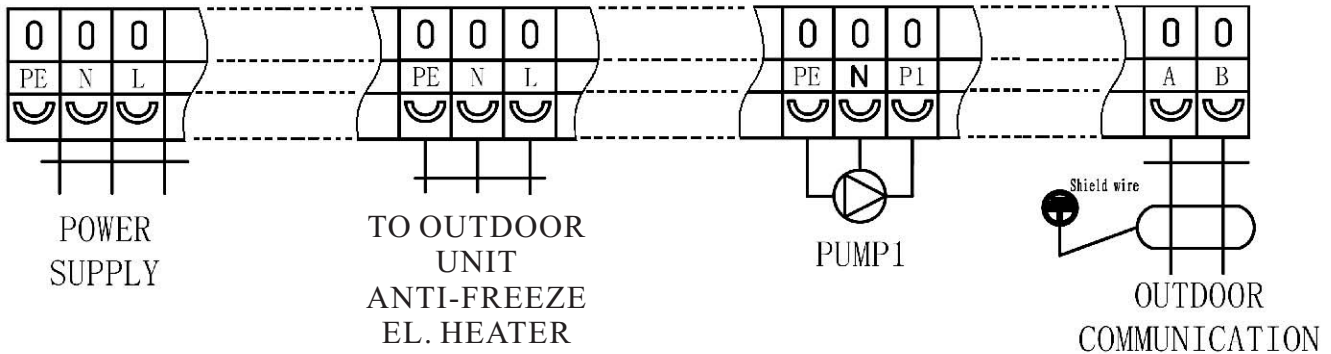
Note: Dotted lines mean "able to be controlled by the Heat Pump".



4. Assembly Configurations – Drawing 1

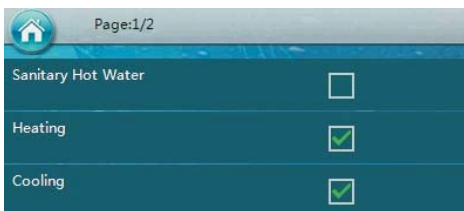
Assembly 1: Wiring Diagram

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:

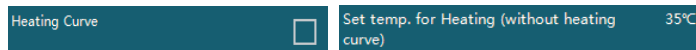
H.1.Setting a heating curve:



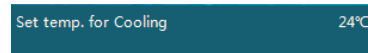
Ambient Temp. 1	-25°C
Ambient Temp. 2	-15°C
Ambient Temp. 3	-5°C
Ambient Temp. 4	5°C
Ambient Temp. 5	10°C

Water Temp. A/Ambient Temp. 1	40°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:



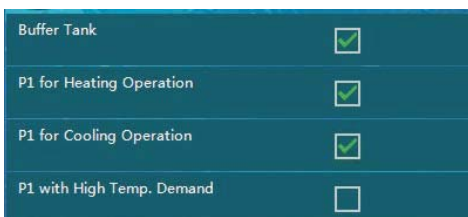
C.Configuring the set water cooling temperature (if applicable):



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



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



4. Assembly Configurations – Drawing 2

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.

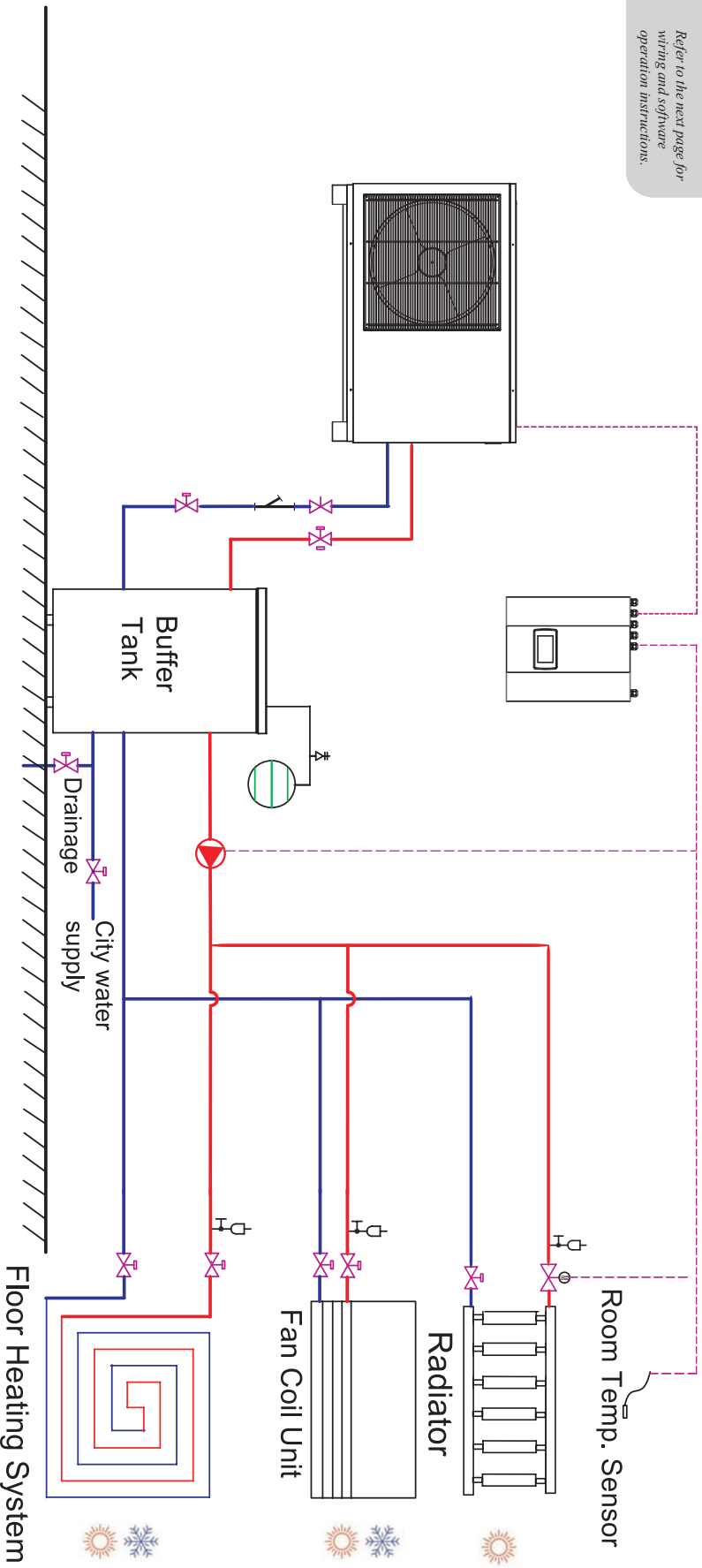
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

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.

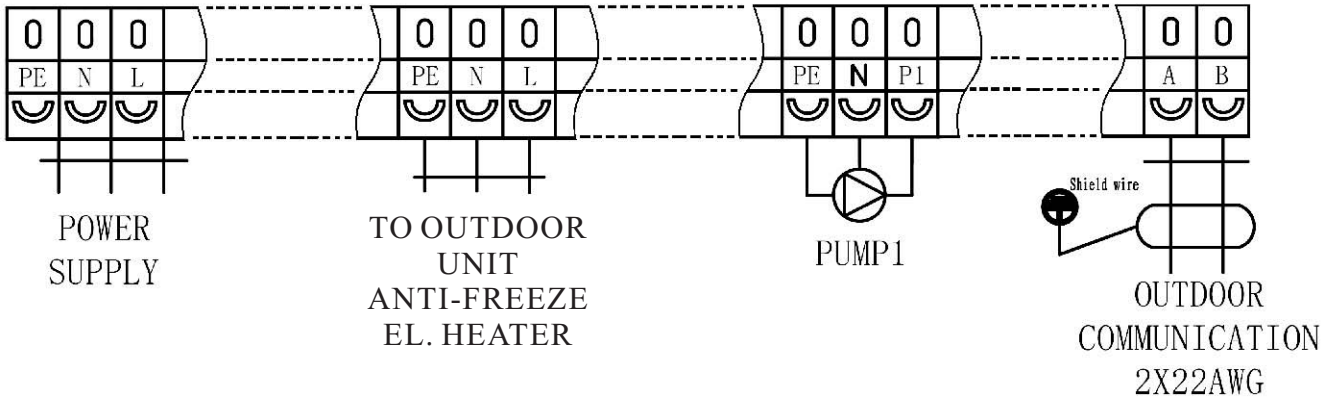


One Temperature Zone, without DHW, with a heating-only (or cooling-only) circuit, by usage of a motorized 2-way valve

4. Assembly Configurations – Drawing 2

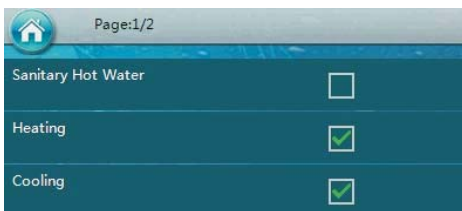
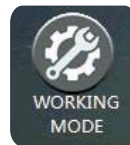
Assembly 2: Wiring Diagram

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:

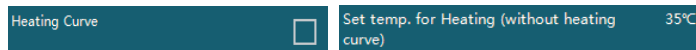


H.1.Setting a heating curve:

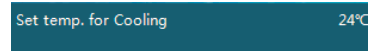


Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:



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



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

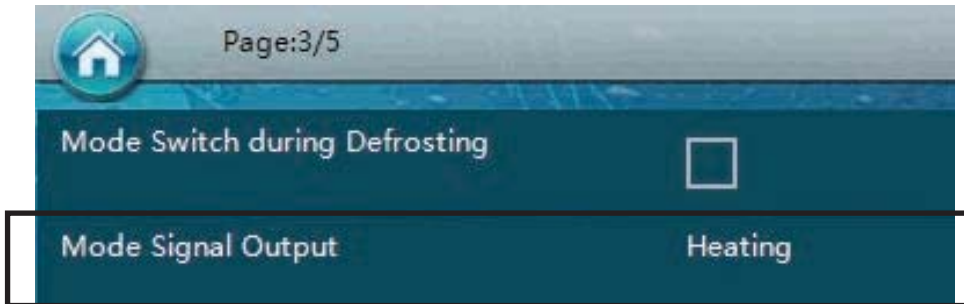
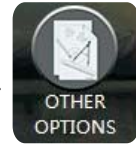
3. Locate and activate the buffer tank and appropriate pumps under



4. Assembly Configurations – Drawing 2

Software: Basic Settings (continued)

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



4. Assembly Configurations – Drawing 3

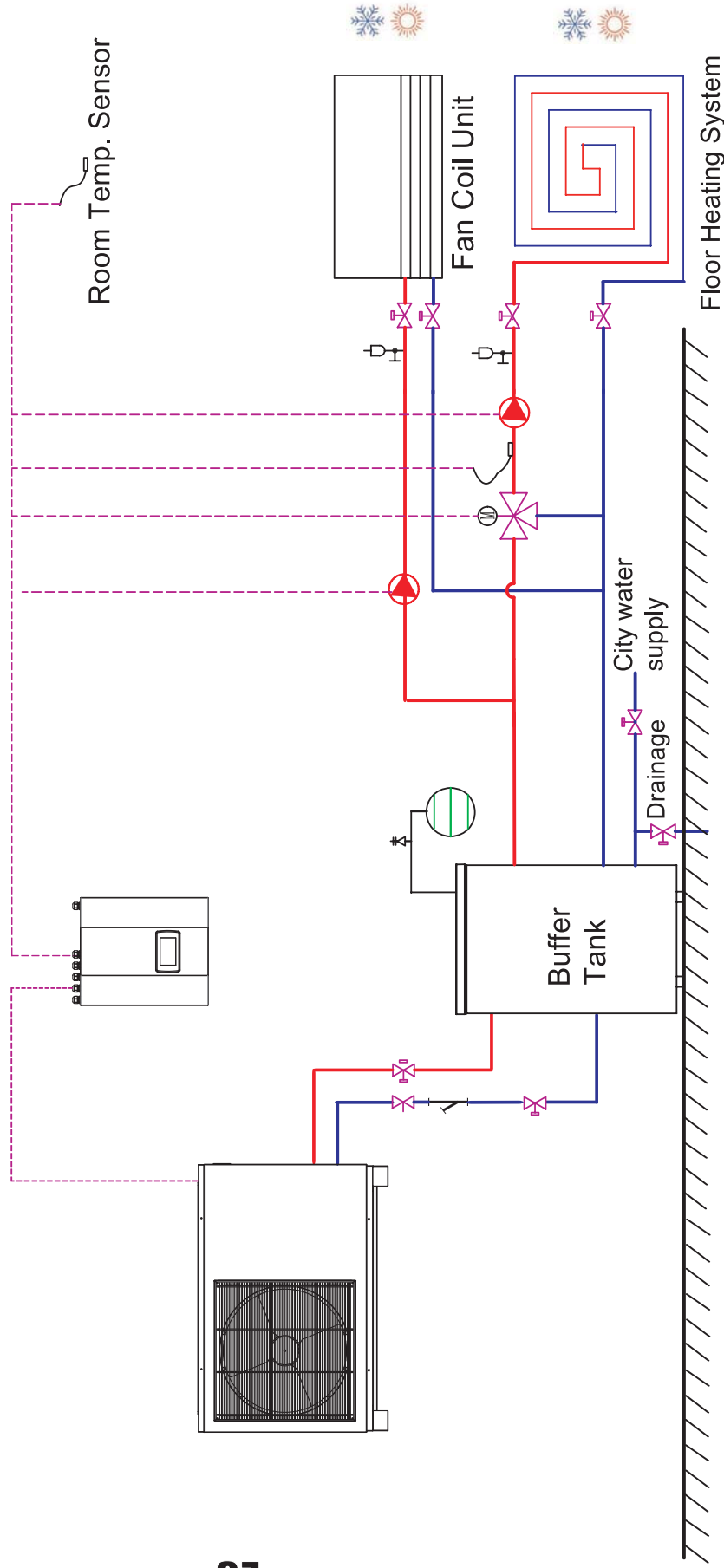
Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

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".

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.

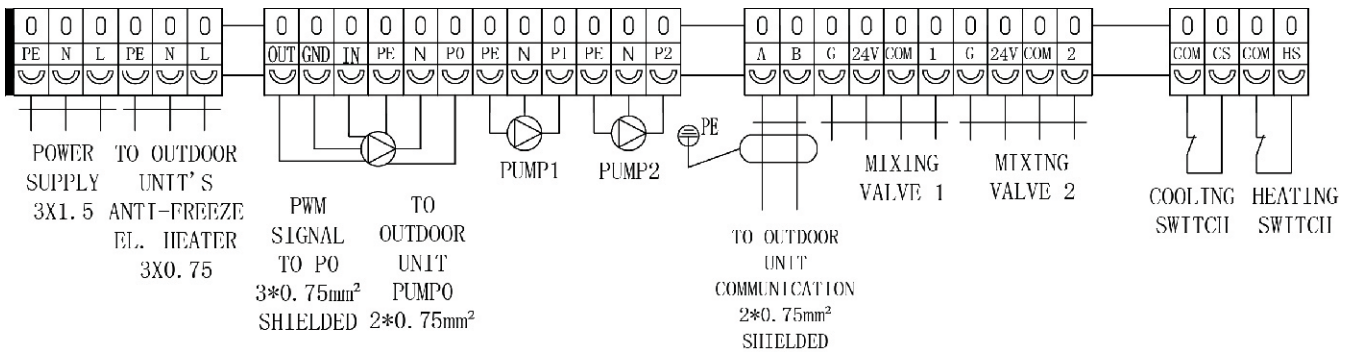


Two Temperature Zones , without DHW

4. Assembly Configurations – Drawing 3

Assembly 3: Wiring Diagram

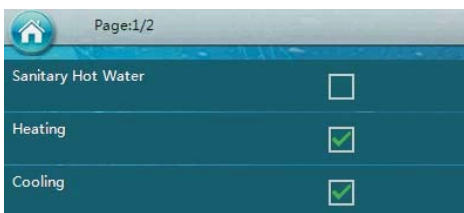
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2, please refer to the appendix A (on page 87-88) 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:

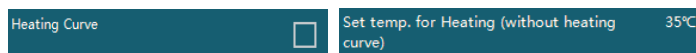


Ambient Temp. 1	-25°C
Ambient Temp. 2	-15°C
Ambient Temp. 3	-5°C
Ambient Temp. 4	5°C
Ambient Temp. 5	10°C

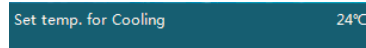
Water Temp. A/Ambient Temp. 1	37°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C



H.2. If no heating curve is desired:

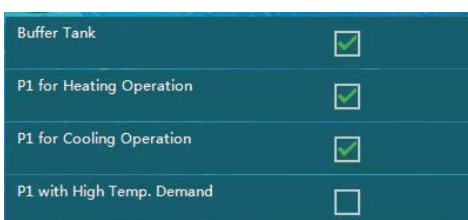


C. Configuring the set water cooling temperature (if applicable):



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

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



4. Assembly Configurations – Drawing 3

Software: Basic Settings (continued)

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

P2 for Heating Operation	<input checked="" type="checkbox"/>
P2 for Cooling Operation	<input type="checkbox"/>



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:

Heating Curve	<input checked="" type="checkbox"/>
---------------	-------------------------------------

Water Temp. A/Ambient Temp. 1	40°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:

Heating Curve	<input type="checkbox"/>
---------------	--------------------------

Set Temp. for Heating (without heating curve)	35°C
---	------

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

Set temp. For Cooling	24°C
-----------------------	------



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

Mixing Valve	<input checked="" type="checkbox"/>
--------------	-------------------------------------

Dependent on whether cooling is needed

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.

4. Assembly Configurations – Drawing 4

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.

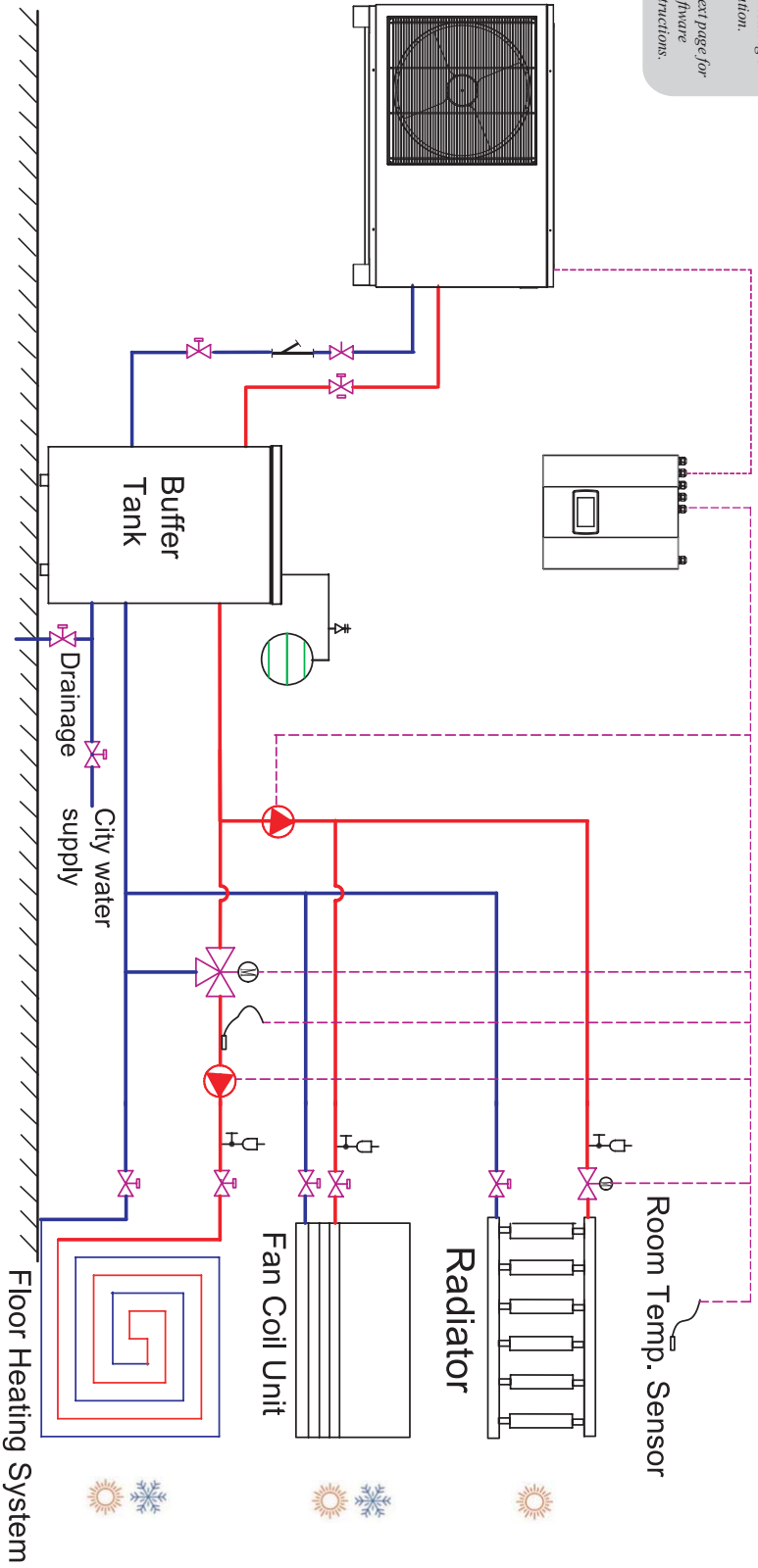
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

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.

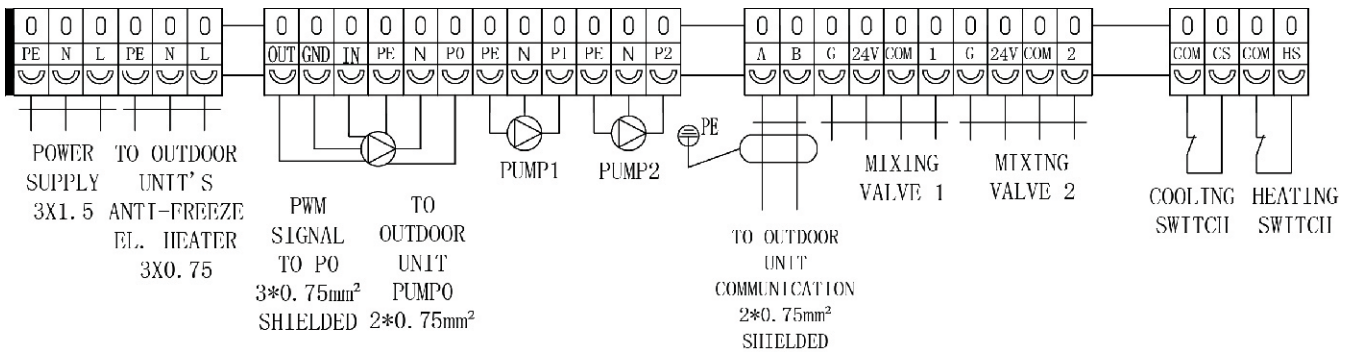


Two Temperature Zones , without DHW, with a heating-only (or cooling-only) circuit, by usage of a motorized 2-way valve

4. Assembly Configurations – Drawing 4

Assembly 4: Wiring Diagram

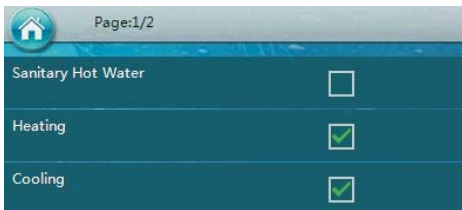
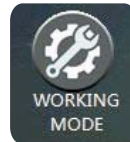
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2, please refers to the appendix A (on page 87-88) 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:

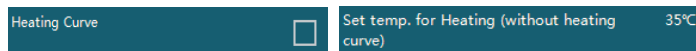


H.1. Setting a heating curve:

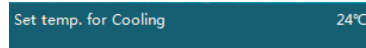


Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:

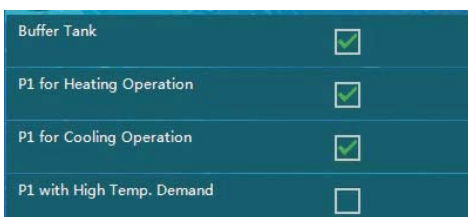


C. Configuring the set water cooling temperature (if applicable):



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

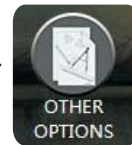
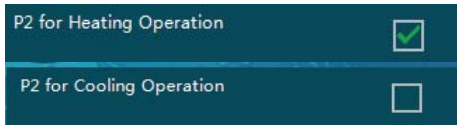
3. Locate and activate the buffer tank and appropriate pumps under



4. 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



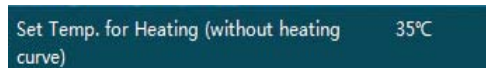
H. Configuring the set water heating temperatures:

H.1.Setting a heating curve:



Water Temp. A/Ambient Temp. 1	40°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C

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

4. Assembly Configurations – Drawing 5

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.

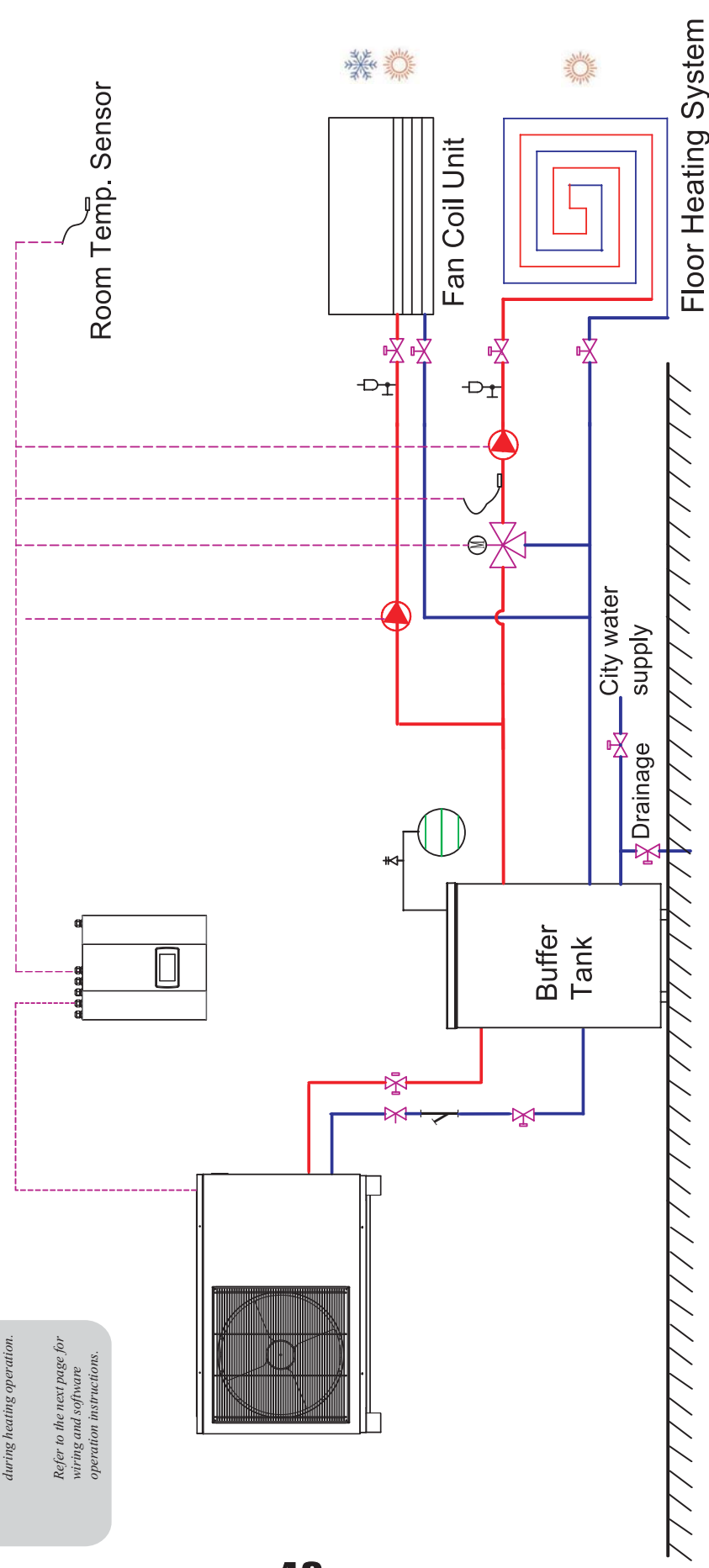
Name	Symbol	Name	Symbol
Temp. Sensor		Water pump	
Safety valve Kit		Mixing valve	
Ball valve		Motorized valve	
Water filter		Expansion tank	
Air purging valve			

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

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.

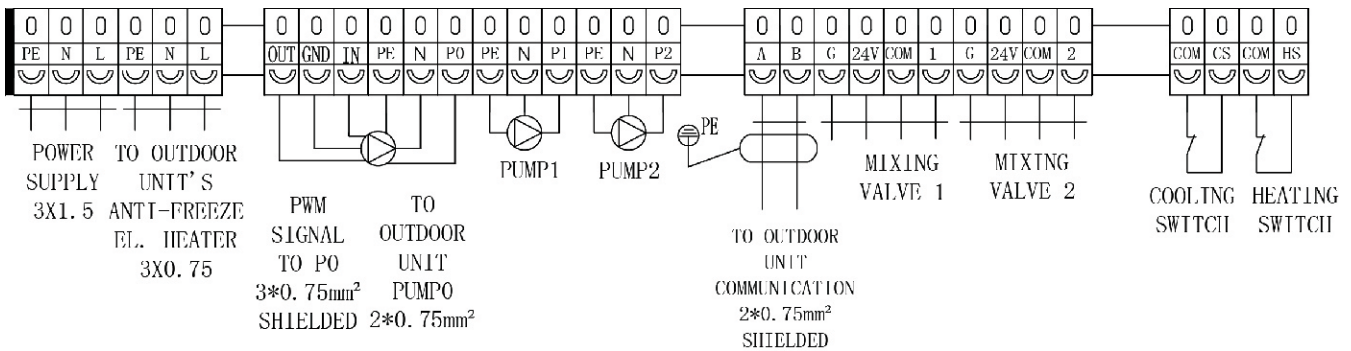


Two Temperature Zones , without DHW, with a heating-only circuit, enabled by setting the secondary pump to heating-only

4. Assembly Configurations – Drawing 5

Assembly 5: Wiring Diagram

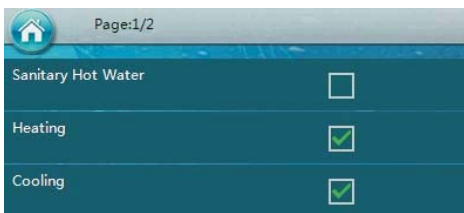
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2, please refers to the appendix A (on page 87-88) 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

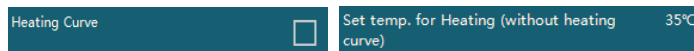
H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:

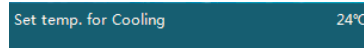


Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:

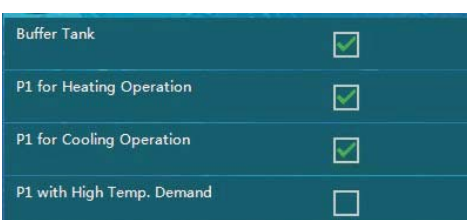


C. Configuring the set water cooling temperature (if applicable):



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

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



4. Assembly Configurations – Drawing 5

Software: Basic Settings (continued)

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

P2 for Heating Operation

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:

Heating Curve

Water Temp. A/Ambient Temp. 1	40°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:

Heating Curve

Set Temp. for Heating (without heating curve) 35°C

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

Set temp. For Cooling 24°C

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

Mixing Valve

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.

4. Assembly Configurations – Drawing 6

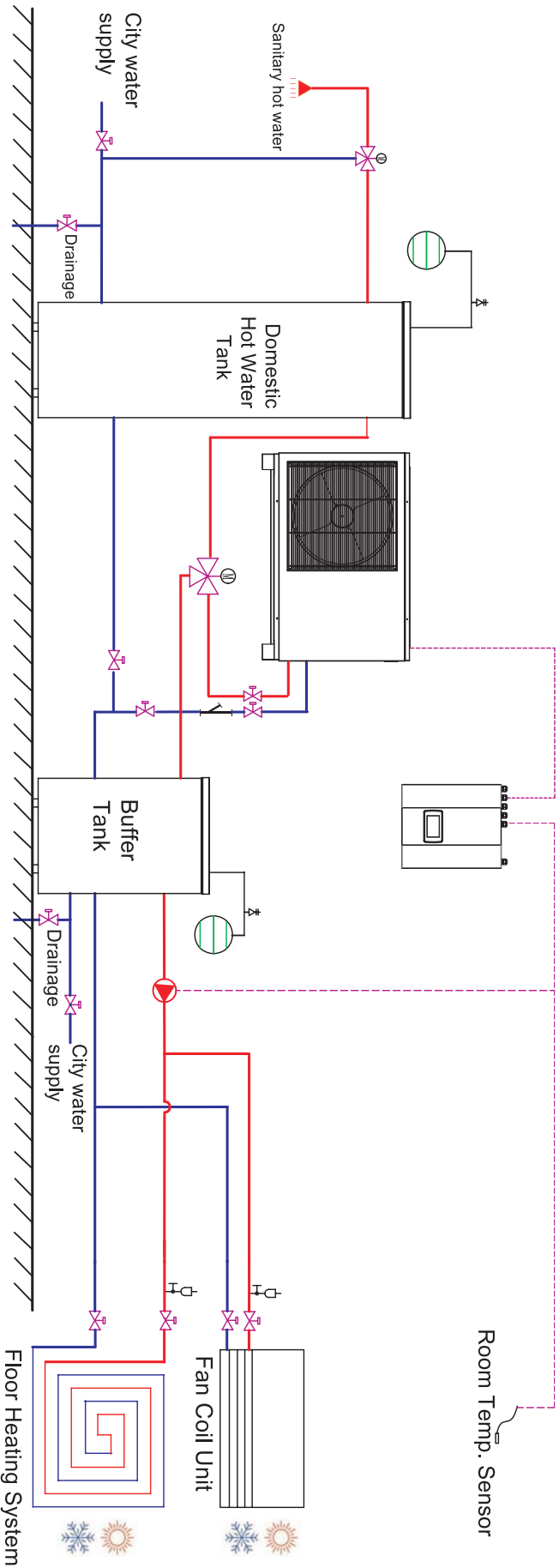
Please ensure that the configuration matches the assembly drawing depicted on the right for a one temperature zone setup that includes domestic hot water.

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". distribution systems.

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

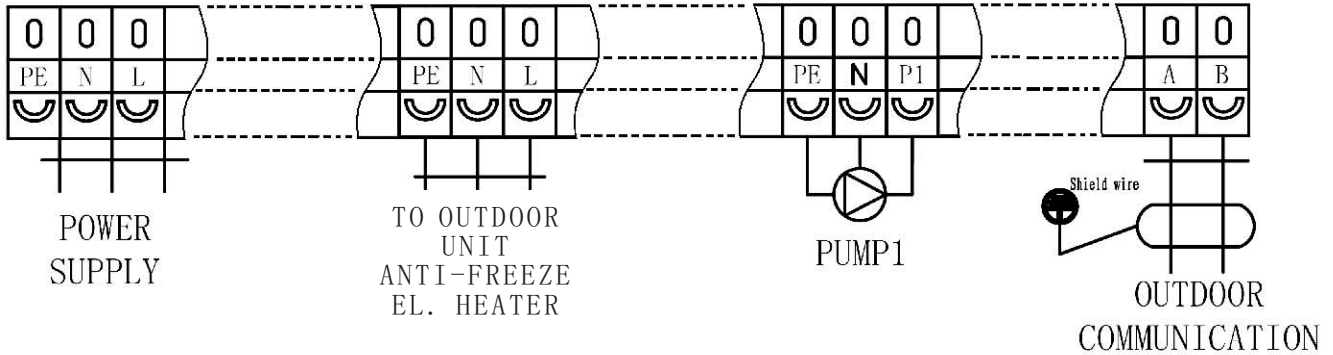


One Temperature Zone, with DHW

4. Assembly Configurations – Drawing 6

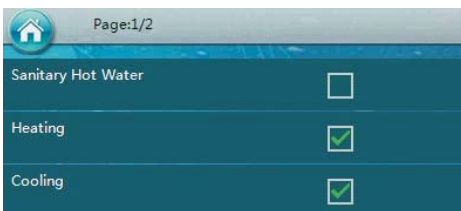
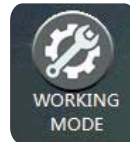
Assembly 6: Wiring Diagram

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



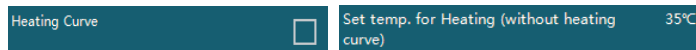
H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:

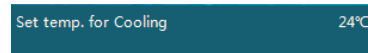


Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:



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



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

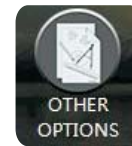
3. Locate and activate the buffer tank and appropriate pumps under



4. 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):



4. Assembly Configurations – Drawing 7

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.

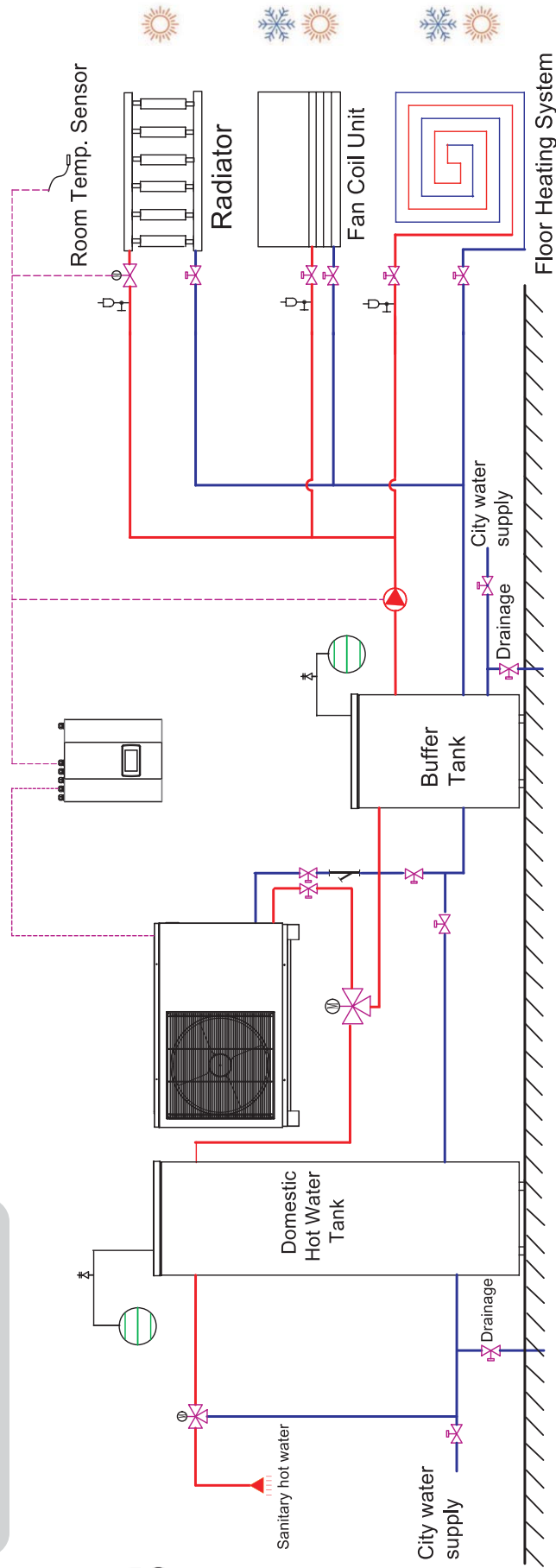
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

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			

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.

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

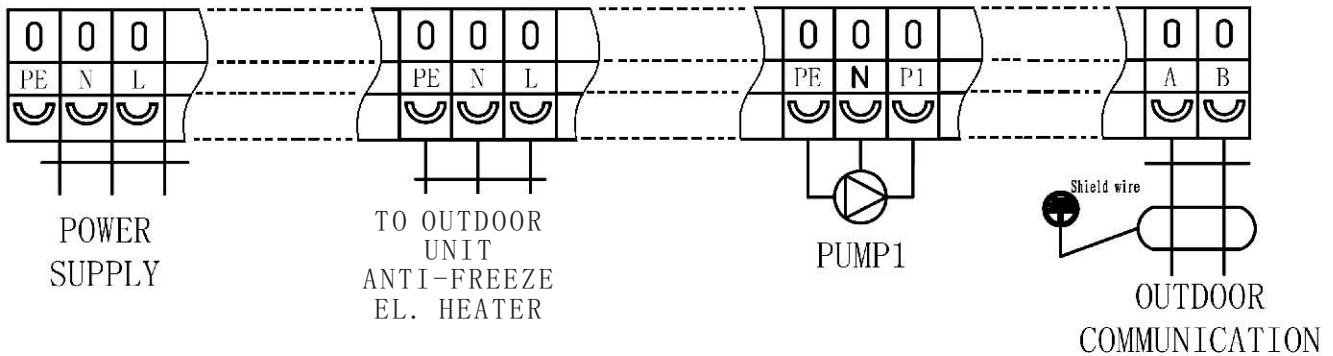


One Temperature Zone, with DHW, with a heating-only (or cooling-only) circuit, by usage of a motorized 2-way valve

4. Assembly Configurations – Drawing 7

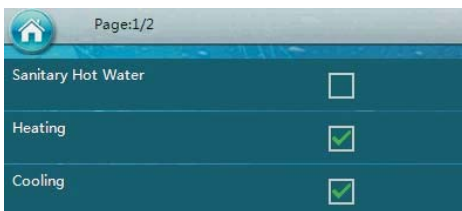
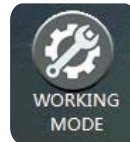
Assembly 7: Wiring Diagram

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:

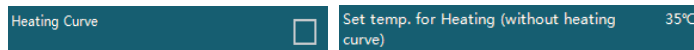


H.1.Setting a heating curve:

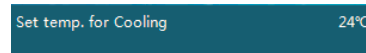


Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:

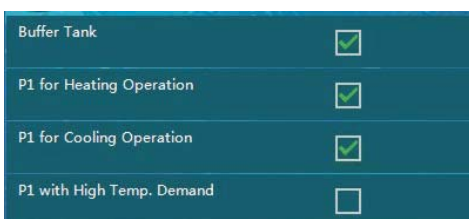


C.Configuring the set water cooling temperature (if applicable):



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

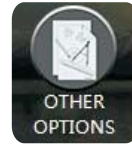
3. Locate and activate the buffer tank and appropriate pumps under



4. 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):



4. Assembly Configurations – Drawing 8

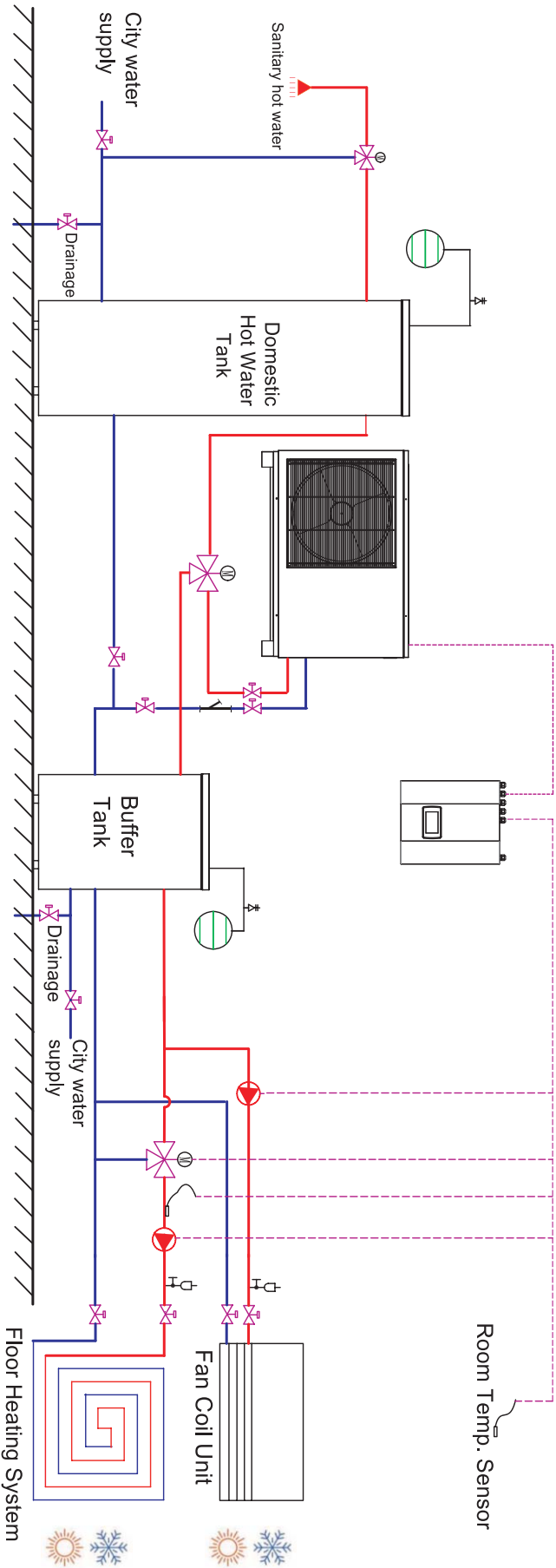
Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone setup that includes domestic hot water.

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.

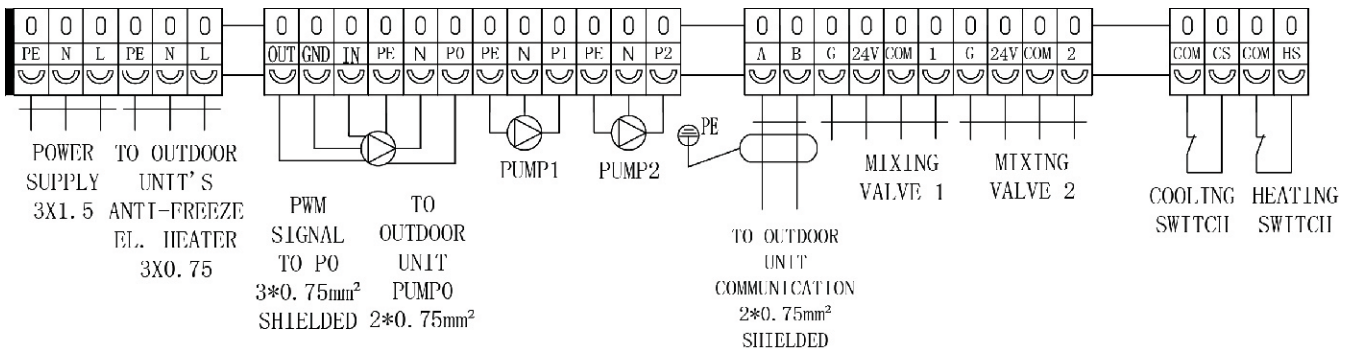


Two Temperature Zone, with DHW

4. Assembly Configurations – Drawing 8

Assembly 8: Wiring Diagram

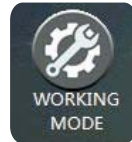
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2, please refer to the appendix A (on page 87-88) 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



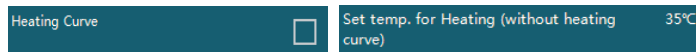
H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:



Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:

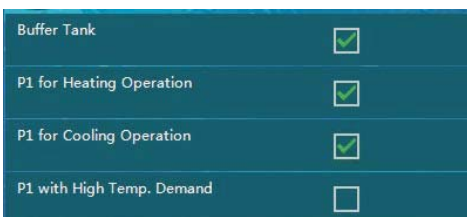


C. Configuring the set water cooling temperature (if applicable):



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

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



4. Assembly Configurations – Drawing 8

Software: Basic Settings (continued)

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

P2 for Heating Operation

P2 for Cooling Operation

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:

Heating Curve

Water Temp. A/Ambient Temp. 1	40°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:

Heating Curve

Set Temp. for Heating (without heating curve) 35°C

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

Set temp. For Cooling 24°C

Dependent on whether cooling is needed

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

Mixing Valve

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

Sanitary Hot Water



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

Setpoint DHW 50°C

4. Assembly Configurations – Drawing 9

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.

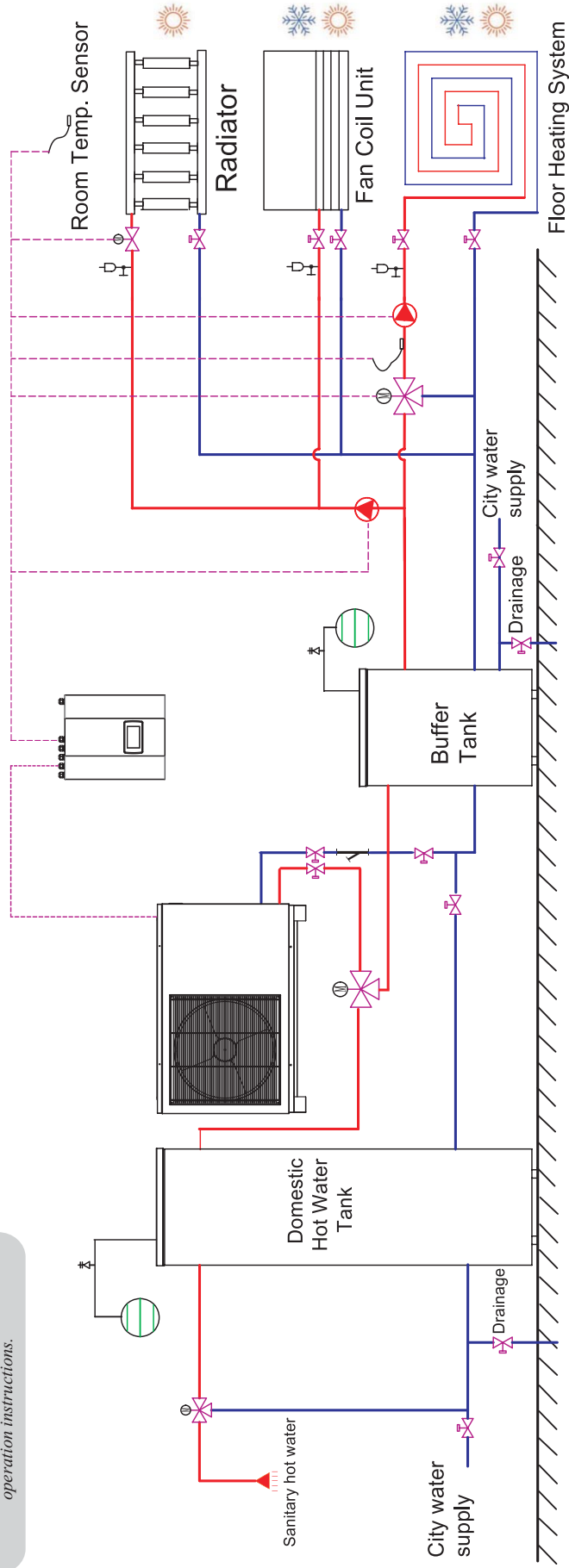
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

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			

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.

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

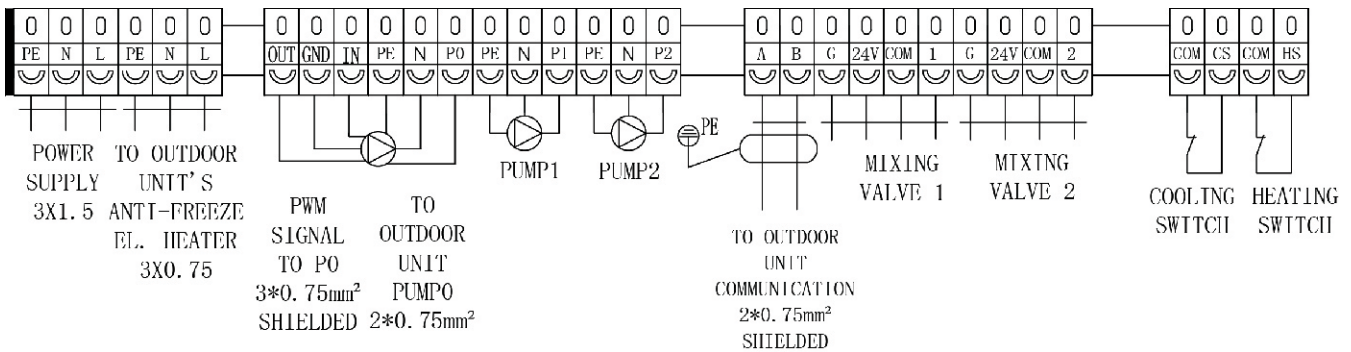


Two Temperature Zones , without DHW, with a heating-only (or cooling-only) circuit, by usage of a motorized 2-way valve

4. Assembly Configurations – Drawing 9

Assembly 9: Wiring Diagram

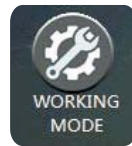
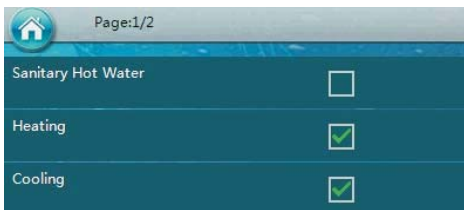
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2, please refer to appendix A (on page 87-88) 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:

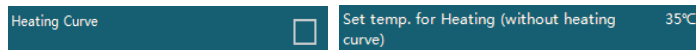
H.1. Setting a heating curve:



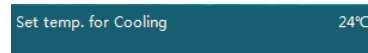
Ambient Temp. 1	-25°C
Ambient Temp. 2	-15°C
Ambient Temp. 3	-5°C
Ambient Temp. 4	5°C
Ambient Temp. 5	10°C

Water Temp. A/Ambient Temp. 1	40°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:

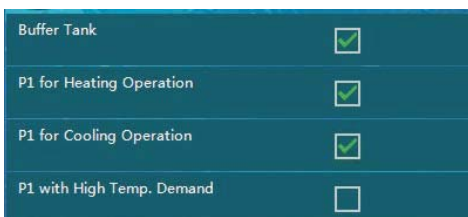


C. Configuring the set water cooling temperature (if applicable):



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

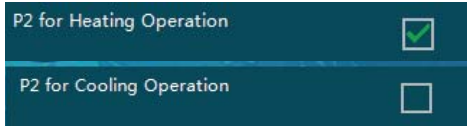
3. Locate and activate the buffer tank and appropriate pumps under



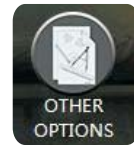
4. Assembly Configurations – Drawing 9

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:



Water Temp. A/Ambient Temp. 1	40°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:



Set Temp. for Heating (without heating curve)	35°C
---	------

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

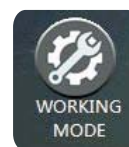


5.1. Activate the mixing valve to manage the second circuit:



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.

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):



Dependent on whether cooling is needed

4. Assembly Configurations – Drawing 10

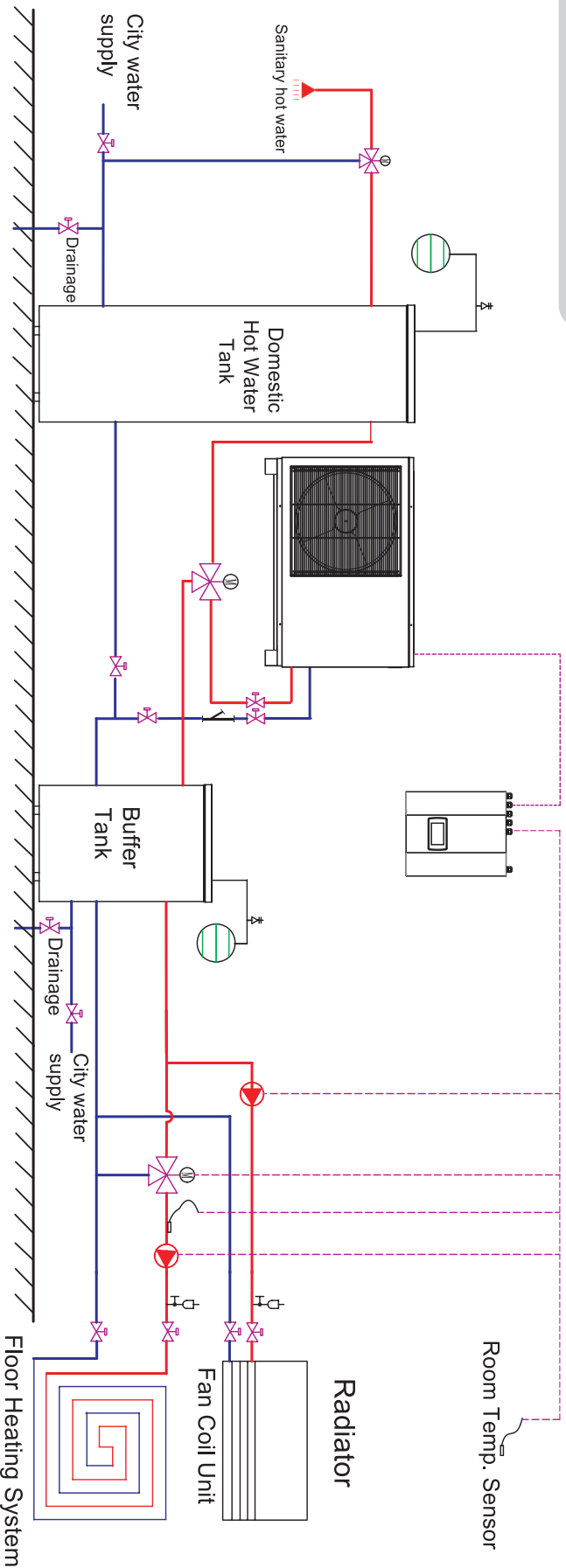
Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone setup that includes domestic hot water, also that utilizes the secondary pump for a heating-only operation.

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 writing 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.

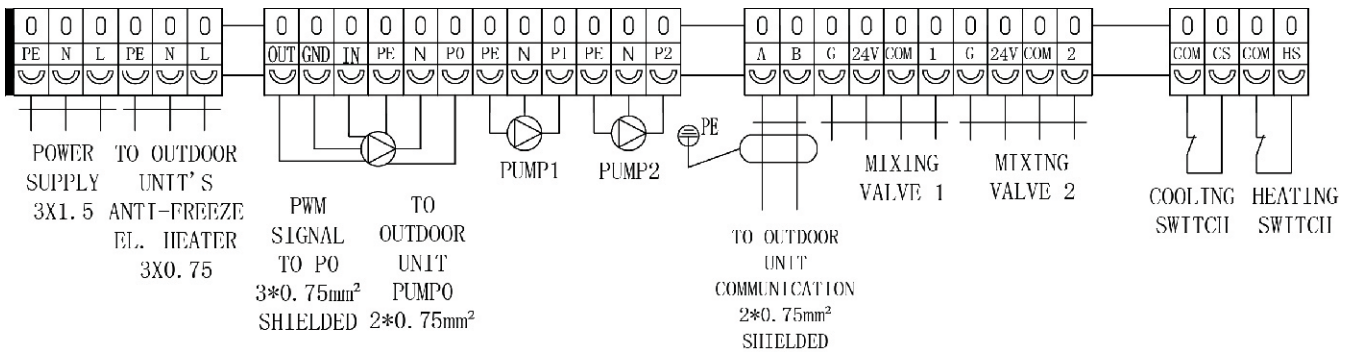


Two Temperature Zones, without DHW, with a heating-only circuit, by setting the secondary pump to heating-only

4. Assembly Configurations – Drawing 10

Assembly 10: Wiring Diagram

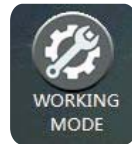
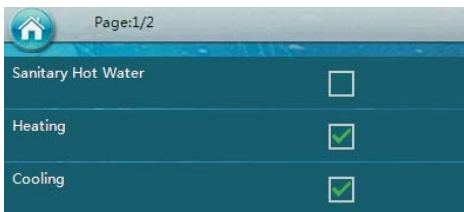
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2, please refer to the appendix A (on page 87-88) 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:

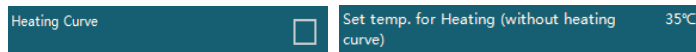
H.1. Setting a heating curve:



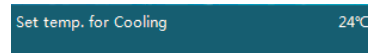
Ambient Temp. 1	-25°C
Ambient Temp. 2	-15°C
Ambient Temp. 3	-5°C
Ambient Temp. 4	5°C
Ambient Temp. 5	10°C

Water Temp. A/Ambient Temp. 1	40°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:

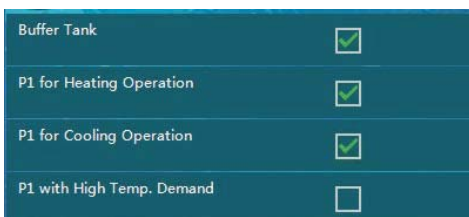


C. Configuring the set water cooling temperature (if applicable):



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

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



4. 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:



Water Temp. A/Ambient Temp. 1	40°C
Water Temp. B/Ambient Temp. 2	37°C
Water Temp. C/Ambient Temp. 3	33°C
Water Temp. D/Ambient Temp. 4	29°C
Water Temp. E/Ambient Temp. 5	25°C

H.2. If no heating curve is desired:



Set Temp. for Heating (without heating curve)	35°C
---	------

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

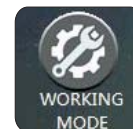


4.1. Activate the mixing valve to manage the second circuit:



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



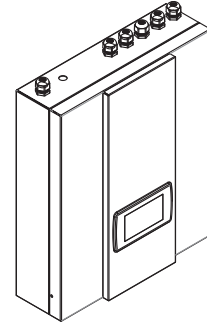
6. Configure the desired setpoint for water temperature (default set to 50°C):



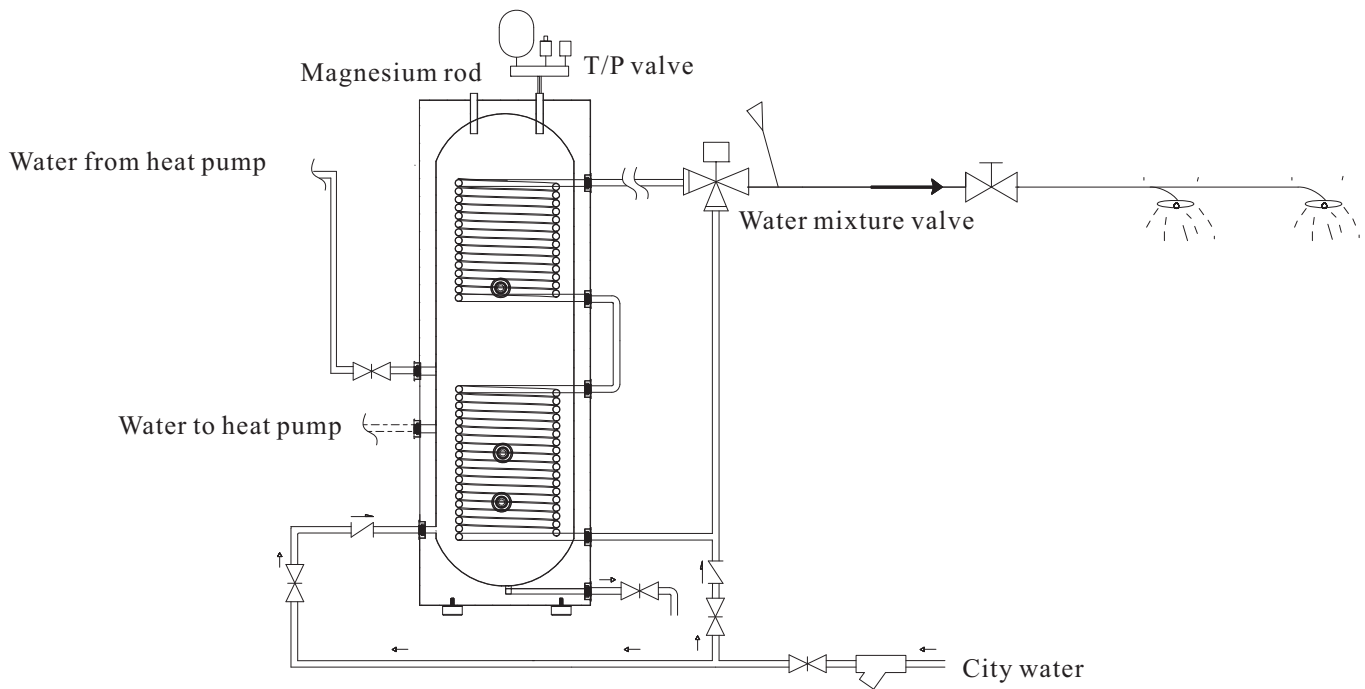
5. Installation Walkthrough

5.1. Sanitary Hot Water Applications

If sanitary hot water is needed, a 3-way diverting valve should be included. It is recommended to set up your sanitary hot water system identically to one of the configurations shown below and on the following pages.



5.1.1. Configuration 1



In this configuration, hot water circulating through the heat pump circuit floods the tank. This submerges the coils, which run the shower water circuit, resulting in a heat exchange interaction. A mixing valve ensures that temperatures do not exceed 60°C

The primary advantages of this application include:

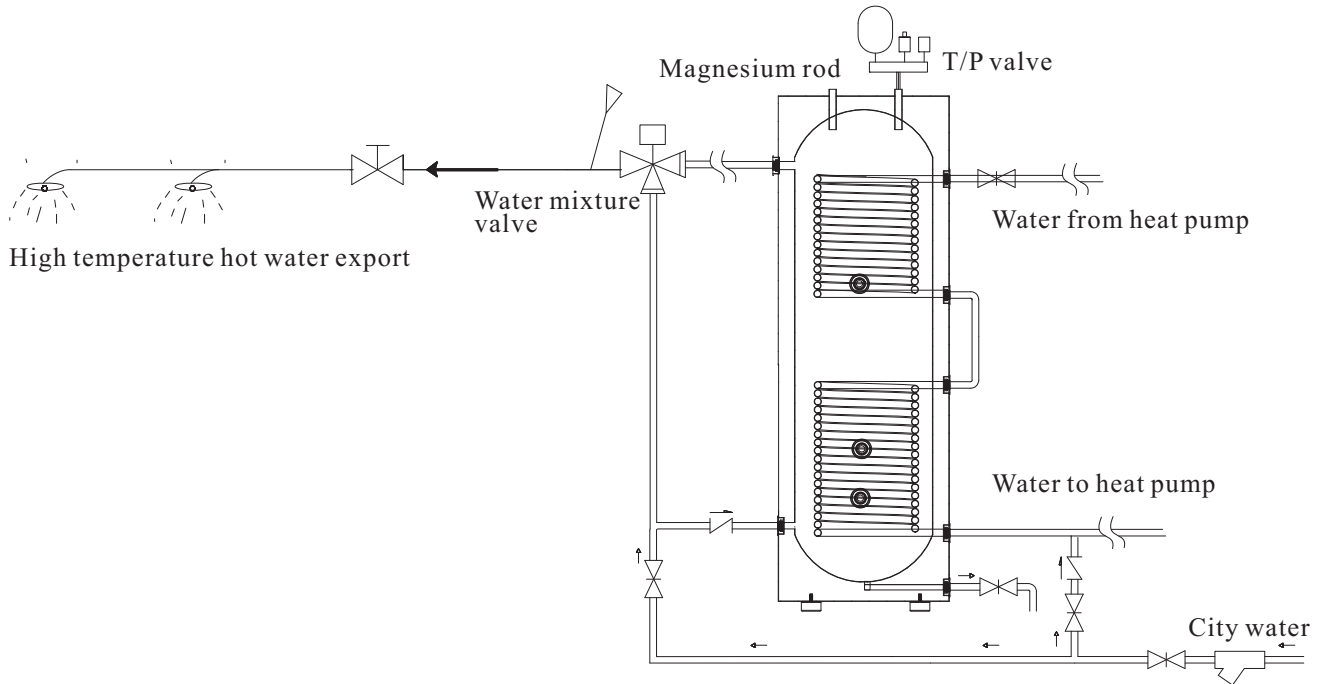
- Sanitization is not necessary, since the sanitary hot water is heated by going through the coils.
- Direct connection between heat pump and tank, ensuring effective water flow rates for it.
- Energy savings from not requiring sanitization.

A disadvantage of this configuration is a decreased volume of sanitary hot water available when compared with other configurations, due to the smaller diameter of the transfer coils.

5. Installation Walkthrough

5.1. Sanitary Hot Water Configurations

5.1.2. Configuration 2



In this configuration, hot water from the heat pump circuit runs through the coils in the tank. Sanitary water fills the tank and is heated by the coils before exiting the tank towards the shower head. This configuration also does not require sanitization.

The primary advantage to this configuration is that it can supply a greater volume of sanitary hot water.

Disadvantages include:

- The coil may create enough resistance to water flow that a secondary heat pump could be needed, in order to ensure that a proper flow rate, efficiency, and proper operation are maintained.
- The capacity of the coils will need to be greater than or equal to the maximum output of the unit. (Max. heat pump output occurs at 7°C Air/45°C Water)

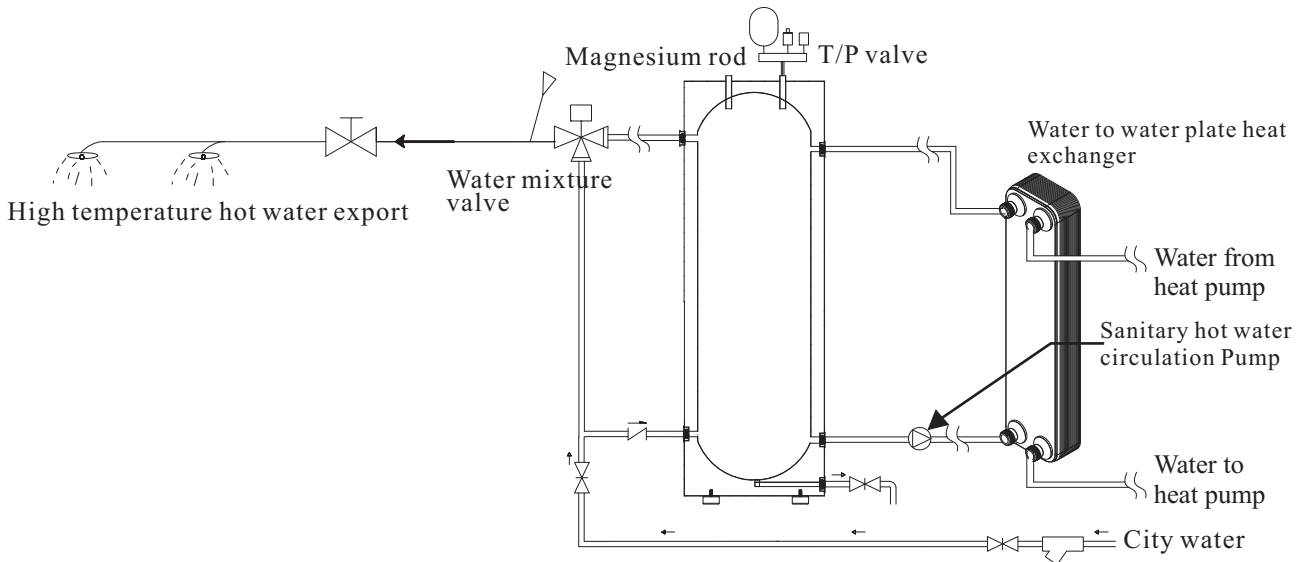
This configuration is optimal for a heat pump that does not exceed 14kW.

5. Installation Walkthrough

5.1. Sanitary Hot Water Configurations

5.1.3. Configuration 3

A water-to-water plate heat exchanger can be substituted for the coil inside water tank, as shown below:

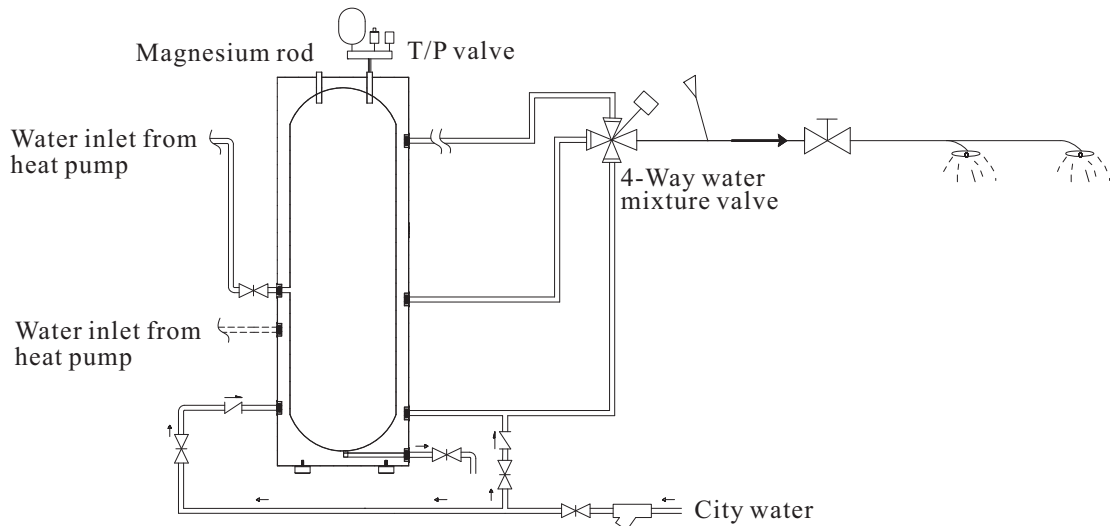


Note: The heat pump unit can control the sanitary hot water circulation pump by connecting it to port “P3”.

This configuration will ensure a sufficient volume, as well as flow rate, of hot sanitary water, at the additional cost of adding the plate heat exchanger.

Whichever application is chosen, it is recommended to install a manual mixture valve between the city water inlet and hot water outlet. This will maximize utilization of hot water from the tank while also preventing scalding shower water temperatures.

Also, if the tank permits, it is optimal to utilize a 4-way mixture valve, as depicted in the picture below. This will promote more even and steady distribution of hot water from the tank.



5. Installation Walkthrough

5.1. Sanitary Hot Water Configurations

5.1.4. Note about the Heating/Cooling Distribution System

Users are heavily recommended to install a buffer tank into the chosen configuration, especially when the method of hot water distribution is below 20L/W of water volume.

The buffer tank should be installed between the heat pump and the distribution system, in order to:

- Ensure the heat pump unit provides a stable and sufficient water flow rate.
- Minimize fluctuation of the system's heating/cooling load by storing unused heat.
- Increase capacity of water volume distribution, which helps ensure proper heat pump operation.

If the method of hot water distribution is capable of dispersing a large enough flow rate, a buffer tank can be excluded from installation into the configuration. If so, please move the cooling/heating temperature sensor (TC, #10 on page 1) to the water return pipe, so that fluctuations of water temperature due to compressor speed changes are minimized.

5. Installation Walkthrough

5.2. Heating and Cooling Circuits

This heat pump unit is capable of controlling two completely different heating and cooling circuits, as shown in the following images.

Configuring the temperatures for circuits 1 and 2 can be done via the “Heating and Cooling Circuit” menus.

If only one circuit is desired, then “Heating and Cooling Circuit 2” can be set to OFF.

5.2.1. Heating & Cooling Circuits



Page:1/5	
Heating/Cooling Stops Based on Water ΔT	2°C
Heating/Cooling Restarts Based on Water ΔT	2°C
ΔT Compressor Speed-reduction	2°C
Set temp. for Cooling	24°C
Heating Curve	<input checked="" type="checkbox"/>



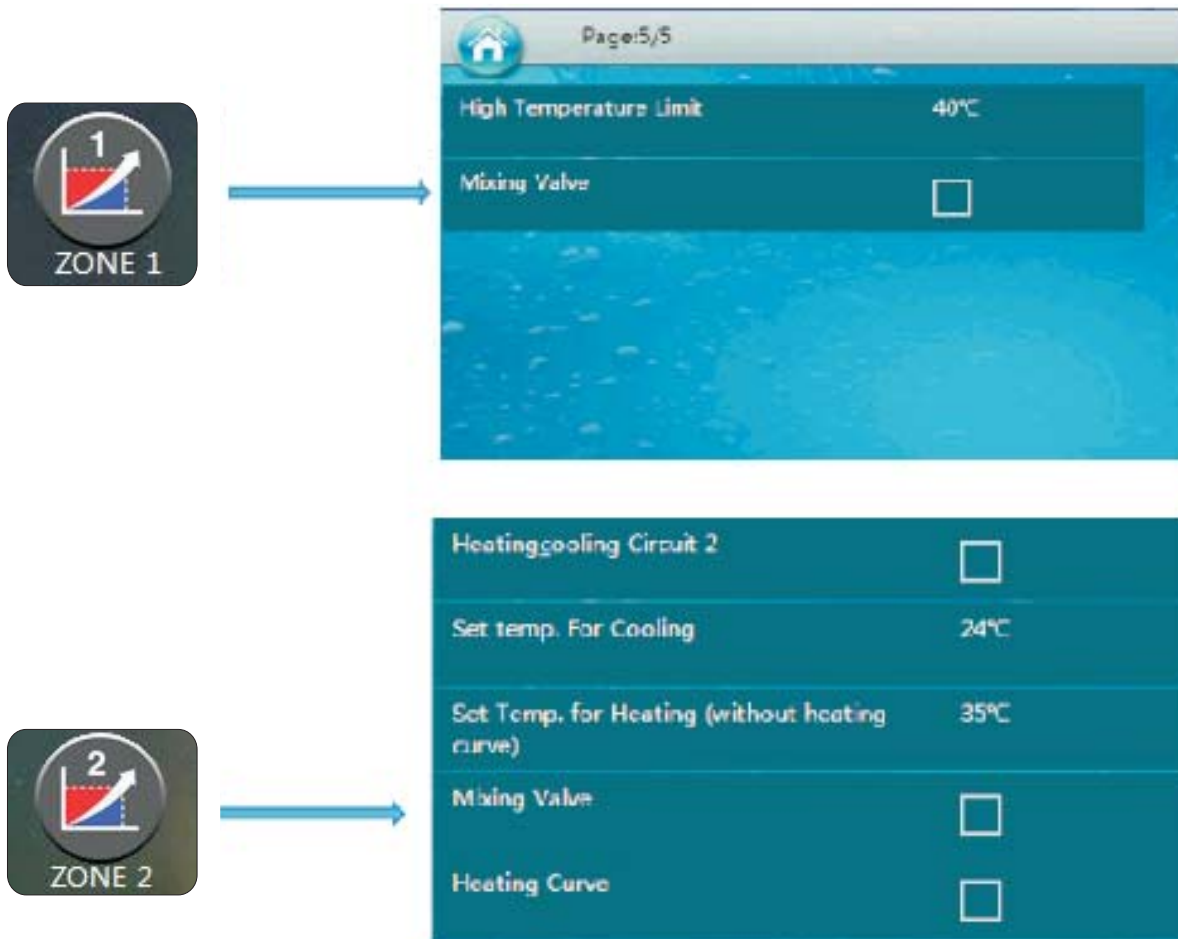
Heatingcooling Circuit 2	<input type="checkbox"/>
Set temp. For Cooling	24°C
Set Temp. for Heating (without heating curve)	35°C
Mixing Valve	<input type="checkbox"/>
Heating Curve	<input checked="" type="checkbox"/>

The basic understanding of these settings is found under your the software section of your particular assembly walkthrough in Chapter 3. A more detailed explanation can be located in the user’s manual.

5. Installation Walkthrough

5.2. Heating and Cooling Circuits

5.2.2. Mixing Valves MV1 and MV2



If the system water temperature may be higher (or lower) than the temperatures needed for circuit 1 (or circuit 2) in a heating or cooling operation, then a mixing valve can be added to the circuit, and connected to the MV1 (or MV2) port on the indoor unit.

The unit will control the mixing valve, continuously mix the supply, and return the water of the circuit to have its temperature read via the TV1 (or TV2) until the value set under the above menus is achieved.

TV1 and/or TV2 should be activated on the installer's level via the "Heating and Cooling Circuit" menu.

Note: A mixing valve is needed, if:

- The system has two circuits that require different water temperatures. The heat pump will have to take the higher/lower (depending on whether heating/cooling) settings of the two circuits as the set temperature for the heat pump. The mixing valve ensures correct water temperature circulation in this instance.
- The system has other heating sources inside that are not controlled by the heat pump. In this case, the actual water temperature may exceed the set temperature.

5. Installation Walkthrough

5.2. Heating and Cooling Circuits

5.2.3. Circulation Pump Control



Buffer Tank	<input type="checkbox"/>
P1 for Heating Operation	<input type="checkbox"/>
P1 for Cooling Operation	<input type="checkbox"/>
P1 with High Temp. Demand	<input type="checkbox"/>
P2 for Heating Operation	<input type="checkbox"/>
P2 for Cooling Operation	<input type="checkbox"/>
P2 with High Temp. Demand	<input type="checkbox"/>

Note: P1 is circulation pump 1, P2 is pump 2

- “Buffer Tank” should be checked if one is installed between the heat pump and distribution system.
- “P1/P2 for Heating/Cooling Operation” sets that circuit’s pump to work for heating or cooling.

If “Buffer Tank” is NOT checkmarked, both P1 and P2 will only work when the compressor is working in the same mode that the pump is set to. So, if P1 is set to “P1 for Heating Operation”, P1 will activate ONLY when the compressor is working in heating mode. If P1 is checkmarked for both “Heating” and “Cooling” operations, then P1 will be ON when the compressor is working in both heating and cooling modes. The pump stops when switched to DHW mode, or after the set temperature is reached.

If “Buffer Tank” IS checkmarked, both P1 and P2 will work as long as there is demand from the distribution system, as per the pump setting. The following must also be fulfilled:

- Actual temperature in the buffer tank (detected via TC) is equal or above 20°C (in heating)
- Actual temperature in the buffer tank (detected via TC) is equal or below 23°C (in cooling)

Even if the unit is working in DHW mode, or the set temperature is reached, the circulation pump will start to work as long as there are heating/cooling demands, and TC is fulfilled as per the above.

- “P1/P2 with High Temp. Demand” sets P1/P2 to automatically stop if the signal for “high demand” is off. For more information regarding this setting, please refer to part D on page 62.

NOTE: It is very important to place the temperature sensor (TR) in a central location with good circulation, with no hot or cold equipment nearby, in a column or interior wall, or somewhere similar.

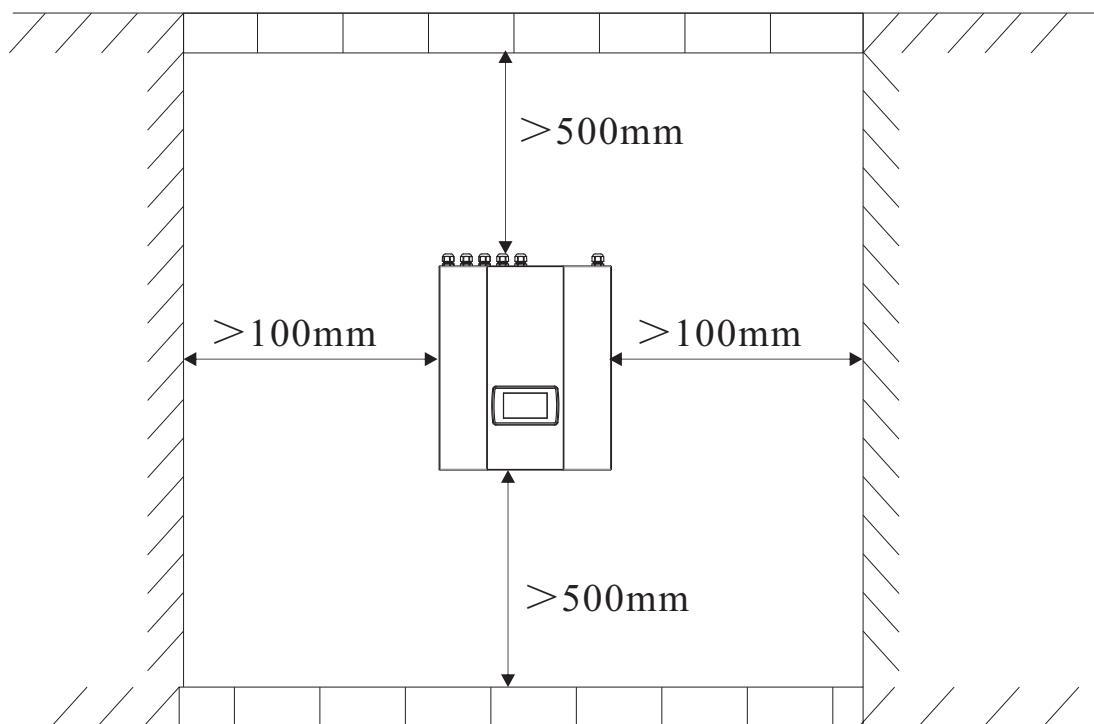
5. Installation Walkthrough

5.3. Indoor Unit Installation

5.3.1. Choosing an installation location

- 1) The indoor unit should be installed indoors, mounted on a wall, and have the water outlet aimed downwards.
- 2) The indoor unit must operate in a dry, well-ventilated location.
- 3) There should be no volatile, corrosive, or flammable liquids or gases nearby.
- 4) Ideally, the unit should be as close as possible to the water supply system.
- 5) Try and leave enough space in the area around the unit to simplify future maintenance.

The minimum dimensions of surrounding gaps suitable for the unit to operate correctly is as follows:



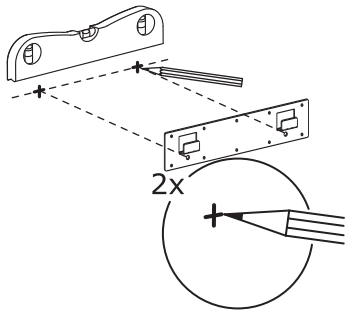
5. Installation Walkthrough

5.3. Indoor Unit Installation

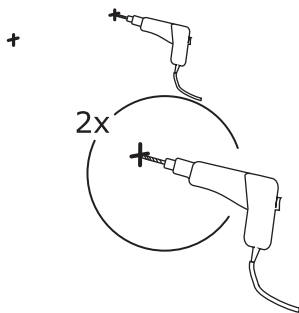
5.3.2. Installation Process

Choose a very firm wall for installation. If it's a wooden wall, use self-tapping screws instead of expansion bolts. Hang the mounting board onto the wooden wall directly, without drilling holes. Ensure the wooden wall is sufficiently firm. Walls that are too thin, brittle, or humid are not adequate for installation.

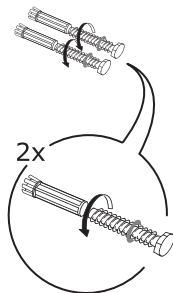
- 1) Take out the expansion bolts and mounting board accessory. Place the mounting board on the wall horizontally. Mark the bolting location onto the wall.



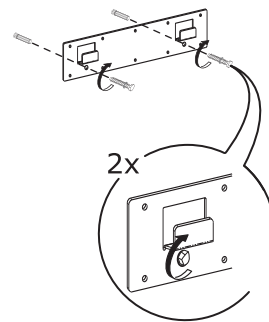
- 2) Drill holes with the proper diameter for the bolts to catch through.



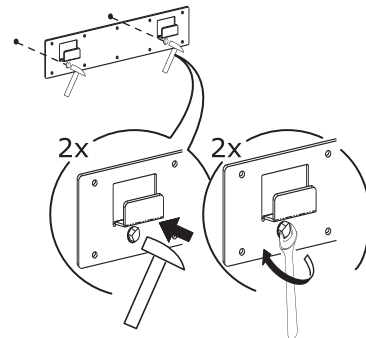
- 3) Unscrew the nuts from the expansion bolts.



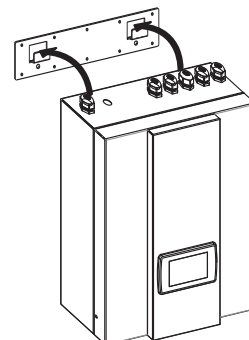
- 4) Loosely fix the mounting board onto the expansion bolts. Do not tighten yet.



- 5) Using a hammer, tap the expansion bolts into the drilled holes. Fasten the nuts with a wrench to fix the mounting board to the wall.



- 6) Hang the indoor unit onto the mounting board, making sure it is stable and placed well. The installation is then complete.

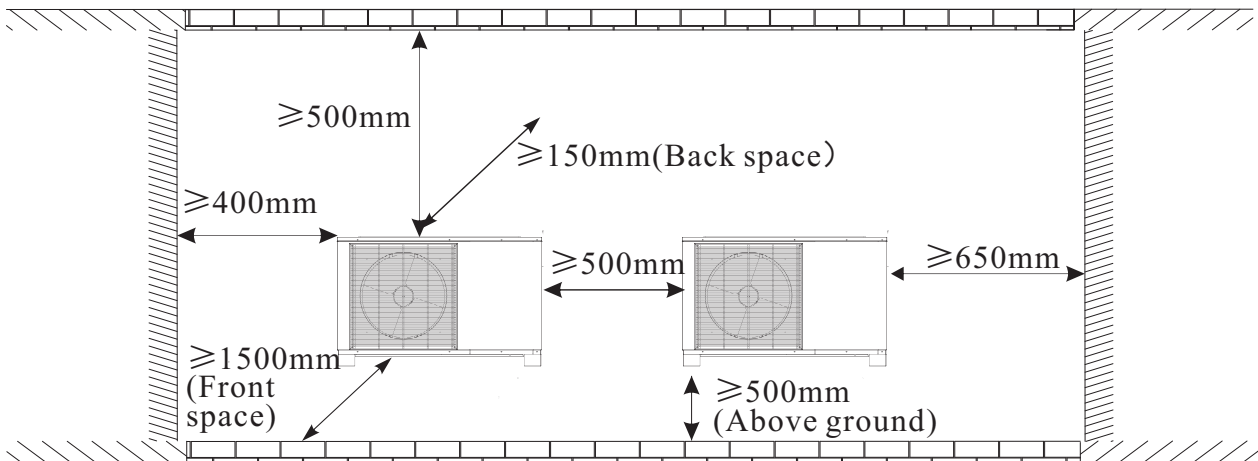


5. Installation Walkthrough

5.4. Outdoor Unit Installation

5.4.1. Choosing an installation location

- 1) The outdoor unit can be installed in an open safe, corridor, balcony, roof, or hung onto the wall.
- 2) Install in a dry, open airspace. Humidity can cause corrosions or short-circuiting to the electronics.
- 3) There should be no volatile, corrosive, or flammable liquids or gases nearby.
- 4) Do not place the unit nearby to bedrooms and living rooms. There will be noise when it is running.
- 5) In harsh climates of snow or sub-zero temperatures, ensure the unit is raised 50cm above ground.
- 6) It is recommended to install an awning above the unit, to prevent snow from clogging open parts.
- 7) Ensure there is proper drainage around the unit. Tilt the unit by 1 cm/m for rain water evacuation.
- 8) Do not install the unit close to kitchen exhaust ports. It is difficult to clean oil from smoke exhaust.
- 9) The location of installation must provide sufficient space around the unit. The minimum dimensions of surrounding gaps suitable for the unit to operate correctly is as follows:



5. Installation Walkthrough

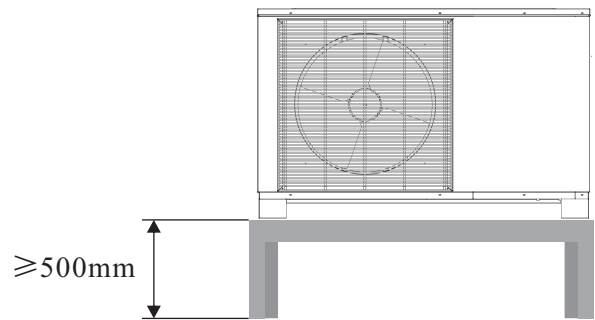
5.4. Outdoor Unit Installation

5.4.2. Installation Process

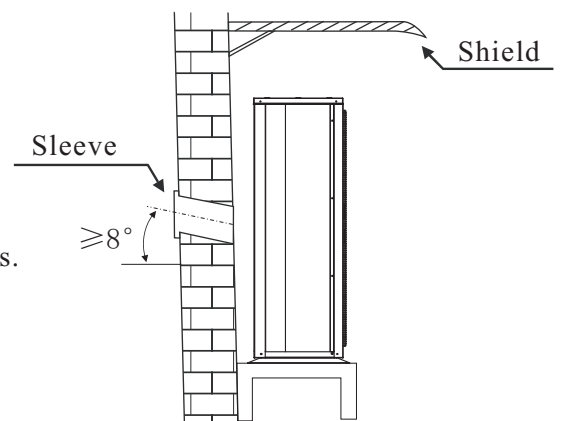
For the installation, users can either use the dedicated mounting bracket provided by the supplier, or prepare a suitable bracket that meets the following requirements.

- 1) The unit must be supported by either flat concrete blocks, or a dedicated mounting bracket. The bracket should be able to support at least 5x the unit's weight.
- 2) After the bracket is fixed, ensure each of the nuts are fully tightened.
- 3) Users should double check to make sure the unit's installation is sufficiently sturdy.
- 4) The bracket material can be stainless or galvanized steel, aluminum, or other proper substitutes.
- 5) The user can opt to use two concrete blocks, or a raised concrete platform, instead of a dedicated mounting bracket. Ensure that the unit is securely fastened after installation.
- 6) Use the outdoor unit's dimensions when choosing a suitable wall bracket.

The platform must be at least 500 mm above ground.



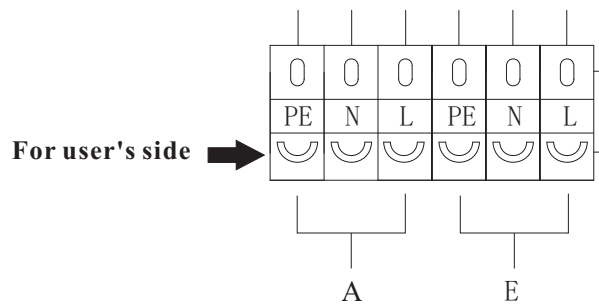
Holes for piping kits should be raised at least 8°
This ensures rain water/condensate does not flow back indoors.



5. Installation Walkthrough

5.5. Wiring

5.5.1. Explanation of Terminal Block 1



A: Unit power supply

This should be connected directly to the city power supply.

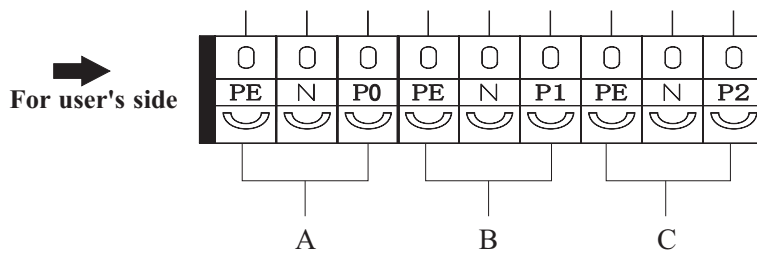
For all units, ensure that a cable of sufficient gauge is used. (found on nameplate)

E: Power supply to outdoor unit anti-freezing electric heater for plate heat exchanger and water pipe.

5. Installation Walkthrough

5.5. Wiring

5.5.2. Explanation of Terminal Block 2



A:P0:Pump for heat pump circulation.

B, C: Water Pump

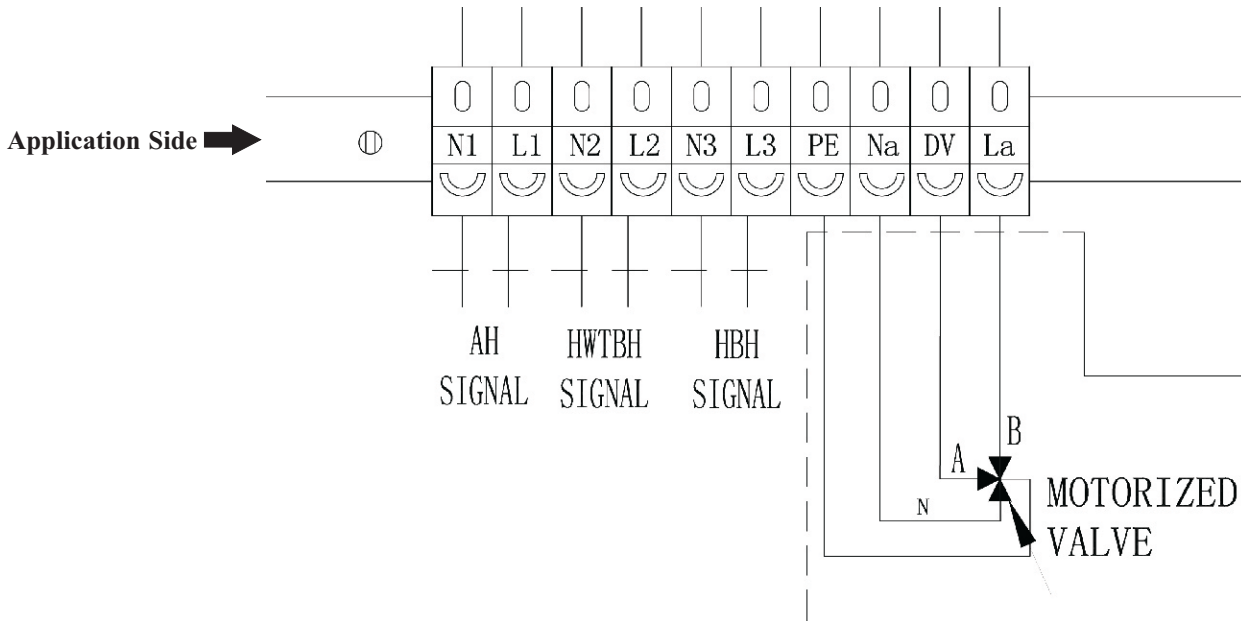
A-Pump 1: Pump for Heating & Cooling Circuit 1,
B-Pump 2: Pump for Heating & Cooling Circuit 2,

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,

5. Installation Walkthrough

5.5. Wiring

5.5.3. Explanation of Terminal Block 3

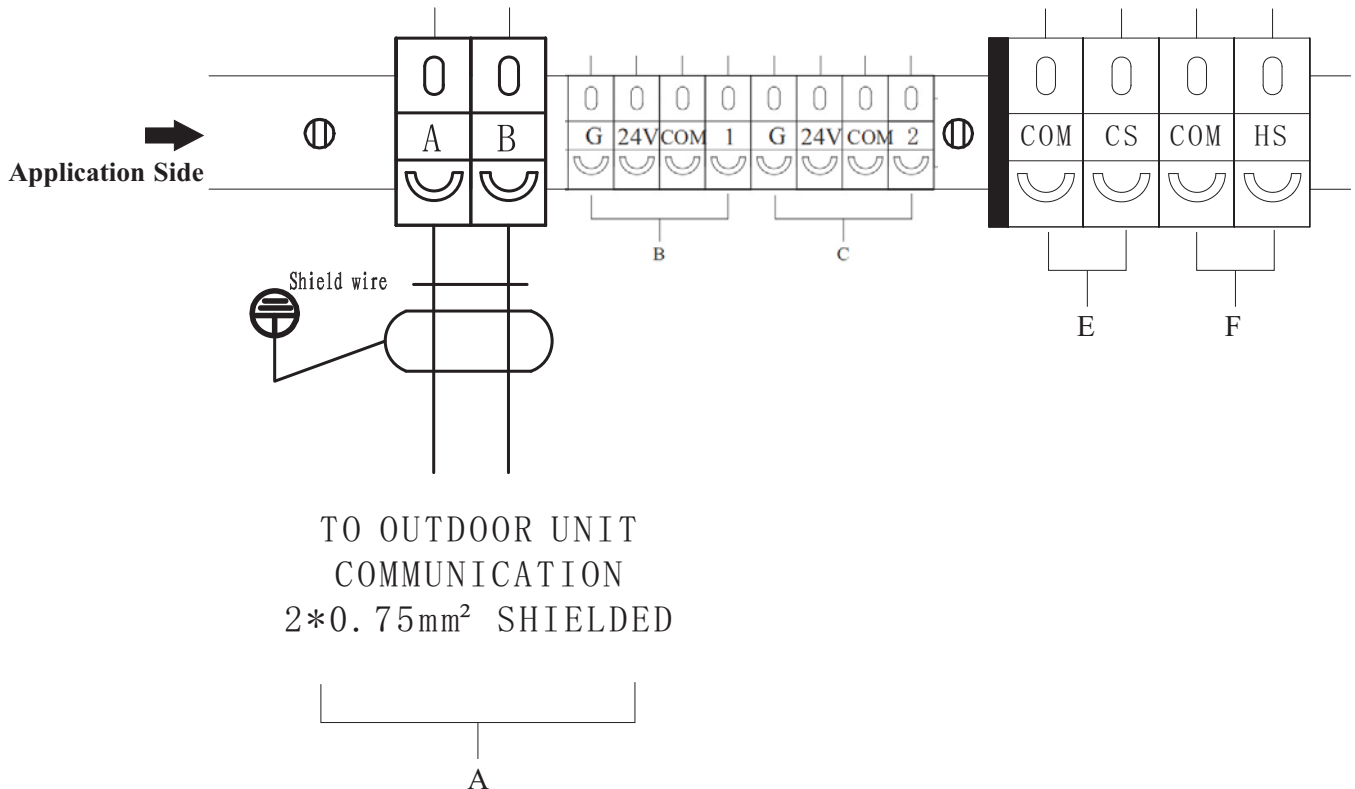


- A:** Signal output to Auxiliary Heater (AH), which will be used as auxiliary heating source for both heating and DHW operation.
- B:** Signal output to Hot Water Tank Backup Heater (HWTBH), which will be used as backup heating source for DHW operation only.
- C:** Signal output to Heating Backup Heater (hbh), which will be used as backup heating source for Heating operation only.
- D:** 3-way motorized valve diverting the water.

5. Installation Walkthrough

5.5. Wiring

5.5.4. Explanation of Terminal Block 4



A: Signal cable between indoor and outdoor unit.

B,C: Motorized Water mixture valve 1&2:

As explained in System illustration chapters, this unit can have two water mixture valves for distribution system under its control. Water Mixture Valve 1 for Heating & Cooling circuit 1
Water Mixture Valve 2 for Heating & Cooling circuit 2

E,F: Cooling and Heating Mode Switchovers

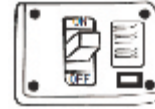
This unit is capable of switching between heating and cooling automatically, according to the ambient temperature, or external signal input. Please refer to the user's manual for more detailed explanations on ambient temperature setting. For external signal input, the external signal should be connected to "Cool Mode Switch" for cooling operation, and "Heat Mode Switch" for heating operation.

5. Installation Walkthrough

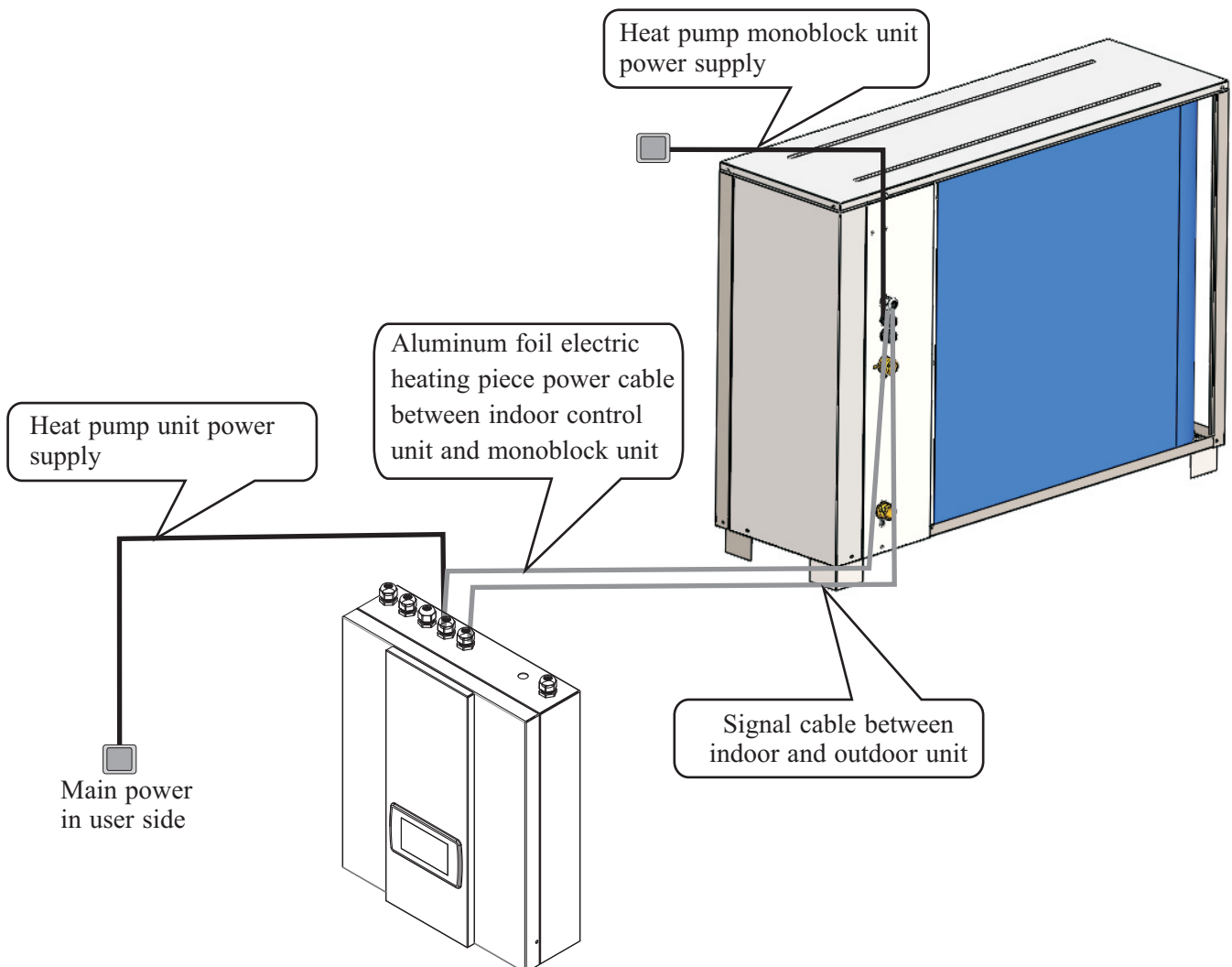
5.5. Wiring

5.5.5. Wiring Process Preliminary Precautions

- Please ensure that a suitable circuit breaker is used for the heat pump.
- The power supply to the heat pump unit must be grounded.
- Wiring should be done by a licensed professional, and comply with industry regulations.
- The unit should be completely powered off before any wiring is done.
- Cables should be properly fastened into place, to prevent loosening from occurring.
- No cable should be fastened to another.
- The power supply should be compliant to all standards located in the rating label.
- The power supply, necessary cables, and sockets should fully meet the input power requirements of the unit.



Installation sketch

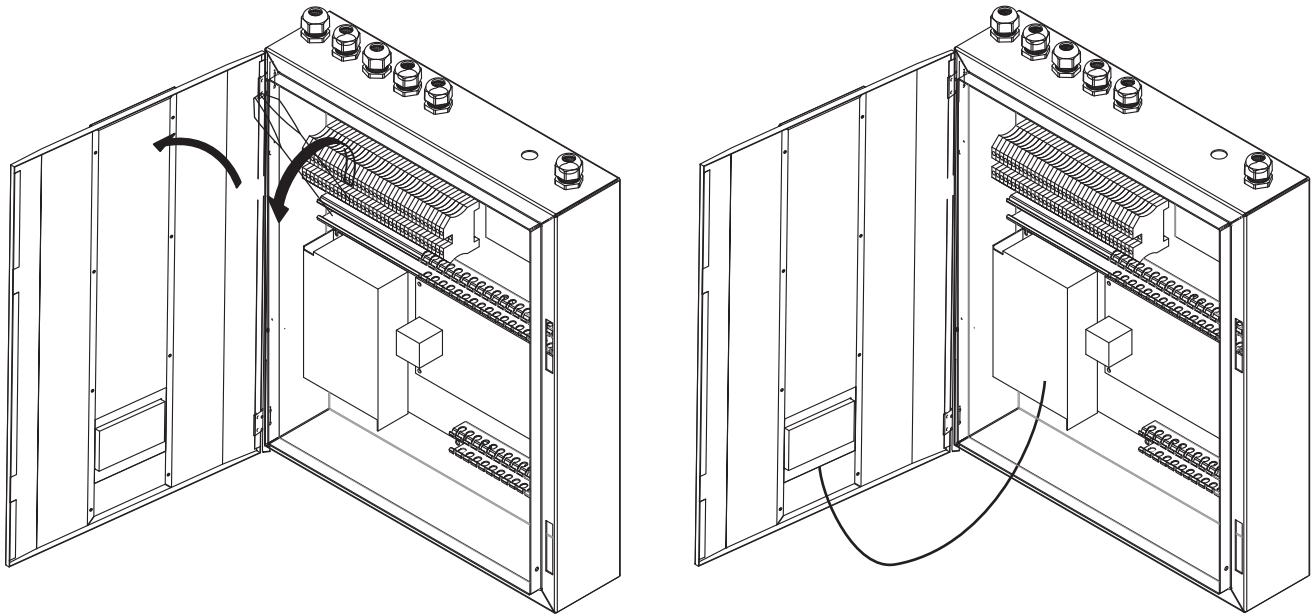


5. Installation Walkthrough

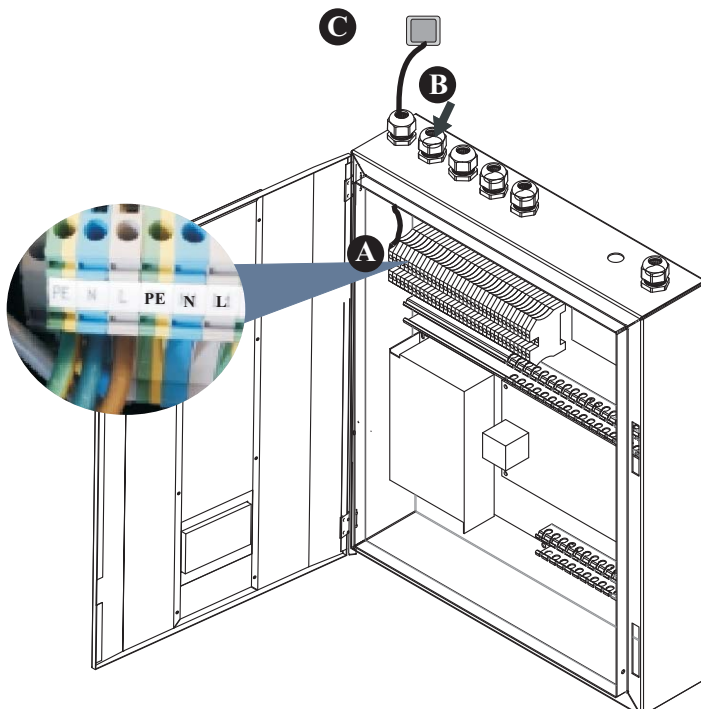
5.5. Wiring

5.5.5. Wiring Process

1) Open the indoor unit's front panel and remove the electrical box cover.



2) Acquire one (or two) power cable(s) of suitable length that is compliant to all local safety regulations.



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

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

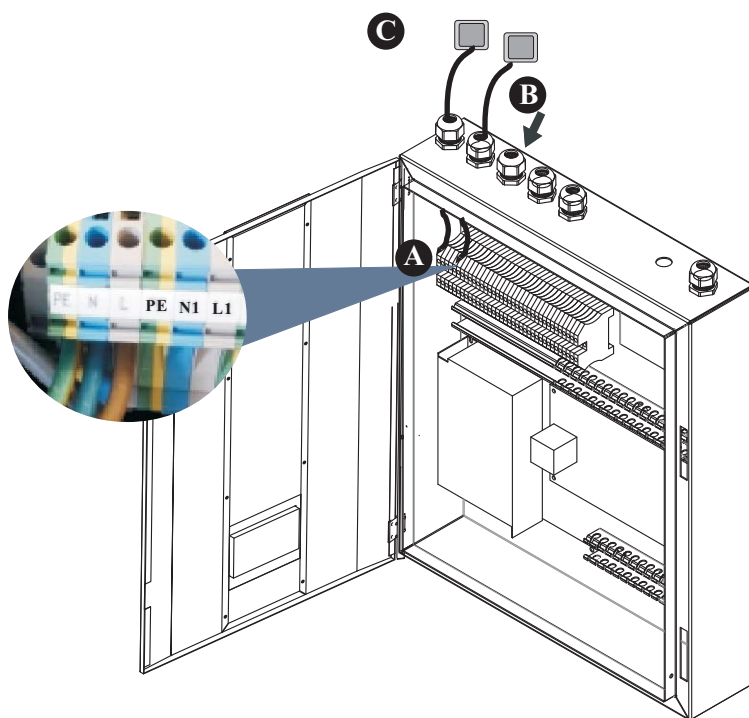
C. Connect the other end of the cable to the city power supply.

5. Installation Walkthrough

5.5. Wiring

3) Connect the auxiliary heater power cable:

Acquire a power cable of suitable length that is compliant to all local safety regulations.



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

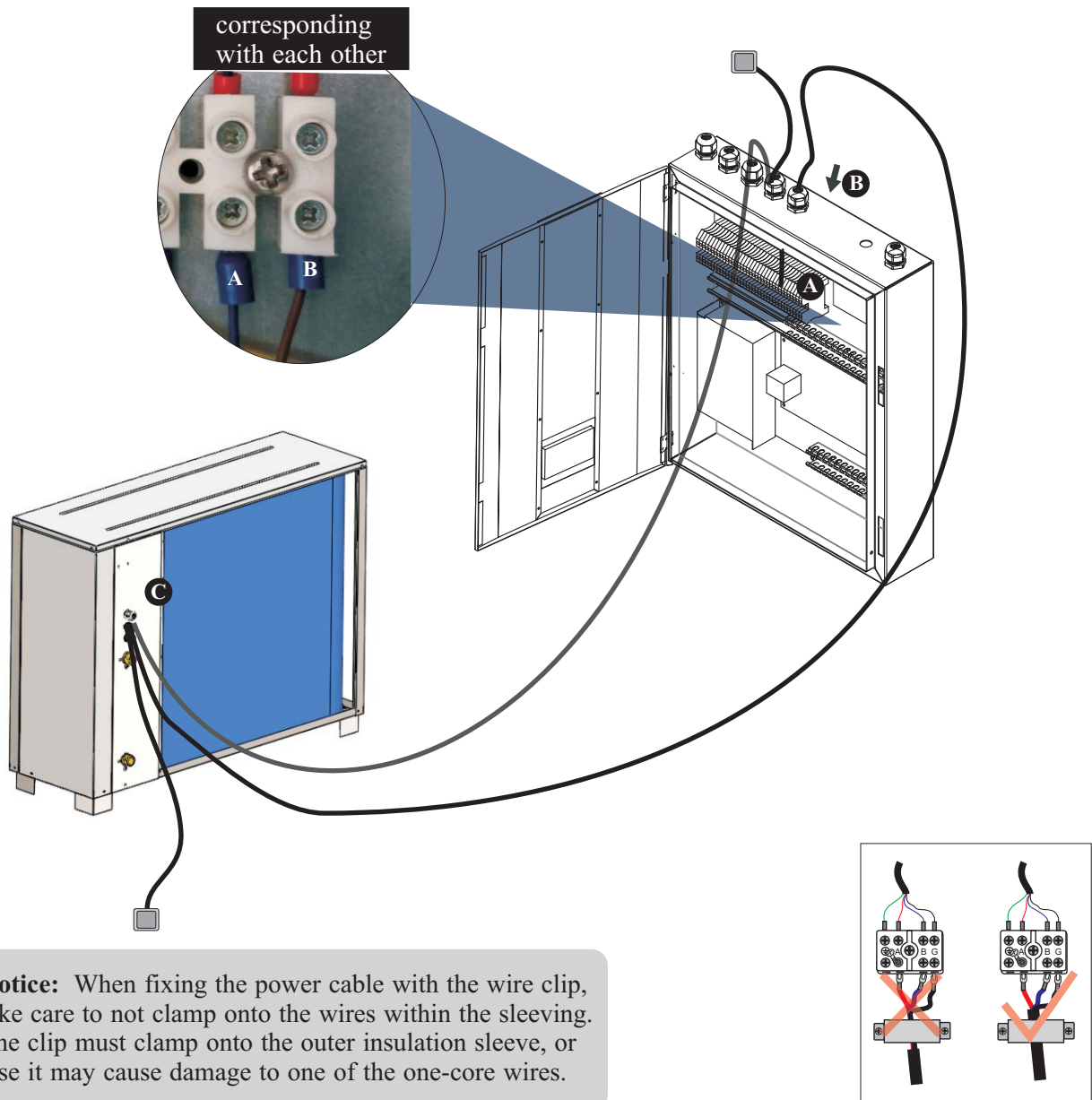
B. Fasten the cable gland to ensure the cable won't loosen.

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

5. Installation Walkthrough

5.5. Wiring

- 4) Connect the signal cable between the indoor and outdoor unit:
Retrieve the signal cable from the accessories bag.



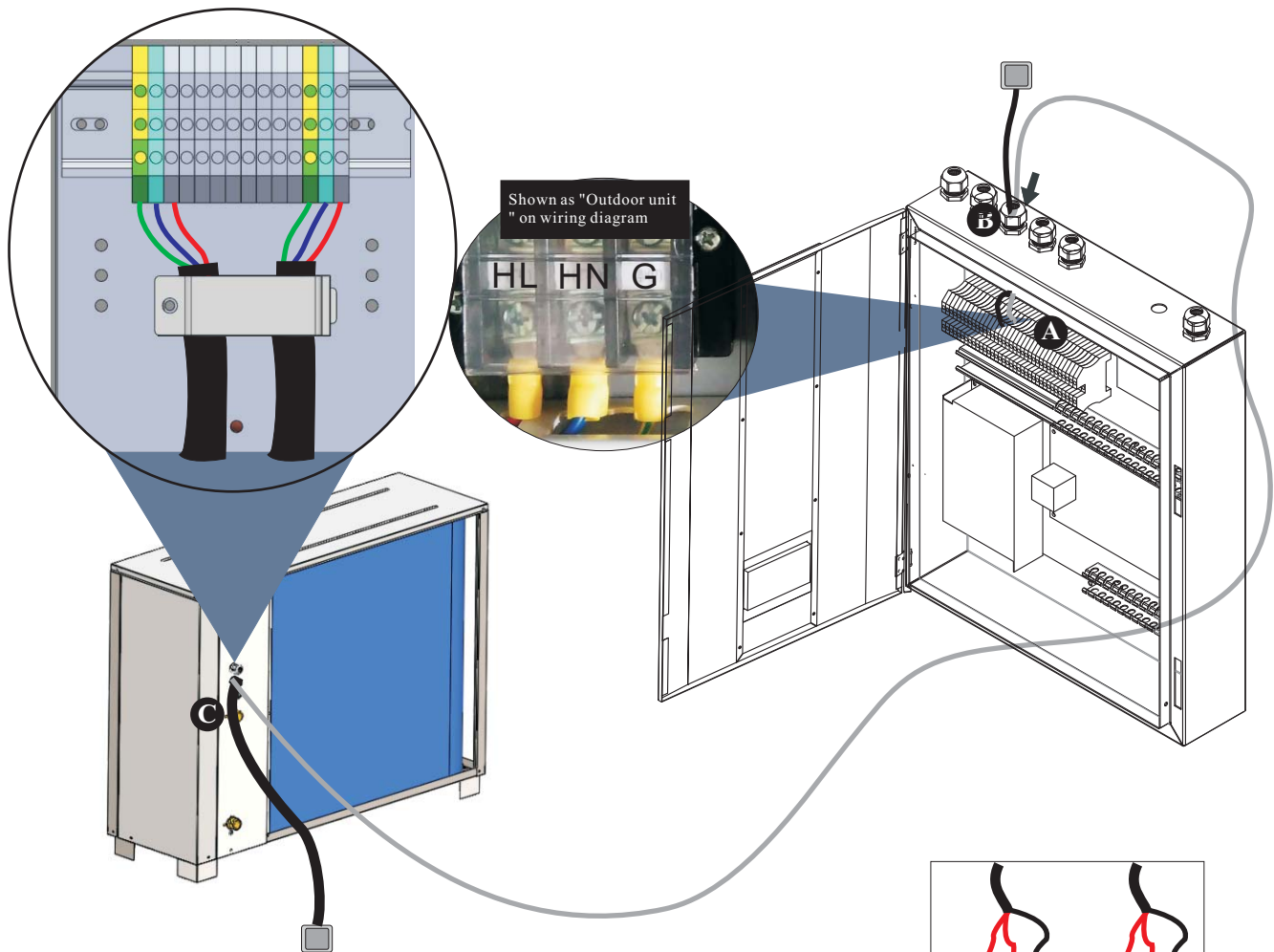
- A. Insert one end of this cable through the cable gland on the bottom of the indoor unit, and connect it to A and B on the appropriate terminal block.
- B. Fasten the cable gland to ensure the cable won't get loosen.
- C. Connect the other end of the cable to the terminal block on the outdoor unit. A and B on the indoor unit should be connected with A, B, and G on the outdoor unit, otherwise communication failure error may occur.

5. Installation Walkthrough

5.5. Wiring

5) Connect the power cable between the indoor and outdoor unit:

Acquire a 3-core power cable of sufficient length that is compliant to all local safety regulations.



Notice: When fixing the power cable with the wire clip, take care to not clamp onto the wires within the sleeving. The clip must clamp onto the outer insulation sleeve, or else it may cause damage to one of the one-core wires.

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

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

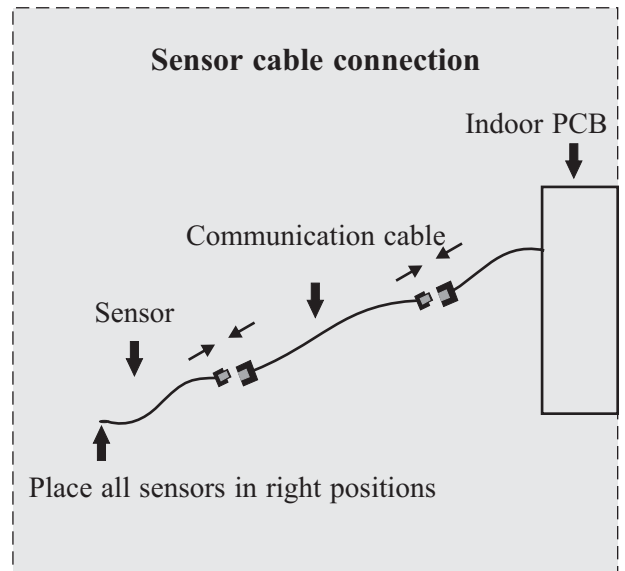
C. Connect the other end of the cable to the terminal block on the outdoor unit. A and B on the indoor unit should be connected with A, B, and G on the outdoor unit, otherwise communication failure error may occur.

5. Installation Walkthrough

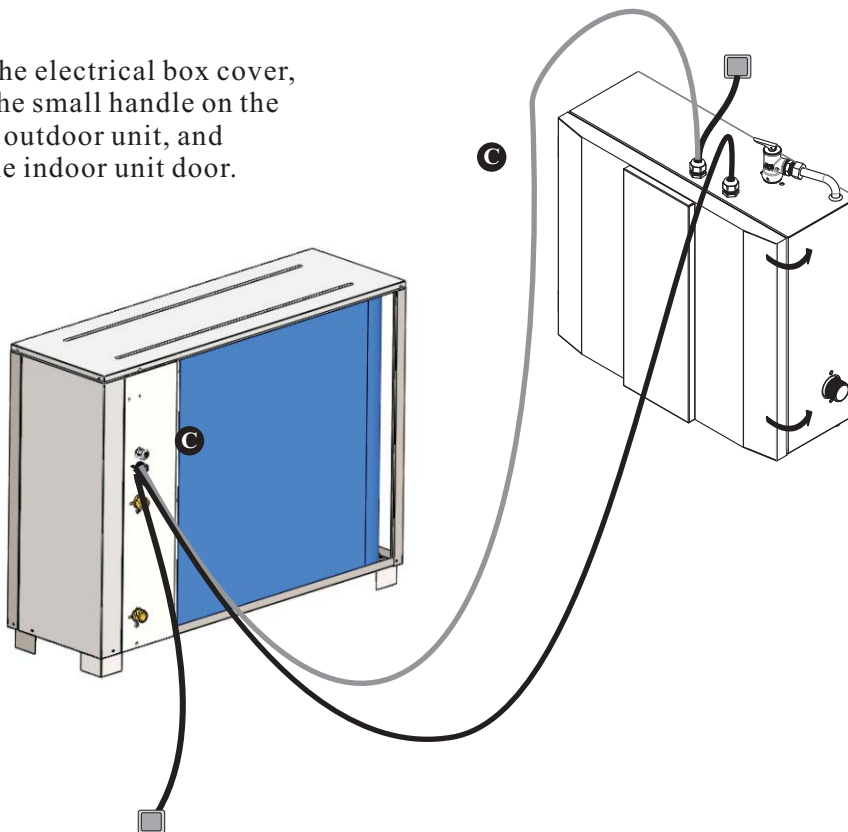
5.5. Wiring

6) Connect the sensors and communication cables to the indoor unit.

- Retrieve all sensors and communication cables from the accessories bag.
- Connect all sensors to the communication cables, and insert the male end into the indoor unit through the cable glands.
- Connect them to the female quick connectors inside the indoor units.
- Place all sensors in the correct positions.
- After everything is connected, fasten the cable glands to prevent cables from loosening.



7) Re-install the electrical box cover, as well as the small handle on the back of the outdoor unit, and close the the indoor unit door.



The wiring process is then complete.

5. Installation Walkthrough

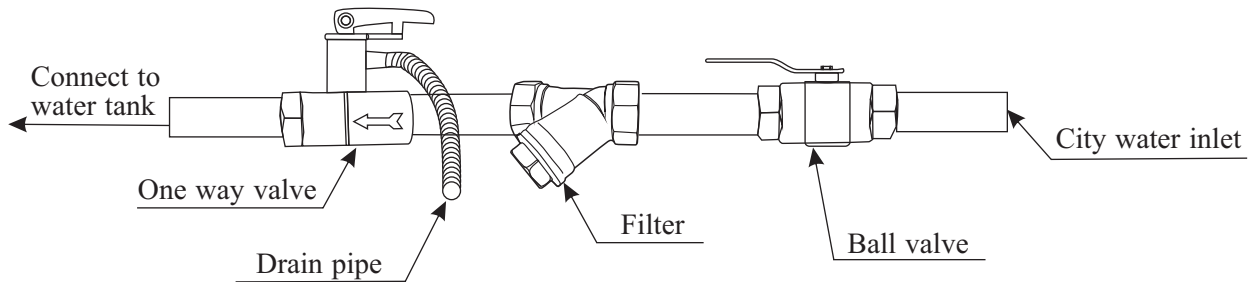
5.6. Water Pipework

After installation of the unit is complete, connect the water inlet to outlet pipe according to local regulations, and confirm that there is flow. Have the piping pressure tested and cleaned before use.

5.6.1. Filtration

A mesh filter should be installed between the water inlet of the unit and the water tank in order to keep collect any impurities and preserve water quality. The filter should be aimed down like below.

It is highly recommended to install check valves on both sides of the filter, to make cleaning or changing the filter later on easier.



5.6.2. Insulation

All pipes running hot water should be well-insulated. No gaps should exist between insulation and outer pipe. Keep the check valves uncovered for future maintenance.



Before finishing, ensure that there is sufficient pressure to send water to the required heights. If not, a water pump can be added in order to increase pumping head.

5.6.3. Water Quality Standards

- Water should contain less than 300 ppm of chloride (in temperatures less than 60°C)
- The pH value of the water should be between 6 to 8.
- No water containing ammonia should pass through this unit.

If the water quality is bad or the water flow is too weak, scale formation and clogging may eventually occur, which lowers efficiency of cooling and heating and can cause abnormalities to occur.

Use pre-cleaned water, or purified water. Good water quality keeps the unit running in high efficiency.

5. Installation Walkthrough

5.7. Test run



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

5.7.1. Before start-up

The list of verifications below must be performed before the unit starts up, to ensure best possible conditions for smooth long-term operation. The list is not exhaustive, and should only be used on a minimum reference basis:

- 1) Make sure the fans are rotating freely.
- 2) Confirm correct flow directions in water piping.
- 3) Verify all system piping matches installation instructions.
- 4) Check the voltage of the unit power supply and make certain it complies to authorized limitations.
- 5) The unit must be properly grounded.
- 6) Check for the presence of any damaged devices
- 7) Check all electrical connections and ensure they are secure.
- 8) Make sure there are no leaks in the piping and the space is well-ventilated.

Fix any problems above if they occur. If everything above is satisfied, the unit can start up.

5.7.2. Starting Up

When the installation of the unit is completed, all water system pipes are confirmed to be well-connected, air purging is done, there are no leakages or other problems, the unit can be powered on.

Turn on the unit by pressing the on/off button on the operation panel. Listen carefully for any abnormal noise or vibrations, and ensure the display of the wired controller is normal.

After the unit has been on for 10 minutes and no abnormalities have occurred, the start-up process is complete. For problems and troubleshooting, please refer to the Service and Maintenance manual.

Final note: It is suggested to not run "heating" or "hot water" mode during ambient temperatures above 32°C , otherwise the unit may easily enter protection mode.

6. Maintenance

6.1. Precaution of maintenance for units with flammable refrigerant

1) Requirement about service area and person

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

2) Monitor status of refrigerant

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

3) Storage of fire extinguishers

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

4) Prohibition of fire

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

5) Inspection of equipment

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

6) Inspection of electrical elements

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

7) Inspection of cables

Check the status of cables and verify if any defects happen because of abrasion, corrosion, overpressure, vibration, cut by sharp edges or other reasons. This inspection should also consider the effects because of cable aging and continuous vibration of compressor and the fans.

8) Inspection of flammable refrigerants

Inspection of refrigerant leakage should be carried out in service area without fire or any other potential ignition source. And this inspection should not be done by detectors working with ignition, such as halogen probe.

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

If soldering is required at leakage point, it is a must to recover all refrigerant or isolate it at somewhere not close to leakage point (by service valve). Before or in process of soldering, oxygen-free nitrogen (OFN) should be used in order to purify the system.

6. Maintenance

6.1. Precaution of maintenance for units with flammable refrigerant

9) Procedures of service on refrigeration system

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

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

10) Refrigerant charging

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

- Ensure that there is no mutual contamination between different refrigerants during refrigerant charging. The pipeline to fill system with refrigerant should be as short as possible in order to reduce the residual amount of refrigerant in it;
- The refrigerant tank should be kept vertically upwards;
- Ensure that the refrigeration system has been well grounded before charging;
- Label the system after charging is finished (or not yet completed);
- Overfilling is prohibited;

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

11) Precautions of refrigerant charging

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

12) Emergency treatment

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

- Suggested disposal in case of serious leakage of flammable refrigerant:
 - a) Turn on the ventilation equipments and cut off power supply of other devices. Persons should evacuate from site immediately.
 - b) Notify and evacuate the neighbouring people and residents in order and stay away from the site for at least 20 meters. Call the police and set up a warning region forbidding people and vehicles from approaching.
 - c) On-site treatment should be carried out by professional firefighters with anti-static clothing. Cut off the leakage source.
 - d) Purge and eliminate flammable refrigerant and residual gas at leakage point and surrounding area with nitrogen, especially for low-lying areas. Detect and verify the elimination work with professional detector until concentration of flammable refrigerant become zero. Only after that, alarm can be cleared.

6. Maintenance

6.1. Precaution of maintenance for units with flammable refrigerant

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

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

When maintain a unit with potential leakage, lock the service valves of outdoor unit and then disconnect refrigerant pipes. Release the refrigerant in indoor unit to the atmosphere. Please be noted that it is prohibited to recover refrigerant when unit is working in order to prevent the air from going into compressor. [For split type of equipment]

14) Requirement about storage of R32 refrigerant

- The refrigerant storage tank should be placed separately in the environment with ambient temperature between -10~50°C and with good ventilation. Warning labels should be placed in this area or on the tanks.

- For service tools in contact with the refrigerant, they should be stored and used separately. And the service tools designed for different refrigerants can not be mixed in usage or storage.

15) Operation specification about equipment dismantling

- Before dismantling, check and ensure safety at service area and keep good ventilation (open doors and windows). Ignition sources are prohibited at the place where equipment is dismantled and the combustible materials should be isolated.

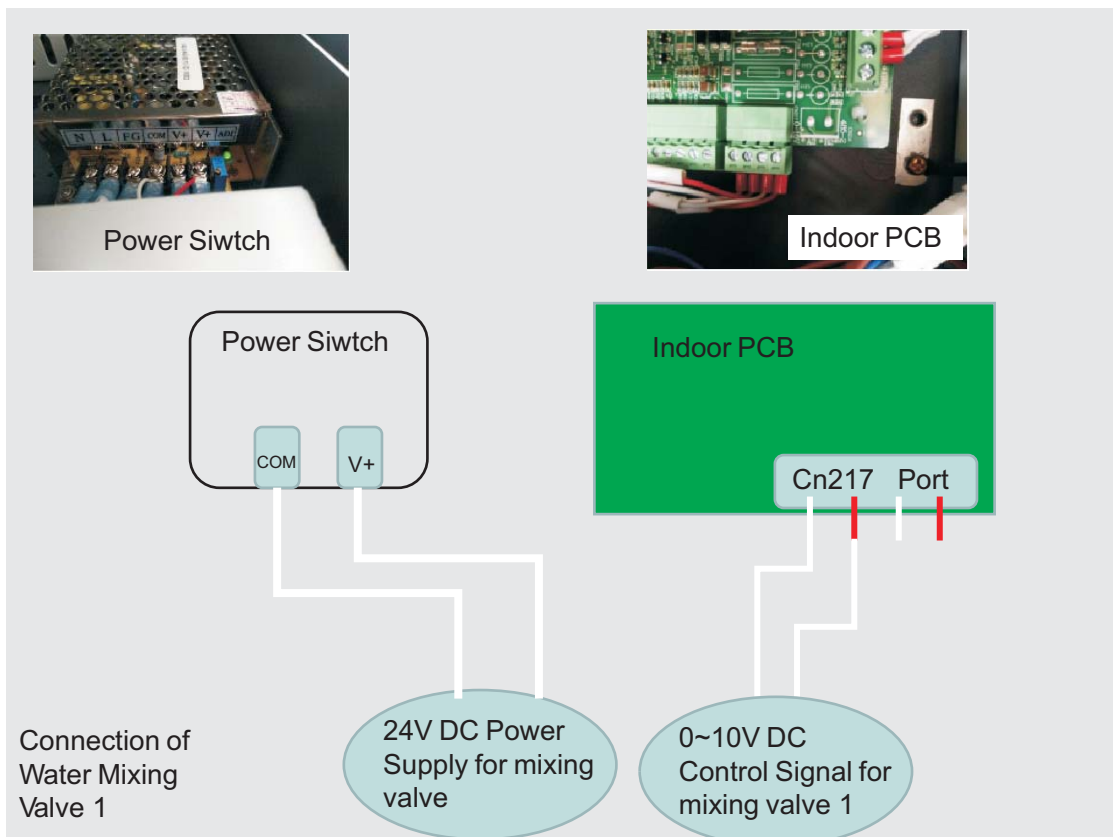
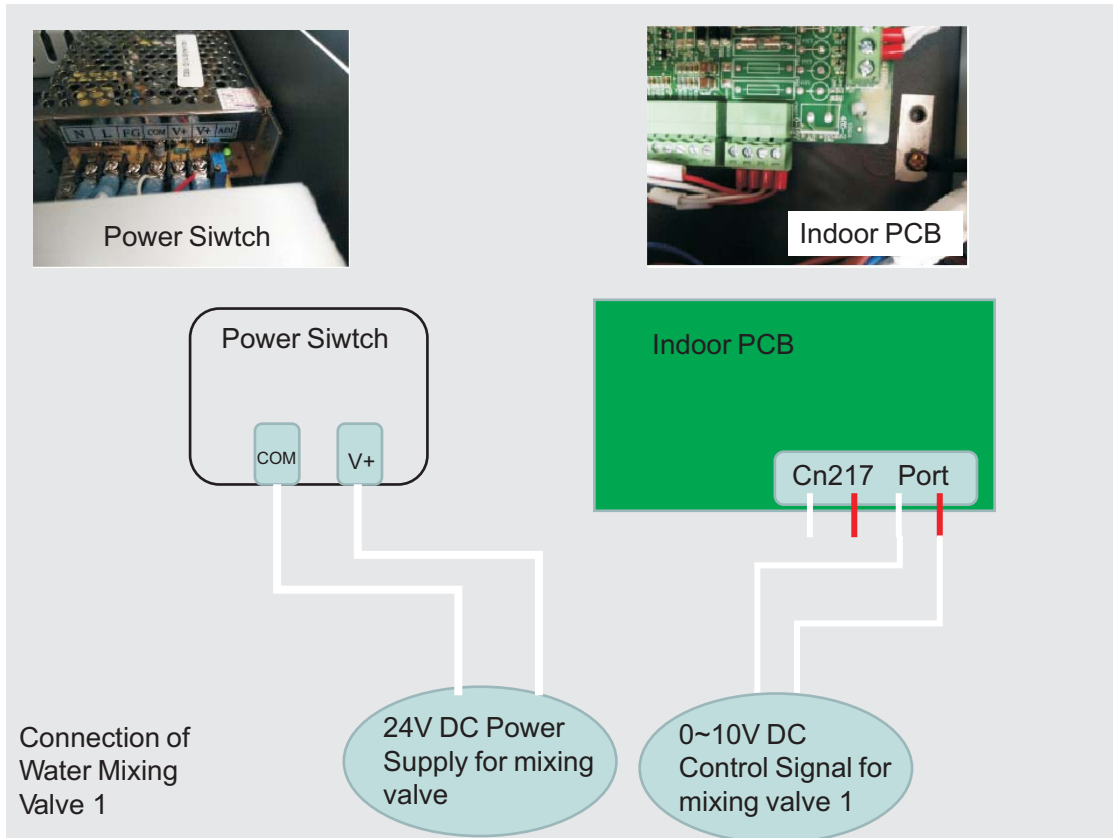
- Please clear the refrigerant in equipment before dismantling. [For split type of equipment]

- Try to move the refrigerant pipes along with indoor unit. If the refrigerant pipes are too long, cut it from a position outside the house for easier removal. When the pipes are going to be used again, connect them with additional extension pipes by soldering. [For split type of equipment]

- For transportation, loading and unloading of equipment, please be careful and collision and drop are not allowed. It is forbidden to store the unit in a confined space or a space with ignition sources.

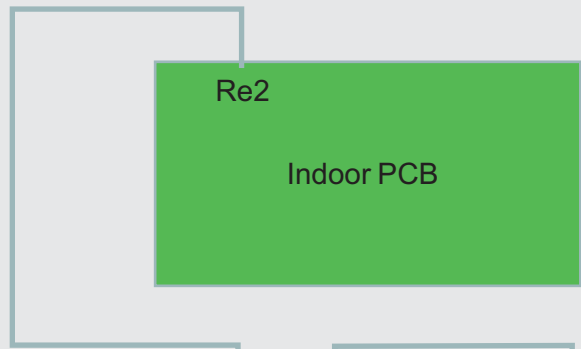
Appendix A: Wiring

Indoor
AWC 6/19-R32-M



Appendix A: Wiring

Indoor
AWC 6/19-R32-M

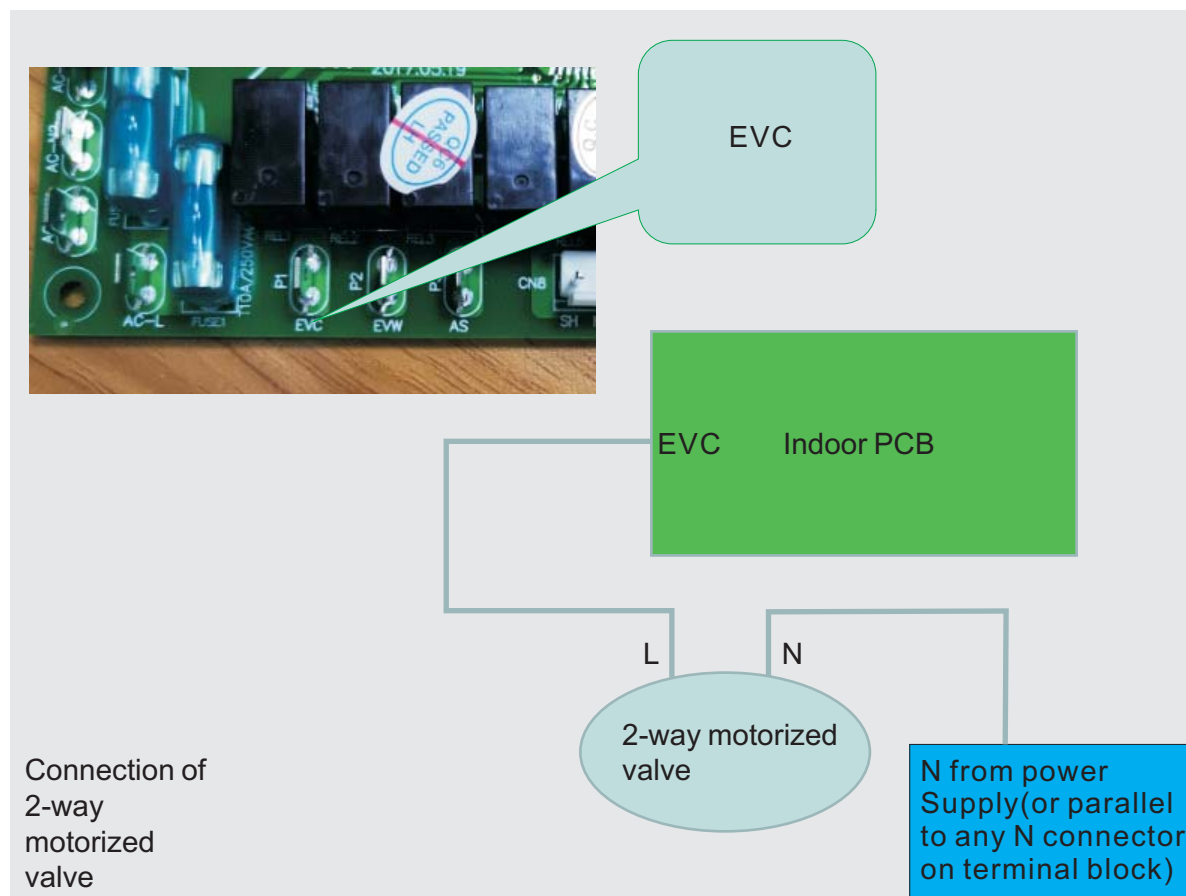


Connection of
2-way
motorized
valve

N from power
supply (or parallel
to any N connector
on terminal block)

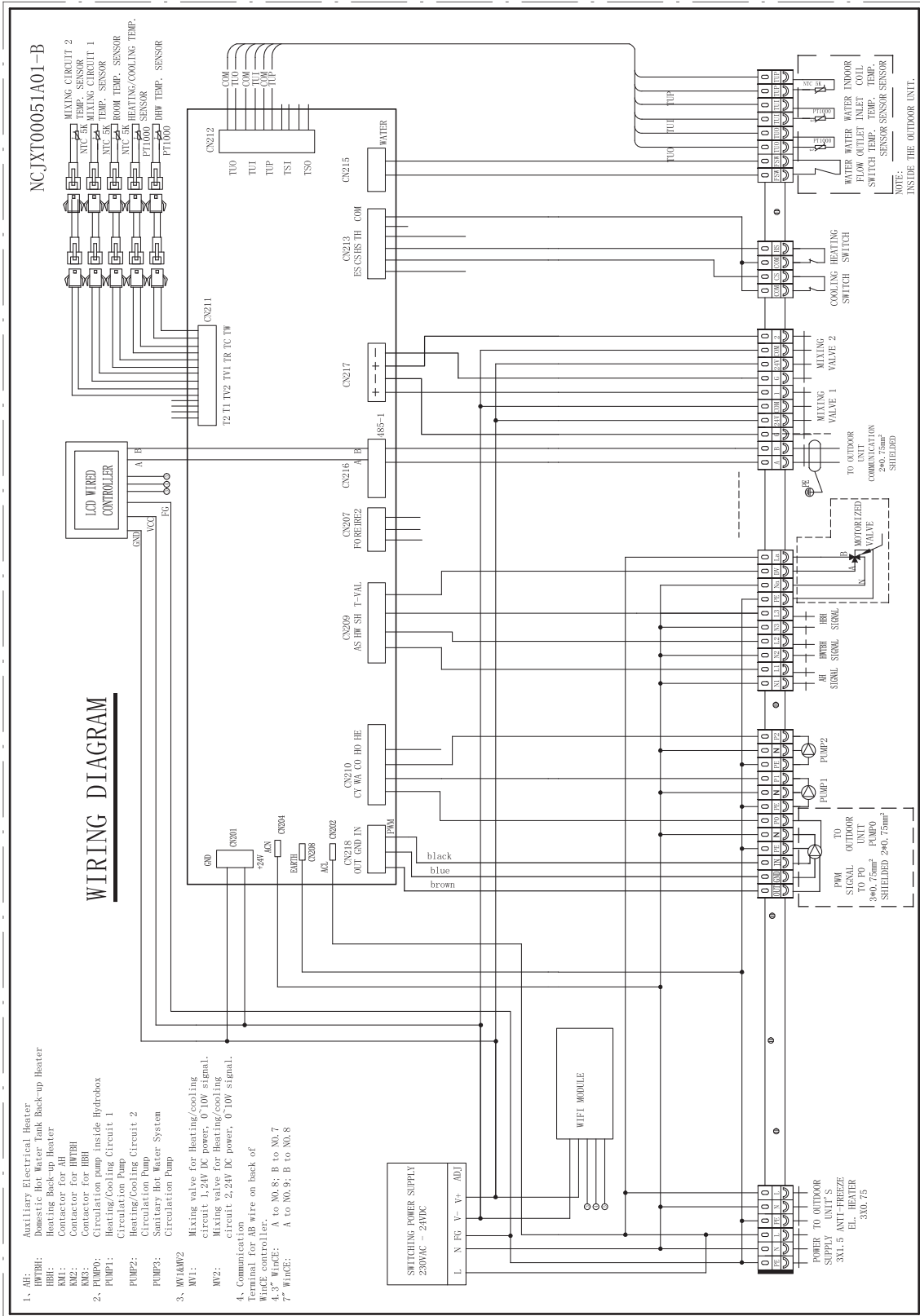
Appendix B: Wiring

Indoor
AWC V5+ 6/19-R32-M



Appendix C: Wiring

Indoor AWC6/19-R32-M



TAKE CARE!

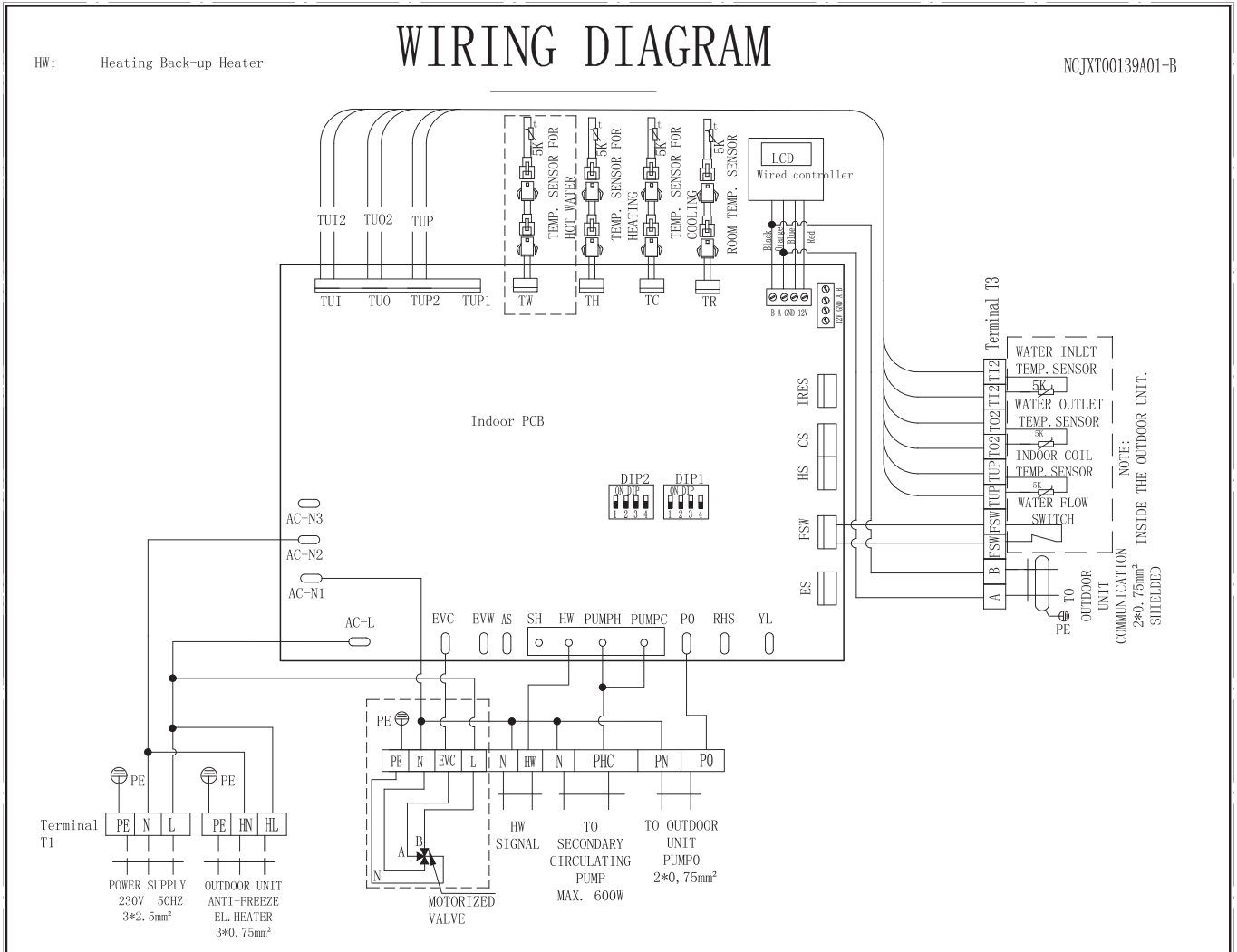
The specifications are subject to change without prior notice.

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

Appendix C: Wiring

Indoor

AWC V5+ 6/19-R32-M



TAKE CARE!

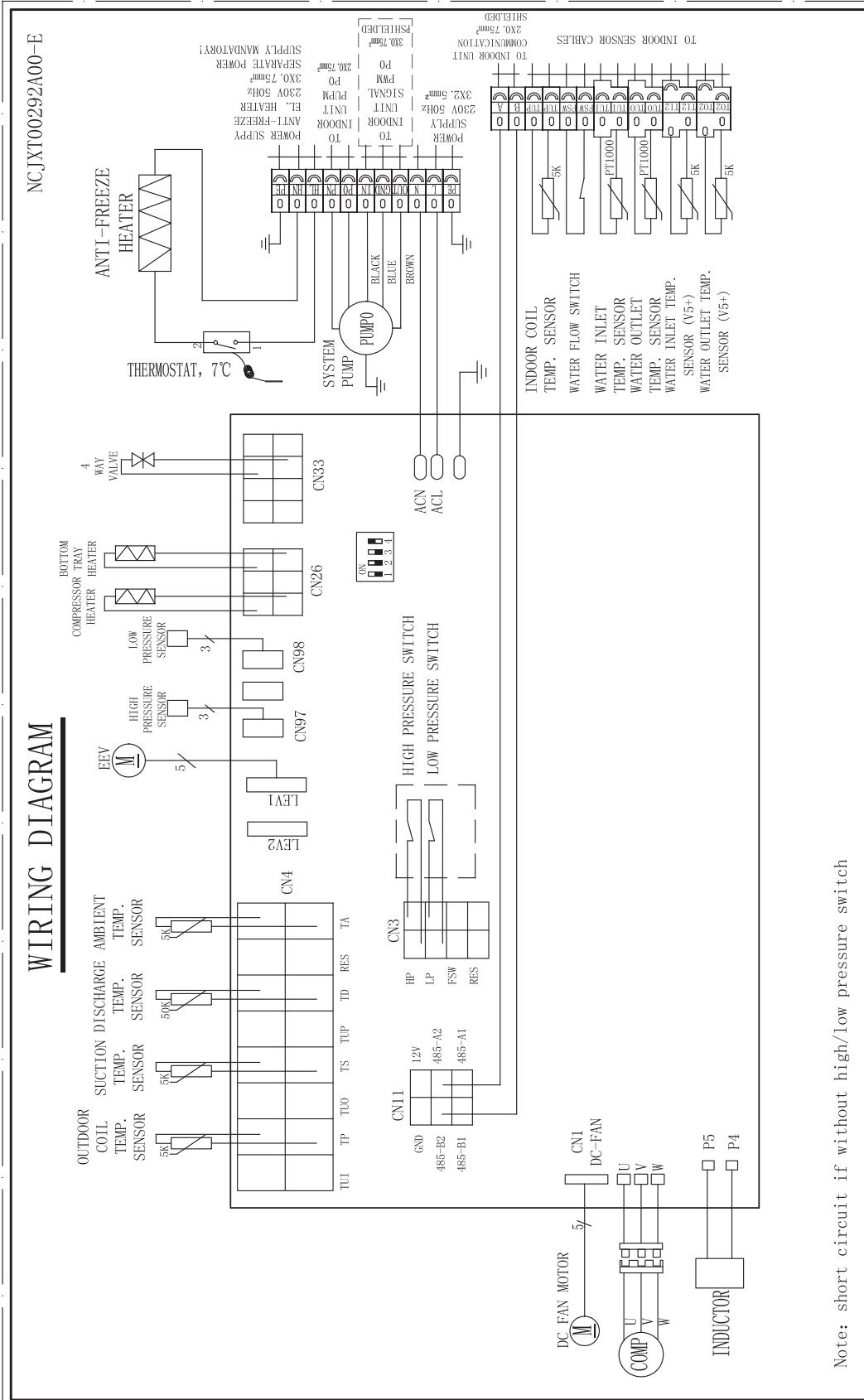
The specifications are subject to change without prior notice.

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

Appendix C: Wiring

Outdoor

AW6/9/12-R32-M

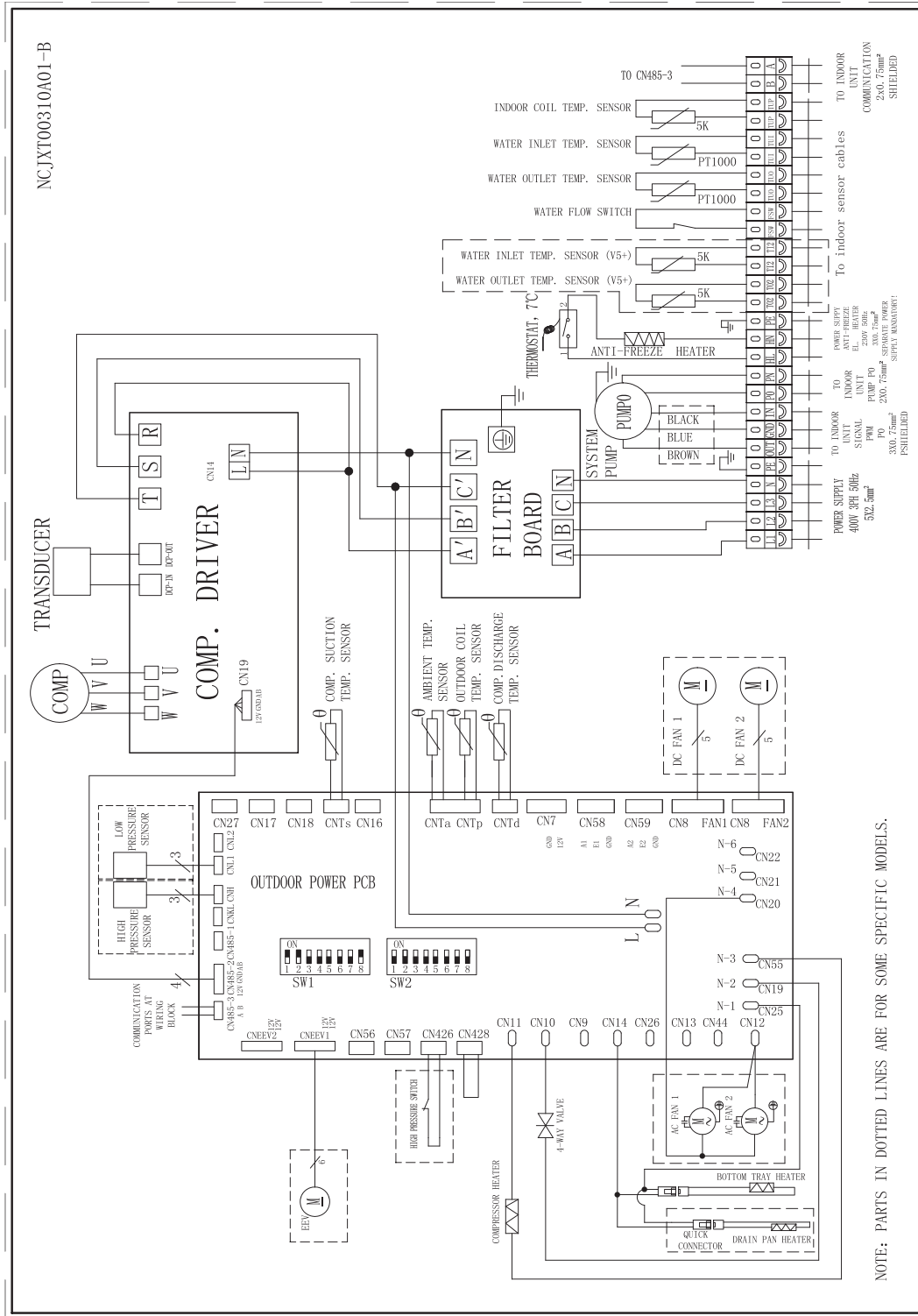


Appendix C: Wiring

Outdoor

AW15-R32-M

AW19-R32-M



TAKE CARE!

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ES Heat Pumps AB, 44138 Alingsås, Sweden
info@energysave.se
www.energysave.se

Thank you for purchase of our quality product.
Please read this manual thoroughly before use , and
follow the instructions carefully in operating the unit
in order to prevent damages to either the device or persons.

Product specifications are subject to change with improvements ,
without prior notice. Please refer to the specification sticker on
the unit for the most recent specifications.

Please refer to the contact information
below for technical support and enquiries:

E-mail:

Telephone: