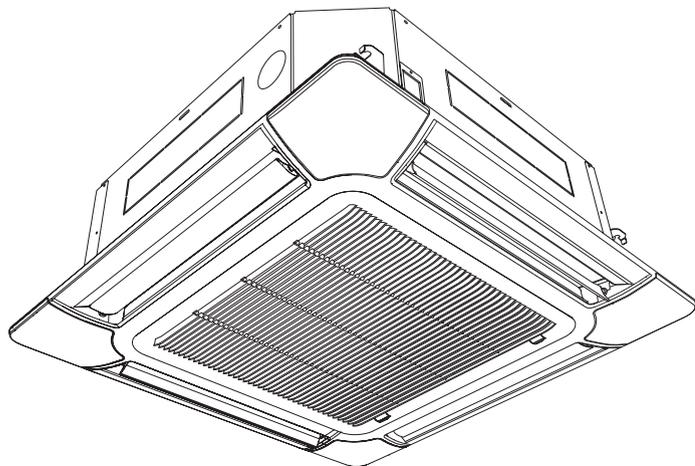


AIR CONDITIONER



INSTALLATION MANUAL

INDOOR UNIT (Cassette type)
For authorized service personnel only.

English

INSTALLATIONSANLEITUNG

INNENGERÄT (Kassettyp)
Nur für autorisiertes Fachpersonal.

Deutsch

MANUEL D'INSTALLATION

UNITÉ INTÉRIEURE (Type cassette)
Pour le personnel de service agréé uniquement.

Français

MANUAL DE INSTALACIÓN

UNIDAD INTERIOR (Tipo cassette)
Únicamente para personal de servicio autorizado.

Español

MANUALE D'INSTALLAZIONE

UNITÀ INTERNA (Tipo a cassetta)
A uso esclusivo del personale tecnico autorizzato.

Italiano

ΕΓΧΕΙΡΙΔΙΟ ΕΓΚΑΤΑΣΤΑΣΗΣ

ΕΣΩΤΕΡΙΚΗ ΜΟΝΑΔΑ (Τύπος κασέτας)
Μόνο για εξουσιοδοτημένο τεχνικό προσωπικό.

Ελληνικά

MANUAL DE INSTALAÇÃO

UNIDADE INTERNA (Tipo cassete)
Somente para o pessoal do serviço técnico autorizado.

Português

РУКОВОДСТВО ПО УСТАНОВКЕ

ВНУТРЕННИЙ БЛОК (кассетного типа)
Только для авторизованного обслуживающего персонала.

Русский

KURULUM KILAVUZU

İÇ ÜNİTE (Kaset tipi)
Yalnızca yetkili servis personeli için.

Türkçe



PART No. 9378590069-04

INSTALLATION MANUAL

PART No. 9378590069-04

INDOOR UNIT (Cassette type)

[Original instructions]

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1. SAFETY PRECAUTIONS

- Be sure to read this manual thoroughly before installation.
- The warnings and precautions indicated in this manual contain important information pertaining to your safety. Be sure to observe them.
- Hand this manual, together with the operating manual, to the customer. Request the customer to keep them on hand for future use, such as for relocating or repairing the unit.

 WARNING	Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.
Installation of this product must be done by experienced service technicians or professional installers only in accordance with this manual. Installation by nonprofessional or improper installation of the product may cause serious accidents such as injury, water leakage, electric shock, or fire. If the product is installed in disregard of the instructions in this manual, it will void the manufacturer's warranty.	
Do not turn on the power until all work has been completed. Turning on the power before the work is completed can cause serious accidents such as electric shock or fire.	
To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. After turning off the power, always wait 10 minutes or more before you touch the electrical components.	
If refrigerant leaks when you are working, ventilate the area. If the leaking refrigerant is exposed to a direct flame it may produce a toxic gas.	
Do not use this equipment with air or any other unspecified refrigerant in the refrigerant lines. Excess pressure can cause a rupture.	
Installation must be performed in accordance with regulations, codes, or standards for electrical wiring and equipment in each country, region, or the installation place.	
This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.	
To avoid danger of suffocation, keep the plastic bag or thin film used as the packaging material away from young children.	

 CAUTION	Indicates a potentially hazardous situation that may result in minor or moderate injury or damage to property.
---	--

Read carefully all safety information written in this manual before you install or use the air conditioner.
Install the product by following local codes and regulations in force at the place of installation, and the instructions provided by the manufacturer.
This unit must be installed by qualified personnel with a capacity certificate for handling refrigerant fluids. Refer to regulation and laws in use on installation place.
This product is part of a set constituting an air conditioner. The product must not be installed alone or be installed with non-authorized device by the manufacturer.
Always use a separate power supply line protected by a circuit breaker operating on all wires with a distance between contact of 3 mm for this product.
To protect the persons, earth (ground) the product correctly, and use the power cable combined with an Earth Leakage Circuit Breaker (ELCB).
The product is not explosion proof, and therefore should not be installed in explosive atmosphere.
Do not touch the fins of the heat exchanger. Touching the heat exchanger fins could result in damage to the fins or personal injury such as skin rupture.
This product contains no user-serviceable parts. Always consult experienced service technicians for repairing.
When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the product.
Do not place any other electrical products or household belongings under the product. Condensation dripping from the product might get them wet, and may cause damage or malfunction of the property.

2. ABOUT THIS PRODUCT

2.1. Precautions for using R410A refrigerant

 WARNING
Do not introduce any substance other than the prescribed refrigerant into the refrigeration cycle. If air enters the refrigeration cycle, the pressure in the refrigeration cycle will become abnormally high and cause the piping to rupture.
If there is a refrigerant leak, make sure that it does not exceed the concentration limit. If a refrigerant leak exceeds the concentration limit, it can lead to accidents such as oxygen starvation.
Do not touch refrigerant that has leaked from the refrigerant pipe connections or other area. Touching the refrigerant directly can cause frostbite.
If a refrigerant leak occurs during operation, immediately vacate the premises and thoroughly ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.

2.2. Special tool for R410A

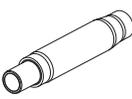
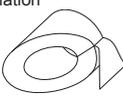
 WARNING
To install a unit that uses R410A refrigerant, use dedicated tools and piping materials that have been manufactured specifically for R410A use. Because the pressure of R410A refrigerant is approximately 1.6 times higher than the R22, failure to use dedicated piping material or improper installation can cause rupture or injury. Furthermore, it can cause serious accidents such as water leakage, electric shock, or fire.

Tool name	Changes
Gauge manifold	The pressure in the refrigerant system is extremely 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 to use a gauge manifold with a high pressure display range of -0.1 to 5.3 MPa and a low pressure display range of -0.1 to 3.8 MPa.
Charging hose	To increase pressure resistance, the hose material and base size were changed. (The charging port thread diameter for R410A is 1/2-20 UNF.)
Vacuum pump	A conventional vacuum pump can be used by installing a vacuum pump adapter. Be sure that the pump oil does not back flow into the system. Use one capable for vacuum suction of -100.7 kPa (5 Torr, -755 mmHg).
Gas leakage detector	Special gas leakage detector for R410A refrigerant.

2.3. Accessories

 WARNING
For installation purposes, be sure to use the parts supplied by the manufacturer or other prescribed parts. The use of non-prescribed parts can cause serious accidents such as the unit to fall, water leakage, electric shock, or fire.

- The following installation parts are furnished. Use them as required.
- Keep the Installation Manual in a safe place and do not discard any other accessories until the installation work has been completed.

Name and Shape	Q'ty	Description
Operating manual 	1	
Installation manual 	1	(This book)
Template (Carton top) 	1	For installing indoor unit
Washer 	8	For installing indoor unit
Coupler heat insulation (large) 	1	For indoor side pipe joint (Gas pipe)
Coupler heat insulation (small) 	1	For indoor side pipe joint (Liquid pipe)
Insulation 	1	For installing drain pipe
Drain hose 	1	For installing drain pipe VP25 (O.D.32, I.D.25)
Hose band 	1	For installing drain hose
Drain hose heat insulation 	1	For installing drain pipe
Cable tie (large) 	3	For electrical wiring
Cable tie (small) 	1	For electrical wiring (Wired remote controller)
Wired remote controller 	1	For air conditioner operation
Remote controller cable 	1	For connecting the remote controller
Screw (M4 × 16) 	2	For installing the remote controller

2.4. Optional parts

Parts name	Model No.	Summary
IR receiver unit	UTY-LRH*A2	For air conditioner operation
Wired remote controller	UTY-RNN*M	For air conditioner operation
Air outlet shutter plate	UTR-YDZC	Install the plate at outlet when carrying out 3-way direction operation
Insulation kit for high humidity	UTZ-KXRA UTZ-KXGA	Install when the condition under the roof is over 80% in humidity and over 30°C in temperature.

External connect kit	UTY-XWZX	For control input/output port
Fresh air intake kit	UTZ-VXGA	To take fresh air
Wide panel	UTG-AGYA-W	Wide panel hides the gap between the ceiling hole and the Cassette grille.
Panel spacer	UTG-BGYA-W	Installation in a space of 56 mm or greater is possible by using panel spacer when the height behind the ceiling is low.

Wired remote controller is recommended using simultaneous twin or triple connection.

3. INSTALLATION WORK

Especially, the installation place is very important for the split type air conditioner because it is very difficult to move from place to place after the first installation.

3.1. Selecting an installation location

Decide the mounting position together with the customer as follows.

⚠ WARNING

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

⚠ CAUTION

Do not install the indoor unit in the following areas:

- Area with high salt content, such as at the seaside. It will deteriorate metal parts, causing the parts to fail or the unit to leak water.
- Area filled with mineral oil or containing a large amount of splashed oil or steam, such as a kitchen. It will deteriorate plastic parts, causing the parts to fail or the unit to leak water.
- Area that generates substances that adversely affect the equipment, such as sulfuric gas, chlorine gas, acid, or alkali. It will cause the copper pipes and brazed joints to corrode, which can cause refrigerant leakage.
- Area that can cause combustible gas to leak, contains suspended carbon fibers or flammable dust, or volatile inflammables such as paint thinner or gasoline. If gas leaks and settles around the unit, it can cause a fire.
- Area where animals may urinate on the unit or ammonia may be generated.

Do not install where there is the danger of combustible gas leakage.

Do not install the unit near a source of heat, steam, or flammable gas.

Install the indoor unit, outdoor unit, power supply cable, transmission cable, and remote control cable at least 1 m away from a television or radio receivers. The purpose of this is to prevent TV reception interference or radio noise. (Even if they are installed more than 1 m apart, you could still receive noise under some signal conditions.)

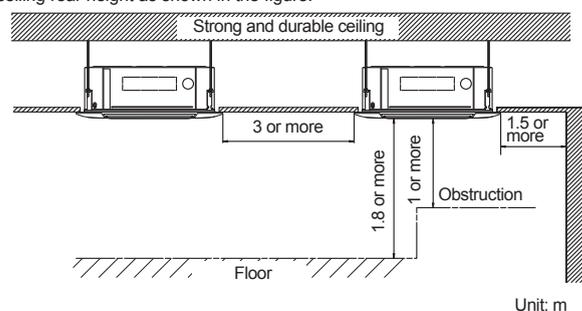
If children may approach the unit, take preventive measures so that they cannot reach the unit.

Use the "Insulation kit for high humidity" (option), when the condition under the roof is over 80% in humidity and over 30°C in temperature. Otherwise, there is a risk of condensation on the ceiling.

- (1) Install the indoor unit in a location having sufficient strength to support the weight of the indoor unit.
- (2) The inlet and outlet ports should not be obstructed; the air should be able to blow all over the room.
- (3) Leave the space required to service the air conditioner.
- (4) Locate where the air can be distributed evenly throughout the room by the unit.
- (5) Install the unit where connection to the outdoor unit is easy.
- (6) Install the unit where the connection pipe can be easily installed.
- (7) Install the unit where the drain pipe can be easily installed.
- (8) Install the unit where noise and vibration is not amplified.
- (9) Take servicing, etc., into consideration and leave the spaces. Also install the unit where the filter can be removed.

3.2. Installation dimension

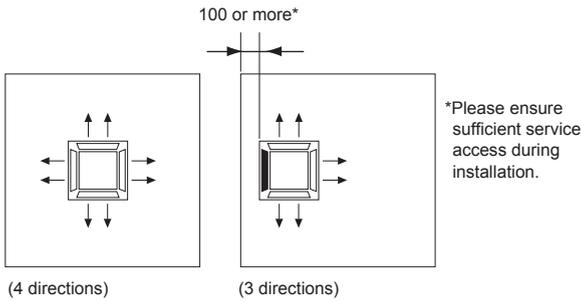
- The ceiling rear height as shown in the figure.



- This product can be installed at a height of up to 4.2 m (30 model: 3.6 m). However, if the heights of the ceiling is higher than 3.2 m or lower than 2.7 m, it is necessary to set the position from remote controller. (See 9.2. Function setting)

Discharge direction setting

- The discharge direction can be selected as shown below.



Unit : mm

- For a 3-way outlet, make sure to perform the Function Setting on the remote control. Also, make sure to use the optional shutter plate to block the outlet.
- The ceiling height cannot be set in the 3-way outlet mode. Therefore, do not change the setting in the setting the ceiling height. (See 9.2. Function setting)
- When the outlet is shut, be sure to install the optional Air outlet shutter plate kit. For the details of installation, please refer to Installation Manual of kit.

3.3. Installation the unit

⚠ WARNING

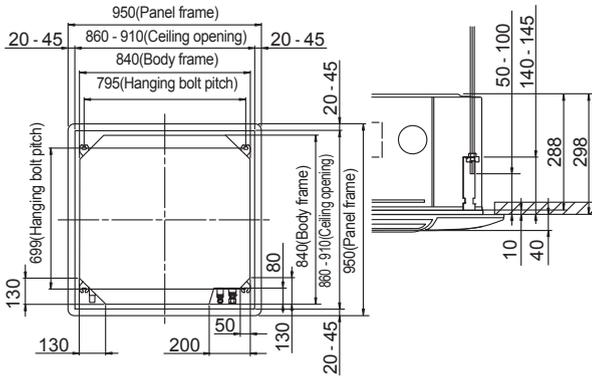
Install the air conditioner in a location which can withstand a load of at least 5 times the weight of the main unit and which will not amplify sound or vibration. If the installation location is not strong enough, the indoor unit may fall and cause injuries.

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

3.3.1. Position the ceiling hole and hanging bolts

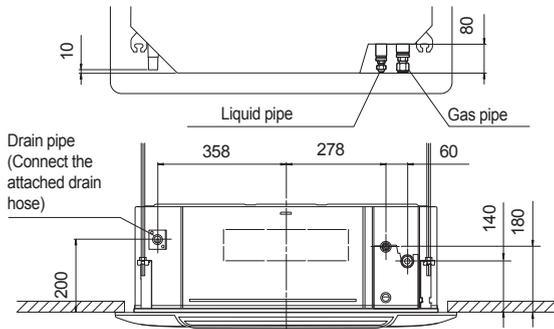
- Positions of the ceiling opening, hanging bolt pitch, piping and ducts.

• Ceiling opening and hanging bolt pitch.



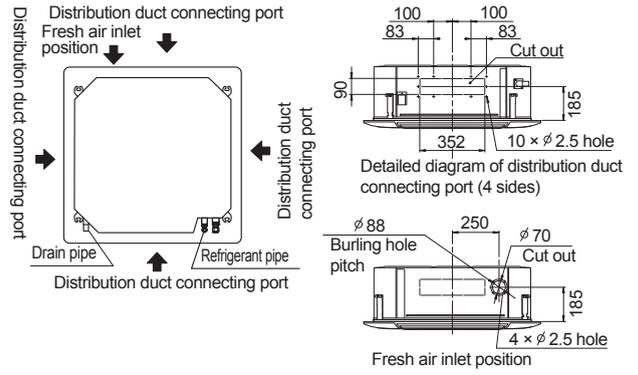
Unit : mm

• Refrigerant piping and drain piping positions.



Unit : mm

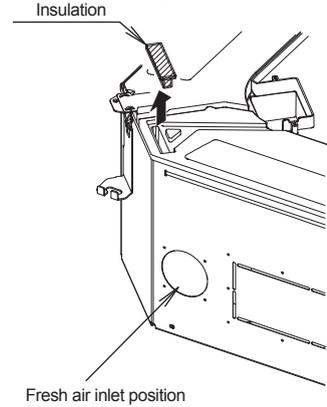
• Distribution ducts and fresh air inlet positions.



Unit : mm

NOTES:

Conduct proper insulation when connecting the distribution ducts and fresh air inlet.



NOTES:

When sucking in the fresh air, please detach the insulation affixed to the drain pan.

- Setting the positions of hanging bolt and ceiling opening.
 - Use an installation template (packaging top surface) to set the positions of the hanging bolt and ceiling opening and drill holes.
- Hanging structure.
 - Select a strong structure for the hanging location.
 - If necessary, reinforce the hanging bolt with quake proof columnar support material to prevent shaking.
 - Use hanging bolts of M8-M10.

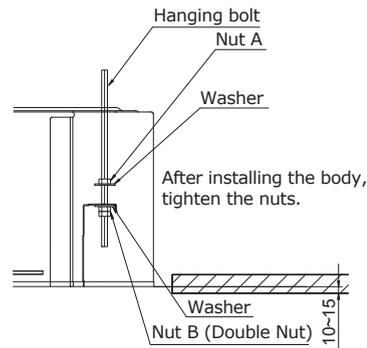
3.3.2. Body installation

- Install the attached washer and nut (prepared on site) onto the hanging bolt.
- Hook the body onto the hanging bolt.
- Adjust the dimensions of the ceiling surface from the body. After installing the decorative panel, you can make fine adjustment of the height of the body. For details, refer to the Installation Manual of the decorative panel.

⚠ WARNING

Perform final tightening by tightening the double nut firmly.

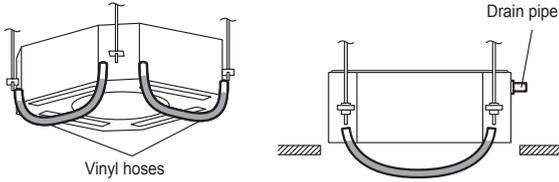
Be sure to install the body horizontally and adjust the height below the body and the ceiling surface properly.



Unit : mm

3.3.3. Leveling

Using a level, or vinyl hose filled with water, fine adjust so that the body is level.
Inclined installation so as the drain pipe side is higher may cause a malfunction of the float switch, and may cause water leakage.



4. PIPE INSTALLATION

CAUTION

Be careful that foreign matter (oil, water, etc.) does not enter the piping with refrigerant R410A models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.

While brazing the pipes, be sure to purge with dry nitrogen gas.

4.1. Selecting the pipe material

CAUTION

Do not use existing pipes.

Use pipes that have clean external and internal sides without any contamination which may cause trouble during use, such as sulfur, oxide, dust, cutting waste, oil or water.

It is necessary to use seamless copper pipes.
Material: Phosphor deoxidized seamless copper pipes.
It is desirable that the amount of residual oil is less than 40 mg/10 m.

Do not use copper pipes that have a collapsed, deformed, or discolored portion (especially on the interior surface). Otherwise, the expansion valve or capillary tube may become blocked with contaminants.

Improper pipe selection will degrade performance. As an air conditioner using R410A incurs pressure higher than when using conventional refrigerant, it is necessary to choose adequate materials.

- Thicknesses of copper pipes used with R410A are as shown in the table.
- Never use copper pipes thinner than those indicated in the table even if they are available on the market.

Thicknesses of Annealed Copper Pipes (R410A)

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

4.2. Pipe requirement

CAUTION

Refer to the Installation Manual of the outdoor unit for description of the length and the diameter of connecting pipe or for difference of its elevation.

Diameter [mm (in.)]	Liquid	9.52 (3/8)
	Gas	15.88 (5/8)

- 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.

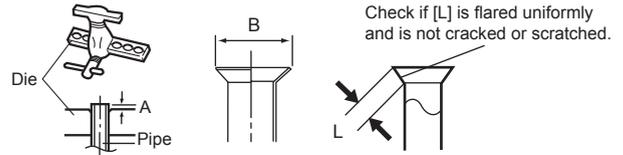
Use heat insulation with heat resistance above 120 °C. (Reverse cycle model only)
In addition, if the humidity level at the installation location of the refrigerant piping is expected to exceed 70%, install heat insulation around the refrigerant piping. If the expected humidity level is 70-80%, use heat 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 0.045W/(m·K) or less (at 20 °C).

4.3. Flare connection (pipe connection)

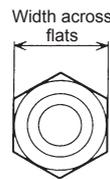
4.3.1. Flaring

- Use special pipe cutter and flare tool exclusive for R410A.
- (1) Cut the connection pipe to the necessary length with a pipe cutter.
 - (2) Hold the pipe downward so that cuttings will not enter the pipe and remove any burrs.
 - (3) Insert the flare nut (always use the flare nut attached to the indoor and outdoor units respectively) onto the pipe and perform the flare processing with a flare tool. Leakage of refrigerant may result if other flare nuts are used.
 - (4) Protect the pipes by pinching them or with tape to prevent dust, dirt, or water from entering the pipes.



Pipe outside diameter [mm (in.)]	Dimension A [mm]	Dimension B _{0.4} [mm]
	Flare tool for R410A, clutch type	
6.35 (1/4)	0 to 0.5	9.1
9.52 (3/8)		13.2
12.70 (1/2)		16.6
15.88 (5/8)		19.7
19.05 (3/4)		24.0

When using conventional flare tools to flare R410A pipes, the dimension A should be approximately 0.5 mm more than indicated in the table (for flaring with R410A flare tools) to achieve the specified flaring. Use a thickness gauge to measure the dimension A.



Pipe outside diameter [mm (in.)]	Width across flats of Flare nut [mm]
6.35 (1/4)	17
9.52 (3/8)	22
12.70 (1/2)	26
15.88 (5/8)	29
19.05 (3/4)	36

4.3.2 Bending pipes

- If pipes are shaped by hand, be careful not to collapse them.
- Do not bend the pipes at an angle more than 90°.
- When pipes are repeatedly bend or stretched, the material will harden, making it difficult to bend or stretch them any more.
- Do not bend or stretch the pipes more than 3 times.

CAUTION

To prevent breaking of the pipe, avoid sharp bends.

If the pipe is bent repeatedly at the same place, it will break.

4.3.3. Pipe connection

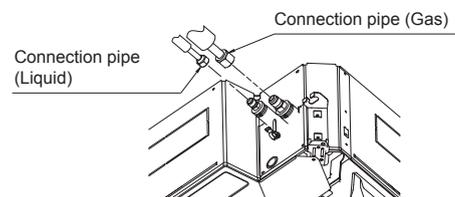
CAUTION

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

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

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.

- (1) Detach the caps and plugs from the pipes.
- (2) Center the pipe against the port on the indoor unit, and then turn the flare nut by hand.

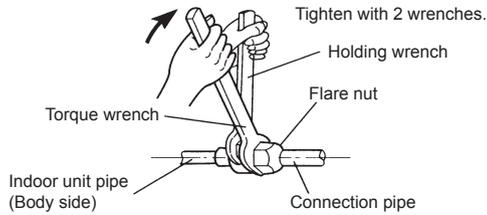


- (3) When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench. (See the table below for the flare nut tightening torques.)

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.

Tighten the flare nuts with a torque wrench using the specified tightening method. Otherwise, the flare nuts could break after a prolonged period, causing refrigerant to leak and generate a hazardous gas if the refrigerant comes into contact with a flame.



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

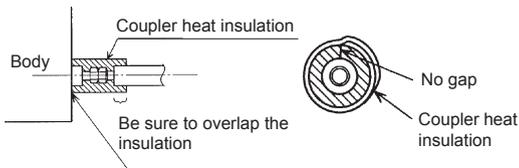
4.4. Installing heat insulation

CAUTION

After checking for gas leaks (refer to the Installation Manual of the outdoor unit), perform this section.

Install heat insulation around both the large (gas) and small (liquid) pipes. Failure to do so may cause water leaks.

After checking for gas leaks, insulate by wrapping insulation around the 2 parts (gas and liquid) of the indoor unit coupling, using the Coupler Heat Insulation. After installing the Coupler Heat Insulation, wrap both ends with vinyl tape so that there is no gap.



CAUTION

Must fit tightly against body without any gap.

5. INSTALLING DRAIN PIPES

WARNING

Do not insert the drain piping into the sewer where sulfurous gas occurs. (Heat exchange erosion may occur.)

Insulate the parts properly so that water will not drip from the connection parts.

Check for proper drainage after the construction by using the visible portion of transparent drain port and the drain piping final outlet on the body.

CAUTION

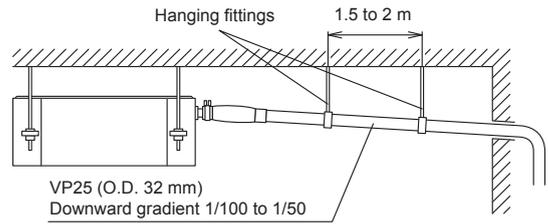
Do not apply adhesive agent on the drain port of the body. (Use the attached drain hose and connect the drain piping.)

NOTES:

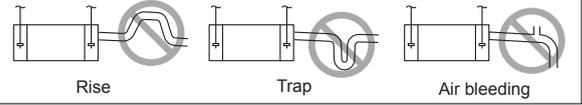
Install the drain pipe.

- Install the drain pipe with downward gradient (1/50 to 1/100) and so there are no rises or traps in the pipe.
- Use general hard polyvinyl chloride pipe (VP25) [outside diameter 32 mm] and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the pipe is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain pipe.
- If it is impossible to have sufficient gradient of pipe, perform drain lift-up.

Drain pipe	Pipe size
	VP25 (O.D. 32 mm)

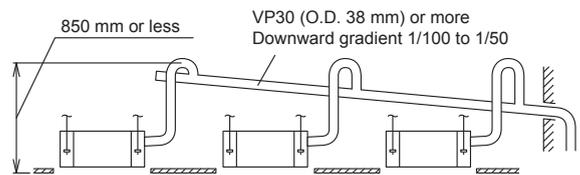
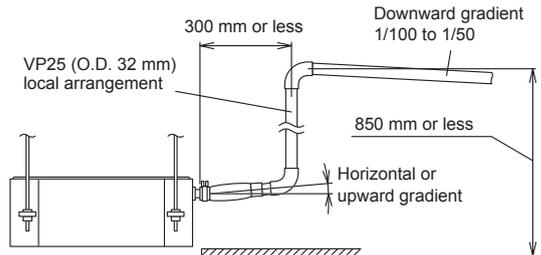


PROHIBITED:



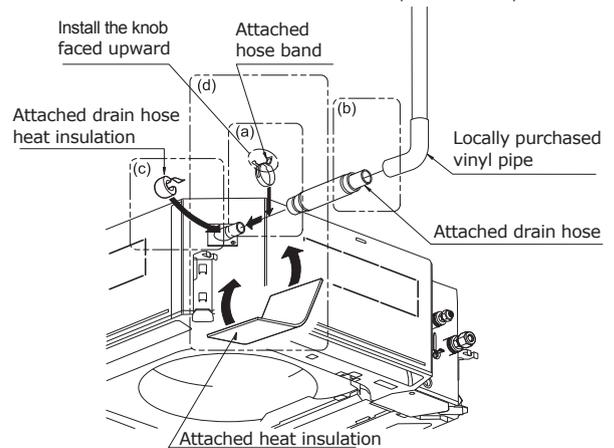
When lifting up drain:

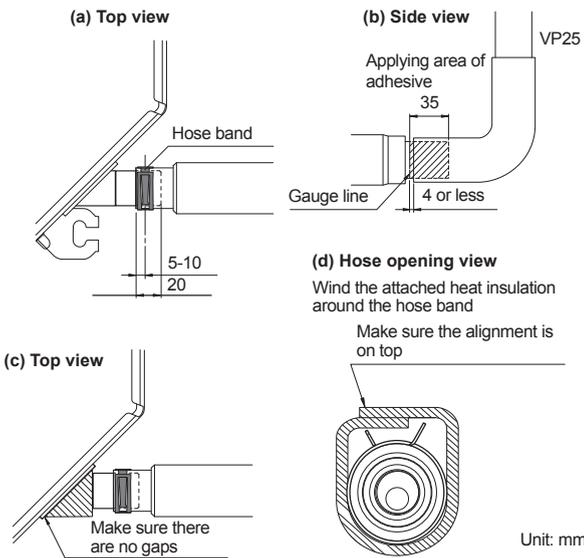
- Height of inclined pipe should be less than 850 mm from the ceiling. A rise dimension over this range will cause leakage.
- Lift up the pipe vertically at the position of 300 mm or less from the unit.



Working procedure

- (1) Install the attached drain hose to the drain port of the body. Attach hose band on top of the drain hose.
- (2) Use vinyl adhesive agent to glue the drain piping (PVC pipe VP25) which is prepared on site or elbow socket. (Apply color adhesive agent evenly until the gauge line and seal.)
- (3) Check the drainage. Refer to "NOTES: Check for drainage"
- (4) Install the heat insulation.
- (5) Use the attached heat insulation to insulate the drain port and band parts of the body.

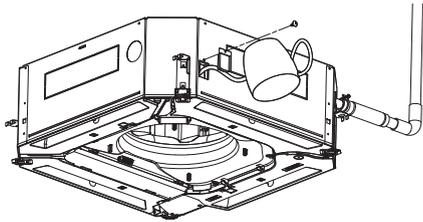




NOTES:

Check for drainage

Pour about 1 liter of water from the position shown in the diagram or from the airflow outlet to the dew tray. Check for any abnormalities such as strange noises and whether the drain pump functions normally.



Install a earth (ground) leakage breaker. In addition, install the earth (ground) leakage breaker so that the entire AC main power supply is cut off at the same time. Otherwise, electric shock or fire could result.

Always connect the earth (ground) wire.
Improper earthing (grounding) work can cause electric shocks.

Install the remote controller cable and bus wire so as not to be direct touched with your hand.

- (1) Use ring terminals with insulating sleeves as shown in the figure below to connect to the terminal block.
- (2) Securely clamp the ring terminals to the wires using an appropriate tool so that the wires do not come loose.
- (3) Use the specified wires, connect them securely, and fasten them so that there is no stress placed on the terminals.
- (4) Use an appropriate screwdriver to tighten the terminal screws. Do not use a screwdriver that is too small, otherwise, the screw heads may be damaged and prevent the screws from being properly tightened.
- (5) Do not tighten the terminal screws too much, otherwise, the screws may break.
- (6) See the table 1 for the terminal screw tightening torques.

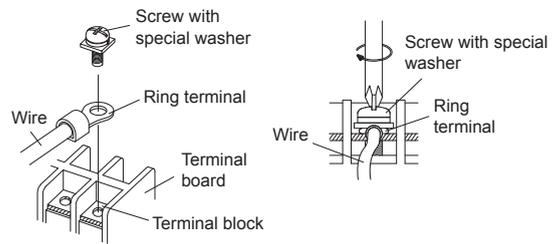
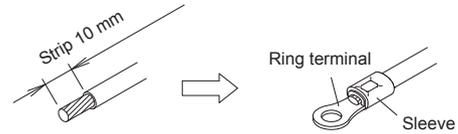


Table 1

Tightening torque [N·m (kgf·cm)]	
M4 screw	1.2 to 1.8 (12 to 18)
M5 screw	2.0 to 3.0 (20 to 30)

WARNING

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

6. ELECTRICAL WIRING

Cable	Cable size (mm ²)	Type	Remarks
Connection cable	1.5 (min.)	Type 60245 IEC57	3Cable+Earth (Ground), 1φ230V

Limit the voltage drop less than 2%. Increase the cable diameter if voltage drop is 2% or more.

WARNING

Electrical work must be performed in accordance with this Manual by a person certified under the national or regional regulations. Be sure to use a dedicated circuit for the unit. An insufficient power supply circuit or improperly performed electrical work can cause serious accidents such as electric shock or fire.

Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.

Use the included transmission cables and power cables or ones specified by the manufacturer. Improper connections, insufficient insulation, or exceeding the allowable current can cause electric shock or fire.

For wiring, use the prescribed type of wires, connect them securely, making sure that there are no external forces of the wires applied to the terminal connections. Improperly connected or secured wires can cause serious accidents such as overheating the terminals, electric shock, or fire.

Do not modify the power cables, use extension cables, or use any branches in the wiring. Improper connections, insufficient insulation, or exceeding the allowable current can cause electric shock or fire.

Match the terminal block numbers and connection cable colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.

Securely connect the connection cables to the terminal blocks. In addition, secure the cables with wiring holders. Improper connections, either in the wiring or at the ends of the wiring, can cause a malfunction, electric shock, or fire.

Always fasten the outside covering of the connection cable with the cable clamp. (If the insulator is chafed, electric leakage may occur.)

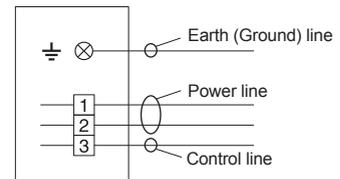
Securely install the electrical box cover on the unit. An improperly installed electrical box cover can cause serious accidents such as electric shock or fire through exposure to dust or water.

Install sleeves into any holes made in the walls for wiring. Otherwise, a short circuit could result.

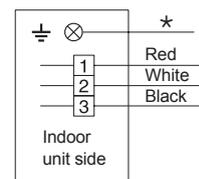
6.1. Wiring system diagram

6.1.1. Standard pair

Connection cable to outdoor unit



Wired remote controller cable



*Ground the remote controller if it has a earth (ground) wire.

6.1.2. Simultaneous multi

By combining multiple indoor units to one outdoor unit, the indoor units can be controlled simultaneously. Refer to the technical manual for the permissible combinations.

For details of the wiring method, refer to the installation notes provided with the outdoor unit.

CAUTION

Tighten the indoor unit connection cable and power supply indoor and outdoor unit, terminal board connections firmly with the terminal board screws. Faulty connection may cause a fire.

If the indoor unit connection cable and power supply are wired incorrectly, the air conditioner may be damaged.

Connect the indoor unit connection cable by matching the numbers of the outdoor and indoor units terminal board numbers as shown in terminal label.

Earth (Ground) both the indoor and outdoor, units by attaching an earth (ground) cable.

Unit shall be earthed (grounded) in compliance with the applicable local and national cables.

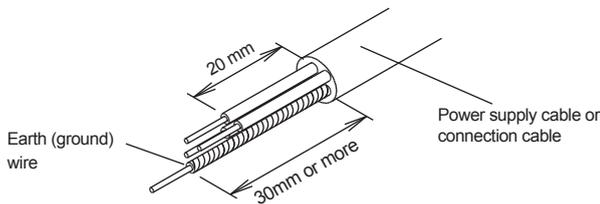
CAUTION

Be sure to refer to the above diagram for do correct field wiring. Wrong wiring causes malfunction of the unit.

Check local electrical rules and also any specific wiring instructions or limitation.

6.2. Connection cable preparation

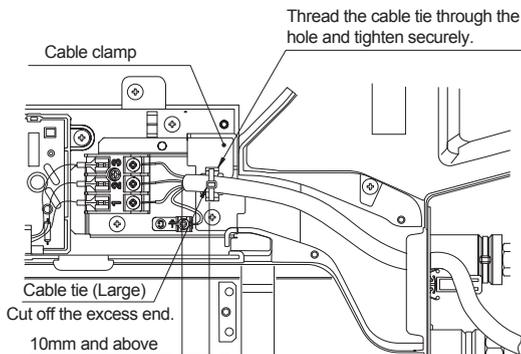
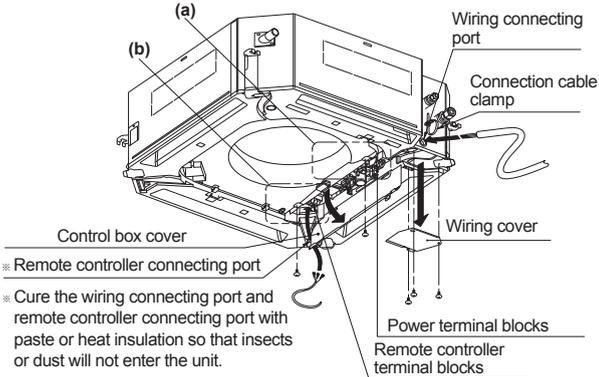
Keep the earth (ground) wire longer than the other wires.



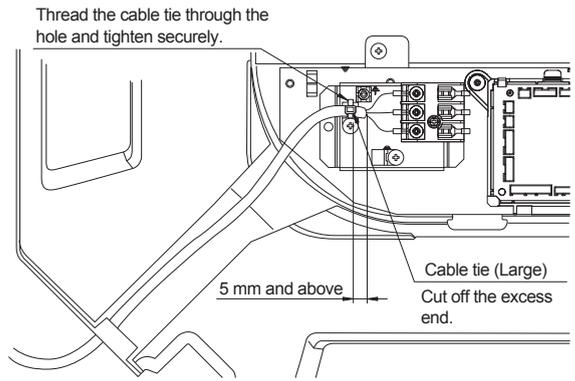
- Use a 4-core wire cable.

6.3. Connection of wiring

(1) Remove the control box cover and install each connection wire. Please firmly tighten connection cable and remote controller cable with the attached cable tie.

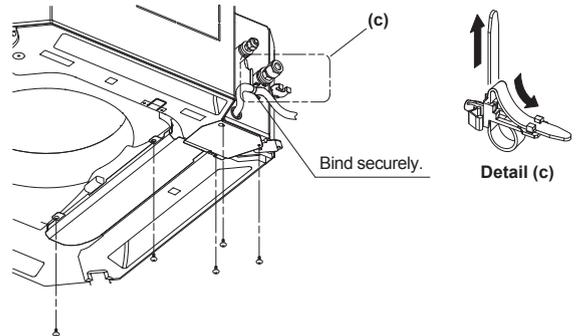


Detail (a)



Detail (b)

(2) Please fix the connection cable with cable clamp. And then install the wire cover with screws.



(3) Replace the control box cover.

CAUTION

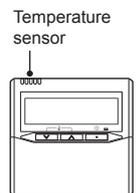
Do not wire the remote controller cable together with or parallel to the connection cables, and power supply cables of the INDOOR UNIT and OUTDOOR UNIT, It may cause erroneous operation.

7. REMOTE CONTROLLER SETTING

CAUTION

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

- Locate where an average temperature for the room being air conditioned will be sensed.
- Do not locate directly exposed to the outlet air from the air-conditioner.
- Locate out of direct sunlight.
- Locate away from the influence of other heat sources.



Do not touch the remote controller PC board and PC board parts directly with your hands.

Do not wire the remote controller cable together with or parallel to the connection cables, and power supply cable of the INDOOR UNIT and OUTDOOR UNIT, It may cause erroneous operation.

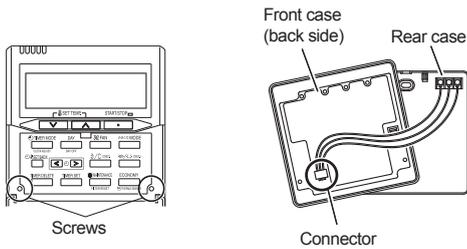
When installing the bus wire near a source of electromagnetic waves, use shielded wire.

Do not set the DIP switches, either on the air conditioner or the remote controller, in any way other than indicated in this manual that is supplied with the air conditioner. Doing so may result in improper operation.

7.1. Installing the remote controller

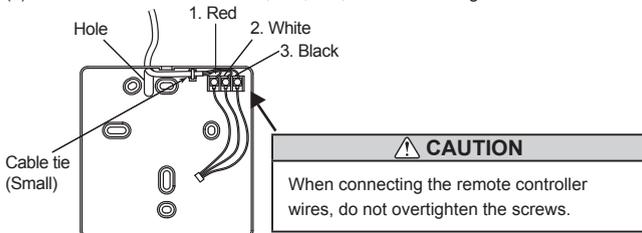
Open the operation panel on the front of the remote controller, remove the 2 screws indicated in the following figure, and then remove the front case of the remote controller.

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.

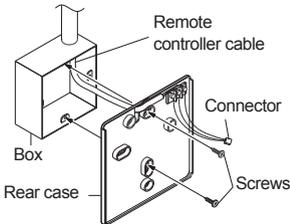


When remote controller cable is concealed

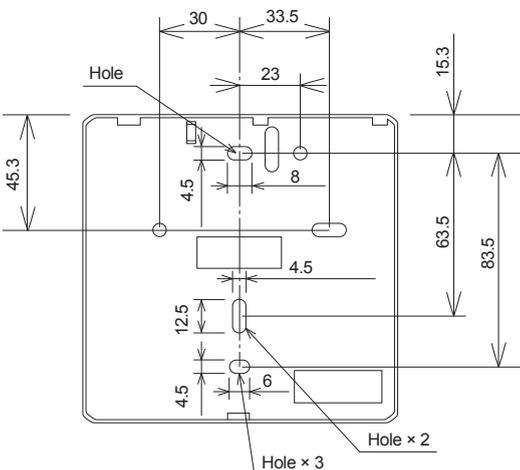
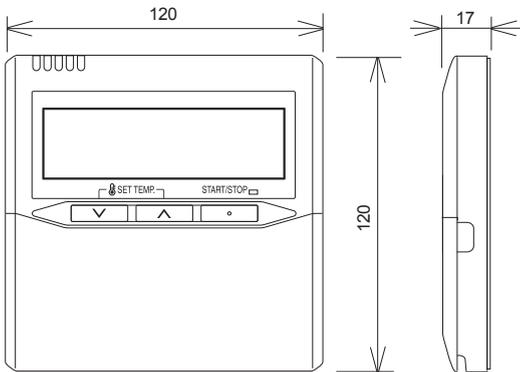
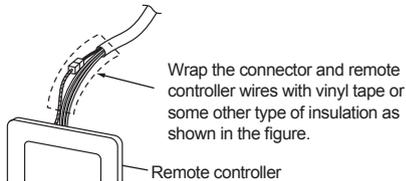
- (1) Conceal the remote controller cable.
- (2) Pass the remote controller cable through the hole in the rear case and connect the remote controller cable to the remote controller terminal board specified in figure.
- (3) Clamp the remote controller cable sheath with the cable tie as shown in figure.
- (4) Cut off the excess cable tie.
- (5) Install the rear case to the wall, box, etc., with 2 screws figure.



[Example]



* Ground the remote controller if it has a ground wire.



Unit: mm

CAUTION

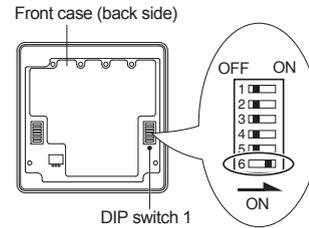
Install the remote controller wires so as not to be direct touched with your hand.

Do not touch the remote controller PC board and PC board parts directly with your hands.

7.2. Setting the dip switches

Set the remote controller DIP switches.

[Example]



NO.	SW state		Detail
	OFF	ON	
1	* ◆		Cannot be used. (Do not change)
2	* ◆		Dual remote controller setting * Refer to 14.2. Dual remote controllers
3	◆		Cannot be used. (Do not change.)
4	◆		Cannot be used. (Do not change)
5	◆		Cannot be used. (Do not change)
6	* ◆ Invalidity	* Validity	Memory backup setting * Set to ON to use batteries for the memory backup. If batteries are not used, all of the settings stored in memory will be deleted if there is a power failure.

(◆ : Factory setting)

8. CASSETTE GRILLE INSTALLATION

- Install according to the Installation instruction sheet for Cassette grille.
- Be sure to confirm there is no gap between the panel and main unit after installing the Cassette grille.

9. FUNCTION SETTING

9.1. Turning on the power

- (1) Check the remote controller wiring and DIP switch settings.
- (2) Install the front case.
When installing the front case, connect the connector to the front case.
- (3) Check the indoor and outdoor unit wiring and circuit board switch settings, and then turn on the indoor and outdoor units. After "9C" has flashed on the set temperature display for several seconds, the clock display will appear in the center of the remote controller display.

The clock display will appear in the center of the remote controller display.

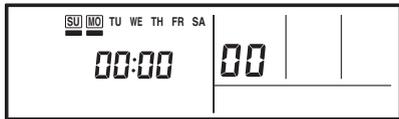
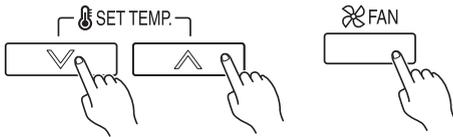


9.2. Function setting

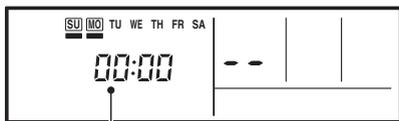
This procedure changes the function settings used to control the indoor unit according to the installation conditions. Incorrect settings can cause the indoor unit to malfunction. This procedure should be performed by authorized installation or service personnel only.

Perform the "FUNCTION SETTING" according to the installation conditions using the remote controller. (Refer to the indoor unit installation manual for details on the function numbers and setting values.)

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

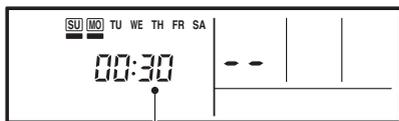
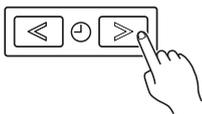


- (2) Press the SET BACK button to select the indoor unit number.



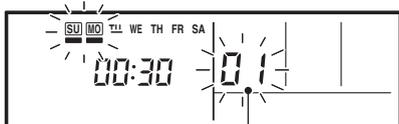
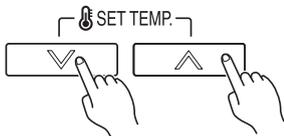
Unit number of INDOOR UNIT

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



Function number

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



Setting value

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

- (6) Repeat steps 2 to 5 to perform additional settings. Press the SET TEMP. buttons (∇) (▲) and FAN button simultaneously again for more than 5 seconds to cancel the function setting mode. In addition, the function setting mode will be automatically canceled after 1 minute if no operation is performed.
- (7) After completing the FUNCTION SETTING, be sure to turn off the power and turn it on again.

CAUTION

After turning off the power, wait 30 seconds or more before turning it on again. The FUNCTION SETTING doesn't become effective if it doesn't do so.

• Function Details

(1) Filter sign

Select appropriate intervals for displaying the filter sign on the indoor unit according to the estimated amount of dust in the air of the room.

If the indication is not required, select "No indication" (03).

(◆... Factory setting)

Function number	Setting value	Setting description
11	00	Standard (2,500 hours)
	01	Long interval (4,400 hours)
	02	Short interval (1,250 hours)
	03	No indication

(2) Ceiling height

Select the appropriate ceiling height according to the place of installation.

(◆... Factory setting)

Function number	Setting value	Setting description
20	00	Standard (3.2m)
	01	High ceiling (4.2m) (30 model : 3.6m)
	02	Low ceiling (2.7m)

In case of Cassette type models:

The ceiling height values are for the 4-way outlet.

Do not change this setting in the 3-way outlet mode.

7000, 9000 Btu/h models cannot be installed in high ceilings.

Do not change this setting.

(3) Outlet directions

Select the appropriate number of outlet directions according to the installation conditions.

(◆... Factory setting)

Function number	Setting value	Setting description
22	00	4-way
	01	3-way

(4) Vertical airflow direction range control

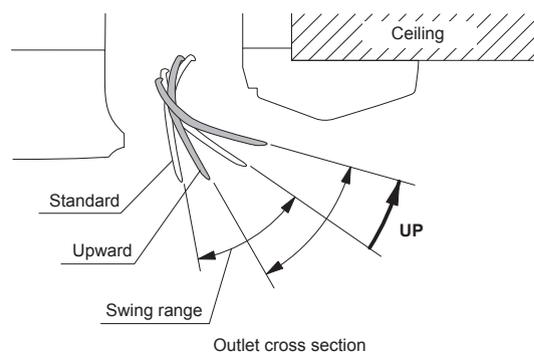
To prevent draft, change the setting to "Upward" (01).

Note that the airflow in certain usage conditions may leave the ceiling dirty. In such cases, the use of the optional "PANEL SPACER KIT" is recommended.

(◆... Factory setting)

Function Number	Setting Value	Setting Description
23	00	Standard
	01	Upward

- If function setting 20 is set at "High ceiling" mode, "Upward" (01) is recommended.



(5) Room temperature sensor control for cooling

Depending on the installed environment, correction of the room temperature sensor may be required.

Select the appropriate control setting according to the installed environment.
(◆... Factory setting)

Function number	Setting value	Setting description
30	00	Standard
	01	Slightly lower control
	02	Lower control
	03	Higher control

(6) Room temperature sensor control for heating

Depending on the installed environment, correction of the room temperature sensor may be required.

Select the appropriate control setting according to the installed environment.
(◆... Factory setting)

Function number	Setting value	Setting description
31	00	Standard
	01	Lower control
	02	Slightly higher control
	03	Higher control

(7) Auto restart

Enable or disable automatic restart after a power interruption.

(◆... Factory setting)

Function number	Setting value	Setting description
40	00	Enable
	01	Disable

* Auto restart is an emergency function such as for power outage etc. Do not attempt to use this function in normal operation. Be sure to operate the unit by remote controller or external device.

(8) Room temperature sensor switching

(Only for Wired remote controller)

When using the Wired remote controller temperature sensor, change the setting to "Both" (01).

(◆... Factory setting)

Function number	Setting value	Setting description
42	00	Indoor unit
	01	Both

00: Sensor on the indoor unit is active.

01: Sensors on both indoor unit and wired remote controller are active.

* Remote controller sensor must be turned on by using the remote controller

(9) Remote controller custom code

(Only for wireless remote controller)

The indoor unit custom code can be changed.

Select the appropriate custom code.

(◆... Factory setting)

Function number	Setting value	Setting description
44	00	A
	01	B
	02	C
	03	D

(10) External input control

"Operation/Stop" mode or "Forced stop" mode can be selected.

(◆... Factory setting)

Function number	Setting value	Setting description
46	00	Operation/Stop mode
	01	(Setting forbidden)
	02	Forced stop mode

Setting record

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

Setting	Setting Value
(1) Filter sign	
(2) Ceiling height	
(3) Outlet directions	
(4) Vertical airflow direction range control	

(5) Room temperature sensor control for cooling	
(6) Room temperature sensor control for heating	
(7) Auto restart	
(8) Room temperature sensor switching	
(9) Remote controller custom code	
(10) External input control	

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

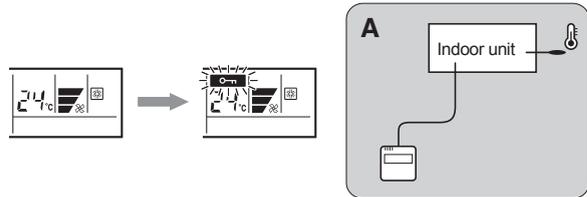
SETTING THE ROOM TEMPERATURE DETECTION LOCATION

The detection location of the room temperature can be selected from the following 2 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.

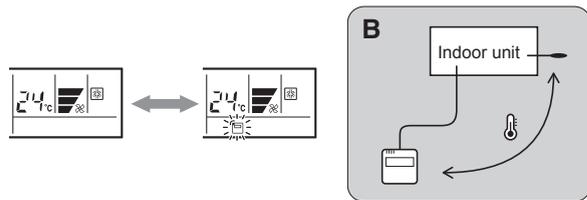


B. Indoor unit/remote controller setting (room temperature sensor selection)

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

(1) Enable the room temperature sensor selection in FUNCTION SETTING, which will be previous page.

(2) Press the THERMO SENSOR button for 5 seconds or more to select the temperature sensor of the indoor unit or the remote controller.



NOTES:

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

CAUTION

- 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.
- 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.
- 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.

10. SPECIAL INSTALLATION METHODS

CAUTION

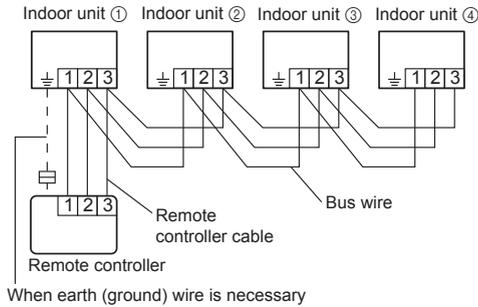
Be sure to turn off the electrical breaker before making settings.

When setting DIP switches, do not touch any other parts on the circuit board directly with your bare hands.

10.1. 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) DIP switch setting (Indoor unit)

Set the unit number of each indoor unit using the DIP switches on the indoor unit circuit board. (See the following table and figure.)

The DIP switches are normally set to make the unit number "00".

Indoor unit	Unit number	DIP SWITCH No.			
		1	2	3	4
①	00	OFF	OFF	OFF	OFF
②	01	ON	OFF	OFF	OFF
③	02	OFF	ON	OFF	OFF
④	03	ON	ON	OFF	OFF
⑤	04	OFF	OFF	ON	OFF
⑥	05	ON	OFF	ON	OFF
⑦	06	OFF	ON	ON	OFF
⑧	07	ON	ON	ON	OFF
⑨	08	OFF	OFF	OFF	ON
⑩	09	ON	OFF	OFF	ON
⑪	10	OFF	ON	OFF	ON
⑫	11	ON	ON	OFF	ON
⑬	12	OFF	OFF	ON	ON
⑭	13	ON	OFF	ON	ON
⑮	14	OFF	ON	ON	ON
⑯	15	ON	ON	ON	ON

Example : unit number 03



NOTES:

Be sure to set consecutive R.C. addresses.

The indoor units cannot be operated if a number is skipped.

(3) Remote controller setting

1. Turn on all of the indoor units.

Turn on the indoor unit with the unit number "00" last. (Within 1 minute)

2. Set the refrigerant circuit address. (Assign the same number to all of the indoor units connected to an outdoor unit.)

Refrigerant circuit address	Function Number	Setting Value
	02	00~15

3. Set the "Primary" and "Secondary" settings. (Set the indoor unit that is connected to the outdoor unit using a transmission cable as the "Primary".)

	Function Number	Setting Value
Primary	51	00
Secondary		01

4. After completing the function settings, turn off all of the indoor units, and then turn them back on.

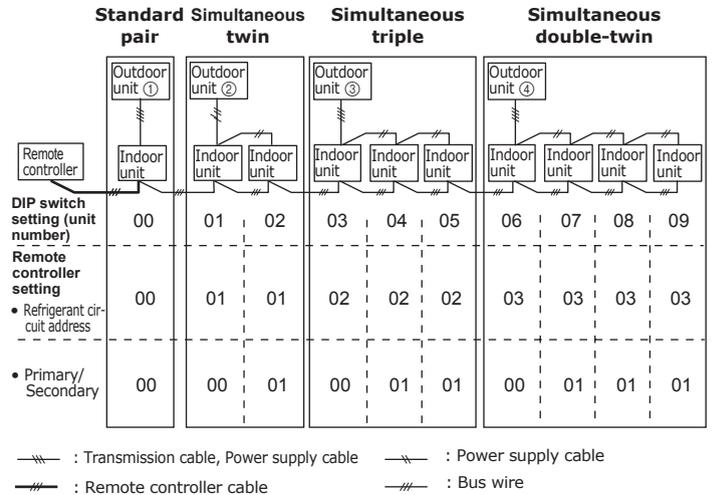
* If error code 21, 22, 24 or 27 is displayed, there may be an incorrect setting. Perform the remote controller setting again.

NOTES:

When different indoor unit models are connected using the group control system, some functions may no longer be available.

If the group control system contains multiple units that are operated simultaneously, connect and set the units as shown below.

- Auto-changeover operates under the same mode with model unit number 00.
- It should not be connected to any other Gr that is not of the same series (A**G only).

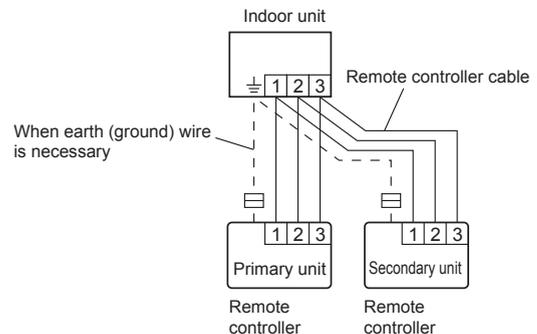


* Make sure that the indoor unit with the unit number "00" is connected to the outdoor unit using a transmission cable.

10.2. Dual remote controllers

- 2 separate remote controllers can be used to operate the indoor units.
- The timer and self-diagnosis functions cannot be used on the secondary unit of remote controller.

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



(2) Remote controller DIP switch 1 setting

Set the remote controller DIP switch 1-No. 2 according to the following table.

(Refer to 7.2. Setting the dip switches)

	DIP SW 1-No. 2
Primary unit	OFF
Secondary unit	ON

11. TEST RUN

Check items

- (1) Is operation of each button on the remote control unit normal?
- (2) Does each lamp light normally?
- (3) Do airflow direction louvers operate normally?
- (4) Is the drain normal?
- (5) Do not have an abnormal noise and vibration during operation?

Do not operate the air conditioner in test run for a long time.

[Operation method]

Depending on your installation, choose from the following:

By the wireless remote controller (with "TEST RUN" button)

- To start test run, press the "START/STOP" button and the "TEST RUN" button on the remote controller.
- To end test run, press the remote controller "START/STOP" button.

By the indoor unit or IR receiver unit

- To start test run, press the "MANUAL AUTO" button of the unit for more than 10 seconds (forced cooling).
- To end test run, press the "MANUAL AUTO" button for more than 3 seconds or press the remote controller "START/STOP" button.

By the wired remote controller

- For the operation method, refer to the installation manual and the operating manual of the wired remote controller.

The Operation indicator lamp and Timer indicator lamp will simultaneously flash during the test run mode.

Heating test run will begin in a few minutes when HEAT is selected by the remote controller [reverse cycle model only].

12. CHECK LIST

Pay special attention to the check items below when installing the indoor unit(s). After installation is complete, be sure to check the following check items again.

CHECK ITEMS	If not performed correctly	CHECK BOX
Has the indoor unit been installed correctly?	Vibration, noise, indoor unit may drop	
Has there been a check for gas leaks (refrigerant pipes)?	No cooling, No heating	
Has heat insulation work been completed?	Water leakage	
Does water drain easily from the indoor units?	Water leakage	
Are the wires and pipes all connected completely?	No operation, heat or burn damage	
Is the connection cable the specified thickness?	No operation, heat or burn damage	
Are the inlets and outlets free of any obstacles?	No cooling, No heating	
After installation is completed, has the proper operation and handling been explained to the user?		

13. OPTIONAL KIT INSTALLATION (OPTION)

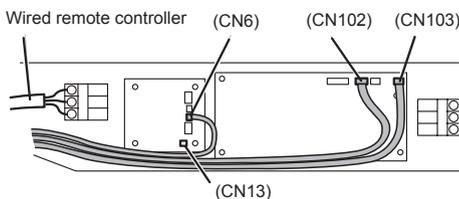


WARNING

Regulation of cable differs from each locality, refer in accordance with local rules.

This air conditioner can be connected with the following optional kits.

Option type	Connector No.
UTZ-VXGA (Fresh air intake)	CN6
UTY-LRH*A2 (IR Receiver)	CN13
UTY-XWZX (External input)	CN102
UTY-XWZX (External output)	CN103



14. CUSTOMER GUIDANCE

Explain the following to the customer in accordance with the operating manual:

- (1) Starting and stopping method, operation switching, temperature adjustment, timer, air flow switching, and other remote controller unit operations.
- (2) Air filter removal and cleaning, and how to use the air louvers.
- (3) Give the operating and Installation Manuals to the customer.
- (4) If the signal code is changed, explain to the customer how it changed (the system returns to signal code A when the batteries in the remote controller unit are replaced).
*(4) is applicable to using wireless remote controller.

15. ERROR CODES

If you use a wireless remote controller, the lamp on the photo detector unit will output error codes by way of blinking patterns. If you use a wired type remote controller, error codes will appear on the remote controller display. See the lamp blinking patterns and error codes in the table. An error display is displayed only during operation.

Error display			Wired remote controller Error code	Description
OPERATION lamp (green)	TIMER lamp (orange)	ECONOMY lamp (green)		
●(1)	●(1)	◇	11	Serial communication error
●(1)	●(2)	◇	12	Wired remote controller communication error
●(1)	●(5)	◇	15	Check run unfinished
●(1)	●(6)	◇	16	Peripheral unit transmission PCB connection error
●(1)	●(8)	◇	18	External communication error
●(2)	●(1)	◇	21	Unit number or Refrigerant circuit address setting error [Simultaneous Multi]
●(2)	●(2)	◇	22	Indoor unit capacity error
●(2)	●(3)	◇	23	Combination error
●(2)	●(4)	◇	24	• Connection unit number error (indoor secondary unit) [Simultaneous Multi] • Connection unit number error (indoor unit or branch unit) [Flexible Multi]
●(2)	●(6)	◇	26	Indoor unit address setting error
●(2)	●(7)	◇	27	Primary unit, secondary unit set-up error [Simultaneous Multi]
●(2)	●(9)	◇	29	Connection unit number error in wired remote controller system
●(3)	●(1)	◇	31	Power supply interruption error
●(3)	●(2)	◇	32	Indoor unit PCB model information error
●(3)	●(3)	◇	33	Indoor unit motor electricity consumption detection error
●(3)	●(5)	◇	35	Manual auto switch error
●(3)	●(9)	◇	39	Indoor unit power supply error for fan motor
●(3)	●(10)	◇	3A	Indoor unit communication circuit (wired remote controller) error
●(4)	●(1)	◇	41	Inlet air temp. sensor error
●(4)	●(2)	◇	42	Indoor unit Heat Ex. Middle temp. sensor error
●(4)	●(4)	◇	44	Human sensor error
●(5)	●(1)	◇	51	Indoor unit fan motor error
●(5)	●(3)	◇	53	Drain pump error
●(5)	●(7)	◇	57	Damper error
●(5)	●(15)	◇	5U	Indoor unit error
●(6)	●(1)	◇	61	Outdoor unit reverse/missing phase and wiring error
●(6)	●(2)	◇	62	Outdoor unit main PCB model information error or communication error
●(6)	●(3)	◇	63	Inverter error
●(6)	●(4)	◇	64	Active filter error, PFC circuit error
●(6)	●(5)	◇	65	Trip terminal L error
●(6)	●(8)	◇	68	Outdoor unit rush current limiting resistor temp. rise error

●(6)	●(10)	◇	6A	Display PCB microcomputers communication error
●(7)	●(1)	◇	71	Discharge temp. sensor error
●(7)	●(2)	◇	72	Compressor temp. sensor error
●(7)	●(3)	◇	73	Outdoor unit Heat Ex. liquid temp. sensor error
●(7)	●(4)	◇	74	Outdoor temp. sensor error
●(7)	●(5)	◇	75	Suction Gas temp. sensor error
●(7)	●(6)	◇	76	• 2-way valve temp. sensor error • 3-way valve temp. sensor error
●(7)	●(7)	◇	77	Heat sink temp. sensor error
●(8)	●(2)	◇	82	• Sub-cool Heat Ex. gas inlet temp. sensor error • Sub-cool Heat Ex. gas outlet temp. sensor error
●(8)	●(3)	◇	83	Liquid pipe temp. sensor error
●(8)	●(4)	◇	84	Current sensor error
●(8)	●(6)	◇	86	• Discharge pressure sensor error • Suction pressure sensor error • High pressure switch error
●(9)	●(4)	◇	94	Trip detection
●(9)	●(5)	◇	95	Compressor rotor position detection error (permanent stop)
●(9)	●(7)	◇	97	Outdoor unit fan motor error
●(9)	●(8)	◇	98	Outdoor unit fan motor 2 error
●(9)	●(9)	◇	99	4-way valve error
●(9)	●(10)	◇	9A	Coil (expansion valve) error
●(10)	●(1)	◇	A1	Discharge temp. error
●(10)	●(3)	◇	A3	Compressor temp. error
●(10)	●(4)	◇	A4	High pressure error
●(10)	●(5)	◇	A5	Low pressure error
●(13)	●(2)	◇	J2	Branch boxes error [Flexible Multi]

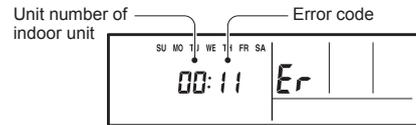
Display mode ● : 0.5s ON / 0.5s OFF
◇ : 0.1s ON / 0.1s OFF
() : Number of flashing

[Troubleshooting at the remote controller LCD]

This is possible only on the wired remote controller.

[Self-diagnosis]

If an error occurs, the following display will be shown.
("Er" will appear in the set room temperature display.)



EX. Self-diagnosis

[Troubleshooting with the indoor unit display] (option)

