



<ORIGINAL>
CITY MULTI

Air-Conditioners
INDOOR UNIT
PEFY-P-VMHS-E



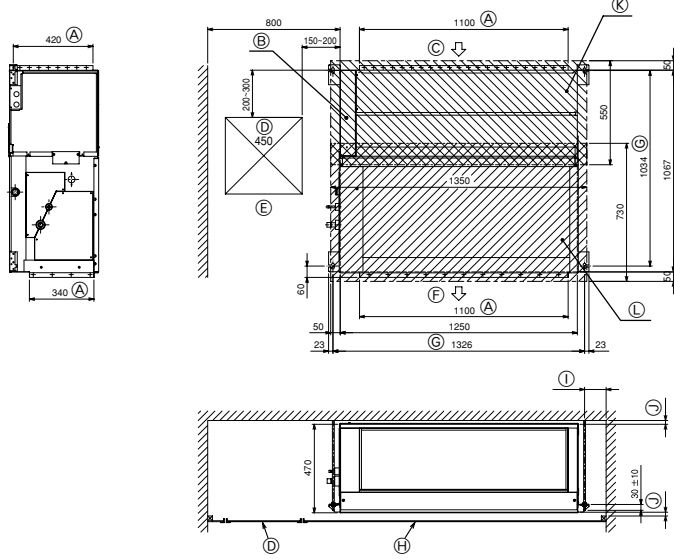
INSTALLATION MANUAL

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

[Fig. 3.1.1]

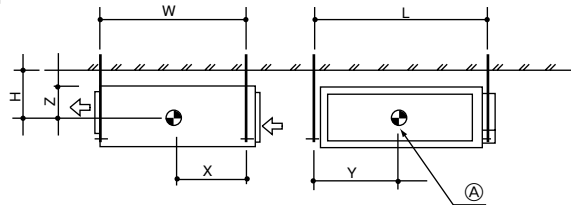
PEFY-P200-250VMHS-E

(Unit: mm)



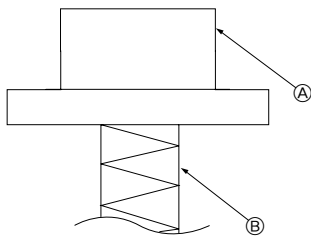
- Ⓐ Duct dimension
- Ⓑ Electrical components case
- Ⓒ Air inlet
- Ⓓ Access door
- Ⓔ Servicing space
- Ⓕ Air outlet
- Ⓖ Hanging bolt spacing
- Ⓗ Ceiling
- Ⓘ More than 100 mm
- Ⓙ More than 20 mm
- Ⓚ Keep the service space for the maintenance from the bottom when the fan motor changed.
- Ⓛ Keep the service space for the maintenance from the bottom when the heat exchanger cleaned.

[Fig. 4.1.1]



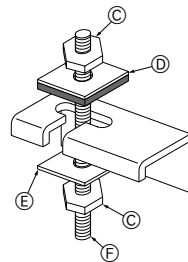
Ⓐ Center of gravity

[Fig. 5.1.1]



- Ⓐ Unit body
- Ⓑ Lifting machine

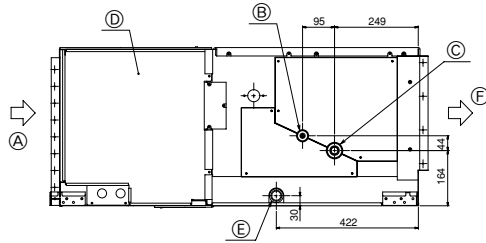
[Fig. 5.1.2]



- Ⓒ Nuts (field supply)
- Ⓓ Washers (with cushion)
- Ⓔ Washers (without cushion)
- Ⓕ M10 Hanging bolt (field supply)

[Fig. 6.2.1]

(Unit: mm)

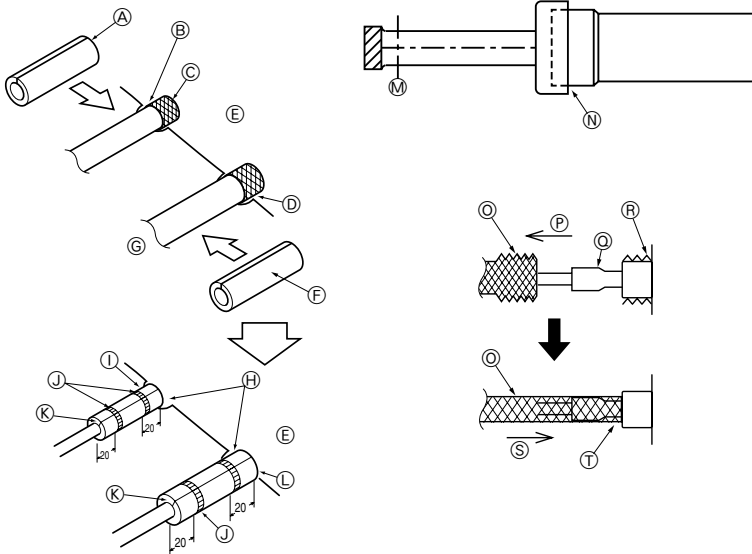


- Ⓐ Air inlet
- Ⓑ Refrigerant piping (liquid)
- Ⓒ Refrigerant piping (gas)
- Ⓓ Control box
- Ⓔ Drain outlet
- Ⓕ Air outlet

6.3

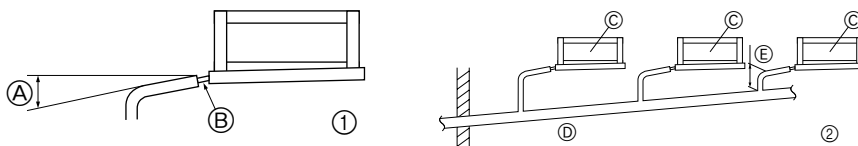
[Fig. 6.3.1]

(Unit: mm)



- Ⓐ Thermal insulation tubing ①
- Ⓑ Caution:
Pull out the thermal insulation on the refrigerant piping at the site, braise the piping, and replace the insulation in its original position.
Take care to ensure that condensation does not form on exposed copper piping.
- Ⓒ Refrigerant piping (liquid)
- Ⓓ Refrigerant piping (gas)
- Ⓔ Main body
- Ⓕ Thermal insulation tubing ②
- Ⓖ Site refrigerant piping
- Ⓗ Ensure that there are no gaps between the insulation and the main body.
- Ⓘ Thermal insulation tubing (small) (supplied) ①
- Ⓝ Ties (large) (supplied) ④
- Ⓚ Ensure that there is no gap here. Place join upwards.
- Ⓛ Thermal insulation tubing (medium) (supplied) ②
- Ⓜ Cut
- Ⓝ Release gas before removing the brazing.
- Ⓞ Thermal insulation
- Ⓟ Pull
- Ⓠ Flared pipe end
- Ⓡ Wrap with damp cloth
- Ⓢ Return to original position
- Ⓣ Ensure that there is no gap here.

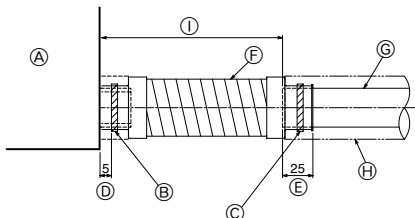
[Fig. 7.2.1]



- Ⓐ Downward slope 1/100 or more
- Ⓑ Drain hose (Accessory)
- Ⓒ Indoor unit
- Ⓓ Collective piping
- Ⓔ Maximize this length to approx. 10 cm

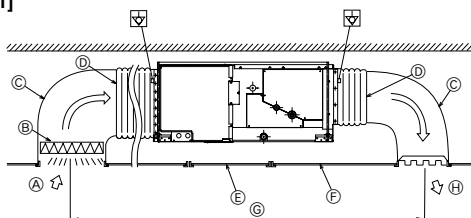
[Fig. 7.2.2]

(Unit: mm)



- Ⓐ Indoor unit
- Ⓑ Hose band (accessory)
- Ⓒ Tie band (accessory)
- Ⓓ Band fixing part
- Ⓔ Insertion margin
- Ⓛ Drain hose (accessory)
- Ⓝ Drain pipe (O.D. ø32 mm PVC TUBE, field supply)
- Ⓡ Insulating material (field supply)
- Ⓣ Max. 145 ± 5 mm

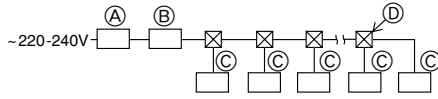
[Fig. 8.0.1]



- Ⓐ Air inlet
- Ⓑ Air filter (supplied at site)
- Ⓒ Duct
- Ⓓ Canvas duct
- Ⓔ Access door
- Ⓛ Ceiling
- Ⓝ Ensure sufficient length to prevent short cycling
- Ⓡ Air outlet

9.1

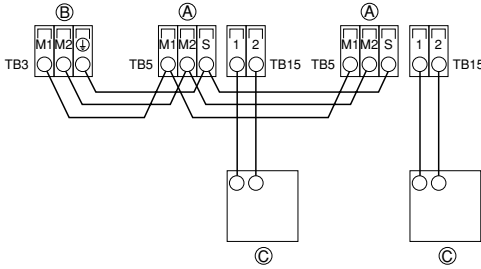
[Fig. 9.1.1]



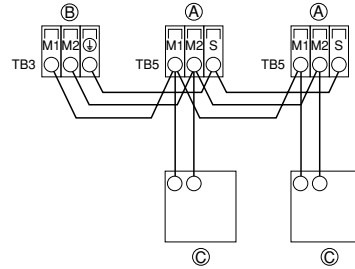
- (A) Ground-fault interrupter
- (B) Local switch/Wiring breaker
- (C) Indoor unit
- (D) Pull box

9.2

[Fig. 9.2.1]

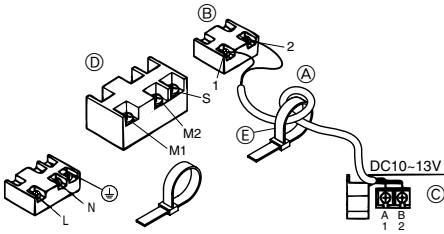


[Fig. 9.2.2]

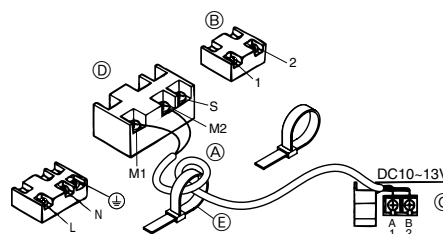


- (A) Terminal block for indoor transmission cable
- (B) Terminal block for outdoor transmission cable
- (C) Remote controller

[Fig. 9.2.3]



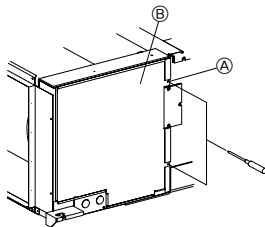
[Fig. 9.2.4]



- (A) Non-polarized
- (B) TB15
- (C) Remote Controller
- (D) TB5
- (E) Clamp

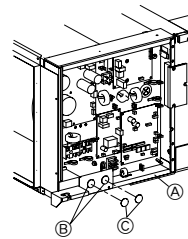
9.3

[Fig. 9.3.1]



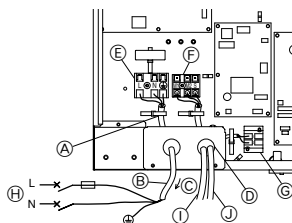
- (A) Screw holding cover (2 pcs)
- (B) Cover

[Fig. 9.3.2]



- (A) Control box
- (B) Knockout hole
- (C) Remove

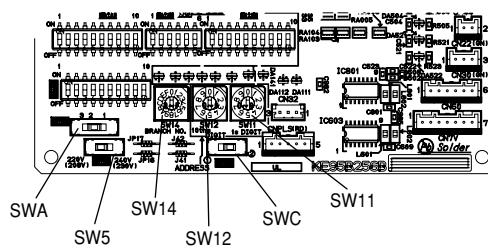
[Fig. 9.3.3]



- (A) Use PG bushing to keep the weight of the cable and external force from being applied to the power supply terminal connector. Use a cable tie to secure the cable. Wind the wire around the cable strap once to keep it from being pulled out.
- (B) Power source wiring
- (C) Tensile force
- (D) Use ordinary bushing
- (E) Power source terminal bed
- (F) Terminal bed for indoor transmission
- (G) Terminal bed for remote controller
- (H) To 1-phase power source
- (I) Transmission line to the M-NET Remote controller
- (J) Transmission line to the MA Remote controller

9.6

[Fig. 9.6.1]



<Indoor controller board>

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1. Safety precautions

1.1. Before installation and electric work

- ▶ Before installing the unit, make sure you read all the “Safety precautions”.
- ▶ The “Safety precautions” provide very important points regarding safety. Make sure you follow them.

Symbols used in the text

Warning:


Describes precautions that should be observed to prevent danger of injury or death to the user.

Caution:


Describes precautions that should be observed to prevent damage to the unit.


Symbols used in the illustrations

 : Indicates an action that must be avoided.

 : Indicates that important instructions must be followed.

 : Indicates a part which must be grounded.

 : Indicates that caution should be taken with rotating parts. (This symbol is displayed on the main unit label.) <Color: yellow>

 : Beware of electric shock (This symbol is displayed on the main unit label.) <Color: yellow>

Warning:

Carefully read the labels affixed to the main unit.

Warning:

- Ask the dealer or an authorized technician to install the air conditioner.
 - Improper installation by the user may result in water leakage, electric shock, or fire.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Install the air unit at a place that can withstand its weight.
 - Inadequate strength may cause the unit to fall down, resulting in injuries.
- Use the specified cables for wiring. Make the connections securely so that the outside force of the cable is not applied to the terminals.
 - Inadequate connection and fastening may generate heat and cause a fire.
- Prepare for typhoons and other strong winds and earthquakes and install the unit at the specified place.
 - Improper installation may cause the unit to topple and result in injury.
- Always use an air cleaner, humidifier, electric heater, and other accessories specified by Mitsubishi Electric.
 - Ask an authorized technician to install the accessories. Improper installation by the user may result in water leakage, electric shock, or fire.
- Never repair the unit. If the air conditioner must be repaired, consult the dealer.
 - If the unit is repaired improperly, water leakage, electric shock, or fire may result.

- 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.
- Do not touch the heat exchanger fins.
 - Improper handling may result in injury.
- When handling this product, always wear protective equipment.
EG: Gloves, full arm protection namely boiler suit, and safety glasses.
 - Improper handling may result in injury.
- If refrigerant gas leaks during installation work, ventilate the room.
 - If the refrigerant gas comes into contact with a flame, poisonous gases will be released.
- Install the air conditioner according to this Installation Manual.
 - If the unit is installed improperly, water leakage, electric shock, or fire may result.
- Have all electric work done by a licensed electrician according to “Electric Facility Engineering Standard” and “Interior Wire Regulations” and the instructions given in this manual and always use a special circuit.
 - If the power source capacity is inadequate or electric work is performed improperly, electric shock and fire may result.
- Keep the electric parts away from water (washing water etc.).
 - It might result in electric shock, catching fire or smoke.
- Securely install the outdoor unit terminal cover (panel).
 - If the terminal cover (panel) is not installed properly, dust or water may enter the outdoor unit and fire or electric shock may result.
- Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.
 - Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit.
 - It may also be in violation of applicable laws.
 - MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.
- If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration from exceeding the safety limit even if the refrigerant should leak.
 - Consult the dealer regarding the appropriate measures to prevent the safety limit from being exceeded. Should the refrigerant leak and cause the safety limit to be exceeded, hazards due to lack of oxygen in the room could result.
- When moving and reinstalling the air conditioner, consult the dealer or an authorized technician.
 - If the air conditioner is installed improperly, water leakage, electric shock, or fire may result.
- After completing installation work, make sure that refrigerant gas is not leaking.
 - If the refrigerant gas leaks and is exposed to a fan heater, stove, oven, or other heat source, it may generate noxious gases.
- Do not reconstruct or change the settings of the protection devices.
 - If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result.
- To dispose of this product, consult your dealer.
- Do not use a leak detection additive.
- The installer and system specialist shall secure safety against leakage according to local regulation or standards.
 - The instructions in this manual may be applicable if local regulation are not available.
- Pay a special attention to the place, such as a basement, etc. where refrigeration gas can stay, since refrigeration is heavier than the air.
- Children should be supervised to ensure that they do not play with the appliance.
- 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.

1.2. Precautions for devices that use R410A or R407C refrigerant

⚠ Caution:

- **Do not use the existing refrigerant piping.**
 - The old refrigerant and refrigerator oil in the existing piping contains a large amount of chlorine which may cause the refrigerator oil of the new unit to deteriorate.
- **Use refrigerant piping made of C1220 (Cu-DHP) phosphorus deoxidized copper as specified in the JIS H3300 "Copper and copper alloy seamless pipes and tubes". In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.**
 - Contaminants on the inside of the refrigerant piping may cause the refrigerant residual oil to deteriorate.
- **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Store elbows and other joints in a plastic bag.)**
 - If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor trouble may result.
- **Use ester oil, ether oil or alkylbenzene (small amount) as the refrigerator oil to coat flares and flange connections.**
 - The refrigerator oil will degrade if it is mixed with a large amount of mineral oil.
- **Use liquid refrigerant to fill the system.**
 - If gas refrigerant is used to seal the system, the composition of the refrigerant in the cylinder will change and performance may drop.
- **Do not use a refrigerant other than R410A or R407C.**
 - If another refrigerant (R22, etc.) is used, the chlorine in the refrigerant may cause the refrigerator oil to deteriorate.
- **Use a vacuum pump with a reverse flow check valve.**
 - The vacuum pump oil may flow back into the refrigerant cycle and cause the refrigerator oil to deteriorate.
- **Do not use the following tools that are used with conventional refrigerants.**

(Gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, refrigerant recovery equipment.)

 - If the conventional refrigerant and refrigerator oil are mixed in the R410A or R407C, the refrigerant may deteriorate.
 - If water is mixed in the R410A or R407C, the refrigerator oil may deteriorate.
 - Since R410A or R407C does not contain any chlorine, gas leak detectors for conventional refrigerants will not react to it.
- **Do not use a charging cylinder.**
 - Using a charging cylinder may cause the refrigerant to deteriorate.
- **Be especially careful when managing the tools.**
 - If dust, dirt, or water gets in the refrigerant cycle, the refrigerant may deteriorate.

1.3. Before getting installed

⚠ Caution:

- **Do not install the unit where combustible gas may leak.**
 - If the gas leaks and accumulates around the unit, an explosion may result.
- **Do not use the air conditioner where food, pets, plants, precision instruments, or artwork are kept.**
 - The quality of the food, etc. may deteriorate.
- **Do not use the air conditioner in special environments.**
 - Oil, steam, sulfuric smoke, etc. can significantly reduce the performance of the air conditioner or damage its parts.
- **When installing the unit in a hospital, communication station, or similar place, provide sufficient protection against noise.**
 - The inverter equipment, private power generator, high-frequency medical equipment, or radio communication equipment may cause the air conditioner to operate erroneously, or fail to operate. On the other hand, the air conditioner may affect such equipment by creating noise that disturbs medical treatment or image broadcasting.

2. Indoor unit accessories

The unit is provided with the following accessories:

No.	Accessories	Quantity
①	Insulation pipe (small)	1
②	Insulation pipe (medium)	1
③	Tie band (small)	1
④	Tie band (large)	4
⑤	Drain hose	1
⑥	Washer (with cushion)	4
⑦	Washer (without cushion)	4
⑧	Hose band	1

- **Do not install the unit on a structure that may cause leakage.**
 - When the room humidity exceeds 80 % or when the drain pipe is clogged, condensation may drip from the indoor unit. Perform collective drainage work together with the outdoor unit, as required.
- **The indoor models should be installed the ceiling over than 2.5 m from floor.**

1.4. Before getting installed (moved) - electrical work

⚠ Caution:

- **Ground the unit.**
 - Do not connect the ground wire to gas or water pipes, lightning rods, or telephone ground lines. Improper grounding may result in electric shock.
- **Install the power cable so that tension is not applied to the cable.**
 - Tension may cause the cable to break and generate heat and cause a fire.
- **Install an leak circuit breaker, as required.**
 - If an leak circuit breaker is not installed, electric shock may result.
- **Use power line cables of sufficient current carrying capacity and rating.**
 - Cables that are too small may leak, generate heat, and cause a fire.
- **Use only a circuit breaker and fuse of the specified capacity.**
 - A fuse or circuit breaker of a larger capacity or a steel or copper wire may result in a general unit failure or fire.
- **Do not wash the air conditioner units.**
 - Washing them may cause an electric shock.
- **Be careful that the installation base is not damaged by long use.**
 - If the damage is left uncorrected, the unit may fall and cause personal injury or property damage.
- **Install the drain piping according to this Installation Manual to ensure proper drainage. Wrap thermal insulation around the pipes to prevent condensation.**
 - Improper drain piping may cause water leakage and damage to furniture and other possessions.
- **Be very careful about product transportation.**
 - Only one person should not carry the product if it weighs more than 20 kg.
 - Some products use PP bands for packaging. Do not use any PP bands for a means of transportation. It is dangerous.
 - Do not touch the heat exchanger fins. Doing so may cut your fingers.
 - When transporting the outdoor unit, suspend it at the specified positions on the unit base. Also support the outdoor unit at four points so that it cannot slip sideways.
- **Safely dispose of the packing materials.**
 - Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
 - Tear apart and throw away plastic packaging bags so that children will not play with them. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.

1.5. Before starting the test run

⚠ Caution:

- **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.
- **Do not touch the switches with wet fingers.**
 - Touching a switch with wet fingers can cause electric shock.
- **Do not touch the refrigerant pipes during and immediately after operation.**
 - During and immediately after operation, the refrigerant pipes are may be hot and may be cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes.
- **Do not operate the air conditioner with the panels and guards removed.**
 - Rotating, hot, or high-voltage parts can cause injuries.
- **Do not turn off the power immediately after stopping operation.**
 - Always wait at least five minutes before turning off the power. Otherwise, water leakage and trouble may occur.

3. Selecting an installation site

- Select a location so that air can be blown into all corners of the room.
- Avoid locations exposed to outside air.
- Select a location free of obstructions to the airflow in and out of the unit.
- Avoid locations exposed to steam or oil vapour.
- Avoid locations where combustible gas may leak, settle or be generated.
- Avoid installation near machines emitting high-frequency waves (high-frequency welders, etc.)
- Avoid locations where the airflow is directed at a fire alarm sensor. (Hot air could trigger the alarm during the heating operation.)
- Avoid places where acidic solutions are frequently handled.
- Avoid places where sulphur-based or other sprays are frequently used.
- If the unit is run for long hours when the air above the ceiling is at high temperature/high humidity (dew point above 26 °C), due condensation may be produced in the indoor unit. When operating the units in this condition, add insulation material (10-20 mm) to the entire surface of the indoor unit to avoid due condensation.

Warning:
Install the indoor unit on a ceiling strong enough to sustain its weight. If the ceiling lacks strength, it may cause the unit to fall down, resulting in an injury.

4. Fixing hanging bolts

4.1. Fixing hanging bolts

(Give site of suspension strong structure.)

Hanging structure

- Ceiling: The ceiling structure varies from building to one another. For detailed information, consult your construction company.
 - If necessary, reinforce the hanging bolts with anti-quake supporting members as countermeasures against earthquakes.
* Use M10 for hanging bolts and anti-quake supporting members (field supply).
- ① Reinforcing the ceiling with additional members (edge beam, etc.) must be required to keep the ceiling at level and to prevent the ceiling from vibrations.
 - ② Cut and remove the ceiling members.
 - ③ Reinforce the ceiling members, and add other members for fixing the ceiling boards.

5. Installing the unit

5.1. Hanging the unit body

- ▶ Bring the indoor unit to an installation site as it is packed.
- ▶ To hang the indoor unit, use a lifting machine to lift and pass through the hanging bolts.

[Fig. 5.1.1] (P. 2)

- Ⓐ Unit body
- Ⓑ Lifting machine

[Fig. 5.1.2] (P. 2)

- Ⓒ Nuts (field supply)
- Ⓓ Washers (with cushion)
- Ⓔ Washers (without cushion)
- Ⓕ M10 Hanging bolt (field supply)

3.1. Installation and servicing space

Note:
Always install access doors in the specified positions for service maintenance.

Warning:
Install the unit on a ceiling strong enough to support its weight.
• If the unit is mounted on a structure of insufficient strength it may fall causing injury.

[Fig. 3.1.1] (P. 2)

- Ⓐ Duct dimension
- Ⓑ Electrical components case
- Ⓒ Air inlet
- Ⓓ Access door
- Ⓔ Servicing space
- Ⓕ Air outlet
- Ⓖ Hanging bolt spacing
- Ⓗ Ceiling
- Ⓛ More than 100 mm
- Ⓜ More than 20 mm
- Ⓝ Keep the service space for the maintenance from the bottom when the fan motor changed.
- Ⓞ Keep the service space for the maintenance from the bottom when the heat exchanger cleaned.

3.2. Combining indoor units with outdoor units

For combining indoor units with outdoor units, refer to the outdoor unit installation manual.

[Fig. 4.1.1] (P.2)

- Ⓐ Center of gravity

Center of gravity and Product Weight

Model name	W (mm)	L (mm)	H (mm)	X (mm)	Y (mm)	Z (mm)	Product Weight (kg)
PEFY-P200VMHS-E	1034	1326	255	462	660	235	97
PEFY-P250VMHS-E	1034	1326	255	462	660	235	100

5.2. Confirming the unit's position and fixing hanging bolts

- ▶ Ensure that the hanging bolt nuts are tightened to fix the hanging bolts.
- ▶ To ensure that drain is discharged, be sure to hang the unit at level using a level.

Caution:
Install the unit in horizontal position. If the side with drain port is installed higher, water leakage may be caused.

6. Refrigerant pipe and drain pipe specifications

To avoid dew drops, provide sufficient antisweating and insulating work to the refrigerant and drain pipes.

When using commercially available refrigerant pipes, be sure to wind commercially available insulating material (with a heat-resisting temperature of more than 100 °C and thickness given below) onto both liquid and gas pipes.

Be also sure to wind commercially available insulating material (with a form polyethylene's specific gravity of 0.03 and thickness given below) onto all pipes which pass through rooms.

- ① Select the thickness of insulating material by pipe size.

Pipe size	Insulating material's thickness
6.4 mm to 25.4 mm	More than 10 mm
28.6 mm to 38.1 mm	More than 15 mm

- ② If the unit is used on the highest story of a building and under conditions of high temperature and humidity, it is necessary to use pipe size and insulating material's thickness more than those given in the table above.

- ③ If there are customer's specifications, simply follow them.

6.1. Refrigerant pipe and drain pipe specifications

- Ⓐ Refrigerant pipe sizes

	R410A		Drain pipe
	Liquid pipe	Gas pipe	
P200	O.D. ø9.52 mm (3/8")	O.D. ø19.05 mm (3/4")	O.D. ø32
P250	O.D. ø9.52 mm (3/8")	O.D. ø22.2 mm (7/8")	

6.2. Refrigerant pipe, drain pipe and filling port

[Fig. 6.2.1] (P. 3)

- | | |
|----------------------------|-------------------------------|
| Ⓐ Air inlet | Ⓑ Refrigerant piping (liquid) |
| Ⓒ Refrigerant piping (gas) | Ⓓ Control box |
| Ⓔ Drain outlet | Ⓕ Air outlet |

7. Connecting refrigerant pipes and drain pipes

7.1. Refrigerant piping work

This piping work must be done in accordance with the installation manuals for both outdoor unit and BC controller (simultaneous cooling and heating series R2).

- Series R2 is designed to operate in a system that the refrigerant pipe from an outdoor unit is received by BC controller and branches at the BC controller to connect between indoor units.
- For constraints on pipe length and allowable difference of elevation, refer to the outdoor unit manual.
- The method of pipe connection is brazing connection.

Cautions On Refrigerant Piping

- ▶ Be sure to use non-oxidative brazing for brazing to ensure that no foreign matter or moisture enter into the pipe.
- ▶ Be sure to apply refrigerating machine oil over the flare connection seating surface and tighten the connection using a double spanner.
- ▶ Provide a metal brace to support the refrigerant pipe so that no load is imparted to the indoor unit end pipe. This metal brace should be provided 50 cm away from the indoor unit's flare connection.

6.3. Request for refrigerant piping connection

Connecting refrigerant piping

- After connecting refrigerant piping, insulate the joints (flared joints) with thermal insulation tubing as shown below.

[Fig. 6.3.1] (P. 3)

- Ⓐ Thermal insulation tubing ①
- Ⓑ Caution:
 - Pull out the thermal insulation on the refrigerant piping at the site, braze the piping, and replace the insulation in its original position.
 - Take care to ensure that condensation does not form on exposed copper piping.
- Ⓒ Refrigerant piping (liquid) Ⓓ Refrigerant piping (gas)
- Ⓔ Main body Ⓕ Thermal insulation tubing ②
- Ⓖ Site refrigerant piping
- Ⓖ Ensure that there are no gaps between the insulation and the main body.
- Ⓗ Thermal insulation tubing (small) (supplied) ①
- Ⓙ Ties (large) (supplied) ④
- Ⓚ Ensure that there is no gap here. Place join upwards.
- Ⓛ Thermal insulation tubing (medium) (supplied) ②
- Ⓜ Cut
- Ⓝ Release gas before removing the brazing.
- Ⓞ Thermal insulation Ⓟ Pull
- Ⓠ Flared pipe end Ⓡ Wrap with damp cloth
- Ⓢ Return to original position Ⓣ Ensure that there is no gap here.

⚠ Caution:

Before removing the brazing, cut off the end of the pipe to release any gas. If the gas is not released, the pipe may fly off.

1. Remove and discard the rubber bung which is inserted in the end of the unit piping.
 2. Flare the end of the site refrigerant piping.
 3. Pull out the thermal insulation on the site refrigerant piping, braze the unit piping, and replace the insulation in its original position.
- * Before brazing the refrigerant piping, **always wrap the piping on the main body, and the thermal insulation piping, with damp cloths to prevent heat shrinkage and burning the thermal insulation tubing.** Take care to ensure that the flame does not come into contact with the main body itself.

Refrigerant amount adjustment

Refer to the installation manual for the outdoor unit for details on adjusting the amount of refrigerant.

⚠ Warning:

Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.

- Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit.
- It may also be in violation of applicable laws.
- MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.

⚠ Caution:

- **Use refrigerant piping made of C1220 (Cu-DHP) phosphorus deoxidized copper as specified in the JIS H3300 "Copper and copper alloy seamless pipes and tubes". In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.**
- **Never use existing refrigerant piping.**
 - The large amount of chlorine in conventional refrigerant and refrigerator oil in the existing piping will cause the new refrigerant to deteriorate.
- **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing.**
 - If dust, dirt, or water gets into the refrigerant cycle, the oil will deteriorate and the compressor may fail.
- **Use ester oil, ether oil or alkylbenzene (small amount) as the refrigerator oil to coat flares and flange connections. (For models using R410A or R407C)**
 - The refrigerant used in the unit is highly hygroscopic and mixes with water and will degrade the refrigerator oil.

7.2. Drain piping work

- Ensure that the drain piping is downward (pitch of more than 1/100) to the outdoor (discharge) side. Do not provide any trap or irregularity on the way. (①)
- Ensure that any cross-wise drain piping is less than 20 m (excluding the difference of elevation). If the drain piping is long, provide metal braces to prevent it from waving. Never provide any air vent pipe. Otherwise drain may be ejected.
- Use a hard vinyl chloride pipe VP-25 (with an external diameter of 32 mm) for drain piping.
- Ensure that collected pipes are 10 cm lower than the unit body's drain port as shown in ②.
- Do not provide any odor trap at the drain discharge port.
- Put the end of the drain piping in a position where no odor is generated.
- Do not put the end of the drain piping in any drain where ionic gases are generated.

[Fig. 7.2.1] (P. 3)

- Ⓐ Downward slope 1/100 or more
- Ⓑ Drain hose (Accessory)
- Ⓒ Indoor unit
- Ⓓ Collective piping
- Ⓔ Maximize this length to approx. 10 cm

1. Insert the drain hose (accessory) into the drain port.
(The drain hose must not be bent more than 45° to prevent the hose from breaking or clogging.)
The connecting part between the indoor unit and the drain hose may be disconnected at the maintenance. Fix the part with the accessory band, not be adhered.
2. Attach the drain pipe (O.D. ø32 PVC TUBE, field supply).
(Attach the pipe with glue for the hard vinyl chloride pipe, and fix it with the band (small, accessory).)
3. Perform insulation work on the drain pipe (O.D. ø32 PVC TUBE) and on the socket (including elbow).

[Fig. 7.2.2] (P. 3)

- Ⓐ Indoor unit
- Ⓑ Hose band (accessory)
- Ⓒ Tie band (accessory)
- Ⓓ Band fixing part
- Ⓔ Insertion margin
- Ⓕ Drain hose (accessory)
- Ⓖ Drain pipe (O.D. ø32 mm PVC TUBE, field supply)
- Ⓗ Insulating material (field supply)
- Ⓘ Max. 145 ± 5 mm

8. Duct work

- When connecting ducts, insert a canvas duct between the main body and the duct.
- Use non-combustible duct components.
- Install sufficient thermal insulation to prevent condensation forming on air inlet and air outlet duct flanges, and air outlet ducts.

[Fig. 8.0.1] (P. 3)

- Ⓐ Air inlet
- Ⓑ Air filter (supplied at site)
- Ⓒ Duct
- Ⓓ Canvas duct
- Ⓔ Access door
- Ⓕ Ceiling
- Ⓖ Ensure sufficient length to prevent short cycling
- Ⓗ Air outlet

⚠ Caution:
Inlet duct is 850 mm or more necessary to construct.
Always install horizontal.

9. Electrical wiring

Precautions on electrical wiring

⚠ Warning:

Electrical work should be done by qualified electrical engineers in accordance with "Engineering Standards For Electrical Installation" and supplied installation manuals. Special circuits should also be used. If the power circuit lacks capacity or has an installation failure, it may cause a risk of electric shock or fire.

1. Be sure to install an earth leakage breaker to the power.
2. Install the unit to prevent that any of the control circuit cables (remote controller, transmission cables) is brought in direct contact with the power cable outside the unit.
3. Ensure that there is no slack on all wire connections.
4. Some cables (power, remote controller, transmission cables) above the ceiling may be bitten by mice. Use as many metal pipes as possible to insert the cables into them for protection.

5. Never connect the power cable to leads for the transmission cables. Otherwise the cables would be broken.
6. Be sure to connect control cables to the indoor unit, remote controller, and the outdoor unit.
7. Put the unit to the ground on the outdoor unit side.
8. Select control cables from the conditions given in page 10.

⚠ Caution:

- Be sure to put the unit to the ground on the outdoor unit side. Do not connect the earth cable to any gas pipe, water pipe, lightning rod, or telephone earth cable. Incomplete grounding may cause a risk of electric shock.
- 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.

	Transmission cables	ME Remote controller cables	MA Remote controller cables
Type of cable	Shielding wire (2-core) CVVS, CPEVS or MVVS	Sheathed 2-core cable (unshielded) CVV	
Cable diameter	More than 1.25 mm ²	0.3 ~ 1.25 mm ² (0.75 ~ 1.25 mm ²)*1	0.3 ~ 1.25 mm ² (0.75 ~ 1.25 mm ²)*1
Remarks	Max length: 200 m Maximum length of transmission lines for centralized control and indoor/ outdoor transmission lines (Maximum length via indoor units): 500 m MAX The maximum length of the wiring between power supply unit for transmission lines (on the transmission lines for centralized control) and each outdoor unit and system controller is 200 m.	When 10 m is exceeded, use cables with the same specifica- tion as transmission cables.	Max length: 200 m

*1 Connected with simple remote controller.

CVVS, MVVS: PVC insulated PVC jacketed shielded control cable
CPEVS: PE insulated PVC jacketed shielded communication cable
CVV: PVC insulated PVC sheathed control cable

9.1. Power supply wiring

- Use dedicated power supplies for the indoor unit.
- Bear in mind ambient conditions (ambient temperature, direct sunlight, rain water, etc.) when proceeding with the wiring and connections.
- The wire size is the minimum value for metal conduit wiring. If the voltage drops, use a wire that is one rank thicker in diameter. Make sure the power-supply voltage does not drop more than 10%.
- Specific wiring requirements should adhere to the wiring regulations of the region.
- Power supply cords of appliances shall not be lighter than design 245 IEC 57, 227 IEC 57, 245 IEC 53 or 227 IEC 53.
- A switch with at least 3 mm contact separation in each pole shall be provided by the Air conditioner installation.

[Fig. 9.1.1] (P.4)

- (A) Ground-fault interrupter
- (B) Local switch/Wiring breaker
- (C) Indoor unit
- (D) Pull box

Total operating current of the indoor unit	Minimum wire thickness (mm ²)			Ground-fault interrupter *1	Local switch (A)		Breaker for wiring (A) (Non-fuse breaker)
	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. Permissible System Impedance.

*1 The Ground-fault interrupter should support Inverter circuit.

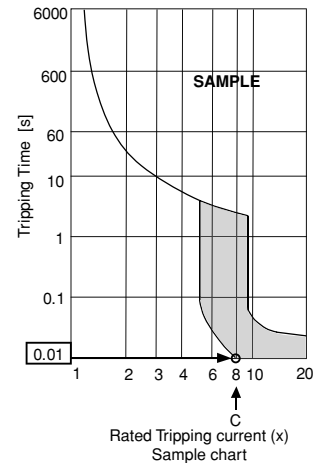
The Ground-fault interrupter should combine using of local switch or wiring breaker.

*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 Type1)/C} + {V1 × (Quantity of Type2)/C} + {V1 × (Quantity of Type3)/C} + {V1 × (Quantity of Others)/C}

Indoor unit		V1	V2
Type1	PLFY-VBM, PMFY-VBM, PEFY-VMS, PCFY-VKM, PKFY-VHM, PKFY-VKM, PFFY-VKM, PFFY-VLRMM	18.6	2.4
Type2	PEFY-VMA	38	1.6
Type3	PEFY-VMHS	13.8	4.8
Others	Other indoor unit	0	0



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 PEFY-VMS × 4 + PEFY-VMA × 1, C = 8 (refer to right sample chart)

$$F2 = 18.6 \times 4/8 + 38 \times 1/8$$

$$= 14.05$$

$$\rightarrow 16 \text{ A breaker (Tripping current} = 8 \times 16 \text{ A at 0.01s)}$$

*3 Current sensitivity is calculated using the following formula.

$$G1 = (V2 \times \text{Quantity of Type1}) + (V2 \times \text{Quantity of Type2}) + (V2 \times \text{Quantity of Type3}) + (V2 \times \text{Quantity of Others}) + (V3 \times \text{Wire length [km]})$$

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 mm ²	48
2.5 mm ²	56
4.0 mm ²	66

⚠ Warning:

- Be sure to use specified wires for connections and ensure no external force is imparted to terminal connections. If connections are not fixed firmly, heating or fire may result.
- Be sure to use the appropriate type of overcurrent protection switch. Note that generated overcurrent may include some amount of direct current.

⚠ Caution:

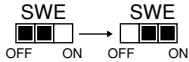
- Some installation sites may require attachment of an earth leakage breaker for the inverter. If no earth leakage breaker is installed, there is a danger of electric shock.
- Do not use anything other than the correct capacity breaker and fuse. Using fuse, wire or copper wire with too large capacity may cause a risk of malfunction or fire.

Notes:

- This device is intended for the connection to a power supply system with a maximum permissible system impedance (Refer to IEC61000-3-3.) at the interface point (power service box) of the user's supply.
- The user must ensure that this device is connected only to a power supply system which fulfils the requirement above. If necessary, the user can ask the public power supply company for the system impedance at the interface point.

- Backup operation

Even when the electrical work has not been completed, the fan and the drain pump can be operated by connecting the jumper (SWE) on the control board to the ON-side and energizing the terminal block.



Reconnect the SWE on the control board to the OFF-side upon completion of all work.

9.2. Connecting remote controller, indoor and outdoor transmission cables

(Remote controller is optionally available.)

- Connect indoor unit TB5 and outdoor unit TB3. (Non-polarized 2-wire)
The “S” on indoor unit TB5 is a shielding wire connection. For specifications about the connecting cables, refer to the outdoor unit installation manual.
- Install a remote controller following the manual supplied with the remote controller.
- Connect the “1” and “2” on indoor unit TB15 to a MA remote controller. (Non-polarized 2-wire)
- Connect the “M1” and “M2” on indoor unit TB5 to a M-NET remote controller. (Non-polarized 2-wire)
- Connect the remote controller’s transmission cable within 10 m using a 0.75 mm² core cable. If the distance is more than 10 m, use a 1.25 mm² junction cable.

[Fig. 9.2.1] (P.4) MA Remote controller

[Fig. 9.2.2] (P.4) M-NET Remote controller

- Ⓐ Terminal block for indoor transmission cable
- Ⓑ Terminal block for outdoor transmission cable
- Ⓒ Remote controller

- DC 10 to 13 V between 1 and 2 (MA remote controller)
- DC 24 to 30 V between M1 and M2 (M-NET remote controller)

[Fig. 9.2.3] (P.4) MA Remote controller

[Fig. 9.2.4] (P.4) M-NET Remote controller

- Ⓐ Non-polarized
- Ⓑ TB15
- Ⓒ Remote Controller
- Ⓓ TB5
- Ⓔ Clamp

- Wind the transmission and remote controller wires around the clamp once to keep them from being pulled out.
- The MA remote controller and the M-NET remote controller cannot be used at the same time or interchangeably.

Note:

Ensure that the wiring is not pinched when fitting the terminal box cover. Pinching the wiring may cut it.

⚠ Caution:

Install wiring so that it is not tight and under tension. Wiring under tension may break, or overheat and burn.

- Fix power source wiring to control box by using buffer bushing for tensile force. (PG connection or the like.) Connect transmission wiring to transmission terminal block through the knockout hole of control box using ordinary bushing.
- After wiring is complete, make sure again that there is no slack on the connections, and attach the cover onto the control box in the reverse order removal.

⚠ Caution:

Wire the power supply so that no tension is imparted. Otherwise disconnection, heating or fire result.

9.3. Connecting electrical connections

Verify that the model name on the operating instructions on the cover of the control box is the same as the model name on the nameplate.

1. Remove the 2 screws holding the terminal box cover in place.

[Fig. 9.3.1] (P.4)

- Ⓐ Screw holding cover (2 pcs)
- Ⓑ Cover

Note:

Ensure that the wiring is not pinched when fitting the terminal box cover. Pinching the wiring may cut it.

⚠ Caution:

Install wiring so that it is not tight and under tension. Wiring under tension may break, or overheat and burn.

2. Open knockout holes

(Recommend to use a screwdriver or the like for this work.)

[Fig. 9.3.2] (P.4)

- Ⓐ Control box
- Ⓑ Knockout hole
- Ⓒ Remove

3. Fix power source wiring to control box by using buffer bushing for tensile force. (PG connection or the like.) Connect transmission wiring to transmission terminal block through the knockout hole of control box using ordinary bushing.
4. Connect the power source, Earth, transmission and remote controller wiring. The dismounting of the terminal bed box is not needed.

[Fig. 9.3.3] (P.4)

- Ⓐ Use PG bushing to keep the weight of the cable and external force from being applied to the power supply terminal connector. Use a cable tie to secure the cable.
Wind the wire around the cable strap once to keep it from being pulled out.
- Ⓑ Power source wiring
- Ⓒ Tensile force
- Ⓓ Use ordinary bushing
- Ⓔ Power source terminal bed
- Ⓕ Terminal bed for indoor transmission
- Ⓖ Terminal bed for remote controller
- Ⓗ To 1-phase power source
- Ⓘ Transmission line to the M-NET Remote controller
- Ⓚ Transmission line to the MA Remote controller

5. After wiring is complete, make sure again that there is no slack on the connections, and attach the cover onto the control box in the reverse order removal.

Notes:

- Do not pinch the cables or wires when attaching the terminal bed box cover. Doing so may cause a risk of disconnection.
- When accommodating the terminal bed box, make sure that the connectors on the box side are not removed. If removed, it cannot operate normally.

⚠ Caution:

Wire the power supply so that no tension is imparted. Otherwise disconnection, heating or fire result.

9.4. External I/O specifications

⚠ Caution:

1. Wiring should be covered by insulation tube with supplementary insulation.
2. Use relays or switches with IEC or equivalent standard.
3. The electric strength between accessible parts and control circuit should have 2750 V or more.

9.5. Selecting the static pressure

Five levels of external static pressure (50Pa/100Pa/150Pa/200Pa/250Pa) are available for selection.

Set the setting either by using the switches on the control board (SWA and SWC) or from the function selection screen on the remote controller.

Notes:

- When the static pressure setting was set from the remote controller, the actual setting and the switch setting on the control board may not match because the latest setting from the remote controller overrides the previous setting. To check the latest static pressure setting, check it on the remote controller, not on the switch.
- If the static pressure setting for the duct is lower than that for the unit, the fan of the unit may repeat start/stop, and the outdoor unit may remain in a stopped state. Match the static pressure settings for the unit to that for the duct.

► To set the external static pressure with the switches on the control board

External static pressure	SWA	SWC
50Pa	3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input checked="" type="checkbox"/>	
100Pa	3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/>	<input type="checkbox"/> ② <input checked="" type="checkbox"/> ①
150Pa	3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/>	
200Pa	3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/>	<input checked="" type="checkbox"/> ② <input type="checkbox"/> ①
250Pa	3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/>	<input type="checkbox"/> ② <input checked="" type="checkbox"/> ①

Set the switches on the control board (SWA and SWC) as shown in the table at left.

► To set the external static pressure from the function selection screen on the remote controller (Only PAR-30MAA)

Follow the instructions below and the instructions detailed in the remote controller manual for how to set the switches.

1. Set the function setting No. 32 (Switch setting/Function selection) to "2".
2. Set the function setting No. 8 and No. 10 to appropriate values, according to the external static pressure.

Selection	Function setting No.	Initial setting	Current setting
	No. 32		
Switch setting	1	○	
Function selection	2		

External static pressure setting	Function setting No.		Initial setting	Current setting
	No. 8	No. 10		
50Pa	1	1		
100Pa	2	1		
150Pa	3	1	○	
200Pa	2	2		
250Pa	3	2		

[Important]

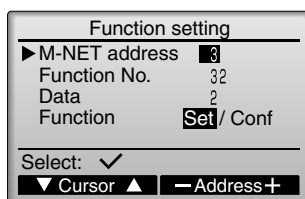
Be sure to write down the settings for all functions in the "Current setting" row if any of the initial settings has been changed.

Selecting a function

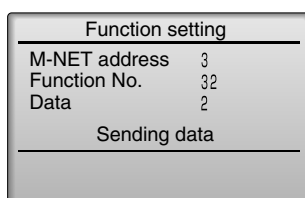
* The steps below explain how to set the settings on the MA Smart Remote Controller.

► To change the settings

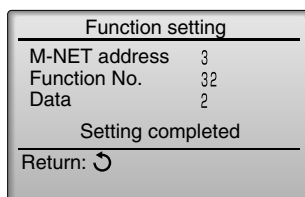
1. Select Function setting from the Service menu to bring up the Function setting screen. (Refer to the remote controller manual for how to set the items in the service menu.)



2. Using the F1 through F4 buttons, set the settings for the M-NET address, Function No., and Data, select "Set", and press the Enter button. The settings signals will be sent from the remote controller to the indoor units.

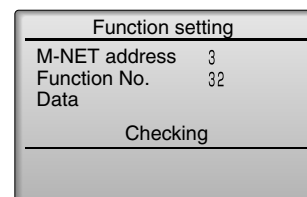


3. "Sending data" will appear on the screen, and when signal transmission is successfully completed, "Setting completed" will appear. Press the BACK button to return to the Function setting screen.



► To confirm the setting

1. Select Function setting from the Service menu to bring up the Function setting screen. (Refer to the remote controller manual for how to set the items in the service menu.)
2. Using the F1 through F4 buttons, set the settings for the M-NET address, Function No., and Data, select "Conf", and press the Enter button.
3. "Checking" will appear on the screen, and when signal transmission is successfully completed, the current settings values will be displayed.



Notes:

- The actual static pressure setting and the Dip switch setting may not match if the setting was set from the remote controller.
- To check the static pressure setting, check it on the remote controller, not on the dip switch.

9.6. Setting addresses

(Be sure to operate with the main power turned OFF.)

[Fig. 9.6.1] (P. 4)

<Indoor controller board>

- There are two types of rotary switch setting available: setting addresses 1 to 9 and over 10, and setting branch numbers.
 - ① How to set addresses
Example: If Address is "3", remain SW12 (for over 10) at "0", and match SW11 (for 1 to 9) with "3".
 - ② How to set branch numbers SW14 (Series R2 only)
Match the indoor unit's refrigerant pipe with the BC controller's end connection number. Remain other than R2 at "0".
- The rotary switches are all set to "0" when shipped from the factory. These switches can be used to set unit addresses and branch numbers at will.
- The determination of indoor unit addresses varies with the system at site. Set them referring to technical data.

Notes:

Please set the switch SW5 according to the power supply voltage.

- Set SW5 to 240 V side when the power supply is 230 and 240 volts.
- When the power supply is 220 volts, set SW5 to 220 V side.

9.7. Sensing room temperature with the built-in sensor in a remote controller

If you want to sense room temperature with the built-in sensor in a remote controller, set SW1-1 on the control board to "ON". The setting of SW1-7 and SW1-8 as necessary also makes it possible to adjust the air flow at a time when the heating thermometer is OFF.

Note:

To perform the auto cooling/heating operation, use the built-in sensor in a remote controller or the optional remote sensor.

9.8. Electrical characteristics

Symbols : MCA : Max. Circuit Amps (= 1.25 x FLA) FLA : Full Load Amps
IFM : Indoor Fan Motor Output : Fan motor rated output

PEFY-P-VMHS-E	Power supply			IFM	
	Volts / Hz	Range +-10%	MCA(A) (50 / 60Hz)	Output(kW)	FLA(A) (50 / 60Hz)
PEFY-P200VMHS-E	220-240V / 50Hz	Max.: 264V	7.00	0.87	5.60
PEFY-P250VMHS-E	220-240V / 60Hz	Min.: 198V	7.50	0.87	6.00

Refer to Data Book for other models.



AIR CONDITIONER INTDOOR UNIT MODEL _____ <G>

OPERATE		COOLING			HEATING		
RATED VOLTAGE	~ V	220	230	240	220	230	240
FREQUENCY	Hz	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
CAPACITY	kW						
RATED INPUT	kW						
RATED CURRENT	A						
MAX CURRENT	A						
RATED CONDITION		INDOOR			INDOOR		
DB / WB	°C	OUTDOOR			OUTDOOR		
			27 / 19			20 / -	
			35 / 24			7 / 6	

REFRIGERANT R410A WEIGHT kg
IP CODE IP20 ALLOWABLE PRESSURE 4.15MPa
AIRFLOW RATE m³/h YEAR OF MANUFACTURE _____
NOISE LEVEL dB(A) SERIAL No. _____

MITSUBISHI ELECTRIC CORPORATION

MANUFACTURER: MITSUBISHI ELECTRIC CORPORATION
AIR-CONDITIONING & REFRIGERATION SYSTEMS WORKS
5-66, TEBIRA, 6-CHOME, WAKAYAMA CITY, JAPAN

2SP

MADE IN JAPAN

This product is designed and intended for use in the residential,
commercial and light-industrial environment.

The product at hand is
based on the following
EU regulations:

- Low Voltage Directive 2014/35/EU
- Electromagnetic Compatibility Directive
2014/30/EU
- Machinery Directive 2006/42/EC

Please be sure to put the contact address/telephone number on
this manual before handing it to the customer.

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN