



INSTALLATION & OWNER'S MANUAL

Split Air-source Heat pump Water Heater

KHP-26 ACS1
KT-200



Original Manual

Thank you very much for purchasing our product,
Before using your unit, please read this manual carefully and keep it for future reference.

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1 SAFETY PRECAUTIONS

The precautions listed here are divided into the following types. They are quite important, so be sure to follow them carefully. Meanings of DANGER, WARNING, CAUTION and NOTE symbols.

INFORMATION

- Read these instructions carefully before installation. Keep this manual in a handy for future reference.
- Improper installation of equipment or accessories may result in electric shock, short-circuit, leakage, fire or other damage to the equipment. Be sure to only use accessories made by the supplier, which are specifically designed for the equipment and make sure to get installation done by a professional.
- All the activities described in this manual must be carried out by a licensed technician. Be sure to wear adequate personal protection equipment such as gloves and safety glasses while installing the unit or carrying out maintenance activities.
- Contact your dealer for any further assistance.

DANGER

Indicates an imminently hazardous situation which if not avoided, will result in serious injury.

WARNING

Indicates a potentially hazardous situation which if not avoided, could result in serious injury.




CAUTION

Indicates a potentially hazardous situation which if not avoided, may result in minor or moderate injury. It is also used to alert against unsafe practices.

NOTE

Indicates situations that could only result in accidental equipment or property damage.

Explanation of symbols displayed on the unit

	CAUTION	This symbol shows that the operation manual should be read carefully.
	CAUTION	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	CAUTION	This symbol shows that information is available such as the operating manual or installation manual.

WARNING

For continued safety of this appliance it must be installed, operated and maintained in accordance with the manufacturer's instructions.

WARNING

This appliance may deliver water at high temperature. Refer to the Plumbing Code of Australia (PCA), local requirements and installation instructions to determine if additional delivery temperature control is required.

DANGER

- The operation of the thermal cut-out indicates a possibly dangerous situation. Do not reset the thermal cut-out until the water heater has been serviced by a qualified person.
- Failure to operate the relief valve easing gear at least once every six months may result in the water heater exploding. Continuous leakage of water from the valve may indicate a problem with the water heater.
- If the hot water system is not used for two weeks or more, a quantity of highly flammable hydrogen gas may accumulate in the water heater. To dissipate this gas safely, it is recommended that a hot tap be turned on for several minutes or until discharge of gas ceases. Use a sink, basin, or bath outlet, but not a dishwasher, clothes washer, or other appliance. During this procedure, there must be no smoking, open flame, or any electrical appliance operating nearby. If hydrogen is discharged through the tap, it will probably make an unusual sound as with air escaping.
- Before touching electric terminal parts, turn off power switch.
- Do not touch the inner parts of the controller. Do not remove the front panel. Some parts inside are dangerous to touch, otherwise a machine malfunction may be caused.
- When front panels are removed, live parts can be easily touched by accident.
- Never leave the unit unattended during installation or servicing when the front panel is removed.
- Do not touch water pipes during and immediately after operation as the pipes may be hot and could burn your hands. To avoid injury, give the piping time to return to normal temperature or be sure to wear protective gloves.
- Do not touch any switch with wet fingers. Touching a switch with wet fingers can cause electrical shock.
- Before touching electrical parts, turn off all applicable power to the unit.

WARNING

- If the water supply pressure exceeds the rated pressure, a pressure reducing valve is to be fitted in the installation.
- The water may drip from the discharge pipe of the pressure-relief device and that this pipe must be left open to the atmosphere.
- The pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked.
- A discharge pipe connected to the pressure-relief device is to be installed in a continuously downward direction and in a frost-free environment.
- For appliances with supplementary heaters, the minimum clearance from the appliance to combustible surfaces will be 3m.
- The installation of the appliance shall conform to the Plumbing Code of Australia (PCA).
- A creepage breaker must be installed adjacent to the power supply.
- Do not remove, cover or deface any permanent instructions, labels, or the data labels from either the outside of the unit or inside of unit panels.
- Required qualified person for relocating, repairing and maintaining the unit instead of doing by yourself.
- Electric connection work should obey the instructions of local power company, local electric utility and this manual.
- Never use the wiring and fuse with wrong rated current, otherwise the unit maybe break down and cause fire further more.
- Do not insert fingers, rods or other objects into the air inlet or outlet. When the fan is rotating at high speed, it will cause injury.
- Never use a flammable spray such as hair spray, lacquer paint near the unit. It may cause a fire.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- Tear apart and throw away plastic packaging bags so that children will not play with them. Children playing with plastic bags face danger of death by suffocation.
- Safely dispose of packing materials such as nails and other metal or wood parts that could cause injuries.
- Ask your dealer or qualified personnel to perform installation work in accordance with this manual. Do not install the unit yourself. Improper installation could result in water leakage, electric shocks or fire.
- Be sure to use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling from its mount.
- Install the unit on a foundation that can withstand its weight. Insufficient physical strength may cause the equipment to fall and possible injury.
- Perform specified installation work with full consideration of strong wind, hurricanes, or earthquakes. Improper installation work may result in accidents due to equipment falling.

- Make certain that all electrical work is carried out by qualified personnel according to the local laws and regulations and this manual using a separate circuit. Insufficient capacity of the power supply circuit or improper electrical construction may lead to electric shocks or fire.
- Be sure to install a ground fault circuit interrupter according to local laws and regulations. Failure to install a ground fault circuit interrupter may cause electric shocks and fire.
- Make sure all wiring is secure. Use the specified wires and ensure that terminal connections or wires are protected from water and other adverse external forces. Incomplete connection or affixing may cause a fire.
- When wiring the power supply, form the wires so that the front panel can be securely fastened. If the front panel is not in place there could be overheating of the terminals, electric shocks or fire.
- After completing the installation work, check to make sure that there is no refrigerant leakage.
- Never directly touch any leaking refrigerant as it could cause severe frostbite. Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor and other refrigerant cycle parts. Burns or frostbite are possible if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear protective gloves.
- Do not touch the internal parts (pump, backup heater, etc.) during and immediately after operation. Touching the internal parts can cause burns. To avoid injury, give the internal parts time to return to normal temperature or, if you must touch them, be sure to wear protective gloves.
- Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.

CAUTION

- The earthing pole of socket must be grounded well, make sure that power supply socket and plug are dry enough and connected tightly.
- Before cleaning, be sure to stop the unit and turn the breaker off or pull out the power plug.
- After a long term use, check the unit base and fittings. If damaged, the unit may sink and result in injury.
- Arrange the drain pipe to ensure smooth draining. Improper drainage work may cause wetting of the building, furniture etc.
- Do not turn off the power supply. System will stop or restart heating automatically. A continuous power supply for water heating is necessary, except service and maintenance.
- Ground the unit.
- Grounding resistance should be according to local laws and regulations.
- Do not connect the ground wire to gas or water pipes, lightning conductors or telephone ground wires.
- Incomplete grounding may cause electric shocks.
 - Gas pipes: Fire or an explosion might occur if the gas leaks.
 - Water pipes: Hard vinyl tubes are not effective grounds.
 - Lightning conductors or telephone ground wires: Electrical threshold may rise abnormally if struck by a lightning bolt.
- The installation height of power supply should be over 1.8m, if there is any water splattered, separate the power supply from water.
- Do not wash the unit. This may cause electric shocks or fire. The appliance must be installed in accordance with national wiring regulations. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Do not install the unit in the following places:
 - Where there is mist of mineral oil, oil spray(eg: kitchen) or vapors. Plastic parts may deteriorate, and cause them to come loose or water to leak.
 - Where corrosive gases (such as sulphurous acid gas) are produced. Where corrosion of copper pipes or soldered parts may cause refrigerant to leak.
 - Where there is machinery which emits electromagnetic waves. Electromagnetic waves can disturb the control system and cause equipment malfunction.
 - Where flammable gases may leak, where carbon fiber or ignitable dust is suspended in the air or where volatile flammables such as paint thinner or gasoline are handled. These types of gases might cause a fire.
 - Where the air contains high levels of salt such as near the ocean.
 - Where voltage fluctuates a lot, such as in factories.
 - In vehicles or vessels.
 - Where acidic or alkaline vapors are present.
 - Other special environments.

- This appliance can be used by children 8 years old and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they are supervised or given instruction on using the unit in a safe manner and understand the hazards involved. Children should not play with the unit. Cleaning and user maintenance should not be done by children without supervision.
- Children should be supervised to ensure that they do not play with the appliance.
- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.
- Concerning disconnection incorporated in the fixed wiring should be in accordance with AS/NZS 3000.
- DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary. Do not dispose of electrical appliances as municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substance can leak into the groundwater and get into the food chain, damaging your health and well-being.
- The wiring must be performed by professional technicians in accordance with national wiring regulation and this circuit diagram. An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device (RCD) with the rating not exceeding 30mA shall be incorporated in the fixed wiring according to the national rule.
- Confirm the safety of the installation area (walls, floors, etc.) without hidden dangers such as water, electricity, and gas.
- Before installation, check whether the user's power supply meets the electrical installation requirements of unit (including reliable grounding, leakage, and wire diameter electrical load, etc.). If the electrical installation requirements of the product are not met, the installation of the product is prohibited until the product is rectified.
- When installing multiple air conditioners in a centralized manner, please confirm the load balance of the three-phase power supply, and multiple units are prevented from being assembled into the same phase of the three-phase power supply.
- Product installation should be fixed firmly. Take reinforcement measures, when necessary.

NOTE

- The appliance is intended to be permanently connected to the water mains and not connected by a hose-set.
 - When using the off-peak function, the product can only work under the off-peak power supply all the time.
- About Fluorinated Gasses
- This air-conditioning unit contains fluorinated gasses. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself. Compliance with national gas regulations shall be observed.
 - Installation, service, maintenance and repair of this unit must be performed by a certified technician.
 - Product uninstallation and recycling must be performed by a certified technician.
 - If the system has a leak-detection system installed, it must be checked for leaks at least every 12 months. When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

CAUTION

- Generally, the ambient air temperature of the unit must be above -15°C and below 43°C.
- Install safety valve to water inlet, the largest torque of safety valve shouldn't be more than 80N.m.
- Please make sure water tank is upright put. Install in the place that can prevent unit toppling and falling (e.g. balcony or corner). If install the unit in an open space, to avoid being blown down by strong wind (especially in the area with strong wind), please fix water tank according to operation manual.
- All the diagrams in this manual is for reference only, its appearance and function may differ from water heater that you bought, actual model shall prevail.

2 GENERAL INTRODUCTION

2.1 Outdoor unit

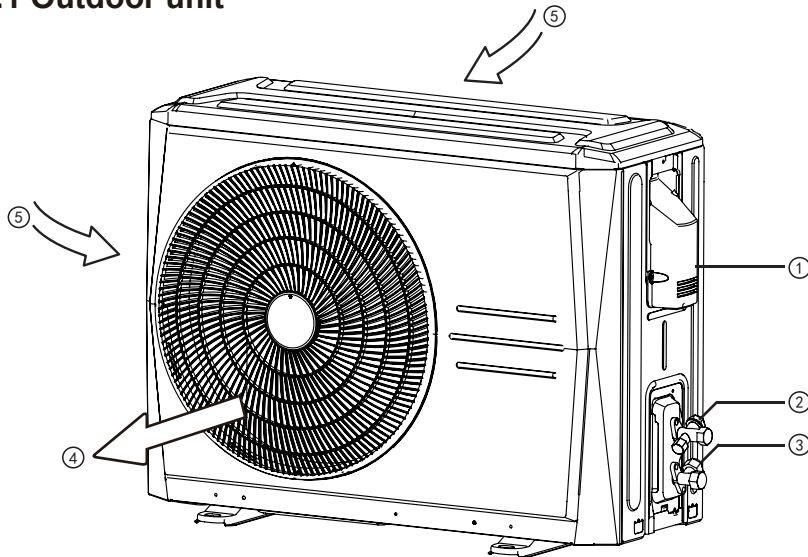


Table 2-1

No.	Name
①	Power cord enter
②	Refrigerant gas valve
③	Refrigerant liquid valve
④	Air outlet
⑤	Air inlet

Fig. 2-1

2.2 Water tank

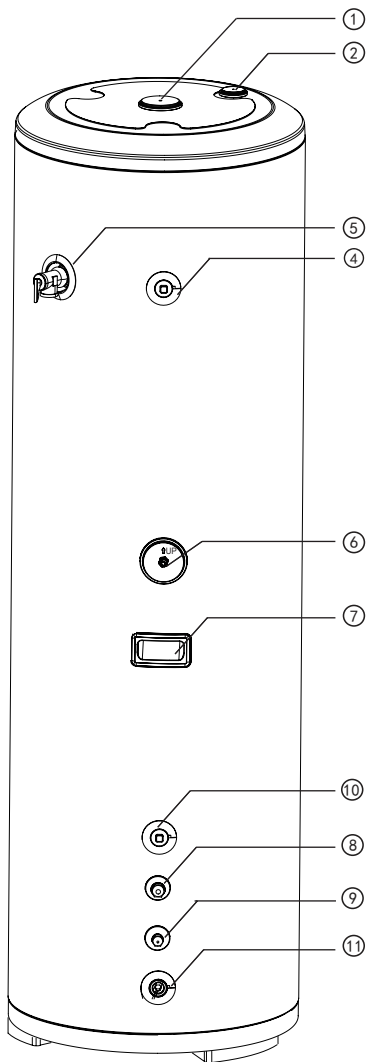


Table 2-2

No.	Name
①	Magnesium rod insertion port
②	Foam filling port
④	Water outlet
⑤	Temperature pressure safety valve
⑥	Water tank temperature sensor
⑦	Handle
⑧	Refrigerant gas pipe
⑨	Refrigerant liquid pipe
⑩	Water inlet
⑪	Drain outlet

200L Without Aux.*

* Electric auxiliary heater is shortened to Aux.

2.3 Specifications

Table 2-3

General	Outdoor unit model		KT-200		
	Indoor unit model		KHP-26 ACS1		
	Ambient temperature		°C	-15~46	
	Leaving water temperature		°C	20~70	
	Heating	Capacity ¹	W	1800	
		Input	W	1000	
	Hot water yield		m ³ /h	0.0387 ¹ / 0.0516 ²²	
	Refrigerant piping	Liquid side	mm/inch	φ6.35 / φ1/4'	
		Gas side	mm/inch	φ9.52 / φ3/8'	
		Max. height difference	m	10	
Max. refrigerant pipe length		m	20		
Design pressure		MPa	3		
Outdoor unit	Outdoor unit power supply		V/N/Hz	220-240/1/50	
	Max. current		A	13.5	
	Compressor Type		Type	Rotary	
	Fan	Type		AC	
	Air side heat exchanger		Type	Hydraulic aluminum fin + Inner grooved copper tube	
	Throttle		Type	Electric expansion valve	
	Outdoor sound pressure level		dB(A)	65	
	Dimension	Unit dimension(L*W*H)		mm	804*327*555
		Packing dimension(L*W*H)		mm	845*390*630
		Net weight		kg	29
		Gross weight		kg	32
	Refrigerant	Type		R134a	
Charged volume		g	900		
Water Tank	Tank volume		L	190	
	Electric heater	Capacity	kW	2.1	
		Power supply	V/N/Hz	220-240/1/50	
	Dimension	Unit dimension(W*D*H)		mm	505*505*1665
		Packing dimension(W*D*H)		mm	1775*635*590
		Net weight		kg	74
		Gross weight		kg	84

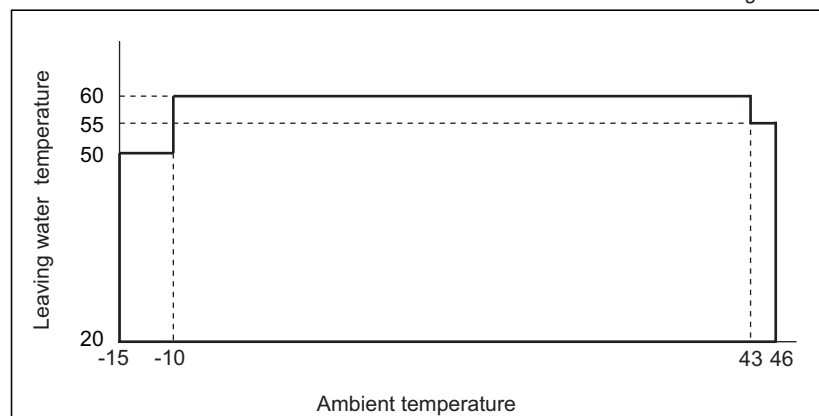
Notes:

1. Ambient temperature 19/15°C(DB/WB), Initial water temperature 9°C, Terminative water temp. 60°C.
2. Ambient temperature 19/15°C(DB/WB), Initial water temperature 15°C, Terminative water temp. 55°C.

Unit: °C Table 2-4

Ambient temperature	Leaving water temperature
-15~-10	50
-10~43	60
43~46	55













Fig. 2-3



3 BEFORE INSTALLATION

3.1 Accessories

Table 3-1

Accessory Name	Qty.	Shape	Purpose
Outdoor unit	Installation manual	1	 Need by master unit
	Manual of wired controller	1	 Wired controller instructions
	Wired controller components	1	 Control unit and display unit status
	Water drainage connection	1	 For condensate water draining
	Water drainage pipe	1	— Condensate water drainage of unit bottom plate
	Plastic expansion tube	4	— To fix mounting box
	Screw	4	— To fix mounting box
	Fixing box of HMI	1	 Install the wired controller
	Wiring for HMI	1	— Connect the unit and HMI
	Seal ring	1	 Seal between water drainage connection and external machine
Water tank	Water tank fixing strip	1	 Fixed water tank
	PTR valve	1	 Pressure relief
	Connector	2	 Connect water tank and safe care
	Seal ring	2	 Prevent rust between water tank and joint
	Safe care	2	 Isolation current to some extent (only with Aux.*)
	Copper nut	2	 Refrigerant connection pipe nut of water tank
Water drainage pipe for water tank(with hose clamp)	1	— Drain water from tank when necessary	

NOTE

During installing, it is necessary to reserve enough installation space and maintenance space according to the following figures.

3.2 Space for maintenance

3.2.1 Outdoor unit installation and maintenance space, see Fig 3-1 and Fig 3-2. (Unit: mm)

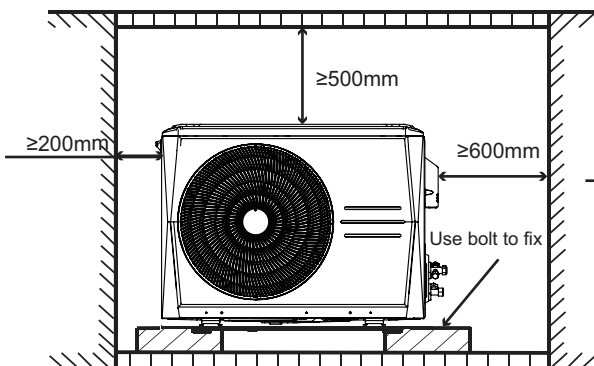


Fig 3-1

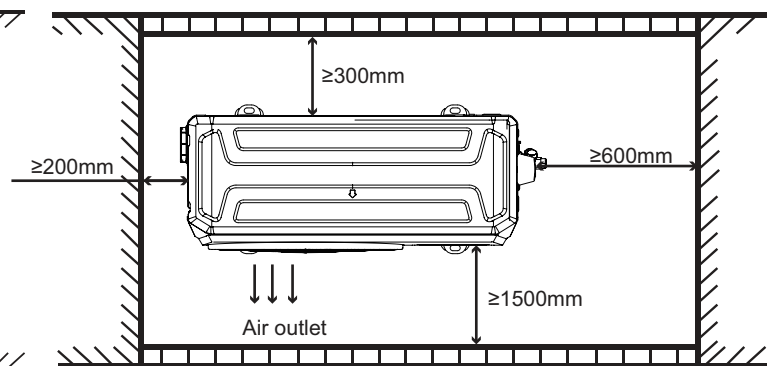
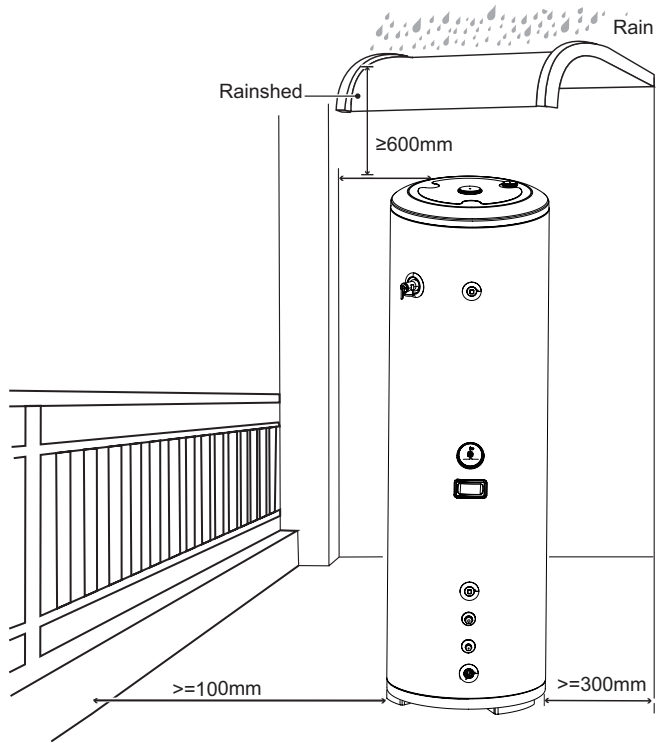


Fig 3-2

NOTE

- If the water tank is completely installed outdoors, it is strongly recommended to install a rain shelter.
- When the water tank is installed outdoors, the distance between the water tank and the fence is not less than 200mm.
- When the water tank is installed indoors, the distance between the water tank and the wall is not less than 600mm.
- For the water tank with electric auxiliary heater, the electric auxiliary heater shall be at least 1000mm away from the wall to ensure that there is enough space for electric auxiliary heat maintenance.



* Electric auxiliary heater is shortened to Aux.

Fig 3-3

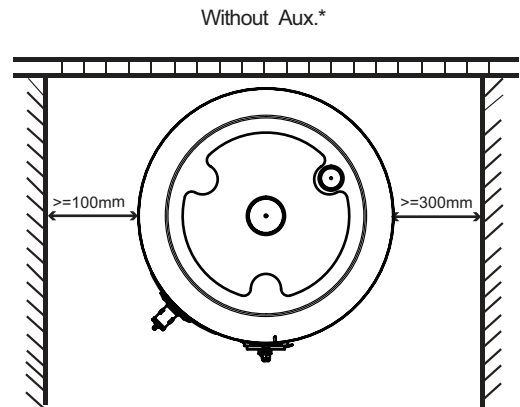


Fig 3-4

4 INSTALLATION PROCEDURE

NOTE

- Ask your dealer or specialized person for moving, repair, and maintenance.
- Install it in the place without direct sunlight and other direct heat radiations. If it can't be avoided, please add a cover to prevent unit from direct sunlight.
- The ceiling is horizontal, and its structure can endure the weight of the indoor unit.
- Please firmly install the unit, otherwise it may cause abnormal noise and vibration.
- Remove obstacles nearby, a narrow circulation space may influence performance of the unit.
- Install in the place that closes to water tank as far as possible, under the condition that the installation requirements could be satisfied.
- When installing in the place that near to the sea and high place where strong wind blows, install the unit against a wall or use a baffle when necessary to ensure the unit could run normally, see Fig 4-1. Especially in the place with strong wind, pay attention not to let strong wind blow back to the unit.
- If install the unit in a basement, inside the room or other confined space, please pay attention to air discharge and air supply circulation around the unit and outside. Circulation air volume should not less than 1250m³/h.

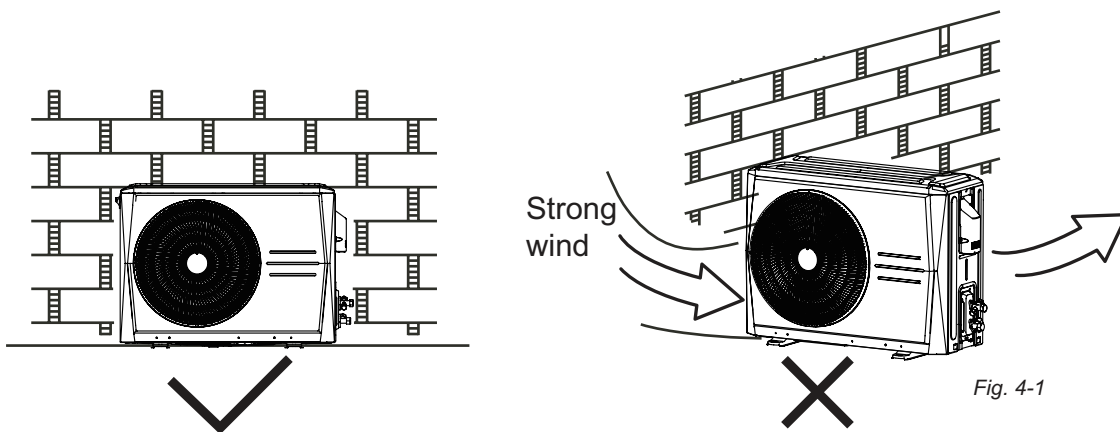


Fig. 4-1

4.1 Dimension sketch and fixed way

4.1.1 Outdoor unit, see Fig. 4-2, Fig. 4-3 and Table 4-1. (Unit: mm)

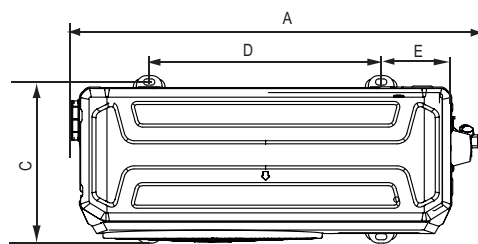
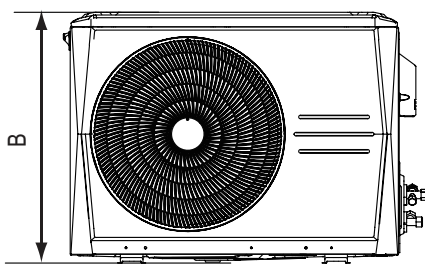


Fig. 4-2

Please fix the four bases of the outdoor unit on the flat ground with bolts.

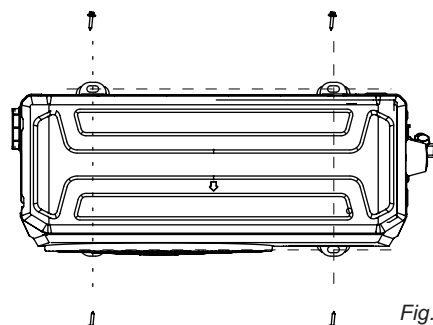


Fig. 4-3

Table 4-1

Dimension and mounting dimension				
A	B	C	D	E
804	555	302	452	137

4.1.2 Water tank, see Fig. 4-4, Fig. 4-5 and Table 4-2. (Unit: mm)

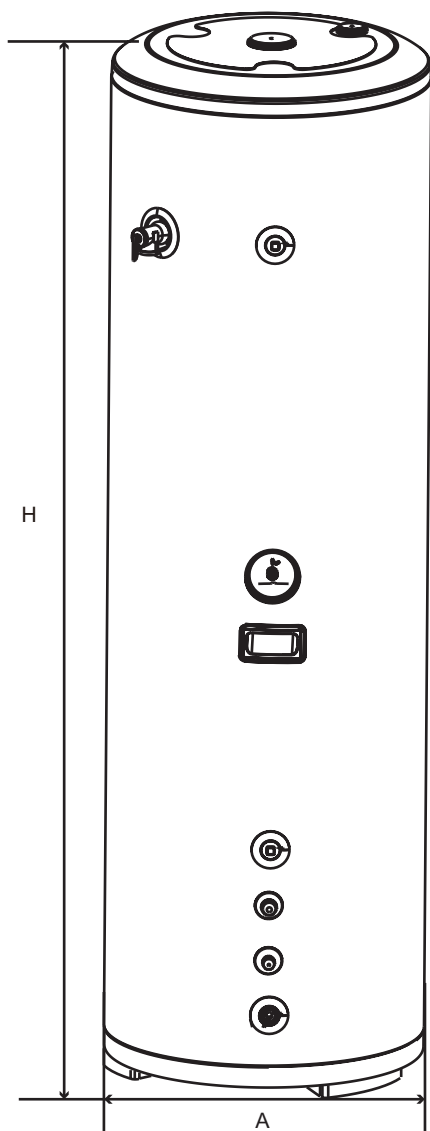
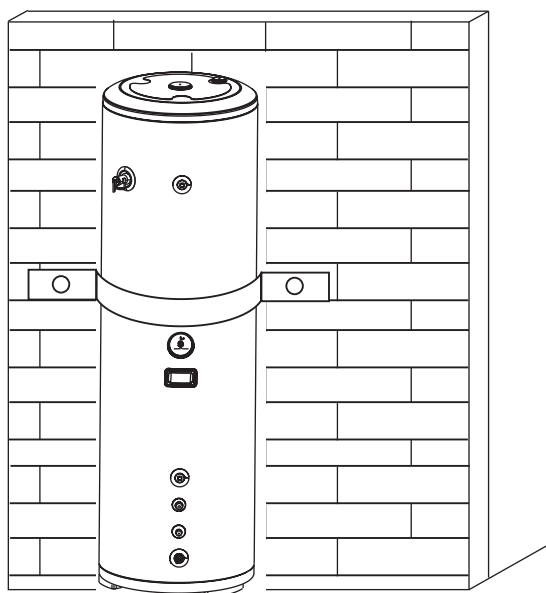


Table 4-2

Dimension Model	A	H
200L	505	1665



Please install the water tank fixing strip as shown in the figure to ensure that the water tank is stably fixed.

Fig. 4-4

Fig. 4-5

4.2 Drain hole position

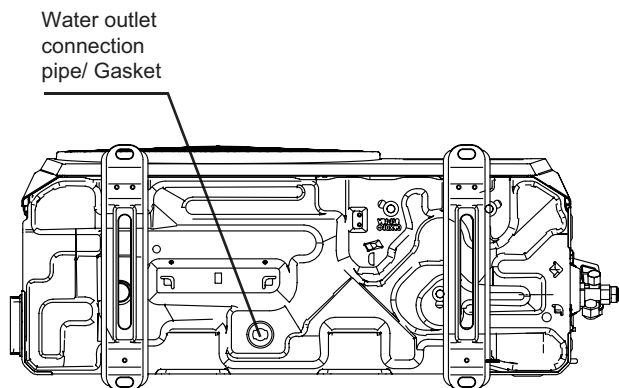


Fig 4-6

Please use the Allen wrench to open the drain valve to drain the water. If no water flows out, it means that the draining is completed.

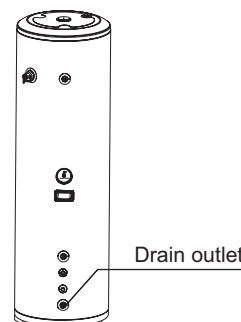
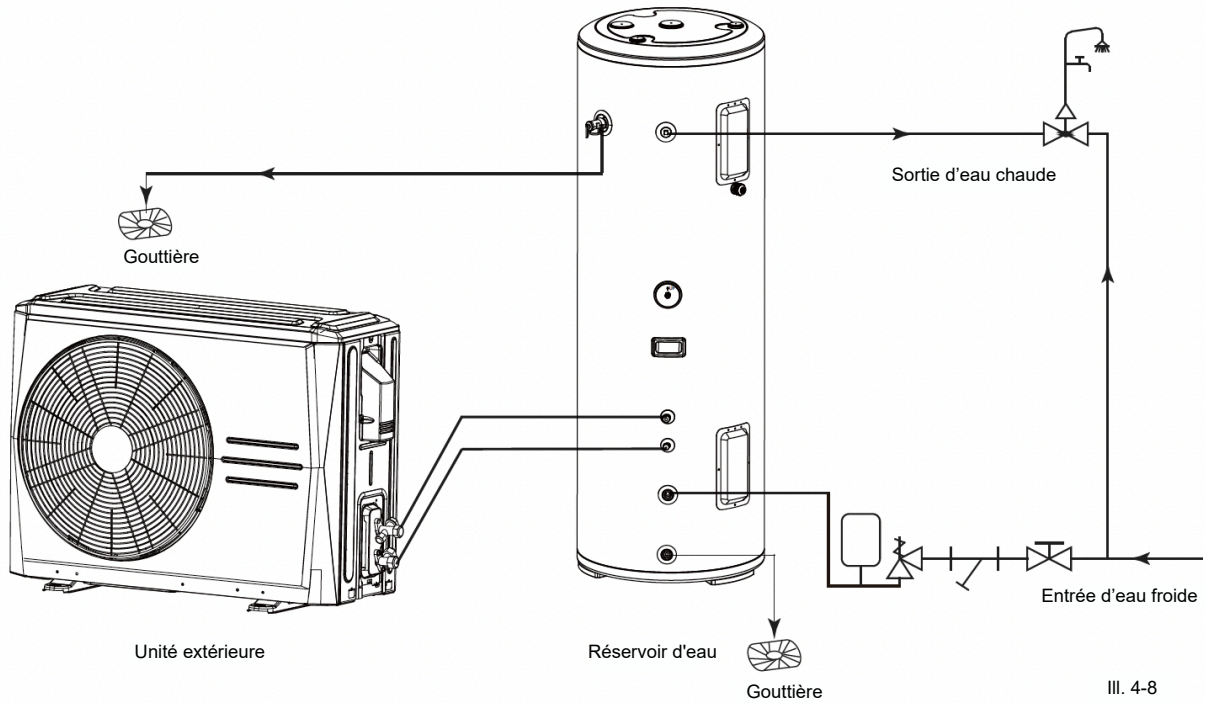


Fig 4-7

4.3 Pipe connection

4.3.1 Unit connection sketch

Unit connection sketch, please refer to Fig.4-8.



III. 4-8

Icons and meanings

Table 4-3

Name	Water end user	One-way stop valve (bought by customers themselves)	Water mixing valve (bought by customers themselves)
Icon			
Name	Safety valve (must be installed)	Expansion tank (suggest to install)	Y-shape filter (≥40 meshes) (bought by customers themselves)
Icon			
Name	Gutter		
Icon			

NOTE

- The water tank temperature can be set from 20 °C to 65 °C (or 70 °C).
- The minimum water inlet pressure is not less than 0.15MPa, and the maximum is not more than 0.5MPa.
- If the inlet water pressure is less than 0.15MPa, a pump should be installed at the water inlet.
- To guarantee the safety usage of tank, a reducing valve should be installed in the water inlet pipe, if the water pressure exceeds 0.5MPa.
- It is strongly recommended to use thread seal tape for sealing when connecting water pipes and valves.

4.3.2 PTR valve

- The valve body unloading pressure is 850kPa, unloading temperature is 99°C.
- PT valve is tightened with a 68N.m torque wrench. Apply sealant to the first 3 turns of screw thread before installation; After installation, the outlet of the drain pipe shall be installed face down, and the thread turns that are not screwed into the PT valve shall be less than 3 turns.
- Before filling the water tank, the PTR valve must be installed properly.
- The PTR valve should be checked every half year to make sure that there is no restriction of the valve. Please beware of hot water from the valve. The drainage pipe should be well insulated in order to prevent water inside pipe from freezing in cold weather.

4.3.3 Stop valve instruction

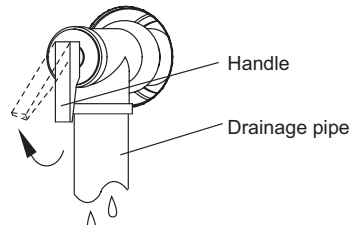


Fig.4-9

- In general, the shape of stop valve and names of each part are shown in Fig.4-10.
- Effect of stop valve:
 - Stop the system when the unit is working.
 - When water tank connects with the outdoor unit, vacuumize and add refrigerant through it.
 - Stop the system and then recycle refrigerant to outdoor unit when maintaining.
- Open and close the stop valve:
 - Open: dismantle the bonnet by wrench and insert an *Allen key to spool, open the stop block anticlockwise and then tighten the bonnet.
 - Close: use a wrench to dismantle the bonnet and insert an Allen key to spool, close the stop block clockwise and then tighten the bonnet.

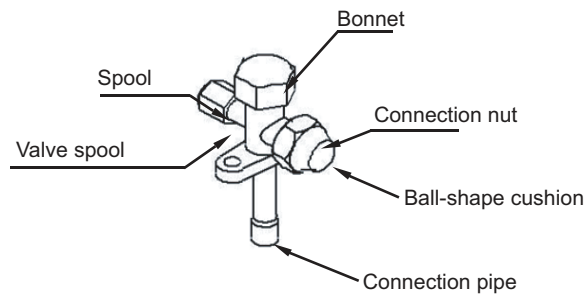


Fig.4-10

⚠ CAUTION

Before water heater runs, please make sure every stop valve has been opened.

4.3.4 Connection length of outdoor unit and water tank pipe and height difference requirements:

Table 4-1

Max.length (m)	Max. height difference (m)	Standard length (m)	Standard height difference (m)
20	10	3	0

NOTE

- Do not let air, dust, or other impurities fall in the pipe system during installation.
- The connecting pipe should not be installed until the indoor and outdoor units have been fixed already.
- Keep the connecting pipe dry, and do not let moisture in during installation.
- When connecting copper pipe, please wrap it with thermal insulation material.

4.4 Vacuum Drying

4.4.1 Purpose

Vacuum drying should be performed in order to remove moisture and non-condensable gases from the system. Removing moisture prevents ice formation and oxidization of copper piping or other internal components. The presence of ice particles in the system would cause abnormal operation, whilst particles of oxidized copper can cause compressor damage. The presence of non-condensable gases in the system would lead to pressure fluctuations and poor heat exchange performance.

4.4.2 Procedure

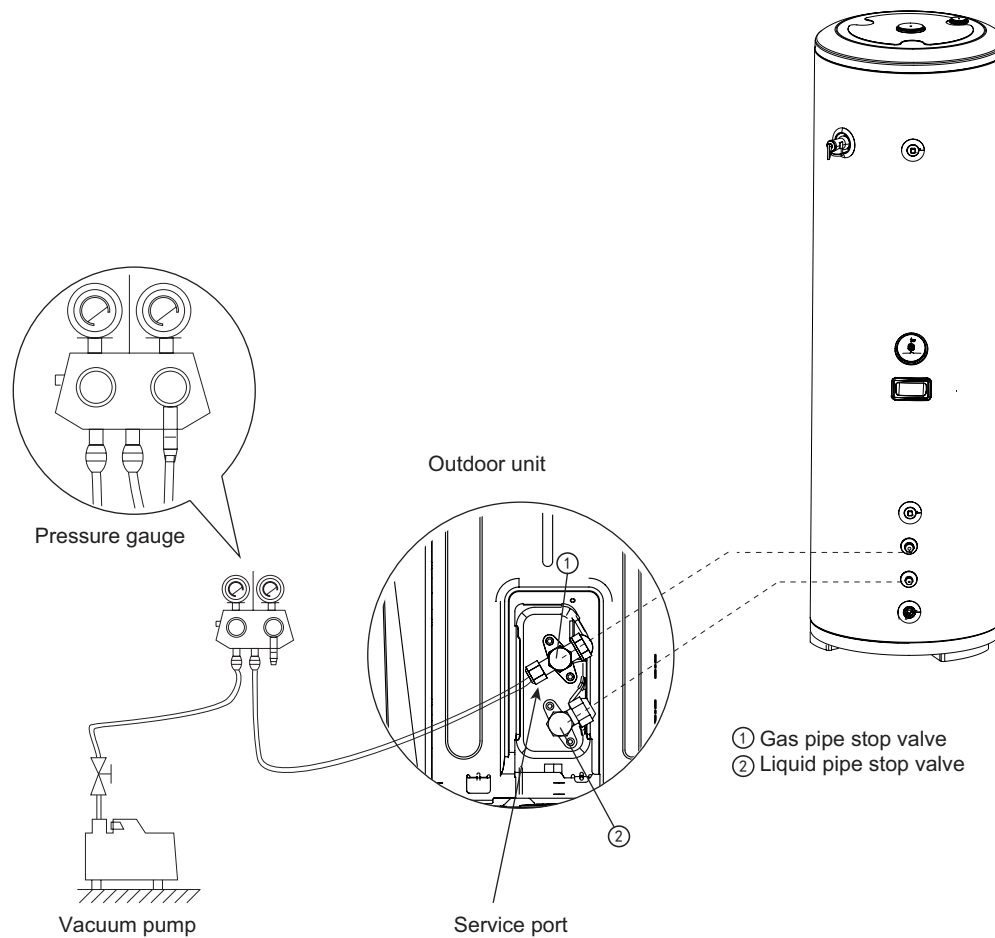
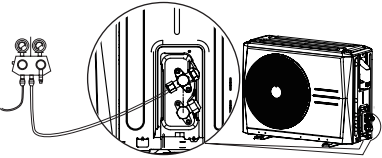
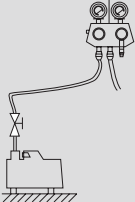
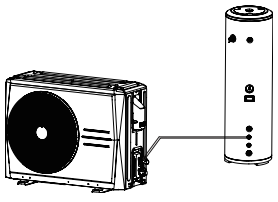
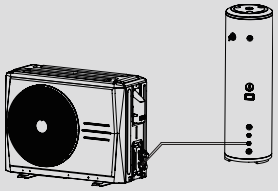


Fig.4-11

Table 4-5

Item	Description	Image	Notice
1	Connect the (low pressure side) hose of a pressure gauge to the outdoor unit gas pipe stop valve.		Before performing vacuum drying, make sure that all the outdoor unit stop valves are firmly closed.
2	Connect the hose to the vacuum pump.		<p>1. Mixing of pump lubricant with compressor oil could cause compressor malfunction and a one-way valve should therefore be used to prevent vacuum pump lubricant seeping into the piping system.</p> <p>2. Using a vacuum pump with a discharge in excess of 4L/s and a precision level of 0.02mmHg is recommended.</p>
3	Connect the outdoor unit gas pipe stop valve to water tank gas pipe		
4	Connect the outdoor unit liquid pipe stop valve to water tank liquid pipe		
5	Start the vacuum pump and then open the pressure gauge valves to start vacuum the system.		
6	After 15-20 minutes, close the pressure gauge valves.		
7	After a further 5 to 10 minutes check the pressure gauge. If the gauge has returned to zero, check for leakages in the refrigerant piping. If the gauge is no change, then vacuum drying is OK.		
8	Re-open the pressure gauge valves and continue vacuum drying for at least 20 minutes and until a pressure difference of 756mmHg or more has been achieved. Once the pressure difference of at least 756mmHg has been achieved, continue vacuum drying for 20 minutes.		
9	Close the pressure gauge valves and then stop the vacuum pump.		
10	After 1 hour, check the pressure gauge. If the pressure in the piping has not increased, the procedure is finished. If the pressure has increased, check for leakages.		After vacuum drying, keep the hoses connected to the pressure gauge and to the outdoor unit stop valves, in preparation for refrigerant charging.

4.5 Refrigerant charge

- Pipe length is 2~20m.
- If the pipe length is less than 10m, there is no need to add additional refrigerant charge.
- If the pipe length is more than 10m, adding additional refrigerant charge is necessary, and the rule is 20g/m for the additional pipe.

5 ELECTRICAL CONNECTION

CAUTION

- The heat pump should use separate power supply with rated voltage. If voltage is not stable, please use stabilized voltage supply.
- The external power supply to the heat pump should have ground wiring, which is linked to the ground wiring of the indoor and outdoor unit.
- The wiring work should be done by qualified persons according to circuit drawing.
- A leakage protector should be installed according to the National Standard concerning electrical appliance.
- An all-pole disconnection device which has at least 3mm separation distance in contact points should be installed.
- Power supply cords and signal wires should be arranged properly. Separate strong current wire and weak current wire, meanwhile they can't contact with connection pipe and valve.
- Power supply with a leakage protector should be installed in a water-proof place inside the room.
- Don't do cross connection between 2 wires and signal wires must be shielded.
- When power supply cord parallels with controlling wire, please put the wires to corresponding wire pipe and leave proper space between wires.
- When selecting power supply cords, please refer to the National Standard and this manual, power supply used outdoor should not lighter than NO.57 wire in IEC 60245.
- If power supply cord is damaged, to avoid danger, it must be replaced by professional person.
- Do not turn on the power until you have checked carefully after wiring.
- This appliance can be connected only to a supply with system impedance no more than 0.530Ω. In case necessary, please consult your supply authority for system impedance information.

5.1 Power supply cords

5.1.1 Specification of power supply

Table 5-1

Model	Item	Power	Min. wire dia.(mm ²) (metal pipe/synthetic resin pipe wire)		Manual switch(A)		Leakage protector	Max. E-heater Power(W)
			Successive length ≤30m	Ground wire	Capacity	Fuse		
	With AUX.	220-240V~50Hz	1.5 to 4	1.5 to 4	20	15	30mA below 0.1 sec	2100
	Without AUX.		1.0 to 2.5	1.0 to 2.5				

NOTE

- Specifications of power wires above (outdoor unit power wire and power wire that connects with water tank): H07RN-F.
- Power supply provided individually(not use power supply device).

CAUTION

Wire diameter shown in the table above and successive length is the situation than voltage drop is in the range of 2%, when successive length is longer than the value shown in the table, please select wire diameter according to relative standards.

5.2 Water tank temperature sensor installation

Connect the water tank temperature sensor wire connector to the outdoor unit T5L connector.

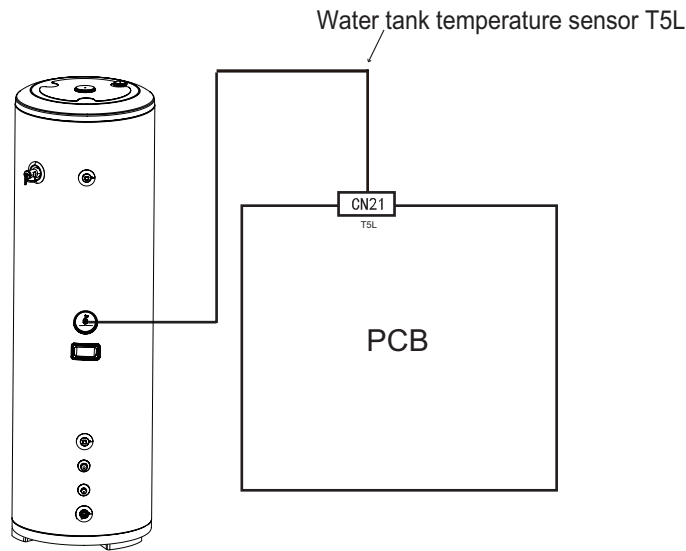


Fig.5-1

5.3 ODU & AUX. power connection

NOTE

If the water tank has the electric auxiliary heating(AUX.)function, please follow the steps below to connect the electric auxiliary heating power cord.

1. Remove the protective cover of the electric control box on the right side of the outdoor unit.

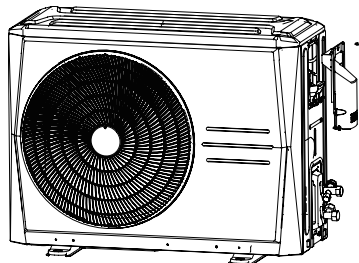


Fig.5-2

2. Connect the electric auxiliary heating power line on the water tank to the corresponding port on the terminal block.

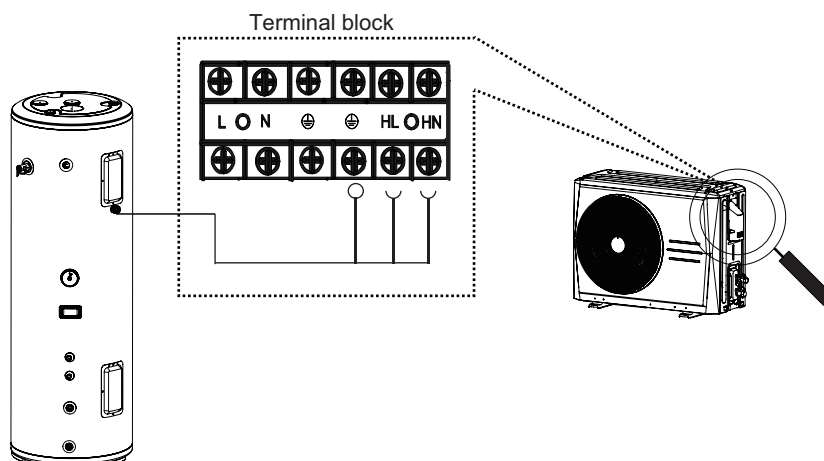


Fig.5-3

3. Outdoor unit power supply.

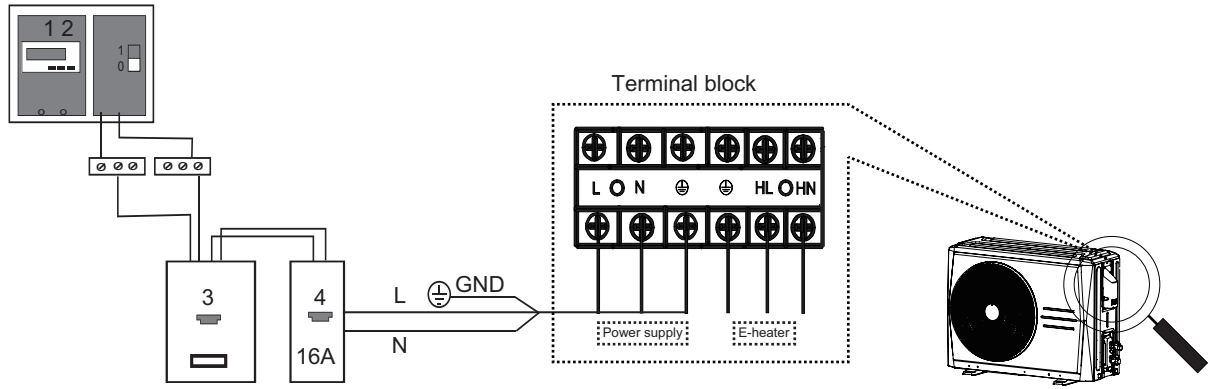


Fig.5-4

1. Electric counter
2. Global overcurrent and leakage circuit breaker
3. Electric leakage circuit breaker
4. Overcurrent circuit breaker

CAUTION

- A leakage protector must be installed on power supply box outside the unit according to the figure above.
- Power supply with leakage protector must be installed inside or installed in the place that can satisfy water-proof requirements.
- This unit can be started only if it is grounded reliably.

5.4 Dial code definitions

NOTE

The picture shown is for reference only, actual product may vary.

means 0, means 1.

Table 5-2

S1-1		0	Default
		1	Reserve
S1-2		0	Reserve
		1	Default
S1-3		0	Reserve
		1	Reserve
S2-1		0	Reserve
		1	Reserve
S2-2		00	The default validity period of user set parameters is 24 hours.
		01	The default validity period of user set parameters is long-term.
S2-3		10	Reserve
		11	Default

6 CHECK

NOTE

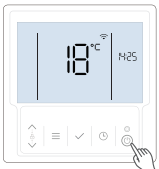
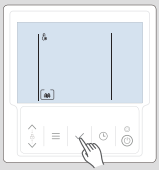
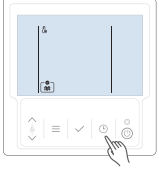
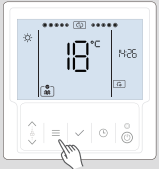
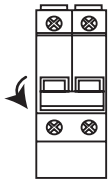
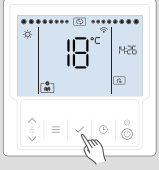
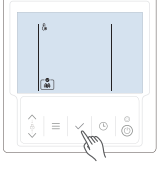
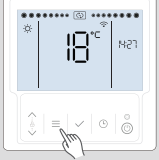
Before switching on the unit, read following recommendations:

- When the installation and parameter setting are completed, cover all the sheet metal of the unit well.
- The unit should be maintained by professionals.

For the water tank with electric auxiliary heater, please check the quality of the electric auxiliary heater according to the method in Chapter 6.1 before the Long-term operation to avoid damage to the unit or personal injury.

6.1 Quality inspection of electric auxiliary heater

Table 6-1

No.	Description	Image	Notice
1	After the unit is powered on, press the power button on the wired controller and the screen will flash briefly.		The unit shall be installed according to the requirements of the corresponding specifications. Before the unit is powered on, please ensure that the system operates in the environment where the water tank is full of water to prevent damage to the electric auxiliary heat pipe.
2	Press and hold the “√” button until the manual electric auxiliary heater function icon “[#]” appears.		If the wired controller screen is locked and displays the icon “[]”, press and hold the “^” and “√” buttons simultaneously for several seconds. When the “[]” icon disappears, it indicates that the wired controller screen is successfully unlocked.
3	Press the “√” button again, and the icon “[]” will appear, indicating that the manual electric auxiliary heater function has been turned on.		Press the “√” button to switch the manual electric auxiliary heater function between ON and OFF.
4	Press the “≡” button to return to the main interface. If the manual electric auxiliary heater function icon and the electric auxiliary heater operation status icon are displayed on the screen of the wired controller, it means that the manual electric auxiliary heater function has been turned on, and the electric auxiliary heater is in operation status. If not, please check whether steps 1 to 4 are correct.		
5	After the manual electric auxiliary heater function is turned on, wait for 5min to make the electric auxiliary heating operate stably in the environment with water, check whether the leakage protection switch trips. If there is a trip, immediately cut off the power and notify the professional maintenance personnel.		In this case, it is usually need to replace the electric heating pipe.
6	If no tripping occurs, please turn off the manual electric auxiliary heater function after unlocking the wired controller screen. Then press and hold the “√” button to enter the electric auxiliary heater function interface.		
7	After entering the electric auxiliary heater function interface, press the “√” button again to cancel the manual electric auxiliary heater function, and the icon display will change from “[]” to “[#]”.		
8	Press the “≡” button to return to the main interface, and you can find that the manual electric auxiliary heater function icon and the electric auxiliary heater operation status icon are disappeared, indicating that the manual electric auxiliary heater function has been closed.		

6.2 System parameters check

If the whole unit failed or in protection, the panel will display the corresponding code; when more than one failure or protection occurs, the order of failure protection will display. When checking, the number is displayed first, then the content. Press check button, you can go over parameters of the whole unit, the following table shows sequence of check:

Table 6-2

No.	Display content	Instructions
0	Normal display	"dF"——Defrosting "dC"——Refrigerant recovering "0"——When being shut down " _ " Temperature of water tank—— When operating or standby
1	Running mode	"3"——Water heating
2	Running air speed	"F0" ——Shut down fan "F1" ——Low speed "F3"—— High speed
3	T3 temp. value	
4	T4 temp. value	
5	T5L temp. value	
6	Th temp. value	
7	Tp temp. value	
8	Current	
9	EEV opening degree	Actual opening=display value×8
10	T5s setting temperature	
11	Td setting auto start temp. of auxiliary E-heater	
12	Trdh setting booting return difference temp.	
13	The third to last error	
14	Penultimate error	
15	The last error	
16	Software version	Actual version
17	Check finished	Display"- -"

7 OPERATIONS AND PERFORMANCES

CAUTION

Please cut off the manual switch power when unit fails. Do not restart until problems are solved.

1) Characteristics of water heating——3 minute protection

Restart or open manual switch after the unit has been shut down within a short time. Unit will not start immediately until 3 minutes later, because of the self-protect function of the compressor.

2) During operation, if outdoor temperature is higher than normal, the fan motor will runs at low air volume or stop running.

3) About defrosting function perform at heating operation

- In case of frosting during heating operation, to prevent the heating efficiency from decreasing, defrosting operation will turn on automatically (Approx. 2~7 minutes).

- In the process of defrosting operation, the unit fan motor will stop running.

4) About protection device

- When protection device operate, though the unit stops, the operating indicator of wire control still will be blinking.

- When protection device operates, nixie indicator will display malfunction code (unit).

- Protection device will act when the following circumstances occur:

a) Air inlet or outlet are blocked.

b) Voltage is a little higher or lower compare to the voltage range (Exceeding the range of -10%~10% of 230V)

5) Start the unit after a long period out of service

Start-up the unit after out of service for a long period (includes drive up a unit at the first time), you would see rust mix up water in red, flow out from tap. Such that is a normal phenomenon, please be calmly and keep draining, after for a while rust will disappear.

6) About power failure

- In case power failure during the unit working, please stop all operating actions.

- At the next startup after power failure, the RUN indicator of wire controller will blink slowly for several seconds for noting user.

- Misoperation occur during unit working.

7) About RCCB

Outdoor unit must use RCCB,pleases install an RCCB between in user power supply and the outdoor unit. In case the unit cannot act but not attribute to power failure, please check these RCCB switches at first. Before operate the RCCB, please ensure that the user installing switch is break off.

8 MAINTENANCE

8.1 Confirmation before running

- 1) Make sure whether ground wire is broken or fall off.
- 2) Power on the machine after all connections are qualified.

8.2 Troubleshooting when abnormal situation happens

Before asking for serving or repairing, check the following points:

- Non-mechanical malfunction
- 1) Water oozes from safety valve pressure relief opening
 - When water heating, cold water will expand when heated, water oozing is normal. Do not block it for safety consideration.
 - If a large amount of water flows, it means safety valve is invalid. Stop using and replace safety valve.
 - 2) Long period for heating a tank of water
 - In winter, water heating efficiency will decrease because of low ambient temperature (about 0°C). It will take a longer time for water heating.
 - If customer needs to use hot water, please start the unit in advance.
- Need to check
- 1) Automatically start or stop
 - Whether we set timer wrongly.
 - 2) When not working
 - Check whether powering on.
 - Whether manual switch is on.
 - Whether fuse blows.
 - Whether start the protection device (indicator lights).
 - Whether it is not the time of timer on. (Operation lamp lights.)
 - 3) If heating effect is not good
 - Whether air outlet and inlet has been blocked.

CAUTION

- If the following situation happens, please stop running and cut off power supply manually and contact with the dealer or service center.
 - ON/OFF operation is ineffective.
 - Fuse or RCCB trips frequently
- Before leave unused for a long time, please complete the following items:
 - Drain water from tank and pipes, close all valve bodies.
- After leave unused for a long time, please check the following items:
 - Check air inlet and outlet of the unit to see whether they are blocked. Clean immediately when they are blocked.
 - Check whether water pipes, valves have been damaged or blocked. Whether there's water leakage in joints, replace them when water leaks.
 - It is suggested to inspect anode protection material every half year. If it has been exhausted, please replace it with a new one.

8.3 After-sale service

In case of malfunctions, please cut off the power switch and contact after-sale service centre or technical service department, for detailed information please refer to User Service Guide.

8.4 Important information for the used refrigerant

This product has the fluorinated gas, it is forbidden to release to air.

Refrigerant type: R134a; Volume of GWP: 1430;

GWP=Global Warming Potential

Table 8-1

Factory charge	
Refrigerant/kg	tonnes CO ₂ equivalent
0.9	1.29

NOTE

Frequency of Refrigerant Leak Checks:

- 1) For equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO₂ equivalent or more, but of less than 50 tonnes of CO₂ equipment, at least every 12 months, or where a leakage detection system is installed, at least every 24 months.
- 2) For equipment that contains fluorinated greenhouse gases in quantities of 50 tonnes of CO₂ equivalent or more, but of less than 500 tonnes of CO₂ equipment, at least every six months, or where a leakage detection system is installed, at least every 12 months.
- 3) For equipment that contains fluorinated greenhouse gases in quantities of 500 tonnes of CO₂ equivalent or more, at least every three months, or where a leakage detection system is installed, at least every six months.
- 4) Non-hermetically sealed equipment charged with fluorinated greenhouse gases shall only be sold to the end user where evidence is provided that the installation is to be carried out by an undertaking certified person.
- 5) Only certificated person is allowed to do installation, operation and maintenance.

8.5 Water quality limitations

NOTE

If the water quality does not meet the requirements in the table below, please contact the supplier for advice.

Table 8-2

PH Value	Total Hardness	Electrical Conductivity
6.5-8.0	50ppm	<200µS/cm(25°C)
Sulphate Ion	Silicon	Iron Content
<50ppm	<30ppm	<0.3ppm
Sulfide Ion	Chloride Ion	Ammonia Ion
None	<50ppm	None
Sodium Ion	Calcium Ion	_____
None	<50ppm	_____

9 ERROR CODE SHOOTING TABLE

Table 9-1

Error Code	Explanation
E2	Communication error
E4	Water tank temperature sensor error (T5L)
E5	ODU heat exchanger temperature sensor error (T3)
E6	ODU ambient temperature sensor error (T4)
E9	Suction temperature sensor error (Th)
EA	Discharge temperature sensor error (Tp)
EF	Clock chip error
HP	Smart Grid signal error
HC	E-heater error (Current is less than 2A when e-heater operating)
P1	High pressure protection
P2	Over load protection of fixed compressor
P4	High discharge temperature (Tp) protection
PA	Low water temperature protection
bA	The ambient temperature exceeds the declared range (not an error)
F2	Low super-heat of discharge protection
F6	Electric expansion valve joint fault
db	Anti-freezing operating (not an error) for some unit

NOTE

A series of horizontal dotted lines for writing notes.

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Kaysun
by frigicoll

MAIN OFFICE

Blasco de Garay, 4-6
08960 Sant Just Desvern
(Barcelona)
Tel. +34 93 480 33 22
<http://www.frigicoll.es/>
<http://www.kaysun.es/en/>

MADRID

Senda Galiana, 1
Polígono Industrial Coslada
Coslada (Madrid)
Tel. +34 91 669 97 01
Fax. +34 91 674 21 00
madrid@frigicoll.es