MITSUBISHI ELECTRIC

CITY MULTI

Air-Conditioners

PUMY-P200YKM3-ER

For use with the R410A

INSTALLATION MANUAL

FOR INSTALLER

For safe and correct use, read this manual and the indoor unit installation manual thoroughly before installing the air-conditioner unit.

English

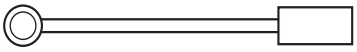
Contents

Note: This symbol mark is for related countries only.
This symbol mark is according to the directive 2012/19/EU Article 14 Information for users and Annex IX.
Your MITSUBISHI ELECTRIC product is designed and manufactured with high quality materials and components which can be recycled and reused.
This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.
Please, dispose of this equipment at your local community waste collection/recycling centre.
In the European Union there are separate collection systems for used electrical and electronic product.
Please, help us to conserve the environment we live in!

⚠ **Caution:**
- **Do not vent R410A into the atmosphere.**

Confirmation of parts attached

In addition to this manual, the following part is supplied with the outdoor unit.
It is used for grounding the S terminal of transmission terminal block TB7. For detail refer to “6. Electrical work”.



Grounding lead wire

1. Safety precautions

- **► Before installing the unit, make sure you read all the “Safety precautions”.**
- **► Please report to or take consent by the supply authority before connection to the system.**
- **► Equipment complying with IEC/EN 61000-3-12**
- **► It is designed for use in the residential, commercial and light-industrial environment.**
- **► PUMY-P200YKM3**
  “This equipment complies with IEC 61000-3-12 provided that the short-circuit power S_{sc} is greater than or equal to S_{sc} (*1) at the interface point between the user’s supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consulation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power S_{sc} greater than or equal to S_{sc} (*1)”

S_{sc} (*1)

Model	S_{sc} (MVA)
PUMY-P200YKM3	1.56

⚠ **Warning:**
Describes precautions that must be observed to prevent danger of injury or death to the user.

⚠ **Caution:**
Describes precautions that must be observed to prevent damage to the unit.

After installation work has been completed, explain the “Safety precautions,” use, and maintenance of the unit to the customer according to the information in the Operation Manual and perform the test run to ensure normal operation. Both the Installation Manual and Operation Manual must be given to the user for keeping. These manuals must be passed on to subsequent users.

⏚ : Indicates a part which must be grounded.

⚠ **Warning:**
Carefully read the labels affixed to the main unit.

⚠ **Warning:**
- **The unit must not be installed by the user. Ask a dealer or an authorized technician to install the unit. If the unit is installed incorrectly, water leakage, electric shock, or fire may result.**
- **This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.**
- **For installation work, follow the instructions in the Installation Manual and use tools and pipe components specifically made for use with R410A refrigerant. The R410A refrigerant in the HFC system is pressurized 1.6 times the pressure of usual refrigerants. If pipe components not designed for R410A refrigerant are used and the unit is not installed correctly, the pipes may burst and cause damage or injuries. In addition, water leakage, electric shock, or fire may result.**
- **When installing the unit, use appropriate protective equipment and tools for safety. Failure to do so could cause injuries.**
- **The unit must be installed according to the instructions in order to minimize the risk of damage from earthquakes, typhoons, or strong winds. An incorrectly installed unit may fall down and cause damage or injuries.**
- **The unit must be securely installed on a structure that can sustain its weight. If the unit is mounted on an unstable structure, it may fall down and cause damage or injuries.**
- **If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. Consult a dealer regarding the appropriate measures to prevent the allowable concentration from being exceeded. Should the refrigerant leak and cause the concentration limit to be exceeded, hazards due to lack of oxygen in the room may result.**
- **Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.**
- **All electric work must be performed by a qualified technician according to local regulations and the instructions given in this manual. The units must be powered by dedicated power lines and the correct voltage and circuit breakers must be used. Power lines with insufficient capacity or incorrect electrical work may result in electric shock or fire.**
- **Use C1220 copper phosphorus, for copper and copper alloy seamless pipes, to connect the refrigerant pipes. If the pipes are not connected correctly, the unit will not be properly grounded and electric shock may result.**
- **Use only specified cables for wiring. The wiring connections must be made securely with no tension applied on the terminal connections. Also, never splice the cables for wiring (unless otherwise indicated in this document). Failure to observe these instructions may result in overheating or a fire.**
- **The terminal block cover panel of the outdoor unit must be firmly attached. If the cover panel is mounted incorrectly and dust and moisture enter the unit, electric shock or fire may result.**
- **When installing or relocating, or servicing the air conditioner, use only the specified refrigerant (R410A) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines.**
  If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards.
  The use of any refrigerant other than that specified for the system will cause mechanical failure or system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.

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1. Safety precautions

- **Do not perform pump down work when there is a gas leak. The intake of air or other gases causes abnormally high pressure in the refrigeration cycle, which may cause explosion or injury.**
- **Use only authorized accessories and ask a dealer or an authorized technician to install them. If accessories are incorrectly installed, water leakage, electric shock, or fire may result.**
- **Do not alter the unit. It may cause fire, electric shock, injury or water leakage.**
- **The user should never attempt to repair the unit or transfer it to another location. If the unit is installed incorrectly, water leakage, electric shock, or fire may result. If the air conditioner must be repaired or moved, ask a dealer or an authorized technician.**
- **After installation has been completed, check for refrigerant leaks. If refrigerant leaks into the room and comes into contact with the flame of a heater or portable cooking range, poisonous gases will be released.**
- **The appliance shall be installed in accordance with national wiring regulations.**
- **If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.**
- **When opening or closing the valve below freezing temperatures, refrigerant may spurt out from the gap between the valve stem and the valve body, resulting in injuries.**

1.1. Before installation

⚠ **Caution:**

- **Do not use the unit in an unusual environment. If the air conditioner is installed in areas exposed to steam, volatile oil (including machine oil), or sulfuric gas, areas exposed to high salt content such as the seaside, or areas where the unit will be covered by snow, the performance can be significantly reduced and the internal parts can be damaged.**
- **Do not install the unit where combustible gases may leak, be produced, flow, or accumulate. If combustible gas accumulates around the unit, fire or explosion may result.**
- **The outdoor unit produces condensation during the heating operation. Make sure to provide drainage around the outdoor unit if such condensation is likely to cause damage.**
- **When installing the unit in a hospital or communications office, be prepared for noise and electronic interference. Inverters, home appliances, high-frequency medical equipment, and radio communications equipment can cause the air conditioner to malfunction or breakdown. The air conditioner may also affect medical equipment, disturbing medical care, and communications equipment, harming the screen display quality.**
- **Follow the instructions below to prevent abrasive components contained in sandpaper and cutting tools from entering the refrigerant circuit because those components can cause failures of the compressor and valves.**
  - To deburr pipes, use a reamer or other deburring tools, not sandpaper.
  - To cut pipes, use a pipe cutter, not a grinder or other tools that use abrasive materials.
  - When cutting or deburring pipes, do not allow cutting chips or other foreign matters to enter the pipes.
  - If cutting chips or other foreign matters enter pipes, wipe them off the inside of the pipes.

1.2. Before installation (relocation)

⚠ **Caution:**

- **Be extremely careful when transporting the units. Two or more persons are needed to handle the unit, as it weighs 20 kg or more. Do not grasp the packaging bands. Wear protective gloves to remove the unit from the packaging and to move it, as you can injure your hands on the fins or other parts.**
- **Be sure to safely dispose of the packaging materials. Packaging materials, such as nails and other metal or wooden parts may cause stabs or other injuries.**
- **The base and attachments of the outdoor unit must be periodically checked for looseness, cracks or other damage. If such defects are left uncorrected, the unit may fall down and cause damage or injuries.**
- **Do not clean the air conditioner unit with water. Electric shock may result.**
- **Tighten all flare nuts to specification using a torque wrench. If tightened too much, the flare nut can break after an extended period and refrigerant can leak out.**

1.3. Before electric work

⚠ **Caution:**

- **Be sure to install circuit breakers. If not installed, electric shock may result.**
- **For the power lines, use standard cables of sufficient capacity. Otherwise, a short circuit, overheating, or fire may result.**
- **When installing the power lines, do not apply tension to the cables. If the connections are loosened, the cables can snap or break and overheating or fire may result.**
- **Be sure to ground the unit. Do not connect the ground wire to gas or water pipes, lightning rods, or telephone grounding lines. If the unit is not properly grounded, electric shock may result.**
- **Use circuit breakers (ground fault interrupter, isolating switch (+B fuse), and molded case circuit breaker) with the specified capacity. If the circuit breaker capacity is larger than the specified capacity, breakdown or fire may result.**

1.4. Before starting the test run

⚠ **Caution:**

- **Turn on the main power switch more than 12 hours before starting operation. Starting operation just after turning on the power switch can severely damage the internal parts. Keep the main power switch turned on during the operation season.**
- **Before starting operation, check that all panels, guards and other protective parts are correctly installed. Rotating, hot, or high voltage parts can cause injuries.**
- **Do not touch any switch with wet hands. Electric shock may result.**
- **Do not touch the refrigerant pipes with bare hands during operation. The refrigerant pipes are hot or cold depending on the condition of the flowing refrigerant. If you touch the pipes, burns or frostbite may result.**
- **After stopping operation, be sure to wait at least five minutes before turning off the main power switch. Otherwise, water leakage or breakdown may result.**

1.5. Using R410A refrigerant air conditioners

⚠ **Caution:**

- **Use C1220 copper phosphorus, for copper and copper alloy seamless pipes, to connect the refrigerant pipes. Make sure the insides of the pipes are clean and do not contain any harmful contaminants such as sulfuric compounds, oxidants, debris, or dust. Use pipes with the specified thickness. (Refer to page 6) Note the following if reusing existing pipes that carried R22 refrigerant.**

- Replace the existing flare nuts and flare the flared sections again.
- Do not use thin pipes. (Refer to page 6)

- **Store the pipes to be used during installation indoors and keep both ends of the pipes sealed until just before brazing. (Leave elbow joints, etc. in their packaging.) If dust, debris, or moisture enters the refrigerant lines, oil deterioration or compressor breakdown may result.**
- **Use ester oil, ether oil, alkylbenzene oil (small amount) as the refrigeration oil applied to the flared sections. If mineral oil is mixed in the refrigeration oil, oil deterioration may result.**
- **Do not use refrigerant other than R410A refrigerant. If another refrigerant is used, the chlorine will cause the oil to deteriorate.**
- **Use the following tools specifically designed for use with R410A refrigerant. The following tools are necessary to use R410A refrigerant. Contact your nearest dealer for any questions.**

Tools (for R410A)	
Gauge manifold	Flare tool
Charge hose	Size adjustment gauge
Gas leak detector	Vacuum pump adapter
Torque wrench	Electronic refrigerant charging scale

- **Be sure to use the correct tools. If dust, debris, or moisture enters the refrigerant lines, refrigeration oil deterioration may result.**
- **Do not use a charging cylinder. If a charging cylinder is used, the composition of the refrigerant will change and the efficiency will be lowered.**

2. Installation location

(mm)

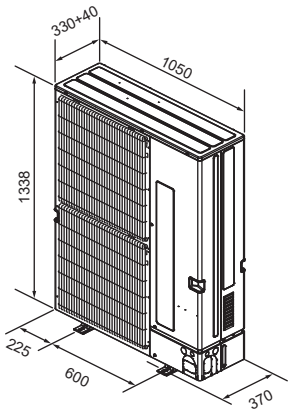

Fig. 2-1

2.1. Refrigerant pipe

Refer to Fig. 4-3.

2.2. Choosing the outdoor unit installation location

- Avoid locations exposed to direct sunlight or other sources of heat.
- Select a location from which noise emitted by the unit will not inconvenience neighbors.
- Select a location permitting easy wiring and pipe access to the power source and indoor unit.
- Avoid locations where combustible gases may leak, be produced, flow, or accumulate.
- Note that water may drain from the unit during operation.
- Select a level location that can bear the weight and vibration of the unit.
- Avoid locations where the unit can be covered by snow. In areas where heavy snow fall is anticipated, special precautions such as raising the installation location or installing a hood on the air intake must be taken to prevent the snow from blocking the air intake or blowing directly against it. This can reduce the airflow and a malfunction may result.
- Avoid locations exposed to oil, steam, or sulfuric gas.
- Use the transportation handles of the outdoor unit to transport the unit. If the unit is carried from the bottom, hands or fingers may be pinched.

2.3. Outline dimensions (Outdoor unit) (Fig. 2-1)

Constraints on indoor unit installation

You should note that indoor units that can be connected to this outdoor unit are the following models.

- Indoor units with model numbers 10-200 can be connected.
  When using Branch box, indoor units with model number 15-100 can be connected.
  Refer to the table 1 below for possible room, indoor unit combinations.

Verification

The rated capacity should be determined by observing the table below. The unit's quantities are limited as shown in the following table 2. For the next step, make sure that the total rated capacity selected will stay in a range of 50% - 130% of the outdoor unit capacity.

- PUMY-P200 11.2 - 29.1 kW

Table 1-1 (City Multi indoor units (P*FY series))

Indoor unit type	P10	P15	P20	P25	P32	P40	P50	P63	P71	P80	P100	P125	P140	P200
Rated capacity (Cooling) (kW)	1.2	1.7	2.2	2.8	3.6	4.5	5.6	7.1	8.0	9.0	11.2	14.0	16.0	22.4

Table 1-2 (M series, P series, S series)

Indoor unit type	15	20	22	25	35	42	50	60	71	80	100
Rated capacity (Cooling) (kW)	1.5	2.0	2.2	2.5	3.5	4.2	5.0	6.0	7.1	8.0	10.0

Combinations in which the total capacity of indoor units exceeds the capacity of the outdoor unit will reduce the cooling capacity of each indoor unit below their rated cooling capacity. Thus, combine indoor units with an outdoor unit within the outdoor unit's capacity, if possible.

Table 2 Connectable indoor units quantities

- Table 2-1 City Multi indoor units

PUMY-P200	1-12

- Table 2-2 Branch box system (M, S, P series indoor units via Branch box)

PUMY-P200	2-8

- Table 2-3 Mixed system (City Multi indoor units and M, S, P series indoor units via Branch box)

	One Branch box		Two Branch boxes	
	Via Branch box	City Multi indoor	Via Branch box	City Multi indoor
PUMY-P200	Max. 5	Max. 5	Max. 8	Max. 3

Table 3 Connectable Branch box quantities

PUMY-P200	1-2*

* The maximum total capacity of the units that can be connected each branch box is 20.2 kW.

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2. Installation location

2.4. Ventilation and service space

Note:
The dimensions given along the arrows below are required to guarantee the air conditioner's performance. Install the unit in as wide a place as possible for later service or repairs.

2.4.1. When installing a single outdoor unit

Minimum dimensions are as follows, except for Max., meaning Maximum dimensions, indicated.
Refer to the figures for each case.

① Obstacles at rear only (Fig. 2-2)
② Obstacles at rear and above only (Fig. 2-3)
- Do not install the optional air outlet guides for upward airflow.

③ Obstacles at rear and sides only (Fig. 2-4)
④ Obstacles at front only (Fig. 2-5)
- ∗ When using an optional air outlet guide, the clearance is 500 mm or more.

⑤ Obstacles at front and rear only (Fig. 2-6)
- ∗ When using an optional air outlet guide, the clearance is 500 mm or more.

⑥ Obstacles at rear, sides, and above only (Fig. 2-7)
- Do not install the optional air outlet guides for upward airflow.

2.4.2. When installing multiple outdoor units

Leave 25 mm space or more between the units.

① Obstacles at rear only (Fig. 2-8)
② Obstacles at rear and above only (Fig. 2-9)
- No more than three units must be installed side by side. In addition, leave space as shown.
- Do not install the optional air outlet guides for upward airflow.

③ Obstacles at front only (Fig. 2-10)
- ∗ When using an optional air outlet guide, the clearance is 1000 mm or more.

④ Obstacles at front and rear only (Fig. 2-11)
- ∗ When using an optional air outlet guide, the clearance is 1000 mm or more.

⑤ Single parallel unit arrangement (Fig. 2-12)
- ∗ When using an optional air outlet guide installed for upward airflow, the clearance is 1000 mm or more.

⑥ Multiple parallel unit arrangement (Fig. 2-13)
- ∗ When using an optional air outlet guide installed for upward airflow, the clearance is 1500 mm or more.

⑦ Stacked unit arrangement (Fig. 2-14)
- The units can be stacked up to two units high.
- No more than two stacked units must be installed side by side. In addition, leave space as shown.

(mm)

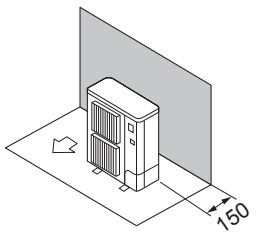

Fig. 2-2

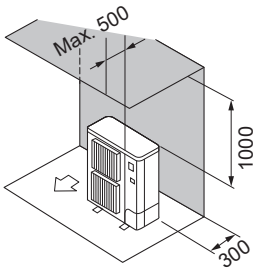

Fig. 2-3

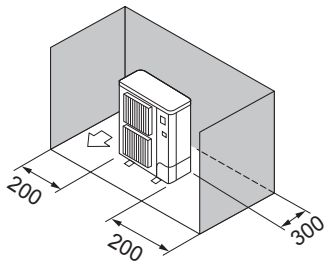

Fig. 2-4

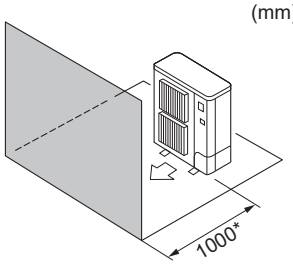

Fig. 2-5

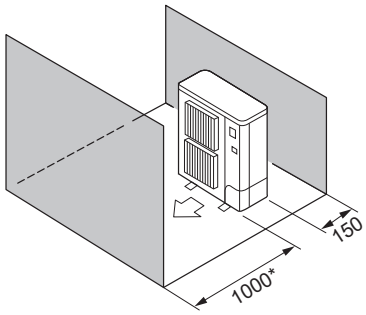

Fig. 2-6

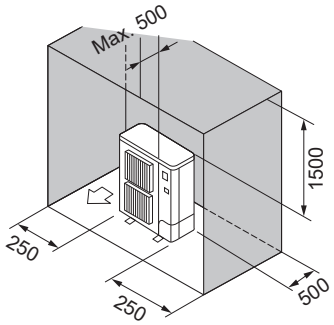

Fig. 2-7

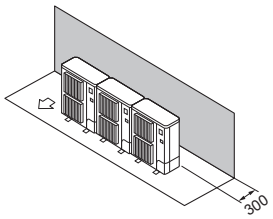

Fig. 2-8

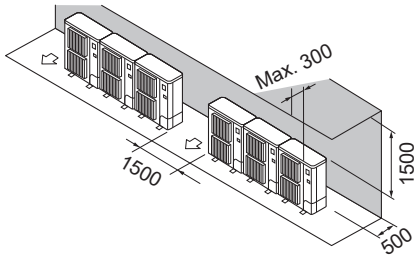

Fig. 2-9

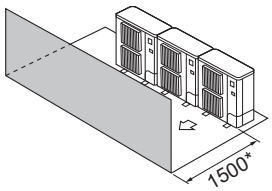

Fig. 2-10

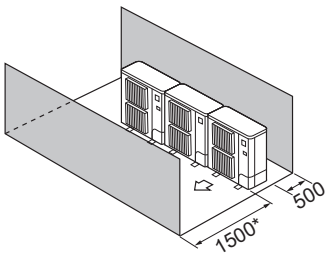

Fig. 2-11

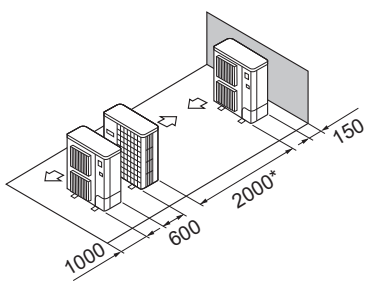

Fig. 2-12

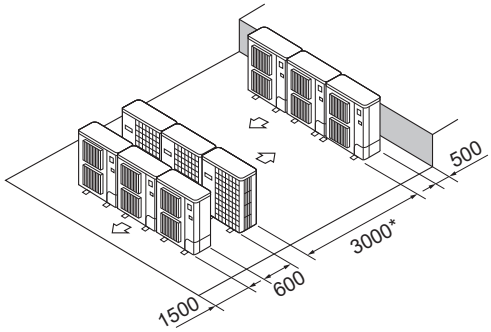

Fig. 2-13

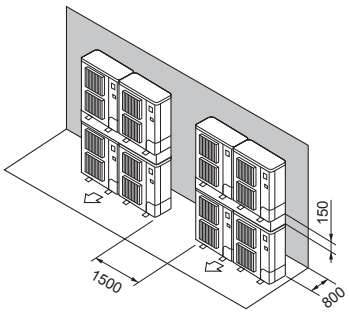

Fig. 2-14

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2. Installation location

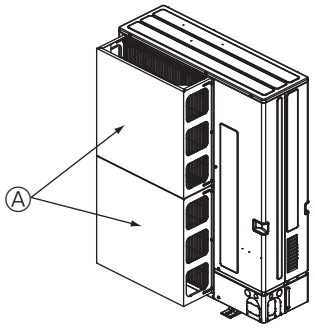


Fig. 2-15

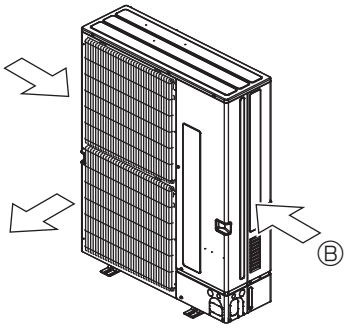


Fig. 2-16

2.4.3. Windy location installation

When installing the outdoor unit on a rooftop or other location unprotected from the wind, situate the air outlet of the unit so that it is not directly exposed to strong winds. Strong wind entering the air outlet may impede the normal airflow and a malfunction may result.

The following shows two examples of precautions against strong winds.

① Install an optional air protect guide if the unit is installed in a location where strong winds from a typhoon, etc. may directly enter the air outlet. (Fig. 2-15)

Ⓐ Air protect guide

② Position the unit so that the air outlet blows perpendicularly to the seasonal wind direction, if possible. (Fig. 2-16)

Ⓑ Wind direction

3. Installing the outdoor unit

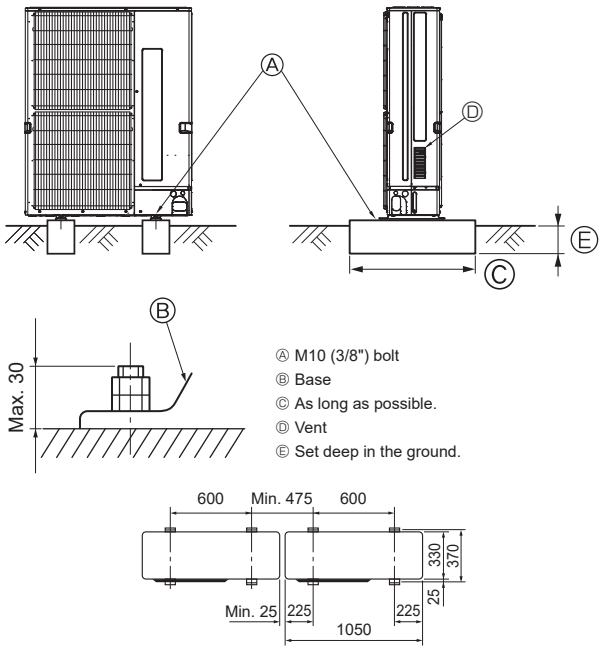


Fig. 3-1

- Be sure to install the unit in a sturdy, level surface to prevent rattling noises during operation. (Fig. 3-1)

<Foundation specifications>

Foundation bolt	M10 (3/8″)
Thickness of concrete	120 mm
Length of bolt	70 mm
Weight-bearing capacity	320 kg

- Make sure that the length of the foundation bolt is within 30 mm of the bottom surface of the base.
- Secure the base of the unit firmly with four-M10 foundation bolts in sturdy locations.

Installing the outdoor unit

- Do not block the vent. If the vent is blocked, operation will be hindered and breakdown may result.
- In addition to the unit base, use the installation holes on the back of the unit to attach wires, etc., if necessary to install the unit. Use self-tapping screws (ø5 × 15 mm or less) and install on site.

⚠ Warning:

- **The unit must be securely installed on a structure that can sustain its weight. If the unit is mounted on an unstable structure, it may fall down and cause damage or injuries.**
- **The unit must be installed according to the instructions in order to minimize the risk of damage from earthquakes, typhoons, or strong winds. An incorrectly installed unit may fall down and cause damage or injuries.**

⚠ Caution:

- **Install unit on a rigid structure to prevent excessive operation sound or vibration.**

4. Installing the refrigerant piping

4.1. Precautions for devices that use R410A refrigerant

- **Refer to page 3 for precautions not included below on using air conditioners with R410A refrigerant.**
- **Use ester oil, ether oil, alkylbenzene oil (small amount) as the refrigeration oil applied to the flared sections.**
- **Use C1220 copper phosphorus, for copper and copper alloy seamless pipes, to connect the refrigerant pipes. Use refrigerant pipes with the thicknesses specified in the table to the below. Make sure the insides of the pipes are clean and do not contain any harmful contaminants such as sulfuric compounds, oxidants, debris, or dust.**

⚠ Warning:

When installing or relocating, or servicing the air conditioner, use only the specified refrigerant (R410A) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines.

If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards.

The use of any refrigerant other than that specified for the system will cause mechanical failure or system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.

ø6.35, ø9.52, ø12.7	Thickness 0.8 mm
ø15.88, ø19.05, ø22.2	Thickness 1.0 mm

- **Do not use pipes thinner than those specified above.**
- **Use 1/2 H or H pipes if the diameter is 19.05 mm or larger.**
- **The thicknesses listed in the table above are based on Japanese standards. Use pipes with a maximum working pressure of 4.15 MPa [601 psig] or higher according to local standards.**

⚠ Caution:

Follow the instructions below to prevent abrasive components contained in sandpaper and cutting tools from entering the refrigerant circuit because those components can cause failures of the compressor and valves.

- **To deburr pipes, use a reamer or other deburring tools, not sandpaper.**
- **To cut pipes, use a pipe cutter, not a grinder or other tools that use abrasive materials.**
- **When cutting or deburring pipes, do not allow cutting chips or other foreign matters to enter the pipes.**
- **If cutting chips or other foreign matters enter pipes, wipe them off the inside of the pipes.**

en

4. Installing the refrigerant piping

4.2. Selecting pipe size

Conversion formula

1/4 F	ø6.35 mm
3/8 F	ø9.52 mm
1/2 F	ø12.7 mm
5/8 F	ø15.88 mm
3/4 F	ø19.05 mm

4.2.1. Pipe size

A (Fig. 4-3) (mm)

	Liquid pipe	Gas pipe
L ≤ 60 m	ø9.52 mm	ø19.05 mm
L > 60 m	ø12.7 mm	ø19.05 mm

B, C, D (Fig. 4-3) (mm)

Total capacity of indoor units	Liquid pipe		Gas pipe
– 16.0 kW	L ≤ 60 m	ø9.52	ø15.88
	L > 60 m	ø12.7	
16.1 – 29.1 kW	L ≤ 60 m	ø9.52	ø19.05
	L > 60 m	ø12.7	

L: The farthest piping length from the outdoor unit to an indoor unit.

A, B, C (Fig. 4-4)

Liquid (mm)	L ≤ 20 m	ø9.52
	L > 20 m	ø12.7
Gas (mm)	ø19.05	

A (Fig. 4-5) (mm)

	Liquid pipe	Gas pipe
L1 ≤ 60 m and L2 ≤ 20 m	ø9.52	ø19.05
L1 > 60 m or L2 > 20 m	ø12.7	ø19.05

B, C, D, E (Fig. 4-5) (mm)

Total capacity of indoor units	Liquid pipe		Gas pipe
–16.0 kW	L1 ≤ 60 m or L2 ≤ 20 m	ø9.52	ø15.88
	L1 > 60 m or L2 > 20 m	ø12.7	
16.1 – 29.1 kW	L1 ≤ 60 m or L2 ≤ 20 m	ø9.52	ø19.05
	L1 > 60 m or L2 > 20 m	ø12.7	

L1: The farthest piping length from the outdoor unit to an indoor unit.
L2: The farthest piping length for the main pipes from the outdoor unit to the branch box.

a, b, c~j (Fig. 4-3, 4, 5)

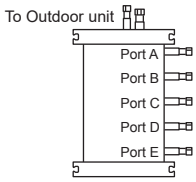
Indoor unit series	Model number	Liquid pipe	Gas pipe
CityMulti	10-50	ø6.35 mm	ø12.7 mm
	63-140	ø9.52 mm	ø15.88 mm
	200	ø9.52 mm	ø19.05 mm
M series or S series	15-42	ø6.35 mm	ø9.52 mm
	50	ø6.35 mm	ø12.7 mm
	60	ø6.35 mm	ø15.88 mm
	71-80	ø9.52 mm	ø15.88 mm
P series	35, 50 *1	ø6.35 mm	ø12.7 mm
	60-100	ø9.52 mm	ø15.88 mm

*1 When using 35, 50 type indoor unit of P series, use the flare nut attached to the indoor unit.
Do not use the flare nut in the indoor unit accessory. If it is used, a gas leakage or even a pipe extraction may occur.

en

4. Installing the refrigerant piping

4.2.2. Valve size of branch box



(1) Valve size of branch box for outdoor unit

Liquid pipe	ø9.52 mm
Gas pipe	ø15.88 mm

(2) Valve size of branch box for indoor unit

Port A*1	Liquid pipe	ø6.35 mm
	Gas pipe	ø9.52 mm
Port B*1	Liquid pipe	ø6.35 mm
	Gas pipe	ø9.52 mm
Port C*1	Liquid pipe	ø6.35 mm
	Gas pipe	ø9.52 mm
Port D	Liquid pipe	ø6.35 mm
	Gas pipe	ø9.52 mm
Port E	Liquid pipe	ø6.35 mm
	Gas pipe	ø12.7 mm

*1 3-branch type : only Port A, B, C

4.2.3. Different-diameter joint (optional parts)

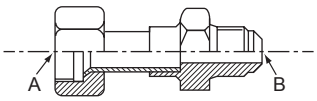


Fig. 4-1

Fig. 4-2

Model name	Connected pipes diameter	Diameter A	Diameter B
	mm	mm	mm
MAC-A454JP-E	ø9.52 → ø12.7	ø9.52	ø12.7
MAC-A455JP-E	ø12.7 → ø9.52	ø12.7	ø9.52
MAC-A456JP-E	ø12.7 → ø15.88	ø12.7	ø15.88
PAC-493PI	ø6.35 → ø9.52	ø6.35	ø9.52
PAC-SG76RJ-E	ø9.52 → ø15.88	ø9.52	ø15.88
PAC-SG75RJ-E	ø15.88 → ø19.05	ø15.88	ø19.05

Model name	Connected pipes diameter	Outside Diameter A	Inside Diameter B
	mm	mm	mm
PAC-SG78RJB-E	ø9.52 → ø12.7	ø9.52	ø12.7
PAC-SG79RJB-E	ø12.7 → ø9.52	ø12.7	ø9.52
PAC-SG80RJB-E	ø12.7 → ø15.88	ø12.7	ø15.88
PAC-SG77RJB-E	ø6.35 → ø9.52	ø6.35	ø9.52
PAC-SG76RJB-E	ø9.52 → ø15.88	ø9.52	ø15.88
PAC-SG72RJB-E	ø15.88 → ø19.05	ø15.88	ø19.05

4.2.4. Branch pipe (optional parts)

According to the connection method, you can choose the favorite one.

2-branch joint	CMY-Y62-G-E
4-branch header	CMY-Y64-G-E
8-branch header	CMY-Y68-G-E

2-branch pipe (Joint)

Model name	Connection method
MSDD-50AR-E	flare
MSDD-50BR-E	brazing

■ **Installation procedure (2-branch pipe (Joint))**

Refer to the installation manuals of MSDD-50AR-E and MSDD-50BR-E.

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4. Installing the refrigerant piping

4.3. Pipe length and height difference

4.3.1. Connection without Branch Box (Fig. 4-3)

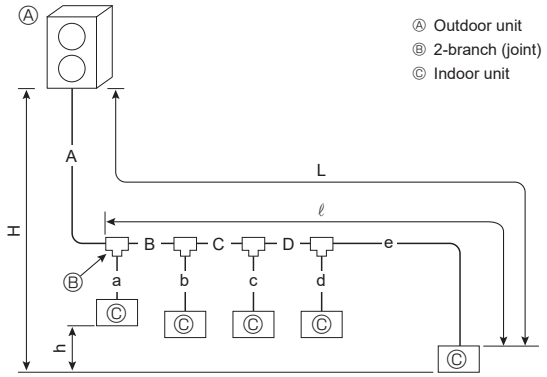

Fig. 4-3 (a)

Permissible length (one-way)	Total piping length	A+B+C+D+a+b+c+d+e ≤ 150 m
	Farthest piping length (L)	L = A+B+C+D+e ≤ 80 m
	Farthest piping length after the first branch (ℓ)	ℓ = B+C+D+e ≤ 30 m
Permissible height difference (one-way)	In indoor/outdoor section (H)	H ≤ 50 m (In the case of outdoor unit is set higher than indoor unit)
		H ≤ 40 m (In the case of outdoor unit is set lower than indoor unit)
	In each indoor unit (h)	h ≤ 15 m

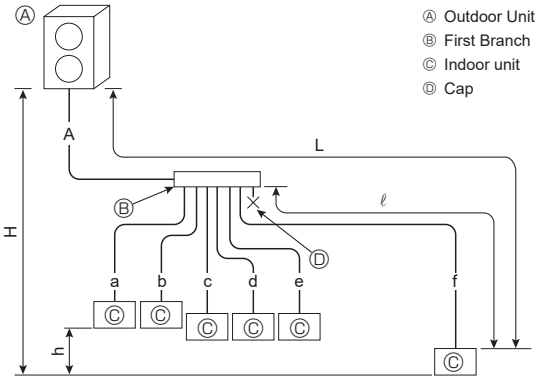

Fig. 4-3 (b)

Permissible length (one-way)	Total piping length	A+a+b+c+d+e+f ≤ 150 m
	Farthest piping length (L)	L = A+f ≤ 80 m, ℓ = f ≤ 30 m
Permissible height difference (one-way)	In indoor/outdoor section (H)	H ≤ 50 m (In the case of outdoor unit is set higher than indoor unit)
		H ≤ 40 m (In the case of outdoor unit is set lower than indoor unit)
	In each indoor unit (h)	h ≤ 15 m

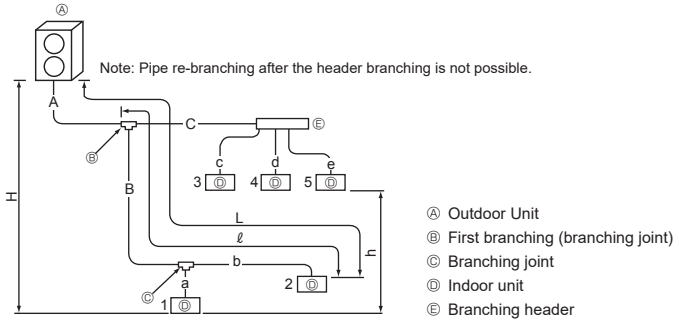

Fig. 4-3 (c)

Permissible length (one-way)	Total piping length	A+B+C+a+b+c+d+e ≤ 150 m
	Farthest piping length (L)	L = A+B+b ≤ 80 m
	Farthest piping length after the first branch (ℓ)	B+b ≤ 30 m
Permissible height difference (one-way)	In indoor/outdoor section (H)	H ≤ 50 m (In the case of outdoor unit is set higher than indoor unit)
		H ≤ 40 m (In the case of outdoor unit is set lower than indoor unit)
	In each indoor unit (h)	h ≤ 15 m

4. Installing the refrigerant piping

4.3.2. Connection with Branch Box (Fig. 4-4)

- This unit has flared connections on each indoor unit and branch box and outdoor unit sides.
- Remove the valve cover of the outdoor unit, then connect the pipe.
- Refrigerant pipes are used to connect the branch box and outdoor unit.

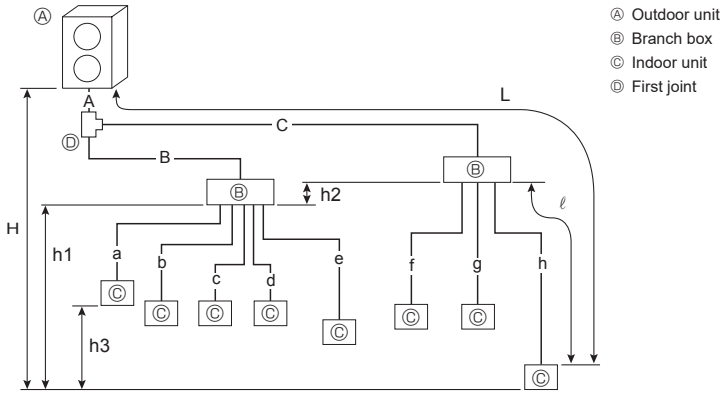

Fig. 4-4

Permissible length (one-way)	Total piping length	A + B + C + a + b + c + d + e + f + g + h ≤ 150 m
	Farthest piping length (L)	A + C + h ≤ 80 m
	Piping length between outdoor unit and branch boxes	A + B + C ≤ 55 m
	Farthest branch box from the first joint	C ≤ 30 m
	Farthest piping length after branch box (ℓ)	h ≤ 25 m
	Total piping length between branch boxes and indoor units	a + b + c + d + e + f + g + h ≤ 95 m
Permissible height difference (one-way)	In indoor/outdoor section (H)*1	H ≤ 50 m (In the case of outdoor unit is set higher than indoor unit)
		H ≤ 40 m (In the case of outdoor unit is set lower than indoor unit)
	In branch box/indoor unit section (h1)	h1 + h2 ≤ 15 m
	In each branch unit (h2)	h2 ≤ 15 m
	In each indoor unit (h3)	h3 ≤ 12 m
Number of bends		| A + B + a |, | A + B + b |, | A + B + c |, | A + B + d |, | A + B + e |, | A + C + f |, | A + C + g |, | A + C + h | ≤ 15

*1 Branch box should be placed within the level between the outdoor unit and indoor units.

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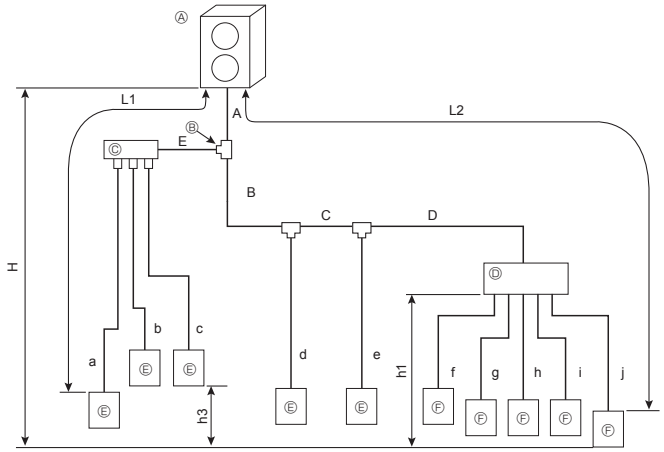
4. Installing the refrigerant piping

4.3.3. Mixed system (City Multi indoor units and M, S, P series indoor units via Branch box) (Fig. 4-5)

1. In case of using one Branch box



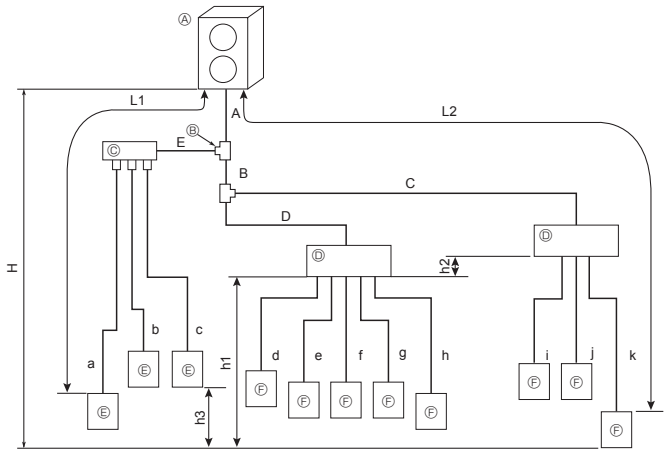
Ⓐ Outdoor Unit
Ⓑ First joint
Ⓒ Branch header
Ⓓ Branch box
Ⓔ CityMulti Indoor unit
Ⓕ M, S, P series Indoor unit

Fig. 4-5 (a)

Permissible length (One-way)	Total piping length	A + B + C + D + E + a + b + c + d + e + f + g + h + i + j ≤ 150 m
	Farthest piping length (L1)	A + E + a or A + B + C + e ≤ 80 m
	Farthest piping length. Via Branch box (L2)	A + B + C + D + j ≤ 80 m
	Piping length between outdoor unit and branch box	A + B + C + D ≤ 55 m
	Farthest piping length from the first joint	B + C + D or B + C + e ≤ 30 m
	Farthest piping length after branch box	j ≤ 25 m
	Total piping length between branch boxes and indoor units	f + g + h + i + j ≤ 95 m
Permissible height difference (One-way)	In indoor/outdoor section (H) *1	H ≤ 50 m (In the case of outdoor unit is set higher than indoor unit)
		H ≤ 40 m (In the case of outdoor unit is set lower than indoor unit)
	In branch box/indoor unit section (h1)	h1 ≤ 15 m
	In each indoor unit (h3)	h3 ≤ 12 m
Number of bends		|A + E + a|, |A + E + b|, |A + E + c|, |A + B + d|, |A + B + C + e|, |A + B + C + D + f|, |A + B + C + D + g|, |A + B + C + D + h|, |A + B + C + D + i|, |A + B + C + D + j| ≤ 15

*1: Branch box should be placed within the level between the outdoor unit and indoor units.

2. In case of using two Branch boxes



Ⓐ Outdoor Unit
Ⓑ First joint
Ⓒ Branch header
Ⓓ Branch box
Ⓔ CityMulti Indoor unit
Ⓕ M, S, P series Indoor unit

Fig. 4-5 (b)

Permissible length (One-way)	Total piping length	A + B + C + D + E + a + b + c + d + e + f + g + h + i + j + k ≤ 150 m
	Farthest piping length (L1)	A + E + a ≤ 80 m
	Farthest piping length. Via Branch box (L2)	A + B + C + k ≤ 80 m
	Piping length between outdoor unit and branch boxes	A + B + C + D ≤ 55 m
	Farthest piping length from the first joint	B + C or E + a ≤ 30 m
	Farthest piping length after branch box	k ≤ 25 m
	Farthest branch box from outdoor unit	A + B + C ≤ 55 m
	Total piping length between branch boxes and indoor units	d + e + f + g + h + i + j + k ≤ 95 m
Permissible height difference (One-way)	In indoor/outdoor section (H) *1	H ≤ 50 m (In the case of outdoor unit is set higher than indoor unit)
		H ≤ 40 m (In the case of outdoor unit is set lower than indoor unit)
	In branch box/indoor unit section (h1+h2)	h1 + h2 ≤ 15 m
	In each branch unit (h1)	h2 ≤ 15 m
	In each indoor unit (h3)	h3 ≤ 12 m
Number of bends		|A + E + a|, |A + E + b|, |A + E + c|, |A + B + D + d|, |A + B + D + e|, |A + B + D + f|, |A + B + D + g|, |A + B + D + h|, |A + B + C + i|, |A + B + C + j|, |A + B + C + k| ≤ 15

*1: Branch box should be placed within the level between the outdoor unit and indoor units.

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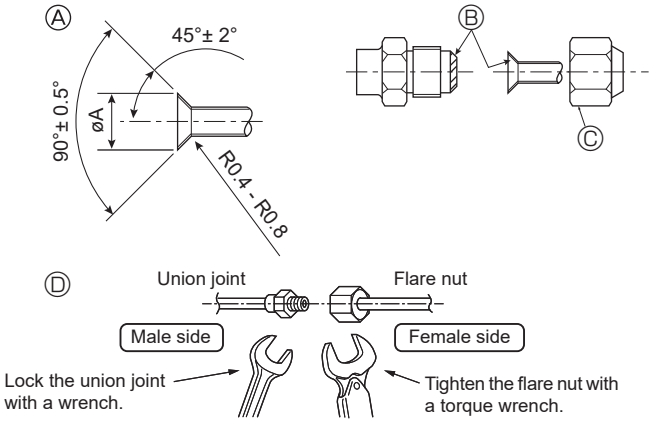
4. Installing the refrigerant piping



Ⓐ Flare cutting dimensions
Ⓓ Flare nut tightening torque

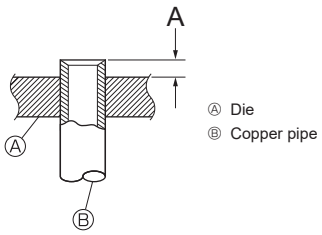
Fig. 4-6

Ⓐ (Fig. 4-6)

Copper pipe O.D. (mm)	Flare dimensions øA dimensions (mm)
ø6.35	8.7 - 9.1
ø9.52	12.8 - 13.2
ø12.7	16.2 - 16.6
ø15.88	19.3 - 19.7
ø19.05	23.6 - 24.0

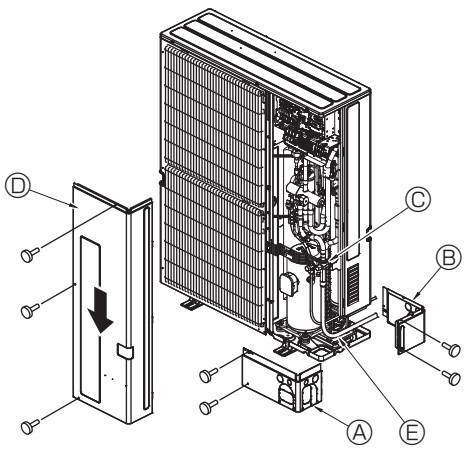
Ⓓ (Fig. 4-6)

Copper pipe O.D. (mm)	Flare nut O.D. (mm)	Tightening torque (N·m)
ø6.35	17	14 - 18
ø6.35	22	34 - 42
ø9.52	22	34 - 42
ø12.7	26	49 - 61
ø12.7	29	68 - 82
ø15.88	29	68 - 82
ø15.88	36	100 - 120
ø19.05	36	100 - 120



Ⓐ Die
Ⓑ Copper pipe

Fig. 4-7



Ⓐ Front piping cover
Ⓑ Piping cover
Ⓒ Stop valve
Ⓓ Service panel
Ⓔ Bend radius : 100 mm - 150 mm

Fig. 4-8

4.4. Connecting pipes (Fig. 4-6)

- Conduct sufficient anti-condensation and insulation work to prevent water dripping from the refrigerant piping. (liquid pipe/gas pipe)
- Increase insulation depending on the environment where the refrigerant piping is installed, or condensation may occur on the surface of the insulation material. (Insulation material Heat-resistant temperature: 120 °C, Thickness: 15 mm or more)
  * When the refrigerant piping is used in locations subject to high temperature and humidity such as in the attic, further addition of insulation may be required.
- To insulate the refrigerant piping, apply heat-resistant polyethylene foam between the indoor unit and insulation material as well as to the net between the insulation material filling all gaps.
  (Condensation forming on the piping may result in condensation in the room or burns when contacting the piping.)
- The indoor parts of the drain pipe should be wrapped with polyethylene foam insulation materials (specific gravity of 0.03, thickness of 9 mm or more).
- Apply thin layer of refrigerant oil to pipe and joint seating surface before tightening flare nut. Ⓐ
- Apply refrigerating machine oil over the entire flare seat surface. Ⓑ
- Use the flare nuts for the following pipe size. Ⓒ
- For connection, first align the center, then tighten the first 3 to 4 turns of flare nut by hand.
- Use 2 wrenches to tighten piping connections. Ⓓ
- Use leak detector or soapy water to check for gas leaks after connections are completed.
- When bending the pipes, be careful not to break them. Bend radius of 100 mm to 150 mm is sufficient.
- Make sure the pipes do not contact the compressor. Abnormal noise or vibration may result.

① Pipes must be connected starting from the indoor unit.
Flare nuts must be tightened with a torque wrench.
② Flare the liquid pipes and gas pipes and apply a thin layer of refrigeration oil (Applied on site).
- When usual pipe sealing is used, refer to Table 3 for flaring of R410A refrigerant pipes.
  The size adjustment gauge can be used to confirm A measurements.

⚠ Warning:
When installing the unit, securely connect the refrigerant pipes before starting the compressor.

* To connect the CONNECTION KIT (PAC-LV11M-J), refer to the installation manual for the CONNECTION KIT.

Table 3 (Fig. 4-7)

Copper pipe O.D. (mm)	A (mm)	
	Flare tool for R410A	Flare tool for R22·R407C
	Clutch type	
ø6.35	0 - 0.5	1.0 - 1.5
ø9.52	0 - 0.5	1.0 - 1.5
ø12.7	0 - 0.5	1.0 - 1.5
ø15.88	0 - 0.5	1.0 - 1.5
ø19.05	0 - 0.5	1.0 - 1.5

4.5. Refrigerant piping (Fig. 4-8)

Remove the service panel Ⓓ (three screws) and the front piping cover Ⓐ (two screws) and rear piping cover Ⓑ (two screws).
① Perform refrigerant piping connections for the indoor/outdoor unit when the outdoor unit's stop valve is completely closed.
② Vacuum-purge air from the indoor unit and the connection piping.
③ After connecting the refrigerant pipes, check the connected pipes and the indoor unit for gas leaks. (Refer to 4.6. Refrigerant pipe airtight testing method)
④ Vacuumize the refrigerant lines through the service port of the liquid and gas stop valves. And then open the stop valves completely (for both the liquid and gas stop valves). This will completely connect the refrigerant lines of the indoor and outdoor units.
- If the stop valves are left closed and the unit is operated, the compressor and control valves will be damaged.
- Use a leak detector or soapy water to check for gas leaks at the pipe connection sections of the outdoor unit.
- Do not use the refrigerant from the unit to purge air from the refrigerant lines.
- After the valve work is completed, tighten the valve caps to the correct torque: 20 to 25 N·m (200 to 250 kgf·cm).
  Failure to replace and tighten the caps may result in refrigerant leakage. In addition, do not damage the insides of the valve caps as they act as a seal to prevent refrigerant leakage.

⑤ Use sealant to seal the ends of the thermal insulation around the pipe connection sections to prevent water from entering the thermal insulation.

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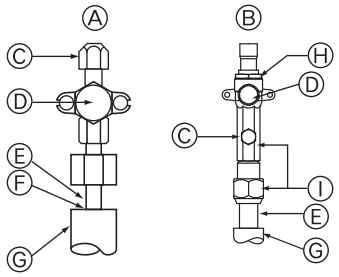


Ⓐ Stop valve <Liquid side>
Ⓑ Stop valve <Gas side>
Ⓒ Service port
Ⓓ Open/Close section
Ⓔ Local pipe
Ⓕ Sealed, same way for gas side
Ⓖ Pipe cover
Ⓗ Do not use a wrench here. Refrigerant leakage may result.
Ⓘ Use two wrenches here.

Fig. 4-9

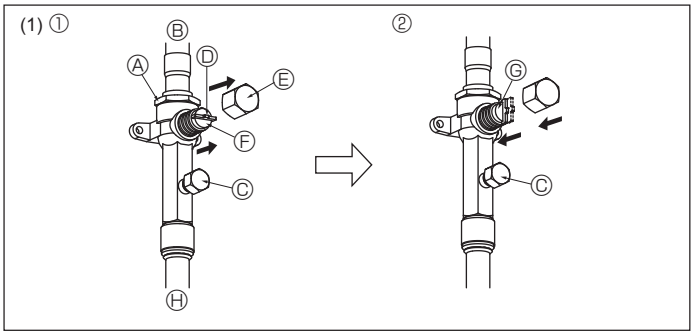


Fig. 4-10

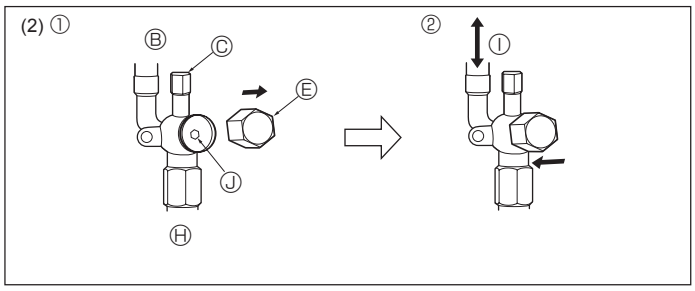
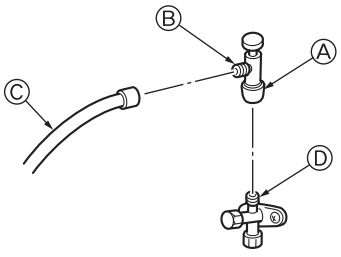


Fig. 4-11



* The figure to the left is an example only. The stop valve shape, service port position, etc., may vary according to the model.
* Turn section Ⓐ only. (Do not further tighten sections Ⓐ and Ⓑ together.)

Ⓒ Charge hose
Ⓓ Service port

Fig. 4-12

4.6. Refrigerant pipe airtight testing method

(1) Connect the testing tools.
- Make sure the stop valves Ⓐ Ⓑ are closed and do not open them.
- Add pressure to the refrigerant lines through the service port Ⓒ of the liquid stop valve Ⓐ and the gas stop valve Ⓑ.

(2) Do not add pressure to the specified pressure all at once; add pressure little by little.
① Pressurize to 0.5 MPa (5 kgf/cm^{2}G), wait five minutes, and make sure the pressure does not decrease.
② Pressurize to 1.5 MPa (15 kgf/cm^{2}G), wait five minutes, and make sure the pressure does not decrease.
③ Pressurize to 4.15 MPa (41.5 kgf/cm^{2}G) and measure the surrounding temperature and refrigerant pressure.

(3) If the specified pressure holds for about one day and does not decrease, the pipes have passed the test and there are no leaks.
- If the surrounding temperature changes by 1°C, the pressure will change by about 0.01 MPa (0.1 kgf/cm^{2}G). Make the necessary corrections.

(4) If the pressure decreases in steps (2) or (3), there is a gas leak. Look for the source of the gas leak.

4.7. Stop valve opening method

The stop valve opening method varies according to the outdoor unit model. Use the appropriate method to open the stop valves.

(1) Gas side (Fig. 4-10)
① Remove the cap, pull the handle toward you and rotate 1/4 turn in a counterclockwise direction to open.
② Make sure that the stop valve is open completely, push in the handle and rotate the cap back to its original position.

(2) Liquid side (Fig. 4-11)
① Remove the cap and turn the valve rod counterclockwise as far as it will go with the use of a 4 mm hexagonal wrench. Stop turning when it hits the stopper. (ø6.35: Approximately 4.5 revolutions) (ø9.52: Approximately 10 revolutions)
② Make sure that the stop valve is open completely, push in the handle and rotate the cap back to its original position.

Ⓐ Valve body
Ⓑ Unit side
Ⓒ Service port
Ⓓ Handle
Ⓔ Cap
Ⓕ Completely closed
Ⓖ Completely open
Ⓗ Refrigerant piping side (On-siteinstallation)
Ⓘ Direction the refrigerant flows in
Ⓙ Valve stem

Refrigerant pipes are protectively wrapped
- The pipes can be protectively wrapped up to a diameter of ø90 before or after connecting the pipes. Cut out the knockout in the pipe cover following the groove and wrap the pipes.

Pipe inlet gap
- Use putty or sealant to seal the pipe inlet around the pipes so that no gaps remain. (If the gaps are not closed, noise may be emitted or water and dust will enter the unit and breakdown may result.)

Precautions when using the charge valve (Fig. 4-12)
Do not tighten the service port too much when installing it, otherwise, the valve core could be deformed and become loose, causing a gas leak.
After positioning section Ⓑ in the desired direction, turn section Ⓐ only and tighten it. Do not further tighten sections Ⓐ and Ⓑ together after tightening section Ⓐ.

⚠ **Warning:**
- **When opening or closing the valve below freezing temperatures, refrigerant may spurt out from the gap between the valve stem and the valve body, resulting in injuries.**
- **When installing the unit, securely connect the refrigerant pipes before starting the compressor.**

en

4. Installing the refrigerant piping

4.8. Additional refrigerant charge

Additional refrigerant charge

Refrigerant for the extended piping is not included in the outdoor unit when the unit is shipped from the factory. Therefore, charge each refrigerant piping system with additional refrigerant at the installation site. In addition, in order to carry out service, enter the size and length of each liquid pipe and additional refrigerant charge amounts in the spaces provided on the “Refrigerant amount” plate on the outdoor unit.

* When the unit is stopped, charge the unit with the additional refrigerant through the liquid stop valve after the pipe extensions and indoor units have been vacuumized.
When the unit is operating, add refrigerant to the gas check valve using a safety charger. Do not add liquid refrigerant directly to the check valve.

Calculation of additional refrigerant charge

- Calculate the additional charge using the liquid pipe size and length of the extended piping and total capacity of connected indoor units.
- Calculate the additional refrigerant charge using the procedure shown to the right, and charge with the additional refrigerant.
- For amounts less than 0.1 kg, round up the calculated additional refrigerant charge.
  (For example, if the calculated charge is 6.01 kg, round up the charge to 6.1 kg.)
- The amount of additional refrigerant which is calculated from the total capacity of indoor units and the combination of extended pipes must not be over 18.0 kg.
  (Refer to 2.4. for the capacity of indoor units, and 4.1. for extended piping.)

<Additional Charge>

Calculation of refrigerant charge

Pipe size Liquid pipe		Pipe size Liquid pipe		Pipe size Liquid pipe		Total capacity of connected indoor units	Amount for the indoor units
ø6.35	+	ø9.52	+	ø12.7	+	– 16.0 kW	2.5 kg
(m) × 19.0 (g/m)		(m) × 50.0 (g/m)		(m) × 92.0 (g/m)		16.1 kW –	3.0 kg

Included refrigerant amount when shipped from the factory

Included refrigerant amount
7.3 kg

<Example>
Outdoor model : P200
Indoor 1 : P63 (7.1 kW)
2 : P40 (4.5 kW)
3 : P25 (2.8 kW)
4 : P20 (2.2 kW)
5 : P50 (5.6 kW)

A : ø12.7 35 m
a : ø9.52 15 m
b : ø6.35 10 m
c : ø6.35 10 m
d : ø6.35 30 m
e : ø6.35 10 m

} At the conditions below:

The total length of each liquid line is as follows:
ø12.7 : A = 35 m
ø9.52 : a = 15 m
ø6.35 : b + c + d + e = 10 + 10 + 30 + 10 = 60 m
The total capacity of connected indoor unit is as follows:
7.1 + 4.5 + 2.8 + 2.2 + 5.6 = 22.2
<Calculation example>
Additional refrigerant charge

$$60 \times \frac{19.0}{1000} + 15 \times \frac{50.0}{1000} + 35 \times \frac{92.0}{1000} + 3.0 = 8.2 \text{ kg (rounded up)}$$

5. Drainage piping work

Outdoor unit drainage pipe connection

When drain piping is necessary, use the drain socket or the drain pan (option).

Drain socket	PAC-SG61DS-E
Drain pan	PAC-SH97DP-E

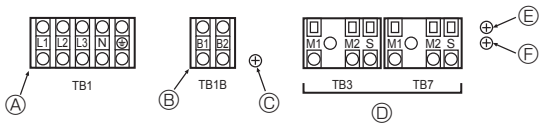
6. Electrical work

6.1. Caution

① Follow ordinance of your governmental organization for technical standard related to electrical equipment, wiring regulations and guidance of each electric power company.
② Use self-extinguishing distribution cables for power supply wiring.
③ Wiring for control (hereinafter referred to as transmission line) shall be (5 cm or more) apart from power source wiring so that it is not influenced by electric noise from power source wiring. (Do not insert transmission line and power source wire in the same conduit.)
④ Be sure to provide designated grounding work to outdoor unit.
⑤ Give some allowance to wiring for electrical part box of indoor and outdoor units, because the box is sometimes removed at the time of service work.
⑥ Never connect the main power source to terminal block of transmission line. If connected, electrical parts will be burnt out.
⑦ Use 2-core shield cable for transmission line. If transmission lines of different systems are wired with the same multiplecore cable, the resultant poor transmitting and receiving will cause erroneous operations.
⑧ Only the transmission line specified should be connected to the terminal block for outdoor unit transmission.
(Transmission line to be connected with indoor unit : Terminal block TB3 for transmission line, Other : Terminal block TB7 for centralized control)
Erroneous connection does not allow the system to operate.
⑨ In case to connect with the upper class controller or to conduct group operation in different refrigerant systems, the control line for transmission is required between the outdoor units each other.
Connect this control line between the terminal blocks for centralized control. (2-wire line with no polarity)
When conducting group operation in different refrigerant systems without connecting to the upper class controller, replace the insertion of the short circuit connector from CN41 of one outdoor unit to CN40.
⑩ Group is set by operating the remote controller.
⑪ When connecting the CONNECTION KIT (PAC-LV11M-J) and an M series indoor unit, refer to the installation manual for the CONNECTION KIT.
⑫ When connecting a branch box, be sure to turn on the indoor units and the branch box before turning on the outdoor unit.

en

6. Electrical work



Ⓐ Power source
Ⓑ Power supply for branch box
Ⓒ Screw on the electrical component box for ground connection (TB1/TB1B)
Ⓓ Transmission line
Ⓔ Screw on the electrical component box for ground connection (TB3)
Ⓕ Screw on the electrical component box for ground connection (TB7)

Fig. 6-1

6.2. Control box and connecting position of wiring (Fig. 6-1)

1. Connect the wiring between the outdoor unit and the indoor unit or branch box to the transmission terminal block (TB3) of the outdoor unit.
   Connect the wiring between the outdoor unit and the centralized control system to the transmission terminal block (TB7) of the outdoor unit.
   When using shielded wiring, connect the ground of the shielded wiring to the shield terminal (S) of the terminal block (TB3) or (TB7).
   If the connection of the outdoor unit's transmission power supply connector has been changed from CN41 to CN42, connect the shield terminal (S) of the terminal block (TB7) to the screw (Ⓕ) using the included lead wire.
   * The shield (S) terminal of the transmission terminal block (TB3) is connected to the ground (Ⓔ) when the unit is shipped from the factory.
2. The terminal (B1) and (B2) on the terminal block (TB1B) is for supplying power to the branch box (220 – 240 VAC. max 6 A).
3. Remove the knock-out pieces from the piping cover, pass the power supply and transmission wires through the appropriate knock-out holes, and connect the wires to the terminal block.
4. Fix power source wiring to terminal box by using buffer bushing for tensile force (PG connection or the like).

⚠ **Caution:**
Never connect the transmission line for the indoor unit or the centralized control system transmission line to this terminal block (TB1). If the transmission lines are connected, the indoor unit terminal block or centralized control terminal block could be damaged.

6.3. Wiring transmission cables

① **Types of control cables**

1. Wiring transmission cables

Types of transmission cables	Shielding wire CVVS, CPEVS or MVVS
Cable diameter	More than 1.25 mm^2
Maximum wiring length	Within 200 m

2. M-NET Remote control cables

Types of remote control cables	Shielding wire CVVS, CPEVS or MVVS
Cable diameter	0.5 to 1.25 mm^2
Remarks	When 10 m is exceeded, use cable with the same specifications as transmission line wiring cables.

3. MA Remote control cable

Type of remote control cable	Sheathed 2-core cable (unshielded) CVV
Cable diameter	0.3 to 1.25 mm^2 (0.75 to 1.25 mm^2)*
Remarks	Within 200 m

* Connected with simple remote controller.

② **Wiring examples**

• Controller name, symbol and allowable number of controllers.

Name		Symbol	Allowable number of controllers
Outdoor unit controller		OC	–
Indoor unit controller	CITY MULTI series	M-IC	1 to 12 units per 1 OC *1
	M, S, P series	A-IC	2 to 8 units per 1 OC *1
Branch box		BC	0 to 2 units per 1 OC *1
Remote controller	M-NET	M-NET RC *2	Maximum of 12 controllers for 1 OC (Can not be connected if Branch box is used.) *1
	MA	MA-RC	Maximum of 2 per group
	Wireless	WL-RC	–

Note:
***1. The number of connectable units may be limited by some conditions such as an indoor unit's capacity or each unit's equivalent power consumption.**
***2. Don't use the Lossnay controller (PZ-61DR-E, PZ-43SMF-E, PZ-52SF-E, PZ-60DR-E).**

en

6. Electrical work

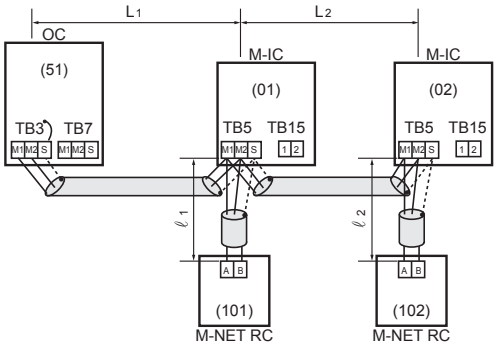
6.4. System control

Example of an M-NET remote controller system (Address setting is necessary.)

<Example for wiring control cables, wiring method and address setting, permissible lengths, and the constraint items are listed in the standard system with detailed explanation.>

Example for the standard operation

■ **Example of wiring transmission cables**



1 M-NET remote controller for each CITY MULTI series indoor unit
There is no need for setting the hundreds digit on the M-NET remote controller.

Note:
Combinations of standard operation, operation using 2 M-NET remote controllers, and group operation are possible.

■ **Wiring Method and Address Settings**

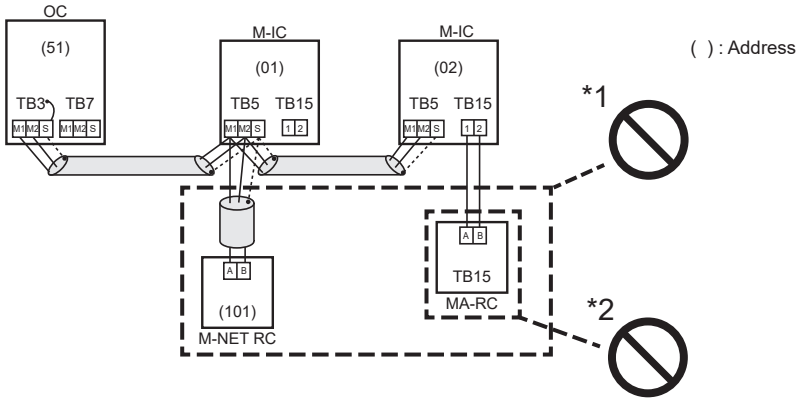
1. Always use shielded wire when making connections between the outdoor unit (OC) and the indoor unit (M-IC).
2. Use feed wiring to connect terminals M1, M2 and the ground terminal on transmission cable terminal block (TB3) for the outdoor unit (OC) to terminals M1 and M2 on the transmission cable terminal block (TB5) of each CITY MULTI series indoor unit (M-IC). Use nonpolarized 2-core wire.
3. Connect terminals M1 and M2 on transmission cable terminal block (TB5) for each indoor unit with the terminal block on M-NET the remote controller (M-NET RC).
4. Set the address setting switch (on P.C.B) as shown below.

Unit	Range	Setting Method
M-IC	001 to 050	—
OC	051 to 100	Use the smallest address of all the indoor unit plus 50. * The address automatically becomes “100” if it is set as “01–50”.
M-NET RC	101 to 150	Indoor unit address plus 100.

■ **Permissible Lengths**

1. Maximum transmission cable length between indoor and outdoor unit:
   L1 + L2 ≤ 200 m (1.25 mm² or more)
2. M-NET Remote controller cable length:
   ℓ1, ℓ2 ≤ 10 m (0.5 to 1.25 mm²)
   If the length exceeds 10 m, use a 1.25 mm² shielded wire. The section of the cable that exceeds 10 m must be included in the maximum length via outdoor units and maximum transmission cable length.

■ **Constraint items**



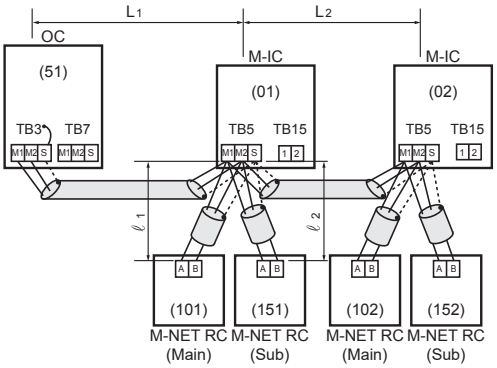
*1. M-NET remote controller (M-NET RC) and MA remote controller (MA RC) cannot be used together.
*2. Do not connect anything with TB15 of CITY MULTI series indoor unit (M-IC).

en

6. Electrical work

Example for the operation using 2 M-NET remote controllers

■ **Example of wiring Transmission cables**



( ) : Address

Using 2 M-NET remote controllers for each CITY MULTI series indoor unit.

Note:
Combinations of standard operation, operation using 2 M-NET remote controllers, and group operation are possible.

■ **Wiring Method and Address Settings**

1. Always use shielded wire when making connections between the outdoor unit (OC) and the indoor unit (M-IC).
2. Use feed wiring to connect terminals M1, M2 and the ground terminal on transmission cable terminal block (TB3) for the outdoor unit (OC) to terminals M1 and M2 on the transmission cable terminal block (TB5) of each CITY MULTI series indoor unit (M-IC). Use nonpolarized 2-core wire.
3. Connect terminals M1 and M2 on transmission cable terminal block (TB5) for each indoor unit with the terminal block on M-NET the remote controller (M-NET RC).
4. Set the address setting switch (on P.C.B) as shown below.

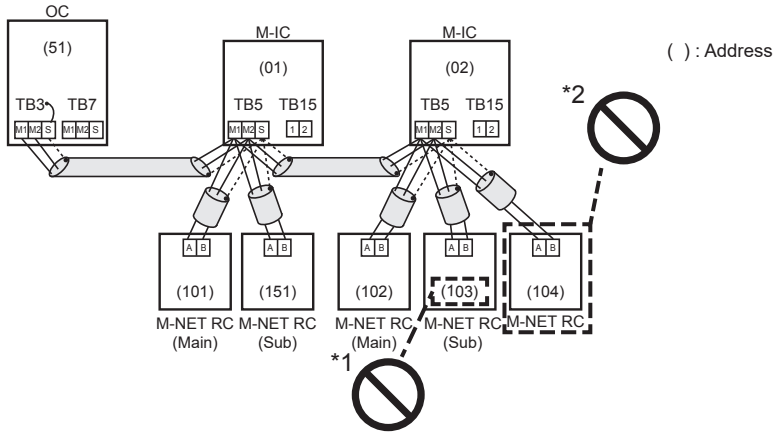
Unit	Range	Setting Method
M-IC	001 to 050	—
OC	051 to 100	Use the smallest address of all the indoor units plus 50. * The address automatically becomes “100” if it is set as “01–50”.
M-NET RC (Main)	101 to 150	Indoor unit address plus 100.
M-NET RC (Sub)	151 to 200	Indoor unit address plus 150.

■ **Permissible Lengths**

1. Maximum transmission cable length between indoor and outdoor unit (1.25 mm² or more):
   L1 + L2 ≤ 200 m
2. M-NET Remote controller cable length:
   ℓ1+ℓ2 ≤ 10 m (0.5 to 1.25 mm²)

If the length exceeds 10 m, use a 1.25 mm² shielded wire. The section of the cable that exceeds 10 m must be included in the maximum length via outdoor units and maximum transmission cable length.

■ **Constraint items**



( ) : Address

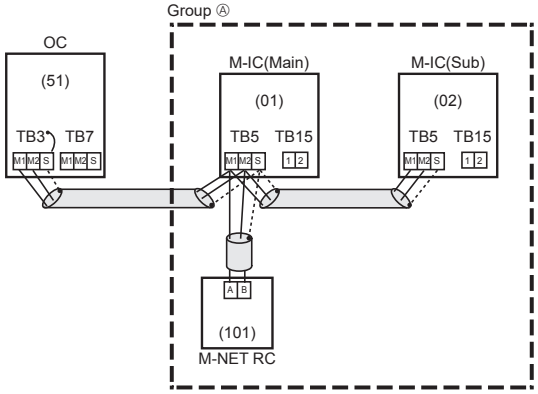
*1. Use the CITY MULTI series indoor unit (M-IC) address plus 150 as the sub M-NET remote controller address. In this case, it should be 152.
*2. 3 or more M-NET remote controllers (M-NET RC) cannot be connected to 1 CITY MULTI series indoor unit.

en

6. Electrical work

Example for the group operation

■ **Example of wiring transmission cables**



( ) : Address

Multiple CITY MULTI series indoor units operated together by 1 M-NET remote controller.

Note:
Combinations of standard operation, operation using 2 M-NET remote controllers, and group operation are possible.

■ **Wiring Method and Address Settings**

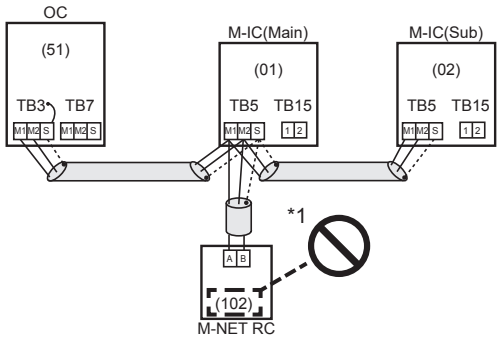
1. Always use shielded wire when making connections between the outdoor unit (OC) and the indoor unit (M-IC).
2. Use feed wiring to connect terminals M1 and M2 and the ground terminal on transmission cable terminal block (TB3) for the outdoor unit (OC) to terminals M1 and M2 on the transmission cable terminal block (TB5) of each CITY MULTI series indoor unit (M-IC). Use nonpolarized 2-core wire.
3. Connect terminals M1 and M2 on transmission cable terminal block (TB5) of the M-IC main unit with the most recent address within the same CITY MULTI series indoor unit (M-IC) group to terminal block on the M-NET remote controller.
4. Set the address setting switch (on P.C.B) as shown below.

Unit	Range	Setting Method
M-IC (Main)	001 to 050	Use the smallest address within the same group of CITY MULTI series indoor units.
M-IC (Sub)	001 to 050	Use an address, other than that of the M-IC (Main) from among the units within the same group of indoor units. This must be in sequence with the M-IC (Main).
OC	051 to 100	Use the smallest address of all the CITY MULTI series indoor units plus 50. * The address automatically becomes “100” if it is set as “01–50”.
M-NET RC	101 to 150	Set at an M-IC (Main) address within the same group plus 100.

5. Use the CITY MULTI series indoor unit (M-IC) within the group with the most functions as the M-IC (Main) unit.

■ **Permissible Lengths**
Same as that of standard operation

■ **Constraint items**



( ) : Address

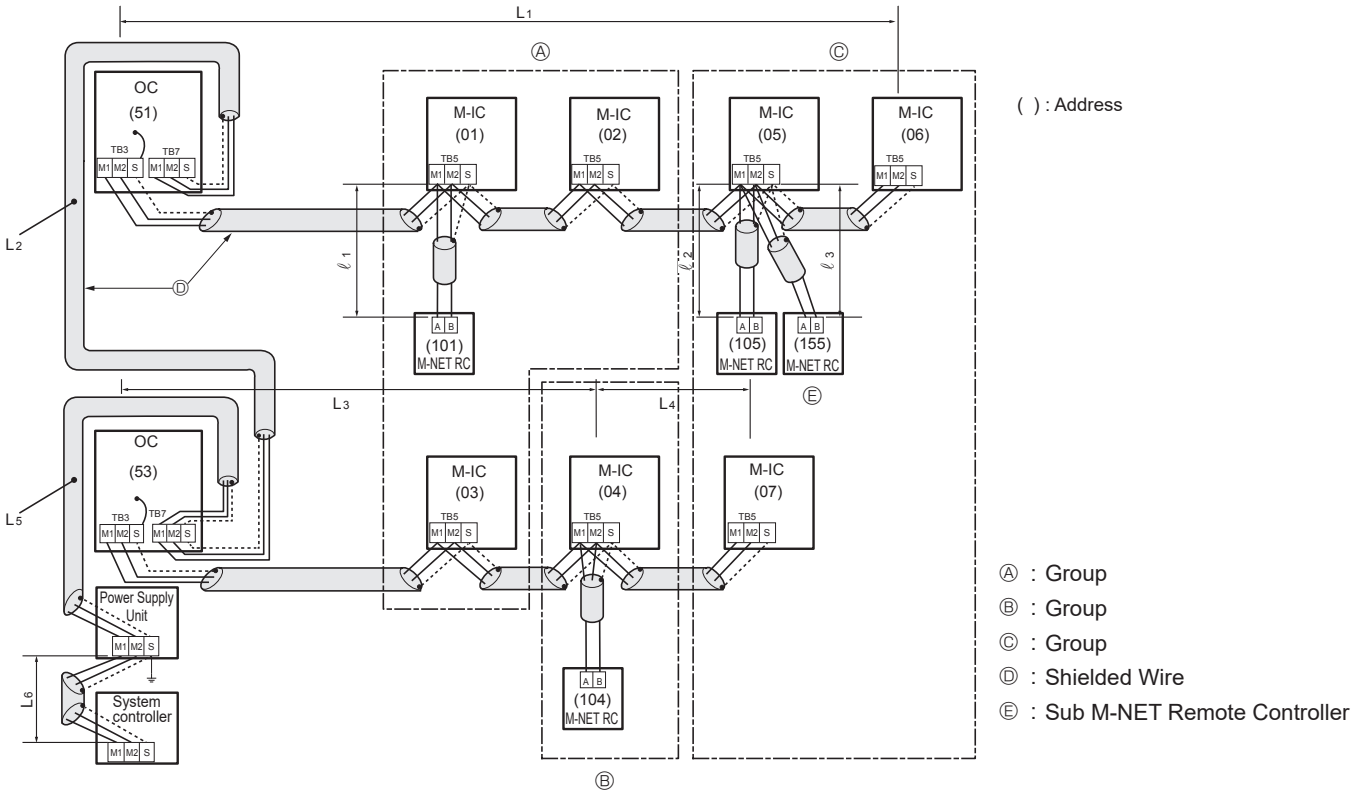
*1. The M-NET remote controller address is the CITY MULTI series indoor unit main address plus 100. In this case, it should be 101.

en

6. Electrical work

Example of a group operation system with 2 or more outdoor units and an M-NET remote controller. (Address settings are necessary.)

■ **Examples of wiring transmission cables**



■ **Wiring Method and Address Settings**

1. Always use shielded wire when making connections between the outdoor unit (OC) and the CITY MULTI series indoor unit (M-IC), as well for all OC-OC, and IC-IC wiring.
2. Use feed wiring to connect terminals M1 and M2 and the ground terminal on the transmission cable terminal block (TB3) of each outdoor unit (OC) to terminals M1, M2 and terminal S on the transmission cable terminal block of the CITY MULTI series indoor unit (M-IC).
3. Connect terminals M1 and M2 on the transmission cable terminal block of the CITY MULTI series indoor unit (M-IC) that has the most recent address within the same group to the terminal block on the M-NET remote controller (M-NET RC).
4. Connect together terminals M1, M2 and terminal S on the terminal block for centralized control (TB7) for the outdoor unit (OC).
5. Set the address setting switch as follows.

Unit	Range	Setting Method
M-IC (Main)	01 to 50	Use the smallest address within the same group of CITY MULTI series indoor units.
M-IC (Sub)	01 to 50	Use an address, other than the M-IC (Main) in the same group of CITY MULTI series indoor units. This must be in sequence with the M-IC (Main).
OC	51 to 100	Use the smallest address of all the CITY MULTI series indoor units plus 50. * The address automatically becomes “100” if it is set as “01–50”.
M-NET RC (Main)	101 to 150	Set at an M-IC (Main) address within the same group plus 100.
M-NET RC (Sub)	151 to 200	Set at an M-IC (Main) address within the same group plus 150.
MA-RC	-	Address setting is not necessary. (Main/sub setting is necessary.)

en

6. The group setting operations among the multiple CITY MULTI series indoor units are done by the M-NET remote controller (M-NET RC) after the electrical power has been turned on.
7. When the system controller is connected to the system, set SW2-1 on all outdoor units to ON.
   Also, set the power supply switching connectors (CN40, CN41) as follows.

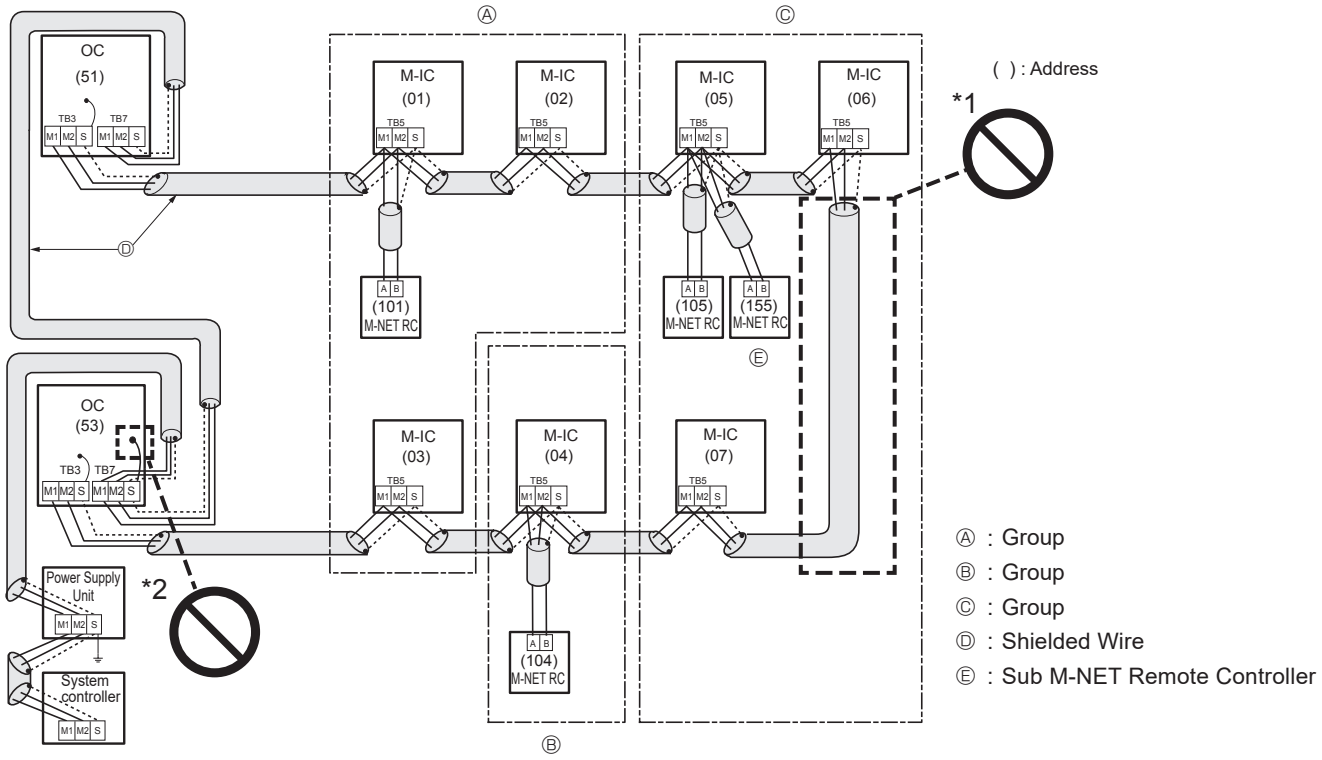
Refrigerant system	Connection with system controller	Transmission line power supply unit	Group operation in different refrigerant systems	Power supply switching connector settings
Single refrigerant	–	–	–	Remains CN41 (default setting)
Multiple refrigerants	No	–	No	Remains CN41 (default setting)
			Yes	For one outdoor unit only, switch the power supply switching connector (CN41) to (CN40). * Short-circuit the S (shield) terminal and the ground terminal (⏚) of the terminal block (TB7) of one outdoor unit switched to CN40.
	Connection with indoor/outdoor transmission line	Not required	Yes/No	
	Connection with central control system transmission line	Required	Yes/No	Remains CN41 (default setting)

6. Electrical work

■ **Permissible Lengths**

1. Maximum transmission cable length via outdoor unit:
   L1+L2+L3+L4, L3+L4+L5+L6, L1+L2+L5+L6 ≤ 500 m (1.25 mm² or more)
2. Maximum transmission cable length between indoor, branch box and outdoor unit:
   L1, L3+L4, L2+L5, L6 ≤ 200 m (1.25 mm² or more)
3. M-NET Remote controller cable length:
   ℓ1, ℓ2 + ℓ3 ≤ 10 m (0.5 to 1.25 mm²)
   If the length exceeds 10 m, use a 1.25 mm² shielded wire.
   The section of the cable that exceeds 10 m must be included in the maximum length via outdoor units and maximum transmission cable length.

■ **Constraint items**



Set all addresses to ensure that they are not overlapped.
M-NET remote controller and MA remote controller cannot be connected with the CITY MULTI series indoor unit of the same group wiring together.

*1. Never connect together the terminal blocks (TB5) for transmission wires for CITY MULTI series indoor units (M-IC) that have been connected to different outdoor units (OC).
*2. The earth processing of S terminal for the centralized control terminal block (TB7) is unnecessary. Connect the terminal S on the power supply unit with the earth.

en

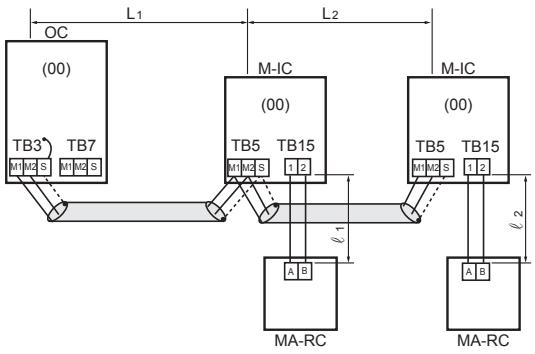
6. Electrical work

Example of an MA remote controller system (Address setting is not necessary.)

<In the case of same group operation, need to set the address that is only main CITY MULTI series indoor unit.>

Example for the standard operation

■ **Example of wiring transmission cables**



( ) : Address

1 MA remote controller for each indoor unit

Note:
Combinations of standard operation, operation using 2 M-NET remote controllers, and group operation are possible.

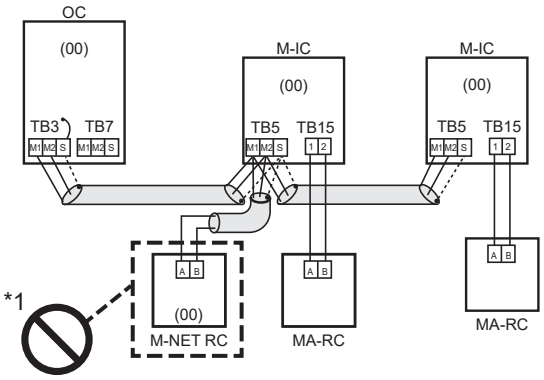
■ **Wiring Method and Address Settings**

1. Always use shielded wire when making connections between the outdoor unit (OC) and the indoor unit (M-IC).
2. Use feed wiring to connect terminals M1 and M2 on transmission cable terminal block (TB3) for the outdoor unit (OC) to terminals M1 and M2 on the transmission cable terminal block (TB5) of each CITY MULTI series indoor unit (M-IC). Use nonpolarized 2-core wire.
3. Connect terminals 1 and 2 on transmission cable terminal block (TB15) for each CITY MULTI series indoor unit with the terminal block for the MA remote controller (MA-RC).

■ **Permissible Lengths**

1. Maximum transmission cable length between indoor and outdoor unit:
   L1 + L2 ≤ 200 m (1.25 mm² or more)
2. MA remote controller cable length:
   ℓ1, ℓ2 ≤ 200 m (0.3 to 1.25 mm²)

■ **Constraint items**



( ) : Address

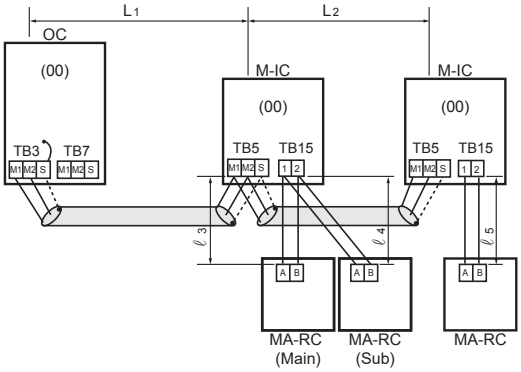
*1. The MA remote controller and the M-NET remote controller cannot be used together with the CITY MULTI series indoor unit of the same group.

en

6. Electrical work

Example for the operation using 2 remote controllers

■ **Example of wiring transmission cables**



Using 2 MA remote controllers for each CITY MULTI series indoor unit.

Note:
Combinations of standard operation, operation using 2 M-NET remote controllers, and group operation are possible.

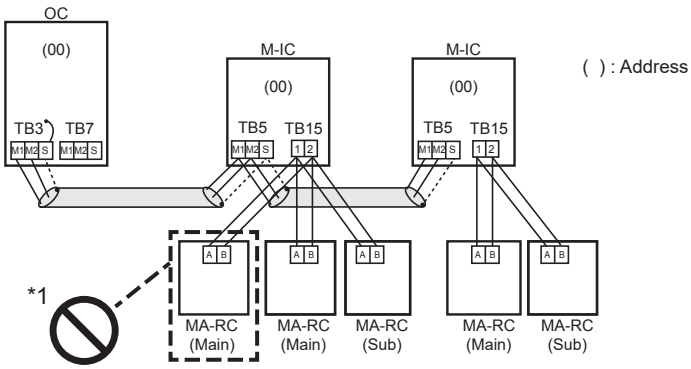
■ **Wiring Method and Address Settings**

1. Always use shielded wire when making connections between the outdoor unit (OC) and the indoor unit (M-IC).
2. Use feed wiring to connect terminals M1 and M2 on transmission cable terminal block (TB3) for the outdoor unit (OC) to terminals M1 and M2 on the transmission cable terminal block (TB5) of each CITY MULTI series indoor unit (M-IC). Use nonpolarized 2-core wire.
3. Connect terminals 1 and 2 on transmission cable terminal block (TB15) for each CITY MULTI series indoor unit with the terminal block for the MA remote controller (MA-RC).
4. In the case of using 2 remote controllers, connect terminals 1 and 2 on transmission cable terminal block (TB15) for each indoor unit with the terminal block for 2 MA remote controllers.
   - Set either one of the MA remote controllers to “sub remote controller”.
   - Refer to the installation manual of MA remote controller.

■ **Permissible Lengths**

1. Maximum transmission cable length between indoor and outdoor unit:
   L1 + L2 ≤ 200 m (1.25 mm² or more)
2. MA remote controller cable length:
   ℓ3 +ℓ4, ℓ5 ≤ 200 m (0.3 to 1.25 mm²)

■ **Constraint items**



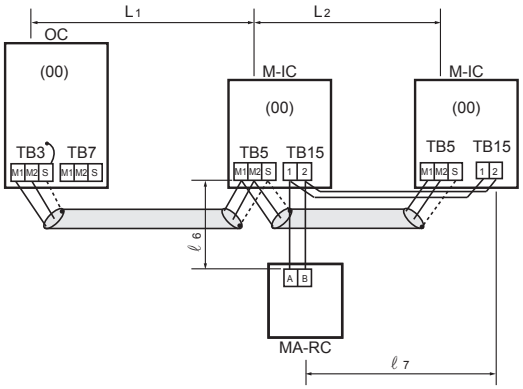
*1. 3 MA remote controllers or more cannot be connected with the CITY MULTI series indoor unit of the same group.

en

6. Electrical work

Example for the group operation

■ **Example of wiring transmission cables**



( ) : Address

Multiple indoor units operated together by 1 MA remote controller.

Note:
Combinations of standard operation, operation using 2 M-NET remote controllers, and group operation are possible.

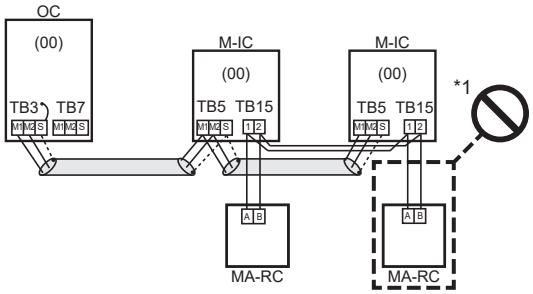
■ **Wiring Method and Address Settings**

1. Always use shielded wire when making connections between the outdoor unit (OC) and the indoor unit (M-IC).
2. Use feed wiring to connect terminals M1 and M2 on transmission cable terminal block (TB3) for the outdoor unit (OC) to terminals M1 and M2 on the transmission cable terminal block (TB5) of each CITY MULTI series indoor unit (M-IC). Use nonpolarized 2-core wire.
3. Connect terminals 1 and 2 on transmission cable terminal block (TB15) for each CITY MULTI series indoor unit with the terminal block for the MA remote controller (MA-RC).
4. In the case of group operation using MA remote controller (MA-RC), connect terminals 1 and 2 on transmission cable terminal block (TB15) of each CITY MULTI series indoor unit. Use non-polarized 2-core wire.
5. In the case of same group operation, need to set the address that is only main CITY MULTI series indoor unit. Please set the smallest address within number 01–50 of the CITY MULTI series indoor unit with the most functions in the same group.

■ **Permissible Lengths**

1. Maximum transmission cable length between indoor and outdoor unit:
   L1 + L2 ≤ 200 m (1.25 mm² or more)
2. MA remote controller cable length:
   ℓ6 +ℓ7 ≤ 200 m (0.3 to 1.25 mm²)

■ **Constraint items**



( ) : Address

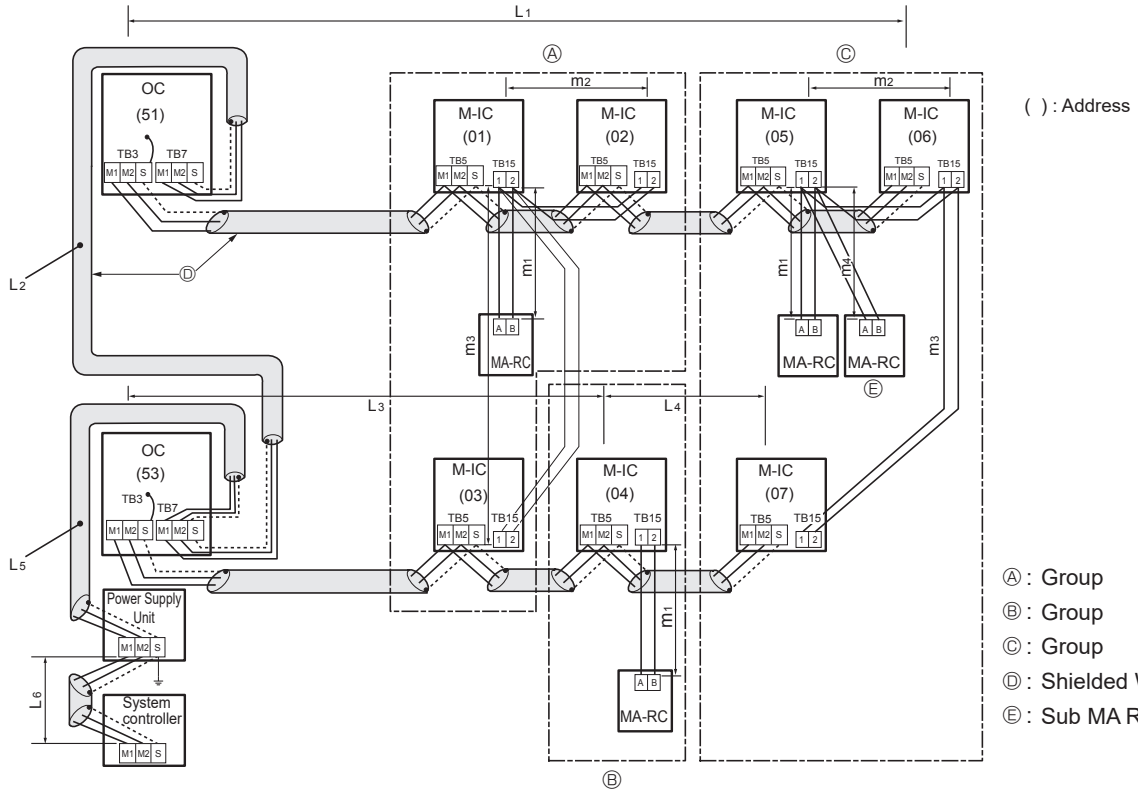
*1. The second MA remote controller is connected with the terminal block (TB15) for the MA remote controller of the same CITY MULTI series indoor unit (M-IC) as the first MA remote control.

en

6. Electrical work

Example of a group operation with 2 or more outdoor units and MA remote controllers. (Address settings are necessary.)

■ **Examples of wiring transmission cables**



■ **Wiring Method Address Settings**

1. Always use shielded wire when making connections between the outdoor unit (OC) and the CITY MULTI series indoor unit (M-IC), as well for all OC-OC, and IC-IC wiring.
2. Use feed wiring to connect terminals M1 and M2 and the ground terminal on the transmission cable terminal block (TB3) of each outdoor unit (OC) to terminals M1 and M2 on the terminal S on the transmission cable terminal block of the CITY MULTI series indoor unit (M-IC).
3. Connect terminals 1 and 2 on the terminal block for MA remote controller line (TB15) on the indoor unit (M-IC) to the terminal block on the MA remote controller (MA-RC). (Nonpolarized two-wire)
4. Connect together terminals M1, M2 and terminal S on the terminal block for centralized control (TB7) for the outdoor unit (OC).
5. Set the address setting switch as follows.

Unit	Range	Setting Method
M-IC (Main)	01 to 50	Use the smallest address within the same group of indoor units.
M-IC (Sub)	01 to 50	Use an address, other than the M-IC (Main) in the same group of M-NET indoor units. This must be in sequence with the M-IC (Main).
OC	51 to 100	Use the smallest address of all the indoor units plus 50. * The address automatically becomes “100” if it is set as “01–50”.
M-NET RC (Main)	101 to 150	Set at an M-IC (Main) address within the same group plus 100.
M-NET RC (Sub)	151 to 200	Set at an M-IC (Main) address within the same group plus 150.
MA-RC	-	Address setting is not necessary. (Main/sub setting is necessary.)

6. When connecting PWFY unit
   - For PWFY series, do not set up group connection with other indoor units.
   - LOSSNAY is not available for use with PWFY series.
   - Use a WMA remote controller for operation of PWFY series.
     For more details, refer to the service manual for PWFY series.
7. When the system controller is connected to the system, set SW2-1 on all outdoor units to ON.
   Also, set the power supply switching connectors (CN40, CN41) as follows.

Refrigerant system	Connection with system controller	Transmission line power supply unit	Group operation in different refrigerant systems	Power supply switching connector settings
Single refrigerant	–	–	–	Remains CN41 (default setting)
Multiple refrigerants	No	–	No	Remains CN41 (default setting)
			Yes	For one outdoor unit only, switch the power supply switching connector (CN41) to (CN40). * Short-circuit the S (shield) terminal and the ground terminal (⏚) of the terminal block (TB7) of one outdoor unit switched to CN40.
	Connection with indoor/outdoor transmission line	Not required	Yes/No	
	Connection with central control system transmission line	Required	Yes/No	Remains CN41 (default setting)

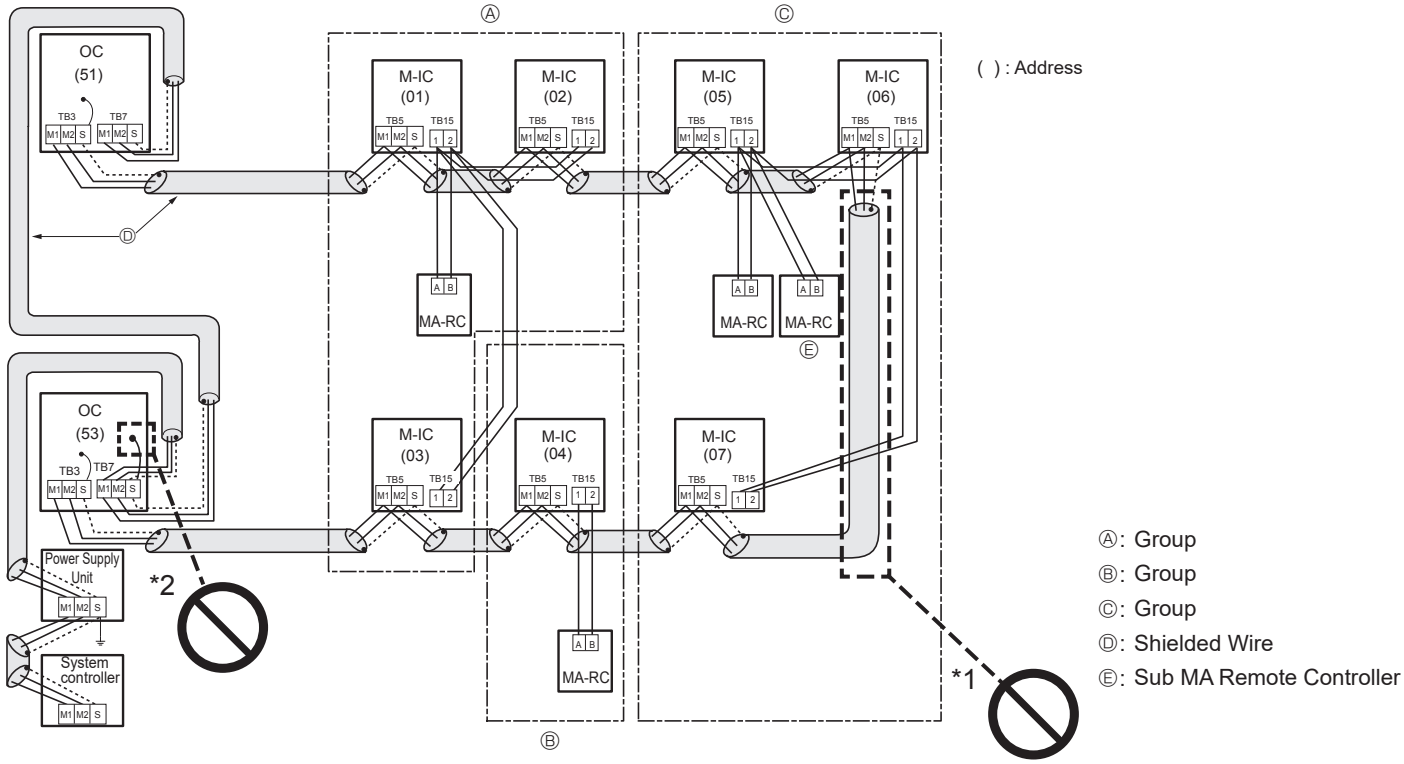
en

6. Electrical work

■ **Permissible Lengths**

1. Maximum line length via outdoor unit (M-NET cable):
   L1+L2+L3+L4, L3+L4+L5+L6, L1+L2+L5+L6 ≤ 500 m (1.25 mm² or more)
2. Maximum transmission cable length between indoor and outdoor unit. (M-NET cable):
   L1 and L3+L4 and L2+L5 and L6 ≤ 200 m (1.25 mm² or more)
3. MA Remote controller cable length:
   m1 and m1+m2+m3 and m1+m2+m3+m4 ≤ 200 m (0.3 to 1.25 mm²)

■ **Constraint items**



M-NET remote controller and MA remote controller cannot be connected with the CITY MULTI series indoor unit of the same group wiring together.

*1. Never connect together the terminal blocks (TB5) for transmission wires for CITY MULTI series indoor units (M-IC) that have been connected to different outdoor units (OC).

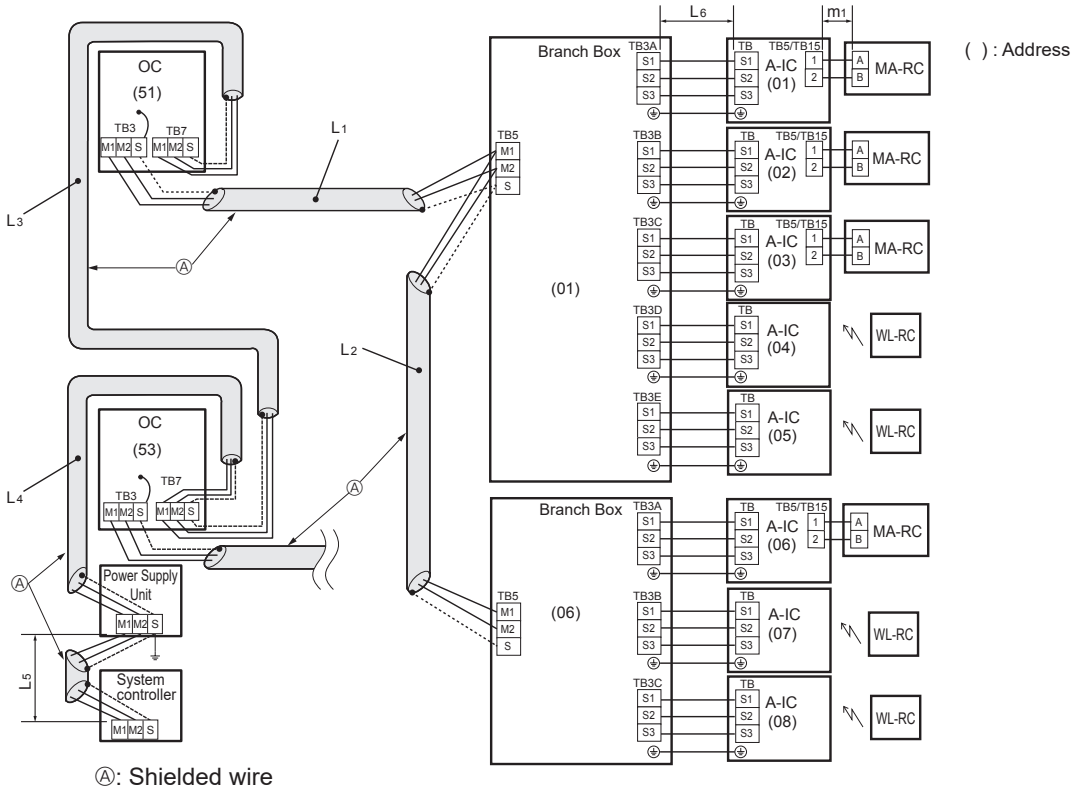
*2. The earth processing of S terminal for the centralized control terminal block (TB7) is unnecessary. Connect the terminal S on the power supply unit with the earth.

en

6. Electrical work

Example of a system using branch box and A-Control indoor unit

■ **Examples of wiring transmission cables**



■ **Wiring Method Address Settings**

1. Always use shielded wire when making connections between the outdoor unit (OC) and the Branch Box, as well for all OC-OC and BC-BC wiring.
2. Use feed wiring to connect terminals M1 and M2 and the ground terminal on the transmission cable terminal block (TB3) of each outdoor unit (OC) to terminals M1 and M2 on the terminal S on the transmission cable terminal block (TB5) of the Branch Box.
3. Connect terminals 1 and 2 on the transmission cable terminal block (TB5/TB15) of the A-control indoor unit (A-IC), to the terminal block on the MA remote controller (MA-RC).
4. Connect together terminals M1, M2 and terminal S on the terminal block for centralized control (TB7) for the outdoor unit (OC).
5. The earth processing of S terminal for the centralized control terminal block (TB7) is unnecessary. Connect the terminal S on the power supply unit to the earth.
6. Set the address setting switch as follows.

Unit	Range	Setting Method
A-IC	01 to 50	According to the set address of connected Branch Box, set the A-IC addresses sequentially by SW1, SW11, SW12 on Branch Box. (For example, when the Branch Box address is set to 01, set the A-IC addresses to 01, 02, 03, 04 and 05.)
Branch Box	01 to 50	Use a number within the range 1–50, but it should not make the highest address of connected A-IC exceed 50.
OC	51 to 100	Use the smallest address of all the Branch Box plus 50. * The address automatically becomes “100” if it is set as “01–50”.
MA-RC	-	Address setting is not necessary.

7. When the system controller is connected to the system, set SW2-1 on all outdoor units to ON.
   Also, set the power supply switching connectors (CN40, CN41) as follows.

Refrigerant system	Connection with system controller	Transmission line power supply unit	Group operation in different refrigerant systems	Power supply switching connector settings
Single refrigerant	–	–	–	Remains CN41 (default setting)
Multiple refrigerants	No	–	No	
			Yes	For one outdoor unit only, switch the power supply switching connector (CN41) to (CN40). * Short-circuit the S (shield) terminal and the ground terminal (⏚) of the terminal block (TB7) of one outdoor unit switched to CN40.
	Connection with indoor/outdoor transmission line	Not required	Yes/No	
	Connection with central control system transmission line	Required	Yes/No	Remains CN41 (default setting)

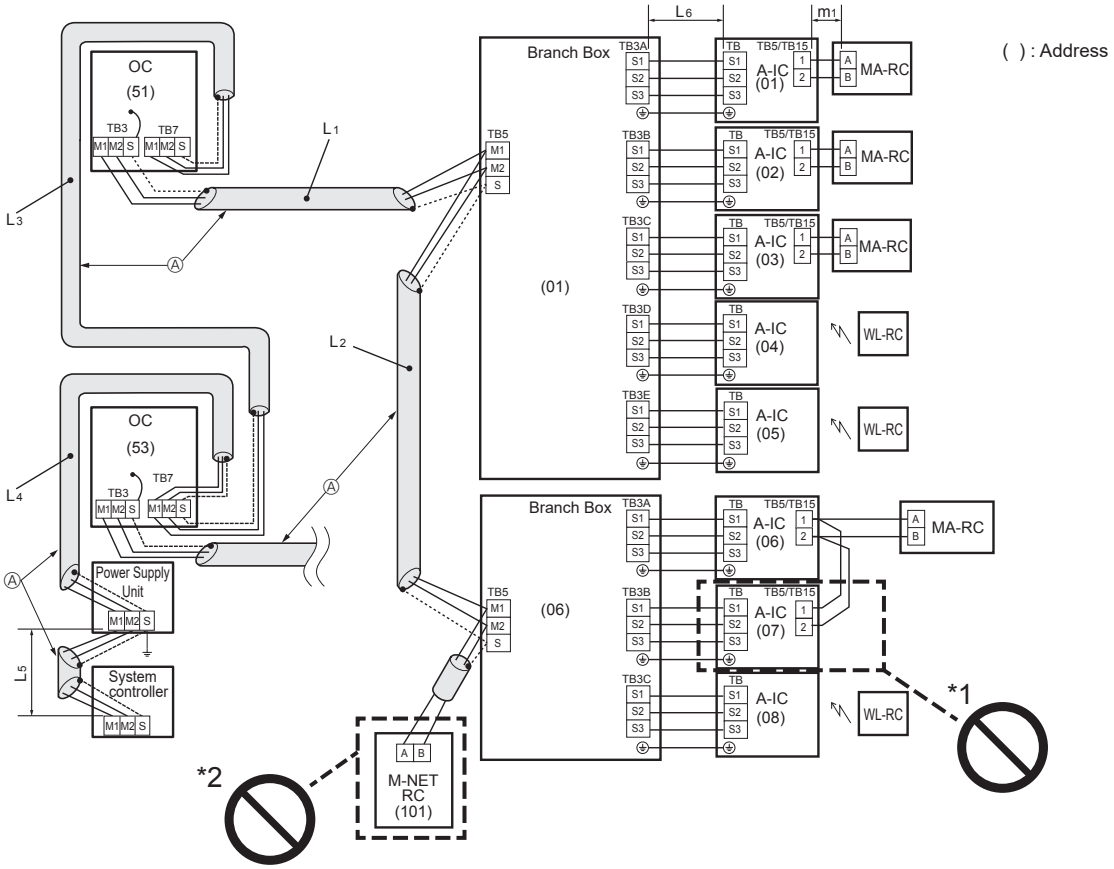
en

6. Electrical work

■ **Permissible Lengths**

1. Maximum line length via outdoor unit (M-NET cable):
   L1+L2+L3+L4+L5 ≤ 500 m (1.25 mm² or more)
2. Maximum transmission cable length between Branch box and outdoor unit. (M-NET cable):
   L1+L2, L3+L4, L5 ≤ 200 m (1.25 mm² or more)
3. Maximum transmission cable length between branch box and outdoor unit. (A-Control cable):
   L6 ≤ 25 m (1.5 mm²)
4. MA Remote controller cable length:
   m1 ≤ 200 m (0.3 to 1.25 mm²)

■ **Constraint items**



Different refrigerant systems cannot be connected together.

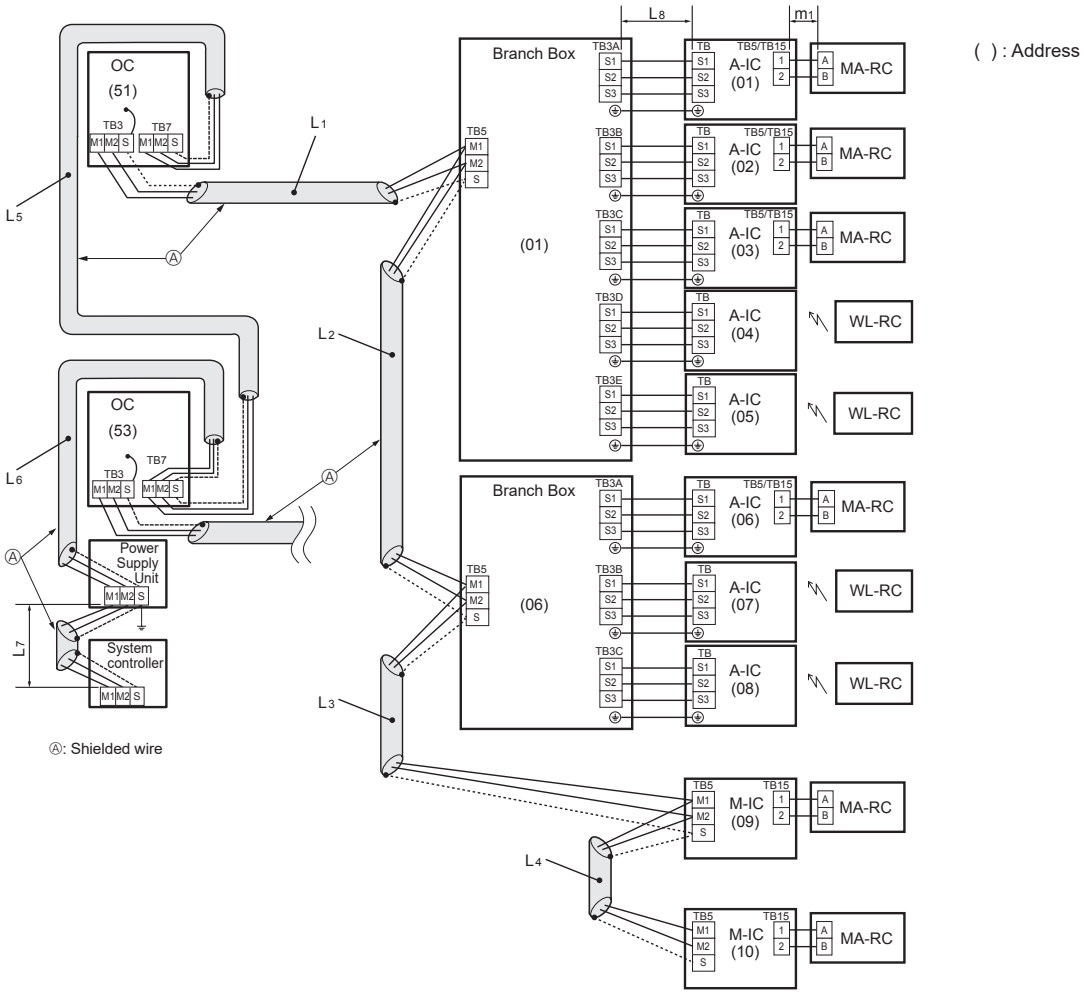
*1. Plural indoor units cannot be operated by a single remote controller.
*2. M-NET remote controller cannot be connected.

en

6. Electrical work

Example of a system using Branch Box, A-Control indoor unit, and CITY MULTI series indoor unit.

■ **Examples of wiring transmission cables**



en

6. Electrical work

■ **Wiring Method Address Settings**

1. Always use shielded wire when making connections between the outdoor unit (OC) and the Branch Box or CITY MULTI series indoor unit (M-IC), as well for all OC-OC, IC-IC, BC-BC and IC-BC wiring.
2. Use feed wiring to connect terminals M1 and M2 and the ground terminal on the transmission cable terminal block (TB3) of each outdoor unit (OC) to terminals M1 and M2 on the terminal S on the transmission cable terminal block (TB5) of the Branch Box or CITY MULTI series indoor unit (M-IC).
3. Connect terminals 1 and 2 on the transmission cable terminal block (TB5/TB15) of the A-control indoor unit (A-IC) or CITY MULTI series indoor unit (M-IC), to the terminal block on the MA remote controller (MA-RC).
4. Connect together terminals M1, M2 and terminal S on the terminal block for centralized control (TB7) for the outdoor unit (OC).
5. The earth processing of S terminal for the centralized control terminal block (TB7) is unnecessary. Connect the terminal S on the power supply unit to the earth.
6. Set the address setting switch as follows.

Unit	Range	Setting Method
M-IC	01 to 50	-
A-IC	01 to 50	According to the set address of connected Branch Box, set the A-IC addresses sequentially by SW1, SW11, SW12 on Branch Box. (For example, when the Branch Box address is set to 01, set the A-IC addresses to 01, 02, 03, 04 and 05.)
Branch Box	01 to 50	Use a number within the range 1-50, but it should not make the highest address of connected A-IC exceed 50.
OC	51 to 100	Use the smallest address of all the Branch Box plus 50. * The address automatically becomes “100” if it is set as “01–50”.
MA-RC	-	Address setting is not necessary.

7. When the system controller is connected to the system, set SW2-1 on all outdoor units to ON.
   Also, set the power supply switching connectors (CN40, CN41) as follows.

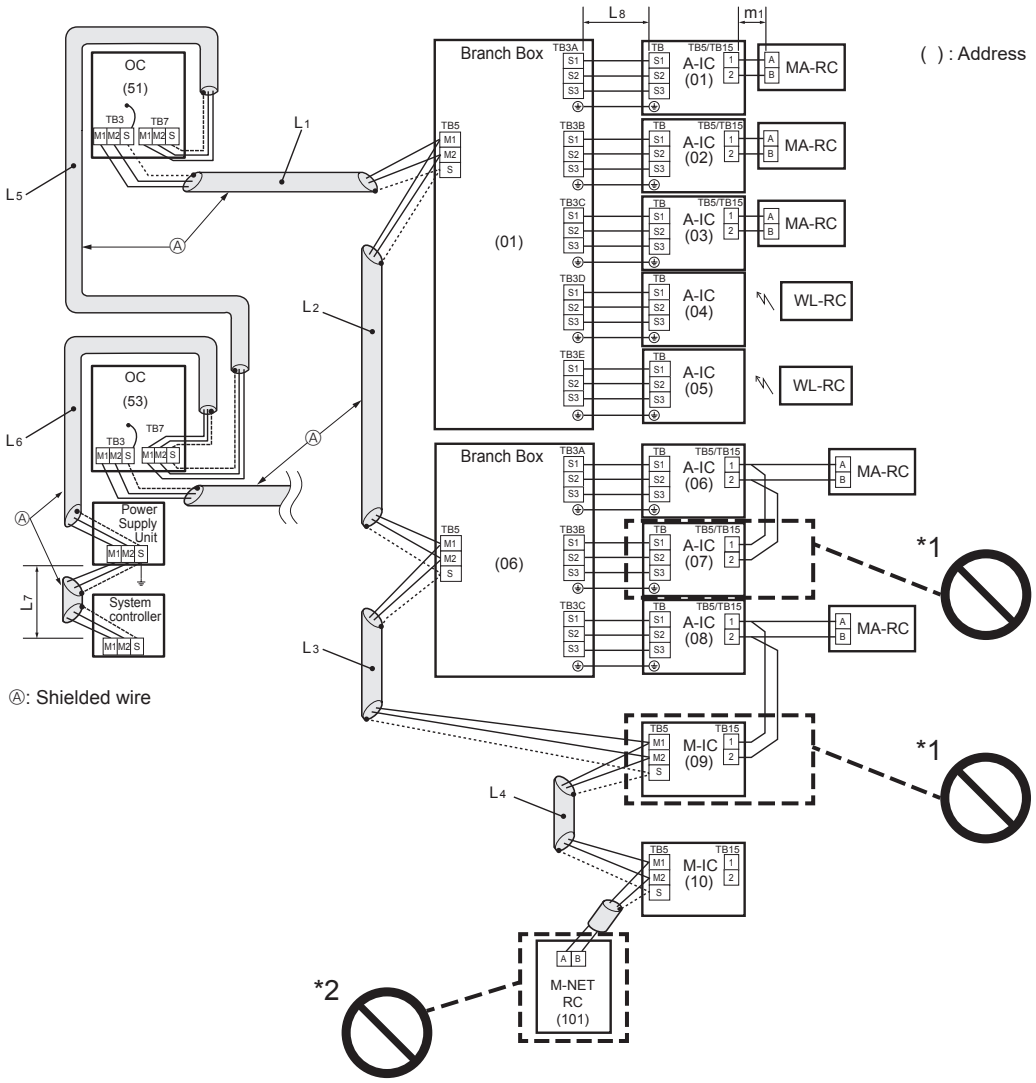
Refrigerant system	Connection with system controller	Transmission line power supply unit	Group operation in different refrigerant systems	Power supply switching connector settings
Single refrigerant	–	–	–	Remains CN41 (default setting)
Multiple refrigerants	No	–	No	Remains CN41 (default setting)
			Yes	For one outdoor unit only, switch the power supply switching connector (CN41) to (CN40). * Short-circuit the S (shield) terminal and the ground terminal (⏚) of the terminal block (TB7) of one outdoor unit switched to CN40.
	Connection with indoor/outdoor transmission line	Not required	Yes/No	
	Connection with central control system transmission line	Required	Yes/No	Remains CN41 (default setting)

■ **Permissible Lengths**

1. Maximum line length via outdoor unit (M-NET cable):
   L1+L2+L3+L4+L5+L6+L7 ≤ 500 m (1.25 mm² or more)
2. Maximum transmission cable length between Indoor unit,Branch box and outdoor unit. (M-NET cable):
   L1+L2+L3+L4, L5 +L6 and L7 ≤ 200 m (1.25 mm² or more)
3. Maximum transmission cable length between branch box and outdoor unit. (A-Control cable):
   L8 ≤ 25 m (1.5 mm²)
4. MA Remote controller cable length:
   m1 ≤ 200 m (0.3 to 1.25 mm²)

6. Electrical work

■ **Constraint items**



Different refrigerant systems cannot be connected together.

*1. Plural indoor units cannot be operated by a single remote controller.
*2. M-NET remote controller cannot be connected.

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6.5. Wiring of main power supply and equipment capacity

Schematic Drawing of Wiring: When Not Using a Branch Box (Example) (Fig. 6-2)

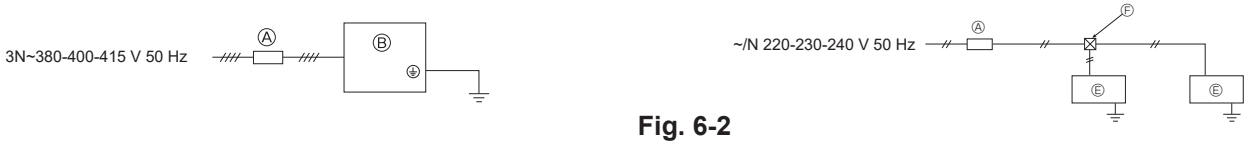
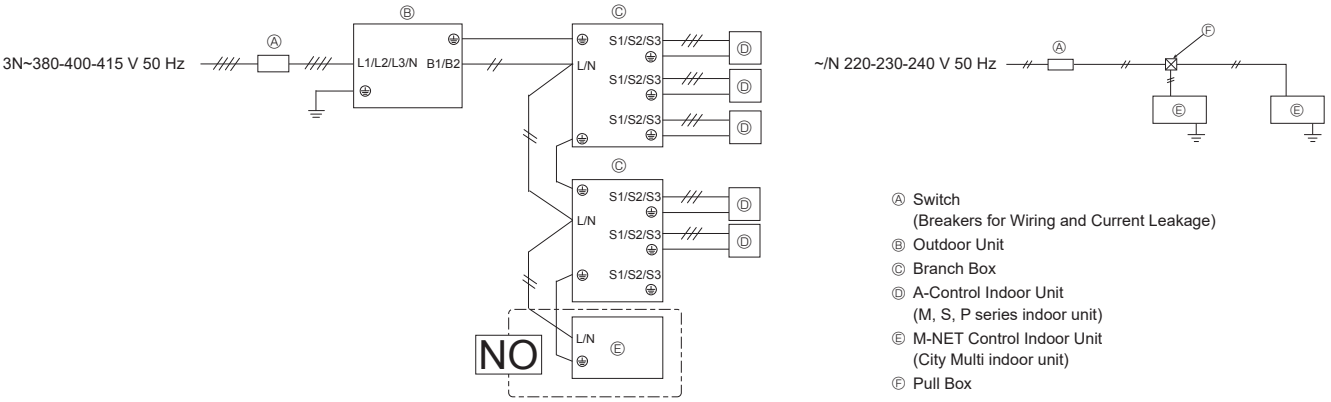


Fig. 6-2

Schematic Drawing of Wiring: When using a Branch Box (Example) (Fig. 6-3)

<When Power Is Supplied from the Outdoor Unit>



Ⓐ Switch
(Breakers for Wiring and Current Leakage)
Ⓑ Outdoor Unit
Ⓒ Branch Box
Ⓓ A-Control Indoor Unit
(M, S, P series indoor unit)
Ⓔ M-NET Control Indoor Unit
(City Multi indoor unit)
Ⓕ Pull Box

* The M-NET Control Indoor unit cannot receive power supplied from an outdoor unit, so provide it with power separately.

<When Power Is Supplied Separately>

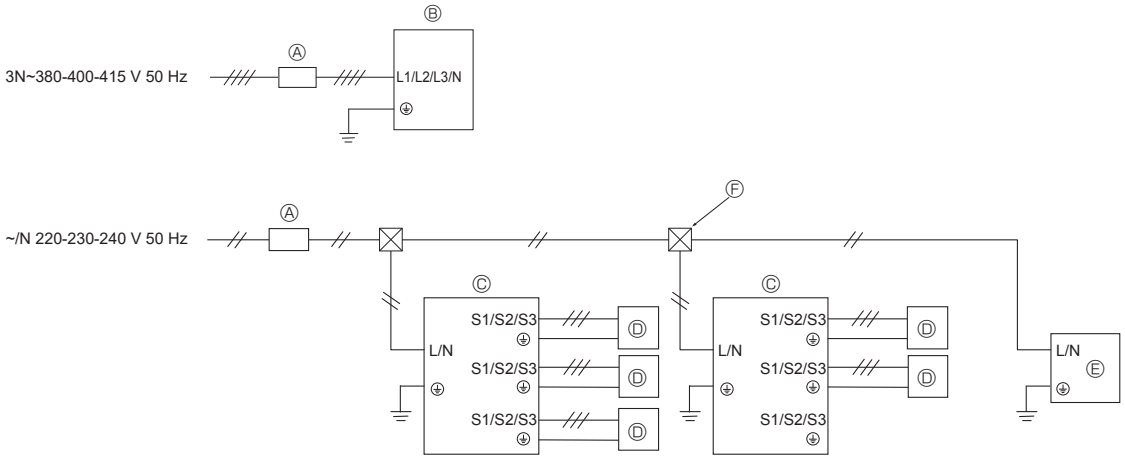


Fig. 6-3

en

6. Electrical work

Cross-sectional area of Wire for Main Power Supply and On/Off Capacities
<When power is supplied separately>

Model	Power Supply	Minimum Wire Cross-sectional area (mm²)		Breaker for Wiring *1	Breaker for Current Leakage
		Main Cable	Ground		
Outdoor Unit	3N~380-400-415 V 50 Hz *2	2.5	2.5	25 A	25 A 30 mA 0.1 sec. or less

<When power is supplied from the outdoor unit>

Model	Power Supply	Minimum Wire Cross-sectional area (mm²)		Breaker for Wiring *1	Breaker for Current Leakage
		Main Cable	Ground		
Outdoor Unit	3N~380-400-415 V 50 Hz *2	4.0	4.0	32 A	32 A 30 mA 0.1 sec. or less

*1. A breaker with at least 3.0 mm contact separation in each poles shall be provided. Use non-fuse breaker (NF) or earth leakage breaker (NV).
*2. In multi-phase appliances, the colour of the neutral conductor of the supply cord, if any, shall be blue.

<Indoor units> When power is supplied separately

Total operating current of the indoor unit	Minimum wire thickness (mm²)			Ground-fault interruper *1	Local switch (A)		Breaker for wiring (NFB)
	Main Cable	Branch	Ground		Capacity	Fuse	
F0 = 16 A or less *2	1.5	1.5	1.5	20 A current sensitivity *3	16	16	20
F0 = 25 A or less *2	2.5	2.5	2.5	30 A current sensitivity *3	25	25	30
F0 = 32 A or less *2	4.0	4.0	4.0	40 A current sensitivity *3	32	32	40

Apply to IEC61000-3-3 about max. permissive system impedance.
*1 The Ground-fault interrupter should support inverter circuit.
The Ground-fault interrupter should combine using of local switch or wiring breaker.
*2 Please take the larger of F1 or F2 as the value for F0.
F1 = Total operating maximum current of the indoor units × 1.2
F2 = {V1 × (Quantity of Type 1)/C} + {V1 × (Quantity of Type 2)/C} + {V1 × (Quantity of Type 3)/C} + ⋯ + {V1 × (Quantity of Type 17)/C}

Connect to Branch box

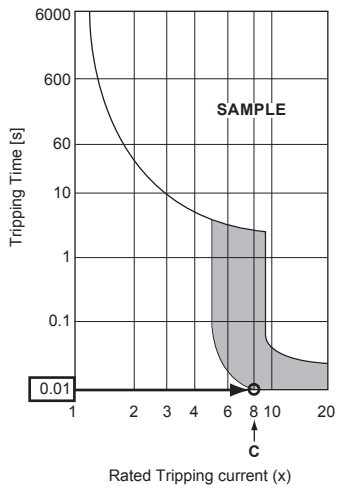
Indoor unit		V1	V2
Type 1	SEZ-KD·VA(L), SEZ-M·DA(L), PCA-RP·KAQ, PCA-M·KA, SLZ-KF·VA, PLA-RP·EA, PLA-M·EA, PCA-M·KA2, SEZ-M·DA(L)2	19.8	2.4
Type 2	PEAD-RP·JAQ(L), PEAD-M·JA(L), PEAD-M·JA(L)2	26.9	
Type 3	MLZ-KA·VA, MLZ-KP·VF	9.9	
Type 4	MSZ-FH·VE, MSZ-GF·VE, MSZ-SF·VE, MSZ-EF·VE, MSZ-SF·VA, MSZ-EF·VG-E1	6.8	
Type 5	MFZ-KJ·VE2, MSZ-LN·VG, MSZ-AP·VG, MSZ-AP·VF, MSZ-EF·VG-E2, MSZ-EF·VGK-E1, MSZ-AP·VGK, MFZ-KT·VG, MSZ-LN·VG2, MSZ-EF·VGK-E2, MSZ-EF·VG-E3, MSZ-AY·VG, MSZ-AY·VGK(P)	7.4	
Type 6	Branch box	5.1	3.0
Type 7	SLZ-M·FA, SLZ-M·FA2, PLA-M·EA2	17.1	2.4

Connect to Connection kit (PAC-LV11M)

Indoor unit		V1	V2
Type 8	MSZ-EF·VE, MSZ-SF·VA, MSZ-SF·VE, MSZ-FH·VE, MSZ-EF·VG-E1	6.8	2.4
Type 9	MFZ-KJ·VE2, MSZ-LN·VG, MSZ-AP·VG, MSZ-AP·VF, MSZ-EF·VG-E2, MSZ-EF·VGK-E1, MSZ-AP·VGK, MFZ-KT·VG, MSZ-LN·VG2, MSZ-EF·VGK-E2, MSZ-EF·VG-E3, MSZ-AY·VG, MSZ-AY·VGK(P)	7.4	
Type 10	Connection kit (PAC-LV11M)	3.5	

Indoor unit		V1	V2
Type 11	PEFY-P·VMA(L)-E(2)	38.0	1.6
Type 12	PEFY-VMHS-E-F, PEFY-P40-140VMHS-E	26.8	1.6
Type 13	PMFY-P·VBM-E, PLFY-P·VBM-E, PEFY-P·VMS1-E, PCFY-P·VKM-E, PKFY-P·VKM-E, PLFY-P·VEM-E, PLFY-P·VFM-E, PFFY-VKM-E2, PFFY-VLRMM-E, PKFY-VLM-E, PFFY-VCM-E, PLFY-M·VEM-E	19.8	2.4
Type 14	PEFY-VMA(L)-E3, PEFY-M·VMA(L)-A	18.6	3.0
Type 15	PEFY-P200VMHS-E	13.8	4.8
Type 16	PLFY-M·VEM6	17.1	2.4
Type 17	PLFY-P·VLMD-E, PEFY-P·VMR-E-L/R, PFFY-P·VLEM-E, GUF-RD(H)4, PFFY-VLRM-E	0.0	0.0

Sample chart



C : Multiple of tripping current at tripping time 0.01s
Please pick up “C” from the tripping characteristic of the breaker.

<Example of “F2” calculation>
* Condition PLFY-P·VBM-E × 4 + PEFY-VMA-E × 1, C = 8 (refer to right sample chart)
F2 = 19.8 × 4/8 + 38 × 1/8
= 14.65
→ 16 A breaker (Tripping current = 8 × 16 A at 0.01s)
* 3 Current sensitivity is calculated using the following formula.
G1 = V2 × (Quantity of Type 1) + V2 × (Quantity of Type 2) + V2 × (Quantity of Type 3) + ⋯ + V2 × (Quantity of Type 17)
+ V3 × (Wire length [km])

G1	Current sensitivity
30 or less	30 mA 0.1 sec. or less
100 or less	100 mA 0.1 sec. or less

Wire thickness	V3
1.5 mm²	48
2.5 mm²	56
4.0 mm²	66

1. **Bear in mind ambient conditions (ambient temperature,direct sunlight, rain water,etc.) when proceeding with the wiring and connections.**
2. **The wire size is the minimum value for metal conduit wiring. The power cord size should be 1 rank thicker consideration of voltage drops. Make sure the power-supply voltage does not drop more than 10%.**
3. **Specific wiring requirements should adhere to the wiring regulations of the region.**
4. **Power supply cords of parts of appliances for outdoor use shall not be lighter than polychloroprene sheathed flexible cord (design 60245 IEC57). For example, use wiring such as YZW.**
5. **Install an earth longer than other cables.**

en

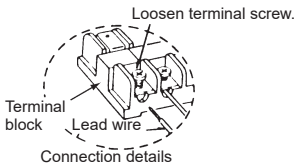
6. Electrical work

⚠ **Warning:**

- **Be sure to use specified wires to connect so that no external force is imparted to terminal connections. If connections are not fixed firmly, it may cause heating or fire.**
- **Be sure to use the appropriate type of overcurrent protection switch. Note that generated overcurrent may include some amount of direct current.**
- **Be sure to attach the terminal block covers/panel of the outdoor unit securely.**
  If it is not attached correctly, if could result in a fire or an electric shock due to dust, water. etc.

⚠ **Caution:**

- **Be careful not to make mis-wiring.**
- **Firmly tighten the terminal screws to prevent them from loosening.**
- **After tightening, pull the wires lightly to confirm that they not move.**
- **If the connecting wire is incorrectly connected to the terminal block, the unit does not operate normally.**
- **Some installation site may require attachment of an earth leakage breaker. If no earth leakage breaker is installed, it may cause an electric shock.**
- **Do not use anything other than breaker and fuse with correct capacity. Using fuse and wire or copper wire with too large capacity may cause a malfunction of unit or fire.**

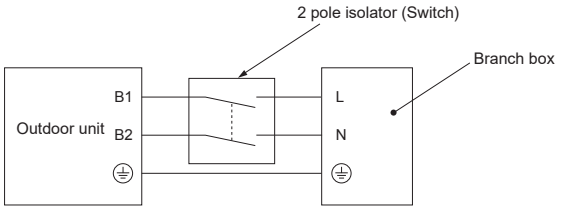


IMPORTANT
Make sure that the current leakage breaker is one compatible with higher harmonics.
Always use a current leakage breaker that is compatible with higher harmonics as this unit is equipped with an inverter.
The use of an inadequate breaker can cause the incorrect operation of inverter.

Never splice the power cable or the indoor-outdoor-branch box connection cable, otherwise it may result in a smoke, a fire or communication failure.

⚠ **Warning:**

- **Please turn off the main power supply when servicing. And do not touch the B1, B2 terminals when the power is energized. If isolator should be used between outdoor unit and branch box/indoor unit and branch box, please use 2 pole type.**
  (Please refer to figure below.)



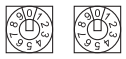
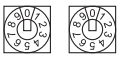
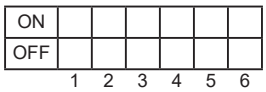
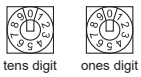
⚠ **Caution:**
After using the isolator, be sure to turn off and on the main power supply to reset the system. Otherwise, the outdoor unit may not be able to detect the branch box(es) or indoor units.

Be sure to connect the outdoor-branch box/indoor-branch box connecting cables directly to the units (no intermediate connections).
Intermediate connections can lead to communication errors if water enters the cables and causes insufficient insulation to ground or a poor electrical contact at the intermediate connection point.

6. Electrical work

6.6. Address setting

Switch address setting

<table>
<tr><th></th><th>Outdoor</th><th colspan="2">Branch Box</th><th>M, S, P series Indoor</th><th>CITY MULTI series</th></tr>
<tr><th></th><th></th><th>Address</th><th>Connection Setting</th><th></th><th></th></tr>
<tr><td>Switch</td><td> 
tens digit ones digit
SWU2 SWU1</td><td> 
tens digit ones digit
SW12 SW11</td><td> 
SW1</td><td>None</td><td> 
tens digit ones digit
SW12 SW11</td></tr>
<tr><td>Range</td><td>51 - 100</td><td colspan="2">1 - 50</td><td>–</td><td>1 - 50</td></tr>
<tr><td>Setting</td><td>CITY MULTI series Indoor or Branch Box address +50</td><td colspan="2">• According to the set address (for example, 01), the addresses for the connected indoor units are set sequentially (for example, 02, 03, 04, and 05).
<table><tr><td>SW1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td></td></tr><tr><td></td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td></td></tr><tr><td>Port</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td></td></tr><tr><td>Address</td><td>01</td><td></td><td></td><td></td><td></td><td>(SW11, 12)</td></tr><tr><td></td><td></td><td>02</td><td>03</td><td>04</td><td>05</td><td>(sequential numbers)</td></tr></table></td><td>• Specify whether indoor units are connected to each port (A, B, C, D, and E).
<table><tr><td>SW1</td><td>Port</td><td>OFF</td><td>ON</td></tr><tr><td>1</td><td>A</td><td>disconnected</td><td>connected</td></tr><tr><td>2</td><td>B</td><td>disconnected</td><td>connected</td></tr><tr><td>3</td><td>C</td><td>disconnected</td><td>connected</td></tr><tr><td>4</td><td>D</td><td>disconnected</td><td>connected</td></tr><tr><td>5</td><td>E</td><td>disconnected</td><td>connected</td></tr><tr><td>6</td><td>not use</td><td></td><td></td></tr></table></td><td>There are no address settings for the indoor units.</td><td>–</td></tr>
</table>

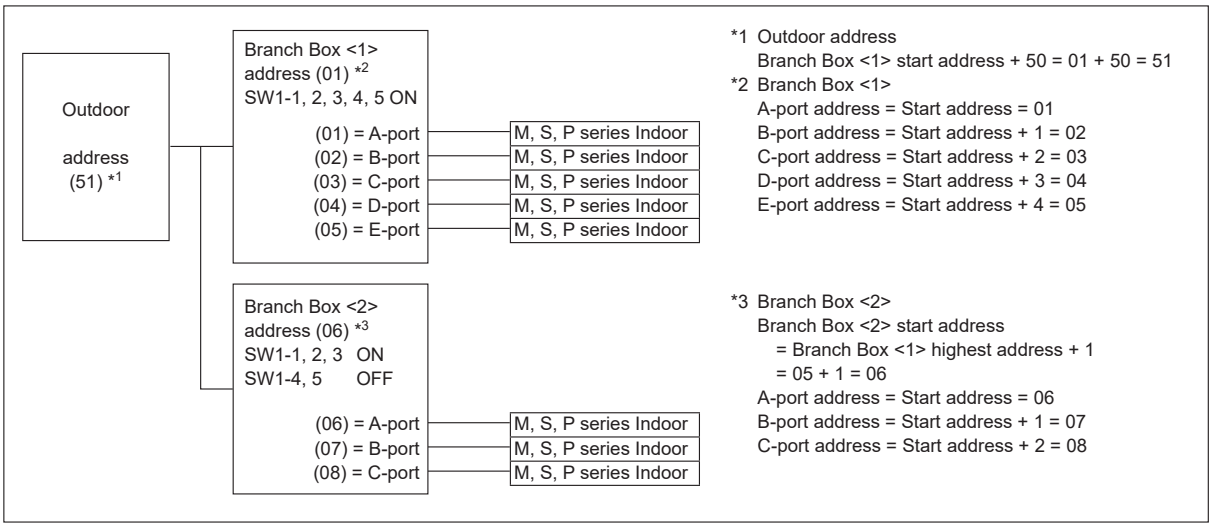
Note: 1. Branch box address

When setting the address, use a number within the range 1–50.

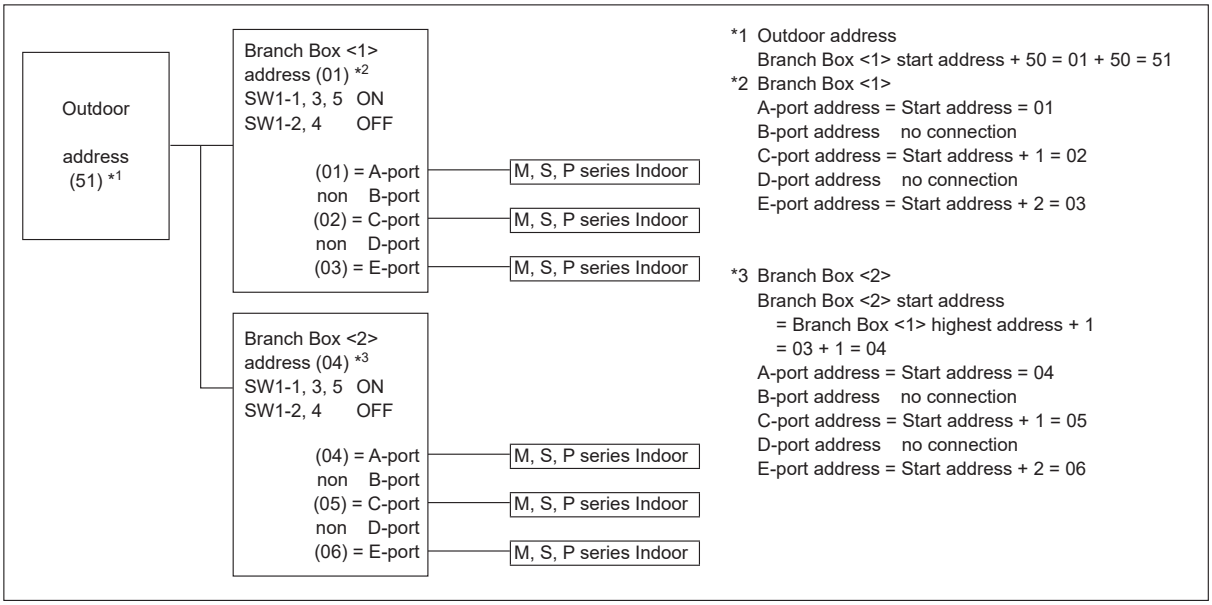
E.g. The set address is (47) and there are 5 indoor units (A, B, C, D, and E).

If A: (47), B: (48), C: (49), D: (50), and E: (51), E is incorrect because it exceeds 50.

Ex1. Outdoor + Branch <1> (M, S, P series Indoor A, B, C, D, E) + Branch <2> (M, S, P series Indoor A, B, C)



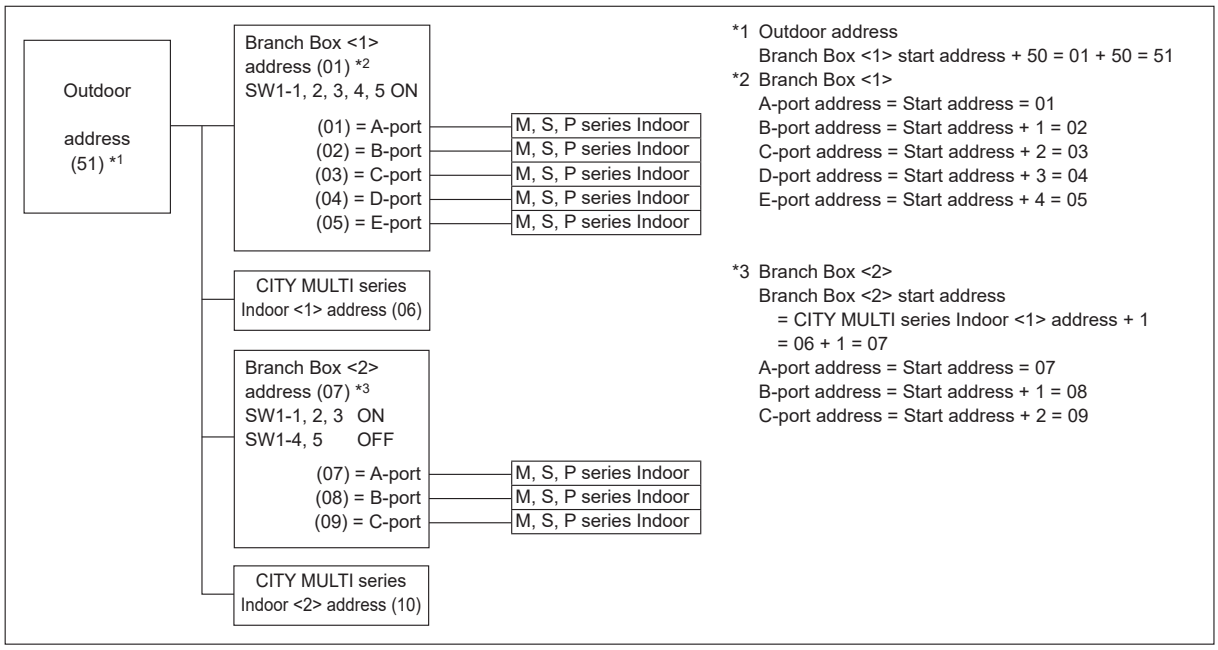
Ex2. Outdoor + Branch <1> (M, S, P series Indoor A, C, E) + Branch <2> (M, S, P series Indoor A, C, E)



en

6. Electrical work

Ex3. Outdoor + Branch <1> (M, S, P series Indoor A, B, C, D, E) + Branch <2> (M, S, P series Indoor A, B, C) + CITY MULTI series Indoor <1> + CITY MULTI series Indoor <2>



en

7. Test run

7.1. Before test run

► After completing installation and the wiring and piping of the indoor and outdoor units, check for refrigerant leakage, looseness in the power supply or control wiring, wrong polarity, and no disconnection of one phase in the supply.

► Use a 500-volt M-ohm tester to check that the resistance between the power supply terminals and ground is at least 1 MΩ.

► Do not carry out this test on the control wiring (low voltage circuit) terminals.

⚠ Warning:

Do not use the air conditioner if the insulation resistance is less than 1 MΩ.

Insulation resistance

After installation or after the power source to the unit has been cut for an extended period, the insulation resistance will drop below 1 MΩ due to refrigerant accumulating in the compressor. This is not a malfunction. Perform the following procedures.

1. Remove the wires from the compressor and measure the insulation resistance of the compressor.
2. If the insulation resistance is below 1 MΩ, the compressor is faulty or the resistance dropped due the accumulation of refrigerant in the compressor.
3. After connecting the wires to the compressor, the compressor will start to warm up after power is supplied. After supplying power for the times indicated below, measure the insulation resistance again.
   - The insulation resistance drops due to accumulation of refrigerant in the compressor. The resistance will rise above 1 MΩ after the compressor is warmed up for 12 hours.
     (The time necessary to warm up the compressor varies according to atmospheric conditions and refrigerant accumulation.)
   - To operate the compressor with refrigerant accumulated in the compressor, the compressor must be warmed up at least 12 hours to prevent breakdown.
4. If the insulation resistance rises above 1 MΩ, the compressor is not faulty.

⚠ Caution:

- **The compressor will not operate unless the power supply phase connection is correct.**
- **Turn on the power at least 12 hours before starting operation.**

- Starting operation immediately after turning on the main power switch can result in severe damage to internal parts. Keep the power switch turned on during the operational season.

► The followings must be checked as well.

- The outdoor unit is not faulty. LED on the control board of the outdoor unit flash when the outdoor unit is faulty.
- Both the gas and liquid stop valves are completely open.

7.2. Test run

7.2.1. Using remote controller

Refer to the indoor unit installation manual.

- Be sure to perform the test run for each indoor unit. Make sure each indoor unit operates properly following the installation manual attached to the unit.
- If you perform the test run for all indoor units at once, you cannot detect any erroneous connection, if any, of the refrigerant pipes and the connecting wires.

* The compressor operation is not available for 3 minutes at least after the power is supplied.

- The compressor can emit noise just after turn on the power supply or in case of low outside air temperature.
- Depending on the operating conditions, the outdoor unit fan may stop while the compressor is operating, but this is not a malfunction.

About the restart protective mechanism

Once the compressor stops, the restart preventive device operates so the compressor will not operate for 3 minutes to protect the air conditioner.

7.2.2. Using SW3 in outdoor unit

Note:

In case of the test run from outdoor unit, all indoor units operate. Therefore, you can not detect any erroneous connection of refrigerant pipes and the connecting wires. If it aims at detection of any erroneous connection, be sure to carry out the test run from remote controller with reference to "7.2.1. Using remote controller."

SW3-1	ON	Cooling operation
SW3-2	OFF	
SW3-1	ON	Heating operation
SW3-2	ON	

* After performing the test run, set SW3-1 to OFF.

- A few seconds after the compressor starts, a clanging noise may be heard from the inside of the outdoor unit. The noise is coming from the check valve due to the small difference in pressure in the pipes. The unit is not faulty.

The test run operation mode cannot be changed by DIP switch SW3-2 during the test run. (To change the test run operation mode during the test run, stop the test run by DIP switch SW3-1. After changing the test run operation mode, resume the test run by switch SW3-1.)

7.3. Refrigerant collecting (Pump down)

Perform the following procedures to collect the refrigerant when moving the indoor unit or the outdoor unit.

① Turn off the circuit breaker.

② Connect the low pressure side of the gauge manifold to the service port of the gas side stop valve.

③ Close the liquid stop valve.

④ Supply power (circuit breaker).

* Start-up of the indoor-outdoor communication takes about 3 minutes after the power (circuit breaker) is turned on. Start the pump-down operation 3 to 4 minutes after the power (circuit breaker) is turned ON.

⑤ Perform the test run for cooling operation (SW3-1: ON and SW3-2: OFF). The compressor (outdoor unit) and ventilators (indoor and outdoor units) start operating and test run for cooling operation begins. Immediately after performing the test run for cooling operation, set the outdoor service switch SW2-4 (pump down switch) from OFF to ON.

* Do not continue to operate for a long time with the switch SW2-4 set to ON. Make sure to switch it to OFF after pump down is completed.

* Only set the SW3-1 to ON if the unit is stopped. However, even if the unit is stopped and the SW3-1 is set to ON less than 3 minutes after the compressor stops, the refrigerant collecting operation cannot be performed. Wait until the compressor has been stopped for 3 minutes and then set the SW3-1 to ON again.

* When connecting a Cylinder or Hydrobox unit, do not use the DipSW functions of outdoor unit. Operate all of the indoor units, excluding a Cylinder or Hydrobox unit, in cooling mode.

⑥ Fully close the gas stop valve when the pressure reading on the gauge drops 0.05 - 0.00 MPa (approximately 0.5 - 0.0 kgf/cm^2)

⑦ Stop the air conditioner operation (SW3-1: OFF). Set the outdoor service switch SW2-4 from ON to OFF.

* When connecting a Cylinder or Hydrobox unit, stop the indoor units operation.

⑧ Turn off the power supply (circuit breaker).

* If too much refrigerant has been added to the air conditioner system, the pressure may not drop to 0.05 MPa (0.5 kgf/cm^2). If this occurs, use a refrigerant collecting device to collect all of the refrigerant in the system, and then recharge the system with the correct amount of refrigerant after the indoor and outdoor units have been relocated.

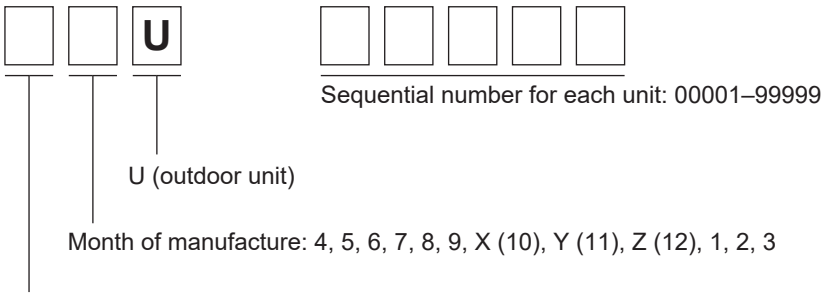
⚠ Warning:

- **When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes. The compressor may burst and cause injury if any foreign substance, such as air, enters the system.**
- **Do not perform pump down work when there is a gas leak. The intake of air or other gases causes abnormally high pressure in the refrigeration cycle, which may cause explosion or injury.**

en

8. Serial number

■ The serial number is indicated on the SPEC NAME PLATE.



This product is made in Japan.

en

<ENGLISH>
English is original. The other languages versions are translation of the original.

⚠ CAUTION

- Refrigerant leakage may cause suffocation. Provide ventilation in accordance with EN378-1.
- Be sure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.
- Never put batteries in your mouth for any reason to avoid accidental ingestion.
- Battery ingestion may cause choking and/or poisoning.
- Install the unit on a rigid structure to prevent excessive operation sound or vibration.
- The A-weighted sound pressure level is below 70dB.
- This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

<РУССКИЙ>
Языком оригинала является английский. Версии на других языках являются переводом оригинала.

⚠ ОСТОРОЖНО

- Утечка хладагента может стать причиной удушья. Обеспечьте вентиляцию в соответствии с EN378-1.
- Обязательно оберните трубы изоляционной обмоткой. Непосредственный контакт с неизолированным трубопроводом может привести к ожогам или обморожению.
- Запрещается класть элементы питания в рот по каким бы то ни было причинам во избежание случайного проглатывания.
- Попадание элемента питания в пищеварительную систему может стать причиной удушья и/или отравления.
- Устанавливайте устройство на жесткую структуру во избежание чрезмерного шума или чрезмерной вибрации во время работы.
- Уровень звукового давления по шкале А не превышает 70 дБ.
- Данное устройство предназначено для использования специалистами или обученным персоналом в магазинах, на предприятиях легкой промышленности и фермах или для коммерческого применения непрофессионалами.

<ҚАЗАҚ>
Бастапқы тілі — ағылшын. Басқа тілдегі нұсқалар бастапқы тілінің аудармалары.

⚠ САҚ БОЛЫҢЫЗ

- Суық агенттің ағып кетуі тұншығуға әкелуі мүмкін. EN378-1 талаптарына сәйкес желдетуді қамтамасыз етіңіз.
- Құбырды оқшаулағышпен орауды ұмытпаңыз. Оқшауланбаған құбыржолмен тікелей жанасу күйікке шалдығуға немесе үсікке ұшыратуға әкелуі мүмкін.
- Байқаусызда жұтып қоймау үшін ешқашан ешбір себеппен батареяларды аузыңызға салмаңыз.
- Батареяны жұту тұншығуға және/немесе улануға әкелуі мүмкін.
- Шамадан тыс дыбыс пен дірілдің алдын алу үшін құрылғыны қатты құрылымға орнатыңыз.
- А өлшенген дыбыс қысымының деңгейі 70 дБ-ден төмен.
- Бұл құрылғы дүкендерде, жеңіл өнеркәсіпте және фермаларда тәжірибелі немесе біліктілігі бар пайдаланушылардың немесе коммерциялық мақсатта кәсіби емес пайдаланушылардың пайдалануына арналған.

<ՀԱՅԵՐԵՆ>
Բնօրինակը անգլերեն է: Այլ լեզուներով թարգմանությունները բնօրինակի թարգմանություն են:

⚠ ԶԳՈՒՇԱՑՈՒՄ

- Սառնագենտի արտահոսքը կարող է հանգեցնել շնչահեղձության: Պետք է իրականացնել օդափոխում՝ համաձայն EN378-1 նորմի:
- Խողովակը պետք է փաթաթել մեկուսիչով: Հարթ խողովակի հետ ուղղակի շփումը կարող է առաջացնել այրվածքներ կամ ցրտահարվածություն:
- Երբեք մի դրեք մարտկոցները բերանի մեջ որևէ պատճառով՝ պատահաբար կուլ տալուց խուսափելու համար:
- Մարտկոցների կուլ տալը կարող է հանգեցնել խեղդվելուն և/կամ թունավորվելուն:
- Սարքը տեղադրեք կոշտ/պինդ պատի վրա՝ աշխատանքային բարձր ձայնից կամ թրթռումից խուսափելու համար:
- A դասակարգմամբ ձայնային ճնշման մակարդակը 70դԲ -ից ցածր է:
- Այս սարքը նախատեսված է փորձագետների կամ պատրաստված օգտագործողների կողմից օգտագործման համար խանութներում, թեթև արդյունաբերությունում և տնտեսություններում, կամ ուղղակի անհատների կողմից առևտրային օգտագործման համար:

<УКРАЇНСЬКА>
Переклад оригіналу. Текст іншими мовами є перекладом оригіналу.

⚠ ОБЕРЕЖНО

- Виток холодоагенту може призвести до удушення. Необхідно забезпечити вентиляцію відповідно до стандарту EN 378-1.
- Труби необхідно обмотати ізоляційним матеріалом. Прямий контакт із непокритою трубою може призвести до опіку або обмороження.
- Забороняється класти елементи живлення в рот із будь-яких причин, оскільки є ризик випадково їх проковтнути.
- Попадання елемента живлення в травну систему може стати причиною задухи та/або отруєння.
- Встановлюйте блок на міцній конструкції, щоб уникнути надмірного рівня звуку роботи або вібрації.
- Рівень амплітудно зваженого акустичного тиску становить нижче 70 дБ.
- Цей прилад призначається для використання спеціалістами або особами, що пройшли відповідне навчання, у крамницях, легкій промисловості та сільськогосподарських підприємствах, а також для комерційного використання неспеціалістами.

This product is designed and intended for use in the residential, commercial and light-industrial environment.
Данное изделие предназначено для использования в жилых, коммерческих и производственных зонах с малым энергопотреблением.
Бұл құрылғы тұрғын, коммерциялық және жеңіл өнеркәсіптік ортада пайдалану үшін жасалған және соған арналған.
Այս սարքավորումը նախատեսված է բնակելի շենքերում, առևտրային կազմակերպություններում և թեթև արդյունաբերության հիմնարկներում օգտագործման համար:
Виріб розроблений і призначений для використання в житловій та комерційній сферах, а також у легкій промисловості.

Importer:
Импортер:
Импорттаушы:
Ներմուծող՝
Імпортер:

ООО «Мицубиси Электрик (РУС)»
115114, Российская Федерация, г. Москва, ул. Летниковская, д. 2, стр. 1, 5 этаж

Please be sure to put the contact address/telephone number on this manual before handing it to the customer.
Не забудьте указать контактный адрес/номер телефона в данном руководстве, прежде чем передать его клиенту.
Осы нұсқаулықты клиентке берудің алдында байланыс мекенжайын/телефон нөмірін міндетті түрде көрсетіңіз.
Հաճախորդին հանձնելուց առաջ համոզվեք, որ ձեռնարկի մեջ նշված են հասցեն/հեռախոսի համարը:
Укажіть у посібнику контактну адресу чи номер телефону, перш ніж передавати його користувачеві.

MITSUBISHI ELECTRIC CORPORATION

Название Компании: ООО «Мицубиси Электрик (РУС)»
Адрес: россия, 115114, Российская Федерация, г. Москва, ул. Летниковская, д. 2, стр. 1, 5 этаж
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