

KAISAI

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INSTALATION MANUAL

SPLIT TYPE HEAT PUMP WITH DHW





HEAT PUMP INDOOR UNIT

with **DHW**

SPLIT

KMK-190L-100RY1

KMK-240L-100RY1

KMK-240L-160RY3

Installation 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. Read these instructions carefully before installation. Keep this manual in a handy for future reference.

Meanings of DANGER, WARNING, CAUTION and NOTE symbols.

DANGER

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

WARNING

Indicates a potentially hazardous situation which if not avoided, could result in death or 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.

WARNING

- 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.
- This appliance which connect 1-phase 6KW backup heater can be connected only to a supply with system impedance no more than 0.3079Ω. In case necessary, please consult your supply authority for system impedance information.



Caution: Risk of fire/
flammable materials

WARNING

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.

Special requirements for R32

WARNING

- Refrigerant leakage and open flame are not allowed.
- Be aware that the R32 refrigerant does NOT contain an odour.

WARNING

The appliance shall be stored so as to prevent mechanical damage and in a well-ventilated room without continuously operating ignition sources (example: open flames, an operating gas appliance) and have a room size as specified below.

NOTE

- Do NOT re-use joints which have been used already.
- Joints made in installation among parts of refrigerant system shall be accessible for maintenance purposes.

WARNING

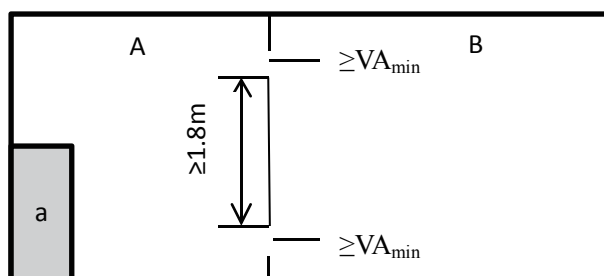
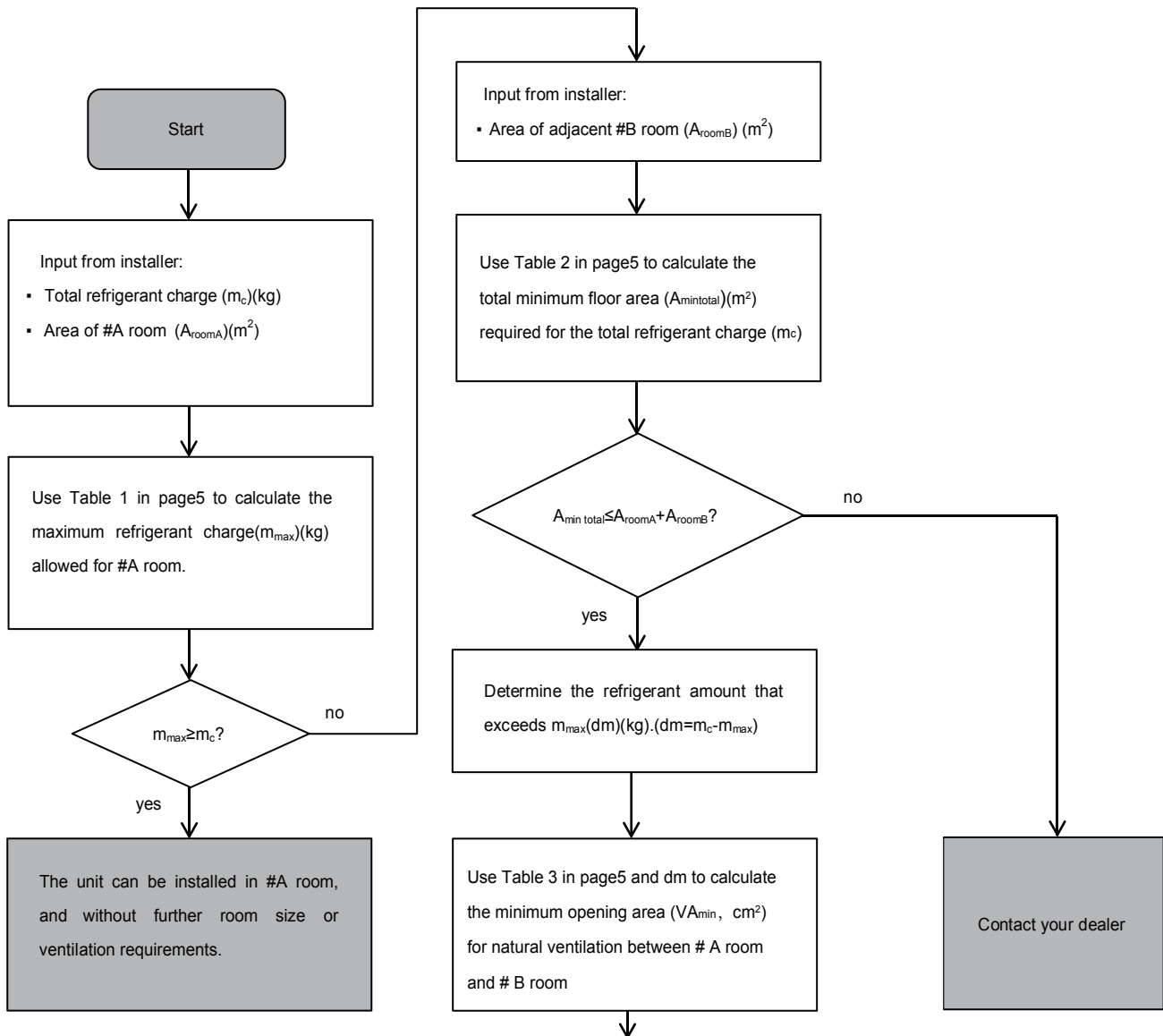
Make sure installation, servicing, maintenance and repair comply with instructions and with applicable legislation (for example national gas regulation) and are executed only by authorised persons.

NOTE

- Pipework should be protected from physical damage.
- Installation of pipework should be kept to a minimum.

If the total refrigerant charged in the system is ≤ 1.842 kg, there are no additional minimum floor area requirements.

If the total refrigerant charged in the system is > 1.842 kg, you need to comply with additional minimum floor area requirements as described in the following flow chart. The flow chart uses the following tables: "Table 1-Maximum refrigerant charge allowed in a room: indoor unit" on page 5, "Table 2-Minimum floor area: indoor unit" on page 5 and "Table 3-Minimum venting opening area for natural ventilation: indoor unit" on page 5.



a Indoor unit

#A Room where the indoor unit is installed.

#B Room adjacent to #A room.

The area of A plus B has to be greater than or equal to 6.9 m².

Table 1-Maximum refrigerant charge allowed in a room:indoor unit

A _{room} (m ²)	Maximum refrigerant charge in a room(m _{max})(kg)	A _{room} (m ²)	Maximum refrigerant charge in a room(m _{max})(kg)
	H=1230mm(100/190)		H=1500mm(100/240,160/240)
6.9	1.85	4.7	1.85
7.0	1.87	5.0	1.93
8.0	1.98	5.5	2.01
9.0	2.13	6.0	2.10
10.0	2.23	6.5	2.19
11.0	2.34	7.0	2.27
12.0	2.44	7.5	2.34
		8.0	2.44

Table 2-Minimum floor area:indoor unit

m _c (kg)	Minimum floor area(m ²)	m _c (kg)	Minimum floor area(m ²)
	H=1230mm(100/190)		H=1500mm(100/240,160/240)
1.85	6.90	1.85	4.70
1.90	7.31	1.90	4.92
1.95	7.70	1.95	5.18
2.00	8.10	2.00	5.45
2.05	8.51	2.05	5.72
2.10	8.93	2.10	6.01
2.15	9.36	2.15	6.30
2.20	9.80	2.20	6.59
2.25	10.3	2.25	6.89
2.30	10.7	2.30	7.20
2.35	11.2	2.35	7.52
2.40	11.7	2.40	7.84
2.45	12.2	2.45	8.10

Table 3-Minimum venting opening area for natural ventilation: indoor unit

m _c	m _{max}	dm=m _c -m _{max} (kg)	Minimum venting opening area(cm ²)	Minimum venting opening area(cm ²)
			H=1230mm(100/190)	H=1500mm(100/240,160/240)
2.41	0.3	2.11	375	290
2.41	0.5	1.91	350	280
2.41	0.7	1.71	330	268
2.41	0.9	1.51	315	258
2.41	1.1	1.31	302	247
2.41	1.3	1.11	278	228
2.41	1.5	0.91	245	200
2.41	1.7	0.71	203	167
2.41	1.9	0.51	154	126
2.41	2.1	0.31	98	80

NOTE

- The value of "installation height(H)" is the distance from the lowest point of the refrigerant pipe of indoor unit to the ground .

DANGER

- Before touching electric terminal parts, turn off power switch.
- When service panels are removed, live parts can be easily touched by accident.
- Never leave the unit unattended during installation or servicing when the service 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 if you must touch them.
- 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

- 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 by 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, 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.

CAUTION

- 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.

CAUTION

- Install the power wire at least 3 feet (1 meter) away from televisions or radios to prevent interference or noise. (Depending on the radio waves, a distance of 3 feet (1 meter) may not be sufficient to eliminate the noise.)
- 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 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.
- 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.
- 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 wiring/pipes.
- 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.

Product installation should be fixed firmly, Take reinforcement measures, when necessary.

NOTE

- About Fluorinated Gases
 - This air-conditioning unit contains fluorinated gases. 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.

2 ACCESSORIES

2.1 Unpacking

Removing the package

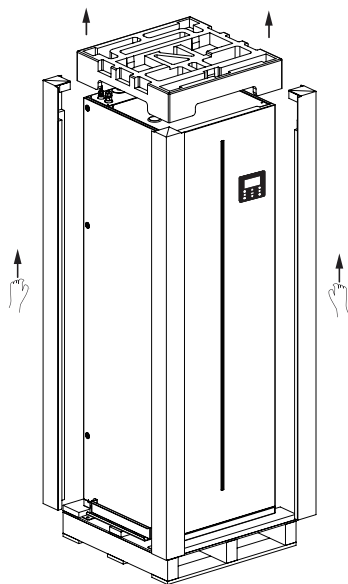


Fig.2-1

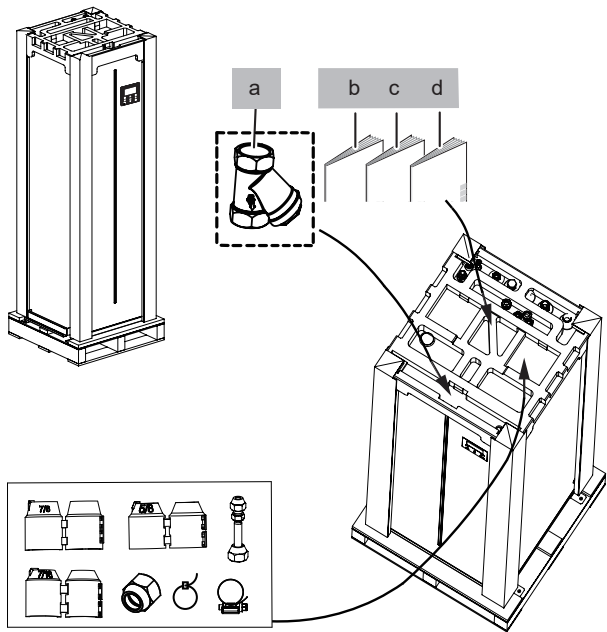


Fig.2-2

Installation Fittings					Installation Fittings				
Name	Shape	Quantity			Name	Shape	Quantity		
		100/190	100/240	160/240			100-190	100-240	160-240
Installation and owner's manual(this book)		1	1	1	M9 Copper Nut		1	1	1
Operation manual		1	1	1	M16 Copper Nut		1	1	1
					Y-shape filter		1	1	1
M16 Copper Nut Tamper Cap		1	1	1	Operation manual (Wire controller)		1	1	1
M9 Copper Nut Tamper Cap		1	1	1	Transfer 9.52-6.35		1	1	1
M6 Copper Nut Tamper Cap		1	1	1	Belt L200		2	2	2
					Throat bander		1	1	1

2.2 Remove the wooden base

- Remove the 4 screws of the wooden base (Refer to Fig.2-3).
- Four people hold the sheet metal lifting machine, one of them pull the wooden base (Refer to Fig.2-4).
- Remove the 8 screws of the sheet metal and remove the sheet metal (Refer to Fig.2-5).
- Take carefully when lifting machine and pull the wooden.
- Care should be taken when transporting the heat pump unit that the casing is not damaged by impact. Do not remove the protection packaging unit heat pump unit has reached its final location. This will help protect the structure and control panel. The heat pump can be transported ONLY vertically.
- Be careful with the Installation and Operation manual and with the factory-supplied accessories box located at the top of the unit.
- Four people are required when lifting because of the heavy weight of the unit.

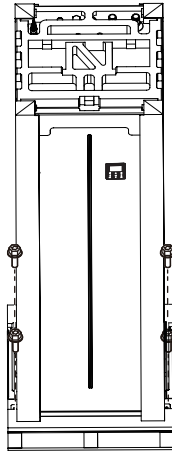


Fig.2-3

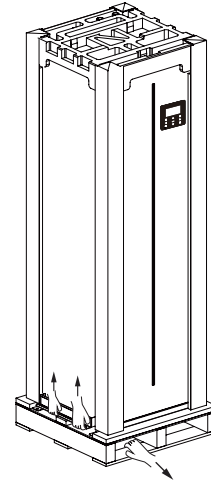


Fig.2-4

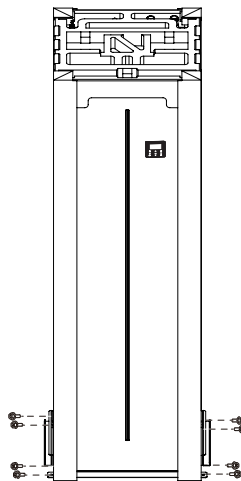


Fig.2-5

3 INSTALLATION SITE

WARNING

- Do not install the IDU near a bedroom;
- Suggest install it in a garage, utility room, corridor, basement, or laundry room;
- Be sure to adopt adequate measures to prevent the unit from being used as a shelter by small animals.
- Small animals making contact with electrical parts can cause malfunction, smoke or fire. Please instruct the customer to keep the area around the unit clean.
- The equipment is not intended for use in a potentially explosive atmosphere.
- Please connect the top pipe or fill the water tank immediately after removing the wooden frame, so as not to cause the machine to tip over.

- Select an installation site where the following conditions are satisfied and one that meets with your customer's approval.
 - Safe places which can bear the unit's weight and where the unit can be installed at an even level.
 - Places where there is no possibility of flammable gas or product leak.
 - The equipment is not intended for use in a potentially explosive atmosphere.
 - Places where servicing space can be well ensured.
 - Places where the units' piping and wiring lengths come within the allowable ranges.
 - Places where water leaking from the unit cannot cause damage to the location (e.g. in case of a blocked drain pipe).
 - Do not install the unit in places often used as a work space. In case of construction work (e.g. grinding etc.) where a lot of dust is created, the unit must be covered.
 - Do not place any object or equipment on top of the unit (top plate)
 - Do not climb, sit or stand on top of the unit.
 - Be sure that sufficient precautions are taken in case of refrigerant leakage according to relevant local laws and regulations.
 - Don't install the unit near the sea or where there is corrosion gas.
- When installing the unit in a place exposed to strong wind, pay special attention to the following.
In normal condition, refer to the figures below for installation of the unit:

CAUTION

The indoor unit should be installed in an indoor water proof place.

The indoor unit is to be floor mounted in an indoor location that meets the following requirements:

- The installation location is frost-free.
- The space around the unit is adequate for servicing (Refer to Fig.4-2).
- There is a provision for condensate drain and pressure relief valve blow-off.

CAUTION

When the unit is running in the cooling mode, condensate may drop from the water inlet and water outlet pipes. Please make sure the dropping condensate will not result in damage of your furniture and other devices.

4 INSTALLATION

4.1 Dimensions of the unit:

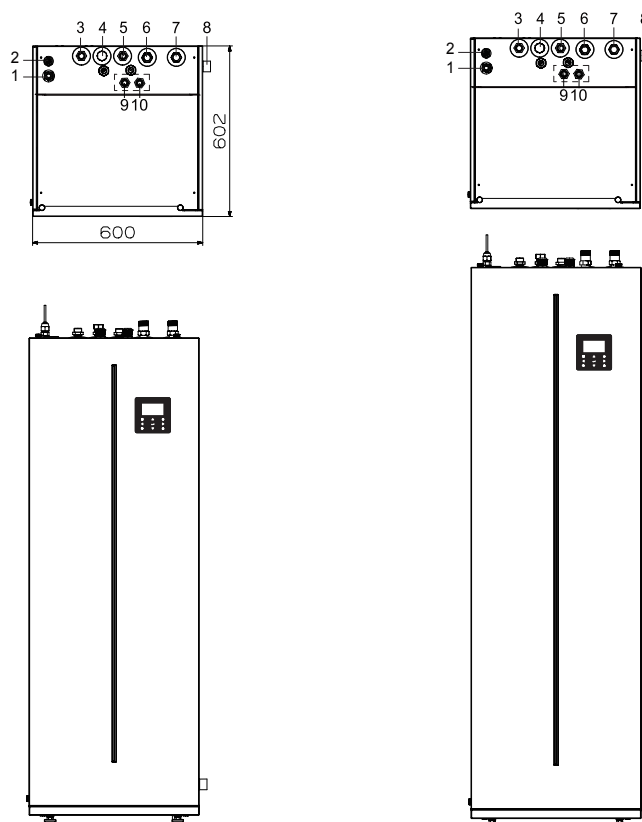


Fig.4-1

unit:mm

NO.	NAME	NO.	NAME
1	Refrigerant gas connection 5/8"-14UNF	6	Space heating (cooling) water inlet .R1"
2	Refrigerant liquid connection 3/8"-14 UNF	7	Space heating (cooling) water outlet .R1"
3	Domestic hot water outlet R3/4"	8	Drainage Ø 25
4	Domestic hot water recirculation water inlet (Plugged by the nut).	9	Solar circulation outlet (customized)
5	Domestic cold water inlet	10	Solar circulation inlet (customized)

- The content in the dotted line area is for customized.

4.2 Installation requirements

- The indoor unit is packed by the carton cap and corner.
- At delivery, the unit must be checked and any damage must be reported immediately to the carrier claims agent.
- Check if all indoor unit accessories are enclosed.
- Bring the unit as close as possible to the final installation position in its original package in order to prevent damage during transport.
- When the water tank is free of water, the maximum net weight of indoor unit with water tank shall reach about 158Kg, which needs to be lifted by special equipment.

4.3 Servicing space requirements

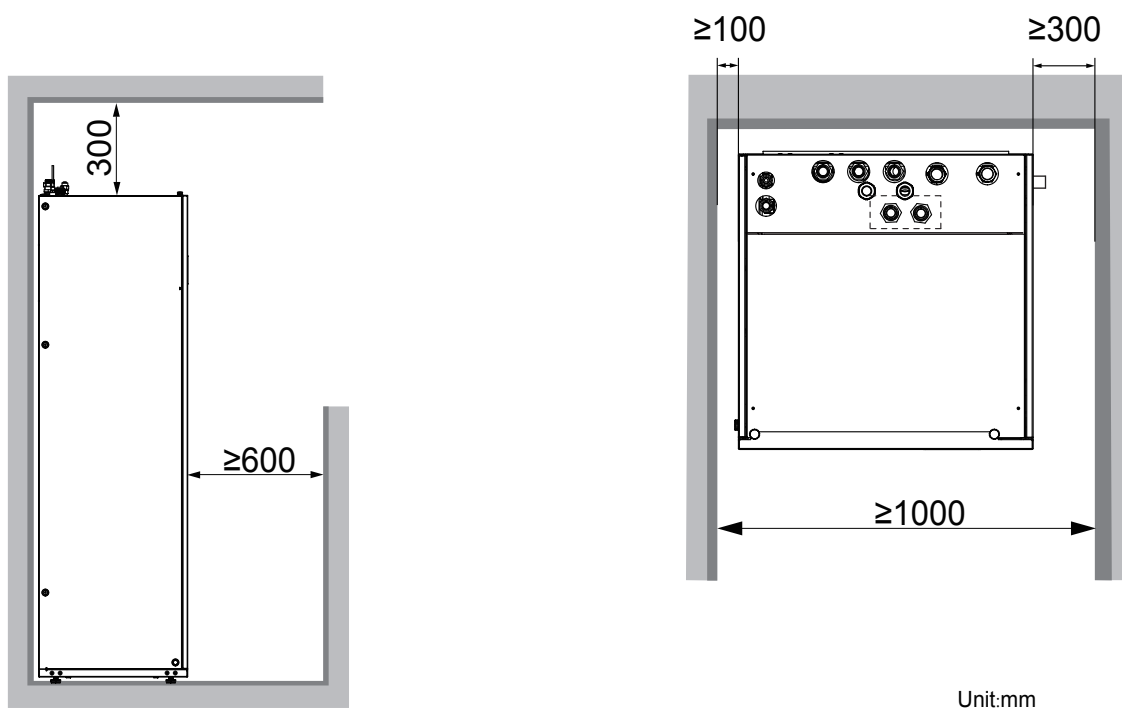


Fig.4-2

4.4 Mounting the indoor unit

Lift the indoor unit from the pallet and place it on the floor.

Slide the indoor unit into position.

Adjust the height of the leveling feet (Refer to Fig.4-3) to compensate for floor irregularities. The maximum allowed deviation is 1° (Refer to Fig. 4-4)

Be specially careful with the mounting foot once the unit is on the floor. Avoid harsh handling of the unit, as it could cause damages to the foot.

Each mounting feet can be adjusted up to 30mm, but keep all them in the factory supplied position unit has been installed in its final position.

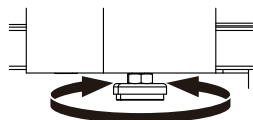


Fig.4-3

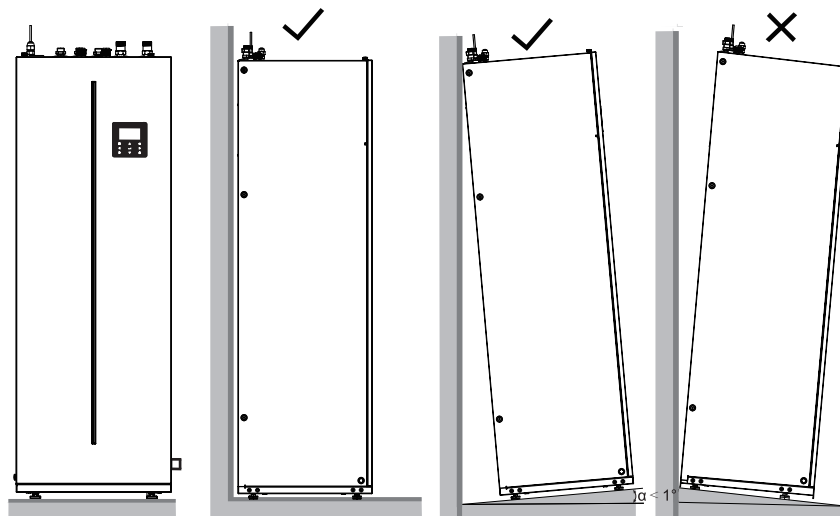


Fig.4-4

5 CONNECTING THE REFRIGERANT PIPING

For all guidelines, instructions and specifications regarding refrigerant pipe between the indoor unit and outdoor unit, please refer to "Installation and owner's manual (Kaisai split outdoor unit)"
Connecting the 16mm refrigerant pipe to the refrigerant gas connection.

- Sufficiently tighten the flare nut (Refer to Fig.5-3)
- Check the tightening torque (Refer to the right table)
- Tighten it with a spanner and torque wrench (Refer to Fig.5-4)
- The protective nut is a one-time part, it can not be reused. In case it is removed, it should be replaced with a new one. (Refer to Fig.5-5)

Outer diam.	Tightening torque(N.cm)	Additional tightening torque(N.cm)
φ 6.35	1500 (153kgf.cm)	1600 (163kgf.cm)
φ 9.52	2500 (255kgf.cm)	2600 (265kgf.cm)
φ 16	4500 (459kgf.cm)	4700 (479kgf.cm)

⚠ CAUTION

- When connecting the refrigerant pipes, always use two wrenches/spanners to tighten or loosen the nuts ! (Refer to Fig.5-4) Otherwise, it will cause damage of piping connections .
- If the indoor unit is matched with outdoor unit (4/6kW), the transfer 9.52-6.35 (Refer to the table in Page 8) should be mounted on the refrigerant liquid connection of indoor unit (Refer to Fig.5-2); The transfer is not used in other types of outdoor unit (8/10/12/14/16kW).

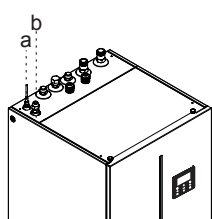


Fig.5-1

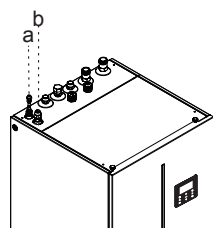


Fig.5-2

a Refrigerant liquid connection
b Refrigerant gas connection

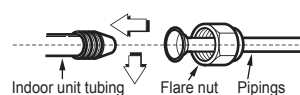


Fig.5-3

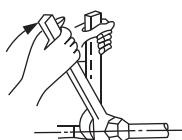


Fig.5-4

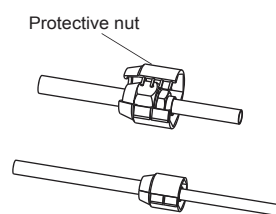


Fig.5-5

CAUTION

- Under installation conditions, excessive torque can damage the nut.
- When flared joints are reused , the flare part should be re-fabricated.

6 CONNECTING THE WATER PIPING

6.1 Connecting the space heating(cooling) water piping

To facilitate service and maintenance, two shut-off valves(field supply) and one overpressure bypass valve should be installed. The two shut-off valves should be mounted on the space heating(cooling)water inlet and outlet pipe of indoor unit.

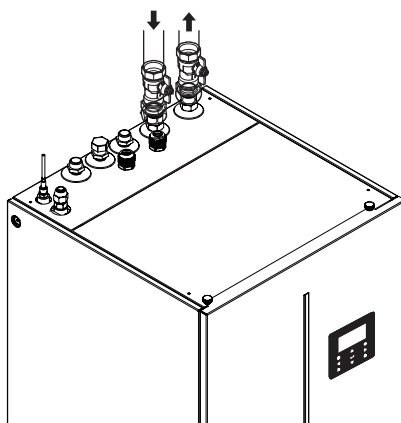


Fig.6-1

- 1.Connecting the shut-off valves to the indoor units.
- 2.Connecting the shut-off valves to the space heating(cooling) water pipes.

6.2 Connecting the domestic water piping

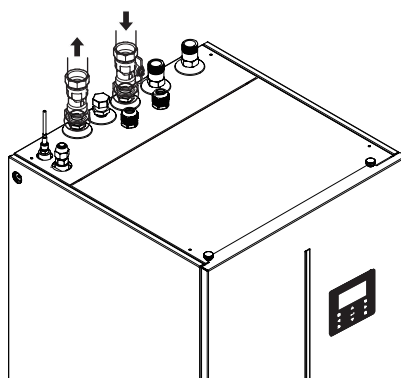


Fig.6-2

The shut-off valve should be mounted on the domestic cold water inlet.

- 1.Connect the shut-off valve to the cold water inlet of indoor unit.
- 2 Connect the cold water pipe to the shut-off valve.
- 3 Connect the domestic hot water pipe to the hot water outlet of indoor unit.

6.3 Connecting the recirculation water piping

If domestic hot water recirculation function is requested, the recirculation pipe should be connected.

1. Removing the nut of the recirculation on the indoor unit.
2. Connecting the recirculation water pipe to the indoor unit.

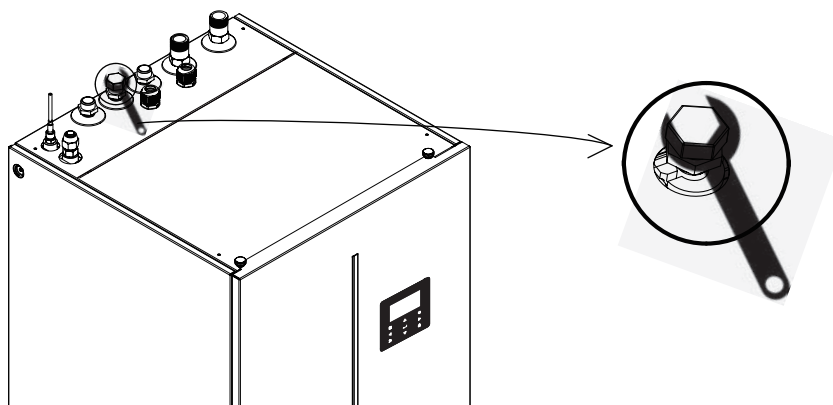


Fig.6-3

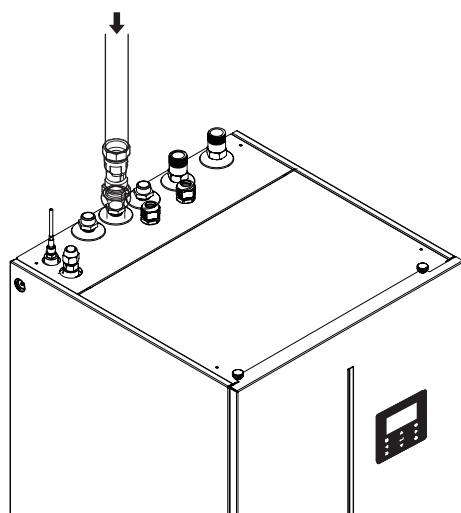


Fig.6-4

6.4 Connecting the drainage hose to the indoor unit

The water coming from the pressure relief valve and the condensate water is collected in the drainage pan. The drainage hose should be connected to the drainage pipe. Connect the drainage pipe with a throat bander and insert the drainage pipe into the floor drain.

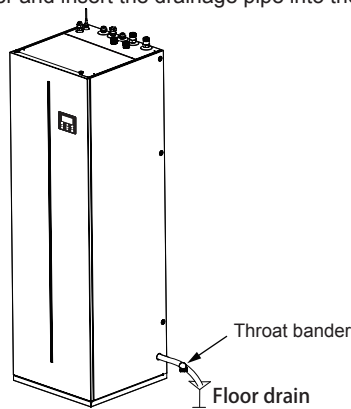


Fig.6-5

6.5 Connecting the solar circulation piping(if needed)

If the solar kit is designed in the system. The solar circulation water pipe should be connected to the inlet and outlet connector of indoor unit.

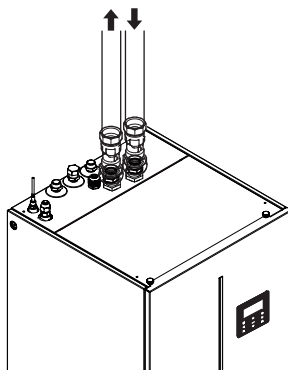


Fig.6-6

6.6 Water piping insulation

The insulation materials should be covered on the all piping in the water circuit piping system to prevent condenser water during cooling operation, the capacity reduction and freezing of the outside water piping during winter. The insulation material should at least of B1 fire resistance rating and complies with all applicable legislation. The thickness of the sealing materials must be at least 13 mm with thermal conductivity 0.039 W/mK in order to prevent freezing on the outside water piping.

If the outside temperature is higher than 30°C and the humidity is higher than RH 80%, then the thickness of the insulation materials should be at least 20 mm in order to avoid condensation on the surface of the insulation piping.

6.7 Water circuit anti-freeze protection

All hydronic parts inside of the unit are insulated to reduce the heat lose. Insulation materials must be added on the field water piping.

The unit program has special functions which use the heat pump and backup heater (if available) to protect the entire system from freezing. When the temperature of the water flow in the system drops to a certain value, the unit will heat the water by using the heat pump or the electric heating tap or the backup heater. The anti-freeze protection function will turn off only when the temperature increases to a certain value.

When unit lose the power, the above function will not active to protect the unit from freezing.

⚠ CAUTION

When the unit is not running for a long time, make sure the unit is powered on all the time. If the unit should be cut off the power, make sure the water in the piping of the system should be drained completely to avoid the water pump and piping system being damaged by freezing. The power of the unit also needs to be cut off after water in the system is drained.

Water may enter into the flow switch and cannot be drained out, it may freeze when the temperature is low enough. The flow switch should be removed and dried, then can be reinstalled in the unit.

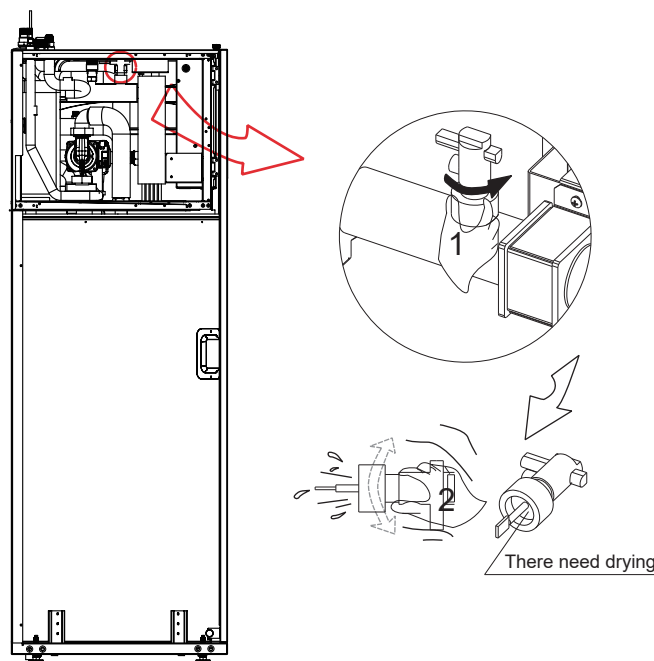


Fig.6-7

NOTE

- 1.Counterclockwise rotation, remove the flow switch.
- 2.Dry the flow switch completely.

CAUTION

Be careful not to deform the unit's piping by using excessive force when connecting the piping. Deforming the piping may lead to malfunction of heat pump.

If air, moisture or dust gets in the water circuit, problems may occur. Therefore, always take into account the following when connecting the water circuit:

- Use clean pipes only.
- Hold the pipe end downwards when removing burrs.
- Cover the pipe end when inserting it through a wall to prevent dust and dirt entering.
- Use a good thread sealant for sealing the connections. The sealing must be able to withstand the pressures and temperatures of the system.
- When using non-copper metallic piping, be sure to insulate two kind of materials from each other to prevent galvanic corrosion.
- As copper is a soft material, use appropriate tools for connecting the water circuit. Inappropriate tools will cause damage to the pipes.

NOTE

The unit is only to be used in a closed water system. Application in an open water circuit can lead to excessive corrosion of the water piping:

- Never use Zn-coated parts in the water circuit. Excessive corrosion of these parts may occur as copper piping is used in the unit's internal water circuit.
- When using a 3-way valve in the water circuit. Preferably choose a ball type 3-way valve to guarantee full separation between the domestic hot water and floor heating water circuit.
- When using a 3-way valve or a 2-way valve in the water circuit. The recommended maximum changeover time of the valve should be less than 60 seconds.

6.8 Filling water

6.8.1 Filling the water circuit

- Connect the water supply to the filling valve and open the valve.
- Make sure all the automatic air purge valves are open (at least 2 turns).
- Filling with water until the manometer(field supply) indicates a pressure of approximately 2.0 bar. Remove air in the circuit as much as possible using the automatic air purge valves.

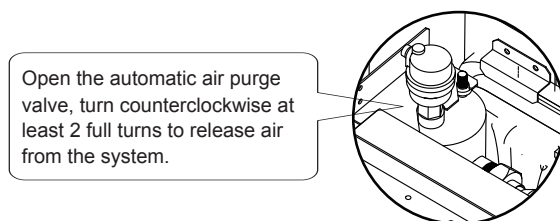


Fig.6-8

NOTE

During filling, it might not be possible to remove all air in the system. Remaining air will be removed through the automatic air purge valve during the first operating hours of the system. Topping up the water afterwards might be required.

- The water pressure indicated on the manometer will vary depending on the water temperature (higher pressure at higher water temperature). However, at all times water pressure should remain above 0.5 bar to avoid air entering the circuit. The unit might drain-off too much water through the pressure relief valve.
- Water quality should be complied with EN 98/83 EC Directives.
- Detailed water quality condition can be found in EN 98/83 EC Directives.

NOTE

- In most applications this minimum water volume will be satisfactory.
- In critical processes or in rooms with a high heat load though, extra water might be required.
- When circulation in each space heating loop is controlled by remotely controlled valves, it is important that this minimum water volume is kept even if all the valves are closed.
- if each space heating (cooling loop is controlled by the valves, the overpressure bypass valve(field supply) should be mounted between the heating(cooling) loops.

6.8.2 Filling the domestic hot water tank

- 1 Open every hot water tap in turn to purge air from the pipes of the system.
- 2 Open the cold water supply valve.
- 3 Close all water taps after all air is purged.
- 4 Check for water leakage.
- 5 Manually operate the field-installed pressure relief valve to ensure a free water flow through the discharge pipe.

CAUTION

- Cold water inlet pressure should be less than 1.0MPa. Expansion vessel and safety valve (field supply, protection pressure is 1.0MPa) must be installed.
- Warning and Water Quality Directive and Groundwater: This product is designed to comply with the European Water Quality Directive 98/83/EC amended by 2015/1787/EU. The lifespan of the product is not guaranteed in the case of the use of groundwater, such as spring water or well water, the use of tap water when salt or other impurities are contained, nor in areas of acidic water quality. Maintenance and warranty costs related to these cases are the customer's responsibility.

7 FIELD WIRING

WARNING

A main switch or other means of disconnection, having a contact separation in all poles, must be incorporated in the fixed wiring in accordance with relevant local laws and regulations. Switch off the power supply before making any connections. Use only copper wires. Never squeeze bundled cables and make sure they do not come in contact with the piping and sharp edges. Make sure no external pressure is applied to the terminal connections. All field wiring and components must be installed by a licensed electrician and must comply with relevant local laws and regulations.

The field wiring must be carried out in accordance with the wiring diagram supplied with the unit and the instructions given below.

Be sure to use a dedicated power supply. Never use a power supply shared by another appliance.

Be sure to establish a ground. Do not ground the unit to a utility pipe, surge protector, or telephone ground. Incomplete grounding may cause electrical shock.

Be sure to install a ground fault circuit interrupter (30 mA). Failure to do so may cause electrical shock.

Be sure to install the required fuses or circuit breakers.

7.1 Precautions on electrical wiring work

- Fix cables so that cables do not make contact with the pipes (especially on the high pressure side).
- Secure the electrical wiring with cable ties as shown in figure so that it does not come in contact with the piping, particularly on the high-pressure side.
- Make sure no external pressure is applied to the terminal connectors.
- When installing the ground fault circuit interrupter make sure that it is compatible with the inverter (resistant to high frequency electrical noise) to avoid unnecessary opening of the ground fault circuit interrupter.

NOTE

The ground fault circuit interrupter must be a high- speed type breaker of 30 m A (<0.1 s).

NOTE

- Maximum length of communication wirings is 50m.
- Power cords and communication wiring must be laid out separately, they can not be placed in the same conduit. Otherwise, it may lead to electromagnetic interference. Power cords and communication wirings should not come in contact with the refrigerant pipe so as to prevent the high temperature pipe from damaging the wires.
- Communication wirings must use shielded lines. Including indoor unit to outdoor unit PQE line ,indoor unit to controller ABXYE line.

- This unit is equipped with an inverter. Installing a phase advancing capacitor not only will reduce the power factor improvement effect, but also may cause abnormal heating of the capacitor due to high-frequency waves. Never install a phase advancing capacitor as it could lead to an accident.
- Equipment must be grounded.
- All high-voltage external load, if it is metal or a grounded port, must be grounded.
- All external load current is needed less than 0.2A, if the single load current is greater than 0.2A, the load must be controlled through AC contactor.

7.2 Precautions on wiring of power supply

- Use a round crimp-style terminal for connection to the power supply terminal board. In case it cannot be used due to unavoidable reasons, be sure to observe the following instructions.
- Do not connect different gauge wires to the same power supply terminal. (Loose connections may cause overheating.)
- When connecting wires of the same gauge, connect them according to the figure below.

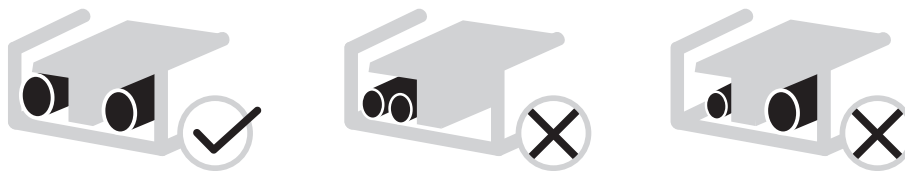


Fig.7-1

- Use the correct screwdriver to tighten the terminal screws. Small screwdrivers can damage the screw head and prevent appropriate tightening.
- Over-tightening the terminal screws can damage the screws.
- Attach a ground fault circuit interrupter and fuse to the power supply line.
- In wiring, make certain that prescribed wires are used, carry out complete connections, and fix the wires so that outside force cannot affect the terminals.

7.3 Safety device requirements

1. Select the wire diameters(minimum value) individually for each unit based on the table below.
2. Select circuit breaker that having a contact separation in all poles not less than 3 mm providing full disconnection , where MFA is used to select the current circuit breakers and residual current operation breakers:

System	Hz	Power Current					IWPM	
		Voltage (V)	Min. (V)	Max. (V)	MCA (A)	MFA (A)	kW	FLA (A)
100/190(3kW heater)	50	220-240/1N	198	264	14.3	/	0.087	0.66
160/240(9kW heater)	50	380-415/3N	342	456	14.00	/	0.087	0.66

NOTE

MCA : Max. Circuit Amps. (A)
MFA : Max. Fuse Amps. (A)
IWPM: Indoor Water Pump Motor
FLA : Full Load Amps. (A)

7.4 Before connecting the wiring

- 1.Remove the bolt in the lower left corner of indoor unit.
- 2.Open the front panel.
- 3.Remove the cover of the control box.

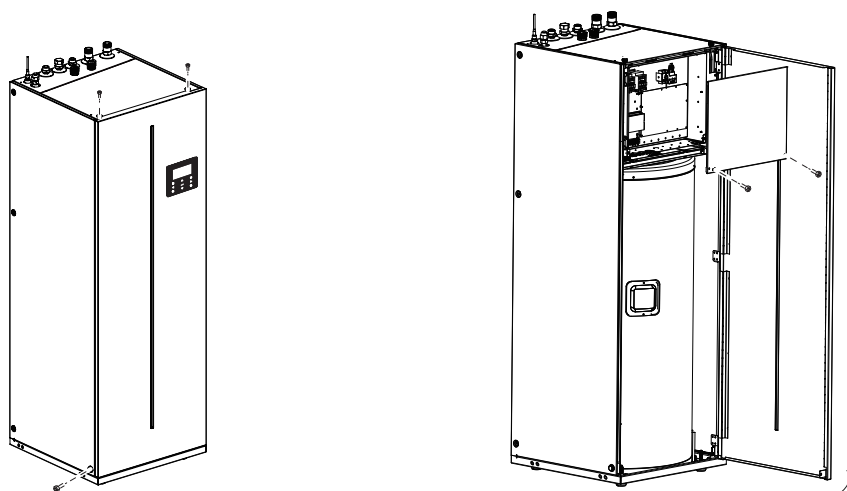


Fig.7-2

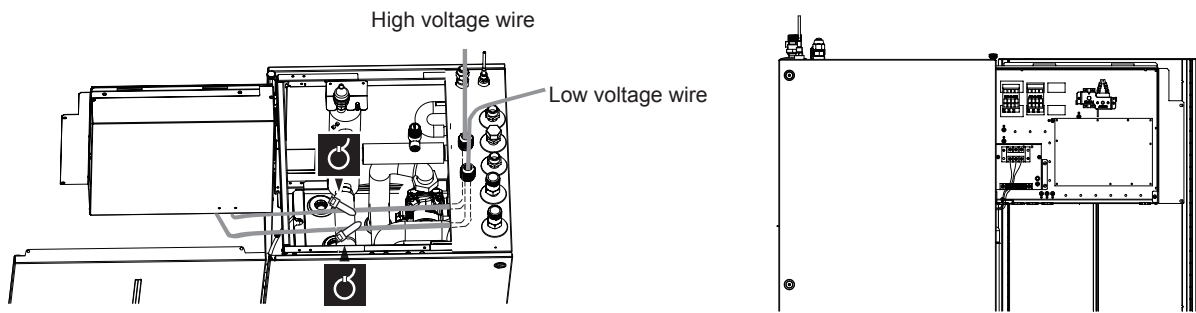
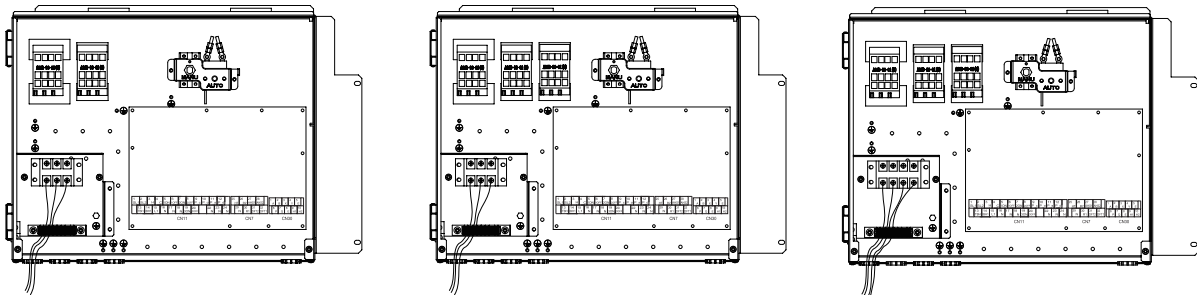
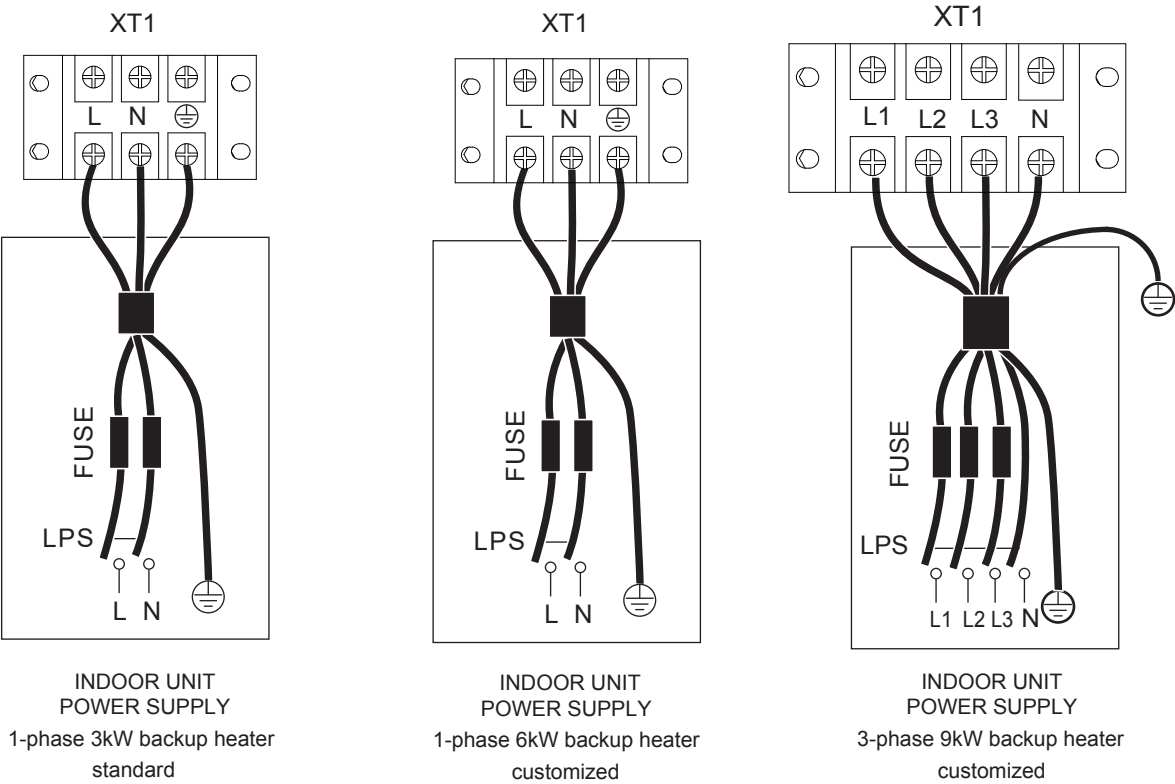


Fig.7-3

7.5 Connecting the main power supply



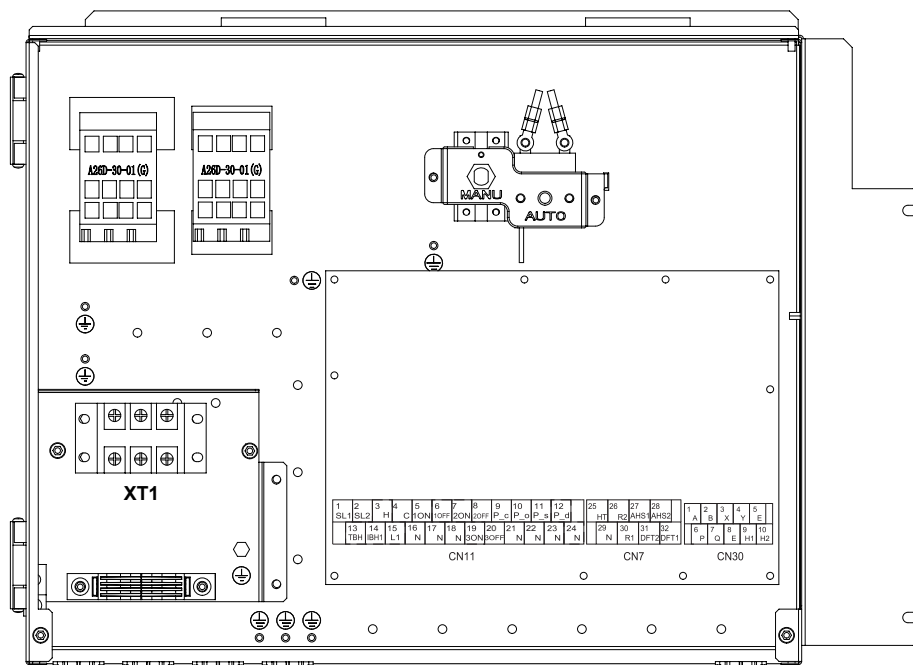
Unit	3kW-1PH	6kW-1PH	9kW-3PH
Wiring size(mm ²)	4.0	6.0	4.0

- Stated values are maximum values (see electrical data for exact values).

NOTE

The ground fault circuit interrupter must be a high-speed type breaker of 30 mA (<0.1 s).Flexible cord must meet 60245IEC(H05VV-F) standards.

7.6 Connecting for other components



	Print	Connect to
CN11	1 SL1	Solar energy input signal
	2 SL2	
	3 H	Room thermostat input (high voltage)
	4 C	
	15 L1	
	5 1ON	SV1(3-way valve) (connected in factory)
	6 1OFF	
	16 N	
	7 2ON	SV2(3-way valve)
	8 2OFF	
	17 N	
	9 P_c	Pumpc(zone2 pump)
	21 N	
	10 P_o	Outside circulation pump /zone1 pump
	22 N	
	11 P_s	Solar energy pump
	23 N	
	12 P_d	DHW pipe pump
	24 N	
	13 TBH	Unavailable
	16 N	
	14 IBH1	Internal backup heater 1
	17 N	
	18 N	SV3(3-way valve)
	19 3ON	
	20 3OFF	

	Print	Connect to
CN7	26 R2	Indicator light of unit operating status (field supply)
	30 R1	
	31 DFT2	Indicator light for defrost operation status(field supply)
	32 DFT1	
	25 HT	Antifreeze E-heating tape(field supply)
	29 N	
	27 AHS1	Unavailable
	28 AHS2	

	Print	Connect to
CN30	1 A	Wired controller (connected in factory)
	2 B	
	3 X	
	4 Y	
	5 E	Outdoor unit
	6 P	
	7 Q	
	8 E	
	9 H1	Internal cascaded machine
	10 H2	

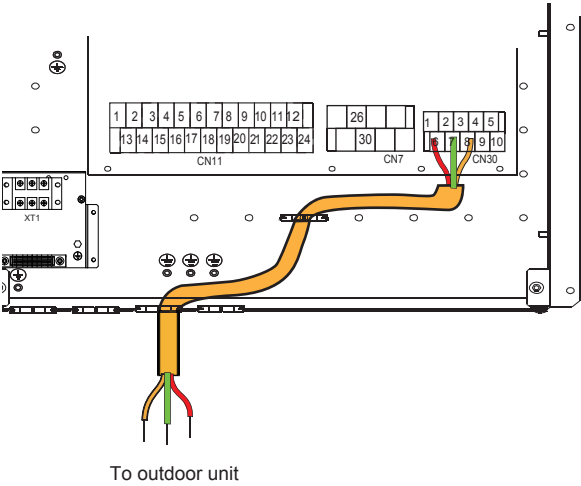
Port provide the control signal to the load.Two kind of control signal port:

Type 1 : Dry connector without voltage.

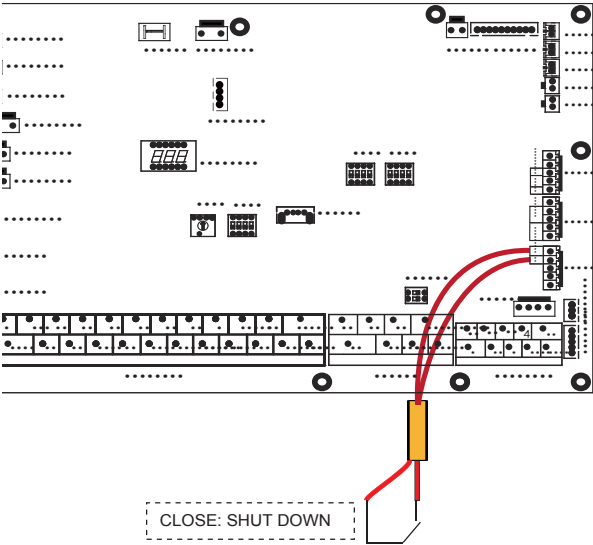
Type 2 : Port provide the signal with 220V voltage. If the current of load is <0.2A, load can connect to the port directly.

If the current of load is >=0.2A, the AC contactor is required to be connected for the load.

6.1 connecting the communication wire to outdoor unit

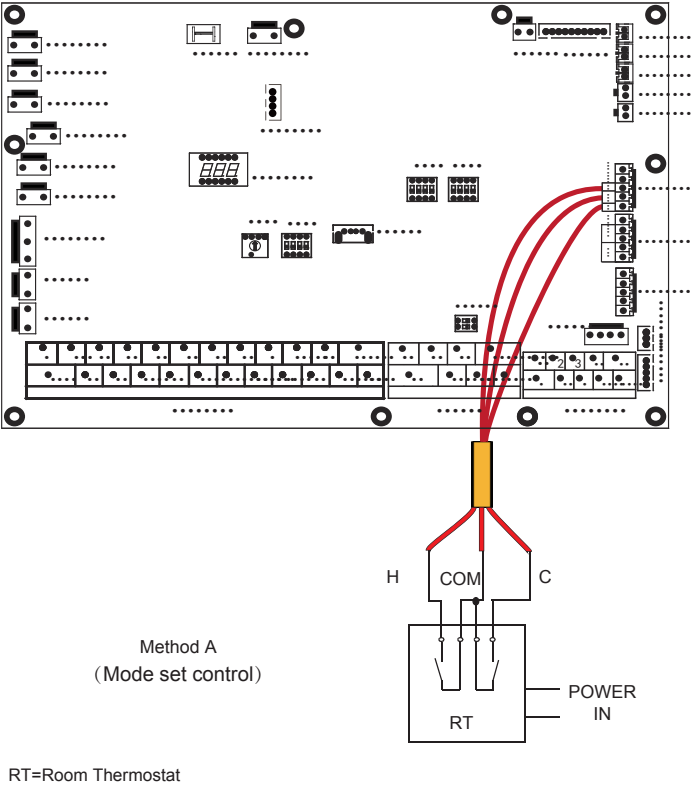


6.2 For remote shut down:

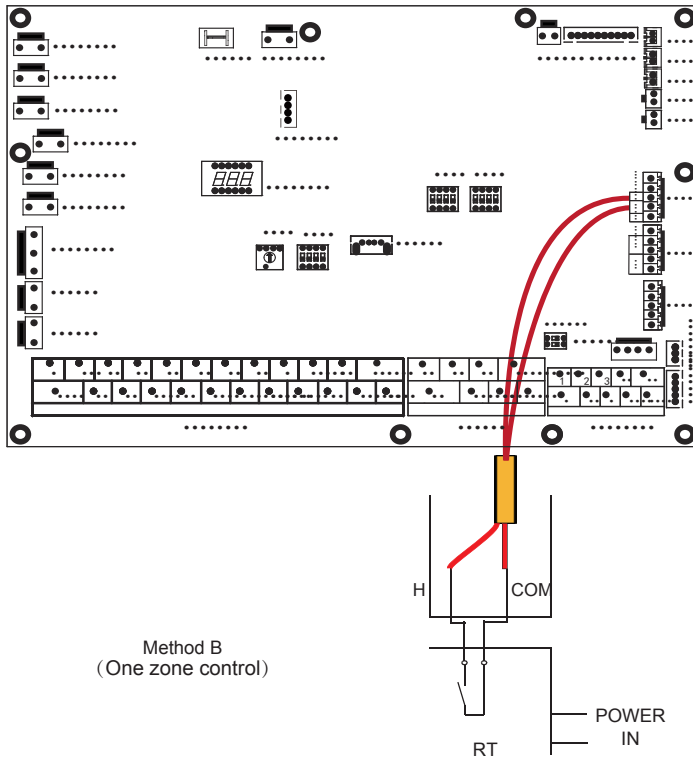


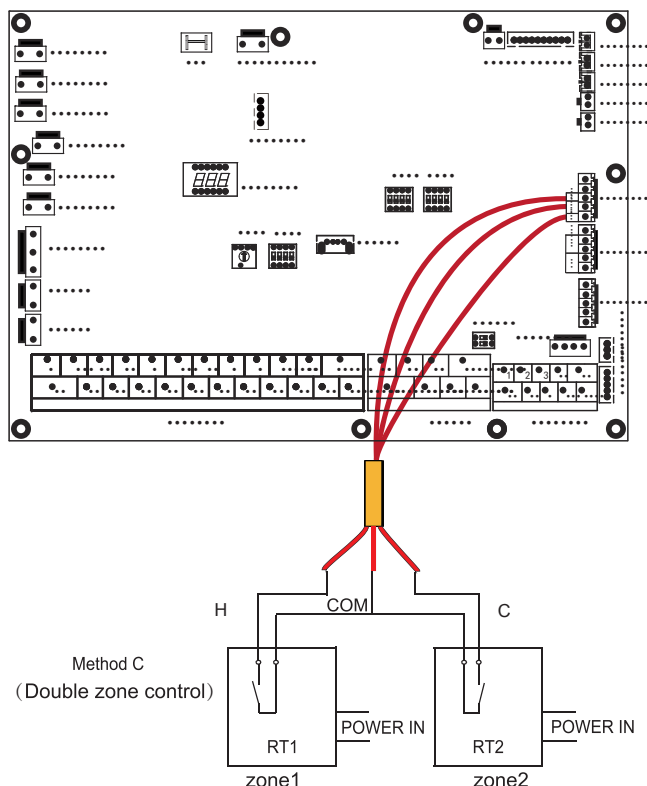
7.6.3 Room thermostat (Low voltage):

There are three methods for connecting the thermostat cable (as described in the pictures) and it depends on the application.



RT=Room Thermostat





RT1=1# Room Thermostat
RT2=2# Room Thermostat

• Method A (Mode set control)

RT can control heating and cooling individually, like the controller for 4-pipe FCU. When the indoor unit is connected with the external temperature controller, user interface FOR SERVICEMAN set ROOM THERMOSTAT to MODE SET:

A.1 When unit detect voltage is 12VDC between CL and COM ,the unit operates in the cooling mode.

A.2 When unit detect voltage is 12VDC between HT and COM, the unit operates in the heating mode.

A.3 When unit detect voltage is 0VDC for both side(CL-COM, HT-COM) the unit stop working for space heating or cooling.

A.4 When unit detect voltage is 12VDC for both side(CL-COM, HT-COM) the unit working in cooling mode.

• Method B (One zone control)

RT provide the switch signal to unit. User interface FOR SERVICEMAN set ROOM THERMOSTAT to ONE ZONE:

B.1 When unit detect voltage is 12VDC between HT and COM, unit turns on.

B.2 When unit detect voltage is 0VDC between HT and COM, unit turns off.

• Method C (Double zone control)

Indoor unit is connected with two room thermostat, while user interface FOR SERVICEMAN set ROOM THERMOSTAT to DOUBLE ZONE:

C.1 When unit detect voltage is 12VDC between HT and COM , zone1 turn on. When unit detect voltage is 0VDC between HT and COM, zone1 turn off.

C.2 When unit detect voltage is 12VDC between CL and COM, zone2 turn on according to climate temp curve. When unit detect voltage is 0V between CL and COM, zone2 turn off.

C.3 When HT-COM and CL-COM are detected as 0VDC, unit turn off.

C.4 when HT-COM and CL-COM are detected as 12VDC, both zone1 and zone2 turn on.

NOTE

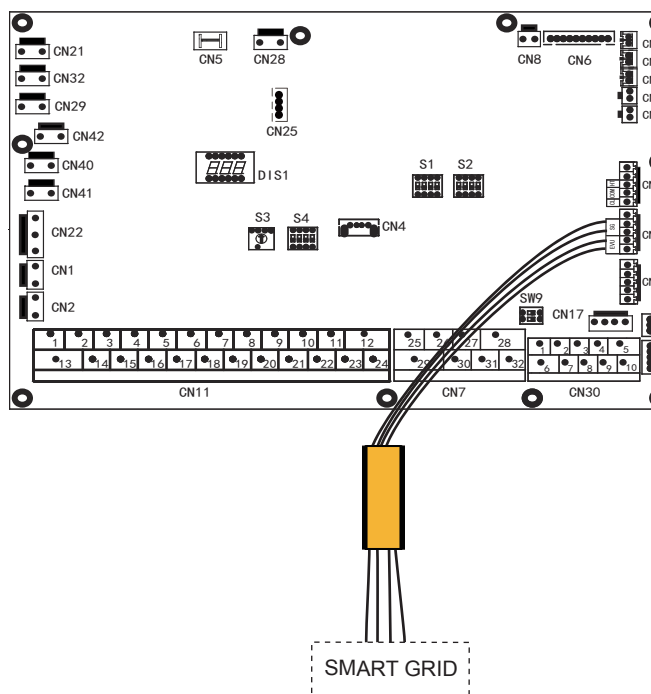
- The wiring of the thermostat should correspond to the settings of the user interface. Refer to **ROOM THERMOSTAT**.
- Power supply of machine and room thermostat must be connected to the same Neutral Line .
- When ROOM THERMOSTAT is not set to NON, the indoor temperature sensor Ta can't be set to valid
- Zone 2 can only operate in heating mode, When cooling mode is set on user interface and zone1 is OFF,"CL" in zone2 closes, system still keeps 'OFF'. While installation, the wiring of thermostats for zone1 and zone2 must be correct.

a) Procedure

- Connect the cable to the appropriate terminals as shown in the picture.
- Fix the cable with cable ties to the cable tie mountings to ensure stress relief.

7.6.4 For smart grid:

The unit has smart grid function, there are two ports on PCB to connect SG signal and EVU signal as following(SG is municipal power, and EVU is free power):



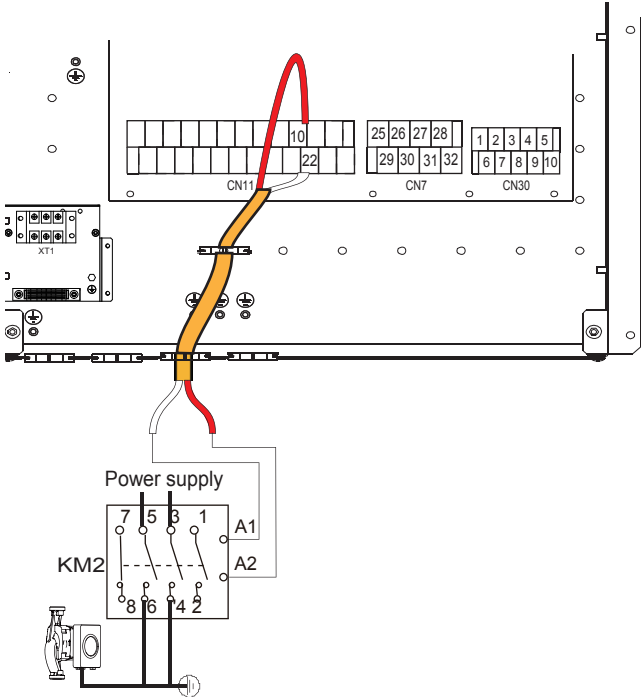
1.When EVU signal is on, and SG signal is on, as long as the DHW mode is set to be valid, the heat pump and IBH will operate in DHW mode at the same time automatically. When T5 rises to 60°C, the DHW mode will exit and switch to cooling/heating mode normally.

2.When EVU signal is on, and SG signal is off, as long as the DHW mode is set to be valid and the mode is on, the heat pump and IBH will operate in DHW mode at the same time automatically. When $T5 \geq \text{Min}(T5S+3, 60)$, the DHW mode will exit and switch to cooling/heating mode normally. (T5S is the setting temperature)

3.When EVU signal is off, SG signal is on, the unit operates normally.

4.When EVU signal is off, and SG signal is off, the unit operates as below: The unit will not operate DHW mode, and the IBH is invalid, disinfect function is invalid. The max running time for cooling/heating is "SG RUNNING TIME", then unit will be c

7.6.5 For P_o:

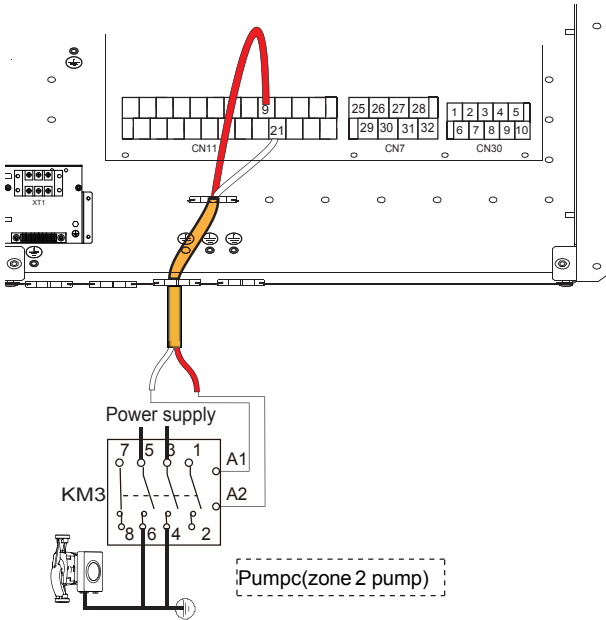


Voltage	220-240VAC
Maximum running current(A)	0.2
Wiring size(mm²)	0.75
Control port signal type	Type 2

i) Procedure

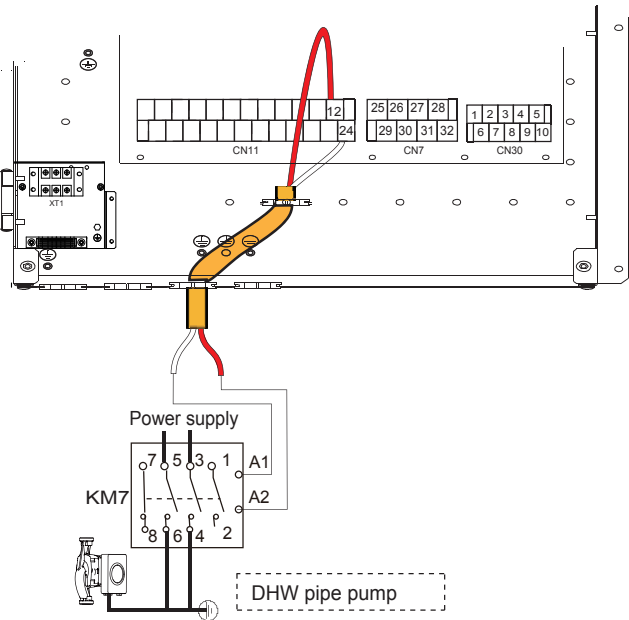
Connect the cable to the appropriate terminals as shown in the picture.
Fix the cable with cable ties to the cable tie mountings to ensure stress relief.

7.6.6 For P_c



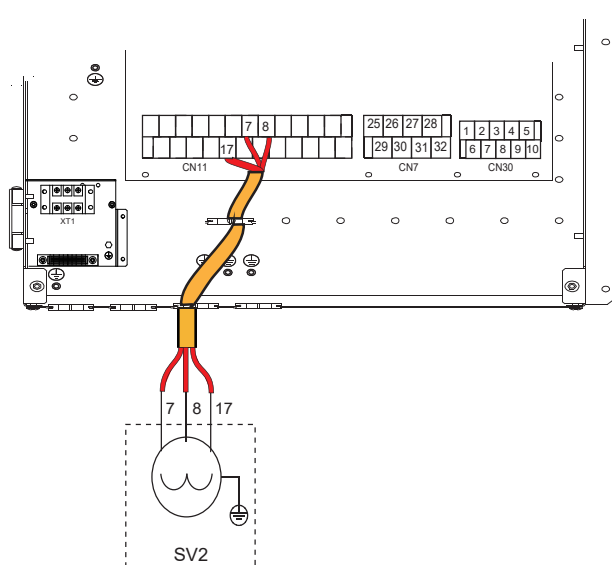
Voltage	220-240VAC
Maximum running current(A)	0.2
Wiring size(mm²)	0.75
Control port signal type	Type 2

7.6.7 For P_d

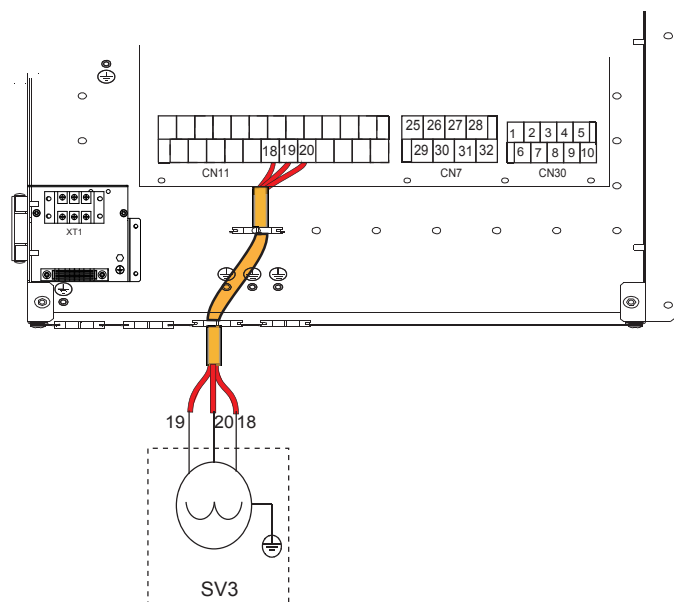


Voltage	220-240VAC
Maximum running current(A)	0.2
Wiring size(mm²)	0.75
Control port signal type	Type 2

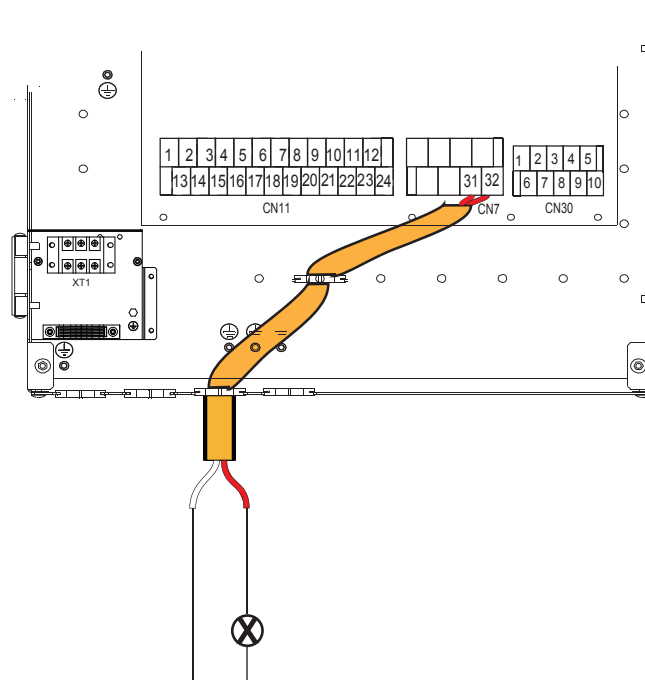
7.6.8 For 3-way valve SV2



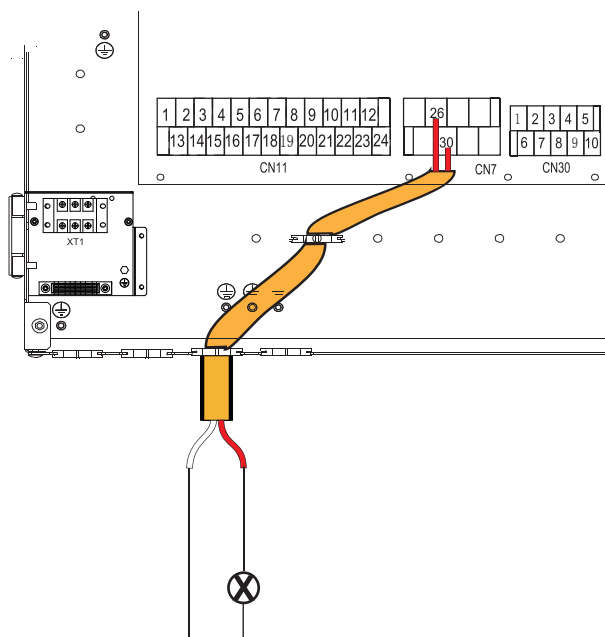
7.6.9 For 3-way valve SV3



7.6.10 For defrosting signal output:



7.6.11 For unit operating status signal output



7.6.12 For room thermostat:

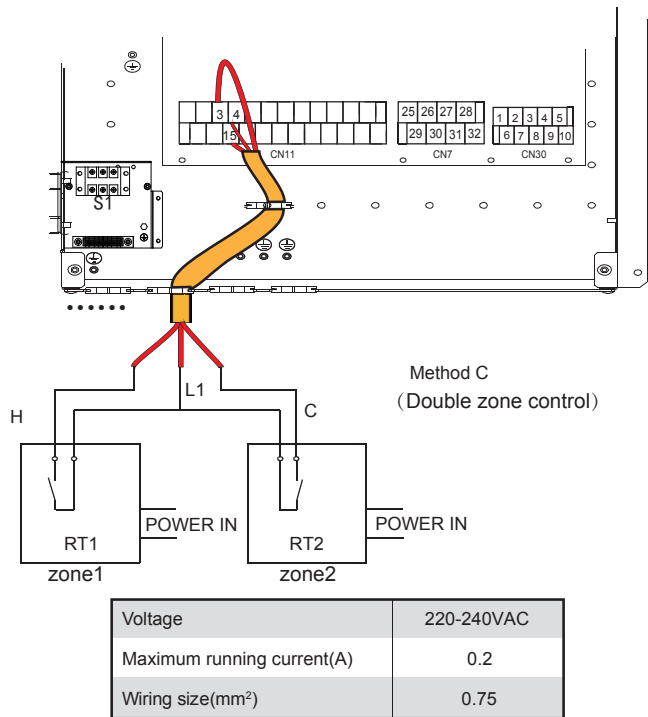
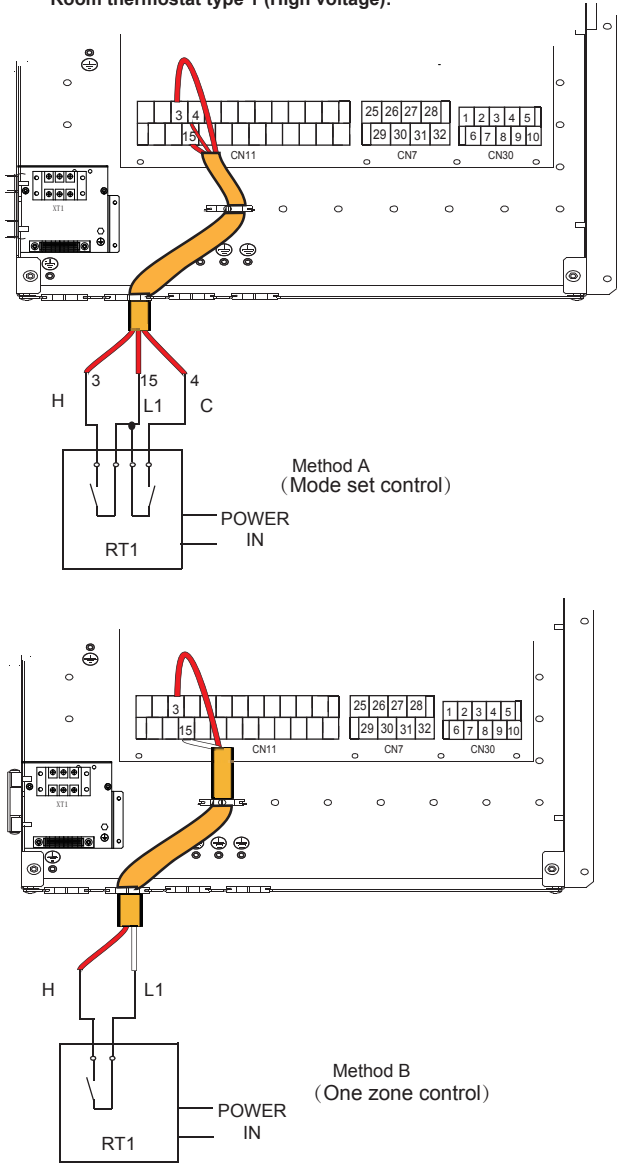
Room thermostat type 1(High voltage): "POWER IN" provide the working voltage to the RT, doesn't provide the voltage to the RT connector directly. Port "15 L1" provide the 220V voltage to the RT connector. Port "15 L1" connect from the unit main power supply port L of 1- phase power supply.

Room thermostat type 2(Low voltage) : "POWER IN" provide the working voltage to the RT

NOTE

There are two optional connecting methods depending on the room thermostat type.

Room thermostat type 1 (High voltage):



There are three methods for connecting the thermostat cable (as described in the picture above) and it depends on the application.

• Method A (Mode set control)

RT can control heating and cooling individually, like the controller for 4-pipe FCU. When the indoor unit is connected with the external temperature controller, user interface FOR SERVICEMAN set ROOM THERMOSTAT to MODE SET:

- A.1 When unit detect voltage is 230VAC between C and L1 ,the unit operates in the cooling mode.
- A.2 When unit detect voltage is 230VAC between H and L1, the unit operates in the heating mode.
- A.3 When unit detect voltage is 0VAC for both side(C-L1, H-L1) the unit stop working for space heating or cooling.
- A.4 When unit detect voltage is 230VAC for both side(C-L1, H-L1) the unit working in cooling mode.

• Method B (One zone control)

RT provide the switch signal to unit. User interface FOR SERVICEMAN set ROOM THERMOSTAT to ONE ZONE:

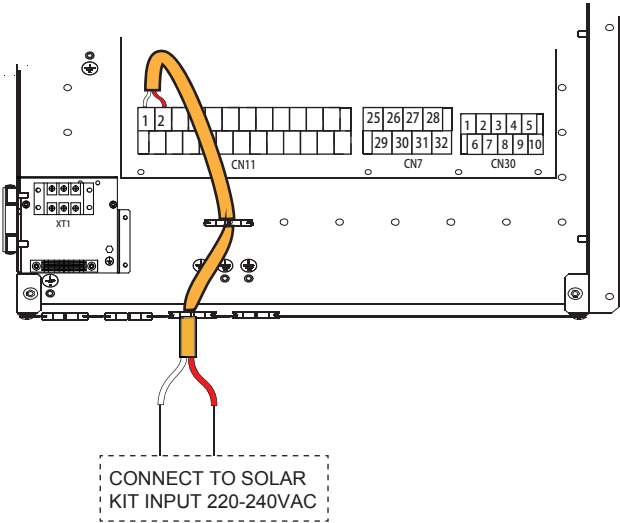
- B.1 When unit detect voltage is 230VAC between H and L1, unit turns on.
- B.2 When unit detect voltage is 0VAC between H and L1, unit turns off.

• Method C (Double zone control)

Indoor unit is connected with two room thermostat, while user interface FOR SERVICEMAN set ROOM THERMOSTAT to DOUBLE ZONE:

- C.1 When unit detect voltage is 230VAC between H and L1 ,zone1 turns on.When unit detect voltage is 0VAC between H and L1, zone1 turns off.
- C.2 When unit detect voltage is 230VAC between C and L1, zone2 turns on according to climate temp curve. When unit detect voltage is 0V between C and L1, zone2 turns off.
- C.3 When H-L1 and C-L1 are detected as 0VAC, unit turns off.
- C.4 when H-L1 and C-L1 are detected as 230VAC, both zone1 and zone2 turn on.

7.6.13 For solar energy input signal



Voltage	220-240VAC
Maximum running current(A)	0.2
Wiring size(mm²)	0.75

8 START-UP AND CONFIGURATION

The unit should be configured by the installer to match the installation environment (outdoor climate, installed options, etc.) and user expertise.

⚠ CAUTION

It is important that all information in this chapter is read sequentially by the installer and that the system is configured as applicable.

8.1 Initial start-up at low outdoor ambient temperature

During initial start-up and when water temperature is low, it is important that the water is heated gradually. Failure to do so may result in concrete floors cracking due to rapid temperature change. Please contact the responsible cast concrete building contractor for further details.

To do so, the lowest water flow set temperature can be decreased to a value between 25°C and 35°C by adjusting the FOR SERVICEMAN.

8.2 Pre-operation checks

Checks before initial start-up

⚠ DANGER

Switch off the power supply before making any connections.

After the installation of the unit, check the following before switching on the circuit breaker:

- **Field wiring:** Make sure that the field wiring between the local supply panel and unit and valves (when applicable), unit and room thermostat (when applicable), unit and domestic hot water tank, and unit and backup heater kit have been connected according to the instructions described in the chapter 7 **"FIELD WIRING"**, according to the wiring diagrams and to local laws and regulations.
- **Fuses, circuit breakers, or protection devices** Check that the fuses or the locally installed protection devices are of the size and type specified in 7.3 **"Safety device requirements"**. Make sure that no fuses or protection devices have been bypassed.
- **Backup heater circuit breaker:** Do not forget to turn on the backup heater circuit breaker in the switchbox (it depends on the backup heater type). Refer to the wiring diagram.
- **Booster heater circuit breaker:** Do not forget to turn on the booster heater circuit breaker (applies only to units with optional domestic hot water tank installed).
- **Ground wiring:** Make sure that the ground wires have been connected properly and that the ground terminals are tightened.
- **Internal wiring:** Visually check the switch box for loose connections or damaged electrical components.
- **Mounting:** Check that the unit is properly mounted, to avoid abnormal noises and vibrations when starting up the unit.
- **Damaged equipment:** Check the inside of the unit for damaged components or squeezed pipes.
- **Refrigerant leak:** Check the inside of the unit for refrigerant leakage. If there is a refrigerant leak, call your local dealer.
- **Power supply voltage:** Check the power supply voltage on the local supply panel. The voltage must correspond to the voltage on the identification label of the unit.
- **Air purge valve:** Make sure the air purge valve is open (at least 2 turns).
- **Shut-off valves:** Make sure that the shut-off valves are fully open.

8.3 Field settings

The unit should be configured to match the installation environment (outdoor climate, installed options, etc.) and user demand. A number of field settings are available. These settings are accessible and programmable through "FOR SERVICEMAN" in user interface.

Powering on the unit

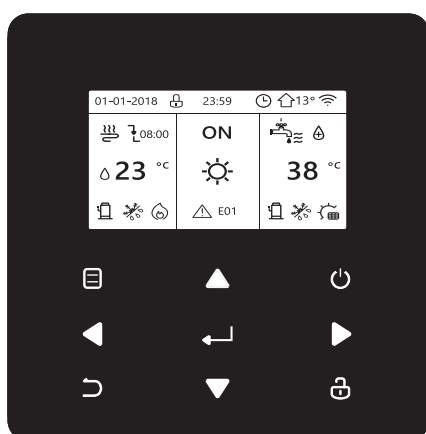
When power on the unit, "1%~99%" is displayed on the user interface during initialization. During this process the user interface cannot be operated.

Procedure

To change one or more field settings, proceed as follows.

💡 NOTE

Temperature values displayed on the wired controller (user interface) are in °C.



Keys	Function
	• Go to the menu structure(on the home page)
	• Navigate the cursor on the display
	• Navigate in the menu structure
	• Adjust settings
	• Turn on/off the space heating/cooling operation or DHW mode
	• Turn on/or off functions in the menu structure
	• Come back to the up level
	• Long press for unlock /lock the controller
	• Unlock /lock some functions such as "DHW temperature adjusting"
	• Go to the next step when programming a schedule in the menu structure; and confirm a selection to enter in the submenu of the menu structure.

8.4 About for serviceman

"FOR SERVICEMAN" is designed for the installer to set the parameters.

- Setting the composition of equipment.
- Setting the parameters.

How to go to FOR SERVICEMAN

Go to MENU> FOR SERVICEMAN. Press OK:

FOR SERVICEMAN

Please input the password:

0 0 0

OK ENTER ↕ ADJUST ⇄

Press ◀ ▶ to navigate and press ▼ ▲ to adjust the numerical value. Press OK. The password is 234, the following pages will be displayed after putting the password:

FOR SERVICEMAN 1/3

1. DHW MODE SETTING

2. COOL MODE SETTING

3. HEAT MODE SETTING

4. AUTO MODE SETTING

5. TEMP.TYPE SETTING

6. ROOM THERMOSTAT

OK ENTER ↕

FOR SERVICEMAN 2/3

7. OTHER HEATING SOURCE

8. HOLIDAY AWAY MODE SET

9. SERVICE CALL SETTING

10. RESTORE FACTORY SETTINGS

11. TEST RUN

12. SPECIAL FUNCTION

OK ENTER ↕

FOR SERVICEMAN 3/3

13. AUTO RESTART

14. POWER INPUT LIMITATION

15. INPUT DEFINE

16. CASCADE SET

17. HMI ADDRESS SET

OK ENTER ↕

Press ▼ ▲ to scroll and use "OK" to enter submenu.

8.4.1 DHW MODE SETTING

DHW = domestic hot water

Go to MENU> FOR SERVICEMAN> 1.DHW MODE SETTING. Press OK. The following pages will be displayed:

1 DHW MODE SETTING 1/5

1.1 DHW MODE YES

1.2 DISINFECT YES

1.3 DHW PRIORITY YES

1.4 DHW PUMP YES

1.5 DHW PRIORITY TIME SET NON

↕ ADJUST ⇄

1 DHW MODE SETTING 2/5

1.6 dT5_ON 5 °C

1.7 dT1S5 10 °C

1.8 T4DHWMAX 43 °C

1.9 T4DHWMIN -10 °C

1.10 t_INTERVAL_DHW 5 MIN

↕ ADJUST ⇄

1 DHW MODE SETTING 3/5

1.11 dT5_TBH_OFF 5 °C

1.12 T4_TBH_ON 5 °C

1.13 t_TBH_DELAY 30 MIN

1.14 T5S_DI 65 °C

1.15 t_DI HIGHTEMP. 15MIN

↕ ADJUST ⇄

1 DHW MODE SETTING 4/5

1.16 t_DI_MAX 210 MIN

1.17 t_DHWHP_RESTRICT 30 MIN

1.18 t_DHWHP_MAX 120 MIN

1.19 DHWPUMP TIME RUN YES

1.20 PUMP RUNNING TIME 5 MIN

↕ ADJUST ⇄

1 DHW MODE SETTING 5/5

1.21 DHW PUMP DI RUN NON

↕ ADJUST ⇄

8.4.2 COOL MODE SETTING

Go to MENU> FOR SERVICEMAN> 2.COOL MODE SETTING. Press OK.

The following pages will be displayed:

2 COOL MODE SETTING	1/3
2.1 COOL MODE	YES
2.2 t _{T4_FRESH_C}	2.0HRS
2.3 T4CMAX	43°C
2.4 T4CMIN	20°C
2.5 dT1SC	5°C
ADJUST	

2 COOL MODE SETTING	2/3
2.6 dTSC	2°C
2.7 t _{INTERVAL_C}	5MIN
2.8 T1SetC1	10°C
2.9 T1SetC2	16°C
2.10 T4C1	35°C
ADJUST	

2 COOL MODE SETTING	3/3
2.11 T4C2	25°C
2.12 ZONE1 C-EMISSION	FCU
2.13 ZONE2 C-EMISSION	FLH
ADJUST	

8.4.3 HEAT MODE SETTING

Go to MENU>FOR SERVICEMAN> 3.HEAT MODE SETTING. Press OK. The following pages will be displayed:

3 HEAT MODE SETTING	1/3
3.1 HEAT MODE	YES
3.2 t _{T4_FRESH_H}	2.0HRS
3.3 T4HMAX	16°C
3.4 T4HMIN	-15°C
3.5 dT1SH	5°C
ADJUST	

3 HEAT MODE SETTING	2/3
3.6 dTSH	2°C
3.7 t _{INTERVAL_H}	5MIN
3.8 T1SetH1	35°C
3.9 T1SetH2	28°C
3.10 T4H1	-5°C
ADJUST	

3 HEAT MODE SETTING	3/3
3.11 T4H2	7°C
3.12 ZONE1 H-EMISSION	RAD.
3.13 ZONE2 H-EMISSION	FLH
3.14 t _{DELAY_PUMP}	2MIN
ADJUST	

8.4.4 AUTO MODE SETTING

Go to MENU> FOR SERVICEMAN> 4.AUTO MODE SETTING. Press OK, the following page will be displayed.

4 AUTO. MODE SETTING	
4.1 T4AUTOCMIN	25°C
4.2 T4AUTOHMAX	17°C
ADJUST	

8.4.5 TEMP. TYPE SETTING

About TEMP. TYPE SETTING

The TEMP. TYPE SETTING is used for selecting whether the water flow temperature or room temperature is used to control the ON/OFF of the heat pump.




When ROOM TEMP. is enabled, the target water flow temperature will be calculated from climate-related curves.

How to enter the TEMP. TYPE SETTING




Go to MENU> FOR SERVICEMAN> 5.TEMP. TYPE SETTING. Press OK. The following page will be displayed:

5 TEMP. TYPE SETTING	
5.1 WATER FLOW TEMP.	YES
5.2 ROOM TEMP.	NON
5.3 DOUBLE ZONE	NON
ADJUST	

If you only set WATER FLOW TEMP. to YES, or only set ROOM TEMP. to YES, The following pages will be displayed.







01-01-2018	23:59	13°
	ON	
35 °C		38 °C

only WATER FLOW TEMP. YES

01-01-2018	23:59	13°
	ON	
23.5 °C		38

only ROOM TEMP. YES

If you set WATER FLOW TEMP. and ROOM TEMP. to YES, meanwhile set DOUBLE ZONE to NON or YES, the following pages will be displayed.

01-01-2018	23:59	13°	01-01-2018	23:59	13°
	ON			ON	
35 °C		38 °C	23.5 °C		







Homepage (zone 1)

Addition page (zone 2)

(Double zone is effective)

In this case, the setting value of zone 1 is T1S, the setting value of zone 2 is T1S2 (The corresponding T1S2 is calculated according to the climate related curves.)

If you set DOUBLE ZONE to YES and set ROOM TEMP. to NON, meanwhile set WATER FLOW TEMP. to YES or NON, the following pages will be displayed.

01-01-2018	23:59	13°	01-01-2018	23:59	13°
	ON			ON	
35 °C		38 °C	35 °C		

Homepage (zone 1)

Addition page (zone 2)

In this case, the setting value of zone 1 is T1S, the setting value of zone 2 is T1S2.

If you set DOUBLE ZONE and ROOM TEMP. to YES, meanwhile set WATER FLOW TEMP. to YES or NON, the following page will be displayed.

01-01-2018	23:59	13°	01-01-2018	23:59	13°
	ON			ON	
23 °C		38 °C	23.5 °C		

Homepage (zone 1)

Addition page (zone 2)
(Double zone is effective)

In this case, the setting value of zone 1 is T1S, the setting value of zone 2 is T1S2 (The corresponding T1S2 is calculated according to the climate related curves.)

8.4.6 ROOM THERMOSTAT

About ROOM THERMOSTAT

The ROOM THERMOSTAT is used to set whether the room thermostat is available.

How to set the ROOM THERMOSTAT

Go to MENU> FOR SERVICEMAN> 6.ROOM THERMOSTAT. Press OK. The following page will be displayed:

6 ROOM THERMOSTAT	
6.1 ROOM THERMOSTAT	NON
ADJUST	

NOTE

ROOM THERMOSTAT = NON, no room thermostat.

ROOM THERMOSTAT = MODE SET, the wiring of room thermostat should follow method A.

ROOM THERMOSTAT=ONE ZONE, the wiring of room thermostat should follow method B.

ROOM THERMOSTAT=DOUBLE ZONE, the wiring of room thermostat should follow method C (refer to 7.6 "Connecting for other components/For room thermostat")

8.4.7 OTHER HEATING SOURCE

The OTHER HEATING SOURCE is used to set the parameters of the backup heater, additional heating sources.

Go to MENU> FOR SERVICEMAN> 7.OTHER HEATING SOURCE, Press OK. The following page will be displayed:

7 OTHER HEATING SOURCE	1/2
7.1 dT1_IBH_ON	5°C
7.2 t_IBH_DELAY	30MIN
7.3 T4_IBH_ON	-5°C
7.4 dT1_AHS_ON	5°C
7.5 t_AHS_DELAY	30MIN
ADJUST	

7 OTHER HEATING SOURCE	2/2
7.6 T4_AHS_ON	5°C
7.7 IBH LOCATE	PIPE LOOP
7.8 P_IBH1	0.0kW
7.9 P_IBH2	0.0kW
7.10 P_TBH	2.0kW
ADJUST	

8.4.8 HOLIDAY AWAY SETTING

The HOLIDAY AWAY SETTING is used to set the outlet water temperature to prevent freezing when away for holiday.

Go to MENU> FOR SERVICEMAN> 8.HOLIDAY AWAY SETTING. Press OK. The following page will be displayed:

8 HOLIDAY AWAY SETTING	
8.1 T1S_H.A._H	20°C
8.2 T5S_H.A._DHW	20°C
ADJUST	

8.4.9 SERVICE CALL SETTING

The installers can set the phone number of the local dealer in SERVICE CALL SETTING. If the unit doesn't work properly, call this number for help.

Go to MENU> FOR SERVICEMAN>SERVICE CALL. Press OK. The following page will be displayed:

9 SERVICE CALL SETTING	
PHONE NO.	*****
MOBILE NO.	*****
OK CONFIRM	ADJUST

Press ▼ ▲ to scroll and set the phone number. The maximum length of the phone number is 13 digits, if the length of phone number is short than 12, please input ■, as shown below:

If POINT CHECK is selected, the following pages will be displayed:

11 TEST RUN	1/2
3-WAY VALVE 1	OFF
3-WAY VALVE 2	OFF
PUMP I	OFF
PUMP O	OFF
PUMP C	OFF
ON/OFF ON/OFF	

11 TEST RUN	2/2
PUMPSOLAR	OFF
PUMPDHW	OFF
INNER BACKUP HEATER	OFF
TANK HEATER	OFF
3-WAY VALVE 3	OFF
ON/OFF ON/OFF	

Press ▼ ▲ to scroll to the components you want to check and press ON/OFF. For example, when 3-way valve is selected and ON/OFF is pressed, if the 3-way valve is open/close, then the operation of 3-way valve is normal, and so are other components.



CAUTION

Before the point check, make sure the tank and the water system is filled with water, and air is expelled, otherwise it may cause the pump or backup heater burn out.

If you select AIR PURGE and press "OK", the following page will be displayed :

11 TEST RUN
Test run is on. Air purge is on.
OK CONFIRM

When in air purge mode, SV1 will open, SV2 will close. 60s later the pump in the unit (PUMPI) will operate for 10min during which the flow switch will not work. After the pump stops, the SV1 will close and the SV2 will open. 60s later both the PUMPI and PUMPO will operate until the next command is received.

When CIRCULATION PUMP RUNNING is selected, the following page will be displayed:

11 TEST RUN
Test run is on. Circulated pump is on.
OK CONFIRM

When circulation pump running is turned on, all running components will stop. 60 seconds later, the SV1 will open, the SV2 will close, 60 seconds later PUMPI will operate. 30s later, if the flow switch checked normal flow, PUMPI will operate for 3min, after the pump stops 60 seconds, the SV1 will close and the SV2 will open. 60s later the both PUMPI and PUMPO will operate, 2 mins later, the flow switch will check the water flow. If the flow switch closes for 15s, PUMPI and PUMPO will operate until the next command is received.

When the COOL MODE RUNNING is selected, the following page will be displayed:

11 TEST RUN
Test run is on. Cool mode is on. Leaving water temperature is 15°C.
OK CONFIRM

During COOLMODEtest running , the default target outlet water temperature is 7°C. The unit will operate until the water temperature drops to a certain value or the next command is received.

When the HEAT MODE RUNNING is selected, the following page will be displayed:

11 TEST RUN

Test run is on.
Heat mode is on.
Leaving water temperature is 15°C.

OK

CONFIRM

During HEATMODEtest running , the default target outlet water temperature is 35°C. The IBH (internal backup heater) will turn on after the compressor runs for 10 min. After the IBH runs for 3 minutes, the IBH will turn off, the heat pump will operate until the water temperature increase to a certain value or the next command is received.

When the DHW MODE RUNNING is selected, the following page will be displayed:

11 TEST RUN

Test run is on.
DHW mode is on.
Water flow temperature. is 45°C
Water tank temperature. is 30°C

OK

CONFIRM

During DHW MODE test running , the default target temperature of the domestic water is 55°C. The TBH(tank boost heater) will turn on after the compressor runs for 10min. The TBH will turn off 3 minutes later, the heat pump will operate until the water temperature increase to a certain value or the next command is received.

During test run, all buttons except OK are invalid . If you want to turn off the test run, please press OK. For example ,when the unit is in air purge mode, after you press OK, the following page will be displayed:

11 TEST RUN

Do you want to turn off the test run (AIR PURGE)function?

NO

YES

OK

CONFIRM

Press ◀ ▶ to scroll the cursor to YES and press OK. The test run will turn off.

8.4.12 AUTO RESTART

The AUTO RESTART function is used to select whether the unit reapplies the user interface settings at the time when power returns after a power supply failure.

Go to MENU> FOR SERVICEMAN>13.AUTO RESTART

13 AUTO RESTART

13.1 COOL/HEAT MODE

YES

13.2 DHW MODE

NON

ADJUST

The AUTO RESTART function reapplies the user interface settings at the time of the power supply failure. If this function is disabled, when power returns after a power supply failure, the unit won't auto restart.

8.4.13 POWER INPUT LIMITATION

How to set the POWER INPUT LIMITATION

Go to MENU> FOR SERVICEMAN>14.POWER INPUT LIMITATION

14 POWER INPUT LIMITATION

14.1 POWER LIMITATION

0

ADJUST

8.4.14 INPUT DEFINE

How to set the INPUT DEFINE

Go to MENU> FOR SERVICEMAN> 15.INPUT DEFIN

15 INPUT DEFINE

15.1 ON/OFF(M1M2)

REMOTE

15.2 SMART GRID

NON

15.3 T1b(Tw2)

NON

15.4 Tbt1

NON

15.5 Tbt2

NON

ADJUST

15 INPUT DEFINE

15.6 Ta

HMI

15.7 Ta-adj

-2°C

15.8 SOLAR INPUT

NON

15.9 F-PIPE LENGTH

< 10m

15.10 RT/Ta_PCB

NON

ADJUST

15 INPUT DEFINE	
15.11 PUMP SILENT MODE	NO

9 TEST RUN AND FINAL CHECKS

The installer is obliged to verify correct operation of unit after installation.

9.1 Final checks

Before switching on the unit, read following recommendations:

- When the complete installation and all necessary settings have been carried out, close all front panels of the unit and refit the unit cover.
- The service panel of the switch box may only be opened by a licensed electrician for maintenance purposes.

9.2 Test run operation (manually)

If required, the installer can perform a manual test run operation at any time to check correct operation of air purge, heating, cooling and domestic water heating, refer to 8.4.11 "TEST RUN".

10 MAINTENANCE AND SERVICE

In order to ensure optimal availability of the unit, a number of checks and inspections on the unit and the field wiring have to be carried out at regular intervals.

This maintenance needs to be carried out by your local technician.

In order to ensure optimal availability of the unit, a number of checks and inspections on the unit and the field wiring have to be carried out at regular intervals.

This maintenance has to be carried out by your local technician.

DANGER

ELECTRIC SHOCK

- Before carrying out any maintenance or repairing activity, must switch off the power supply on the supply panel.
- Do not touch any live part for 10 minutes after the power supply is turned off.
- The crank heater of compressor may operate even in standby.
- Please note that some sections of the electric component box are hot.
- Forbid touch any conductive parts.
- Forbid rinse the unit. It may cause electric shock or fire.

Forbid leave the unit unattended when service panel is removed.

The following checks must be performed at least once a year by qualified person.

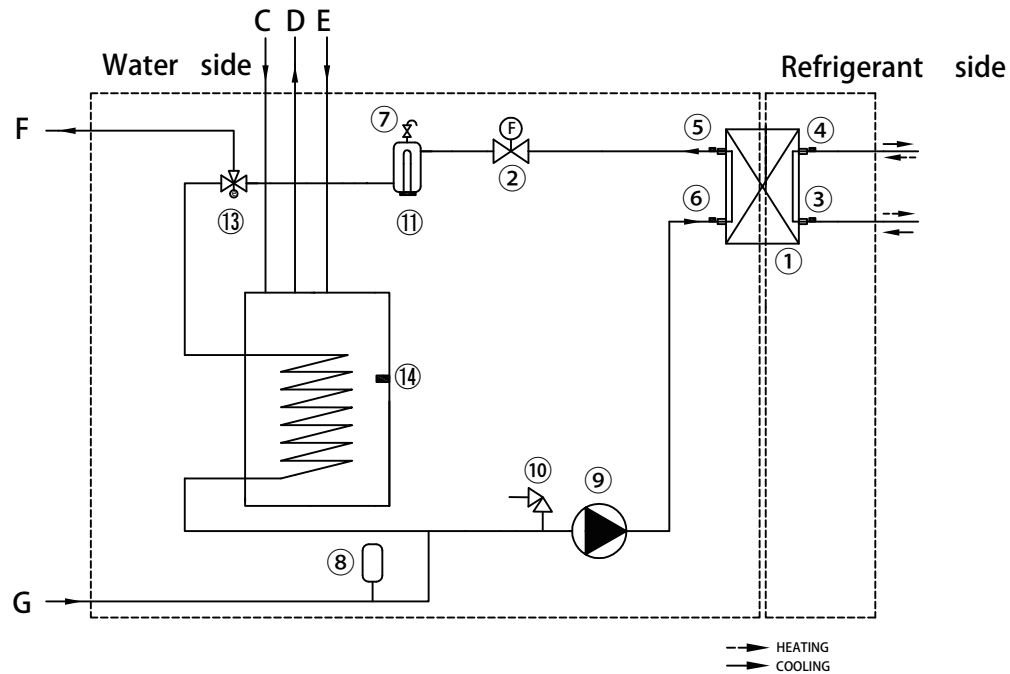
- Water pressure
Check the water pressure, if it is below 1 bar, fill water to the system.
- Water filter
Clean the water filter.
- Water pressure relief valve
Check for correct operation of the pressure relief valve by turning the black knob on the valve counter-clockwise:
If you do not hear a clacking sound, contact your local dealer.
In case the water keeps running out of the unit, close both the water inlet and outlet shut-off valves first and then contact your local dealer.
- Pressure relief valve hose
Check that the pressure relief valve hose is positioned appropriately to drain the water.
- Backup heater vessel insulation cover
Check that the backup heater insulation cover is fastened tightly around the backup heater vessel.
- Domestic hot water tank pressure relief valve (field supply).
Check for correct operation of the pressure relief valve on the domestic hot water tank.
- Unit switch box
Carry out a thorough visual inspection of the switch box and look for obvious defects such as loose connections or defective wiring.
Check for correct operation of contactors with an ohm meter. All contacts of these contactors must be in open position.

11 TECHNICAL SPECIFICATIONS

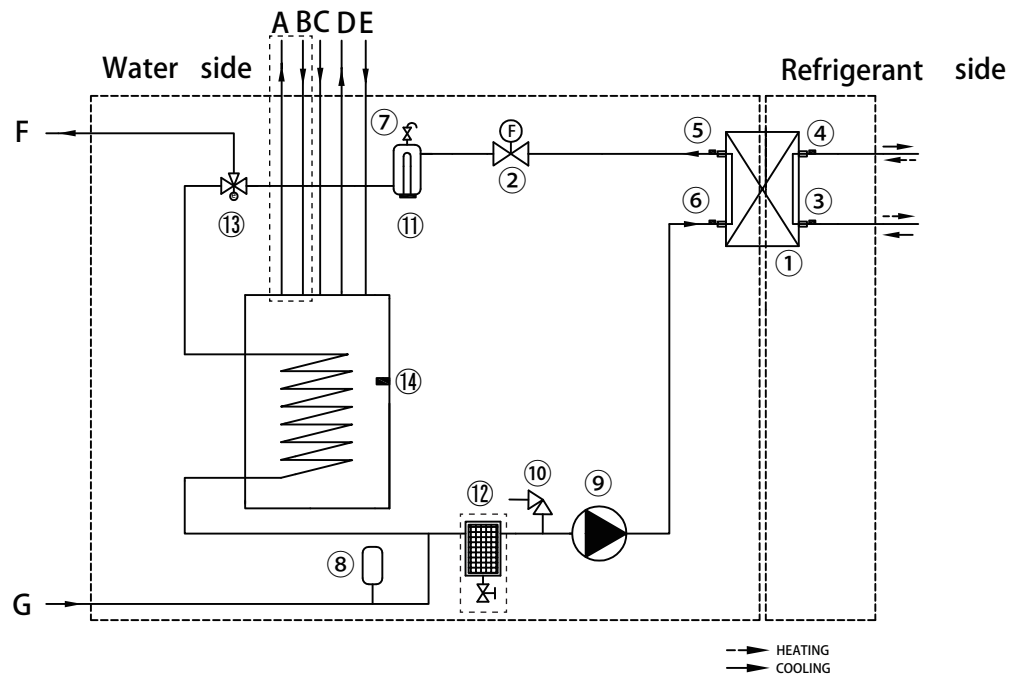
Indoor unit model	100/190 3kW heater
Power supply	220-240V~ 50Hz
Rated input	3095W
Rated Current	13.5A
Norminal capacity	Refer to the technical data
Dimensions (W×H×D)[mm]	600*1683*600
Packing (W×H×D)[mm]	653*1900*653
Heat exchanger	Plate heat exchanger
Electric heater	3000W
Internal water volume	13.5L
Rated water pressure	0.3MPa
Filter mesh	60
Min. water flow (flow switch)	6L/min
Pump	
Type	DC inverter
Max. head	9m
Power input	5~90W
Expansion vessel	
Volume	8L
Max. operating pressure	0.3MPa
Pre-charge pressure	0.10MPa
Weight	
Net weight	140kg
Gross weight	161kg
Connections	
Refrigerant pipe(gas/liquid)	Φ15.9/Φ9.52
Water inlet/outlet	R1"
Drain connection	Φ25
Operation range	
Outlet water(heating model)	+12 ~ +65℃
Outlet water(cooling model)	+5 ~ +30℃
Domestic hot water	+12 ~ +60℃
Space heating/cooling water inlet water pressure	0.1~0.25MPa
Domestic cold water pressure	0.15~ 0.3MPa
Ambient temperature(Indoor side)	+5 ~ +35℃

Indoor unit model	100/190 6kW heater	160/240 9kW heater
Power supply	220-240V~ 50Hz	380~415V 3N~ 50Hz
Rated input	6095W	9095W
Rated Current	26.5A	13.5A
Norminal capacity	Refer to the technical data	
Dimensions (W×H×D)[mm]	600*1943*600	600*1943*600
Packing (W×H×D)[mm]	653*2160*653	653*2160*653
Heat exchanger	Plate heat exchanger	
Electric heater	6000W	9000W
Internal water volume	13.5L	
Rated water pressure	0.3MPa	
Filter mesh	60	
Min. water flow (flow switch)	6L/min	
Pump		
Type	DC inverter	
Max. head	9m	
Power input	5~90W	
Expansion vessel		
Volume	8L	
Max. operating pressure	0.3MPa	
Pre-charge pressure	0.10MPa	
Weight		
Net weight	139kg	159kg
Gross weight	154kg	180kg
Connections		
Refrigerant pipe(gas/liquid)	Φ15.9/Φ9.52	
Water inlet/outlet	R1"	
Drain connection	Φ25	
Operation range		
Outlet water(heating model)	+12~+65℃	
Outlet water(cooling model)	+5~+30℃	
Domestic hot water	+12~+60℃	
Space heating/cooling water inlet water pressure	0.1~0.25MPa	
Domestic cold water pressure	0.15~0.3MPa	
Ambient temperature (Indoor side)	+5~+35℃	

ANNEX A: Refrigerant cycle



Standard Unit



Customized Unit

Item	Description	Item	Description
1	Water side heat exchanger (Plate heat exchange)	12	Magnetic separator(Customized)
2	Flow switch	13	3-Way valve
3	Refrigerant liquid line temperature sensor	14	Domestic water tank temperature sensor (Accessory)
4	Refrigerant gas line temperature sensor		
5	Water outlet temperature sensor	A	Solar circulation outlet(Customized)
6	Water inlet temperature sensor	B	Solar circulation inlet(Customized)
7	Automatic air purge valve	C	Domestic cold water inlet
8	Expansion vessel	D	Domestic hot water outlet
9	Circulated pump	E	Domestic hot water recirculation water inlet
10	Pressure relief valve	F	Space heating/cooling water outlet
11	Backup heater	G	Space heating/cooling water inlet



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