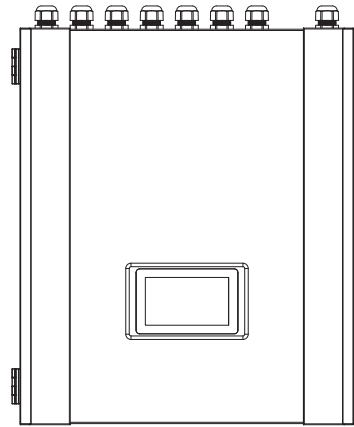
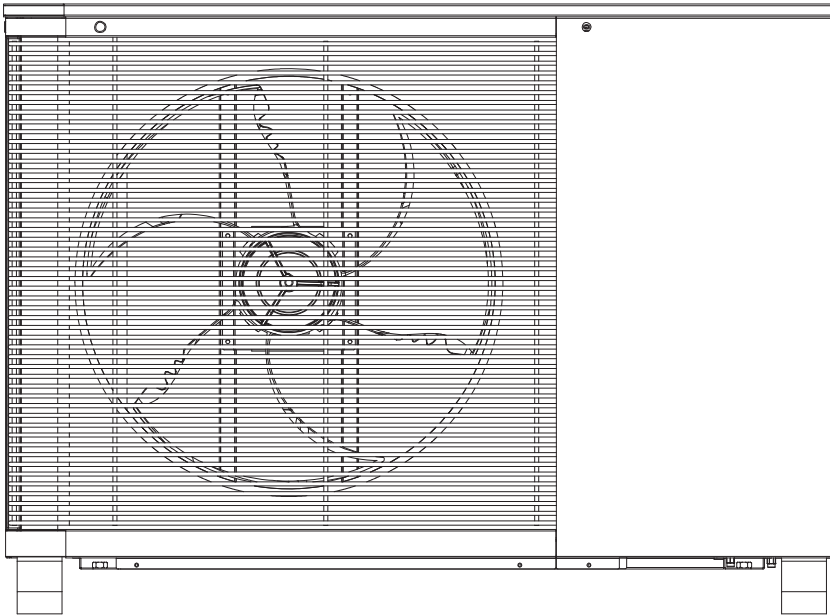




AWC6/19-R32-M-V8



DC Inverter Air to Water Heat Pump



User's manual

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

Catalogue

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1. Before use

1.1 Advanced Important Notice

Cautions:

1. Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
2. The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.).
3. Do not pierce or burn.
4. Be aware that refrigerants may not contain an odour.
5. Appliance shall be installed, operated and stored in a room with a floor area larger than X m² (refer to specifications sheet).
6. The installation of pipe-work shall be kept to a minimum X m² (refer to specifications sheet).
7. Spaces where refrigerant pipes shall be compliance with national gas regulations.
8. Servicing shall be performed only as recommended by the manufacturer.
9. The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
10. All working procedure that affects safety means shall only be carried by competent persons.

General Notice:

1. Transport of equipment containing flammable refrigerants

Compliance with the transport regulations

2. Marking of equipment using signs

Compliance with local regulations

3. Disposal of equipment using flammable refrigerants

Compliance with national regulations

4. Storage of equipment/appliances

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

5. Storage of packed (unsold) equipment

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

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

6. Information on servicing

1) Checks to the area

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

2) Work procedure

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

1. Before use

3) General work area

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

4) Checking for presence of refrigerant

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

5) Presence of fire extinguisher

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

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

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

Ensure that apparatus is mounted securely.

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

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

8.Repair to intrinsically safe components

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

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

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

1. Before use

9. Cabling

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

10. Detection of flammable refrigerants

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

11. Leak detection methods

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

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

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

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

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

12. Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

- Remove refrigerant;
- Purge the circuit with inert gas;
- Evacuate;
- Purge again with inert gas;
- Open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be “flushed” with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place. Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

1. Before use

13. Charging procedures

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

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.

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

14. Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

- a) Become familiar with the equipment and its operation.
- b) Isolate system electrically.
- c) Before attempting the procedure ensure that:
 - .Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - .All personal protective equipment is available and being used correctly;
 - .The recovery process is supervised at all times by a competent person;
 - .Recovery equipment and cylinders conform to the appropriate standards.
- d) Pump down refrigerant system, if possible.
- e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f) Make sure that cylinder is situated on the scales before recovery takes place.
- g) Start the recovery machine and operate in accordance with manufacturer's instructions.
- h) Do not overfill cylinders. (No more than 80% volume liquid charge).
- I) Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

15. Labelling

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

16. Recovery

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

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding

1. Before use

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.

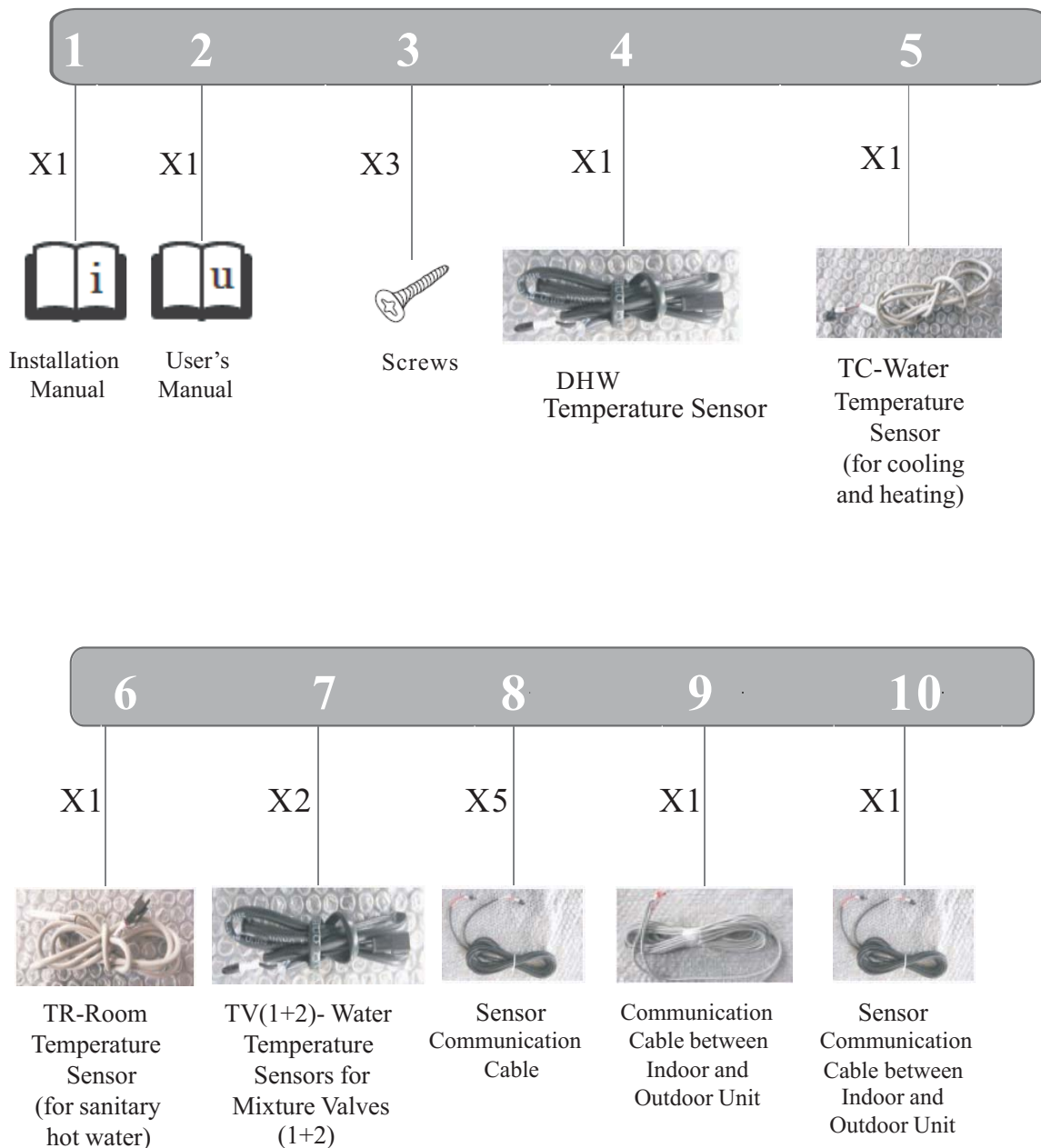
The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

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. Amitime Electric Co., Ltd. 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 43°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.



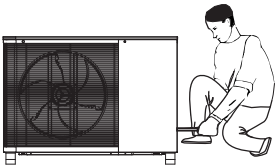
Warning



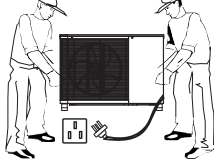
Caution




Prohibition



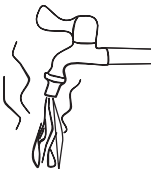
The installation, dismantlement and maintenance of the unit must be performed by qualified personnel. It is forbidden to do any changes to the structure of the unit. Otherwise injury of person or unit damage might happen.



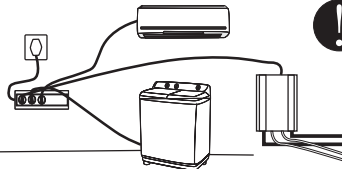
To avoid electrical shock, make sure to disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and, before touching, make sure that those voltages are lower than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



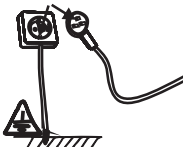
Be sure to read this manual before use.



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



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

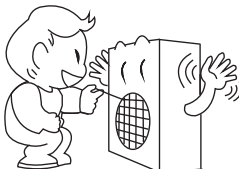


Ground wire
The power supply to the unit must be grounded.




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

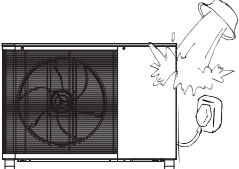
This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.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



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




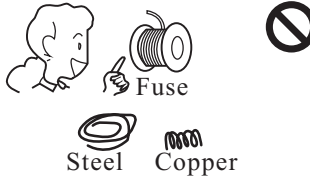
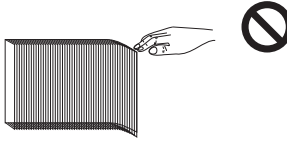
Do not touch the power plug with wet hands. Never pull out the plug by pulling the power cable.

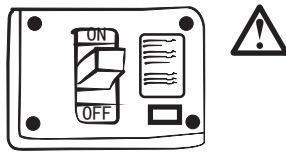
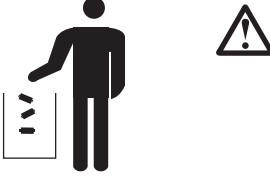
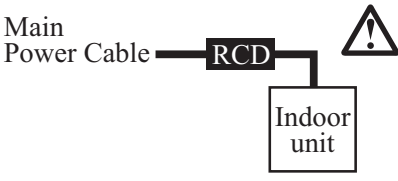


Water or any kind of liquid is strictly forbidden to be poured into the product, or may cause electric creepage or breakdown of the product.

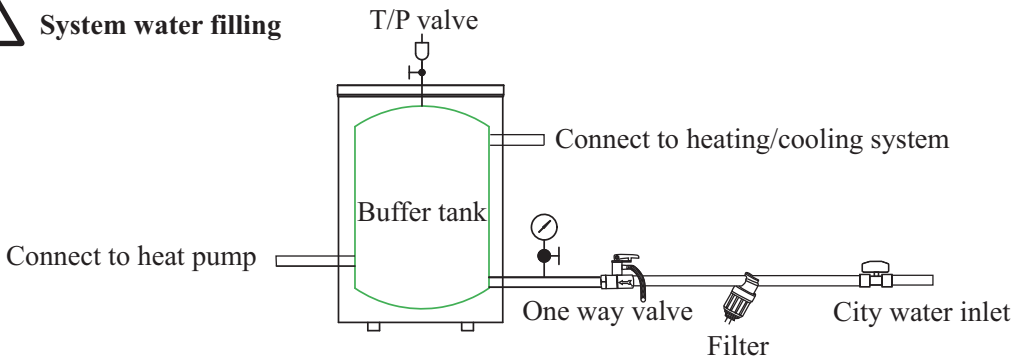
2. Introduction

2.2.Safety Precautions

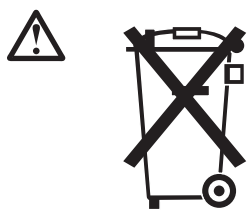
 <p>When the power cord gets loose or damaged, always get a qualified person to fix it.</p>	 <p>Please select the correct fuse or breaker as per recommended. Steel wire or copper wire cannot be taken as substitute for fuse or breaker. Otherwise, damages maybe caused.</p>	 <p>Be aware fingers might be 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>
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System water filling

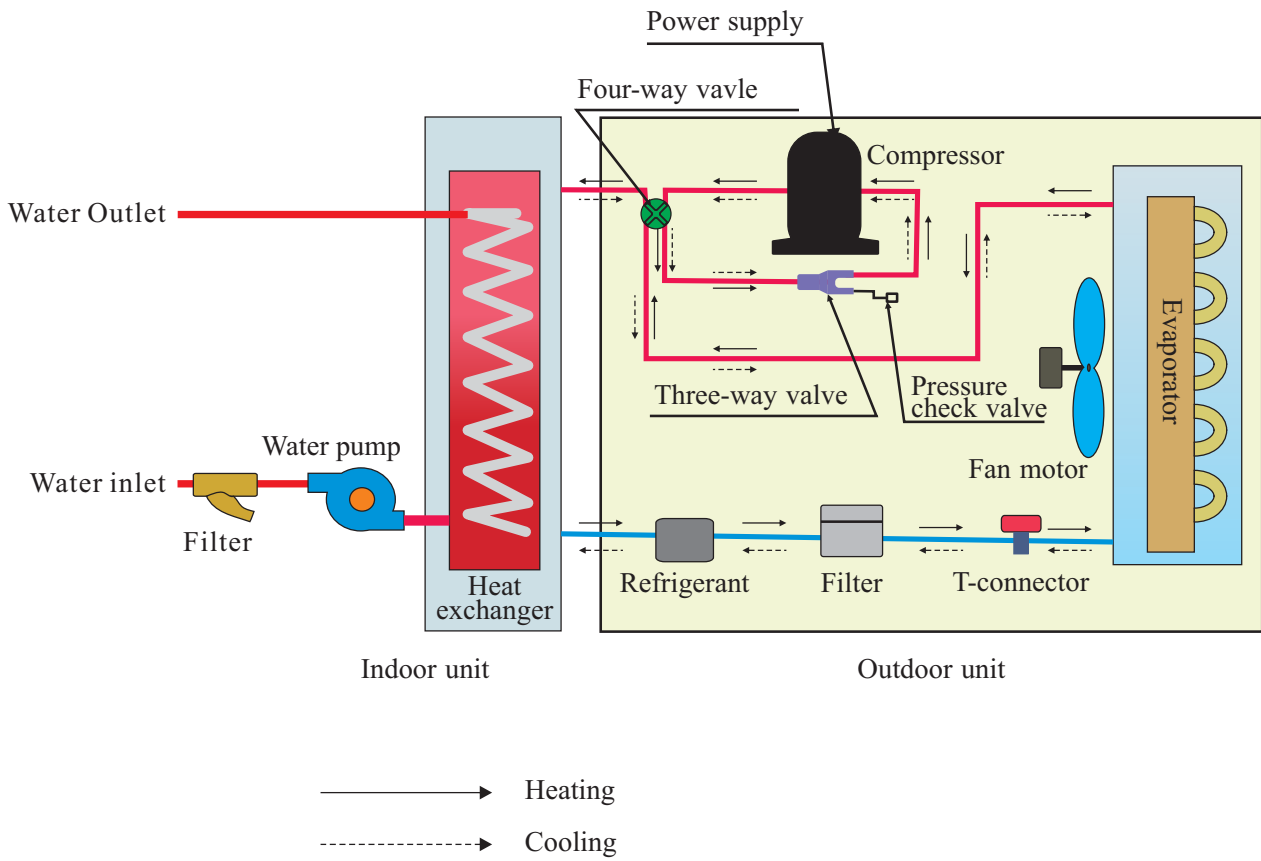


1. It's suggested to use pure water for filling the system.
 2. If use city water for filling, please soften the water and add a filter.
 Note: After filling, the system of water system should be 0.15~0.6MPa.

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

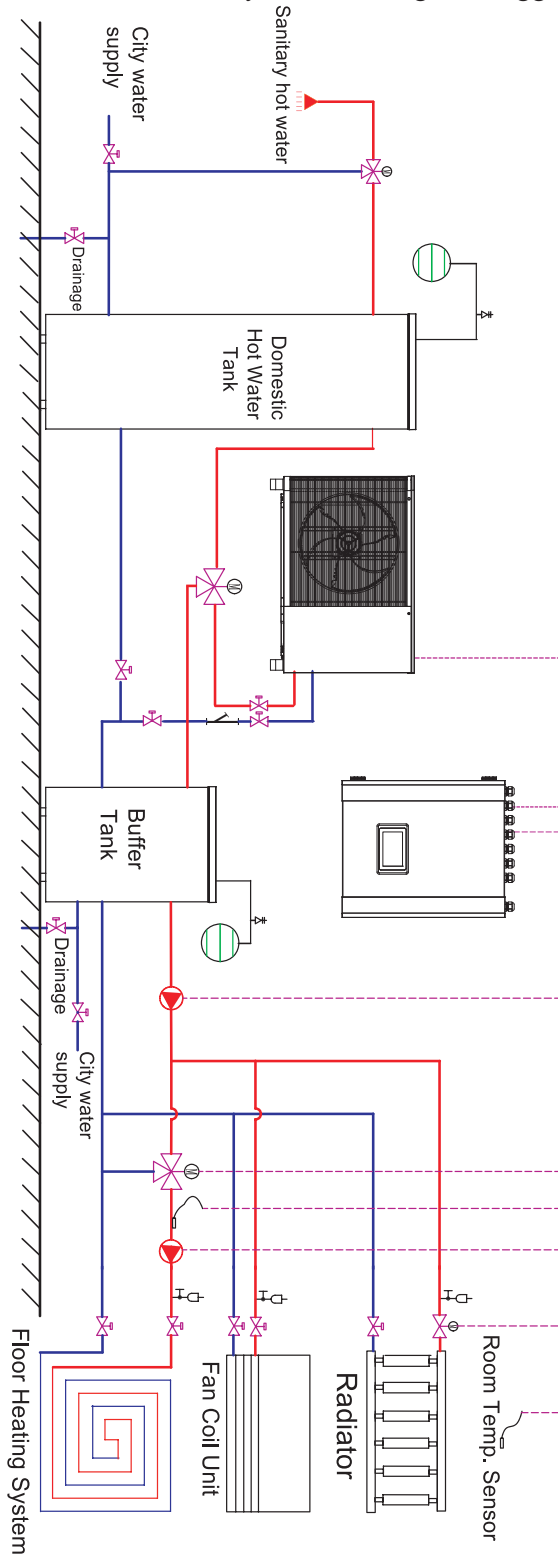
2.3. Functioning Principles



2. Introduction

2.4. 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

2.5. Technical Specifications

Model	Outdoor unit		AW6-R32-M-V8	AW9-R32-M-V8	AW12-R32-M-V8	AW15-R32-M-V8	AW19-R32-M-V8
IP rating		IPXX	IP44	IP44	IP44	IP44	IP44
Indoor unit							
Model	Indoor unit		AWC6/19-R32-M-V8				
IP rating		IPXX	IP34				
Min/max heating capacity(1)		kW	3.5/6.5	4.3/9.2	5.5/11.6	6.0/15.3	9.2/18.5
El. heating power input min/max(1)		W	750/1410	920/2090	1100/2680	1220/3200	1830/4140
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	2.3/5.9	3.9/8.6	4.9/11.2	6.6/14.4	8.5/18.2
El. heating power input min/max(2)		W	909/1917	1120/2510	1401/3263	1900/4100	2300/5000
C.O.P min/max(2)		W/W	2.6/3.1	3.46/3.66	3.4/3.6	3.5/3.7	3.58/3.72
SCOP - Average climate, low temperature		W	4.72	4.72	4.71	4.98	4.83
Energy class			A+++	A+++	A+++	A+++	A+++
Min/max cooling capacity(3)		kW	6.22/7.41	8.48/9.5	7.0/9.8	7.2/18.5	16/19.3
El. cooling power input min/max(3)		W	1374/1806	1860/2200	1728/2510	1400/5000	1660/6300
E.E.R. min/max(3)		W/W	4.1/4.5	4.31/4.56	3.9/4.05	3.7/5.1	3.05/3.41
Min/max cooling capacity(4) (A35/W7)		kW	3.5/4.5	4.9/7.2	4.9/8.5	4.5/13	5.5/16
El. cooling power input min/max(4)		W	1330/1680	1450/2360	1350/2440	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	-30~45				
Min/max ambient working temp. in cooling mode		°C	8~65				
Max flow temp. in heating mode		°C	58				
Min flow temp. in heating mode		°C	20				
Min flow temp. in cooling mode		°C	7				
Defrost upon demand			yes				
Heating cable for defrosting			yes				
Compressor pre-heat			yes				
Electronic expansion valve			yes				
Max. Operation High Pressure		bar	42				
Min. Operation Low Pressure		bar	14				
PS Hydraulic circuit		bar	3				
Min. Floor Area for installation, operation and storage		m ²	3.1				
Min. Area Pipe-work		m ²	3.1				
Anti-Freeze el. heater	Power supply	V/Hz	230/1/50				
Anti-Freeze el. heater	Rated power	kW	0.08	0.08	0.08	0.095	0.095

2. Introduction

2.5. Technical Specifications

			AW6-R32-M-V8	AW9-R32-M-V8	AW12-R32-M-V8	AW15-R32-M-V8	AW19-R32-M-V8
Model							
ErP approved circulation pump	Manufacturer		Shimge	Shimge	Shimge	Shimge	Shimge
	type		APM25-9-130/180 PWM1	APM25-9-130/180 PWM1	APM25-9-130/180 PWM1	APM25-9-130/180 PWM1	APM25-9-130/180 PWM1
	ErP classification		EEI ≤ 0.21-Part 3				
Compressor	Manufacturer		Mitsubishi				
	type		DC inverter (twin rotary)				
Fan	Quantity	pcs	1	1	1	2	2
	Air flow	m³/h	2500	3150	3150	6200	7000
	Rated power	W	35	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	57	57
	Indoor unit tank version	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		m³/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		m³/h	1.04	1.55	2.05	2.59	3.24
Residual current device and overvoltage protection			Required				
Power supply (grounded) Outdoor unit	Outdoor unit	V/N/Hz	230/1/50	230/1/50	230/1/50	400/3/50	400/3/50
	Fuse Outdoor unit	A	10A/C	16A/C	16A/C	3P/16A/C	3P/16A/C
Power supply (grounded) Indoor unit tank version	Indoor unit tank version	V/N/Hz	230/1/50				
	Fuse Indoor unit tank version	A	10				
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 CO2 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	1025x397x750	1207x412x900	1207x412x900	1106x416x1498	1106x416x1498
	Indoor unit tank version	mm	450X380X115				
Dimensions Brutto (L x D x H) including carton box and palette	Outdoor unit	mm	1080x485x920	1270x490x1050	1270x490x1050	1158x500x1657	1158x500x1657
	Indoor unit tank version	mm	500X410X210				
Net weight	Outdoor unit	kg	80	99	105	157	166
	Indoor unit tank version	kg	9				
Brutto weight including carton box, added manuals, sensors and palette	Outdoor unit	kg	95	115	121	177	186
	Indoor unit tank version	kg	13				

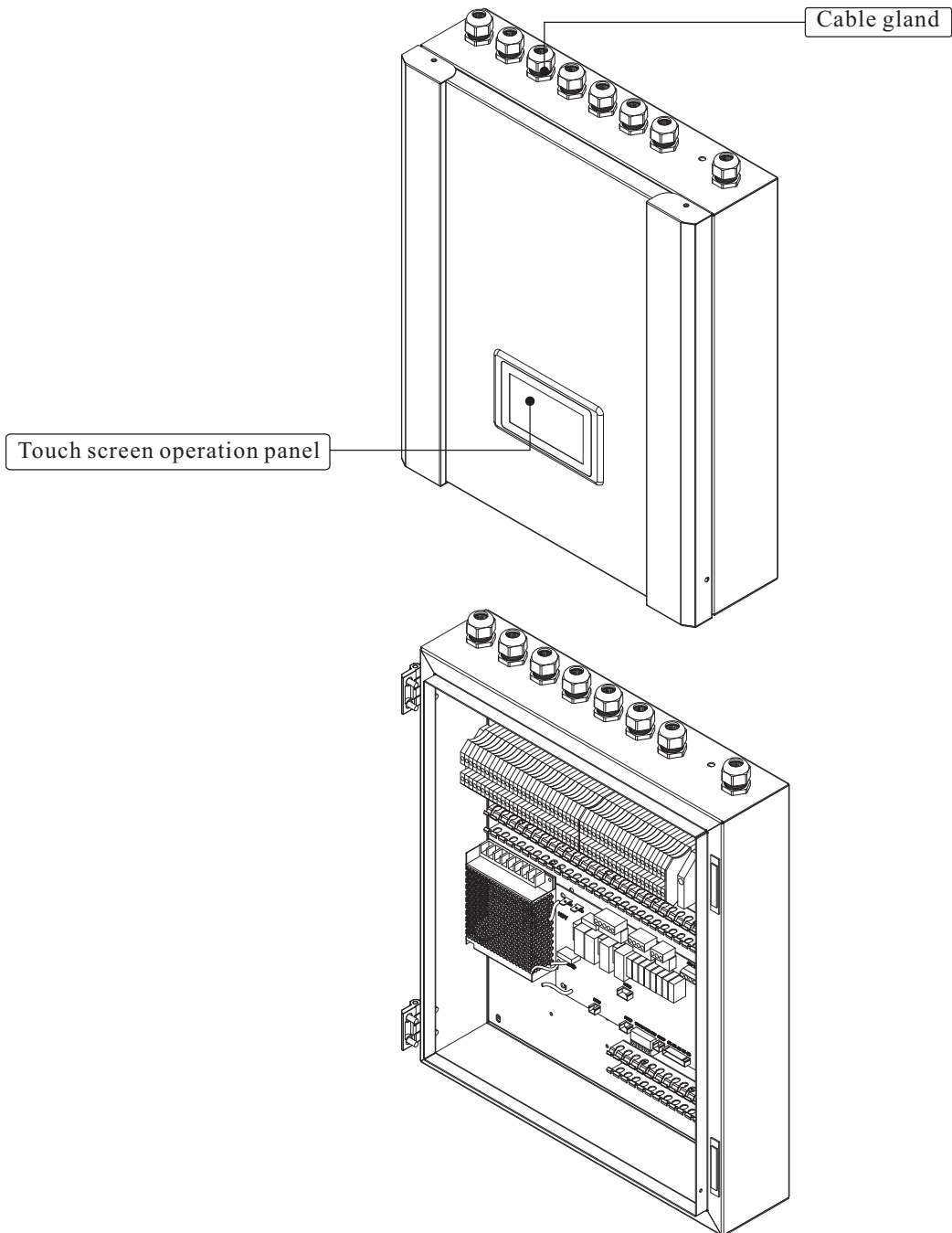
- (1) Heating condition: water inlet/outlet temperature: 30 °C/35°C, Ambient temperature: DB 7 °C /WB 6 °C
- (2) Heating condition: water inlet/outlet temperature: 40°C/45°C, Ambient temperature: DB 7 °C /WB 6 °C
- (3) Cooling condition: water inlet/outlet temperature: 23 °C/18°C, Ambient temperature: DB 35 °C /WB 24 °C
- (4) Cooling condition: water inlet/outlet temperature: 12°C/7°C, Ambient temperature: DB 35 °C /WB 24 °C

3. Overview of the Units

3.1. Functional Diagrams

Monoblock indoor unit

AWC6/19-R32-M-V8

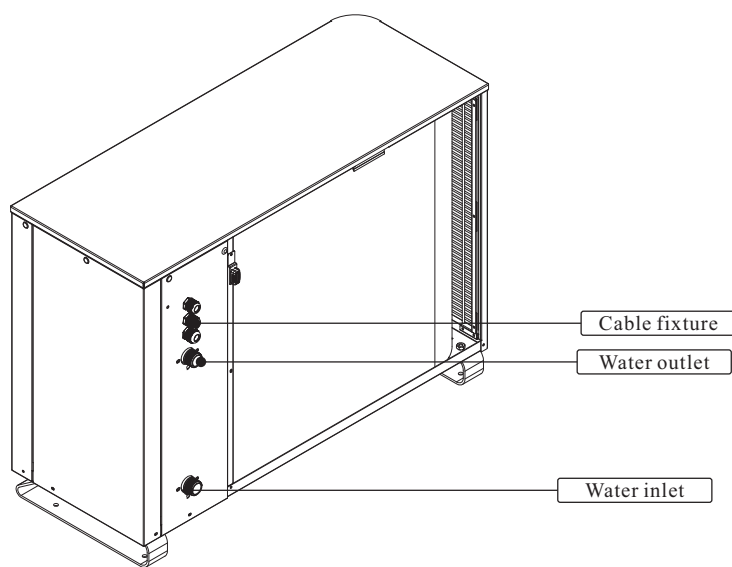
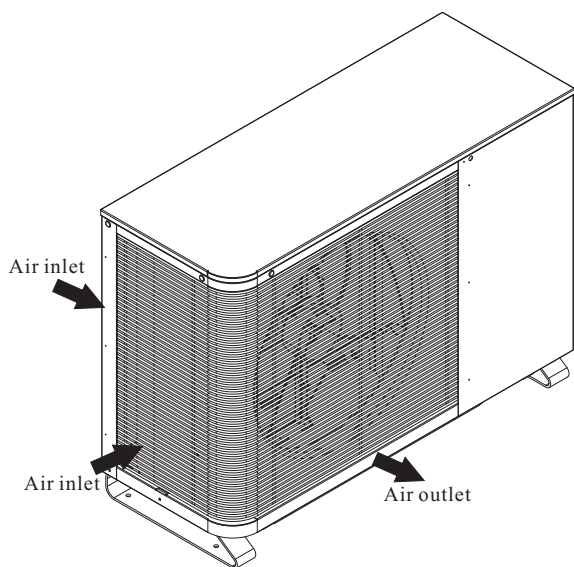


3. Overview of the Units

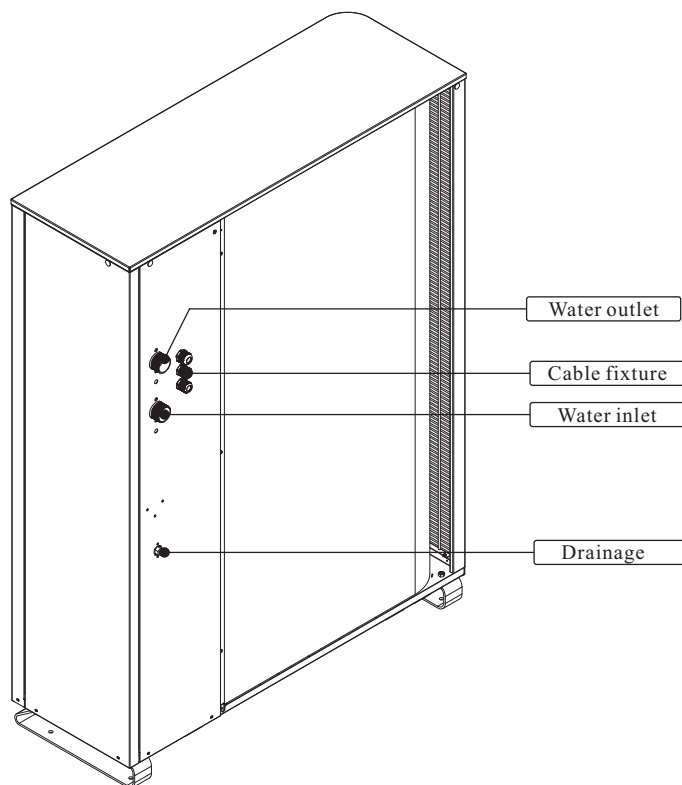
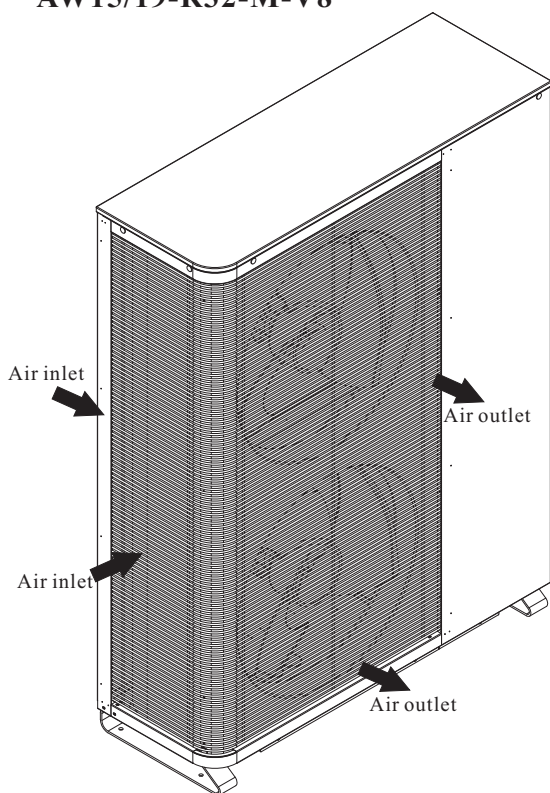
3.1. Functional Diagrams

Monoblock outdoor unit

AW6/9/12-R32-M-V8



AW15/19-R32-M-V8



3. Overview of the Units

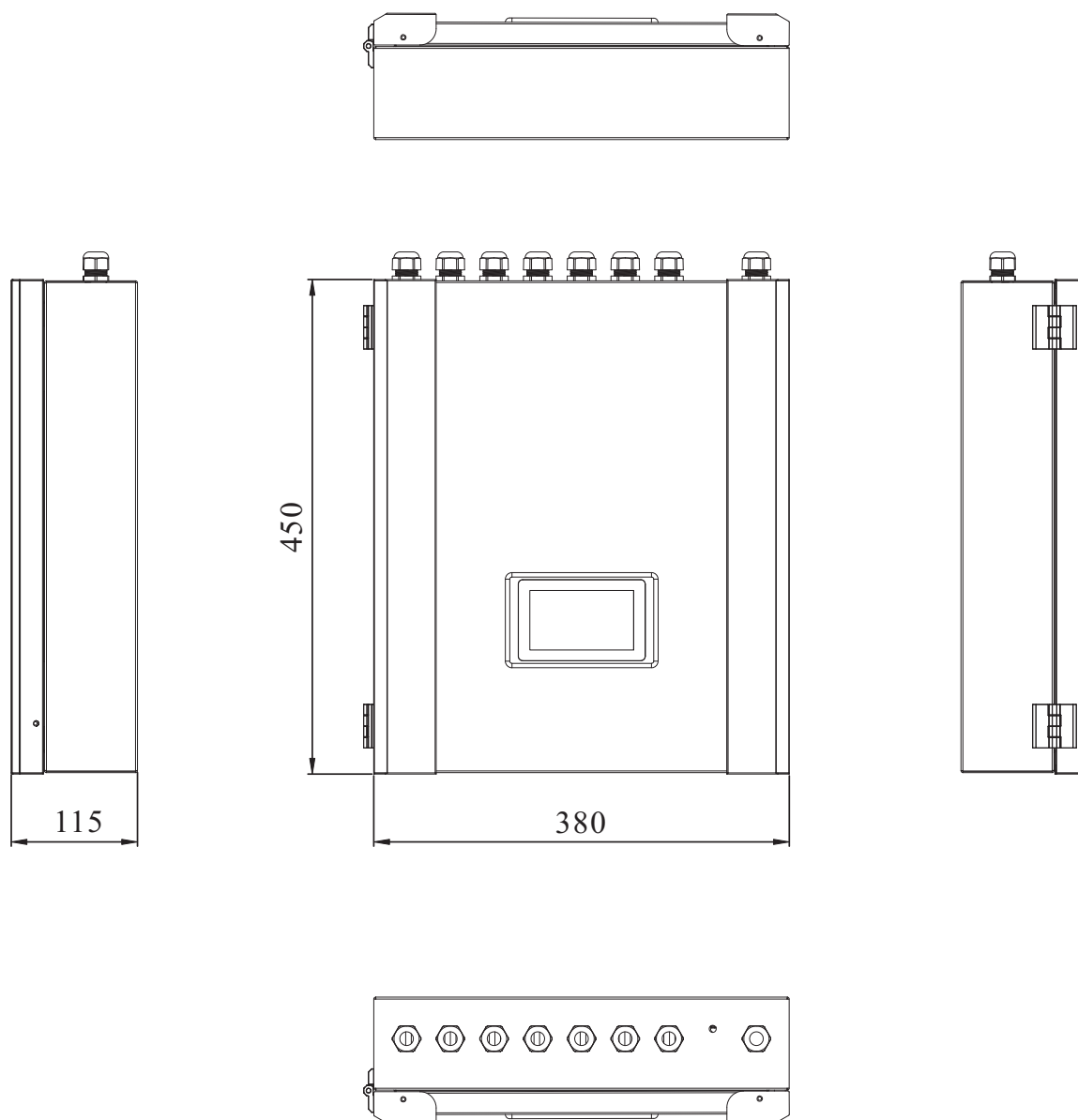
3.2.Outlines and Dimensions

Outlines and dimensions

Monoblock indoor unit

AWC6/19-R32-M-V8

Unit:mm



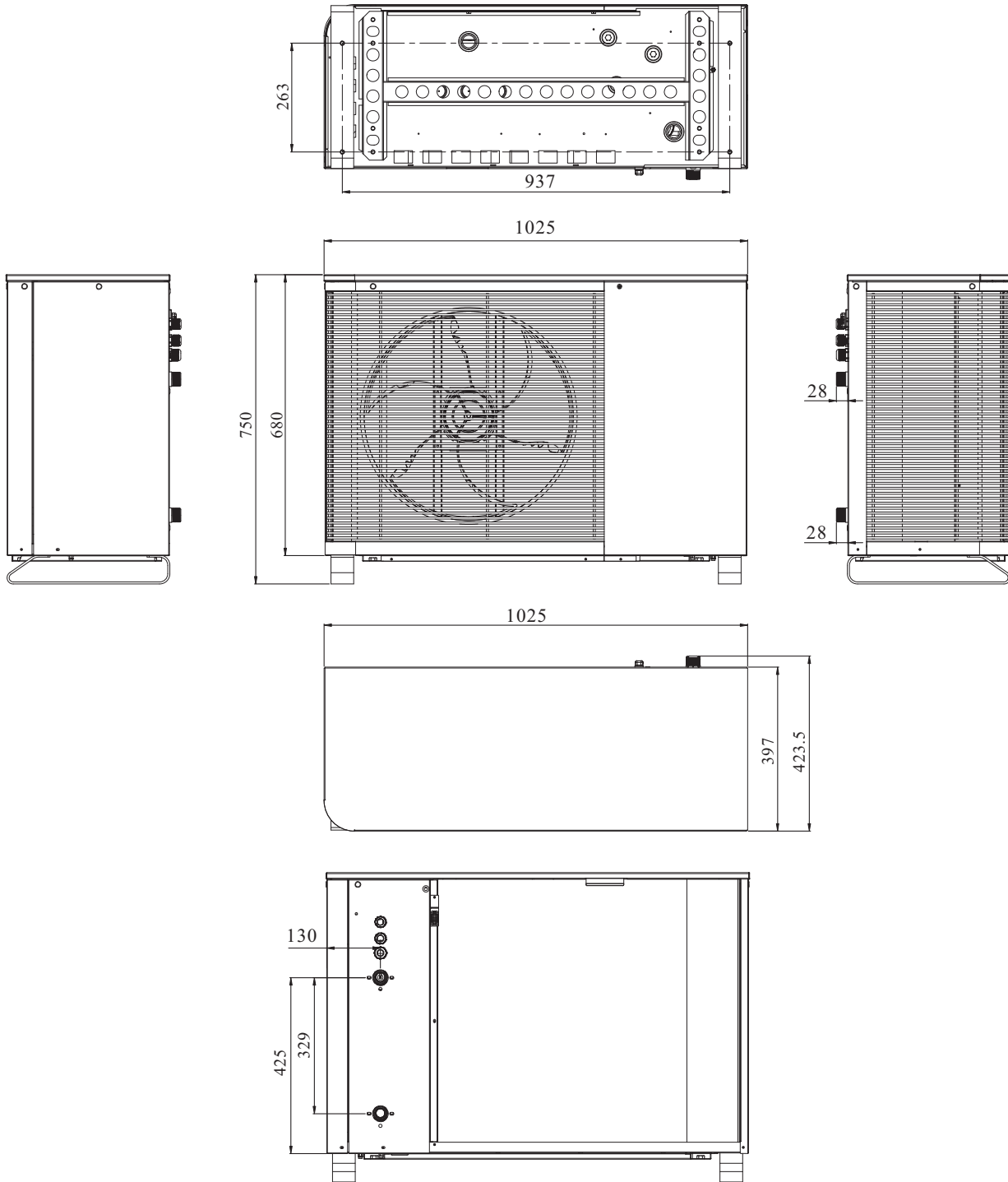
3. Overview of the Units

3.2.Outlines and Dimensions

Unit:mm

Monoblock outdoor unit

AW6-R32-M-V8



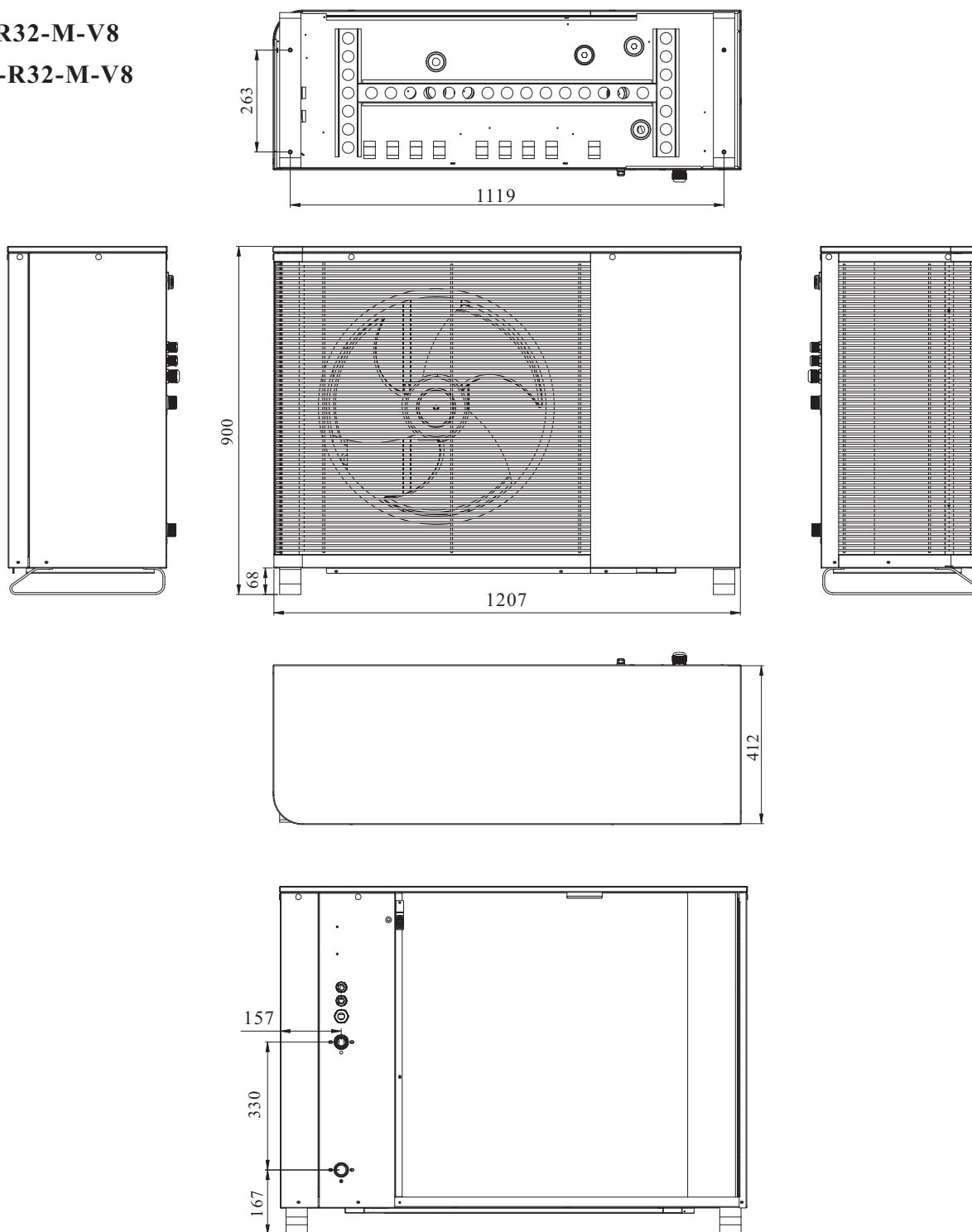
3. Overview of the Units

3.2. Outlines and Dimensions

Unit:mm

Monoblock outdoor unit

AW9-R32-M-V8
AW12-R32-M-V8



3. Overview of the Units

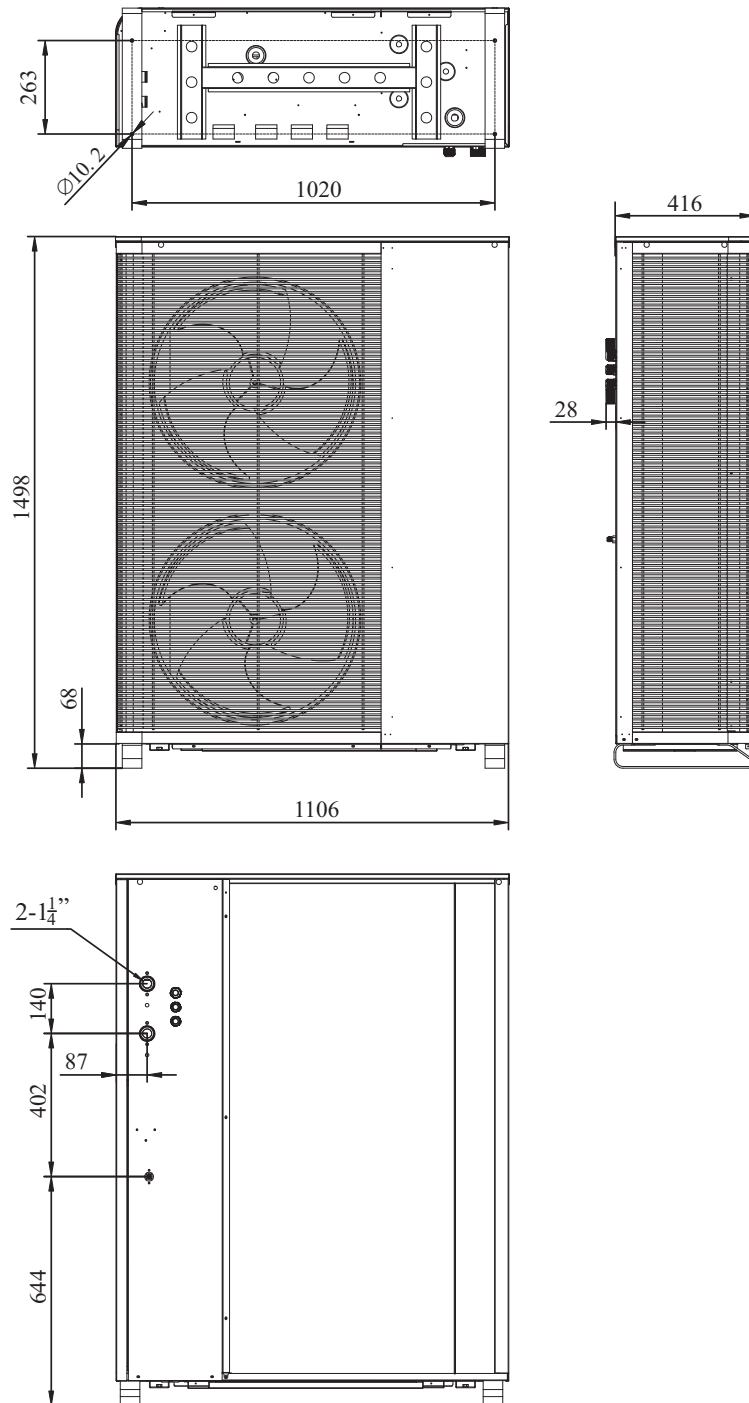
3.2.Outlines and Dimensions

Unit:mm

Monoblock outdoor unit

AW15-R32-M-V8

AW19-R32-M-V8

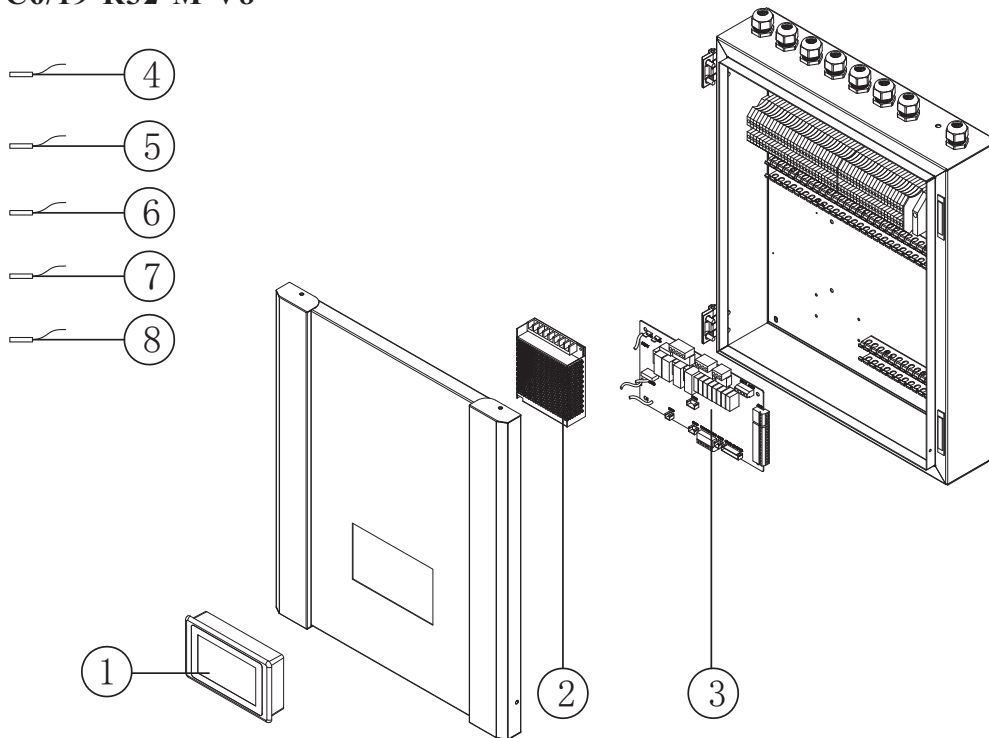


3. Overview of the Units

3.3. Exploded view

Monoblock indoor unit

AWC6/19-R32-M-V8



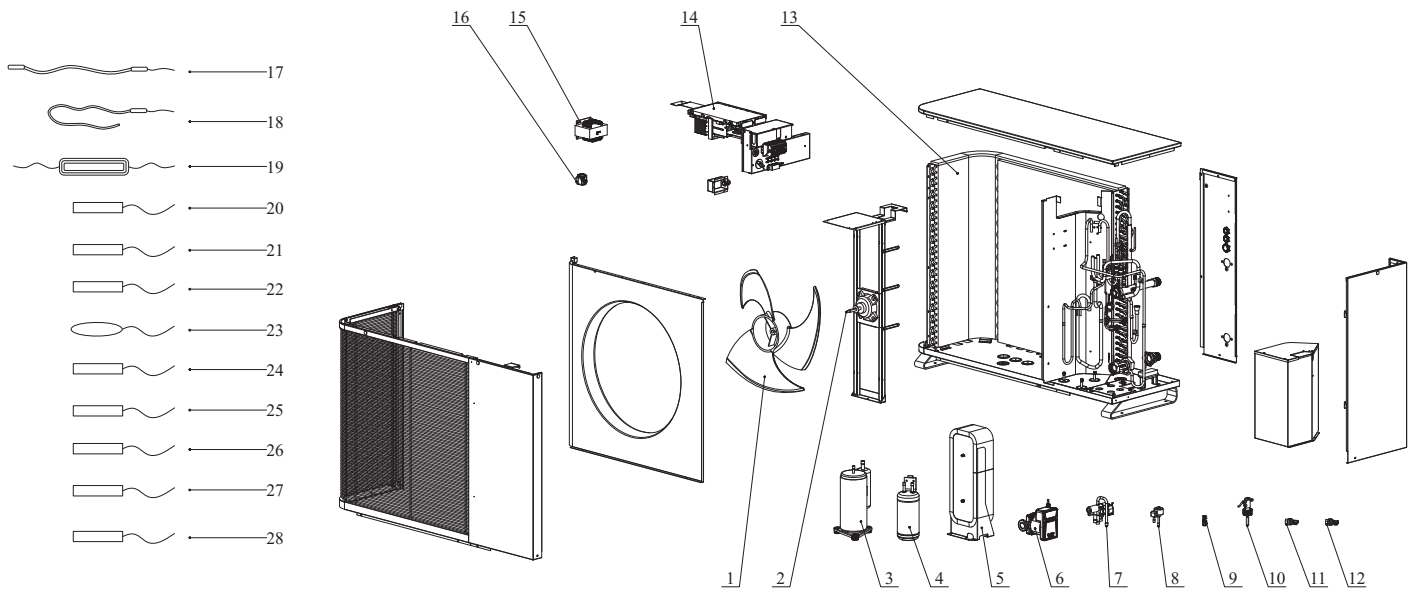
NO	Name
1	Touch screen operation panel
2	Power switch
3	Indoor PCB
4	DHW TEMP. SENSOR
5	HEATING/COOLING TEMP. SENSOR
6	MIXING CIRCUIT 1 TEMP. SENSOR
7	MIXING CIRCUIT 2 TEMP. SENSOR
8	ROOM TEMP. SENSOR

3. Overview of the Units

3.3. Exploded view

Monoblock outdoor unit

AW6/9/12-R32-M-V8

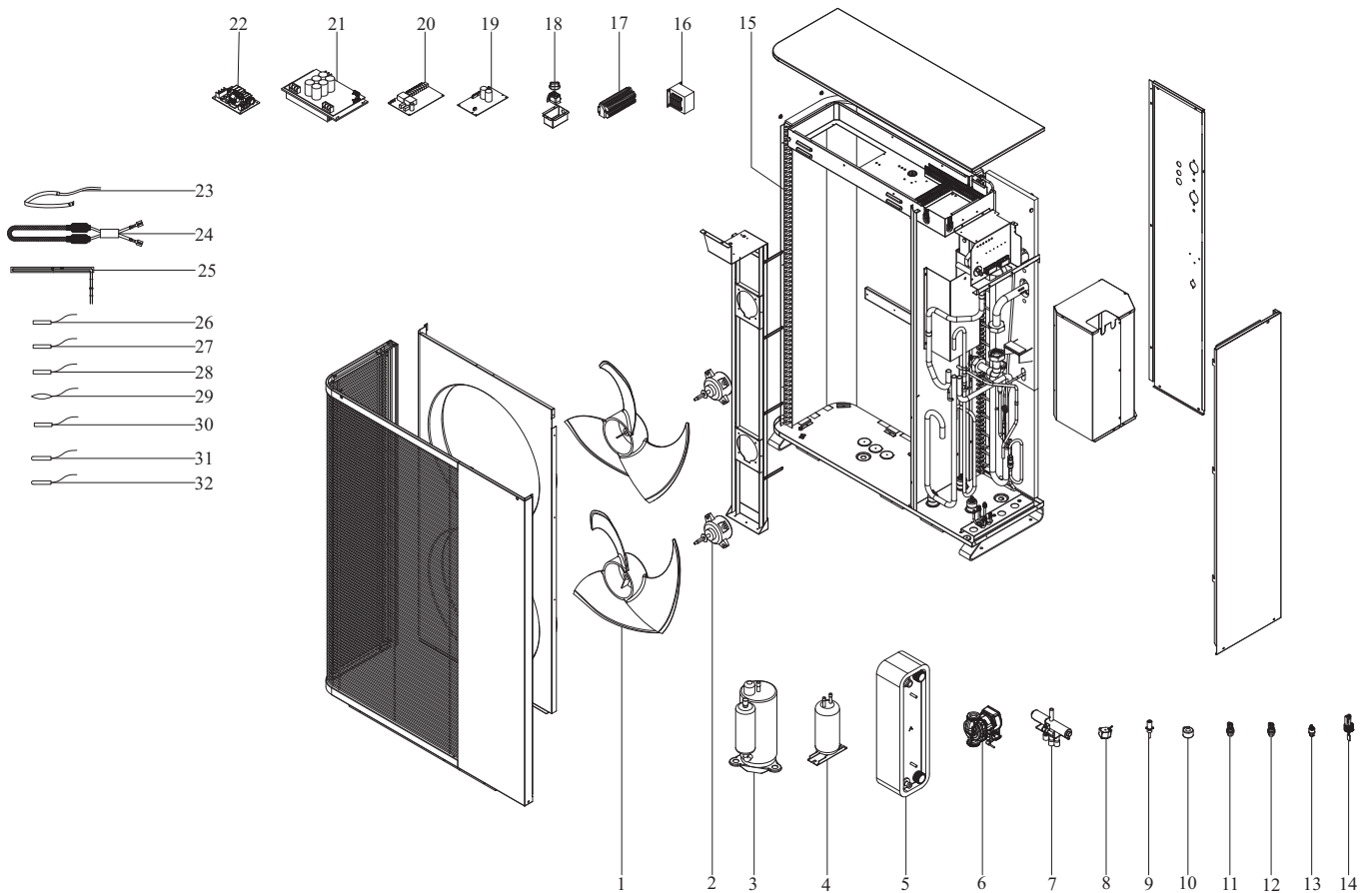


NO	Name	NO	Name
1	Fan	12	Low pressor sensor
2	Fan motor	13	Evaporater
3	Compressor	14	Main PCB
4	Liquid receiver	15	Reactance
5	Plate heat exchanger	16	Thermostat
6	Water pump	17	Bottom plate heater
7	Four-way valve	18	Compressor heater
	Four-way valve coil	19	Electric heater for plate heat exchanger
8	EEV	20	Discharge temp. sensor
	EEV coil	21-23	Suction/Coil/Ambient temp. sensor
9	Air purging valve	24-26	Water inlet/outlet temp. sensor for plate heat exchanger
10	Water flow switch	27-28	Water inlet/outlet temp. sensor
11	High pressor sensor		

3. Overview of the Units

3.3. Exploded view

Monoblock outdoor unit AW15/19-R32-M-V8



NO	Name	NO	Name	NO	Name
1	Fan	12	High pressure sensor	23	Comprssor crankcase heater
2	Fan motor	13	High pressure switch	24	Bottom plate heater
3	Compressor	14	Water flow switch	25	Heater for plate heat exchanger
4	Gas storage tank	15	Evaporator coil	26	Discharge temp. sensor
5	Plate heat exchanger	16	Reactance	27	Suction temp. sensor
6	Water pump	17	Terminal board	28	Evaporating coil temp. sensor
7	4-way valve	18	Thermostat of PHE anti-free heater	29	Ambient temp. sensor
8	Coil of 4-way valve	19	Fan Control board	30	Water inlet temp. sensor
9	EEV	20	Main contoroller PCB	31	Water outlet temp. sensor
10	Coil of EEV	21	Drive PCB	32	Condensing coil temp. sensor
11	Low pressure sensor	22	Filter PCB		

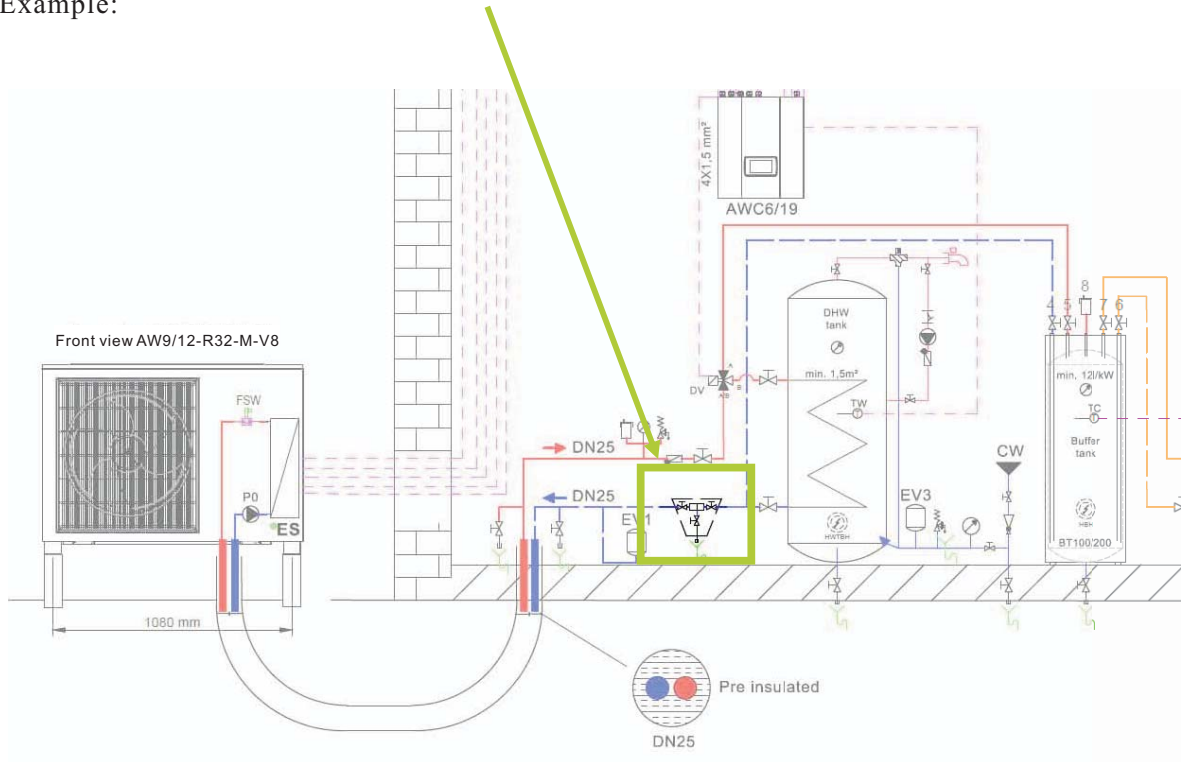
4. Installation

4.1. Indoor and outdoor unit installation

Filter for hydraulic system

On the return line of the system a dirt separator and a magnetic filter must be installed.

Example:



Piping distance Indoor-Outdoor

ES heat pump model	Piping dimintions	Buffer tank in system	Number of elbows	Max piping distance
AW6-R32-M-V8	DN25 / DN32	Yes	6	20m/30m
AWC6/19R32-M-V8				
AWST6/15-R32-M-V8	DN25 / DN32	No	6	10m/15m
AW9-R32-M-V8	DN25 / DN32	Yes	6	20m/30m
AWC6/19R32-M-V8				
AWST6/15-R32-M-V8	DN25 / DN32	No	6	10m/15m
AW12-R32-M-V8	DN25 / DN32	Yes	6	20m/30m
AWC6/19R32-M-V8				
AWST6/15-R32-M-V8	DN25 / DN32	No	6	10m/15m
AW15-R32-M-V8	DN32 / DN40	Yes	6	20m/30m
AWC6/19R32-M-V8				
AWST6/15-R32-M-V8	DN32 / DN40	No	6	10m/15m
AW19-R32-M-V8	DN32 / DN40	Yes	6	20m/30m
AWC6/19R32-M-V8				
AWST6/15-R32-M-V8	DN32 / DN40	No	6	10m/15m

4. Installation

4.2 Buffer tank

NOTE

Hydraulic schemes provided by the ES distributor or ES personnel contain official requirements for the installation of the ES heat pump into a hydraulic system. Those must be followed for a save working of the ES heat pumps. Main schemes are awalible on the official Energy Save web page <https://energysave.se/downloads/>.

Minimum volumen of the buffer tank is 12 Liter per kW of heating capacity. The calculation is based on the niminal heating capacity of the heat pump at A7/W35.

Required buffer tank sizes based on heat pump model

Model (outdoor unit)	Minimum buffer tank size
AW6-R32-M-V8	72Liter
AW9-R32-M-V8	108Liter
AW12-R32-M-V8	144Liter
AW15-R32-M-V8	180Liter
AW19-R32-M-V8	228Liter

Buffer tank is mandatory if:

System	Specification
Multiple zone regulation	If more then one heat distribution circuits are used.
Radiator system	If radiators are used as the heat distribution system.
Zone valve regulation	If any kind of shot-off valves are used on the heat distribution system. For example: electronic valves on the distribution system of the floor heating system are used, that can be regulated separately form the heat pump controls.
Fan Coils for heating or cooling	If Fan Coils are use for the heat distribution system.

4. Installation

4.3 DHW production specifications

If a DHW tank with coil is used for heating the sanitary water, the coil must have a minimum surface area to insure a normal working of the heat pump.

The coil must have a minimum surface area of 0,125 x nominal heating capacity of the heat pump at A7/W35.

Model (outdoor unit)	Min coil surface area
AW6-R32-M-V8	0.75m ²
AW9-R32-M-V8	1.13m ²
AW12-R32-M-V8	1.5m ²
AW15-R32-M-V8	1.88m ²
AW19-R32-M-V8	2.38m ²

5. Assembly Configurations - Flowchart

Locate the Configuration that Meets Your Needs

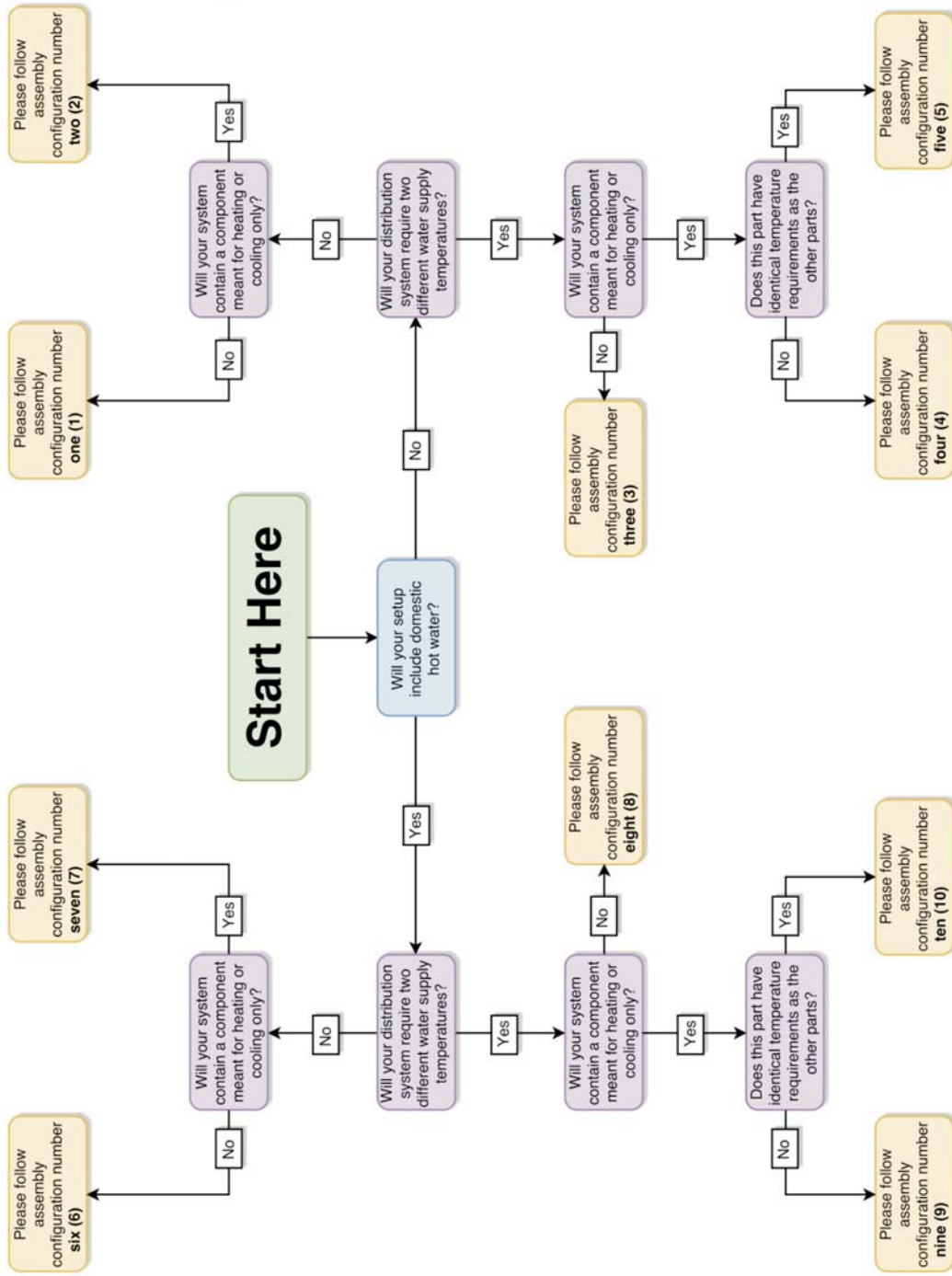
Follow the flowchart on the right in order to locate which of the assembly configuration matches the needs of the end user, each of which contains specific assembly and wiring diagrams, with software instructions.

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

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

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

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



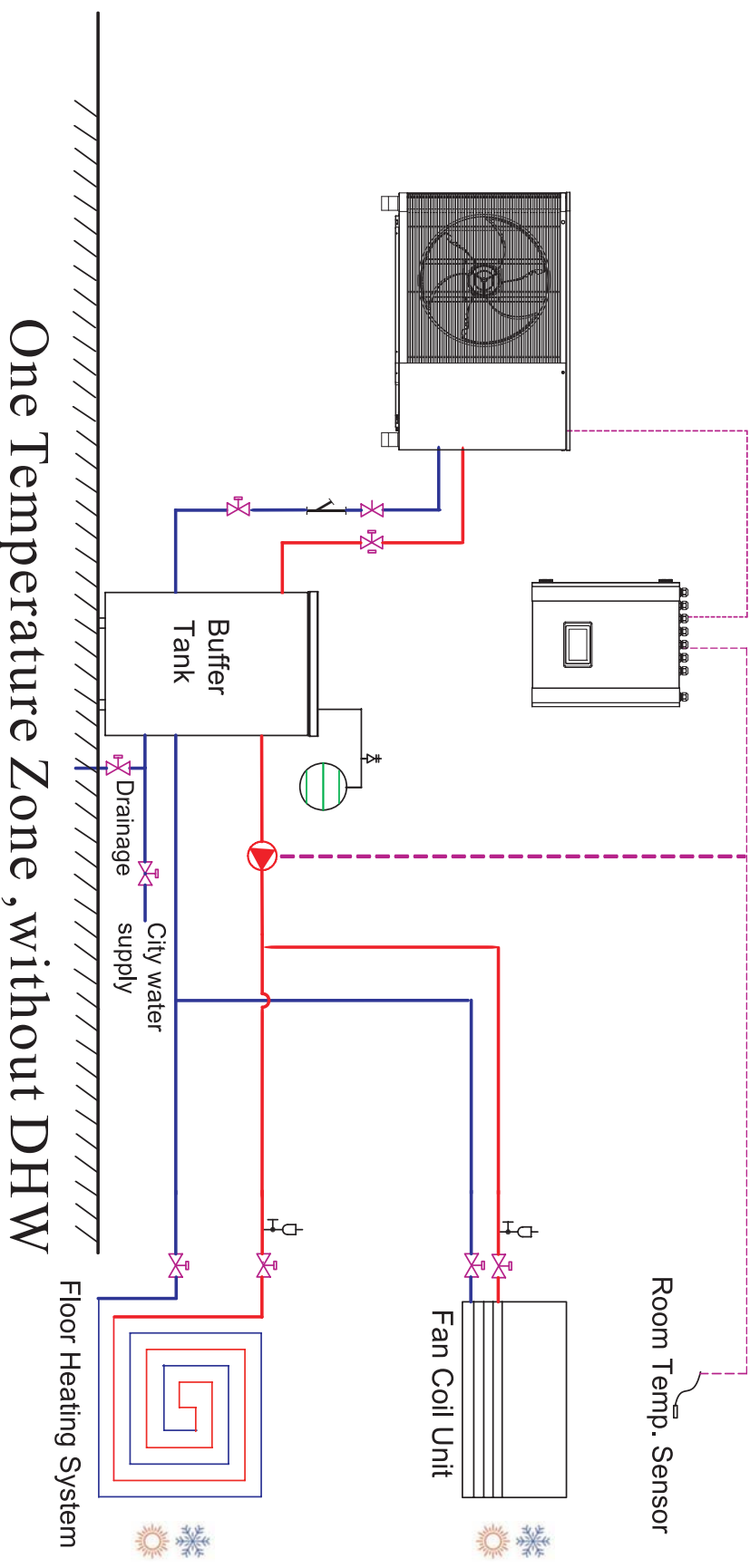
5. Assembly Configurations – Drawing 1

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			

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.

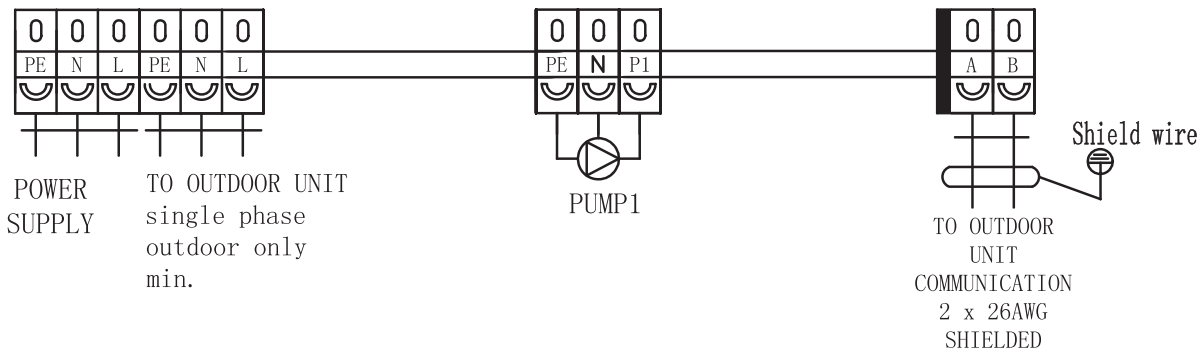


One Temperature Zone, without DHW

5. 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



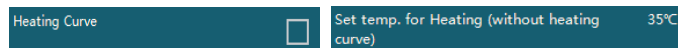
H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:

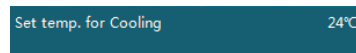


Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

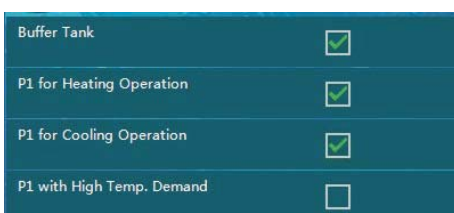
H.2. If no heating curve is desired:



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



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



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

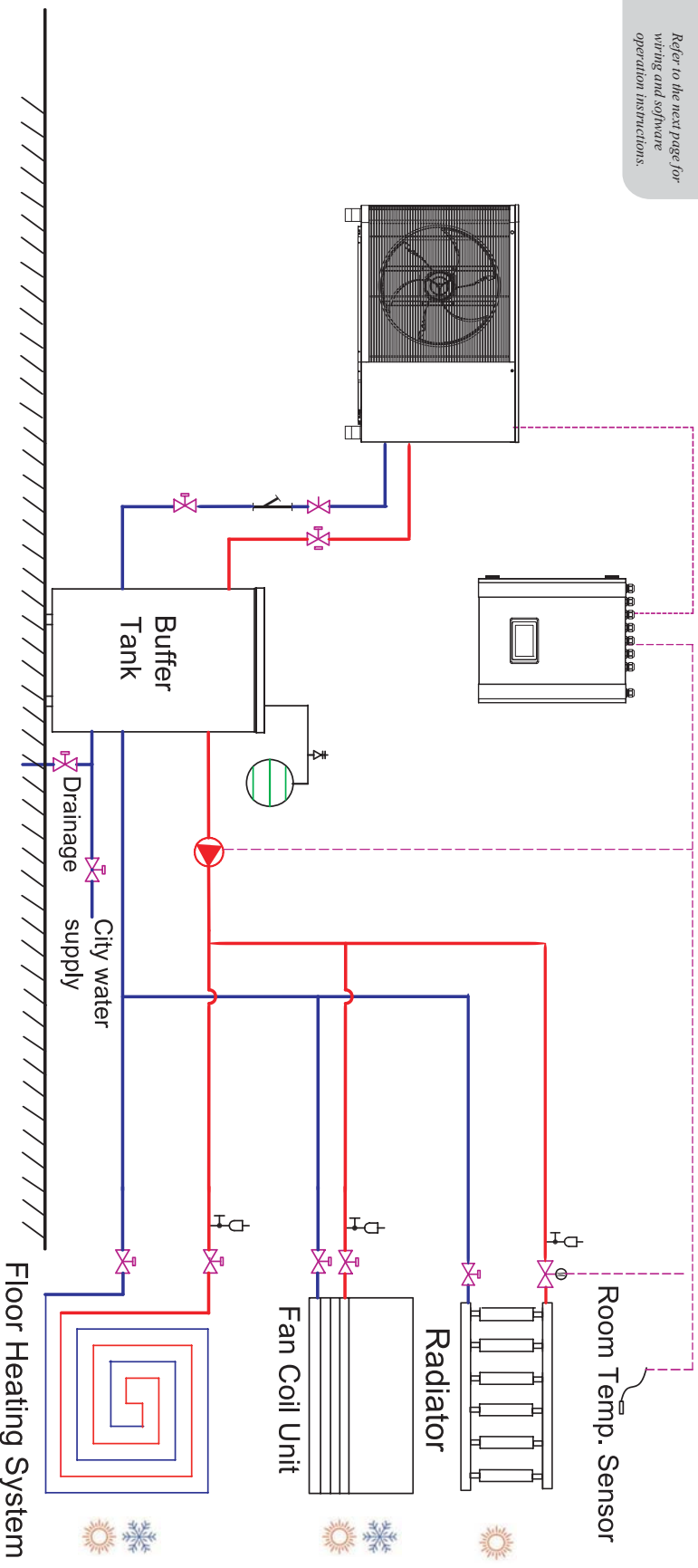
5. Assembly Configurations – Drawing 2

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".	



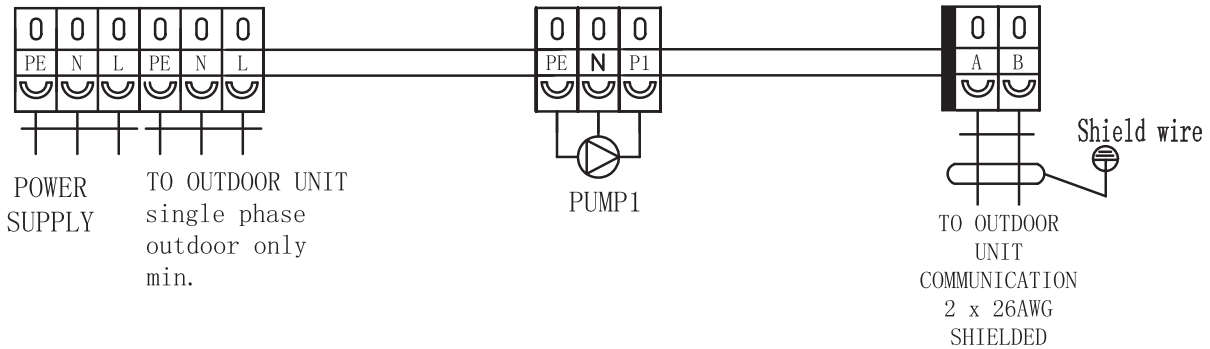
One Temperature Zone, without DHW, with a heating-only (or cooling-only) circuit, by usage of a motorized 2-way valve

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.

5. 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



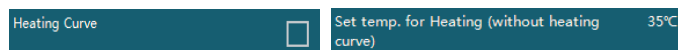
H. Configuring the set water heating temperatures:

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:

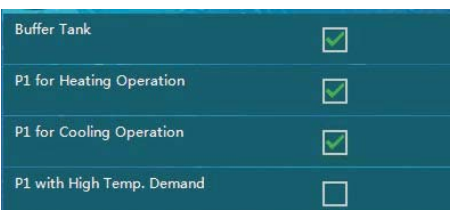


C. Configuring the set water cooling temperature (if applicable):



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

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



5. Assembly Configurations – Drawing 2

Software: Basic Settings (continued)

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



5. Assembly Configurations – Drawing 3

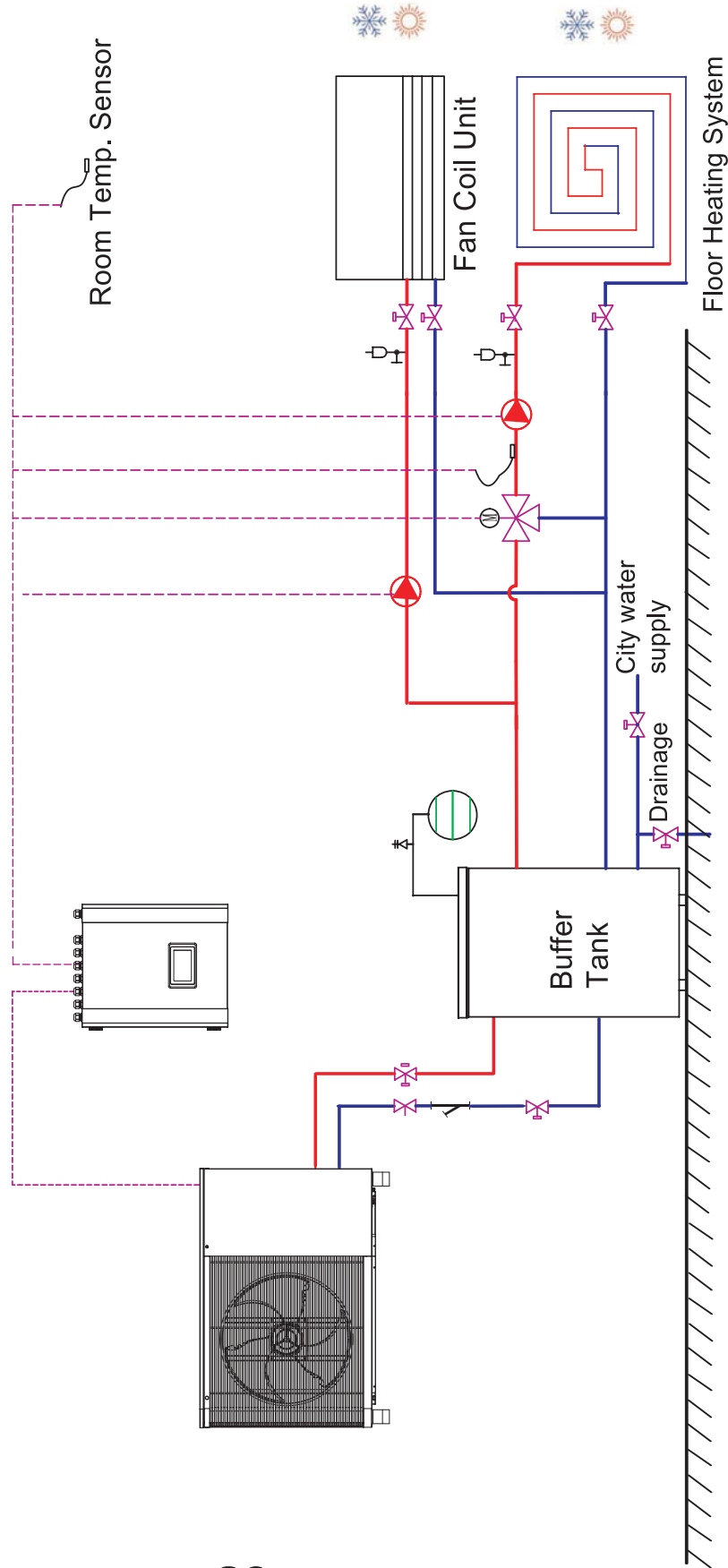
Notice: The Fan Coil Unit, Floor Heating System, and Radiator are placeholder distribution systems only and can be substituted by any other appropriate distribution systems.

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.

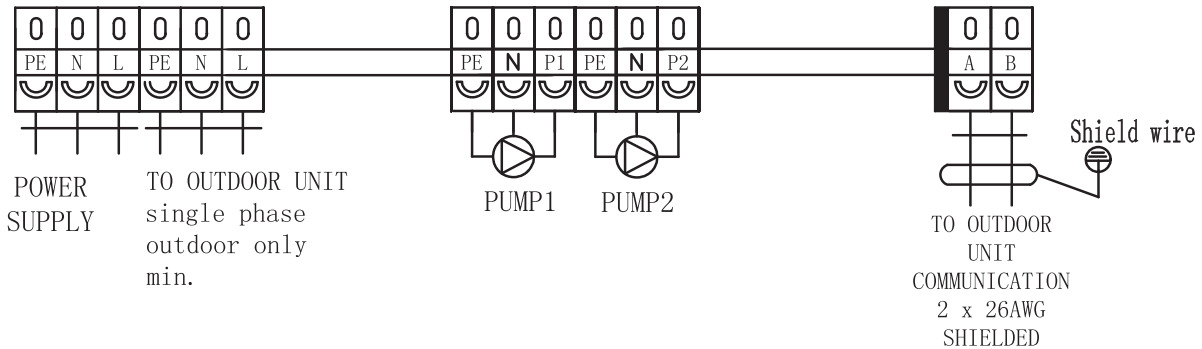


Two Temperature Zones , without DHW

5. Assembly Configurations – Drawing 3

Assembly 3: Wiring Diagram

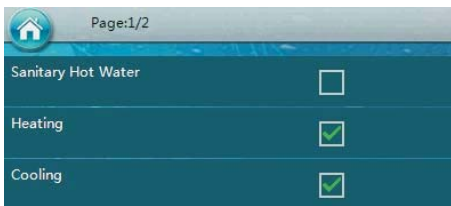
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2, please refer to the appendix A (on page 88-89) 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

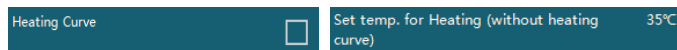
H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:

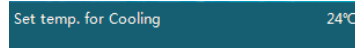


Ambient Temp. 1	-25°C	Water Temp. A / Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B / Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C / Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D / Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E / Ambient Temp. 5	25°C

H.2. If no heating curve is desired:



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



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



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

5. 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"/>
--------------	-------------------------------------

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

5. 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.

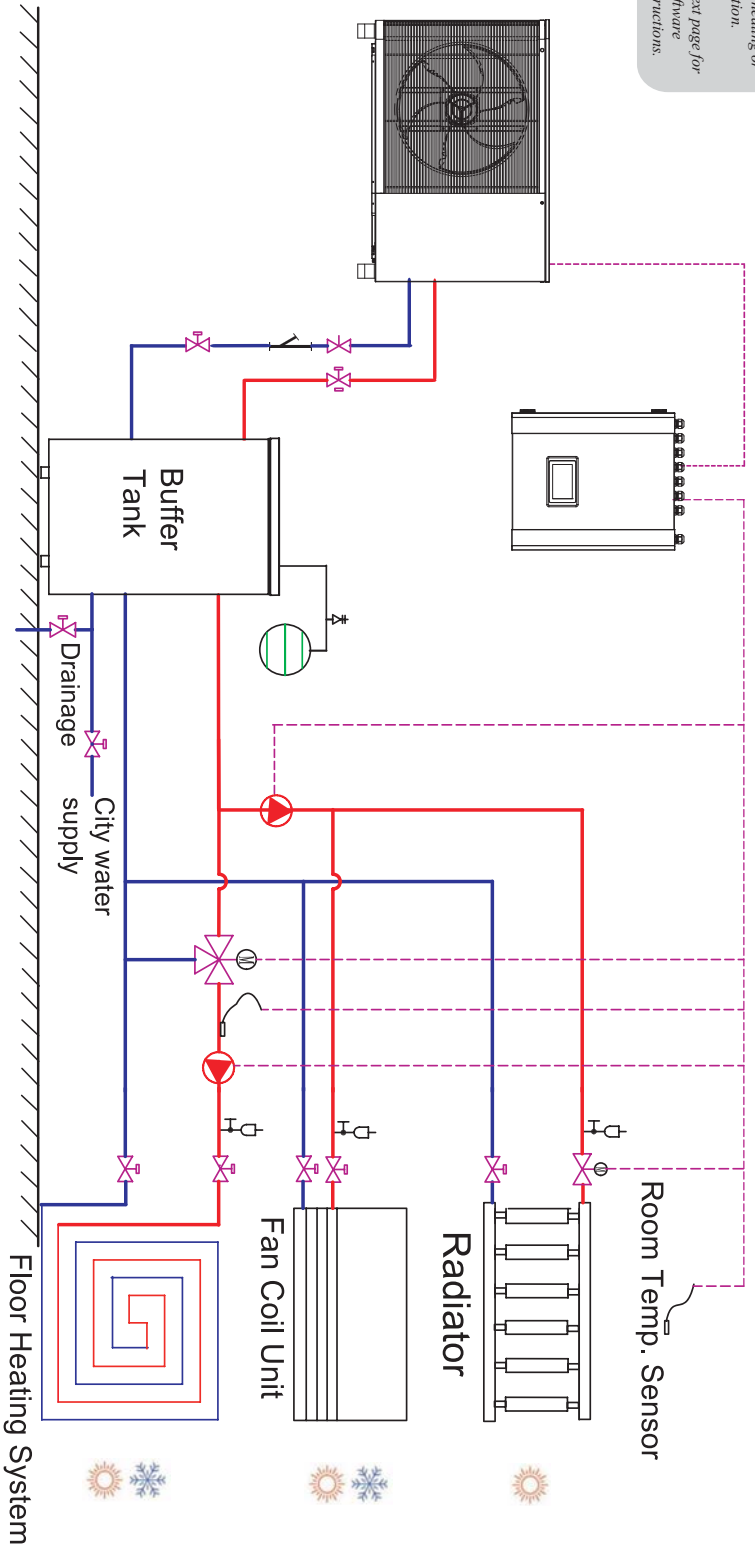
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

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.

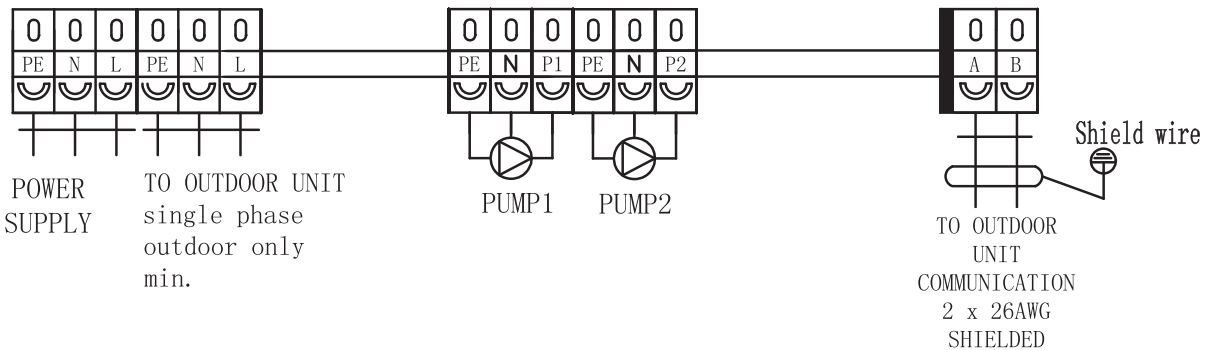


Two Temperature Zones , without DHW, with a heating-only (or cooling-only) circuit, by usage of a motorized 2-way valve

5. Assembly Configurations – Drawing 4

Assembly 4: Wiring Diagram

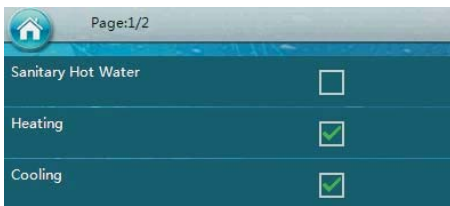
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2, please refer to the appendix A (on page 88-89) 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

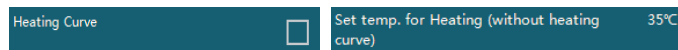
H. Configuring the set water heating temperatures:

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):



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

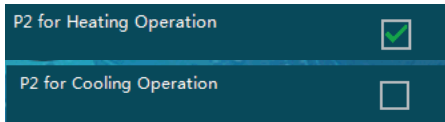


If cooling function is desired, ensure these sections are configured.

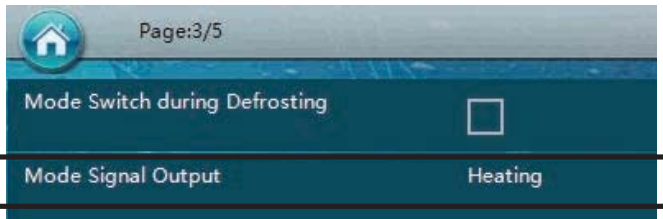
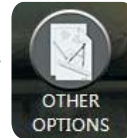
5. Assembly Configurations – Drawing 4

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:



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.

Dependent on whether cooling is needed

5. Assembly Configurations – Drawing 5

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

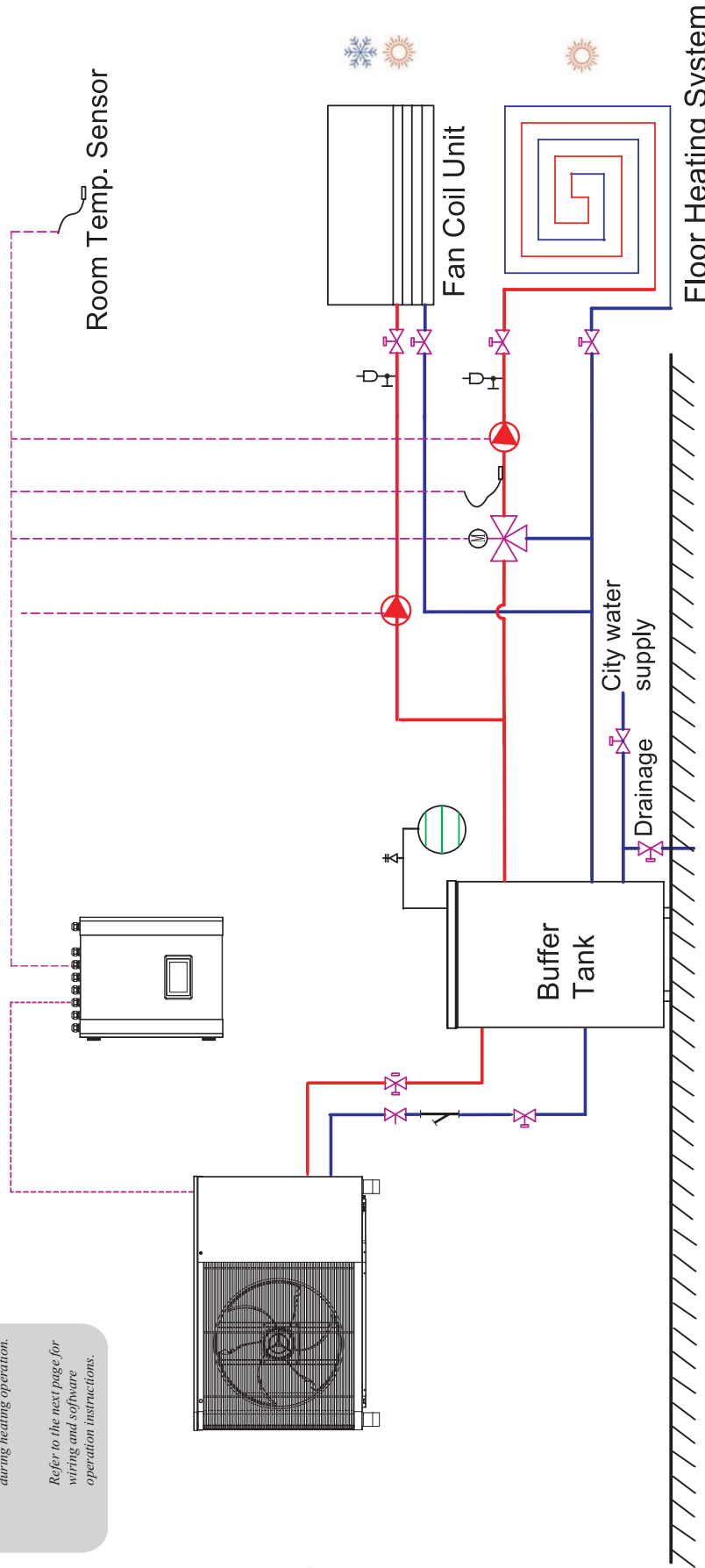
Note: For the heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating operation.

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

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

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

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

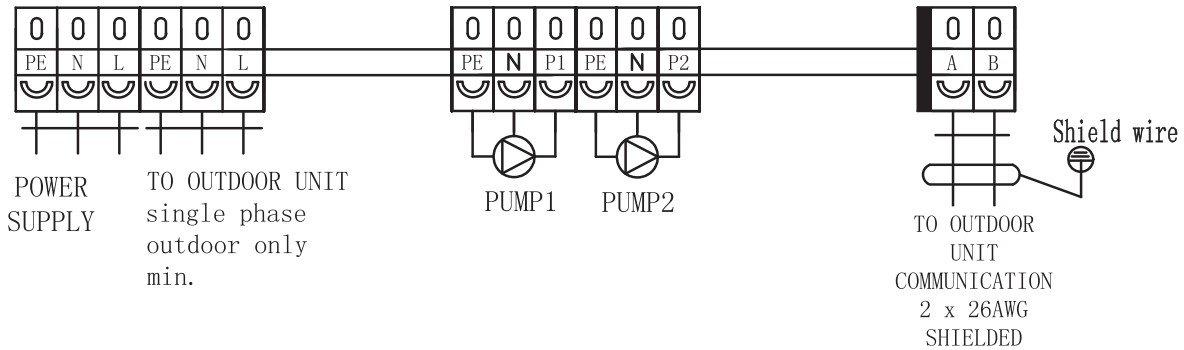


Two Temperature Zones , without DHW, with a heating-only circuit, enabled by setting the secondary pump to heating-only

5. 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 refer to the appendix A (on page 88-89) 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

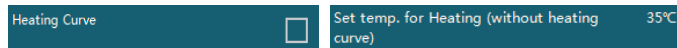
H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:

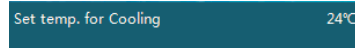


Ambient Temp. 1	-25°C	Water Temp. A / Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B / Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C / Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D / Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E / Ambient Temp. 5	25°C

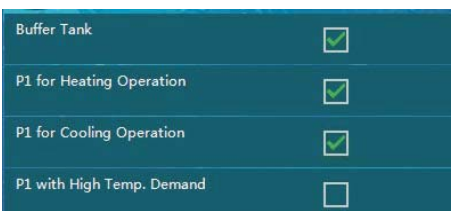
H.2. If no heating curve is desired:



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



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



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

5. 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.

5. Assembly Configurations – Drawing 6

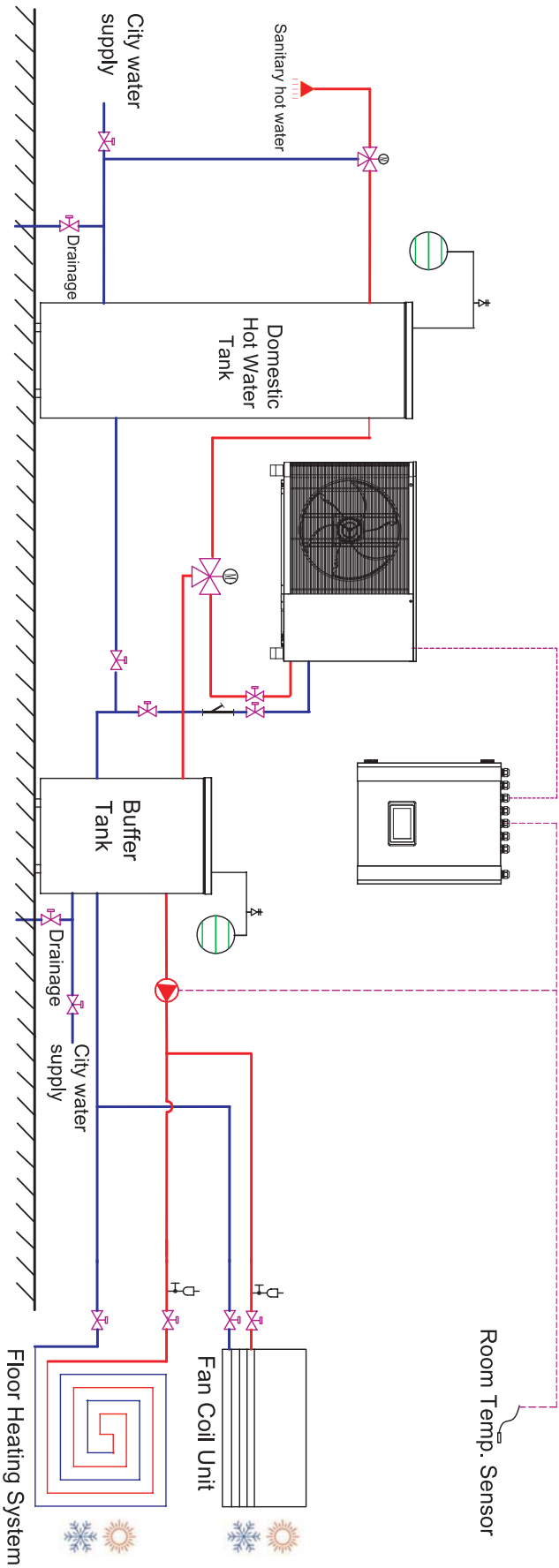
Please ensure that the configuration matches the assembly drawing depicted on the right for a one temperature zone domestic hot water.

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

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

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

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

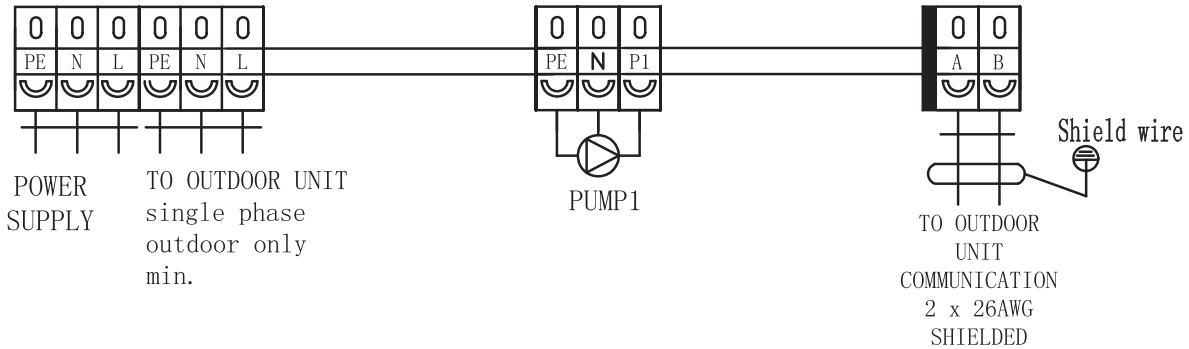


One Temperature Zone, with DHW

5. Assembly Configurations – Drawing 6

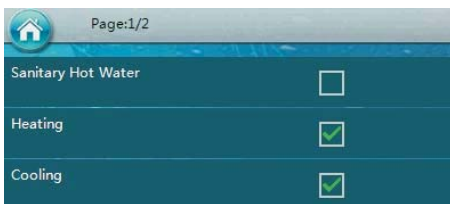
Assembly 6: Wiring Diagram

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



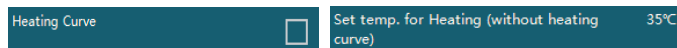
H. Configuring the set water heating temperatures:

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

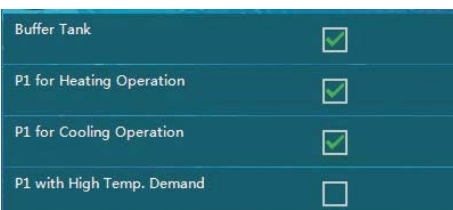
H.2. If no heating curve is desired:



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



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

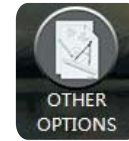


If cooling function is desired, ensure these sections are configured.

5. Assembly Configurations – Drawing 6

Software: Basic Settings (continued)

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



Sanitary hot water



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

Setpoint DHW

50°C

5. 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.

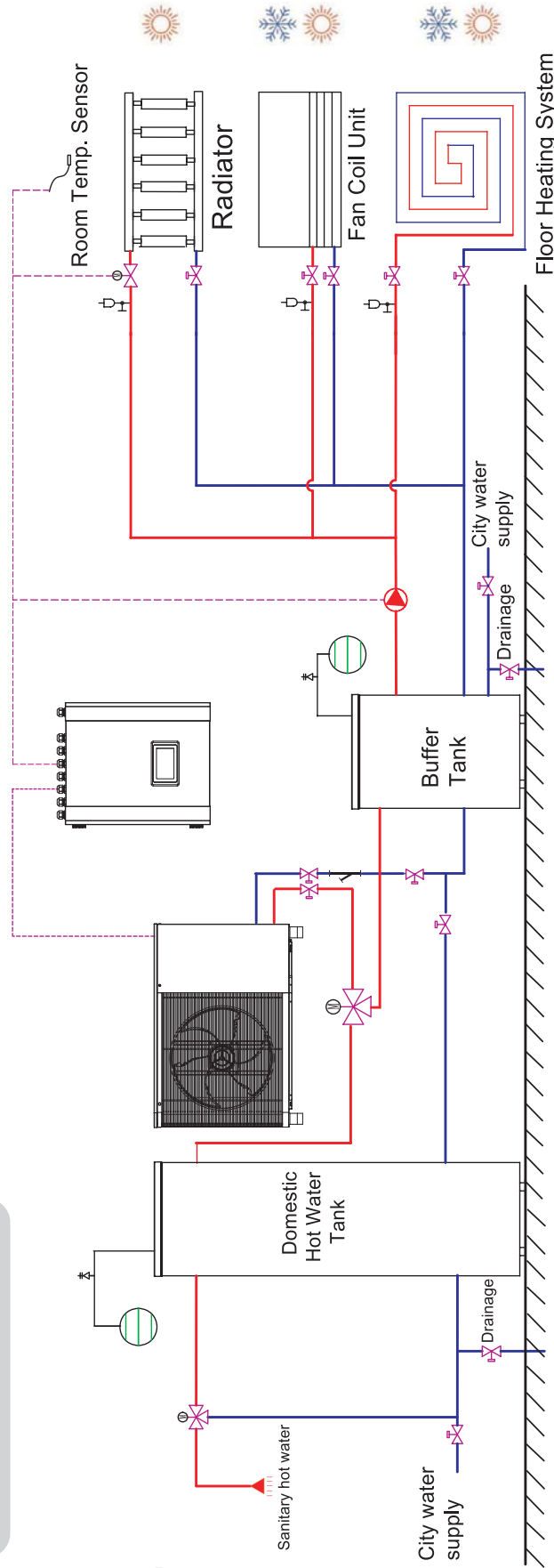
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

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".

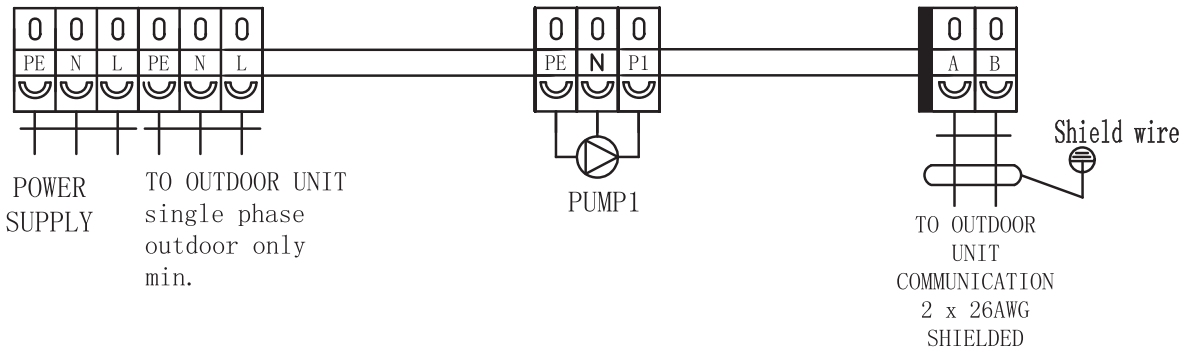


One Temperature Zone, with DHW, with a heating-only (or cooling-only) circuit, by usage of a motorized 2-way valve

5. 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



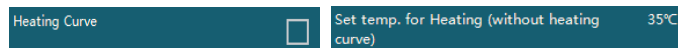
H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:

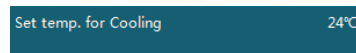


Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

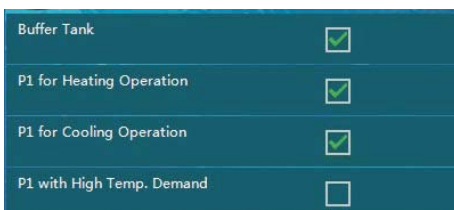
H.2. If no heating curve is desired:



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



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

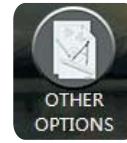


If cooling function is desired, ensure these sections are configured.

5. 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):



5. Assembly Configurations – Drawing 8

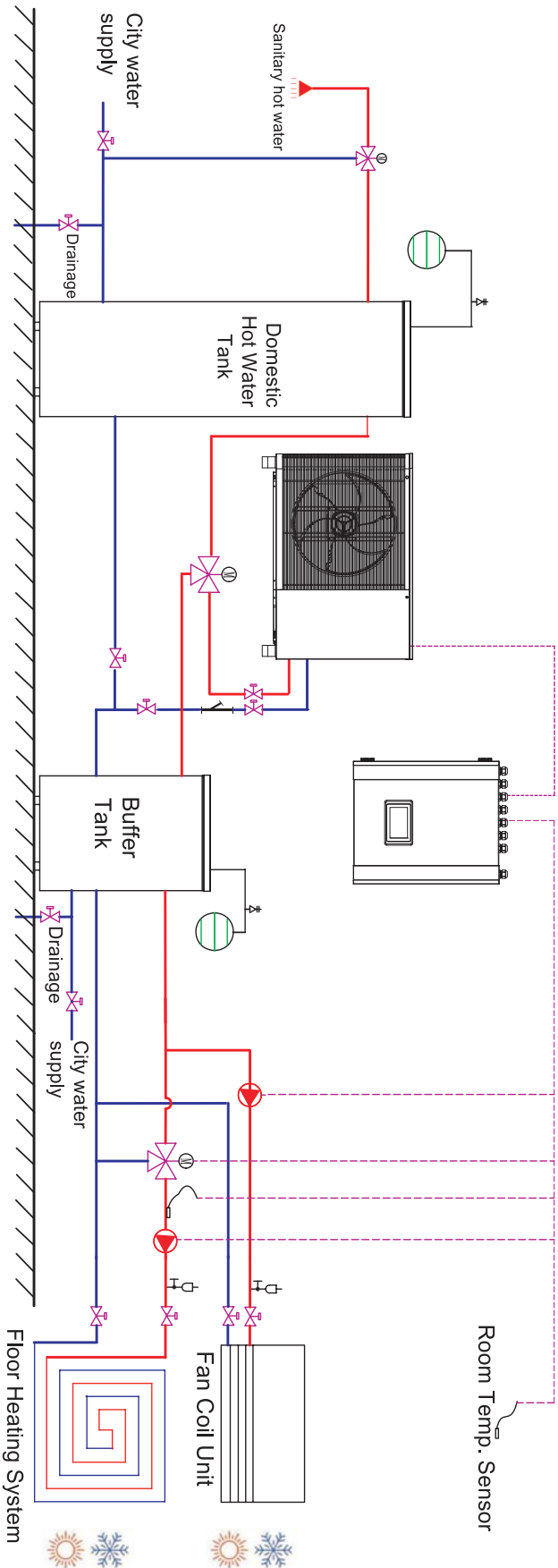
Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone setup that includes domestic hot water.

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.

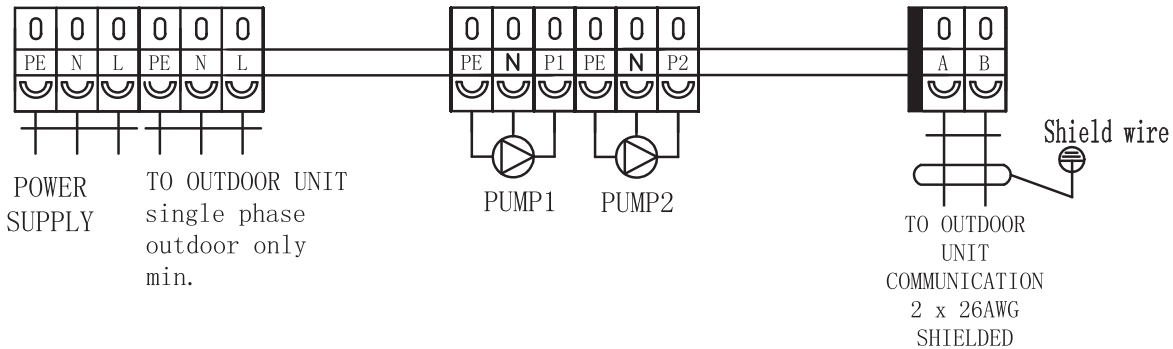


Two Temperature Zone, with DHW

5. 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 88-89) 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



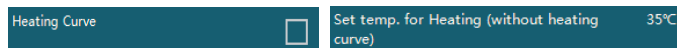
H. Configuring the set water heating temperatures:

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):



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



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

5. 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

Dependent on whether cooling is needed

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

Set temp. For Cooling 24°C

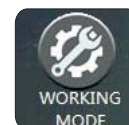
4.1. Activate the mixing valve to manage the second circuit:

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.

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

5. 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.

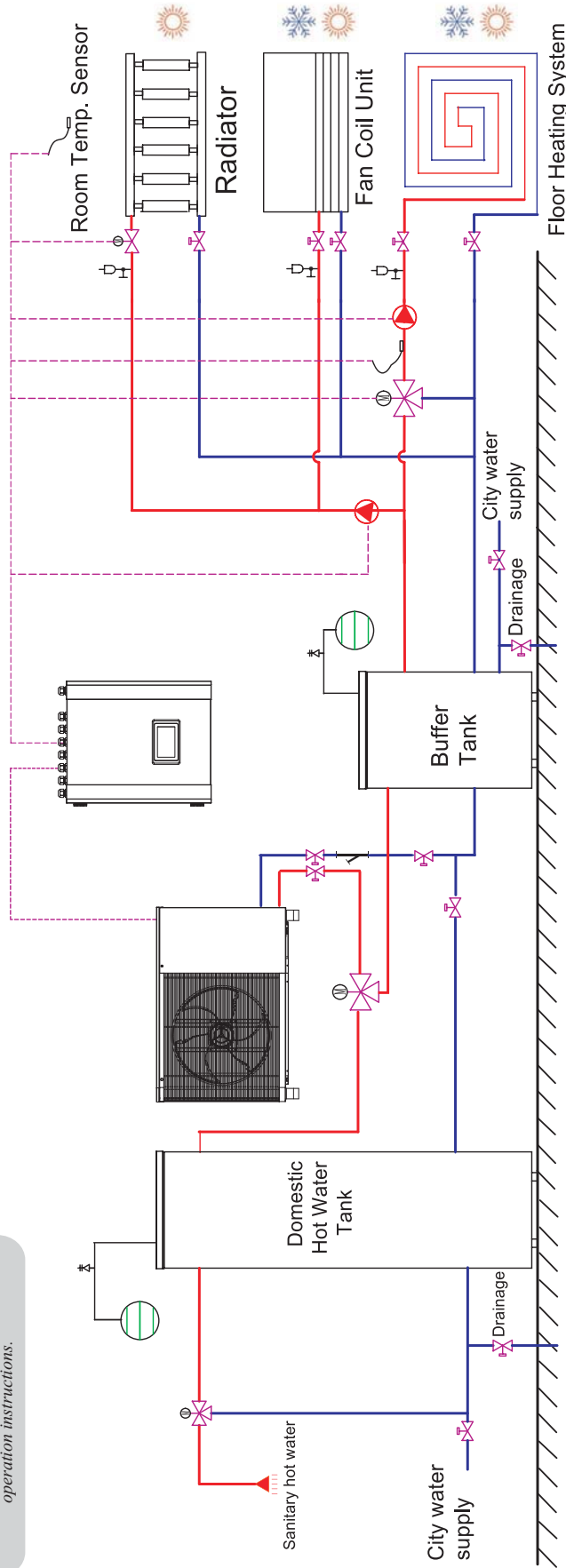
Note: For the cooling-only or heating-only circuit, a motorized two-way valve can be connected to the unit, to cut the water supply during heating or cooling operation.

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			

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.

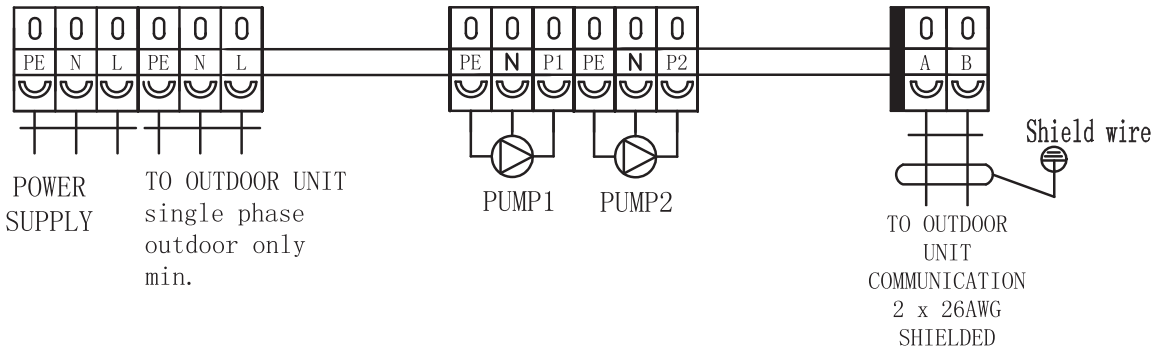


Two Temperature Zones , without DHW, with a heating-only (or cooling-only) circuit, by usage of a motorized 2-way valve

5. 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 the appendix A (on page 88-89) 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

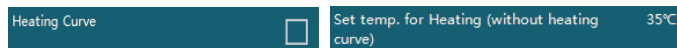
H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:

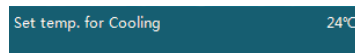


Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

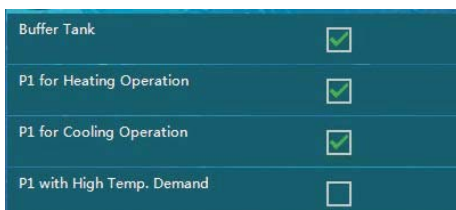
H.2. If no heating curve is desired:



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



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

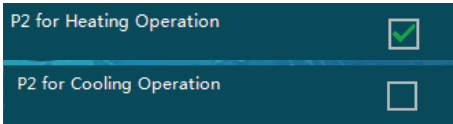


If cooling function is desired, ensure these sections are configured.

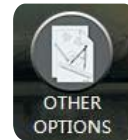
5. Assembly Configurations – Drawing 9

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

5. Assembly Configurations – Drawing 10

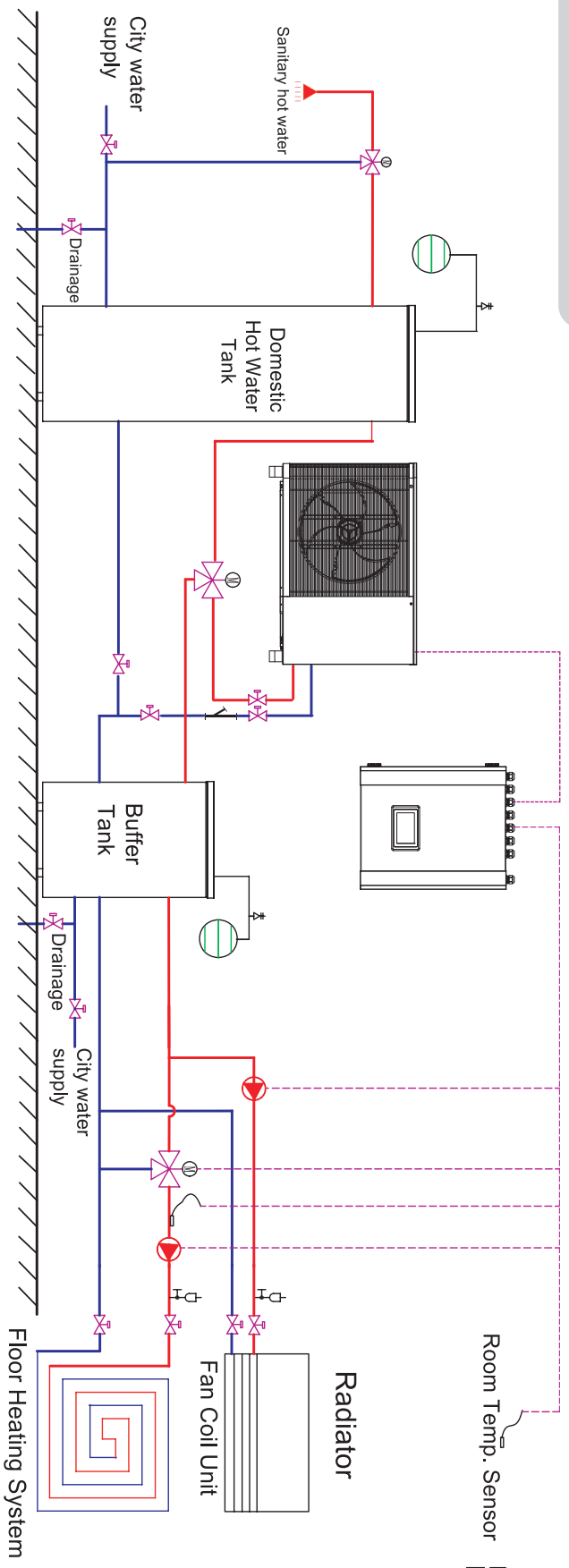
Please ensure that the configuration matches the assembly drawing depicted on the right for a two temperature zone setup that includes domestic hot water, also that utilizes the secondary pump for a heating-only operation.

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 wiring and software operation instructions.

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

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

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

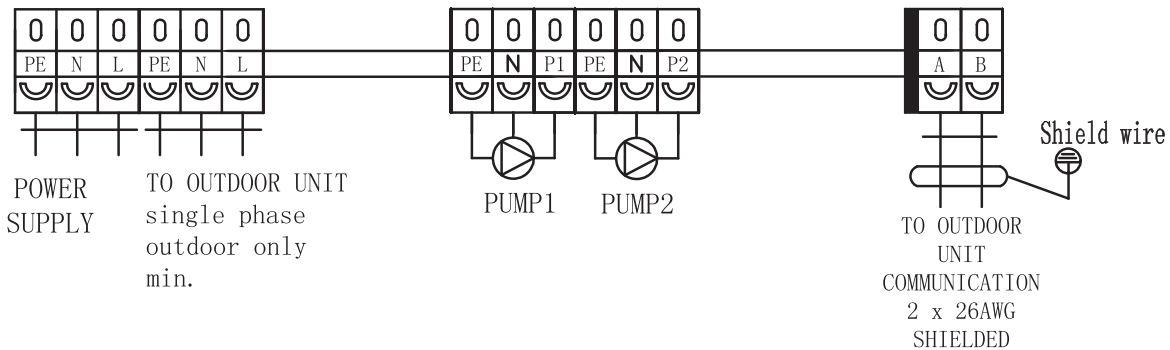


Two Temperature Zones , without DHW, with a heating-only circuit, by setting the secondary pump to heating-only

5. Assembly Configurations – Drawing 10

Assembly 10: Wiring Diagram

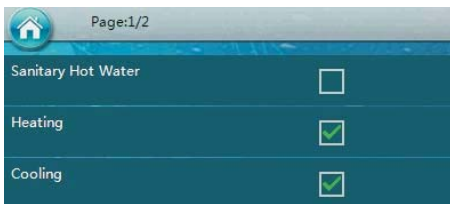
To achieve successful operation at a minimum, ensure the ports below are properly connected.



For connection for mixing valve 2, please refer to the appendix A (on page 88-89) 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



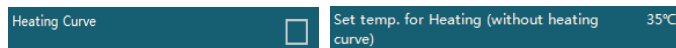
H. Configuring the set water heating temperatures:

H.1. Setting a heating curve:

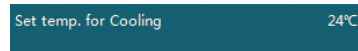


Ambient Temp. 1	-25°C	Water Temp. A/Ambient Temp. 1	40°C
Ambient Temp. 2	-15°C	Water Temp. B/Ambient Temp. 2	37°C
Ambient Temp. 3	-5°C	Water Temp. C/Ambient Temp. 3	33°C
Ambient Temp. 4	5°C	Water Temp. D/Ambient Temp. 4	29°C
Ambient Temp. 5	10°C	Water Temp. E/Ambient Temp. 5	25°C

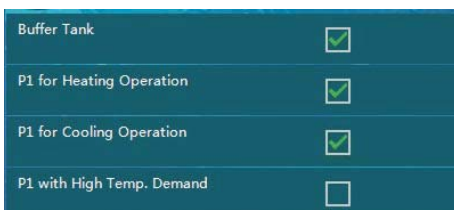
H.2. If no heating curve is desired:



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



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

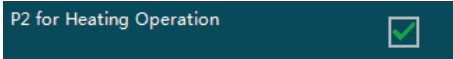


If cooling function is desired, ensure these sections are configured.

5. 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



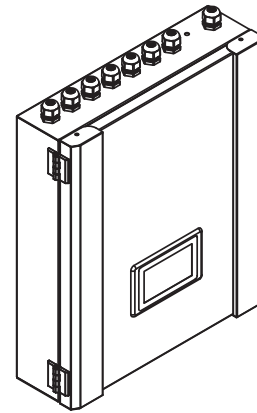
6. Configure the desired setpoint for water temperature (default set to 50°C):



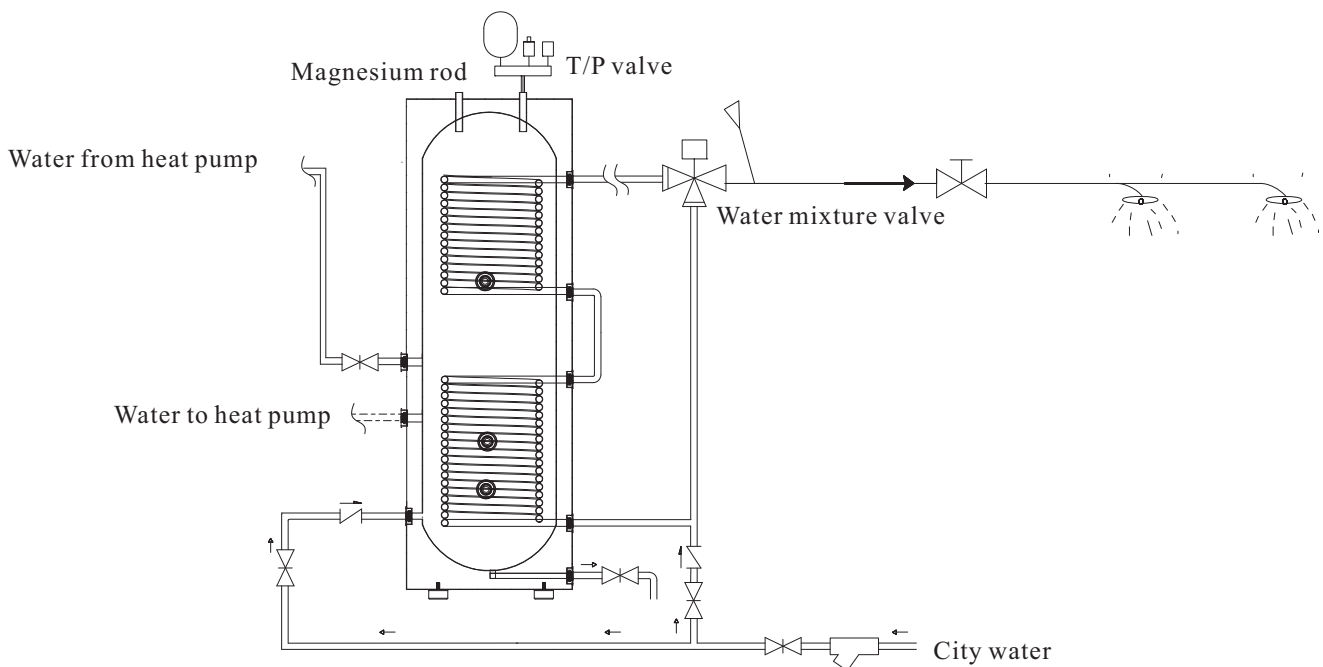
6. Installation Walkthrough

6.1. 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.



6.1.1. Configuration 1



In this configuration, hot water circulating through the heat pump circuit floods the tank. This submerses 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:

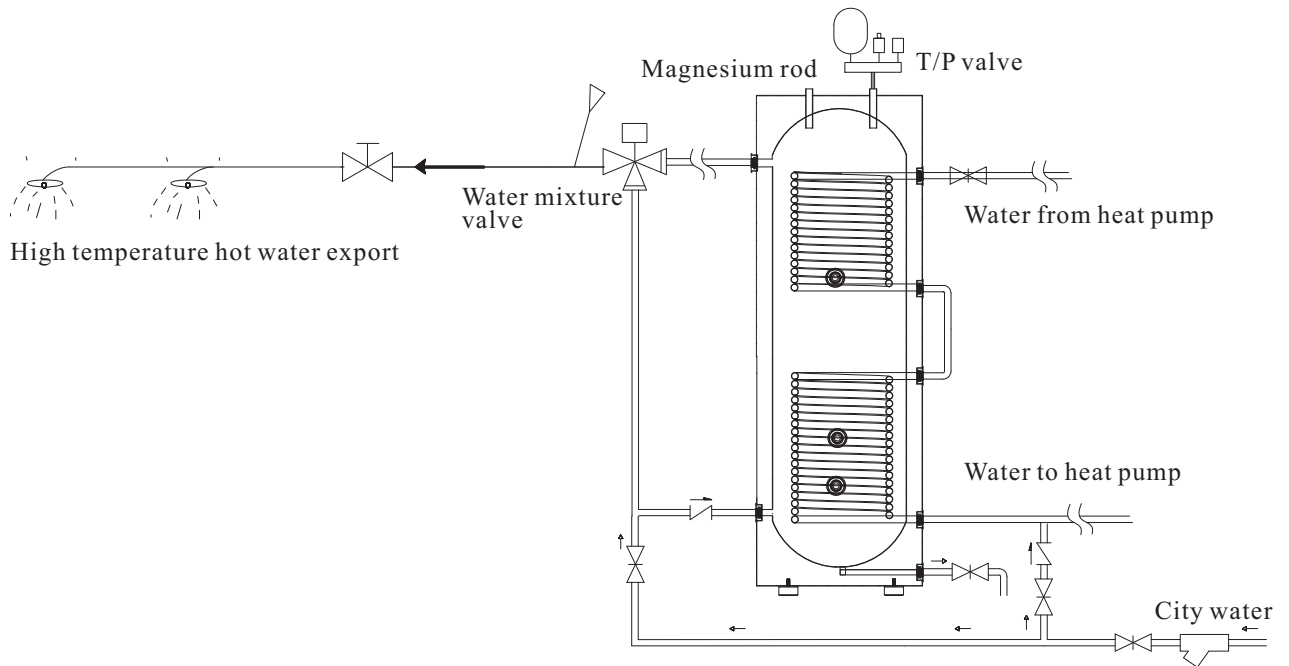
- Sanitization is not necessary, since the sanitary hot water is heated by going through the coils.
- Direct connection between heat pump and tank, ensuring effective water flow rates for it.
- Energy savings from not requiring sanitization.

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.

6. Installation Walkthrough

6.1. Sanitary Hot Water Configurations

6.1.2. 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)

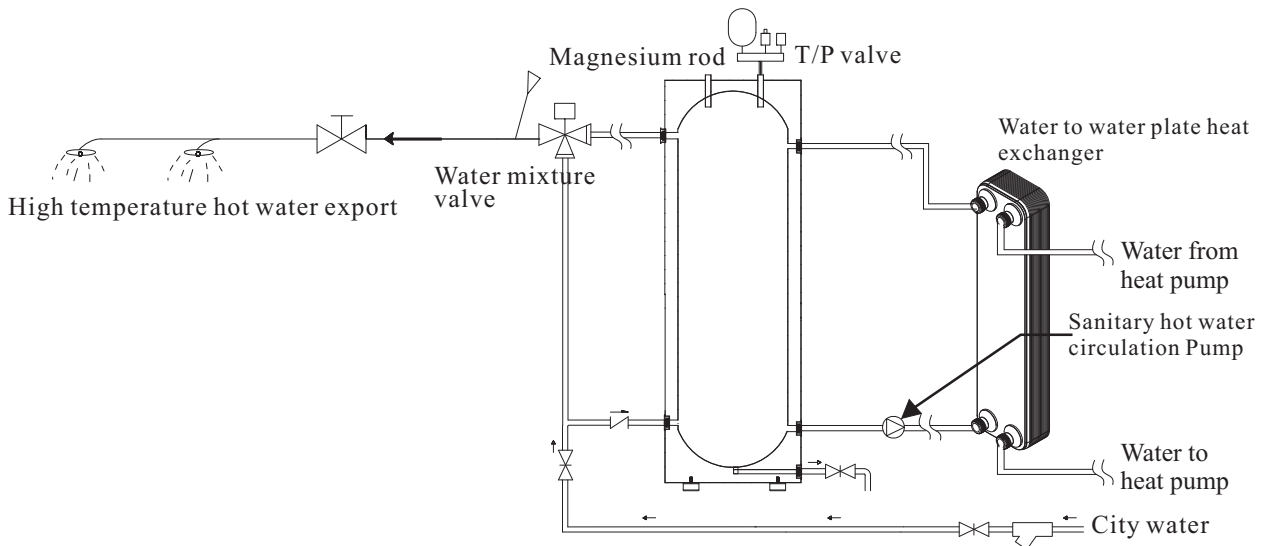
This configuration is optimal for a heat pump that does not exceed 14kW.

6. Installation Walkthrough

6.1. Sanitary Hot Water Configurations

6.1.3. Configuration 3

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

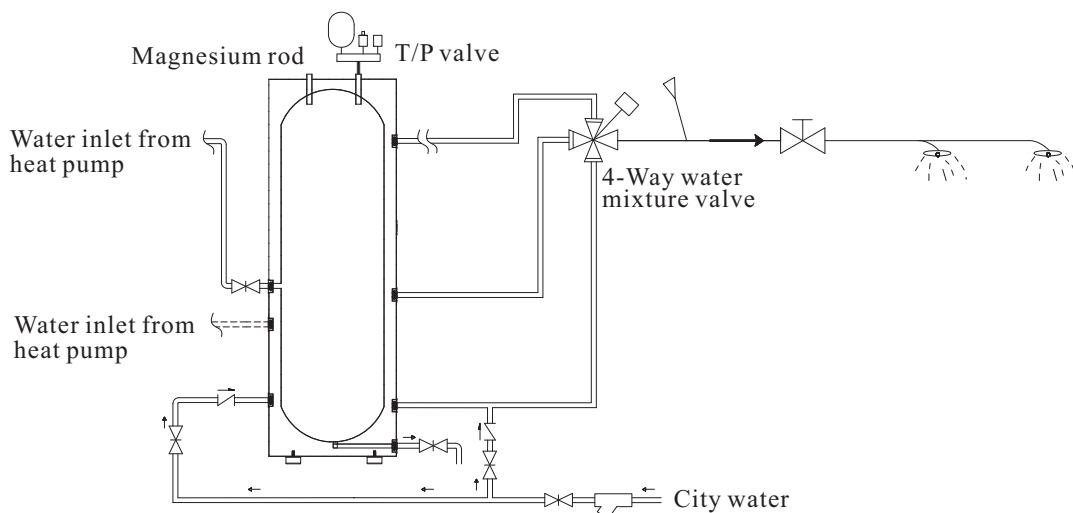


Note: The heat pump unit can control the sanitary hot water circulation pump by connecting it to port "P3".

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.



6. Installation Walkthrough

6.1. Sanitary Hot Water Configurations

6.1.4. 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/kW 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.

6. Installation Walkthrough

6.2. 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.

6.2.1. 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"/>



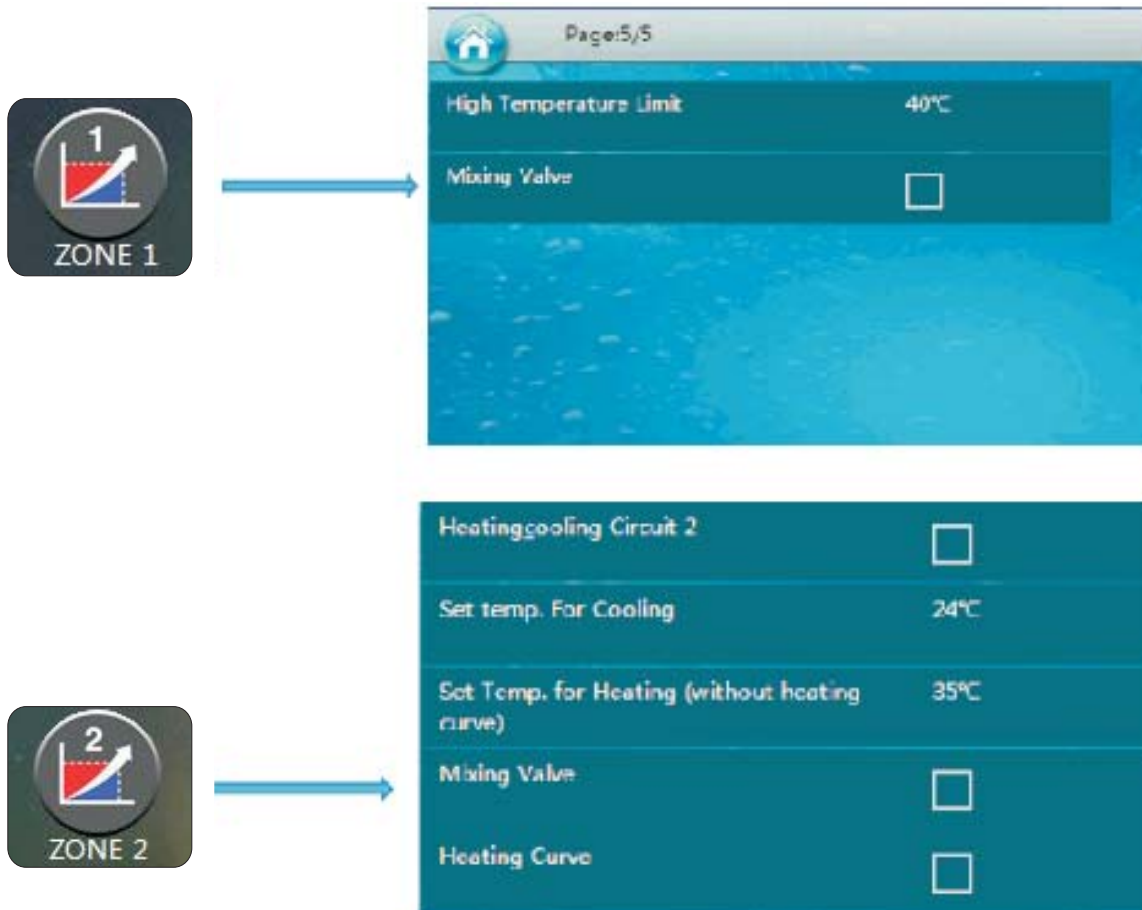
Heating/Cooling Circuit 2	<input type="checkbox"/>
Set temp. For Cooling	24°C
Set Temp. for Heating (without heating curve)	35°C
Mixing Valve	<input type="checkbox"/>
Heating Curve	<input checked="" type="checkbox"/>

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.

6. Installation Walkthrough

6.2. Heating and Cooling Circuits

6.2.2. 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.

6. Installation Walkthrough

6.2. Heating and Cooling Circuits

6.2.3. 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.

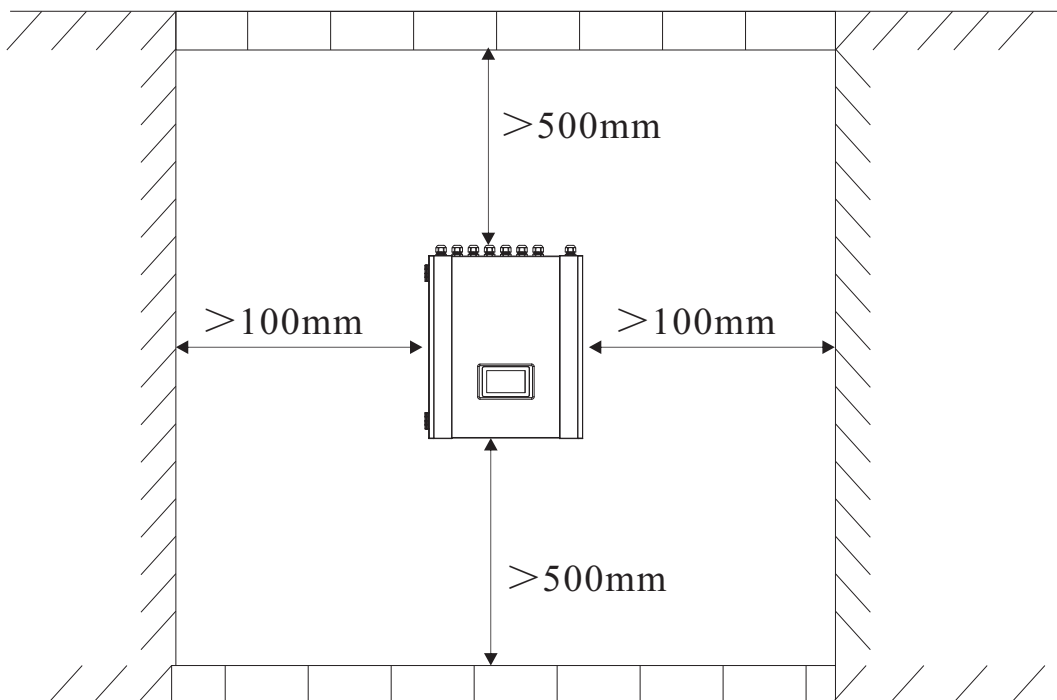
6. Installation Walkthrough

6.3. Indoor Unit Installation

6.3.1. 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:



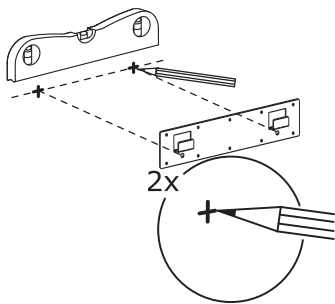
6. Installation Walkthrough

6.3. Indoor Unit Installation

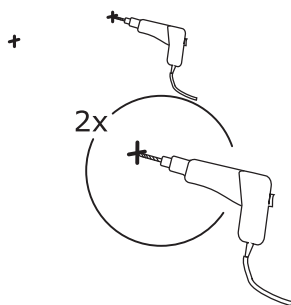
6.3.2. Installation Process

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.

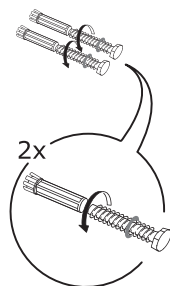
- 1) Take out the expansion bolts and mounting board accessory. Place the mounting board on the wall horizontally. Mark the bolting location onto the wall.



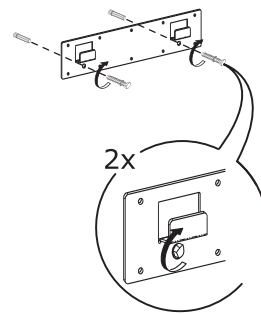
- 2) Drill holes with the proper diameter for the bolts to catch through.



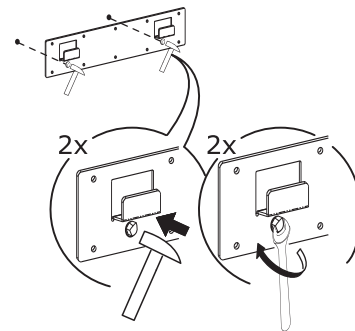
- 3) Unscrew the nuts from the expansion bolts.



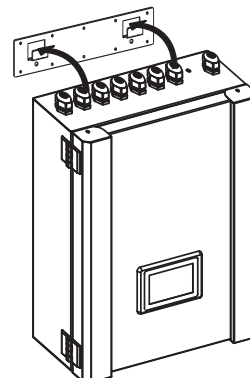
- 4) Loosely fix the mounting board onto the expansion bolts. Do not tighten yet.



- 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.

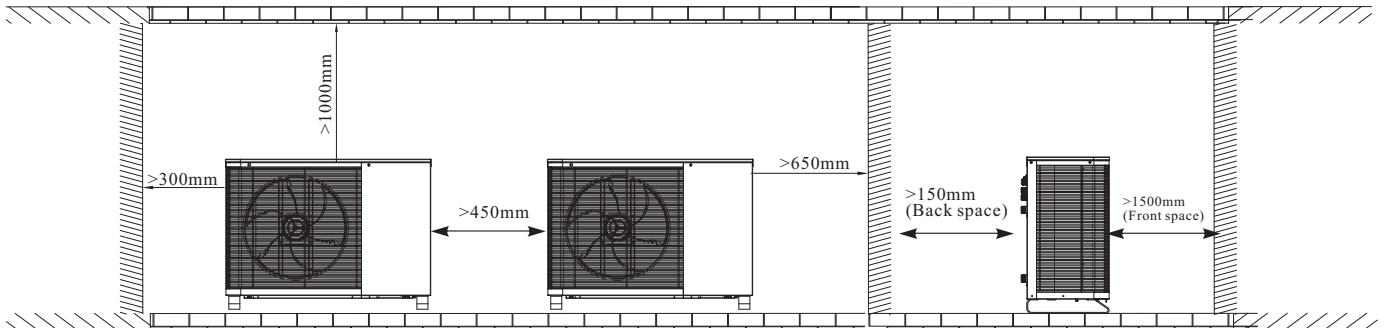


6. Installation Walkthrough

6.4. Outdoor Unit Installation

6.4.1. Choosing an installation location

- 1) The outdoor unit can be installed in an open space, 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 1cm/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:



6. Installation Walkthrough

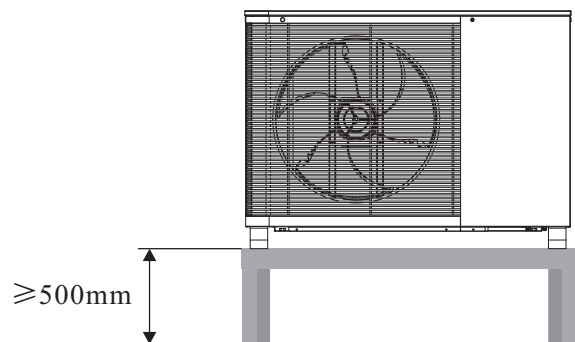
6.4. Outdoor Unit Installation

6.4.2. Installation Process

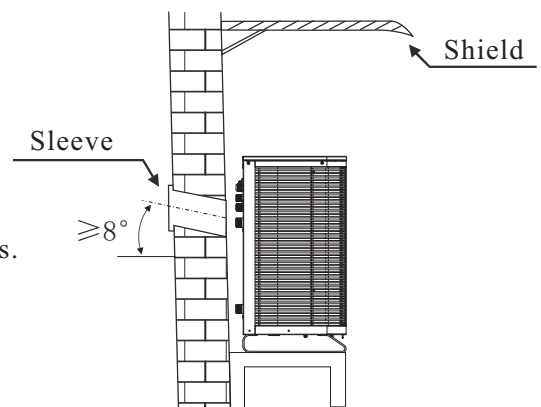
For the installation, users can either use the dedicated mounting bracket provided by the supplier, or prepare a suitable bracket that meets the following requirements.

- 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.



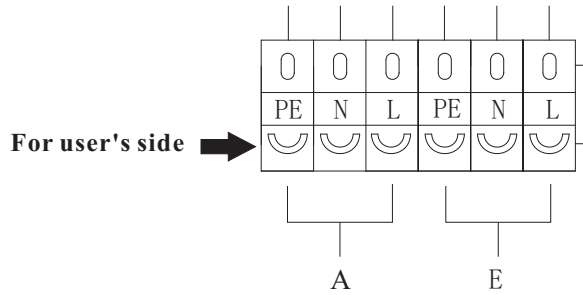
Holes for piping kits should be raised at least 8°
This ensures rain water/condensate does not flow back indoors.



6. Installation Walkthrough

6.5. Wiring

6.5.1. Explanation of Terminal Block 1



A: Unit power supply

This should be connected directly to the city power supply.

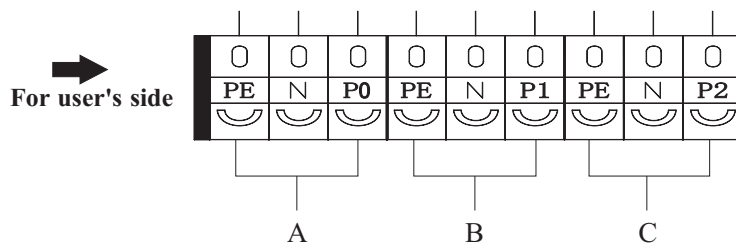
For all units, ensure that a cable of sufficient gauge is used. (found on nameplate)

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

6. Installation Walkthrough

6.5. Wiring

6.5.2. Explanation of Terminal Block 2



A: P0: Pump for heat pump circulation.

B, C: Water Pump

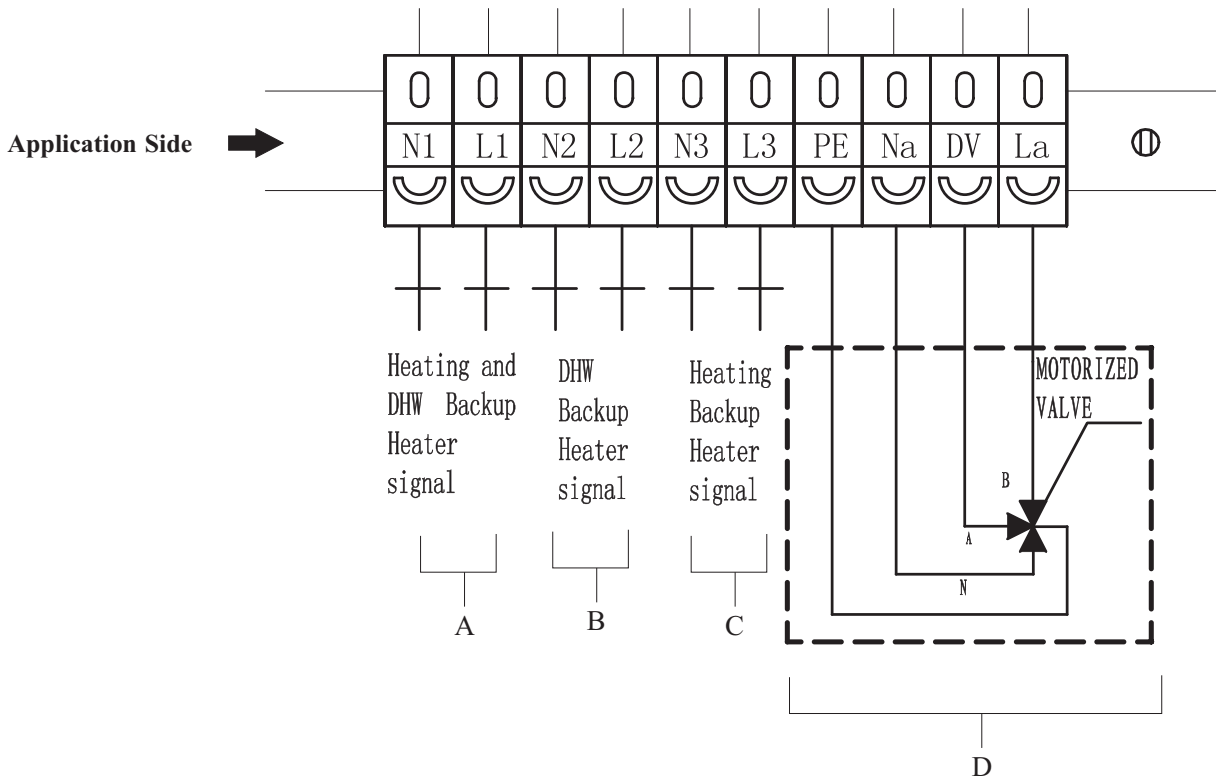
A-Pump 1: Pump for Heating & Cooling Circuit 1,
B-Pump 2: Pump for Heating & Cooling Circuit 2,

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,

6. Installation Walkthrough

6.5. Wiring

6.5.3. Explanation of Terminal Block 3

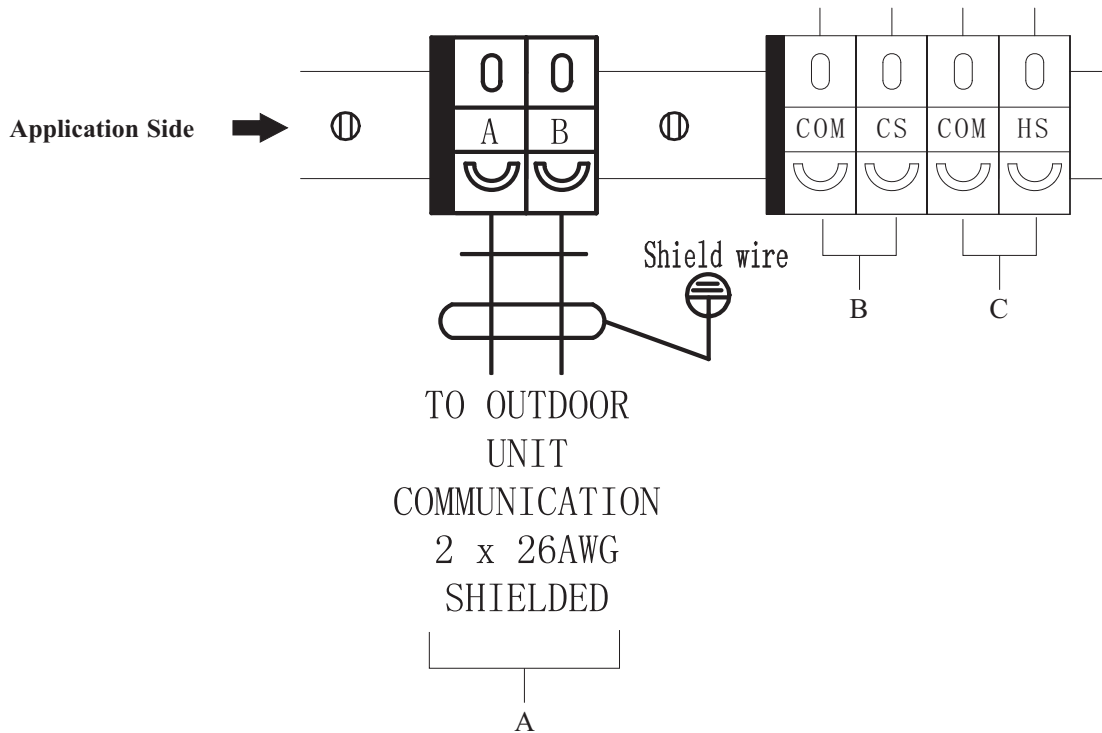


- A:** Signal output to Auxiliary Heater (AH), which will be used as auxiliary heating source for both heating and DHW operation.
- B:** Signal output to Hot Water Tank Backup Heater (HWTBH), which will be used as backup heating source for DHW operation only.
- C:** Signal output to Heating Backup Heater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

6. Installation Walkthrough

6.5. Wiring

6.5.4. Explanation of Terminal Block 4



A: Signal cable between indoor and outdoor unit.

B, C: 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.

6. Installation Walkthrough

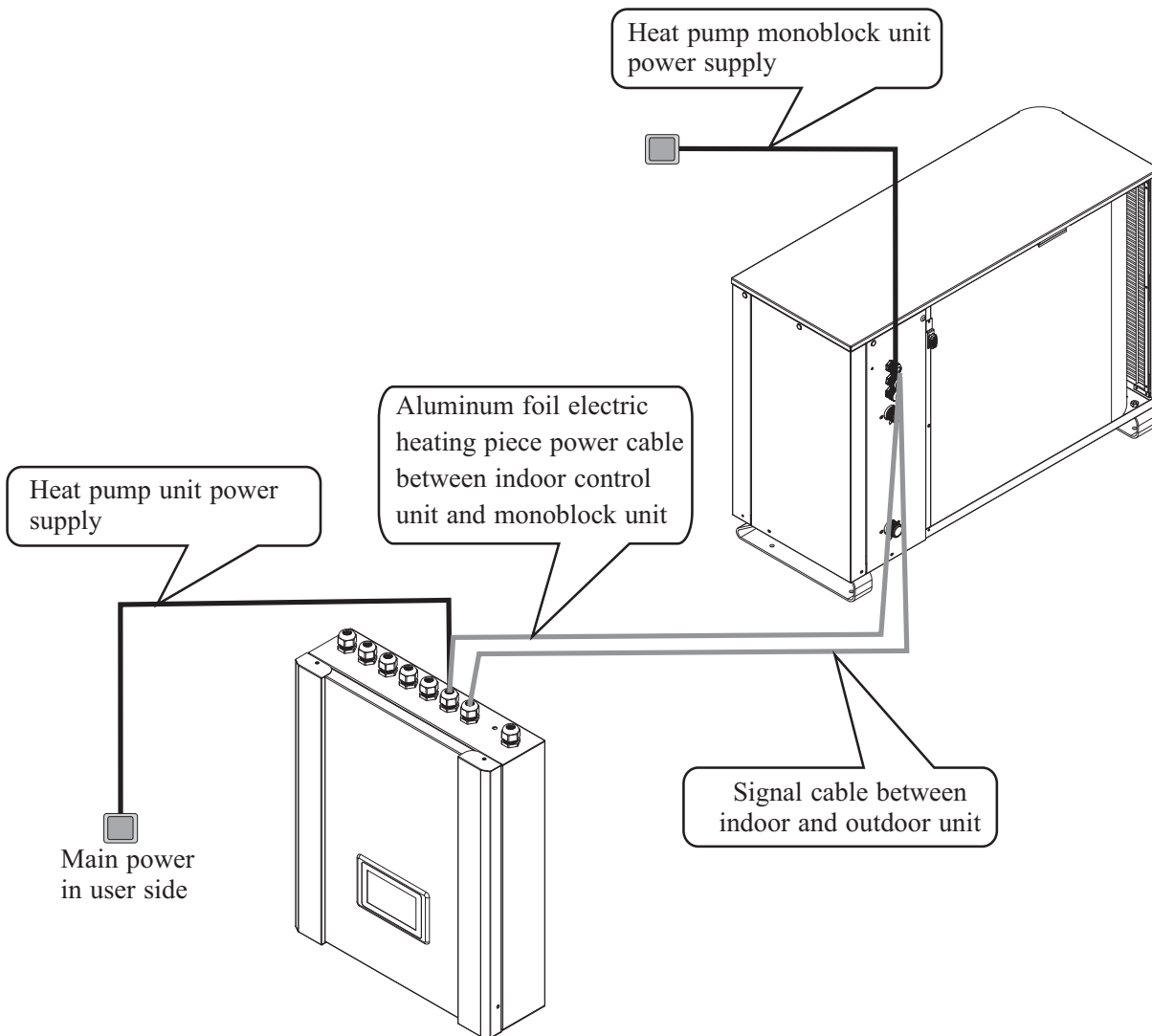
6.5. Wiring

6.5.5. 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

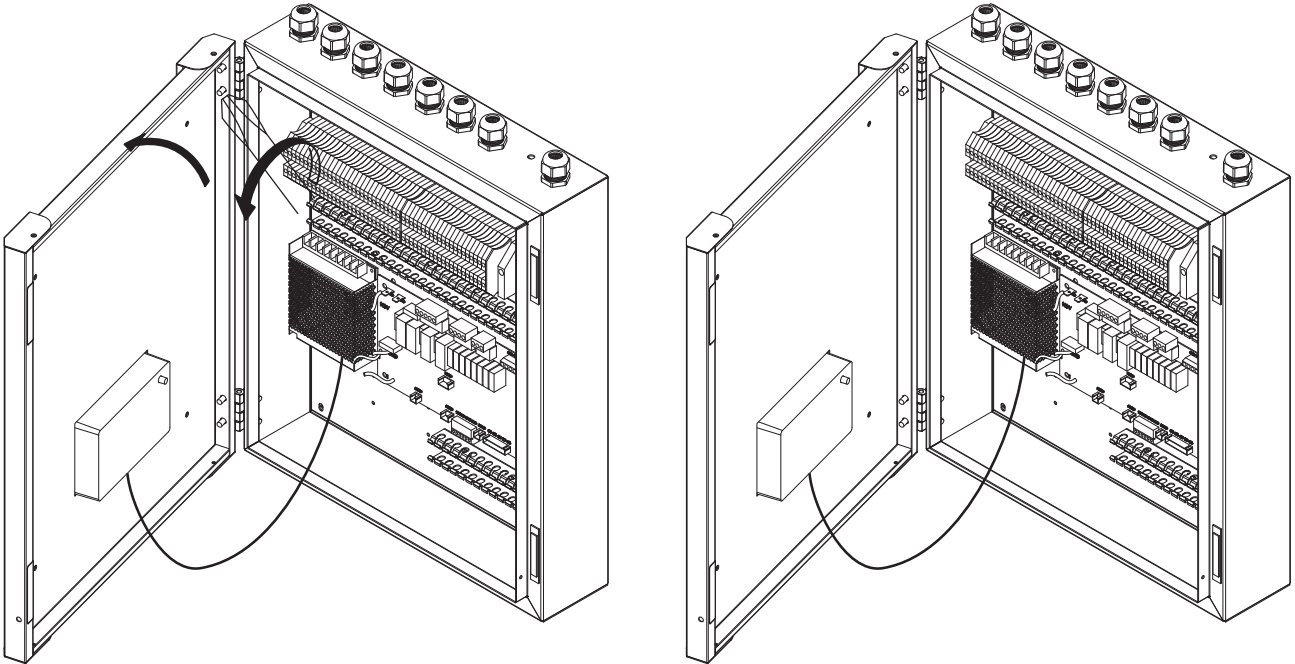


6. Installation Walkthrough

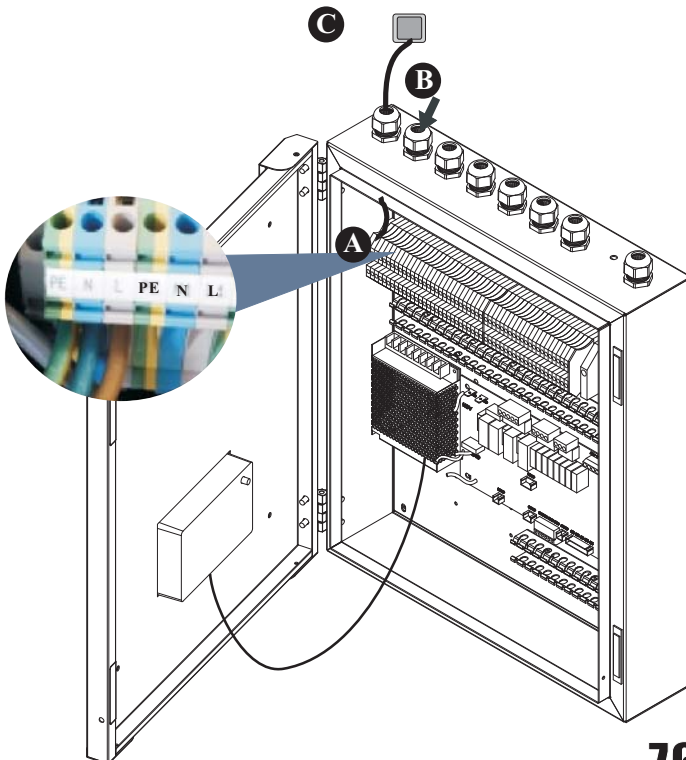
6.5. Wiring

6.5.5. 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.

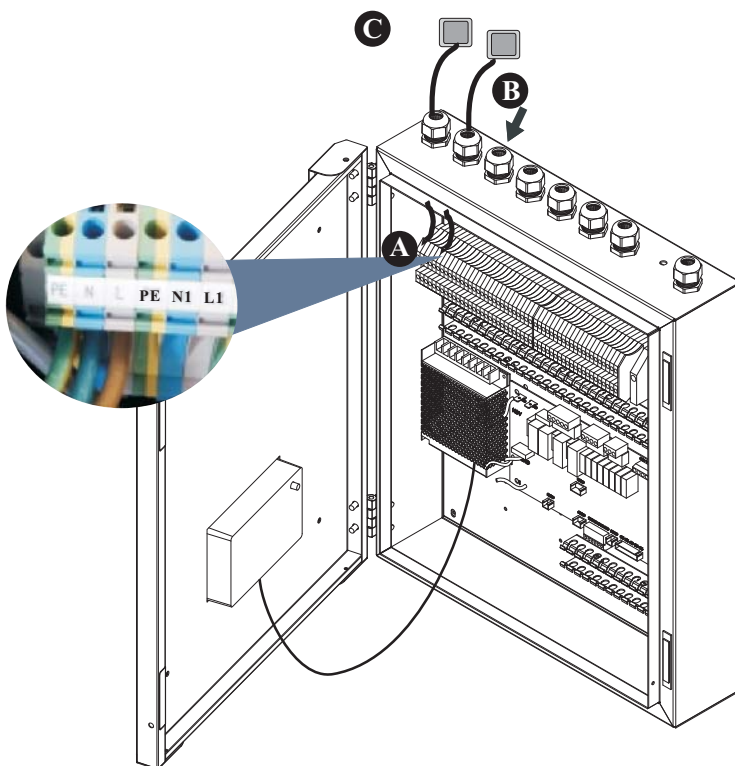
C. Connect the other end of the cable to the city power supply.

6. Installation Walkthrough

6.5. Wiring

3) Connect the auxiliary heater power cable:

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

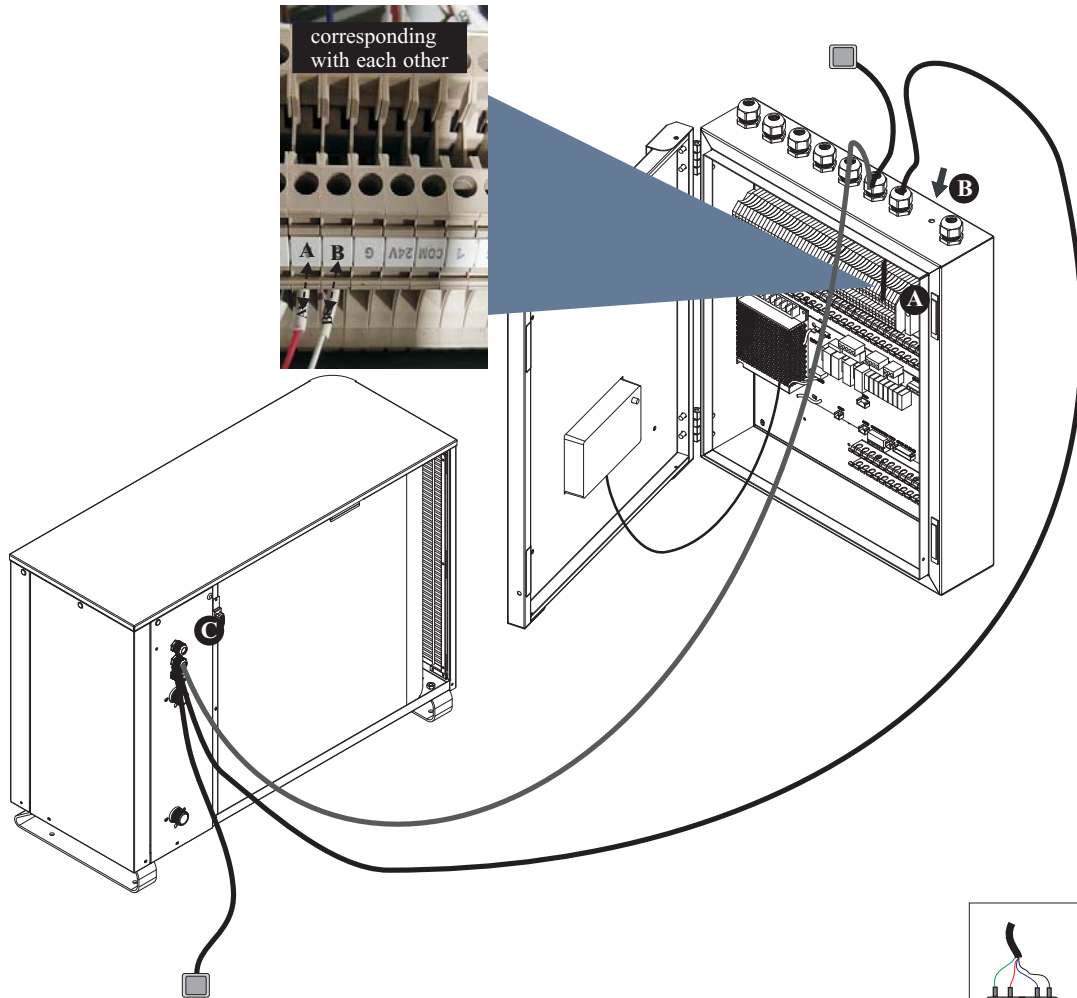


- A. Insert one end of this cable through the cable gland on the bottom of the indoor unit, and connect it with the AH power supply terminals (PE, N1, L1)
- B. Fasten the cable gland to ensure the cable won't loosen.
- C. Connect the other end of the cable to the city power supply.

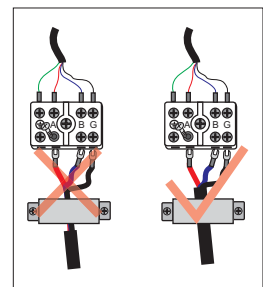
6. Installation Walkthrough

6.5. Wiring

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



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.



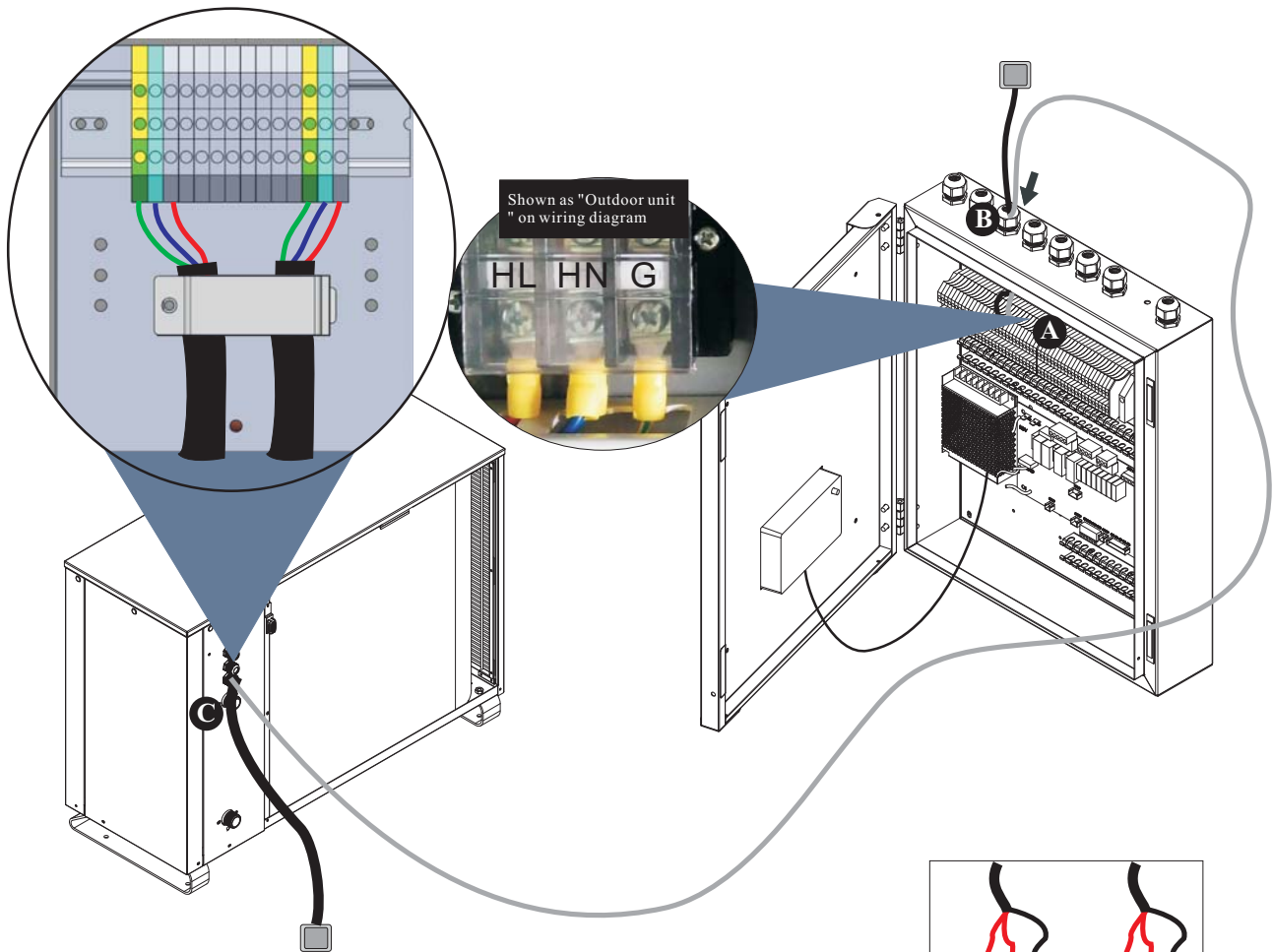
- Insert one end of this cable through the cable gland on the bottom of the indoor unit, and connect it to A and B on the appropriate terminal block.
- Fasten the cable gland to ensure the cable won't get loosen.
- Connect the other end of the cable to the terminal block on the outdoor unit. A and B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

6. Installation Walkthrough

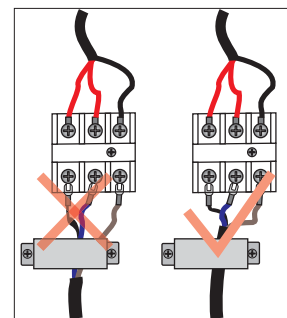
6.5. Wiring

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.

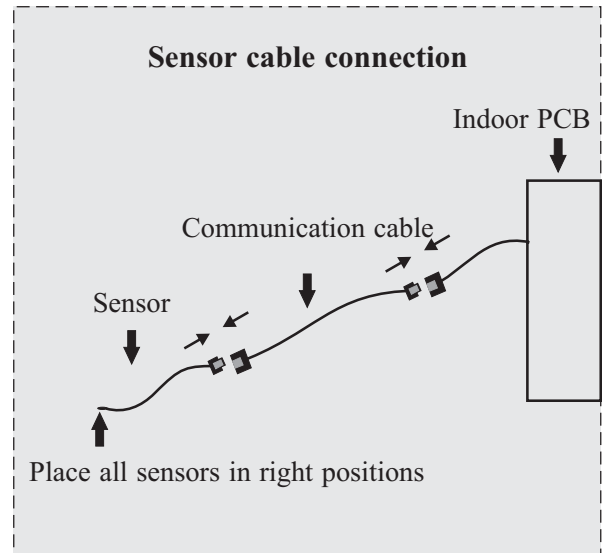
C. Connect the other end of the cable to the terminal block on the outdoor unit. A and B on the indoor unit should be connected with A, B, and G on the outdoor unit, otherwise communication failure error may occur.

6. Installation Walkthrough

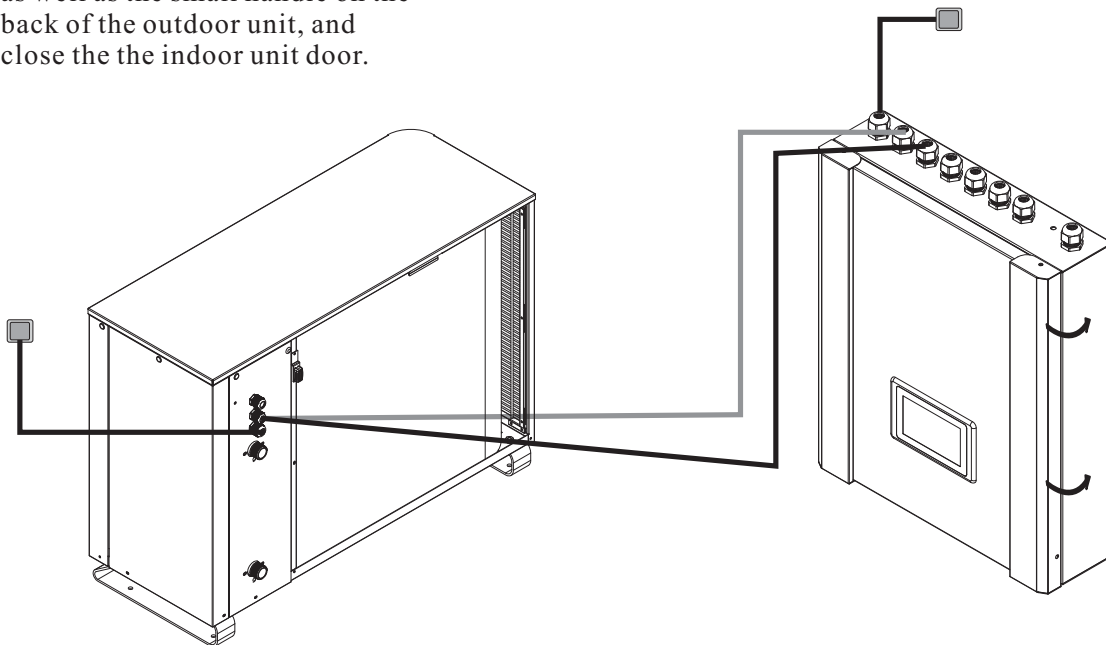
6.5. Wiring

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.

6. Installation Walkthrough

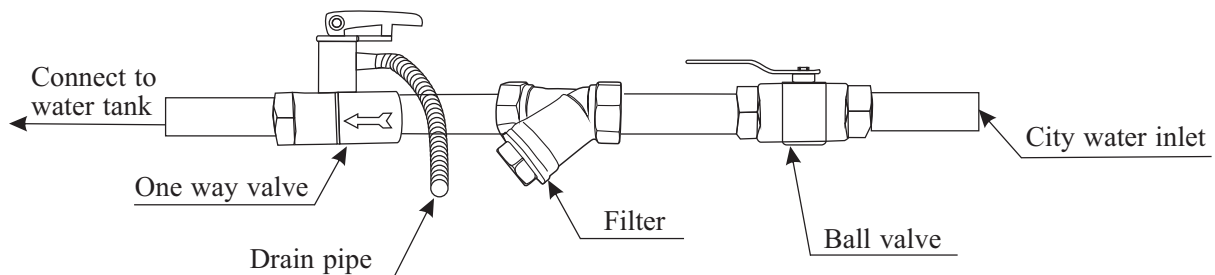
6.6. Water Pipework

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.

6.6.1. 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.



6.6.2. 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.

6.6.3. 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.

6. Installation Walkthrough

6.7. Test run



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

6.7.1. 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.

6.7.2. 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. Installation Walkthrough

6.8. Circulating pump

Technical Parameters

Parameters	Specification description
Electric pump form	Centrifugal circulation pump (non-self-priming)
Power supply (AC/DC)	AC
Voltage	230V
Frequency	50/60Hz
Input power	4~95W
Current	0.04~0.75A
Range of speed	1000-4500r/m
IP protection class	IP 44
Insulation grade	Class F
EEI	≤0.21-Part3
Noise	≤45dB
Maximum lift	9m
Maximum flow	4.5m ³ /h
Matching pipe diameter	DN25
Matching inlet and outlet thread	G1.5
Rotating direction of the rotor	Clockwise from the control box to the pump body

Product Functions



No.	Items	Function description
1	Operation and control mode	Internal operation at the maximum constant power + PWM external speed control
2	Start	Maximum torque start
3	PWM external speed control	PWM signal automatically recognizes the entering and exiting speed adjustment mode
4	Display	LED digital tube, display of speed control mode, display of fault code
5	Protection function	Overcurrent protection, over/undervoltage protection, phase loss protection, locked rotor protection, dry running protection
6	PWM feedback	0-4.5m ³ /h,electric pump flow feedback, fault feedback

6. Installation Walkthrough







6.8. Circulating pump

Mode display

After the power is turned on, all green LED lights flash 3 times, and the speed control mode is displayed as follows:

Pump status	Display light status	Pump status	Display light status
No PWM signal		PWM signal speed control	

Fault display

Description of fault protection:		
Function name	Description	Panel display code
Locked-rotor protection	When the rotor shaft of the electric pump is stuck, the electric pump will attempt to restart, and restart every 5s; when attempting to restart, the electric pump reports a blocking error and the panel displays the fault code, and the pump will stop after 5cycles of restart	
Overvoltage/undervoltage protection	Under abnormal circumstances where the input voltage is less than 170V or higher than 270V, the electric pump will enter the protection state and stop, and report an electrical fault and the panel will display the fault code, so as not to operate beyond the range and cause damage; and when the voltage returns to 170V-270V, and the electric pump will resume running	
Phase loss protection	When the phase loss fault occurs to the electric pump, the electric pump will attempt to restart, and restart every 1s; when attempting to restart, the electric pump reports an electrical error and the panel displays a fault code; finally, the pump will stop after 5 cycles of restart	
Overcurrent (short circuit) protection	When such faults as short circuit or overheating occur to the electric pump, the electric pump will attempt to restart, and restart every 5s; when attempting to restart, the electric pump reports an electrical error and the panel displays the fault code	
Dry running protection	When the water pump runs without water for 1 minute, the water pump will stop and report a fault, and restart after 10 minutes; finally, the pump will stop after 5 cycles of restart.	
Over-temperature protection	When the power module is overheated, the water pump stops and reports a fault code	

7. Maintenance

7.1. 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.

7. Maintenance

7.1. 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.

7. Maintenance

7.1. 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

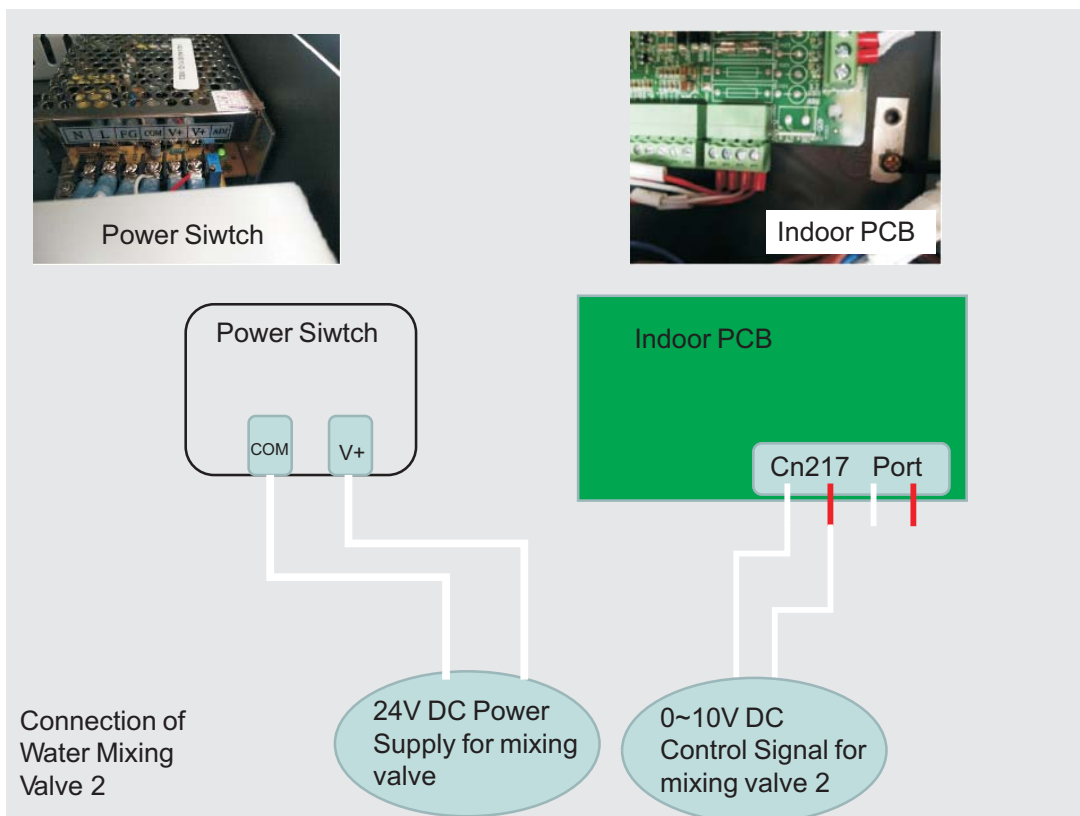
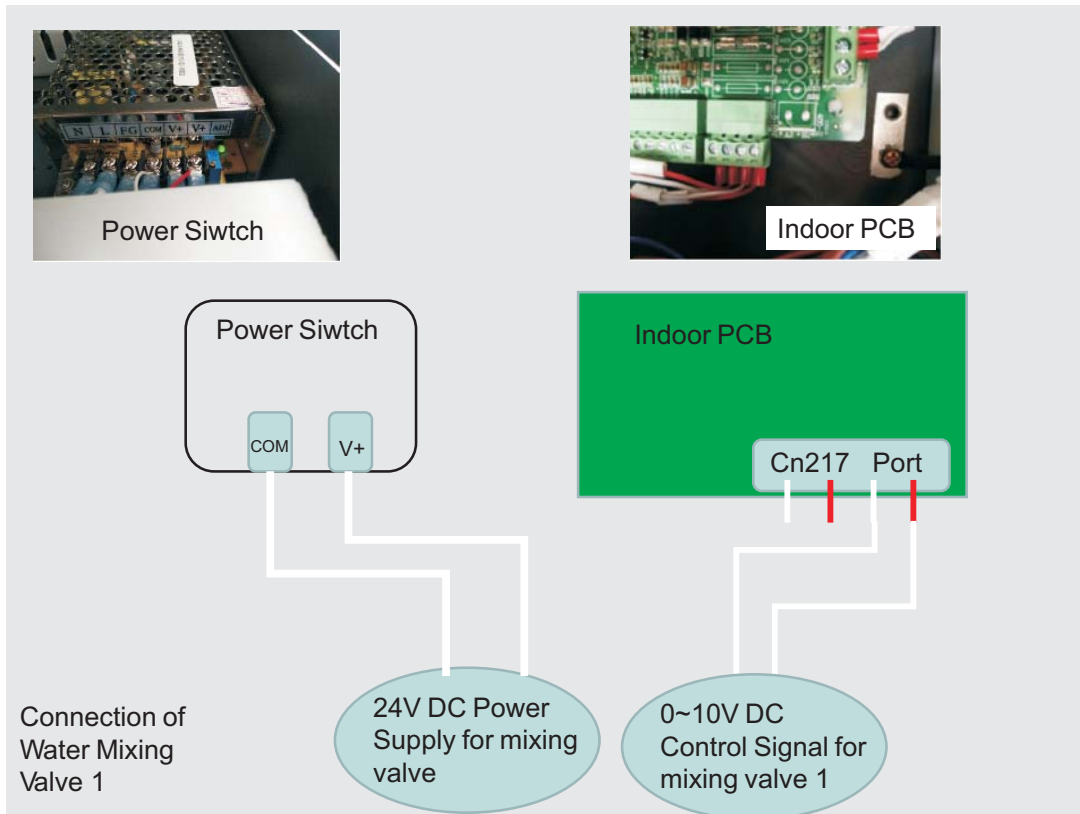
- Before dismantling, check and ensure safety at service area and keep good ventilation (open doors and windows). Ignition sources are prohibited at the place where equipment is dismantled and the combustible materials should be isolated.

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

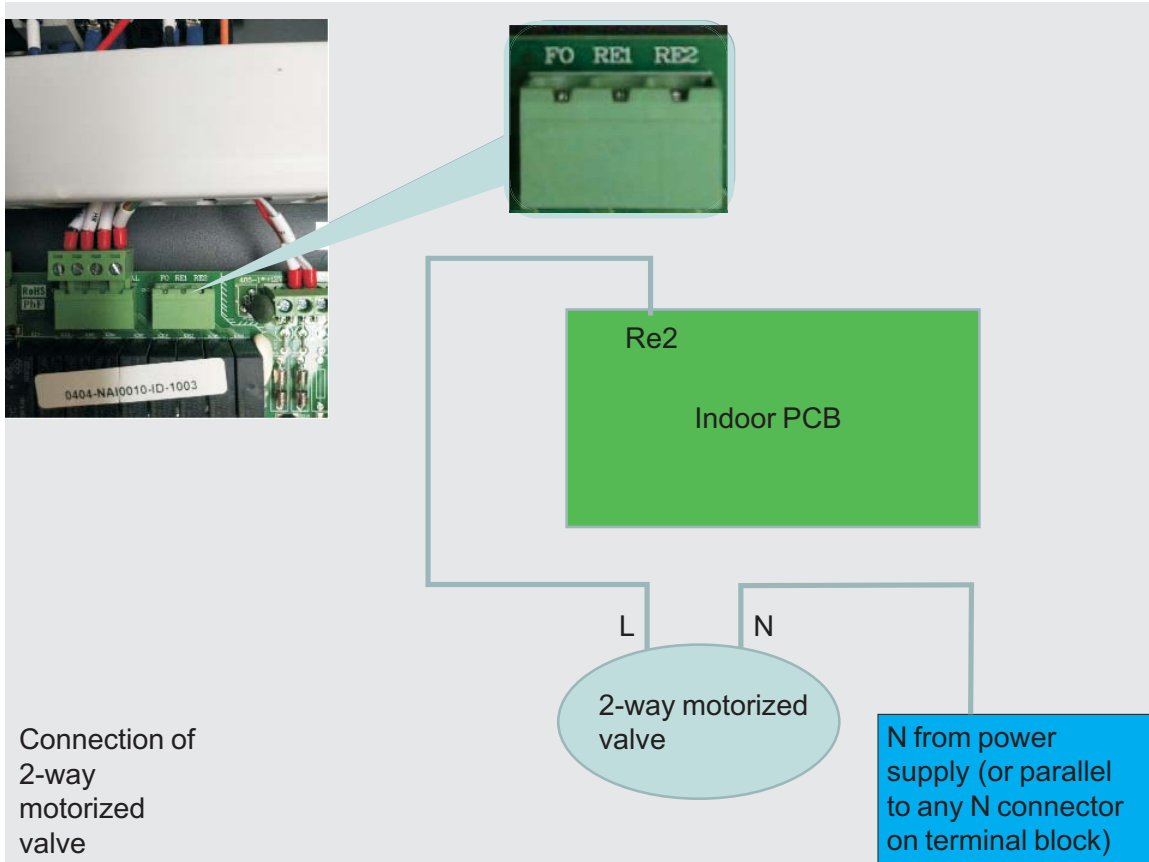
- Try to move the refrigerant pipes along with indoor unit. If the refrigerant pipes are too long, cut it from a position outside the house for easier removal. When the pipes are going to be used again, connect them with additional extension pipes by soldering. [For split type of equipment]

- 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

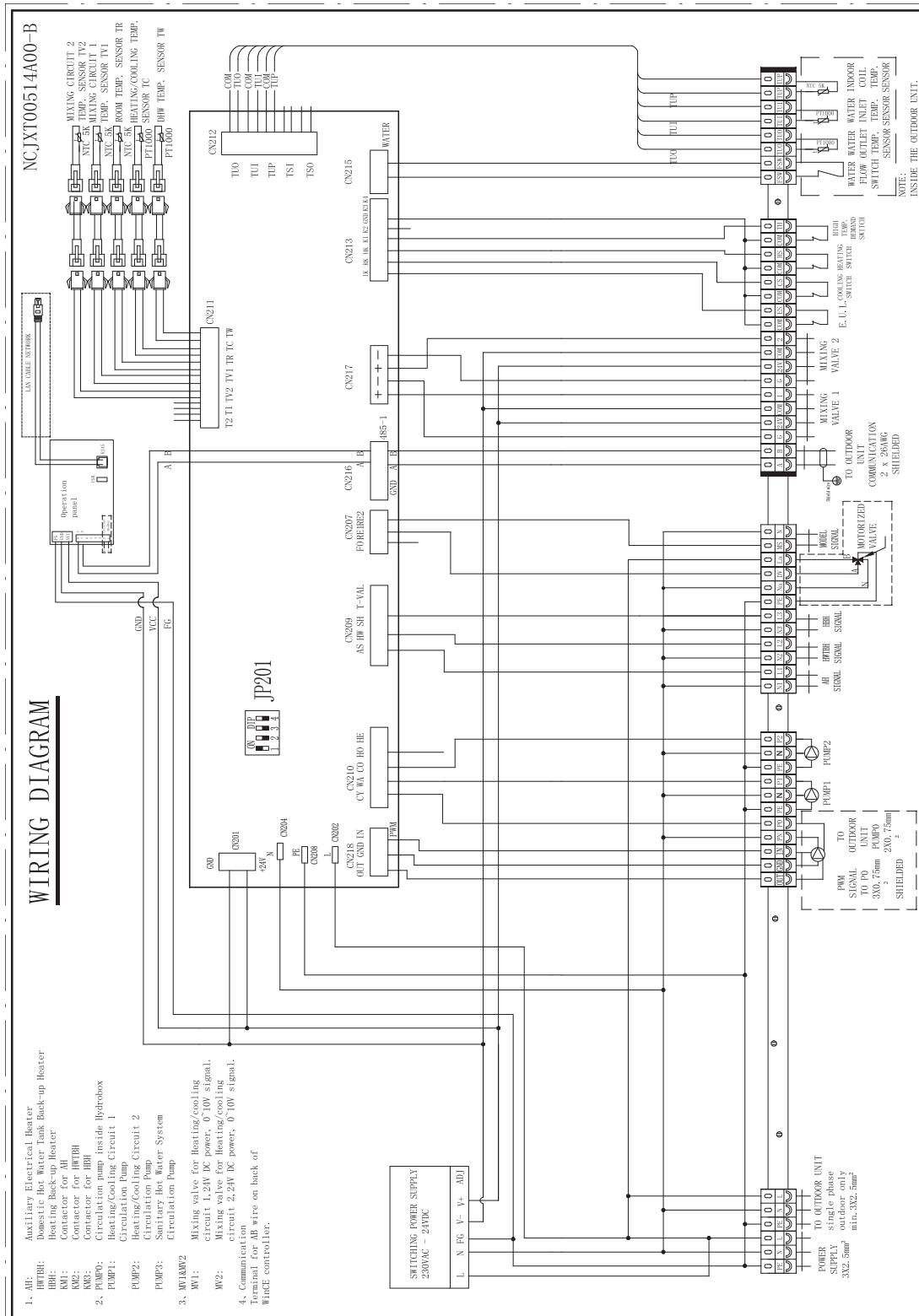


Appendix A: Wiring



Appendix B: Wiring

Monoblock indoor unit — AWC6/19-R32-M-V8



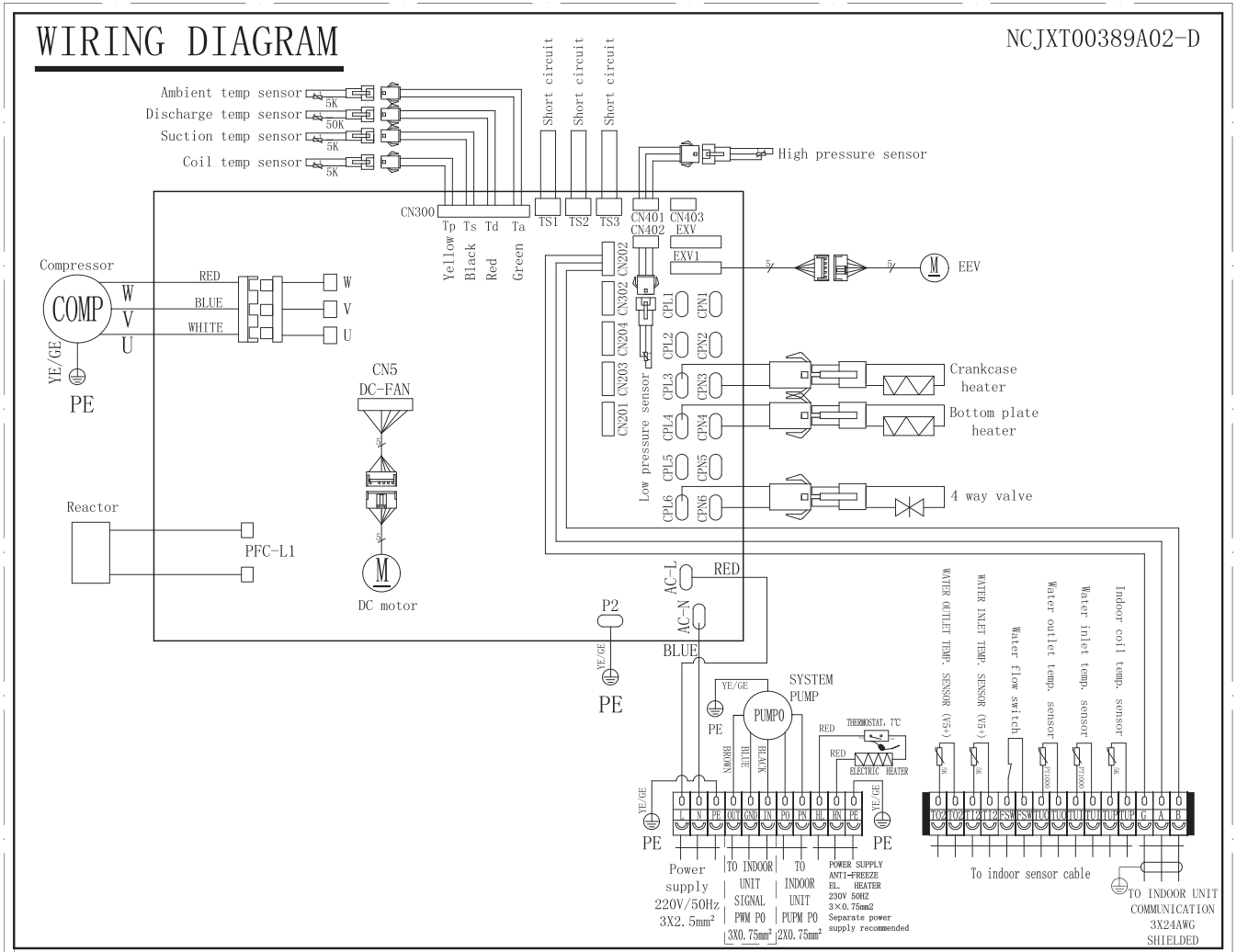
TAKE CARE!

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 B: Wiring

Monoblock outdoor unit — AW6/9/12-R32-M-V8



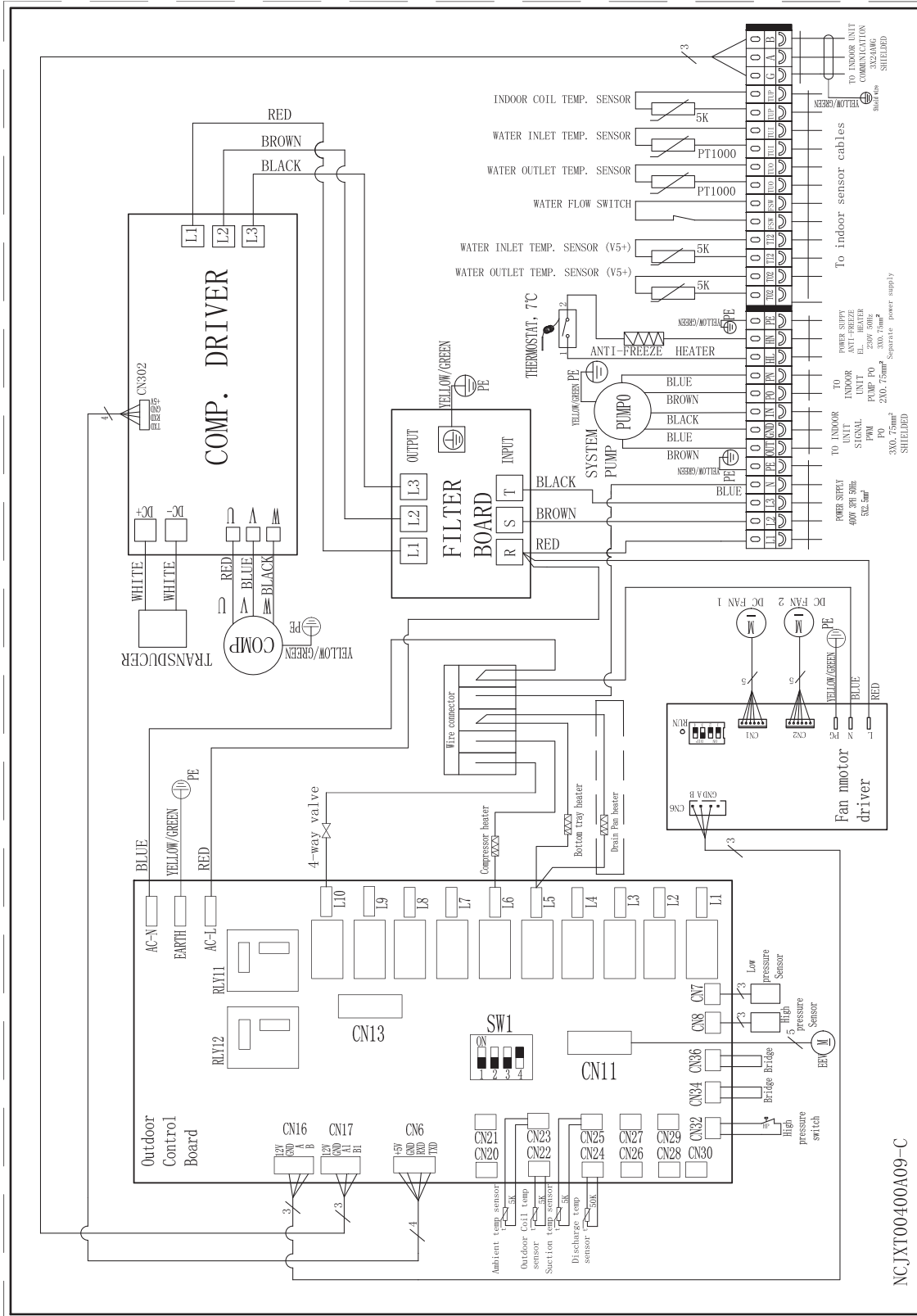
TAKE CARE!

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 B: Wiring

Monoblock outdoor unit — AW15/19-R32-M-V8



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.



ES Heat Pumps AB, 44138 Alingsås, Sweden
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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: