FOR INSTALLER

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

FILE COPY

MITSUBISHI ELECTRIC
Air-Conditioners

PEH-MYB
4.3

[Fig. 4.3.1]

1....
2....
3....
4....
5....

(1)...
   a) Alternating display
   b) Error code
   c) Attribute of error search
   d) Unit number

(2)...

(3)...

4.4

[Fig. 4.4.1]

1....
2....
3....
4....

(1)...

(2)...

5. When the number of data errors generated is 02.
   a) Remote controller transmission data
   b) Transmission data at transmission path


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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.

- Beware of electric shock. (This symbol is displayed on the main unit label.)

Danger: Carefully read the labels affixed to the main unit.

Danger:
- 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.
- Install the 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 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 filter and other accessories specified by Mitsubishi Electric.
- Ask an authorized technician to install the accessories. Improper installation 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.
- Do not touch the heat exchanger fins.
- Improper handling may result in injury.
- If the 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.
- 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.
- When installing and moving the air conditioner to another site, do not change the type with a refrigerant different from the refrigerant (R410A or R522) specified on the unit.
- If a different refrigerant or air is mixed with the original refrigerant, the refrigerant may be damaged and the unit may be damaged.
- 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 toxic 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 incorrectly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result.
- To dispose of this product, consult your dealer.
- The Installer and system specialist shall ensure safety according to local regulations or standards.
- Following standards may be applicable if local regulations are not available.
- Pay special attention to the place, such as a basement, etc. where refrigeration gas can stay, since refrigeration is heavier than the air.
- The appliance is not intended for use by young children or infirm persons without supervision.
- Young children should be supervised to ensure that they do not play with the appliance.
- Never operate in open phase condition. Control box may be broken.
1.2. 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 checking.
- 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.

1.3. 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.
- The reverse phase of L lines (L1, L2, L3) can be detected (Error code: 4103), but the reverse phase of L lines and L line can not be detected.
- The same electric parts should be damaged when power is supplied under the reverse wiring.
- 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 earth circuit breaker, as required.
  - If an earth 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 unchecked, the unit may fall and cause personal injury or property damage.

1.4. 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 may be hot and may be cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigeration 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.

Note:
1. The total capacity of connected indoor unit models represents the total sum of the figures expressed in the indoor model name.
2. Combinations in which the total capacity of the connected indoor units exceeds the capacity of the outdoor unit will reduce the capacity of each indoor unit below the rated capacity during simultaneous operation. Therefore, if circumstances allow, combine indoor units within the capacity of the outdoor unit.
3. Installation

I. Indoor unit

I-1. Accessories

The unit is provided with the following accessories:

- [Fig. I-1.0.1] (P2)
  - Air outlet
  - Remote controller

I-2. Selecting an installation site

- Select a site with sturdy/lived surface sufficiently durable against the weight of unit.
- Before installing unit, the route to carry in unit to the installation site should be determined.
- Select a site where the unit is not affected by entering air.
- Select a site where the flow of supply and return air is not blocked.
- Select a site where refrigerant piping can easily be led to the outside.
- Select a site which allows the supply air to be distributed fully in room.
- Do not install unit at a site with oil splashing or steam in much quantity.
- Do not install unit at a site where combustible gas may generate, flow in, stagnate or leak.
- Do not install unit at a site where equipment generating high frequency waves (a high frequency wave welder for example) is provided.
- Do not install unit at a site where the detector is located at the supply air side. (Fire detector may operate erroneously due to the heated air supplied during heating operation.)
- When special chemical product may scatter around such as site chemical plants and hospitals, full investigation is required before installing unit. (The plastic components may be damaged depending on the chemical product applied.)

I-2.1. Install the indoor unit on a ceiling strong enough to sustain its weight

⚠ 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 causing injuries.

I-3. Fixing hanging bolts

I-3.1. Fixing hanging bolts

(Unit M10 hanging bolts. The bolts should be supplied in the field.)

(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.
  - 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.
  - Cut and remove the ceiling members.
  - Reinforce the ceiling members, and add other members for fixing the ceiling boards.

For wooden construction

- Use the tie beam (for one story building) or second-floor beam (for two story building) as strength members.
- To hang the air-conditioner, use a hard square timber of more than 6 cm if the distance between beams is less than 90 cm and a hard square timber of more than 9 cm if the distance between beams is less than 180 cm.

I-2.2. Securing installation and service space

- Select the optimum direction of supply airflow according to the configuration of the room and the installation position.
- As the piping and wiring are connected at the bottom and side surfaces, and the maintenance is made at the same surfaces, allow a proper space properly.
- For the efficient suspension work and safety, provide a space as much as possible.

Service space

[Fig. I-2.2.1] (P2)

- When connecting air inlet
- When installing the suspension fixtures prior to installation of the indoor unit with out/air duct and outlet duct.
- When hanging the indoor unit directly without inlet duct and outlet duct.
- Service space
- Suspension bolt pitch
- Air inlet
- Air outlet

Suspension bolt pitch

[Fig. I-2.2.2] (P2)

- Top of the unit
- 4 x 12 suspension bolt holes
- Control box
- Chain pan
- Main body

I-2.3. Combining indoor units with outdoor units

For combining indoor units with outdoor units, refer to the outdoor unit installation manual.
I -4. Installing the unit

I -4.1. 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.
- Install the indoor unit in the ceiling work.

[Fig. I -4.1.1] (P.2)

① Unit body ② Lifting machine

Two installation methods are available:
When the indoor unit is installed vertically:
1. Attach a washer and nut(s) to each suspension bolt. (The washers and nuts are to be supplied locally.)
2. Fit the indoor unit to each suspension bolt.
3. Make sure that the unit is positioned level, then tighten each nut.

[Fig. I -4.1.2] (P.2)

③ Nut ③ Washer

When using inlet duct:

<table>
<thead>
<tr>
<th>When using inlet duct</th>
<th>When not using inlet duct</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 or more</td>
<td>50 or more</td>
</tr>
<tr>
<td>30 or more</td>
<td>30 or more</td>
</tr>
</tbody>
</table>

Nut *1 is not required if distance A is 0.

When installing the suspension fixture prior to installation of the indoor unit:

1. Loosen each suspension fixture bolt slightly, then remove the fixture and U-shaped washers.

I -5. Refrigerant pipe and drain pipe specifications

To avoid dew drops, provide sufficient antecedence 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 sides. Be sure to wind commercially available insulating material (with a form of polyethylene's specific gravity of 0.09 and thickness given below) onto all pipes which pass through rooms.

① Select the thickness of insulating material by pipe size.

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>Insulating material thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.4 mm to 26.4 mm</td>
<td>More than 10 mm</td>
</tr>
<tr>
<td>26.6 mm to 58.1 mm</td>
<td>More than 15 mm</td>
</tr>
</tbody>
</table>

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 materials thickness more than those given in the above table.

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

I -6. Connecting refrigerant pipes and drain pipes

I -6.1. Refrigerant piping work

This piping work must be done in accordance with the installation manuals for outdoor unit.

- 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 to ensure that no foreign matter or moisture enter into the pipe.
- 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 brazing connection.

⚠️ Warning:
- Do not mix anything other than the specified refrigerant (R22) into the refrigerating cycle. Mixing air may cause the refrigerating cycle to get abnormally high temperature, resulting in a burst.

⚠️ Caution:
- Install the refrigerant piping for the indoor unit in accordance with the following.

2. Adjust each suspension fixture bolt.
3. Attach a washer and nut and suspension fixture to each suspension bolt. (The washers and nuts are to be supplied locally.)
4. Hook the indoor unit to the suspension fixtures.
5. Make sure that the unit is positioned level, then tighten each nut.

[Fig. I -4.1.3] (P.2)

④ Be sure to attach a U-shaped washer (if washers in blank)

I -4.2. Confirming the unit's position and fixing hanging bolts

[Fig. I -4.2.1] (P.2)

④ Test check

- Use the pipe supplied with the panel to confirm that the unit body and hanging bolts are positioned in place. If they are not positioned in place, it may result in dew drops due to wind leak. Be sure to check the positional relationship.
- Use a level to check that the surface indicated by ④ is at level. Ensure that the hanging bolt nuts are tightened to fit the hanging bolts.
- To ensure that drain is discharged, be sure to hang the unit at level using a level.

⚠️ Caution:
- Be sure to install the unit body at level.

I -5.1. Refrigerant pipe and drain pipe specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Refrigerant pipe</th>
<th>Drain pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>PEH-7, BMFY</td>
<td>PEH-10MFY</td>
</tr>
<tr>
<td>Refrigerant pipe</td>
<td>Liquid pipe</td>
<td>Gas pipe</td>
</tr>
<tr>
<td></td>
<td>φ16.88</td>
<td>φ22.4</td>
</tr>
<tr>
<td></td>
<td>φ28.58</td>
<td>φ38.58</td>
</tr>
<tr>
<td>Drain pipe</td>
<td>1D (Male screw)</td>
<td></td>
</tr>
</tbody>
</table>

I -5.2. Refrigerant pipe, drain pipe and filling port

[Fig. I -5.2.1] (P.3)

④ Refrigerant pipe (liquid pipe) - IP ⑤ Refrigerant pipe (gas pipe) - LP

⑥ Drain pipe

1. Remove the rubber cap.

[Fig. I -6.1.1] (P.3)

⑥ Remove braze cap

2. Pull out the thermal insulation on the site refrigerant piping, brace the unit piping, and replace the insulation in its original position. Wrap the piping with insulating tape.

[Fig. I -6.1.2] (P.3)

⑥ Thermal insulation ⑥ Full out insulation

⑥ Wrap with wrap cloth ⑥ Return to original position

⑥ Ensure that there is no gap here ⑥ Wrap with insulating tape

Note:
- Pay strict attention when wrapping the copper piping since wrapping the piping may cause condensation instead of preventing it.
- 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.

⚠️ Caution:
- Use refrigerant piping made of C1220 (CU-DHP) phosphorus doped silicon dioxide as specified in the JIS H3309 "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 refrigerant 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.

Additional refrigerant charge
- Take care not to allow dirt or cutting chips to enter the refrigerant pipes.
- The refrigerant pipes must be kept warm, so take particular care to insulate between refrigerant pipes and the gas pipe located inside the indoor unit, since the gas pipe heats the refrigerant during cooling operation.
- When connecting the refrigerant pipes, make sure that the stop valve of the outdoor unit is fully closed (as it was when shipped from the factory). After connecting all the refrigerant pipes between the indoor and outdoor units, purge air from the stop valve service port of the outdoor unit and service port of each connecting pipe. Check that there is no air leakage from any pipe connection, then fully open the stop valve of the outdoor unit. This will connect the refrigerant circuit between the indoor and outdoor units.
- The refrigerant pipes must be as short as possible.
- Flare and flange connections must be used for connection of the refrigerant pipes.
- The indoor and outdoor units must be connected with the refrigerant pipes.

Warning:
During installation and re-installation, take care not to allow any gas or materials other than the specified refrigerant (PE1-2) to enter the refrigerant cycle. Entry of air will cause extremely high pressure inside the refrigerant cycle, possibly resulting in breakage of pipes.

I-7. Duct work
- In connecting duct, insert canvas duct between unit and duct.
- Use insulating material for duct parts.
- Provide fall insulation to inlet duct flange, outlet duct flange and outlet duct to prevent condensation.
- Be sure to apply the air filter near the air inlet grille.
- Before connecting an inlet duct, remove the air filter (supplied with the unit), then install that filter in the inlet grille.

Caution:
- Outlet duct is 850 mm or more necessary to construct.
- To connect the air conditioner main body and the duct for potential equalization.
- Inlet temperature sensor when an inlet duct is installed.
An inlet temperature sensor is installed on the inlet duct flange. Before connecting an inlet duct, this sensor must be removed and installed in the specified position.

I-8. Remote controller
I-8.1 Installing procedures
(1) Select an installing position for the remote controller (switch box).
Be sure to observe the following precautions.

Remote controller profile
- Required coverages surrounding the remote controller
- Temperature sensor
- Installation pitch

The temperature sensors are located on both remote controller and indoor unit. To use the temperature sensor on the remote controller, mainly use the remote controller for temperature setting or room temperature detection. Install the remote controller in such an area that can detect average room temperature, free of direct sunlight, arrow from the air conditioner, and other such heating sources.
(2) Seal the service entrance for the remote controller cord with putty to prevent moisture or dust from entering the unit.

- A. For installation in the switch box:
  - When the remote controller cord is installed in the switch box, seal the junction between the switch box and the conduit with putty.

- B. For direct installation on the wall select one of the following:
  - Prepare a hole through the wall to pass the remote controller cord (in order to run the remote controller cord from the back), then seal the hole with putty.
  - Run the remote controller cord through the cut-out upper case, then seal the cut-out notch with putty similarly as above.

D-1. To lead the remote controller cord from the back of the controller:

D-2. To run the remote controller cord through the upper portion:

- Switch box (For two switch cases)
- Remote controller cord
- Cross-connected, pan-head screw
- Seal the pipe connector cord service entrance with putty

B. For direct installation on the wall:

- Wood screw

**Caution:**

Do not overtighten the screws to avoid deformation or broken lower case.

**Note:**

- Select a flat place for installation.
- Be sure to use two or more locations for securing the remote controller in the switch box or on the wall.

I-8.2. Connecting procedures

- The remote controller cord may be extended up to 500 m. Since the remote controller cord supplied with the unit is 10 m-long, use these electric wires or (two-core) cables of 0.3 mm² to 1.25 mm² for extension. Do not use multiconductor cables to prevent possible malfunction of the unit.

- Switch box:
- Remote controller cord
- Cross-connected, pan-head screw
- Seal the pipe connector cord service entrance with putty

**Caution:**

Do not use crimp-style terminals for connection to the remote controller terminal block to eliminate contact with the brass and resultant trouble.

(3) Set the dip switch No. 1 shown below when using two remote controllers for the same group:

**I-8.2.1.** (P.4) Dip switches

**Setting the dip switches**

The dip switches are at the bottom of the remote controller. Remote controller Main/Sub and other function settings are performed using these switches. Ordinarily, only change the Main/Sub setting of SW1. (The factory settings are all "OFF").

**I-8.3. Fitting the upper case**

**I-8.3.1.** (P.4)

(1) Put the upper latches (at two locations) first then fit the upper case into the lower case as illustrated.

(2) To remove the upper case, put a slotted screwdriver tip in the latches as shown in the diagram then move the screwdriver in the direction of arrow.

**Caution:**

- Do not move the screwdriver while inserting the tip far into the latches to prevent broken latches.
- Be sure to put the screwdriver tip securely in the latches until a snap sound. Loosely inserted screwdriver may fall down.

Note:

The operating section is covered with a protective sheet. Before using the unit, remove to protect the protective sheet.

I-8.4. Function settings

(1) Wired type

**I-8.4.1.** (P.4)

- Model number
- Refrigerant address
- Setting number
- Unit number

**Changing the power voltage setting**

Be sure to change the power voltage setting when operating the unit in an area where the power source is 220 V or 230 V. (The power voltage setting is set to 240 V at the factory. Units that are used in areas where the power source is 240 V do not require power voltage setting changes.)

**Operating instructions** (enabling settings with a wired remote controller)

**I-8.4.2.** (P.5)

- Go to the function setting mode
- Press the FILTER and TEST RUN buttons simultaneously and hold them for at least 2 seconds. FUNCTION will start to flash. The refrigerator address display will start to flash momentarily.

- Setting the refrigerator address

Use the [ ] [ ] (TIMER SET) button to set the refrigerator address to 00. Press [ ] to increase the value or [ ] to decrease it.

00 is the typical setting. When operating in a group configuration, use the corresponding refrigerator address (see the technical manual for details on setting the refrigerator address for a group). The refrigerator addresses must be set in order when performing the following operation.

- If the unit stops two seconds after the FUNCTION display starts to flash or [88] starts to flash in the indoor temperature display, a transmission problem may have occurred. Check to see if there is some source of transmission interference (noise) nearby.

- If you made a mistake during any point of this procedure, you can quit the function setting mode by pressing [ ] once and then return to step 1.

- Setting the unit number

Press [ ] (CLOCK ON/OFF) and [ ] will start to flash in the unit number display.

Use the [ ] [ ] (TIMER SET) button to set the unit number to 00. Press [ ] to increase the value or [ ] to decrease it.

Unit number 00 is the function setting selection for the entire refrigeration system.

- Setting the refrigerant address/unit number

Press the [ ] (MODE) button to designate the refrigerant address/unit number. [ ] will flash in the mode number display momentarily.

- If [88] appears in the room temperature section, the selected refrigerant address does not exist in the system. Also, if [P] appears in the unit number display section, the selected unit number does not exist. Enter the correct refrigerant address and unit number at steps 7 and 8.

- If unit operation will start when settings are confirmed using the [ ] (MODE) button. You can also use this operation to find out which functions are assigned to which unit numbers and the locations of those indoor units. Note that the fan operation will start for all of the indoor units that have been assigned refrigerant addresses when O or AL is the assigned unit number.
Designating the mode and setting numbers

The mode and setting numbers ① - ⑨ will start to flash when the MODE button ① is pressed and the designation operation will begin. The numbers are set when the flashing settings stay lit.

Selecting the mode number

Press the ② 1 ③ (TEMP) buttons to set the mode number ① to 04.
Press ① to increase the value or ② to decrease it.
① Mode number 04 = power voltage switching mode

Selecting the setting number

1 will start to flash as the currently specified setting number ② when the ③ button ① is pressed. Use the ③ ② ① (TEMP) buttons to specify 2 as the setting number. Press ② ① to increase the value or ① ③ to decrease it.
② Setting number 1 = 240 V
③ Setting number 2 = 220 V/200 V

Other function selections

Now that you know how to change the power voltage setting, there are several other settings that can be changed as well. The following Table lists the various settings that can be changed through the remote controller and the default settings of the various units.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Function</th>
<th>Settings</th>
<th>FE+MYB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power failure automatic recovery</td>
<td>Not available</td>
<td>Available</td>
<td>○</td>
</tr>
<tr>
<td>Indoor temperature detecting</td>
<td>Indoor unit operating average</td>
<td>Set by indoor unit’s remote controller</td>
<td>○</td>
</tr>
<tr>
<td>LCOSSMAY connectivity</td>
<td>Not supported</td>
<td>Supported (indoor unit is not equipped with outdoor-air intake)</td>
<td>○</td>
</tr>
<tr>
<td>Power voltage</td>
<td>240 V</td>
<td>220 V, 230 V</td>
<td>○</td>
</tr>
<tr>
<td>Filter sign</td>
<td>100 Hz</td>
<td>2500 Hz</td>
<td>○</td>
</tr>
<tr>
<td>Fan speed</td>
<td>Quiet</td>
<td>Standard</td>
<td>○</td>
</tr>
<tr>
<td>No. of air outlets</td>
<td>High ceiling</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Installed options (high-performance filter)</td>
<td>Not supported</td>
<td>Supported</td>
<td>○</td>
</tr>
<tr>
<td>Up/down vene setting</td>
<td>No vases</td>
<td>Equipped with vases</td>
<td>○</td>
</tr>
</tbody>
</table>

Things to remember when entering function selections:

The basic procedure for entering function selections is the same as described for switching between power voltages. However, there are some differences at step ③ for selecting the unit number, step ⑥ for selecting the mode number, and step ⑦ for selecting the unit number. The following Tables 2 and 3 list the various function settings, mode numbers, and setting numbers. Table 2 details the functions of the entire refrigerant system while Table 3 shows the functions that can be set for the indoor unit.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Function of the entire refrigerant system (select unit number 00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>Settings</td>
</tr>
<tr>
<td>Power failure automatic recovery</td>
<td>Not available</td>
</tr>
<tr>
<td>Indoor temperature detecting</td>
<td>Indoor unit operating average</td>
</tr>
<tr>
<td>LCOSSMAY connectivity</td>
<td>Not supported</td>
</tr>
<tr>
<td>Power voltage</td>
<td>240 V</td>
</tr>
<tr>
<td>Filter sign</td>
<td>100 Hz</td>
</tr>
<tr>
<td>Fan speed</td>
<td>Quiet</td>
</tr>
<tr>
<td>No. of air outlets</td>
<td>High ceiling</td>
</tr>
<tr>
<td>Installed options (high-performance filter)</td>
<td>Not supported</td>
</tr>
</tbody>
</table>
### Table 3. Normalized functions of the indoor unit (select unit numbers 01 to 03 or AL)

<table>
<thead>
<tr>
<th>Mode</th>
<th>Settings</th>
<th>Mode no.</th>
<th>Setting no.</th>
<th>Check</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter sign</td>
<td>100 Hr.</td>
<td>07</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2000 Hr.</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No filter sign indicator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fan speed</td>
<td>Quiet</td>
<td>08</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standard</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of air outlets</td>
<td>Standard</td>
<td>09</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High ceiling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installed options (High-performance filter)</td>
<td>Not supported</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supported</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uplow valve setting</td>
<td>No valves</td>
<td>11</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equipped with valves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Setting the unit numbers
   - Set "00" as the unit number when setting functions from Table 2.
   - When setting functions for an indoor unit in an independent system, set the unit number to 01.
   - When setting functions for a simultaneous-Twin Triple indoor unit system, assign unit numbers from 01 to 03 to each indoor unit.
   - When setting the same functions for an entire simultaneous Twin Triple indoor unit system, assign "AL" as the unit number.

4. Selecting the mode number
   - Select from Table 2 and Table 3.

5. Selecting the setting number
   - Select from Table 2 and Table 3.

### T-09. 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 take power from the special branch circuit.
2. Be sure to install an earth leakage breaker to the power.
3. 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.
4. Ensure that there is no slack on all wire connections.
5. 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.
6. Never connect the power cable to leads for the transmission cables. Otherwise the cables could be broken.
7. Be sure to connect control cables to the indoor unit, remote controller, and the outdoor unit.
8. Put the unit to the ground on the outdoor unit side.
9. Be sure to connect between the control cable terminal block of the outdoor unit and that of the indoor unit. (Cables have polarity, so make sure that they are connected according to the terminal numbers.)
10. Fix power source wiring to control box by using buffer bushing for tensile force (PG connection or the like). Connect control wiring to control terminal bed through the knockout hole of control box using ordinary bushing.

**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, lighting rod, or telephonic earth cable. Incomplete grounding may cause a risk of electric shock.

### Wiring example (For metal piping)

<table>
<thead>
<tr>
<th>Power Cable</th>
<th>Breaker Capacity</th>
<th>Fuse</th>
<th>Control Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEH-7, BMY</td>
<td>2.0 mm² or thicker</td>
<td>15 A</td>
<td>Cable or wire of 0.8 mm² or thicker (12 YDC)</td>
</tr>
<tr>
<td>PEH-10M/5B</td>
<td>2.0 mm² or thicker</td>
<td>15 A</td>
<td>15 A</td>
</tr>
</tbody>
</table>

* The grounding wire must be of the same diameter as the power cable wire.

### Location of cable holes

[Fig. I-6.3] (P.59)

- For remote controller cables
- For outdoor unit connection cables
- For power supply cables

- Switching the external static pressure (PEH-10M/5B only)

The unit has been set at the factory so that the standard amount of air is provided when the static pressure outside the unit is 30 Pa. However, it is possible to change the motor torque so that the standard amount of air is provided when the static pressure outside the unit is 75 Pa. This can be done by removing the white connector and connecting the red one (both connectors are provided inside the control box) as shown below.

[Fig. I-6.4] (P.59)

- Only PEH-10
- White connector (C01)
- Red connector (C02)
- G01
- Accessory connector

**Caution:**

Do not use anything other than the correct capacity breaker and fuse. Using nonspecified fuse, wire or copper wire with too large capacity may cause a risk of malfunction or fire.
II. Outdoor unit

II-1. Confirmation of parts attached

1. Connecting pipe x 1 (Connecting pipe is attached in front of compressor)
2. Packing (inside ø25, outside ø30) x 1

II-2. Space required around unit

[Fig. II-2-1] (P8)

A space of at least 150 mm is necessary at the inlet surface. Tasting servicing, etc. at the service panel side, a space of at least 500 mm should be provided and outlet side is open.

II-3. Lifting method and weight of product

[Fig. II-3-1] (P8)

Caution:
- Be very careful to carry product.
- Do not have only one person to carry product if it is more than 20 kg.
- PP bands are used to pack some products. Do not use them as a mean for transportation because they are dangerous. Do not touch heavy exchanger line with your bare hands. Otherwise you may get a cut in your hands.
- Tear plastic packaging bag and scrap it so that children cannot play with it. Otherwise plastic packaging bag may suffocate children to death.
- When carrying in outdoor unit, be sure to support it at four points. Carrying in and lifting with 3-point support may make outdoor unit unstable, resulting in a fall of it.
- The angles at which the ropes suspend the unit should be at least 45° and 60°. (Refer to Fig. II-3-1)

II-4. Installation of unit

II-4.1. Installation

[Fig. II-4.1] (P8)

• Fix unit tightly with bolts so that unit will not fall down due to earthquake or gust.
• Use concrete or angle for foundation of unit.
• Vibration may be transmitted to the installation section and noise and vibration may be generated from the floor and walls, depending on the installation conditions. Therefore, provide ample vibration-proofing (cushion pads, cushion frame, etc.).
• Be sure that the corners are firmly seated. If the corners are not firmly seated, the installation test may be bent.

Warning:
• Be sure to install unit in a place strong enough to withstand its weight.
Any lack of strength may cause unit to fall down, resulting in personal injury.
• Have installation work in order to protect against a strong wind and earthquake.
Any installation deficiency may cause unit to fall down, resulting in a personal injury.

When building the foundation, give full attention to the floor strength, drain water disposal during operation, drain water flows out of the unit, and piping and wiring routes.

II-5. Refrigerant piping installation

A connection must be applied to the indoor unit and liquid piping of the outdoor unit, whilst flange connection must be applied to the gas piping of the outdoor unit. For the branching, brazing connection must be applied.

Warning:
Always use extreme care to prevent the refrigerant gas (R22) from leaking while using fire or flame. If the refrigerant gas comes in contact with the flame from any source, such as a gas stove, it breaks down and generates a poisonous gas which can cause gas poisoning. Never wield in an unventilated room. Always conduct an inspection for gas leakage after installation of the refrigerant piping has been completed.

II-5.1. Caution
1. Commercially available piping often contains dust and other materials. Always blow it clean with a dry inert gas.
2. Use care to prevent dust, water or other contaminants from entering the piping during installation.
3. Reduce the number of bending portions as much as possible, and make bending radius as big as possible.
4. Always observe the restrictions on the refrigerant piping (such as rated length, the difference between high/low pressures, and piping diameter). Failure to do so can result in equipment failure or a decline in heating/cooling performance.
5. Never use refrigerant to perform an air purge. Always evacuate using a vacuum pump.
6. Always insulate the piping properly. Insufficient insulation will result in a decline in heating/cooling performance, water drops from condensation and other such problems.

Warning:
When connecting the refrigerant piping, make sure that the ball valve of the outdoor unit is completely closed (the临近 setting) and do not operate it until the refrigerant piping for the outdoor and indoor units has been connected, a refrigerant leakage test has been performed and the evacuation process has been completed.

Always use a non-oxidizing brazing material for brazing the parts. If a non-oxidizing brazing material is not used, it could cause dropping or damage to the compressor unit.

Never perform outdoor unit piping connection work when it is raining.

Warning:
When installing and moving the unit, do not charge it with refrigerant other than the refrigerant specified on the unit. Mixing of a different refrigerant, air, etc. may cause the refrigerant cycle to malfunction and result in severe damage.

II-5.2. Refrigerant piping system

Connection Example
[Fig. II-5.2] (P8)

(a) Outdoor unit
(b) Gas pipe size
(c) Liquid pipe size
(d) Outdoor unit

Caution:
• Total bends are 15 units
II-6. Additional Refrigerant Charge

II-6.1. Additional refrigerant charge
The mount of refrigerant charged in this unit is appropriate for 5-meter long refrigerant pipes.

Refer to the table below and add the corresponding amount of refrigerant if the pipes are extended.
(Refrigerant charge is charged in the outdoor unit.)

<table>
<thead>
<tr>
<th>Charge</th>
<th>Unit length</th>
<th>Refrigerant piping length (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 m</td>
<td>0.6</td>
<td>2.4</td>
</tr>
<tr>
<td>10 m</td>
<td>0.6</td>
<td>2.4</td>
</tr>
<tr>
<td>5 m</td>
<td>0.6</td>
<td>2.4</td>
</tr>
<tr>
<td>0.6 m</td>
<td>1.6</td>
<td>2.4</td>
</tr>
<tr>
<td>0.3 m</td>
<td>1.6</td>
<td>2.4</td>
</tr>
<tr>
<td>20 m</td>
<td>0.6</td>
<td>2.4</td>
</tr>
<tr>
<td>10 m</td>
<td>0.6</td>
<td>2.4</td>
</tr>
<tr>
<td>5 m</td>
<td>0.6</td>
<td>2.4</td>
</tr>
<tr>
<td>0.6 m</td>
<td>1.6</td>
<td>2.4</td>
</tr>
</tbody>
</table>

II-6.2. Caution for piping connection/valve operation

- Conduct piping connection and valve operation accurately.
- The gas side connecting pipe is being assembled for shipment.
  - For brazing to the connecting pipe with flange, remove the connecting pipe with flange from the ball valve, and brace it at the outside of the unit.
  - During the time when removing the connecting pipe with flange, remove the seal attached on the back side of this sheet and paste it onto the flange surface of the ball valve to prevent the entry of dust into the valve.
  - The refrigerant circuit is closed with a round, close-packed packing at the shipment to prevent gas loss between flanges. As no operation can be done under this state, be sure replace the packing with the hollow packing attached at the piping connection.
  - At the mounting of the hollow packing, wipe off dust attached on the flange sheet surface and the packing. Coat refrigerant machine oil (Ether oil, ether oil or alkylbenzene [small amount]) onto both surfaces of the packing.

- After evacuation and refrigerant charge, ensure that the handle is fully open. If operating with the valve closed, abnormal pressure will be imparted to the high- or low-pressure side of the refrigerant circuit, giving damage to the compressor, four-way valve, etc.
- Determine the amount of additional refrigerant charge by using the formula, and charge refrigerant additionally through the service port after completing piping connection work.
- After completing work, lighten the service port and cap securely to generate gas leak.

II-6.3. Airtight test, evacuation, and refrigerant charging

- Airtight test
  - Perform with the stop valve of the outdoor unit closed, and pressurize the connection piping and the indoor unit from the service port provided on the stop valve of the outdoor unit. (Always pressurize from both the liquid pipe and the gas pipe service ports.)

- Nitrogen gas
- To indoor unit
- System analyzer
- Liquid pipe
- Gas pipe
- Service port
<table>
<thead>
<tr>
<th>Air tight test procedure</th>
<th>Restriction</th>
</tr>
</thead>
</table>
| 1. Nitrogen gas pressurization  
(1) After pressurizing to the design pressure (3.3 MPa) using nitrogen gas, let stand for about one day. If the pressure does not drop, air tightness is good. 
However, if the pressure drops, since the leaking point is unknown, the following bubble test may also be performed. 
(2) After the pressurization described above, spray the flare connection parts, brazed parts, flanges, and other parts that may leak with a bubbling agent (flour paste, etc.) and visually check for bubbles. 
(3) After the air tight test, wipe off the bubbling agent.  
| * If a flammable gas or air (oxygen) is used as the pressurization gas, it may catch fire or explode. |
| 2. Pressurization using refrigerant gas and nitrogen gas  
(1) Pressurizing to a gas pressure of approximately 0.2 MPa, pressurize to the design pressure (2.64 MPa) using nitrogen gas. 
However, do not pressurize at one time. Stop during pressurization and check that the pressure does not drop.  
(2) Check for gas leaks by checking the flare connection parts, brazed parts, flanges, and other parts which may leak using an N203 leak detector.  
(3) This test may be used together with bubble type gas leak test.  |
| * Do not use a refrigerant other than that indicated on the unit.  
* Do not use a halocarbon torch. (Leaks cannot be detected.) |

### Evacuation
Evacuate with the ball valve of the outdoor unit closed and evacuate both the connection piping and the indoor unit from the service port provided on the ball valve of the outdoor unit using a vacuum pump. (Always evacuate from the service port of both the liquid pipe and the gas pipe.) After the vacuum reaches 5 Torr, continue evacuation for at least one hour or more.

* Never perform air purging using refrigerant.

### II-64. Thermal Insulation of Refrigerant piping
Be sure to give insulation work to refrigerant piping by covering liquid pipe and gas pipe separately with enough thickness heat-resistant polyethylene, so that no gap is observed in the joint between indoor unit and insulating material, and insulating materials themselves. When insulation work is insufficient, there is a possibility of condensation drip, etc. Pay special attention to insulation work to ceiling plenum.

#### Note:
- Always add an appropriate amount of refrigerant. Also always seal the system with liquid refrigerant. Too much or too little refrigerant will cause trouble.
- Use a gauge maniflod, charging hose, and other parts for the refrigerant indicated on the unit.
- Use a gravimeter. (One that can measure down to 0.1 kg)

#### II-64.1.1 (P7)
- Insulation material A
- Outer covering B

<table>
<thead>
<tr>
<th>Insulation material A</th>
<th>Outer covering B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass fiber</td>
<td>Steel wire</td>
</tr>
<tr>
<td>Adhesive + Heat-resistant polyethylene foam + Adhesive tape</td>
<td>Piping</td>
</tr>
<tr>
<td>Indoor</td>
<td>Vinyl tape</td>
</tr>
<tr>
<td>Floor exposed</td>
<td>Water-proof hemp cloth + Bronze asphalt</td>
</tr>
<tr>
<td>Outdoor</td>
<td>Water-proof hemp cloth + Zinc plate + Oily paint</td>
</tr>
</tbody>
</table>

### II-7. Wiring
#### II-7.1. 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. Set up the outdoor unit so that the wiring for the remote controller and the M-NET (MEANS) wiring do not produce electrical interference with the power supply cable. (Do not route them together in the same conduit.)
3. Be sure to provide designated grounding work to outdoor unit.
4. 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.
5. In the indoor/outdoor connection wiring, power and signal wiring are contained in the same multiconductor cable. Since the cable is polarized, be sure the connection is according to the terminal number.
6. For detailed information about the power supply cable, see the manual supplied with the indoor unit.
## II-7.2. Wiring and fitting capacities

**<PUH>**

Main power supply wire thickness and switch capacities.

<table>
<thead>
<tr>
<th>Electrical work</th>
<th>Main wire</th>
<th>Power supply thickness *1</th>
<th>Overcurrent protector *2</th>
<th>Power supply thickness *1</th>
<th>Overcurrent protector *2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>mm²</td>
<td>A</td>
<td>mm²</td>
<td>A</td>
</tr>
<tr>
<td>PUH-7, B</td>
<td>8 or more</td>
<td>14 or more</td>
<td>50</td>
<td>2.0</td>
<td>15</td>
</tr>
<tr>
<td>PUH-10</td>
<td>8 or more</td>
<td>14 or more</td>
<td>60</td>
<td>2.0</td>
<td>15</td>
</tr>
</tbody>
</table>

**Notes:**
*1: “Power supply thickness” indicates the thinnest allowable metal wire.
*2: “Overcurrent protector” indications are for when class B fuse are used.
*3: These wires are supplied with optional remote controller and branch piping.
*4: Power supply cables of parts of appliances for outdoor use shall not be lighter than polyvinyl chloride sheathed flexible cord (design: 245 IEC 60).

Table above is an example. The selection of other capacities should be determined in accordance with the relevant standards.

### 4. Test run

#### 4.1. Before test run

The test run can be carried out either from the outdoor unit or the indoor unit.

1. Checklist
   - After the installation, piping setup, and wiring of the indoor and outdoor units is complete, check that refrigerant is not leaking, the power and control wires are not loose, and the power and control cables are not exposed. (When connecting model PEH-P-YE in particular, check that there is current in the separate power supply cable for the indoor unit.)
   - Use a 500 V insulation resistance tester to make sure that the resistance between the power terminal and the ground is 1.0 MΩ or more. If it is less than 1.0 MΩ, do not operate the unit. Absolutely do not touch the testers to indoor/ outdoor connection terminals S1, S2, and S3. An accident could occur.
   - Make sure there is no malfunction in the outdoor unit. (If there is a malfunction, you can diagnose it using LED3 on the board.)
   - Check that the dial valve is fully open on both the liquid and gas ends.
   - Check the electrical power phase. If the phase is reversed, the fan may rotate in the wrong direction or stop, or unusual sounds may be produced.
   - Starting at least 12 hours before the test run, send current through the crankcase heater. (If the current is running for a shorter period of time, damage to the compressor could result.)
   - For specific models requiring changing of settings for higher ceilings or selection of power supply ON/OFF capability, make proper changes referring to the description for Selection of Functions through Remote Controller.

After the above checks are complete, carry out the test run as indicated in the following outline.

#### 4.2. Test run procedures

1. **Indoor unit**
   - [Fig. 4-2.1] (P.7)

**Operating procedure**

* Press the [OFF] button
  - Cooling/drying mode: Cool air should start to blow.
  - Heating mode: Warm air should start to blow (after a while).

* Press the [ON/OFF] button
  - Check for correct motion of auto-varies.

* Check the outdoor unit fan for correct running
  - The fan runs automatically to provide optimum fan speed. The fan keeps running at a low speed to make sure the outdoor unit runs smoothly.

* Press the [ON/OFF] button to reset the test run in progress
  - The test run will be automatically shut down after two hours in response to the AUTO STOP setting of two hours on the timer.

* During the test run, the room temperature display shows the indoor unit tube temperatures.

* In the case of the test run, the OFF timer will activate, and the test run will automatically stop after two hours.

* The room temperature display section shows the control temperature for the indoor units during the test run.

* Check that all the indoor units are running properly for simultaneous twin and tripe operation.

Malfonctions may not be displayed even if the wiring is incorrect.

(1) After turning ON the power, the system will go into startup mode, and the remote controller operation lamp (red) and the room temperature display section's “H’’ will flash. Also, in the case of the indoor substrate LEDs, LED 1 and LED 2 light up (when address is 0) or become dim (when address is not 0), and LED 3 flashes. In the case of the outdoor substrate LED display [ ] and [ ] are displayed alternately at 1-second intervals.

If one of the above operations does not function correctly, the following causes should be considered, and if applicable, dealt with. (The following symptoms have been determined under test run mode. Note that “startup” in the chart means the *1 display above.)
### Symptoms

<table>
<thead>
<tr>
<th>Remote Controller Display</th>
<th>Outdoor Substrate LED Display</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote controller is displaying &quot;HI&quot;, and operation is not possible.</td>
<td>After “startup” display, “00” is displayed (correct operation).</td>
<td>• After power is turned ON, system startup lasts for about 2 min., and “HI” is displayed (correct operation).</td>
</tr>
<tr>
<td>After power is turned ON, “HI” is displayed for 3 mins., then error code is displayed.</td>
<td>After “startup” display, error code is displayed.</td>
<td>• Outdoor units safeguard installation connector is open.</td>
</tr>
<tr>
<td>After power is turned ON, “HI” is displayed for 3 mins.</td>
<td>After “startup” display, “F1” (negative phase) is displayed.</td>
<td>• Negative phase and open phase of outdoor units power terminal board (Single phase: L, N, PE/triple phase: L1, L2, L3, N, PE)</td>
</tr>
<tr>
<td>Power is turned ON, and “EE” or “EF” are displayed after “HI” is displayed.</td>
<td>After “startup” display, “O0” or “E1” is displayed (&quot;EE&quot; is displayed when a test run is made).</td>
<td>• Incorrect connection of outdoor terminal board (Single phase: L, N, PE/triple phase: L1, L2, L3, N, PE grounding and B1, B2, B3).</td>
</tr>
<tr>
<td>Display messages do not appear even when remote controller operation switch is turned ON (operation lamp does not light up).</td>
<td>After “startup” display, “EA” (error for number of units) or “ER” (unit number error) is displayed.</td>
<td>• Wiring for the indoor and outdoor unit is not connected correctly (Polarity is wrong for S1, S2, S3).</td>
</tr>
<tr>
<td>Operation display appears but soon disappears even when remote controller operations are executed.</td>
<td>After “startup” display, “O0” is displayed (correct operation).</td>
<td>• Remote controller transmission wire short.</td>
</tr>
<tr>
<td>After “startup” display, “O0” is displayed.</td>
<td>After “startup” display, “O0” is displayed (correct operation).</td>
<td>• Remote controller transmission wire burnout.</td>
</tr>
</tbody>
</table>

* Press the remote controller’s “CHECK” button twice consecutively to be able to run a self-diagnosis. See the chart below for details of error code displays.

#### LCD Nonconformity Content

<table>
<thead>
<tr>
<th>LCD</th>
<th>Nonconformity Content</th>
<th>LCD</th>
<th>Nonconformity Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Suction sensor error</td>
<td>P9</td>
<td>Tube temperature error</td>
</tr>
<tr>
<td>P2</td>
<td>Tubing (liquid) sensor error</td>
<td>P9</td>
<td>Tube (gas phase) sensor error</td>
</tr>
<tr>
<td>P4</td>
<td>Drain sensor error</td>
<td>E0 – E1</td>
<td>Outdoor unit nonconformity</td>
</tr>
<tr>
<td>P6</td>
<td>Overflow/safety operation</td>
<td>E0 – E6</td>
<td></td>
</tr>
</tbody>
</table>

#### Display Messages

<table>
<thead>
<tr>
<th>LCD</th>
<th>Nonconformity Content</th>
<th>LCD</th>
<th>Nonconformity Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>E0</td>
<td>No error history</td>
<td>E6</td>
<td>Signal error between indoor and outdoor units</td>
</tr>
<tr>
<td>FFF</td>
<td>No relevant unit</td>
<td>EF</td>
<td>Signal error between indoor and outdoor units</td>
</tr>
</tbody>
</table>

See the chart below for details of the LED displays (LED 1, 2, 3) on the indoor substrate.

- **LED 1 (noncomputer power supply):** Displays the ON/OFF of power control. Check that this is lit during normal use.
- **LED 2 (remote controller lead):** Displays the ON/OFF of the remote controller. If the red LED is lit, the remote controller is correctly connected.
- **LED 3 (indoor and outdoor signals):** Displays signal between indoor and outdoor units. Check that this is flashing during normal use.

### 2) Outdoor unit

#### 1) Check Items

- After installation of indoor and outdoor units, and tubing and electric wiring work, check that the unit is free from leaks of refrigerant, incorrect connections, and incorrect polarity.

- (Check that there is no negative phase and open phase. [The F1 message for negative phase and the F2 message for open phase will flash at LED 1 on the outdoor substrate. If this happens, rewire correctly.] Check the wiring for correctness.

- (Check the phase balance between power terminals. [Single phase: L, N, PE/triple phase: L1, L2, L3, N, PE] and the ground with a 500 V Megger and check that it is 1.0 MΩ or more. Do not operate the equipment if the resistance is less than 1.0 MΩ.) Never connect this equipment on the connection wiring terminals (S1, S2, S3) as this causes damage.

- When there is no error at the outdoor unit. (If there is an error at the outdoor unit, it can be evaluated at LED 1 [digital display] of the outdoor substrate.)

- The stop valves are open both the liquid and gas sides. After checking the above, execute the test run in accordance with the following.

#### 2) Test run start and finish

- Operation from the indoor unit
  - Execute the test run using the installation manual for the indoor unit.
  - Operation from the outdoor unit
  - Execute the test run start, operation, and operation mode (cooling, heating) using the DIP switch SW 4 on the outdoor substrate. [Fig. 4.2] (P7)
  - ① Stop  ② Cooling  ③ Operation  ④ Heating
  - ⑤ Set the operation mode (cooling, heating) using SW 4-2
  - ⑥ Turn ON SW 4-1, The operation mode for SW 4-3 will be adhered to, and the test run will commence.
  - ⑦ Turn OFF SW 4-1 to finish the test run.

#### Note:

- The SW 4-2 operation mode cannot be changed during the test run. (To change the operation mode, stop the equipment with SW 4-1, change the operation mode, then restart the test run with SW 4-1.)
  - If the 2-hour timer is set, the test run will stop automatically after 2 hours.
  - During the test run, the room temperature display on the indoor unit will indicate the temperature of the indoor unit piping.

### 4.3. Self-diagnosis

#### Use the remote controller to look up each unit's error history.

**[Fig. 4.3.1] (P3)**

- **① Change to self-diagnosis mode**
  - Press the CHECK button twice within three seconds to show the following display.

- **② Select the refrigerant address number to be self-diagnosed**
  - Press the CD, CD buttons to scroll through the refrigerant address numbers (00 to 15) and select the refrigerant address number to be self-diagnosed. After three seconds from making the change, the liquid refrigerant address to be self-diagnosed will start to flash, and self-diagnosis will commence.

- **③ Self-diagnosis result display**
  - See the above chart for details of error code contents.
    - ① When there is an error history
    - ② When there is no error history
    - ③ When the address does not exist
      - a) Alternating display
      - b) Error code
      - c) Address of error search
      - d) Unit number

- **④ Reset error history**
  - Display the error history at the self-diagnosis result display screen. If the address for self-diagnosis is still flashing when the CD button is pressed twice within three seconds.
  - Diagram on the left will be displayed when error history has been reset.
  - Note that the error content will be redisplayed if error history resetting is unsuccessful.
    - a) Alternating display
4. Remote controller diagnosis

If operation cannot be carried out from the remote controller, use this function to diagnose the remote controller.

[Fig. 4.4.1] (P8)

1. First, check the electricity current marker
   a. The current voltage (CC 12 V) is not displayed on the remote controller, the
      electricity current marker will be lit.
   b. If the electricity current marker is not lit, check the remote controller wiring
      and the indoor units.

2. Transfer to remote control mode
   a. Hold down the C-CHECK button for five seconds or more to display the diagram
      on the left.
   b. Press the FILTER button to commence diagnosis of remote controller.

3. Remote controller diagnosis results
   a. The remote control is functioning correctly.
   b. Check other possible causes as there are no problems with the remote controller.

5. Troubleshooting

5.1. How to handle problems with the test run

Error code list: details

<table>
<thead>
<tr>
<th>Error details</th>
<th>Problem location</th>
<th>MELANS display</th>
<th>Remote controller display</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote controller communication – reception error</td>
<td>Remote Controller</td>
<td>6831, 6834</td>
<td>E9</td>
</tr>
<tr>
<td>Remote controller communication – transmission error</td>
<td>Remote Controller</td>
<td>6832, 6833</td>
<td>E3</td>
</tr>
<tr>
<td>Remote controller communication – reception error</td>
<td>Indoor unit</td>
<td>6831, 6834</td>
<td>E4</td>
</tr>
<tr>
<td>Remote controller communication – transmission error</td>
<td>Indoor unit</td>
<td>6832, 6833</td>
<td>E5</td>
</tr>
<tr>
<td>Communication between indoor and outdoor units – reception error</td>
<td>Indoor unit</td>
<td>6740, 6843</td>
<td>E6</td>
</tr>
<tr>
<td>Communication between indoor and outdoor units – transmission error</td>
<td>Indoor unit</td>
<td>6841, 6842</td>
<td>E7</td>
</tr>
<tr>
<td>Communication between indoor and outdoor units – reception error</td>
<td>Outdoor unit</td>
<td>6846, 6845</td>
<td>E8</td>
</tr>
<tr>
<td>Communication between indoor and outdoor units – transmission error</td>
<td>Outdoor unit</td>
<td>6841, 6842</td>
<td>E9</td>
</tr>
<tr>
<td>Indoor/outdoor connection wiring error, indoor and overload (6 units or more)</td>
<td>Outdoor unit</td>
<td>8944, 6842</td>
<td>EA</td>
</tr>
<tr>
<td>Indoor/outdoor connection wiring error (interference, loose)</td>
<td>Outdoor unit</td>
<td>8045, 6842</td>
<td>EB</td>
</tr>
<tr>
<td>Excessive time in use</td>
<td>Outdoor unit</td>
<td>6846, 6843</td>
<td>EA</td>
</tr>
<tr>
<td>Serial communication error</td>
<td>Outdoor unit</td>
<td>3913, 6843</td>
<td>EE</td>
</tr>
<tr>
<td>Serial communication error</td>
<td>M-NET board</td>
<td>3944, 6843</td>
<td>EE</td>
</tr>
<tr>
<td>Reverse phase, out of phase verification</td>
<td>Outdoor unit</td>
<td>4100, 6843</td>
<td>F1</td>
</tr>
<tr>
<td>Faulty input circuit</td>
<td>Outdoor unit</td>
<td>4115, 6843</td>
<td>F8</td>
</tr>
<tr>
<td>Duplicated M-NET address setting</td>
<td>M-NET board</td>
<td>5600, 6843</td>
<td>A0</td>
</tr>
<tr>
<td>M-NET error in P/HW transmission</td>
<td>M-NET board</td>
<td>5606, 6843</td>
<td>A2</td>
</tr>
<tr>
<td>M-NET bus error</td>
<td>M-NET board</td>
<td>5968, 6843</td>
<td>A3</td>
</tr>
<tr>
<td>M-NET communication error with P transmission</td>
<td>M-NET board</td>
<td>5606, 6843</td>
<td>A6</td>
</tr>
<tr>
<td>M-NET error – no ACK</td>
<td>M-NET board</td>
<td>5607, 6843</td>
<td>A7</td>
</tr>
<tr>
<td>M-NET error – no response</td>
<td>M-NET board</td>
<td>5968, 6843</td>
<td>A8</td>
</tr>
<tr>
<td>Undefined error code</td>
<td>undefined</td>
<td>undefined</td>
<td>EF</td>
</tr>
<tr>
<td>Outlet temperature error</td>
<td>Outdoor unit</td>
<td>1102, 6843</td>
<td>U2</td>
</tr>
<tr>
<td>CN29 Short-circuit Connector Unplugged</td>
<td>Outdoor unit</td>
<td>1108, 6843</td>
<td>U2</td>
</tr>
<tr>
<td>Open/short in discharge lamp thermostat</td>
<td>Outdoor unit</td>
<td>5104, 6843</td>
<td>U3</td>
</tr>
<tr>
<td>Open/short in liquid temp or condenser/evaporator temp thermostat</td>
<td>Outdoor unit</td>
<td>5015, 6843</td>
<td>U4</td>
</tr>
<tr>
<td>Compressor/evaporator interruption (6/13 operation)</td>
<td>Outdoor unit</td>
<td>4101, 6843</td>
<td>U6</td>
</tr>
<tr>
<td>High pressure error (6/13 operation)</td>
<td>Outdoor unit</td>
<td>1302, 6843</td>
<td>UE</td>
</tr>
<tr>
<td>Low pressure error (6/3 operation)</td>
<td>Outdoor unit</td>
<td>1302, 6843</td>
<td>UE</td>
</tr>
<tr>
<td>Power synchronous idle circuit error</td>
<td>Outdoor unit</td>
<td>4115, 6843</td>
<td>F8</td>
</tr>
<tr>
<td>Inlet sensor error</td>
<td>Indoor unit</td>
<td>5101, 6843</td>
<td>P1</td>
</tr>
<tr>
<td>Piping sensor error</td>
<td>Indoor unit</td>
<td>5102, 6843</td>
<td>PO</td>
</tr>
<tr>
<td>Drain sensor error</td>
<td>Indoor unit</td>
<td>2503, 6843</td>
<td>P4</td>
</tr>
<tr>
<td>Drain overflow protector operation</td>
<td>Indoor unit</td>
<td>2502, 6843</td>
<td>PS</td>
</tr>
<tr>
<td>Water leak error (PCH only)</td>
<td>Indoor unit</td>
<td>2502, 6843</td>
<td>PS</td>
</tr>
<tr>
<td>Freeze prevention operation</td>
<td>Indoor unit</td>
<td>1650, 6843</td>
<td>P6</td>
</tr>
<tr>
<td>Surge prevention operation</td>
<td>Indoor unit</td>
<td>1654, 6843</td>
<td>P6</td>
</tr>
<tr>
<td>Piping temperature error</td>
<td>Indoor unit</td>
<td>1110, 6843</td>
<td>PB</td>
</tr>
</tbody>
</table>
Depending on the position of the SW2 switch on the outdoor unit board, the segments light up to indicate the running condition of the unit and the particulars of the check code.

<table>
<thead>
<tr>
<th>000000</th>
<th>Operation mode/relay output</th>
</tr>
</thead>
</table>
| tens place | 0: stop  
| | 1: SW1  
| | 2: 21S4  
| | 4: 52C  
| units place | 0: cooling  
| | H: heating  
| | d: defrosting |

Relay output = SV1 + 21S4 + 52C
Ex. During cooling mode, when 52C and SW1 are ON; C9

When an error occurs, the error code and error signal ("1") are displayed in alternation.

<table>
<thead>
<tr>
<th>011110</th>
<th>Outdoor unit control condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>010110</td>
<td>Indoor unit control condition (IC1) (IC2)</td>
</tr>
<tr>
<td>110110</td>
<td>Indoor unit control condition (IC3) (IC4)</td>
</tr>
</tbody>
</table>

Control mode display system

<table>
<thead>
<tr>
<th>Display</th>
<th>Indoor unit</th>
<th>Outdoor unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Ordinary</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Hum adjustment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Defrosting</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Heater ON</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Freeze prevention</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Surge prevention</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Compressor OFF</td>
<td></td>
</tr>
</tbody>
</table>

5.2. The following occurrences are not problems or errors

<table>
<thead>
<tr>
<th>Problem</th>
<th>Remote controller display</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>The fan setting changes during heating.</td>
<td>Ordinary display</td>
<td>During thermostat OFF mode, light air or low air operation will take place. During thermostat ON mode, light air or low air will switch automatically to set point on the basis of time or piping temperature.</td>
</tr>
<tr>
<td>The fan stops during heating.</td>
<td>Defrosting display</td>
<td>During defrosting, the fan will stop.</td>
</tr>
<tr>
<td>When the switch is turned ON, the fan does not begin to operate.</td>
<td>Heating preparations underway</td>
<td>After the switch is turned to ON or until the piping temperature reaches 35°C, there will be 5 minutes of light air operation. After that there will be 2 minutes of low air operation, then set point will begin (heat adjustment control).</td>
</tr>
<tr>
<td>The outdoor unit fan turns in reverse or stops, and an unusual sound is heard.</td>
<td>Ordinary display</td>
<td>There is a risk of the power to the outdoor unit being connected in reverse phase. Be sure to check that the phase is correct.</td>
</tr>
</tbody>
</table>
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 73/23/EEC

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