

# Refrigerant R410A Duct Type SPLIT TYPE AIR CONDITIONER INSTALLATION INSTRUCTION SHEET

(PART NO. 9374536054-03)

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.

## 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 conventional 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.
- 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 diameter	Thickness (mm)	Thickness (mm)
Small	9.52 mm (3/8 in)	0.80
Large	15.88 mm (5/8 in)	1.20

## STANDARD PARTS

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

### INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
	4	For suspending the indoor unit from ceiling
	4	For suspending the indoor unit from ceiling
	4	
	1	For indoor side pipe joint (large pipe)
	1	For indoor side pipe joint (small pipe)

Name and Shape	Q'ty	Application
	1 (large)	For fixing the drain hose
	1 (small)	For fixing the remote controller cable
	2	For installing the remote controller
	1	For connecting the remote controller
	1	Insulates the drain hose and vinyl hose

### OUTDOOR UNIT ACCESSORIES

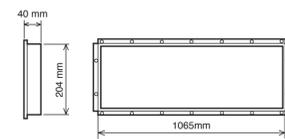
	1	For outdoor unit drain piping work [Heat & Cool mode (Reverse cycle) only]
	1	

## 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)



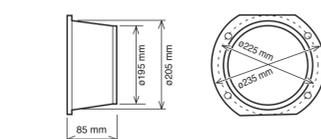
### Flexible duct

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



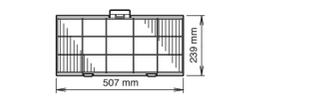
### Round flange

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



### 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.

WARNING	
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 cables 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 cable.
⑥	Do not turn on the power until all installation work is complete.

- 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

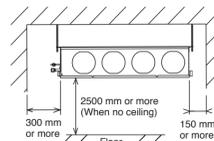
WARNING	
Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not topple or fall.	

CAUTION	
①	Do not install where there is the danger of combustible gas leakage.
②	Do not install the unit near heat source of heat, steam, or flammable gas.
③	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

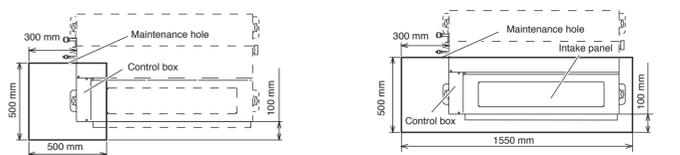
- Install the indoor unit on a place having a sufficient strength so that it withstand against the weight of the indoor unit.
- The inlet and outlet ports should not be obstructed; the air should be able to blow all over the room.
- Leave the space required to service the air conditioner.
- Install the 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

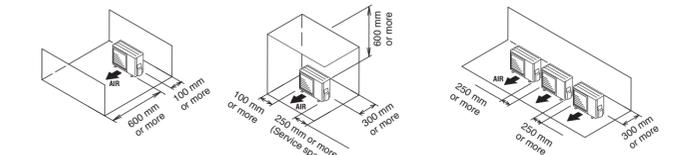
It shall be possible to install and remove the control box.

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



### OUTDOOR UNIT

- When there are obstacles at the back or front sides.
- When there are obstacles at the back, side(s), and top.
- When there are obstacles at the back side with the installation of more than one unit.



WARNING	
①	Install the unit where it will not be tilted by more than 5°.
②	When installing the outdoor unit where it may be exposed to strong wind, fasten it securely.

- If possible, do not install the unit where it will be exposed to direct sunlight. (If necessary, install a blind that does not interfere with the air flow.)
- Install the outdoor unit in a place where it will be free from being dirty or getting wet by rain as much as possible.
- Install the unit when connection to the indoor unit is easy.
- During heating operation, drain water flows from the outdoor unit. Therefore, install the outdoor unit in a place where the drain water flow will not be obstructed.
- Do not place animals and plants in the path of the warm air.
- Take the air conditioner weight into account and select a place where noise and vibration are small.
- Select a place so that the warm air and noise from the air conditioner do not disturb neighbors.
- Provide the space so that the air flow is not blocked. Also for efficient operation, leave open three of the four directions front, rear, and both sides.

## CONNECTING PIPE REQUIREMENT

CAUTION				
The maximum lengths of this product are shown in the following table. If the units are further apart than this, correct operation can not be guaranteed.				

Liquid	Gas	Pipe length		Maximum height (between indoor and outdoor)
		MAX.	MIN.	
9.52 mm (3/8 in.)	15.88 mm (5/8 in.)	25m	7.5 m	15 m

- 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).

## ELECTRICAL REQUIREMENT

- Electric wire size and fuse capacity:

Power supply cable (mm <sup>2</sup> )		Connection cable (mm <sup>2</sup> )		Breaker capacity (A)
MAX.	MIN.	MAX.	MIN.	
4.0	3.5	2.5	1.5	30

- Always use H07RN-F or equivalent to the connection cable.
- Install all electrical works in accordance to local regulation.
- Install the disconnect device with a contact gap of at least 3 mm nearby the units. (Both indoor unit and outdoor unit)

## INSTALLATION PROCEDURE

Install the air conditioner as follows:

### 1 INDOOR UNIT INSTALLATION

RECOMMENDED RANGE OF EXTERNAL STATIC PRESSURE	
30Pa~150Pa	

WARNING	
Fasten the unit securely with special nuts A and B.	

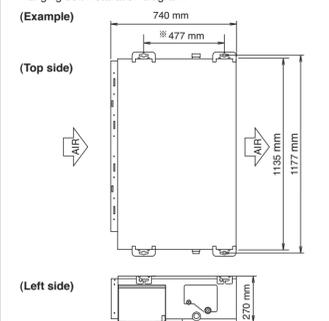
- Install the air conditioner in a location which can withstand a load of at least five times the weight of the main unit and which will not amplify sound or vibration. If the installation location is not strong enough, the indoor unit may fall and cause injuries.
- If the job is done with the panel frame only, there is a risk that the unit will come loose. Please take care.

CAUTION	
For installation, refer to the technical data.	

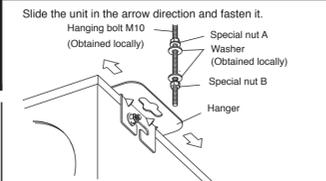
### 1. INSTALLING THE HANGERS

WARNING	
When fastening the hangers, make the bolt positions uniform.	

Hanging bolt installation diagram.



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

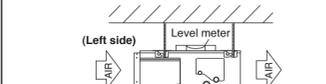


Bolt Strength	
9.81 to 14.71 N·m (100 to 150 kgf·cm)	

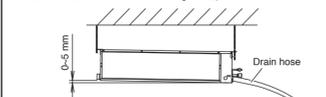
WARNING	
Fasten the unit securely with special nuts A and B.	

### 2. LEVELING

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



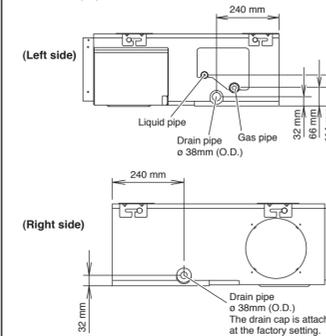
Base horizontal direction leveling on top of the unit.



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

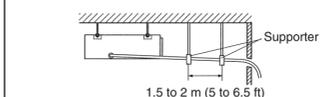
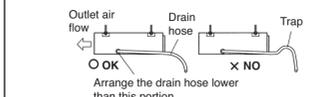
### 3. INSTALLING DRAIN HOSE

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

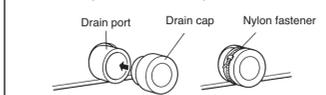


CAUTION	
Install the drain hose in accordance with the instructions in this installation instruction sheet and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.	

**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 38 mm) 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.	

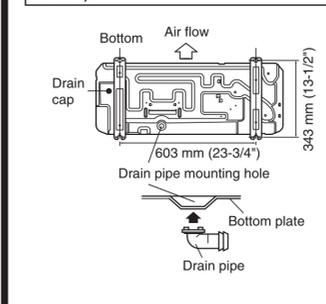
CAUTION	
When air is taken in from the bottom side, the operating sound of the product will easily enter the room. Install the product and intake grilles where the affect of the operating sound is small.	

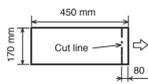
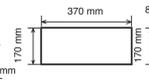
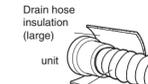
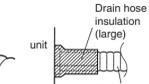
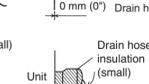
### 2 OUTDOOR UNIT INSTALLATION

WARNING	
①	Install the unit where it will not be tilted by more than 5°.
②	When installing the outdoor unit where it may be exposed to strong wind, fasten it securely.

- Set the unit on a strong stand, such as one made of concrete blocks to minimize shock and vibration.
- Do not set the unit directly on the ground because it will cause trouble.
- Outdoor unit should be fasten with bolts four places indicated by the arrows without fail.
- Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to an commercial 16 mm hose. (Heat & Cool model (Reverse cycle) only)
- When installing the drain pipe, plug all the holes (- hole at one place) other than the drain pipe mounting hole in the bottom of the outdoor unit with putty so there is no water leakage. (Heat & Cool model (Reverse cycle) only)

CAUTION	
Installation in cold regions. Do not use the accessory drain pipe and drain cap. (If the drain pipe and drain cap are used, the drain water in the pipe may freeze in extremely cold weather.)	



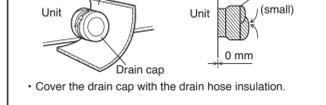
	
	
	

• Cut the drain hose insulation at a position approximately 80 mm from the end with cutters, etc.  
• Stick the large drain hose insulation at the drain hose installation side.  
• Stick the small drain hose insulation at the drain cap side.

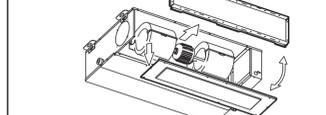
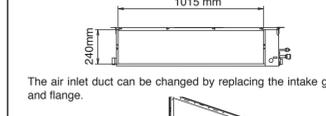
• Cover the drain cap with the drain hose insulation.

### 4. INTAKE DUCT CONNECTION

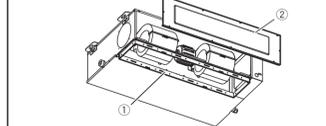
Follow the procedure in the following figure to the ducts.



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



For the bottom air intake, follow the procedure of ① → ② for installation. (The factory setting is back air intake.)



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.	

### 3 CONNECTING THE PIPING

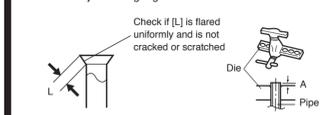
WARNING	
①	Do not use the existing piping and flare nuts. If the existing materials are used, the pressure inside the refrigerant cycle will rise and cause breakage, injury, etc. (Use the special R410A materials.)
②	During installation, make sure that the refrigerant pipe is attached firmly before you run the compressor. Do not operate the compressor under the condition of refrigerant piping not attached properly with 2-way or 3-way valve open. This may cause abnormal pressure in the refrigeration cycle that leads to breakage and even injury.

Do not operate the compressor under the condition of refrigerant piping not attached properly with 2-way or 3-way valve open. This may cause abnormal pressure in the refrigeration cycle that leads to breakage and even injury.

CAUTION	
①	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.
②	While welding the pipes, be sure to blow dry nitrogen gas through them.
③	The maximum lengths of this product are shown in the table in "CONNECTING PIPE REQUIREMENT" section. 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 (for R22) flare tool. When using the conventional flare tool, always use an allowance adjustment gauge and secure the A dimension.



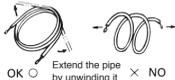
Pipe outside diameter	A (mm)		
	Flare tool for R410A, clutch type	Conventional flare tool Clutch type	Wing nut type
9.52 mm (3/8 in.)	0 to 0.5	1.0 to 1.5	1.5 to 2.0
15.88 mm (5/8 in.)	0 to 0.5	1.0 to 1.5	2.0 to 2.5

(Continued to the next page.)

### 3 CONNECTING THE PIPING

#### 2. BENDING PIPES

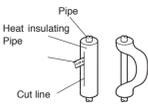
The pipes are shaped by your hands. Be careful not to collapse them.



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

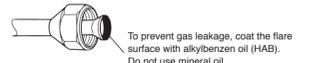
- 1 To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 150 mm or over.
- 2 If the pipe is bent repeatedly at the same place, it will break.

#### 3. CONNECTION PIPES

- (1) Indoor unit side  
Detach the caps and plugs from the pipes.

#### CAUTION

- 1 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.
- 2 Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.

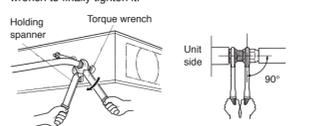


Centering the pipe against port on the indoor unit, turn the flare nut with your hand.

#### 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.



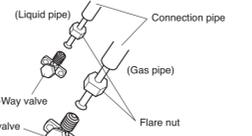
#### Flare nut tightening torque

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

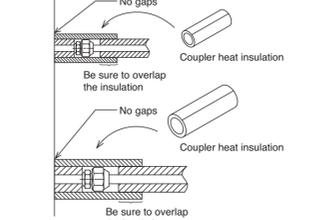
Be sure to connect the gas pipe after connecting the liquid pipe completely.

- (2) Outdoor unit side  
Tighten the flare nut of the connection pipe at the outdoor unit valve connector. The tightening method is the same as that as at the indoor side.



#### 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.

### 4 VACUUM PROCESS

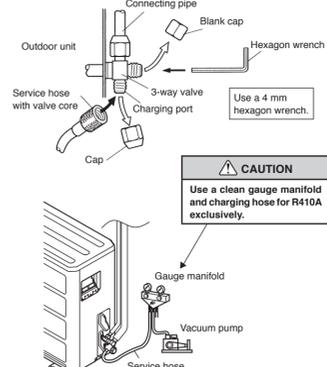
#### CAUTION

- 1 Do not purge the air refrigerants but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!
- 2 Use a vacuum pump for R410A exclusively. Using the same vacuum for different refrigerants may damage the vacuum pump or unit.

#### 1. VACUUM

- (1) Remove the cap, and connect the gauge manifold and the vacuum pump to the charging valve by the service hoses.
- (2) Vacuum the indoor unit and the connecting pipes until the pressure gauge indicates -0.1 MPa (-76 cmHg).
- (3) When -0.1 MPa (-76 cmHg) is reached, operate the vacuum pump for at least 15 minutes.
- (4) Disconnect the service hoses and fit the cap to the charging valve to the specified torque.
- (5) Remove the blank caps, and fully open the spindles of the 2-way and 3-way valves with a hexagon wrench (Torque: 6 to 7 N·m (60 to 70 kgf·cm)).
- (6) Tighten the blank caps of the 2-way valve and 3-way valve to the specified torque.

	Tightening torque
Blank cap (2-way valve)	20 to 25 N·m (200 to 250 kgf·cm)
Blank cap (3-way valve)	30 to 35 N·m (300 to 350 kgf·cm)
Charging port cap	10 to 12 N·m (100 to 120 kgf·cm)



#### CAUTION

Use a clean gauge manifold and charging hose for R410A exclusively.

### 2. ADDITIONAL CHARGE

Refrigerant suitable for a piping length of 7.5 m is charged in the outdoor unit at the factory. When the piping is longer than 7.5 m, additional charging is necessary. For the additional amount, see the table below.

Pipe length	7.5 m	10 m	15 m	20 m	25 m
	(25 ft)	(33 ft)	(49 ft)	(66 ft)	(82 ft)
Additional refrigerant (Reverse cycle)	None	100 g (3.5 oz)	300 g (10.6 oz)	500 g (17.6 oz)	700 g (24.7 oz)
	None	50 g (1.8 oz)	150 g (5.3 oz)	250 g (8.9 oz)	350 g (12.3 oz)

Between 7.5 m and 25 m, when using a connection pipe other than that in the table, charge additional refrigerant with 40 g (1.4 oz)/1 m (3.3 ft) (Reverse cycle model), 20 g (0.7 oz)/1 m (3.3 ft) (Cooling model) as the criteria.

#### WARNING

- 1 During the pump-down operation, make sure that the compressor is turned off before you remove the refrigerant piping. Do not remove the connection pipe while the compressor is in operation with 2-way or 3-way valve open. This may cause abnormal pressure in the refrigeration cycle that leads to breakage and even injury.
- 2 When installing and relocating the air conditioner, do not mix gases other than the specified refrigerant (R410A) to enter the refrigerant cycle. If air or other gas enters the refrigerant cycle, the pressure inside the cycle will rise to an abnormally high value and cause breakage, injury, etc.

#### CAUTION

- 1 When charging the refrigerant R410A, always use an electronic balance for refrigerant charging (to measure the refrigerant by weight).
- 2 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.
- 3 Add refrigerant from the charging valve after the completion of the work.
- 4 If the units are further apart than the maximum pipe length, correct operation can not be guaranteed.

### 5 GAS LEAKAGE INSPECTION

#### CAUTION

After connecting the piping, check the joints for gas leakage with gas leak detector.

### 6 ELECTRICAL WIRING

#### 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.

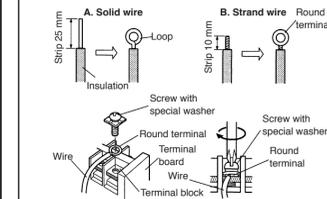
#### HOW TO CONNECT WIRING TO THE TERMINALS

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

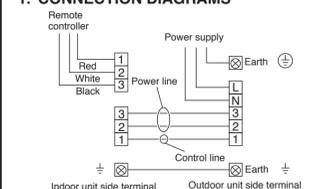
- (1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 25 mm (1 5/16") to expose the solid wire.
- (2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
- (3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
- (4) 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

- (1) 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.
- (2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
- (3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
- (4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.



#### 1. CONNECTION DIAGRAMS

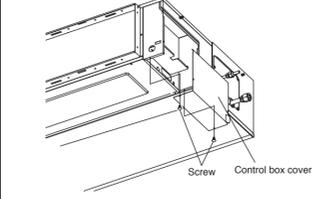


### 2. INDOOR UNIT SIDE

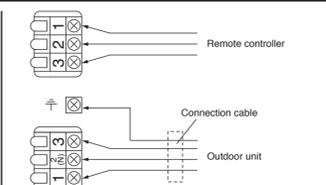
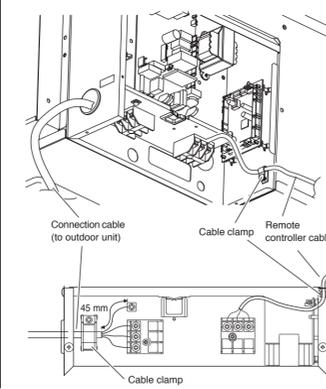
#### WARNING

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

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



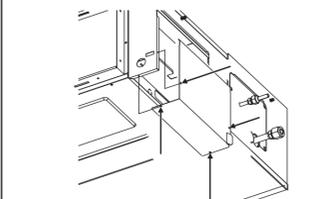
- (2) After wiring is complete, secure the remote controller cable, connection cable, and power cable with the cable clamps.



#### CAUTION

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

- (3) Install control box cover.



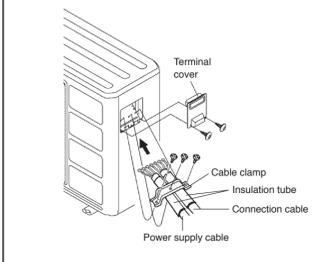
Adjust the position of the screws for control box cover according to the installation.

### 3. OUTDOOR UNIT SIDE

#### WARNING

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

- (1) Remove the terminal cover of the outdoor unit, and insert the end of the connection cable and the power supply cable into the terminal board.
- (2) Fasten the connection cable and the power supply cable with the cable clamps, and install the terminal cover.



#### CAUTION

When routing the ground wires, leave slack as shown in the illustrations.

### 7 POWER

#### WARNING

- 1 The rated voltage of this product is 230 V A.C. 50 Hz.
- 2 Before turning on the verify that the voltage is within the 198 V to 264 V range.
- 3 Always use a special branch circuit and install a special receptacle to supply power to the air conditioner.
- 4 Use a special branch circuit breaker and receptacle matched to the capacity of the air conditioner. (Fuse/Breaker capacity: 30 A)
- 5 The special branch circuit breaker is installed in the permanent wiring. Always use a circuit that can trip all the poles of the wiring and has an isolation distance of at least 3 mm between the contacts of each pole.
- 6 Perform wiring work in accordance with standards so that the air conditioner can be operated safely and positively.
- 7 Install a leakage special branch circuit breaker in accordance with the related laws and regulations and electric company standards.

#### CAUTION

- 1 The power source capacity must be the sum of the air conditioner current and the current of other electrical appliances. When the current contracted capacity is insufficient, change the contracted capacity.
- 2 When the voltage is low and the air conditioner is difficult to start, contact the power company the voltage raised.
- 3 This air conditioner must be connected to a power source that has an electrical impedance of 0.159 Ω or less or has a supply current of 100 A or greater. If the power supply does not meet the specifications, contact the power company.

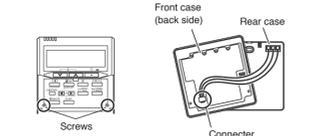
### 8 REMOTE CONTROLLER SETTING

#### CAUTION

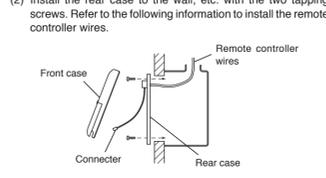
- 1 When detecting the room temperature using the remote controller, please set up the remote controller according to the following conditions. If the remote controller is not well set, the correct room temperature will not be detected, and thus the abnormal conditions like "not cooled" or "not heated" will occur even if the air-conditioner is running normally.
  - A location with an average temperature for the room being airconditioned.
  - Not directly exposed to the outlet air from the air-conditioner.
  - Out of direct sunlight.
  - Away from the influence of other heat sources.
- 2 When installing the remote controller and cable near a source of electromagnetic waves, separate the remote controller from the source of the electromagnetic waves and use shielded cable.
- 3 Do not touch the remote controller PC board and PC board parts directly with your hands.

#### 1. INSTALLING THE REMOTE CONTROLLER

- (1) 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.



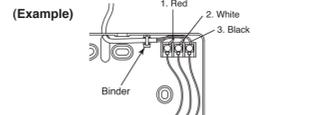
When installing the remote controller, remove the connector from the front case. The wires may break if the connector is not removed and the front case hangs down. When installing the front case, connect the connector to the front case.



#### 2. ROUTING THE REMOTE CONTROLLER WIRES

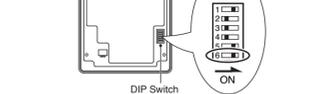
- (1) Install the remote controller wires to the terminals on the top of the rear case as shown in the following figure.
- (2) Fasten the wires with the binder.

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)

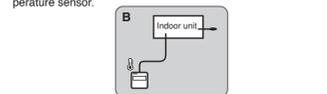
The room temperature is detected by the indoor unit temperature sensor.



- (1) 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.

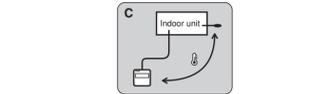


- (1) Press the THERMO SENSOR button for 5 seconds or more to unlock the function. The thermo sensor display flashes and then disappears when the function is unlocked.
- (2) Press the THERMO SENSOR button. The thermo sensor display appears.

- (3) 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.
- (4) 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.



- (1) 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.
- (2) Press the THERMO SENSOR button to select the temperature sensor of the indoor unit or the remote controller.

#### CAUTION

- 1 When select the "Remote controller setting", if the detected temperature value between the temperature sensor of the indoor unit and the temperature sensor of the remote controller varies significantly, it is likely to return to the control status of temperature sensor of the indoor unit temporarily.
- 2 As the temperature sensor of remote controller detects the temperature near the wall, when there is a certain difference between the room temperature and the wall temperature, the sensor will not detect the room temperature correctly sometimes. Especially when the outer side of the wall on which the sensor is positioned is exposed to the open air, it is recommended to use the temperature sensor of the indoor unit to detect the room temperature when the indoor and outdoor temperature difference is significant.
- 3 The temperature sensor of the remote controller is not only used when there is a problem in the detection of the temperature sensor of the indoor unit.

#### 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 (LOCK) will flash when the THERMO SENSOR button is pressed.

### 9 TEST RUN

#### CAUTION

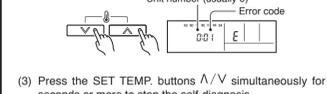
Supply power to the crankcase heater for at least 12 hours before the start of operation in winter.

- (1) Stop the air conditioner operation.
- (2) Press the MODE button and the FAN button simultaneously for 2 seconds or more to start the test run.
- (3) Press the START/STOP button to stop the test run.

#### [SELF-DIAGNOSIS]

When a malfunction occurs in the outdoor unit, the LEDs on the circuit board light to indicate the error. Refer to the following table for the description of each error according to the LEDs.

- 1. REMOTE CONTROLLER DISPLAY
- (1) Stop the air conditioner operation.
- (2) Press the SET TEMP. 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.



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 open
07	Outdoor heat exchanger temperature sensor short-circuited
08	Power source connection error
09	Float switch operated
0A	Outdoor temperature sensor open
0b	Outdoor temperature sensor short-circuited

Error code	Error contents
0C	Discharge pipe temperature sensor open
0d	Discharge pipe temperature sensor short-circuited
0E	Outdoor high pressure error
0F	Discharge pipe temperature error
11	Model error
12	Indoor fan error
13	Outdoor signal error
14	Outdoor EEPROM error

#### 2. OUTDOOR UNIT LEDS

Heat & Cool model (reverse cycle) only  
When a malfunction occurs in the outdoor unit, the LEDs on the circuit board light to indicate the error. Refer to the following table for the description of each error according to the LEDs.

Error display	LED1	LED2	Error contents
Quick flash continued	ON/OFF 0.1 sec. / 0.1 sec.	ON/OFF 0.1 sec. / 0.1 sec.	Model abnormal or EEPROM abnormal
1 quick flash repeated	ON/OFF 0.5 sec. / 2 sec.	ON/OFF 0.5 sec. / 2 sec.	Power source connection error
2 quick flash repeated	ON/OFF 0.5 sec. / 2 sec.	ON/OFF 0.5 sec. / 2 sec.	Discharge temperature sensor error
3 quick flash repeated	ON/OFF 0.5 sec. / 2 sec.	ON/OFF 0.5 sec. / 2 sec.	Outdoor heat exchanger temperature sensor error
4 quick flash repeated	ON/OFF 0.5 sec. / 2 sec.	ON/OFF 0.5 sec. / 2 sec.	Outdoor temperature sensor error
5 quick flash repeated	ON/OFF 0.5 sec. / 2 sec.	ON/OFF 0.5 sec. / 2 sec.	Communication signal error
6 quick flash repeated	ON/OFF 0.5 sec. / 2 sec.	ON/OFF 0.5 sec. / 2 sec.	Indoor unit error
7 quick flash repeated	ON/OFF 0.5 sec. / 2 sec.	ON/OFF 0.5 sec. / 2 sec.	Discharge temperature error
8 quick flash repeated	ON/OFF 0.5 sec. / 2 sec.	ON/OFF 0.5 sec. / 2 sec.	High pressure error

When the fault is cleared, the LED lamp goes off. However, for discharge pipe temperature abnormal and high pressure abnormal, the LED lamp lights continuously for 24 hours, as long as the power is not turned off.

### 10 SPECIAL INSTALLATION METHODS

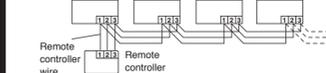
#### CAUTION

- 1 When setting the rotary switch and DIP switches, do not touch any other parts on the circuit board directly with your bare hands.
- 2 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.

- (1) Wiring method (indoor unit to remote controller)



- (2) 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.

- (3) DIP switch setting (remote controller)

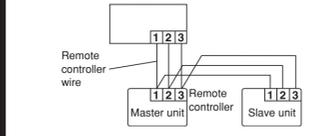
Change DIP switch No. 3 on the remote controller from OFF to ON.



#### 2. DUAL REMOTE CONTROLLERS (OPTIONAL)

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

- (1) Wiring method (indoor unit to remote controller)



- (2) 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		Remote controller
	DIP-SW No. 1	DIP-SW No. 2	
1 (Normal)	ON	OFF	OFF
2 (Dual)	OFF	OFF	

#### 3. CANCELING AUTO RESTART

The auto restart function can be canceled.

- (1) 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]

##### • Indoor unit