# R410A Duct Type

# **SPLIT TYPE AIR CONDITIONER** INSTALLATION INSTRUCTION

(PART NO. 9366259053-03)

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

For authorized	service	personnel	only
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<b>⚠ WARNING</b>	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
A CAUTION	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
- B) Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with conventional refriger ant 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/cm²) for high pressure.  –0.1 to 3.8 MPa (–76 cmHg to 38 kgf/cm²) 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	or Special gas leakage detector for HFC refrigerant R410A.	

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 inte rior 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

diameter for R410A is 1/2 UNF 20 threads per inch.]

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 avail

#### Thicknesses of Annealed Copper Pipes (R410A)

Pipe outside diameter	Inickness
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
	6.35 mm (1/4 in.) 9.52 mm (3/8 in.) 12.70 mm (1/2 in.) 15.88 mm (5/8 in.)

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,	9.52 mm (3/8 in.)	0.80 mm
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	15.88 mm (5/8 in.)	1.00 mm
	19.05 mm (3/4 in.)	1.20 mm

#### INDOOR UNIT ACCESSORIES

STANDARD PARTS

Name and Shape	Q'ty	Application
Hanger	4	For suspending the indoor unit from ceiling
Special nut A (large flange)	4	For suspending the indoor unit from ceiling
Special nut B (small flange)	4	
Coupler heat insulation (large)	1	For indoor side pipe joint (gas pipe)
Coupler heat		For indoor side pipe joint

Name and Shape	Q'ty	Application
Binder	1 (large)	For fixing the drain hose
	1 (small)	For fixing the remote controller cable
Remote controller	1	
Tapping screw (flush heads)	2	For installing the remote controller
Remote controller cable	1	For connecting the remote controller
Drain hose insulation	1	Insulates the drain hose and vinyl hose

### **OUTDOOR UNIT ACCESSORIES**

insulation (small)

Drain pipe	1	For outdoor unit drain piping work [Heat & Cool mode
Drain cap	2	(Reverse cycle) only]

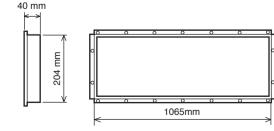


### **OPTIONAL PARTS**

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

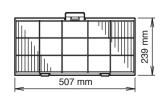
(liquid pipe)

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

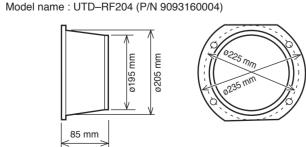


Long-life filter Model name : UTD-LF25NA (P/N9079892004)

9366259053-03.indd 1



# Round flange



Simple remote controller Model name : UTB-YPB (P/N9077582006)

Remote sensor Model name: UTD-RS100 (P/N9072619004)

#### For authorized service personnel only.

#### **⚠** WARNING

- 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
- 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

#### **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.

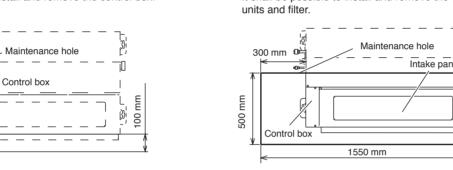
### **!** CAUTION

- Do not install where there is the danger of combustible gas leakage.
- 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
- Decide the mounting position with the customer as follows:

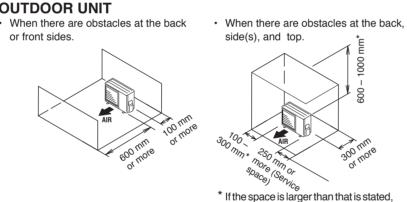
#### **INDOOR UNIT**

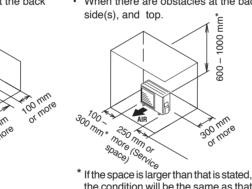
- (1) Install the indoor unit on a place having a sufficient strength so that it withstand against the weight of the indoor unit.
- (2) The inlet and outlet ports should not be obstructed; the air should be able to blow all
- (3) Leave the space required to service the air conditioner
- (4) Install the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

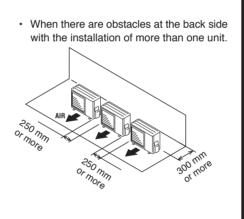
#### Maintenance hole dimension It shall be possible to install and remove the control box It shall be possible to install and remove the control box, fan



#### **OUTDOOR UNIT**







the condition will be the same as that there are no obstacles

## **⚠** WARNING

- 2 When installing the outdoor unit where it may exposed to strong wind, fasten it securely.
- (1) If possible, do not install the unit where it will exposed to direct sunlight.

Install the unit where it will not be tilted by more than 5°.

- (If necessary, install a blind that does not interfere with the air flow.)
- (2) Install the outdoor unit in a place where it will be free from being dirty or getting wet by rain as much as possible.
- (3) Install the unit when connection to the indoor unit is easy. (4) During heating operation, drain water flows from the outdoor unit. Therefore, install the outdoor unit in a place where the drain water
- (5) Do not place animals and plants in the path of the warm air.
- (6) Take the air conditioner weight into account and select a place where noise and vibration are small.
- (7) Select a place so that the warm air and noise from the air conditioner do not disturb neighbors.
- (8) 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

## 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.

Diameter		Pipe length		Maximum height	
Liquid	Gas	MAX.	MIN.	(between indoor and outdoor)	
9.52 mm (3/8 in.)	15.88 mm (5/8 in.)	30 m	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 breaker capacity

		. ,		
Power supply cable (mm²) Connection cable (mm²)		Breaker capacity (A)		
MAX.	MIN.	MAX.	MIN.	breaker capacity (A)
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 the standard.
- Install the disconnect device with a contact gap of at least 3 mm in all poles nearby the units.
- (Both indoor unit and outdoor unit)

## **INSTALLATION PROCEDURE**

## **INDOOR UNIT INSTALLATION**

RECOMMENDED RANGE OF **EXTERNAL STATIC PRESSURE** 

#### 30Pa~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

<b>⚠</b> CAUTION	

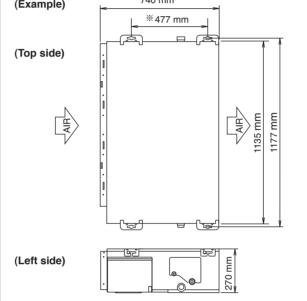
#### 1. INSTALLING THE HANGERS

For installation, refer to the technical data.

# **⚠ WARNING**

When fastening the hangers, make the bolt positions uniform.

#### Hanging bolt installation diagram



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

**↑** CAUTION

1) If an intake duct is installed, take care not to

#### ø 38mm (O.D.) The drain cap is attached at the factory setting.

Slide the unit in the arrow direction and fasten it.

**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.

Give a slight tilt to the side to which the drain hose is connected

Install the drain hose according to the measurements given in the

Level meter

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

Base horizontal direction leveling on top of the unit.

The tilt should be in the range of 0 mm to 5 mm

3. INSTALLING DRAIN HOSE

following figure.

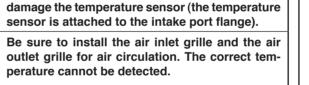
Washer

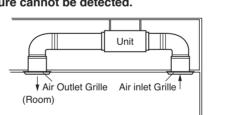
(Obtained locally

Hanging bolt M10

(Obtained locally)

2. LEVELING





- 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.

## 5. OUTLET DUCT CONNECTION

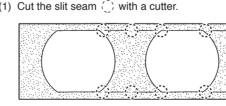
## Duct installation pattern ( CUT PART)

(2) Round duct outlet ×4

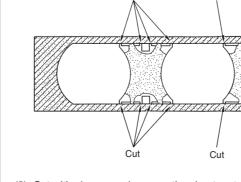
(1) Square duct

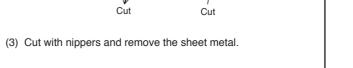


When using as a square duct

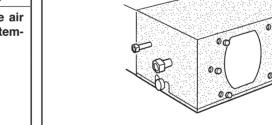


(2) Turn up the insulation around the points to be cut according to the outlet port shape working points so that the insulation does not stick out at the 1/1/1/2 part.



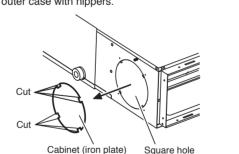


4) Since there is a slit in the insulation, use radio pliers, tweezers, etc. to stretch the screw hole part used when installing the round flange and square flange when connecting the duct.



#### 6. FRESH AIR INTAKE (Processing before use)

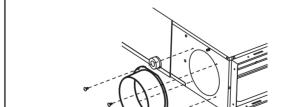
(1) When taking in fresh air, cut a slit shaped cabinet in the left side of the outer case with nippers



#### **CAUTION** When removing the cabinet (iron plate), be careful not to damage the indoor unit internal parts and surrounding area (outer case)

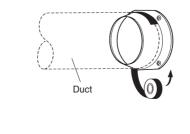
2) When processing the cabinet (iron plate), be careful not to injure yourself with burrs, etc.

(2) Install the round flange (option parts) to the fresh air intake.



### (3) Connect the duct to the round flange.

(4) Seal with a band and vinyl tape, etc. so that air does not leak



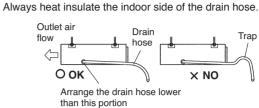
#### Install the drain hose in accordance with the instructions in this installation instruction sheet and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.

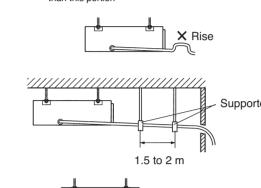
#### NOTE: INSTALL THE DRAIN HOSE

· 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

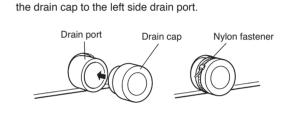
**CAUTION** 

- 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.





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

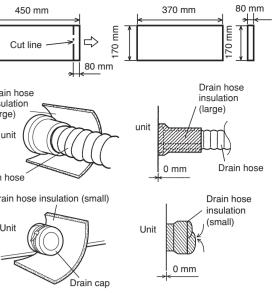


#### Always check that the drain cap is installed to the unused drain port and is fastened with the nylon If the drain cap is not installed, or is not sufficiently

**A** CAUTION

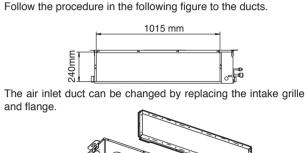
fastened by the nylon fastener, water may drip during the cooling operation.

#### 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

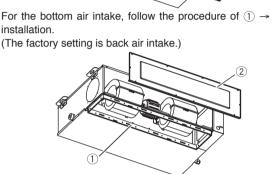


· Cover the drain cap with the drain hose insulation.

#### 4. INTAKE DUCT CONNECTION



For the bottom air intake, follow the procedure of  $(1) \rightarrow (2)$  for



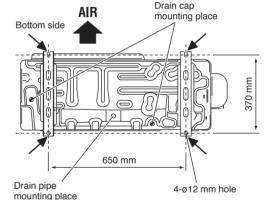
**⚠** CAUTION

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

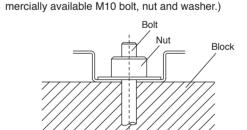
## **OUTDOOR UNIT** INSTALLATION

#### 1. OUTDOOR UNIT PROCESSING

(1) Outdoor unit to be fasten with bolts at the four places indicated by the arrows without fail



(2) Fix securely with bolts on a solid block. (Use 4 sets of com

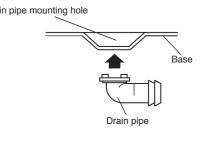


(3) Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to a commercial 16 mm hose. (Reverse cycle model only)

(4) When installing the drain pipe, plug all the holes other than the drain pipe mounting hole in the bottom of the outdoor unit with putty so there is no water leakage. (Reverse cycle model only)

#### **CAUTION** When the outdoor temperature is 0°C or less, 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 (Reverse cycle model only)



## **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. 3) The maximum lengths of this product are shown

## correct operation can not be guaranteed.

1. FLARING (1) Cut the connection pipe to the necessary length with a pipe

indoor and outdoor units respectively) onto the pipe and perform

in the table. If the units are further apart than this.

(2) Hold the pipe downward so that cuttings will not enter the pipe and remove the burrs. (3) Insert the flare nut (always use the flare nut attached to the

the flare processing with a flare tool. Use the special R410A flare tool, or the conventional (for R22)



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

Dimension B  $_{-0.4}^{0}$  (mm) Pipe outside diameter 6.35 mm (1/4 in.) 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



of Flare nut diameter 6.35 mm (1/4 in.) 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.)

Width across flats

#### **⚠** CAUTION

- To prevent breaking of the pipe, avoid sharp 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

Indoor unit

(1) Detach the caps and plugs from the pipes.

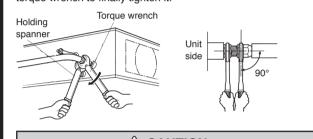
Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

**CAUTION** 

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

**⚠** CAUTION

Do not make power supply cable and connection

(6) Put the service cover and valve cover back after completion

/!\ WARNING

The rated voltage of this product is 230 V A.C.

Before turning on the verify that the voltage is

Always use a special branch circuit and install

a special receptacle to supply power to the air

Use a special branch circuit breaker and receptacle matched to the capacity of the air condi-

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

Perform wiring work in accordance with stan-

dards so that the air conditioner can be operated

Install a leakage special branch circuit breaker

in accordance with the related laws and regula-

**CAUTION** 

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

When the voltage is low and the air conditioner

is difficult to start, contact your power supplier

tions and electric company standards.

tioner. (Fuse/ Breaker capacity: 30 A)

within the 198 V to 264 V range.

of the work.

50 Hz.

conditioner.

contacts of each pole.

safely and positively.

contracted capacity.

to raise the voltage.

Power supply cable

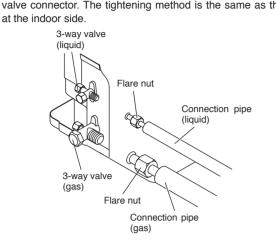
and connection cable

cable come in contact with valve (Gas).

Flare nut Tightening torque 6.35 mm (1/4 in.) dia. 14 to 18 N·m (140 to 180 kgf·cm) 9.52 mm (3/8 in.) dia. 33 to 42 N·m (330 to 420 kgf·cm) 12.70 mm (1/2 in.) dia. 50 to 62 N·m (500 to 620 kgf·cm) 15.88 mm (5/8 in.) dia. 63 to 77 N·m (630 to 770 kgf·cm) 19.05 mm (3/4 in.) dia. 100 to 110 N·m (1000 to 1100 kgf·cm)

#### **Outdoor unit**

Tighten the flare nut of the connection pipe at the outdoor unit valve connector. The tightening method is the same as that as



#### 4. 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 30 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: 6~7 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

Pipe outside diameter		Tightening torque
	6.35 mm (1/4 in.)	20 to 25 N·m (200 to 250 kgf·cm)
	9.52 mm (3/8 in.)	20 to 25 N·m (200 to 250 kgf·cm)
Blank	12.70 mm (1/2 in.)	25 to 30 N·m (250 to 300 kgf·cm)
	15.88 mm (5/8 in.)	30 to 35 N·m (300 to 350 kgf·cm)
	19.05 mm (3/4 in.)	35 to 40 N·m (350 to 400 kgf·cm)
Charging port cap		10 to 12 N·m (100 to 120 kgf·cm)

REMOTE CONTROLLER

**!** CAUTION

ture using the remote controller, sensor

please set up the remote controller

according to the following condi-

If the remote controller is not well

room being airconditioned.

normally.

air-conditioner.

Out of direct sunlight.

When detecting the room tempera- 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

· A location with an average temperature for the

Not directly exposed to the outlet air from the

· Away from the influence of other heat sources.

near a source of electromagnetic waves, sepa-

rate the remote controller from the source of

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,

When installing the remote controller, remove the connector

not removed and the front case hangs down.

controller wires

from the front case. The wires may break if the connector is

When installing the front case, connect the connector to the

2) Install the rear case to the wall, etc. with the two tapping

screws. Refer to the following information to install the remote

then remove the front case of the remote controller.

remove the two screws indicated in the following figure, and

(back side)

the electromagnetic waves and use shielded

When installing the remote controller and cable

SETTING

#### **↑** CAUTION When moving and installing the air conditioner do not mix gas other than the specified refriger-

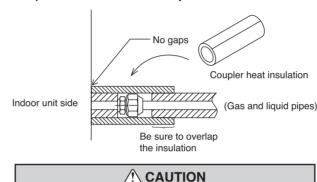
- ant (R410A) inside the refrigerant cycle. 2 When charging the refrigerant R410A, always use an electronic balance for refrigerant charqing (to measure the refrigerant by weight).
- 3 When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition Liquid
- 4 Add refrigerant from the charging valve after the completion of the work.
- 5 If the units are further apart than the maximum pipe length, correct operation can not be guar-

#### 6. GAS LEAKAGE INSPECTION

#### **⚠** CAUTION

- 1) After connecting the piping, check the all joints for gas leakage with gas leak detector.
- When inspecting gas leakage, always use the vacuum pump for pressure. Do not use nitrogen

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



There should be no gaps between the insulation

#### **⚠** WARNING

- 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 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

with your hand.

Service hose

with valve core

Cap

Use a 4 mm

Charging por

Vacuum pump

**↑** CAUTION

1) Do not purge the air refrigerants but use a vacuum

refrigerant in the outdoor unit for air purging!

Use a vacuum pump and gauge manifold and

charging hose for R410A exclusively. Using the

same vacuum for different refrigerants may dam-

Refrigerant suitable for a piping length of 7.5 m is charged in the

When the piping is longer than 7.5 m, additional charging is

None

None

250 g

500 g

50 g

30 m

100 g 40 g/m

450 g 20 g/m

900 g 40 g/m

20 g/m

g/m

age the vacuum pump or the unit.

For the additional amount, see the table below

5. ADDITIONAL CHARGE

outdoor unit at the factory.

rigerant (R410A)

efrigerant (R410A) Cooling model

Cooling model

Reverse cycle model

Reverse cycle model

necessarv.

pump to vacuum the installation! There is no extra

hexagon wrench.

# 2 During the pump-down operation, make sure that the compressor is turned off before you remove the refrigerant piping.

2. ROUTING THE REMOTE CONTROLLER

(1) Install the remote controller wires to the terminals on the top of

Install the remote controller wires so as not to be direct touched

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.

the rear case as shown in the following figure.

3. SETTING THE DIP SWITCHES

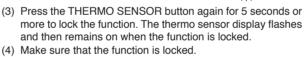
When using a battery (memory backup)

(2) Fasten the wires with the binder

#### then disappears when the function is unlocked. (2) Press the THERMO SENSOR button. The thermo sensor display appears.

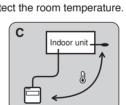
(1) Press the THERMO SENSOR button for 5 seconds or more

to unlock the function. The thermo sensor display flashes and

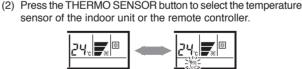


#### C. Indoor unit/remote controller setting (room temperature sensor selection)

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.



**CAUTION** 

ੂਪ੍ਹਾ **ਡ** setting", if the detected temperature

sensor of the indoor unit and the temperature

sensor of the remote controller varies signifi-

cantly, it is likely to return to the control status

of temperature sensor of the indoor unit tem-

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 sen-

sor will not detect the room temperature cor-

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 tem-

perature sensor of the indoor unit to detect the

room temperature when the indoor and outdoor

ler is not only used when there is a problem in

the detection of the temperature sensor of the

3) The temperature sensor of the remote control-

temperature difference is significant.

When select the "Remote controller

value between the temperature

#### 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. f batteries are not used, all of the settings stored in memory will

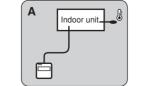
be deleted if there is a power failure. 4. SETTING THE ROOM TEMPERATURE

# DETECTION LOCATION

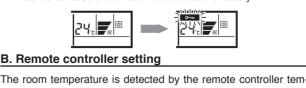
The detection location of the room temperature can be selected from the following three examples. Choose the detection location that is best for the installation location

## A. Indoor unit setting (factory setting)

The room temperature is detected by the indoor unit temperature



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



perature sensor.

#### NOTES

indoor unit.

rectly sometimes.

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.

# **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 cable colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.
- Connect the connection cables firmly to the terminal board. Imperfect installation may cause
- 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.

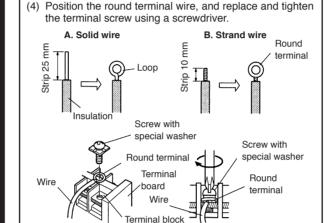
#### **HOW TO CONNECT WIRING** TO THE TERMINALS

#### 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 to expose the solid 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. ) Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdrive

#### 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 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 tighte the terminal screw using a screwdriver

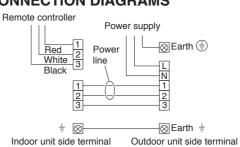


#### **CAUTION**

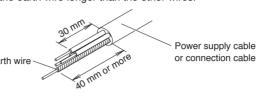
Do not bundle the remote controller cable, or wire the remote controller cable in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cable. It may cause erroneous operation.

**TEST RUN** 

#### 1. CONNECTION DIAGRAMS



#### 2. CONNECTION CABLE PREPARATION Keep the earth wire longer than the other wires.

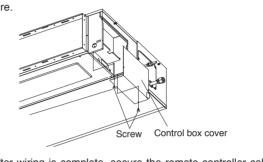


#### 3. INDOOR UNIT

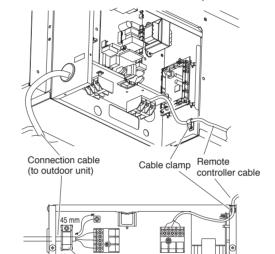
#### **↑** CAUTION 1) Use care not to mistake the power supply cable and connection wires when installing. Install so that the wires for the remote controller will not come in contact with other connection wires. 3 If there is a risk of entering insects and small

animals into the hole for cables, fill in the gap

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



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



Error contents

Discharge pipe temperature sensor short-

Outdoor high pressure error

Model error

2. OUTDOOR UNIT LEDS

ndoor fan error

Outdoor signal error

Heat & Cool model (reverse cycle) only

Outdoor EEPROM error

When a malfunction occurs in the outdoor unit, the LEDs on the

circuit board light to indicate the error. Refer to the following table

LED2

опппппппп ис

0.1 sec.

Quick flash

**Error contents** 

Model abnormal o

**EEPROM** error

for the description of each error according to the LEDs.

Discharge pipe temperature error

Error code

0d

11

13

\_\_\_\_0.1 sec.

Quick flash

5 guick flash

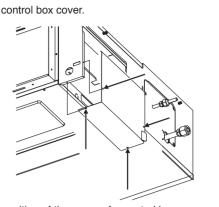
6 guick flash

repeated

N HODODOOR

# Remote controller

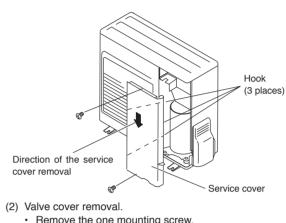
(3) Install control box cover



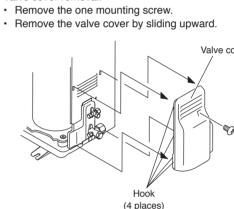
Adjust the position of the screws for control box cover according to the installation.

#### 4. OUTDOOR UNIT

(1) Service cover removal Remove the two mounting screws. · Remove the service cover by pushing downwards.



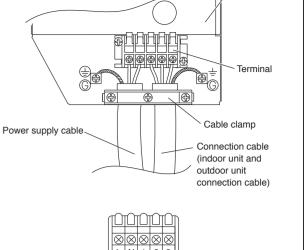
Remove the one mounting screw.

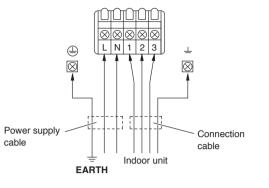


Control box

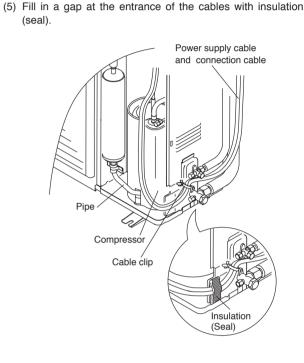
(4) Fasten the power supply cable and connection cable with cable clamp.

(3) Connect the power supply cable and the connection cable to





cable



# SPECIAL INSTALLATION

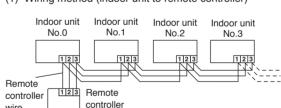
**A** CAUTION When setting the rotary switch and DIP switches, do not touch any other parts on the circuit board directly with your bare hands. Be sure to turn off the main power.

## **GROUP CONTROL SYSTEM**

**METHODS** 

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

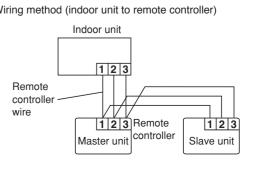


# ON **DIP Switch**

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

Two separate remote controllers can be used to operate the

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



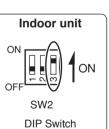
#### (2) DIP switch setting (remote controller) Set the remote controller DIP switch Nos. 1 and 2 according to the following table.

umber	Maste	Remote	
remote ontrollers	DIP-SW No. 1	DIP-SW No. 2	controller OFF ON
(Normal)	ON	OFF	
2 (Dual)	OFF	OFF	4 <b>-</b>
umber	Slave	unit	6 💶
remote ontrollers	DIP-SW No. 1	DIP-SW No. 2	
/N     \			

## (Normal) 2 (Dual) ON ON

#### 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]

SW state

		OFF	0	
SW2	1	- *	_	Remote sensor setting
SW2 DIP- Switch	2	Edge *	Pulse	Control input setting
	3	Validity *	Invalidity	Auto restart setting
Remote controller				

	NO.	OFF	ON	Detail
DIP- Switch	1		*	Dual remote
	2	*		controller setting
	3	One unit *	Multiple unit	Group control setting
	4	Heat & Cool model	Cooling only model	
	5	Invalidity	Validity *	Auto changeover setting
	6	Invalidity *	Validity	Memory backup setting

PART NO. 9366259053-03

9366259053-03.indd 2

# Remote controller

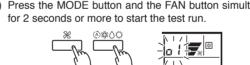
Detail

# SW state

\*: Factory setting

## **⚠** 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



(3) Press the START/STOP button to stop the test run.

#### [SELF-DIAGNOSIS] When the error indication "E:EE" is displayed, follow the follow-

(1) Stop the air conditioner operation

ing items to perform the self-diagnosis. "E:EE" indicates an error 1. REMOTE CONTROLLER DISPLAY

(2) Press the SET TEMP. buttons  $\Lambda/V$  simultaneously for 5 seconds or more to start the self-diagnosis. Refer to the following tables for the description of each error

Error code	Error contents
00	Communication error (indoor unit remote controller)
01	Communication error (indoor 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
80	Power source connection error
09	Float switch operated
0A	Outdoor temperature sensor open
0b	Outdoor temperature sensor short-circuited

Discharge pipe temperature sensor open

(3) Press the SET TEMP. buttons  $\Lambda/V$  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 open
07	Outdoor heat exchanger temperature sensor short-circuited
80	Power source connection error
09	Float switch operated
0A	Outdoor temperature sensor open
01	Outdoor temperature sensor short-circuited

continued 0.5 sec. Power source 2 sec. connection error Lighting continued 1 quick flash 0.5 sec. temperature sensor 2 sec. Lighting continued 2 guick flash 0.5 sec. Outdoor heat exchanger \_\_\_\_2 sec. temperature senso Lighting continued 3 quick flash 4 quick flash Outdoor temperatur Lighting continued repeated sensor error 5 quick flash Communication Lighting continued signal error 6 quick flash Lighting continued Indoor unit error repeated 7 quick flash Lighting continued repeated temperature erro 8 quick flash Lighting continued | High pressure erro

Dislighting continued error (24h) 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.

Dislighting continued ture error (24h)

Discharge tempera

High pressure