

AUUB18TLAV2
AUUB24TLAV2
AUUB30TLAV2

AUUB36TLAV2
AUUB48TLAV2

INSTALLATION MANUAL

INDOOR UNIT (Cassette Type)

For authorized service personnel only.

MANUEL D'INSTALLATION

UNITÉ INTÉRIEURE (type cassette)

Pour le personnel agréé uniquement.

MANUAL DE INSTALACIÓN

UNIDAD INTERIOR (Tipo casete)

Únicamente para personal de servicio autorizado.

English

Français

Español



INSTALLATION MANUAL

PART No. 9371022666-02
VRF system indoor unit (Cassette type)

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1. SAFETY PRECAUTIONS

1.1. IMPORTANT! Please read before starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

- For safe installation and trouble-free operation, you must:
- Carefully read this instruction booklet before beginning.
 - Follow each installation or repair step exactly as shown.
 - Observe all local, state, and national electrical codes.
 - Pay close attention to all danger, warning, and caution notices given in this manual.

WARNING: This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION: This symbol refers to a hazard or unsafe practice which can result in personal injury and the potential for product or property damage.

- Hazard alerting symbols



: Electrical



: Safety/alert

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

1.2. SPECIAL PRECAUTIONS

When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate earthing (grounding) can cause accidental injury or death.
- Earth (Ground) the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing...

...In a Ceiling or Wall

Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

...In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

...In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

...In a Snowy Area (for Heat Pump-type Systems)


Install the outdoor unit on a raised platform that is higher than drifting snow.

When Connecting Refrigerant Tubing

- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before opening the refrigerant valves.


When Servicing

- Turn the power OFF at the main circuit breaker panel before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- After installation, explain correct operation to the customer, using the operating manual.

 **DANGER**

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

- 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**

Request your dealer or a professional installer to install the unit in accordance with this Manual.
An improperly installed unit can cause serious accidents such as water leakage, electric shock, or fire.
If the unit is installed in disregard of the instructions in the Installation 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.

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.

Installation must be performed in accordance with the requirement of NEC (National Electrical Code) and CEC (Canadian Electrical Code) by authorized personnel only.

Except for EMERGENCY, never turn off main as well as sub breaker of the indoor units during operation. It will cause compressor failure as well as water leakage. First, stop the indoor unit by operating the control unit, converter or external input device and then cut the breaker.
Make sure to operate through the control unit, converter or external input device.
When the breaker is designed, locate it at a place where the users cannot start and stop in the daily work.

Cancer and Reproductive Harm - www.P65Warnings.ca.gov

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 leakage, make sure that it does not exceed the concentration limit.

If a refrigerant leakage 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 leakage 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 tools 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	Contents of change for R22 tool
Gauge manifold	Pressure is huge and cannot be measured with a conventional (R22) 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 500 microns to 768 psi (–0.1 to 5.3 MPa) and a low pressure display range 500 microns to 551 psi (–0.1 to 3.8 MPa).
Charging hose	To increase pressure resistance, the hose material and base size were changed.
Vacuum pump	A conventional (R22) vacuum pump can be used by installing a vacuum pump adapter. • 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 500 microns (–100.7 kPa).
Gas leakage detector	Special gas leakage detector for HFC refrigerant R410A.

2.3. Accessories





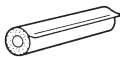
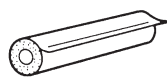
⚠ WARNING

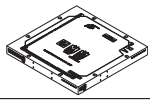
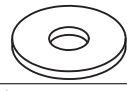
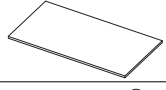
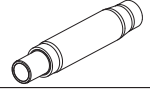


For installation purposes, be sure to use the parts supplied by the manufacturer or other prescribed parts.

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	Application
Operation manual 	1	
Installation manual 	1	(This book)
Cable tie (large) 	4	For fixing the connection pipe (large and small).
Push mount cable tie 	1	For transmission and remote controller cable binding.
Coupler heat insulation (small) 	1	For indoor side pipe joint (small).
Coupler heat insulation (large) 	1	For indoor side pipe joint (large).

Template (carton top) 	1	For installing indoor unit.
Washer 	8	For installing indoor unit.
Insulation 	1	For installing drain pipe
Drain hose 	1	For installing drain pipe. (Ø 3/4 in [I.D.]; Ø 1-1/16 in [O.D.])
Hose band 	1	For installing drain hose.
Drain pipe insulation 	1	For installing drain pipe.

2.4. Optional parts

Description	Model	Application
Air outlet shutter plate	UTR-YDZK	Install the plate at outlet when carrying out 3-way direction operation.
Panel spacer	UTG-BKXA-W	Installation in a space of 1-9/16 in (56 mm) or greater is possible by using panel spacer when the height behind the ceiling is low.
Wide panel	UTG-AKXA-W	Wide panel hides the gap between the ceiling hole and the Cassette grille.
Insulation kit for high humidity	UTZ-KXRA, UTZ-KXGA (for indoor unit height 11-3/4 in (298 mm)) UTZ-KXGB (for indoor unit height 10-1/16 in (256 mm))	Install when the condition under the roof is over 80% in humidity and over 86°F (30°C) in temperature.
IR receiver kit	UTY-LBHxD	For air conditioner operation.
Human sensor kit	UTY-SHZXC	To prevent waste of electricity, this function controls the temperature setting when no one is occupying the room.
External connect kit	UTY-XWZXZC	For output function. (Output terminal / CNB01)
	UTY-XWZXZB	For control input function. (Apply voltage terminal / CNA01)
	UTY-XWZXZD	For control input function. (Dry contact terminal / CNA02)
	UTY-XWZXZ7	For forced thermostat off function. (Apply voltage terminal / CNA03)
	UTY-XWZXZE	For forced thermostat off function. (Dry contact terminal / CNA04)
Wireless LAN adapter	UTY-TFSXZ*	For wireless LAN control.
MODBUS® convertor	UTY-VMSX	For connecting a single indoor unit system to the Modbus® network.
External power supply unit	UTZ-GXXA	Supply power to the indoor unit PCB when the indoor unit is turned off to prevent errors.

* You cannot use the Fresh air intake kit (UTZ-VXGA) for this product.

2.5. About unit of the length

This product is manufactured to metric units and tolerances. United States customary units are provided for reference only. In cases where exact dimensions and tolerances are required, always refer to metric units.

4.3.2. Bending pipes

- If pipes are shaped by hand, be careful not to collapse them.
- Do not bend the pipes in an angle more than 90°.
- When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them anymore.
- 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 install the pipe against the port on the indoor unit and the outdoor unit correctly. If the centering is improper, the flare nut cannot tighten 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.

Hold the torque wrench at its grip, keeping it at a right angle with the pipe, in order to tighten the flare nut correctly.

(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.)

Connection pipe (liquid)

Connection pipe (gas)

Tighten with 2 wrenches.

Holding wrench

Flare nut

Torque wrench

Indoor unit pipe (body side)

Connection pipe

Flare nut [in (mm)]	Tightening torque [lbf-ft (N-m)]
1/4 (6.35) dia.	11.8 to 13.3 (16 to 18)
3/8 (9.52) dia.	23.6 to 31.0 (32 to 42)
1/2 (12.70) dia.	36.1 to 45.0 (49 to 61)
5/8 (15.88) dia.	46.5 to 55.3 (63 to 75)
3/4 (19.05) dia.	66.4 to 81.1 (90 to 110)

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.

Cable tie (large) (accessories)

Coupler heat insulation (accessories)

Body

Be sure to overlap the insulation

No gap

Coupler heat insulation

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)

- Install the drain pipe with downward gradient (1/100 to 1/50) and so there are no rises or traps in the pipe. Unsmooth draining caused by accumulated water flow in the pipe may cause clogged drain.
- Use general hard polyvinyl chloride pipe (Ø 3/4 in [I.D.]; Ø 1-1/16 in [O.D.]).
- When the pipe is long, install supporters.
- Do not perform air bleeding. Drainage may be blown out.
- If it is impossible to have sufficient gradient of pipe, perform drain lift-up.

	Pipe size
Drain pipe	(Ø 3/4 in [I.D.]; Ø 1-1/16 in [O.D.])

Hanging fittings

60 to 78 in (1.5 to 2.0 m)

Ø 3/4 in [I.D.]; Ø 1-1/16 in [O.D.]

Downward gradient 1/100 to 1/50

PROHIBITED:

Rise

Trap

Air bleeding

- When lifting up drain:
- Height of inclined pipe should be less than 33 in (850 mm) from the ceiling. A rise dimension over this range will cause leakage.
 - Lift up the pipe vertically at the position of 11 in (300 mm) or less from the unit.

11 in (300 mm) or less

Downward gradient 1/100 to 1/50

33 in (850 mm) or less

Horizontal or upward gradient

Ø 3/4 in [I.D.]; Ø 1-1/16 in [O.D.] local arrangement

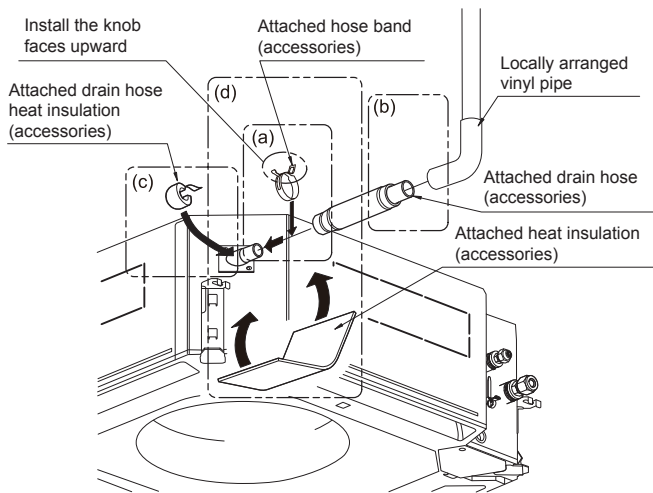
33 in (850 mm) or less

Ø 1 in [I.D.]; Ø 1-5/16 in [O.D.] or more

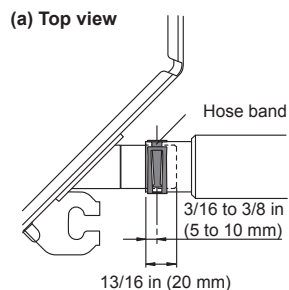
Downward gradient 1/100 to 1/50

Working procedure

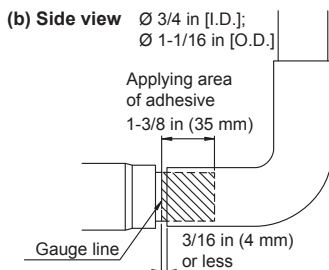
- (1) Install the attached drain hose to the drain port of the body. Install the hose band from the top of the hose within the graphic display area. Secure firmly with the hose band.
- (2) Use vinyl adhesive agent to glue the drain piping (PVC pipe VP25) which is prepared on site or elbow socket. (Apply color adhesive agent evenly until the gauge line and seal)
- (3) Check the drainage. (See separate diagram)
- (4) Install the heat insulation.
- (5) Use the attached heat insulation to insulate the drain port and band parts of the body.



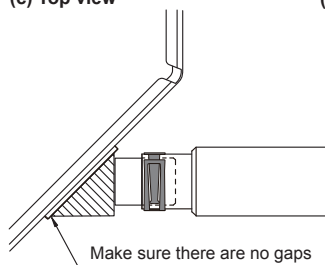
(a) Top view



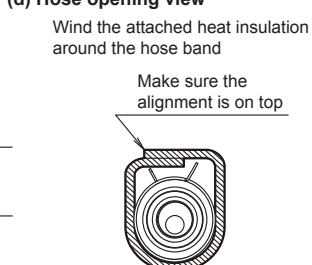
(b) Side view



(c) Top view



(d) Hose opening view



6. ELECTRICAL WIRING

⚠ 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 all units.

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

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.

Use the included connection 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.

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 (or RB unit). Erroneous wiring may cause burning of the electric parts.

Securely connect the connection cables to the terminal board. 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 discharge may occur.)

We suggest installing GFEB breakers or follow local electrical code. When installing this system, install using ground fault equipment breakers (GFEB) to reduce the risk of leaking current which result in electric shock or potential fire.

⚠ WARNING

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

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

Perform wiring work in accordance with standards so that the air conditioner can be operated safely and positively.

Connect the connection cable firmly to the terminal board. Imperfect installation may cause a fire.

If the supply cable is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

⚠ CAUTION

Earth (Ground) the unit.

Do not connect the earth (ground) cable to a gas pipe, water pipe, lightning rod, or a telephone earth (ground) cable. Improper earthing (grounding) may cause electric shock.

Do not connect power supply cables to the transmission or remote controller terminals, as this will damage the product.

Never bundle the power supply cable and transmission cable, remote control cable together. Separate these cables by 2 in (50 mm) or more. Bundling these cables together will cause miss operation or breakdown.

When handling PCB, static electricity charged in the body may cause malfunction of the PCB. Follow the cautions below:

- Establish an earth (ground) for the indoor and outdoor units and peripheral devices.
- Cut power (breaker) off.
- Touch metal part of the indoor units for more than 10 seconds to discharge static electricity charged in the body.
- Do not touch terminals of parts and patterns implemented on PCB.

6.1. Electrical requirement

- Select the power cable type and size in accordance with relevant local and national regulations.

Voltage rating	208/230 V
Operating range	187 to 253 V

- Specifications for local wiring power cord and branch wiring are in compliance with local code
- Max. wire length: Set a length so that the voltage drop is less than 2%. Increase the wire diameter when the wire length is long.

Breaker should be installed at every refrigerant system. Do not use a breaker in a different refrigerant system.

Refer to the table for the breaker specifications of each installation condition. Perform the power crossover wiring within the range of the same refrigerant system. When the crossover wiring is done, make a connection for indoor units to satisfy conditions A and B below.

A. Current breaker requirements

Model	MCA	MAX. CKT. BKR (Fuse capacity)
AUUB18TLAV2	0.33 A	15 A
AUUB24TLAV2	0.40 A	
AUUB30TLAV2	0.68 A	
AUUB36TLAV2	0.78 A	
AUUB48TLAV2	1.40 A	

- MCA: Minimum Circuit Ampacity
- MAX. CKT. BKR: Maximum Circuit Breaker

When the power crossover wiring is done, make it so that the total of the MCA of the connected RB units and indoor units does not exceed the 11 A. For RB unit MCA, refer to the RB unit installation manual.

If the capacity of connected RB units and indoor units exceeds the upper limit, either add breakers or use a breaker with a greater capacity.

B. Earth leakage breaker requirements

Breaker capacity	Maximum connectable "indoor units" or "indoor units + RB units" (*1)
30 mA, 0.1 sec or less	36 or less
100 mA, 0.1 sec or less	37 to 121 (*2)

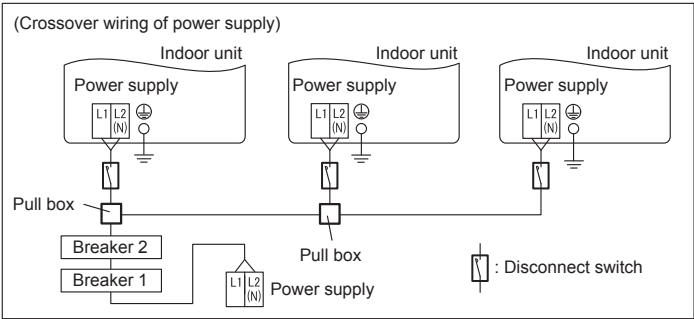
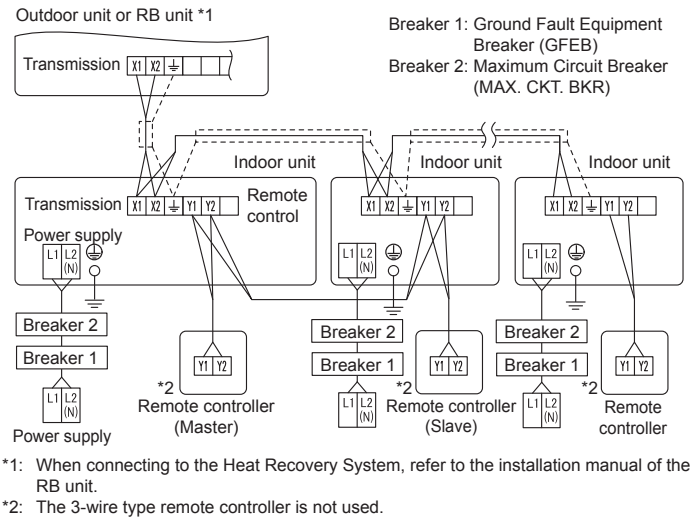
*1: Heat pump type: indoor units, Heat recovery type: indoor units and RB units.

*2: If the 100 mA capacity breaker is not provided, split the quantity of the indoor units into small groups of 36 units or less and provide a breaker with capacity of 30 mA for each group.

6.1.1. Cable specifications

Use	Cable size (AWG)	Cable type	Remarks
Transmission cable	22	LEVEL 4 (NEMA) non-polar 2 core, twisted pair solid core diameter 0.026 in (0.65 mm)	LONWORKS® compatible cable
Remote controller cable (2-wire type)	22 to 16	Sheathed PVC cable	Non polar 2 core, twisted pair
	18	Thermostat cable 2 core	Use sheathed non twisted pair cable

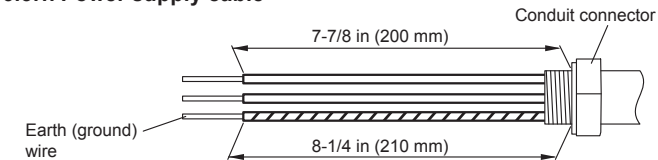
6.2. Wiring method



6.3. Unit wiring

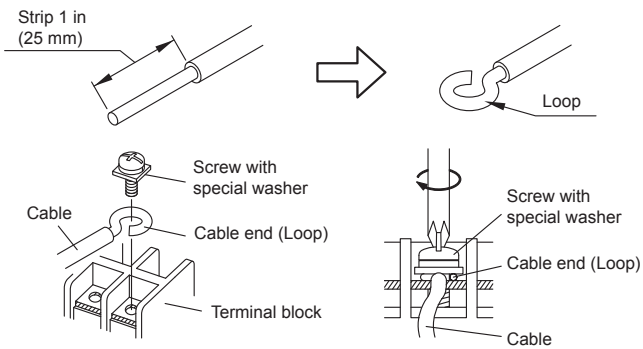
• Before attaching the cable to terminal block.

6.3.1. Power supply cable



A. For solid core wiring

- To connect the electrical terminal, follow the below diagram and connect after looping it around the end of the cable.
- Use the specified cables, connect them securely, and fasten them so that there is no stress placed on the terminals.
- Use an appropriate screwdriver to tighten the terminal screws. Do not use a screwdriver that is too small, otherwise, the screw heads may be damaged and prevent the screws from being properly tightened.
- Do not tighten the terminal screws too much, otherwise, the screws may break.
- See the table for the terminal screw tightening torques.
- Please do not fix 2 power supply cables with 1 screw.



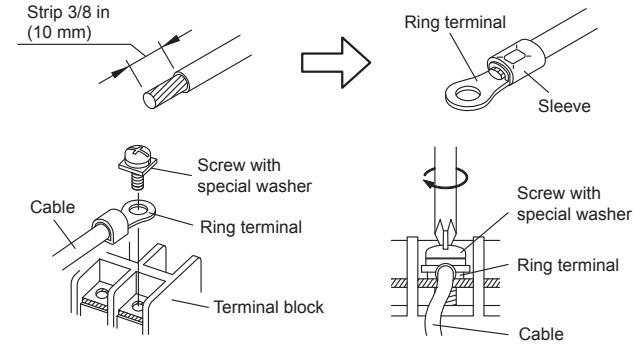
Do not apply branch wiring. It may result electric shock or fire.

⚠ WARNING

When using solid core cables, do not use the ring terminal. If you use the solid core cables with the ring terminal, the ring terminal's pressure bonding may malfunction and cause the cables to abnormally heat up.

B. For strand wiring

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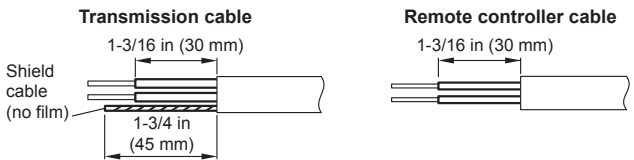


⚠ WARNING

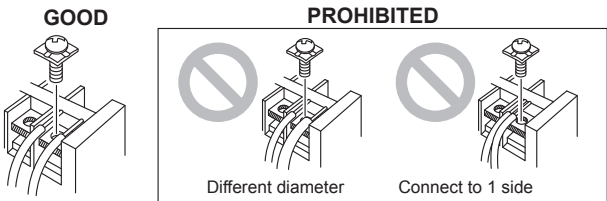
Use ring terminals and tighten the terminal screws to the specified torques, otherwise, abnormal overheating may be produced and possibly cause heavy damage inside the unit.

Terminal number	Tightening torque
M3.5 screw (Power supply/L, N, GND)	11 to 16 lbf·in (1.2 to 1.8 N·m)

6.3.2. Transmission and Remote controller cable



• Connect remote controller and transmission cables as shown in figure below.



⚠ WARNING

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

Terminal number	Tightening torque
M3 screw (Transmission /X1, X2) (Remote controller /Y1, Y2)	4.4 to 5.3 lbf-in (0.5 to 0.6 N·m)

CAUTION

To peel the film from the lead cable, use a dedicated tool that will not damage the conductor cable.

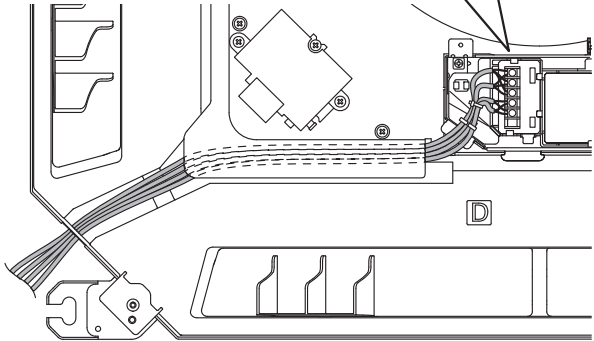
When installing a screw on the terminal block, do not cut the cable by overtightening the screw. On the other hand, an under tightened screw can cause faulty contact, which will lead to a communication failure.

6.4. Connection of wiring

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

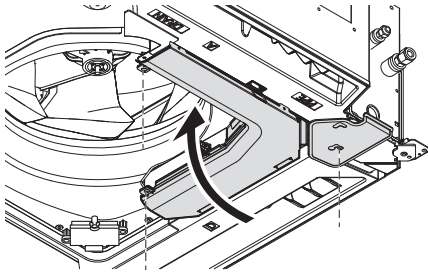
Attach the conduit connector on the wiring connecting port.
(The grommet edging and the connection cable clamp are not used.)

- (2) Please firmly tighten Connection cable and Remote controller cable with the attached cable tie.



- (3) Replace the Control box cover and Wiring cover. Securely tighten the screws.

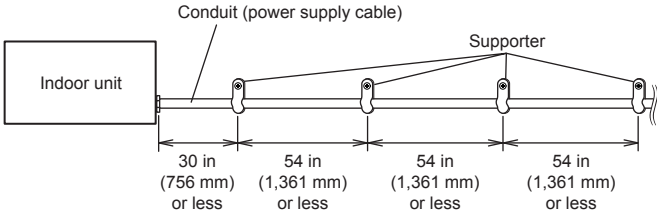
Cure the wiring connecting port and remote controller connecting port with putty or heat insulation so that insects or dust will not enter the unit.



CAUTION

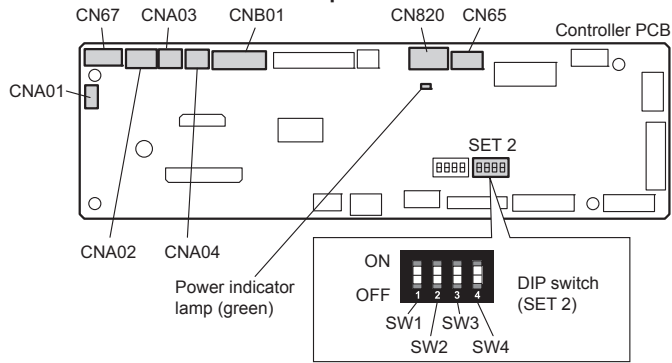
Do not bundle the remote controller cable, or wire the remote controller cable in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cable. It may cause erroneous operation.

- (4) Fix the conduit with the supporters as shown below.



6.5. Optional parts wiring

6.5.1. Connector and DIP switch position



Name	Application
CNA01	Apply voltage terminal
CNA03	Apply voltage terminal
CNA02	Dry contact terminal
CNA04	Dry contact terminal
DIP switch SET 2 (SW2)	Input signal type switching
CNB01	Output terminal
CN65	For one of the following. • MODBUS® convertor (*1) • Wireless LAN adapter (*1)
CN67	For Human sensor kit
CN820	For External power supply unit (*1)

*1: For details, refer to each installation manual.

6.5.2. Power indicator lamp status

Power indicator lamp (Green)	Status contents
● Lit	Lit when the power is turned on.
● Fast flashing (every 0.1 second)	There is a fault with the communication board or the main board.
● Blinking (repeat 3 seconds ON and 1 second OFF)	The indoor unit is turned off and power is supplied from the External power supply unit (optional) to the indoor unit PCB.

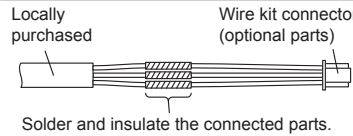
6.5.3. Connection methods

Wire modification for External input/output wire

- Remove insulation from wire attached to wire kit connector.
- Remove insulation from field supplied cable. Use crimp type insulated butt connector to join field cable and wire kit wire.
- Connect the wire with connecting wire with solder.

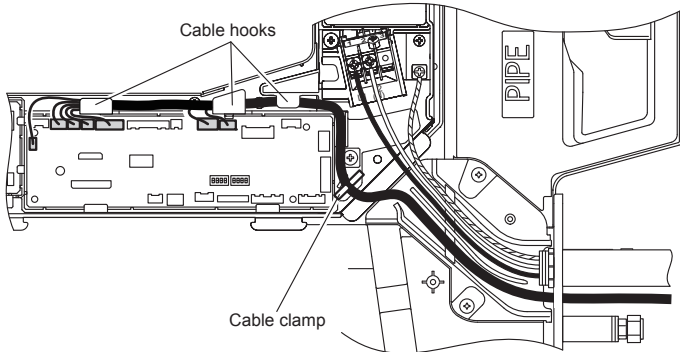
IMPORTANT:

Be sure to insulate the connection between the wires.



Connection terminals and wiring arrangement

In following figure, all the possible connectors are connected for description. In actual installation, you cannot connect all the connectors at once.



6.6. External input and external output (optional parts)

6.6.1. External input

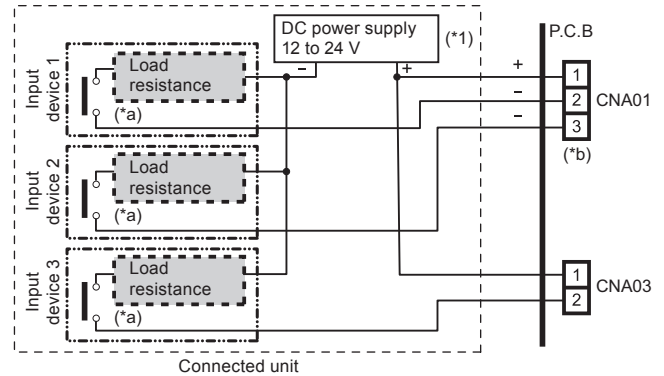
- Indoor unit can be Operation/Stop, Emergency stop or Forced stop by using indoor unit PCB CNA01 or CNA02.
- "Operation/Stop" mode, "Emergency stop" mode or "Forced stop" mode can be selected with function setting of indoor unit.
- Indoor unit can be Forced thermostat off by using indoor unit PCB CNA03 or CNA04.
- A twisted pair cable (22 AWG) should be used. Maximum length of cable is 492 ft (150 m).
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
- The wire connection should be separate from the power cable line.

Input select

Use either one of these types of terminal according to the application. (Both types of terminals cannot be used simultaneously.)

• Apply voltage terminal ([CNA01], [CNA03])

When a power supply must be provided at the input device you want to connect, use the Apply voltage terminal ([CNA01], [CNA03]).



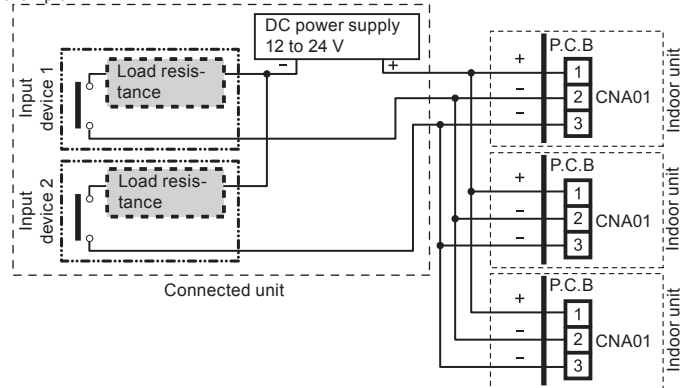
*1: Make the power supply DC 12 to 24 V. Select a power supply capacity with an ample surplus for the connected load.

Do not impress a voltage exceeding 24 V across pins 1-2, and 1-3.

*a: The allowable current is DC 5 mA to 10 mA. (Recommended: DC 5 mA)
Provide a load resistance such that the current becomes DC 10 mA or less.
Select very low current use contacts (usable at DC 12 V, DC 1 mA or less).

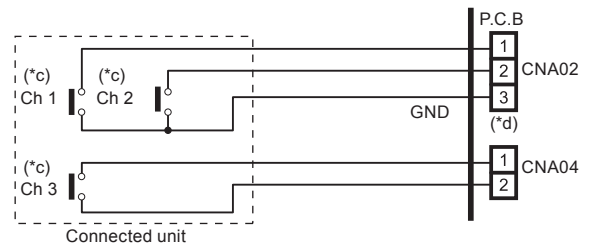
*b: The polarity is [+ for pin 1 and - for pin 2 and 3. Connect correctly.

When connected to Apply voltage terminals of multiple indoor units with a connected unit, be sure to make a branch outside the indoor unit using a pull box, etc. as shown on below example.



• Dry contact terminal ([CNA02], [CNA04])

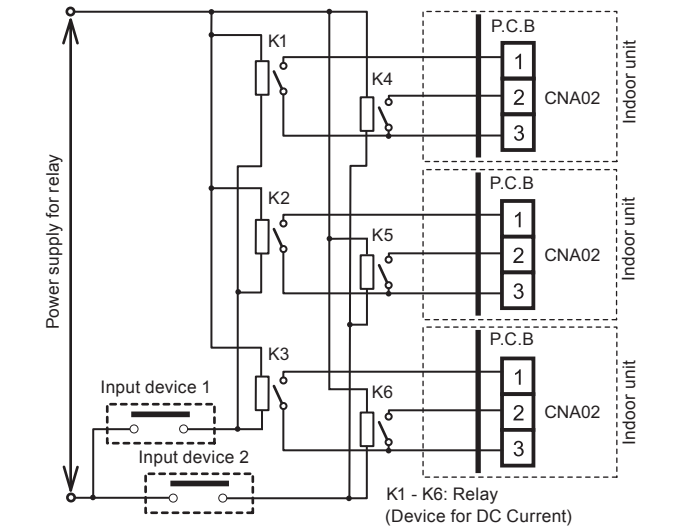
When a power supply is unnecessary at the input device you want to connect, use the Dry contact terminal ([CNA02], [CNA04]).



*c: Select very low current use contacts (usable at DC 12 V, DC 1 mA or less).

*d: The wiring is different from Apply voltage terminals. Be sufficiently careful when wiring.

When connected to Dry contact terminals of multiple indoor units with a connected unit, insulate each indoor unit with relay, etc. as shown on below example.



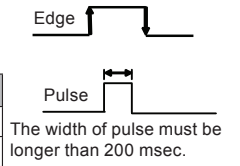
NOTE:
When connected to multiple indoor units directly, it will cause breakdown.

Operation behavior

• Input signal type

The input signal type can be selected.
It is switched by DIP switch on the indoor unit PCB.

DIP switch [Set 2 SW2]	Input signal type
OFF (Factory setting)	Edge
ON	Pulse



• When function setting is “Operation/Stop” mode.

Input	Connector	Input signal	Command
Edge	Ch1 of CNA01 or CNA02	OFF → ON	Operation
		ON → OFF	Stop
Pulse	CNA01 or CNA02	Ch1 OFF → ON	Operation
		Ch2 OFF → ON	Stop

* The last command has priority.
* The indoor units within the same remote controller group operates in the same mode.

• When function setting is “Emergency stop” mode.

Input	Connector	Input signal	Command
Edge	Ch1 of CNA01 or CNA02	OFF → ON	Emergency stop
		ON → OFF	Normal
Pulse	CNA01 or CNA02	Ch1 OFF → ON	Emergency stop
		Ch2 OFF → ON	Normal

* All indoor units of same refrigerant system stops when Emergency stop operates.

• When function setting is “Forced stop” mode.

Input	Connector	Input signal	Command
Edge	Ch1 of CNA01 or CNA02	OFF → ON	Forced stop
		ON → OFF	Normal
Pulse	CNA01 or CNA02	Ch1 OFF → ON	Forced stop
		Ch2 OFF → ON	Normal

* When the forced stop is triggered, indoor unit stops and Operation/Stop operation by a remote controller is restricted.
* When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

• Selection method of functions

“Operation/Stop” mode or “Emergency stop” mode, “Forced stop” mode can be selected with function setting of indoor unit.

• Forced thermostat off function (“Edge” input only)

*If function setting “60” is set to “00”

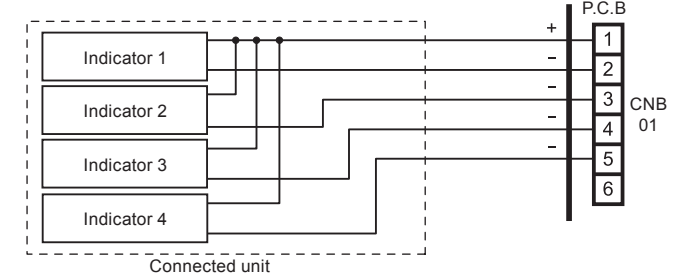
Input	Connector	Input signal	Command
Edge	Ch1 of CNA01 or CNA02	OFF → ON	Thermostat off
		ON → OFF	Normal

6.6.2. External output

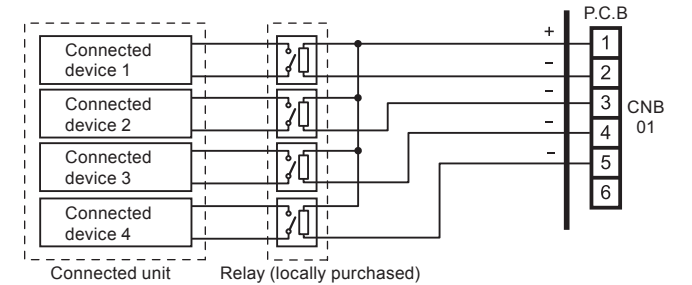
- A twisted pair cable (22AWG) should be used. Maximum length of cable is 82 ft (25 m).
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
- Output voltage: Hi DC 12 V ± 2 V, Lo 0 V.
- Permissible current: 50 mA

Output select

• When indicator etc. are connected directly



• When connecting with unit equipped with a power supply



Operation behavior

* If function setting “60” is set to “00”

Connector	Output voltage	Status
CNB01	External output 1 Pins 1-2	0 V Stop
		DC 12 V Operation
	External output 2 Pins 1-3	0 V Normal
		DC 12 V Error
	External output 3 Pins 1-4	0 V Indoor unit fan stop
		DC 12 V Indoor unit fan operation
	External output 4 Pins 1-5	0 V External heater OFF
		DC 12 V External heater ON

• Indoor unit fan setting for external heater

Fan setting when turning ON output to the connected external heater can be set by changing Dip switch on PC board.

Dip switch [SET2 SW3]	Fan setting when ON is output to the external heater	Explanation
OFF (Factory setting)	OFF	For the fan setting details, see the Design & Technical Manual.
ON	ON	

7. FIELD SETTING

There are 3 methods for address setting by FIELD SETTING as follows.
Please set by either of the methods.

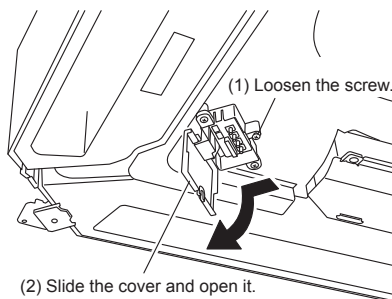
Each setting method is described in below (1) to (3).

- (1) IU AD, REF AD SW settings: This section (7.1. Setting the address)
- (2) Remote controller settings: Refer to the wired or wireless remote controller manual for detailed setting information. (Set IU AD, REF AD SW to 0)
- (3) Automatic address settings: Refer to the outdoor unit manual for detailed setting information. (Set IU AD, REF AD SW to 0)

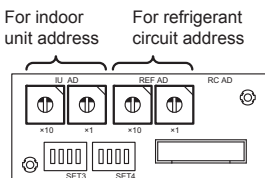
7.1. Setting the address

CAUTION

Use an insulated screwdriver to set the dip switches.



Open the cover referring to the figure below. Close and fix the cover after addressing setting.



Setting	Setting range	Type of switch
Indoor unit address <ul style="list-style-type: none"> Rotary switch [IU AD × 1] (Factory setting "0") Rotary switch [IU AD × 10] (Factory setting "0") <p>When connecting multiple indoor units to 1 refrigerant system, set the address at IU AD SW as shown in the Table A.</p>	0 to 63	<p>Setting example "2"</p> <p>IU AD × 10 IU AD × 1</p>
Refrigerant circuit address <ul style="list-style-type: none"> Rotary switch [REF AD × 1] (Factory setting "0") Rotary switch [REF AD × 10] (Factory setting "0") <p>In the case of multiple refrigerant systems, set REF AD SW as shown in the Table A for each refrigerant system. Set to the same refrigerant circuit address as the outdoor unit.</p>	0 to 99	<p>Setting example "63"</p> <p>REF AD × 10 REF AD × 1</p>

- If working in an environment where the wireless remote controller can be used, the addresses can also be set using the remote controller.
- If setting the addresses using the wireless remote controller, set the indoor unit address and refrigerant circuit address to "00". (For information on setting using the wireless remote controller.)

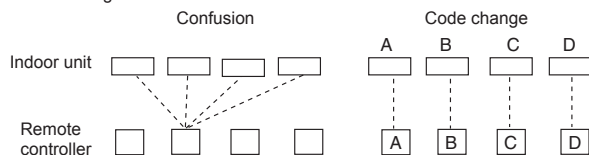
* Do not set the indoor unit address (IU AD SW) at 64 to 99. It may result in failure.

Table A

Address	Rotary switch setting		Address	Rotary switch setting	
Refrigerant circuit	REF AD SW × 10	REF AD SW × 1	Indoor unit	IU AD SW × 10	IU AD SW × 1
0	0	0	0	0	0
1	0	1	1	0	1
2	0	2	2	0	2
3	0	3	3	0	3
4	0	4	4	0	4
5	0	5	5	0	5
...
10	1	0	10	1	0
11	1	1	11	1	1
...
99	9	9	63	6	3

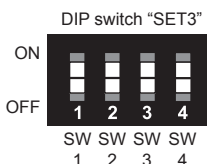
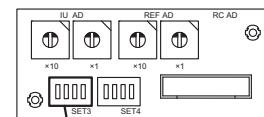
7.2. Custom code setting

- Selecting the custom code prevents the indoor unit mix-up. (figure below) (Up to 4 codes can be set.)
- Perform the setting for both the indoor unit and the remote controller.



Custom code setting for indoor unit

Set the DIP switch SET3 SW1, 2, referring to the figure and table below.



DIP switch SET3	Custom code			
	A (Factory setting)	B	C	D
SW1	OFF	ON	OFF	ON
SW2	OFF	OFF	ON	ON

7.3. Function setting

- FUNCTION SETTING can be performed with the wired or wireless remote controller. (The remote controller is optional equipment)
- Refer to the wired or wireless remote controller manual for detailed setting information.
- Refer to "7.1. Setting the address" for indoor unit address and refrigerant circuit address settings.
- Turn the power of the indoor unit ON before starting the setting.

- * Turning on the power to the indoor units initializes EEV, so make sure the piping air tight test and vacuuming have been conducted before turning on the power.
- * Also check again to make sure no wiring mistakes were made before turning on the power.

Function details

Function	Function number	Setting number	Default	Details
Filter indicator interval	11	00	Standard	Adjust the filter cleaning interval notification. If the notification is too early, change to setting 01. If the notification is too late, change to setting 02.
		01	Longer	
		02	Shorter	
Filter indicator action	13	00	Enable	Enable or disable the filter indicator. Setting 02 is for use with a central remote controller.
		01	Disable	
		02	Display only on central remote controller	
Ceiling airflow	20	00	Standard	Regulate the airflow according to the needs of the installation location. When set to 01, the air flow will be stronger. (Cassette type only)
		01	High Ceiling	
Vertical airflow direction	23	00	Standard	Adjust the vertical airflow direction. All airflow direction louvers are adjusted together.
		01	Adjust	
(Forbidden)	24	00	_____	_____
(Forbidden)	26	31	_____	_____
Cool air temperature trigger	30	00	Standard	Adjust the cool air trigger temperature. To lower the trigger temperature, use setting 01. To raise the trigger temperature, use setting 02.
		01	Adjust (1)	
		02	Adjust (2)	
Heat air temperature trigger	31	00	Standard	Adjust the heat air trigger temperature. To lower the trigger temperature by 6 degrees C, use setting 01. To lower the trigger temperature by 4 degrees C, use setting 02. To raise the trigger temperature, use setting 03.
		01	Adjust (1)	
		02	Adjust (2)	
		03	Adjust (3)	
Auto restart (*1)	40	00	Enable	Enable or disable automatic system restart after a power outage.
		01	Disable	
Cool Air Prevention	43	00	Super low	Restraining the cold airflow with making the airflow lower when starting heating operation. To correspond to the ventilation, set to 01.
		01	Follow the setting on the remote controller	

Function	Function number	Setting number	Default	Details
External control	46	00 Start/Stop	○	Allow an external controller to start or stop the system, or to perform an emergency stop. * If an emergency stop is performed from an external controller, all refrigerant systems will be disabled. * If forced stop is set, indoor unit stops by the input to the external input terminals, and Start/Stop by a remote controller is restricted.
		01 Emergency stop		
		02 Forced stop		
Error report target	47	00 All	○	Change the target for reporting errors. Errors can either be reported in all locations, or only on the central remote controller.
		01 Display only on central remote controller		
Fan setting when cooling thermostat OFF	49	00 Follow the setting on the remote controller	○	When set to 01, the fan stops when the thermostat is OFF in cooling operation. Connection of the wired remote controller (2-wire type) and switching its thermistor are necessary.
		01 Stop		
Switching functions for external inputs and external outputs terminals (*2)	60	00 Mode 0	○	<ul style="list-style-type: none"> Set this function when connecting the VRF system to a ventilator, economizer, humidifier, or other external device. The connection terminal functions can be changed depending on the type of external device. For details of the connection terminal functions, see the Design & Technical Manual.
		01 Mode 1		
		02 Mode 2		
		03 Mode 3		
		04 Mode 4		
		05 Mode 5		
		06 Mode 6		
		07 Mode 7		
		08 Mode 8		
Control switching of external heaters	61	00 Auxiliary heater control 1	○	Sets the control method for the external heater being used. For details of the control method, see the Design & Technical Manual.
		01 Auxiliary heater control 2		
		02 Heat pump prohibition control		
		03 Heater selection control using outdoor temperature 1		
		04 Heater selection control using outdoor temperature 2		
		05 Auxiliary heater control by outdoor temperature 3		
		06 Auxiliary heat pump control		
		07 Auxiliary heat pump control by outdoor temperature 1		
		08 Auxiliary heat pump control by outdoor temperature 2		
		09 Auxiliary heat pump control by outdoor temperature 3		
Operating temperature switching of external heaters	62	00 Setting 0	○	<ul style="list-style-type: none"> Sets the temperature conditions when the external heater is ON. For the temperature conditions, see "Temperature conditions when the external heater is ON". For a more detailed explanation, see the Design & Technical Manual.
		01 Setting 1		
		02 Setting 2		
		03 Setting 3		
		04 Setting 4		
		05 Setting 5		
		06 Setting 6		
		07 Setting 7		
		08 Setting 8		
		09 Setting 9		
		10 Setting 10		
		11 Setting 11		
		12 Setting 12		
		13 Setting 13		
		14 Setting 14		
		15 Setting 15		
		16 Setting 16		
		17 Setting 17		

Function	Function number	Setting number	Default	Details
Auto mode type (*3)	68	00 Single setpoint auto mode (traditional)	○	Switch the setting method of auto mode to single or dual (cooling/heating). For heat pump systems, it is necessary to set the master indoor unit (by wired remote controller).
		01 Dual setpoint auto mode		
Deadband value (*3)	69	00 0°F (0°C)	○	Choose the minimum temperature between cooling and heating settings (deadband) for Dual setpoint auto mode (set in No. 68).
		01 1°F (0.5°C)		
		02 2°F (1.0°C)		
		03 3°F (1.5°C)		
		04 4°F (2.0°C)		
		05 5°F (2.5°C)		
		06 6°F (3.0°C)		
		07 7°F (3.5°C)		
		08 8°F (4.0°C)		
		09 9°F (4.5°C)		
(Forbidden)	70	00 —	○	—
Standby time for auxiliary equipment operation	71	00 Disable	○	Sets the standby time until the auxiliary equipment operation starts during primary equipment operation.
		01 1 minutes		
		02 2 minutes		
		⋮ ⋮ ⋮		
		98 98 minutes		
		99 99 minutes		
Heat pump backup setting	72	00 Disable	○	Enables or disables the heat pump backup instruction from the outdoor unit. This function will be usable provided that the corresponding outdoor unit is connected.
		01 Enable		
Emergency heat	73	00 Disable	○	Enables or disable of emergency heat input.
		01 Enable		
Fan delay time	74	00 1 minutes	○	Sets the fan delay time when the heater is turned off.
		01 50 seconds		
		02 40 seconds		
		03 30 seconds		
External heater use in defrosting. (*4)	75	00 Disable	○	Enables or disables the external heater use in defrosting.
		01 Enable		

- *1: Auto restart is an emergency function such as for power failure etc.
Do not start and stop the indoor unit by this function in normal operation.
Be sure to operate by the control unit, converter or external input device.
- *2: Inappropriate setting may cause an external device malfunction. Confirm whether all the settings have been performed appropriately according to the installing condition.
- *3: Function number 68 and 69 will be usable provided that the corresponding operating device is connected.
- *4: When using function number 75, inappropriate heater selection may cause cold air in defrosting.

Temperature conditions when the external heater is ON/OFF

Temperature (t) = Room temperature - set temperature

		Set value of function: 61			
		00		01 to 09	
		ON	OFF	ON	OFF
Set value of function: 62	00	t < -5.4°F (-3°C)	t ≥ -1.8°F (-1°C)	t ≤ -0.9°F (-0.5°C)	t ≥ +0.9°F (+0.5°C)
	01	t < -3.6°F (-2°C)	t ≥ -1.8°F (-1°C)	t ≤ -1.8°F (-1°C)	t ≥ +0.9°F (+0.5°C)
	02	t < -3.6°F (-2°C)	t ≥ -1.8°F (-1°C)	t ≤ -3.6°F (-2°C)	t ≥ +0.9°F (+0.5°C)
	03	t < -5.4°F (-3°C)	t ≥ -1.8°F (-1°C)	t ≤ -5.4°F (-3°C)	t ≥ +0.9°F (+0.5°C)
	04	t < -7.2°F (-4°C)	t ≥ -1.8°F (-1°C)	t ≤ -7.2°F (-4°C)	t ≥ +0.9°F (+0.5°C)
	05	t < -9.0°F (-5°C)	t ≥ -1.8°F (-1°C)	t ≤ -9.0°F (-5°C)	t ≥ +0.9°F (+0.5°C)
	06	t < -5.4°F (-3°C)	t ≥ -0.9°F (-0.5°C)	t ≤ -0.9°F (-0.5°C)	t ≥ 0°F (0°C)
	07	t < -3.6°F (-2°C)	t ≥ -0.9°F (-0.5°C)	t ≤ -1.8°F (-1°C)	t ≥ 0°F (0°C)
	08	t < -3.6°F (-2°C)	t ≥ -0.9°F (-0.5°C)	t ≤ -3.6°F (-2°C)	t ≥ 0°F (0°C)
	09	t < -5.4°F (-3°C)	t ≥ -0.9°F (-0.5°C)	t ≤ -5.4°F (-3°C)	t ≥ 0°F (0°C)
	10	t < -7.2°F (-4°C)	t ≥ -0.9°F (-0.5°C)	t ≤ -7.2°F (-4°C)	t ≥ 0°F (0°C)
	11	t < -9.0°F (-5°C)	t ≥ -0.9°F (-0.5°C)	t ≤ -9.0°F (-5°C)	t ≥ 0°F (0°C)
	12	t < -5.4°F (-3°C)	t ≥ 0°F (0°C)	t ≤ -0.9°F (-0.5°C)	t ≥ -0.9°F (-0.5°C)
	13	t < -3.6°F (-2°C)	t ≥ 0°F (0°C)	t ≤ -1.8°F (-1°C)	t ≥ -0.9°F (-0.5°C)
	14	t < -3.6°F (-2°C)	t ≥ 0°F (0°C)	t ≤ -3.6°F (-2°C)	t ≥ -0.9°F (-0.5°C)
	15	t < -5.4°F (-3°C)	t ≥ 0°F (0°C)	t ≤ -5.4°F (-3°C)	t ≥ -0.9°F (-0.5°C)
	16	t < -7.2°F (-4°C)	t ≥ 0°F (0°C)	t ≤ -7.2°F (-4°C)	t ≥ -0.9°F (-0.5°C)
	17	t < -9.0°F (-5°C)	t ≥ 0°F (0°C)	t ≤ -9.0°F (-5°C)	t ≥ -0.9°F (-0.5°C)

8. CASSETTE GRILLE INSTALLATION

- Operate according to the installation Manual CASSETTE GRILLE.
- Be sure to confirm there is no gap between the cassette grille and main unit after installing the CASSETTE GRILLE.

9. TEST RUN

9.1. Test run using Outdoor unit (PCB)

Refer to the Installation Manual for the outdoor unit if the PCB for the outdoor unit is to be used for the test run.

9.2. Test run using remote controller

- Refer to the Installation Manual for the remote controller to perform the test run using the remote controller.
- When the air conditioner is being test run, the OPERATION and TIMER indicator lamp flash slowly at the same time.

10. 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	
Is the voltage of the power source the same as that indicated on the label on the indoor unit?	No operation, heat or burn damage	
Are the wires and pipes all connected completely?	No operation, heat or burn damage	
Is the indoor unit earthed (grounded)?	Short circuit	
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	
Does start and stop air conditioner operation by remote control unit or external device?	No operation	
After installation is completed, has the proper operation and handling been explained to the user?		

11. ERROR CODES

If you use a wired type remote controller, error codes will appear on the remote controller display. If you use a wireless remote controller, the lamp on the photodetector unit will output error codes by way of blinking patterns. See the lamp blinking patterns and error codes in the table below.

Error indications			Wired remote controller error code	Error contents
OPERATION lamp (green)	TIMER lamp (orange)	FILTER lamp (red)		
● (1)	● (2)	◇	12	Remote controller communication error
● (1)	● (4)	◇	14	Network communication error
● (1)	● (6)	◇	16	Peripheral unit communication error
● (2)	● (6)	◇	26	Indoor unit address setting error
● (2)	● (9)	◇	29	Connection unit number error in wired remote controller system
● (3)	● (1)	◇	31	Indoor unit power supply abnormal
● (3)	● (2)	◇	32	Indoor unit main PCB error
● (3)	● (10)	◇	3A	Indoor unit communication circuit (wired remote controller) error
● (4)	● (1)	◇	41	Indoor unit room temp. thermistor error
● (4)	● (2)	◇	42	Indoor unit heat ex. temp. thermistor error
● (4)	● (4)	◇	44	Human sensor error
● (5)	● (1)	◇	51	Indoor unit fan motor 1 error
● (5)	● (2)	◇	52	Indoor unit coil (expansion valve) error
● (5)	● (3)	◇	53	Indoor unit water drain abnormal
● (9)	● (15)	◇	9U	Outdoor unit miscellaneous error
● (10)	● (8)	◇	AB	Poor refrigerant circulation
● (13)	● (1)	◇	11	RB unit error

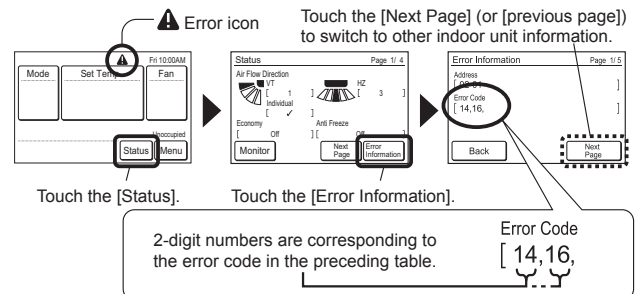
Display mode ● : 0.5 s ON / 0.5 s OFF

◇ : 0.1 s ON / 0.1 s OFF

() : Number of flashing

Wired Remote Controller Display

UTY-RNRUZ* (2-wire type)



For more information, refer to the installation manual of the remote controller.