MITSUBISHI ELECTRIC

*Changes for the Better*

AIR CONDITIONER

2023

R410A R32

# Service Handbook

**Model**

**CMB-WM108V-AA**
**CMB-WM1016V-AA**
**CMB-WM108V-AB**
**CMB-WM1016V-AB**
**CMB-WM108V-BB**
**CMB-WM1016V-BB**

**2nd edition**

# Safety Precautions

- Read and observe the safety precautions below and the instructions provided on the labels affixed to the unit.
- Retain this manual for future reference. Make sure that this manual is passed on to the end users.
- All refrigerant piping work, electrical work, air-tightness test, and brazing work must be performed by qualified personnel.
- Incorrect use may result in serious injury.

| | |
|---|---|
| ⚠ WARNING | **indicates a hazardous situation which, if not avoided, could result in death or serious injury.** |
| ⚠ CAUTION | **indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.** |
| CAUTION | **addresses practices not related to personal injury, such as product and/or property damage.** |

## General Precautions

### ⚠ WARNING

**Do not use any refrigerant other than the type indicated in the manuals for the unit and on the nameplate.**

- Doing so will cause the unit or pipes to burst, or result in an explosion or fire during use, during repairs, 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.

**Do not use the unit in an unusual environment.**

- If the unit is used in areas exposed to large amounts of oil, steam, organic solvents, or corrosive gases (such as ammonia, sulfuric compounds, or acids), or areas where acidic/alkaline solutions or special chemical sprays are used frequently, it may significantly reduce the performance and corrode the internal parts, resulting in refrigerant leakage, water leakage, injury, electric shock, malfunction, smoke, or fire.

**Do not change the settings of the safety or protection devices.**

- Forcing the unit to operate by disabling the safety devices, such as the pressure switch or the thermal switch, may result in bursting, fire, or explosion.
- Operating the unit with a safety device whose settings have been changed may result in bursting, fire, or explosion.
- Using safety devices other than those specified by Mitsubishi Electric may result in bursting, fire, or explosion.

**Do not alter or modify the unit.**

- Doing so will result in refrigerant leakage, water leakage, serious injury, electric shock, or fire.

**Do not wet the electrical parts.**

- Doing so may result in current leakage, electric shock, malfunction, or fire.

**Do not touch the electrical parts, switches, or buttons with wet fingers.**

- Doing so may result in electric shock, malfunction, or fire.

**Do not touch the refrigerant pipes and refrigerant line components with bare hands during and immediately after operation.**

- The refrigerant in the pipes will be very hot or very cold, resulting in frostbite or burns.

**Do not touch the electrical parts with bare hands during and immediately after operation.**

- Doing so may result in burns.

**Ventilate the room while servicing the unit.**

- If the refrigerant leaks, oxygen deficiency may result. If the leaked refrigerant comes in contact with a heat source, toxic gas will be generated.

**If you notice any abnormality (e.g., a burning smell), stop the operation, turn off the power switch, and consult your dealer.**

- Continuing the operation may result in electric shock, malfunction, or fire.

**Properly install all required covers and panels on the terminal box and the control box.**

- If dust or water enters the unit, this may result in electric shock or fire.

**Periodically check the unit base for damage.**

- If the damage is left uncorrected, the unit will fall and cause serious injury.

**Consult your dealer for the proper disposal of the unit.**

- The refrigerant oil and the refrigerant in the unit will pose a risk of environmental pollution, fire, or explosion.

**Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.**

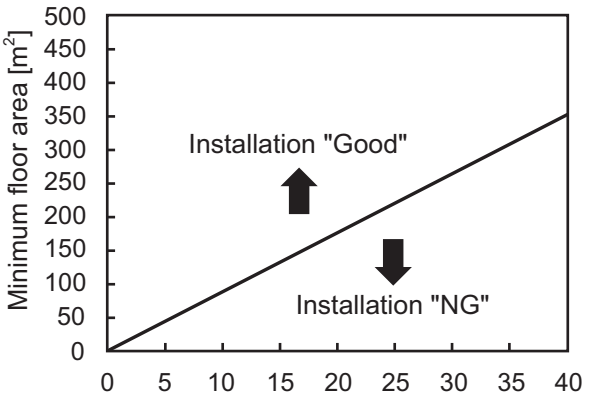
**The unit shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.)**

**Do not pierce or burn.**

**Be aware that refrigerants may not contain an odour.**

**The unit shall be installed, operated and stored in a room with a floor area according to the following figure.**

**The HBC controller(s) shall not be installed in a condition with certain floor area and the refrigerant amount as shown in the figure below.**



(When installed in the ceiling of 1.8 meters high)

**The unit shall be properly stored to prevent mechanical damage.**

## ⚠ CAUTION

**Children should be supervised to ensure that they do not play with the appliance.**

**Do not operate the unit with the panels and guards removed.**

- Rotating, hot, or high-voltage parts may cause injury, electric shock, or fire.

**Do not touch fans, heat exchanger fins, or the sharp edges of components with bare hands.**

- Doing so may result in injury.

**Wear protective gloves when working on the unit.**

- Failure to do so may result in injury.
- High-pressure pipes poses a risk of burns if touched with bare hands while the unit is in operation.

**Check that markings of the unit are not illegible.**

- Illegible warning or caution markings may cause damage to the unit, resulting in injury.

**If the ambient temperature can drop below freezing while the heat-source unit is not in use, blow the water out of the pipes or fill them with anti-freeze solution.**

- Failure to do so may cause the water in the pipes to freeze and damage the unit.
- Water from burst pipes may result in water-damage to the furnishings.

**Make sure the supply-water flow rate falls within the specified range.**

- Failure to maintain the adequate flow rate can result in corrosion of the heat-source unit.
- Water from corroded pipes can result in water-damage to the furnishings.

# Transportation and Installation

## ⚠ WARNING

**When lifting the unit, pass the slings through the four designated sling holes.**

- Improper lifting will cause the unit to topple or fall, resulting in serious injury.

## ⚠ CAUTION

**Do not lift the unit with the PP bands that are used on some products.**

- Doing so may result in injury.

**Observe the restrictions on the maximum weight that a person can lift, which is specified in local regulations.**

- Failure to do so may result in injury.

# Installation

## ⚠ WARNING

**Do not install the unit where combustible gas may leak.**

- If combustible gas accumulates around the unit, fire or explosion may result.

**Do not allow children to play with the packing materials.**

- Suffocation or serious injury may result.

**Cut up the packing materials before disposal.**

**All installation work must be performed by qualified personnel in accordance with this manual.**

- Improper installation may result in refrigerant leakage, water leakage, serious injury, electric shock, or fire.

**If the air conditioner is installed in a small room, take measures to prevent the refrigerant concentration from exceeding the safety limit in the event of refrigerant leakage.**

- Consult your dealer regarding the appropriate measures to prevent the allowable concentration from being exceeded. If the refrigerant leaks and the allowable concentration is exceeded, hazards due to a lack of oxygen in the room will result.

**Install the unit in accordance with the instructions to minimize the risk of damage from earthquakes and strong winds.**

- Improper installation will cause the unit to topple, resulting in serious injury.

**The unit must be securely installed on a structure that can sustain its weight.**

- Failure to do so will cause the unit to fall, resulting in serious injury.

**Do not open the control box cover when charging refrigerant.**

- Doing so may cause sparks, resulting in fire.

## ⚠ CAUTION

**Seal all openings around pipes and wires to keep out small animals, rainwater, or snow.**

- Failure to do so may result in current leakage, electric shock, or damage to the unit.

**Do not install the unit where corrosive gas may be generated.**

- Doing so can corrode the pipes, resulting in refrigerant leakage and fire.

# Piping Work

## ⚠ WARNING

**Piping work shall be kept to a minimum.**

**The pipes shall be protected from physical damage.**

**Before heating the brazed sections, remove the gas and oil that are trapped in the pipes.**

- Failure to do so may generate fire, resulting in serious injury.

**Do not purge the air using refrigerant. Use a vacuum pump to evacuate the system.**

- Residual gas in the refrigerant lines will cause bursting of the pipes or an explosion.

**Do not use oxygen, flammable gas, or a refrigerant containing chlorine for air-tightness testing.**

- Doing so may result in an explosion. Chlorine will deteriorate the refrigerant oil.

**When installing or relocating the unit, do not allow air or any substance other than the specified refrigerant to enter the refrigerant lines.**

- Any substance other than the specified refrigerant may cause abnormally high pressure in the refrigerant lines, resulting in bursting of the pipes or an explosion.

**After the installation has been completed, check for refrigerant leaks.**

- If the refrigerant leaks, oxygen starvation may result. If the leaked refrigerant comes in contact with a heat source, toxic gas will be generated.

**Have a fire extinguisher nearby before brazing work.**

- If the refrigerant leaks while brazing work is being performed, fire may result.

**Provide no-smoking signs at the brazing workplace.**

- If the refrigerant leaks when an ignition source is present, fire may result.

## Wiring Work

### ⚠ WARNING

**Include some slack in the power cables.**

- Failure to do so may break or overheat the cables, resulting in smoke or fire.

**Connections must be made securely and without tension on the terminals.**

- Improperly connected cables may break, overheat, or cause smoke or fire.

**Tighten all terminal screws to the specified torque.**

- Loose screws and contact failure may result in smoke or fire.

**Electrical work must be performed by qualified personnel in accordance with local regulations and the instructions provided in this manual. Only use the specified cables and dedicated circuits.**

- Inadequate power source capacity or improper electrical work will result in electric shock, malfunction, or fire.

**Install an earth leakage breaker on the power supply of each unit.**

- Failure to do so may result in electric shock or fire.

**Only use properly rated breakers (an earth leakage breaker, local switch <a switch + fuse that meets local electrical codes>, or overcurrent breaker).**

- Failure to do so may result in electric shock, malfunction, smoke, or fire.

**Only use standard power cables of sufficient capacity.**

- Failure to do so may result in current leakage, overheating, smoke, or fire.

**Proper grounding must be provided by qualified personnel.**

- Improper grounding may result in electric shock, fire, explosion, or malfunction due to electrical noise. Do not connect the ground wire to gas or water pipes, lightning rods, or telephone ground wires.

### ⚠ CAUTION

**After the wiring work has been completed, measure the insulation resistance, and make sure that it reads at least 1 MΩ.**

- Failure to do so may result in electric leakage, malfunction, or fire.

## Relocation and Repairs

### ⚠ WARNING

**Only qualified personnel must relocate or repair the unit. Do not attempt to disassemble or alter the unit.**

- Failure to do so will result in refrigerant leakage, water leakage, serious injury, electric shock, or fire.

**Do not service the unit in the rain.**

- Doing so may result in electric leakage, electric shock, wire shorting, malfunction, smoke, or fire.

**Check for refrigerant leaks before service.**

- If the refrigerant leaks, fire may result.

**Do not open the control box cover when recovering, charging, or purging refrigerant.**

- Doing so may cause sparks, resulting in fire.

## Additional Precautions

### CAUTION

**Do not turn off the power immediately after stopping operation.**

- Wait for at least five minutes after the unit has stopped before turning off the power. Failure to do so may result in drain water leakage or the mechanical failure of sensitive parts.

**The unit must be periodically inspected by a dealer or qualified personnel.**

- If dust or dirt accumulates inside the unit, the drain pipes may become clogged, and water leakage from the pipes may wet the surroundings and generate odours.

**Turn on the power at least 12 hours before starting operation. Keep the power turned on throughout the operating season.**

- Insufficient energizing will result in malfunction.

**Do not use the air conditioner for special purposes (e.g. keeping food, animals, plants, precision devices, or art objects in a room).**

- Such items could be damaged or deteriorated.

**Collect the refrigerant and properly dispose of it in accordance with local regulations.**

**Do not install the unit on or over items that are subject to water damage.**

- When the room humidity exceeds 80% or if the drain pipe is clogged, condensation may collect and drip from the indoor unit onto the ceiling or floor.

**Drain piping must be installed by a dealer or qualified personnel to ensure proper drainage.**

- Improper drain piping may cause water leakage, resulting in damage to furniture and other surroundings.

**Take appropriate measures against electrical noise interference when installing the unit in hospitals or radio communication facilities.**

- Inverter, high-frequency medical, or wireless communication equipment as well as power generators may cause the air conditioning system to malfunction. The air conditioning system may also adversely affect the operation of these types of equipment by creating electrical noise.

**Insulate pipes to prevent condensation.**

- Condensation may collect and drip from the unit onto the ceiling or floor.

**Keep the service valves closed until refrigerant charging is completed.**

- Failure to do so will damage the unit.

**Place a wet towel on the service valves before brazing the pipes to keep the temperature of the valves from rising above 120ºC (248ºF).**

- Failure to do so may result in equipment damage.

**Keep the flame out of contact with the cables and metal sheet when brazing the pipes.**

- Failure to do so may result in burnout or malfunction.

**Use the following tools specifically designed for use with the specified refrigerant: Gauge manifold, charge hose, gas leak detector, check valve, refrigerant charge base, vacuum gauge, and refrigerant recovery equipment.**

- Gas leak detectors for conventional refrigerants will not react to a refrigerant that does not contain chlorine.
- If the specified refrigerant is mixed with water, refrigerant oil, or another refrigerant, the refrigerant oil will deteriorate and the compressor will malfunction.

**Use a vacuum pump with a check valve.**

- If the vacuum pump oil flows back into the refrigerant lines, the refrigerant oil may deteriorate and the compressor may malfunction.

**Keep tools clean.**

- If dust, dirt, or water accumulates on the charging hose or the flare processing tool, the refrigerant will deteriorate and the compressor will malfunction.

**Use refrigerant piping made of phosphorus deoxidized copper (copper and copper alloy seamless pipes) that meets local requirements. Pipe joints should also meet local requirements. Keep the inner and outer surfaces of the pipes clean and free of sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminants.**

- Contaminants on the inside of the refrigerant piping will cause the refrigerant oil to deteriorate and cause the compressor to malfunction.

**Store pipes indoors, and keep both ends of the pipes sealed until just before making a flare connection or brazing. (Store elbows and other joints in plastic bags.)**

- If dust, dirt, or water enters the refrigerant lines, the refrigerant oil will deteriorate and the compressor will malfunction.

**Braze the pipes with a nitrogen purge to avoid oxidation.**

- Oxidized flux inside the refrigerant pipes will cause the refrigerant oil to deteriorate and cause the compressor to malfunction.

**Do not use existing refrigerant piping.**

- The old refrigerant and refrigerant oil in the existing piping contain a large amount of chlorine, which will cause the refrigerant oil in the new unit to deteriorate and cause the compressor to malfunction.

**Charge refrigerant in a liquid state.**

- Charging refrigerant in the gaseous state will change the composition of the refrigerant and lead to a performance drop.

**Do not use a charging cylinder when charging refrigerant.**

- The use of a charging cylinder may change the composition of the refrigerant and lead to a performance drop.

**If a large electric current flows due to a malfunction or faulty wiring, earth-leakage breakers on the unit side and on the upstream side of the power supply system could both operate. Depending on the importance of the system, separate the power supply system or take protective coordination of breakers.**

**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.**

**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.**

**Store the unit in a room large enough to allow clearance in the event of refrigerant leakage.**

**Refrigerant R32 is flammable. Do not use a naked-flame type detector.**

**Use circulation and makeup water that meet the water-quality standards.**

- Degradation of water quality can result in water leakage.

**Only qualified personnel may touch the USB port in the control box.**

# CONTENTS

# Ⅰ Read Before Servicing

## [1] Read Before Servicing

1. **Check the type of refrigerant used in the system to be serviced.**
   **Refrigerant Type**
   Multi air conditioner for building application CITY MULTI R2 YLM/YNW series: R410A
   CITY MULTI R2 (E)M-YNW series: R32
   CITY MULTI WR2 YLM series: R410A

2. **Check the symptoms exhibited by the unit to be serviced.**
   Refer to this service handbook for symptoms relating to the refrigerant cycle.

3. **Thoroughly read the safety precautions at the beginning of this manual.**

4. **Preparing necessary tools: Prepare a set of tools to be used exclusively with each type of refrigerant.**
   Refer to "Necessary Tools and Materials" for information on the use of tools.(page 4)

5. **Verification of the connecting pipes: Verify the type of refrigerant used for the unit to be moved or replaced.**
   - Use refrigerant pipes made of phosphorus deoxidized copper. Keep the inner and outer surfaces of the pipes clean and free of such contaminants as sulfur, oxides, dust, dirt, shaving particles, oil, and water.
   - These types of contaminants inside the refrigerant pipes may cause the refrigerant oil to deteriorate.

6. **If there is a leak of gaseous refrigerant and the remaining refrigerant is exposed to an open flame, a poisonous gas hydrofluoric acid may form. Keep workplace well ventilated.**

> ⚠ **CAUTION**
> - Install new pipes immediately after removing old ones to keep moisture out of the refrigerant circuit.
> - The use of refrigerant that contains chloride, such as R22, will cause the refrigerating machine oil to deteriorate.

## [2] Necessary Tools and Materials

Prepare the following tools and materials necessary for installing and servicing the unit.

**Tools for use with R410A and R32 (Adaptability of tools that are for use with R22 or R407C)**

**1. To be used exclusively with R410A and R32 (not to be used if used with R22 or R407C)**

| Tools/Materials | Use | Notes |
|---|---|---|
| Gauge Manifold | Evacuation and refrigerant charging | Higher than 5.09MPa[738psi] on the high-pressure side |
| Charging Hose | Evacuation and refrigerant charging | The hose diameter is larger than the conventional model. |
| Refrigerant Recovery Cylinder | Refrigerant recovery | |
| Refrigerant Cylinder | Refrigerant charging | The refrigerant type is indicated. The cylinder is pink. |
| Charging Port on the Refrigerant Cylinder | Refrigerant charging | The charge port diameter is larger than that of the current port. |
| Flare Nut | Connection of the unit with the pipes | Use Type-2 Flare nuts. |

**2. Tools and materials that may be used with R410A and R32 with some restrictions**

| Tools/Materials | Use | Notes |
|---|---|---|
| Gas Leak Detector | Gas leak detection | The ones for use with HFC refrigerant may be used. |
| Vacuum Pump | Vacuum drying | May be used if a check valve adapter is attached. |
| Flare Tool | Flare processing | Flare processing dimensions for the piping in the system using the new refrigerant differ from those of R22. Refer to I [3] Piping Materials. |
| Refrigerant Recovery Equipment | Refrigerant recovery | May be used if compatible with R410A or R32. |

**3. Tools and materials that are used with R22 or R407C that may also be used with R410A and R32**

| Tools/Materials | Use | Notes |
|---|---|---|
| Vacuum Pump with a Check Valve | Vacuum drying | |
| Bender | Bending pipes | |
| Torque Wrench | Tightening flare nuts | Only the flare processing dimensions for pipes that have a diameter of ø12.7 (1/2") and ø15.88 (5/8") have been changed. |
| Pipe Cutter | Cutting pipes | |
| Welder and Nitrogen Cylinder | Welding pipes | |
| Refrigerant Charging Meter | Refrigerant charging | |
| Vacuum Gauge | Vacuum level check | |

**4. Tools and materials that must not be used with R410A and R32**

| Tools/Materials | Use | Notes |
|---|---|---|
| Charging Cylinder | Refrigerant charging | Prohibited to use |

Tools for R410A and R32 must be handled with special care to keep moisture and dust from infiltrating the cycle.

## [3] Piping Materials

**Do not use the existing piping!**

### 1. Copper pipe materials

| | |
|---|---|
| O-material (Soft Annealed) | Soft copper pipes (annealed copper pipes). They can easily be bent with hands. |
| 1/2H-material (Light Annealed) | Hard copper pipes (straight pipes). They are stronger than the O-material (Soft Annealed) at the same radial thickness. |

- The distinction between O-materials (Soft Annealed) and 1/2H-materials (Light Annealed) is made based on the strength of the pipes themselves.

### 2. Types of copper pipes

| Maximum working pressure | Refrigerant type |
|---|---|
| 3.45 MPa [500psi] | R22, R407C etc. |
| 4.30 MPa [624psi] | R410A, R32 etc. |

### 3. Piping materials/Radial thickness

Use refrigerant pipes made of phosphorus deoxidized copper.
The operation pressure of the units that use R410A and R32 is higher than that of the units that use R22.
Use pipes that have at least the radial thickness specified in the chart below.
(Pipes with a radial thickness of 0.7 mm or less may not be used.)

| Pipe size (mm[in]) | | Radial thickness (mm) | Type |
|---|---|---|---|
| ø6.35 | [1/4"] | 0.8t | O-material (Soft Annealed) |
| ø9.52 | [3/8"] | 0.8t | |
| ø12.7 | [1/2"] | 0.8t | |
| ø15.88 | [5/8"] | 1.0t | |
| ø19.05 | [3/4"] | 1.0t | 1/2H-material, H-material (Light Annealed, Skin Hard) |
| ø22.2 | [7/8"] | 1.0t | |
| ø25.4 | [1"] | 1.0t | |
| ø28.58 | [1-1/8"] | 1.0t | |
| ø31.75 | [1-1/4"] | 1.1t | |
| ø34.93 | [1-3/8"] | 1.2t | |
| ø41.28 | [1-5/8"] | 1.4t | |

- For the models for use with R410A and R32, pipes made with O-material (soft annealed) cannot be used unless they have a diameter of at least ø19.05 (3/4") and a radial thickness of 1.2 t. Use pipes made with 1/2H-material (light annealed).
- The figures in the radial thickness column are based on the Japanese standards and provided only as a reference. Use pipes that meet the local standards.

**4. Thickness and refrigerant type indicated on the piping materials**

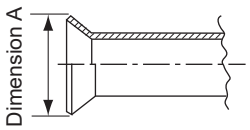
Ask the pipe manufacturer for the symbols indicated on the piping material for new refrigerant.

**5. Flare processing (O-material (Soft Annealed) and OL-material only)**

The flare processing dimensions for the pipes that are used in the R410A and R32 system are larger than those in the R22 system.

Flare processing dimensions (mm[in])

| Pipe size (mm[in]) | | A dimension (mm) | |
|---|---|---|---|
| | | R410A, R32 | R22, R407C |
| ø6.35 | [1/4"] | 9.1 | 9.0 |
| ø9.52 | [3/8"] | 13.2 | 13.0 |
| ø12.7 | [1/2"] | 16.6 | 16.2 |
| ø15.88 | [5/8"] | 19.7 | 19.4 |
| ø19.05 | [3/4"] | 24.0 | 23.3 |



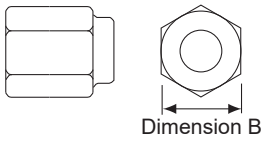

(ø19.05 pipes should have a radial thickness of 1.2 t and be made of annealed materials.)
If a clutch-type flare tool is used to flare the pipes in the system using R410A and R32, the length of the pipes must be between 1.0 and 1.5 mm. For margin adjustment, a copper pipe gauge is necessary.

**6. Flare nut**

The flare nut type has been changed to increase the strength. The size of some of the flare nuts have also been changed.

Flare nut dimensions (mm[in])

| Pipe size (mm[in]) | | B dimension (mm) | |
|---|---|---|---|
| | | R410A, R32 | R22, R407C |
| ø6.35 | [1/4"] | 17.0 | 17.0 |
| ø9.52 | [3/8"] | 22.0 | 22.0 |
| ø12.7 | [1/2"] | 26.0 | 24.0 |
| ø15.88 | [5/8"] | 29.0 | 27.0 |
| ø19.05 | [3/4"] | 36.0 | 36.0 |



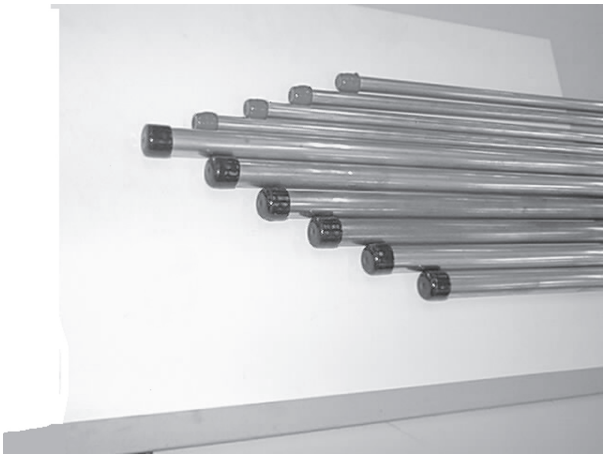

The figures in the radial thickness column are based on the Japanese standards and provided only as a reference. Use pipes that meet the local standards.

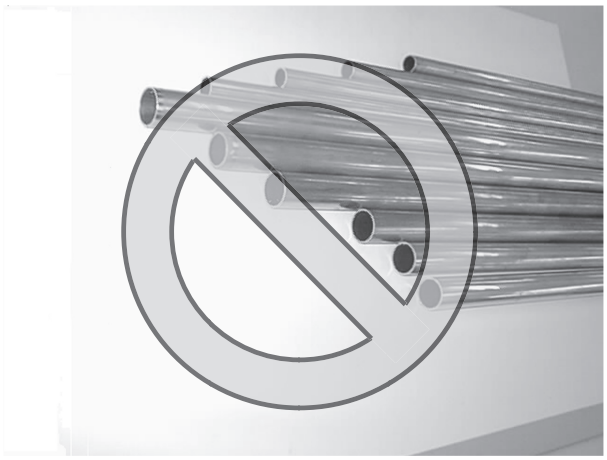
## [4] Storage of Piping

**1. Storage location**

Store the pipes to be used indoors. (Warehouse at site or owner's warehouse)
If they are left outdoors, dust, dirt, or moisture may infiltrate and contaminate the pipe.

**2. Sealing the pipe ends**





Both ends of the pipes should be sealed until just before brazing.
Keep elbow pipes and T-joints in plastic bags.

The new refrigerator oil is 10 times as hygroscopic as the conventional refrigerating machine oil (such as Suniso) and, if not handled with care, could easily introduce moisture into the system. Keep moisture out of the pipes, for it will cause the oil to deteriorate and cause a compressor failure.

## [5] Pipe Processing

Use a small amount of ester oil, ether oil, or alkylbenzene to coat flares and flanges.

**Note**

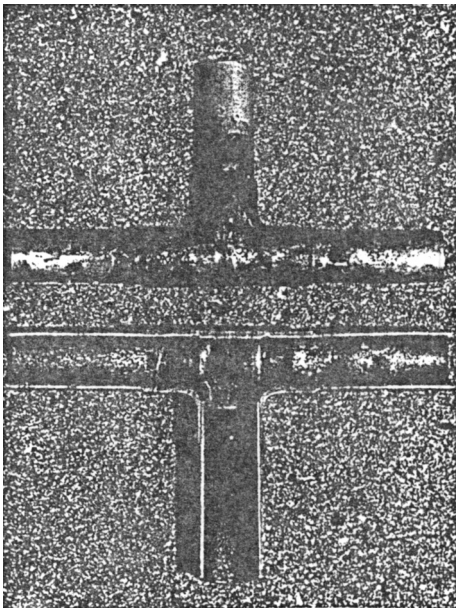
- Use a minimum amount of oil.
- Use only ester oil, ether oil, and alkylbenzene.

## [6] Brazing

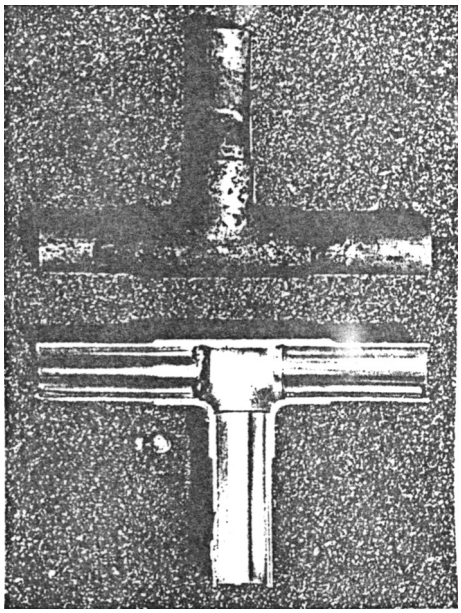
No changes have been made in the brazing procedures. Perform brazing with special care to keep foreign objects (such as oxide scale, water, and dust) out of the refrigerant system.

Example: Inside the brazed connection

Use of oxidized solder for brazing



Use of non-oxidized solder for brazing



**1. Items to be strictly observed**

- Do not conduct refrigerant piping work outdoors if raining.
- Use non-oxidized solder.
- Use a brazing material (BCuP-3) that requires no flux when brazing between copper pipes or between a copper pipe and copper coupling.
- If installed refrigerant pipes are not immediately connected to the equipment, then braze and seal both ends.

**2. Reasons**

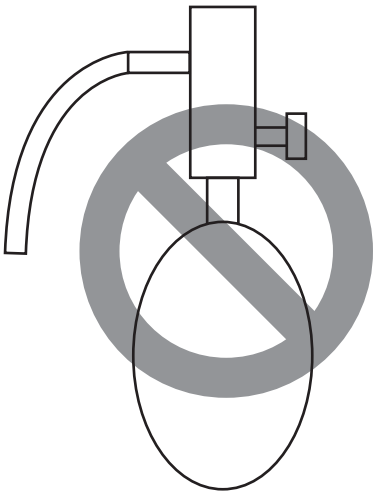
- The new refrigerating machine oil is 10 times as hygroscopic as the conventional oil and is more likely to cause unit failure if water infiltrates into the system.
- Flux generally contains chloride. Residual flux in the refrigerant circuit will cause sludge to form.

**3. Notes**

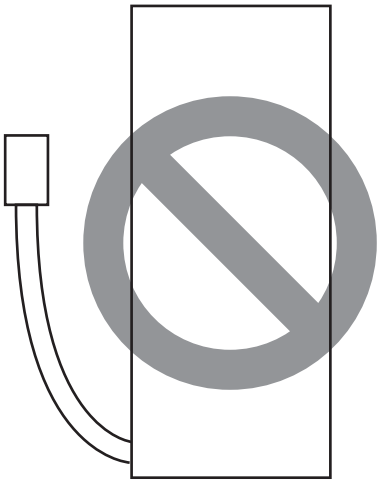
Do not use commercially available antioxidants because they may cause the pipes to corrode or refrigerating machine oil to deteriorate.

## [7] Air Tightness Test (Refrigerant Circuit)

No changes have been made in the detection method. Note that a refrigerant leak detector for R22 will not detect R410A and R32 leak.



Halide torch



R22 leakage detector

**1. Items to be strictly observed**

- Pressurize the equipment with nitrogen up to the design pressure (4.15MPa[601psi]), and then judge the equipment's air tightness, taking temperature variations into account.
- Refrigerant R410A must be charged in the liquid state (vs. gaseous state).

**2. Reasons**

- Oxygen, if used for an air tightness test, poses a risk of explosion. (Only use nitrogen to check air tightness.)
- Refrigerant R410A must be charged in the liquid state. If gaseous refrigerant in the cylinder is drawn out first, the composition of the remaining refrigerant in the cylinder will change and become unsuitable for use.

**3. Notes**

Procure a leak detector that is specifically designed to detect an HFC leak. A leak detector for R22 will not detect an HFC (R410A, R32) leak.

## [8] Vacuum Drying (Evacuation) (Refrigerant Circuit)


(Photo1) 15010H


(Photo2) 14010

Recommended vacuum gauge:
ROBINAIR 14010 Thermistor Vacuum Gauge

**1. Vacuum pump with a reverse-flow check valve (Photo1)**

To prevent the vacuum pump oil from flowing into the refrigerant circuit during power OFF or power failure, use a vacuum pump with a reverse-flow check valve.
A reverse-flow check valve may also be added to the vacuum pump currently in use.

**2. Standard of vacuum degree (Photo 2)**

Use a vacuum pump that attains 0.5Torr(65Pa) or lower degree of vacuum after 5 minutes of operation, and connect it directly to the vacuum gauge. Use a pump well-maintained with an appropriate lubricant. A poorly maintained vacuum pump may not be able to attain the desired degree of vacuum.

**3. Required precision of vacuum gauge**

Use a vacuum gauge that registers a vacuum degree of 5Torr(650Pa) and measures at intervals of 1Torr(130Pa). (A recommended vacuum gauge is shown in Photo2.)
Do not use a commonly used gauge manifold because it cannot register a vacuum degree of 5Torr(650Pa).

**4. Evacuation time**

- After the degree of vacuum has reached 5Torr(650Pa), evacuate for an additional 1 hour. (A thorough vacuum drying removes moisture in the pipes.)
- Verify that the vacuum degree has not risen by more than 1Torr(130Pa) 1hour after evacuation. A rise by less than 1Torr(130Pa) is acceptable.
- If the vacuum is lost by more than 1Torr(130Pa), conduct evacuation, following the instructions in section 6. Special vacuum drying.

**5. Procedures for stopping vacuum pump**

To prevent the reverse flow of vacuum pump oil, open the relief valve on the vacuum pump side, or draw in air by loosening the charge hose, and then stop the operation.
The same procedures should be followed when stopping a vacuum pump with a reverse-flow check valve.

**6. Special vacuum drying**

- When 5Torr(650Pa) or lower degree of vacuum cannot be attained after 3 hours of evacuation, it is likely that water has penetrated the system or that there is a leak.
- If water infiltrates the system, break the vacuum with nitrogen. Pressurize the system with nitrogen gas to 0.5kgf/cm$^2$G(0.05MPa) and evacuate again. Repeat this cycle of pressurizing and evacuation either until the degree of vacuum below 5Torr(650Pa) is attained or until the pressure stops rising.
- Only use nitrogen gas for vacuum breaking. (The use of oxygen may result in an explosion.)

**7. Notes**

**♦To evacuate air from the entire system**
**Applying a vacuum through the check joints at the refrigerant service valve on the high and low pressure sides (BV1 and 2) is not enough to attain the desired vacuum pressure.**
**Be sure to apply a vacuum through the check joints at the refrigerant service valve on the high and low pressure sides (BV1 and 2) and also through the check joints on the high and low pressure sides (CJ1 and 2).**

**♦To evacuate air only from the outdoor units**
**Apply a vacuum through the check joints on the high and low pressure sides (CJ1, and 2).**

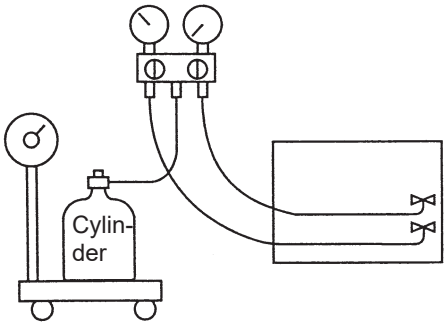
**♦To evacuate air from the HBC and extension pipes**
**Apply a vacuum through the check joints at the refrigerant service valve on the high and low pressure sides (BV1 and 2).**

**♦When performing the maintenance work, such as vacuum drying, pumping down, or refrigerant recovery, on the outdoor unit or the heat-source unit, set SW5-1 first and then SW4-5 on the HBC controller board to ON to operate the water circuit pump and circulate the water to prevent the water side of the heat exchanger within the HBC from freezing.**

*** When vacuum drying, pumping down or refrigerant recovery has been completed, set SW4-5 first and then SW5-1 to OFF.**

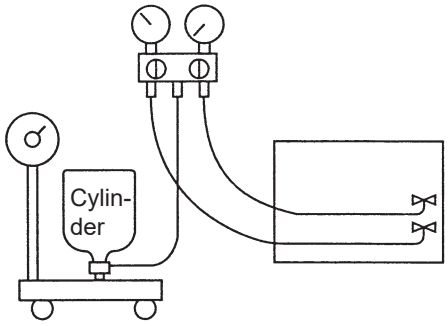
## [9] Refrigerant Charging

Cylinder with a siphon

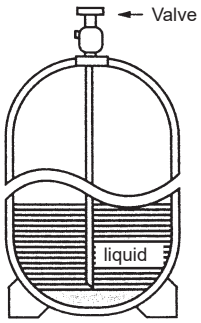


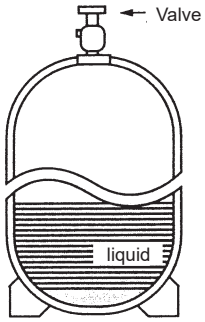

Cylinder color R410A is pink.
Cylinder color R32 is light blue.

Cylinder without a siphon




Refrigerant charging in the liquid state




**1. Reasons**

R410A is a pseudo-azeotropic HFC blend (boiling point R32=-52°C[-62°F], R125=-49°C[-52°F]) and can almost be handled the same way as a single refrigerant, such as R22. To be safe, however, draw out the refrigerant from the cylinder in the liquid phase. If the refrigerant in the gaseous phase is drawn out, the composition of the remaining refrigerant will change and become unsuitable for use.

**2. Notes**

When using a cylinder with a siphon, refrigerant is charged in the liquid state without the need for turning it upside down. Check the type of the cylinder on the label before use.

## [10] Remedies to be taken in case of a Refrigerant Leak

If the refrigerant leaks out, it may be replenished. The entire refrigerant does not need to be replaced. (Charge refrigerant in the liquid state.)
Refer to "VIII [5] Refrigerant Leak."(page 198)

## [11] Characteristics of the Conventional and the New Refrigerants

**1. Chemical property**

As with R22, the new refrigerant (R410A) is low in toxicity and chemically stable nonflammable refrigerant.
The new refrigerant R32 is low in toxicity and slightly flammable refrigerant.
However, because the specific gravity of vapor refrigerant is greater than that of air, leaked refrigerant in a closed room will accumulate at the bottom of the room and may cause hypoxia.
If exposed to an open flame, refrigerant will generate poisonous gases. Do not perform installation or service work in a confined area.
Because R32 is slightly flammable, do not perform installation or service work in a confined area.

| | New Refrigerant (HFC type) | | | Conventional Refrigerant (HCFC type) |
|---|---|---|---|---|
| | R32 | R410A | R407C | R22 |
| | R32 | R32/R125 | R32/R125/R134a | R22 |
| Composition (wt%) | (100) | (50/50) | (23/25/52) | (100) |
| Type of Refrigerant | Single Refrigerant | Pseudo-azeotropic Refrigerant | Non-azeotropic Refrigerant | Single Refrigerant |
| Chloride | Not included | Not included | Not included | Included |
| Safety Class | A2L | A1/A1 | A1/A1 | A1 |
| Molecular Weight | 52.0 | 72.6 | 86.2 | 86.5 |
| Boiling Point (°C/°F) | -51.7/-61.0 | -51.4/-60.5 | -43.6/-46.4 | -40.8/-41.4 |
| Steam Pressure (25°C,MPa/77°F,psi) (gauge) | 1.690/245 | 1.557/226 | 0.9177/133 | 0.94/136 |
| Saturated Steam Density (25°C,kg/m$^3$/77°F,psi) | 47.4 | 64.0 | 42.5 | 44.4 |
| Flammability | flammable | Nonflammable | Nonflammable | Nonflammable |
| Ozone Depletion Coefficient (ODP)*1 | 0 | 0 | 0 | 0.055 |
| Global Warming Coefficient (GWP)*2 | 675 | 2088 | 1774 | 1810 |
| Refrigerant Charging Method | Refrigerant charging in the liquid state | Refrigerant charging in the liquid state | Refrigerant charging in the liquid state | Refrigerant charging in the gaseous state |
| Replenishment of Refrigerant after a Refrigerant Leak | Available | Available | Available | Available |

*1 When CFC11 is used as a reference
*2 When $CO_2$ is used as a reference
These GWP values are based on Regulation (EU) No.517/2014 from IPCC 4th edition.

**2. Refrigerant composition**

R410A is a pseudo-azeotropic HFC blend and can almost be handled the same way as a single refrigerant, such as R22. To be safe, however, draw out the refrigerant from the cylinder in the liquid phase. If the refrigerant in the gaseous phase is drawn out, the composition of the remaining refrigerant will change and become unsuitable for use.
If the refrigerant leaks out, it may be replenished. The entire refrigerant does not need to be replaced.

**3. Pressure characteristics**

The pressure in the system using R32 is 1.6 times as great as that in the system using R22.

| Temperature (°C/°F) | Pressure (gauge) | | | |
|---|---|---|---|---|
| | R32 | R410A | R407C | R22 |
| | MPa/psi | MPa/psi | MPa/psi | MPa/psi |
| -20/-4 | 0.30/44 | 0.30/44 | 0.18/26 | 0.14/20 |
| 0/32 | 0.71/103 | 0.70/102 | 0.47/68 | 0.40/58 |
| 20/68 | 1.37/199 | 1.34/194 | 0.94/136 | 0.81/117 |
| 40/104 | 2.38/345 | 2.31/335 | 1.44/209 | 1.44/209 |
| 60/140 | 3.83/621 | 3.73/541 | 2.44/354 | 2.33/338 |
| 65/149 | 4.28/621 | 4.17/605 | 2.75/399 | 2.60/377 |

## [12] Precautions for handling equipment using R32

When handling the units that use R32 refrigerant, observe the following notes. (The notes are based on the precautions regarding R32 refrigerant contained in IEC 60335-2-40.)

**1. Transportation**

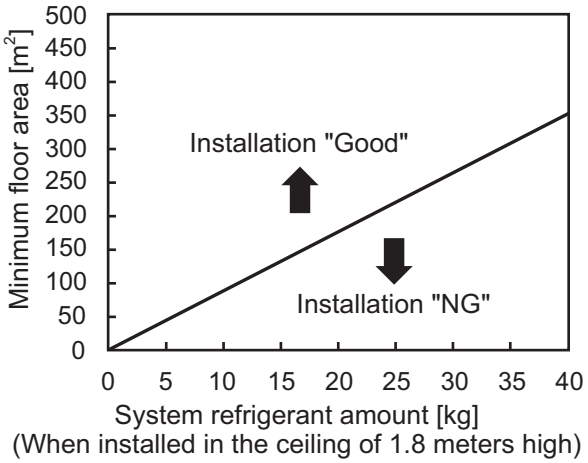
1) Additional transportation regulations may exist with respect to equipment containing slightly flammable gas. The maximum number of pieces of equipment or the configuration of the equipment, permitted to be transported together will be determined by the applicable transport regulations.

**2. Disposal**

1) Follow the local regulations on proper disposal of equipment using R32.

**3. Storage**

1) Appliance shall be installed, operated and stored in a room with a floor area according to the following figure.



(When installed in the ceiling of 1.8 meters high)

2) The maximum number of pieces of equipment permitted to be stored together will be determined local regulations.

**4. Servicing information**

1) Checks to the area
Prior to beginning work on systems containing slightly flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, 3) to 7) shall be completed prior to conducting work on the system.

2) Work procedure
Work shall be undertaken under a controlled procedure so as to minimise the risk of a slightly flammable gas being present while the work is being performed.

3) General work area
All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

4) Checking for presence of refrigerant
The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially slightly flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants.

5) Presence of fire extinguisher
If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or $CO_2$ fire extinguisher adjacent to the charging area.

6) No ignition sources
No person carrying out work, such as brazing, in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed in a conspicuous place in the work area.

7) Ventilated area
Ensure that the area is in the open or that it is adequately ventilated before replacing parts or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

8) Checks to the refrigeration equipment
Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the MITSUBISHI ELECTRIC's Installation Manual and Service Handbook shall be followed. If in doubt, consult the dealer's technical department for assistance.
The following checks shall be applied to installations using slightly flammable refrigerants:
- the amount of refrigerant charge depends on the size of the area in which products containing refrigerant are to be installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
- marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode components containing refrigerant, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected being so corroded.

9) Checks to electrical devices
Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

10) Initial safety checks shall include:
- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

**5. Repairing sealed components**

1) During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

2) Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

3) Ensure that the apparatus is mounted securely.

4) Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the MITSUBISHI ELECTRIC's specifications.

5) The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

**6. Refrigerant leakage detection**

The following leak detection methods are deemed acceptable for all refrigerant systems.

1) Electronic leak detectors may be used to detect refrigerant leaks but, in the case of slightly flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.

2) If a leak is suspected, all naked flames shall be removed/extinguished.

3) If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Because R32 is slightly flammable, oxygen free nitrogen (OFN) shall be poured through the system both before and during the brazing process to purge R32.

**7. Refrigerant removal and vacuum drying for service**

1) R32 is slightly flammable. Follow the procedures below to reduce the risk of R32 from catching fire:
   1. Remove refrigerant;
   2. Purge the circuit with inert gas;
   3. Evacuate;
   4. Purge again with inert gas;
   5. Open the circuit by cutting or brazing.

2) The charged refrigerant shall be recovered into the recovery cylinders designated for use with R32. For appliances containing slightly flammable refrigerants, the system shall be "flushed" with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

3) Because R32 is slightly flammable, flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.

4) Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation is available.

**8. Decommissioning**

1) Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

2) Become familiar with the equipment and its operation.

3) Isolate system electrically.

4) Before attempting the procedure, ensure that:
   - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
   - all personal protective equipment is available and being used correctly;
   - the recovery process is supervised at all times by a competent person;
   - recovery equipment and cylinders conform to the appropriate standards.

5) Pump down refrigerant system, if possible.

6) Make sure that cylinder is situated on the scales before recovery takes place.

7) Start the recovery machine and operate in accordance with MITSUBISHI ELECTRIC's instructions.

8) Do not overfill cylinders. (No more than 80% volume liquid charge)

9) Do not exceed the maximum working pressure of the cylinder, even temporarily.

10) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

11) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

**9. Labelling**

1) Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Because R32 is slightly flammable, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

**10. Appropriate refrigerant recovery method**

1) When removing refrigerant from a system, either for repairing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

2) When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for recovering refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery starts.

3) The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, slightly flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult dealer if in doubt.

4) The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants with different properties in recovery units and especially not in cylinders.

5) If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that slightly flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

**11. Competence of service personnel**

**(1) General**

Special training additional to usual refrigerating equipment repair procedures is required when equipment with slightly flammable refrigerants is affected.

**(2) Training**

The training should include the substance of the following:
Information about the explosion potential of slightly flammable refrigerants to show that flammables may be dangerous when handled without care.

**(3) Information about the correct working procedures**

Commissioning

1) Ensure that the floor area is sufficient for the refrigerant charge or that the ventilation duct is assembled in a correct manner.

2) Connect the pipes and carry out a leak test before charging with refrigerant.

3) Check safety equipment before putting into service.

Maintenance

1) Portable equipment shall be repaired outside or in a workshop specially equipped for servicing units with slightly flammable refrigerants.

2) Ensure sufficient ventilation at the repair place.

3) Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.

4) Discharge capacitors in a way that won't cause any spark. The standard procedure to short circuit the capacitor terminals usually creates sparks.

5) Reassemble sealed enclosures accurately. If seals are worn, replace them.

6) Check safety equipment before putting into operation.

Repair

1) Portable equipment shall be repaired outside or in a workshop specially equipped for servicing units with slightly flammable refrigerants.

2) Ensure sufficient ventilation at the repair place.

3) Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.

4) Discharge capacitors in a way that won't cause any spark.

5) When brazing is required, the following procedures shall be carried out in the right order:
   1. Remove the refrigerant. If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
   2. Evacuate the refrigerant circuit.
   3. Purge the refrigerant circuit with nitrogen for 5 min.
   4. Evacuate again.
   5. Remove parts to be replaced by cutting, not by flame.
   6. Purge the braze point with nitrogen during the brazing procedure.
   7. Carry out a leak test before charging with refrigerant.

6) Reassemble sealed enclosures accurately. If seals are worn, replace them.

7) Check safety equipment before putting into operation.

Decommissioning

1) If the safety is affected when the equipment is putted out of service, the charged refrigerant shall be removed before decommissioning.

2) Ensure sufficient ventilation at the equipment location.

3) Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.

4) Discharge capacitors in a way that won't cause any spark.

5) Remove the refrigerant. If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.

6) Evacuate the refrigerant circuit.

7) Purge the refrigerant circuit with nitrogen for 5 min.

8) Evacuate again.

9) Fill with nitrogen up to atmospheric pressure.

10) Put a label on the equipment that the refrigerant is removed.

Disposal

1) Ensure sufficient ventilation at the working place.

2) Remove the refrigerant. If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.

3) Evacuate the refrigerant circuit.

4) Purge the refrigerant circuit with nitrogen for 5 min.

5) Evacuate again.

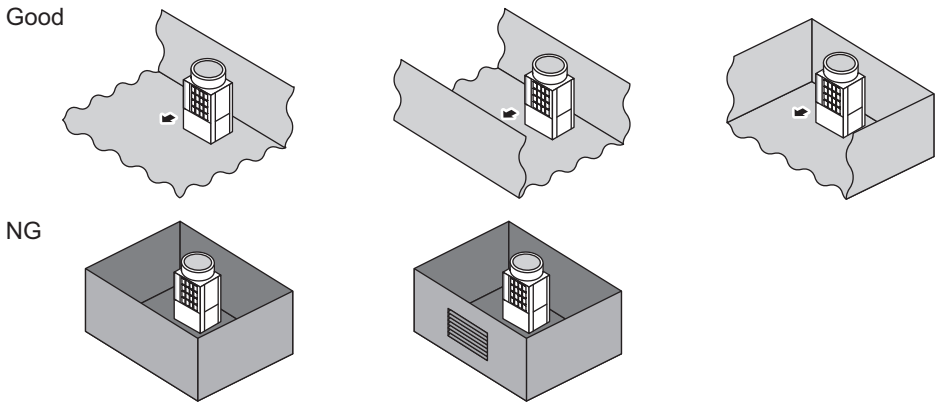
6) Cut out the compressor and drain the oil.

### 12. Installation restrictions for outdoor units

**⚠ WARNING**

- **R32 is heavier than air—as well as other refrigerants—so tends to accumulate at the base (in the vicinity of the floor). If R32 accumulates around the base, it may reach a flammable concentration in case the room is small. To avoid ignition, maintain a safe work environment by ensuring appropriate ventilation. If the refrigerant leaks in a room or an area that has insufficient ventilation, refrain from using flames until the work environment is improved by ensuring appropriate ventilation.**
- **Do not install the outdoor unit in a semibasement, basement, or machinery room, where the refrigerant stagnates in the case of leak of refrigerant.**
- **Install the outdoor unit in a space where at least one side is open.**

Figure 1




### 13. Installation restrictions for HBC controllers

Observe the following restrictions that apply to the installation of HBC controller.
[Restrictions for HBC controller installation]

**⚠ WARNING**

- **There must be at least 1.8 meters from the floor to an HBC controller (indicated as H in Figure 3).**
- **Do not place an ignition source in a space where an HBC controller is installed or adjacent spaces not shielded by firewalls (refer to Table 2).**
  **Examples: Lighters, combustion heaters, combustion boilers, and combustion cookers**
- **Figure 2 shows the minimum floor areas required for given amounts of refrigerant in various refrigerant systems. Make sure the installation conditions meet the requirements shown in the figure (system refrigerant amount / minimum floor area ≤ 0.11).**
- **When installing an HBC controller in a ceiling space, make sure the relationship between the total floor areas of the rooms that share the ceiling space and the total refrigerant amount in the system falls within the range.**
- **The ceiling material should not be made of highly breathable materials (e.g., mesh ceiling).**
  **When the ceiling is made of mesh (highly breathable material), the unit should be visible through the ceiling from below.**
  **When the ceiling is made of mesh (highly breathable material), calculate the refrigerant concentration based only on the area of the room directly below the unit, and make sure the value obtained satisfies the restrictions. (In Figure 3, for example, if the ceiling is made of mesh, calculate the refrigerant concentration based only on the floor area of Room B.)**
- **If the ceiling space is divided into separate areas by firewalls, calculate the refrigerant concentration based on the floor area of the room under the relevant enclosed ceiling area, and make sure the calculation results satisfy the installation restrictions (refer to Table 1).**
  **Example: Installation of an HBC controller in the ceiling space above Room B (The ceiling is not made of highly breathable material.)**
  **Floor area = Floor area of Room A + Floor area of Room B**
- **When installing an HBC controller in a machine room or a riser, minimum floor area requirements shown in Figure 2 (system refrigerant amount / minimum floor area ≤ 0.11) must be observed, and the HBC controller must be installed at a height of 1.8 meters or higher.**
- **All of the above-mentioned restrictions apply not only to new installations but also to relocations and layout changes.**

Figure 2

Minimum floor area requirement (height from floor to HBC controller = 1.8 m)

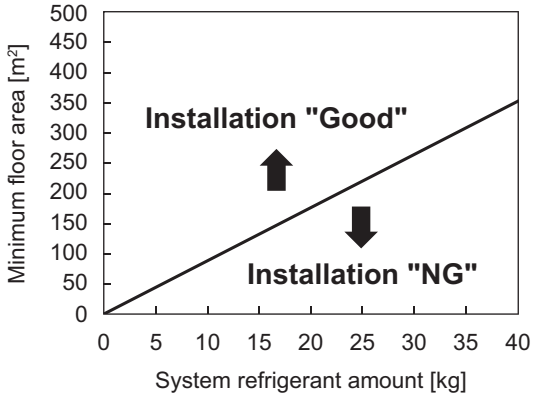



Table 1

Examples of floor area calculation

| Installation type | Calculation of floor areas |
|---|---|
| Installation in the ceiling space in Room B (Ceiling made of low-breathable material) | Floor area of Room A + Floor area of Room B |
| Installation in the ceiling space in Room B (Ceiling made of highly breathable material) | Floor area of Room B |
| Installation in Room B | Floor area of Room B |

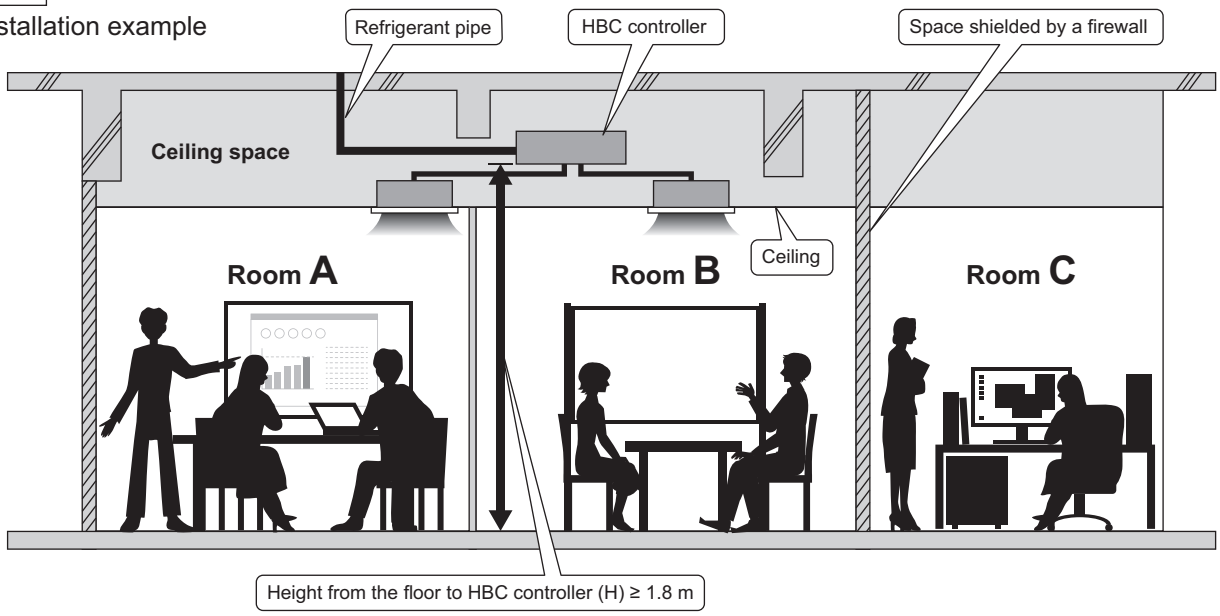
Table 2

Spaces where ignition sources should not be placed

| Installation type | No ignition source spaces |
|---|---|
| Installation in the ceiling space in Room B (Ceiling made of low-breathable material) | Ceiling space |
| Installation in the ceiling space in Room B (Ceiling made of highly breathable material) | Ceiling space + Room B |
| Installation in Room B | Room B |

Figure 3

Installation example



## [13] Notes on Refrigerating Machine Oil

### 1. Refrigerating machine oil in the HFC refrigerant system

HFC type refrigerants use a refrigerating machine oil different from that used in the R22 system.
Note that the ester oil used in the system has properties that are different from commercially available ester oil.
Different types of oil are used for R407C/R410A and for R32.

| Refrigerant | Refrigerating machine oil |
|---|---|
| R22 | Mineral oil |
| R407C | Ester oil |
| R410A | Ester oil |
| R32 | Ester oil |

### 2. Effects of contaminants*1

Refrigerating machine oil used in the HFC system must be handled with special care to keep contaminants out.
The table below shows the effect of contaminants in the refrigerating machine oil on the refrigeration cycle.
*1.Contaminants is defined as moisture, air, processing oil, dust/dirt, wrong types of refrigerant, and refrigerating machine oil.

### 3. The effects of contaminants in the refrigerating machine oil on the refrigeration cycle.

<table>
<tr><th colspan="2">Cause</th><th colspan="2">Symptoms</th><th>Effects on the refrigerant cycle</th></tr>
<tr><td colspan="2" rowspan="2">Water infiltration</td><td></td><td>Frozen expansion valve and capillary tubes</td><td rowspan="3">Clogged expansion valve and capillary tubes<br>Poor cooling performance<br>Compressor overheat<br>Motor insulation failure<br>Burnt motor<br>Coppering of the orbiting scroll<br>Lock<br>Burn-in on the orbiting scroll</td></tr>
<tr><td>Hydrolysis</td><td rowspan="2">Sludge formation and adhesion<br>Acid generation<br>Oxidization<br>Oil degradation</td></tr>
<tr><td colspan="2">Air infiltration</td><td>Oxidization</td></tr>
<tr><td rowspan="4">Infiltration of contaminants</td><td rowspan="2">Dust, dirt</td><td colspan="2">Adhesion to expansion valve and capillary tubes</td><td>Clogged expansion valve, capillary tubes, and drier<br>Poor cooling performance<br>Compressor overheat</td></tr>
<tr><td colspan="2">Infiltration of contaminants into the compressor</td><td>Burn-in on the orbiting scroll</td></tr>
<tr><td rowspan="2">Mineral oil etc.</td><td colspan="2">Sludge formation and adhesion</td><td>Clogged expansion valve and capillary tubes<br>Poor cooling performance<br>Compressor overheat</td></tr>
<tr><td colspan="2">Oil degradation</td><td>Burn-in on the orbiting scroll</td></tr>
</table>

## [14] Water piping

### 1. Precautions for water piping

Consider the following when installing a water piping system.

**(1) Design pressure of the water piping**

Use a water pipe that can withstand pressure of at least 1.0 MPa.

**(2) Water pipe type**

Use of plastic pipe is recommended.Do not use chloride plastic pipes.
When using copper pipes, be sure to braze the pipes under a nitrogen purge. (Oxidation during may shorten the life of the pump.)

**(3) Expansion tank**

Install an expansion tank to accommodate expanded water.

**(4) Drain piping**

Install the drain pipe with a downward inclination of between 1/100 and 1/200. To prevent drain water from freezing in winter, install the drain pipe as steep an angle as practically possible and minimize the straight line. For cold climate installation, take an appropriate measure (e.g., drain heater) to prevent the drain water from freezing.

**(5) Insulation**

Cover the water pipe with insulating materials with the specified thickness or more to prevent thermal loss or condensation from collecting.

**(6) Air vent valve**

Install air vent valves to the highest places where air can accumulate.

**(7) Maintenance valve**

It is recommended to install valves on the inlet/outlet for each HBC controller branch for maintenance.

**(8) Water pressure gauge**

Install a water pressure gauge to check the charged pressure.

**(9) Water pipe connection**

When connecting to water pipe, be sure to make the connection in accordance with the relevant local laws and regulations.

## 2. Notes on corrosion

### (1) Water quality

It is important to check the water quality beforehand. See table below (Circulating water/Makeup Water Quality Standards).

| Items | | Lower mid-range temperature water system | | Tendency | |
|---|---|---|---|---|---|
| | | Recirculating water [20<T<60°C] [68<T<140°F] | Make-up water | Corrosive | Scale-forming |
| Standard items | pH (25°C[77°F]) | 7.0 ~ 8.0 | 7.0 ~ 8.0 | ○ | ○ |
| | Electric conductivity (mS/m) (25°C[77°F]) (μS/cm) (25°C[77°F]) | 30 or less [300 or less] | 30 or less [300 or less] | ○ | ○ |
| | Chloride ion (mg $Cl^-$/ 〃 ) | 50 or less | 50 or less | ○ | |
| | Sulfate ion (mg $SO_4^{2-}$/ 〃 ) | 50 or less | 50 or less | ○ | |
| | Acid consumption (pH4.8) (mg $CaCO_3$/ 〃 ) | 50 or less | 50 or less | | ○ |
| | Total hardness (mg $CaCO_3$/ 〃 ) | 70 or less | 70 or less | | ○ |
| | Calcium hardness (mg $CaCO_3$/ 〃 ) | 50 or less | 50 or less | | ○ |
| | Ionic silica (mg $SiO_2$/ 〃 ) | 30 or less | 30 or less | | ○ |
| Reference items | Iron (mg Fe/ 〃 ) | 1.0 or less | 0.3 or less | ○ | ○ |
| | Copper (mg Cu/ 〃 ) | 1.0 or less | 0.1 or less | ○ | |
| | Sulfide ion (mg $S^{2-}$/ 〃 ) | not to be detected | not to be detected | ○ | |
| | Ammonium ion (mg $NH_4^+$/ 〃 ) | 0.3 or less | 0.1 or less | ○ | |
| | Residual chlorine (mg Cl/ 〃 ) | 0.25 or less | 0.3 or less | ○ | |
| | Free carbon dioxide (mg $CO_2$/ 〃) | 0.4 or less | 4.0 or less | ○ | |
| | Ryzner stability index | – | – | ○ | ○ |

Reference : Guideline of Water Quality for Refrigeration and Air Conditioning Equipment. (JRA GL02E-1994)

### (2) Debris in the water

Sand, pebbles, suspended solids, and corrosion products in water can damage the metal pipe and heat exchanger on the HBC controller and may cause corrosion. When installing, prevent debris from entering the water. If there is debris in the water, perform debris removal operation after test run by cleaning the strainers inside the HBC controller. (Refer to other sections for how to perform a test run.)

### (3) Connecting pipes made of different materials

Connecting pipes used for HBC controller and indoor unit are copper alloy pipes. If steel pipes are connected tothe pipes, the contact surface will corrode. Do not use steel pipes to avoid corrosion.

### (4) Residual air

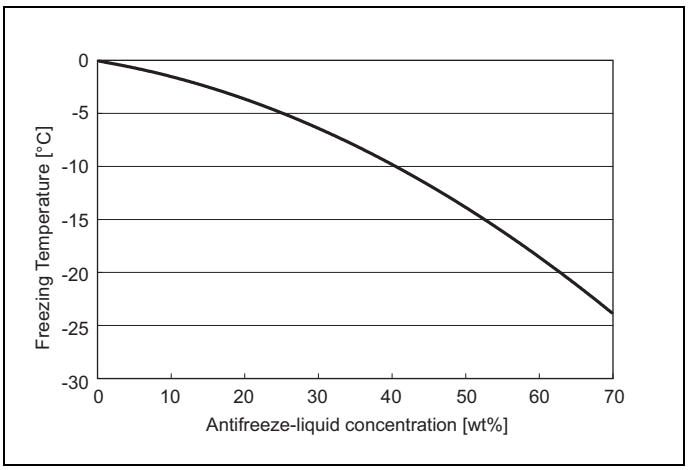
Residual air in the pipe results in water pump malfunction, noise, or water pipe corrosion in the water circuit. Ensure air is purged before use. (Refer to other sections for how to perform air vent operation.)

### 3. Correction by antifreeze-liquid concentration

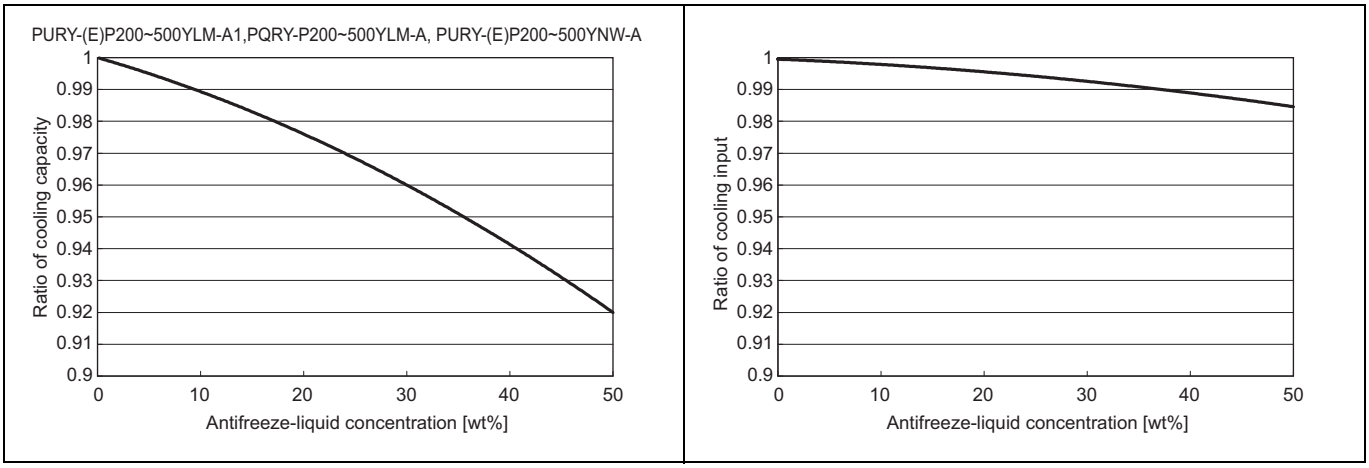
In HYBRID CITY MULTI system, antifreeze-liquid should be used to prevent the system from freezing. Refer to the following graphs for the capacity correction by antifreeze-liquid. Refer to (1) for antifreeze-liquid concentration, (2) and (3) for capacity correction by antifreeze-liquid concentration.
When adding antifreeze-liquid, be sure to perform the process in accordance with the relevant local laws and regulations.

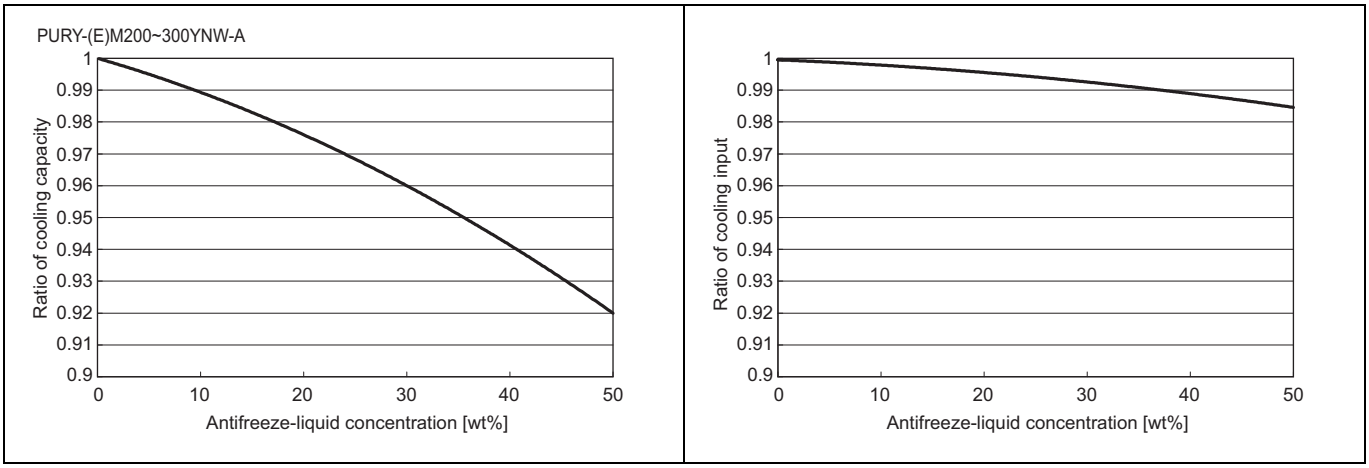
#### (1) Antifreeze-liquid concentration

Use propylene glycol solution for antifreeze.
Refer to the following graph to estimate the antifreeze-liquid concentration required for freeze protection.



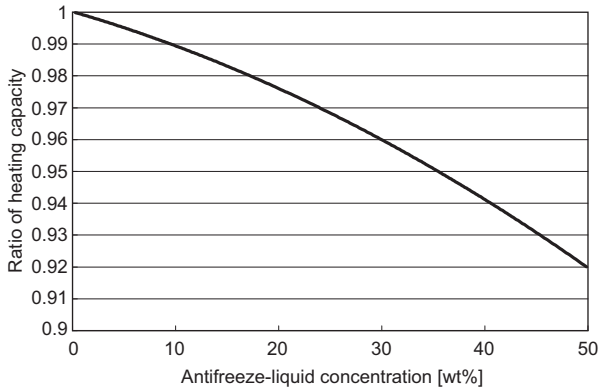

#### (2) Capacity correction by antifreeze-liquid concentration (cooling)

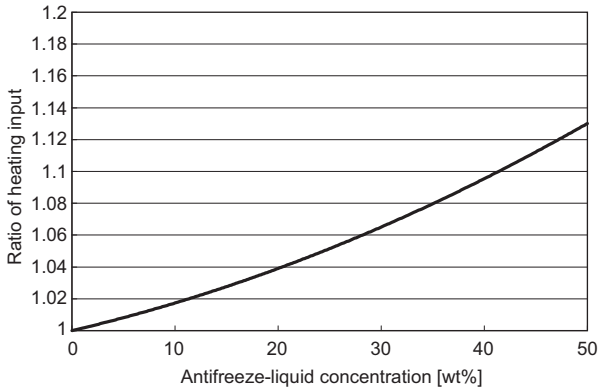


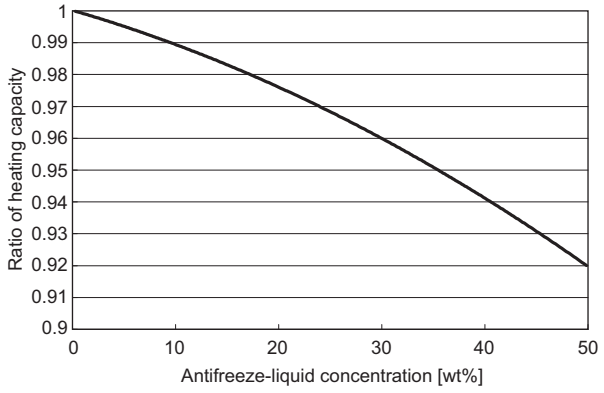
### (3) Capacity correction by antifreeze-liquid concentration (heating)

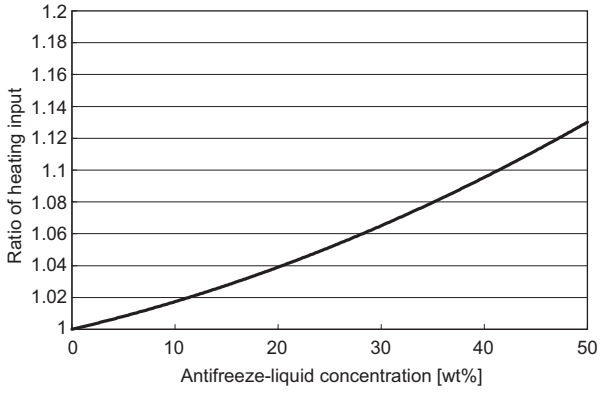
PURY-(E)P200~500YLM-A1, PQRY-P200~500YLM-A, PURY-(E)P200~500YNW-A




PURY-(E)M200~300YNW-A



# II Restrictions

## [1] System configuration

### 1. Table of compatible indoor units

The table below summarizes the types of indoor units that are compatible with different types of outdoor units.

**(1) Standard combinations**

| Outdoor units (Heat source units) | HBC controller Sub-HBC | Maximum total capacity of connectable indoor units | Maximum number of connectable indoor units | Types of connectable indoor units |
|---|---|---|---|---|
| (E)P200 | CMB-WM108V-AA, CMB-WM1016V-AA<br>CMB-WM108V-AB, CMB-WM1016V-AB<br>CMB-WM108V-BB, CMB-WM1016V-BB | 100 - 300 | 30 | W/WP/WL10- W/WP/ WL125 models Indoor units for use with HBC controller |
| (E)P250 | | 125 - 375 | 37 | |
| (E)P300 | | 150 - 450 | 45 | |
| (E)P350 | | 175 - 525 | 50 | |
| (E)P400 | | 200 - 600 | 50 | |
| (E)P450 | | 225 - 675 | 50 | |
| (E)P500 | | 250 - 750 | 50 | |
| (E)M200 | | 100 - 300 | 30 | |
| (E)M250 | | 125 - 375 | 37 | |
| (E)M300 | | 150 - 450 | 45 | |
| (E)M350 | | 175 - 525 | 50 | |
| (E)M400 | | 200 - 600 | 50 | |
| (E)M450 | | 225 - 675 | 50 | |
| (E)M500 | | 250 - 750 | 50 | |

**Note**

1) "Maximum total capacity of connectable indoor units" refers to the sum of the numeric values in the indoor unit model names.
2) If the total capacity of the indoor units that are connected to a given outdoor unit exceeds the capacity of the outdoor unit, the indoor units will not be able to perform at the rated capacity when they are operated simultaneously. Select a combination of units so that the total capacity of the connected indoor units is at or below the capacity of the outdoor unit whenever possible.
3) Only either P**Y-W model indoor units (equipped with a flow control valve) or P**Y-WP/WL model indoor units (without a flow control valve) can be connected to the HBC. (Combining different models of indoor units will cause a connection error.)
4) The following models of indoor units can be used as indoor units equipped with a flow control valve when used with the optional valve kit (PAC-SK04VK-E).

   <Applicable indoor units>

   P**Y-WL**

   * The optional valve kit (PAC-SK04VK-E) cannot be installed on P**Y-WP** models.

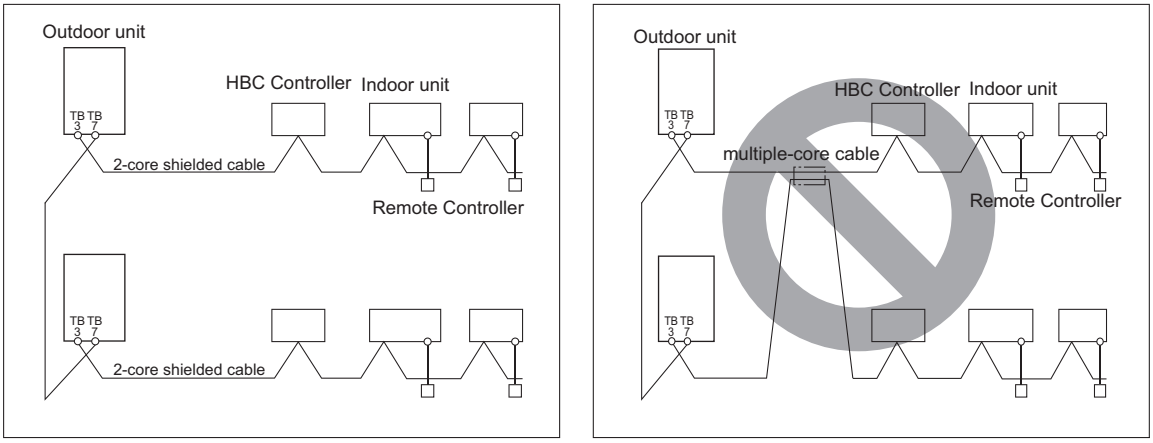
## [2] Types and Maximum Allowable Length of Cables

### 1. Wiring work

#### (1) Notes

1) Have all electrical work performed by an authorized electrician according to the local regulations and instructions in this manual.
2) Install external transmission cables at least 5cm [1-31/32"] away from the power supply cable to avoid noise interference. (Do not put the control cable and power supply cable in the same conduit tube.)
3) Provide grounding for the outdoor unit as required.
4) Run the cable from the electric box of the indoor or outdoor unit in such way that the box is accessible for servicing.
5) Do not connect power supply wiring to the terminal block for transmission line. Doing so will damage the electronic components on the terminal block.
6) Use 2-core shielded cables as transmission cables.

   Do not use a single multiple-core cable to connect indoor units that belong to different refrigerant systems. Doing so may result in signal transmission errors and malfunctions.




TB3: Terminal block for indoor-outdoor transmission line TB7: Terminal block for centralized control

7) When extending the transmission cable, be sure to extend the shield wire.

#### (2) Control wiring

Different types of control wiring are used for different systems. Before performing wiring work, refer to the following page(s).
[7] Example System with an MA Remote Controller
[8] Example System with an ME Remote Controller
[9] Example System with an MA and an ME Remote Controller

**Types and maximum allowable length of cables**

Control lines are categorized into 2 types: transmission line and remote controller line.

Use the appropriate type of cables and observe the maximum allowable length specified for a given system. If a given system has a long transmission line or if a noise source is located near the unit, place the unit away from the noise source to reduce noise interference.

1) M-NET transmission line

| | | |
|---|---|---|
| Cable type | Facility type | All facility types |
| | Type | Shielded cable CVVS, CPEVS, MVVS |
| | Number of cores | 2-core cable |
| | Cable size | Larger than 1.25mm$^2$ [AWG16], or ø1.2mm or above |
| Maximum transmission line distance between the outdoor unit and the farthest indoor unit | | 200 m [656ft] max. |
| Maximum transmission line distance for centralized control and Indoor/outdoor transmission line (Maximum line distance via outdoor unit) | | 1000 m [3280ft] (500 m [1640ft]) max. *1<br>*The maximum overall line length from the power supply unit on the transmission lines for centralized control to each outdoor unit or to the system controller is 200m [656ft] max.<br>*1 If a given system includes one or more unit or remote controller that does not support the maximum allowable cable distance of 1000 m [3280 ft], the maximum allowable cable distance in the system will be 500 m [1640 ft]. Refer to the latest catalog for information on which units and remote controllers support the maximum allowable cable distance of 1000 m [3280 ft]. |

2) Remote controller wiring

| | | MA remote controller*1 | ME remote controller*2 | |
|---|---|---|---|---|
| | | | 10 m or less | Over 10 m |
| Cable type | Type | VCTF, VCTFK, CVV, VVR, VVF, VCT | Shielded cables CVVS, CPEVS, and MVVS | |
| | Number of cores | 2-core cable | 2-core cable (one pair (P) for a single wire) | |
| | Cable size | 0.3 to 1.25mm$^2$ *3 *5 [AWG22 to 16] | 0.3 to 1.25mm$^2$ *3 [AWG22 to 16] | 1.25mm$^2$ or more *3 [AWG16 or more] |
| Maximum overall line length | | 200 m [656ft] max.*4 | 10 m [32ft] max. | The section of the cable that exceeds 10m [32ft] must be included in the maximum indoor-outdoor transmission line distance. |

*1 MA remote controller refers to MA remote controller (PAR-4"x"MA series, PAR-3"x"MA series ("X" represents 0 or later), PAR-CT01MA series, PAR-21MAA), MA simple remote controller, and wireless remote controller.

*2 PAR-U02MEDA, PAR-F27MEA

*3 The use of cables that are smaller than 0.75mm$^2$ (AWG18) is recommended for easy handling.

*4 70 m [229 ft] max for PAR-CT01MA series

*5 To wire PAR-CT01MA series, PAR-4"x"MA series, PAR-3"x"MA series ("X" represents 0 or later), and Simple MA remote controller, use a wire with a diameter of 0.3 mm$^2$ [AWG22].

## [3] Switch Settings

**1. Switch setting**

The necessary switch settings depend on system configuration. Before performing wiring work, refer to the following page(s).
[7] Example System with an MA Remote Controller
[8] Example System with an ME Remote Controller
[9] Example System with an MA and an ME Remote Controller
If the switch settings are changed while the unit is being powered, those changes will not take effect, and the unit will not function properly.

| Units on which to set the switches | | Symbol | Units to which the power must be shut off |
|---|---|---|---|
| CITY MULTI indoor unit | Main/sub unit | IC | Outdoor units and Indoor units |
| LOSSNAY *1 | | LC | Outdoor units and LOSSNAY |
| ME remote controller | Main/sub remote controller | RC | Outdoor units |
| MA remote controller | Main/sub remote controller | MA | Indoor units |
| CITY MULTI outdoor unit | | OC | Outdoor units |
| HBC controller | Main1- 2 | HB1 - 2 | Outdoor units and HBC controller |
| | Sub1 - 2 | HS1 - 2 | Outdoor units*2 and HBC controller |

*1. Applicable when LOSSNAY units are connected to the indoor-outdoor transmission line.
*2. When setting the switch SW4 of the control board, set it with the outdoor unit power on. Refer to the outdoor unit service handbook.

## [4] M-NET Address Settings

### -1- Address Settings List

#### 1. M-NET Address settings

#### (1) Address settings table

The need for address settings and the range of address setting depend on the configuration of the system.

| Unit or controller | | Sym-bol | Address setting range | Setting method | Factory address setting |
|---|---|---|---|---|---|
| CITY MULTI indoor unit<br>M-NET adapter<br>M-NET con-trol interface<br>Free Plan adapter | Main/sub unit | IC | 0, 01 to 50 *1 *4 *5 *6 | ♦Assign the smallest address to the main indoor unit in the group, and assign sequential address numbers to the rest of the indoor units in the same group.<br>♦In a system with two or more HBC controllers, make the settings for the indoor units in the following order.<br>(i) Indoor unit to be connected to the main HBC controller 1<br>(ii) Indoor unit to be connected to sub HBC controller 1<br>(iii) Indoor unit to be connected to the main HBC controller 2<br>(iv) Indoor unit to be connected to sub HBC controller 2<br>Make the settings for the indoor units in the way that the for-mula "(i) < (ii) < (iii) < (iv)" is true. | 00 |
| LOSSNAY | | LC | 0, 01 to 50 *1 *4 *5 *6 | Assign an arbitrary but unique address to each of these units after assigning an address to all indoor units. | 00 |
| ME remote controller | Main remote controller | RC | 101 to 150 | Add 100 to the smallest address of all the indoor units in the same group. | 101 |
| | Sub remote controller | RC | 151 to 200 *3 | Add 150 to the smallest address of all the indoor units in the same group. | |
| MA remote controller | | MA | No address settings required. (The main/sub setting must be made if 2 re-mote controllers are connected to the system.) | | Main |
| CITY MULTI outdoor unit | | OC | 0, 51 to 100 *1 *2 *5 *6 | ♦Assign an address that equals the lowest address of the in-door units in the same refrigerant circuit plus 50. | 00 |
| Auxiliary out-door unit | HBC controller (main) | HB1<br>HB2 | 0, 51 to 100 *1 *2 *5 | ♦Assign an address that equals the address of the outdoor unit in the same refrigerant system plus 1.<br>♦If a given address overlaps any of the addresses that are assigned to the outdoor units or to the sub HBC control-ler, use a different, unused address within the setting range.<br>♦If two or more main HBC controllers are connected, the automatic address start up function is not available. | 00 |
| | HBC controller (sub) | HS1<br>HS2 | 51 to 100 *2 | ♦Assign an address to both the sub HBC controller that equals the lowest address of the indoor units that are connected to each of them plus 50.<br>♦If a sub HBC controller is connected, the automatic start-up function is not available. | |

*1. If a given address overlaps any of the addresses that are assigned to other units, use a different, unused address within the setting range.
*2. To set the outdoor unit address or the auxiliary outdoor unit address to "100," set the rotary switches to "50."
*3. To set the ME remote controller address to "200," set the rotary switches to "00."
*4. Some models of indoor units have two or three control boards.
Assign an address to the No.1, No. 2, and No. 3 control boards so that the No. 2 control board address equals the No. 1 control board address plus 1, and that the No. 3 control board address equals the No. 1 control board address plus 2.
*5. No address settings are required for units in a system with a single outdoor unit (with some exceptions).
Address setting is required if two or more main HBC controllers and a sub HBC controller are connected.
*6. If a given address overlaps any of the addresses that are assigned to other units, use a different, unused address within the setting range.

| Unit or controller | | Symbol | Address setting range | Setting method | Factory address setting |
|---|---|---|---|---|---|
| System controller | Group remote controller | GR SC | 201 to 250 | Assign an address that equals the sum of the smallest group number of the group to be controlled and 200. | 201 |
| | System remote controller | SR SC | | Assign an arbitrary but unique address within the range listed on the left to each unit. | |
| | ON/OFF remote con troller | AN SC | | Assign an address that equals the sum of the smallest group number of the group to be controlled and 200. | |
| | Schedule timer (compatible with M-NET) | ST SC | | Assign an arbitrary but unique address within the range listed on the left to each unit. | 202 |
| | Central controller AE-200 AG-150A GB-50ADA G(B)-50A | TR SC | 0, 201 to 250 | Assign an arbitrary but unique address within the range listed on the left to each unit. The address must be set to "0" to control the K-control unit. | 000 |
| | LM adapter | SC | 201 to 250 | Assign an arbitrary but unique address within the range listed on the left to each unit. | 247 |

### -2- Outdoor Unit Power Jumper Connector Connection

There are limitations on the total number of units that are connectable to each refrigerant system. Refer to the DATABOOK for details.

| System configuration | Connection to the system controller | Power supply unit for transmission lines | Group operation of units in a system with multiple outdoor units | Power supply switch connector connection |
|---|---|---|---|---|
| System with one outdoor unit | _ | _ | _ | CN41 (Factory setting) |
| System with multiple outdoor units | Not connected | _ | Not grouped | |
| | | Not required | Grouped | Disconnect the male connector from the female power supply switch connector (CN41) and connect it to the female power supply switch connector (CN40) on only one of the outdoor units.*2 *Connect the S (shielded) terminal on the terminal block (TB7) on the outdoor unit whose CN41 was replaced with CN40 to the ground terminal (⏚) on the electric box. |
| | With connection to the indoor unit system | Not required | Grouped/not grouped | |
| | With connection to the centralized control system | Not required*1 (Powered from the outdoor unit) | Grouped/not grouped | |
| | | Required *1 | Grouped/not grouped | CN41 (Factory setting) |

*1 The need for a power supply unit for transmission lines depends on the system configuration. Some controllers, such as GB-50ADA, have a function to supply power to the transmission lines.
*2 The replacement of the power jumper connector from CN41 to CN40 must be performed on only one outdoor unit in the system.

### -3- Outdoor Unit Centralized Controller Switch Setting

| System configuration | Centralized control switch (SW5-1) settings *1 |
|---|---|
| Connection to the system controller Not connected | OFF (Factory setting) |
| Connection to the system controller Connected *2 | ON |

*1 Set SW5-1 on all outdoor units in the same refrigerant circuit to the same setting.
*2 When only the LM adapter is connected, leave SW5-1 to OFF (as it is).

### -4- Room Temperature Detection Position Selection

To stop the fan during heating Thermo-OFF (SW1-7 and 1-8 on the indoor units to be set to ON), use the built-in thermistor on the remote controller or an optional thermistor.

1) To use the built-in sensor on the remote controller, set the SW1-1 to ON.
   (Factory setting: SW1-1 set to "OFF".)
   - Some models of remote controllers are not equipped with a built-in temperature sensor. Use the built-in temperature sensor on the indoor unit instead.
   - When using the built-in sensor on the remote controller, install the remote controller where room temperature can be detected.

   (Note) Factory setting for SW1-1 on the indoor unit of the All-Fresh Models is ON.
2) When an optional temperature sensor is used, set SW1-1 to OFF, and set SW3-8 to ON.
   - When using an optional temperature sensor, install it where room temperature can be detected.

### -5- Start/Stop Control of Indoor Units

Each indoor unit (or group of indoor units) can be controlled individually by setting SW 1-9 and 1-10.

| Function | Operation of the indoor unit when the operation is resumed after the unit was stopped | Setting (SW1)*4 *5 | |
|---|---|---|---|
| | | 9 | 10 |
| Power ON/OFF by the plug*1,*2,*3 | Indoor unit will go into operation regardless of its operation status before power off (power failure). (In approx. 5 minutes) | OFF | ON |
| Automatic restoration after power failure | Indoor unit will go into operation if it was in operation when the power was turned off (or cut off due to power failure). (In approx. 5 minutes) | ON | OFF |
| | Indoor unit will remain stopped regardless of its operation status before power off (power failure). | OFF | OFF |

*1. Do not shut off power to the outdoor units. Doing so will cut off the power supply to the compressors and the heater on the outdoor units and may result in compressor malfunction when operation is restored after a power failure.
*2. Not applicable to units with a built-in drain pump or humidifier.
*3. Models with a built-in drain pump cannot be turned on/off by the plug individually. All the units in the same refrigerant circuits will be turned on or off by the plug.
*4. Requires that the dipswitch settings for all the units in the group be made.
*5. To control the external input to and output from the air conditioners with the PLC software for general equipment via the AE-200, set SW1-9 and SW1-10 to ON. With these settings made, the power start-stop function becomes disabled. To use the auto recovery function after power failure while these settings are made, set SW1-5 to ON.

### -6- Miscellaneous Settings

Cooling-only setting for the indoor unit: Cooling only model (Factory setting: SW3-1 "OFF.")
When using indoor unit as a cooling-only unit, set SW3-1 to ON.

## -7- Various Control Methods Using the Signal Input/Output Connector on Outdoor Unit

### (1) Various connection options

| Type | Usage | Function | Terminal to be used*1 | Option |
|---|---|---|---|---|
| Input | Prohibiting cooling/heating operation (thermo OFF) by an external input to the outdoor unit.<br>*It can be used as the DEMAND control device for each system. | DEMAND (level) | CN3D*2 | Adapter for external input (PAC-SC36NA-E) |
| | Performs a low level noise operation of the outdoor unit by an external input to the outdoor unit.<br>* It can be used as the silent operation device for each refrigerant system. | Low-noise mode (level) *3*4 | | |
| | Forces the outdoor unit to perform a fan operation by receiving signals from the snow sensor.*5 | Snow sensor signal input (level) | CN3S | |
| | The operation mode of the unit can be changed from normal cooling operation (performance priority) to energy-saving cooling mode by an external signal input. | Energy-saving mode | CN3K | |
| Output | How to extract signals from the outdoor unit<br>*It can be used as an operation status display device.<br>*It can be used for an interlock operation with external devices. | Operation status of the compressor*5 | CN51 | Adapter for external output (PAC-SC37SA-E) |
| | | Error status*6 | | |

*1 For details, refer to section (2) Example of wiring connection.

*2 For details, refer to section (2) Example of wiring connection and other relevant sections in the manual. [5] Demand Control Overview

*3 Low-noise mode is valid when Dip SW6-8 on the outdoor unit is set to OFF. When DIP SW6-8 is set to ON, 4 levels of on-DEMAND are possible, using different configurations of low-noise mode input and DEMAND input settings.When 2 or more outdoor units exist in one refrigerant circuit system, 8 levels of on-DEMAND are possible.

*4. By setting Dip SW6-7, the Low-noise mode can be switched between the Capacity priority mode and the Low-noise priority mode.
When SW6-7 is set to ON: The low-noise mode always remains effective.
When SW6-7 is set to OFF: The low noise mode is cancelled when certain outside temperature or pressure criteria are met, and the unit goes into normal operation (capacity priority mode).

| Low-noise mode is effective. | | Capacity priority mode becomes effective. | |
|---|---|---|---|
| Cooling | Heating | Cooling | Heating |
| TH7<30°C[86°F] and 63HS1<32kg/cm$^2$ | TH7>3°C[37°F] and 63LS>4.6kg/cm$^2$ | TH7>35°C[95°F] or 63HS1>35kg/cm$^2$ | TH7<0°C[32°F] or 63LS<3.9kg/cm$^2$ |

*5 If the formula TH7>5 holds true, the fan will not go into operation when the contact receives signal input.

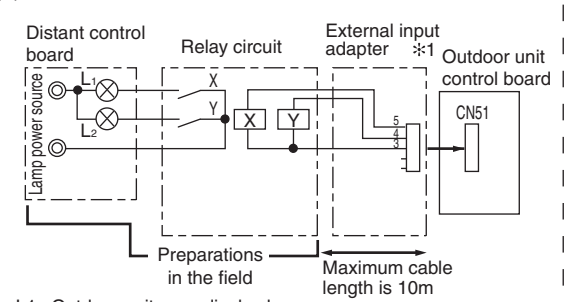
*6 When using a base heater, change the setting using SW4. When using a base heater, error output will not be available.

**(2) Example of wiring connection**

## ⚠ CAUTION

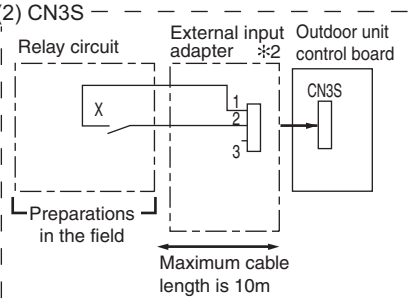
1) Wiring should be covered by insulation tube with supplementary insulation.
2) Use relays or switches with IEC or equivalent standard.
3) The electric strength between accessible parts and control circuit should have 2750V or more.

(1) CN51



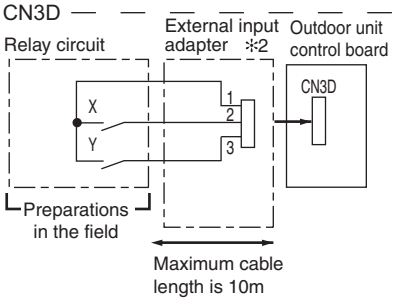

L1 : Outdoor unit error display lamp ※3
L2 : Compressor operation lamp (compressor running state)
X, Y : Relay (coil =<0.9W : DC12V)
※1. Optional part : PAC-SC37SA-E or field supply.
※3. When using a base heater, error output will not be available.

(2) CN3S

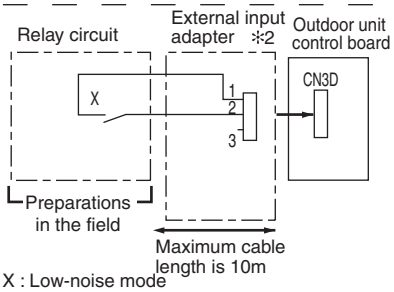



X : Relay Contact rating voltage >= DC15V
Contact rating current >= 0.1A
Minimum applicable load =< 1mA at DC
Snow sensor : The outdoor fan runs when X is closed in stop mode or thermostat mode.
※2. Optional part : PAC-SC36NA-E or field supply.

(3) CN3D



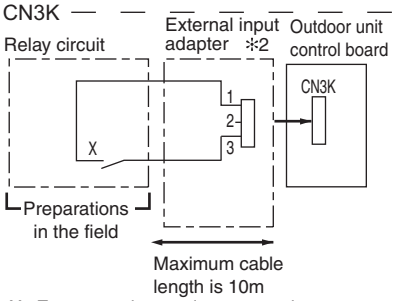

X : Low-noise mode
Y : Compressor ON/OFF
X,Y : Relay Contact rating voltage >= DC15V
Contact rating current >= 0.1A
Minimum applicable load =< 1mA at DC
※2. Optional part : PAC-SC36NA-E or field supply.




X : Low-noise mode
X : Relay Contact rating voltage >= DC15V
Contact rating current >= 0.1A
Minimum applicable load =< 1mA at DC
※2. Optional part : PAC-SC36NA-E or field supply.

Low-noise mode : The noise level is reduced by controlling the maximum fan frequency and maximum compressor frequency.

(4) CN3K




X : Energy-saving mode command
X : Relay Contact rating voltage >= DC15V
Contact rating current >= 0.1A
Minimum applicable load =< 1mA at DC
※2. Optional part : PAC-SC36NA-E or field supply.

## [5] Demand Control Overview

### (1) General outline of control

Demand control is performed by using the external signal input to the 1-2 and 1-3 pins of CN3D on the outdoor unit (OC).
Between 2 and 4 steps of demand control is possible by setting Dip SW6-8 on the outdoor unit (OC).

| No | Demand control switch | Dip SW6-8 | Input to CN3D*2 |
|---|---|---|---|
| | | OC | |
| 1 | 2 steps (0-100%) | OFF | OC |
| 2 | 4 steps (0-50-75-100%) | ON | OC |

*1 Available demand functions
M200 - M500YNW-A1, EM200 - EM500YNW-A1 models (single-outdoor-unit system) : 2 and 4 steps shown in the rows 1 and 2 in the table above only.
*2 Signal is input to CN3D on the outdoor unit whose SW6-8 is set to ON. When SW6-8 is set to OFF on all outdoor units, the signal is input to the CN3D on the OC.
Outdoor units whose SW6-8 is set to ON are selectable in a single refrigerant system.
*3 If wrong sequence of steps are taken, the units may go into the Thermo-OFF (compressor stop) mode.
Ex) When switching from 100% to 50%
(Incorrect) 100%→0%→50% The units may go into the Thermo-OFF mode.
(Correct) 100%→75%→50%
*4 The percentage of the demand listed in the table above is an approximate value based on the compressor volume and does not necessarily correspond with the actual capacity.
*5 Notes on using demand control in combination with the low-noise mode
To enable the low-noise mode, it is necessary to short-circuit 1-2 pin of CN3D on the outdoor unit whose SW6-8 is set to OFF.
When SW6-8 is set to ON on all outdoor units, the following operations cannot be performed.
♦Performing 4-step demand in combination with the low-noise operation in a single-outdoor-unit system.

1) Contact input and control content

**2-step demand control**

The same control as the Thermo-OFF is performed by closing 1-3 pin of CN3D.

| CN3D | |
|---|---|
| 1-3 | |
| Open | 100% |
| Close | 0% |

**4-step demand control (When SW6-8 is set to ON on an outdoor unit)**

Demand capacity is shown below.

| CN3D | 1-2P | |
|---|---|---|
| 1-3P | Open | Close |
| Open | 100% | 75% |
| Close | 0% | 50% |

## [6] System Connection Example

Examples of typical system connection are shown below.
Refer to the Installation Manual that came with each device or controller for details.

**(1) An example of a system to which an MA remote controller is connected**

| | System configuration | Connection to the system controller | Address start up for indoor and outdoor units | Notes |
|---|---|---|---|---|
| 1 | Single refrigerant system | NO | Automatic address setup | |
| 2 | Single refrigerant system | NO | Manual address setup | Connection of multiple LOSSNAY units |
| 3 | Grouping of units in different refrigerant systems | NO | Manual address setup | |
| 4 | Single refrigerant system | With connection to transmission line for centralized control | Manual address setup | |
| 5 | Single refrigerant system | With connection to indoor-outdoor transmission line | Manual address setup | |
| 6 | Single refrigerant system | With connection to transmission line for centralized control | Manual address setup | Connection of multiple LOSSNAY units |

**(2) An example of a system to which an ME remote controller is connected**

| | System configuration | Connection to the system controller | Address start up for indoor and outdoor units | Notes |
|---|---|---|---|---|
| 1 | Single refrigerant system | With connection to transmission line for centralized control | Manual address setup | |

**(3) An example of a system to which both MA remote controller and ME remote controller are connected**

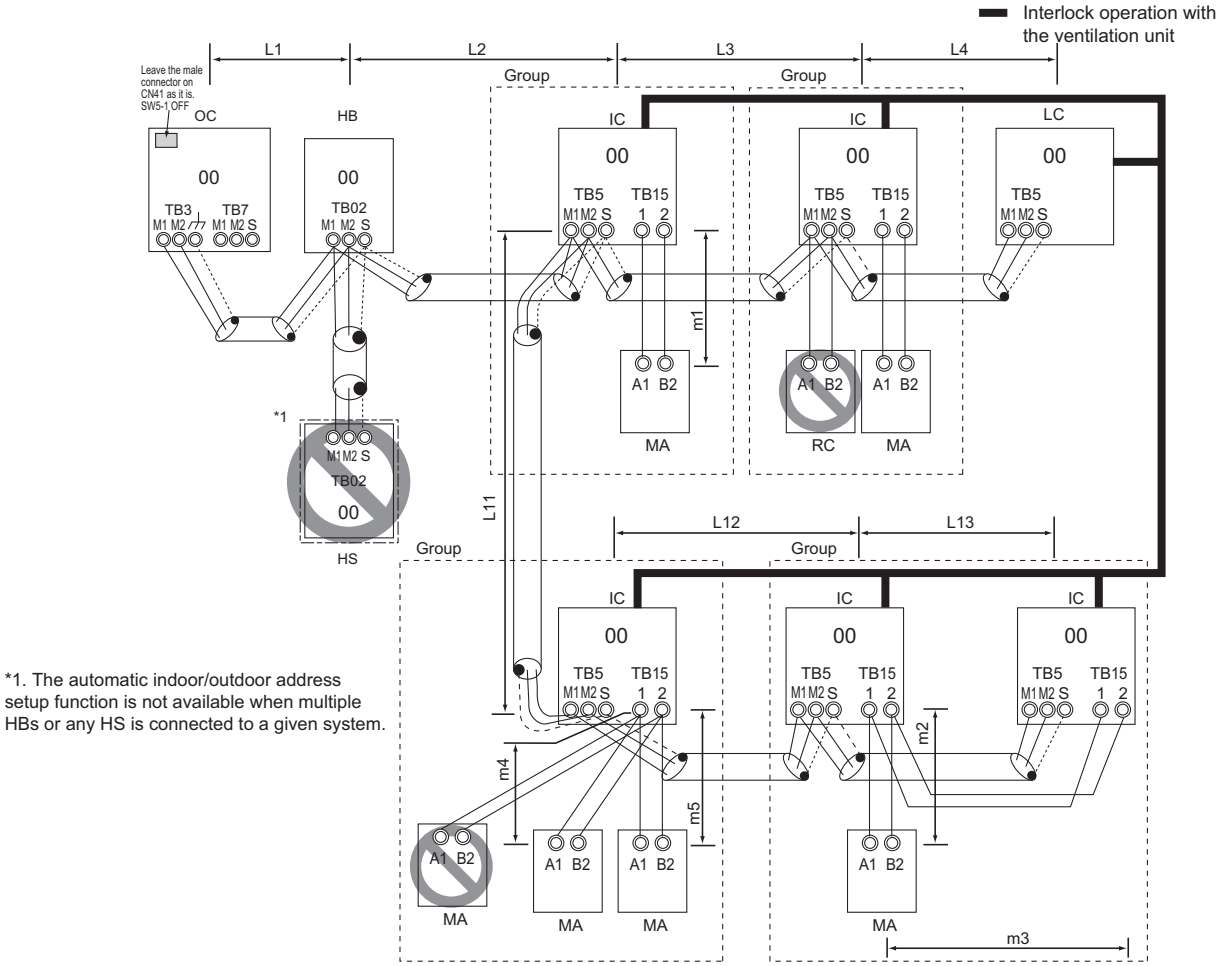
| | System configuration | Connection to the system controller | Address start up for indoor and outdoor units | Notes |
|---|---|---|---|---|
| 1 | Single refrigerant system | With connection to transmission line for centralized control | Manual address setup | |

*MA remote controller and ME remote controller cannot both be connected to the same group.

## [7] Example System with an MA Remote Controller

### -1- Single Refrigerant System (Automatic Indoor/Outdoor Address Startup)

#### (1) Sample control wiring




*1. The automatic indoor/outdoor address setup function is not available when multiple HBs or any HS is connected to a given system.

#### (2) Cautions

1) ME remote controller and MA remote controller cannot both be connected to the same group of indoor units.
2) No more than 2 MA remote controllers can be connected to a group of indoor units.
   When a PAR-CT01MA series, PAR-4"x"MA series, or PAR-3"x"MA series ("X" represents 0 or later) is connected to a group, no other MA remote controllers can be connected to the same group.
3) When the number of the connected indoor units is as shown in the table below, one or more transmission boosters (sold separately) are required.
   To connect two transmission boosters, connect them in parallel. (Observe the maximum number of connectable indoor units that are listed in the specifications for each outdoor unit.)

| Number of transmission booster (sold separately) required | |
|---|---|
| 1 unit | 2 units |
| 25 - 50 units | – |

♦The table above shows the number of transmission boosters that is required by the system with four HBC controllers. For each HBC controller added or subtracted, subtract or add two indoor units.

4) Automatic address setup is not available if start-stop input (CN32, CN51, CN41) is used for a group operation of indoor units or when multiple indoor units with different functions are grouped in the same group. Refer to the following page(s). [7] -2- Single Refrigerant System with Two or More LOSSNAY Units
5) For information about connecting two or more LOSSNAY units to a system, refer to the following page(s). [7] -2- Single Refrigerant System with Two or More LOSSNAY Units

#### (3) Maximum allowable length

1) Indoor/outdoor transmission line
   Maximum distance (1.25mm$^2$ [AWG16] or larger)
   L1 +L2+L3+L4≦200m[656ft]
   L1 +L2+L11+L12+L13≦200m[656ft]
   *If the power-supply distance exceeds the distance limit of 200 meters, a transmission booster (PAC-SF46EPA-G) is required.
2) Transmission line for centralized control
   No connection is required.
3) MA remote controller wiring
   Maximum overall line length
   (0.3 to 1.25mm$^2$ [AWG22 to 16])
   m1≦200m [656ft]
   m2+m3≦200m [656ft]
   m4+m5≦200m [656ft]*1
   *1 70m [229 ft] for PAR-CT01MA series (single remote controller only)
   *To wire PAR-CT01MA series, PAR-4"x"MA series, PAR-3"x"MA series ("X" represents 0 or later), and Simple MA remote controller, use a wire with a diameter of 0.3mm$^2$ [AWG22].

**(4) Wiring method**

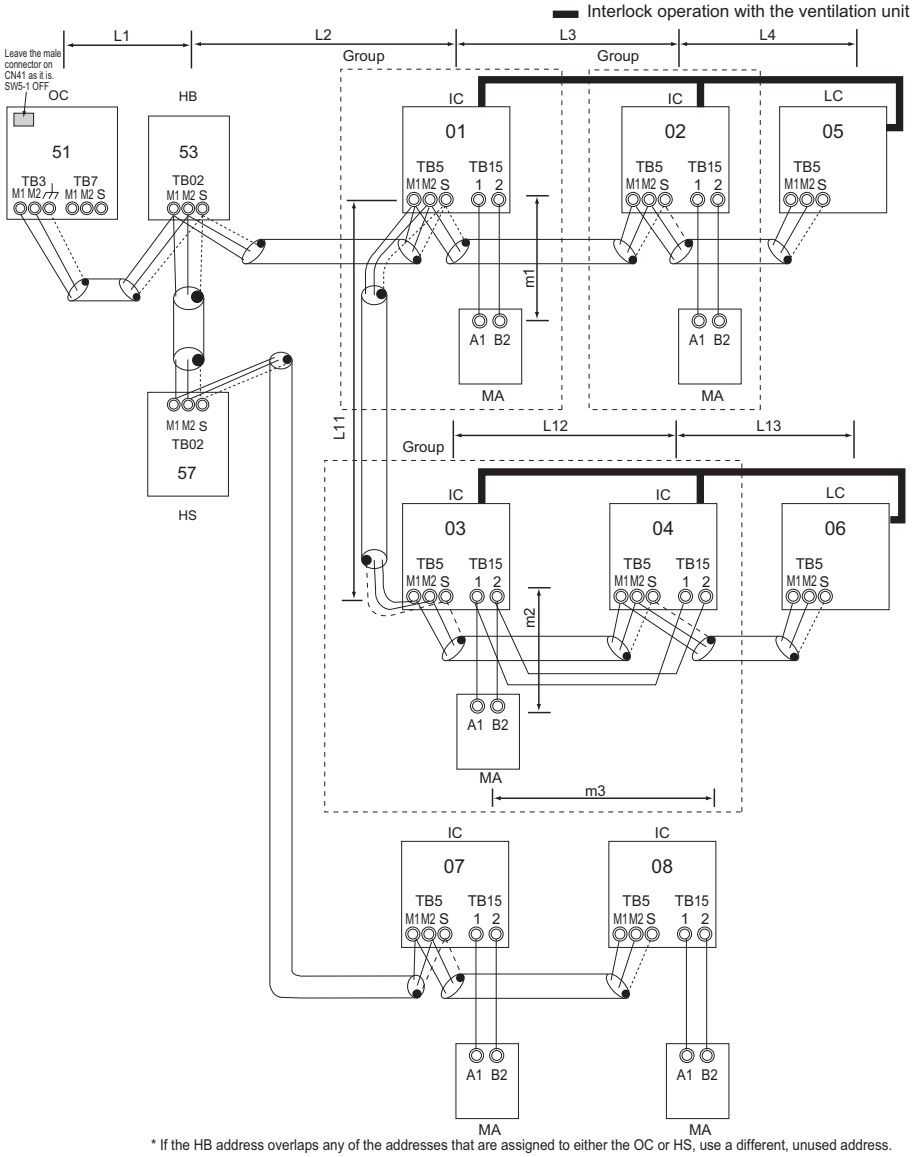
1) Indoor/outdoor transmission line
Daisy-chain terminals M1 and M2 of the terminal block for indoor-outdoor transmission line (TB3) on the outdoor unit (OC), of the terminal block for indoor-outdoor transmission line (TB02) on the main HBC controller (HB), and of the terminal block for indoor-outdoor transmission line (TB5) on each indoor unit (IC). (Non-polarized two-wire)
♦Only use shielded cables.
**Shielded cable connection**
Daisy-chain the ground terminal ( ⏚ ) on the outdoor unit (OC), the S terminal of the terminal block (TB02) on the HBC controller (HB), and the S terminal of the terminal block (TB5) on the indoor unit (IC) with the shield of the shielded cable.
2) Transmission line for centralized control
No connection is required.
3) MA remote controller wiring
Connect terminals 1 and 2 on the terminal block for MA remote controller line (TB15) on the indoor unit (IC) to the terminal block on the MA remote controller (MA). (Non-polarized two-wire)
**When 2 remote controllers are connected to the system**
When 2 remote controllers are connected to the system, connect terminals 1 and 2 of the terminal block (TB15) on the indoor unit (IC) to the terminal block on the two MA remote controllers.
♦Set one of the MA remote controllers as a sub controller. (Refer to the Instruction Manual for the MA remote controller for the setting method.)
**Group operation of indoor units**
To perform a group operation of indoor units (IC), daisy-chain terminals 1 and 2 on the terminal block (TB15) on all indoor units (IC) in the same group, and then connect terminals 1 and 2 on the terminal block (TB15) on the indoor unit on one end to the terminal block on the MA remotecontroller. (Non-polarized two-wire)
♦When performing a group operation of indoor units that have different functions, "Automatic indoor/outdoor addresssetup" is not available.
4) LOSSNAY connection
Connect terminals M1 and M2 on the terminal block(TB5) on the indoor unit (IC) to the appropriate terminals on the terminal block (TB5) on LOSSNAY (LC). (Non-polarized two-wire)
♦Interlock operation setting with all the indoor units in the same system will automatically be made. (It is required that the Lossnay unit be turned on before the outdoorunit.)
♦For information about certain types of systems (1. Systems in which the LOSSNAY unit is interlocked with only part of the indoor units, 2. Systems in which the LOSSNAY unit is operated independently from the indoor units, 3. Systems in which more than 16 indoor units are interlocked with the LOSSNAY unit, and 4. Systems to which two ore more LOSSNAY units are connected), refer to the following page(s). [7] -2- Single Refrigerant System with Two or More LOSSNAY Units
5) Switch setting
6) When replacing the control board on only some of the outdoor units, delete all connection information. (Refer to the outdoor unit service handbook.)

**(5) Address setting method**

| Procedures | Unit or controller | | | Address setting range | Setting method | Notes | Factory setting |
|---|---|---|---|---|---|---|---|
| 1 | Indoor unit | Main unit | IC | No settings required. | - | Port number setting is required<br>For information about how to perform a group operation of indoor units that feature different functions, refer to the following page(s). [7] -2- Single Refrigerant System with Two or More LOSSNAY Units | 00 |
| | | Sub unit | IC | | | | |
| 2 | LOSSNAY | | LC | No settings required. | - | | 00 |
| 3 | MA remote controller | Main remote controller | MA | No settings required. | - | | Main |
| | | Sub remote controller | MA | Sub remote controller | Settings to be made with the Sub/Main switch | | |
| 4 | Outdoor unit | | OC | No settings required. | - | | 00 |
| 5 | Auxiliary outdoor unit | HBC controller | HB | No settings required. | - | | 00 |

## -2- Single Refrigerant System with Two or More LOSSNAY Units

### (1) Sample control wiring




* If the HB address overlaps any of the addresses that are assigned to either the OC or HS, use a different, unused address.
OC and HB addresses (lowest indoor unit address in the group plus +50) have higher priority than the HS address.

### (2) Cautions

1) ME remote controller and MA remote controller cannot both be connected to the same group of indoor units.
2) No more than 2 MA remote controllers can be connected to a group of indoor units.
   When a PAR-CT01MA series, PAR-4"x"MA series, or PAR-3"x"MA series ("X" represents 0 or later) is connected to a group, no other MA remote controllers can be connected to the same group.
3) When the number of the connected indoor units is as shown in the table below, one or more transmission boosters (sold separately) are required.
   To connect two transmission boosters, connect them in parallel. (Observe the maximum number of connectable indoor units that are listed in the specifications for each outdoor unit.)

| Number of transmission booster (sold separately) required | |
|---|---|
| 1 unit | 2 units |
| 25 - 50 units | – |

- The table above shows the number of transmission boosters that is required by the system with four HBC controllers. For each HBC controller added or subtracted, subtract or add two indoor units.
- Refer to the DATABOOK for further information about how many booster units are required for a given system.

### (3) Maximum allowable length

1) Indoor/outdoor transmission line
   Same as [7] -1-
2) Transmission line for centralized control
   No connection is required.
3) MA remote controller wiring
   Same as [7] -1-

**(4) Wiring method**

1) Indoor/outdoor transmission line

Daisy-chain terminals M1 and M2 of the terminal block for indoor-outdoor transmission line (TB3) on the outdoor unit (OC), of the terminal block for indoor-outdoor transmission line (TB02) on the main and sub HBC controllers (HB and HS), and of the terminal block for indoor-outdoor transmission line (TB5) on each indoor unit (IC). (Non-polarized two-wire)

- Only use shielded cables.

**Shielded cable connection**

Daisy-chain the ground terminal ( ⏚ ) on the outdoor unit (OC), the S terminal of the terminal block (TB02) on HB and HS, and the S terminal of the terminal block (TB5) on the indoor unit (IC) with the shield of the shielded cable.

2) Transmission line for centralized control

No connection is required.

3) MA remote controller wiring

Same as [7] -1-

**When 2 remote controllers are connected to the system**

Same as [7] -1-

**Group operation of indoor units**

Same as [7] -1-

4) LOSSNAY connection

Connect terminals M1 and M2 on the terminal block (TB5) on the indoor unit (IC) to the appropriate terminals on the terminal block (TB5) on LOSSNAY (LC). (Non-polarized two-wire)

- Interlock setting between the indoor units and LOSSNAY units must be entered on the remote controller. For information about how to interlock the operation of indoor and LOSSNAY units.

5) Switch setting

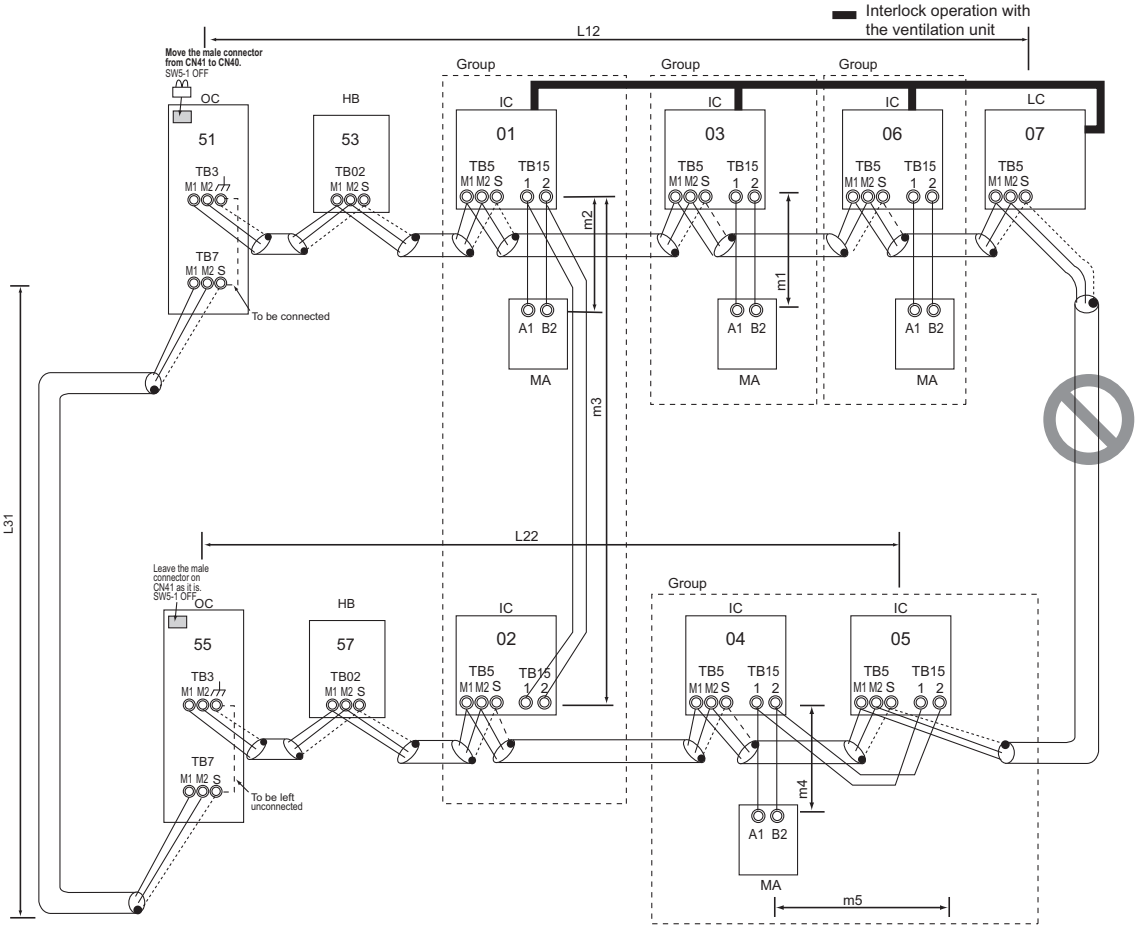
Address setting is required as follows.

**(5) Address setting method**

| Procedures | Unit or controller | | | Address setting range | Setting method | Notes | Factory setting |
|---|---|---|---|---|---|---|---|
| 1 | Indoor unit | Main unit | IC | 01 to 50 | • Assign the smallest address to the main unit in the group.<br>• In a system with two or more HBC controllers, make the settings for the indoor units in the following order.<br>(i) Indoor unit to be connected to the main HBC controller 1<br>(ii) Indoor unit to be connected to sub HBC controller 1<br>(iii) Indoor unit to be connected to the main HBC controller 2<br>(iv) Indoor unit to be connected to sub HBC controller 2<br>Make the settings for the indoor units in the way that the formula "(i) < (ii) < (iii) < (iv)" is true. | • Port number setting is required<br>• To perform a group operation of indoor units that feature different functions, designate the indoor unit in the group with the greatest number of functions as the main unit. | 00 |
| | | Sub unit | | | Assign sequential numbers starting with the address of the main unit in the same group +1. (Main unit address +1, main unit address +2, main unit address +3, etc.) | | |
| 2 | LOSSNAY | | LC | 01 to 50 | Assign an arbitrary but unique address to each of these units after assigning an address to all indoor units. | None of these addresses may overlap any of the indoor unit addresses. | 00 |
| 3 | MA remote controller | Main remote controller | MA | No settings required. | - | | Main |
| | | Sub remote controller | MA | Sub remote controller | Settings to be made with the Sub/Main switch | | |
| 4 | Outdoor unit | | OC | 51 to 100 | • Assign sequential address to the outdoor units in the same refrigerant circuit. | • To set the address to 100, set the rotary switches to 50.<br>• If the addresses that is assigned to the main HBC controller overlaps any of the addresses that are assigned to the outdoor units or to the sub HBC controller, use a different, unused address within the setting range.<br>• The use of a sub HBC controller requires the connection of a main HBC controller. | 00 |
| 5 | Auxiliary outdoor unit | HBC controller (Main) | HB | 51 to 100 | OC +1 | | |
| | | HBC controller (Sub) | HS | | Assign an address that equals the sum of the smallest address of the indoor units that are connected to the sub HBC controller and 50. | | |

## -3- Grouped Operation of Units in Separate Refrigerant Circuits

### (1) Sample control wiring




### (2) Cautions

1) ME remote controller and MA remote controller cannot both be connected to the same group of indoor units.
2) No more than 2 MA remote controllers can be connected to a group of indoor units.
   When a PAR-CT01MA series, PAR-4"x"MA series, or PAR-3"x"MA series ("X" represents 0 or later) is connected to a group, no other MA remote controllers can be connected to the same group.
3) Do not connect the terminal blocks (TB5) on the indoor units that are connected to different outdoor units with each other.
4) Replacement of male power jumper connector (CN41) must be performed only on one of the outdoor units (not required if power to the transmission line for centralized control is supplied from a controller with a power supply function, such as GB-50ADA).
5) Provide grounding to S terminal on the terminal block for transmission line for centralized control (TB7) on only one of the outdoor units.
6) When the number of the connected indoor units is as shown in the table below, one or more transmission boosters (sold separately) are required.
   To connect two transmission boosters, connect them in parallel. (Observe the maximum number of connectable indoor units that are listed in the specifications for each outdoor unit.)

| Number of transmission booster (sold separately) required | |
|---|---|
| 1 unit | 2 units |
| 25 - 50 units | – |

- The left table shows the number of transmission boosters that is required by the system with four HBC controllers. For each HBC controller added or subtracted, subtract or add two indoor units.
- Refer to the DATABOOK for further information about how many booster units are required for a given system.

### (3) Maximum allowable length

1) Indoor/outdoor transmission line
   Maximum distance (1.25mm$^2$ [AWG16] or larger)
   L12≦200m [656ft]
   L22≦200m [656ft]
   *If the power-supply distance exceeds the distance limit of 200 meters, a transmission booster (PAC-SF46EPA-G) is required.
2) Transmission line for centralized control
   L31≦200m [656ft]
3) MA remote controller wiring
   Same as [7] -1-
4) Maximum line distance via outdoor unit (1.25mm$^2$ [AWG16] or larger)
   L12+L31+L22≦1000 m [3280ft] (500 m [1640ft]) *1
   *1 If a given system includes one or more unit or remote controller that does not support the maximum allowable cable distance of 1000 m [3280 ft], the maximum allowable cable distance in the system will be 500 m [1640 ft]. Refer to the latest catalog for information on which units and remote controllers support the maximum allowable cable distance of 1000 m [3280 ft].

**(4) Wiring method**

1) Indoor/outdoor transmission line

Same as [7] -2-

**Shielded cable connection**

Same as [7] -2-

2) Transmission line for centralized control

Daisy-chain terminals M1 and M2 on the terminal block for transmission line for centralized control (TB7) on the outdoor units (OC) in different refrigerant circuit and on the OC in the same refrigerant circuit.
If a power supply unit is not connected to the transmission line for centralized control, replace the power jumper connector on the control board from CN41 to CN40 on only one of the outdoor units.

**Note**

a) When connecting TB7, only commence after checking that the voltage is below 20 VDC.

- Only use shielded cables.

**Shielded cable connection**

Daisy-chain the S terminal on the terminal block (TB7) on the outdoor unit (OC) with the shield wire of the shielded cable. Short-circuit the earth terminal ( ⏚ ) and the S terminal on the terminal block (TB7) on the outdoor unit whose power jumper connector is mated with CN40.

3) MA remote controller wiring

Same as [7] -1-

**When 2 remote controllers are connected to the system**

Same as [7] -1-

**Group operation of indoor units**

Same as [7] -1-

4) LOSSNAY connection

Same as [7] -2-

5) Switch setting

Address setting is required as follows.

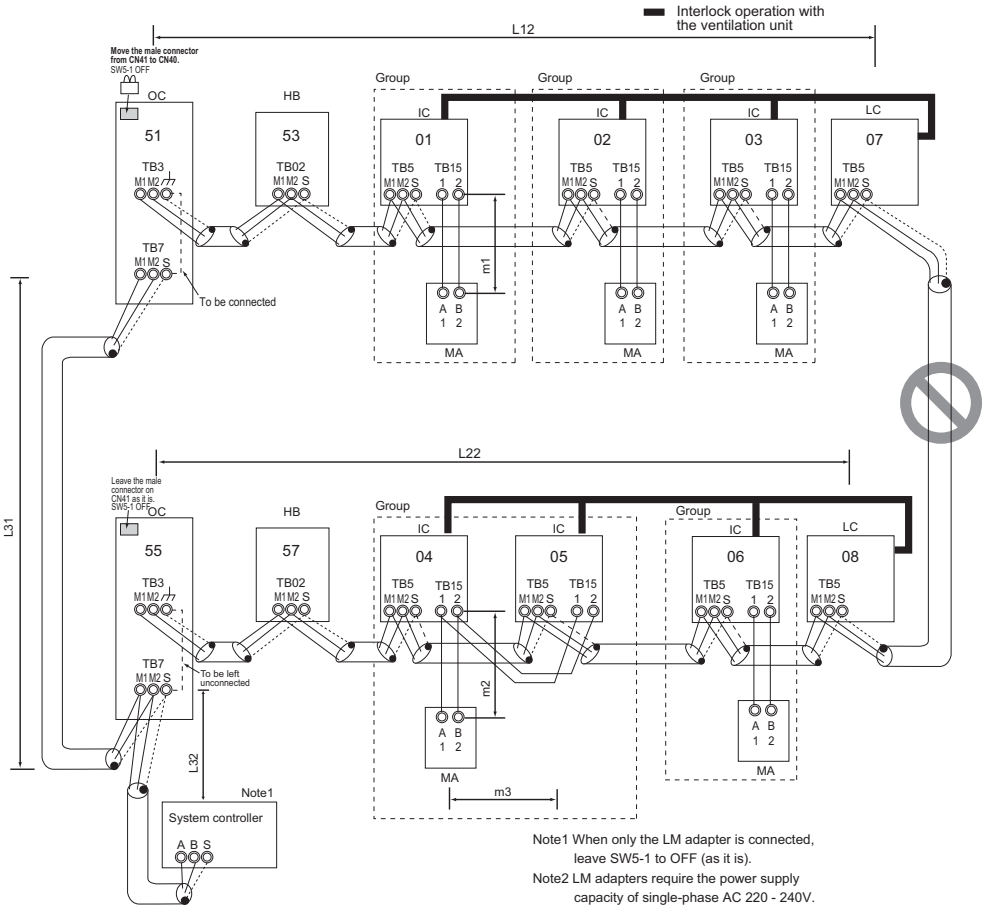
**(5) Address setting method**

| Procedures | Unit or controller | | | Address setting range | Setting method | Notes | Factory setting |
|---|---|---|---|---|---|---|---|
| 1 | Indoor unit | Main unit | IC | 01 to 50 | • Assign the smallest address to the main unit in the group.<br>• In a system with two or more HBC controllers, make the settings for the indoor units in the following order.<br>(i) Indoor unit to be connected to the main HBC controller 1<br>(ii) Indoor unit to be connected to sub HBC controller 1<br>(iii) Indoor unit to be connected to the main HBC controller 2<br>(iv) Indoor unit to be connected to sub HBC controller 2<br>Make the settings for the indoor units in the way that the formula "(i) < (ii) < (iii) < (iv)" is true. | • Port number setting is required<br>• To perform a group operation of indoor units that feature different functions, designate the indoor unit in the group with the greatest number of functions as the main unit. | 00 |
| | | Sub unit | | | Assign sequential numbers starting with the address of the main unit in the same group +1. (Main unit address +1, main unit address +2, main unit address +3, etc.) | | |
| 2 | LOSSNAY | | LC | 01 to 50 | Assign an arbitrary but unique address to each of these units after assigning an address to all indoor units. | None of these addresses may overlap any of the indoor unit addresses. | 00 |
| 3 | MA remote controller | Main remote controller | MA | No settings required. | - | | Main |
| | | Sub remote controller | MA | Sub remote controller | Settings to be made with the Sub/Main switch | | |
| 4 | Outdoor unit | | OC | 51 to 100 | • Assign sequential address to the outdoor units in the same refrigerant circuit. | • To set the address to 100, set the rotary switches to 50.<br>• If the addresses that is assigned to the main HBC controller overlaps any of the addresses that are assigned to the outdoor units or to the sub HBC controller, use a different, unused address within the setting range.<br>• The use of a sub HBC controller requires the connection of a main HBC controller. | 00 |
| 5 | Auxiliary outdoor unit | HBC controller (Main) | HB | 51 to 100 | OC +1 | | |
| | | HBC controller (Sub) | HS | | Assign an address that equals the sum of the smallest address of the indoor units that are connected to the sub HBC controller and 50. | | |

## -4- System with a Connection of System Controller to Centralized Control Transmission Line

### (1) Sample control wiring

An example of a system in which a system controller is connected to the transmission cable for the centralized control system and the power is supplied from the outdoor unit




Note1 When only the LM adapter is connected, leave SW5-1 to OFF (as it is).
Note2 LM adapters require the power supply capacity of single-phase AC 220 - 240V.

### (2) Cautions

1) ME remote controller and MA remote controller cannot both be connected to the same group of indoor units.
2) No more than 2 MA remote controllers can be connected to a group of indoor units.
   When a PAR-CT01MA series, PAR-4"x"MA series, or PAR-3"x"MA series ("X" represents 0 or later) is connected to a group, no other MA remote controllers can be connected to the same group.
3) Do not connect the terminal blocks (TB5) on the indoor units that are connected to different outdoor units with each other.
4) Replacement of male power jumper connector (CN41) must be performed only on one of the outdoor units (not required if power to the transmission line for centralized control is supplied from a controller with a power supply function, such as GB-50ADA).
5) Short-circuit the shield terminal (S terminal) and the earth terminal ( ⏚ ) on the terminal block for transmission line for centralized control (TB7) on the outdoor unit whose power jumper connector is mated with CN40.
6) When the number of the connected indoor units is as shown in the table below, one or more transmission boosters (sold separately) are required.
   To connect two transmission boosters, connect them in parallel. (Observe the maximum number of connectable indoor units that are listed in the specifications for each outdoor unit.)

| Number of transmission booster (sold separately) required | |
|---|---|
| 1 unit | 2 units |
| 25 - 50 units | – |

- The left table shows the number of transmission boosters that is required by the system with four HBC controllers. For each HBC controller added or subtracted, subtract or add two indoor units.
- Refer to the DATABOOK for further information about how many booster units are required for a given system.

7) When a power supply unit is connected to the transmission line for centralized control, leave the power jumper connector on CN41 as it is (factory setting).

### (3) Maximum allowable length

1) Indoor/outdoor transmission line
   Same as [7] -3-
2) Transmission line for centralized control
   L31+L32 ≦ 200m [656ft]
3) MA remote controller wiring
   Same as [7] -1-
4) Maximum line distance via outdoor unit
   (1.25mm$^2$ [AWG16] or larger)
   L32+L31+L12 ≦ 1000 m [3280ft] (500 m [1640ft]) *1
   L32+L22 ≦ 1000 m [3280ft] (500 m [1640ft]) *1
   L12+L31+L22 ≦ 1000 m [3280ft] (500 m [1640ft]) *1

*1 If a given system includes one or more unit or remote controller that does not support the maximum allowable cable distance of 1000 m [3280 ft], the maximum allowable cable distance in the system will be 500 m [1640 ft]. Refer to the latest catalog for information on which units and remote controllers support the maximum allowable cable distance of 1000 m [3280 ft].

**(4) Wiring method**

1) Indoor/outdoor transmission line
   Same as [7] -2-
   Only use shielded cables.
   **Shielded cable connection**
   Same as [7] -2-
2) Transmission line for centralized control
   Daisy-chain terminals A and B on the system controller, terminals M1 and M2 on the terminal block for transmission line for centralized control (TB7) on the outdoor units (OC) in different refrigerant circuits and on the outdoor unit (OC) in the same refrigerant circuit.
   If a power supply unit is not connected to the transmission line for centralized control, replace the power jumper connector on the control board from CN41 to CN40 on only one of the outdoor units.
   If a system controller is connected, set the central control switch (SW5-1) on the control board of all outdoor units to "ON."

**Note**

a) When connecting TB7, only commence after checking that the voltage is below 20 VDC.
   ♦Only use shielded cables.

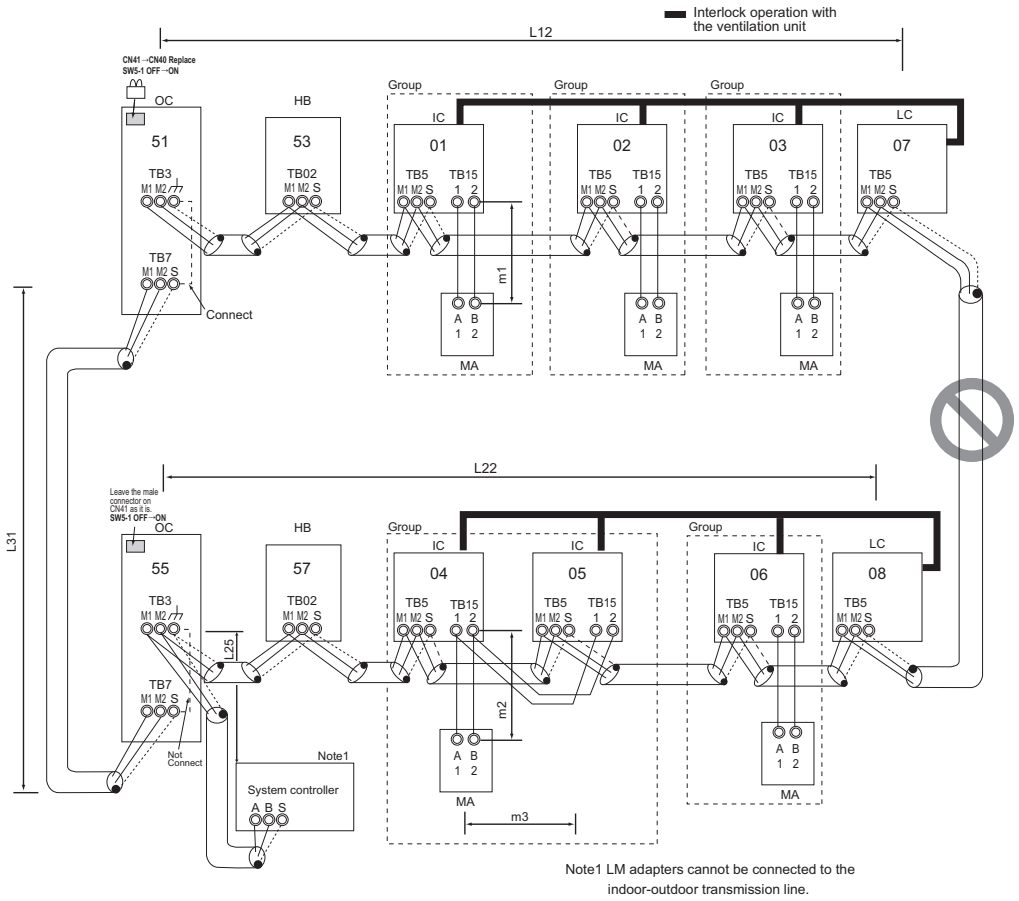
   **Shielded cable connection**
   Daisy-chain the S terminal of the terminal block (TB7) on the system controller, OC with the shield of the shielded cable. Short-circuit the earth terminal ( ⏚ ) and the S terminal on the terminal block (TB7) on the outdoor unit whose power jumper connector is mated with CN40.
3) MA remote controller wiring
   Same as [7] -1-
   **When 2 remote controllers are connected to the system**
   Same as [7] -1-
   **Group operation of indoor units**
   Same as [7] -1-
4) LOSSNAY connection
   Connect terminals M1 and M2 on the terminal block (TB5) on the indoor unit (IC) to the appropriate terminals on the terminal block for indoor-outdoor transmission line (TB5) on LOSSNAY (LC). (Non-polarized two-wire)
   ♦Indoor units must be interlocked with the LOSSNAY unit using the system controller. (Refer to the operation manual for the system controller for the setting method.) Interlock setting from the remote controller is required if the ON/OFF remote controller alone or the LM adapter alone is connected.
5) Switch setting
   Address setting is required as follows.

**(5) Address setting method**

| Procedures | Unit or controller | | | Address setting range | Setting method | Notes | Factory setting |
|---|---|---|---|---|---|---|---|
| 1 | Indoor unit | Main unit | IC | 01 to 50 | ♦Assign the smallest address to the main unit in the group.<br>♦In a system with two or more HBC controllers, make the settings for the indoor units in the following order.<br>(i) Indoor unit to be connected to the main HBC controller 1<br>(ii) Indoor unit to be connected to sub HBC controller 1<br>(iii) Indoor unit to be connected to the main HBC controller 2<br>(iv) Indoor unit to be connected to sub HBC controller 2<br>Make the settings for the indoor units in the way that the formula "(i) < (ii) < (iii) < (iv)" is true. | ♦Port number setting is required<br>♦To perform a group operation of indoor units that feature different functions, designate the indoor unit in the group with the greatest number of functions as the main unit. | 00 |
| | | Sub unit | | | Assign sequential numbers starting with the address of the main unit in the same group +1. (Main unit address +1, main unit address +2, main unit address +3, etc.) | | |
| 2 | LOSSNAY | | LC | 01 to 50 | Assign an arbitrary but unique address to each of these units after assigning an address to all indoor units. | None of these addresses may overlap any of the indoor unit addresses. | 00 |
| 3 | MA remote controller | Main remote controller | MA | No settings required. | - | Make the same indoor unit group settings with the system controller as the ones that were made with the MA remote controller. | Main |
| | | Sub remote controller | MA | Sub remote controller | Settings to be made with the Sub/Main switch | | |
| 4 | Outdoor unit (Note) | | OC | 51 to 100 | ♦Assign sequential address to the outdoor units in the same refrigerant circuit. | ♦To set the address to 100, set the rotary switches to 50.<br>♦If the addresses that is assigned to the main HBC controller overlaps any of the addresses that are assigned to the outdoor units or to the sub HBC controller, use a different, unused address within the setting range.<br>♦The use of a sub HBC controller requires the connection of a main HBC controller. | 00 |
| 5 | Auxiliary outdoor unit | HBC controller (Main) | HB | 51 to 100 | OC +1 | | |
| | | HBC controller (Sub) | HS | | Assign an address that equals the sum of the smallest address of the indoor units that are connected to the sub HBC controller and 50. | | |

## -5- System with a Connection of System Controller to Indoor-Outdoor Transmission Line

### (1) Sample control wiring




Note1 LM adapters cannot be connected to the indoor-outdoor transmission line.

### (2) Cautions

1) ME remote controller and MA remote controller cannot both be connected to the same group of indoor units.
2) No more than 2 MA remote controllers can be connected to a group of indoor units.
   When a PAR-CT01MA series, PAR-4"x"MA series, or PAR-3"x"MA series ("X" represents 0 or later) is connected to a group, no other MA remote controllers can be connected to the same group.
3) Do not connect the terminal blocks (TB5) on the indoor units that are connected to different outdoor units with each other.
4) Replacement of male power jumper connector (CN41) must be performed only on one of the outdoor units (not required if power to the transmission line for centralized control is supplied from a controller with a power supply function, such as GB-50ADA).
5) Provide grounding to S terminal on the terminal block for transmission line for centralized control (TB7) on only one of the outdoor units.
6) A maximum of three system controllers can be connected to the indoor-outdoor transmission line. (AE-200, AE-50, EW-50, AT-50B, AG-150A, GB-50ADA, or G(B)-50A are not connectable.)
7) When the total number of indoor units exceeds 20 (12 if one or more indoor units of the 200 model or above is connected), it may not be possible to connect a system controller to the indoor-outdoor transmission line.
8) When the number of the connected indoor units is as shown in the table below, one or more transmission boosters (sold separately) are required.
   To connect two transmission boosters, connect them in parallel. (Observe the maximum number of connectable indoor units that are listed in the specifications for each outdoor unit.)

| Number of transmission booster (sold separately) required | |
|---|---|
| 1 unit | 2 units |
| 25 - 50 units | – |

- The left table shows the number of transmission boosters that is required by the system with four HBC controllers. For each HBC controller added or subtracted, subtract or add two indoor units.
- Refer to the DATABOOK for further information about how many booster units are required for a given system.

### (3) Maximum allowable length

1) Indoor/outdoor transmission line

   Maximum distance (1.25mm$^2$ [AWG16] or larger)
   L12≦200m [656ft]
   L22≦200m [656ft]
   L25≦200m [656ft]
   *If the power-supply distance exceeds the distance limit of 200 meters, a transmission booster (PAC-SF46EPA-G) is required.
2) Transmission line for centralized control

   L31≦200m [656ft]
3) MA remote controller wiring

   Same as [7] -1-
4) Maximum line distance via outdoor unit
   (1.25mm$^2$ [AWG16] or larger)
   L25+L31+L12≦1000 m [3280ft] (500 m [1640ft]) *1
   L12+L31+L22≦1000 m [3280ft] (500 m [1640ft]) *1

   *1 If a given system includes one or more unit or remote controller that does not support the maximum allowable cable distance of 1000 m [3280 ft], the maximum allowable cable distance in the system will be 500 m [1640 ft]. Refer to the latest catalog for information on which units and remote controllers support the maximum allowable cable distance of 1000 m [3280 ft].

### (4) Wiring method

1) Indoor/outdoor transmission line

Daisy-chain terminals M1 and M2 of the terminal block for indoor-outdoor transmission line (TB3) on the outdoor unit (OC), of the terminal block for indoor-outdoor transmission line (TB02) on the main and sub HBC controllers (HB and HS), of the terminal block for indoor-outdoor transmission line (TB5) on each indoor unit (IC), and the S terminal of the system controller.(Non-polarized two-wire)

- Only use shielded cables.

**Shielded cable connection**

Daisy-chain the ground terminal ( ⏚ ) on the outdoor unit (OC), the S terminal of the terminal block (TB02) on the HB and HS, and the S terminal of the terminal block (TB5) on the indoor unit (IC) with the shield of the shielded cable.

2) Transmission line for centralized control

Daisy-chain terminals M1 and M2 on the terminal block for transmission line for centralized control (TB7) on the outdoor units (OC) in different refrigerant circuit and on the OC in the same refrigerant circuit.

If a power supply unit is not connected to the transmission line for centralized control, replace the power jumper connector on the control board from CN41 to CN40 on only one of the outdoor units.

Set the central control switch (SW5-1) on the control board of all outdoor units to "ON."

**Note**

a) When connecting TB7, only commence after checking that the voltage is below 20 VDC.

- Only use shielded cables.

**Shielded cable connection**

Daisy-chain the S terminal on the terminal block (TB7) on the outdoor units (OC, OS) with the shield wire of the shielded cable. Short-circuit the earth terminal ( ⏚ ) and the S terminal on the terminal block (TB7) on the outdoor unit whose power jumper connector is mated with CN40.

3) MA remote controller wiring

Same as [7] -1-

**When 2 remote controllers are connected to the system**

Same as [7] -1-

**Group operation of indoor units**

Same as [7] -1-

4) LOSSNAY connection

Connect terminals M1 and M2 on the terminal block (TB5) on the indoor units (IC) to the appropriate terminals on the terminal block for indoor-outdoor transmission line (TB5) on LOSSNAY (LC). (Non-polarized two-wire)

- Indoor units must be interlocked with the LOSSNAY unit using the system controller. (Refer to the operation manual for the system controller for the setting method.) Interlock setting from the remote controller is required if the ON/OFF remote controller alone is connected.

5) Switch setting

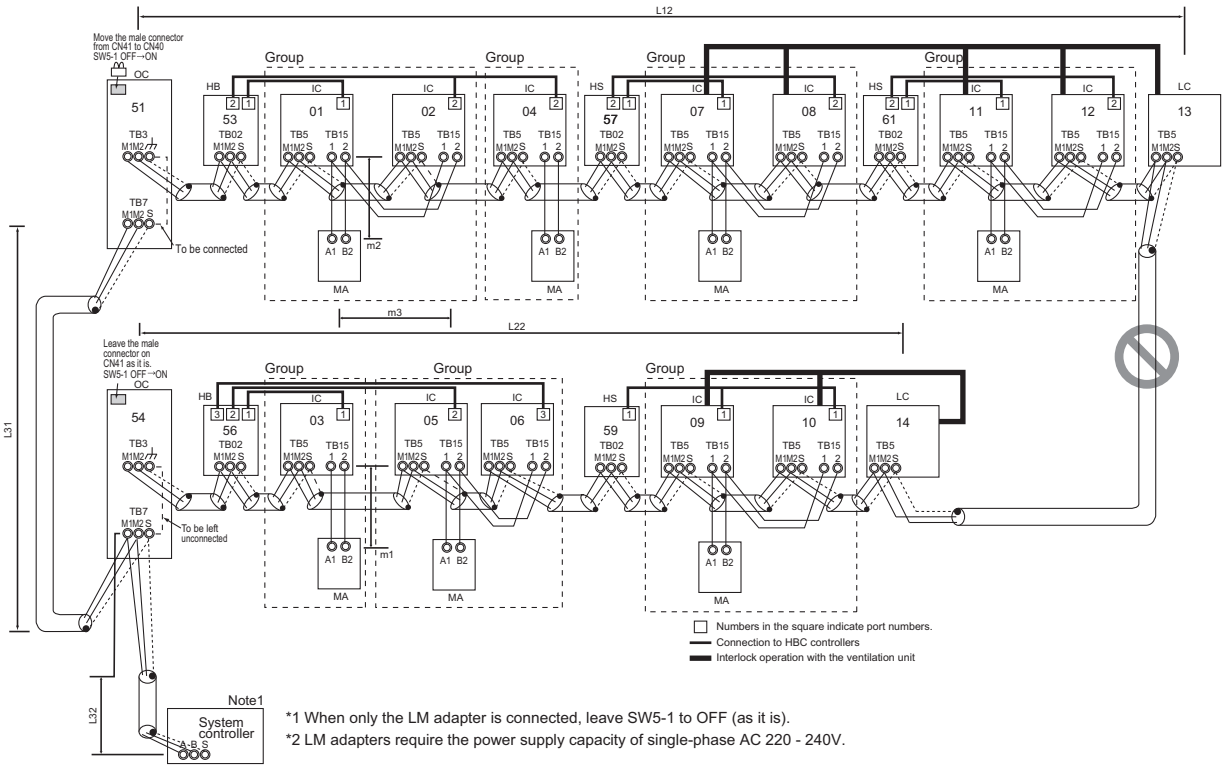
Address setting is required as follows.

### (5) Address setting method

| Procedures | Unit or controller | | | Address setting range | Setting method | Notes | Factory setting |
|---|---|---|---|---|---|---|---|
| 1 | Indoor unit | Main unit | IC | 01 to 50 | • Assign the smallest address to the main unit in the group.<br>• In a system with two or more HBC controllers, make the settings for the indoor units in the following order.<br>(i) Indoor unit to be connected to the main HBC controller 1<br>(ii) Indoor unit to be connected to sub HBC controller 1<br>(iii) Indoor unit to be connected to the main HBC controller 2<br>(iv) Indoor unit to be connected to sub HBC controller 2<br>Make the settings for the indoor units in the way that the formula "(i) < (ii) < (iii)< (iv)" is true. | • Port number setting is required<br>• To perform a group operation of indoor units that feature different functions, designate the indoor unit in the group with the greatest number of functions as the main unit. | 00 |
| | | Sub unit | | | Assign sequential numbers starting with the address of the main unit in the same group +1. (Main unit address +1, main unit address +2, main unit address +3, etc.) | | |
| 2 | LOSSNAY | | LC | 01 to 50 | Assign an arbitrary but unique address to each of these units after assigning an address to all indoor units. | None of these addresses may overlap any of the indoor unit addresses. | 00 |
| 3 | MA remote controller | Main remote controller | MA | No settings required. | - | Make the same indoor unit group settings with the system controller as the ones that were made with the MA remote controller. | Main |
| | | Sub remote controller | MA | Sub remote controller | Settings to be made with the Sub/Main switch | | |
| 4 | Outdoor unit | | OC | 51 to 100 | • Assign sequential address to the outdoor units in the same refrigerant circuit. | • To set the address to 100, set the rotary switches to 50.<br>• If the addresses that is assigned to the main HBC controller overlaps any of the addresses that are assigned to the outdoor units or to the sub HBC controller, use a different, unused address within the setting range.<br>• The use of a sub HBC controller requires the connection of a main HBC controller. | 00 |
| 5 | Auxiliary outdoor unit | HBC controller (Main) | HB | 51 to 100 | OC +1 | | |
| | | HBC controller (Sub) | HS | | Assign an address that equals the sum of the smallest address of the indoor units that are connected to the sub HBC controller and 50. | | |

## -6- System with Multiple HBC Controllers

### (1) Sample control wiring




*1 When only the LM adapter is connected, leave SW5-1 to OFF (as it is).
*2 LM adapters require the power supply capacity of single-phase AC 220 - 240V.

### (2) Cautions

1) ME remote controller and MA remote controller cannot both be connected to the same group of indoor units.
2) No more than 2 MA remote controllers can be connected to a group of indoor units.
   When a PAR-CT01MA series, PAR-4"x"MA series, or PAR-3"x"MA series ("X" represents 0 or later) is connected to a group, no other MA remote controllers can be connected to the same group.
3) Do not connect the terminal blocks (TB5) on the indoor units that are connected to different outdoor units with each other.
4) Replacement of male power jumper connector (CN41) must be performed only on one of the outdoor units (not required if power to the transmission line for centralized control is supplied from a controller with a power supply function, such as GB-50ADA).
5) Short-circuit the S (shield) terminal of the terminal block for the central control unit (TB7) and the ground terminal ($\perp$) on the outdoor unit whose power jumper was moved from CN41 to CN40.
6) When the number of the connected indoor units is as shown in the table below, one or more transmission boosters (sold separately) are required.
   To connect two transmission boosters, connect them in parallel. (Observe the maximum number of connectable indoor units that are listed in the specifications for each outdoor unit.)

| Number of transmission booster (sold separately) required | |
|---|---|
| 1 unit | 2 units |
| 25 - 50 units | – |

- The table above shows the number of transmission boosters that is required by the system with four HBC controllers. For each HBC controller added or subtracted, subtract or add two indoor units.
- Refer to the DATABOOK for further information about how many booster units are required for a given system.

7) When a power supply unit is connected to the transmission line for centralized control, leave the power jumper connector on CN41 as it is (factory setting).

### (3) Maximum allowable length

1) Indoor/outdoor transmission line
   Maximum distance (1.25mm$^2$ [AWG16] or larger)
   L12≦200m [656ft]
   L22≦200m [656ft]
   *If the power-supply distance exceeds the distance limit of 200 meters, a transmission booster (PAC-SF46EPA-G) is required.
2) Transmission line for centralized control
   L31+L32 ≦200m [656ft]
3) MA remote controller wiring
   Maximum overall line length
   (0.3 to 1.25mm$^2$ [AWG22 to 16])
   m1≦200m [656ft]
   m2+m3≦200m [656ft]*1
   *1 70m [229 ft] for PAR-CT01MA series (single remote controller only)
   *To wire PAR-CT01MA series, PAR-4"x"MA series, PAR-3"x"MA series ("X" represents 0 or later), and Simple MA remote controller, use a wire with a diameter of 0.3mm$^2$ [AWG22].
4) Maximum line distance via outdoor unit
   (1.25mm$^2$ [AWG16] or larger)
   L32+L31+L12 ≦1000 m [3280ft] (500 m [1640ft]) *1
   L32+L22 ≦1000 m [3280ft] (500 m [1640ft]) *1
   L12+L31+L22 ≦1000 m [3280ft] (500 m [1640ft]) *1
   *1 If a given system includes one or more unit or remote controller that does not support the maximum allowable cable distance of 1000 m [3280 ft], the maximum allowable cable distance in the system will be 500 m [1640 ft]. Refer to the latest catalog for information on which units and remote controllers support the maximum allowable cable distance of 1000 m [3280 ft].

**(4) Wiring method**

1) Indoor/outdoor transmission line

Daisy-chain terminals M1 and M2 of the terminal block for indoor-outdoor transmission line (TB3) on the outdoor unit (OC), of the terminal block for indoor-outdoor transmission line (TB02) on the main and sub HBC controllers (HB and HS), and of the terminal block for indoor-outdoor transmission line (TB5) on each indoor unit (IC). (Non-polarized two-wire)

- Only use shielded cables.

**Shielded cable connection**

Daisy-chain the ground terminal (⏚) on the outdoor unit (OC), the S terminal of the terminal block (TB02) on the HB and HS, and the S terminal of the terminal block (TB5) on the indoor unit (IC) with the shield of the shielded cable.

2) Transmission line for centralized control

Daisy-chain terminals A and B of the system controller, M1 and M2 terminals of TB7 (terminal block for centralized control system connection) on the outdoor units (OC) in different refrigerant systems, and M1 and M2 terminals of TB7 (terminal block for centralized control system connection) on the outdoor unit (OC) in the same refrigerant circuit.

If a power supply unit is not connected to the transmission line for centralized control, replace the power jumper connector on the control board from CN41 to CN40 on only one of the outdoor units.

When connecting a system controller, set the centralized control switch (SW5-1) on the control board of all indoor units to "ON."

**Note**

a) When connecting TB7, only commence after checking that the voltage is below 20 VDC.

- Only use shielded cables.

**Shielded cable connection**

Daisy-chain the S terminal of the terminal block (TB7) on the system controller, OC with the shield of the shielded cable. Short-circuit the earth terminal ( ⏚) and the S terminal on the terminal block (TB7) on the outdoor unit whose power jumper connector is mated with CN40.

3) MA remote controller wiring

Same as [7] -1-

**When 2 remote controllers are connected to the system**

Same as [7] -1-

**Group operation of indoor units**

Same as [7] -1-

4) LOSSNAY connection

Connect terminals M1 and M2 on the terminal block (TB5) on the indoor unit (IC) to the appropriate terminals on the terminal block for indoor-outdoor transmission line (TB5) on LOSSNAY (LC). (Non-polarized two-wire)

- Indoor units must be interlocked with the LOSSNAY unit using the system controller. (Refer to the operation manual for the system controller for the setting method.) Interlock setting from the remote controller is required if the ON/OFF remote controller alone or the LM adapter alone is connected.

5) Switch setting

Address setting is required as follows.

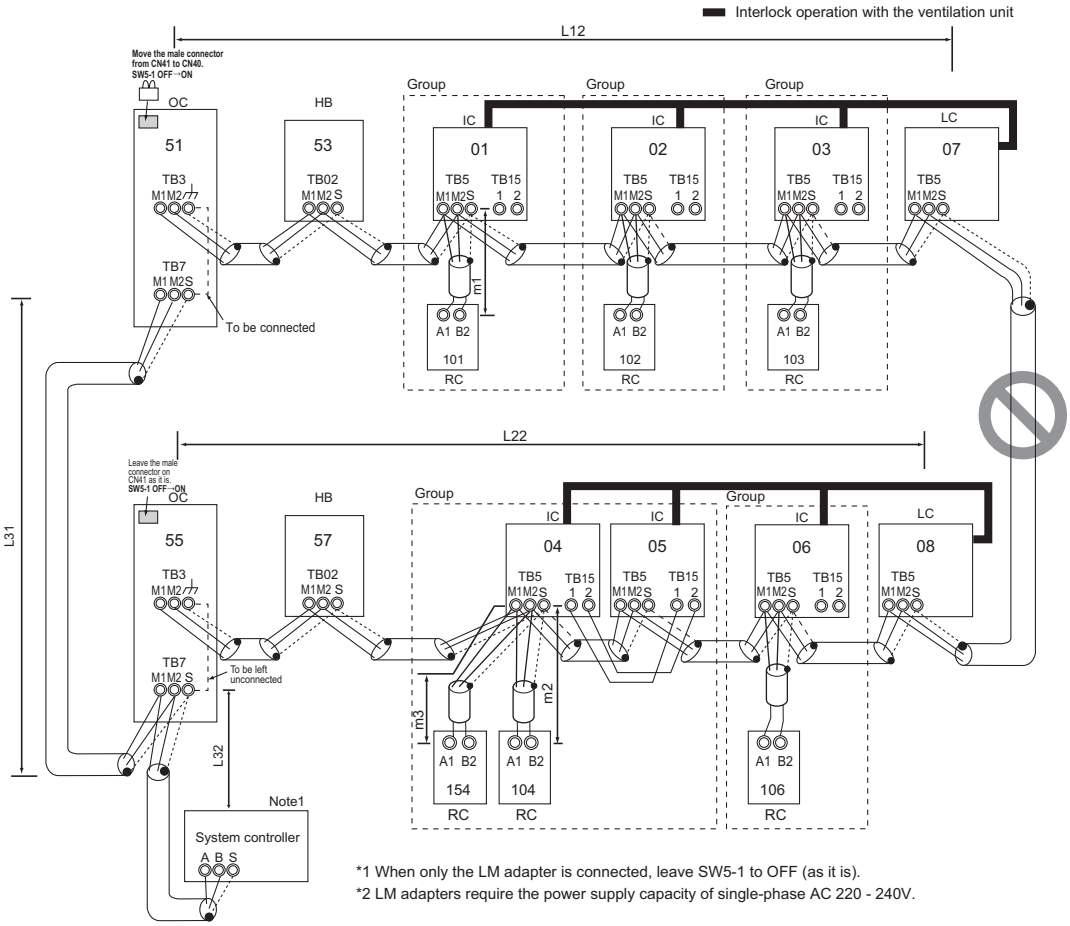
### (5) Address setting method

| Procedures | Unit or controller | | | Address setting range | Setting method | Notes | Factory setting |
|---|---|---|---|---|---|---|---|
| 1 | Indoor unit | Main unit | IC | 01 to 50 | ♦Assign the smallest address to the main unit in the group.<br>♦In a system with a sub HBC controller, make the settings for the indoor units in the following order.<br>(i) Indoor unit to be connected to the main HBC controller 1<br>(ii) Indoor unit to be connected to sub HBC controller 1<br>(iii) Indoor unit to be connected to the main HBC controller 2<br>(iv) Indoor unit to be connected to sub HBC controller 2<br>Make the settings for the indoor units in the way that the formula "(i) < (ii) < (iii) < (iv)" is true. | ♦Port number setting is required<br>♦To perform a group operation of indoor units that feature different functions, designate the indoor unit in the group with the greatest number of functions as the main unit. | 00 |
| | | Sub unit | | | Assign sequential numbers starting with the address of the main unit in the same group +1. (Main unit address +1, main unit address +2, main unit address +3, etc.) | | |
| 2 | LOSSNAY | | LC | 01 to 50 | Assign an arbitrary but unique address to each of these units after assigning an address to all indoor units. | None of these addresses may overlap any of the indoor unit addresses. | 00 |
| 3 | MA remote controller | Main remote controller | MA | No settings required. | - | Make the same indoor unit group settings with the system controller as the ones that were made with the MA remote controller. | Main |
| | | Sub remote controller | MA | Sub remote controller | Settings to be made with the Sub/Main switch | | |
| 4 | Outdoor unit | | OC | 51 to 100 | ♦The sum of the smallest address of the indoor units in the same system and 50. | ♦To set the address to 100, set the rotary switches to 50. | 00 |
| 5 | Auxiliary unit | HBC controller (Main) | HB | 51 to 100 | OC +1 | ♦To set the address to 100, set the rotary switches to 50.<br>♦If the addresses that is assigned to the main HBC controller overlaps any of the addresses that are assigned to the outdoor units or to the sub HBC controller, use a different, unused address within the setting range.<br>♦The use of a sub HBC controller requires the connection of a main HBC controller. | 00 |
| | | HBC controller (Sub) | HS | 51 to 100 | Assign an address that equals the sum of the smallest address of the indoor units that are connected to the sub HBC controller and 50. | | |

## [8] Example System with an ME Remote Controller

### -1- System with a Connection of System Controller to Centralized Control Transmission Line

#### (1) Sample control wiring




*1 When only the LM adapter is connected, leave SW5-1 to OFF (as it is).
*2 LM adapters require the power supply capacity of single-phase AC 220 - 240V.

#### (2) Cautions

1) ME remote controller and MA remote controller cannot both be connected to the same group of indoor units.
2) No more than 2 ME remote controllers can be connected to a group of indoor units.
3) Do not connect the terminal blocks (TB5) on the indoor units that are connected to different outdoor units with each other.
4) Replace the power jumper connector of the control board from CN41 to CN40 on only one of the outdoor units (not required if power to the transmission line for centralized control is supplied from a controller with a power supply function, such as GB-50ADA).
5) Provide an electrical path to ground for the S terminal on the terminal block for centralized control on only one of the outdoor units.
6) When the number of the connected indoor units is as shown in the table below, one or more transmission boosters (sold separately) are required.
   To connect two transmission boosters, connect them in parallel. (Observe the maximum number of connectable indoor units that are listed in the specifications for each outdoor unit.)

| Number of transmission booster (sold separately) required | | |
|---|---|---|
| 1 unit | 2 units | 3 units |
| 13 - 32 units | 33 - 50 units | - |

- The left table shows the number of transmission boosters that is required by the system with four HBC controllers. For each HBC controller added or subtracted, subtract or add two indoor units.
- Refer to the DATABOOK for further information about how many booster units are required for a given system.

7) When a power supply unit is connected to the transmission line for centralized control, leave the power jumper connector on CN41 as it is (factory setting).

#### (3) Maximum allowable length

1) Indoor/outdoor transmission line
   Same as [7] -3-
2) Transmission line for centralized control
   Same as [7] -4-
3) ME remote controller wiring
   Maximum overall line length
   (0.3 to 1.25mm$^2$ [AWG22 to 16])
   m1≦10m [32ft]
   m2+m3≦10m [32ft]
   If the standard-supplied cable must be extended, use a cable with a diameter of 1.25mm$^2$ [AWG16]. The section of the cable that exceeds 10m [32ft] must be included in the maximum indoor-outdoor transmission line distance described in 1).
   When connected to the terminal block on the Simple remote controller, use cables that meet the following cable size specifications: 0.75 - 1.25 mm$^2$ [AWG18-16].
4) Maximum line distance via outdoor unit
   (1.25 mm$^2$ [AWG16] or large)
   Same as [7] -4-

**(4) Wiring method**

1) Indoor/outdoor transmission line

Same as [7] -2-

**Shielded cable connection**

Same as [7] -2-

2) Transmission line for centralized control

Same as [7] -4-

**Shielded cable connection**

Same as [7] -4-

3) ME remote controller wiring

ME remote controller is connectable anywhere on the indoor-outdoor transmission line.

**When 2 remote controllers are connected to the system**

Refer to the section on Switch Setting.

**Performing a group operation (including the group operation of units in different refrigerant circuits).**

Refer to the section on Switch Setting.

4) LOSSNAY connection

Same as [7] -4-

5) Switch setting

Address setting is required as follows.

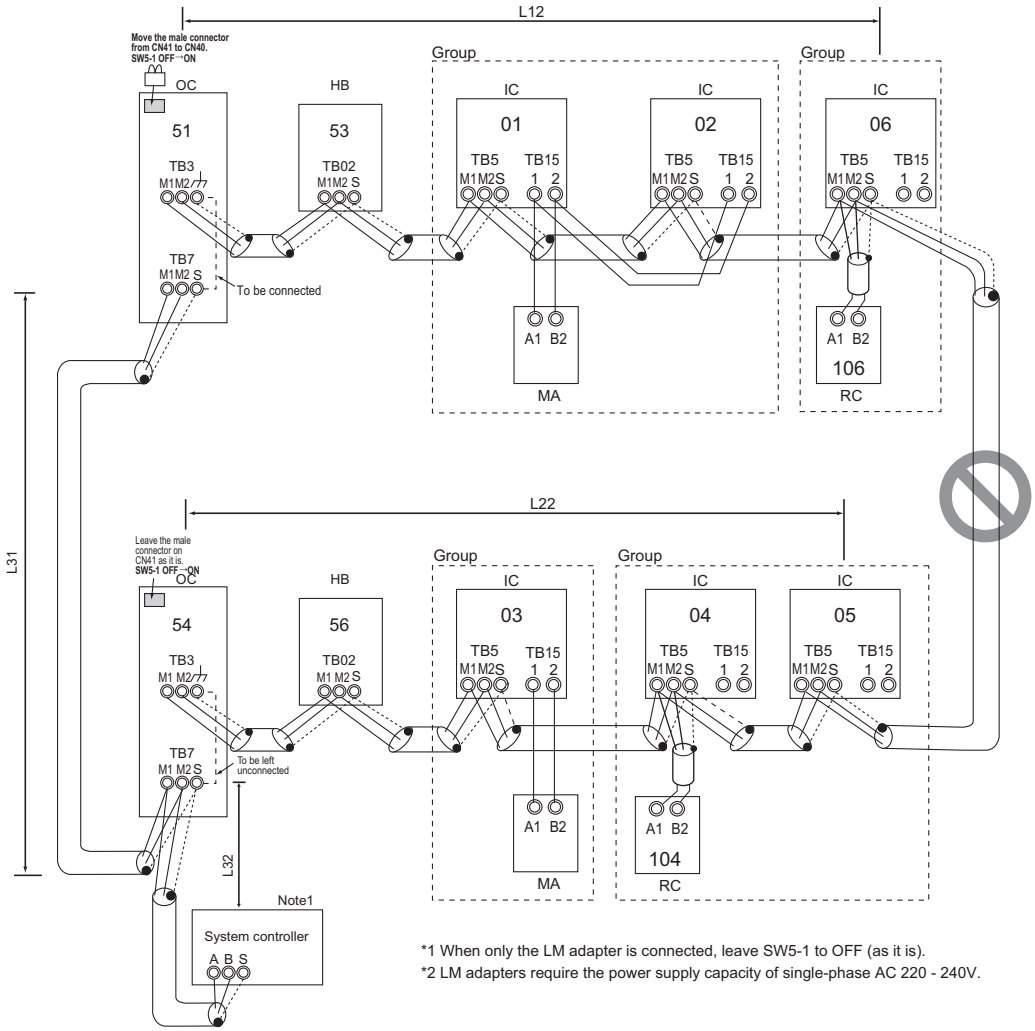
**(5) Address setting method**

| Procedures | Unit or controller | | | Address setting range | Setting method | Notes | Factory setting |
|---|---|---|---|---|---|---|---|
| 1 | Indoor unit | Main unit | IC | 01 to 50 | ♦Assign the smallest address to the main unit in the group.<br>♦In a system with two or more HBC controllers, make the settings for the indoor units in the following order.<br>(i) Indoor unit to be connected to the main HBC controller 1<br>(ii) Indoor unit to be connected to sub HBC controller 1<br>(iii) Indoor unit to be connected to the main HBC controller 2<br>(iv) Indoor unit to be connected to sub HBC controller 2<br>Make the settings for the indoor units in the way that the formula "(i) < (ii) < (iii) < (iv)" is true. | ♦Port number setting is required<br>♦To perform a group operation of indoor units that have different functions, set the indoor unit in the group with the greatest number of functions as the main unit. | 00 |
| | | Sub unit | | | Assign sequential numbers starting with the address of the main unit in the same group +1. (Main unit address +1, main unit address +2, main unit address +3, etc.) | | |
| 2 | LOSSNAY | | LC | 01 to 50 | Assign an arbitrary but unique address to each of these units after assigning an address to all indoor units. | None of these addresses may overlap any of the indoor unit addresses. | 00 |
| 3 | ME remote controller | Main remote controller | RC | 101 to 150 | Add 100 to the main unit address in the group | ♦It is not necessary to set the 100s digit.<br>♦To set the address to 200, set the rotary switches to 00. | 101 |
| | | Sub remote controller | RC | 151 to 200 | Add 150 to the main unit address in the group | | |
| 4 | Outdoor unit | | OC | 51 to 100 | ♦Assign sequential address to the outdoor units in the same refrigerant circuit. | ♦To set the address to 100, set the rotary switches to 50.<br>♦If the addresses that is assigned to the main HBC controller overlaps any of the addresses that are assigned to the outdoor units or to the sub HBC controller, use a different, unused address within the setting range.<br>♦The use of a sub HBC controller requires the connection of a main HBC controller. | 00 |
| 5 | Auxiliary outdoor unit | HBC controller (Main) | HB | 51 to 100 | OC +1 | | |
| | | HBC controller (Sub) | HS | | Assign an address that equals the sum of the smallest address of the indoor units that are connected to the sub HBC controller and 50. | | |

## [9] Example System with an MA and an ME Remote Controller

### -1- System with a Connection of System Controller to Centralized Control Transmission Line

#### (1) Sample control wiring




#### (2) Cautions

1) Be sure to connect a system controller.
2) ME remote controller and MA remote controller cannot both be connected to the same group of indoor units.
3) Assign to the indoor units connected to the MA remote controller addresses that are smaller than those of the indoor units that are connected to the ME remote controller.
4) No more than 2 ME remote controllers can be connected to a group of indoor units.
5) No more than 2 MA remote controllers can be connected to a group of indoor units.
   When a PAR-CT01MA series, PAR-4"x"MA series, or PAR-3"x"MA series ("X" represents 0 or later) is connected to a group, no other MA remote controllers can be connected to the same group.
6) Do not connect the terminal blocks (TB5) on the indoor units that are connected to different outdoor units with each other.
7) Replace the power jumper connector of the control board from CN41 to CN40 on only one of the outdoor units (not required if power to the transmission line for centralized control is supplied from a controller with a power supply function, such as GB-50ADA).
8) Provide an electrical path to ground for the S terminal on the terminal block for centralized control on only one of the outdoor units.
9) When the number of the connected indoor units is as shown in the right table, one or more transmission boosters (sold separately) are required.
   To connect two transmission boosters, connect them in parallel. (Observe the maximum number of connectable indoor units that are listed in the specifications for each outdoor unit.)

| Number of transmission booster (sold separately) required | | |
|---|---|---|
| 1 unit | 2 units | 3 units |
| 13 - 32 units | 33 - 50 units | - |

- The above table shows the number of transmission boosters that is required by the system with four HBC controllers. For each HBC controller added or subtracted, subtract or add two indoor units.
- Refer to the DATABOOK for further information about how many booster units are required for a given system.

10) When a power supply unit is connected to the transmission line for centralized control, leave the power jumper connector on CN41 as it is (factory setting).

**(3) Maximum allowable length**

1) Indoor/outdoor transmission line

   Same as [7] -3-

2) Transmission line for centralized control

   Same as [7] -4-

3) MA remote controller wiring

   Same as [7] -1-

4) ME remote controller wiring

   Same as [8] -1-

5) Maximum line distance via outdoor unit (1.25 $mm^2$ [AWG16] or larger)

   Same as [7] -4-

**(4) Wiring method**

1) Indoor/outdoor transmission line

   Same as [7] -2-

   **Shielded cable connection**

   Same as [7] -2-

2) Transmission line for centralized control

   Same as [7] -2-

   **Shielded cable connection**

   Same as [7] -4-

3) MA remote controller wiring

   (When 2 remote controllers are connected to the system, Group operation of indoor units)

   Same as [7] -1-

4) ME remote controller wiring

   (When 2 remote controllers are connected to the system, Group operation of indoor units)

   Same as [8] -1-

5) LOSSNAY connection

   Same as [7] -4-

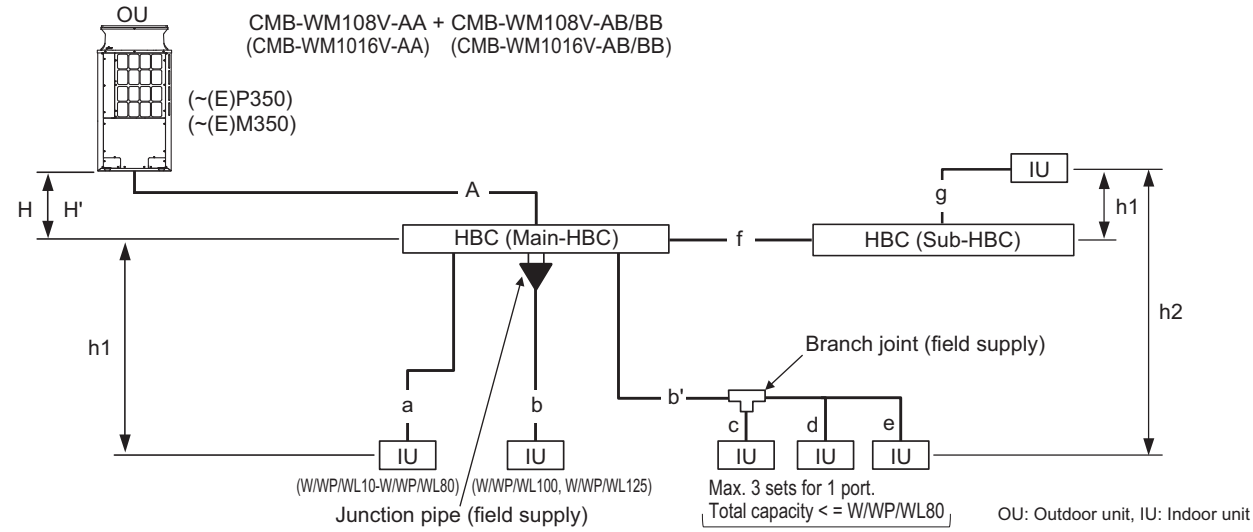
6) Switch setting

   Address setting is required as follows.

**(5) Address setting method**

<table>
<tr><th>Pro-cedures</th><th colspan="4">Unit or controller</th><th>Address setting range</th><th>Setting method</th><th>Notes</th><th>Factory setting</th></tr>
<tr><td rowspan="4">1</td><td rowspan="4">Operation with the MA remote controller</td><td rowspan="2">Indoor unit</td><td>Main unit</td><td>IC</td><td>01 to 50</td><td>⬧Assign the smallest address to the main unit in the group.<br>⬧In a system with two or more HBC controllers, make the settings for the indoor units in the following order.<br>(i) Indoor unit to be connected to the main HBC controller 1<br>(ii) Indoor unit to be connected to sub HBC controller 1<br>(iii) Indoor unit to be connected to the main HBC controller 2<br>(iv) Indoor unit to be connected to sub HBC controller 2<br>Make the settings for the indoor units in the way that the formula "(i) < (ii) < (iii) < (iv)" is true.</td><td rowspan="2">⬧Assign an address smaller than that of the indoor unit that is connected to the ME remote controller.<br>⬧Enter the same indoor unit group settings on the system controller as the ones that were entered on the MA remote controller.<br>⬧To perform a group operation of indoor units that have different functions, designate the indoor unit in the group with the greatest number of functions as the main unit.<br>⬧Port number setting is required.</td><td rowspan="2">00</td></tr>
<tr><td>Sub unit</td><td>IC</td><td>01 to 50</td><td>Assign sequential numbers starting with the address of the main unit in the same group +1. (Main unit address +1, main unit address +2, main unit address +3, etc.)</td></tr>
<tr><td rowspan="2">MA remote controller</td><td>Main remote controller</td><td>MA</td><td>No settings required.</td><td>-</td><td rowspan="2"></td><td rowspan="2">Main</td></tr>
<tr><td>Sub remote controller</td><td>MA</td><td>Sub remote controller</td><td>Settings to be made according to the remote controller function selection</td></tr>
<tr><td rowspan="4">2</td><td rowspan="4">Operation with the ME remote controller</td><td rowspan="2">Indoor unit</td><td>Main unit</td><td>IC</td><td>01 to 50</td><td>Assign the smallest address to the main unit in the group.</td><td rowspan="2">⬧Assign an address higher than those of the indoor units that are connected to the MA remote controller.<br>⬧Make the initial settings for the indoor unit group settings via the system controller.<br>⬧To perform a group operation of indoor units that have different functions, designate the indoor unit in the group with the greatest number of functions as the main unit.<br>⬧Port number setting is required.<br>⬧Addresses that are assigned to the indoor units that are connected to the sub HBC controller should be higher than the addresses that are assigned to the indoor units that are connected to the main HBC controller.</td><td rowspan="2">00</td></tr>
<tr><td>Sub unit</td><td>IC</td><td>01 to 50</td><td>Assign sequential numbers starting with the address of the main unit in the same group +1. (Main unit address +1, main unit address +2, main unit address +3, etc.)</td></tr>
<tr><td rowspan="2">ME remote controller</td><td>Main remote controller</td><td>RC</td><td>101 to 150</td><td>Add 100 to the main unit address in the group.</td><td rowspan="2">⬧It is not necessary to set the 100s digit.<br>⬧To set the address to 200, set it to 00.</td><td rowspan="2">101</td></tr>
<tr><td>Sub remote controller</td><td>RC</td><td>151 to 200</td><td>Add 150 to the main unit address in the group.</td></tr>
<tr><td>3</td><td colspan="4">LOSSNAY</td><td>LC</td><td>01 to 50</td><td>Assign an arbitrary but unique address to each of these units after assigning an address to all indoor units.</td><td>None of these addresses may overlap any of the indoor unit addresses.</td><td>00</td></tr>
<tr><td>4</td><td colspan="4">Outdoor unit</td><td>OC</td><td>51 to 100</td><td>⬧Assign sequential address to the outdoor units in the same refrigerant circuit.</td><td rowspan="2">⬧To set the address to 100, set it to 50.<br>⬧If the addresses that is assigned to the main HBC controller overlaps any of the addresses that are assigned to the outdoor units or to the sub HBC controller, use a different, unused address within the setting range.<br>⬧The use of a sub HBC controller requires the connection of a main HBC controller.</td><td rowspan="2">00</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Auxiliary outdoor unit</td><td colspan="2">HBC controller (Main)</td><td>HB</td><td rowspan="2">51 to 100</td><td>OC +1</td></tr>
<tr><td colspan="2">HBC controller (Sub)</td><td>HS</td><td>Assign an address that equals the sum of the smallest address of the indoor units that are connected to the sub HBC controller and 50.</td></tr>
</table>

## [10] Restrictions on Pipe Length



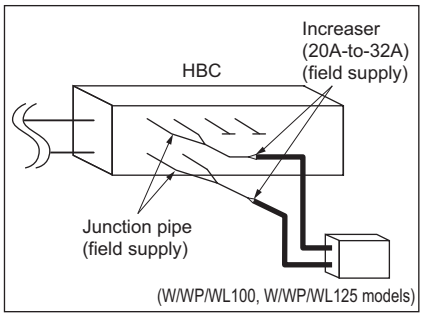
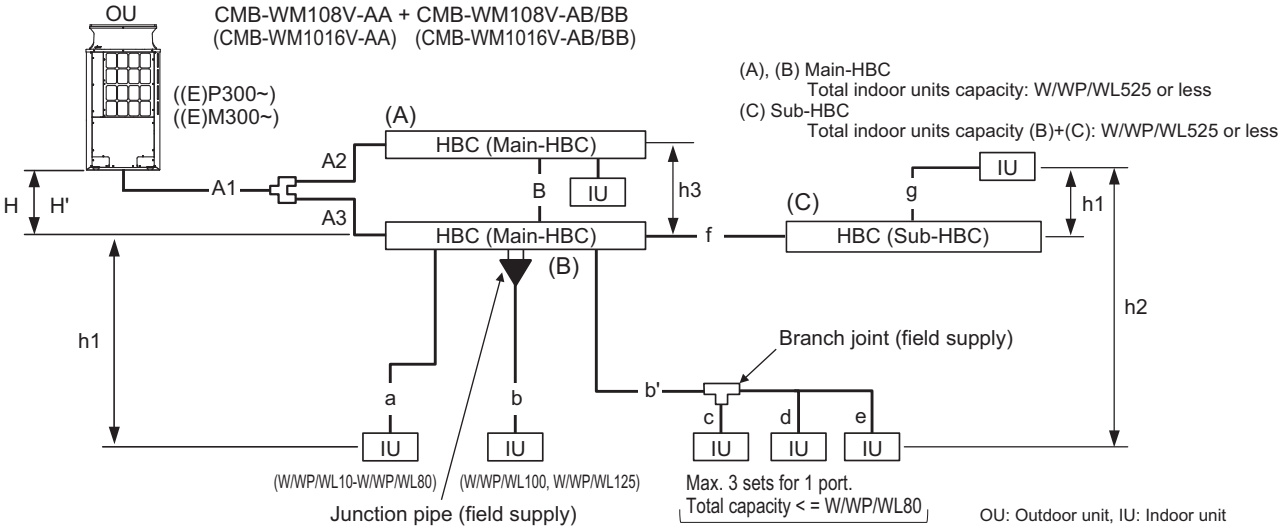




Fig. A

(Unit: m)

| | Item | | Piping portion | Allowable value |
|---|---|---|---|---|
| Pipe Lengths | Between outdoor unit and HBC (refrigerant pipework) | | A | 110 or less |
| | Water pipework between indoor units and HBC | | f + g | 60 or less |
| Difference of elevation | Between HBC and outdoor units | Outdoor unit above HBC | H | 50 or less*1 |
| | | Outdoor unit below HBC | H' | 40 or less*2 |
| | Between indoor units and HBC | | h1 | 15(10) or less*3 |
| | Between indoor units | | h2 | 15(10) or less*3 |

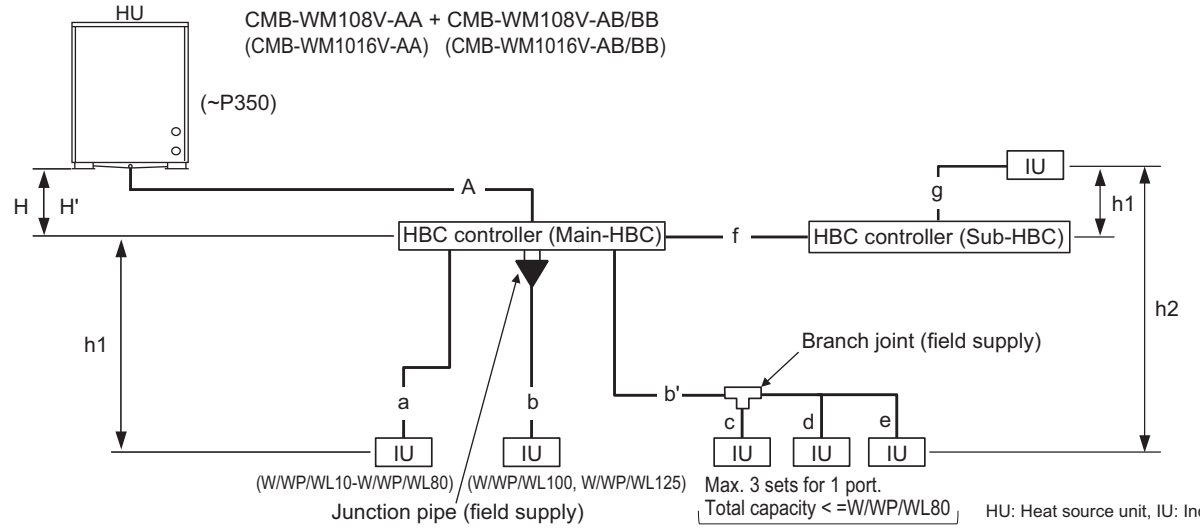
*1. 90 m is available depending on the model and installation conditions. For more detailed information, contact your local distributor.
*2. 60 m is available depending on the model and installation conditions. For more detailed information, contact your local distributor.
*3. Values in ( ) are applied when indoor total capacity exceeds 130% of outdoor unit capacity




(Unit: m)

| | Item | | Piping portion | Allowable value |
|---|---|---|---|---|
| Pipe Lengths | Between outdoor unit and HBC (refrigerant pipework) | | A1 + A2 + A3 | 110 or less |
| | Water pipework between indoor units and HBC | | f + g | 60 or less |
| | Between HBC | | B | 40 or less |
| Difference of elevation | Between HBC and outdoor units | Outdoor unit above HBC | H | 50 or less*1 |
| | | Outdoor unit below HBC | H' | 40 or less*2 |
| | Between indoor units and HBC | | h1 | 15(10) or less*3 |
| | Between indoor units | | h2 | 15(10) or less*3 |
| | Between HBC | | h3 | 15(10) or less*3 |

*1. 90 m is available depending on the model and installation conditions. For more detailed information, contact your local distributor.
*2. 60 m is available depending on the model and installation conditions. For more detailed information, contact your local distributor.
*3. Values in ( ) are applied when indoor total capacity exceeds 130% of outdoor unit capacity



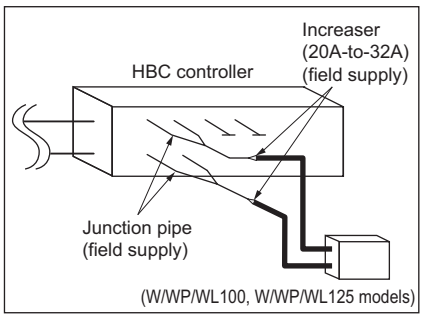
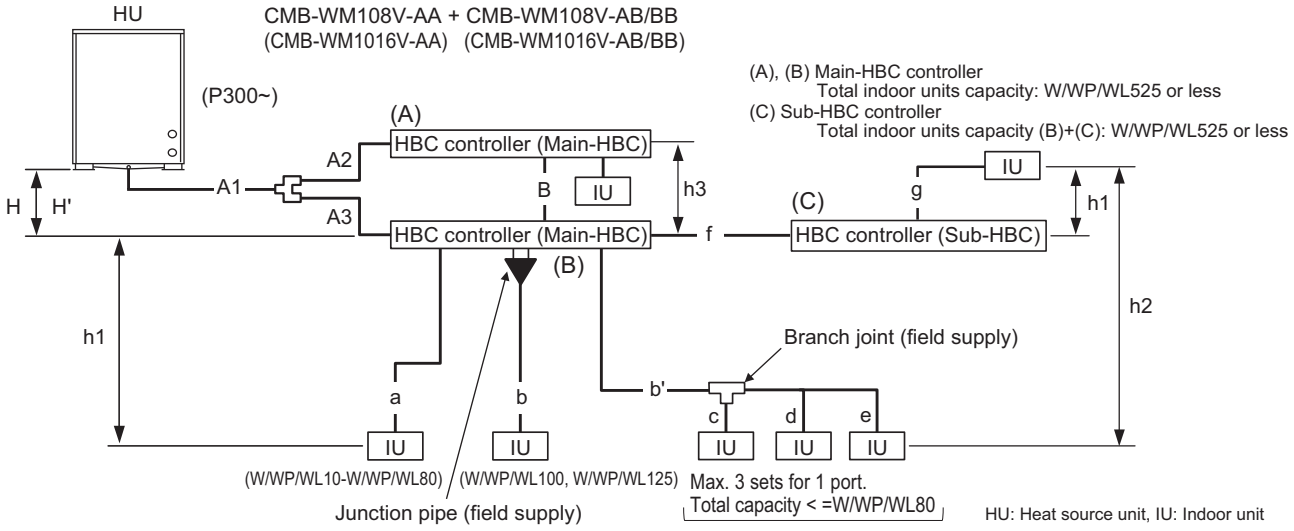




Fig. A

(Unit: m)

| | Item | | Piping portion | Allowable value |
|---|---|---|---|---|
| Pipe Lengths | Between heat source unit and HBC controller (refrigerant pipework) | | A | 110 or less |
| | Water pipework between indoor units and HBC controller | | f + g | 60 or less |
| Difference of elevation | Between HBC and heat source units | Heat source unit above HBC | H | 50 or less |
| | | Heat source unit below HBC | H' | 40 or less |
| | Between indoor units and HBC controller | | h1 | 15(10) or less*1 |
| | Between indoor units | | h2 | 15(10) or less*1 |

*1. Values in ( ) are applied when indoor total capacity exceeds 130% of heat source unit capacity




(Unit: m)

| | Item | | Piping portion | Allowable value |
|---|---|---|---|---|
| Pipe Lengths | Between heat source unit and HBC controller (refrigerant pipework) | | A1 + A2 + A3 | 110 or less |
| | Water pipework between indoor units and HBC controller | | f + g | 60 or less |
| | Between HBC controllers | | B | 40 or less |
| Difference of elevation | Between HBC and heat source units | Heat source unit above HBC | H | 50 or less |
| | | Heat source unit below HBC | H' | 40 or less |
| | Between indoor units and HBC controller | | h1 | 15(10) or less*1 |
| | Between indoor units | | h2 | 15(10) or less*1 |
| | Between HBC controllers | | h3 | 15(10) or less*1 |

*1. Values in ( ) are applied when indoor total capacity exceeds 130% of heat source unit capacity

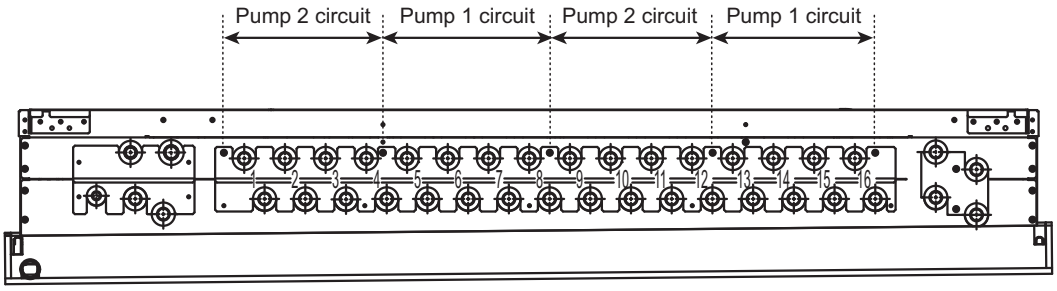



Fig. B

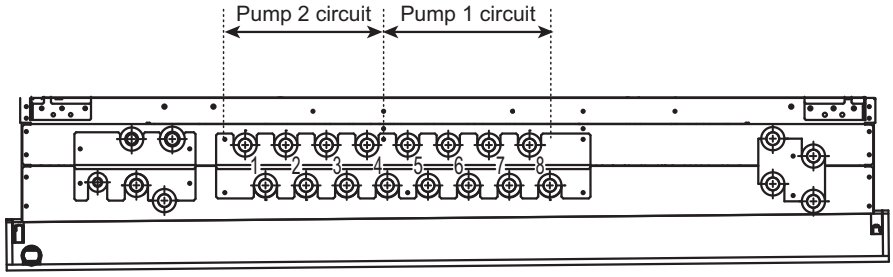



Fig. C

**Note**

1) To connect multiple indoor units to a port
   - Maximum total capacity of connected indoor units: W/WP/WL80
   - Maximum number of connectable indoor units: 3 units
   - Branch joints are field-supplied.
   - All the indoor units that are connected to the same port must be in the same group and perform the Thermo-ON/OFF operation simultaneously.
   - The room temperatures of all the indoor units in the group need to be monitored via the connected remote controller.
   - When connecting a W/WP/WL71 through 125 model indoor unit to an HBC controller, the pipes that connect the unit to the same set of HBC controller ports cannot be branched out to connect additional units.
   - Selection of water piping
     Select the size according to the total capacity of indoor units to be installed downstream.
   - Do not connect multiple indoor units to the same port when operating each of them in different modes (cooling, heating, stop, and thermo-OFF). The indoor units connected to the same port must be set to operate in the same mode. Set them to the same group to make them run/stop in the same mode all together. Alternatively, enable the thermo setting on the remote controller, or set the common thermostat (optional) to run/stop the units in the same mode based on the representative temperature.
   - When multiple indoor units are connected to a single port, install a pressure control valve in the pipe to equalize the pressure of all indoor units.
   - Pressure control valves are required for the “WP-type” and “WL-type without the optional valve kit” indoor units only, and not for the “W-type” and “WL-type with the optional valve kit” indoor units.

2) Connecting W/WP/WL100 or 125 indoor units to an HBC controller
   - When connecting W/WP/WL100 or 125 indoor units to an HBC controller, connect each unit to two sets of two ports on the HBC controller, using two junction pipes (Y-joints). (See Fig. A.)
   - Connect an increaser (20A-to-32A) to the merged side of each junction pipe. (See Fig. A.)
   - When the junction pipes are connected to 16 HBC ports, the branched sides of the junction pipes cannot be connected to the ports "4 and 5," "8 and 9," or "12 and 13" at the same time. (See Fig. B.)
   - When the junction pipes are connected to 8 HBC ports, the branched sides of the junction pipes cannot be connected to the ports "4 and 5" at the same time. (See Fig. C.)
   - When a W/WP/WL100 or a 125 model indoor unit is connected to an HBC controller, the pipes that connect the unit to the same set of HBC ports cannot be branched out to connect additional units.

3) Maximum capacity of indoor units connectable to an HBC controller for obtaining the rated performance
   - An HBC controller has two pumps. Each pump can accommodate the capacity equivalent to W/WP/WL175 indoor units.
   - When connecting the pipe to 16 HBC ports, make sure that the total capacity of the indoor units connected to ports "1 through 4 and 9 through 12" or "5 through 8 and 13 through 16" will not exceed W/WP/WL175 and will be equal as much as possible. (See Fig. B.)
     When connecting the pipe to 8 HBC ports, make sure that the total capacity of the indoor units connected to ports "1 through 4" or "5 through 8" will not exceed W/WP/WL175 and will be equal as much as possible. (See Fig. C.)
     If the total capacity exceeds W/WP/WL175, the performance will be degraded.

**1. Refrigerant and water pipe size**

**(1) Refrigerant pipe between outdoor unit and HBC controller (Part A, A1, A2, and A3)**

1) Use of one HBC controller

| | | HBC CONTROLLER | | |
|---|---|---|---|---|
| | Unit model | Model name | High pressure side | Low pressure side |
| Outdoor Unit side | PURY-(E)P200 | (HBC CONTROLLER) CMB-WM108V-AA CMB-WM1016V-AA | ø15.88 (Brazing) | ø19.05 (Brazing) |
| | PURY-(E)P250 | | ø19.05 (Brazing) | ø22.2 (Brazing) |
| | PURY-(E)P300 | | ø19.05 (Brazing) | ø22.2 (Brazing) |
| | PURY-(E)P350 | | ø19.05 (Brazing) | ø28.58 (Brazing) |
| | PURY-(E)M200 | | ø15.88 (Brazing) | ø19.05 (Brazing) |
| | PURY-(E)M250 | | ø15.88 (Brazing) | ø22.2 (Brazing) |
| | PURY-(E)M300 | | ø15.88 (Brazing) | ø22.2 (Brazing) |
| | PURY-(E)M350 | | ø15.88 (Brazing) | ø28.58 (Brazing) |

2) Use of two HBC controllers

| | | HBC CONTROLLER | | | | |
|---|---|---|---|---|---|---|
| | Unit model | Model name | Between outdoor unit and twining pipe | | Between twining pipe and HBC | |
| | | | High pressure side | Low pressure side | High pressure side | Low pressure side |
| Outdoor Unit side | PURY-(E)P300 | (HBC CONTROLLER) CMB-WM108V-AA CMB-WM1016V-AA*1*2 | ø19.05 (Brazing) | ø22.2 (Brazing) | ø15.88 (Brazing) for each HBC | ø19.05 (Brazing) for each HBC |
| | PURY-(E)P350 | | ø19.05 (Brazing) | ø28.58 (Brazing) | ø15.88 (Brazing) for each HBC | ø19.05 (Brazing) for each HBC |
| | PURY-(E)P400 | | ø22.2 (Brazing) | ø28.58 (Brazing) | ø15.88 (Brazing) for each HBC | ø19.05 (Brazing) for each HBC |
| | PURY-(E)P450 | | ø22.2 (Brazing) | ø28.58 (Brazing) | ø19.05 (Brazing) for each HBC | ø22.2 (Brazing) for each HBC |
| | PURY-(E)P500 | | ø22.2 (Brazing) | ø28.58 (Brazing) | ø19.05 (Brazing) for each HBC | ø22.2 (Brazing) for each HBC |
| | PURY-(E)M300 | | ø15.88 (Brazing) | ø22.2 (Brazing) | ø15.88 (Brazing) for each HBC | ø19.05 (Brazing) for each HBC |
| | PURY-(E)M350 | | ø15.88 (Brazing) | ø28.58 (Brazing) | ø15.88 (Brazing) for each HBC | ø19.05 (Brazing) for each HBC |
| | PURY-(E)M400 | | ø19.05 (Brazing) | ø28.58 (Brazing) | ø15.88 (Brazing) for each HBC | ø19.05 (Brazing) for each HBC |
| | PURY-(E)M450 | | ø19.05 (Brazing) | ø28.58 (Brazing) | ø15.88 (Brazing) for each HBC | ø22.2 (Brazing) for each HBC |
| | PURY-(E)M500 | | ø19.05 (Brazing) | ø28.58 (Brazing) | ø15.88 (Brazing) for each HBC | ø22.2 (Brazing) for each HBC |

*1. PURY-(E)P400 model or larger requires a connection of two main-HBC controllers in parallel.

*2. PURY-(E)M400 model or larger requires a connection of two main-HBC controllers in parallel.

3) Use of one HBC controller

| | | HBC CONTROLLER | | |
|---|---|---|---|---|
| | Unit model | Model name | High pressure side | Low pressure side |
| Heat source Unit side | PQRY-P200 | (HBC CONTROLLER) CMB-WM108V-AA CMB-WM1016V-AA | ø15.88 (Brazing) | ø19.05 (Brazing) |
| | PQRY-P250 | | ø19.05 (Brazing) | ø22.2 (Brazing) |
| | PQRY-P300 | | ø19.05 (Brazing) | ø22.2 (Brazing) |
| | PQRY-P350 | | ø22.2 (Brazing) | ø28.58 (Brazing) |

4) Use of two HBC controllers

| | | HBC CONTROLLER | | | | |
|---|---|---|---|---|---|---|
| | Unit model | Model name | Between outdoor unit and twining pipe | | Between twining pipe and HBC | |
| | | | High pressure side | Low pressure side | High pressure side | Low pressure side |
| Heat source Unit side | PQRY-P300 | (HBC CONTROLLER) CMB-WM108V-AA CMB-WM1016V-AA*1 | ø19.05 (Brazing) | ø22.2 (Brazing) | ø15.88 (Brazing) for each HBC | ø19.05 (Brazing) for each HBC |
| | PQRY-P350 | | ø22.2 (Brazing) | ø28.58 (Brazing) | ø15.88 (Brazing) for each HBC | ø19.05 (Brazing) for each HBC |
| | PQRY-P400 | | ø22.2 (Brazing) | ø28.58 (Brazing) | ø15.88 (Brazing) for each HBC | ø19.05 (Brazing) for each HBC |
| | PQRY-P450 | | ø22.2 (Brazing) | ø28.58 (Brazing) | ø19.05 (Brazing) for each HBC | ø22.2 (Brazing) for each HBC |
| | PQRY-P500 | | ø22.2 (Brazing) | ø28.58 (Brazing) | ø19.05 (Brazing) for each HBC | ø22.2 (Brazing) for each HBC |

*1. PQRY-P400YLM model or larger requires a connection of two main-HBC controllers in parallel.

**(2) Water pipe between HBC controller and indoor units (Sections a, b, c, d, e, and g)**

| Total down-stream indoor unit capacity | Connection size | | Pipe size | |
|---|---|---|---|---|
| | Water inlet | Water outlet | Water out | Water return |
| W/WP/WL10–50 | O.D. 22 mm | O.D. 22 mm | I.D. ≥ 20 mm | I.D. ≥ 20 mm |
| W/WP/WL51–125 | | | I.D. ≥ 30 mm | I.D. ≥ 30 mm |

* For other indoor units, refer to the indoor unit's DATA BOOK.
* The pipe diameter depends on the capacity of indoor units. Refer to the indoor unit's DATA BOOK for details.

**(3) Water pipe between Main-HBC and Sub-HBC controller (Section f)**

| Total down-stream indoor unit capacity | Pipe size between Main-HBC and Sub-HBC controller |
|---|---|
| W/WP/WL10–100 | I.D. ≥ 20.0 mm |
| W/WP/WL101–200 | I.D. ≥ 25.8 mm |
| W/WP/WL201–300 | I.D. ≥ 30.0 mm |
| W/WP/WL301–400 | I.D. ≥ 33.3 mm |
| W/WP/WL401–500 | I.D. ≥ 36.2 mm |
| W/WP/WL501–525 | I.D. ≥ 36.8 mm |

* The diameter of Main-HBC ports is O.D. 22.0 mm.
* The diameter of Sub-HBC ports is O.D. 22.0 mm (-AB model) or 28.0 mm (-BB model).

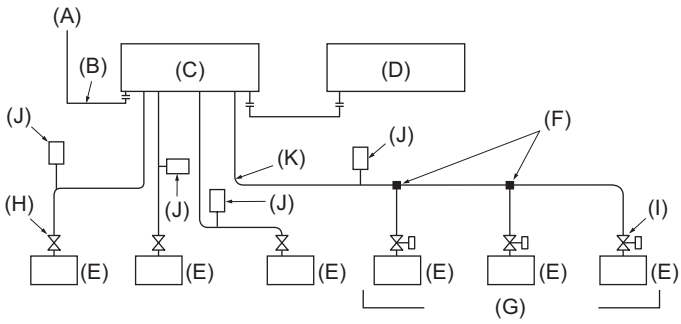
**(4) Refrigerant pipe between HBC controller and HBC controller**

Unit : mm [inch]

| ø15.88 [5/8"] (Brazed connection) |
|---|

## 2. Connecting the HBC controller

### (1) Size of the pipe that fits the standard HBC controller ports



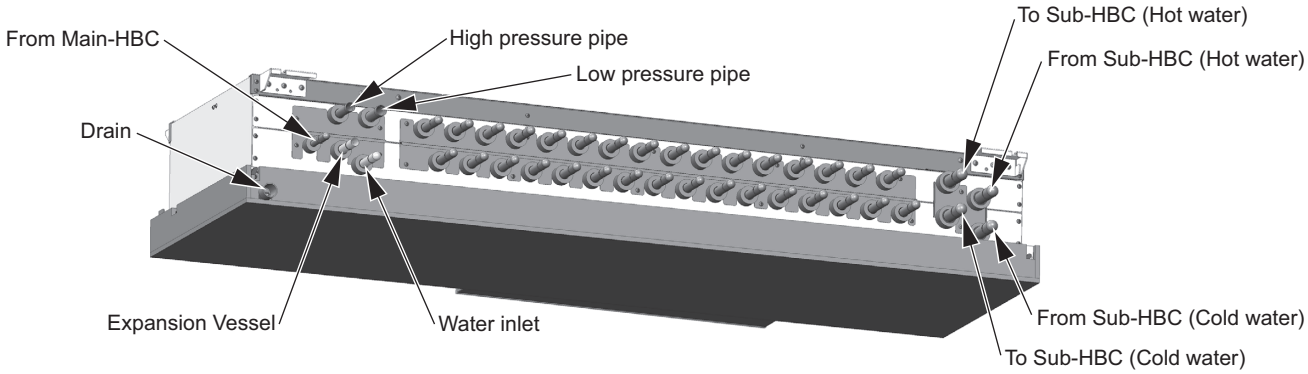

(A) To outdoor unit
(B) End connection (brazing)
(C) Main-HBC controller
(D) Sub-HBC controller
(E) Indoor unit
(F) Branch joint (field supply)
(G) Up to three units for 1 branch hole; total capacity: below 80 (but in same mode, cooling/heating)
(H) Shutoff valve (field supply)
(I) Pressure control valve (field supply)
(J) Auto air vent valve (Highest point on the water pipe for each branch) (field supply)
(K) Water pipework

# III HBC Controller Components

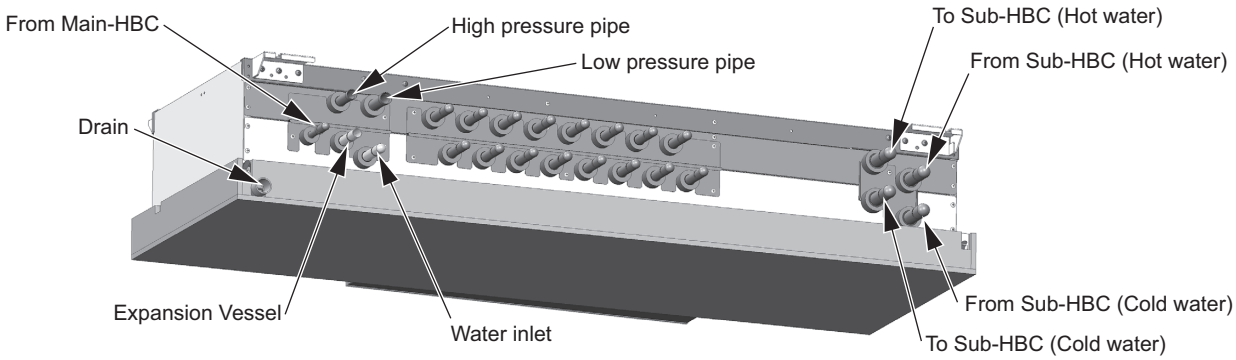
## [1] HBC Controller Components

### 1. Front

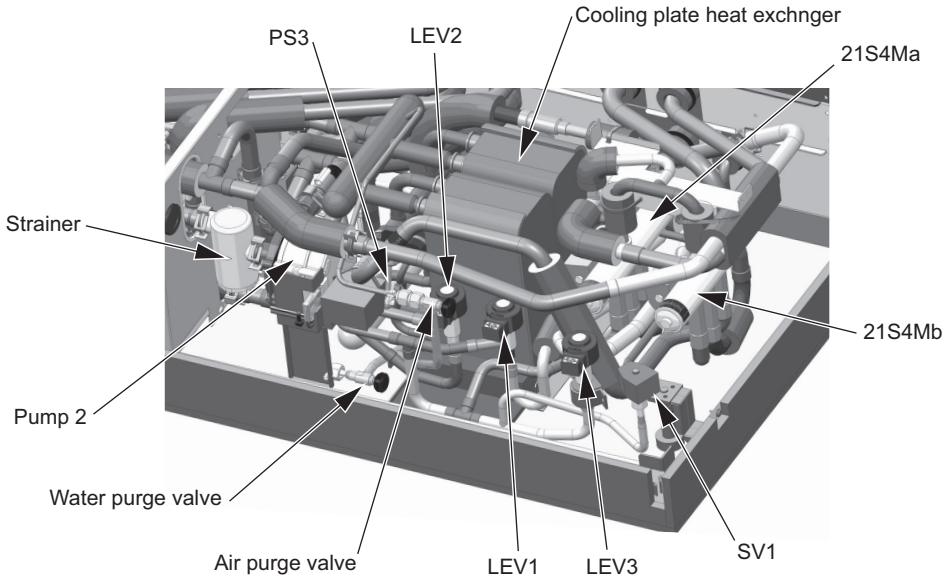
#### (1) CMB-WM1016V-AA



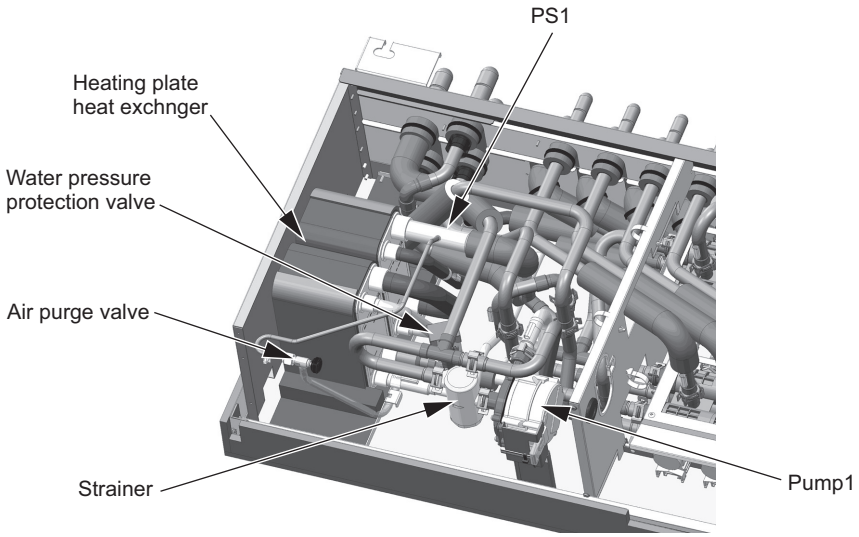

#### (2) CMB-WM108V-AA



**2. Rear right side (cooling)**

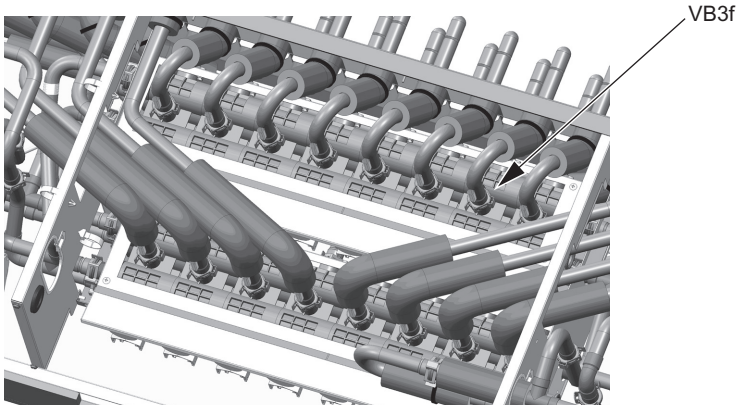



**3. Rear left side (heating)**

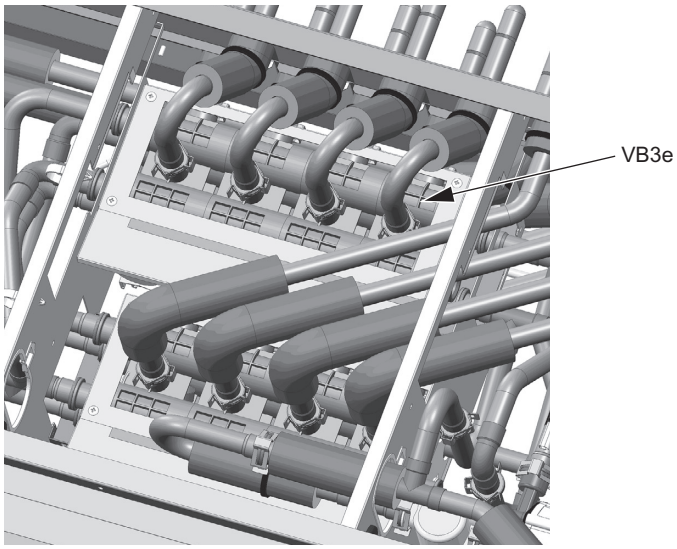


**4. Top side**

**(1) CMB-WM1016V-AA**



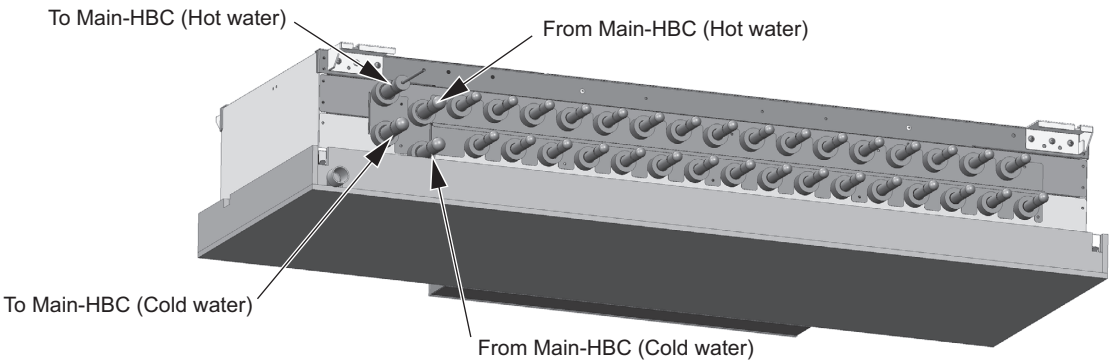

**(2) CMB-WM108V-AA**



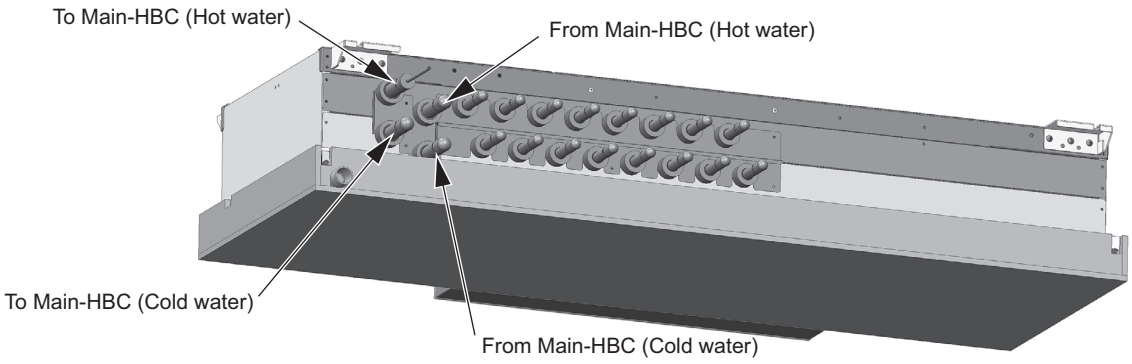
## [2] Sub-HBC Components

### 1. Front

#### (1) CMB-WM1016V-AB

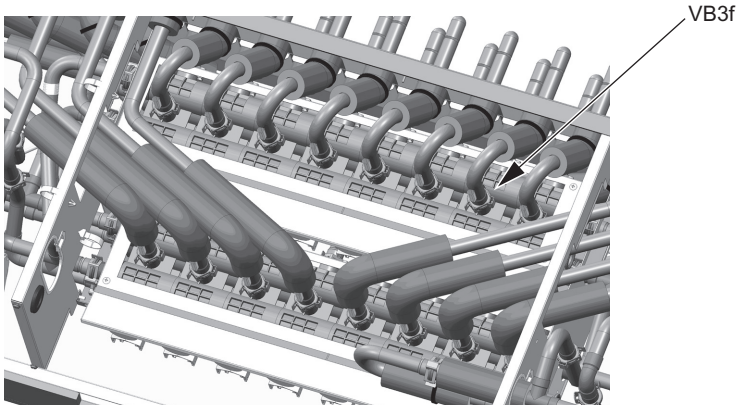



#### (2) CMB-WM108V-AB

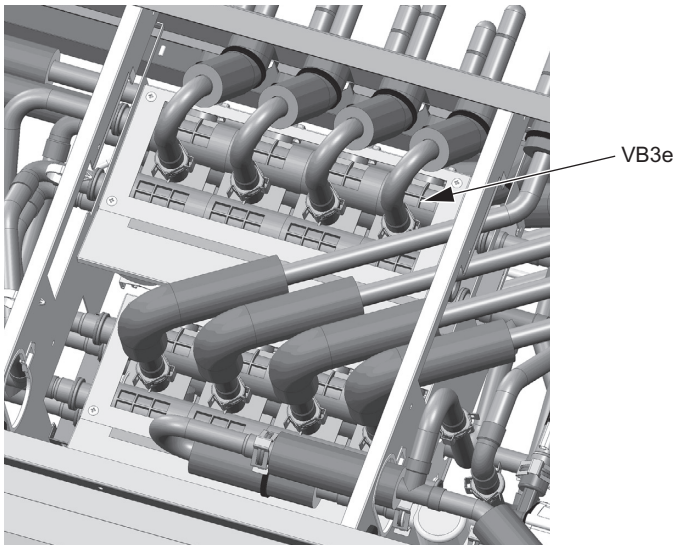


**2. Top side**

**(1) CMB-WM1016V-AB**

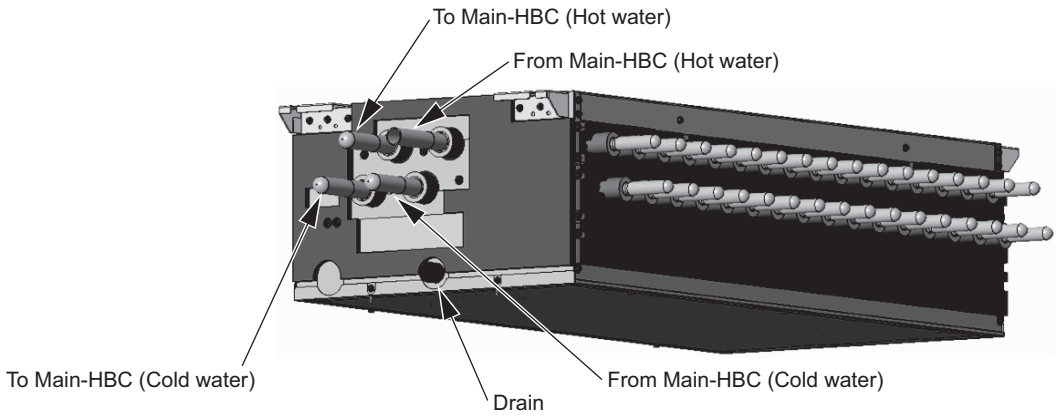



**(2) CMB-WM108V-AB**

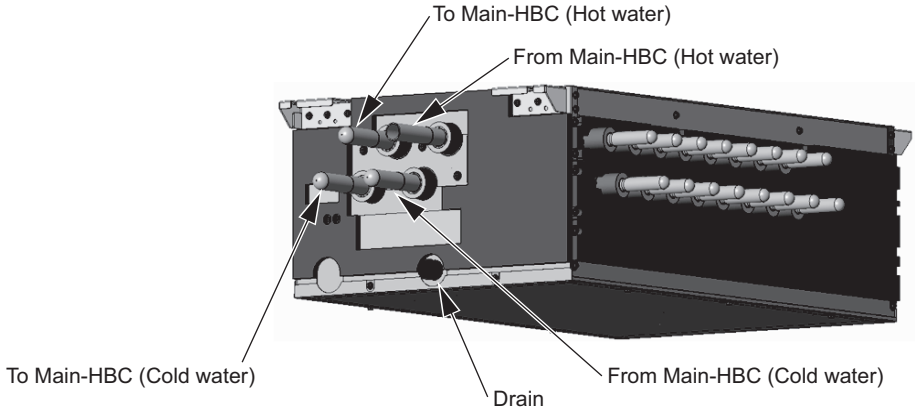


### 3. Front

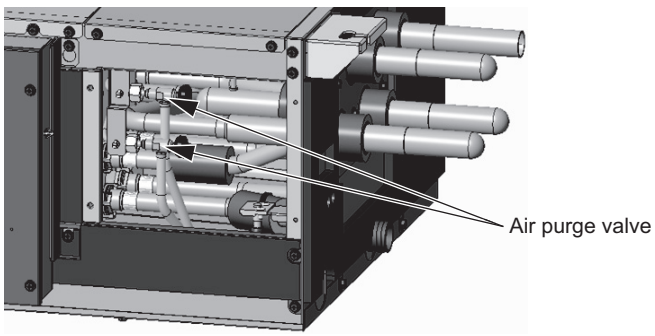
#### (1) CMB-WM1016V-BB




#### (2) CMB-WM108V-BB

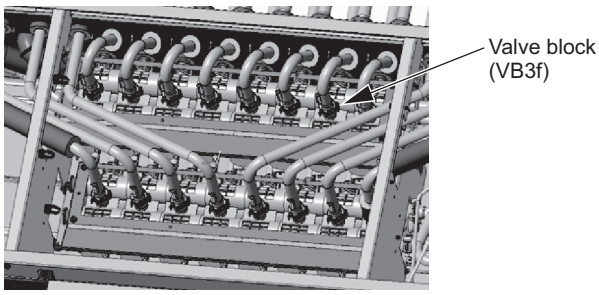



### 4. Rear right side

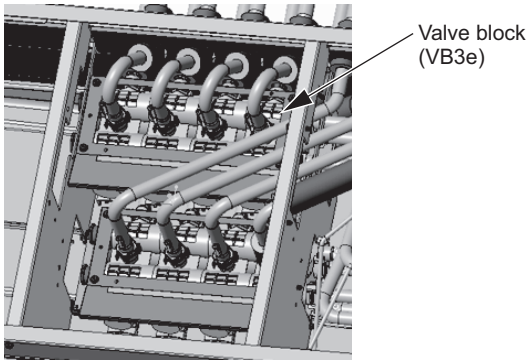


**5. Top side**

**(1) CMB-WM1016V-BB**

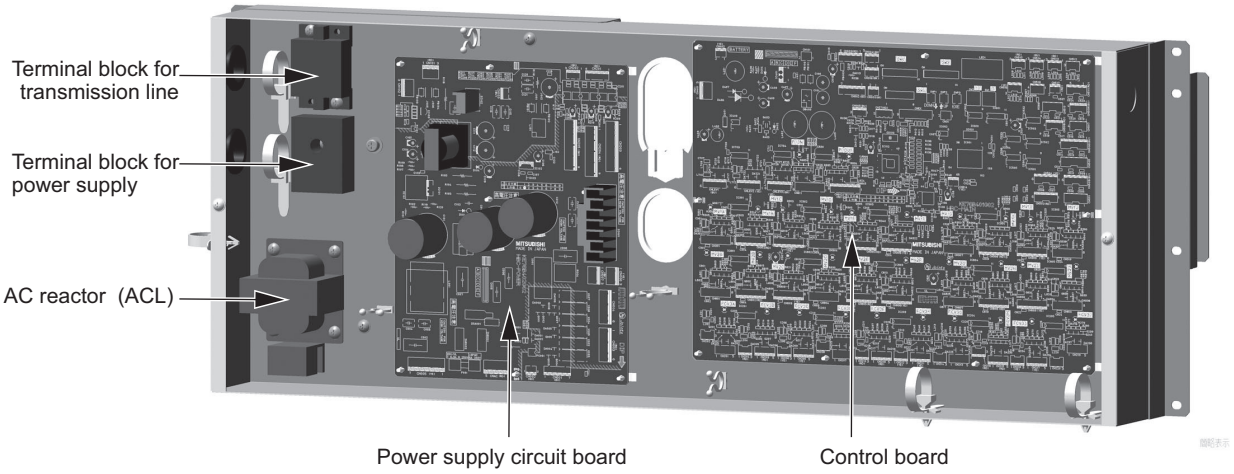



**(2) CMB-WM108V-BB**

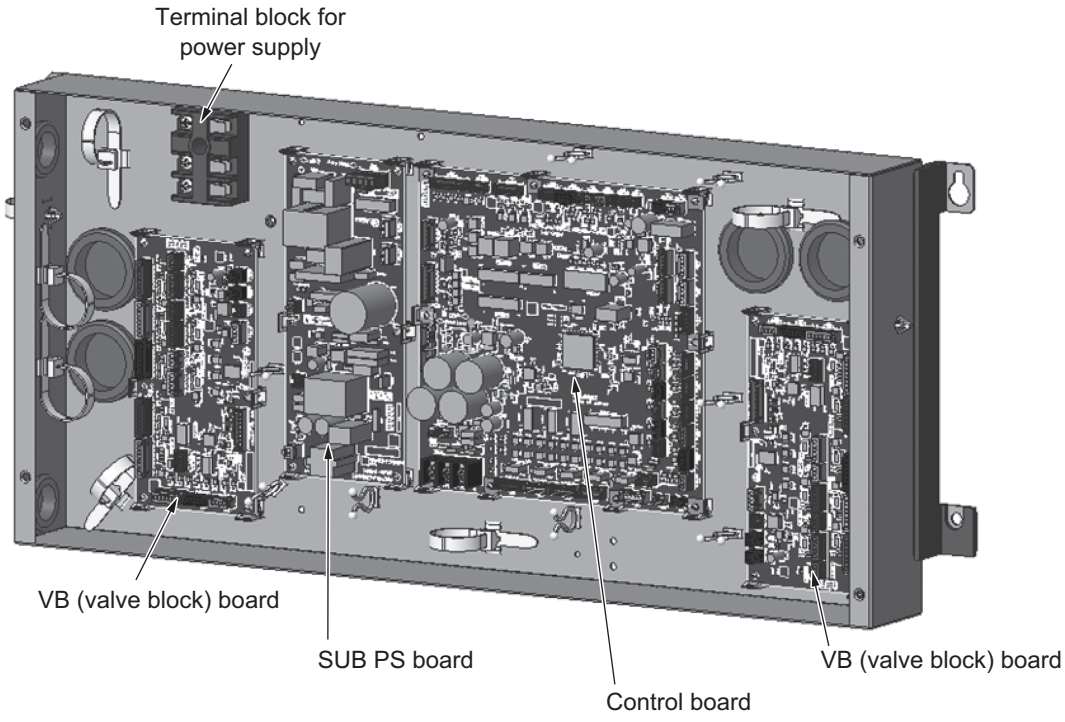


## [3] Control Box of the HBC Controller and Sub-HBC

### 1. CMB-WM108, WM1016V-AA, CMB-WM108, WM1016V-AB



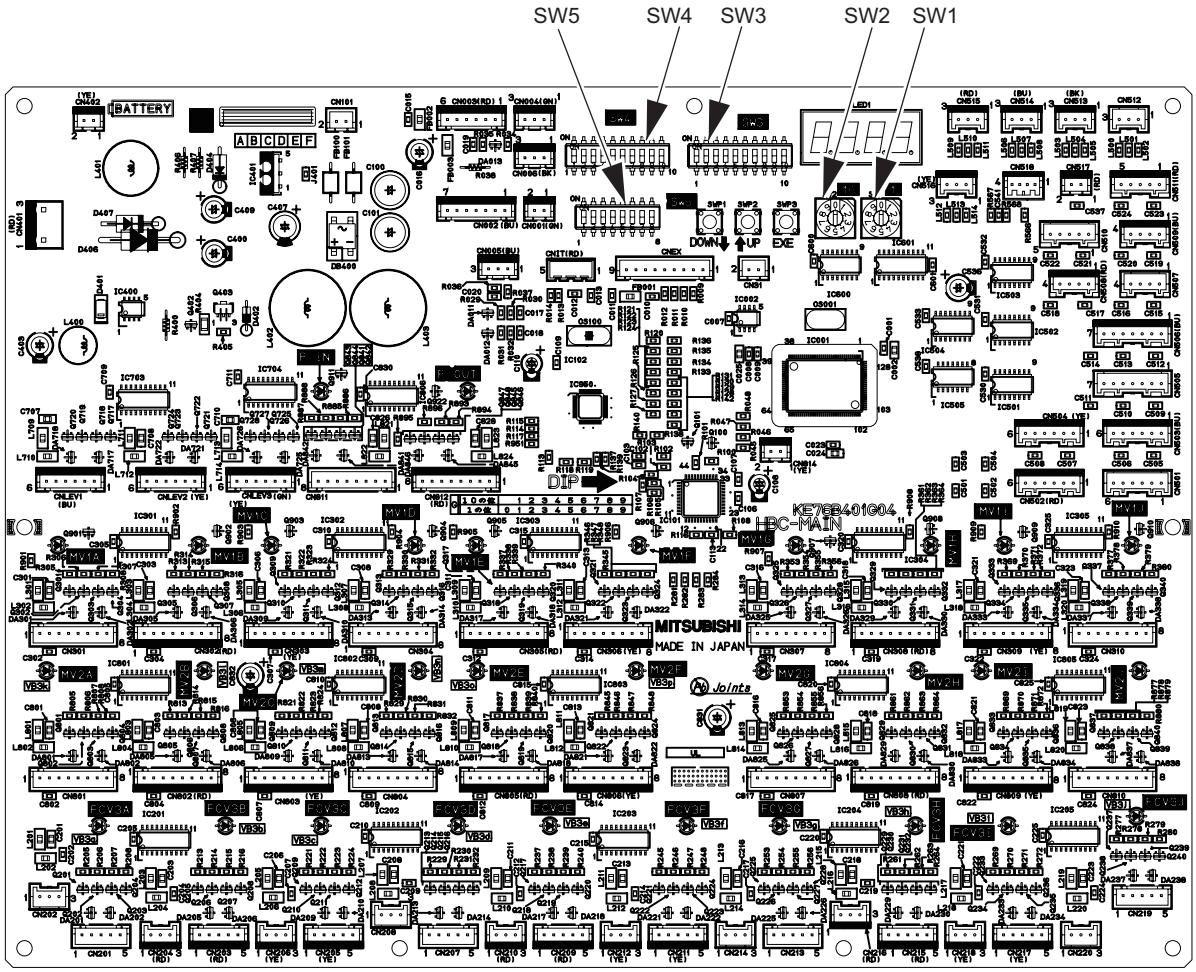

### 2. CMB-WM108V, 1016V-BB



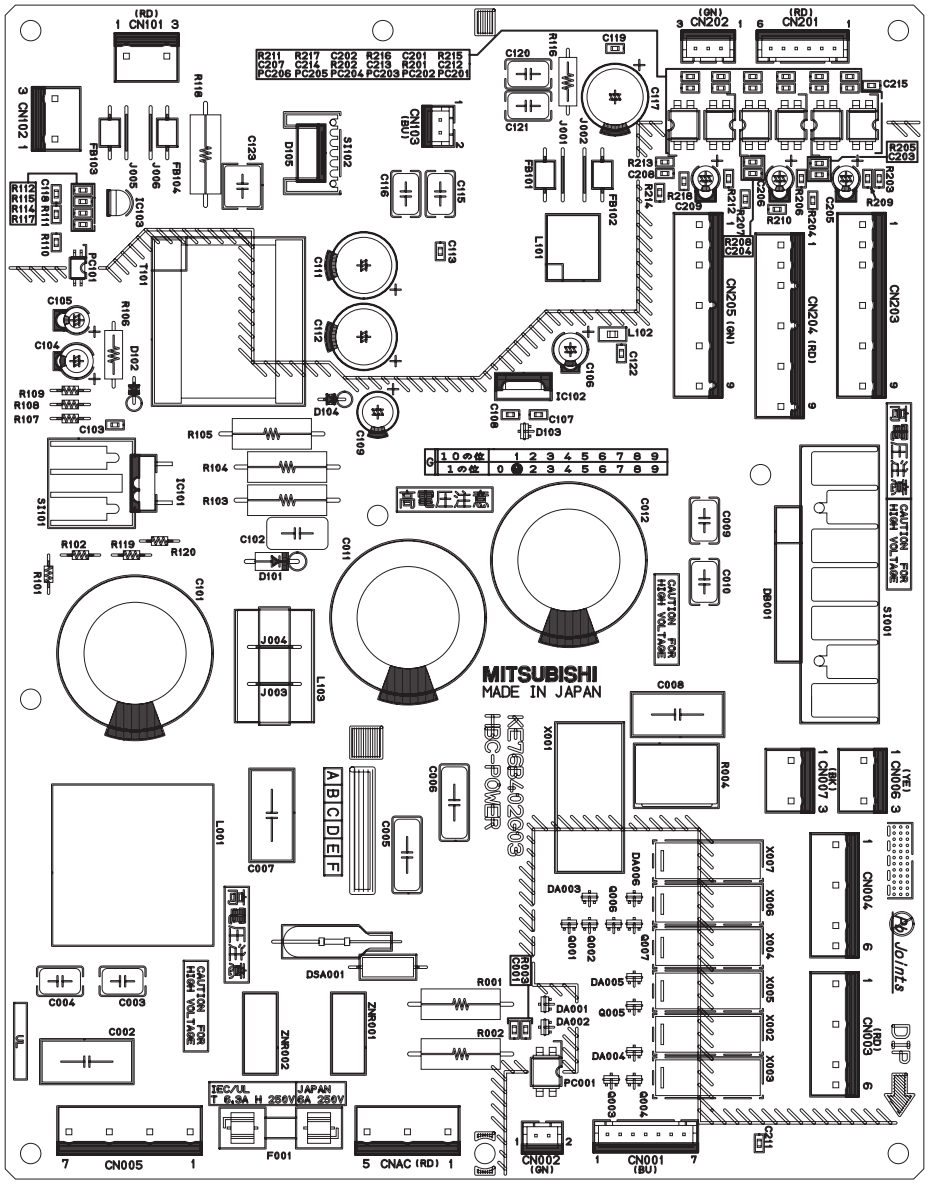
## [4] HBC Controller and Sub-HBC Circuit Board

### 1. CMB-WM108V-AA, CMB-WM1016V-AA, CMB-WM108V-AB, CMB-WM1016V-AB

### (1) Control board

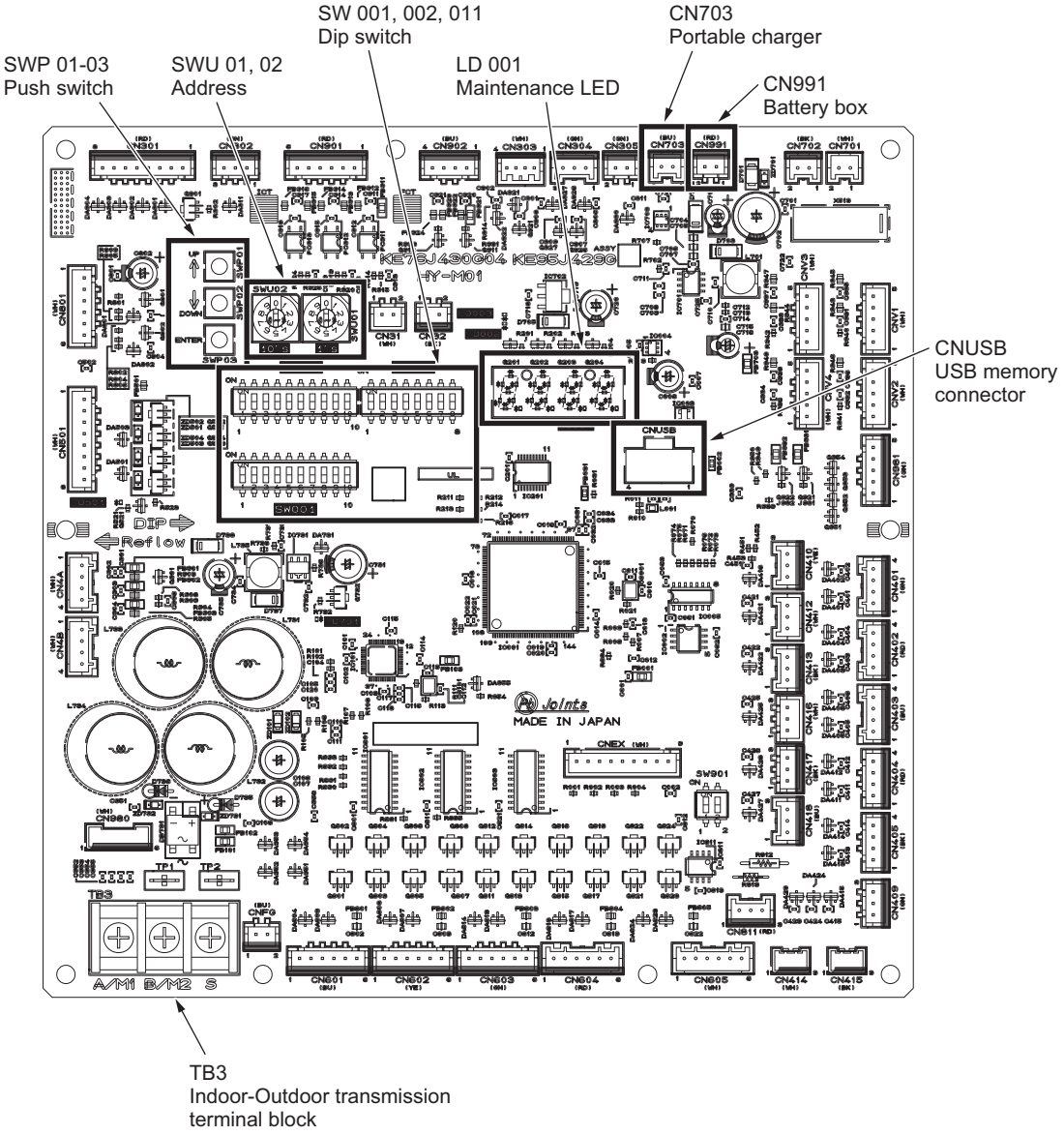


**(2) Power supply circuit board**

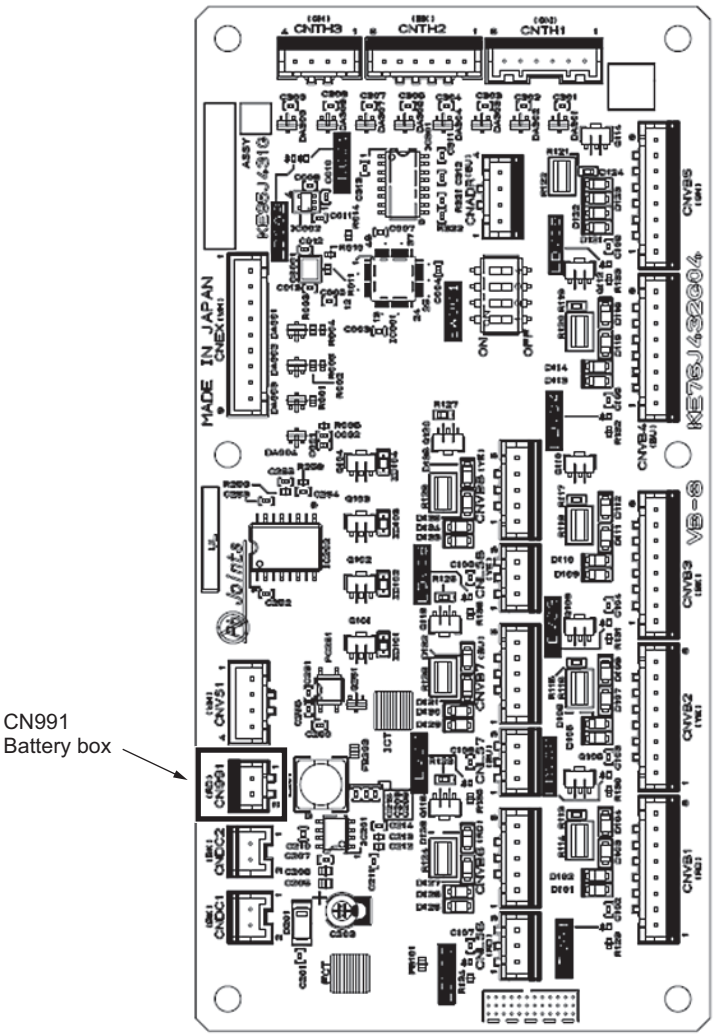


## 2. CMB-WM108V-BB, CMB-WM1016V-BB

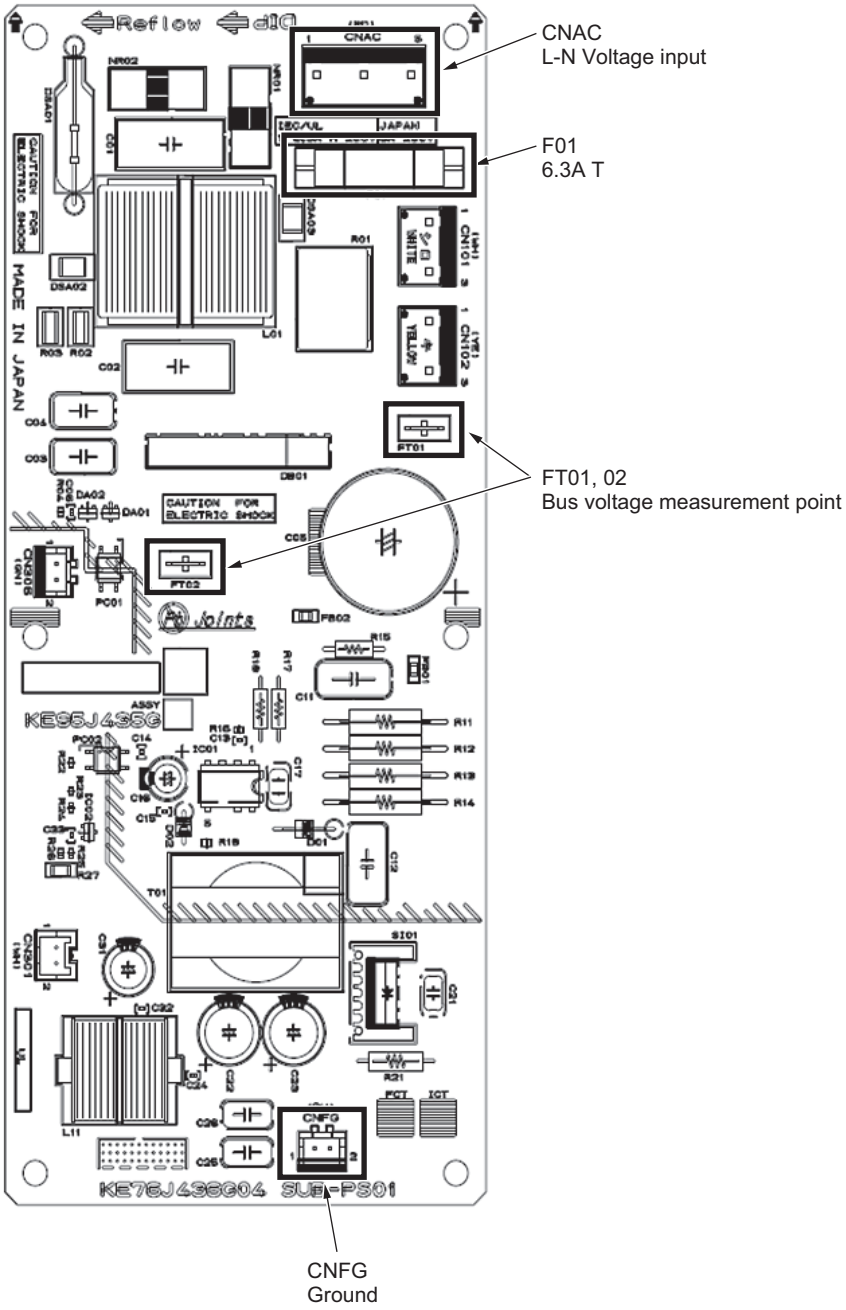
### (1) Control board



**(2) VB board**


CN991
Battery box
CNTH3
CNTH2
CNTH1
MADE IN JAPAN
KE76J432G04
VB-8

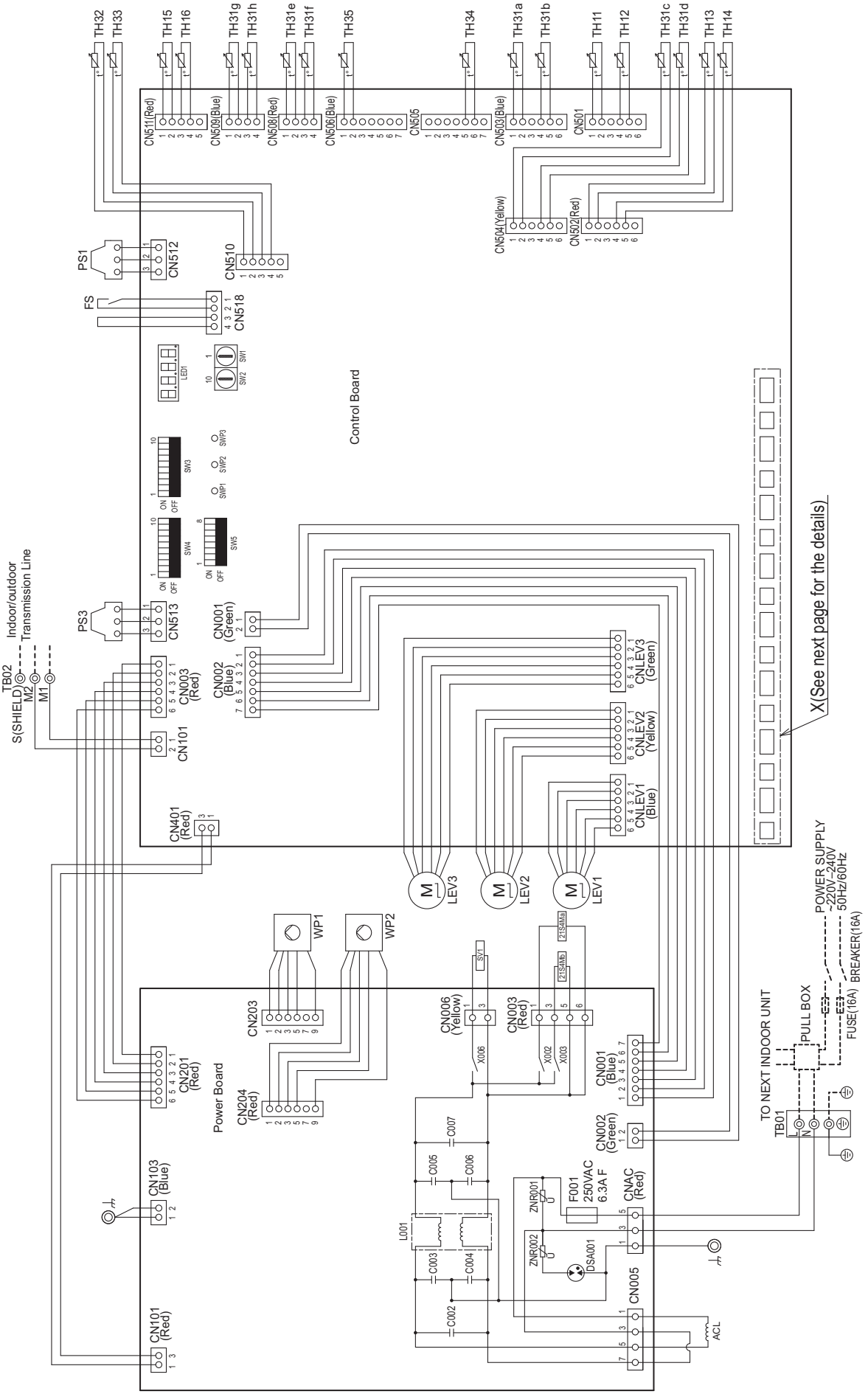
**(3) SUB PS board**



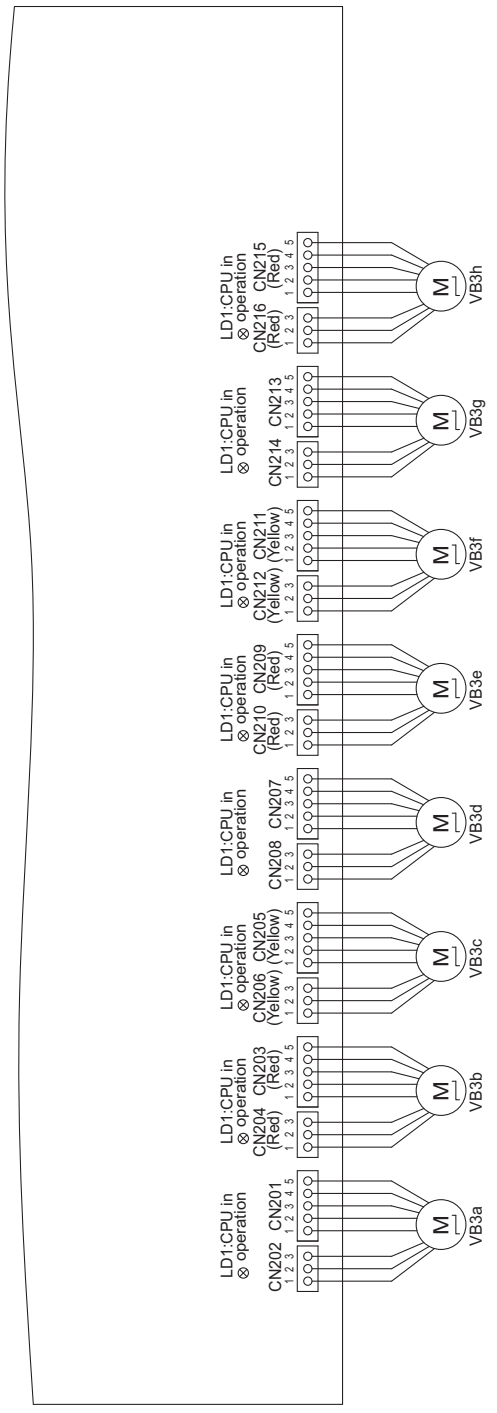
# Ⅳ Electrical Wiring Diagram

## [1] Electrical Wiring Diagram of the HBC Controller and Sub-HBC

### (1) CMB-WM108V-AA



**(2) CMB-WM108V-AA (Detail of X section)**

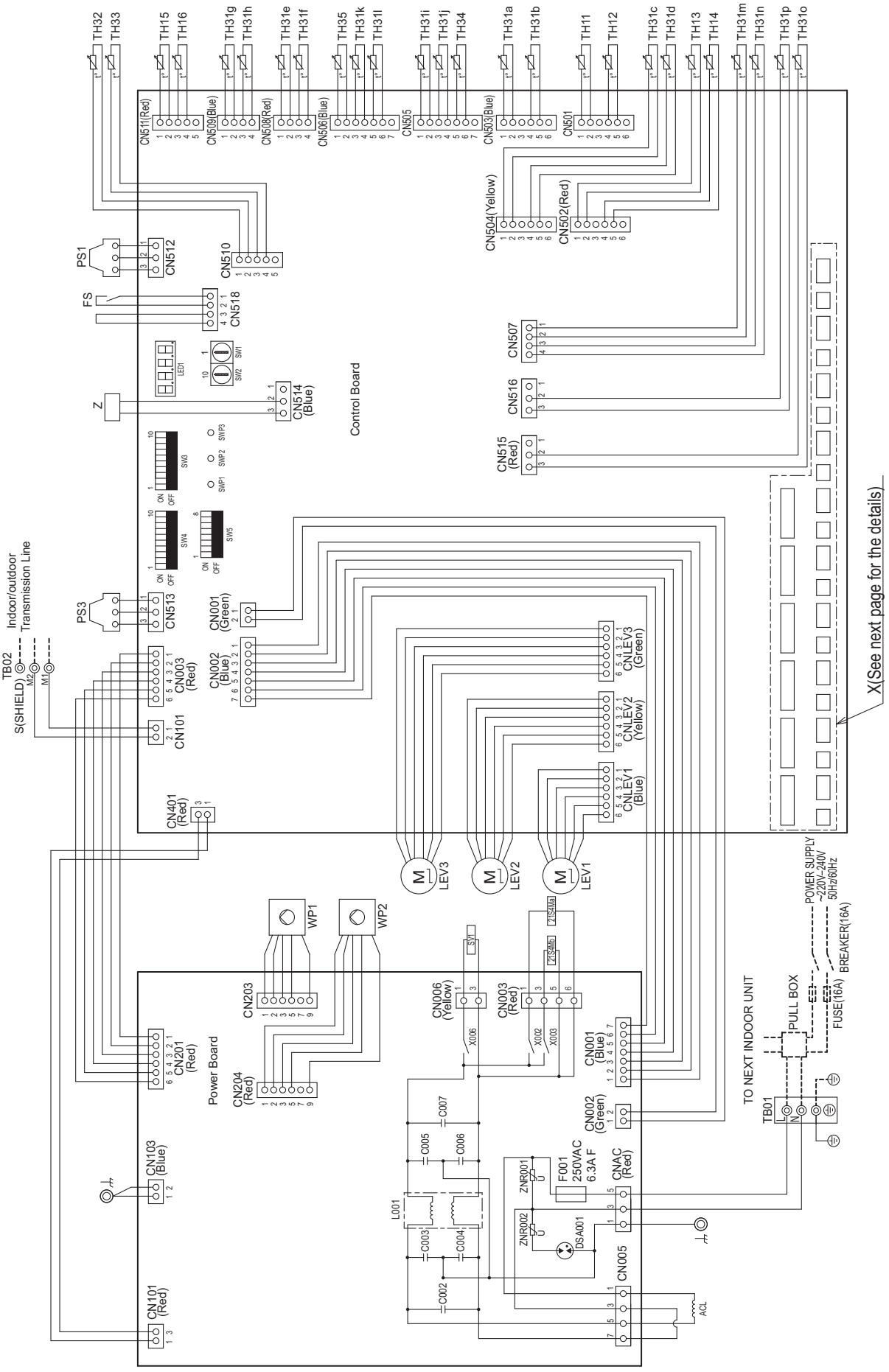



NOTE:1.TB02 is transmission terminal block.
Never connect power line to it.
2.The initial set values of switch on Control Board are as follows.
SW1:0
SW2:0

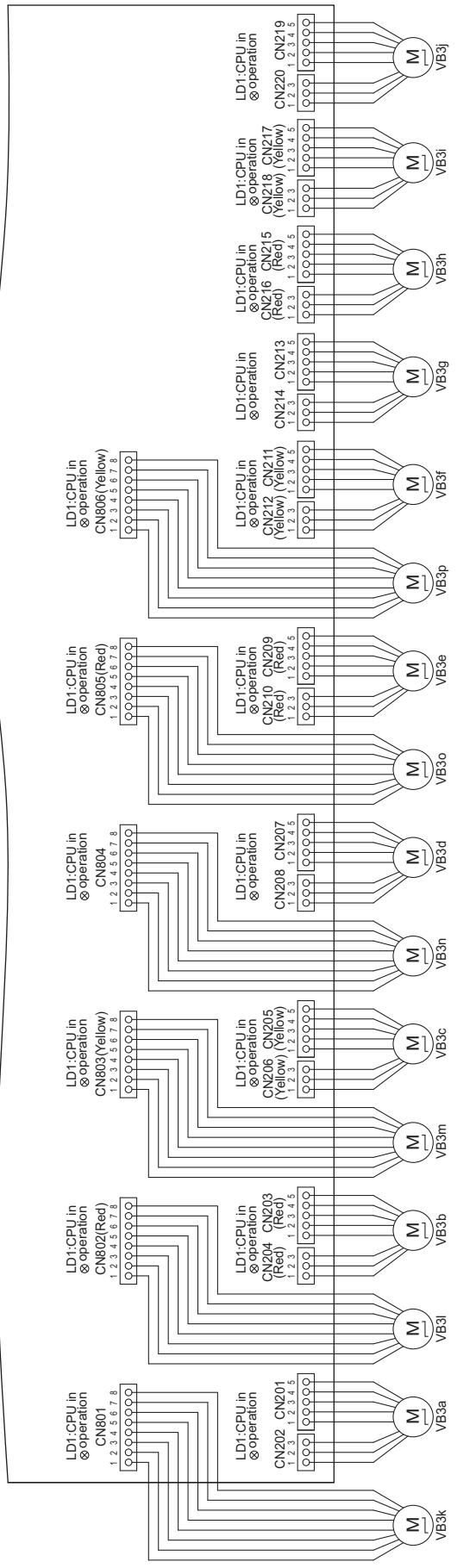
(Symbol explanation)

| Symbol | Name | Symbol | Name |
|---|---|---|---|
| ACL | AC reactor | SV1 | Solenoid valve |
| TH11~16,TH32~35, TH31a~h | Thermister sensor | F001 | Fuse AC250V 6.3A F |
| | | 21S4Ma,21S4Mb | 4 way valve |
| LEV1~3 | Expansion valve | WP1,WP2 | Pump |
| PS1,PS3 | Pressure sensor | VB3a~h | Valve block |
| TB01 | Terminal block (for power source) | FS | Float switch |
| TB02 | Terminal block (for Transmission) | | |

### (3) CMB-WM1016V-AA



**(4) CMB-WM1016V-AA (Detail of X section)**

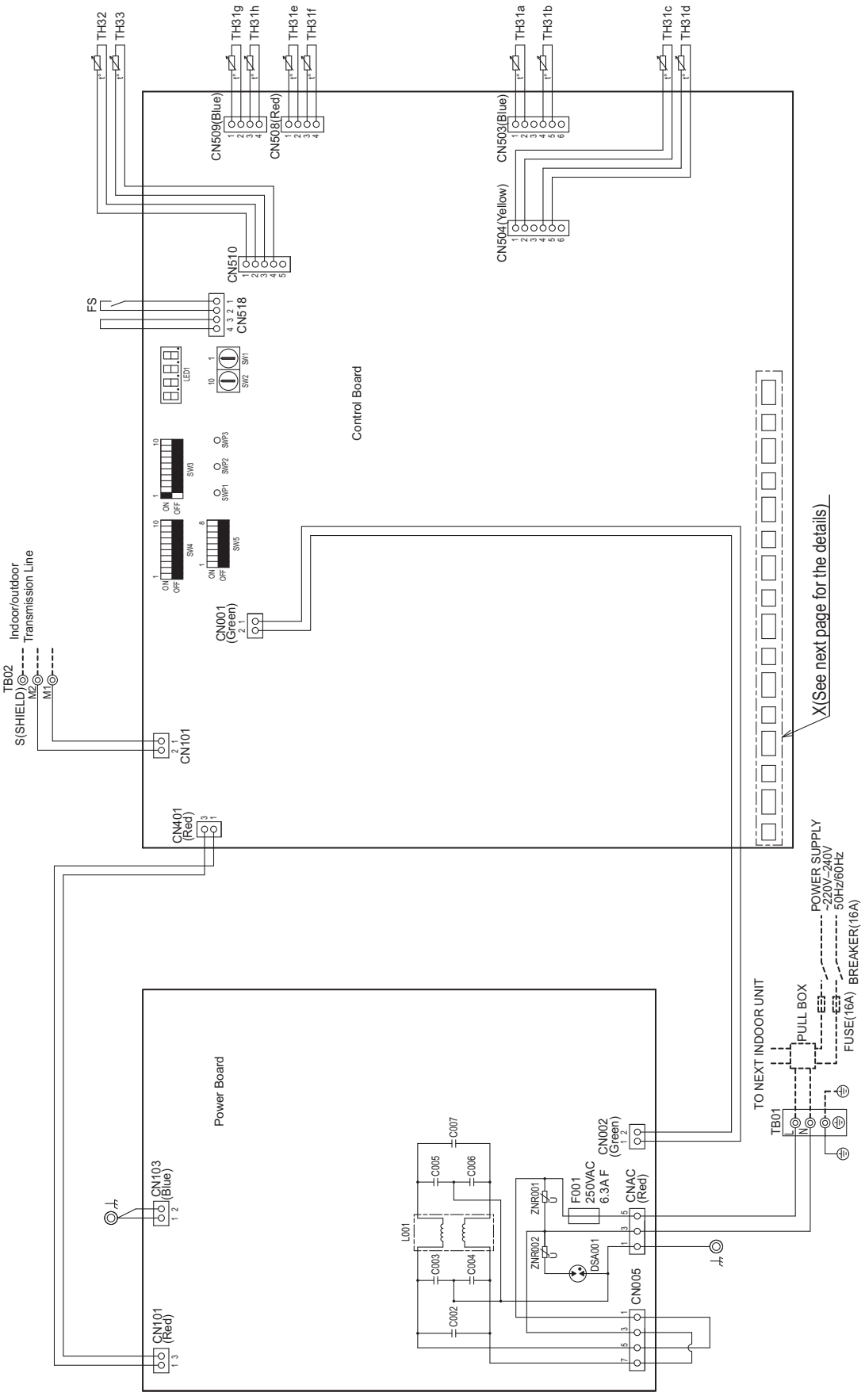



NOTE: 1. TB02 is transmission terminal block.
Never connect power line to it.
2. The initial set values of switch on Control Board are as follows.
SW1:0
SW2:0

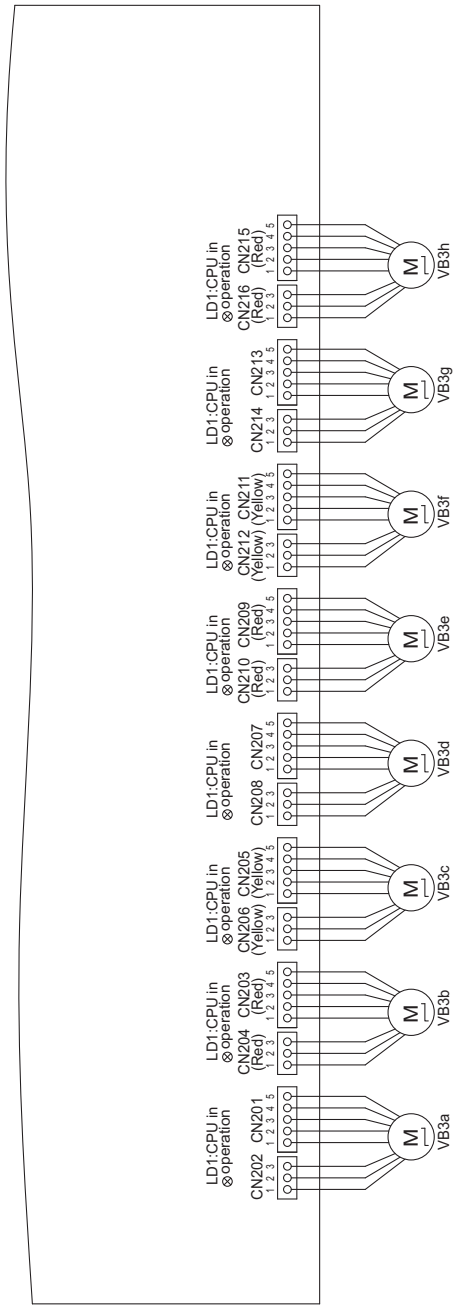
(Symbol explanation)

| Symbol | Name | Symbol | Name |
|---|---|---|---|
| ACL | AC reactor | SV1 | Solenoid valve |
| TH11~16,TH32~35, TH31a~p | Thermister sensor | F001 | Fuse AC250V 6.3A F |
| | | 21S4Ma,21S4Mb | 4 way valve |
| LEV1~3 | Expansion valve | WP1,WP2 | Pump |
| PS1,PS3 | Pressure sensor | VB3a~p | Valve block |
| TB01 | Terminal block (for power source) | FS | Float switch |
| | | Z | Function setting connector |
| TB02 | Terminal block (for Transmission) | | |

**(5) CMB-WM108V-AB**



**(6) CMB-WM108V-AB (Detail of X section)**

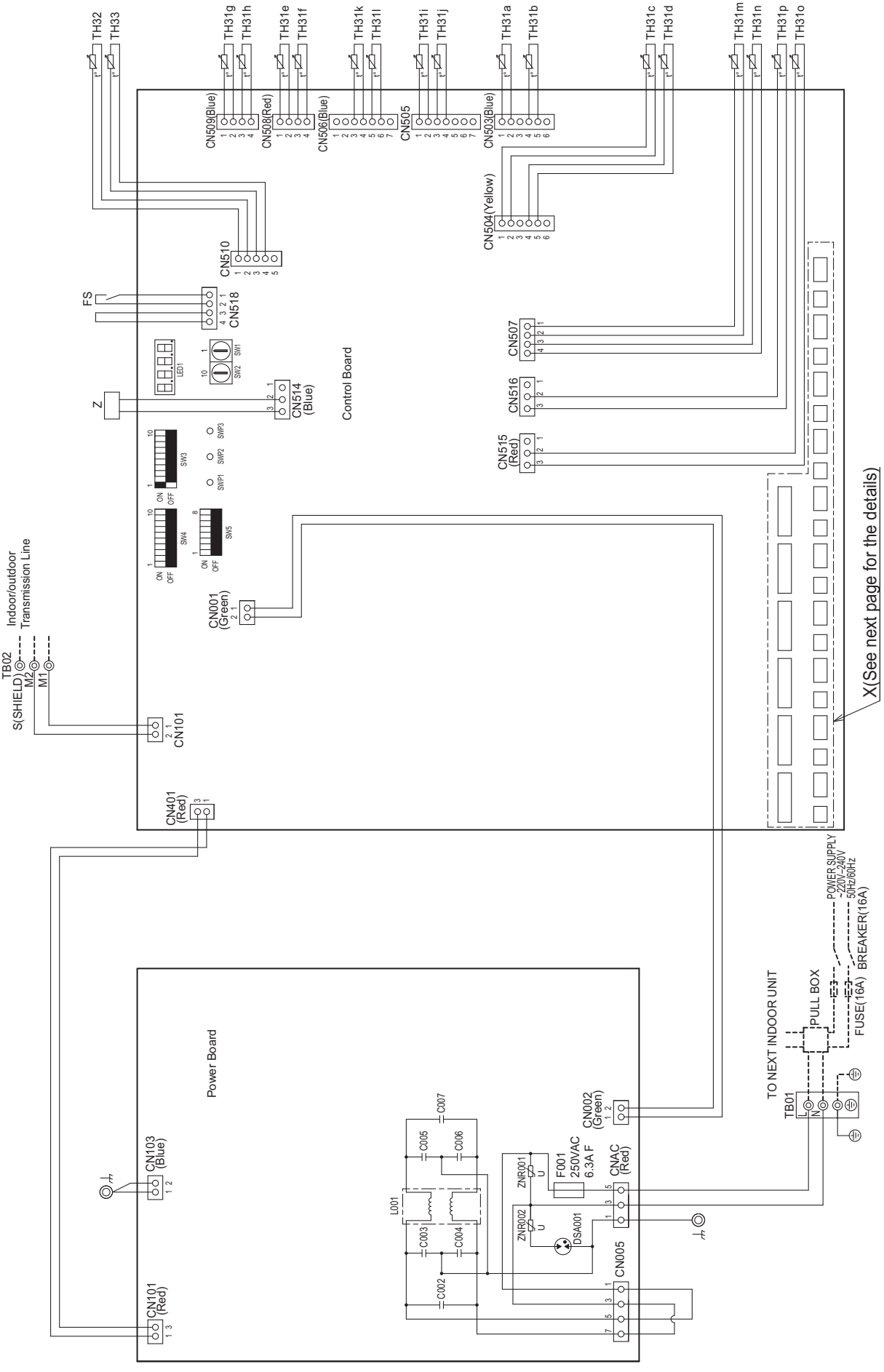



NOTE:1.TB02 is transmission terminal block.
Never connect power line to it.
2.The initial set values of switch on Control Board are as follows.
SW1:0
SW2:0

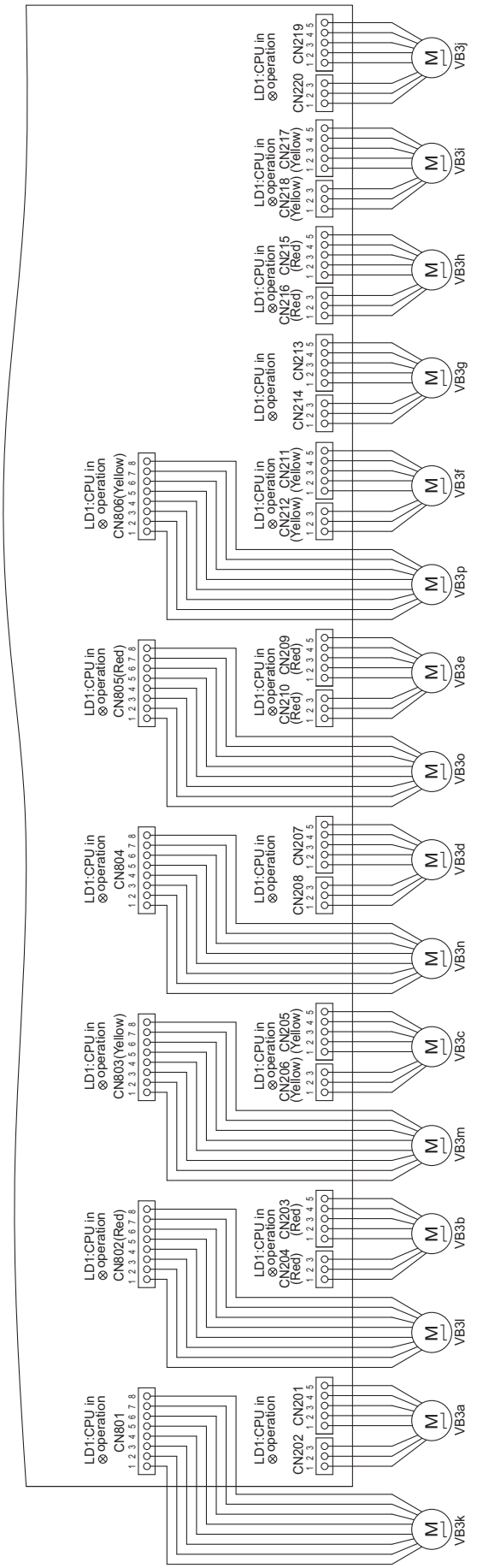
(Symbol explanation)

| Symbol | Name |
|---|---|
| TH31a~h,TH32,TH33 | Thermister sensor |
| VB3a~h | Valve block |
| FS | Float switch |
| TB01 | Terminal block (for power source) |
| TB02 | Terminal block (for Transmission) |
| F001 | Fuse AC250V 6.3A F |

### (7) CMB-WM1016V-AB



### (8) CMB-WM1016V-AB (Detail of X section)

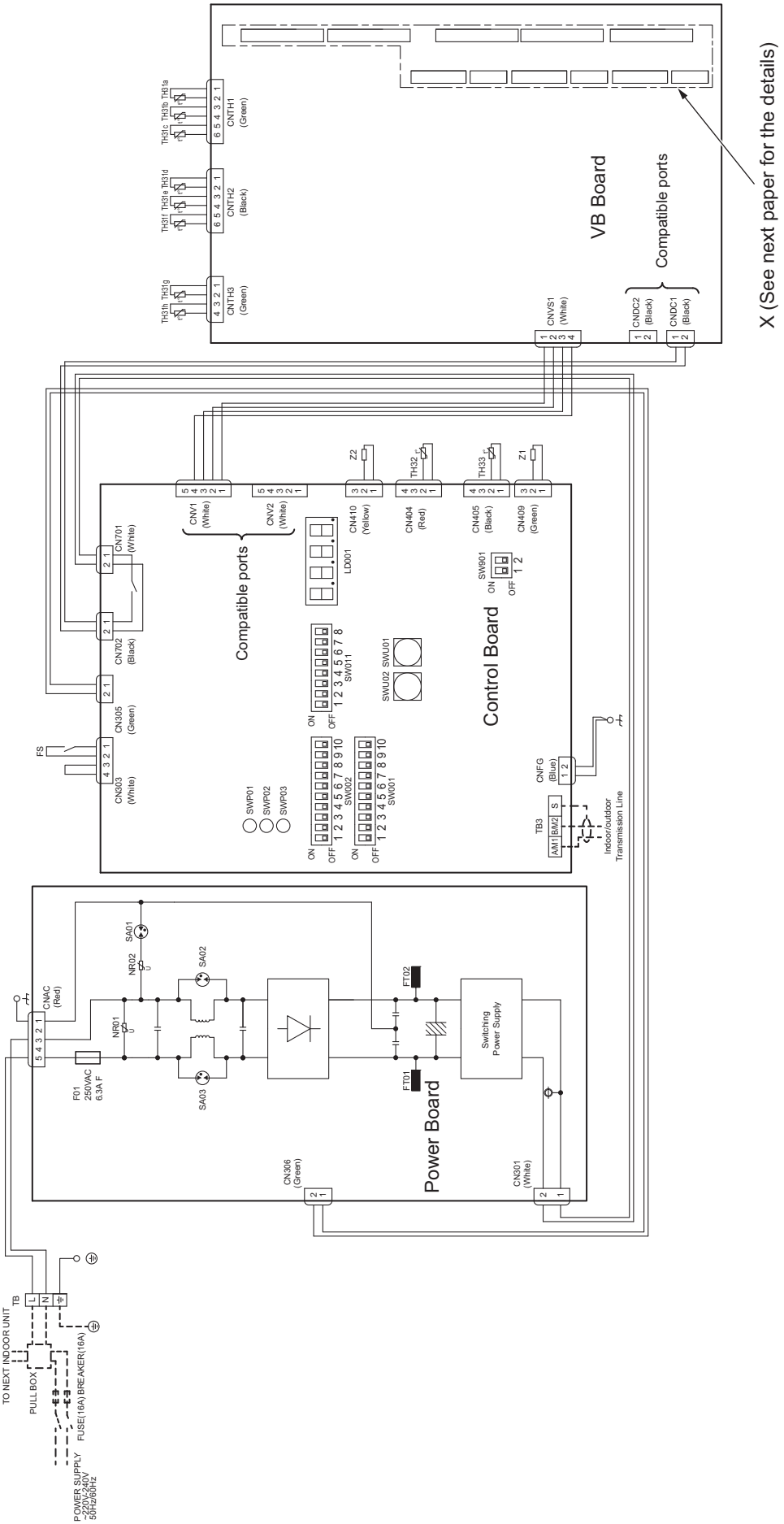



NOTE:1.TB02 is transmission terminal block.
Never connect power line to it.
2.The initial set values of switch on
Control Board are as follows.
SW1:0
SW2:0

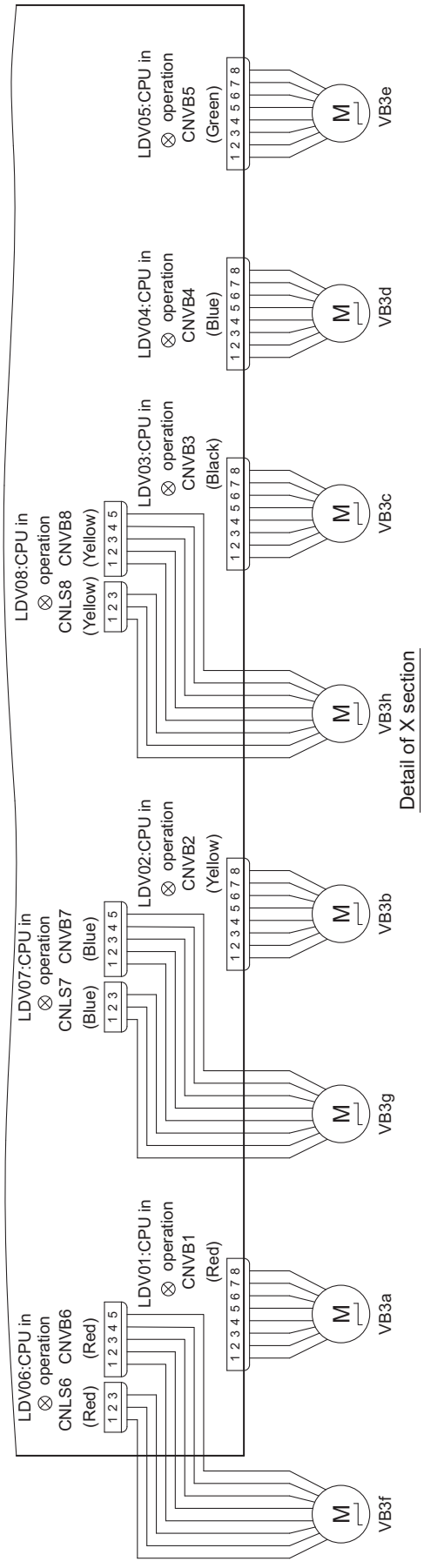
(Symbol explanation)

| Symbol | Name |
|---|---|
| TH31a~p,TH32,TH33 | Thermister sensor |
| VB3a~p | Valve block |
| FS | Float switch |
| Z | Function setting connector |
| TB01 | Terminal block (for power source) |
| TB02 | Terminal block (for Transmission) |
| F001 | Fuse AC250V 6.3A F |

### (9) CMB-WM108V-BB



**(10) CMB-WM108V-BB (Detail of X section)**

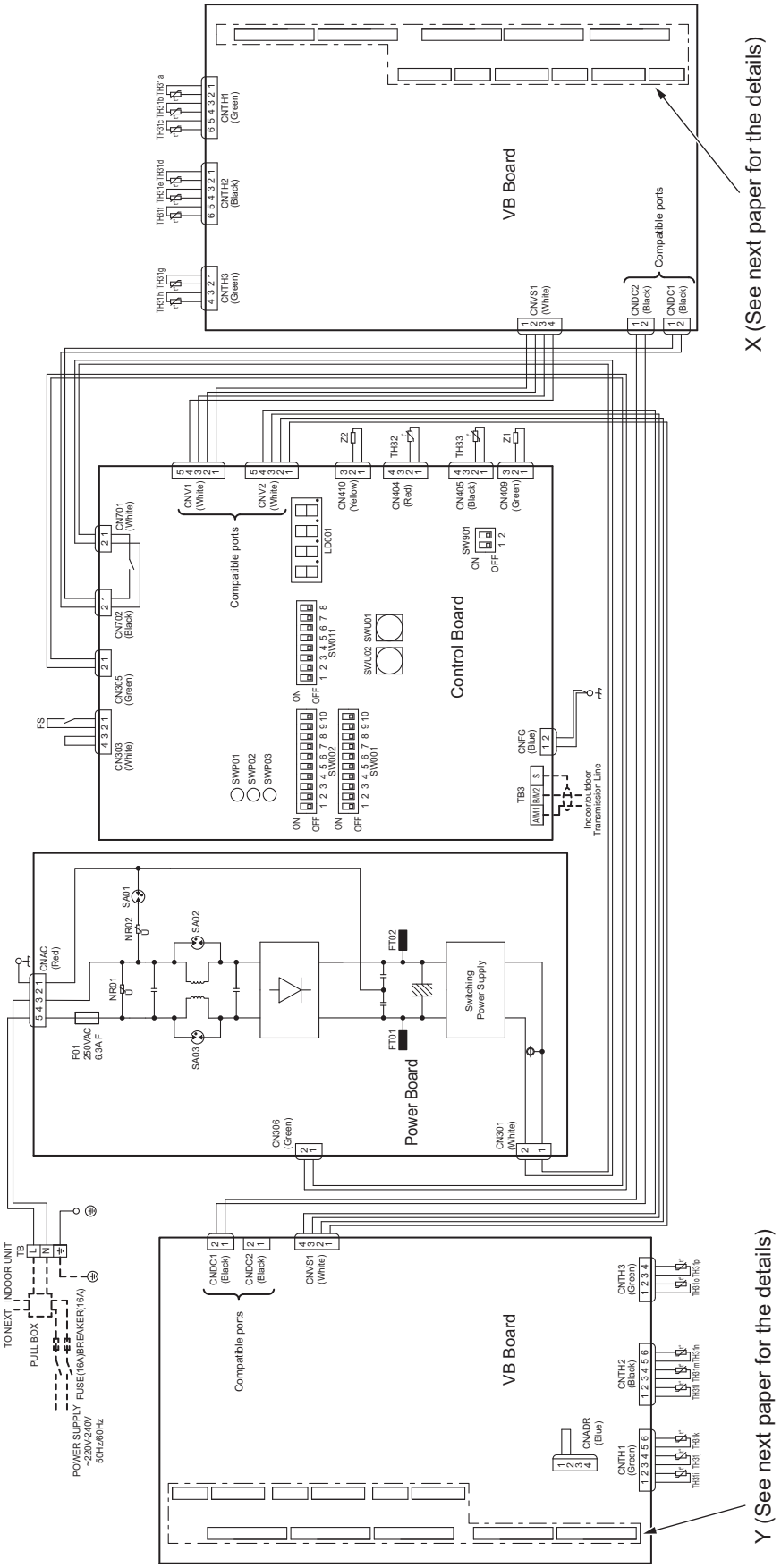



(Symbol explanation)

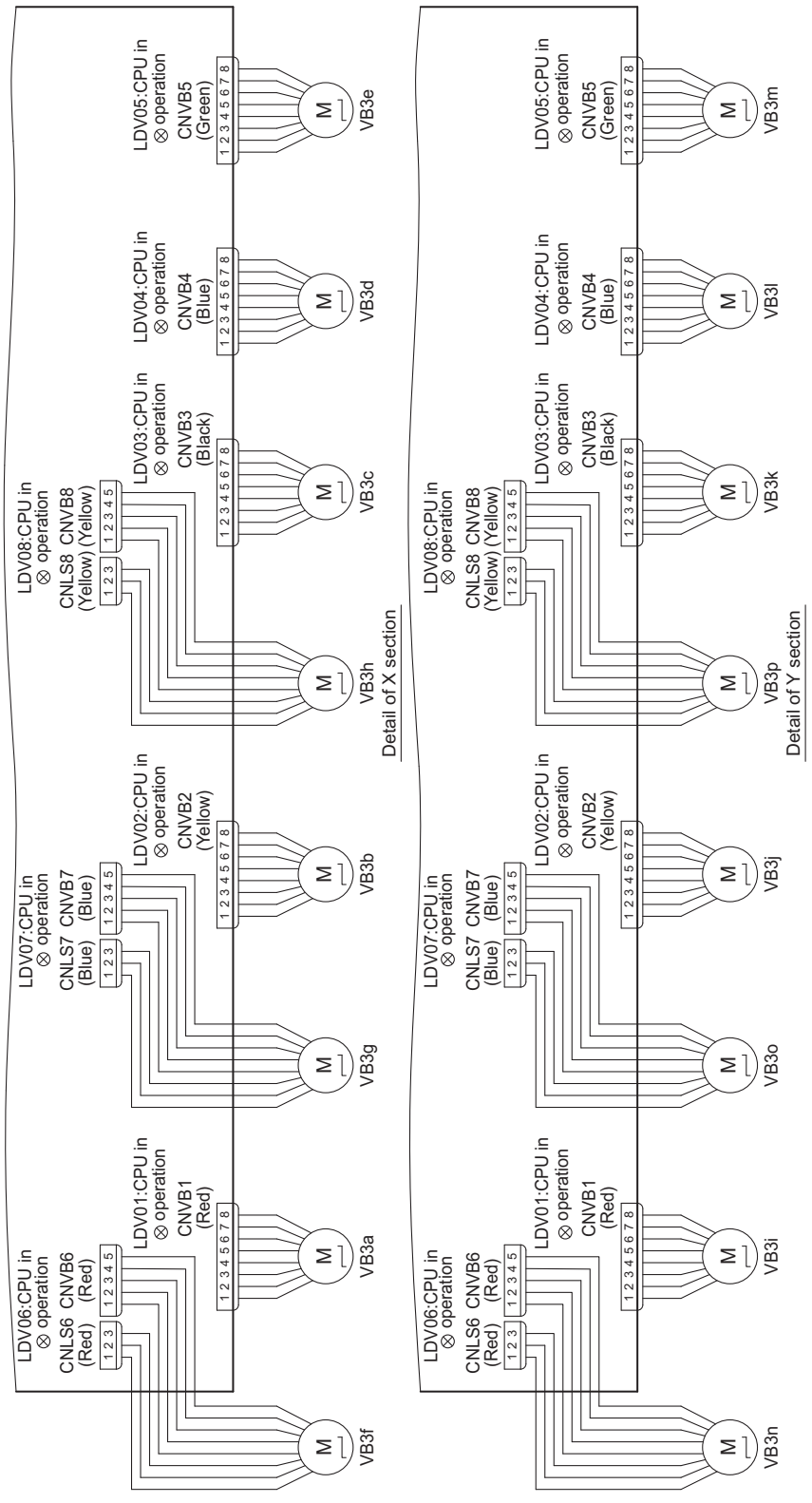
| Symbol | Name |
|---|---|
| FS | Float switch |
| F01 | Fuse AC250V 6.3A F |
| TB | Terminal block (for power source) |
| TB3 | Terminal block (for Transmission) |
| TH31a~h,TH32~33 | Thermister sensor |
| VB3a~h | Valve block |
| Z1,Z2 | Function setting connector |

NOTE:1. TB3 is transmission terminal block.
Never connect power line to it.
2. The initial set values of switch on Control Board are as follows.
SWU01:0
SWU02:0
3. The wirings to TB and TB3 shown in dotted line are field work.

**(11) CMB-WM1016V-BB**



**(12) CMB-WM1016V-BB (Detail of X, Y section)**

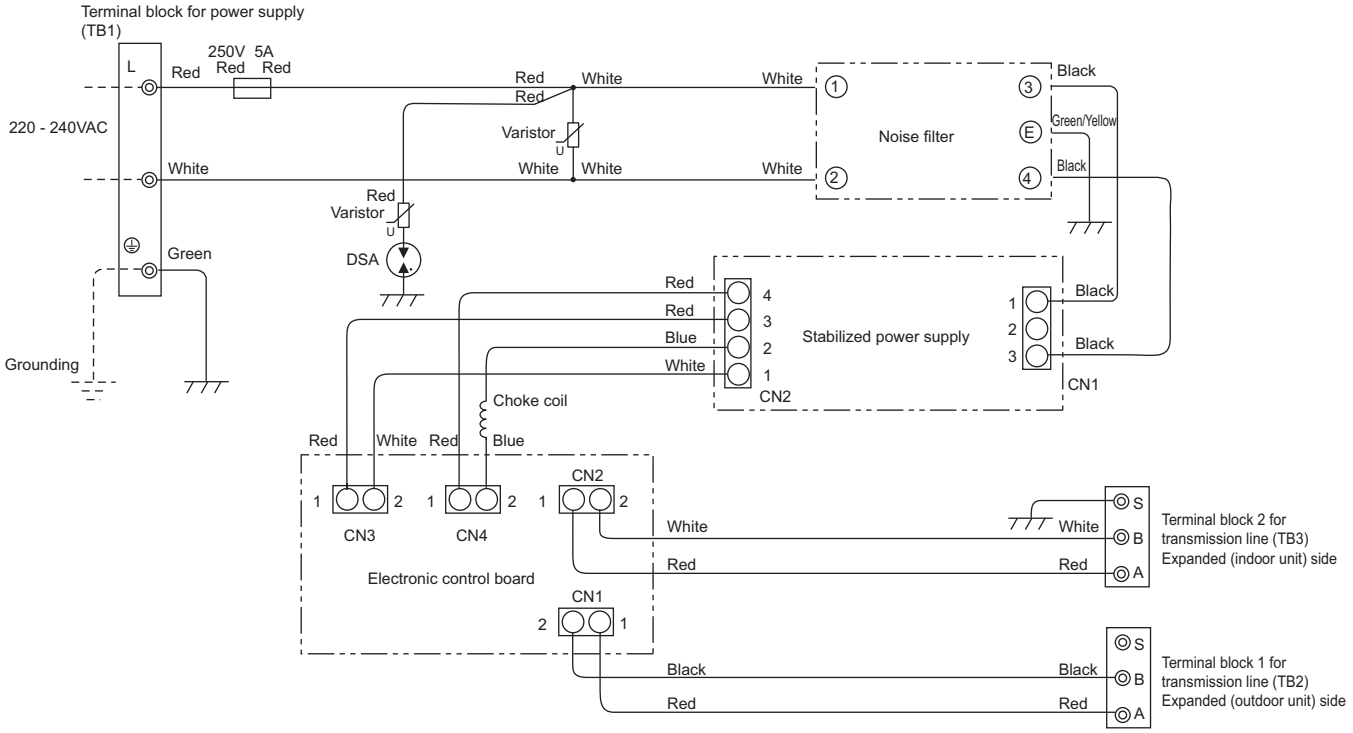



(Symbol explanation)

| Symbol | Name |
|---|---|
| FS | Float switch |
| F01 | Fuse AC250V 6.3A F |
| TB | Terminal block (for power source) |
| TB3 | Terminal block (for Transmission) |
| TH31a~p,TH32~33 | Thermister sensor |
| VB3a~p | Valve block |
| Z1,Z2 | Function setting connector |

NOTE: 1. TB3 is transmission terminal block.
Never connect power line to it.
2. The initial set values of switch on Control Board are as follows.
SWU01:0
SWU02:0
3. The wirings to TB and TB3 shown in dotted line are field work.

## [2] Electrical Wiring Diagram of Transmission Booster

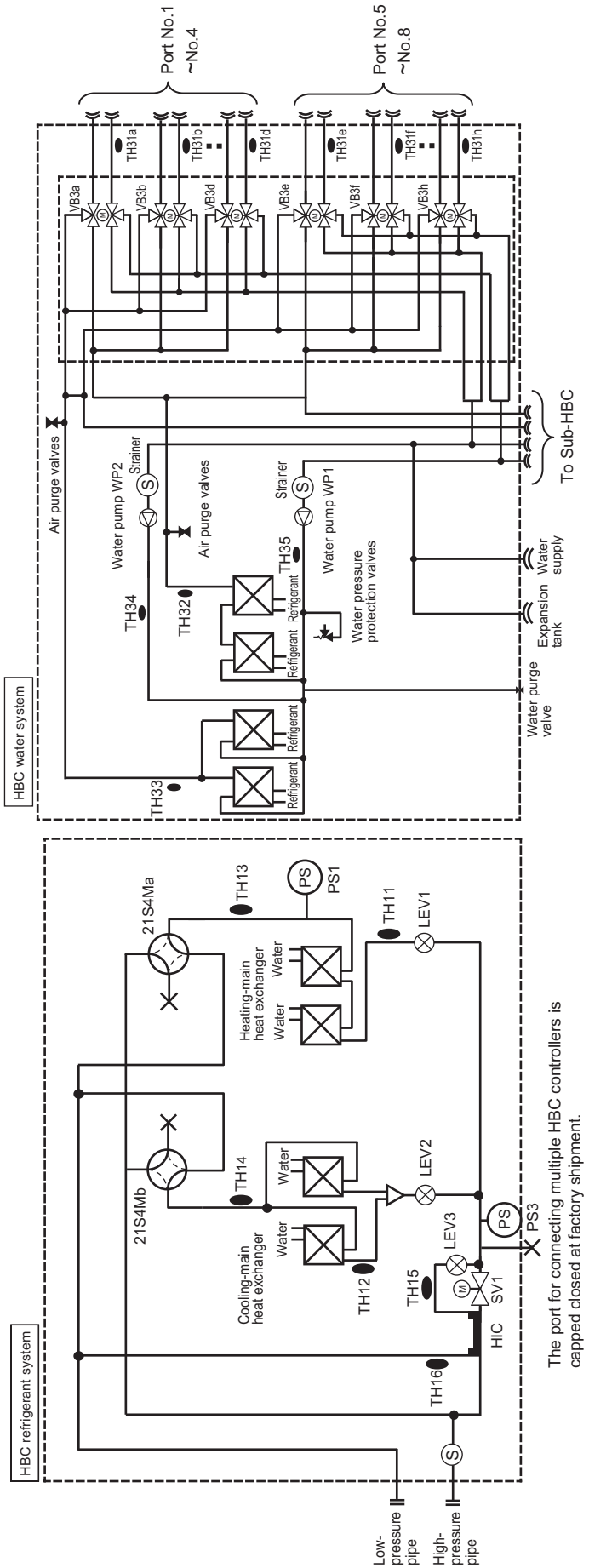


# Ⅴ Refrigerant Circuit

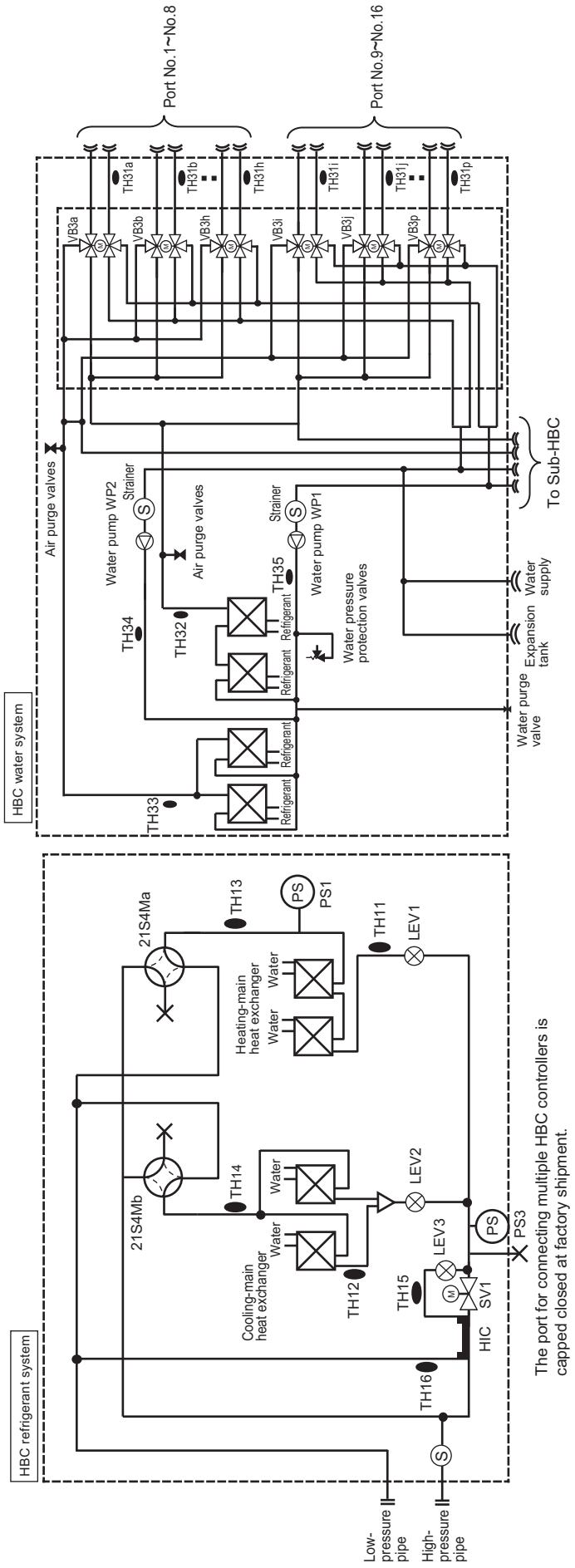
## [1] Refrigerant Circuit Diagram

**1. HBC controller**

**(1) CMB-WM108V-AA**

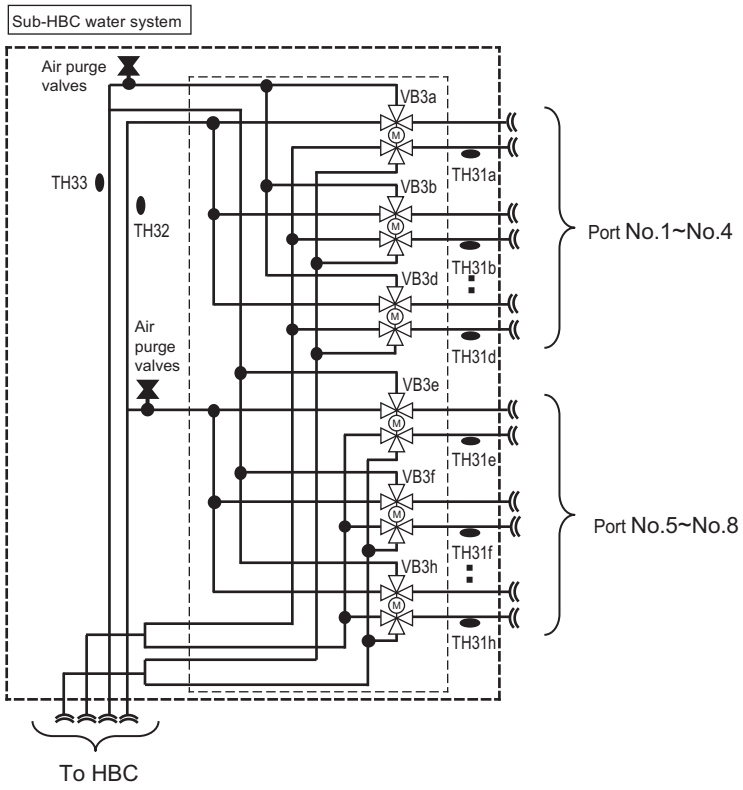


**(2) CMB-WM1016V-AA**

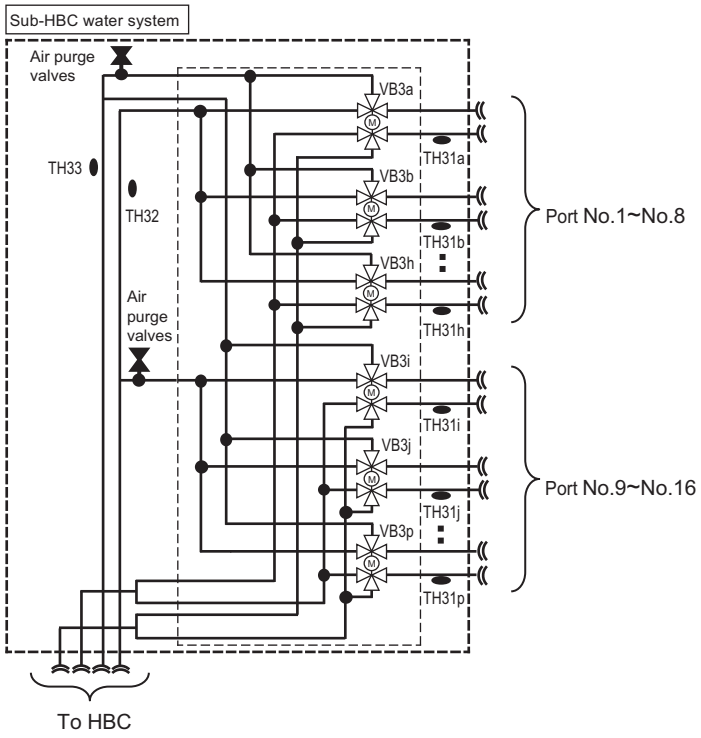


## 2. Sub-HBC

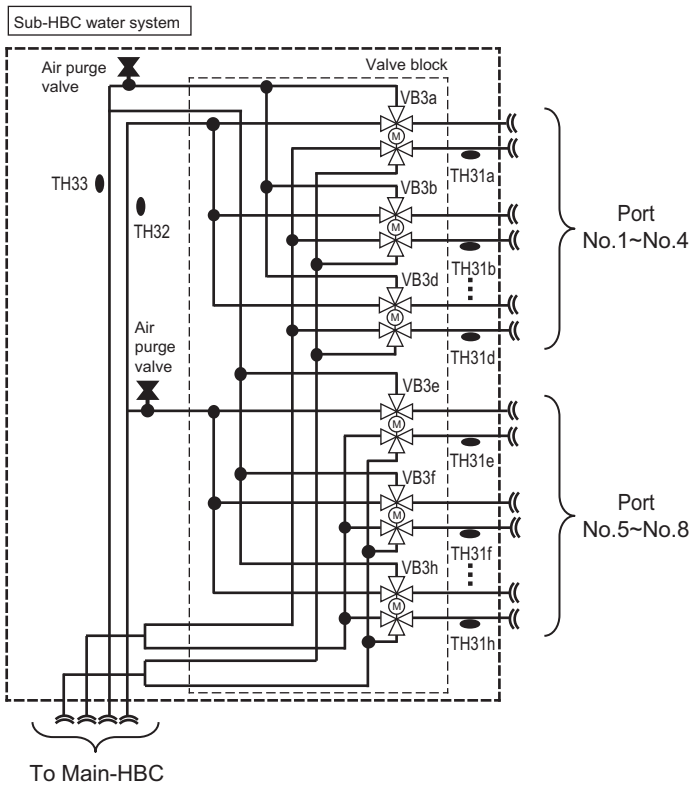
### (1) CMB-WM108V-AB



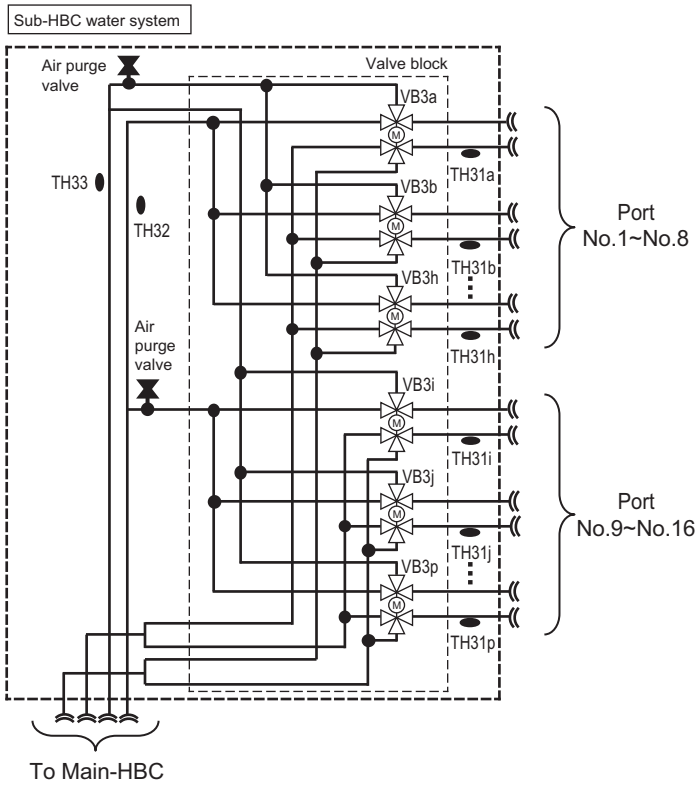

### (2) CMB-WM1016V-AB



### (3) CMB-WM108V-BB

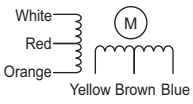
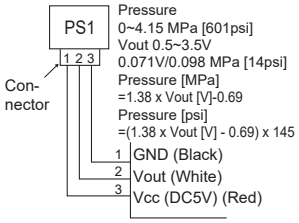



### (4) CMB-WM1016V-BB



## [2] Principal Parts and Functions

### 1. HBC controller

| Part name | Symbols | Notes | Usage | Specifications | Check method |
|---|---|---|---|---|---|
| Solenoid valve | SV1 | Refrigerant side | Opens during the cooling mode and defrost cycle | AC220-240V<br>Open when energized/ closed when de-energized | Continuity check with a tester |
| 4-way valve | 21S4Ma,b | Refrigerant side | Switches between heating and cooling | AC220-240V<br>Open when energized/ closed when de-energized | Continuity check with a tester |
| LEV | LEV1 | Refrigerant side | Supplies refrigerant to HEX1a and HEX1b | DC12V<br>Opening of a valve driven by a stepping motor<br>0~3000 pulses | Refer to the section "Continuity Test with aTester".<br>Continuity between white, red, and orange.<br>Continuity between yellow, brown, and blue.<br>  |
| | LEV2 | Refrigerant side | Supplies refrigerant to HEX2a and HEX2b | | |
| | LEV3 | Refrigerant side | Subcool control | | |
| Thermistor | TH11,12, T13,14 | Refrigerant side | Compressor frequency control<br>LEV opening adjustment | $R_0$ = 15kΩ<br>$R_{0/80}$ = 3460<br>$R_t = 15\exp\{3460\,(\frac{1}{273+t}-\frac{1}{273})\}$<br><br>0°C[32°F] : 15kohm<br>10°C[50°F] :9.7kohm<br>20°C[68°F] :6.4kohm<br>25°C[77°F] :5.3kohm<br>30°C[86°F] :4.3kohm<br>40°C[104°F] :3.1kohm | |
| | TH15,16 | | Bypass superheat amount adjustment | | |
| | TH31a~p | Water side | Indoor unit circulating water control | | |
| | TH32,33 | | Indoor unit circulating water control | | |
| | TH34,35 | | Water pump error detection | | |
| | TH36,37 | | Water pump suction water temperature detection | | |
| Pressure sensor | PS1 (high pressure side) | Refrigerant side | 1) Detects high pressure<br>2) LEV control |  | |
| | PS3 (medium pressure side) | | 1) Detects medium pressure<br>2) LEV control | | |
| Valve block | VB3a~p[*1] | Water side | 1) Switches the water flow path depending on the operation mode<br>2) Temperature difference control<br>Controls the water flow to each indoor unit | DC12V<br>Opening of a valve driven by a stepping motor[*2] | |
| Pump | PUMP1,2 | Water side | Temperature difference control<br>Controls the water flow to each indoor unit | Rated voltage DC268V<br>Specified voltage DC0-6V | |
| Water pressure protection valve | CPV1 | Water side | Trips when the internal pressure in the water circuit rises | Operating pressure: 560 kPa | |

*1. The names of port "a" through "p" are corresponding to port 1 through 16.

*2. For the degree of valve opening, "0" or "1600" indicates fully open and "800" indicates fully closed.

**2. Sub-HBC**

| Part name | Symbols | Notes | Usage | Specifications | Check method |
|---|---|---|---|---|---|
| Thermistor | TH31a~p[*1], TH32, 33 | Water side | Indoor unit circulating water control | Same as the table above | |
| Valve block | VB3a~p [*1] | Water side | 1) Switches the water flow path depending on the operation mode<br>2) Temperature difference control<br>Controls the water flow to each indoor unit | DC12V<br>Opening of a valve driven by a stepping motor[*2] | |

*1. The names of port "a" through "p" are corresponding to port 1 through 16.

*2. For the degree of valve opening, "0" or "1600" indicates fully open and "800" indicates fully closed.

**3. Indoor unit**

| Component | Symbol | |
|---|---|---|
| Room temperature thermistor | TH21 | Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ |
| Water inlet pipe thermistor | TH22 | Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ |
| Water outlet pipe thermistor | TH23 | Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ |

# Ⅵ Control

## [1] Functions and Factory Settings of the Dipswitches

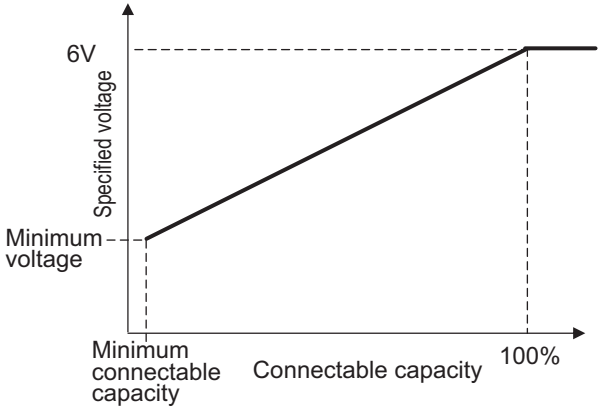
### 1. Switch functions <HBC controller> (Control board)

| Switch | | Function | Function according to switch setting | | Switch setting timing |
|---|---|---|---|---|---|
| | | | OFF | ON | |
| SW3 | 1 - 3 | Model setting | Preset before shipment | | - |
| | 4 | - | - | - | - |
| | 5 | SV1 ON fixed control | Not available | Available | Any time after being energized |
| | 6 - 7 | Pressure sensor backup | Error codes are not sent to outdoor units | Error codes are sent to outdoor units. | Any time after being energized |
| | 8 | - | - | - | - |
| | 9 | - | - | - | - |
| | 10 | Heat recovery defrost | Available | Not available | Before being energized |
| SW4 | 1 | Debris removal run mode | Not available | Available | Any time after being energized |
| | 2 | - | - | - | - |
| | 3 | Test run air vent mode after strainer processing | Not available | Available | Any time after being energized |
| | 4 | Forced termination of a test run | Not available | Available | Any time after being energized |
| | 5 | Water tightness check | Not available<br>(When the switch is set from ON to OFF, set the VB3 to the specified opening for stoppage.) | Available<br>Two water pumps ON (output 30%) one minute after setting VB3 to 0 or 1600. | Any time after being energized (only when the control mode is stopped) |
| | 6 | Operation function 1 of the valve block | Not available | VB3=800 | Any time after being energized |
| | 7 | - | - | - | - |
| | 8 | - | - | - | - |
| | 9 | - | - | - | - |
| | 10 | - | - | - | - |
| SW5 | 1 | Water supply SW | Not available | Available: VB=0 or 1600 | Any time after being energized |
| | 2 | Air vent SW | Not available | Available | Any time after being energized |
| | 3 | - | - | - | - |
| | 4 | Compatible with antifreeze-liquid 1 | Refer to the Databook. | | |
| | 5 | Compatible with antifreeze-liquid 2 | | | |
| | 6 | - | - | - | - |
| | 7 | - | - | - | - |
| | 8 | - | - | - | - |

## [2] Controlling HBC Controller

### -1- Water pump control

Depending on the capacity required, temperature difference on the indoor units is controlled so as to be within a certain range. During normal operation, the changes in specified voltage of the water pump corresponding to the capacity of connectable indoor units are shown in the graph below.




**Note**

The specified voltage changes with the load on the indoor unit side. (A sample is shown in the graph above.)

**(1) Periodic specified voltage control**

1) Periodic control cycle

Specified voltage control is performed after the following times have elapsed.

- Thirty seconds after either compressor startup or the completion of the defrost cycle

2) The amount of frequency change

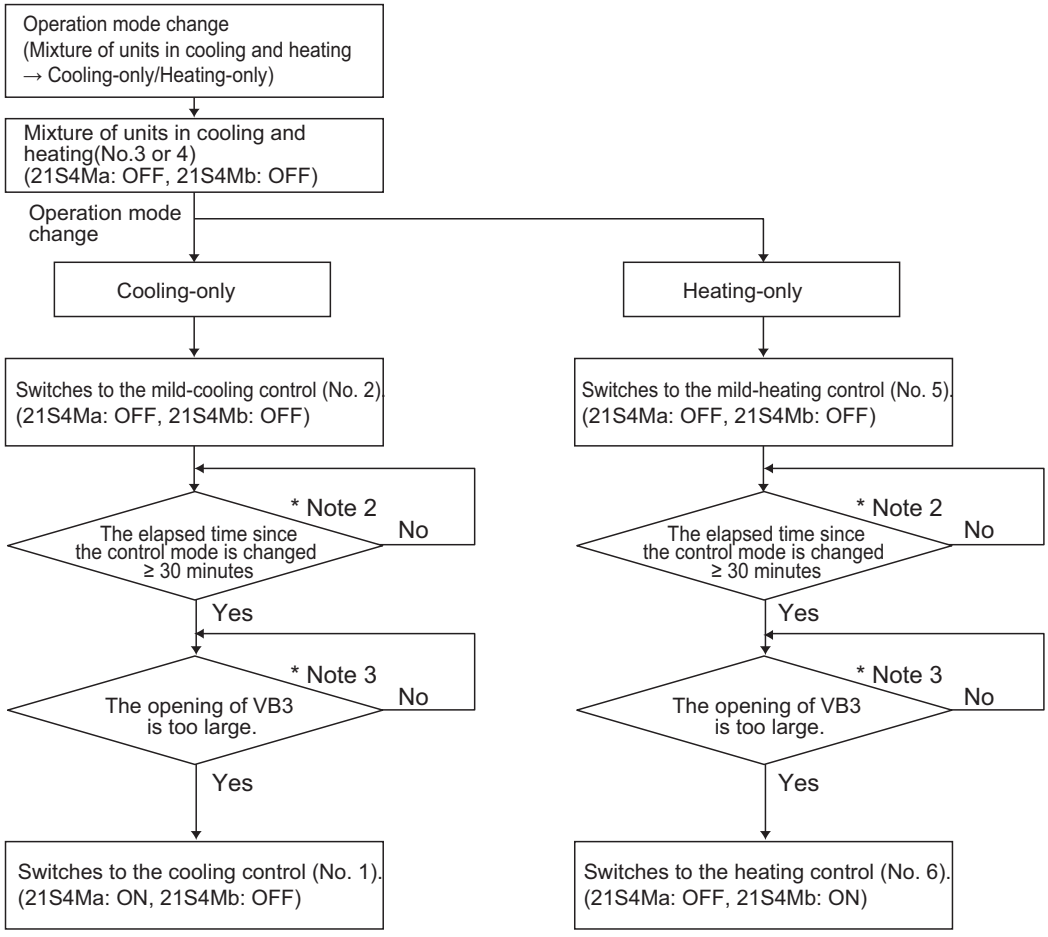
The amount of specified voltage change is controlled to approximate the target value based on the target temperature difference.

3) The voltage control range and control content vary with the version of the equipment and the software.

## -2- 4-way valve control

4-way valves (21S4M (a, b)) turn on or off according to the operation mode.
For 21S4Ma, ON indicates switching to the cooling side and OFF indicates switching to the heating side. For 21S4Mb, ON indicates switching to the heating side and OFF indicates switching to the cooling side. For 21S4Ma, ON indicates switching to the cooling side and OFF indicates switching to the heating side. For 21S4Mb, ON indicates switching to the heating side and OFF indicates switching to the cooling side. When energized: ON; When de-energized: OFF

| No. | Operation mode | 4-way valve control mode | 4-way valve | |
|---|---|---|---|---|
| | | | 21S4Ma | 21S4Mb |
| 1 | Cooling-only | Cooling | ON | OFF |
| 2 | | Cooling (Half HEX) | OFF | OFF |
| 3 | Cooling-main | Cooling-main | OFF | OFF |
| 4 | Heating-main | Heating-main | OFF | OFF |
| 5 | Heating-only | Warm heating | OFF | OFF |
| 6 | | Heating | OFF | ON |
| 7 | Defrost | Defrost | The status before defrosting maintained | The status before defrosting maintained |
| 8 | Stopped | Stopped | OFF | OFF |




**Note**

1) Select the installation site carefully, as some noise may be produced when the 4-way valve is switched.
   Install the unit in a place where the noise from the unit will not be problem.
   (Install the indoor units and HBC controller at least 5m [16-6/16ft] away from each other when installing in a space with low background noise, e.g., hotel rooms.)
   Install the unit in the ceiling of an area that are not always occupied by people, e.g., hallway, office kitchen, restrooms. (Do not install the unit in the middle of a room.)
2) The elapsed time is used to reduce the switching frequency of the control modes between No. 1 or No. 6 AND No. 3 or No. 4.
3) Capacity control is determined depending on the opening of VB3 that adjusts the water flow rate.

### -3- Valve block (VB3) water flow rate adjustment

♦Depending on the capacity required, periodic control is performed every one minute to keep the temperature difference between the heat exchanger outlet pipe temperature and indoor unit port pipe temperature within 4.0ºC for cooling and 4.5ºC for heating, and the opening is controlled in the range between 85 and 700 (cooling) or 900 and 1600 (Heating) pulses.

For the degree of valve opening, C800 or H800 indicate fully open and 0 indicates fully closed.

### -4- Valve block (VB3) water flow path switching control

♦The following table shows the control pattern of the 3-way valve in different operation modes to switch the water flow.

**(1) Cooling-only Thermo-ON, Cooling-only Thermo-OFF, Cooling-only test run, Heating-only Thermo ON, and Heating-only Thermo OFF**

| Outdoor unit operation mode | Connected indoor unit operation mode | VB3 command value for opening |
|---|---|---|
| Cooling-only Thermo-ON<br>Heating-only Thermo ON | Stop | 1 |
| | Fan | 1 |
| | Thermo-ON | 2 or 3 |
| | Thermo-OFF | 1 |
| Cooling-only Thermo-OFF<br>Heating-only Thermo OFF | Stop | 1 |
| | Fan | 1 |
| | Thermo-OFF | 1 |
| Cooling-only test run | Stop | 1 |
| | Fan | 1 |
| | Thermo-ON | 2 or 3 |
| | Thermo-OFF | 1 |

**(2) Heating-main Thermo-ON, Heating-main Thermo-OFF, Cooling-main Thermo-ON, and Cooling-main Thermo-OFF**

| Outdoor unit operation mode | Connected indoor unit operation mode | VB3 command value for opening |
|---|---|---|
| Heating-main Thermo-ON<br>Cooling-main Thermo-ON | Stop | 1 |
| | Fan | 1 |
| | Cooling Thermo-ON | 2 |
| | Cooling Thermo-OFF | 1 |
| | Heating Thermo-ON | 3 |
| | Heating Thermo-OFF | 1 |
| Heating-main Thermo-OFF<br>Cooling-main Thermo-OFF | Stop | 1 |
| | Fan | 1 |
| | Cooling Thermo-OFF | 1 |
| | Heating Thermo-OFF | 1 |

<Designated degree of valve opening>

- 1: 800 pulse
- 2: 85~700 pulses
- 3: 900~1600 pulses

## -5- Bypass Control

Solenoid valves have two types: (SV1) that bypass the high- and low- pressure sides; LEV (LEV3). They perform the following functions.

### (1) Bypass solenoid valve (SV1) (ON: open)

| Operation mode | SV1 | |
|---|---|---|
| | ON | OFF |
| Cooling-only Thermo-ON | Always ON | |
| Cooling-main Thermo-ON | Always OFF | |
| Heating-only Thermo-ON | Always OFF | |
| Heating-main Thermo-ON | Always OFF | |
| Defrost | Always ON during heat recovery defrost | OFF except to perform heat recovery defrost |
| Stop | Always OFF | |
| Cooling-only Thermo-OFF | Always ON | |
| Thermo-OFF (Heating-only, Mixture of units in cooling and heating) | Always OFF | |
| Cooling-only test run | Always ON | |
| Test run for stop | Always ON | |

## -6- Plate heat exchanger control

### (1) Cooling-only Thermo-ON and Cooling-only test run

- When three minutes have passed after the LEV operates with initial opening, the LEV opening is adjusted every 1 minute to keep the amount of superheat before and after the plate heat exchanger constant.

### (2) Heating-only Thermo-ON

- When three minutes have passed after the LEV operates with initial opening, the LEV opening is adjusted every 1 minute to keep the amount of subcool before and after the plate heat exchanger constant.

### (3) Cooling-main/Heating-main Thermo-ON and Cooling-main/Heating-main refrigerant recovery

1) Periodic control for LEV1

   The LEV opening is adjusted the same way as described in (2) Heating-only Thermo-ON and Heating-only refrigerant recovery.

2) Periodic control for LEV2

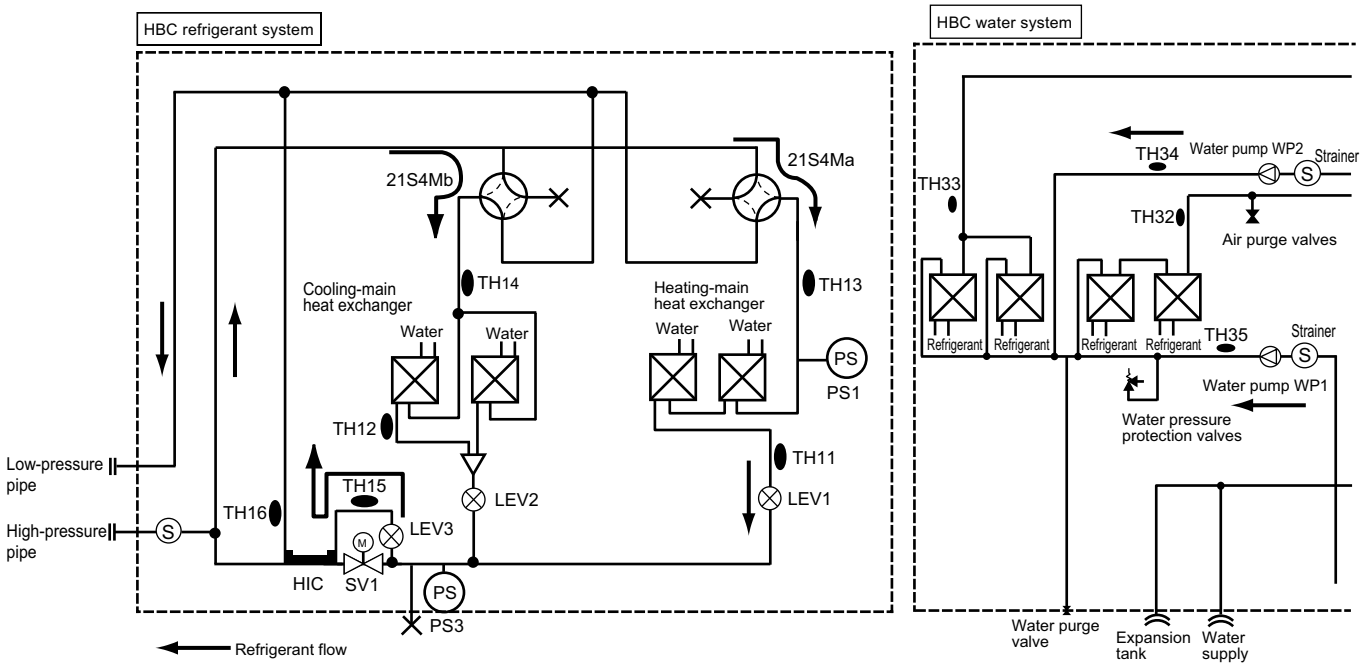
   To be fully open (3000)

## -7- Defrost Operation Control

### (1) Defrost cycle type

- The defrost cycle has following two types: Bypass defrost that is the same method as that used in a CITY MULTI series system and heat recovery defrost (default) that the heat is collected from the water circuit and the defrost cycle ends early.

The following figure shows the refrigerant flow for the bypass defrost. In the bypass defrost method, LEV1 and 2 are closed and the heat is not exchanged between the refrigerant and water. In the heat recovery defrost method, the defrost cycle ends early because the heat is caught from the water.
The basic defrost method is the heat recovery defrost with the dip switch 3-10 on the HBC turned OFF (default). The bypass defrost may be performed depending on the water temperature. Setting the dip switch 3-10 to ON performs the bypass defrost.




### (2) Starting the defrost operation

- The defrost cycle will start when all of the three conditions (outside temperature, cumulative compressor operation time, and pipe temperature) under <Condition 1>, <Condition 2>, or <Condition 3> are met.

| | Condition 1 | Condition 2 | Condition 3 |
|---|---|---|---|
| Outside temperature (TH7) | -5ºC [23ºF] or above | -5ºC [23ºF] or below | |
| Cumulative compressor operation time | 50 minutes or more<br>90 minutes or more if the defrost prohibit timer is set to 90. | | 250 minutes or more |
| Pipe temperature (TH6) | The pipe temperature has stayed below the temperatures in the table below (Note1) for three minutes. | The pipe temperature (TH6) has stayed at or below the value obtained from the formula "Outside temperature (TH7) - 10ºC [18ºF]" for three minutes. or the 63LS reading has stayed below the value obtained from the formula "1.5 + 0.02 x (20+TH7)" for three minutes. | The pipe temperature has stayed below the temperatures in the table below (Note1) for three minutes |

**Note**

1) Outdoor unit pipe temperature (TH6)

| | |
|---|---|
| SW3-3 OFF | -8ºC |
| SW3-3 ON | -5ºC |

- If 10 minutes have passed since compressor startup or since the completion of a defrost cycle, a forced defrost cycle can be started by setting DIP SW2-7 to ON.
- Even if the defrost-prohibit timer is set to 90 minutes (or 150 minutes for "Condition 3" to be met), the actual defrost-prohibit time for the next defrost cycle is 50 minutes if the last defrost cycle took 12 minutes.

**(3) Defrost cycle**

| | | Bypass defrost | | Heat recovery defrost | |
|---|---|---|---|---|---|
| Outdoor Unit | Dip switch setting | SW3-10 ON | | SW3-10 OFF | |
| | Operation mode | Heating-only | Heating-main | Heating-only | Heating-main |
| | Outdoor unit frequency | 103Hz | | | |
| | Outdoor unit fan | Stop | | | |
| | SV1a | ON (open) | | | |
| | SV5b | ON (open) | | | |
| | 21S4a, 21S4b | OFF | | | |
| | SV9 | OFF (closed) | | | |
| HBC controller (other than 3-way valve and water flow rate control valve) | LEV1 | 41 | | 3000 | |
| | LEV2 | 41 | | 3000 | 41 |
| | LEV3 | 3000 | | | |
| | SV1 | ON | | OFF | |
| | 21S4Ma | OFF | | | |
| | 21S4Mb | ON | | ON | OFF |
| | PUMP1 | Scheduled control | | Command value 100% | |
| | PUMP2 | Scheduled control | | Command value 100% | Scheduled control |

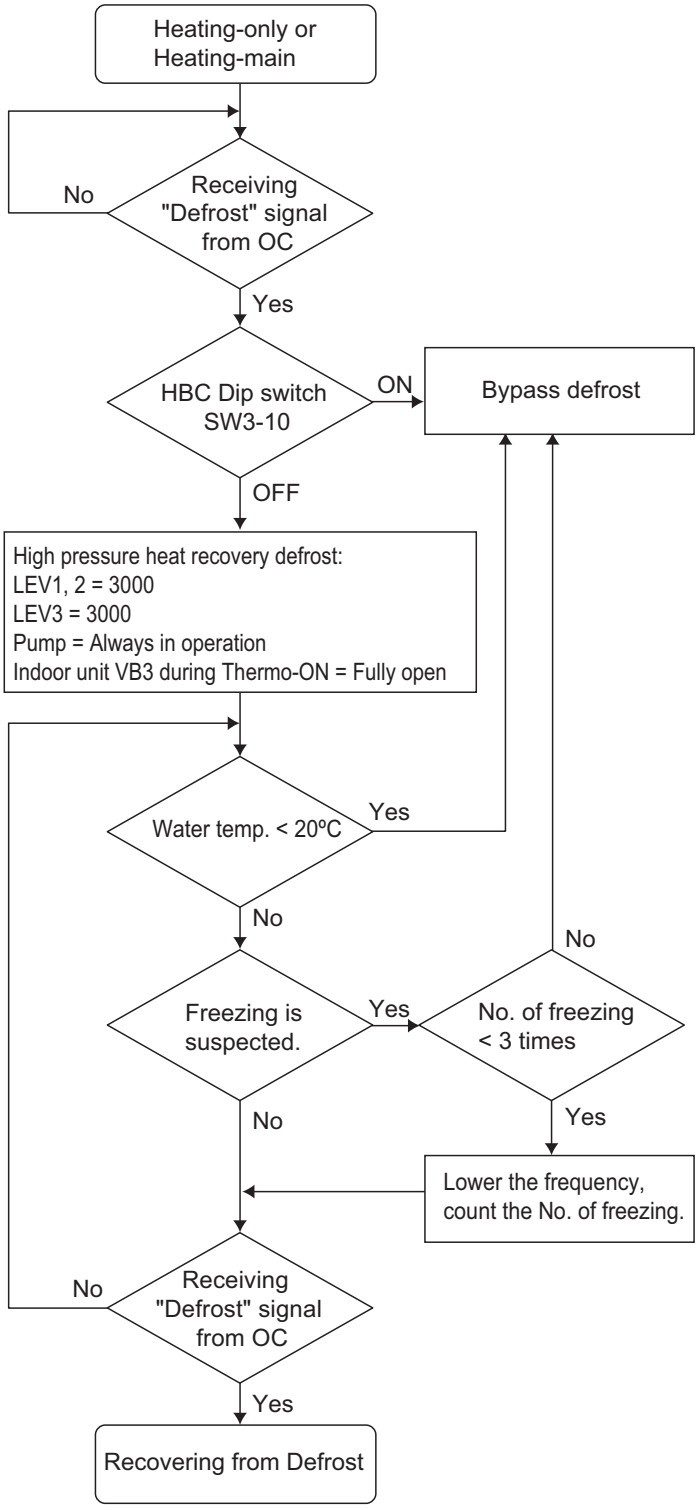
| | | | | | |
|---|---|---|---|---|---|
| HBC controller (3-way valve and water flow rate control valve) | Dip switch setting | SW3-10 ON | | | |
| | Indoor unit mode | Heating Thermo-ON | Heating Thermo-OFF | Cooling Thermo-ON | Cooling Thermo-OFF |
| | VB3a~p | Scheduled control | Scheduled control | Scheduled control | C800 or H800 |

| | | | | | |
|---|---|---|---|---|---|
| HBC controller (3-way valve and water flow rate control valve) | Dip switch setting | SW3-10 OFF | | | |
| | Indoor unit mode | Heating Thermo-ON | Heating Thermo-OFF | Cooling Thermo-ON | Cooling Thermo-OFF |
| | VB3a~p | C800 or H800 | C800 or H800 | Scheduled control | C800 or H800 |

*The indoor unit fan will stop during defrost.

**(4) Recovering from Defrost**

♦The setting of the dip switch 3-10 determines the defrost method (bypass defrost or heat recovery defrost).
As shown in the following flow chart, the bypass defrost may be performed during the heat recovery defrost depending on the operation status.



## -8- Refrigerant Recovery Control

The refrigerant recovery control function controls the refrigerant flow at the HBC controller during heating operation to keep the refrigerant from collecting inside the HBC controller.
It is also performed during cooling operation to prevent an excessive amount of refrigerant from accumulating in the outdoor heat exchanger.

**Starting criteria for the refrigerant recovery cycle (during Cooling-only, Cooling-main, Heating-only, or Heating-main mode)**

The refrigerant recovery mode starts when all of the following conditions are met:

1) When 5 minutes have passed in the Heating-only or Heating-main mode or 30 seconds have passed in the Cooling-only or Cooling-main mode since the completion of the previous refrigerant recovery cycle AND the when following conditions are met.
   Outdoor unit TH4 > 105°C [221°F]
2) When the port is not in the 4-minute restart delay mode

**Starting criteria for the refrigerant recovery cycle (during Cooling-only, Cooling-main, Heating-only, or Heating-main mode)**

The opening of LEV1 and LEV2 on the HBC is increased.

## -9- Backup control

The following backup control is started on the HBC as necessary.

**(1) Backup mode for plate heat exchanger protection**

- The following control is performed depending on the outlet pipe temperature of the plate heat exchanger for freeze-up protection.

[Cooling-main/Heating-main operation]

1) Outdoor unit (Heat source unit)
   Cooling-main operation: Continued; Heating-main operation: Continued
2) HBC controller

| | | Control mode | |
|---|---|---|---|
| | | Cooling-main/Heating-main | Cooling-only |
| Outdoor unit (Heat source unit) | Operation mode | Continues the current operation | Cooling-only Thermo-OFF |
| HBC controller | 21S4Ma | Heating side: open (de-energized) | Cooling side: open (energized) |
| | 21S4Mb | Cooling side: open (de-energized) | Cooling side: open (de-energized) |
| | LEV1 | Maintains the opening that was used in the previous operation mode | Opening during Cooling-only Thermo-OFF |
| | LEV2 | 41 pulses: fully closed | Opening during Cooling-only Thermo-OFF |
| | LEV3 | 3000 pulses: fully open | Opening during Cooling-only Thermo-OFF |
| | SV1 | Closed | Open |
| | PUMP1 | Continues the heating operation | Continues the cooling-only operation |
| | PUMP2 | Continues the cooling operation | Continues the cooling-only operation |
| | VB3a~p | The opening depending on the indoor unit operation mode | The opening depending on the indoor unit operation mode |

**(2) Heating water temperature backup mode**

- When the heating operation can be continued without receiving heat from the refrigerant due to water temperature rise during heating operation (the outlet pipe temperature of the plate heat exchanger is 50ºC or above), the outdoor unit goes into the Thermo-OFF mode, and the heating operation is performed only by circulating the hot water by the water pump. When the water temperature decreases to a certain level (the outlet temperature of the plate heat exchanger is 45ºC or below), the outdoor unit starts up.

## -10- Water pump protection control

When the circuit is clogged or air enters the water circuit, the protection control starts on the HBC controller to protect the water pump and the system is stopped depending on the situation.

**(1) When the internal temperature of the water pump increases**

- When the detection temperature of the water pump outlet pipe is above a certain level, the water pump is stopped to protect it from the heat.

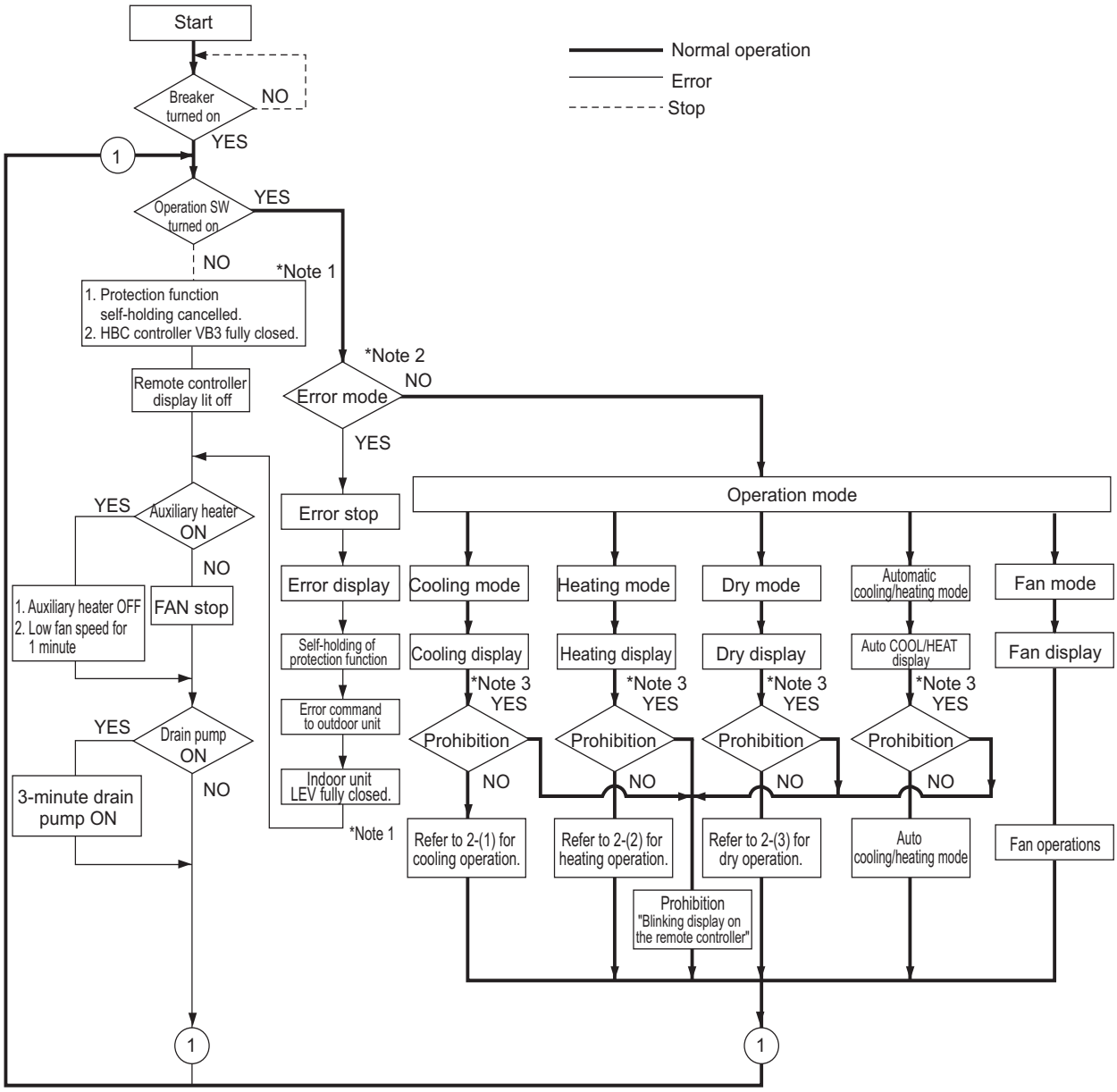
**(2) When the revolutions of the water pump increases**

- When the revolutions of the water pump is above a certain level (The value changes depending on the specified voltage.), the water pump is stopped to reduce the risk of air infiltration and water leaks.

## [3] Operation Flow Chart

### 1. Mode determination flowchart

### (1) Indoor unit (cooling, heating, dry, fan mode)

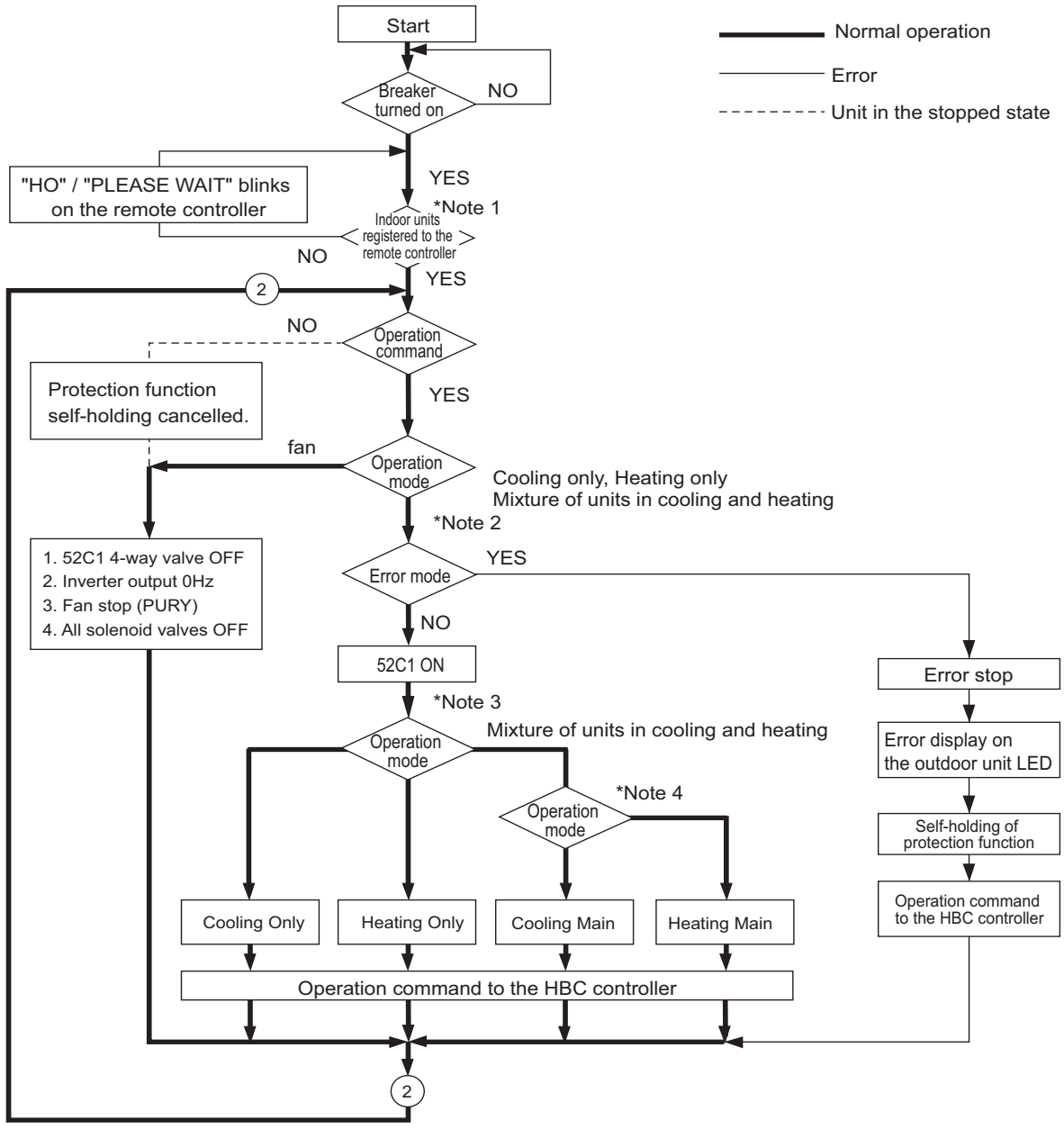



*Note 1. HBC controller VB3 fully closed : Opening 0.

*Note 2. The system may go into the error mode on either the indoor unit side or the HBC controller or outdoor unit side. If some of the indoor units are experiencing a problem, only those indoor units that are experiencing the problem will stop. If the HBC controller or the outdoor unit is experiencing a problem, all the connected units will stop.

*Note 3. If multiple indoor units are connected to a port and there is a discrepancy in the operation mode between the indoor unit and the port, the operation will be prohibited. (Operation mode blinks on the remote controller, the Fan stops, HBC controller VB3 becomes fully closed.)

**(2) Outdoor unit (cooling only, heating only, cooling main and heating main modes) (Heat source unit)**



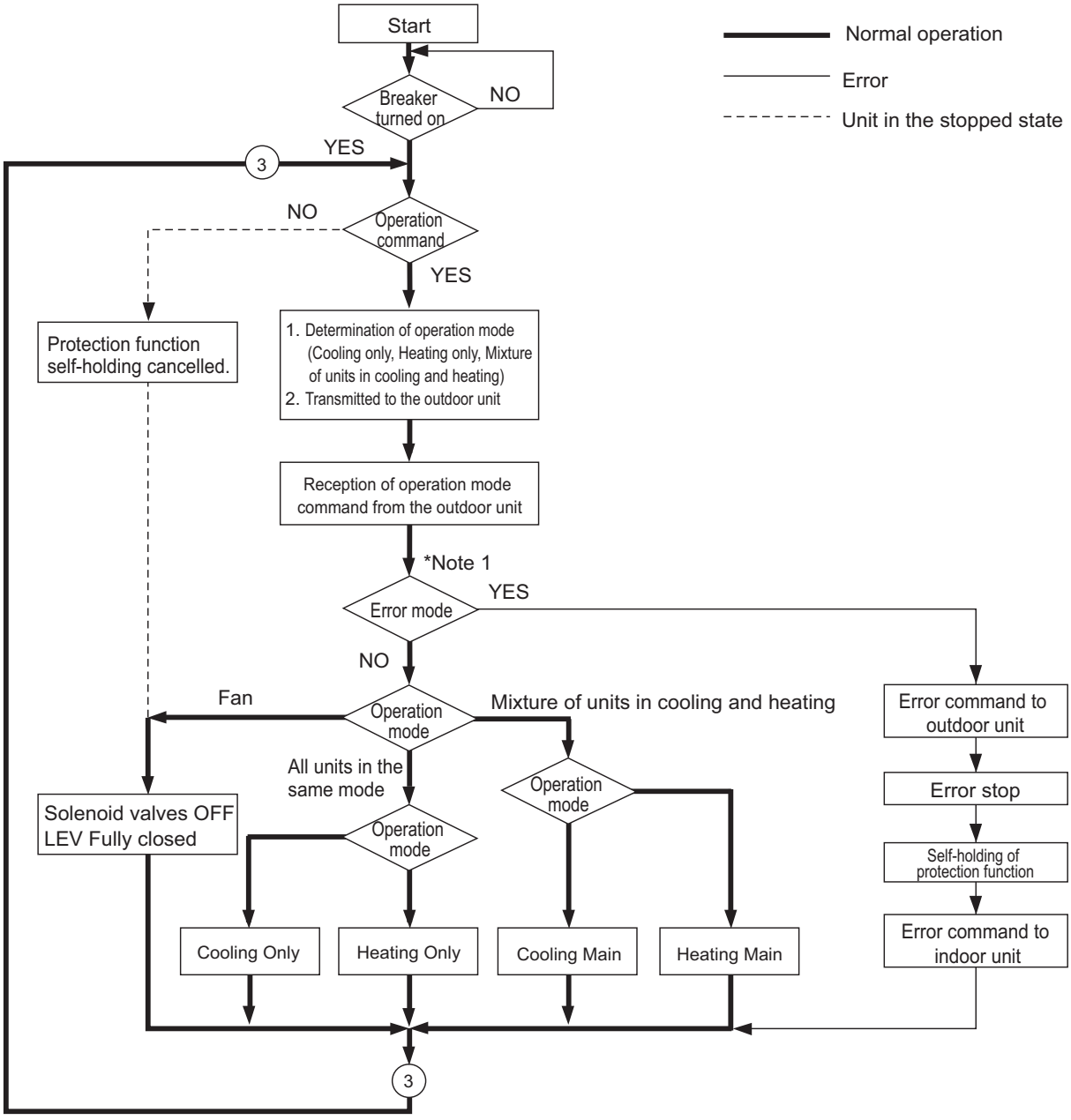

*Note 1. For approximately three minutes after power on, a search for the outdoor unit address, HBC controller address, indoor unit address, and remote controller address, and group information is performed. While this process is performed, "HO" and "PLEASE WAIT" blink on the display. If the indoor units have not been grouped with the remote controller, "HO" and "PLEASE WAIT" will keep blinking on the display, even after three minutes after power on.

*Note 2. The system may go into the error mode on the indoor unit, HBC controller, or the outdoor unit side. The outdoor units will stop only when all the indoor units are experiencing a problem. If at least one of the indoor units is in normal operation, the outdoor unit will continue in operation, displaying an error code on the LED.

*Note 3. The units will follow the operation mode commands from the HBC controller

*Note 4. When the operation mode commands from the HBC controllers are mixed (both cooling and heating), the actual operation mode is determined by the outdoor unit.

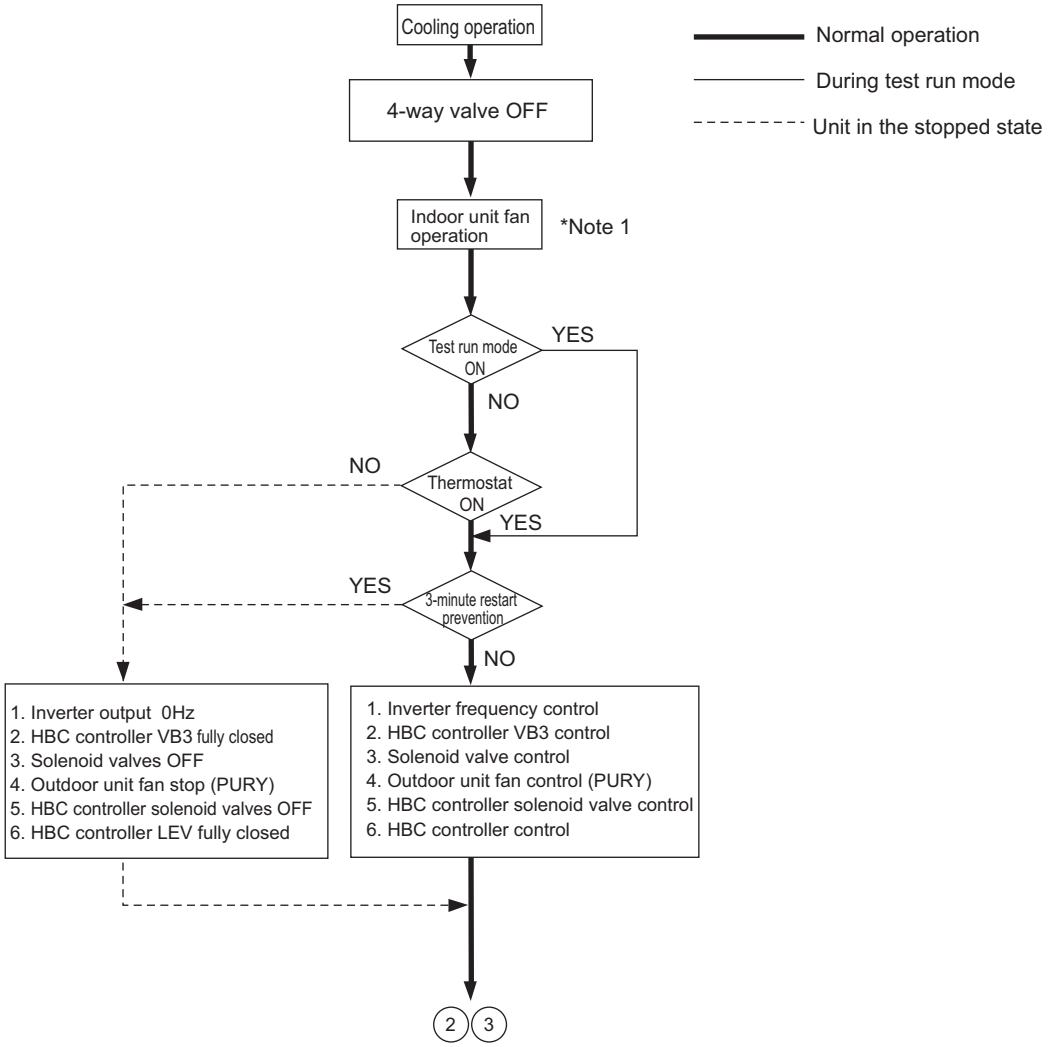
**(3) HBC controller (cooling only, heating only, cooling main and heating main modes)**




Note 1. The system may go into the error mode on either the indoor unit side or the HBC controller or outdoor unit side. If some of the indoor units are experiencing a problem, only those indoor units that are experiencing the problem will stop. If the HBC controller or the outdoor unit is experiencing a problem, all the connected units will stop.

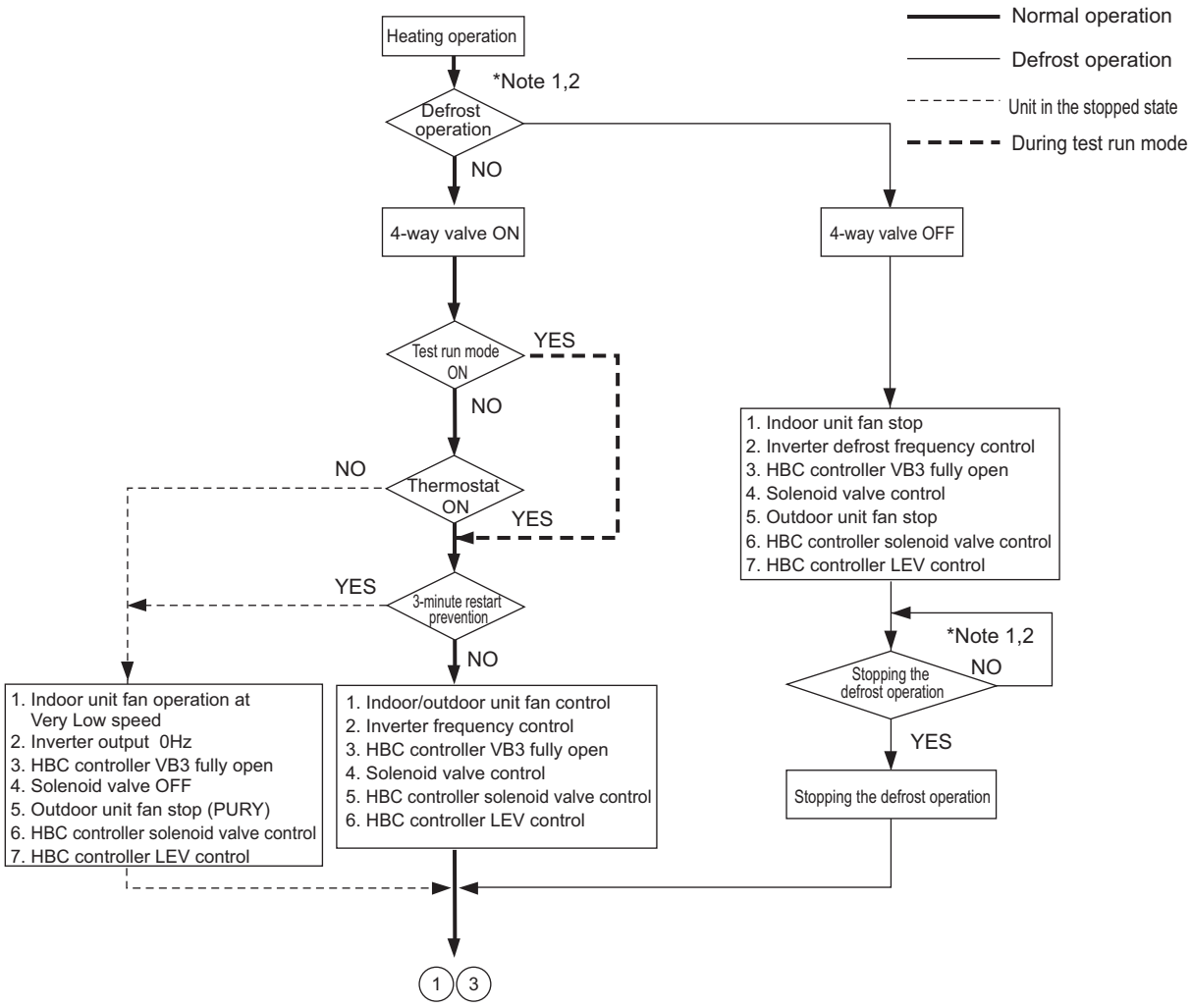
## 2. Operations in each mode

### (1) Cooling operation




*Note 1. The indoor fan operates at the set notch under cooling mode regardless of the ON/OFF state of the thermostat.

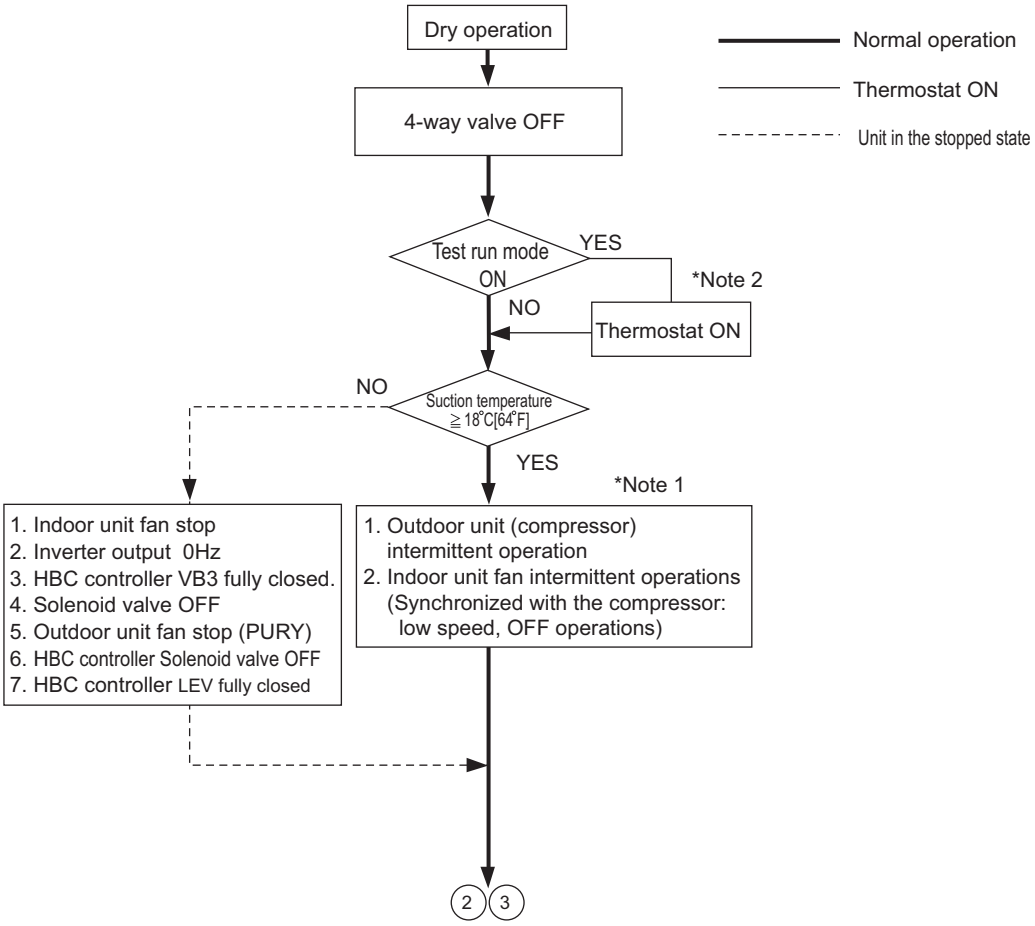
### (2) Heating operation




*Note 1. When the outdoor unit goes into the defrost mode (PURY only), defrost command is sent to the HBC controller and indoor units.
Upon reception of the command, the indoor units will go into the defrost mode. When defrosting is completed and upon receiving the signal that indicates the completion of defrosting, indoor units will resume the heating operation.

*Note 2. Defrost end condition: 10 or more minutes must pass after defrost operation.
or Outdoor unit piping temperature : refer to "-7- Defrost operation control" of [2] Controlling HBC Controller (page 110)

### (3) Dry operation




*Note 1.When the return air temperature reaches 18ºC [64ºF] or above, the outdoor unit (compressor) and the indoor unit fan will start a simultaneous intermittent operation. The operations of the outdoor unit, HBC controller, outdoor unit LEVs and solenoid valves that are performed when the compressor turns on are the same with the cooling operation.

*Note 2.Thermostat is always kept on during test run mode, and indoor and outdoor unit intermittent operation (ON) time is a little longer than that of normal operation.

# VII Test Run Mode

## [1] Items to be checked before a Test Run

**(1) Check for refrigerant leak and loose cables and connectors.**

**(2) Measure the insulation resistance between the power supply terminal block and the ground with a 500V megger and make sure it reads at least 1.0Mohm.**

Note

- Do not operate the unit if the insulation resistance is below 1.0Mohm.
- Do not apply megger voltage to the terminal block for transmission line. Doing so will damage the controller board.
- The insulation resistance between the power supply terminal block and the ground could go down to close to 1Mohm immediately after installation or when the power is kept off for an extended period of time because of the accumulation of refrigerant in the compressor.
- If insulation resistance reads at least 1Mohm, by turning on the main power and powering the belt heater for at least 12 hours, the refrigerant in the compressor will evaporate and the insulation resistance will go up.
- Do not measure the insulation resistance of the terminal block for transmission line for the unit remote controller.

**(3) Make sure the valves on both the high-pressure and low-pressure sides are fully open.**

Note

Securely tighten the cap.

**(4) Check the phase sequence and the voltage of the power supply.**

**(5) [When a transmission booster is connected]**
**Turn on the transmission booster before turning on the outdoor units.**

Note

- If the outdoor units are turned on first, the connection information for the refrigerant circuit may not be properly recognized.
- In case the outdoor units are turned on before the transmission booster is turned on, perform a power reset on the outdoor units after turning on the power booster.

**(6) Turn on the main power to the unit at least 12 hours before test run to power the belt heater.**

Note

Insufficient powering time may result in compressor damage.

**(7) When a power supply unit is connected to the transmission line for centralized control, perform a test run with the power supply unit being energized. Leave the power jumper connector on CN41 as it is (factory setting).**

## [2] Operating Characteristic and Refrigerant Amount

It is important to have a clear understanding of the characteristics of refrigerant and the operating characteristics of air conditioners before attempting to adjust the refrigerant amount in a given system.

**1. Operating characteristic and refrigerant amount**

The following table shows items of particular importance.

1) During cooling operation, the amount of refrigerant in the accumulator is the smallest when all indoor units are in operation.
2) During heating operation, the amount of refrigerant in the accumulator is the largest when all indoor units are in operation.
3) General tendency of discharge temperature
   - ♦Discharge temperature tends to rise when the system is short on refrigerant.
   - ♦Changing the amount of refrigerant in the system while there is refrigerant in the accumulator has little effect on the discharge temperature.
   - ♦The higher the pressure, the more likely it is for the discharge temperature to rise.
   - ♦The lower the pressure, the more likely it is for the discharge temperature to rise.
4) When the amount of refrigerant in the system is adequate, the compressor shell temperature is 10 to 60°C [18 to 108°F] higher than the low pressure saturation temperature (Te).

   -> If the temperature difference between the compressor shell temperature and low pressure saturation temperature (Te) is smaller than 5°C [9°F], an overcharging of refrigerant is suspected.

## [3] Adjusting the Refrigerant Amount

**1. Symptoms**

Overcharging or undercharging of refrigerant can cause the following symptoms:
Before attempting to adjust the amount of refrigerant in the system, thoroughly check the operating conditions of the system. Then, adjust the refrigerant amount by running the unit in the refrigerant amount adjust mode.

| | |
|---|---|
| The system comes to an abnormal stop, displaying 1500 (overcharged refrigerant) on the controller. | Overcharged refrigerant |
| The operating frequency does not reach the set frequency, and there is a problem with performance. | Insufficient refrigerant amount |
| The system comes to an abnormal stop, displaying 1102 (abnormal discharge temperature) on the controller. | |

**2. Amount of refrigerant**

**(1) To be checked during operation**

Operate all indoor units in either cooling-only or heating-only mode, and check such items as discharge temperature, subcooling, low pressure, suction temperature, and shell bottom temperature to estimate the amount of refrigerant in the system.

| Symptoms | Conclusion |
|---|---|
| Discharge temperature is high. (Normal discharge temperature is below 95°C [203°F].) | Slightly undercharged refrigerant |
| Low pressure is unusually low. | |
| Suction superheat is large. (Normal suction superheat is less than 20°C [36°F].) | |
| Compressor shell bottom temperature is high. (The difference between the compressor shell bottom temperature and low pressure saturation temperature (Te) is greater than 60°C [108°F].) | |
| Discharge superheat is small. (Normal discharge superheat is greater than 10°C [18°F].) | Slightly overcharged refrigerant |
| Compressor shell bottom temperature is low. (The difference between the compressor shell bottom temperature and low pressure saturation temperature (Te) is less than 5°C [9°F].) | |

### 3. Amount of refrigerant to be added

The amount of refrigerant that is shown in the table below is factory-charged to the outdoor units.
The amount necessary for extended pipe (field piping) is not included and must be added on site.

| Outdoor unit model | Amount of pre-charged refrigerant in the outdoor unit (kg) | Outdoor unit model | Amount of pre-charged refrigerant in the outdoor unit (kg) |
|---|---|---|---|
| P200YNW | 5.2 | P400YNW | 8.0 |
| P250YNW | 5.2 | P450YNW | 10.8 |
| P300YNW | 5.2 | P500YNW | 10.8 |
| P350YNW | 8.0 | | |

| Outdoor unit model | Amount of pre-charged refrigerant in the outdoor unit (kg) | Outdoor unit model | Amount of pre-charged refrigerant in the outdoor unit (kg) |
|---|---|---|---|
| EP200YNW | 5.2 | M200YNW | 5.2 |
| EP250YNW | 5.2 | M250YNW | 5.2 |
| EP300YNW | 5.2 | M300YNW | 5.2 |
| EP350YNW | 8.0 | EM200YNW | 5.2 |
| EP400YNW | 8.0 | EM250YNW | 5.2 |
| EP450YNW | 10.8 | EM300YNW | 5.2 |
| EP500YNW | 10.8 | | |

| Heat source unit model | Amount of pre-charged refrigerant in the Heat source unit (kg) |
|---|---|
| P200YLM | 5.0 |
| P250YLM | 5.0 |
| P300YLM | 5.0 |
| P350YLM | 6.0 |
| P400YLM | 6.0 |
| P450YLM | 6.0 |
| P500YLM | 6.0 |

#### (1) Calculation formula (PURY-(E)P/PQRY-P)

The amount of refrigerant to be added depends on the size and the length of field piping. (unit in m[ft])

1) When the distance between HBC and outdoor unit is longer than 30.5m:
   Amount of added refrigerant (kg) = $(0.21 \times L_1)+(0.14 \times L_2)+(0.1 \times L_3)+\alpha_1$
2) When the distance between HBC and outdoor unit is 30.5m or shorter:
   Amount of added refrigerant (kg) = $(0.23 \times L_1)+(0.16 \times L_2)+(0.11 \times L_3)+\alpha_1$

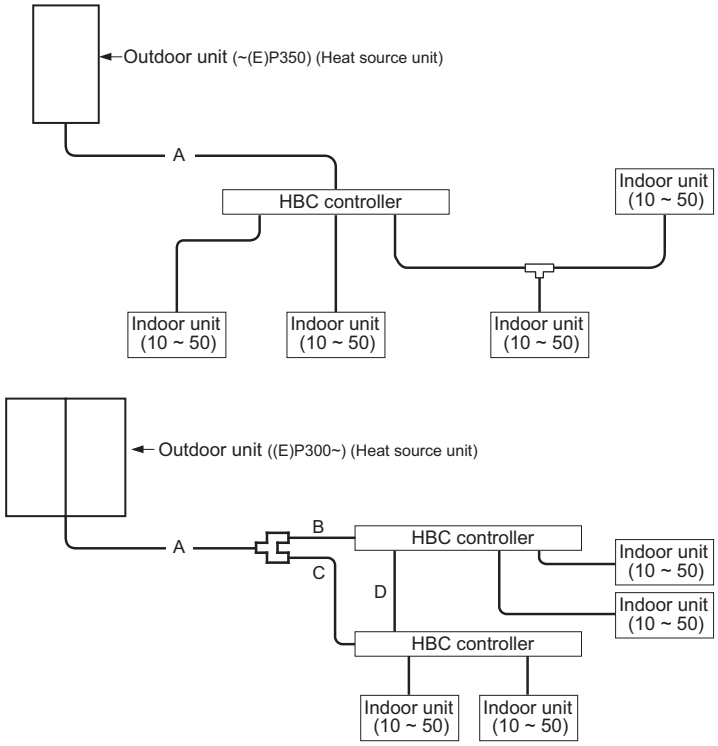
$L_1$ :Length of Φ22.2 [7/8"] high pressure pipe (m)
$L_2$ :Length of Φ19.05 [3/4"] high pressure pipe (m)
$L_3$ :Length of Φ15.88 [5/8"] high pressure pip (m)
$\alpha_1$ :Refer to the table below.

| Outdoor unit index (Heat source unit model) | Diameter of high-pressure pipe |
|---|---|
| (E)P200 | ø15.88 |
| (E)P250 | ø19.05 |
| (E)P300 | ø19.05 |
| (E)P350 | ø19.05 |
| (E)P400 | ø15.88 |
| (E)P450 | ø19.05 |
| (E)P500 | ø19.05 |

| Amount for the HBC controller |
|---|
| $\alpha_1$(kg) |
| 3.0 |

Round up the calculation result to the nearest 0.1kg. (Example: 18.04kg to 18.1kg)

**(2) Example**




**(3) Sample calculation**

Indoor 1: 50 A: ø19.05 42 m
2: 50
3: 50
4: 40
Outdoor P250

The total length of each liquid line is as follows:
ø19.05: A = 42 m, $\alpha_1$ = 3.0
Therefore,
<Calculation example>
Additional refrigerant charge
= 42 × 0.14 + 3.0
= 8.88 kg
≒ 8.9 kg
* All pipe work except A is water pipe work.

Indoor 1: 50 A:ø22.2 18 m
2: 50 B:ø15.88 5 m
3: 50 C:ø15.88 10 m
4: 50 D:ø15.88 8 m
Outdoor P400

The total length of each liquid line is as follows:
ø22.2: A = 18 m, ø15.88: B + C + D = 23m, $\alpha_1$ = 3.0 × 2
Therefore,
<Calculation example>
Additional refrigerant charge
= 18 × 0.23+ (5 + 10 + 8) × 0.11 + 3.0 × 2
= 12.67 kg
≒ 12.7 kg
* All pipe work except A, B, C, D is water pipe work.

**(1) Calculation formula (PURY-(E)M)**

The amount of refrigerant to be added depends on the size and the length of field piping. (unit in m[ft])

1) When the distance between HBC and outdoor unit is longer than 10m:
   Amount of added refrigerant (kg) = $(0.09 \times L_1)+\alpha_1$
2) When the distance between HBC and outdoor unit is 10m or shorter:
   Amount of added refrigerant (kg) = $(0.11 \times L_1)+\alpha_1$

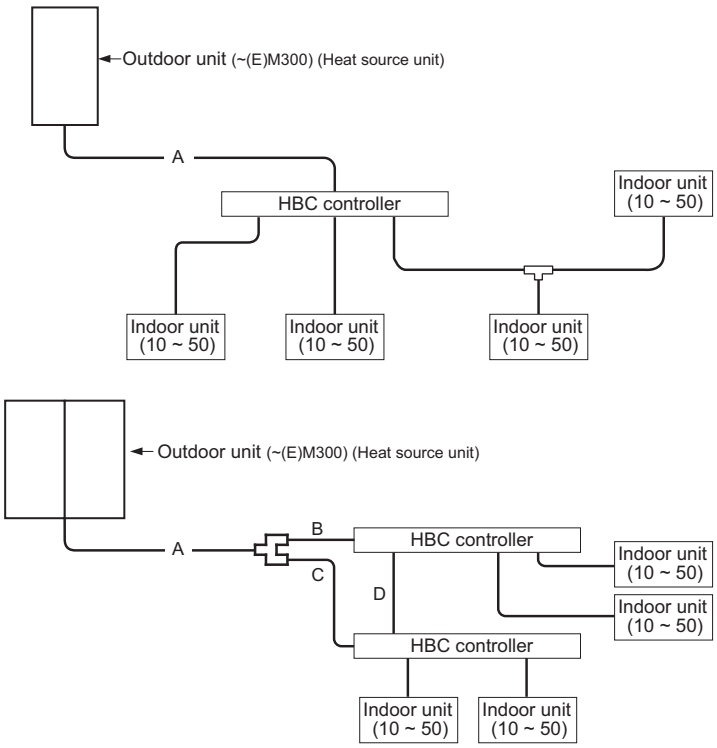
$L_1$ :Length of Φ15.88 [5/8"] high pressure pip (m)
$\alpha_1$ :Refer to the table below.

| Outdoor unit index (Heat source unit model) | Diameter of high-pressure pipe |
|---|---|
| (E)M200 | ø15.88 |
| (E)M250 | ø15.88 |
| (E)M300 | ø15.88 |

| Amount for the HBC controller |
|---|
| $\alpha_1$(kg) |
| 2.8 |

Round up the calculation result to the nearest 0.1kg. (Example: 18.04kg to 18.1kg)

**(2) Example**




**(3) Sample calculation**

| | | | |
|---|---|---|---|
| Indoor | 1: 50 | A: ø19.05 | 42 m |
| | 2: 50 | | |
| | 3: 50 | | |
| | 4: 40 | | |
| Outdoor | P250 | | |

The total length of each liquid line is as follows:
ø15.88: A = 42 m, $\alpha_1$ = 2.8
Therefore,
<Calculation example>
Additional refrigerant charge
= 42 × 0.09 + 2.8
= 6.58 kg
≒ 6.6 kg
* All pipe work except A is water pipe work.

| | | | |
|---|---|---|---|
| Indoor | 1: 50 | A:ø22.2 | 18 m |
| | 2: 50 | B:ø15.88 | 5 m |
| | 3: 50 | C:ø15.88 | 10 m |
| | 4: 50 | D:ø15.88 | 8 m |
| Outdoor | P400 | | |

The total length of each liquid line is as follows:
ø15.88: A = 18 m, ø15.88: B + C + D = 23m, $\alpha_1$ = 2.8 × 2
Therefore,
<Calculation example>
Additional refrigerant charge
= (18 + 5 + 10 + 8) × 0.11 + 2.8 × 2
= 9.56 kg
≒ 9.6 kg
* All pipe work except A, B, C, D is water pipe work.

## [4] Refrigerant Amount Adjust Mode

On the model of unit described in this document, the refrigerant charge cannot be adjusted.

## [5] The following symptoms are normal.

| Symptoms | Remote controller display | Cause |
|---|---|---|
| The auto vane adjusts its position by itself. | Normal display | After an hour of cooling operation with the auto vane in the vertical position, the vane may automatically move into the horizontal position. Louver blades will automatically move into the horizontal position while the unit is in the defrost mode, pre-heating stand-by mode, or when the thermostat triggers unit off. |
| The fan stops during heating operation. | Defrost | The fan remains stopped during defrost operation. |
| The fan keeps running after the unit has stopped. | Unlit | When the auxiliary heater is turned on, the fan operates for one minute after stopping to dissipate heat. |
| The fan speed does not reach the set speed when operation switch is turned on. | STAND BY | The fan operates at extra low speed for 5 minutes after it is turned on or until the pipe temperature reaches 35°C[95°F], then it operates at low speed for 2 minutes, and finally it operates at the set speed. (Pre-heating stand-by) |
| When the main power is turned on, the display shown on the right appears on the indoor unit remote controller for 5 minutes. | "HO" or "PLEASE WAIT" icons blink on the display. | The system is starting up. Wait until the blinking display of "HO" or "PLEASE WAIT" go off. |
| The drain pump keeps running after the unit has stopped. | Unlit | The drain pump stays in operation for three minutes after the unit in the cooling mode is stopped. |
| The drain pump is running while the unit is stopped. | | When drain water is detected, the drain pump goes into operation even while the unit is stopped. |
| Indoor unit and HBC controller make noise during cooling/ heating changeover. | Normal display | This noise is made when the refrigerant circuit is reversed and is normal. |
| Sound of the refrigerant flow is heard from the indoor unit immediately after starting operation. | Normal display | This is caused by the transient instability of the refrigerant flow and is normal. |
| Warm air sometimes comes out of the indoor units that are not in the heating mode. | Normal display | This is due to the fact that the LEVs on some of the indoor units are kept slightly open to prevent the refrigerant in the indoor units that are not operating in the heating mode from liquefying and accumulating in the compressor. It is part of a normal operation. |
| The HBC controller makes refrigerant flow noise during defrost. | During defrost | This noise is produced by the high-pressure liquid refrigerant migrating into the HBC and evaporating. (This noise is normal.) |

# VIII Troubleshooting

## [1] Error Code Lists

| Error Code | Preliminary error code | Error (preliminary) detail code | Error code definition | | Searched unit | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Outdoor unit | Indoor unit | HBC controller | LOSSNAY | Remote controller | |
| 2500 | - | - | Drain sensor submergence | | | O | | | | |
| 2501 | - | - | Water pump error | | | | O | | | |
| 2502 | - | - | Drain pump fault (float switch) | | | O | O | | | |
| | | | Untightened manual air vent valve | | | O | | | | |
| 2503 | - | - | Drain sensor (Thd) fault | | | O | | O | | |
| 2512 | - | - | 3-way valve/Water flow rate control valve fault | | | | O | | | |
| 4102 | 4152 | - | Open phase | | O | | | | | |
| 4106 | - | - | Transmission power supply fault | | O | | | | | |
| 4114 | - | - | Indoor unit fan motor error | | | O | | | | |
| 4115 | - | - | Power supply signal sync error | | O | | | | | |
| 5102 | - | - | Incorrect pipe connection | | | O | | | | |
| 5111 | - | - | Temperature sensor fault (HBC controller) | Liquid-side refrigerant temp. of Heating-main heat exchanger (TH11) | | | O | | | |
| 5112 | - | - | | Liquid-side refrigerant temp. of Cooling-main heat exchanger (TH12) | | | O | | | |
| 5113 | - | - | | Gas-side refrigerant temp. of Heating-main heat exchanger (TH13) | | | O | | | |
| 5114 | - | - | | Gas-side refrigerant temp. of Cooling-main heat exchanger (TH14) | | | O | | | |
| 5115 | - | - | | Bypass inlet temperature (TH15) | | | O | | | |
| 5116 | - | - | | Bypass outlet temperature (TH16) | | | O | | | |
| 5132 | – | – | Temperature sensor fault (HBC controller) | Water-side outlet temp. of Heating-main heat exchanger (TH32) | | | O | | | |
| 5133 | – | – | | Water-side outlet temp. of Cooling-main heat exchanger (TH33) | | | O | | | |
| 5134 | – | – | | Water pump WP2 outlet temperature (TH34) | | | O | | | |
| 5135 | – | – | | Water pump WP1 outlet temperature (TH35) | | | O | | | |

| Error Code | Prelimi-nary error code | Error (prelim-inary) detail code | Error code definition | | Searched unit | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Outdoor unit | Indoor unit | HBC controller | LOSSNAY | Remote controller | |
| 5141 | − | − | Temperature sensor fault (HBC controller) | 1st port returned water temp. (TH31a) | | | O | | | |
| 5142 | − | − | | 2nd port returned water temp. (TH31b) | | | O | | | |
| 5143 | − | − | | 3rd port returned water temp. (TH31c) | | | O | | | |
| 5144 | − | − | | 4th port returned water temp. (TH31d) | | | O | | | |
| 5145 | − | − | | 5th port returned water temp. (TH31e) | | | O | | | |
| 5146 | − | − | | 6th port returned water temp. (TH31f) | | | O | | | |
| 5147 | − | − | | 7th port returned water temp. (TH31g) | | | O | | | |
| 5148 | − | − | | 8th port returned water temp. (TH31h) | | | O | | | |
| 5149 | - | - | | 9th port returned water temp. (TH31i) | | | O | | | |
| 5150 | - | - | | 10th port returned water temp. (TH31j) | | | O | | | |
| 5151 | - | - | | 11th port returned water temp. (TH31k) | | | O | | | |
| 5152 | - | - | | 12th port returned water temp. (TH31l) | | | O | | | |
| 5153 | - | - | | 13th port returned water temp. (TH31m) | | | O | | | |
| 5154 | - | - | | 14th port returned water temp. (TH31n) | | | O | | | |
| 5155 | - | - | | 15th port returned water temp. (TH31o) | | | O | | | |
| 5156 | - | - | | 16th port returned water temp. (TH31p) | | | O | | | |

| Error Code | Prelimi-nary error code | Error (prelim-inary) detail code | Error code definition | | Searched unit | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Outdoor unit | Indoor unit | HBC controller | LOSSNAY | Remote controller | |
| 5161 | - | - | Temperature sensor fault (Sub-HBC) | 1st port returned water temp. (TH31a) | | | O | | | |
| 5162 | - | - | | 2nd port returned water temp. (TH31b) | | | O | | | |
| 5163 | - | - | | 3rd port returned water temp. (TH31c) | | | O | | | |
| 5164 | - | - | | 4th port returned water temp. (TH31d) | | | O | | | |
| 5165 | - | - | | 5th port returned water temp. (TH31e) | | | O | | | |
| 5166 | - | - | | 6th port returned water temp. (TH31f) | | | O | | | |
| 5167 | - | - | | 7th port returned water temp. (TH31g) | | | O | | | |
| 5168 | - | - | | 8th port returned water temp. (TH31h) | | | O | | | |
| 5169 | - | - | | 9th port returned water temp. (TH31i) | | | O | | | |
| 5170 | - | - | | 10th port returned water temp. (TH31j) | | | O | | | |
| 5171 | - | - | | 11th port returned water temp. (TH31k) | | | O | | | |
| 5172 | - | - | | 12th port returned water temp. (TH31l) | | | O | | | |
| 5173 | - | - | | 13th port returned water temp. (TH31m) | | | O | | | |
| 5174 | - | - | | 14th port returned water temp. (TH31n) | | | O | | | |
| 5175 | - | - | | 15th port returned water temp. (TH31o) | | | O | | | |
| 5176 | - | - | | 16th port returned water temp. (TH31p) | | | O | | | |
| 5177 | - | - | | Water-side outlet temp. of Heating-main heat ex-changer (TH32) | | | O | | | |
| 5178 | - | - | | Water-side outlet temp. of Cooling-main heat ex-changer (TH33) | | | O | | | |
| 5201 | 1402 | - | High-pressure sensor fault (Outdoor unit HPS/HBC controller PS1) | | O | | O | | | |
| 5301 | 4300 | [115] | ACCT sensor fault | | O | | | | | |
| | | [117] | ACCT sensor circuit fault | | O | | | | | |
| | | [119] | Open-circuited IPM/Loose ACCT connector | | O | | | | | |
| | | [120] | Faulty ACCT wiring | | O | | | | | |
| 5701 | - | - | Loose float switch connector | | | O | | | | |
| 6600 | - | - | Address overlaps | | O | O | O | O | O | |

| Error Code | Preliminary error code | Error (preliminary) detail code | Error code definition | Searched unit | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Outdoor unit | Indoor unit | HBC controller | LOSSNAY | Remote controller | |
| 6601 | - | - | Polarity setting error | | | | | O | |
| 6602 | - | - | Transmission processor hardware error | O | O | O | O | O | |
| 6603 | - | - | Transmission line bus busy error | O | O | O | O | O | |
| 6606 | - | - | Communication error between device and transmission processors | O | O | O | O | O | |
| 6607 | - | - | No ACK error | O | O | O | O | O | |
| 6608 | - | - | No response error | O | O | O | O | O | |
| 7100 | - | - | Total capacity error | O | | | | | |
| 7101 | - | - | Capacity code setting error | O | O | | O | | |
| 7102 | - | - | Wrong number of connected units | O | | O | | | |
| 7105 | - | - | Address setting error | O | | | | | |
| 7106 | - | - | Attribute setting error | | | | O | | |
| 7107 | - | - | Port setting error | | | O | | | |
| 7110 | - | - | Connection information signal transmission/reception error | O | | | | | |
| 7113 | - | - | Function setting error | O | | | | | |
| 7117 | - | - | Model setting error | O | | | | | |
| 7130 | - | - | Incompatible unit combination | O | | | | | |

## [2] Responding to Error Display on the Remote Controller

**1. Error Code**

**2500**

**Drain sensor submergence (Models with a drain sensor)**

**2. Error definition and error detection method**

1) If an immersion of the drain sensor in the water is detected while the unit is in any mode other than the Cool/Dry mode and when the drain pump goes from OFF to ON, this condition is considered preliminary water leakage. While this error is being detected, humidifier output cannot be turned on.
2) If the immersion of the sensor in the water is detected four consecutive times at an hour interval, this is considered water leakage, and "2500" appears on the monitor.
3) Detection of water leakage is also performed while the unit is stopped.
4) Preliminary water leakage is cancelled when the following conditions are met:

- One hour after the preliminary water leakage was detected, it is not detected that the drain pump goes from OFF to ON.
- The operation mode is changed to Cool/Dry.
- The liquid pipe temperature minus the inlet temperature is -10°C [-18°F] or less.

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Drain water drainage problem<br>• Clogged drain pump<br>• Clogged drain piping<br>• Backflow of drain water from other units | Check for proper drainage. |
| (2) Adhesion of water drops to the drain sensor<br>• Trickling of water along the lead wire<br>• Rippling of drain water caused by filter clogging | 1) Check for proper lead wire installation.<br>2) Check for clogged filter. |
| (3) Failure of the relay circuit for the solenoid valve | Replace the relay. |
| (4) Indoor unit control board failure<br>• Drain sensor circuit failure | If the above item checks out OK, replace the indoor unit control board. |

## 1. Error Code

**2500**

**Drain sensor submergence (Models with a float switch)**

## 2. Error definition and error detection method

1) If an immersion of the float switch in the water is detected while the unit is in any mode other than the Cool/Dry mode and when the drain pump goes from OFF to ON, this condition is considered preliminary water leakage. While this error is being detected, humidifier output cannot be turned on.
2) If the drain pump turns on within one hour after preliminary water leakage is detected and the above-mentioned condition is detected two consecutive times, water leakage error water leakage is detected, and "2500" appears on the monitor.
3) Detection of water leakage is also performed while the unit is stopped.
4) Preliminary water leakage is cancelled when the following conditions are met:

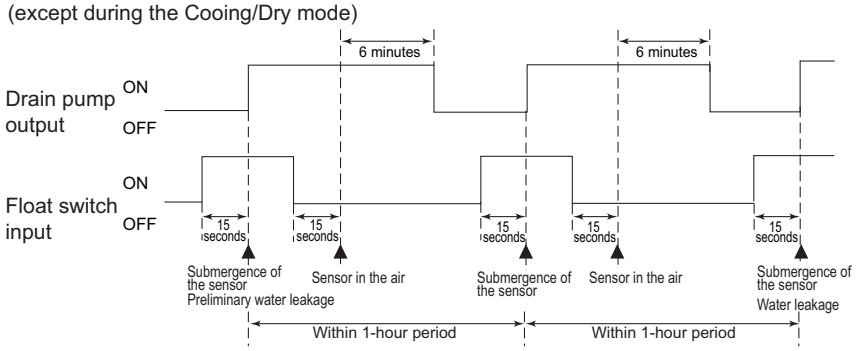
- One hour after the preliminary water leakage was detected, it is not detected that the drain pump goes from OFF to ON.
- The operation mode is changed to Cool/Dry.
- The liquid pipe temperature minus the inlet temperature is - 10°C [ -18°F] or less.

## 3. Cause, check method and remedy

| Cause | Check method and remedy |
|---|---|
| (1) Drain water drainage problem<br>•Clogged drain pump<br>•Clogged drain piping<br>•Backflow of drain water from other units | Check for proper drainage. |
| (2) Stuck float switch<br>Check for slime in the moving parts of the float switch. | Check for normal operation of the float switch. |
| (3) Float switch failure | Check the resistance with the float switch turned on and turned off. |

<Reference>

Drain pump operation triggered by a submergence of the liquid level sensor (except during the Cooing/Dry mode)



**1. Error Code**

**2501**

**Water pump fault**

**2. Error definition and error detection method**

♦When clogged water circuit or water leaks from the water circuit is detected, the water pump is stopped for protection.
♦When the following statuses are detected, the pump will be stopped.
∗The revolutions of the water pump exceeds the specific range.
∗Pump discharge port: TH34, TH35 > 53ºC [127ºF]

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Water circuit is clogged. | 1) Check for tightened water flow rate control valves or field-installed valves. |
| (2) Water leaks from the water circuit | 2) Check the pump for proper sound.<br>If there is air in the circuit, it makes a noise. |
| (3) Air infiltration through the air vent valve | 3) Check that any air vent valves are not installed in the water circuit on the suction side water pump.<br>If an air vent valve is installed in the water circuit on the suction side water pump, it will cause the air infiltration. |
| (4) Broken or semi-broken thermistor wire | 4) Check for a broken thermistor wire. |
| (5) Thermistor failure | 5) Check the resistance of the thermistor.<br>0°C [32°F] : 6.0kΩ<br>10°C [50°F] : 3.9kΩ<br>20°C [68°F]: 2.6kΩ<br>30°C [86°F] : 1.8kΩ<br>40°C [104°F] : 1.3kΩ |
| (6) Semi-broken pump wire | 6) Check for semi-broken pump wires. |

♦If a sudden water leak occurs, replace the water pressure protection valves because they may be the cause.

**1. Error Code**

**2502**

**Drain pump fault (Models with a drain sensor)**

**2. Error definition and error detection method**

1) Make the drain sensor thermistor self-heat. If the temperature rise is small, it is interpreted that the sensor is immersed in water. This condition is considered to be a preliminary error, and the unit goes into the 3-minute restart delay mode.
2) If another episode of the above condition is detected during the preliminary error, this is considered a drain pump error, and "2502" appears on the monitor.
3) This error is always detected while the drain pump is in operation.
4) The following criteria are met when the criteria for the forced stoppage of outdoor unit (system stoppage) are met.
   ∗"Liquid pipe temperature - inlet temperature ≦ -10°C [ -18 °F] " has been detected for 30 minutes.
   ∗The immersion of drain sensor is detected 10 consecutive times.
   ∗The conditions that are listed under items 1) through 3) above are always met before the criteria for the forced stoppage of the outdoor unit.
5) The indoor unit that detected the conditions that are listed in item 4) above brings the outdoor unit in the same refrigerant circuit to an error stop (compressor operation prohibited), and the outdoor unit brings all the indoor units in the same refrigerant circuit that are in any mode other than Fan or Stop to an error stop. "2502" appears on the monitor of the units that came to an error stop.
6) Forced stoppage of the outdoor unit
   Detection timing: The error is detected whether the unit is in operation or stopped.
7) Ending criteria for the forced stoppage of outdoor unit
   Power reset the indoor unit that was identified as the error source and the outdoor unit that is connected to the same refrigerant circuit.
   Forced stoppage of the outdoor unit cannot be cancelled by stopping the unit via the remote controller.
   (Note) Items 1) - 3) and 4) - 7) are detected independently from each other.

**Note**

**The address and attribute that appear on the remote controller are those of the indoor unit (or OA processing unit) that caused the error.**

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Drain pump failure | Check for proper functioning of the drain pump. |
| (2) Drain water drainage problem<br>♦Clogged drain pump<br>♦Clogged drain piping | Check for proper drainage. |
| (3) Adhesion of water drops to the drain sensor<br>♦Trickling of water along the lead wire<br>♦Rippling of drain water caused by filter clogging | 1) Check for proper lead wire installation.<br>2) Check for clogged filter. |
| (4) Indoor unit control board failure<br>♦Drain pump drive circuit failure<br>♦Drain heater output circuit failure | If the above item checks out OK, replace the indoor unit control board. |
| (5) Items (1) through (4) above and an indoor unit electronic valve closure failure (leaky valve) occurred simultaneously. | Check the solenoid valves on the indoor unit for leaks. |

**1. Error Code**

**2502**

**Drain pump fault (Models with a float switch)**

**2. Error definition and error detection method**

1) The immersion of sensor tip in water is detected by the ON/OFF signal from the float switch.
   ∗Submergence of the sensor
   When it is detected that the float switch has been ON for 15 seconds, it is interpreted that the sensor tip is immersed in water.
   ∗Sensor in the air
   When it is detected that the float switch has been OFF for 15 seconds, it is interpreted that the sensor tip is not immersed in water.
2) If it is detected that the float switch has been ON for 3 minutes after the immersion of the sensor tip was detected, this is considered a drain pump failure, and "2502" appears on the monitor.
   ∗The total time it takes for this error to be detected is 3 minutes and 15 seconds, including the time it takes for the first immersion of the sensor tip to be detected.
3) Detection of drain pump failure is performed while the unit is stopped.
4) The following criteria are met when the criteria for the forced stoppage of outdoor unit (system stoppage) are met.
   ∗"Liquid pipe temperature - inlet temperature ≦ - 10°C [ -18°F] " has been detected for 30 minutes.
   ∗It is detected by the float switch that the sensor tip has been immersed in water for 15 minutes or more.
   ∗The conditions that are listed under items 1) through 3) above are always met before the criteria for the forced stoppage of the outdoor unit.
5) The indoor unit and HBC controller that detected the conditions that are listed in item 4) above brings the outdoor unit in the same refrigerant system to an abnormal stop (compressor operation prohibited), and the outdoor unit brings all the indoor units and HBC controller in the same refrigerant system that are in any mode other than Fan or Stop to an abnormal stop. "2502" appears on the monitor of the units that came to an abnormal stop.
6) Forced stoppage of the outdoor unit
   Detection timing: The error is detected whether the unit is in operation or stopped.
   This error is detected whether the unit is in operation or stopped.
7) Ending criteria for the forced stoppage of outdoor unit
   Power reset the indoor unit that was identified as the error source and the outdoor unit that is connected to the same refrigerant circuit.
   Forced stoppage of the outdoor unit cannot be cancelled by stopping the unit via the remote controller.
   (Note) Items 1) - 3) and 4) - 7) are detected independently from each other.

**Note**

**The address and attribute that appear on the remote controller are those of the indoor unit (or OA processing unit) that caused the error.**

**3. Cause, check method and remedy**

| Cause | | Check method and remedy |
|---|---|---|
| (1) | Drain pump failure | Check for proper functioning of the drain pump mechanism |
| (2) | Drain water drainage problem<br>♦Clogged drain pump<br>♦Clogged drain piping | Check for proper drainage. |
| (3) | Stuck float switch<br>Check for slime in the moving parts of the float switch. | Check for normal operation of the float switch. |
| (4) | Float switch failure | Check the resistance with the float switch turned on and turned off. |
| (5) | Indoor unit/HBC controller control board fault<br>♦Drain pump drive circuit failure<br>♦Float switch input circuit failure | Replace indoor unit control board. |
| (6) | Items (1) through (5) above and an indoor unit electronic valve closure failure (leaky valve) occurred simultaneously. | Check the solenoid valves on the indoor unit for leaks. |
| (7) | Untightened manual air vent valve | Visual/Manual inspection |

♦If a sudden water leak occurs, replace the water pressure protection valves because they may be the cause.
♦During water supply or air vent operation, set the Dip SW 5-2 from OFF to ON. (This error is ignored for nine hours.)

**1. Error Code**

**2503**

**Drain sensor (Thd) fault**

**2. Error definition and error detection method**

- If the open or short circuit of the thermistor has been detected for 30 seconds, this condition is considered to be a preliminary error, and the unit goes into the 3-minute restart delay mode.
- If another episode of the above condition is detected during the preliminary error, this is considered a drain sensor error.(If the short or open circuit of the thermistor is no longer detected, normal operation will be restored in 3 minutes.)
- This error is detected when one of the following conditions are met.
  - ∗During Cool/Dry operation
  - ∗Liquid pipe temperature minus inlet temperature is equal to or smaller than - 10°C [ -18°F] (except during the defrost cycle)
  - ∗When the liquid temperature thermistor or suction temperature thermistor or short or open circuited.
  - ∗Drain pump is in operation.
  - ∗One hour has elapsed since the drain sensor went off.

  Short: 90°C [194 °F] or above
  Open: - 20°C [-4 °F] or below

**3. Cause, check method and remedy**

| Cause | | Check method and remedy | |
|---|---|---|---|
| (1) | Faulty connector (CN31) insertion. | 1) | Check for connector connection failure.<br>Reinsert the connector, restart the operation, and check for proper operation. |
| (2) | Broken or semi-broken thermistor wire | 2) | Check for a broken thermistor wire. |
| (3) | Thermistor failure | 3) | Check the resistance of the thermistor.<br>0°C[32 °F]:6.0kΩ<br>10°C[50 °F]:3.9kΩ<br>20°C[68°F]:2.6kΩ<br>30°C[86°F]:1.8kΩ<br>40°C[104 °F]:1.3kΩ |
| (4) | Indoor unit control board (error detection circuit) failure | 4) | Replace the indoor unit control board if the problem recurs when the unit is operated with the No.-1 and No.-2 pins on the drain sensor connector (CN31) being short-circuited.<br>If the above item checks out OK, there are no problems with the drain sensor.<br>Turn off the power and turn it back on. |

**1. Error Code**

**2512**

**Valve block fault**

**2. Error definition and error detection method**

♦Limit signal that is output from valve block is not detected or is not reset after it is detected.

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Loose connectors, wiring fault<br>(2) Valve block fault | When the LEDs on the control board (VB3a-VB3p) are lit, check the valve block whose LED is lit for loose connectors, wiring fault, and proper operation. When the LEDs described above are not lit, check all the valve block for proper operation. |
| (3) Control board fault | If no problems are found with the above items, replace the control board. |

**1. Error Code**

**4102**

**Open phase**

**2. Error definition and error detection method**

- An open phase of the power supply (L1 phase, N phase) was detected at power on.
- The L3 phase current is outside of the specified range.

**Note**

The open phase of the power supply may not always be detected if a power voltage from another circuit is applied.

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Power supply problem<br>♦Open phase voltage of the power supply<br>♦Power supply voltage drop | Check the input voltage to the power supply terminal block TB1. |
| (2) Noise filter problem<br>♦Coil problem<br>♦Circuit board failure | ♦Check the coil connections.<br>♦Check for coil burnout.<br>♦Confirm that the voltage at the CN3 connector is 198 V or above. |
| (3) Wiring failure | Confirm that the voltage at the control board connector CNAC is 198 V or above.<br>If the voltage is below 198V, check the wiring connection between the noise filter board CN3, noise filter board CN2 and control board CNAC.<br>Confirm that the wiring between noise filter TB23 and INV board SC-L3 is put through CT3. |
| (4) Blown fuse | Check for a blown fuse (F01) on the control board.<br>->If a blown fuse is found, check for a short-circuiting or earth fault of the actuator. |
| (5) CT3 failure | Replace the inverter if this problem is detected after the compressor has gone into operation. |
| (6) Control board failure | Replace the control board if none of the above is causing the problem. |

**1. Error Code**

**4106**

**<Transmission power supply fault Error detail code FF (Outdoor unit)>**

**2. Error definition and error detection method**

Transmission power output failure

**3. Cause**

1) Wiring failure
2) Transmission power supply cannot output voltage because overcurrent was detected.
3) Voltage cannot be output due to transmission power supply problem.
4) Transmission voltage detection circuit failure

**4. Check method and remedy**

Check the items in VIII [4] -3- (2) Troubleshooting transmission power circuit of outdoor unit on all outdoor units in the same refrigerant circuit.(page 195)

**<Transmission power supply fault other than error detail code FF (Outdoor unit)>**

**2. Error definition and error detection method**

Transmission power reception failure

**3. Cause**

One of the outdoor units stopped supplying power, but no other outdoor units start supplying power.

**4. Check method and remedy**

Check the items in VIII [4] -3- (2) Troubleshooting transmission power circuit of outdoor unit on all outdoor units in the same refrigerant circuit.(page 195)

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**1. Error Code**

**4114**

**Indoor unit fan motor error**

**2. Error definition and error detection method**

When the fan motor output from the indoor unit circuit board is ON and when the rotation speed input from the fan motor cannot be detected for 30 seconds or more

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Fan motor connector contact failure | Check the fan motor connector CNMF for proper connection. |
| (2) Indoor unit circuit board failure | Remove the fan motor connector CNMF and check the voltage at the indoor unit circuit board.<br>Testing point 1. 280 VDC (Between CNMF1 (+) and CNMF4 (-))<br>2. 15 VDC (Between CNMF5 (+) and CNMF4 (-))<br>Replace the indoor unit circuit board if the voltage is abnormal.<br>If the 4114 error persists after the indoor unit circuit board is replaced, replace the fan motor as well. |
| (3) Fan motor fault | Replace the fan motor if the voltage is normal in step (2) above.<br>If the 4114 error persists after the fan motor is replaced, replace the indoor unit circuit board as well. |

**1. Error Code**

**4115**

**Power supply signal sync error**

**2. Error definition and error detection method**

The frequency cannot be determined when the power is switched on.

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Power supply error | Check the voltage of the power supply terminal block (TB1). |
| (2) Noise filter problem<br>•Coil problem<br>•Circuit board failure | •Check the coil connections.<br>•Check for coil burnout.<br>•Confirm that the voltage at the CN3 connector is 198 V or above. |
| (3) Faulty wiring | Check fuse F01 on the control board. |
| (4) Wiring failure<br>Between noise filter CN3 and noise filter CN2 and control board CNAC | Confirm that the voltage at the control board connector CNAC is 198 V or above. |
| (5) Control board failure | If none of the items described above is applicable, and if the trouble reappears even after the power is switched on again, replace the control board. |

**1. Error Code**

**5102**

**Incorrect pipe connection (indoor unit)**

**2. Error definition and error detection method**

Water inlet and outlet pipes are connected in reverse. (Detected only during commissioning)

1) The formula "Water inlet pipe temperature (TH22) + 4°C < Water outlet pipe temperature (TH23)" is met after at least 15 minutes have passed after the operation mode was changed from Cooling/Dry to Heating during commissioning.
2) The formula "Water inlet pipe temperature (TH22) + 4°C < Water outlet pipe temperature (TH23)" is met after at least 10 minutes have passed after the operation mode was changed from the mode other than Cooling/Dry to Heating during commissioning.
3) The formula "Water inlet pipe temperature (TH22) > Water outlet pipe temperature (TH23) + 4°C" is met after at least 15 minutes have passed after the operation mode was changed from Heating to Cooling/Dry during commissioning.
4) The formula "Water inlet pipe temperature (TH22) > Water outlet pipe temperature (TH23) + 4°C" is met after at least 10 minutes have passed after the operation mode was changed from the mode other than Heating to Cooling/Dry during commissioning.

Note

**This error may not be detectable under certain operating conditions due to a lack of temperature differential.**

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Incorrect water pipe connection | Check that the water inlet and outlet pipes are not connected in reverse. |
| (2) Thermistor failure<br>(3) Connector contact failure<br>(4) Disconnected wire or partial disconnected thermistor wire | Check the thermistor resistor.<br>0°C [32°F]: 15 kΩ<br>10°C [50°F]: 9.7 kΩ<br>20°C [68°F] : 6.4 kΩ<br>30°C [86°F] : 4.3 kΩ<br>40°C [104°F] : 3.1 kΩ |
| (5) Indoor board (detection circuit) failure | Check the connector contact.<br>When no fault is found, the indoor board is a failure. |

**1. Error Code**

**5111 - 5116**

**Temperature sensor fault (HBC controller) (TH11~TH16)**

**5132 - 5135**

**Temperature sensor fault (HBC controller) (TH32~TH35)**

**5141 - 5156**

**Temperature sensor fault (HBC controller) (TH31a~TH31p)**

**5161 - 5176**

**Temperature sensor fault (Sub-HBC) (TH31a~TH31p)**

**5177 - 5178**

**Temperature sensor fault (Sub-HBC) (TH32~TH33)**

**2. Error definition and error detection method**

- If a shorted (high temperature intake) or open (low temperature intake) thermistor (TH11 through TH16, TH32 through TH35, TH31a through TH31p, TH31a through TH31p, TH32, or TH33 ) is detected during operation, the unit comes to an abnormal stop, and an error code “5111” through “5116,” “5132” through “5135,” “5141” through “5156,” “5161” through “5176,” or “5177” through “5178” appears on the display.
- Detection of a short- or open-circuit as described above is suspended during the defrost cycle and for 3 minutes after the operation mode is changed.

**3. Cause, check method and remedy**

| Cause | | Check method and remedy |
|---|---|---|
| (1) | Thermistor failure | Check thermistor resistance. |
| (2) | Pinched lead wire | Check for pinched lead wire. |
| (3) | Torn wire coating | Check for wire coating. |
| (4) | A pin on the male connector is missing or contact failure | Check connector. |
| (5) | Disconnected wire | Check for wire. |
| (6) | Thermistor input circuit failure on the control board | Check the intake temperature of the sensor with the LED monitor.<br>When the temperature is far different from the actual temperature, replace the control board. |

<Reference>

| | Short detection | Open detection |
|---|---|---|
| TH11 | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |
| TH12 | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |
| TH13 | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |
| TH14 | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |
| TH15 | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |
| TH16 | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |
| TH32~TH35 | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |
| TH31a~TH31p | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |
| TH31a~TH31p | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |
| TH32~TH33 | 110°C [230°F] and above (0.4kΩ) | -40°C [-40°F] and below (130kΩ) |

**1. Error Code**

**5201**

**High-pressure sensor fault (Outdoor unit 63HS1/HBC controller PS)**

**2. Error definition and error detection method**

When a pressure sensor reading of 4.06 MPa [589 psi] or above is detected, error codes "5201" and "5203" will appear. The unit will continue its operation by using other sensors as a backup.

**3. Cause, check method and remedy**

| Cause | | Check method and remedy |
|---|---|---|
| (1) | High pressure sensor failure | Refer to the page on the troubleshooting of the high pressure sensor in outdoor unit service handbook. |
| (2) | Pressure drop due to refrigerant leak | |
| (3) | Torn wire coating | |
| (4) | A pin on the male connector is missing or contact failure | |
| (5) | Disconnected wire | |
| (6) | High pressure sensor input circuit failure on the control board | |

**1. Error Code**

**5301**

**ACCT sensor fault (Detail code 115)**

**2. Error definition and error detection method**

When the formula "output current < 1.5 Arms" remains satisfied for 10 seconds while the inverter is in operation.

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Inverter open output phase | Check the output wiring connections. |
| (2) Compressor failure | Refer to the page on troubleshooting of inverter in outdoor unit service handbook |
| (3) INV board failure | Refer to the page on troubleshooting of inverter in outdoor unit service handbook |

**Note**

Refer to the page on troubleshooting of inverter in outdoor unit service handbook.

**1. Error Code**

**5301**

**ACCT sensor circuit fault (Detail code 117)**

**2. Error definition and error detection method**

When an error value is detected with the ACCT detection circuit just before the inverter starts

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) INV board failure | Refer to the page on troubleshooting of inverter in outdoor unit service handbook |
| (2) Compressor failure | Refer to the page on troubleshooting of inverter in outdoor unit service handbook |

**Note**

Refer to the page on troubleshooting of inverter in outdoor unit service handbook.

**1. Error Code**

**5301**

**Open-circuited IPM/Loose ACCT connector (Detail code 119)**

**2. Error definition and error detection method**

Presence of enough current cannot be detected during the self-diagnostic operation immediately before inverter startup.

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Inverter output wiring problem | Check output wiring connections.<br>Confirm that the U- and W-phase output cables are put through CT12 and CT22 on the INV board respectively. |
| (2) Inverter failure | Refer to the page on troubleshooting of inverter in outdoor unit service handbook |
| (3) Compressor failure | Refer to the page on troubleshooting of inverter in outdoor unit service handbook |

**Note**

Refer to the page on troubleshooting of inverter in outdoor unit service handbook.

**1. Error Code**

**5301**

**Faulty ACCT wiring (Detail code 120)**

**2. Error definition and error detection method**

Presence of target current cannot be detected during the self-diagnostic operation immediately before startup. (Detection of improperly mounted ACCT sensor)

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Inverter output wiring problem | Check output wiring connections.<br>Confirm that the U- and W-phase output cables are put through CT12 and CT22 on the INV board respectively. |
| (2) Inverter failure | Refer to the page on troubleshooting of inverter in outdoor unit service handbook |
| (3) Compressor failure | Refer to the page on troubleshooting of inverter in outdoor unit service handbook |

**Note**

Refer to the page on troubleshooting of inverter in outdoor unit service handbook.

**1. Error Code**

**5701**

**Loose float switch connector**

**2. Error definition and error detection method**

Detection of the disconnected float switch (open-phase condition) during operation

**3. Cause, check method and remedy**

**(1) CN4F disconnection or contact failure**

Check for disconnection of the connector (CN4F) on the indoor unit control board.

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**1. Error Code**

**6600**

**Address overlaps**

**2. Error definition and error detection method**

An error in which signals from more than one indoor units with the same address are received

Note

**The address and attribute that appear on the remote controller indicate the controller that detected the error.**

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) Two or more of the following have the same address: Outdoor units, HBC controllers, indoor units, LOSSNAY units, controllers such as ME remote controllers.<br><Example><br>6600 "01" appears on the remote controller<br>Unit #01 detected the error.<br>Two or more units in the system have 01 as their address.<br>(2) Signals are distorted by the noise on the transmission line. | ♦Find the unit that has the same address as that of the error source.<br>**Once the unit is found, correct the address. Then, turn off the outdoor units, indoor units, and LOSSNAY units, keep them all turned off for at least five minutes, and turn them back on.**<br>♦When air conditioning units are operating normally despite the address overlap error<br>Check the transmission wave shape and noise on the transmission line.<br>See the section "Investigation of Transmission Wave Shape/Noise." |

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**1. Error Code**

**6601**

**Polarity setting error**

**2. Error definition and error detection method**

The error detected when transmission processor cannot distinguish the polarities of the M-NET transmission line.

**3. Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| (1) No voltage is applied to the M-NET transmission line that AG-150A/GB-50ADA/PAC-YG50ECA/BAC-HD150 are connected to.<br>(2) M-NET transmission line to which AG-150A/GB-50ADA/PAC-YG50ECA/BAC-HD150 are connected is short-circuited. | Check if power is supplied to the M-NET transmission line of the AG-150A/GB-50ADA/PAC-YG50ECA/BAC-HD150, and correct any problem found. |

**1. Error Code**

**6602**

**Transmission processor hardware error**

**2. Error definition and error detection method**

Although "0" was surely transmitted by the transmission processor, "1" is displayed on the transmission line.

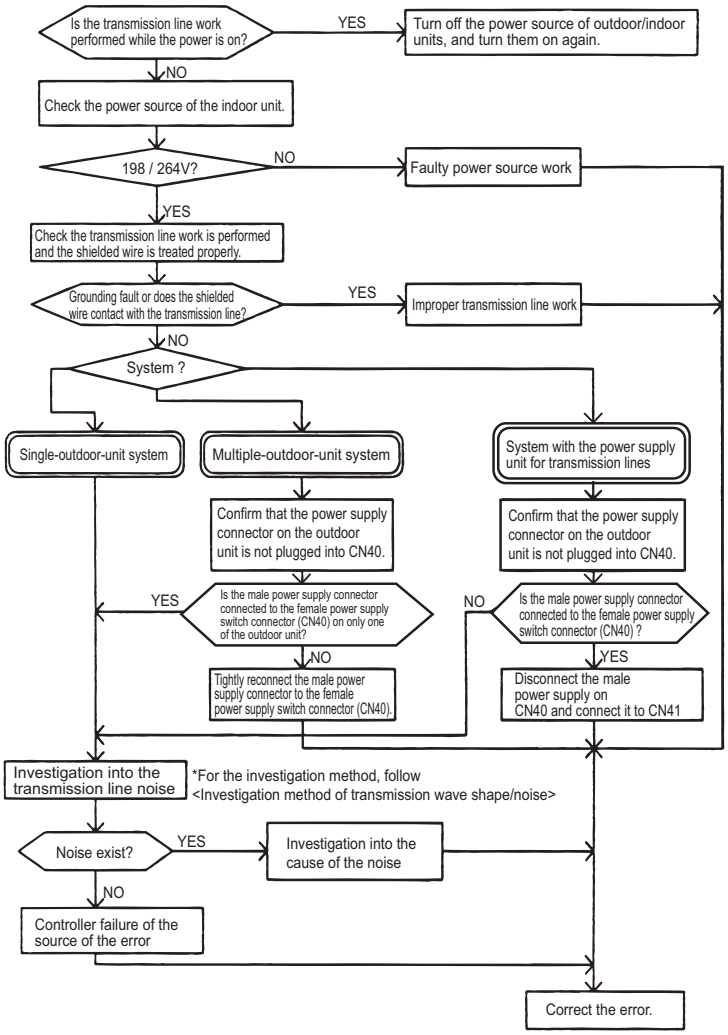
**Note**

**The address/attribute appeared on the display on the remote controller indicates the controller where an error occurred.**

**3. Cause**

1) When the wiring work of or the polarity of either the indoor or outdoor transmission line is performed or is changed while the power is on, the transmitted data will collide, the wave shape will be changed, and an error will be detected.
2) Grounding fault of the transmission line
3) When grouping the indoor units that are connected to different outdoor units, the male power supply connectors on the multiple outdoor units are connected to the female power supply switch connector (CN40).
4) When the power supply unit for transmission lines is used in the system connected with MELANS, the male power supply connector is connected to the female power supply switch connector (CN40) on the outdoor unit.
5) Controller failure of the source of the error
6) When the transmission data is changed due to the noise on the transmission line
7) Voltage is not applied on the transmission line for centralized control (in case of grouped indoor units connected to different outdoor units or in case of the system connected with MELANS)

**4. Check method and remedy**



**1. Error Code**

**6603**

**Transmission line bus busy error**

**2. Error definition and error detection method**

- Generated error when the command cannot be transmitted for 4-10 minutes in a row due to bus-busy
- Generated error when the command cannot be transmitted to the transmission line for 4-10 minutes in a row due to noise

Note

**The address/attribute appeared on the display on the remote controller indicates the controller where an error occurred.**

**3. Cause, check method and remedy**

| Cause | | Check method and remedy |
|---|---|---|
| (1) | The transmission processor cannot be transmitted as the short-wavelength voltage like noise exists consecutively on the transmission line. | Check the transmission wave shape and noise on the transmission line.<br>See the section "Investigation of Transmission Wave Shape/Noise."<br>-> No noise indicates that the error source controller is a failure.<br>-> If noise exists, investigate the noise. |
| (2) | Error source controller failure | |

**1. Error Code**

**6606**

**Communication error between device and transmission processors**

**2. Error definition and error detection method**

Communication error between the main microcomputer on the indoor unit board and the microcomputer for transmission

Note

**The address/attribute appeared on the display on the remote controller indicates the controller where an error occurred.**

**3. Cause, check method and remedy**

| Cause | | Check method and remedy |
|---|---|---|
| (1) | Data is not properly transmitted due to accidental erroneous operation of the controller of the error source. | Turn off the power source of the outdoor and the indoor units.(When the power source is turned off separately, the microcomputer will not be reset, and the error will not be corrected.)<br>-> If the same error occurs, the error source controller is a failure. |
| (2) | Error source controller failure | |

**1. Error Code**

**6607**

**No ACK error**

**2. Error definition and error detection method**

The error is detected when no acknowledgement (ACK signal) is received after the transmission. (eg. When the data is transmitted six times in a row with 30 seconds interval, the error is detected on the transmission side.)

Note

**The address/attribute appeared on the display on the remote controller indicates the controller which did not provide the response (ACK).**

**3. System configuration**

**(1) System with one outdoor unit**

| Error source address | Error display | Detection method | Cause | Check method and remedy |
|---|---|---|---|---|
| Outdoor unit (OC) | ME remote controller (RC)<br>MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to OC | (1) Contact failure of transmission line of OC or IC<br>(2) Decrease of transmission line voltage/signal by exceeding acceptable range of transmission wiring. Farthest:200 m [656ft] or less<br>Remote controller wiring: 10m [32ft] or less<br>(3) Erroneous sizing of transmission line (Not within the range below). Wire diameter: 1.25mm$^2$ [AWG16] or more<br>(4) Indoor unit control board failure | Turn off the power source of the outdoor unit, and turn it on again. If the error is accidental, it will run normally. If not, check the causes (1) - (4). |
| HBC controller (HB) | ME remote controller (RC)<br>MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to HB | (1) When HBC controller address is changed or modified during operation.<br>(2) Faulty or disconnected transmission wiring of HBC controller<br>(3) Disconnected connector of HBC controller (CN02)<br>(4) Faulty control board of HBC controller | Turn off the outdoor/indoor units for 5 or more minutes, and turn them on again.<br>If the error is accidental, they will run normally. If not, check the causes (1) - (4). |
| Indoor unit (IC) | ME remote controller (RC)<br>MA remote controller (MA) | No acknowledgement (ACK) at RC transmission to IC | (1) When IC unit address is changed or modified during operation.<br>(2) Faulty or disconnected IC transmission wiring<br>(3) Disconnected IC connector (CN2M)<br>(4) Indoor unit controller failure<br>(5) ME remote controller failure | Turn off the outdoor/indoor units for 5 or more minutes, and turn them on again.<br>If the error is accidental, they will run normally.<br>If not, check the causes (1) - (5). |
| LOSSNAY (LC) | ME remote controller (RC)<br>MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to LC | (1) The power source of LOSSNAY has been shut off.<br>(2) When the address of LOSSNAY is changed in the middle of the operation<br>(3) Faulty or disconnected transmission wiring of LOSSNAY<br>(4) Disconnected connector (CN1) on LOSSNAY<br>(5) Controller failure of LOSSNAY | Turn off the power source of LOSSNAY and turn it on again.<br>If the error is accidental, it will run normally.<br>If not, check the causes (1) - (5). |
| ME remote controller (RC) | ME remote controller (RC)<br>MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to RC | (1) Faulty transmission wiring at IC unit side.<br>(2) Faulty wiring of the transmission line for ME remote controller<br>(3) When the address of ME remote controller is changed in the middle of the operation<br>(4) ME remote controller failure | Turn off the power source of the outdoor unit for 5 minutes or more, and turn it on again.<br>If the error is accidental, it will run normally.<br>If not, check the causes (1) - (4). |

**1. Error Code**

**6607**

**No ACK error**

**2. Error definition and error detection method**

The error is detected when no acknowledgement (ACK signal) is received after the transmission. (eg. When the data is transmitted six times in a row with 30 seconds interval, the error is detected on the transmission side.)

Note

**The address/attribute appeared on the display on the remote controller indicates the controller which did not provide the response (ACK).**

**3. System configuration**

**(2) Grouping of units in a system with multiple outdoor units**

| Error source address | Error display | Detection method | Cause | Check method and remedy |
|---|---|---|---|---|
| Outdoor unit (OC) | ME remote controller (RC) MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to OC | Same cause as that for system with one outdoor unit | Same remedy as that for system with one outdoor unit |
| HBC controller (HB) | ME remote controller (RC) MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to HB | Same cause as that for system with one outdoor unit | Same remedy as that for system with one outdoor unit |
| Indoor unit (IC) | ME remote controller (RC) MA remote controller (MA) | No acknowledgement (ACK) at RC transmission to IC | (1) Same causes as (1) - (5) for system with one outdoor unit<br>(2) Disconnection or short circuit of the transmission line for the outdoor unit on the terminal block for centralized control line connection (TB7)<br>(3) When multiple outdoor units are connected and the power source of one of the outdoor units has been shut off.<br>(4) The male power supply connector of the outdoor unit is not connected to the female power supply switch connector (CN40).<br>(5) The male power supply connectors on 2 or more outdoor units are connected to the female power supply switch connector (CN40) for centralized control.<br>If an error occurs, after the unit runs normally once, the following causes may be considered.<br>♦Total capacity error (7100)<br>♦Capacity code error (7101)<br>♦Error in the number of connected units (7102)<br>♦Address setting error (7105) | 1) Turn off the power sources of the outdoor and indoor units for 5 or more minutes, and turn them on again. If the error is accidental, the will run normally.If not, check the cause 2).<br>2) Check the causes of (1) - (5). If the cause is found, correct it. If no cause is found, check 3).<br>3) Check the LED displays for troubleshooting on other remote controllers whether an error occurs.<br>If an error is found,<br>-> If an error is found, check the check code definition, and correct the error.<br>If no error is found,<br>-> Indoor unit board failure |

**1. Error Code**

**6607**

**No ACK error**

**2. Error definition and error detection method**

The error is detected when no acknowledgement (ACK signal) is received after the transmission. (eg. When the data is transmitted six times in a row with 30 seconds interval, the error is detected on the transmission side.)

Note

**The address/attribute appeared on the display on the remote controller indicates the controller which did not provide the response (ACK).**

**3. System configuration**

**(2) Grouping of units in a system with multiple outdoor units**

| Error source address | Error display | Detection method | Cause | Check method and remedy |
|---|---|---|---|---|
| LOSSNAY (LC) | ME remote controller (RC) MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to LC | (1) Factors (1) through (5) in the "Factors in system with one outdoor unit" (When performing an interlocked operation of the LOSSNAY unit and the indoor units that are connected to different outdoor units.)<br>(2) Disconnection or short circuit of the transmission line for the outdoor unit on the terminal block for centralized control line connection (TB7)<br>(3) When multiple outdoor units are connected and the power source of one of the outdoor units has been shut off.<br>(4) The male power supply connector of the outdoor unit is not connected to the female power supply switch connector (CN40).<br>(5) The male power supply connectors on 2 or more outdoor units are connected to the female power supply switch connector (CN40) for centralized control.<br>If an error occurs, after the unit runs normally once, the following causes may be considered.<br>♦Total capacity error (7100)<br>♦Capacity code error (7101)<br>♦Error in the number of connected units (7102)<br>♦Address setting error (7105) | 1) Turn off the power source of LOSSNAY for 5 or more minutes, and turn it on again. If the error is accidental, it will run normally.If not, check the cause 2).<br>2) Check the causes of (1) - (5). If the cause is found, correct it. If no cause is found, check 3).<br>3) Same cause as that for indoor unit described in 3) |

**1. Error Code**

**6607**

**No ACK error**

**2. Error definition and error detection method**

The error is detected when no acknowledgement (ACK signal) is received after the transmission. (eg. When the data is transmitted six times in a row with 30 seconds interval, the error is detected on the transmission side.)

Note

**The address/attribute appeared on the display on the remote controller indicates the controller which did not provide the response (ACK).**

**3. System configuration**

**(2) Grouping of units in a system with multiple outdoor units**

| Error source address | Error display | Detection method | Cause | Check method and remedy |
|---|---|---|---|---|
| ME remote controller (RC) | ME remote controller (RC) MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to RC | (1) Same causes as (1) - (4) for system with one outdoor unit | 1) Turn off the power source of LOSSNAY for 5 or more minutes, and turn it on again. If the error is accidental, it will run normally.If not, check the cause 2). |
| | | | (2) Disconnection or short circuit of the transmission line for the outdoor unit on the terminal block for centralized control line connection (TB7) | 2) Check the causes of (1) - (5). If the cause is found, correct it. If no cause is found, check 3). |
| | | | (3) When multiple outdoor units are connected and the power source of one of the outdoor units has been shut off. | 3) Same cause as that for indoor unit described in 3) |
| | | | (4) The male power supply connector of the outdoor unit is not connected to the female power supply switch connector (CN40). | |
| | | | (5) The male power supply connectors on 2 or more outdoor units are connected to the female power supply switch connector (CN40) for centralized control.<br>If the problem recurs after normal operation is restored, the problem is caused by one of the following factors:<br>♦Total capacity error (7100)<br>♦Capacity code setting error (7101)<br>♦Error in the number of connected units (7102)<br>♦Address setting error (7105) | |

**1. Error Code**

**6607**

**No ACK error**

**2. Error definition and error detection method**

The error is detected when no acknowledgement (ACK signal) is received after the transmission. (eg. When the data is transmitted six times in a row with 30 seconds interval, the error is detected on the transmission side.)

Note

**The address/attribute appeared on the display on the remote controller indicates the controller which did not provide the response (ACK).**

**3. System configuration**

**(3) System connected to the system controllers (MELANS)**

| Error source address | Error display | Detection method | Cause | Check method and remedy |
|---|---|---|---|---|
| Outdoor unit (OC) | ME remote controller (RC)<br>System controller (SC)<br>MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to OC | Same cause as that for system with one outdoor unit | Same remedy as that for system with one outdoor unit |
| HBC controller (HB) | ME remote controller (RC)<br>system controller (SC)<br>MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to HB | Same cause as that for system with one outdoor unit | Same remedy as that for system with one outdoor unit |

**1. Error Code**

**6607**

**No ACK error**

**2. Error definition and error detection method**

The error is detected when no acknowledgement (ACK signal) is received after the transmission. (eg. When the data is transmitted six times in a row with 30 seconds interval, the error is detected on the transmission side.)

Note

**The address/attribute appeared on the display on the remote controller indicates the controller which did not provide the response (ACK).**

**3. System configuration**

**(3) System connected to the system controllers (MELANS)**

| Error source address | Error display | Detection method | Cause | Check method and remedy |
|---|---|---|---|---|
| Indoor unit (IC) | ME remote controller (RC) MA remote controller (MA) | No acknowledgement (ACK) at RC transmission to IC | Same as grouping of units in a system with multiple outdoor units | Same remedy as that for grouping of units in a system with multiple outdoor units |
| | System controller (SC) | No acknowledgement (ACK) at SC transmission to IC | 1. Error occurrence on some IC<br>(1) Same cause as that for system with one outdoor unit | Same remedy as that for system with one outdoor unit |
| | | | 2. Error occurrence on all IC in the system with one outdoor unit<br>(1) Total capacity error (7100)<br>(2) Capacity code error (7101)<br>(3) Error in the number of connected units (7102)<br>(4) Address setting error (7105)<br>(5) Disconnection or short circuit of the transmission line for the outdoor unit on the terminal block for centralized control line connection (TB7)<br>(6) Turn off the power source of the outdoor unit<br>(7) Malfunction of electrical system for the outdoor unit | 1) Check the LED display for troubleshooting on the outdoor unit.<br>♦If an error is found, check the check code definition, and correct the error.<br>♦If no error is found, check 2).<br>2) Check (5) - (7) on the left. |
| | | | 3. Error occurrence on all IC<br>(1) Same causes as (1) - (7) described in 2.<br>(2) The male power supply connectors on 2 or more outdoor units are connected to the female power supply switch connector (CN40) for the transmission line for centralized control.<br>(3) Disconnection or shutdown of the power source of the power supply unit for transmission line<br>(4) System controller (MELANS) malfunction | Check voltage of the transmission line for centralized control.<br>♦20V or more: Check (1) and (2) on the left.<br>♦Less than 20V: Check (3) on the left. |

**1. Error Code**

**6607**

**No ACK error**

**2. Error definition and error detection method**

The error is detected when no acknowledgement (ACK signal) is received after the transmission. (eg. When the data is transmitted six times in a row with 30 seconds interval, the error is detected on the transmission side.)

Note

**The address/attribute appeared on the display on the remote controller indicates the controller which did not provide the response (ACK).**

**3. System configuration**

**(3) System connected to the system controllers (MELANS)**

| Error source address | Error display | Detection method | Cause | Check method and remedy |
|---|---|---|---|---|
| ME remote controller (RC) | ME remote controller (RC)<br>System controller (SC)<br>MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to RC | Same as grouping of units in a system with multiple outdoor units | Same remedy as that for grouping of units in a system with multiple outdoor units |
| | System controller (SC) | No acknowledgement (ACK) at MELANS transmission to RC | 1. Error occurrence on some IC<br>(1) Same cause as that for system with one outdoor unit | Same remedy as that for system with one outdoor unit |
| | | | 2. Error occurrence on all IC in the system with one outdoor unit<br>(1) An error is found by the outdoor unit.<br>Total capacity error (7100)<br>Capacity code error (7101)<br>Error in the number of connected units (7102)<br>Address setting error (7105)<br>(2) Disconnection or short circuit of the transmission line for the outdoor unit on the terminal block for centralized control line connection (TB7)<br>(3) Turn off the power source of the outdoor unit<br>(4) Malfunction of electrical system for the outdoor unit | 1) Check the LED display for troubleshooting on the outdoor unit.<br>• If an error is found, check the check code definition, and correct the error.<br>•If no error is found, check the cause 2).<br>2) Check (2) - (4) on the left. |
| | | | 3. Error occurrence on all IC<br>(1) Same causes as (1) - (4) described in 2.<br>(2) When the power supply unit for transmission lines is used and the male power supply connector is connected to the female power supply switch connector (CN40) for the transmission line for centralized control<br>(3) Disconnection or shutdown of the power source of the power supply unit for transmission line<br>(4) System controller (MELANS) malfunction | Check (1) - (4) on the left. |

**1. Error Code**

**6607**

**No ACK error**

**2. Error definition and error detection method**

The error is detected when no acknowledgement (ACK signal) is received after the transmission. (eg. When the data is transmitted six times in a row with 30 seconds interval, the error is detected on the transmission side.)

Note

**The address/attribute appeared on the display on the remote controller indicates the controller which did not provide the response (ACK).**

**3. System configuration**

**(3) System connected to the system controllers (MELANS)**

| Error source address | Error display | Detection method | Cause | Check method and remedy |
|---|---|---|---|---|
| System controller (SC) | ME remote controller (RC)<br>MA remote controller (MA) | No acknowledgement (ACK) at IC transmission to SC | 1. Error display on some displays on ME remote controllers<br>(1) Faulty wiring of the transmission line for ME remote controller<br>(2) Disconnection or contact failure of the transmission connector for ME remote controller<br>(3) ME remote controller failure | Check (1) - (3) on the left. |
| | | | 2. Error occurrence on all IC in the system with one outdoor unit<br>(1) An error is found by the outdoor unit.<br>Total capacity error (7100)<br>Capacity code error (7101)<br>Error in the number of connected units (7102)<br>Address setting error (7105)<br>(2) Disconnection or short circuit of the transmission line for the outdoor unit on the terminal block for centralized control line connection (TB7)<br>(3) Turn off the power source of the outdoor unit<br>(4) Malfunction of electrical system for the outdoor unit | 1) Check the LED display for troubleshooting on the outdoor unit.<br>• If an error is found, check the check code definition, and correct the error.<br>• If no error is found, check the cause 2)<br>2) Check (2) - (4) on the left. |
| | | | 3. Error display on all displays on ME remote controllers<br>(1) Same causes as (1) - (4) described in 2.<br>(2) When the power supply unit for transmission lines is used and the male power supply connector is connected to the female power supply switch connector (CN40) for the transmission line for centralized control<br>(3) Disconnection or shutdown of the power source of the power supply unit for transmission line<br>(4) System controller (MELANS) malfunction | Check (1) - (4) on the left |

**1. Error Code**

**6607**

**No ACK error**

**2. Error definition and error detection method**

The error is detected when no acknowledgement (ACK signal) is received after the transmission. (eg. When the data is transmitted six times in a row with 30 seconds interval, the error is detected on the transmission side.)

Note

**The address/attribute appeared on the display on the remote controller indicates the controller which did not provide the response (ACK).**

**3. System configuration**

**(4) Errors that are not limited to a particular system**

| Error source address | Error display | Detection method | Cause | Check method and remedy |
|---|---|---|---|---|
| Address which should not be existed | - | - | (1) Although the address of ME remote controller has been changed after the group is set using ME remote controller, the indoor unit is keeping the memory of the previous address. The same symptom will appear for the registration with SC. | Delete unnecessary information of non-existing address which some indoor units have. Use either of the following two methods for deletion. |
| | | | (2) Although the address of LOSSNAY has been changed after the interlock registration of LOSSNAY is made using ME remote controller, the indoor unit is keeping the memory of the previous address. | 1) Address deletion by ME remote controller<br>Delete unnecessary address information using the manual setting function of ME remote controller.<br>2) Deletion of connection information of the outdoor unit by the deleting switch<br>**Note that the above method will delete all the group settings set via the ME remote controller and all the interlock settings between LOSSNAY units and indoor units.**<br>♦Turn off the power source of the outdoor unit, and wait for 5 minutes.<br>♦Turn on the dip switch (SW5-2) on the outdoor unit control board.<br>♦Turn on the power source of the outdoor unit, and wait for 5 minutes.<br>♦Turn off the power source of the outdoor unit, and wait for 5 minutes.<br>♦Turn off the dip switch (SW5-2) on the outdoor unit control board.<br>♦ Turn on the power source of the outdoor unit. |

**1. Error Code**

**6608**

**No response error**

**2. Error definition and error detection method**

- When no response command is returned although acknowledgement (ACK) is received after transmission, an error is detected.
- When the data is transmitted 10 times in a row with 3 seconds interval, an error is detected on the transmission side.

Note

**The address/attribute appeared on the display on the remote controller indicates the controller where an error occurred.**

**3. Cause**

1) The transmission line work is performed while the power is on, the transmitted data will collide, and the wave shape will be changed.
2) The transmission is sent and received repeatedly due to noise.
3) Decrease of transmission line voltage/signal by exceeding acceptable range of transmission wiring.
   Farthest:200m [656ft] or less
   Remote controller wiring:12m [39ft] or less
4) The transmission line voltage/signal is decreased due to erroneous sizing of transmission line.
   Wire diameter: 1.25mm$^2$[AWG16] or more

**4. Check method and remedy**

1) When an error occurs during commissioning, turn off the power sources for the outdoor unit, indoor unit, BC controller, and LOSSNAY for 5 or more minutes, and then turn them on again.
   - When they return to normal operation, the cause of the error is the transmission line work performed with the power on.
   - If an error occurs again, check the cause 2).
2) Check 3) and 4) above.
   - If the cause is found, correct it.
   - If no cause is found, check 3).
3) Check transmission wave shape/ noise on trans-mission line by following "VIII [3] Investigation of Transmission Wave Shape/ Noise" (page 183).
   **Noise is the most possible cause of the error "6608".**

**1. Error Code**

**7100**

**Total capacity error**

**2. Error definition and error detection method**

The model total of indoor units in the system with one outdoor unit exceeds limitations.

**3. Error source, cause, check method and remedy,**

<table>
<tr><th>Error source</th><th>Cause</th><th>Check method and remedy</th></tr>
<tr><td rowspan="3">Outdoor unit</td><td>(1) The model total of indoor units in the system with one outdoor unit exceeds the following table.<br><br>
<table>
<tr><th>Model</th><th>Qj Total</th></tr>
<tr><td>(E)P200 model</td><td>300</td></tr>
<tr><td>(E)P250 model</td><td>375</td></tr>
<tr><td>(E)P300 model</td><td>450</td></tr>
<tr><td>(E)P350 model</td><td>525</td></tr>
<tr><td>(E)P400 model</td><td>600</td></tr>
<tr><td>(E)P450 model</td><td>675</td></tr>
<tr><td>(E)P500 model</td><td>750</td></tr>
</table></td><td>1) Check the Qj total (capacity code total) of indoor units connected.<br><br>2) Check the Qj setting (capacity code) of the connected indoor unit set by the switch (SW2 on indoor unit board).<br><br>When the model name set by the switch is different from that of the unit connected, turn off the power source of the outdoor and the indoor units, and change the setting of the Qj (capacity code).<br><br>3) Indoor unit Qj table<br><br>
<table>
<tr><th>Model</th><th>Qj</th></tr>
<tr><td>15</td><td>3</td></tr>
<tr><td>20</td><td>4</td></tr>
<tr><td>25</td><td>5</td></tr>
<tr><td>32</td><td>6</td></tr>
<tr><td>40</td><td>8</td></tr>
<tr><td>50</td><td>10</td></tr>
</table></td></tr>
<tr><td>(2) The model selection switches (SW5-3 - 5-8) on the outdoor unit are set incorrectly.<br><br>
<table>
<tr><th rowspan="2">Model</th><th colspan="6">SW5</th></tr>
<tr><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th></tr>
<tr><td>P200 model</td><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P250 model</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P300 model</td><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P350 model</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P400 model</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P450 model</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>P500 model</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>EP200 model</td><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP250 model</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP300 model</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP350 model</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP400 model</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP450 model</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td></tr>
<tr><td>EP500 model</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td></tr>
</table></td><td>Check the setting for the model selection switch on the outdoor unit (Dipswitches SW5-3 - 5-8 on the outdoor unit control board).</td></tr>
<tr><td>(3) The outdoor unit and the auxiliary unit (OS) that is connected to the same system are not properly connected.</td><td>Confirm that the TB3 on the OC and OS are properly connected.</td></tr>
</table>

**1. Error Code**

**7101**

**Capacity code setting error**

**2. Error definition and error detection method**

Connection of incompatible (wrong capacity code) indoor unit or outdoor unit

**3. Error source, cause, check method and remedy**

<table>
<tr><th>Error source</th><th>Cause</th><th>Check method and remedy</th></tr>
<tr><td>Outdoor unit<br>Indoor unit</td><td>(1) The model name (capacity code) set by the switch (SW2) is wrong.<br>*The capacity of the indoor unit can be confirmed by the self-diagnosis function (SW4 operation) of the outdoor unit.</td><td>1) Check the model name (capacity code) of the indoor unit which has the error source address set by the switch (SW2 on indoor unit board).<br>When the model name set by the switch is different from that of the unit connected, turn off the power source of the outdoor and the indoor units, and change the setting of the capacity code.</td></tr>
<tr><td>Outdoor unit</td><td>(2) The model selection switches (SW5-3 - 5-8) on the outdoor unit are set incorrectly.
<table>
<tr><th rowspan="2">Model</th><th colspan="6">SW5</th></tr>
<tr><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th></tr>
<tr><td>P200 model</td><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P250 model</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P300 model</td><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P350 model</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P400 model</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>P450 model</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>P500 model</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>EP200 model</td><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP250 model</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP300 model</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP350 model</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP400 model</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>EP450 model</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td></tr>
<tr><td>EP500 model</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td></tr>
</table></td><td>Check the setting for the model selection switch on the outdoor unit (Dipswitches SW5-3 - 5-8 on the outdoor unit control board).</td></tr>
</table>

**1. Error Code**

**7102**

**Wrong number of connected units**

**2. Error definition and error detection method**

The number of connected indoor units is "0" or exceeds the allowable value.

**3. Error source, cause, check method and remedy**

<table>
<tr><th>Error source</th><th>Cause</th><th>Check method and remedy</th></tr>
<tr><td>Outdoor unit</td><td>(1) Number of indoor units connected to the outdoor terminal block (TB3) for indoor/ outdoor transmission lines exceeds limitations described below.
<table>
<tr><th>Number of units</th><th>Restriction on the number of units</th></tr>
<tr><td>Total number of indoor units</td><td>1 - 50: (E)P200 model<br>1 - 50: (E)P250 model<br>1 - 50: (E)P300 model<br>1 - 50: (E)P350 model<br>1 - 50: (E)P400 model<br>1 - 50: (E)P450 model<br>1 - 50: (E)P500 model</td></tr>
<tr><td>Number of HBC controllers</td><td>1 - 2 *1</td></tr>
<tr><td>Total number of outdoor units</td><td>1</td></tr>
</table>
*1 2 units in the case of P300 or later model<br>
(2) Disconnected transmission line from the outdoor unit or BC controller<br>
(3) Short-circuited transmission line<br>
When (2) and (3) apply, the following display will appear.<br>
♦ME remote controller<br>
Nothing appears on the remote controller because it is not powered.<br>
♦MA remote controller<br>
"HO" or "PLEASE WAIT" blinks.<br>
(4) The model selection switch (SW5-7) on the outdoor unit is set to OFF. (Normally set to ON)<br>
(5) Outdoor unit address setting error<br>
The outdoor units in the same refrigerant circuit do not have sequential address numbers.<br>
(6) The units other than HBC controller and indoor units for exclusive use with HBC controller are connected.</td><td>1) Check whether the number of units connected to the outdoor terminal block (TB3) for indoor/ outdoor transmission lines does not exceed the limitation. (See (1) and (2) on the left.)<br>
2) Check (2) - (3) on the left.<br>
3) Check whether the transmission line for the terminal block for centralized control (TB7) is not connected to the terminal block for the indoor/outdoor transmission line (TB3).<br>
4) Check the setting for the model selection switch on the outdoor unit (Dipswitches SW5-7 on the outdoor unit control board).</td></tr>
</table>

**1. Error Code**

**7105**

**Address setting error**

**2. Error definition and error detection method**

Erroneous setting of OC unit address
Erroneous setting of BC controller address

**3. Cause, check method and remedy**

| Error source | Cause | Check method and remedy |
|---|---|---|
| Outdoor unit<br>BC controller | Erroneous setting of OC unit address<br>The address of outdoor unit is not being set to 51 - 100.<br>The address of HBC controller is not set to 51 - 100. | Check that the outdoor unit and HBC controller addresses are set to 00 or a number between 51 and 100.<br>If the outdoor unit address is out of the valid range, reset the address with the power to the outdoor unit turned off.<br>If the HBC controller address is out of the valid range, reset the address with the power to both the outdoor unit and HBC controller turned off. |

**1. Error Code**

**7106**

**Attribute setting error**

**2. Error definition and error detection method**

| Error source | Cause | Check method and remedy |
|---|---|---|
| - | A remote controller for use with indoor units, such as the MA remote controller, is connected to the OA processing unit whose attribute is FU. | To operate the OA processing unit directly via a remote controller for use with indoor units, such as the MA remote controller, set the DIP SW 3-1 on the OA processing unit to ON. |

| Operation Method | SW3-1 |
|---|---|
| Interlocked operation with the indoor unit | OFF |
| Direct operation via the MA remote controller | ON |

**1. Error Code**

**7107**

**Port setting error**

**2. Error definition and error detection method**

The port with wrong number is connected to the indoor unit.The model total connected to the port is greater than the specification.

**3. Error source, cause, check method and remedy**

After troubleshooting the error using the check methods and remedies shown below, turn the power back on.

<table>
<tr><th>Error source</th><th>Cause</th><th>Check method and remedy</th></tr>
<tr><td>HBC controller</td><td>(1) Model total of indoor units per each port or per each port merge is greater than the specification.
<table>
<tr><td rowspan="2">Total port number</td><td>Single branching</td><td>80</td></tr>
<tr><td>Two branches merge</td><td>160</td></tr>
</table>
(2) 4 or more indoor units are connected to the same port.<br>(3) When two ports are used, the port with the smaller number is not connected to the indoor unit.<br>(4) The address of the HBC controller is not set to an address that equals the address of the lowest address of the connected indoor unit plus 50.<br>(5) In the system to which multiple HBC controllers are connected, the indoor unit address connected to the HBC controller is not set as shown below.<br>(i) The indoor unit address which is connected to the HBC controller (main 1)<br>(ii) The indoor unit address which is connected to the HBC controller (Sub 1)<br>(iii) The indoor unit address which is connected to the HBC controller (main 2)<br>(iv) The indoor unit address which is connected to the HBC controller (Sub 2)<br>Address setting<br>(i) < (ii) < (iii) < (iv)<br>(6) Indoor units (W/WP/WL81 or above) using two branch ports are connected to two branch ports across the groups listed below.<br>Group 1: Branch port No. 1 to No. 4<br>Group 2: Branch port No. 5 to No. 8<br>Group 3: Branch port No. 9 to No. 12(*)<br>Group 4: Branch port No. 13 to No. 16(*)<br>* For HBC with 16 branch ports</td><td>Before resetting the port number using the port number setting switch or the model using the model (capacity code) setting switch, turn off the power of the outdoor unit, the HBC controller and the indoor unit.</td></tr>
</table>

**1. Error Code**

**7110**

**Connection information signal transmission/reception error**

**2. Error definition and error detection method**

The given indoor unit is inoperable because it is not properly connected to the outdoor unit in the same system.

**3. Error source, cause, check method and remedy**

| Error source | Cause | Check method and remedy |
|---|---|---|
| Outdoor unit | (1) Power to the transmission booster is cut off. | 1) Confirm that the power to the transmission booster is not cut off by the booster being connected to the switch on the indoor unit. (The unit will not function properly unless the transmission booster is turned on.) |
| | (2) Power resetting of the transmission booster and outdoor unit. | ->Reset the power to the outdoor unit. |
| | (3) Wiring failure between OC and OS | 2) Confirm that the TB3 on the OC and OS are properly connected. |
| | (4) Broken wire between OC and OS. | 3) Check the model selection switch on the outdoor unit (Dipswitch SW5-7 on the control board.). |
| | (5) The model selection switch (SW5-7) on the outdoor unit is set to OFF. (Normally set to ON) | |

**1. Error Code**

**7113**

**Function setting error (incorrect resistor connection)**

**2. Error source, cause, check method and remedy**

| Error source | Cause | Check method and remedy |
|---|---|---|
| Outdoor unit | (1) Wiring fault<br>(2) Loose connectors, short-circuit, contact failure<br>(3) Incompatible control board and INV board (replacement with a wrong circuit board)<br>(4) DIP SW setting error on the control board | (Detail code 15)<br>1) Check the connector CNTYP5 on the control board for proper connection. |
| | | (Detail code 14)<br>1) Check the connector CNTYP4 on the control board for proper connection.<br>2) Check the settings of SW5-3 through SW5-6 on the control board. |
| | | (Detail code 12)<br>1) Check the connector CNTYP2 on the control board for proper connection.<br>2) Check the connector CNTYP5 on the control board for proper connection.<br>3) Check the settings of SW5-3 through SW5-8 on the control board. |
| | | (Detail code 16)<br>1) Check the connector CNTYP on the INV board for proper connection.<br>2) Check the connector CNTYP5 on the control board for proper connection.<br>3) Check the settings of SW5-3 through SW5-8 on the control board.<br>4) Check the wiring between the control board and INV board. |
| | | (Detail code 00, 01, 05)<br>1) Check the wiring between the control board and INV board.<br>2) Check the settings of SW5-3 through SW5-8 on the control board.<br>3) Check the connector CNTYP5 on the control board for proper connection. |
| | | (Detail code Miscellaneous)<br>*If a set-model-name identification error occurs, check the detail code on the unit on which the error occurred. The detail code that appears on other units will be different from the ones shown above. |

**1. Error Code**

**7117**

**Model setting error**

**2. Error source, cause, check method and remedy**

| Error source | Cause | Check method and remedy |
|---|---|---|
| Outdoor unit | (1) Wiring fault<br>(2) Loose connectors, short-circuit, contact failure | (Detail code 15)<br>1) Check the connector CNTYP5 on the control board for proper connection. |
| | | (Detail code 14)<br>1) Check the connector CNTYP4 on the control board for proper connection. |
| | | (Detail code 12)<br>1) Check the connector CNTYP2 on the control board for proper connection.<br>2) Check the connector CNTYP5 on the control board for proper connection. |
| | | (Detail code 16)<br>1) Check the connector CNTYP on the INV board for proper connection.<br>2) Check the connector CNTYP5 on the control board for proper connection.<br>3) Check the wiring between the control board and INV board. |
| | | (Detail code 0, 1, 5, 6)<br>1) Check the wiring between the control board and INV board.<br>2) Check the settings of SW5-3 through SW5-6 on the control board.<br>3) Check the connector CNTYP5 on the control board for proper connection. |
| | | (Detail code Miscellaneous)<br>*If a set-model-name identification error occurs, check the detail code on the unit on which the error occurred. The detail code that appears on other units will be different from the ones shown above. |

**1. Error Code**

**7130**

**Incompatible unit combination**

**2. Error source, cause, check method and remedy**

Refer to 7130 in outdoor unit service handbook.

## -1- Troubleshooting according to the remote controller malfunction or the external input error

### In the case of MA remote controller

**1. Phenomena**

Even if the operation button on the remote controller is pressed, the display remains unlit and the unit does not start running.(Power indicator ◎ does not appear on the screen.)

**(1) Cause**

1) The power is not supplied to the indoor unit.
   - The main power of the indoor unit is not on.
   - The connector on the indoor unit board has come off.
   - The fuse on the indoor unit board has melted.
   - Transformer failure and disconnected wire of the indoor unit.
2) Incorrect wiring for the MA remote controller
   - Disconnected wire for the MA remote controller or disconnected line to the terminal block.
   - Short-circuited MA remote controller wiring
   - Incorrect wiring of the MA remote controller cables
   - Incorrect connection of the MA remote wiring to the terminal block for transmission line (TB5) on the indoor unit
   - Wiring mixup between the MA remote controller cable and 220 - 240 VAC power supply cable
   - Reversed connection of the wire for the MA remote controller and the M-NET transmission line on the indoor unit
3) The number of the MA remote controllers that are connected to an indoor unit exceeds the allowable range (2 units).
4) The length or the diameter of the wire for the MA remote controller are out of specification.
5) Short circuit of the wire for the remote display output of the outdoor unit or reversed polarity connection of the relay.
6) The indoor unit board failure
7) MA remote controller failure

**(2) Check method and remedy**

1) Measure voltages of the MA remote controller terminal (among 1 to 3).
   - If the voltage is between DC 9 and 12V, the remote controller is a failure.
   - If no voltage is applied, check the causes 1) and 3) and if the cause is found, correct it.

   If no cause is found, refer to 2).
2) Remove the wire for the remote controller from the terminal block (TB15) on the MA remote controller for the indoor unit, and check voltage among 1 to 3.
   - If the voltage is between DC 9 and 12 V, check the causes 2) and 4) and if the cause is found, correct it.
   - If no voltage is applied, check the cause 1) and if the cause is found, correct it.

   If no cause is found, check the wire for the remote display output (relay polarity).
   If no further cause is found, replace the indoor unit board.

## In the case of MA remote controller

**2. Phenomena**

When the remote controller operation SW is turned on, the operation status briefly appears on the display, then it goes off, and the display lights out immediately, and the unit stops.

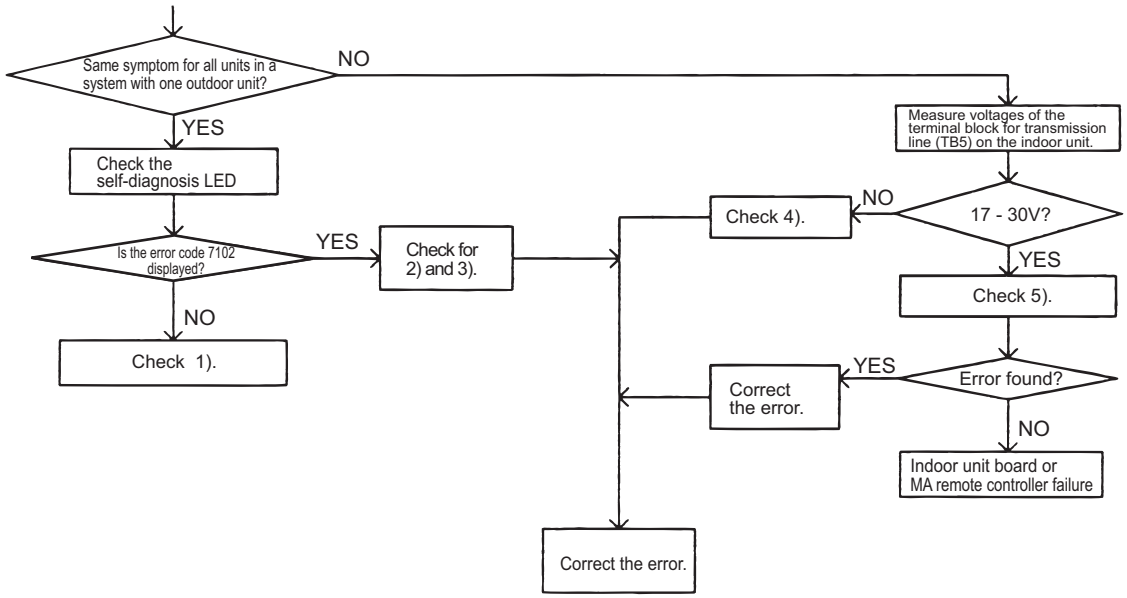
**(1) Cause**

1) The power for the M-NET transmission line is not supplied from the outdoor unit.
2) Short circuit of the transmission line.
3) Incorrect wiring of the M-NETtransmission line on the outdoorunit.
   - Disconnected wire for the MA remote controller or disconnected line to the terminal block.
   - The indoor transmission line is connected incorrectly to the transmission terminal block for centralized controller (TB7).
   - The male power supply connectors on the multiple outdoor units are connected to the female power supply switch connector (CN40).

   In the system to which the power supply unit for transmission lines is connected, the male power supply connector is connected to the female power supply switch connector (CN40) on the outdoor unit.
4) Disconnected M-NET transmission line on the indoor unit side.
5) Disconnected wire between the terminal block for M-NET line (TB5) of the indoor unit and the indoor unit board (CN2M) or disconnected connector.

**(2) Check method and remedy**

1) **When 2) and 3) above apply, check code 7102 will be displayed on the self-diagnosis LED.**




Refer to VIII [4] -3- (2) "Troubleshooting transmission power circuit of outdoor unit" for how to check item 1 in the flow chart above.(page 195)

## In the case of MA remote controller

**3. Phenomena**

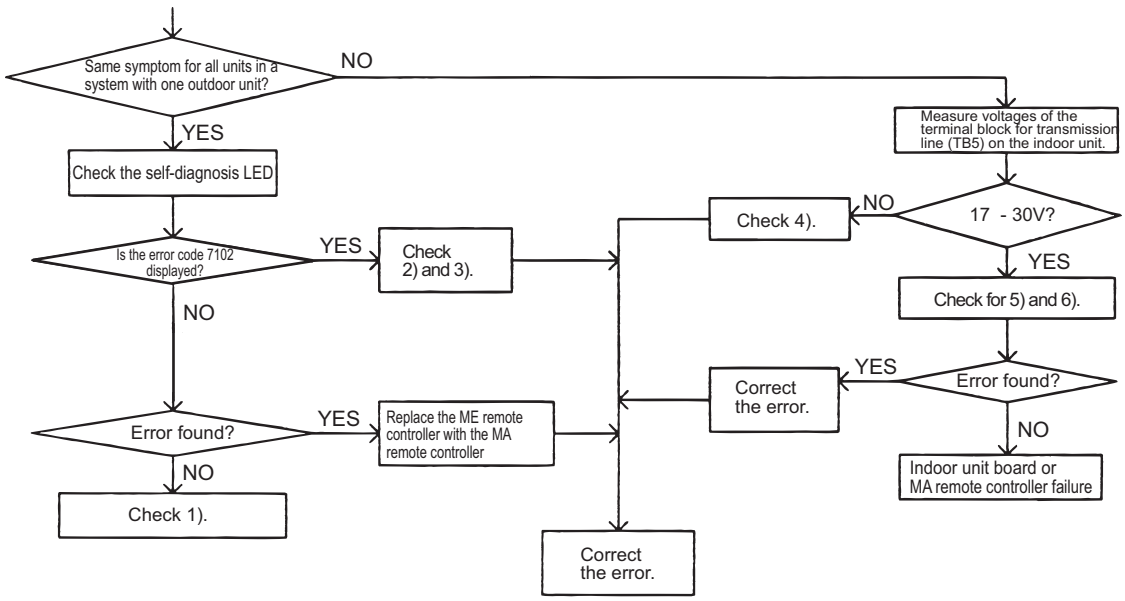
"HO" or "PLEASE WAIT" display on the remote controller does not disappear, and no operation is performed even if the button is pressed. ("HO" or "PLEASE WAIT" display will normally turn off 5 minutes later after the power on.)

**(1) Cause**

1) The power for the M-NET transmission line is not supplied from the outdoor unit.
2) Short-circuited transmission line
3) Incorrect wiring of the M-NET transmission line on the outdoor unit.
   - Disconnected wire for the MA remote controller or disconnected line to the terminal block.
   - The indoor transmission line is connected incorrectly to the transmission terminal block for centralized controller (TB7).
   - The male power supply connectors on the multiple outdoor units are connected to the female power supply switch connector (CN40).
     In the system to which the power supply unit for transmission lines is connected, the male power supply connector is connected to the female power supply switch connector (CN40) on the outdoor unit
4) Disconnected M-NET transmission line on the indoor unit.
5) Disconnected wire between the terminal block for M-NET line (TB5) of the indoor unit and the indoor unit board (CN2M) or disconnected connector.
6) Incorrect wiring for the MA remote controller
   - Short-circuited wire for the MA remote controller
   - Disconnected wire for the MA remote controller (No.2) and disconnected line to the terminal block.
   - Reversed daisy-chain connection between groups
   - Incorrect wiring for the MA remote controller to the terminal block for transmission line connection (TB5) on the indoor unit
   - The M-NET transmission line is connected incorrectly to the terminal block (TB15) for the MA remote controller.
7) The sub/main setting of the MA remote controller is set to sub.
8) 2 or more main MA remote controllers are connected.
9) Indoor unit board failure (MA remote controller communication circuit)
10) Remote controller failure
11) Outdoor unit failure

**(2) Check method and remedy**

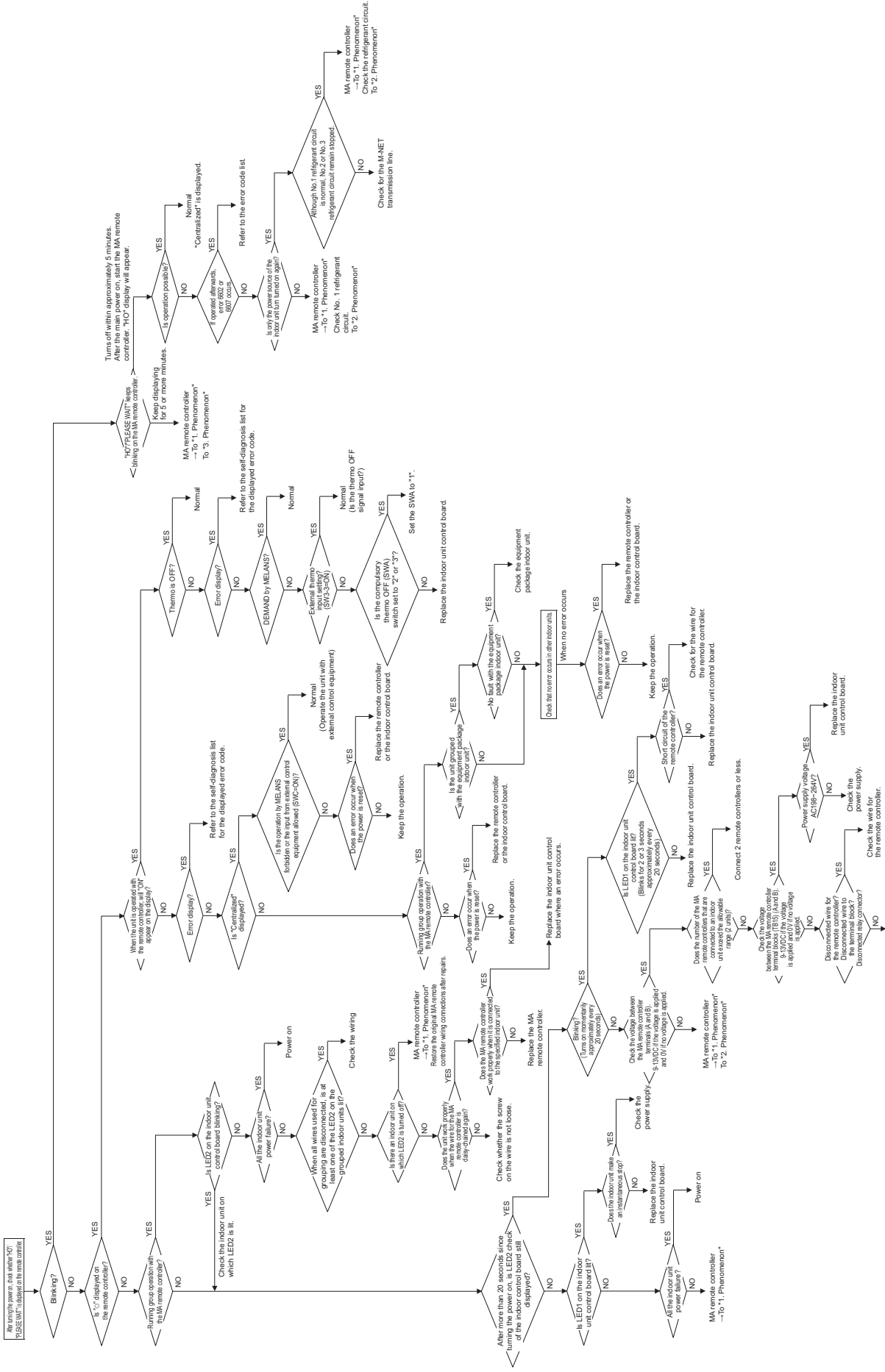
1) **When 2) and 3) above apply, check code 7102 will be displayed on the self-diagnosis LED.**




Refer to VIII [4] -3- (2) "Troubleshooting transmission power circuit of outdoor unit" for how to check item 1 in the flow chart above.(page 195)

Flow chart

Even if the operation button on the remote controller is pressed, the indoor and the outdoor units do not start running.



## In case of ME remote controller

**1. Phenomena**

Even if the operation button on the remote controller is pressed, the display remains unlit and the unit does not start running. (Power indicator ◎ does not appear on the screen.)

**(1) Cause**

1) The power for the M-NET transmission line is not supplied from the indoor unit.
2) Short circuit of the transmission line.
3) Incorrect wiring of the M-NET transmission line on the outdoor unit.
   - Disconnected wire for the MA remote controller or disconnected line to the terminal block.
   - The indoor transmission line is connected incorrectly to the transmission terminal block for centralized controller (TB7).
4) Disconnected transmission line on the remote controller.
5) Remote controller failure
6) Outdoor unit failure

**(2) Check method and remedy**

1) Check voltage of the transmission terminal block for of the ME remote controller.
   - If voltage between is 17V and 30V -> ME remote controller failure
   - When voltage is 17V or less -> Refer to VIII [4] -3- (2) "Troubleshooting transmission power curcuit of outdoor unit".(page 195)
2) **When 2) and 3) above apply, check code 7102 will be displayed on the self-diagnosis LED.**

## In case of ME remote controller

**2. Phenomena**

When the remote controller operation SW is turned on, a temporary operation display is indicated, and the display lights out immediately.

**(1) Cause**

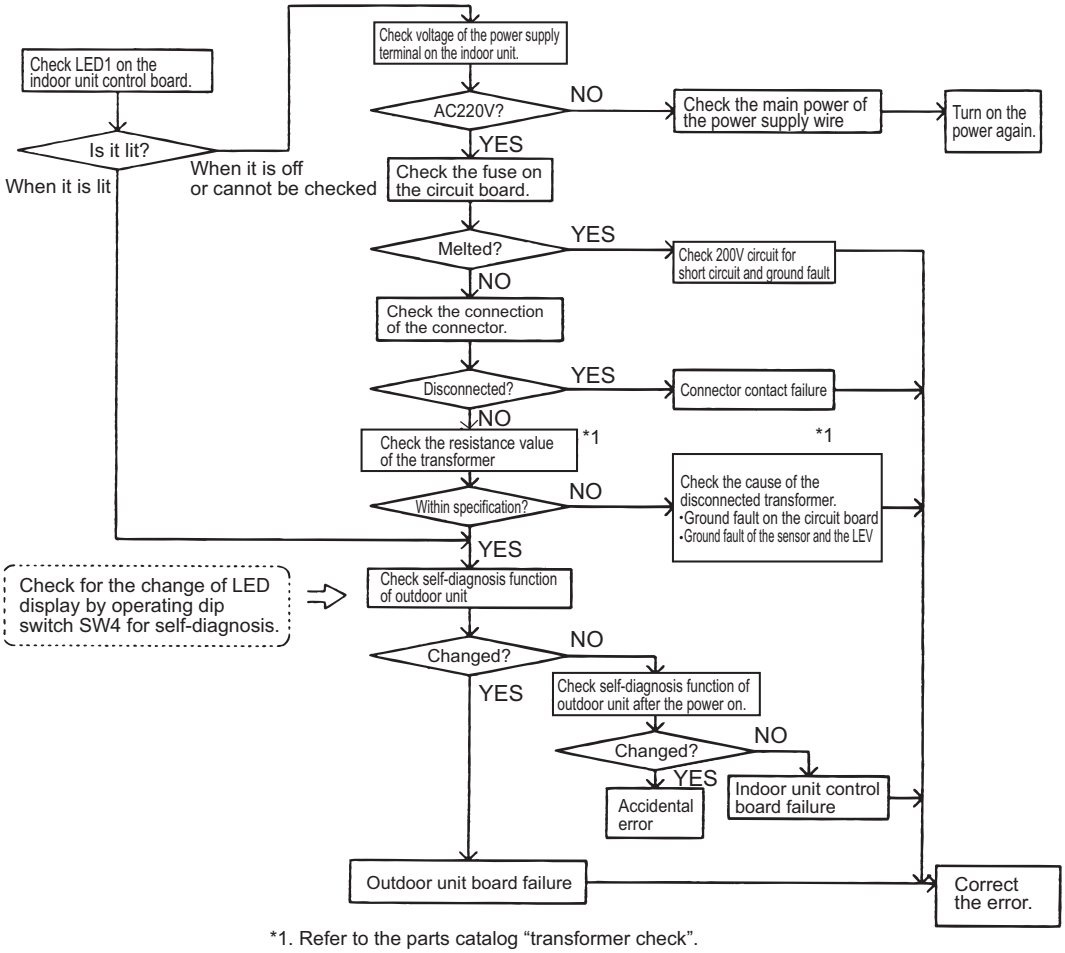
**1) The power is not supplied to the indoor unit.**

- The main power of the indoor unit (AC220V) is not on.
- The connector on the indoor unit board has come off.
- The fuse on the indoor unit board has melted.
- Transformer failure and disconnected wire of the indoor unit
- The indoor unit board failure

**2) The outdoor control board failure**

As the indoor unit does not interact with the outdoor unit, the outdoor unit model cannot be recognized.

**(2) Check method and remedy**




*1. Refer to the parts catalog “transformer check”.

## In case of ME remote controller

### 3. Phenomena

"HO" display on the remote controller does not disappear, and no operation is performed even if the button is pressed.

### (1) Cause

**Without using MELANS**

1) Outdoor unit address is set to "00"
2) A wrong address is set.
   - The address of the indoor unit that is connected to the remote controller is incorrect. (It should equal the ME remote controller address plus 100.)
   - A wrong address is set to the ME remote controller. (100 must be added to the address of the indoor unit.)
3) Faulty wiring of the terminal block for transmission line (TB5) of the indoor unit in the same group with the remote controller.
4) The centralized control switch (SW5-1) on the outdoor unit is set to ON.
5) Disconnection or faulty wiring of indoor unit transmission line.
6) Disconnection between the terminal block for M-NET line connection (TB5) of the indoor unit and the male connector (CN2M)
7) The male power supply connectors on 2 or more outdoor units are connected to the female power supply switch connector (CN40) for the transmission line for centralized control.
8) Outdoor unit control board failure
9) Indoor unit control board failure
10) Remote controller failure

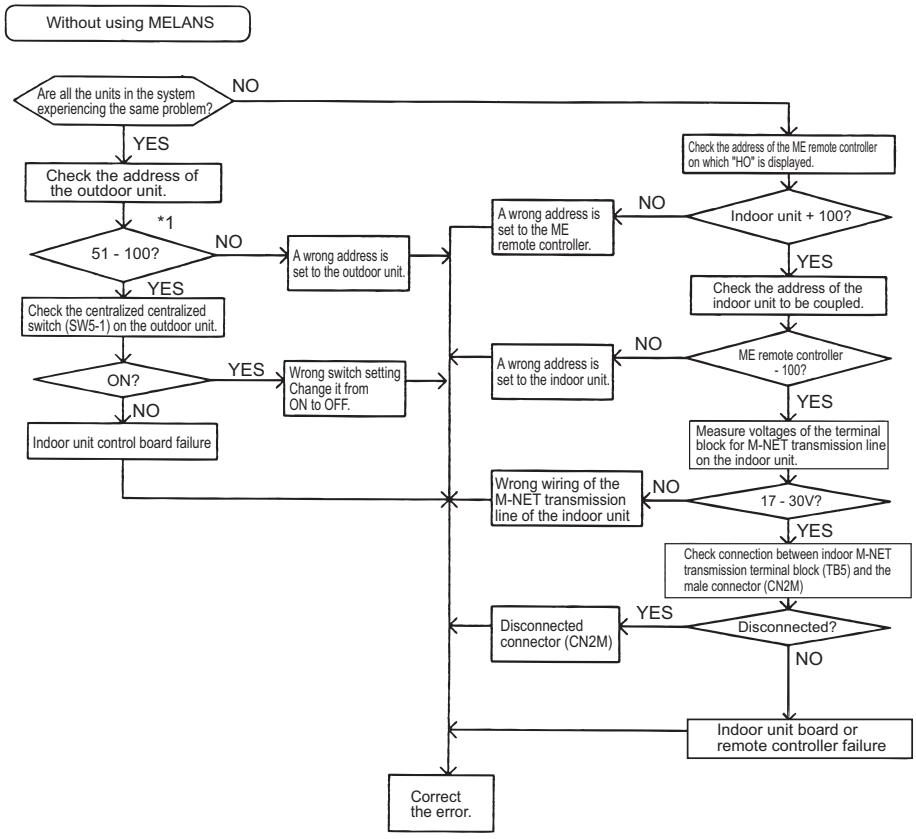
**Interlocking control with MELANS**

11) No group registration is made using MELANS. (The indoor unit and the ME remote controller are not grouped.)
12) Disconnected transmission line for centralized control (TB7) of the outdoor unit
13) The male power supply connector is connected to CN40 on more than one outdoor unit, or the connector is connected to CN40 on the outdoor unit in the system to which a power supply unit for transmission line is connected.

**Using MELANS**

14) When MELANS is used, "HO" display on the remote controller will disappear when the indoor unit and the local remote controller (ME remote controller) are grouped.
    If "HO" does not disappear after the registration, check the causes (2) 1) - 3).

### (2) Check method and remedy




*1. When the indoor unit address is set to 1 - 50, the address will be forcibly set to 100.

## In case of ME remote controller

**4. Phenomena**

"88" appears on the remote controller when the address is registered or confirmed.

**(1) Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| **An error occurs when the address is registered or confirmed. (common)** | |
| 1. A wrong address is set to the unit to be coupled. | (1) Confirm the address of unit to be coupled. |
| 2. The transmission line of the unit to be coupled is disconnected or is not connected. | (2) Check the connection of transmission line. |
| 3. Circuit board failure of the unit to be coupled | (3) Check voltage of the terminal block for transmission line of the unit to be coupled. |
| | 1) Normal if voltage is between DC17 and 30V. |
| 4. Improper transmission line work | 2) Check (4) in case other than 1). |
| **Generates at interlocking registration between LOSSNAY and the indoor unit** | |
| 5. The power of LOSSNAY is OFF. | (4) Check for the main power of LOSSNAY. |
| **Generates at confirmation of controllers used in the system in which the indoor units connected to different outdoor units are grouped** | |
| 6. The power of the outdoor unit to be confirmed has been cut off. | (5) Check the power supply of the outdoor unit which is coupled with the unit to be confirmed. |
| 7. The power of the outdoor unit to be confirmed has been cut off. | (6) Check that the transmission line for centralized control (TB7) of the outdoor unit is not disconnected. |
| 8. When the indoor units connected to different outdoor units are grouped without MELANS, the male power supply connector is not connected to the female power supply switch connector (CN40) for the transmission line for centralized control. | (7) Check voltage of the transmission line for centralized control. |
| 9. The male power supply connectors on 2 or more outdoor units are connected to the female power supply switch connector (CN40) for the transmission line for centralized control. | 1) Normal when voltage is between 10V and 30V |
| 10. In the system to which MELANS is connected, the male power supply connector is connected to the female power supply switch connector (CN40) for the transmission line for centralized control. | 2) Check 8 - 11 described on the left in case other than 1). |
| 11. Short circuit of the transmission line for centralized control | |

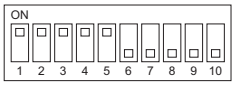
## Both for MA remote controller and ME remote controller

**1. Phenomena**

Although cooling operation starts with the normal remote controller display, the capacity is not enough

**(1) Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| 1. Compressor frequency does not rise sufficiently.<br>♦Faulty detection of pressure sensor.<br>♦Protection works and compressor frequency does not rise due to high discharge temperature<br>♦Protection works and compressor frequency does not rise due to high pressure<br>♦Pressure drops excessively. | (1) Check pressure difference between the detected pressure by the pressure sensor and the actual pressure with self-diagnosis LED.<br>-> If the accurate pressure is not detected, check the pressure sensor. (Refer to the page on Troubleshooting of Pressure Sensor in outdoor unit service handbook)<br>Note: Lower inlet pressure by the low pressure sensor than the actual pressure causes insufficient capacity.<br>SW4 setting (SW6-10: OFF)<br>High pressure sensor<br>SW4<br>ON<br>1 2 3 4 5 6 7 8 9 10<br>Low pressure sensor<br>SW4<br>ON<br>1 2 3 4 5 6 7 8 9 10<br>(2) Check temperature difference between the evaporating temperature (Te) and the target evaporating temperature (Tem) with self-diagnosis LED.<br>Note: Higher Te than Tem causes insufficient capacity.<br>SW4 setting (SW6-10: OFF)<br>Evaporating temperature Te<br>SW4<br>ON<br>1 2 3 4 5 6 7 8 9 10<br>Target evaporating temperature Tem<br>SW4<br>ON<br>1 2 3 4 5 6 7 8 9 10<br>Note: Protection works and compressor frequency does not rise even at higher Te than Tem due to high discharge temperature and high pressure.<br>At high discharge temperature:<br>Refer to 1102 in outdoor unit service handbook<br>At high pressure:<br>Refer to 1302 in outdoor unit service handbook |
| 2. HBC controller LEV1 and 2 actuation failure<br>♦Insufficient refrigerant flows due to LEV malfunction (not enough opening) or protection works and compressor frequency does not rise due to pressure drop. | Refer to the page of LEV troubleshooting ([4] -1-).(page 186) |




The figure at left shows that the switches 1 through 5 are set to ON and 6 through 10 are set to OFF.

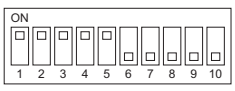
| Cause | Check method and remedy |
|---|---|
| 3. RPM error of the outdoor unit FAN<br>♦Motor failure or board failure, or airflow rate decrease due to clogging of the heat exchanger<br>♦The fan is not properly controlled as the outdoor temperature cannot be precisely detected by the temperature sensor.<br>♦The fan is not properly controlled as the pressure cannot be precisely detected by the pressure sensor. | Refer to the page on troubleshooting of the outdoor unit fan in outdoor unit service handbook<br>Refer to 5106 in outdoor unit service handbook<br>Refer to 1302 in outdoor unit service handbook |
| 4. Long piping length<br>The cooling capacity varies greatly depending on the pressure loss. (When the pressure loss is large, the cooling capacity drops.) | Check the piping length to determine if it is contributing to performance loss.<br>Piping pressure loss can be estimated from the temperature difference between the indoor unit heat exchanger outlet temperature and the saturation temperature (Te) of 63LS. ->Correct the piping. |
| 5. Piping size is not proper (thin) | |
| 6. Insufficient refrigerant amount<br>Protection works and compressor frequency does not rise due to high discharge temperature. | Refer to 1-1. (Compressor frequency does not rise sufficiently.)(page 178)<br>Refer to the page on refrigerant amount adjustment(page 124) |
| 7. Clogging by foreign object | Check the temperature difference between in front of and behind the place where the foreign object is clogging the pipe (upstream side and downstream side). When the temperature drops significantly, the foreign object may clog the pipe.<br>-> Remove the foreign object inside the pipe. |
| 8. The indoor unit inlet temperature is excessively. (Less than 15°C [59°F] WB) | Check the inlet air temperature and for short cycling. Change the environment where the indoor unit is used. |
| 9. Compressor failure<br>The amount of circulating refrigerant decreases due to refrigerant leak in the compressor. | Check the discharge temperature to determine if the refrigerant leaks, as it rises if there is a leak. |
| 10. HBC controller LEV3 actuation failure<br>Sufficient cold water is not supplied as sufficient sub cool cannot be secured on the HBC controller due to LEVI, 2, and 3 actuation failure. | Refer to the page of LEV troubleshooting ( [4] -1- ).(page 186) |
| 11. TH12, TH15 and 63HS1 sensor failure or faulty wiring<br>LEV3 is not controlled normally. | ♦Check the thermistor.<br>♦Check wiring. |
| 12. HBC controller valve block actuation failure<br>Sufficient cold water is not supplied because of the insufficient water flow rate and coexistence of cold and hot water on the HBC controller due to valve block actuation failure. | ♦Refer to the section on valve block fault under "Troubleshooting." (page 200) |

**2. Phenomena**

Although heating operation starts with the normal remote controller display, the capacity is not enough.

**(1) Cause, check method and remedy**

| Cause | Check method and remedy |
|---|---|
| 1. Compressor frequency does not rise sufficiently.<br>♦Faulty detection of pressure sensor.<br>♦Protection works and compressor frequency does not rise due to high discharge temperature<br>♦Protection works and compressor frequency does not rise due to high pressure. | (1) Check pressure difference between the detected pressure by the pressure sensor and the actual pressure with self-diagnosis LED.<br>-> If the accurate pressure is not detected, check the pressure sensor. (Refer to the page on Trouble-shooting of Pressure Sensor in outdoor unit service handbook)<br>Note: Higher inlet pressure by the high pressure sensor than the actual pressure causes insufficient capacity.<br>SW4 setting (SW6-10: OFF)<br>High pressure sensor<br>SW4<br>ON<br>1 2 3 4 5 6 7 8 9 10<br>Low pressure sensor<br>SW4<br>ON<br>1 2 3 4 5 6 7 8 9 10<br>(2) Check the difference between the condensing temperature (Tc) and the target condensing temperature (Tcm) with self-diagnosis LED.<br>Note: Higher Tc than Tcm causes insufficient capacity.<br>SW4 setting (SW6-10: OFF)<br>Condensing temperature Tc<br>SW4<br>ON<br>1 2 3 4 5 6 7 8 9 10<br>Target condensing temperature Tcm<br>SW4<br>ON<br>1 2 3 4 5 6 7 8 9 10<br>Note: Protection works and compressor frequency does not rise even at lower Tc than Tcm due to high discharge temperature and high pressure.<br>At high discharge temperature:<br>Refer to 1102 in outdoor unit service handbook<br>At high pressure:<br>Refer to 1302 in outdoor unit service handbook |




The figure at left shows that the switches 1 through 5 are set to ON and 6 through 10 are set to OFF.

| Cause | | Check method and remedy |
|---|---|---|
| 2. | HBC controller LEV1 and 2 actuation failure<br>Sufficient hot water is not supplied on the HBC controller due to HBC controller LEVI, 2, and 3 actuation failure. | Refer to the page of LEV troubleshooting ([4] -1-). (page 186) |
| 3. | Temperature reading error on the indoor unit piping temperature sensor<br>If the temperature reading on the sensor is higher than the actual temperature, it makes the subcool seem smaller than it is, and the LEV opening decreases too much. | Check the thermistor. |
| 4 | RPM error of the outdoor unit FAN<br>♦Motor failure or board failure, or airflow rate decrease, pressure drop due to clogging of the heat exchanger leading to high discharge temperature<br>♦The fan is not properly controlled as the temperature cannot be precisely detected with the piping sensor. | Refer to the page on outdoor unit fan in outdoor unit service handbook |
| 5. | Insulation failure of the refrigerant piping | |
| 6. | Long piping length<br>Excessively long piping on the high pressure side causes pressure loss leading to increase in the high pressure. | Confirm that the characteristic of capacity drop due to piping length.<br>-> Change the pipe |
| 7. | Piping size is not proper (thin) | |
| 8. | Clogging by foreign object | Check the temperature difference between the upstream and the downstream of the pipe section that is blocked. Since blockage in the extended section is difficult to locate, operate the unit in the cooling cycle, and follow the same procedures that are used to locate the blockage of pipe during cooling operation.<br>->Remove the blockage in the pipe. |
| 9. | The indoor unit inlet temperature is excessively high.(exceeding 28°C [82°F]) | Check the inlet air temperature and for short cycling. Change the environment where the indoor unit is used. |
| 10. | Insufficient refrigerant amount<br>Protection works and compressor frequency does not rise due to low discharge temperature<br>Refrigerant recovery operation is likely to start. | Refer to 2 - 1. (Compressor frequency does not rise sufficiently.)(page 180)<br>Refer to the page on refrigerant amount adjustment.(page 124) |
| 11. | Compressor failure (same as in case of cooling) | Check the discharge temperature. |
| 12. | HBC controller LEV3 actuation failure<br>A drop in the low pressure that is caused either by a blockage of liquid pipe or by a pressure loss and the resultant slowing of refrigerant flow causes a tendency for the discharge temperature to rise. | Refer to the page of LEV troubleshooting ([4] -1-). (page 186) |
| 13. | HBC controller valve block actuation failure<br>Sufficient hot water is not supplied because of the insufficient water flow rate and coexistence of cold and hot water on the HBC controller due to valve block actuation failure. | Refer to the section on valve block fault under "Troubleshooting." (page 200) |

**3. Phenomena**

Outdoor unit stops at times during operation.

**(1) Cause, check method and remedy**

| Cause | | Check method and remedy | |
|---|---|---|---|
| | The first stop is not considered as an error, as the unit turns to anti-restart mode for 3 minutes as a preliminary error. | (1) | Check the mode operated in the past by displaying preliminary error history on LED display with SW4. |
| | **Error mode** | (2) | Reoperate the unit to find the mode that stops the unit by displaying preliminary error history on LED display with SW4<br>Refer to the reference page for each error mode. |
| 1) | Abnormal high pressure | | |
| 2) | Abnormal discharge air temperature | | |
| 3) | Heatsink thermistor failure | | *Display the indoor piping temperature table with SW4 to check whether the freeze proof operation runs properly, and check the temperature. |
| 4) | Thermistor failure | | |
| 5) | Pressure sensor failure | | |
| 6) | Over-current break | | |
| 7) | Refrigerant overcharge | | |
| Note1: | Frost prevention tripping only under cooling mode may be considered in addition to the above. (Freeze protection is detected by one or all indoor units.) | | |
| Note2: | Even the second stop is not considered as an error when some specified errors occur. (eg. The third stop is considered as an error when the thermistor error occurs.) | | |

## [3] Investigation of Transmission Wave Shape/Noise

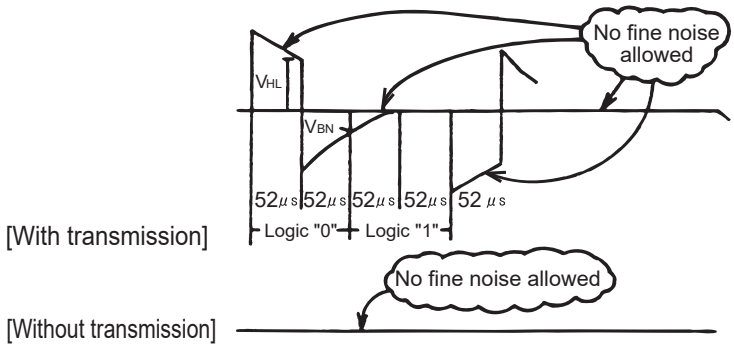
**1. M-NET transmission**

Control is performed by exchanging signals between the outdoor unit and the indoor unit (ME remote controller) through M-NET transmission. Noise interference on the transmission line will interrupt the normal transmission, leading to erroneous operation.

**(1) Symptoms caused by noise interference on the transmission line**

| Cause | Erroneous operation | Error code | Error code definition |
|---|---|---|---|
| Noise interference on the transmission line | Signal is transformed and will be misjudged as the signal of another address. | 6600 | Address overlap |
| | Transmission wave pattern is transformed due to the noise creating a new signal | 6602 | Transmission processor hardware error |
| | Transmission wave pattern is transformed due to the noise, and will not be received normally leading to no acknowledgement (ACK). | 6607 | No ACK error |
| | Transmission cannot be performed due to the fine noise. | 6603 | Transmission line bus busy error |
| | Transmission is successful; however, the acknowledgement (ACK) or the response cannot be received normally due to the noise. | 6607<br>6608 | No ACK error<br>No response error |

**(2) Wave shape check**




**Wave shape check**

Check the wave pattern of the transmission line with an oscilloscope. The following conditions must be met.

1) Small wave pattern (noise) must not exist on the transmission signal. (Minute noise (approximately 1V) can be generated by DC-DC converter or the inverter operation; however, such noise is not a problem when the shield of the transmission line is grounded.)
2) The sectional voltage level of transmission signal should be as follows.

| Logic | Voltage level of the transmission line |
|---|---|
| 0 | $V_{HL}$ = 2.5V or higher |
| 1 | $V_{BN}$ = 1.3V or below |

**(3) Check method and remedy**

1) Measures against noise
Check the followings when noise exists on the wave or the errors described in (1) occur.

| | Error code definition | Remedy |
|---|---|---|
| Check that the wiring work is performed according to wiring specifications. | 1. The transmission line and the power line are not wired too closely. | Isolate the transmission line from the power line (5cm [1-31/32"] or more). Do not insert them in the same conduit. |
| | 2. The transmission line is not bundled with that for another systems. | The transmission line must be isolated from another transmission line.<br>When they are bundled, erroneous operation may be caused. |
| | 3. The specified wire is used for the transmission line. | Use the specified transmission line.<br>Type: Shielded wire CVVS/CPEVS/MVVS (For ME remote controller)<br>Diameter: 1.25mm$^2$ [AWG16] or more<br>(Remote controller wire: 0.3 - 1.25mm$^2$ [AWG22-16]) |
| | 4. When the transmission line is daisy-chained on the indoor unit terminals, are the shields daisy-chained on the terminals, too? | The transmission is two-wire daisy-chained. The shielded wire must be also daisy-chained.<br>When the shielded cable is not daisy-chained, the noise cannot be reduced enough. |
| Check that the grounding work is performed according to grounding specifications. | 5. Is the shield of the indoor-outdoor transmission cable grounded to the earth terminal on the outdoor unit? | Connect the shield of the indoor-outdoor transmission cable to the earth terminal (⏚) on the outdoor unit.<br>If no grounding is provided, the noise on the transmission line cannot escape leading to change of the transmission signal. |
| | 6. Check the treatment method of the shield of the transmission line (for centralized control). | The transmission cable for centralized control is less subject to noise interference if it is grounded to the outdoor unit whose power jumper cable was moved from CN41 to CN40 or to the power supply unit.<br>The environment against noise varies depending on the distance of the transmission lines, the number of the connected units, the type of the controllers to be connected, or the environment of the installation site. Therefore, the transmission line work for centralized control must be performed as follows.<br>1. When no grounding is provided: Ground the shield of the transmission cable by connecting to the outdoor unit whose power jumper connector was moved from CN41 to CN40 or to the power supply unit.<br>2. When an error occurs even though one point grounding is provided: Ground the shield on all outdoor units. |

2) Check the followings when the error "6607" occurs, or "HO" appears on the display on the remote controller.

| Error code definition | Remedy |
|---|---|
| 7. The farthest distance of transmission line is 200m [656ft] or longer. | Check that the farthest distance from the outdoor unit to the indoor unit and to the remote controller is within 200m [656ft]. |
| 8. The types of transmission lines are different. | Use the specified transmission line.<br>Type: Shielded wire CVVS/CPEVS/MVVS (For ME remote controller)<br>Diameter: 1.25mm$^2$ [AWG16] or more<br>(Remote controller wire: 0.3-1.25mm$^2$ [AWG22-16]) |
| 9. Outdoor unit circuit board failure | Replace the outdoor unit control board or the power supply board for the transmission line. |
| 10. Indoor unit circuit board failure or remote controller failure | Replace the indoor unit circuit board or the remote controller. |
| 11. The MA remote controller is connected to the M-NET transmission line. | Connect the MA remote controller to the terminal block for MA remote controller (TB15). |

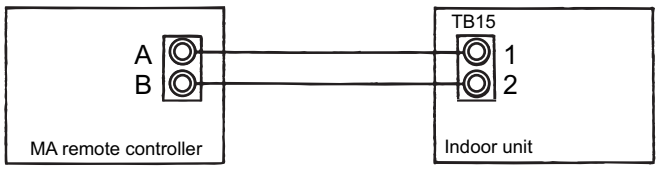
**2. MA remote controller transmission**

The communication between the MA remote controller and the indoor unit is performed with current tone burst.

**(1) Symptoms caused by noise interference on the transmission line**

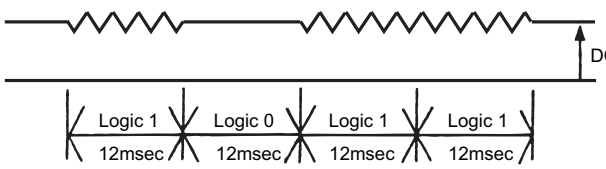
If noise is generated on the transmission line, and the communication between the MA remote controller and the indoor unit is interrupted for 3 minutes in a row, MA transmission error (6831) will occur.

**(2) Confirmation of transmission specifications and wave pattern**




A, B : No polarity
Across terminal No. 1-2
: Power supply (9V to 12VDC)

Transmission waveform (Across terminal No.1 - 2)




① Satisfies the formula
12 msec/bit ± 5%
② Voltage among terminals must be between DC9 and 12 V.

## [4] Troubleshooting Principal Parts

### -1- LEV

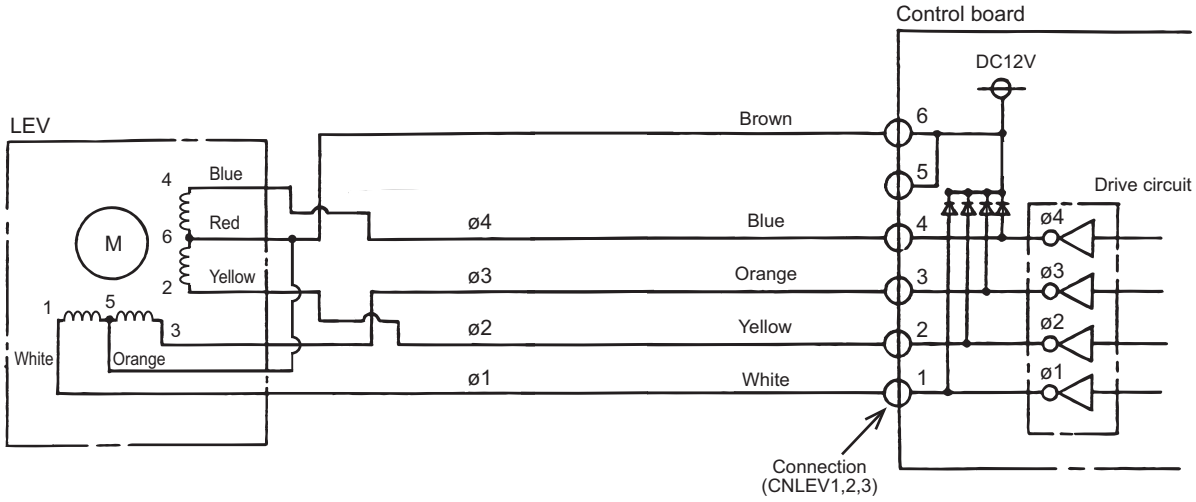
**LEV operation**

HBC controller LEVI, 2, and 3 (linear expansion valves) are driven by the pulse signal from the control board and are controlled by a stepping motor.

**(1) HBC controller LEV**

The valve opening changes according to the number of pulses.

1) Control boards and the LEV (HBC controller LEV1, 2, 3)



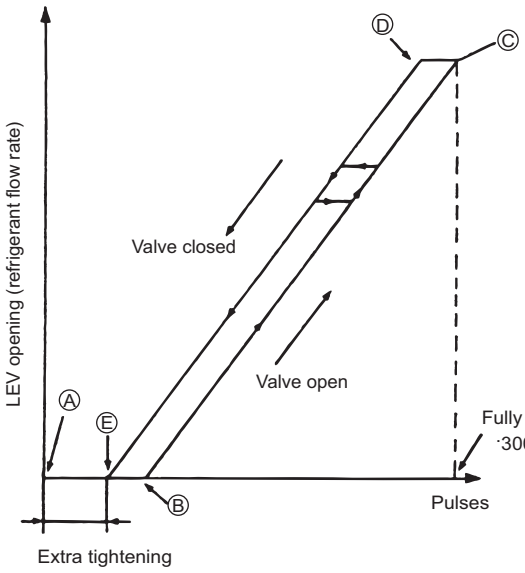

2) Pulse signal output and valve operation

| Output (phase) number | Output state | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| ϕ1 | ON | OFF | OFF | ON |
| ϕ2 | ON | ON | OFF | OFF |
| ϕ3 | OFF | ON | ON | OFF |
| ϕ4 | OFF | OFF | ON | ON |

Output pulses change in the following orders when the
Valve is closed; 1 →2 →3 → 4 → 1
Valve is open; 4 →3 →2 → 1 → 4

*1. When the LEV opening angle does not change, all the output phases will be off.
*2. When the output is open phase or remains ON, the motor cannot run smoothly, and rattles and vibrates.

3) LEV valve closing and opening operation



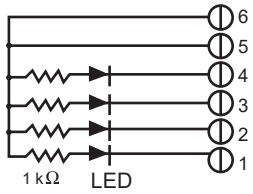

* Upon power on, the HBC controller circuit board sends 3200 Hz pulse closing signals to the LEVs (HBC controller LEV 1, 2, and 3) to determine the valve position and bring the valve to the position as indicated by Ⓐ in the diagram. After the valve position has been adjusted to the position as indicated by Ⓐ in the diagram below, the HBC controller circuit board sends a 41-pulse signal to bring the LEV opening to the position as indicated by Ⓑ in the diagram below.

When the valve operates smoothly, no sound from LEV or no vibration occurs, however, when the pulses change from Ⓔ to Ⓐ in the chart or the valve is locked, a big sound occurs.

*Whether a sound is generated or not can be determined by holding a screwdriver against it, then placing your ear against the handle.

*1 The LEV opening may become greater depending on the operation status.

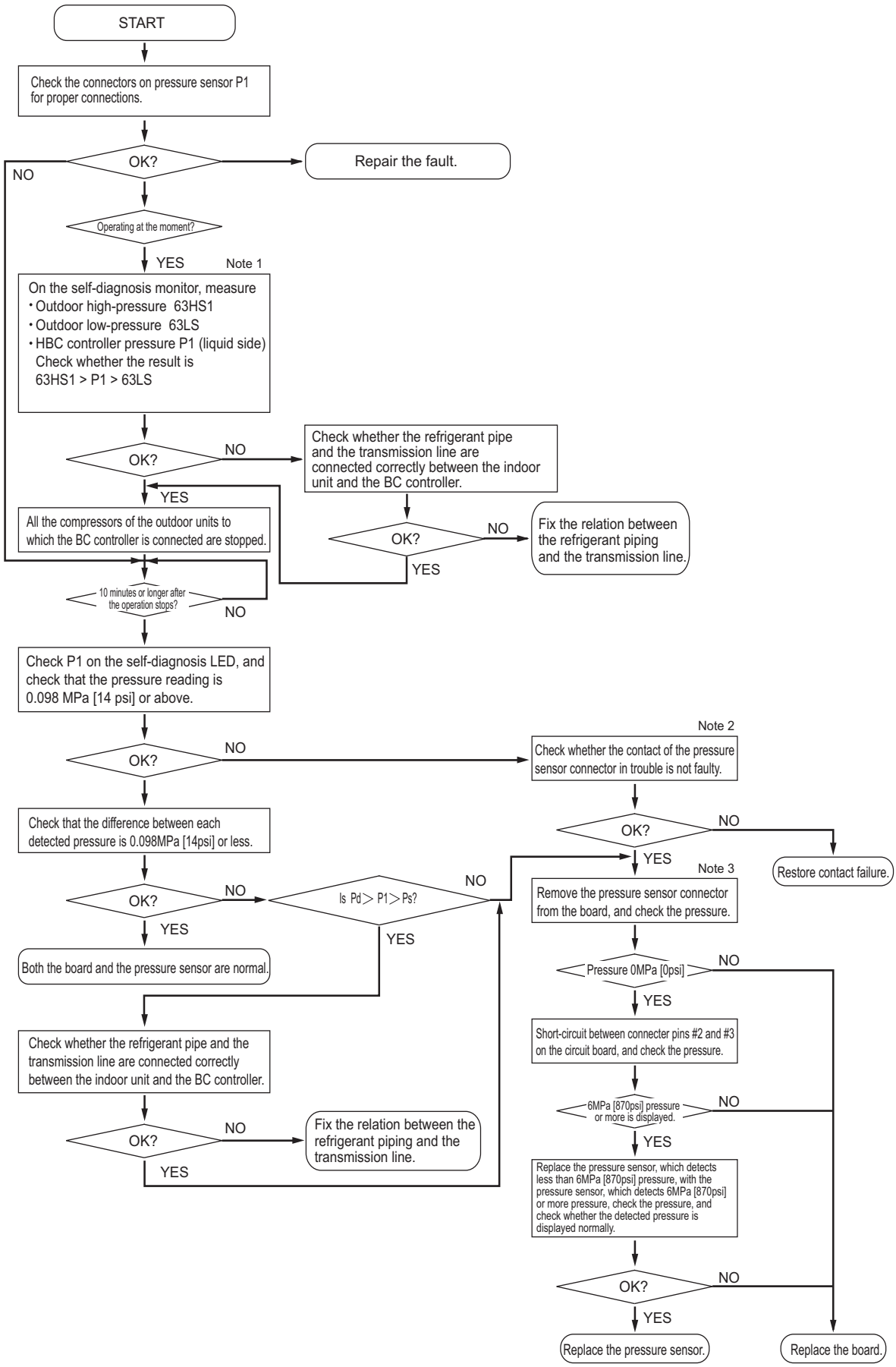
**(2) Judgment methods and possible failure mode**

| Malfunction mode | Judgment method | Remedy |
|---|---|---|
| Microcomputer driver circuit failure | Disconnect the control board connector and connect the check LED as shown in the figure below.<br>  <br><br>resistance : 0.25W 1kΩ<br>LED : DC15V 20mA or more<br>When the main power is turned on, the indoor unit circuit board outputs pulse signals to the indoor unit LEV for 10 seconds.<br>If any of the LED remains lit or unlit, the drive circuit is faulty. | When the drive circuit has a problem, replace the control board. |
| LEV mechanism is locked | If the LEV is locked, the drive motor runs idle, and makes a small clicking sound.<br>When the valve makes a closing and opening sound, the valve has a problem. | Replace the LEV. |
| Disconnected or short-circuited LEV motor coil | Measure resistance between the coils (red - white, red -orange, brown - yellow, brown - blue) using a tester. They are normal if resistance is 150ohm ± 10%. | Replace the LEV coils. |
| Faulty wire connections in the connector or faulty contact | 1. Check for loose pins on the connector and check the colors of the lead wires visually<br>2. Disconnect the control board's connector and conduct a continuity check using a tester. | Check the continuity at the points where an error occurs. |

## -2- Troubleshooting Principal Parts of HBC Controller

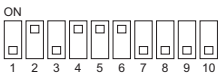
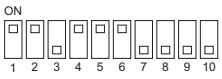
### 1. Pressure sensor

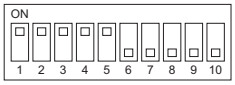
Troubleshooting flow chart for pressure sensor



**Note**

1) Check the self-diagnosis switch (Outdoor control board SW4 (SW6-10:OFF)).

| Measurement data | Symbol | SW4 setting value |
|---|---|---|
| Outdoor high pressure | 63HS1 |   |
| Outdoor low pressure | 63LS |   |



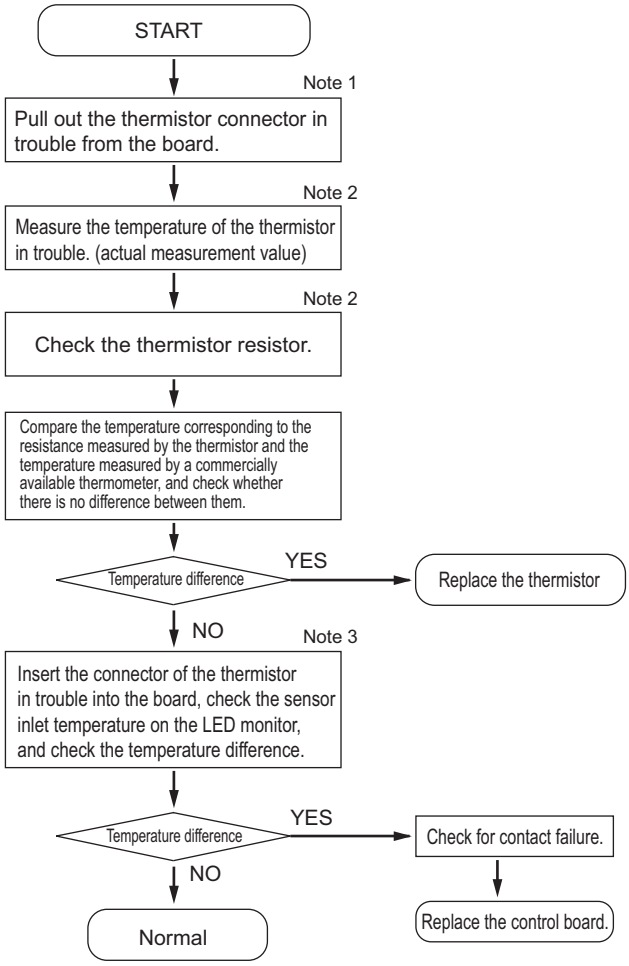

The figure at left shows that the switches 1 through 5 are set to ON and 6 through 10 are set to OFF.

**Note**

2) Check CNP1 connector on the HBC controller control board for proper connections.
3) Check the pressure value on the self-diagnosis switch (same as note 2) with the connector of the applied pressure sensor is disconnected from the board.

## 2. Temperature sensor

**Troubleshooting instructions for thermistor**




**Note**

1) Connectors on the circuit board are connected to the sensors as follows. Unplug the corresponding connectors before checking each sensor.

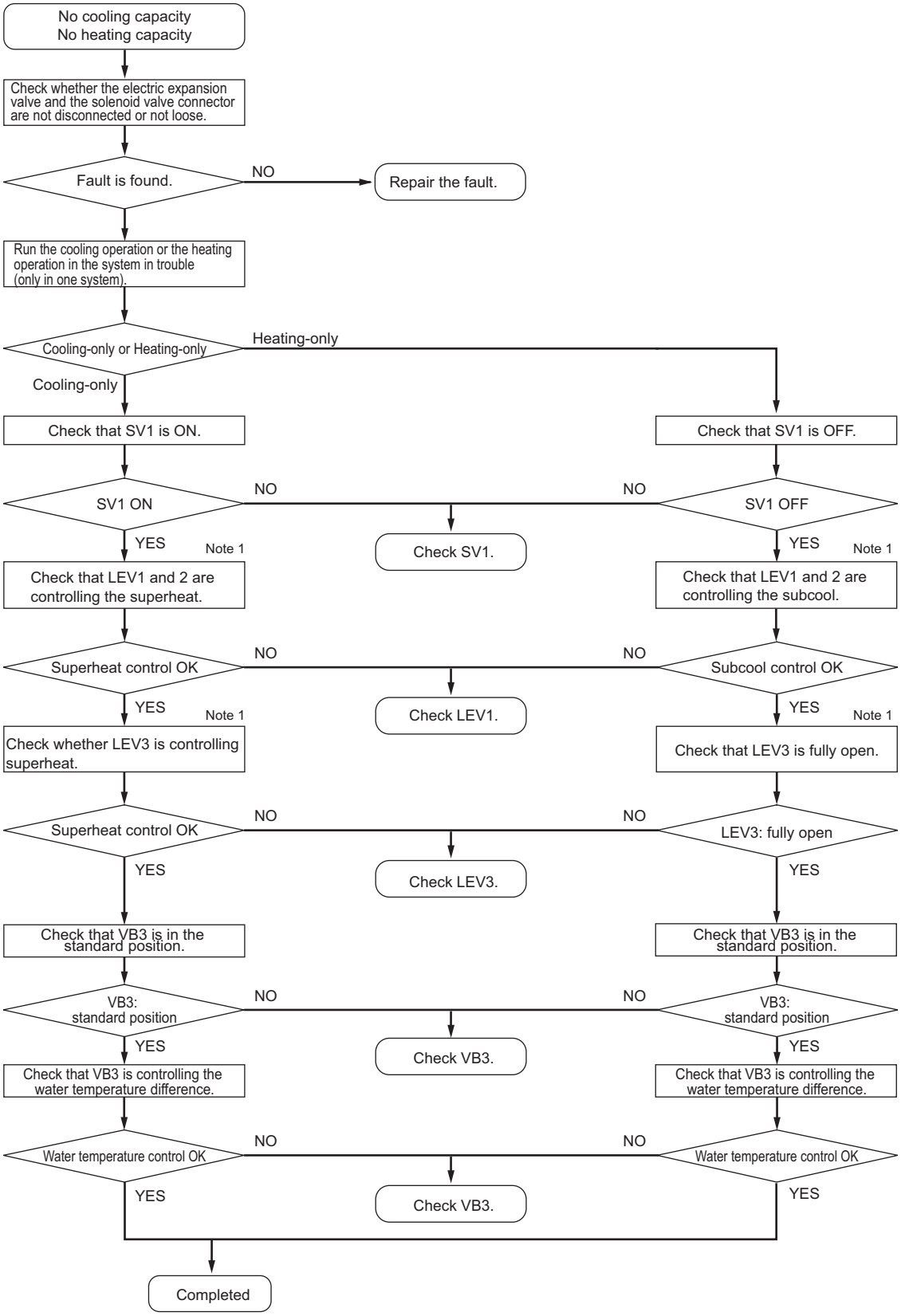
| Sensor | Connectable connector |
|---|---|
| TH11~TH12 | CN501 |
| TH13~TH14 | CN502 |
| TH15~TH16 | CN511 |
| TH31a~TH31b | CN503 |
| TH31c~TH31d | CN504 |
| TH31e~TH31f | CN508 |
| TH31g~TH31h | CN509 |
| TH32~TH33 | CN510 |
| TH31i~TH31j, TH34 | CN505 |
| TH31k~TH31l, TH35 | CN506 |
| TH31m~TH31n | CN507 |
| TH31o | CN515 |
| TH31p | CN516 |

2)

- Pull out the sensor connector from the I/O board, Do not pull the sensor by holding the lead wire.
- Measure the resistance with such as a tester.
- Compare the measured value with that of shown in the figure below. When the result is ± 10%, it is normal.

### 3. Troubleshooting flow chart for LEV, Solenoid valve, and Valve block

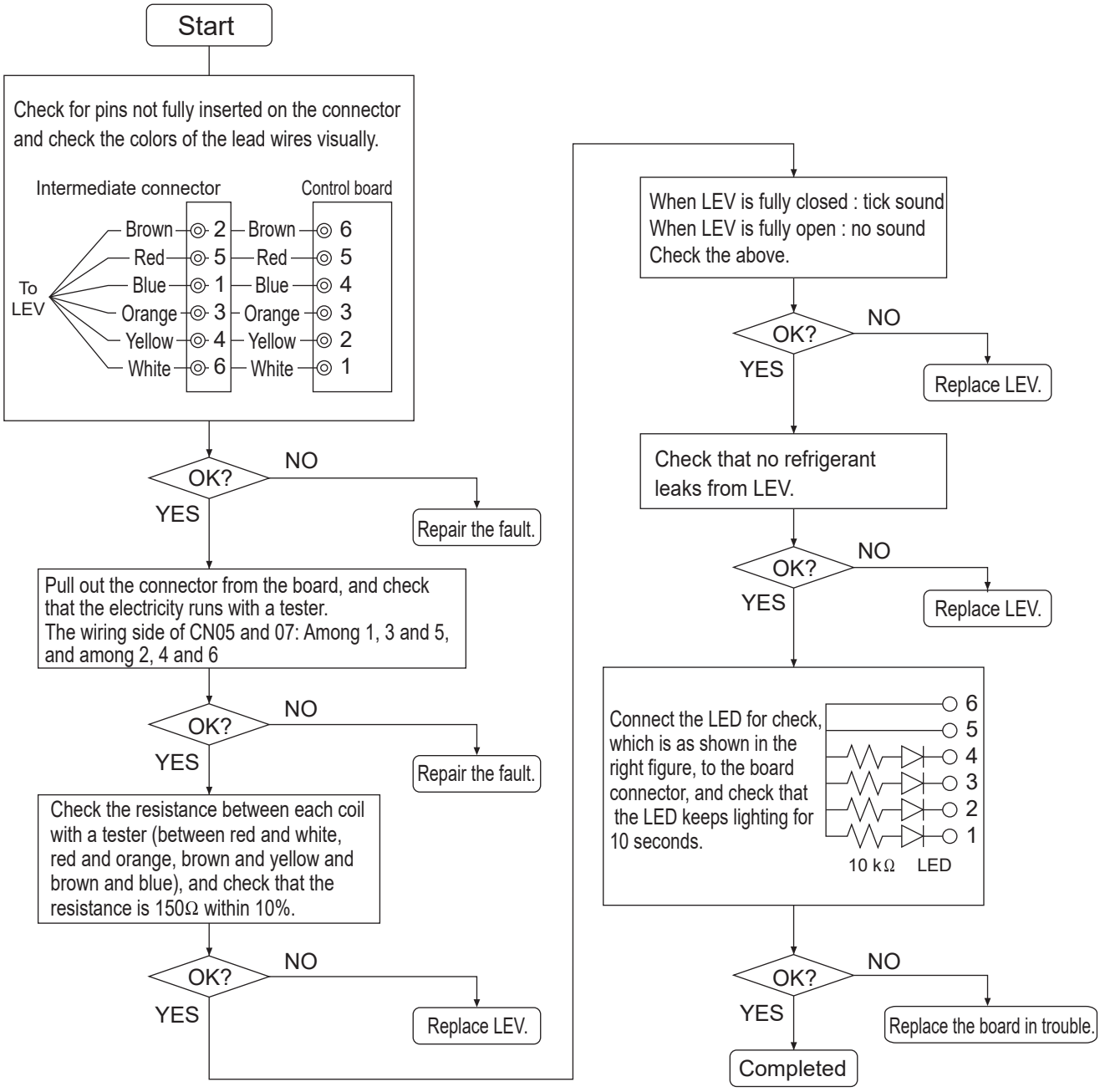
#### (1) LEV




**Note**

1) Refer to Chapter "Control" for superheat, subcool, and water temperature difference.

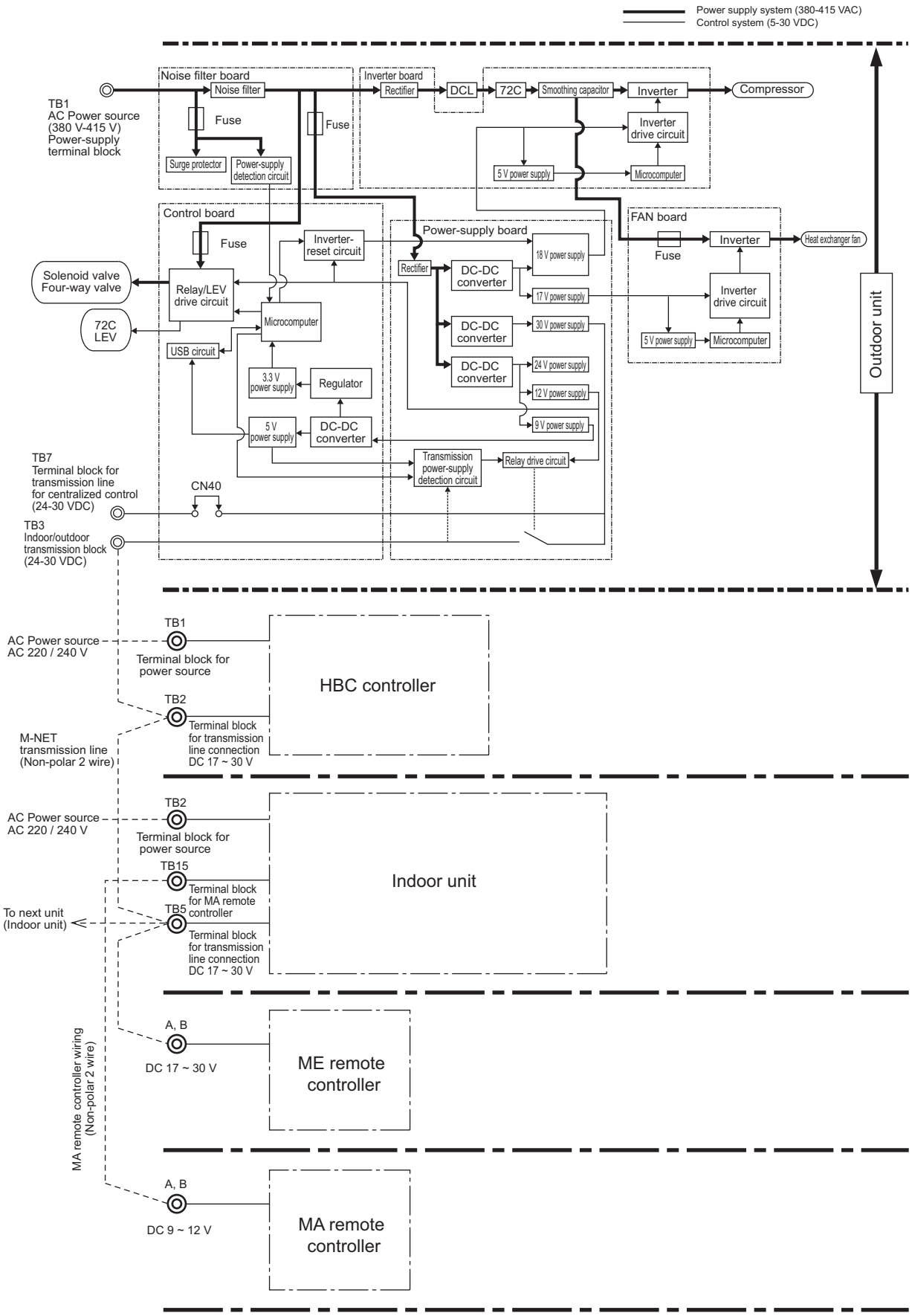
**Troubleshooting flow chart for solenoid valve body**



## -3- Control Circuit

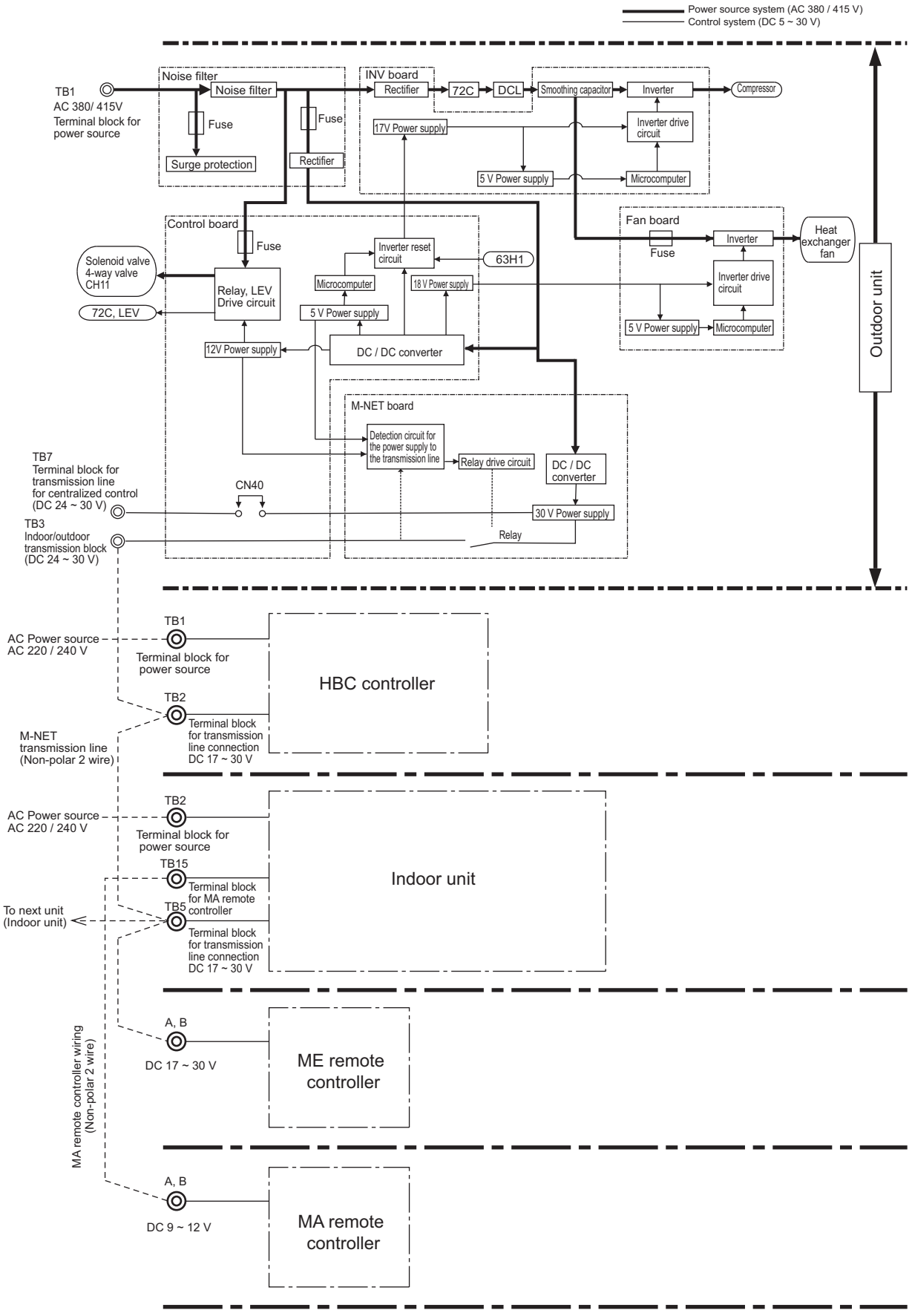
### (1) Control power source function block

#### 1) PURY-(E)M***YNW-A/PURY-(E)P***YNW-A




* MA remote controllers and ME remote controllers cannot be used together.
(Both the ME and MA remote controller can be connected to a system with a system controller.)

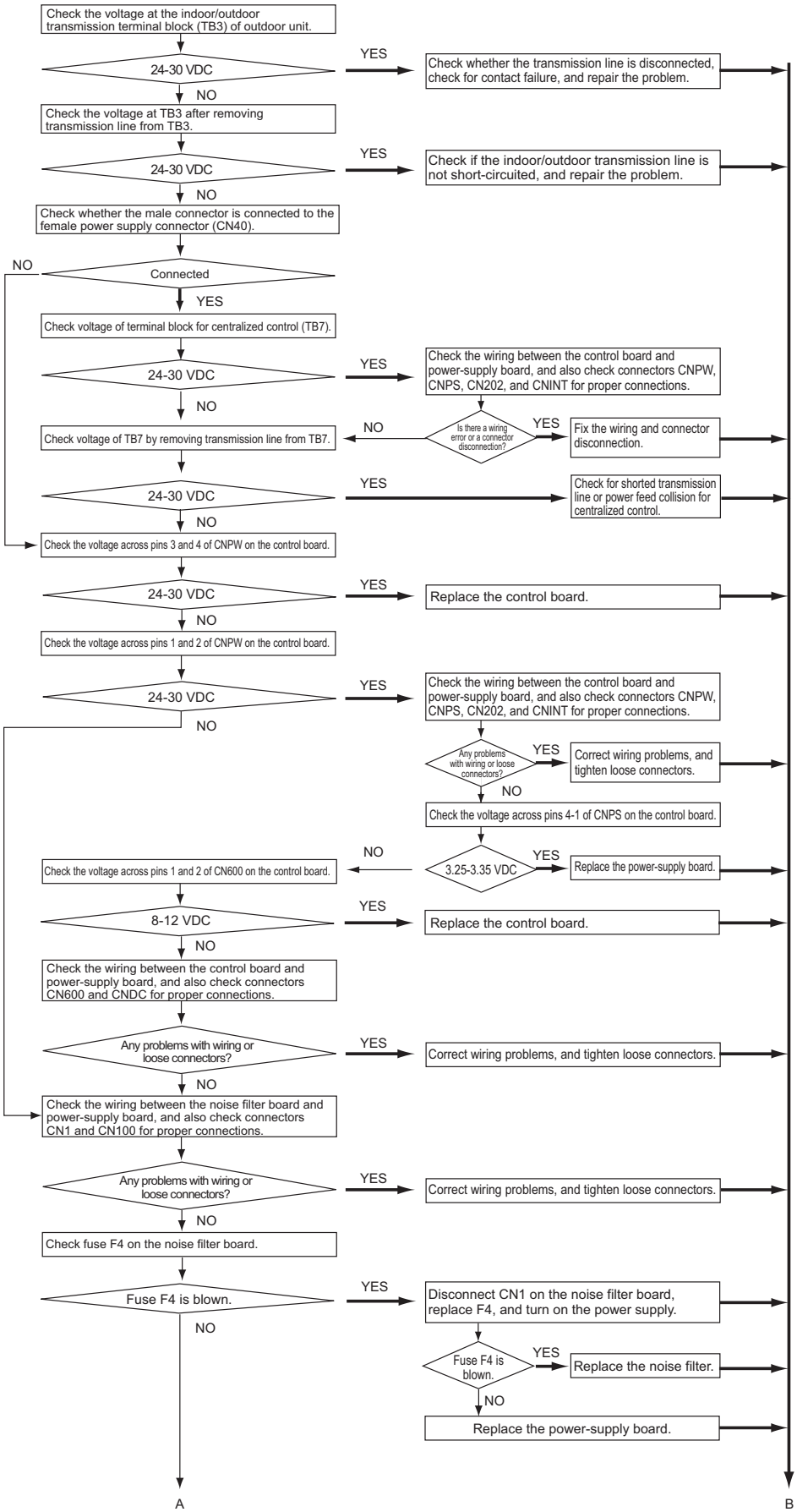
## 2) PURY-(E)P***YLM-A

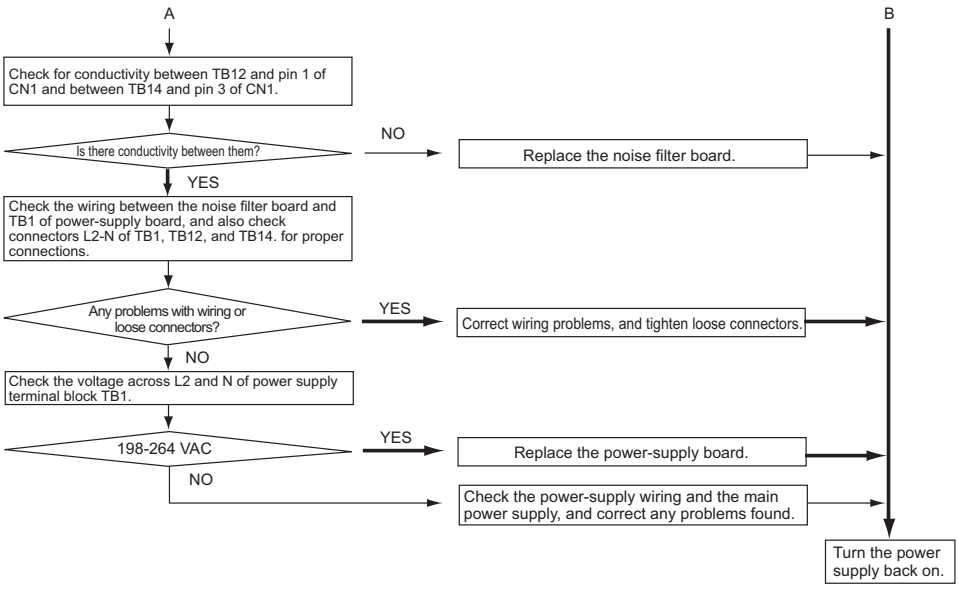



* MA remote controllers and ME remote controllers cannot be used together.
(Both the ME and MA remote controller can be connected to a system with a system controller.)

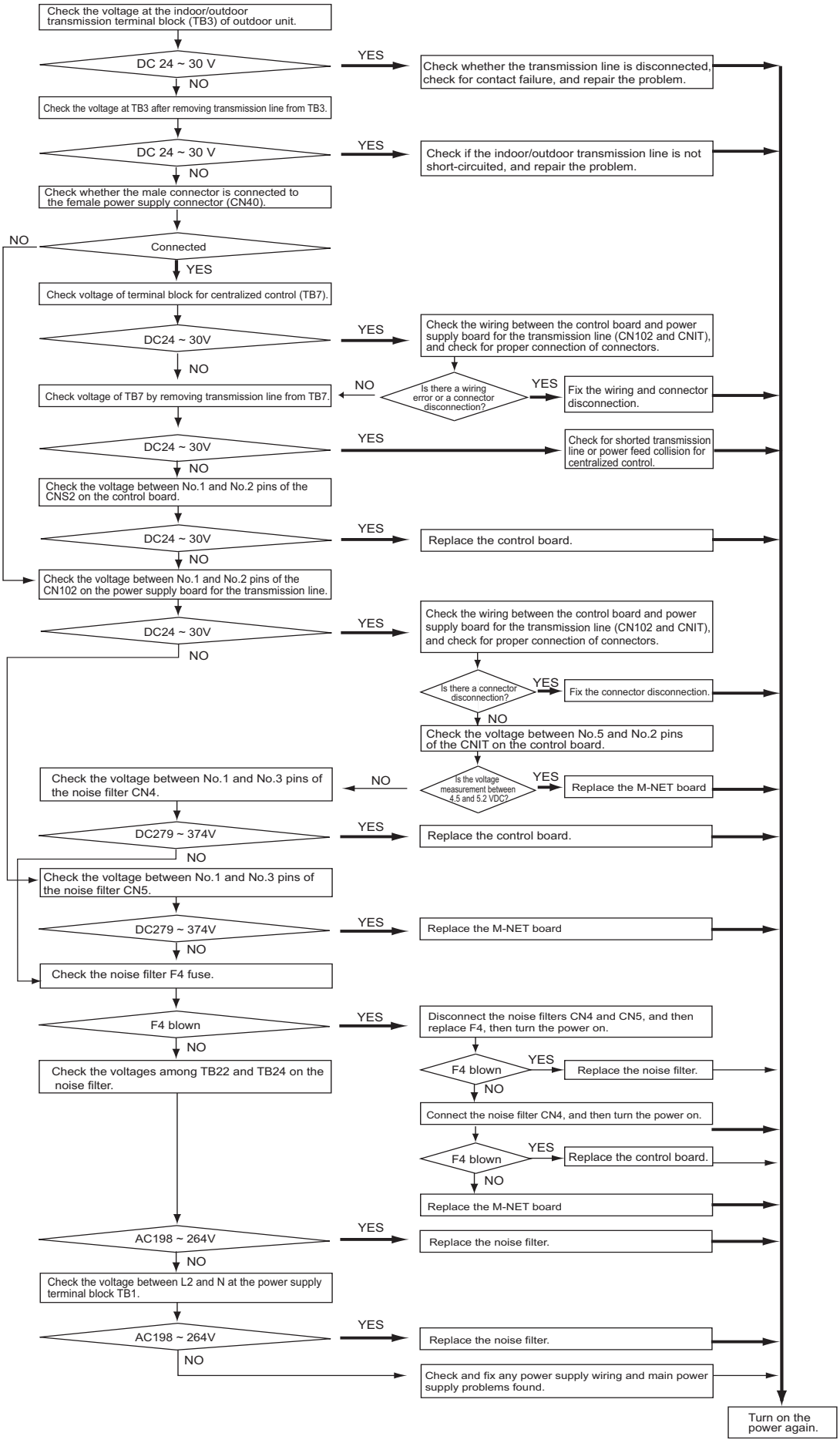
## (2) Troubleshooting transmission power circuit of outdoor unit

### 1) PURY-(E)M***YNW-A/PURY-(E)P***YLM-A




A
B
Check for conductivity between TB12 and pin 1 of CN1 and between TB14 and pin 3 of CN1.
Is there conductivity between them?
NO
Replace the noise filter board.
YES
Check the wiring between the noise filter board and TB1 of power-supply board, and also check connectors L2-N of TB1, TB12, and TB14. for proper connections.
Any problems with wiring or loose connectors?
YES
Correct wiring problems, and tighten loose connectors.
NO
Check the voltage across L2 and N of power supply terminal block TB1.
198-264 VAC
YES
Replace the power-supply board.
NO
Check the power-supply wiring and the main power supply, and correct any problems found.
Turn the power supply back on.

## 2) PURY-(E)P***YLM-A



## [5] Refrigerant Leak

**1. Leak spot: In the case of extension pipes and HBC controller (Cooling season)**

1) Mount a pressure gauge on the service check joint (CJ2) on the low-pressure side.
2) Stop all the indoor units, and close the high-pressure side refrigerant service valve (BV2) on the outdoor unit while the compressor is being stopped.
3) Stop all the indoor units; turn on SW4 (912) on the outdoor unit control board while the compressor is being stopped. (Pump down mode will start, and all the indoor units will run in cooling test run mode.)
4) In the pump down mode (SW4 (912) is ON), all the indoor units and compressors will automatically stop when the low pressure (63LS) reaches 0.383MPa [55psi] or less or 15 minutes have passed after the pump mode started. Stop all the indoor units and compressors when the pressure indicated by the pressure gauge, which is on the check joint (CJ2) for low-pressure service, reaches 0.383MPa [55psi] or 20 minutes pass after the pump down operation is started.
5) Close the service ball valve (BV1) on the low-pressure pipe on the outdoor unit.
6) Collect the refrigerant that remains in the extended pipe for the HBC controller. Do not discharge refrigerant into the atmosphere when it is collected.
7) Repair the leak.
8) After repairing the leak, vacuum[*1] the extension pipe and the HBC controller.
9) To adjust refrigerant amount, open the ball valves (BV1 and BV2) inside the outdoor unit and turn off SW2-4.

**2. Leak spot: In the case of outdoor unit (Cooling season)**

**(1) Run all the indoor units in the cooling test run mode.**

1) To run the indoor unit in test run mode, turn SW4 (769) on the outdoor unit control board to ON.
2) Change the setting of the remote controller for all the indoor units to the cooling mode.
3) Check that all the indoor units are performing a cooling operation.

**(2) Stop all the indoor units, and stop the compressor.**

1) To stop all the indoor units and the compressors, turn SW4 (769) on the outdoor control board from ON to OFF.
2) Check that all the indoor units are being stopped.

**(3) Close the ball valves (BV1 and BV2).**

**(4) Collect the refrigerant that remains inside the outdoor unit. Do not discharge refrigerant into air into the atmosphere when it is collected.**

**(5) Repair the leak.**

**(6) After repairing the leak, replace the dryer with the new one, and perform evacuation [*1] inside the outdoor unit.**

**(7) To adjust refrigerant amount, open the ball valves (BV1 and BV2) inside the outdoor unit.**

*1. Refer to Chapter I [8] Vacuum Drying (Evacuation) for detailed procedure.(page 10)

**3. Leak spot: In the case of extension pipe and HBC controller (Heating season)**

**(1) Run all the indoor units in heating test run mode.**

1) To run the indoor unit in test run mode, set SW4 (769) on the outdoor unit control board to ON.
2) Change the setting of the remote controller for all the indoor units to the heating mode.
3) Check that all the indoor units are performing a heating operation.

**(2) Stop all the indoor units, and stop the compressor.**

1) To stop all the indoor units and the compressors, turn SW4 (769) on the outdoor control board from ON to OFF.
2) Check that all the indoor units are stopped.

**(3) Close the ball valves (BV1 and BV2).**

**(4) Extract any residual refrigerant in the extension pipes and HBC controller. Do not discharge refrigerant into air when it is collected.**

**(5) Repair the leak.**

**(6) After repairing the leak, evacuate the air from the extension pipes and HBC controller*1. Then, open the ball valves (BV1 and BV2), and operate the unit in the refrigerant charge adjust mode.**

**4. Leak spot: In the case of outdoor unit (Heating season)**

1) Extract the refrigerant from the entire system (outdoor units, extension pipes, and HBC controller). Do not discharge refrigerant into the atmosphere when it is collected.
2) Repair the leak.
3) Repair the leak, and evacuate the air from the entire system *1 . Then, calculate the proper amount of refrigerant to be added (outdoor unit + extension pipe + HBC controller), and charge the system with that amount. Refer to Chapter VII [3] 3. for the proper amount of refrigerant charge.(page 125)

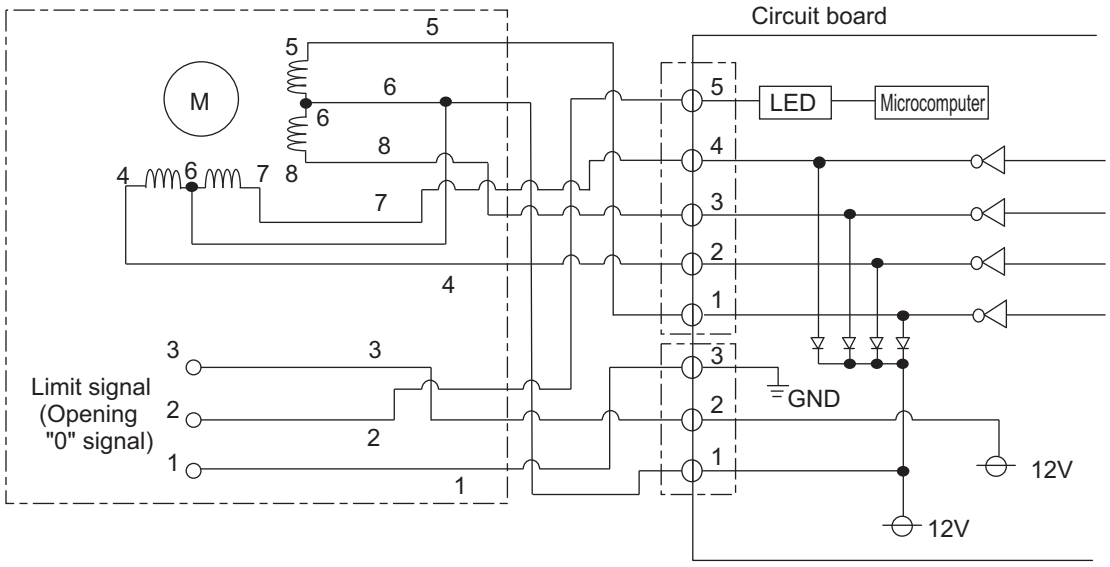
*1. Refer to Chapter I [8] Vacuum Drying (Evacuation) for detailed procedure.(page 10)

## [6] Servicing the HBC controller

**1. Valve block**

VB3 (valve block) is driven by the pulse signal from the HBC controller control board and are controlled by a stepping motor.

1) HBC controller control board and valve block (VB3)




2) Pulse signal output and valve motion

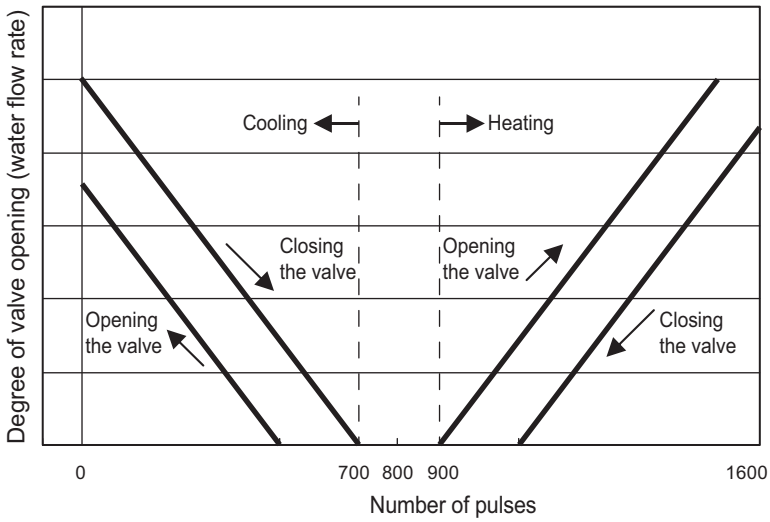
| Output (phase) number | Output status | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 4 | ON | ON | OFF | OFF |
| 5 | OFF | ON | ON | OFF |
| 7 | OFF | OFF | ON | ON |
| 8 | ON | OFF | OFF | ON |

When valve opens (0→C800 or H800): 4→3→2→1

When valve closes (C800 or H800→0): 1→2→3→4

- If the LEDs (VB3a-VB3p) on the control board are lit, check the relevant valve blocks for loose connectors and faulty wiring. Make sure that the valve blocks are properly controlling the refrigerant flow.
- If the LED is unlit, check all valve blocks for proper operation.
- If the problem persists after taking the above measures, replace the circuit board.

3) Opening and closing of the valve



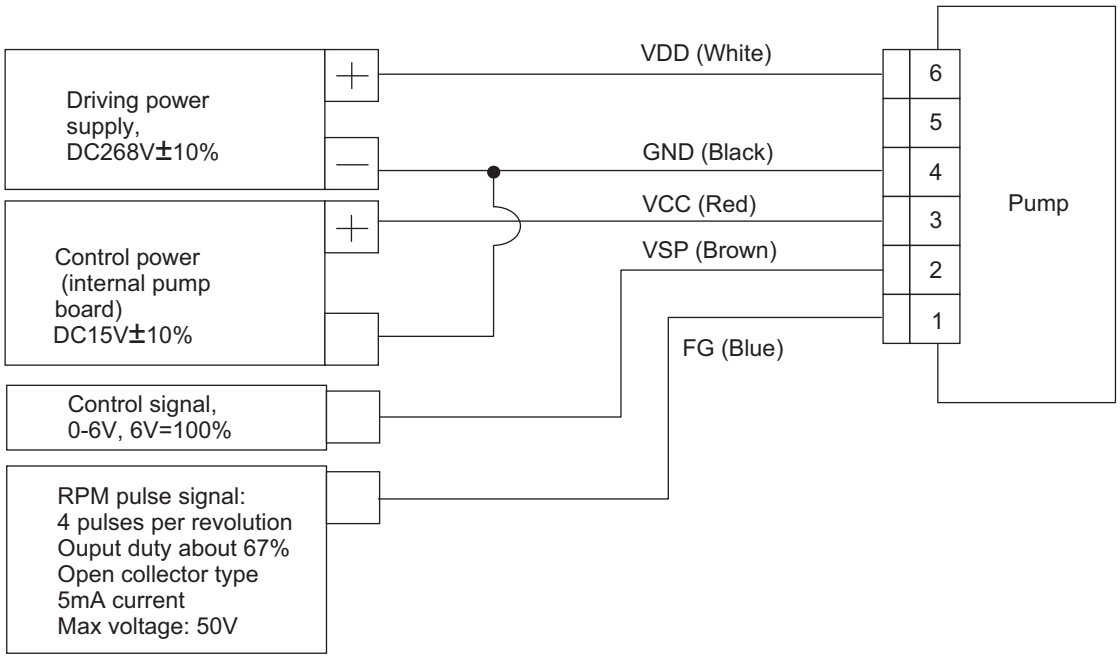

**2. Water pump**

Check the connector and make sure that it is connected properly.
Check the driving power supply, control power supply for the pumps internal board, and check the control signal voltage by connecting each voltage to ground. (Control signal voltage will be 0V when stopped and 6V when running at 100%)
If these are voltages are not correct then investigate the HBC pump power supply board.

If the supply voltages are correct, and the control signal is being sent and the pump will still not operate the likely causes are:

- Internal pump control board failure - replace pump. (Note: The internal pump control board is usually damaged when removing and replacing the connector with the power supply turned on. Always remove the pump connector with the power supply turned off.)
- Coil failure - replace pump. If the windings have been damaged the pump will require replacing.
- Internal mechanical failure such as bearing failure, turbine failure, magnet degradation. This will require pump replacement.

Before replacement the causes must be investigated and resolved. The pump shaft bearings and magnets can be easily damaged by overheating due to dry running or water system blockage. Check the strainer for blockage, investigate the water circuit for blockage and or foreign material, and that there is no air in the system or an uncontrolled leak.

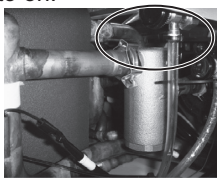


## [7] Instructions for debris removal operation

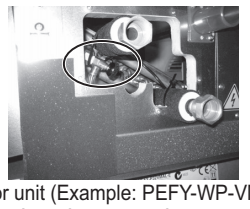
This operation removes the debris that may have been introduced during installation from the water circuit.
Perform this operation **after completion of water- and refrigerant-piping work, air tightness test, evacuation of refrigerant circuits, refrigerant charging, and electrical work.**

**1.Preparation for debris removal operation**

1.Set DIP SW 5-1 (valve opening when stopped), DIP SW 5-2 (nullification of drain over-flow error for 9 hours) from off to on.



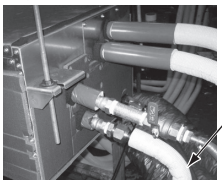
HBC controller



Indoor unit (Example: PEFY-WP-VMA-E)

2.Turn on the breaker, and then open the air vent valves on the HBC controller and the indoor units.
Refer to the Installation Manual for the location of air vent valves.
(If there are air vent valves on the field-installed pipes, open the valves as well.)

3.Supply water from the suction pipe on the HBC controller.

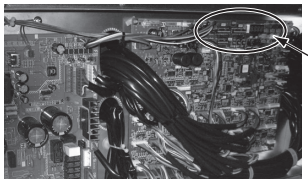


Install a non-return valve to prevent water in the water circuit flowing back to the water supply pipe, or remove the water supply hose after the air vent operation.

4.**Check that water comes from each air vent valve, and perform the debris removal operation.**

**2.Debris removal operation**

1.If there are a large amount of debris in the water in the field-installed pipes, set DIPSW4-1 from OFF to ON.
(Refer to the flowchart for debris removal operation for details.)
Perform the debris removal operation. (Each air vent valve should stay open.)

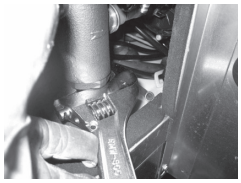


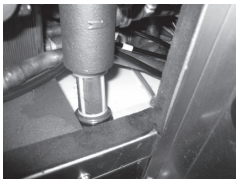
LED and DIPSW positions

2.Debris removal operation will be completed in 40 minutes, and the LED indication will change to "Air1," "Air2," and "AirE" in order. Then, the water pump will stop.

3.Stop the water supply, and check that no water is coming out of the air vent valves. Then, set the dipswitch 4-1 from ON to OFF.

4.Set DIP SW4-6 to on, and switch off the HBC controller. Open the air-vent valve and the water-vent valve.
Slowly open the strainer closest to the water supply to the HBC. (Note that if it is opened fast, water may blast out.)
Remove the strainer, clean its inside, and refit it.





5.Slowly open the other strainer which is the furthest from the water supply.
(After the cleaning, set DIPSW4-6 to OFF.)

6.Make sure the strainers are re-installed.

**Flowchart for debris removal operation (DIPSW4-1 is ON.)**

Step 1 Intermittent operation of water pump (20 min) — The operation is performed while air is discharged from the water pipe. [Air1]

↓

Step 2 Operation of all indoor units (20 min) — Debris in the pipe will accumulate into the strainer by operating all indoor units. [Air2 to AirE]

(1)The operation can be forced to stop by setting DIPSW4-4 from OFF to ON.
(2)If it is found during any step that air ventilation has not been completed to the desired degree, start over at Step 2-1.

<General cautions>
(1)To avoid malfunction, do not connect or disconnect the power connector of the water pump being powered on.
(2)Check for water leaks from the field-installed pipe joint during operation.
(3)Do not pull the clip on the connection of the water pipe with pliers so that undue force is applied.
(4)If Error appears on the LED, turn off the breaker, turn it back on, and start over at step 2-1.

**3.End processing**

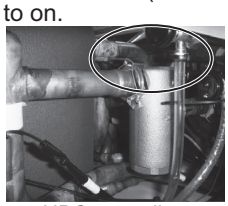
Set the dipswitches 5-1 and 5-2 to OFF after completion of debris removal operation.

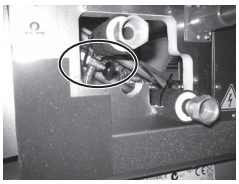
## [8] Instructions for the air vent operation

This operation removes the air that remains after water is supplied to the water circuit.
Perform this operation **after completion of water- and refrigerant-piping work, air tightness test, evacuation of refrigerant circuits, and refrigerant charging (and debris removal, if performed).**
* When connecting two main-HBCs in parallel, take steps 1 through 4 below for the first main-HBC, and then do the same for the second main-HBC. (Steps 1 through 4 below cannot be taken for both main-HBCs simultaneously.)

**1.Preparation for the air vent operation**

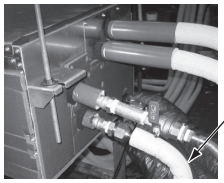
1.Set DIP SW 5-1 (valve opening when stopped), DIP SW 5-2 (nullification of drain over-flow error for 9 hours) from off to on.


HBC controller


Indoor unit (Example: PEFY-WP-VMA-E)

2.Turn on the breaker, and then open the air vent valves on the HBC controller and the indoor units.
Refer to the Installation Manual for the location of air vent valves.
(If there are air vent valves on the field-installed pipes, open the valves as well.)

3.Supply water from the suction pipe on the HBC controller.


Install a non-return valve to prevent water in the water circuit flooding back to the water supply pipe, or remove the water supply hose after the air vent operation.

4.**Check that water comes from each air vent valve, and perform the air vent operation.**

**2.Air vent operation**

1.Set DIPSW4-3 from OFF to ON.
2.The LED will indicate "Air1" "Air2" "Air3" "Air4" and "AirE" in order over a period of up to 70~220 minutes, and after 70~220 minutes have passed, the water pump will stop.


LED and DIPSW positions

3.Set the dipswitch 4-3 from ON to OFF.
4.Close the all air vent valves.
5.Stop the water supply.

**3.Checking for the presence of residual air**

1.Set DIPSW4-5 from OFF to ON, and operate the water pump.
2.If there is residual air in the circuit, it will be noisy. Check for water leaks from the pipe, and then, perform the air vent operation again.

**Flowchart for air vent operation (DIPSW4-3 is ON.)**

| | | |
|---|---|---|
| Step 1 | Intermittent operation of water pump (20 min) | The operation is performed while air is discharged from the water pipe. [Air1] |
| ↓ | | |
| Step 2 | Operation of all indoor units (20 min) | The residual air will be roughly removed by operating all indoor units. [Air2] |
| ↓ | | |
| Step 3 | Operation of individual indoor unit (10 min per one branch) | The residual air will be removed by operating indoor units for each branch. [Air3] |
| ↓ | | |
| Step 4 | Heating operation of all indoor units (20 min) | The saturated air in the circulating water will be removed by performing heating operation for all indoor units and raising the temperature of the circulating water. [Air4 to AirE] |

• Perform this process only when the outdoor temperature is lower than 25°C.

(1)The operation can be forced to stop by setting DIPSW4-4 from OFF to ON.
(2) If it is found during any step that air ventilation has not been completed to the desired degree, go back to Step 2-1.
(3)If Error appears on the LED, turn off the breaker, turn it back on, and start over at step 2-1.

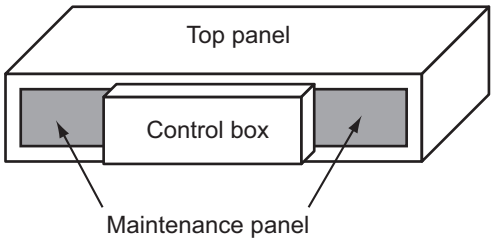
**4.End processing**

Set the dipswitches 5-1 and 5-2 to OFF after completion of air vent operation.

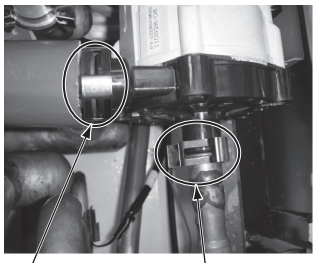
## [9] Instructions for the water pump replacement

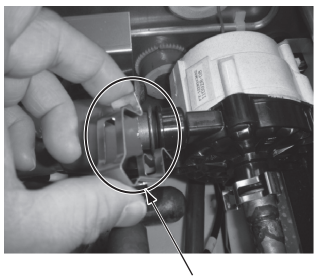
1.After turning off the power to the HBC controller, replace the water pump. To stop the water flow from the indoor unit, perform the following DIPSW operations.
When replacing the water pump near the water supply port, set DIPSW4-6 to ON (DIPSW4-7 to OFF).
When replacing the other water pump, set DIPSW4-6 and DIPSW4-7 to ON.

2.Open the top panel and maintenance panel of the water pump to be replaced.

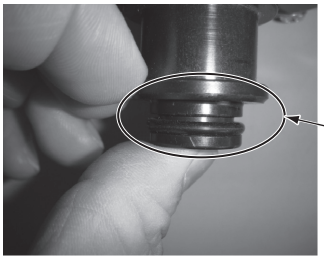



3.Remove the clips on the inlet/outlet of the water pump.

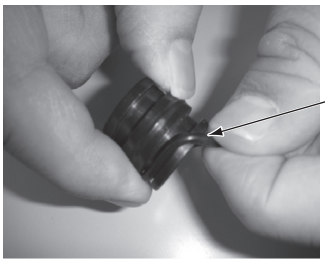



4.Remove the water pump by pulling out the inlet/outlet of the water pump.




5.After removing the water pump, check the O-ring on the sleeve for damage. If O-ring is damaged, replace the O-ring with a new one.

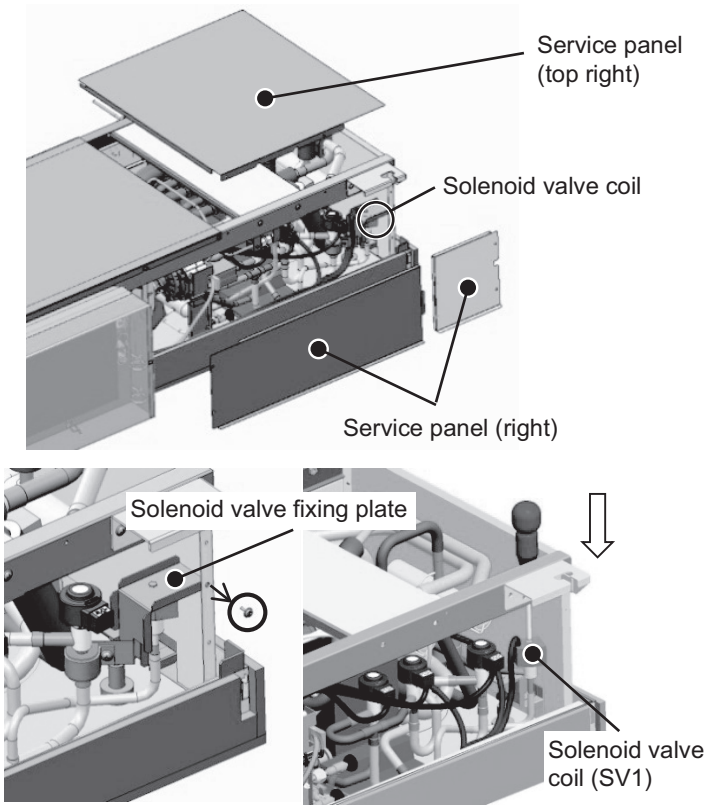



6.Insert the water pump again so that debris is not trapped in the O-ring, and install the clip.
When inserting the water pump, lubricate the O-ring with soapy water.

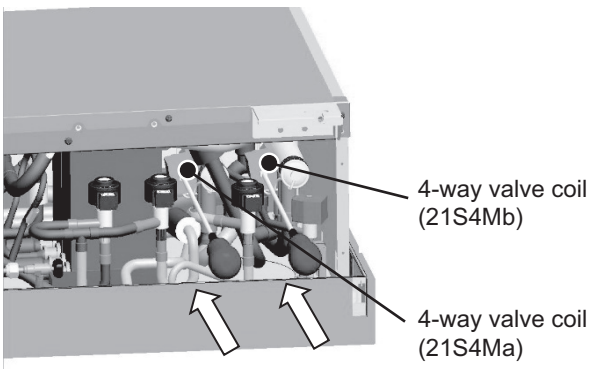

7.After closing the panels, turn on the power to the HBC controller, and perform the air vent operation.

**Replacement procedures for each service part**

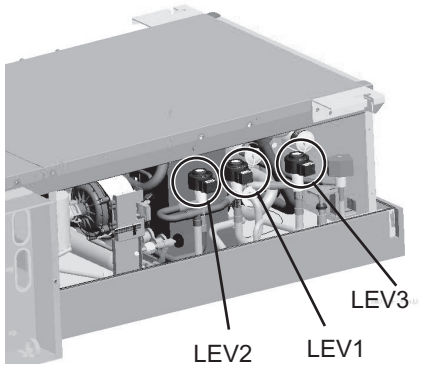
**1. Solenoid valve coil (SV1)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Remove the four fixing screws from the service panel (right) and then remove the service panel (right).<br>(2) Remove the two fixing screws from the service panel (top right) and then remove the service panel (top right).<br>(3) Disconnect the corresponding solenoid valve coil connector from the control board.<br>(4) Remove the control box and then remove the solenoid valve coil wires secured by clamps.<br>(5) Remove one solenoid valve coil fixing screw from the top (indicated by direction of the arrow in the figure) and then remove the solenoid valve coil.<br>(6) Remove the one fixing screw and then remove the solenoid valve fixing plate.<br>(7) Install the new solenoid valve coil in the position indicated in the figure and then connect the connector to the control board. |  | In ceiling space |

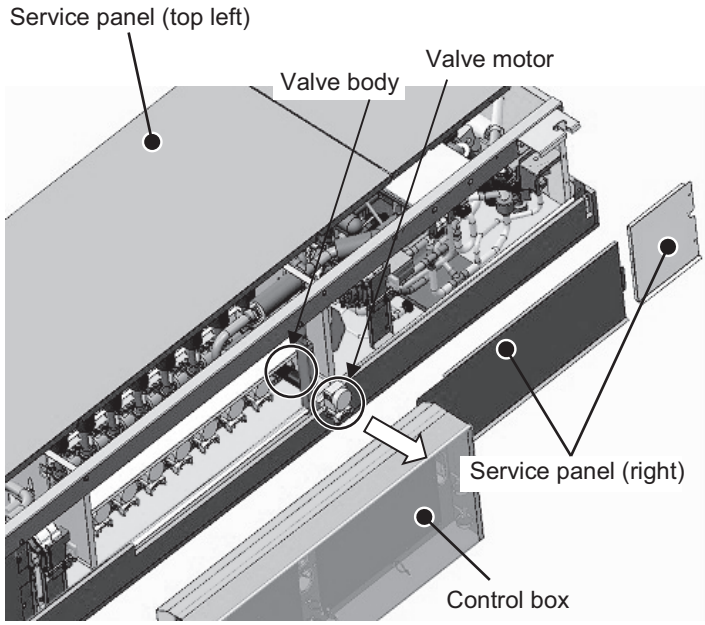
**2. 4-way valve coils (21S4Ma, 21S4Mb)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Remove the four fixing screws from the service panel (right) and then remove the service panel (right).<br>(2) Disconnect the corresponding solenoid valve coil connector from the control board.<br>(3) Remove the two 4-way valve coil fixing screws from the front (indicated by direction of the arrow in the figure) and then remove two 4-way valve coils.<br>(4) Remove the control box and then remove the 4-way valve coil wires secured by clamps. They are also secured to the solenoid valve coil wires with cable ties so remove the cable ties.<br>(5) Install the new 4-way valve coils in the positions indicated in the figure and then connect the connectors to the control board.<br>* Take care not to mix up the 4-way valve coils on the left and right when installing them. |  | In ceiling space |

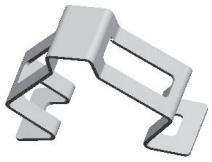
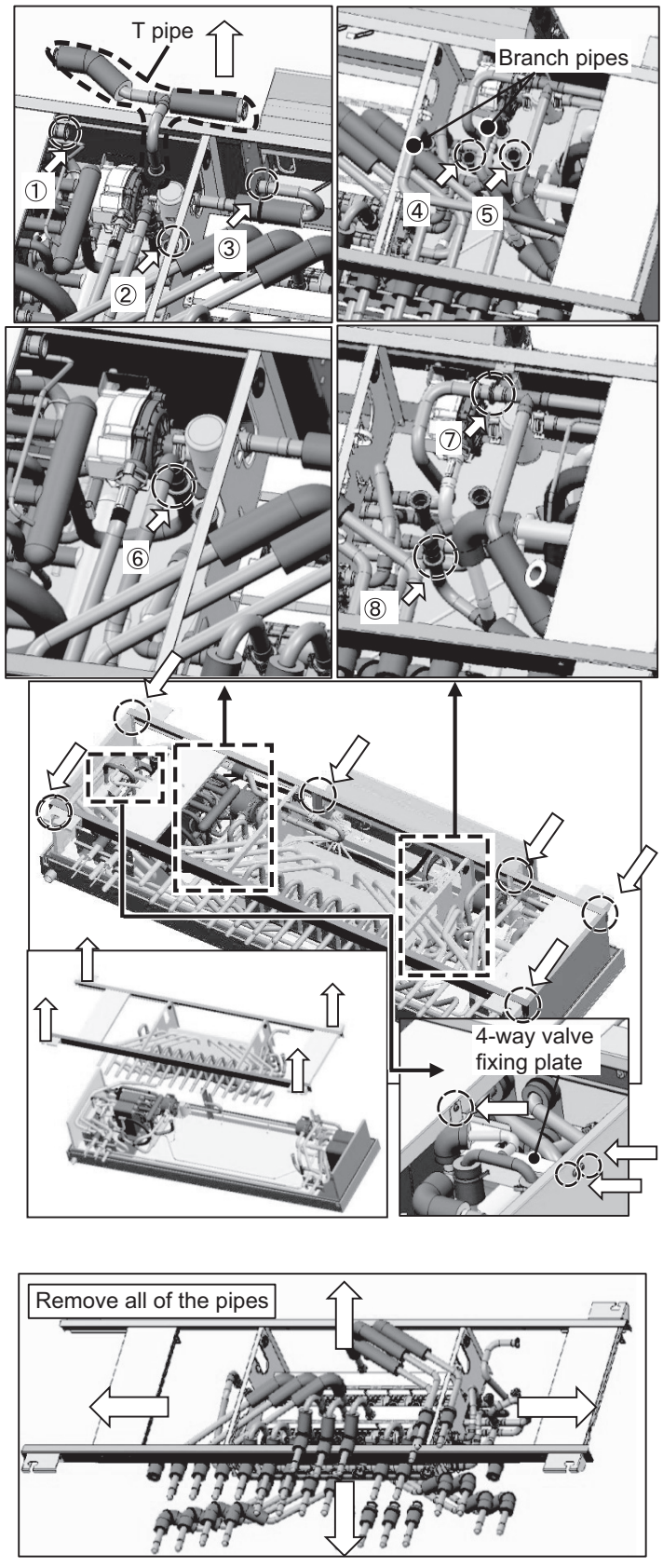
### 3. LEV coils (LEV1, LEV2, LEV3)

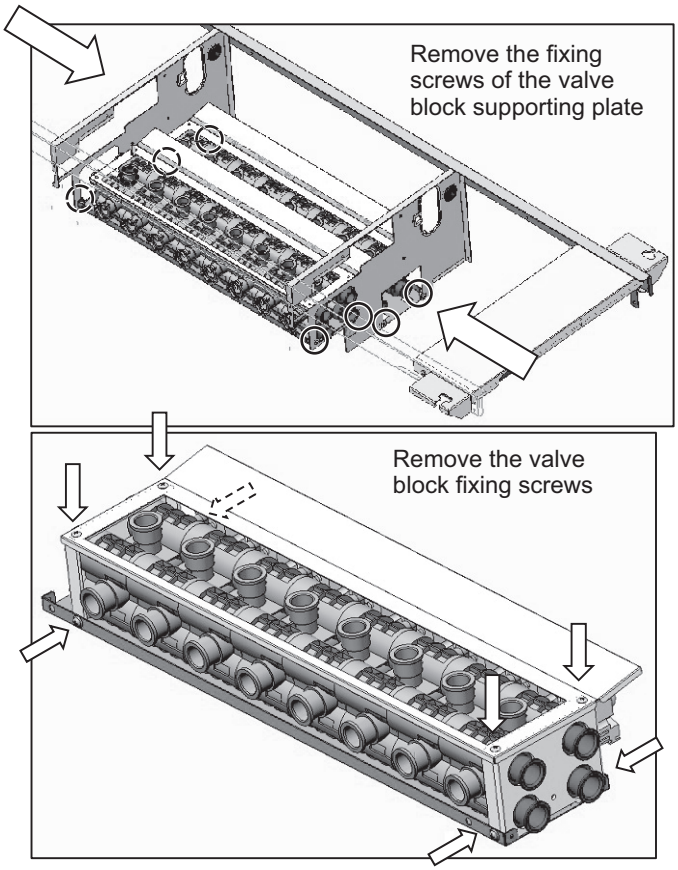
| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Remove four fixing screws from the service panel (right) and then remove the service panel (right).<br>(2) Disconnect the corresponding LEV coil connectors from the control board.<br>(3) Remove the control box and then remove the LEV coil wires secured by clamps and cable ties.<br>(4) Rotate the LEV coils slightly and then remove them in the upward direction.<br>(5) Install the new LEV coils in the positions indicated in the figure and then connect the connectors to the control board.<br>∗Take care not to mix up the three LEV coils when installing them.<br>∗Rotate the LEV coils until you hear them snap into place to attach them properly. |  | In ceiling space |

### 4. Valve motor and valve body

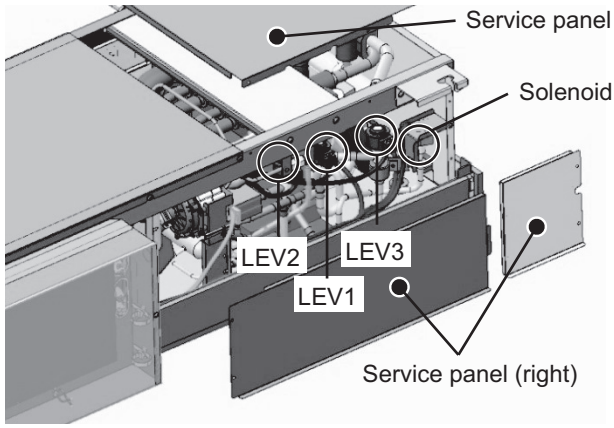
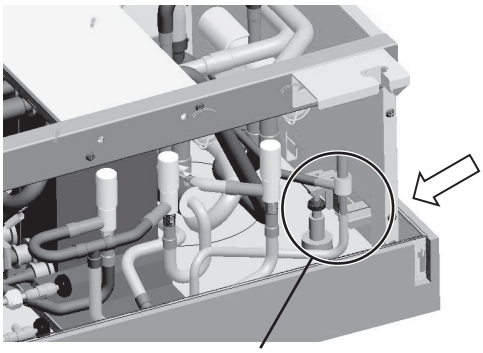
| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Perform the operation to drain the water from the system if necessary in accordance with the following.<br>♦When replacing only valve motor: Draining water from system not necessary<br>♦When replacing valve body: Draining water from system necessary<br>(2) Remove the four fixing screws from the service panel (right) and then remove the service panel (right).<br>(3) Remove the two fixing screws from the service panel (top left) and then remove the service panel (top left).<br>(4) Disconnect the corresponding valve motor connector from the control board.<br>(5) Remove the four control box fixing screws and then remove the control box.<br>Disconnect each wire connector and then completely remove the control box.<br>(6) Perform the removal operation in accordance with the following.<br>♦When replacing only valve motor: Remove the two fixing screw and then remove the valve motor.<br>♦When replacing valve body: Remove the motor as described above and then pull out the valve body in the direction of the arrow indicated in the figure. |  | In ceiling space |

**5. Valve block**

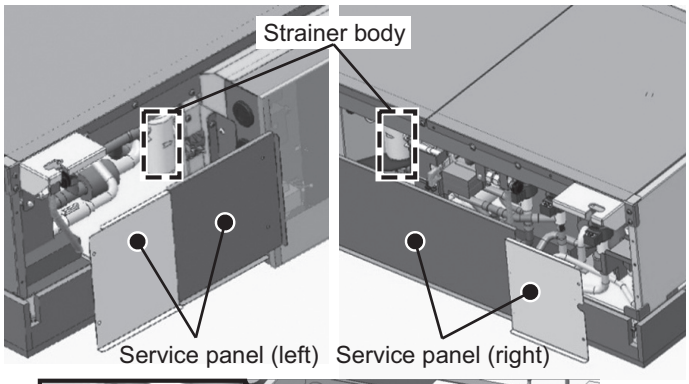
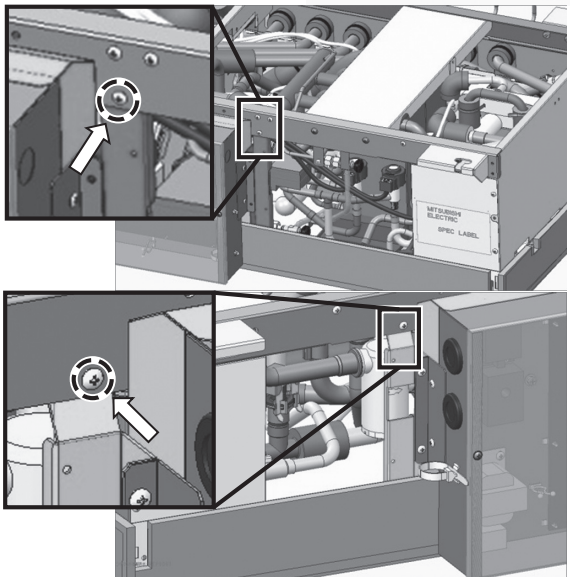
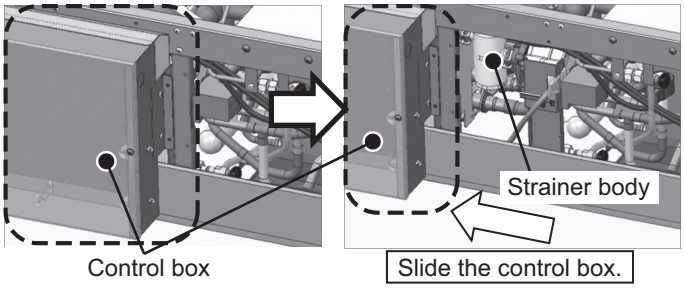
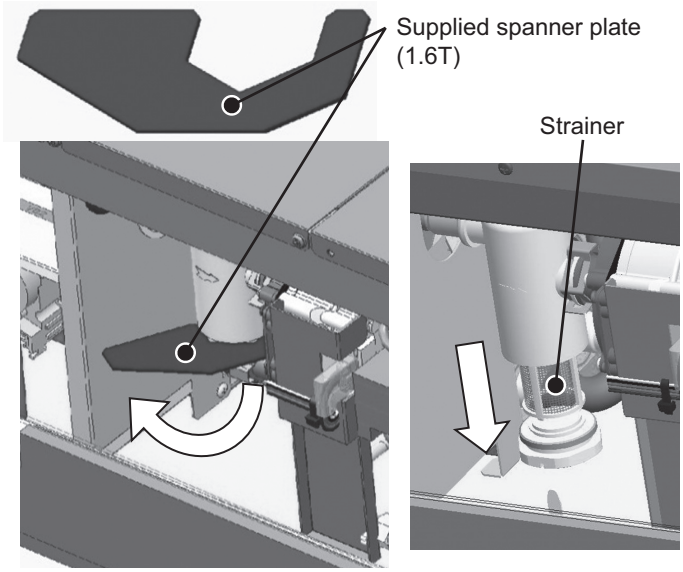
| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Collect the refrigerant and water and then carry out the unit from the ceiling space.<br>(2) Remove all of the service panels (top, front, and back).<br>(3) Disconnect all connectors from the control board.<br>(4) Remove the clips (figure below) connecting the pipes shown in the figure and then remove the T pipe in the upward direction. (① to ③ in the figure)<br>  <br>Clip<br>(5) Remove the clips connecting the branch pipes and then remove the two branch pipes in the upward direction. (④ and ⑤ in the figure)<br>(6) Remove the clips connecting the pipes shown in the figure. (⑥ to ⑧ in the figure)<br>(7) Remove the 4-way valve fixing plate. (3 screws)<br>(8) Remove the ten screws indicated by the arrows in the figure that are securing the front frame and back frame control box supporting plates.<br>(9) Hold the lifting brackets and lift up the valve block assembly to remove it.<br>(10) Remove all of the pipes from the valve block assembly. |  | Below ceiling |

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (11) Remove the 8 fixing screws of the plates supporting the valve block shown in the figure.<br><br>(12) Remove the 8 screws securing the valve block and then replace the valve block.<br>∗It is recommend to replace all nipples with new ones because damage to an O-ring attached to a nipple may cause water to leak during recovery after replacement of a valve block. |  | Below ceiling |

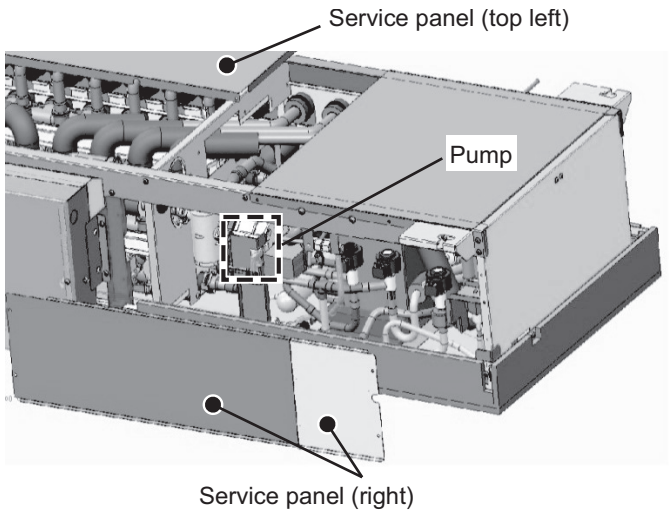
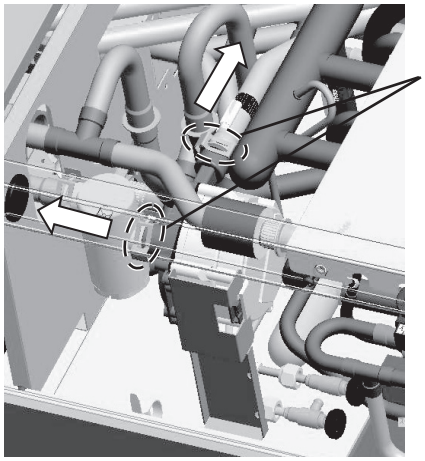
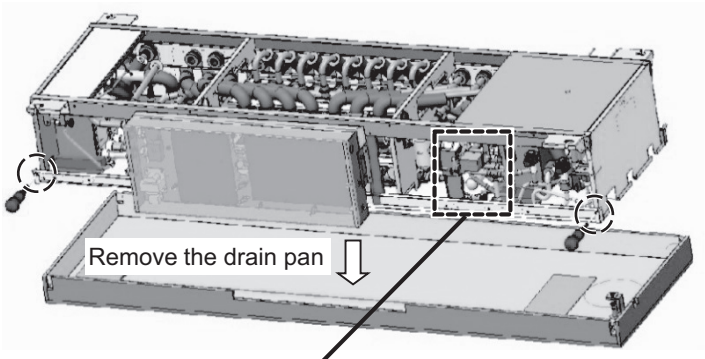
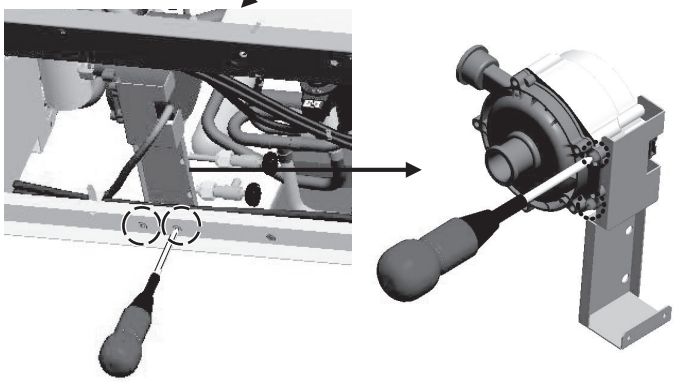
### 6. Solenoid valve and LEV body

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Collect the refrigerant and water and then carry out the unit from the ceiling space.<br>(2) Remove the four fixing screws from the service panel (right) and then remove the service panel (right).<br>(3) Remove the two fixing screws from the service panel (top right) and then remove the service panel (top right).<br>(4) Disconnect the corresponding valve coil connectors from the control board and also remove the coil from the valve. (For how to remove the coil, follow the operation procedures of 1.)<br>(5) Remove the float switch and fixing plate from the drain pan (to prevent them from catching fire when the brazing is performed). Remove the two fixing screws from the direction of the arrow indicated in the figure.<br>(6) Protect the heat insulation material around the corresponding valve to prevent it from burning.<br>(7) Debraze the corresponding valve to remove it and then replace it. |  <br>  <br>Float switch | Below ceiling |

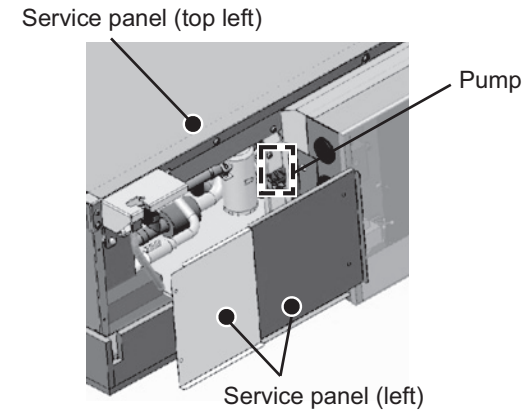
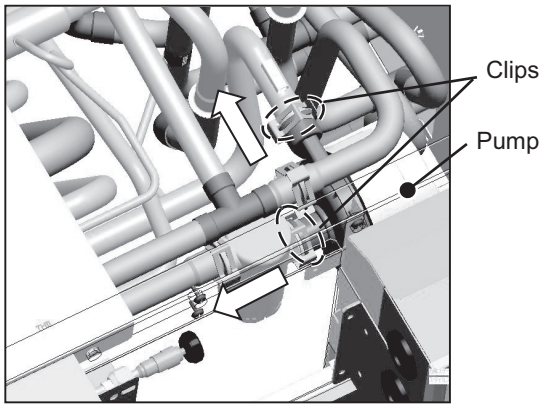
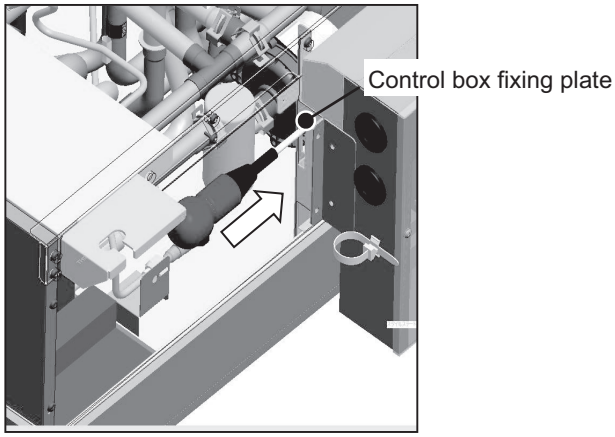
**7. Strainer**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Unscrew the four fixing screws from the service panel on the right to remove it (when servicing the strainer on the Heating-main side water-pump).<br>(2) Unscrew the four fixing screws from the service panel on the left to remove it (when servicing the strainer on the Cooling-main side water-pump). |  | In ceiling space |
| (3) Unscrew the two screws on either side of the control box. (Applicable to CMB-WM108V-AA only) |  | |
| (4) Slide the control box to the left until the strainer is visible (Approx. 150 mm). (Applicable to CMB-WM108V-AA only) |  | |
| (5) Using the supplied spanner plate, open the cover at the bottom of the strainer.<br>(6) Pull out the strainer downward, and replace it.<br>*Fully tighten the cover at the bottom of the strainer. Failing to do so may cause a water leakage. |  | |

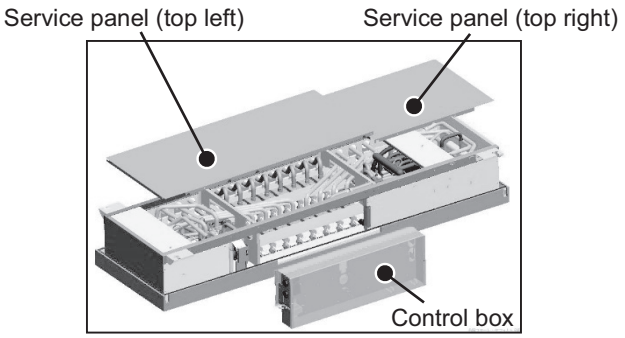
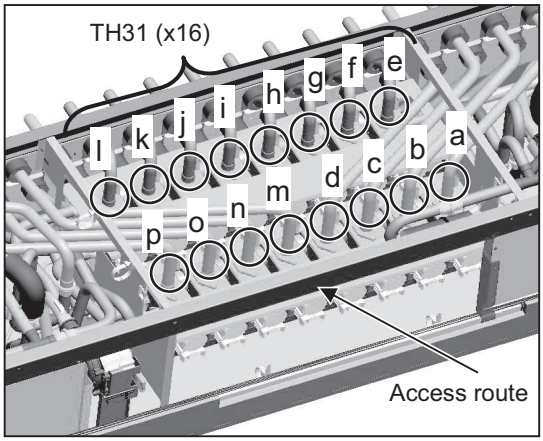
**8. Pump (right side of control box)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Remove the four fixing screws from the service panel (right) and then remove the service panel (right).<br>(2) Remove the two fixing screws from the service panel (top left) and then remove the service panel (top left).<br>(3) Disconnect the pump connector.<br>∗Do not disconnect and connect the pump connector while the power is on. Doing so may cause a failure. |  | In ceiling space |
| (4) Remove the control box and then remove the pump and float switch wires secured by clamps.<br>(5) Remove the two clips connecting the pump and pipes and then move the pipes by hand in the direction indicated by the arrow in the figure. |  | |
| (6) Remove the two screws securing the drain pan and then remove the drain pan.<br>∗If you have a screwdriver with a handle that is 100 mm or less, there is no need to remove the drain pan. |  | |
| (7) Remove the two fixing screws of the pump fixing plate and then remove the pump and plate.<br>(8) Remove the two screws securing the pump and plate from the side (direction of arrow) and then replace the pump. |  | |

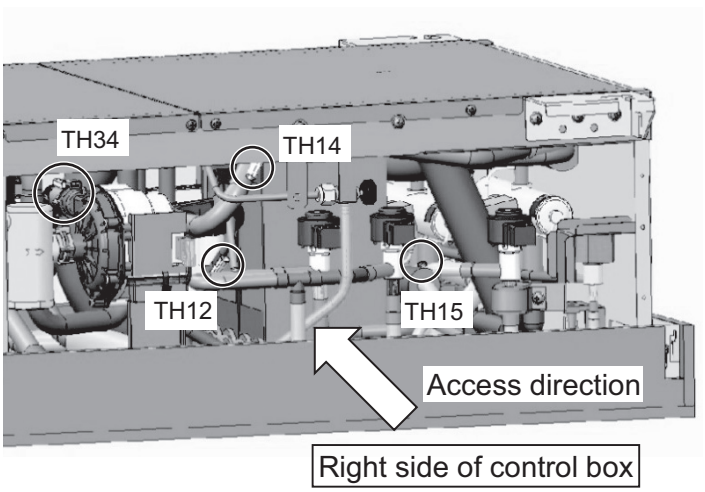
**9. Pump (left side of control box)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Remove the four fixing screws from the service panel (left) and then remove the service panel (left).<br>(2) Remove the two fixing screws from the service panel (top left) and then remove the service panel (top left).<br>(3) Disconnect the pump connector.<br>∗Do not disconnect and connect the pump connector while the power is on. Doing so may cause a failure. |  | In ceiling space |
| (4) Remove the two clips connecting the pump and pipes and then move the pipes by hand in the direction indicated by the arrow in the figure. |  | |
| (5) Remove the control box and then remove the pump wires secured by clamps.<br>(6) Remove the one control box fixing screw and then remove the control box fixing plate.<br>(7) Remove the two screws securing the pump and plate from the side (direction of arrow) and then replace the pump. |  | |

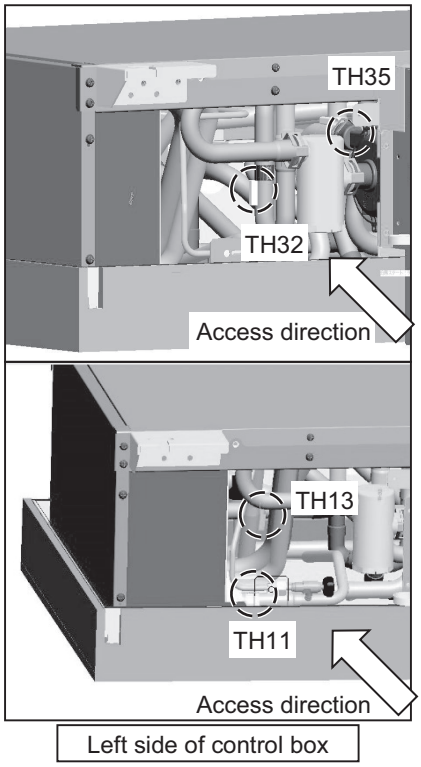
**10. Thermistor (TH31)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Remove the two fixing screws from the service panel (top right) and then remove the service panel (top right).<br>(2) Remove the two fixing screws from the service panel (top left) and then remove the service panel (top left).<br>(3) Disconnect all TH31 connectors from the control board.<br>(4) Remove the four control box fixing screws and then remove the control box.<br>(5) Remove the thermistor (TH34). <Refer to 11.> (Because of same connector as TH31)<br>(6) Pull out TH31 from the top of the unit and then replace it. |  <br>  | In ceiling space |

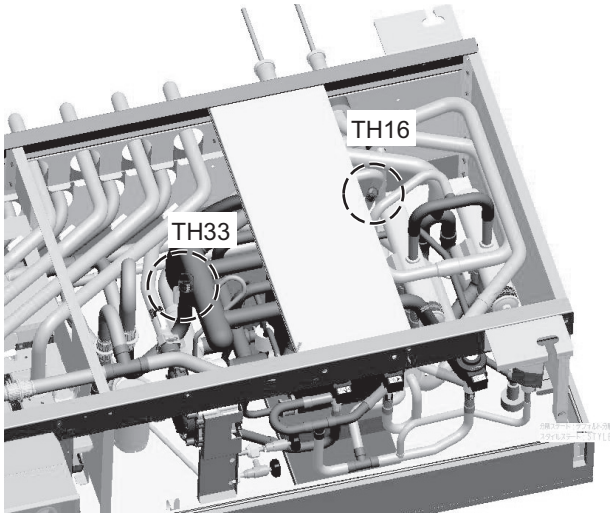
**11. Thermistors (TH12, TH14, TH15, and TH34)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Disconnect the connectors of the thermistor to be replaced from the control board.<br>(2) Remove the four fixing screws from the service panel (right) and then remove the service panel (right).<br>(3) Remove the thermistor from the front of the unit and then replace it.<br>(4) Remove the control box and then remove the thermistor wires secured by clamps.<br>(5) In the case of TH12, also remove TH11.<br>In the case of TH14, also remove TH13.<br>In the case of TH15, also remove TH16.<br>In the case of TH34, also remove TH31i and TH31j.<br>(Because of same connector as corresponding thermistor)<br><Refer to 10.> |  | In ceiling space |

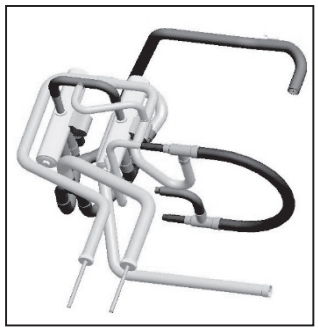
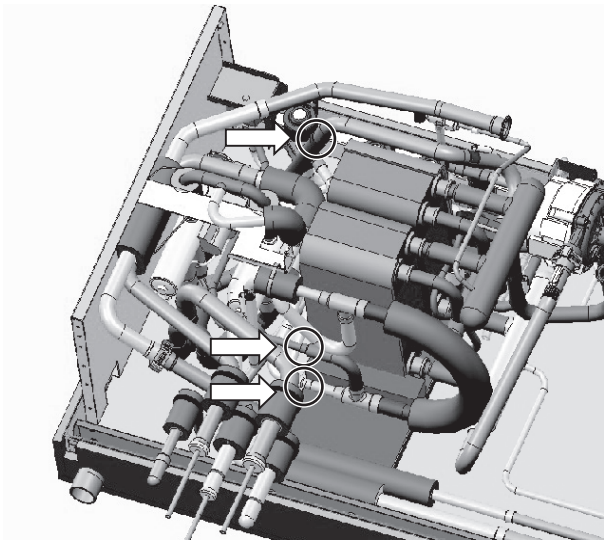
**12. Thermistors (TH11, TH13, TH32, and TH35)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Disconnect the connectors of the thermistor to be replaced from the control board.<br>(2) Remove the four fixing screws from the service panel (left) and then remove the service panel (left).<br>(3) Remove the thermistor from the front of the unit and then replace it.<br>(4) Remove the control box and then remove the thermistor wires secured by clamps.<br>(5) In the case of TH11, also remove TH12. In the case of TH13, also remove TH14. In the case of TH32, also remove TH33. In the case of TH35, also remove TH31k and TH31l. (Because of same connector as corresponding thermistor) <Refer to 10.> |  | In ceiling space |

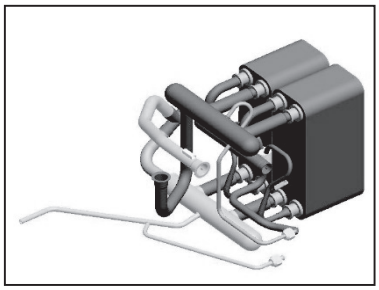
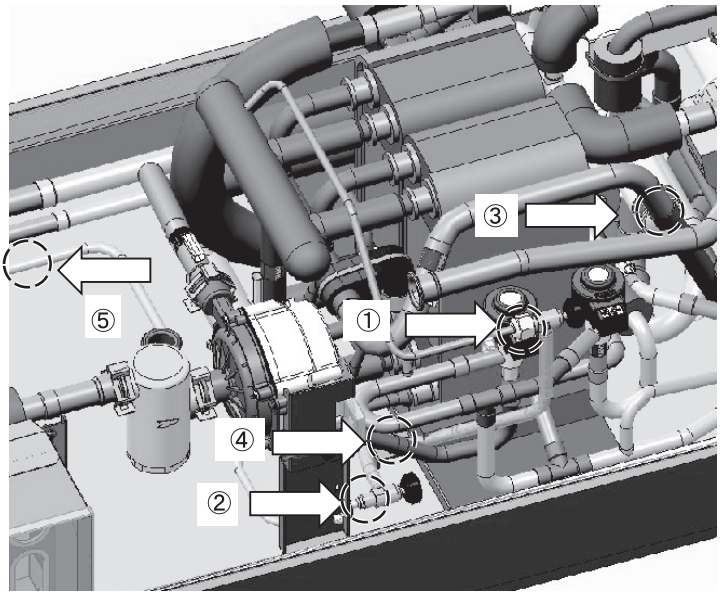
**13. Thermistors (TH16 and TH33)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Disconnect the connectors of the thermistor to be replaced from the control board.<br>(2) Remove the four fixing screws from the service panel (right) and then remove the service panel (right).<br>(3) Remove the two fixing screws from the service panel (top right) and then remove the service panel (top right).<br>(4) Remove the thermistor from the top of the unit and then replace it.<br>(5) Remove the control box and then remove the thermistor wires secured by clamps.<br>(6) In the case of TH16, also remove TH15. In the case of TH33, also remove TH32. (Because of same connector as corresponding thermistor) <Refer to 10.> |  | In ceiling space |

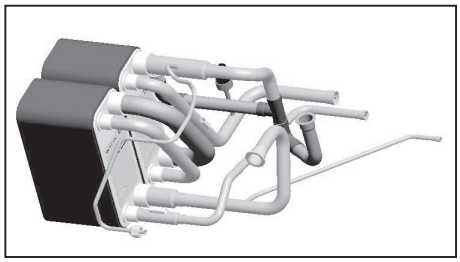
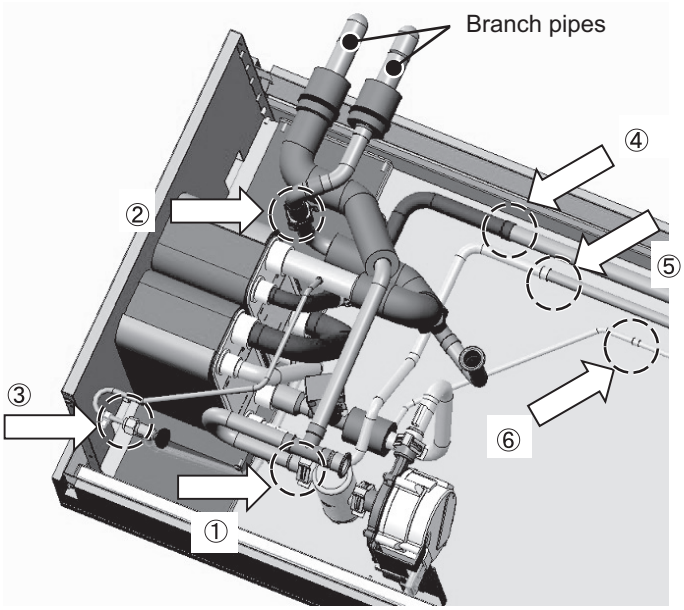
**14. 4-way valve body (21S4)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) 1.Perform the operation as described in (1) to (8) of 5.<br>(2) Debraze the three places indicated in the figure and then replace the 4-way valve with a service part. When brazing, protect the heat insulation material to prevent it from burning.<br>  <br>4- way valve service part |  | Below ceiling |

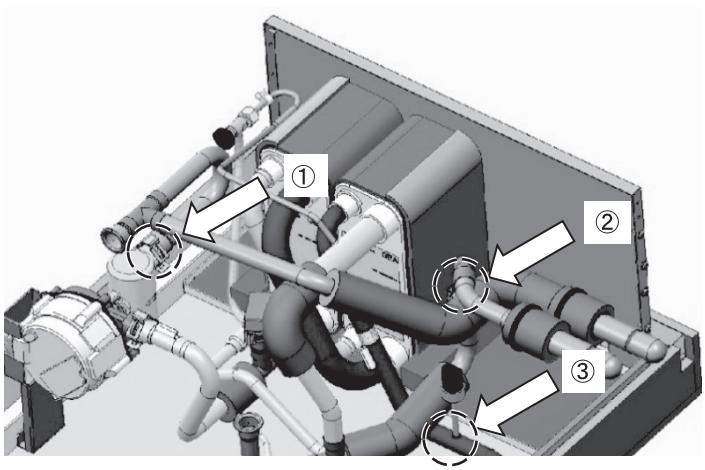
**15. Plate heat exchanger (cooling-main side)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Perform the work as described in (1) to (8) of 5.<br>(2) Remove the two flare nuts of the water purge valve and air purge valve. (① and ② in the figure)<br>(3) Debraze the three places indicated in the figure and then replace the plate heat exchanger with a service part. (③, ④, and ⑤ in the figure)<br>  <br>Plate heat exchanger (cooling-main side) service part |  | Below ceiling |

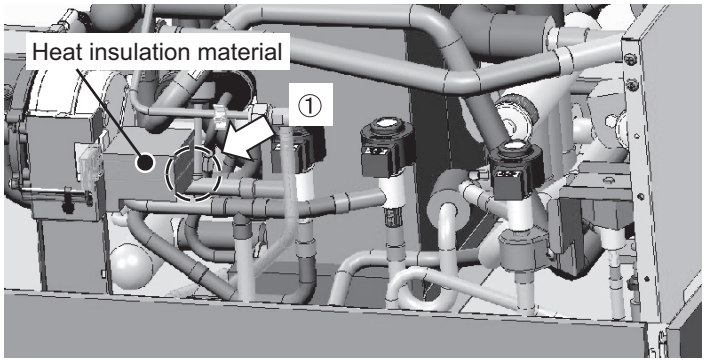
**16. Plate heat exchanger (heating-main side)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Perform the work as described in (1) to (8) of 5.<br>(2) Remove the clips connecting the pipes in the two places shown in the figure and then remove the branch pipes in the upward direction. (① and ② in the figure)<br>(3) Remove the one flare nut of the air purge valve. (③ in the figure)<br>(4) Debraze the three places indicated in the figure and then replace the plate heat exchanger with a service part. (④, ⑤, and ⑥ in the figure)<br>  <br>Plate heat exchanger (heating-main side) service part |  | Below ceiling |

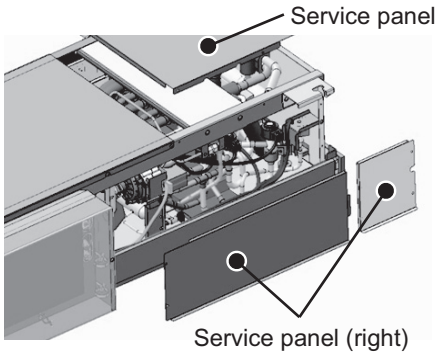
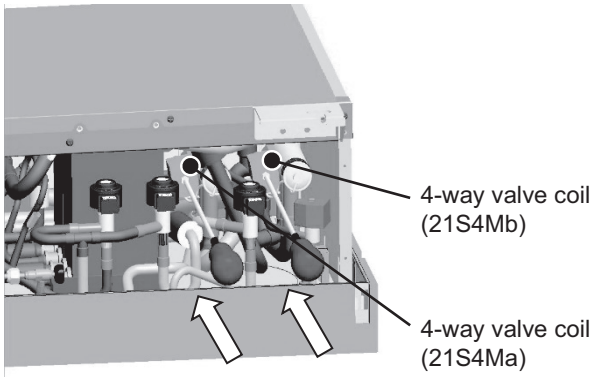
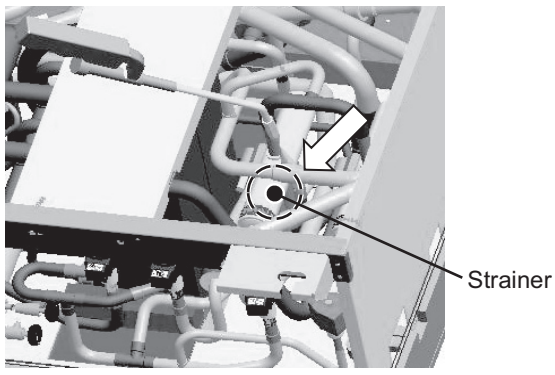
**17. Pressure sensor**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Perform the work as described in (1) to (8) of 5.<br>(2) Remove the clips connecting the pipes in the two places shown in the figure and then remove the branch pipes in the upward direction. (① and ② in the figure)<br>(3) Debraze the brazed portion of the pressure sensor indicated in the figure and then replace the pressure sensor with a service part. (③ in the figure)<br>∗Protect the heat insulation material around the pressure sensor so as not to burn it with the flame of the torch. |  | Below ceiling |

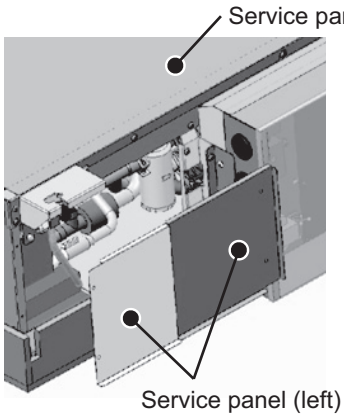
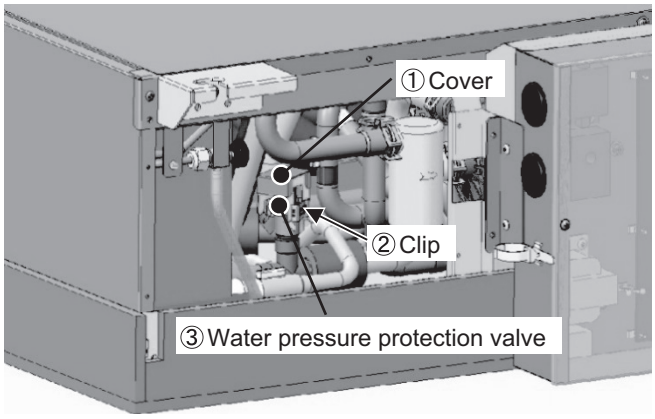
**18. Pressure sensor (PS3)**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Perform the work as described in (1) to (8) of 5.<br>(2) Cut the cable ties securing the heat insulation material indicated in the figure and then remove the heat insulation material.<br>(3) Debraze the brazed portion of the pressure sensor indicated in the figure and then replace the pressure sensor with a service part. (① in the figure)<br>∗Protect the heat insulation material around the pressure sensor so as not to burn it with the flame of the torch. |  | Below ceiling |

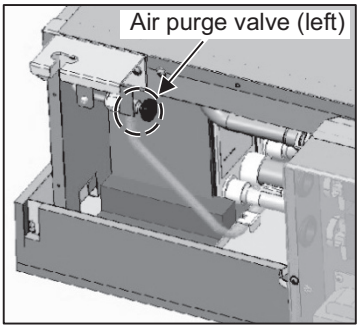
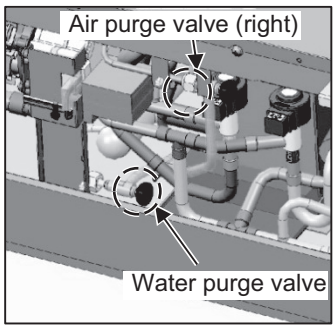
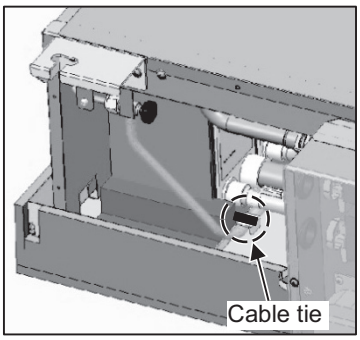
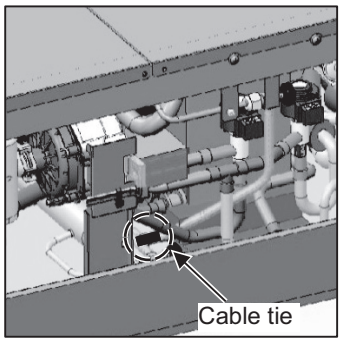
**19. Strainer in front of 4-way valve**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Collect the refrigerant and water and then carry out the unit from the ceiling space.<br>(2) Remove the four fixing screws from the service panel (right) and then remove the service panel (right).<br>(3) Remove the two fixing screws from the service panel (top right) and then remove the service panel (top right).<br>(4) Disconnect the 4-way valve coil connector from the control board.<br><br>(5) Remove the one 4-way valve coil fixing screw from the front (indicated by direction of the arrow in the figure) and then remove the 4-way valve coil so as not to burn the wires with the brazing flame.<br><br>(6) Debraze the positions indicated in the figure, remove the strainer inside the pipe, and then replace it with a service part. |  <br>  <br>  | Below ceiling |

**20. Water pressure protection valve**

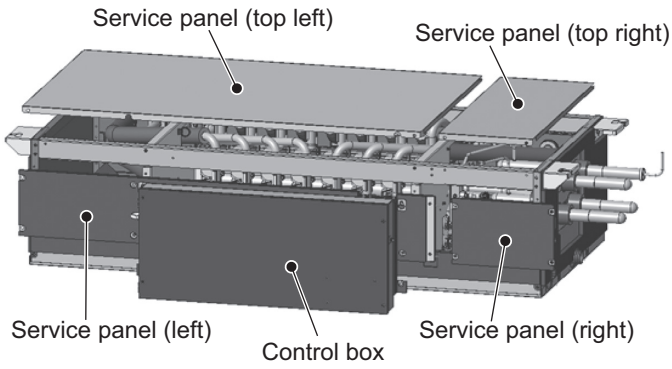
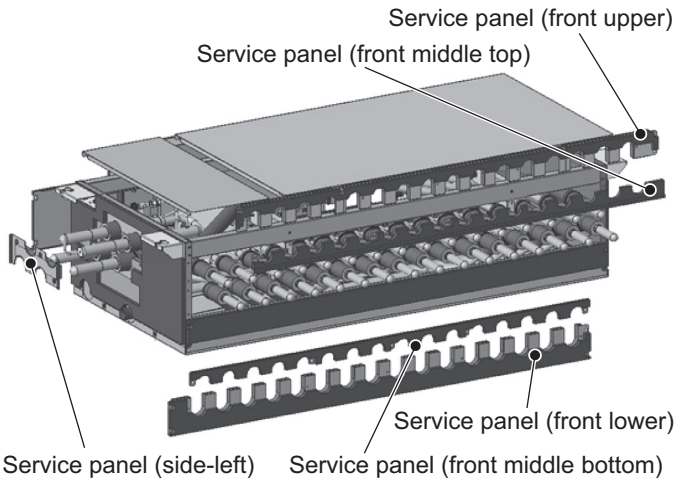
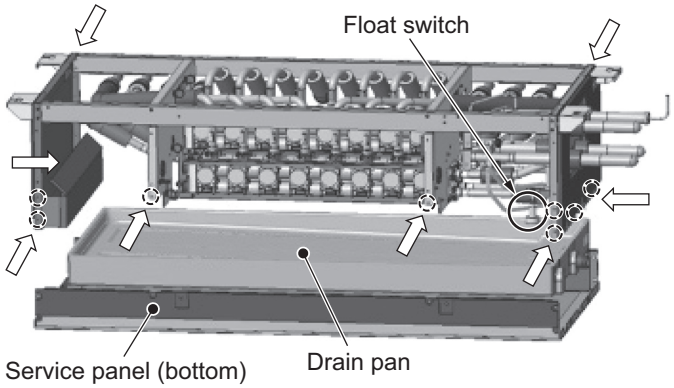
| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Remove the two fixing screws from the service panel (top left) and then remove the service panel (top left).<br><br>(2) Remove the cover above the water pressure protection valve (① in the figure ) in the upward direction from the top. Then remove the clip toward the front (② in the figure). Remove the water pressure protection valve (③ in the figure) upward and replace it with a service part. |  <br>  | In ceiling space |

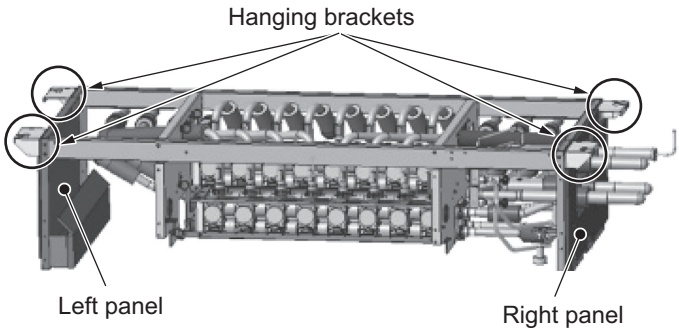
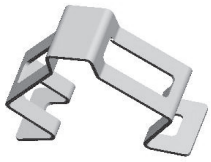
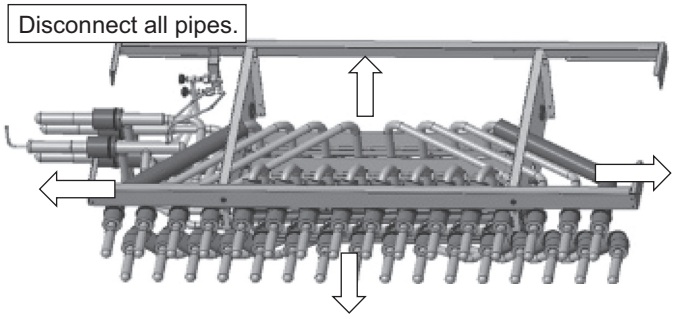
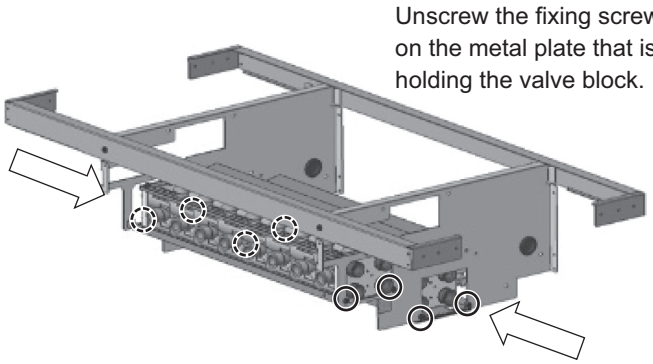
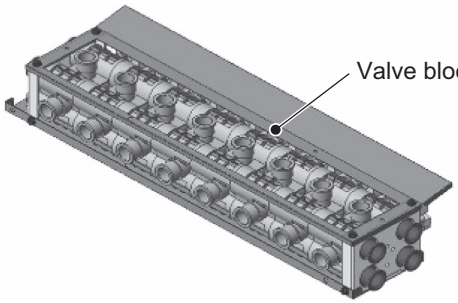
**21. Water purge valve and air purge valve**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| (1) Remove the four fixing screws from the service panel (right) and then remove the service panel (right).<br>(2) Remove the four fixing screws from the service panel (left) and then remove the service panel (left).<br>(3) Cut the cable ties securing the PVC tubes and plates.<br>(4) Remove the clamps securing the pipes of the air purge valve and water purge valve from the plates.<br>(5) Loosen the flare nuts with a spanner and then replace the valves with service parts.<br>(6) Secure the PVC tubes to the plates in their original position.<br>∗To prevent rough movement when the valves are opened.<br>(7) Perform the air purge operation.<br>  <br>Water purge valve and air purge valve service parts |  <br>  <br>  <br>  | In ceiling space |

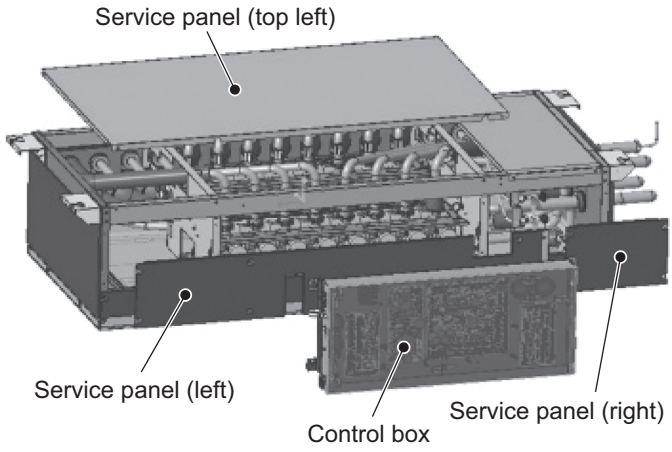
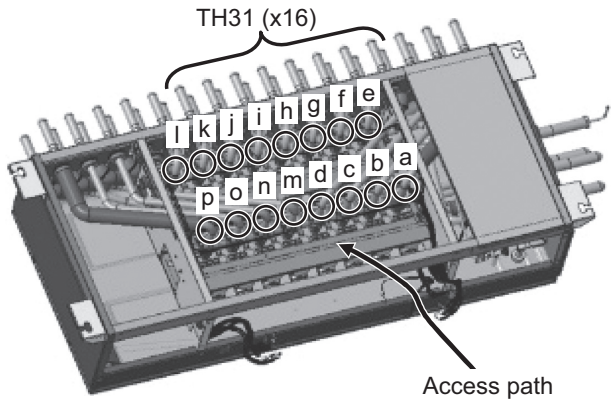
## [10] Sub-HBC Maintenance Instructions (CMB-WM108,1016V-BB)

### 1. Valve Block Assembly Replacement Procedure

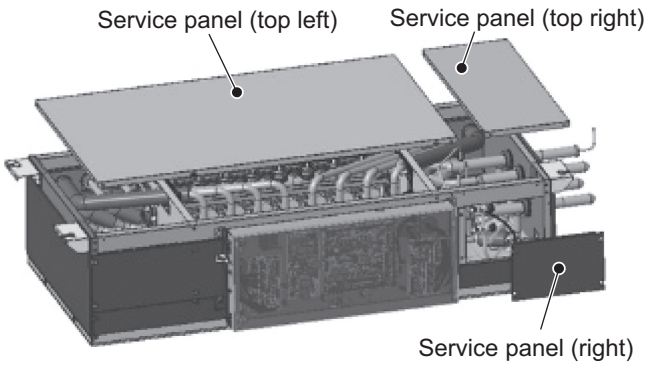
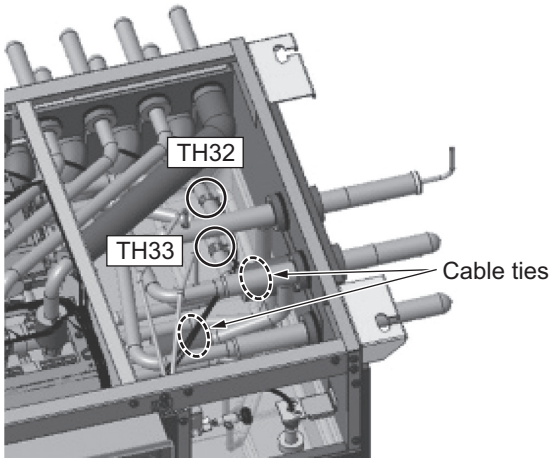
| Operation procedures | Illustrations | Operation location |
|---|---|---|
| 1) Drain water from the system, and move the unit out of the ceiling space.<br><br>2) Unscrew all screws from the service panels (top, front, back, left), and remove the service panels.<br>♦Number of screws on the panels<br>Service panel (right): 4<br>Service panel (left): 6<br>Service panel (top left): 2<br>Service panel (top right): 2<br>Service panel (front upper): 6<br>Service panel (front lower): 4<br>Service panel (front middle top): 5<br>Service panel (front middle bottom): 5<br>Service panel (side-left): 4<br><br>3) Unscrew the control box fixing screws (x4), and remove the control box. Disconnect all wire connectors from the control box.<br><br>4) Unscrew the float switch mounting screws (x2), and remove the float switch.<br>5) Unscrew the screws (x14) on the right and left panels, lift the valve block by holding the hanging brackets, and remove the service panel (bottom) and the drain pan. |  <br>  <br>  | Under the ceiling |

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| 6) Unscrew the fixing screws (x3) on each hanging bracket (x4), and remove the hanging brackets.<br>7) Unscrew the fixing screws each (x4) on the right and left panels, and remove the right and left panels. |  | Under the ceiling |
| 8) Remove the clip (shown below) from the valve block ASSY, and disconnect all pipes.<br>  <br>Clip |  | |
| 9) Unscrew the fixing screws (x8) on the metal plate that is holding the valve block. |  | |
| 10) Replace the valve block ASSY with a new one (service parts).<br>∗It is recommended to replace all nipples with new ones after replacing the valve block, because the nipples may have been damaged by the O-rings, resulting in water leakage. |  | |

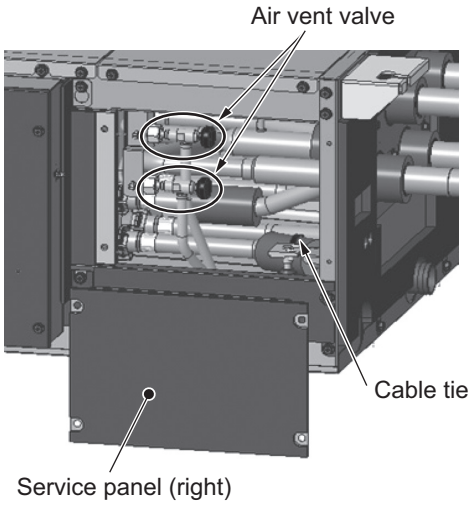
**2. Thermistor (TH31) Replacement Procedure**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| 1) Unscrew the fixing screws (x4) on the service panel (right), and remove the service panel (right).<br>2) Unscrew the fixing screws (x2) on the service panel (top left), and remove the service panel (top left).<br>3) Disconnect all TH31 connectors from the control board.<br>4) Unscrew the fixing screws (x4) on the control box, and remove the control box. Disconnect all wiring connectors from the control box.<br>5) Unscrew the fixing screws (x6) on the service panel (left), and remove the service panel (left).<br>6) Release the thermistor wires from the clamps.<br>7) Pull TH31 out of the top of the unit, and replace it with a new one. |  <br>  | Above the ceiling |

### 3. Thermistor (TH32, TH33) Replacement Procedure

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| 1) Unscrew the fixing screws (x4) on the service panel (right), and remove the service panel (right).<br>2) Unscrew the fixing screws (x2) on the service panel (top right), and remove the service panel (top right).<br>3) Unscrew the fixing screws (x2) on the service panel (top left), and remove the service panel (top left).<br>4) Disconnect the connectors of the thermistors to be replaced from the control board.<br>5) Release the thermistor wires from the clamps.<br>6) Cut the cable ties shown in the figure to release the thermistor wires.<br>7) Remove the thermistors from the top of the unit. |  <br>  | Above the ceiling |

**4. Air Vent Valve Replacement Procedure**

| Operation procedures | Illustrations | Operation location |
|---|---|---|
| 1) Unscrew the fixing screws (x4) on the service panel (right), and remove the service panel (right).<br>2) Cut the cable tie that is holding the PVC tube.<br>3) Release the clamp that is holding the pipes with the air vent valve from the metal plate.<br>4) Loosen the flare nut using a spanner, and replace the air vent valves with new ones (service parts).<br>5) Hold the PVC tube with a cable tie as it was.<br>∗To prevent the PVC tube from moving when the valve is opened.<br>6) Perform air vent operation. |  <br>  <br>Air vent valve (service parts) | Above the ceiling |

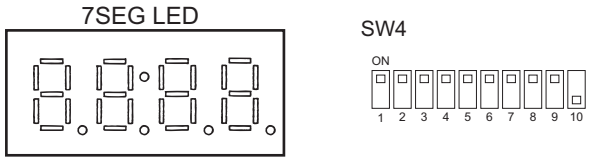
# Ⅸ LED Monitor Display on the Outdoor Unit Board

## [1] How to Read the LED on the Service Monitor

### -1- Outdoor unit board

**1. How to Read the LED**

By setting the DIP SW 4-1 through 4-10 (Set SW6-10 to OFF.)(Switch number 10 is represented by 0), the operating condition of the unit can be monitored on the service monitor. (Refer to the table on the following pages for DIP SW settings.)
The service monitor uses 4-digit 7-segment LED to display numerical values and other types of information.

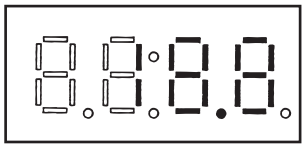



♦In the example above, 1 through 9 are set to ON, and 10 is set to OFF.

Pressure and temperature are examples of numerical values, and operating conditions and the on-off status of solenoid valve are examples of flag display.

1) Display of numerical values

Example: When the pressure data sensor reads 18.8kg/cm$^2$ (Item No. 58)

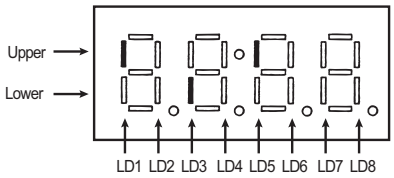


♦The unit of pressure is in kg/cm$^2$

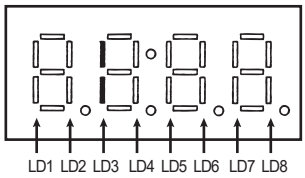
♦ Use the following conversion formula to convert the displayed value into a value in SI unit.
Value in SI unit (MPa) = Displayed value (kg/cm$^2$) x 0.098

2) Flag display

Example: When 21S4a, 21S4b, SV1a are ON. (Item No. 3)

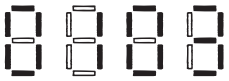
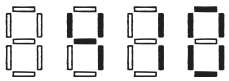



Example: 3-minutes restart mode (Item No. 14)



**2. Initial LED Display**

From power on until the completion of initial settings, the following information will be displayed on the monitor screen. (Displays No. 1 through No. 4 in order repeatedly.)

| No | Item | Display | Remarks |
|---|---|---|---|
| 1 | Software version |  | [0103] : Version 1.03 |
| 2 | Refrigerant type |  | [ 410] : R410A |
| 3 | Model and capacity |  | [H-20] : Cooling/Heating 20 HP<br>For the first few minutes after power on, the capacity of each outdoor unit is displayed. Thereafter, the combined capacity is displayed. |
| 4 | Communication address |  | [ 51] : Address 51 |

After the initial settings have been completed, the information on these items can be checked by making the switch setting that corresponds to No. 517 in the LED display table.

**Note**

Only item No. 1 "Software Version" appears on the display if there is a wiring failure between the control board and the transmission line power supply board or if the circuit board has failed. LED may not light up at all.

### 3. Clock Memory Function

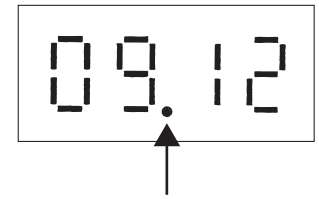
The outdoor unit has a simple clock function that enables the unit to calculate the current time with an internal timer by receiving the time set by the system controller, such as AG-150A.
If an error (including a preliminary error) occurs, the error history data and the error detection time are stored into the service memory.
The error detection time stored in the service memory and the current time can be seen on the service LED.

**Note**

1) Use the time displayed on the service LED as a reference.
2) The date and the time are set to "00" by default. If a system controller that sets the time, such as AG-150A is not connected, the elapsed time and days since the first power on will be displayed.
   If the time set on a system controller is received, the count will start from the set date and the time.
3) The time is not updated while the power of the indoor unit is turned off. When the power is turned off and then on again, the count will resume from the time before the power was turned off. Thus, the time that differs the actual time will be displayed. (This also applies when a power failure occurs.)
   The system controller, such as AG-150A, adjusts the time once a day. When the system controller is connected, the time will be automatically updated to the correct current time after the time set by the system controller is received. (The data stored into the memory before the set time is received will not be updated.)

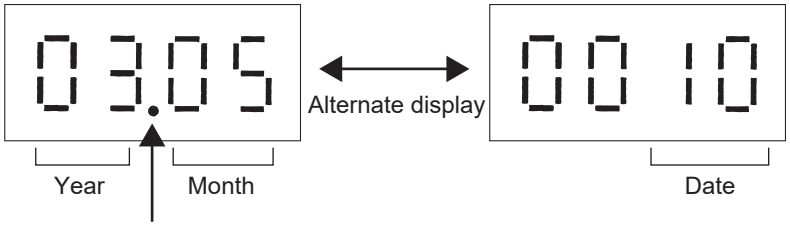
**(1) Reading the time data:**

1) Time display
   Example: 12 past 9



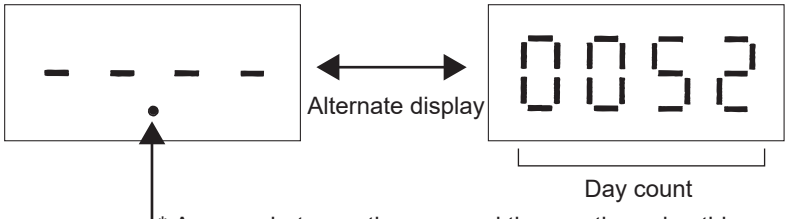

* Disappears if the time data is deviated due to a power failure, or if a system controller that sets the time is not connected.

2) Date display
   ♦When the main controller that can set the time is connected
   Example: May 10, 2003




* Appears between the year and the month, and nothing appears when the date is displayed.

♦When the main controller that can set the time is not connected
Example: 52 days after power was turned on



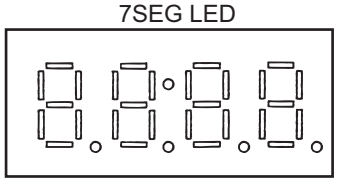

* Appears between the year and the month, and nothing appears when the date is displayed.

## -2- HBC controller/Sub-HBC board

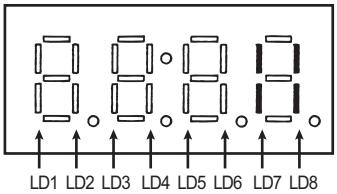
### 1. How to read the LED

The operation status of the unit can be monitored on the service monitor.
The service monitor uses 4-digit 7-segment LED to display flags.
There are no check items using dipswitch settings.

7SEG LED

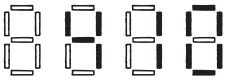
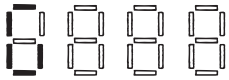
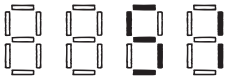


LD1: Pump in operation
LD2: DIP SW 5-4 ON
LD3: DIP SW 5-5 ON
LD5: 72C
LD7: HB
LD8: Microcomputer in operation




### 2. LED display at initial setting

From power on until the completion of initial settings, the following information will be displayed on the monitor screen. (Displays No. 1 through No. 4 in order repeatedly.)

| No | Item | Display | Remarks |
|---|---|---|---|
| 1 | Software version |  | [0103] : Version 1.03 |
| 2 | Refrigerant type |  | [ 410] : R410A |
| 3 | Model and capacity |  | [GA ] : HBC controller<br>[GB ] : Sub-HBC |
| 4 | Communication address |  | [ 51] : Address 51 |

**Note**

Only item No. 1 "Software Version" appears on the display if there is a wiring failure between the control board and the transmission line power supply board or if the circuit board has failed.

**LED monitor display** (Outdoor unit)

**Current data**

| No. | SW4 (SW6 - 9: OFF, SW6-10: OFF) | Item | | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 0 | 0000000000 | Relay output display 1 Lighting | | Comp in operation | | | | 72C | | OC | CPU in operation | A | A | |
| | | Check (error) display 1 OC/OS error | | 0000 to 9999 (Address and error codes highlighted) | | | | | | | | B | B | |
| 1 | 1000000000 | Check (error) display 2 OC/OS error | | 0000 to 9999 (Address and error codes highlighted) | | | | | | | | A | A | Display of the latest preliminary error<br>If no preliminary errors are detected, "----" appears on the display. |
| 2 | 0100000000 | Check (error) display 3 (Including IC and BC) | | 0000 to 9999 (Address and error codes highlighted) | | | | | | | | B | | If no errors are detected, "----" appears on the display. |
| 3 | 1100000000 | Relay output display 2 | Top | 21S4a | | CH11 | | SV1a | | SV2 | | A | A | |
| | | | Bottom | | | 21S4b | | | | | | | | |
| 4 | 0010000000 | Relay output display 3 | Top | | | | | 21S4c | | | | A | A | |
| | | | Bottom | | | | | | | | | | | |
| 7 | 1110000000 | Special control | | Retry operation | Emergency operation | | | | | Communication error between the OC and OS | Communication error 3-minute restart delay mode | B | B | |
| 9 | 1001000000 | Communication demand capacity | | 0000 to 9999 | | | | | | | | B | B | If not demanded controlled, "----" [ % ] appears on the display. |
| 10 | 0101000000 | Contact point demand capacity | | 0000 to 9999 | | | | | | | | B | | If not demanded controlled, "----" [ % ] appears on the display. |
| 11 | 1101000000 | External signal (Open input contact point) | | Contact point demand | Low-noise mode (Capacity priority) | Snow sensor | Cooling-heating changeover (Cooling) | Cooling-heating changeover (Heating) | | | | A | A | |
| 12 | 0011000000 | External signal (Open input contact point) | | | | | | | | Locked cooling fan | Low-noise mode (Quiet priority) | A | A | |
| 13 | 1011000000 | | | | | | | | | | Cooling fan output | | | |
| 14 | 0111000000 | Outdoor unit operation status | | HB operation signal | Warm-up mode | 3-minutes restart mode | Compressor in operation | Preliminary error | Error | 3-minutes restart after instantaneous power failure | Preliminary low pressure error | A | A | |
| 15 | 1111000000 | OC/OS identification | | OC/OS | | | | | | | | A | A | |
| 16 | 0000100000 | Indoor unit check | Top | Unit No. 1 | Unit No. 2 | Unit No. 3 | Unit No. 4 | Unit No. 5 | Unit No. 6 | Unit No. 7 | Unit No. 8 | B | | The lamp that corresponds to the unit that came to an abnormal stop lights.<br>The lamp goes off when the error is reset.<br>Each unit that comes to an abnormal unit will be given a sequential number in ascending order starting with 1. |
| | | | Bottom | Unit No. 9 | Unit No. 10 | Unit No. 11 | Unit No. 12 | Unit No. 13 | Unit No. 14 | Unit No. 15 | Unit No. 16 | | | |
| 17 | 1000100000 | | Top | Unit No. 17 | Unit No. 18 | Unit No. 19 | Unit No. 20 | Unit No. 21 | Unit No. 22 | Unit No. 23 | Unit No. 24 | | | |
| | | | Bottom | Unit No. 25 | Unit No. 26 | Unit No. 27 | Unit No. 28 | Unit No. 29 | Unit No. 30 | Unit No. 31 | Unit No. 32 | | | |
| 18 | 0100100000 | | Top | Unit No. 33 | Unit No. 34 | Unit No. 35 | Unit No. 36 | Unit No. 37 | Unit No. 38 | Unit No. 39 | Unit No. 40 | | | |
| | | | Bottom | Unit No. 41 | Unit No. 42 | Unit No.43 | Unit No. 44 | Unit No. 45 | Unit No. 46 | Unit No. 47 | Unit No. 48 | | | |
| 19 | 1100100000 | | Top | Unit No. 49 | Unit No. 50 | | | | | | | | | |
| | | | Bottom | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

## Current data

| No. | SW4 (SW6 - 9: OFF, SW6-10: OFF) | Item | | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 20 | 0010100000 | Indoor unit Operation mode | Top | Unit No. 1 | Unit No. 2 | Unit No. 3 | Unit No. 4 | Unit No. 5 | Unit No. 6 | Unit No. 7 | Unit No. 8 | B | | Lit during cooling<br>Blinking during heating<br>Unlit while the unit is stopped or in the fan mode |
| | | | Bottom | Unit No. 9 | Unit No. 10 | Unit No. 11 | Unit No. 12 | Unit No. 13 | Unit No. 14 | Unit No. 15 | Unit No. 16 | | | |
| 21 | 1010100000 | | Top | Unit No. 17 | Unit No. 18 | Unit No. 19 | Unit No. 20 | Unit No. 21 | Unit No. 22 | Unit No. 23 | Unit No. 24 | | | |
| | | | Bottom | Unit No. 25 | Unit No. 26 | Unit No. 27 | Unit No. 28 | Unit No. 29 | Unit No. 30 | Unit No. 31 | Unit No. 32 | | | |
| 22 | 0110100000 | | Top | Unit No. 33 | Unit No. 34 | Unit No. 35 | Unit No. 36 | Unit No. 37 | Unit No. 38 | Unit No. 39 | Unit No. 40 | | | |
| | | | Bottom | Unit No. 41 | Unit No. 42 | Unit No.43 | Unit No. 44 | Unit No. 45 | Unit No. 46 | Unit No. 47 | Unit No. 48 | | | |
| 23 | 1110100000 | | Top | Unit No. 49 | Unit No. 50 | | | | | | | | | |
| | | | Bottom | | | | | | | | | | | |
| 24 | 0001100000 | Indoor unit thermostat | Top | Unit No. 1 | Unit No. 2 | Unit No. 3 | Unit No. 4 | Unit No. 5 | Unit No. 6 | Unit No. 7 | Unit No. 8 | B | | Lit when thermostat is on<br>Unlit when thermostat is off |
| | | | Bottom | Unit No. 9 | Unit No. 10 | Unit No. 11 | Unit No. 12 | Unit No. 13 | Unit No. 14 | Unit No. 15 | Unit No. 16 | | | |
| 25 | 1001100000 | | Top | Unit No. 17 | Unit No. 18 | Unit No. 19 | Unit No. 20 | Unit No. 21 | Unit No. 22 | Unit No. 23 | Unit No. 24 | | | |
| | | | Bottom | Unit No. 25 | Unit No. 26 | Unit No. 27 | Unit No. 28 | Unit No. 29 | Unit No. 30 | Unit No. 31 | Unit No. 32 | | | |
| 26 | 0101100000 | | Top | Unit No. 33 | Unit No. 34 | Unit No. 35 | Unit No. 36 | Unit No. 37 | Unit No. 38 | Unit No. 39 | Unit No. 40 | | | |
| | | | Bottom | Unit No. 41 | Unit No. 42 | Unit No.43 | Unit No. 44 | Unit No. 45 | Unit No. 46 | Unit No. 47 | Unit No. 48 | | | |
| 27 | 1101100000 | | Top | Unit No. 49 | Unit No. 50 | | | | | | | | | |
| | | | Bottom | | | | | | | | | | | |
| 28 | 0011100000 | Drive recorder status | | Drive recorder is stopped (OFF).: "OFF"<br>Drive recorder is in operation (ON).: "ON"<br>Drive recorder is in operation, but unable to start for a certain reason. *1: "ON" flashes.<br>On-board flash error *2: "F-Er"<br>Drive recorder has automatically stopped due to a serious error in the system. "Err" | | | | | | | | B | | |
| 37 | 1010010000 | HB operation mode | | Cooling-only ON | Cooling-only OFF | Heating-only ON | Heating-only OFF | Mixed-mode ON | Mixed-mode OFF | Fan | Stop | B | | |
| 39 | 1110010000 | Outdoor unit Operation mode | | Permissible stop | Standby | Cooling | Cooling-main | Heating | Heating-main | | | A | A | |
| 42 | 0101010000 | Outdoor unit control mode | | Stop | Thermo OFF | Abnormal stop | Scheduled control | Initial start up | Defrost | Oil balance | Low frequency oil recovery | A | A | |
| 43 | 1101010000 | | | Warm-up mode | Refrigerant recovery | | | Continuous heating 2 | Continuous heating 1 | | | A | A | |
| 45 | 1011010000 | TH4 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 46 | 0111010000 | TH3 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 47 | 1111010000 | TH7 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 48 | 0000110000 | TH6 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 50 | 0100110000 | TH5 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 54 | 0110110000 | TH9 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 56 | 0001110000 | THHS1 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 58 | 0101110000 | High-pressure sensor data | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [kgf/cm$^2$] |
| 59 | 1101110000 | Low-pressure sensor data | | -99.9 to 999.9 | | | | | | | | A | A | |
| 62 | 0111110000 | TH15 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 63 | 1111110000 | TH11 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 78 | 0111001000 | ∑ Qj | | 0000 to 9999 | | | | | | | | B | B | |
| 79 | 1111001000 | ∑ Qjc | | 0000 to 9999 | | | | | | | | B | B | |
| 80 | 0000101000 | ∑ Qjh | | 0000 to 9999 | | | | | | | | B | B | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6 - 9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 81 | 1000101000 | Target Tc | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 82 | 0100101000 | Target Te | -99.9 to 999.9 | | | | | | | | B | | |
| 83 | 1100101000 | Tc | -99.9 to 999.9 | | | | | | | | A | A | |
| 84 | 0010101000 | Te | -99.9 to 999.9 | | | | | | | | A | A | |
| 86 | 0110101000 | Total frequencies (OC+OS) | 0000 to 9999 | | | | | | | | B | | Control data [ Hz ] |
| 87 | 1110101000 | Total frequency of each unit | 0000 to 9999 | | | | | | | | A | A | |
| 88 | 0001101000 | COMP frequency | 0000 to 9999 | | | | | | | | A | A | |
| 91 | 1101101000 | COMP operating frequency | 0000 to 9999 | | | | | | | | A | A | The unit is [rps]<br>Output frequency of the inverter depends on the type of compressor and equals the integer multiples (x1, x2 etc.) of the operating frequency of the compressor. |
| 92 | 0011101000 | Number of times error occurred during crankcase heating by compressor motor | 0000 to 9999 | | | | | | | | A | A | Number of times INV error occurred during IH crankcase heating by compressor motor |
| 93 | 1011101000 | All AK (OC+OS) | 0000 to 9999 | | | | | | | | B | | |
| 94 | 0111101000 | AK | 0000 to 9999 | | | | | | | | A | A | |
| 95 | 1111101000 | FAN1 | 0000 to 9999 | | | | | | | | A | A | Fan output [ % ] |
| 96 | 0000011000 | Fan inverter output rpm (FAN1) | 0000 to 9999 | | | | | | | | A | A | [rpm] |
| 97 | 1000011000 | FAN2 | 0000 to 9999 | | | | | | | | A | A | Fan output [ % ] |
| 98 | 0100011000 | Fan inverter output rpm (FAN2) | 0000 to 9999 | | | | | | | | A | A | [rpm] |
| 101 | 1010011000 | LEV5a | 0000 to 9999 | | | | | | | | A | A | |
| 104 | 0001011000 | LEV2 | 0000 to 9999 | | | | | | | | A | A | |
| 105 | 1001011000 | LEV4 | 0000 to 9999 | | | | | | | | A | A | |
| 107 | 1101011000 | LEV5b | 0000 to 9999 | | | | | | | | A | A | |
| 108 | 0011011000 | COMP operating current (DC) | 00.0 to 999.9 | | | | | | | | A | A | Peak value[A] |
| 109 | 1011011000 | LEV2b | 0000 to 9999 | | | | | | | | A | A | |
| 110 | 0111011000 | LEV2c | 0000 to 9999 | | | | | | | | A | A | |
| 111 | 1111011000 | COMP bus voltage | 00.0 to 999.9 | | | | | | | | A | A | The unit is<br>[ V ] |
| 112 | 0000111000 | LEV2d | 0000 to 9999 | | | | | | | | A | A | |
| 113 | 1000111000 | LEV9 | 0000 to 9999 | | | | | | | | A | A | |
| 116 | 0010111000 | Number of times the unit went into the mode to remedy wet vapor suction | 0000 to 9999 | | | | | | | | B | | |
| 117 | 1010111000 | COMP Operation time Upper 4 digits | 0000 to 9999 | | | | | | | | A | A | The unit is<br>[ h ] |
| 118 | 0110111000 | COMP Operation time Lower 4 digits | 0000 to 9999 | | | | | | | | A | A | |
| 121 | 1001111000 | Backup mode | Abnormal pressure rise | High-pressure drop | Low-pressure drop | Abnormal Td rise | High-pressure during defrost cycle | Control box temperature rise | | | A | A | Stays lit for 90 seconds after the completion of backup control |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6 - 9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 123 | 1101111000 | COMP number of start-stop events Upper 4 digits | 0000 to 9999 | | | | | | | | A | A | Count-up at start-up The unit is [Time] |
| 124 | 0011111000 | COMP number of start-stop events Lower 4 digits | 0000 to 9999 | | | | | | | | A | A | |
| 129 | 1000000100 | Integrated operation time of compressor (for rotation purpose) | 0000 to 9999 | | | | | | | | B | | The unit is [ h ] |
| 178 | 0100110100 | Error history 1 | 0000 to 9999 | | | | | | | | B | B | Address and error codes highlighted If no errors are detected, "---- " appears on the display. Preliminary error information of the OS does not appear on the OC. Neither preliminary error information of the OC nor error information of the IC appears on the OS. |
| 179 | 1100110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 180 | 0010110100 | Error history 2 | 0000 to 9999 | | | | | | | | B | B | |
| 181 | 1010110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 182 | 0110110100 | Error history 3 | 0000 to 9999 | | | | | | | | B | B | |
| 183 | 1110110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 184 | 0001110100 | Error history 4 | 0000 to 9999 | | | | | | | | B | B | |
| 185 | 1001110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 186 | 0101110100 | Error history 5 | 0000 to 9999 | | | | | | | | B | B | |
| 187 | 1101110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 188 | 0011110100 | Error history 6 | 0000 to 9999 | | | | | | | | B | B | |
| 189 | 1011110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 190 | 0111110100 | Error history 7 | 0000 to 9999 | | | | | | | | B | B | |
| 191 | 1111110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 192 | 0000001100 | Error history 8 | 0000 to 9999 | | | | | | | | B | B | |
| 193 | 1000001100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 194 | 0100001100 | Error history 9 | 0000 to 9999 | | | | | | | | B | B | |
| 195 | 1100001100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 196 | 0010001100 | Error history 10 | 0000 to 9999 | | | | | | | | B | B | |
| 197 | 1010001100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 198 | 0110001100 | Error history of inverter (At the time of last data back-up before error) | 0000 to 9999 | | | | | | | | B | B | |
| 199 | 1110001100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data before error**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 201 | 1001001100 | Outdoor unit operation status | | HB operation signal | Warm-up mode | 3-minutes restart mode | Compressor in operation | Preliminary error | Error | 3-minutes restart after instantaneous power failure | Preliminary low pressure error | A | A | |
| 202 | 0101001100 | OC/OS identification | | OC/OS | | | | | | | | A | A | |
| 203 | 1101001100 | HB operation mode | | Cooling-only ON | Cooling-only OFF | Heating-only ON | Heating-only OFF | Mixed-mode ON | Mixed-mode OFF | Fan | Stop | A | A | |
| 205 | 1011001100 | Outdoor unit Operation mode | | Permissible stop | Standby | Cooling | Cooling-main | Heating | Heating-main | | | A | A | |
| 208 | 0000101100 | Outdoor unit control mode | | Stop | Thermo OFF | Abnormal stop | Scheduled control | Initial start up | Defrost | Oil balance | Low frequency oil recovery | A | A | |
| 209 | 1000101100 | | | | Refrigerant recovery | | | Continuous heating 2 | Continuous heating 1 | | | A | A | |
| 211 | 1100101100 | Relay output display 1 Lighting | | Comp in operation | | | | 72C | | OC | Always lit | A | A | |
| 212 | 0010101100 | Relay output display 2 Lighting | Top | 21S4a | | CH11 | | SV1a | | SV2 | | A | A | |
| | | | Bottom | | | 21S4b | | | | | | | | |
| 213 | 1010101100 | Relay output display 3 Lighting | Top | | | | | 21S4c | | | Lit while power to the indoor units is being supplied | A | A | |
| | | | Bottom | | | | | | | | | | | |
| 216 | 0001101100 | TH4 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 217 | 1001101100 | TH3 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 218 | 0101101100 | TH7 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 219 | 1101101100 | TH6 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 221 | 1011101100 | TH5 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 225 | 1000011100 | TH9 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 227 | 1100011100 | THHS1 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 229 | 1010011100 | High-pressure sensor data | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [kgf/cm$^2$] |
| 230 | 0110011100 | Low-pressure sensor data | | -99.9 to 999.9 | | | | | | | | A | A | |
| 233 | 0101011100 | TH15 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 234 | 0101011100 | TH11 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 249 | 1001111100 | ∑ Qj | | 0000 to 9999 | | | | | | | | B | B | |
| 250 | 0101111100 | ∑ Qjc | | 0000 to 9999 | | | | | | | | B | B | |
| 251 | 1101111100 | ∑ Qjh | | 0000 to 9999 | | | | | | | | B | B | |
| 252 | 0011111100 | Target Tc | | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 253 | 1011111100 | Target Te | | -99.9 to 999.9 | | | | | | | | B | | |
| 254 | 0111111100 | Tc | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 255 | 1111111100 | Te | | -99.9 to 999.9 | | | | | | | | A | A | |
| 257 | 1000000010 | Total frequencies (OC+OS) | | 0000 to 9999 | | | | | | | | B | | Control data [ Hz ] |
| 258 | 0100000010 | Total frequency of each unit | | 0000 to 9999 | | | | | | | | A | A | |
| 259 | 1100000010 | COMP frequency | | 0000 to 9999 | | | | | | | | A | A | |
| 264 | 0001000010 | All AK (OC+OS) | | 0000 to 9999 | | | | | | | | B | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data before error**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 265 | 1001000010 | AK | 0000 to 9999 | | | | | | | | A | A | |
| 266 | 0101000010 | FAN1 | 0000 to 9999 | | | | | | | | A | A | Fan inverter output [ % ] |
| 267 | 1101000010 | Fan inverter output rpm (FAN1) | 0000 to 9999 | | | | | | | | A | A | [rpm] |
| 268 | 0011000010 | FAN2 | 0000 to 9999 | | | | | | | | A | A | Fan inverter output [ % ] |
| 269 | 1011000010 | Fan inverter output rpm (FAN2) | 0000 to 9999 | | | | | | | | A | A | [rpm] |
| 272 | 0000100010 | LEV5a | 0000 to 9999 | | | | | | | | A | A | |
| 275 | 1100100010 | LEV2 | 0000 to 9999 | | | | | | | | A | A | |
| 276 | 0010100010 | LEV4 | 0000 to 9999 | | | | | | | | A | A | |
| 278 | 0110100010 | LEV5b | 0000 to 9999 | | | | | | | | A | A | |
| 279 | 1110100010 | COMP operating current (DC) | 00.0 to 999.9 | | | | | | | | A | A | Peak value[A] |
| 282 | 0101100010 | COMP bus voltage | 00.0 to 999.9 | | | | | | | | A | A | The unit is [ V ] |
| 283 | 1101100010 | LEV2b | 0000 to 9999 | | | | | | | | A | A | |
| 284 | 0011100010 | LEV2c | 0000 to 9999 | | | | | | | | A | A | |
| 285 | 1011100010 | LEV2d | 0000 to 9999 | | | | | | | | A | A | |
| 286 | 0111100010 | LEV9 | 0000 to 9999 | | | | | | | | A | A | |
| 288 | 0000010010 | COMP Operation time Upper 4 digits | 0000 to 9999 | | | | | | | | A | A | The unit is [ h ] |
| 289 | 1000010010 | COMP Operation time Lower 4 digits | 0000 to 9999 | | | | | | | | A | A | |
| 294 | 0110010010 | COMP number of start-stop events Upper 4 digits | 0000 to 9999 | | | | | | | | A | A | Count-up at start-up The unit is [Time] |
| 295 | 1110010010 | COMP number of start-stop events Lower 4 digits | 0000 to 9999 | | | | | | | | A | A | |
| 300 | 0011010010 | Integrated operation time of compressor (for rotation purpose) | 0000 to 9999 | | | | | | | | B | | The unit is [ h ] |
| 301 | 1011010010 | Power supply unit | OC/OS ↔ Address | | | | | | | | B | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 351 | 1111101010 | IC1 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | B | | Displayed alternately every 5 seconds |
| 352 | 0000011010 | IC2 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 353 | 1000011010 | IC3 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 354 | 0100011010 | IC4 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 355 | 1100011010 | IC5 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 356 | 0010011010 | IC6 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 357 | 1010011010 | IC7 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 358 | 0110011010 | IC8 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 359 | 1110011010 | IC9 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 360 | 0001011010 | IC10 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 361 | 1001011010 | IC11 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 362 | 0101011010 | IC12 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 363 | 1101011010 | IC13 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 364 | 0011011010 | IC14 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 365 | 1011011010 | IC15 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 366 | 0111011010 | IC16 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 367 | 1111011010 | IC17 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 368 | 0000111010 | IC18 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 369 | 1000111010 | IC19 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 370 | 0100111010 | IC20 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 371 | 1100111010 | IC21 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 372 | 0010111010 | IC22 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 373 | 1010111010 | IC23 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 374 | 0110111010 | IC24 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 375 | 1110111010 | IC25 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 376 | 0001111010 | IC26 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 377 | 1001111010 | IC27 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 378 | 0101111010 | IC28 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 379 | 1101111010 | IC29 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 380 | 0011111010 | IC30 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 381 | 1011111010 | IC31 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 382 | 0111111010 | IC32 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 383 | 1111111010 | IC33 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 384 | 0000000110 | IC34 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 385 | 1000000110 | IC35 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 386 | 0100000110 | IC36 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 387 | 1100000110 | IC37 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 388 | 0010000110 | IC38 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 389 | 1010000110 | IC39 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 390 | 0110000110 | IC40 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | B | | Displayed alternately every 5 seconds |
| 391 | 1110000110 | IC41 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 392 | 0001000110 | IC42 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 393 | 1001000110 | IC43 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 394 | 0101000110 | IC44 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 395 | 1101000110 | IC45 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 396 | 0011000110 | IC46 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 397 | 1011000110 | IC47 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 398 | 0111000110 | IC48 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 399 | 1111000110 | IC49 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 400 | 0000100110 | IC50 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 408 | 0001100110 | IC1 Suction temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 409 | 1001100110 | IC2 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 410 | 0101100110 | IC3 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 411 | 1101100110 | IC4 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 412 | 0011100110 | IC5 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 413 | 1011100110 | IC6 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 414 | 0111100110 | IC7 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 415 | 1111100110 | IC8 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 416 | 0000010110 | IC9 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 417 | 1000010110 | IC10 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 418 | 0100010110 | IC11 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 419 | 1100010110 | IC12 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 420 | 0010010110 | IC13 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 421 | 1010010110 | IC14 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 422 | 0110010110 | IC15 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 423 | 1110010110 | IC16 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 424 | 0001010110 | IC17 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 425 | 1001010110 | IC18 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 426 | 0101010110 | IC19 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 427 | 1101010110 | IC20 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 428 | 0011010110 | IC21 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 429 | 1011010110 | IC22 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 430 | 0111010110 | IC23 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 431 | 1111010110 | IC24 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 432 | 0000110110 | IC25 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 433 | 1000110110 | IC26 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 434 | 0100110110 | IC27 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 435 | 1100110110 | IC28 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 436 | 0010110110 | IC29 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 437 | 1010110110 | IC30 Suction temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 438 | 0110110110 | IC31 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 439 | 1110110110 | IC32 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 440 | 0001110110 | IC33 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 441 | 1001110110 | IC34 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 442 | 0101110110 | IC35 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 443 | 1101110110 | IC36 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 444 | 0011110110 | IC37 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 445 | 1011110110 | IC38 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 446 | 0111110110 | IC39 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 447 | 1111110110 | IC40 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 448 | 0000001110 | IC41 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 449 | 1000001110 | IC42 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 450 | 0100001110 | IC43 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 451 | 1100001110 | IC44 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 452 | 0010001110 | IC45 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 453 | 1010001110 | IC46 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 454 | 0110001110 | IC47 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 455 | 1110001110 | IC48 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 456 | 0001001110 | IC49Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 457 | 1001001110 | IC50 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 458 | 0101001110 | IC1 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 459 | 1101001110 | IC2 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 460 | 0011001110 | IC3 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 461 | 1011001110 | IC4 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 462 | 0111001110 | IC5 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 463 | 1111001110 | IC6 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 464 | 0000101110 | IC7 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 465 | 1000101110 | IC8 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 466 | 0100101110 | IC9 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 467 | 1100101110 | IC10 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 468 | 0010101110 | IC11 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 469 | 1010101110 | IC12 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 470 | 0110101110 | IC13 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 471 | 1110101110 | IC14 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 472 | 0001101110 | IC15 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 473 | 1001101110 | IC16 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 474 | 0101101110 | IC17 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 475 | 1101101110 | IC18 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 476 | 0011101110 | IC19 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 477 | 1011101110 | IC20 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 478 | 0111101110 | IC21 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 479 | 1111101110 | IC22 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 480 | 0000011110 | IC23 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 481 | 1000011110 | IC24 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 482 | 0100011110 | IC25 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 483 | 1100011110 | IC26 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 484 | 0010011110 | IC27 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 485 | 1010011110 | IC28 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 486 | 0110011110 | IC29 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 487 | 1110011110 | IC30 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 488 | 0001011110 | IC31 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 489 | 1001011110 | IC32 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 490 | 0101011110 | IC33 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 491 | 1101011110 | IC34 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 492 | 0011011110 | IC35 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 493 | 1011011110 | IC36 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 494 | 0111011110 | IC37 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 495 | 1111011110 | IC38 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 496 | 0000111110 | IC39 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 497 | 1000111110 | IC40 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 498 | 0100111110 | IC41 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 499 | 1100111110 | IC42 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 500 | 0010111110 | IC43 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 501 | 1010111110 | IC44 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 502 | 0110111110 | IC45 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 503 | 1110111110 | IC46 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 504 | 0001111110 | IC47 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 505 | 1001111110 | IC48 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 506 | 0101111110 | IC49 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 507 | 1101111110 | IC50 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Setting data**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 512 | 0000000001 | Self-address | Alternate display of self address and unit model | | | | | | | | A | A | |
| 513 | 1000000001 | IC/FU address | Count-up display of number of connected units | | | | | | | | B | | |
| 514 | 0100000001 | RC address | Count-up display of number of connected units | | | | | | | | B | | |
| 515 | 1100000001 | HB/HS address | Count-up display of number of connected units | | | | | | | | | | |
| 516 | 0010000001 | OS address | Count-up display of number of connected units | | | | | | | | B | | |
| 517 | 1010000001 | Version/Capacity | S/W version → Refrigerant type → Model and capacity → Communication address | | | | | | | | A | A | |
| 518 | 0110000001 | OC address | OC address display | | | | | | | | | B | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 523 | 1101000001 | IC1 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 524 | 0011000001 | IC2 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 525 | 1011000001 | IC3 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 526 | 0111000001 | IC4 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 527 | 1111000001 | IC5 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 528 | 0000100001 | IC6 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 529 | 1000100001 | IC7 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 530 | 0100100001 | IC8 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 531 | 1100100001 | IC9 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 532 | 0010100001 | IC10 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 533 | 1010100001 | IC11 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 534 | 0110100001 | IC12 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 535 | 1110100001 | IC13 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 536 | 0001100001 | IC14 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 537 | 1001100001 | IC15 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 538 | 0101100001 | IC16 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 539 | 1101100001 | IC17 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 540 | 0011100001 | IC18 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 541 | 1011100001 | IC19 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 542 | 0111100001 | IC20 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 543 | 1111100001 | IC21 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 544 | 0000010001 | IC22 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 545 | 1000010001 | IC23 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 546 | 0100010001 | IC24 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 547 | 1100010001 | IC25 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 548 | 0010010001 | IC26 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 549 | 1010010001 | IC27 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 550 | 0110010001 | IC28Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 551 | 1110010001 | IC29 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 552 | 0001010001 | IC30 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 553 | 1001010001 | IC31 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 554 | 0101010001 | IC32 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 555 | 1101010001 | IC33 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 556 | 0011010001 | IC34 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 557 | 1011010001 | IC35 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 558 | 0111010001 | IC36 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 559 | 1111010001 | IC37 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 560 | 0000110001 | IC38 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 561 | 1000110001 | IC39 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 562 | 0100110001 | IC40 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 563 | 1100110001 | IC41 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 564 | 0010110001 | IC42 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 565 | 1010110001 | IC43 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 566 | 0110110001 | IC44 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 567 | 1110110001 | IC45 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 568 | 0001110001 | IC46 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 569 | 1001110001 | IC47 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 570 | 0101110001 | IC48 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 571 | 1101110001 | IC49 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 572 | 0011110001 | IC50 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 573 | 1011110001 | IC1SH | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 574 | 0111110001 | IC2SH | -99.9 to 999.9 | | | | | | | | | | |
| 575 | 1111110001 | IC3SH | -99.9 to 999.9 | | | | | | | | | | |
| 576 | 0000001001 | IC4SH | -99.9 to 999.9 | | | | | | | | | | |
| 577 | 1000001001 | IC5SH | -99.9 to 999.9 | | | | | | | | | | |
| 578 | 0100001001 | IC6SH | -99.9 to 999.9 | | | | | | | | | | |
| 579 | 1100001001 | IC7SH | -99.9 to 999.9 | | | | | | | | | | |
| 580 | 0010001001 | IC8SH | -99.9 to 999.9 | | | | | | | | | | |
| 581 | 1010001001 | IC9SH | -99.9 to 999.9 | | | | | | | | | | |
| 582 | 0110001001 | IC10SH | -99.9 to 999.9 | | | | | | | | | | |
| 583 | 1110001001 | IC11SH | -99.9 to 999.9 | | | | | | | | | | |
| 584 | 0001001001 | IC12SH | -99.9 to 999.9 | | | | | | | | | | |
| 585 | 1001001001 | IC13SH | -99.9 to 999.9 | | | | | | | | | | |
| 586 | 0101001001 | IC14SH | -99.9 to 999.9 | | | | | | | | | | |
| 587 | 1101001001 | IC15SH | -99.9 to 999.9 | | | | | | | | | | |
| 588 | 0011001001 | IC16SH | -99.9 to 999.9 | | | | | | | | | | |
| 589 | 1011001001 | IC17SH | -99.9 to 999.9 | | | | | | | | | | |
| 590 | 0111001001 | IC18SH | -99.9 to 999.9 | | | | | | | | | | |
| 591 | 1111001001 | IC19SH | -99.9 to 999.9 | | | | | | | | | | |
| 592 | 0000101001 | IC20SH | -99.9 to 999.9 | | | | | | | | | | |
| 593 | 1000101001 | IC21SH | -99.9 to 999.9 | | | | | | | | | | |
| 594 | 0100101001 | IC22SH | -99.9 to 999.9 | | | | | | | | | | |
| 595 | 1100101001 | IC23SH | -99.9 to 999.9 | | | | | | | | | | |
| 596 | 0010101001 | IC24SH | -99.9 to 999.9 | | | | | | | | | | |
| 597 | 1010101001 | IC25SH | -99.9 to 999.9 | | | | | | | | | | |
| 598 | 0110101001 | IC26SH | -99.9 to 999.9 | | | | | | | | | | |
| 599 | 1110101001 | IC27SH | -99.9 to 999.9 | | | | | | | | | | |
| 600 | 0001101001 | IC28SH | -99.9 to 999.9 | | | | | | | | | | |
| 601 | 1001101001 | IC29SH | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 602 | 0101101001 | IC30SH | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 603 | 1101101001 | IC31SH | -99.9 to 999.9 | | | | | | | | | | |
| 604 | 0011101001 | IC32SH | -99.9 to 999.9 | | | | | | | | | | |
| 605 | 1011101001 | IC33SH | -99.9 to 999.9 | | | | | | | | | | |
| 606 | 0111101001 | IC34SH | -99.9 to 999.9 | | | | | | | | | | |
| 607 | 1111101001 | IC35SH | -99.9 to 999.9 | | | | | | | | | | |
| 608 | 0000011001 | IC36SH | -99.9 to 999.9 | | | | | | | | | | |
| 609 | 1000011001 | IC37SH | -99.9 to 999.9 | | | | | | | | | | |
| 610 | 0100011001 | IC38SH | -99.9 to 999.9 | | | | | | | | | | |
| 611 | 1100011001 | IC39SH | -99.9 to 999.9 | | | | | | | | | | |
| 612 | 0010011001 | IC40SH | -99.9 to 999.9 | | | | | | | | | | |
| 613 | 1010011001 | IC41SH | -99.9 to 999.9 | | | | | | | | | | |
| 614 | 0110011001 | IC42SH | -99.9 to 999.9 | | | | | | | | | | |
| 615 | 1110011001 | IC43SH | -99.9 to 999.9 | | | | | | | | | | |
| 616 | 0001011001 | IC44SH | -99.9 to 999.9 | | | | | | | | | | |
| 617 | 1001011001 | IC45SH | -99.9 to 999.9 | | | | | | | | | | |
| 618 | 0101011001 | IC46SH | -99.9 to 999.9 | | | | | | | | | | |
| 619 | 1101011001 | IC47SH | -99.9 to 999.9 | | | | | | | | | | |
| 620 | 0011011001 | IC48SH | -99.9 to 999.9 | | | | | | | | | | |
| 621 | 1011011001 | IC49SH | -99.9 to 999.9 | | | | | | | | | | |
| 622 | 0111011001 | IC50SH | -99.9 to 999.9 | | | | | | | | | | |
| 623 | 1111011001 | IC1SC | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 624 | 0000111001 | IC2SC | -99.9 to 999.9 | | | | | | | | | | |
| 625 | 1000111001 | IC3SC | -99.9 to 999.9 | | | | | | | | | | |
| 626 | 0100111001 | IC4SC | -99.9 to 999.9 | | | | | | | | | | |
| 627 | 1100111001 | IC5SC | -99.9 to 999.9 | | | | | | | | | | |
| 628 | 0010111001 | IC6SC | -99.9 to 999.9 | | | | | | | | | | |
| 629 | 1010111001 | IC7SC | -99.9 to 999.9 | | | | | | | | | | |
| 630 | 0110111001 | IC8SC | -99.9 to 999.9 | | | | | | | | | | |
| 631 | 1110111001 | IC9SC | -99.9 to 999.9 | | | | | | | | | | |
| 632 | 0001111001 | IC10SC | -99.9 to 999.9 | | | | | | | | | | |
| 633 | 1001111001 | IC11SC | -99.9 to 999.9 | | | | | | | | | | |
| 634 | 0101111001 | IC12SC | -99.9 to 999.9 | | | | | | | | | | |
| 635 | 1101111001 | IC13SC | -99.9 to 999.9 | | | | | | | | | | |
| 636 | 0011111001 | IC14SC | -99.9 to 999.9 | | | | | | | | | | |
| 637 | 1011111001 | IC15SC | -99.9 to 999.9 | | | | | | | | | | |
| 638 | 0111111001 | IC16SC | -99.9 to 999.9 | | | | | | | | | | |
| 639 | 1111111001 | IC17SC | -99.9 to 999.9 | | | | | | | | | | |
| 640 | 0000000101 | IC18SC | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 641 | 1000000101 | IC19SC | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 642 | 0100000101 | IC20SC | -99.9 to 999.9 | | | | | | | | | | |
| 643 | 1100000101 | IC21SC | -99.9 to 999.9 | | | | | | | | | | |
| 644 | 0010000101 | IC22SC | -99.9 to 999.9 | | | | | | | | | | |
| 645 | 1010000101 | IC23SC | -99.9 to 999.9 | | | | | | | | | | |
| 646 | 0110000101 | IC24SC | -99.9 to 999.9 | | | | | | | | | | |
| 647 | 1110000101 | IC25SC | -99.9 to 999.9 | | | | | | | | | | |
| 648 | 0001000101 | IC26SC | -99.9 to 999.9 | | | | | | | | | | |
| 649 | 1001000101 | IC27SC | -99.9 to 999.9 | | | | | | | | | | |
| 650 | 0101000101 | IC28SC | -99.9 to 999.9 | | | | | | | | | | |
| 651 | 1101000101 | IC29SC | -99.9 to 999.9 | | | | | | | | | | |
| 652 | 0011000101 | IC30SC | -99.9 to 999.9 | | | | | | | | | | |
| 653 | 1011000101 | IC31SC | -99.9 to 999.9 | | | | | | | | | | |
| 654 | 0111000101 | IC32SC | -99.9 to 999.9 | | | | | | | | | | |
| 655 | 1111000101 | IC33SC | -99.9 to 999.9 | | | | | | | | | | |
| 656 | 0000100101 | IC34SC | -99.9 to 999.9 | | | | | | | | | | |
| 657 | 1000100101 | IC35SC | -99.9 to 999.9 | | | | | | | | | | |
| 658 | 0100100101 | IC36SC | -99.9 to 999.9 | | | | | | | | | | |
| 659 | 1100100101 | IC37SC | -99.9 to 999.9 | | | | | | | | | | |
| 660 | 0010100101 | IC38SC | -99.9 to 999.9 | | | | | | | | | | |
| 661 | 1010100101 | IC39SC | -99.9 to 999.9 | | | | | | | | | | |
| 662 | 0110100101 | IC40SC | -99.9 to 999.9 | | | | | | | | | | |
| 663 | 1110100101 | IC41SC | -99.9 to 999.9 | | | | | | | | | | |
| 664 | 0001100101 | IC42SC | -99.9 to 999.9 | | | | | | | | | | |
| 665 | 1001100101 | IC43SC | -99.9 to 999.9 | | | | | | | | | | |
| 666 | 0101100101 | IC44SC | -99.9 to 999.9 | | | | | | | | | | |
| 667 | 1101100101 | IC45SC | -99.9 to 999.9 | | | | | | | | | | |
| 668 | 0011100101 | IC46SC | -99.9 to 999.9 | | | | | | | | | | |
| 669 | 1011100101 | IC47SC | -99.9 to 999.9 | | | | | | | | | | |
| 670 | 0111100101 | IC48SC | -99.9 to 999.9 | | | | | | | | | | |
| 671 | 1111100101 | IC49SC | -99.9 to 999.9 | | | | | | | | | | |
| 672 | 0000010101 | IC50SC | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Setting data**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 676 | 0010010101 | INV board S/W version | 0.00 to 99.99 | | | | | | | | A | A | |
| 679 | 1110010101 | Fan board (address 5) S/W version | 0.00 to 99.99 | | | | | | | | A | A | |
| 680 | 0001010101 | Fan board (address 6) S/W version | 0.00 to 99.99 | | | | | | | | A | A | |
| 688 | 0000110101 | Current time | 00:00 to 23:59 | | | | | | | | A | A | Hour: minute |
| 689 | 1000110101 | Current time -2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 690 | 0100110101 | Time of error detection 1 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 691 | 1100110101 | Time of error detection 1-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 692 | 0010110101 | Time of error detection 2 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 693 | 1010110101 | Time of error detection 2-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 694 | 0110110101 | Time of error detection 3 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 695 | 1110110101 | Time of error detection 3-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 696 | 0001110101 | Time of error detection 4 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 697 | 1001110101 | Time of error detection 4-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 698 | 0101110101 | Time of error detection 5 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 699 | 1101110101 | Time of error detection 5-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 700 | 0011110101 | Time of error detection 6 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 701 | 1011110101 | Time of error detection 6-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 702 | 0111110101 | Time of error detection 7 | 00:00 to 23:59 | | | | | | | | A | A | Hour: minute |
| 703 | 1111110101 | Time of error detection 7-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 704 | 0000001101 | Time of error detection 8 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 705 | 1000001101 | Time of error detection 8-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 706 | 0100001101 | Time of error detection 9 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 707 | 1100001101 | Time of error detection 9-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 708 | 0010001101 | Time of error detection 10 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 709 | 1010001101 | Time of error detection 10-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 710 | 0110001101 | Time of last data backup before error | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 711 | 1110001101 | Time of last data backup before error -2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 714 | 0101001101 | IC1 LEV opening | 0000 to 9999 | | | | | | | | B | | Fully open: 2000 |
| 715 | 1101001101 | IC2 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 716 | 0011001101 | IC3 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 717 | 1011001101 | IC4 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 718 | 0111001101 | IC5 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 719 | 1111001101 | IC6 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 720 | 0000101101 | IC7 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 721 | 1000101101 | IC8 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 722 | 0100101101 | IC9 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 723 | 1100101101 | IC10 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 724 | 0010101101 | IC11 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 725 | 1010101101 | IC12 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 726 | 0110101101 | IC13 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 727 | 1110101101 | IC14 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 728 | 0001101101 | IC15 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 729 | 1001101101 | IC16 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 730 | 0101101101 | IC17 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 731 | 1101101101 | IC18 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 732 | 0011101101 | IC19 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 733 | 1011101101 | IC20 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 734 | 0111101101 | IC21 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 735 | 1111101101 | IC22 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 736 | 0000011101 | IC23 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 737 | 1000011101 | IC24 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 738 | 0100011101 | IC25 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 739 | 1100011101 | IC26 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 740 | 0010011101 | IC27 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 741 | 1010011101 | IC28 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 742 | 0110011101 | IC29 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 743 | 1110011101 | IC30 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 744 | 0001011101 | IC31 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 745 | 1001011101 | IC32 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 746 | 0101011101 | IC33 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 747 | 1101011101 | IC34 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 748 | 0011011101 | IC35 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 749 | 1011011101 | IC36 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 750 | 0111011101 | IC37 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 751 | 1111011101 | IC38 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 752 | 0000111101 | IC39 LEV opening | 0000 to 9999 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 753 | 1000111101 | IC40 LEV opening | 0000 to 9999 | | | | | | | | B | | Fully open: 2000 |
| 754 | 0100111101 | IC41 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 755 | 1100111101 | IC42 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 756 | 0010111101 | IC43 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 757 | 1010111101 | IC44 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 758 | 0110111101 | IC45 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 759 | 1110111101 | IC46 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 760 | 0001111101 | IC47 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 761 | 1001111101 | IC48 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 762 | 0101111101 | IC49 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 763 | 1101111101 | IC50 LEV opening | 0000 to 9999 | | | | | | | | | | |
| 764 | 0011111101 | IC1 Operation mode | 0000: Stop 0001: Ventilation 0002: Cooling 0003: Heating 0004: Dry | | | | | | | | B | | |
| 765 | 1011111101 | IC2 Operation mode | | | | | | | | | | | |
| 766 | 0111111101 | IC3 Operation mode | | | | | | | | | | | |
| 767 | 1111111101 | IC4 Operation mode | | | | | | | | | | | |
| 768 | 0000000011 | IC5 Operation mode | | | | | | | | | | | |
| 769 | 1000000011 | IC6 Operation mode | | | | | | | | | | | |
| 770 | 0100000011 | IC7 Operation mode | | | | | | | | | | | |
| 771 | 1100000011 | IC8 Operation mode | | | | | | | | | | | |
| 772 | 0010000011 | IC9 Operation mode | | | | | | | | | | | |
| 773 | 1010000011 | IC10 Operation mode | | | | | | | | | | | |
| 774 | 0110000011 | IC11 Operation mode | | | | | | | | | | | |
| 775 | 1110000011 | IC12 Operation mode | | | | | | | | | | | |
| 776 | 0001000011 | IC13 Operation mode | | | | | | | | | | | |
| 777 | 1001000011 | IC14 Operation mode | | | | | | | | | | | |
| 778 | 0101000011 | IC15 Operation mode | | | | | | | | | | | |
| 779 | 1101000011 | IC16 Operation mode | | | | | | | | | | | |
| 780 | 0011000011 | IC17 Operation mode | | | | | | | | | | | |
| 781 | 1011000011 | IC18 Operation mode | | | | | | | | | | | |
| 782 | 0111000011 | IC19 Operation mode | | | | | | | | | | | |
| 783 | 1111000011 | IC20 Operation mode | | | | | | | | | | | |
| 784 | 0000100011 | IC21 Operation mode | | | | | | | | | | | |
| 785 | 1000100011 | IC22 Operation mode | | | | | | | | | | | |
| 786 | 0100100011 | IC23 Operation mode | | | | | | | | | | | |
| 787 | 1100100011 | IC24 Operation mode | | | | | | | | | | | |
| 788 | 0010100011 | IC25 Operation mode | | | | | | | | | | | |
| 789 | 1010100011 | IC26 Operation mode | | | | | | | | | | | |
| 790 | 0110100011 | IC27 Operation mode | | | | | | | | | | | |
| 791 | 1110100011 | IC28 Operation mode | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 792 | 0001100011 | IC29 Operation mode | 0000: Stop 0001: Ventilation 0002: Cooling 0003: Heating 0004: Dry | | | | | | | | B | | |
| 793 | 1001100011 | IC30 Operation mode | | | | | | | | | | | |
| 794 | 0101100011 | IC31 Operation mode | | | | | | | | | | | |
| 795 | 1101100011 | IC32 Operation mode | | | | | | | | | | | |
| 796 | 0011100011 | IC33 Operation mode | | | | | | | | | | | |
| 797 | 1011100011 | IC34 Operation mode | | | | | | | | | | | |
| 798 | 0111100011 | IC35 Operation mode | | | | | | | | | | | |
| 799 | 1111100011 | IC36 Operation mode | | | | | | | | | | | |
| 800 | 0000010011 | IC37 Operation mode | | | | | | | | | | | |
| 801 | 1000010011 | IC38 Operation mode | | | | | | | | | | | |
| 802 | 0100010011 | IC39 Operation mode | | | | | | | | | | | |
| 803 | 1100010011 | IC40 Operation mode | | | | | | | | | | | |
| 804 | 0010010011 | IC41 Operation mode | | | | | | | | | | | |
| 805 | 1010010011 | IC42 Operation mode | | | | | | | | | | | |
| 806 | 0110010011 | IC43 Operation mode | | | | | | | | | | | |
| 807 | 1110010011 | IC44 Operation mode | | | | | | | | | | | |
| 808 | 0001010011 | IC45 Operation mode | | | | | | | | | | | |
| 809 | 1001010011 | IC46 Operation mode | | | | | | | | | | | |
| 810 | 0101010011 | IC47 Operation mode | | | | | | | | | | | |
| 811 | 1101010011 | IC48 Operation mode | | | | | | | | | | | |
| 812 | 0011010011 | IC49 Operation mode | | | | | | | | | | | |
| 813 | 1011010011 | IC50 Operation mode | | | | | | | | | | | |
| 814 | 0111010011 | IC1 filter | 0000 to 9999 | | | | | | | | B | | Hours since last maintenance [ h ] |
| 815 | 1111010011 | IC2 filter | 0000 to 9999 | | | | | | | | | | |
| 816 | 0000110011 | IC3 filter | 0000 to 9999 | | | | | | | | | | |
| 817 | 1000110011 | IC4 filter | 0000 to 9999 | | | | | | | | | | |
| 818 | 0100110011 | IC5 filter | 0000 to 9999 | | | | | | | | | | |
| 819 | 1100110011 | IC6 filter | 0000 to 9999 | | | | | | | | | | |
| 820 | 0010110011 | IC7 filter | 0000 to 9999 | | | | | | | | | | |
| 821 | 1010110011 | IC8 filter | 0000 to 9999 | | | | | | | | | | |
| 822 | 0110110011 | IC9 filter | 0000 to 9999 | | | | | | | | | | |
| 823 | 1110110011 | IC10 filter | 0000 to 9999 | | | | | | | | | | |
| 824 | 0001110011 | IC11 filter | 0000 to 9999 | | | | | | | | | | |
| 825 | 1001110011 | IC12 filter | 0000 to 9999 | | | | | | | | | | |
| 826 | 0101110011 | IC13 filter | 0000 to 9999 | | | | | | | | | | |
| 827 | 1101110011 | IC14 filter | 0000 to 9999 | | | | | | | | | | |
| 828 | 0011110011 | IC15 filter | 0000 to 9999 | | | | | | | | | | |
| 829 | 1011110011 | IC16 filter | 0000 to 9999 | | | | | | | | | | |
| 830 | 0111110011 | IC17 filter | 0000 to 9999 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 831 | 1111110011 | IC18 filter | 0000 to 9999 | | | | | | | | B | | Hours since last maintenance [ h ] |
| 832 | 0000001011 | IC19 filter | 0000 to 9999 | | | | | | | | | | |
| 833 | 1000001011 | IC20 filter | 0000 to 9999 | | | | | | | | | | |
| 834 | 0100001011 | IC21 filter | 0000 to 9999 | | | | | | | | | | |
| 835 | 1100001011 | IC22 filter | 0000 to 9999 | | | | | | | | | | |
| 836 | 0010001011 | IC23 filter | 0000 to 9999 | | | | | | | | | | |
| 837 | 1010001011 | IC24 filter | 0000 to 9999 | | | | | | | | | | |
| 838 | 0110001011 | IC25 filter | 0000 to 9999 | | | | | | | | | | |
| 839 | 1110001011 | IC26 filter | 0000 to 9999 | | | | | | | | | | |
| 840 | 0001001011 | IC27 filter | 0000 to 9999 | | | | | | | | B | | Hours since last maintenance [ h ] |
| 841 | 1001001011 | IC28 filter | 0000 to 9999 | | | | | | | | | | |
| 842 | 0101001011 | IC29 filter | 0000 to 9999 | | | | | | | | | | |
| 843 | 1101001011 | IC30 filter | 0000 to 9999 | | | | | | | | | | |
| 844 | 0011001011 | IC31 filter | 0000 to 9999 | | | | | | | | | | |
| 845 | 1011001011 | IC32 filter | 0000 to 9999 | | | | | | | | | | |
| 846 | 0111001001 | IC33 filter | 0000 to 9999 | | | | | | | | | | |
| 847 | 1111001011 | IC34 filter | 0000 to 9999 | | | | | | | | | | |
| 848 | 0000101011 | IC35 filter | 0000 to 9999 | | | | | | | | | | |
| 849 | 1000101011 | IC36 filter | 0000 to 9999 | | | | | | | | | | |
| 850 | 0100101011 | IC37 filter | 0000 to 9999 | | | | | | | | | | |
| 851 | 1100101011 | IC38 filter | 0000 to 9999 | | | | | | | | | | |
| 852 | 0010101011 | IC39 filter | 0000 to 9999 | | | | | | | | | | |
| 853 | 1010101011 | IC40 filter | 0000 to 9999 | | | | | | | | | | |
| 854 | 0110101011 | IC41 filter | 0000 to 9999 | | | | | | | | | | |
| 855 | 1110101011 | IC42 filter | 0000 to 9999 | | | | | | | | | | |
| 856 | 0001101011 | IC43 filter | 0000 to 9999 | | | | | | | | | | |
| 857 | 1001101011 | IC44 filter | 0000 to 9999 | | | | | | | | | | |
| 858 | 0101101011 | IC45 filter | 0000 to 9999 | | | | | | | | | | |
| 859 | 1101101011 | IC46 filter | 0000 to 9999 | | | | | | | | | | |
| 860 | 0011101011 | IC47 filter | 0000 to 9999 | | | | | | | | | | |
| 861 | 1011101011 | IC48 filter | 0000 to 9999 | | | | | | | | | | |
| 862 | 0111101011 | IC49 filter | 0000 to 9999 | | | | | | | | | | |
| 863 | 1111101011 | IC50 filter | 0000 to 9999 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Other types of data**

| No. | SW4 (SW6-9: OFF, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 871 | 1110011011 | U-phase current effective value 1 | -99.9 to 999.9 | | | | | | | | A | A | The unit is [ A ] |
| 872 | 0001011011 | W-phase current effective value 1 | -99.9 to 999.9 | | | | | | | | A | A | |
| 873 | 1001011011 | Power factor phase angle 1 | -99.9 to 999.9 | | | | | | | | A | A | The unit is [ deg ] |
| 880 | 0000111011 | Control board Reset counter | 0 to 254 | | | | | | | | A | A | The unit is [ time ] |
| 881 | 1000111011 | INV board Reset counter | 0 to 254 | | | | | | | | A | A | |
| 884 | 0010111011 | Fan board (address 5) reset counter | 0 to 254 | | | | | | | | A | A | The unit is [ time ] |
| 885 | 1010111011 | Fan board (address 6) reset counter | 0 to 254 | | | | | | | | A | A | |
| 980 | 0010101111 | M-NET processor S/W version | 0.00 to 99.99 | | | | | | | | A | A | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6-9:ON, SW6-10:OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1024 | 0000000000 | | | | | | | | | | | | |
| 1025 | 1000000000 | | | | | | | | | | | | |
| 1026 | 0100000000 | | | | | | | | | | | | |
| 1027 | 1100000000 | | | | | | | | | | | | |
| 1028 | 0010000000 | | | | | | | | | | | | |
| 1029 | 1010000000 | | | | | | | | | | | | |
| 1030 | 0110000000 | | | | | | | | | | | | |
| 1031 | 1110000000 | | | | | | | | | | | | |
| 1032 | 0001000000 | | | | | | | | | | | | |
| 1033 | 1001000000 | | | | | | | | | | | | |
| 1034 | 0101000000 | | | | | | | | | | | | |
| 1035 | 1101000000 | | | | | | | | | | | | |
| 1036 | 0011000000 | | | | | | | | | | | | |
| 1037 | 1011000000 | | | | | | | | | | | | |
| 1038 | 0111000000 | | | | | | | | | | | | |
| 1039 | 1111000000 | | | | | | | | | | | | |
| 1040 | 0000100000 | | | | | | | | | | | | |
| 1041 | 1000100000 | | | | | | | | | | | | |
| 1042 | 0100100000 | | | | | | | | | | | | |
| 1043 | 1100100000 | | | | | | | | | | | | |
| 1044 | 0010100000 | | | | | | | | | | | | |
| 1045 | 1010100000 | | | | | | | | | | | | |
| 1046 | 0110100000 | | | | | | | | | | | | |
| 1047 | 1110100000 | | | | | | | | | | | | |
| 1048 | 0001100000 | | | | | | | | | | | | |
| 1049 | 1001100000 | | | | | | | | | | | | |
| 1050 | 0101100000 | | | | | | | | | | | | |
| 1051 | 1101100000 | | | | | | | | | | | | |
| 1052 | 0011100000 | | | | | | | | | | | | |
| 1053 | 1011100000 | | | | | | | | | | | | |
| 1054 | 0111100000 | | | | | | | | | | | | |
| 1055 | 1111100000 | | | | | | | | | | | | |
| 1056 | 0000010000 | | | | | | | | | | | | |
| 1057 | 1000010000 | | | | | | | | | | | | |
| 1058 | 0100010000 | | | | | | | | | | | | |
| 1059 | 1100010000 | | | | | | | | | | | | |
| 1060 | 0010010000 | | | | | | | | | | | | |
| 1061 | 1010010000 | | | | | | | | | | | | |
| 1062 | 0110010000 | | | | | | | | | | | | |
| 1063 | 1110010000 | | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6-9:ON, SW6-10:OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1064 | 0001010000 | | | | | | | | | | | | |
| 1065 | 1001010000 | | | | | | | | | | | | |
| 1066 | 0101010000 | | | | | | | | | | | | |
| 1067 | 1101010000 | | | | | | | | | | | | |
| 1068 | 0011010000 | | | | | | | | | | | | |
| 1069 | 1011010000 | | | | | | | | | | | | |
| 1070 | 0111010000 | | | | | | | | | | | | |
| 1071 | 1111010000 | | | | | | | | | | | | |
| 1072 | 0000110000 | | | | | | | | | | | | |
| 1073 | 1000110000 | | | | | | | | | | | | |
| 1074 | 0100110000 | | | | | | | | | | | | |
| 1075 | 1100110000 | | | | | | | | | | | | |
| 1076 | 0010110000 | | | | | | | | | | | | |
| 1077 | 1010110000 | | | | | | | | | | | | |
| 1078 | 0110110000 | | | | | | | | | | | | |
| 1079 | 1110110000 | | | | | | | | | | | | |
| 1080 | 0001110000 | | | | | | | | | | | | |
| 1081 | 1001110000 | | | | | | | | | | | | |
| 1082 | 0101110000 | | | | | | | | | | | | |
| 1083 | 1101110000 | | | | | | | | | | | | |
| 1084 | 0011110000 | | | | | | | | | | | | |
| 1085 | 1011110000 | | | | | | | | | | | | |
| 1086 | 0111110000 | | | | | | | | | | | | |
| 1087 | 1111110000 | | | | | | | | | | | | |
| 1088 | 0000001000 | | | | | | | | | | | | |
| 1089 | 1000001000 | | | | | | | | | | | | |
| 1090 | 0100001000 | | | | | | | | | | | | |
| 1091 | 1100001000 | | | | | | | | | | | | |
| 1092 | 0010001000 | | | | | | | | | | | | |
| 1093 | 1010001000 | | | | | | | | | | | | |
| 1094 | 0110001000 | | | | | | | | | | | | |
| 1095 | 1110001000 | | | | | | | | | | | | |
| 1096 | 0001001000 | | | | | | | | | | | | |
| 1097 | 1001001000 | | | | | | | | | | | | |
| 1098 | 0101001000 | | | | | | | | | | | | |
| 1099 | 1101001000 | | | | | | | | | | | | |
| 1100 | 0011001000 | | | | | | | | | | | | |
| 1101 | 1011001000 | | | | | | | | | | | | |
| 1102 | 0111001000 | | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6-9:ON, SW6-10:OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1103 | 1111001000 | | | | | | | | | | | | |
| 1104 | 0000101000 | | | | | | | | | | | | |
| 1105 | 1000101000 | | | | | | | | | | | | |
| 1106 | 0100101000 | | | | | | | | | | | | |
| 1107 | 1100101000 | | | | | | | | | | | | |
| 1108 | 0010101000 | | | | | | | | | | | | |
| 1109 | 1010101000 | | | | | | | | | | | | |
| 1110 | 0110101000 | | | | | | | | | | | | |
| 1111 | 1110101000 | | | | | | | | | | | | |
| 1112 | 0001101000 | | | | | | | | | | | | |
| 1113 | 1001101000 | | | | | | | | | | | | |
| 1114 | 0101101000 | | | | | | | | | | | | |
| 1115 | 1101101000 | | | | | | | | | | | | |
| 1116 | 0011101000 | | | | | | | | | | | | |
| 1117 | 1011101000 | | | | | | | | | | | | |
| 1118 | 0111101000 | | | | | | | | | | | | |
| 1119 | 1111101000 | | | | | | | | | | | | |
| 1120 | 0000011000 | | | | | | | | | | | | |
| 1121 | 1000011000 | | | | | | | | | | | | |
| 1122 | 0100011000 | | | | | | | | | | | | |
| 1123 | 1100011000 | | | | | | | | | | | | |
| 1124 | 0010011000 | | | | | | | | | | | | |
| 1125 | 1010011000 | | | | | | | | | | | | |
| 1126 | 0110011000 | | | | | | | | | | | | |
| 1127 | 1110011000 | | | | | | | | | | | | |
| 1128 | 0001011000 | | | | | | | | | | | | |
| 1129 | 1001011000 | | | | | | | | | | | | |
| 1130 | 0101011000 | | | | | | | | | | | | |
| 1131 | 1101011000 | | | | | | | | | | | | |
| 1132 | 0011011000 | | | | | | | | | | | | |
| 1133 | 1011011000 | | | | | | | | | | | | |
| 1134 | 0111011000 | | | | | | | | | | | | |
| 1135 | 1111011000 | | | | | | | | | | | | |
| 1136 | 0000111000 | | | | | | | | | | | | |
| 1137 | 1000111000 | | | | | | | | | | | | |
| 1138 | 0100111000 | | | | | | | | | | | | |
| 1139 | 1100111000 | | | | | | | | | | | | |
| 1140 | 0010111000 | | | | | | | | | | | | |
| 1141 | 1010111000 | | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6-9:ON, SW6-10:OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1142 | 0110111000 | | | | | | | | | | | | |
| 1143 | 1110111000 | | | | | | | | | | | | |
| 1144 | 0001111000 | | | | | | | | | | | | |
| 1145 | 1001111000 | | | | | | | | | | | | |
| 1146 | 0101111000 | | | | | | | | | | | | |
| 1147 | 1101111000 | | | | | | | | | | | | |
| 1148 | 0011111000 | | | | | | | | | | | | |
| 1149 | 1011111000 | | | | | | | | | | | | |
| 1150 | 0111111000 | | | | | | | | | | | | |
| 1151 | 1111111000 | | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6-9:ON, SW6-10:OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1317 | 1010010010 | | | | | | | | | | B | | |
| 1318 | 0110010010 | | | | | | | | | | B | | |
| 1320 | 0001010010 | Relay output display HBC (Main) | SV1 | 21S4Ma | 21S4Mb | 72C | Float switch | Function setting connector | Oil balance | Low frequency oil recovery | | | |
| 1321 | 1001010010 | WP1 control (HBC) (Main) | HBC (Main) address ↔ 0000 to 0100*2 | | | | | | | | | | |
| 1322 | 0101010010 | WP2 control (HBC) (Main) | HBC (Main) address ↔ 0000 to 0100*2 | | | | | | | | | | |
| 1323 | 1101010010 | WP1 rotation (HBC) (Main) | HBC (Main) address ↔ 0000 to 9999*2 | | | | | | | | | | |
| 1324 | 0011010010 | WP2 rotation (HBC) (Main) | HBC (Main) address ↔ 0000 to 9999*2 | | | | | | | | | | |
| 1325 | 1011010010 | TH11 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1326 | 0111010010 | TH12 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1327 | 1111010010 | TH13 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1328 | 0000110010 | TH14 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1329 | 1000110010 | TH15 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1330 | 0100110010 | TH16 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1331 | 1100110010 | TH31a (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1332 | 0010110010 | TH31b (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1333 | 1010110010 | TH31c (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1334 | 0110110010 | TH31d (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1335 | 1110110010 | TH31e (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1336 | 0001110010 | TH31f (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1337 | 1001110010 | TH31g (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1338 | 0101110010 | TH31h (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1339 | 1101110010 | TH31i (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1340 | 0011110010 | TH31j (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1341 | 1011110010 | TH31k (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1342 | 0111110010 | TH31l (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1343 | 1111110010 | TH31m (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1344 | 0000001010 | TH31n (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1345 | 1000001010 | TH31o (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1346 | 0100001010 | TH31p (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1347 | 1100001010 | TH32 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1348 | 0010001010 | TH33 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1349 | 1010001010 | TH34 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1350 | 0110001010 | TH35 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1351 | 1110001010 | SC1 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1352 | 0001001010 | SC2 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

*2 When multiple main HBC and sub HBC controllers are connected to the outdoor unit or heat source unit, the addresses and the values of these controllers will be displayed on the maintenance LED in the following cycle: HBC (Main1) (HBC (Sub1)) addresses → HBC (Main1) (HBC (Sub1)) values → Blank → HBC (Main2) (HBC (Sub2)) addresses → HBC (Main2) (HBC (Sub2)) values → Blank → HBC (Main1) (HBC (Sub1)) addresses (cycles back to the beginning and repeats).

**Current data**

| No. | SW4 (SW6-9:ON, SW6-10:OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1353 | 1001001010 | SH1 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1354 | 0101001010 | SH2 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1355 | 1101001010 | PT1 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1356 | 0011001010 | dPHM (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1357 | 1011001010 | PS1 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1358 | 0111001010 | PS3 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1359 | 1111001010 | LEV1 opening (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1360 | 0000101010 | LEV2 opening (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1361 | 1000101010 | LEV3 opening (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1362 | 0100101010 | TH31a (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1363 | 1100101010 | TH31b (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1364 | 0010101010 | TH31c (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1365 | 1010101010 | TH31d (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1366 | 0110101010 | TH31e (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1367 | 1110101010 | TH31f (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1368 | 0001101010 | TH31g (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1369 | 1001101010 | TH31h (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1370 | 0101101010 | TH31i (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1371 | 1101101010 | TH31j (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1372 | 0011101010 | TH31k (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1373 | 1011101010 | TH31l (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1374 | 0111101010 | TH31m (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1375 | 1111101010 | TH31n (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1376 | 0000011010 | TH31o (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1377 | 1000011010 | TH31p (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1378 | 0100011010 | TH32 (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1379 | 1100011010 | TH33 (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1380 | 0010011010 | VB3a (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1381 | 1010011010 | VB3b (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1382 | 0110011010 | VB3c (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1383 | 1110011010 | VB3d (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1384 | 0001011010 | VB3e (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1385 | 1001011010 | VB3f (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1386 | 0101011010 | VB3g (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1387 | 1101011010 | VB3h (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1388 | 0011011010 | VB3i (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1389 | 1011011010 | VB3j (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

*2 When multiple main HBC and sub HBC controllers are connected to the outdoor unit or heat source unit, the addresses and the values of these controllers will be displayed on the maintenance LED in the following cycle: HBC (Main1) (HBC (Sub1)) addresses → HBC (Main1) (HBC (Sub1)) values → Blank → HBC (Main2) (HBC (Sub2)) addresses → HBC (Main2) (HBC (Sub2)) values → Blank → HBC (Main1) (HBC (Sub1)) addresses (cycles back to the beginning and repeats).

**Current data**

| No. | SW4 (SW6-9:ON, SW6-10:OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1390 | 0111011010 | VB3k (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1391 | 1111011010 | VB3l (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1392 | 0000111010 | VB3m (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1393 | 1000111010 | VB3n (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1394 | 0100111010 | VB3o (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1395 | 1100111010 | VB3p (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1396 | 0010111010 | VB3a (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1397 | 1010111010 | VB3b (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1398 | 0110111010 | VB3c (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1399 | 1110111010 | VB3d (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1400 | 0001111010 | VB3e (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1401 | 1001111010 | VB3f (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1402 | 0101111010 | VB3g (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1403 | 1101111010 | VB3h (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1404 | 0011111010 | VB3i (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1405 | 1011111010 | VB3j (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1406 | 0111111010 | VB3k (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1407 | 1111111010 | VB3l (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1408 | 0000000110 | VB3m (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1409 | 1000000110 | VB3n (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1410 | 0100000110 | VB3o (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1411 | 1100000110 | VB3p (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.
*2 When multiple main HBC and sub HBC controllers are connected to the outdoor unit or heat source unit, the addresses and the values of these controllers will be displayed on the maintenance LED in the following cycle: HBC (Main1) (HBC (Sub1)) addresses → HBC (Main1) (HBC (Sub1)) values → Blank → HBC (Main2) (HBC (Sub2)) addresses → HBC (Main2) (HBC (Sub2)) values → Blank → HBC (Main1) (HBC (Sub1)) addresses (cycles back to the beginning and repeats).

**Data before error**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1654 | 0110111001 | | | | | | | | | | | | |
| 1655 | 1110111001 | | | | | | | | | | | | |
| 1656 | 0001111001 | Relay output display (HBC) (Main) | SV1 | 21S4Ma | 21S4Mb | 72C | Float switch | Function setting connector | Oil balance | Low frequency oil recovery | | | |
| 1657 | 1001111001 | WP1 control (HBC) (Main) | HBC (Main) address ↔ 0000 to 0100*2 | | | | | | | | | | |
| 1658 | 0101111001 | WP2 control (HBC) (Main) | HBC (Main) address ↔ 0000 to 0100*2 | | | | | | | | | | |
| 1659 | 1101111001 | WP1 rotation (HBC) (Main) | HBC (Main) address ↔ 0000 to 9999*2 | | | | | | | | | | |
| 1660 | 0011111001 | WP2 rotation (HBC) (Main) | HBC (Main) address ↔ 0000 to 9999*2 | | | | | | | | | | |
| 1661 | 1011111001 | TH11 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1662 | 0111111001 | TH12 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1663 | 1111111001 | TH13 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1664 | 0000000101 | TH14 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1665 | 1000000101 | TH15 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1666 | 0100000101 | TH16 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1667 | 1100000101 | TH31a (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1668 | 0010000101 | TH31b (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1669 | 1010000101 | TH31c (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1670 | 0110000101 | TH31d (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1671 | 1110000101 | TH31e (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1672 | 0001000101 | TH31f (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1673 | 1001000101 | TH31g (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1674 | 0101000101 | TH31h (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1675 | 1101000101 | TH31i (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1676 | 0011000101 | TH31j (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1677 | 1011000101 | TH31k (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1678 | 0111000101 | TH31l (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1679 | 1111000101 | TH31m (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1680 | 0000100101 | TH31n (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1681 | 1000100101 | TH31o (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1682 | 0100100101 | TH31p (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1683 | 1100100101 | TH32 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1684 | 0010100101 | TH33 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1685 | 1010100101 | TH34 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1686 | 0110100101 | TH35 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1687 | 1110100101 | SC1 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1688 | 0001100101 | SC2 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

*2 When multiple main HBC and sub HBC controllers are connected to the outdoor unit or heat source unit, the addresses and the values of these controllers will be displayed on the maintenance LED in the following cycle: HBC (Main1) (HBC (Sub1)) addresses → HBC (Main1) (HBC (Sub1)) values → Blank → HBC (Main2) (HBC (Sub2)) addresses → HBC (Main2) (HBC (Sub2)) values → Blank → HBC (Main1) (HBC (Sub1)) addresses (cycles back to the beginning and repeats).

**Data before error**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1689 | 1001100101 | SH1 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1690 | 0101100101 | SH2 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1691 | 1101100101 | PT1 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1692 | 0011100101 | dPHM (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1693 | 1011100101 | PS1 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1694 | 0111100101 | PS3 (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1695 | 1111100101 | LEV1 opening (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1696 | 0000010101 | LEV2 opening (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1697 | 1000010101 | LEV3 opening (HBC) (Main) | HBC (Main) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1698 | 0100010101 | TH31a (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1699 | 1100010101 | TH31b (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1700 | 0010010101 | TH31c (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1701 | 1010010101 | TH31d (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1702 | 0110010101 | TH31e (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1703 | 1110010101 | TH31f (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1704 | 0001010101 | TH31g (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1705 | 1001010101 | TH31h (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1706 | 0101010101 | TH31i (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1707 | 1101010101 | TH31j (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1708 | 0011010101 | TH31k (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1709 | 1011010101 | TH31l (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1710 | 0111010101 | TH31m (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1711 | 1111010101 | TH31n (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1712 | 0000110101 | TH31o (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1713 | 1000110101 | TH31p (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1714 | 0100110101 | TH32 (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1715 | 1100110101 | TH33 (HBC) (Sub) | HBC (Sub) address ↔ -99.9 to 999.9*2 | | | | | | | | | | |
| 1716 | 0010110101 | VB3a (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1717 | 1010110101 | VB3b (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1718 | 0110110101 | VB3c (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1719 | 1110110101 | VB3d (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1720 | 0001110101 | VB3e (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1721 | 1001110101 | VB3f (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1722 | 0101110101 | VB3g (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1723 | 1101110101 | VB3h (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1724 | 0011110101 | VB3i (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1725 | 1011110101 | VB3j (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |

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**Data before error**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 1726 | 0111110101 | VB3k (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1727 | 1111110101 | VB3l (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1728 | 0000001101 | VB3m (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1729 | 1000001101 | VB3n (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1730 | 0100001101 | VB3o (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1731 | 1100001101 | VB3p (HBC) (Main) | HBC (Main) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1732 | 0010001101 | VB3a (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1733 | 1010001101 | VB3b (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1734 | 0110001101 | VB3c (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1735 | 1110001101 | VB3d (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1736 | 0001001101 | VB3e (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1737 | 1001001101 | VB3f (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1738 | 0101001101 | VB3g (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1739 | 1101001101 | VB3h (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1740 | 0011001101 | VB3i (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1741 | 1011001101 | VB3j (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1742 | 0111001101 | VB3k (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1743 | 1111001101 | VB3l (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1744 | 0000101101 | VB3m (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1745 | 1000101101 | VB3n (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1746 | 0100101101 | VB3o (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |
| 1747 | 1100101101 | VB3p (HBC) (Sub) | HBC (Sub) address ↔ 0 or C1 to C999 or H1 to H999 or 1000 to 9999*2 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.
*2 When multiple main HBC and sub HBC controllers are connected to the outdoor unit or heat source unit, the addresses and the values of these controllers will be displayed on the maintenance LED in the following cycle: HBC (Main1) (HBC (Sub1)) addresses → HBC (Main1) (HBC (Sub1)) values → Blank → HBC (Main2) (HBC (Sub2)) addresses → HBC (Main2) (HBC (Sub2)) values → Blank → HBC (Main1) (HBC (Sub1)) addresses (cycles back to the beginning and repeats).

**LED monitor display** (Heat source unit)

**Current data**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 0 | 0000000000 | Relay output display 1 Lighting | | Comp in operation | | | | 72C | | OC | CPU in operation | A | A | |
| | | Check (error) display 1 OC/OS error | | 0000 to 9999 (Address and error codes highlighted) | | | | | | | | B | B | |
| 1 | 1000000000 | Check (error) display 2 OC/OS error | | 0000 to 9999 (Address and error codes highlighted) | | | | | | | | A | A | Display of the latest preliminary error<br>If no preliminary errors are detected, "----" appears on the display. |
| 2 | 0100000000 | Check (error) display 3 (Including IC and BC) | | 0000 to 9999 (Address and error codes highlighted) | | | | | | | | B | | If no errors are detected, "----" appears on the display. |
| 3 | 1100000000 | Relay output display 2 | Top | 21S4a | | CH11 | | SV1a | | | | A | A | |
| | | | Bottom | | | 21S4b | | | | | | | | |
| 4 | 0010000000 | Relay output display 3 | Top | SV4a | SV4b | | | | SV4d | SV9 | Power supply for indoor transmission line | A | A | |
| | | | Bottom | SV7a | SV7b | | SV7c | | | | | | | |
| 7 | 1110000000 | Special control | | Retry operation | Emergency operation | | | | | Communication error between the OC and OS | Communication error 3-minute restart delay mode | B | B | |
| 9 | 1001000000 | Communication demand capacity | | 0000 to 9999 | | | | | | | | B | B | If not demanded controlled, "----" [ % ] appears on the display. |
| 10 | 0101000000 | Contact point demand capacity | | 0000 to 9999 | | | | | | | | B | | If not demanded controlled, "----" [ % ] appears on the display. |
| 11 | 1101000000 | External signal (Open input contact point) | | Contact point demand | Low-noise mode (Capacity priority) | | Cooling-heating changeover (Cooling) | Cooling-heating changeover (Heating) | | | | A | A | |
| 12 | 0011000000 | External signal (Open input contact point) | | | | | | | | Pump interlock (Contact: open) | Low-noise mode (Quiet priority) | A | A | |
| 14 | 0111000000 | Heat source unit operation status | | BC operation signal | | 3-minutes restart mode | Compressor in operation | Preliminary error | Error | 3-minutes restart after instantaneous power failure | Preliminary low pressure error | A | A | |
| 15 | 1111000000 | OC/OS identification | | OC/OS | | | | | | | | A | A | |
| 16 | 0000100000 | Indoor unit check | Top | Unit No. 1 | Unit No. 2 | Unit No. 3 | Unit No. 4 | Unit No. 5 | Unit No. 6 | Unit No. 7 | Unit No. 8 | B | | The lamp that corresponds to the unit that came to an abnormal stop lights.<br>The lamp goes off when the error is reset.<br>Each unit that comes to an abnormal unit will be given a sequential number in ascending order starting with 1. |
| | | | Bottom | Unit No. 9 | Unit No. 10 | Unit No. 11 | Unit No. 12 | Unit No. 13 | Unit No. 14 | Unit No. 15 | Unit No. 16 | | | |
| 17 | 1000100000 | | Top | Unit No. 17 | Unit No. 18 | Unit No. 19 | Unit No. 20 | Unit No. 21 | Unit No. 22 | Unit No. 23 | Unit No. 24 | | | |
| | | | Bottom | Unit No. 25 | Unit No. 26 | Unit No. 27 | Unit No. 28 | Unit No. 29 | Unit No. 30 | Unit No. 31 | Unit No. 32 | | | |
| 18 | 0100100000 | | Top | Unit No. 33 | Unit No. 34 | Unit No. 35 | Unit No. 36 | Unit No. 37 | Unit No. 38 | Unit No. 39 | Unit No. 40 | | | |
| | | | Bottom | Unit No. 41 | Unit No. 42 | Unit No.43 | Unit No. 44 | Unit No. 45 | Unit No. 46 | Unit No47 | Unit No. 48 | | | |
| 19 | 1100100000 | | Top | Unit No. 49 | Unit No. 50 | | | | | | | | | |
| | | | Bottom | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 20 | 0010100000 | Indoor unit Operation mode | Top | Unit No. 1 | Unit No. 2 | Unit No. 3 | Unit No. 4 | Unit No. 5 | Unit No. 6 | Unit No. 7 | Unit No. 8 | B | | Lit during cooling<br>Lit during heating<br>Unlit while the unit is stopped or in the fan mode |
| | | | Bottom | Unit No. 9 | Unit No. 10 | Unit No. 11 | Unit No. 12 | Unit No. 13 | Unit No. 14 | Unit No. 15 | Unit No. 16 | | | |
| 21 | 1010100000 | | Top | Unit No. 17 | Unit No. 18 | Unit No. 19 | Unit No. 20 | Unit No. 21 | Unit No. 22 | Unit No. 23 | Unit No. 24 | | | |
| | | | Bottom | Unit No. 25 | Unit No. 26 | Unit No. 27 | Unit No. 28 | Unit No. 29 | Unit No. 30 | Unit No. 31 | Unit No. 32 | | | |
| 22 | 0110100000 | | Top | Unit No. 33 | Unit No. 34 | Unit No. 35 | Unit No. 36 | Unit No. 37 | Unit No. 38 | Unit No. 39 | Unit No. 40 | | | |
| | | | Bottom | Unit No. 41 | Unit No. 42 | Unit No.43 | Unit No. 44 | Unit No. 45 | Unit No. 46 | Unit No47 | Unit No. 48 | | | |
| 23 | 1110100000 | | Top | Unit No. 49 | Unit No. 50 | | | | | | | | | |
| | | | Bottom | | | | | | | | | | | |
| 24 | 0001100000 | Indoor unit thermostat | Top | Unit No. 1 | Unit No. 2 | Unit No. 3 | Unit No. 4 | Unit No. 5 | Unit No. 6 | Unit No. 7 | Unit No. 8 | B | | Lit when thermostat is on<br>Unlit when thermostat is off |
| | | | Bottom | Unit No. 9 | Unit No. 10 | Unit No. 11 | Unit No. 12 | Unit No. 13 | Unit No. 14 | Unit No. 15 | Unit No. 16 | | | |
| 25 | 1001100000 | | Top | Unit No. 17 | Unit No. 18 | Unit No. 19 | Unit No. 20 | Unit No. 21 | Unit No. 22 | Unit No. 23 | Unit No. 24 | | | |
| | | | Bottom | Unit No. 25 | Unit No. 26 | Unit No. 27 | Unit No. 28 | Unit No. 29 | Unit No. 30 | Unit No. 31 | Unit No. 32 | | | |
| 26 | 0101100000 | | Top | Unit No. 33 | Unit No. 34 | Unit No. 35 | Unit No. 36 | Unit No. 37 | Unit No. 38 | Unit No. 39 | Unit No. 40 | | | |
| | | | Bottom | Unit No. 41 | Unit No. 42 | Unit No.43 | Unit No. 44 | Unit No. 45 | Unit No. 46 | Unit No47 | Unit No. 48 | | | |
| 27 | 1101100000 | | Top | Unit No. 49 | Unit No. 50 | | | | | | | | | |
| | | | Bottom | | | | | | | | | | | |
| 37 | 1010010000 | | | | | | | | | | | | | |
| 39 | 1110010000 | Heat source unit Operation mode | | Permissible stop | Standby | Cooling | Cooling-main | Heating | Heating-main | | | A | A | |
| 42 | 0101010000 | Heat source unit control mode | | Stop | Thermo OFF | Abnormal stop | Scheduled con-trol | Initial start up | Defrost | Oil balance | Low frequency oil recovery | A | A | |
| 43 | 1101010000 | | | Warm-up mode | Refrigerant re-covery | | | | | | | A | A | |
| 45 | 1011010000 | TH4 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 46 | 0111010000 | TH3 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 47 | 1111010000 | TH7 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 48 | 0000110000 | TH6 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 49 | 1000110000 | TH2 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 50 | 0100110000 | TH5 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 51 | 1100110000 | TH8 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 53 | 1010110000 | THINV | | -99.9 to 999.9 | | | | | | | | A | A | Unit in [°C] |
| 56 | 0001110000 | THHS1 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 58 | 0101110000 | High-pressure sensor data | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [kgf/cm$^2$] |
| 59 | 1101110000 | Low-pressure sensor data | | -99.9 to 999.9 | | | | | | | | A | A | |
| 78 | 0111001000 | ∑ Qj | | 0000 to 9999 | | | | | | | | B | B | |
| 79 | 1111001000 | ∑ Qjc | | 0000 to 9999 | | | | | | | | B | B | |
| 80 | 0000101000 | ∑ Qjh | | 0000 to 9999 | | | | | | | | B | B | |
| 81 | 1000101000 | Target Tc | | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 82 | 0100101000 | Target Te | | -99.9 to 999.9 | | | | | | | | B | | |
| 83 | 1100101000 | Tc | | -99.9 to 999.9 | | | | | | | | A | A | |
| 84 | 0010101000 | Te | | -99.9 to 999.9 | | | | | | | | A | A | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 86 | 0110101000 | Total frequencies (OC+OS) | 0000 to 9999 | | | | | | | | B | | Control data [ Hz ] |
| 87 | 1110101000 | Total frequency of each unit | 0000 to 9999 | | | | | | | | A | A | |
| 88 | 0001101000 | COMP frequency | 0000 to 9999 | | | | | | | | A | A | |
| 91 | 1101101000 | Comp operating frequency | 0000 to 9999 | | | | | | | | A | A | Unit in [rsp]<br>The inverter output current (voltage) frequency will equal the integer multiples of the operating frequency of the compressor. |
| 92 | 0011101000 | Number of times error occurred during IH crankcase heating by compressor motor | 0000 to 9999 | | | | | | | | A | A | Number of times INV error occurred during IH crankcase heating by compressor motor |
| 93 | 1011101000 | All AK (OC+OS) | 0000 to 9999 | | | | | | | | B | | |
| 94 | 0111101000 | AK | 0000 to 9999 | | | | | | | | A | A | |
| 99 | 1100011000 | LEV6 | 0000 to 9999 | | | | | | | | A | A | Heat source unit LEV opening (Fully open: 1400) |
| 100 | 0010011000 | LEV7 | 0000 to 9999 | | | | | | | | A | A | Heat source unit LEV opening (Fully open: 1400) |
| 102 | 0110011000 | LEVINV | 0 to 480 | | | | | | | | A | A | Heat source unit LEV opening (Fully open: 480) |
| 103 | 1110011000 | LEV1 | 0 to 480 | | | | | | | | A | A | Heat source unit LEV opening (Fully open: 480) |
| 108 | 0011011000 | COMP operating current (DC) | 00.0 to 999.9 | | | | | | | | A | A | Peak value[A] |
| 111 | 1111011000 | COMP bus voltage | 00.0 to 999.9 | | | | | | | | A | A | The unit is [ V ] |
| 116 | 0010111000 | Number of times the unit went into the mode to remedy wet vapor suction | 0000 to 9999 | | | | | | | | B | | |
| 117 | 1010111000 | COMP Operation time Upper 4 digits | 0000 to 9999 | | | | | | | | A | A | The unit is [ h ] |
| 118 | 0110111000 | COMP Operation time Lower 4 digits | 0000 to 9999 | | | | | | | | A | A | |
| 121 | 1001111000 | Backup mode | Abnormal pressure rise | High-pressure drop | Low-pressure drop | Abnormal Td rise | | Control box temperature rise | | | A | A | Stays lit for 90 seconds after the completion of backup control |
| 123 | 1101111000 | COMP number of start-stop events Upper 4 digits | 0000 to 9999 | | | | | | | | A | A | Count-up at start-up<br>The unit is [Time] |
| 124 | 0011111000 | COMP number of start-stop events Lower 4 digits | 0000 to 9999 | | | | | | | | A | A | |
| 129 | 1000000100 | Integrated operation time of compressor (for rotation purpose) | 0000 to 9999 | | | | | | | | B | | The unit is [ h ] |
| 132 | 0010000100 | | | | | | | | | | | | |
| 133 | 1010000100 | | | | | | | | | | | | |
| 134 | 0110000100 | | | | | | | | | | | | |
| 135 | 1110000100 | | | | | | | | | | | | |
| 136 | 0001000100 | | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 138 | 0101000100 | | | | | | | | | | | | |
| 139 | 1101000100 | | | | | | | | | | | | |
| 140 | 0011000100 | | | | | | | | | | | | |
| 141 | 1011000100 | | | | | | | | | | | | |
| 143 | 1111000100 | | | | | | | | | | | | |
| 144 | 0000100100 | | | | | | | | | | | | |
| 145 | 1000100100 | | | | | | | | | | | | |
| 146 | 0100100100 | | | | | | | | | | | | |
| 149 | 1010100100 | | | | | | | | | | | | |
| 150 | 0110100100 | | | | | | | | | | | | |
| 151 | 1110100100 | | | | | | | | | | | | |
| 152 | 0001100100 | | | | | | | | | | | | |
| 153 | 1001100100 | | | | | | | | | | | | |
| 154 | 0101100100 | | | | | | | | | | | | |
| 155 | 1101100100 | | | | | | | | | | | | |
| 156 | 0011100100 | | | | | | | | | | | | |
| 157 | 1011100100 | | | | | | | | | | | | |
| 158 | 0111100100 | | | | | | | | | | | | |
| 159 | 1111100100 | | | | | | | | | | | | |
| 160 | 0000010100 | | | | | | | | | | | | |
| 161 | 1000010100 | | | | | | | | | | | | |
| 162 | 0100010100 | | | | | | | | | | | | |
| 163 | 1100010100 | | | | | | | | | | | | |
| 164 | 0010010100 | | | | | | | | | | | | |
| 165 | 1010010100 | | | | | | | | | | | | |
| 166 | 0110010100 | | | | | | | | | | | | |
| 167 | 1110010100 | | | | | | | | | | | | |
| 178 | 0100110100 | Error history 1 | 0000 to 9999 | | | | | | | | B | B | Address and error codes highlighted<br>If no errors are detected, "---- " appears on the display.<br>Preliminary error information of the OS does not appear on the OC.<br>Neither preliminary error information of the OC nor error information of the IC appears on the OS. |
| 179 | 1100110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 180 | 0010110100 | Error history 2 | 0000 to 9999 | | | | | | | | B | B | |
| 181 | 1010110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 182 | 0110110100 | Error history 3 | 0000 to 9999 | | | | | | | | B | B | |
| 183 | 1110110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 184 | 0001110100 | Error history 4 | 0000 to 9999 | | | | | | | | B | B | |
| 185 | 1001110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 186 | 0101110100 | Error history 5 | 0000 to 9999 | | | | | | | | B | B | |
| 187 | 1101110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 188 | 0011110100 | Error history 6 | 0000 to 9999 | | | | | | | | B | B | Address and error codes highlighted<br>If no errors are detected, "---- " appears on the display.<br>Preliminary error information of the OS does not appear on the OC.<br>Neither preliminary error information of the OC nor error information of the IC appears on the OS. |
| 189 | 1011110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 190 | 0111110100 | Error history 7 | 0000 to 9999 | | | | | | | | B | B | |
| 191 | 1111110100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 192 | 0000001100 | Error history 8 | 0000 to 9999 | | | | | | | | B | B | |
| 193 | 1000001100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 194 | 0100001100 | Error history 9 | 0000 to 9999 | | | | | | | | B | B | |
| 195 | 1100001100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 196 | 0010001100 | Error history 10 | 0000 to 9999 | | | | | | | | B | B | |
| 197 | 1010001100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |
| 198 | 0110001100 | Error history of inverter (At the time of last data back-up before error) | 0000 to 9999 | | | | | | | | B | B | |
| 199 | 1110001100 | Error details of inverter | Error details of inverter (0001-0120) | | | | | | | | A | A | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Error history**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 201 | 1001001100 | Heat source unit operation status | | BC operation signal | Warm-up mode | 3-minutes restart mode | Compressor in operation | Preliminary error | Error | 3-minutes restart after instantaneous power failure | Preliminary low pressure error | A | A | |
| 202 | 0101001100 | OC/OS identification | | OC/OS-1/OS-2 | | | | | | | | A | A | |
| 203 | 1101001100 | | | | | | | | | | | | | |
| 205 | 1011001100 | Heat source unit Operation mode | | Permissible stop | Standby | Cooling | Cooling-main | Heating | Heating-main | | | A | A | |
| 208 | 0000101100 | Heat source unit control mode | | Stop | Thermo OFF | Abnormal stop | Scheduled control | Initial start up | | Oil balance | Low frequency oil recovery | A | A | |
| 209 | 1000101100 | | | Warm-up mode | Refrigerant recovery | | | | | | | A | A | |
| 211 | 1100101100 | Relay output display 1 Lighting | | Comp in operation | | | | 72C | | OC | Always lit | A | A | |
| 212 | 0010101100 | Relay output display 2 Lighting | Top | 21S4a | | CH11 | | SV1a | | | | A | A | |
| | | | Bottom | | | 21S4b | | | | | | | | |
| 213 | 1010101100 | Relay output display 3 Lighting | Top | SV4a | SV4b | | | | SV4d | SV9 | Lit while power to the indoor units is being supplied | A | A | |
| | | | Bottom | SV7a | SV7b | | SV7c | | | | | | | |
| 216 | 0001101100 | TH4 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 217 | 1001101100 | TH3 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 218 | 0101101100 | TH7 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 219 | 1101101100 | TH6 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 220 | 0011101100 | TH2 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 221 | 1011101100 | TH5 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 222 | 0111101100 | TH8 | | -99.9 to 999.9 | | | | | | | | A | A | |
| 224 | 0000011100 | THINV | | -99.9 to 999.9 | | | | | | | | A | A | Unit in [°C] |
| 227 | 1100011100 | THHS1 | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 229 | 1010011100 | High-pressure sensor data | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [kgf/cm$^2$] |
| 230 | 0110011100 | Low-pressure sensor data | | -99.9 to 999.9 | | | | | | | | A | A | |
| 249 | 1001111100 | ∑ Qj | | 0000 to 9999 | | | | | | | | B | B | |
| 250 | 0101111100 | ∑ Qjc | | 0000 to 9999 | | | | | | | | B | B | |
| 251 | 1101111100 | ∑ Qjh | | 0000 to 9999 | | | | | | | | B | B | |
| 252 | 0011111100 | Target Tc | | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 253 | 1011111100 | Target Te | | -99.9 to 999.9 | | | | | | | | B | | |
| 254 | 0111111100 | Tc | | -99.9 to 999.9 | | | | | | | | A | A | The unit is [°C] |
| 255 | 1111111100 | Te | | -99.9 to 999.9 | | | | | | | | A | A | |
| 257 | 1000000010 | Total frequencies (OC+OS) | | 0000 to 9999 | | | | | | | | B | | Control data [ Hz ] |
| 258 | 0100000010 | Total frequency of each unit | | 0000 to 9999 | | | | | | | | A | A | |
| 259 | 1100000010 | COMP frequency | | 0000 to 9999 | | | | | | | | A | A | |
| 262 | 0110000010 | Comp operating frequency | | 0000 to 9999 | | | | | | | | A | A | Unit in [rps] |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Error history**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 264 | 0001000010 | All AK (OC+OS) | 0000 to 9999 | | | | | | | | B | | |
| 265 | 1001000010 | AK | 0000 to 9999 | | | | | | | | A | A | |
| 270 | 0111000010 | LEV6 | 0000 to 9999 | | | | | | | | A | A | Heat source unit LEV opening (Fully open: 1400) |
| 271 | 1111000010 | LEV7 | 0000 to 9999 | | | | | | | | A | A | Heat source unit LEV opening (Fully open: 1400) |
| 273 | 1000100010 | LEVINV | 0 to 480 | | | | | | | | A | A | Heat source unit LEV opening (Fully open: 480) |
| 274 | 0100100010 | LEV1 | 0 to 480 | | | | | | | | A | A | Heat source unit LEV opening (Fully open: 480) |
| 279 | 1110100010 | COMP operating current (DC) | 00.0 to 999.9 | | | | | | | | A | A | Peak value [A] |
| 282 | 0101100010 | COMP bus voltage | 00.0 to 999.9 | | | | | | | | A | A | The unit is [ V ] |
| 288 | 0000010010 | COMP Operation time Upper 4 digits | 0000 to 9999 | | | | | | | | A | A | The unit is [ h ] |
| 289 | 1000010010 | COMP Operation time Lower 4 digits | 0000 to 9999 | | | | | | | | A | A | |
| 294 | 0110010010 | COMP number of start-stop events Upper 4 digits | 0000 to 9999 | | | | | | | | A | A | Count-up at start-up The unit is [Time] |
| 295 | 1110010010 | COMP number of start-stop events Lower 4 digits | 0000 to 9999 | | | | | | | | A | A | |
| 300 | 0011010010 | Integrated operation time of compressor (for rotation purpose) | 0000 to 9999 | | | | | | | | B | | The unit is [ h ] |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Current data**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 301 | 1011010010 | Power supply unit | OC/OS-1/OS-2 <-> Address | | | | | | | | B | | |
| 302 | 0111010010 | Start-up unit | OC/OS-1/OS-2 <-> Address | | | | | | | | B | | |
| 320 | 0000001010 | | | | | | | | | | | | |
| 321 | 1000001010 | | | | | | | | | | | | |
| 322 | 0100001010 | | | | | | | | | | | | |
| 323 | 1100001010 | | | | | | | | | | | | |
| 324 | 0010001010 | | | | | | | | | | | | |
| 325 | 1010001010 | | | | | | | | | | | | |
| 330 | 0101001010 | | | | | | | | | | | | |
| 331 | 1101001010 | | | | | | | | | | | | |
| 332 | 0011001010 | | | | | | | | | | | | |
| 333 | 1011001010 | | | | | | | | | | | | |
| 334 | 0111001010 | | | | | | | | | | | | |
| 335 | 1111001010 | | | | | | | | | | | | |
| 336 | 0000101010 | | | | | | | | | | | | |
| 337 | 1000101010 | | | | | | | | | | | | |
| 338 | 0100101010 | | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 351 | 1111101010 | IC1 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | B | | Displayed alternately every 5 seconds |
| 352 | 0000011010 | IC2 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 353 | 1000011010 | IC3 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 354 | 0100011010 | IC4 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 355 | 1100011010 | IC5 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 356 | 0010011010 | IC6 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 357 | 1010011010 | IC7 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 358 | 0110011010 | IC8 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 359 | 1110011010 | IC9 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 360 | 0001011010 | IC10 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 361 | 1001011010 | IC11 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 362 | 0101011010 | IC12 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 363 | 1101011010 | IC13 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 364 | 0011011010 | IC14 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 365 | 1011011010 | IC15 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 366 | 0111011010 | IC16 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 367 | 1111011010 | IC17 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 368 | 0000111010 | IC18 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 369 | 1000111010 | IC19 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 370 | 0100111010 | IC20 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 371 | 1100111010 | IC21 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 372 | 0010111010 | IC22 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 373 | 1010111010 | IC23 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 374 | 0110111010 | IC24 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 375 | 1110111010 | IC25 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 376 | 0001111010 | IC26 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 377 | 1001111010 | IC27 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 378 | 0101111010 | IC28 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 379 | 1101111010 | IC29 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 380 | 0011111010 | IC30 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 381 | 1011111010 | IC31 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 382 | 0111111010 | IC32 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 383 | 1111111010 | IC33 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 384 | 0000000110 | IC34 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 385 | 1000000110 | IC35 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 378 | 0101111010 | IC28 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 379 | 1101111010 | IC29 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 380 | 0011111010 | IC30 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 381 | 1011111010 | IC31 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | B | | Displayed alternately every 5 seconds |
| 382 | 0111111010 | IC32 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 383 | 1111111010 | IC33 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 384 | 0000000110 | IC34 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 385 | 1000000110 | IC35 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 386 | 0100000110 | IC36 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 387 | 1100000110 | IC37 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 388 | 0010000110 | IC38 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 389 | 1010000110 | IC39 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 390 | 0110000110 | IC40 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 391 | 1110000110 | IC41 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 392 | 0001000110 | IC42 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 393 | 1001000110 | IC43 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 394 | 0101000110 | IC44 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 395 | 1101000110 | IC45 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 396 | 0011000110 | IC46 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 397 | 1011000110 | IC47 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 398 | 0111000110 | IC48 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 399 | 1111000110 | IC49 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 400 | 0000100110 | IC50 Address/capacity code | 0000 to 9999 | | | | 0000 to 9999 | | | | | | |
| 408 | 0001100110 | IC1 Suction temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 409 | 1001100110 | IC2 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 410 | 0101100110 | IC3 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 411 | 1101100110 | IC4 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 412 | 0011100110 | IC5 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 413 | 1011100110 | IC6 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 414 | 0111100110 | IC7 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 415 | 1111100110 | IC8 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 416 | 0000010110 | IC9 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 417 | 1000010110 | IC10 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 418 | 0100010110 | IC11 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 419 | 1100010110 | IC12 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 420 | 0010010110 | IC13 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 421 | 1010010110 | IC14 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 422 | 0110010110 | IC15 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 423 | 1110010110 | IC16 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 424 | 0001010110 | IC17 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 425 | 1001010110 | IC18 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 426 | 0101010110 | IC19 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 427 | 1101010110 | IC20 Suction temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 428 | 0011010110 | IC21 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 429 | 1011010110 | IC22 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 430 | 0111010110 | IC23 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 431 | 1111010110 | IC24 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 432 | 0000110110 | IC25 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 433 | 1000110110 | IC26 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 434 | 0100110110 | IC27 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 435 | 1100110110 | IC28 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 436 | 0010110110 | IC29 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 437 | 1010110110 | IC30 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 438 | 0110110110 | IC31 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 439 | 1110110110 | IC32 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 440 | 0001110110 | IC33 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 441 | 1001110110 | IC34 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 442 | 0101110110 | IC35 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 443 | 1101110110 | IC36 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 444 | 0011110110 | IC37 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 445 | 1011110110 | IC38 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 446 | 0111110110 | IC39 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 447 | 1111110110 | IC40 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 448 | 0000001110 | IC41 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 449 | 1000001110 | IC42 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 450 | 0100001110 | IC43 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 451 | 1100001110 | IC44 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 452 | 0010001110 | IC45 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 453 | 1010001110 | IC46 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 454 | 0110001110 | IC47 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 455 | 1110001110 | IC48 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 456 | 0001001110 | IC49 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 457 | 1001001110 | IC50 Suction temperature | -99.9 to 999.9 | | | | | | | | | | |
| 458 | 0101001110 | IC1 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 459 | 1101001110 | IC2 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 460 | 0011001110 | IC3 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 461 | 1011001110 | IC4 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 462 | 0111001110 | IC5 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 463 | 1111001110 | IC6 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 464 | 0000101110 | IC7 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 465 | 1000101110 | IC8 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 466 | 0100101110 | IC9 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 467 | 1100101110 | IC10 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 468 | 0010101110 | IC11 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 469 | 1010101110 | IC12 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 470 | 0110101110 | IC13 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 471 | 1110101110 | IC14 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 472 | 0001101110 | IC15 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 473 | 1001101110 | IC16 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 474 | 0101101110 | IC17 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 475 | 1101101110 | IC18 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 476 | 0011101110 | IC19 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 477 | 1011101110 | IC20 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 478 | 0111101110 | IC21 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 479 | 1111101110 | IC22 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 480 | 0000011110 | IC23 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 481 | 1000011110 | IC24 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 482 | 0100011110 | IC25 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 483 | 1100011110 | IC26 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 484 | 0010011110 | IC27 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 485 | 1010011110 | IC28 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 486 | 0110011110 | IC29 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 487 | 1110011110 | IC30 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 488 | 0001011110 | IC31 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 489 | 1001011110 | IC32 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 490 | 0101011110 | IC33 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 491 | 1101011110 | IC34 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 492 | 0011011110 | IC35 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 493 | 1011011110 | IC36 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 494 | 0111011110 | IC37 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 495 | 1111011110 | IC38 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 496 | 0000111110 | IC39 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 497 | 1000111110 | IC40 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 498 | 0100111110 | IC41 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 499 | 1100111110 | IC42 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 500 | 0010111110 | IC43 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 501 | 1010111110 | IC44 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 502 | 0110111110 | IC45 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 503 | 1110111110 | IC46 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 504 | 0001111110 | IC47 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 505 | 1001111110 | IC48 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 506 | 0101111110 | IC49 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 507 | 1101111110 | IC50 Liquid pipe temperature | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Setting data**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 512 | 0000000001 | Self-address | Alternate display of self address and unit model | | | | | | | | A | A | |
| 513 | 1000000001 | IC/FU address | Count-up display of number of connected units | | | | | | | | B | | |
| 514 | 0100000001 | RC address | Count-up display of number of connected units | | | | | | | | B | | |
| 515 | 1100000001 | BC/BS/TU address | Count-up display of number of connected units | | | | | | | | B | | |
| 516 | 0010000001 | OS address | Count-up display of number of connected units | | | | | | | | B | | |
| 517 | 1010000001 | Version/Capacity | S/W version -> Refrigerant type -> Model and capacity -> Communication address | | | | | | | | A | A | |
| 518 | 0110000001 | OC address | OC address display | | | | | | | | | B | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 523 | 1101000001 | IC1 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 524 | 0011000001 | IC2 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 525 | 1011000001 | IC3 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 526 | 0111000001 | IC4 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 527 | 1111000001 | IC5 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 528 | 0000100001 | IC6 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 529 | 1000100001 | IC7 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 530 | 0100100001 | IC8 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 531 | 1100100001 | IC9 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 532 | 0010100001 | IC10 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 533 | 1010100001 | IC11 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 534 | 0110100001 | IC12 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 535 | 1110100001 | IC13 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 536 | 0001100001 | IC14 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 537 | 1001100001 | IC15 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 538 | 0101100001 | IC16 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 539 | 1101100001 | IC17 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 540 | 0011100001 | IC18 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 541 | 1011100001 | IC19 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 542 | 0111100001 | IC20 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 543 | 1111100001 | IC21 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 544 | 0000010001 | IC22 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 545 | 1000010001 | IC23 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 546 | 0100010001 | IC24 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 547 | 1100010001 | IC25 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 548 | 0010010001 | IC26 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 549 | 1010010001 | IC27 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 550 | 0110010001 | IC28 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 551 | 1110010001 | IC29 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 552 | 0001010001 | IC30 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 553 | 1001010001 | IC31 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 554 | 0101010001 | IC32 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 555 | 1101010001 | IC33 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 556 | 0011010001 | IC34 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 557 | 1011010001 | IC35 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 558 | 0111010001 | IC36 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 559 | 1111010001 | IC37 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 560 | 0000110001 | IC38 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 561 | 1000110001 | IC39 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 562 | 0100110001 | IC40 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 563 | 1100110001 | IC41 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 564 | 0010110001 | IC42 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 565 | 1010110001 | IC43 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 566 | 0110110001 | IC44 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 567 | 1110110001 | IC45 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 568 | 0001110001 | IC46 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 569 | 1001110001 | IC47 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 570 | 0101110001 | IC48 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 571 | 1101110001 | IC49 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 572 | 0011110001 | IC50 Gas pipe temperature | -99.9 to 999.9 | | | | | | | | | | |
| 573 | 1011110001 | IC1SH | -99.9 to 999.9 | | | | | | | | | | |
| 574 | 0111110001 | IC2SH | -99.9 to 999.9 | | | | | | | | | | |
| 575 | 1111110001 | IC3SH | -99.9 to 999.9 | | | | | | | | | | |
| 576 | 0000001001 | IC4SH | -99.9 to 999.9 | | | | | | | | | | |
| 577 | 1000001001 | IC5SH | -99.9 to 999.9 | | | | | | | | | | |
| 578 | 0100001001 | IC6SH | -99.9 to 999.9 | | | | | | | | | | |
| 579 | 1100001001 | IC7SH | -99.9 to 999.9 | | | | | | | | | | |
| 580 | 0010001001 | IC8SH | -99.9 to 999.9 | | | | | | | | | | |
| 581 | 1010001001 | IC9SH | -99.9 to 999.9 | | | | | | | | | | |
| 582 | 0110001001 | IC10SH | -99.9 to 999.9 | | | | | | | | | | |
| 583 | 1110001001 | IC11SH | -99.9 to 999.9 | | | | | | | | | | |
| 584 | 0001001001 | IC12SH | -99.9 to 999.9 | | | | | | | | | | |
| 585 | 1001001001 | IC13SH | -99.9 to 999.9 | | | | | | | | | | |
| 586 | 0101001001 | IC14SH | -99.9 to 999.9 | | | | | | | | | | |
| 587 | 1101001001 | IC15SH | -99.9 to 999.9 | | | | | | | | | | |
| 588 | 0011001001 | IC16SH | -99.9 to 999.9 | | | | | | | | | | |
| 589 | 1011001001 | IC17SH | -99.9 to 999.9 | | | | | | | | | | |
| 590 | 0111001001 | IC18SH | -99.9 to 999.9 | | | | | | | | | | |
| 591 | 1111001001 | IC19SH | -99.9 to 999.9 | | | | | | | | | | |
| 592 | 0000101001 | IC20SH | -99.9 to 999.9 | | | | | | | | | | |
| 593 | 1000101001 | IC21SH | -99.9 to 999.9 | | | | | | | | | | |
| 594 | 0100101001 | IC22SH | -99.9 to 999.9 | | | | | | | | | | |
| 595 | 1100101001 | IC23SH | -99.9 to 999.9 | | | | | | | | | | |
| 596 | 0010101001 | IC24SH | -99.9 to 999.9 | | | | | | | | | | |
| 597 | 1010101001 | IC25SH | -99.9 to 999.9 | | | | | | | | | | |
| 598 | 0110101001 | IC26SH | -99.9 to 999.9 | | | | | | | | | | |
| 599 | 1110101001 | IC27SH | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 600 | 0001101001 | IC28SH | -99.9 to 999.9 | | | | | | | | B | | The unit is [°C] |
| 601 | 1001101001 | IC29SH | -99.9 to 999.9 | | | | | | | | | | |
| 602 | 0101101001 | IC30SH | -99.9 to 999.9 | | | | | | | | | | |
| 603 | 1101101001 | IC31SH | -99.9 to 999.9 | | | | | | | | | | |
| 604 | 0011101001 | IC32SH | -99.9 to 999.9 | | | | | | | | | | |
| 605 | 1011101001 | IC33SH | -99.9 to 999.9 | | | | | | | | | | |
| 606 | 0111101001 | IC34SH | -99.9 to 999.9 | | | | | | | | | | |
| 607 | 1111101001 | IC35SH | -99.9 to 999.9 | | | | | | | | | | |
| 608 | 0000011001 | IC36SH | -99.9 to 999.9 | | | | | | | | | | |
| 609 | 1000011001 | IC37SH | -99.9 to 999.9 | | | | | | | | | | |
| 610 | 0100011001 | IC38SH | -99.9 to 999.9 | | | | | | | | | | |
| 611 | 1100011001 | IC39SH | -99.9 to 999.9 | | | | | | | | | | |
| 612 | 0010011001 | IC40SH | -99.9 to 999.9 | | | | | | | | | | |
| 613 | 1010011001 | IC41SH | -99.9 to 999.9 | | | | | | | | | | |
| 614 | 0110011001 | IC42SH | -99.9 to 999.9 | | | | | | | | | | |
| 615 | 1110011001 | IC43SH | -99.9 to 999.9 | | | | | | | | | | |
| 616 | 0001011001 | IC44SH | -99.9 to 999.9 | | | | | | | | | | |
| 617 | 1001011001 | IC45SH | -99.9 to 999.9 | | | | | | | | | | |
| 618 | 0101011001 | IC46SH | -99.9 to 999.9 | | | | | | | | | | |
| 619 | 1101011001 | IC47SH | -99.9 to 999.9 | | | | | | | | | | |
| 620 | 0011011001 | IC48SH | -99.9 to 999.9 | | | | | | | | | | |
| 621 | 1011011001 | IC49SH | -99.9 to 999.9 | | | | | | | | | | |
| 622 | 0111011001 | IC50SH | -99.9 to 999.9 | | | | | | | | | | |
| 623 | 1111011001 | IC1SC | -99.9 to 999.9 | | | | | | | | | | |
| 624 | 0000111001 | IC2SC | -99.9 to 999.9 | | | | | | | | | | |
| 625 | 1000111001 | IC3SC | -99.9 to 999.9 | | | | | | | | | | |
| 626 | 0100111001 | IC4SC | -99.9 to 999.9 | | | | | | | | | | |
| 627 | 1100111001 | IC5SC | -99.9 to 999.9 | | | | | | | | | | |
| 628 | 0010111001 | IC6SC | -99.9 to 999.9 | | | | | | | | | | |
| 629 | 1010111001 | IC7SC | -99.9 to 999.9 | | | | | | | | | | |
| 630 | 0110111001 | IC8SC | -99.9 to 999.9 | | | | | | | | | | |
| 631 | 1110111001 | IC9SC | -99.9 to 999.9 | | | | | | | | | | |
| 632 | 0001111001 | IC10SC | -99.9 to 999.9 | | | | | | | | | | |
| 633 | 1001111001 | IC11SC | -99.9 to 999.9 | | | | | | | | | | |
| 634 | 0101111001 | IC12SC | -99.9 to 999.9 | | | | | | | | | | |
| 635 | 1101111001 | IC13SC | -99.9 to 999.9 | | | | | | | | | | |
| 636 | 0011111001 | IC14SC | -99.9 to 999.9 | | | | | | | | | | |
| 637 | 1011111001 | IC15SC | -99.9 to 999.9 | | | | | | | | | | |
| 638 | 0111111001 | IC16SC | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 639 | 1111111001 | IC17SC | -99.9 to 999.9 | | | | | | | | B | | The unit is [ °C ] |
| 640 | 0000000101 | IC18SC | -99.9 to 999.9 | | | | | | | | | | |
| 641 | 1000000101 | IC19SC | -99.9 to 999.9 | | | | | | | | | | |
| 642 | 0100000101 | IC20SC | -99.9 to 999.9 | | | | | | | | | | |
| 643 | 1100000101 | IC21SC | -99.9 to 999.9 | | | | | | | | | | |
| 644 | 0010000101 | IC22SC | -99.9 to 999.9 | | | | | | | | | | |
| 645 | 1010000101 | IC23SC | -99.9 to 999.9 | | | | | | | | | | |
| 646 | 0110000101 | IC24SC | -99.9 to 999.9 | | | | | | | | | | |
| 647 | 1110000101 | IC25SC | -99.9 to 999.9 | | | | | | | | | | |
| 648 | 0001000101 | IC26SC | -99.9 to 999.9 | | | | | | | | | | |
| 649 | 1001000101 | IC27SC | -99.9 to 999.9 | | | | | | | | | | |
| 650 | 0101000101 | IC28SC | -99.9 to 999.9 | | | | | | | | | | |
| 651 | 1101000101 | IC29SC | -99.9 to 999.9 | | | | | | | | | | |
| 652 | 0011000101 | IC30SC | -99.9 to 999.9 | | | | | | | | | | |
| 653 | 1011000101 | IC31SC | -99.9 to 999.9 | | | | | | | | | | |
| 654 | 0111000101 | IC32SC | -99.9 to 999.9 | | | | | | | | | | |
| 655 | 1111000101 | IC33SC | -99.9 to 999.9 | | | | | | | | | | |
| 656 | 0000100101 | IC34SC | -99.9 to 999.9 | | | | | | | | | | |
| 657 | 1000100101 | IC35SC | -99.9 to 999.9 | | | | | | | | | | |
| 658 | 0100100101 | IC36SC | -99.9 to 999.9 | | | | | | | | | | |
| 659 | 1100100101 | IC37SC | -99.9 to 999.9 | | | | | | | | | | |
| 660 | 0010100101 | IC38SC | -99.9 to 999.9 | | | | | | | | | | |
| 661 | 1010100101 | IC39SC | -99.9 to 999.9 | | | | | | | | | | |
| 662 | 0110100101 | IC40SC | -99.9 to 999.9 | | | | | | | | | | |
| 663 | 1110100101 | IC41SC | -99.9 to 999.9 | | | | | | | | | | |
| 664 | 0001100101 | IC42SC | -99.9 to 999.9 | | | | | | | | | | |
| 665 | 1001100101 | IC43SC | -99.9 to 999.9 | | | | | | | | | | |
| 666 | 0101100101 | IC44SC | -99.9 to 999.9 | | | | | | | | | | |
| 667 | 1101100101 | IC45SC | -99.9 to 999.9 | | | | | | | | | | |
| 668 | 0011100101 | IC46SC | -99.9 to 999.9 | | | | | | | | | | |
| 669 | 1011100101 | IC47SC | -99.9 to 999.9 | | | | | | | | | | |
| 670 | 0111100101 | IC48SC | -99.9 to 999.9 | | | | | | | | | | |
| 671 | 1111100101 | IC49SC | -99.9 to 999.9 | | | | | | | | | | |
| 672 | 0000010101 | IC50SC | -99.9 to 999.9 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Setting data**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 676 | 0010010101 | INV board S/W version | 0.00 to 99.99 | | | | | | | | A | A | |
| 688 | 0000110101 | Current time | 00:00 to 23:59 | | | | | | | | A | A | Hour: minute |
| 689 | 1000110101 | Current time -2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 690 | 0100110101 | Time of error detection 1 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 691 | 1100110101 | Time of error detection 1-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 692 | 0010110101 | Time of error detection 2 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 693 | 1010110101 | Time of error detection 2-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 694 | 0110110101 | Time of error detection 3 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 695 | 1110110101 | Time of error detection 3-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 696 | 0001110101 | Time of error detection 4 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 697 | 1001110101 | Time of error detection 4-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 698 | 0101110101 | Time of error detection 5 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 699 | 1101110101 | Time of error detection 5-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 700 | 0011110101 | Time of error detection 6 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 701 | 1011110101 | Time of error detection 6-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 702 | 0111110101 | Time of error detection 7 | 00:00 to 23:59 | | | | | | | | A | A | Hour: minute |
| 703 | 1111110101 | Time of error detection 7-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 704 | 0000001101 | Time of error detection 8 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 705 | 1000001101 | Time of error detection 8-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 706 | 0100001101 | Time of error detection 9 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 707 | 1100001101 | Time of error detection 9-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 708 | 0010001101 | Time of error detection 10 | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 709 | 1010001101 | Time of error detection 10-2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |
| 710 | 0110001101 | Time of last data backup before error | 00:00 to 23:59 | | | | | | | | | | Hour: minute |
| 711 | 1110001101 | Time of last data backup before error -2 | 00.00 to 99.12/1 to 31 | | | | | | | | | | Year and month, and date alternate display |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 714 | 0101001101 | | | | | | | | | | | | |
| 715 | 1101001101 | | | | | | | | | | | | |
| 716 | 0011001101 | | | | | | | | | | | | |
| 717 | 1011001101 | | | | | | | | | | | | |
| 718 | 0111001101 | | | | | | | | | | | | |
| 719 | 1111001101 | | | | | | | | | | | | |
| 720 | 0000101101 | | | | | | | | | | | | |
| 721 | 1000101101 | | | | | | | | | | | | |
| 722 | 0100101101 | | | | | | | | | | | | |
| 723 | 1100101101 | | | | | | | | | | | | |
| 724 | 0010101101 | | | | | | | | | | | | |
| 725 | 1010101101 | | | | | | | | | | | | |
| 726 | 0110101101 | | | | | | | | | | | | |
| 727 | 1110101101 | | | | | | | | | | | | |
| 728 | 0001101101 | | | | | | | | | | | | |
| 729 | 1001101101 | | | | | | | | | | | | |
| 730 | 0101101101 | | | | | | | | | | | | |
| 731 | 1101101101 | | | | | | | | | | | | |
| 732 | 0011101101 | | | | | | | | | | | | |
| 733 | 1011101101 | | | | | | | | | | | | |
| 734 | 0111101101 | | | | | | | | | | | | |
| 735 | 1111101101 | | | | | | | | | | | | |
| 736 | 0000011101 | | | | | | | | | | | | |
| 737 | 1000011101 | | | | | | | | | | | | |
| 738 | 0100011101 | | | | | | | | | | | | |
| 739 | 1100011101 | | | | | | | | | | | | |
| 740 | 0010011101 | | | | | | | | | | | | |
| 741 | 1010011101 | | | | | | | | | | | | |
| 742 | 0110011101 | | | | | | | | | | | | |
| 743 | 1110011101 | | | | | | | | | | | | |
| 744 | 0001011101 | | | | | | | | | | | | |
| 745 | 1001011101 | | | | | | | | | | | | |
| 746 | 0101011101 | | | | | | | | | | | | |
| 747 | 1101011101 | | | | | | | | | | | | |
| 748 | 0011011101 | | | | | | | | | | | | |
| 749 | 1011011101 | | | | | | | | | | | | |
| 750 | 0111011101 | | | | | | | | | | | | |
| 751 | 1111011101 | | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 752 | 0000111101 | | | | | | | | | | | | |
| 753 | 1000111101 | | | | | | | | | | | | |
| 754 | 0100111101 | | | | | | | | | | | | |
| 755 | 1100111101 | | | | | | | | | | | | |
| 756 | 0010111101 | | | | | | | | | | | | |
| 757 | 1010111101 | | | | | | | | | | | | |
| 758 | 0110111101 | | | | | | | | | | | | |
| 759 | 1110111101 | | | | | | | | | | | | |
| 760 | 0001111101 | | | | | | | | | | | | |
| 761 | 1001111101 | | | | | | | | | | | | |
| 762 | 0101111101 | | | | | | | | | | | | |
| 763 | 1101111101 | | | | | | | | | | | | |
| 764 | 0011111101 | IC1 Operation mode | 0000 : Stop 0001 : Ventilation 0002 : Cooling 0003 : Heating 0004 : Dry | | | | | | | | B | | When WR2 is used, the four LDs on the left (LD1-4) display operation mode, and the four LDs on the right (LD5-LD8) display port address. (Displayed alternately every five seconds) |
| 765 | 1011111101 | IC2 Operation mode | | | | | | | | | | | |
| 766 | 0111111101 | IC3Operation mode | | | | | | | | | | | |
| 767 | 1111111101 | IC4 Operation mode | | | | | | | | | | | |
| 768 | 0000000011 | IC5 Operation mode | | | | | | | | | | | |
| 769 | 1000000011 | IC6 Operation mode | | | | | | | | | | | |
| 770 | 0100000011 | IC7 Operation mode | | | | | | | | | | | |
| 771 | 1100000011 | IC8 Operation mode | | | | | | | | | | | |
| 772 | 0010000011 | IC9 Operation mode | | | | | | | | | | | |
| 773 | 1010000011 | IC10 Operation mode | | | | | | | | | | | |
| 774 | 0110000011 | IC11 Operation mode | | | | | | | | | | | |
| 775 | 1110000011 | IC12 Operation mode | | | | | | | | | | | |
| 776 | 0001000011 | IC13 Operation mode | | | | | | | | | | | |
| 777 | 1001000011 | IC14 Operation mode | | | | | | | | | | | |
| 778 | 0101000011 | IC15 Operation mode | | | | | | | | | | | |
| 779 | 1101000011 | IC16 Operation mode | | | | | | | | | | | |
| 780 | 0011000011 | IC17 Operation mode | | | | | | | | | | | |
| 781 | 1011000011 | IC18 Operation mode | | | | | | | | | | | |
| 782 | 0111000011 | IC19 Operation mode | | | | | | | | | | | |
| 783 | 1111000011 | IC20 Operation mode | | | | | | | | | | | |
| 784 | 0000100011 | IC21 Operation mode | | | | | | | | | | | |
| 785 | 1000100011 | IC22 Operation mode | | | | | | | | | | | |
| 786 | 0100100011 | IC23 Operation mode | | | | | | | | | | | |
| 787 | 1100100011 | IC24 Operation mode | | | | | | | | | | | |
| 788 | 0010100011 | IC25 Operation mode | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 789 | 1010100011 | IC26 Operation mode | 0000 : Stop 0001 : Ventilation 0002 : Cooling 0003 : Heating 0004 : Dry | | | | | | | | B | | When WR2 is used, the four LDs on the left (LD1-4) display operation mode, and the four LDs on the right (LD5-LD8) display port address. (Displayed alternately every five seconds) |
| 790 | 0110100011 | IC27 Operation mode | | | | | | | | | | | |
| 791 | 1110100011 | IC28 Operation mode | | | | | | | | | | | |
| 792 | 0001100011 | IC29 Operation mode | | | | | | | | | | | |
| 793 | 1001100011 | IC30 Operation mode | | | | | | | | | | | |
| 794 | 0101100011 | IC31 Operation mode | | | | | | | | | | | |
| 795 | 1101100011 | IC32 Operation mode | | | | | | | | | | | |
| 796 | 0011100011 | IC33 Operation mode | | | | | | | | | | | |
| 797 | 1011100011 | IC34 Operation mode | | | | | | | | | | | |
| 798 | 0111100011 | IC35 Operation mode | | | | | | | | | | | |
| 799 | 1111100011 | IC36 Operation mode | | | | | | | | | | | |
| 800 | 0000010011 | IC37 Operation mode | | | | | | | | | | | |
| 801 | 1000010011 | IC38 Operation mode | | | | | | | | | | | |
| 802 | 0100010011 | IC39 Operation mode | | | | | | | | | | | |
| 803 | 1100010011 | IC40 Operation mode | | | | | | | | | | | |
| 804 | 0010010011 | IC41 Operation mode | | | | | | | | | | | |
| 805 | 1010010011 | IC42 Operation mode | | | | | | | | | | | |
| 806 | 0110010011 | IC43 Operation mode | | | | | | | | | | | |
| 807 | 1110010011 | IC44 Operation mode | | | | | | | | | | | |
| 808 | 0001010011 | IC45 Operation mode | | | | | | | | | | | |
| 809 | 1001010011 | IC46 Operation mode | | | | | | | | | | | |
| 810 | 0101010011 | IC47 Operation mode | | | | | | | | | | | |
| 811 | 1101010011 | IC48 Operation mode | | | | | | | | | | | |
| 812 | 0011010011 | IC49 Operation mode | | | | | | | | | | | |
| 813 | 1011010011 | IC50 Operation mode | | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 814 | 0111010011 | IC1 filter | 0000 to 9999 | | | | | | | | B | | Hours since last maintenance [ h ] |
| 815 | 1111010011 | IC2 filter | 0000 to 9999 | | | | | | | | | | |
| 816 | 0000110011 | IC3 filter | 0000 to 9999 | | | | | | | | | | |
| 817 | 1000110011 | IC4 filter | 0000 to 9999 | | | | | | | | | | |
| 818 | 0100110011 | IC5 filter | 0000 to 9999 | | | | | | | | | | |
| 819 | 1100110011 | IC6 filter | 0000 to 9999 | | | | | | | | | | |
| 820 | 0010110011 | IC7 filter | 0000 to 9999 | | | | | | | | | | |
| 821 | 1010110011 | IC8 filter | 0000 to 9999 | | | | | | | | | | |
| 822 | 0110110011 | IC9 filter | 0000 to 9999 | | | | | | | | | | |
| 823 | 1110110011 | IC10 filter | 0000 to 9999 | | | | | | | | | | |
| 824 | 0001110011 | IC11 filter | 0000 to 9999 | | | | | | | | | | |
| 825 | 1001110011 | IC12 filter | 0000 to 9999 | | | | | | | | | | |
| 826 | 0101110011 | IC13 filter | 0000 to 9999 | | | | | | | | | | |
| 827 | 1101110011 | IC14 filter | 0000 to 9999 | | | | | | | | | | |
| 828 | 0011110011 | IC15 filter | 0000 to 9999 | | | | | | | | | | |
| 829 | 1011110011 | IC16 filter | 0000 to 9999 | | | | | | | | | | |
| 830 | 0111110011 | IC17 filter | 0000 to 9999 | | | | | | | | | | |
| 831 | 1111110011 | IC18 filter | 0000 to 9999 | | | | | | | | | | |
| 832 | 0000001011 | IC19 filter | 0000 to 9999 | | | | | | | | | | |
| 833 | 1000001011 | IC20 filter | 0000 to 9999 | | | | | | | | | | |
| 834 | 0100001011 | IC21 filter | 0000 to 9999 | | | | | | | | | | |
| 835 | 1100001011 | IC22 filter | 0000 to 9999 | | | | | | | | | | |
| 836 | 0010001011 | IC23 filter | 0000 to 9999 | | | | | | | | | | |
| 837 | 1010001011 | IC24 filter | 0000 to 9999 | | | | | | | | | | |
| 838 | 0110001011 | IC25 filter | 0000 to 9999 | | | | | | | | | | |
| 839 | 1110001011 | IC26 filter | 0000 to 9999 | | | | | | | | | | |
| 840 | 0001001011 | IC27 filter | 0000 to 9999 | | | | | | | | | | |
| 841 | 1001001011 | IC28 filter | 0000 to 9999 | | | | | | | | | | |
| 842 | 0101001011 | IC29 filter | 0000 to 9999 | | | | | | | | | | |
| 843 | 1101001011 | IC30 filter | 0000 to 9999 | | | | | | | | | | |
| 844 | 0011001011 | IC31 filter | 0000 to 9999 | | | | | | | | | | |
| 845 | 1011001011 | IC32 filter | 0000 to 9999 | | | | | | | | | | |
| 846 | 0111001001 | IC33 filter | 0000 to 9999 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Data on indoor unit system**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B)*1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 847 | 1111001011 | IC34 filter | 0000 to 9999 | | | | | | | | B | | Hours since last maintenance [ h ] |
| 848 | 0000101011 | IC35 filter | 0000 to 9999 | | | | | | | | | | |
| 849 | 1000101011 | IC36 filter | 0000 to 9999 | | | | | | | | | | |
| 850 | 0100101011 | IC37 filter | 0000 to 9999 | | | | | | | | | | |
| 851 | 1100101011 | IC38 filter | 0000 to 9999 | | | | | | | | | | |
| 852 | 0010101011 | IC39 filter | 0000 to 9999 | | | | | | | | | | |
| 853 | 1010101011 | IC40 filter | 0000 to 9999 | | | | | | | | | | |
| 854 | 0110101011 | IC41 filter | 0000 to 9999 | | | | | | | | | | |
| 855 | 1110101011 | IC42 filter | 0000 to 9999 | | | | | | | | | | |
| 856 | 0001101011 | IC43 filter | 0000 to 9999 | | | | | | | | | | |
| 857 | 1001101011 | IC44 filter | 0000 to 9999 | | | | | | | | | | |
| 858 | 0101101011 | IC45 filter | 0000 to 9999 | | | | | | | | | | |
| 859 | 1101101011 | IC46 filter | 0000 to 9999 | | | | | | | | | | |
| 860 | 0011101011 | IC47 filter | 0000 to 9999 | | | | | | | | | | |
| 861 | 1011101011 | IC48 filter | 0000 to 9999 | | | | | | | | | | |
| 862 | 0111101011 | IC49 filter | 0000 to 9999 | | | | | | | | | | |
| 863 | 1111101011 | IC50 filter | 0000 to 9999 | | | | | | | | | | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

**Other types of data**

| No. | SW4 (SW6 - 9: ON, SW6-10: OFF) | Item | Display | | | | | | | | Unit (A, B) *1 | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1234567890 | | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 | LD8 | OC | OS | |
| 871 | 1110011011 | U-phase current effective value 1 | -99.9 to 999.9 | | | | | | | | A | A | The unit is [ A ] |
| 872 | 0001011011 | W-phase current effective value 1 | -99.9 to 999.9 | | | | | | | | A | A | |
| 873 | 1001011011 | Power factor phase angle 1 | -99.9 to 999.9 | | | | | | | | A | A | The unit is [ deg ] |
| 880 | 0000111011 | Control board Reset counter | 0 to 254 | | | | | | | | A | A | The unit is [ time ] |
| 881 | 1000111011 | INV board Reset counter | 0 to 254 | | | | | | | | A | A | |

*1 A: The condition of either OC or OS is displayed individually. B: The condition of the entire refrigerant system is displayed.

# Service Handbook

**Model**

**CMB-WM108V-AA**
**CMB-WM1016V-AA**
**CMB-WM108V-AB**
**CMB-WM1016V-AB**
**CMB-WM108V-BB**
**CMB-WM1016V-BB**

**MITSUBISHI ELECTRIC CORPORATION**

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