

INSTALLATION MANUAL

Refrigerant Shut-off Device
For V8 R32 Series Mini VRF

IMPORTANT NOTE:



Original instructions

Thank you very much for purchasing our air conditioner.

Before using your air conditioner, please read this manual carefully and keep it for future reference.

The figure shown in this manual is for reference only and may be slightly different from the actual product.

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1 SAFETY PRECAUTIONS

- Be sure to be in conformity with the local, national and international laws and regulations.
- Read "SAFETY PRECAUTIONS" carefully before installation.
- The following precautions include important safety items. Always observe these precautions.
- Keep this manual in a handy place for future reference.

The safety precautions listed here are divided into two categories. In either case, important safety information which must be read carefully is listed.

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 may also be used to alert against unsafe practices.

WARNING

- Ask your local dealer or qualified personnel to carry out installation work. Improper installation may result in water leakage, electric shock, or fire.
- Perform installation work in accordance with the instructions provided in this installation manual. Improper installation may result in water leakage, electric shock, or fire.
- Consult your local dealer regarding what to do in the event of refrigerant leakage. Refrigerant shut-off devices should only be installed outdoors. If installed indoors, a refrigerant leak that comes in contact with an ignition source may cause a fire. Otherwise, this may lead to an accident due to oxygen deficiency.
- Be sure to use only the specified parts and accessories for installation work. Failure to use the specified parts may result in the air conditioner falling down, water leakage, electric shocks, fire, etc.
- Install the refrigerant shut-off device on a foundation that can withstand its mass. Insufficient strength may cause the refrigerant shut-off device to fall and cause injury. In addition, it may lead to vibration of indoor units and cause an unpleasant chattering noise.

WARNING

- Carry out the specified installation work in consideration of strong winds, typhoons, or earthquakes.
- Improper installation may result in an accident such as refrigerant shut-off device falling.
- The appliance shall be installed in accordance with national wiring regulations, make sure that all electrical work is carried out by qualified personnel according to the applicable legislation (note 1) and this installation manual, using a separate circuit. In addition, even if the wiring is short, make sure to use wiring that has sufficient length and never connect additional wiring to supplement the length.
- Insufficient capacity of the power supply circuit or improper electrical construction may lead to electric shock or fire.
- (note 1) applicable legislation means "All international, national and local directives, laws, regulations and/or codes which are relevant and applicable for a certain product or domain".
- Ground the refrigerant shut-off device. Do not connect the ground wiring to gas or water piping, lightning conductor, or telephone ground wiring. Incomplete grounding may cause electric shock or a fire. A high surge current from lightning or other sources may cause damage to the Refrigerant shut-off device.
- Be sure to install a ground leakage circuit breaker. Failure to do so may cause electric shock and fire.
Be sure to use only the specified parts and accessories for installation work.
- Disconnect the power supply before touching the electric components.
- Make sure that all wiring is secure, use the specified wiring, and ensure that external forces do not act on the terminal connections or wiring. Incomplete connection or fixing may cause overheating or fire.
- Wiring for power supply and wiring between refrigerant shut-off device and indoor or outdoor units must be properly laid and formed, and the control box cover must be firmly fastened so that the wiring does not push up structural parts such as the cover.
- If the cover is improperly fastened, it may cause electric shock or fire.
- If refrigerant gas leaks during installation, ventilate the area immediately. Toxic gas may be produced if refrigerant gas comes into contact with flame.
- After completing the installation work, check to make sure that there is no leakage of refrigerant gas. Toxic gas may be produced if refrigerant gas leaks into the room and comes into contact with a source of flame, such as a fan heater, stove, or cooker.
- Never directly touch any accidentally leaking refrigerant. This could result in severe wounds due to frostbite.

WARNING

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

CAUTION

- Install the drain piping according to this installation manual to ensure good drainage, and insulate the piping to prevent condensation. Improper drain piping may cause water leakage, which could drip onto furniture.
- Install the refrigerant shut-off device, power supply wiring, and transmission wiring at least 1 m away from televisions or radios to prevent image interference or noise. (Depending on the radio waves, a distance of 1 m may not be sufficient to eliminate noise.)
- Install the refrigerant shut-off device as far as possible from fluorescent lamps. If a wireless remote controller kit is installed, the transmission distance may be shorter in a room where an electronic lighting type (inverter or rapid start type) fluorescent lamp is installed.
- Make sure to provide adequate measures to prevent the refrigerant shut-off device from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Please instruct the customer to keep the area around the unit clean.

The refrigerant shut-off device is not intended for use in a potentially explosive atmosphere. Do not install the refrigerant shut-off device in the following places:

1. Where there is mist of oil, oil spray, or vapour, for example a kitchen. Resin parts may deteriorate, causing them to fall out or water to leak.
2. Where corrosive gas, such as sulfurous acid gas, is produced. Corrosion of copper piping or brazed parts may cause the refrigerant to leak.
3. Where there is machinery which emits electromagnetic waves. Electromagnetic waves may disturb the control system, and cause the equipment to malfunction.
4. Where flammable gases may leak, where carbon fibre or ignitable dust is suspended in the air, or where volatile flammables, such as thinner or gasoline, are handled. If the gas leaks and remains around the refrigerant shut-off device, it could ignite.
5. Do not use in areas where the air is salty, such as along coastlines, in factories, or other areas with significant voltage

fluctuations, or in automobiles and watercraft. Doing so could result in a malfunction.

6. In places that are exposed to wind flow, condensation can gather on the surface of the refrigerant shut-off device body, cause leaks.

- Ensure that the electric cable is correctly connected. If the electric cable is incorrectly connected, then it will damage the electrical components.
- Don't store the unit in a humid basement or expose it to rain or water.

2 BEFORE INSTALLATION

2.1 Precautions

Be sure to verify in advance that the refrigerant used in installation is R32.

The unit will not operate correctly with a different type of refrigerant.

When moving the unit during or after unpacking, hold it using the 4 hanging brackets and avoid subjecting other parts, particularly refrigerant pipes and the control box, to force.




For more information about the installation of outdoor and indoor units, refer to the installation manual that came with each unit.

2.2 Accessories and locally purchased components

Verify that the following accessories have been included in the packaging.

Accessories of the refrigerant shut-off device

Table 2-1

NAME	QTY.	SHAPE	USE
Installation & operation manual	1		For the Refrigerant Shut-off Device installation and operation instructions.
Magnetic ring	1		To improve the EMC effect.
Tightening belt	2		To hold the magnetic ring.

Locally purchased components

Table 2-2

NAME	USE
PVC drainage pipe	Use for drainage pipe for the Refrigerant Shut-off Device; the length varies according to circumstances.
Heat-insulated pipe	The inner diameter should be the same as the relative copper pipes and PVC pipes. The thickness should be (more than) 10mm, especially near wet areas.

2.3 Checklist

Exercise particular care concerning the following items during installation and check again after installation is complete:

Post-installation checklist

Table 2-3

Check item	If defective	Check here.
Has the refrigerant shut-off device been installed firmly?	The unit may fall, vibrate, or operate noisily.	
Did you carry out a gas leakage inspection?	The unit may fail to heat or cool as designed.	
Was the unit completely insulated? (Refrigerant pipes and drain pipes)	The unit may cause to leak of water.	
Does water flow slightly from the drain?	The unit may cause to leak of water.	
Is the supply voltage the same as the voltage indicated on the label?	The unit may fail to operate or burn up.	
Are there any wiring mistakes, erroneous wiring, or erroneous pipe connections?	The unit may fail to operate, burn up, or produce abnormal noise.	
Has the unit been grounded?	In the event of short-circuiting, the unit may pose a hazard.	
Is the thickness of the electrical wiring the same as described in the specifications?	The unit may fail to operate or burn up.	
Are all indoor and outdoor units properly installed?	The unit may fall, vibrate, or operate noisily.	
Are all electrical connections (both power and control) properly terminated?	The unit may fail to operate or burn up.	
Are the units properly grounded in accordance with current electrical codes?	The unit may fail to operate or burn up.	

Delivery checklist

Table 2-4

Check item	Check here.
Has a cover been installed on the refrigerant shut-off device?	
Did you give the customer the installation manual?	

3 INSTALLATION SITE

Consider the following requirements when choosing the installation location and obtain the customer's consent:

- The location must be able to withstand the weight of the refrigerant shut-off device.
- The location must allow reliable drainage and cannot be installed in low lying areas.
- The location must allow inspection holes to be installed on the control box side. (A separate opening is necessary when lowering the product.)
- There must be adequate space in which to perform installation and service work.
- The length of pipe from the indoor unit to the outdoor unit must be less than or equal to the permissible pipe length (as listed in the installation manual that came with the outdoor unit).
- The field pipes used to connect the outdoor unit and indoor unit need to be firmly secured. No vibration is permitted. Never install the pipes above the ceiling of an occupied room.

3.1 The Refrigerant Shut-off Device

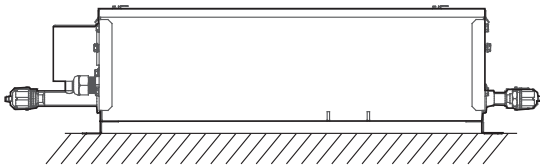


Fig.3-1

NOTE

- Note:1. The space of the refrigerant shut-off device shown in the diagram above is both required for ceiling-suspended installation and the shut-off device needs to be installed horizontally upwards.

WARNING

- Securely install the unit at a location that is capable of withstanding its weight.
- Inadequate strength may cause the refrigerant shut-off device to fall, resulting in bodily injury.

CAUTION

- Leave enough space to perform maintenance on refrigerant shut-off device.
- To prevent video and audio interference, install the refrigerant shut-off device as well as the associated power wiring and signal transmission lines at least 1 m away from TVs and radios.
- The refrigerant shut-off device must be installed outdoors.

4 PREPARATIONS BEFORE INSTALLATION

Install suspension bolts and hanging brackets as illustrated in the diagram below.

- Use a suspension bolt size of M5.
- Use mold-in inserts and embedded foundation bolts for new installations or hole-in anchor bolts or similar hardware for existing installations, taking care to install them in a manner that can withstand the unit's weight.
- Suspension bolt spacing

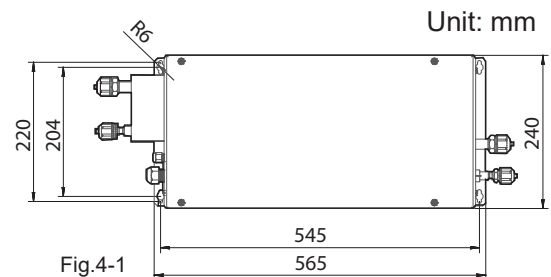
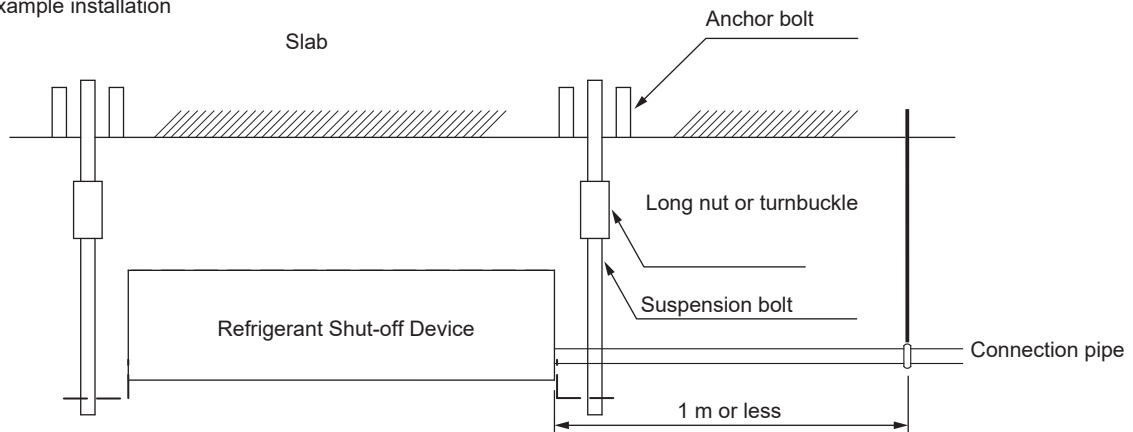


Fig.4-1

- Use the hanging brackets to support the connection pipes on both the front and back of the unit within 1 m of the unit's side.
- Placing an excessive amount of weight on the Refrigerant Shut-off Device's hanging brackets may cause the unit to fall, resulting in bodily injury.

Example installation



All the above parts must be supplied in the field

Fig.4-2

5 RREFRIGERANT SHUT-OFF DEVICE INSTALLATION

⚠ WARNING

- Install at a location which is strong enough to withstand the set's weight.
- If the location is not strong enough or installation is not completed properly, the unit could fall and cause injury.
- Carry out special installation work to prevent strong wind or earthquakes.
- If installing by halves, the set will drop and cause an accident.

5.1 Install the main body

5.1.1 Install the suspension screw

1. Use a suspension bolt size of M5.
2. Remove the ceiling: For details about different architectural structures, please contact indoor decoration personnel.
 - a. To ensure that the ceiling is level and to avoid ceiling vibration, strengthen the ceiling plate's base frame.
 - b. Do not cut off the ceiling plate base frame.
 - c. Strengthen the base frame on the both sides of the fixed ceiling.
 - d. After hoisting and installing the main body, piping and wiring work should be completed in the ceiling. Decide the outlet directions of the pipes after selecting the installation location. Especially for positions which already have a ceiling, please install a pipe, drainage pipe, indoor and outdoor unit connecting wires and wire controlling wire to the connecting positions before hoisting the unit.

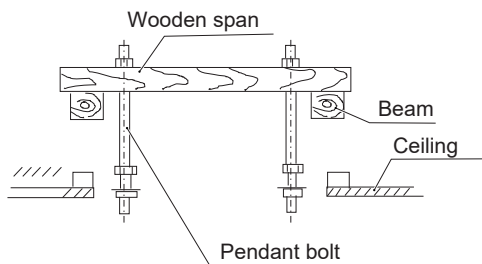
5.1.2 Hoisting install the Rrefrigerant shut-off device

1. Please use the pulley to hoist and install the refrigerant shut-off device on the suspension bolt.
2. Please use the gradienter to adjust the refrigerant shut-off device into a level position, or water leakage may occur.

5.2 The installation of suspension screw bolts

For installation scenarios of hanging screw bolts, refer to the following (Fig.5-1 to Fig.5-3)

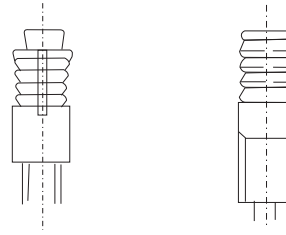
Wooden struct



Put rectangular sticks across the beams, and set pendant bolts.

Fig.5-1

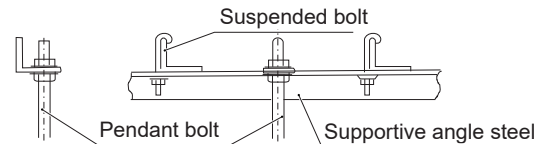
Old concrete roughcast



Use embedded bolts and embedded pulling plugs.

Fig.5-2

Steel beam and girder structure



Secure and use supportive angle steel.

Fig.5-3

New concrete roughcast

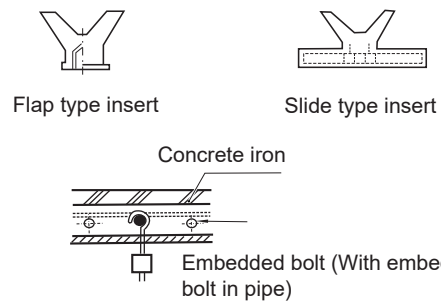


Fig.5-4

⚠ CAUTION

- The bolt material is constructed of high quality carbon steel (galvanized or covered other rust preventive materials on the surface) or stainless steel.
- Ceiling rust prevention measures are based on actual construction. For a detailed description please consult a building engineer.
- Suspending bolts must be secured. The method varies depending on the installation scenario.

5.3 Dimension diagrams

Unit: mm

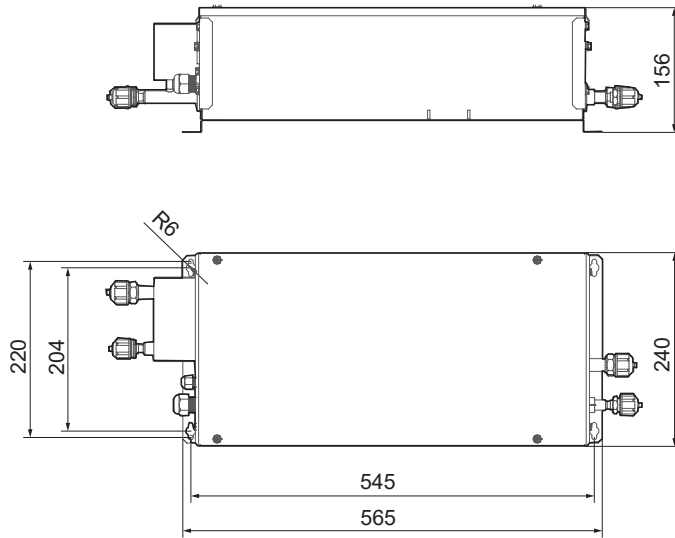


Fig.5-5

5.4 Hanging the refrigerant shut-off device

1. Adjust the nut's site, the interval between the gasket (Down Side) and the ceiling should be adjusted according to actual construction circumstances. See Fig.5-6.
2. Hang the nut of the hanging screw bolt into the slotted hole of the installing ear.
3. Use the level gauge to confirm the horizontality of the unit. (Prevent slanting towards the non-drainage side; slanting slightly towards the drainage side is preferable) See Fig.5-7.

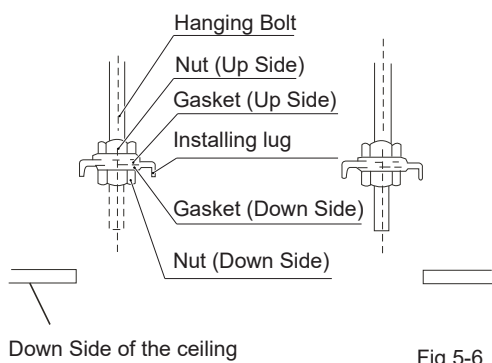


Fig.5-6

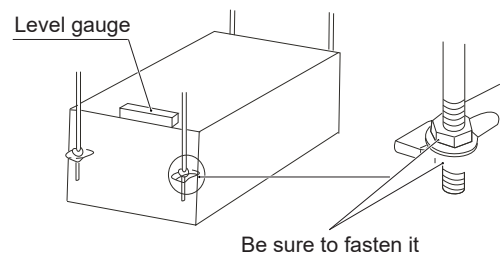


Fig.5-7

5.5 Multiple installations of the refrigerant shut-off device

This unit has three different installation types:

- (1) Horizontal-up type;
- (2) ceiling-suspended type;
- (3) wall-mounted type.

Choose the appropriate installation type according to the installation location.

5.5.1 Horizontal-up type

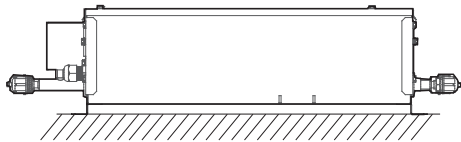
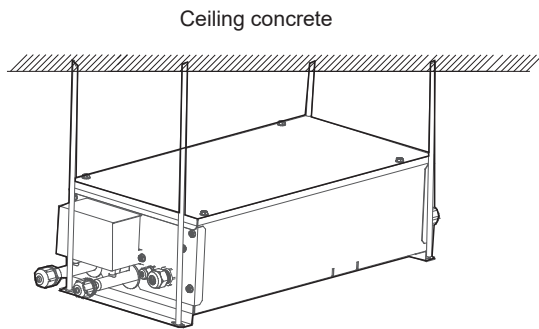


Fig.5-8

CAUTION

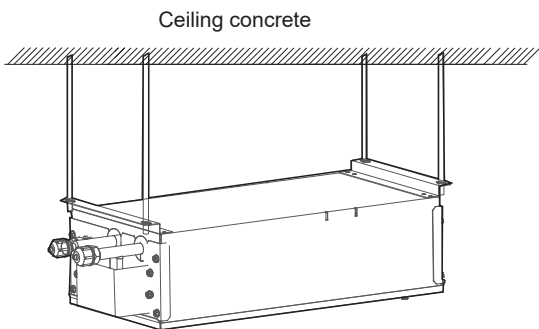
- Do not install the refrigerant shut-off device in a low-lying area with water. Failure to do so may cause a short circuit in the electrical components or create a safety hazard of electric shock.

5.5.2 Ceiling-suspended type



Right

Fig.5-9



Wrong

Fig.5-10

5.5.3 Wall-mounted type

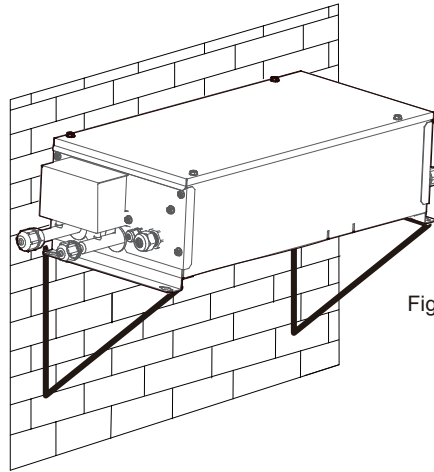


Fig.5-11

- Wrong installation type

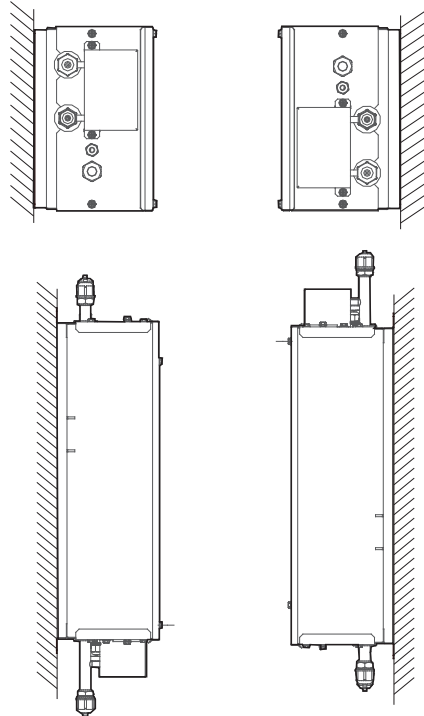


Fig.5-12

CAUTION

- The tilt of the unit should be within $\pm 5^\circ$ in the front/back and on the left/right.
- Be sure to install the unit with the top surface facing up.
- Do not install near bedrooms. The sound of refrigerant flowing through the piping may sometimes be audible.
- The refrigerant shut-off device cannot be installed indoors.
- When the shut-off device is installed on the outside of the room with people often walk through the location, should be installed in the shut-off device directly below the centralized drainage of the drain pan or water guide device to facilitate centralized drainage, to avoid condensate dripping to passers-by, or flow to the road affect road conditions.

6 REFRIGERANT PIPING

For instructions for installing piping between the outdoor unit and the refrigerant shut-off device, selecting an indoor branch joint, and installing piping between the indoor branch joints and indoor units, refer to the installation manual included with the outdoor unit.

Before beginning the installation work, be sure to verify that the type of refrigerant used is R32. (The unit will not operate correctly with a different type of refrigerant.)

Insulate all of the piping, including the liquid pipes, gas pipes and each of the pipe connections. Not insulating these pipes could result in water leaks or burns.

In particular, low-temperature gas flows in the gas piping during full cooling operation, so the same amount of insulation as used for the suction gas pipes is required.

In addition, high-temperature gas flows in the gas piping, so use insulation that can withstand more than 120°C.

Select insulation material which is suited to the installation environment. For details, refer to the Engineering date book. Failure to do so could cause condensation to form on the surface of the insulation.

6.1 Connecting diagram of the refrigerant shut-off device

Connecting diagram 1 for refrigerant shut-off device

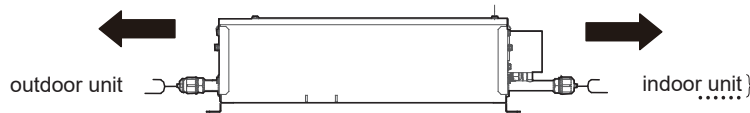


Fig.6-1

Refrigerant piping schematic diagram 2

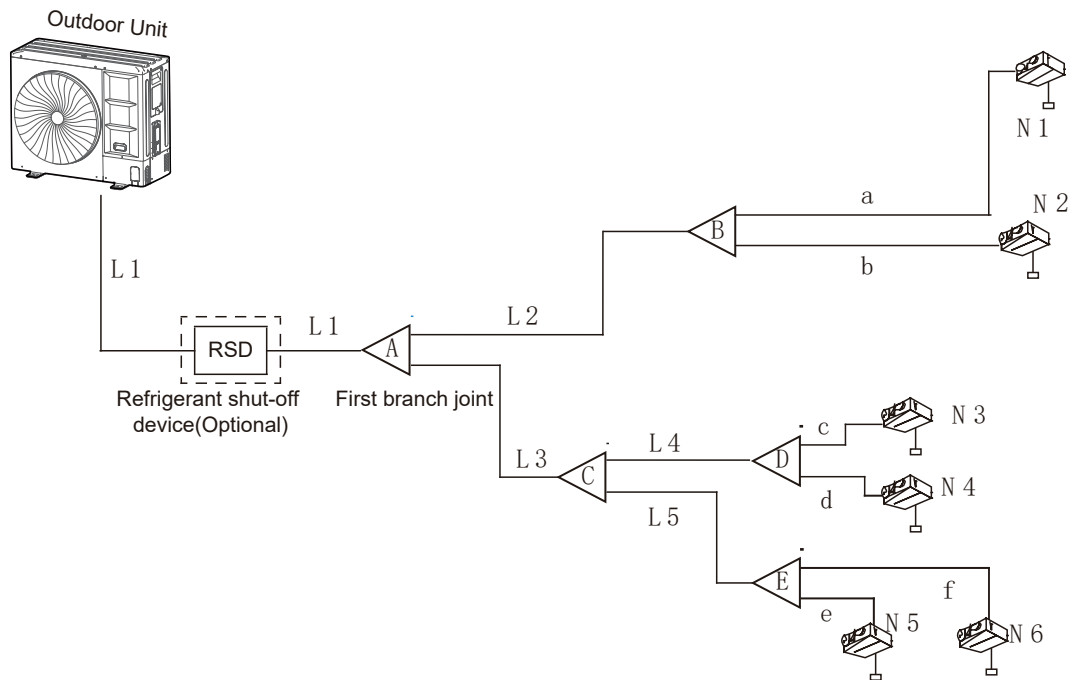


Fig. 6-2

NOTE

- The outdoor unit connection pipe of the refrigerant shut-off device and the indoor unit connection pipe must be connected in accordance with the direction of the logo on the body of the device and cannot be reversed, otherwise the ball valve of the refrigerant shut-off device may not be opened.
- The ball valves of the refrigerant shut-off device will be closed when the refrigerant shut-off device is powered off or faulty.
- The refrigerant shut-off device must be installed on the main pipe L1, not on other indoor unit pipes.

6.2 The procedure of connecting pipes

1. Measure the required length of the connective pipe, and follow these procedures to make the connective pipes. (Refer to Pipeline Connection for details)

1) First connect the indoor units and the outdoor unit.

a. The pipe bend should be handled carefully, without damaging the pipe and insulation layer.

b. When connecting or disconnecting the pipeline, be sure to use two spanners concurrently.

c. Do not rest the weight of the connecting pipe on the adapter of the indoor unit. An excessively heavy load on the adapter of the indoor unit may deform the pipe and thus affect the cooling/heating effects.

2) The valve of the outdoor unit should be closed completely (default factory setting). Every time you connect the pipe, unscrew the nut at the valve, and connect the flared pipe (within 5 minutes). If the nut is put away for a long time after being unscrewed from the valve, dust and other foreign substance may enter the pipeline system and cause faults.

3) After the refrigerant pipe is connected to the indoor and outdoor units, expel air as instructed in the "Expel air" section. After expelling the air, screw on the nut at the maintenance opening.

a. Precautions for the flexible part of the pipeline

i. The bend angle shall not exceed 90°. (See Fig.6-3)

Use a thumb to bend the pipe



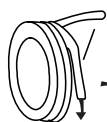
Minimum radius 100mm

Fig.6-3

ii. The bend shall preferably be in the middle of the pipe length, and a higher bend radius is preferred.

iii. Do not bend the flexible pipe more than 3 times.

b. Bend the thin-wall connective pipe (See Fig.6-4)



Method of unleashing the spooled pipe
Straighten the pipe end

Fig.6-4

i. When bending the pipe, cut out a notch of the desired size at the bend of the adiabatic pipe, and then expose the pipe (wrap the pipe with the wrapping tape after bending it).

ii. The radio of the elbow pipe should be as large as possible to prevent flattening or crushing.

iii. Use the pipe bender to make a closed elbow pipe.

c. Use purchased copper pipe

When purchasing a copper pipe, be sure to use the heat insulation materials of the same type (with a thickness of over 9mm).

2. Deploy the pipelines

1) Drill a porthole on the wall, and put the hole sheath and hole cover through the wall.

2) Place the connective pipe together with the indoor & outdoor connection wires. Use wrapping tape to bind them tightly. Do not let air penetrate it, or this could lead to condensation and drops of moisture.

3) Pull the connective wrapped connective pipe from outside through the sheath, which passes through the wall, and lead it into the room.

CAUTION

- Please be careful when installing connective piping, do not let any air, dust, or other foreign substances enter the system.
- Connection of pipes can be conducted after the indoor and outdoor units are secured.
- The connective pipe must be kept dry during installation. Do not let water enter it.
- Connective copper pipe must be wrapped insulation layer (at least 9 mm thickness)

6.3 Checking for leakage

Check all the joints with the leakage detector or soapy water.

6.4 Airtight test

After installation and before connecting to the outdoor unit, the refrigerant pipe must undergo an airtight test with 4.0 MPa (40.8kgf/cm²) nitrogen for 24 hours from the gas pipe and liquid pipe.

6.5 Air purging

Use a vacuum pump to vacuum from the gas pipe and liquid pipe of the outdoor unit and make sure that refrigerant shut-off device is powered on and not faulty. The detailed procedure is in accordance with the instructions in the installation manual that came with the outdoor unit to perform vacuum drying.

6.6 Open/Close the valves

Open/Close the spools or the valves of the outdoor unit with an inner hexagon spanner.

CAUTION

- Don't use the refrigerant of the outdoor unit to create the vacuum.
- Vacuum from the gas pipes and liquid pipes of the outdoor unit and the refrigerant shut-off device when the ball valves of the refrigerant shut-off device are closed.

6.7 Thermal insulation

To process the thermal insulation for gas side and liquid side piping, Please completely insulate the gas side and liquid side piping, due to the fact that the ambient temperature is very low during cooling mode.

1. Thermal insulation of at least 120 °C material shall be applied to the gas side piping.

2. Apply attached thermal insulation material to tightly wrap the connective part of indoor piping, leaving no gaps.

3. To prevent condensation, do not leave any gaps between the insulation material and the unit body (See Fig.6-5).

4. Insulation tube installation instructions for unused branch ports (indoor unit side) (gas and liquid pipes) (See Fig.6-6) .

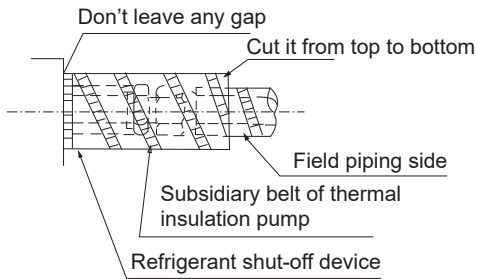


Fig.6-5

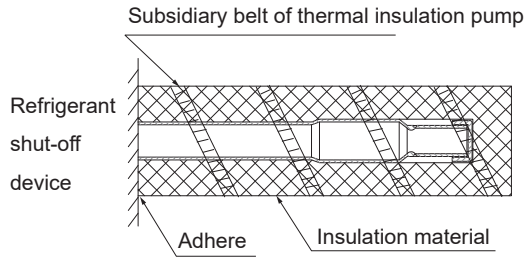


Fig.6-6

⚠ CAUTION

- Insulate all of the piping including the liquid pipes, gas pipes, and each of the pipe connections.
- Not insulating these pipes could result in water leakage or burning. In particular, low-temperature gas flows in the gas pipes during full cooling operation, so the same amount of insulation as used for the suction gas pipes is required. In addition, high temperature gas flows in the gas piping, so use insulation that can withstand more than 120°C.
- When reinforcing the insulation material in accordance with the installation environment, also make sure to reinforce the insulation on the piping that protrudes from the unit.
- Insulation material required for reinforcement work should be supplied in the field.
- For more information, refer to the Engineering data book.

⚠ CAUTION

Wrap insulation material with the seam facing up. (Refer to Fig.6-7)

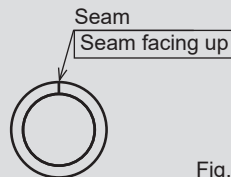


Fig.6-7

7. ELECTRICAL WIRING

7.1 Safety device requirements

💡 NOTE

- Special power shall be applied within the rated voltage range. This air conditioner's external circuit must be grounded. This means that the power cable of the refrigerant shut-off device shall be jointed with a reliable external grounding wire.
- If the power supply lacks N phase or there is an error in the N phase, the device will malfunction.
- Do not share the same power supply line with other devices.
- The power cord may produce electromagnetic interference so you should maintain a certain distance from equipment that may be susceptible to such interference.
- Connect to the power supply only after all the wiring and connection works have been completed, and carefully check that they are.
- Separate power supply for the refrigerant shut-off device and outdoor unit.

⚠ WARNING

- Take note of the risk of electric shocks during installation.
- All the electric wires and components must be installed by a certified electrician, and the installation process must comply with applicable regulations.
- Use only wires with copper cores for the connections.
- A main breaker or safety device that can disconnect all polarities must be installed, and the breaker device can be completely disconnected in situations where there is excessive voltage.
- Wiring must be carried out in strict accordance with what is stated on the product nameplate.
- Do not squeeze or pull the unit connection, and make sure the wiring is not in contact with the sharp edges of the sheet metal.
- Make sure the grounding connection is safe and reliable. Do not connect the earth wire to public pipes, telephone earth wires, surge absorbers and other places that are not designed for grounding. Improper grounding may cause electric shock.
- Make sure the fuses and circuit breakers installed meet the corresponding specifications.
- Before powering the unit on, make sure the connections between the power cord and terminals of the components are secure, and the metallic cover of the electric control box is closed tightly.

7.2 Connecting the wiring

NOTE

- Do not connect the power supply to the communication terminal block. Otherwise, the whole system may fail.
- You must first connect the earth line (note that you should use only the yellow-green wire to connect to the earth, and you must turn off the power supply when you are connecting the earth line) before you connect the power cord. Before you install the screws, you must first comb through the path along the wiring to prevent any part of the wiring from becoming exceptionally loose or tight because of inconsistencies in the lengths of the power cord and earth line.
- The wire diameter must comply with the specifications, and the terminal should be screwed tightly. Do not subject the terminal to any external force.

The power supply specifications are as follows:

Table 7-1

Power	Phase	1-Phase
	Volt and frequency	220-240V~50Hz

1. Use copper conductors only.
2. Use insulated wire for the power cord.
3. Select the wire diameters(minimum value) individually for each unit based on the table 7-2 and table 7-3.
4. 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.

Table 7-2

Model	Hz	Voltage	Refrigerant shut-off device		Power supply		Power (W)
			Voltage range		MCA	MFA	
			Min.	Max.			
N8SV-01	50	220-240	198	264	0.3	5	69

MCA: Min. Circuit Amps (A); MFA: Max. Fuse Amps (A)

Table 7-3

	Flexible cords / Cable for fixed wiring
Nominal cross-sectional area (mm ²)	1

Wire/electrical connection and attention/caution

1. The power cables should be connected to the refrigerant shut-off device with the label "L,N,⊕".
2. Communication cables and power cables add magnetic ring to improve anti-interference, one more circle for better effect.
3. XY communication function is not allowable ,as it is reserved.

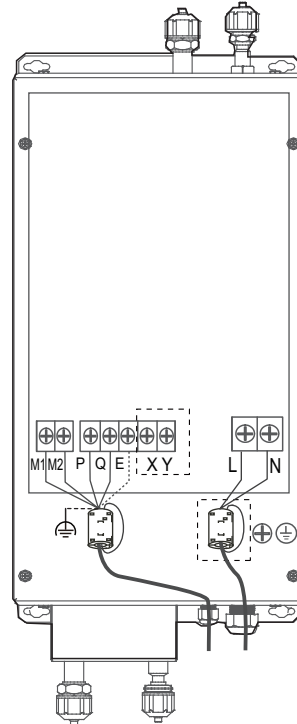


Figure 7-1

- Wiring layout is comprised of the communication wiring between the indoor units, outdoor units and refrigerant shut-off device. See below the wiring layout of the refrigerant shut-off device .

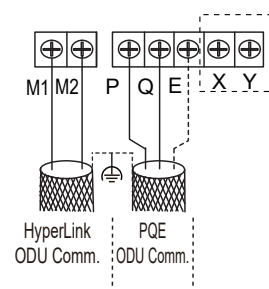
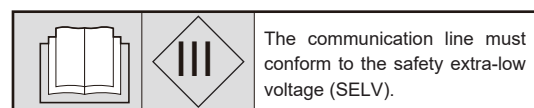


Figure 7-2



⚠ WARNING

- Do not connect the communication line when the power is on.
- Do not connect the power cable to the terminal of communication line, otherwise, the board of shut-off device will be damaged.
- Do not connect a system with both HyperLink (M1 M2) communication lines and P Q communication lines.

⚠ CAUTION

- On-site wiring must comply with the relevant regulations of the local country/region and must be completed by professionals.
- When a single communication line is not long enough, the joint must be crimped or soldered, and the copper wire at the joint shall not be exposed.
- Please refer tightening belt to hold the magnetic ring.

Before connecting the communication wiring, please select the appropriate connection method. Refer to the following table:

Table 7-4 communication mode

Optional communication mode of shut-off device and ODU
HyperLink (M1 M2) communication
RS-485 (P Q) communication

Table 7-5 Communication wiring material

Communication mode	Type of wire	Number of cores and wire diameter (mm ²)	Total length of communication line (m)
RS-485 (P Q) communication	PVC-sheathed copper-core flexible shielded twisted pair	2x0.75	L≤1200
HyperLink (M1 M2) communication	Ordinary PVC-sheathed flexible cable	2x0.75	L≤2000

- HyperLink (M1 M2) communication

$L1+L2+La+Ln \leq 2000m$, Communication wiring $2 \times 0.75mm^2$

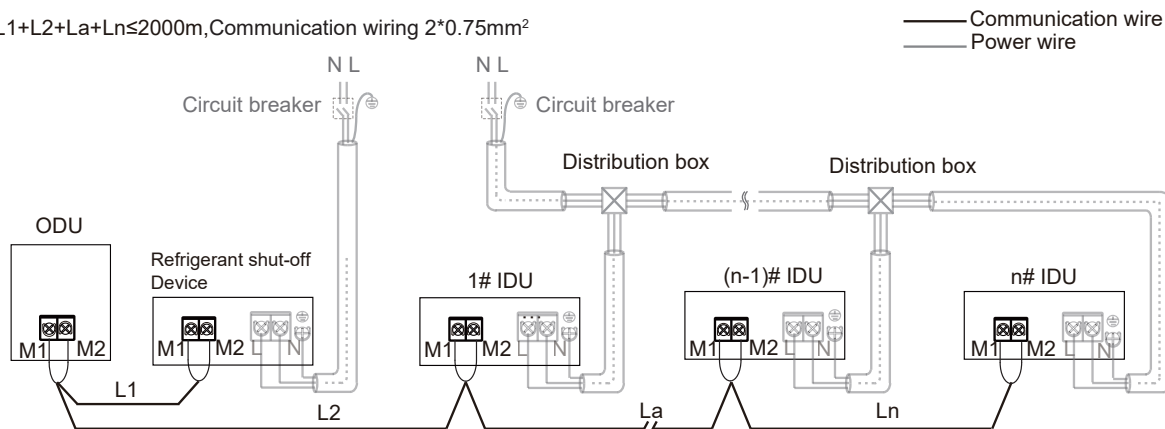
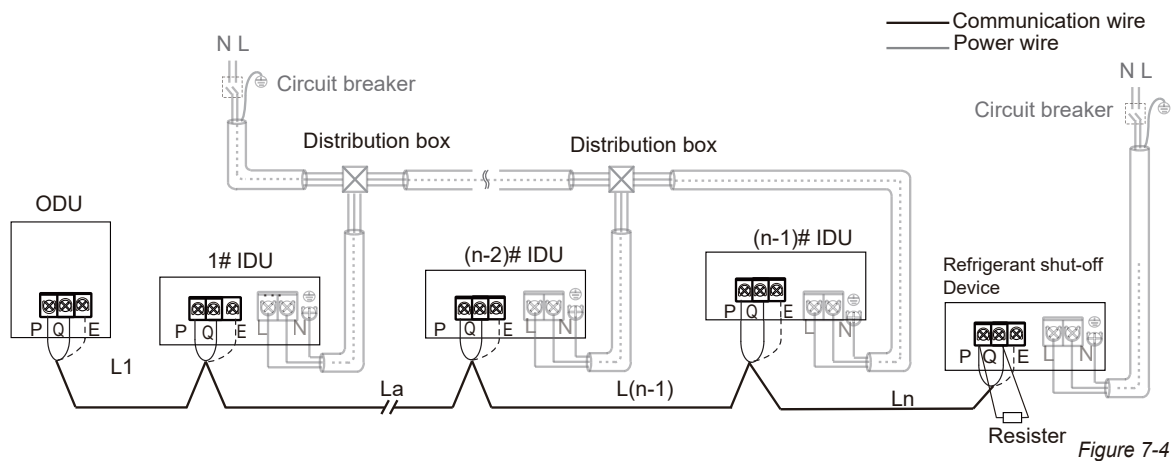


Figure 7-3

⚠ CAUTION

- Do not connect the HyperLink (M1 M2) communication line to the P Q communication line .
- Separate power supply for the indoor units and refrigerant shut-off device.
- It is recommended directly connect the shut-off device and ODU for communication.
- The communication wiring must be consistent with ODU.
- Please refer to ODU and IDU installation manuals for communication wire connection between indoor units and outdoor units.

- RS-485(P Q) communication
 $L1+La+L (n-1)+Ln \leq 1200m$, Communication wiring $2 \times 0.75mm^2$



CAUTION

- Do not connect the P Q communication line to the HyperLink (M1 M2) communication line .
- Separate power supply for the indoor units and refrigerant shut-off device.
- The shut-off device is connected with the last IDU for communication.
- Please refer to ODU and IDU installation manuals for communication wire connection between indoor units and outdoor units.

8 QUERY INSTRUCTIONS

8.1 SW1/SW2 query instructions

Spot check list for general information.

Press SW1 and SW2 to forward and backward to spot check the refrigerant shut-off device data. After 1s shows the no., the display will automatically show the data. For example, to check the last fault, press SW1/SW2 to show --06, then stop and wait for 1s, and the display will show the number of the current outdoor operation mode.

Table 8-1

Displayed	Description	Note
Default	EBV-A and EBV-B status	0-OFF; 1-ON
--01	Refrigerant shut-off device address	
--02	EBV-A status	0-OFF; 1-ON
--03	EBV-B status	0-OFF; 1-ON
--04	Third from last fault	
--05	Second from last fault	
--06	Last fault	
--07	Program Version	

8.2 Troubleshooting

Malfunction display of refrigerant shut-off device DSP

Error code table for refrigerant shut-off device

Table 8-2

Error code	Content	Remarks	Manual restart required
Ab1	Main power off	The outdoor unit display displays "Ad1" fault code	No
3b01	Electronic ball valve connection failure	The outdoor unit display displays "Ad1" fault code	Yes
C2A	Communication failure between refrigerant shut-off device and outdoor	The outdoor unit display displays "Ad1" fault code	No
P5d	Supercapacitor voltage over rated operational voltage	The outdoor unit display displays "Ad1" fault code	Yes
P5E	Supercapacitor voltage lower than rated operational voltage	The outdoor unit display displays "Ad1" fault code	Yes
P71	EEPROM error	The outdoor unit display displays "Ad1" fault code	Yes

16110200000146 V.B

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黑白印刷，双胶纸80g，A4

N21039231 2022.10.17-罗华东

- 1、P3，附件新增磁环和束紧带
- 2、P13-14，新增磁环安装位置说明
- 3、调整目录与P12正文一致性对应
- 4、P8，增加说明内容

2023.08.02-李世年

- 1、P12 输入电源线的线径指定使用1mm²
- 2、P13删除 EN55014-1和EN55014-2的标准
和细化描述以及PQ通讯需手拉手进行通讯方式
- 3、P15调整故障代码的排序,说明书和接线铭牌保持一致，无风险

