

DC Inverter Air to Water Heat Pump

ULTIMA (R290)



Indoor units:

HLT-9-3S

HLT-12-3S

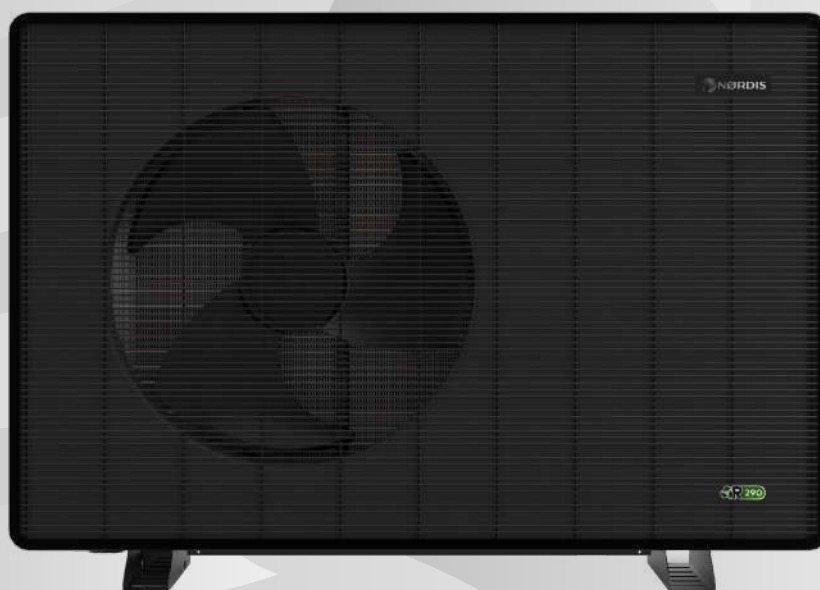
Outdoor units:

HLT6MONO-S

HLT9MONO-S

HLT12MONO-S

HLT16MONO-3S



Installation Manual

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



CONTENTS

1. Before use

1.1 Safety precautions	1
1.2 Working principle	3
1.3 Main components	4
1.4 Specifications	7

2. Installation

2.1 General application system introduction	9
2.2 Tools needed	11
2.3 Installation of the indoor control unit	11
2.4 Installation of the outdoor unit	13
2.5 Accessories	15
2.6 Outdoor unit power supply	16
2.7 Indoor unit & Integrated auxiliary heater (AH) power supply	16
2.8 HWTBH (DHW tank electric heater) power supply	17
2.9 Circulation pump power supply	17
2.10 Communication & Mixture valves connections	18
2.11 SG-Ready & Cooling / Heating switches	18
2.12 Wiring	19
2.13 Installation of safety valve kit	24
2.14 Water pipe connection	25
2.15 Test run	26

3. Attached drawing

3.1 Outlines and dimensions	27
3.2 Exploded view	31
3.3 Wiring diagram	35

1. Before use

1.1 Safety precautions

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



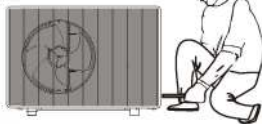
Warning



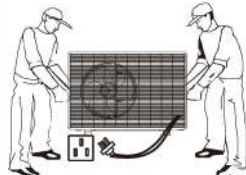
Caution



Prohibition



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



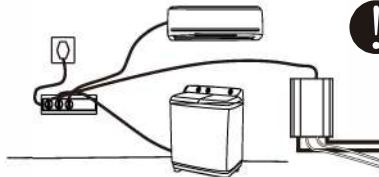
To avoid electrical shock, make sure to disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and, before touching, make sure that those voltages are lower than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



Be sure to read this manual before use.



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



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

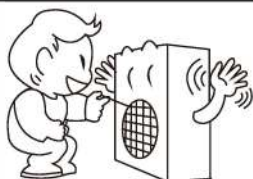
Ground wire



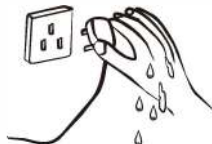
The power supply to the unit must be grounded.



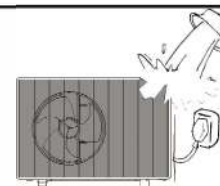
This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.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



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


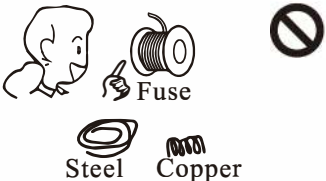
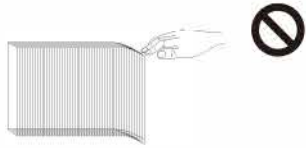



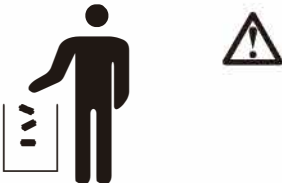
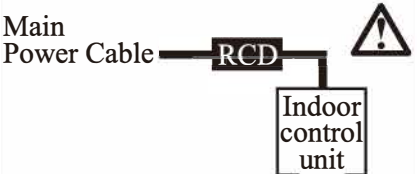
Do not touch the power plug with wet hands. Never pull out the plug by pulling the power cable.



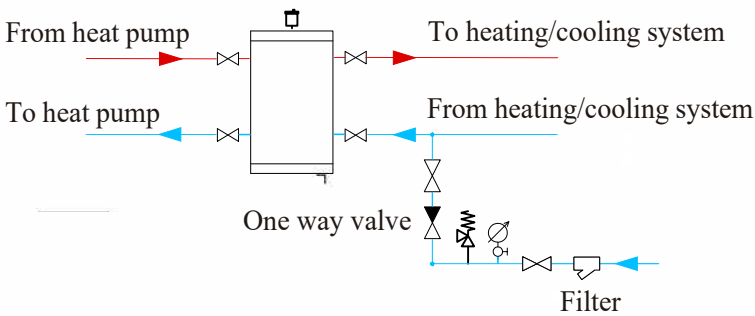
Water or any kind of liquid is strictly forbidden to be poured into the product, or may cause electric creepage or breakdown of the product.

1. Before use

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

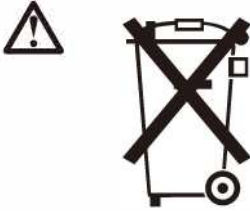
System water filling



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

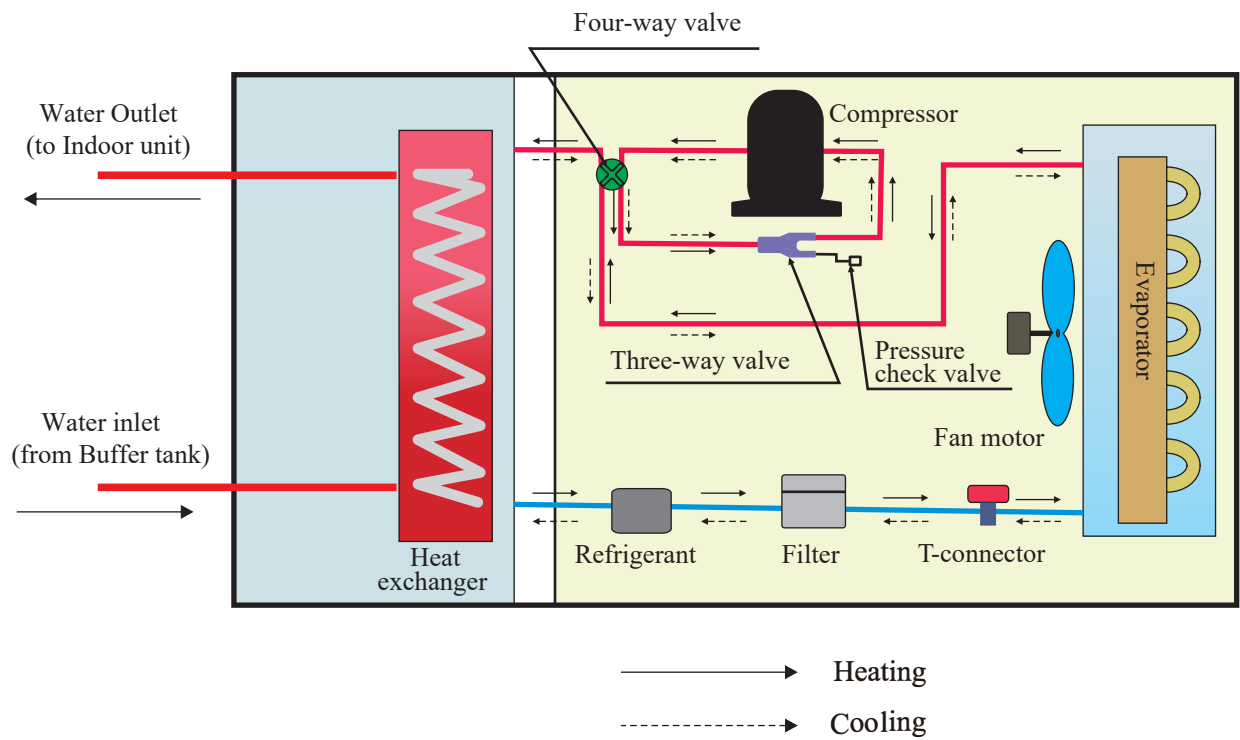
2. If use city water for filling, please soften the water and add a filter.

Note: After filling, the system of water system should be 0.15~0.25MPa.

	<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>
---	---

1. Before use

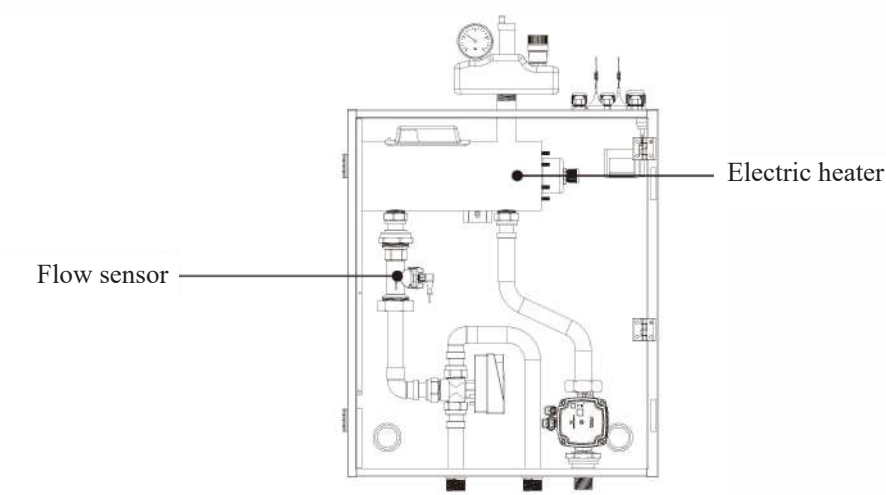
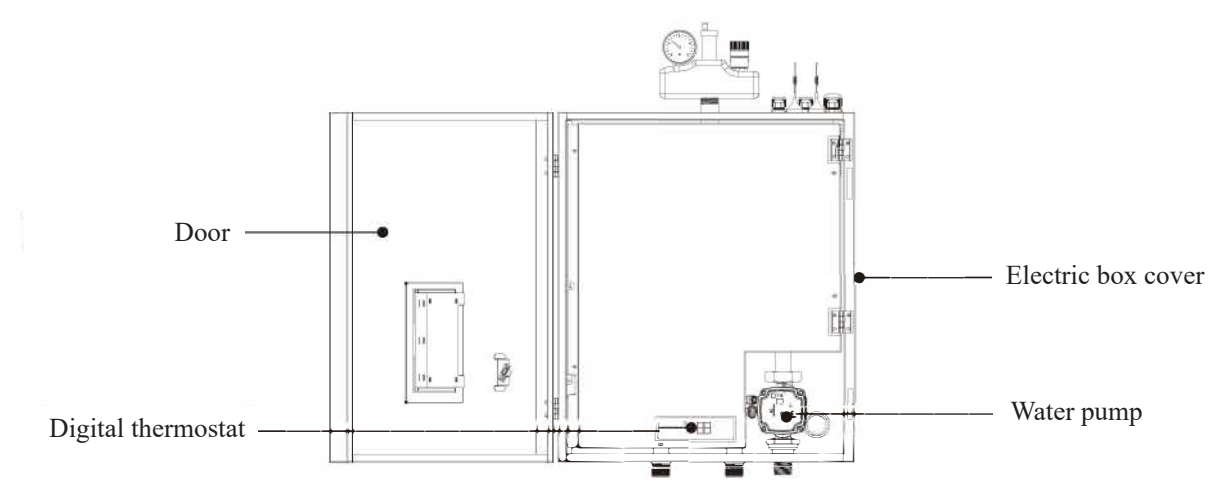
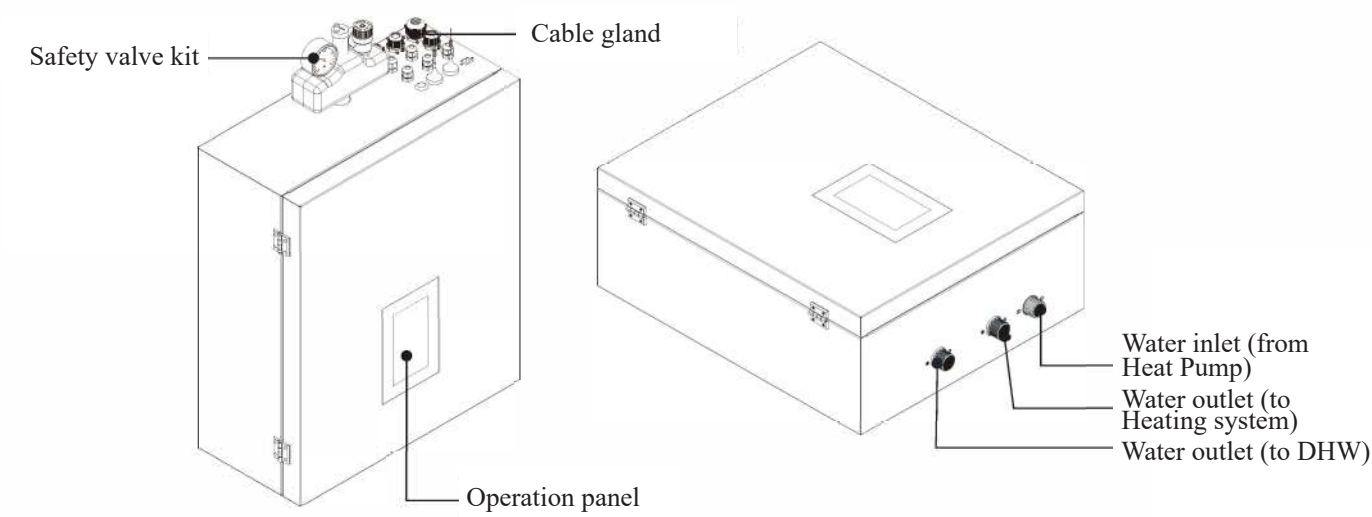
1.2 Working principle



1. Before use

1.3 Main components

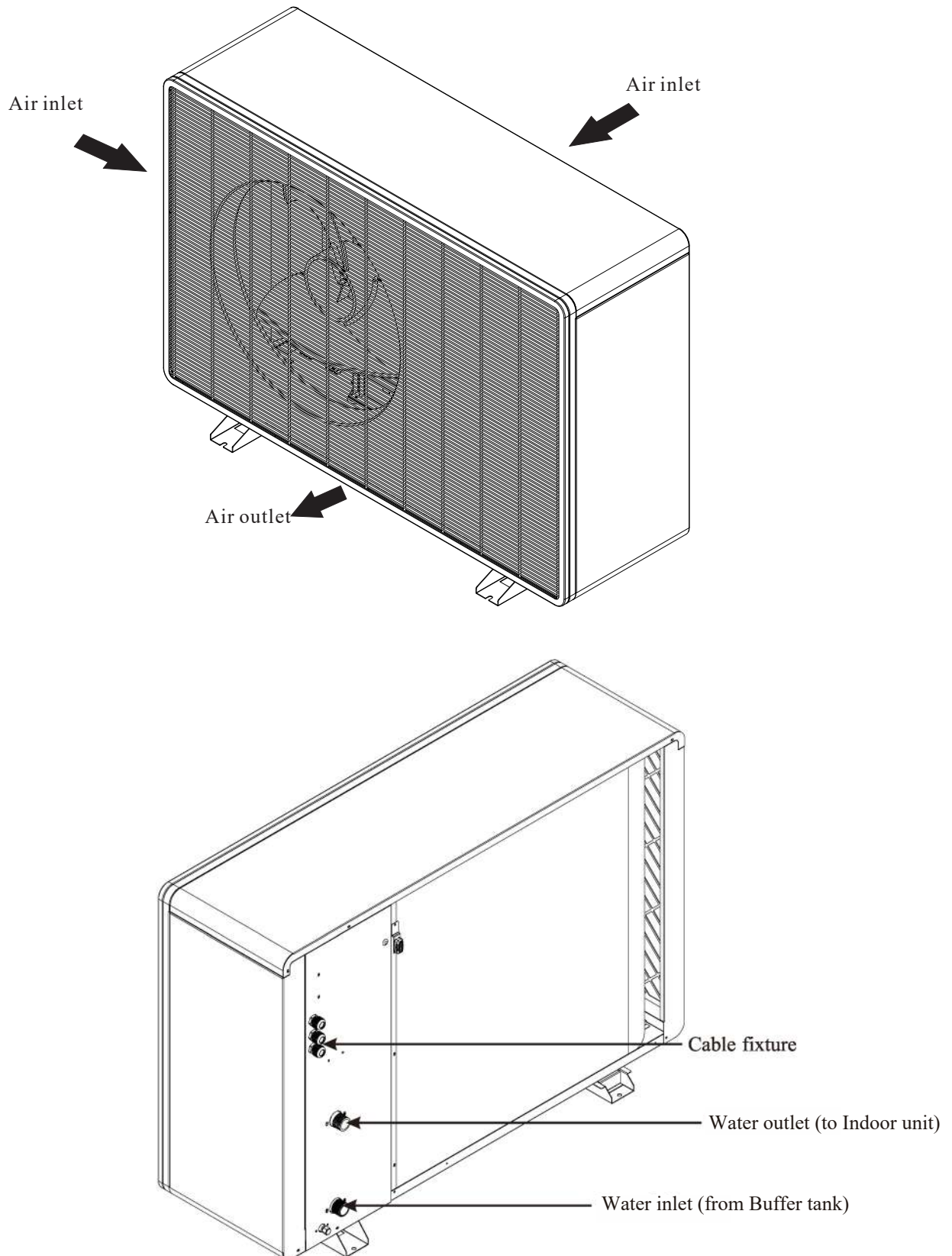
1.3.1 Indoor control unit



1. Before use

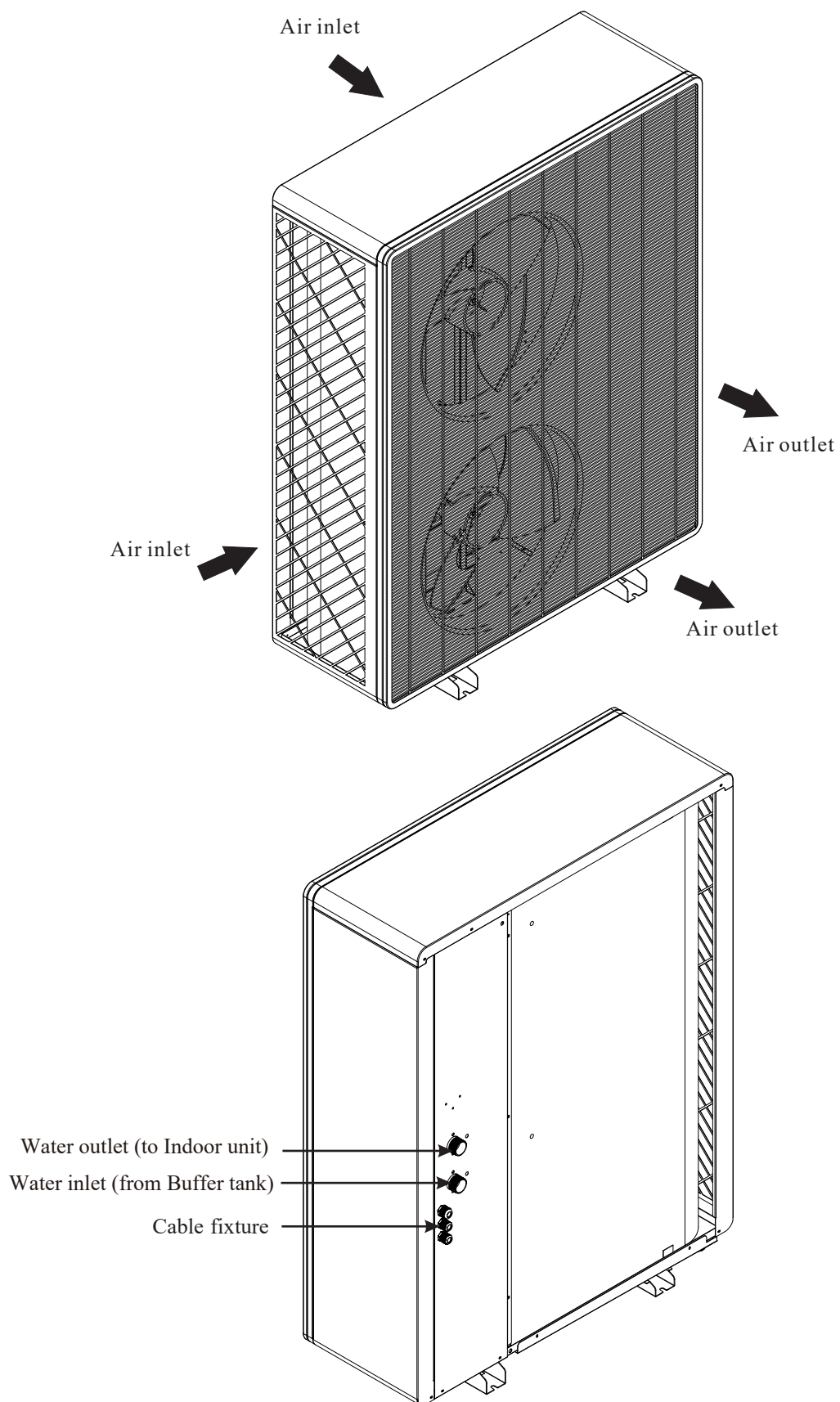
1.3.2 Outdoor unit

HLT6/9/12MONO-S



1. Before use

HLT16MONO-3S



1. Before use

1.4 Specifications

Outdoor Unit Model				HLT6MONO-S	HLT9MONO-S	HLT12MONO-S	HLT16MONO-3S
Compatible Indoor Units without DHW Tank				HLT-9-3S			HLT-12-3S
Seasonal Energy (According to EN14825) ⁵							
ErP	Energy Class-Heating (35°C / 55°C)			A+++ / A++			
	SCOP (35°C / 55°C)	W/W		4.81/3.59	4.85/3.65	4.76/3.56	4.74/3.50
	Rated Heat Output (Prated) (35°C / 55°C)	kW		4.91/4.55	6.93/6.40	8.97/8.21	12.55/11.01
	Seasonal Space Heating Efficiency (35°C / 55°C)	%		1893/140.6	190.9/143.1	187.5/139.4	186.5/136.9
	Annual Energy Consumption (35°C / 55°C)	kWh		2111/2616	2953/3622	3889/4766	5475/6505
	Sound Pressure Level 1m (Indoor / Outdoor) *	dB(A)		19/40	20/39	21/41	23/40
	Sound Power Level (Indoor / Outdoor) ⁶ *	dB(A)		33/54	33/54	34/56	37/56
Nominal Capacity and Nominal Input							
Heating	Heating Capacity Min./Max.	A7/W35 ¹	kW	2.56/6.76	3.76/9.52	5.21/12.0	6.83/16.6
	Heating Power Input Min./Max.		kW	0.58/1.52	0.68/2.04	0.99/3.06	1.27/4.18
	C.O.P Max.		W/W	4.83	5.57	5.31	5.38
	Heating Capacity Min./Max.	A7/W45 ²	kW	2.42/6.57	3.00/9.09	4.38/11.7	6.17/15.5
	Heating Power Input Min./Max.		kW	0.67/1.82	0.86/2.40	1.11/3.55	1.58/4.76
	C.O.P Max.		W/W	3.86	4.03	3.94	3.90
Cooling	Cooling Capacity Min./Max.	A35/W18 ³	kW	2.02/5.43	2.39/7.83	3.47/10.1	5.77/12.4
	Cooling Power Input Min./Max.		kW	0.51/1.31	0.57/2.08	0.94/2.97	1.23/3.70
	E.E.R Max.		W/W	4.23	4.35	3.93	4.69
	Cooling Capacity Min./Max.	A35/W7 ⁴	kW	1.27/3.71	1.83/5.61	2.16/7.19	4.05/10.1
	Cooling Power Input Min./Max.		kW	0.52/1.30	0.62/2.00	0.97/2.76	1.26/3.55
	E.E.R Max.		W/W	2.95	2.99	2.64	3.22

* - low-temperature applications

¹ Air temperature +7°C, 85% RH, water temperature +30/35°C.

² Air temperature +7°C, 85% RH, water temperature +40/45°C.

³ Air temperature +35°C, water temperature +23/18°C.

⁴ Air temperature +35°C, water temperature +12/7°C.

⁵ Tested according to the EN12102-1 standard.

⁶ Defined under moderate climate zone conditions.

Outdoor Unit Model				HLT6MONO-S	HLT9MONO-S	HLT12MONO-S	HLT16MONO-3S	
Power Supply			V/Hz/F	220-240/50/1			380-415/50/3	
Circuit Breaker			A	16		25	16	
Power Cable				3x2.5		3x4.0	5x2.5	
Operation limits	Ambient Temperature Range		℃	-25 ~ 43				
	Heating Water Temperature Range		℃	20 ~ 75				
	Cooling Water Temperature Range			7 ~ 25				
Refrigerant side	Refrigerant	Type / Amount	- / g	R290 / 0.6	R290 /0.7	R290 / 0.9	R290 / 1.5	
	Rotory Compressor	Quantity		1				
	Four-way valve + EEV			Sanhua				
	Fan	Quantity		1			2	
		Airflow	m3/h	3150			3300	6300
		Rated Power	W	62			124	
Water Side	Plate Heat Exchanger	Quantity		1				
	Water Pressure Drop		kPa	23				
	Piping Connection		Inch	G1"			G1-1/4"	
Dimensions	Net Dimensions (L x D x H)		mm	1255x440x885		1255x440x985	1140x460x1490	
	Net Weight		kg	98	109	120	164	

Specifications are subject to change without notice. For actual device specifications, see. See the stickers on the device.

1. Before use

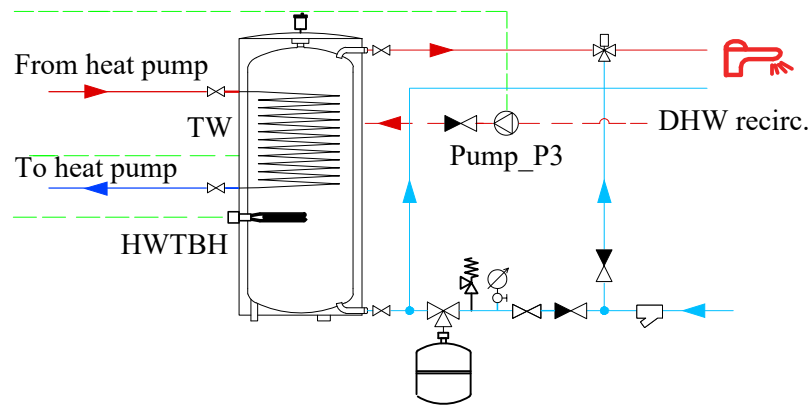
Indoor Unit Model			HLT-9-3S			HLT-12-3S
Compatible Outdoor Units			HLT6MONO-S	HLT9MONO-S	HLT12MONO-S	HLT16MONO-3S
Power Supply		V/Hz/F	380-415/50/3			
Circuit Breaker		A	16			
Power Cable		mm ²	5x2.5			
Backup Heater		kW	9 (3+6)			
3-way Diverting Valve			LK Systems			
Water Flow Meter			Vortex			
Circulation Pump (Head, m)			Grundfos (9)			Grundfos (12)
Water Side	Piping Connection	Inch	G1"			G1-1/4"
	Allowable Water Flow - Min./Rated/Max.	l/s	0.20/0.29/0.37	0.27/0.38/0.50	0.40/0.57/0.75	0.50/0.72/0.93
		l/min	12/17.4/22.2	16.2/22.8/30	24/34.2/45	30/43.2/55.8
		m ³ /h	0.72/1.04/1.33	0.97/1.37/1.8	1.44/2.05/2.7	1.8/2.59/3.35
Dimensions	Net Dimensions (L x D x H)	mm	550x260x650			
	Net Weight	kg	34			

Specifications are subject to change without notice. For actual device specifications, see. See the stickers on the device.

2. Installation

2.1 General application system introduction

2.1.1 Sanitary hot water



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

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

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

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

Model	Recommended DHW tank capacity, ltr	Heat exchanger surface area, m ²
HLT6MONO-S	150-250	≥ 2.0
HLT9MONO-S		
HLT12MONO-S	300-500	≥ 2.5
HLT16MONO-3S		



2. Installation

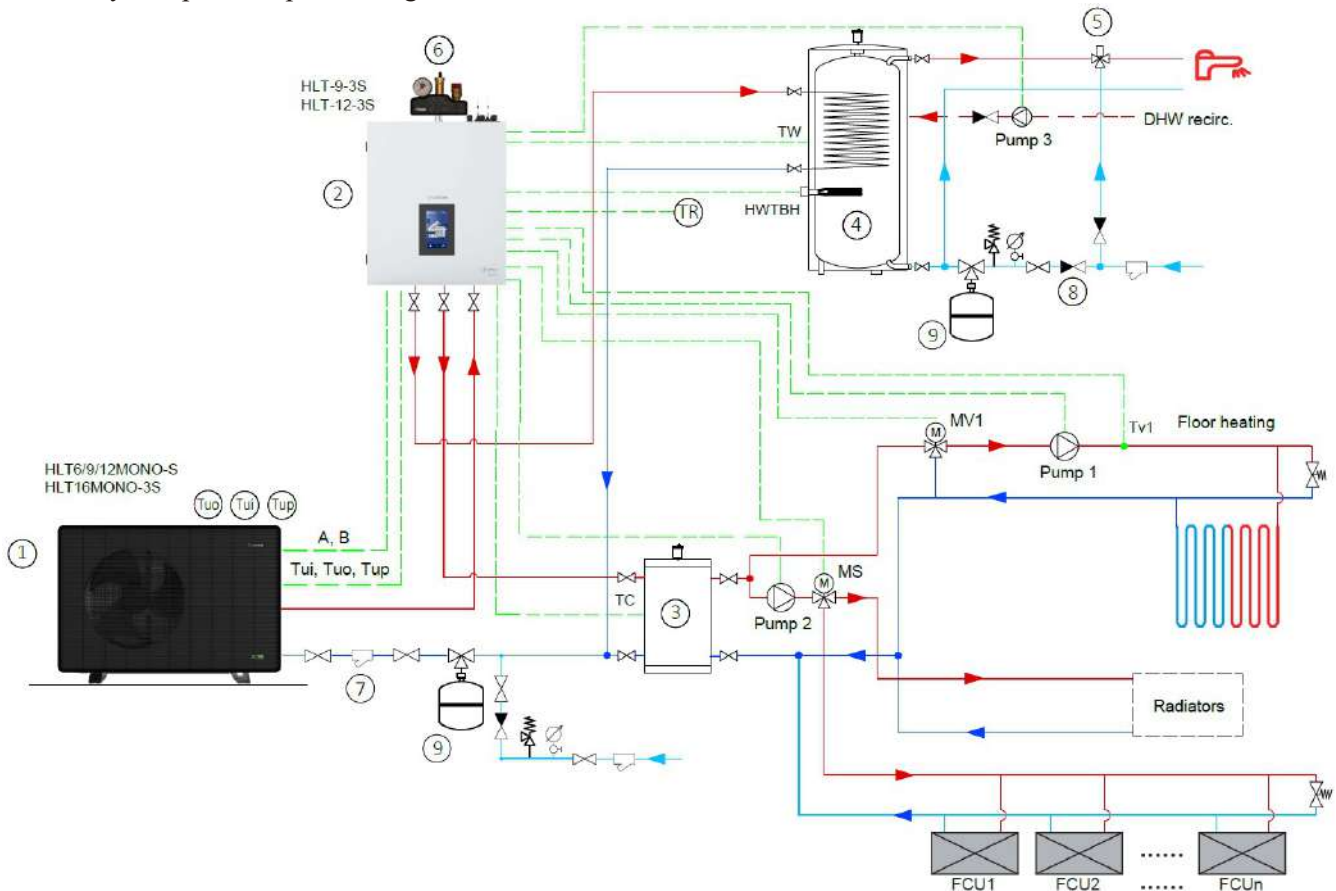
2.1.2 Heating / Cooling distribution system

Note:

Buffer tank MUST be included in the system. The whole distribution system should have no less water volume than 20ltr/kW. The buffer tank should be installed between heat pump and distribution system, in order to:

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

In certain cases where the system does not have a buffer tank installed, please move temperature sensor TC (Heating/Cooling water temperature) to water return pipe to minimize the fluctuation of water temperature caused by compressor speed changes.



Item	Name
1	Outdoor unit
2	Indoor control unit
3	Buffer tank
4	DHW tank
5	DHW mixture valve
6	Safety valve kit
7	Magnetic filter
8	One-way valve
9	Expansion vessel
MS	Motorized 3-way valve
MV1	Mixture valve (0-10V)

Item	Name
Pump 1	Circulation pump for System 1
Pump 2	Circulation pump for System 2
Pump 3	DHW recirculation pump
HWTBH	DHW tank back-up heater
TW	DHW temperature
TC	Heating/Cooling water temperature
TR	Room temperature
Tuo	Outdoor unit outlet water temperature
Tui	Outdoor unit return water temperature
Tup	Outdoor unit coil temperature
Tv1	Water temp. after mixture valve 1

2. Installation

2.2 Tools needed

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

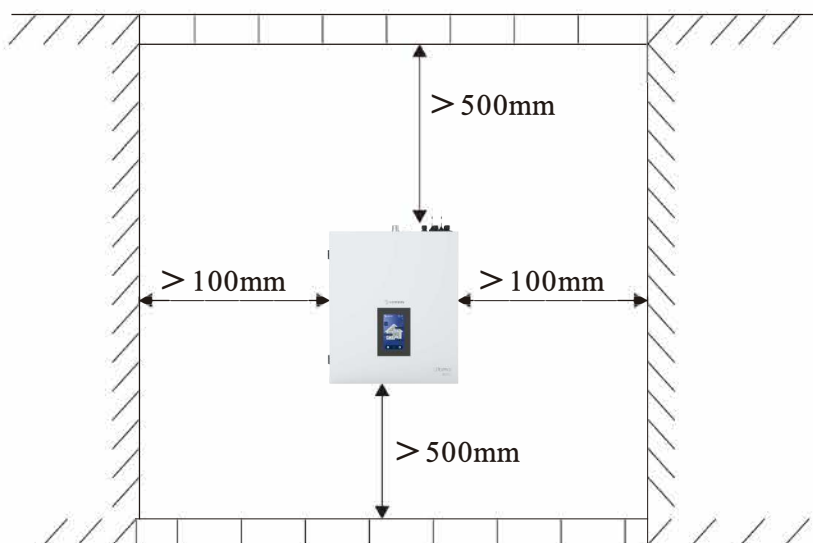


The installation of the product should be handled by professional installers or under their instructions.

2.3 Installation of the indoor control unit

2.3.1 Installation notes

- 1) The indoor control unit should be installed indoors and mounted on the wall, with water outlet downwards.
- 2) The indoor control unit shall be placed in dry and well-ventilated environment.
- 3) Indoor control unit mustn't be installed in an environment where volatile, corrosive or flammable liquid or gas exists.
- 4) Enough space should be left around the indoor control unit for further maintenance.
Please choose a suitable position to install the indoor control unit as follows:

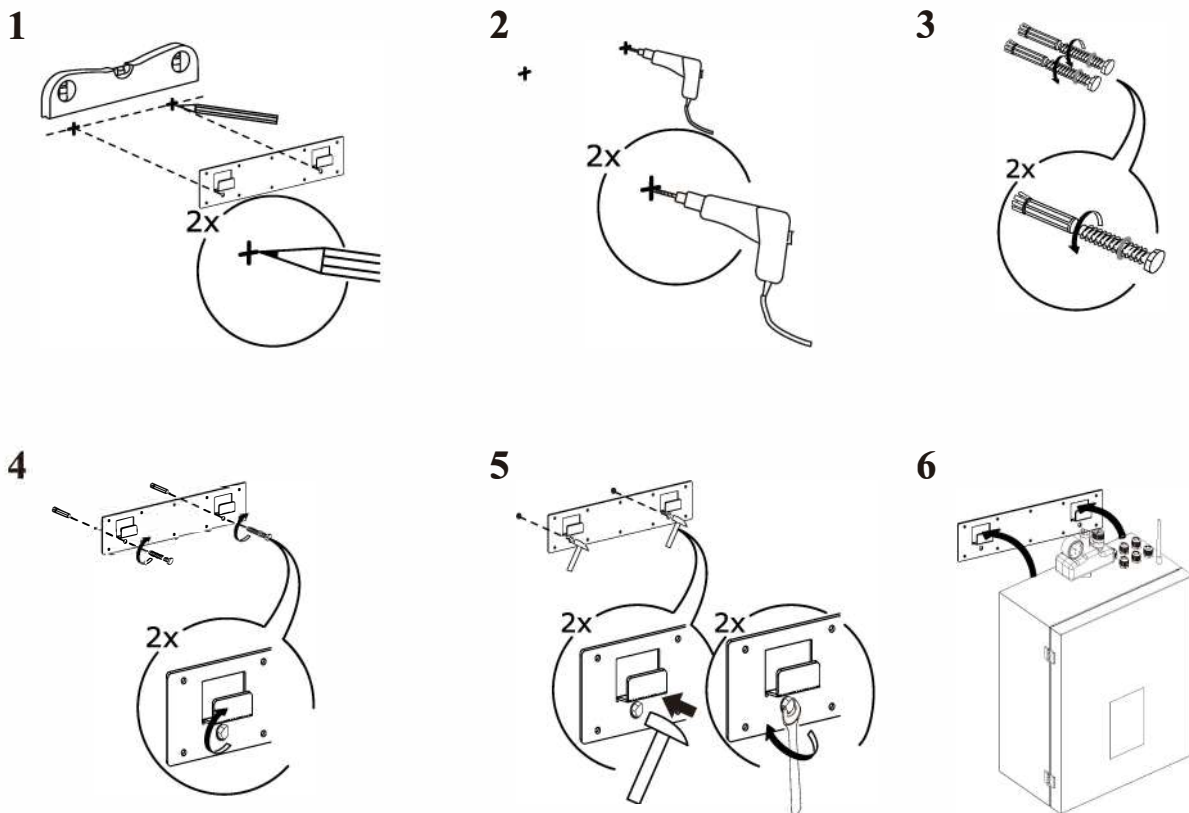


2. Installation

2.3.2 Installation

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

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



Note:

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



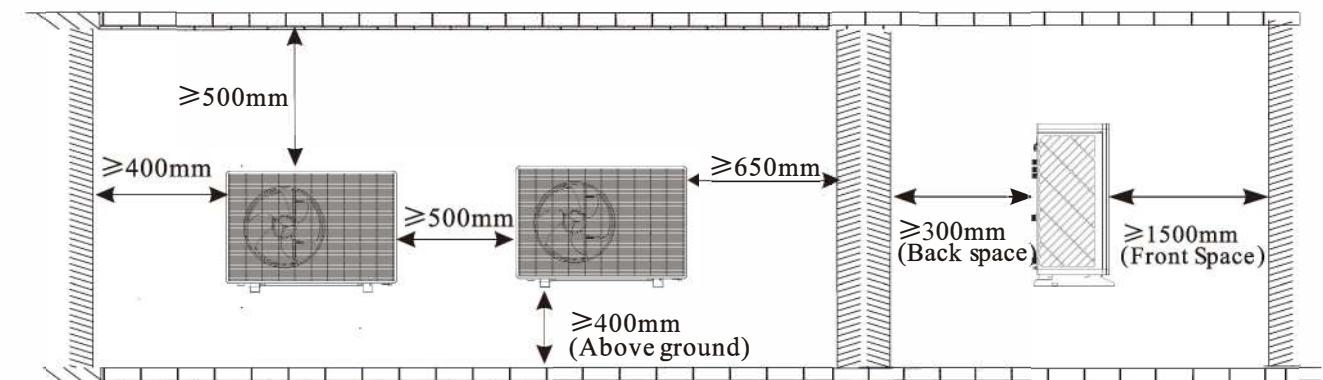
If it's wood wall, please use self-tapping screws in accessory instead of expansion bolts. Please hang the mounting board directly onto the wood wall without drilling holes. The wood wall must be firm enough. Wood walls that are too thin, too brittle or humid are not adequate for installation.

2. Installation

2.4 Installation of the outdoor unit

2.4.1 Installation notes

- 1) The outdoor unit can be located in a open space, corridor, balcony, and roof.
- 2) The outdoor unit shall be placed in dry and well-ventilated environment; If the outdoor unit is installed in humid environment, electronic components may get corroded, or short-circuited because of heavy humidity.
- 3) Outdoor unit mustn't be installed in an environment where volatile, corrosive or flammable liquid or gas exists.
- 4) Please don't install outdoor unit close to bedroom or living room, because there is some noise when it's running.
- 5) When installing the unit in harsh climatic conditions, sub-zero temperatures, snow, humidity..., please raise the unit above the ground by about 50cm.
It's recommended to install an awning above the outdoor unit, to protect the snow from clogging in the air inlet and outlet and ensure the normal running.
- 6) Please ensure there is drainage system around the location, to drain the condensate water under defrosting mode.
- 7) When installing the unit, tilt it by 1cm/m for rain water evacuation.
- 8) Install outdoor unit far away from the exhaust port of kitchen, to avoid oil smoke entering into outdoor unit and adhering to heat exchanger. It's hard to clean up.
- 9) Please don't install the indoor control unit and outdoor unit in damp locations, otherwise it may cause short-circuit or corrosion of some components. The unit should be free from corrosive and moisture surrounding. Otherwise the lifetime of the unit might be shortened.
- 10) Please ensure enough space around the outdoor unit, for better ventilation and maintenance.
Please refer to the illustration below.

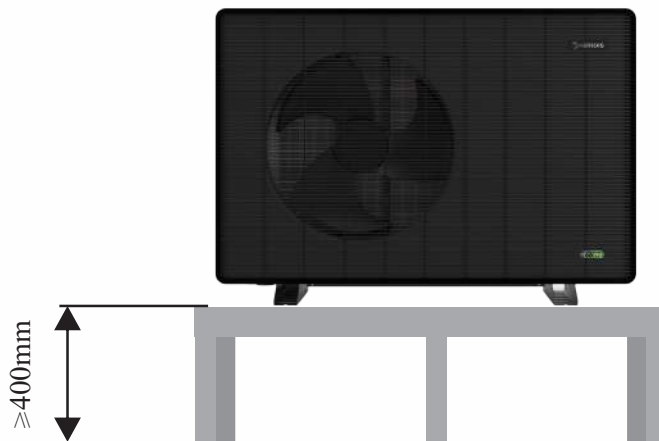


2. Installation

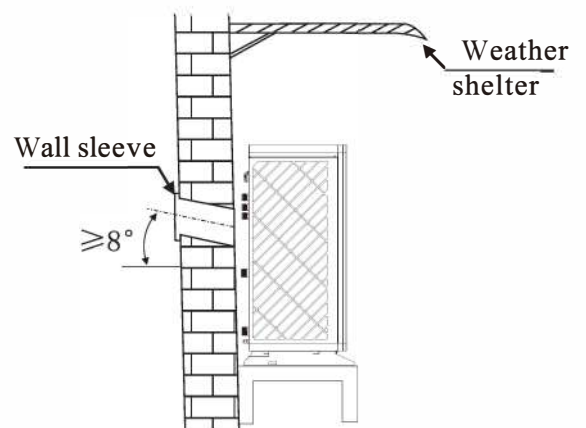
2.4.2 Installation

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

- 1) The unit must be installed on flat concrete blocks, or a dedicated mounting bracket. The bracket should be able to support at least 5 times of unit's weight.
- 2) All nuts must be tightened after the bracket is fixed; otherwise, it may cause damage to the equipment.
- 3) User should double check and make sure the installation of unit is firm enough.
- 4) The bracket can be of stainless steel, galvanized steel, aluminum and other materials as required by the user.
- 5) Besides the mounting bracket, the user can also install the outdoor unit on two concrete blocks, or a raised concrete platform. Please make sure that the unit is securely fastened after installation.
- 6) Please see the dimensions of outdoor unit when choose a suitable wall bracket.



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



2. Installation

2.5 Accessories



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

Name	Quantity	Remark
User manual	1pc	
Safety valve kit	1set	
TV1 - water temperature sensor	1pc	
TV2 - water temperature sensor	1pc	
TW- water temperature sensor for DHW	1pc	
TR - Room temperature sensor	1pc	
TC - Heating/cooling water temperature sensor	1pc	
Sensors' extension cable	5pcs	
Connection cable (TUP, TUI, TUO sensors)	1pc	
Communication cable (indoor to outdoor)	1pc	
WiFi / 4G module antennas	2pcs	
Water connector for 16kW (G1" internal thread to G5/4" external thread)	2pcs	
Drain pipe	1pc	
Brass screws	2pcs	
Indoor control unit bracket	1pc	
Expansion bolts	2pcs	

2. Installation

HLT6MONO-S
HLT9MONO-S
HLT12MONO-S
HLT16MONO-3S

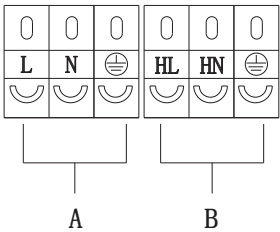
2.6 Outdoor unit main power & Emergency electric heater power supply

HLT6/9MONO-S

A: Unit main power supply (Power Cord: H05VV-F 3×2.5mm²);
B: Emergency electric heater power supply (Power Cord: H05VV-F 3×1.5mm²);

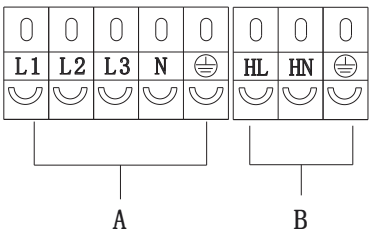
HLT12MONO-S

A: Unit power supply (Power Cord: H05VV-F 3×4mm²).
B: Emergency electric heater power supply (Power Cord: H05VV-F 3×1.5mm²);



HLT16MONO-3S

A: Unit power supply (Power Cord: H05VV-F 5×2.5mm²).
B: Emergency electric heater power supply (Power Cord: H05VV-F 3×1.5mm²);



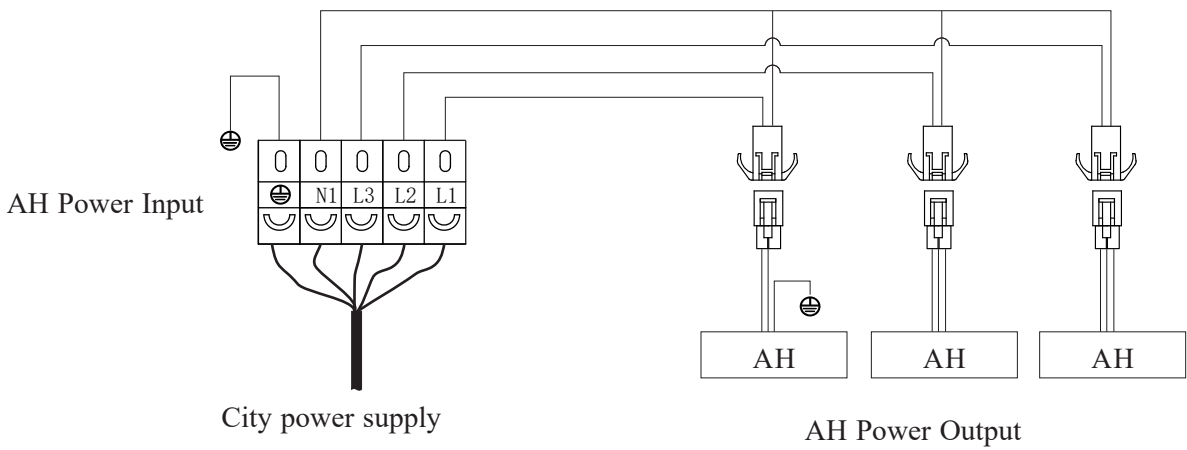
NOTE: The emergency electric heater must be connected to a separate power source than the main power source of the unit.

HLT-9-3S
HLT-12-3S

2.7 Indoor unit & Integrated auxiliary heater (AH) power supply

Unit power supply & Power supply for AH-Auxiliary heater inside unit (Power Cord: H05VV-F 5×2.5mm², city power input)

Unit power supply & Power supply for AH-Auxiliary heater inside unit should be connected to city power input.



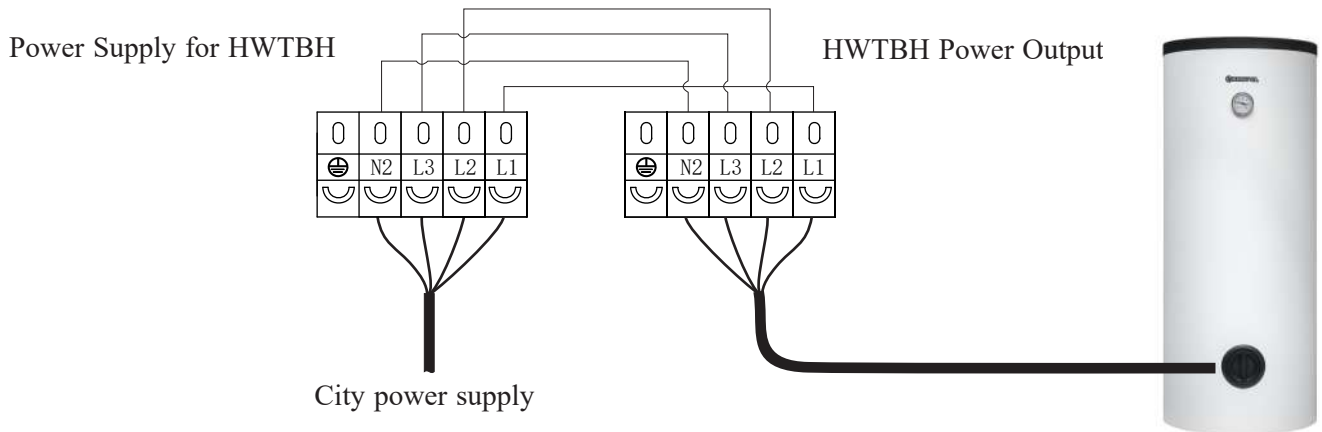
2. Installation

2.8 HWTBH (DHW tank electric heater) power supply

If DHW tank has electric heater installed, it can be controlled by heat pump.

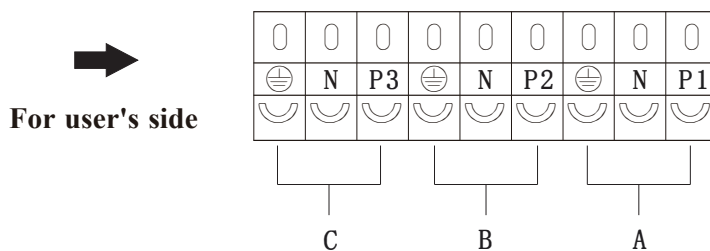
Power supply for HWTBH - Hot Water Tank Back-up Heater (Power Cord: H05VV-F 5×2.5mm², city power input)

In that way, city power input (1 phase or 3 phase) should be connected to "Power Supply for HWTBH 5×2.5mm²".



Electric heater installed in to the DHW tank connect to port "HWTBH Power Output".

2.9 Circulation pump power supply



A,B,C-Water Pumps

A - Pump 1: Circulation pump (heating/cooling)

B - Pump 2: Circulation pump (heating/cooling)

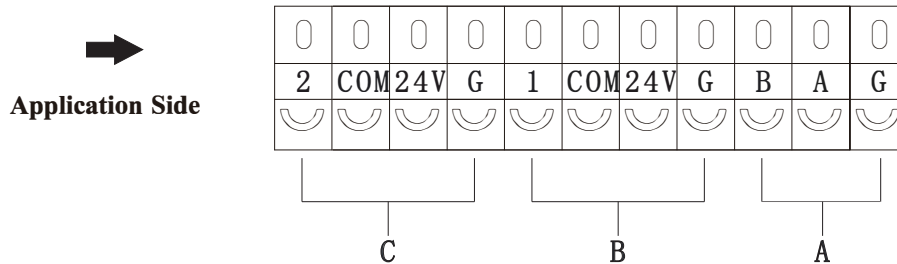
C - Pump 3: Circulation pump (hot water)

Pump 0: DC pump inside the indoor control unit.

If there is an external water pump in heating, cooling or hot water system, it can be connected to these ports to be controlled by the heat pump.

2. Installation

2.10 Communication & Mixing valves connections



A: Signal cable to outdoor unit

Connect connectors A, B and G to the corresponding connectors A, B and G on the outdoor unit (Cable: 2x26AWG shielded).

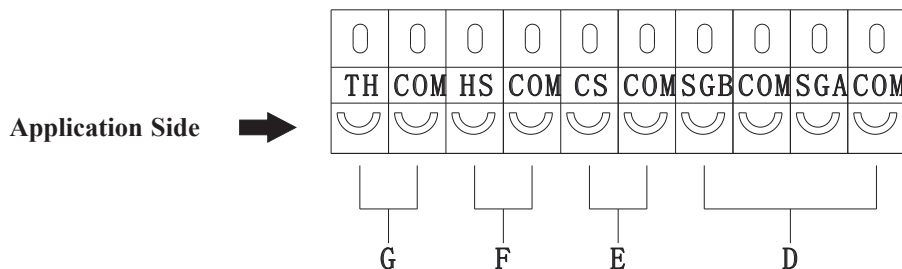
B, C: Motorized Water mixture valve 1&2:

This unit can have two water mixture valves for distribution system under its control.

Water Mixture Valve 1 for Heating & Cooling circuit 1 (for special cases only);

Water Mixture Valve 2 for Heating & Cooling circuit 2 (for underfloor heating mixing station).

2.11 SG-Ready & Cooling / Heating switches



D: SG-Ready

This function can respond to defined external control signals by smart grid, "SG Ready" is a smart tariff management scheme. This function can respond to defined external signals and adjusts heat pump's operation according to the price signals and status of the grid, which allows the heat pump to support the grid, have a lower carbon footprint and be more cost-effectiveness to operate.

E, F: Cool mode & heat mode switch-over

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

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

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

2. Installation

G: High demanding distribution system switch

When two heating distribution systems are connected, unit should always take the set temperature for high demanding circuit, which needs higher temperature in heating and lower temperature in cooling operation, as the set temperature for the heat pump unit.

However, when this high demanding circuit is not needed or has reached the set temperature, heat pump unit can switch the heat pump set temperature to the values set for the other circuit, for better efficiency.

This set of connector is used to receive the signal from high demanding circuit, if has.

When "CLOSE" signal is received, unit works with high demanding.

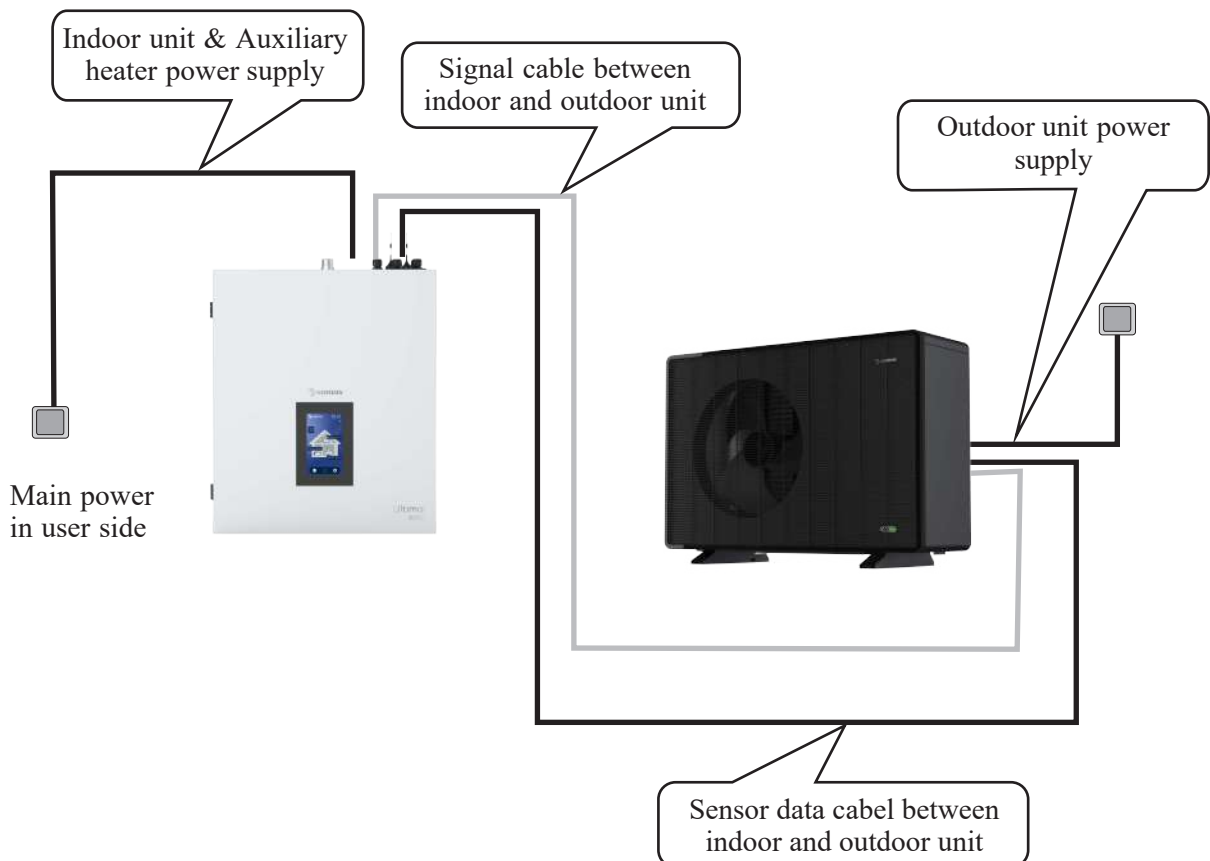
When "OPEN" signal is received, unit works with low demanding.

2.12 Wiring

- ◆ It is recommended to use a suitable circuit breaker for the heat pump;
- ◆ The power supply to the heat pump unit must be grounded.
- ◆ The wiring should be done by professional person.
- ◆ The wiring should be comply with the local industry regulation.
- ◆ The wiring should be done after the unit is powered off.
- ◆ Cable should be fixed tightly, to ensure it won't get loose.
- ◆ Don't connect several parts of cables together to use.
- ◆ Make sure the power supply in the local coincide with the power supply marked in rating label.
- ◆ Make sure power supply, cable and socket can meet the requirement of the input power of the unit.
- ◆ No open fire during installation

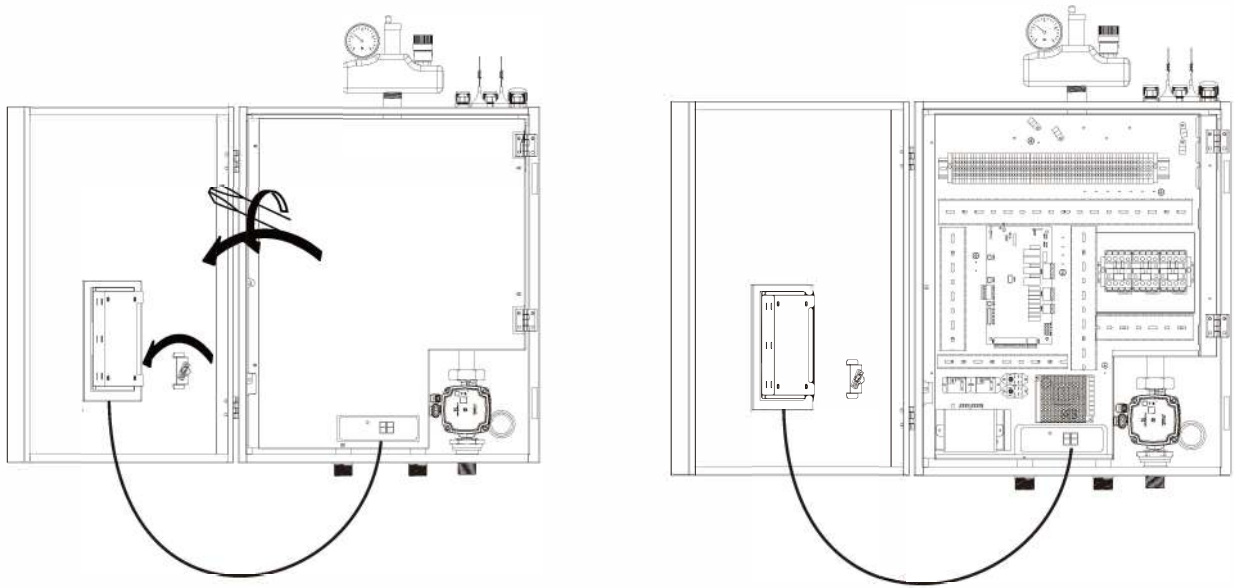


Installation sketch



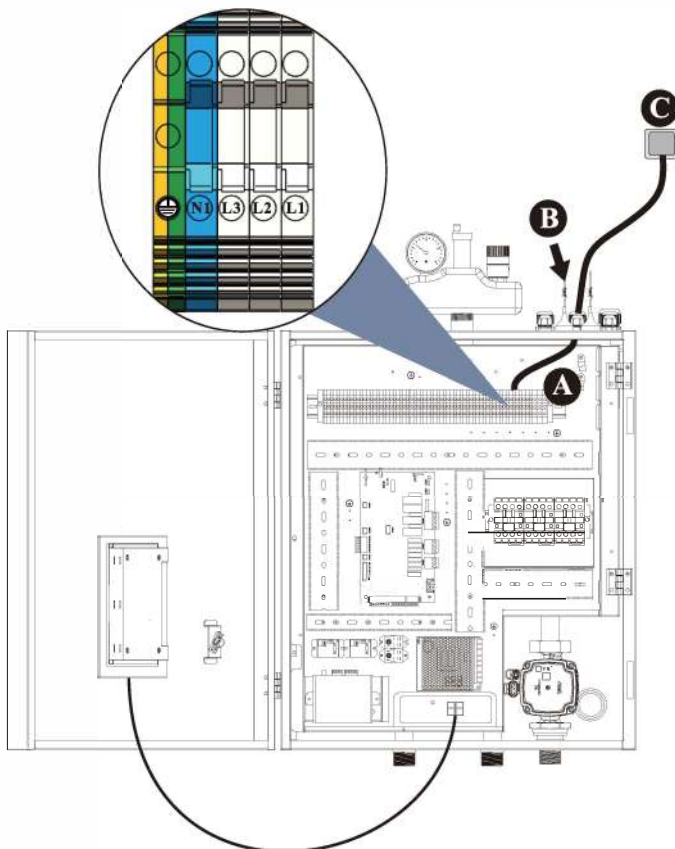
2. Installation

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



1) Indoor unit power supply & Auxiliary Heater power cable

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



A. Insert one end of this cable through the cable gland on bottom of the indoor control unit, and connect it with heat pump power supply terminals(@, N1, L3, L2, L1).

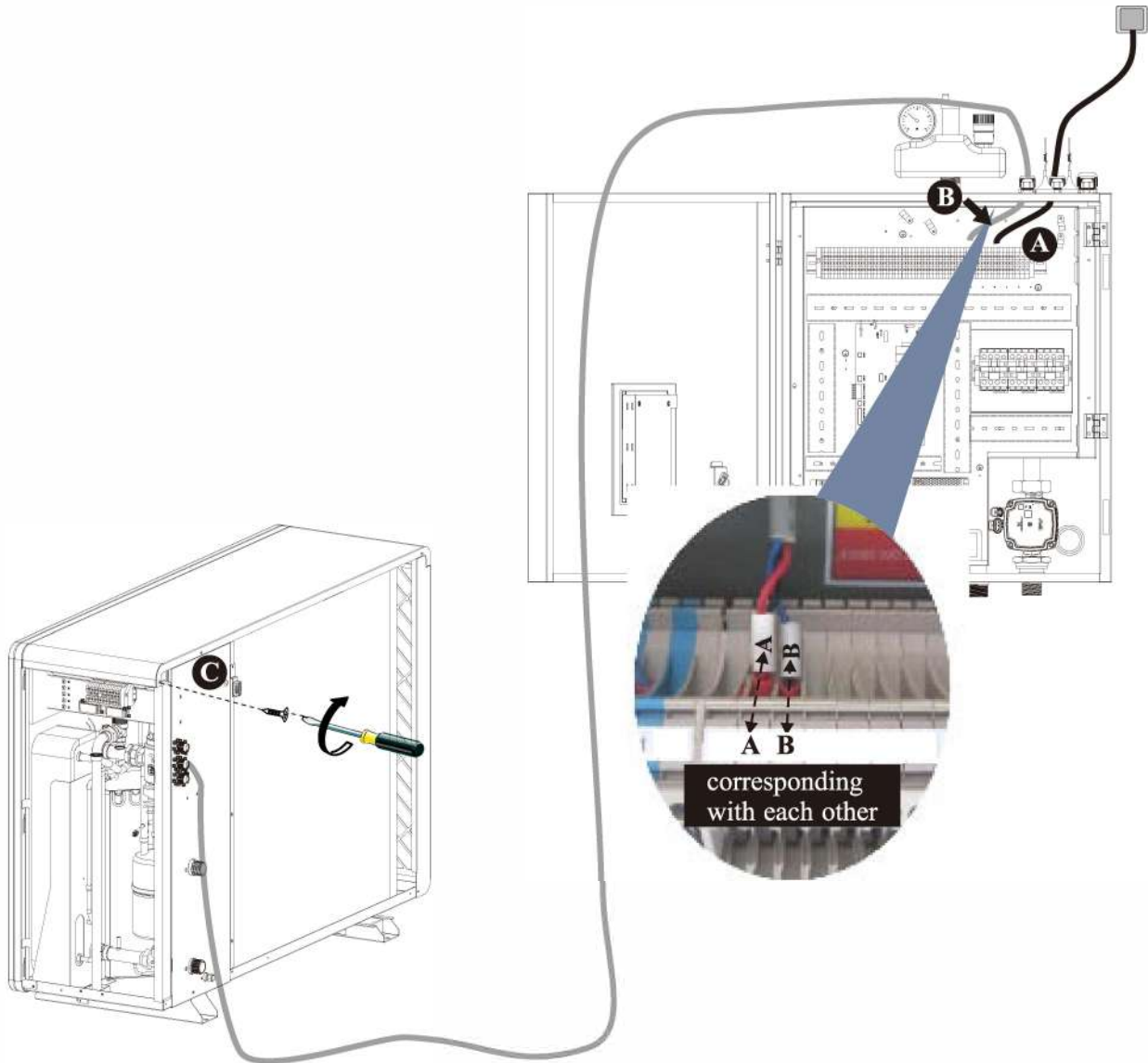
B. Fasten the cable gland to ensure the cable won't get loosen.

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

2. Installation

2) Signal cable between indoor control unit and outdoor unit

10m communication cable is packed in accessories bag.



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

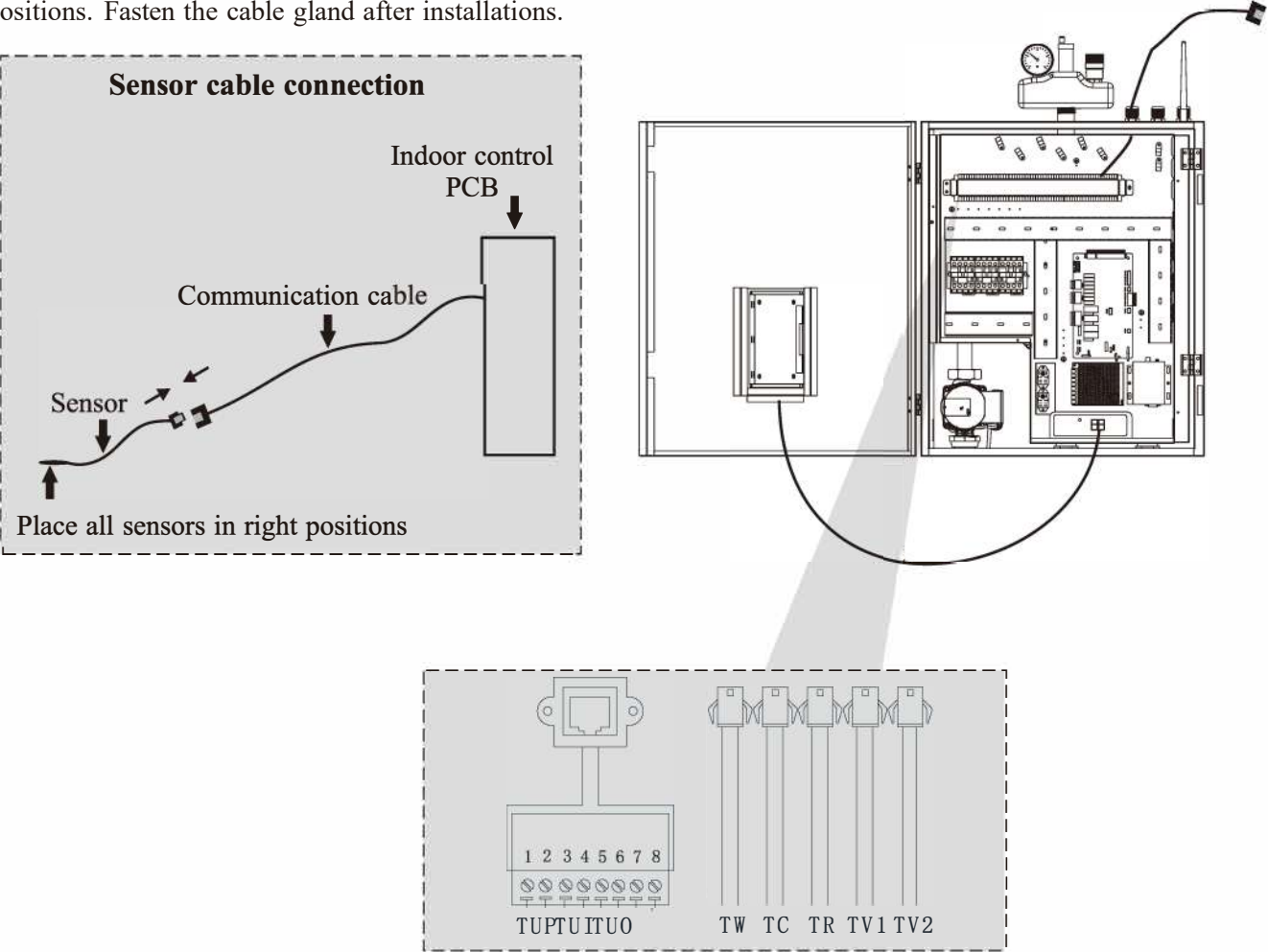
B. Fasten the cable gland to ensure the cable won't get loosen.

C. Take off the side panel, and connect the other end of communication cable to correspondent terminal block through cable gland. Fix the cable with cable gland after cable is well connected. A and B on outdoor unit should be connected with A and B on indoor control unit, otherwise unit will show communication failure.

2. Installation

3) Sensor cables

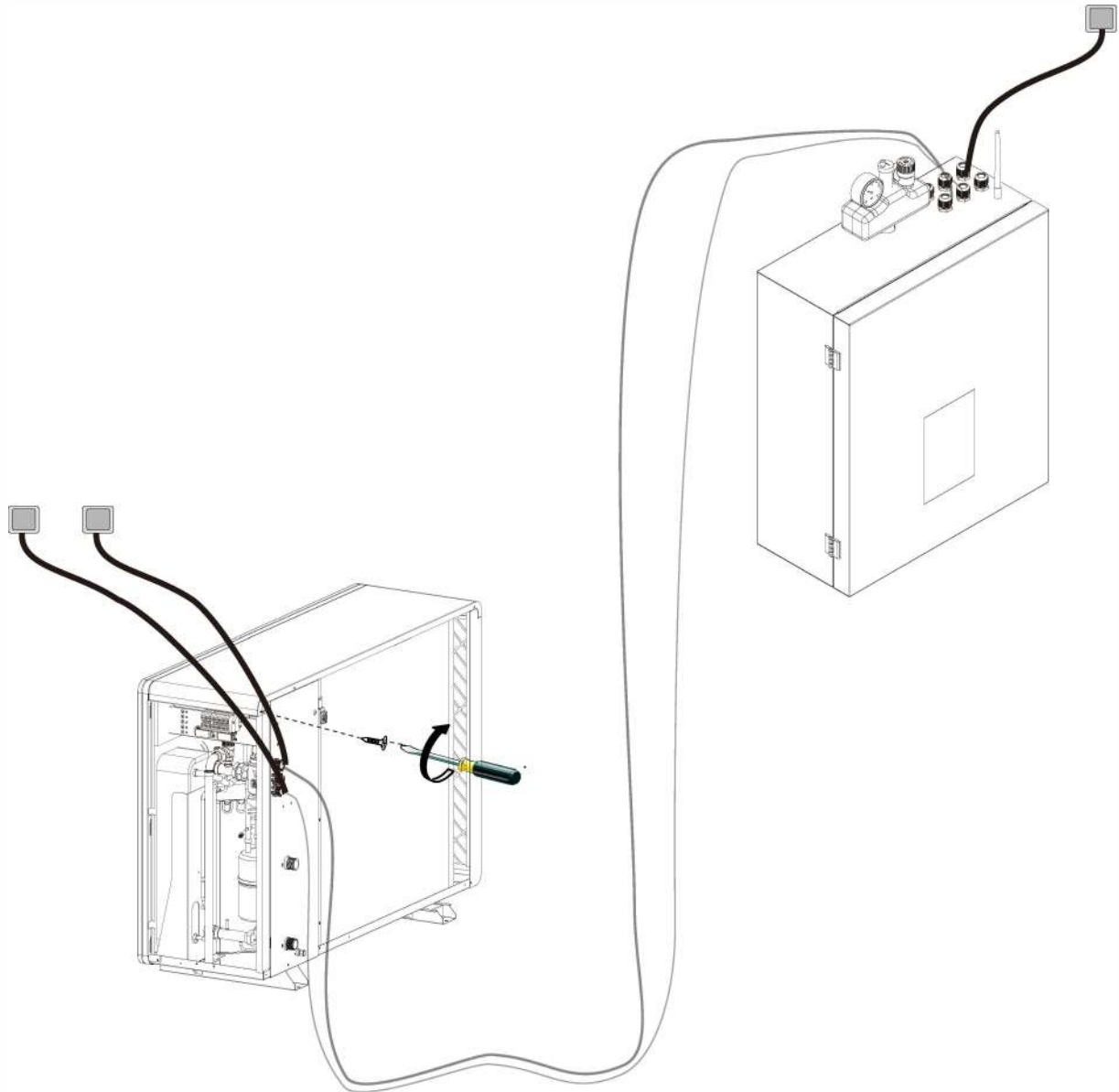
Take all sensors and communication cables out from the accessories bag. Connect the sensors together with the quick connectors on extension cables and insert the end with the connector into the indoor unit through cable gland. Connect them with the quick connector inside the indoor unit and place all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



A	TW - Water temperature sensor for sanitary hot water	Connect these sensors with sensors' extension cables by quick connectors, and then connect these extension cables with corresponding sensors' wires on indoor unit. These sensors and extension cables are packed inside the accessories bag.
	TC - Water temp. sensor for cooling and heating	
	TR - Room temperature sensor	
	TV1 - Water temperature sensor after mixture valve 1	
	TV2 - Water temperature sensor after mixture valve 2	
B	TUP - Coil temperature sensor	Connect these sensors (both in outdoor and indoor unit) with connection cable by quick connectors. These sensors are installed already, but should be connected between outdoor and indoor unit with connection cable. Connection cable is in the accessories bag.
	TUI - Water inlet temperature sensor	
	TUO - Water outlet temperature sensor	

2. Installation

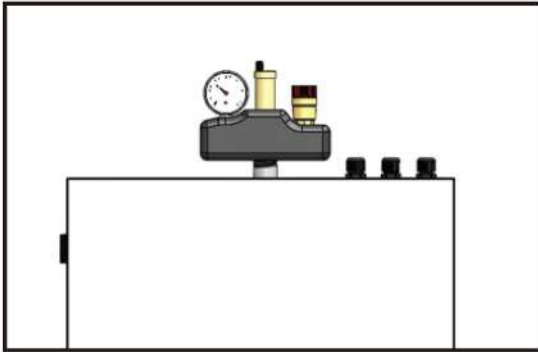
Install the electric box cover on indoor control unit and electric box cover on outdoor unit back, and close the door of indoor control unit.



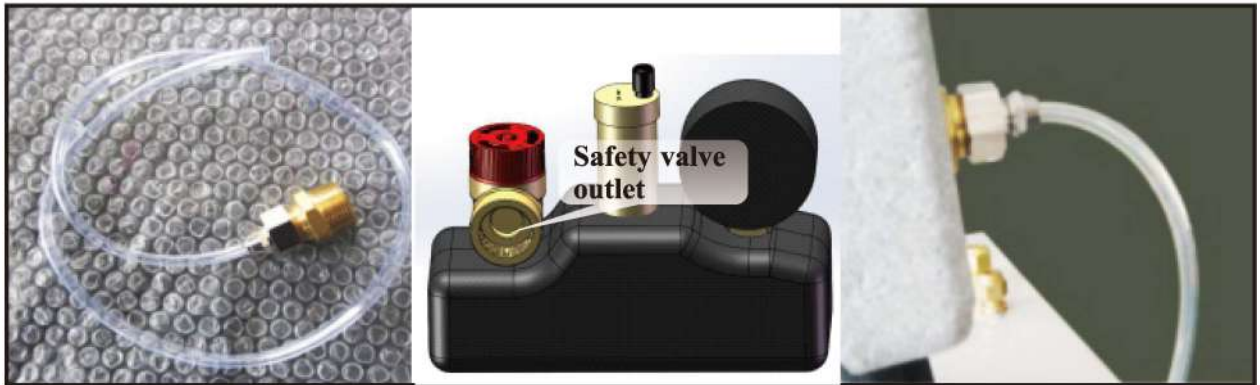
2. Installation

2.13 Installation of safety valve kit

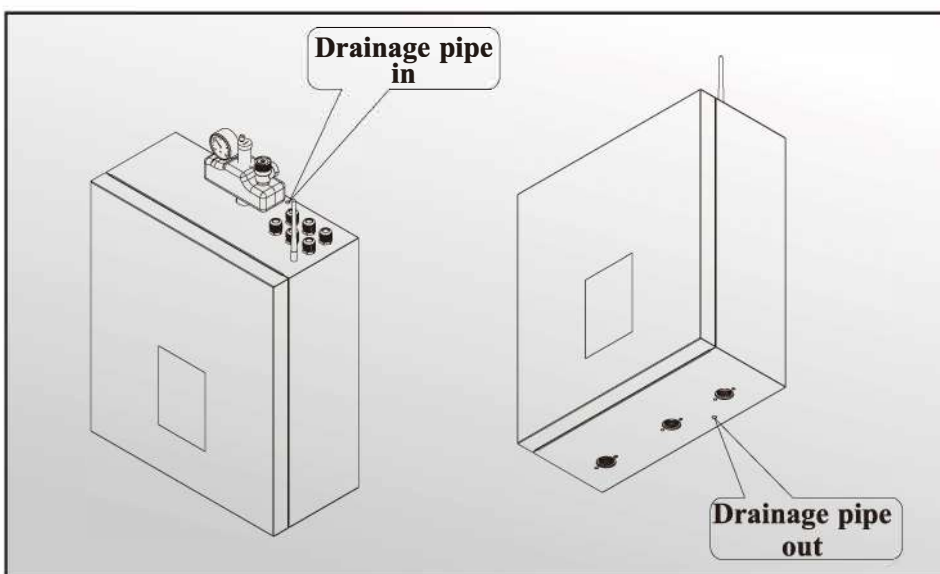
- 1) Install the safety valve kit to the connector on top of indoor control unit.



- 2) Connect the drainage pipe to safety valve outlet.



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

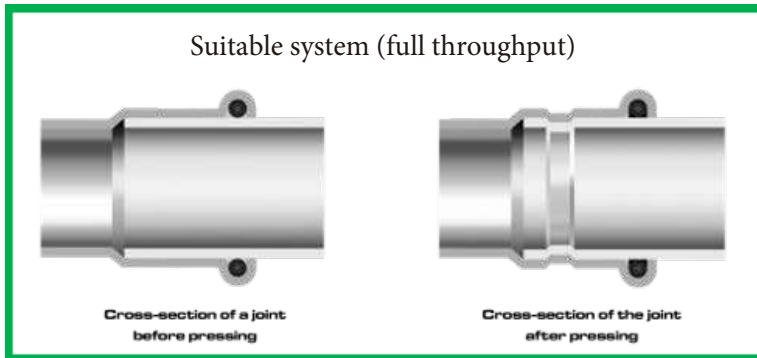


2. Installation

2.14 Water pipe connection

Please carefully select and operate the water pipe. The water pipe system must have the necessary permeability to ensure the flow of water in the distribution system. It is recommended to use pipe systems in which fittings do not reduce the internal diameter (e.g. press steel/copper systems or others).

Heat pump model	Required min pipe diameter
HLT6/9/12MONO-S	Ø28
HLT16MONO-3S	Ø35



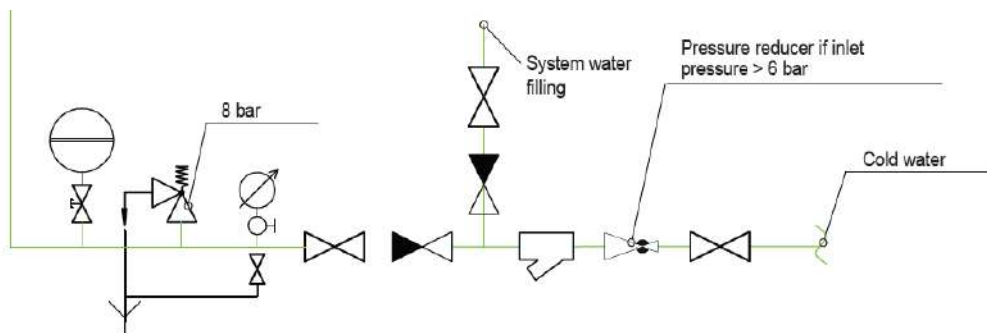
After connection, the water piping should be pressure tested and cleaned before use.

1.Filters. A mesh filter and a magnetic filter must be installed on return pipe before the outdoor unit to keep the water quality and collect impurity contained in the water. Take care to keep the water filter mesh towards the bottom. Check valve is recommended to be installed at both sides of the filters, so as to clean or change the filter in an easier way.

2.One-way valve. One way valve must be installed to water filling connector, to avoid back-flow of water when water supply stops or water pressure not enough.

3.Insulation. All pipes running hot water should be well insulated. The insulation must be tied up tightly without gap (but please don't wrap up the check valve for future maintenance).

Cold water supply system



! Please ensure enough water pressure to send the water to the required height. If the water pressure is not enough to maintain proper water flow rate for the system, please add a water pump to increase the pumping head.

4) Requirements of water quality

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

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

2. Installation

2.15 Test run



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

1) Before start-up

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

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



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

2) Pre-start up

- A. When the installation of unit is completed, water system pipes are well connected and air purging is done, no leakage or other problems, the unit can be powered to start up.
- B. Turn on the unit, press the on-off button on the operation panel to start the unit. Please check carefully if there is some abnormal noise or vibration, or the display of wired controller is normal or not.
- C. After the unit is working properly for 10 minutes, without any problem, then the pre-start up is completed; If not, please refer to the Service and Maintenance chapter in this manual to solve the problems.



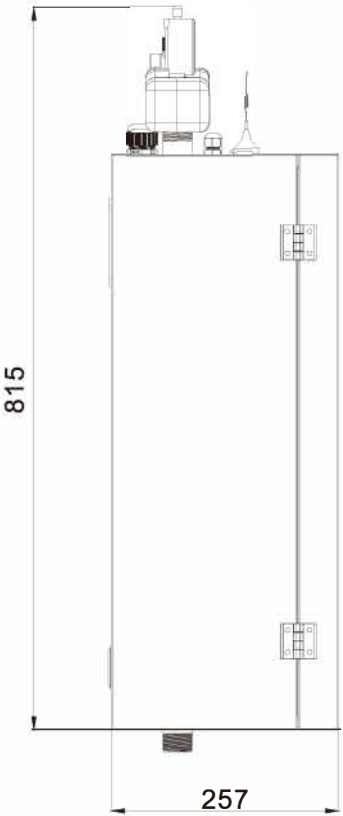
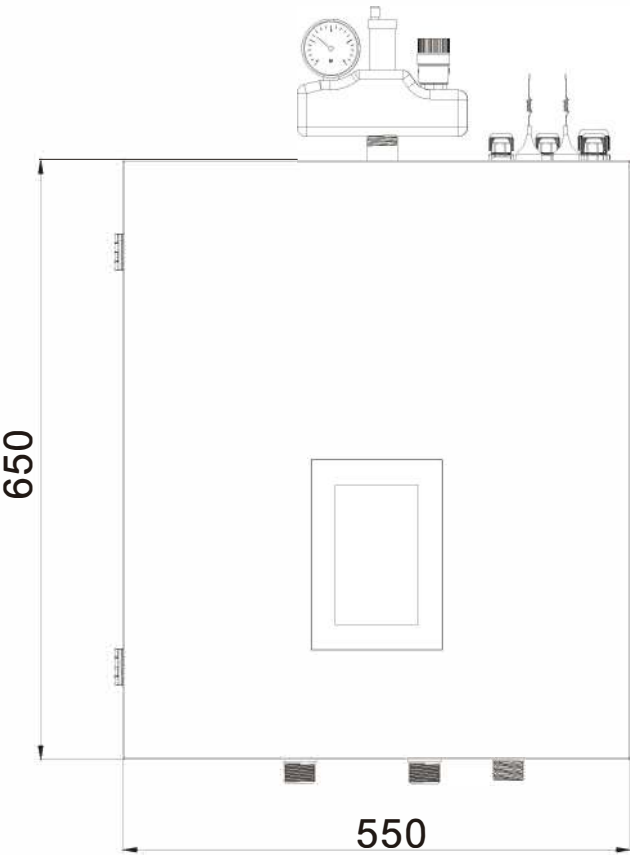
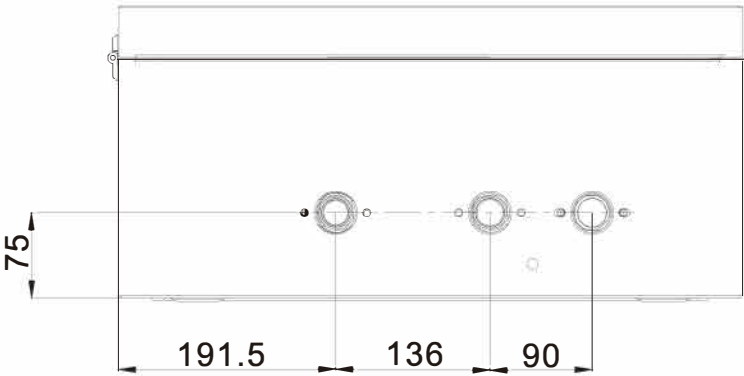
It is suggested not to run "heating" or "hot water" mode, when ambient temperature is over 32°C, otherwise unit may go into protection mode easily.

3. Attached drawing

3.1 Outlines and dimensions

—— Indoor control unit

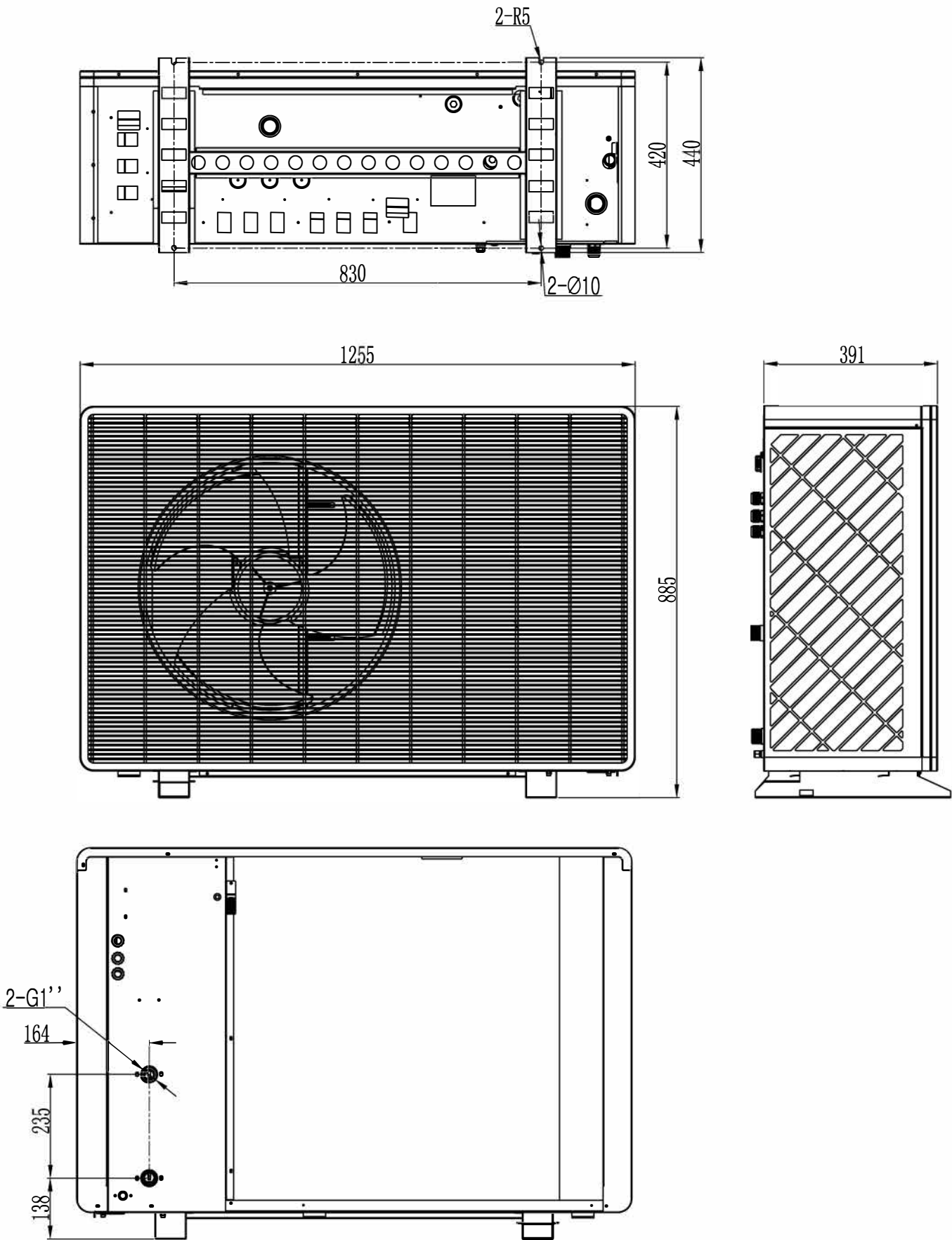
Unit:mm



3. Attached drawing

—— Outdoor unit
HLT6/9MONO-S

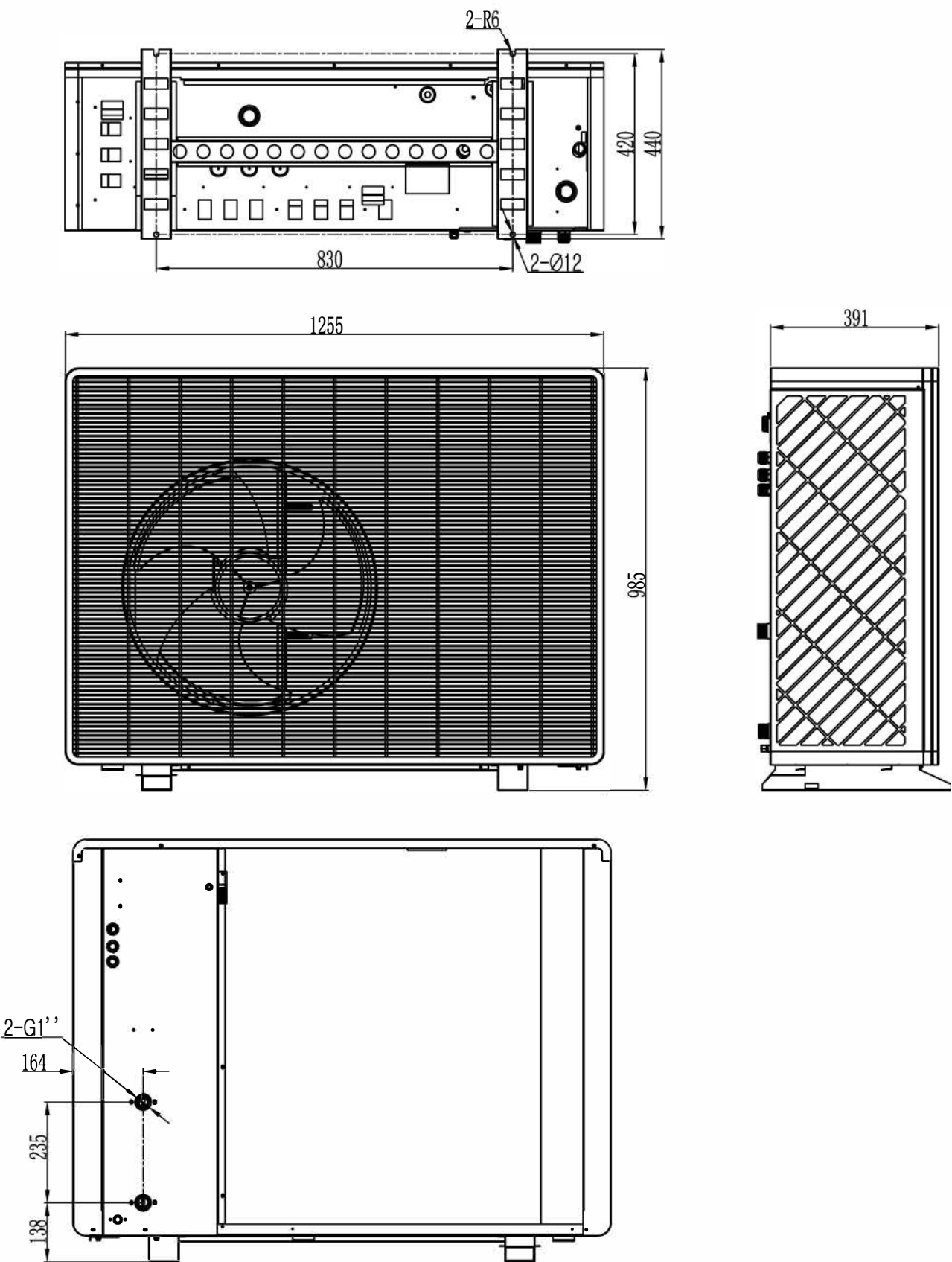
Unit:mm



3. Attached drawing

Outdoor unit
HLT12MONO-S

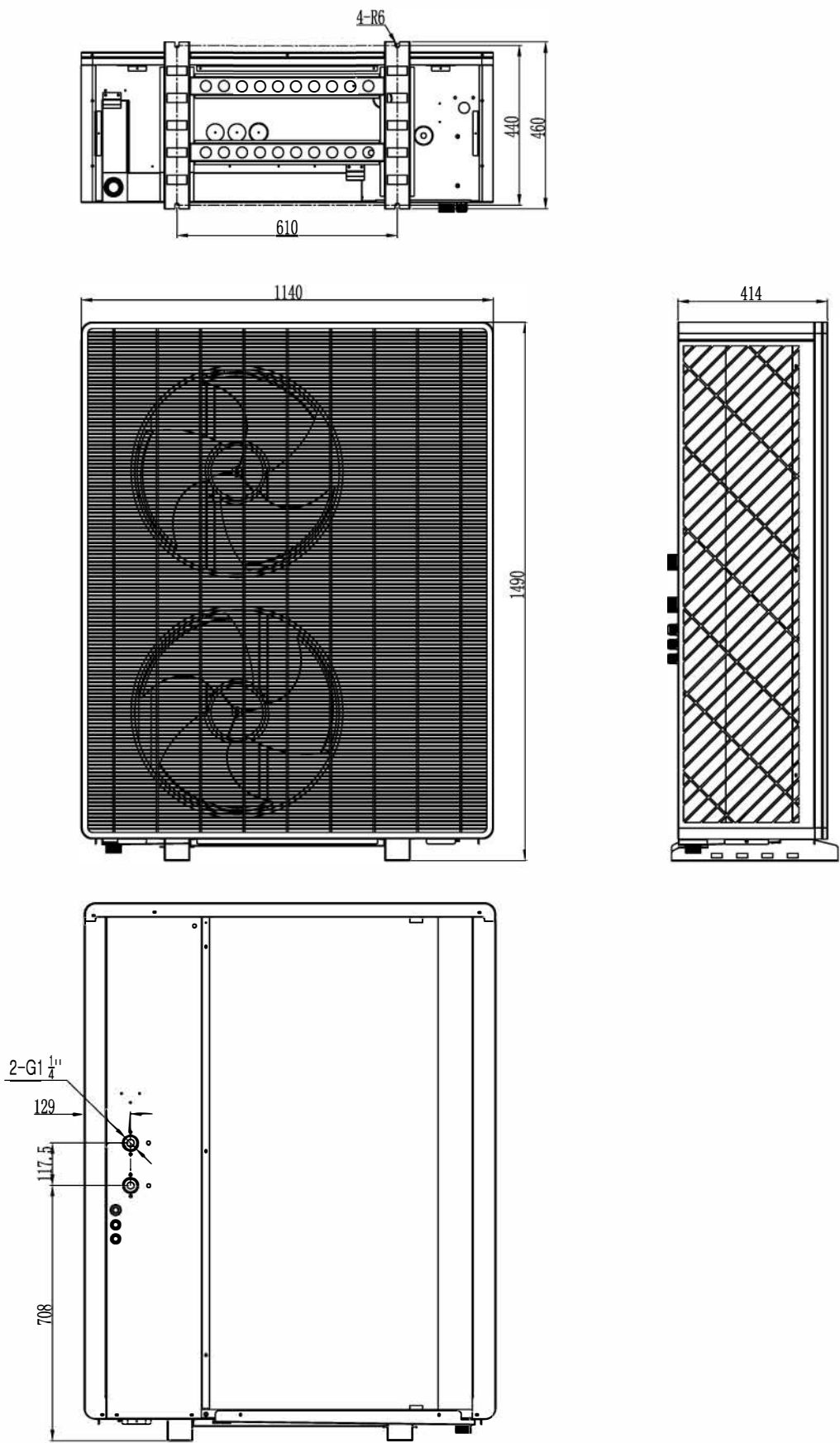
Unit:mm



3. Attached drawing

—— Outdoor unit
HLT16MONO-3S

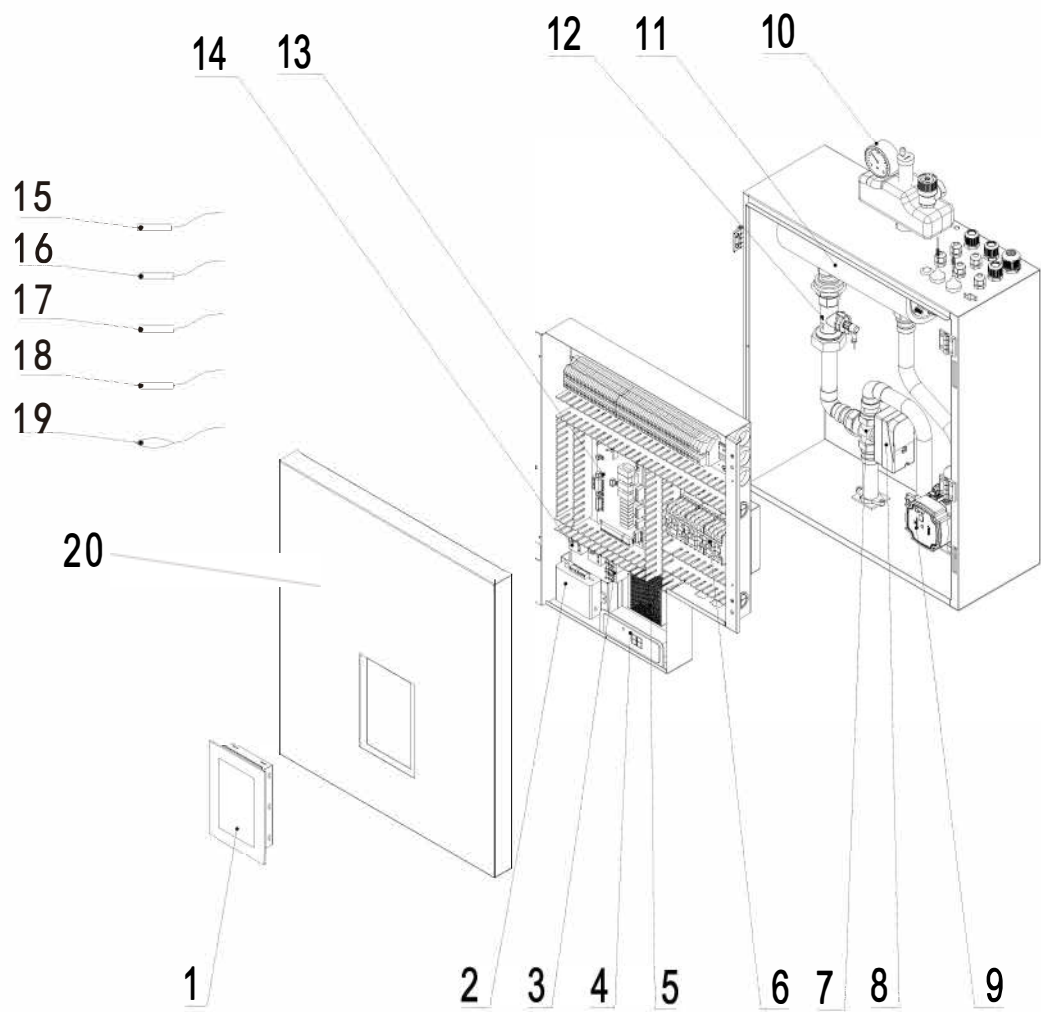
Unit:mm



3. Attached drawing

3.2 Exploded view

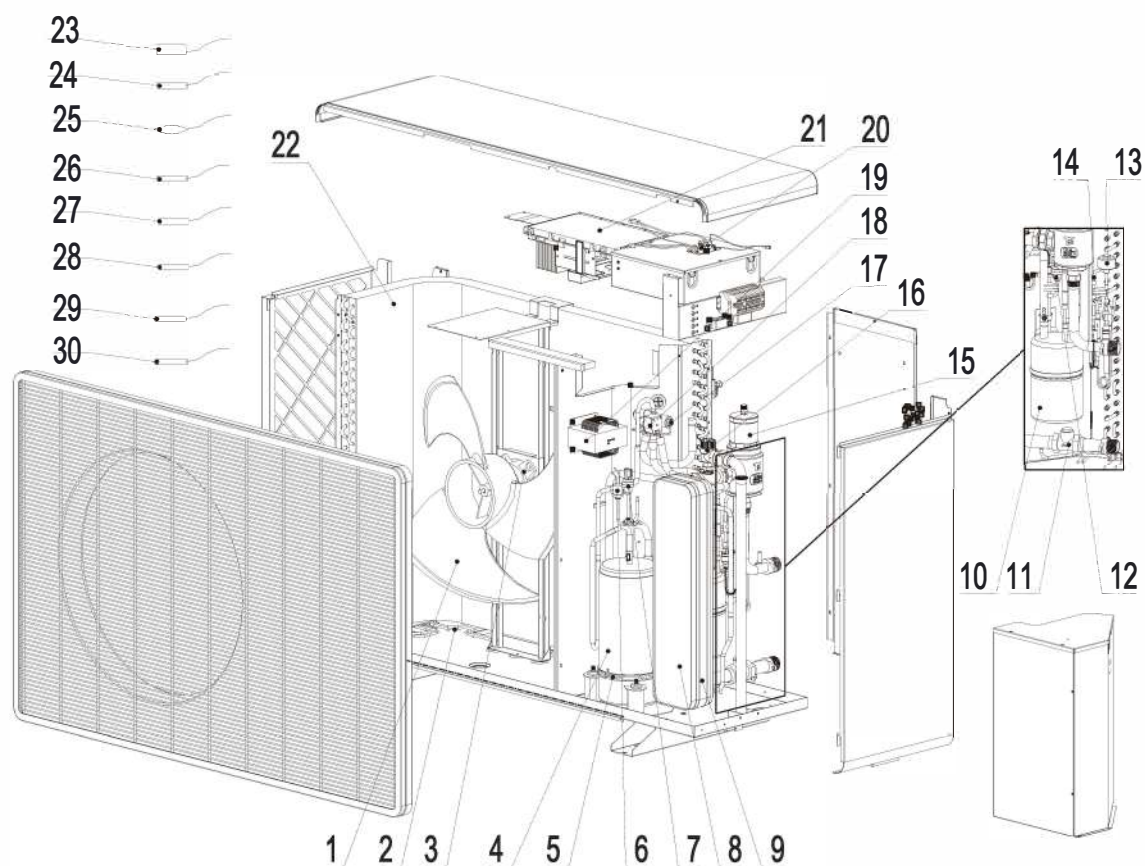
—— Indoor control unit



NO	Name	NO	Name
1	Operation panel	11	Electric heater
2	WiFi DTU module	12	Vortex flow sensor
3	Relay	13	Indoor main PCB
4	Thermostat	14	Relay
5	Power switch	15	Mixing water temp sensor (TV1)
6	AC contactor	16	Mixing water temp sensor (TV2)
7	Three-way valve	17	DHW temp sensor (TW)
8	Three-way valve coil	18	Heating/Cooling temp sensor (TC)
9	Water pump	19	Room temp sensor (TR)
10	Safety valve	20	Door

3. Attached drawing

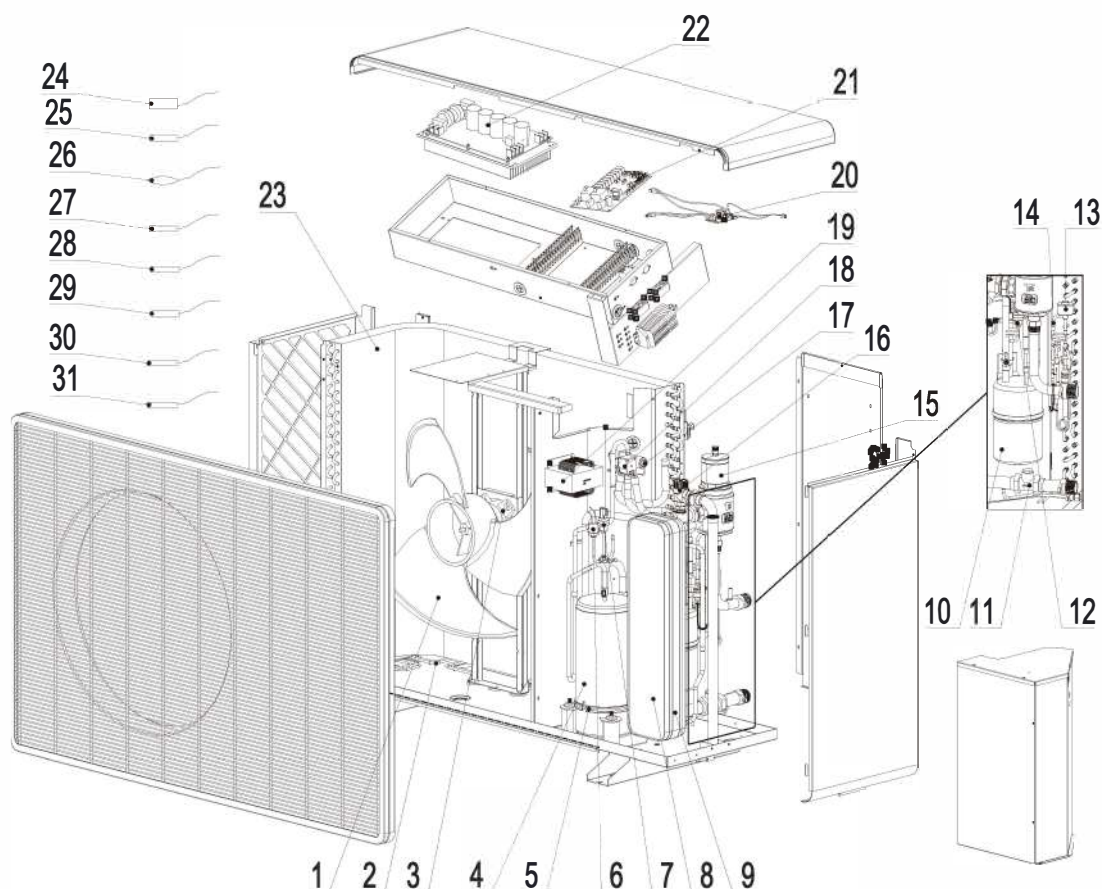
—— Outdoor unit
HLT6/9MONO-S



No	Name	No	Name
1	Fan blade	16	Pressure release valve
2	Bottom plate heater	17	Four-way valve
3	DC motor	18	Four-way valve coil
4	Compressor	19	Reactor
5	Crankcase el. heater	20	Thermostat
6	High pressure switch	21	Outdoor main PCB
7	High pressure sensor	22	Evaporator
8	Plate heat exchanger	23	Discharge temp sensor
9	El. heater for plate heat exchanger	24	Suction temp sensor
10	Heat exchange gas-liquid separator	25	Ambient temp sensor
11	Check valve	26	Outer coil temp sensol
12	Low pressure sensor	27	Inner coil temp sensor
13	EEV coil	28	Temp sensor for plate heat exchanger
14	EEV	29	Water inlet temp sensor
15	Gas separator	30	Water outlet temp sensor

3. Attached drawing

—— Outdoor unit
HLT12MONO-S

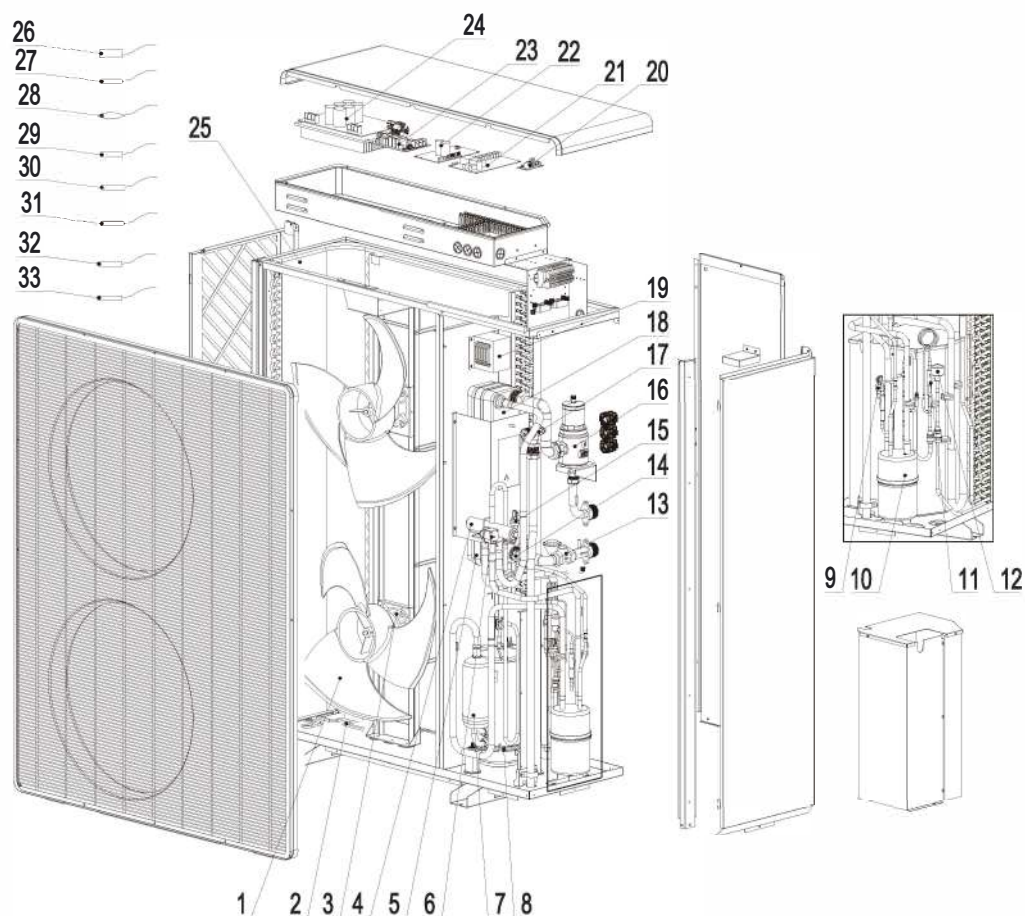


No	Name	No	Name
1	Fan blade	17	Four-way valve
2	Bottom plate heater	18	Four-way valve coil
3	DC motor	19	Reactor
4	Compressor	20	Thermostat
5	Crankcase el. heater	21	Outdoor main PCB
6	High pressure switch	22	Drive PCB
7	High pressure sensor	23	Evaporator
8	Plate heat exchanger	24	Discharge temp sensor
9	El. heater for plate heat exchanger	25	Suction temp sensor
10	Heat exchange gas-liquid separator	26	Ambient temp sensor
11	Check valve	27	Outer coil temp sensol
12	Low pressure sensor	28	Inner coil temp sensor
13	EEV coil	29	Temp sensor for plate heat exchanger
14	EEV	30	Water inlet temp sensor
15	Gas separator	31	Water outlet temp sensor
16	Pressure release valve		

3. Attached drawing

—— Outdoor unit

HLT16MONO-3S

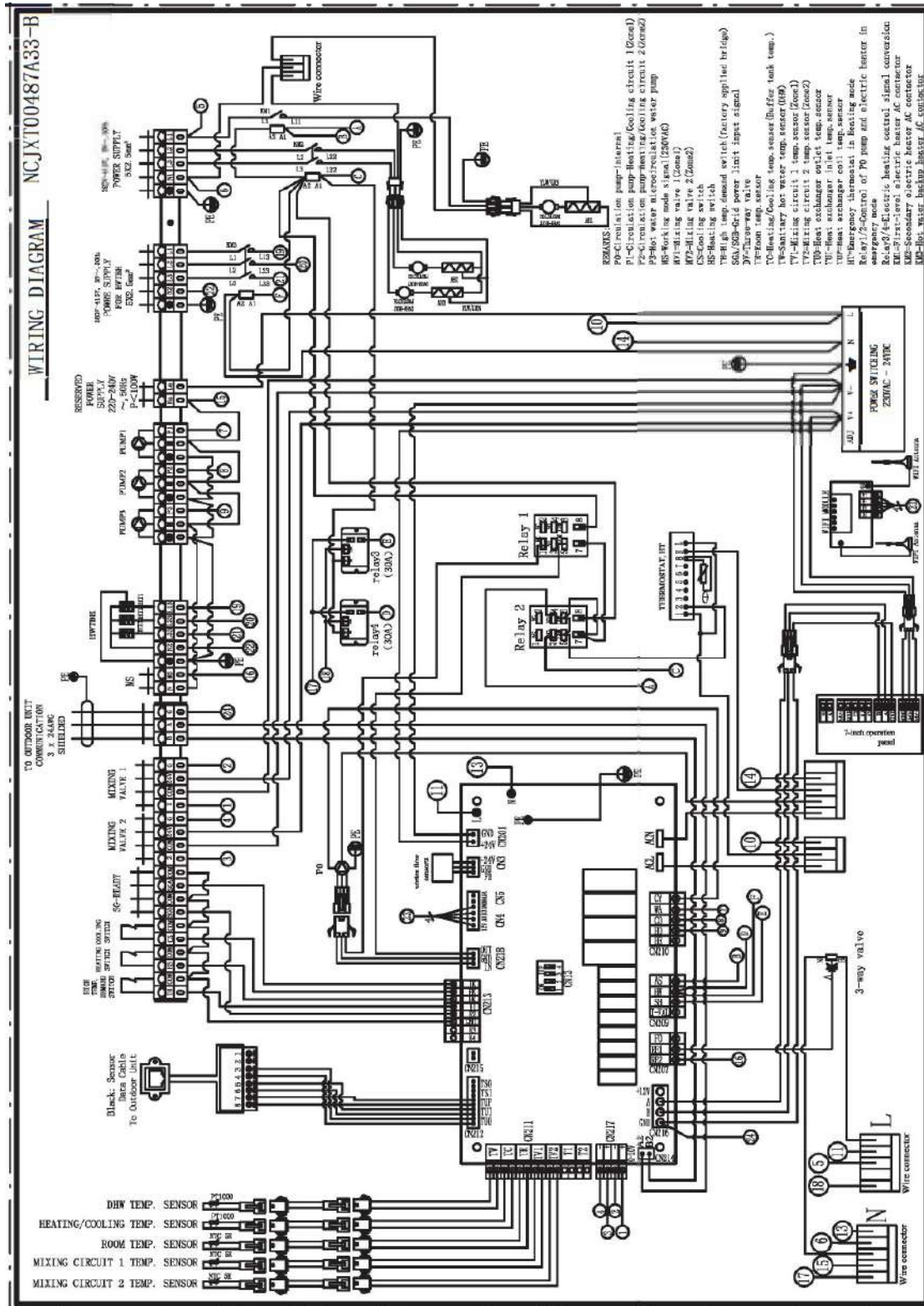


No	Name	No	Name
1	Fan blade	18	Plate heat exchanger
2	Bottom plate heater	19	Reactor
3	DC motor	20	Thermostat
4	Four-way valve	21	Outdoor main PCB
5	El. heater for plate heat exchanger	22	Fan drive PCB
6	Four-way valve coil	23	Filter PCB
7	Compressor	24	Drive PCB
8	Crankcase el. heater	25	Evaporator
9	Low pressure sensor	26	Discharge temp sensor
10	Heat exchange gas-liquid separator	27	Suction temp sensor
11	EEV	28	Ambient temp sensor
12	EEV coil	29	Outer coil temp sensor
13	Check valve	30	Inner coil temp sensor
14	High pressure switch	31	Temp sensor for plate heat exchanger
15	High pressure sensor	32	Water inlet temp sensor
16	Gas separator	33	Water outlet temp sensor
17	Pressure release valve		

3. Attached drawing

3.3 Wiring diagram

—— Indoor control unit

HLT-9(12)-3S

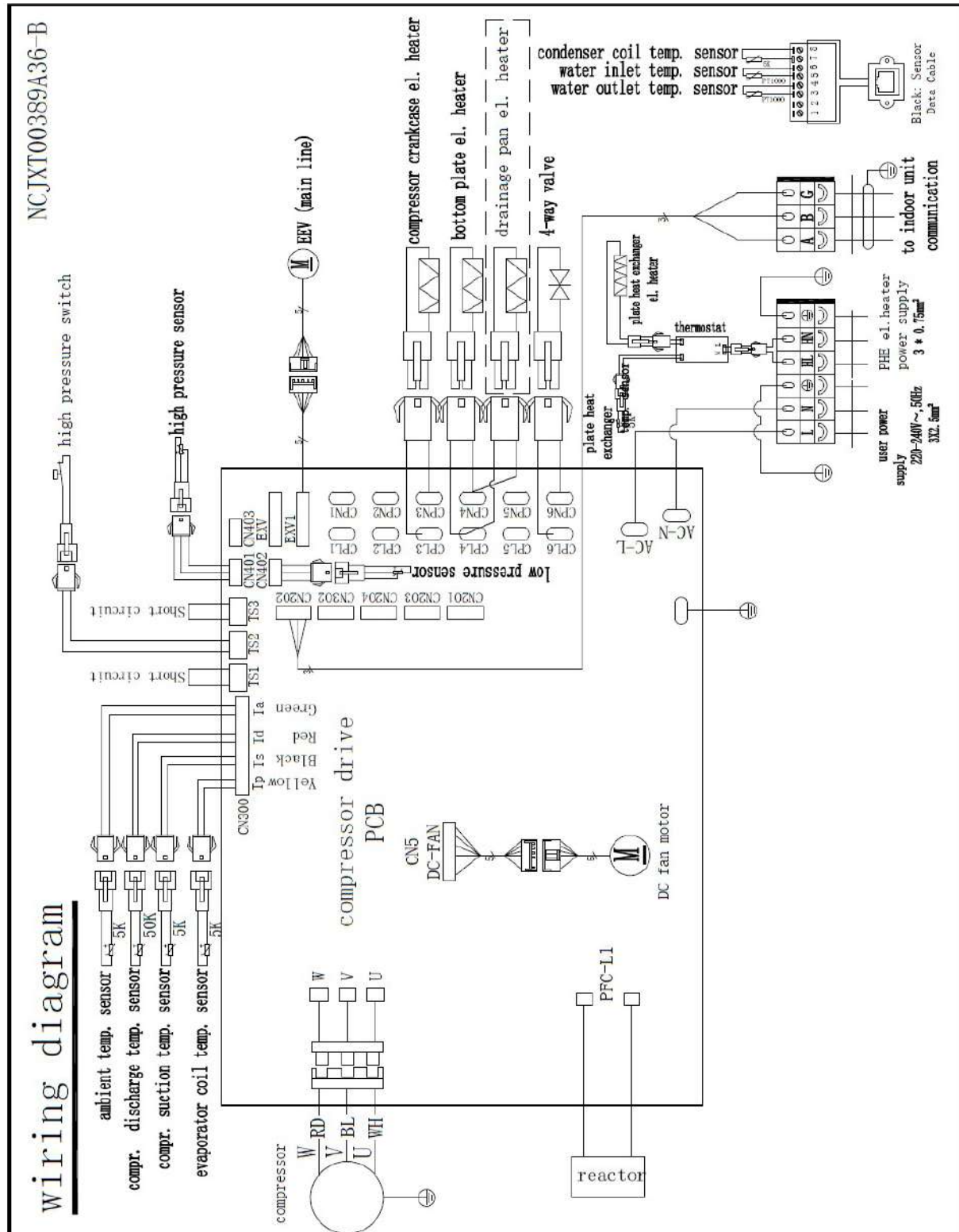
TAKE CARE!

The specifications are subject to change without prior notice.

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

3. Attached drawing

Outdoor unit HLT6/9MONO-S



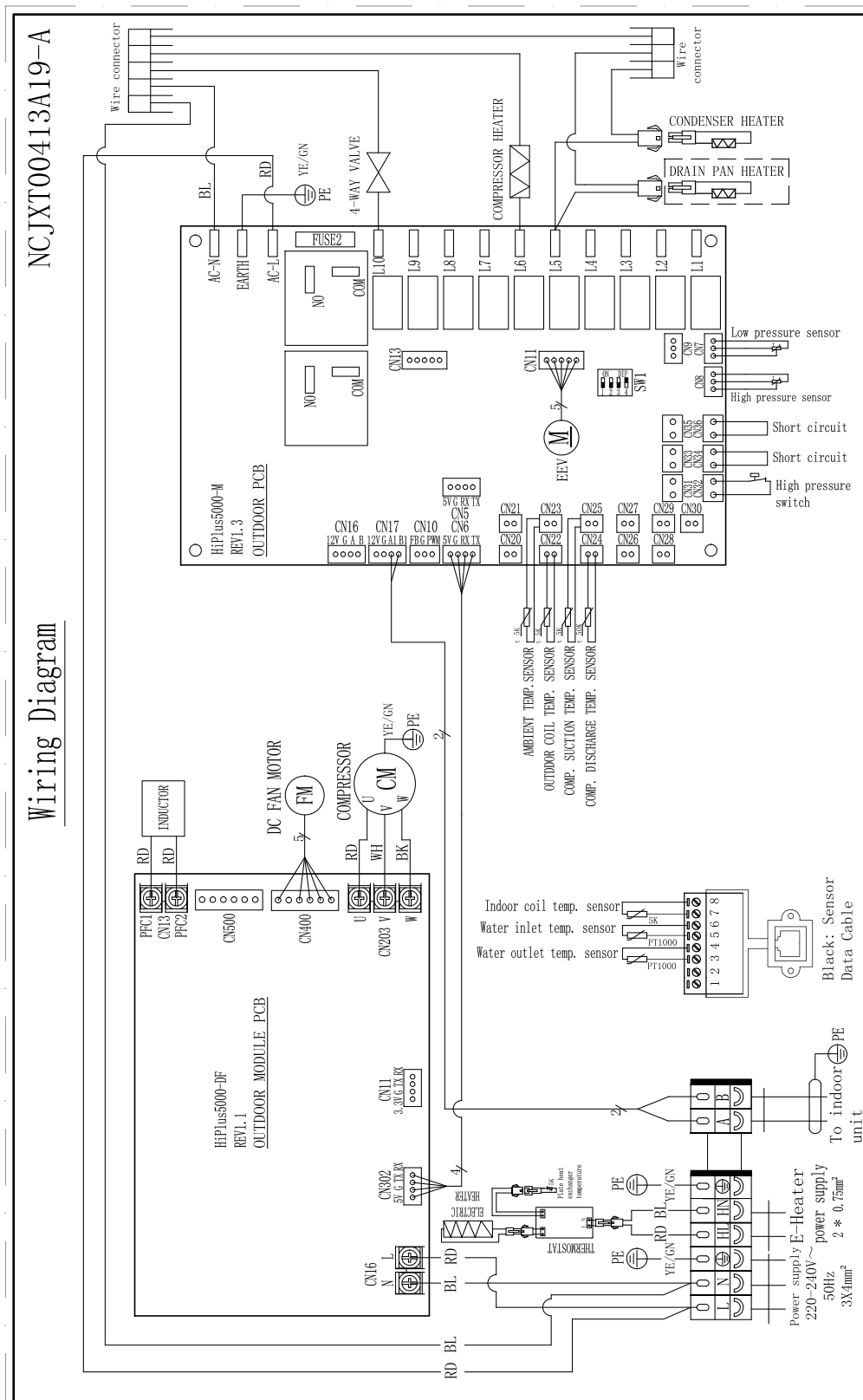
TAKE CARE!

The specifications are subject to change without prior notice.

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

3. Attached drawing

— Outdoor unit
HLT12MONO-S



TAKE CARE!

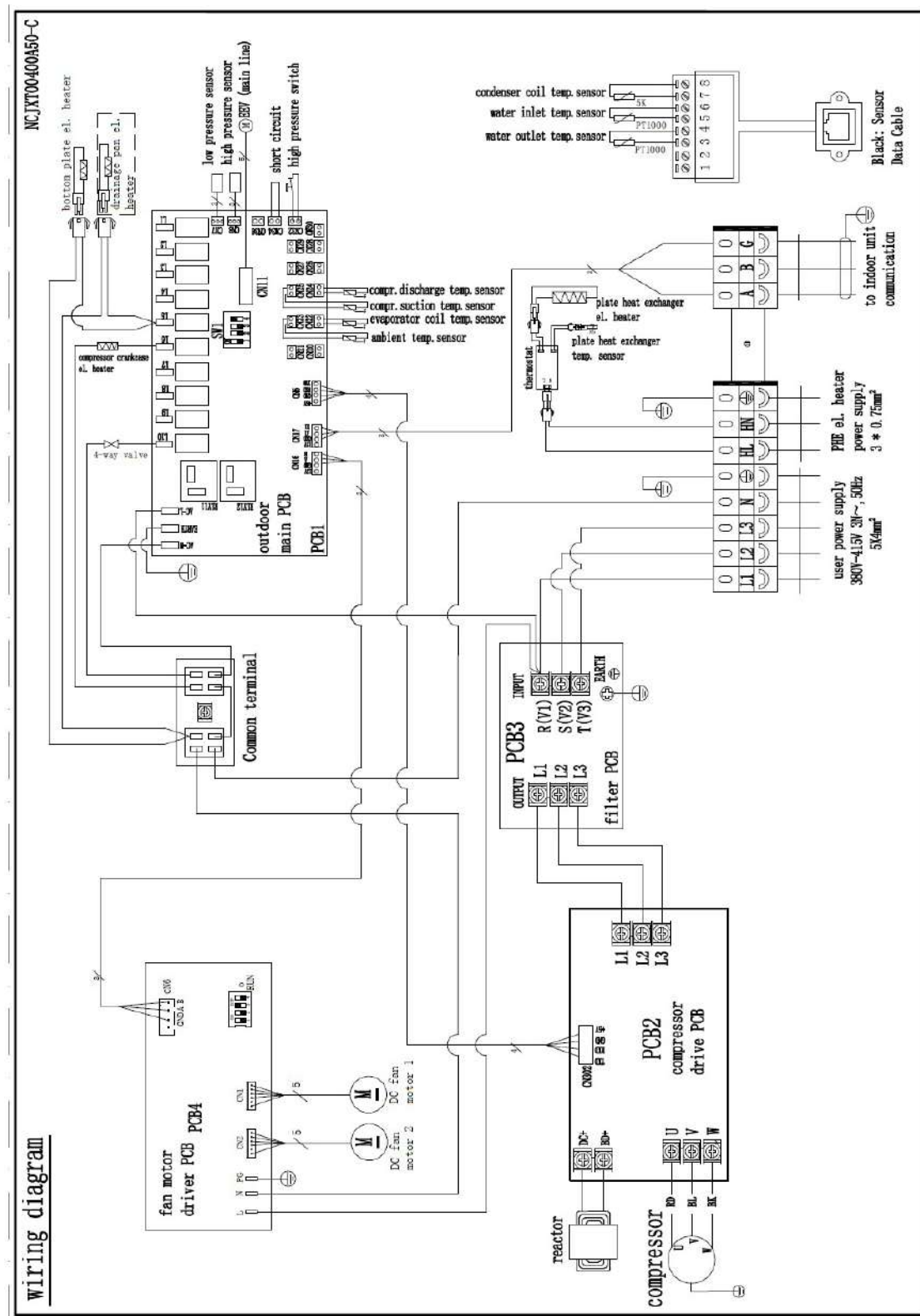
The specifications are subject to change without prior notice.

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

3. Attached drawing

Outdoor unit

HLT16MONO-3S



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.

NOTES

[illegible]

Thank you for choosing our quality product.

Please read this manual carefully before use and follow the instructions to operate the unit in order to prevent damages on the device or injuries to staff.

Specifications are subject to change with product improvements without prior notice. Please refer to the specification sticker on the unit for upgraded specifications.