VRF SYSTEM
INDOOR UNIT
Duct Type

⚠ CAUTION

R410A
REFRIGERANT

This Air Conditioner contains and operates with refrigerant R410A.

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

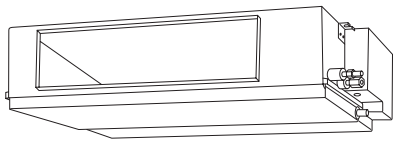
Refer to Commonwealth, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the installation, maintenance and/or service of this product.

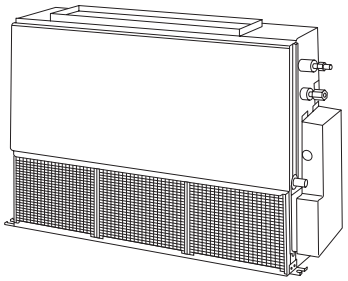
English

中文

INSTALLATION MANUAL

For authorized service personnel only.





Contents

PART NO. 9374342181

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 unit in accordance with this Manual.
  An improperly installed unit can cause serious accidents such as water leakage, electric shock, or fire.
  If the 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 control unit, converter or external input device and then cut the breaker.
  Make sure to operate through the control unit, 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 the 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 leakage, make sure that it does not exceed the concentration limit.
  If a refrigerant leakage exceeds the concentration limit, it can lead to accidents such as oxygen starvation.

⚠ WARNING

- 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 leakage 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 the R410A refrigerant, use dedicated tools and piping materials that have been manufactured specifically for R410A use.
  Because the pressure of the 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.

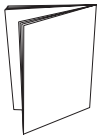
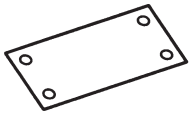
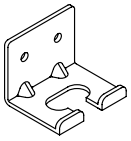
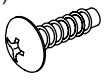
Tool name	Contents of change
Gauge manifold	Pressure is huge and cannot be measured with a conventional gauge. To prevent erroneous mixing of other refrigerants, the diameter of each port has been changed. It is recommended to use a gauge manifold with a high pressure display range –0.1 to 5.3 MPa and a low pressure display range –0.1 to 3.8 MPa.
Charging hose	To increase pressure resistance, the hose material and base size were changed.
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 HFC refrigerant R410A.

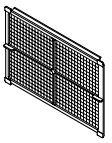
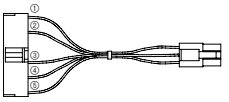
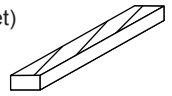
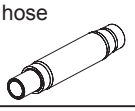
2.3. Accessories

⚠ 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 to fall, 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.

Do not discard any accessories needed for installation until the installation work has been completed.

Name and Shape	Q'ty	Application
Operating Manual 	1	
Installation Manual 	1	(This book)
Installation template 	1	For positioning the indoor unit
Hanger 	4	For suspending the indoor unit
Tapping screw (M4 × 10mm) 	8	For installing the hanger
Special nut A (Large flange) 	4	For suspending the indoor unit from ceiling
Special nut B (Small flange) 	4	For suspending the indoor unit from ceiling For fixing the indoor unit on the floor.
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Large pipe)
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Small pipe)
Binder 	Medium 2	For transmission and remote controller cable binding.
	Large 4	For fixing the coupler heat insulation.

Name and Shape	Q'ty	Application
Filter 	2 (AR7/9)	
	3 (AR12/14/18)	
Wire 	1	Use for static pressure under 25 Pa.
Insulation (Outlet) 	2 (Small)	For outlet flange
	2 (Large)	
Drain hose 	1	For installing drain pipe VP25 (O.D.32, I.D.25)
Hose band 	1	For installing drain hose
Drain hose insulation B 	1	Insulates the drain hose

2.4. Optional parts

The following options are available.

Description	Parts	Application
External output wire	P/N 9368778002	For control output port
External input wire	P/N 9368779009	For control input port
Remote sensor	UTD-RS100	Room temperature sensor
IR receiver unit	UTB-*WB	For the wireless remote controller.
Drain pump unit	UTZ-PX1BBA	

When installing, please refer to the installation manual of each optional part.

3. INSTALLATION WORK

3.1. Selecting an installation location

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.

⚠ WARNING

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

⚠ CAUTION

- Do not install the 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.

• Decide the mounting position with the customer as follows:

(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) A place from where the air can be distributed evenly throughout the room by the unit.

(5) Install the unit where connection to the outdoor unit is easy.

(6) Install the unit where the connection pipe can be easily installed.

(7) Install the unit where the drain pipe can be easily installed.

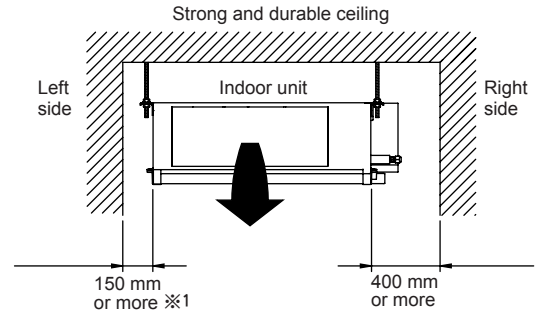
(8) Install the unit where noise and vibrations are not amplified.

(9) Take servicing, etc., into consideration and leave the spaces. Also install the unit where the filter can be removed.

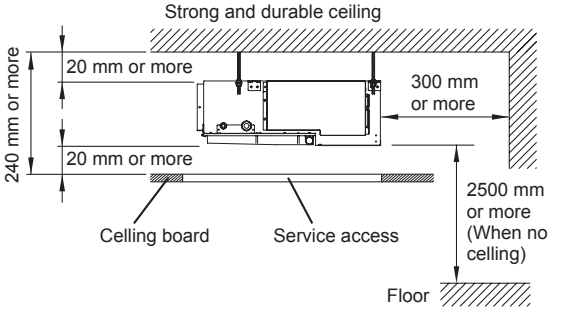
3.2A. Installation dimensions (Ceiling concealed type)

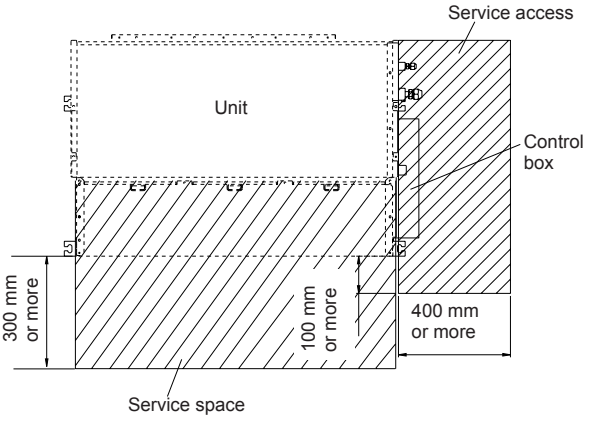
Provide a service access for inspection purposes.
Do not place any wiring or illumination in the service space, as they will impede service.

Installation Dimensions



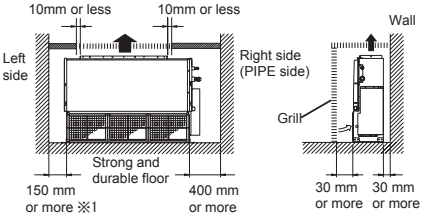
※1 400mm or more when drain from drain pipe

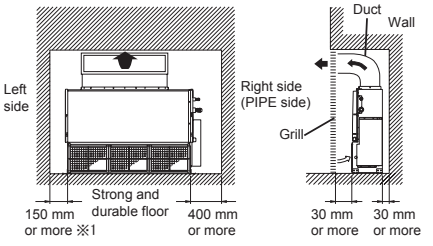




3.2B. Installation dimensions (Floor standing concealed type)

The floor standing concealed type requires a temperature correction setting. Perform this in “7. FIELD SETTING”.





※1 400mm or more when drain from drain pipe

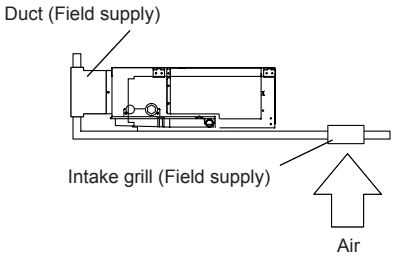
3.3A. Installation the unit (Ceiling concealed type)

⚠ WARNING

- Install the air conditioner in a location which can withstand a load do 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.
- If the job is done with the panel frame only, there is a risk that the unit will come loose. Please take care.

3.3A.1. UNIT INSTALLATION EXAMPLE (CEILING CONCEALED TYPE)

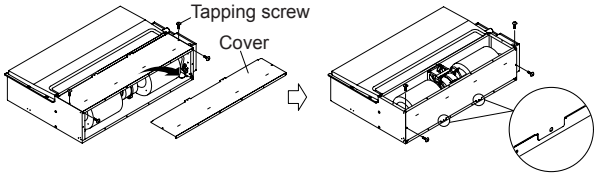
Side Inlet - Side Outlet

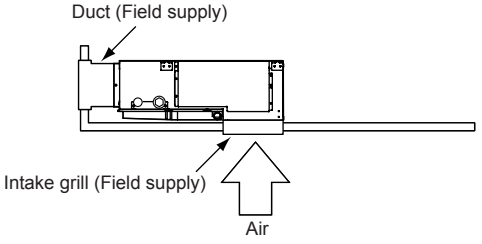


Bottom Inlet - Side Outlet

Replace the cover as follows.

- Remove the 4 tapping screws, and then remove cover.
- Install the cover with the 4 tapping screws as shown in the illustration below.



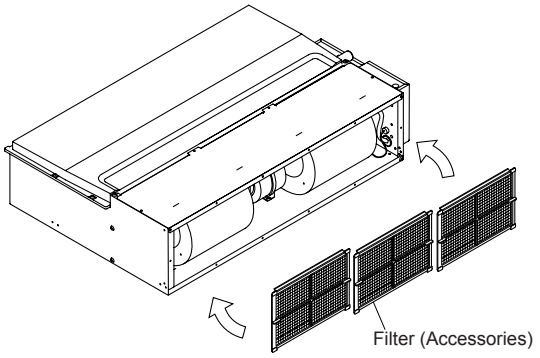


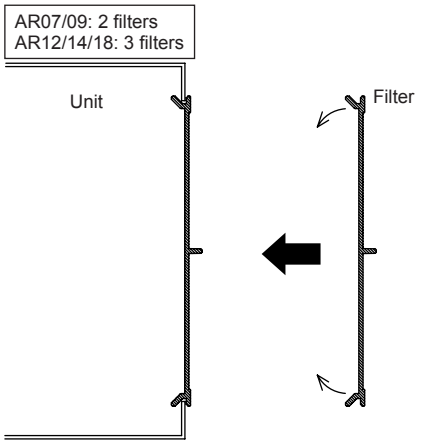
⚠ CAUTION

- To prevent people from touching the parts inside the unit, be sure to install grilles on the inlet and outlet ports. The grilles must be designed in such a way that cannot be removed without tools.
- When connecting the duct to the outlet port of the indoor unit, be sure to insulate the outlet port and the installation screws to prevent water from leaking around the port.
- Set the static pressure outside the unit to 50 Pa or less (the allowable range is between 0 and 50 Pa).

3.3A.2. INSTALL THE FILTERS

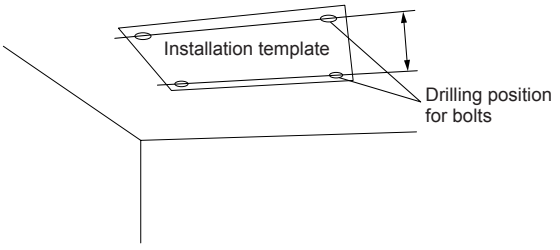
- Install the filters to the unit.

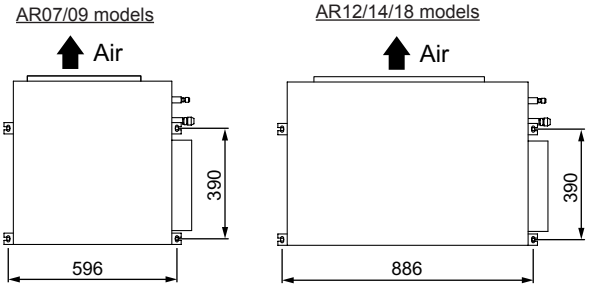




3.3A.3. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS

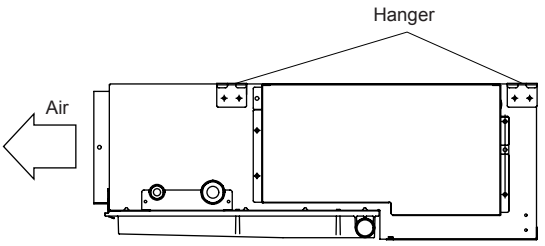
- Using the installation template, drill holes for bolts (4 holes).





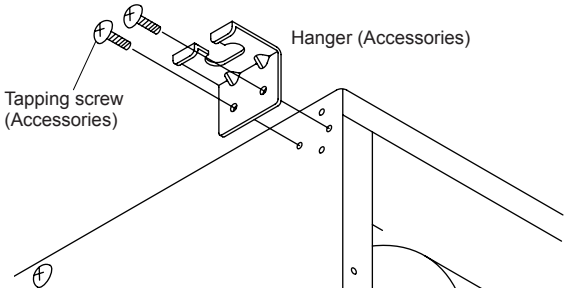
3.3A.4. INSTALLING THE HANGERS

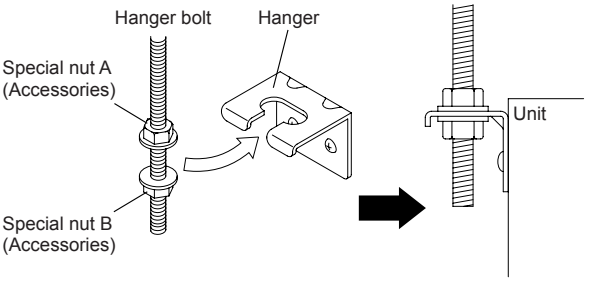
- Fasten the hanging bolts to the ceiling and install special nuts A and B.
- Install the hangers (Accessories) to the unit (4 places).



- Hang the unit.

Pass the hanging bolts through the hangers (4 places).

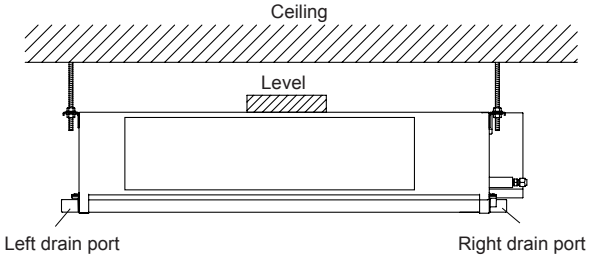




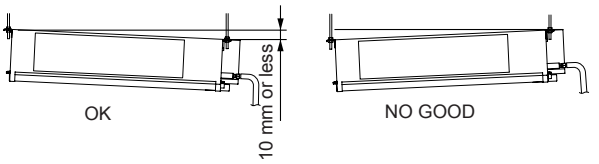
⚠ CAUTION
• Leave a space of 100 mm or more between the inlet port and the ceiling.
• Fasten the unit securely with Special units A and B.

3.3A.5. LEVELING

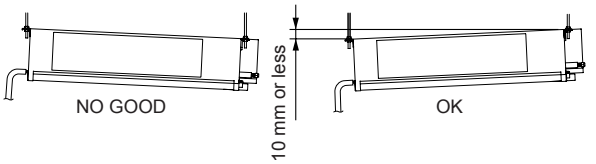
Base horizontal direction leveling on top of the unit.

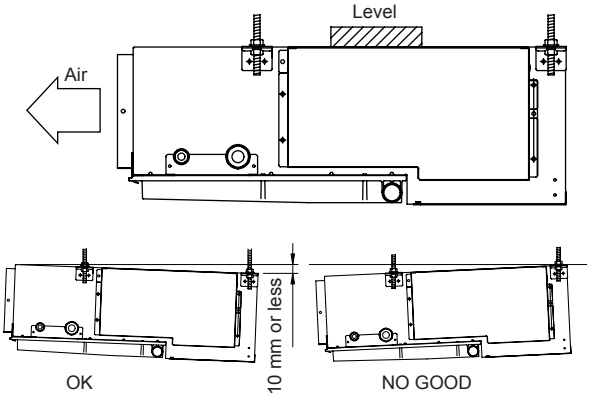


If using the right drain port



If using the left drain port



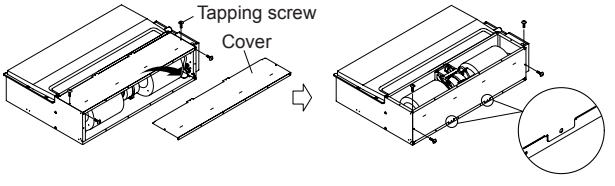


3.3B. Install the unit (Floor standing concealed type)

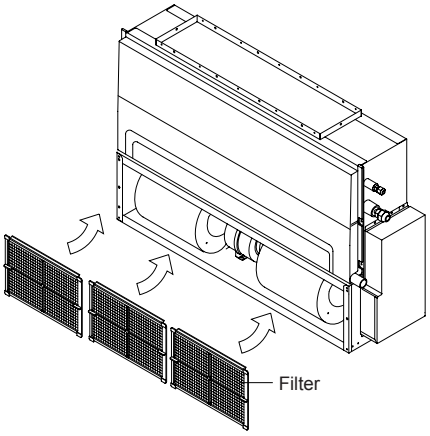
⚠ CAUTION
• To prevent people from touching the parts inside the unit, be sure to install grilles on the inlet and outlet ports. The grilles must be designed in such a way that cannot be removed without tools.
• When connecting the duct to the outlet port of the indoor unit, be sure to insulate the outlet port and the installation screws to prevent water from leaking around the port.
• Set the static pressure outside the unit to 50 Pa or less (the allowable range is between 0 and 50 Pa).

3.3B.1. INSTALL THE FILTERS

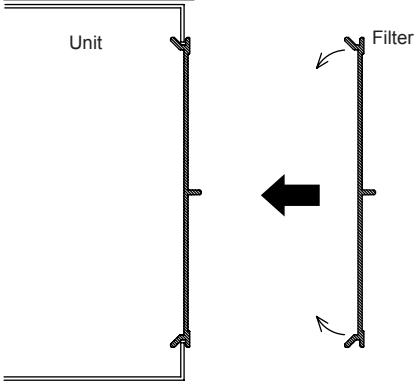
- Remove the 4 tapping screws, and then remove cover.
- Install the cover with the 4 tapping screws as shown in the illustration below.



• Install the filters (Accessories) to the unit.

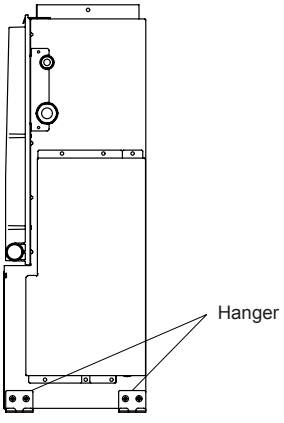


AR07/09: 2 filters
AR12/14/18: 3 filters



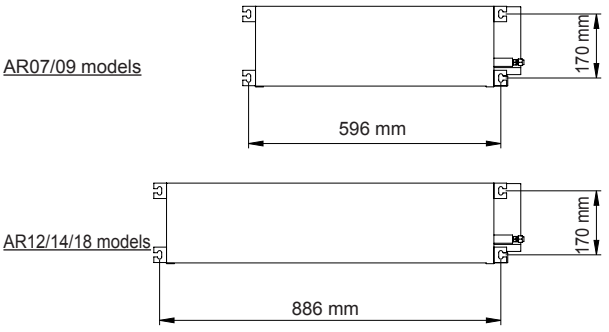
3.3B.2. INSTALLING THE HANGERS

• Install the hangers (Accessories) to the unit (4 places).



3.3B.3. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS

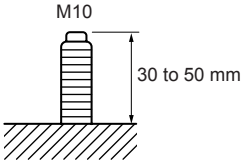
• Drilling position for bolts.



⚠ CAUTION

Secure with an M10 anchor bolts. If securing the unit to the floor is difficult, first build a stand or platform.

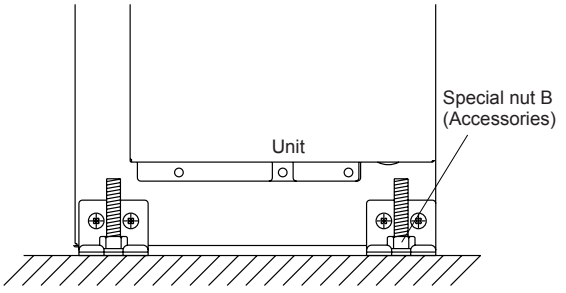
• Bolt dimensions



3.3B.4. INSTALL THE UNIT

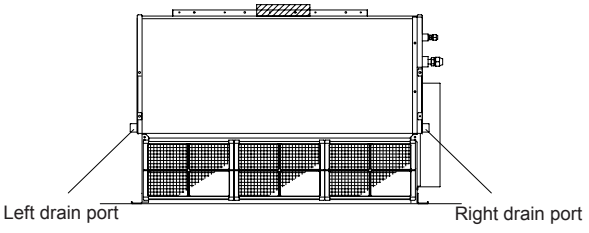
• Fix the unit.

Install the unit and fasten with special nut B.

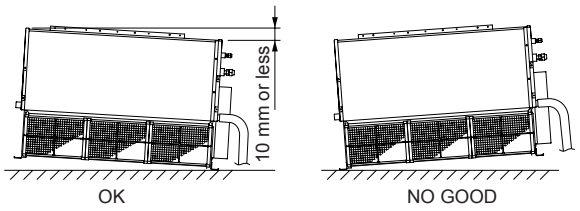


3.3B.5. LEVELING

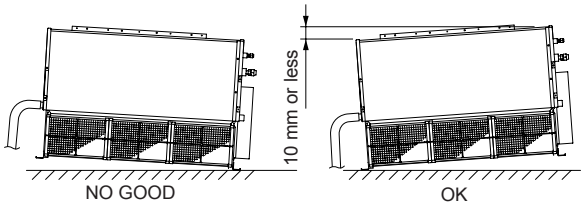
Base horizontal and vertical direction leveling on top of the unit.



If using the right drain port



If using the left drain port



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)

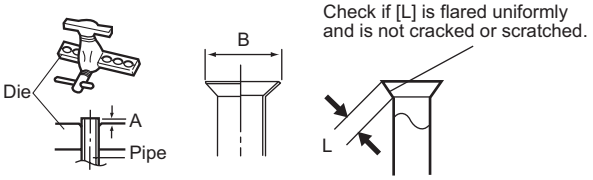
⚠ WARNING

- 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.

4.3.1. Flaring

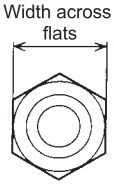
- Use special pipe cutter and flare tool exclusive for R410A.

(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] Flare tool for R410A, clutch type	Dimension $B^{0}_{-0.4}$ [mm]
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

- If pipes are shaped by hand, 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.

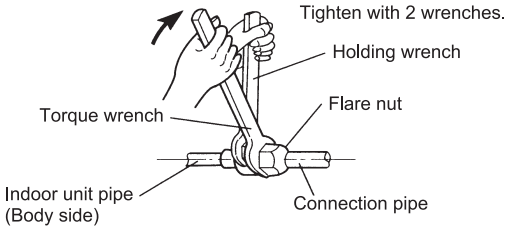
4.3.3. Pipe connection

⚠ CAUTION

- Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tighten 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.
- 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.

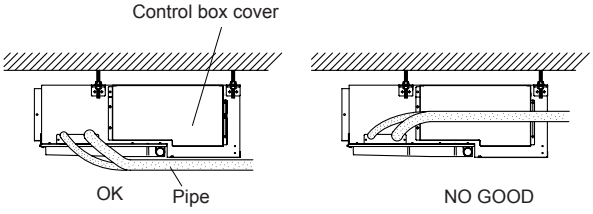
When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench. (See the table below for the flare nut tightening torques.)



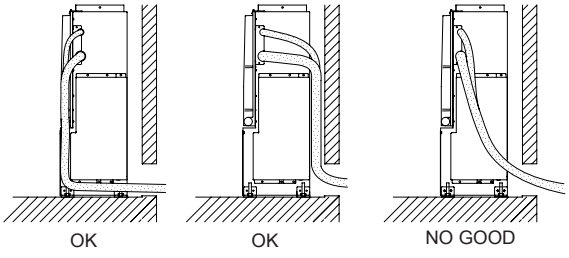
Flare nut [mm (in.)]	Tightening torque [N·m (kgf·cm)]
6.35 (1/4) dia.	16 to 18 (160 to 180)
9.52 (3/8) dia.	32 to 42 (320 to 420)
12.70 (1/2) dia.	49 to 61 (490 to 610)
15.88 (5/8) dia.	63 to 75 (630 to 750)
19.05 (3/4) dia.	90 to 110 (900 to 1,100)

Route the pipe as shown in the illustration below.

- CEILING CONCEALED TYPE



- FLOOR STANDING CONCEALED TYPE



⚠ CAUTION

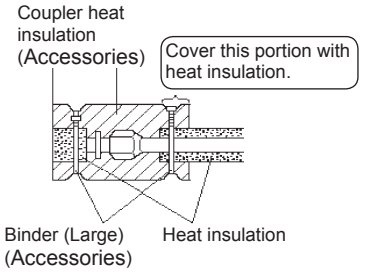
- Connect the piping so that the control box cover can easily be removed for servicing when necessary.
- In order to prevent water from leaking into the control box, make sure that the piping is well insulated.

4.4. Installing heat insulation

Install the heat insulation material after performing a refrigerant leak check (see the Installation Manual for the outdoor unit for details).

4.4.1. COUPLER HEAT INSULATION

- Insulate by the coupler heat insulation (Accessories) around the gas pipe and liquid pipe of indoor side.
- After installing the coupler heat insulation, wrap both end with vinyl tape so that there is no gap.
- After affixing the coupler heat insulation, secure it with 2 binders (large), one on each end of the insulation.
- Make sure that the binders overlap the heat insulation pipe.



⚠ CAUTION

- After checking for gas leaks (refer to the Installation Manual of the outdoor unit), perform this section.
- Install heat insulation around both the large (gas) and small (liquid) pipes. Failure to do so may cause water leaks.

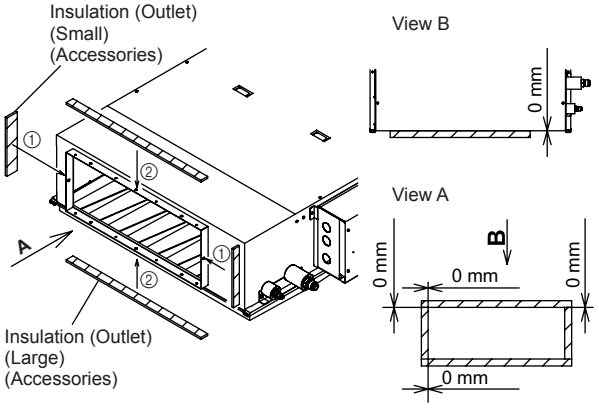
4.4.2. INSULATION (OUTLET)

When not using the air outlet duct, install the insulation (outlet) on the air outlet flange. (Fig. A)

①Install the small pieces of insulation (outler/small) on the left and right sides of the air outlet flange.

②Install the large pieces of insulation (outler/large) on the upper and lower sections of the air outlet flange.

Fig. A



⚠ CAUTION

Failure to install the insulation may cause water leaks.

5. INSTALLING DRAIN PIPES

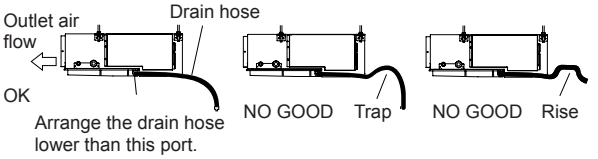
Use general hard polyvinyl chloride pipe and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
Always heat insulate the indoor side of the drain hose.
Use a drain pipe that matches the size of the drain hose (Table A).

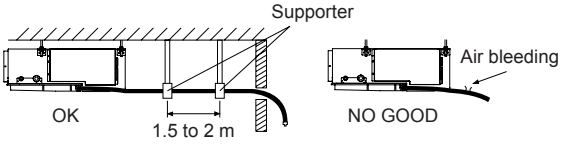
- Do not perform a rise, trap and air bleeding.
- Provide a downward gradient (1/100 or more).
- Provide supporters when long pipes are installed.
- Use an insulation material as needed, to prevent the pipes from freezing.
- Install the pipes in a way that allows for the removal of the control box.

Table A

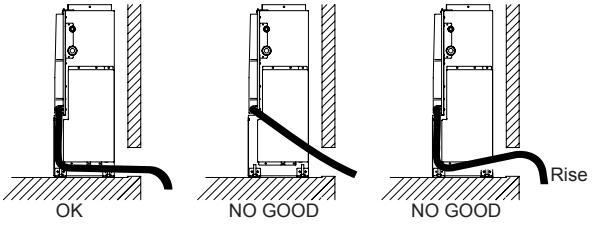
	O.D.
Drain pipe	32 mm(VP25)

• CEILING CONCEALED TYPE





• FLOOR STANDING CONCEALED TYPE

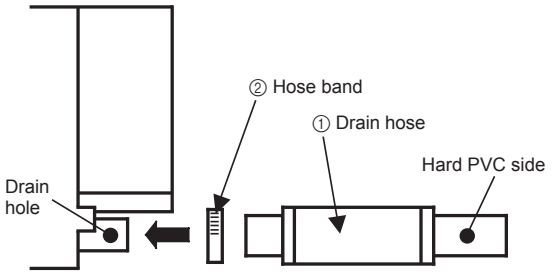


• Installation method of Drain hose

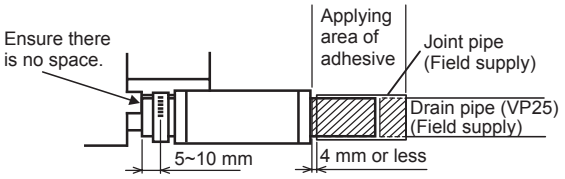
⚠ CAUTION

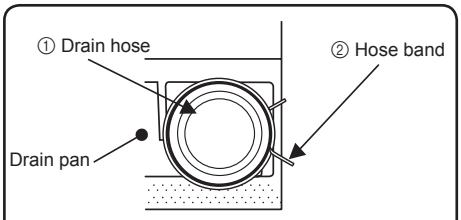
- Be sure to connect the pipes for drainage without leakage.
- To avoid condensation and dripping, always insulate the indoor drain pipe.

(1) Be sure to use supplied Drain hose ① and Hose band ② (When using the Drain hole on the other side of the unit, installation work is the same.)



(2) Be sure to insert Drain hose ① to the very end of the Drain pan of the unit with no space.



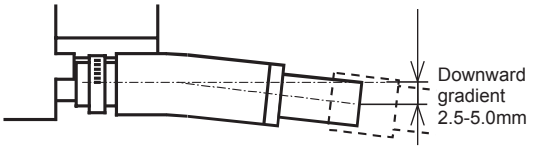


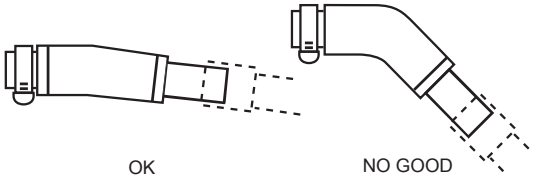
Fasten the Hose band ② at the position where the screw is vertical.
The screw must be positioned at the rightside of the Drain hose ① as in the figure.

⚠ CAUTION

Do not connect to the Drain hole with adhesive. Using adhesive may cause damage and water leaks.

(3) After installing the Drain hose ①, check if the drainage is smooth.

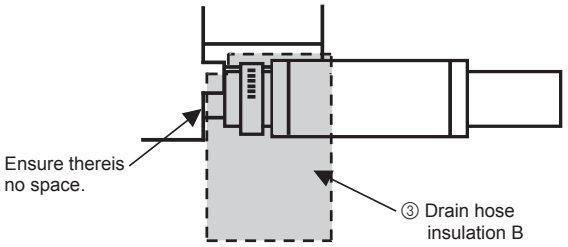


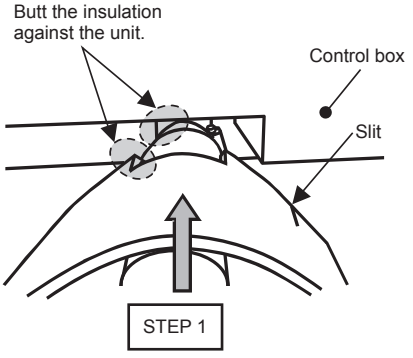


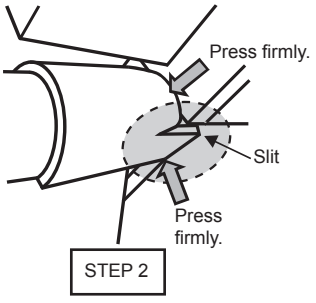
⚠ CAUTION

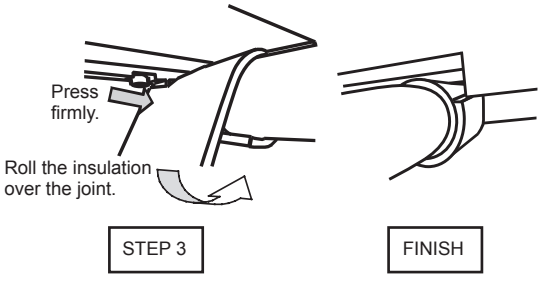
To prevent excessive force on Drain hose ①, avoid bends or twists. (To bend or twist may cause water leaks.)

(4) After checking for drainage, attach the Drain hose insulation B ③ to insulate, following the instructions as in the figures.
To avoid space with Drain hose ① and Hose band ②, press firmly the Drain hose insulation B ③.

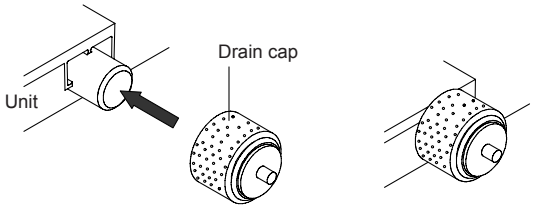








- When using the drain port on the left side of the unit, remove the drain cap and install it to the right side drain port.



⚠ CAUTION

Make sure the drain water is properly drained.

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.
- 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.
- 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.
- 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.
- 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 block 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.)
- 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.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

⚠ 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 cables to the transmission or remote controller terminals, as this will damage the product.
- Never bundle the power supply cable and transmission cable, remote control 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

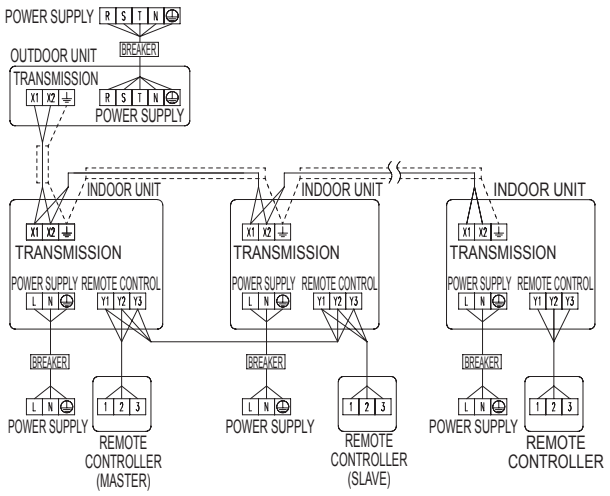
	Recommended cable size (mm^2)	Cable type	Remark
Power supply cable	2.5	Type245 IEC57 or equivalent	1ø 50 Hz 198–264 V 2 Cable + ground
Transmission cable	0.33	LONWORKS compatible cable	22 AWG LEVEL 4 (NEMA) non-polar 2 core, twisted pair solid core diameter 0.65 mm
Remote controller cable	0.33	Sheathed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

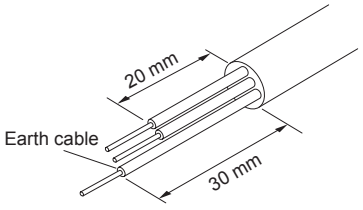


6.3. Unit wiring

• Before attaching the cable to terminal block.

6.3.1 Power supply cable

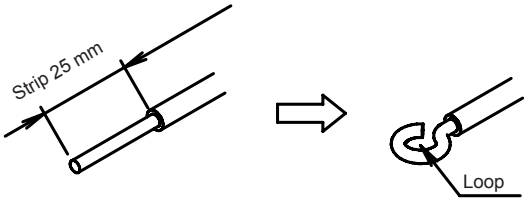
Adjust the length of power supply cable to avoid excessive tension with referring figure below.

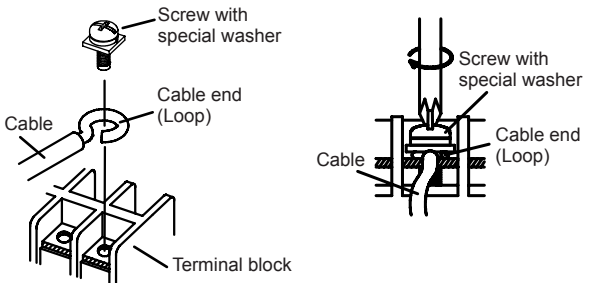


Power supply cable

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.



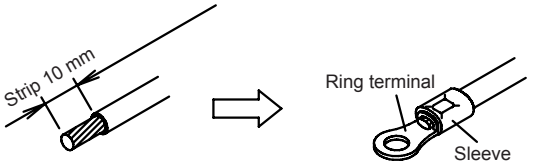


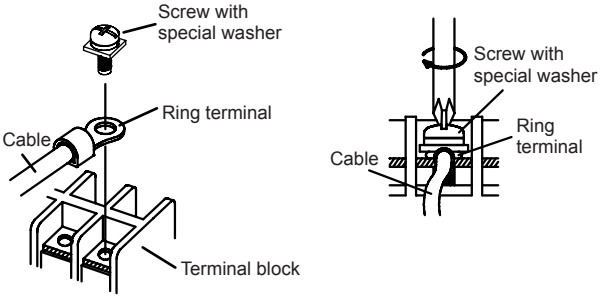
⚠ WARNING

• When using solid core cables, do not use the 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.



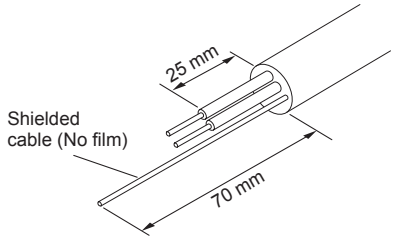


⚠ WARNING

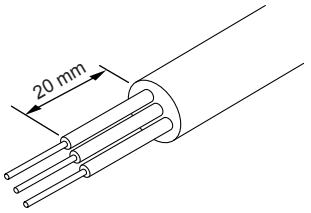
• Use ring terminals and tighten the terminal screws to the specified torques, otherwise, abnormal overheating may be produced and possibly cause heavy damage inside the unit.

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 and Remote controller cable



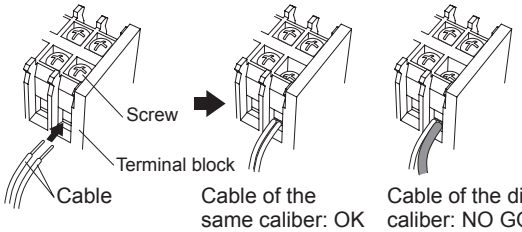
Transmission cable



Remote controller cable

- Connect remote controller and transmission cables as shown in Fig. A.

Fig. A



⚠ WARNING

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

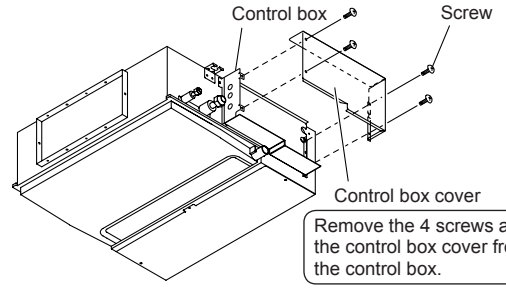
Tightening torque	
M3.5 screw (Transmission /X1, X2) (Remote controller /Y1, Y2, Y3)	0.8 to 1.0 N·m (8 to 10 kgf·cm)

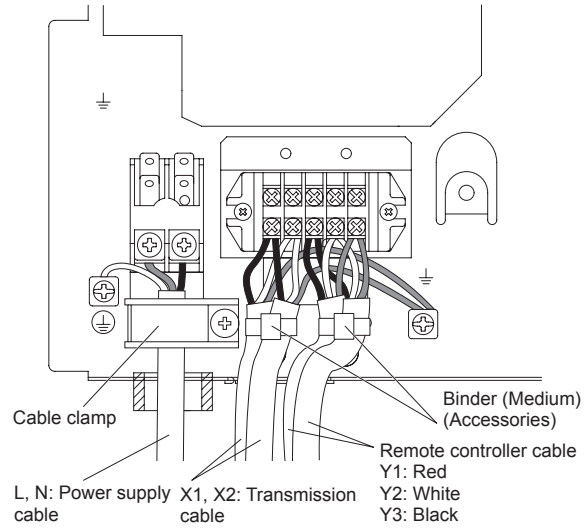
⚠ CAUTION

- 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.

6.4. Connection of wiring

(1) Remove the control box cover from the control box.
(2) Connect the connection cable.



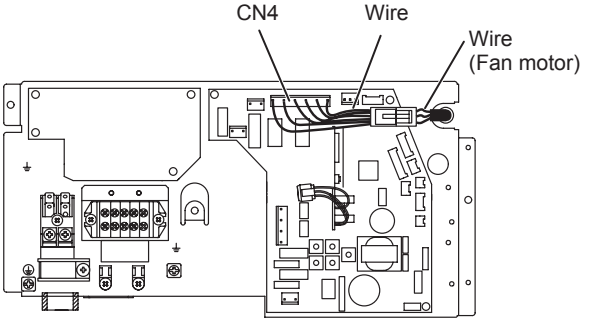


6.5. Air flow changing

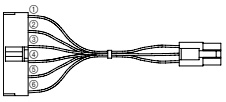
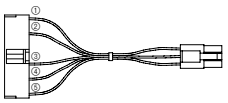
When using the unit with external static pressure under 25 Pa, the connector must be replaced as explained below.

Replacement method (see Fig. B)
(1) Remove the Wire (Type A) connector from Wire (Fan motor).
(2) Remove the Wire (Type A) connector from CN4 of the PCB.
(3) Insert the Wire (Type B) connector into CN4 of the PCB.
(4) Insert the Wire (Type B) connector into Wire (Fan motor).

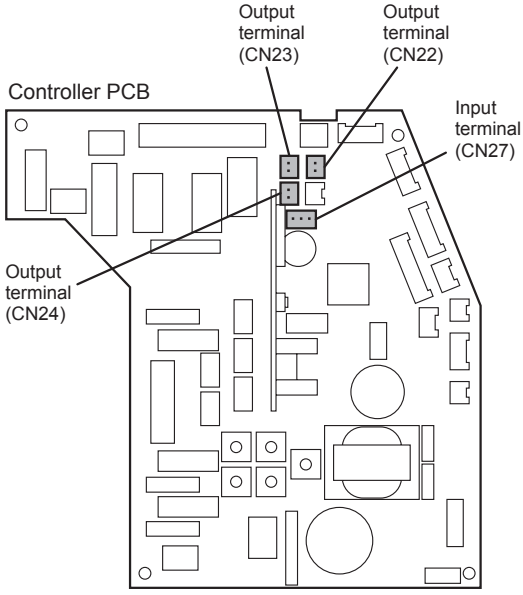
Fig. B



External Static Pressure and Required Connector Type

Type	A	B
External static pressure	25 – 50 Pa	0 – 25 Pa
Wire	 ① Purple ② Pink ③ Blue ④ Red ⑤ White ⑥ Black	 ① Blue ② Purple ③ Pink ④ White ⑤ Black
Remark	Factory setting (Standard static pressure)	Accessories (Low static pressure)

6.6. External input and external output (Optional parts)

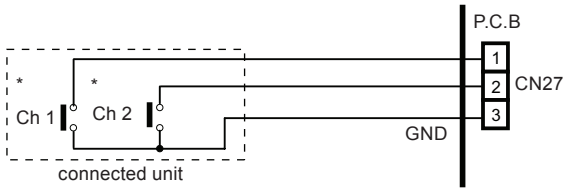


(1) External input terminals

- Indoor unit can be Start/Stop or Emergency stop by using indoor unit PCB CN27.

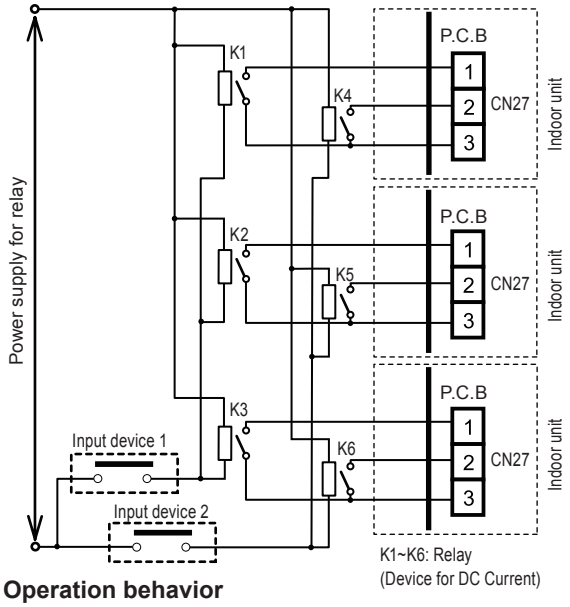
Wiring methods and specifications

- A twisted pair cable (22AWG) should be used. Maximum length of cable is 25 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.
- Open circuit voltage : ≤ 5.25 (V).
- Short circuit current : ≤ 0.6 (mA).
- Short circuit detection resistance (R_{ON}) : ≤ 500 (ohm).
- Short circuit detection resistance (R_{OFF}) : ≥ 100 (kilo-ohm).



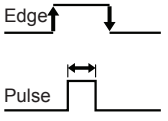
* Select very low current use contacts (usable at DC12V, DC1mA or less).

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.

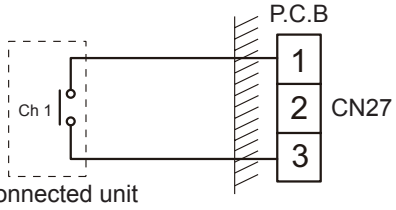


The width of pulse must be longer than 200msec.

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

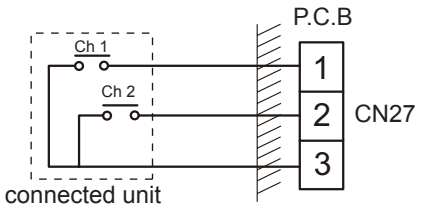
- When function setting is “Start/Stop” mode
  [In the case of “Edge” input]

Connector	Input signal	Command
Ch1 of CN27	OFF → ON	Operation
	ON → OFF	Stop



[In the case of “Pulse” input]

Connector		Input signal	Command
CN27	Ch1	OFF → ON	Opration
	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 CN27	OFF → ON	Emergency stop
	ON → OFF	Normal

[In the case of “Pulse” input]

Connector		Input signal	Command
CN27	Ch1	OFF → ON	Emergency stop
	Ch2	OFF → ON	Normal

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

Connector	Input signal	Command
Ch1 of CN27	OFF → ON	Forced stop
	ON → OFF	Normal

In the case of “Pulse” input

Connector		Input signal	Command
CN27	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.
* **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.

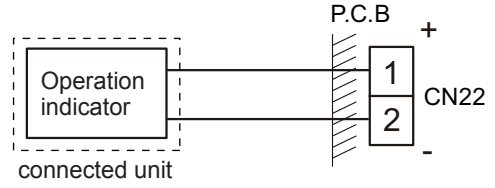
Wiring methods and specifications

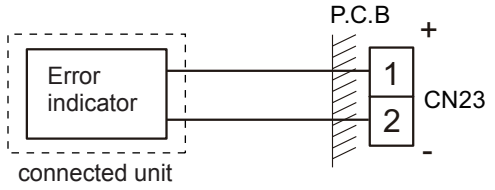
* A twisted pair cable (22AWG) should be used. Maximum length of cable is 150 m.
* Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
• The wire connection should be separate from the power cable line.

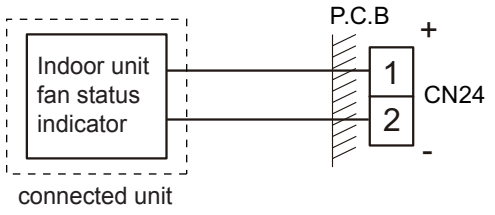
Operation behavior

Connector	Output voltage	Status
CN22	12V	Operation
	0V	Stop
CN23	12V	Error
	0V	Normal
CN24	12V	Indoor unit fan operation
	0V	Indoor unit fan stop

Output voltage : Hi DC12V ± 2V
Lo 0V
Permissible current : 15mA



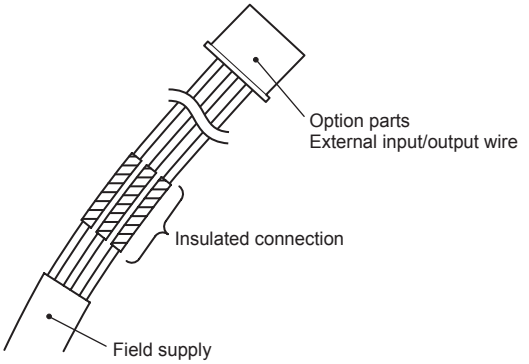




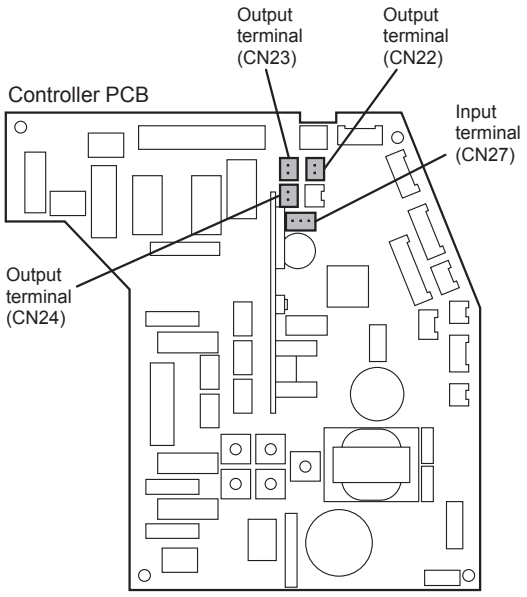
(3) Connection methods

• 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.

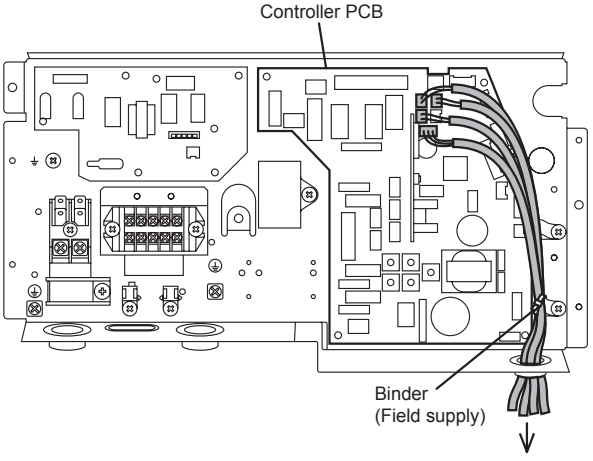
Important: Be sure to insulate the connection between the wires.



• Connection terminals



• Wiring arrangement

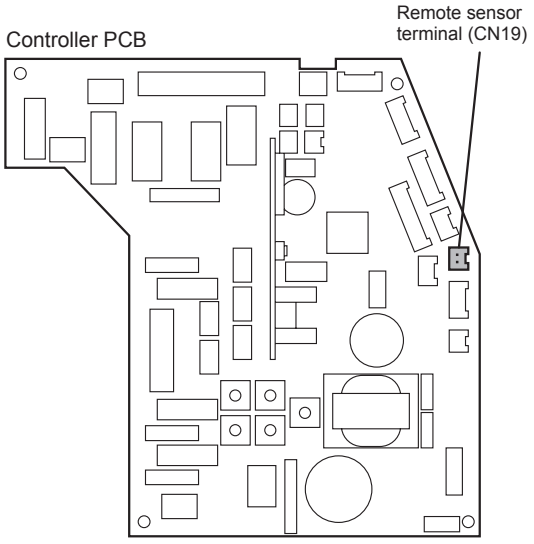


6.7. Remote sensor (Optional parts)

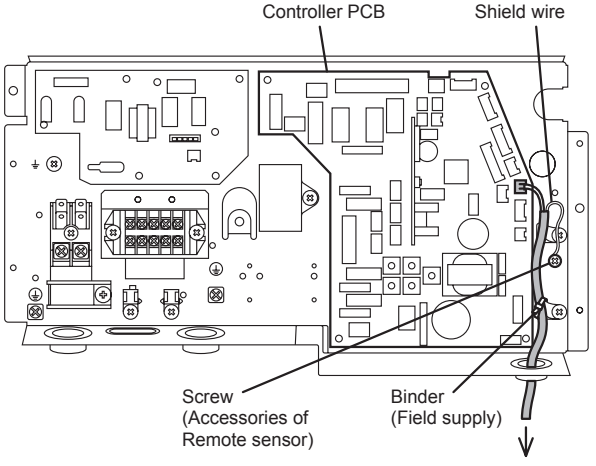
• For the installation method, please refer to the INSTALLATION MANUAL of remote sensor.

Connection methods

• Connection terminals



• Wiring arrangement



• Remove the existing connector and replace it with the remote sensor connector (ensure that the correct connector is used).
• The original connector should be insulated to ensure that it does not come into contact with other electrical circuitry.
• Use conduit hole when external output cable is used.

Setting for room temperature correction

When a remote sensor is connected, set the function setting of indoor unit as indicated below.

• Function Number “30”:
  Set the Setting Number to “00”. (Default)
• Function Number “31”:
  Set the Setting Number to “02”.

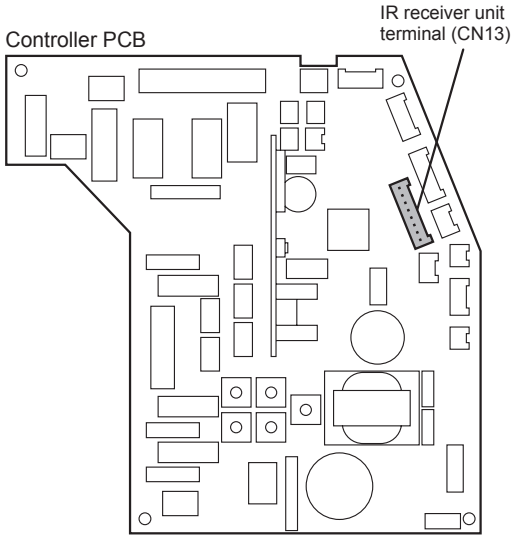
* Refer to “7.3. Function setting” for ditails about Function Number and Setting Number.

6.8. IR recever unit (Optional parts)

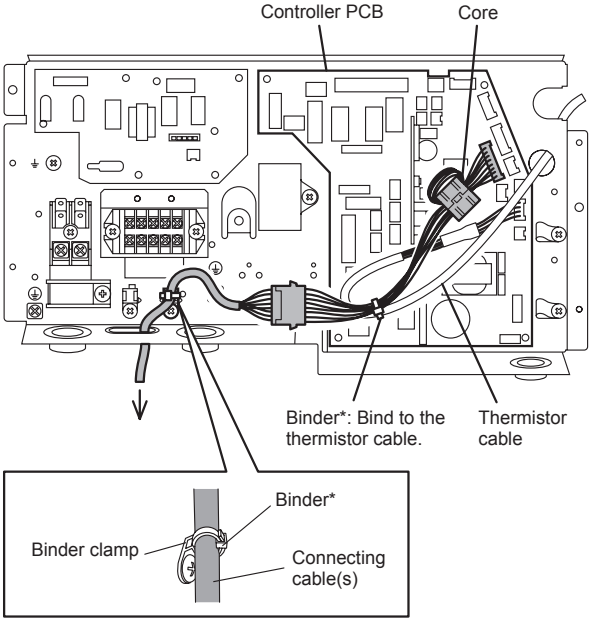
- For the installation method, please refer to the INSTALLATION MANUAL of IR receiver unit.

Connection methods

- Connection terminals



- Wiring arrangement



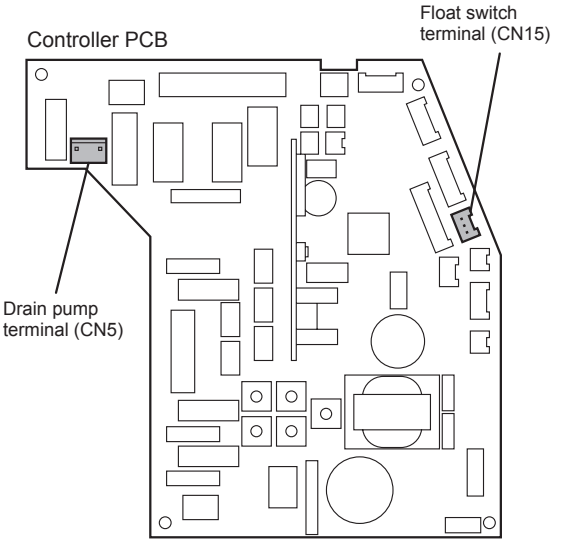
*Accessories of IR receiver unit

6.9. Drain pump unit (Optional parts)

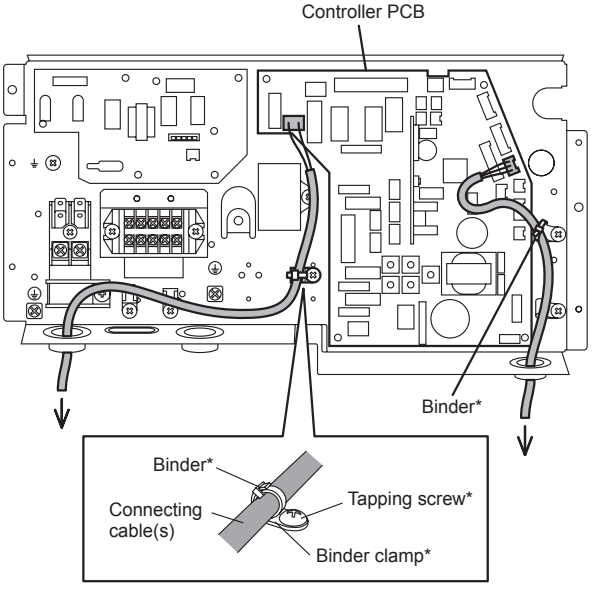
- For the installation method, please refer to the INSTALLATION MANUAL of drain pump unit.

Connection methods

- Connection terminals



- Wiring arrangement



*Accessories of Drain pump unit

7. FIELD SETTING

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

(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)

⚠ CAUTION

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

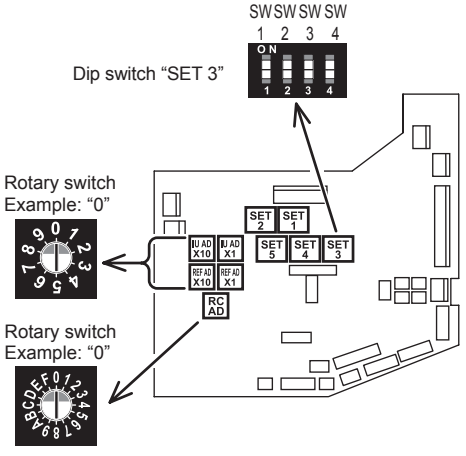
7.1. Setting the address

Manual address setting method

- If the receiver unit is attached, the indoor unit address and the refrigerant circuit address can also be set up through the wirelessremote controller.

⚠ CAUTION

- Use an insulated screwdriver to set the dip switches.



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

(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.

- If working in an environment where the wireless remote controller can be used, the addresses can also be set using the remote controller.
- If setting the addresses using the wireless remote controller, set the indoor unit address and refrigerant circuit address to “00”.
(For information on setting using the wireless remote controller.)

Table A

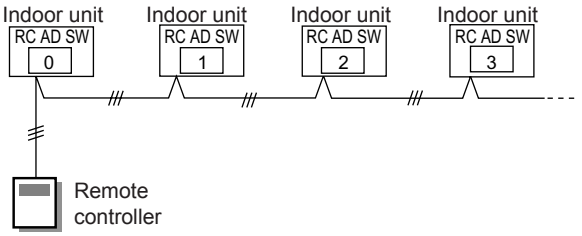
Address	Rotary Switch Setting		Address	Rotary Switch Setting	
Refrigerant circuit	REF AD SW		Indoor unit	IU AD SW	
	× 10	× 1		× 10	× 1
0	0	0	0	0	0
1	0	1	1	0	1
2	0	2	2	0	2
3	0	3	3	0	3
4	0	4	4	0	4
5	0	5	5	0	5
6	0	6	6	0	6
7	0	7	7	0	7
8	0	8	8	0	8
9	0	9	9	0	9
10	1	0	10	0	0
11	1	1	11	1	1
12	1	2	12	1	2
⋮	⋮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

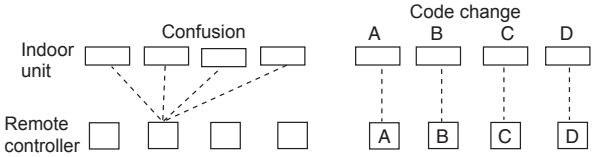


RC AD SW	0	1	2	3	4	5	6	7
Address	0	1	2	3	4	5	6	7

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. (Up to 4 codes can be set.)
Perform the setting for both the indoor unit and the remote controller.



• Custom code setting for indoor unit

Set the DIP SW SET 3 SW1, SW2 referring to the Table B.

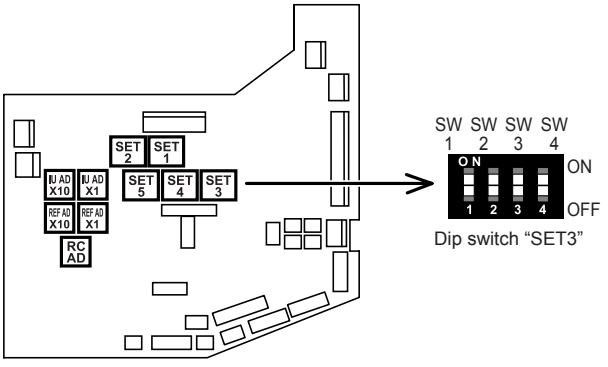


Table B

	Custom code			
	A (Factory setting)	B	C	D
DIP SW SET3 SW1	OFF	ON	OFF	ON
DIP SW SET3 SW2	OFF	OFF	ON	ON

7.3. Fuction setting

- 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		
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.
		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 wired remote.
		01	Display only on central remote controller		

8. TEST OPERATION

8.1. 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.

8.2. Test operation using Remote Controller

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

9. 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 control unit or external device?	No operation	
After installation is completed, has the proper operation and handling been explained to the user?	———	

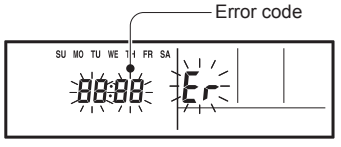
10. ERROR CODES

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 lamp (green)	TIMER lamp (orange)	FILTER 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



For details on marking the ERROR CODES, please refer to the Manual of “IR Receiver Unit” or “Wired Remote Controller”.