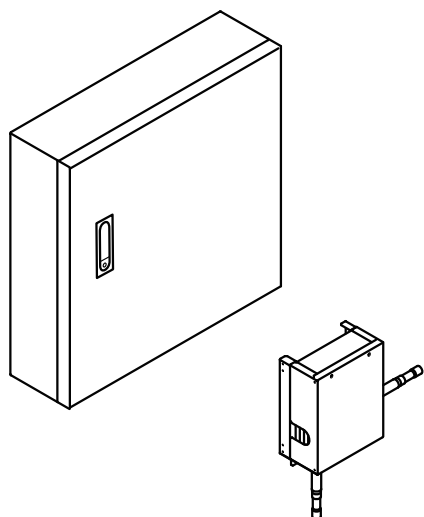




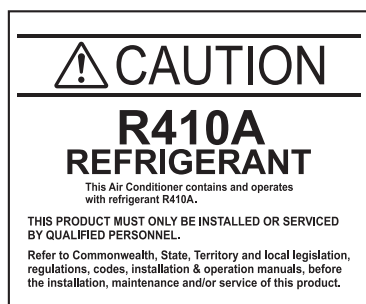
INSTALLATION MANUAL

DX-kit

For authorized service personnel only.



UTY-VDGX
UTP-VX30A
UTP-VX60A
UTP-VX90A



[Original instructions]

FUJITSU GENERAL LIMITED

PART NO. 9381279005

INSTALLATION MANUAL

PART NO. 9381279005

VRF system DX-kit

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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, to the customer. Request the customer to keep them on hand for future use, such as for relocating or repairing the unit.
- For installation of the air handling unit (heat exchanger), refer to the installation manual for the air handling unit.

 WARNING	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
Request your dealer or a professional installer to install the DX-kit in accordance with this Installation Manual. An improperly installed unit can cause serious accidents such as water leakage, electric shock, or fire. If the DX-kit 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 work must be performed in accordance with national wiring standards by authorized personnel only.	
Except for EMERGENCY, never turn off main as well as sub breaker of the DX-kits during operation. It will cause compressor failure as well as water leakage. First, stop the DX-kit 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.	

 CAUTION	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.
Read carefully all security information before use or install the DX-kit.	
Do not attempt to install the DX-kit or a part of the DX-kit by yourself.	
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.	
The installation must be carried out in compliance with regulations in force in the place of installation and the installation instructions of the manufacturer.	
This unit is part of a set constituting the DX-kit. It must not be installed alone or with non-authorized 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 3mm for this unit.	
The unit must be correctly earthed (grounded) and the supply line must be equipped with a differential breaker in order to protect the persons.	
The units are not explosion proof and therefore should not be installed in explosive atmosphere.	
Never touch electrical components immediately after the power supply has been turned off. Electric shock may occur. After turning off the power, always wait 5 minutes before touching electrical components.	
This unit contains no user-serviceable parts. Always consult authorized service personnel to repairs.	
When moving, consult authorized service personnel for disconnection and installation of the unit.	

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 UNF 20 threads per inch.)
Vacuum pump	A conventional vacuum pump can be used by installing a vacuum pump adapter. Be sure that the pump oil does not backflow 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

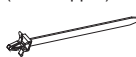
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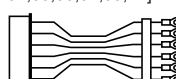
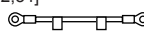
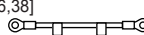
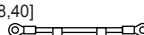
For installation purposes, be sure to use the parts supplied by the manufacturer or other prescribed parts. The use of non-prescribed parts can cause serious accidents such as the unit falling, water leakage, electric shock, or fire.

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

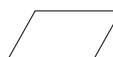
Keep the Installation Manual in a safe place and do not discard any other accessories until the installation work has been completed.

(1) Control unit Accessories

Name and Shape	Q'ty	Application
Installation Manual 	1	(This book)
Key 	2	For the door of control unit
Sealing washer 	3	For mounting the control unit to the wall Waterproof specifications
Nuts (M8) 	3	For mounting the control unit to the wall
Cable ties (with stopper) 	19	For securing the cables
Cable gland (M10) 	4	For cable holes
Cable gland (M16) 	5	For cable holes
Cable gland (M20) 	1	For cable holes
Blind bar 	5	For mounting when not passing the cable through the cable gland
Cable tie 	3	For securing the optional remote controller cable
Screw (M4×L6 mm) 	3	For mounting the optional remote controller
Cable tie mount 	2	For securing the optional remote controller cable
Thermistor (Inlet air and Outlet air) 	2	For measuring the room temperature
Thermistor (Label: GAS) 	1	For measuring the gas pipe temperature (For gas pipes)
Thermistor (Label: LIQ) 	1	For measuring the liquid pipe temperature (For liquid pipes)
Thermistor holder pipe (Small) 	1	For mounting the thermistor
Thermistor holder pipe (Large) 	1	For mounting the thermistor

Name and Shape	Q'ty	Application
Thermistor spring (For small thermistor holder pipe) 	1	For mounting the thermistor
Thermistor spring (For large thermistor holder pipe) 	1	For mounting the thermistor
Template 	1	For installing the control unit
Connection cable 1 [Label : 32,33,35,37,39,41] 	1	For external output
Connection cable 2 [Label : 32,34] 	1	For external output
Connection cable 3 [Label : 34,36] 	1	For external output
Connection cable 4 [Label : 36,38] 	1	For external output
Connection cable 5 [Label : 38,40] 	1	For external output

(2) EEV unit Accessories

Name and Shape	Q'ty	Application
Installation Manual 	1	—
Secure fitting 	4	For mounting the EEV unit to the wall, or stacking multiple EEV units
Tapping Screw L (M4×L16) 	8	For mounting the EEV unit to the wall
Tapping Screw S (M4×L10) 	8	For stacking multiple EEV unit
Rubber sheet 	2	For mounting pipe joints
Pipe heat insulations 	2	For mounting pipe joints
cable tie (Large) 	4	For securing heat insulations
cable tie (Medium) 	1	For securing cables
Seal 	2	For pasting unused piping holes

2.4. Optional parts

The following options are available.
When installing, refer to the installation manual of each optional part.

Connectable Peripheral Devices

Model Name		Notes
Wired Remote Controller	UTY-RNKY	*1, *2
Wired Remote Controller	UTY-RNRY	*1, *2
Wireless Remote Controller (IR receiver unit)	UTY-LNHY (UTB-YWC)	*2
Group Remote Controller (via network converter)	UTY-CGGY (UTY-VGGXZ1)	*2
Touch Panel Controller	UTY-DTGY	*2
Central Remote Controller	UTY-DCGY	*2
Network Converter for LONWORKS®	UTY-VLGX	*2
BACnet® Gateway	UTY-ABGX	*2
System Controller	UTY-APGX	*2
System Controller Lite	UTY-ALGX	*2
Service Tool	UTY-ASGX	*2
Web Monitoring Tool	UTY-AMGX	*2
Separation Tube (For EEV unit 2 connections)	UTP-LX180A	—

*1 Remote controller groups cannot be connected using DX-kits or other indoor units.
*2 If controlling using "external input and output" analog inputs from an external controller (DDC), operations from the controllers described above are disabled.

3. PRODUCT SELECTION

- Failure to observe the selection conditions described below will affect the outdoor unit service life and operational reliability.
- When selecting air handling unit, it must be designed for R410A refrigeration.

3.1. Product Lineup

(1) Product Lineup

Unit Name	Model Name	Environment specifications
Control unit	UTY-VDGX	- Temperature: -20 to 46 °C - Humidity: 10 to 90% RH (No condensation)
EEV unit	UTP-VX30A	
	UTP-VX60A	
	UTP-VX90A	

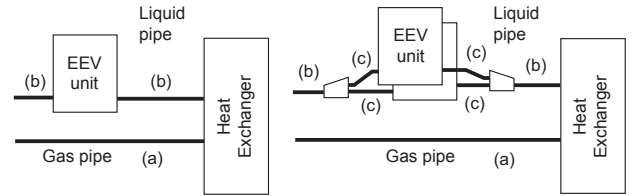
(2) EEV unit Selection

- The EEV unit is selected according to the capacity class conditions.
- If the capacity class is 40 kW or 50 kW, 2 EEV units are connected (in parallel).

Capacity Class	(kW)	5.0	6.3	8.0	10.0	12.5
EEV unit model No.		30	30	30	60	60
Cooling capacity	(kW)	5.6	6.3	8	10	12.5
Heating capacity	(kW)	6.3	7.1	9	11.2	14
Heat exchanger capacity		Refer to the Design & Technical manual.				
Airflow rate (Reference)	(m³/h)	1,060	1,200	1,520	1,600	2,000
Capacity range	Cool	(kW)	5.1~5.9	6.0~7.1	7.2~9.0	9.1~11.1
	Heat	(kW)	5.7~6.7	6.8~8.0	8.1~10.0	10.1~12.4
Evaporation temperature		Refer to the Design & Technical manual.				
Condensation temperature		Refer to the Design & Technical manual.				

Capacity Class	(kW)	14.0	20.0	25.0	40.0	50.0
EEV unit model No.		60	90	90	90+90	90+90
Cooling capacity	(kW)	14	22.4	25	40	50.4
Heating capacity	(kW)	16	25	28	45	56.5
Heat exchanger capacity		Refer to the Design & Technical manual.				
Airflow rate (Reference)	(m³/h)	2,240	3,560	4,000	6,400	8,000
Capacity range	Cool	(kW)	13.3~18.0	18.1~23.7	23.8~28.0	28.1~44.7
	Heat	(kW)	15.1~20.0	20.1~26.5	26.6~31.5	31.6~49.9
Evaporation temperature		Refer to the Design & Technical manual.				
Condensation temperature		Refer to the Design & Technical manual.				

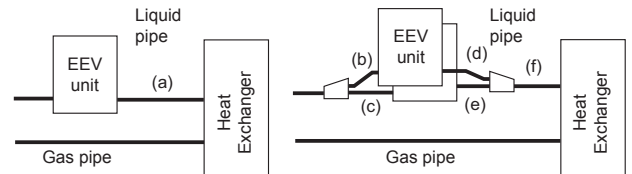
Pipe size



Capacity Class	(kW)	5.0	6.3	8.0	10.0	12.5
Pipe size	Gas (a)	(mm)	15.88	15.88	15.88	19.05
	Liquid (b)	(mm)	9.52	9.52	9.52	9.52
	Liquid (c)	(mm)	—	—	—	—

Capacity Class	(kW)	14.0	20.0	25.0	40.0	50.0
Pipe size	Gas (a)	(mm)	19.05	22.2	22.2	28.58
	Liquid (b)	(mm)	9.52	12.7	12.7	12.7
	Liquid (c)	(mm)	—	—	—	12.7

Pipe length



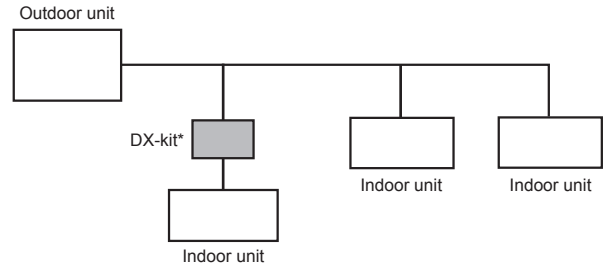
(a) ≤ 5 m

(b) ≤ 2 m, (c) ≤ 2 m, (d) ≤ 2 m, (e) ≤ 2 m
(d) + (f) ≤ 5 m, (e) + (f) ≤ 5 m

3.2. System Design

3.2.1. Basic Refrigerating System Configuration

Using the DX-kit enables indoor units manufactured by other than Fujitsu general to be used in the Fujitsu general refrigerant system.



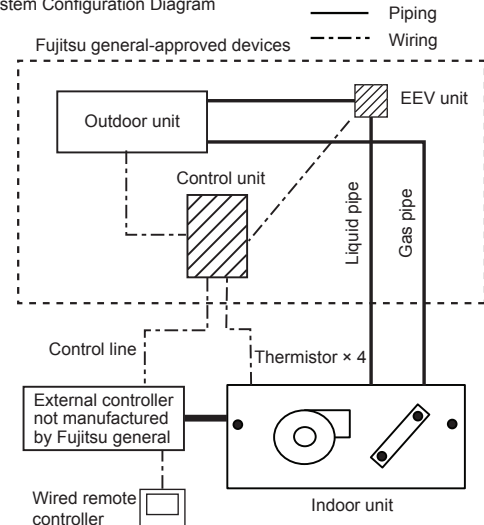
* DX-kit = Control unit + EEV unit

3.2.2. Basic DX-kit System Configuration

(1) System Pattern 1

External controllers (DDC) not manufactured by Fujitsu general control the Fujitsu general outdoor units and indoor units (refrigerant cycle devices, etc.) not manufactured by Fujitsu general. With this system, control using a Fujitsu general VRF controller is not possible.

System Configuration Diagram

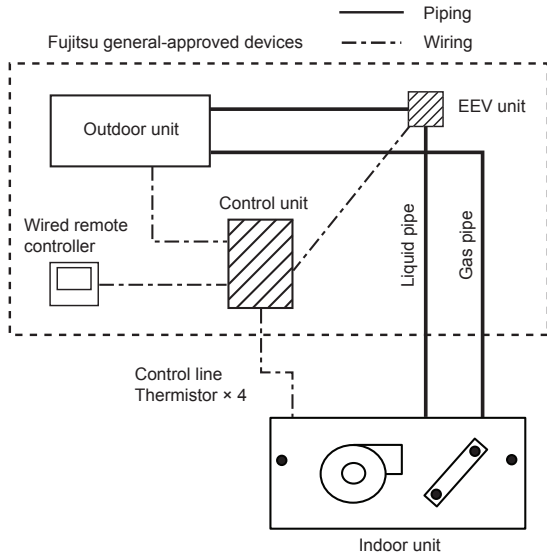


For control line details, see "External Input and External Output".

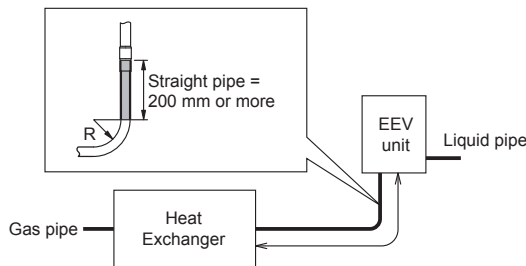
(2) Pattern 2

Fujitsu general remote controllers and control devices directly control Fujitsu general outdoor units and indoor units (refrigerant cycle devices, etc.) not manufactured by Fujitsu general. A system configuration example is shown below.

System Configuration Diagram



3.2.3. Pipe Conditions



4. INSTALLATION WORK

Correct initial installation location is important because it is difficult to move unit after it is installed.

4.1. 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 DX-kit. Install the units securely so that they do not topple or fall.

CAUTION

Do not install the DX-kit 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 use the unit for special purposes, such as storing food, raising animals, growing plants, or preserving precision devices or art objects. It can degrade the quality of the preserved or stored objects.

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 DX-kit, power supply cable, transmission cable, and remote controller 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.)

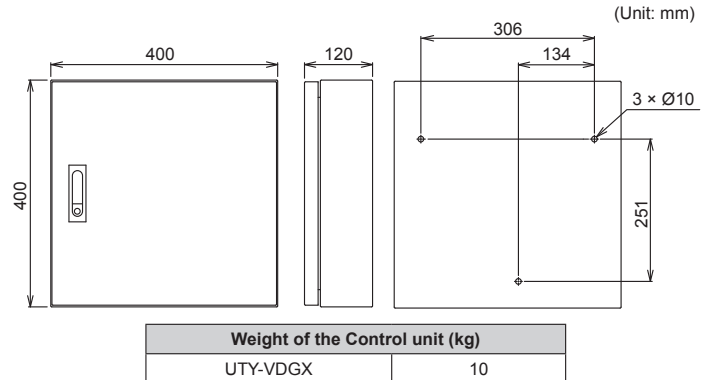
If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

Take precautions to prevent the unit from falling.

- (1) Install the DX-kit on a place having a sufficient strength so that it withstands against the weight of the DX-kit.
- (2) Leave the space required to service the DX-kit.
- (3) Install the unit where connection to the outdoor unit (or RB unit) is easy.
- (4) Install the unit where the connection pipe can be easily installed.
- (5) Install the unit where noise and vibrations are not amplified.
- (6) Take servicing, etc., into consideration and leave the spaces.
- (7) Do not install the unit where it will be exposed to direct sunlight.

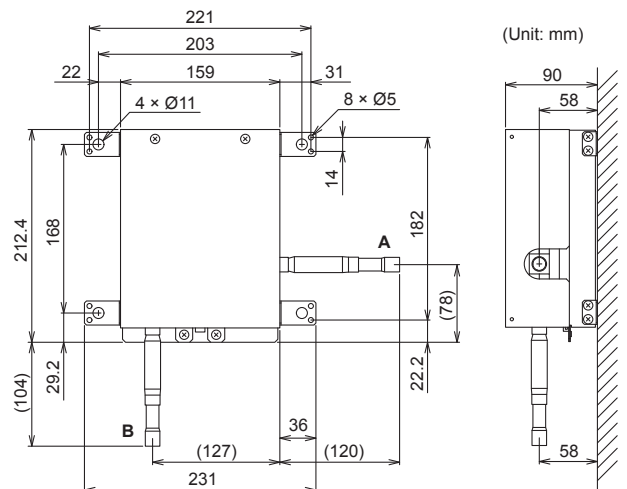
4.2. Installation dimensions

4.2.1. Control unit



4.2.2. EEV unit

EEV unit Dimensions



Connection pipe diameter (mm)

Model	A	B
UTP-VX30A	9.52	9.52
UTP-VX60A	9.52	9.52
UTP-VX90A	12.7	12.7

Weight of the EEV unit (kg)

UTP-VX30A	2
UTP-VX60A	2
UTP-VX90A	2

4.3. Installing the unit

WARNING

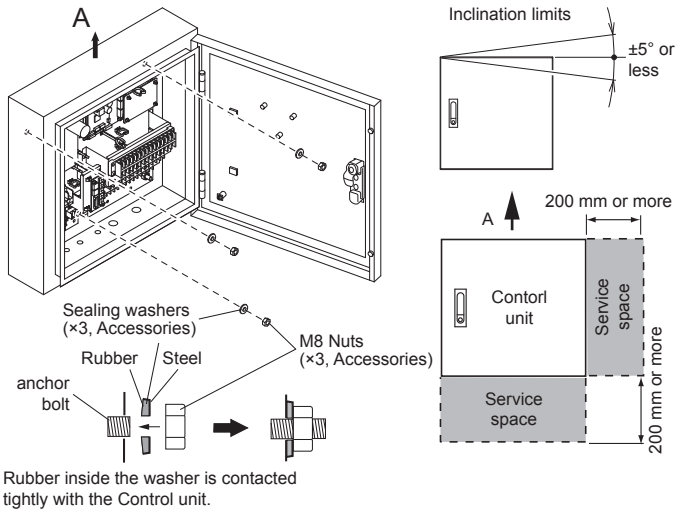
Install the DX-kit in a location which can withstand a load of at least 5 times the weight of the main unit and which will not amplify sound or vibration. If the installation location is not strong enough, the DX-kit may fall and cause injuries.

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

Carrying in and installation of the unit should be performed by a sufficient number of people and with sufficient equipment that is adequate for the weight of the unit. Performing such work by an insufficient number of people or with inadequate equipment could result in dropping of the unit or personal injury.

4.3.1. Installing the Control unit

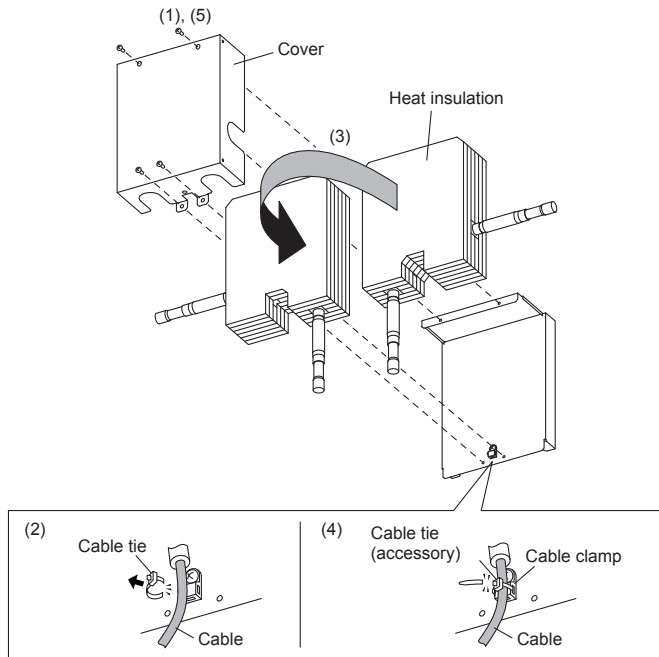
- If installing outdoors, make sure to orient A upwards.
- Using a template (accessory) is recommended when positioning the holes for mounting the control unit.



4.3.2. Installing the EEV unit

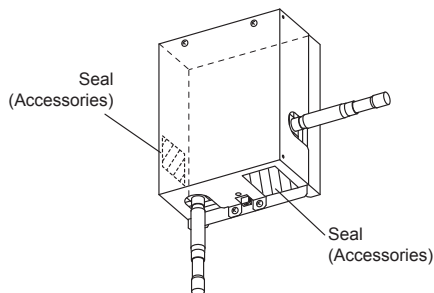
4.3.2.1. Changing Pipe Orientation

- EEV unit pipe orientation can be changed according to the installation conditions.
- (1) Remove the 4 screws and remove the cover.
 - (2) Cut the cable tie fixing the cable.
 - (3) Invert both the pipes and heat insulation.
 - (4) Pass the cable tie (accessory) through the cable clamp, and firmly secure the cable, and then cut any unnecessary part of cable tie.
 - (5) Use the 4 screws to mount the cover.



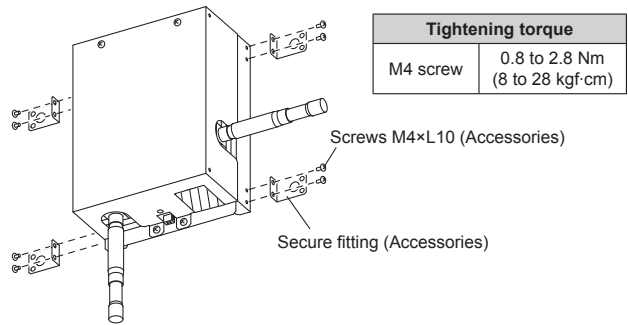
4.3.2.2. Pasting Seals to the piping holes

Use the seals (accessories) to cover any unused piping holes.



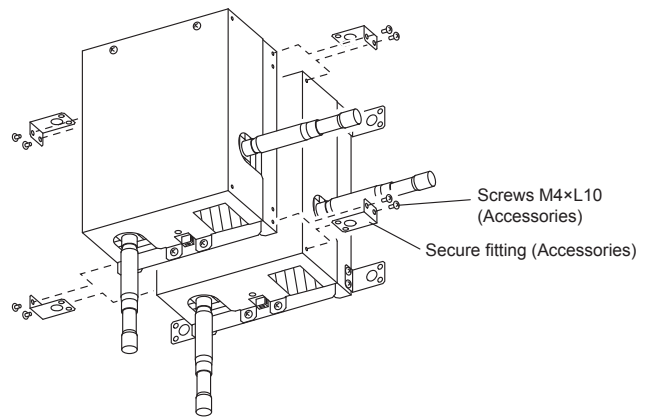
4.3.2.3. Mounting Secure Fittings (If Using 1 EEV unit)

- (1) Use the 8 screws (accessories) to secure the secure fittings (accessories).



4.3.2.4. Mounting Secure Fittings (If Using 2 EEV units)

- (1) If using 2 EEV units, stacking the 2 kits is recommended.
If stacking 2 EEV units, secure using the secure fittings (accessories) and screws (accessories).

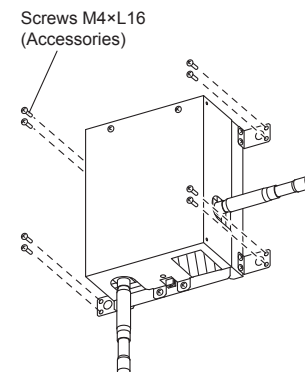


4.3.2.5. Installing EEV units

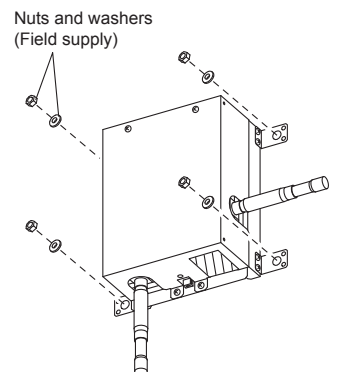
Mount the EEV unit to the wall.
Select the securing method according to the installation environment.

Method 1: Use the 8 screws (accessories) to secure the unit.
Method 2: Mount the 4 anchor bolts (field supply) to the wall, and then secure the unit.

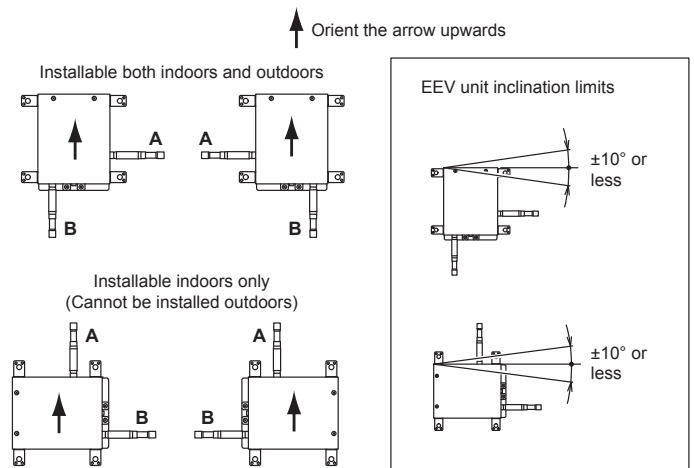
Method 1



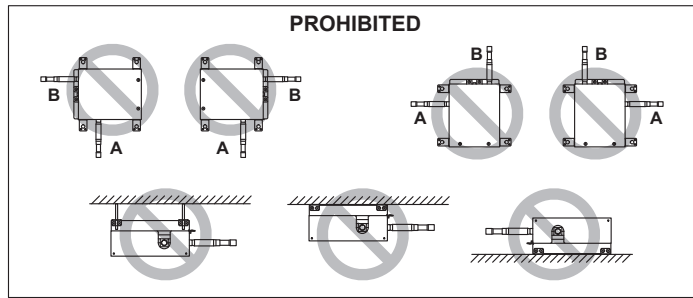
Method 2



Installable EEV unit orientations



Prohibited EEV unit orientations



5. PIPE INSTALLATION

CAUTION

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

While welding the pipes, be sure to blow dry nitrogen gas through them.

5.1. Selecting the pipe material

CAUTION

Do not use existing pipes from another refrigeration system or refrigerant.

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 (R22) 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]	Material
6.35 (1/4)	0.80	COPPER JIS H3300 C1220T-O or equivalent
9.52 (3/8)	0.80	
12.70 (1/2)	0.80	
15.88 (5/8)	1.00	
19.05 (3/4)	1.20	COPPER JIS H3300 C1220T-H or equivalent
22.22 (7/8)	1.00	
28.58 (1-1/8)	1.00	

5.2. Pipe requirement

CAUTION

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

- 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 to 80 %, use heat insulation that is 15 mm or thicker and if the expected humidity exceeds 80 %, use heat insulation that is 20 mm or thicker. If heat insulation is used that is not as thick as specified, condensation may form on the surface of the insulation. In addition, use heat insulation with heat conductivity of 0.045 W/(m·K) or less (at 20 °C).

5.3. Bending pipes

- The pipes are shaped by your hands or pipe bender. Be careful not to collapse them.
- Do not bend the pipes in 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.

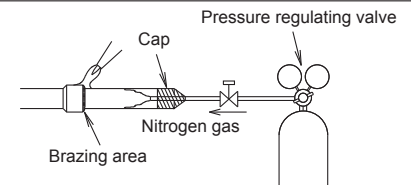
If the pipe is bent repeatedly at the same place, it will break.

5.4. Pipe connection

CAUTION

If air or another type of refrigerant enters the refrigeration cycle, the internal pressure in the refrigeration cycle will become abnormally high and prevent the unit from exerting its full performance.

Apply nitrogen gas while brazing the pipes. Nitrogen gas pressure: 0.02 MPa (= pressure felt sufficiently on the back of your hand)



If a pipe is brazed without applying nitrogen gas, it will create an oxidation film. This can degrade performance or damage the parts in the unit (such as the compressor or valves).

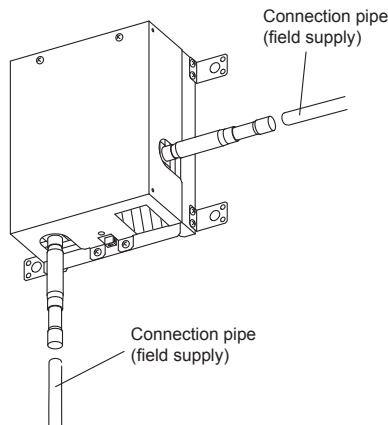
Do not use flux to braze pipes. If the flux is the chlorine type, it will cause the pipes to corrode. Furthermore, if the flux contains fluoride, it will adversely affect the refrigerant pipe system such as by degrading the refrigerant oil.

For brazing material, use phosphor copper that does not require flux.

	Outer diameter of pipe
Connection Pipe (Liquid)	12.70 mm

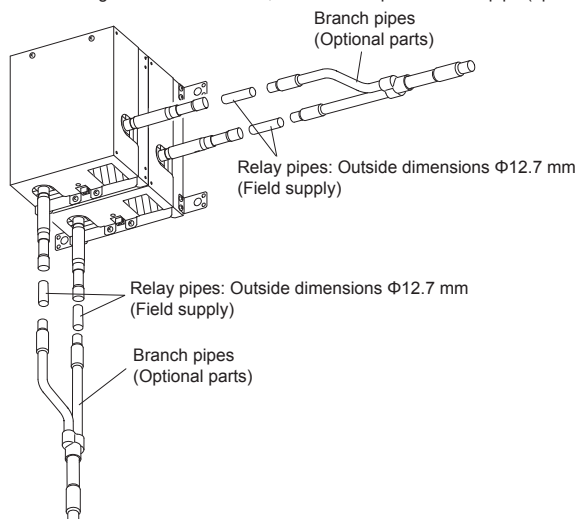
Connect the EEV unit pipe to the connection pipe. Braze the connectors.

(a) Connecting 1 EEV unit



(b) Connecting 2 EEV units

If connecting 2 stacked EEV units, connect the special branch pipe (optional part).



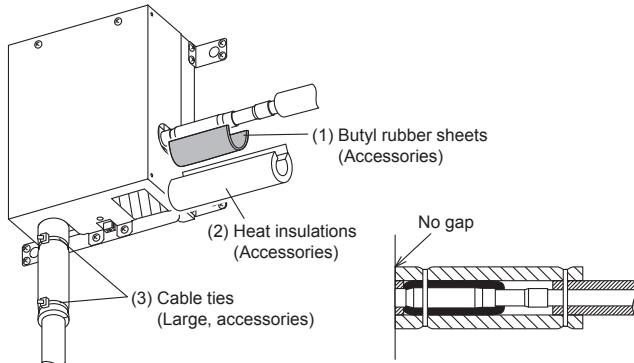
5.5. Installing heat insulation

CAUTION

After checking for gas leaks (refer to the Installation Manual of the outdoor unit), perform this section. Failure to do so may cause water leaks.

Implement heat insulation as shown in the diagram below.

- (1) Mount the rubber sheets (accessories).
- (2) Mount the heat insulations (accessories). There should be no gaps between the insulation and the product.
- (3) Secure to a pipe using 2 cable ties.

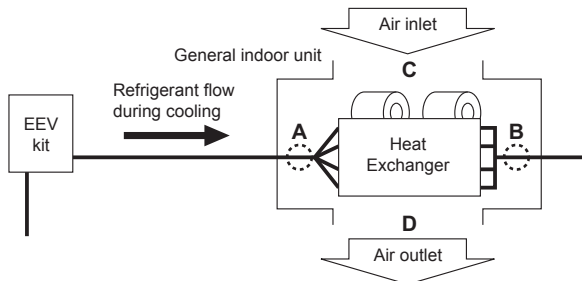


- Perform the work in (1), (2) and (3) for the 2 pipes.
- For the heat insulation on the separation tube (Optional parts) used to connect 2 EEV units, refer to the installation manual of the separation tube.

6. MOUNTING THERMISTORS

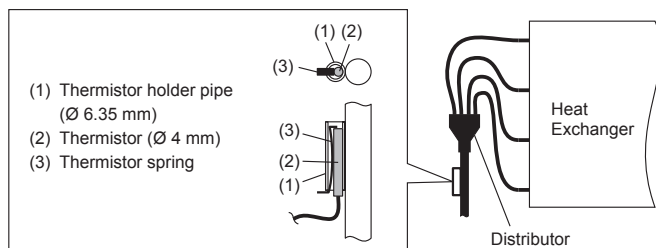
- To prevent water from accumulating on top of the thermistor, orient the thermistor wires downwards when mounting the thermistor.
- Make good contact between thermistor and air handling unit. Put the top of the thermistors on the air handling unit, this is the most sensitive point of the thermistor.

Mounting thermistors to general indoor units



A: Heat exchanger inlet pipe

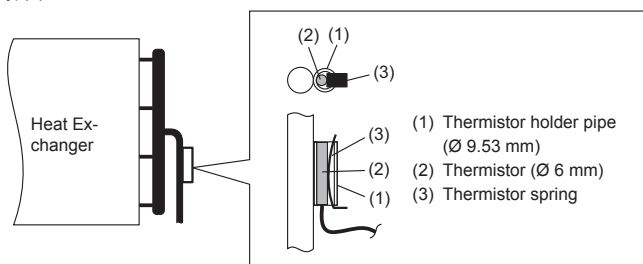
Braze a thermistor holder pipe (Ø 6.35, accessory) in front of the distributor branch. Use a thermistor spring (accessory) to tightly seal and secure the thermistor (Ø4, accessory) pipes.



* Attach this thermistor in a location where the evaporating temperature can be detected during cooling operation.

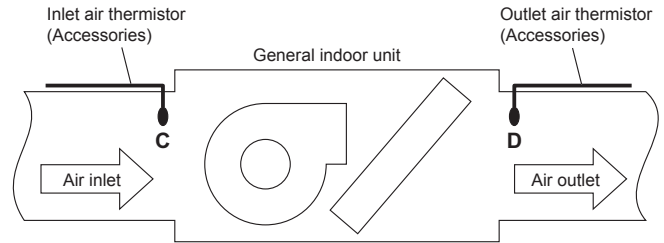
B: Heat exchanger outlet pipe

Braze a thermistor holder pipe (Ø 9.53, accessory) to the heat exchanger outlet pipe. Use a thermistor spring (accessory) to tightly seal and secure the thermistor (Ø6, accessory) pipes.



C: Inlet air thermistor/D: Outlet air thermistor

Install in a location where the effects of heat sources such as heat exchangers and heaters, etc., are minimized as far as possible.



7. 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.

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.

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.

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 board 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.)

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.

Install an earth leakage breaker. In addition, install the earth 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) 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 DX-kit 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.

Take special precaution for connection to the external controller (DDC, field supply). Make sure the wiring for the external input and output signals is correct. Miswiring of these cables could damage the entire system.

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 controller cable together.
Separate these cable by 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 DX-kit and outdoor units and peripheral devices.
- Cut power (breaker) off.
- Touch metal part of the DX-kit for more than 10 seconds to discharge static electricity charged in the body.
- Do not touch terminals of parts and patterns implemented on PCB.

7.1. Electrical requirement

- The following breaker specifications apply only to connections for Fujitsu general indoor units, RB units, and DX-kits.
- Do not simultaneously connect Fujitsu general devices and non-Fujitsu general devices to the same breaker. In using non-Fujitsu general devices, follow the specifications for that device.

Voltage rating	230 V
Operating range	198 to 264 V

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

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 DX-kits to satisfy conditions A and B below.

A. Current breaker requirements

Model	MCA	MFA
UTY-VDGX	0.096 A	20 A

MCA: Minimum Circuit Ampacity

MFA: Main Fuse Ampacity

When the power crossover wiring is done, make it so that the total of the MCA of the connected DX-kits, RB units, and indoor units does not exceed the 15 A. For indoor unit MCA and RB unit MCA, refer to the indoor unit and RB unit installation manual.

If the capacity of connected DX-kits, 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 DX-kits, "indoor units + DX-kits", or "indoor units + RB units + DX-kits"
30 mA, 0.1 sec or less	44 or less **
100 mA, 0.1 sec or less	45 to 128

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

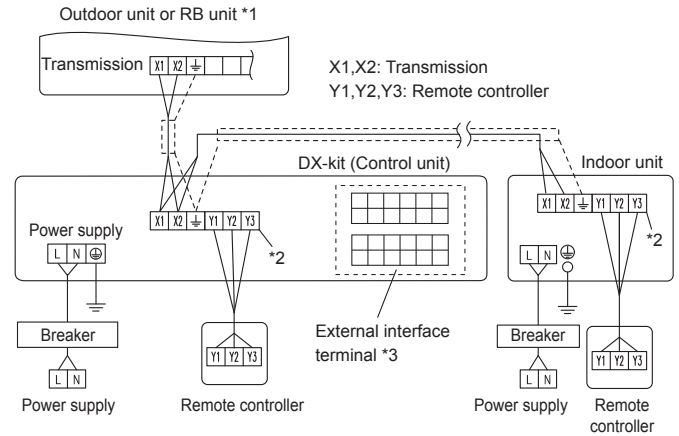
** If the total number of units connected to the breaker exceeds 44, either add a 30mA breaker, or use breakers with a greater capacity.

7.1.1. Cable specifications

For cable selections, see the "Connection of wiring" chapter below.

7.2. Wiring method

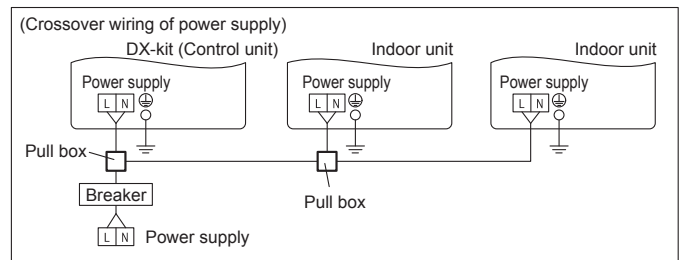
EXAMPLE



*1: When connecting to the Heat Recovery System, refer to the installation manual of the RB unit.

*2: When connecting the 2-wire type remote controller, Y3 is not used.

*3: For the external interface terminal, refer to "7.4. Connection of wiring".



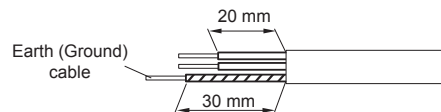
7.3. Unit wiring

- Before attaching the cable to terminal block.

7.3.1. Power supply cable and Drain pump signal cable

Adjust the length of power supply cable to avoid excessive tension with referring figure below.

Power supply cable

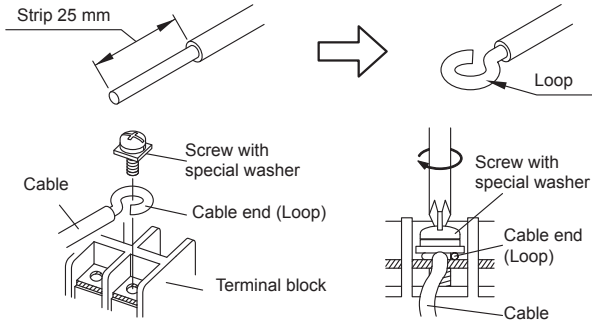


Drain pump signal cable

Decide the peeling length of the covering for the drain pump signal cable according to the conditions for connecting to the terminal.

A. For solid core wiring

- (1) To connect the electrical terminal, follow the below diagram and connect after looping it around the end of the cable.
- (2) Use the specified cables, connect them securely, and fasten them so that there is no stress placed on the terminals.
- (3) 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.
- (4) Do not tighten the terminal screws too much, otherwise, the screws may break.
- (5) See the table for the terminal screw tightening torques.
- (6) Please do not fix 2 power supply cables with 1 screw.

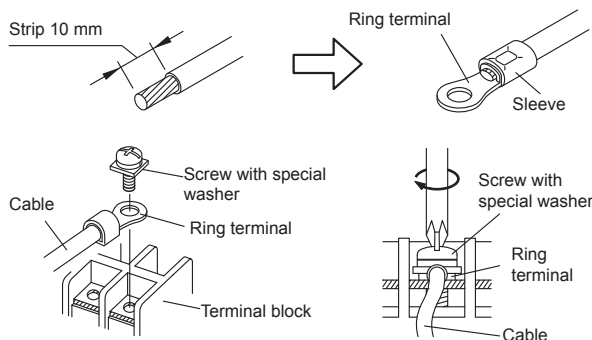


⚠ WARNING

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

- (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 cables using an appropriate tool so that the cables do not come loose.
- (3) Use the specified cables, 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 for the terminal screw tightening torques.
- (7) Please do not fix 2 power supply cables with 1 screw.



⚠ WARNING

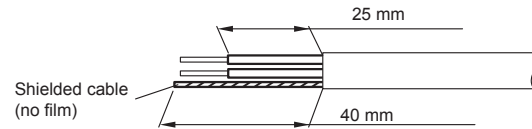
Use ring terminals and tighten the terminal screws to the specified torques, otherwise, abnormal overheating may be produced and possibly cause heavy damage inside the unit.

Tightening torque

M4 screw (Power supply/L, N, GND)	1.2 to 1.8 N·m (12 to 18 kgf·cm)
--------------------------------------	-------------------------------------

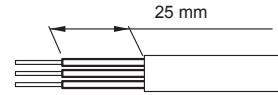
7.3.2. Transmission cable, Remote controller cable and External interface cable

Transmission cable

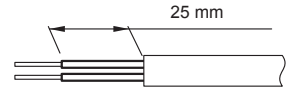


Remote controller cable

For 3-wire type



For 2-wire type

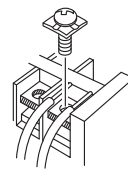


External interface cable

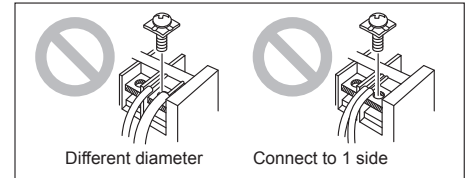
Decide the peeling length the covering for the external interface cable according to the conditions for connecting to the terminal.

Fig. A

GOOD



PROHIBITED



Different diameter

Connect to 1 side

⚠ WARNING

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

Tightening torque

M3 screw (Transmission/X1, X2) (Remote controller/ Y1, Y2, Y3)	0.5 to 0.6 N·m (5 to 6 kgf·cm)
--	-----------------------------------

⚠ 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 undertightened screw can cause faulty contact, which will lead to a communication failure.

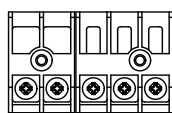
7.4. Connection of wiring

7.4.1. Terminal Explanation and Cable Holes

- Only one cable can be passed through each cable hole. To pass multiple cables through a single cable hole, use a (field supply) multi-conductor cable with more wires, and bundle multiple cables into one.
- Maximum length of cable is 10 m. (recommended value, Except "P1" and "TR1")

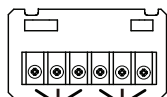
·Power supply terminal

·Drain pump signal terminal



D1

P1



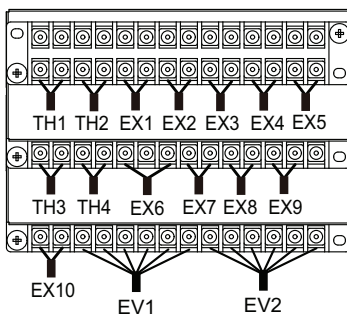
TR1

R1

·Transmission terminal

·Remote controller terminal

·External interface terminal

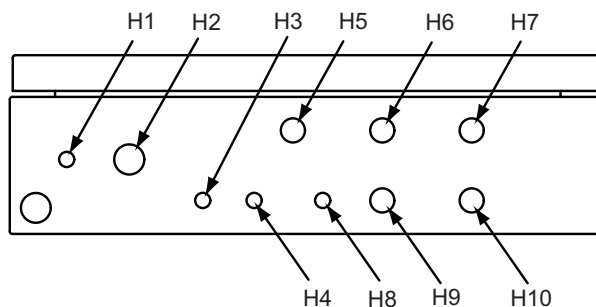


EV1

EV2

Cable holes with mounted cable glands (accessories)

Hole No.	Cable gland type	Diameter (mm)	Insertable cable dimensions (mm)
H2	Large	Φ20.0	Φ6 to 12
H5, H6, H7, H9, H10	Medium	Φ16.2	Φ4 to 8
H1, H3, H4, H8	Small	Φ10.2	Φ3 to 6



Terminal No.	Terminal Name		Hole No.	Connection	Recommended cable size (mm ²)	Cable type	Specifications
P1	POWER SUPPLY		H2	Power supply	2.5 (AWG14)	Type245 IEC57 or equivalent	1ø 50 Hz 198 to 264 V 2 Cable + earth (ground)
TR1	TRANSMISSION		H3	Transmission line	0.33 (AWG22)	LONWORKS compatible cable	22 AWG LEVEL 4 (NEMA) non-polar 2 core, twisted pair solid core diameter 0.65 mm
R1	REMOTE CONTROLLER		H4	2-wire type remote controller	0.33 to 1.25 (AWG22 to 16)	Sheathed PVC cable	Non polar 2 core
				3-wire type remote controller	0.33 (AWG22)	Sheathed PVC cable	Polar 3 core
D1	DRAIN PUMP		H1	Drain pump	0.5 (AWG20)	Type245 IEC57 or equivalent	—
T1	THERMISTOR (GAS)		H5	Thermistor mounted to the gas pipe	0.33 (AWG22)	Sheathed PVC cable	Relay the multi-conductor cable, and pass it through the designated hole.
T2	THERMISTOR (LIQUID)			Thermistor mounted to the liquid pipe			
T3	THERMISTOR (INLET AIR)			Thermistor mounted to the inlet			
T4	THERMISTOR (OUTLET AIR)			Thermistor mounted to the outlet			
EV1	EEV1	1 - Red 2 - Brown 3 - Black 4 - Green 5 - Yellow 6 - White	H9	Electronic expansion valve 1	0.33 (AWG22)	Sheathed PVC cable	—
EV2	EEV2		H10	Electronic expansion valve 2	0.33 (AWG22)	Sheathed PVC cable	Use the electronic expansion valves only when two units are connected
EX1	ON/OFF SIGNAL (OUTPUT)	External output / Digital	H6	External controller	0.33 (AWG22)	Sheathed PVC cable	—
EX2	ERROR SIGNAL (OUTPUT)	External output / Digital					
EX3	FAN SIGNAL	External output / Digital					
EX4	DEFROST SIGNAL	External output / Digital					
EX5	THERMOSTAT ON/OFF SIGNAL	External output / Digital					
EX6	ON/OFF SIGNAL (INPUT)	External input / Digital	H7	External controller	0.33 (AWG22)	Sheathed PVC cable	ERROR SIGNAL OFF(Open)= Error ON(Short)= Normal
EX7*	ERROR SIGNAL * (INPUT)	External input / Digital					
	The factory default is shorted between the terminals by the cables.						
EX8	COOL/HEAT SIGNAL	External input / Digital					
EX9	ANALOG SIGNAL	External input / Analog					
EX10	FLOAT SW SIGNAL	External input / Digital	H8	Float switch mounted to the heat exchanger	0.33 (AWG22)	Sheathed PVC cable	—

EX7*: The factory default is shorted between the terminals by the cables. If there is a malfunction with an external device, using this external input is recommended in order to protect the refrigerant system.

7.4.2. Connecting the Cables

CAUTION

Pay attention to the following during installation. Failure to do so may cause water penetration damage.

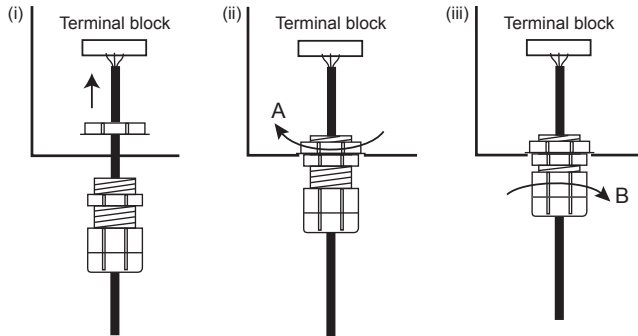
- Use the attached waterproof cable gland.
- Multiple differently-shaped waterproof cable glands are attached, so make sure to use the waterproof cable gland suited to the cable hole.
- Make sure to firmly secure the waterproof cable gland to the cable hole.
- When attaching the cable gland, using a tightening torque that is less than the recommended value may cause water penetration. Using a tightening torque that is more than the recommended value may cause damage to the cable gland.

(1) Connect the cable.

- As shown below, pass the cable through the cable hole on the bottom of the control unit and through the cable gland (accessories), then connect the cable to the terminal block.
- Attach the cable gland firmly to the unit.
- Attach the cable firmly to the cable gland.

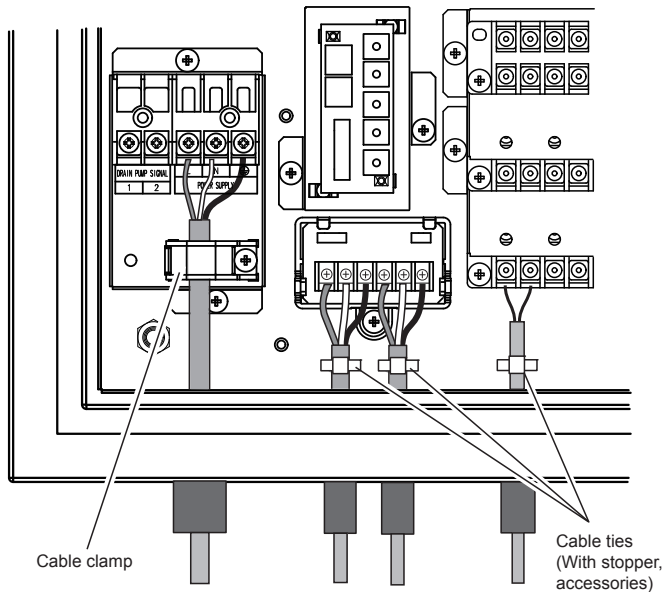
Tightening torque for cable gland (recommended value)

	A	B
For M10	0.5 N·m	0.5 N·m
For M16	1.0 N·m	1.5 N·m
For M20	1.0 N·m	2.0 N·m



(2) Secure the cable.

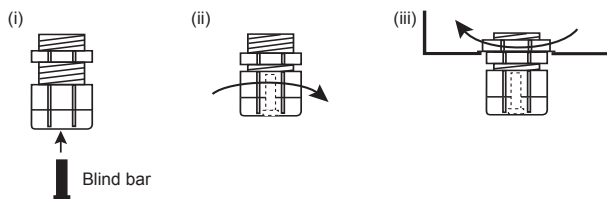
- Using power supply cables
Secure the cable using the cable clamp mounted inside the device.
- Using other than power supply cables
Secure the cable using the cable ties (With stopper, accessories).



• Unused holes

Mount blind bars instead of cables to the cable glands.

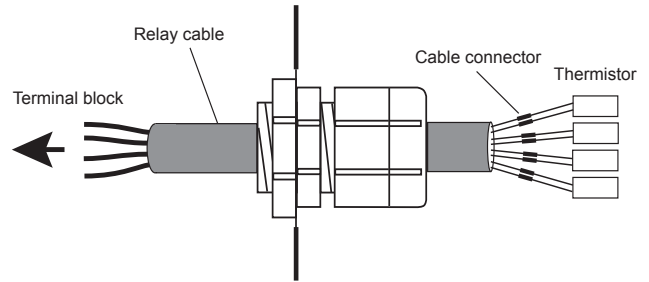
- Insert the blind bar into the cable gland.
- Firmly secure the blind bar to the cable gland.
- Mount the cable gland to the hole, and secure firmly.



• Outdoor cable connections

(1) Thermistor cable connections

- Connect the thermistor cables to the relay multi-conductor cables as shown in the diagram before passing through the hole.
- Make sure to use only weatherproof relay cables.



(2) Electronic expansion valve cable connections

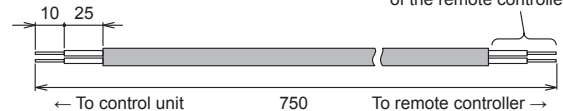
Make sure to observe the following installation conditions

- Avoid locations in direct sunlight
- Avoid locations with wind and rain
- Avoid locations with water contact

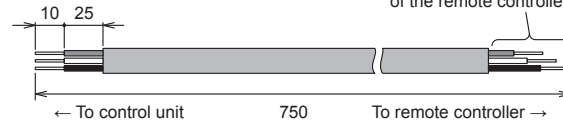
Mount the wired remote controller to the inside of the control unit

(1) Processing the remote controller cable

For 2-wire type remote controller (field supply)
(Unit: mm)
Refer to the installation manual of the remote controller.

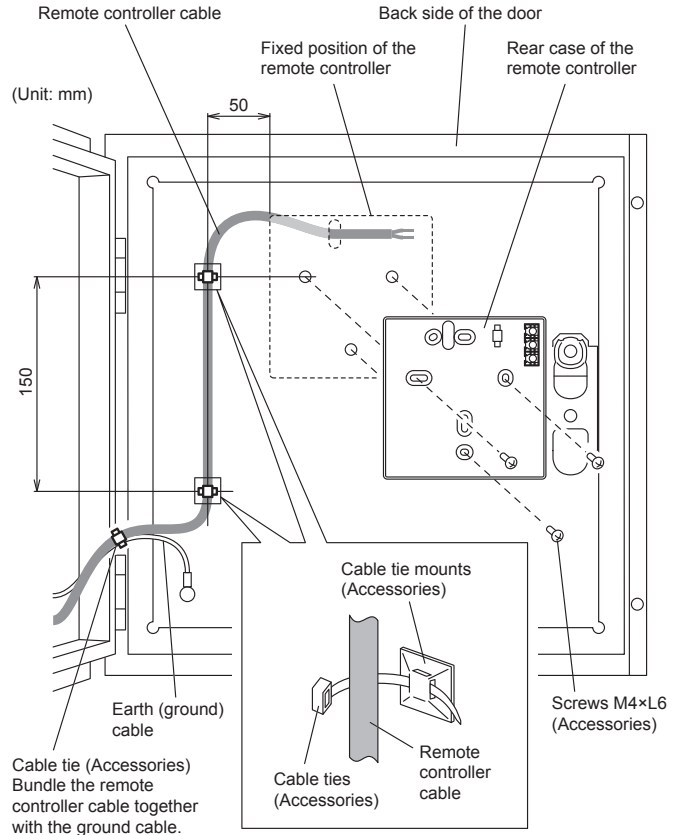


For 3-wire type remote controller (attached with the remote controller)
Refer to the installation manual of the remote controller.

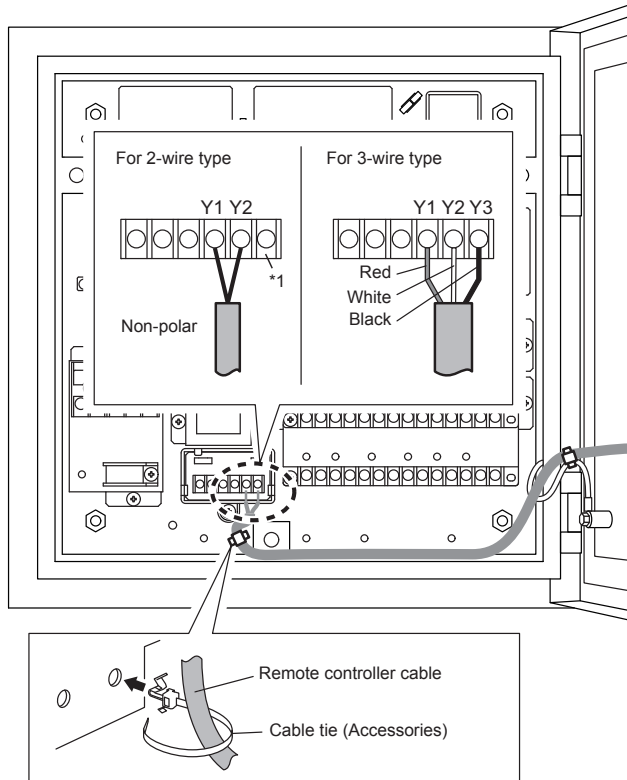


(2) Wiring the remote controller cable (door side)

See the wired remote controller installation manual for how to install the remote controller and the wiring method. Further, as shown in the diagram below, pass and draw through the remote controller cable from the case to the cable hole at the back of the case.

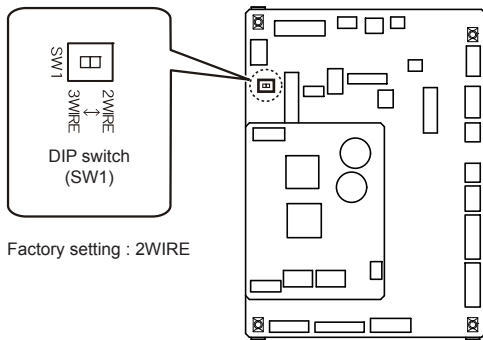


(3) Wiring the remote controller cable (device side)



*1) If you connect the remote controller cable to the terminal Y3, 2-wire type remote controller does not work.

(4) Set the DIP switch according to the type of remote controller used.



• When using the wired remote controller, if the temperature drops below 0°C, the LCD display may become dim, the response may become slower, and the time accuracy of the clock will be lost.

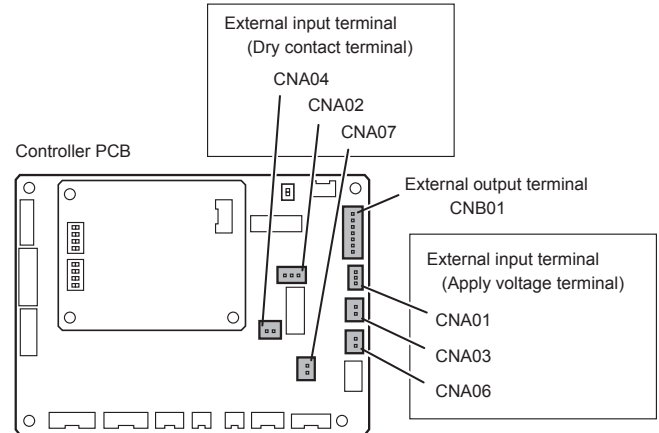
7.5. External input and external output (Optional parts)

7.5.1. Digital external inputs

- Select either the apply voltage method or dry contact method for digital external inputs.
- Both types of terminals cannot be used simultaneously.
- Float witch signal is compatible with the dry contact method only.

Switch connectors as shown in the table below according to the method selected.

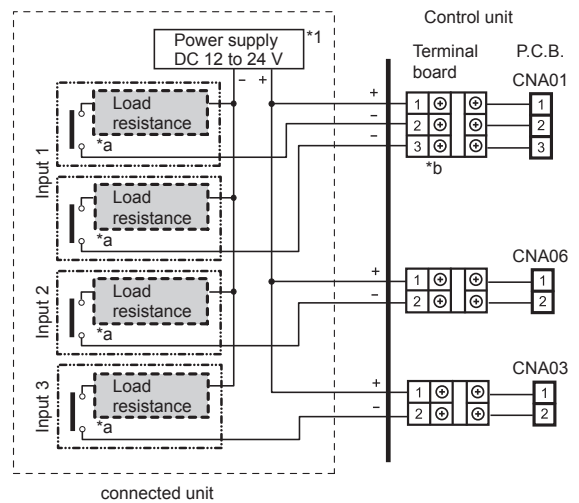
Terminal name	PCB connector (*: Factory setting)	
	Apply voltage	Dry contact
ON/OFF SIGNAL (INPUT)	CNA01	CNA02*
ERROR SIGNAL (INPUT)	CNA06	CNA07*
COOL / HEAT SIGNAL	CNA03	CNA04*
FLOAT SW SIGNAL	Incompatible	CNA05*



- 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.

• Apply voltage terminal ([CNA01], [CNA03], [CNA06])

When a power supply must be provided at the input device you want to connect, use the Apply voltage terminal ([CNA01], [CNA03], [CNA06]).

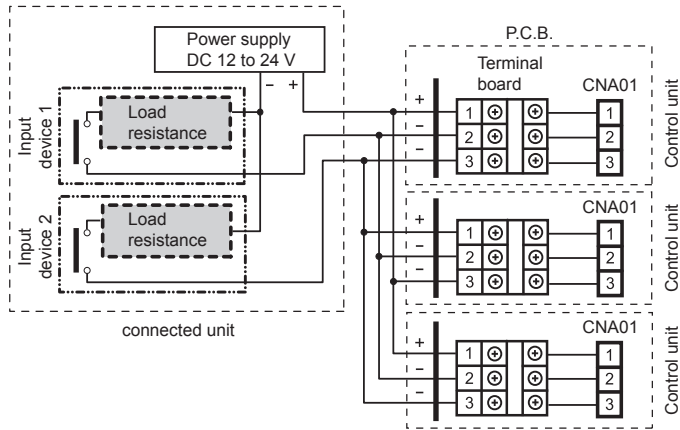


*1 Make the power supply DC12 to 24V. Select a power supply capacity with an ample surplus for the connected load. Do not impress a voltage exceeding 24V across pins 1-2, and 1-3.

*a The allowable current is DC 5mA to 10mA. (Recommended: DC5mA)
Provide a load resistance such that the current becomes DC10mA or less.
Select very low current use contacts (usable at DC12V, DC1mA or less).

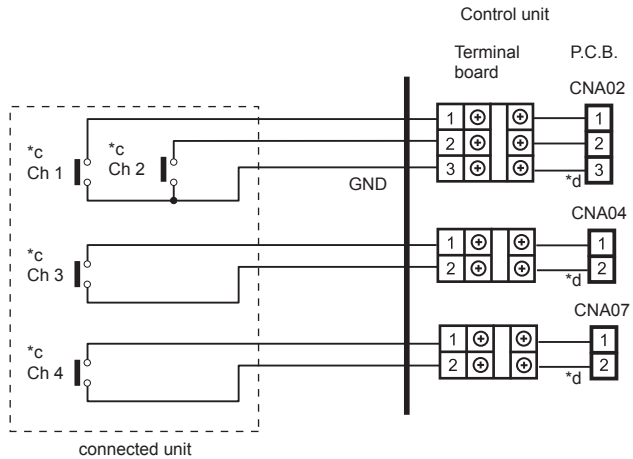
*b The polarity is [+] for pin 1 and [-] for pin 2 and 3. Connect correctly.

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



• Dry contact terminal ([CNA02], [CNA04], [CNA07])

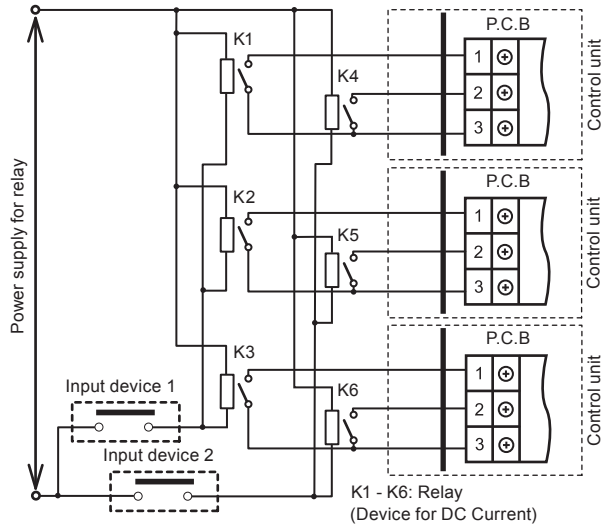
When a power supply is unnecessary at the input device you want to connect, use the Dry contact terminal ([CNA02], [CNA04], [CNA07]).



*c Select very low current use contacts (usable at DC12V, DC1mA 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.

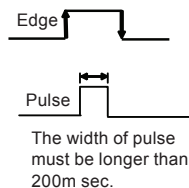
Operation behavior

• 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 -2]	Input signal type
OFF (Factory setting)	Edge
ON	Pulse



(1) ON/OFF SIGNAL (INPUT)

[For the "Edge" input method, function settings "60"=00]

Terminal block		Input signal	Command
ON/OFF SIGNAL (INPUT)	Pin1 to Pin3	OFF → ON	Operation
		ON → OFF	Operation stopped

[For the "Edge" input method, function settings "60"=01]

Terminal block		Input signal	Command
ON/OFF SIGNAL (INPUT)	Pin1 to Pin3	OFF → ON	Cooling operation
		ON → OFF	Operation stopped

[For the "Pulse" input method]

Terminal block		Input signal	Command
ON/OFF SIGNAL (INPUT)	Pin1 to Pin2	OFF → ON	Operation
	Pin1 to Pin3	OFF → ON	Stop

* The last command has priority.

* The indoor units within the same remote controller group operates in the same mode.

(2) ERROR SIGNAL (INPUT)

If an error signal is input, perform protection operation (Thermostat OFF mode).
Make sure to install so that the input signals during normal operation is always "ON".

Terminal block		Input signal	Command
ERROR SIGNAL (INPUT)	Pin1 to Pin2	ON	Normal
		OFF	Error

(3) COOL/HEAT SIGNAL

Switch the operation mode (heating/cooling).

["Edge" input method, function settings "60"=00]

Terminal block		Input signal	Command
COOL/HEAT SIGNAL	Pin1 to Pin2	OFF → ON	Heat
		ON → OFF	Cool

["Edge" input method, function settings "60"=01]

Terminal block		Input signal	Command
COOL/HEAT SIGNAL	Pin1 to Pin2	OFF → ON	Heating operation
		ON → OFF	Operation stopped

Note

- In heat recovery system, HEAT/COOL switching during operation is disabled unless the RB unit and DX-kit are connected in 1-to-1.
- If switching the operation mode directly from cooling to heating to cooling, set the priority mode to "indoor unit priority" (*1), and set the DX-kit to "Administrative indoor unit(or Master indoor unit)" (*2). Making this setting when the DX-kit and the VRF for another indoor unit are connected to the same refrigerant system will make the DX-kit prioritize the operation mode, so be careful.

*1) For the setting methods, refer to the installation manual for the outdoor unit in V-II and J-II systems, and refer to the installation manual for the RB unit in VR-II system.

*2) For the settings method, see the wired remote controller installation manual and this installation manual.

(4) FLOAT SW SIGNAL

Check the drain status.

If the "ON" status continues for 3 mins. or more, decide a drainage error, and perform a protection stop. (Thermostat OFF and FAN OFF mode) Further, turn OFF and ON the power again to restore.

["Edge" input only]

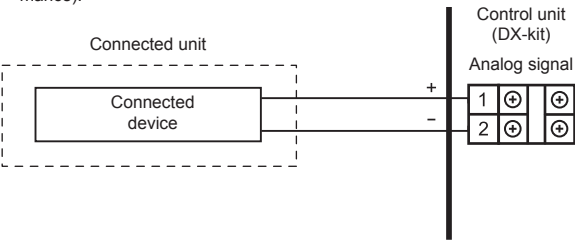
Connector		Input signal	Command
FLOAT SW SIGNAL	Pin1 to Pin3	OFF → ON	Protection operation
		ON → OFF	Normal

7.5.2. Analog external inputs

Changing the voltage of the signals entered to "analog external inputs" enables you to set either the operation temperature or the required operation performance.

If using this function, make the following DIP switch settings.

- i) Set the "Analog external inputs ON/OFF" setting to "ON".
- ii) Set the control item (either the operation temperature or required operation performance).



7.5.3. External output

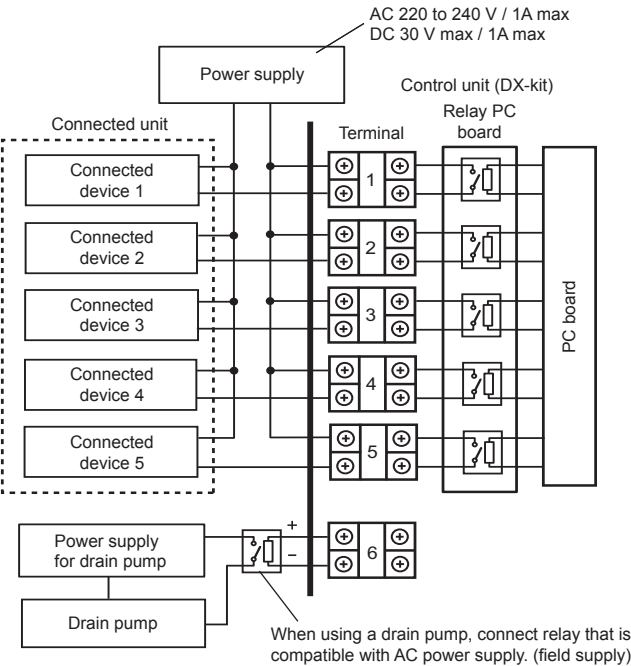
No.	Terminal block	Type-i	Type-ii	Status
		DX-kit internal relay status	DX-kit output level	
1	ON/OFF SIGNAL	ON (Open)	OFF	Stop
		OFF (Short)	ON (DC12V)	Operation
2	ERROR SIGNAL	ON (Open)	OFF	Normal
		OFF (Short)	ON (DC12V)	Error
3	FAN SIGNAL	ON (Open)	OFF	FAN off
		OFF (Short)	ON (DC12V)	FAN on
4	DEFROST SIGNAL	ON (Open)	OFF	Normal
		OFF (Short)	ON (DC12V)	Defrosting
5	THERMOSTAT ON/OFF SIGNAL	ON (Open)	OFF	Thermostat Off
		OFF (Short)	ON (DC12V)	Thermostat On
6	DRAIN PUMP SIGNAL (*1)	OFF		Drain pump Off
		ON (AC 230 V)		Drain pump On

- Select either of the following two power supply methods.
(Factory setting is Type-i)

Type-i	• Using a power supply from other than the DX-kit (Connected unit, etc.) • Usable tolerance voltages and currents: AC 220 to 240 V / 1A max or DC 30 V max / 1A Max
Type-ii	• Using a power supply from the DX-kit control unit • Output voltage: Hi DC12V±2V, Lo 0 V / 50 mA max

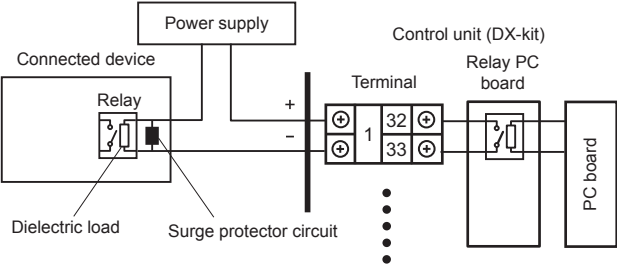
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.

(1) Type-i: Using a power supply from other than the DX-kit (Connected unit, etc.)

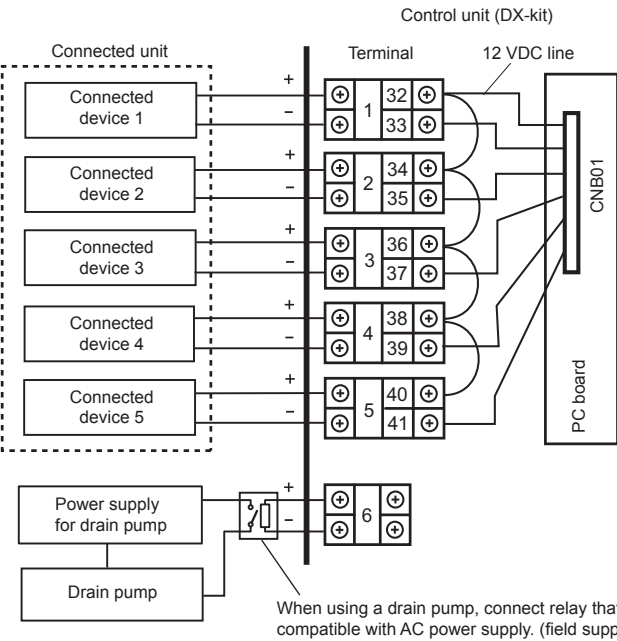


- Precautions for Type-i

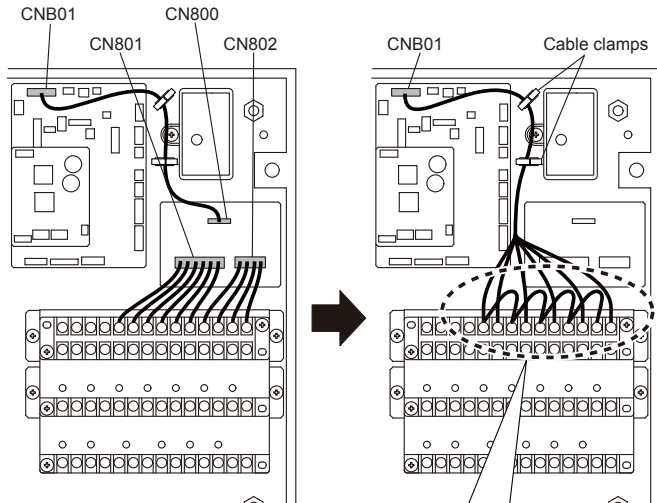
If connecting a dielectric load such as a relay coil, etc., to the connected device, make sure to add a surge protector circuit to the load side as shown in the diagram.



(2) Type-ii: Using a power supply from the DX-kit control unit



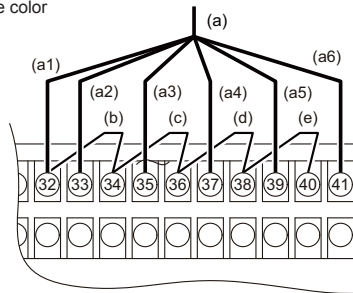
- If Type-ii is selected, change the wiring as shown in the diagram. (All cables used are enclosed.)



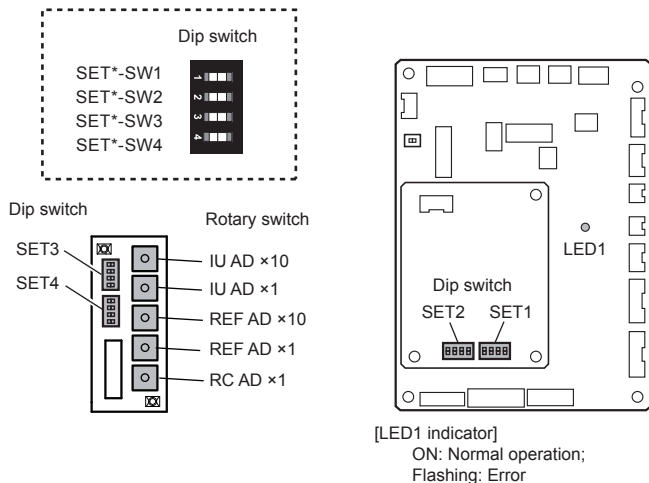
- If connecting an connection cables (accessories) to a terminal, make sure to match the number of the label affixed to the cable with the terminal number.

About the cable name and cable color

- (a) Connection cable 1:
(a1) Brown, (a2) Red
(a3) Orange, (a4) Yellow
(a5) Green, (a6) Blue
- (b) Connection cable 2:
Brown
- (c) Connection cable 3:
Brown
- (d) Connection cable 4:
Brown
- (e) Connection cable 5:
Brown



8. FIELD SETTING



CAUTION

Be sure to turn OFF the power before performing the field setting.

8.1. Setting the address

8.1.1. Setting the indoor unit address and refrigerant circuit address controlled by the DX-kit

- (1) Setting automatic address
Set the rotary switch IU_AD,REF_AD to 0.
(For the advanced function settings, see the outdoor unit installation manual.)
- (2) Setting manual address
Set the rotary switch IU_AD,REF_AD to the specified value.

Manual address setting method

- If the receiver unit is attached, the indoor unit address and the refrigerant circuit address can also be set up through the wireless remote controller.

CAUTION

Use an insulated screwdriver to set the DIP switches.

Setting	Setting range	Type of switch
Indoor unit address controlled by the DX-kit *1	0 to 63	Setting example 2 IU AD × 10 IU AD × 1
Refrigerant circuit address *2	0 to 99	Setting example 63 REF AD × 10 REF AD × 1

*1) Indoor unit address

Rotary switch (IU AD × 1)...Factory setting "0"
Rotary switch (IU AD × 10)...Factory setting "0"
When connecting multiple indoor units to 1 refrigerant system, set the address at IU AD SW as shown in the Table A.

*2) Refrigerant circuit address

Rotary switch (REF AD × 1)...Factory setting "0"
Rotary switch (REF AD × 10)...Factory setting "0"
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.

- 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.)

Table A

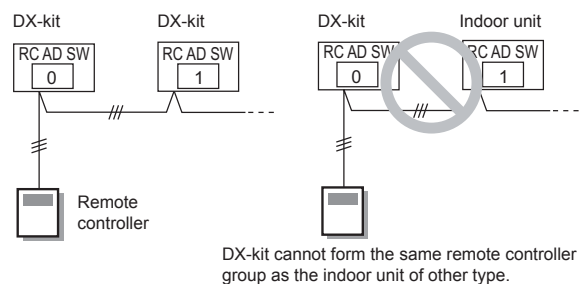
Address	Rotary		Address	Rotary	
	Switch Setting			Switch Setting	
Refrigerant circuit	REF AD SW		Indoor unit	IU AD SW	
	× 10	× 1		× 10	× 1
0	0	0	0	0	0
1	0	1	1	0	1
2	0	2	2	0	2
3	0	3	3	0	3
4	0	4	4	0	4
5	0	5	5	0	5
6	0	6	6	0	6
7	0	7	7	0	7
8	0	8	8	0	8
9	0	9	9	0	9
10	1	0	10	0	0
11	1	1	11	1	1
12	1	2	12	1	2
.	.	.	.	.	.
.	.	.	.	.	.
99	9	9	63	6	3

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

8.1.2. Remote controller address

- Set this address if connecting a Fujitsu general remote controller.
- If using analog inputs, Fujitsu general remote controller operation will be disabled.
If using analog inputs, DX-kit cannot form the remote controller group.
- i) 3-wire type
Rotary switch (RC AD SW)...Factory setting "0"
When connecting multiple indoor units to 1 standard wired remote controller, set the address at RC AD SW in sequence from 0.

Setting	Setting range	Type of switch
Remote controller address	0 to 15	Setting example 0 RC AD



RC AD SW	0	1	2	3	4	5	6	7
Address	0	1	2	3	4	5	6	7
RC AD SW	8	9	A	B	C	D	E	F
Address	8	9	10	11	12	13	14	15

ii) 2-wire type

Rotary switch (RC AD SW)...Factory setting "0"

Since the remote controller address settings are automatically configured, you do not need to configure them.

If configuring manually, it is necessary to configure both the indoor unit and the remote controller.

For details, please refer to the remote controller manual.

8.2. Dip switch setting

(1) Capacity settings of indoor units to be controlled

The capacity of indoor units to be controlled is set.

Indoor unit capacity	Dip switch setting (*: factory setting)				
	SET1-1	SET1-2	SET1-3	SET1-4	SET2-1
5.0 kW *	ON	OFF	ON	OFF	OFF
6.3 kW	ON	OFF	ON	OFF	ON
8.0 kW	ON	ON	ON	OFF	OFF
10.0 kW	OFF	ON	ON	OFF	ON
12.5 kW	OFF	ON	OFF	ON	OFF
14.0 kW	ON	ON	OFF	ON	OFF
20.0 kW	ON	OFF	ON	ON	OFF
25.0 kW	OFF	ON	ON	ON	OFF
40.0 kW	ON	OFF	OFF	ON	ON
50.0 kW	OFF	ON	OFF	ON	ON
Not described above	Settings prohibited				

(2) Setting digital input signal methods

- Select either edge method or pulse method as the external inputs signal method.

DIP switch SET2-2	Digital input signals format
OFF (factory setting)	Edge
ON	Pulse

Make sure that SET2-3 and SET2-4 are always OFF.

(3) Analog external inputs method

- You can select the item to be controlled using analog external inputs from the external controller (either "Operation temperature" or "Required operation performance").
- Make the DIP switch SET3-1 settings before making the SET3-2 settings.
- Make sure to set a connection status that uses the external controller.
- If SET3-1 is ON, VRF device controls will be disabled.

(i) Analog external inputs ON/OFF

DIP switch SET3-1	Analog external inputs ON/OFF
OFF (factory setting)	OFF
ON	ON

(ii) Control items

- The items to be controlled are selected according to the device status that uses the external controller.

DIP switch SET3-2	Control conditions
OFF (factory setting)	Operation temperature
ON	Required operation performance

(4) AC (air conditioning.) control settings

- Select the AC control format from either "outlet temperature control" or "inlet temperature control".

DIP switch SET3-3	Temperature control position
OFF (factory setting)	Outlet temperature control
ON	Inlet temperature control

Make sure that SET3-4 is always OFF.

(5) RB unit bypass circuit feasibility

- If connecting the RB unit and a general indoor unit 1-to-1 in the heat recovery system unit, configure a bypass circuit in the RB unit when the heat thermostat is OFF.
- Prevents hot air from outlet when the heat thermostat is OFF.
- If the indoor unit is 40kW or 50kW type, the RB unit cannot be connected.

DIP switch SET4-3	
OFF (factory setting)	No bypass
ON	With bypass

(6) Administrative indoor unit setting

- You can set the DX-kit as the "administrative indoor unit" from among multiple indoor units (including the DX-kit) connected using the same refrigerant system (or RB unit).
- Only one administrative indoor unit can be set using the same refrigerant system (or RB unit).
- If forming the remote controller group, set this DIP switch "OFF".

DIP switch SET4-4	Administrative indoor unit settings
OFF (factory setting)	OFF
ON	ON

- Precautions if using the DX-kit as the administrative indoor unit
If the "Administrative indoor unit setting" is "ON" for another indoor unit connected to the same refrigerant system (or RB unit), make sure to turn "OFF" that setting. For details, see the wired remote controller installation manual.
- When connecting the wired remote controller to the DX-kit, set this switch to OFF. (Set the "Administrative indoor unit setting" with the wired remote controller.)

Make sure to set SET4-1 and SET4-2 to always OFF.

(7) Remote controller selections

The cable type of wired remote controller has been selected.

DIP switch SW1	Wired remote controller cable type
2WIRE (factory setting)	2 wire type
3WIRE	3 wire type

8.3. 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. (Set IU AD, REF AD SW to 0)
- Refer to "8.1. 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	
Auto restart	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. If using Outlet temperature control (DIP switch SET3-3: OFF), set this function "01".
		01	Follow the setting on the remote controller	
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	
Switching functions for external inputs and external outputs terminals	60	00	Mode 0	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	
Selecting stop operation during an external error	64	00	Mode 0	Thermostat off
		01	Mode 1	Thermostat OFF + fan stop
		02	Mode 2	Thermostat OFF + fan stop + outdoor unit stop

9. TEST RUN

The test run function will force the outdoor unit to operate. When performing the test run, confirm that the entire system including the external devices operates normally. (If only the outdoor unit operates, it may cause damage to the entire refrigerant system.)

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. (If using analog inputs, Fujitsu general remote controller operation will be disabled.)

10. CHECK LIST (Example)

Pay special attention to the check items below when installing the entire system. After installation is complete, be sure to check the following check items again.

Check items	If not performed correctly	Check box
Are the external devices and DX-Kit operating as expected?	No operation, heat or burn damage	
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 controller or external device?	No operation	
After installation is completed, has the proper operation and handling been explained to the user?		

11. ERROR CODES

- When an error occurs, the LED on the PC board (LED name: LED1) flashes.
- "Error code" can be viewed by connecting the optional wired remote controller, group remote controller, and IR receiver unit, etc.

If you use a wired type remote controller (Optional parts), error codes will appear on the remote controller display. If you use a wireless remote controller (IR receiver unit of optional parts), 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.

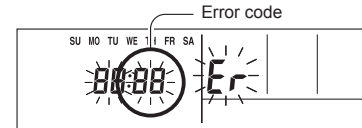
Error indications			Wired Remote Controller Error code	Error contents
OPERATION lamp (green)	TIMER lamp (orange)	FILTER lamp (red)		
● (1)	● (2)	◇	12	Remote controller communication error
● (1)	● (4)	◇	14	Network communication error
● (1)	● (6)	◇	16	Peripheral unit communication error
● (2)	● (6)	◇	26	Indoor unit address setting error

Error indications			Wired Remote Controller Error code	Error contents
OPERATION lamp (green)	TIMER lamp (orange)	FILTER lamp (red)		
● (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)	● (2)	◇	42	Indoor unit heat ex. temp. thermistor error
● (4)	● (10)	◇	4A	Indoor unit air temp. thermistor 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
● (13)	● (1)	◇	11	RB unit error
● (13)	● (6)	◇	16	DX-kit error

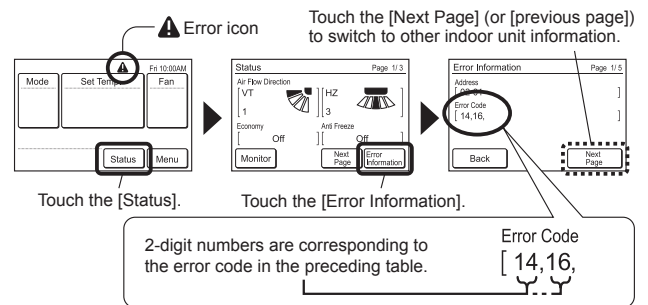
Display mode
 ● : 0.5s ON / 0.5s OFF
 ◇ : 0.1s ON / 0.1s OFF
 () : Number of flashing

Wired Remote Controller Display

UTY-RNKY / UTY-RNKG / UTY-RNKYT (3-wire type)

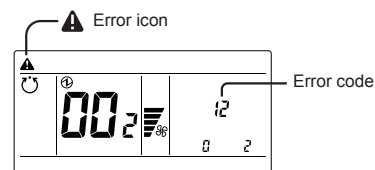


UTY-RNRY / UTY-RNRG (2-wire type)



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

UTY-RLRY / UTY-RLRG (2-wire type)



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

For details on marking the ERROR CODES, refer to the Manual of "Wired Remote Controller".

12. OPERATIONS

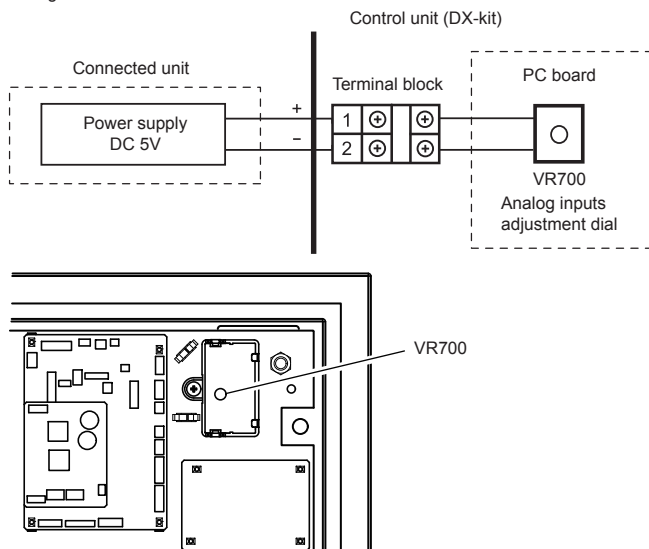
12.1. Analog external inputs

CAUTION

- Use an insulated screwdriver to set the adjustment dial.
- Do not apply voltage greater than 10V.

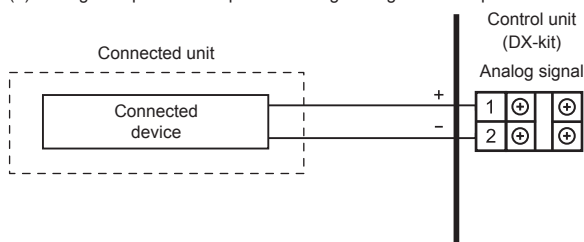
The operation temperature and required operation performance are set by changing the voltage of the signals entered to "analog external inputs". Compensating the analog circuit tolerance before using this function is recommended.

- (1) Initial settings for using the analog external inputs circuit.
Set the DIP switch SET3-1 to "ON".
Set the DIP switch SET3-2 to "OFF".
- (2) Compensate the tolerance of the circuit that measures the voltage of the analog input signals.



- Compensation method
 - i) Connect the power supply adjusted to output DC 5V to the designated terminal.
 - ii) Turn ON the power supply.
 - iii) Use the adjustment dial to compensate so that the temperature display for the wired remote controller indicates 20°C.

- (3) Setting the operation temperature using analog external inputs

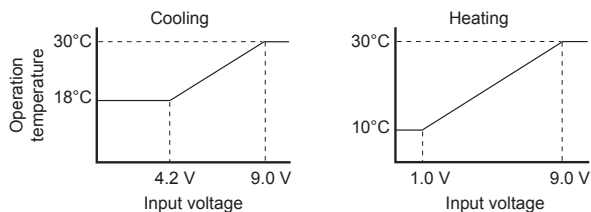


The operation temperature is set by changing the voltage of the input signals.
(• If using this function, set the DIP switch SET3-2 to "OFF".)

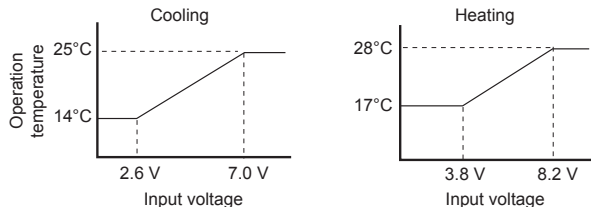
Formula: Operation temperature $T (^{\circ}\text{C}) = 2.5 \times \text{Ain} + 7.5$
 $\text{Ain} = \text{Input voltage (1.0 to 9.0V)}$

See the following diagram for the advanced input conditions.

- a) Using the inlet to control the temperature



- b) Using the outlet to control the temperature



- (4) Setting required operation performance using analog external inputs

- The operation capacity can be set by changing the voltage of the input signals.
- * Refrigerant cycle protection is prioritized, so operation may not be as required.
- If using this function, set the DIP switch SET3-2 to "ON".

Formula: Required operation performance $C(\%) = 12.5 \times \text{Ain} - 11.25$

$\text{Ain} = \text{Input voltage (1.3 to 8.9 V)}$

If $\text{Ain} < 1.3 \text{ V}$, $C = 0\%$ fixed

If $\text{Ain} > 8.9 \text{ V}$, $C = 100\%$ fixed

