

DC Inverter Air to Water Heat Pump with DHW tank

ULTIMA (R290)



Indoor units:

HTL-9-250-3S

HTL-12-250-3S

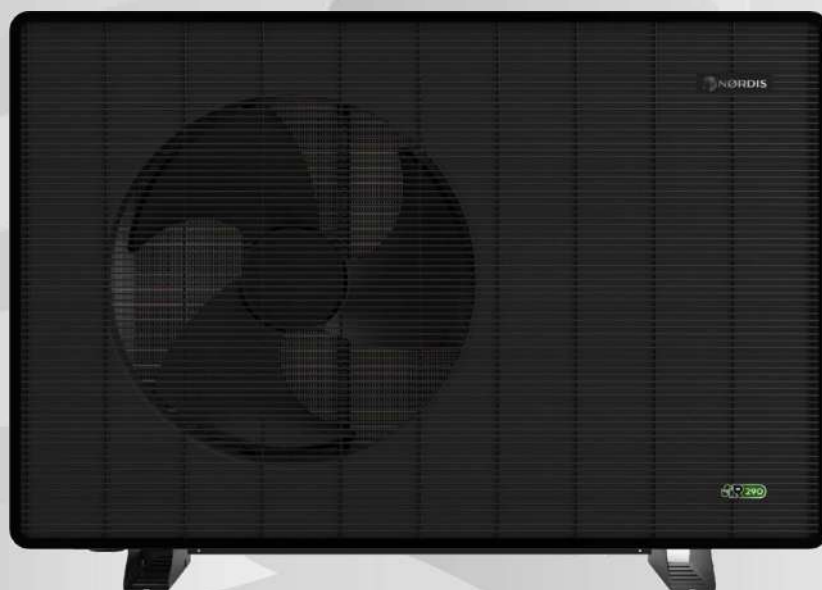
Outdoor units:

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.



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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.



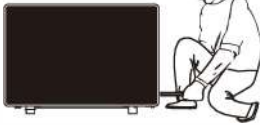
Warning



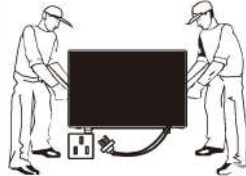
Caution



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.



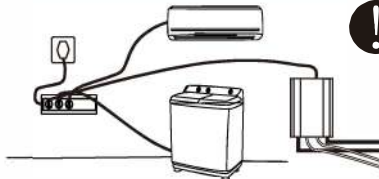
To avoid electrical shock, make sure to disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and, before touching, make sure that those voltages are lower than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

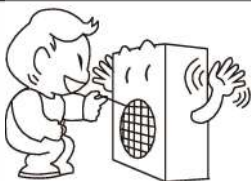
Ground wire



The power supply to the unit must be grounded.



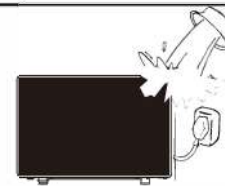
This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.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


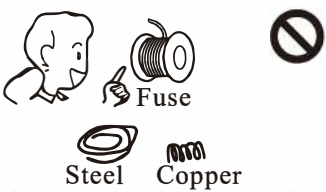
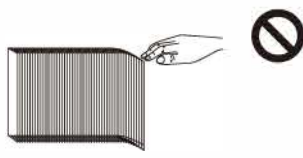


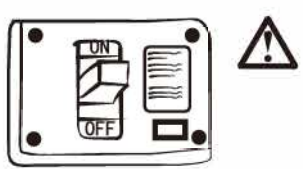

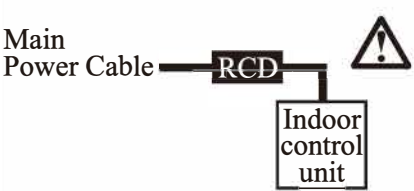
Do not touch the power plug with wet hands. Never pull out the plug by pulling the power cable.




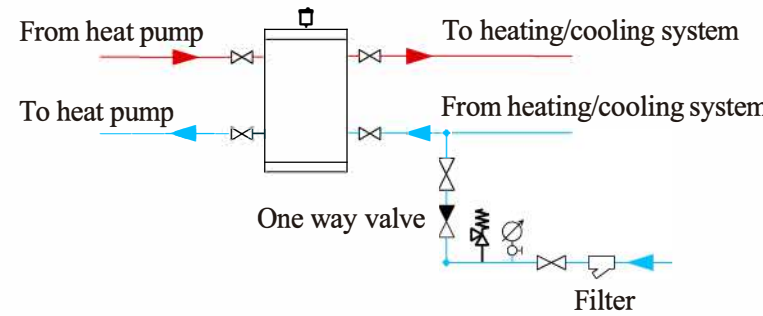
Water or any kind of liquid is strictly forbidden to be poured into the product, or may cause electric creepage or breakdown of the product.

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>
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 <p>It is mandatory to use a suitable circuit breaker for the heat pump and make sure the power supply to the unit corresponds to the specifications. Otherwise the unit might be damaged.</p>	 <p>Disposal of Scrap Batteries (if there is) . Please discard the batteries as sorted municipal waste at the accessible collection point.</p>	 <p>Installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable.</p>
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 **System water filling**

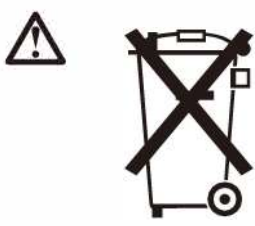


The diagram illustrates the water filling process for the system. It shows a central unit with four ports. The top-left port is labeled 'From heat pump' with a red arrow pointing into the unit. The top-right port is labeled 'To heating/cooling system' with a red arrow pointing out of the unit. The bottom-left port is labeled 'To heat pump' with a blue arrow pointing into the unit. The bottom-right port is labeled 'From heating/cooling system' with a blue arrow pointing out of the unit. Below the unit, there is a 'One way valve' and a 'Filter' in the line.

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

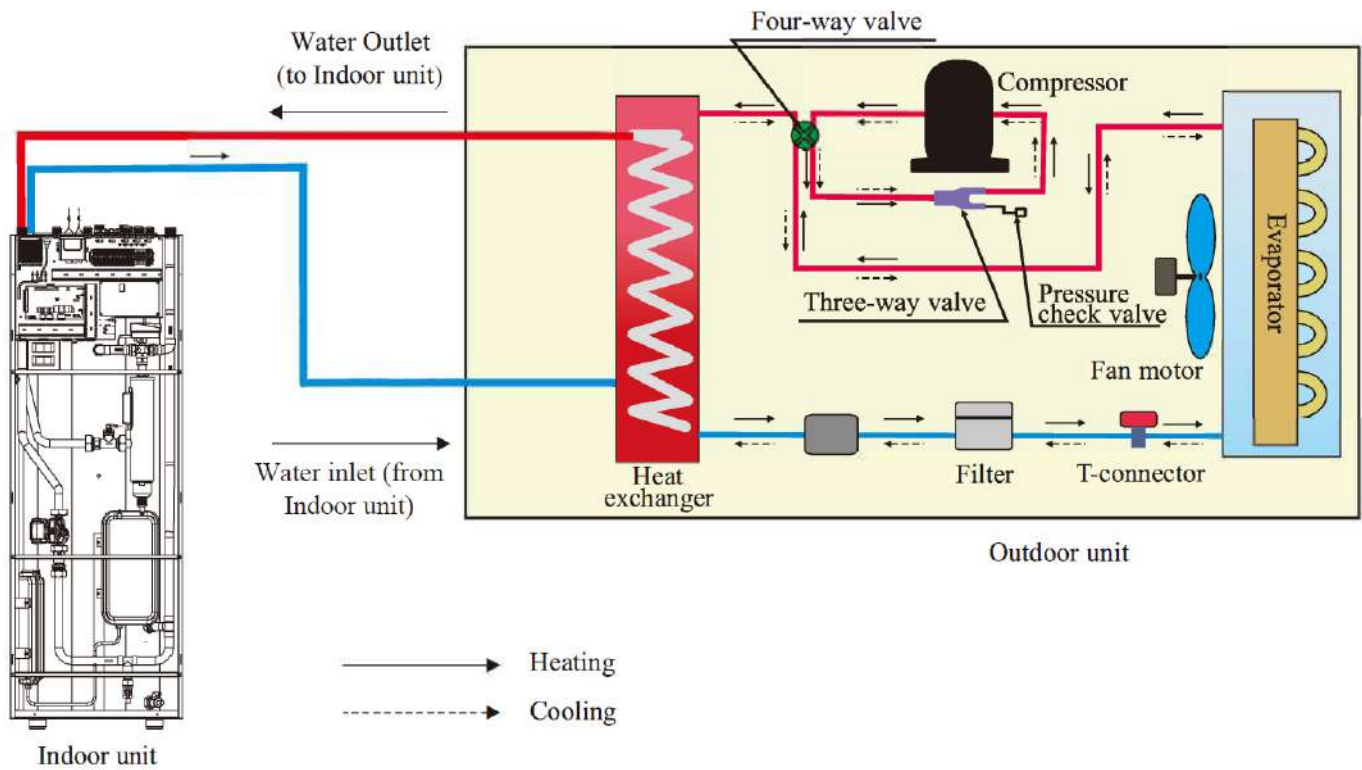
2. If use city water for filling, please soften the water and add a filter.

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

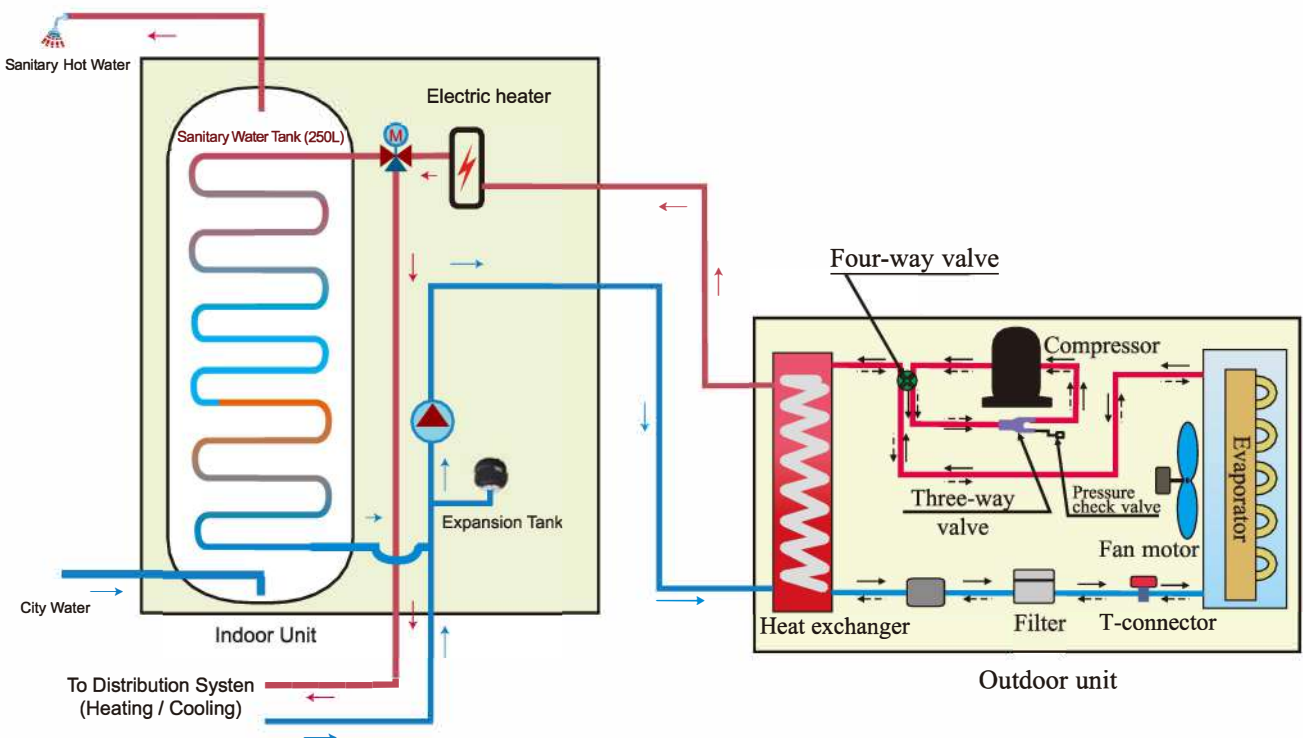
	<p>This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your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

1.2 Working principle



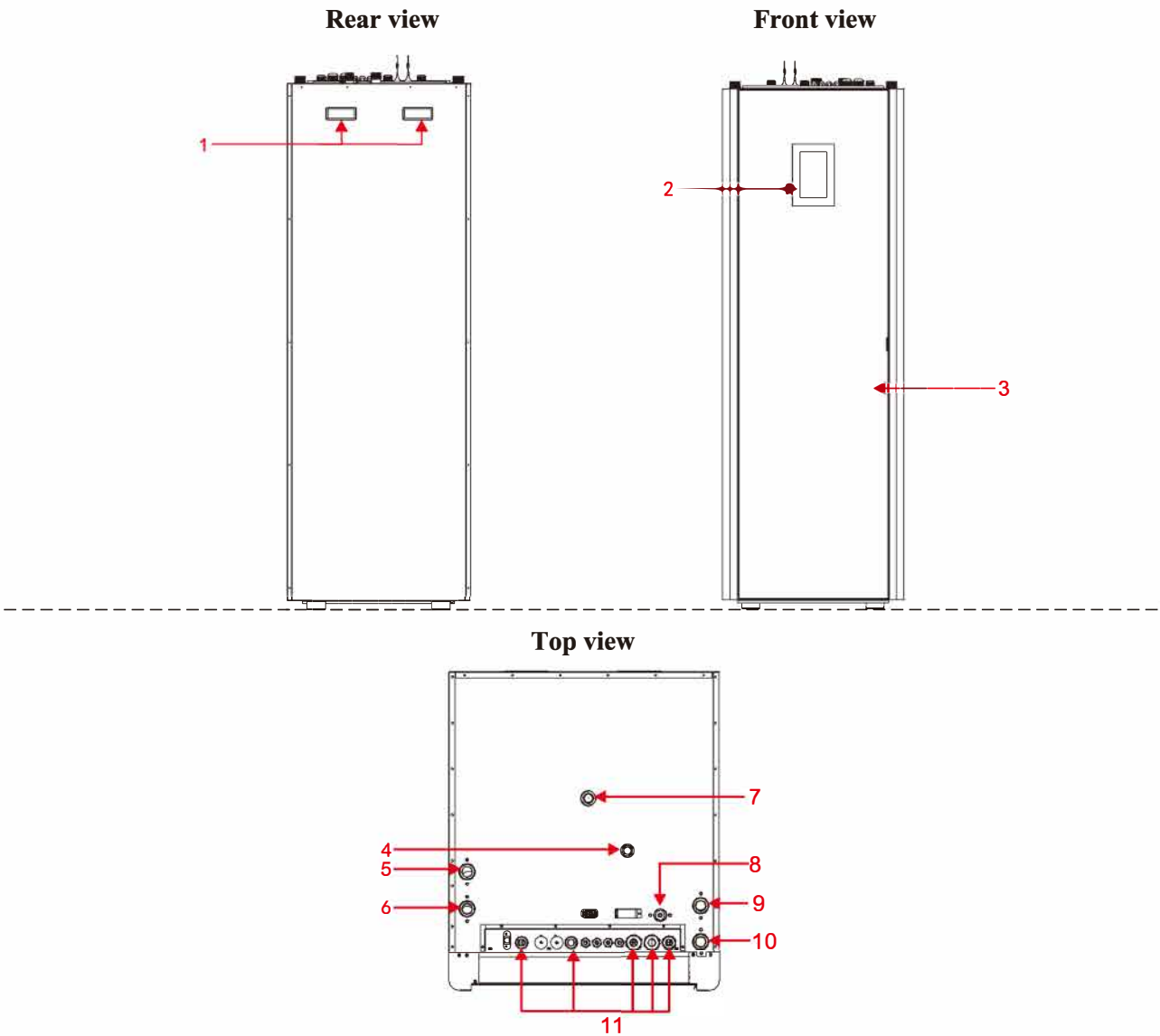
Hot water from heat pump goes into coil of tank. Sanitary hot water is heated up by the coils inside tank, and fills the tank.



1. Before use

1.3 Main components

1.3.1 Indoor control unit

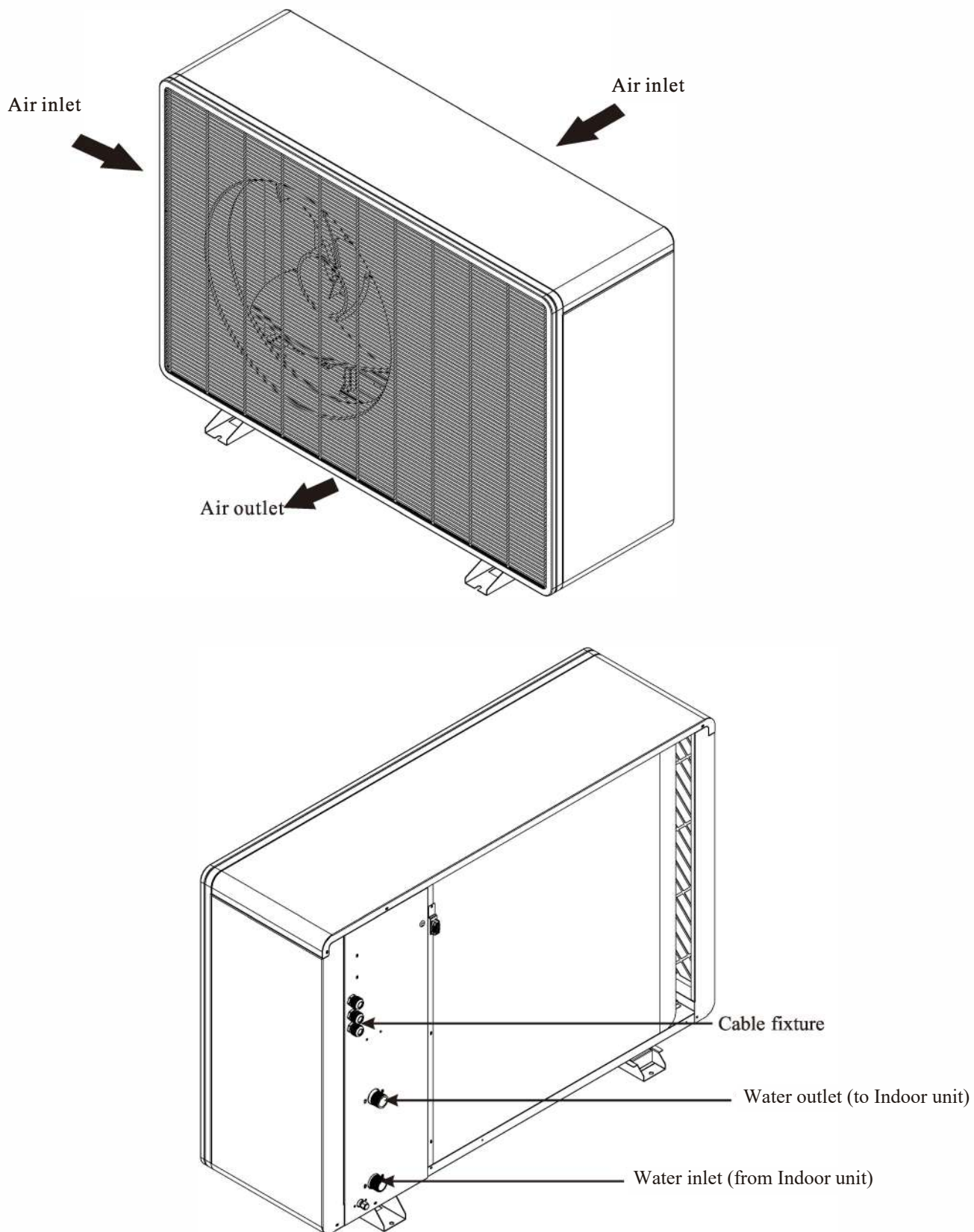


No.	NAME
1	Handle
2	Controller Panel
3	Front Panel
4	Cold sanitary water (G3/4")
5	From outdoor unit (G1 ")
6	To outdoor unit (G1 ")
7	Hot sanitary water (G1 ")
8	Automatic air vent
9	From heating /cooling system (G1 ")
10	To heating/cooling system (G1 ")
11	Cable gland

1. Before use

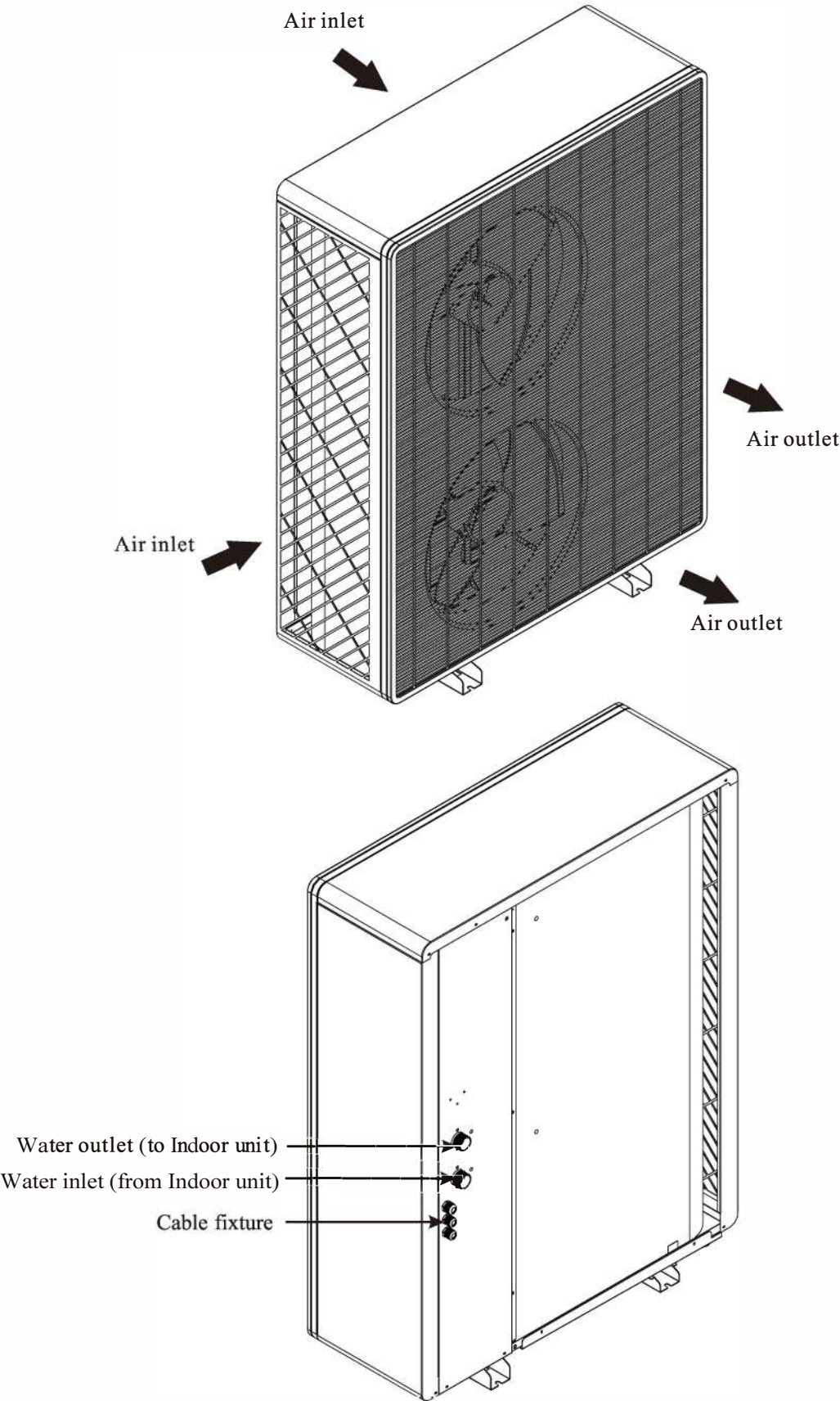
1.3.2 Outdoor unit

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)	%		189.3/140.6	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	
	Rotary 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-9-250-3S			HLT-12-250-3S
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		mm²	5x2.5			
Backup Heater		kW	9 (3+6)			
3-way Diverting Valve			LK Systems			
DHW tank	Volume	l	250			
	Material		Duplex 2205 SS			
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
		m3/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	600x710x1720			
	Net Weight	kg	115			

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

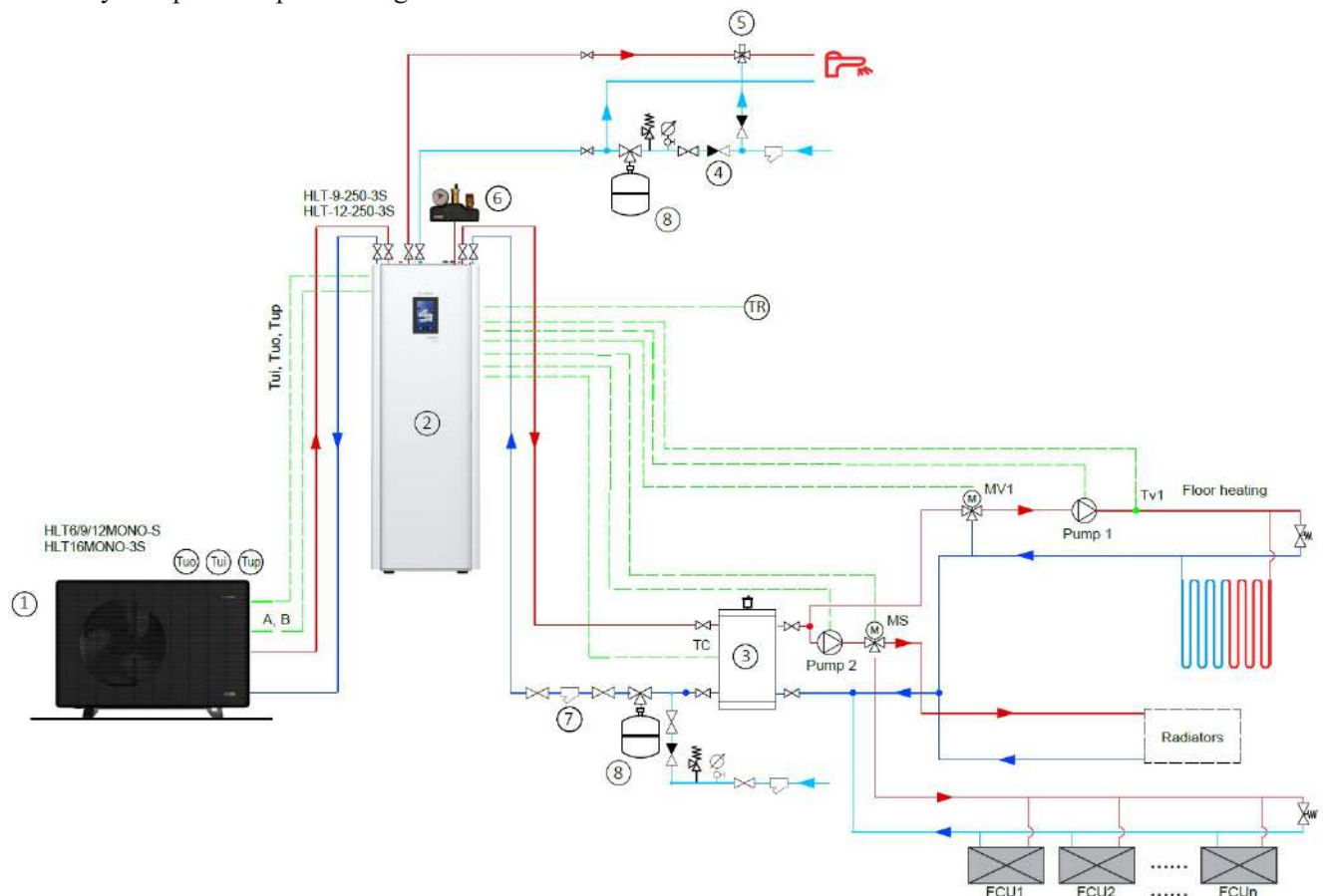
2.1.1 Heating / Cooling distribution system

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 sensor) 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 with DHW tank
3	Buffer tank
4	One-way valve
5	DHW mixture valve
6	Safety valve kit
7	Magnetic filter
8	Expansion vessel
MS	Motorized 3-way valve

Item	Name
MV1	Mixture valve (0-10V)
Pump 1	Circulation pump for System 1
Pump 2	Circulation pump for System 2
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).

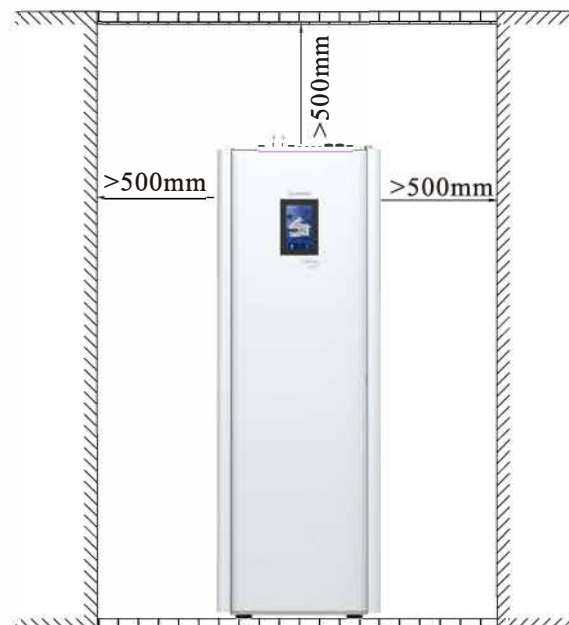


The installation of the product should be handled by professional installers or under their instructions.

2.3 Installation of the indoor control unit

2.3.1 Installation notes

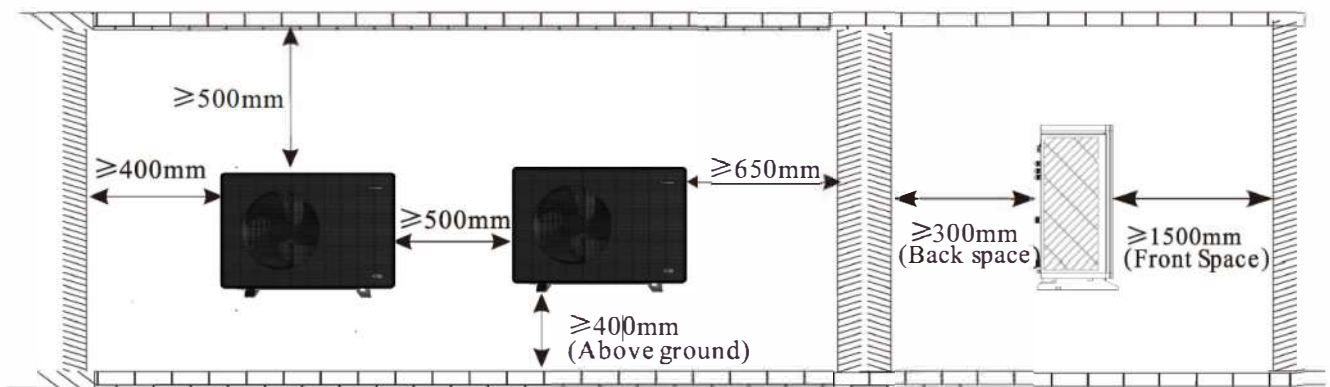
- A. The indoor unit can be located in a room, corridor, balcony, garage or warehouse.
- B. Indoor unit should be placed on flat and solid ground.
- C. The unit is recommended to be put in a space close to water supply, and drainage.
- D. The outdoor and indoor unit should be placed close, to save the copper tube as well as the energy.
- E. The indoor unit shall be placed in dry and well-ventilated environment.
- F. Indoor unit mustn't be installed in an environment where volatile, corrosive or flammable liquid or gas exists.
- G. During the movement, please be careful to keep the unit vertically. If the unit is tilted by 30°, it may fall down and cause damage to itself or the porter.
- H. Don't expose the operation panel under direct sunshine.
- I. Enough space should be left around the indoor unit for further maintenance.



2. Installation

2.4 Installation of the outdoor unit

- A. The outdoor unit can be located in a room, corridor, balcony, and roof or hanged on the wall.
- B. Please don't install outdoor unit close to bedroom or living room, because there is some noise when it's running.
- C. The outdoor unit shall be placed in dry and well-ventilated environment.
- D. Outdoor unit mustn't be installed in an environment where volatile, corrosive or flammable liquid or gas exists.
- E. Please cover a protecting roof over the outdoor unit, lest ice or snow blocks the air inlet. Shield the unit from direct sunshine, rain or snow, but never cover the unit which will cause the bad ventilation.
- F. Please ensure there is drainage system around the location, to drain the condensated water under defrosting mode.
- G. Please don't install the indoor and outdoor unit in damp locations, otherwise it may cause short-circuit or corrosion of some components. The unit should be free from corrosive and moisture surrounding. Otherwise the lifetime of the unit might be shortened.
- H. When installing the unit in harsh climatic conditions, sub-zero temperatures, snow, humidity area, please raise the unit above the ground by about 20cm.
- I. When installing the unit, tilt it by 1cm/cm to left side of the unit (see from front), for better water drainage.
- J. Outdoor unit should be placed on flat and solid ground. When installing the outdoor unit, please ensure enough space around the outdoor unit, for better ventilation and maintenance. Please refer to the illustration below.

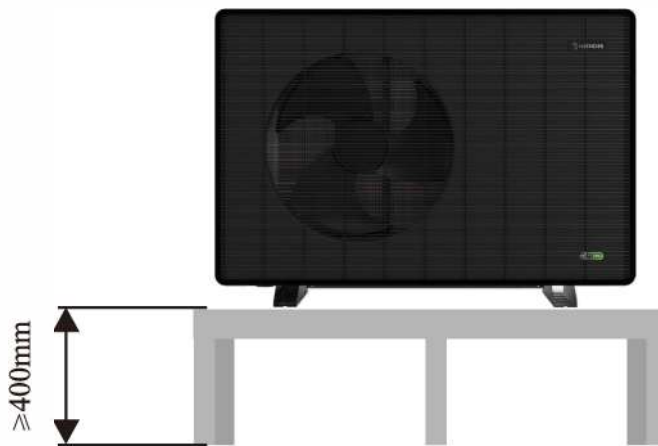


2. Installation



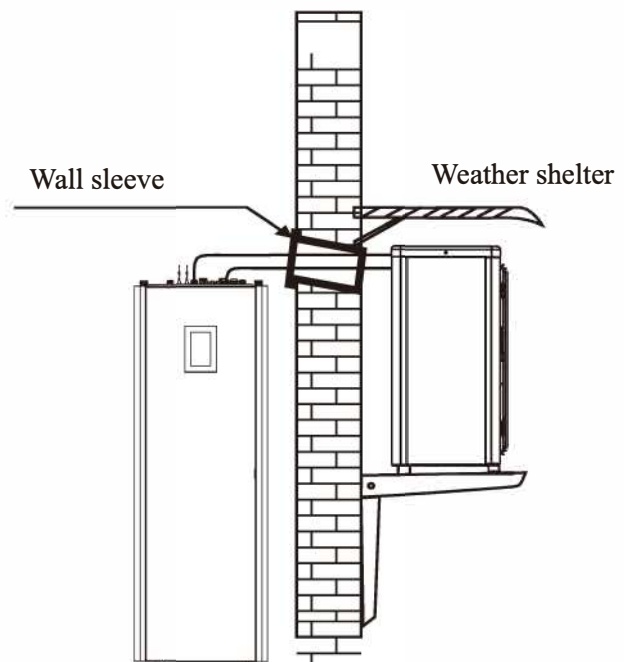
Please add rubber absorber under the outdoor unit, to reduce the vibration.

- 1) The unit must be located on a flat, solid, preferably cemented surface.
- 2) When installing the unit, introduce a tilt of 1 cm/m for rain water evacuation.
- 3) When installing the unit in harsh climatic conditions, sub-zero temperature, snow, humidity, it is recommended to raise the unit off the ground by about 400mm.
- 4) It is recommended to have a base with following size for these units.
- 5) Rubber vibration absorbing mountings are recommended.
- 6) When sitting the unit, take care to leave sufficient free space all around it for carrying out maintenance.



The refrigerant piping and signal cable between indoor and outdoor unit should go through the wall by using a wall sleeve.

The hole should lean to outside a little bit (≥ 8 degrees), to avoid rain water or condensate water flow back to the indoor.



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 - temperature sensor	1pc	
TV2 - temperature sensor	1pc	
TR - Room temperature sensor	1pc	
TC - Heating/cooling water temperature sensor	1pc	
Sensors' extension cable	4pcs	
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	

2. Installation

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

2.6 Outdoor unit main power & Emergency electric heater power supply

HLT6/9MONO-S

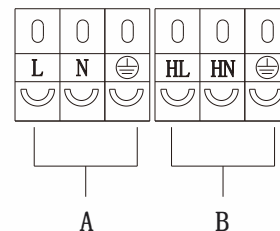
A: Unit main power supply (Power Cord: H05VV-F 3×2.5mm²);

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).

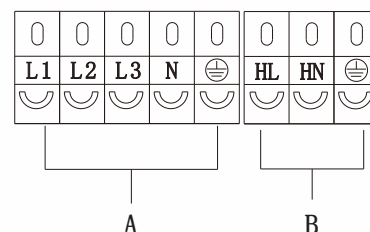
B: Emergency electric heater power supply (Power Cord: H05VV-F 3×1.5mm²);



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.

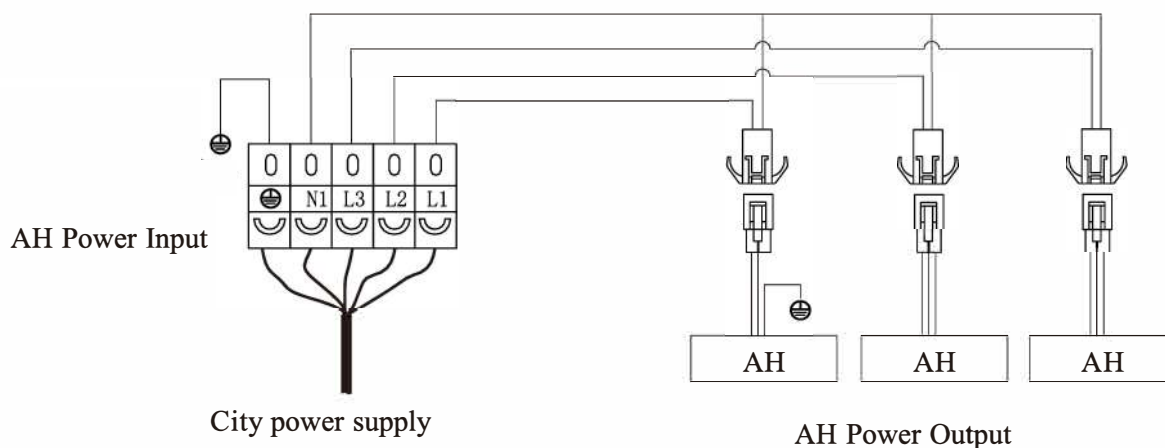
HLT-9-250-3S

HLT-12-250-3S

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

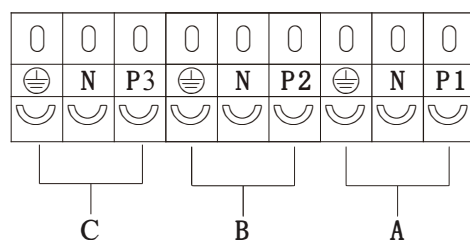
Unit power supply & Power supply for AH-Auxiliary heater inside unit (Power Cord: H05VV-F 5×2.5mm², city power input)

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



2. Installation

2.8 Circulation pump power supply



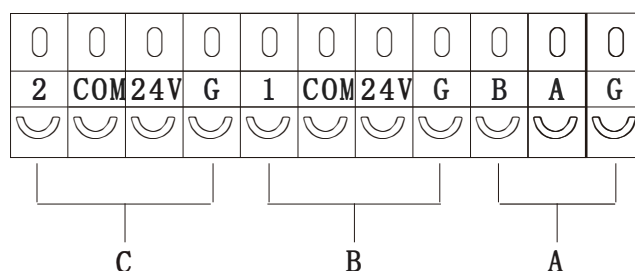
A - Pump 1 : Circulation pump (heating/cooling)

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

C - Pump 3: DHW pump

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

2.9 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:

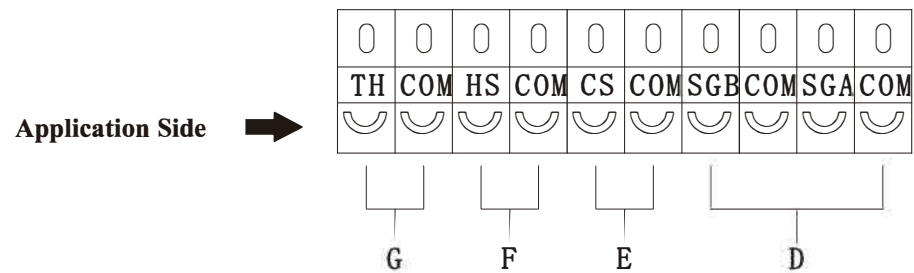
This unit can have two water mixture valves for distribution system under its control.

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. Installation

2.10 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.

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.

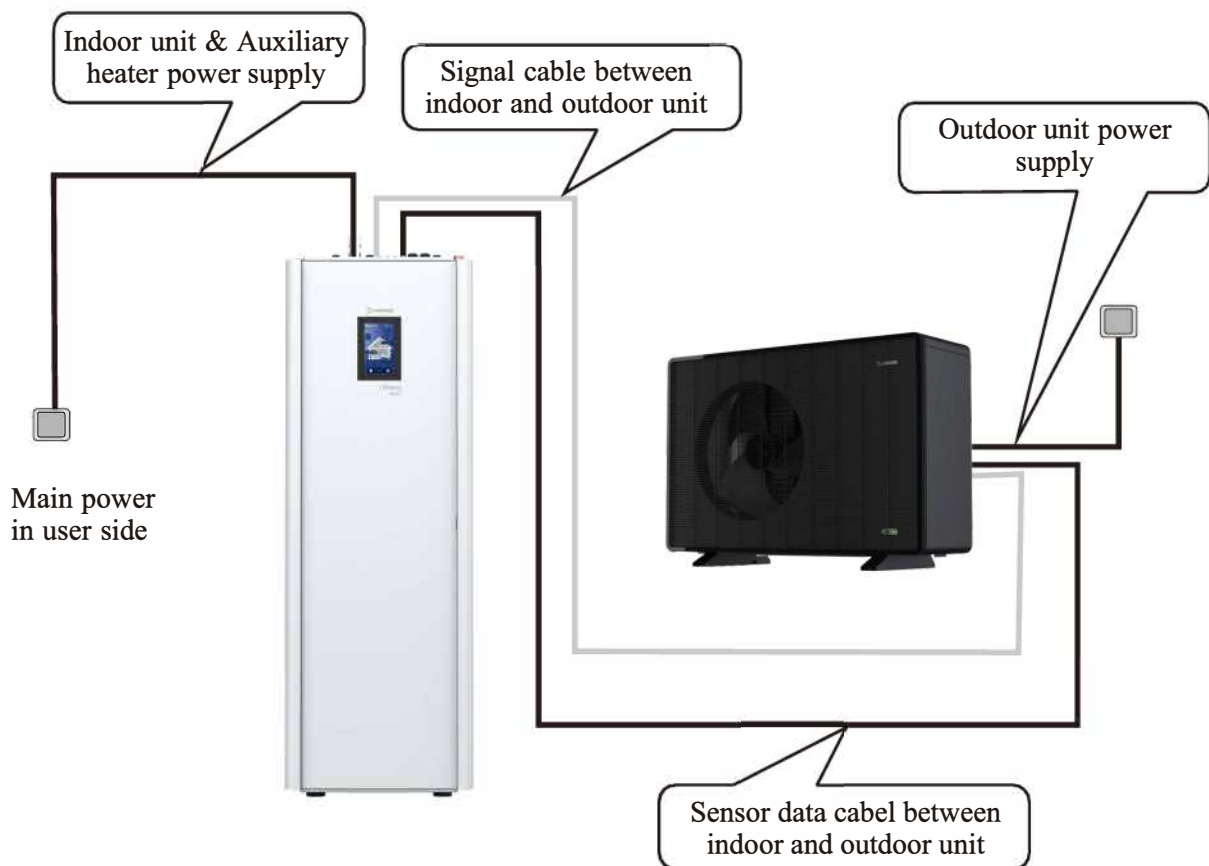
2. Installation

2.11 Wiring

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

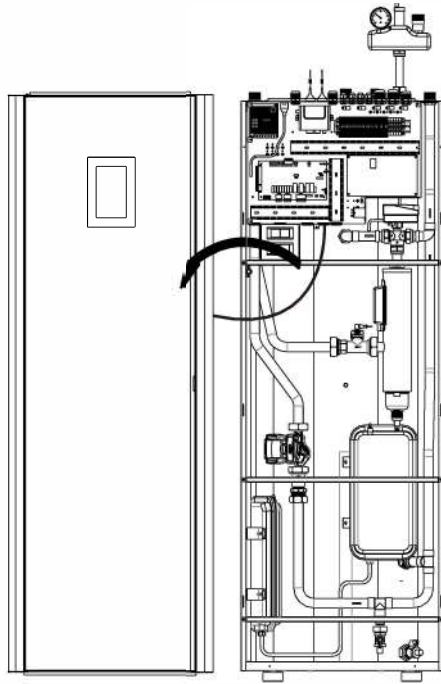


Installation sketch



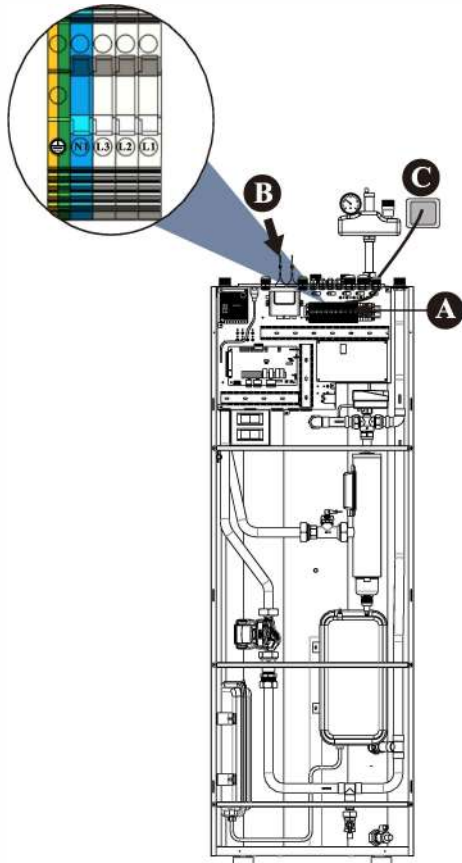
2. Installation

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



1) Heat pump 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).

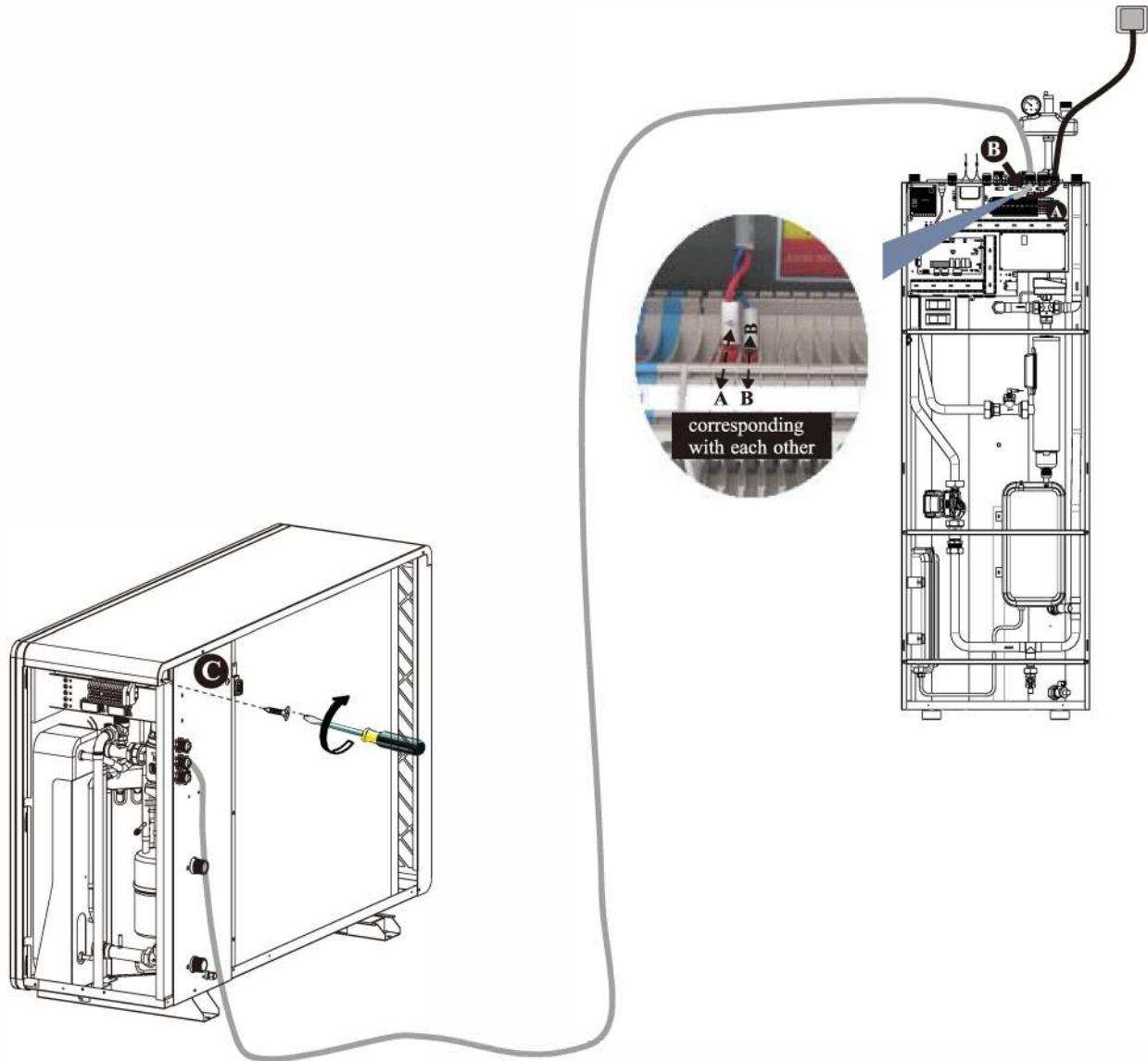
B. Fasten the cable gland to ensure the cable won't get loosen.

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.

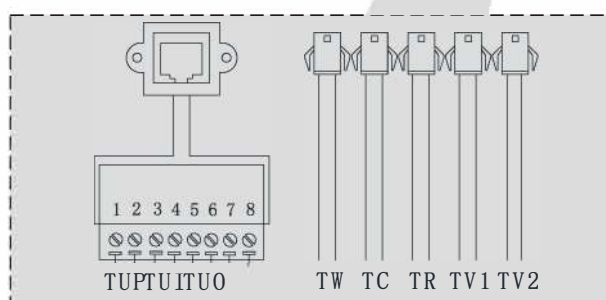
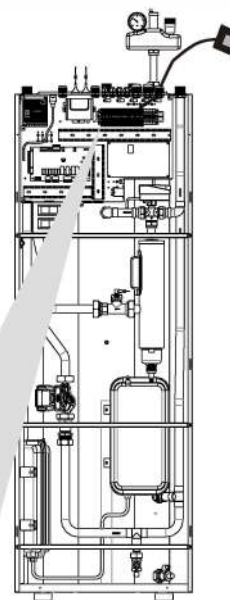
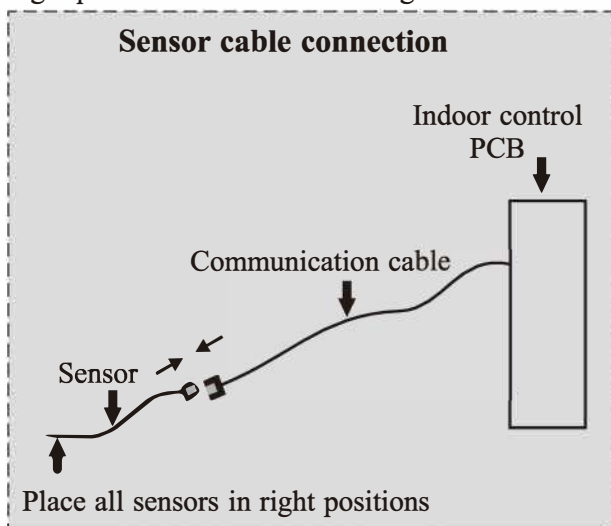
B. Fasten the cable gland to ensure the cable won't get loosen.

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

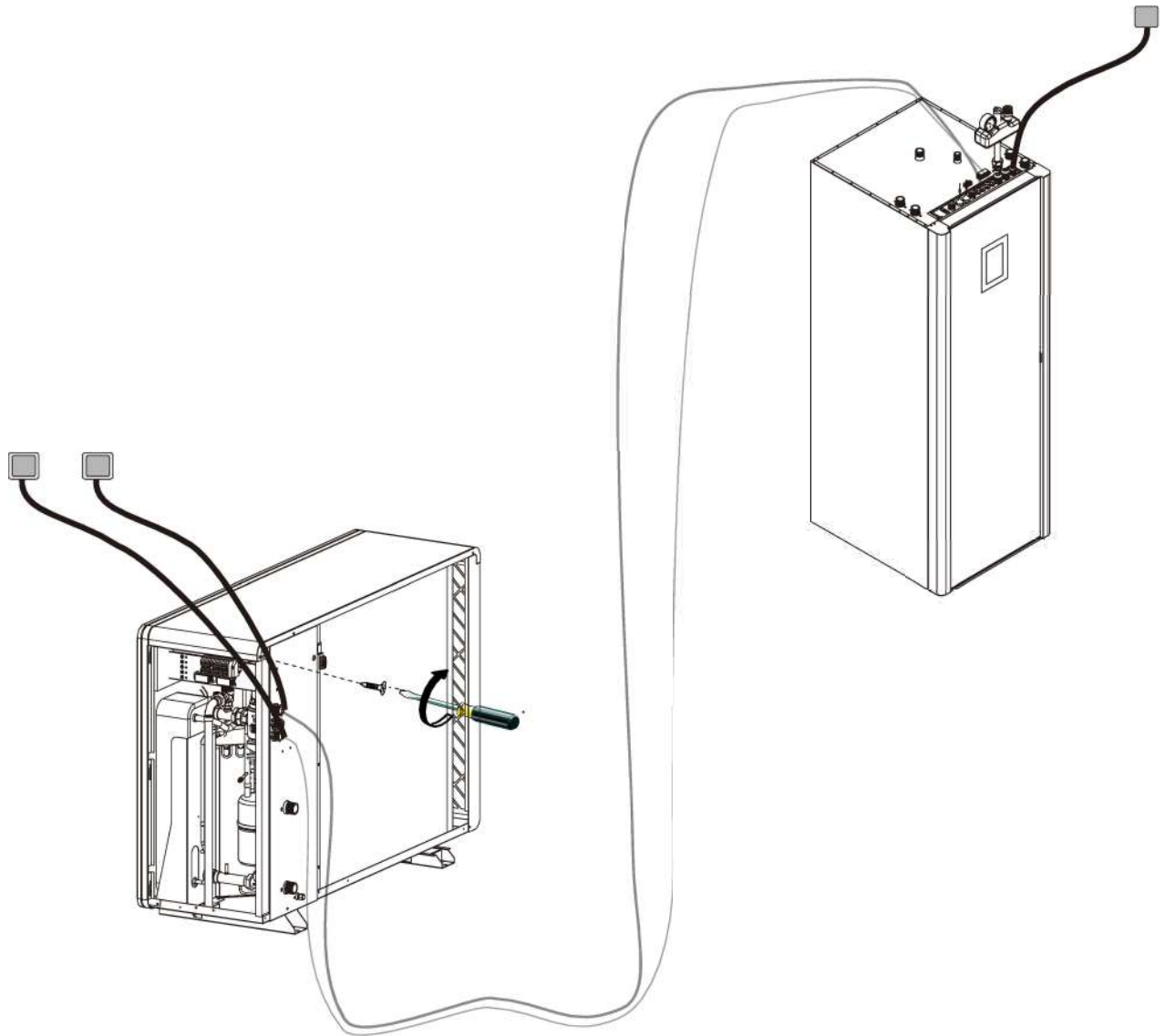
Take all sensors and communication cables out from the accessories bag. Connect the sensors together with the quick connectors on communication cables and insert the end with the connector into the indoor unit through cable gland. Connect them with the quick connector inside the indoor unit and place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



A	TC - Water temp. sensor for cooling and heating	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.
	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.

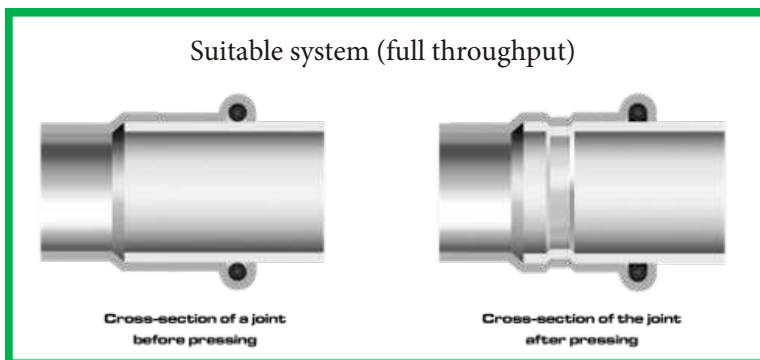


2. Installation

2.12 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



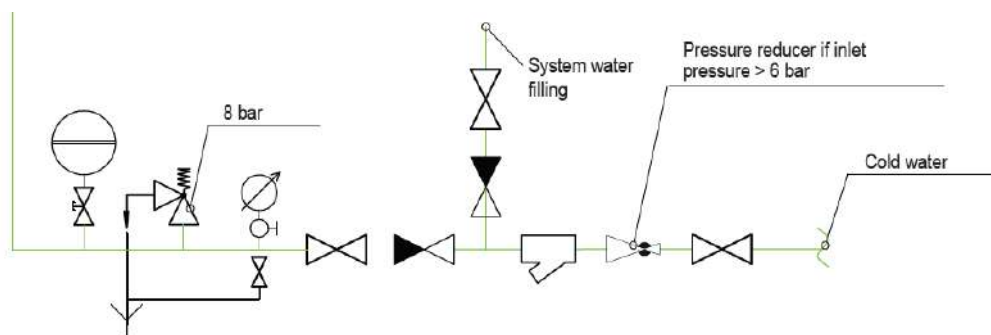
After connection, the water piping should be pressure tested and cleaned before use.

1.Filters. A mesh filter and a magnetic filter must be installed on return pipe before the indoor 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

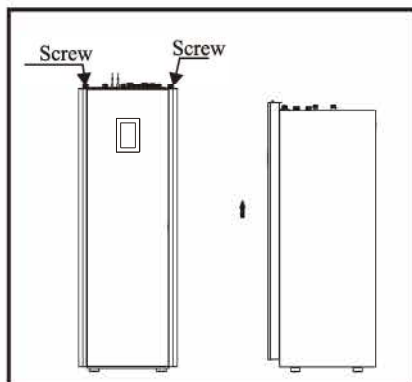
- Chloridion element in the water should be less than 300ppm (temperature is less than 60°C).
- PH value of water should be from 6 to 8.
- The water with ammonia can't be used for the unit.

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.

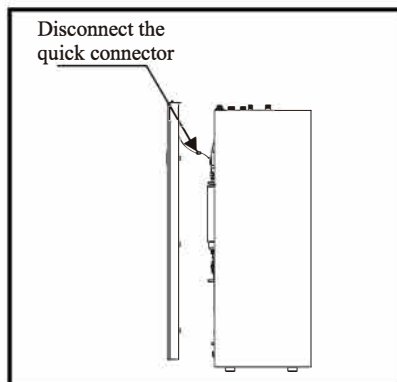
2. Installation

Connect of drainage pipe

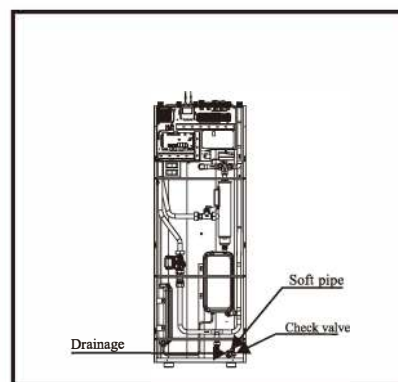
When the tank need to be drained, please do as per following instruction:



1. Unscrew the 2pcs screws on top of front panel.

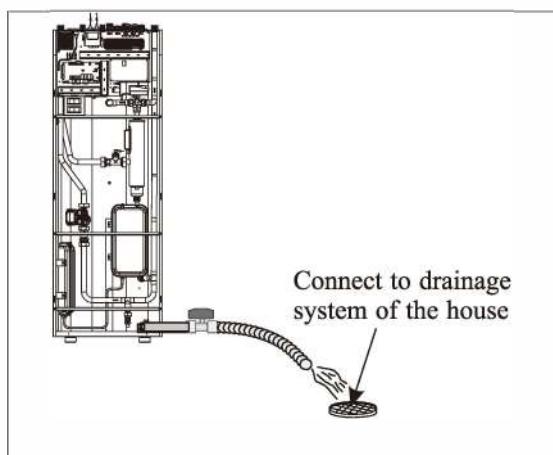


2. Hold the front panel up by 10~15mm, disconnect the quick connector from wired controller, and then take out the front panel.



3. Open the ball valve to drain off water.

2.13 Installation of the accessories



Drain the water to drainage system of the house, and open the ball valve to drain out all water inside the tank. Please extend the drainage pipe by connecting another water pipe, if the distance between the unit and drainage system is long.

The safety valve kit is in the accessories.

1. Take the safety valve kit from the accessories.
2. Apply sealant on threads of the G1/2" male connector upon the water tank according to the industry standards.
3. Find the connector "automatic air vent" on the top of water tank according to the label and install the safety valve kit onto it.



2. Installation

2.14 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.



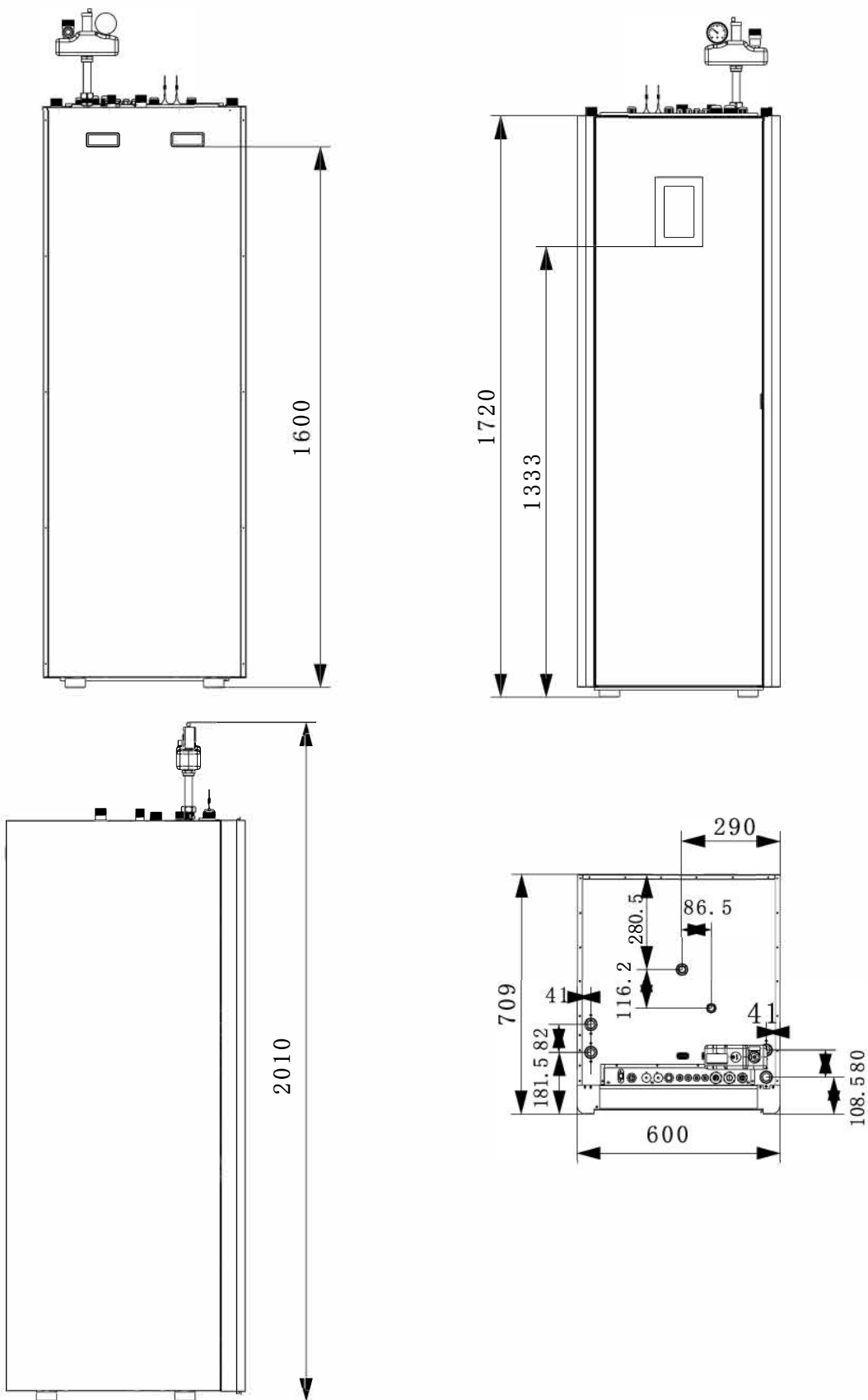
It is suggested not to run "heating" or "hot water" mode, when ambient temperature is over 32°C, otherwise unit may go into protection mode easily.

3. Attached drawing

3.1 Outlines and dimensions

—— Indoor control unit

Unit:mm

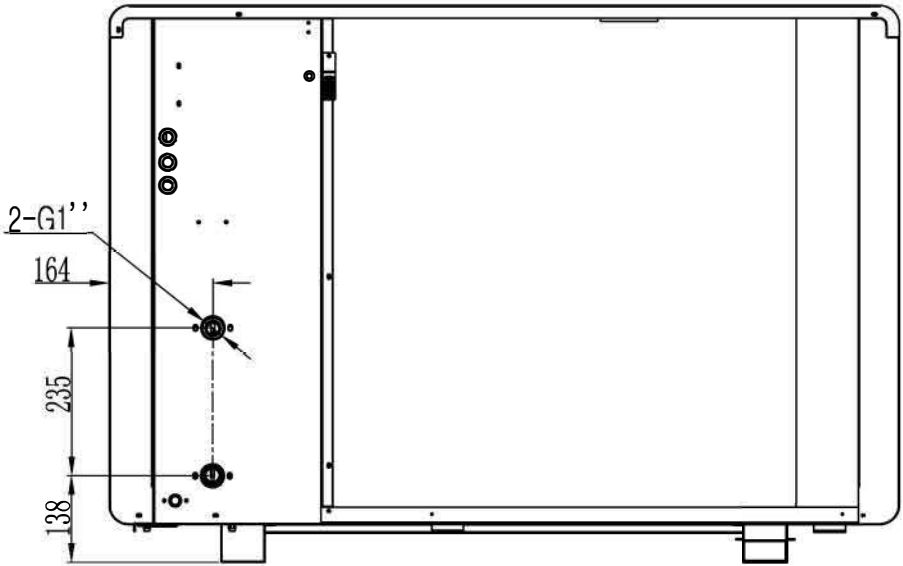
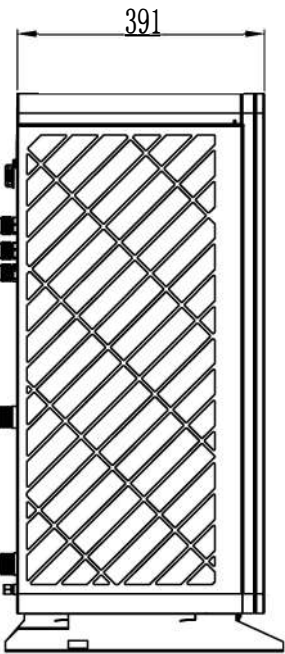
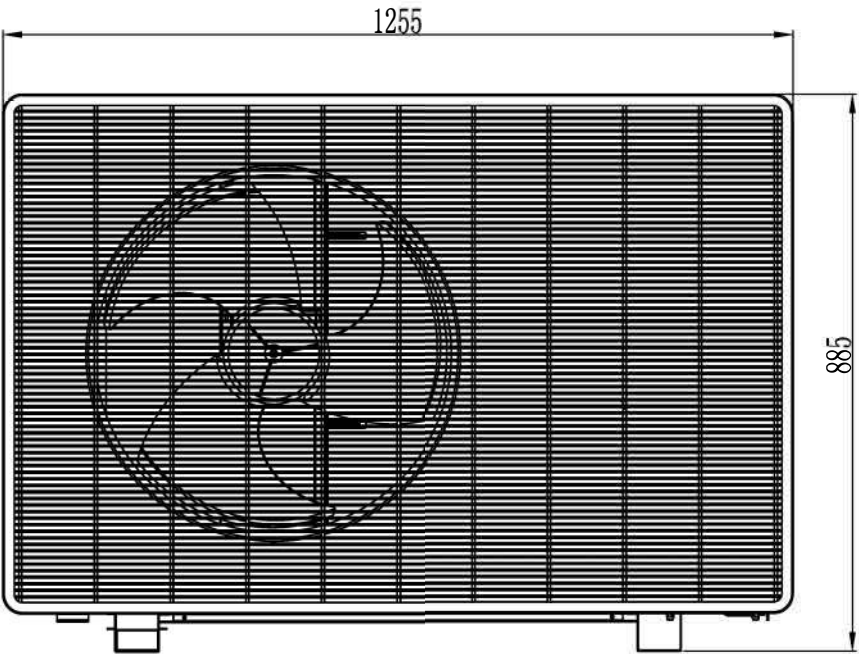
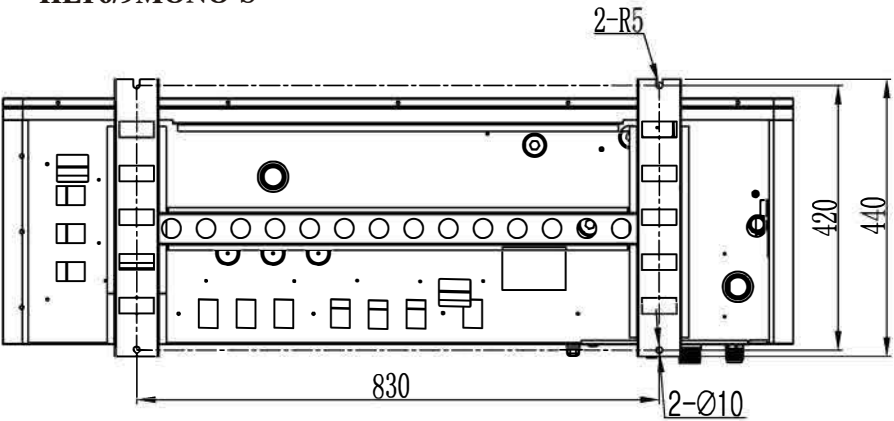


3. Attached drawing

— Outdoor unit

HLT6/9MONO-S

Unit:mm

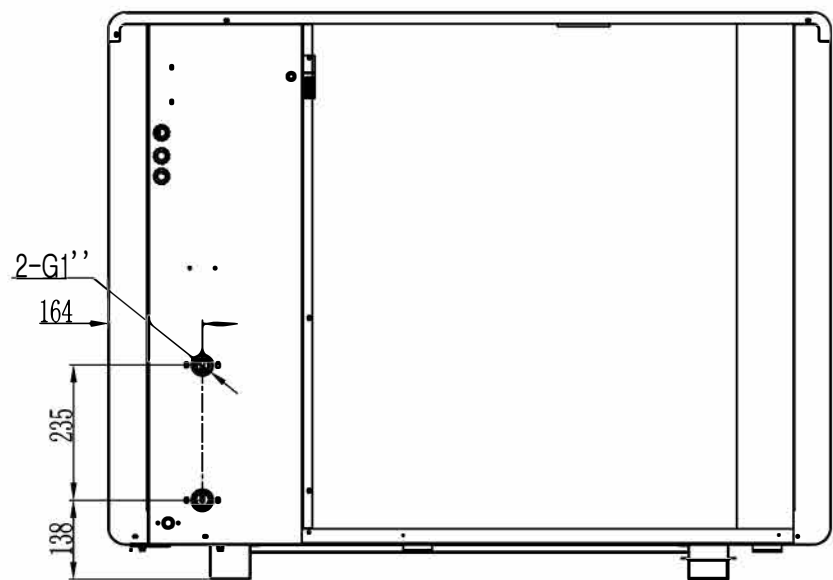
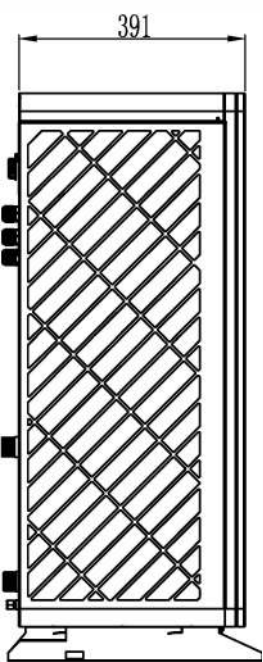
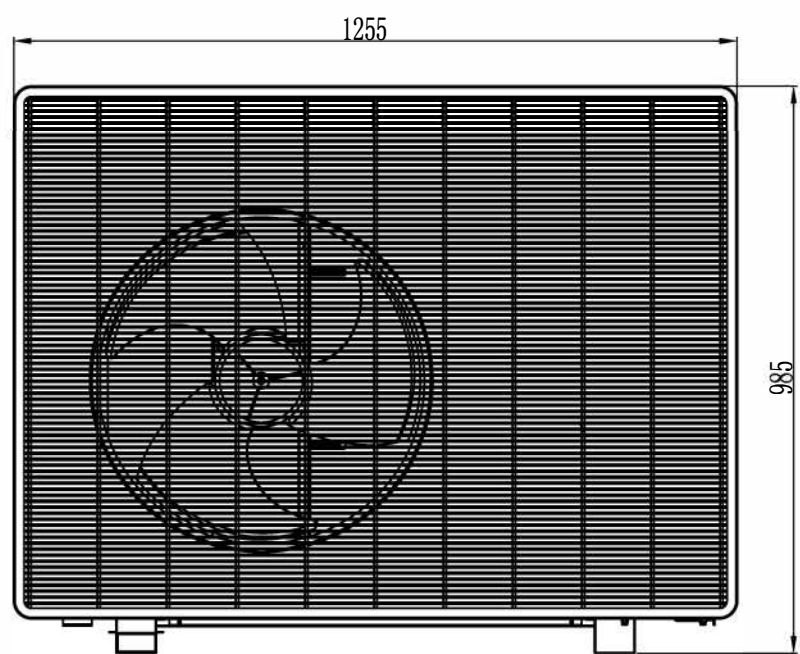
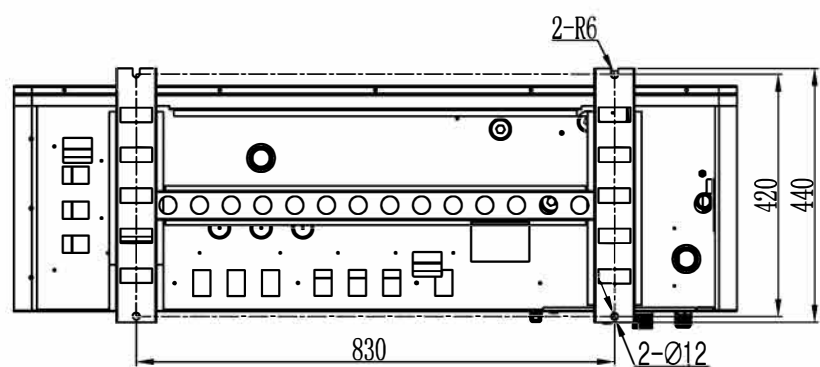


3. Attached drawing

—— Outdoor unit

HLT12MONO-S

Unit:mm

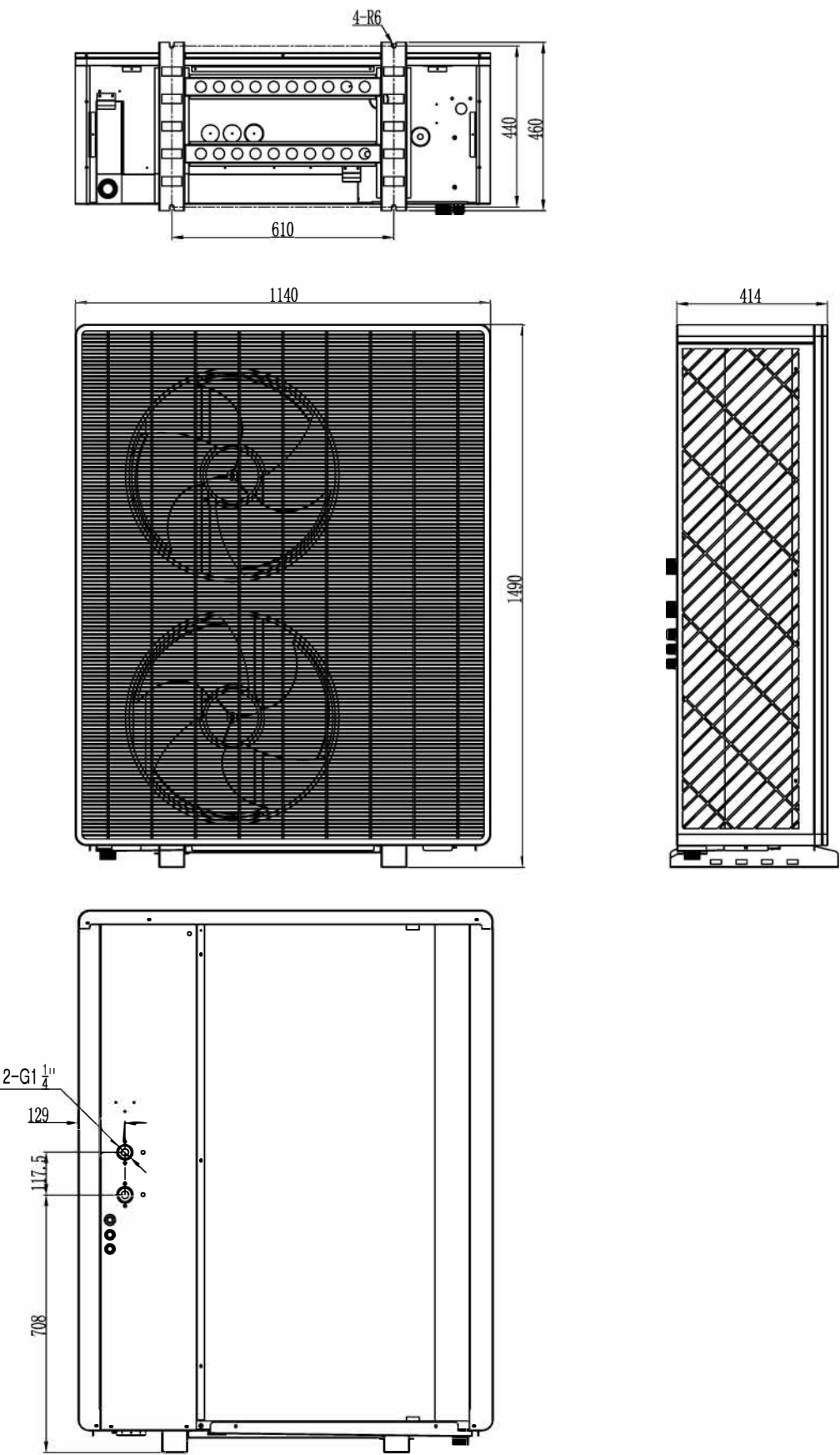


3. Attached drawing

—— Outdoor unit

HLT16MONO-3S

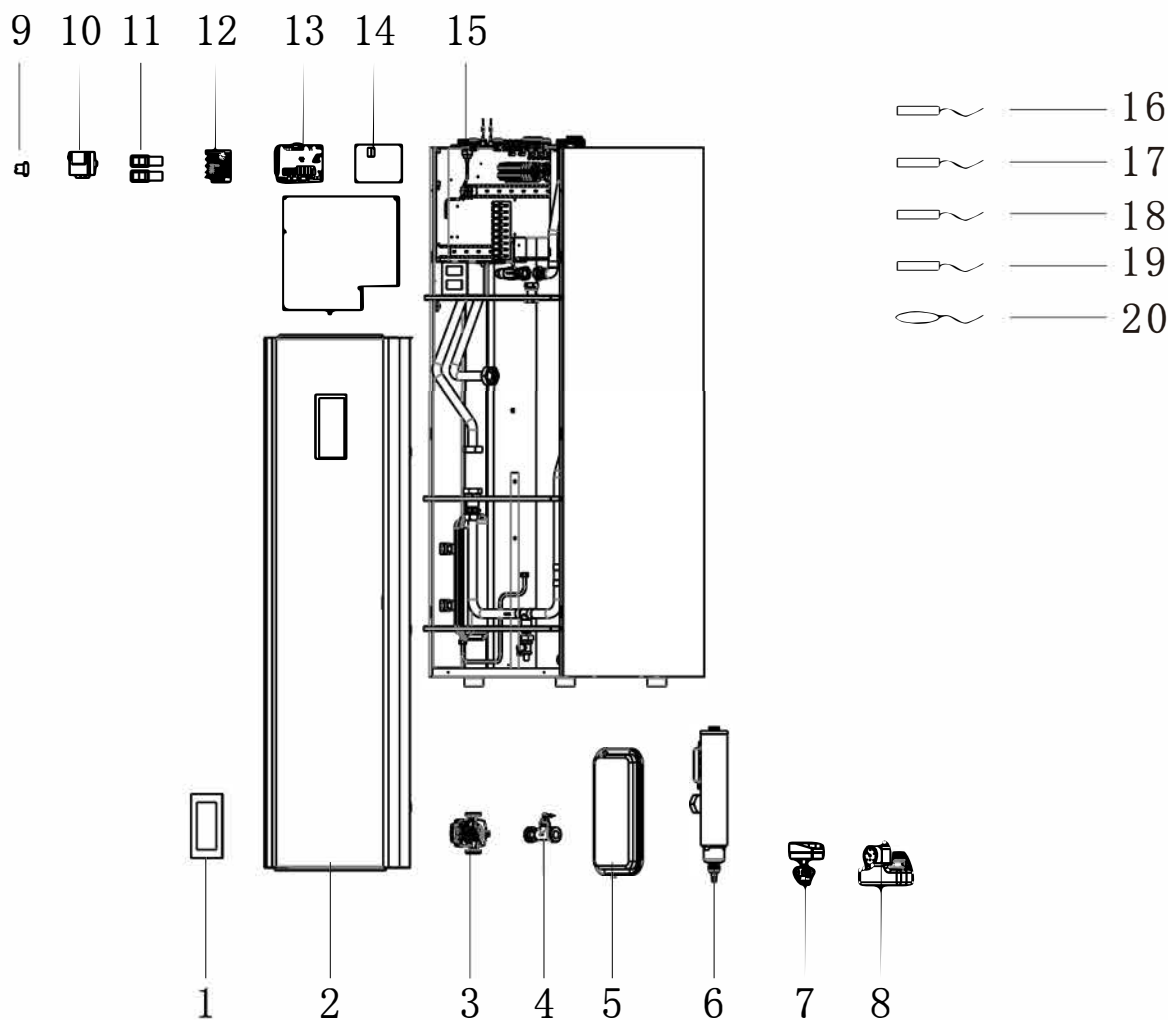
Unit:mm



3. Attached drawing

3.2 Exploded view

—— Indoor control unit

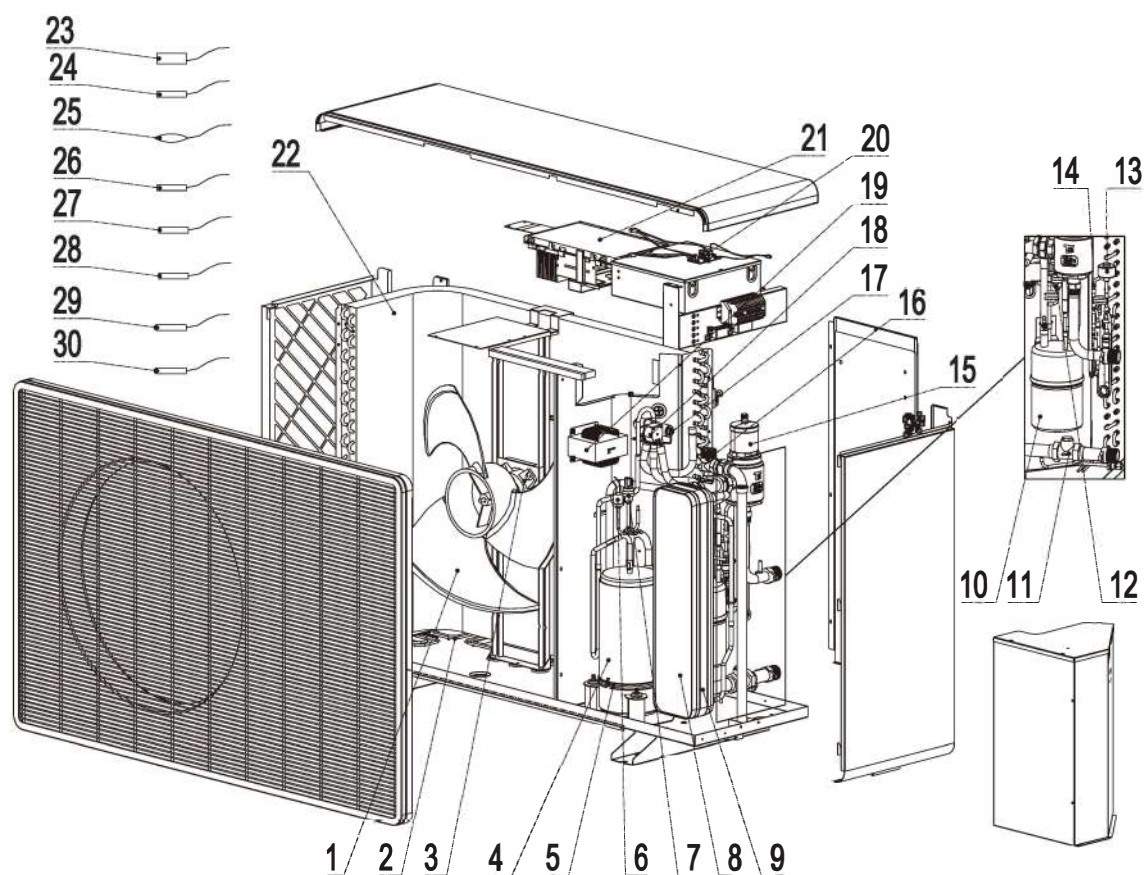


Item no.	Part Name	Item no.	Part Name
1	Operation panel	11	Digital thermostat
2	Front door	12	Power switch
3	Water pump	13	Indoor main PCB
4	Vortex flow sensor	14	Relay PCB
5	Expansion vessel	15	250L water tank
6	Electric heater	16	Hot water temp sensor (TW)
7	Three-way valve coil	17	Mixing water temp sensor (TV1)
	Three-way valve	18	Mixing water temp sensor (TV2)
8	Safety valve	19	Cooling/heating temp sensor (TC)
9	Relay	20	Room temp sensor (TR)
10	WIFI DTU module		

3. Attached drawing

— Outdoor unit

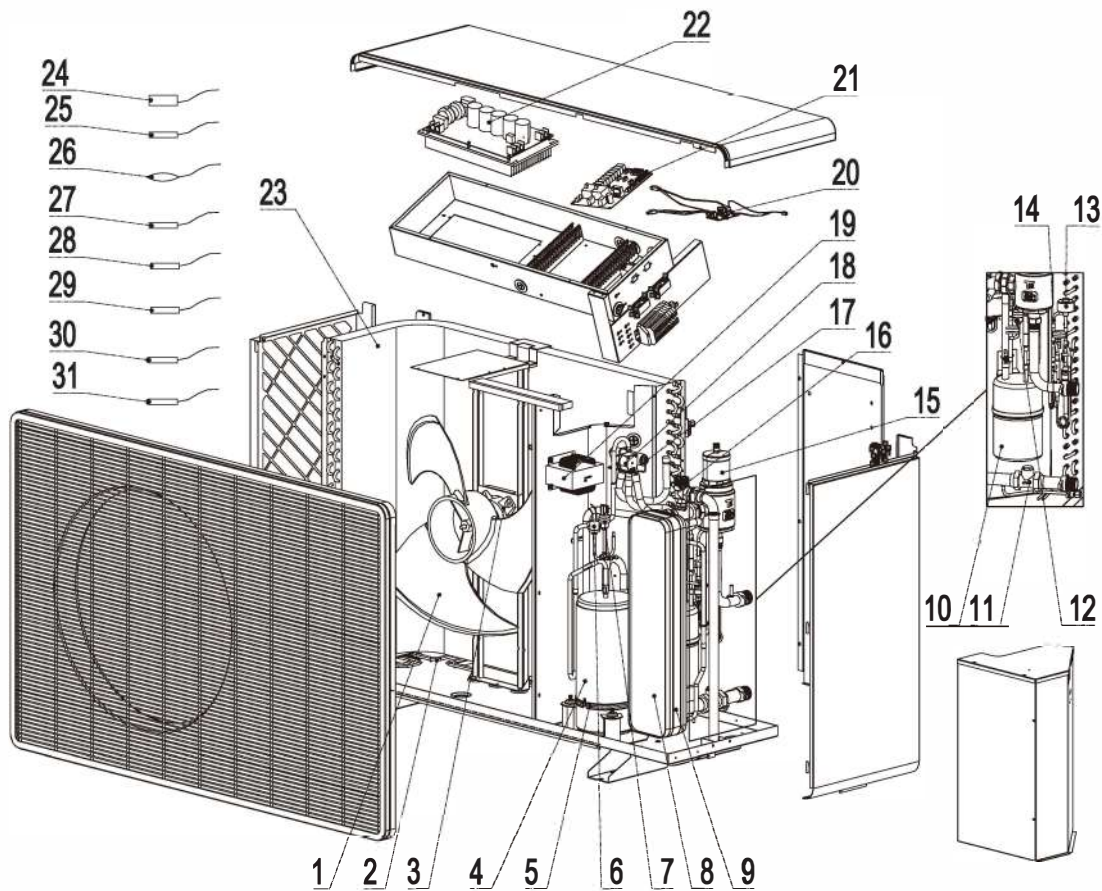
HLT6/9MONO-S



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

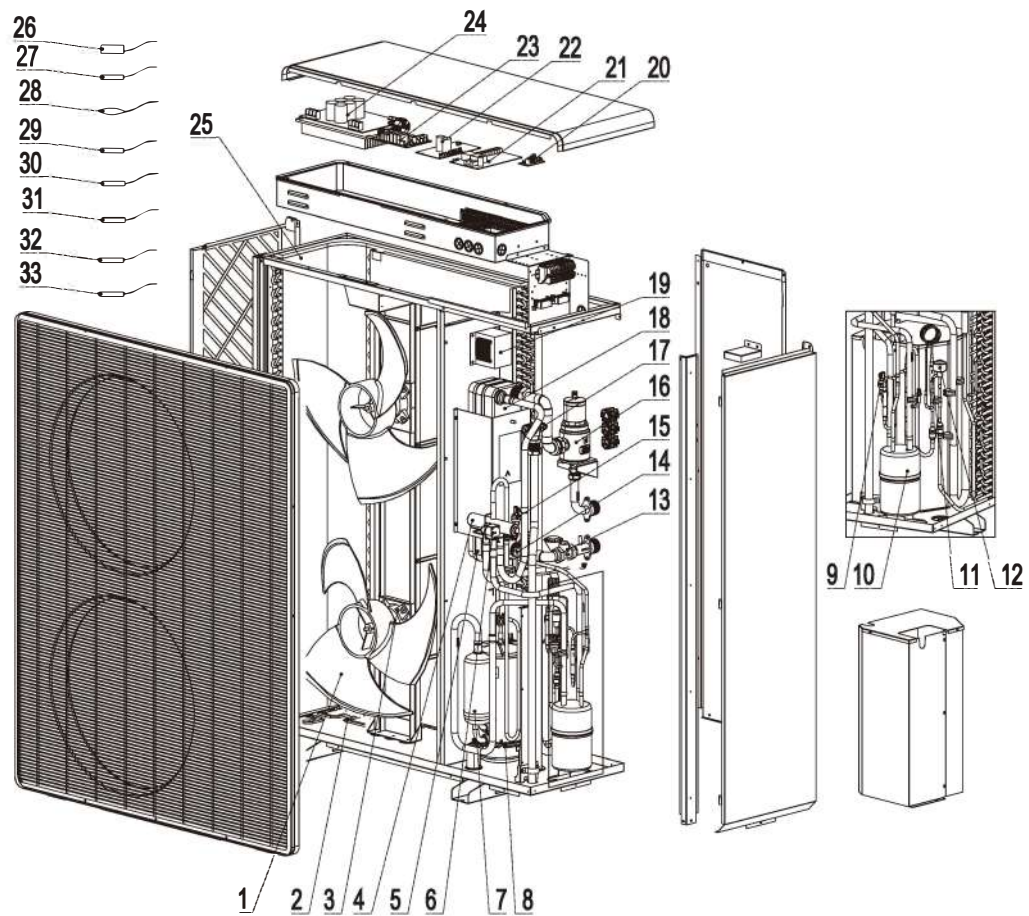


No	Name	No	Name
1	Fan blade	17	Four-way valve
2	Bottom plate heater	18	Four-way valve coil
3	DC motor	19	Reactor
4	Compressor	20	Thermostat
5	Crankcase el. heater	21	Outdoor main PCB
6	High pressure switch	22	Drive PCB
7	High pressure sensor	23	Evaporator
8	Plate heat exchanger	24	Discharge temp sensor
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

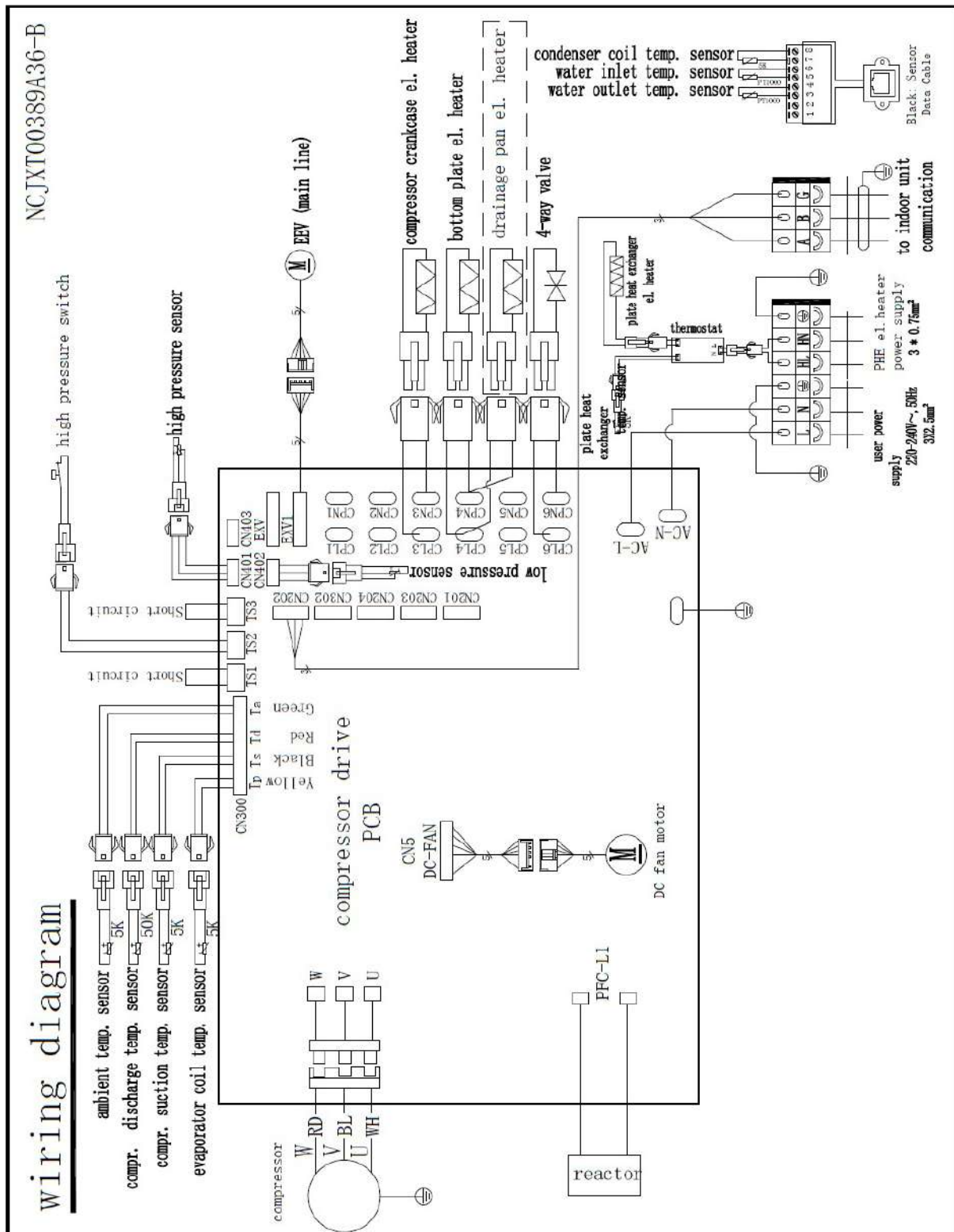
HLT16MONO-3S



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

Outdoor unit HLT6/9MONO-S



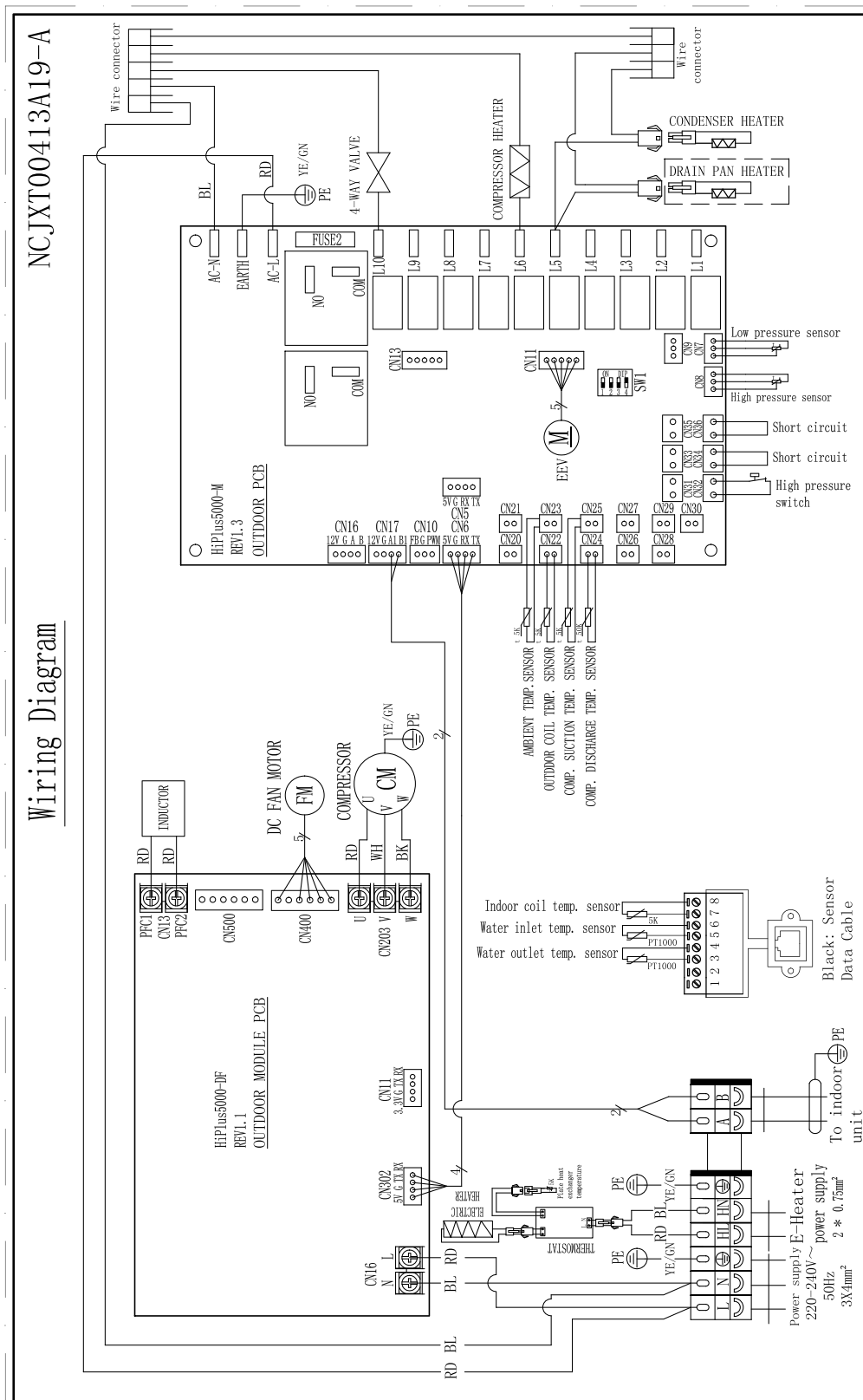
TAKE CARE!

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



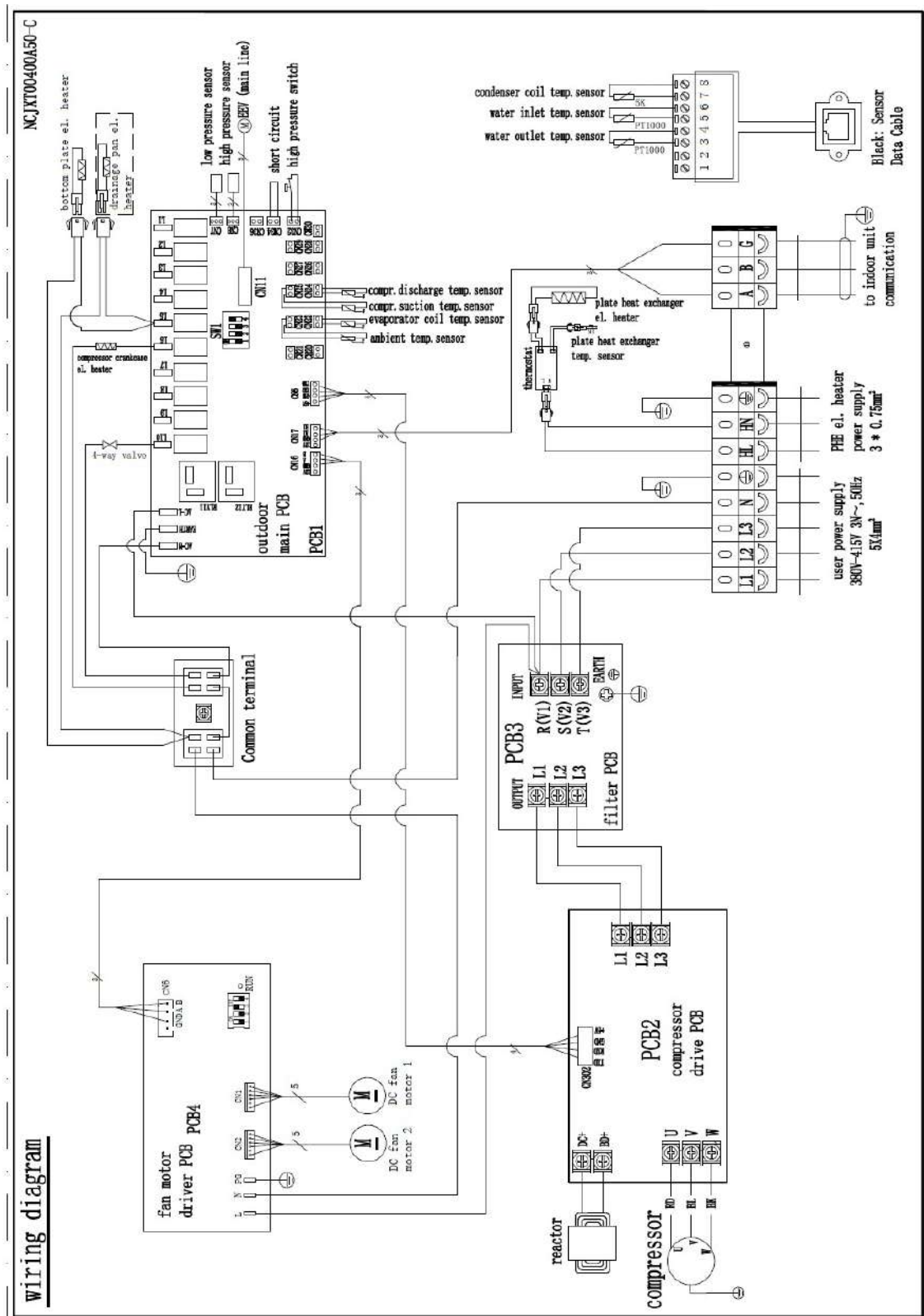
TAKE CARE!

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.

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.