

# Refrigerant R410A Duct Type

## SPLIT TYPE AIR CONDITIONER

### INSTALLATION INSTRUCTION SHEET

(PART NO. 9374318063)

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

For authorized service personnel only.

<b>WARNING</b>	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
<b>CAUTION</b>	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

<b>This air conditioner uses new refrigerant HFC (R410A).</b>	
The basic installation work procedures are the same as conventional refrigerant models. However, pay careful attention to the following points:	
①	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.
②	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.]
③	Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with conventional refrigerant models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.
④	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.
⑤	When moving, if the compressor stops during pump down, close the valve immediately.

#### 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 <sup>2</sup> ) for high pressure. -0.1 to 3.8 MPa (-76 cmHg to 38 kgf/cm <sup>2</sup> ) 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 Table. Never use copper pipes thinner than that in the table even when it is available on the market.

Thicknesses of Annealed Copper Pipes		
Pipe outside diameter	Thickness	
9.52 mm (3/8 in.)	0.80 mm	
15.88 mm (5/8 in.)	1.00 mm	

## STANDARD PARTS

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

#### INDOOR UNIT ACCESSORIES

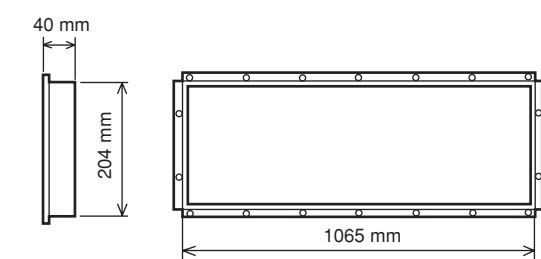
Name and Shape	Q'ty	Application	Name and Shape	Q'ty	Application
Hanger	4	For suspending the indoor unit from ceiling	Binder	1 (large) 1 (small)	For fixing the drain hose For fixing the remote controller cord
Special nut A (large flange)	4	For suspending the indoor unit from ceiling	Remote controller	1	
Special nut B (small flange)	4		Tapping screw (flush heads)	2	For installing the remote controller
Coupler heat insulation (large)	1	For indoor side pipe joint (large pipe)	Remote controller cord	1	For connecting the remote controller
Coupler heat insulation (small)	1	For indoor side pipe joint (small pipe)	Drain hose insulation	1	Insulates the drain hose and vinyl hose

## OPTIONAL PARTS

When connecting the square duct and round duct, use the optional square flange or round flange and flexible duct.

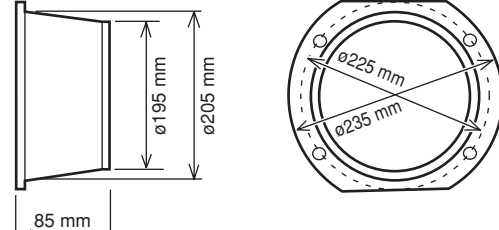
#### Square flange

Model name : UTD-SF045T (P/N 9098180007)



#### Round flange

Model name : UTD-RF204 (P/N 9093160004)



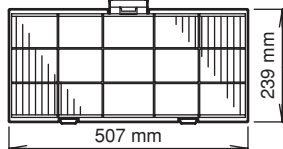
#### Flexible duct

Model name : UTD-RD202 (P/N 9074165004)



#### Long-life filter

Model name : UTD-LF25NA (P/N9079892004)



#### Simple remote controller

Model name : UTB-YPB (P/N9077582006)

#### Remote sensor

Model name : UTD-RS100 (P/N9072619004)

For authorized service personnel only.

<b>WARNING</b>	
①	For the air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.
②	Connect the indoor unit and outdoor unit with the air conditioner piping and cords available standards parts. This installation instruction sheet describes the correct connections using the installation set available from our standard parts.
③	Installation work must be performed in accordance with national wiring standards by authorized personnel only.
④	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.
⑤	Do not use an extension cord.
⑥	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 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 the unit near heat source of heat, steam, or flammable gas.
- If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

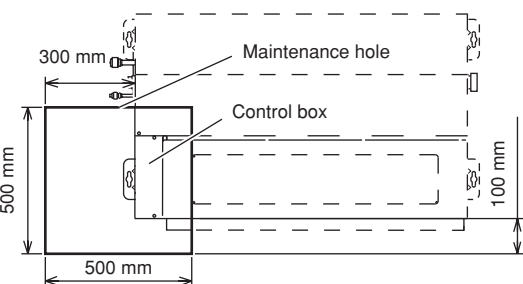
Decide the mounting position with the customer as follows:

#### INDOOR UNIT

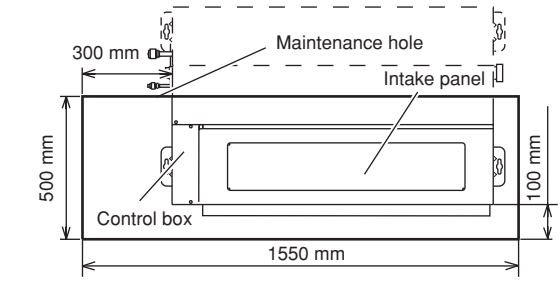
- Install the indoor unit on a place having a sufficient strength so that it withstand against the weight of the indoor unit.
- The inlet and outlet ports should not be obstructed; the air should be able to blow all over the room.
- Leave the space required to service the air conditioner.
- Install the unit where the drain pipe can be easily installed.
- Providing as much space as possible between the indoor unit and the ceiling will make work much easier.
- If installing in a place where its humidity exceeds 80%, use heat insulation to prevent condensation.

#### Maintenance hole dimension

It shall be possible to install and remove the control box.



It shall be possible to install and remove the control box, fan units and filter.



## INSTALLATION PROCEDURE

Install the air conditioner as follows:

### 1 INDOOR UNIT INSTALLATION

<b>RECOMMENDED RANGE OF EXTERNAL STATIC PRESSURE</b>	
30Pa to 150Pa	

#### 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.
- If the job is done with the panel frame only, there is a risk that the unit will come loose. Please take care.

#### CAUTION

For installation, refer to the technical data.

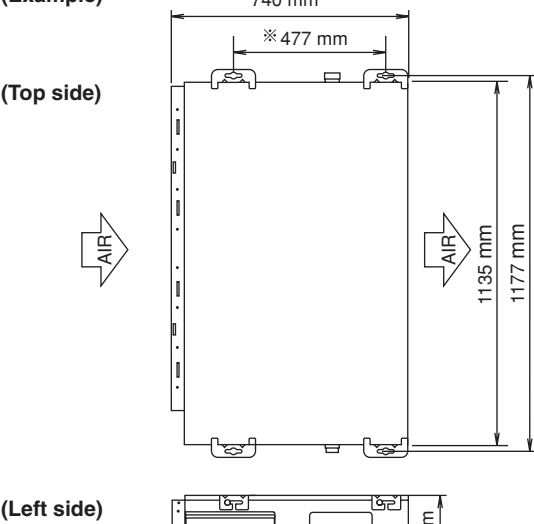
#### 1. INSTALLING THE HANGERS

#### WARNING

When fastening the hangers, make the bolt positions uniform.

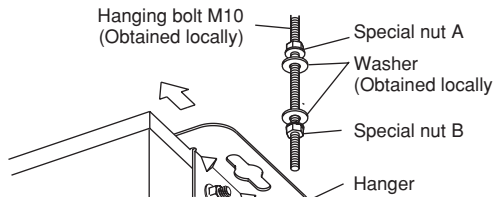
Hanging bolt installation diagram.

(Example)



The distance of ※ is adjustable according to the place of the hanging bolts. (MAX : 550 mm, MIN : 410 mm)

Slide the unit in the arrow direction and fasten it.



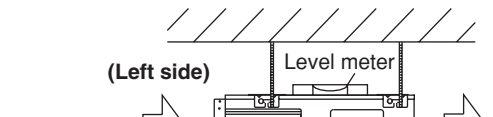
Bolt Strength	9.81 to 14.71 N·m (100 to 150 kgf·cm)
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#### WARNING

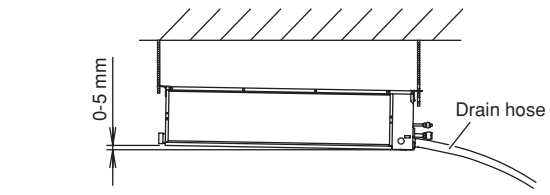
Fasten the unit securely with special nuts A and B.

#### 2. LEVELING

Base vertical direction leveling on the unit (right and left).



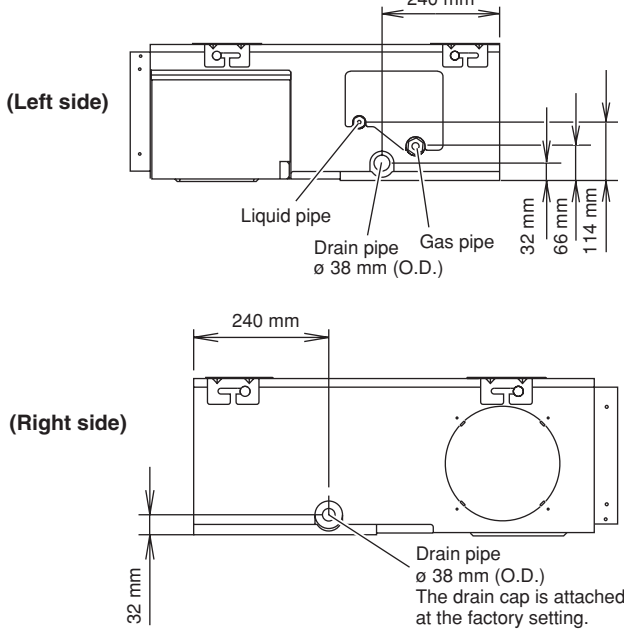
Base horizontal direction leveling on top of the unit.



Give a slight tilt to the side to which the drain hose is connected. The tilt should be in the range of 0 mm to 5 mm.

#### 3. INSTALLING DRAIN HOSE

Install the drain hose according to the measurements given in the following figure.

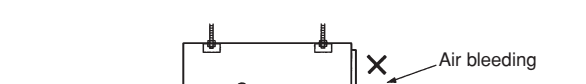
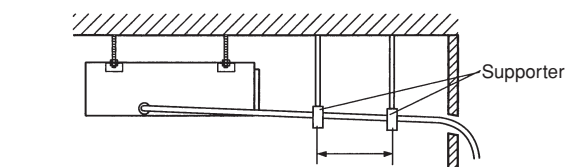
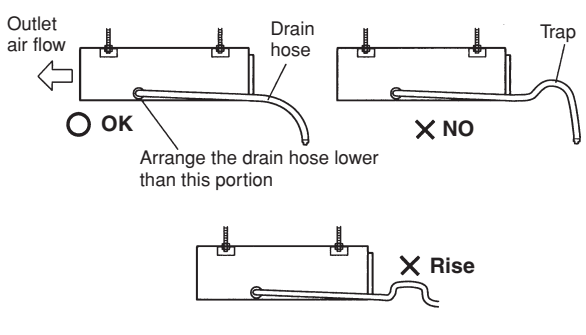


#### CAUTION

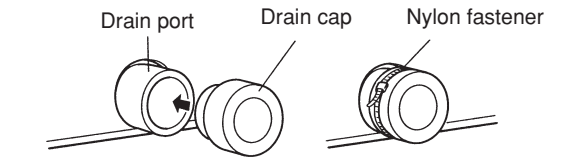
Install the drain hose in accordance with the instructions in this installation instruction sheet and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.

#### NOTE: INSTALL THE DRAIN HOSE

- Install the drain hose with downward gradient (1/50 to 1/100) and so there are no rises or traps in the hose.
- Use general hard polyvinyl chloride pipe (VP25) [outside diameter 38mm] and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the hose is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain hose.



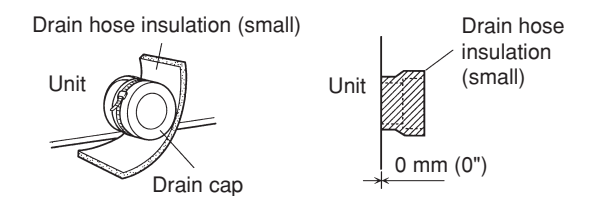
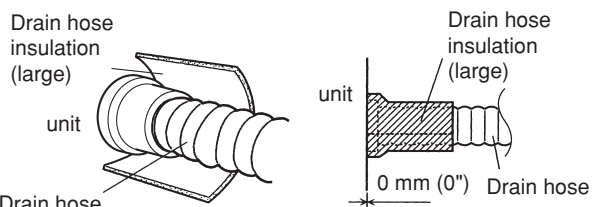
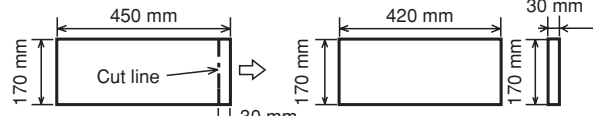
- When the unit is shipped from the factory, the drain port is on the left side (control box side).
- When using the drain port on the right side of the unit, reinstall the drain cap to the left side drain port.



#### CAUTION

Always check that the drain cap is installed to the unused drain port and is fastened with the nylon fastener. If the drain cap is not installed, or is not sufficiently fastened by the nylon fastener, water may drip during the cooling operation.

- Cut the drain hose insulation at a position approximately 30mm from the end with cutters, etc.
- Stick the large drain hose insulation at the drain hose installation side.
- Stick the small drain hose insulation at the drain cap side.





## CONNECTING THE PIPING

### WARNING

- Do not use the existing piping and flare nuts.**
- If the existing materials are used, the pressure inside the refrigerant cycle will rise and cause breakage, injury, etc. (Use the special R410A materials.)

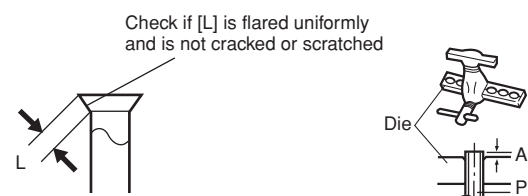
### CAUTION

- 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.

### 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.

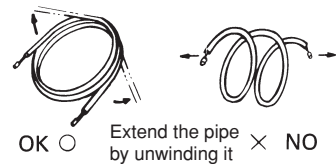
- Insert the flare nut (always use the flare nut attached to the indoor and outdoor units respectively) onto the pipe and perform the flare processing with a flare tool. Use the special R410A flare tool, or the conventional flare tool. When using the conventional flare tool, always use an allowance adjustment gauge and secure the A dimension.



Pipe outside diameter	A (mm)
	Flare tool for R410A, clutch type
9.52 mm (3/8 in.)	0 to 0.5
15.88 mm (5/8 in.)	0 to 0.5

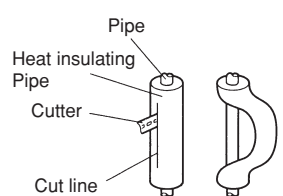
### 2. BENDING PIPES

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.

When bending the pipe, do not bend it as is. The pipe will be collapsed. In this case, cut the heat insulating pipe with a sharp cutter as shown on the right, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.



### CAUTION

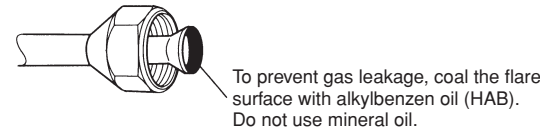
- To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 150 mm or over.
- If the pipe is bent repeatedly at the same place, it will break.

### 3. CONNECTION PIPES

Indoor unit side  
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.

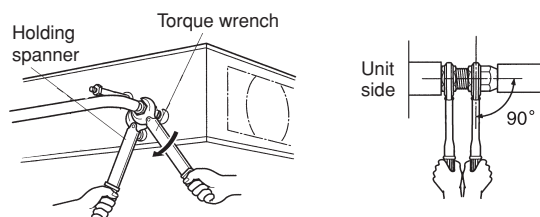


Centering the pipe against port on the indoor unit, turn the flare nut with your hand.

### 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.

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



### Flare nut tightening torque

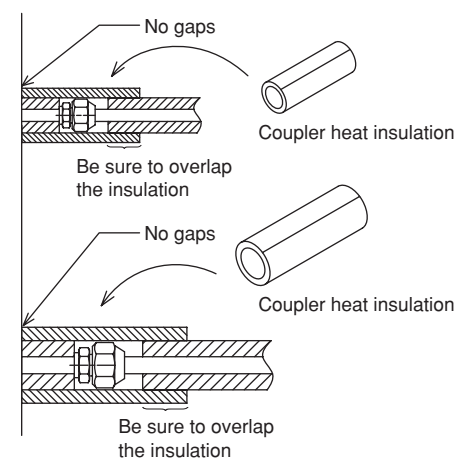
Flare nut	Tightening torque
9.52 mm (3/8 in.) dia.	33 to 42 N·m (330 to 420 kgf·cm)
15.88 mm (5/8 in.) dia.	63 to 77 N·m (630 to 770 kgf·cm)

### CAUTION

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

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

Stick coupler heat insulation (large and small) to the place where connecting pipes.



### CAUTION

- There should be no gaps between the insulation and the product.

## ELECTRICAL WIRING

### CAUTION

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

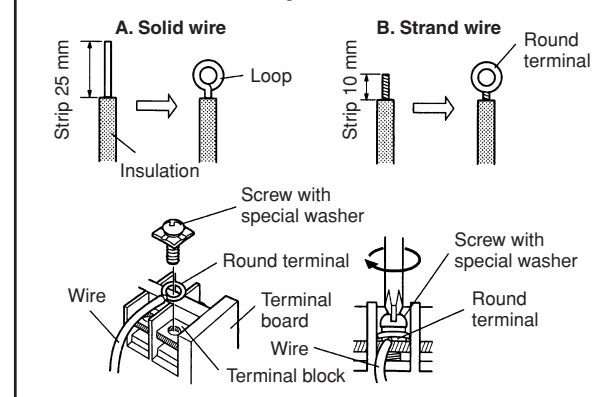
### HOW TO CONNECT WIRING TO THE TERMINALS

#### A. For solid core wiring (or F-cable)

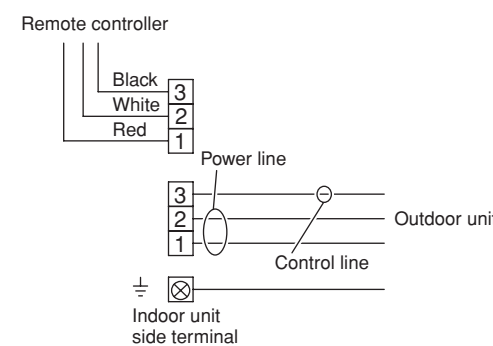
- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 25 mm (15/16") to expose the solid wire.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
- Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

#### B. For strand wiring

- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 10 mm (3/8") to expose the strand wiring.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
- Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.



### 1. CONNECTION DIAGRAMS

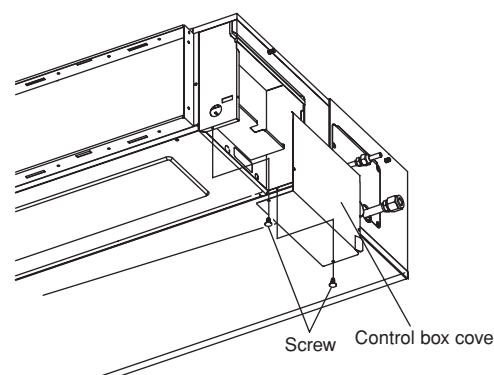


### 2. INDOOR UNIT SIDE

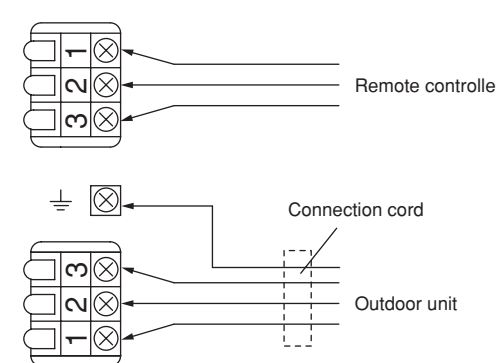
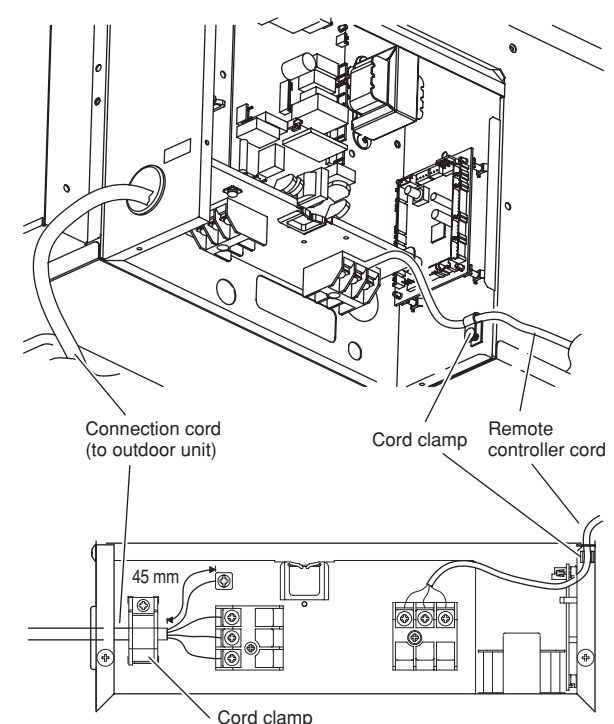
### WARNING

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

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



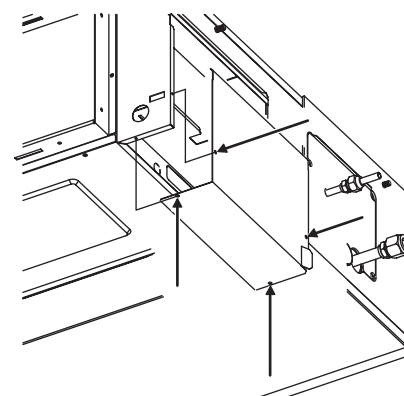
- After wiring is complete, secure the remote controller cord, connection cord, and power cord with the cord clamps.



### CAUTION

- Use care not to mistake the power supply cord and connection wires when installing.
- Install so that the wires for the remote controller will not come in contact with other connection wires.
- If there is a risk of entering insects and small animals into the hole for cords, fill in the gap with putty.

- Install control box cover.



Adjust the position of the screws for control box cover according to the installation.

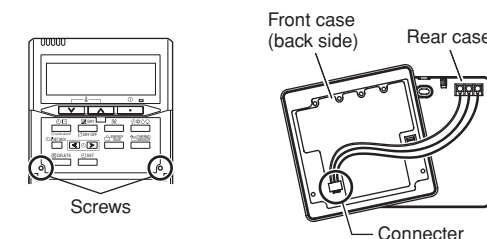
## REMOTE CONTROLLER SETTING

### CAUTION

- In order to detect the room temperature correctly when using the temperature sensor of the remote controller, do not install the remote controller in a place where it will be exposed to direct sunlight or directly below the air outlet of the indoor unit.
- When installing the remote controller and cord near a source of electromagnetic waves, separate the remote controller from the source of the electromagnetic waves and use shielded cord.
- Do not touch the remote controller PC board and PC board parts directly with your hands.

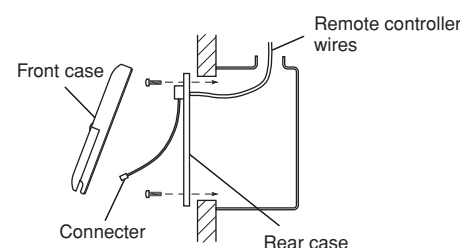
### 1. INSTALLING THE REMOTE CONTROLLER

- Open the operation panel on the front of the remote controller, remove the two screws indicated in the following figure, and then remove the front case of the remote controller.



When installing the remote controller, remove the connector from the front case. The wires may break if the connector is not removed and the front case hangs down. When installing the front case, connect the connector to the front case.

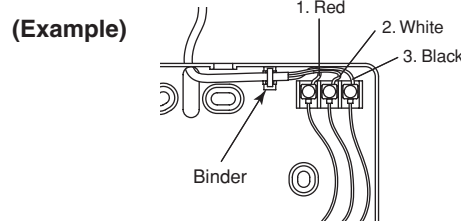
- Install the rear case to the wall, etc. with the two tapping screws. Refer to the following information to install the remote controller wires.



### 2. ROUTING THE REMOTE CONTROLLER WIRES

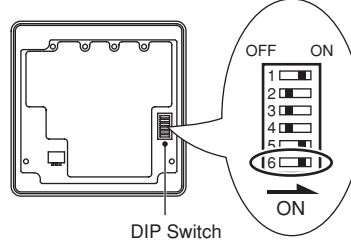
- Install the remote controller wires to the terminals on the top of the rear case as shown in the following figure.
- Fasten the wires with the binder.

Install the remote controller wires so as not to be direct touched with your hand.



### 3. SETTING THE DIP SWITCHES

When using a battery (memory backup)



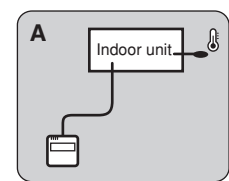
Change the DIP switch setting to use batteries. (The DIP switch is not set to use batteries at the factory.) Change DIP switch No. 6 from OFF to ON. If batteries are not used, all of the settings stored in memory will be deleted if there is a power failure.

### 4. SETTING THE ROOM TEMPERATURE DETECTION LOCATION

The detection location of the room temperature can be selected from the following three examples. Choose the detection location that is best for the installation location.

#### A. Indoor unit setting (factory setting)

The room temperature is detected by the indoor unit temperature sensor.

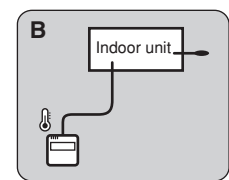


- When the THERMO SENSOR button is pressed, the lock display flashes because the function is locked at the factory.



#### B. Remote controller setting

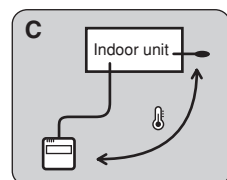
The room temperature is detected by the remote controller temperature sensor.



- Press the THERMO SENSOR button for 5 seconds or more to unlock the function. The thermo sensor display flashes and then disappears when the function is unlocked.
- Press the THERMO SENSOR button. The thermo sensor display appears.
- Press the THERMO SENSOR button again for 5 seconds or more to lock the function. The thermo sensor display flashes and then remains on when the function is locked.
- Make sure that the function is locked.

### C. Indoor unit/remote controller setting (room temperature sensor selection)

The temperature sensor of the indoor unit or the remote controller can be used to detect the room temperature.



- Press the THERMO SENSOR button for 5 seconds or more to unlock the function. The thermo sensor display flashes and then disappears when the function is unlocked.
- Press the THERMO SENSOR button to select the temperature sensor of the indoor unit or the remote controller.



### NOTES

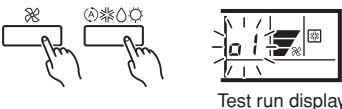
If the function to change the temperature sensor is used as shown in examples A and B (other than example C), be sure to lock the detection location. If the function is locked, the lock display will flash when the THERMO SENSOR button is pressed.

## TEST RUN

### CAUTION

- Supply power to the crankcase heater for at least 12 hours before the start of operation in winter.

- Stop the air conditioner operation.
- Press the master control button and the fan control button simultaneously for 2 seconds or more to start the test run.



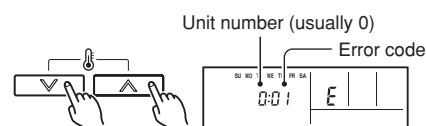
- Press the start/stop button to stop the test run.

### [SELF-DIAGNOSIS]

When the error indication "E.EE" is displayed, follow the following items to perform the self-diagnosis. "E.EE" indicates an error has occurred.

### REMOTE CONTROLLER DISPLAY

- Stop the air conditioner operation.
- Press the set temperature buttons A / V simultaneously for 5 seconds or more to start the self-diagnosis. Refer to the following tables for the description of each error code.



- Press the set temperature buttons A / V simultaneously for 5 seconds or more to stop the self-diagnosis.

Error code	Error contents
00	Communication error (indoor unit ↔ remote controller)
01	Communication error (indoor unit ↔ outdoor unit)
02	Room temperature sensor open
03	Room temperature sensor short-circuited
04	Indoor heat exchanger temperature sensor open
05	Indoor heat exchanger temperature sensor short-circuited
06	Outdoor heat exchanger temperature sensor
08	Power source connection error
09	Float switch operated
0A	Outdoor temperature sensor
0c	Discharge pipe temperature sensor
0E	Outdoor high pressure abnormal
11	Model abnormal
12	Indoor fan abnormal
13	Outdoor signal abnormal
14	Outdoor EEPROM abnormal
15	Compressor temperature sensor
16	Pressure switch error
17	IPM error
18	CT error
19	Active filter module (AFM) error
1A	Compressor does not operate
1b	Outdoor unit fan error
1c	Communication error (inverter ↔ multicontroller)
1d	2 way valve sensor error
1E	Expansion valve error
1F	Connection indoor unit error

## SPECIAL INSTALLATION METHODS

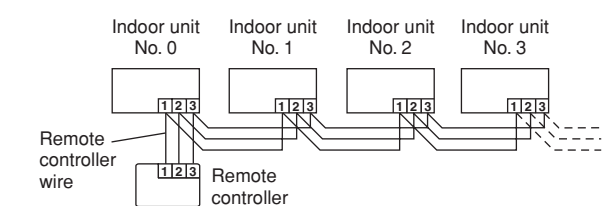
### CAUTION

- When setting the rotary switch and DIP switches, do not touch any other parts on the circuit board directly with your bare hands.
- Be sure to turn off the main power.

### 1. GROUP CONTROL SYSTEM

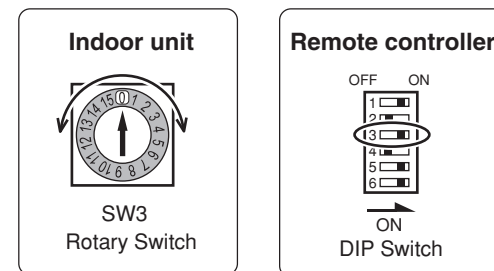
A number of indoor units can be operated at the same time using a single remote controller.

- Wiring method (indoor unit to remote controller)



- Rotary switch setting (indoor unit)  
Set the unit number of each indoor unit using the rotary switch on the indoor unit circuit board. The rotary switch is normally set to 0.

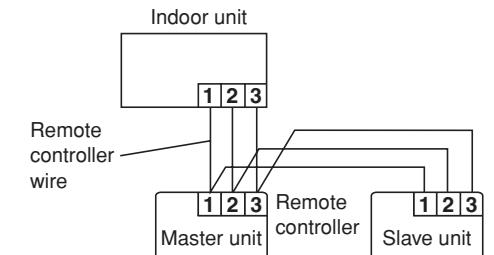
- DIP switch setting (remote controller)  
Change DIP switch No. 3 on the remote controller from OFF to ON.



### 2. DUAL REMOTE CONTROLLERS (OPTIONAL)

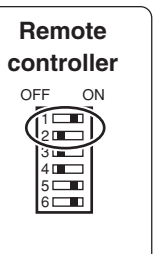
Two separate remote controllers can be used to operate the indoor units.

- Wiring method (indoor unit to remote controller)



- DIP switch setting (remote controller)  
Set the remote controller DIP switch Nos. 1 and 2 according to the following table.

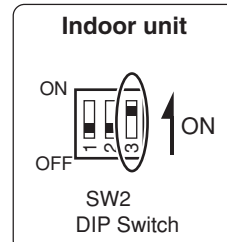
Number of remote controllers	Master unit	
	DIP-SW No. 1	DIP-SW No. 2
1 (Normal)	ON	OFF
2 (Dual)	OFF	OFF



### 3. CANCELING AUTO RESTART

The auto restart function can be canceled.

- DIP switch setting (indoor unit)  
Change the DIP switch (SW2-3) on the indoor unit circuit board from OFF to ON. The auto restart function will be canceled.



### [DIP-SWITCH SETTING]

NO.	SW state		Detail
	OFF	ON	
SW2 DIP-Switch	1	— *	Remote sensor setting
	2	Edge *	Pulse Control input setting
	3	Validity *	Invalidity Auto restart setting

\*: Factory setting