Refrigerant R410A
INVERTER

AIRSTAGE™ J-II
Variable Refrigerant Flow System

6. SYSTEM DESIGN

CONTENTS

6. SYSTEM DESIGN

CONTENTS

6. SYSTEM DESIGN

CONTENTS

6. SYSTEM DESIGN

1. SYSTEM DESIGN

1-1. REFRIGERANT SYSTEM

■ CONNECTABLE UNIT WITHIN 1 REFRIGERANT SYSTEM

Unit	Quantity	Remarks
Outdoor unit	1 unit	
Indoor unit	2 to Max. 6 units	4HP (AJ∗A36LALH)
	2 to Max. 8 units	5HP (AJ∗A45LALH)
	2 to Max. 9 units	6HP (AJ∗A54LALH)

● Table

HP	Capacity (kW)	Outdoor unit quantity	Maximum connectable indoor unit	Connectable capacity range
4	11.2	1	6	50% to 130%
5	14.0	1	8	
6	15.5	1	9	

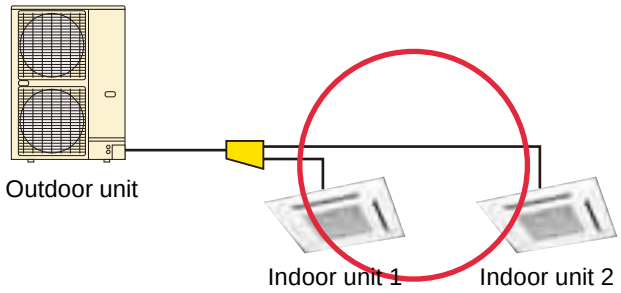
● Caution

- When all indoor units are operating at maximum capacity, individual indoor unit operate at a slightly lower capacity. (When connecting more than 100%)
- Do not exceed both of "connectable capacity range" and "maximum connectable indoor unit", otherwise it may cause hinder the return of the refrigerant oil and cause a compressor breakdown.
- Minimum connectable indoor unit number is 2.

SYSTEM DESIGN

■ EXAMPLE OF REFRIGERANT SYSTEM

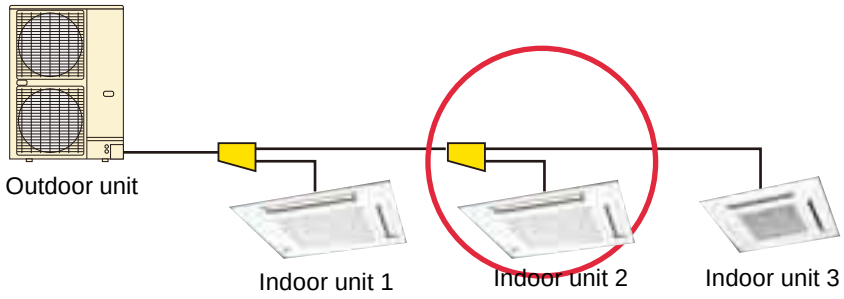
● Example 1 (OK)



Capacity ratio 58%

	Model	Capacity (kW)	Total capacity (kW)	Connectable indoor unit capacity		Judgement
				Min.	Max.	
Outdoor unit	AJ∗A54L	15.5	15.5	② 50% 7.8	③ 130% 20.1	②≤ ①≤ ③ 7.8 < 9.0 < 20.1 → OK
Indoor unit 1	AUXB14	4.5	① 9.0			
Indoor unit 2	AUXB14	4.5				

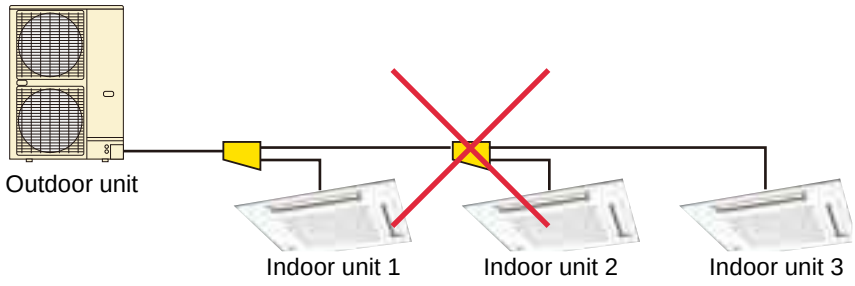
● Example 2 (OK)



Capacity ratio 128%

	Model	Capacity (kW)	Total capacity (kW)	Connectable indoor unit capacity		Judgement
				Min.	Max.	
Outdoor unit	AJ∗A54L	15.5	15.5	② 50% 7.8	③ 130% 20.1	②≤ ①≤ ③ 7.8 < 19.8 < 20.1 → OK
Indoor unit 1	AUXD24	7.1	① 19.8			
Indoor unit 2	AUXD24	7.1				
Indoor unit 3	AUXB18	5.6				

● Example 3 (Not good)

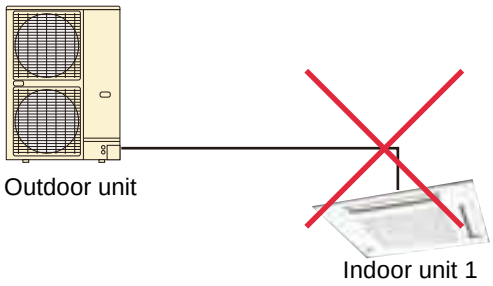


Capacity ratio 150%

	Model	Capacity (kW)	Total capacity (kW)	Connectable indoor unit capacity		Judgement
				Min.	Max.	
Outdoor unit	AJ∗A54L	15.5	15.5	② 50% 7.8	③ 130% 20.1	③≤ ① 20.1 < 23.2 → Not good
Indoor unit 1	AUXA30	9.0	① 23.2			
Indoor unit 2	AUXD24	7.1				
Indoor unit 3	AUXD24	7.1				

SYSTEM DESIGN

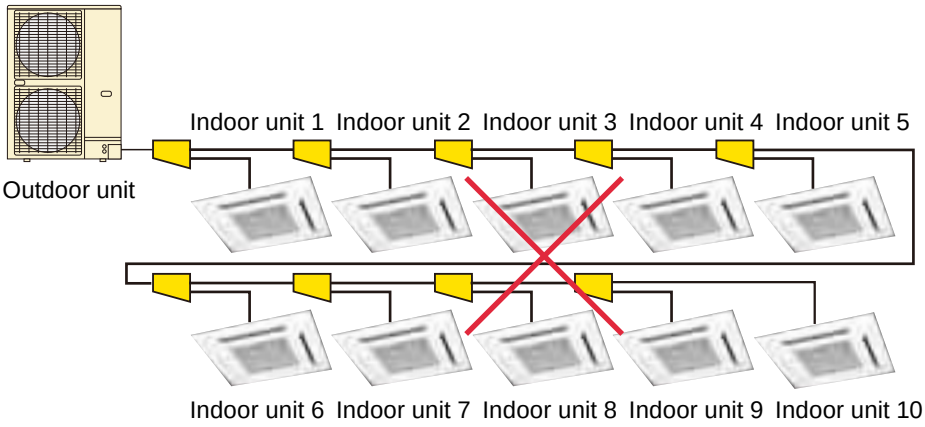
● Example 4 (Not good)



Capacity ratio 90%

	Model	Capacity (kW)	Total capacity (kW)	Connectable indoor unit capacity		Judgement
				Min.	Max.	
Outdoor unit	AJ∗A54L	15.5	15.5	② 50% 7.8	③ 130% 20.1	Not good → Because only one indoor unit is connected
Indoor unit 1	AUXA54	14.0	① 14.0			

● Example 5 (Not good)



	Model	Capacity (kW)	Total capacity (kW)	Connectable indoor unit capacity		Judgement
				Min.	Max.	
Outdoor unit	AJ∗A54L	15.5	15.5	② 50% 7.8	③ 130% 20.1	Not good → Because ten indoor units are connected
Indoor unit 1	AUXB07	2.2	① 22.0			
Indoor unit 2	AUXB07	2.2				
Indoor unit 3	AUXB07	2.2				
Indoor unit 4	AUXB07	2.2				
Indoor unit 5	AUXB07	2.2				
Indoor unit 6	AUXB07	2.2				
Indoor unit 7	AUXB07	2.2				
Indoor unit 8	AUXB07	2.2				
Indoor unit 9	AUXB07	2.2				
Indoor unit 10	AUXB07	2.2				

SYSTEM DESIGN

1-2. VRF NETWORK SYSTEM

■ MAXIMUM WIRING LENGTH OF VRF NETWORK SYSTEM

Transmission line	Maximum wiring length
Total wiring length of transmission	3600m
Maximum wiring length between units	400m
Total wiring length in 1 segment *	500m

	VRF network system	segment *
Wiring length	3600m	500m
Number of unit	400	64

∗ Segment: Please refer to ■MAXIMUM CONNECTION OF NETWORK SEGMENT for network segment figure and explanation.

■ THE MAXIMUM CONNECTABLE UNIT

● Outdoor unit and indoor unit

	Maximum connectable units in one VRF network system
Outdoor unit	100
Indoor unit	400

SYSTEM DESIGN

■ CONTROLLER AND CONVERTOR

				Model	Maximum connectable units in one VRF network system	Remarks	
Controller	Central Control	System Controller		UTY-APGX	1	*1:Note	Max.controllable VRF network system : 4 Max.controllable remote controller groups : 1600 per 4 VRF network system Max.controllable indoor unit : 1600 per 4 VRF network system Max.controllable groups : 1600 per 4 VRF network system
		Touch Panel Controller		UTY-DTG∗	16	*2:Note	Max.controllable remote controller groups : 400 Max.controllable indoor unit : 400 Max.controllable groups : 400
		Central Remote Controller		UTY-DCG∗	16		Max.controllable indoor unit : 100 Max.controllable groups : 16
		Group Remote Controller		UTY-CGG∗	(64)		When Group Remote Controller is used, Network Convertor (UTY-VGGX) is required. Max controllable remote controller groups : 8 Max controllable indoor units : 18
	Individual Control	Wired Remote Controller		UTY-RNK∗			Max controllable indoor units : 9
		Simple Remote Controller (with master control)		UTY-RSK∗			Max controllable indoor units : 9
		Simple Remote Controller (without master control)		UTY-RHK∗			Max controllable indoor units : 9
		Wireless Remote Controller		UTY-LNH∗			

*1 Note: Different VRF series may be connected for each of the 4 VRF networks supported by the unit, but different series may not coexist within the same network.
(V-II Series and J-II Series can exist together on same network. V Series and S Series can exist together on same network, too.)

*2 Note : For one VRF network system, total number of Touch Panel Controller, Central Remote Controller, Network Convertor for Group Remote Controller is 16, including one Network Convertor for LonWorks®.

SYSTEM DESIGN

			Model	Maximum connectable units in one VRF network system	Remarks	
Adaptor / Convertor	Signal Amplifier		UTY-VSGX	8		The signal amplifier is required when 500m or more in transmission line length or connected unit exceeds 64units.
	Network Convertor		UTY-VGGX	Used for connecting split system : 100	Total number of refrigerant system and Network convertor is maximum 100.	Max connectable Single split or Big multi type in a UTY-VGGX : 16 units.
				Used for connecting Group Remote Controller : 16	*2:Note	Max connectable Group Remote Controller : 4 units. One Network Convertor (UTY-VGGX) covers 2 refrigerant systems.
	Network Convertor for LONWORKS®		UTY-VLGX	1		Max controllable indoor units : 128
	BACnet® Gateway		UTY-ABGX	1	*1:Note	Max.controllable VRF network system : 4 Max.controllable remote controller groups : 1600 per 4 VRF network system Max.controllable indoor unit : 1600 per 4 VRF network system Max.controllable groups : 1600 per 4 VRF network system
	External Switch Controller		UTY-TEKX			Max connectable indoor units : 16
Service & Maintenance	Service Tool		UTY-ASGX	1	1 Service Tool or 1 Web Monitoring Tool can be connected.	PC : Field supplied. USB adaptor is required.
	Web Monitoring Tool		UTY-AMGX		*1:Note.	Web Monitoring Tool: Internet explorer 6.0 or higher. PC : Field supplied. Up to 4 VRF network system can be observed with one Web Monitoring Tool.

*1 Note: Different VRF series may be connected for each of the 4 VRF networks supported by the unit, but different series may not coexist within the same network.
(V-II Series and J-II Series can exist together on same network. V Series and S Series can exist together on same network, too.)

*2 Note : For one VRF network system, total number of Touch Panel Controller, Central Remote Controller, Network Convertor for Group Remote Controller is 16, including one Network Convertor for LONWORKS®.

SYSTEM DESIGN

■ MAXIMUM CONNECTION OF NETWORK SEGMENT

● Network segment : divided network by signal amplifier

- In the following case, signal amplifier is required.

(1) When the total length of the transmission line exceeds 500 m.

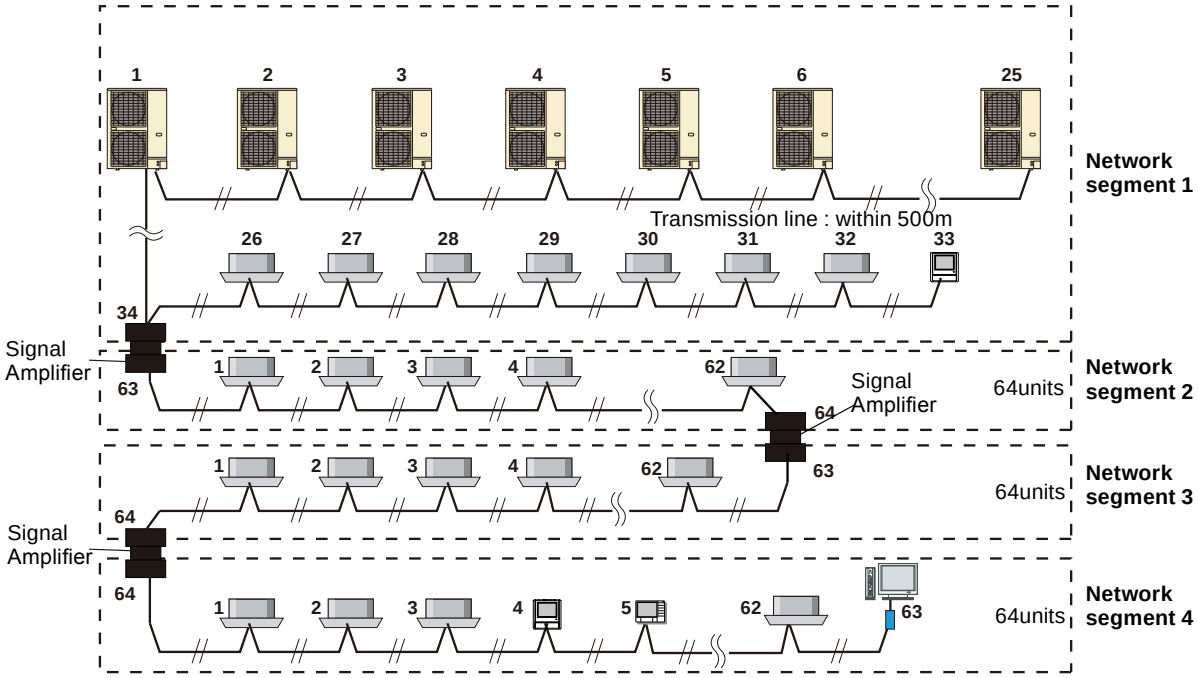
(2) When the number of total unit*1 exceed over 64 units.

- When a signal amplifier is installed, network is divided into two network segments.

Network segments mean divided block which has been connected with signal amplifier within above condition.

In a network segment(NS), divided by a signal amplifier, have to keep the following limitation.

Segment inside	Limitation
Transmission line	500m or less
Number of unit *1 (See the next page)	64 or less
Terminal resistor	1



● Caution

VRF network system should keep both of number of unit and wiring length.
When system exceeds either number of unit or wiring length, system should be devided.
Different VRF series may not coexist within the same network.

SYSTEM DESIGN

● Meaning of unit

		Model name	Unit
Outdoor unit	4HP	AJ✳A36LALH	○
	5HP	AJ✳A45LALH	○
	6HP	AJ✳A54LALH	○
All indoor unit		-	○
Controller	System controller	UTY-APGX	○
	Touch panel controller	UTY-DTG*	○
	Central Remote controller	UTY-DCG*	○
	Group remote controller	UTY-CGG*	×
	Wired remote controller	UTY-RNK*	×
	Simple remote controller (With operation mode)	UTY-RSK*	×
	Simple remote controller (Without operation mode)	UTY-RHK*	×
	Wireless remote controller	UTY-LNH*	×
	IR receiver unit for Duct	UTB-*WB UTB-*WC	×
	IR receiver unit for Cassette	UTY-LRHYA1	×
Convertor	External switch controller	UTY-TEKX	×
	Network convertor	UTY-VGGX	○
	Network convertor for LonWorks®	UTY-VLGX	○
	BACnet® Gateway	UTY-ABGX	○
	Signal amplifier	UTY-VSGX	○
Maintenance	Service tool	UTY-ASGX	○
	Web monitoring tool	UTY-AMGX	○
Option	Others optional parts	-	×

○: It should be count

×: It should not be count

SYSTEM DESIGN

SYSTEM DESIGN

■ THE MAXIMUM WIRING LENGTH OF UNIT

Name	Model	Maximum wiring length		
Network convertor	UTY-VGGX	Total length of group remote controller cable to convertor	100m	Used for group remote controller
		Remote controller to UTY-VGGX	100m	Used for single split Airconditioner
		Indoor unit to UTY-VGGX	100m	
Signal amplifier	UTY-VSGX	In each network segment	500m	
External switch controller	UTY-TEKX	External switch to UTY-TEKX	50m	Max.connectable 16 indoor units. 2 Remote controllers can be used jointly.
		Indoor unit to UTY-TEKX	25m	
Wired, Simple remote controller	UTY-RNK* UTY-RSK* UTY-RHK*	Remote controller cable	500m	

1-3. MOUNTING POSITION

■ OUTDOOR UNIT

For the air conditioner to operate satisfactorily, install it as outlines in installation manual.

● Outdoor unit mounting position

- A position where satisfies the mounting space described in “chapter 3. 3 Installation space".
- A position where the unit can be installed horizontally.
- A position with enough space for performing pipe work, service and maintenance.
- A position where satisfies the pipe limitations of height and length between the outdoor units to be connected

● Outdoor unit mounting limitation

- A position that is not exposed to strong or seasonal winds.
- A position where the blown air does not accumulate.
- A position where there are no obstructions to the air near to the inlet and outlet.
- A position not exposed to radiation from other heat sources.
- A position where the discharge air will not affect animals or plants.
- A position where the noise and hot air will not disturb the neighbour.
- A position with strong installation fixings, which can sufficiently bear the product weight.
- A position that does not transmit noise or vibration.
- A position where drain water discharge is not a problem.
- A position where snow does not accumulate.
- A position not easily affected by electrical noise.
- A position out of reach of children.
- A position where there is no danger of the generation, influx or accumulation of flammable gas.
- A position that does not have a special environment such as large amounts of oil, vapor or sulfide gas.

● Precaution for outdoor unit mounting position

- Mount the outdoor unit in a position where its tilt is 3 degrees or less.
- When mounting units on each floor or multiple units, secure enough outlet space to prevent a short circuit effect.
- In cold or snowy regions, make sure that the mount is high enough and install a snow protection hood.
- Drain water is discharged from the outdoor unit during operation, so make sure that this drain water is possible to flow.
- Use material such as vibration-resistant rubber to prevent the transmission of vibration to the floor.
- Securely fix the unit when it may be in a position exposed to strong winds.

SYSTEM DESIGN

■ INDOOR UNIT

For the air conditioner to operate satisfactorily, install it as outlines in installation manual.

● Indoor unit mounting position

- Decide the mounting position with the customer
- Install the unit level on a strong wall, floor, ceiling which is not subject to vibration.
- The inlet and outlet ports should not be obstructed. The air should be able to blow all over the room.
- Install the unit where the connection pipe can be easily installed.
- Install the unit where the drain pipe can be easily installed.
- Take servicing, etc. into consideration and leave the spaces. Also install the unit where the filter can be removed.
- Install the unit where satisfy the pipe length and hight.

● Indoor unit mounting limitation

- Install at a place that can withstand the weight of the indoor unit and install positively so that the unit will not topple or fall.
- Do not install the unit where there is the danger of combustible gas leakage.
- Do not install the unit near heat sources and the location with high temperature.
- Mount with the lowest moving parts at least 2.4m above floor or grade level.
- Do not install the unit near a source of heat, steam, or flammable gas.
- Do not use the unit for air conditioning or saving precision instrument, food, art, plants and animal as special place.
- If children may approach the unit, take preventive measures so that they cannot reach the unit.
- Do not install where there is oily smoke, machine oil (i.e. factory), salty environment with direct sea breeze, and too much of dust.
- Install the unit where drainage does not cause any trouble.
- Welding parts may be fretted if the unit is installed where corrosive gas such as sulphurous acid gas is generated.
- Control may not operate correctly if the unit is installed near machinery which emit electromagnetic wave.
- Install the unit in a well-ventilated place avoiding rains and direct sunlight.
- Install the unit where air from the outlet and noise do not disturb the neighbour.
- Install the indoor and outdoor units, power wiring, signal wiring and remote control wiring 1 m away from television and radio to avoid distorted images and noise. (However, distorted noise may not be avoidable even if units and wiring mentioned above are installed 1m away from television and radio depending on conditions of electromagnetic disturbance.)
- When installing an indoor unit in a small room, a countermeasure must be taken to keep refrigerant concentration limitations will never be exceeded even if there is a refrigerant leak.
- A sound might be heard from the indoor unit such as a refrigerant flowing sound. For using in small and quiet room such as bed room or hotel guest room, select the unit which has not exposed inside the room (Ex. Duct type) or the unit which connects EV kit separately (Ex. Compact wall mounted type (EEV external model) + EV kit).

SYSTEM DESIGN

2. PIPING DESIGN

2-1. IMPORTANT ITEMS WHEN USING NEW REFRIGERANT (R410A)

R410A operates at higher pressure and has less solubility with mineral oil than traditional R22 refrigerant. Therefore, the lubricant and a part of pipe material are different. Some special tools are necessary.

■ REFRIGERANT PIPING MATERIAL AND WALL THICKNESS

It is necessary to use seamless copper tubes for refrigerant use.
Thickness of tubes are shown in table below.
Endurance pressure of the pipe must be 4.2 MPa.

Nominal Diameter	(in)	1/4"	3/8"	1/2"	5/8"	3/4"
Outside Diameter	(mm)	6.35	9.52	12.70	15.88	19.05
Material		JIS H3300 C1220T-O or equivalent *1				
Wall Thickness *2	(mm)	0.8	0.8	0.8	1.0	1.2

*1: Allowable tensile stress ≥ 33 (N/mm^2)
*2: Endurance pressure of the pipe must be 4.2 MPa.

Please select the pipe size in accordance with regional standard.

■ LUBRICANT

Refrigerant	R410A (Mixed refrigerant)
Lubricant	Synthetic oil

■ TOOLS

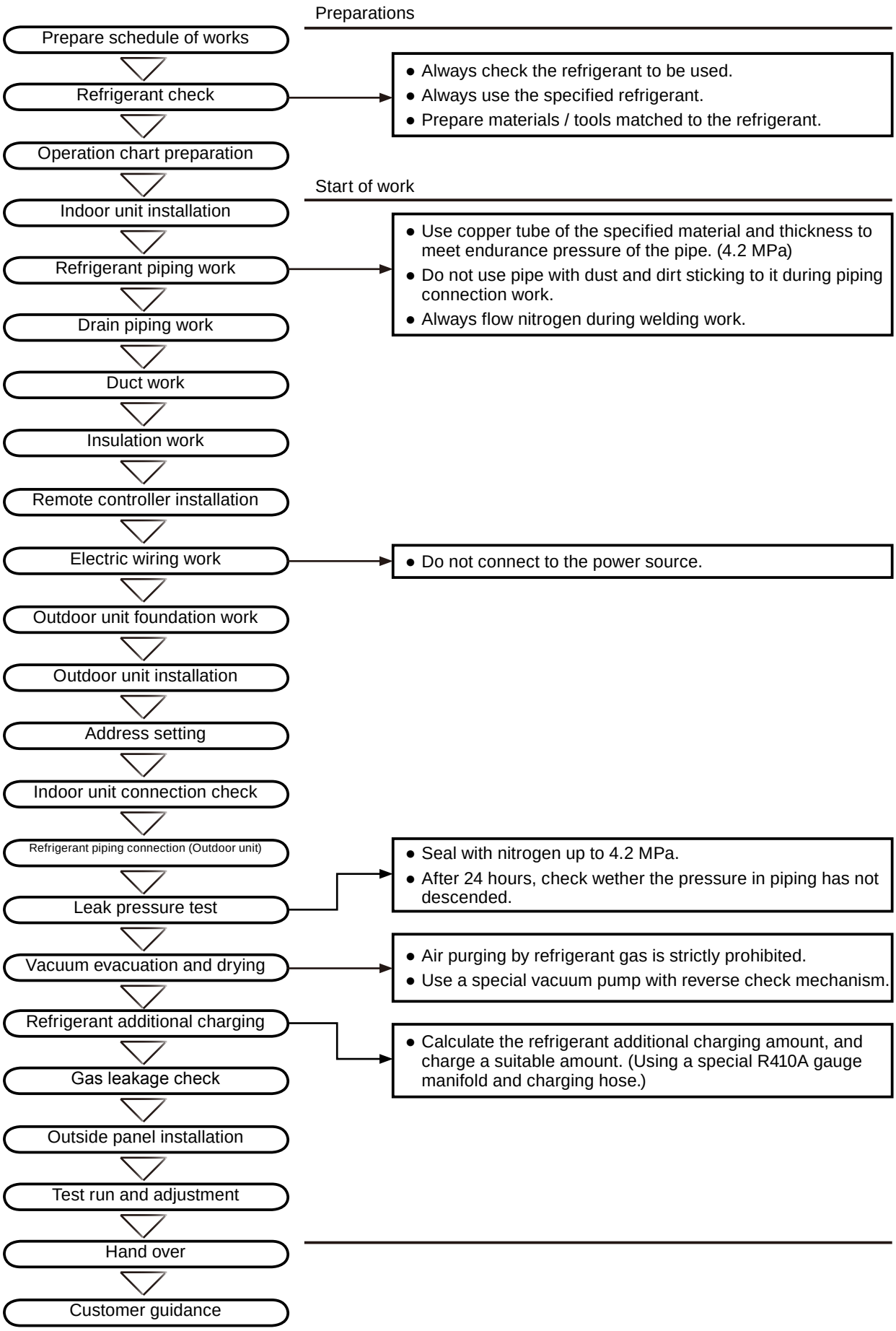
R410A work requires a number of special tools. Since the tools (with *3 symbol) for R22 work cannot be used for R410A, prepare them beforehand.

Tool name	Process and application	
Pipe cutter	Pipe cutting	Refrigerant piping work
Flaring tool *3	Pipe flaring work	
Torque wrench *3	Flare nut connection	
Expander	Expansion at pipe connection	
Pipe bender	Pipe bending work	
Nitrogen gas	Pipe interior oxidation prevention	Air tightness test
Welder	Pipe brazing	
Gauge manifold *3	Vacuum evacuation and refrigerant charging Operation check	Air tightness test ~ Refrigerant additional charging
Charging hose *3		
Vacuum pump (with adaptor) *3		Vacuum drying
Electronic scale for refrigerant charging		Refrigerant additional charging
Gas leak tester *3	Gas leakage test	

*3: Please refer to a service manual for details.

SYSTEM DESIGN

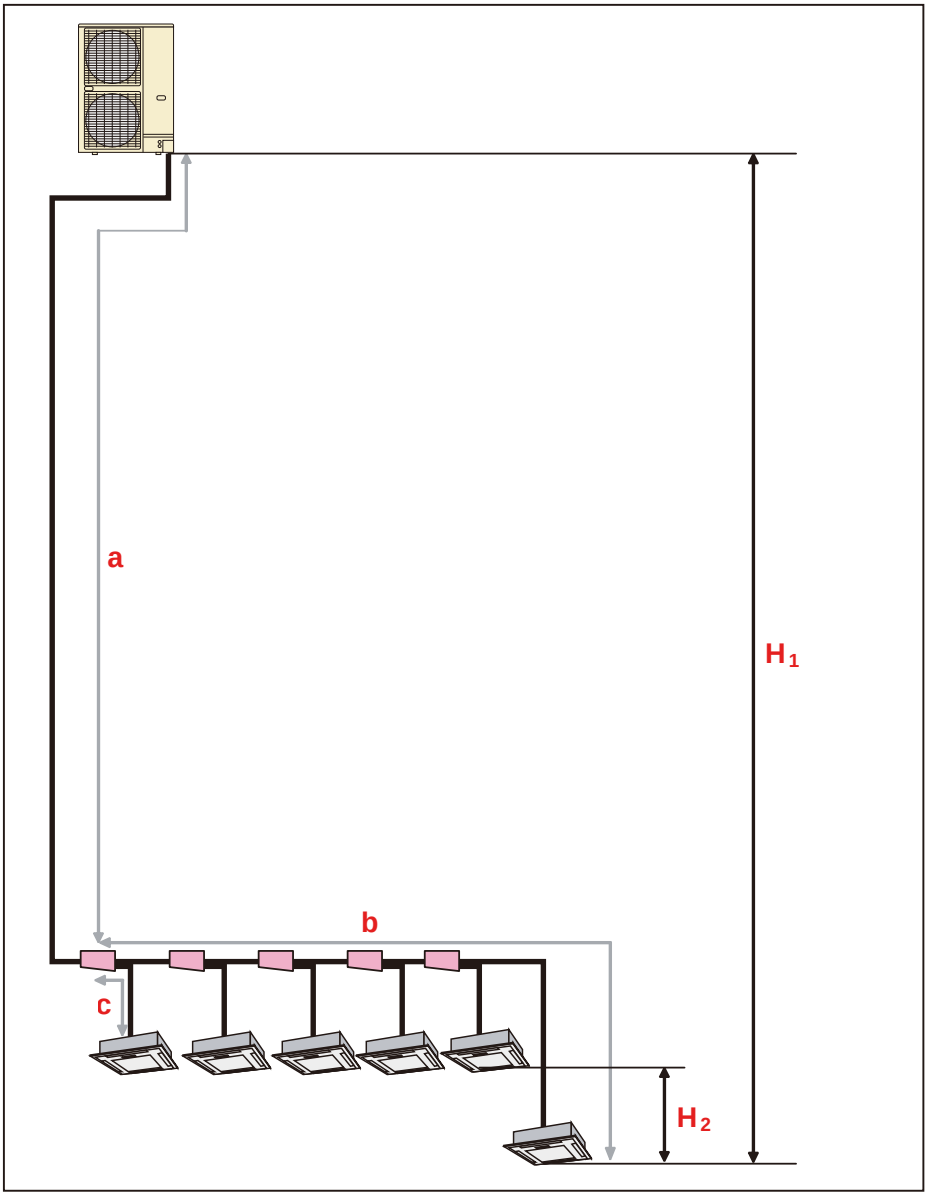
■ WORK FLOW (EXAMPLE)



SYSTEM DESIGN

2-2. PIPING LIMITATION

■ LIMITATION



Limitation			Diagram
Maximum allowable pipe length (actual pipe length)	Total pipe length	180m or less *1	Total
	Between outdoor unit and the farthest indoor unit	120m or less	a + b
	Between the first separation tube and the farthest indoor unit	40m or less	b
	Between outdoor unit and the nearrest indoor unit	5m or more	a + c
	Between outdoor unit and the first seperation tube	3m or more	a
Maximum allowable height difference	Between outdoor unit and indoor unit	30m or less	H1
	Between indoor unit	15m or less	H2

＊1 : Total pipe length is limited by the condition that total refrigerant amount should not exceed 15.7kg.

SYSTEM DESIGN

■ CAUTION

Keep the "piping limitation" for correct operation.

● Allowable height difference:

If the height difference between the indoor unit and outdoor unit is larger than the allowable value:

- ∗ The pressure loss will be larger → Insufficient cooling and heating
- ∗ The refrigerant in liquid pipe will flush → Refrigerant flow noise generate at indoor unit
- ∗ The refrigerant oil will not return → Insufficient refrigerant oil resulting in compressor damage

If the height difference between indoor unit is larger than the allowable value:

- ∗ The refrigerant flow balance will be poor → Insufficient cooling and heating (poor balance)
- ∗ Refrigerant oil will collect in the piping or non-operating indoor units
  → Insufficient refrigerant oil resulting in compressor damage

● Pipe length:

If the pipe length is longer than prescribed:

- ∗ The pressure loss will be larger → Insufficient cooling and heating
- ∗ Too much refrigerant will be charged → Liquid backs up resulting in compressor damage
- ∗ The refrigerant oil will not return → Insufficient refrigerant oil resulting in compressor damage

● Pipe size:

If the pipe size is larger than designated size:

- ∗ The refrigerant flow velocity will drop. Refrigerant oil will not return to the outdoor unit.
  → Insufficient refrigerant oil resulting in compressor damage
- ∗ The refrigerant in liquid pipe will flush easily → Insufficient cooling and heating

If the pipe size is smaller than designated size:

- ∗ The refrigerant circulation volume will drop → Insufficient cooling and heating
- ∗ The pressure loss will be larger → Insufficient cooling and heating

● Indoor unit connected capacity:

If the indoor unit connected capacity is larger than the system capable capacity:

- ∗ Insufficient system performance → Insufficient cooling and heating
- ∗ When heating, refrigerant will collect in non-operating indoor units resulting in an insufficient refrigerant circulation volume → Insufficient cooling and heating
- ∗ The refrigerant oil will not return → Compressor damage

If the indoor unit connected capacity is too small compared to the system capacity:

- ∗ The liquid return will be too great → Compressor damage
- ∗ The refrigerant will concentrate in the operating unit
  → Continuous operation will become difficult due to triggering of the protection in response to the pressure high-rise, etc., and noise will be generated by the refrigerant flow when heating

SYSTEM DESIGN

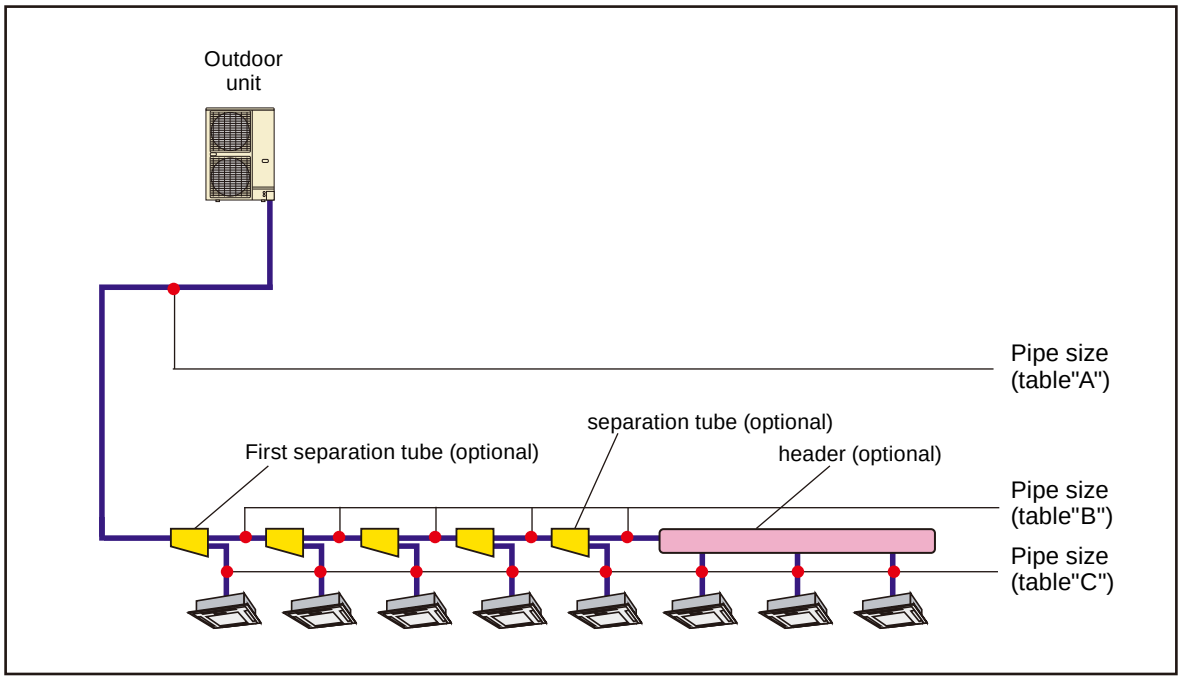
2-3. PIPE SIZE

■ PIPE DIAMETER, RECOMMENDED MATERIAL AND WALL THICKNESS

Nominal Diameter	(in)	1/4"	3/8"	1/2"	5/8"	3/4"
Outside Diameter	(mm)	6.35	9.52	12.70	15.88	19.05
Material		JIS H3300 C1220T-O or equivalent *1				
Wall Thickness *2	(mm)	0.8	0.8	0.8	1.0	1.2

*1: Allowable tensile stress ≥ 33 (N/mm^2)
*2: Endurance pressure of the pipe must be 4.2 MPa.

Please select the pipe size in accordance with regional standard.



■ PIPE SIZE SELECTION

- **Caution**

After referring to "COOLING CAPACITY TABLE" followed, select each Pipe size, Separation tube and Header from "COOLING CAPACITY TABLE" of outdoor unit and Indoor unit connected in the system.

● Pipe size table "A"

(Between outdoor unit and the first seperation tube (header))

HP	Model code	Outdoor unit cooling capacity (kW)	Outside diameter mm (in)			
			Between outdoor unit and the farthest indoor unit < 90m		Between outdoor unit and the farthest indoor unit ≥ 90m	
			Liquid pipe	Gas pipe	Liquid pipe	Gas pipe
4	36	11.2	9.52 (3/8")	15.88 (5/8")	9.52 (3/8")	19.05 (3/4")
5	45	14.0	9.52 (3/8")	15.88 (5/8")	9.52 (3/8")	19.05 (3/4")
6	54	15.5	9.52 (3/8")	19.05 (3/4")	9.52 (3/8")	19.05 (3/4")

SYSTEM DESIGN

● Pipe size table "B"

(Between separation tube to separation tube (header))

Total cooling capacity of indoor unit (kW)	Outside diameter mm (in)	
	Liquid pipe	Gas pipe
4.4 to 11.1	9.52 (3/8")	15.88 (5/8")
11.2 to 20.1	9.52 (3/8")	19.05 (3/4")

∗ If the selected pipe diameter between separation tubes (based on table "B") becomes larger than the pipe diameter between outdoor unit and the first separation tube (based on table "A"), please select the pipe whose diameter is equal to the one between outdoor unit and the first separation tube.

(If pipe diameter B > A, select pipe size from table A)

∗ "Total cooling capacity of indoor unit" is the total value for the cooling capacity of indoor unit connected downstream.

● Pipe size table "C"

(Between separation tube (header) to indoor unit)

Model code	Cooling capacity of indoor unit (kW)	Outside diameter mm (in)	
		Liquid pipe	Gas pipe
07, 09, 12, 14	2.2, 2.8, 3.6, 4.5	6.35 (1/4")	12.70 (1/2")
18, 24, 30	5.6, 7.1, 9.0	9.52 (3/8")	15.88 (5/8")
36, 45, 54 *1	11.2, 12.5, 14.0	9.52 (3/8")	19.05 (3/4")

*1: If the selected pipe diameter between separation tube (header) to indoor unit (based on table "C") becomes larger than the pipe diameter between separation tube to separation tube (header) (based on table "B"), please select the pipe whose diameter is equal to the one between separation tube to separation tube (header).

(If pipe diameter C > B, select pipe size from table B)

It is necessary to change a connection pipe diameter using Reducer.

SYSTEM DESIGN

■ INDOOR SIDE BRANCH KIT

● Separation tube

Separation tube
UTR-BP090X

● Header

Header	
3-6 Branches	3-8 Branches
UTR-H0906L	UTR-H0908L

● EV kit

These models are used for Compact Wall Mounted Type(EEV external model)

Application model	Model
AS∗E07LACH AS∗E09LACH	UTR-EV09XB
AS∗E12LACH AS∗E14LACH	UTR-EV14XB

SYSTEM DESIGN

■ COOLING CAPACITY TABLE

● Outdoor unit

HP	Cooling capacity (kW)	Model name
4	11.2	AJ∗A36LALH
5	14.0	AJ∗A45LALH
6	15.5	AJ∗A54LALH

● Indoor unit

Type	Cooling capacity (kW)	Model name
Compact Cassette	2.2	AUXB07LALH
	2.8	AUXB09LALH
	3.6	AUXB12LALH
	4.5	AUXB14LALH
	5.6	AUXB18LALH
	7.1	AUXB24LALH
Cassette	5.6	AUXD18LALH
	7.1	AUXD24LALH
	9.0	AUXA30LALH
	11.2	AUXA36LALH
	12.5	AUXA45LALH
	14.0	AUXA54LALH
Compact Duct	2.2	ARXB07LALH
	2.8	ARXB09LALH
	3.6	ARXB12LALH
	4.5	ARXB14LALH
	5.6	ARXB18LALH
Slim Duct	2.2	ARXD07LATH
	2.8	ARXD09LATH
	3.6	ARXD12LATH
	4.5	ARXD14LATH
	5.6	ARXD18LATH
	7.1	ARXD24LATH
Low Static Pressure Duct	7.1	ARXB24LATH
	9.0	ARXB30LATH
	11.2	ARXB36LATH
	12.5	ARXB45LATH

Type	Cooling capacity (kW)	Model name
Duct	7.1	ARXA24LATH
	9.0	ARXA30LATH
	11.2	ARXA36LATH
	12.5	ARXA45LATH
High Static Pressure Duct	11.2	ARXC36LATH
	12.5	ARXC45LATH
Floor / Ceiling	3.6	AB∗A12LBTH
	4.5	AB∗A14LBTH
	5.6	AB∗A18LBTH
	7.1	AB∗A24LBTH
Ceiling	9.0	AB∗A30LBTH
	11.2	AB∗A36LBTH
	12.5	AB∗A45LBTH
	14.0	AB∗A54LBTH
Compact Wall Mounted (EEV internal model)	2.2	AS∗A07LACH
	2.8	AS∗A09LACH
	3.6	AS∗A12LACH
	4.5	AS∗A14LACH
Compact Wall Mounted (EEV external model)	2.2	AS∗E07LACH
	2.8	AS∗E09LACH
	3.6	AS∗E12LACH
	4.5	AS∗E14LACH
Wall Mounted	5.6	AS∗A18LACH
	7.1	AS∗A24LACH
	8.0	AS∗A30LACH

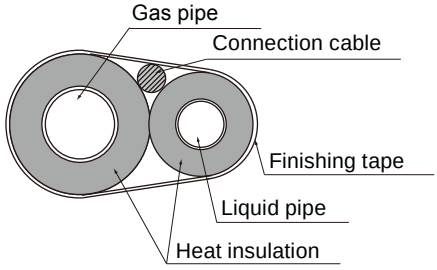
SYSTEM DESIGN

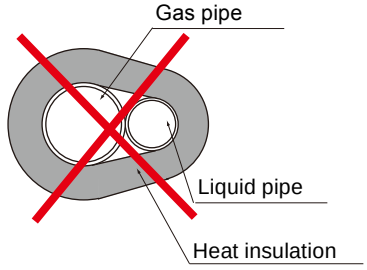
2-4. SELECTION OF PIPE HEAT INSULATING MATERIAL

- Always insulate the refrigerant pipe to prevent condensation and water droplets by the refrigerant pipe.
- Decide the thickness of the heat insulating material by referring to the recommended minimum thickness in Table 1. (For installation condition T=32°C(DB),humidity≤70%, humidity≤75%, humidity≤80%, humidity≤85%)
- When the outdoor unit is installed in a higher position than the indoor unit, fill the connecting part gap with putty, etc. to prevent the dew condensation water of the valve of the outdoor unit from flowing to the indoors from the gap between the pipe and the heat insulating material.
- Liquid pipe and gas pipe should be completely insulated with same specification.
- In case not to insulate and not to seal refrigerant pipe completely, it will become the cause of water leak.
- Table1 Size of refrigerant pipe and recommended minimum thickness of heat insulating material (In case a heat insulating material which thermal conductivity is equal to or less than 0.040 W/(m·k) is used.)

		Recommended minimum thickness for heat insulating material (mm)			
Relative humidity		≤70%	≤75%	≤80%	≤85%
Refrigerant pipe Outside diameter mm (in.)	6.35 (1/4")	8	10	13	17
	9.52 (3/8")	9	11	14	18
	12.70 (1/2")	10	12	15	19
	15.88 (5/8")	10	12	16	20
	19.05 (3/4")	10	13	16	21

- When an ambient temperature and relative humidity exceed 32°C (DB)and 85% respectively, please strengthen heat insulation of refrigerant pipe. If necessary put a heat insulation on indoor unit casing. When not strengthening heat insulation of refrigerant pipe, the surface of the heat insulation may be dewed.
- Since gas pipe becomes high temperature at heating operation for heatpump type, please select the heat insulating material which heat-resistant temperature is 120°C or more.





- Make sure that pipe is covered completely by the heat insulation,not expoding to air. Inadequate heat insulation may cause condensation.
- Do not cover heat insulation gas and liquid pipes together as above figure. It may cause condensation and capacity drop by heat loss.

SYSTEM DESIGN

2-5. ADDITIONAL CHARGE CALCULATION

- The outdoor unit is charged refrigerant at the factory.
- Additional refrigerant required to be charged on site depending on pipe length.
- The additional refrigerant charge amount is calculated according to the following formula.
- Round up the calculated result to two decimal places.

■ CALCULATION OF ADDITIONAL CHARGE REFRIGERANT

1. Calculation of additional amount for outdoor unit

Model	HP	b Factory charged amount (kg)
AJ∗A36LALH	4	4.80
AJ∗A45LALH	5	5.30
AJ∗A54LALH	6	5.30

Diameter of liquid pipe (mm)	a Additional amount for pipe length (kg/m)
ø6.35	0.021
ø9.52	0.058

2. Calculation of additional amount for pipe length

	Total length of ø9.52mm liquid pipe	a :		Total length of ø6.35mm liquid pipe	a :		Total
A=	m	x 0.058 kg/m	+	m	x 0.021 kg/m	=	kg
	kg			kg			

3. Calculation of additional charge refrigerant

A = kg Round up A to 2 decimal place.

4. Factory charged amount

b : Outdoor unit factory charged amount
B= kg

5. Total refrigerant amount check

C = A + B = kg

Note : Check the total refrigerant amount under the following conditions.

Condition	Computational formula
Total amount of refrigerant ≤ 15.7kg	C ≤ 15.7kg

When total refrigerant amount exceed limitation.

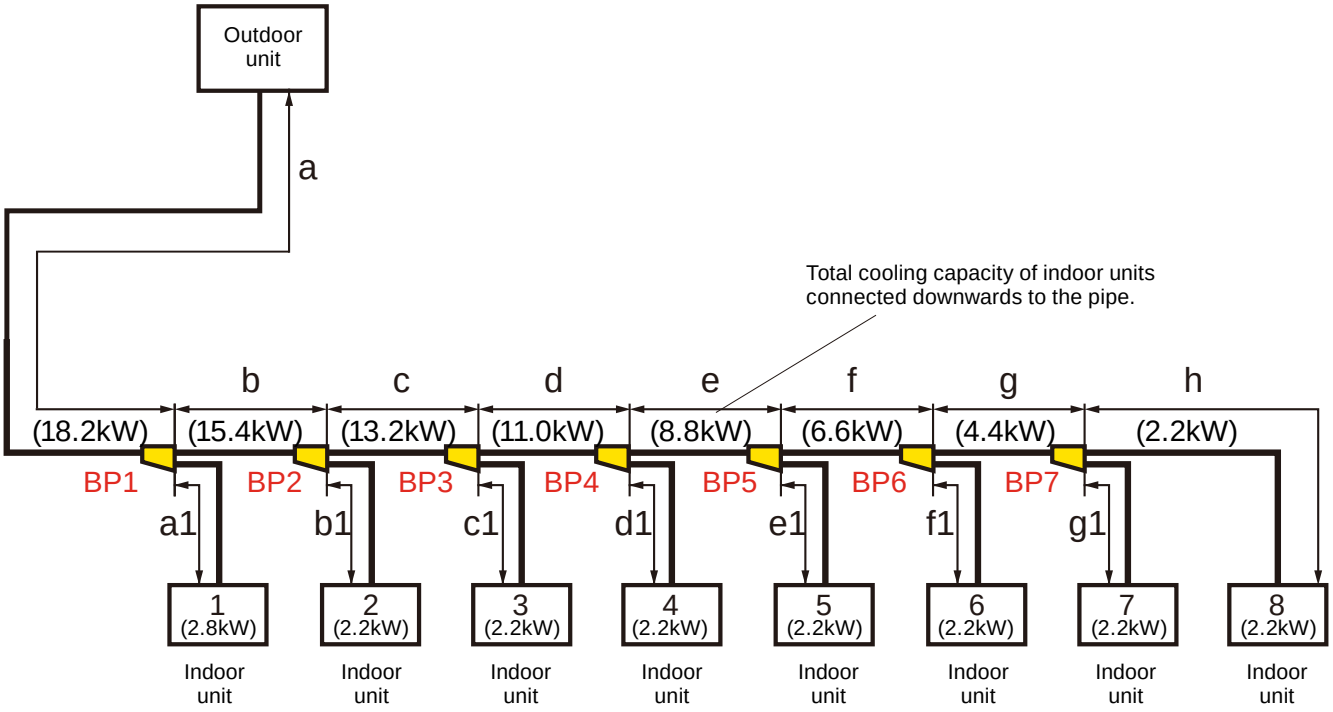
- Reduce pipe length for refrigerant system.
- Change the refrigerant system configuration.

SYSTEM DESIGN

SYSTEM DESIGN

2-6. EXAMPLE OF PIPING DESIGN

■ REFRIGERANT SYSTEM 1



● System configuration (Indoor units)

	1	2	3	4	5	6	7	8	Total Capacity (kW)
Model name	ARXD09	ARXD07	ARXD07	ARXD07	ARXD07	ARXD07	ARXD07	ARXD07	18.2
Capacity (kW)	2.8	2.2	2.2	2.2	2.2	2.2	2.2	2.2	

● System configuration (Outdoor unit)

	Outdoor unit
Model name	AJ∗A54
Capacity (kW)	15.5

● Capacity ratio

(Total indoor unit capacity) / (Total outdoor unit capacity)

= (18.2) / (15.5) = 117.4% (Within 50% to 130%)

● Selection of branch kit

Branch point No.	Model
BP1	UTR-BP090X
BP2	UTR-BP090X
BP3	UTR-BP090X
BP4	UTR-BP090X
BP5	UTR-BP090X
BP6	UTR-BP090X
BP7	UTR-BP090X

Model	Q'ty
UTR-BP090X	7

SYSTEM DESIGN

● Selection of pipe size

	a	a1	b	b1	c	c1	d	d1	e	e1
Liquid pipe	9.52	6.35	9.52	6.35	9.52	6.35	9.52	6.35	9.52	6.35
Gas pipe	19.05	12.70	19.05	12.70	19.05	12.70	15.88	12.70	15.88	12.70
Length (m) Example	40	15	5	10	5	10	5	10	5	10
	f	f1	g	g1	h					
Liquid pipe	9.52	6.35	9.52	6.35	6.35					
Gas pipe	15.88	12.70	15.88	12.70	12.70					
Length (m) Example	5	10	5	10	7					

● Limitation check

	Diagram	Example (m)	Limitation (m)	Judge
Total pipe length	Total	152	180m or less	OK
Between outdoor unit and farthest indoor unit	a+b+c+d+e+f+g+h	77	120m or less	OK
Between the first separation tube and the farthest indoor unit	b+c+d+e+f+g+h	37	40m or less	OK
Between outdoor unit and the nearest indoor unit	a+a1	55	5m or more	OK
Between outdoor unit and the first seperation tube	a	40	3m or more	OK

● Calculation of additional charge refrigerant

1. Calculation of additional amount for pipe length

Liquid pipe size	9.52	6.35
Additional refrigerant (kg/m)	0.058	0.021
Liquid pipe length (m)	70	82

A = (0.058 x 70) + (0.021 x 82) = 5.79 (kg)

2. Factory charged amount

	Model	Factory charged amount (kg)
Outdoor unit	AJ∗A54	5.30

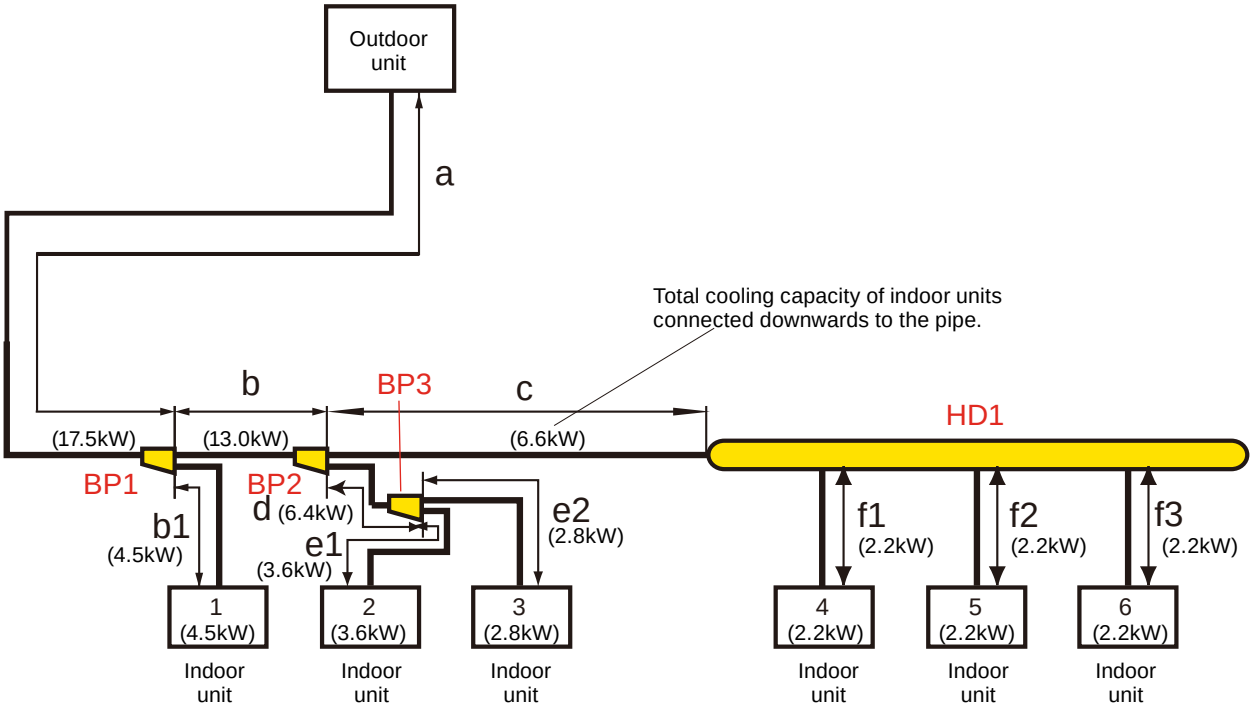
B = 5.30 (kg)

3. Total refrigerant amount check

C = A + B = 5.79 + 5.30 = 11.09(kg) < 15.7 (kg) → OK

Check pipe length and height difference between units by comparing with items shown in "2-2.PIPING LIMITATION".

■ REFRIGERANT SYSTEM 2



● System configuration (Indoor units)

	1	2	3	4	5	6	Total Capacity (kW)
Model name	ARXD14	ARXD12	ARXD09	ARXD07	ARXD07	ARXD07	17.5
Capacity (kW)	4.5	3.6	2.8	2.2	2.2	2.2	

● System configuration (Outdoor unit)

	Outdoor unit 1
Model name	AJ∗A45
Capacity (kW)	14.0

● Capacity ratio

(Total indoor unit capacity) / (Total outdoor unit capacity)

= (17.5) / (14.0) = 125.0% (Within 50% to 130%)

● Selection of branch kit

Branch point No.	Model
BP1	UTR-BP090X
BP2	UTR-BP090X
BP3	UTR-BP090X
HD1	UTR-H0906L

Model	Q'ty
UTR-BP090X	3
UTR-H0906L	1

SYSTEM DESIGN

● Selection of pipe size

	*a	b	b1	c	d	e1	e2	f1	f2	f3
Liquid pipe	9.52	9.52	6.35	9.52	9.52	6.35	6.35	6.35	6.35	6.35
Gas pipe	19.05	19.05	12.70	15.88	15.88	12.70	12.70	12.70	12.70	12.70
Length (m) Example	60	15	10	15	5	10	5	10	5	10

∗ Pipe size "a" selection : The length that between outdoor unit and the farthest indoor unit.
a + b + c + f3 =100 > 90m

Therefore Gas pipe must be size up from 15.88mm to 19.05mm. (Refer 2-3. PIPE SIZE)

● Limitation check

	Diagram	Example (m)	Limitation (m)	Judge
Total pipe length	Total	145	180m or less	OK
Between outdoor unit and farthest indoor unit	a+b+c+f3	100	120m or less	OK
Between the first separation tube and the farthest indoor unit	b+c+f3	40	40m or less	OK
Between outdoor unit and the nearest indoor unit	a+b1	70	5m or more	OK
Between outdoor unit and the first seperation tube	a	60	3m or more	OK

● Calculation of additional charge refrigerant

1. Calculation of additional amount for pipe length

Liquid pipe size	9.52	6.35
Additional refrigerant (kg/m)	0.058	0.021
Liquid pipe length (m)	95	50

A = (0.058 x 95) + (0.021 x 50) = 6.56 (kg)

2. Factory charged amount

	Model	Factory charged amount (kg)
Outdoor unit	AJ∗A54	5.30

B = 5.30 (kg)

3. Total refrigerant amount check

C = A + B = 6.56 + 5.30 = 11.86 (kg) < 15.7 (kg) → OK

Check pipe length and height difference between units by comparing with items shown in "2-2.PIPING LIMITATION".

SYSTEM DESIGN

3. PIPING CONNECTION

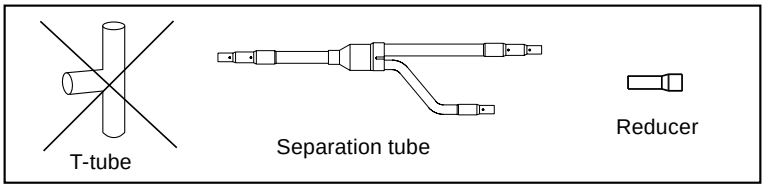
3-1. CAUTION OF PIPING

■ CAUTION

Keep the permissible length of every piping limitation to prevent a defect or cooling/heating failure.

● Piping material

- Use the designated size (Diameter & thickness) of refrigerant pipes.
- Those pipes purchased locally may contain dust inside. Please blow out the dust by dried inert gas when using.
- To process the branch, do not use T-shaped pipe, which causes a uneven refrigerant flow.
  Use the optionally available standard branch kit.



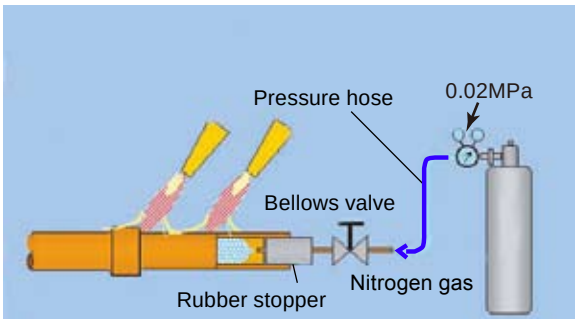
- When replacing the unit, never use piping which has been used for previous installations.
  Only use the new piping.

● Piping process strage

- Be careful to avoid the dust or water falling into the pipe when performing piping process and piping installation.
- When processing the pipe, make the number of bending portion as few as possible, and the bending radius as large as possible.
- If the diameter of the required pipe is different from the branch unit, either cut it out or use the reducer.

● Brazing

- While Brazing the pipes, be sure to blow dry nitrogen gas through them.
- If nitrogen gas is not blown through the pipes while they are being brazed, an oxidized layer may form on the inside of the pipes. If this occurs, the cooling efficiency may decrease and the air conditioner unit (compressor, valves, etc.) cause malfunction.



- When brazing the pipes, do not use flux. If the flux is chlorine-based, the pipes will corrode and when the flux contains fluorine, the refrigerant oil will deteriorate, etc. Using the flux has an adverse affect on the refrigerant piping system.
- For brazing materials, use phosphor copper solder that does not require flux.

● Piping treatment

- The pipes vibrate, expand, and contract during operation, so if loads are concentrated in one area, it could cause cracks in the pipes. Provide the pipe supports every 2 to 3m.
- Make sure to insulate the refrigeration pipes separately with ample thickness of heat-resistant polyethylene form etc. For the connecting portion, apply the enough insulation to avoid any gap.

SYSTEM DESIGN

■ CAUTION

● Brazing

While brazing the pipe, be sure to blow dry nitrogen gas through the pipes.

If not used, it will be caused to damage for compressor and clog the strainer and electronic expansion valve.

Example) Inside state of brazing pipe section

Nitrogen gas used	Nitrogen gas used but not sufficient (Oxygen gas still inside the pipe)	Nitrogen gas does not used
		

SYSTEM DESIGN

3-2. PIPING TO OUTDOOR UNIT

■ OPENING A KNOCKOUT HOLE

⚠ CAUTION
● Be careful not to deform or scratch the panel while opening the knock out holes.
● To protect the piping insulation after opening a knock out hole, remove any burrs from the edge of the hole. It is recommended to apply rust prevention paint to the edge of the hole.

- Pipes can be connected from 4 directions, front, lateral side, rear side and bottom. (Fig. A)
- When connecting at the bottom, remove the service panel and piping cover on the front of the outdoor unit, and open the knock out hole provided at the bottom corner of the piping outlet.
- It can be installed as shown on “Fig. B” cutting out the 2 slits as indicated on “Fig. C”. (When cutting slits, use a steel saw.)

Fig. A

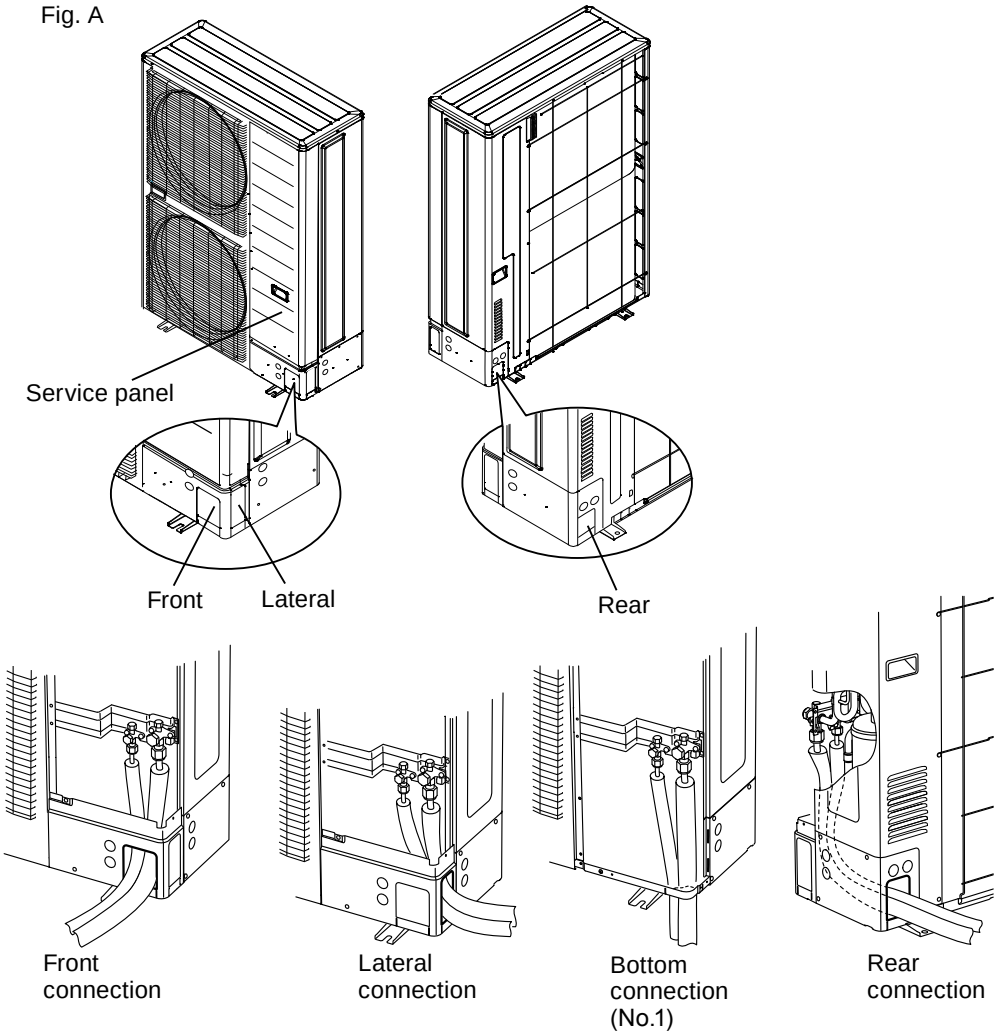


Fig. B

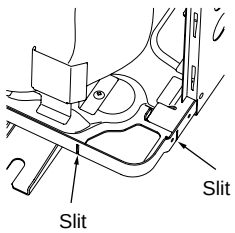
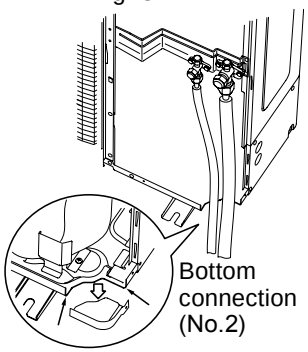


Fig. C



SYSTEM DESIGN

■ PIPE CONNECTION

⚠ CAUTION

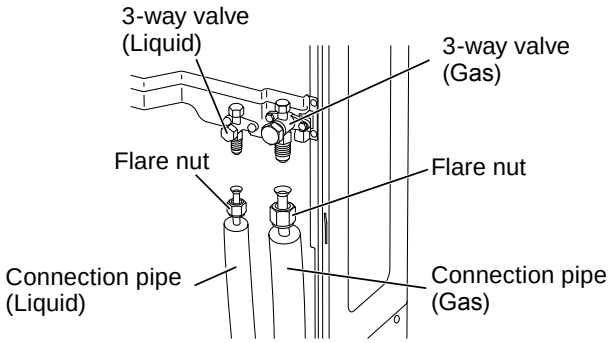
- Be sure to install the pipe against the port on the indoor unit and the outdoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.
- Do not remove the flare nut from the outdoor unit pipe until immediately before connecting the connection pipe.
- After installing the piping, make sure that the connection pipes do not touch the compressor or outer panel. If the pipes touch the compressor or outer panel, they will vibrate and produce noise.

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

(2) Center the pipe against the port on the outdoor unit, and then turn the flare nut by hand.

(3) Tighten the flare nut of the connection pipe at the outdoor unit valve connector.

(4) After tightening the flare nut by hand, use a torque wrench to fully tighten it.



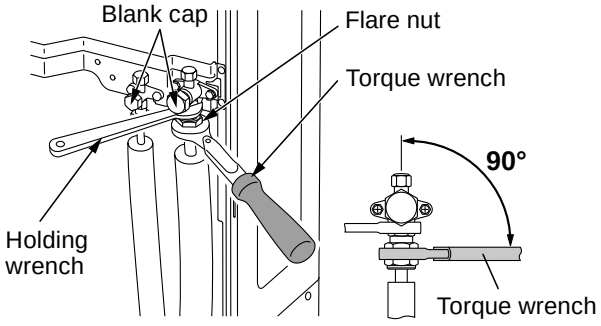
⚠ CAUTION

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

SYSTEM DESIGN

SYSTEM DESIGN

- Outer panel may be distorted if fastened only with a wrench. Be sure to fix the elementary part with a spanner and fasten with a wrench (refer to below diagram).
- Do not apply force to the blank cap of the valve or hang a wrench, etc., on the cap. It may cause leakage of refrigerant.



Flare nut [mm (in.)]	Tightening torque [N·m]
6.35 (1/4) dia.	16 to 18
9.52 (3/8) dia.	32 to 42
12.70 (1/2) dia.	49 to 61
15.88 (5/8) dia.	63 to 75
19.05 (3/4) dia.	90 to 110

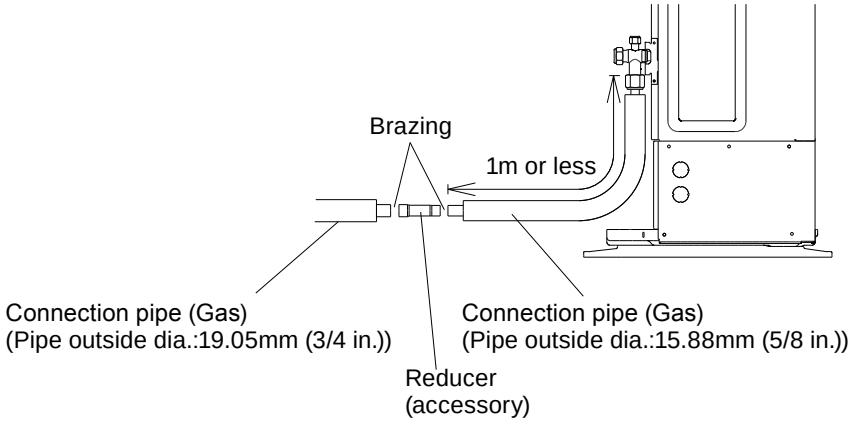
In the case of AJ∗A54LALH

● It is necessary to change a connection pipe diameter by using Reducer.

(1) Reducer must be brazed outside of the outdoor unit.

(2) Distance between 3-Way-Valve and Reducer ≤ 1m

(3) The part of Reducer do insulation processing after brazing .



Example. Case of front connection

● Handling precautions for the valves

● Mounted part of Blank cap is sealed for protection.

● Fasten blank cap tightly after opening valves.

Blank cap [mm (in.)]	Tightening torque [N·m]
6.35 (1/4)	20 to 25
9.52 (3/8)	20 to 25
12.70 (1/2)	25 to 30
15.88 (5/8)	30 to 35
19.05 (3/4)	35 to 40

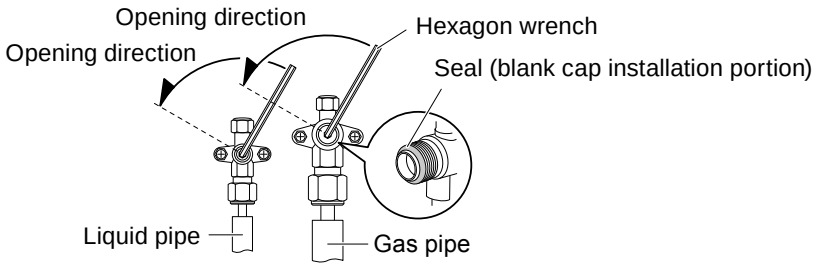
SYSTEM DESIGN

Operating the valves

● Use a hexagon wrench (size 4 mm).

● Opening (1) Insert the hexagon wrench into the valve shaft, and turn it counterclockwise.
(2) Stop turning when the valve shaft can no longer be turned. (Open position)

● Closing (1) Insert the hexagon wrench into the valve shaft, and turn it clockwise.
(2) Stop turning when the valve shaft can no longer be turned. (Closed position)



3-3. SEPARATION TUBE

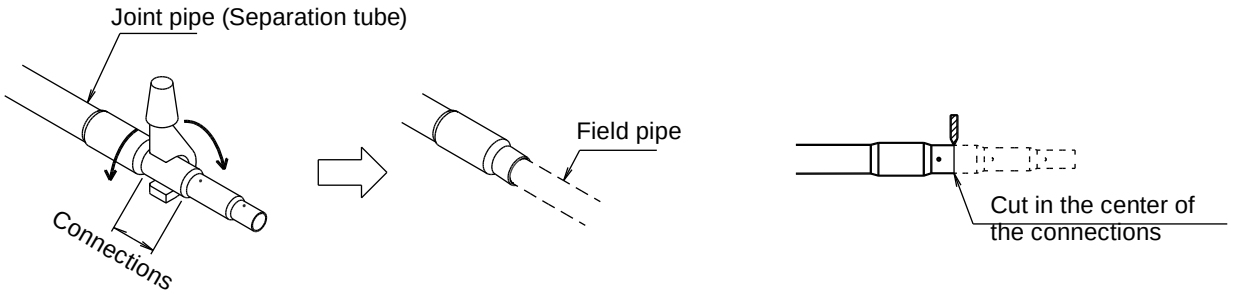
■ INSTALLATION

● Separation tube

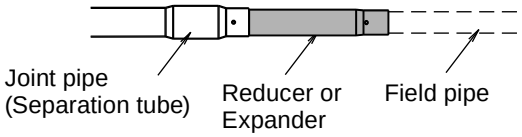
Separation tube
UTR-BP090X

● Installation

Use the pipe cutter to cut at the location which matches the piping size when the piping size is different.



When the pipe size of the separation tube itself does not match, or when piping sizes differ even if it cuts the pipe, use attached Reducer or attached Expander.

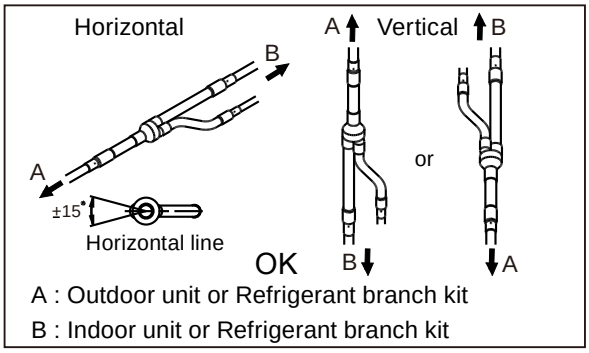


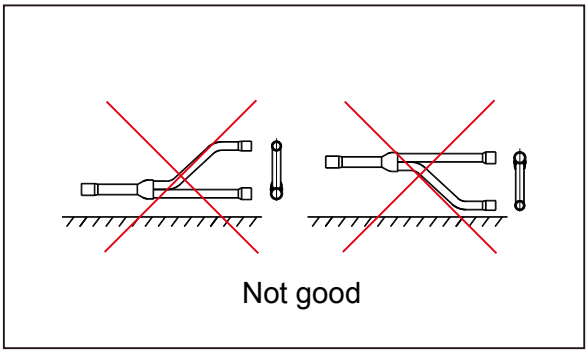
● Restriction when install

Be sure following restriction.

1) Installation angle

Install the separation tube so that it branches either horizontally or vertically.



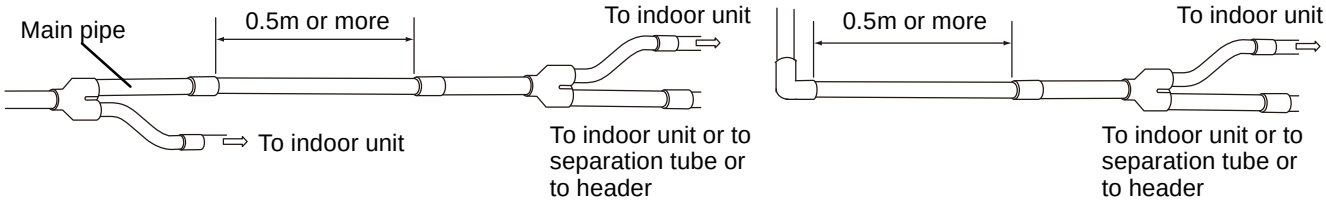


SYSTEM DESIGN

SYSTEM DESIGN

2) Straight pipe length

A straight pipe (minimum lenght 0.5m) before separation tube is necessary in order to separation the rifregerant exactly.

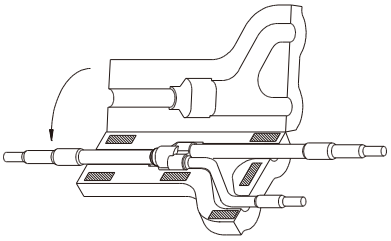


⚠Caution
Keep the distance 0.5m or more for straight part to separation tube, in order to prevent the outdoor unit mulfunction and generation of refrigerant noise

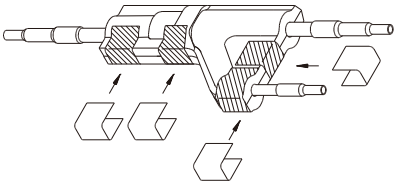
● Heat insulation installation

After brazing the pipes, and leak check use the supplied insulation to insulate them.

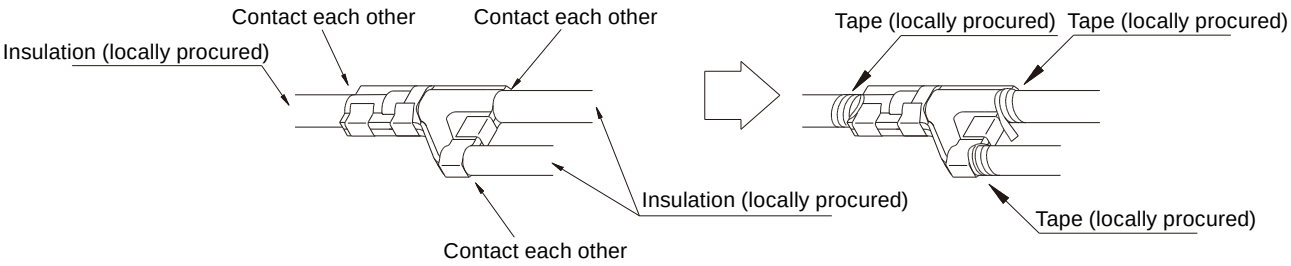
1) Remove the protective sheet from the double-stick that is affixed to the heat insulation.



2) Be sure to fix each insulation at 4 positions with tape (accessory) in the following figure.

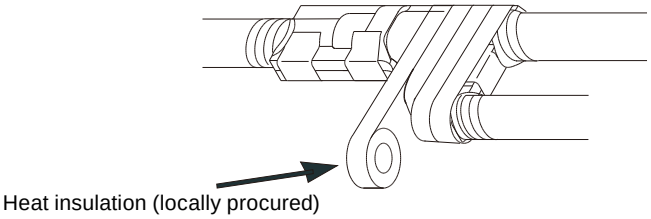


3) Seal the connection part with tape to avoid any gap.



⚠Caution
● Insulate the liquid and gas pipe completely. If not, it may cause the water condensaton or performance reduction. ● Wrap the heat insulation with tape or pipe cover in order to extend the life time of heat insulation. ● Take proper measurement to strenghten by using another heat insulation at the following installing enviroment (a) Environment temperature ≥ 35°C and humidity 85%. (b) Environment temperature ≥ 25°C and humidity 90%.

Installation example



SYSTEM DESIGN

3-4. HEADER

■ HEADER INSTALLATION

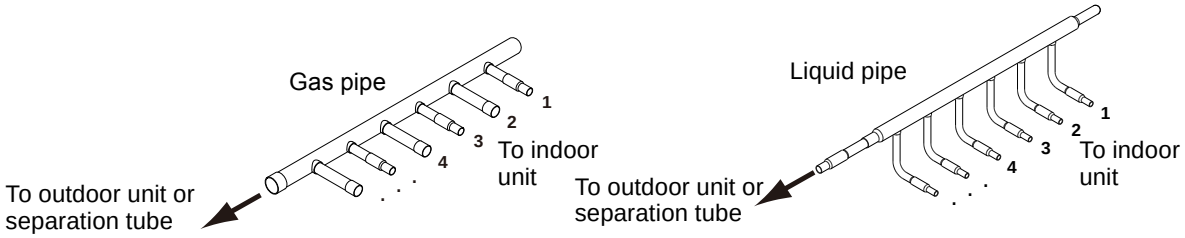
● Header selection

Header	
3 - 6 Branches	3 - 8 Branches
UTR-H0906L	UTR-H0908L

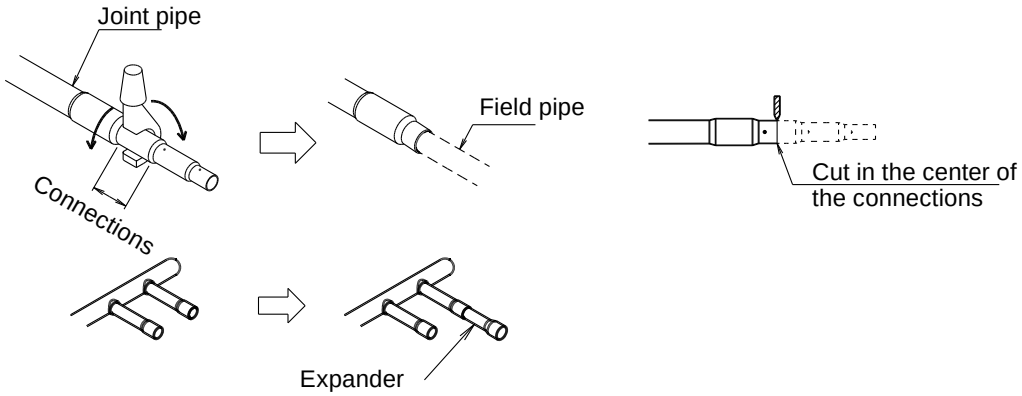
When Separate into two branches, please use a separation tube instead.

● Installation

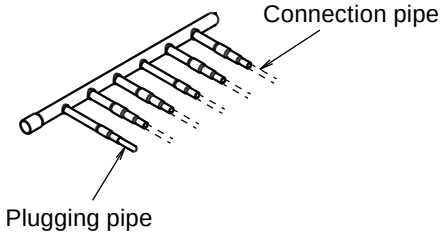
(1) When connecting the connection pipes from the indoor units, connect them to the header branch pipes in order of 1, 2, 3, etc.



(2) Use a pipe cutter to cut at the location that matches the piping size or use expanders as necessary.



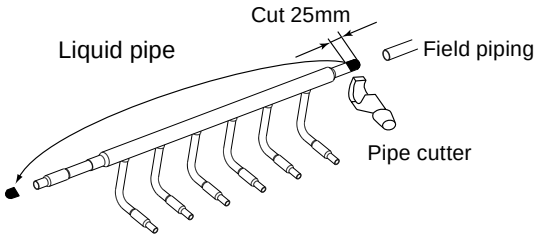
(3) Attach a plugging pipe provided if there is no piping connected at the headers.



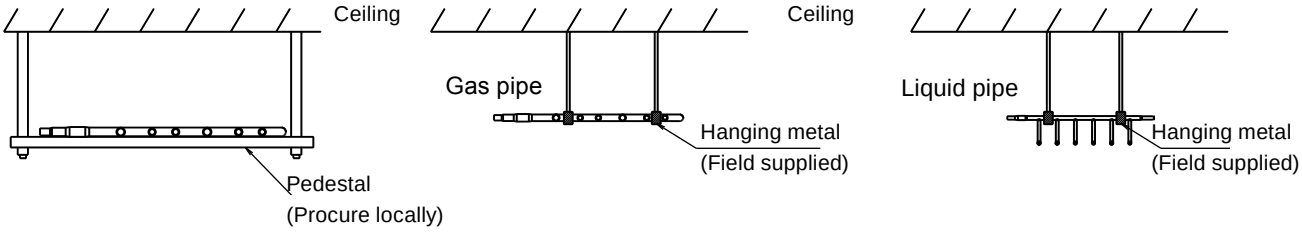
SYSTEM DESIGN

SYSTEM DESIGN

(4) Connecting pipe field supplied from outdoor unit, cut the pipe end to connect the pipe and close the opposite end.



(5) Use header support as necessary.

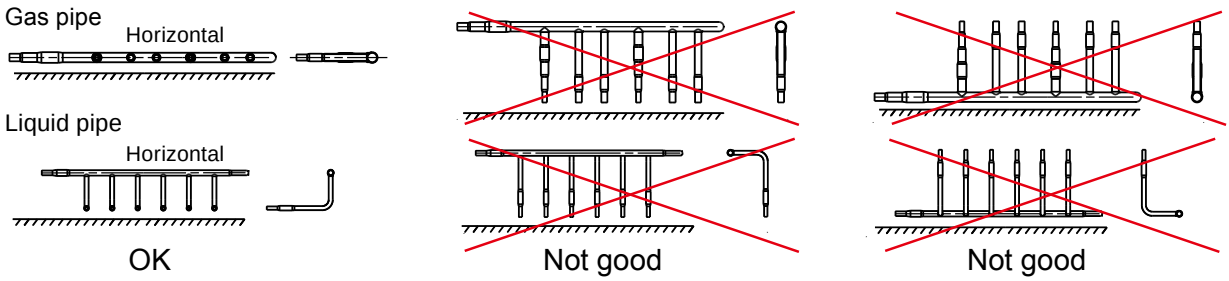


● Restriction when install

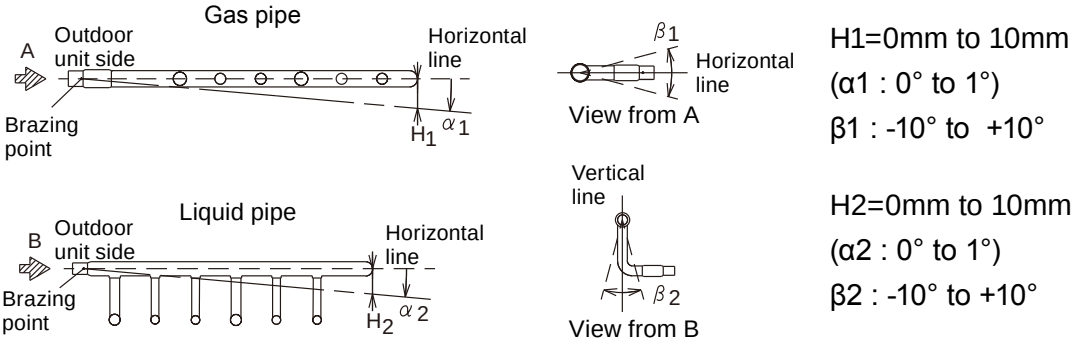
Be sure following restriction.

1) Installation angle

Install the header so that it branches horizontally.



Use a level to make sure that the header is positioned as shown in following figure, and then, secure it in place.



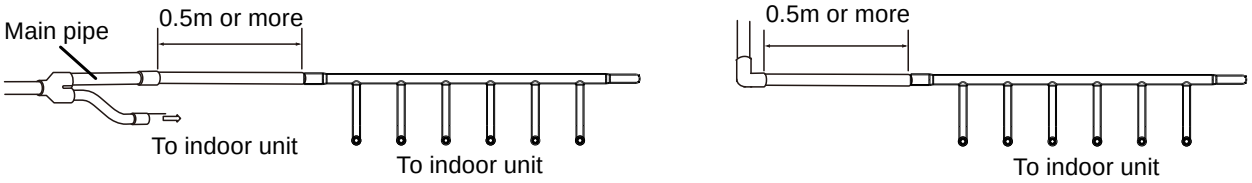
H1=0mm to 10mm
(α1 : 0° to 1°)
β1 : -10° to +10°

H2=0mm to 10mm
(α2 : 0° to 1°)
β2 : -10° to +10°

SYSTEM DESIGN

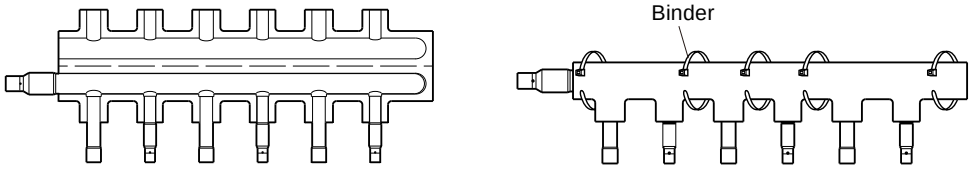
2) Straight tube length

A straight tube (minimum length 0.5m) is necessary before header in order to separate the refrigerant exactly.



● Heat insulation installation

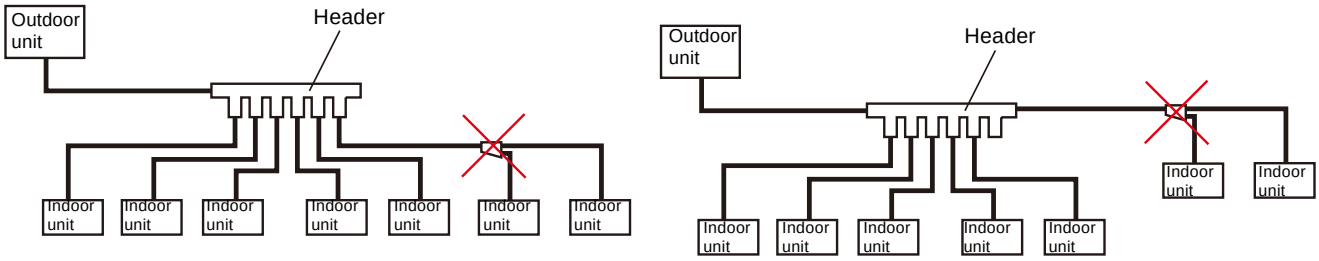
After brazing the piping, attach heat insulation.
Remove the protective paper for the tape on the heat insulation for the header and attach it.
Tighten by using binders at five locations.



Cover the plugging pipe with heat insulation and seal with tape.

● Caution

Separation tube is not allowed to install header kit.



SYSTEM DESIGN

SYSTEM DESIGN

3-5. EV KIT

An EV kit must be required for the compact wall mounted type (EEV external model) on the liquid pipe side.

■ EV KIT SELECTION

Model name	Application indoor units
UTR-EV09XB	AS∗E07LACH, AS∗E09LACH
UTR-EV14XB	AS∗E12LACH, AS∗E14LACH

A wrong selection could cause improper operation, because the built-in electronic expansion valve is different.

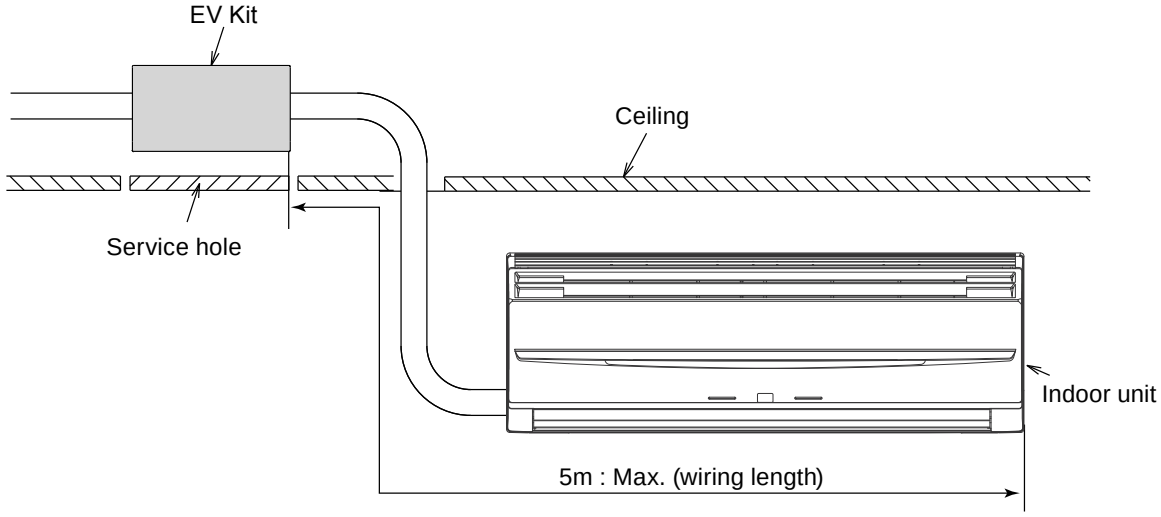
■ MODELS REQUIRE EV KIT :

AS∗E07LACH, AS∗E09LACH, AS∗E12LACH, AS∗E14LACH

- Select the above indoor unit for use in small and, quiet rooms such as hotel or bedroom, where noise would be a distraction.
- The other indoor units, do not require an EV kit.

■ DECIDING INSTALLATION LOCATION

- Keep the installed piping and wiring length less than 5m.
- EV kit should be considered to install away from the living quarters, such as above the ceiling.
- Install the EV kit where it can be accessed for servicing.



⚠CAUTION

Do not install EV kit in a location with any of the following conditions.

- Do not install the kit outdoor.
- Do not install the kit where the danger of combustible gas leakage.
- Do not install the kit where near a fire place or other heating appartatus.
- Do not install the kit where oily smoke, machine oil (i.e. factory),salty envilopment with direct sea breeze.
- Do not install the kit where too much of dust.
- Do not install the kit where corrosive gas such as sulphurous acid gas is generated.
- Do not install the kit where exposed to rains and direct sunlight.

SYSTEM DESIGN

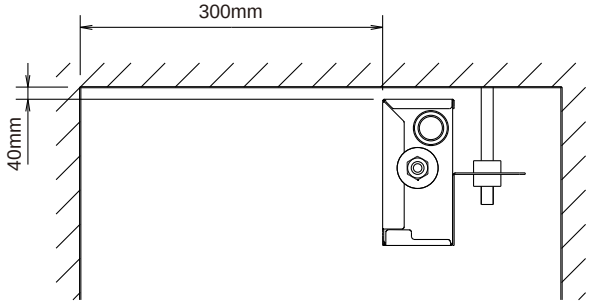
Decide the mounting position with the customer as follows:

(1) Install EV kit level on strong wall, floor, ceiling which is not subject to vibration.

(2) Install EV kit where the connection pipe can be easily installed.

(3) Install EV kit where vibration and noise are not amplified.

(4) Take servicing, etc. into consideration and leave the space as follows.

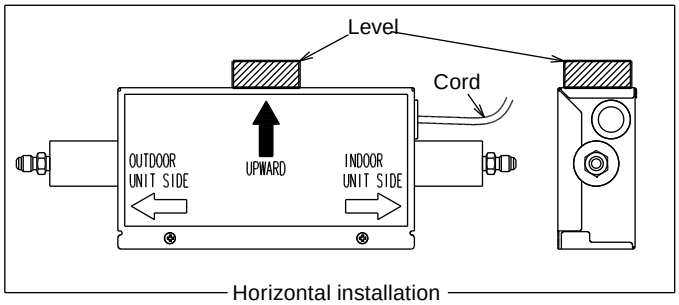


■ INSTALLATION METHOD

⚠CAUTION

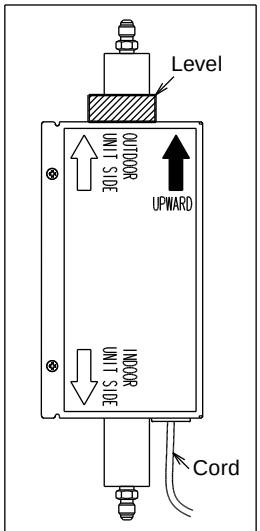
The installation direction can be selected either horizontal (Pattern A) or vertical (Pattern B), but keep the inclination within 5º.

Pattern A



Horizontal installation

Pattern B



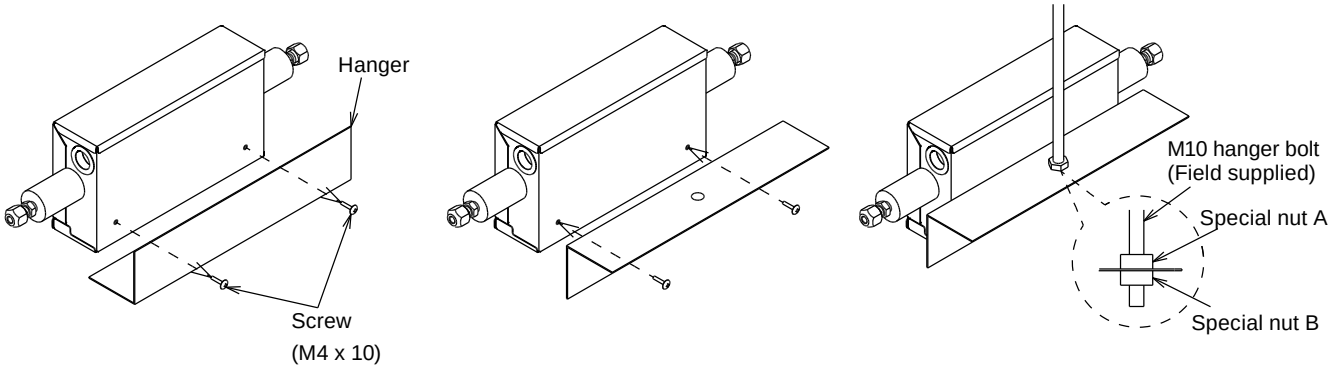
Vertical installation

Incorrect installation direction or angle may cause improper operation.

● Suspended installation

(1) Remove the 2 screws (M4x10) and replace them with the hanger.

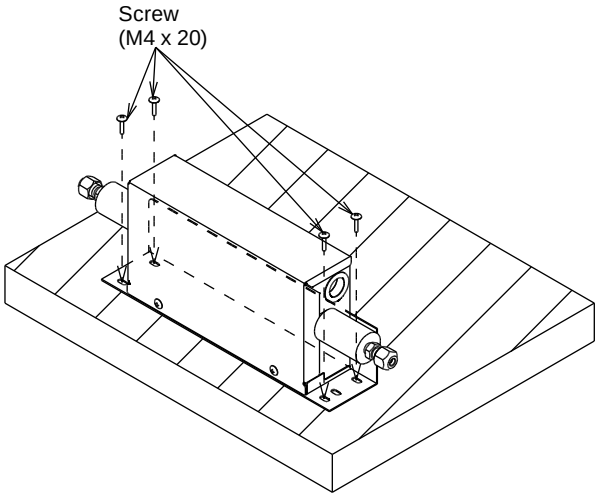
(2) Use the hanger bolts to fasten the hanger.



SYSTEM DESIGN

● Floor installation

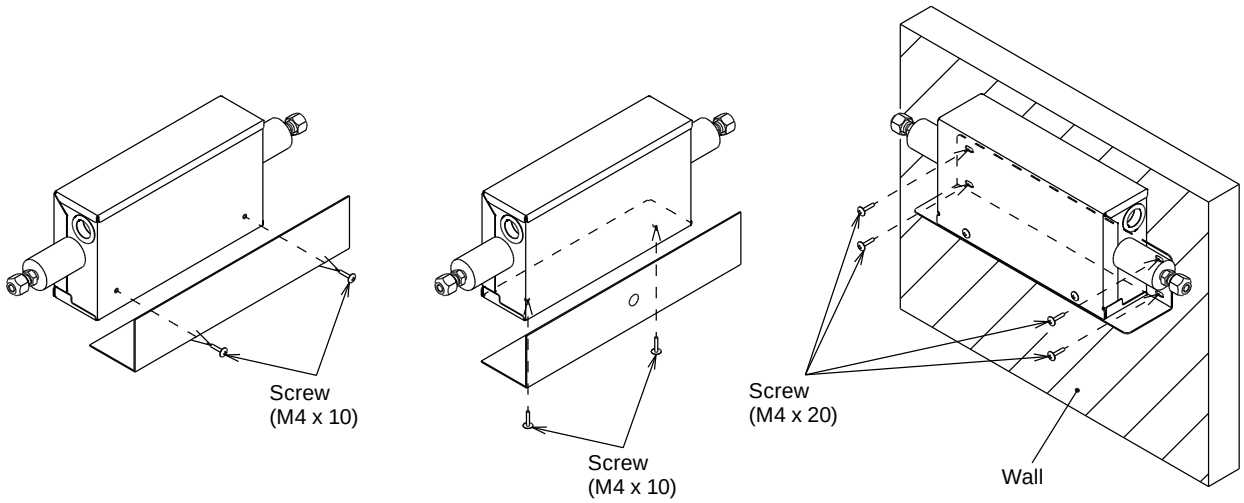
Use the 4 screws to fasten the unit to the floor.



● Wall mounted installation

(1) Remove the 2 screws (M4x10) and replace them with the hanger.

(2) Use the 4 screws (M4x20) to fasten the unit to the wall.



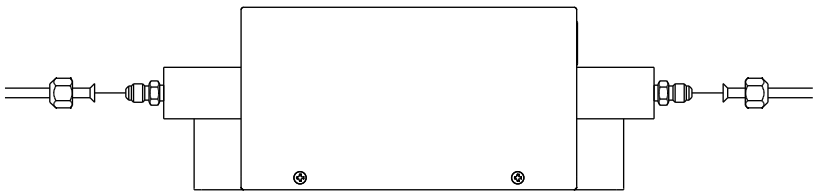
SYSTEM DESIGN

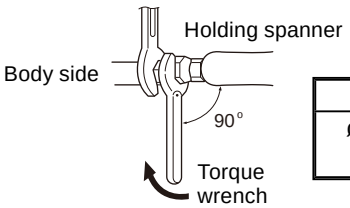
■ CONNECT THE PIPES

Connect EV kit to liquid pipe of compact wall mounted (EEV external model) indoor unit.

Pipe size	Indoor unit side	ø 6.35mm	Flare connection
	Outdoor unit side	ø 6.35mm	

Use a toruque wrench to tighten the flare nut.

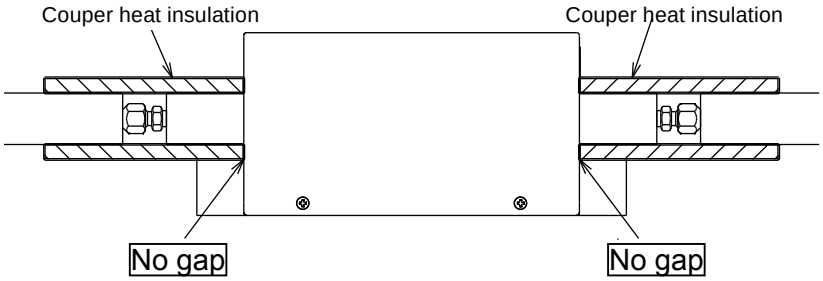




Pipe	Tightening torque
ø 6.35 (1/4")	16.0 to 18.0 N•m

■ ATTACH THE INSULATION MATERIAL

Insulate by the coupler heat insulation arround the pipe.

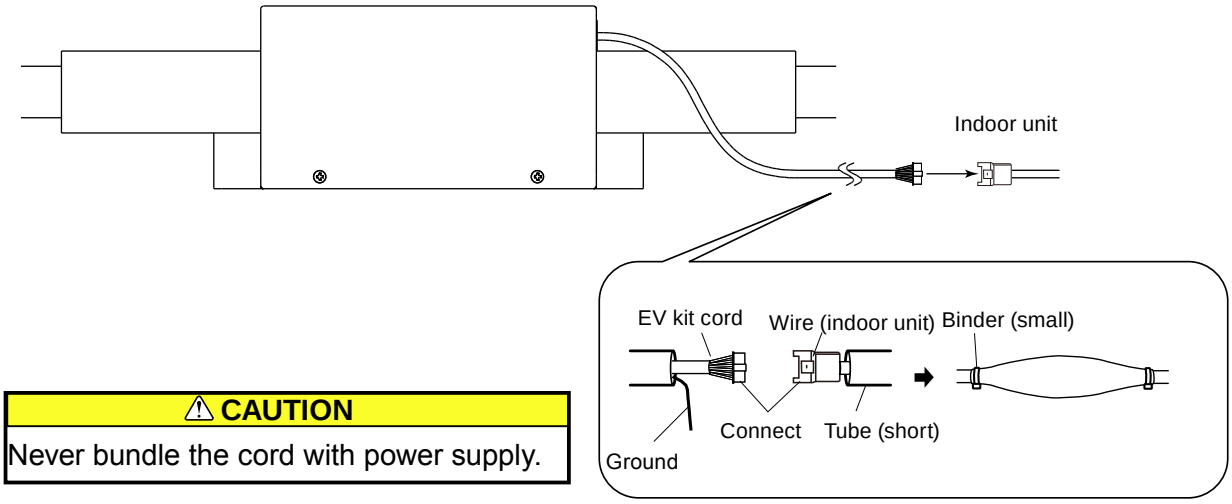


■ WIRING PROCEDURE

(1) Connect the EV kit cord to the indoor unit.

(2) Wrap the tube arround the connection, and fasten both ends binders.

(3) Connect the ground to the indoor unit.



⚠ CAUTION

Never bundle the cord with power supply.

■ SPECIFICATIONS

Model name	UTR-EV09XB	UTR-EV14XB
Dimensions (mm) (H x W x D)	121 x 416 x 65	
Weight (g)	1500	
Connection cord length (m)	5	

SYSTEM DESIGN

4. WIRING DESIGN

4-1. ELECTRICAL WIRING

■ PRECAUTION FOR ELECTRICAL WIRING

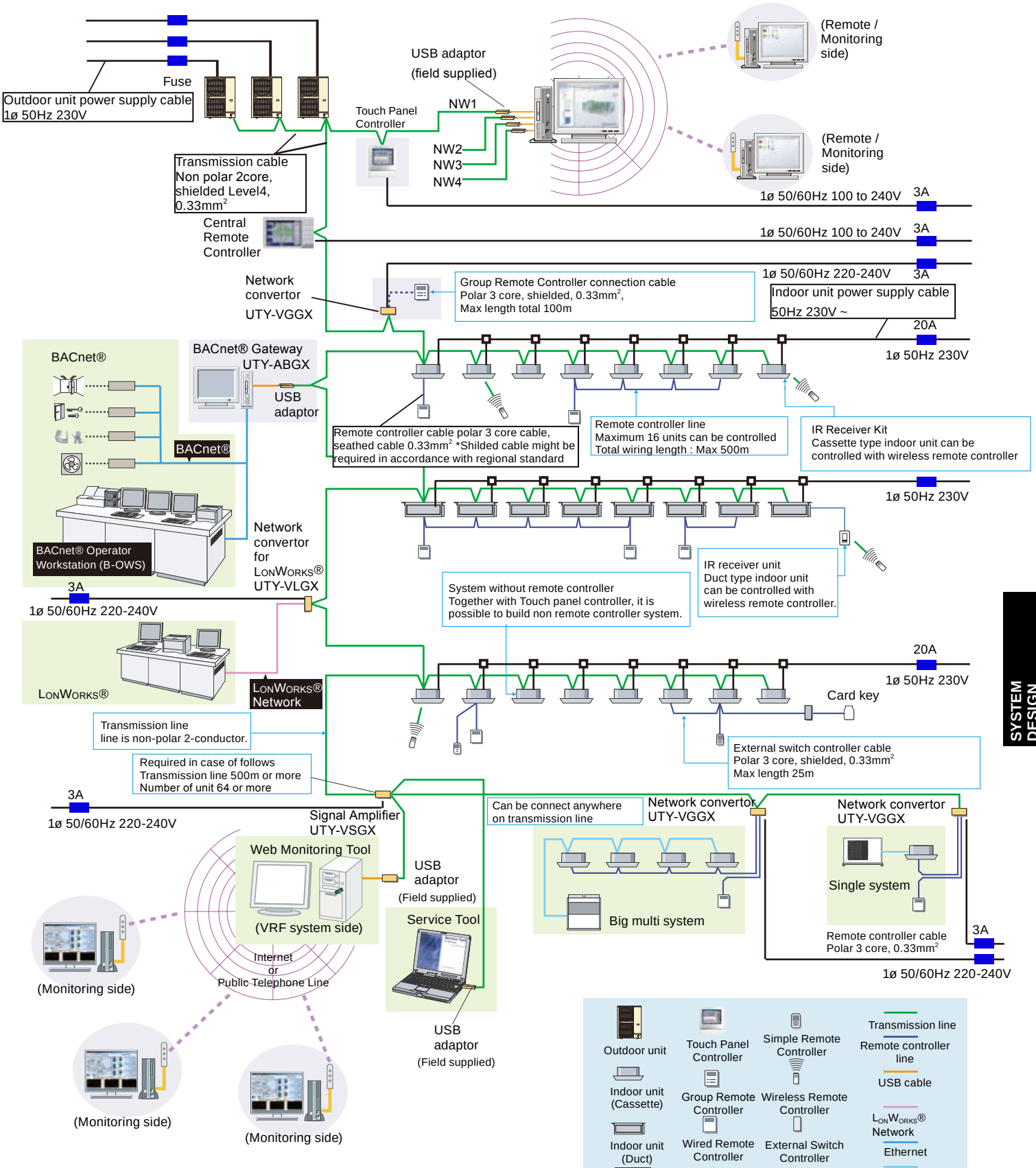
Regulation on wire diameter and selecting circuit braker size differ from locality.

Install in accordance with regional standard.

⚠WARNING
● Do not turn on the power until all installation work is complete.
● Always install a circuit breaker in the power supply cable for the unit. Failure to use a circuit breaker could result in electrical shock or fire.
● Before starting work, check that power is not being supplied to the unit.
● Connect the connection cable firmly to the terminal board. Imperfect installation may cause a fire.
● Always fasten the outside covering of the connection cable with the cord clamp. (If the insulator is chafed, electric leakage may occur.)
● Always connect the ground wire.
● Never install a condenser for improving the power factor. (It will not improve the power factor and the condenser will become abnormally hot.)

SYSTEM DESIGN

■ WIRING SYSTEM OUTLINE



Disconnect switch might be required in accordance with the regional standard.

SYSTEM DESIGN

4-2. POWER SUPPLY CABLE WIRING

■ POWER SUPPLY CABLE SPECIFICATIONS

Use a separate power supply for the outdoor unit and indoor unit.

● Outdoor unit

Model	Recommended cable size (mm^2)		Fuse capacity (A)	Breaker for leakage current	Remarks
	Power cable	Earth cable			
AJ∗A36LALH	6	4	32	30mA 0.1sec or less	230V~ 50Hz 2Wire + ground
AJ∗A45LALH	6	4	32		
AJ∗A54LALH	6	4	32		

- Select wire size base on the value of MCA and TOCA. In the table of "3.OUTDOOR UNITS",example of wiring specification for outdoor unit is given.
- Select circuit breaker for outdoor unit based on the value of MCA of "3.OUTDOOR UNITS". The breaker should not operate when starting current is generated.

● Indoor unit

Model	Recommended cable size (mm^2)	Fuse capacity (A)	Breaker for leakage current	Remarks
All models	2.5	20	30mA 0.1sec or less	230V~ 50Hz 2Wire + ground

- Select cable size base on the value of total MCA of the indoor units connected. and if necessary divided the system which the total MCA of the indoor units connected must be smaller than 15 (A). The indoor units shall be connected up whthin refrigerant system.
- In order to be influenced of a breaker stop, please divide a power supply circuit for every refrigerant system.
- Please attach at least one breaker per refrigerant system.
- Please design the power supply circuit to keep the voltage drop within 2%.

⚠Caution

- Obtain the distribution network operator's agreement about the power capacity of the power supply system, specifi cation of the cable and the harmonic current, and etc. when you connect the outdoor unit with the power supply.
- This product is intended for professional use. Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- Above "Wire size" and "Fuse capacity" are an example.
- Regulation of wire size and circuit breaker differs from each locality, please refer in accordance with regional standard.
- Specific wiring requirement should be applied Type 245 IEC 57 or equivalent.
- To prevent the electrical noise malufunction and hazards from insulation failure, the unit should be connected to ground.
- A disconnect switch may be required for ease of maintenance in accordance with regional standard for each unit. Please check the regional standard. Make the wire length between disconnect switch and unit terminal as short as possible.
- When connecting the indoor unit power supply from part of a 3-phase power source, recommend to take the power from each phase uniformly to prevent unbalance.
- All field wiring and components must be provided by a licensed electrician.
- Use copper conductors only.

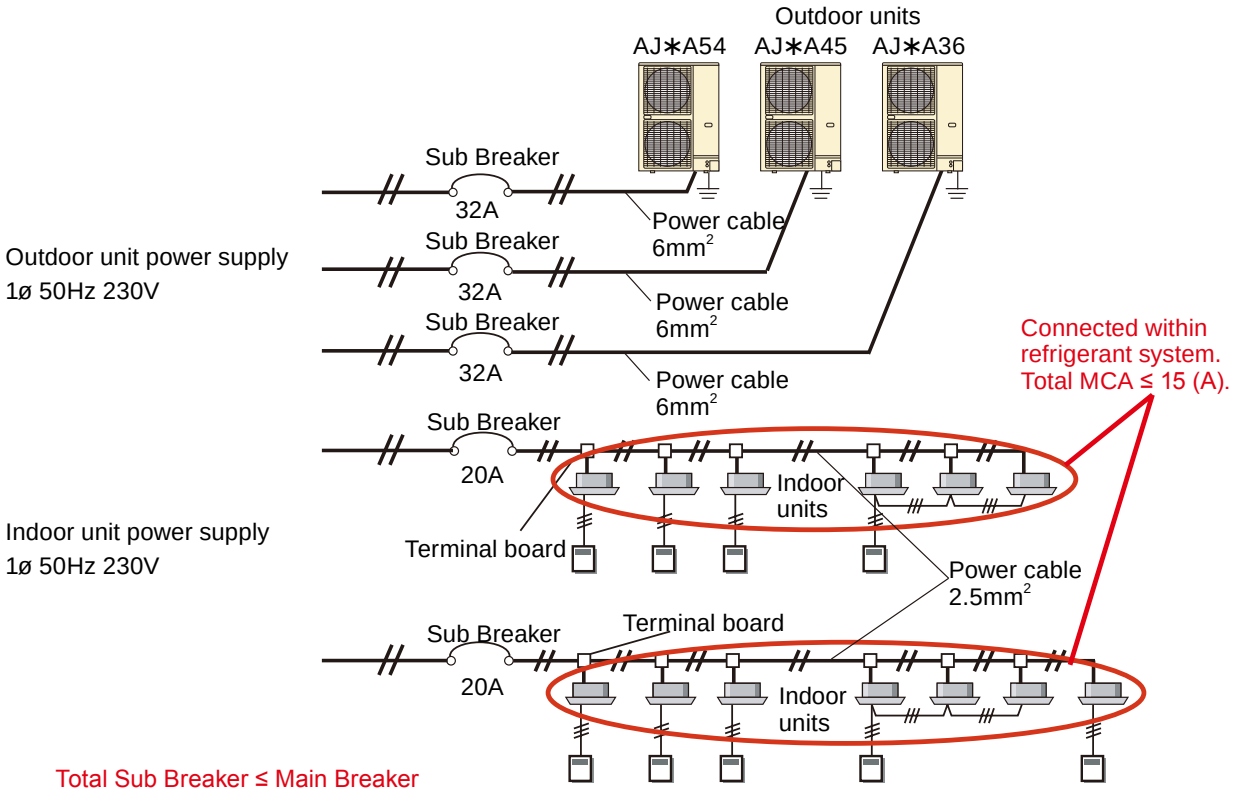
SYSTEM DESIGN

■ POWER SUPPLY CABLE WIRING

● Example : Power supply cable wiring. (Using terminal board for indoor units)

⚠Caution

- 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.
- Regulation of wire size and circuit breaker differs from each locality, please refer in accordance with regional standard.



SYSTEM DESIGN

4-3. TRANSMISSION LINE

■ TRANSMISSION WIRING SPECIFICATIONS

Use	Size	Wire type	Remarks
Transmission cable	0.33mm^2 (22AWG)	LEVEL 4 (NEMA) non-polar 2core, twisted pair solid core diameter 0.65mm	LONWORKS® compatible cable

Use the shielded wire specified and always ground it both end.

22AWG (0.65mm) Level 4 cable with shielded (National Electrical Manufacturers Association (NEMA) Differs from the Category 4 specification proposed by the Electronic Industries Association / Telecommunication Industry Association (EIA/TIA)

● Reference specifications for transmission cable

No.	Item		Unit	Specifications
1	Wire type		mm	0.65dia (22AWG) Twisted pair with shield
2	Pair (Twisted pair cable) Note 1		-	1P or 2P
3	Loop DC Resistance (20°C)		Ohm/km	Less than 118
4	DC Resistance Unbalancing (20°C)		%	Less than 5
5	Dielectric Voltage (Between conductor to conductor)		V/min	AC 350
6	Insulation Resistance (20°C) (Between conductor to conductor)		Mohm-km	More than 500 (after charging DC500V 1min.)
7	Static Capacitance between Conductors	1KHz	nF/km	Less than 56
8	Unbalanced Static Capacitance (To Ground)	1KHz	nF/km	Less than 3.28
9	Characteristic Impedance	772KHz	Ohm	102+ - 15% (87 to 117)
		1MHz		100+ - 15% (85 to 115)
		4MHz		100+ - 15% (85 to 115)
		8MHz		100+ - 15% (85 to 115)
		10MHz		100+ - 15% (85 to 115)
		16MHz		100+ - 15% (85 to 115)
		20MHz		100+ - 15% (85 to 115)
10	Attenuation	772KHz	dB/km	Less than 15
		1MHz		Less than 18
		4MHz		Less than 36
		8MHz		Less than 49
		10MHz		Less than 56
		16MHz		Less than 72
		20MHz		Less than 79
11	Cross talk attenuation (Note 2)	772KHz	dB/km	Less than 58
		1MHz		Less than 56
		4MHz		Less than 47
		8MHz		Less than 42
		10MHz		Less than 41
		16MHz		Less than 38
		20MHz		Less than 36

Note :

- Number of twist is not specified. However, it shall satisfy the electrical specifications such as characteristic impedance, attenuation, etc. (Example : More than 40times/m)
- Cross talk attenuation is applied when the twisted cable has 2 pairs (2P)
- Material is not specified. However, it shall be selected by considering the operating environment (Temperature, Humidity), and the regional regulation by the environmental condition (ROHS Directive, etc.)
- Mechanical specification is not specified. However, it shall be selected by considering the operating environment.
- Never bundle transmission cable with power supply cable.

SYSTEM DESIGN

■ WIRING RULES

- In the following cases, Signal Amplifier is required.

1) When the total length of the transmission line exceeded 500 m.

AB+BC+BD+DE+EF > 500 m (Fig. 1)

2) When the total number of units *1 is over 64.

- Transmission line length between each unit*1 : MAX 400 m.
- Total transmission line length: MAX 3600 m

AB+BC+BD+DE+EF+EG+GH < 3600 m (Fig. 2)

Fig. 1

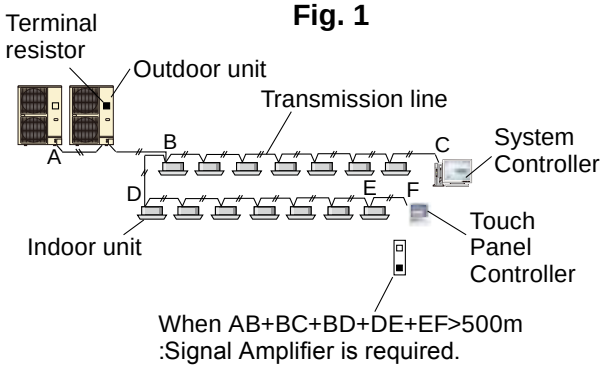
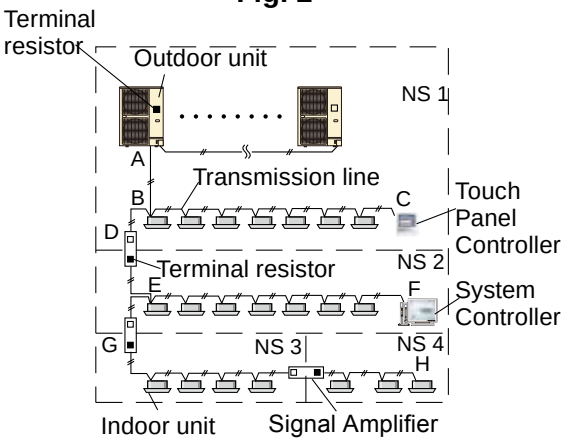


Fig. 2



*1: Refer detail Meaning of unit on 1-2 VRF NETWORK SYSTEM.

SYSTEM DESIGN

■ TRANSMISSION WIRING FLOW

● Step 1 : Decide to use feature of Automatic Address Setting depending on system design

Decide to use Automatic Address Setting or Manual Address Setting.

- Automatic Address Setting → Step 2 (1)
- Manual Address Setting → Step 2 (2)

● Step 2 : Confirm Transmission Wiring

(1) Automatic Address Setting

Connect the transmission cable like as Fig 3-1, 3-2.

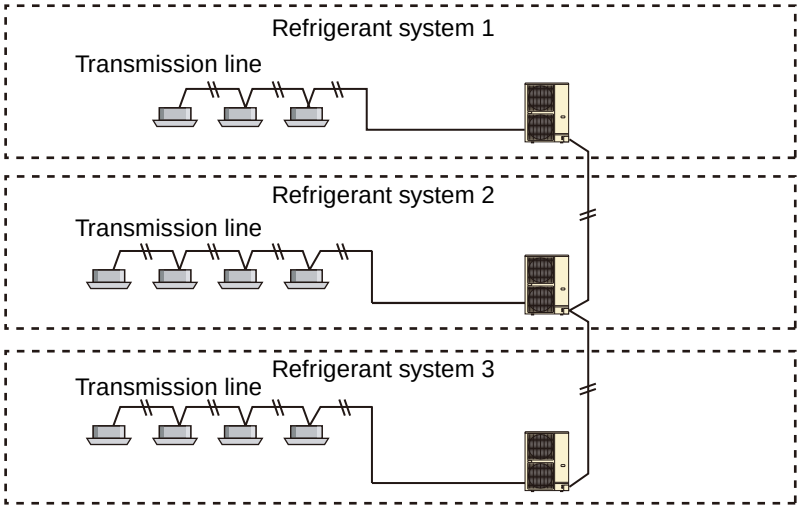


Fig. 3-1

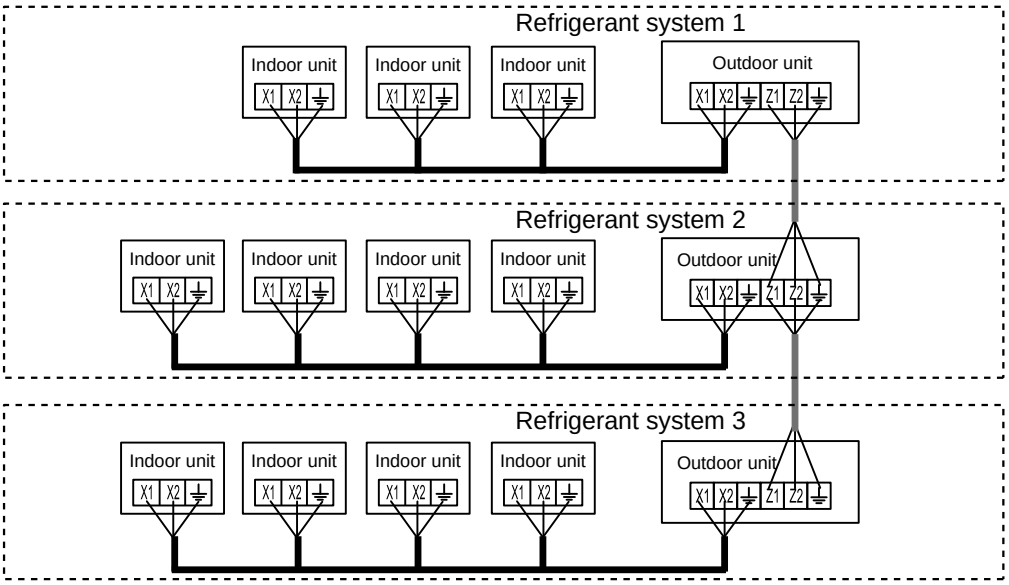


Fig. 3-2

- X1, X2 : Indoor units to outdoor unit
- Z1, Z2 : Connection for different refrigerant circuit of outdoor unit

SYSTEM DESIGN

(2) Manual Address Setting

Connect the transmission cable like as Fig 4-1, 4-2.

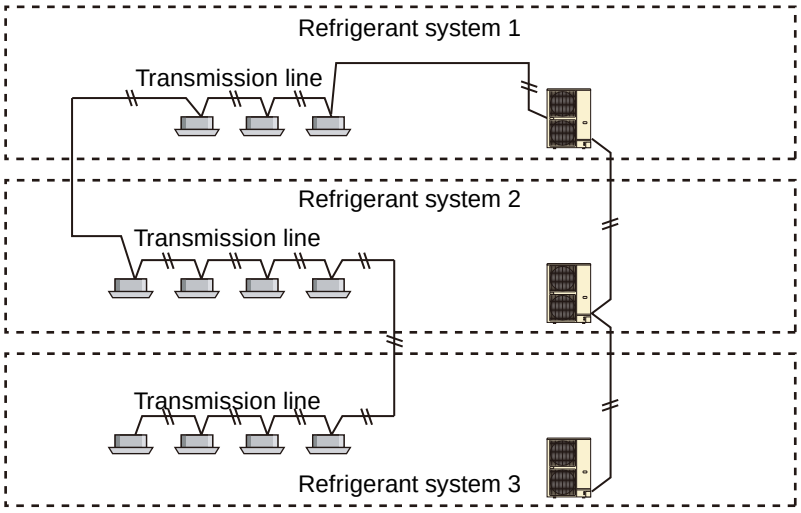


Fig. 4-1

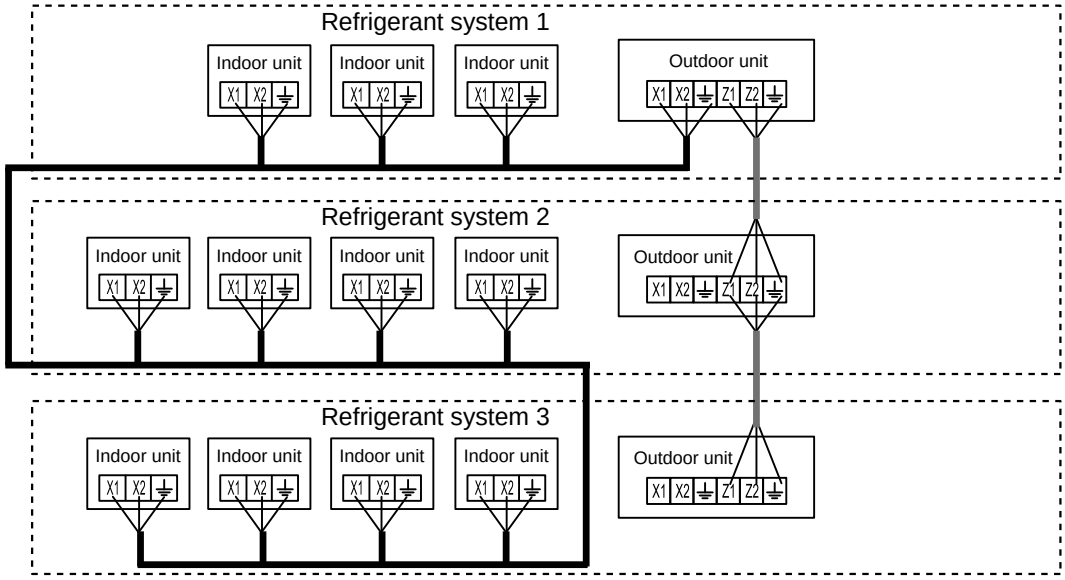


Fig. 4-2

- X1, X2 : Indoor units to outdoor unit
- Z1, Z2 : Connection for different refrigerant circuit of outdoor unit

● Step 3 : Check Transmission wiring rule

Confirm transmission wiring rule above.

SYSTEM DESIGN

● Step 4 : Confirm how to install Signal Amplifier

When Signal Amplifier is installed, network is divided into two network segments.

In a network segment (NS) divided by a Signal Amplifier, it has to keep the following facts.

1)Total transmission line length: MAX 500 m

AB+BC+BD < 500 m (Fig. 2)

2)The total number of units *1 : MAX 64

3)The number of terminal resistor : 1

*1: Refer detail Meaning of unit on 1-2 VRF NETWORK SYSTEM.

Fig. 1

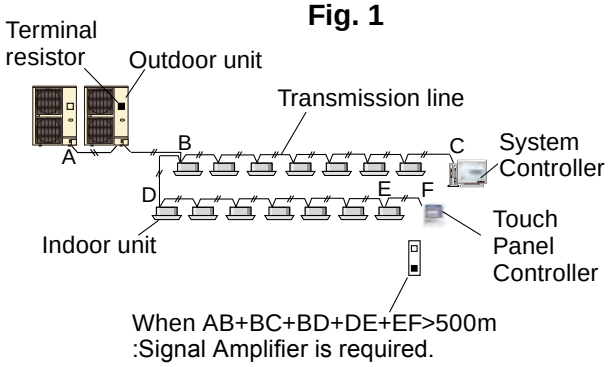
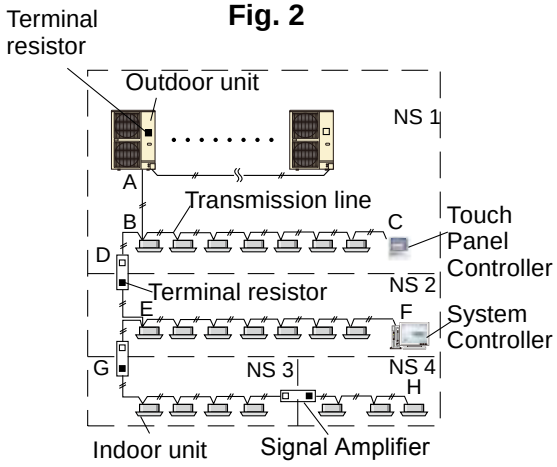


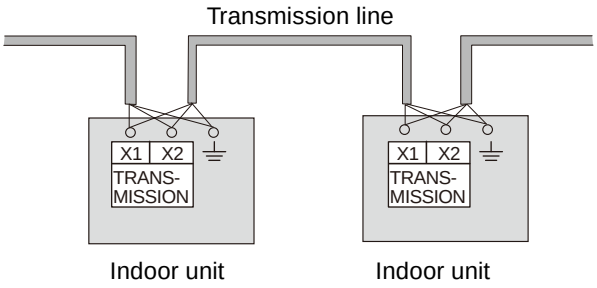
Fig. 2



● Step 5 : Confirm how to wire transmission line

Confirm how to connect transmission line between indoor units.

- Arrange so that there is one terminal resistor for each network segment.
- Always take a ground from both ends of transmission line.



● Step 6 : Confirm transmission wiring system

Check your transmission wiring system if the transmission wiring system is ensured wiring rule.

Check list

□ Total Transmission wiring length

□ Total number of unit *1

*1: Refer detail Meaning of unit on 1-2 VRF NETWORK SYSTEM.

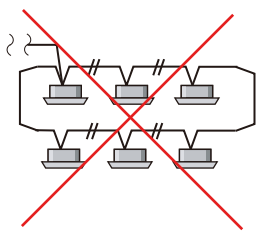
SYSTEM DESIGN

■ TRANSMISSION LINE SEPARATION RULES

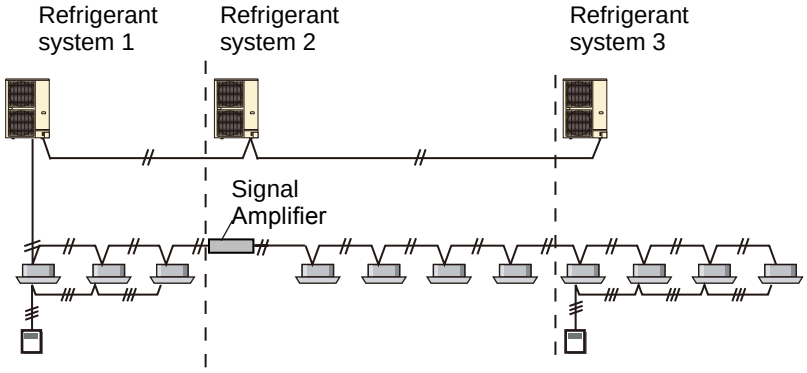
- The transmission line between indoor unit, outdoor unit and controllers can be connected by one cable.
- Terminal board available on the market or the ones inside the indoor unit or outdoor should be used for transmission line separation.
- Connection of three or more lines may cause poor communication for one terminal. In this case, please use a terminal box.

Note

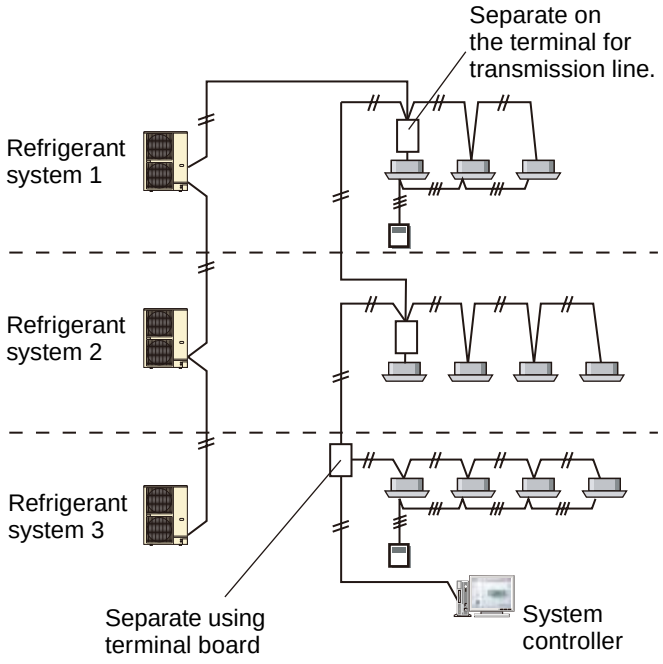
- Do not loop.



Example 1 : Connecting each outdoor and indoor unit with one connection wiring.

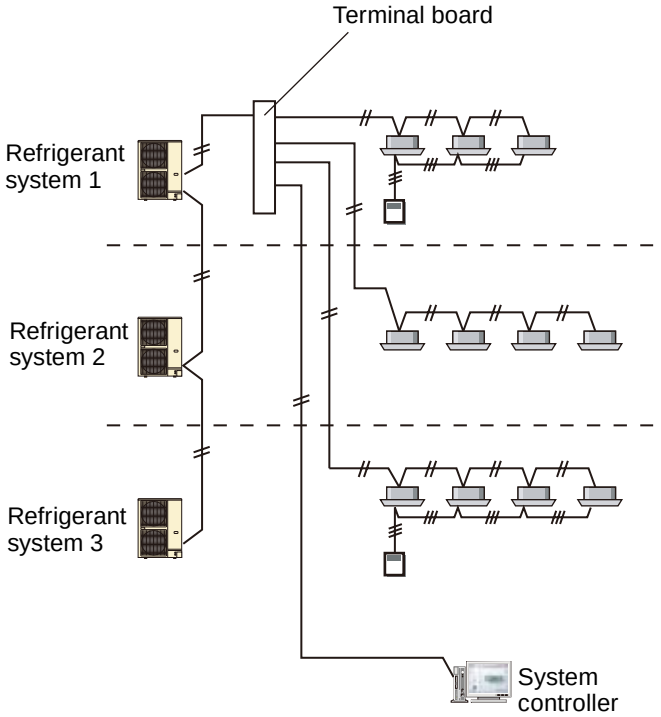


Example 2 : Separating transmission line.

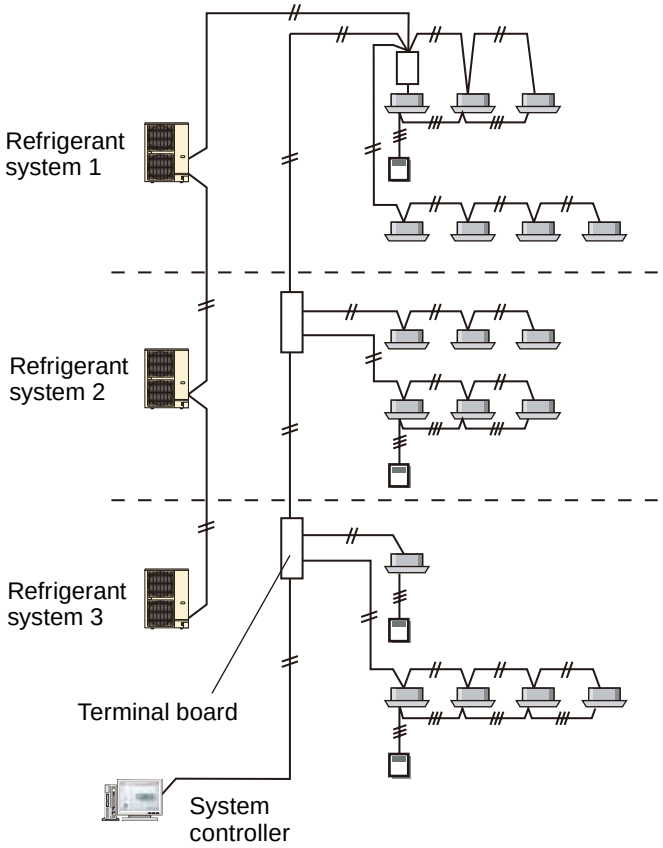


SYSTEM DESIGN

Example 3 : Separation wiring from one terminal board radially.



Example 4 : Combination of example 2 and 3

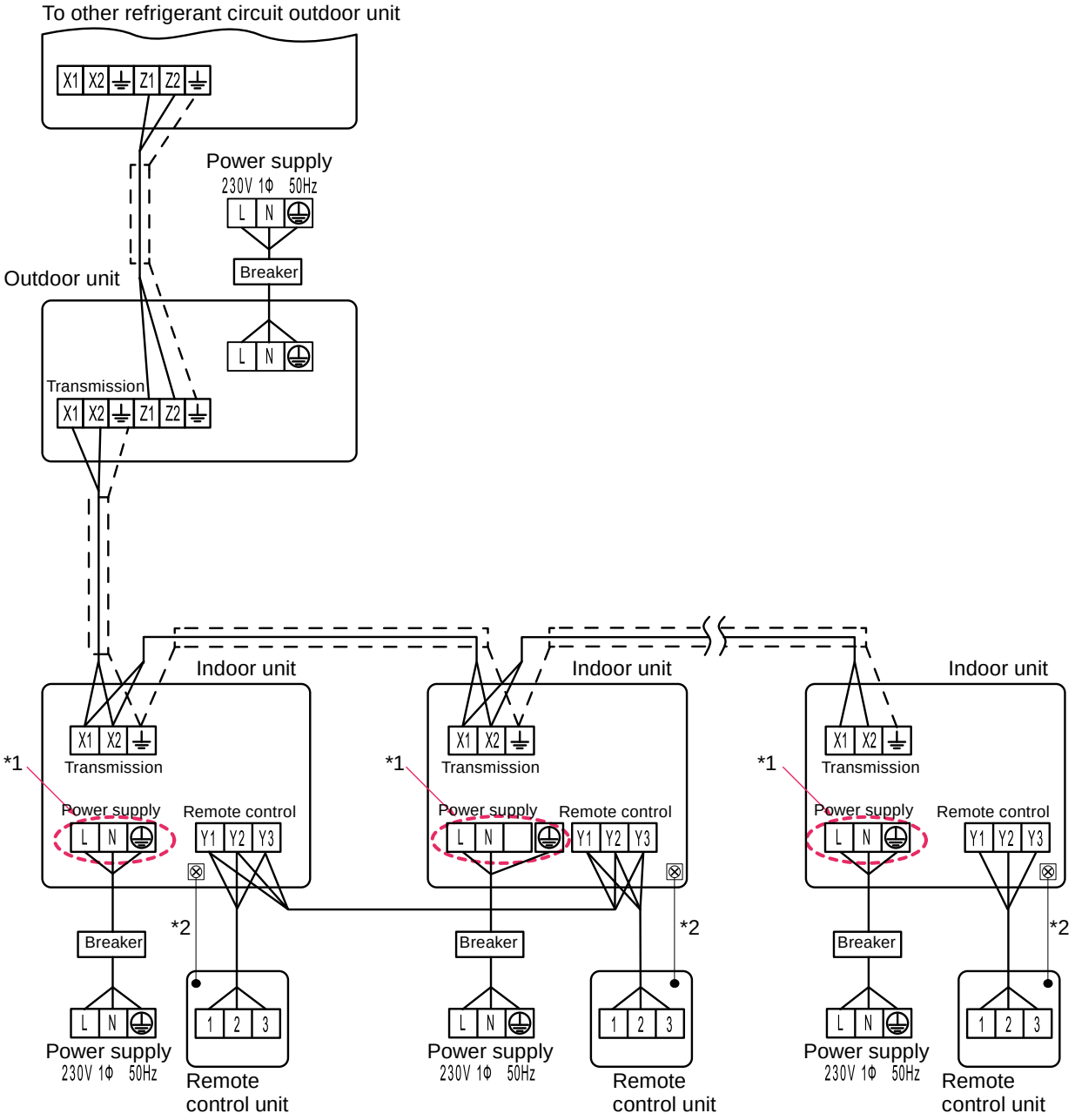


SYSTEM DESIGN

■ WIRING METHOD

Practical transmission wiring method is shown below.

Each terminal has to be connected the following rules.



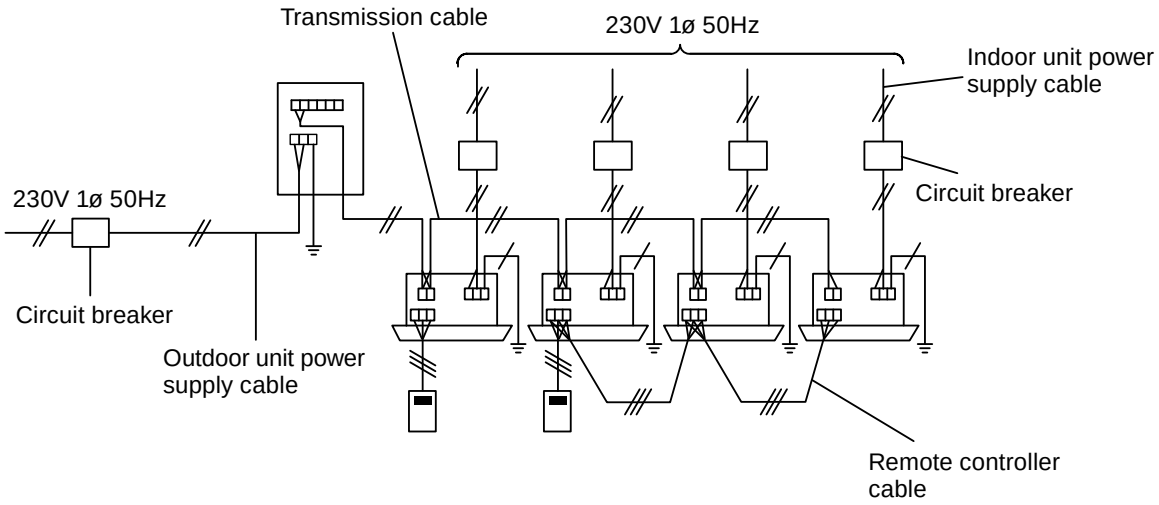
- X1, X2 : Indoor units to outdoor unit
- Z1, Z2 : Connection for different refrigerant circuit of outdoor unit

*1 : The number of power supply terminals is different depending on the indoor unit model. For the wiring, refer to the indoor unit installation manual.

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

SYSTEM DESIGN

● Example



SYSTEM DESIGN

4-4. CONTROLLER CABLE WIRING

■ WIRING SPECIFICATIONS

Model type	Connection to	Wire	Size	Specification
System Controller	USB Adaptor	USB cable	-	
Touch Panel Controller	Transmission line			Refer to 4-3
Central Remote Controller	Transmission line			Refer to 4-3
Group Remote Controller	Network Convertor	Remote controller cable	0.33mm^2	Shielded, Polar 3core
Wired Remote Controller	Indoor unit	Remote controller cable	0.33mm^2	Sheathed PVC cable Polar 3core *1
Simple Remote Controller	Indoor unit			
External Switch Controller	Indoor unit	Remote controller cable	0.33mm^2	Shielded, Polar 3core
	External input		0.33mm^2	Shielded, Polar 2core, Twisted pair
IR Receiver Unit (UTB-*WB) (UTB-*WC)	Indoor unit	Connection cable	-	(5m cable attached)
IR Receiver Unit (UTY-LRHYB1)	Indoor unit	Connection cable	-	
Remote Sensor	Indoor unit	Connection cable	-	(10m cable attached)
EV Kit	Indoor unit	Connection cable	-	(5m cable attached)
Drain Pump Unit	Indoor unit	Connection cable	-	

*1 : Use shielded cable (field supplied) in accordance with the regional cable standard.

⚠Caution

- Install in accordance with regional standard.
- Never bundle the power supply cable and controller cable together. Bundling these cords together will cause misoperation.
- Always ground for shielded cable both end.
- For detail specification and connection, please refer to "5.Controll system".
- Controller might be required to connect power supply cable and transmission line. Use separate connection with other units for power suply cable.

SYSTEM DESIGN

5. SYSTEM SETTING

5-1. SYSTEM TYPE SETTING

Set the DIP switch to the corresponding system type as shown in the table.

Do not use a nonexistent switch combination.

Note
∗Perform the system setting and address setting , before turning on the power. ∗For the air conditioner to operate properly, perform the correct setting.

■ OUTDOOR UNIT SETTING

<step 1>

Refrigerant circuit address setting

Set the Rotary SW REF AD x10 & x1
See the switch detail for "5-2 Address setting"

<step 2>

Terminal resistor setting

Set the DIP SW SET5-4
See the switch detail for "5-8 Terminal resistor setting"

<step 3>

Indoor unit connection check

See the detail for "5-9 Indoor unit connection check"

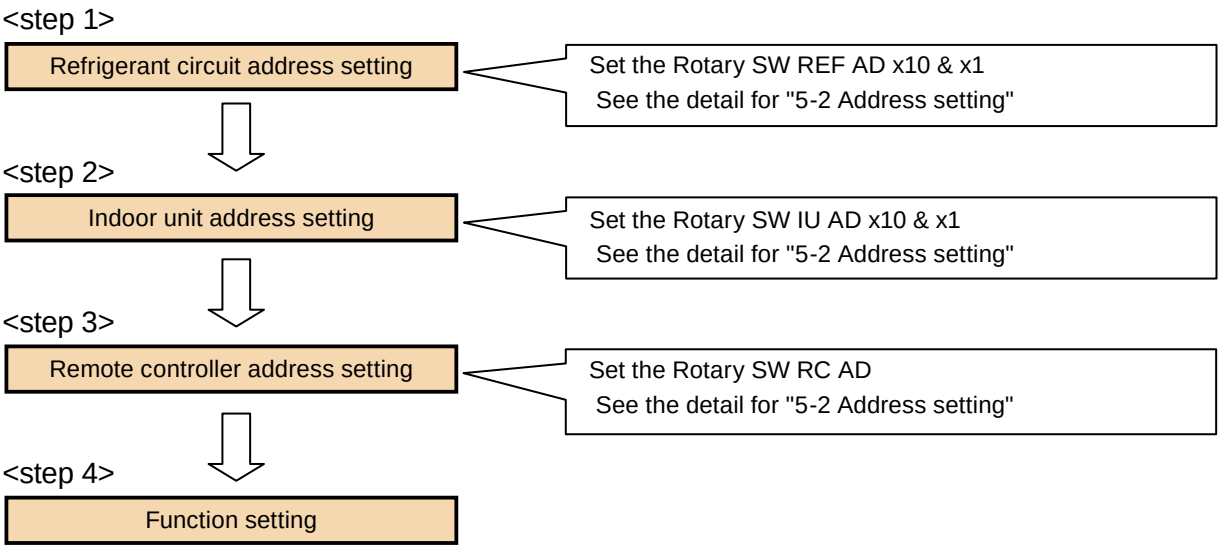
<step 4>

Function setting

SYSTEM DESIGN

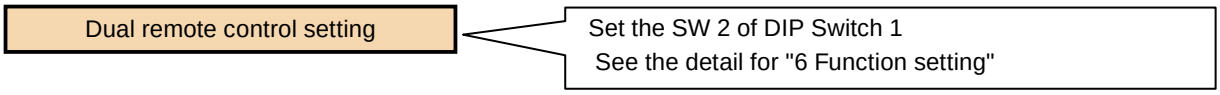
■ INDOOR UNIT SETTING

Please refer to the correct SW position for 6-6 Function Setting.



■ REMOTE CONTROLLER SETTING

In case of Wired remote controller, Simple remote controller.



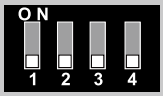
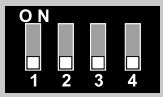
∗Other than above unit , Please refer the 6 Function setting and installation manual.

SYSTEM DESIGN

5-2. ADDRESS SETTING

For this system, each address should be preset before operation.
Please refer following table for outdoor unit, indoor unit and each remote controller.

■ KINDS OF ADDRESS AND SETTING RANGE

UNIT	SETTING		SETTING RANGE	TYPE OF SWITCH	REMARKS
Outdoor unit	A	Refrigerant circuit address	00 ~ 99	Setting example 01  REF AD x10 REF AD x1	Arbitrary numbers can be set in range of 00-99
	B	Forbidden	-	 SET3	Setting forbidden
	C	Forbidden	-		Setting forbidden
	L	Forbidden	-	 SET5	Setting forbidden
Indoor unit	D	Refrigerant circuit address	00 ~ 99	**■ Manual address setting** Setting example 01  REF AD x10 REF AD x1	Arbitrary numbers can be set in range of 00-99
				■ Infrared address setting Set this switch to 00 at factory setting.	See the setting method 5-4
				■ Wired R.C. address setting Set this switch to 00 at factory setting.	See the setting method 5-5
				■ Simple R.C. address setting Set this switch to 00 at factory setting.	See the setting method 5-6
				■ Automatic address setting Set this switch to 00 at factory setting.	See the setting method 5-7
	E	Indoor unit address	00 ~ 63	**■ Manual address setting** Setting example 12  IU AD x10 IU AD x1	Arbitrary numbers can be set in range of 00-63
				■ Infrared address setting Set this switch to 00 at factory setting.	See the setting method 5-4
				■ Wired R.C. address setting Set this switch to 00 at factory setting.	See the setting method 5-5
				■ Simple R.C. address setting Set this switch to 00 at factory setting.	See the setting method 5-6
				■ Automatic address setting Set this switch to 00 at factory setting.	See the setting method 5-7
	F	Remote controller address	0 ~ 8	Setting example 8  RC AD	See the setting method 5-3

*Set up after confirming the details of each unit.

SYSTEM DESIGN

■ KINDS OF ADDRESS AND SETTING RANGE

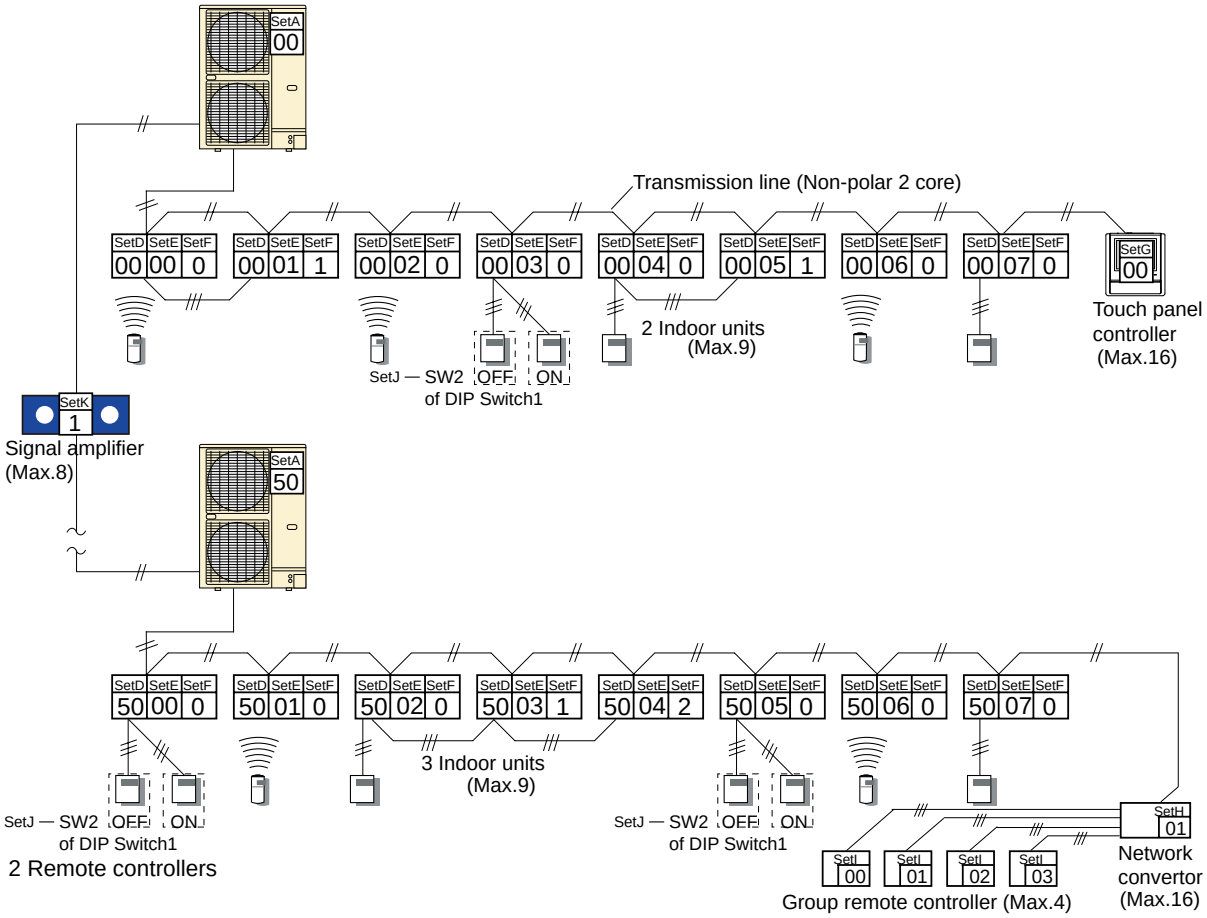
UNIT		SETTING	SETTING RANGE	TYPE OF SWITCH	REMARKS
Touch panel controller	G	Controller / Convertor address	00 ~ 15 *1		See the setting method 6-8
Network convertor	H	Controller / Convertor address	00 ~ 15 *1	Setting example 01 	See the setting method 6-9
		Refrigerant circuit address	0 ~ 99		
Group remote controller	I	Group remote controller address	00 ~ 03		See the setting method 6-7
Wired, simple remote controller	J	Dual remote control switch	ON/OFF	SW 2 of DIP Switch 1	See the setting method 6-6
Signal amplifier	K	Signal amplifier address	1 ~ 8	**■ Manual address setting**	See the setting method 6-10
				■ Automatic address setting Set to 1 at factory setting.	See the setting method 5-7
Network convertor for LonWorks®	M	Controller / Convertor address	00 ~ 15 *1		See the setting method 6-11
Central remote controller	N				See the setting method 6-12

*Set up after confirming the details of each unit.

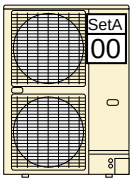
*1: The sum total of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LonWorks® is a maximum of 16.
Note: Address of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LonWorks® must not be same.

SYSTEM DESIGN

■ SETTING EXAMPLE



● Outdoor unit setting



SetA: Refrigerant circuit address
(Rotary SW REF AD x10, x1)

● Touch panel controller setting

SetG: Controller address (Max.16)

● Network convertor setting

SetH: Convertor address
(for Group remote controller:Max.16)

Refrigerant circuit address
(for Single split AC:Max.100)

● Central remote controller setting

SetN: Controller address (Max.16)

● Indoor unit setting

SetD	SetE	SetF
50	06	0

SetD		SetE		SetF
Refrigerant circuit address		Indoor unit address		Remote controller address
REF AD X10	REF AD X1	IU AD X10	IU AD X1	RC AD

● Group remote controller setting

SetI: Group remote controller address (Max.4)

● Wired, Simple remote controller setting

SetJ: Dual remote control
(SW2 of DIP Switch1)

● Signal amplifier setting

SetK: Signal amplifier address (Max.8)

● Network convertor for LonWorks® setting

SetM: Convertor address

＊Instructions for setting up the address

1. The refrigerant circuit address of the indoor and outdoor units can be set to arbitrary numbers in the range of 0 to 99.
2. The Indoor unit address can be set to arbitrary numbers in the range of 0 to 63.
3. The total numbers of indoor units ≦ 9 (6HP), ≦ 8 (5HP), ≦ 6 (4HP).
4. Set the remote controller address in the order of 0,1,2, . . . ,8.(Blank is not allowed)
5. Touch panel controller address can be set to arbitrary numbers in the range of 0 to 15.

6 : The sum total of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LonWorks® is a maximum of 16.

7. Please keep Address No. of Touch Panel Controller from overlapping the controller (Central remote controller, Network convertor for Group remote controller and Network convertor for LonWorks®) connected to the same VRF Network system.

SYSTEM DESIGN

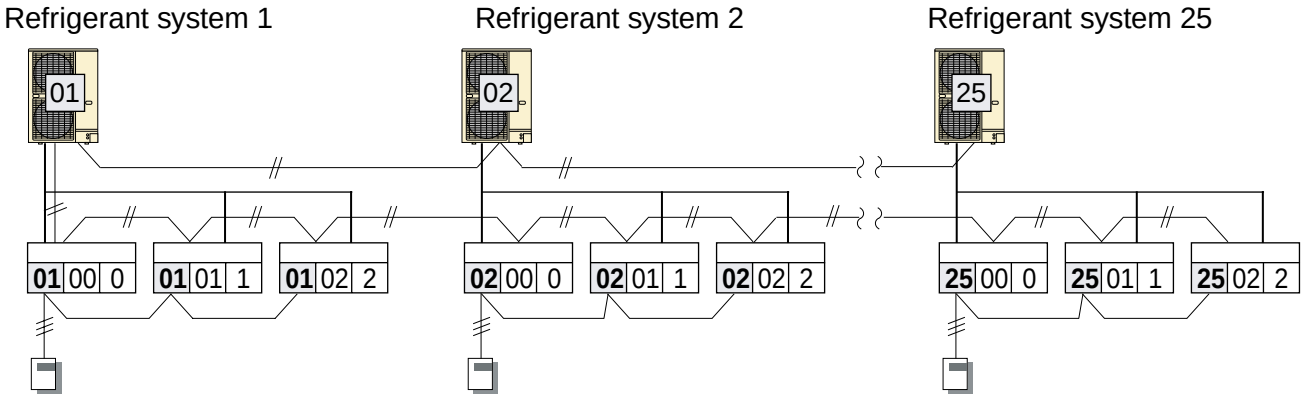
5-3. MANUAL ADDRESS SETTING METHOD

■ ADDRESS SETTING DESCRIPTION

● Refrigerant circuit address (Set A and Set D)

In case of 2 or more refrigerant system in VRF network system, each refrigerant system should be set an exclusive refrigerant circuit address.

Refrigerant system : It means same refrigerant circuit which has connected between outdoor unit and indoor unit by piping.



● Example

Outdoor unit (Set A)

Refrigerant circuit address	Rotary SW setting	
	REF AD x10	REF AD x1
01	0	1
11	1	1
25	2	5
50	5	0

Indoor unit (Set D)

Refrigerant circuit address	Rotary SW setting	
	REF AD x10	REF AD x1
01	0	1
11	1	1
25	2	5
50	5	0

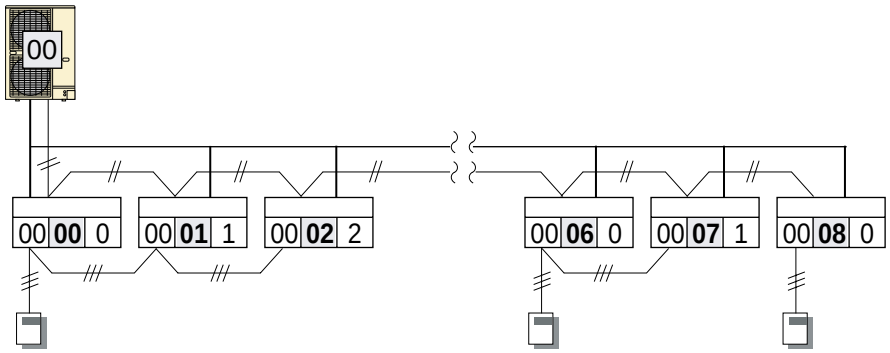
Setting range 00 - 99(Arbitrary numbers can be set)

All the indoor unit and outdoor unit in same refrigerant circuit should be set same address.

SYSTEM DESIGN

● Indoor unit address (Set E)

Each indoor unit in same refrigerant system should be set an exclusive indoor unit address.



Indoor unit address	Rotary SW setting	
	IU AD x10	IU AD x1
00	 0	 0
03	 0	 3
07	 0	 7

*Setting range 00 - 63(Arbitrary numbers can be set)

*Connectable indoor units are maximum 9 (6HP), 8 (5HP), 6 (4HP) units.

*Do not set indoor unit address to the range of 64 from 99.

*Do not set the same address number to two or more indoor units.

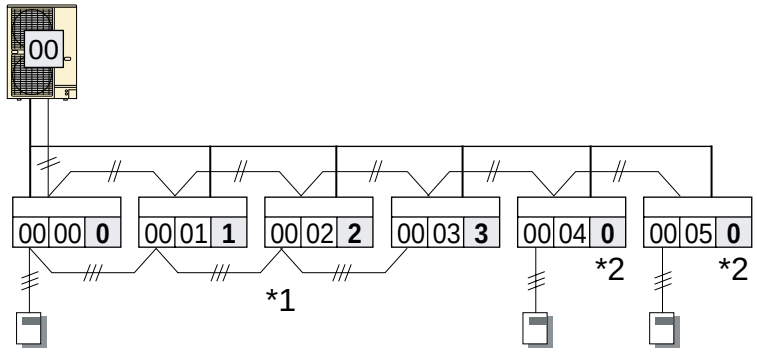
SYSTEM DESIGN

● Remote controller address (Set F)

1 individual remote controller can be controlled Max.9 indoor unit with connecting remote controller cable.

These units connecting by remote controller cable regards as remote controller group.

Even 1 indoor unit as 1 or no remote controller connection regards 1 remote controller group.



Remote controller address	Rotary SW setting RC AD
0	 0
1	 1
8	 8

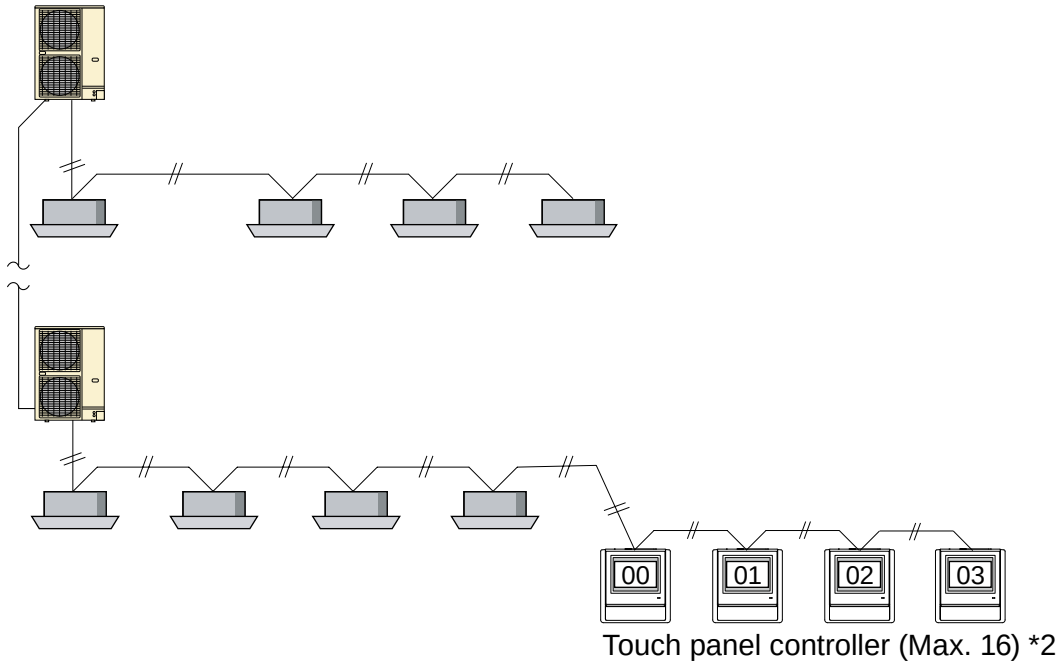
Remote controller address	Rotary SW setting RC AD
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

*1 : Set the remote controller address in the order of 0,1,2, . . . ,8.(Blank is not allowed)

*2 : When remote controller group is not constructed (1:1 connection of indoor unit and remote controller), be sure to set the remote controller address to "0" (factory setting).

SYSTEM DESIGN

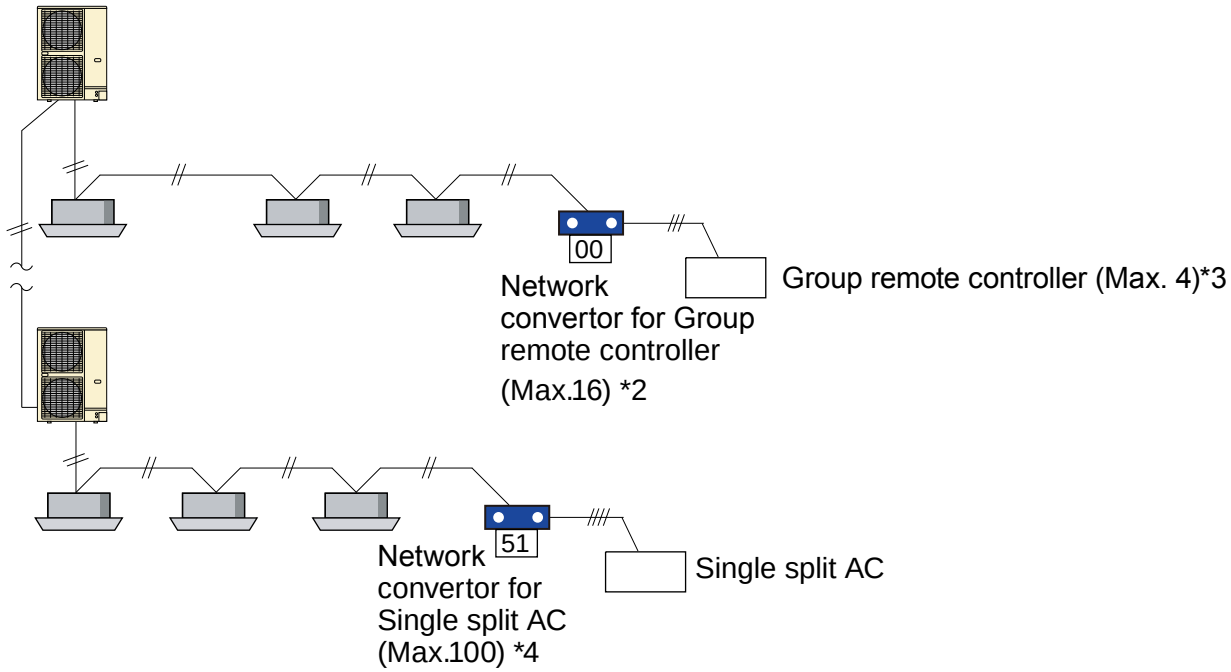
● Touch panel controller setting (Set G)



*1 : Set Touch panel controller address first, to conduct the initial setting of it.
Refer to the "setting manual" for details.

*2 : The sum total of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LONWORKS® is a maximum of 16.

● Network convertor setting (Set H)



*1 : Set the Rotary SW 110 and SW 111 on network convertor PCB.

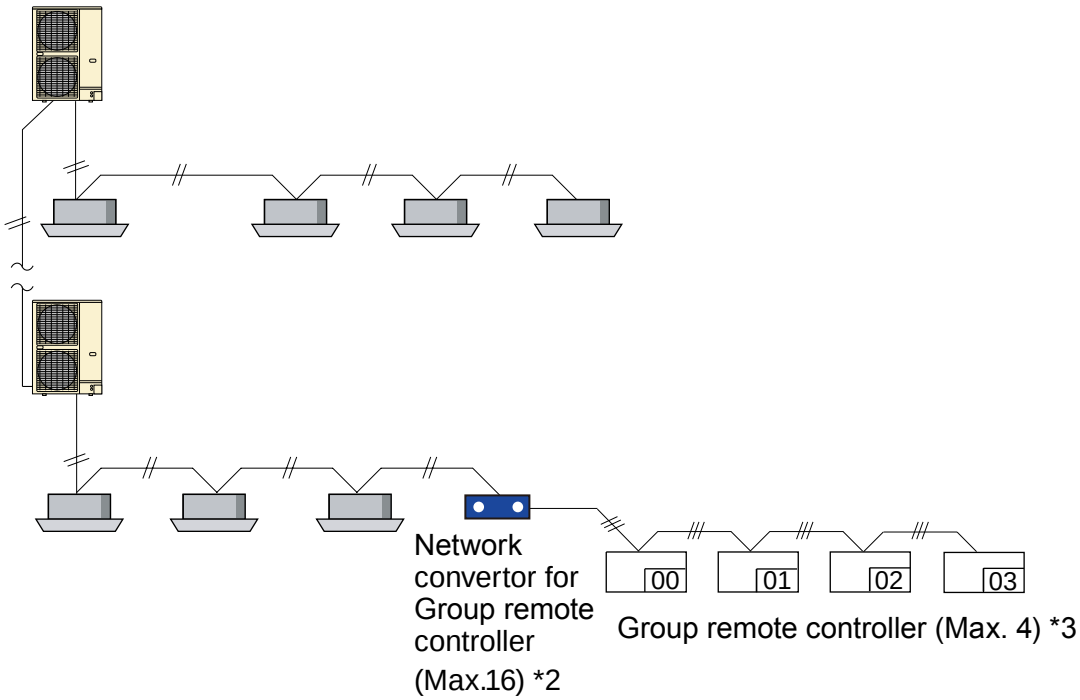
*2 : The sum total of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LONWORKS® is a maximum of 16.

*3 : Up to 64 Group remote controllers are able to connect with one VRF Network system.

*4 : When connecting the Network convertor for Single split AC , set up the number so that the Refrigerant circuit address number of outdoor unit and indoor unit does not overlap .
And the sum total of the Refrigerant circuit address of Network convertor for Single split AC and the Refrigerant circuit address of the outdoor unit and the indoor unit is a maximum of 100.

SYSTEM DESIGN

● Group remote controller setting (Set I)



*1 : Set group remote controller address first, to conduct the initial setting of it.

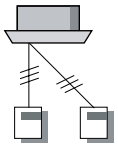
*2 : The sum total of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LONWORKS® is a maximum of 16.

*3 : Up to 64 Group remote controllers are able to connect with one VRF Network system.

● Dual remote control switch (Set J)

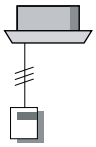
When 2 wired remote controllers are connected to the remote control group, turn the SW 2 of DIP Switch 1 of Slave Remote Controller ON.

- Slave remote controller will not be valid for timer setting.
- Last command is priority.



[Master] [Slave]
SW2 OFF ON
of DIP Switch 1

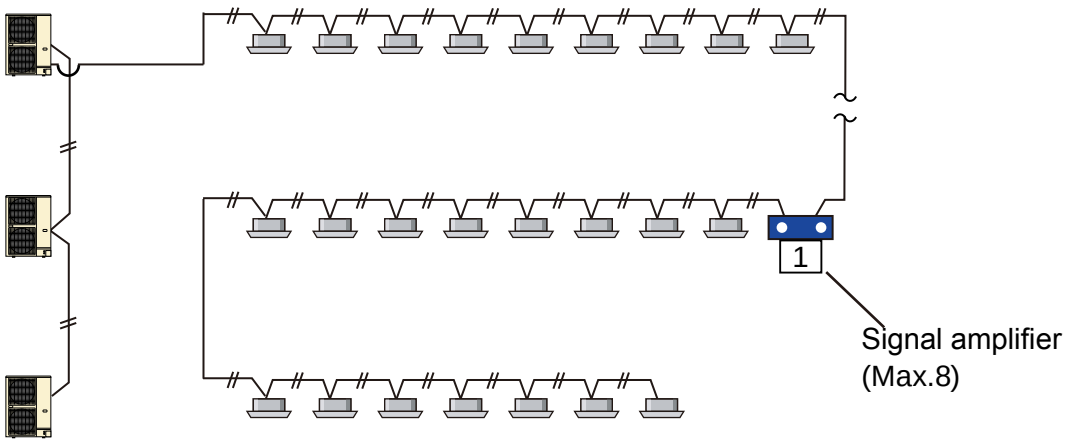
Remote controller unit PCB
Setting by SW 2 of DIP Switch 1



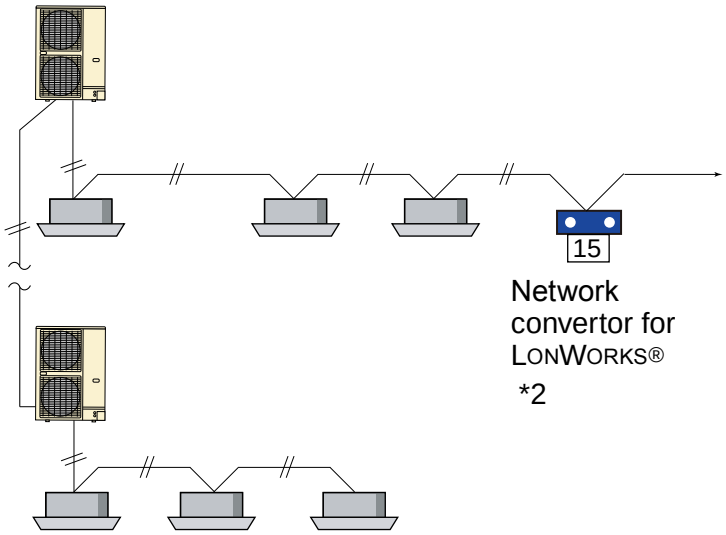
[Master]
SW2 OFF
of DIP Switch 1

When only 1 remote controller will connect, this SW 2 of DIP Switch 1 must be set OFF.

● Signal amplifier address (Set K)



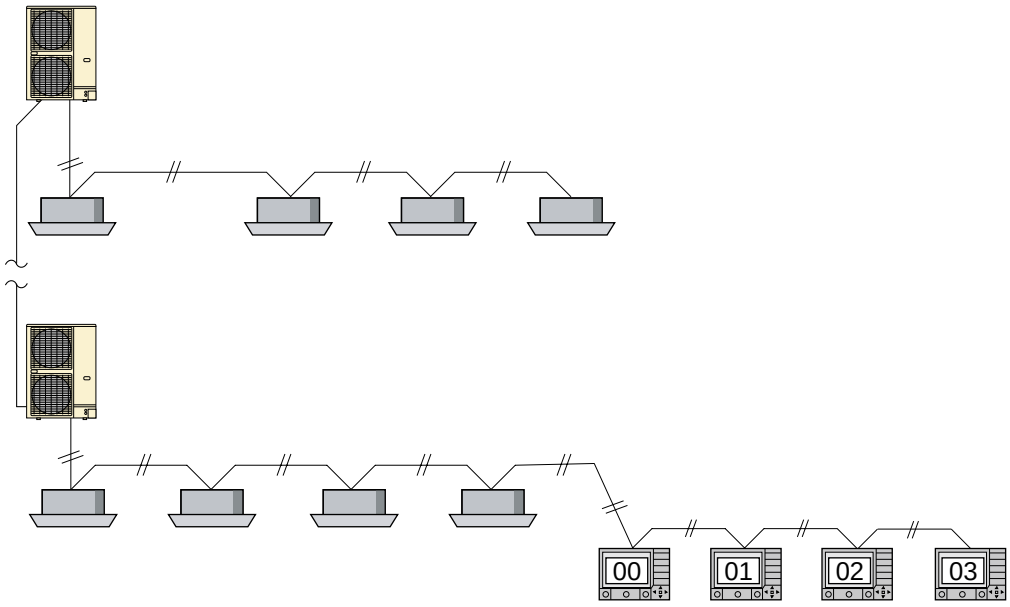
● Network convertor for LONWORKS® setting (Set M)



*1 : Setting up more than one Network Convertor in one VRF network system is prohibited.

*2 : The sum total of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LONWORKS® is a maximum of 16.

● Central remote controller setting (Set N)



Central remote controller (Max. 16) *2

*1 : Set Central remote controller address first, to conduct the initial setting of it.
Refer to the "setting manual" for details.

*2 : The sum total of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LONWORKS® is a maximum of 16.

SYSTEM DESIGN

5-4. INFRARED ADDRESS SETTING

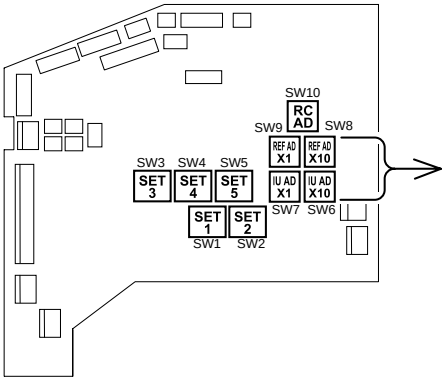
- A wireless remote controller is required to set the infrared address setting.
- This function is available in all indoor unit with infrared signal receiver.
- Infrared address setting for duct type and cassette type models can be made possible by using the optional IR receiver unit.

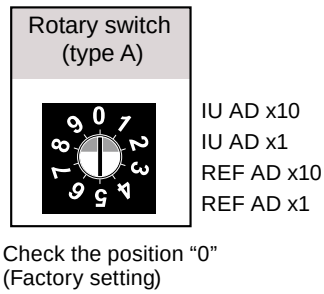
  Note : Since Beeping sound generate from indoor unit PCB installed far away (not from IR Receiver unit), sound might not be heard.
- The indoor unit's refrigerant circuit address and indoor unit address can be set performing the infrared address setting.
- When remote controller address setting is required, set by the rotary switch on the indoor unit's PCB.

■ PREPARATION

(1) Set the switch on the indoor unit's PCB that is used for manual address setting is set to "00" at factory setting.

(This process is unnecessary for newly installed and not yet set the SW.)



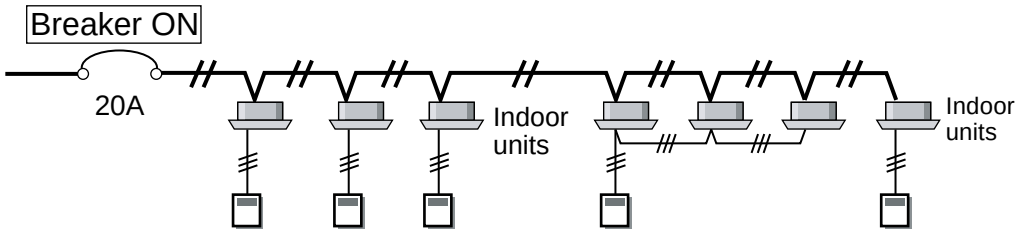


Check the position "0" (Factory setting)

∗If it is set to any other numbers, that setting value will be enabled.

(2) Turn on the power to the indoor unit.

* By turning on the power 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.

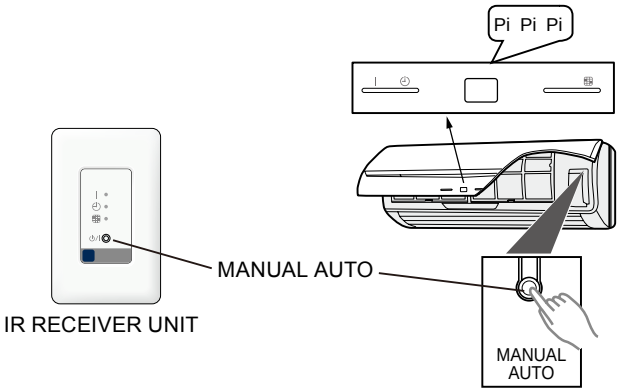


SYSTEM DESIGN

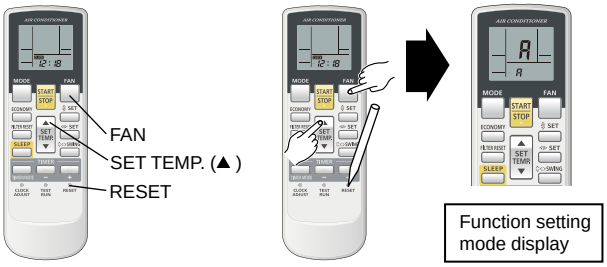
SYSTEM DESIGN

■ SWITCHING SELECTION OF ADDRESS SETTING MODE

(3) Press and hold the “MANUAL/AUTO” button for 3 seconds.



(4) Press and hold the “FAN” and the “ SET TEMP. ▲ ” buttons. Whilst holding these 2 buttons, press the "RESET" button.



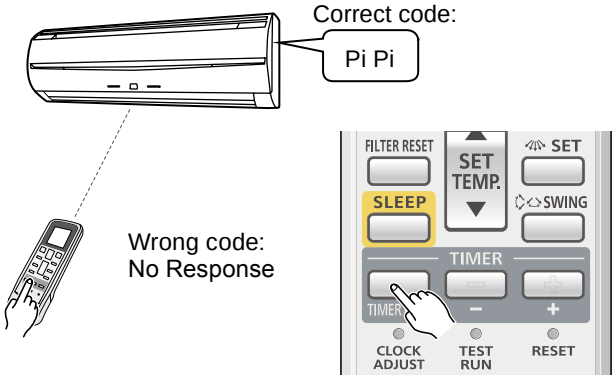
- The position of the “MANUAL/AUTO” button varies depending on the model. Refer to the operation manual for the position that is included with the unit.
- The error will be displayed by continuously pressing the "MANUAL/AUTO" for 10 sec or more. In this case release the button or turn off the power.
- An explanation of the displayed information as shown below.

■ SELECTION AND CONFIRMATION OF CUSTOM CODE

(5) Press the “ SET TEMP. ▲ ” or “ SET TEMP. ▼ ” buttons to select the custom code that matches the setting with the indoor unit.By selecting the appropriate custom code, the communication between the indoor unit and the wireless RC become possible.

The initial setting is "A"

(6) Press the “TIMER MODE" button to send the code to the indoor unit.

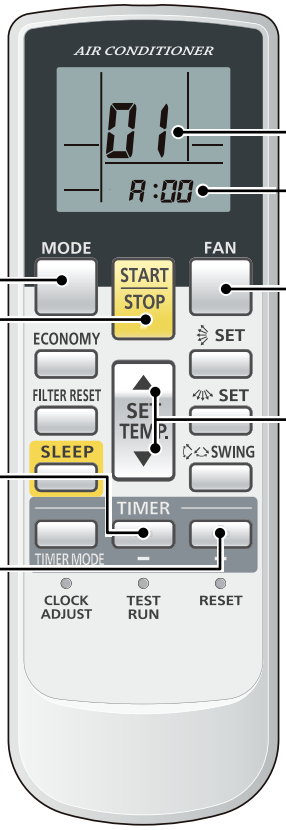


SYSTEM DESIGN

■ BUTTON NAME AND FUNCTION

- Refer to “5-2" for an outline of the address setting.
- It does not matter whether the refrigerant circuit address or indoor unit address is set first.
  (The method shown here sets the indoor unit address first.)
- During address setting mode, indoor unit reject the any operation command from remote controller.

Note : Address code display is as follows (operation lamp display)



Function number

01 --- Indoor unit address

02 --- Refrigerant circuit address

MODE button

- Start the address setting mode
- Changes the address display digits

Setting number

Setting number

* Indoor unit address valid range 00-63
  Refrigerant circut address valid range 00-99

START/STOP button

Transmits address setting

FAN button

Switches between the setting number (bottom line) and function number (top line)

TIMER set (-) button

Reconfirmation of address setting.

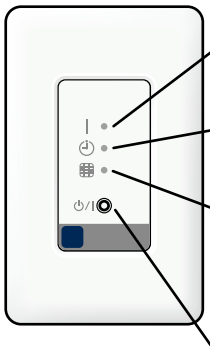
SET TEMP. " ▲ " and " ▼ " button

Increases and decreases the displayed number

TIMER set (+) button

Confirmation of address setting.

IR RECEIVER UNIT



OPERATION LAMP

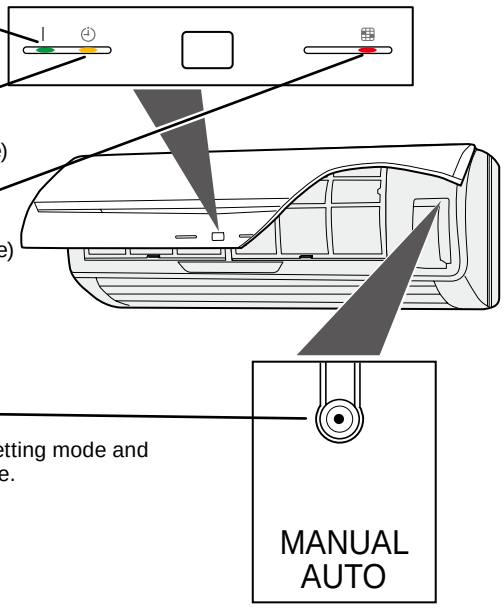
Indication of address code

TIMER LAMP

Indication of address data number (the ten’s place)

FILTER LAMP

Indication of address data number (the one’s place)



MANUAL/AUTO button

Long press (3 sec more) ----- Switches between the address setting mode and the address setting complete mode.

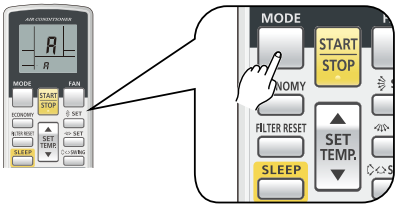
Short press ----- Switches the indicator display

	INDOOR UNIT ADDRESS DISPLAY	REFRIGERANT CIRCUIT ADDRESS DISPLAY
OPERATION LAMP	ON / OFF (Light continuously)	ON / OFF (Light 1 sec ON / 1 sec OFF)

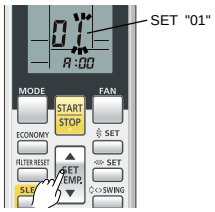
■ ADDRESS SETTING

● INDOOR UNIT ADDRESS SETTING

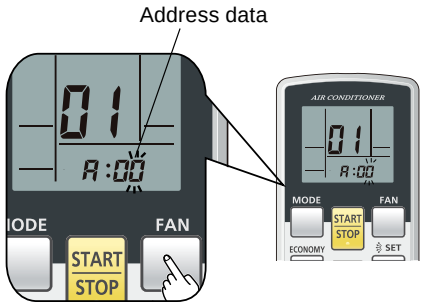
(7) Press the “MODE” button to access the address setting mode.



(8) Make sure the function number is ‘01’. If the number is other than ‘01’, press the “ ▲ ” or the “ ▼ ” buttons to alter.

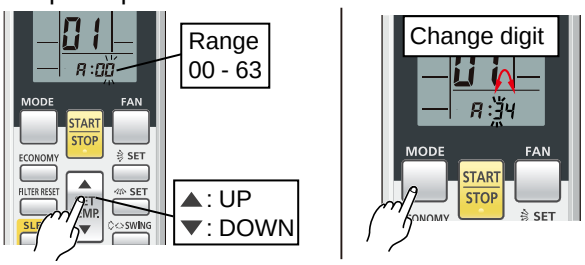


(9) Press the “FAN” button to access the address data setting mode. The address data will flash once this button is pressed.

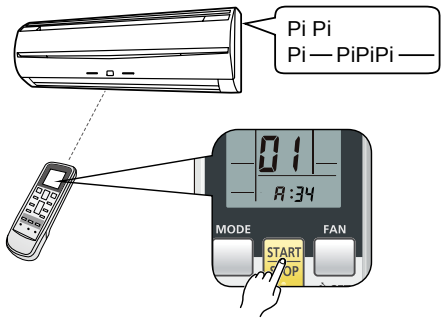


(10) Press the “ ▲ ” or the “ ▼ ” buttons to adjust the address data. The indoor unit address range is between 00 and 63.

Each time the “MODE” button is pressed, it switches between the one' place and the ten's place positions.



(11) Press the “START/STOP” button once to send the information. A beeping noise will be heard if the command is accepted.

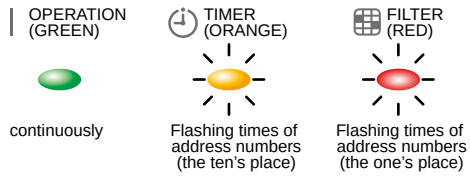


∗In the following cases the setting signal is not read and a buzzer sounds.

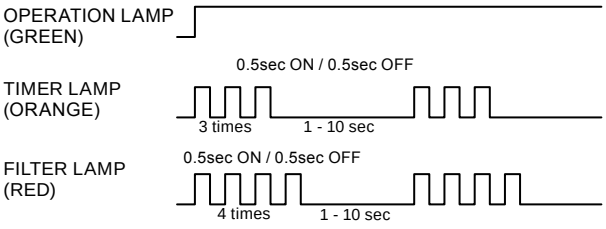
The indoor unit address No. is set out of range (64 or more) : Pi Pi Pi ———— (3 sec)

The setting of the rotary switch on the PCB is not "00" : Pi Pi Pi Pi Pi

(12) Indoor unit will display the indoor unit address data number on "TIMER ◴ "(ORANGE) and "FILTER ▦ "(RED) light.



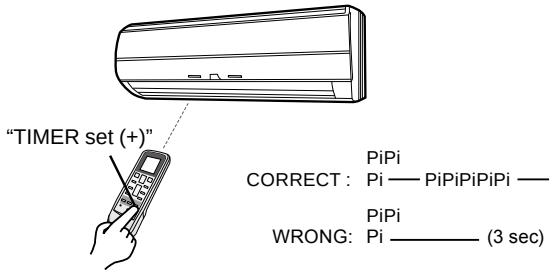
(Example) ADDRESS : 34



∗ ADDRESS 0 setting will not indicate TIMER LAMP and FILTER LAMP.

● Confirmation of address setting

(13) Press the “TIMER set (+)” button.

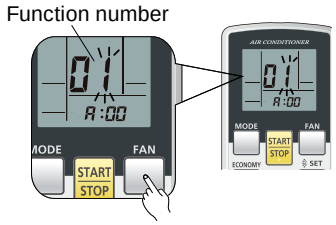


SYSTEM DESIGN

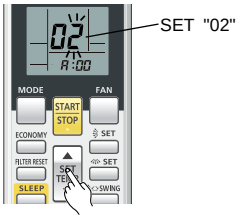
● REFRIGERANT CIRCUIT ADDRESS SETTING

Note : The refrigerant circuit address is displayed when the following operations are performed even while indoor unit address is displayed on LED display of indoor unit.

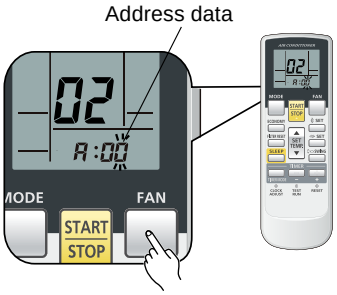
(14) Press the “FAN” button to select the function number.



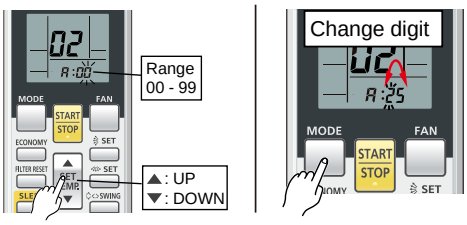
(15) Press the " ▲ " or the " ▼ " button to adjust function number 02.



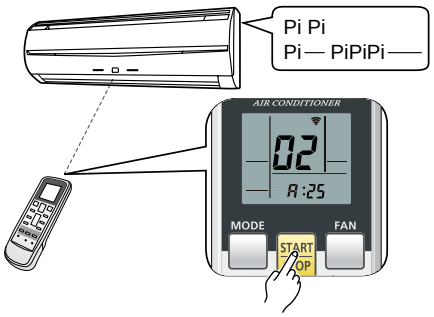
(16) Press the “FAN” button to access the address data setting mode. The address data will flash once this button is pressed.



(17) Press the " ▲ " or the " ▼ " buttons to adjust the address data. The refrigerant circuit address range is between 00 and 99. Each time the "MODE" button is pressed, it switches between the one's place and the ten's place positions.



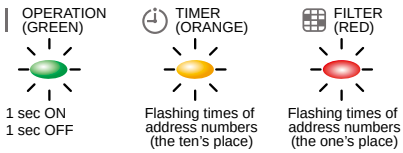
(18) Press the “START/STOP” button once to send the information. A beeping noise will be heard if the command is accepted.



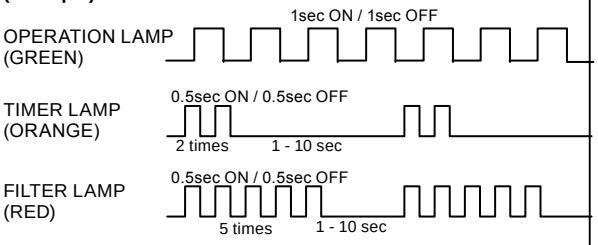
∗ In the following cases the setting signal is not read and a buzzer sounds.

The setting of the rotary switch on the PCB is not "00" : Pi Pi Pi Pi Pi

(19) Indoor unit will display the refrigerant circuit address data number on "TIMER ◴ "(ORANGE) and "FILTER ▦ "(RED) light.



(Example) ADDRESS : 25

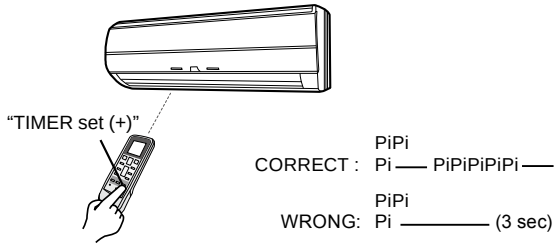


∗ ADDRESS 0 setting will not indicate TIMER LAMP and FILTER LAMP.

∗ ADDRESS display will automatically switched from indoor unit address to refrigerant circuit address.

● Confirmation of address setting

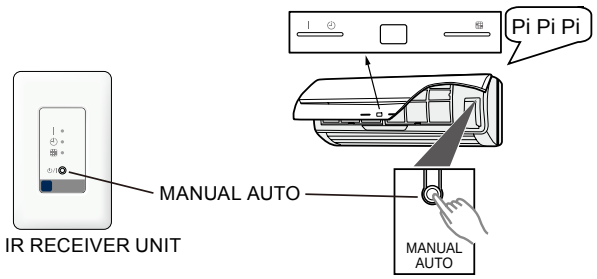
(20) Press the “TIMER set (+)” button.



SYSTEM DESIGN

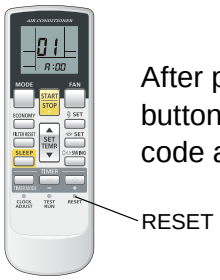
■ COMPLETION OF ADDRESS SETTING MODE

(21) Press and hold the “MANUAL/AUTO ⏽” button for 3 seconds.



* Each LED light brightness is darkening though the content of the display doesn't change.

(22) Press the “RESET” button.

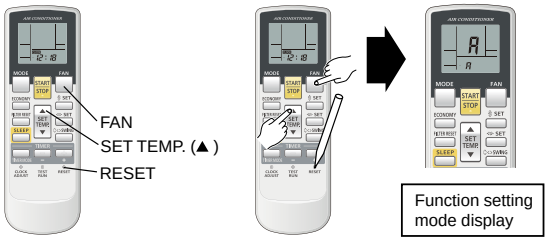


After pressing the RESET button, please set the custom code again if b,c,d setting.

∗ The address setting signal is not received after switched address setting completion mode. (Pi Pi Pi Pi Pi)
∗ Press the "MANUAL/AUTO ⏽" button again for 3 sec to return to if required to return the address setting mode.

■ RECONFIRMATION OF ADDRESS SETTING

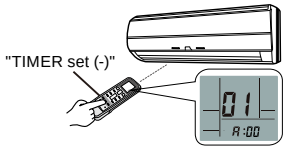
(23) Press and hold the “FAN” and the “ SET TEMP. ▲ ” buttons. Whilst holding these 2 buttons, press the "RESET" button.



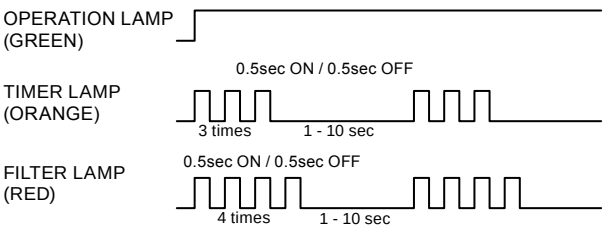
SYSTEM DESIGN

● INDOOR UNIT ADDRESS SETTING

(24) Make sure the function number is "01"
Refer to (8)
Press the “TIMER set (-)” button.

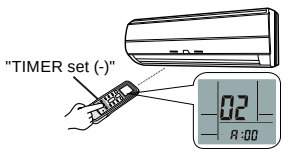


(Example) ADDRESS : 34

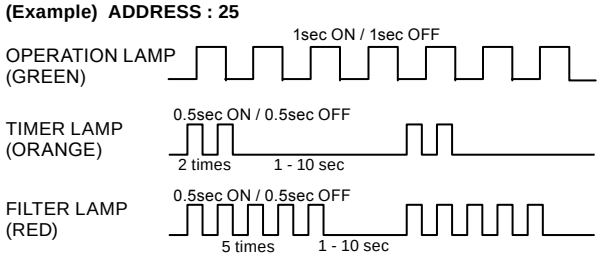


● REFRIGERANT CIRCUIT ADDRESS SETTING

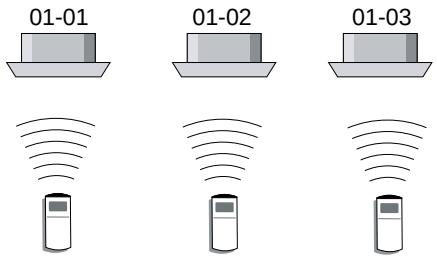
(25) Make sure the function number is "02"
Refer to (15)
Press the “TIMER set (-)” button.



(Example) ADDRESS : 25



■ SETTING UP EACH INDOOR UNIT



Repeat steps (1) through to (25). Steps (1) through to (6) and (21) to (25) only need to carried out if the custom code is different to the factory setting of “A”.

■ RESET THE POWER AFTER SETTING UP ADDRESS OF ALL INDOOR UNITS

Important

- **If the reset is not performed, address can not be read in normally.**
- **After all the addresses have been set, the circuit breaker needs to be switched off for at least 2 minutes.**

After the 2 minutes has passed, power can be restored.

- **The set address is stored in the PCB and will remain in memory even when the power is turned off.**

However setting address is effective after power reset.

Record the address set in the indoor unit on a label, etc., and affix the label to the unit so it can be used for after-sales service operations.

∗ Address 0 setting will not indicate TIMER LAMP and FILTER LAMP.

∗ Once the "RESET" button is pressed on the remote controller, the OPERATION MODE will be set in the "AUTO MODE".
Please adjust the OPERATION MODE to either "COOLING" or "HEATING" before trying to operate the air conditioner.

∗ Note : If CUSTOM CODE is set to anything other than "A" ,the remote control must be set accordingly to the INDOOR UNIT setting.

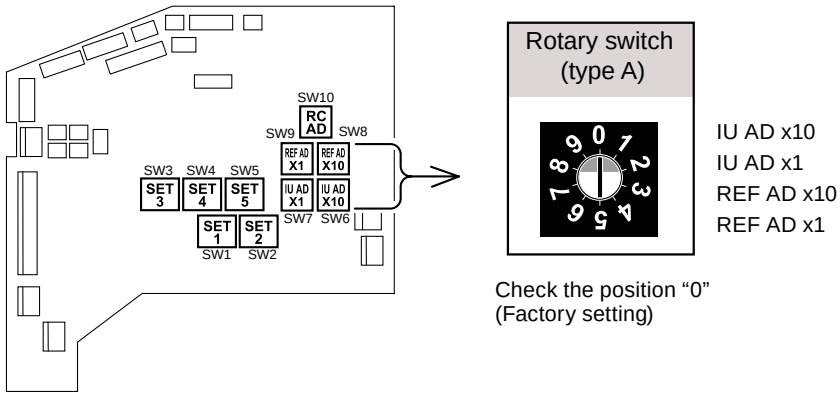
SYSTEM DESIGN

5-5. WIRED REMOTE CONTROLLER ADDRESS SETTING

- Indoor unit addresses and refrigerant circuit addresses can be set up using wired remote controllers.
- This function allows setting the addresses of all indoor units to which a wired remote controller is being connected.
- This function cannot be used to set up remote controller addresses.
  Be sure to set them up using the rotary switches on the PCB of each indoor unit. (Refer to 5-3.)
- This function cannot be used on the slave units.

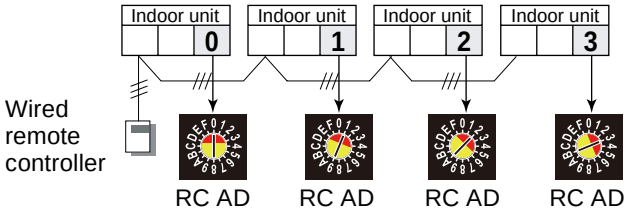
■ PREPARATION

1) Make sure that all indoor unit address switches (IU AD x10, IU AD x1) and refrigerant circuit address switches (REF AD x10, REF AD x1) on the PCB of each indoor unit are set at 0 (factory setting).



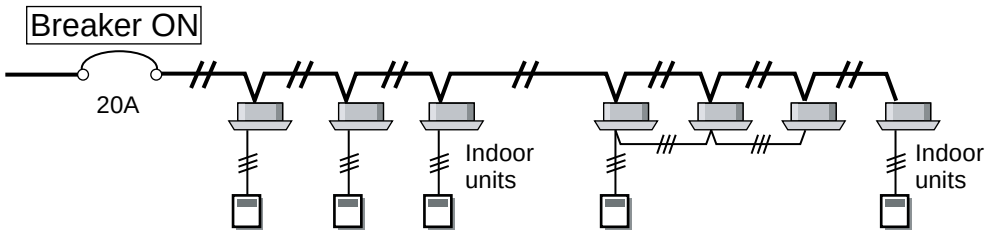
- If any of the switches is positioned at a value other than 0, this function will not activate.
- The layout of the switches differs depending on the type of the indoor unit. (Refer to 6-2.)

2) If multiple indoor units are connected to a single wired remote controller, make sure to manually set up the remote controller address (RC AD) on the PCBs of the indoor units. (Refer to 5-3.)
   Ex.) When four indoor units are connected



3) Turn on the power to the indoor unit.

- By turning on the power 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.

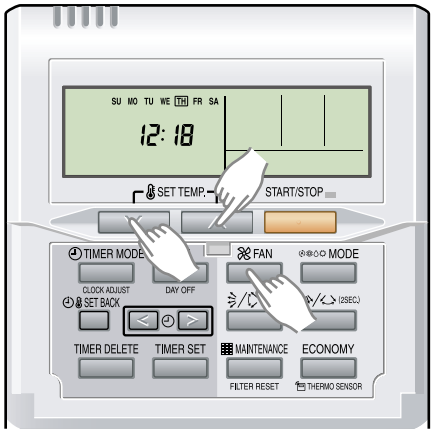


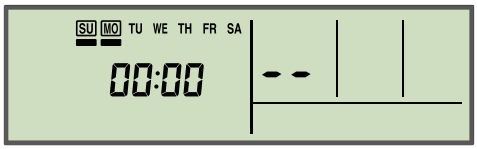
SYSTEM DESIGN

SYSTEM DESIGN

■ SWITCHING SELECTION OF ADDRESS SETTING MODE

4) To activate the address setting mode, hold down the three buttons of SET TEMP. V, SET TEMP. Λ and FAN at the same time for 5 seconds or longer.





Address setting mode initial display

■ BUTTON NAME AND FUNCTION

- Refer to “5-2” for an outline of the address setting.
- It does not matter whether the refrigerant circuit address or indoor unit address is set first. (The method shown here sets the indoor unit address first.)
- During address setting mode, indoor unit reject the any operation command from remote controller.

SYSTEM DESIGN

Function number

01---Indoor unit address

02---Refrigerant circuit address

Remote controller address

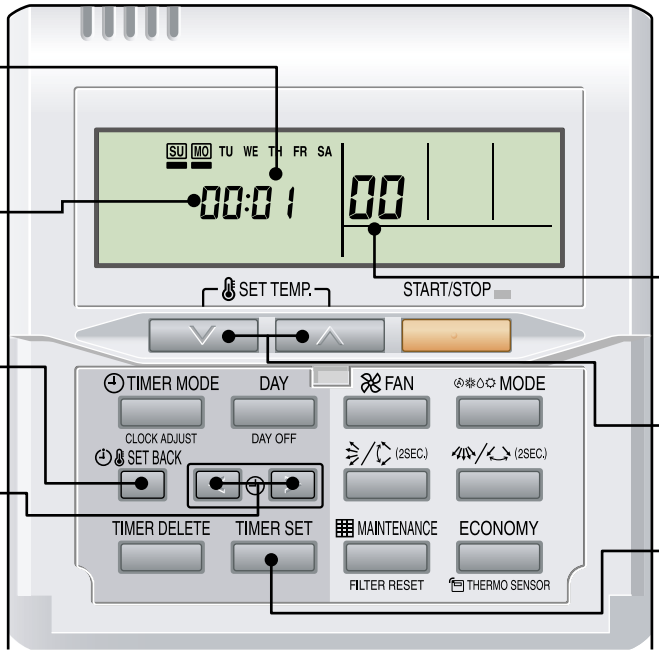
Remote controller address setting number 00-15

SET BACK button

Switches the remote controller address setting number.

SET TIME “<” and “>” button

Switches the function number.



Setting number

Setting number

- Indoor unit address valid range 00-63
- Refrigerant circuit address valid range 00-99

SET TEMP. “V” and “Λ” button

Switches the setting number.

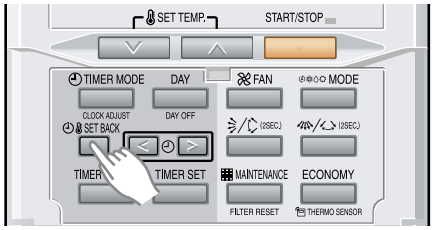
TIMER SET button

Transmits address setting

■ ADDRESS SETTING

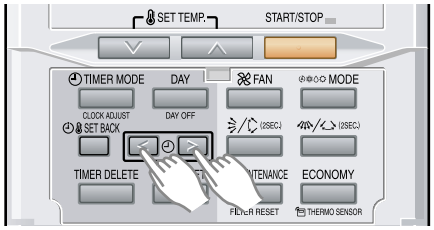
● Indoor unit address setting

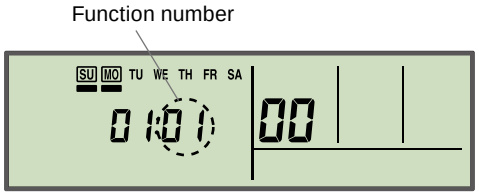
5) Pressing the SET BACK button, select a remote controller address (select the indoor unit you want to operate).



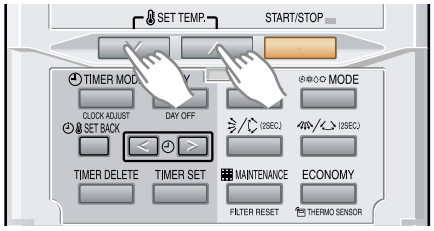
Ex.) When remote controller address “01” is selected

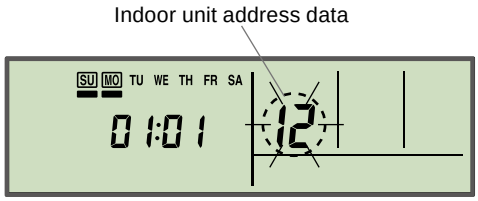
6) Pressing the SET TIME < button or the SET TIME > button, display function number 01.





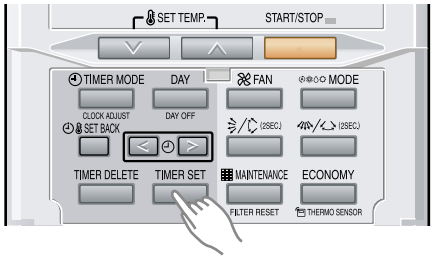
7) Pressing the SET TEMP. V button or the SET TEMP. Λ button, set up the indoor unit address. (The setting range is from 00 to 63.)

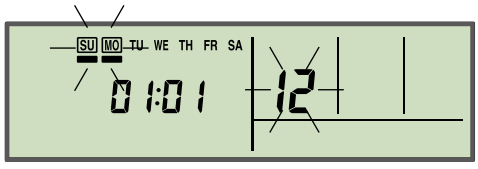




Ex.) When indoor unit address data “12” is set up

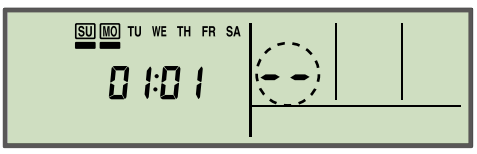
8) Pressing the TIMER SET button, confirm the selected indoor unit address data. (The data will be transferred to the indoor unit.)

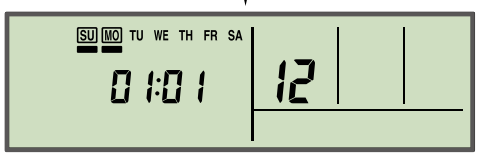




NO GOOD

GOOD





- When indoor unit address data was not set up on the indoor unit (-- is displayed.)
- Set up indoor unit address data again according to the procedure in step 7) above.

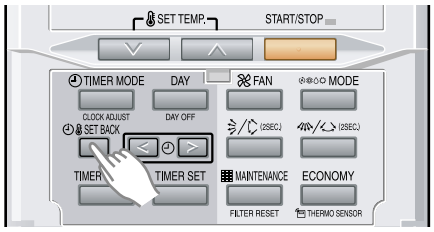
When indoor unit address data was normally set up on the indoor unit
(Flashing display changes to illuminated display.)

SYSTEM DESIGN

SYSTEM DESIGN

● Refrigerant circuit address setting

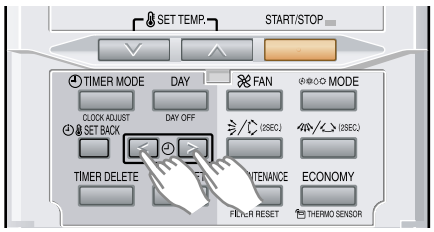
9) Pressing the SET BACK button, select a remote controller address (select the indoor unit you want to operate).



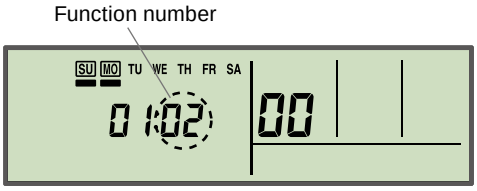
Ex.) When remote controller address “01” is selected

*If the indoor unit you want to operate has already been selected, skip step 9)

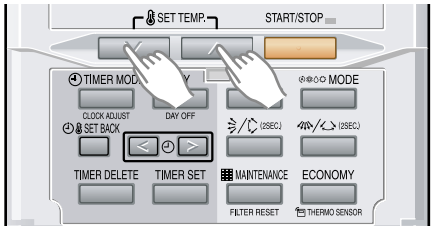
10) Pressing the SET TIME < button or the SET TIME > button, display function number 02.

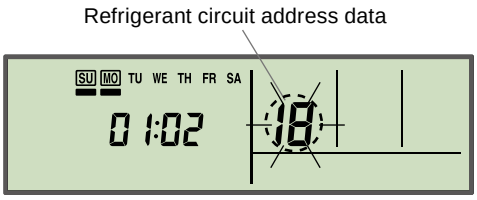


< : Down button
> : Up button



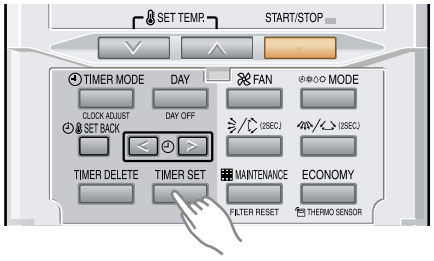
11) Pressing the SET TEMP. V button or the SET TEMP. Λ button, set up the refrigerant circuit address data. (The setting range is from 00 to 99.)

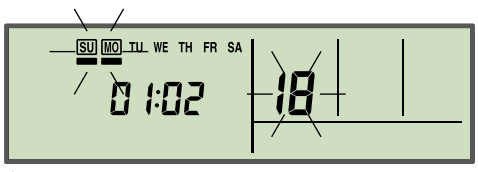




Ex.) When refrigerant circuit address data “18” is set up

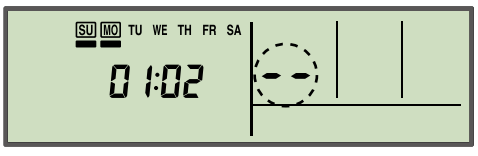
12) Pressing the TIMER SET button, confirm the selected refrigerant circuit address data. (The data will be transferred to the indoor unit.)

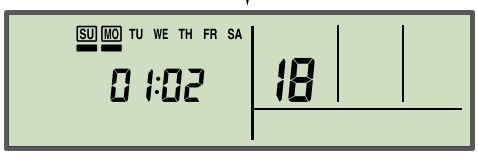




NO GOOD

GOOD





- When refrigerant circuit address data was not set up on the indoor unit (-- is displayed.)
- Set up refrigerant circuit address data again according to the procedure in step 11) above.

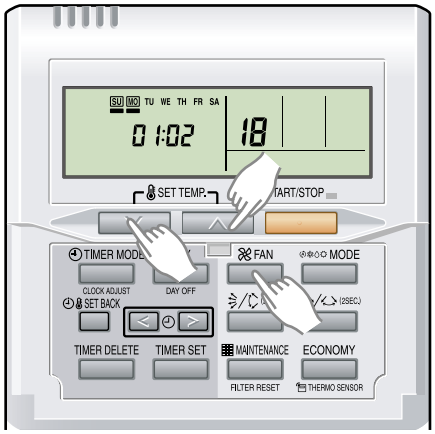
When refrigerant circuit address data was normally set up on the indoor unit (Flashing display changes to illuminated display.)

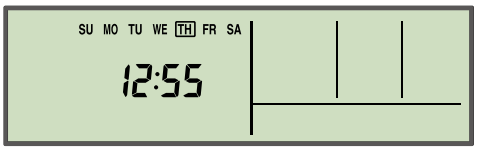
SYSTEM DESIGN

SYSTEM DESIGN

■ COMPLETION OF ADDRESS SETTING MODE

13) To clear the address setting mode and return to the regular display, hold down the three buttons of SET TEMP. V, SET TEMP. Λ and FAN at the same time.

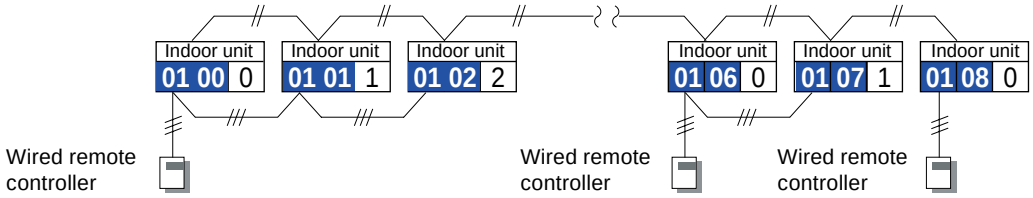




Normal mode display

∗ If no key entry is made for 60 seconds, even though none of the above buttons is pressed, the address setting mode will automatically be cleared.
(If the address setting mode is automatically cleared while setting addresses, activate the mode again according to the procedure in step 4) above.)

■ SETTING UP EACH INDOOR UNIT



Repeat the procedures in steps 1) through 13), and set up the indoor units requiring address setting.

■ RESET THE POWER AFTER SETTING UP ADDRESS OF ALL INDOOR UNITS

Important

∗ If the reset is not performed, address can not be read in normally.
∗ After all the addresses have been set, the circuit breaker needs to be switched off for at least 2 minutes.
After the 2 minutes has passed, power can be restored.
∗ The set address is stored in the PCB and will remain in memory even when the power is turned off.
However setting address is effective after power reset.
Record the address set in the indoor unit on a label, etc., and affix the label to the unit so it can be used for after-sales service operations.

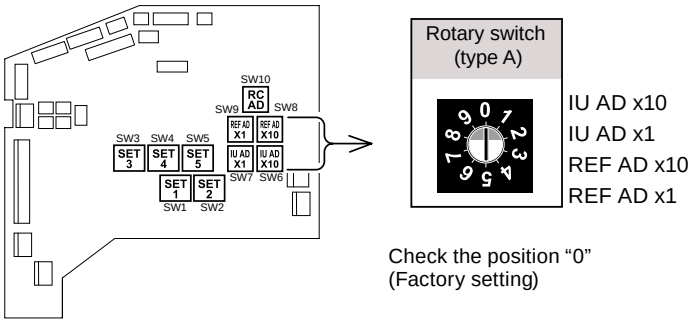
SYSTEM DESIGN

5-6. SIMPLE REMOTE CONTROLLER ADDRESS SETTING

- Indoor unit addresses and refrigerant circuit addresses can be set up using simple remote controllers.
- This function allows setting the addresses of all indoor units to which a simple remote controller is being connected.
- This function cannot be used to set up remote controller addresses.
  Be sure to set them up using the rotary switches on the PCB of each indoor unit. (Refer to 5-3.)
- This function can be set up on both UTY-RSK*(With operation mode) and UTY-RHK*(Without operation mode) types.
- This function cannot be used on the slave units.

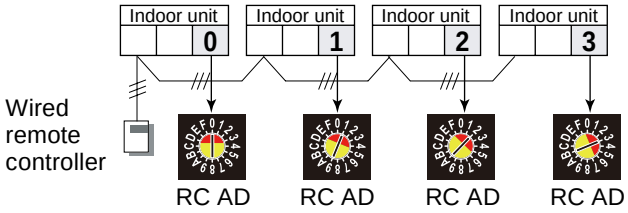
■ PREPARATION

1) Make sure that all indoor unit address switches (IU AD x10, IU AD x1) and refrigerant circuit address switches (REF AD x10, REF AD x1) on the PCB of each indoor unit are set at 0 (factory setting).



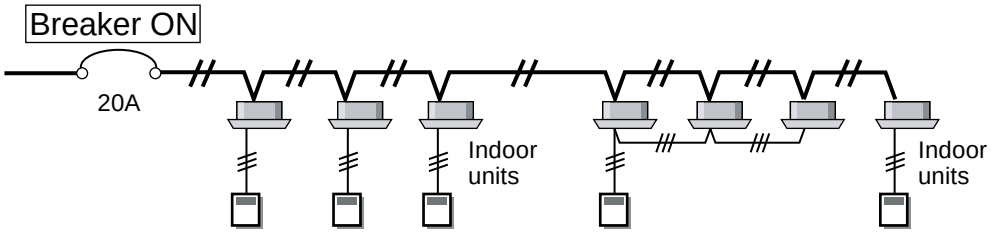
- If any of the switches is positioned at a value other than 0, this function will not activate.
- The layout of the switches differs depending on the type of the indoor unit. (Refer to 6-2.)

2) If multiple indoor units are connected to a single simple remote controller, make sure to manually set up the remote controller address (RC AD) on the PCBs of the indoor units. (Refer to 5-3.)
   Ex.) When four indoor units are connected



3) Turn on the power to the indoor unit.

- By turning on the power 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.

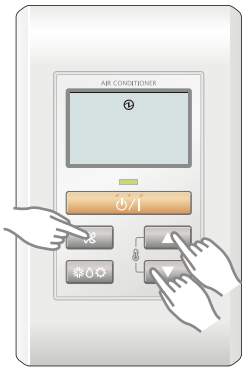


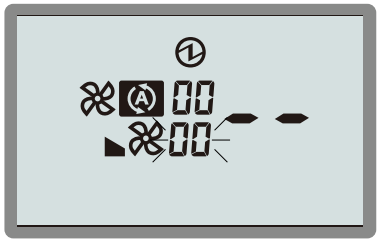
SYSTEM DESIGN

SYSTEM DESIGN

■ SWITCHING SELECTION OF ADDRESS SETTING MODE

4) To activate the address setting mode, hold down the three buttons of SET TEMP. ▼, SET TEMP. ▲ and FAN at the same time for 5 seconds or longer.





Address setting mode initial display

■ BUTTON NAME AND FUNCTION

- Refer to “5-2” for an outline of the address setting.
- It does not matter whether the refrigerant circuit address or indoor unit address is set first. (The method shown here sets the indoor unit address first.)
- During address setting mode, indoor unit reject the any operation command from remote controller.

Function number

01---Indoor unit address

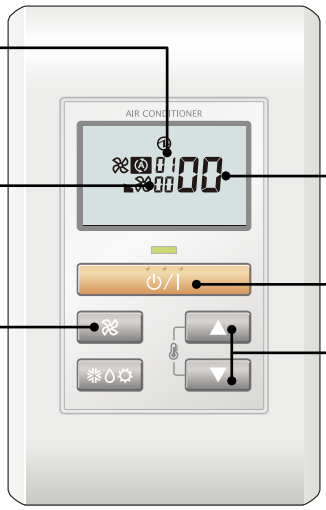
02---Refrigerant circuit address

Remote controller address

Remote controller address setting number 00-15

FAN button

Each time this button is pressed, the fan setting changes among “Remote controller address,” “Function number” and “Setting number.”



Setting number

Setting number

- Indoor unit address valid range 00-63
- Refrigerant circuit address valid range 00-99

START/STOP button

Transmits address setting

SET TEMP. “▲” and “▼” button

Switches the various numbers.

UTY-RSK* (With operation mode)

Function number

01---Indoor unit address

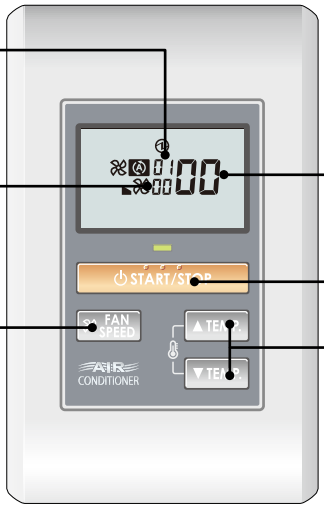
02---Refrigerant circuit address

Remote controller address

Remote controller address setting number 00-15

FAN button

Each time this button is pressed, the fan setting changes among “Remote controller address,” “Function number” and “Setting number.”



Setting number

Setting number

- Indoor unit address valid range 00-63
- Refrigerant circuit address valid range 00-99

START/STOP button

Transmits address setting

SET TEMP. “▲” and “▼” button

Switches the various numbers.

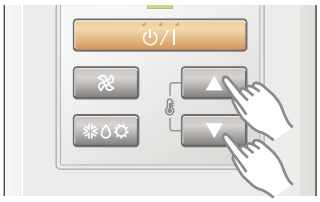
UTY-RHK* (Without operation mode)

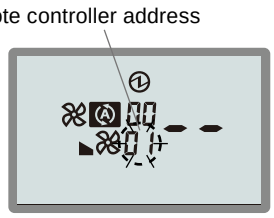
SYSTEM DESIGN

■ ADDRESS SETTING

● Indoor unit address setting

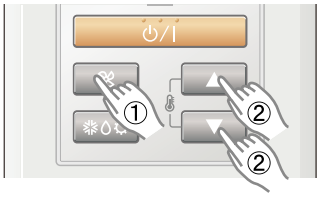
5) Pressing the SET TEMP. ▲ button or SET TEMP. ▼ button, select a remote controller address (select the indoor unit you want to operate).

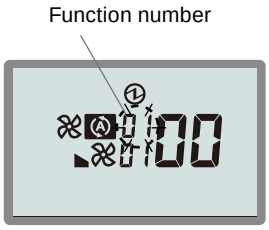




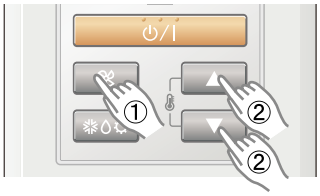
Ex.) When remote controller address “01” is selected

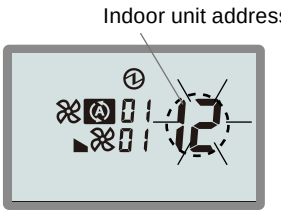
6) Press the FAN button so that the “Function number” display flashes. Then, press either the SET TEMP. ▲ button or the SET TEMP. ▼ button to display function number “01.”





7) Press the FAN button so that the “Setting number” display flashes. Then, press either the SET TEMP. p button or the SET TEMP. q button to set up the indoor unit address data. (The setting range is from 00 to 63.)



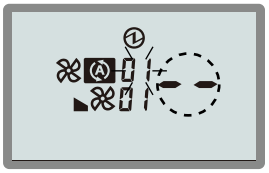


Ex.) When indoor unit address data “12” is set up

8) Pressing the START/STOP button, confirm the selected indoor unit address data. (The data will be transferred to the indoor unit.)

NOT GOOD

GOOD



- When indoor unit address data was not set up on the indoor unit (-- is displayed.)
- Set up indoor unit address data again according to the procedure in step 7) above.

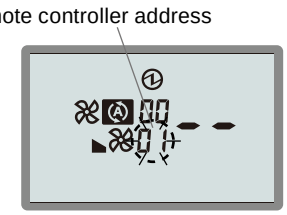
When indoor unit address data was normally set up on the indoor unit.

SYSTEM DESIGN

SYSTEM DESIGN

● Refrigerant circuit address setting

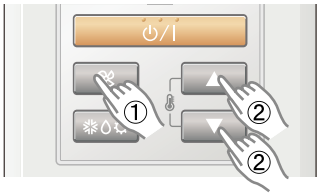
9) Pressing the SET TEMP. ▲ button or SET TEMP. ▼ button, select a remote controller address (select the indoor unit you want to operate).

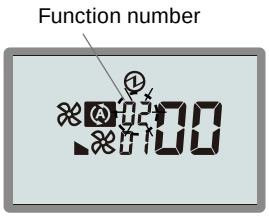


Ex.) When remote controller address “01” is selected

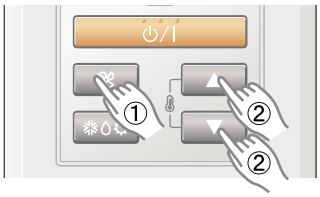
*If the indoor unit you want to operate has already been selected, skip step 9).

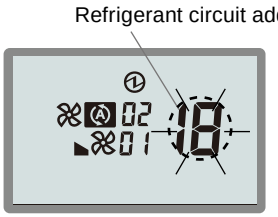
10) Press the FAN button so that the “Function number” display flashes. Then, press either the SET TEMP. ▲ button or the SET TEMP. ▼ button to display function number “02.”





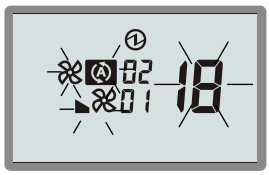
11) Press the FAN button so that the “Setting number” display flashes. Then, press either the SET TEMP. ▲ button or the SET TEMP. ▼ button to set up the refrigerant circuit address data. (The setting range is from 00 to 99.)





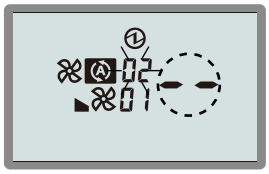
Ex.) When refrigerant circuit address data “18” is set up

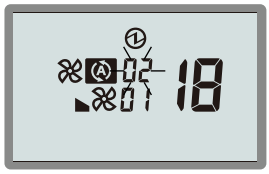
12) Pressing the START/STOP button, confirm the selected refrigerant circuit address data. (The data will be transferred to the indoor unit.)



GOOD

NOT GOOD





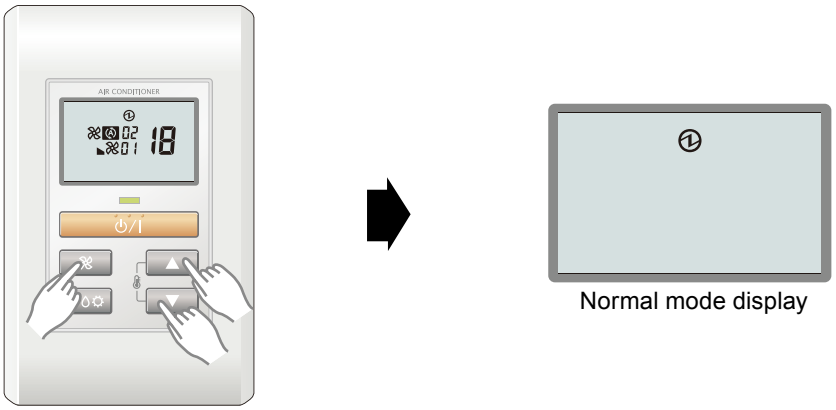
- When refrigerant circuit address data was not set up on the indoor unit (-- is displayed.)
- Set up refrigerant circuit address data again according to the procedure in step 11) above.

When refrigerant circuit address data was normally set up on the indoor unit.

SYSTEM DESIGN

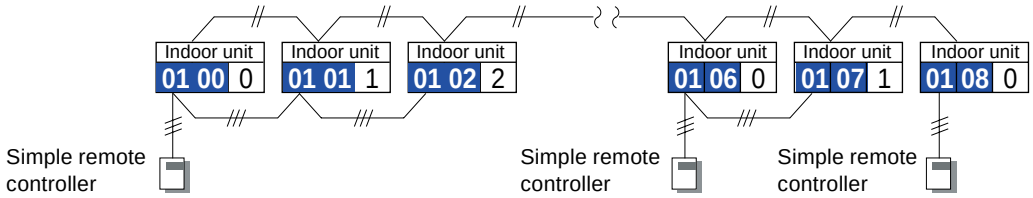
■ COMPLETION OF ADDRESS SETTING MODE

13) Press the three buttons of SET TEMP. ▲, SET TEMP. ▼ and FAN at the same time for 5 seconds or longer. The address setting mode will be cleared and the regular display will be restored.



∗ If no key entry is made for 60 seconds, even though none of the above buttons is pressed, the address setting mode will automatically be cleared.
(If the address setting mode is automatically cleared while setting addresses, activate the mode again according to the procedure in step 4) above.)

■ SETTING UP EACH INDOOR UNIT



Repeat the procedures in steps 1) through 13), and set up the indoor units requiring address setting.

■ RESET THE POWER AFTER SETTING UP ADDRESS OF ALL INDOOR UNITS

Important

∗ If the reset is not performed, address can not be read in normally.
∗ After all the addresses have been set, the circuit breaker needs to be switched off for at least 2 minutes.
After the 2 minutes has passed, power can be restored.
∗ The set address is stored in the PCB and will remain in memory even when the power is turned off.
However setting address is effective after power reset.
Record the address set in the indoor unit on a label, etc., and affix the label to the unit so it can be used for after-sales service operations.

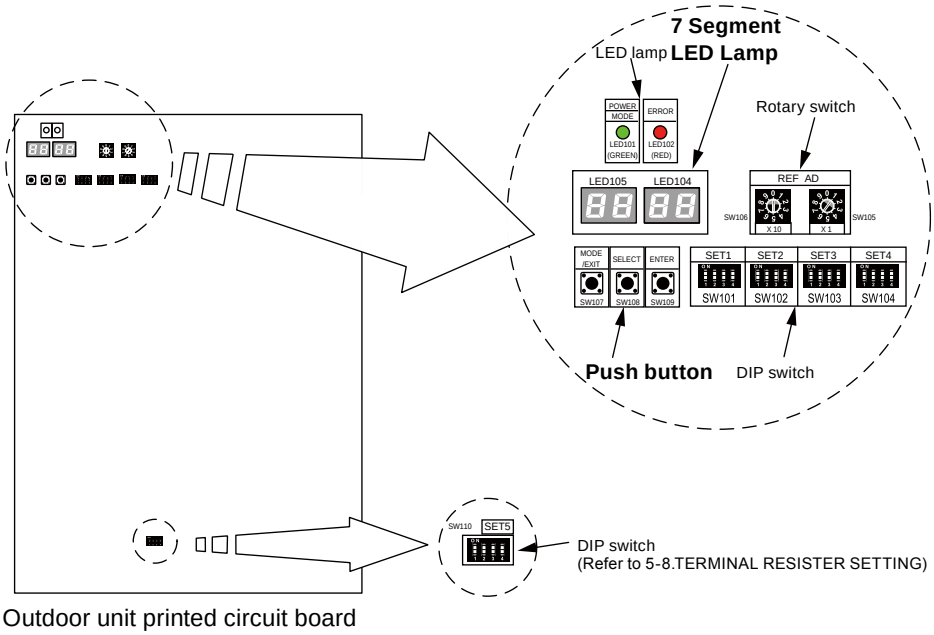
SYSTEM DESIGN

5-7. AUTOMATIC ADDRESS SETTING

The addresses of signal amplifiers and indoor units can be set automatically.

⚠Caution
Following are cautions when performing AUTOMATIC ADDRESS SETTING. 1.The Controller cannot be used. 2.AUTOMATIC ADDRESS SETTING may take about 30 minutes. 3.Emergency stop signal is not accepted. Refer to 7. EXTERNAL INPUT & OUTPUT for design related to emergency stop.
When setting both addresses of signal amplifiers and indoor units automatically, be sure to always set the addresses of signal amplifiers first.

■ SWITCH POSITION



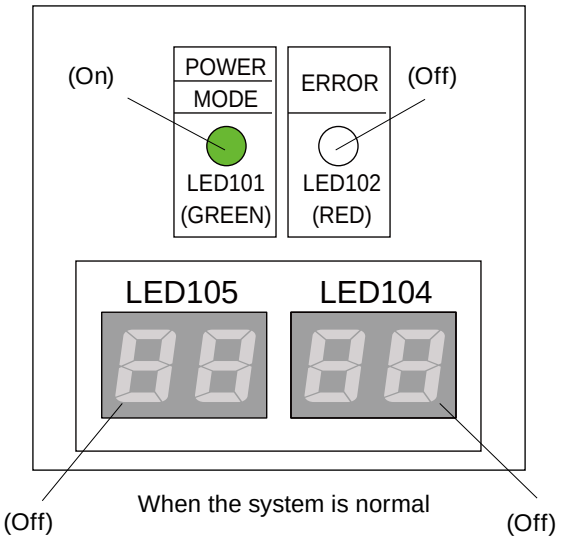
Outdoor unit printed circuit board

- Set the functions of an outdoor unit with the push buttons (SW107, SW108 and SW109) while observing the 7-segment LED lamps (LED105 and LED104) on the printed circuit board.

SYSTEM DESIGN

■ PREPARATION

1) Be sure to check that the operation of the outdoor unit has stopped (be sure to stop the operation if it is still running), and turn off the power.
2) Remove the front panel of the outdoor unit, and remove the lid of the electrical component box in order to expose the printed circuit board.
3) Turn on the power of the outdoor unit.



- As shown in the above figure, make sure that the POWER/MODE indicator lamp (LED101) is on and the ERROR indicator lamp (LED102) is off.
- If the ERROR indicator lamp (LED102) flashes, it indicates that an error has occurred. Check wiring and power supply. After making sure that the ERROR indicator lamp (LED102) has turned off, proceed to the next step.

SYSTEM DESIGN

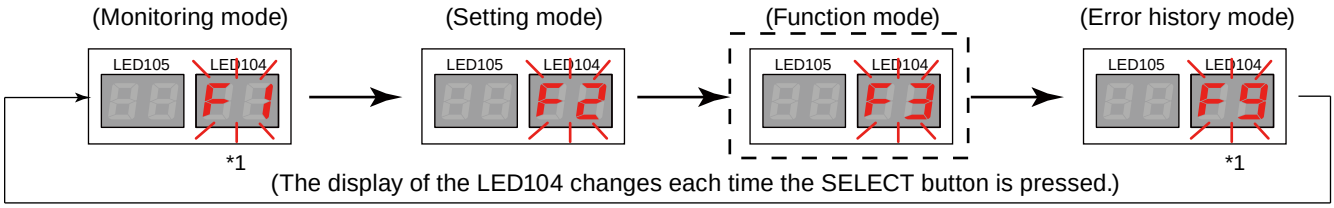
■ SIGNAL AMPLIFIER AUTOMATIC ADDRESS SETTING

⚠Caution

- The Signal Amplifier Automatic Address Setting function can be used for a maximum of eight signal amplifiers installed within the same network.
- Perform the automatic address setting of signal amplifiers on only one outdoor unit within the same network. (Do not set them again from other outdoor unit.)
- When setting the address of a signal amplifier automatically, be sure to always set the address on the printed circuit board of the Signal amplifier to “1”(factory setting).

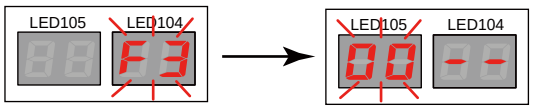
1) After verifying that the system is normally, press the MODE/EXIT button (SW107) once.

2) Press the SELECT button (SW108) to display “F3” on the LED104.



*1 : The “F1” and “F9” modes are used for maintenance, so do not set them in regular

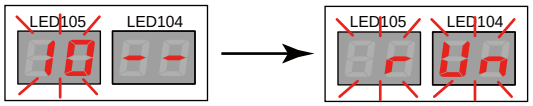
3) When “F3” appears on the LED104, press the ENTER button (SW109).



A flashing display appears on the LED105.

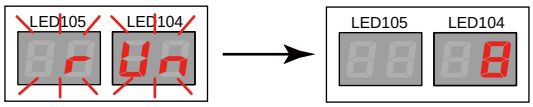
4) Press the SELECT button (SW108) to display “10” on the LED105.

5) When “10” appears on the LED105, hold down the ENTER button (SW109) for at least 3 seconds. (Unless it is held down for at least 3 seconds, the selection will not be confirmed.)



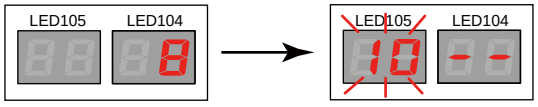
When the Automatic Address Setting function is activated, the display changes to “run.”

6) When automatic address setting is completed, the number of signal amplifier is displayed on the LED104. Verify that the count matches the number of signal amplifiers being installed.

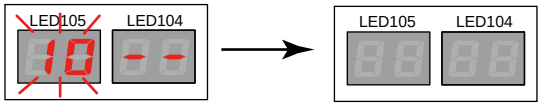


Ex.) When eight signal amplifiers are being connected

7) To exit automatic address setting, press the ENTER button (SW109) in the setting completed status shown in step 6) above.



Next, press the MODE/EXIT button (SW107) to exit the Function mode.



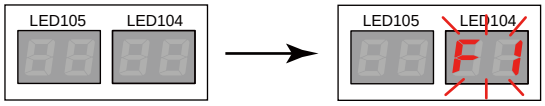
SYSTEM DESIGN

■ INDOOR UNIT AUTOMATIC ADDRESS SETTING

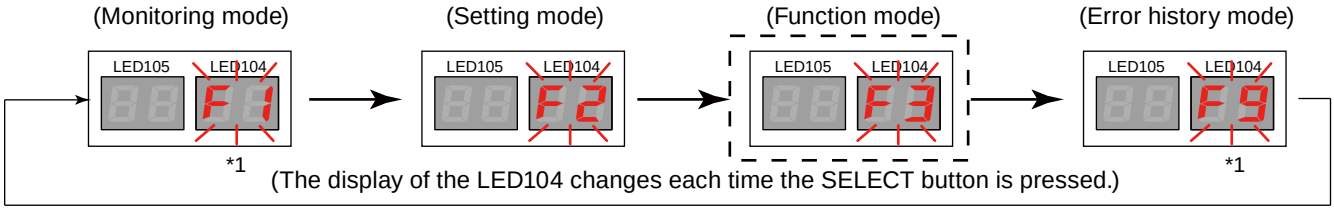
⚠Caution

- The Indoor Unit Automatic Address Setting function can be used for a maximum of 64 indoor units installed within the same refrigerant system. However, a maximum of 9 (6HP), 8 (5HP), 6 (4HP) indoor units can be installed within the same refrigerant system.
- The Indoor Unit Automatic Address Setting function cannot be used for indoor units being connected to other refrigerant systems via the network.
  (Refer to "■TRANSMISSION WIRING FLOW" in "4-3. TRANSMISSION LINE".)
- When setting addresses automatically, be sure to position "IU AD x10" (SW6), "IU AD x1" (SW7), "REF AD x10" (SW8) and "REF AD x1" (SW9) at 0 (Factory setting).
- When an indoor unit address is set up, a refrigerant circuit address is also set up at the same time. (The refrigerant circuit address of an outdoor unit being connected within the same refrigerant system is set up.)

1) After verifying that the system is operating normally, press the MODE/EXIT button (SW107) once.

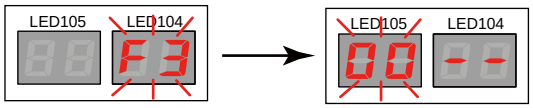


2) Press the SELECT button (SW108) to display "F3" on the LED104.



*1 : The "F1" and "F9" modes are used for maintenance, so do not set them in regular

3) When "F3" appears on the LED104, press the ENTER button (SW109).



A flashing display appears on the LED105.

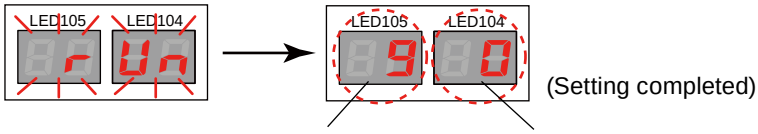
4) Press the SELECT button (SW108) to display "11" on the LED105.

SYSTEM DESIGN

5) When “11” appears on the LED105, hold down the ENTER button (SW109) for at least 3 seconds.(Unless it is held down for at least 3 seconds, the selection will not be confirmed.)

When the Automatic Address Setting function is activated, the display changes to “run.”

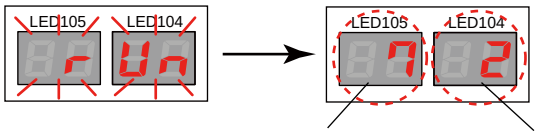
6) When automatic address setting is completed, the number of indoor units of which automatic address setting succeeded is displayed on the LED105, and the number of indoor units of which automatic address setting failed is displayed on the LED104.
Ex.) When 9 indoor units are connected, and the automatic setting of the addresses of all indoor units ended normally



LED105: The number of indoor units of which automatic address setting succeeded

LED104: The number of indoor units of which automatic address setting failed

Ex.) When 9 indoor units are connected, and the automatic setting of the addresses of two indoor units failed

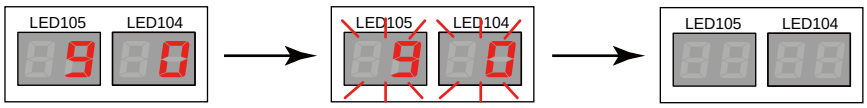


LED105: The number of indoor units of which automatic address setting succeeded

LED104: The number of indoor units of which automatic address setting failed

If automatic address setting failed, make sure that all of the rotary switches SW6 to SW9 on the PCBs of the failed indoor units are positioned at 0 and that wiring and power supply are correct, and then perform automatic address setting again.

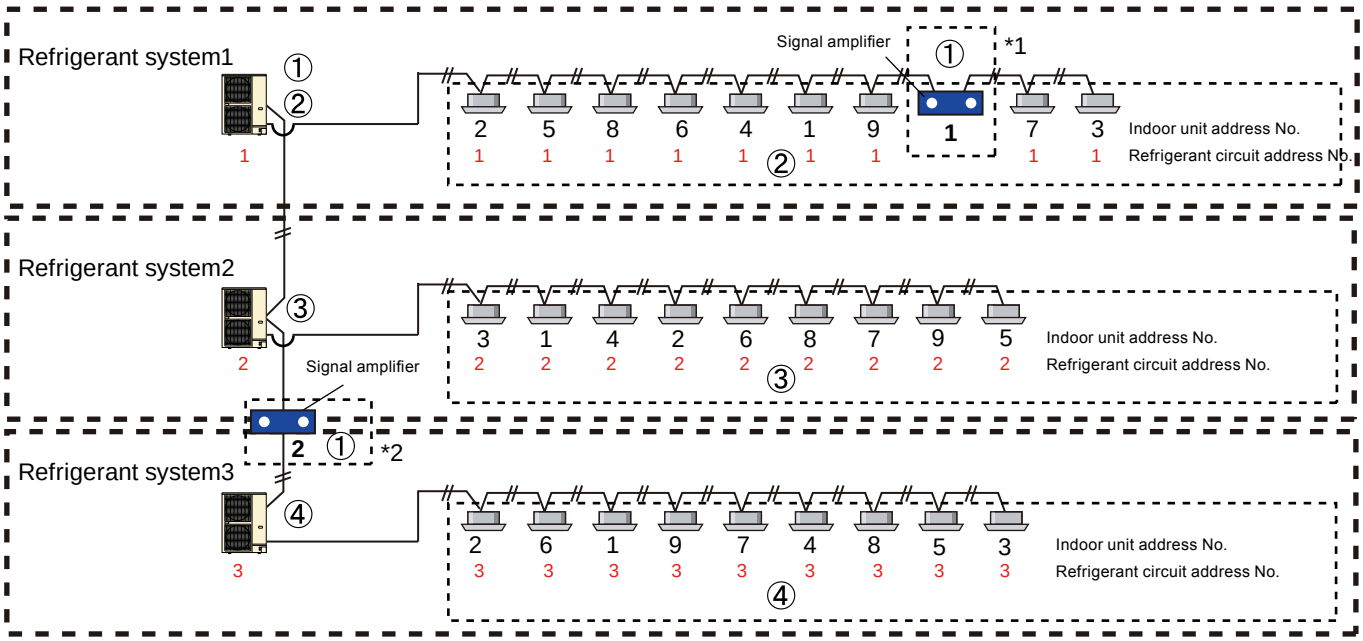
7) When the ENTER button (SW109) is pressed, it takes about 30 seconds for end processing. During that time, the LED display blinks.
Setting is complete when the LED display goes off.



SYSTEM DESIGN

■ EXAMPLES

● Example 1 : To automatically set both addresses of signal amplifiers and indoor units



Step 1: ① Activate the Signal Amplifier Automatic Address Setting function on the outdoor unit of Refrigerant System 1.

→An address is automatically assigned to all signal amplifiers on the network. (Because an address is also assigned to the signal amplifiers being connected in Refrigerant Systems 2 and 3, it is not necessary to perform the automatic address setting of these signal amplifiers again on the outdoor units of Refrigerant Systems 2 and 3.)

Step 2: ② Activate the Indoor Unit Automatic Address Setting function on the outdoor unit of Refrigerant System 1.

→An indoor unit address and a refrigerant circuit address are automatically set up for all indoor units being connected in Refrigerant System 1.

Step 3: ③ Activate the Indoor Unit Automatic Address Setting function on the outdoor unit of Refrigerant System 2.

→An indoor unit address and a refrigerant circuit address are automatically set up for all indoor units being connected in Refrigerant System 2.

Step 4: ④ Activate the Indoor Unit Automatic Address Setting function on the outdoor unit of Refrigerant System 3.

→An indoor unit address and a refrigerant circuit address are automatically set up for all indoor units being connected in Refrigerant System 3.

⚠Caution

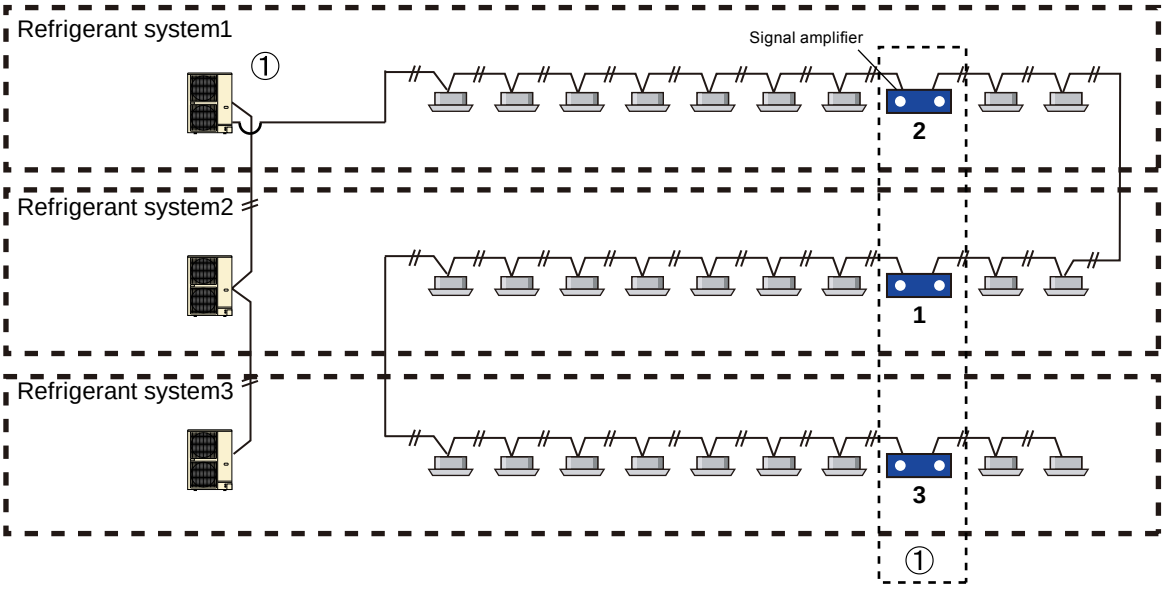
- Before activating the Automatic Address Setting function, make sure to finish setting the refrigerant circuit addresses of outdoor units.
- Setting the addresses of indoor units automatically does not necessary mean that addresses are assigned sequentially starting from the indoor unit which is located the closest to the outdoor units (instead, addresses are assigned randomly).
  With respect to the setting of refrigerant circuit addresses, the same address numbers of the refrigerant circuit addresses of the outdoor units being connected within the same refrigerant system are assigned.
- To find out what addresses have been assigned to individual indoor units, it is necessary to perform a separate address check operation.

＊1: If the total wiring length within a segment is expected to exceed 500 m, insert a signal amplifier (Refer to 3-4).

＊2: If the number of nodes (the number of units of indoor units, outdoor units, controllers and others) is expected to exceed 64 (including signal amplifiers), insert a signal amplifier (Refer to 3-4).

SYSTEM DESIGN

● Example 2 : To automatically set the addresses of signal amplifiers only (When the addresses of indoor units will be set manually)



Step 1: ① Activate the Signal Amplifier Automatic Address Setting function on the outdoor unit of Refrigerant System 1.

→An address is automatically assigned to all signal amplifiers on the network.

⚠Caution
● When indoor units are being connected via different refrigerant systems, never activate the Indoor Unit Automatic Address Setting function.
● As long as master units are on the same network, any master unit can set the addresses of signal amplifiers automatically.Perform the automatic address setting of signal amplifiers on only one outdoor unit within the same network. (Do not set them again from other outdoor unit.)

SYSTEM DESIGN

5-8. TERMINAL RESISTOR SETTING

⚠Caution
Be sure to set the terminal resistor according to specifications. Set the terminal resistor for every network segment (NS). ● If terminal resistor is set in multiple devices, the overall communication system may be damaged. ● If terminal resistor is not set in a device, abnormal communication may occur.

- Be sure to set one terminal resistor in a network segment. You can set the terminal resistor at the outdoor unit or signal amplifier.
- When setting the terminal resistor of a signal amplifier, refer to the installation manual of the signal amplifier.
- When setting multiple terminal resistors, take note of the following items.

①How many network segments are there in a VRF system?

②Where will you set the terminal resistors in a network segment?

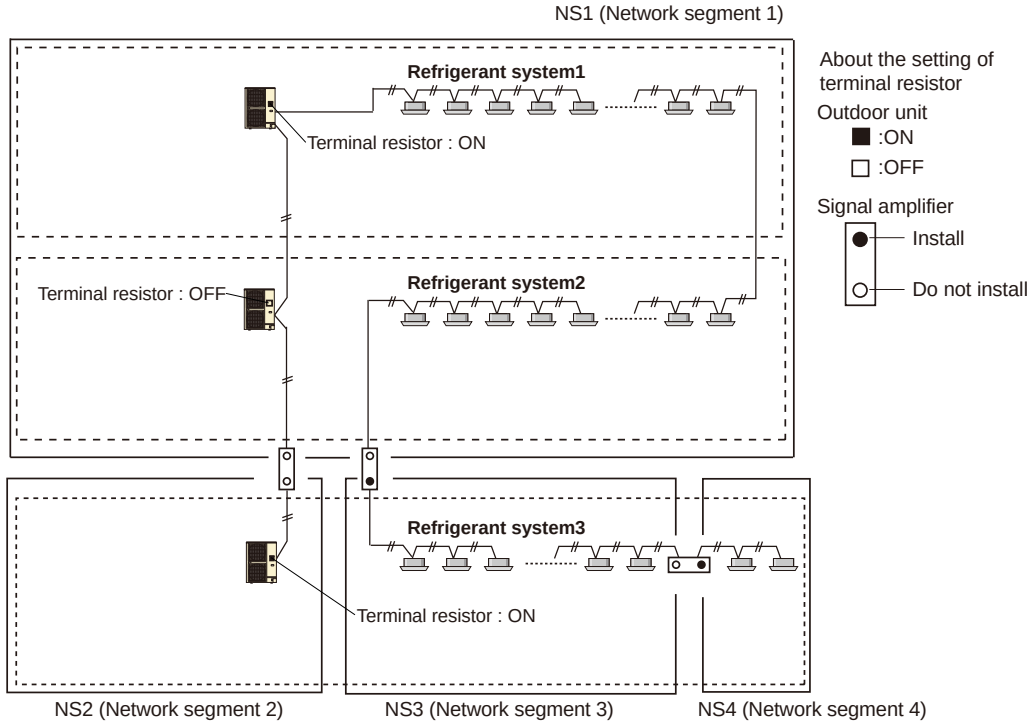
(Condition for 1 segment: Total number of outdoor and indoor units and signal amplifiers is less than 64, or the total length of the transmission line is less than 500m)

③How many outdoor units are connected in 1 Refrigerant system?

- From conditions①-③, set outdoor unit DIP switch SET5-4 in accordance with the table below.

DIP SW SET5-4	Terminal resistor	Remarks
OFF	Disable	(Factory setting)
ON	Enable	-

■ SETTING EXAMPLE

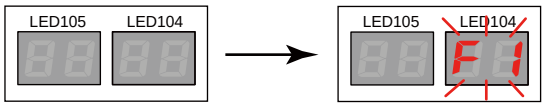


SYSTEM DESIGN

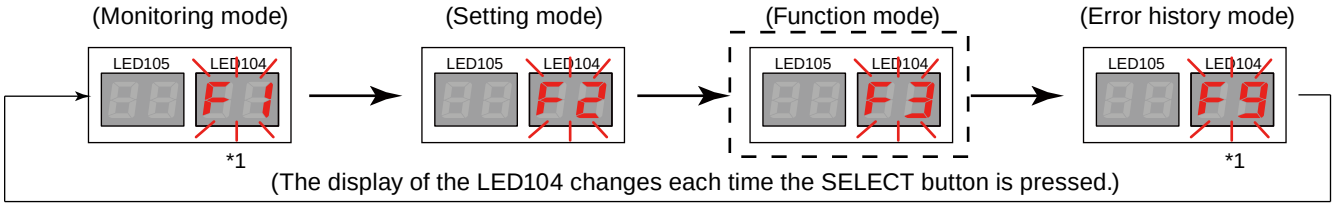
5-9. INDOOR UNIT CONNECTION CHECK

Note
It is necessary to stop SERVICE TOOL (UTY-ASGX) and WEB MONITORING TOOL (UTY-AMGX), when you will carry out indoor unit connection check.

1) After verifying that the system is normally, press the MODE/EXIT button (SW107) once.

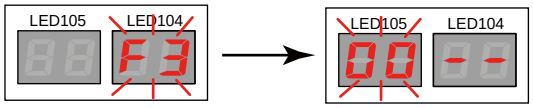


2) Press the SELECT button (SW108) to display “F3” on the LED104.



*1 : The “F1” and “F9” modes are used for maintenance, so do not set them in regular

3) When “F3” appears on the LED104, press the ENTER button (SW109).

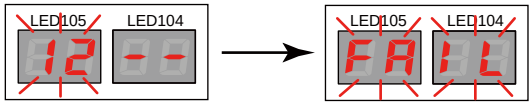


A flashing display appears on the LED105.

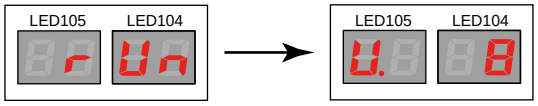
4) Press the SELECT button (SW108) to display “12” on the LED105.

5) When “12” appears on the LED105, hold down the ENTER button (SW109) for at least 3 seconds. (Unless it is held down for at least 3 seconds, the selection will not be confirmed.)
When the Indoor Unit Connection Check function is activated, the display changes to “run”.

- When the Indoor Unit Connection Check function is not activated (during maintenance), the display changes to “FAIL”.



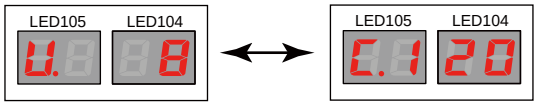
6) When Indoor Unit Connection Check is completed, the number of indoor unit is displayed on the LED104, LED105. Verify that the count matches the number of indoor units being installed.



Ex.) When eight indoor units are being connected

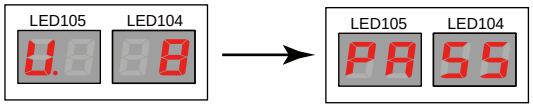
SYSTEM DESIGN

7) When the number of indoor units appear on the LED104, LED105, press the SELECT button (SW108), the display changes to volume ratio of the indoor units.

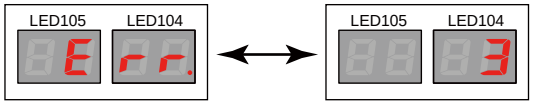


Ex.) When volume ratio of the indoor units is 120 %.

8) When “the number of indoor units” or “volume ratio of the indoor units connection” appears on the LED104, LED105, press the ENTER button (SW109). When Indoor Unit Connection Check is completed, the display changes to “PASS”.



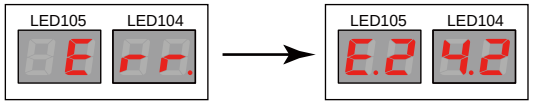
When Indoor Unit Connection Check is error, the display changes to “Err.” or “number of error” every one second.



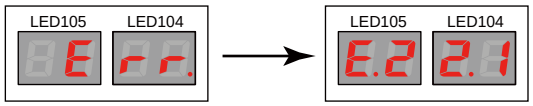
Ex.) Shown numbers of error are three.

When confirm the contents of the error , push the ENTER button (SW109). When there are some errors, display change by push the SELECT button (SW108).

●Number of indoor unit connection is error (6HP:2~9, 5HP:2~8, 4HP:2~6).

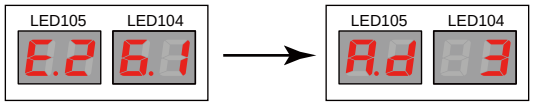


● Volume ratio of the indoor units connection is error (50~130%).



● Overlap address of the indoor unit is error.

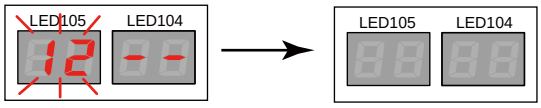
Display the address of the overlap indoor unit, hold down the ENTER button (SW109).



Ex.) Shown that overlap address to indoor unit address 3.

9) To exit the Indoor Unit Connection Check , press the ENTER button (SW109) in the setting completed status shown in step 8) above.

Next, press the MODE/EXIT button (SW107) to exit the Function mode.

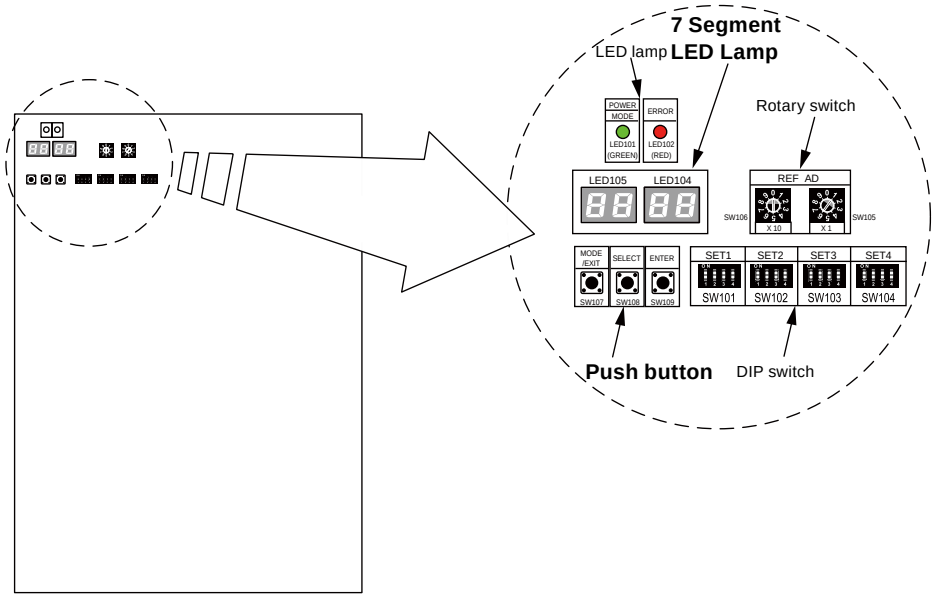


SYSTEM DESIGN

6. FUNCTION SETTING

6-1. OUTDOOR UNIT

■ SWITCH POSITION

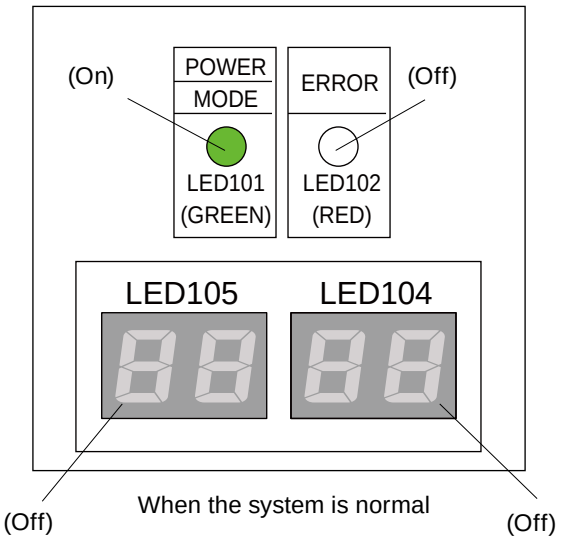


Outdoor unit printed circuit board

- Set the functions of an outdoor unit with the push buttons (SW107, SW108 and SW109) while observing the 7-segment LED lamps (LED105 and LED104) on the printed circuit board.

■ PREPARATION

1) Be sure to check that the operation of the outdoor unit has stopped (be sure to stop the operation if it is still running), and turn off the power.
2) Remove the front panel of the outdoor unit, and remove the lid of the electrical component box in order to expose the printed circuit board.
3) Turn on the power of the outdoor unit.

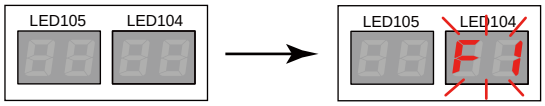


- As shown in the above figure, make sure that the POWER/MODE indicator lamp (LED101) is on and the ERROR indicator lamp (LED102) is off.
- If the ERROR indicator lamp (LED102) flashes, it indicates that an error has occurred. Check wiring and power supply. After making sure that the ERROR indicator lamp (LED102) has turned off, proceed to the next step.

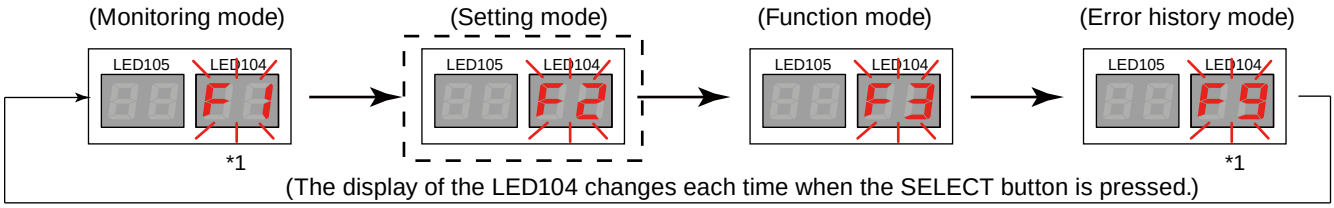
SYSTEM DESIGN

■ FUNCTION SETTING

1) After verifying that the system is normally, press the MODE/EXIT button (SW107) once.

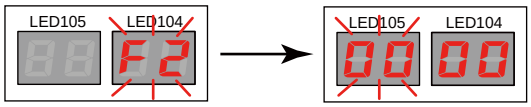


2) Press the SELECT button (SW108), and display “F2” on the LED104.

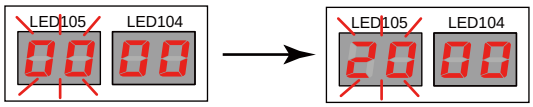


*1:The “F1”and “F9” modes are used for maintenance, so do not set them in regular operation.

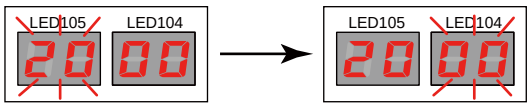
3) When “F2” appears on the LED104, press the ENTER button (SW109).
A flashing display appears on the LED105, and the flashing display of “F2” on the LED104 changes to the illuminated display of a number.



4) Referring to the Settings List shown below, press the SELECT button (SW108) and display the code number of the mode you want to set on the LED105.
Ex.) To select switching between Forced Stop and Emergency Stop



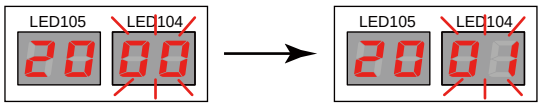
Next, press the ENTER button (SW109), and confirm the selection of the mode you want to set.



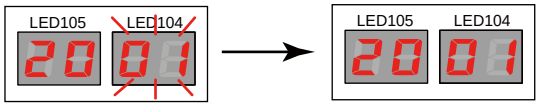
A flashing display on the LED105 changes to an illuminated display, and an illuminated display on the LED104 changes to a flashing display.

SYSTEM DESIGN

5) Again, referring to the Settings List shown below, press the SELECT button (SW108), and display the code number of the function you want to set on the LED104.
Ex.) To select the Emergency Stop function

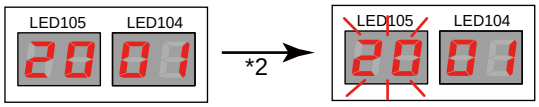


Next, press the ENTER button (SW109), and confirm the selection of the function you want to set.



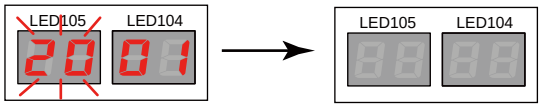
A flashing display on the LED104 changes to an illuminated display.
This completes FUNCTION SETTING.

6) To exit FUNCTION SETTING, press the ENTER button (SW109) in the setting completed status shown in step 5) above.

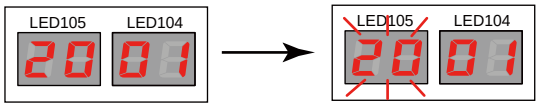


*2 : 5 seconds after, even if ENTER button(SW109) is not pressed , LED105 changes to a flashing display automatically.

Then, press the MODE/EXIT button (SW107) to exit FUNCTION SETTING MODE.



7) To set another function, press the ENTER button (SW109) in the setting completed status shown in step 5) above.



Repeat steps 4) and 5) above to set other functions.
When all settings are complete, perform the operation described in step 6) above to exit.

SYSTEM DESIGN

■ SETTINGS LIST

LED105 CODE No.		Setting Mode	LED104 CODE No.		Setting Function	Factory setting	Remarks
0	0	Pipe length setting	0	0	Standard		Pipe length means the length between outdoor unit and the farthest indoor unit.
			0	1	Short		
			0	2	Medium		
			0	3	Long 1		
			0	4	Long 2		
1	0	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
			0	2	Forbidden		
			0	3	Forbidden		
1	1	Cooling capacity shift	0	0	Normal mode	●	
			0	1	Save energy mode 1		
			0	2	High power mode 1		
			0	3	High power mode 2		
			0	4	Forbidden		
1	2	Heating capacity shift	0	0	Normal mode	●	
			0	1	Save energy mode		
			0	2	High power mode 1		
			0	3	High power mode 2		
1	3	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
1	4	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
			0	2	Forbidden		
			0	3	Forbidden		
			0	4	Forbidden		
2	0	Switching between batch stop or emergency stop	0	0	Batch stop	●	This mode selects the pattern of the stop function to be operated by the external input terminal (CN134). •Batch stop: The stop of all indoor units connected to same refrigerant system due to input signal coming from CN134.
			0	1	Emergency stop		•Emergency stop: When emergency stop is actuated, the indoor unit does not accept the operation command from the remote controller. On the other hand, when the emergency stop is released (no input from CN134), the air conditioner does not return to the original operation until operate indoor unit by the remote controller.

SYSTEM DESIGN

LED105 CODE No.		Setting Mode	LED104 CODE No.		Setting Function	Factory setting	Remarks
2	1	Operation mode selecting method	0	0	Priority given to the first command	●	Select the priority setting of the operation mode. •Priority given to the first command: Priority is given to the operation mode which is set first. •Priority given to external input of outdoor unit: Priority is given to the operation mode which is set by the external input terminal (CN132). •Priority given to administrative indoor unit: Priority is given to the operation mode of the administrative indoor unit which is set by the wired remote controller.
			0	1	Priority given to external input of outdoor unit		
			0	2	Priority given to administrative indoor unit		
2	2	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
2	3	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
			0	2	Forbidden		
			0	3	Forbidden		
2	4	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
			0	2	Forbidden		
			0	3	Forbidden		
2	5	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
			0	2	Forbidden		
			0	3	Forbidden		
2	6	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
2	7	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
2	8	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
2	9	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		

SYSTEM DESIGN

LED105 CODE No.		Setting Mode	LED104 CODE No.		Setting Function	Factory setting	Remarks
3	0	Outdoor unit capacity save setting	0	0	Level 1 (stop)	●	The capacity limit can be selected by the external input terminal (CN133) when operating with the “Outdoor unit capacity save function.” The lower the level, the more the effect of energy saving, but the cooling/heating performance will also drop.
			0	1	Level 2		
			0	2	Level 3		
			0	3	Level 4		
			0	4	Level 5		
3	1	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
4	0	Capacity priority setting (in low noise mode)	0	0	Off (quiet priority)	●	If the cooling/heating performance becomes insufficient when the low noise mode is set, it is possible to set “capacity priority” that automatically cancels the low noise mode (once performance is restored, the mode will automatically return to the low noise mode).
			0	1	On (capacity priority)		
4	1	Low noise mode setting	0	0	Off (Normal)	●	
			0	1	On (Low noise mode)		
4	2	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
6	0	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		

SYSTEM DESIGN

LED105 CODE No.		Setting Mode	LED104 CODE No.		Setting Function	Factory setting	Remarks
7	0	Electricity meter No. setting 1 *1	0	0	Setting number x00	●	Set the ones digit and tens digit of the No. of the electricity meter connected to CN135.
			0	1	Setting number x01		
			▪ ▪ ▪	▪ ▪ ▪	▪ ▪ ▪		
			9	8	Setting number x98		
			9	9	Setting number x99		
7	1	Electricity meter No. setting 2 *1	0	0	Setting number 0xx	●	Set the hundreds digit of the No. of the electricity meter connected to CN135.
			0	1	Setting number 1xx		
			0	2	Setting number 2xx		
7	2	Electricity meter pulse setting 1 *2	0	0	Setting number xx00	●	Set the ones digit and tens digit of the No. of the electricity meter pulse setting connected to CN135.
			0	1	Setting number xx01		
			▪ ▪ ▪	▪ ▪ ▪	▪ ▪ ▪		
			9	8	Setting number xx98		
			9	9	Setting number xx99		
7	3	Electricity meter pulse setting 2 *2	0	0	Setting number 00xx	●	Set the hundreds digit and thousands digit of the electricity meter pulse setting connected to CN135.
			0	1	Setting number 01xx		
			▪ ▪ ▪	▪ ▪ ▪	▪ ▪ ▪		
			9	8	Setting number 98xx		
			9	9	Setting number 99xx		
9	0	Forbidden	0	0	Forbidden	●	Setting forbidden
			0	1	Forbidden		
			0	2	Forbidden		
			0	3	Forbidden		
			0	4	Forbidden		
			0	5	Forbidden		
			0	6	Forbidden		
			0	7	Forbidden		
			0	8	Forbidden		
			0	9	Forbidden		
			1	0	Forbidden		
			1	1	Forbidden		

*1: When electricity meter No. is set to “000” and “201 to 299”, the pulses input to CN135 become ineffective.
Available setting number is "001" to "200"

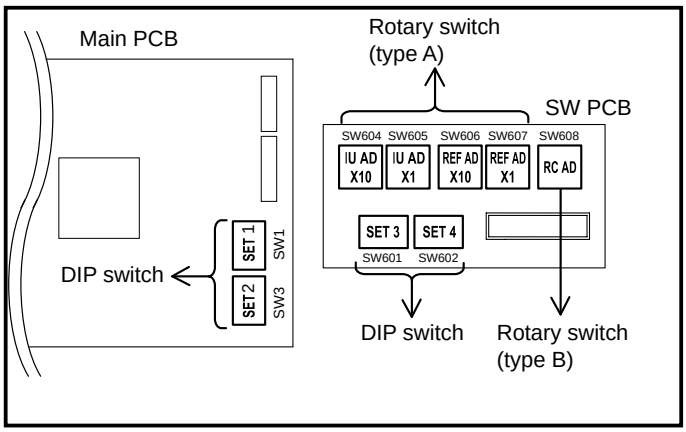
*2: When the electricity meter pulse setting is set to “0000”, the pulses input to CN135 become ineffective.
Available setting number is "0001" to "9999"

SYSTEM DESIGN

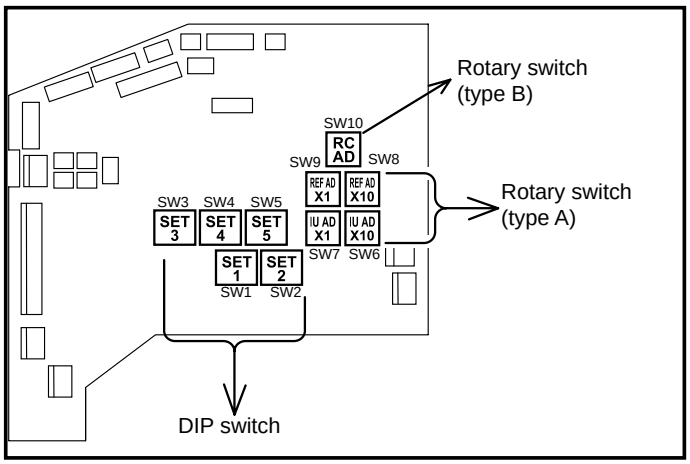
6-2. INDOOR UNIT (setting by switch)

■ SWITCH POSITION

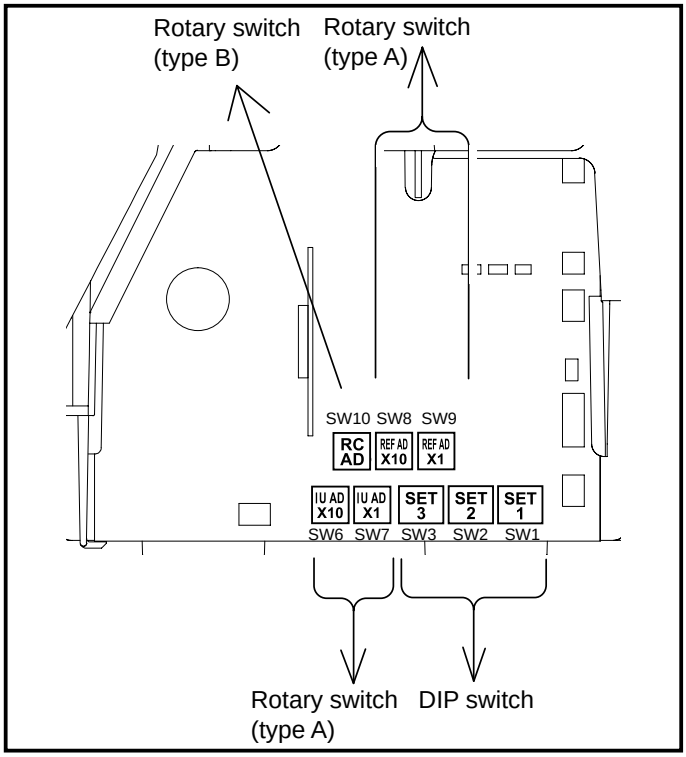
● Compact Cassette type Cassette type, Floor/Ceiling type, Ceiling type, and Slim Duct type



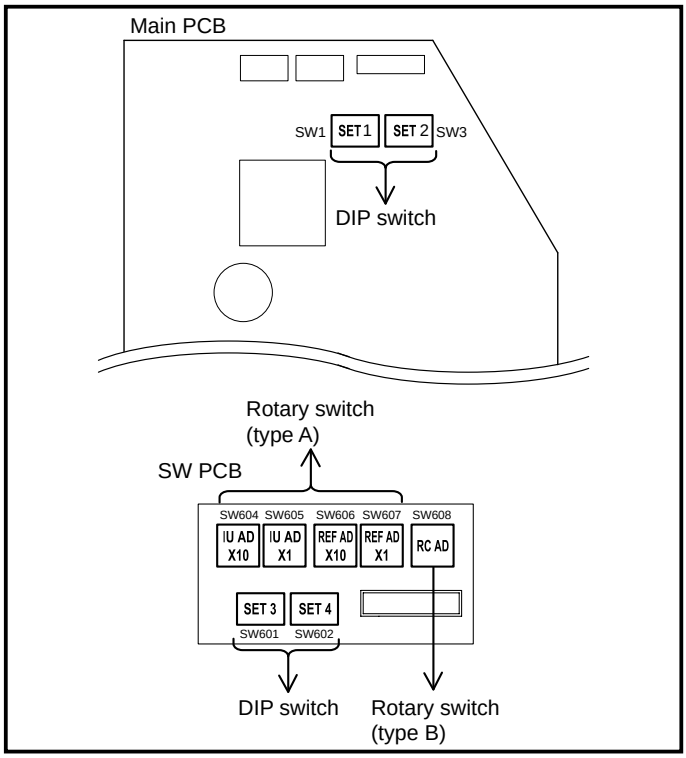
● Compact Duct type, Low Static Duct type, Duct type, and High Static Duct type

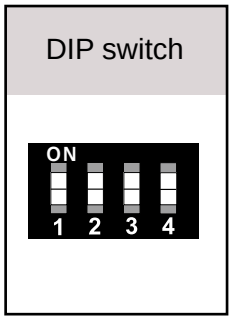


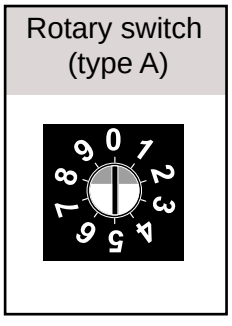
● Compact Wall Mounted type

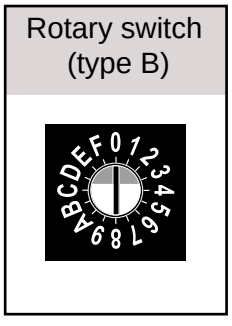


● Wall Mounted type









SYSTEM DESIGN

SYSTEM DESIGN

■ SWITCH TABLE

DIP-SW	SET1	1	Forbidden (Indoor unit capacity setting)
		2	Forbidden (Indoor unit capacity setting)
		3	Forbidden (Indoor unit capacity setting)
		4	Forbidden (Indoor unit capacity setting)
	SET2	1	Forbidden (Indoor unit capacity setting)
		2	External input select "edge/pulse"
		3	Forbidden
		4	Forbidden
	SET3	1	Wireless remote controller custom code switch 1
		2	Wireless remote controller custom code switch 2
		3	Forbidden
		4	Forbidden
	SET4	1	Drainage function switch (Slim Duct type only)
		2	Auto louver grille setting switch (Slim Duct type only)
		3	Forbidden
		4	Forbidden
	SET5	1	Forbidden
		2	Forbidden
		3	Forbidden
		4	Forbidden
Rotary SW	IU AD x 10		Indoor unit address switch 1
	IU AD x 1		Indoor unit address switch 2
	REF AD x10		Refrigerant circuit address switch 1
	REF AD x1		Refrigerant circuit address switch 2
	RC AD		Remote controller address switch

SYSTEM DESIGN

■ DIP SWITCH SETTING

● SET1 and SET2-1 setting (Never change at the site)

●Indoor unit capacity (Setting forbidden)

SET1-1	SET1-2	SET1-3	SET1-4	SET2-1	Indoor unit capacity
OFF	OFF	OFF	OFF	OFF	2.2kW
ON	OFF	OFF	OFF	OFF	2.8kW
OFF	ON	OFF	OFF	OFF	3.6kW
ON	ON	OFF	OFF	OFF	4.0kW
OFF	OFF	ON	OFF	OFF	4.5kW
ON	OFF	ON	OFF	OFF	5.6kW
OFF	ON	ON	OFF	OFF	7.1kW
ON	ON	ON	OFF	OFF	8.0kW
OFF	OFF	OFF	ON	OFF	9.0kW
ON	OFF	OFF	ON	OFF	11.2kW
OFF	ON	OFF	ON	OFF	12.5kW
ON	ON	OFF	ON	OFF	14.0kW
OFF	OFF	ON	ON	OFF	Setting forbidden
ON	OFF	ON	ON	OFF	Setting forbidden
OFF	ON	ON	ON	OFF	Setting forbidden
ON	ON	ON	ON	OFF	Setting forbidden

● SET2 setting

●External input select “edge/pulse”

(◆...Factory setting)

	SET2-2	External input select
◆	OFF	Edge
	ON	pulse

●SET2-3, SET2-4 setting forbidden

(◆...Factory setting)

	SET2-3	SET2-4	
◆	OFF	OFF	Fixed at OFF
	ON	ON	Setting forbidden

SYSTEM DESIGN

● SET3 setting

●Wireless remote controller custom code switch

This DIP switch sets the custom code of the wireless remote controller of an indoor unit.

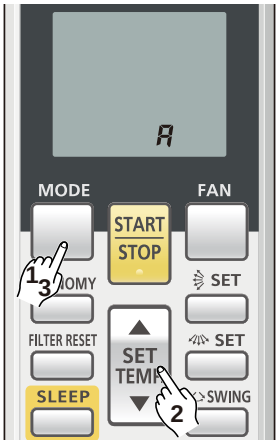
If multiple indoor units are being installed in the same room, switch the custom codes of the corresponding wireless remote controllers in order to prevent their signals from being mixed.

When switching the custom code of the wireless remote controller of an indoor unit, be sure to also switch the code setting on the paired wireless remote controller side at the same time.

(◆...Factory setting)

	SET3-1	SET3-2	Custom code
◆	OFF	OFF	Type A
	ON	OFF	Type B
	OFF	ON	Type C
	ON	ON	Type D

How to switch the code on the wireless remote controller side



1) Press the MODE button for more than five seconds to start the code change.
2) Press the SET TEMP. (▲) or (▼) button to select the desired code.
   ↱ A → B → C → D ↰
3) Press the MODE button again to end the code change.

●SET3-3, SET3-4 setting forbidden

(◆...Factory setting)

	SET3-3	SET3-4	
◆	OFF	OFF	Fixed at OFF
	ON	ON	Setting forbidden

SYSTEM DESIGN

● SET4 setting

●Drainage function switch (Slim Duct type only)

If contained drain pump is not used, set the drainage function to "Invalid" in the drainage function switching.

(◆...Factory setting)

	SET4-1	Drainage function
◆	OFF	Valid
	ON	Invalid

*Note: Pls. be sure about water leakage from the indoor unit while changing setting.

●Auto louver grille setting switch (Slim Duct type only)

When Auto louver grille kit (optional parts) is attached, set the Auto louver grille setting "Valid".

(◆...Factory setting)

	SET4-2	Auto louver grille setting
◆	OFF	Invalid
	ON	Valid

Note: Auto louver grille kit doesn't operate correctly when setting it to indoor unit other than Revision code B.
Serial number became "X2XXXXX" from revision code B.

●SET4-3, SET4-4 setting forbidden

(◆...Factory setting)

	SET4-3	SET4-4	
◆	OFF	OFF	Fixed at OFF
	ON	ON	Setting forbidden

● SET5 setting

●SET5-1, SET5-2, SET5-3, SET5-4 setting forbidden

(◆...Factory setting)

	SET5-1	SET5-2	SET5-3	SET5-4	
◆	OFF	OFF	OFF	OFF	Fixed at OFF
	ON	ON	ON	ON	Setting forbidden

SYSTEM DESIGN

■ ROTARY SWITCH SETTING

● IU AD setting

●Indoor unit address switch

Sets the indoor unit addresses.

Please see "5-3 MANUAL ADDRESS SETTING METHOD" for indoor unit address conversion table.

INDOOR UNIT ADDRESS SWITCH (Factory setting IU AD x 1: 0, IU AD x 10: 0)

Rotary SW	Description	Remarks
IU AD x 1	Indoor unit address Switch 1	Indoor unit address (the first digit)
IU AD x 10	Indoor unit address Switch 2	Indoor unit address (the second digit)

● REF AD setting

●Refrigerant circuit address switch

Sets the refrigerant circuit address.

Please see "5-3 MANUAL ADDRESS SETTING METHOD" for refrigerant circuit address conversion table.

REFRIGERANT CIRCUIT ADDRESS SWITCH (Factory setting REF AD x 1: 0, REF AD x 10: 0)

Rotary SW	Description	Remarks
REF AD x 1	Refrigerant circuit address Switch 1	Refrigerant circuit address (the first digit)
REF AD x 10	Refrigerant circuit address Switch 2	Refrigerant circuit address (the second digit)

● RC AD setting

●Remote controller address switch

When the indoor unit is wired by remote controller group, to identity the indoor unit in the remote controller group, the number (remote controller address) in the remote controller group is set.

Set the remote controller address in the 0.1.2,~,8 order (Blank is not allowed)

REMOTE CONTROLLER ADDRESS SWITCH (Factory setting : 0)

Rotary SW	Description	Remarks
RC AD	Remote controller address	Remote controller address

SYSTEM DESIGN

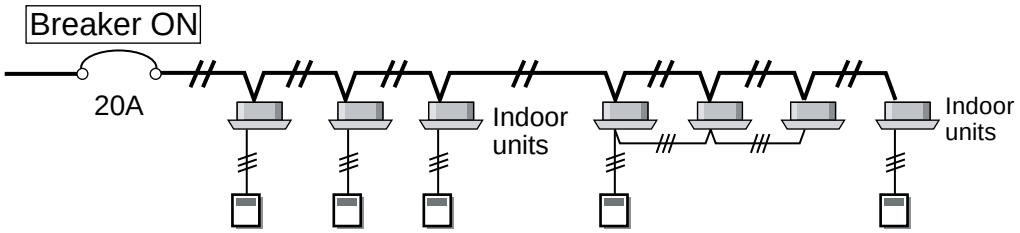
6-3. INDOOR UNIT (setting by wireless remote controller)

- This procedure changes to the function settings used to control the indoor unit according to the installation conditions. Incorrect settings can cause the indoor unit malfunction.
- After the power is turned on, perform the “FUNCTION SETTING” according to the installation conditions using the remote controller.
- The settings may be selected between the following two: Function Number or Setting Value.
- Settings will not be changed if invalid numbers or setting values are selected.

■ PREPARATION

(1) Turn on the power to the indoor unit.

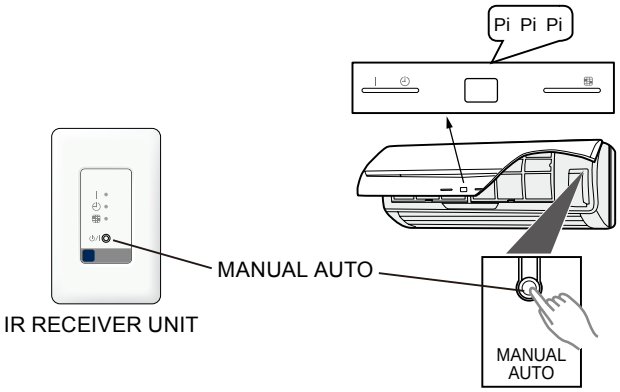
* By turning on the power indoor units initializes EEV, so make sure the piping air-tight test and vacuuming have been conducted before turning on the power.
* Also check again to make sure no wiring mistakes were made before turning on the power.



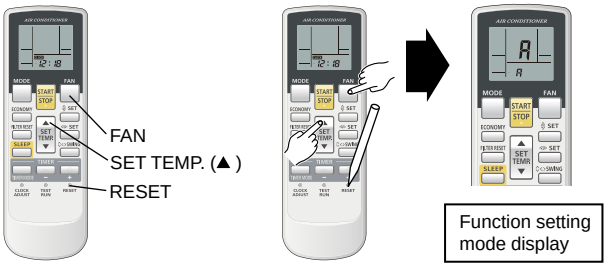
SYSTEM DESIGN

■ SWITCHING SELECTION OF FUNCTION SETTING MODE

(2) Press and hold the “MANUAL/AUTO” button for 3 seconds.



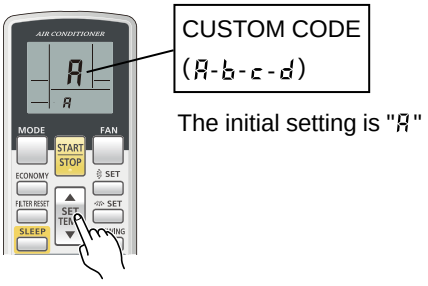
(3) Press and hold the “FAN” and the “ SET TEMP. ▲ ” buttons. Whilst holding these 2 buttons, press the "RESET" button.



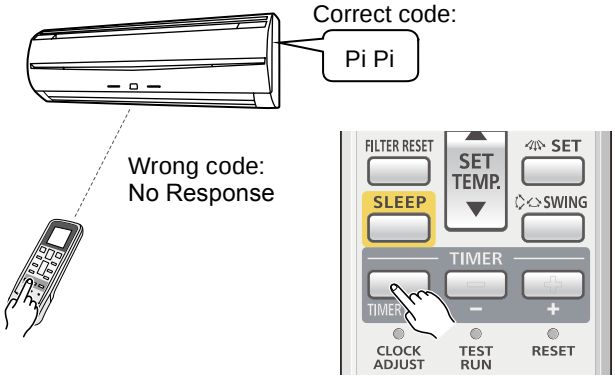
- The position of the “MANUAL/AUTO” button varies depending on the model. Refer to the operation manual for the position that is included with the unit.
- The error will be displayed by continuosly pressing the "MANUAL/AUTO" for 10 sec or more. In this case release the button or turn off the power.
- An explanation of the displayed information as shown below.

■ SELECTION AND CONFIRMATION OF CUSTOM CODE

(4) Press the “ SET TEMP. ▲ ” or “ SET TEMP. ▼ ” buttons to select the custom code that matches the setting with the indoor unit.By selecting the appropriate custom code, the communication between the indoor unit and the wireless RC become possible.



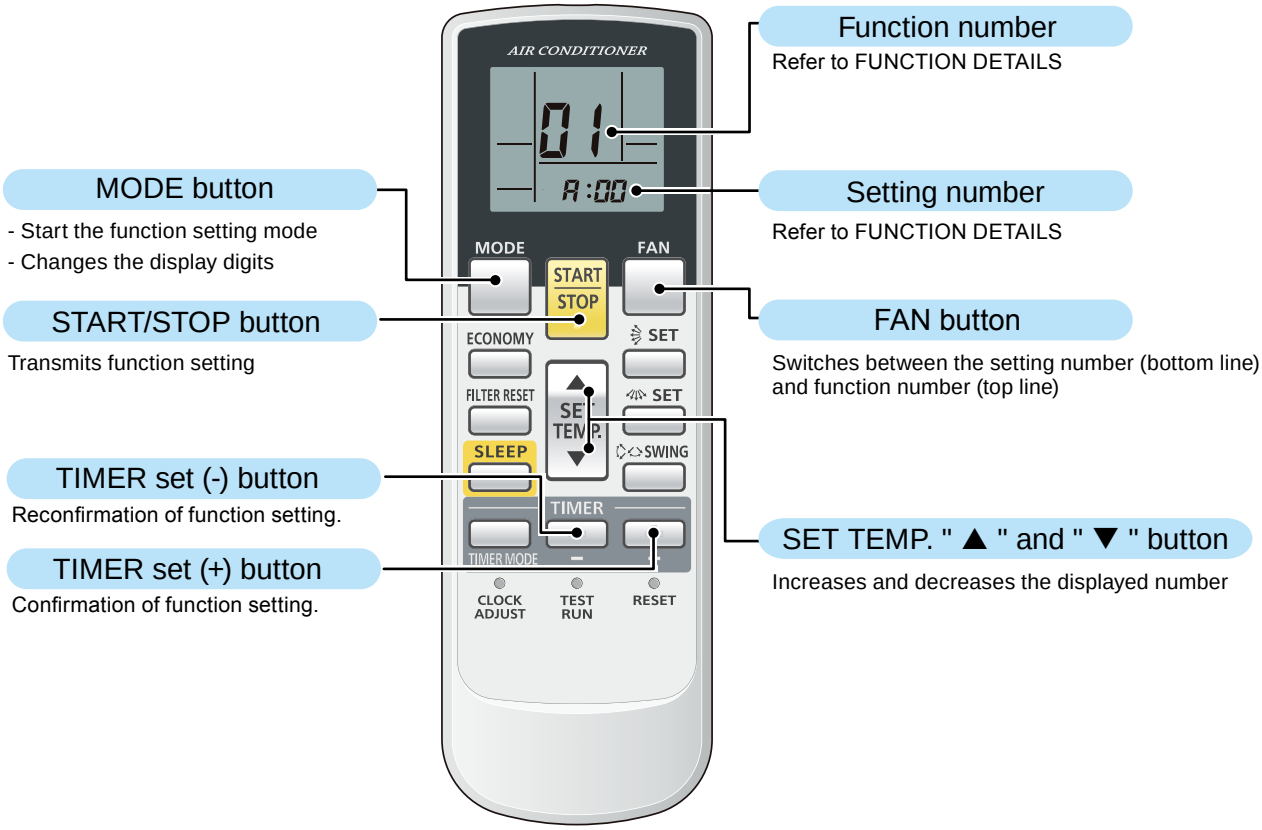
(5) Press the “TIMER MODE" button to send the code to the indoor unit.



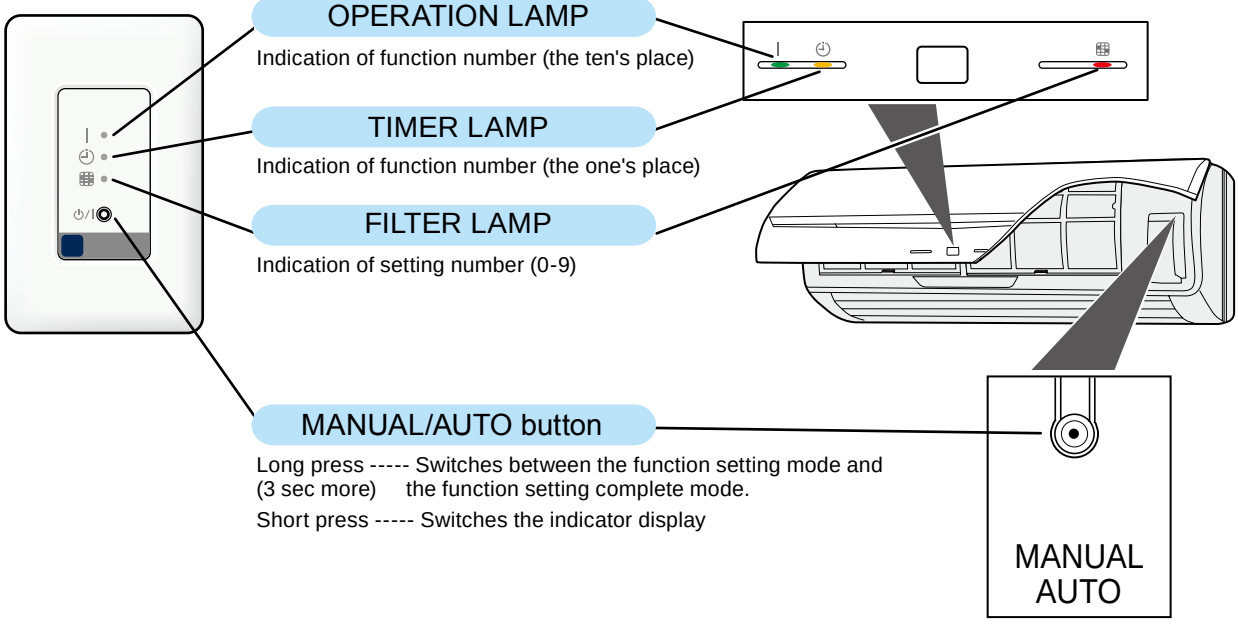
SYSTEM DESIGN

■ BUTTON NAME AND FUNCTION

● During address setting mode, indoor unit reject the any operation command from remote controller.



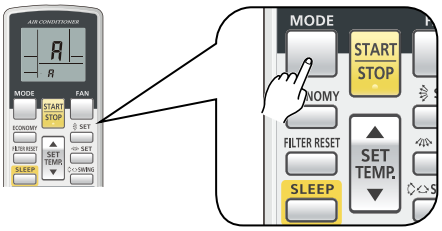
IR RECEIVER UNIT



SYSTEM DESIGN

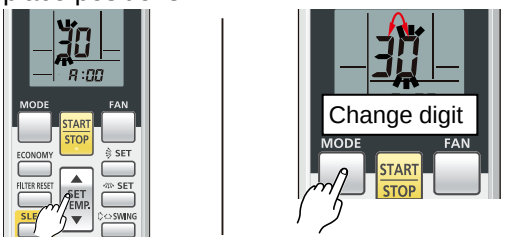
■ FUNCTION SETTING

(6) Press the “MODE” button to access the function setting mode.



(7) Press the “ ▲ ” or the “ ▼ ” buttons to select the function number.

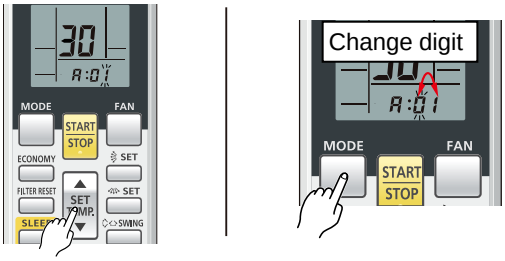
Each time the “MODE” button is pressed, it switches between the one's place and the ten's place positions.



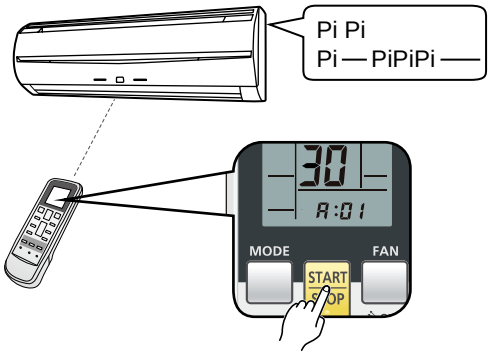
(8) Press the "FAN" button to proceed to setting the number. (Press the "FAN" button again to return to the function number selection.)

(9) Press the “ ▲ ” or the “ ▼ ” buttons to select the setting number.

Each time the “MODE” button is pressed, it switches between the one's place and the ten's place positions.



(10) Press the “START/STOP” button once to send the information. A beeping sound will be heard if the command is accepted.

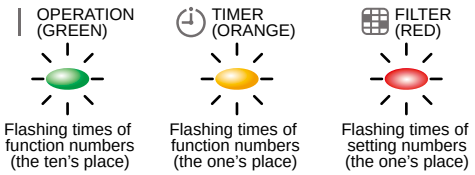


＊In the following cases the setting signal is not read and a buzzer sounds.

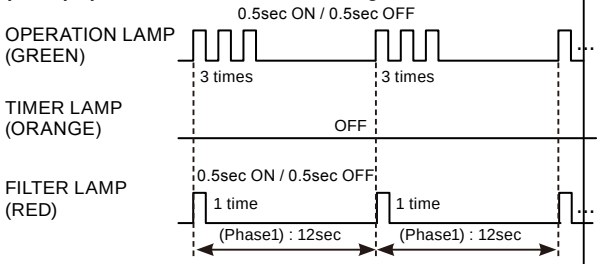
The function setting No. is set out of range
: Pi Pi Pi Pi Pi

Case1 : When setting number is one digit.

(11-1) Indoor unit will display the function setting number on "OPERATION"(GREEN), "TIMER ◴ "(ORANGE) and "FILTER ▦ "(RED) light.



(Example) Function number : 30, Setting number : 01



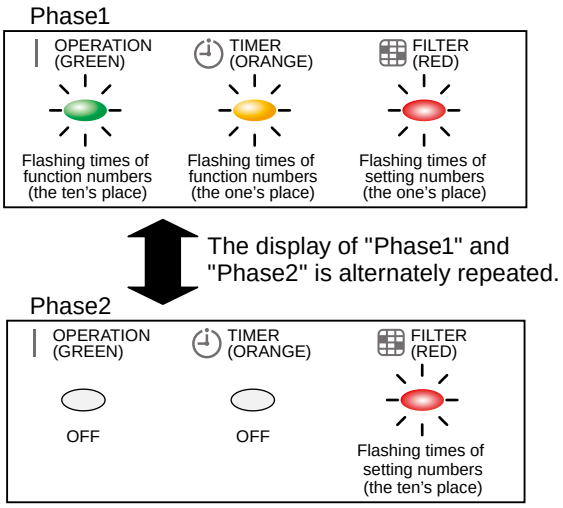
＊ Number 0 setting will not indicate TIMER LAMP and FILTER LAMP.

SYSTEM DESIGN

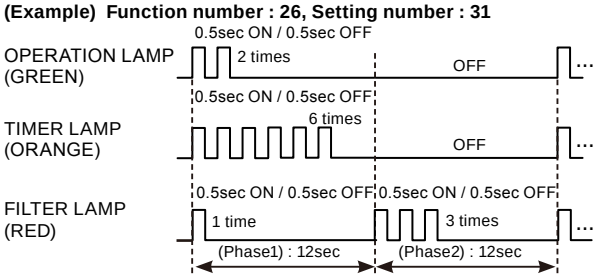
SYSTEM DESIGN

Case2 : When setting number is two digits.

(11-2) Indoor unit will display the function setting number on "OPERATION"(GREEN), "TIMER" "(ORANGE) and "FILTER" "(RED) light.



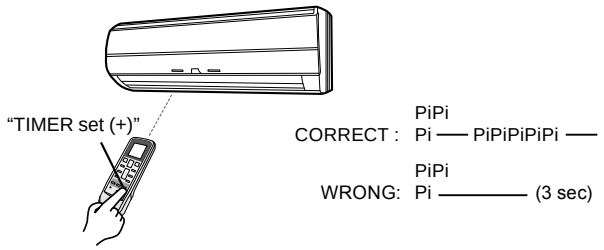
(Example) Function number : 26, Setting number : 31



∗ Number 0 setting will not indicate TIMER LAMP and FILTER LAMP.

● Confirmation of function setting

(12) Press the "TIMER set (+)" button.



SYSTEM DESIGN

SYSTEM DESIGN

■ FUNCTION DETAILS

Function	Function number	Setting number		Default	Details
Filter indicator interval	**11**	**00**	Default	●	Adjust the filter cleaning interval notifi cation. 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 control.
		01	Disable		
		02	Display only on central remote control		
Ceiling airflow	**20**	**00**	Default	●	Regulate the airfl ow according to the needs of the installation location. When set to 01, the air flow will be stronger.
		01	High Ceiling		
Vertical airflow direction	**23**	**00**	Default	●	Adjust the vertical airflow direction. All airflow direction louvers are adjusted together. (Cassette type only)
		01	Raise		
Horizontal swing airflow direction	**24**	**00**	Default	●	Adjust the horizontal swing airflow direction. (For horizontal swing equipped models)
		01	Left half		
		02	Right half		
Static pressure	**26**	**00**	0Pa		(Slim Duct type only) Range of static pressure is different from one model to other.
		01	10Pa		
		02	20Pa		
		03	30Pa		
		04	40Pa		
		05	50Pa		
		06	60Pa		
		07	70Pa		
		08	80Pa		
		09	90Pa		
		31	25Pa (Standard)	●	
Cool air temperature trigger	**30**	**00**	Default	●	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**	Default	●	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)		
*1 Auto restart	**40**	**00**	Enable		Enable or disable automatic system restart after a power outage.
		01	Disable	●	
External control	**46**	**00**	Start/Stop	●	Allow an external controller to start or stop the system, or to perform an emergency stop, or to perform a forced stop. * If an emergency stop is performed from an external controller, same refrigerant system 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	*2 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 wired remote.
		01	Display only on central remote control		

Model name	Range of static pressure
ARXD07LATH	0 to 90 Pa
ARXD09LATH	
ARXD12LATH	
ARXD14LATH	
ARXD18LATH	
ARXD24LATH	0 to 50 Pa

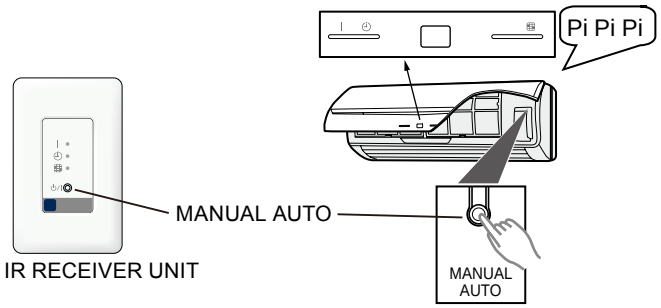
*1 : Auto restart is an emergency function such as for power failure etc.
Do not start and stop the indoor unit by this function in normal operation.
Be sure to operate by the control unit, converter or external input device.

*2: Forced stop mode is available for the indoor units after revision code B.
Serial number became “X2XXXXX” from revision code B.
However, ARXD07, 09, 12, 14, 18, 24LATH (Slim Duct), AB*A12, 14, 18, 24LBTH (Floor/Ceiling),AB*A30, 36, 45, 54LBTH (Ceiling), AS*A18, 24, 30LACH (Wall Mounted) are available regardless of revision code.

SYSTEM DESIGN

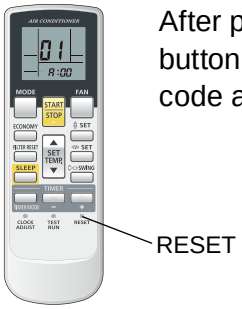
■ COMPLETION OF FUNCTION SETTING MODE

(13) Press and hold the “MANUAL/AUTO ｜／○” button for 3 seconds.



∗ Each LED light brightness is darkening though the content of the display doesn't change.

(14) Press the “RESET” button.

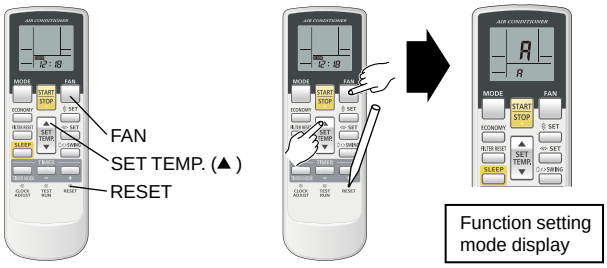


After pressing the RESET button, please set the custom code again if b,c,d setting.

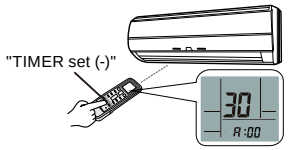
∗ The function setting signal is not received after switched function setting completion mode. (Pi Pi Pi Pi Pi)
∗ Press the "MANUAL/AUTO ｜／○" button again for 3 sec to return to if required to return the function setting mode.

■ RECONFIRMATION OF FUNCTION SETTING

(15) Press and hold the “FAN” and the “ SET TEMP. ▲ ” buttons. Whilst holding these 2 buttons, press the "RESET" button.

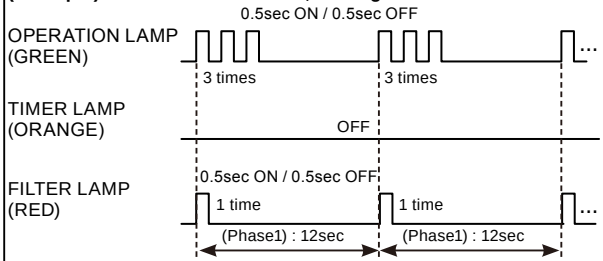


(16) Function number to be confirmed is displayed.
Refer to (7).
Press the “TIMER set (-)” button.



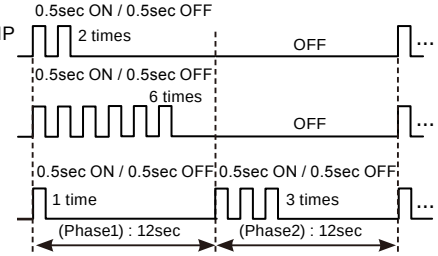
Case1 : When setting number is one digit.

(Example) Function number : 30, Setting number : 01



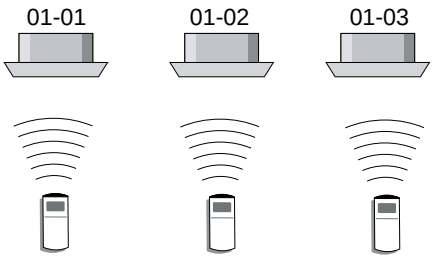
Case2 : When setting number is two digits.

(Example) Function number : 26, Setting number : 31



SYSTEM DESIGN

■ SETTING UP EACH INDOOR UNIT



Repeat steps (1) through to (16). Steps (1) through to (5) and (13) to (16) only need to carried out if the custom code is different to the factory setting of “A”.

■ RESET THE POWER AFTER SETTING UP FUNCTION OF ALL INDOOR UNITS

Important

- **If the reset is not performed, function can not be read in normally.**
- **After all the functions have been set, the circuit breaker needs to be switched off for at least 2 minutes.**
  After the 2 minutes has passed, power can be restored.
- **The set function is stored in the PCB and will remain in memory even when the power is turned off.**
  However setting function is effective after power reset.
  Record the function set in the indoor unit on a label, etc., and affix the label to the unit so it can be used for after-sales service operations.

∗ Number 0 setting will not indicate TIMER LAMP and FILTER LAMP.

∗ Once the "RESET" button is pressed on the remote controller, the OPERATION MODE will be set in the "AUTO MODE".
Please adjust the OPERATION MODE to either "COOLING" or "HEATING" before trying to operate the air conditioner.

∗ Note : If CUSTOM CODE is set to anything other than "A" ,the remote control must be set accordingly to the INDOOR UNIT setting.

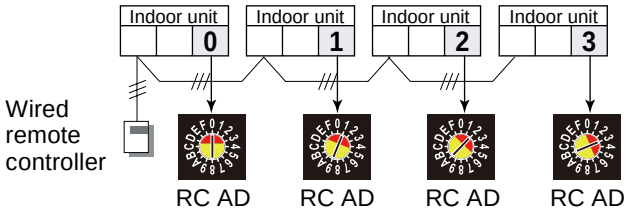
SYSTEM DESIGN

6-4. INDOOR UNIT (setting by wired remote controller)

- The function settings of the control of the indoor unit can be changed by this procedure according to the installation conditions. Incorrect settings can cause the indoor unit malfunction.
- After the power is turned on, perform the “FUNCTION SETTING” according to the installation conditions using the remote controller.
- The settings may be selected between the following two: Function Number or Setting Value.
- Settings will not be changed if invalid numbers or setting values are selected.
- This function cannot be used on the slave units.

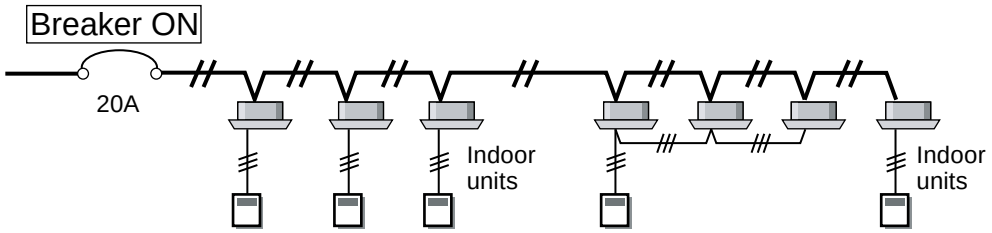
■ PREPARATION

1) If multiple indoor units are connected to a single wired remote controller, make sure to manually set up the remote controller address (RC AD) on the PCBs of the indoor units. (Refer to 5-3.)
Ex.) When four indoor units are connected



2) Turn on the power to the indoor unit.

- By turning on the power 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.

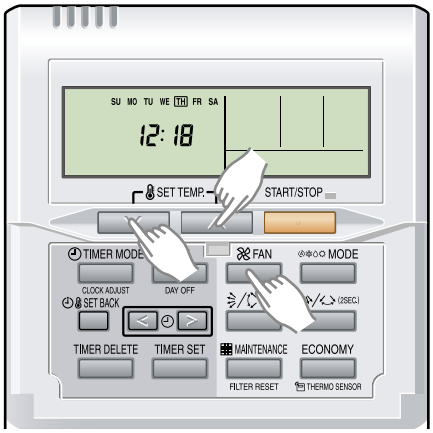


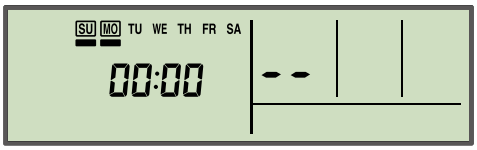
SYSTEM DESIGN

SYSTEM DESIGN

■ SWITCHING SELECTION OF FUNCTION SETTING MODE

3) To activate the function setting mode, hold down the three buttons of SET TEMP. V, SET TEMP. Λ and FAN at the same time for 5 seconds or longer.

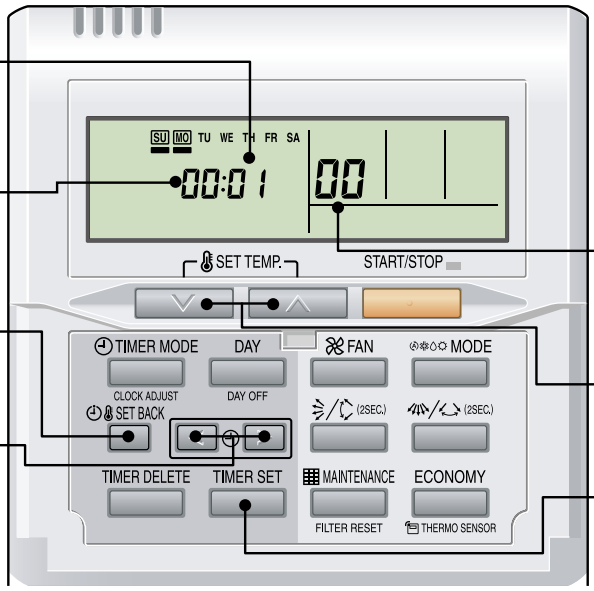




Address setting mode initial display

■ BUTTON NAME AND FUNCTION

- During address setting mode, indoor unit reject the any operation command from remote controller.



Function number

Refer to FUNCTION DETAILS

Remote controller address

Remote controller address setting number 00-15

SET BACK button

Switches the remote controller address setting number.

SET TIME “<” and “>” button

Switches the function number.

Setting number

Refer to FUNCTION DETAILS

SET TEMP. “V” and “Λ” button

Switches the setting number.

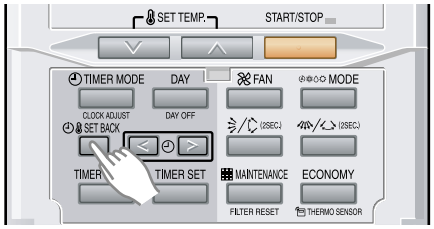
TIMER SET button

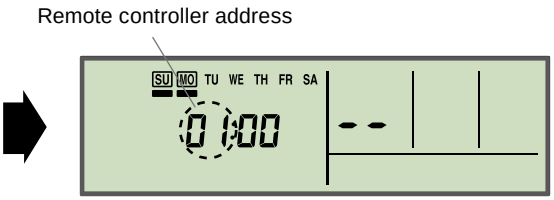
Transmits function setting

SYSTEM DESIGN

■ FUNCTION SETTING

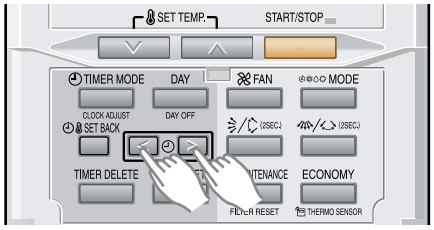
4) Pressing the SET BACK button, select a remote controller address (select the indoor unit you want to operate)

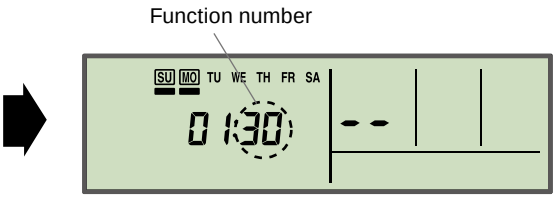




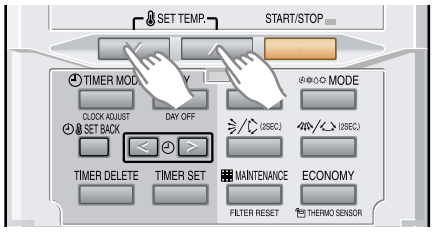
Ex.) When remote controller address “01” is selected

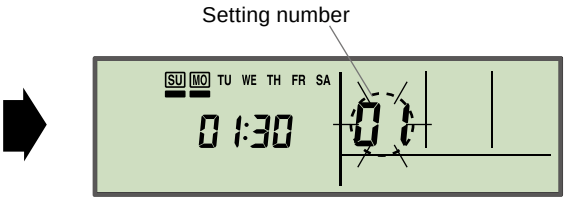
5) Pressing the SET TIME < button or the SET TIME > button, to select the function number.





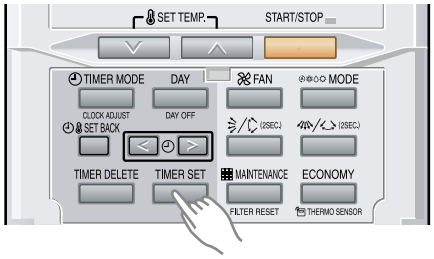
6) Pressing the SET TEMP. V button or the SET TEMP. Λ button, to select the setting number. The display flashes during setting number selection.

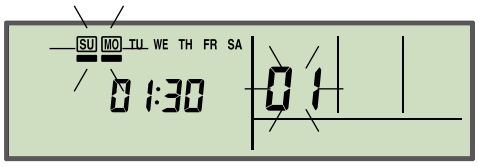




Ex.) Function number : 30, Setting number : 01

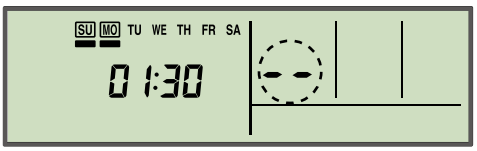
7) Pressing the TIMER SET button, confirm the setting.
(The data will be transferred to the indoor unit.)



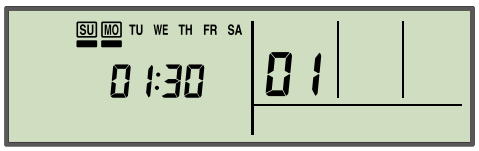


NO GOOD

GOOD



- When the data was not set up on the indoor unit (-- is displayed.)
- Set up the data again according to the procedure in step 5), 6) above.



When the data was normally set up on the indoor unit
(Flashing display changes to illuminated display.)

SYSTEM DESIGN

SYSTEM DESIGN

■ FUNCTION DETAILS

Function	Function number	Setting number		Default	Details
Filter indicator interval	**11**	**00**	Default	●	Adjust the filter cleaning interval notifi cation. 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 control.
		01	Disable		
		02	Display only on central remote control		
Ceiling airflow	**20**	**00**	Default	●	Regulate the airfl ow according to the needs of the installation location. When set to 01, the air flow will be stronger.
		01	High Ceiling		
Vertical airflow direction	**23**	**00**	Default	●	Adjust the vertical airflow direction. All airflow direction louvers are adjusted together. (Cassette type only)
		01	Raise		
Horizontal swing airflow direction	**24**	**00**	Default	●	Adjust the horizontal swing airflow direction. (For horizontal swing equipped models)
		01	Left half		
		02	Right half		
Static pressure	**26**	**00**	0Pa		(Slim Duct type only) Range of static pressure is different from one model to other.
		01	10Pa		
		02	20Pa		
		03	30Pa		
		04	40Pa		
		05	50Pa		
		06	60Pa		
		07	70Pa		
		08	80Pa		
		09	90Pa		
		31	25Pa (Standard)	●	
Cool air temperature trigger	**30**	**00**	Default	●	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**	Default	●	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)		
*1 Auto restart	**40**	**00**	Enable		Enable or disable automatic system restart after a power outage.
		01	Disable	●	
External control	**46**	**00**	Start/Stop	●	Allow an external controller to start or stop the system, or to perform an emergency stop, or to perform a forced stop. * If an emergency stop is performed from an external controller, same refrigerant system 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	*2 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 wired remote.
		01	Display only on central remote control		

Model name	Range of static pressure
ARXD07LATH	0 to 90 Pa
ARXD09LATH	
ARXD12LATH	
ARXD14LATH	
ARXD18LATH	
ARXD24LATH	0 to 50 Pa

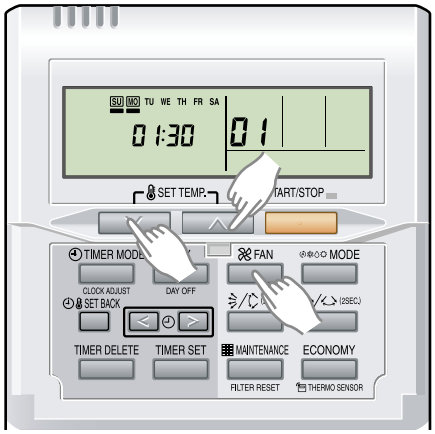
*1 : Auto restart is an emergency function such as for power failure etc.
Do not start and stop the indoor unit by this function in normal operation.
Be sure to operate by the control unit, converter or external input device.

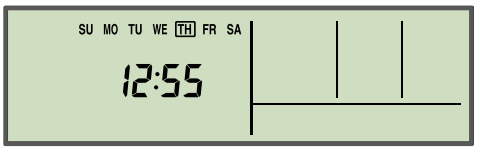
*2: Forced stop mode is available for the indoor units after revision code B.
Serial number became “X2XXXXX” from revision code B.
However, ARXD07, 09, 12, 14, 18, 24LATH (Slim Duct), AB*A12, 14, 18, 24LBTH (Floor/Ceiling),AB*A30, 36, 45, 54LBTH (Ceiling), AS*A18, 24, 30LACH (Wall Mounted) are available regardless of revision code..

SYSTEM DESIGN

■ COMPLETION OF FUNCTION SETTING MODE

8) To clear the function setting mode and return to the regular display, hold down the three buttons of SET TEMP. V, SET TEMP. Λ and FAN at the same time.

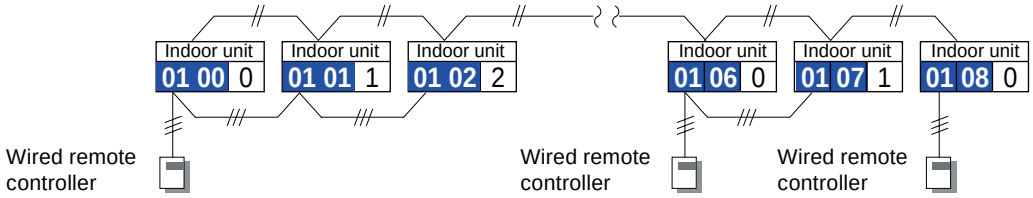




Normal mode display

∗ If no key entry is made for 60 seconds, even though none of the above buttons is pressed, the function setting mode will automatically be cleared.
(If the function setting mode is automatically cleared while setting addresses, activate the mode again according to the procedure in step 3) above.)

■ SETTING UP EACH INDOOR UNIT



Repeat the procedures in steps 1) through 8), and set up the indoor units requiring function setting.

■ RESET THE POWER AFTER SETTING UP FUNCTION OF ALL INDOOR UNITS

Important

∗ If the reset is not performed, function can not be read in normally.
∗ After all the functions have been set, the circuit breaker needs to be switched off for at least 2 minutes.
After the 2 minutes has passed, power can be restored.
∗ The set function is stored in the PCB and will remain in memory even when the power is turned off.
However setting function is effective after power reset.
Record the function set in the indoor unit on a label, etc., and affix the label to the unit so it can be used for after-sales service operations.

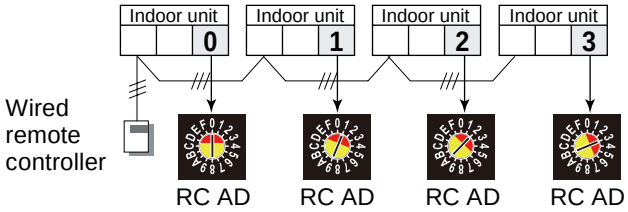
SYSTEM DESIGN

6-5. INDOOR UNIT (setting by simple remote controller)

- This procedure changes to the function settings used to control the indoor unit according to the installation conditions. Incorrect settings can cause the indoor unit malfunction.
- After the power is turned on, perform the “FUNCTION SETTING” according to the installation conditions using the remote controller.
- The settings may be selected between the following two: Function Number or Setting Value.
- Settings will not be changed if invalid numbers or setting values are selected.
- This function cannot be used on the slave units.

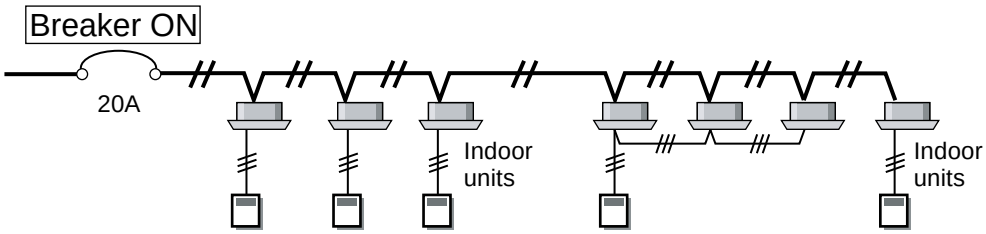
■ PREPARATION

1) If multiple indoor units are connected to a single simple remote controller, make sure to manually set up the remote controller address (RC AD) on the PCBs of the indoor units. (Refer to 5-3.)
Ex.) When four indoor units are connected



2) Turn on the power to the indoor unit.

- By turning on the power 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.

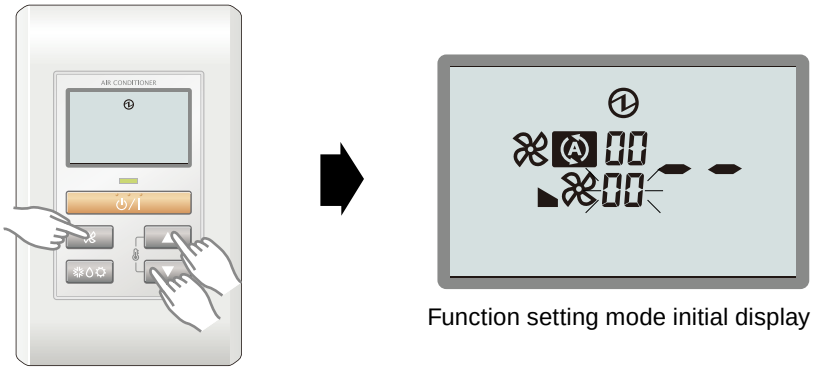


SYSTEM DESIGN

SYSTEM DESIGN

■ SWITCHING SELECTION OF FUNCTION SETTING MODE

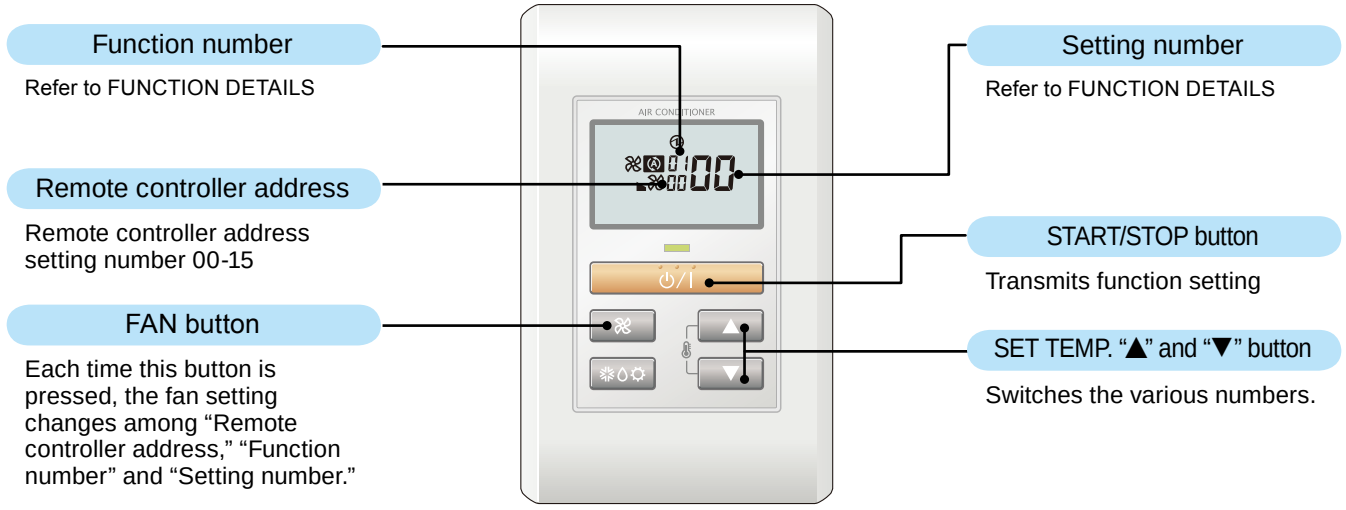
3) To activate the function setting mode, hold down the three buttons of SET TEMP. ▼, SET TEMP. ▲ and FAN at the same time for 5 seconds or longer.



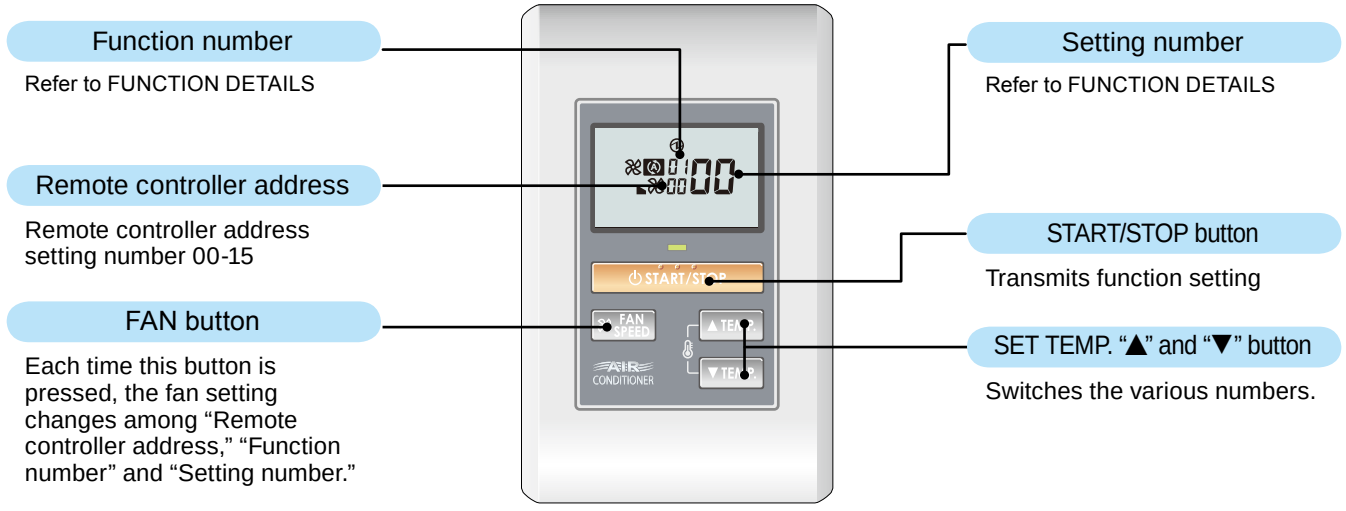
Function setting mode initial display

■ BUTTON NAME AND FUNCTION

- During function setting mode, indoor unit reject the any operation command from remote controller.



UTY-RSK* (With operation mode)

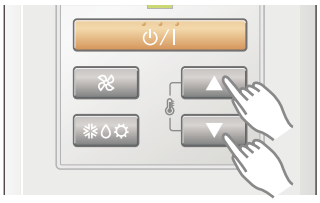


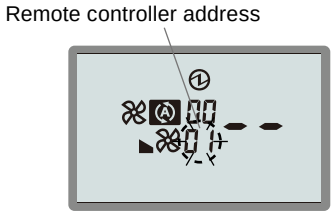
UTY-RHK* (Without operation mode)

SYSTEM DESIGN

■ FUNCTION SETTING

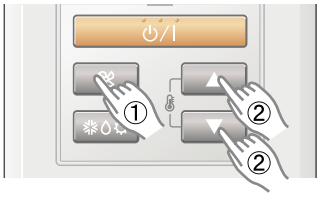
4) Pressing the SET TEMP. ▲ button or SET TEMP. ▼ button, select a remote controller address (select the indoor unit you want to operate).

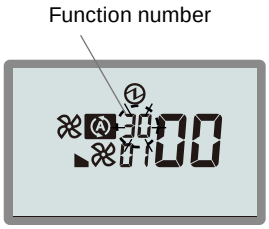




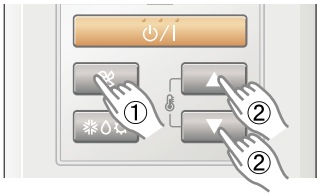
Ex.) When remote controller address “01” is selected

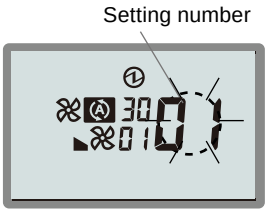
5) Press the FAN button so that the “Function number” display flashes. Then, press either the SET TEMP. ▲ button or the SET TEMP. ▼ button to set up the function number.





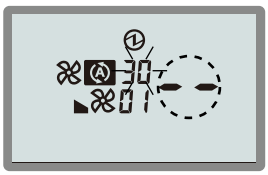
6) Press the FAN button so that the “Setting number” display flashes. Then, press either the SET TEMP. ▲ button or the SET TEMP. ▼ button to set up the setting number.





Ex.) Function number : 30, Setting number : 01

7) Pressing the START/STOP button, confirm the setting.
(The data will be transferred to the indoor unit.)



NOT GOOD

GOOD

- When the data was not set up on the indoor unit (-- is displayed.)
- Set up the data again according to the procedure in step 5), 6) above.

When the data was normally set up on the indoor unit.

SYSTEM DESIGN

■ FUNCTION DETAILS

<table>
<tr><th>Function</th><th>Function number</th><th colspan="2">Setting number</th><th>Default</th><th>Details</th></tr>
<tr><td rowspan="3">Filter indicator interval</td><td rowspan="3">11</td><td>00</td><td>Default</td><td>●</td><td rowspan="3">Adjust the filter cleaning interval notifi cation. If the notification is too early, change to setting 01. If the notification is too late, change to setting 02.</td></tr>
<tr><td>01</td><td>Longer</td><td></td></tr>
<tr><td>02</td><td>Shorter</td><td></td></tr>
<tr><td rowspan="3">Filter indicator action</td><td rowspan="3">13</td><td>00</td><td>Enable</td><td>●</td><td rowspan="3">Enable or disable the filter indicator. Setting 02 is for use with a central remote control.</td></tr>
<tr><td>01</td><td>Disable</td><td></td></tr>
<tr><td>02</td><td>Display only on central remote control</td><td></td></tr>
<tr><td rowspan="2">Ceiling airflow</td><td rowspan="2">20</td><td>00</td><td>Default</td><td>●</td><td rowspan="2">Regulate the airfl ow according to the needs of the installation location. When set to 01, the air flow will be stronger.</td></tr>
<tr><td>01</td><td>High Ceiling</td><td></td></tr>
<tr><td rowspan="2">Vertical airflow direction</td><td rowspan="2">23</td><td>00</td><td>Default</td><td>●</td><td rowspan="2">Adjust the vertical airflow direction. All airflow direction louvers are adjusted together.
(Cassette type only)</td></tr>
<tr><td>01</td><td>Raise</td><td></td></tr>
<tr><td rowspan="3">Horizontal swing airflow direction</td><td rowspan="3">24</td><td>00</td><td>Default</td><td>●</td><td rowspan="3">Adjust the horizontal swing airflow direction.
(For horizontal swing equipped models)</td></tr>
<tr><td>01</td><td>Left half</td><td></td></tr>
<tr><td>02</td><td>Right half</td><td></td></tr>
<tr><td rowspan="11">Static pressure</td><td rowspan="11">26</td><td>00</td><td>0Pa</td><td></td><td rowspan="11">(Slim Duct type only)
Range of static pressure is different from one model to other.
Model name / Range of static pressure
ARXD07LATH, ARXD09LATH, ARXD12LATH, ARXD14LATH, ARXD18LATH: 0 to 90 Pa
ARXD24LATH: 0 to 50 Pa</td></tr>
<tr><td>01</td><td>10Pa</td><td></td></tr>
<tr><td>02</td><td>20Pa</td><td></td></tr>
<tr><td>03</td><td>30Pa</td><td></td></tr>
<tr><td>04</td><td>40Pa</td><td></td></tr>
<tr><td>05</td><td>50Pa</td><td></td></tr>
<tr><td>06</td><td>60Pa</td><td></td></tr>
<tr><td>07</td><td>70Pa</td><td></td></tr>
<tr><td>08</td><td>80Pa</td><td></td></tr>
<tr><td>09</td><td>90Pa</td><td></td></tr>
<tr><td>31</td><td>25Pa (Standard)</td><td>●</td></tr>
<tr><td rowspan="3">Cool air temperature trigger</td><td rowspan="3">30</td><td>00</td><td>Default</td><td>●</td><td rowspan="3">Adjust the cool air trigger temperature. To lower the trigger temperature, use setting 01. To raise the trigger temperature, use setting 02.</td></tr>
<tr><td>01</td><td>Adjust (1)</td><td></td></tr>
<tr><td>02</td><td>Adjust (2)</td><td></td></tr>
<tr><td rowspan="4">Heat air temperature trigger</td><td rowspan="4">31</td><td>00</td><td>Default</td><td>●</td><td rowspan="4">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.</td></tr>
<tr><td>01</td><td>Adjust (1)</td><td></td></tr>
<tr><td>02</td><td>Adjust (2)</td><td></td></tr>
<tr><td>03</td><td>Adjust (3)</td><td></td></tr>
<tr><td rowspan="2">*1 Auto restart</td><td rowspan="2">40</td><td>00</td><td>Enable</td><td></td><td rowspan="2">Enable or disable automatic system restart after a power outage.</td></tr>
<tr><td>01</td><td>Disable</td><td>●</td></tr>
<tr><td rowspan="3">External control</td><td rowspan="3">46</td><td>00</td><td>Start/Stop</td><td>●</td><td rowspan="3">Allow an external controller to start or stop the system, or to perform an emergency stop, or to perform a forced stop.
* If an emergency stop is performed from an external controller, same refrigerant system 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.</td></tr>
<tr><td>01</td><td>Emergency stop</td><td></td></tr>
<tr><td>02</td><td>*2 Forced stop</td><td></td></tr>
<tr><td rowspan="2">Error report target</td><td rowspan="2">47</td><td>00</td><td>All</td><td>●</td><td rowspan="2">Change the target for reporting errors. Errors can either be reported in all locations, or only on the wired remote.</td></tr>
<tr><td>01</td><td>Display only on central remote control</td><td></td></tr>
</table>

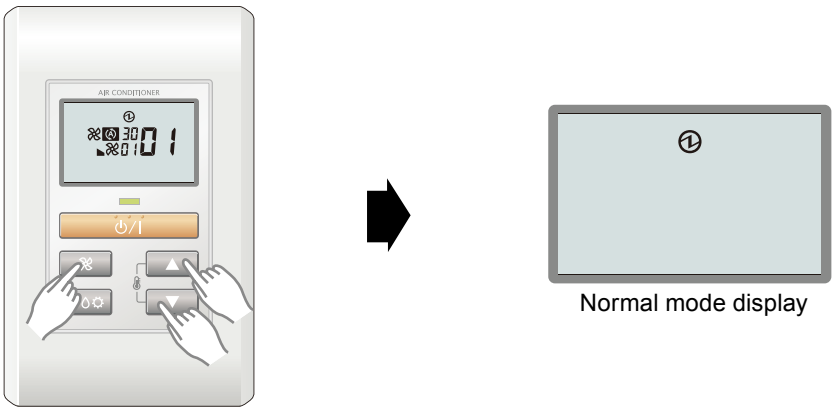
*1 : Auto restart is an emergency function such as for power failure etc.
Do not start and stop the indoor unit by this function in normal operation.
Be sure to operate by the control unit, converter or external input device.

*2: Forced stop mode is available for the indoor units after revision code B.
Serial number became “X2XXXXX” from revision code B.
However, ARXD07, 09, 12, 14, 18, 24LATH (Slim Duct), AB*A12, 14, 18, 24LBTH (Floor/Ceiling),AB*A30, 36, 45, 54LBTH (Ceiling), AS*A18, 24, 30LACH (Wall Mounted) are available regardless of revision code.

SYSTEM DESIGN

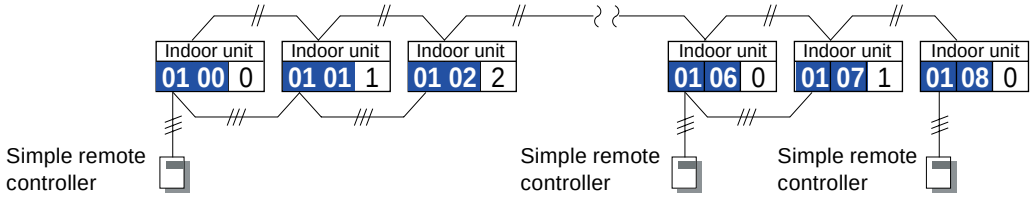
■ COMPLETION OF FUNCTION SETTING MODE

8) Press the three buttons of SET TEMP. ▲, SET TEMP. ▼ and FAN at the same time for 5 seconds or longer. The function setting mode will be cleared and the regular display will be restored.



∗ If no key entry is made for 60 seconds, even though none of the above buttons is pressed, the function setting mode will automatically be cleared.
(If the function setting mode is automatically cleared while setting addresses, activate the mode again according to the procedure in step 3) above.)

■ SETTING UP EACH INDOOR UNIT



Repeat the procedures in steps 1) through 8), and set up the indoor units requiring function setting.

■ RESET THE POWER AFTER SETTING UP FUNCTION OF ALL INDOOR UNITS

Important

∗ If the reset is not performed, function can not be read in normally.
∗ After all the functions have been set, the circuit breaker needs to be switched off for at least 2 minutes.
After the 2 minutes has passed, power can be restored.
∗ The set function is stored in the PCB and will remain in memory even when the power is turned off.
However setting function is effective after power reset.
Record the function set in the indoor unit on a label, etc., and affix the label to the unit so it can be used for after-sales service operations.

SYSTEM DESIGN

6-6. WIRED, SIMPLE REMOTE CONTROLLER

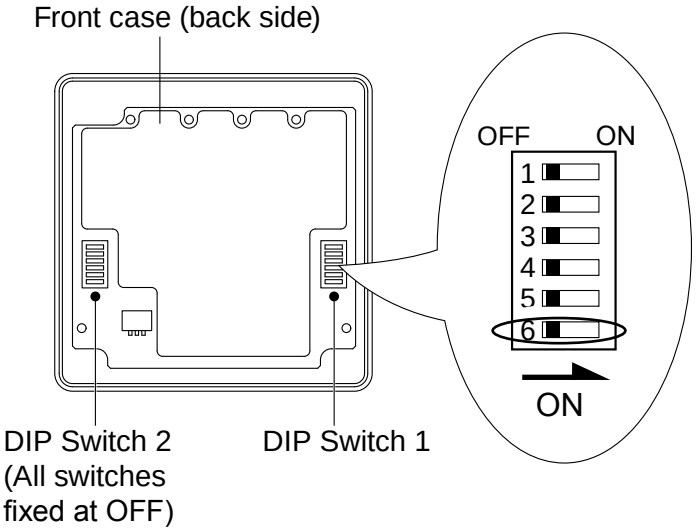
DIP Switch 1	SW1	Forbidden
	SW2	Dual remote controller setting
	SW3	Forbidden
	SW4	Forbidden
	SW5	Forbidden
	SW6	Memory backup setting (Wired remote controller only)

* Do not use DIP Switch 2 (Wired remote controller)

■ SWITCH POSITION

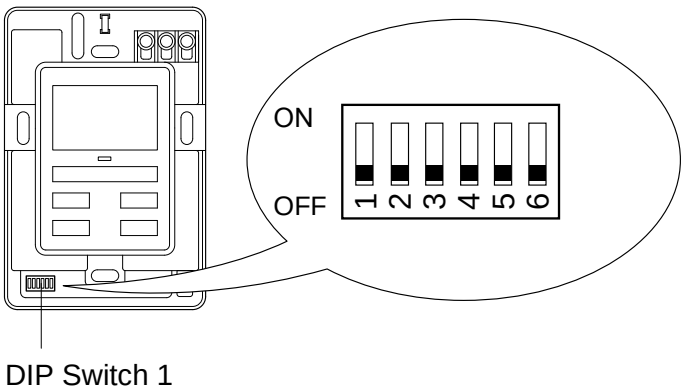
● Wired remote controller

Model : UTY-RNK∗

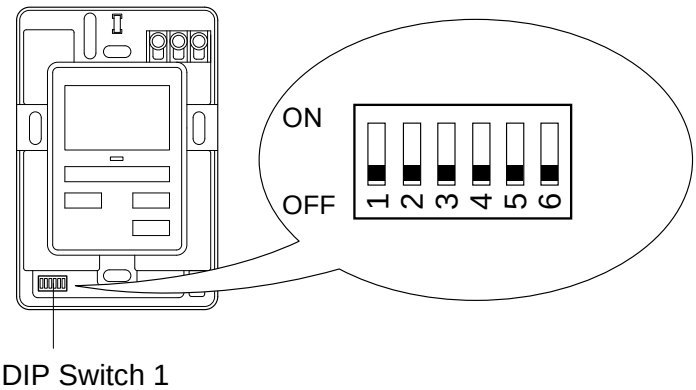


● Simple remote controller

Model : UTY-RSK∗



Model : UTY-RHK∗



SYSTEM DESIGN

■ DIP SWITCH 1 SETTING

● SW1 setting forbidden

(◆...Factory setting)

	SW1	
◆	OFF	Fixed at OFF
	ON	Setting forbidden

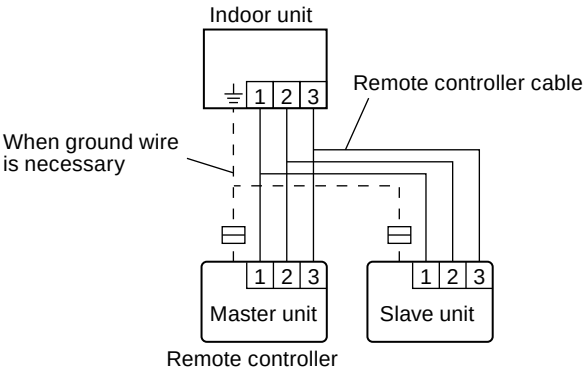
● SW2 setting

●Dual remote controller setting

Set the remote controller SW2 according to the following table.

(◆...Factory setting)

	Number of remote controller	Master unit	Slave unit
		SW2	SW2
◆	1 (Normal)	OFF	-
	2 (Dual)	OFF	ON



● SW3 setting forbidden

(◆...Factory setting)

	SW3	
◆	OFF	Fixed at OFF
	ON	Setting forbidden

● SW4 setting forbidden

(◆...Factory setting)

	SW4	
◆	OFF	Fixed at OFF
	ON	Setting forbidden

● SW5 setting forbidden

(◆...Factory setting)

	SW5	
◆	OFF	Fixed at OFF
	ON	Setting forbidden

● SW6 setting

●Memory backup setting (Wired remote controller only)

Set to ON to use batteries for the memory backup.

If batteries are not used, all of settings stored in memory will be delete if there is a power failure.

(◆...Factory setting)

	SW6	Memory backup
◆	OFF	Invalidity
	ON	Validity

Never turn it ON in the case of simple remote controller.

SYSTEM DESIGN

6-7. GROUP REMOTE CONTROLLER

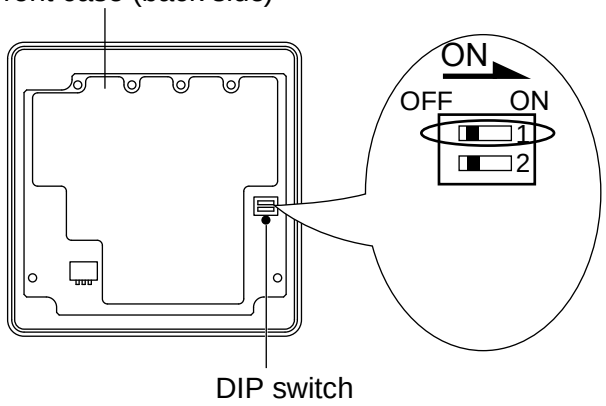
DIP Switch	SW1	Memory backup setting
	SW2	Forbidden

■ SWITCH POSITION

● Group remote controller

Model : UTY-CGG∗

Front case (back side)



■ DIP SWITCH SETTING

● SW1 setting

●Memory backup setting

If there is a power failure when the memory backup is enabled, the setting stored in the memory will be saved.

(◆...Factory setting)

	SW1	Memory backup
◆	OFF	Invalidity
	ON	Validity

● SW2 setting forbidden

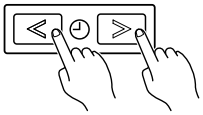
(◆...Factory setting)

	SW2	
◆	OFF	Fixed at OFF
	ON	Setting forbidden

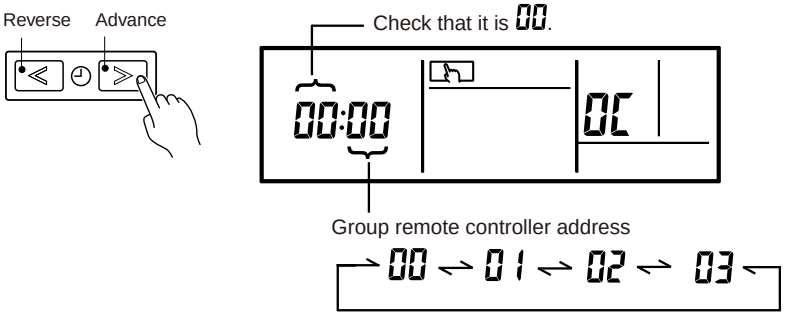
SYSTEM DESIGN

■ GROUP REMOTE CONTROLLER ADDRESS SETTING

- Hold down the set time buttons ⩽ and ⩾ simultaneously for two seconds or more to start the setting.



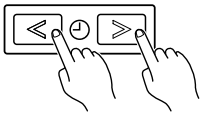
- Press the set time buttons to set the Group remote controller address.



- Press the ENTER button.

Check the ((•)) and 0C flash for two seconds.

- Hold down again the set time buttons ⩽ and ⩾ simultaneously for two seconds or more to complete setting.

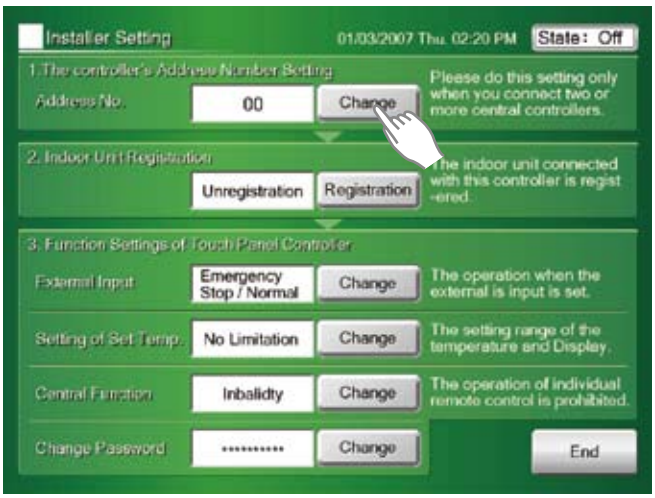


SYSTEM DESIGN

6-8. TOUCH PANEL CONTROLLER

■ ADDRESS SETTING

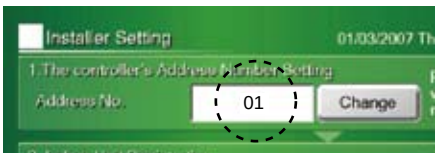
- Display the Installer Setting screen and press "Change" button of "1. The controller Address Number Setting".



- If it changes to "1. The controller Address Number Setting" screen, press "01" button of Address No., and then press "OK" button.

Ex) When setting the Address Number to "01".

- If it returns to Installer Setting screen, make sure that Address No. is "01", and then end.



Note:

- **Address No. can be set between "00" and "15". (Up to maximum 16 Touch Panel Controller can be installed to 1 system).**
- **When installing two or more Touch Panel Controller, set up so that Address No. does not overlap.**
- **Please refer to the OPERATING MANUAL of Touch Panel Controller for details.**
- **Please keep Address No. of Touch Panel Controller from overlapping the controller (Central Remote Controller, Network Convertor for LonWorks, and Network Convertor for Group Remote Controller) connected to the same VRF Network system**

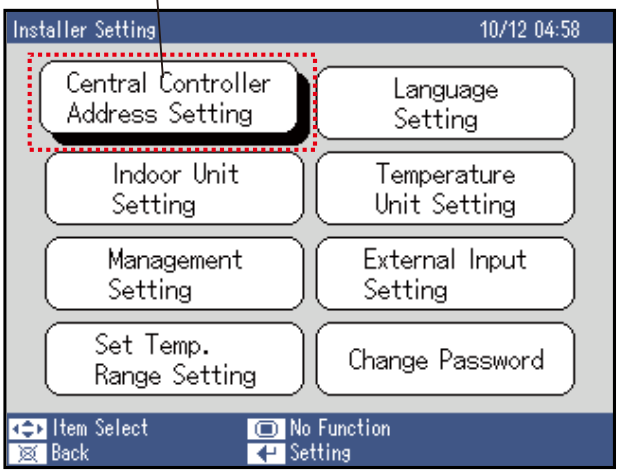
SYSTEM DESIGN

6-9. CENTRAL REMOTE CONTROLLER

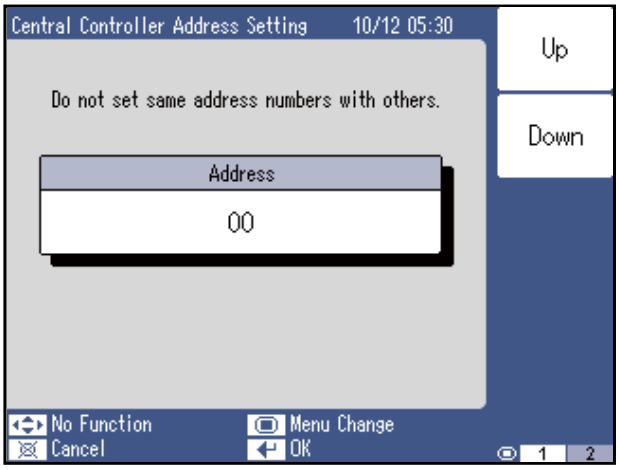
■ ADDRESS SETTING

- Display the Installer Setting screen and Press the [ ] button and move the cursor to "Central Controller Address Setting".
- Press the [ ] button.

Central remote controller address setting



- Press the [UP] button or [Down] button.
- Set the Address value.
  The Address value can be set from 00 to 15.
- When the [ ] button is pressed, setting is complete.



Note:

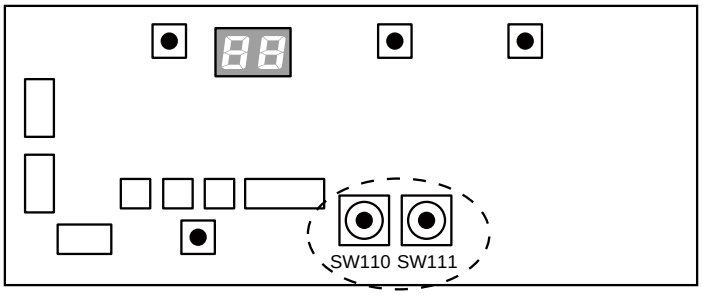
- **Address No. can be set between "00" and "15". (Up to maximum 16 Central Remote Controller can be installed to 1 system).**
- **When installing two or more Central Remote Controller, set up so that Address No. does not overlap.**
- **Please refer to the OPERATING MANUAL of Central Remote Controller for details.**
- **Please keep Address No. of Central Remote Controller from overlapping the controller (Touch Panel Controller, Network Convertor for LonWorks, and Network Convertor for Group Remote Controller) connected to the same VRF Network system**

SYSTEM DESIGN

6-10. NETWORK CONVERTOR

■ SWITCH POSITION

- Set network convertor rotary switch 110 and 111.



Network convertor PCB

■ CONVERTOR ADDRESS SETTING

For Group remote controller

● Example

Convertor address	SW setting	
	Rotary SW110 (10 digit)	Rotary SW111 (1 digit)
01	 0	 1
15	 1	 5

*Setting range 00 - 15 (Arbitrary numbers can be set)

*****The sum total of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LonWorks® is a maximum of 16

*Address of the Touch panel controller, Central remote controller, Network convertor for Group remote controller and Network convertor for LonWorks® must not be same.

■ REFRIGERANT CIRCUIT ADDRESS SETTING

For Single split AC

● Example

Refrigerant circuit address	SW setting	
	Rotary SW110 (10 digit)	Rotary SW111 (1 digit)
01	 0	 1
99	 9	 9

*Setting range 00 - 99 (Arbitrary numbers can be set)

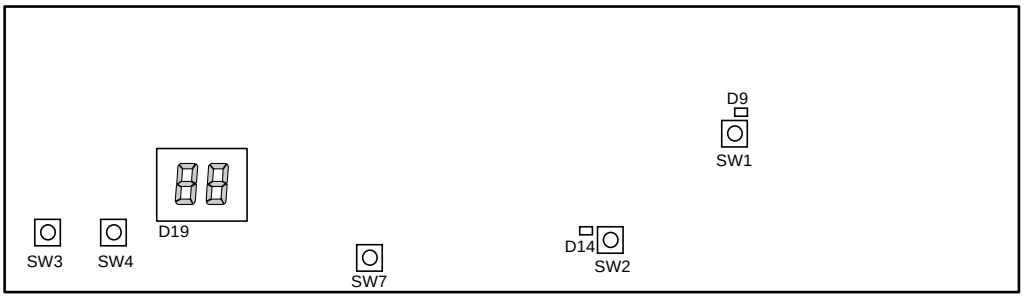
*When connecting the Network convertor for Single split AC , set up the number so that the Refrigerant circuit address number of outdoor unit and indoor unit does not overlap .

And the sum total of the Refrigerant circuit address of Network convertor for Single split AC and the Refrigerant circuit address of the outdoor unit and the indoor unit is a maximum of 100.

SYSTEM DESIGN

6-11. SIGNAL AMPLIFIER

■ SWITCH POSITION

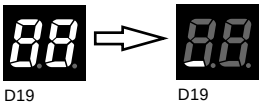


■ AUTOMATIC ADDRESS SETTING

- Refer to 5-7

■ MANUAL ADDRESS SETTING

1) Turn on the power for the signal amplifier.



2) While holding down the set button (SW4), press and release the reset button (SW7) to enter the address setting mode.

The address setting mode is activated only if the set button is hold down when the reset button is released.

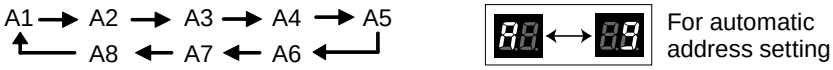
3) Press the set button (SW4) to display the current address.

The address is set to A1 at the factory.

*1 : When the automatic address setting is selected, the display range is 9 - 16.

4) Press the mode button (SW3) to select the address. *2

The displayed address changes as follows each time the mode button is pressed.



*2 : If connecting multiple signal amplifiers, be sure to select a different address for each amplifier. If the same address is used for different signal amplifiers, communication cannot occur.

Ex.) Address No.5 is selected.

5) Press the set button (SW4) to set the selected address.

6) Turn the power off and on or press the reset button (SW7) to exit the address setting mode and return to the normal mode.

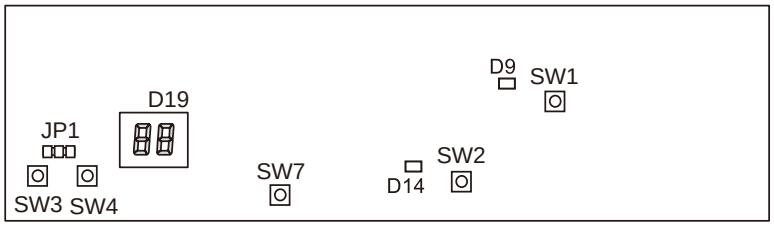
If an address setting error occurs ("26" is displayed on the right side of the D19 LED display), the address will not be set. Perform address setting again.

Normal mode Address setting error

SYSTEM DESIGN

6-12. NETWORK CONVERTOR FOR LONWORKS®

■ SWITCH POSITION



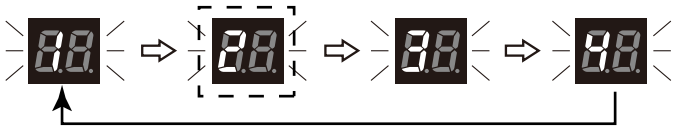
■ ADDRESS SETTING

When setting address, please be sure that the address of Network Convertor for LONWORKS® is not overlap the address of other controller like, Touch Panel Controller, Central Remote Controller & Network Convertor for Group Remote Controller.

Following steps are necessary for setting address of Network Convertor.

1) Turn on the power of network convertor.

2) Select the special mode by pressing and releasing SW7 (reset button) while holding down SW4 (set button) until special mode “1” is displayed.



Special mode changes from ‘1’ to ‘4’ as shown in the above mentioned way.

3) Press SW3 (mode button) to set special mode “2”. Special mode “2” is the address setting mode.

4) Press SW4 (set button). Present address is displayed.

Ex.) Address No. 15 is factory setting.

5) Press SW3 (mode button) to select the address. The displayed address changes as follows each time the mode button is pressed.

Ex.) Address No. 3 is selected.

6) Press SW4 (set button) to set the selected address.

Ex.) Address No. 3 is set.

7) Turn the power off and on or press SW7 (reset button) to exit from address setting mode. Anyone of the following indication will disappear:

: VRF Network address allocation is not registered by using Tool for Network Convertor

: Binding and Commissioning is not executed

: Normal Mode (Ready for operation)

: Others (Please check Installation Manual for more detail)

SYSTEM DESIGN

6-13. DUCT STATIC PRESSURE SETTING

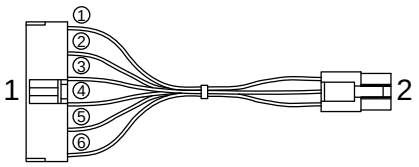
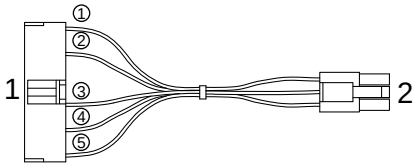
■ MODELS : ARXB07LALH, ARXB09LALH, ARXB12LALH, ARXB14LALH, ARXB18LALH

Change a setting of air flow, when external static pressure is less than 25 Pa.

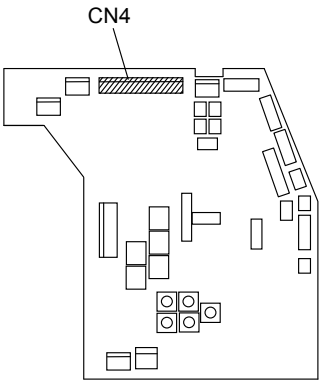
A setting of air flow can be changed by exchanging wires for B type from A type. (Refer to following table)

How to set air flow

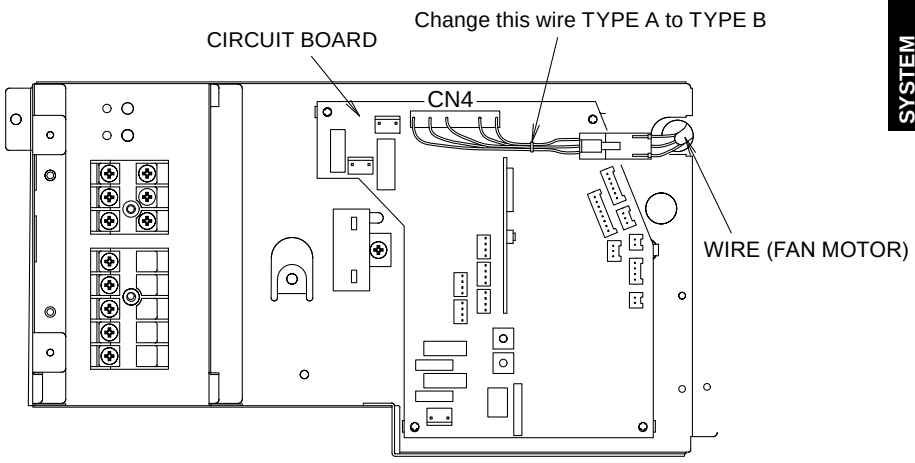
Connect "1" of "B type" wire to "CN4" on circuit board and "2" to the connector connected to the fan motor.

TYPE	EXTERNAL STATIC PRESSURE	WIRE	REMARK
A	25 - 50 Pa	 ①PURPLE ②PINK ③BLUE ④RED ⑤WHITE ⑥BLACK	Factory setting (Standard static pressure)
B	0 - 25 Pa	 ①BLUE ②PURPLE ③PINK ④WHITE ⑤BLACK	Standard parts (Low static pressure)

● Layout of circuit board



● Layout of control box



Be sure to connect the wire with connector.

If connection is improper, it will not operate properly.

SYSTEM DESIGN

■ MODELS : ARXD07LATH, ARXD09LATH, ARXD12LATH, ARXD14LATH, ARXD18LATH, ARXD24LATH

Change the air flow setting dependings on the external static pressure is different from 25 Pa.

Setting of air flow can be changed by exchanged by wireless remote controller, wired remote controller, and simple remote controller.

How to set air flow (external static pressure)

- Wireless remote controller

  Air flow is set by function number 26 (static pressure).

  Refer to "BUTTON NANE AND FUNCTION", "FUNCTION SETTING" and "FUNCTION DETAILS" in 6-3 INDOOR UNIT (setting by wireless remote controller).

- Wired remote controller

  Air flow is set by function number 26 (static pressure).

  Refer to "BUTTON NANE AND FUNCTION", "FUNCTION SETTING" and "FUNCTION DETAILS" in 6-4. INDOOR UNIT (setting by wired remote controller).

- Simple remote controller

  Air flow is set by function number 26 (static pressure).

  Refer to "BUTTON NANE AND FUNCTION", "FUNCTION SETTING" and "FUNCTION DETAILS" in 6-5 INDOOR UNIT (setting by simple remote controller).

- FAN PERFORMANCE CURVE

  Refer to chapter 4. 7-2. SLIM DUCT TYPE.

Note
● If air flow setting is unmatched, it is caused to be air flow down or water leakage due to wrong operation. ● Range of static pressure at ARXD24L model is different from the others.

SYSTEM DESIGN

■ MODELS : ARXB24LATH, ARXB30LATH, ARXB36LATH, ARXB45LATH

When using the ARXB24/30/36/45 model with external static pressure of 40Pa or lower, the Wire (Fan motor) must be replaced as explained below.

Replacement method

(1) Remove the cover.

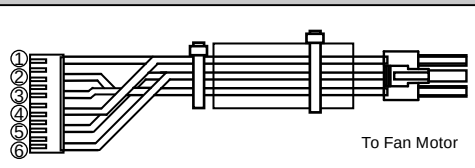
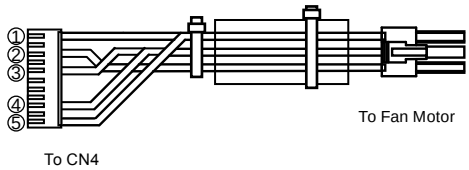
(2) Remove the Wire (Type A) connector from Wire (Fan motor).

(3) Remove the Wire (Type A) connector from CN4 of the PCB.

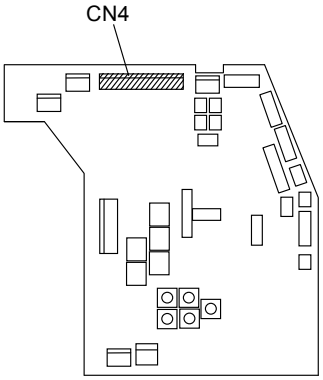
(4) Insert the Wire (Type B) connector into CN4 of the PCB.

(5) Insert the Wire (TypeB) connector into Wire (Fan motor).

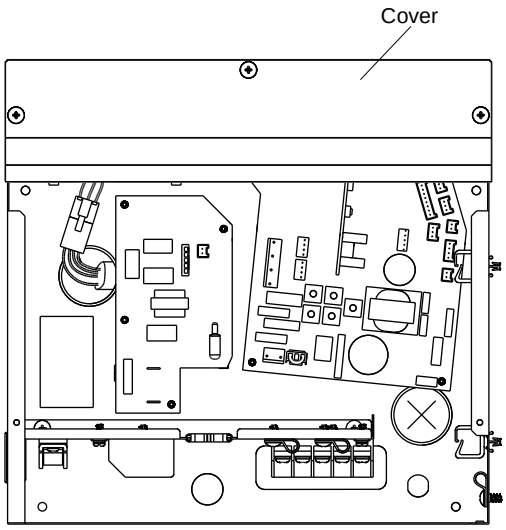
(6) Insert the cover.

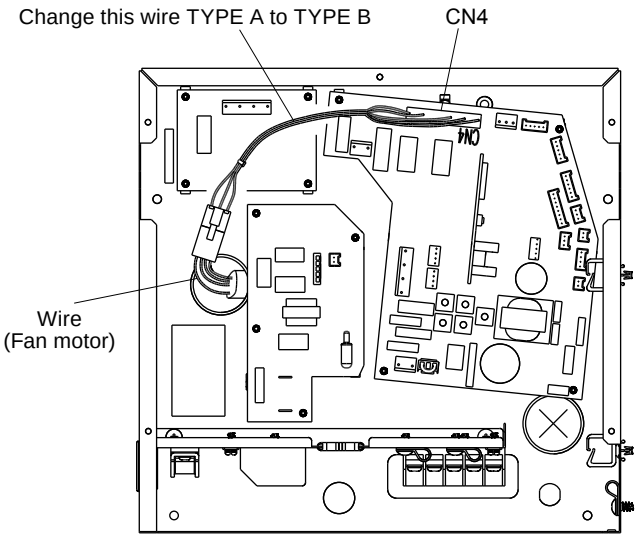
TYPE	EXTERNAL STATIC PRESSURE	WIRE	REMARK
A	40 - 80 Pa	 ①BLACK ②WHITE ③RED ④BLUE ⑤PINK ⑥PURPLE	Factory setting (Standard static pressure)
B	0 - 40 Pa	 ①BLACK ②WHITE ③PINK ④PURPLE ⑤BLUE	Standard parts (Low static pressure)

● Layout of circuit board



● Layout of control box





Be sure to connect the wire with connector.

If connection is improper, it will not operate properly.

SYSTEM DESIGN

6-14. ADMINISTRATIVE INDOOR UNIT SETTING

- An indoor unit which decides the priority mode (cooling or heating) in a same refrigerant system.
- “Administrative Indoor Unit” can be set to a unit in a same refrigerant system.

■ SETTING METHOD

● Outdoor unit function setting

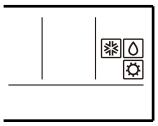
Please set to "Priority given to administrative indoor unit" with function setting of outdoor unit.
→Refer to 6-1.OUTDOOR UNIT

● Wired remote controller setting

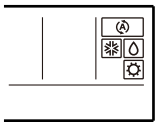
(1) After the indoor unit stops operation, press the “MODE” button of wired remote controller for 5 seconds continuously.
The operating mode of the wired remote controller display lights on after 5 seconds as follows.

(2) Press the “MODE ” button.

(1)-a) The indication not set as "Administrative indoor unit"

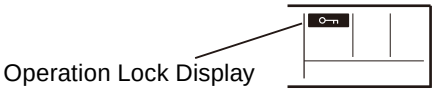


(1)-b) The indication set as "Administrative indoor unit"



Note

- “MODE ” button is locked by below reasons while the marking lights on.
  In such case, “Administrative Indoor Unit” cannot be set or released.



- “Priority on Administrative Indoor Unit” is not selected in the setting of priority mode of outdoor unit.
  →Set “Administrative Indoor Unit” in the wired remote controller after selecting “Priority on Administrative Indoor Unit” in setting of priority mode of outdoor unit.
- Another indoor unit was set to “Administrative Indoor Unit” already.
  →Release the setting “Administrative Indoor Unit” of another indoor unit.

Display (1)-b) when setting, and display (1)-a) when releasing.
→The display blinks when the “MODE ” button is pressed, and the display of (1)-a) and (1)-b) alters whenever the “MODE ” button is pressed.
→The contents set in the wired remote controller are transferred to the indoor unit immediately after the display is selected. It may take 10 seconds depending on communication conditions. While this period, the button operation will be suspended.
→It returns to the normal display after 20 seconds automatically if the operation button is not pressed.
→When setting or releasing is completed, the indication on wired remote controller changes to the normal indication from blinking.

(3) Complete the setting or releasing of “Administrative Indoor Unit”.
Press the “MODE ” button of the wired remote controller again for 5 seconds continuously.
→The indication returns to normal display if the “MODE” button is pressed for 5 seconds continuously.
(It returns to normal indication after 20 seconds even if the “MODE ” button is not pressed.)

SYSTEM DESIGN

6-15. ENERGY SAVING SETTING (SYSTEM CONTROLLER)

In this section, an energy saving function and an electricity charge apportionment function which uses electricity meters is explained. System Controller (UTY-APGX, UTY-PEGX) is required to perform these functions.

Note: These functions are available for the indoor units and outdoor units after revision code B. (Refer to 1-3.REVISION CODE)

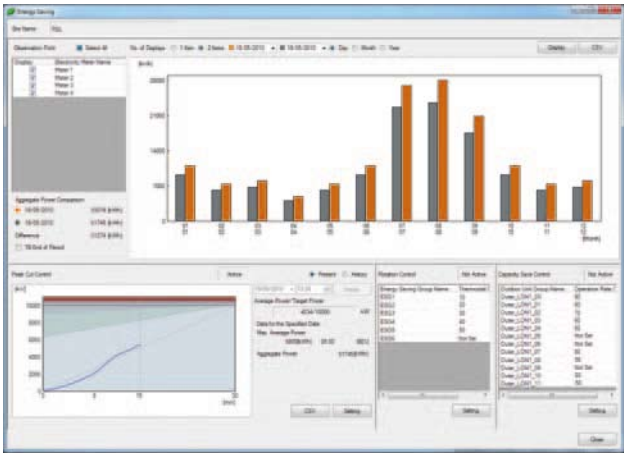
■ FEATURES OF ENERGY SAVING FUNCTION

● Power consumption graph function

Displays by bar graph the power consumption measured by the electricity meter connected to the air conditioner. Use it to grasp the power consumption usage conditions.

The power consumption for 3 years is saved and the past history can be referenced.

In addition, the data of an arbitrary 2 periods can be displayed for comparison.



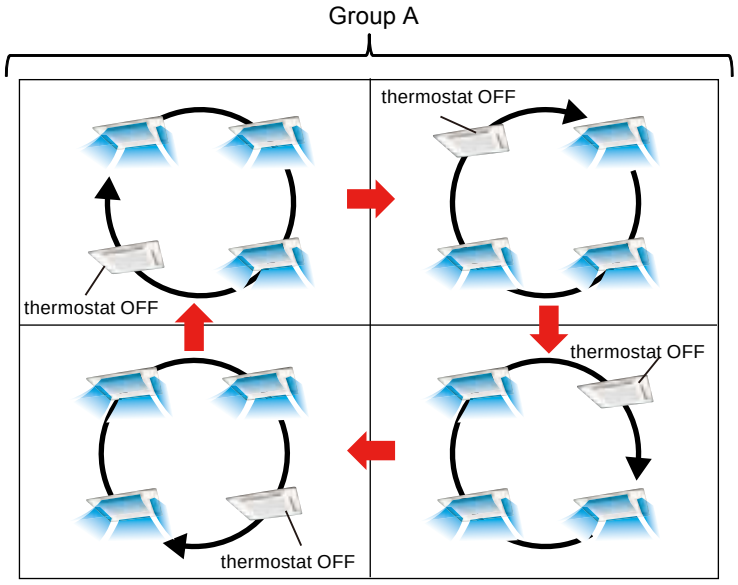
● Indoor unit rotation operation function

Reduces the power consumption by rotating the indoor units which are set to forced thermostat OFF.

Operating the air conditioner even in the spring and autumn when the heat load is comparatively light may have an energy saving effect.

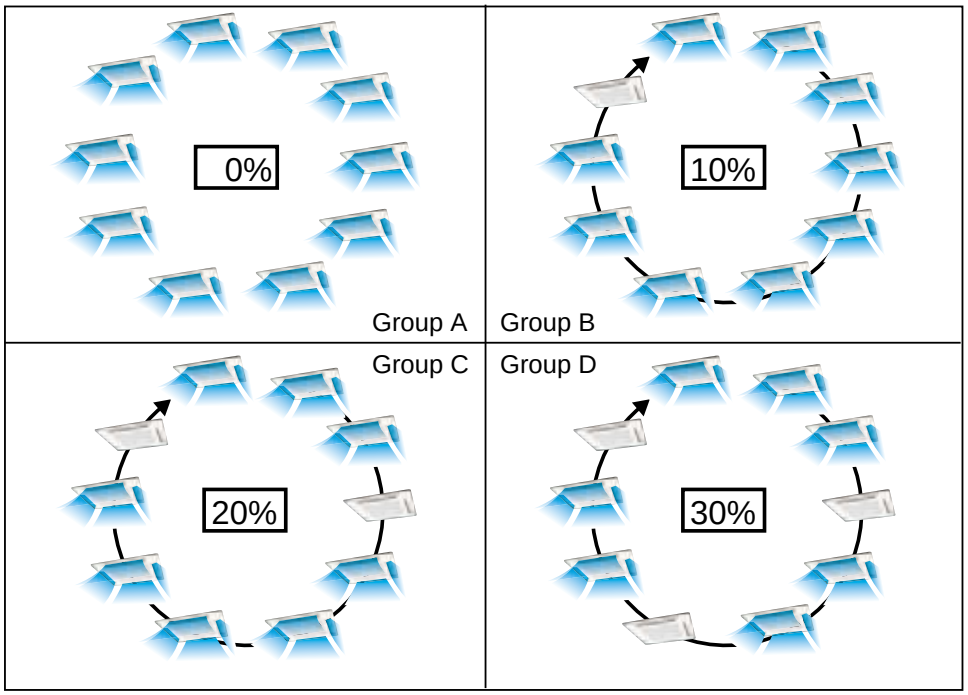
Because it is an intermittent operation, it does not loose much comfort, and is a control which is difficult for the user of the room to sense its operation.

- The electric power consumed in the arbitrarily defined group is reduced by rotating indoor units which are set to forced thermostat OFF.

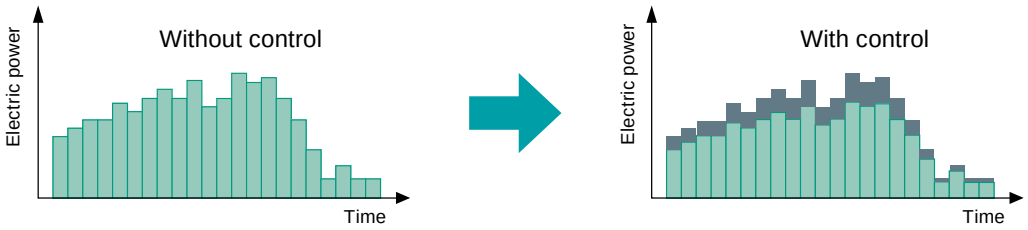


SYSTEM DESIGN

- Indoor units can be rotated according to the stoppage rate set for each group.



*The indoor unit operation stoppage rate can be selected from 10% to 30%.



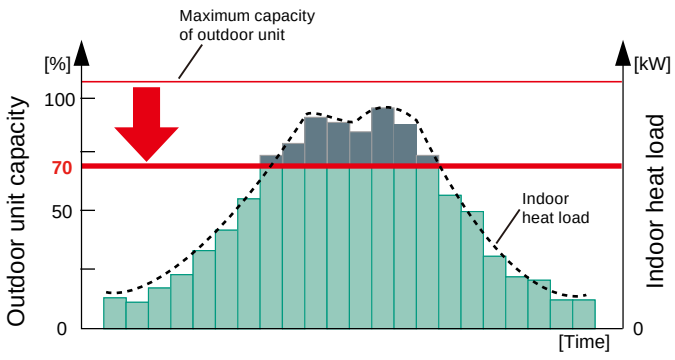
● Outdoor unit capacity save function

The power consumption is reduced by limiting the upper limit of the outdoor unit capacity for each refrigerant system.

This has a reducing effect especially in the summer, winter and other times when the heat load is high.

In addition, because the upper limit capacity of the outdoor unit is limited directly, it is a control which easily exhibits an energy saving effect compared to rotation control. However, because the outdoor unit does not operate above the limited capacity, there may be a loss of comfort, depending on the indoor heat load.

*The operation capacity upper limit rate [%] of the outdoor unit is specified for each refrigerant system.

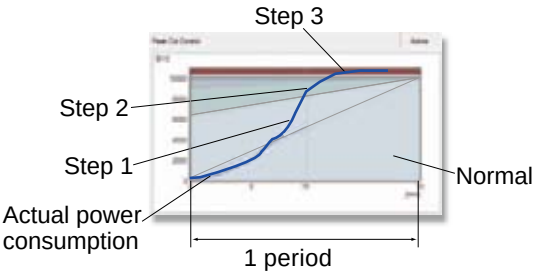


● Peak cut operation function

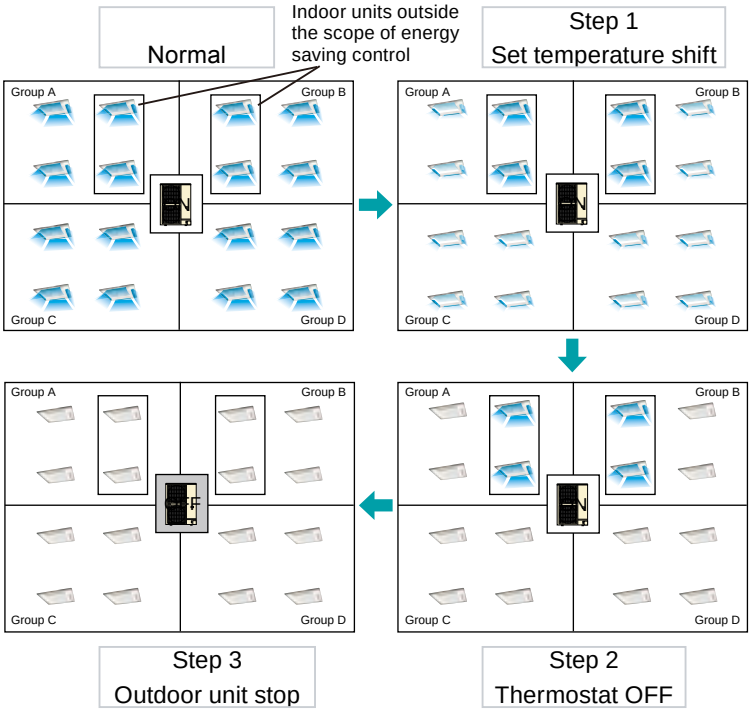
Reduces the power consumption by setting a specific target value (maximum average power [kW]) for all the air conditioners and controlling operation so that this value is not exceeded.

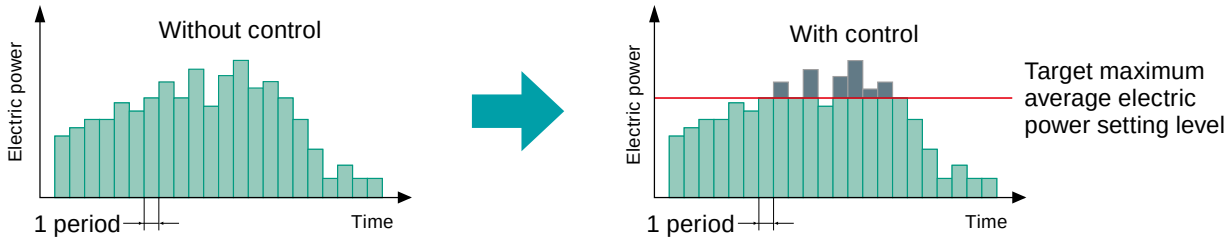
Limit control is performed in 3 steps of “Step 1: Set temperature shift” → “Step 2: Thermostat OFF” → “Step 3: Outdoor unit stop”.

To perform this control, an electricity meter must be installed.



*Specifies the maximum average electric power [kW] for the entire air conditioning system.





■ GENERAL SETTING FLOW FOR ENERGY SAVING AND ELECTRICITY CHARGE APPORTIONMENT USING ELECTRICITY METER

The general setting flow for realizing an energy saving function and an electricity charge apportionment function using an electricity meter is shown as an example in the table below.

	Flow	Reference item
1	Overview of the energy saving function and electricity charge apportionment function using an electricity meter and an understanding of the usage method and restrictions, etc.	■Features of Energy Saving Function ■Operation Example ■Notes on Energy Saving Function ■Installation Restriction of Energy Saving Units ■Electricity Charge Apportionment and Electricity Meter
2	Deciding the power source supply system. Deciding the electricity meter installation sites, number and the outdoor units which are connected. Deciding the appropriate VT/CT specifications.	■Electrical Wiring ■Installation Restriction of Electricity Meter ■Electricity Meter System
3	Procuring the electricity meters and related hardware and materials.	■Electrical Wiring
4	Electricity meters and related hardware and materials installation work.	■Electrical Wiring
5	Electricity meter setting.	■Setting of Outdoor Unit and System Controller
6	Outdoor unit setting.	■Setting of Outdoor Unit and System Controller Refer also to "6-1.OUTDOOR UNIT"
7	System controller setting.	■Setting of Outdoor Unit and System Controller Refer also to "System Controller Instruction Manual"

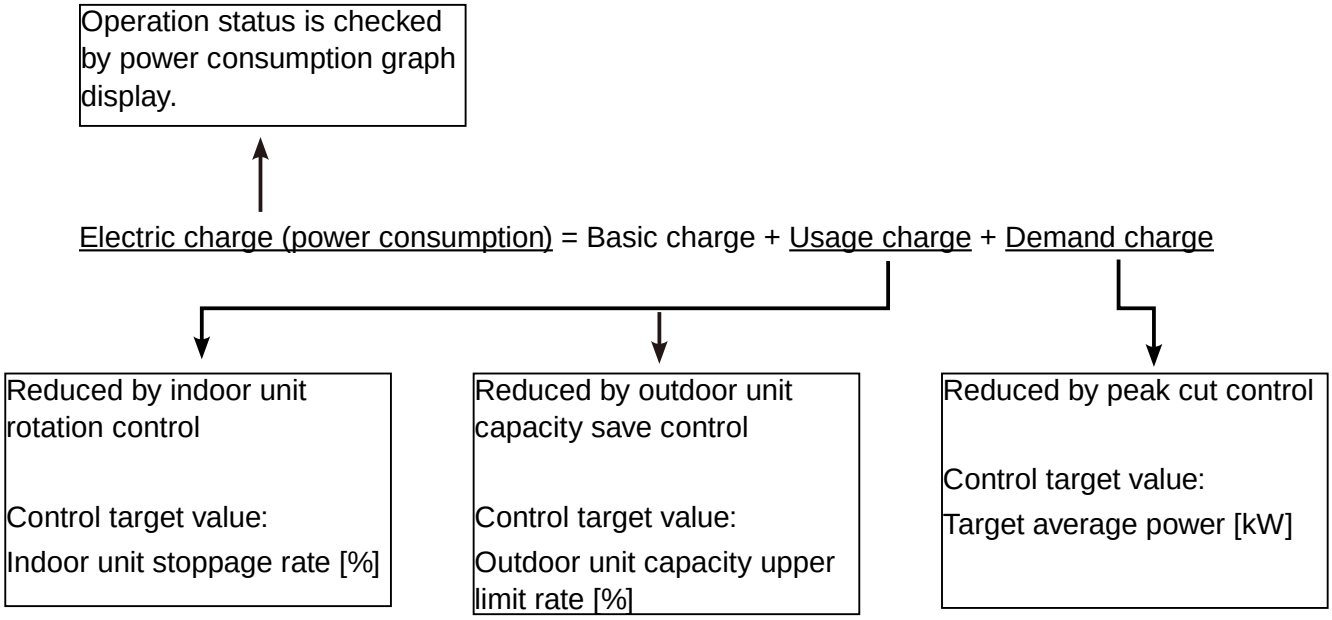
Note: Outdoor units and indoor units layout, remote controller group combination method, and other design shall be performed separately.

SYSTEM DESIGN

■ OPERATION EXAMPLE

Electric charges usually consist of the following elements.

With the energy saving function, operation for each element is as follows.



*Basic charge: Charge billed according to contract with the electric power company. Includes meter reading cost and billing cost.

*Usage charge: Charge billed according the power consumed.

*Demand charge: Charge billed according to the scale of the contract with the electric power company

SYSTEM DESIGN

■ NOTES ON ENERGY SAVING FUNCTION

Energy saving function precautions and scope of guarantee

The effect of the energy saving function depends on the units used, usage environment, installation environment, and so forth. Each energy saving function is not guaranteed to display a fixed effect and function for operation by specific setting. Reading and understanding the following precautions is requested before using the function.

(1) How to use the energy saving function

Since the effect of the energy saving function depends on the units used, usage environment, installation environment, and so forth, a different effect may appear according to the building and operating period even when operated with the same settings and schedule. Try to gain an understanding of the features of each energy saving function and confirm the actual effect through operation and apply appropriate settings, etc. as required.

(2) Target electric power of peak cut function

These are values used as target values when performing peak cut control. These values do not always guarantee that the consumed power is within the target value. For example, even if forced thermostat off and outdoor unit stoppage are activated, the control become ineffective if the outdoor unit is performing a protective operation (oil recovery and defrosting). As a result, the electric power consumed may exceed the target electric power.

(3) Relationship between unit protection and energy saving function

For VRF, there are operations and restrictions for protecting units. The energy saving function operates within the range of these protective operations and restrictions. When the energy saving function performs control against these protective operations and restrictions, the protective operations and restrictions have priority and the energy saving function is either restricted or may not operate. As protective operations of units, there are oil recovery, defrosting, etc. which are automatically performed periodically or under specified conditions.

(4) Failure, etc.

An energy saving function operates only when the related units are operating normally. When the power of the electricity meter and the outdoor units connected to an electricity meter and the SYSTEM CONTROLLER is turned off due to a failure, etc. the energy saving function will not operate normally.

(5) Explaining to the building tenants

During energy saving function operation, control from the remote controller may be overrided by the energy saving control. For this reason, it is recommended that the building tenants be informed of this beforehand.

SYSTEM DESIGN

■ INSTALLATION RESTRICTION OF ENERGY SAVING UNITS

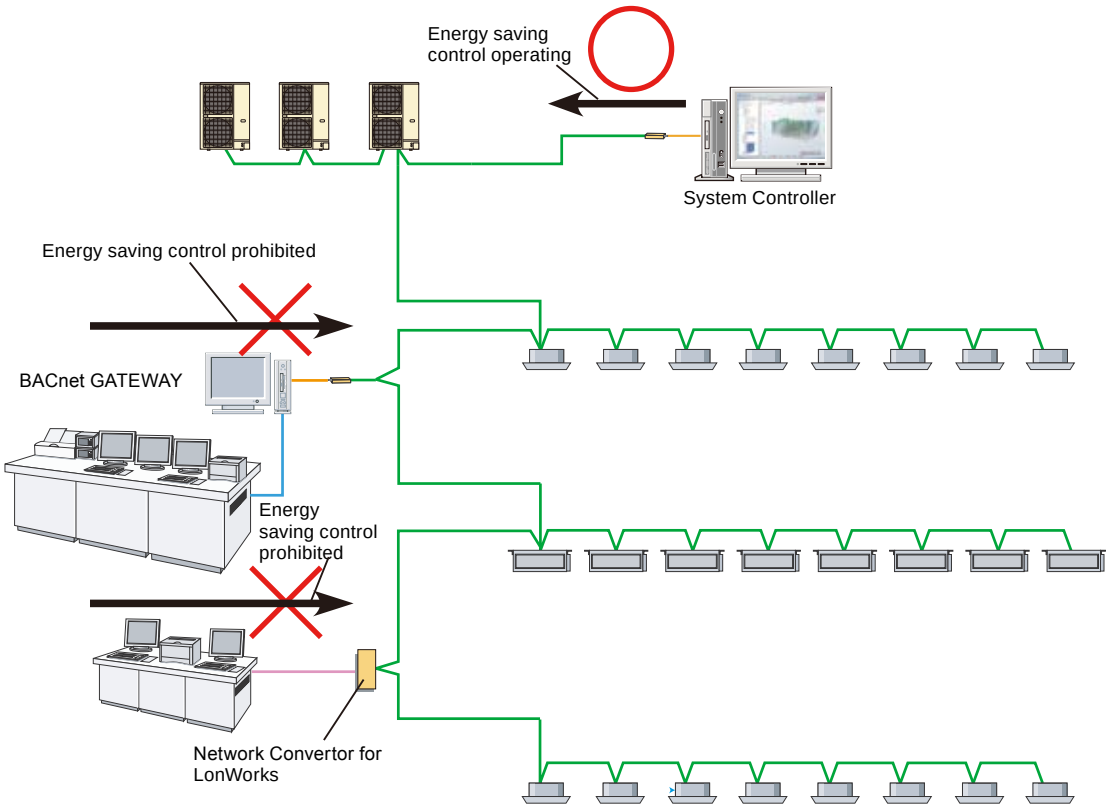
(1) Only 1 unit may perform energy saving control at a time. When energy saving control is performed by SYSTEM CONTROLLER (UTY-APGX/PEGX), stop energy saving control *1 from the building management system through the following units.

・BACnet GATEWAY (UTY-ABGX)

・NETWORK CONVERTOR for LonWorks (UTY-VLGX)

When energy saving control is performed from multiple points, trouble may occur.

*1: Forced thermostat OFF, outdoor unit stoppage



(2) Electricity meter installation

Among energy saving control, there are functions which require installation of an electricity meter.

・Power consumption graph display function

・Peak cut control

When performing these functions, refer to the installation rules and install an electricity meter in advance.

SYSTEM DESIGN

■ ELECTRICITY CHARGE APPORTIONMENT AND ELECTRICITY METER

When implementing the electricity charge apportionment function in a VRF System, a configuration which does not use electricity meters or a configuration which uses electricity meters can be selected. The differences between these two configurations are explained below.

The electricity charge apportionment function apportions the power consumption to each block (tenant indoor unit) defined in advance according to the usage record, after the power consumption (electricity charge) of the air conditioners is input to the System Controller. Electricity charge apportionment calculation becomes possible only after inputting the power consumption (or electricity charge).

[Electricity charge apportionment when electricity meter not used]

Only after the electricity bill is received from the electric power company and the billed amount is input into the System Controller, can electricity charge apportionment for the billed period be calculated.

[Electricity charge apportionment when electricity meter used]

Since the power consumption data is sent from the electricity meter to the System Controller at any time, basically electricity charge apportionment calculation can be performed at any time. Because an actual System Controller calculate power charge apportionment data in one day units, electricity charge apportionment calculation can be performed at an arbitrary day in one day units.

SYSTEM DESIGN

Example (1)

When the tenants of a tenant building, etc. are billed for their air conditioning electricity charge once a month, if the electricity bill arrives from the electric power company each month, the electricity charge apportionment function can be used without electricity meters because electricity charge apportionment can be performed based on that bill and the tenants can be billed. Even if there are tenants moving in and out within a month, appropriate billing can be performed after the bill was received from the electric power company. However, when the electricity bill is received from the electric power company once every 3 months, electricity charge apportionment for 3 months cannot be calculated until the bill is received. In this case, building owner can only bill the building tenants for air conditioning electricity charges every 3 months. However, if electricity meters are installed, billing at an arbitrary interval, for example, once a month, is possible.

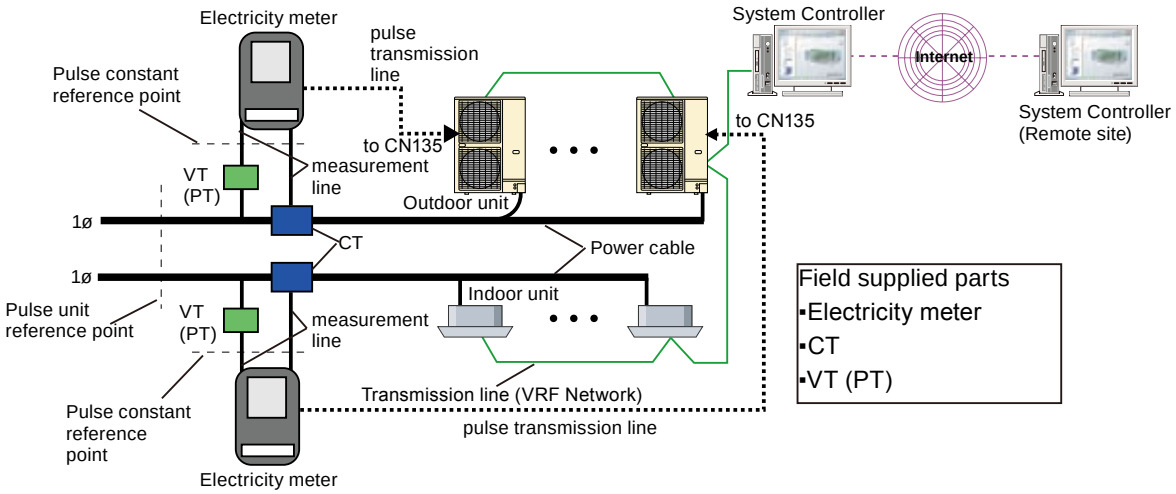
Example (2)

When air conditioning electricity charge is billed based on the electricity charge apportionment function for each room in hotels etc., because guests leave and arrive daily and the electricity charge is calculated each time, you cannot wait for the electricity bill to arrive from the electric power company. In such cases, it must be possible to be able to calculate electricity charge apportionment at any time using electricity meter.

■ ELECTRICAL WIRING

● Electricity meter connection composition

To perform energy saving peak cut control, basically, electricity meters with pulse transmission function measuring all the power consumed by the air conditioner are necessary. Multiple meters installations are also possible as long as the number of electricity meters is within the specified limit. A general electricity meter installation configuration is shown below.



Item	Description	Remarks
Electricity meter	Measures the voltage and current of the power cable to which measurement line is connected and finds the power consumption from these. In addition, pulses corresponding to the measured value are output to the transmission line.	
VT(PT)	Voltage Transformer (Power Transformer) Transform the power source voltage to a measurable voltage. Transformation ratio is indicated by VT (PT) ratio. Normally unnecessary for the voltage value level used by outdoor units and indoor units.	
CT	Current Transformer Transform the power line current value to a current measurable by an electricity meter. Transformation ratio is indicated by CT ratio. There are types which is inserted between power cables and types which are coupled to the power cables.	
Pulse unit	Pulse unit indicates the relationship between electricity meter output pulse and measured power. The value specified in pulse unit indicates the power in kWh consumed on the power cable for 1 pulse. Units: [kWh/pulse] The value specified by pulse unit takes into account the VT and CT ratio used and corresponds to the actual power consumption itself.	
Pulse unit reference point	Indicates the measurement point of the power consumption specified in pulse units.	
Pulse constant	Pulse constant indicates the relationship between electricity meter measured power and output pulses. The value specified by pulse constant indicates how many pulses are equivalent to 1kWh of power consumption input to an electricity meter. Units: [pulse/kWh] Because the ratio of VT and CT used is not taken into account in the value specified by pulse constant, to find the actual power consumption on the power cable, the pulse constant value must be multiplied by both the VT and CT ratio.	
Pulse constant reference point	Indicates the measurement point of power consumption specified by pulse constant.	

SYSTEM DESIGN

● Selection of Electricity meter, CT, and VT

Select the electricity meter, CT, and VT by considering the following items.

(1) Install electricity meters for each refrigerant system, if circumstances allow.

(2) Select VT/CT with a small VT/CT ratio.

(3) When using an electricity meter which is specified in pulse units (kWh/pulse), usually select a meter with a 1kWh/pulse output.

● Outdoor unit connection interface (CN135) to electricity meter

Item		Specifications	Remarks
Interface		Dry contact “a” contacts	“a” contacts: ON when shorted *1
Pulse	Specifi-cations	Width: 50ms or more Interval: 50ms or more	
	Units	1kWh/pulse (pulse units) recommended	
	Constant	Considering the electricity meters available in some countries, use of electricity meters with 3200 pulse/kWh (pulse constant) or less pulses are possible.	
Line length restriction		150m or less	Between Electricity meter to Outdoor unit
Wiring specifications		Control and instrumentation cable CVV-S (Control-use Vinyl insulated Vinyl sheathed cable – Shielding) *2 2-conductor 1.25mm^2	

*1: Pulse signal: normally OFF (open), ON (closed) when shorted

*2: When affected by interference by induction, select shielded CVV cable (CVV-S cable). This is because copper shielding tape is wrapped around CVV cable and induction interference from adjacent power cables is alleviated and normal communication is maintained.
In addition, when the wiring is outdoors, select weather resistance cable.

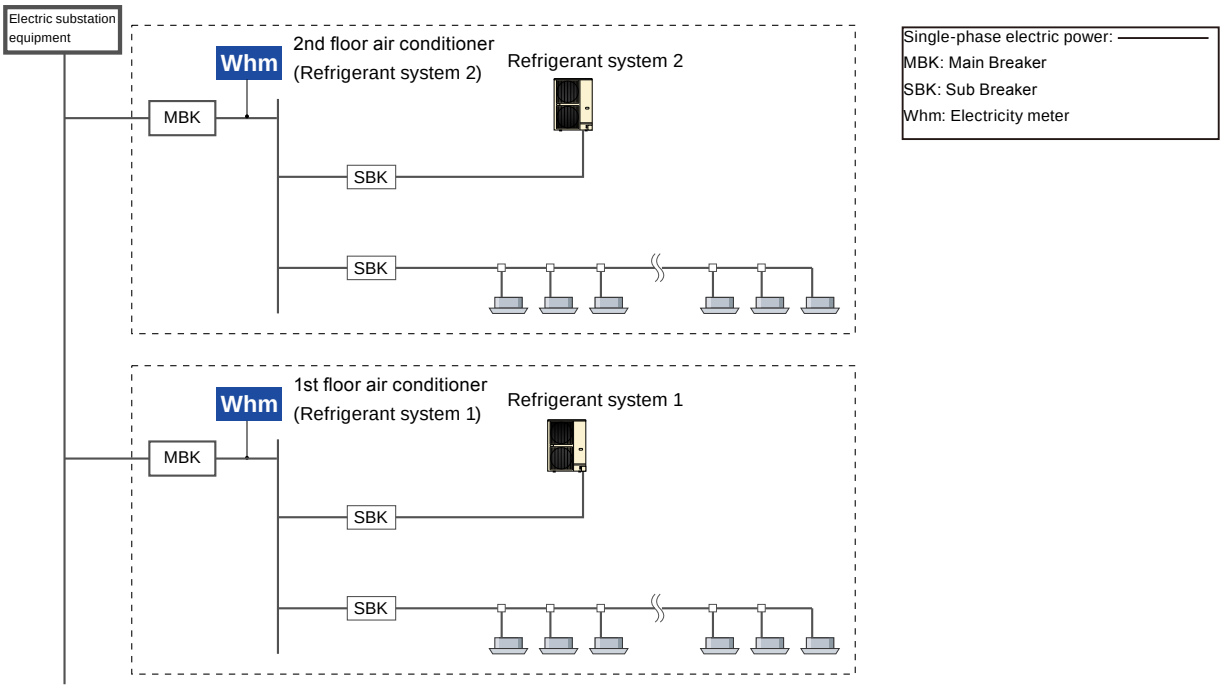
● Number of electricity meters installed and connection destination

Item	Specifications	Remarks
Number of electricity meters installed	Max.200	Per System Controller
	Max. 1	Number connectable to 1 outdoor unit
Electricity meter signal line connection destination	Arbitrary	There are no restrictions on outdoor units which connect an electricity meter. An arbitrary electricity meter can be connected to an arbitrary outdoor unit.

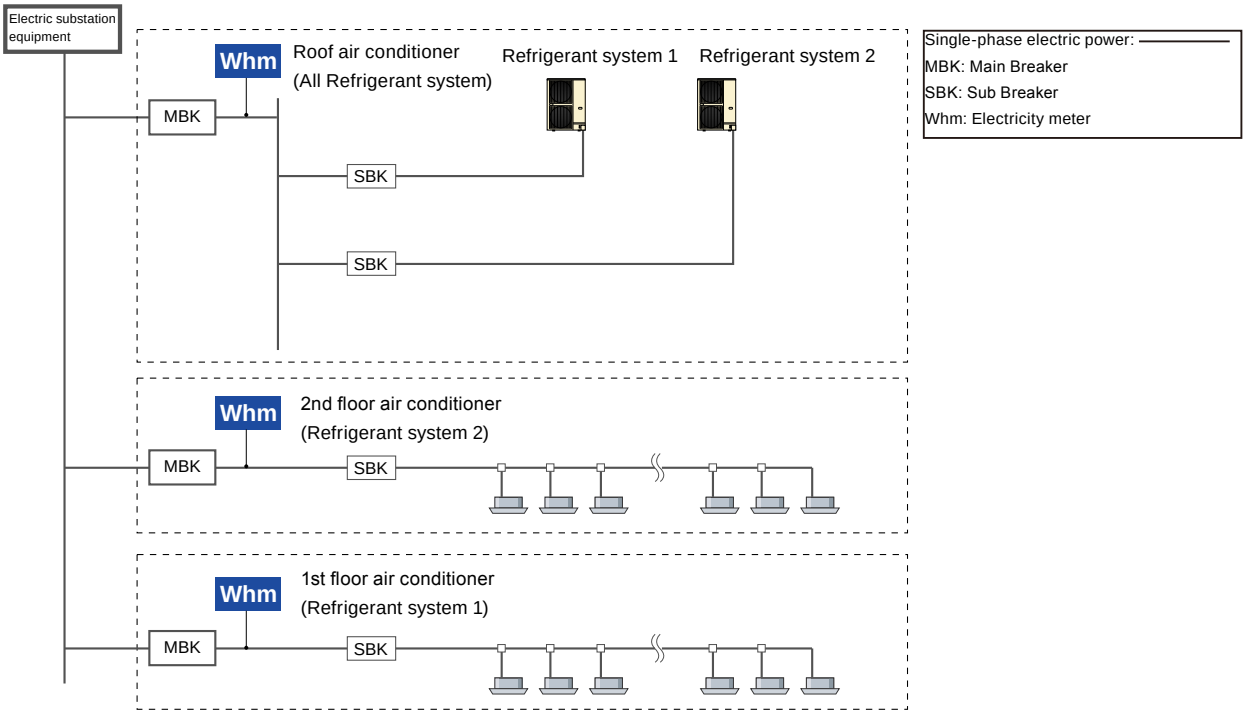
SYSTEM DESIGN

● Installation example of Electricity meter

• Example of installation for each refrigerant system

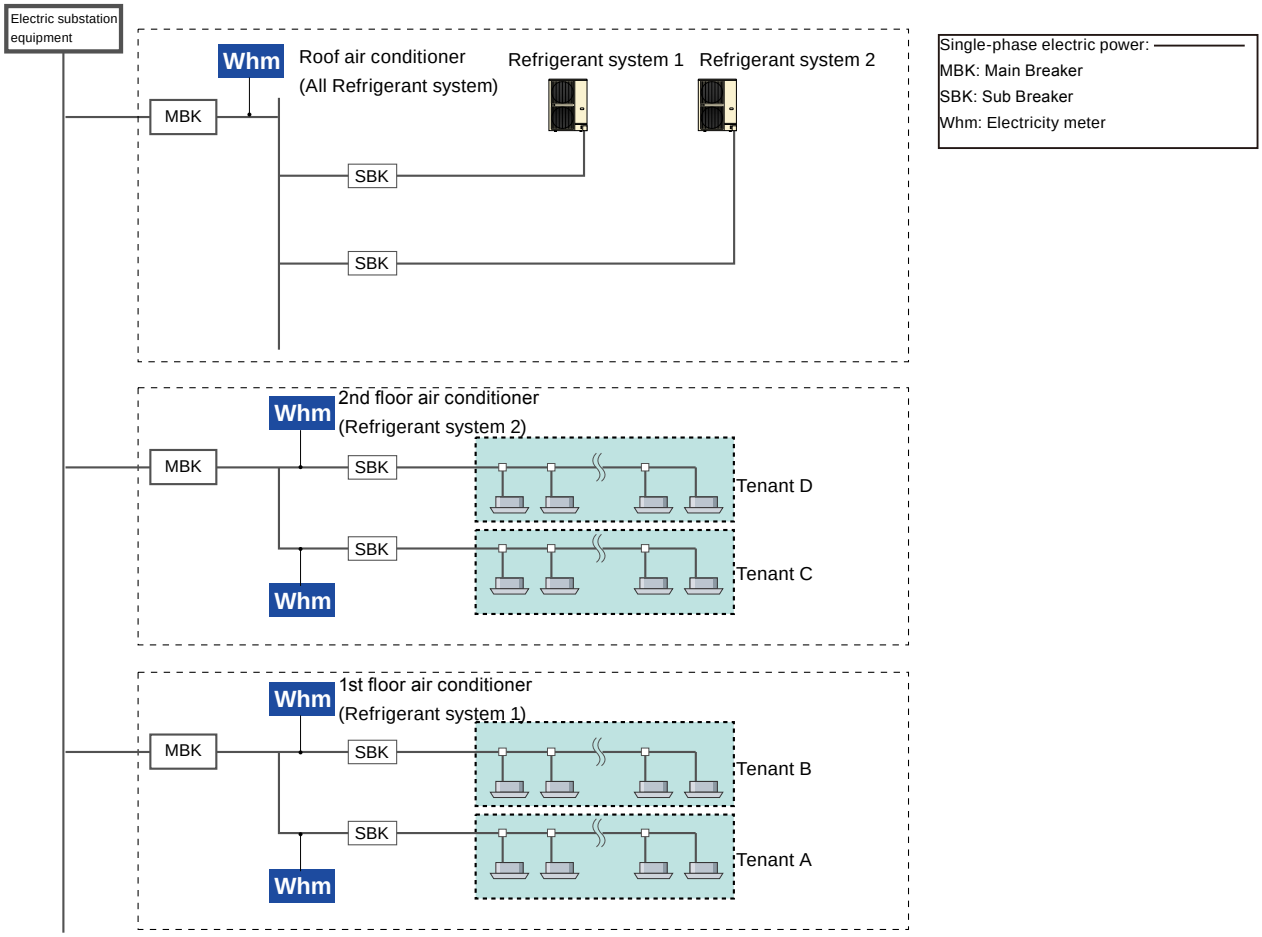


• Example of installation for indoor units and outdoor units



SYSTEM DESIGN

• Example of installation for each tenant



SYSTEM DESIGN

■ INSTALLATION RESTRICTION OF ELECTRICITY METER

● Functions that requires installation of electricity meter

Use an electricity meter having the following functions:

・Electricity charge apportionment function

Install for operation using an electricity meter. (Operation without an electricity meter is also possible.)

When using an electricity meter, an electricity meter must be installed for all the units which perform apportionment calculation.

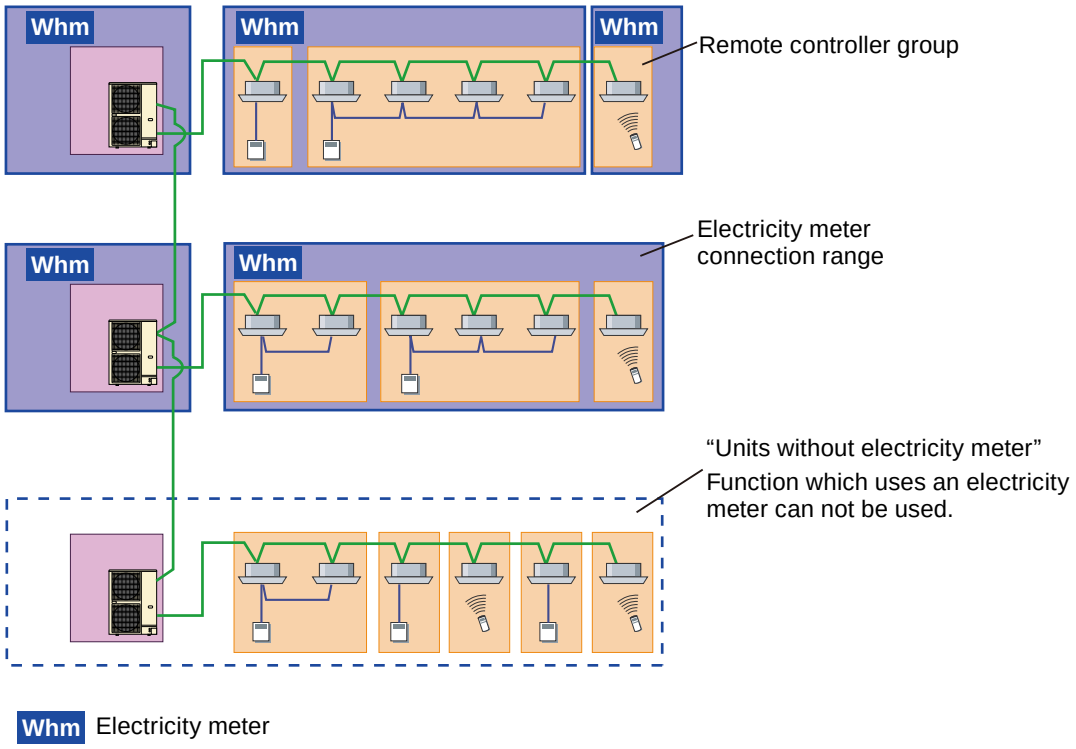
・Peak cut control function

Installation of an electricity meter is essential.

・Power consumption graph display function

Installation of an electricity meter is essential.

[Installation example]



SYSTEM DESIGN

● Installation restriction

Install electricity meters in accordance with the following restrictions:

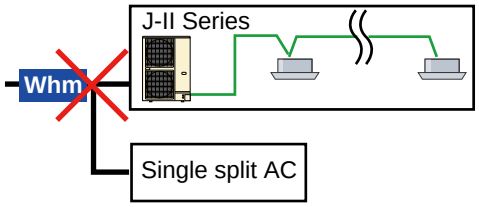
(1) Install an electricity meter only to air conditioners which are the target of the function.
When electric lights and other OA equipments are connected to the electricity meter, also their power consumptions are calculated.
Connect electricity meters to only the necessary air conditioners.

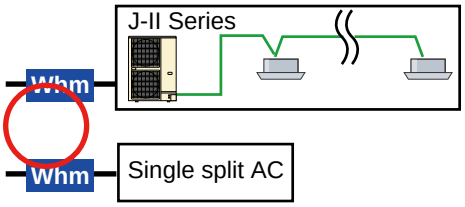
(2) An electricity meter can be connected to J-II Series air conditioners.
An electricity meter can be installed to the J-II Series *1. An electricity meter cannot be connected to S Series and V Series units because they are not electricity meter supported.

*1: Indoor units with revision code B or later is required.
Serial number became “X2XXXXX” from revision code B.

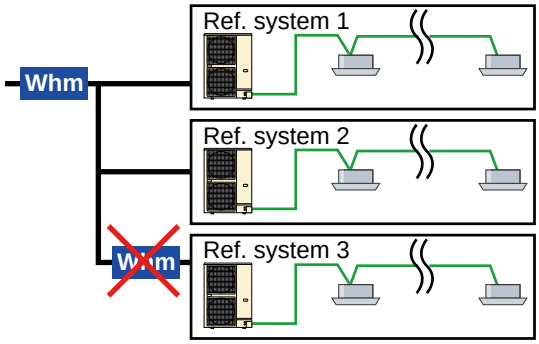
(3) Electricity meter supported/unsupported units cannot be mixed under one electricity meter. (Because the available functions are different)
When connecting single type air conditioners via J-II Series network converter (UTY-VGGX), separately connect the electricity meter to J-II Series VRF air conditioners because there are some functions *2 that are electricity meter unsupported.
However, UTY-VGGX which connects a group remote controller is an exception.

*2: [Electricity charge apportionment function]
The electricity charge apportionment function cannot be used with single types air conditioners which are connected to a network converter.
[Energy saving function]
In the peak cut control, though the power will be included in the target power, the actual control will not be performed.





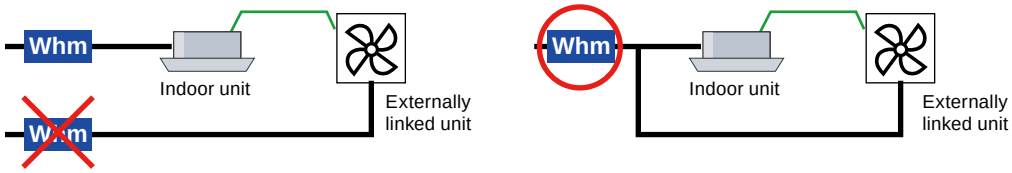
(4) Electricity power meters cannot be nested
Installation of the meters themselves is possible, but use only one electricity meter for the System Controller . (If both are used, the power consumption will be measured twice.)



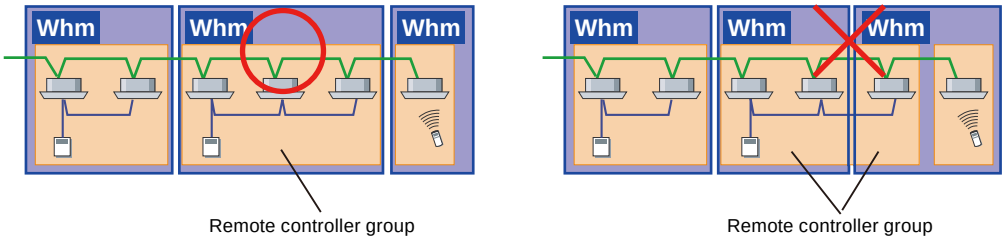
SYSTEM DESIGN

(5) The externally linked units* shall be connected to the same electricity meter as the air conditioner to which they are connected.

*General-purpose unit which performs calculation as an externally linked unit by electricity charge apportionment function.

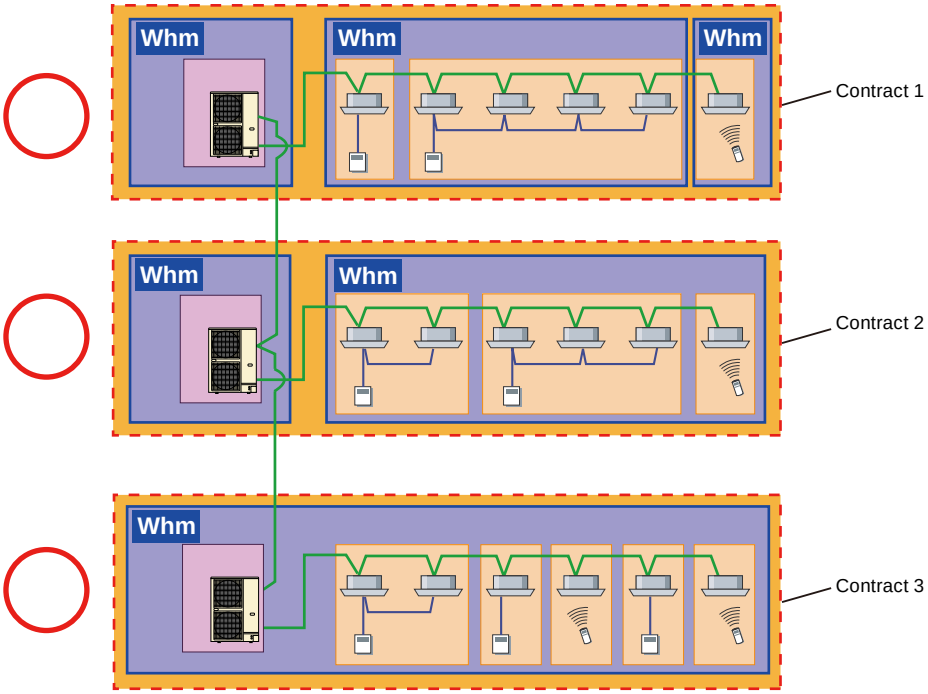


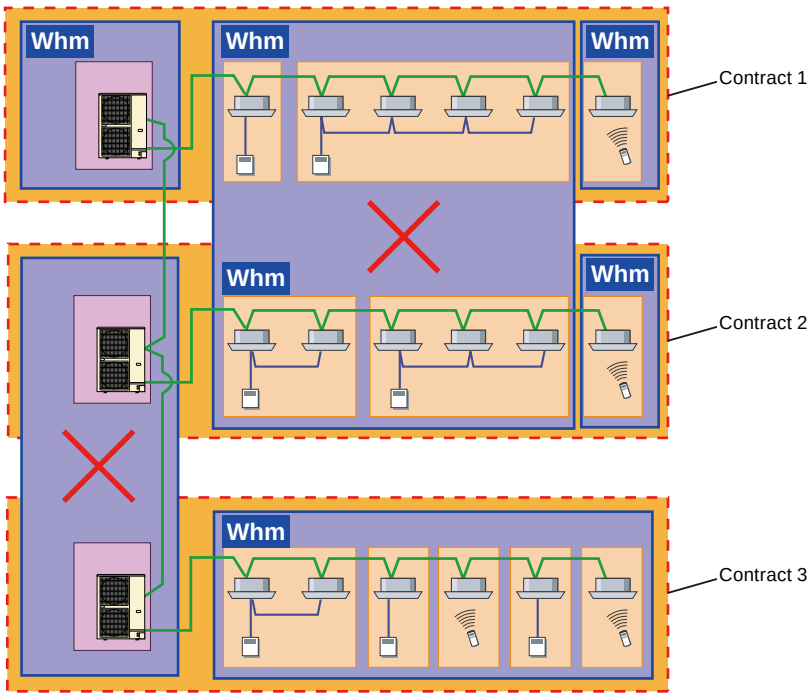
(6) Installation of electricity meter which divides remote control groups is prohibited.



SYSTEM DESIGN

(8) Installation of electricity meter which crosses the contract is prohibited.
When an electricity meter is used by electricity charge apportionment function, install the electricity meter so that it does not cross over the “contract setting” set by electricity charge apportionment.





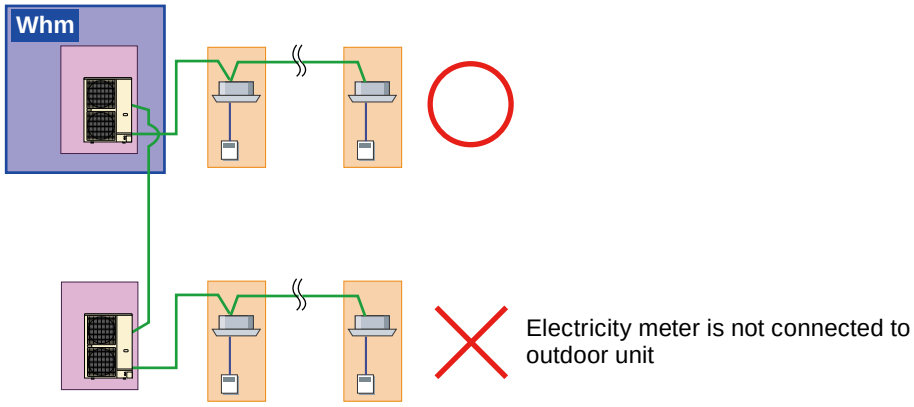
SYSTEM DESIGN

(9) When performing apportionment calculation using electricity meter

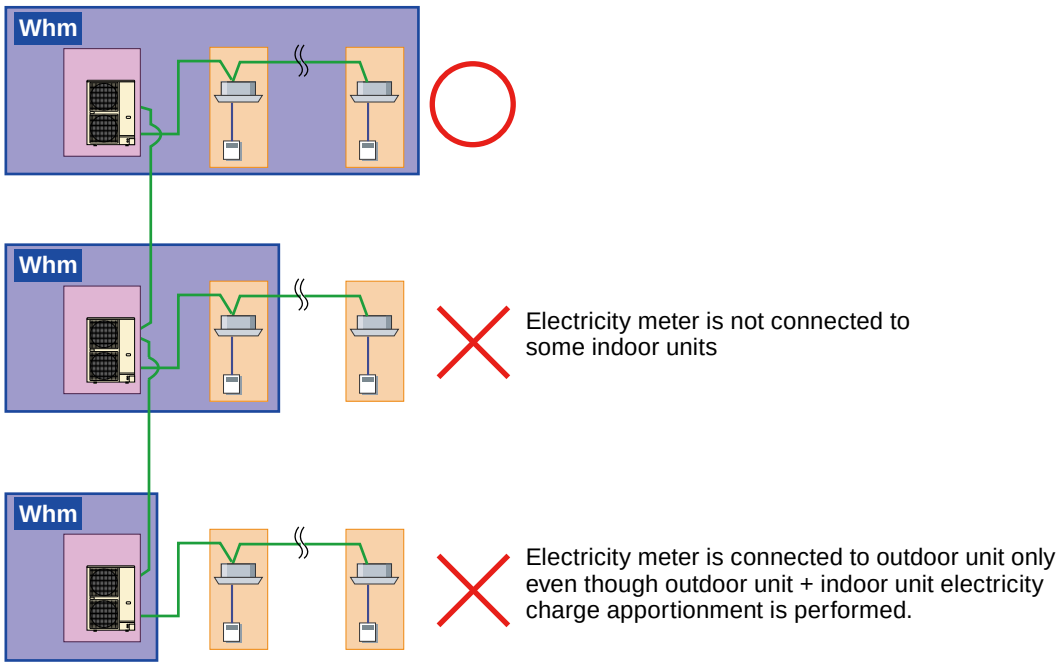
The electricity meter shall be connected to the necessary air conditioners which are the target of calculation by the electricity charge apportionment function.

When an electricity meter is not connected, electricity charge apportionment calculation using an electricity meter may not be possible.

<<Electricity charge apportionment with outdoor unit only>> → Connect the electricity meter to the outdoor unit.



<<Outdoor unit + indoor unit electricity charge apportionment>> → Connection of an electricity meter to the outdoor unit and indoor unit is necessary.

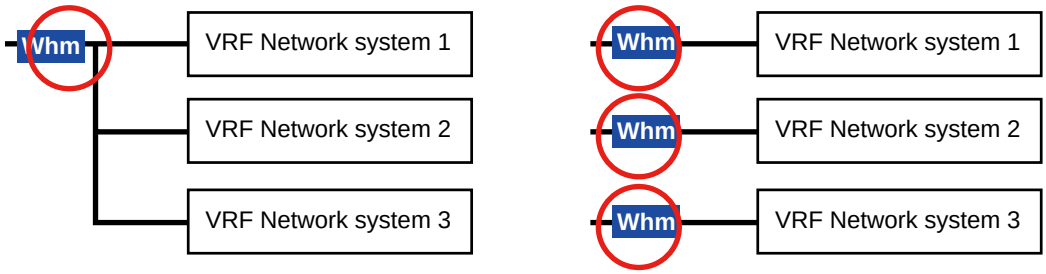


SYSTEM DESIGN

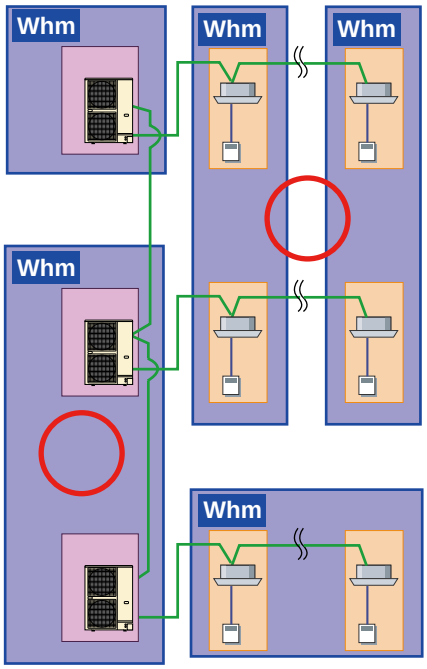
Note

The belows are electricity meter connection methods which can be adapted by the System Controller. However, the previously mentioned setting restrictions must be observed.

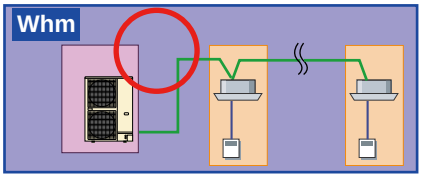
(1) Multiple VRF Networks can connect to 1 electricity meter. (with network crossover)



(2) Installation crossing over refrigerant systems is possible.



(3) Outdoor unit/indoor unit mixed in 1 meter is possible.



SYSTEM DESIGN

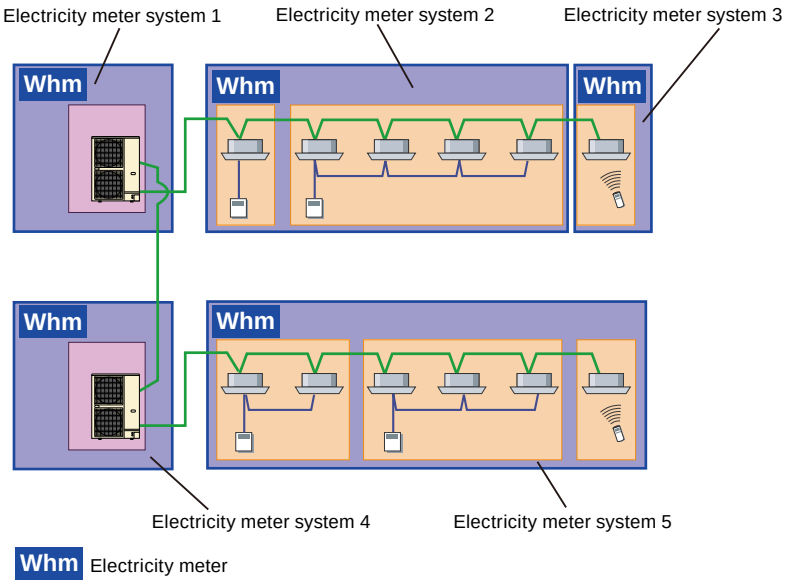
■ ELECTRICITY METER SYSTEM

Electricity meter system is the connection configuration of one electricity meter and the air conditioner units which are connected to the power line under it. This is set on the System Controller.

Set the System Controller to match the actual electricity meter installation configuration.

Since the electricity charge apportionment function/energy saving function perform control using the power consumption data from an electricity meter, it is necessary to set an electricity meter system on the System Controller.

When installing electricity meters as shown below, 5 electricity meters systems are set.



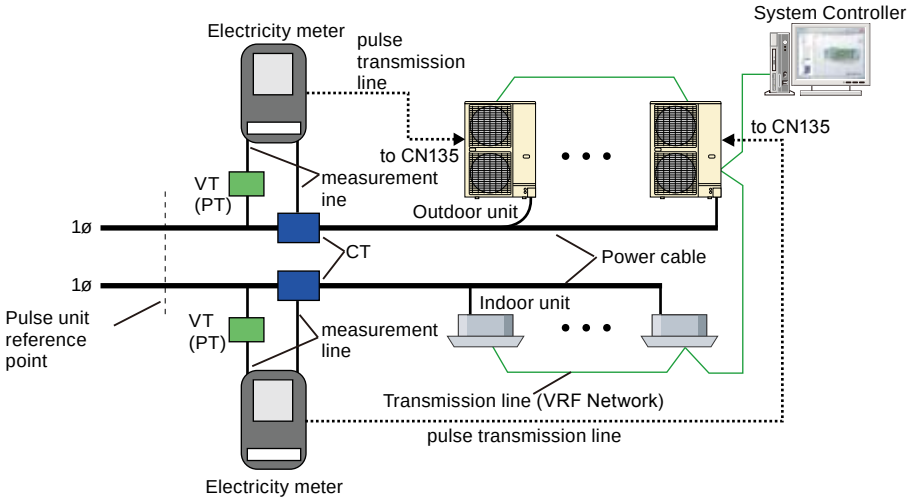
SYSTEM DESIGN

■ SETTING OF OUTDOOR UNIT AND SYSTEM CONTROLLER

To obtain the appropriate power consumption by System Controller, the power value measured by an electricity meter must be properly conveyed. To do this, appropriate setting at the electricity meter, outdoor unit, and System Controller is necessary. The method of setting the pulse from the electricity meter received by an outdoor unit and the method of setting the pulse value set by system controller are described here. When electricity meter setting is necessary, perform it in accordance with the instruction manual supplied with the electricity meter.

Below, the setting method of electricity meters specified in pulse units and that specified in pulse constant are described.

(1) When electricity meter used is specified in pulse units
The connection configuration is shown below.



For the electricity meter specified in pulse units, the output pulses are normalized in advance (normally 1kWh/pulse) and is output. In this case, the settings are as follows:

Set point	Set item	Set value	Description	Remarks
Electricity meter	Set in accordance with the product manual.	-	When there is a product unique setting, setting is performed in accordance with the product manual. (Pulse units value, VT/CT ratio, output coefficient, etc.)	
Outdoor unit	Meter No. setting	Arbitrary	Set an unique electricity meter No. for electricity meter identification.	The information will become necessary when setting System Controller later. Refer also to 6-1 OUTDOOR UNIT.
	Electricity meter pulse setting	1	Fixed to “1”. When 1 pulse comes from the electricity meter, the outdoor unit communicates “1” to the System Controller.	
System Controller	Electricity meter system setting	Units measured by electricity meter	Set the outdoor unit and indoor unit, measured by the electricity meter of the meter No. set at the outdoor unit.	The value set by each outdoor unit is used.
	Pulse setting	Electricity meter pulse units value (Usually either of 1, 10, or 100 [kWh/ pulse])	Set the pulse units specified by the electricity meter as they are. Set the number of kWh that corresponds to the “1” communicated from the outdoor unit.	Refer to the value set by each outdoor unit.

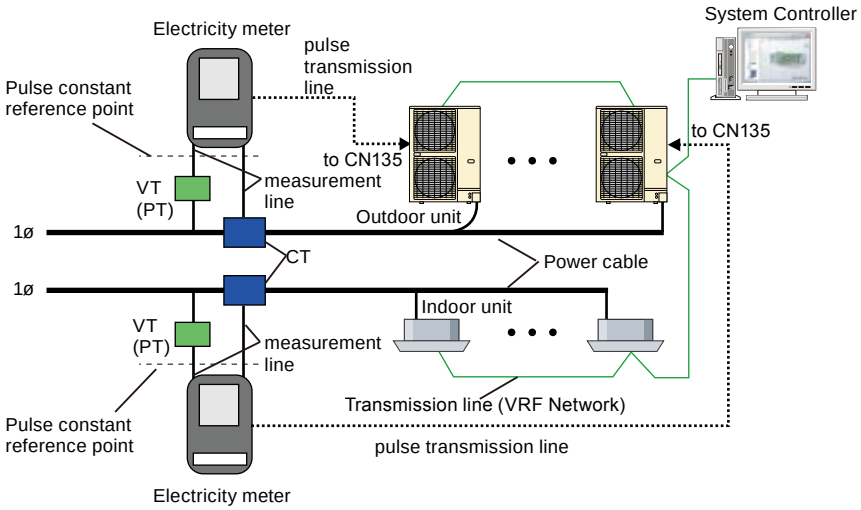
[Setting example]

Equipment conditions: VT ratio=1 (not used), CT ratio=50(250/5A), electricity meter=1kWh/pulse

Set value: Electricity meter pulse setting=1(fixed), pulse setting=1(corresponds to electricity meter used)

SYSTEM DESIGN

(2) When electricity meter used is specified by pulse constant
The connection configuration is shown below.



For the electricity meter specified by pulse constant, the power consumption indicated by output pulse must be corrected by VT/CT ratio. In this case, the settings are as follows:

Set point	Set item	Set value	Description	Remarks
Electricity meter	Set in accordance with the product manual.	-	When there is a product unique setting, setting is performed in accordance with the product manual. (Pulse constant value, output coefficient, etc.)	
Outdoor unit	Meter No. setting	Arbitrary	Set an unique electricity meter No. for electricity meter identification.	The information will become necessary when setting System Controller later. Refer also to 6-1.OUTDOOR UNIT
	Electricity meter pulse setting	The pulse constant value / (VT ratio x CT ratio). However, truncated after the decimal point	Set the approximate number of power meter pulses that are equivalent to 1kWh. When set number of pulses come from the electricity meter, the outdoor unit communicates “1” to the system controller.	
System controller	Electricity meter system setting	Unit to be measured by electricity meter	Sets the outdoor unit and indoor unit, measured by the electricity meter of the meter No. set at the outdoor unit.	The value set by each outdoor unit is used.
	Pulse setting	(Electricity meter pulse setting value) x (VT ratio x CT ratio)/pulse constant Values after the decimal point must be also input. *1	Set the standard number of kWh for the value communicated from the outdoor unit. Set the number of kWh that corresponds to the “1” communicated from the outdoor unit.	Refer to the value set by each outdoor unit.

*1: Input up to 6 decimal digits

[Setting example]

Equipment conditions: VT ratio=1 (not used), CT ratio=500(2500/5A), electricity meter=3200 pulse/kWh

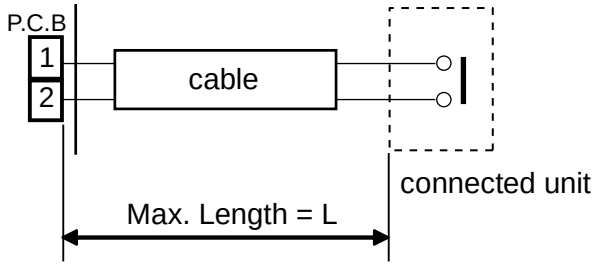
Set value: Electricity meter pulse setting=6 (3200/ (1x500)),
Pulse setting=0.9375 (6x (1x500)/3200) ---Refer to the calculating formula of the table above.

SYSTEM DESIGN

7. EXTERNAL INPUT & OUTPUT

Note :

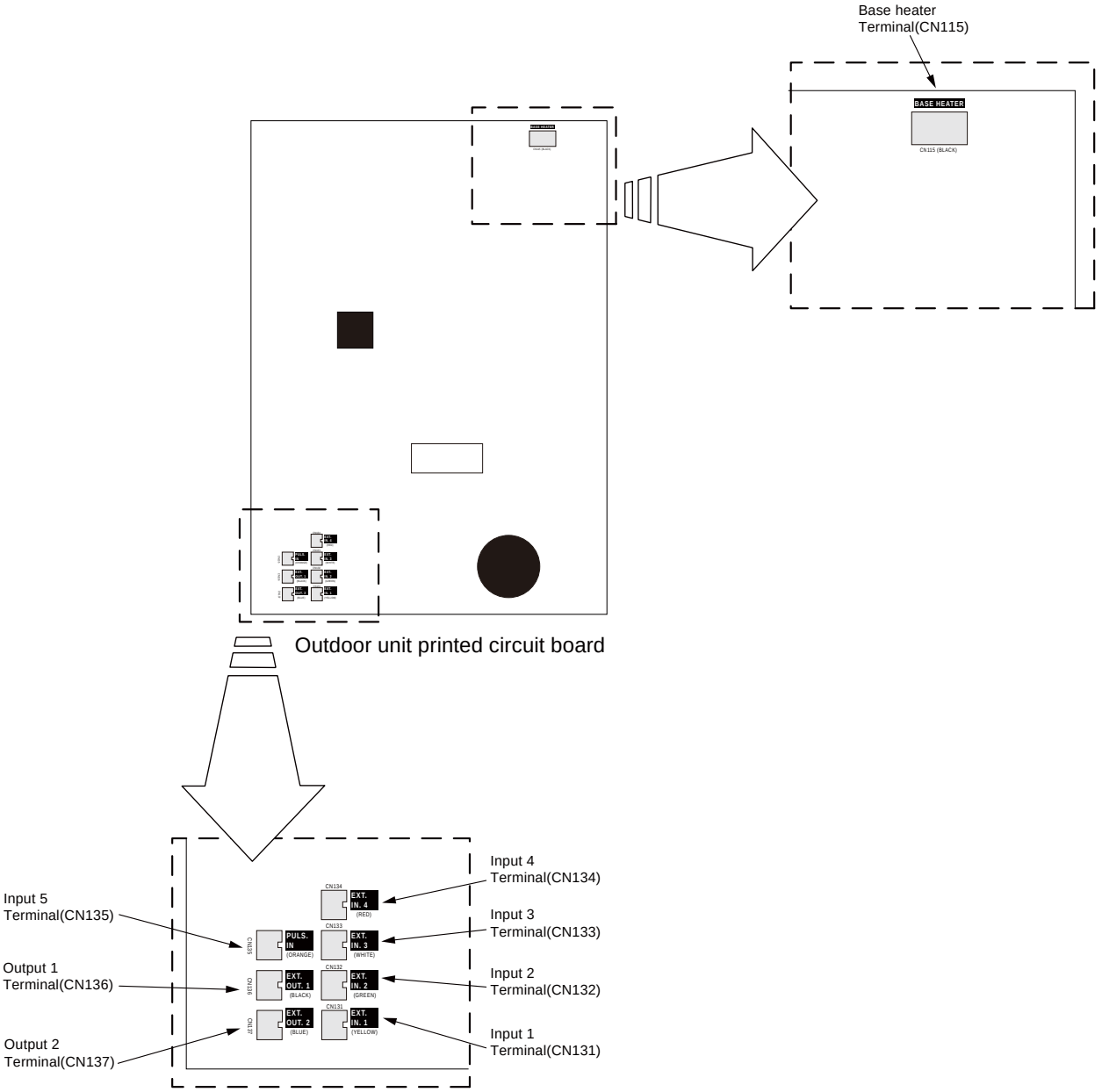
The length regulations of the cable are as shown in the following figures.



Type	L (m) Input / Output	Type	L (m) Input / Output
Outdoor unit	150 / 150	Floor/Ceiling	150 / 150
Compact Cassette		Ceiling	
Cassette		Compact Wall Mounted	25 / 25
Compact Duct	25 / 25		
Slim Duct	150 / 150	Wall Mounted	150 / 150
Low Static Duct	25 / 25	Touch Panel Controller	25 / 25
Duct			
High Static Duct		Central Remote Controller	

7-1. OUTDOOR UNIT

■ TERMINAL POSITION



SYSTEM DESIGN

■ INPUT

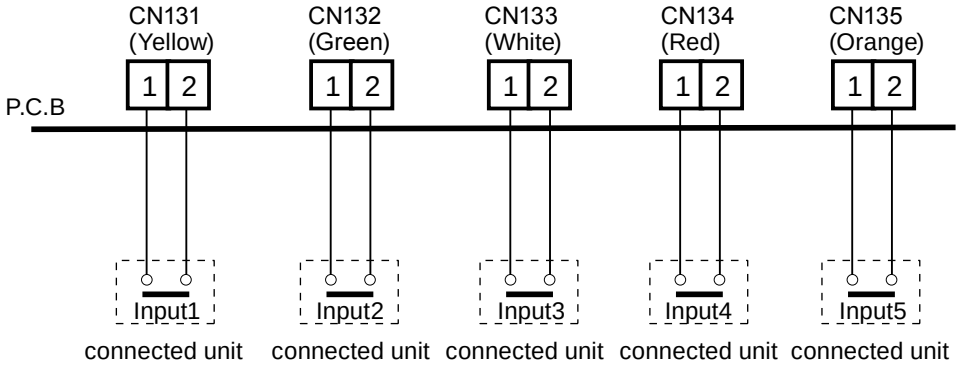
Setting to low noise mode, cooling priority/heating priority selection, outdoor unit operation peak control setting, emergency/batch stop and electricity meter pulse are possible from the outside.

● Wiring method and specifications

*A twisted pair cable (22AWG) shoud be used. Maximum length of cable is 150m.

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

*For each input, pin No.1 is of positive polarity and pin No.2 is of ground level.



● Operation behavior

Connector	Input signal	Status	Outdoor unit
CN131 (Yellow)	OFF	Normal operation	○
	ON	Low noise mode operation	
CN132 (Green) *1	OFF	Cooling priority	○
	ON	Heating priority	
CN133 (White)	OFF	Normal operation	○
	ON	Outdoor unit operation peak control	
CN134 (Red)	OFF	Normal operation	○
	ON	Batch stop or Emergency stop operation *2, *3	
CN135 (Orange) *4	No pulse	No information from electricity meter	○
	Pulse	Power usage information from electricity meter	

Note :

*1: The "external input priority mode" must be set by pressing push button on PC board of outdoor unit.

*2: Batch stop or Emergency stop pattern can be selected by outdoor unit PC board push button.

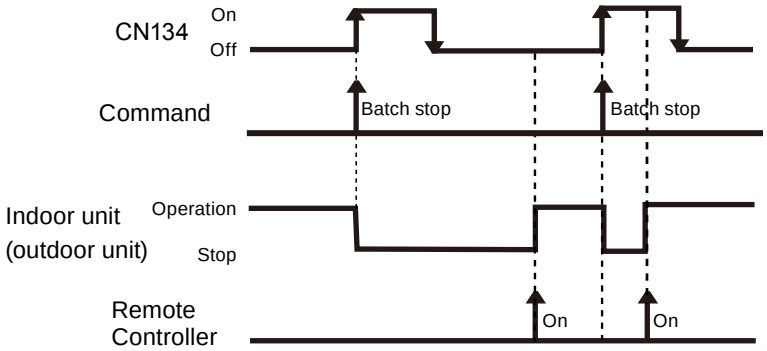
*3: The emergency stop function mounted in the J-II does not guarantee the regulations of each country. For this reason, sufficient checking is necessary regarding use.
Especially, since the fact that the equipment may not be emergency-stopped in the case of breaking of the wiring to the external input terminals and communication line, communication error due to noise, VRF external input circuit trouble, etc. must be considered, the provision of double measures that add direct interruption of the power supply by switch, etc. is recommended as a precaution.

*4: Pulse input to CN135 must be width 50ms or more, and must be interval 50ms or more.

SYSTEM DESIGN

● When function setting is "Batch stop" mode

Connector	Input signal	Command
CN134	OFF → ON	Batch stop
	ON → OFF	-

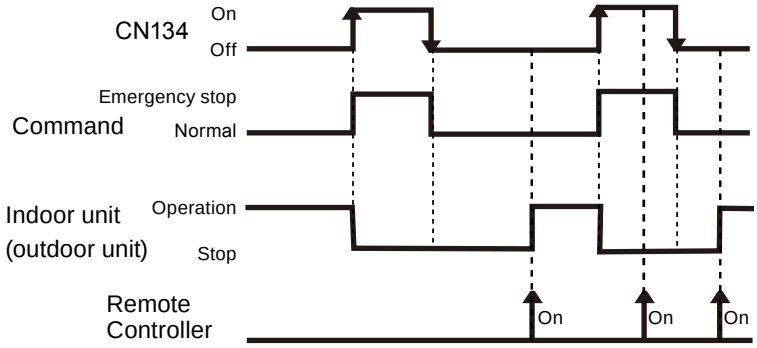


NOTE :

- All indoor units of same refrigerant system stops when Batch stop operates.
- After batch stop operates, the operation by remote controller is possible.

● When function setting is "Emergency stop" mode

Connector	Input signal	Command
CN134	OFF → ON	Emergency stop
	ON → OFF	Normal



NOTE :

- All indoor units of same refrigerant system stops when Emergency stop operates.
- When the Emergency stop is triggered, indoor unit stops and Start/Stop operation by a remote controller is restricted.

SYSTEM DESIGN

■ OUTPUT

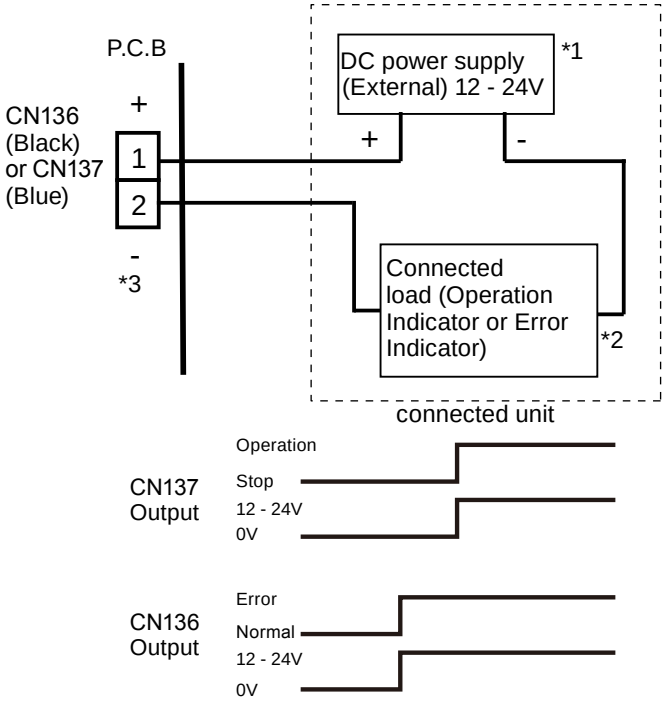
● Error display

This output indicates the outdoor unit and connected indoor unit's "Normal" or "Error" status.

● Operation display

This output indicates the outdoor unit's "Operation" status.

Connector	Output voltage	Status
CN136 (Black)	0V	Normal
	DC 12-24 V *1	Error
CN137 (Blue)	0V	Stop
	DC 12-24 V *1	Operation



*1: Provide a DC12 to 24V power supply. Select a power supply capacity with an ample surplus for the connected load.

*2: The allowable current is 30mA or less. Provide a load resistance such that the current becomes 30mA or less.

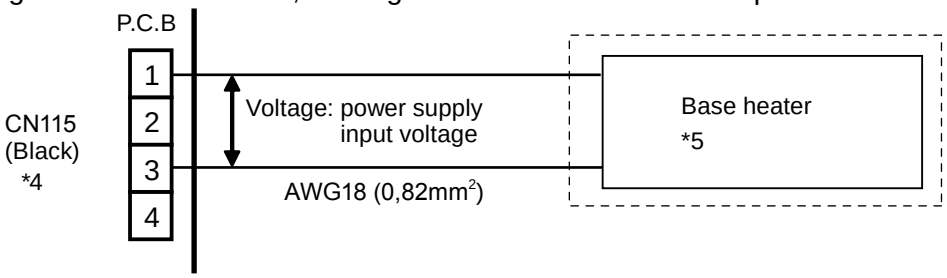
*3: Polarity is [+] for pin 1 and [-] for pin 2. Connect correctly.
Do not impress a voltage exceeding 24V across pins 1-2.

*A twisted pair cable (22AWG) shoud be used. Maximum length of cable is 150m.

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

● Base heater

This is the output signal for base heater. Output signal ON, when the outdoor temperature goes down below 2°C, and signal OFF at the outdoor temperature 4°C.



*4: Connect to pin 1 and pin 3. No connection pin2 and pin4.

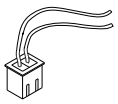
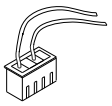
*5: The allowable current is 1A or less.

SYSTEM DESIGN

SYSTEM DESIGN

■ PARTS

To connect base heater, the following cord (service parts) is required. Please use the parts number shown below to order the cord from your sales representative.

Usage	Name and shapes	Q'ty	Parts No.
For external input For external output (Error display, Operation display)	EXTERNAL INPUT WIRE A 	1	9368777005
For external output (Base heater)	WIRE WITH CONNECTOR 	1	9708642000

SYSTEM DESIGN

7-2. INDOOR UNIT (Compact Cassette, Cassette, Floor/Ceiling, Ceiling, Wall mounted and Slim Duct type)

■ CONTROL INPUT (Start / Stop or Emergency stop or Forced stop *1)

- Indoor unit can be Start/Stop or Emergency stop or Forced stop by using indoor unit PCB CN6 or CN17.
- "Start/Stop" mode or "Emergency stop" mode or "Forced stop" mode can be selected with function setting of indoor unit.
- A twisted pair cable (22AWG) shoud be used. Maximum length of cable is 150m.
- 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.

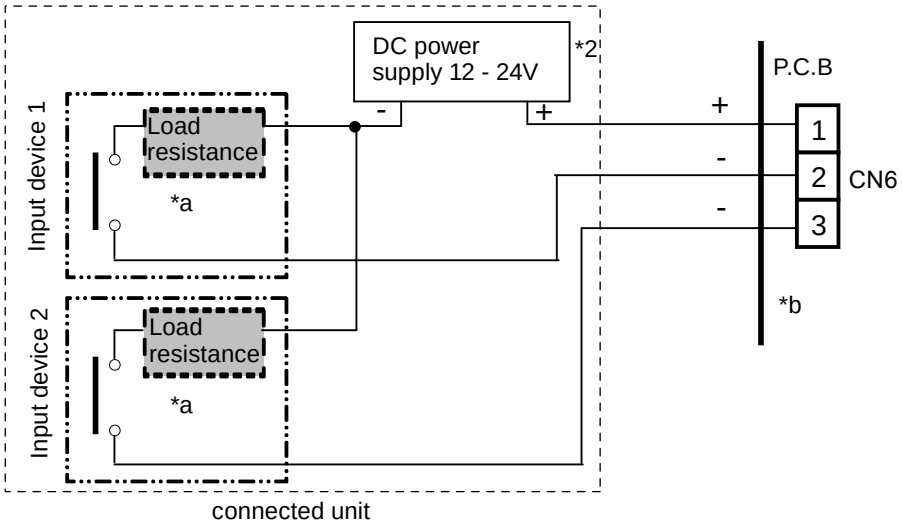
*1: Forced stop mode is available for the indoor units after revision code B.
Serial number became “X2XXXXX” from revision code B.
However, ARXD07, 09, 12, 14, 18, 24LATH (Slim Duct), AB*A12, 14, 18, 24LBTH (Floor/Ceiling), AB*A30, 36, 45, 54LBTH (Ceiling), AS*A18, 24, 30LACH (Wall Mounted) are available regardless of revision code.

● 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 ([CN6])

When a power supply must be provided at the input device you want to connect, use the Apply voltage terminal ([CN6])



*2: 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)

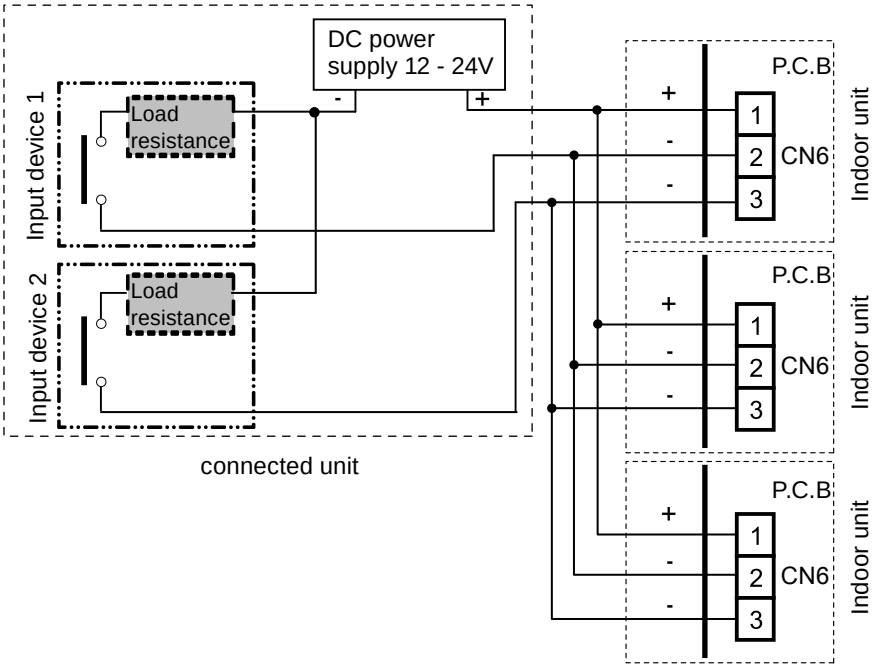
Provide a load resistance such that the current becomes DC10mA or less.

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.

SYSTEM DESIGN

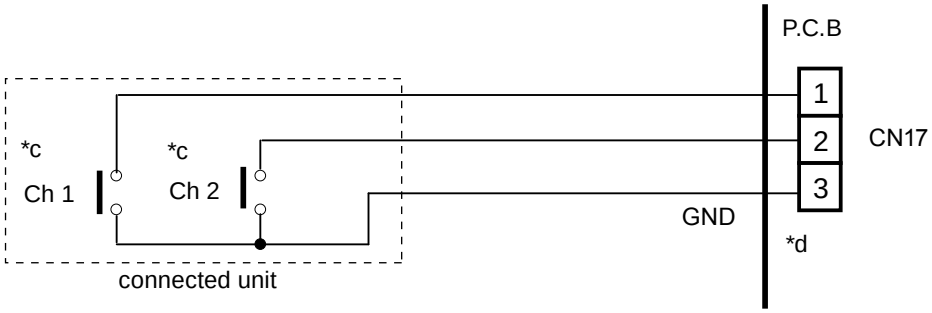
When connected to Apply voltage terminals of multiple indoor units with a connected unit, be sure to make a branch outside the indoor unit using a pull box, etc. as shown on below example.



SYSTEM DESIGN

●Dry contact terminal ([CN17])

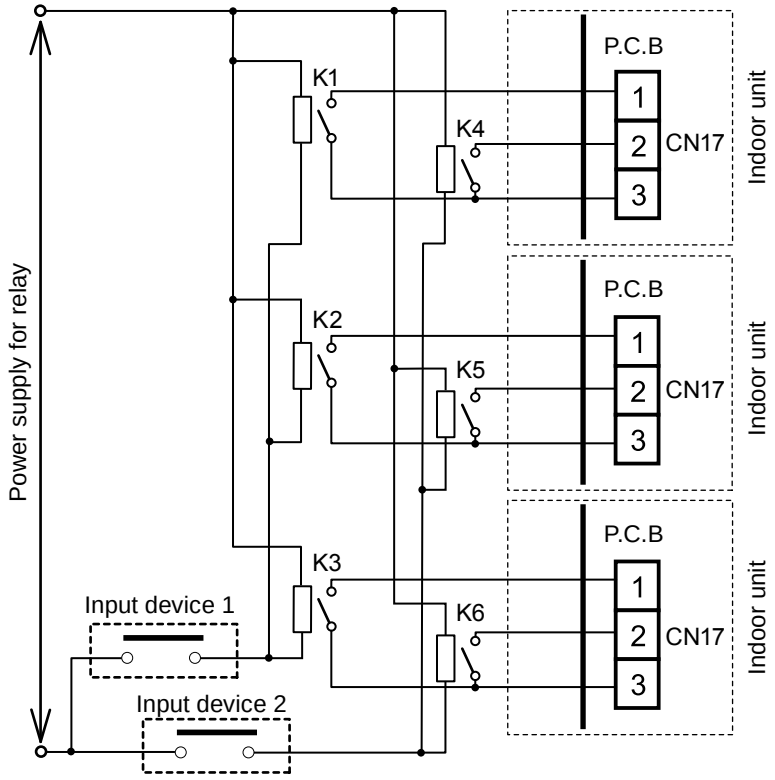
When a power supply is unnecessary at the input device you want to connect, use the Dry contact terminal ([CN17]).



*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.



K1 - K6 : Relay
(Device for DC Current)

NOTE :

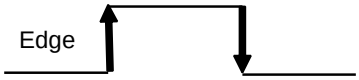
● When connected to multiple indoor units directly, it will cause breakdown.

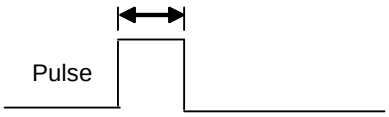
SYSTEM DESIGN

● Input signal type

The input signal type can be selected.

It is switched by Dip-Sw on the indoor unit PCB.





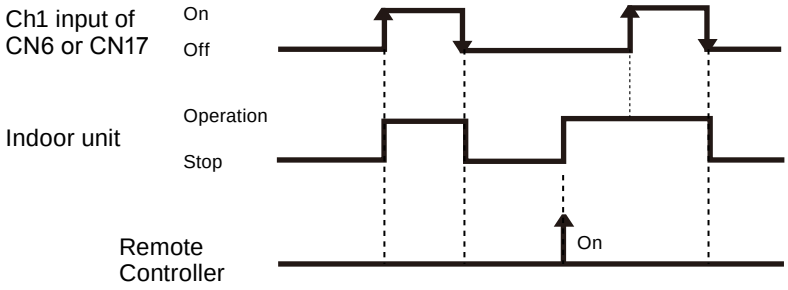
(◆...Factory setting)

	Dip-sw [Set 2-2]	Input signal type
◆	OFF	Edge
	ON	Pulse

● When function setting is "Start/Stop" mode

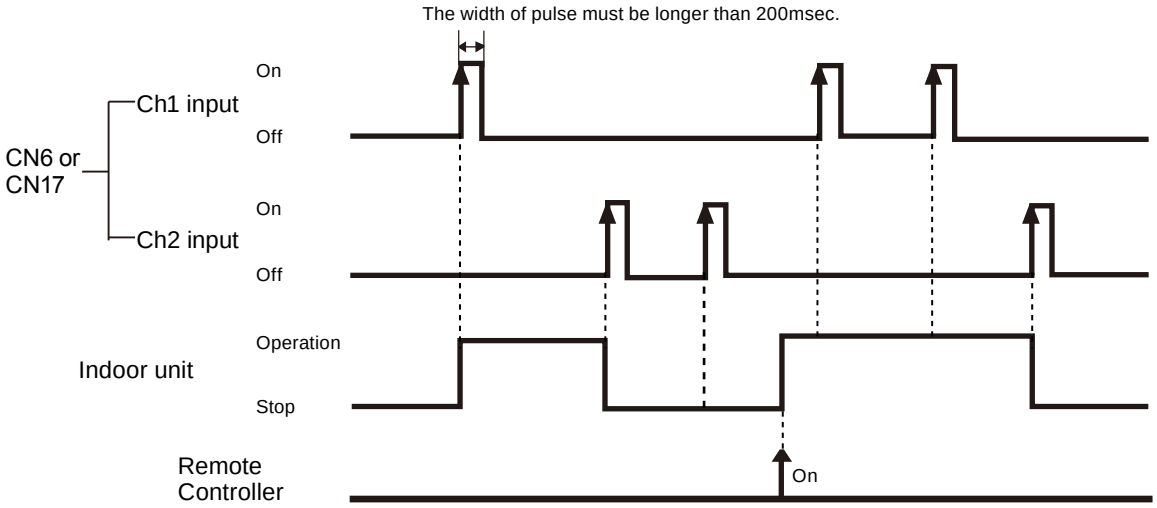
●In the case of "Edge" input

Connector	Input signal	Command
Ch1 of CN6 or CN17	OFF → ON	Operation
	ON → OFF	Stop



●In the case of "Pulse" input

Connector		Input signal	Command
CN6 or CN17	Ch1	OFF → ON	Operation
	Ch2	OFF → ON	Stop



NOTE :

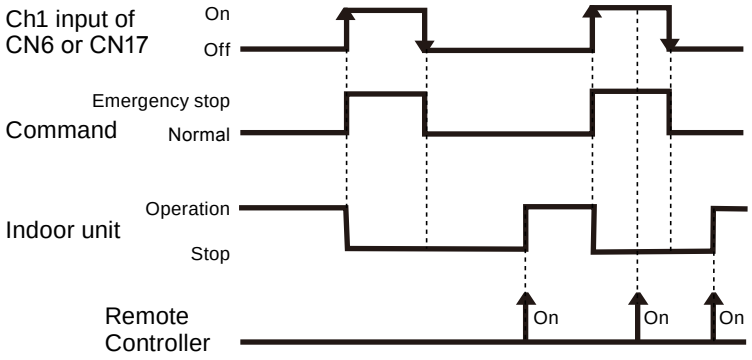
- The last command has priority.
- The indoor units within the same remote controller group operates in the same mode.

SYSTEM DESIGN

● When function setting is "Emergency stop" mode

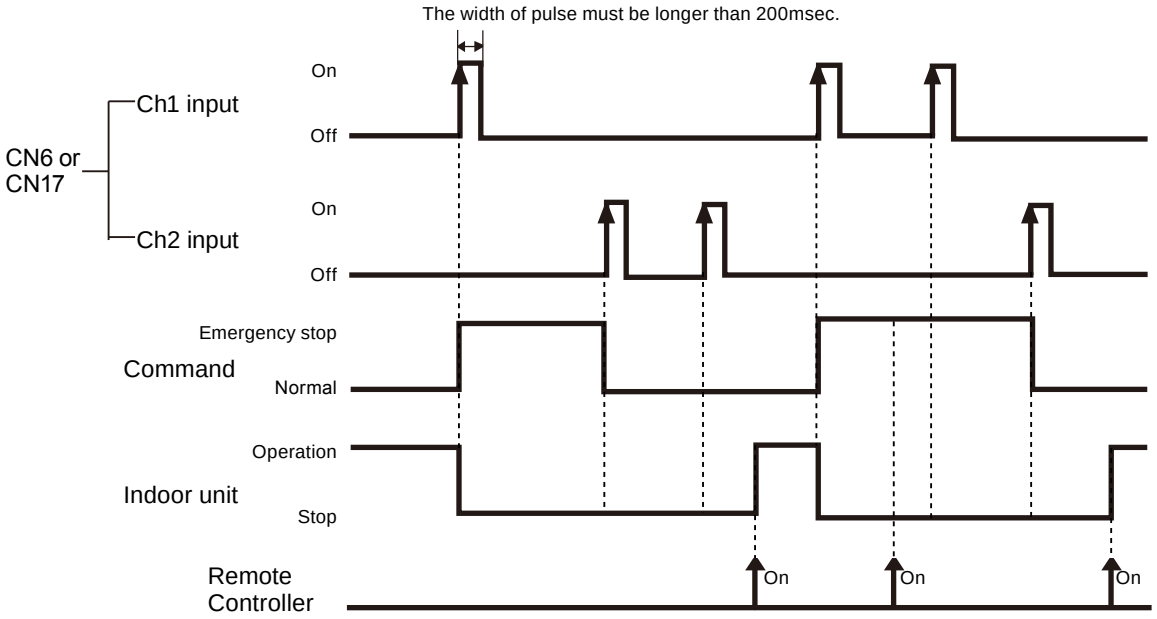
●In the case of "Edge" input

Connector	Input signal	Command
Ch1 of CN6 or CN17	OFF → ON	Emergency stop
	ON → OFF	Normal



●In the case of "Pulse" input

Connector		Input signal	Command
CN6 or CN17	Ch1	OFF → ON	Emergency stop
	Ch2	OFF → ON	Normal



NOTE :

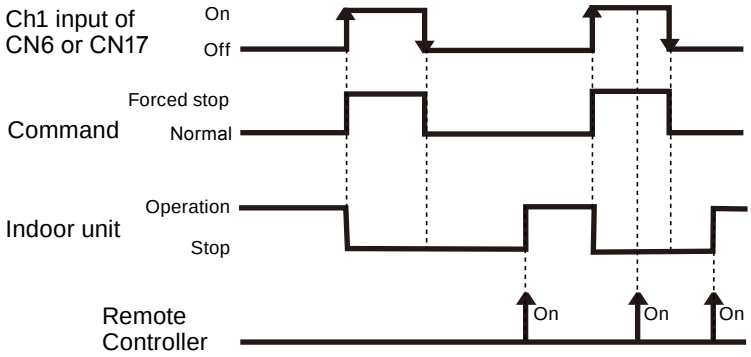
● All indoor units of same refrigerant system stops when Emergency stop operates.

SYSTEM DESIGN

● When function setting is "Forced stop" mode

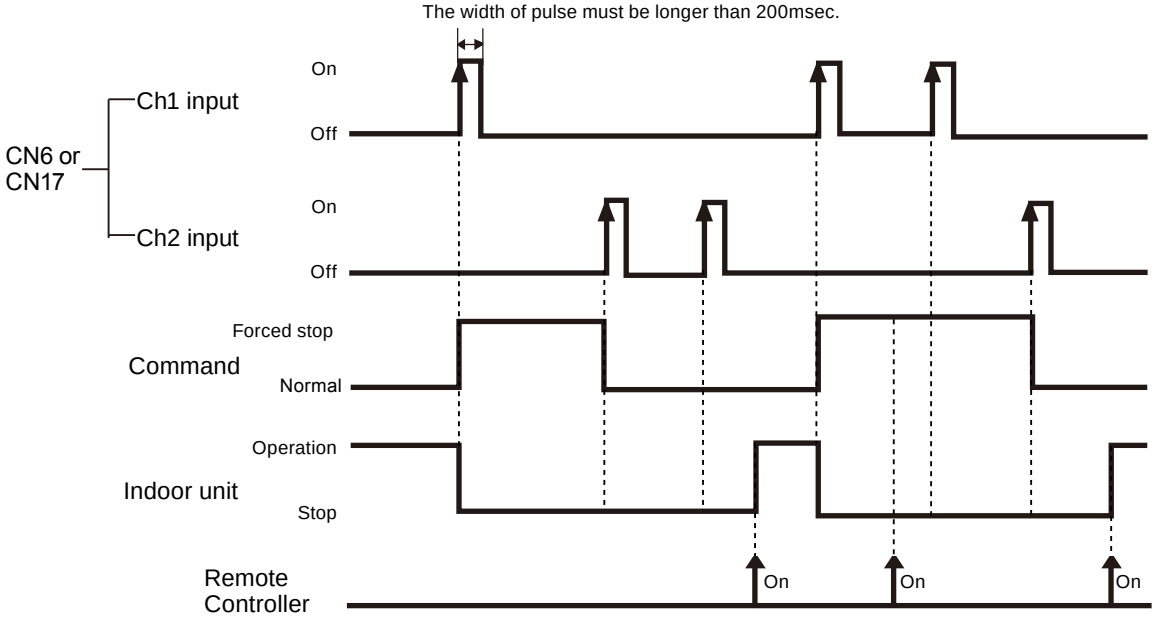
●In the case of "Edge" input

Connector	Input signal	Command
Ch1 of CN6 or CN17	OFF → ON	Forced stop
	ON → OFF	Normal



●In the case of "Pulse" input

Connector		Input signal	Command
CN6 or CN17	Ch1	OFF → ON	Forced stop
	Ch2	OFF → ON	Normal



NOTE :

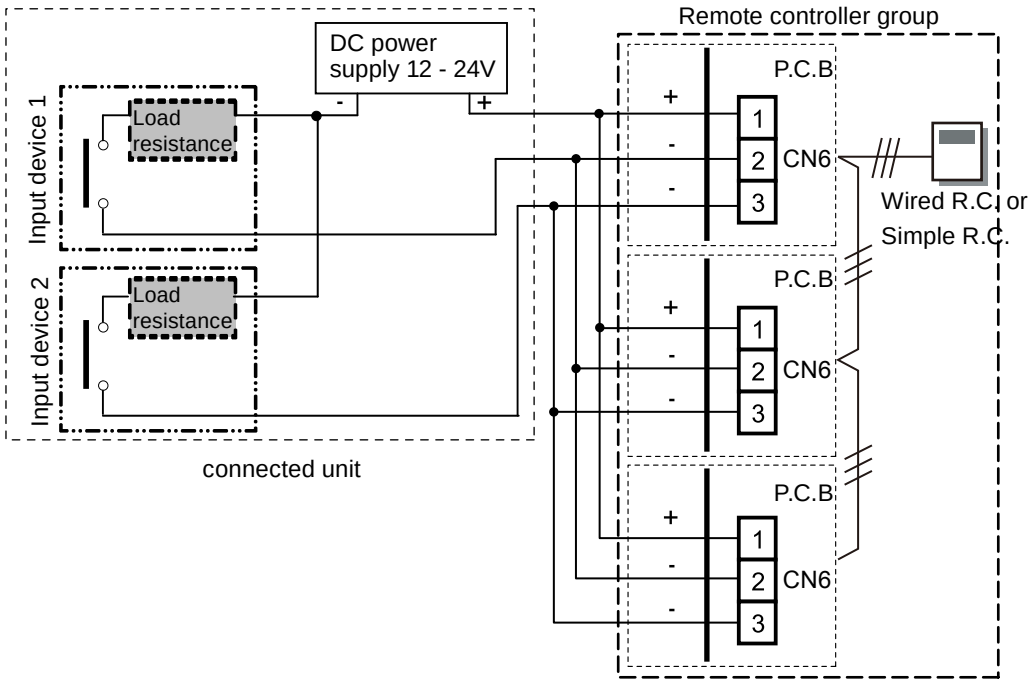
- When the forced stop is triggered, indoor unit stops and Start/Stop operation by a remote controller is restricted.
- Forced stop mode is available for the indoor units after revision code B.
  Serial number became “X2XXXXX” from revision code B.
  However, ARXD07, 09, 12, 14, 18, 24LATH (Slim Duct), AB*A12, 14, 18, 24LBTH (Floor/Ceiling), AB*A30, 36, 45, 54LBTH (Ceiling), AS*A18, 24, 30LACH (Wall Mounted) are available regardless of revision code.

SYSTEM DESIGN

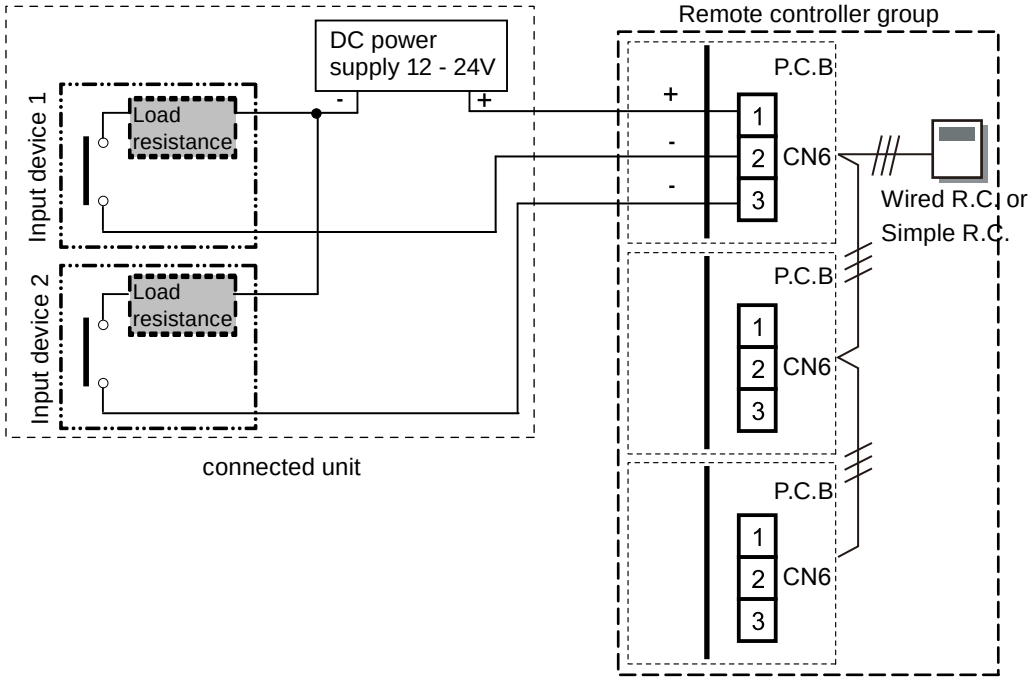
●Considerations when setting forced stop

⚠CAUTION
When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

Example 1 : OK



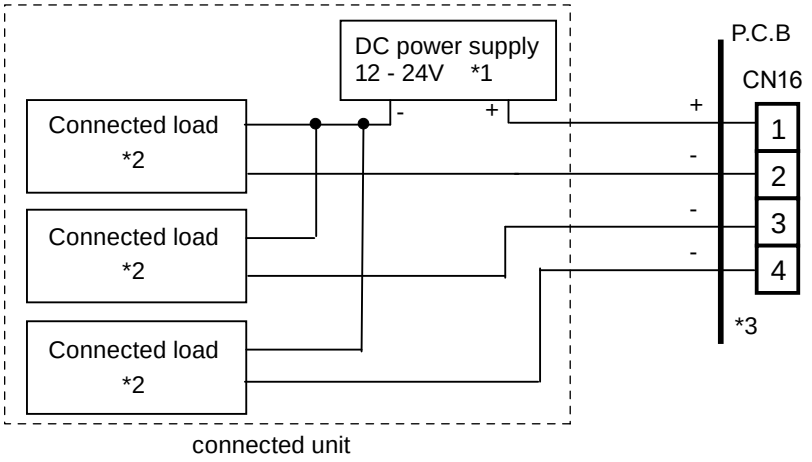
Example 2 : Not good



SYSTEM DESIGN

■ OUTPUT

Connector		Output voltage	Status
CN16	External output1	0V	Stop
	Pins 1-2	DC 12-24 V *10	Operation
	External output2	0V	Normal
	Pins 1-3	DC 12-24 V *10	Error
	External output3	0V	Indoor unit fan stop
	Pins 1-4	DC 12-24 V *10	Indoor unit fan operation



*1: Provide a DC12 to 24V power supply. Select a power supply capacity with an ample surplus for the connected load.

*2: The allowable current is 30mA or less. Provide a load resistance such that the current becomes 30mA or less.

*3: Polarity is [+] for pin 1 and [-] for pins 2-4. Connect correctly.
Do not impress a voltage exceeding 24V across pins 1-2, 1-3, and 1-4.

●Operation status (External output1)

The output for CN16 (1-2) is ON when the indoor unit is operating.

The output is off when the unit is stopped.

●Error status (External output2)

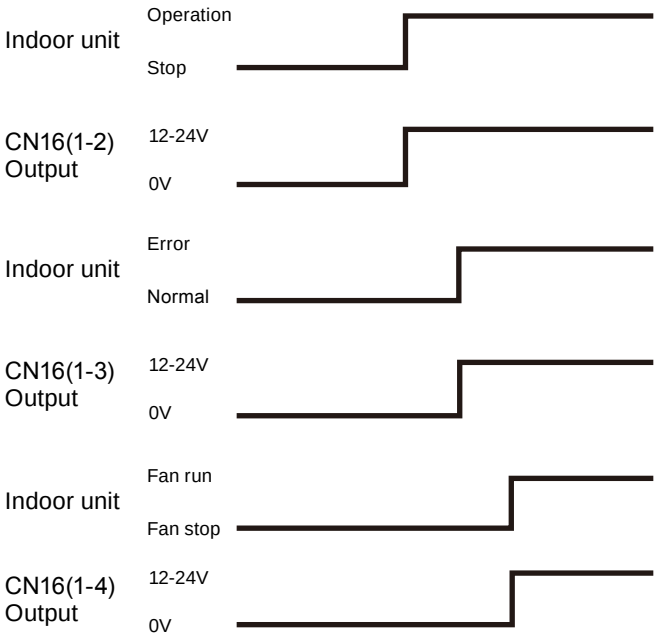
The output for CN16(1-3) is ON when an error is generated for the indoor unit.

●Indoor unit status (External output3)

The output for CN16(1-4) is ON when the indoor unit fan is operating.

The output is off when the fan is stopped or during cold air prevention.

The output for CN16(1-4) is ON during DRY mode.



Ex) Used for inter lock energize for exhaust fan.

*A twisted pair cable (22AWG) shoud be used. Maximum length of cable is 150m.

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

■ PARTS

Following cord (service parts) is required. Please use the parts number shown below to order the cord from your sales representative.

Usage	Name and shapes	Q'ty	Parts No.
For output port	EXTERNAL OUTPUT WIRE 	1	9379529006
For control input port (Apply voltage terminal)	EXTERNAL INPUT WIRE D 	1	9368779016
For control input port (Dry contact terminal)	EXTERNAL INPUT WIRE C 	1	9368779009

SYSTEM DESIGN

7-3. INDOOR UNIT (Compact Duct, Low Static Pressure Duct, Duct and High Static Pressure Duct type)

■ CONTROL INPUT (Start / Stop or Emergency stop or Forced stop *1)

- Indoor unit can be Start/Stop or Emergency stop or Forced stop by using indoor unit PCB CN27.
- "Start/Stop" mode or "Emergency stop" mode or "Forced stop" mode can be selected with function setting of indoor unit.
- A twisted pair cable(22AWG) shoud be used. Maximum length of cable is 25m.
- 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.
- Open circuit voltage : ≤ 5.25 (V).
- Short circuit current : ≤ 0.6 (mA).
- Short circuit detection resistance (R_{ON}) : ≤ 500 (ohm).
- Open circuit detection resistance (R_{OFF}) : ≥ 100 (kilo-ohm).

*1: Forced stop mode is available for the indoor units after revision code B.
Serial number became “X2XXXXX” from revision code B.

● Input signal type

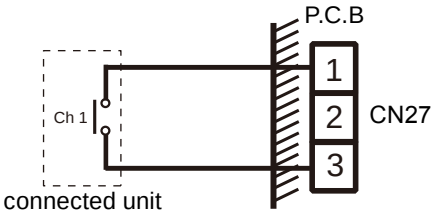
(◆...Factory setting)

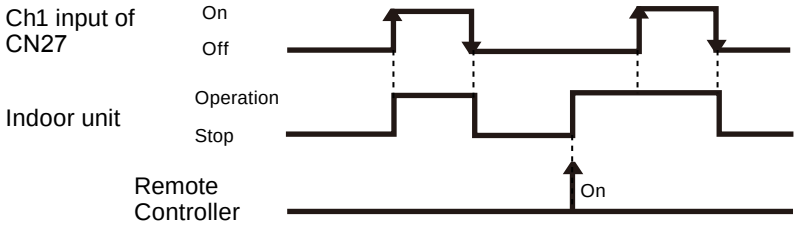
	Dip-sw [Set 2-2]	Input signal type
◆	OFF	Edge
	ON	Pulse

● When function setting is "Start/Stop" mode

●In the case of "Edge" input

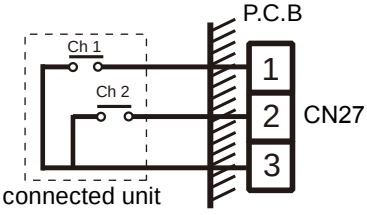
Connector	Input signal	Command
Ch1 of CN27	OFF → ON	Operation
	ON → OFF	Stop



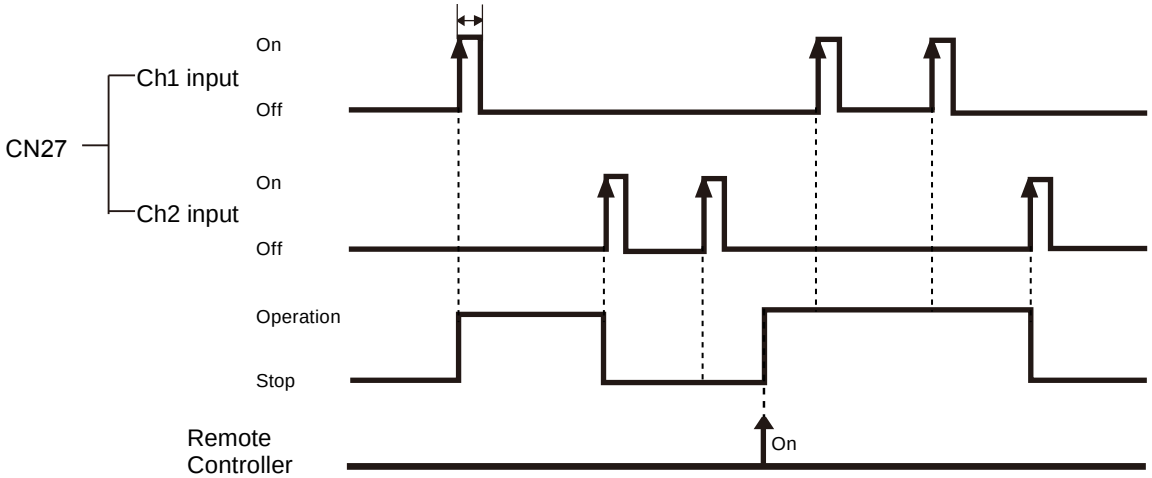


●In the case of "Pulse" input

Connector		Input signal	Command
CN27	Ch1	OFF → ON	Operation
	Ch2	OFF → ON	Stop



The width of pulse must be longer than 200msec.



NOTE :

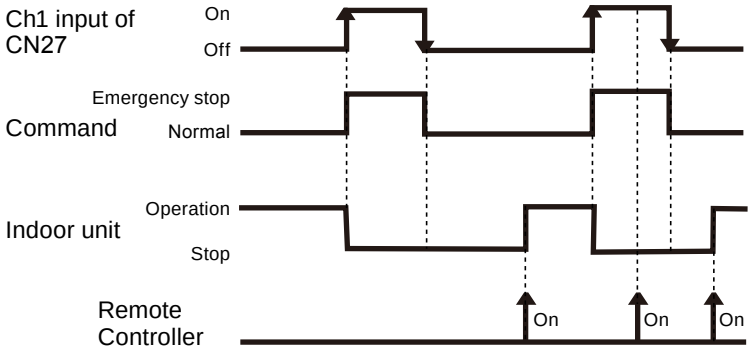
- The last command has priority.
- The indoor units within the same remote controller group operates in the same mode.

SYSTEM DESIGN

● When function setting is "Emergency stop" mode

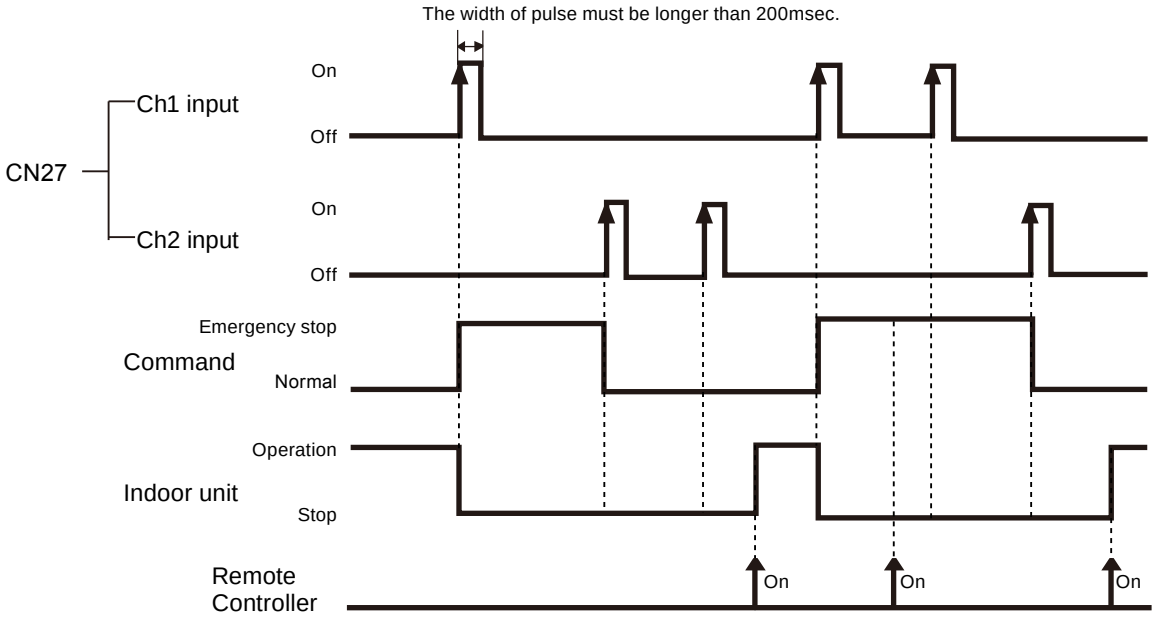
●In the case of "Edge" input

Connector	Input signal	Command
Ch1 of CN27	OFF → ON	Emergency stop
	ON → OFF	Normal



●In the case of "Pulse" input

Connector		Input signal	Command
CN27	Ch1	OFF → ON	Emergency stop
	Ch2	OFF → ON	Normal



NOTE :

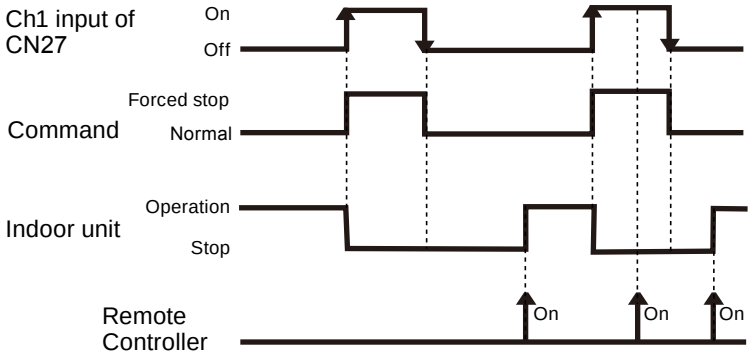
● All indoor units of same refrigerant system stops when Emergency stop operates.

SYSTEM DESIGN

● When function setting is "Forced stop" mode

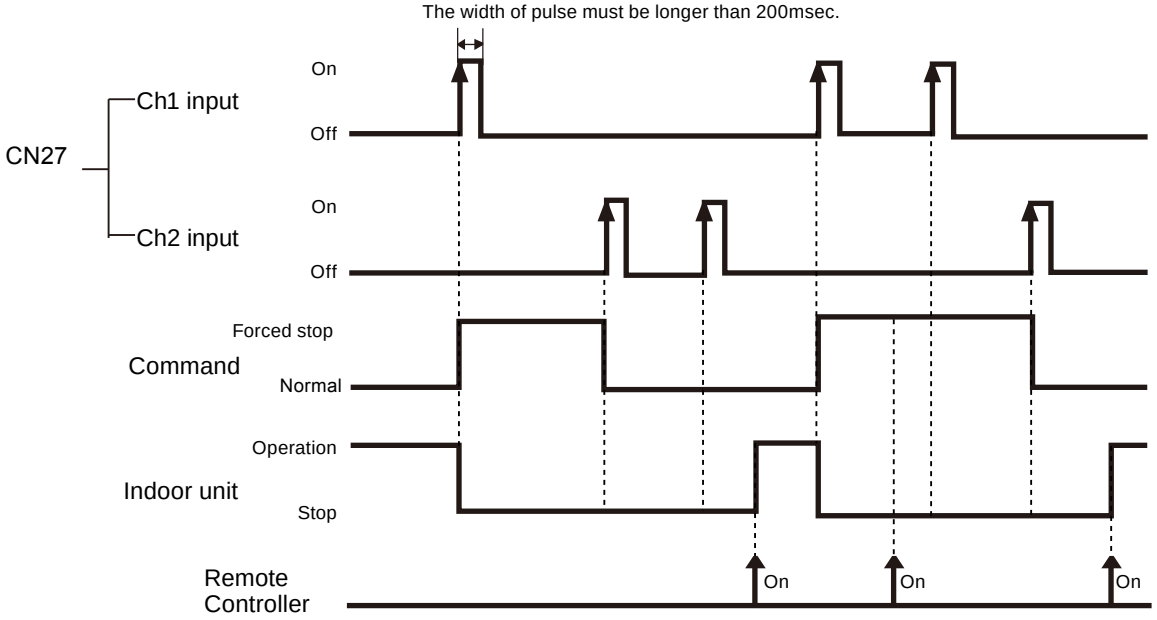
●In the case of "Edge" input

Connector	Input signal	Command
Ch1 of CN27	OFF → ON	Forced stop
	ON → OFF	Normal



●In the case of "Pulse" input

Connector		Input signal	Command
CN27	Ch1	OFF → ON	Forced stop
	Ch2	OFF → ON	Normal



NOTE :

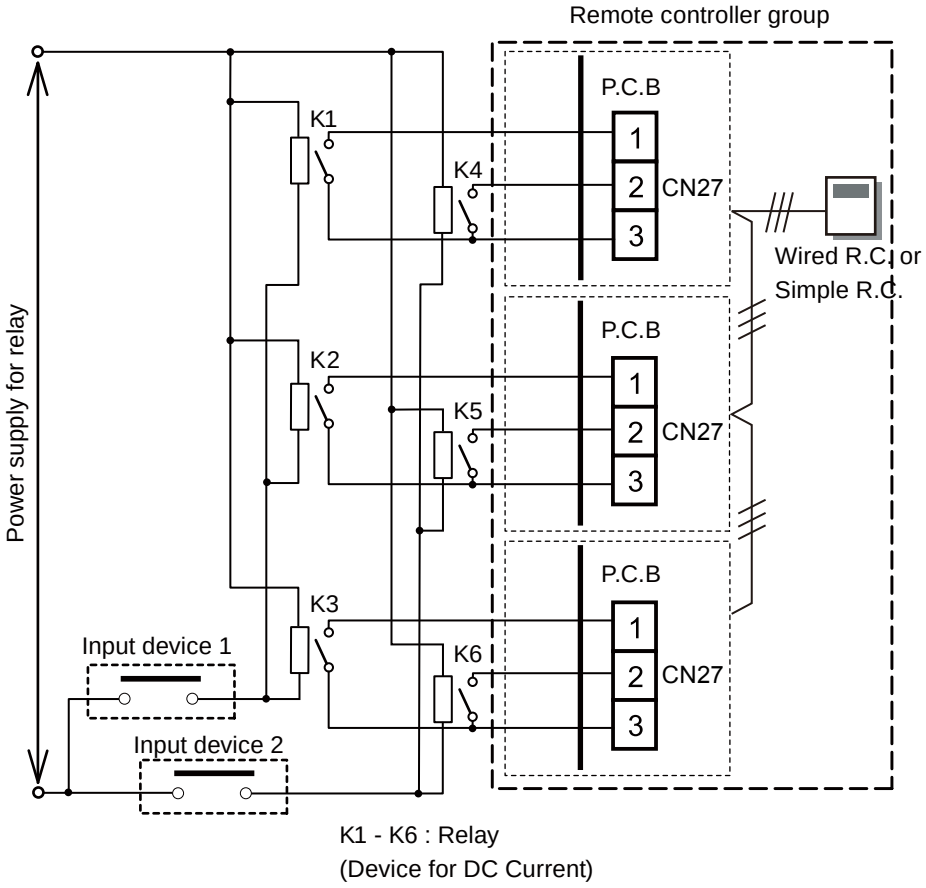
- When the forced stop is triggered, indoor unit stops and Start/Stop operation by a remote controller is restricted.
- Forced stop mode is available for the indoor units after revision code B. Serial number became “X2XXXXX” from revision code B.

SYSTEM DESIGN

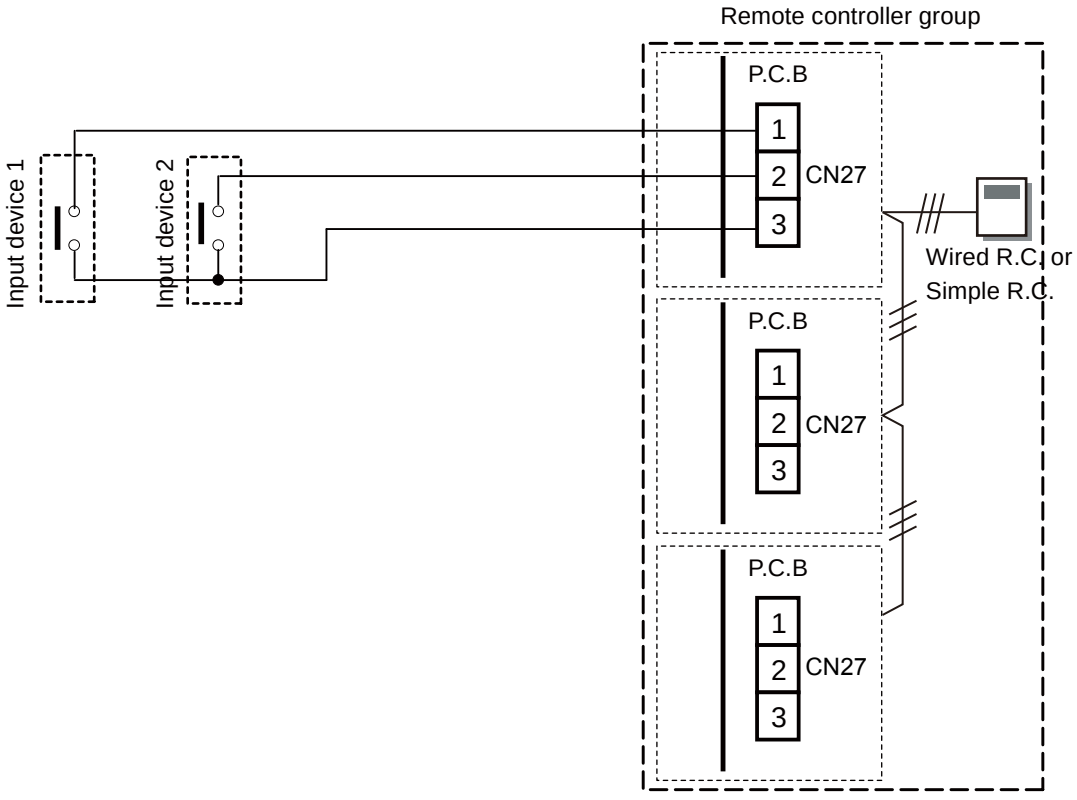
●Considerations when setting forced stop

⚠CAUTION
When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

Example 1 : OK



Example 2 : Not good



SYSTEM DESIGN

■ OUTPUT

Connector	Output voltage	Status
CN22	12V	Operation
	0V	Stop
CN23	12V	Error
	0V	Normal
CN24	12V	Indoor unit fan operation
	0V	Indoor unit fan stop

Output voltage : Hi DC12V ± 2V

Lo 0V

Permissible current : 15mA

*A twisted pair cable (22AWG) shoud be used. Maximum length of cable is 25m.

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

●Operation status

The output for CN22 is ON when the indoor unit is operating.

The output is off when the unit is stopped.

●Error status

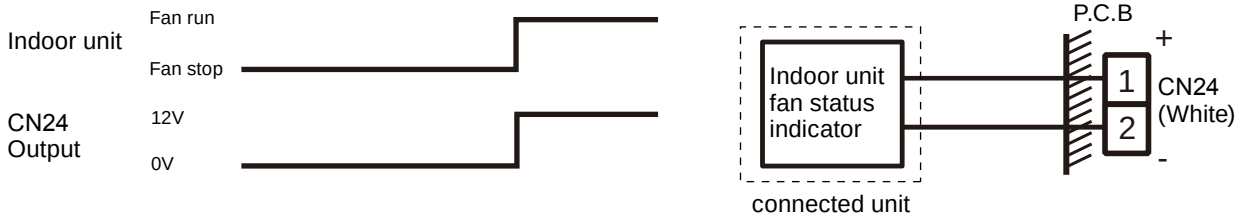
The output for CN23 is ON when an error is generated for the indoor unit.

●Indoor unit status

The output for CN24 is ON when the indoor unit fan is operating.

The output is off when the fan is stopped or during cold air prevention.

The output for CN24 is ON during DRY mode.



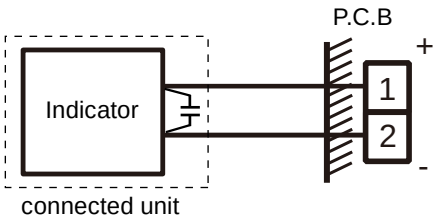
SYSTEM DESIGN

■ PARTS

Following cord (service parts) is required. Please use the parts number shown below to order the cord from your sales representative.

Usage	Name and shapes	Q'ty	Parts No.
For output port	EXTERNAL INPUT WIRE B 	1	9368778002
For control input port	EXTERNAL INPUT WIRE C 	1	9368779009

*If the external indicator has malfunction, due to noise please insert a ceramic capacitor (0.1μF 25V or more) near the input port of the equipment.



SYSTEM DESIGN

7-4. INDOOR UNIT (Compact Wall Mounted type)

■ CONTROL INPUT (Start / Stop or Emergency stop or Forced stop *1)

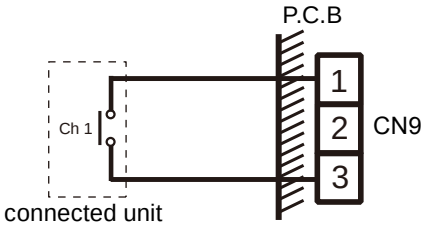
- Indoor unit can be Start/Stop or Emergency stop or Forced stop by using indoor unit PCB CN9.
- "Start/Stop" mode or "Emergency stop" mode or "Forced stop" mode can be selected with function setting of indoor unit.
- A twisted pair cable(22AWG) shoud be used. Maximum length of cable is 25m.
- Use an 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.
- Open circuit voltage : ≤ 5.25 (V).
- Short circuit current : ≤ 0.6 (mA).
- Short circuit detection resistance (R_{ON}) : ≤ 500 (ohm).
- Open circuit detection resistance (R_{OFF}) : ≥ 100 (kilo-ohm).

*1: Forced stop mode is available for the indoor units after revision code B.
Serial number became “X2XXXXX” from revision code B.

● Input signal type

(◆...Factory setting)

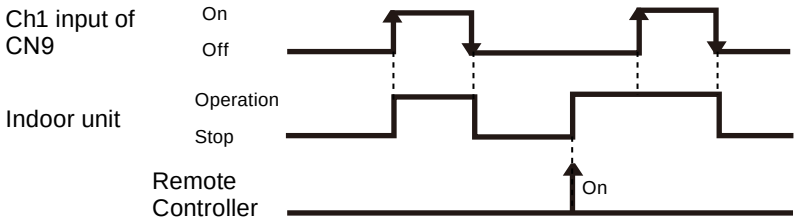
	Dip-sw [Set 2-2]	Input signal type
◆	OFF	Edge
	ON	Pulse



● When function setting is "Start/Stop" mode

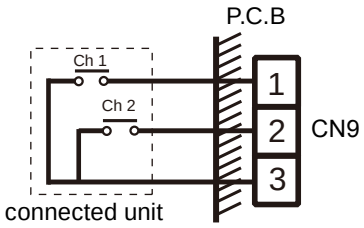
●In the case of "Edge" input

Connector	Input signal	Command
Ch1 of CN9	OFF → ON	Operation
	ON → OFF	Stop

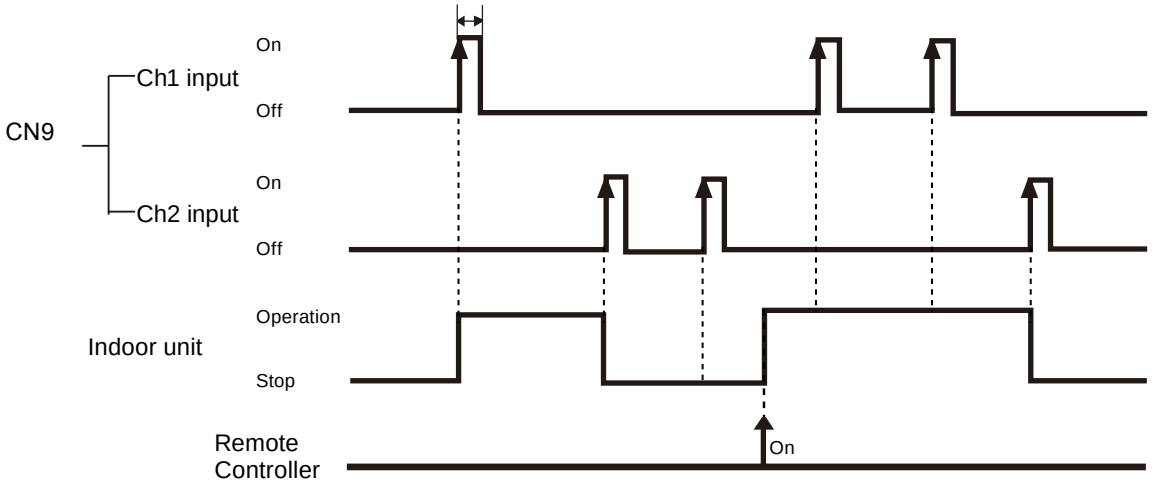


●In the case of "Pulse" input

Connector		Input signal	Command
CN9	Ch1	OFF → ON	Operation
	Ch2	OFF → ON	Stop



The width of pulse must be longer than 200msec.



NOTE :

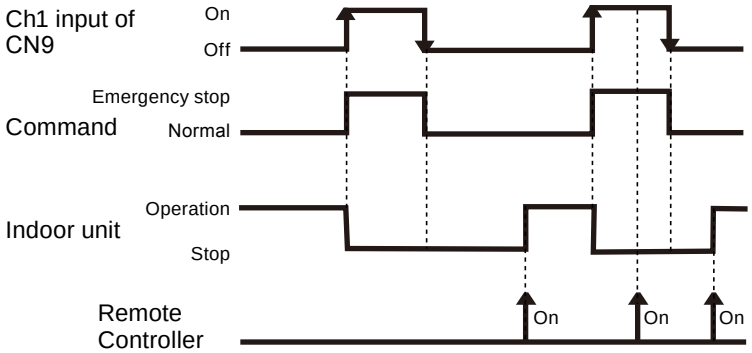
- The last command has priority.
- The indoor units within the same remote controller group operates in the same mode.

SYSTEM DESIGN

● When function setting is "Emergency stop" mode

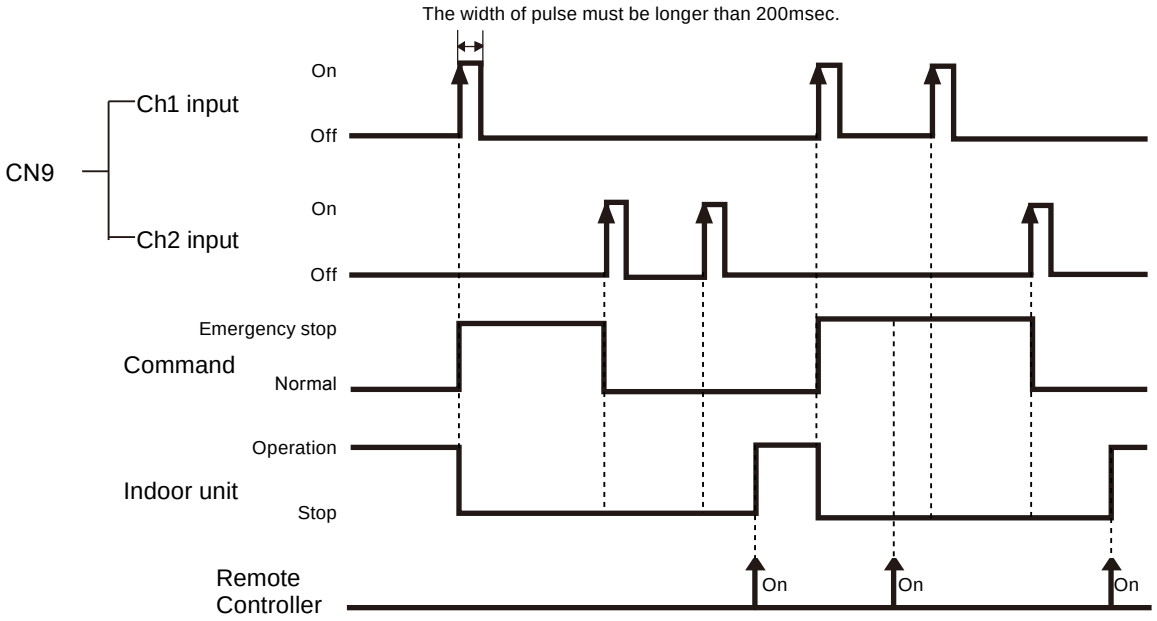
●In the case of "Edge" input

Connector	Input signal	Command
Ch1 of CN9	OFF → ON	Emergency stop
	ON → OFF	Normal



●In the case of "Pulse" input

Connector		Input signal	Command
CN9	Ch1	OFF → ON	Emergency stop
	Ch2	OFF → ON	Normal



NOTE :

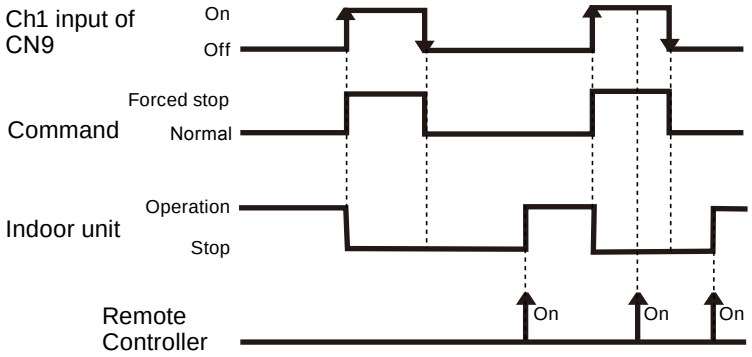
● All indoor units of same refrigerant system stops when Emergency stop operates.

SYSTEM DESIGN

● When function setting is "Forced stop" mode

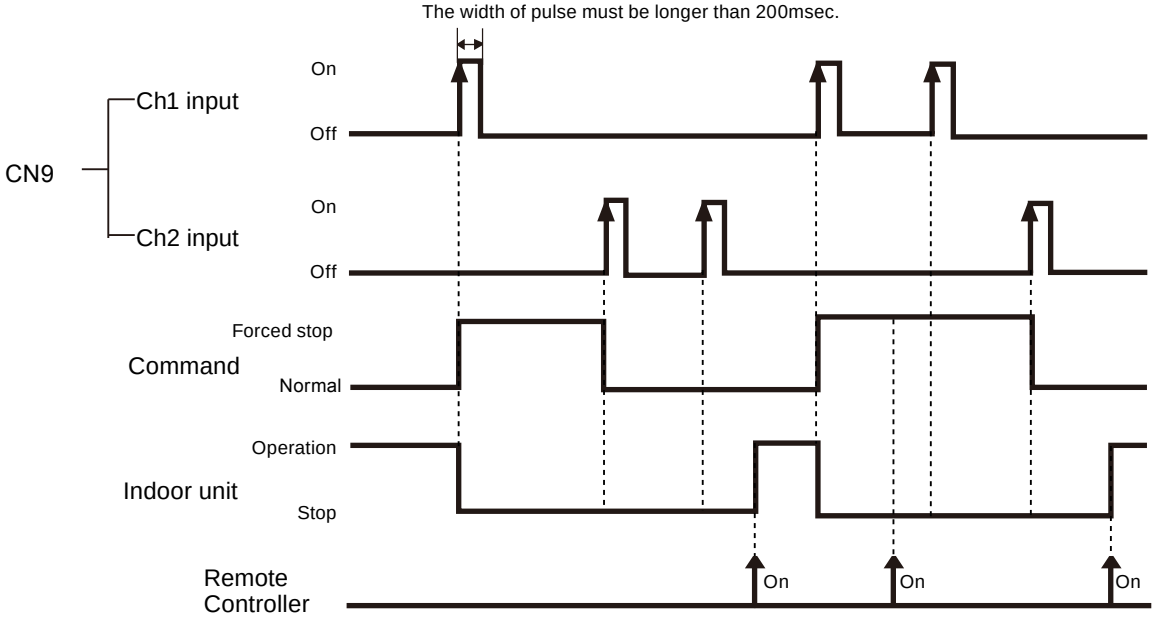
●In the case of "Edge" input

Connector	Input signal	Command
Ch1 of CN9	OFF → ON	Forced stop
	ON → OFF	Normal



●In the case of "Pulse" input

Connector		Input signal	Command
CN9	Ch1	OFF → ON	Forced stop
	Ch2	OFF → ON	Normal



NOTE :

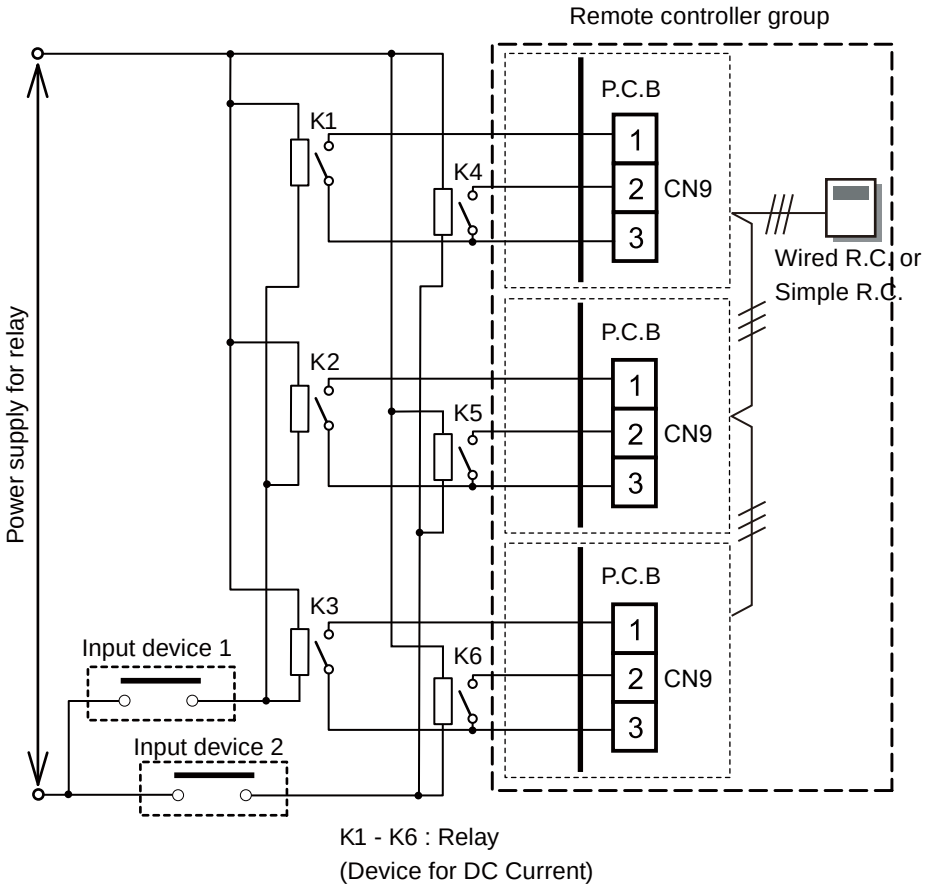
- When the forced stop is triggered, indoor unit stops and Start/Stop operation by a remote controller is restricted.
- Forced stop mode is available for the indoor units after revision code B. Serial number became “X2XXXXX” from revision code B.

SYSTEM DESIGN

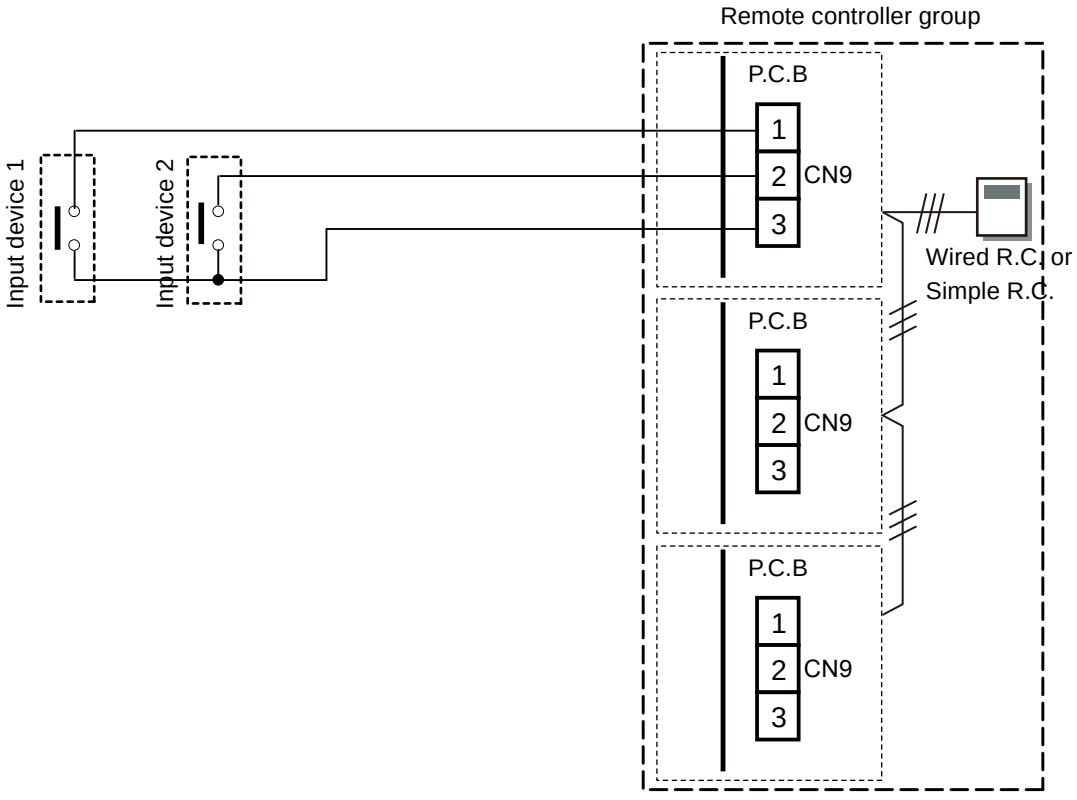
●Considerations when setting forced stop

⚠CAUTION
When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

Example 1 : OK



Example 2 : Not good



SYSTEM DESIGN

■ OUTPUT

Connector	Output voltage	Status
CN8	12V	Operation
	0V	Stop

Output voltage : Hi DC12V ± 2V

Lo 0V

Permissible current : 15mA

*A twisted pair cable (22AWG) shoud be used. Maximum length of cable is 25m.

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

●Operation status

The output for CN8 is ON when the indoor unit is operating.

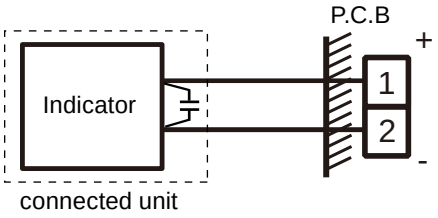
The output is off when the unit is stopped.

■ PARTS

Following cord (service parts) is required. Please use the parts number shown below to order the cord from your sales representative.

Usage	Name and shapes	Q'ty	Parts No.
For output port	EXTERNAL INPUT WIRE B 	1	9368778002
For control input port	EXTERNAL INPUT WIRE C 	1	9368779009

*If the external indicator has malfunction, due to noise please insert a ceramic capacitor (0.1μF 25V or more) near the input port of the equipment.



SYSTEM DESIGN

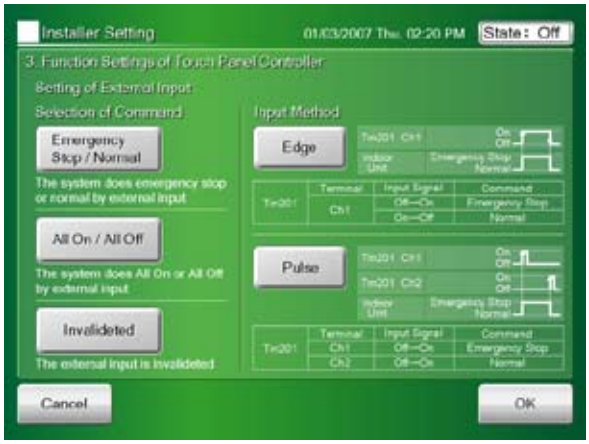
7-5. TOUCH PANEL CONTROLLER

■ CONTROL INPUT (Emergency stop or All on / All off)

Indoor units which are stored into Touch Panel Controller can be operated or stopped by P.C.B TM201

● Input select

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



Please see more detail of selection setting by operation manual of Touch Panel Controller.

It is possible to switch to the Dry contact terminal or the Apply voltage terminal by connecting the CN201 on the TM201 printed circuit board to the CN411 or the CN412 on the printed circuit board of the panel side.

* The Dry contact terminal (connected to the CN411) is set when shipped from the factory.

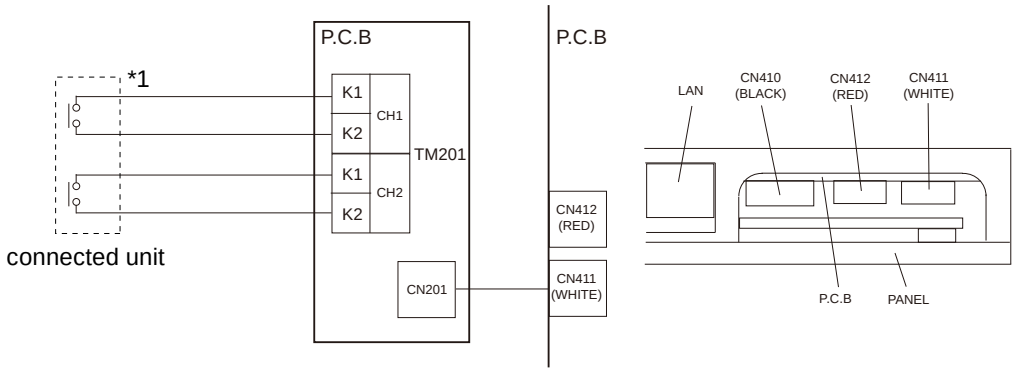
TM201 - K1, K2	Connect with the CN201
Dry contact terminal	CN411
Apply voltage terminal	CN412

SYSTEM DESIGN

SYSTEM DESIGN

●Dry contact terminal TM201 (CN411)

When a power supply is unnecessary at the input device you want to connect, use the Dry contact terminal TM201 (CN411).

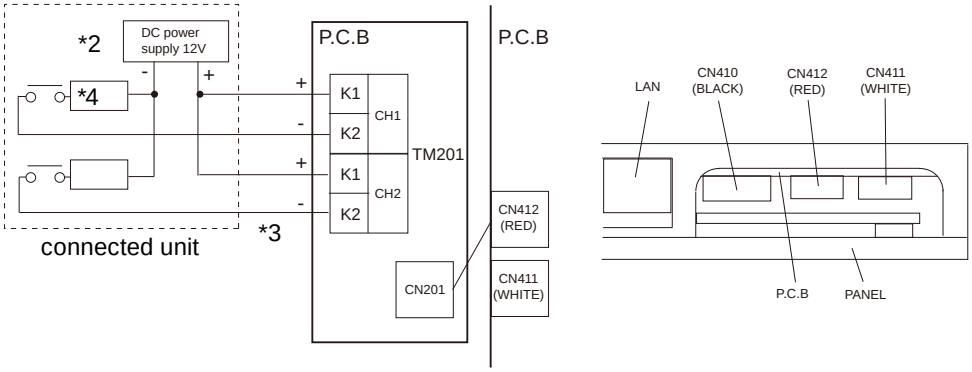


*1 : Short circuit detection resistance (R_{ON}) : ≤ 500 (ohm).
Open circuit detection resistance (R_{OFF}) : ≥ 100 (kilo-ohm).
A twisted pair cable(22AWG) shoud be used. Maximum length of cable is 25m.

●Apply voltage terminal TM201 (CN412)

When a power supply must be provided at the input device you want to connect, use the Apply voltage terminal TM201 (CN412).

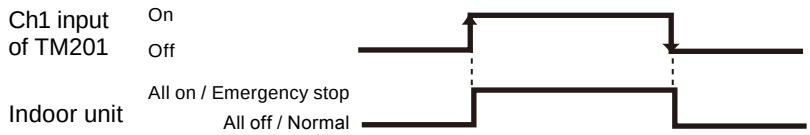
*A twisted pair cable(22AWG) shoud be used. Maximum length of cable is 25m.



*2 : Make the power supply DC12V.
*3 : Do not impress a voltage exceeding 12V across pins K1, and K2.
*4 : The allowable current is 10mA or less (Recommended : DC5mA).

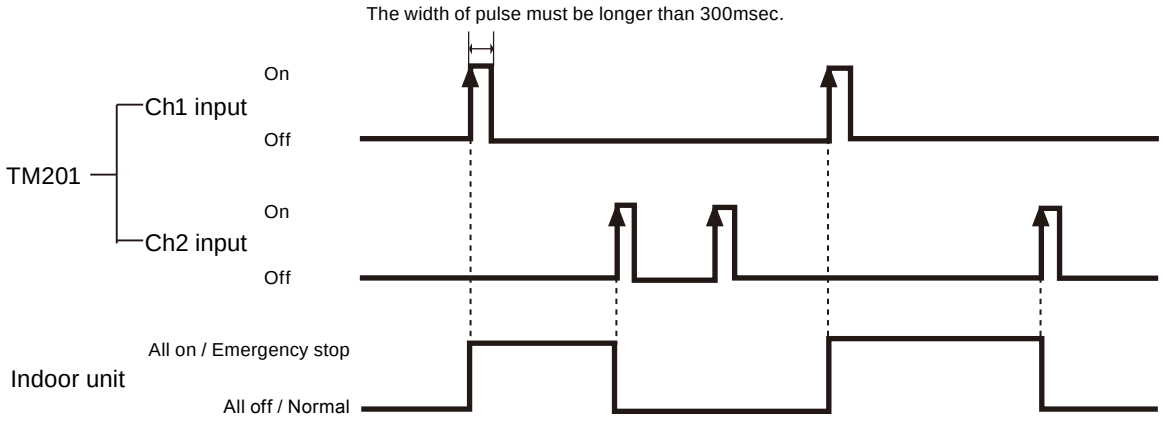
●In the case of "Edge" input

Connector	Input signal	Command
Ch1 of TM201	OFF → ON	All on / Emergency stop
	ON → OFF	All off / Normal



●In the case of "Pulse" input

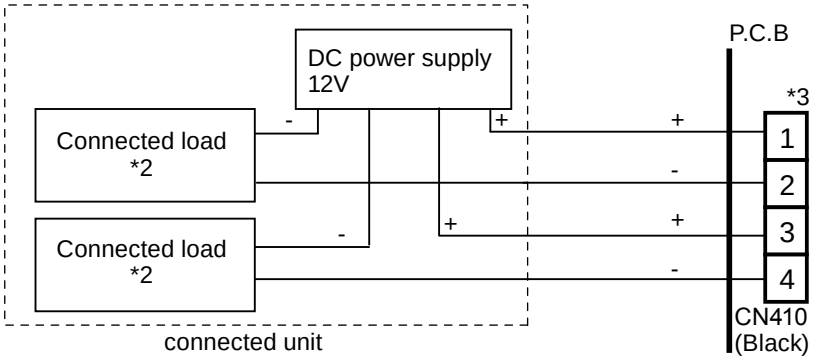
Connector		Input signal	Command
TM201	Ch1	OFF → ON	All on / Emergency stop
	Ch2	OFF → ON	All off / Normal



SYSTEM DESIGN

■ OUTPUT

Connector		Output voltage	Status
CN410 (Black)	Ch1	0V	All of indoor units "Stop"
	Pins1-2	DC12V *1	At least one more indoor units "Operation"
	Ch2	0V	Normal
	Pins3-4	DC12V *1	Error



*1: Provide a DC12V power supply. Select a power supply capacity with an ample surplus for the connected load.
Do not impress a voltage exceeding 12V across pins 1-2, and 3-4

*2: The allowable current is DC15mA or less. Provide a load resistance such that the current becomes DC15mA or less.

*3: Polarity is [+] for pins 1,3 and [-] for pins 2,4.

●Operation status (External output1)

The output for CN410(1-2) is ON when at least one more indoor units is operating.
The output is OFF when all of indoor units is stopped.

●Error status (External output2)

The output for CN410(3-4) is ON when Error of at least one more indoor unit or outdoor unit or Touch panel controller is generated.

■ PARTS

Following cord (service parts) is required. Please use the parts number shown below to order the cord from your sales representative.

Name and shapes	Q'ty	Parts No.
External output wire 	1	9379529006

SYSTEM DESIGN

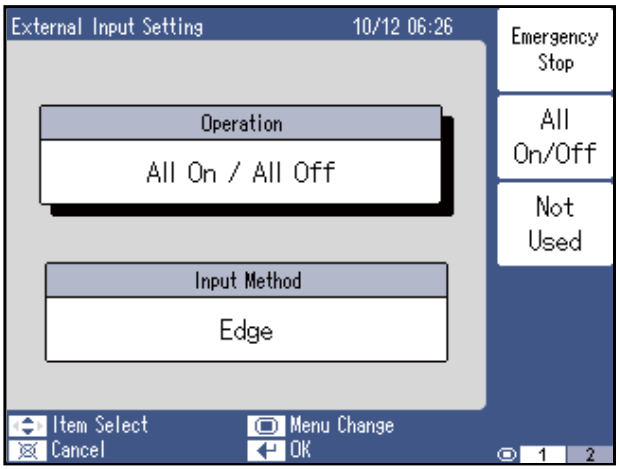
7-6. CENTRAL REMOTE CONTROLLER

■ CONTROL INPUT (Emergency stop or All on / All off)

This function performs “Emergency stop” or “All On / All Off” by using the signal to be input externally at external input terminals.

There are 2 kinds of input method of External input terminal: “Dry contact” or “Apply voltage contact”.

● Input select

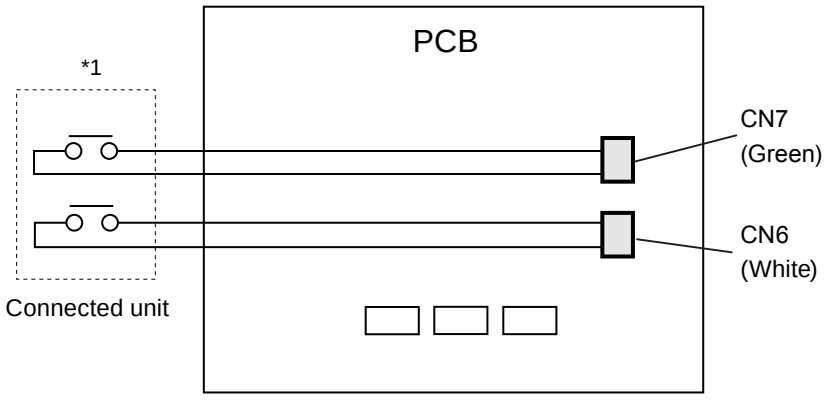


- Press the [ ] button and move the cursor to the “Operation” menu.
  [Emergency Stop] button : Enables Emergency stop by external input.
  [All On/All Off] button : Enables batch operation On/Off by external input.
  [Not Used] button : Does not receive external input signals.
- Press the [ ] button and move the cursor to the “Input Method” menu.
  [Edge] button : Detects the signal rise and fall.
  [Pulse] button : Detects the signal level.
- When the [ ] button is pressed, setting is complete.

● Electrical wiring

●Dry contact

When a power supply is unnecessary at the input device you want to connect, connect to CN6 and CN7.



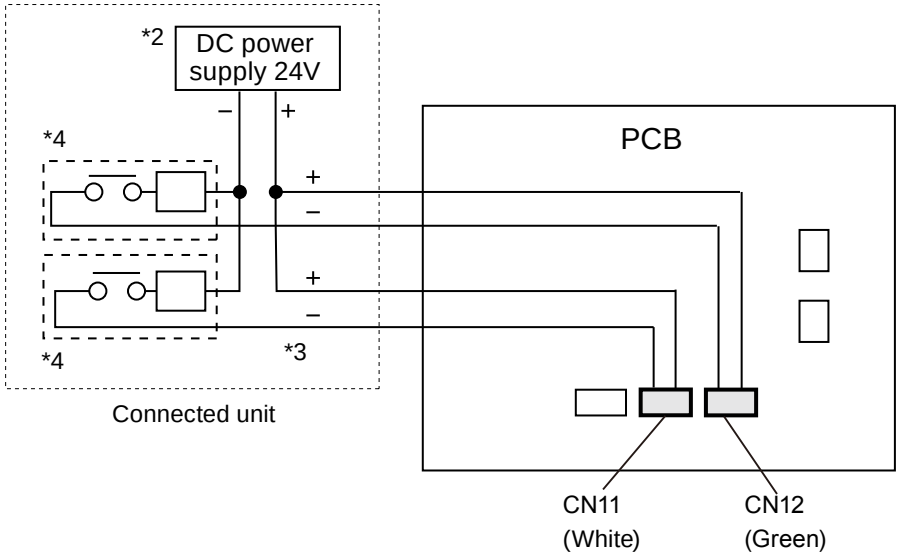
*1 : Short circuit detection resistance (R_{ON}) : ≤ 500 (ohm).
Open circuit detection resistance (R_{OFF}) : ≥ 100 (kilo-ohm).

* A twisted pair cable(22AWG) shoud be used. Maximum length of cable is 25m.

SYSTEM DESIGN

●Apply voltage contact

When a power supply must be provided at the input device, connect to CN11 and CN12.



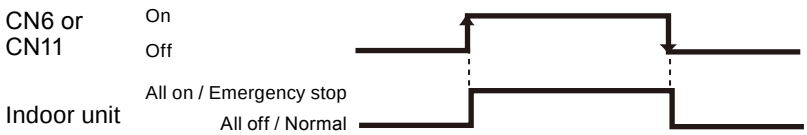
*2 : Make the power supply 24V. Select a power supply capacity with an ample surplus for the connected load.
*3 : Do not impress a voltage exceeding 24V across pin 1, 3.
*4 : The allowable current is DC5mA or less. (Recommended DC5mA)
Provide a load resistance such that the current becomes DC5mA or less.

* A twisted pair cable(22AWG) shoud be used. Maximum length of cable is 25m.

● Input type

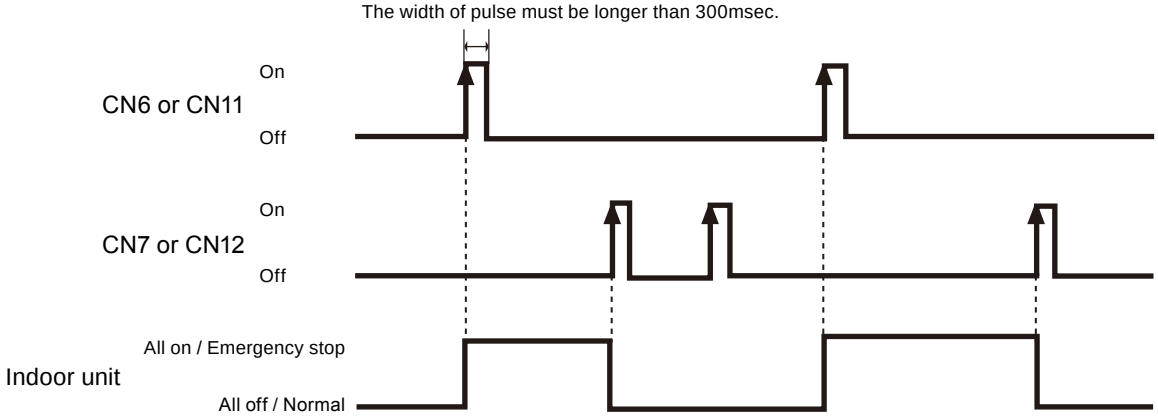
●In the case of "Edge" input

Connector	Input signal	Command
CN6 or CN11	OFF → ON	All on / Emergency stop
	ON → OFF	All off / Normal



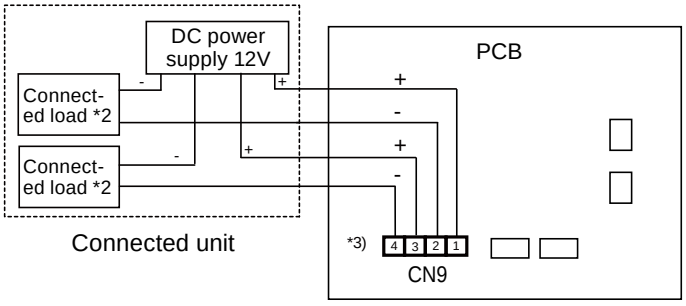
●In the case of "Pulse" input

Connector	Input signal	Command
CN6 or CN11	OFF → ON	All on / Emergency stop
CN7 or CN12	OFF → ON	All off / Normal



■ OUTPUT

Connector		Output voltage	Status
CN9 (Black)	Ch1	0V	All of indoor units "Stop"
	Pins3-4	DC12V *1	At least one more indoor units "Operation"
	Ch2	0V	Normal
	Pins1-2	DC12V *1	Error



*1: Provide a DC12V power supply. Select a power supply capacity with an ample surplus for the connected load.
Do not impress a voltage exceeding 12V across pins 1-2, and 3-4

*2: The allowable current is DC15mA or less. Provide a load resistance such that the current becomes DC15mA or less.

*3: Polarity is [+] for pins 1,3 and [-] for pins 2,4.

●Operation status (External output1)

The output for CN9 (3-4) is ON when at least one more indoor units is operating.

The output is OFF when all of indoor units is stopped.

●Error status (External output2)

The output for CN9 (1-2) is ON when Error of at least one more indoor unit or outdoor unit or Central remote controller is generated.

■ PARTS

Following cord (service parts) is required. Please use the parts number shown below to order the cord from your sales representative.

Usage	Name and shapes	Q'ty	Parts No.
For control input port (Dry contact terminal)	External input wire	2	9368778002
For control input port (Apply voltage terminal)	External input wire	2	9368779009
For output port	External output wire	1	9379529006

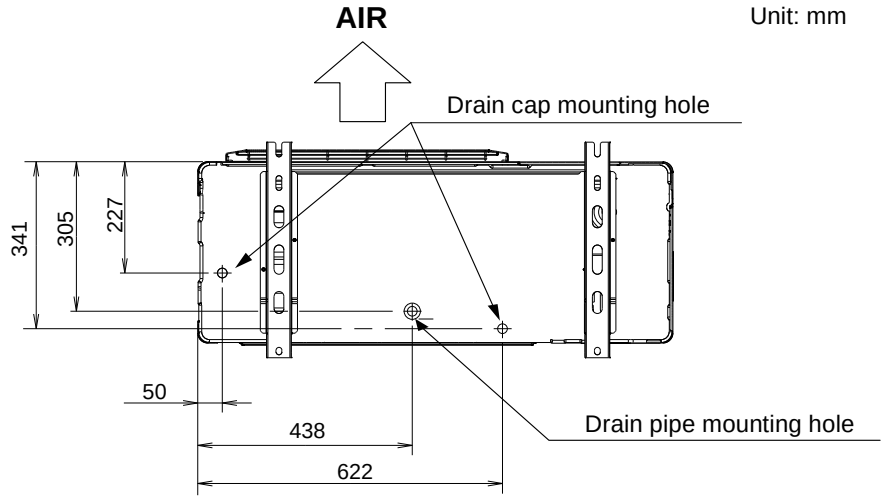
SYSTEM DESIGN

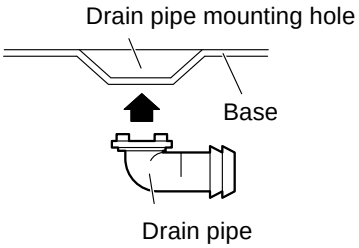
8. DRAIN CONNECTION

8-1. OUTDOOR UNIT

⚠CAUTION
Perform drain work in accordance with this Manual, and ensure that the drain water is properly drained. If the drain work is not carried out correctly, water may drip down from the unit, wetting the furniture.
When the outdoor temperature is 0 °C or less, do not use the accessory drain pipe and drain cap. If the drain pipe and drain cap are used, the drain water in the pipe may freeze in extremely cold weather.

- As the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to a commercial 16 mm hose.
- When installing the drain pipe, plug all the holes other than the drain pipe mounting hole in the bottom of the outdoor unit with drain cap so there is no water leakage.





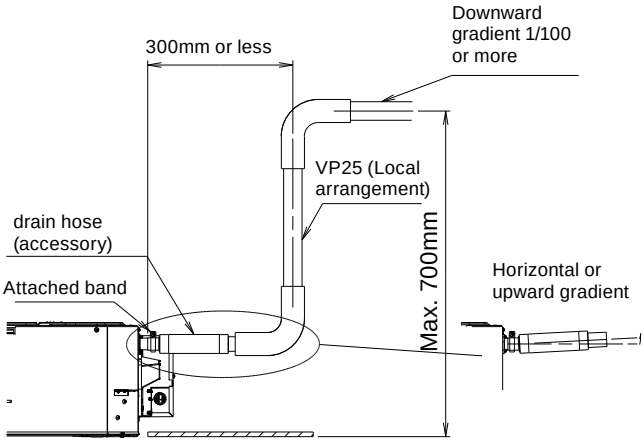
SYSTEM DESIGN

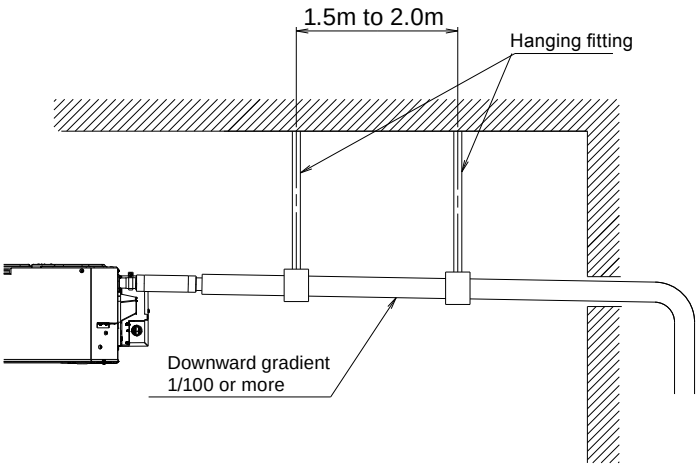
8-2. INDOOR UNIT

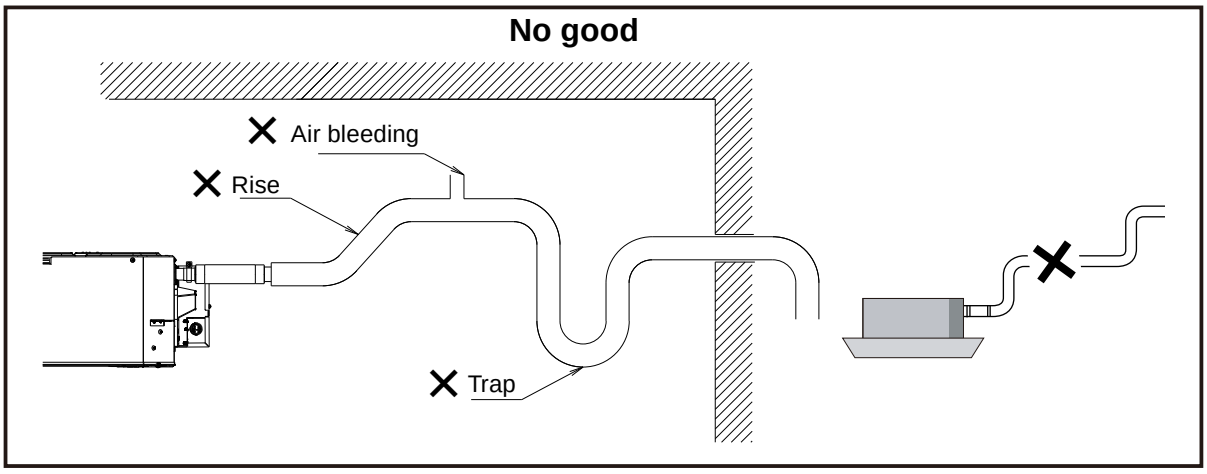
■ GENERAL RULES OF DRAIN PROCESS

- Install the drain pipe with downward gradient (1/100 or more) and so there are no rises in the pipe.
- Use general hard polyvinyl chloride pipe (VP25) and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- Support the drain pipe with supporters each 1.5 to 2m.
- Do not perfrom air bleeding.
- Always heat insulate the indoor side of the drain pipe.
- When connecting the drain hose to the indoor unit, use the accessory band. (Except compact wall mounted type and wall mounted type)

■ COMPACT CASSETTE TYPE







- Drain lift-up pipe restrictions:

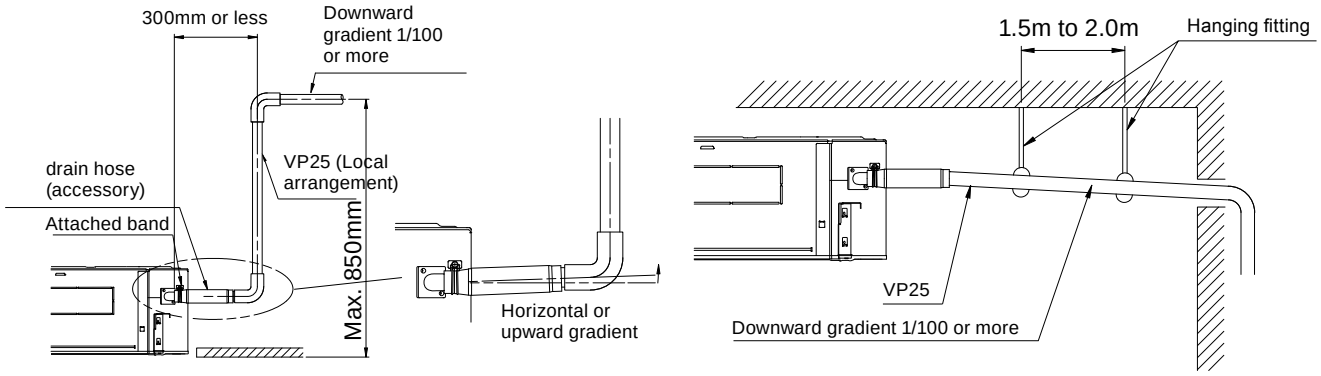
(1) Lift-up height ≤ 700mm (from ceiling)

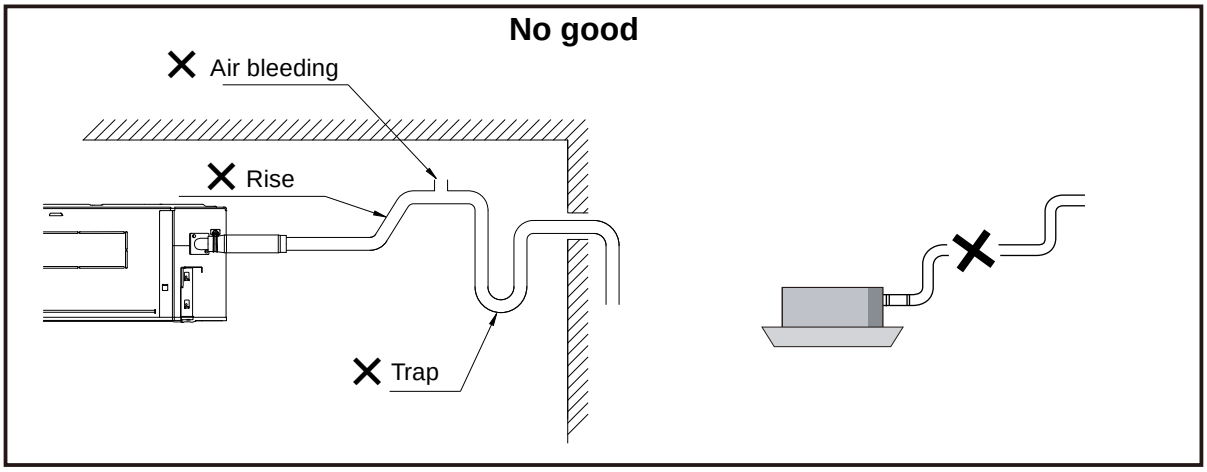
(2) Drain hose (pipe) length ≤ 300mm (between indoor unit and lift-up pipe)

- When a dimensions exceed the above restrictions will cause water leakage.

SYSTEM DESIGN

■ CASSETTE TYPE





- Drain lift-up pipe restrictions:

(1) Lift-up height ≤ 850mm (from ceiling)

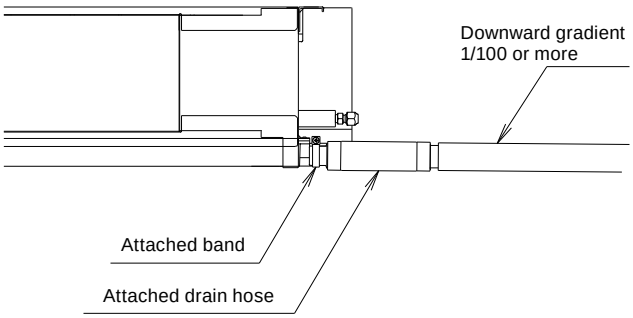
(2) Drain hose (pipe) length ≤ 300mm (between indoor unit and lift-up pipe)

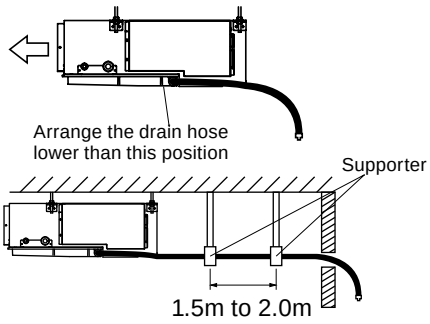
- When a dimensions exceed the above restrictions will cause water leakage.

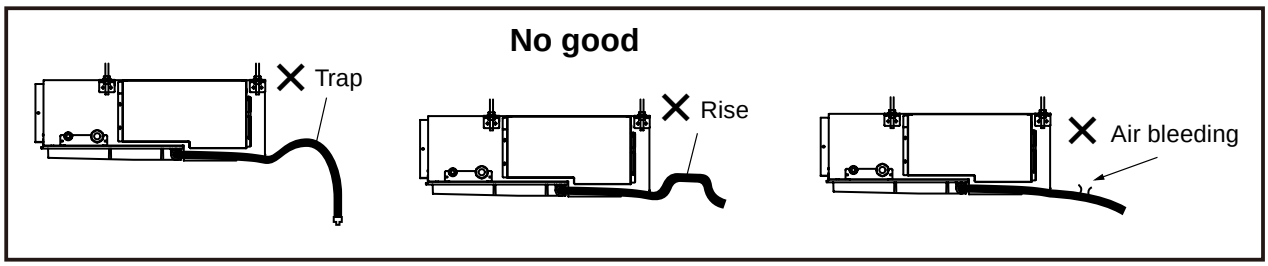
SYSTEM DESIGN

■ COMPACT DUCT TYPE

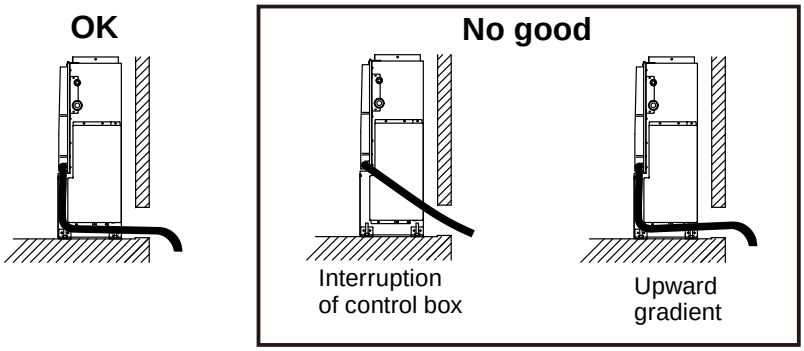
● Ceiling concealed setting







● Floor standing concealed setting



⚠ CAUTION

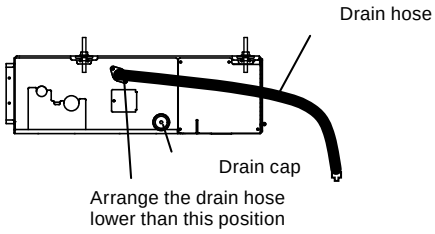
- Connect the drain hose so that the control box cover can easily be removed for servicing when necessary.
- In order to prevent water from leaking into the control box, make sure that the piping is well insulated.
- After finishing the piping, the drain hose installation and the wiring, seal the holes in the wall.

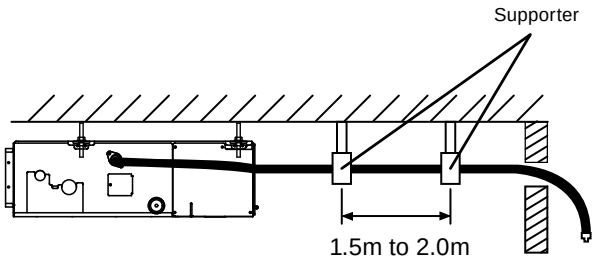
SYSTEM DESIGN

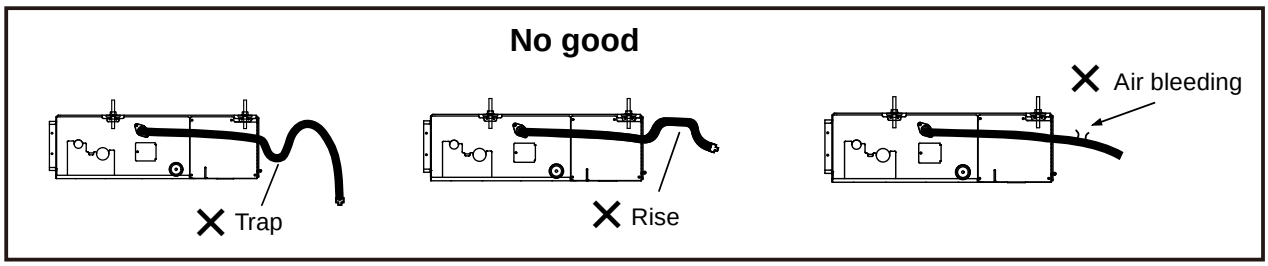
SYSTEM DESIGN

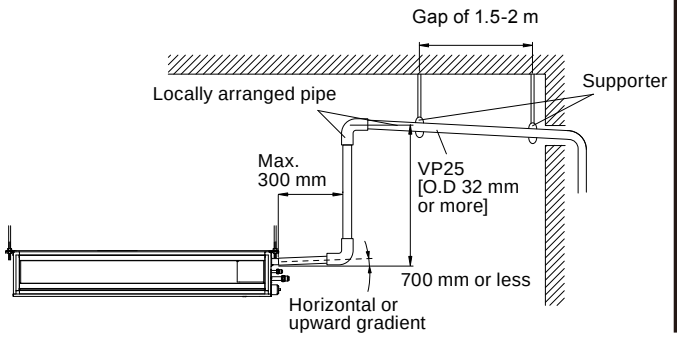
■ SLIM DUCT TYPE

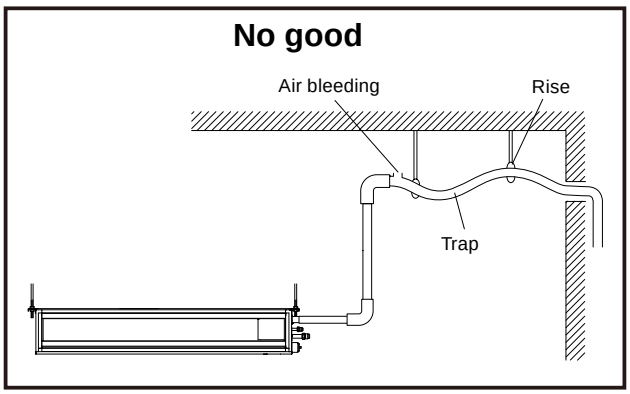
● Ceiling concealed setting



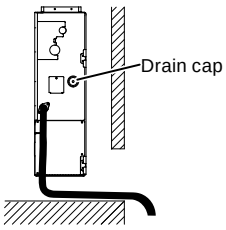


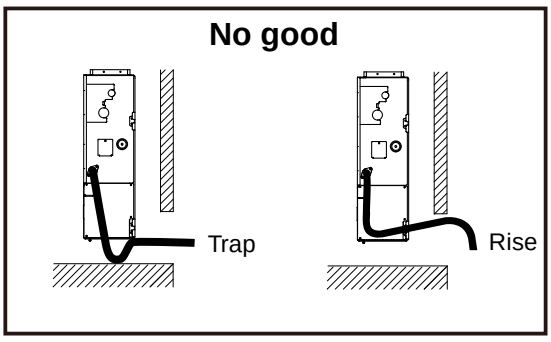






● Floor standing concealed setting

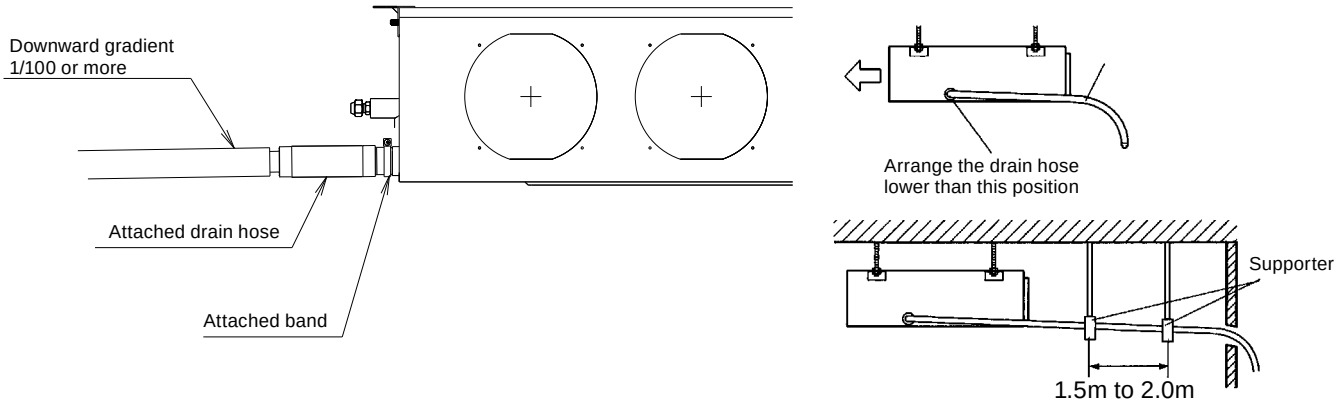


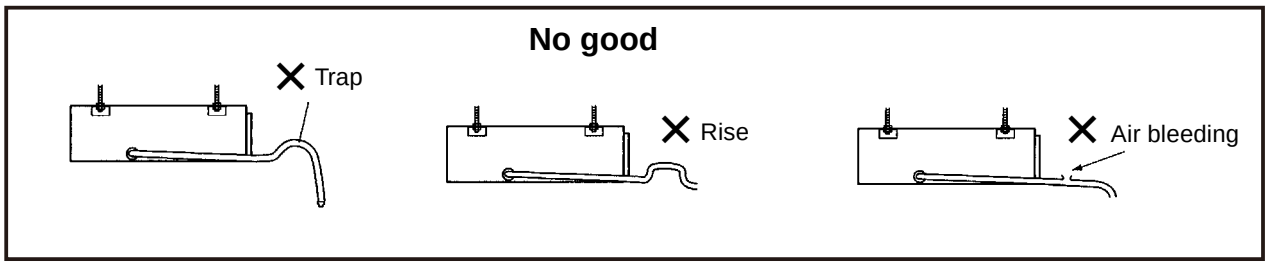


- Install the drain pipe with downward gradient (1/50 to1/100) and so there are no rises or traps in the pipe.
- Use general hard polyvinyl chloride pipe (VP25) [outside diameter 32 mm] and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the pipe is long. Install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain pipe.

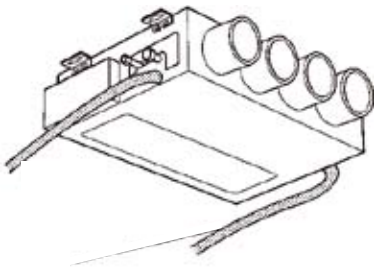
SYSTEM DESIGN

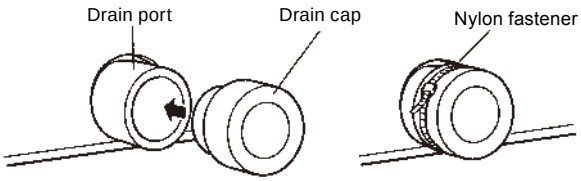
■ LOW STATIC PRESSURE DUCT TYPE / DUCT TYPE





There is a drain port on the left and right sides. Select the drain port to match the local conditions.





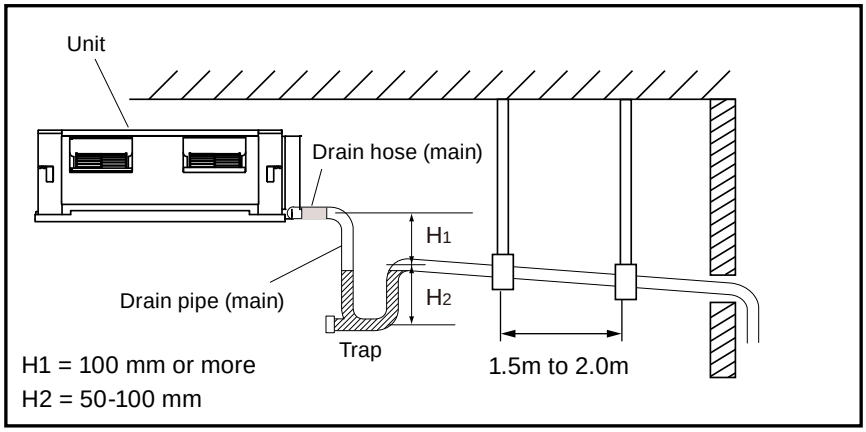
⚠ CAUTION

- Always check that the drain cap is installed to the unused drain port and is fastened with the nylon fastener.
- If the drain cap is not installed, or is not sufficiently fastened by the nylon fastener, water may drip during the cooling operation.

SYSTEM DESIGN

■ HIGH STATIC PRESSURE DUCT TYPE

● Main drain pipe

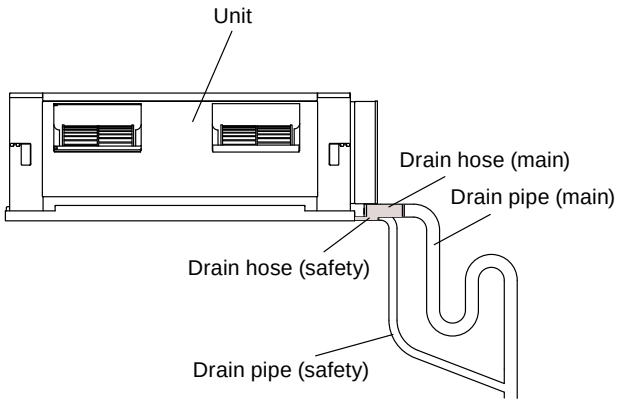


- Be sure to provide a drain trap for each indoor units.
- A trap will have no effect if positioned after the flows from multiple indoor units have joined together.
- The position of the installed drain hose should have a downward gradient of (1/100 or more).
- Make sure that the drain hose is installed without rises.
- Make the trap near to the indoor unit, Position the trap in a location where it can be cleaned.

● Safety drain pipe

There is no need to provide a trap for the safety drain pipe. If the safety drain pipe is connected to the main drain pipe, make the connection below the trap on the main drain pipe.

Once installation is complete, check the flow of the drain water.

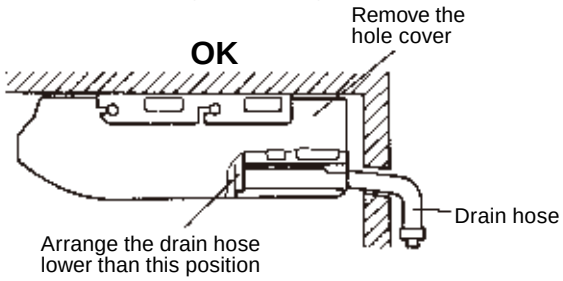


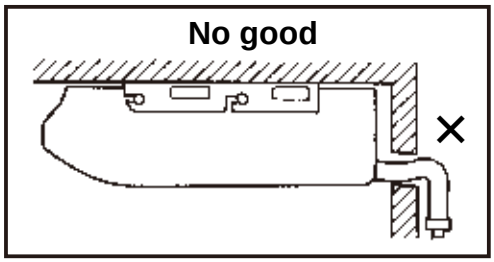
SYSTEM DESIGN

SYSTEM DESIGN

■ FLOOR / CEILING TYPE

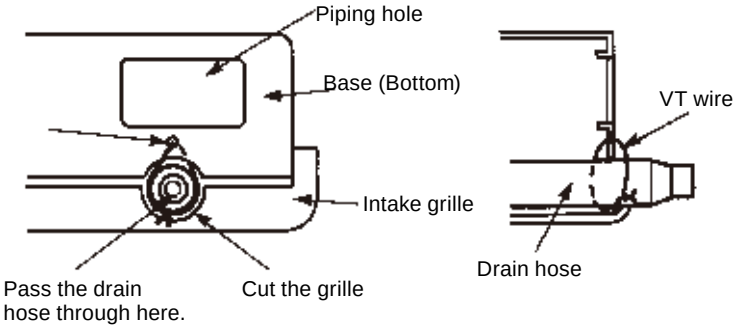
● Under ceiling setting



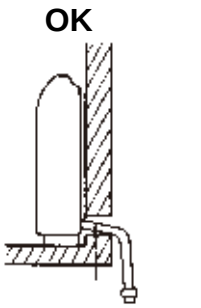


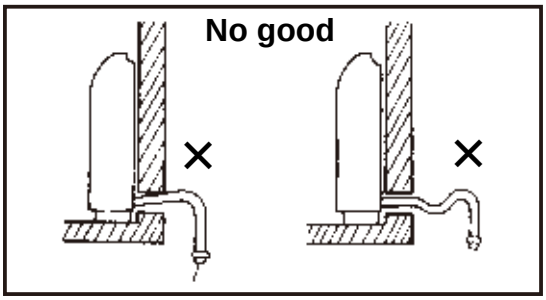
When drain hose is arranged backward.

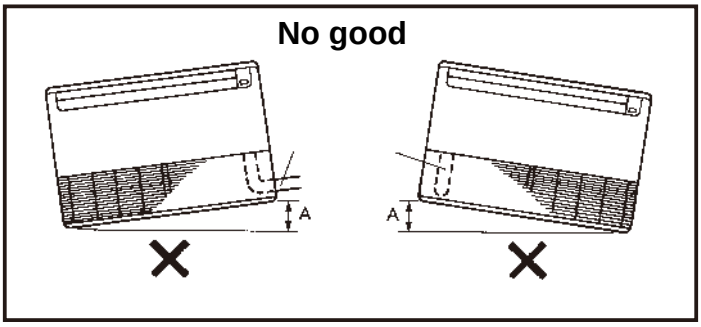
Secure the drain hose with the VT wire.



● Floor console setting



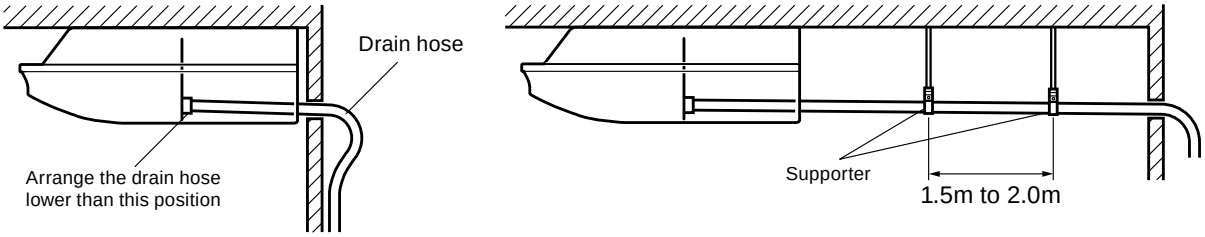


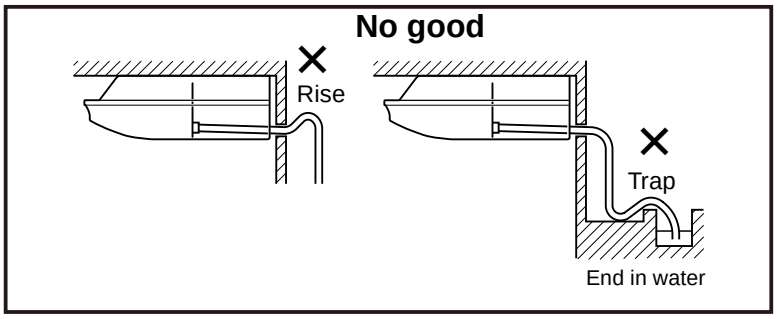


- Do not install the unit so that the drain hose side is too high.
- Height A should be less than 5mm.

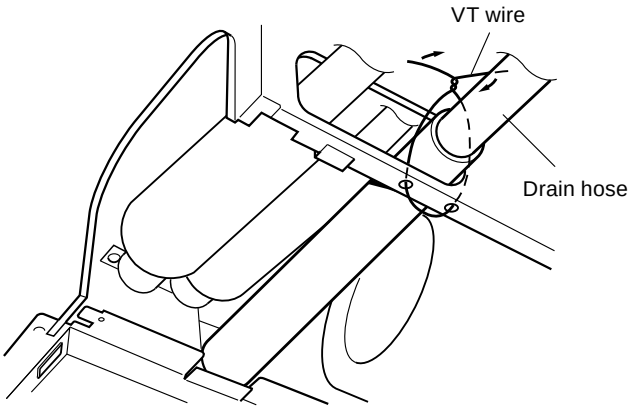
SYSTEM DESIGN

■ CEILING TYPE





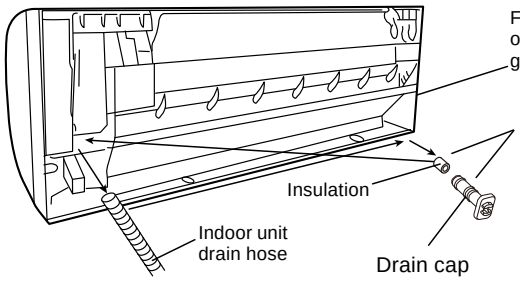
Fasten the drain pipe with VT wire so that the pipe slopes correctly within the indoor unit .

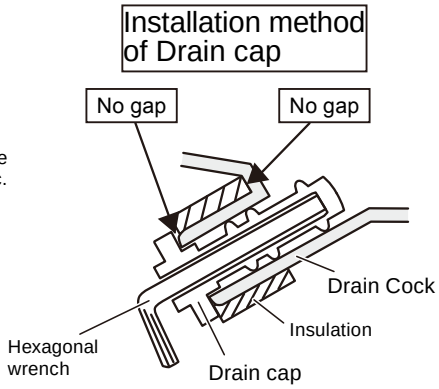


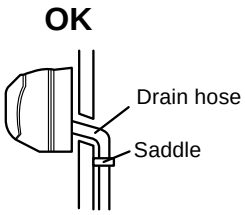
Indoor unit (rear view)

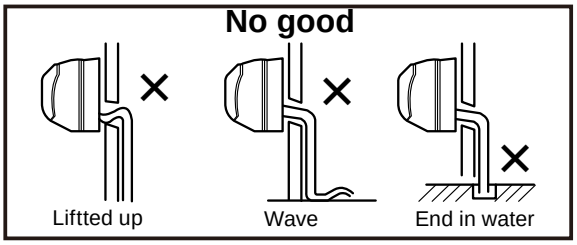
SYSTEM DESIGN

■ COMPACT WALL MOUNTED TYPE

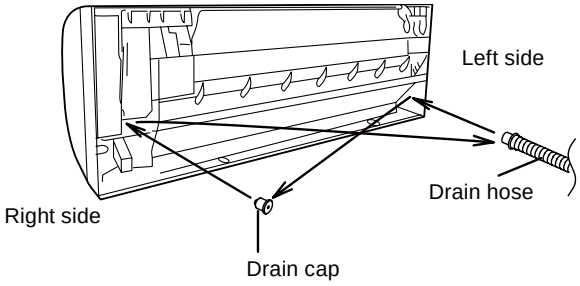


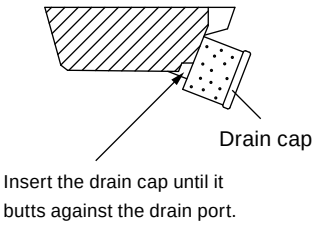


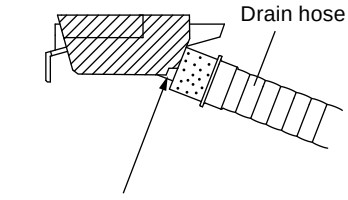


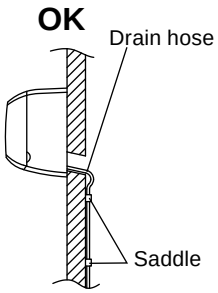


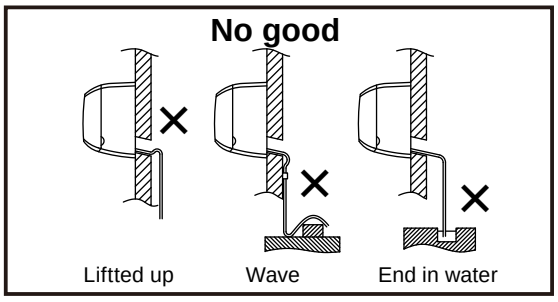
■ WALL MOUNTED TYPE







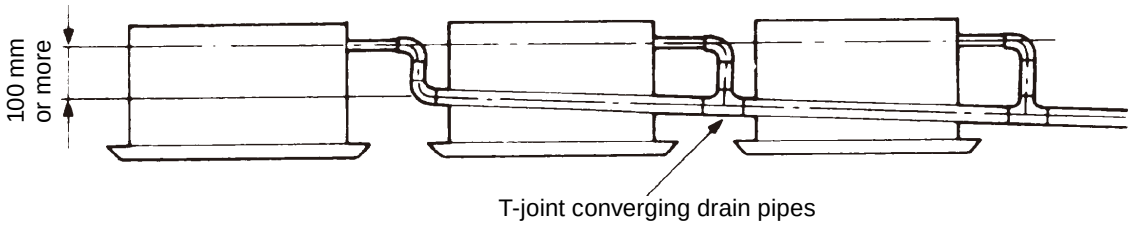


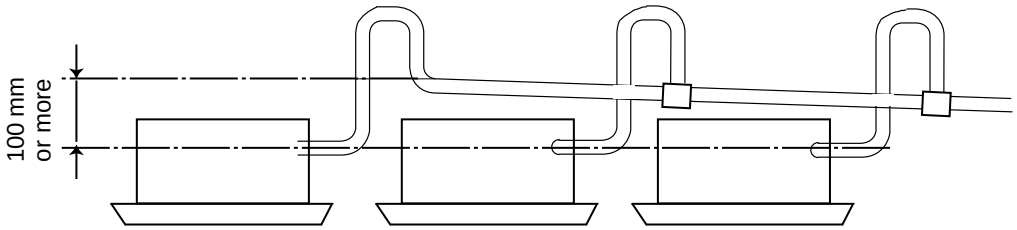


SYSTEM DESIGN

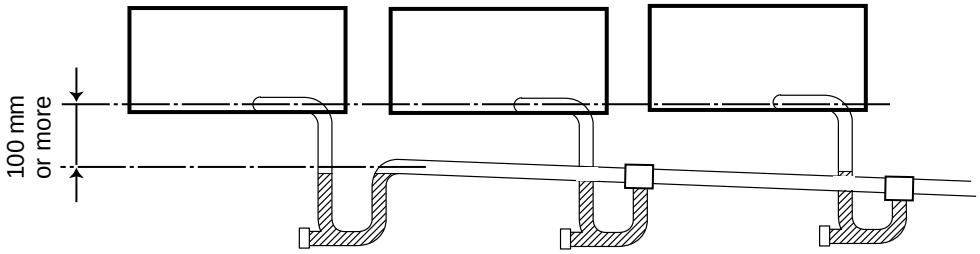
■ CENTRAL DRAIN PROCESS

When converging multiple drain pipes , install according to the procedure shown below.

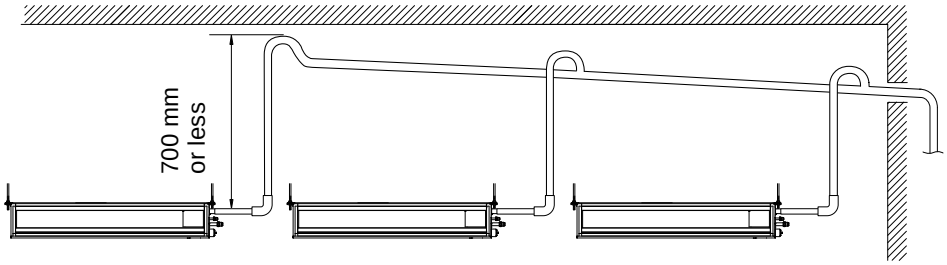




For High static pressure duct type



For Slim duct type



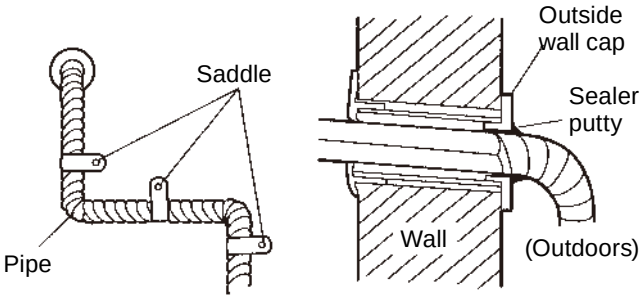
Select converging drain pipes whose diameter is suitable for the operating capacity of the unit.

SYSTEM DESIGN

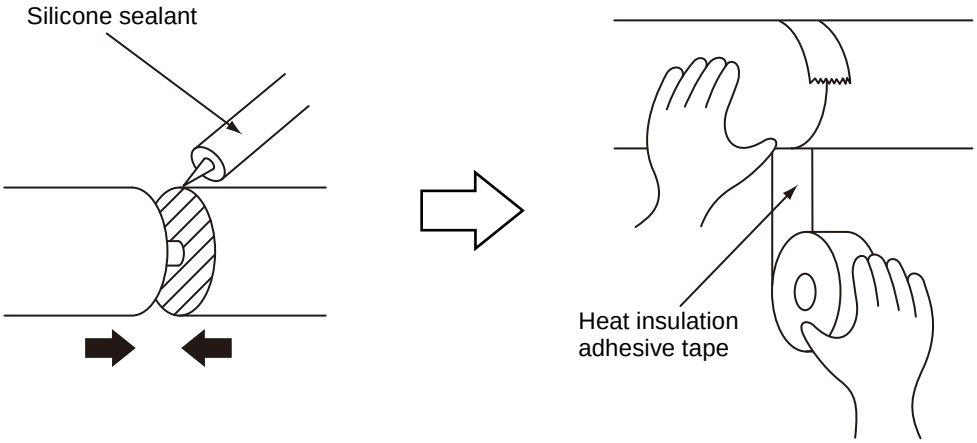
SYSTEM DESIGN

■ DRAIN INSULATION

- Please confirm water flows into Drain pan of the indoor unit, and drain is done normally when the connection of Drain hose is completed.
- Please check whether there is water leak part in the Drain piping.
- Please insulate it from heat by the heat insulator of enough thickness so that there is no dewy when the confirmation ends.
- Fix the drain pipe on to the wall with saddle.



- After put out Drain hose from the wall, please cover the space with the putty etc.



- Be sure to coat the entire end surface.

If there is a gap it could cause condensation

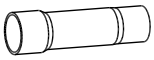
SYSTEM DESIGN

9. STANDARD ACCESSORIES

9-1. OUTDOOR UNIT

The following installation parts are supplied. Use them as required.
Do not discard any accessories until the installation work has been completed.

Name and shape	Q'ty	Application
Specifications manual 	1	
Installation manual 	1	
Drain cap 	2	For outdoor unit drain piping work
Drain pipe 	1	For outdoor unit drain piping work

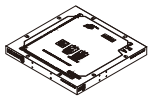
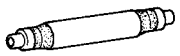
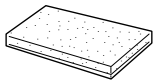
Name and shape	Q'ty	Application
Binder 	2	For binding power cable and transmission cable
Reducer 	1	For AJ∗A54LALH

SYSTEM DESIGN

9-2. INDOOR UNIT

■ COMPACT CASSETTE TYPE

INDOOR UNIT ACCESSORIES

Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Binder (Large) 	4	For fixing the connection pipe (Large and Small)
Binder (Medium) 	4	For power supply and transmission, remote control cable binding.
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Liquid pipe)
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Gas pipe)
Special nut A (Large flange) 	4	For installing indoor unit
Special nut B (Small flange) 	4	For installing indoor unit
Template (Carton top) 	1	For cealing openings cutting Also used as packing
Drain hose 	1	For installing drain pipe
Hose band 	1	For installing drain hose
Drain hose insulation 	1	For installing drain pipe

DECORATION PANEL ACCESSORIES

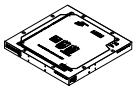
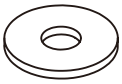
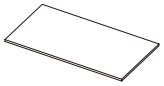
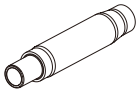
Name and shape	Q'ty	Application
Connector cover 	1	For covering connector
Tapping screw (M5 × 12mm) 	4	For mounting decoration panel
Tapping screw (M4 × 12mm) 	1	For mounting connector cover

SYSTEM DESIGN

SYSTEM DESIGN

■ CASSETTE TYPE

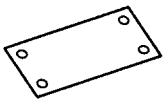
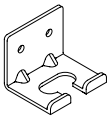
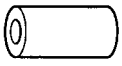
Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Binder (Large) 	4	For fixing the connection pipe (Large and Small)
Binder (Medium) 	4	For power supply and transmission, remote control cable binding.
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Liquid pipe)
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Gas pipe)

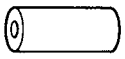
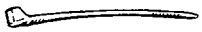
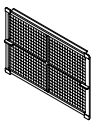
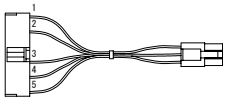
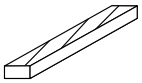
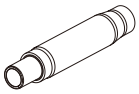
Name and shape	Q'ty	Application
Template (Carton top) 	1	For installing indoor unit.
Washer 	8	For installing indoor unit
Insulation 	1	For installing drain pipe
Drain hose assy 	1	For installing drain pipe
Hose band 	1	For installing drain hose
Drain pipe insulation 	1	For installing drain pipe

SYSTEM DESIGN

SYSTEM DESIGN

■ COMPACT DUCT TYPE

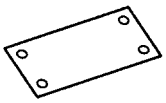
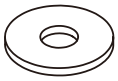
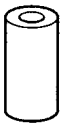
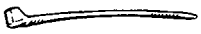
Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Installation template 	1	For positioning the indoor unit
Hanger 	4	For suspending the indoor unit
Tapping screw (M4 x 10mm) 	8	For installing the hanger
Special nut A (Large flange) 	4	For suspending the indoor unit from ceiling
Special nut B (Small flange) 	4	For suspending the indoor unit from ceiling. For fixing the indoor unit on the floor.
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Gas pipe)

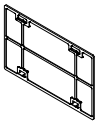
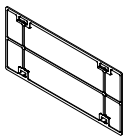
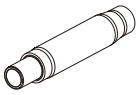
Name and shape	Q'ty	Application
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Liquid pipe)
Binder 	Medium 3	For power supply and transmission and remote control cable binding.
	Large 4	For fixing the coupler heat insulation.
Filter 	2 (AR7/9) 3 (AR12 /14/18)	
Wire 	1	Use for static pressure under 25 Pa.
Insulation (outlet) 	Small 2	For outlet flange
	Large 2	
Drain hose 	1	For connecting the drain pipe
Band 	1	For installing drain hose
Drain hose insulation B 	1	To insulate the joint hose

SYSTEM DESIGN

SYSTEM DESIGN

■ SLIM DUCT TYPE

Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Installation template 	1	For positioning the indoor unit
Washer 	8	For installing indoor unit
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Large pipe)
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Small pipe)
Binder 	Medium 4	For power supply and transmission and remote control cable binding.
	Large 4	For fixing the coupler heat insulation.

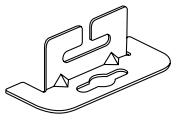
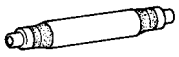
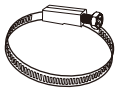
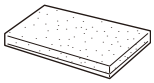
Name and shape	Q'ty	Application
Filter (Small) 	2 (AR07/09/ 12/14/24)	
Filter (Big) 	2 (AR18)	
	1 (AR24)	
Drain hose 	1	For installing drain pipe VP25 (O.D.26, I.D.22)
Band 	1	For installing drain hose
Drain hose insulation B 	1	Insulates the drain hose

SYSTEM DESIGN

SYSTEM DESIGN

■ LOW STATIC PRESSURE DUCT TYPE / DUCT TYPE

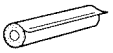
Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Binder (Large) 	5	For fixing the connection pipe (Large and Small) and drain cap
Binder (Medium) 	4	For power supply and transmission, remote control cable binding
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Liquid pipe)
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Gas pipe)

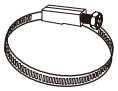
Name and shape	Q'ty	Application
Special nut A (Large flange) 	4	For suspending the indoor unit from ceiling
Special nut B (Small flange) 	4	
Hanger 	4	For suspending the indoor unit from ceiling
Drain hose 	1	For installing drain pipe
Hose band 	1	For installing drain hose
Drain hose insulation 	2	Insulates the drain hose and drain cap
Wire 	1	Attached only ARXB24/ 30/36/45L model. Use for static pressure under 40 Pa.

SYSTEM DESIGN

SYSTEM DESIGN

■ HIGH STATIC PRESSURE DUCT TYPE

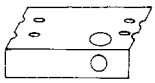
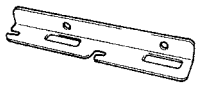
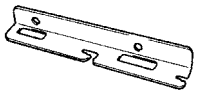
Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Binder (Large) 	4	For fixing the coupler heat insulation
Binder (Medium) 	3	For power supply and transmission, and remote control cable binding
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Liquid pipe)
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Gas pipe)

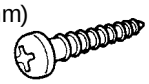
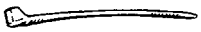
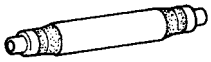
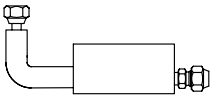
Name and shape	Q'ty	Application
Special nut A (Large flange) 	4	For suspending the indoor unit from ceiling
Special nut B (Small flange) 	4	
Drain hose 	2	For installing drain pipe
Hose band 	2	For installing drain hose
Drain hose insulation 	2	For installing drain hose

SYSTEM DESIGN

SYSTEM DESIGN

■ FLOOR / CEILING TYPE

Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Cover plate (left) 	1	
Cover plate (right) 	1	
Tapping screw (M4 x 10mm) 	2	
Installation template 	1	For positioning the indoor unit For under ceiling type
Bracket (left) 	1	For suspending the indoor unit from ceiling
Bracket (right) 	1	
Special nut 	4	
Wall bracket 	2	For suspending the indoor unit on the wall

Name and shape	Q'ty	Application
Tapping screw (M4 x 20mm) 	6	For fixing the wall bracket
Coupler heat insulation 	2	For indoor side pipe joint
Binder 	Large 4	For fixing the coupler heat insulation
	Medium 3	For power supply, transmission and remote control cable binding
Drain hose 	1	For installing drain pipe
Hose band 	1	For installing drain hose
Drain hose insulation 	1	Adhesive type 100 x 220 (mm)
VT wire 	1	For fixing the drain hose L=280 (mm)
Insulation (pipe) 	1	Adhesive type 160 x 110 (mm)
Silencer pipe 	1	Connect the silencer pipe to the small (Liquid) pipe

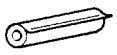
OPTIONAL PARTS

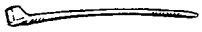
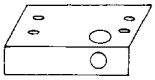
Name and shape	Part No.	Application
Auxiliary pipe 	9374714025	For indoor side pipe joint (For AB18, AB24)

SYSTEM DESIGN

SYSTEM DESIGN

■ CEILING TYPE

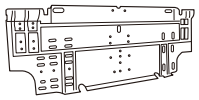
Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Drain hose 	1	For installing drain pipe
Hose band 	1	For installing drain hose
Drain hose insulation 	1	Adhesive type 220 x 100 (mm)
VT wire 	1	For fixing the drain hose L=280 (mm)
Coupler heat insulation (Large) 	2	For indoor side pipe joint (Gas pipe)
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Liquid pipe)

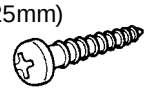
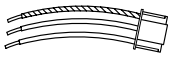
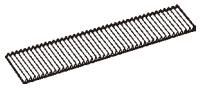
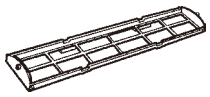
Name and shape	Q'ty	Application
Binder 	Extra large 4	For fixing the coupler heat insulation
	Large 4	
	Medium 3	For power supply and transmission and remote control cable binding
Special nut A (Large flange) 	4	For installing indoor unit
Special nut B (Small flange) 	4	For installing indoor unit
Installation template 	1	For positioning the indoor unit
Auxiliary pipe assembly 	1	For connecting the piping

SYSTEM DESIGN

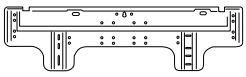
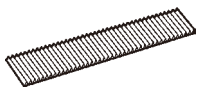
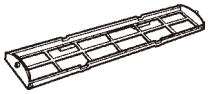
SYSTEM DESIGN

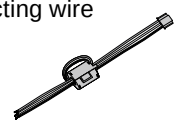
■ COMPACT WALL MOUNTED TYPE

Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Wall hook bracket 	1	For indoor unit installation
Binder 	1	For remote control cable binding
Cloth tape 	1	For indoor unit installation

Name and shape	Q'ty	Application
Tapping screw (M4 x 25mm) 	8	For wall hook bracket installation
Wire assebly 	1	For wired remote control installation
Air cleaning filter 	2	
Air cleaning filter frame 	2	
Seal A 	1	For indoor unit installation

■ WALL MOUNTED TYPE

Name and shape	Q'ty	Application
Operating manual 	1	
Installation manual 	1	
Wall hook bracket 	1	For indoor unit installation
Cloth tape 	1	For indoor unit installation
Tapping screw (M4 x 25mm) 	8	For wall hook bracket installation
Air cleaning filter 	1	
Air cleaning filter frame 	1	

Name and shape	Q'ty	Application
Drain hose Insulation 	1	For installing drain hose
Connecting wire 	2	For wired remote control cable
Binder 	2	For power supply and transmission, remote control cable binding

SYSTEM DESIGN

10. OPTIONAL PARTS INSTALLATION

10-1. DRAIN PUMP UNIT

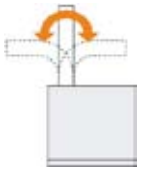
■ MODEL : UTZ-PX1BBA

● Specifications

	Unit	Specifications
Height of drain up	mm	Maximum 1000
Power source	-	220-240V, 50/60Hz
Input Power (230V, 50/60Hz)	W	12 / 10.8
Current (230V, 50/60Hz)	mA	114 / 92
Dimensions (H x W x D)	mm	176 x 178 x 154
Weight	kg	2.5
Connection pipe diameter	-	VP25 (I.D.25mm, O.D.32mm)
Direction of pipe connection *1	-	360°
Angle of pipe connection *2	-	0° (Horizontal)-90° (Vertical)
Control method	-	Control board of indoor unit
safety device	-	Float switch, Thermal fuse

*1 : Direction of pipe connection

*2 : Angle of pipe connection

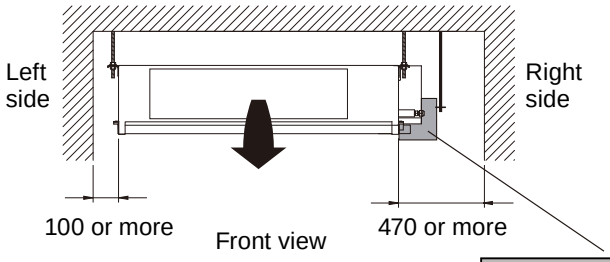


● Application indoor units

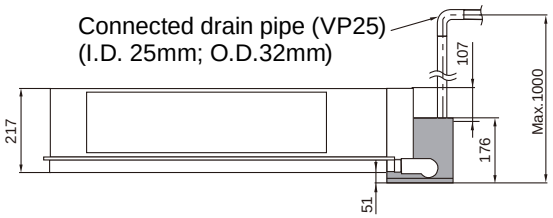
Type	Model name
Compact Duct	ARXB07LALH, ARXB09LALH, ARXB12LALH, ARXB14LALH, ARXB18LALH

● Mounting position

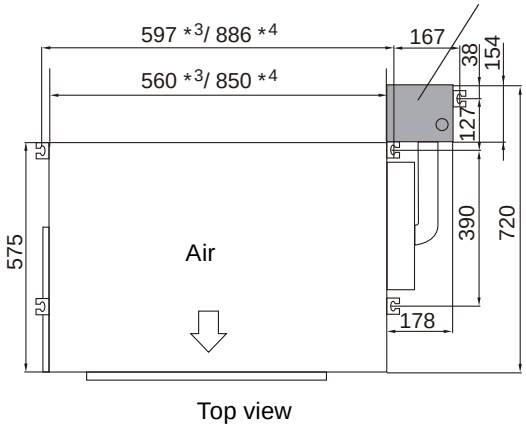
Strong and slide ceiling



(Unit : mm)



Drain pump unit

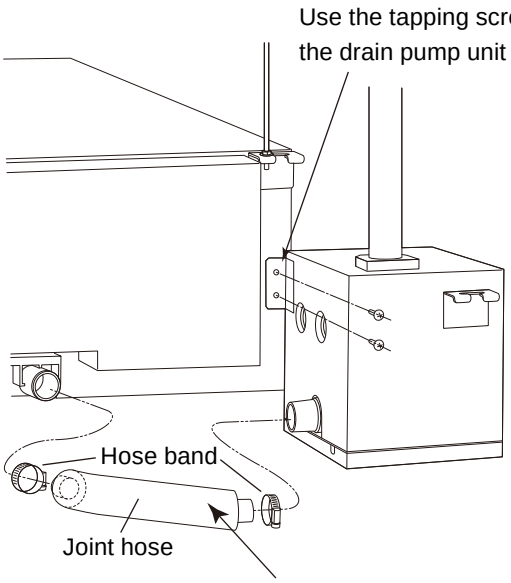


Note:
Leave the space required to service the unit.
Set a maintenance hole near the drain pump unit.
This product is specially designed for ceiling concealed installation of the indoor unit.
It cannot be connected when it is installed on the floor.

*3 : ARXB07, 09
*4 : ARXB12, 14, 18

SYSTEM DESIGN

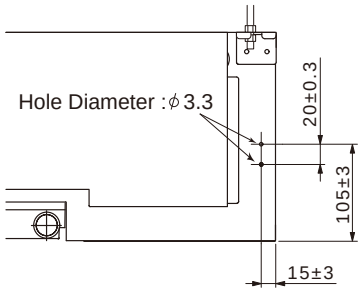
● Installing drain pump unit

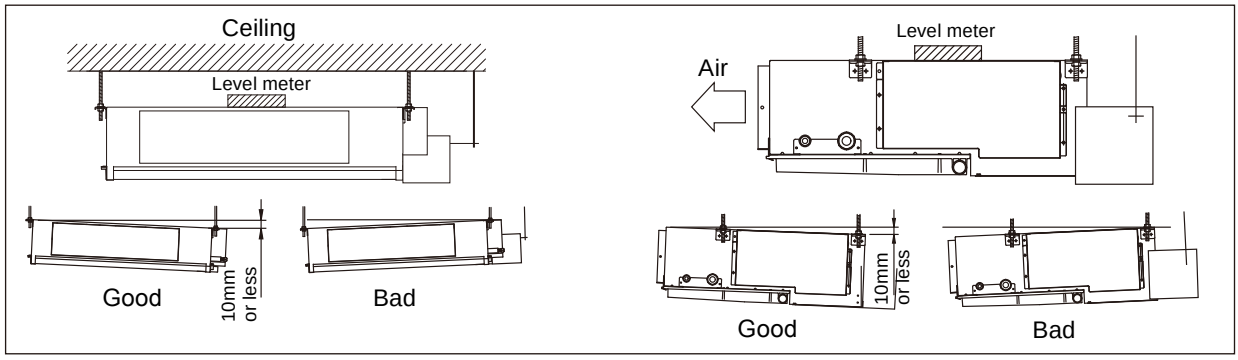


Thread the hose band through the joint hose, and insert it until it touches the drain pump unit and indoor unit.

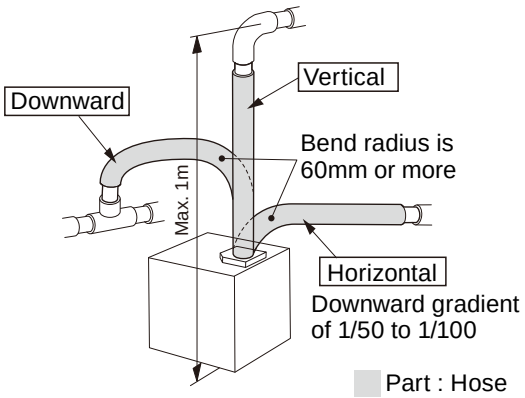
When there is no screw hole

Puncture holes at the following position and then install.

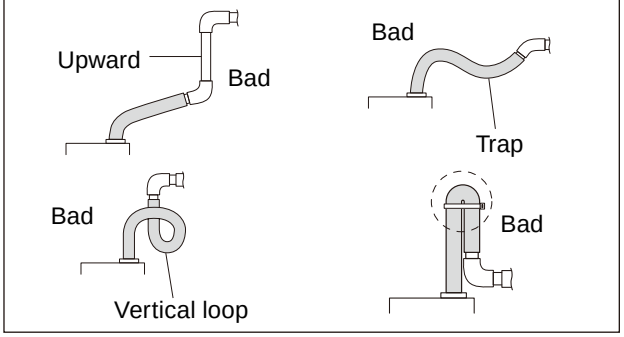




● Installing hose

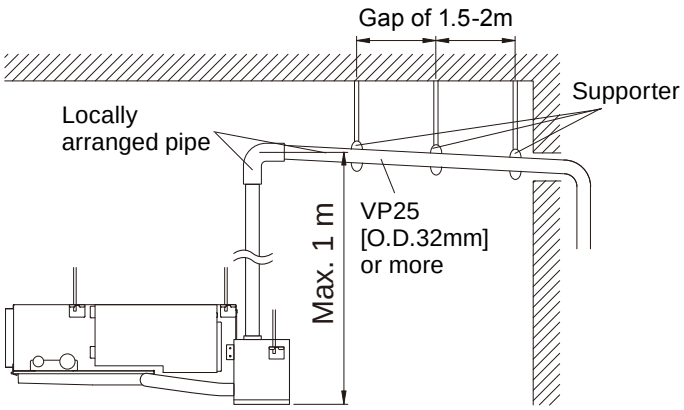


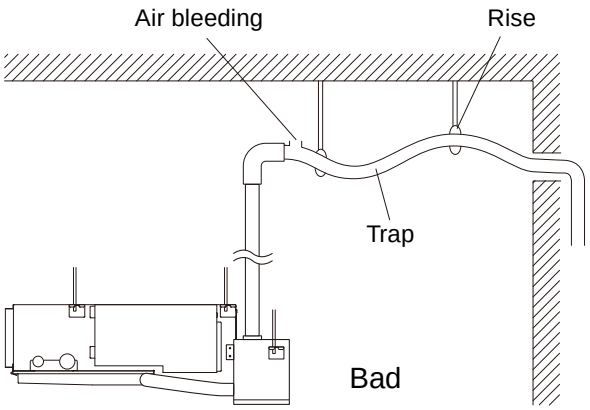
Example of wrong construction.

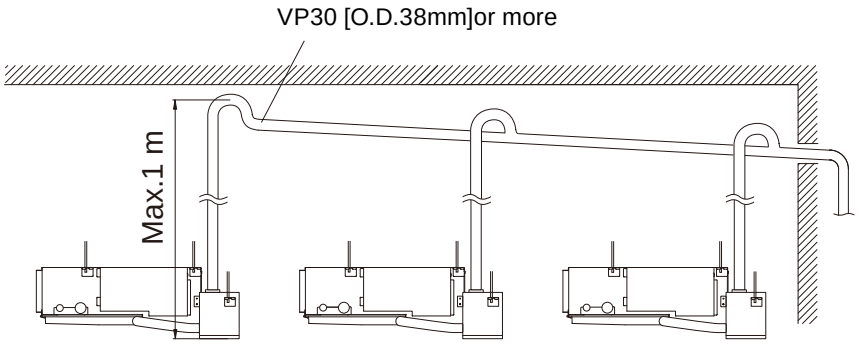


SYSTEM DESIGN

● Installing pipe



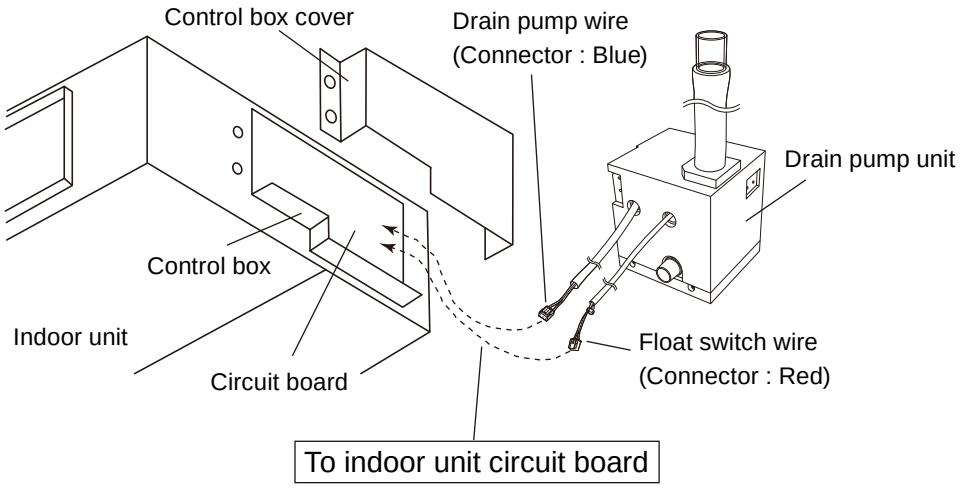




Observe the following procedures to construct centralized drain pipe fittings.

SYSTEM DESIGN

● Electrical wiring

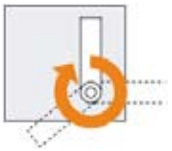


■ MODEL : UTZ-PX1NBA

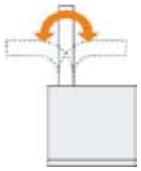
● Specifications

	Unit	Specifications
Height of drain up	mm	Maximum 1000
Power source	-	220-240V, 50/60Hz
Input Power (230V, 50/60Hz)	W	12 / 10.8
Current (230V, 50/60Hz)	mA	114 / 92
Dimensions (H x W x D)	mm	176 x 178 x 154
Weight	kg	2.5
Connection pipe diameter	-	VP25 (I.D.25mm, O.D.32mm)
Direction of pipe connection *1	-	360°
Angle of pipe connection *2	-	0° (Horizontal)-90° (Vertical)
Control method	-	Control board of indoor unit
safety device	-	Float switch, Thermal fuse

*1 : Direction of pipe connection



*2 : Angle of pipe connection



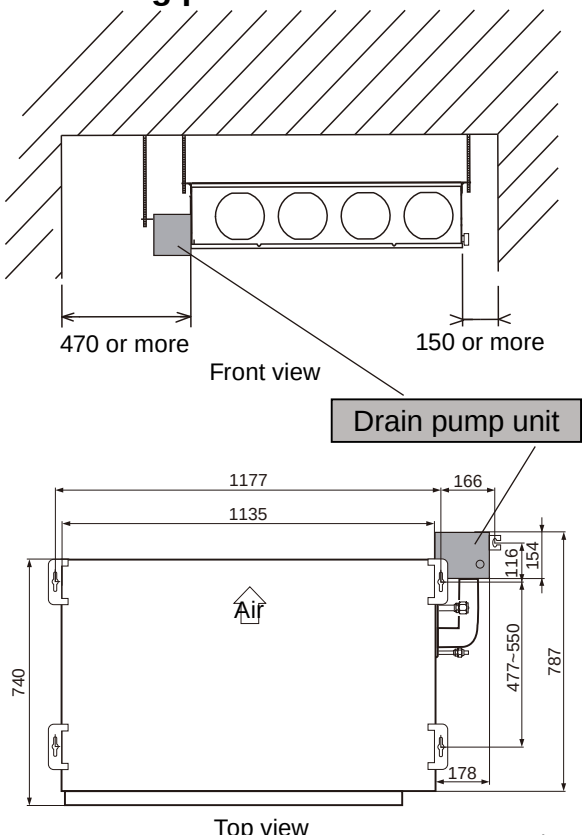
● Application indoor units

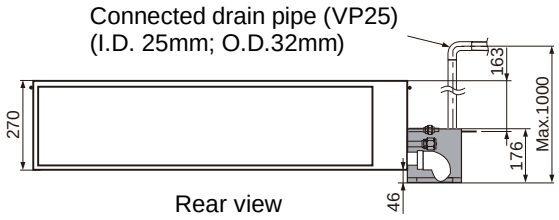
Type	Model name
Low Static Pressure Duct	ARXB24LATH, ARXB30LATH, ARXB36LATH, ARXB45LATH
Duct	ARXA24LATH, ARXA30LATH, ARXA36LATH, ARXA45LATH

SYSTEM DESIGN

● Mounting position

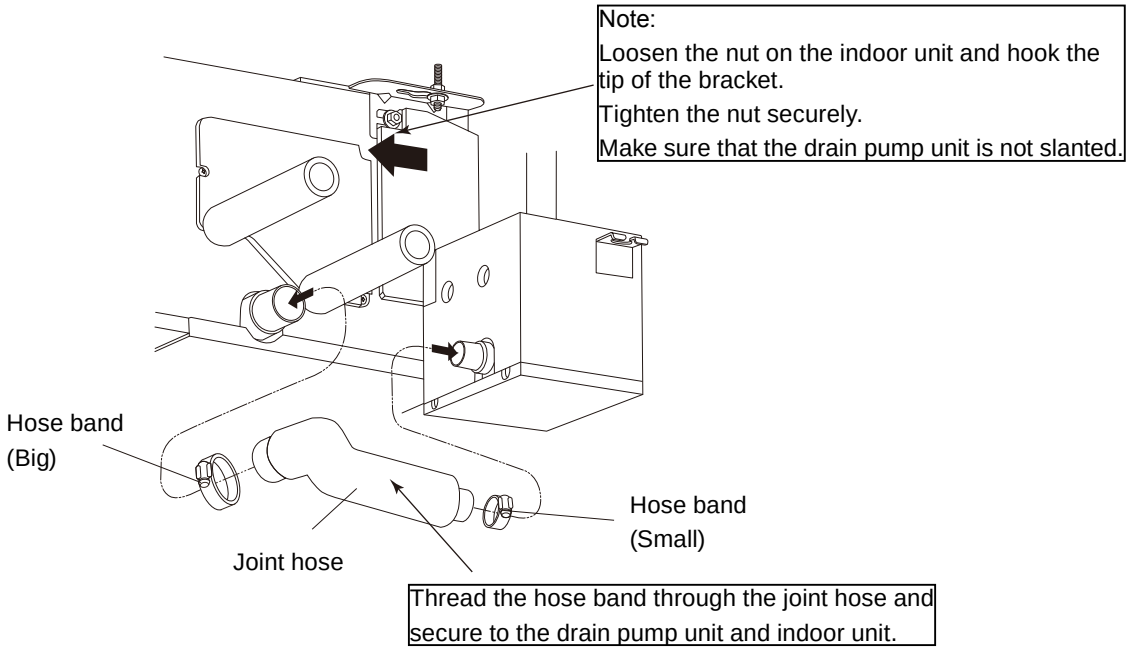
(Unit : mm)

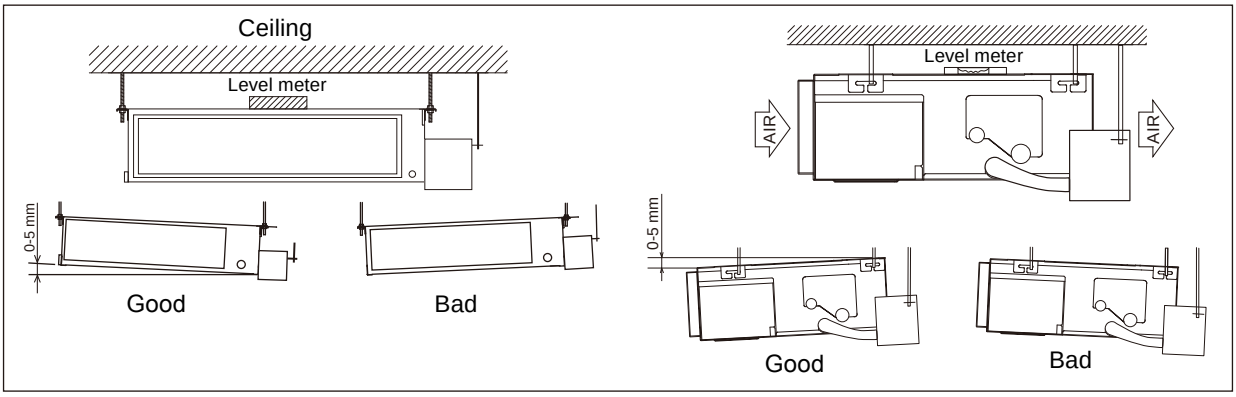




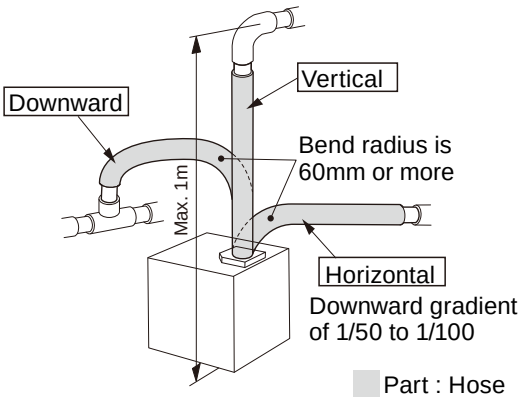
Note:
Leave the space required to service the unit.
Set a maintenance hole near the drain pump unit.

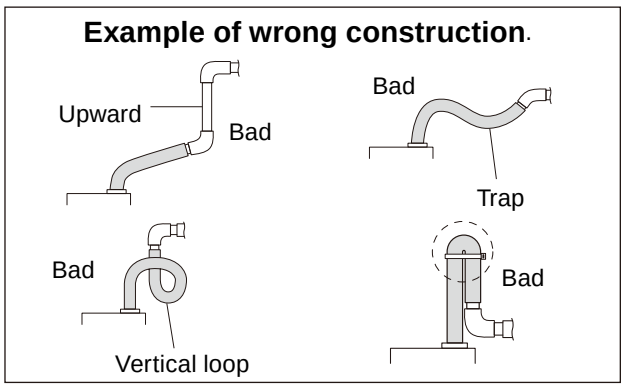
● Installing drain pump unit





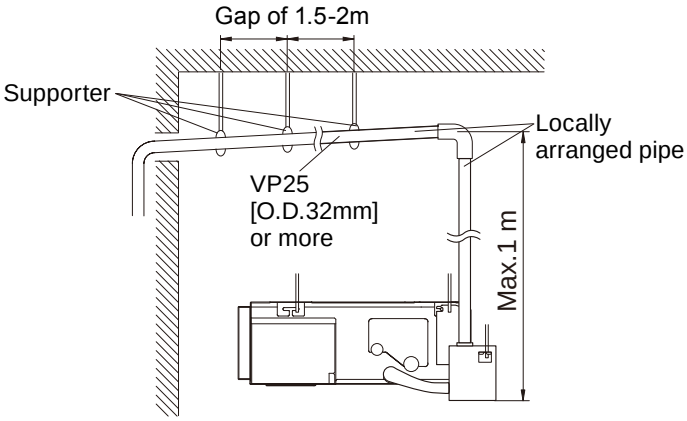
● Installing hose

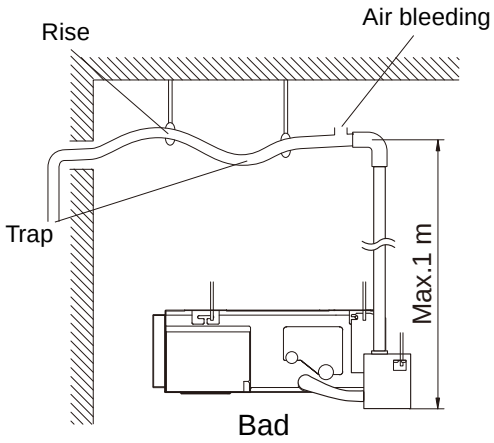


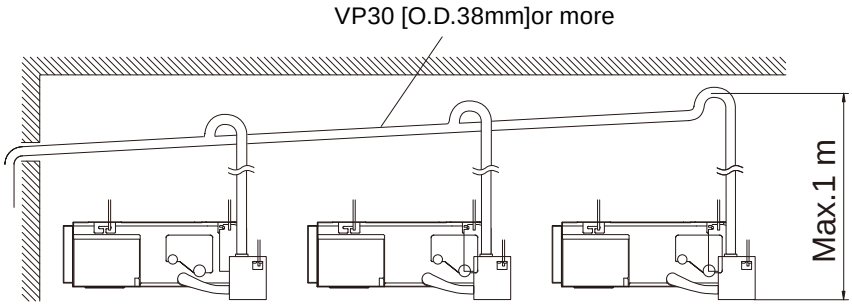


SYSTEM DESIGN

● Installing pipe

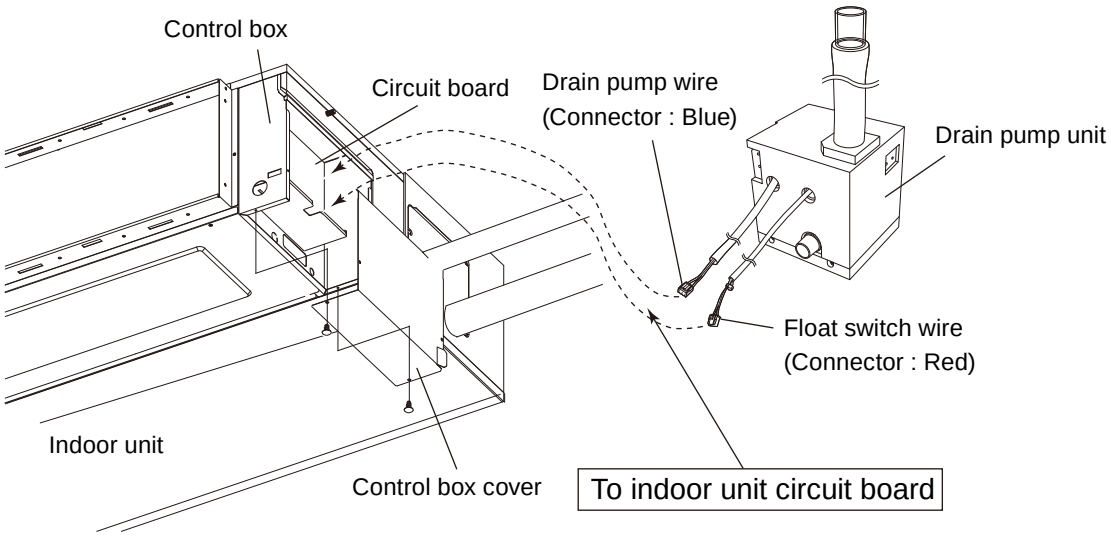






Observe the following procedures to construct centralized drain pipe fittings.

● Electrical wiring

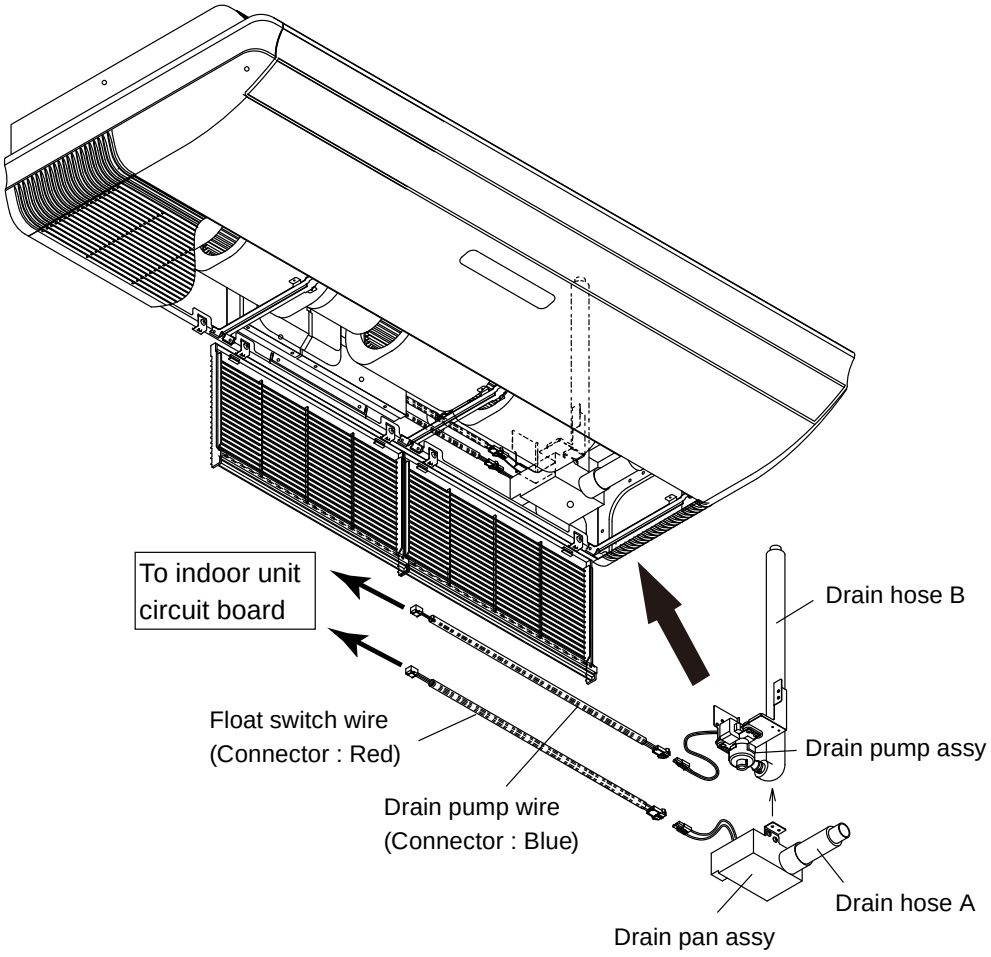


■ MODEL : UTR-DPB24T

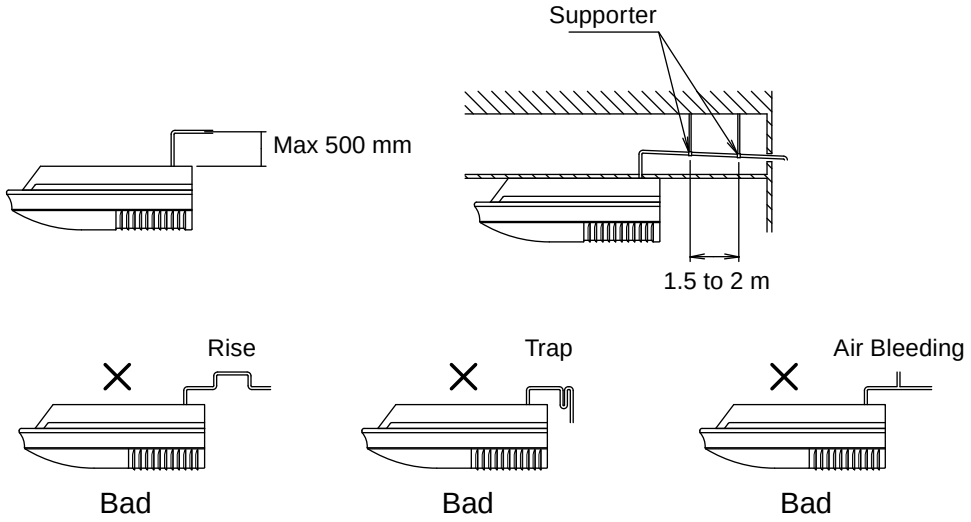
● Application indoor units

Type	Model name
Ceiling	AB∗A30LBTH, AB∗A36LBTH, AB∗A45LBTH, AB∗A54LBTH

● Installing drain pump unit & Electrical wiring



● Installing pipe

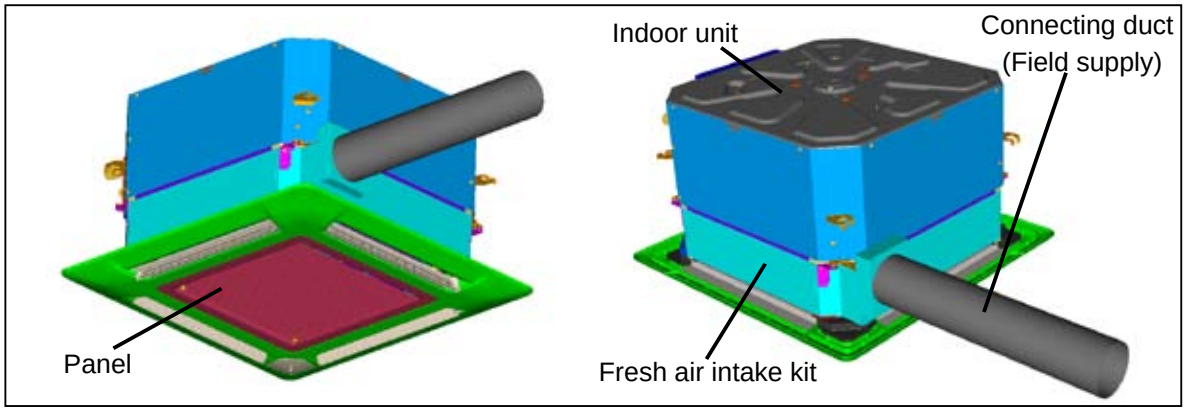


SYSTEM DESIGN

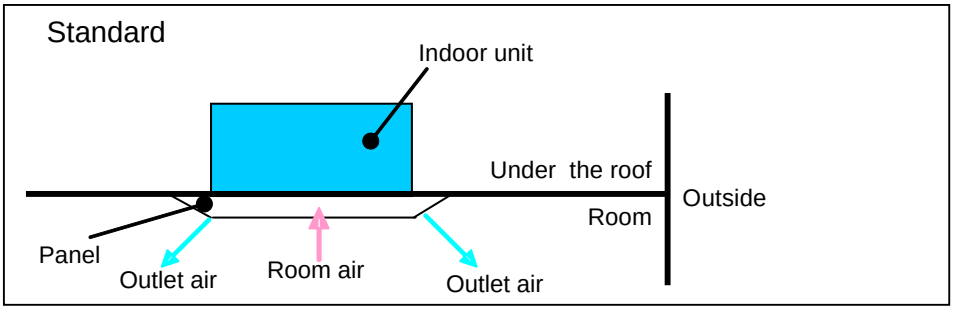
10-2. FRESH AIR INTAKE KIT (MODEL : UTZ-VXAA)

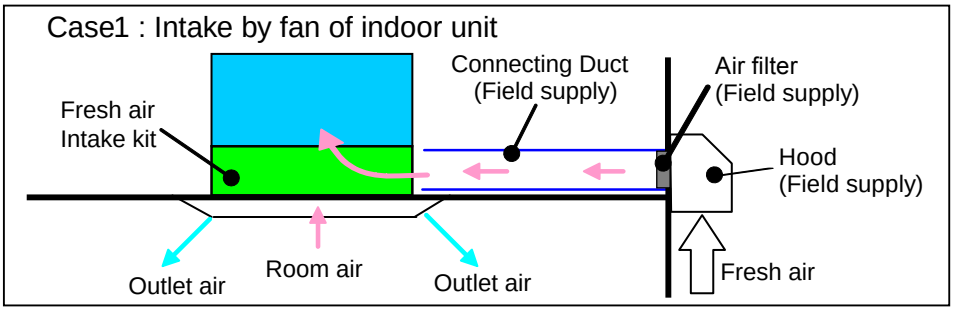
■ FEATURE

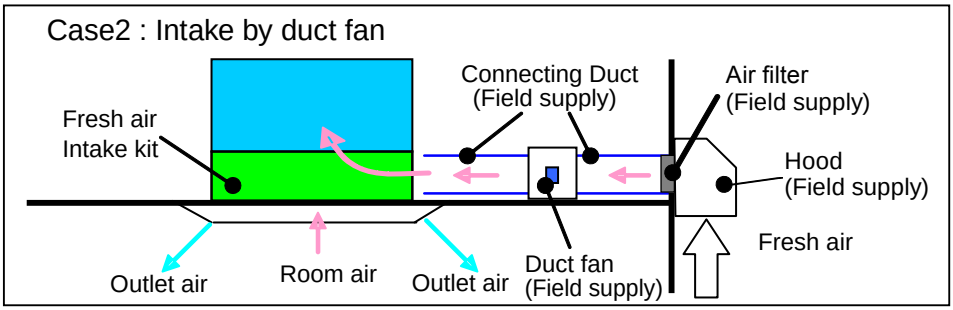
• It can be taken in fresh air of up to 10% of “high” air volume of the indoor unit by attaching Fresh Air Intake Kit to cassette type indoor unit.



■ INSTALLATION EXAMPLE







SYSTEM DESIGN

■ SPECIFICATIONS

Model name				UTZ-VXAA
Fresh air intake	Max. fresh air intake volume		%(for High)	10
Connection duct type			mm (inch)	ø 100 (3-15/16)
			Pcs	1
Dimension (HxWxD)		Net	mm (inch)	120 x 570 x 570 (4-23/32 x 22-7/16 x 22-7/16)
		Gross		165 x 585 x 585 (6-1/2 x23-1/32 x 23-1/32)
Weight		Net	kg (lb.)	3.5 (8)
		Gross		5.5 (12)

SYSTEM DESIGN

■ PRECAUTION

● About fresh air intake kit

- The Fresh Air Intake Kit can be installed onto cassette type air conditioners.
- The volume of ventilated air provided by the Fresh Air Intake Kit may be unable to fulfill ventilation regulations in all countries.
  On such occasions we ask that this kit be used along with Energy recovery ventilators.
- When intaking outside air please ensure correct air-conditioning design as based on air-conditioning load calculations.
  As outside air is not being processed an increase in outside air load can affect air conditioning.

● Installation location

- Area that generate substances that adversely affect the equipment, such as sulfuric gas,chlorine gas,add,or alkalli it will cause the copper pipes and brazed joints to corrode,whitch can cause refrigerant leakage.
- Area with high salt content,such as at the seaside. It will deteriorate metal parts, causing the parts to fall or the unit to leak water.
- Be certain to use electric dampers and shutters to avoid infiltration of cold air, wind and fog during shutdown in areas with cold climates, strong winds, or where fogs are common.
- Please ensure the product is installed a distance of at least three times the duct diameter away from exterior wall air inlets, or air exhausts for the prevention of short circuits.

● Temperature conditions

- Condensation may form on the product when outside air temperature is low, and the temperature and humidity surrounding the product are high. Don't intake the air of below 0°C into the Fresh air intake kit.
- The upper limit of the product's temperature range should respond to the outdoor temperature range.

● About duct fan

- When installing the duct fan, connect the drive relay (field supplied) and operate with the indoor unit.
- Please ensure the intake air volume is below 10% of the product's air volume HI. When the intaken air volume becomes too large there the operating noise may increase and room temperature detection may be affected.

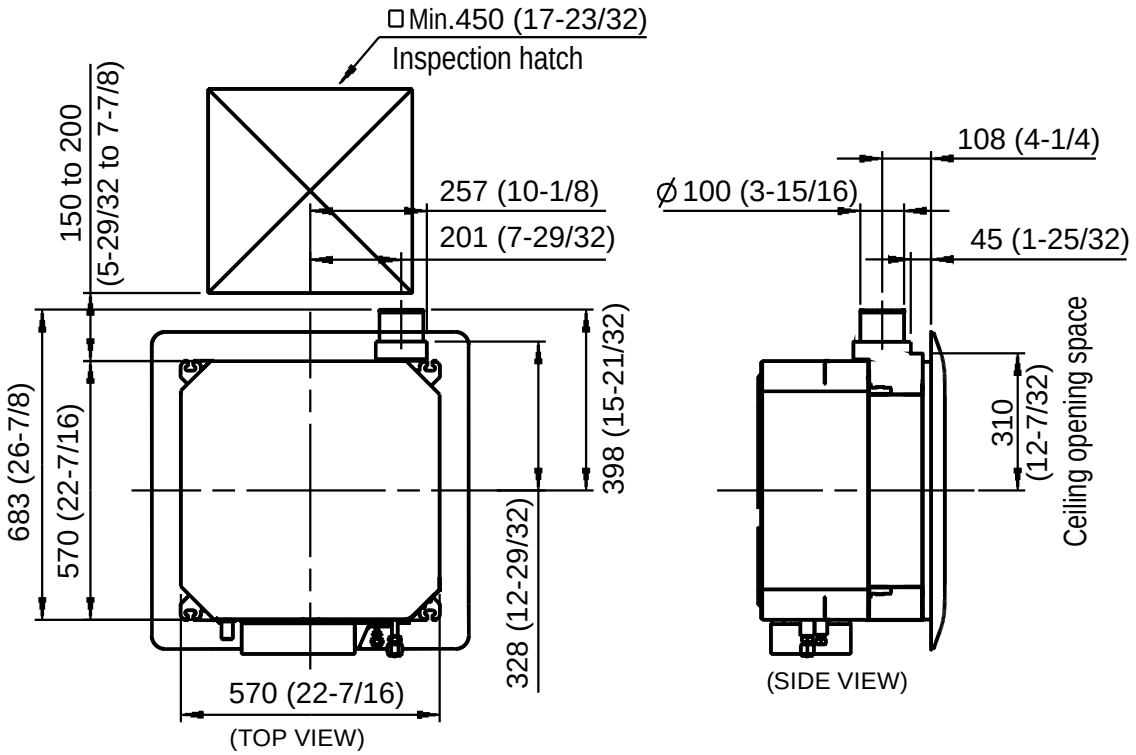
● About the duct connection

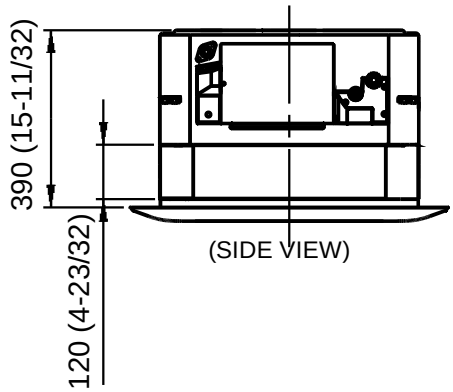
- Procure a duct with internal diameter that fits the external diameter of the duct flange.
- Please note that regulations of some countries may require the use of a nonflammable duct.
- If the duct penetrates a fire-retarding division or other fire-proofing measures, the installation of fire dampers, or a construction that does not adversely affect fire control measures is a regulatory requirement of some countries.
- When using metallic ducts please ensure metals (i.e., metal lath, wire lath, stainless sheeting) are electrically insulated. (A short occurring by electrical connection can cause fire)
- Please ensure to thermally insulate connected ducts to prevent condensation.
- Please make certain that netting or other measures are installed in parts exposed to the outside air to prevent infiltration of small animals such as birds and insects.
- Please be certain to install external air filters to parts exposed to the outside air for heat exchanger protection of indoor equipment.
- Please avoid the infiltration of rain water by installing outside ducts with an incline of at least 1/30, and fitting hoods on openings.

SYSTEM DESIGN

■ DIMENSIONS

Unit : mm (inch)

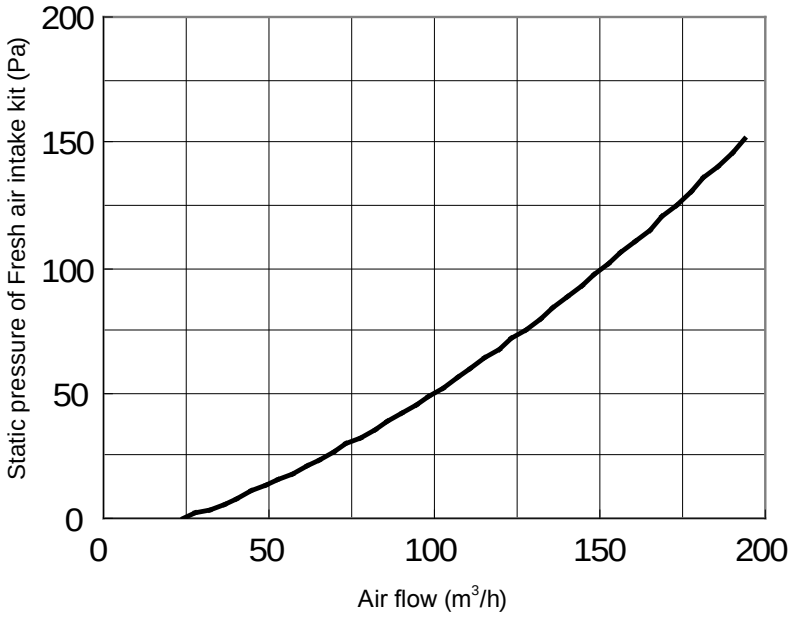




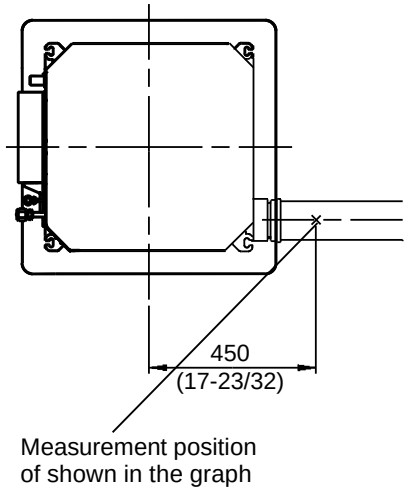
• When installing this kit, inspection hatch is necessary. (It is necessary when servicing.)

SYSTEM DESIGN

■ AIR FLOW



Unit : mm (inch)



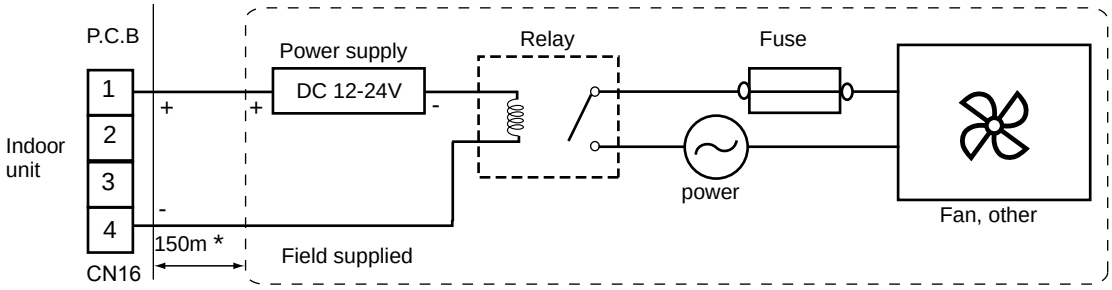
SYSTEM DESIGN

■ FRESH AIR CONTROL OUTPUT

- You can control duct fan by synchronization with fan operation of indoor unit.
- Wire for fresh air control output is supplied with Fresh Air Intake Kit.
- Extended length of the wire : Max. 150m

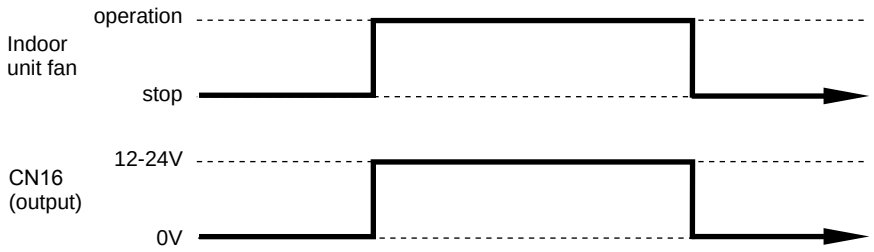
● Connection diagram

- For Relay Output voltage : DC12 - 24V
  Permissible current : 30mA

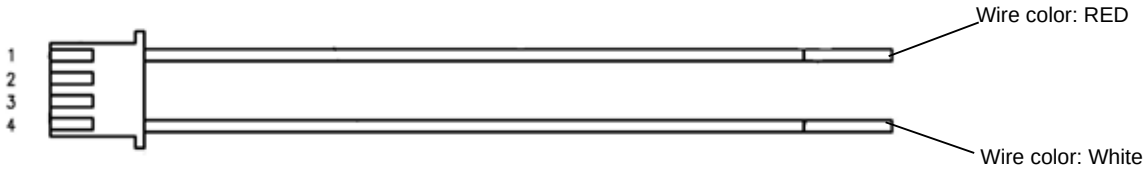


*:Make the distance from the PC board to the Relay Unit within 150 m

● Indoor unit status

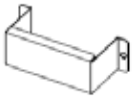


● Wire (External output ②)



SYSTEM DESIGN

■ ACCESSORY PARTS

Name and shape	Q'ty	Application
Installation manual 	1	
Chamber 	1	Air joint for connection duct
Wire cover 	1	Cover for extension wire
Screw 	4	Attaching for chamber Attaching for wire cover
Extension wire for louver 	2	Extension wire for louver

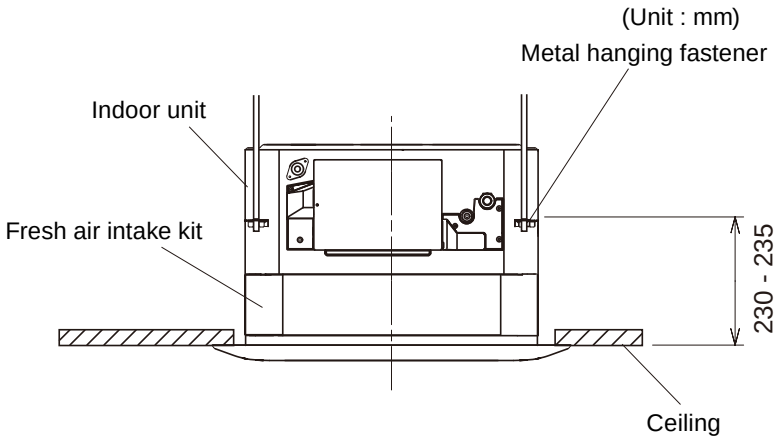
Name and shape	Q'ty	Application
Extension wire for receiver kit 	1	Extension wire for receiving kit
Wire (External output ①) 	1	For connect indoor unit to relay of duct fan (For single or multi)
Wire (External output ②) 	1	For connect indoor unit to relay of duct fan (For VRF)
Bolt 	4	For attaching kit to indoor unit
Binder 	1	For fixing wire

SYSTEM DESIGN

■ INSTALLATION

● Mounting of indoor unit

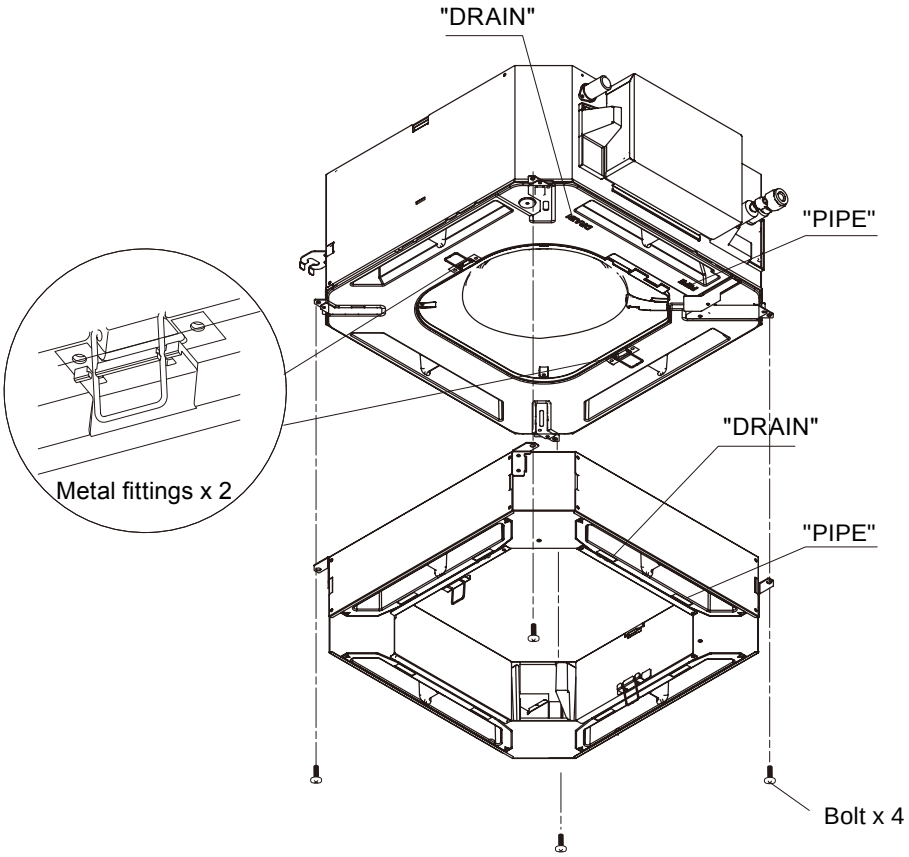
- Please refer to the installation manual provided with the indoor unit for mounting.
- Please refer to the diagram below for installation height.
- When installing this product to existing indoor units, please adjust the installation height of the indoor units to height 230-235mm.



● Installation of the fresh air intake kit

⚠CAUTION
Installing the Fresh Air Intake Kit with the wrong direction is a cause of water leakage.

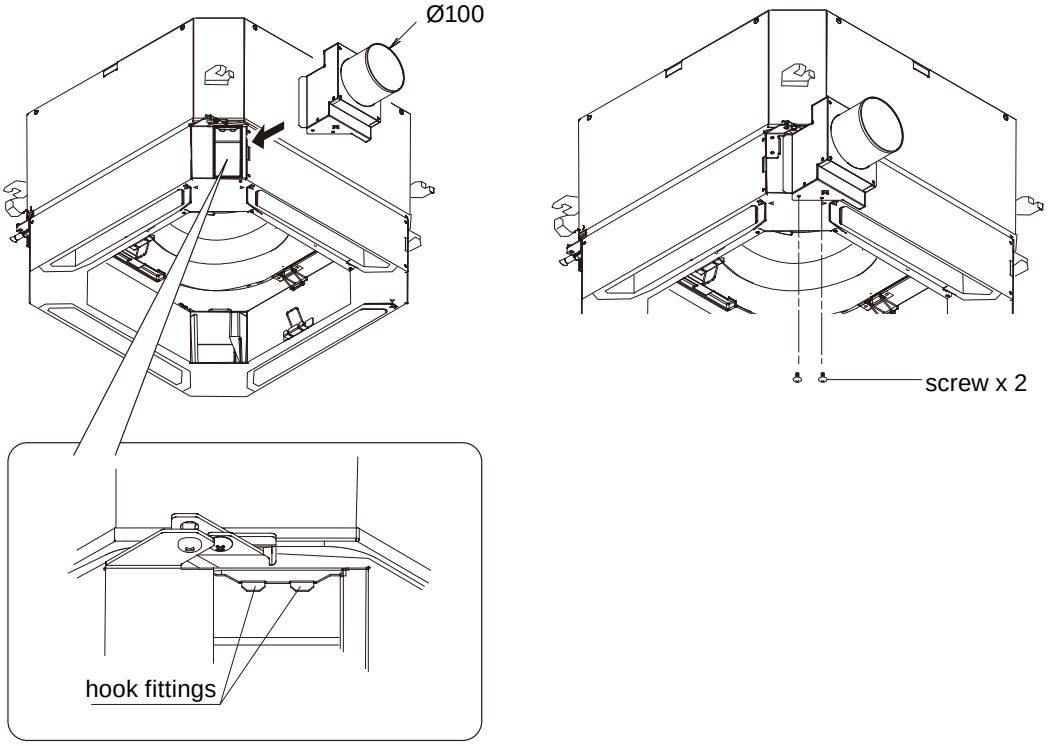
- Provisionally attach the “DRAIN”, “PIPE” of the Fresh Air Intake Kit to the indoor unit foam-sealed “DRAIN”, “PIPE”, following the direction of the indoor unit, using the metal fittings of the combined diagram.



SYSTEM DESIGN

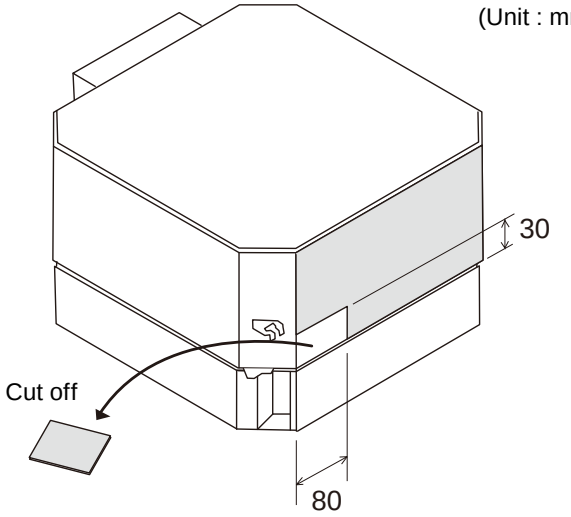
● Chamber installation

Fit the four-sided holes of the chamber together with the hook fittings of the Fresh Air Intake Kit (in two places), and secure the attached chamber in place with screws provided.



- When using the “UTZ-KXGC” kit for high humidity, please first cut off and remove the heat insulation as shown in the figure.
- Please install the kit for high humidity according to the installation instruction sheet provided.

(Unit : mm)



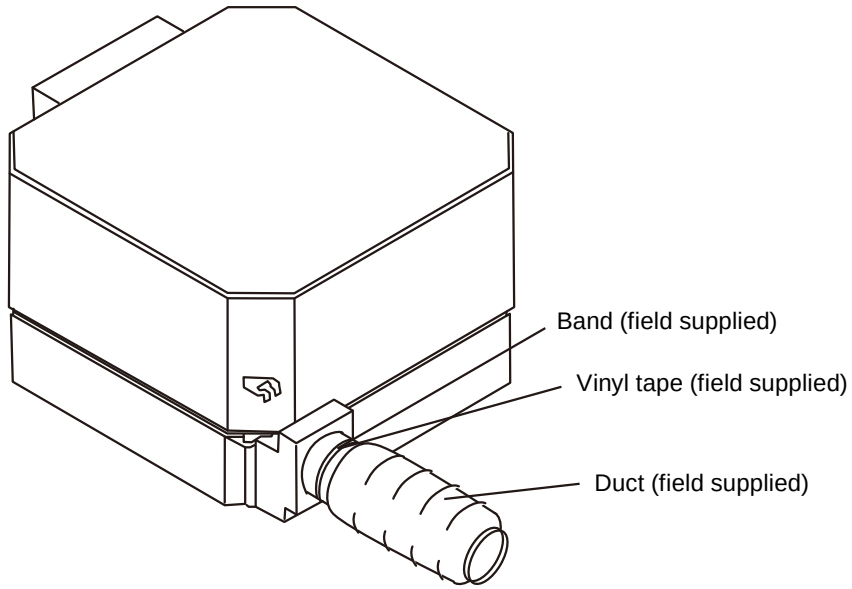
SYSTEM DESIGN

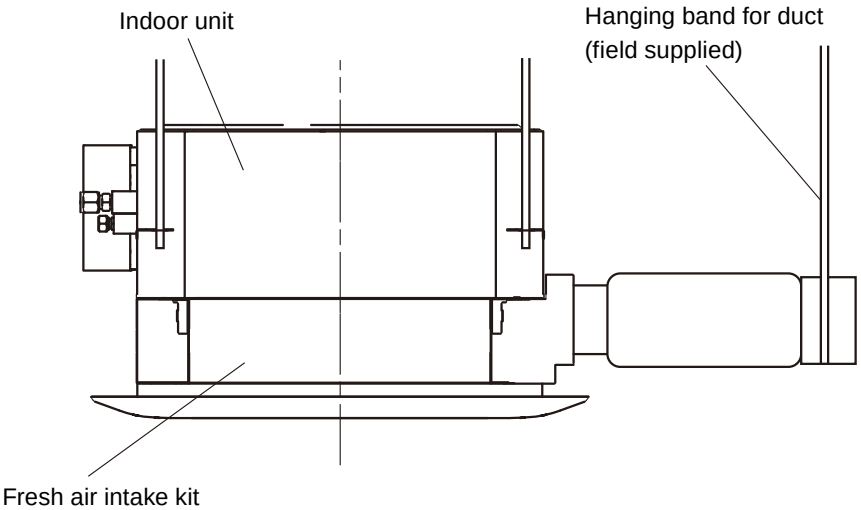
● Duct installation

- Please fasten the connecting parts of the ducts with band, and wrap with vinyl tape to ensure no air leaks. (Carry out the work to ensure no air leakage at a pressure of 200 Pa)
- Please do not construct the duct in the manner of below.

○Extreme Bends
○Highly Repetitive Bends
○Making the Connecting Duct Diameters Smaller

Completion figure



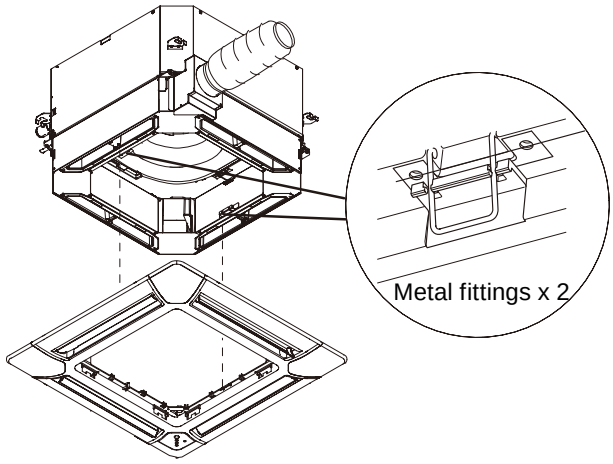


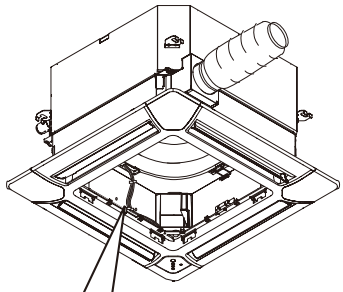
When wiring of the duct fan is required please refer to "■FRESH AIR CONTROL OUTPUT".

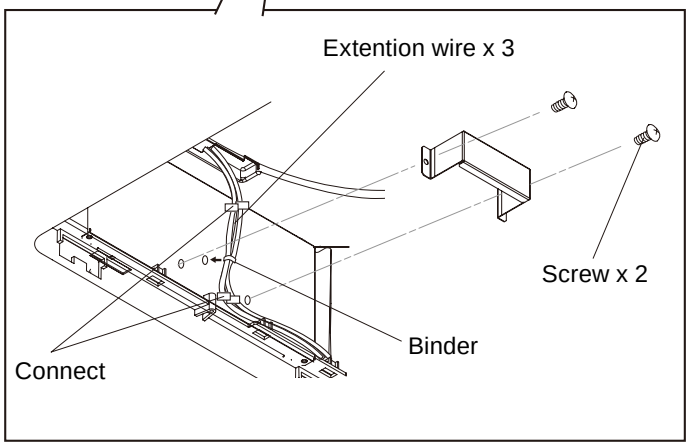
SYSTEM DESIGN

● Installation of decoration panel

1) Please connect extension wires for use with louvers, or extension wire for optical receiver after provisional attaching of the decoration panel.
2) Tie the wires together with the fasteners provided and insert into the hole of the Fresh Air Intake Kit.
3) Install the wire-cover provided on the Fresh Air Intake Kit.
4) Please install decoration panel according to the installation instruction sheet provided.





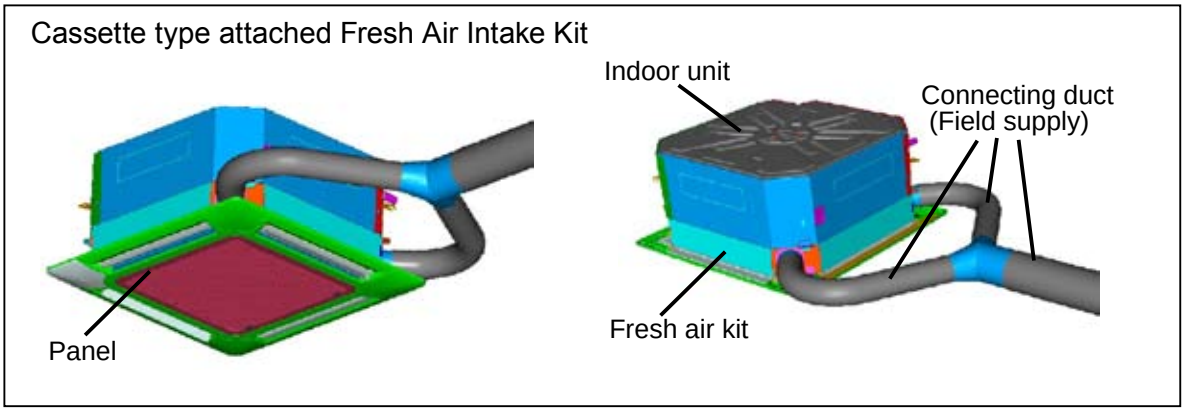


SYSTEM DESIGN

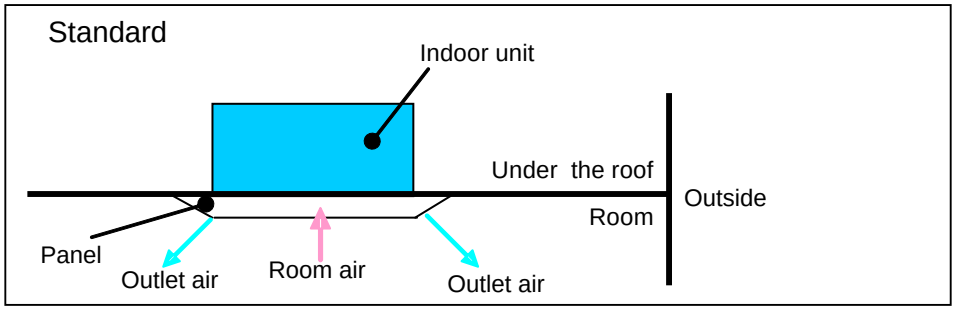
10-3. FRESH AIR INTAKE KIT (MODEL : UTZ-VXGA)

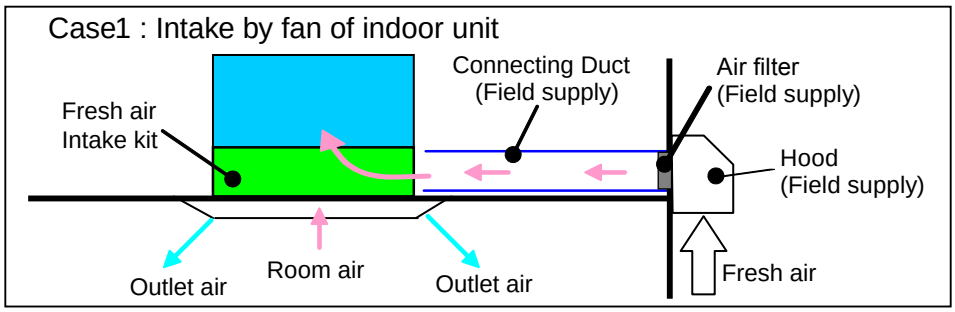
■ FEATURE

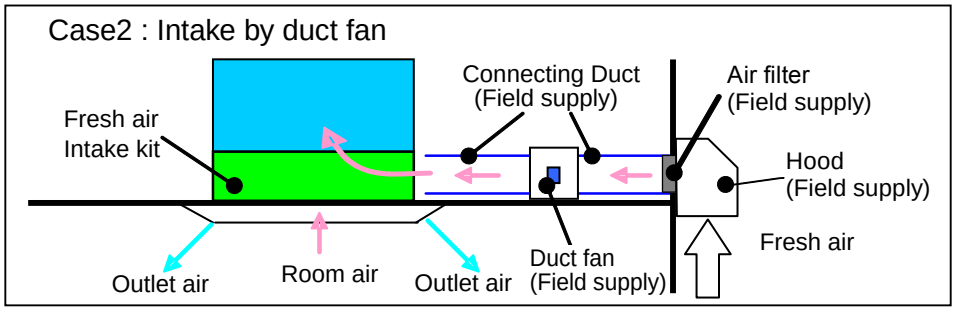
• It can be taken in fresh air of up to 10% of “high” air volume of the indoor unit by attaching Fresh Air Intake Kit to cassette type indoor unit.



■ INSTALLATION EXAMPLE







SYSTEM DESIGN

■ SPECIFICATIONS

Model name				UTZ-VXGA
Fresh air intake	Max. fresh air intake volume	% (for High)	2- way intake	10
			1- way intake	5
Connection duct type		mm (inch)	ø 100 (3-15/16)	
		Pcs	2	
Dimension (HxWxD)	Net	mm (inch)	120 x 840 x 840 (4-23/32 x 33-1/16 x 33-1/16)	
	Gross		165 x 860 x 860 (6-1/2 x 33-27/32 x 33-27/32)	
Weight	Net	kg (lb.)	5.5 (12)	
	Gross		9.0 (20)	

SYSTEM DESIGN

■ PRECAUTION

● About fresh air intake kit

- The Fresh Air Intake Kit can be installed onto cassette type air conditioners.
- The volume of ventilated air provided by the Fresh Air Intake Kit may be unable to fulfill ventilation regulations in all countries.

  On such occasions we ask that this kit be used along with Energy recovery ventilators.
- When intaking outside air please ensure correct air-conditioning design as based on air-conditioning load calculations.

  As outside air is not being processed an increase in outside air load can affect air conditioning.

● Installation location

- Area that generate substances that adversely affect the equipment, such as sulfuric gas,chlorine gas,add,or alkali it will cause the copper pipes and brazed joints to corrode,which can cause refrigerant leakage.
- Area with high salt content,such as at the seaside. It will deteriorate metal parts, causing the parts to fall or the unit to leak water.
- Be certain to use electric dampers and shutters to avoid infiltration of cold air, wind and fog during shutdown in areas with cold climates, strong winds, or where fogs are common.
- Please ensure the product is installed a distance of at least three times the duct diameter away from exterior wall air inlets, or air exhausts for the prevention of short circuits.

● Temperature conditions

- Condensation may form on the product when outside air temperature is low, and the temperature and humidity surrounding the product are high. Don't intake the air of below 0°C into the fresh air intake kit.
- The upper limit of the product's temperature range should respond to the outdoor temperature range.

● About duct fan

- When installing the duct fan, connect the drive relay (field supplied) and operate with the indoor unit.
- Please ensure the intake air volume is below 10% of the product's air volume HI. When the intaken air volume becomes too large there the operating noise may increase and room temperature detection may be affected.

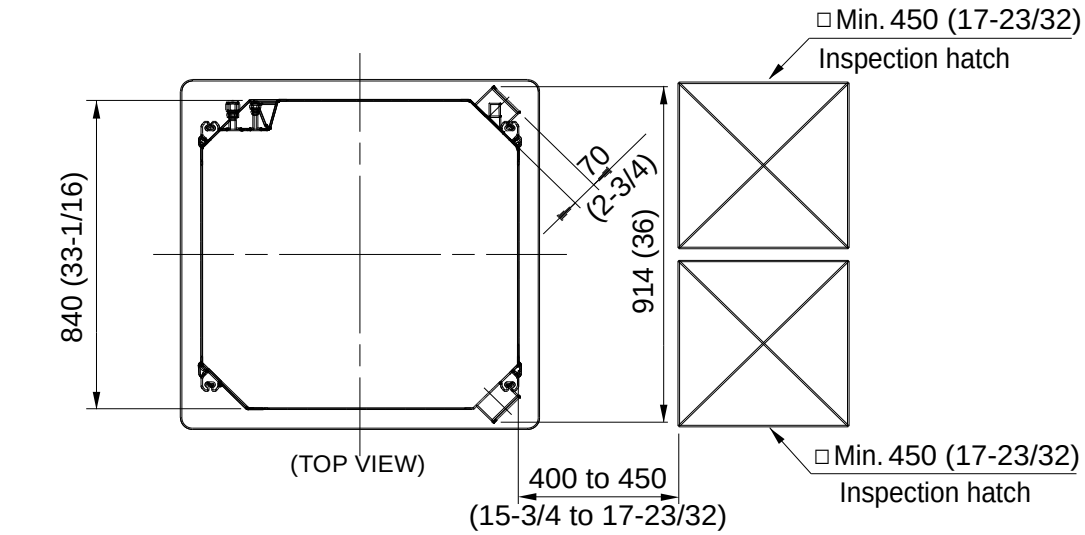
● About the duct connection

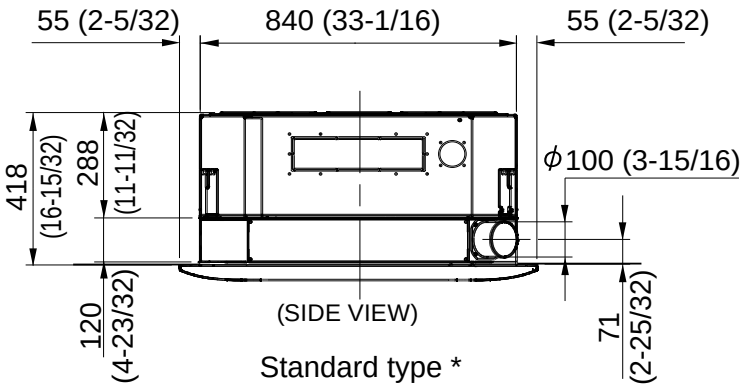
- Procure a duct with internal diameter that fits the external diameter of the duct flange.
- Please note that regulations of some countries may require the use of a nonflammable duct.
- If the duct penetrates a fire-retarding division or other fire-proofing measures, the installation of fire dampers, or a construction that does not adversely affect fire control measures is a regulatory requirement of some countries.
- When using metallic ducts please ensure metals (i.e., metal lath, wire lath, stainless sheeting) are electrically insulated. (A short occurring by electrical connection can cause fire)
- Please ensure to thermally insulate connected ducts to prevent condensation.
- Please make certain that netting or other measures are installed in parts exposed to the outside air to prevent infiltration of small animals such as birds and insects.
- Please be certain to install external air filters to parts exposed to the outside air for heat exchanger protection of indoor equipment.
- Please avoid the infiltration of rain water by installing outside ducts with an incline of at least 1/30, and fitting hoods on openings.

SYSTEM DESIGN

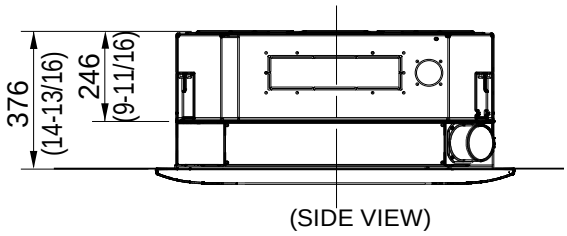
■ DIMENSIONS

Unit : mm (inch)





Standard type *



Slim type *

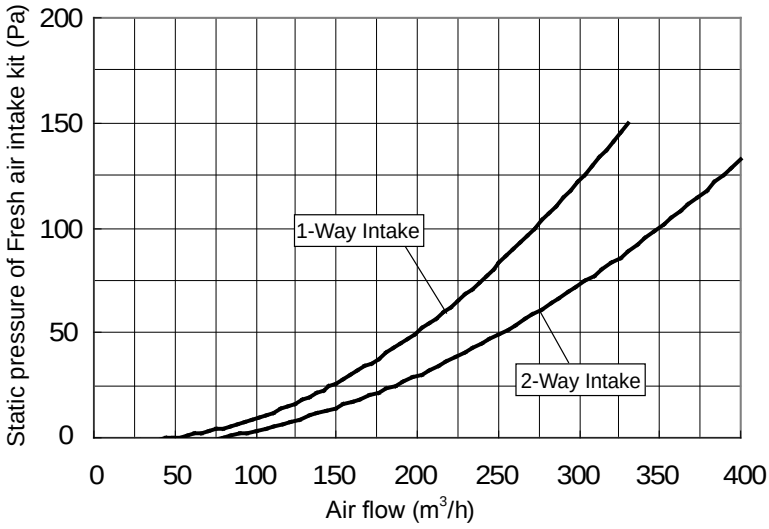
* : The size is different according to indoor unit used.

- When installing this kit, inspection hatch is necessary. (It is necessary when servicing.) Either one of inspection hatches must be installed.

SYSTEM DESIGN

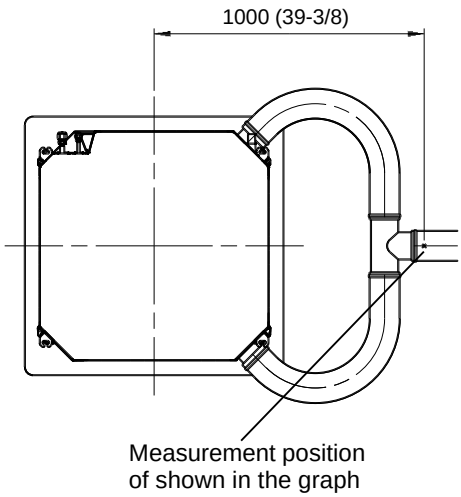
SYSTEM DESIGN

■ AIR FLOW

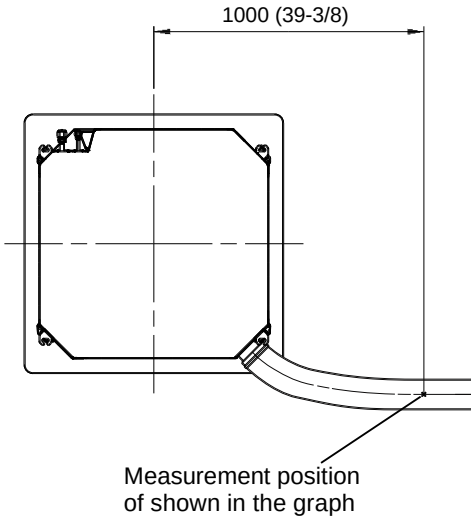


Unit:mm (inch)

for 2-Way Intake



for 1-Way Intake



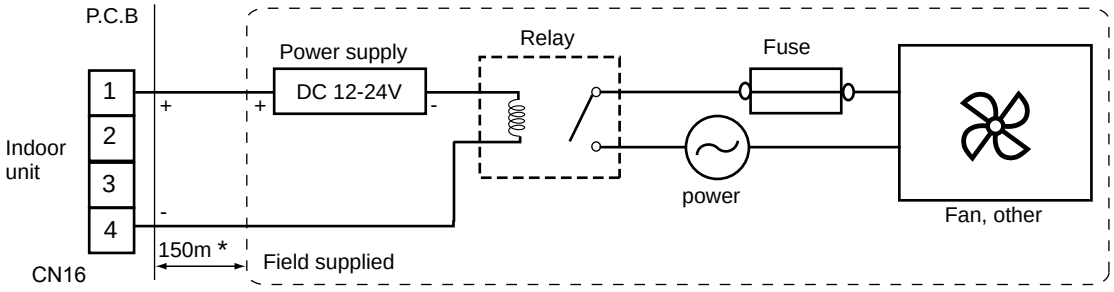
SYSTEM DESIGN

■ FRESH AIR CONTROL OUTPUT

- You can control duct fan by synchronization with fan operation of indoor unit.
- Wire for fresh air control output is supplied with Fresh Air Intake Kit.
- Extended length of the wire : Max. 150m

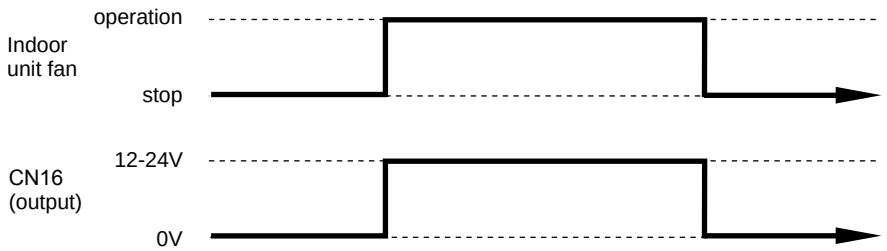
● Connection diagram

- For Relay Output voltage : DC12 - 24V
  Permissible current : 30mA

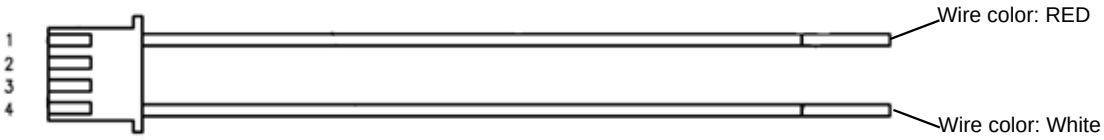


* : Make the distance from the PC board to the Relay Unit within 150 m

● Indoor unit status



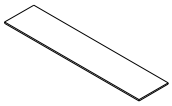
● Wire (External output ②)



SYSTEM DESIGN

■ ACCESSORY PARTS

Name and shape	Q'ty	Application
Installation manual 	1	
Duct Flange 	2	Air joint for connecting duct
Cover 	2	Protective cover to prevent surface condensation
Screw 	16	For Attaching duct flange For Attaching Cover
Hook plate 	4	Plate for attaching panel
Shutter plate 	1	Shutter plate for 1-way intake
Insulation ① 	2	Affixing the insulation outside of the kit
Insulation ② 	1	Affixing the insulation to tube of drain pump for prevent condensation

Name and shape	Q'ty	Application
Insulation ③ 	3	Affixing the insulation outside of the kit
Insulation ④ 	4	Affixing the insulation outside of the cover
Binder 	1	Fixing tube of drain pump
Extension wire for louver 	2	Extension wire for louver
Extension wire for receiver kit 	1	Extension wire for receiver kit
Wire (External output ①) 	1	For connect indoor unit to relay of duct fan
Wire (External output ②) 	1	For connect indoor unit to relay of duct fan
Bolt 	4	For attaching the kit to indoor unit

SYSTEM DESIGN

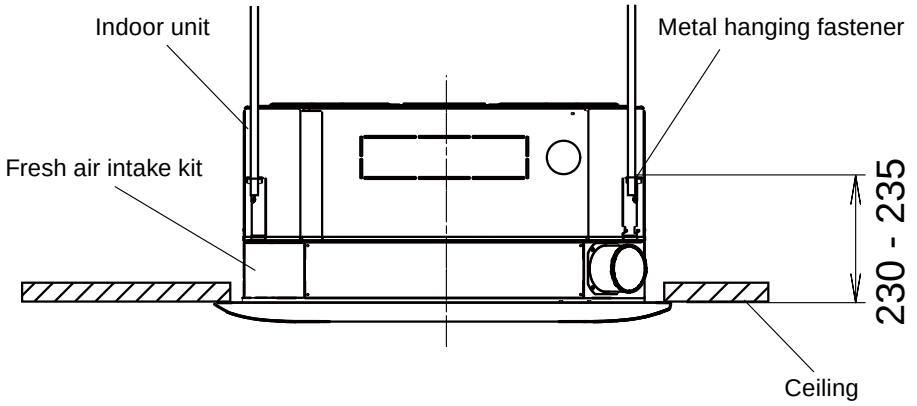
SYSTEM DESIGN

■ INSTALLATION

● Mounting of indoor unit

- Please refer to the installation manual provided with the indoor unit for mounting.
- Please refer to the diagram below for installation height.
- When installing this product to existing indoor units, please adjust the installation height of the indoor units to height 230-235mm.

(Unit : mm)

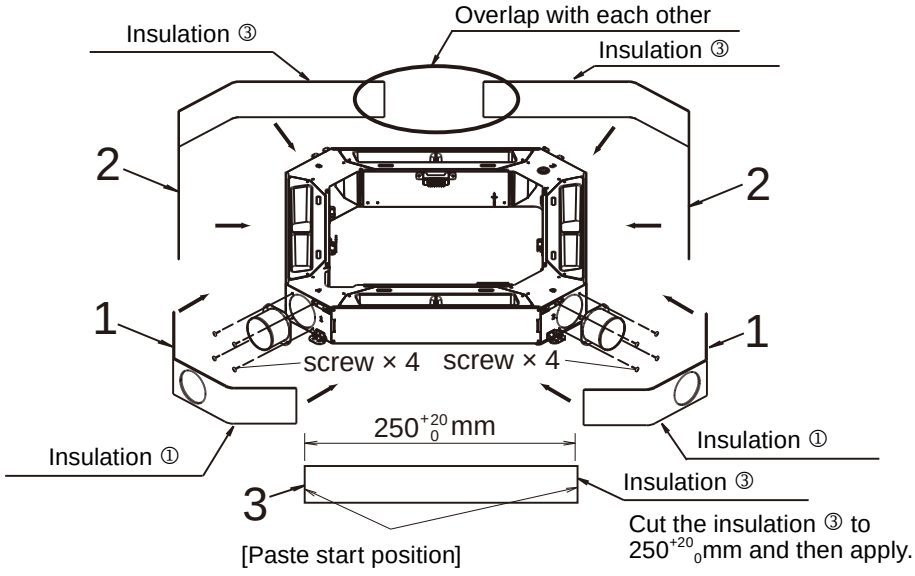


● Pre-installation preparations

- Please attach the duct flange provided with screws.
- The Fresh Air Intake Kit can be used with an external air intake on just one side. Use included sealed plate to apply for different eye holes.
- Please apply Insulation ① to the installed duct flange parts (Do not apply to sealed areas).

[When taking in the air in two sides]

Please paste the insulation in the order shown in the figure below.

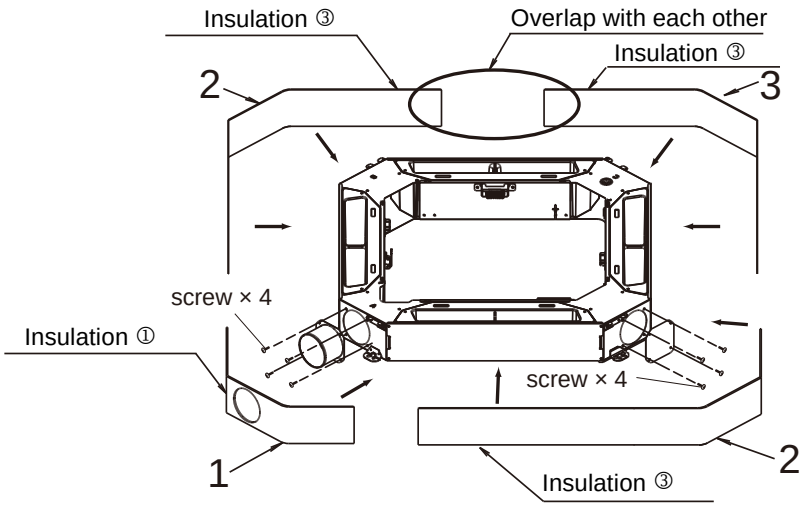


When pasting, make sure that there is no gap between the INSULATION ② (overlap is allowed)

SYSTEM DESIGN

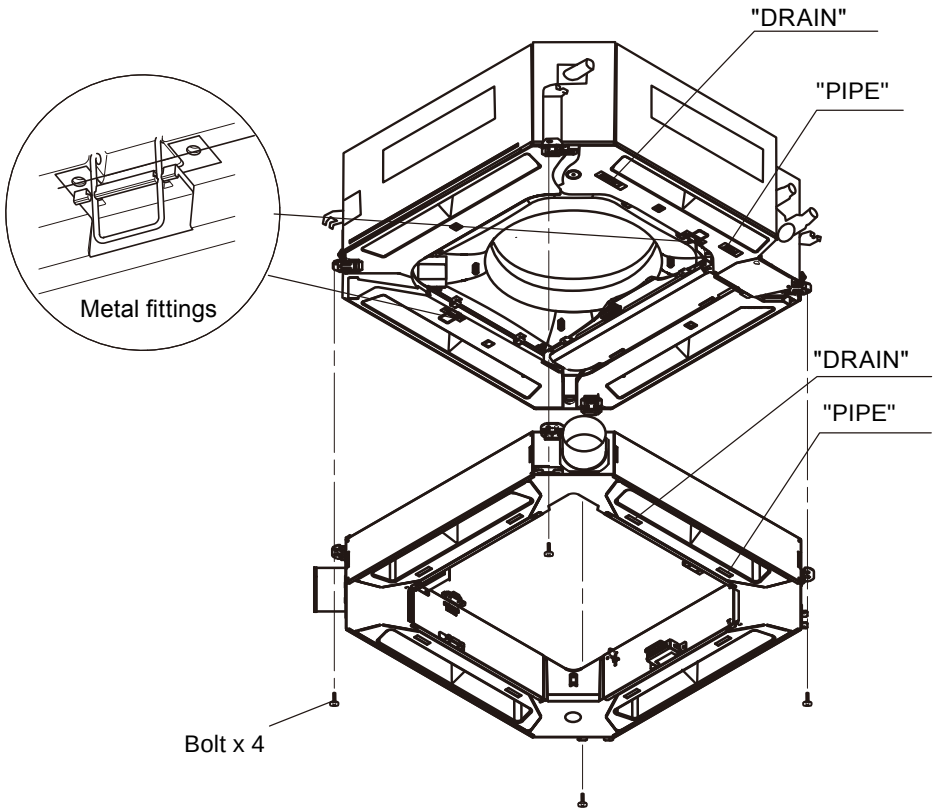
[When taking in the air in one side]

Please paste the insulation in the order shown in the figure below.



● Attaching the Fresh Air Intake Kit

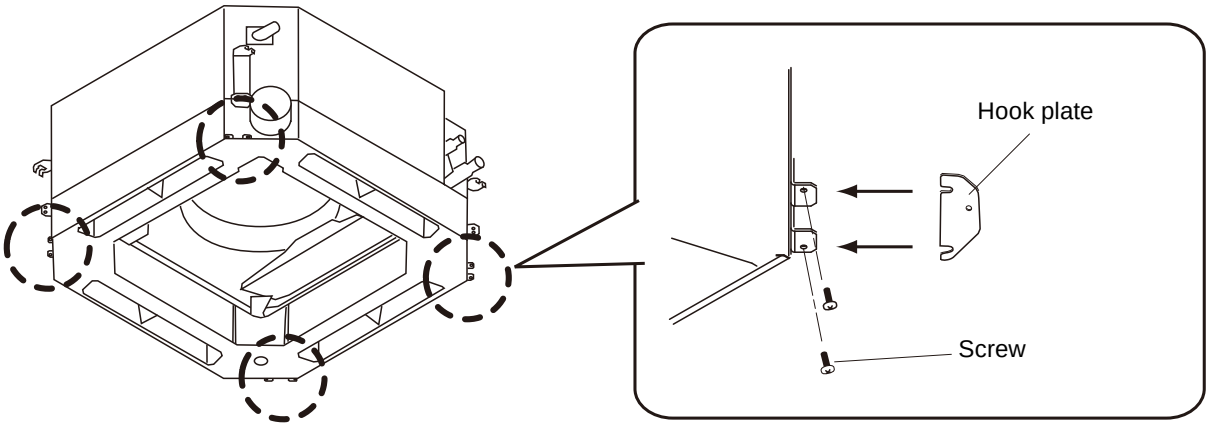
Attach the Fresh Air Intake Kit to the main body using the bolts provided.



SYSTEM DESIGN

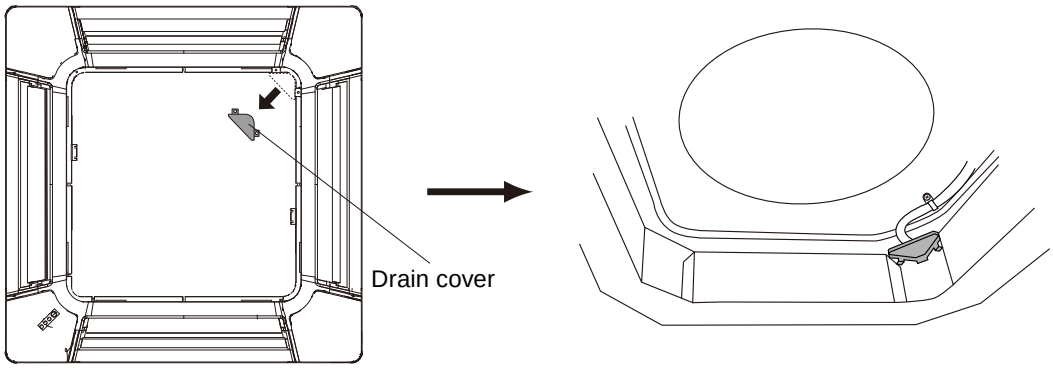
● Attaching the Hook Plate

Attach the Hook Plate by each corner of the Fresh Air Intake Kit.
(The attaching screws are attached to the body of the Fresh Air Intake Kit and must be loosened before installing)

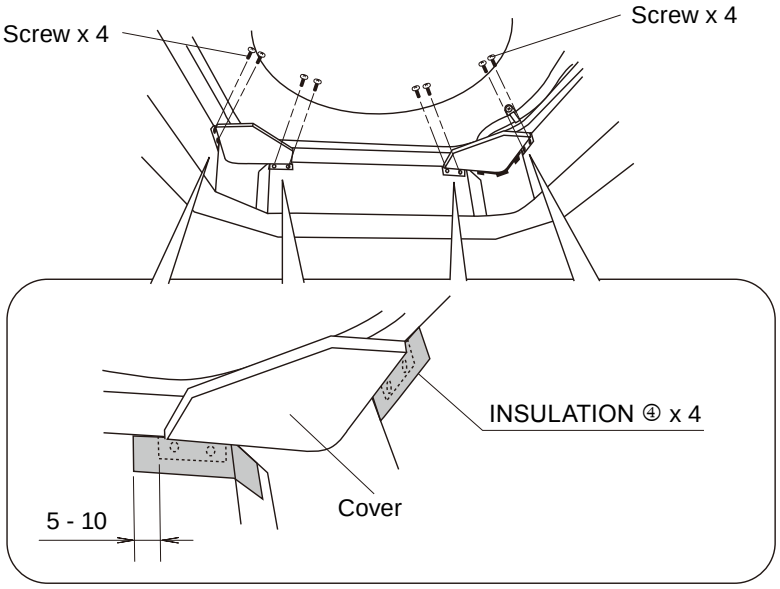


● Cover installation

1) Remove the drain cover attached to the decorative panel and install onto the Fresh Air Intake Kit.



2) Set the cover in position with screws(2 places) as shown in the diagram. Apply the INSULATION ④ after installing the cover.



SYSTEM DESIGN

● Duct installation

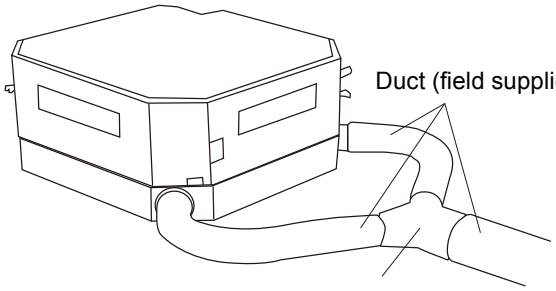
1) Please fasten the connecting parts of the ducts with bands, and wrap with vinyl tape to ensure no air leaks.
   (Carry out the work to ensure no air leakage at a pressure of 200 Pa)

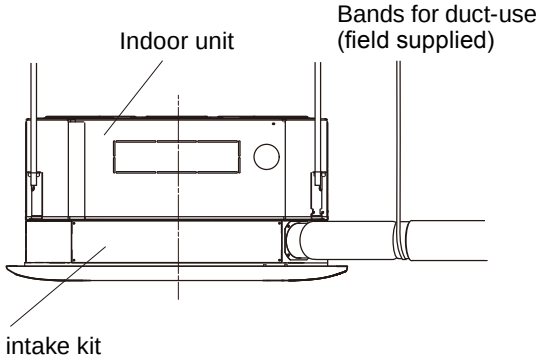
- Please do not construct the duct in the manner of below.

○Extreme Bends
○Highly Repetitive Bends
○Making the Connecting Duct Diameters Smaller

2) When using T-shaped pipe, suspend the kit with suspension bands for duct-use to avoid unnecessary load bearing.

[Completion figure]

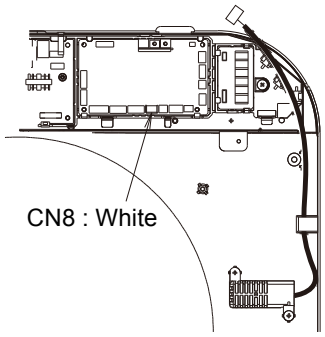




When wiring of the duct fan is required please refer to "■FRESH AIR CONTROL OUTPUT".

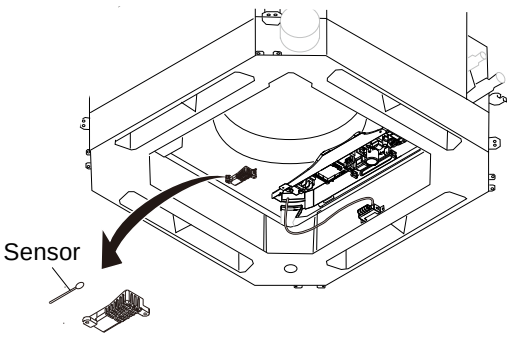
● Pre-installation (Decoration panel) preparations

1) Please remove the control box cover.
2) Remove the connecter from the existing temperature sensor, found on the circuit board of the indoor unit.



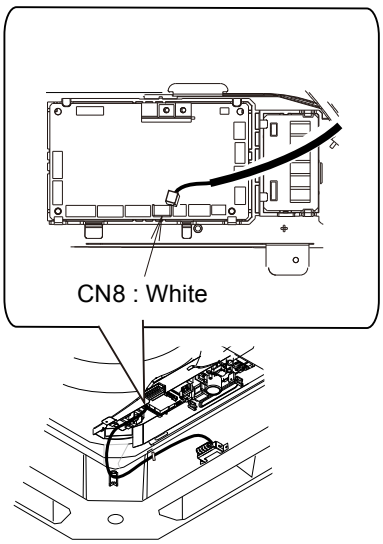
3) The existing temperature sensor will not be used so remove it from the sensor holder, and once more install the empty sensor holder (without sensor) in the control box.

⚠CAUTION
Please make sure to install the sensor holder inside the control box, as it is a fire hazard. Otherwise, it may cause fire.



SYSTEM DESIGN

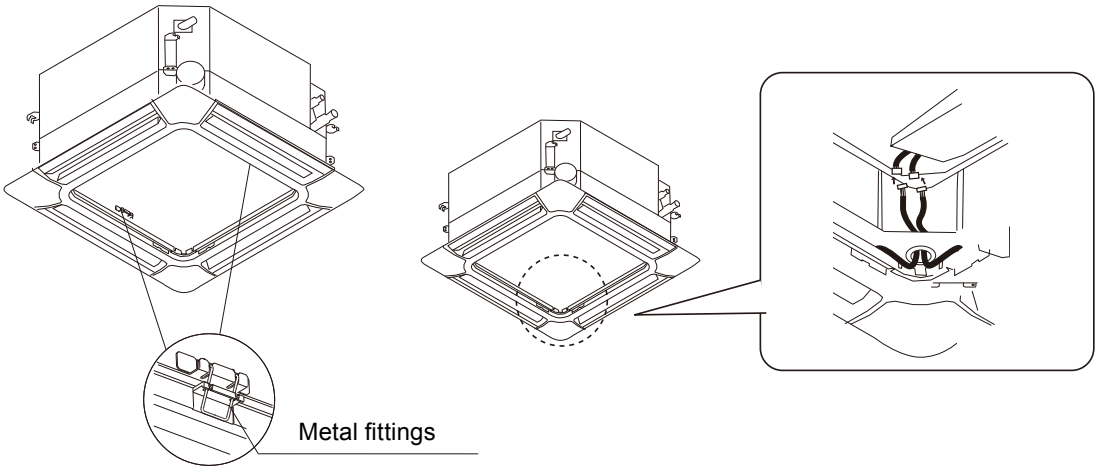
4) Insert the connector of the sensor attached to the Fresh Air Intake Kit onto the substrate board of the indoor unit.



5) Insert the included extension cable for use with louver to the connector.
6) When using the optical receiver unit (option) please insert the included extension wire to the indoor unit.
7) Close the control box cover when work is complete.

● Installation of decoration panel

1) After provisional fixing of a decoration panel, feed the louver extension wire (and optical receiver extension wire) through the penetrating hole.
2) Connect to the connector wires coming out of the decoration panel.
3) Please install decoration panel according to the installation instruction sheet provided.



SYSTEM DESIGN

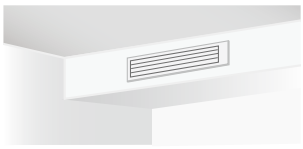
10-4. AUTO LOUVER GRILLE KIT

■ MODELS

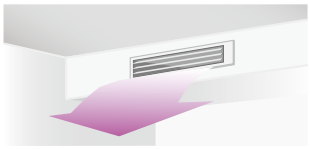
UTD-GXSA-W
UTD-GXSB-W
UTD-GXSC-W

■ FEATURE

Simple flat Auto Louver will provide comfort airflow and harmonize with luxury interior.



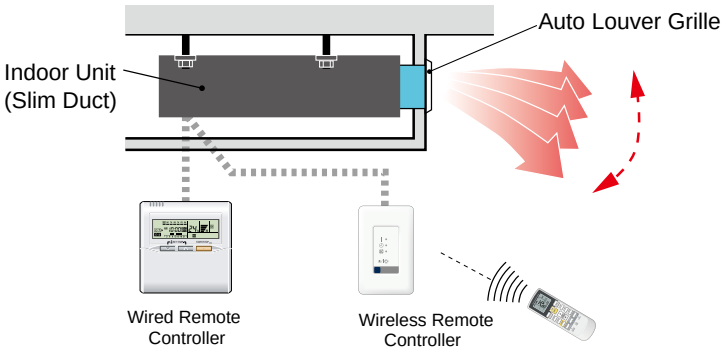
Closed louver
[Operation is stopped.]



Opened louver
[During operation]

SYSTEM DESIGN

● Flexible control



★*Operation with Indoor Unit*

Auto Louver can be operated by synchronizing remote controller of Indoor Unit.

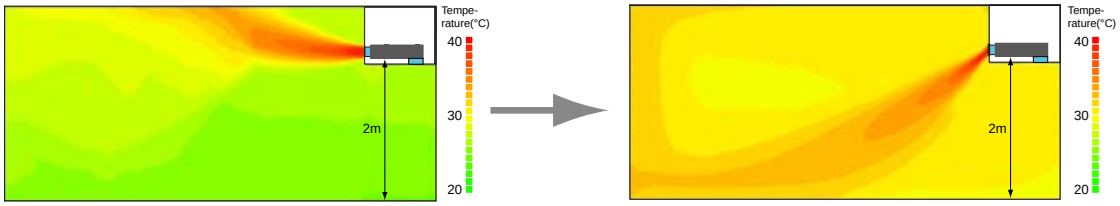
★*UP and Down auto swing*

- Auto airflow direction and auto swing
- 4 steps selectable

★*Auto-closing louver*

When operation of Indoor Unit is stopped, the louver will automatically close.

● Ideal warm airflow



Without Auto Louver

[Condition]
Model (Indoor unit): ARXD12LATH
Outdoor temperature: 2°C
Operation contents: Heating
Set temperature: 30°C
Air flow: Hi

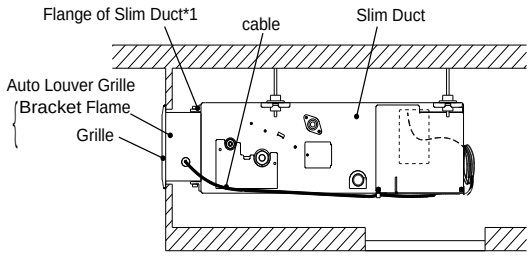
With Auto Louver

[Condition]
Model (Indoor unit): ARXD12LATH
Model (Auto louver grille): UTD-GXSA-W
Outdoor temperature: 2°C
Operation contents: Heating
Set temperature: 30°C
Air flow: Hi
Vertical flap: Downward

● Flexible installation

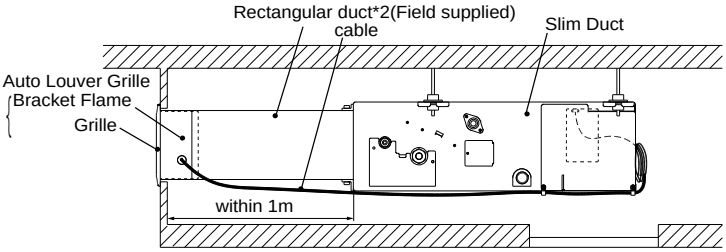
Auto Louver Grille can be connected either directly with indoor unit or through the rectangular duct.

(a) Direct connection to flange



*1 : Attachment is not necessary.

(b) Connection with rectangular duct



*2 : Length of connecting duct must be within 1m

SYSTEM DESIGN

SYSTEM DESIGN

■ SPECIFICATIONS

Model name			UTD-GXSA-W	UTD-GXSB-W	UTD-GXSC-W
Power Supply			Connecting with Control box of indoor unit		
Fixing of Auto Louver Grille			Screw fixing to Flange or Rectangular duct		
Extension Square Duct Limit			1.0m (Max. duct length between indoor unit and Grille)		
Net Dimension (H x W x D)		mm (inch)	180x683x(84+9) [7-3/32x26-7/8x(3-5/16+11/32)]	180x883x(84+9) [7-3/32x34-3/4x(3-5/16+11/32)]	180x1083x(84+9) [7-3/32x42-5/8x(3-5/16+11/32)]
Weight	Net	kg (lb.)	2.0 (4.4)	2.5 (5.6)	3.0 (6.7)
	Gross		3.0 (6.7)	3.5 (7.8)	4.0 (8.9)
Color			White		
Louver Motor			Stepping Motor		
Material			Flame retardant ABS		
Accessories			Fitting Flame, etc.		
Operation range	Cooling	°C (°F)	18 to 32 (64 to 90)		
		% RH	80% or less		
	Heating	°C (°F)	16 to 30 (60 to 88)		

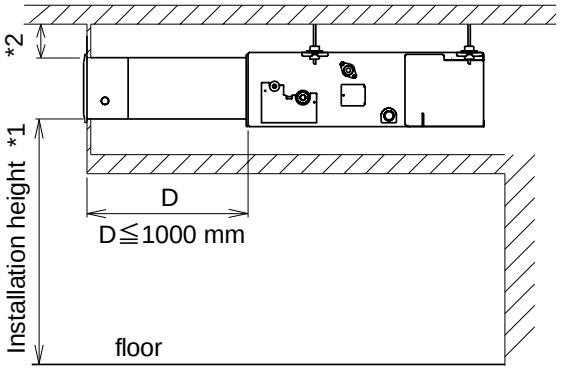
Note: Auto louver grille kit doesn't operate correctly when setting it to indoor unit other than revision code B.
Serial number became "X2XXXXX" from revision code B.

SYSTEM DESIGN

■ PRECAUTION

●Select the installation location that meets the following requirement and that is approved by the customer.

• Cold and warm air should reach the entire room.



*1) Refer to Design & Technical manual for Air velocity distribution and Air temperature distribution during heating.

*2) If the distance from the ceiling is not adequate, it may cause mildew stains on the wall or the ceiling. (Ensure to fix at least 150 mm away from any surface of the equipment.)

●Do not install the unit in the following areas

- The upper part of the vicinity of room entrance. It may cause condensation on the outlet port.
- Near a wall surface. It may cause condensation on the wall during cooling.
- Area filled with mineral oil or containing a large amount of splashed oil or steam, such as a kitchen.
- The place where it will be exposed to direct sunlight. Or else, it may cause a change in color.

●When the installation area is exposed to direct sunlight, take measures to block the light such as covering the grille surface with a sheet. Or else, it may cause a change in color.

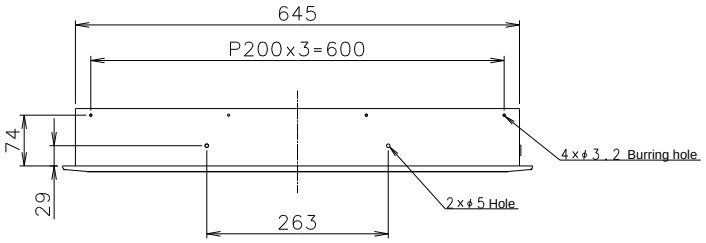
●Use an appropriate Grille that is compatible with the indoor unit. If not used with the correct combination, it may cause condensation.

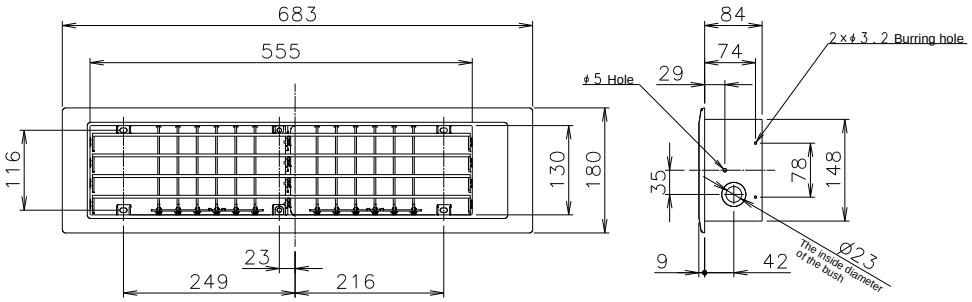
●Perform heat insulation and field setting according the Design & Technical manual of Indoor unit. Not installing as per the instructions may cause condensation.

SYSTEM DESIGN

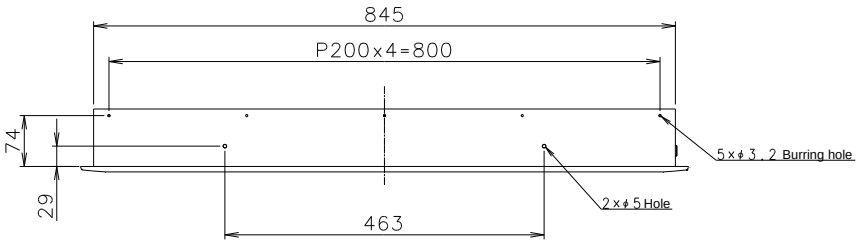
■ DIMENSIONS

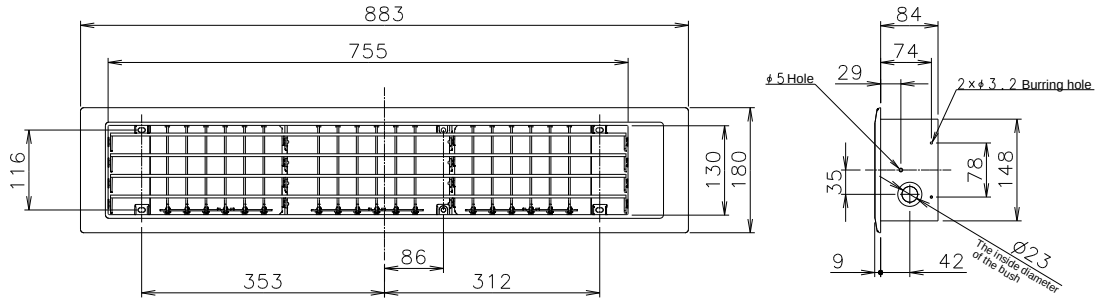
● MODEL : UTD-GXSA-W



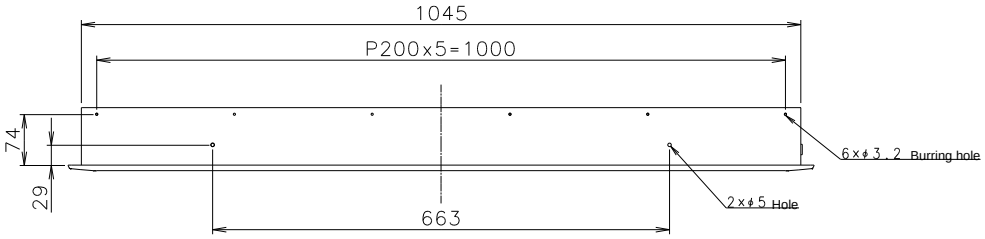


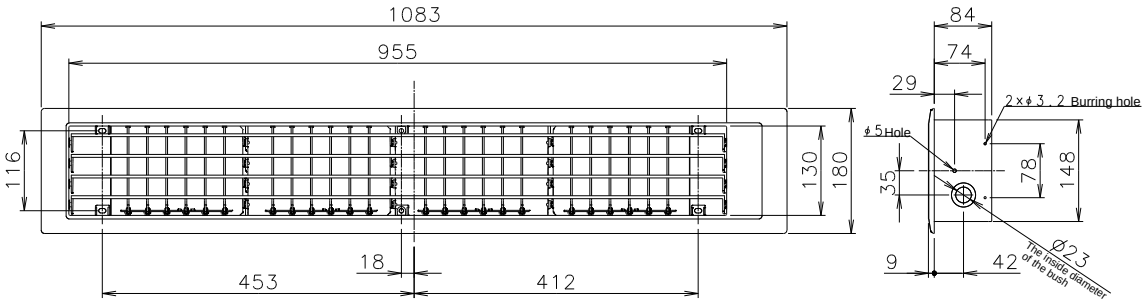
● MODEL : UTD-GXSB-W





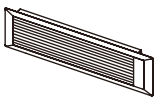
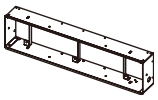
● MODEL : UTD-GXSC-W





SYSTEM DESIGN

■ ACCESSORY PARTS

Name and shape	Q'ty
Installation manual 	1
Operating manual 	1
Grille 	1
Bracket frame 	1

Name and shape	Q'ty
Screw-A 	16
Screw-B 	6
Cable clip 	2
Binder 	3
Bushing 	1

SYSTEM DESIGN

11. REFRIGERANT LEAKAGE CAUTION

The installer and system specialist shall secure safety against leakage according to regional regulations or standards. The following standards may be applicable if regional regulations are not available.

11-1. INTRODUCTION

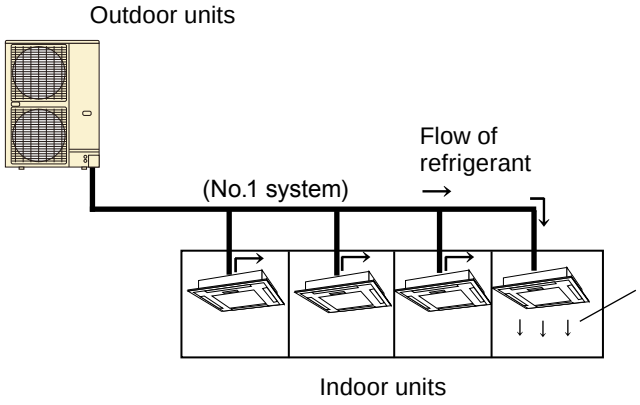
This air conditioners use R410A as refrigerant. Though R410A is harmless and incombustible in itself, the room in which the air conditioner is installed should be large enough that the refrigerant gas will not exceed the concentration limit even if the refrigerant gas leaks.

● Concentration limit

Concentration limit is the limit of Freon gas concentration where immediate measures can be taken without hurting the human body when refrigerant leaks in to the air.

The concentration limit shall be described in units of Kg/m^3 (Freon gas weight in per m^3 air) to facilite calculation.

Concentration limit : $0.3kg/m^3$



Room where refrigerant leaks (Refrigerant of the whole No.1 system flows out.)

SYSTEM DESIGN

11-2. CHECKING CONCENTRATION LIMIT

Check concentration limit following steps ①②, and take appropriate measures depending on the situation.

① Calculate amount of all replenished refrigerant (kg) per refrigerant system.

Amount of replenished refrigerant per refrigerant system	+	Amount of additional replenished refrigerant	=	Total amount of replenished refrigerant in refrigerant system (kg)

Amount of replenished refrigerant at factory shipment

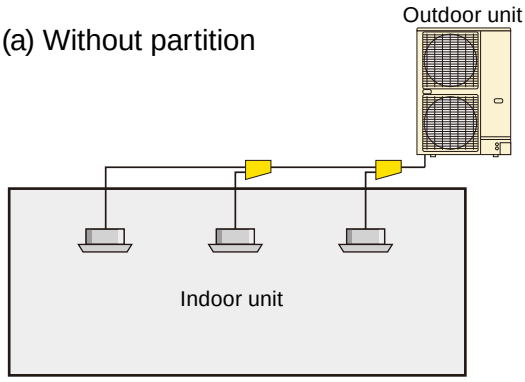
Amount of additionally replenished refrigerant depending on piping length , piping diameter and indoorunit model at customer.

Note : When one refrigerant system is divided into 2 or more refrigerant systems and each system is independent, total amount of replenished refrigerant of each system shall be adopted.

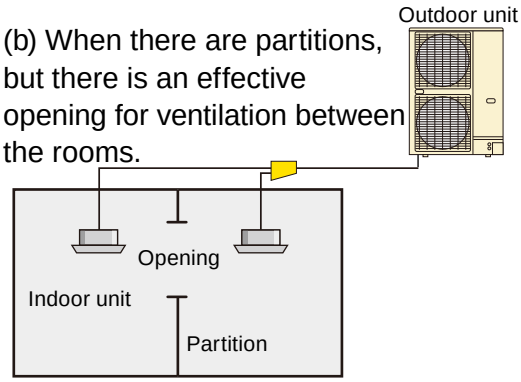
② Smallest room volume.

Calculate room volume by regarding ▭ portion as one room or the smallest room.

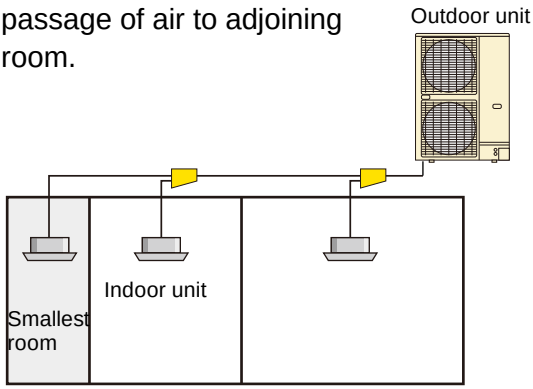
(a) Without partition



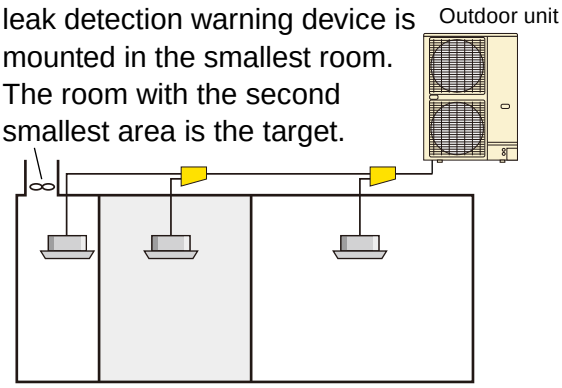
(b) When there are partitions, but there is an effective opening for ventilation between the rooms.



(c) With partition and without opening which serve as passage of air to adjoining room.



(d) When a mechanical ventilation device linked to a gas leak detection warning device is mounted in the smallest room. The room with the second smallest area is the target.



③ Calculate refrigerant concentration from the results of ① and ②

$$\frac{\text{Total amount of replenished refrigerant in refrigerant facility (kg)}}{\text{Capacity of smallest room where indoor unit is installed (m}^3\text{)}} \leq \text{Refrigerant concentration (kg/m}^3\text{)}$$

(R410A)

When the result of calculation exceeds the limiting concentration,perform the same calculations by shifting to the second smallest,and the third smallest rooms until the final result is below the limiting concentration.

SYSTEM DESIGN

When concentration limit is exceeded

When the concentration limit is exceeded,change the original plan or take one of the countermeasures shown below.

● Countermeasure 1

Provide opening for ventilation.

Provide 0.15% or more opening to floor space both above and below or provide opening without door.

● Countermeasure 2

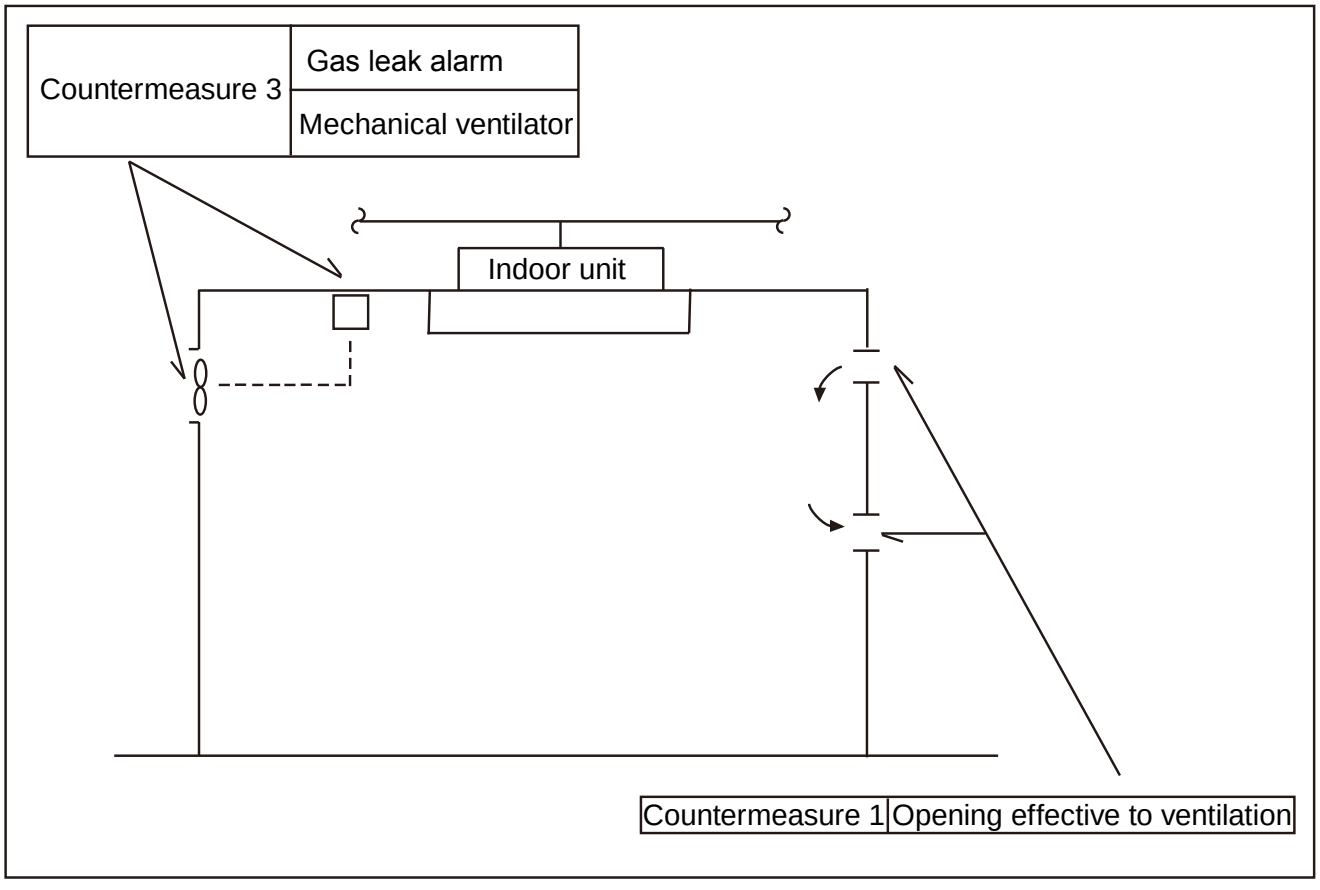
Reduce the total refrigerant charging amount of the refrigerant equipment

Shorten the length of the refrigerant pipes

Move the location of the outdoor unit closer to the indoor unit, and reduce the total refrigerant charging amount by shortening the length of the refrigerant pipes.

● Countermeasure 3

Provide gas leak alarm linked with mechanical ventilator.



Pay special attention to the place, such as a basement, etc. When refrigerant can accummalate, since refrigerant is heavier than air.

SYSTEM DESIGN

12. COMPATIBILITY OF VRF SYSTEM

■ COMPATIBILITY OF OUTDOOR UNIT AND INDOOR UNIT

● OUTDOOR UNIT AND INDOOR UNIT

Compatibility of outdoor unit and indoor unit in refrigerant system as follows.

			Indoor unit	
			J- II / V- II series	J series
Outdoor unit	J- II series	Heat Pump	○ *1 OK	× Not good
	V- II series	Heat Pump	○ OK	× Not good
	J series	Heat Pump Cooling Only	× Not good	○ OK

*1 : Following indoor units cannot be connected. (ARXC60 / 72 / 90LATH)

● Example cases for compatibility

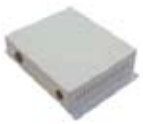
	Outdoor unit	Indoor unit	Judgement
Case 1	 J- II series	 J- II / V- II series	○ OK
Case 2		 J series	× Not good
Case 3	 V- II series	 J- II / V- II series	○ OK
Case 4		 J series	× Not good
Case 5	 J series	 J- II / V- II series	× Not good
Case 6		 J series	○ OK

SYSTEM DESIGN

■ COMPATIBILITY OF CONTROLLER SYSTEM

				Model	J- II series	V- II series	J series
Controller	Central Controller	System Controller		UTY-APGX	○ OK	○ OK	× Not good
		Touch Panel Controller		UTY-DTG∗	○ OK	○ OK	× Not good
		Central Remote Controller		UTY-DCG∗	○ OK	○ OK	× Not good
		Group Remote Controller		UTY-CGG∗	○ OK	○ OK	× Not good
	Individual Controller	Wired Remote Controller		UTY-RNK∗	○ OK	○ OK	× Not good
		Simple Remote Controller (with master control)		UTY-RSK∗	○ OK	○ OK	× Not good
		Simple Remote Controller (without master control)		UTY-RHK∗	○ OK	○ OK	× Not good
		Wireless Remote Controller		UTY-LNH∗	○ OK	○ OK	× Not good

SYSTEM DESIGN

			Model	J- II series	V- II series	J series
Adaptor / Convertor	External Switch Controller		UTY-TEKX	○ OK	○ OK	○ OK
	IR Receiver unit (for all Duct type)		UTB-∗WB UTB-∗WC	○ OK	○ OK	× Not good
	IR Receiver unit (for Cassette type)		UTY-LRH∗B1	○ OK	○ OK	× Not good
	Signal amplifier		UTY-VSGX	○ OK	○ OK	× Not good
	Network Convertor		UTY-VGGX	○ OK	○ OK	× Not good
	Network Convertor for LONWORKS®		UTY-VLGX	○ OK	○ OK	× Not good
	BACnet® Gateway		UTY-ABGX	○ OK	○ OK	× Not good
Service and Maintenance	Service Tool		UTY-ASGX	○ OK	○ OK	× Not good
	Web Monitoring Tool		UTY-AMGX	○ OK	○ OK	× Not good

SYSTEM DESIGN

13. INSTALLATION PRECAUTIONS

13-1. INDOOR UNIT INSTALLATION PRECAUTIONS

Note: The information listed below are general precautions. Some models also include items that do not apply.

■ PLACES WHERE USE PROHIBITED

- Places where there is the danger of combustible gas leakage.
- Places where sulfur gas, chlorine gas, acid, alkali, or other matter which effects equipment is generated
- Places where there is a lot of oil splash and steam (kitchen, machinery room, etc.)
- Places where machinery which generates high frequencies is used
- Ocean beaches and other areas where there is a lot of salt
- Places where carbon fibers and metal powder, powder, etc. suspended in the air
- Installation in vehicles, ships, and other conveyances
- Factory, etc. where voltage fluctuations are large

■ POINTS TO REMEMBER WHEN INSTALLING

1) The set shall be installed at a place which can withstand the weight and vibration of the indoor unit

2) To allow maintenance after refrigerant piping, drain piping, and electric wiring connection and installation, provide an installation service space and an inspection port, as required.

*Installation service space is shown on " chapter 4 4.DIMENSIONS ".

3) Be careful when installing the set at the following places.

[Installation precautions]

	Contents	Countermeasures (Reference)
When the ceiling is high	If the indoor unit is installed where the installation height given in the installation manual is exceeded, the temperature difference between the floor and ceiling of the room will be large and the heating effect will be poor. Moreover, even if the indoor unit is installed within the installation height, a similar phenomena will occur when installed in a room in which the doors are opened and closed frequently and hot air circulation is obstructed by desks, chairs, etc.	1) Switch the setting to the high ceiling mode. 2) Install a circulator. 3) Arrange the furniture in the room so that it does not obstruct the hot air.
When lower level directly contacts the outside air.	When the lower level of the shop and office is a warehouse, parking lot, etc., the surface temperature of the flooring will become low and the radiation of cold from the floor will increase. In this case, your feet will feel cold even if the room temperature is suitable.	
When the air flow distribution is poor	When an indoor unit is installed in a position where the outlet air flow will directly contact people, a draft may be felt. In addition, when there are obstructions in the path of the intake and outlet air flow, the air distribution may become extremely bad.	1) Adjust the louver fins or take other measures matched to the site. 2) Change the indoor unit outlet.

SYSTEM DESIGN

[Installation precautions]

	Contents	Countermeasures (Reference)
When inside the ceiling is high temperature and high humidity	When the indoor unit is installed where the inside of the ceiling is 30°C (86°F) RH80% or greater, the dew point temperature of the outer perimeter may become higher than the cabinet surface temperature and moisture will condense on the surface of the cabinet and water drops may fall inside the room. →Refer to Fig.A In addition, the humidity may vary considerably the same as when the inside of the ceiling is close to hermetically sealed and used as the outside air intake path.	1) Add heat insulating material to the outside of the indoor unit cabinet. *Regarding the cassette type, use of the “high humidity correspondence kit (option)” is recommended. 2) Strengthen the heat insulating material of the refrigerant piping and drain piping also →Refer to Fig.B 3) When the humidity inside the ceiling changes considerably, install a ventilation port

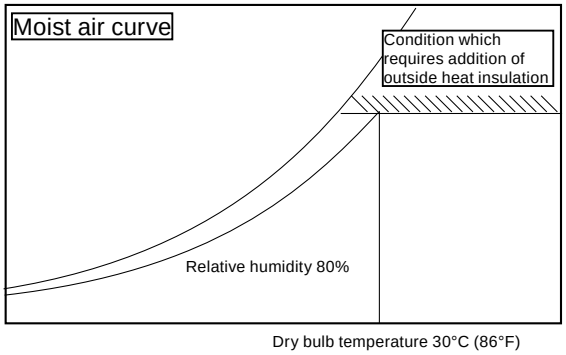


Fig.A

Work method when reinforcing the heat insulation of on-site piping

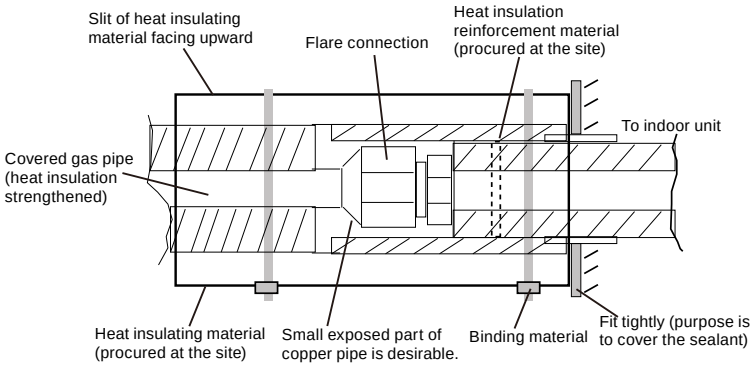


Fig.B

	Contents	Countermeasures (Reference)
When using an external duct	When using an external duct to take in new fresh air, etc., condensation may form on the surface of the duct due to the effect of the outside air temperature and the humidity inside the ceiling.	1) Always perform heat insulation processing. (Heat insulating material: Glass wool 25mm (31/32in) thick or more.)
When the remote controller installation site is bad	If the cold or warm air blown out from the air conditioner directly contacts the thermostat section of the remote controller, the outlet temperature of the air conditioner may be sensed and room temperature control will be different from the room temperature and “not cooled” or “not heated” or other trouble may occur. In addition, there is the possbility that the same kind of trouble may also occur when the remote controller is effected by direct sunlight.	1) Install the remote controller where it will not be directly exposed to the cold or hot air. 2) Install the remote controller where it will not be directly exposed to sunlight or strong lighting

SYSTEM DESIGN

[Installation precautions]

	Contents	Countermeasures (Reference)
When installation environment is quiet	When the wall mounting type was installed in a bedroom, living room, or other quiet place, the sound of the refrigerant flow may be sensed as noise and must be taken into accunt.	1) Plan installation of a model with external expansion valve. 2) Plan installation of a branch box farther from indoor unit. 3) Plan installation using another air conditioner.
When installing duct type in ceiling chamber system	In the case of the ceiling chamber system (duct is not installed at indoor unit inlet side and room air is sucked into the indoor unit through the inside of the ceiling), the thermistor inside the indoor unit may not correctly detect the room temperature. Heating operation: Room is not heated because the indoor unit is easily turned off by the thermostat. Cooling operation: Room is too cold because the indoor unit is difficult to turn off by the thermostat.	1) Replace the indoor unit thermistor with a Remote sensor unit (optional parts) and install the sensor where the room temperature can be correctly detected
When the outlet air is sucked in at duct type	Cooling operation does not cool the room and heating operation does not heat the room because the short circuited indoor unit is not turned on by the thermostat.	1) Reconsider the ventilation port construction 2) Replace the indoor unit thermistor with a Remote sensor unit (optional parts) and install the sensor where the room temperature can be correctly detected.
When using the wireless remote controller	Signals may not be received when using it in a room illuminated by an inverter fluorescent lamp.	1) Turn on the fluorescent lamp and check if the indoor unitreceives the signals from the remote controller. If the indoor unit does notreceive the signals, consult an authorized service personnel.
When installing the inverter type	It may generate noise in TV sets, stereos and PCs.	1) The inverter type should be installed at a sufficient distance from these equipments.

SYSTEM DESIGN

13-2. OUTDOOR UNIT INSTALLATION PRECAUTIONS

Note: The information listed below are general precautions. Some models also include items that do not apply.

■ PLACES WHERE USE PROHIBITED

- Places where there is the danger of combustible gas leakage
- Places where sulfur gas, chlorine gas, acid, alkali, or other matter which effects equipment is generated
- Places not affected by heat radiation from other heat sources
- Places where the air is not stagnant
- Places where machinery which generates high frequencies is used
- Ocean beaches and other areas where there is a lot of salt
- Installation in vehicles, ships, and other conveyances
- Factory, etc. where voltage fluctuations are large

■ POINTS TO REMEMBER WHEN INSTALLING

1) The set shall be installed at a place which can withstand the weight and vibration of the outdoor unit

2) To allow maintenance after refrigerant piping, drain piping, and electric wiring connection and installation, provide an installation service space.

*Installation service space is shown on "chapter3 3.INSTALLATION SPACE"

3) Be careful when installing the set at the following places.

[Installation precautions]

	Contents	Countermeasures (Reference)
When installed near adjacent houses	Perform installation work so that operating sound does not disturb the neighbors.	1) Install a soundproof barrier 2) Change the installation site
When there is the possibility of strong wind	1) If the outdoor unit is exposed to strong wind, capacity may drop, frost may form during heating, and operation may be stopped by high pressure rise. In addition, when a very strong wind blows, the fan may be damaged. 2) When a very strong wind blows, there is the possibility of the outdoor unit being toppled over if held only by foundation bolts	1) Install with the outlet side keep a sufficient distance away from a facing wall or fence. 2) Make the outlet direction and wind direction perpendicular. 3) Fasten the outdoor unit using toppling prevention hardware (procured at the site).
When snow accumulates	If the outdoor unit is covered by accumulated snow, it may not be able to operate.	1) Make the foundation as high as possible. 2) Perform snow prevention work.
When installing the inverter type	It may generate noise in TV sets, stereos and PCs.	1) The inverter type should beinstalled at a sufficient distance from these equipments.

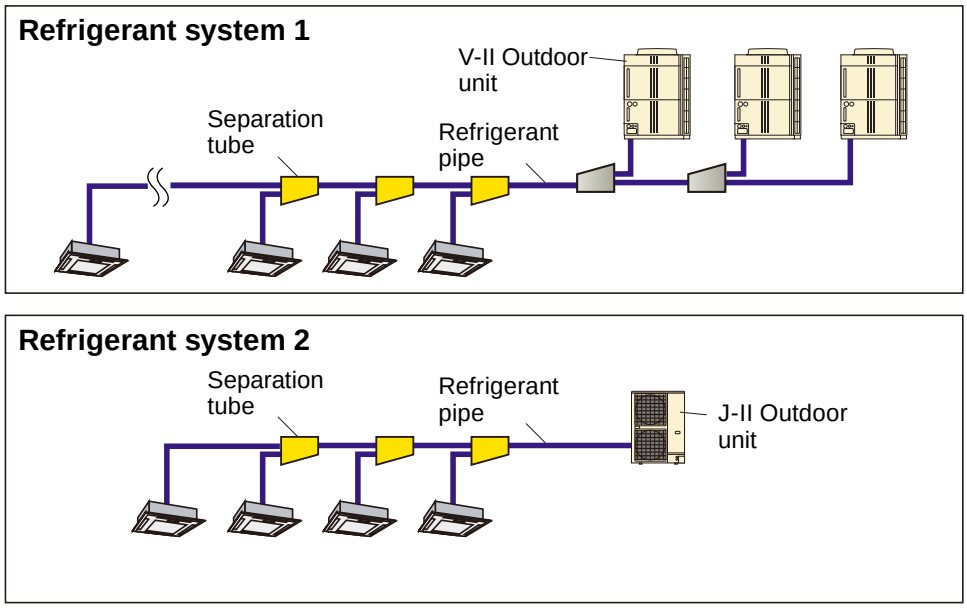
SYSTEM DESIGN

14. ABOUT CONNECTION WITH V-II SERIES

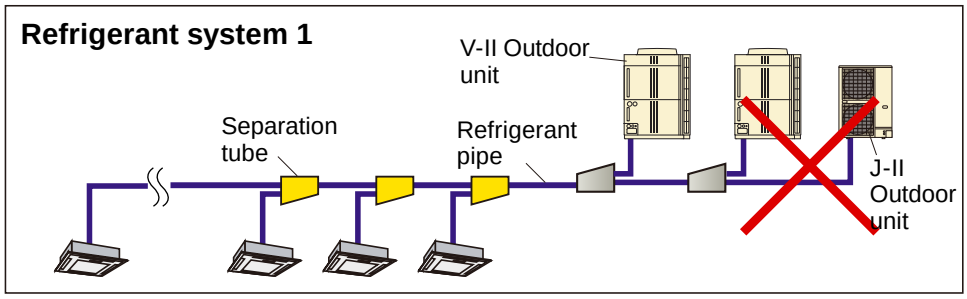
14-1. PIPING CONNECTION

Note: V-II and J-II cannot be connected by the piping in the same refrigerant system

■ EXAMPLE1 (OK)



■ EXAMPLE2 (Not good)



SYSTEM DESIGN

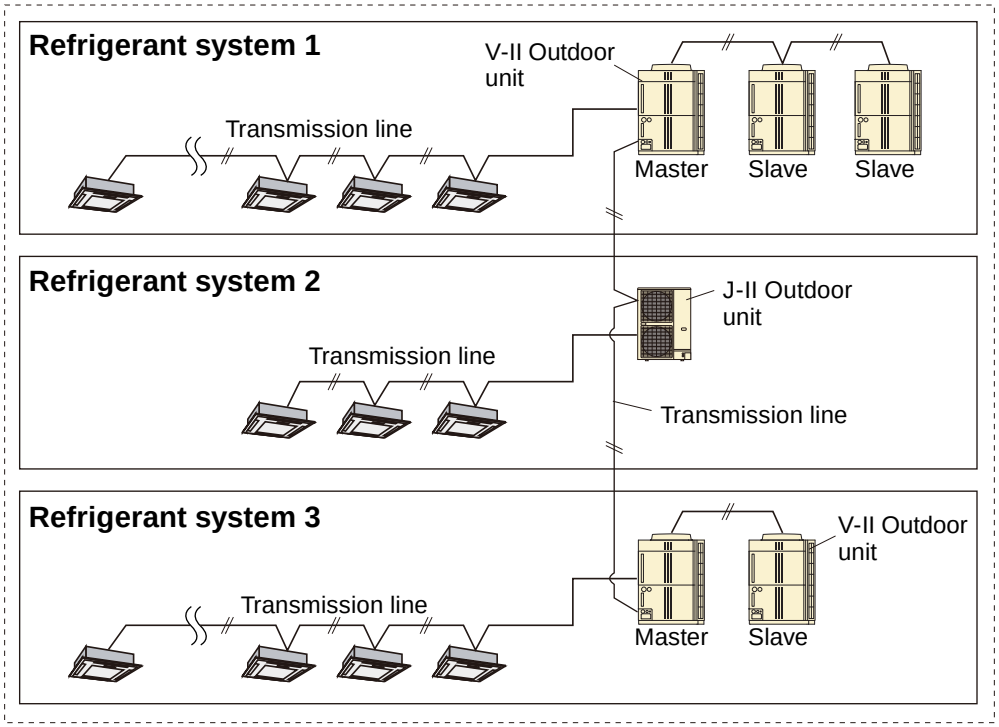
14-2. WIRING CONNECTION

Note: V-II and J-II can be connected by the wiring in the same VRF network system

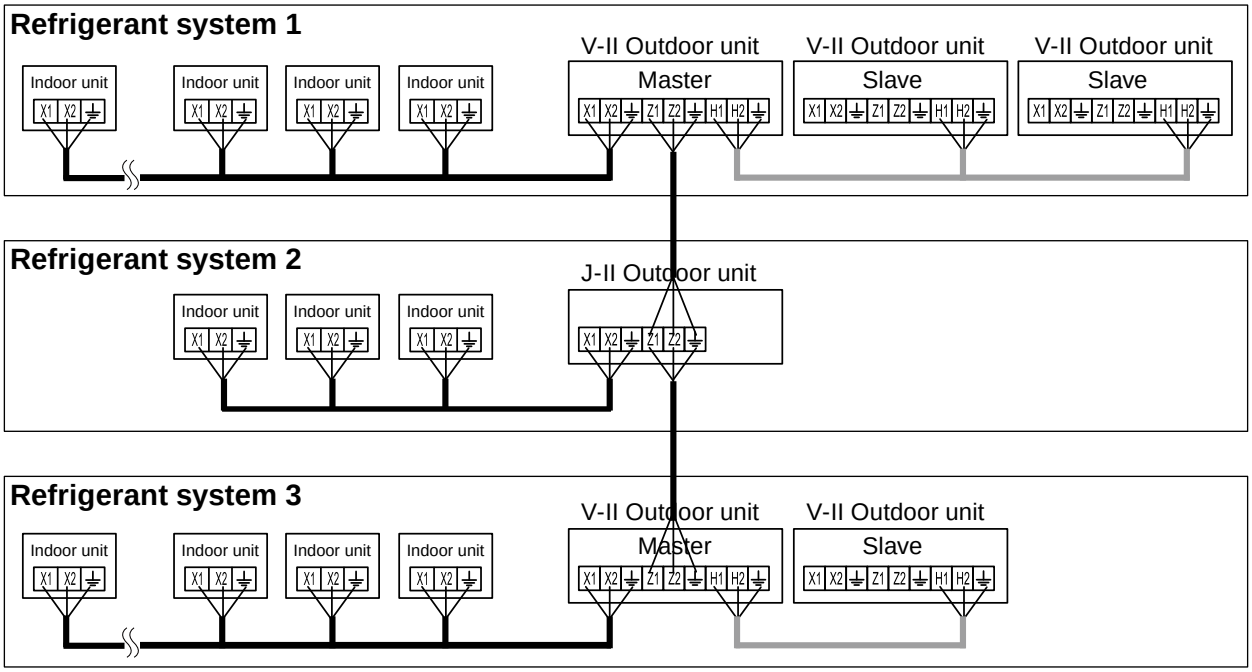
■ EXAMPLE1 (OK)

When wiring to each refrigerant system

VRF network system



● Connection method to terminal

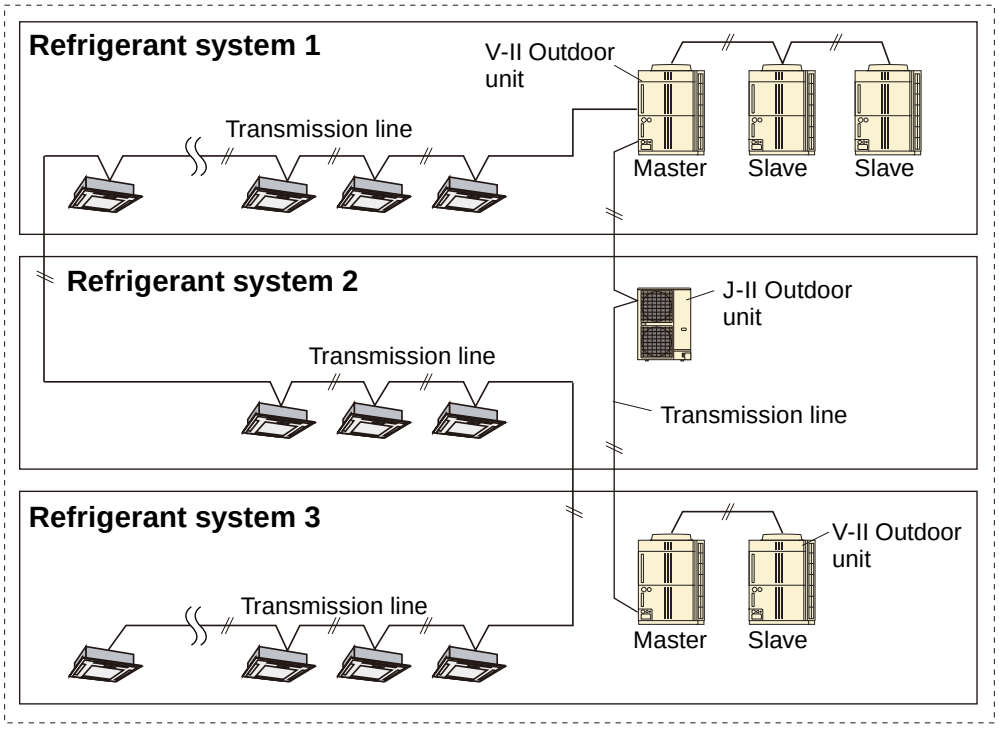


SYSTEM DESIGN

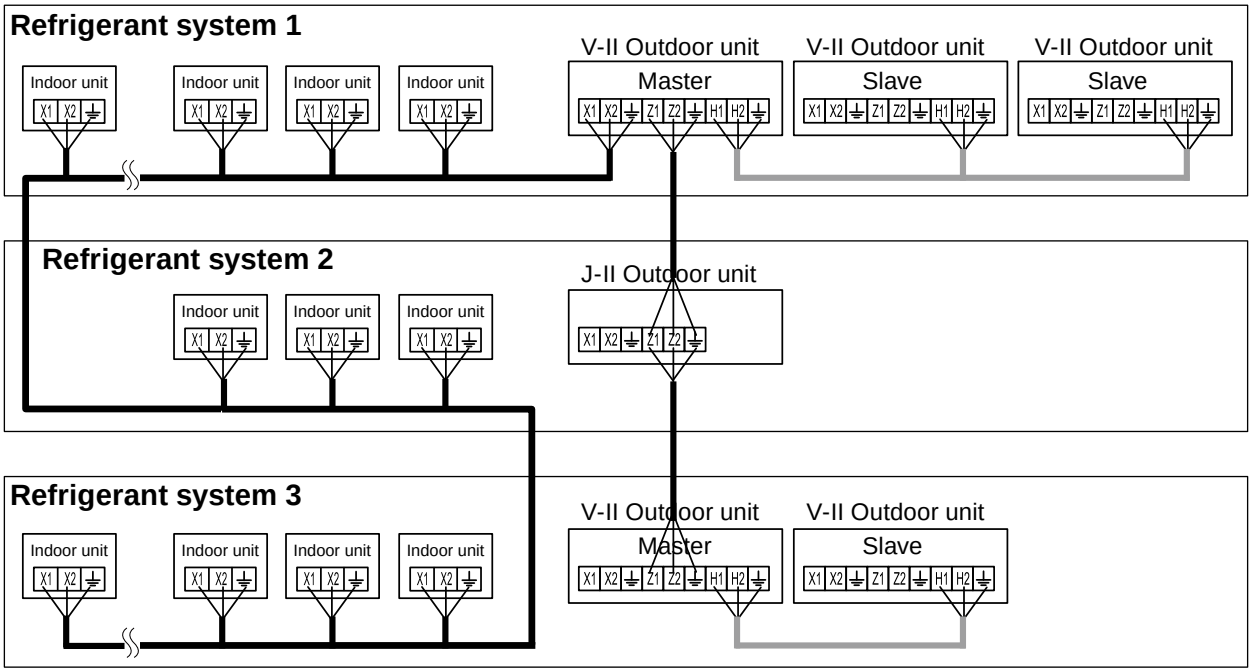
■ EXAMPLE2 (OK)

When stepping over, and wiring to the refrigerant system

VRF network system



● Connection method to terminal

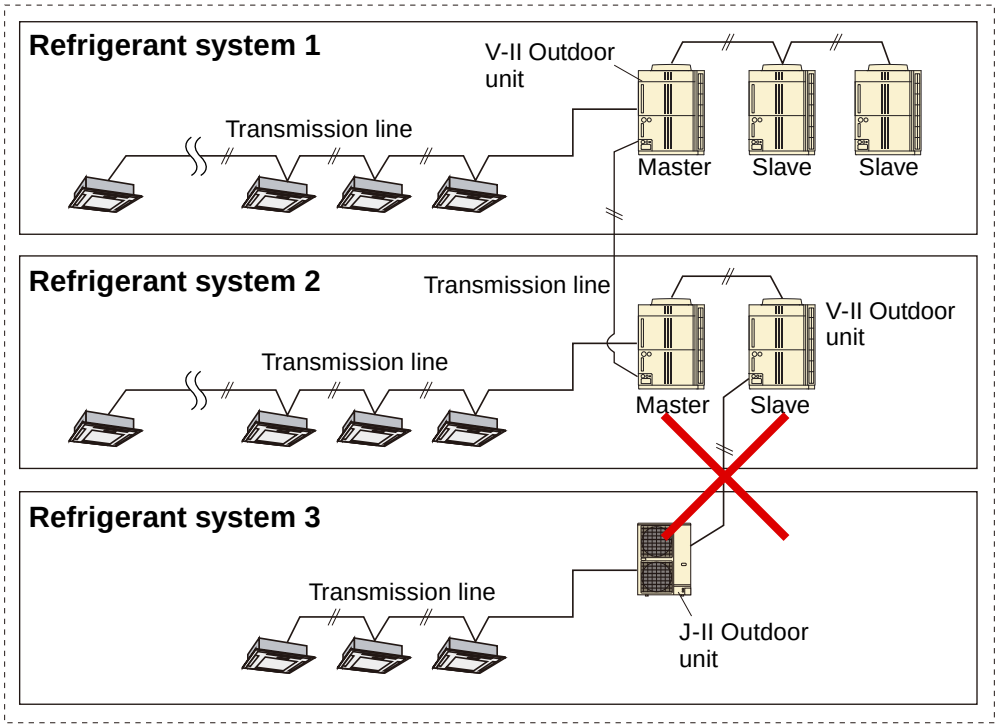


SYSTEM DESIGN

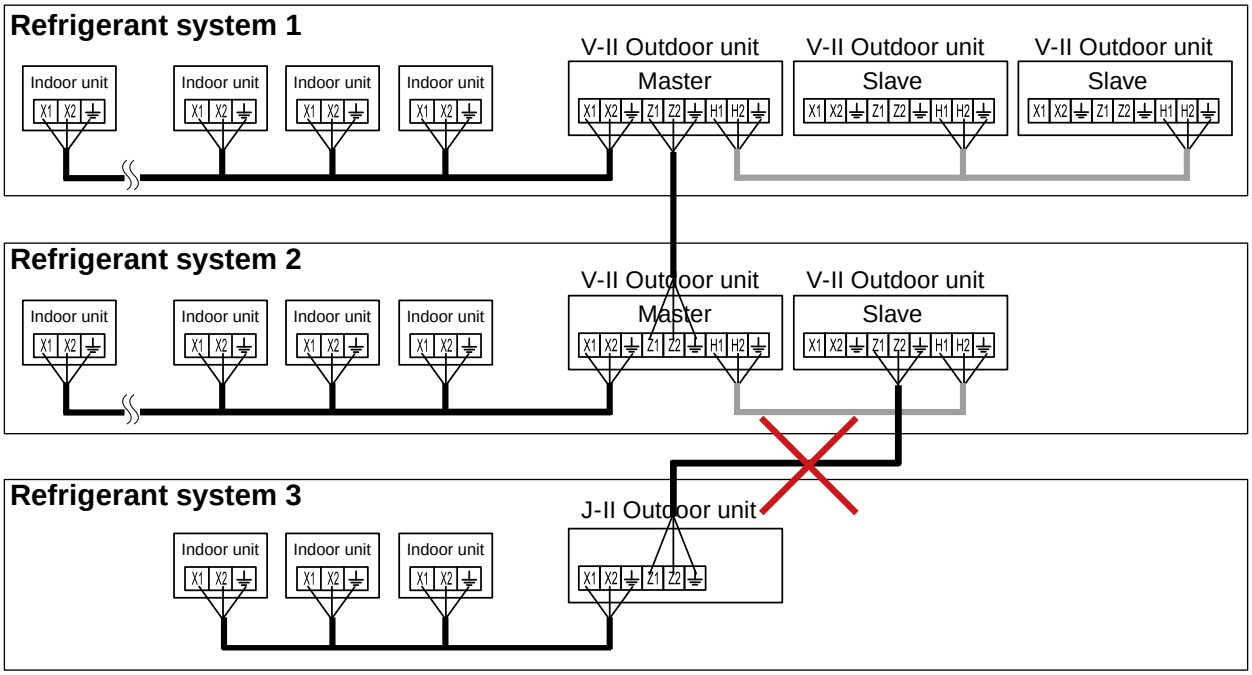
■ EXAMPLE3 (Not good)

Note: Slave unit of V-II and J-II cannot be connected

VRF network system



● Connection method to terminal



SYSTEM DESIGN