

Duct Type SPLIT TYPE AIR CONDITIONER INSTALLATION INSTRUCTION SHEET (PART NO. 9374815111-02)

Indoor unit is an appliance not accessible to the general public.

For authorized service personnel only.

DANGER	This mark indicates procedures which, if improperly performed, are most likely to result in the death of or serious injury to the user or service personnel.
WARNING	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
CAUTION	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

DANGER

Never touch electrical components immediately after the power supply has been turned off. Electrical shock may occur. After turning off the power, always wait 5 minutes or more before touching electrical components.

This air conditioner uses new refrigerant HFC (R410A).

The basic installation work procedures are the same as conventional refrigerant models. However, pay careful attention to the following points:

- Since the working pressure is 1.6 times higher than that of conventional refrigerant models, some of the piping and installation and service tools are special. (See the table below.) Especially, when replacing a conventional refrigerant model with a new refrigerant R410A model, always replace the conventional piping and flare nuts with the R410A piping and flare nuts.
- Models that use refrigerant R410A have a different charging port thread diameter to prevent erroneous charging with conventional refrigerant and for safety. Therefore, check beforehand. [The charging port thread diameter for R410A is 1/2 UNF 20 threads per inch.]
- Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.
- When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.

Special tools for R410A

Tool name	Contents of change
Gauge manifold	Pressure is 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 the gauge with seals -0.1 to 5.3 MPa (-76 cmHg to 53 kgf/cm ²) for high pressure, -0.1 to 3.8 MPa (-76 cmHg to 38 kgf/cm ²) for low pressure.
Charge 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.
Gas leakage detector	Special gas leakage detector for HFC refrigerant R410A.

Copper pipes

It is necessary to use seamless copper pipes and it is desirable that the amount of residual oil is less than 40 mg/10m. Do not use copper pipes having a collapsed, deformed or discolored portion (especially on the interior surface). Otherwise, the expansion valve or capillary tube may become blocked with contaminants. 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 that in the table even when it is available on the market.

Thicknesses of Annealed Copper Pipes (R410A)

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

WARNING

- For the room air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.
- Connect the indoor unit and outdoor unit with the air conditioner piping and cables available standards parts. This installation instruction sheet describes the correct connections using the installation set available from our standard parts.
- Installation work must be performed in accordance with national wiring standards by authorized personnel only.
- 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.
- Do not use an extension cable.
- Do not turn on the power until all installation work is complete.

CAUTION

This installation instruction sheet describes how to install the indoor unit only. To install the outdoor unit, refer to the installation instruction sheet included with the outdoor unit.

- Be careful not to scratch the room air conditioner when handling it.
- After installation, explain correct operation to the customer, using the operating manual.
- Let the customer keep this installation instruction sheet because it is used when the air conditioner is serviced or moved.

SELECTING THE MOUNTING POSITION

WARNING

Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not topple or fall.

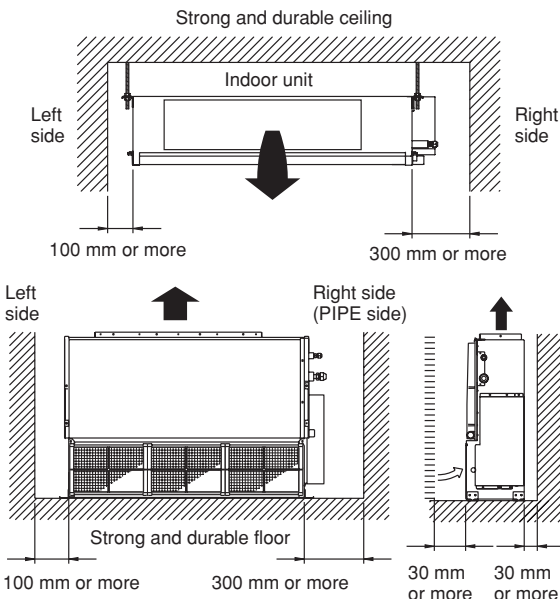
CAUTION

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

Decide the mounting position with the customer as follows:

INDOOR UNIT

- Install the indoor unit level on a strong wall, floor, ceiling which is not subject to vibration.
- The inlet and outlet ports should not be obstructed: the air should be able to blow all over the room.
- Install the unit near an electric outlet or special branch circuit.
- Install the unit where connection to the outdoor unit is easy.
- Install the unit where the drain pipe can be easily installed.
- Take servicing, etc. into consideration and leave the spaces shown on the right. Also install the unit where the filter can be removed.
- Install the indoor unit where vibrations and noise are not amplified.
- When installing the unit on the floor, provide an opening that will allow sufficient air to reach the air inlet panel.



STANDARD PARTS

The following installation parts are furnished. Use them as required.

INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
Installation template	1	For positioning the indoor unit
Hanger	4	For suspending the indoor unit from ceiling
Tapping screw (φ4 × 10)	8	For installing the hanger
Special nut A (large flange)	4	For suspending the indoor unit from ceiling
Special nut B (small flange)	4	
Binder	(Small) 1 (Large) 4	For remote controller and remote controller cable binding For fixing the coupler heat insulation
Remote controller	1	For air conditioner operation
Remote controller cable (1')	1	For connecting the remote controller
Tapping screw (φ4 × 16)	2	For installing the remote controller

(*) Unavailable in ART series.

Name and Shape	Q'ty	Application
Coupler heat insulation (large)	1	For indoor side pipe joint (gas pipe)
Coupler heat insulation (small)	1	For indoor side pipe joint (liquid pipe)
Filter	3	For protecting air conditioner against dust
Drain hose insulation	1	Insulates the drain hose and vinyl hose connection
Edge cover	1	For making a wiring hole for connecting optional units. (Referring to 9 of this installation instruction sheet)

OPTIONAL PARTS

The following options are available.

- Remote sensor:UTD-RS100 (P/N 9072619004)
- External control set:UTD-ECS5A (P/N 9077359004)

INSTALLATION PROCEDURE

Install the air conditioner as follows:

1 INDOOR UNIT INSTALLATION

WARNING

Install the air conditioner in a location which can withstand a load of at least five 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.

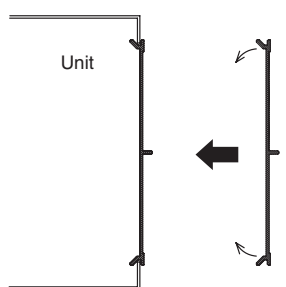
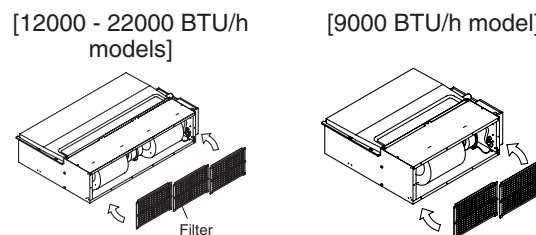
CAUTION

- For installation, refer to the technical data.
- 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.

A. CONCEALED CEILING TYPE

1. INSTALL THE FILTERS

- Install the filters to the unit.



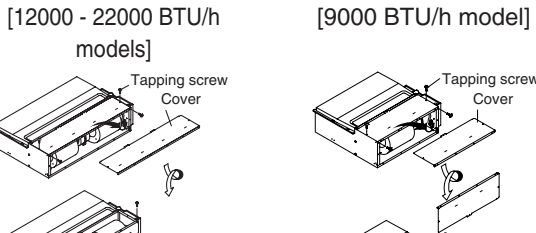
CAUTION

Fasten the unit securely with special nuts A and B.

B. CONCEALED FLOOR STANDING TYPE

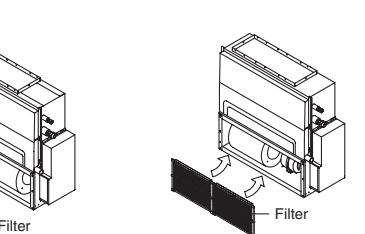
1. INSTALL THE FILTERS

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



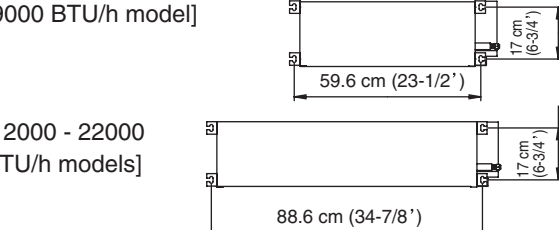
2. INSTALLING THE HANGERS

- Install the hangers to the unit (4 places).



3. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS

- Drilling position for bolts.

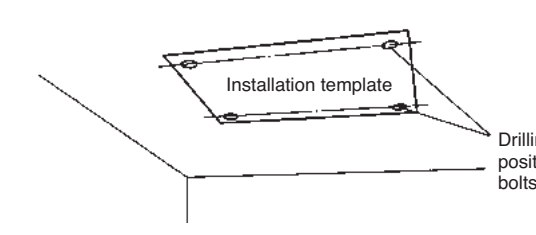


CAUTION

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

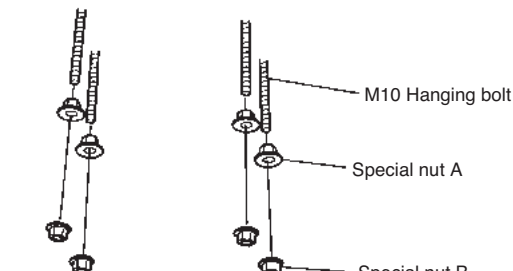
2. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS

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

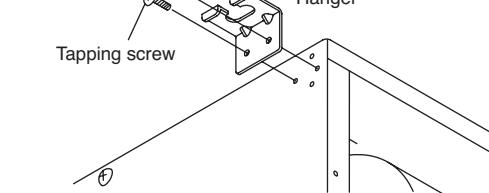
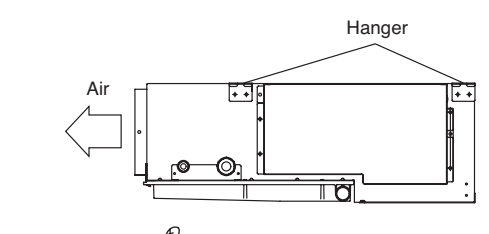


3. INSTALLING THE HANGERS

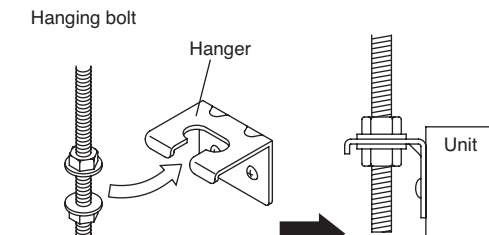
- Fasten the hanging bolts to the ceiling and install special nuts A and B.



- Install the hangers to the unit (4 places).



- Hang the unit. Pass the hanging bolts through the hangers (4 places).

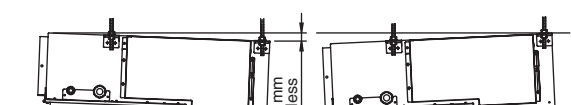
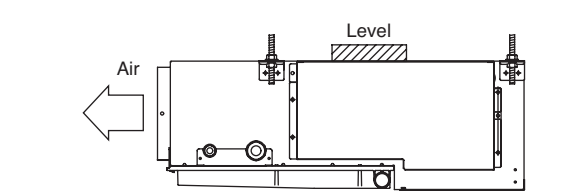
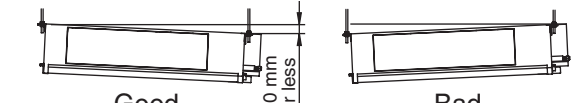
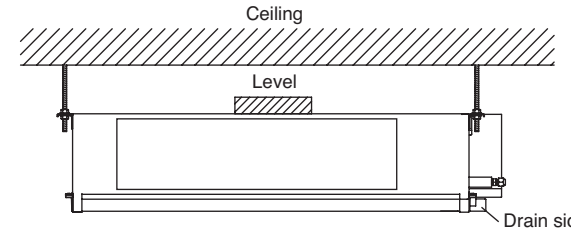


CAUTION

Fasten the unit securely with special nuts A and B.

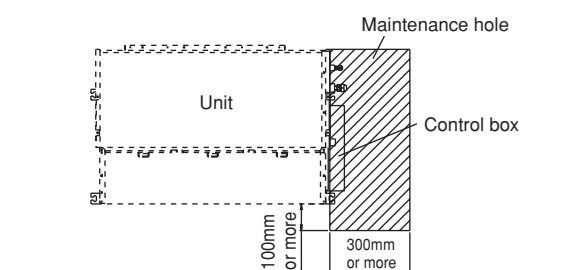
4. LEVELING

Base horizontal direction leveling on top of the unit.



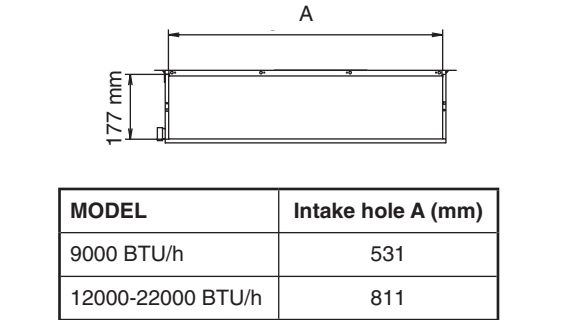
5. MAINTENANCE HOLE DIMENSIONS

Open a maintenance hole with the dimensions shown.



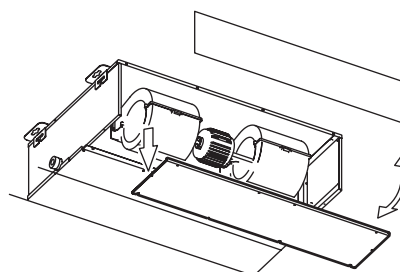
6. INTAKE DUCT CONNECTION

Follow the procedure in the following figure to the ducts.



MODEL	Intake hole A (mm)
9000 BTU/h	531
12000-22000 BTU/h	811

The air inlet duct can be changed by replacing the intake grille and flange.



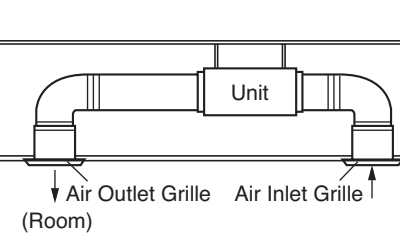
CAUTION

When air is taken in from the bottom side, the operating sound of the product will easily enter the room. Install the product and intake grilles where the affect of the operating sound is small.

CAUTION

- If an intake duct is installed, take care not to damage the temperature sensor (the temperature sensor is attached to the intake port flange).

- Be sure to install the air inlet grille and the air outlet grille for air circulation. The correct temperature cannot be detected.



- Grills must be fixed so that man cannot touch indoor unit fan, and cannot be removed by only hand operation without tool.

- Be sure to install the air filter in the air inlet. If the air filter is not installed, the heat exchanger may be clogged and its performance may decrease.

2 CONNECTING THE PIPE

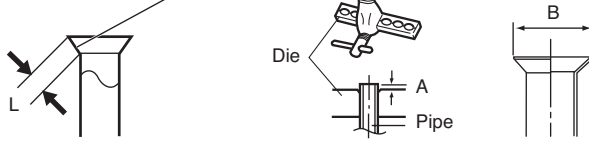
CAUTION

- 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.
- While welding the pipes, be sure to blow dry nitrogen gas through them.
- The maximum lengths of this product are shown in the table. If the units are further apart than this, correct operation can not be guaranteed.

1. FLARING

- Cut the connection pipe to the necessary length with a pipe cutter.
- Hold the pipe downward so that cuttings will not enter the pipe and remove the burrs.
- 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.



Pipe outside diameter	Dimension A (mm) Flare tool for R410A, clutch
6.35 mm (1/4 in.)	0 to 0.5
9.52 mm (3/8 in.)	
12.70 mm (1/2 in.)	
15.88 mm (5/8 in.)	
19.05 mm (3/4 in.)	

Pipe outside diameter	Dimension B (mm) Flare nut
6.35 mm (1/4 in.)	9.1
9.52 mm (3/8 in.)	13.2
12.70 mm (1/2 in.)	16.6
15.88 mm (5/8 in.)	19.7
19.05 mm (3/4 in.)	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	Width across flats of Flare nut
6.35 mm (1/4 in.)	17 mm
9.52 mm (3/8 in.)	22 mm
12.70 mm (1/2 in.)	26 mm
15.88 mm (5/8 in.)	29 mm
19.05 mm (3/4 in.)	36 mm

(Continued to the next page.)

2 CONNECTING THE PIPE

2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.
Do not bend the pipes in an angle more than 90°.
When pipes are repeatedly bent 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 three times.

CAUTION

- To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 150 mm or over.
- If the pipe is bent repeatedly at the same place, it will break.

3. CONNECTION PIPES

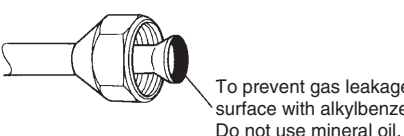
Indoor unit

- Detach the caps and plugs from the pipes.

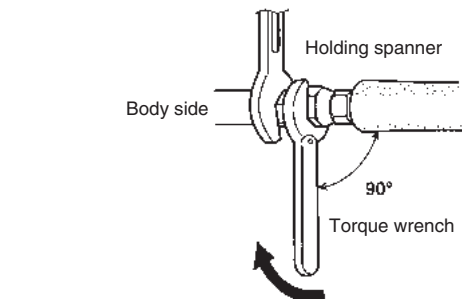
CAUTION

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

- Centering the pipe against port on the indoor unit, turn the flare nut with your hand.



- When the flare nut is tightened properly by your hand, use a torque wrench to finally tighten it.



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.

Flare nut	Tightening torque
6.35 mm (1/4 in.) dia.	16 to 18 N·m (160 to 180 kgf·cm)
9.52 mm (3/8 in.) dia.	30 to 42 N·m (300 to 420 kgf·cm)
12.70 mm (1/2 in.) dia.	49 to 61 N·m (490 to 610 kgf·cm)
15.88 mm (5/8 in.) dia.	63 to 75 N·m (630 to 750 kgf·cm)
19.05 mm (3/4 in.) dia.	90 to 110 N·m (900 to 1100 kgf·cm)

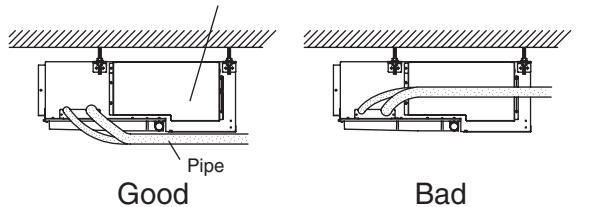
CAUTION

Be sure to connect the gas pipe after connecting the liquid pipe completely.

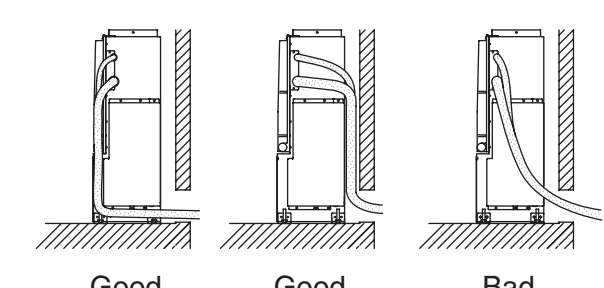
- Lay the piping.

A. CONCEALED CEILING TYPE

Control box cover



B. CONCEALED FLOOR STANDING TYPE

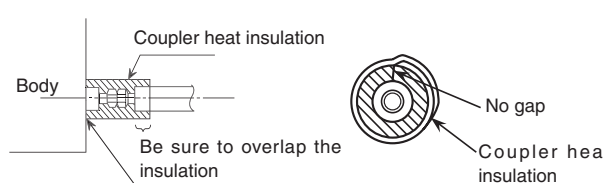


CAUTION

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

4. HEAT INSULATION ON THE PIPE JOINTS (INDOOR SIDE ONLY)

After checking for gas leaks, insulate by wrapping insulation around the two parts (gas and liquid) of the indoor unit coupling, using the coupler heat insulation.
After installing the coupler heat insulation, wrap both ends with vinyl tape so that there is no gap.



CAUTION

Must fit tightly against body without any gap.

3 ELECTRICAL WIRING

WARNING

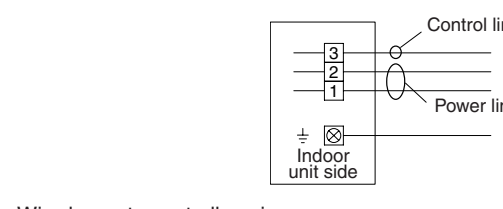
- Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
- Match the terminal board numbers and connection wire colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.
- Connect the connection wires firmly to the terminal board. Imperfect installation may cause a fire.
- Always fasten the outside covering of the connection cable with the cable clamp. (If the insulator is chafed, electric leakage may occur.)
- Always connect the ground wire.
- Install the remote controller wires so as not to be direct touched with your hand.

WARNING

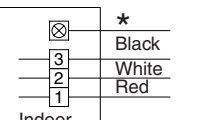
Use crimp-type terminals and tighten the terminal screws to the specified torques, otherwise, abnormal overheating may be produced and possibly cause heavy damage inside the unit.

1. CONNECTION DIAGRAMS

Connection wire (to outdoor unit)



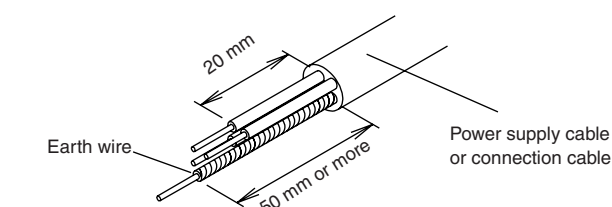
Wired remote controller wire



* Ground the remote controller ip it has a ground wire

2. CONNECTION WIRE PREPARATION

Keep the earth wire longer than the other wires.



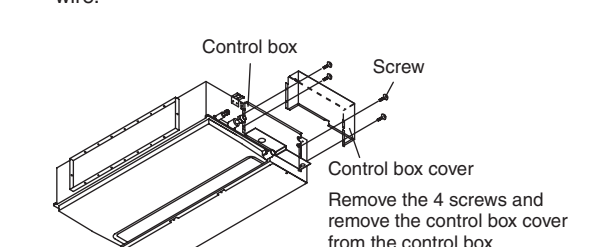
- Use a 4-core wire cable.

3. INDOOR UNIT SIDE

CAUTION

Use care not to mistake the power supply wire and connection wires when installing.

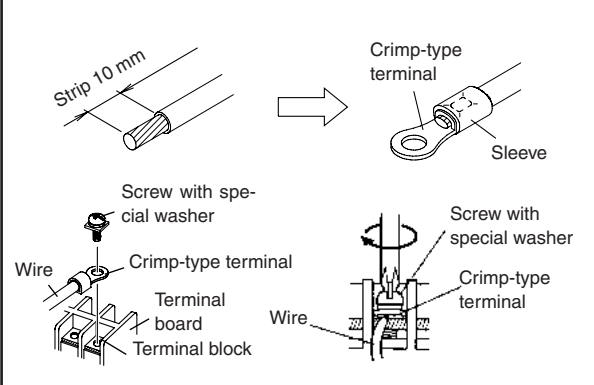
- Remove the control box cover and install each connection wire.



HOW TO CONNECT WIRING TO THE TERMINALS

For strand wiring

- Use crimp-type terminals with insulating sleeves as shown in the figure below to connect to the terminal block.
- Securely crimp the crimp-type terminals to the wires using an appropriate tool so that the wires do not come loose.
- Use the specified wires, connect them securely, and fasten them so that there is no stress placed on the terminals.
- 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.
- Do not tighten the terminal screws too much, otherwise, the screws may break.
- See the table below for the terminal screw tightening torques.



Tightening torque
M4 screw 1.2 to 1.8 N·m (12 to 18 kgf·cm)

5 FUNCTION SETTING

- This procedure changes to the function settings used to control the indoor unit according to the installation conditions. Incorrect settings can cause the indoor unit malfunction.

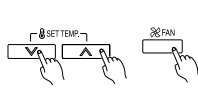
- After the power is turned on, perform the "FUNCTION SETTING" according to the installation conditions using the remote controller.

- The settings may be selected between the following two: Function Number or Setting Value.

- Settings will not be changed if invalid numbers or setting values are selected.

[OPERATION METHOD]

- Press the SET TEMP buttons (V) (A) and FAN button simultaneously for more than 5 seconds to enter the function setting mode.



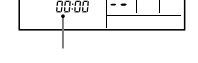
- Press the SET BACK button to select the indoor unit number.



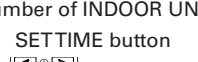
- Press the SET TIME(<)(>) buttons to select the function number.



- Press the SET TEMP buttons (V) (A) to select the setting value. The display flashes as shown to the right during setting value selection.



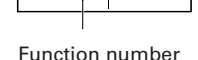
- Press the TIMER SET button to confirm the setting. If the setting value display changes or if "E" is displayed when the flashing stops, the setting value has not been set correctly. (An invalid setting value may have been selected for the indoor unit.)



- Repeat steps 2 to 5 to perform additional settings. Press the SET TEMP buttons (V) (A) and FAN button simultaneously again to cancel the function setting mode. In addition, the function setting mode will be automatically canceled after 1 minute if no operation is performed.



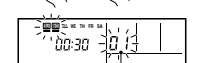
- After completing the FUNCTION SETTING, be sure to turn off the power and turn it on again.



- Press the START/STOP button to stop the test run.



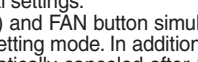
- Press the START/STOP button to stop the test run.



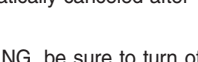
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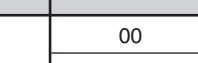
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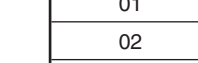
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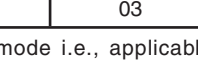
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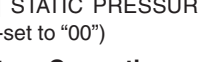
- Press the START/STOP button to stop the test run.



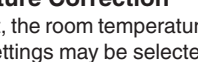
- Press the START/STOP button to stop the test run.



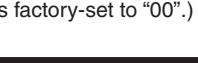
- Press the START/STOP button to stop the test run.



- Press the START/STOP button to stop the test run.



- Press the START/STOP button to stop the test run.



- Press the START/STOP button to stop the test run.



Setting Description	Function Number	Setting Value
Standard		00
Lower control	30	01

Setting the Heater Room Temperature Correction

- Depending on the installed environment, the room temperature sensor may require a correction. The settings may be changed as shown in the table below. (The unit is factory-set to "00".)

Setting Description	Function Number	Setting Value
Standard		00
Lower control	31	01
Slightly warmer control		02
Warmer control		03

When using floor console installation, change the setting value to "01".

Setting Other Functions

- The following settings are also possible, depending on the operating conditions. (The unit is factory-set to "00".)

Auto Restart

Setting Description	Function Number	Setting Value
Yes		00
No	40	01

Indoor Room Temperature Sensor Switching Function

Setting Description	Function Number	Setting Value
No		00
Yes	42	01

- If setting value is "00", room temperature is controlled by the indoor unit temperature sensor.
- If setting value is "01", room temperature is controlled by either indoor unit temperature sensor or remote controller sensor.

Setting Record

- Record any changes to the settings in the following table.

Setting	Setting Value
Static pressure	
Cooler room temperature correction	
Heater room temperature correction	
Auto restart	
Indoor room temperature sensor switching function	

After completing the FUNCTION SETTING, be sure to turn off the power and turn it on again.

6 TEST RUN

CHECK ITEMS

- Is operation of each button on the remote controller normal?
- Does each lamp light normally?
- Do not air flow direction louvers operate normally?
- Is the drain normal?
- Is there any abnormal noise and vibration during operation?

- Do not operate the air conditioner in the running state for a long time.

[OPERATION METHOD]

- For the operation method, refer to the operating manual.

- If the operation lamp is on, press the START/STOP button to turn it off.

- Press the MODE button and FAN button at the same time for more than two seconds to start the test operation. The operation lamp will light up and "a i" will be displayed on the set temperature display.

- *Perform the test operation for 60 minutes.
- *Pressing the START/STOP button will stop the test operation.

- Press the START/STOP button to stop the test run.

- Press the START/STOP button to stop the test run.

- Press the START/STOP button to stop the test run.

- Press the START/STOP button to stop the test run.

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- Press the START/STOP button to stop the test run.

- Press the START/STOP button to stop the test run.

Error code	Error contents
01	
13	
26	Indoor signal error
27	

00	Wired remote controller error
02	Indoor room temperature sensor error
04	Indoor heat exchanger temperature sensor (middle) error
28	Indoor heat exchanger temperature sensor (inlet) error
09	Float switch operated
0C	Outdoor discharge pipe temperature sensor error
06	Outdoor heat exchanger temperature sensor (outlet) error
0A	Outdoor temperature sensor error
15	Compressor temperature sensor error
1d	2-way valve temperature sensor error
1E	3-way valve temperature sensor error
29	Outdoor heat exchanger temperature sensor (middle) error
20	Indoor manual auto switch error
2A	Power supply frequency detection error
17	IPM protection
18	CT error
1A	Compressor location error
1b	Outdoor fan error
1F	Connected indoor unit error
1C	Outdoor unit computer communication error
12	Indoor fan error
0F	Discharge temperature error
24	Excessive high pressure protection on cooling
2C	4-way valve error
1b	Pressure switch error
26	Compressor temperature error
19	Active filter error
25	PFC circuit error

If "CO" appears in the unit number display, there is a remote controller error.

Unit number Error code Content

C0 1d Incompatible indoor unit is connected

C0 1C Indoor unit ↔ remote controller communication error

Unit number Error code Content

C0 1d Incompatible indoor unit is connected

C0 1C Indoor unit ↔ remote controller communication error

Unit number Error code Content

C0 1d Incompatible indoor unit is connected

C0 1C Indoor unit ↔ remote controller communication error

Unit number Error code Content

C0 1d Incompatible indoor unit is connected

C0 1C Indoor unit ↔ remote controller communication error

Unit number Error code Content

C0 1d Incompatible indoor unit is connected

C0 1C Indoor unit ↔ remote controller communication error

Unit number Error code Content

C0 1d Incompatible indoor unit is connected

C0 1C Indoor unit ↔ remote controller communication error

Unit number Error code Content

C0 1d Incompatible indoor unit is connected

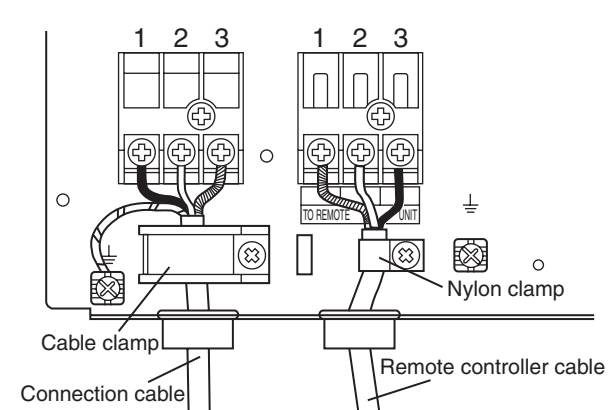
C0 1C Indoor unit ↔ remote controller communication error

Unit number Error code Content

C0 1d Incompatible indoor unit is connected

C0 1C Indoor unit ↔ remote controller communication error

- After wiring is complete, secure the remote controller cable, connection cable, and power cable with the cable clamps.



CAUTION

- Tighten the indoor unit connection wire (to the outdoor unit) and power supply indoor and outdoor unit terminal board connections firmly with the terminal board screws. Faulty connection may cause a fire.
- If the indoor unit connection wire (to the outdoor unit) and power supply are wired incorrectly, the air conditioner may be damaged.
- Wired the indoor unit connection wire (to the outdoor unit) by matching the numbers of the outdoor and indoor units terminal board numbers as shown in terminal label.
- Ground both the indoor and outdoor units by attaching a ground wire.
- Unit shall be grounded in compliance with the applicable local and national codes.

CAUTION

Do not bundle the remote controller cable, or wire the remote controller cable in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cable. It may cause erroneous operation.

4 REMOTE CONTROLLER SETTING

CAUTION

- When detecting the room temperature using the remote controller, please set up the remote controller according to the following conditions. If the remote controller is not well set, the correct room temperature will not be detected, and thus the abnormal conditions like "not cooled" or "not heated" will occur even if the air-conditioner is running normally.
 - A location with an average