VRF SYSTEM
INDOOR UNIT
Wall Mounted Type

⚠ CAUTION

R410A
REFRIGERANT

This Air Conditioner contains
and operates with refrigerant R410A.

THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.

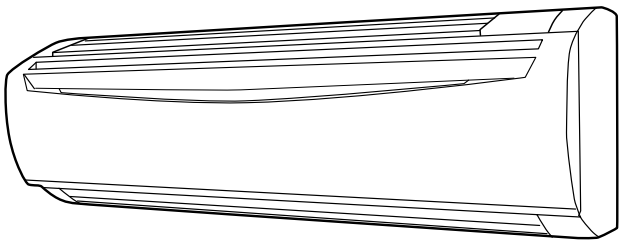
Refer to Commonwealth, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the installation, maintenance and/or service of this product.

English

中文

INSTALLATION MANUAL

For authorized service personnel only.



Contents

PART NO. 9373370062-03

1. SAFETY PRECAUTIONS

- Be sure to read this Manual thoroughly before installation.
- The warnings and precautions indicated in this Manual contain important information pertaining to your safety. Be sure to observe them.
- Hand this Manual, together with the Operating Manual, to the customer. Request the customer to keep them on hand for future use, such as for relocating or repairing the unit.

⚠ WARNING	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.

- Request your dealer or a professional installer to install the indoor unit in accordance with this Installation Manual. An improperly installed unit can cause serious accidents such as water leakage, electric shock, or fire. If the indoor unit is installed in disregard of the instructions in the Installation Manual, it will void the manufacturer's warranty.
- Do not turn ON the power until all work has been completed. Turning ON the power before the work is completed can cause serious accidents such as electric shock or fire.
- If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.
- Installation work must be performed in accordance with national wiring standards by authorized personnel only.
- Except for EMERGENCY, never turn off main as well as sub breaker of the indoor units during operation. It will cause compressor failure as well as water leakage. First, stop the indoor unit by operating the controller, converter or external input device and then cut the breaker.
  Make sure to operate through the controller, converter or external input device.
  When the breaker is designed, locate it at a place where the users cannot start and stop in the daily work.

⚠ CAUTION	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

2. ABOUT THE UNIT

2.1. Precautions for using R410A refrigerant

⚠ WARNING

- Do not introduce any substance other than the prescribed refrigerant into the refrigeration cycle. If air enters the refrigeration cycle, the pressure in the refrigeration cycle will become abnormally high and cause the piping to rupture.
- If there is a refrigerant leak, make sure that it does not exceed the concentration limit. If a refrigerant leak exceeds the concentration limit, it can lead to accidents such as oxygen starvation.
- Do not touch refrigerant that has leaked from the refrigerant pipe connections or other area. Touching the refrigerant directly can cause frostbite.
- If a refrigerant leak occurs during operation, immediately vacate the premises and thoroughly ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.

2.2. Special tool for R410A

⚠ WARNING

- To install a unit that uses R410A refrigerant, use dedicated tools and piping materials that have been manufactured specifically for R410A use. Because the pressure of R410A refrigerant is approximately 1.6 times higher than the R22, failure to use dedicated piping material or improper installation can cause rupture or injury. Furthermore, it can cause serious accidents such as water leakage, electric shock, or fire.

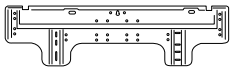
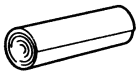
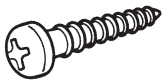
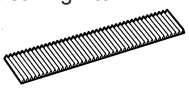
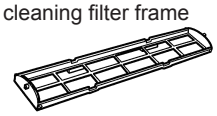
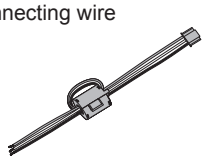
Tool name	Changes
Gauge manifold	The pressure in the refrigerant system is extremely high and cannot be measured with a conventional gauge. To prevent erroneous mixing of other refrigerants, the diameter of each port has been changed. It is recommended to use a gauge manifold with a high pressure display range of –0.1 to 5.3 MPa and a low pressure display range of –0.1 to 3.8 MPa.
Charging hose	To increase pressure resistance, the hose material and base size were changed. (The charging port thread diameter for R410A is 1/2 UNF 20 threads per inch.)
Vacuum pump	A conventional vacuum pump can be used by installing a vacuum pump adapter. Be sure that the pump oil does not backflow into the system. Use one capable for vacuum suction of –100.7 kPa (5 Torr, –755 mmHg).
Gas leakage detector	Special gas leakage detector for R410A refrigerant.

2.3. Accessories

⚠ WARNING

- For installation purposes, be sure to use the parts supplied by the manufacturer or other prescribed parts. The use of non-prescribed parts can cause serious accidents such as the unit falling, water leakage, electric shock, or fire.

- The following installation parts are furnished. Use them as required.
- Keep the Installation Manual in a safe place and do not discard any other accessories until the installation work has been completed.

Name and Shape	Q'ty	Application
Operating Manual 	1	
Installation Manual 	1	(This book)
Wall hook bracket 	1	For indoor unit installation
Cloth tape 	1	For indoor unit installation
Tapping screw (Big) (M4 × 25mm) 	8	For wall hook bracket installation
Air cleaning filter 	2	
Air cleaning filter frame 	2	
Drain hose Insulation 	1	For installing drain hose
Connecting wire 	2	For wired remote controller cable connected
Binder 	2	For power supply and transmission, remote controller cable binding

2.4. Optional parts

The following options are available.
- External output wire (P/N 9379529006)
- External input (voltage) wire (P/N 9368779016)
- External input (no voltage) wire (P/N 9368779009)

3. INSTALLATION WORK

Especially, the installation place is very important for the split type air conditioner because it is very difficult to move from place to place after the first installation.

3.1. Selecting an installation location

Decide the mounting position together with the customer as follows.

⚠ WARNING

- Select installation locations that can properly support the weight of the indoor unit. Install the units securely so that they do not topple or fall.

⚠ CAUTION

Do not install the indoor unit in the following areas:
- Area with high salt content, such as at the seaside. It will deteriorate metal parts, causing the parts to fall or the unit to leak water.
- Area filled with mineral oil or containing a large amount of splashed oil or steam, such as a kitchen. It will deteriorate plastic parts, causing the parts to fall or the unit to leak water.
- Area that generates substances that adversely affect the equipment, such as sulfuric gas, chlorine gas, acid, or alkali. It will cause the copper pipes and brazed joints to corrode, which can cause refrigerant leakage.
- Area that can cause combustible gas to leak, contains suspended carbon fibers or flammable dust, or volatile inflammables such as paint thinner or gasoline. If gas leaks and settles around the unit, it can cause a fire.
- Area where animals may urinate on the unit or ammonia may be generated.

- Do not use the unit for special purposes, such as storing food, raising animals, growing plants, or preserving precision devices or art objects.
  It can degrade the quality of the preserved or stored objects.

- Do not install where there is the danger of combustible gas leakage.

- Do not install the unit near a source of heat, steam, or flammable gas.

- Install the unit where drainage does not cause any trouble.

- Install the indoor unit, outdoor unit, power supply cable, transmission cable, and remote controller cable at least 1 m away from a television or radio receivers. The purpose of this is to prevent TV reception interference or radio noise. (Even if they are installed more than 1 m apart, you could still receive noise under some signal conditions.)

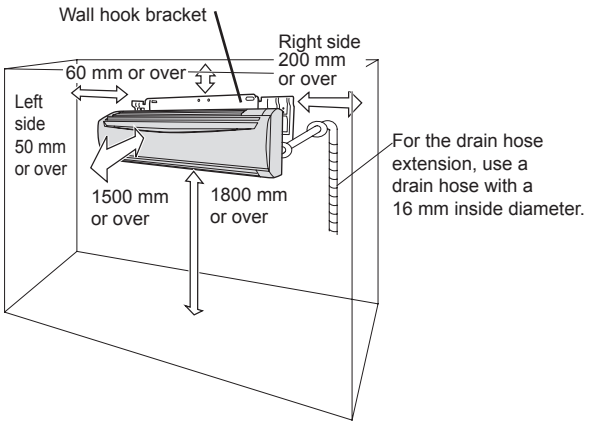
- If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

- Take precautions to prevent the unit from falling.

(1) Install the indoor unit on a place having a sufficient strength so that it withstands against the weight of the indoor unit.
(2) The inlet and outlet ports should not be obstructed; the air should be able to blow all over the room.
(3) Leave the space required to service the air conditioner.
(4) Install the unit where connection to the outdoor unit is easy.
(5) Install the unit where the connection pipe can be easily installed.
(6) Install the unit where the drain pipe can be easily installed.

(7) Install the unit where noise and vibrations are not amplified.
(8) Take servicing, etc., into consideration and leave the spaces. Also install the unit where the filter can be removed.
(9) Do not install the unit where it will be exposed to direct sunlight.

3.2. Installation dimension

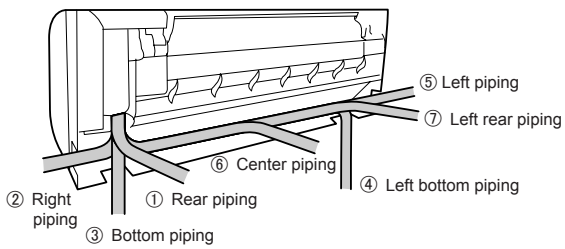


3.3. Installation the unit

⚠ WARNING

- Install the air conditioner in a location which can withstand a load of at least 5 times the weight of the main unit and which will not amplify sound or vibration. If the installation location is not strong enough, the indoor unit may fall and cause injuries.

The piping can be connected in the 7 directions indicated by ①, ②, ③, ④, ⑤, ⑥ and ⑦



3.3.1. Installing the wall hook bracket

⚠ WARNING

- If the wall pipe is not used, the cable interconnecting the indoor and outdoor units may touch metal and cause electric leakage.

[Installation directly to a wall]

Refer to Fig. A for the installation hole dimensions of the wall hook bracket.

Before fastening the wall hook bracket to the wall with the screws, level it by tapping the hook at the center of bracket to the wall with the handle of a screwdriver.

(1) Fasten the wall hook bracket to the wall with 6 or more screws and anchor bolts through the holes near the outer edge of the bracket.
(Do not install the wall hook bracket at only 1 place or at an angle.)
(2) For a concrete wall, embed anchor bolts (10 mm dia.) into the wall at the wall hook bracket holes.
(Allow the anchor bolts to stick out at least 18 mm from the wall. Use 2 bolts for flat concrete wall and 4 bolts for blister concrete wall.)
(3) Install the nuts to the anchor bolts through the wall hook bracket.
(4) Finally tighten the bolts and wood screws after confirming, using the level indicator, that the clamp is horizontal.

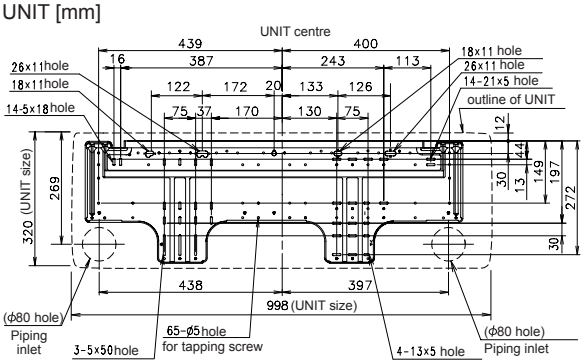
⚠ WARNING

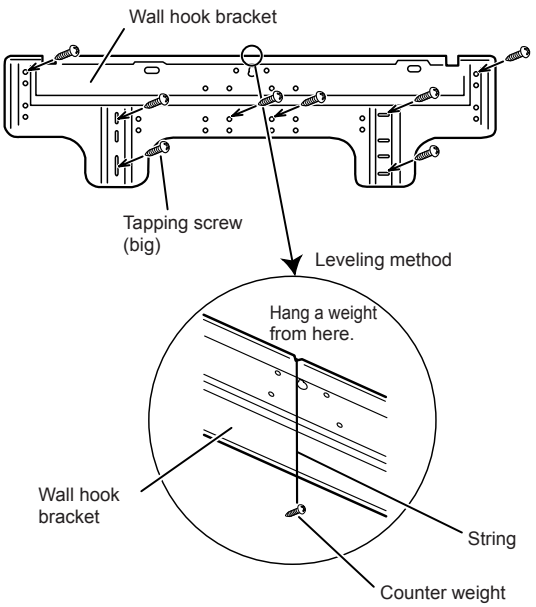
- Install the wall hook bracket so that it is correctly positioned horizontally and vertically. If the wall hook bracket is tilted, water will drip to the floor.

- As the weight of the indoor unit is 15 to 18 kg, it should be installed after properly examining the place where it is intended to be installed. If the place is not strong enough, a plank or girder should be used to make the place sufficiently strong so that the wall can support the weight.

Fig. A

UNIT [mm]





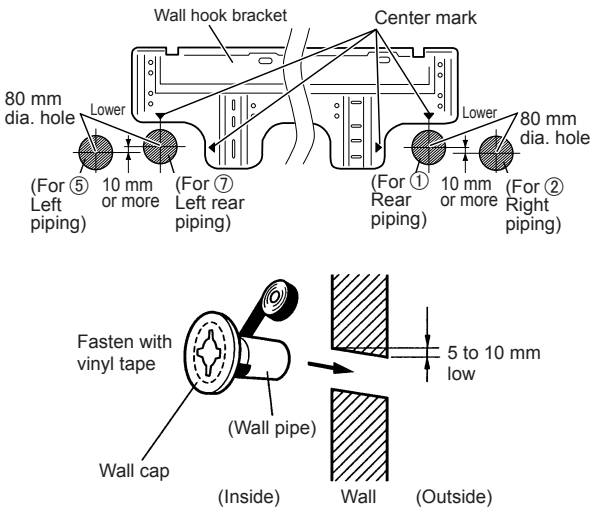
3.3.2. Cutting the hole in the wall for the connecting piping

⚠ WARNING

- If the wall pipe is not used, the cable may touch metal and cause electric leakage.

(1) Cut a 80 mm diameter hole in the wall at the position shown in Fig. B.
(2) For ① Rear piping and ⑦ Left rear piping, cut the hole to a point of intersection of center marks (Fig. B).
For ② Right piping and ⑤ Left piping, cut the hole at least 10 mm below the holes for the rear piping and left rear piping for the drain water to flow freely (Fig. B).
For ⑥ Center piping, cut a hole in the lower, center section of the wall hook bracket.
(Refer to Fig. A. Do not cut a hole outside of the indoor unit outline.)
(3) Cut the hole so that the outside end is lower (5 to 10 mm) than the inside end.
(4) Always align the center of the wall hole. If misaligned, water leakage will occur.
(5) Cut the wall pipe to match the wall thickness, stick it into the wall cap fasten with vinyl tape, and stick the pipe through the hole.(The connection pipe is supplied in the installation set.)
(6) For left piping and right piping and center piping, cut the hole a little lower so that drain water will flow freely.

Fig. B

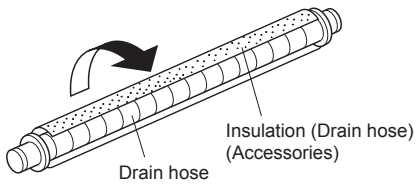


3.3.3. Attach the drain hose

⚠ CAUTION

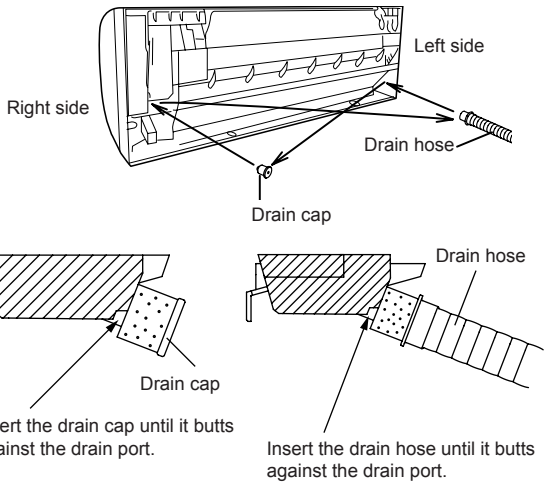
- Insert the drain hose and drain cap into the drain port, making sure that it comes in contact with the back of the drain port, and then mount it. If the drain hose is not connected properly, leaking will occur.

- Wrap the insulation around the drain hose, making sure that there are no gaps.
- Attach the Insulation (Drain hose) to the drain hose.



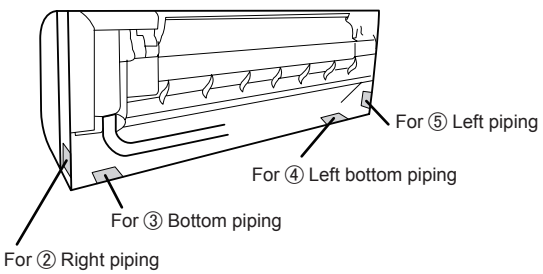
[For ① Rear piping, ② Right piping and ③ Bottom piping]
- The drain hose and drain cap are used as they are.

[For ④ Left bottom piping, ⑤ Left piping and ⑥ Center piping, ⑦ Left rear piping]
- Remove the drain cap and drain hose. Mount the drain cap and drain hose to the drain port on its opposite side.



3.3.4. Cut-out for piping on front cover

[For ② Right piping, ③ Bottom piping, ④ Left bottom piping and ⑤ Left piping]
- Use a metal shears or other cutting tool to cut along the groove in the plastic for the piping that will coming out of the front cover.



4. PIPE INSTALLATION

⚠ CAUTION
• Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant R410A models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.
• While welding the pipes, be sure to blow dry nitrogen gas through them.

4.1. Selecting the pipe material

⚠ CAUTION
• Do not use existing pipes.
• Use pipes that have clean external and internal sides without any contamination which may cause trouble during use, such as sulfur, oxide, dust, cutting waste, oil, or water.
• It is necessary to use seamless copper pipes. Material : Phosphor deoxidized seamless copper pipes It is desirable that the amount of residual oil is less than 40 mg/10 m.
• Do not use copper pipes that have a collapsed, deformed, or discolored portion (especially on the interior surface). Otherwise, the expansion valve or capillary tube may become blocked with contaminants.
• Improper pipe selection will degrade performance. As an air conditioner using R410A incurs pressure higher than when using conventional refrigerant, it is necessary to choose adequate materials.

- Thicknesses of copper pipes used with R410A are as shown in the table.
- Never use copper pipes thinner than those indicated in the table even if they are available on the market.

Thicknesses of Annealed Copper Pipes (R410A)

Pipe outside diameter [mm (in.)]	Thickness [mm]
6.35 (1/4)	0.80
9.52 (3/8)	0.80
12.70 (1/2)	0.80
15.88 (5/8)	1.00
19.05 (3/4)	1.20

4.2. Pipe requirement

⚠ CAUTION
• Refer to the Installation Manual of the outdoor unit for description of the length of connecting pipe or for difference of its elevation.

- Use pipe with water-resistant heat insulation.

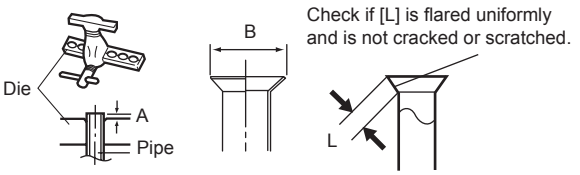
⚠ CAUTION
• Install heat insulation around both the gas and liquid pipes. Failure to do so may cause water leaks. Use heat insulation with heat resistance above 120 °C. (Reverse cycle model only) In addition, if the humidity level at the installation location of the refrigerant piping is expected to exceed 70 %, install heat insulation around the refrigerant piping. If the expected humidity level is 70-80 %, use heat insulation that is 15 mm or thicker and if the expected humidity exceeds 80 %, use heat insulation that is 20 mm or thicker. If heat insulation is used that is not as thick as specified, condensation may form on the surface of the insulation. In addition, use heat insulation with heat conductivity of 0.045 W/(m·K) or less (at 20 °C).

4.3. Flare connection (pipe connection)

4.3.1. Flaring

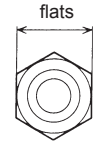
- Use special pipe cutter and flare tool exclusive for R410A.

(1) Cut the connection pipe to the necessary length with a pipe cutter.
(2) Hold the pipe downward so that cuttings will not enter the pipe and remove any burrs.
(3) Insert the flare nut (always use the flare nut attached to the indoor and outdoor units respectively) onto the pipe and perform the flare processing with a flare tool. Use the special R410A flare tool, or the conventional flare tool. Leakage of refrigerant may result if other flare nuts are used.
(4) Protect the pipes by pinching them or with tape to prevent dust, dirt, or water from entering the pipes.



Pipe outside diameter [mm (in.)]	Dimension A [mm]	Dimension $B^{0}_{-0.4}$ [mm]
	Flare tool for R410A, clutch type	
6.35 (1/4)	0 to 0.5	9.1
9.52 (3/8)		13.2
12.70 (1/2)		16.6
15.88 (5/8)		19.7
19.05 (3/4)		24.0

When using conventional flare tools to flare R410A pipes, the dimension A should be approximately 0.5 mm more than indicated in the table (for flaring with R410A flare tools) to achieve the specified flaring. Use a thickness gauge to measure the dimension A.



Pipe outside diameter [mm (in.)]	Width across flats of Flare nut [mm]
6.35 (1/4)	17
9.52 (3/8)	22
12.70 (1/2)	26
15.88 (5/8)	29
19.05 (3/4)	36

4.3.2. Bending pipes

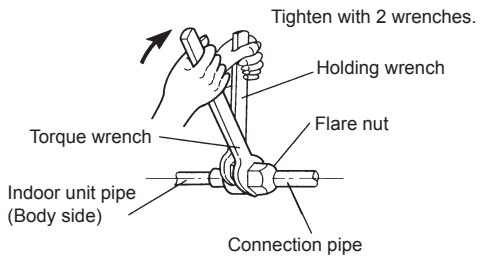
- The pipes are shaped by your hands or pipe bender. Be careful not to collapse them.
- Do not bend the pipes in an angle more than 90°.
- When pipes are repeatedly bend or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than 3 times.

⚠ CAUTION
• To prevent breaking of the pipe, avoid sharp bends.
• If the pipe is bent repeatedly at the same place, it will break.

4.3.3. Pipe connection

When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench.

⚠ CAUTION
• Hold the torque wrench at its grip, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.
• Tighten the flare nuts with a torque wrench using the specified tightening method. Otherwise, the flare nuts could break after a prolonged period, causing refrigerant to leak and generate a hazardous gas if the refrigerant comes into contact with a flame.



⚠ CAUTION
• Be sure to apply the pipe against the port on the indoor unit and the outdoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.
• Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.
• Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

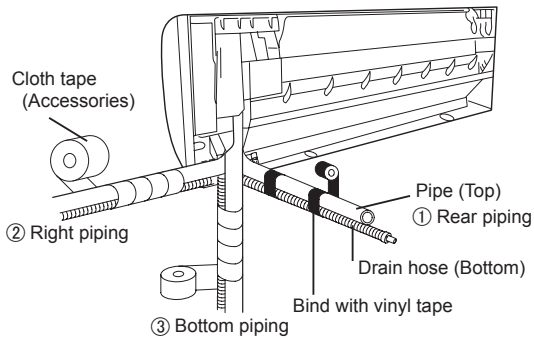
Flare nut [mm (in.)]	Tightening torque [N·m (kgf·cm)]
6.35 (1/4) dia.	16 to 18 (160 to 180)
9.52 (3/8) dia.	32 to 42 (320 to 420)
12.70 (1/2) dia.	49 to 61 (490 to 610)
15.88 (5/8) dia.	63 to 75 (630 to 750)
19.05 (3/4) dia.	90 to 110 (900 to 1,100)

5. FORMING THE DRAIN HOSE AND PIPE

⚠ CAUTION
• Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.
• To prevent breaking of the pipe, avoid sharp bends.
• If the pipe is bent repeatedly at the same place, it will break.

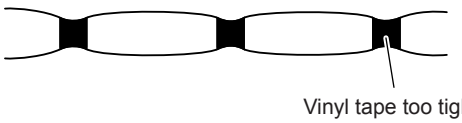
[For ① Rear piping, ② Right piping and ③ Bottom piping]

- Install the indoor unit piping in the direction of the wall hole and bind the drain hose and pipe together with vinyl tape.
- Install the piping so that the drain hose is at the bottom.
- Wrap the pipes of the indoor unit that are visible from the outside with decorative tape.



⚠ CAUTION
• Do not wrap the tape too tightly on drain hose. If the tape is too tight (as shown in the Figure below) the insulation effect will be lost and the moisture from condensation may accumulate.

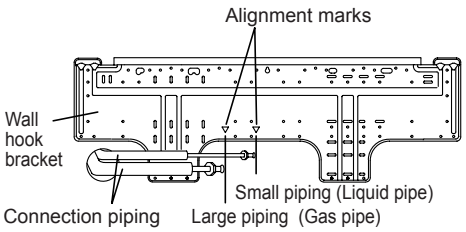
Bad Example



- Perform “6. ELECTRICAL WIRING” before performing this piping.
- Wrap the pipes of the indoor unit that are visible from the outside with cloth tape.
- After passing the indoor piping and drain hose through the wall hole, hang the indoor unit on the hooks at the top of the wall hook bracket.

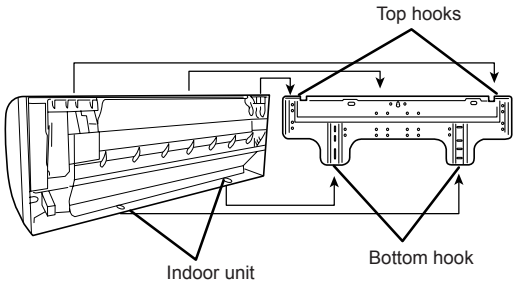
[For ④ Left bottom piping, ⑤ Left piping and ⑥ Center piping, ⑦ Left rear piping]

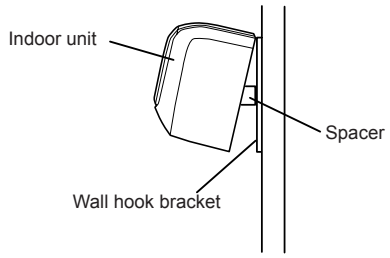
- Preset the end of the pipe.
- For ⑥ Center piping and, ⑦ Left rear piping route the connection pipes through the wall.
- Bend the connection piping to a bend radius not less than 100 mm and position the piping no more than 35 mm from the wall.
- After passing the indoor unit piping and drain hose through the wall hole, hang the indoor unit on the hooks at the top and bottom of the wall hook bracket.



[Hang the indoor unit]

- Hang the indoor unit from the hooks at the top of the wall hook bracket.
- Insert the spacer, etc. between the indoor unit and the wall hook bracket and separate the bottom of the indoor unit from the wall.





6. ELECTRICAL WIRING

⚠ WARNING

- Electrical work must be performed in accordance with this Manual by a person certified under the national or regional regulations. Be sure to use a dedicated circuit for the unit.
  An insufficient power supply circuit or improperly performed electrical work can cause serious accidents such as electric shock or fire.
- Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
- Use the included connection cables and power cables or ones specified by the manufacturer. Improper connections, insufficient insulation, or exceeding the allowable current can cause electric shock or fire.
- For wiring, use the prescribed type of cables, connect them securely, making sure that there are no external forces of the cables applied to the terminal connections. Improperly connected or secured cables can cause serious accidents such as overheating the terminals, electric shock, or fire.
- Do not modify the power cables, use extension cables, or use any branches in the wiring. Improper connections, insufficient insulation, or exceeding the allowable current can cause electric shock or fire.
- Match the terminal board numbers and connection cable colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.
- Securely connect the connection cables to the terminal board. In addition, secure the cables with wiring holders. Improper connections, either in the wiring or at the ends of the wiring, can cause a malfunction, electric shock, or fire.
- Always fasten the outside covering of the connection cable with the cable clamp. (If the insulator is chafed, electric leakage may occur.)
- Securely install the electrical box cover on the unit.
  An improperly installed electrical box cover can cause serious accidents such as electric shock or fire through exposure to dust or water.
- Install sleeves into any holes made in the walls for wiring. Otherwise, a short circuit could result.
- Install a ground leakage breaker. In addition, install the ground leakage breaker so that the entire AC main power supply is cut off at the same time. Otherwise, electric shock or fire could result.
- Always connect the ground cable.
  Improper grounding work can cause electric shocks.
- Install the remote controller cables so as not to be direct touched with your hand.
- Perform wiring work in accordance with standards so that the air conditioner can be operated safely and positively.
- Connect the connection cable firmly to the terminal board. Imperfect installation may cause a fire.

⚠ CAUTION

- Ground the unit.
  Do not connect the ground cable to a gas pipe, water pipe, lightning rod, or a telephone ground cable.
  Improper grounding may cause electric shock.
- Do not connect power supply cable to the transmission or remote controller terminals, as this will damage the product.
- Never bundle the power supply cable and transmission cable, remote controller cable together.
  Separate these cable by 50 mm or more.
  Bundling these cables together will cause miss operation or breakdown.
- When handling PCB, static electricity charged in the body may cause malfunction of the PCB. Follow the cautions below:
  - Establish a ground for the indoor and outdoor units and peripheral devices.
  - Cut power (breaker) off.
  - Touch metal part of the indoor and outdoor units for more than 10 seconds to discharge static electricity charged in the body.
  - Do not touch terminals of parts and patterns implemented on PCB.

6.1. Electrical requirement

Voltage rating	230 V
Operating range	198 - 264 V

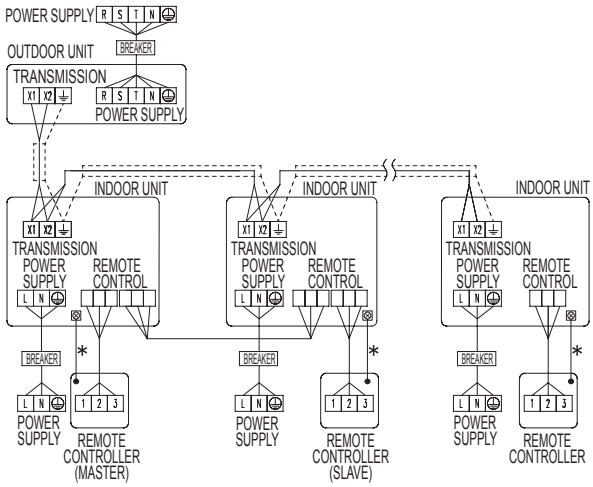
	Recommended cable size (mm^2)	Cable type	Remark
Power supply cable	2.5	Type245 IEC57 or equivalent	1ø 50 Hz 198 - 264 V 2 Cable + ground
Transmission cable	0.33	LONWORKS compatible cable	22 AWG LEVEL 4 (NEMA) non-polar 2 core, twisted pair solid core diameter 0.65 mm
Remote controller cable	0.33	Sheathed PVC cable*	Polar 3 core Twisted pair

*: Use shielded cable in accordance with local rules for remote controller cable.

Fuse capacity (A)	Breaker for leakage current
15	30 mA 0.1 sec. or less

6.2. Wiring method

(EXAMPLE)

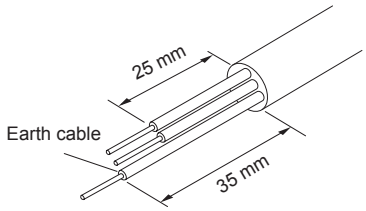


* Ground the remote controller if it has a ground wire.

6.3. Unit wiring

• Before attaching the cable to terminal block.

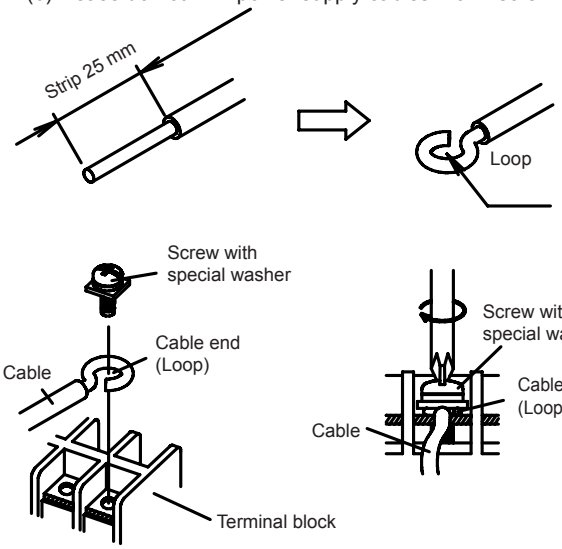
6.3.1. Power supply cable



Power supply cable

A. For solid core wiring

(1) To connect the electrical terminal, follow the below diagram and connect after looping it around the end of the cable.
(2) Use the specified cables, connect them securely, and fasten them so that there is no stress placed on the terminals.
(3) Use an appropriate screwdriver to tighten the terminal screws. Do not use a screwdriver that is too small, otherwise, the screw heads may be damaged and prevent the screws from being properly tightened.
(4) Do not tighten the terminal screws too much, otherwise, the screws may break.
(5) See the table for the terminal screw tightening torques.
(6) Please do not fix 2 power supply cables with 1 screw.



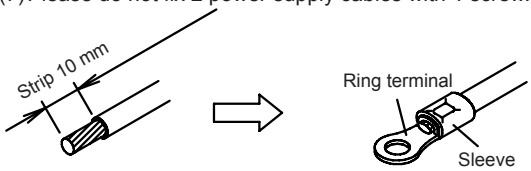
⚠ WARNING

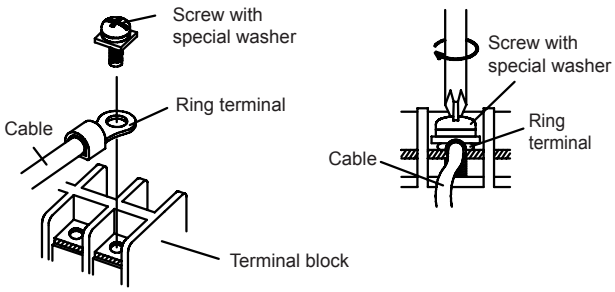
• When using solid core cables, do not use the attached ring terminal. If you use the solid core cables with the ring terminal, the ring terminal's pressure bonding may malfunction and cause the cables to abnormally heat up.

B. For strand wiring

(1) Use ring terminals with insulating sleeves as shown in the figure below to connect to the terminal block.
(2) Securely clamp the ring terminals to the cables using an appropriate tool so that the cables do not come loose.
(3) Use the specified cables, connect them securely, and fasten them so that there is no stress placed on the terminals.

(4) Use an appropriate screwdriver to tighten the terminal screws.
Do not use a screwdriver that is too small, otherwise, the screw heads may be damaged and prevent the screws from being properly tightened.
(5) Do not tighten the terminal screws too much, otherwise, the screws may break.
(6) See the table for the terminal screw tightening torques.
(7) Please do not fix 2 power supply cables with 1 screw.



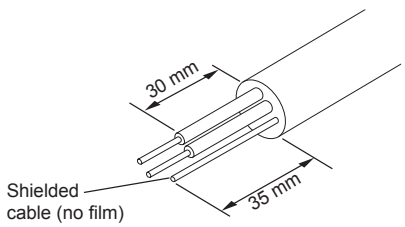


⚠ WARNING

- Use ring terminals and tighten the terminal screws to the specified torques, otherwise, abnormal overheating may be produced and possibly cause heavy damage inside the unit.

Terminal number	Tightening torque
M4 screw (Power supply/L, N, GND)	1.2 to 1.8 N·m (12 to 18 kgf·cm)

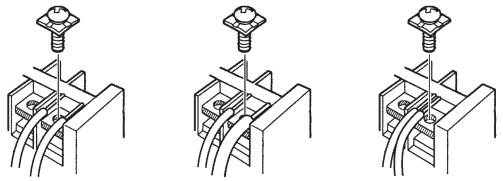
6.3.2. Transmission cable



Transmission cable

- Connect transmission cables as shown in Fig. B.
- When the 2 cables are attached.

Fig. B



⚠ WARNING

- Tighten the terminal screws to the specified torques, otherwise, abnormal overheating may be produced and possibly cause heavy damage inside the unit.

Terminal number	Tightening torque
M3 screw (Transmission/X1, X2)	0.5 to 0.6 N·m (5 to 6 kgf·cm)

⚠ CAUTION

- To peel the film from the lead cable, use a dedicated tool that will not damage the conductor cable.
- When installing a screw on the terminal block, do not cut the cable by overtightening the screw. On the other hand, an undertightened screw can cause faulty contact, which will lead to a communication failure.

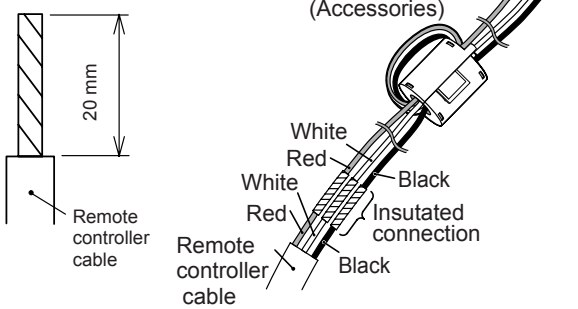
- Remove it with the following sequence in case of the state with the grille.

6.3.3. Remote controller cable

- Remote controller cable modification.

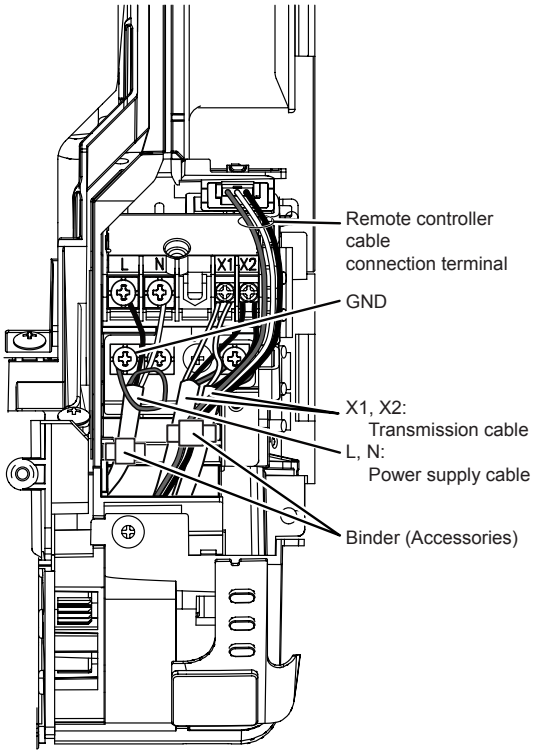
(1) Use a tool to cut off the terminal on the end of the remote controller cable, and then remove the insulation from the cut end of the cable.

(2) Connect the remote controller cable with connecting wire with solder.
Important: Be sure to insulate the connection between the cables.



6.4. Wiring

• Connect the end of the connection cable fully into the terminal block.

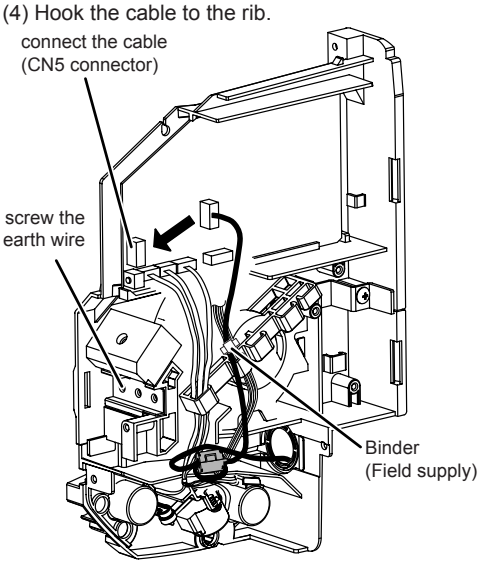


•In case of connecting the second remote controller line.

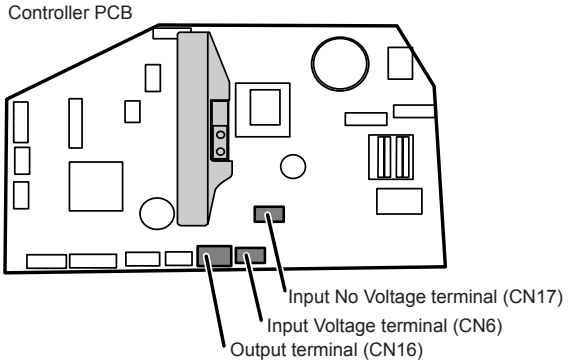
Please refer to the 7. FIELD SETTING for how to open the grill, the front panel and the control box cover.

• Connecting cable to control board connector (CN5)

(1) Connect the remote controller cable with connecting wire as same as the first remote controller cable with solder.
(2) Pass the cable from the hole in the back of indoor unit.
(3) Connect the cable to the control board connector.
(4) Hook the cable to the rib.



6.5. External input and external output (Optional parts)



(1) External input terminals

• Indoor unit can be Start/Stop or Emergency stop, Forced stop by using indoor unit PCB CN6 or CN17.

Wiring methods and specifications

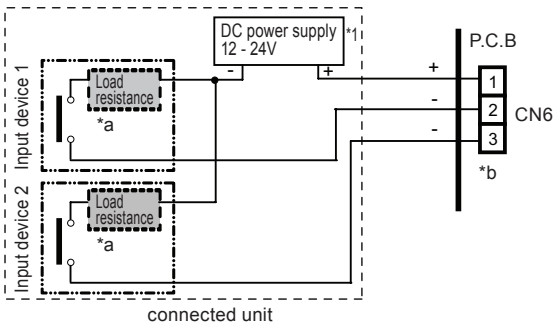
• A twisted pair cable (22AWG) should be used. Maximum length of cable is 150 m.
* Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
• The wire connection should be separate from the power cable line.

• Input selection

Use either one of these types of terminal according to the application. (Both types of terminals cannot be used simultaneously.)

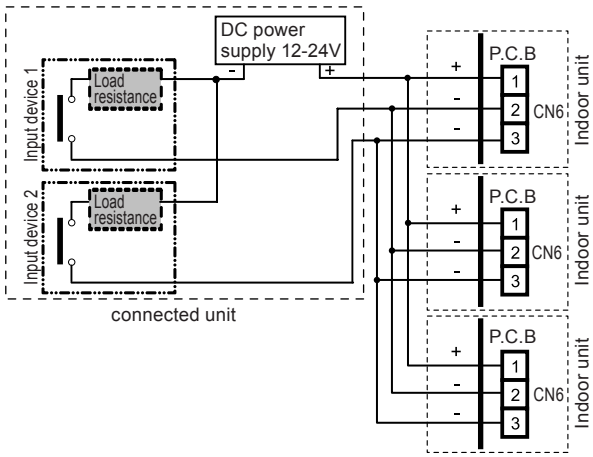
• Voltage terminal ([CN6])

When a power supply must be provided at the input device you want to connect, use the voltage terminal ([CN6]).

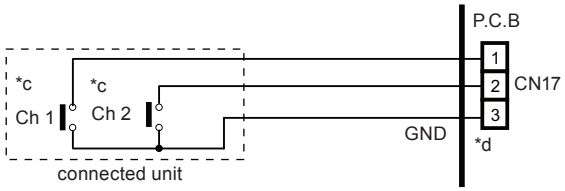


*1 Make the power supply DC12 to 24V. Select a power supply capacity with an ample surplus for the connected load.
Do not impress a voltage exceeding 24V across pins 1-2, and 1-3.
*a The allowable current is DC5~10mA. (Recommended: DC5mA)
Provide a load resistance such that the current becomes DC10mA or less.
Select very low current use contacts (usable at DC12V, DC1mA or less).
*b The polarity is [+] for pin 1 and [-] for pin 2 and 3.
Connect correctly.

When connected to voltage terminals of multiple indoor units with a connected unit, be sure to make a branch outside the indoor unit using a pull box, etc. as shown on below example.

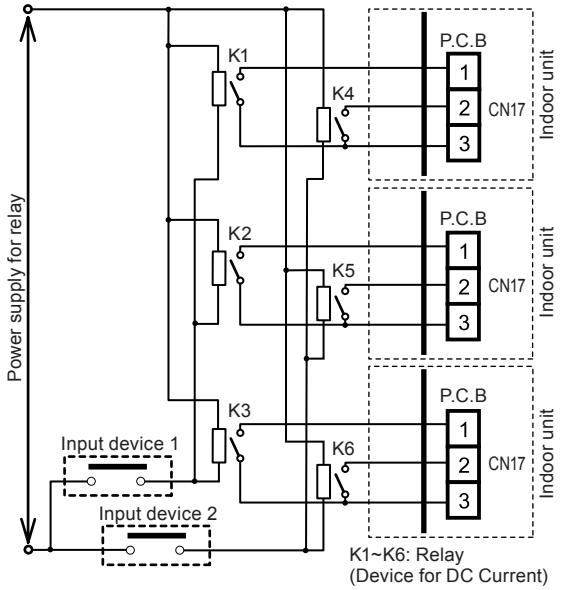


• No voltage terminal ([CN17])
When a power supply is unnecessary at the input device you want to connect, use the no voltage terminal ([CN17]).



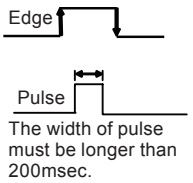
*c Select very low current use contacts (usable at DC12V, DC1mA or less).
*d The wiring is different from voltage terminals. Be sufficiently careful when wiring.

When connected to no voltage terminals of multiple indoor units with a connected unit, insulate each indoor unit with relay, etc. as shown on below example.
When connected to multiple indoor units directly, it will cause breakdown.



Operation behavior

• Input signal type
The input signal type can be selected. It is switched by Dip-sw on the indoor unit PCB.



The width of pulse must be longer than 200msec.

Dip-sw [Set 2-2]	Input signal type
OFF	Edge
ON	Pulse

• When function setting is “Start/Stop” mode
In the case of “Edge” input

Connector	Input signal	Command
Ch1 of CN6 or CN17	OFF → ON	Operation
	ON → OFF	Stop

In the case of “Pulse” input

Connector		Input signal	Command
CN6 or CN17	Ch1	OFF → ON	Operation
	Ch2	OFF → ON	Stop

* The last command has priority.
* The indoor units within the same remote controller group operates in the same mode.

• When function setting is “Emergency stop” mode
In the case of “Edge” input

Connector	Input signal	Command
Ch1 of CN6 or CN17	OFF → ON	Emergency stop
	ON → OFF	Normal

In the case of “Pulse” input

Connector		Input signal	Command
CN6 or CN17	Ch1	OFF → ON	Emergency stop
	Ch2	OFF → ON	Normal

* All indoor units of same refrigerant system stops when Emergency stop operates.

• When function setting is “Forced stop” mode
In the case of “Edge” input

Connector	Input signal	Command
Ch1 of CN6 or CN17	OFF → ON	Forced stop
	ON → OFF	Normal

In the case of “Pulse” input

Connector		Input signal	Command
CN6 or CN17	Ch1	OFF → ON	Forced stop
	Ch2	OFF → ON	Normal

* When the forced stop is triggered, indoor unit stops and Start/Stop operation by a remote controller is restricted.

⚠ CAUTION

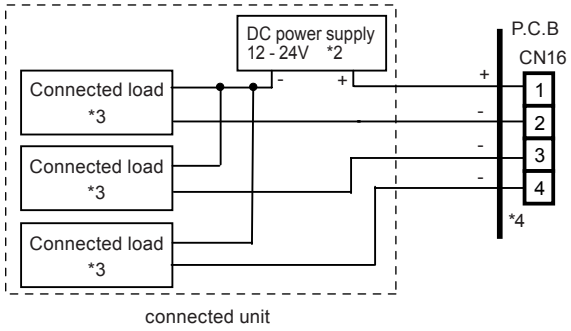
• When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

• Selection method of functions
“Start/Stop” mode or “Emergency stop” mode, “Forced stop” mode can be selected with function setting of indoor unit.

(2) External output terminals

• When picking up output signals for operating status, abnormal conditions or indoor unit status.

Wiring methods and specifications



*2 Provide a DC12 to 24V power supply. Select a power supply capacity with an ample surplus for the connected load.

*3 The allowable current is 30mA or less. Provide a load resistance such that the current becomes 30mA or less.

*4 Polarity is [+] for pin 1 and [-] for pins 2-4. Connect correctly. Do not impress a voltage exceeding 24V across pins 1-2, 1-3, and 1-4.

Operation behavior

Connector		Output voltage	Status
CN16	External output1 Pins 1-2	0V	Stop
		DC 12-24 V *2	Operation
	External output2 Pins 1-3	0V	Normal
		DC 12-24 V *2	Error
	External output3 Pins 1-4	0V	Indoor unit fan stop
		DC 12-24 V *2	Indoor unit fan operation

A twisted pair cable (22AWG) should be used. Maximum length of cable is 150 m.

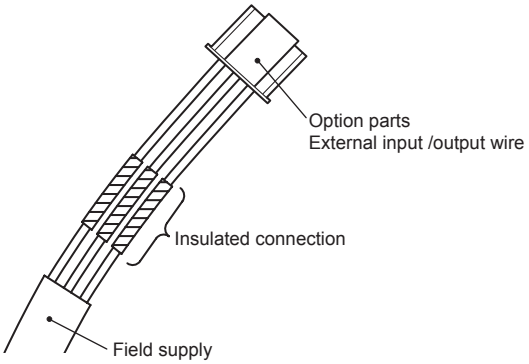
* Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.

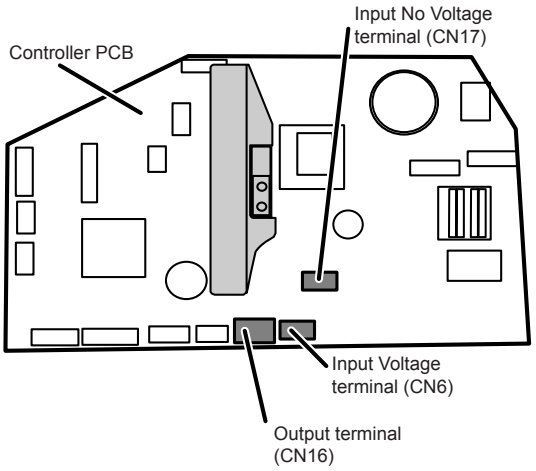
(3) Connection methods

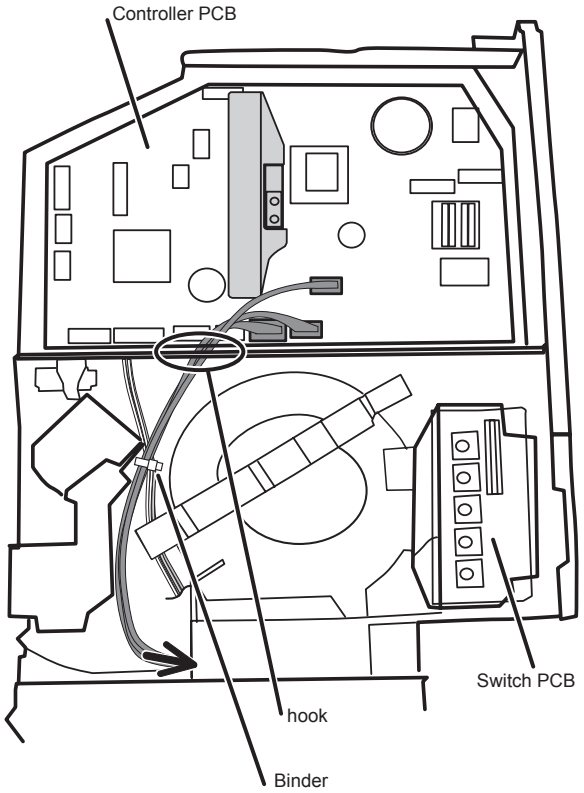
• Wire modification

Use a tool to cut off the terminal on the end of the wire, and then remove the insulation from the cut end of the wire. Connect the wire with connecting wire with solder.

Important: Be sure to insulate the connection between the wires.







7. FIELD SETTING

There are 3 methods for address setting by FIELD SETTING as follows.
Please set by either of the methods.
Each setting method is described in below (1) to (3).

(1) IU AD, REF AD SW settings ... This section (7.1.Setting the address)
(2) Remote controller settings .... Refer to the wired or wireless remote controller manual for detailed setting information. (Set IU AD, REF AD SW to 0)
(3) Automatic address settings ... Refer to the outdoor unit manual for detailed setting information. (Set IU AD, REF AD SW to 0)

7.1. Setting the address

Manual address setting method
- The indoor unit address and the refrigerant circuit address can also be set up through the wireless remote controller

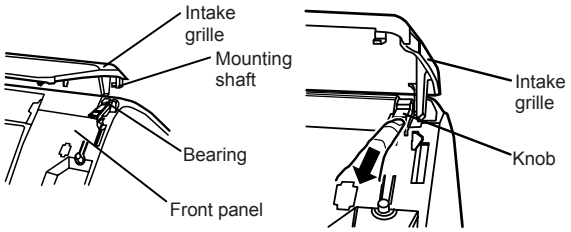
⚠ CAUTION

- Be sure to turn OFF the power before performing the field setting.

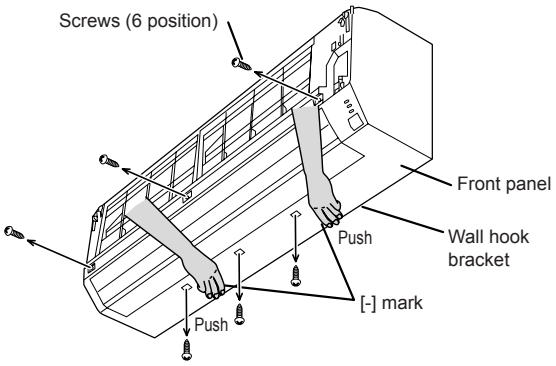
- Please set it according to the following procedures when setting manually.

[Front panel remove and installation]

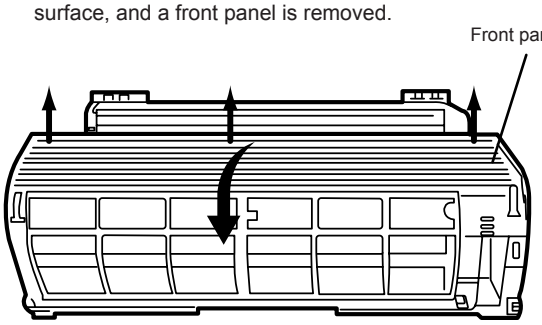
• Intake grill remove.
(1) Open the intake grille.
(2) Pull down the knob.
(3) Lift the intake grille upward and until the beating at the top of the intake grille is removed.



• Front panel removal.
(1) Remove intake grille (Refer to the item of intake grille removal.)
(2) Remove 6 screws.
(3) Push the [-] part on the lower part of the body upwards with your thumb of both hands to detach the 2 hooks, and then pull the front panel forward to remove it.

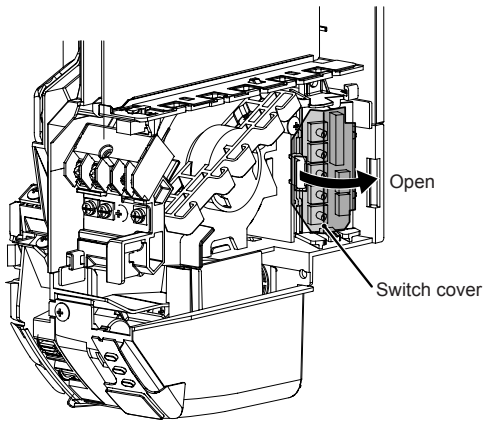


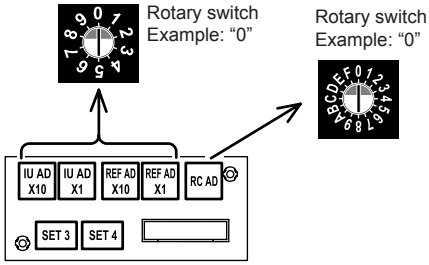
(4) The front panel is pulled to the front, raising the upper surface, and a front panel is removed.



- Piping work can be made easier by laying out, shaping, and temporarily fastening the connection pipe and connection cable beforehand.

- Open the control box cover.
- Open the switch cover.





⚠ CAUTION

- Use an insulated screwdriver to set the dip switches.
- Be careful not to make mistakes for switch settings.

(1) Indoor unit address
Rotary switch (IU AD × 1)....Factory setting “0”
Rotary switch (IU AD × 10)....Factory setting “0”
When connecting multiple indoor units to 1 refrigerant system, set the address at IU AD SW as shown in the Table A

(2) Refrigerant circuit address
Rotary switch (REF AD × 1)....Factory setting “0”
Rotary switch (REF AD × 10)....Factory setting “0”
In the case of multiple refrigerant systems, set REF AD SW as shown in the Table A for each refrigerant system. Set to the same refrigerant circuit address as the outdoor unit.

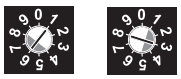
Setting	Setting range	Type of switch
Indoor unit address	0–63	Setting example 2  IU AD × 10 IU AD × 1
Refrigerant circuit address	0–99	Setting example 63  REF AD × 10 REF AD × 1

Table A

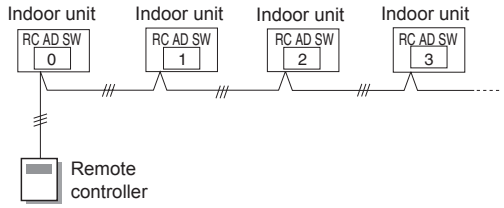
Address	Rotary Switch Setting		Address	Rotary Switch Setting	
Refrigerant circuit	REF AD SW		Indoor unit	IU AD SW	
	× 10	× 1		× 10	× 1
0	0	0	0	0	0
1	0	1	1	0	1
2	0	2	2	0	2
3	0	3	3	0	3
4	0	4	4	0	4
5	0	5	5	0	5
6	0	6	6	0	6
7	0	7	7	0	7
8	0	8	8	0	8
9	0	9	9	0	9
10	1	0	10	1	0
11	1	1	11	1	1
12	1	2	12	1	2
⋮	⋮	⋮	⋮	⋮	⋮
99	9	9	63	6	3

Do not set the indoor unit address (IU AD SW) at 64 to 99. It may result failure.

(3) Remote controller address
Rotary switch (RC AD SW)....Factory setting “0”
When connecting multiple indoor units to 1 standard wired remote controller, set the address at RC AD SW in sequence from 0.

Setting	Setting range	Type of switch
Remote controller address	0–15	Setting example 0  RC AD

Example If 4 indoor units are connected.



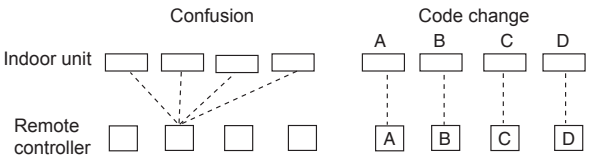
RC AD SW	0	1	2	3	4	5	6	7
Address	0	1	2	3	4	5	6	7

RC AD SW	8	9	A	B	C	D	E	F
Address	8	9	10	11	12	13	14	15

7.2. Custom code setting

Selecting the custom code prevents the indoor unit mix-up. (Fig. B)
(Up to 4 codes can be set.)
Perform the setting for both the indoor unit and the remote controller.

Fig. B



• Custom code setting for indoor unit
Set the DIP SW SET 3 SW1, 2, referring to the Table B.

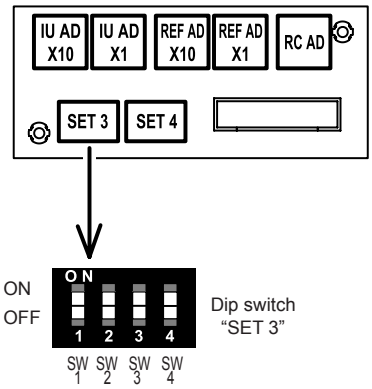


Table B

	Custom code			
	A (Factory setting)	**B**	**C**	**D**
DIP SW SET 3 SW1	OFF	ON	OFF	ON
DIP SW SET 3 SW2	OFF	OFF	ON	ON

7.3. Function setting

⚠ WARNING

- Please make this setting after completing all construction works.

- FUNCTION SETTING can be performed with the wired or wireless remote controller.
  (The remote controller is optional equipment)
- Refer to the wired or wireless remote controller manual for detailed setting information. (Set IU AD, REF AD SW to 0)
- Refer to "7.1. Setting the address" for indoor unit address and refrigerant circuit address settings.
- Turn the power of the indoor unit ON before starting the setting.

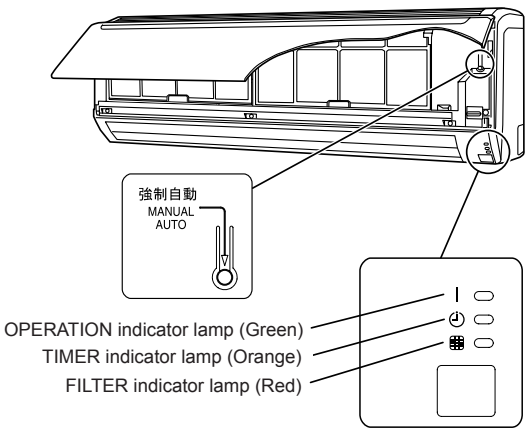
  * Turning on the power indoor units initializes EEV, so make sure the piping air tight test and vacuuming have been conducted before turning on the power.
  * Also check again to make sure no wiring mistakes were made before turning on the power.

Function details

Function	Function number	Setting number		Default	Details
Filter indicator interval	11	00	Default	○	Adjust the filter cleaning interval notification. If the notification is too early, change to setting 01. If the notification is too late, change to setting 02.
		01	Longer		
		02	Shorter		
Filter indicator action	13	00	Enable	○	Enable or disable the filter indicator. Setting 02 is for use with a central remote controller.
		01	Disable		
		02	Display only on central remote controller		
Horizontal swing airflow direction	24	00	Default	○	Adjust the horizontal swing airflow direction. (For horizontal swing equipped models)
		01	Left half		
		02	Right half		
Cool air temperature trigger	30	00	Default	○	Adjust the cool air trigger temperature. To lower the trigger temperature, use setting 01. To raise the trigger temperature, use setting 02.
		01	Adjust (1)		
		02	Adjust (2)		
Hot air temperature trigger	31	00	Default	○	Adjust the hot air trigger temperature. To lower the trigger temperature by 6 degrees C, use setting 01. To lower the trigger temperature by 4 degrees C, use setting 02. To raise the trigger temperature, use setting 03.
		01	Adjust (1)		
		02	Adjust (2)		
		03	Adjust (3)		
Auto restart	40	00	Enable		Enable or disable automatic system restart after a power outage. * Auto restart is an emergency function such as for power failure etc. Do not start and stop the indoor unit by this function in normal operation. Be sure to operate by the control unit, converter or external input device.
		01	Disable	○	
External control	46	00	Start/Stop	○	Allow an external controller to start or stop the system, or to perform an emergency stop. * If an emergency stop is performed from an external controller, all refrigerant systems will be disabled. * If forced stop is set, indoor unit stops by the input to the external input terminals, and Start/Stop by a remote controller is restricted.
		01	Emergency stop		
		02	Forced Stop		

Error report target	47	00	All	○	Change the target for reporting errors. Errors can either be reported in all locations, or only on the central remote controller.
		01	Display only on central remote controller		

7.3.1. Button name and function



7.3.2. Checking the function settings

- Press and hold the “MANUAL AUTO” button on the indoor unit for 3 seconds to check the function settings. It is necessary to disconnect the power in order to return to normal operation mode.

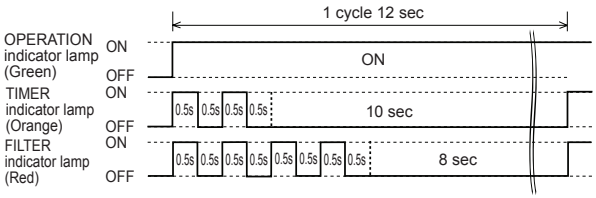
(1) Indoor unit and refrigerant address indication

Indication pattern

Indicator name	Indication pattern	
	Indoor unit address	Refrigerant address
OPERATION indicator lamp (Green)	ON	Flash (1.0s ON/1.0s OFF)
TIMER indicator lamp (Orange)	Address: tens place (0.5s ON/0.5s OFF)	
FILTER indicator lamp (Red)	Address: ones place (0.5s ON/0.5s OFF)	

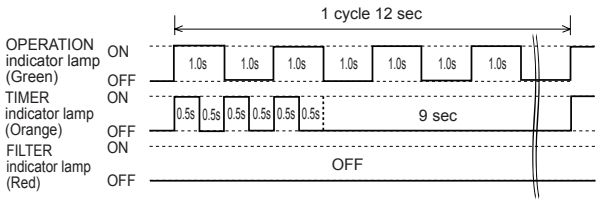
- Indoor unit address example

(Example) ADDRESS : 24



- Refrigerant address example

(Example) ADDRESS : 30



- Setting details

Function number	Item	Setting number
01	Indoor unit address	00~63
02	Refrigeration address	00~99

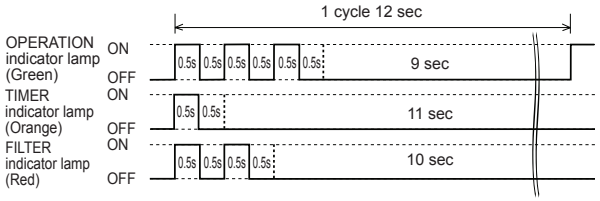
For use with a remote controller, set all rotary switches to 0, and refer to “7.1. Setting the address” for details.
All switches are set to 0 at the factory.

(2) Others

Indication pattern

Indicator Name	Indication pattern
OPERATION indicator lamp (Green)	Function number; tens place (0.5s ON/0.5s OFF)
TIMER indicator lamp (Orange)	Function number; ones place (0.5s ON/0.5s OFF)
FILTER indicator lamp (Red)	Setting number: (0 - 9) (0.5s ON/0.5s OFF)

(Example) Function : 31, Setting number : 2



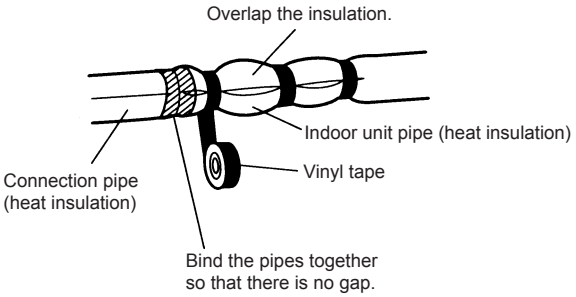
8. FINISHING

Before performing this section, perform a sealing test.
(Refer to the installation Manual for the outdoor unit.)

8.1. Connection pipe, cable and drain hose

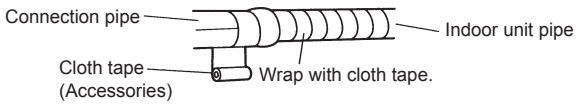
Insulate the drain hose, if necessary, to prevent it from freezing.
(1) Insulate between pipes.
- For ① Rear, ② Right and ③ Bottom piping, overlap the connection pipe heat insulation and indoor unit pipe heat insulation and bind them with vinyl tape so that there is no gap.
- For ④ Left bottom piping, ⑤ Left piping, ⑥ Center piping and ⑦ Left rear piping, butt the connection pipe heat insulation and indoor unit pipe heat insulation together and bind them with vinyl tape so that there is no gap.

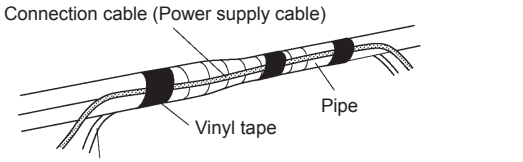
(① Rear, ② Right and ③ Bottom piping)



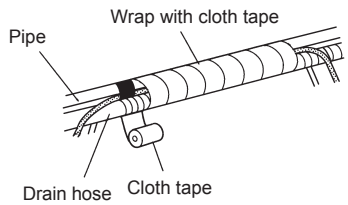
(For ④ Left bottom piping, ⑤ Left piping, ⑥ Center piping and ⑦ Left rear piping)

- Wrap the area which accommodates the rear piping housing section with cloth tape.
- Bind the connection cable with vinyl tape.
- Bundle the piping and drain hose together by wrapping them with cloth tape over the range within which they fit into the rear piping housing section.

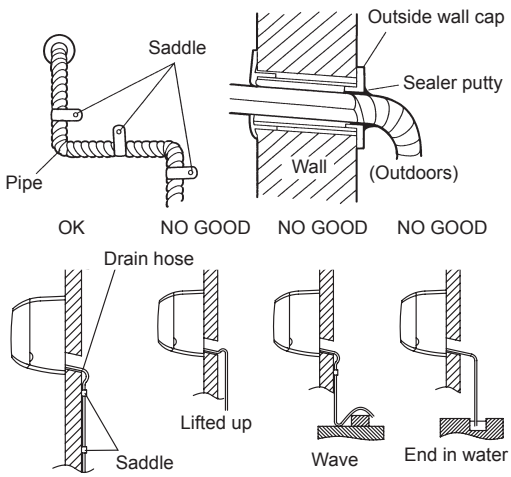




Connection cable (Transmission and Remote controller cable)



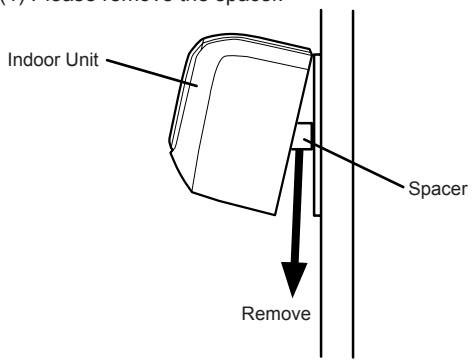
(2) Temporarily fasten the connection cable along the connection pipe with vinyl tape.
(3) Fasten the connection pipe to the outside wall with a saddle, etc.
(4) Fill the gap between the outside wall pipe hole and the pipe with sealer so that rain water and wind cannot blow in.
(5) Fasten the drain hose to the outside wall, etc.



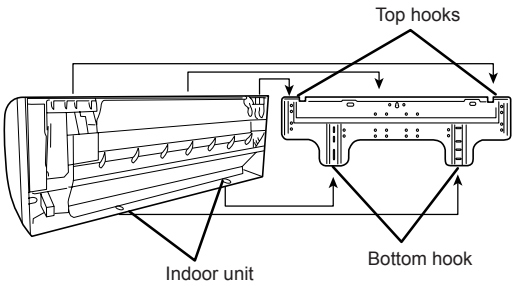
8.2. Installing front cover

• Fix the indoor unit

(1) Please remove the spacer.



(2) Hook the fittings of the indoor unit to the 2 bottom hooks while lowering the unit and pushing it against the wall.

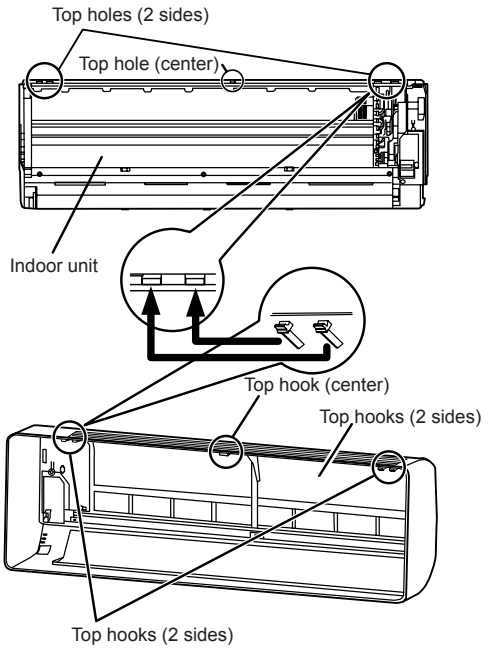


• Front panel installation.

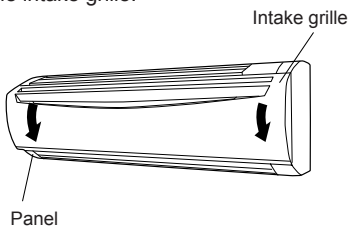
(1) Firstly, fit the lower part of the front panel, and insert top and bottom hooks. (Top center and both sides)
(2) 6 screws is attached.
(3) The intake grille is attached.

• Intake grill installation.

(1) The fixing axle of the intake grille is installed on the front panel.
(2) Lay down the intake grille.

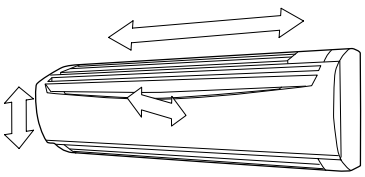


(4) Close the intake grille.

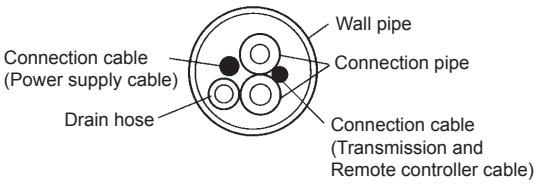


Check that:

- The top and bottom hooks are hooked firmly and the indoor unit does not move to the front and rear or left and right.
- The indoor unit is accurately positioned horizontally and vertically.
- When connected from the left rear, the drain hose is at the bottom left of the wall pipe.



(View from indoor)



9. TEST OPERATION

9.1. Test operation using PCB (Outdoor unit)

- Refer to the Installation Manual for the outdoor unit if the PCB for the outdoor unit is to be used for the test operation.

9.2. Test operation using remote controller

- Refer to the Installation Manual for the remote controller to perform the test operation using the remote controller.
- When the air conditioner is being test run, the OPERATION and TIMER indicator lamp flash slowly at the same time.

10. CHECK LIST

Pay special attention to the check items below when installing the indoor unit(s). After installation is complete, be sure to check the following check items again.

Check items	If not performed correctly	Check box
Has the indoor unit been installed correctly?	Vibration, noise, indoor unit may drop	
Has there been a check for gas leaks (refrigerant pipes)?	No cooling, No heating	
Has heat insulation work been completed?	Water leakage	
Does water drain easily from the indoor units?	Water leakage	
Is the voltage of the power source the same as that indicated on the label on the indoor unit?	No operation, heat or burn damage	
Are the wires and pipes all connected completely?	No operation, heat or burn damage	
Is the indoor unit grounded?	Short circuit	
Is the connection cable the specified thickness?	No operation, heat or burn damage	
Are the inlets and outlets free of any obstacles?	No cooling, No heating	
Does start and stop air conditioner operation by remote controller or external device?	No operation	
After installation is completed, has the proper operation and handling been explained to the user?	———	

11. ERROR CODES

If you use a wired type remote controller, error codes will appear on the remote controller display. If you use a wireless remote controller, the lamp on the photodetector unit will output error codes by way of blinking patterns. See the lamp blinking patterns and error codes in the table below.

Error display			Wired Remote Controller Error CODE	Error contents
OPERATION indicator lamp (green)	TIMER indicator lamp (orange)	FILTER indicator lamp (red)		
● (1)	● (2)	◇	12	Remote controller communication error
● (1)	● (4)	◇	14	Anomalous network communications
● (1)	● (6)	◇	16	Parallel communication error
● (3)	● (1)	◇	31	Power frequency error
● (3)	● (2)	◇	32	Model information error/EEPROM accession error
● (4)	● (1)	◇	41	Room temperature thermistor error
● (4)	● (2)	◇	42	Indoor heat exchanger temperature thermistor error
● (5)	● (1)	◇	51	Indoor fan motor error
● (5)	● (3)	◇	53	Drainage error
● (9)	● (15)	◇	9U	Outdoor unit error

Display mode ● : 0.5s ON / 0.5s OFF
◇ : 0.1s ON / 0.1s OFF
( ) : Number of flashing

Wired Remote Controller Display