

SERVICE MANUAL

INVERTER-DRIVEN MULTI-SPLIT SYSTEM HEAT PUMP AIR CONDITIONERS

Service Manual

< Indoor Units >

- Ducted (High Static) Type

(H,Y,C)IDH015B22S
(H,Y,C)IDH018B22S
(H,Y,C)IDH024B22S
(H,Y,C)IDH027B22S
(H,Y,C)IDH030B22S
(H,Y,C)IDH036B22S
(H,Y,C)IDH048B22S
(H,Y,C)IDH054B22S



- Ducted (Medium Static) Type

(H,Y,C)IDM006B22S
(H,Y,C)IDM008B22S
(H,Y,C)IDM012B22S
(H,Y,C)IDM015B22S
(H,Y,C)IDM018B22S
(H,Y,C)IDM024B22S
(H,Y,C)IDM027B22S
(H,Y,C)IDM030B22S
(H,Y,C)IDM036B22S
(H,Y,C)IDM048B22S
(H,Y,C)IDM054B22S



Important Notice

- Johnson Controls Inc. pursues a policy of continuing improvement in design and performance in its products. As such, Johnson Controls Inc. reserves the right to make changes at any time without prior notice.
- Johnson Controls Inc. cannot anticipate every possible circumstance that might involve a potential hazard.
- This heat pump air conditioning unit is designed for standard air conditioning applications only. Do not use this unit for anything other than the purposes for which it was intended for.
- The installer and system specialist shall safeguard against leakage in accordance with local pipefitter and electrical codes. The following standards may be applicable, if local regulations are not available. International Organization for Standardization: (ISO 5149 or European Standard, EN 378). No part of this manual may be reproduced in any way without the expressed written consent of Johnson Controls Inc.
- This heat pump air conditioning unit is operated and serviced in the United States of America and comes with a full complement of the appropriate Safety, Danger, and Caution, warnings.
- If you have questions, please contact your distributor or dealer.
- This manual provides common descriptions, basic and advanced information to maintain and service this heat pump air conditioning unit which you operate as well for other models.
- This heat pump air conditioning unit has been designed for a specific temperature range. For optimum performance and long life, operate this unit within the range limits.
- This manual should be considered as a permanent part of the air conditioning equipment and should remain with the air conditioning equipment.

Product Inspection upon Arrival

1. Upon receiving this product, inspect it for any damages incurred in transit. Claims for damage, either apparent or concealed, should be filed immediately with the shipping company.
2. Check the model number, electrical characteristics (power supply, voltage, and frequency rating), and any accessories to determine if they agree with the purchase order.
3. The standard utilization for this unit is explained in these instructions. Use of this equipment for purposes other than what it designed for is not recommended.
4. Please contact your local agent or contractor as any issues involving installation, performance, or maintenance arise. Liability does not cover defects originating from unauthorized modifications performed by a customer without the written consent of Johnson Controls, Inc. Performing any mechanical alterations on this product without the consent of the manufacturer will render your warranty null and void.



1. Introduction

This Service Manual concentrates on the heat pump air conditioning units.
Read this manual carefully before performing service.


This manual should be considered as a permanent part of the air conditioning equipment and should remain with the air conditioning equipment.

(Transportation/Installation Work) > (Refrigerant Piping Work) > (Electrical Wiring Work) > (Ref. Charge Work) > (Test Run) > (User)

2. Important Safety Instructions

| Signal Words | |
|--|---|
|  WARNING | Indicates a hazardous situation that, if not avoided, could result in death or serious injury. |
|  CAUTION | Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. |
| NOTICE | Indicates information considered important, but not hazard-related (for example, messages relating to property damage). |

General Precautions

| | |
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|  WARNING | To reduce the risk of serious injury or death, read these instructions thoroughly and follow all warnings or cautions included in all manuals that accompanied the product and are attached to the unit. Refer back to these instructions as needed. |
|--|--|

- This system should be installed by personnel certified by Johnson Controls, Inc. Personnel must be qualified according to local, state and national building and safety codes and regulations. Incorrect installation could cause leaks, electric shock, fire or explosion. In areas where Seismic "Performance requirements are specified, the appropriate measures should be taken during installation to guard against possible damage or injury that might occur in an earthquake if the unit is not installed correctly, injuries may occur due to a falling unit.
- Use appropriate Personal Protective Equipment (PPE), such as gloves and protective goggles and, where appropriate, have a gas mask nearby. Also use electrical protection equipment and tools suited for electrical operation purposes. Keep a wet cloth and a fire extinguisher nearby during brazing. Use care in handling, rigging, and setting of bulky equipment.
- When transporting, be careful when picking up, moving and mounting these units. Although the unit may be packed using plastic straps, do not use them for transporting the unit from one location to another. Do not stand on or put any material on the unit. Get a partner to help, and bend with your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut fingers, so wear protective gloves.
- Do not touch or adjust any safety devices inside the indoor or outdoor units. All safety features, disengagement, and interlocks must be in place and functioning correctly before the equipment is put into operation. If these devices are improperly adjusted or tampered with in any way, a serious accident can occur. Never bypass or jump-out any safety device or switch.
- Johnson Controls will not assume any liability for injuries or damage caused by not following steps outlined or described in this manual. Unauthorized modifications to Johnson Controls products are prohibited as they...
 - May create hazards which could result in death, serious injury or equipment damage.
 - Will void product warranties.
 - May invalidate product regulatory certifications.
 - May violate OSHA standards.

NOTICE

Take the following precautions to reduce the risk of property damage.

- Be careful that moisture, dust, or variant refrigerant compounds not enter the refrigerant cycle during installation work. Foreign matter could damage internal components or cause blockages.
- If air filters are required on this unit, do not operate the unit without the air filter set in place. If the air filter is not installed, dust may accumulate and breakdown may result.
- Do not install this unit in any place where silicon gases can coalesce. If the silicon gas molecules attach themselves to the surface of the heat exchanger, the finned surfaces will repel water. As a result, any amount of drainage moisture condensate can overflow from the condensate pan and could run inside of the electrical box, possibly causing electrical failures.
- When installing the unit in a hospital or other facility where electromagnetic waves are generated from nearby medical and/or electronic devices, be prepared for noise and electronic interference Electromagnetic Interference (EMI). Do not install where the waves can directly radiate into the electrical box, controller cable, or controller. Inverters, appliances, high-frequency medical equipment, and radio communications equipment may cause the unit to malfunction. The operation of the unit may also adversely affect these same devices. Install the unit at least 10 ft. (approximately 3m) away from such devices.
- When a wireless controller is used, locate at a distance of at least 3.3 ft. (approximately 1m) between the indoor unit and electric lighting. If not, the receiver part of the unit may have difficulty receiving operation commands.
- Do not install the unit in any location where animals and plants can come into direct contact with the outlet air stream. Exposure could adversely affect the animals and plants.
- Do not install the unit with any downward slope to the side of the condensate pipe. If you do, you may have drain water flowing back which may cause leaks.
- Be sure the condensate hose discharges water properly. If connected incorrectly, it may cause leaks.
- Do not install the unit in any place where oil can seep onto the units, such as table or seating areas in restaurants, and so forth. For these locations or social venues, use specialized units with oil-resistant features built into them. In addition, use a specialized ceiling fan designed for restaurant use. These specialized oil-resistant units can be ordered for such applications. However, in places where large quantities of oil can splash onto the unit, such as a factory, even the specialized units cannot be used. These products should not be installed in such locations.
- If the wired controller is installed in a location where electromagnetic radiation is generated, make sure that the wired controller is shielded and cables are sleeved inside conduit tubing.
- If there is a source of electrical interference near the power supply, install noise suppression equipment (filter).
- During the test run, check the unit's operation temperature. If the unit is used in an environment where the temperature exceeds the operation boundary, it may cause severe damage. Check the operational temperature boundary in the manual. If there is no specified temperature, use the unit within the operational temperature boundary of 32 to 104°F (0 to 40°C).
- Read installation and appropriate user manuals for connection with PC or peripheral devices. If a warning window appears on the PC, the product stops, does not work properly or works intermittently, immediately stop using the equipment.

Installation Precautions

WARNING

To reduce the risk of serious injury or death, the following installation precautions must be followed.

- When installing the unit into...
 - A wall: Make sure the wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.
 - A room: Properly insulate any refrigerant tubing run inside a room to prevent "sweating" that can cause dripping and water damage to wall and floors.
 - Damp or uneven areas: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
 - An area with high winds: Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable wind baffle.
 - A snowy area: Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow protection hood.
- If the remote sensors are not used with this controller, then do not install this controller...
 - in a room where there is no thermostat.
 - where the unit is exposed to direct sunshine or direct light.
 - where the unit is in close proximity to a heat source.
 - where hot/cold air from the outdoors, or a draft from elsewhere (such as air vents, diffusers or grilles) can affect air circulation.
 - in areas with poor air circulation and ventilation.
- Do not install the unit in the following places. Doing so can result in an explosion, fire, deformation, corrosion, or product failure.
 - Explosive or flammable atmosphere.
 - Where fire, oil, steam, or powder can directly enter the unit, such as in close proximity or directly above a kitchen stove.
 - Where oil (including machinery oil) may be present.
 - Where corrosive gases such as chlorine, bromine, or sulfide can accumulate, such as near a hot tub or hot spring.
 - Where dense, salt-laden airflow is heavy, such as in coastal regions.
 - Where the air quality is of high acidity.
 - Where harmful gases can be generated from decomposition.
- Do not position the condensate pipe for the indoor unit near any sanitary sewers where corrosive gases may be present. If you do, toxic gases can seep into breathable air spaces and can cause respiratory injuries. If the condensate pipe is installed incorrectly, water leakage and damage to the ceiling, floor, furniture, or other possessions may result. If condensate piping becomes clogged, moisture can back up and can drip from the indoor unit. Do not install the indoor unit where such dripping can cause moisture damage or uneven locations: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
- Before performing any brazing work, be sure that there are no flammable materials or open flames nearby.
- Perform a test run to ensure normal operation. Safety guards, shields, barriers, covers, and protective devices must be in place while the compressor/unit is operating. During the test run, keep fingers and clothing away from any moving parts.
- Clean up the site when finished, remembering to check that no metal scraps or bits of wiring have been left inside the unit being installed.
- During transportation, do not allow the backrest of the forklift make contact with the unit, otherwise, it may cause damage to the heat exchanger and also may cause injury when stopped or started suddenly.
- Remove gas inside the closing pipe when the brazing work is performed. If the brazing filler metal is melted with remaining gas inside, the pipes will be blown off and it may cause injury.
- Be sure to use nitrogen gas for an airtight test. If other gases such as oxygen gas, acetylene gas or fluorocarbon gas are accidentally used, it may cause explosion or gas intoxication.

After installation work for the system has been completed, explain the "Safety Precautions," the proper use and maintenance of the unit to the customer according to the information in all manuals that came with the system. All manuals and warranty information must be given to the user or left near the Indoor Unit.

Refrigerant Precautions

WARNING

To reduce the risk of serious injury or death, the following refrigerant precautions must be followed.

- As originally manufactured, this unit contains refrigerant installed by Johnson Controls. Johnson Controls uses only refrigerants that have been approved for use in the unit's intended home country or market. Johnson Controls distributors similarly are only authorized to provide refrigerants that have been approved for use in the countries or markets they serve. The refrigerant used in this unit is identified on the unit's faceplate and/or in the associated manuals. Any additions of refrigerant into this unit must comply with the country's requirements with regard to refrigerant use and should be obtained from Johnson Controls distributors. Use of any non-approved refrigerant substitutes will void the warranty and will increase the potential risk of injury or death.
- If installed in a small room, take measures to prevent the refrigerant from exceeding the maximum allowable concentration in the event that refrigerant gases should escape. The installation should meet the requirements in ASHRAE Standards 15 and 34. If refrigerant gas has leaked during the installation work, ventilate the room immediately.
- Check the design pressure for this product is 601 psi (4.15MPa). The pressure of the refrigerant R410A is 1.4 times higher than that of the refrigerant R22. Therefore, the refrigerant piping for R410A shall be thicker than that for R22. Make sure to use the specified refrigerant piping. If not, the refrigerant piping may rupture due to an excessive refrigerant pressure. Besides, pay attention to the piping thickness when using copper refrigerant piping. The thickness of copper refrigerant piping differs depending on its material.
- The refrigerant R410A is adopted. The refrigerant oil tends to be affected by foreign matters such as moisture, oxide film, (or fat). Perform the installation work with care to prevent moisture, dust, or different refrigerant from entering the refrigerant cycle. Foreign matter can be introduced into the cycle from such parts as expansion valve and the operation may be unavailable.
- To avoid the possibility of different refrigerant or refrigerant oil being introduced into the cycle, the sizes of the charging connections have been changed from R407C type and R22 type. It is necessary to prepare the appropriate tools before performing installation work.
- Use refrigerant pipes and joints which are approved for use with R410A.
- A compressor/unit comprises a pressurized system. Never loosen threaded joints while the system is under pressure and never open pressurized system parts.
- Before installation is complete, make sure that the refrigerant leak test has been performed. If refrigerant gases escape into the air, turn OFF the main switch, extinguish any open flames and contact your service contractor. Refrigerant (Fluorocarbon) for this unit is odorless. If the refrigerant should leak and come into contact with open flames, toxic gas could be generated. Also, because the fluorocarbons are heavier than air, they settle to the floor, which could cause asphyxiation.
- When installing the unit, and connecting refrigerant piping, keep all piping runs as short as possible, and make sure to securely connect the refrigerant piping before the compressor starts operating. If the refrigerant piping is not connected and the compressor activates with the stop valve opened, the refrigerant cycle can become subjected to extremely high pressure, which can cause an explosion or fire.
- Tighten the flare nut with a torque wrench in the specified manner. Do not apply excessive force to the flare nut when tightening. If you do, the flare nut can crack and refrigerant leakage may occur.
- When maintaining, relocating, and disposing of the unit, dismantle the refrigerant piping after the compressor stops.
- When pipes are removed out from under the piping cover, after the insulation work is completed, cover the gap between the piping cover and pipes by a packing (field-supplied). If the gap is not covered, the unit may be damaged if snow, rain water or small animals enter the unit.
- Do not apply an excessive force to the spindle valve at the end of opening. Otherwise, the spindle valve flies out due to refrigerant pressure. At the test run, fully open the gas and liquid valves, otherwise, these devices will be damaged. (It is closed before shipment.)
- If the arrangement for outdoor units is incorrect, it may cause flowback of the refrigerant and result in failure of the outdoor unit.
- The refrigerant system may be damaged if the slope of the piping connection kit exceeds $\pm 15^\circ$.

Electrical Precautions



Take the following precautions to reduce the risk of electric shock, fire or explosion resulting in serious injury or death.

- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause serious injury or death.
 - Perform all electrical work in strict accordance with this manual and all the relevant regulatory standards.
 - Before servicing, open and tag all disconnect switches. Never assume electrical power is disconnected. Check with meter and equipment.
 - Only use electrical protection equipment and tools suited for this installation.
 - Insulate a wired controller against moisture and temperature extremes.
 - Use specified cables between units.
 - The new air conditioner may not function normally in the following instances:
 - If electrical power for the new air conditioner is supplied from the same transformer as the external equipment* referred to below.
 - If the power supply cables for this external equipment* and the new air conditioner unit are located in close proximity to each other.

external equipment*: (Example): A lift, container crane, rectifier for electric railway, inverter power device, arc furnace, electric furnace, large-sized induction motor and large-sized switch.
- Regarding the cases mentioned above, surge voltage may be inducted into the power supply cables for the packaged air conditioner due to a rapid change in power consumption of the device and an activation of a switch.
- Check field regulations and standards before performing electrical work in order to protect the power supply for the new air conditioner unit.
- Communication cabling shall be a minimum of AWG18 (0.82mm²), 2-Conductor, Stranded Copper. Shielded cable must be considered for applications and routing in areas of high EMI and other sources of potentially excessive electrical noise to reduce the potential for communication errors. When shielded cabling is applied, proper bonding and termination of the cable shield is required as per Johnson Controls guidelines. Plenum and riser ratings for communication cables must be considered per application and local code requirements.
 - The polarity of the input terminals is important, so be sure to match the polarity when using contacts that have polarity.
 - Use an exclusive power supply for the air conditioner at the unit's rated voltage.
 - Highly dangerous electrical voltages may be used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause serious injury or death.
 - Before installing the controller or remote devices, ensure that the indoor and outdoor unit operation has been stopped. Further, be sure to wait at least five minutes before turning off the main power switch to the indoor or outdoor units. Otherwise, water leakage or electrical breakdown may result.
 - Do not open the service cover or access panel to the indoor or outdoor units without turning OFF the main power supply. Before connecting or servicing the controller or cables to indoor or outdoor units, open and tag all disconnect switches. Never assume electrical power is disconnected. Check with a meter and equipment.
 - This equipment can be installed with a Ground Fault Circuit Breaker (GFCI), which is a recognized measure for added protection to a properly grounded unit. Install appropriate sized breakers / fuses / overcurrent protection switches, and wiring in accordance with local, state and NEC codes and requirements. The equipment installer is responsible for understanding and abiding by applicable codes and requirements.

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1. Installation

1.1 Outdoor Unit

Refer to the Installation Manual for Outdoor Unit.

1.2 Change-Over Box

Refer to the Installation Manual for Change-Over Box.

1.3 Indoor Unit

Refer to the Installation Manual for Ducted (High Static and Medium Static).

1.4 Control Device

- 1.4.1 Wired Controller: CIW01**
- 1.4.2 Simplified Wired Controller: CIS01**
- 1.4.3 Wireless Controller: CIR01**
- 1.4.4 Mini Central Controller: CCM01**
- 1.4.5 Large Central Controller: CCL01**
- 1.4.6 Computerized Central Controller Management Software: CCCS01**
- 1.4.7 Computerized Central Controller Software / Operation Ratio for CCCS01**
- 1.4.8 Computerized Central Controller Adapter: CCCA01**
- 1.4.9 Infrared (IR) Receiver Kit: CWDIRK01**

For more information of the above Control Devices, please refer to the Installation Manuals for each product.

1.5 Optional Parts

- 1.5.1 Long-Life Filter: F-56LI, F-90LI, F-160LI and
Filter Box for Long-Life Filter: B-56LI, B-90LI, B-160LI**
- 1.5.2 Motion Sensor Kit: SOR-NEZ**
- 1.5.3 Connector Cable: PCC-6A**
- 1.5.4 Relay and 3 Pin Connector Kit: PSC-5RA**
- 1.5.5 Remote Sensor: THM-R2A**
- 1.5.6 3P Connector Cable: PCC-1A**

For more information of the above Optional Parts, please refer to the Installation Manuals for each product.

2. Operation

2.1 Indoor Unit

Refer to the Operation Manual for Ducted (High Static and Medium Static).

2.2 Control Device

- 2.2.1 Wired Controller: CIW01**
- 2.2.2 Simplified Wired Controller: CIS01**
- 2.2.3 Mini Central Controller: CCM01**
- 2.2.4 Large Central Controller: CCL01**
- 2.2.5 Computerized Central Controller Management Software: CCCS01**
- 2.2.6 Computerized Central Controller Software / Operation Ratio for CCCS01**
- 2.2.7 Infrared (IR) Receiver Kit: CWDIRK01**

For more information of the above Control Devices, please refer to the Operation Manuals for each product.

3. Troubleshooting

3.1 Initial Troubleshooting

3.1.1 Checking Electrical Wiring and Power Supply

Check the following items for any abnormalities in the activation of the system.

| No. | Check Situation | Check Method |
|-----|--|---|
| 1 | Is any power supply breaker or fuse open? | Check the voltage (secondary side) of the breaker and also check the continuity of the fuse with a tester. |
| 2 | Is the voltage at the secondary side of the transformer correct? | Disconnect at the secondary side of the transformer and measure voltage with a tester. |
| 3 | Is the wiring firmly secured and correctly connected? | <p>Check that the following wiring connections on O.U./I.U. printed circuit boards (PCBs) are not loose.</p> <ul style="list-style-type: none">• The connection for thermistors• The connection for the wired controller cable• The connection for communication cable• Each connection for power supply line <p>Check that the wiring connections on O.U./I.U. PCBs are not loose or misconnected on the site according to the "Electrical Wiring Diagram" of the Engineering Manual.</p> |

NOTE:

If the fuse(s) on an I.U. PCB is blown, diagnose the cause of overcurrent and replace the fuse(s).

In addition, check the power supply of optional parts because the fuse may blow out by the power supply failure. Turn off power for safety.

- For Outdoor Unit

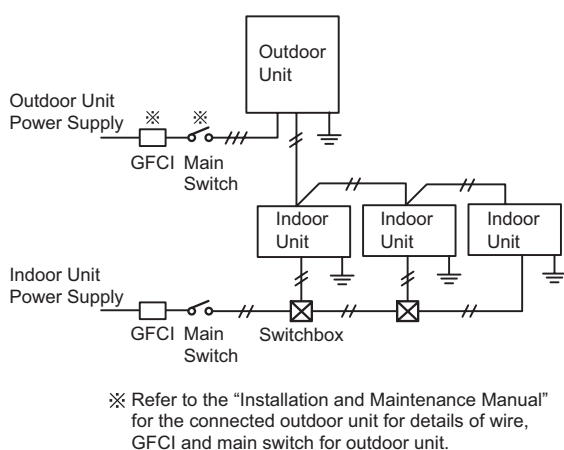
Refer to the Service Manual for Outdoor Unit.

- For Indoor Units

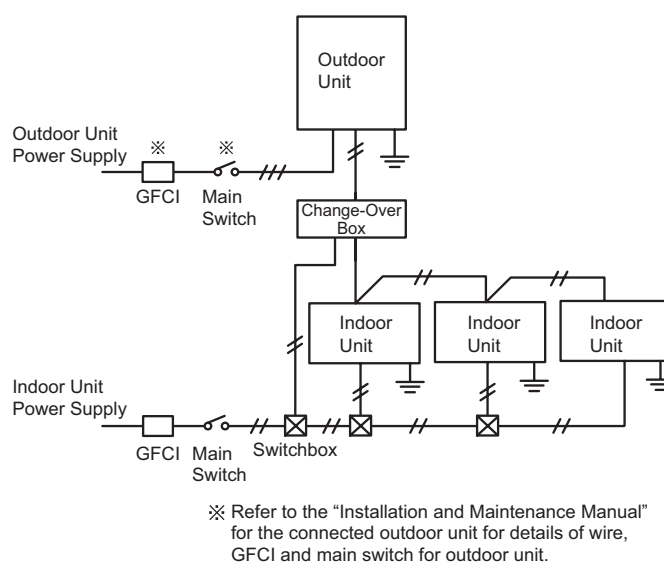
The electrical wiring capacity of the outdoor unit is according to the “Installation and Maintenance Manual” of the outdoor unit. Setting DIP switches may be required depending on the combinations with the outdoor unit.

Select wiring capacity according to Table 1.1 below. This equipment can be installed with a Ground Fault Circuit Interrupter (GFCI), which is a recognized measure for added protection to a properly grounded unit. Install appropriate sized breakers / fuses / overcurrent protection switches, and wiring in accordance with local, state and NEC codes and requirements. The equipment installer is responsible for understanding and abiding by applicable codes and requirements.

< Heat Pump System >



< Heat Recovery System >



NOTICE

- This equipment can be installed with a Ground Fault Circuit Interrupter (GFCI), which is a recognized measure for added protection to a properly grounded unit. Install appropriate sized breakers/ fuses/ / overcurrent protection switches, and wiring in accordance with local, state and NEC codes and requirements. The equipment installer is responsible for understanding and abiding by applicable codes and requirements. Check the recommended size of ELB shown in Table 1.1. Select high-sensitive high speed ELB or GFCI when the rated sensitive current is less than 30mA. (The motion time should be within 0.1 second.)
- Between indoor and outdoor units, use dual-conductor, AWG18 (0.82mm²) stranded copper cable for communication cable. Do not use any cable with more than two conductors. Twisted pair or shielded cable can be used in environments with excessive electrical noise to reduce the possibility of communication errors between system components. Total cable length should not exceed 3281 ft (1000m).
- Select the wiring size, GFCI (Ground Fault Circuit Interrupter) in accordance with the regulations for each region, the “Installation and Maintenance Manual”, and the dedicated electrical circuit that must be used.
- Outside of the indoor unit, installation of the power supply wiring, communication cable, and wired controller cable should be spaced as far apart as possible.

Table 1.1 Recommended Wiring Capacity and Size

• High Static Type

| Model | Power Supply | Minimum Wire Thickness [AWG (mm ²)] | | | GFCI | | Main Switch | | MCA (Minimum Circuit Ampacity) [A] |
|-------------------|-------------------|---|--------------------|--------------------------|---------------------|--------------------------------|---------------------|----------|------------------------------------|
| | | Power Supply Wiring Size (Main) | Ground Wiring Size | Communication Cable Size | Nominal Current [A] | Nominal Sensitive Current [mA] | Nominal Current [A] | Fuse [A] | |
| (H,Y,C)IDH015B22S | 1~, 208/230V 60Hz | 18 (0.82) | 18 (0.82) | 18 (0.82) | 15 | 30 | 15 | 15 | 2.4 |
| (H,Y,C)IDH018B22S | | | | | | | | | 2.4 |
| (H,Y,C)IDH024B22S | | | | | | | | | 2.9 |
| (H,Y,C)IDH027B22S | | | | | | | | | 2.9 |
| (H,Y,C)IDH030B22S | | | | | | | | | 4.7 |
| (H,Y,C)IDH036B22S | | | | | | | | | 5.0 |
| (H,Y,C)IDH048B22S | | | | | | | | | 5.3 |
| (H,Y,C)IDH054B22S | | | | | | | | | 5.3 |

• Medium Static Type

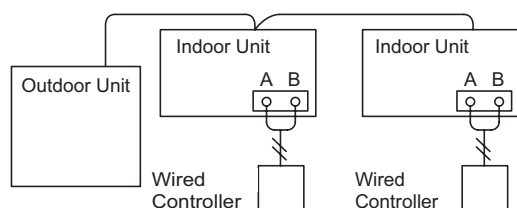
| Model | Power Supply | Minimum Wire Thickness [AWG (mm ²)] | | | GFCI | | Main Switch | | MCA (Minimum Circuit Ampacity) [A] |
|-------------------|-------------------|---|--------------------|--------------------------|---------------------|--------------------------------|---------------------|----------|------------------------------------|
| | | Power Supply Wiring Size (Main) | Ground Wiring Size | Communication Cable Size | Nominal Current [A] | Nominal Sensitive Current [mA] | Nominal Current [A] | Fuse [A] | |
| (H,Y,C>IDM006B22S | 1~, 208/230V 60Hz | 18 (0.82) | 18 (0.82) | 18 (0.82) | 15 | 30 | 15 | 15 | 1.0 |
| (H,Y,C>IDM008B22S | | | | | | | | | 1.2 |
| (H,Y,C>IDM012B22S | | | | | | | | | 1.7 |
| (H,Y,C>IDM015B22S | | | | | | | | | 1.9 |
| (H,Y,C>IDM018B22S | | | | | | | | | 1.8 |
| (H,Y,C>IDM024B22S | | | | | | | | | 2.2 |
| (H,Y,C>IDM027B22S | | | | | | | | | 2.2 |
| (H,Y,C>IDM030B22S | | | | | | | | | 3.5 |
| (H,Y,C>IDM036B22S | | | | | | | | | 4.0 |
| (H,Y,C>IDM048B22S | | | | | | | | | 4.5 |
| (H,Y,C>IDM054B22S | | | | | | | | | 4.5 |

NOTES:

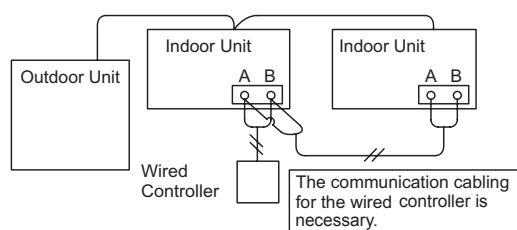
- 1) Follow local codes and regulations when selecting field wires.
- 2) This equipment can be installed with a Ground Fault Circuit Interrupter (GFCI), which is a recognized measure for added protection to a properly grounded unit. Install appropriate sized breakers / fuses / overcurrent protection switches, and wiring in accordance with local, state and NEC codes and requirements. The equipment installer is responsible for understanding and abiding by applicable codes and requirements.
- 3) Total operating current should be less than 12A.
- 4) Fuse should be slow blowing capability.

- Wired Controller Connecting Diagram

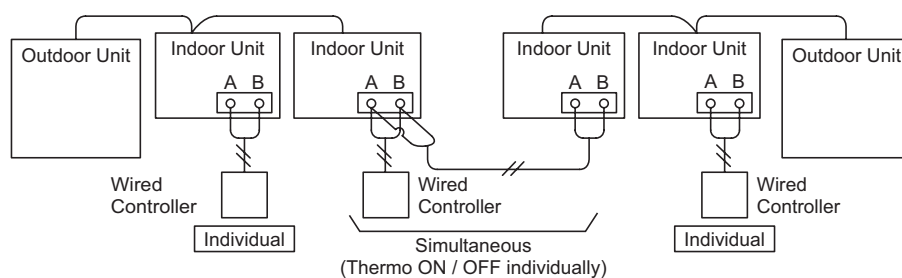
(a) Wired Controllers to each Unit for Individual Operation Setting



(b) One Wired Controller for Individual Operation Setting



(c) Connecting Wired Controller if Connecting between Individual Systems



NOTE:

Thermo-ON: The outdoor unit and some indoor units are running.

Thermo-OFF: The outdoor unit and some indoor units stay on, but don't run.

3.1.2 Location of Printed Circuit Boards (PCBs)

(1) Outdoor Unit

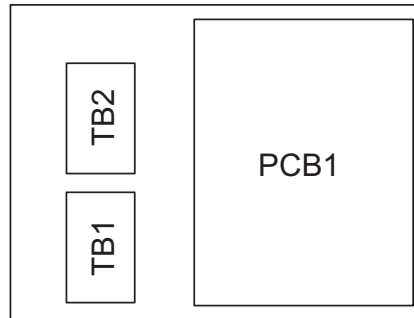
Refer to the Service Manual for Outdoor Unit.

(2) Indoor Unit

- Ducted (High Static and Medium Static)

(H,Y,C)IDH015B22S to (H,Y,C)IDH054B22S

(H,Y,C)IDM006B22S to (H,Y,C)IDM054B22S



3.1.3 Checking Rotary Switch and DIP Switch Settings

The following diagram indicates the factory settings of DSWs on PCBs in the indoor and outdoor units. When simultaneous operation control of multiple units or room thermostat control is operated, the DSW setting will be different as shown below.

(1) Outdoor Unit (Factory Setting)

Refer to the Service Manual for Outdoor Unit.

(2) Indoor Unit (Factory Setting)

The positions of the DIP switches on the PCB are shown in the figure below. Turn OFF all power supplies before setting.

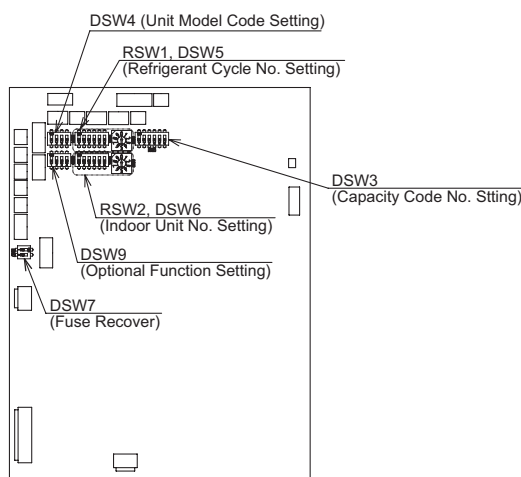
Without turning OFF all power supplies, the switches do not work and the settings are invalid.

The "■" mark indicates the position of DIP switches.

• Ducted (High Static and Medium Static)

(H,Y,C)IDH015B22S to (H,Y,C)IDH054B22S

(H,Y,C)IDM006B22S to (H,Y,C)IDM054B22S



DIP Switch Settings

- (1) Turn OFF the power supply of the indoor unit and the outdoor unit before DIP switch setting. Not doing so makes the setting invalid.
- (2) Factory settings for DSW6 and RSW2 are set to "0". If connecting the indoor unit to H-LINK II supporting the outdoor unit without setting any DIP switches, auto-address setting is performed by the wired controller.
- (3) Auto-Address Setting by Wired Controller
The address numbering is started from "0" by the auto-address function when the wired controller is connected to H-LINK II.

(4) Unit No. Setting (RSW2 and DSW6)

Setting is not required.

Indoor unit numbers are set by the auto-address function. If an indoor unit number setting is required, set the unit number of all indoor units respectively and sequentially by following setting position. It is recommended that you assign a number to each indoor unit from "1". A maximum of 64 indoor units per refrigerant cycle can be connected to an H-LINK II System. Though the available numbers range from zero to 63, the applicable number for the 64th indoor unit in theory supplants the number "zero".

For centralized control, this setting is required.

Unit No. Setting

| DSW6 (Tens Digit) | RSW2 (Units Digit) | Ex.) Set at No.16 Unit |
|---|---|-------------------------|
| | | |
| Before shipment, DSW6 and RSW2 are set at "0". | Setting Position Set by inserting slotted screwdriver into the groove. | Set No.1 Pin at ON side |
| For the units supporting H-LINK II, the unit No. can be set for Max. 64 indoor units (No.0~63). | | RSW2 Set at "6" |

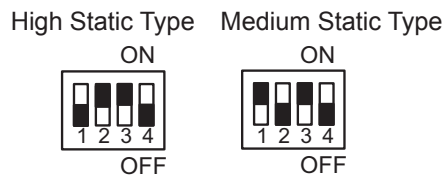
(5) Capacity Code Setting (DSW3)

No setting is required, due to setting before shipment. This switch is utilized for setting the capacity code which corresponds to the capacity of the indoor unit.

| | | | | | | |
|----------------------------|--|--|--|--|--|--|
| Indoor Unit Capacity (MBH) | 06 | 08 | 12 | 15 | 18 | |
| Setting Position | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | |
| Indoor Unit Capacity (MBH) | 24 | 27 | 30 | 36 | 48 | 54 |
| Setting Position | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> | <div><div>ON</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6</div><div>OFF</div></div></div> |

(6) Unit Model Code Setting (DSW4)

No setting is required. It is for setting the model code of the indoor unit. Do not change the setting. Otherwise, unit will not operate effectively.



(7) Refrigerant Cycle No. Setting (RSW1 and DSW5)

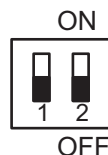
This setting is required. The unit arrives with all settings in the OFF position.

Refrigerant Cycle No. Setting

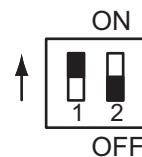
| DSW5 (Tens Digit) | RSW1 (Units Digit) | Ex.) Set at No.5 Cycle |
|--|---|--------------------------------|
| | Setting Position Set by inserting slotted screwdriver into the groove. | Set All Pins OFF Set at "5" |
| Before shipment, DSW5 and RSW1 are set at "0". For the units supporting H-LINK II, the ref. cycle No. can be set for Max. 64 cycles. (No. 0~63) | | |

(8) Fuse Recover (DSW7)

* Factory Settings



* When high voltage is applied to terminals 1 and 2 of TB2, the 0.5A fuse on the PCB will blow. If this has happened, first reconnect the wiring correctly to TB2, and then set the number one pin to ON.



(9) Optional Function Setting (DSW9)

No setting is required. Setting positions before shipment are all OFF.



3.1.4 Checking Wired Controller

Wired Controller Model: CIW01

Each “Check Menu” item and its function are explained in the following table.

| Check Menu Item | Function |
|-----------------------|--|
| Check 1 | Sensor condition of air conditioner are monitored and indicated. |
| Check 2 | Sensor data of air conditioner prior to alarm occurrence is indicated. |
| Alarm History Display | Previous alarm record (date, time, alarm code) is indicated. |
| Model Display | Model name and manufacturing number are indicated. |
| I.U./O.U. PCB Check | The result of PCB check is indicated. |
| Self Checking | Checking of wired controller is carried out. |

● Setting Method

Normal Mode Display

Check Menu Display

Press and hold “Menu” and “ECO” simultaneously for three seconds during the normal mode.

(1) Check 1 and Check 2

| | |
|--|--|
| <p>(1) Press and hold “Menu” and “ECO” simultaneously for three seconds during the normal mode. The Check Menu is displayed.</p> | |
| <p>(2) Select “Check 1” (or “Check 2”) from the Check Menu and press “OK”.</p> | |
| <p>(3) Select the Set Indoor Unit by pressing “△ ▽ ◁ ▷” and press “OK”. This screen is NOT displayed when there is only one indoor unit connected with the wired controller. In this case, (4) below is displayed.</p> | |
| <p>(4) Press “△” or “▽” to change the screen.</p> | |

Features of Check Mode 1

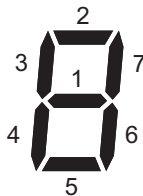
| No. | Item | Data Name |
|-----|------|------------------------------------|
| 1 | b1 | Set Temp. |
| 2 | b2 | Inlet Air Temp. |
| 3 | b3 | Discharge Air Temp. |
| 4 | b4 | Liquid Pipe Temp. |
| 5 | b5 | Remote Thermistor Temp. |
| 6 | b6 | Outdoor Air Temp. |
| 7 | b7 | Gas Pipe Temp. |
| 8 | b8 | Evaporating Temp. at Heating |
| 9 | b9 | Condensing Temp. at Cooling |
| 10 | bA | Comp. Top Temp. |
| 11 | bb | Thermo Temp. of Wired Controller |
| 12 | bC | Not Prepared |
| 13 | C1 | I.U. Micro-Computer * ² |
| 14 | C2 | O.U. Micro-Computer * ² |
| 15 | d1 | Stopping Cause State Indication |
| 16 | E1 | Times of Abnormality |
| 17 | E2 | Times of Power Failure |
| 18 | E3 | Times of Abnormal Transmitting |
| 19 | E4 | Times of Inverter Tripping |
| 20 | F1 | Louver Sensor State |
| 21 | H1 | Discharge Pressure |

| No. | Item | Data Name |
|-----|------|--|
| 22 | H2 | Suction Pressure |
| 23 | H3 | Control Information |
| 24 | H4 | Operating Frequency |
| 25 | J1 | I.U. Capacity |
| 26 | J2 | O.U. Code |
| 27 | J3 | System Number (1) |
| 28 | J4 | System Number (2) |
| 29 | L1 | I.U. Electronic Expansion Valve |
| 30 | L2 | O.U. Electronic Expansion Valve 1 |
| 31 | L3 | O.U. Electronic Expansion Valve 2 |
| 32 | L4 | O.U. Electronic Expansion Valve B |
| 33 | P1 | Comp. Current |
| 34 | P2 | Comp. Operating Accumulated Time |
| 35 | q1 | Motion Sensor Reaction Rate * ¹ |
| 36 | q2 | Radiation Sensor Temp. * ¹ |
| 37 | q3 | Motion Sensor 1 Reaction Rate * ¹ |
| 38 | q4 | Motion Sensor 2 Reaction Rate * ¹ |
| 39 | q5 | Motion Sensor 3 Reaction Rate * ¹ |
| 40 | q6 | Motion Sensor 4 Reaction Rate * ¹ |
| 41 | q7 | Setting Temp. Collected Value |

*¹ The average value for 30 seconds (update cycle time of Check Mode) is displayed on the LCD.

*² "C1" and "C2" are indicated by digital number like a 7-segment display.

Each signal means state of following item. (When ON, signal is displayed)



| | "C1" I.U. Micro-Computer State | "C2" O.U. Micro-Computer State |
|---|--------------------------------|--------------------------------|
| 1 | Operation | CMC1 |
| 2 | Alarm | RVR1 |
| 3 | Heating Thermo ON | CMC2 |
| 4 | Cooling Thermo ON | RVR2 |
| 5 | - | Outdoor Fan |
| 6 | Auxiliary Heater | SVA |
| 7 | Drain-Up Mechanism | SVB |

NOTE:

Items for O.U. are different by O.U. model.

For details, refer to the Service Manual for Outdoor Unit.

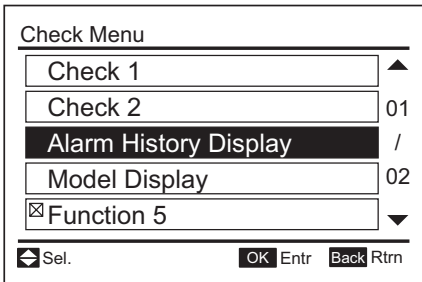
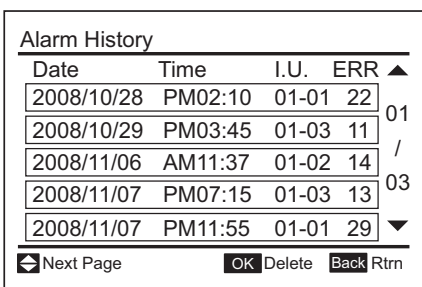
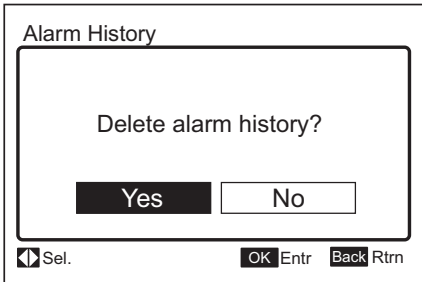
Features of Check Mode 2

| No. | Item | Data Name |
|-----|------|------------------------------|
| 1 | q1 | Inlet Air Temp. |
| 2 | q2 | Discharge Air Temp. |
| 3 | q3 | Liquid Pipe Temp. |
| 4 | q4 | Outdoor Air Temp. |
| 5 | q5 | Gas Pipe Temp. |
| 6 | q6 | Evaporating Temp. at Heating |
| 7 | q7 | Condensing Temp. at Cooling |
| 8 | q8 | Comp. Top Temp. |

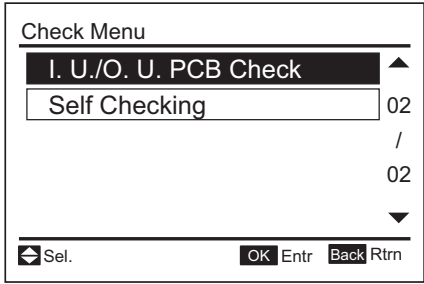
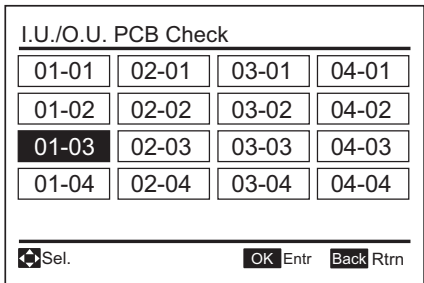
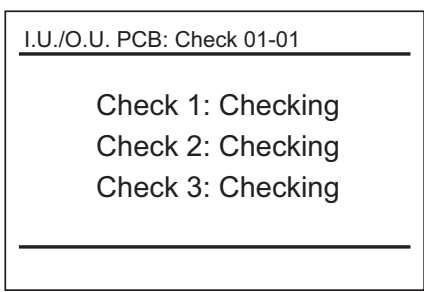
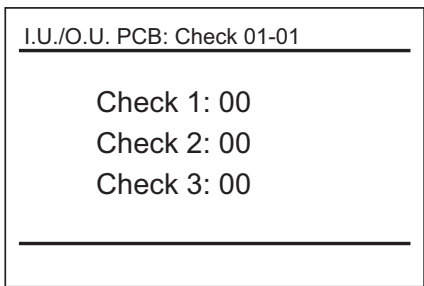
| No. | Item | Data Name |
|-----|------|------------------------|
| 9 | q9 | Discharge Pressure |
| 10 | qA | Suction Pressure |
| 11 | qb | Control Information |
| 12 | qC | Operating Frequency |
| 13 | qd | I.U. Expansion Valve |
| 14 | qE | O.U. Expansion Valve 1 |
| 15 | qF | Comp. Current |

(2) Alarm History Display

The Alarm History Display is accessed from the Check Menu.

| | |
|---|---|
| <p>(1) Press and hold “Menu” and “ECO” simultaneously for 3 seconds during the normal mode. The Check Menu is displayed.</p> |  |
| <p>(2) Select “Alarm History Display” from Check Menu and press “OK”.</p> |  |
| <p>(4) To delete the alarm history, press “OK”. The confirmation screen is displayed. Select “Yes” and press “OK”. The alarm history is deleted and the screen returns to (3) above. If “No” is pressed, the screen returns to (3) above.</p> |  |

(3) I.U./O.U. PCB Check

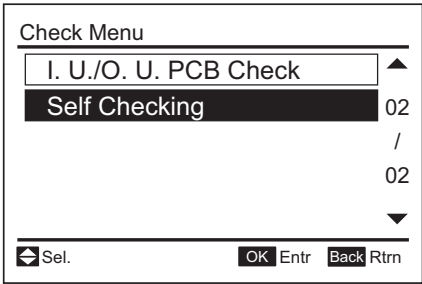
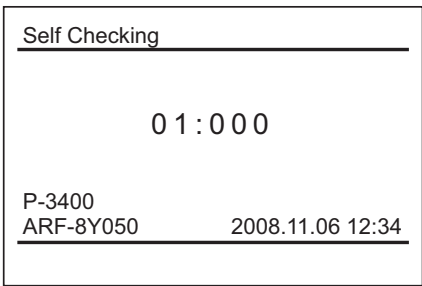
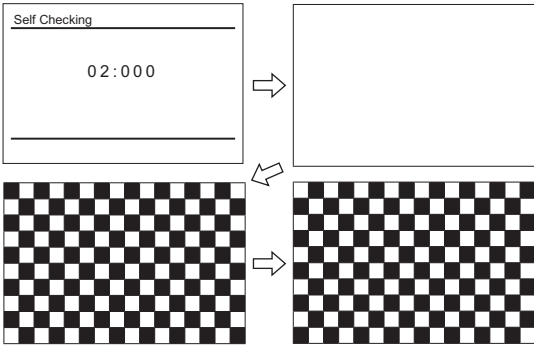
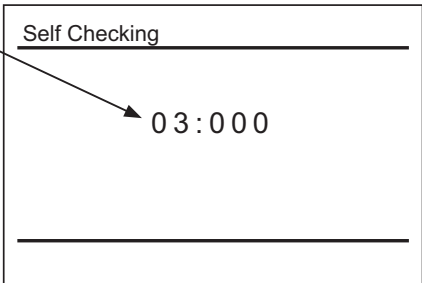
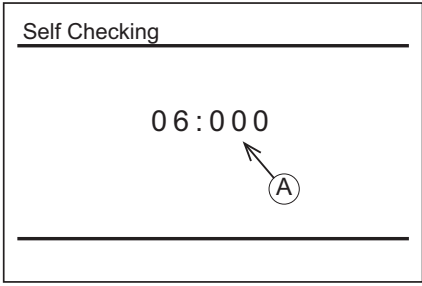
| | |
|--|--|
| <p>(1) Press and hold "Menu" and "ECO" simultaneously for three seconds during the normal mode. Check Menu is displayed.</p> |  |
| <p>(2) Select "I.U./O.U. PCB Check" from the Check Menu and press "OK".</p> |  |
| <p>(4) The indoor unit PCB and the outdoor unit PCB checks are started. * If "Menu" is pressed during the check, the check is canceled and the screen returns to (2). * If "Back/Help" is pressed during the check, the check is canceled and the screen returns to (3) above.</p> |  |
| <p>(5) After completing the check, the results of the PCB check are indicated. Press "Back/Help" and return to (3) above.</p> |  |

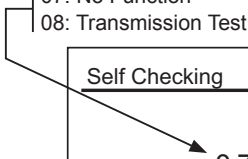
Results of Check Table

| Indoor Unit PCB | | Outdoor Unit PCB | |
|-----------------|--|------------------|--|
| 00 | Normal | 00 | Normal |
| 01 | Abnormality of Inlet Air Temp. Thermistor | 07 | Abnormality of Transmission of Outdoor Unit |
| 02 | Abnormality of Outlet Air Temp. Thermistor | F4 | ITO Input Failure |
| 03 | Abnormality of Liquid Pipe Temp. Thermistor | F5 | PSH Input Failure |
| 04 | Abnormality of Remote Thermistor | F6 | Abnormality of Protection Signal Detection Circuit |
| 05 | Abnormality of Gas Pipe Temp. Thermistor | F7 | Abnormality of Phase Detection |
| 08 | Abnormality of Transmission of Central Station | F8 | Abnormality of Transmission of Inverter |
| 0A | Abnormality of EEPROM | FA | Abnormality of High Pressure Sensor |
| 0b | Zero Cross Input Failure | Fb | Abnormality of Comp. Discharge Gas Temp. Thermistor |
| EE | Abnormality of Transmission of I.U. during Check | FC | Abnormality of Low Pressure Sensor |
| | | Fd | Abnormality of Evaporating Temp. Thermistor at Heating |
| | | FF | Abnormality of Ambient Air Temp. Thermistor |

(4) Self-Checking

Self-Checking checks the wired controller and clears EEPROM (storage cell inside of the wired controller).

| | |
|---|---|
| <p>(1) Press and hold "Menu" and "ECO" simultaneously for three seconds during the normal mode (when unit is not operating). The Check Menu is displayed.</p> |  |
| <p>(2) Select "Self Checking" from the Check Menu and press "OK".</p> |  |
| <p>(3) Select the process for "Self Checking".</p> <ul style="list-style-type: none"> * To start self check, press "ECO". * To clear EEPROM, press "▽" and "ECO" simultaneously. → See EEPROM clear process (15) below. |  |
| <p>(4) LCD Test Press "OK" and the screen changes as shown at the right.</p> | <p>03: Backlight Test 04: Contrast Test 05: Run Indicator Test</p>  |
| <p>(5) Backlight Test LCD brightness is changed gradually by pressing "OK".</p> | |
| <p>(6) Contrast Test Contrast of the LCD gradually changes by pressing "OK".</p> | |
| <p>(7) Run Indicator Test Press "OK" and the run indicator flashes in red and green twice for each.</p> | |
| <p>(8) Button Input Test Press the nine buttons one-by-one. The number indicated with "(A)" counts up as buttons are being pressed.</p> <ul style="list-style-type: none"> * The order of pressing buttons is random. Do not press more than one button at a time. They are not counted. |  |

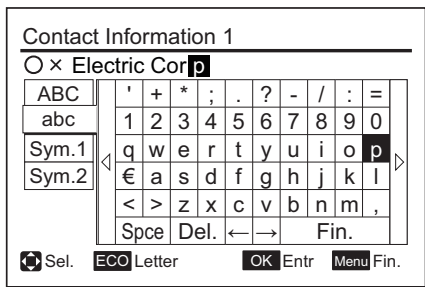
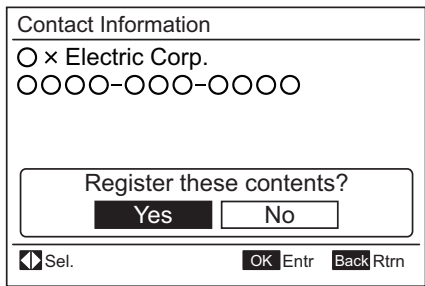
| | |
|--|--|
| <p>(9) No Function This function is not used. Press "OK" to proceed.</p> | <div> <div>07: No Function 08: Transmission Test</div>  <div> <div>Self Checking</div> <div>07:000</div> </div> </div> |
| <p>(10) Communication (Transmission) Circuit Test The wired controller automatically starts to check the communication circuit.</p> | |
| <p>(11) Wired Controller Thermistor Test The detected temperature by the wired controller thermistor is displayed at "A" in the figure at the right.</p> | <div> <div>Self Checking</div> <div>09:025</div> <div>A</div> </div> |
| <p>(12) Date/Time Test The date and time is changed from "2012.03.04 12:34" to "2008. 01. 01 00:00".</p> | <div> <div>Self Checking</div> <div>10:000</div> <div>2008.01.01 00:00</div> </div> |
| <p>(13) EEPROM Test < EEPROM Clearing Cancel > Press "?" (help). < EEPROM Clear > Press "OK" or wait 15 seconds. EEPROM data is cleared. During the process, the numbers indicate the location with "A". If A has a value of "999", EEPROM is in a faulty condition. *If "A" has "999", the process does not proceed to the next step.</p> | <div> <div>Self Checking</div> <div>11:000</div> <div>A</div> </div> |

EEPROM Process

| | |
|---|---|
| <p>(14) Clear EEPROM The wired controller automatically starts the EEPROM clearing process.</p> | <div> <div>Self Checking</div> <div>13:000</div> </div> |
| <p>(15) After several seconds pass, the self checking is completed and the wired controller is automatically restarted.</p> | |

(5) Contact Information Registration

Contact information can be registered from "Contact Information".

| | |
|---|---|
| (1) Press and hold "Menu" and "Back/Help" simultaneously for at least three seconds during the normal mode (when unit is not operating). The Test Run Menu is displayed. | |
| (2) Select "Contact Information" from the Test Run Menu and press "OK". Contact Information 1 is displayed. | |
| (3) Press "Back/Help" to change font types. |  |
| (4) Press "△ ▽ ◀ ▶" to select letters. | |
| (5) Press "OK" to confirm the letters. (Max.: 28 letters) | |
| (6) Select "Fin." and press "OK" (or simply press "Menu"), (7) is displayed. | |
| (7) Repeat (3) through (5) to register contact information and continue. Select "Fin." and press "OK", the confirmation screen is displayed. (Also, press "Menu" and the confirmation screen is displayed.) | |
| (8) Select "Yes" and press "OK". The Test Run Menu is displayed after the setting is confirmed. If "No" is pressed, the screen returns to (3) above. |  |

3.1.5 Checking Using 7-Segment Display

Refer to the Service Manual for Outdoor Unit.

3.1.6 Checking Alarm Code History

Refer to the Service Manual for Outdoor Unit.

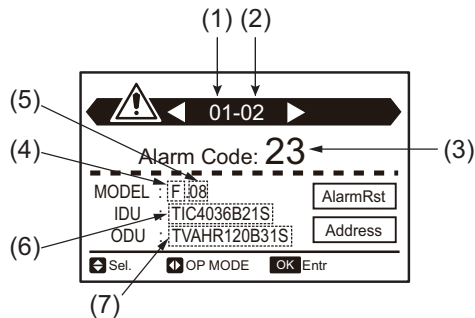
3.1.7 Emergency Operation

Refer to the Service Manual for Outdoor Unit.

3.2 Troubleshooting Procedures

● Alarm Code Indication of Wired Controller

< CIW01 >



- (1) Refrigerant Cycle No. (*1)
- (2) Indoor Unit No. (*1)
- (3) Alarm Code
- (4) Unit Model Code
- (5) Total Number of Indoor Units in the Same System as the Indoor Unit Having Trouble
- (6) Indoor Unit Model (*2) (*3)
- (7) Outdoor Unit Model (*2) (*3)

- (*1): If two or more indoor units having trouble are connected to the wired controller, the indicated indoor unit is selectable.
- (*2): The initial of model names are indicated as "T". These "T" are replaced with "H", "Y" or "C". (Except for the wall mount model.)
When there is a combination of outdoor units, ODU indication is the model of the main outdoor unit (Unit A).
- (*3): The model names are not indicated depending on the unit type.

3.2.1 Alarm Code Table

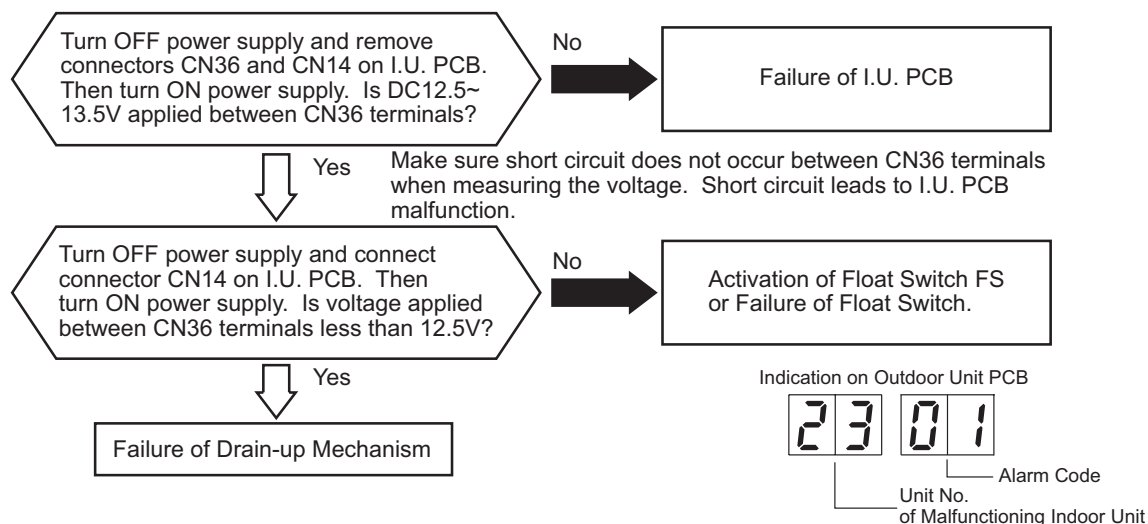
| Code | Category | Content of Abnormality | Leading Cause |
|------|-----------------------|---|--|
| 01 | Indoor Unit | Activation of Protection Device (Float Switch) | Activation of Float Switch (High Water Level in Condensate Pan, Problem with Condensate Piping, Float Switch, or Condensate Pan) |
| 03 | Communication | Operational Irregularities between Indoor and Outdoor Units | Incorrect Wiring, Loose Terminals, Disconnect Wire, Blowout of Fuse, Outdoor Unit Power OFF |
| 11 | Sensor on Indoor Unit | Inlet Air Thermistor | Incorrect Wiring, Disconnecting Wiring Breaking Wire, Short Circuit |
| 12 | | Outlet Air Thermistor | |
| 13 | | Freeze Protection Thermistor | |
| 14 | | Gas Piping Thermistor | |
| 19 | Fan Motor | Activation of Protection Device for Indoor Fan Motor | Fan Motor Overheat, Lockup |
| 31 | System | Incorrect Capacity Setting of Indoor Unit and Outdoor Unit | Incorrect Capacity Code Setting of Combination Excessive or Insufficient Indoor Unit Total Capacity Code |
| 35 | | Incorrect Setting of Indoor Unit No. | Duplication of Indoor Unit No. in same Refrigerant Group |
| b0 | | Incorrect Setting of Unit Model Code | Unit model code setting is not set or is set for the incorrect indoor unit type. |
| b1 | | Incorrect Setting of Unit and Refrigerant Cycle Number | There are 64 or More Number is Set for Address or Refrigerant Cycle. |

3.2.2 Troubleshooting Using Alarm Codes

| | | |
|------------|----|---|
| Alarm Code | 01 | Activation of Protection Device (Float Switch) in Indoor Unit |
|------------|----|---|

- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
 - The indoor unit number (refrigerant cycle number - address number), the alarm code, the model code^{*1)}, the model name^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.
- ^{*1)} Except for some models.

★ This alarm code is displayed when the contact between #1 and #2 of CN14 on the I.U. PCB is opened for over 120 seconds during the cooling, dry, fan, or heating operation.



| Event | Cause | | Check Item | Action (Turn OFF Main Switch) |
|-------------------------------|-----------------------|---|---|--|
| Activation of Float Switch | High Condensate Level | Clogging of Drainage Up-Slope Condensate Piping | Check condensate pan. Check drainage by pouring water. | Remove foreign particles clogging condensate pipe. |
| Failure of Float Switch | Failure | | Check continuity when condensate level is low. | Replace float switch if faulty. |
| | Contact Failure | | Measure resistance with a tester. | Repair looseness and replace connector. |
| | Incorrect Connection | | Check connection. | Repair connection. |
| Failure of Drain-up Mechanism | Failure | | Measure voltage between CN36 terminals with a tester. | Replace drain-up mechanism if faulty. |
| | Contact Failure | | Measure resistance with a tester. | Repair looseness and replace connector. |
| | Incorrect Connection | | Check connection. | Repair connection. |
| Failure of Indoor Unit PCB | | | Check PCB in self-checking mode ^{*1)} . | Replace it if faulty. |

^{*1)}: Self-Checking of PCB shall be performed according to "Service Manual" of the connected outdoor unit.

Alarm
Code

03

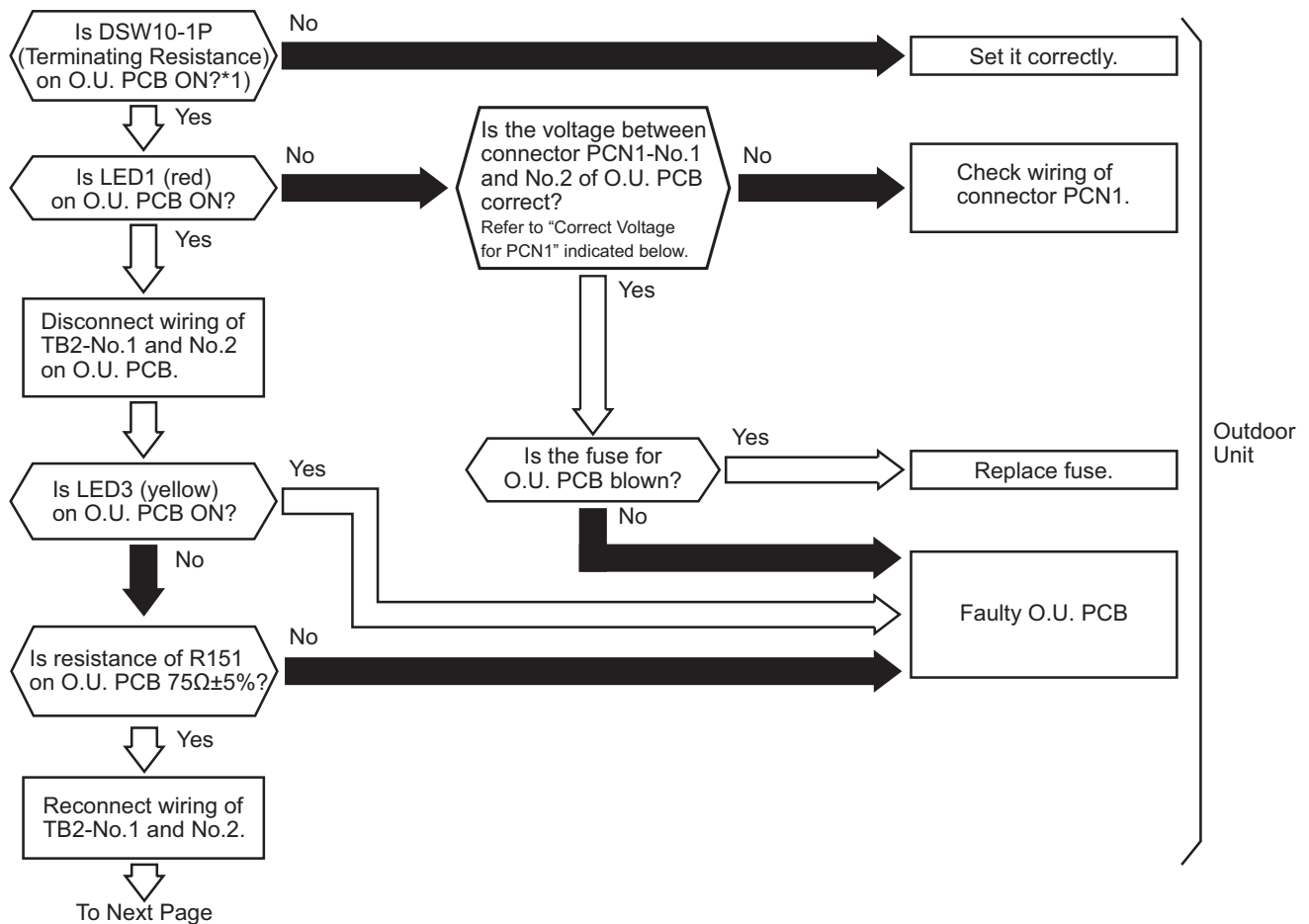
Operational Irregularities between Indoor Units and Outdoor Units

- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

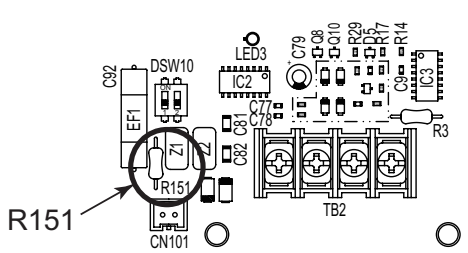
*1): Except for some models.

- ★ When fuses are blown, or the circuit breakers are activated, check the cause of overcurrent and take necessary action.
- ★ This alarm code is displayed when an abnormal condition continues for three minutes after normal communication between indoor units and outdoor units. The abnormal condition continues for 30 seconds even after the micro-computer is automatically reset. If communication failure occurs from the beginning, the alarm code is displayed after 30 seconds from start up.

O.U. PCB: Outdoor Unit PCB (PCB1)

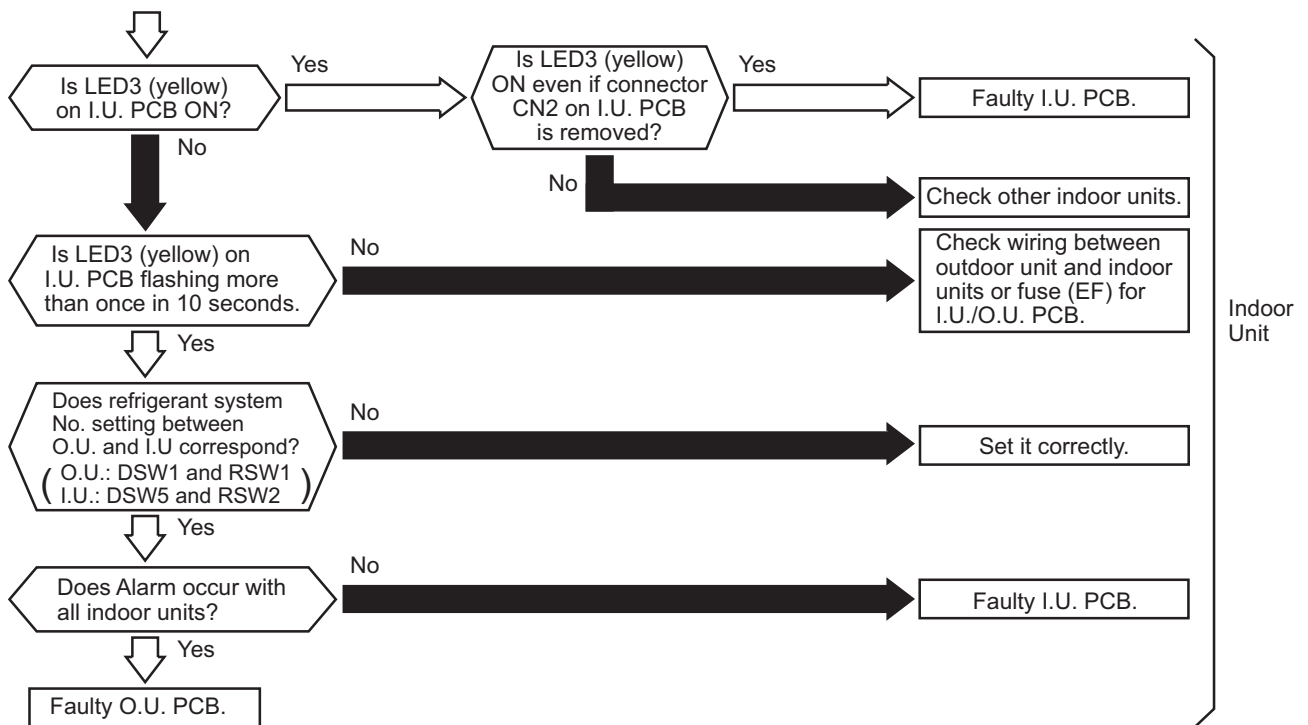


O. U. PCB



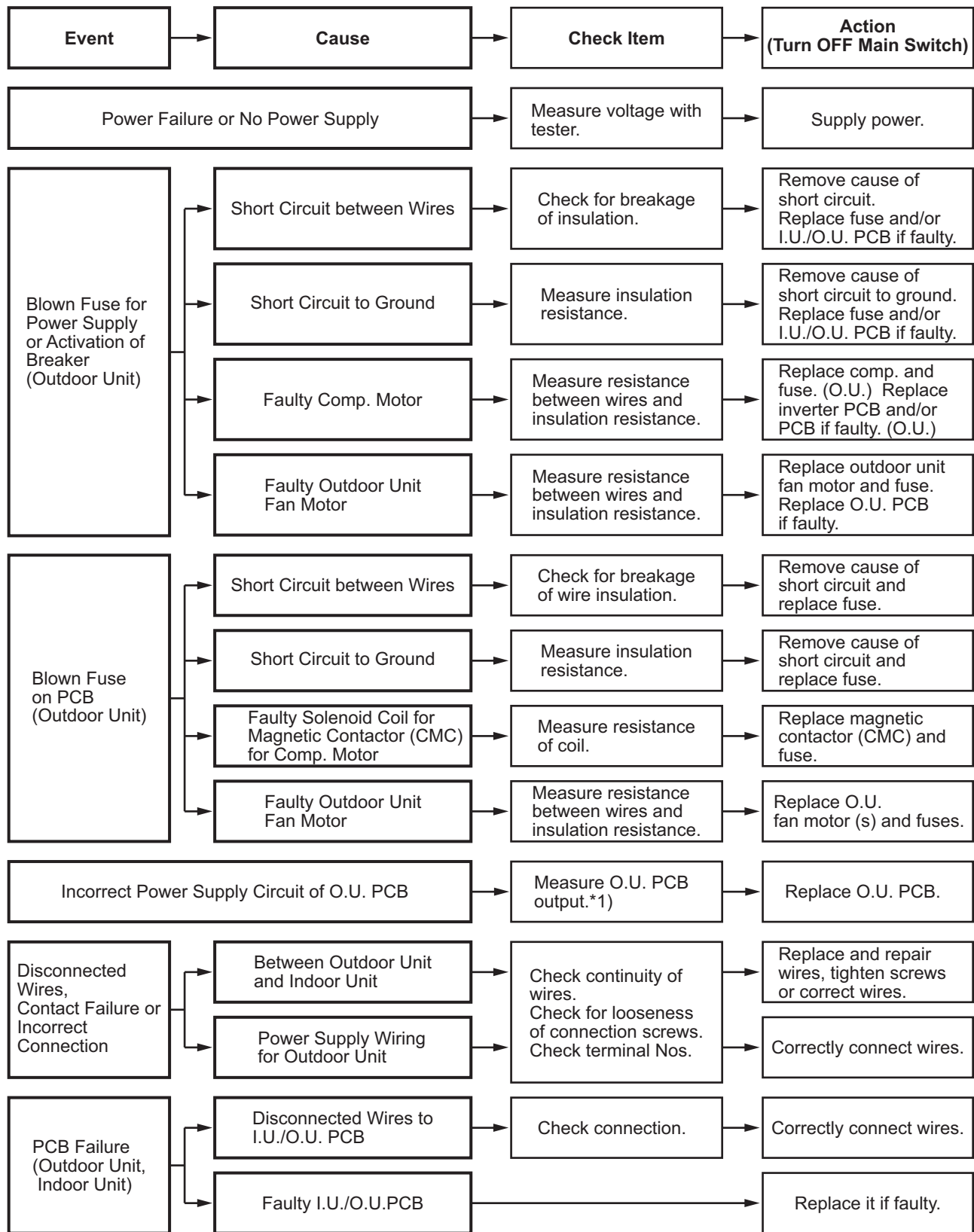
O.U. PCB: Outdoor Unit PCB (PCB1)

I.U. PCB: Indoor Unit PCB



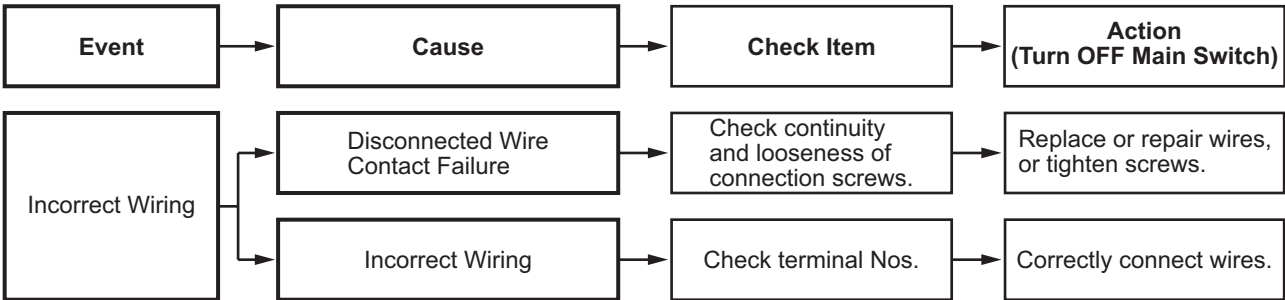
*1): If the end terminal resistance (DSW10) is set to OFF for H-LINK connection, set the end terminal resistance to ON when CN2 is disconnected. Set the end terminal resistance to OFF when CN2 is reconnected.

TROUBLESHOOTING



*1): Refer to O. U. PCB check method for details.

O.U. PCB: Outdoor Unit PCB
I.U. PCB: Indoor Unit PCB



- *1): If the end terminal resistance (DSW10) is set to OFF for H-LINK connection, set the end terminal resistance to ON when CN2 is disconnected. Set the end terminal resistance to OFF when CN2 is reconnected.
- *2): 12VDC between VCC12 and GND2
5VDC between VCC05 and GND1
12VDC between VCC12 and GND1
15VDC between VCC15 and GND1
24VDC between VCC24 and GND1
12VDC between VCC12T and GND1

Refer to the Service Manual of connected outdoor unit.

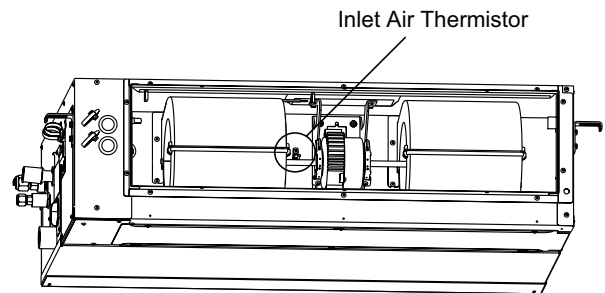
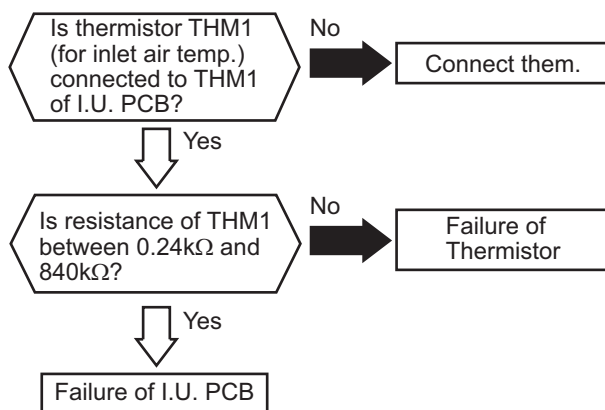
Alarm Code 11

Abnormality of Thermistor for Indoor Unit Inlet Air Temperature (Inlet Air Thermistor)

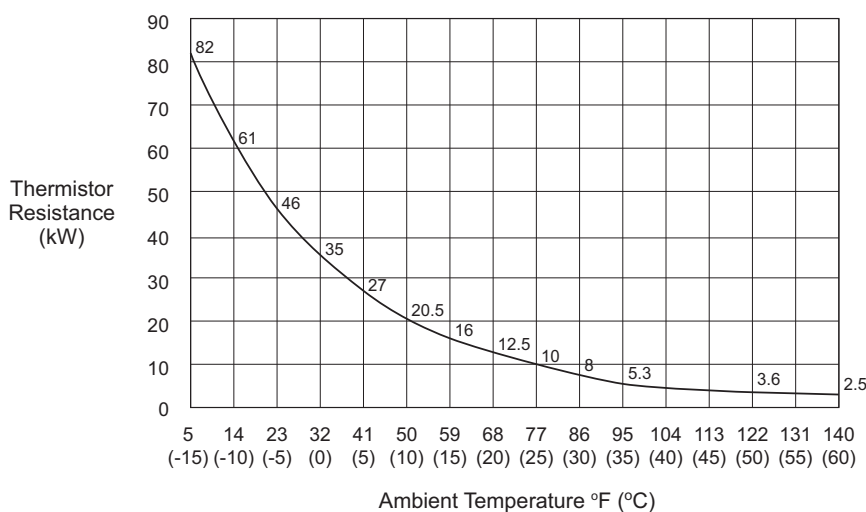
- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

*1): Except for some models.

- ★ This alarm code is displayed when a short circuit ($0.24\text{k}\Omega$ or less) or disconnection ($840\text{k}\Omega$ or more) of the thermistor is detected during heating or cooling operation. The operation automatically restarts when the malfunction is removed.



| Event | Cause | Check Item | Action (Turn OFF Main Switch) |
|---------------------------------|----------------------|---------------------------------------|----------------------------------|
| Failure of Inlet Air Thermistor | Failure | Check resistance. | Replace thermistor if faulty. |
| | Incorrect Connection | Check connection. | Correctly connect wires. |
| Failure of I.U. PCB | | Replace I.U. PCB and check operation. | Replace I.U. PCB if faulty. |



Thermistor Characteristics

Indication on Outdoor Unit PCB (Alarm Code 11 ~ 19)

23 11

Alarm Code (11 ~ 19)
Unit No. of Malfunctioning Indoor Unit

NOTE:

This figure is applicable to the following thermistors.

- Inlet Air Thermistor (THM1), 2. Liquid Pipe Thermistor (Freeze Protection) (THM3),
- Gas Pipe Thermistor (THM5), 4. Outlet Air Thermistor (THM2)

Alarm
Code

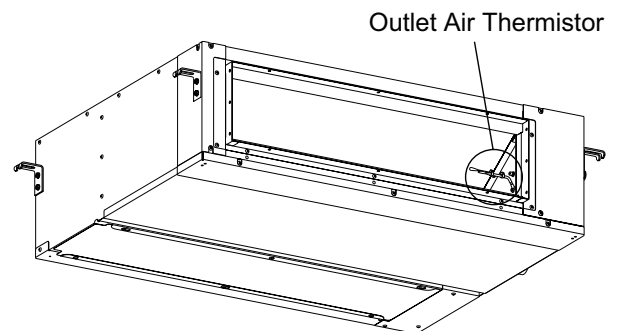
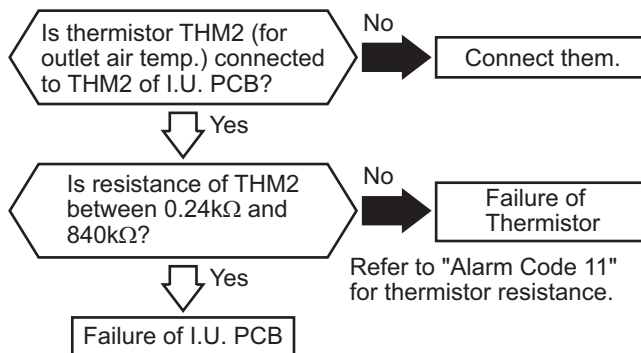
12

Abnormality of Thermistor for Indoor Unit Outlet Air Temperature
(Outlet Air Thermistor)

- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

*1): Except for some models.

- ★ This alarm code is indicated when a short circuit ($0.24\text{k}\Omega$ or less) or disconnection ($840\text{k}\Omega$ or more) of the thermistor is detected during heating or cooling operation. The operation automatically restarts when the malfunction is removed.



| Event | Cause | Check Item | Action (Turn OFF Main Switch) |
|----------------------------------|----------------------|---------------------------------------|----------------------------------|
| Failure of Outlet Air Thermistor | Failure | Check resistance. | Replace thermistor if faulty. |
| | Incorrect Connection | Check wiring to I.U. PCB. | Correctly connect wires. |
| Failure of I.U. PCB | | Replace I.U. PCB and check operation. | Replace I.U. PCB if faulty. |

Alarm
Code

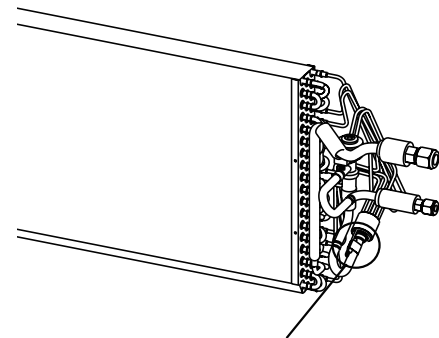
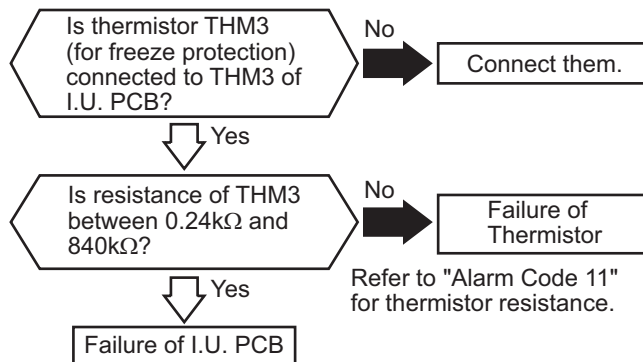
13

Abnormality of Thermistor for Liquid Refrigerant Pipe Temperature
at Indoor Unit Heat Exchanger (Freeze Protection Thermistor)

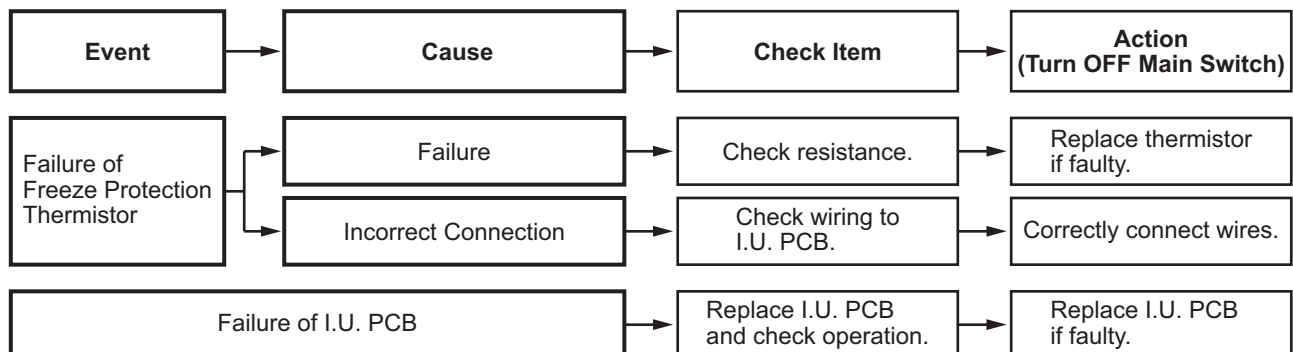
- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

*1): Except for some models.

- ★ This alarm code is indicated when a short circuit ($0.24\text{k}\Omega$ or less) or disconnection ($840\text{k}\Omega$ or more) of the thermistor is detected during heating or cooling operation. The operation automatically restarts when the malfunction is removed.



Liquid Pipe Thermistor
(Freeze Protection)



Alarm
Code

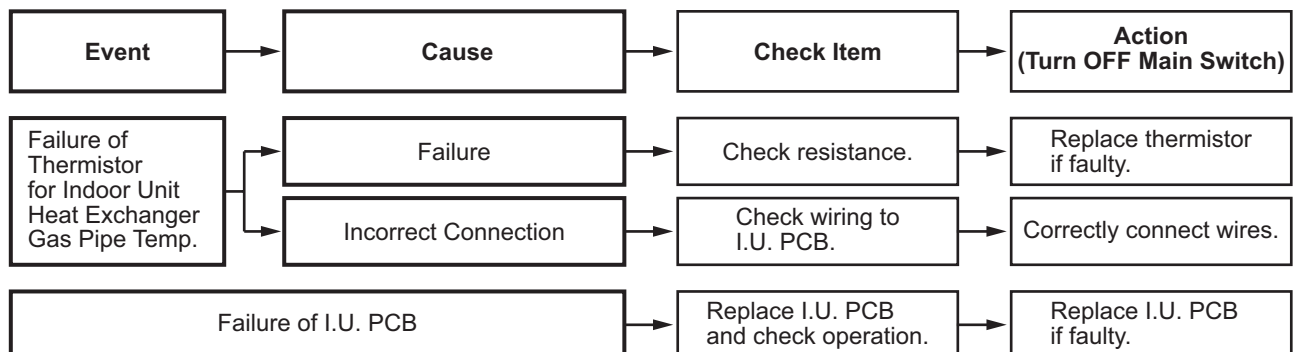
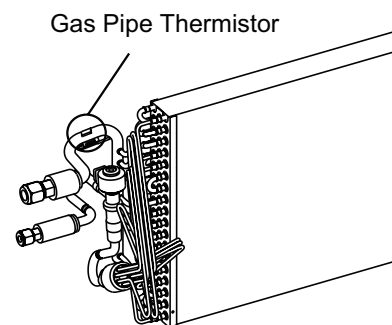
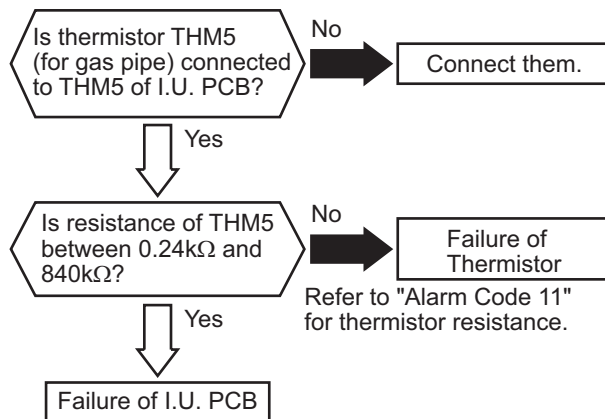
14

Abnormality of Thermistor for Gas Refrigerant Pipe Temperature
at Indoor Unit Heat Exchanger (Gas Pipe Thermistor)

- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

*1): Except for some models.

- ★ This alarm code is indicated when a short circuit ($0.24\text{k}\Omega$ or less) or disconnection ($840\text{k}\Omega$ or more) of the thermistor is detected during a heating or cooling operation. The operation automatically restarts when the malfunction is removed.



Alarm
Code

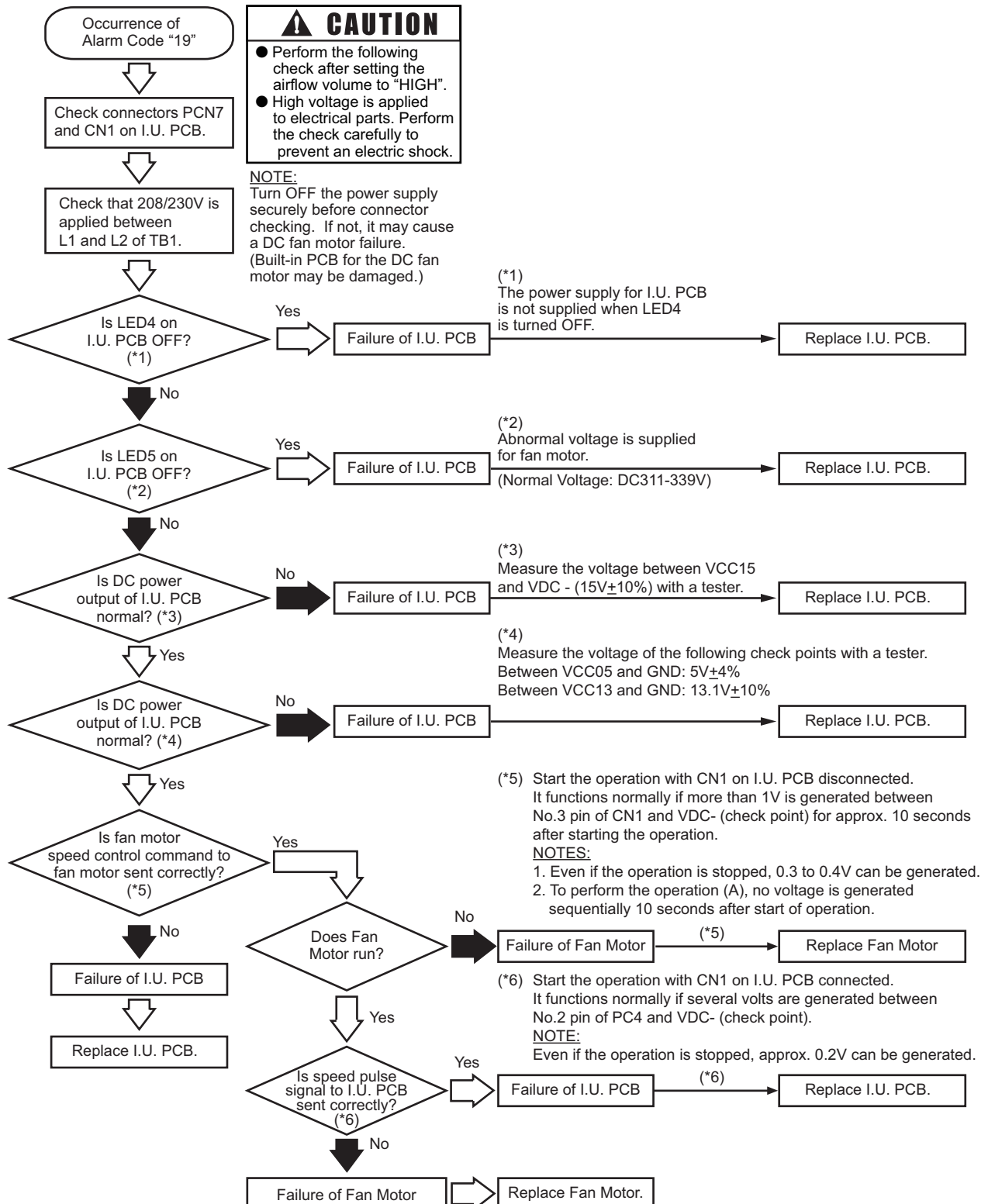
19

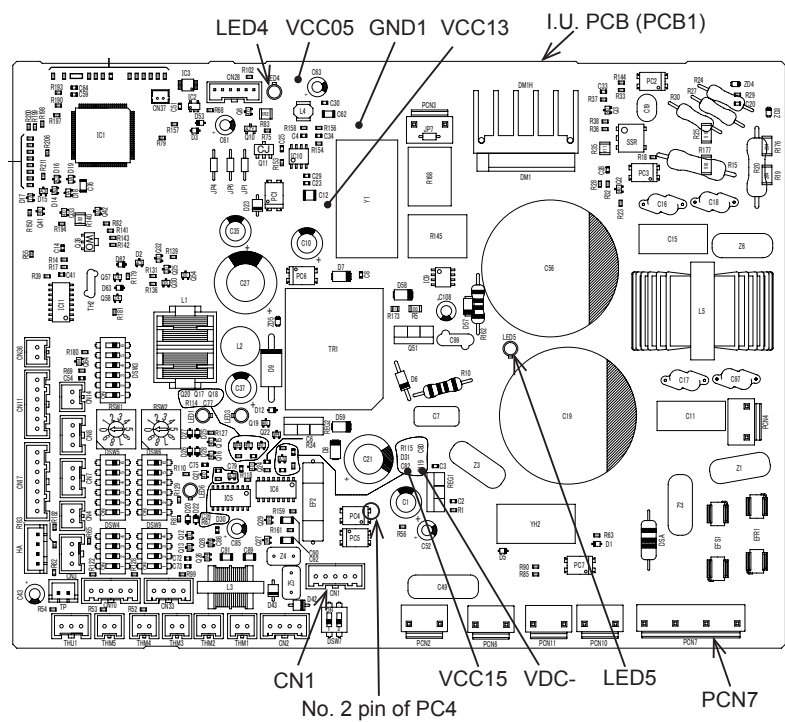
Activation of Protection Device for Indoor Fan Motor

- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

*1): Except for some models.

- ★ This alarm code is displayed when the indoor fan motor rotates at less than 70rpm for five seconds three times in 30 minutes during the operation (A).





Failure Diagnosis of Fan Motor

Disconnect the Fan Motor connectors. Measure resistance between each of the pins twice and check that the readings meet the criteria. Make sure to switch the red and black tester probes before second measurement.

| <div> 2 FG (blue) 3 Vsp (yellow) 4 GND (black) </div> | 1st measurement | | | 2nd measurement | | | <div>Criteria</div> <div>Both readings must be 10 Ω or more.</div> |
|---|-----------------|-------|---------|-----------------|-------|---------|--|
| | Tester | | Reading | Tester | | Reading | |
| | Red | Black | Ω | Red | Black | Ω | |
| | FG | GND | | GND | FG | | |
| | Vsp | GND | | GND | Vsp | | |
| <div> 1 Vdc (white) 3 GND (black) </div> | 1st measurement | | | 2nd measurement | | | <div>Criteria</div> <div>Both readings must be 10 Ω or more.</div> |
| | Tester | | Reading | Tester | | Reading | |
| | Red | Black | Ω | Red | Black | Ω | |
| | Vdc | GND | | GND | Vdc | | |
| | | | | | | | |

Alarm
Code

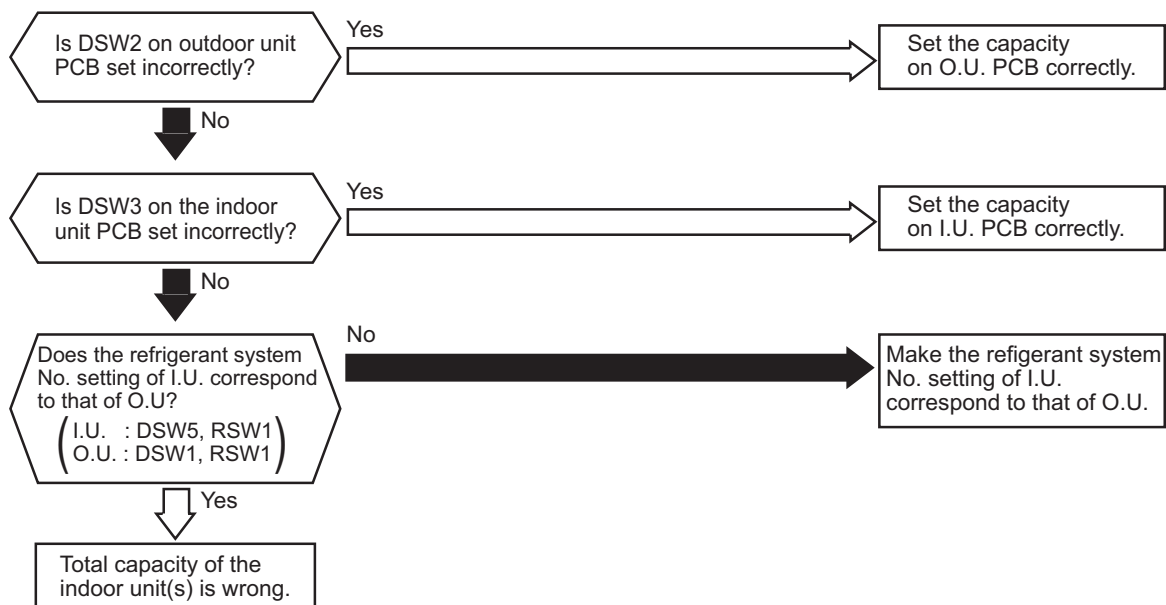
31

Incorrect Capacity Setting of Indoor Unit and Outdoor Unit

- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

*1): Except for some models.

- ★ This alarm code is indicated when DSW2 (for capacity setting) on the outdoor unit PCB is not set (all the settings from #1 to #6 are OFF) or set incorrectly.
- ★ This alarm code is indicated when the total indoor unit capacity exceeds the connectable indoor unit capacity ratio of outdoor unit.



| Event | Cause | Check Item | Action (Turn OFF Main Switch) |
|--|-------|---|---|
| Incorrect Capacity Setting of Each Indoor Unit | | Check combination of O.U. capacity and each I.U. PCB capacity setting. | Correctly set capacity code No. setting of DSW3 on each I.U. PCB. |
| Incorrect Capacity Setting of Outdoor Unit | | Check capacity setting on O.U. PCB. | Correctly set DIP switch DSW2 on O.U. PCB. |
| Total capacity of I.U. connected to O.U. is beyond permissible range | | Calculate total indoor unit capacity and check combination of indoor units. | Ensure that total indoor unit capacity is within permissible range. |
| Refrigerant System No. Setting of I.U. does not correspond to Refrigerant System No. Setting of O.U. | | Check refrigerant No. setting of each I.U. and O.U. PCB. | Make refrigerant system No. setting of each I.U. correspond to that of O.U. (I.U. : DSW5, RSW1 O.U. : DSW1, RSW1) |

Refrigerant Cycle No. Setting

| | Tens digit | Units digit | Ex.) Set 25 Cycles |
|--------------|------------|-------------|--|
| | | | DSW1 and DSW5: Set All Pins OFF RSW1: Set it at "5" |
| Outdoor Unit | DSW1 | RSW1 | |
| Indoor Unit | DSW5 | RSW1 | |

NOTE:

Before shipment, DSW1 and 5, and RSW1 are set to "0."

Maximum refrigerant cycle no. is 63.

| | | |
|------------|-----------|--|
| Alarm Code | 35 | Incorrect Setting of Indoor Unit and Outdoor Unit Number |
|------------|-----------|--|

- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

*1): Except for some models.

- ★ This alarm code is indicated in three to five minutes after power-on of outdoor unit, if the indoor unit No. set by DSW6 and RSW2 duplicates in the same refrigerant group.
- ★ This alarm code is indicated when the refrigerant cycle number and the address setting value are more than 64. (The alarm code "b1" is indicated on the wired controller.)

NOTES:

1. In the case of H-LINK system, this alarm code may be indicated when the DIP switch and the rotary switch (for refrigerant cycle No. setting) on the outdoor unit PCB and DSW5 and RSW1 (for refrigerant cycle No. setting) on the indoor unit PCB are not set correctly. In this case, set them correctly after the power supply is turned OFF, and turn ON the power supply again.
(The rotary switch (RSW2) is not available depending on the indoor unit model.)
2. In the case that the indoor unit No. for the unit not supporting H-LINK II is set as 16 and after, or the indoor unit No. (0 ~15) are occupied at auto-address setting, this alarm code will be indicated on the wired controller while the alarm code "b5" is flashing on the outdoor unit PCB.

Alarm
Code

60

Incorrect Setting of Unit Model Code

- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

*1): Except for some models.

- ★ This alarm code is indicated in the following condition. Check the unit model code setting (DSW4) of I.U. PCB after turning OFF the power supply.

| Condition | Action |
|---|--|
| The unit model code setting (DSW4) is not set (all pins are "OFF"), or is set for the incorrect indoor unit type. | Set DSW4 correctly according to the DIP switch setting in "Installation and Maintenance Manual." |

Alarm
Code

61

Incorrect Setting of Unit and Refrigerant Cycle Number

- The RUN indicator (red) of the Wired Controller flashes and "ALARM" is displayed on the LCD.
- The indoor unit number, the alarm code, the unit model code^{*1)} and the number of connected indoor units are displayed on the LCD. The indoor unit number and the alarm code are displayed on the 7-segment display of the outdoor unit PCB.

*1): Except for some models.

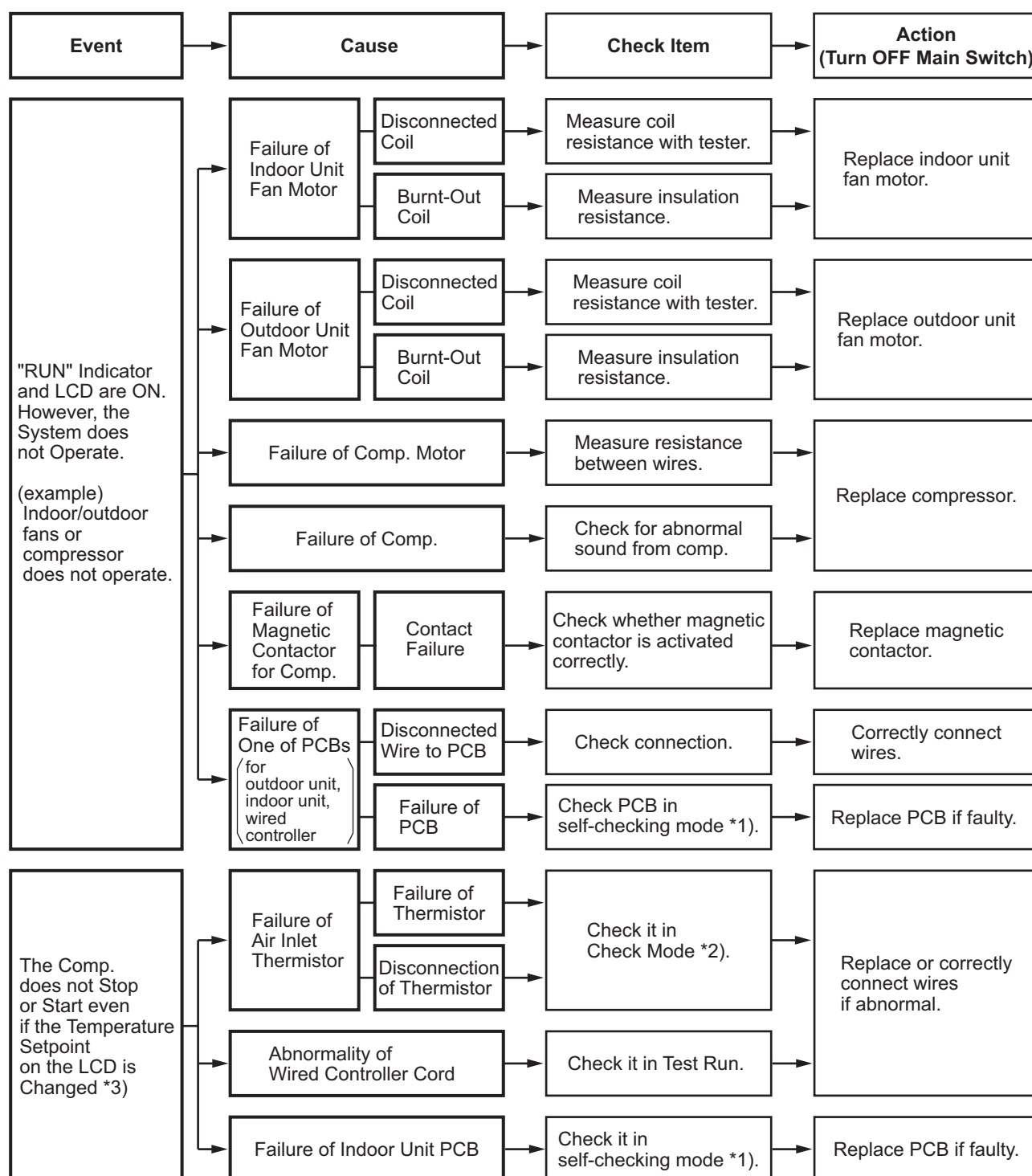
- ★ This alarm code is indicated in the following condition. Check the settings of the DIP switch (DSW) and the rotary switch (RSW) after turning OFF the power supply.

| Condition | Action |
|--|--|
| The unit No. setting (DSW6 and RSW2) or the refrigerant cycle No. setting (DSW5 and RSW1) is set as "64" or more, or more than 2 pins of DSW5 or DSW6 are set. | <p>a) Unit No. Setting / Ref. Cycle No. Setting Starting from "1" (recommended) Set the unit No. and the refrigerant cycle No. from "1" to "63." (Setting No. for the 64th unit is "0.")</p> <p>b) Unit No. Setting / Ref. Cycle No. Setting Starting from "0" Set the unit No. and the refrigerant cycle No. from "0" to "63." (Setting No. for the 64th unit is "63.")</p> |

3.2.3 Abnormalities of Devices

| Other Abnormalities | Abnormalities of Devices |
|---------------------|--------------------------|
|---------------------|--------------------------|

If there is no abnormality (Alarm Code) indicated on the wired controller, and normal operation is not available, take necessary action according to the following procedures.



*1): For CIW01, refer to Section 3.1.4 (4).

*2): For CIW01, refer to Section 3.1.4 (3).

*3): Even if controllers are normal, the compressor does not operate under the following conditions.

* Indoor Air Temp. is lower than 69.8°F (21°C) or Outdoor Air Temp. is lower than 23°F (-5°C) during cooling operation.

* Indoor Air Temp. is higher than 86°F (30°C) or Outdoor Air Temp. is higher than 73.4°F (23°C) during heating operation.

* When a cooling (or heating) operation signal is given to the outdoor unit and a different operation signal is given to indoor units.

* When demand signal or emergency stop signal is given to outdoor unit.

| Other Abnormalities | Abnormalities of Devices | | |
|--|--------------------------------|--|---|
| Event | Cause | Check Item | Action (Turn OFF Main Switch) |
| The Comp. does not stop or start even if the temperature setpoint on the LCD is changed. *3) | Incorrect Optional Setting | Check Setting Condition of "Thermistor of Wired Controller" with Optional Setting <u>* Setting and Control</u> "00": Control by Indoor Thermistor for Suction Air "01": Control by Thermistor of Wired Controller "02": Control by Average Value of Indoor Thermistor for Suction Air and Thermistor of Wired Controller | If the thermistor of wired controller is not used, set it at "00". |
| | Incorrect Input/Output Setting | Check Setting Condition of "i1" and "i2" by Input/Output Setting <u>* Setting and Control</u> "01": Room Thermostat (Cooling) "02": Room Thermostat (Heating) | If the room thermostat is not used, set for input signal actually used. If no signal is used, set it at "00". |

*1): For CIW01, refer to Section 3.1.4 (4).

*2): For CIW01, refer to Section 3.1.4 (3).

*3): Even if controllers are normal, the compressor does not operate under the following conditions.

* Indoor Air Temp. is lower than 69.8°F (21°C) or Outdoor Air Temp. is lower than 23°F (-5°C) during cooling operation.

* Indoor Air Temp. is higher than 86°F (30°C) or Outdoor Air Temp. is higher than 73.4°F (23°C) during heating operation.

* When a cooling (or heating) operation signal is given to the outdoor unit and a different operation signal is given to indoor units.

* When demand signal or emergency stop signal is given to outdoor unit.

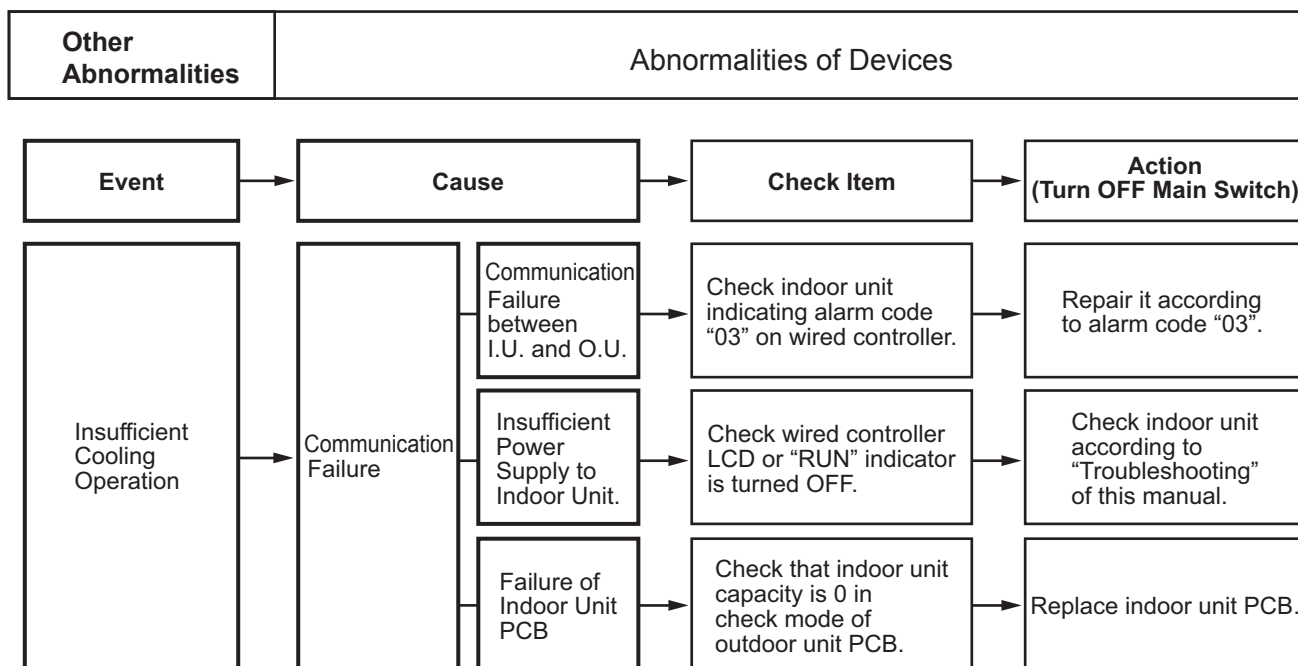
| Other Abnormalities | Abnormalities of Devices | | | |
|--|--|---|---|---|
| Event | Cause | | Check Item | Action (Turn OFF Main Switch) |
| Indoor Fan Speed is Not Changed | Failure of Discharge Air Temp. Thermistor | Failure of Thermistor | Check Thermistor in Self-Checking mode *2). | Replace or correctly connect wires if abnormal. |
| | | Disconnected Wire of Thermistor | | |
| | Failure of Wired Controller | Check it in Self-Checking mode *1). | Replace wired controller if faulty. | |
| | Failure of Indoor Unit PCB | | | Replace PCB if faulty. |
| No Defrosting Operation Mode is Available while Heating Operation or Defrosting Operation is Continued | Failure of Thermistor for Outdoor Evaporating Temp. during Heating | Failure of Thermistor | | Replace or correctly connect it if abnormal. |
| | | Disconnected Wire of Thermistor | | |
| | Failure of Reversing Valve | Disconnected Reversing Valve Coil | Measure resistance of coil. | Replace reversing valve. |
| | | Incorrect Activation of Reversing Valve | Supply power forcibly. | |
| | Disconnected Control Wires between Indoor Unit and Outdoor Unit | | Check connectors. | Correctly connect wires. |
| | Failure of Outdoor Unit PCB | Disconnected Wire to PCB | Check connectors. | Correctly connect wires. |
| | | Failure of PCB | Check it in Self-Checking mode *1). | Replace it when check mode is not available. |
| | Failure of Indoor Unit PCB | Disconnected Wire to PCB | Check connectors. | Correctly connect wires. |
| | | Failure of PCB | | |
| Light and LCD Indication on Wired Controller are Kept ON | Failure of PCB in Indoor Unit or Wired Controller | | Check PCB in Self-Checking mode *1). | Replace PCB if faulty. |

*1): For CIW01, refer to Section 3.1.4 (3).

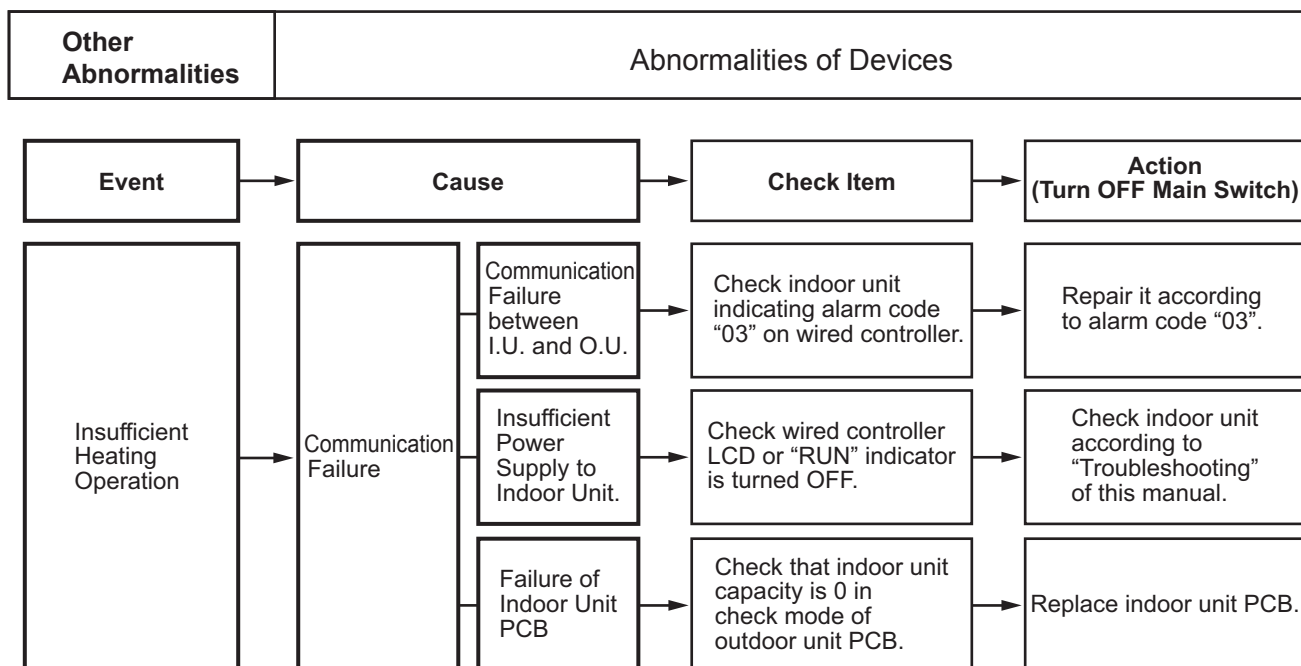
*2): Refer to Section 3.1.4 (4).

| Other Abnormalities | Abnormalities of Devices | | |
|--------------------------------|--|---|---|
| Event | Cause | Check Item | Action (Turn OFF Main Switch) |
| Insufficient Cooling Operation | Indoor Heat Load is Larger than Cooling Capacity | Calculate heat load. | Use a larger unit. |
| | Excessively Low Suction Pressure | Gas Leakage or Shortage of Refrigerant | Measure superheat. Correctly charge refrigerant after repairing gas leakage. |
| | | Excessively Small Diameter Tube or Long Piping | Measure and check field-supplied pipes. Use correct pipes. |
| | | Incorrect Activation of Check Valve of Outdoor Unit | Check whether or not temp. difference exists before/after check valve. Replace check valve for outdoor unit. |
| | | Failure or Malfunction of Electronic Expansion Valve | Check for any clogging. Remove clogging. |
| | | | Check connection cord and connector. Replace connector. |
| | | | Is there operation sound from coil? Replace coil. |
| | | | Is thermistor on compressor normal? Replace thermistor. |
| | | | Is thermistor installed correctly on compressor? Correctly install it. |
| | | Clogged Strainer in Indoor Unit Clogging at Low Pressure Piping | Check temp. difference at inlet and outlet of strainer. Replace strainer in indoor unit. |
| | | Clogging at Low Pressure Piping | Check temp. difference. Remove clogging. |
| | | Insufficient Airflow to Indoor Unit Heat Exchanger | Check for clogged air filter. Clean air filter. |
| | | | Check for obstacle at inlet or outlet. Remove obstacles. |
| | | Excessively Low Air Temp. to Indoor Unit Heat Exchanger | Insufficient revolution of indoor unit fan motor? Replace fan motor. |
| | | | Check short-circuited indoor unit air. Remove cause of short-circuited. |
| | Activation of Motion Sensor Control | "Motion Sensor is activated" is indicated on wired controller. | It is normal. |

| Other Abnormalities | Abnormalities of Devices | | | |
|--------------------------------|--|---|---|--|
| Event | Cause | Check Item | Action (Turn OFF Main Switch) | |
| Insufficient Cooling Operation | Excessively High Discharge Pressure | Insufficient Airflow to Outdoor Unit Heat Exchanger | Check clogging of outdoor unit heat exchanger. | Remove clogging. |
| | | | Obstacles at inlet or outlet of outdoor unit heat exchanger? | Remove obstacles. |
| | | | Is service space for outdoor unit sufficient? | Secure sufficient service space. |
| | | | Correct fan speed? | Replace fan motor. |
| | | Excessively High Air Temp. to Outdoor Unit Heat Exchanger | Short-circuited outdoor unit air | Remove cause of short-circuit. |
| | | | Any other heat load near outdoor unit? | Remove heat source. |
| | | Excessively Charged Refrigerant | Check expansion valve opening. | Correctly charge refrigerant. |
| | | Non-Condensable Gas in Cycle | Check each temp. and pressure. | Charge refrigerant after vacuum pumping. |
| | | Clogging of Discharge Piping | Check for clogging. | Remove clogging. |
| | | Failure or Malfunction of Expansion Valve | Check for clogging. | Remove clogging. |
| | | | Check for connecting wire and connector. | Replace connector. |
| | | | Is there operation sound from coil? | Replace coil. |
| | | | Is thermistor on compressor normal? | Replace thermistor. |
| | | | Is thermistor installed correctly on compressor? | Correctly install it. |
| | Malfunction or Internal Leakage from Reversing Valve | Check temp. difference between inlet and outlet of reversing valve. | Replace reversing valve. | |
| | Excessively Low Suction Pressure | Failure of Solenoid Valve for Bypass | Check leakage from solenoid valve. | Replace solenoid valve. |
| | | Malfunction or Internal Leakage from Reversing Valve | Check temp. difference between inlet and outlet of reversing valve. | Replace reversing valve. |
| | Discharge Temp. of Indoor Unit is Unstable. | Check for expansion valve of indoor unit in the same system. | Replace failed expansion valve of indoor unit. | |



| Other Abnormalities | Abnormalities of Devices | | | |
|--------------------------------|--|--|--|--|
| Event | Cause | Check Item | Action (Turn OFF Main Switch) | |
| Insufficient Heating Operation | Indoor Heat Load is Larger than Heating Capacity | Calculate heat load. | Use larger unit. | |
| | Excessively Low Suction Pressure | Gas Leakage or Insufficient Refrigerant Charge | Measure superheat. | Correctly charge refrigerant after gas leakage check and repair. |
| | | Excessively Small Diameter or Long Piping | Measure field-supplied pipes. | Use specified pipes. |
| | | Failure or Malfunction of Electronic Expansion Valve | Check for clogging. | Remove clogging. |
| | | | Check for connecting cord and connector. | Replace connector. |
| | | | Is there operation sound from coil? | Replace coil. |
| | | | Is thermistor on compressor normal? | Replace thermistor. |
| | | | Is thermistor installed correctly on compressor? | Correctly install it. |
| | | Clogging of Indoor Unit/ Outdoor Unit Strainer | Check temp. difference between inlet and outlet of strainer. | Replace strainer for outdoor unit or indoor unit. |
| | | Clogging of Suction Piping | Check temp. difference of each part. | Remove clogging. |
| | | Insufficient Airflow to Outdoor Unit Heat Exchanger | Is outdoor unit heat exchanger clogged? | Remove clogging. |
| | | | Are there any obstacles at inlet or outlet of outdoor unit? | Remove obstacles. |
| | | | Is service space for outdoor unit sufficient? | Secure sufficient service space. |
| | | | Check outdoor fan speed. | Replace fan motor. |
| | | Excessively Low Air Temp. to Outdoor Unit Heat Exchanger | Check for any short-circuited outdoor unit air. | Remove cause of short circuit. |
| | | Defrosting is Insufficiently Completed | Check thermistor for defrosting. | Replace thermistor for defrosting. |



| Other Abnormalities | Abnormalities of Devices | | | |
|--------------------------------|--|--|---|--|
| Event | Cause | | Check Item | Action (Turn OFF Main Switch) |
| Insufficient Heating Operation | Excessively High Discharge Pressure | Insufficient Airflow to Indoor Unit Heat Exchanger | Check for filter clogging. | Remove clogging. |
| | | | Check for any obstacles at inlet or outlet of indoor unit. | Remove obstacles. |
| | | | Check indoor fan speed. | Replace fan motor. |
| | | Excessively High Air Temp. to Indoor Unit Heat Exchanger | Check whether short circuit exists. | Remove cause of short circuit. |
| | | Excessively Charged Refrigerant | Check expansion valve opening. | Correctly charge refrigerant. |
| | Excessively High Suction Pressure | Non-Condensable Gas in Ref. Cycle | Check refrigerant quantity. | Recharge refrigerant after vacuum pumping. |
| | | Clogging of Discharge Piping | Check for clogging. | Remove clogging. |
| | | Malfunction or Internal Leakage of Reversing Valve | Check temp. difference between inlet and outlet of reversing valve. | Replace reversing valve. |
| | | Malfunction of Check Valve of Outdoor Unit | Check temp. difference between inlet and outlet of check valve. | Replace check valve. |
| | | Failure of Solenoid Valve for Bypass | Check for refrigerant leakage from solenoid valve. | Replace solenoid valve. |
| | Malfunction or Internal Leakage from Reversing Valve | | Check temp. difference between inlet and outlet of reversing valve. | Replace reversing valve. |
| | Discharge Temp. of Indoor Unit is Unstable. | Check for expansion valve of indoor unit in same system. | Replace failed expansion valve of indoor unit. | |
| | Activation of Motion Sensor Control | "Motion Sensor is activated" is indicated on wired controller. | It is normal. | |

| Other Abnormalities | Abnormalities of Devices | | |
|--|--|---|---|
| Event | Cause | Check Item | Action (Turn OFF Main Switch) |
| Cooling or Heating Operation with Abnormal Sound | Foreign Particles Inside Fan Casing | Check it by viewing. | Remove foreign particles. |
| | Indoor Unit Fan Wheel Contacts Casing | Check it by viewing. | Adjust position of fan runner. |
| | Outdoor Unit Propeller Fan Comes in Contact with Fan Shroud | Check it by viewing. | Adjust position of propeller fan. |
| | Abnormal Sound from Compressor | Failure of Installation | Check each part is tightly secured. |
| | | Liquid Ref. Compression | Check expansion valve opening. |
| | | Wear or Breakage of Internal Comp. Parts | Is there any abnormal sound from inside of compressor? |
| | | Crankcase Heater does Not Get Warm | Check resistance of crankcase heater or fuse. |
| | Humming Sound from Magnetic Contactor | Check surface of contacts. | Replace magnetic contactor. |
| | Abnormal Vibration of Cabinets | Check each tightening screws. | Tightly secure it. |
| Outdoor Fan does Not Operate even when Compressor is Operating | Obstacle at Outdoor Fan | Check obstacles. | Remove obstacles. |
| | Preparatory State for Heating Operation | Wait for switching of reversing Valve. (1 to 3 minutes) | If the reversing valve is not switched, check for insufficient refrigerant. |
| Indoor Fan does Not Operate even when Compressor is Operating | Discharge pressure does not increase higher than 319 psi (2.2MPa) due to insufficient refrigerant. | Check operation pressure. | Add refrigerant. |
| | Disconnected Wire for Indoor Fan | Check wiring. | Correctly connect wires. |
| | Failure of Indoor Unit PCB | Check indoor unit PCB. | Replace indoor unit PCB. |

| Other Abnormalities | Abnormalities of Devices | |
|--|--|----------------------------------|
| Event | Cause / Check Item | Action (Turn OFF Main Switch) |
| "Motion Sensor is activated" is NOT Indicated on Wired Controller LCD. | Check connection of connector. | Connect it securely. |
| Operation Stops though Someone is Present. | Check reaction rate (Check Mode 1: q1) (Reaction rate is always 0%: abnormal) | Replace motion sensor. |
| | Check connection of connector. | Connect it securely. |
| Operation Continues though No One is Present. | Check reaction rate (Check Mode 1: q1) (Reaction rate is always 100%: abnormal) | Replace motion sensor. |
| | Check heat source (a moving object whose temperature is different from atmosphere). | Remove it. |
| | Check connection of connector. | Connect it securely. |

3.3 Procedures for Checking

3.3.1 Self-Checking of PCBs using Wired Controller

Refer to Section 3.1.4 "Checking Wired Controller"

3.3.2 Self-Checking of Wired Controller

Refer to Section 3.1.4 "Checking Wired Controller"

3.4 Test Run

Turn OFF all the power supply switches.
Use a tester and make sure that all the switches are turned OFF.

Before the test run, check that the unit is appropriately installed according to the Installation and Maintenance Manual. After that, inspect the following items.

| Check Item | | Contents |
|------------|---|---|
| 1 | Damage | Are the unit appearance and inside of the unit damaged? |
| 2 | Fan Motor | Is the fan motor runner installed in the center of the casing? Is the fan motor installed away from the casing? (The fan motor should NOT touch the casing.) |
| 3 | Fasteners | Are the screws loose due to vibration during transportation? Check that the fasteners are secured firmly during installation, <u>especially for electrical wiring.</u> |
| 4 | Refrigerant Leaks | <u>Check that there are NO refrigerant leaks.</u> The tightening part of the pipe (flare part) may be loose because of vibration during transport. |
| 5 | DSW Setting | Check that the DSW setting is the same as the factory setting. (Refer to Section 3.1.3.) |
| 6 | Insulation ^{*1)} | Measure resistance between electrical component terminal and ground with a tester. It is normal if the resistance is 1MΩ and over. If 1MΩ or less, do not perform the operation due to insulation failure of electrical parts. <u>Do NOT apply electricity to the terminal board of operating line. (Control PCB may be damaged.)</u> |
| 7 | Stop Valve Fully Open | Prior to test run, check that the stop valve of the outdoor unit is completely open. |
| 8 | Power Supply Phase | The operation is NOT possible with the incorrect power phase order or lacking phase. • Alarm "05" is indicated on the LCD of the wired controller. • "05" is indicated on the 7-segment display of the outdoor unit. Check the power supply phase according to the caution label attached close to the outdoor unit terminal block or inside of the service cover. |
| 9 | Turn ON Crankcase Heater ^{*2)} | After completion of item checks 1 to 8, turn ON the power supply of the outdoor unit. Apply power to the outdoor unit(s) at least 12 hours prior to operation of the system for preheating of the compressor oil. |
| 10 | Indoor and Outdoor Temperature | <For Use in both Cooling and Heating Operation> Is indoor temperature DB80°F (27°C) or less during heating operation? (Heating operation may not be operated due to the activation of the overload operation prevention under the ambient temperature of 66°F (19°C) or over.) To perform the test run, set the test run mode with the wired controller. |

***1): Insulation Resistance**

- If the unit has been turned OFF for long periods, insulation resistance may decrease to 1MΩ or less because the refrigerant is retained in the compressor. Check the following points.
 - (a) Disconnect the cables of the compressor and measure the insulation resistance of the compressor itself.
If the resistance is 1MΩ or less, an insulation failure of another electrical charge part has occurred.
 - (b) If the resistance is 1MΩ or less, reconnect the compressor and turn ON the main power supply.
The compressor warms up automatically. Check the insulation resistance again after applying current for at least three hours. (Preheating time depends on the air condition, piping length or refrigerant condition.)
- Before the leakage breaker is activated, check the rated capacity.

***2): Stoppage of Compressor Operation**

The compressor may NOT be operational for a maximum of four hours if the power supply is NOT turned ON in advance.

At this time, the stoppage Code (d1-22) is displayed on the LCD of wired controller and the forced Thermo-OFF function starts.

If operation of the compressor is necessary, turn ON the power supply of the outdoor unit, wait for 30 seconds and press PSW5 on the outdoor unit PCB for at least three seconds. The forced Thermo-OFF function (d1-22) is canceled and the compressor operation is available.

NOTE:

Thermo-ON: The outdoor unit and some indoor units are running.

Thermo-OFF: The outdoor unit and some indoor units stay on, but don't run.

3.4.1 Test Run Using Wired Controller

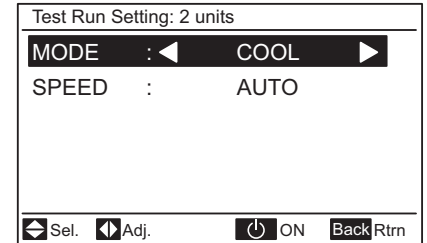
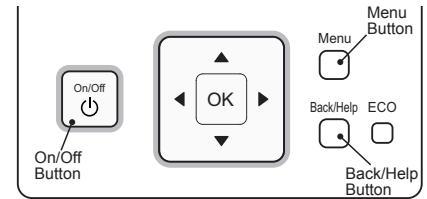
(1) Wired Controller (CIW01)

- (1) Turn ON the power supply of the indoor and outdoor units.
- (2) Set the TEST RUN mode with the wired controller.

Press and hold the "Menu" and the "Back/Help" buttons simultaneously for more than three seconds. Select "Test Run" by pressing "Δ∇" and press "OK". The Test Run screen is displayed.

NOTE:

For other controllers, refer to the "Installation Manual" for each controller.



NOTE:

When "00 unit" is indicated, the auto-address function may be performing. Cancel "Test Run" mode and set it again.

Normal

→ If "TEST RUN" and the total number of the units connected to the wired controller (for example "2 units") are indicated on the wired controller, the connection of the controller cable is correct.

- * The total number of indoor units connected is indicated on the liquid crystal display (LCD).
- * If the indicated number is not equal to the actual number of connected indoor units, the auto-address function is not performed correctly due to incorrect wiring, or electromagnetic interference. Turn OFF the power supply, and correct the wiring after checking the following points (Do not repeat turning ON and OFF within 10 seconds.)
 - (a) The power supply for the indoor unit is NOT turned ON or the incorrect wiring.
 - (b) Loose connection between Indoor Units or Wired Controller.
 - (c) Incorrect Setting of Indoor Unit Address (The indoor unit address is duplicated.)

Abnormal

→ If no indication or "00" appears, or the number of the units indicated is less than the actual number of the units, there is an abnormality.

(3) Checking Procedure for Abnormalities

| Wired Controller Indication | Fault | Inspection Points after the Power Supply OFF |
|---|--|--|
| No Indication | <ul style="list-style-type: none"> * The power supply is not turned ON. * The connection of the controller cable is incorrect. * The connecting wires of power supply line are incorrect or loose. | <ul style="list-style-type: none"> 1. Connection between Connector and Wires 2. Connecting Points of Controller Cable 3. Contact of Connectors of Controller Cable 4. Connection Order of each Terminal Block 5. Screw Fastening of each Terminal Block |
| Number of connected units is incorrect. | <ul style="list-style-type: none"> * The electrical wiring between indoor unit and outdoor unit is disconnected, or the power supply is not turned ON. * The setting of unit number is incorrect. * The connection of control cables between each indoor unit are incorrect. (When one wired controller controls multiple units.) | <ul style="list-style-type: none"> 6. RSW Setting on Indoor Unit Printed Circuit Board 7. Wire Connecting Order of Bridge Cable 8. Connecting Points of Bridge Cable 9. Contact of Connectors of Bridge Cable |

Back to (1) after checking

Move to (4) on the next page. ←

(4) Press "On/Off" button.



Normal

→ The test run operation is started. The operation mode, the airflow volume, the airflow direction and the test run time can be set on the Test Run screen.
Select the item by pressing " $\Delta \nabla < \triangleright$ ".
The test run is completed by pressing the "Back/Help" button during the stoppage or "On/Off" button during the operation.

Abnormal

→ If the units do not start or the operation light on the wired controller flashes, there is an abnormality.

(5) Checking Procedure for Abnormalities

| Wired Controller Indication | Unit Condition | Fault | Inspection Points when the Power Supply is OFF |
|---|---|--|--|
| The operation light flashes. (1 time/1 sec.) And the Unit No. and Alarm Code "03" flash. | The unit does not start. | The power supply is not turned ON. | 1. Connecting Order of each Terminal Block. The fuse on the PCB may be blown due to miswiring. (Can be recovered only once by the DSW on the PCB) Procedures for Recovery When Transmitting Circuit Fuse is Blown 1. Correct the wiring for the terminal block. 2. Setting positions of the model code are shown below. <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> Indoor Unit PCB DSW7 ON  OFF 1 2 </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> Outdoor Unit PCB DSW10 ON  OFF 1 2 </div> </div> 2. Screw Fastening of each Terminal Block. 3. Connecting Order of Power Line Between Indoor Units and Outdoor Unit. |
| | | The connecting wires of operating line are incorrect or loose. | |
| The operation light flashes. (1 time/2 sec.) | The unit does not start. | The connection of controller cable is incorrect. | This is the same as above items 1 through 3. |
| Other alarm codes or indications than those above (Refer to the Alarm Code Table.) | The unit does not start, or starts once and then stops. | The connection of the thermistors or other connectors are incorrect. Tripping of protector exists. | An authorized service person should check the unit using the Alarm Code Table in this manual. |
| The operation light flashes. (1 time/1 sec.) And the Unit No. 00 . Alarm Code dd and Unit Code E.00 flash. | The unit does not start. | The connecting wires of operating line are incorrect or loose. | An authorized service person should check the unit using the Alarm Code Table in this manual. |

Back to (1) after checking

3.4.2 Test Run from Outdoor Unit Side

Refer to the Service Manual for Outdoor Unit.

3.4.3 Checking the Test Run

(1) Indoor and Outdoor Fan

Check that the indoor fan and outdoor fan rotate correctly and the airflow is smooth.

(2) Power Supply Voltage

Check the power supply.

If the power supply is abnormal, contact the electric power company.

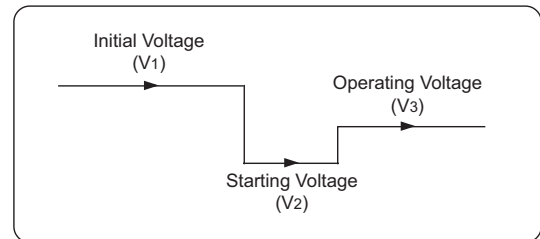
Usually, voltage drop will occur when starting the operation as shown in the figure (V₂).

In order to protect the device, comply with the following normal range of the power supply voltage.

<Normal Range of Power Supply Voltage>

- Supply Voltage: Rated Voltage $\leq \pm 10\%$
- Starting Voltage (V₂): Rated Voltage $\geq -15\%$

< Voltage Change >



Operating Voltage (V₃): Rated Voltage $\leq \pm 10\%$

Voltage Imbalance between Phase: $\leq 3\%$

(3) Normal Operating Pressure

Normal operating suction pressure is 29 to 159.5 psi (0.2 to 1.1 MPa) and normal operating discharge pressure is 145 to 507.6 psi (1.0 to 3.5 MPa) when the refrigerant charge quantity is correct. Check the operation pressure in the test run mode.

(4) High Pressure Switch

Check the operation pressure of the high pressure switch in the table below.

| Refrigerant | Operation Pressure |
|-------------|--------------------|
| R410A | 601 psi (4.15MPa) |

(5) High Pressure Increase Retry (Protection Control)

(a) High pressure will increase when one of the following procedures is performed.

| Cover the air inlet of outdoor unit during cooling operation. | Cover the air inlet of indoor unit during heating operation. |
|---|--|
| | |

(b) When the high pressure retry control is activated, alarm code “P13” is indicated on the 7-segment display of the outdoor unit PCB. If the high pressure retry control occurs three times or more within 30 minutes, alarm code “H5” is indicated on the LCD of the wired controller or the 7-segment display of the outdoor unit PCB.

For CIW01

01-02

Alarm Code: 22

MODEL : F .02

IDU : *****

ODU : *****

OP MODE

AlarmRst

Address

Sel.

OK Entr

NOTE:

High pressure may not increase until the high pressure switch is activated because of the temperature condition.

3.4.4 Checklist for Refrigerant System

Refer to the Service Manual for Outdoor Unit.

3.4.5 Reset for Accumulated Operation Time of Compressor 1-2 (cUJ1-cUJ2)

Refer to the Service Manual for Outdoor Unit.

4. Maintenance

4.1 Maintenance of Outdoor Unit

Refer to the Service Manual for Outdoor Unit.

4.2 Maintenance of Indoor Unit

⚠ DANGER

Use the specified non-flammable refrigerant (R410A) to the outdoor unit in the refrigerant cycle. Do not charge the unit with materials other than R410A, such as hydrocarbon refrigerants (propane, etc.), oxygen, flammable gases (acetylene, or etc.) or poisonous gases when installing, maintaining and moving the unit. Contamination of these are extremely dangerous and may cause an explosion, fire, and injury.

⚠ WARNING

TURN OFF all POWER supply switches.

4.2.1 Intaking Air from Rear Side

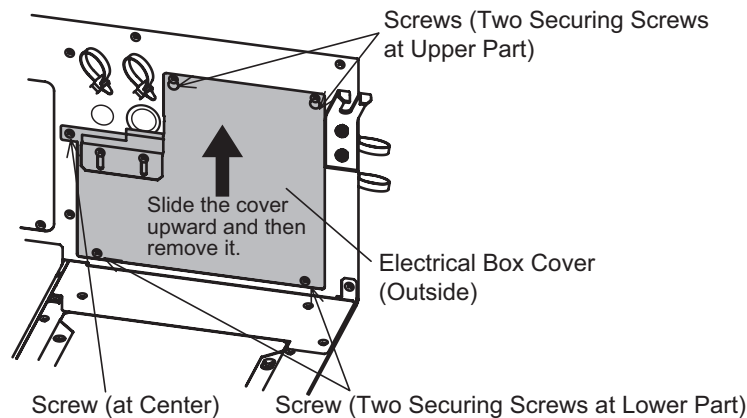
4.2.1.1 Removing Air Filter

- (1) The air inlet grille is field-supplied. The air filter may be located in a hard-to-replace portion due to installation-related reason. Check it carefully.

4.2.1.2 Removing Electrical Box Cover

- (1) Remove the securing screws for the electrical box cover (two securing screws at the lower part and one securing screw at the center). Loosen two securing screws (at the upper part) and remove the electrical box cover by sliding it upward.

| | |
|------|----------------------|
| Tool | Phillips Screwdriver |
|------|----------------------|



⚠ CAUTION

Take care not to drop the electrical box cover during this work.

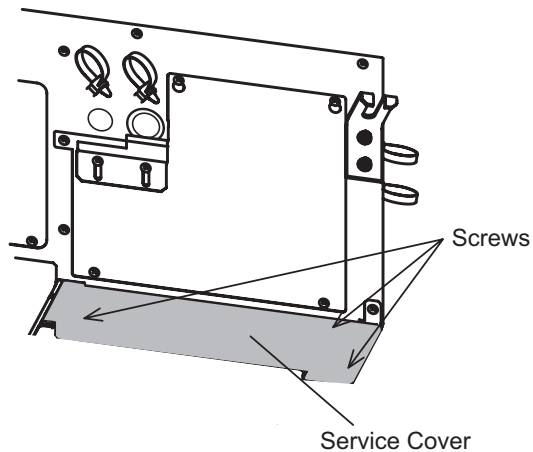
⚠ WARNING

TURN OFF all POWER supply switches.

4.2.1.3 Removing Service Cover

- (1) Loosen three securing screws to remove the service cover.

| | |
|------|----------------------|
| Tool | Phillips Screwdriver |
|------|----------------------|

**NOTICE**

The duct on the air inlet side may need to be removed depending on how the equipment is installed in the local site.

⚠ WARNING

TURN OFF all POWER supply switches.

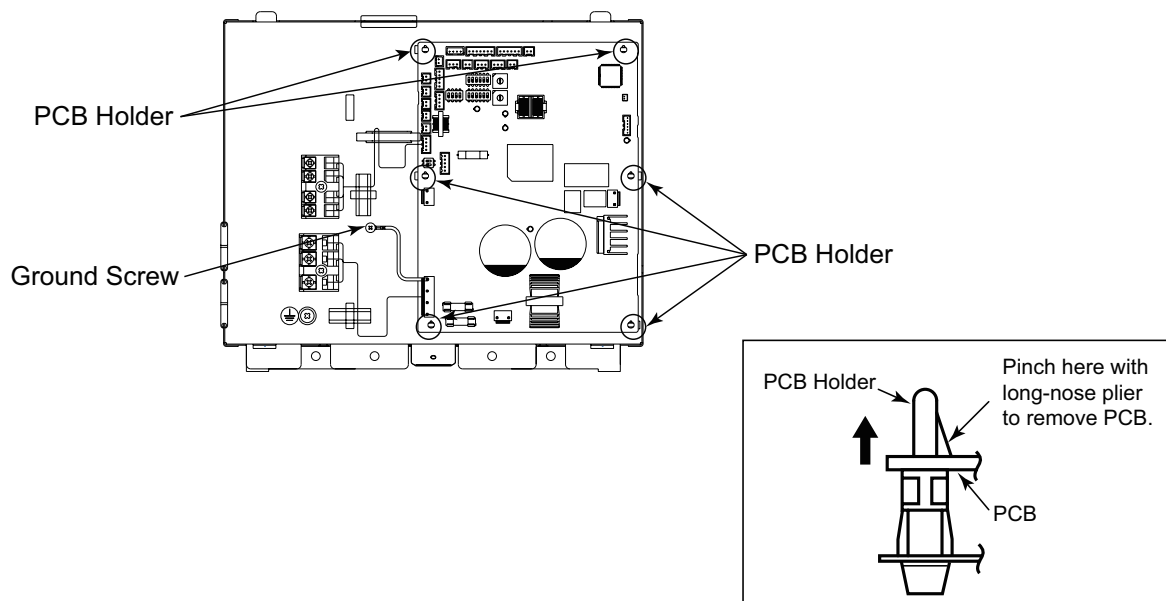
4.2.1.4 Removing PCB

NOTICE

- Do not touch any components on PCB.
- Do not apply excessive force to the PCB, or it will cause a malfunction.
- When reassembling, connect the connectors on PCB in the correct positions. Incorrect wiring may result in a failure of PCB. In addition, be sure to tighten the ground screw properly.
- The settings of DIP switches differ according to the model. After replacing PCB, configure DIP switch settings.

- (1) Remove the electrical box cover according to Section 4.2.1.2 “Removing Electrical Box Cover”.
- (2) Remove all wiring connected to PCB.
- (3) Remove the ground screw.
- (4) PCB is secured with PCB holders (six positions). Pinch PCB holder as shown below with long-nose plier to remove PCB.

| | |
|------|---------------------------------------|
| Tool | Phillips Screwdriver, Long-nose Plier |
|------|---------------------------------------|



WARNING

TURN OFF all POWER supply switches.

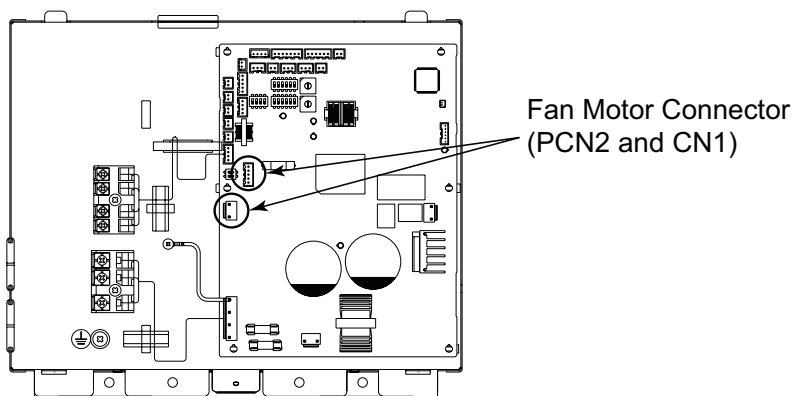
4.2.1.5 Removing Fan Wheel and Fan Motor

CAUTION

- This procedure must be performed by 2 persons.
- The assembly weight of the fan motor with fan wheel is approximately 11 lbs (5 kg). Handle it carefully.

- (1) Remove the electrical box cover according to Section 4.2.1.2 "Removing Electrical Box Cover".
- (2) Remove the fan motor connectors (PCN2 and CN1) from PCB and pull out the wiring for the fan motor from the electrical box.

| | |
|------|----------------------|
| Tool | Phillips Screwdriver |
|------|----------------------|



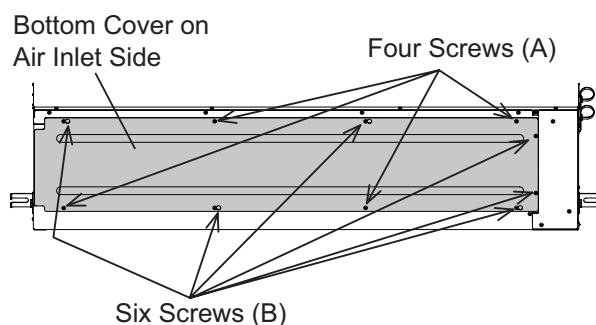
- (3) Remove four screws (A) for the bottom cover on the air inlet side, loosen six screws (B), and remove the bottom cover on the air inlet side. (For (H,Y,C)IDH030-054B22S and (H,Y,C)IDM030-054B22S)

| |
|--|
| Screws (A) and (B) x three each for (H,Y,C)IDH015B22S and (H,Y,C)IDM006-015B22S Screws (A) x three, screws (B) x five for (H,Y,C)IDH018-027B22S and (H,Y,C)IDM018-027B22S |
|--|

CAUTION

- This procedure must be performed by 2 persons preventing the bottom cover from falling.
- Handle the bottom cover carefully to avoid a personal injury.

| | |
|------|----------------------|
| Tool | Phillips Screwdriver |
|------|----------------------|

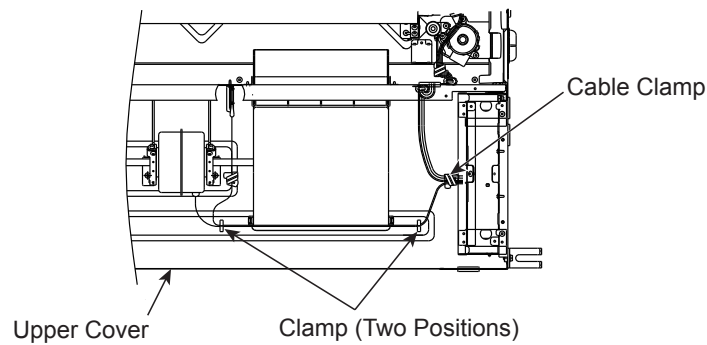


WARNING

TURN OFF all POWER supply switches.

- (4) Remove the wiring for the fan motor from the clamps (two positions) on the upper cover and the cable clamp (one position).
(When reassembling the fan motor, place the base of the wiring for the fan motor in the direction of the clamp.)

| | |
|------|----------------------|
| Tool | Phillips Screwdriver |
|------|----------------------|



- (5) Remove two screws (A) in the lower part of the casing which is divided into two parts, push the hooks (B) inward, and remove the lower part of the casing.

When removing casing for following models:

(H,Y,C)IDH030-054B22S and (H,Y,C)IDM030-054B22S

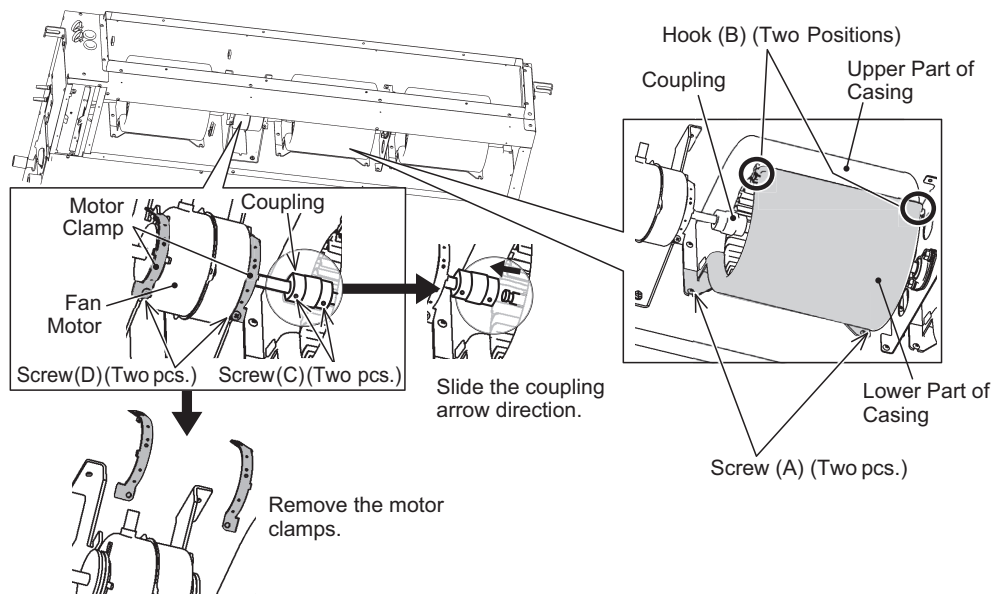
Only the casing next to the fan motor (on the electrical box side).

(H,Y,C)IDH018-027B22S and (H,Y,C)IDM018-027B22S

Casings at two positions on both sides of the fan motor.

- (6) Loosen two screws (C) for the coupling with a hexagonal wrench (M5).
(Only for (H,Y,C)IDH030-054B22S and (H,Y,C)IDM030-054B22S)
- (7) Slide the coupling toward the fan motor side.
- (8) Remove two screws (D) securing the motor clamp and remove two motor clamps. Carry out the procedure carefully not to fall the fan motor or wheel.

| | |
|------|---|
| Tool | Phillips Screwdriver, Hexagonal Wrench (M5, M6) |
|------|---|

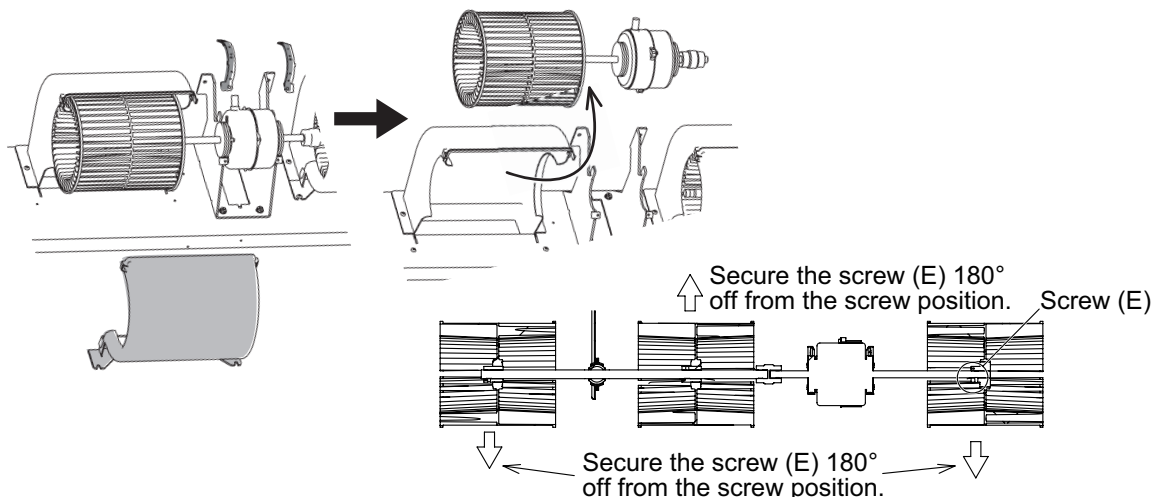


WARNING

TURN OFF all POWER supply switches.

- (9) Remove one screw (E) on the wheel with a hexagonal wrench (M6) and remove the wheel from the motor. If there are two or more wheels, secure the screw (E) 180° off from the adjacent screw position at the reassembling process.

| | |
|------|---|
| Tool | Phillips Screwdriver, Hexagonal Wrench (M5, M6) |
|------|---|



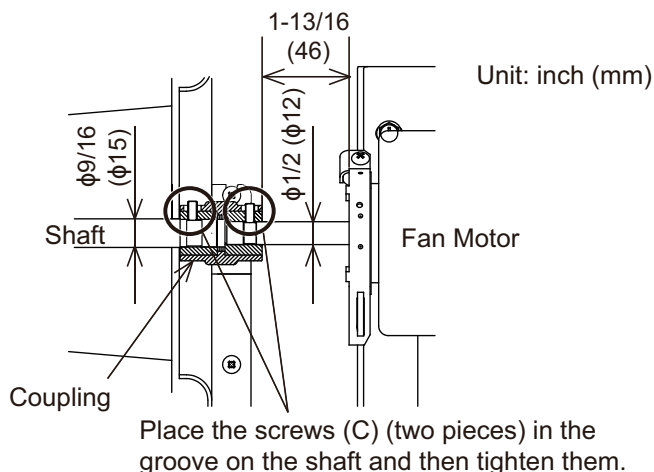
4.2.1.6 Notes for Reassembling Coupling

- (1) Fasten two screws (C) on the fan motor side with the 1-13/16 inches (46 mm) space between the coupling and fan motor.
- (2) Make an adjustment so that the wheel and casing do not come to contact with each other and then fasten two screws (C) on the shaft side.

NOTICE

1. For the position of the screw (E) for the wheel, follow Step 9 in Section 4.2.1.5 “Removing Fan Wheel and Fan Motor”.
2. The diameters between the shaft and the motor axis are different. Insert the coupling in the correct direction”.

| | |
|------|-------------------------|
| Tool | Hexagonal Wrench, Scale |
|------|-------------------------|



WARNING

TURN OFF all POWER supply switches.

4.2.1.7 Checking Dirt (Slime) on Condensate Pan (Simplified Inspection using Cap)

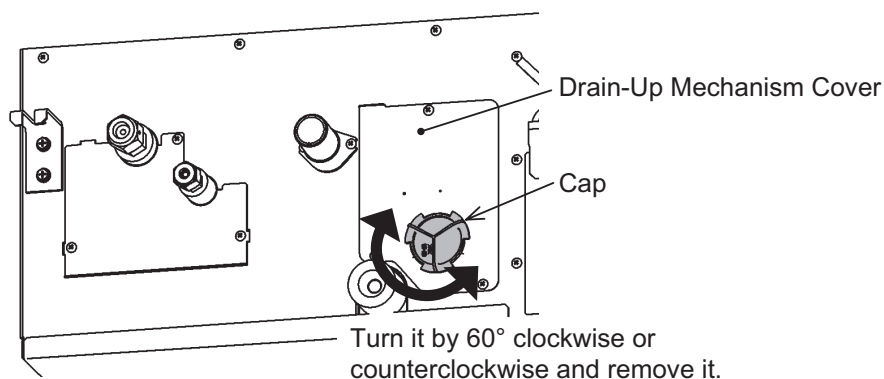
- (1) Turn the cap fixed on the drain-up mechanism cover by 60° clockwise or counterclockwise to remove it.

NOTICE

When putting the cap back on, be sure to confirm that it is secured. If not, condensation water may drop due to air leakage.

Tool

None



4.2.1.8 Checking Dirt (Slime) on Condensate Pan (Removing Drain-Up Mechanism Cover)

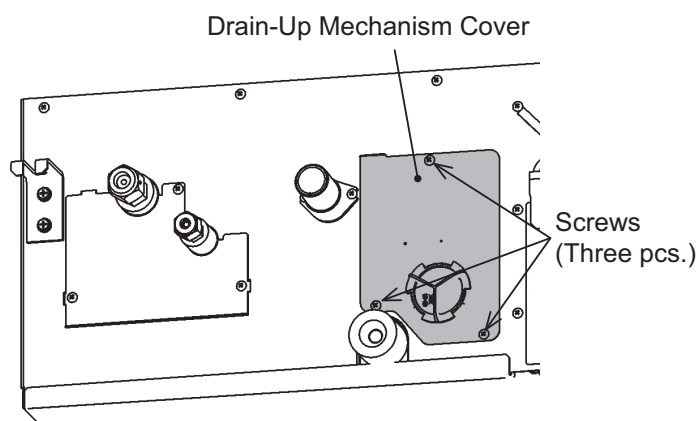
- (1) Remove three screws secured on the drain-up mechanism cover and remove the drain-up mechanism cover.

NOTICE

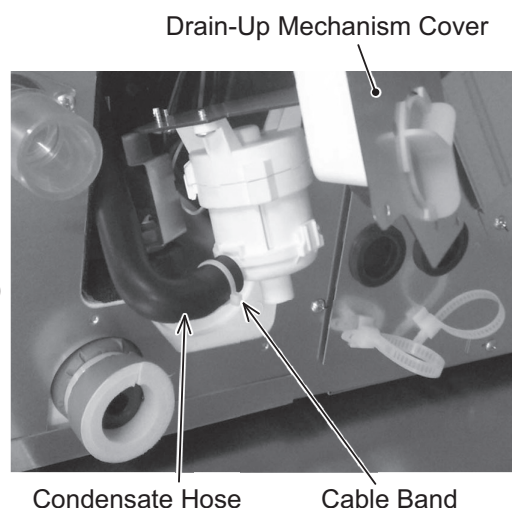
The condensate hose is molded part so there is slight resistance when removing the drain-up mechanism cover. Handle carefully so it does not come to contact with other parts in the surrounding area. It may break the condensate hose or cause water leakage.

Tool

Phillips Screwdriver



- When the drain-up mechanism cover is removed



NOTE:

The surface of condensate pan condition can be checked without removing the cable band.

⚠ WARNING**TURN OFF all POWER supply switches.****4.2.1.9 Checking Operation of Electronic Expansion Valve Coil**

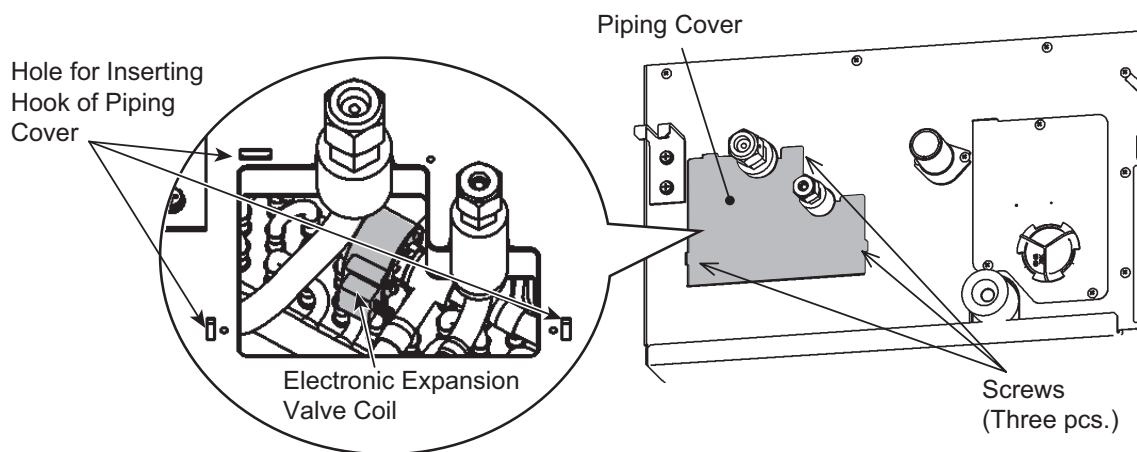
- (1) Remove three screws securing the piping cover and remove the piping cover.

⚠ CAUTION**Work carefully to prevent the piping cover from falling.**

- (2) The electronic expansion valve can be seen from the inspection opening. Turn on the power temporarily, touch the electronic expansion valve coil with hand, and check its operation.
- (3) When attaching the cover, place the upper side hook and then secure the cover with three screws.

| Tool | Phillips Screwdriver |
|------|----------------------|
|------|----------------------|

- When the piping cover is removed.



⚠ WARNING

TURN OFF all POWER supply switches.

4.2.1.10 Removing Condensate Pan

⚠ CAUTION

This procedure must be performed by 2 persons preventing the part from falling.

NOTICE

Drain the remaining water in the condensate pan through the condensate hole and confirm that no water remains. For details of this work procedures, refer to the Installation and Maintenance Manual.

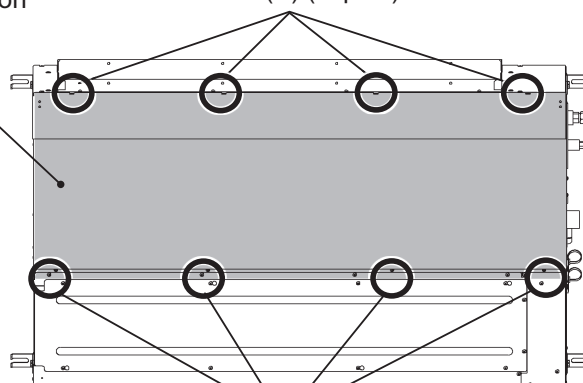
- (1) Remove the securing screws (A) and securing screws (B) for the bottom cover on the air outlet side and remove the cover. The quantity of screws (A) and (B) are shown in the table below.

| Model | Quantity of screw (A) P | Quantity of screw (B) Q |
|--|-------------------------|-------------------------|
| (H,Y,C)IDH015B22S, (H,Y,C)IDM006-015B22S | 2 | 3 |
| (H,Y,C)IDH018-027B22S, (H,Y,C)IDM018-027B22S | 3 | 3 |
| (H,Y,C)IDH030-054B22S, (H,Y,C)IDM030-054B22S | 4 | 4 |

| | |
|------|--|
| Tool | Phillips Screwdriver, Bucket (Capacity of Approx. 1.3 gal. (5 liters)) |
|------|--|

Bottom Cover on
Air Outlet Side

Screw (B) (Q pcs.)



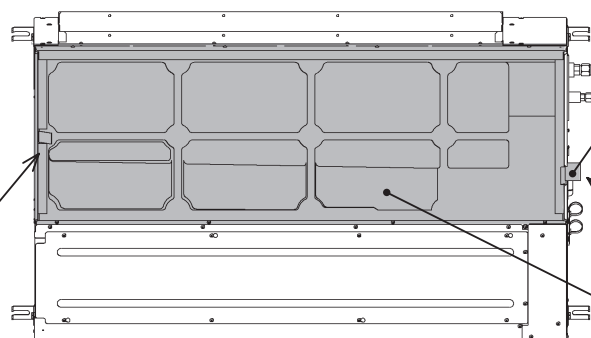
Screw (A) (P pcs.)

- (2) Remove the condensate pan using the ribbon for removing the condensate pan and condensate pipe.

| | |
|------|--|
| Tool | Phillips Screwdriver, Bucket (Capacity of Approx. 1.3 gal. (5 liters)) |
|------|--|

- When the bottom cover on the air outlet side is removed

Ribbon for Removing
Condensate Pan



Condensate Pipe

Condensate Hole

Condensate Pan

WARNING

TURN OFF all POWER supply switches.

4.2.1.11 Removing Electronic Expansion Valve Coil

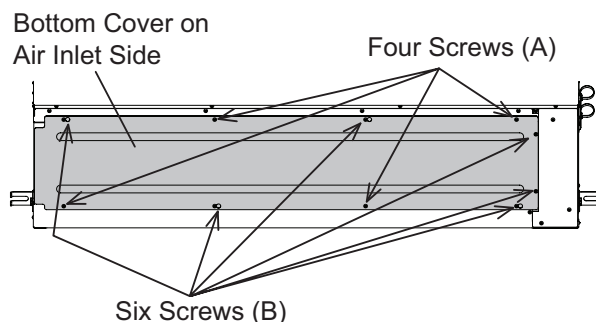
- (1) Remove the condensate pan according to Section 4.2.1.10 "Removing Condensate Pan".
- (2) Remove four screws (A) for the bottom cover on the air inlet side, loosen six screws (B), and remove the bottom cover on the air inlet side. (For (H,Y,C)IDH030-054B22S and (H,Y,C)IDM030-054B22S)

Screws (A) and (B) x three each for (H,Y,C)IDH015B22S and (H,Y,C)IDM006-015B22S
Screws (A) x three, screws (B) x five for (H,Y,C)IDH018-027B22S, (H,Y,C)IDM018-027B22S

CAUTION

- This procedure must be performed by 2 persons preventing the bottom cover from falling.
- Handle the bottom cover carefully to avoid a personal injury.

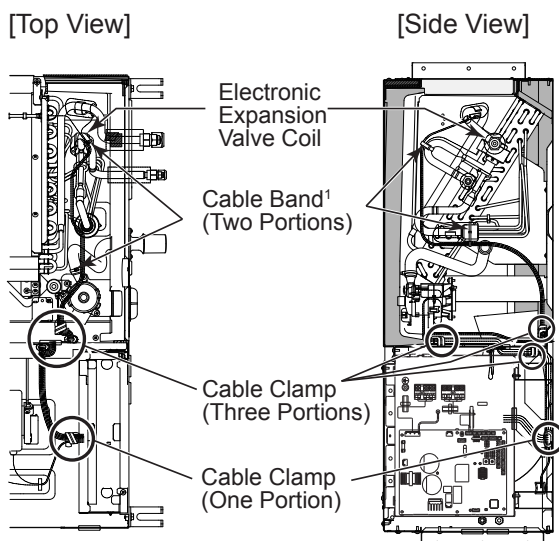
| | |
|------|--|
| Tool | Phillips Screwdriver, Nipper, Cable Band |
|------|--|



- (3) Remove the drain-up mechanism cover according to Section 4.2.1.8 "Checking Dirt (Slime) on Condensate Pan (Removing Drain-Up Mechanism Cover)".
- (4) Cut the cable band¹ (two portions) that bundles the thermistor wiring for each pipe (one each for liquid and gas) and the wiring for the expansion valve coil and then remove each wiring from the cable clamp.
- (5) Rotate the electronic expansion valve coil, remove the detents on the electronic expansion valve coil from the projection parts of the electronic expansion valve body, and then pull the expansion valve coil upward to remove it.

At this time, take care not to twist the piping.

| | |
|------|--|
| Tool | Phillips Screwdriver, Nipper, Cable Band |
|------|--|



WARNING

TURN OFF all POWER supply switches.

- (6) Insert the replacement electronic expansion valve coil into the electronic expansion valve body. Align the detents on the electronic expansion valve coil with the projection parts on the electronic expansion valve body and secure them.

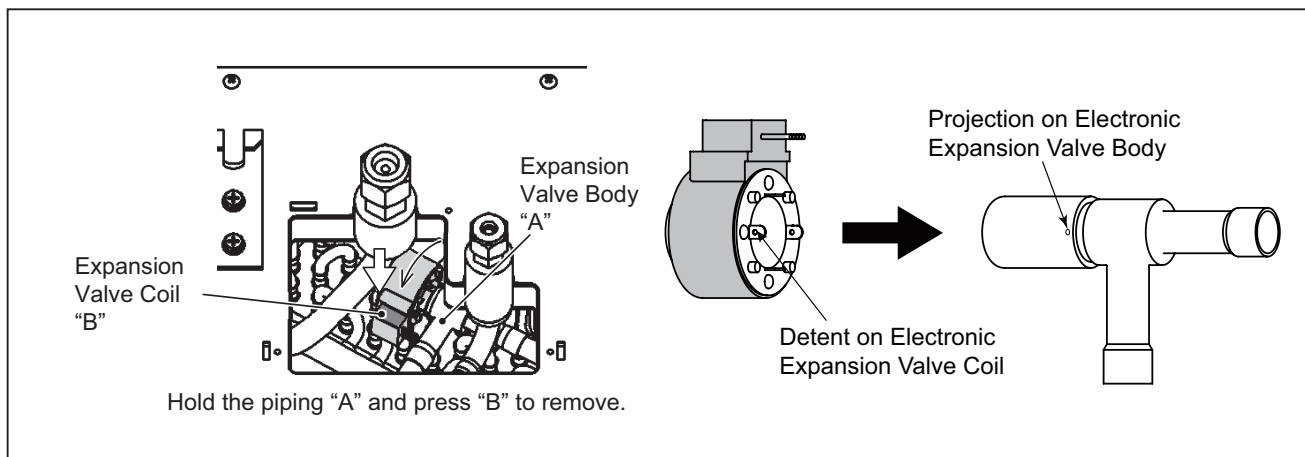
NOTICE

The detents of expansion valve coil are located 90° apart in a circle and the projection parts of expansion valve body are located 180° apart in a circle.

Make sure to fit the projection parts into the detents.

If the electronic expansion valve coil is inserted improperly, it may cause malfunction.

| | |
|------|--|
| Tool | Phillips Screwdriver, Nipper, Cable Band |
|------|--|



- (7) When the procedure above is completed, secure the wiring for the expansion valve coil near the electronic expansion valve coil with a cable band. At this time, secure them so that the end of the vinyl tube of the wiring for the expansion valve coil faces down. Then, secure the thermistor for each pipe (one each for liquid and gas) and the wiring for the expansion valve coil with a cable band.

WARNING

TURN OFF all POWER supply switches.

4.2.1.12 Removing Drain-Up Mechanism

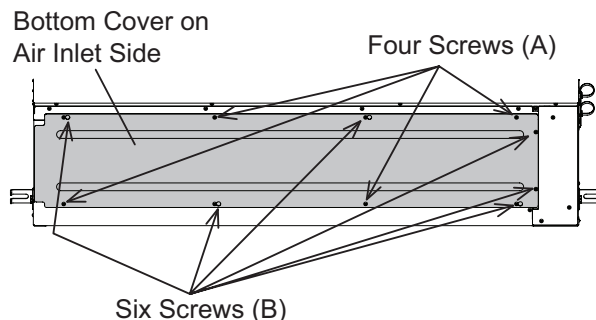
- (1) Remove the condensate pan according to Section 4.2.1.10 "Removing Condensate Pan".
- (2) Remove four screws (A) for the bottom cover on the air inlet side, loosen six screws (B), and remove the bottom cover on the air inlet side. (For (H,Y,C)IDH030-054B22S and (H,Y,C)IDM030-054B22S)

Screws (A) and (B) x three each for (H,Y,C)IDH015B22S and (H,Y,C)IDM006-015B22S
Screws (A) x three, screws (B) x five for (H,Y,C)IDH018-027B22S and (H,Y,C)IDM018-027B22S

CAUTION

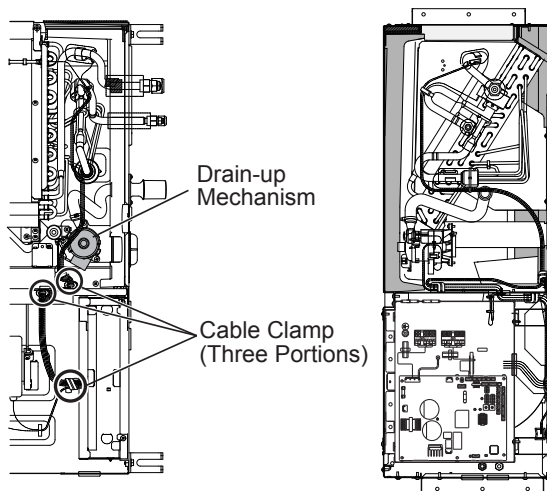
- This procedure must be performed by 2 persons preventing the bottom cover from falling.
- Handle the bottom cover carefully to avoid a personal injury.

| | |
|------|--|
| Tool | Phillips Screwdriver, Nipper, Cable Band |
|------|--|



- (3) Remove the electrical box cover according to Section 4.2.1.2 "Removing Electrical Box Cover".
- (4) Remove the drain-up mechanism connector (CN36) from PCB and pull out the wiring for the drain-up mechanism from the electrical box.
- (5) Loosen the cable clamps (three portions) and remove the wiring for the drain-up mechanism.

| | |
|------|------------------------------|
| Tool | Phillips Screwdriver, Nipper |
|------|------------------------------|



⚠ WARNING

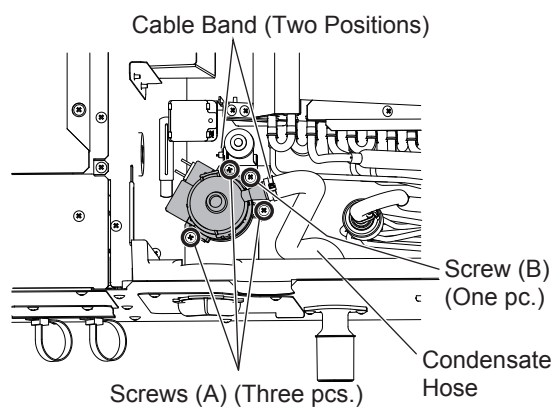
TURN OFF all POWER supply switches.

- (6) Peel off the insulation that bundles the wiring for the drain-up mechanism and float switch.
- (7) Remove three securing screws (A) and one securing screw (B) for the drain-up mechanism and cut the cable bands (two positions).

NOTICE

Handle the drain-up mechanism carefully not to drop it when removing.

| Tool | |
|------------------------------|--|
| Phillips Screwdriver, Nipper | |



- (8) Pull out the condensate hose from the drain-up mechanism and remove the drain-up mechanism.

WARNING

TURN OFF all POWER supply switches.

4.2.1.13 Removing Float Switch

NOTICE

When handling the float switch, do not use electric screwdriver. Be sure to tighten the screws manually. If the float switch falls on the floor or other hard surface, it may cause to malfunction.

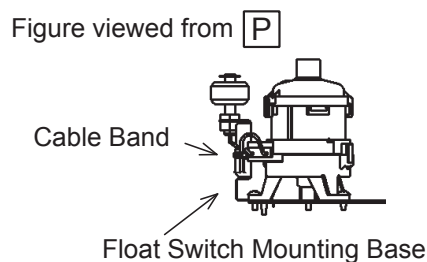
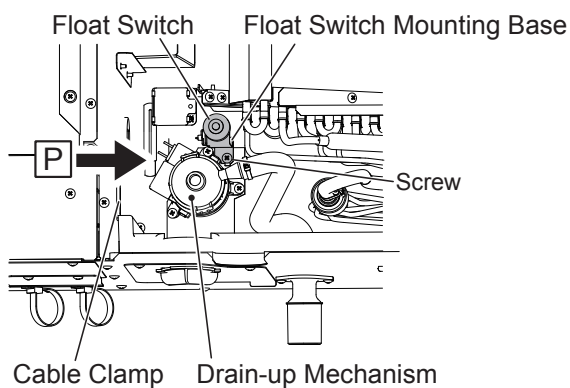
- (1) Remove the condensate pan according to Section 4.2.1.10 "Removing Condensate Pan".
- (2) Remove the electrical box cover according to Section 4.2.1.2 "Removing Electrical Box Cover".
- (3) Remove the float switch relay connector and pull out the wiring for the float switch from the electrical box.
- (4) Loosen the cable clamp and remove the wiring for the float switch.
- (5) Peel off the insulation that bundles the wiring for the drain-up mechanism and float switch.
- (6) Cut the cable band securing the lead wires on the float switch mounting base.
- (7) Removing the float switch

The float switch is secured next to the drain-up mechanism. Remove one securing screw for the float switch mounting base to remove the float switch.

NOTICE

When reassembling, bundle the wiring for the drain-up mechanism and the wiring for the float switch with the packing, secure the wiring for the float switch using a cable band, and secure them using a screw. The packing is included with the service parts for the float switch. Provide cable bands on the local site.

| | |
|------|--|
| Tool | Phillips Screwdriver, Cable Band, Nipper |
|------|--|



⚠ WARNING**TURN OFF all POWER supply switches.****4.2.1.14 Removing Liquid Pipe, Gas Pipe and Air Outlet Thermistors**

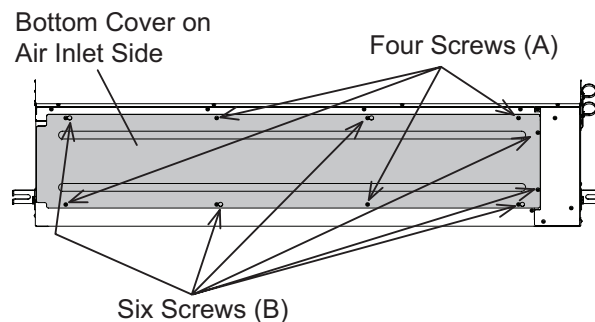
- (1) Remove the condensate pan according to Section 4.2.1.10 "Removing Condensate Pan".
- (2) Remove four screws (A) for the bottom cover on the air inlet side, loosen six screws (B), and remove the bottom cover on the air inlet side. (For (H,Y,C)IDH030-054B22S and (H,Y,C)IDM030-054B22S)

Screws (A) and (B) x three each for (H,Y,C)IDH015B22S and (H,Y,C)IDM006-015B22S
 Screws (A) x three, screws (B) x five for (H,Y,C)IDH018-027B22S and (H,Y,C)IDM018-027B22S

⚠ CAUTION

- This procedure must be performed by 2 persons preventing the bottom cover from falling.
- Handle the bottom cover carefully to avoid a personal injury.

| | |
|------|--|
| Tool | Phillips Screwdriver, Cable Band, Nipper |
|------|--|



- (3) Remove the electrical box cover according to Section 4.2.1.2 "Removing Electrical Box Cover".
- (4) Remove each thermistor connector (THM2, THM3 and THM5) from PCB and pull out the wiring for each thermistor from the electrical box.
- (5) Cut the cable bands (two positions) bundling the thermistor wiring for each pipe (one each for liquid and gas) and the wiring for the expansion valve coil. Then remove each wiring from the cable clamp.
- (6) Remove the butyl sheet and then remove the thermistor holder from the gas pipe.
Then remove the gas pipe thermistor.

WARNING

TURN OFF all POWER supply switches.

- (7) Remove the butyl sheet and then remove the thermistor holder from the liquid pipe. Then remove the liquid pipe thermistor.

NOTICE

[For Reattaching Thermistors]

1. Secure the wiring from the gas pipe and liquid pipe thermistors on the piping using cable bands¹ as shown in Figure A. (Provide cable bands on the local site.)
2. Face the end of the vinyl tube of the gas pipe and liquid pipe thermistors to the bottom of the main unit and arrange it as shown in Figure B. Attaching incorrectly may cause condensation to enter the electrical box.

| | |
|------|--|
| Tool | Phillips Screwdriver, Cable Band, Nipper |
|------|--|

Figure A

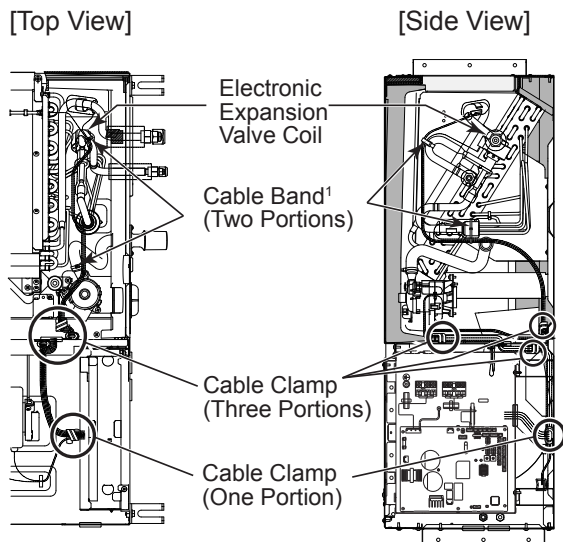
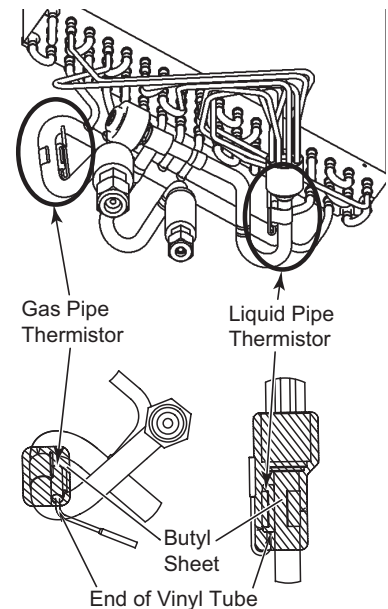
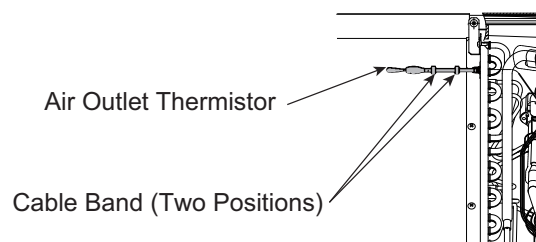


Figure B



- (8) Cut the cable bands (two positions) securing the air outlet thermistor and remove the air outlet thermistor.

| | |
|------|--|
| Tool | Phillips Screwdriver, Cable Band, Nipper |
|------|--|



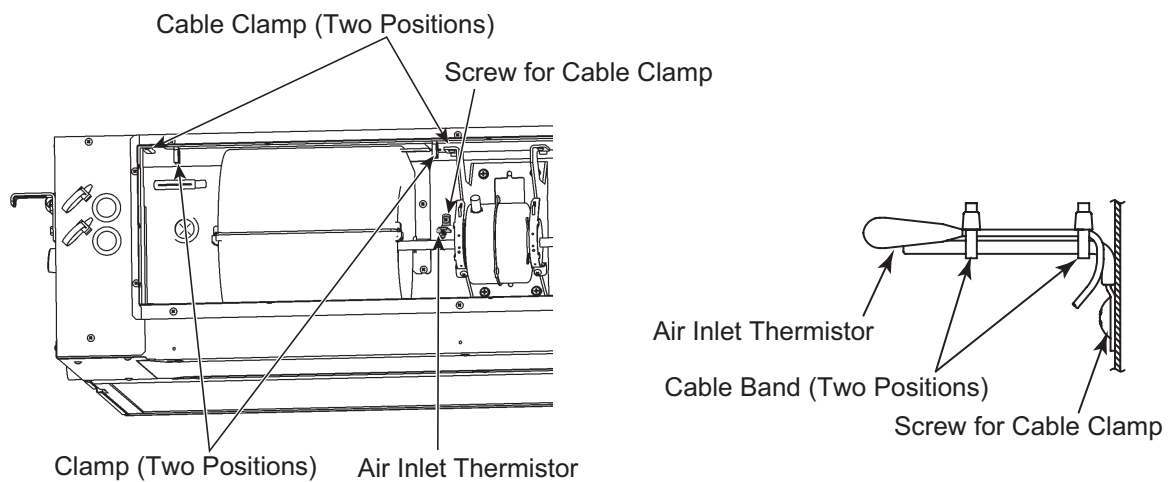
⚠ WARNING

TURN OFF all POWER supply switches.

4.2.1.15 Removing Air Inlet Thermistor

- (1) Remove the electrical box cover according to Section 4.2.1.2 "Removing Electrical Box Cover".
- (2) Remove the air inlet thermistor connector (THM1) from PCB and pull out the wiring from the electrical box.
- (3) Remove the screw for the cable clamp securing the air inlet thermistor.
- (4) Remove the wiring from the clamps (two positions) and cable clamps (two positions), cut the cable bands (two positions), and remove the air inlet thermistor.

| | |
|------|--|
| Tool | Phillips Screwdriver, Cable Band, Nipper |
|------|--|



⚠ WARNING

TURN OFF all POWER supply switches.

4.2.2 Intaking Air from Bottom Side

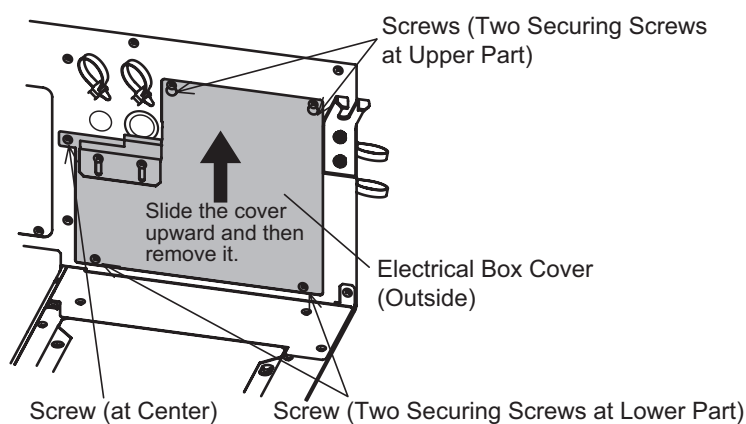
4.2.2.1 Removing Air Filter

- (1) The air inlet grille is field-supplied. The air filter may be located in a hard-to-replace portion due to installation-related reason. Check it carefully.

4.2.2.2 Removing Electrical Box Cover

- (1) Remove the securing screws for the electrical box cover (two securing screws at the lower part and one securing screw at the center). Loosen two securing screws (at the upper part) and remove the electrical box cover by sliding it upward.

| | |
|------|----------------------|
| Tool | Phillips Screwdriver |
|------|----------------------|

**⚠ CAUTION**

Take care not to drop the electrical box cover during this work.

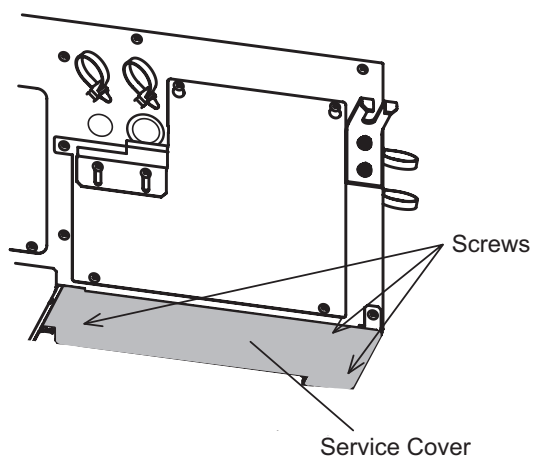
⚠ WARNING

TURN OFF all POWER supply switches.

4.2.2.3 Removing Service Cover

- (1) Loosen three securing screws to remove the service cover.

| | |
|------|----------------------|
| Tool | Phillips Screwdriver |
|------|----------------------|

**NOTICE**

The duct on the air inlet side may need to be removed depending on how the equipment is installed in the local site.

⚠ WARNING

TURN OFF all POWER supply switches.

4.2.2.4 Removing PCB

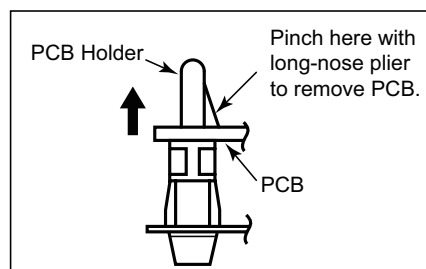
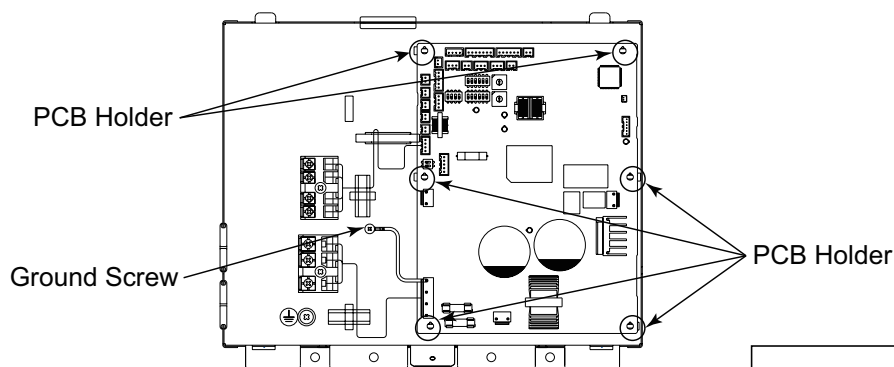
NOTICE

- Do not touch any components on PCB.
- Do not apply excessive force to the PCB, or it will cause a malfunction.
- When reassembling, connect the connectors on PCB in the correct positions. Incorrect wiring may result in a failure of PCB. In addition, be sure to tighten the ground screw properly.
- The settings of DIP switches differ according to the model. After replacing PCB, configure DIP switch settings.

- (1) Remove the electrical box cover according to Section 4.2.2.2 “Removing Electrical Box Cover”.
- (2) Remove all wiring connected to PCB.
- (3) Remove the ground screw.
- (4) PCB is secured with PCB holders (six positions). Pinch PCB holder as shown below with long-nose plier to remove PCB.

Tool

Phillips Screwdriver, Long-nose Plier



⚠ WARNING**TURN OFF all POWER supply switches.**

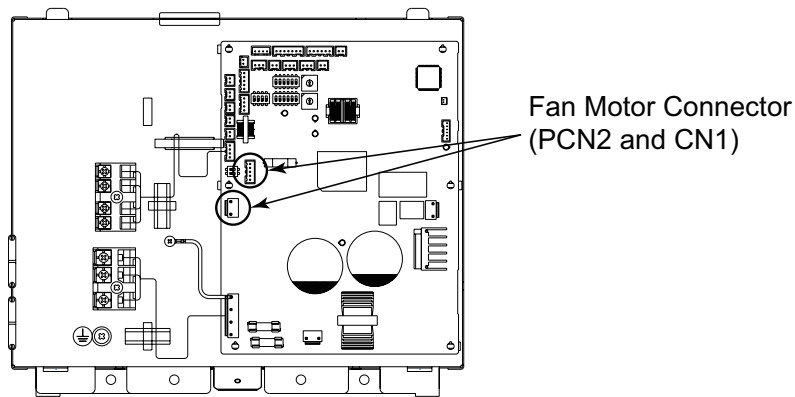
4.2.2.5 Removing Fan Wheel and Fan Motor

⚠ CAUTION

- This procedure must be performed by 2 persons.
- The assembly weight of the fan motor with fan wheel is approximately 11 lbs (5 kg). Handle it carefully.

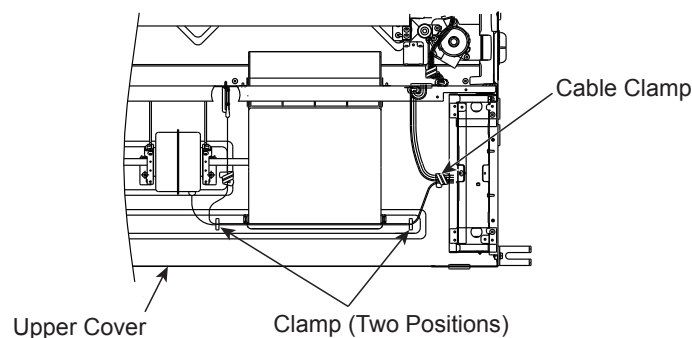
- (1) Remove the electrical box cover according to Section 4.2.2.2 “Removing Electrical Box Cover”.
- (2) Remove the fan motor connectors (PCN2 and CN1) from PCB and pull out the wiring for the fan motor from the electrical box.

| | |
|------|----------------------|
| Tool | Phillips Screwdriver |
|------|----------------------|



- (3) Remove the wiring for the fan motor from the clamps (two positions) on the upper cover and the cable clamp (one position).
(When reassembling the fan motor, place the base of the wiring for the fan motor in the direction of the clamp.)

| | |
|------|---|
| Tool | Phillips Screwdriver, Adjustable Wrench |
|------|---|



⚠ WARNING

TURN OFF all POWER supply switches.

- (4) Remove two screws (A) in the lower part of the casing which is divided into two parts, push the hooks (B) inward, and remove the lower part of the casing.

When removing casing for following models:

(H,Y,C)IDH030-054B22S and (H,Y,C)IDM030-054B22S

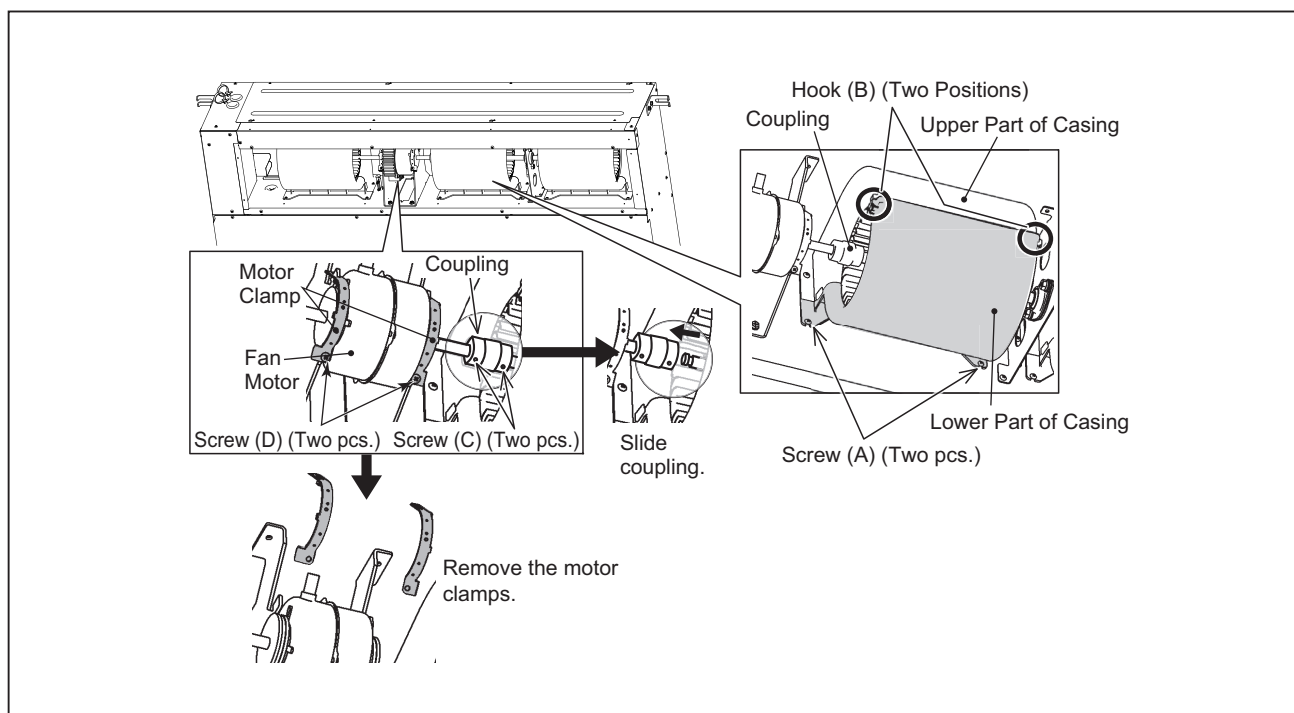
Only the casing next to the fan motor (on the electrical box side).

(H,Y,C)IDH018-027B22S and (H,Y,C)IDM018-027B22S

Casings at two positions on both sides of the fan motor.

- (5) Loosen two screws (C) for the coupling with a hexagonal wrench (M5).
(Only for (H,Y,C)IDH030-054B22S and (H,Y,C)IDM030-054B22S)
- (6) Slide the coupling toward the fan motor side.
- (7) Remove two screws (D) securing the motor clamp and remove two motor clamps. Carry out the procedure carefully not to fall the fan motor or wheel.

| | |
|------|---|
| Tool | Phillips Screwdriver, Hexagonal Wrench (M5, M6) |
|------|---|

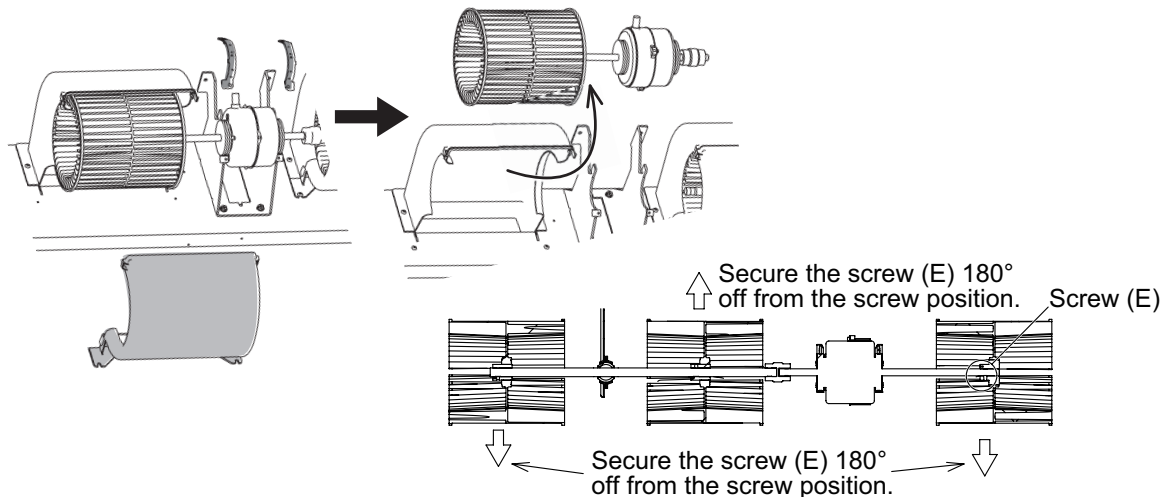


WARNING

TURN OFF all POWER supply switches.

- (8) Remove one screw (E) on the wheel with a hexagonal wrench (M6) and remove the wheel from the motor. If there are two or more wheels, secure the screw (E) 180° off from the adjacent screw position at the reassembling process.

| | |
|------|---|
| Tool | Phillips Screwdriver, Hexagonal Wrench (M5, M6) |
|------|---|



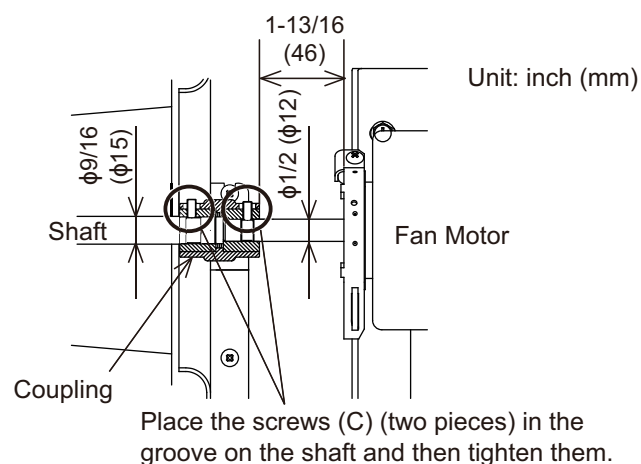
4.2.2.6 Notes for Reassembling Coupling

- (1) Fasten two screws (C) on the fan motor side with the 1-13/16 inches (46 mm) space between the coupling and fan motor.
- (2) Make an adjustment so that the wheel and casing do not come to contact with each other and then fasten two screws (C) on the shaft side.

NOTICE

1. For the position of the screw (E) for the wheel, follow Step 8 in Section “4.2.2.5 Removing Fan Wheel and Fan Motor”.
2. The diameters between the shaft and the motor axis are different. Insert the coupling in the correct direction.

| | |
|------|-------------------------|
| Tool | Hexagonal Wrench, Scale |
|------|-------------------------|



WARNING

TURN OFF all POWER supply switches.

4.2.2.7 Checking Dirt (Slime) on Condensate Pan (Simplified Inspection using Cap)

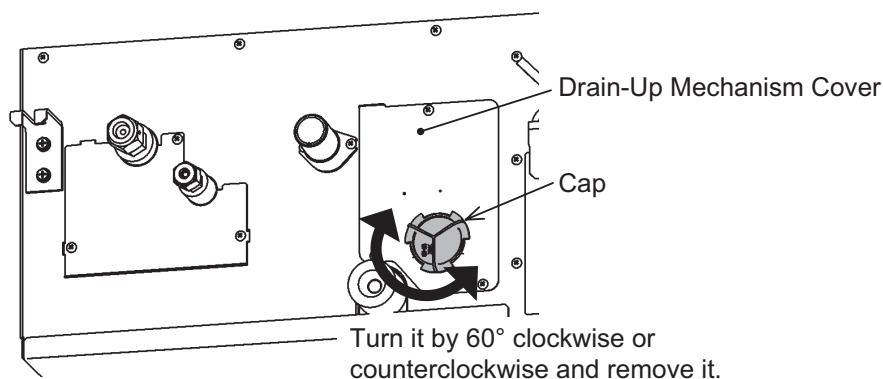
- (1) Turn the cap fixed on the drain-up mechanism cover by 60° clockwise or counterclockwise to remove it.

NOTICE

When putting the cap back on, be sure to confirm that it is secured. If not, condensation water may drop due to air leakage.

Tool

None



4.2.2.8 Checking Dirt (Slime) on Condensate Pan (Removing Drain-Up Mechanism Cover)

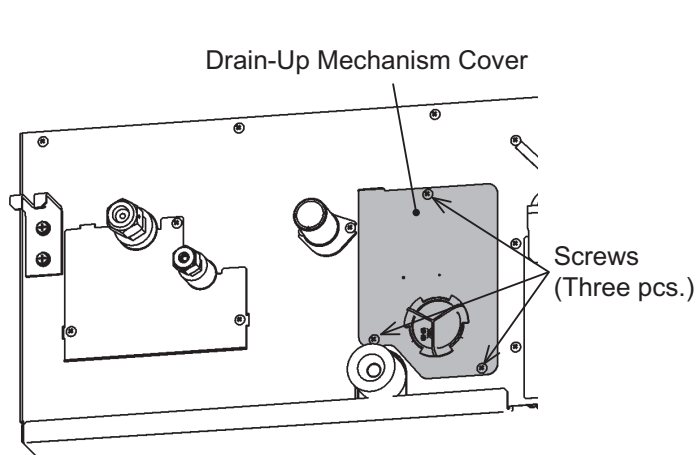
- (1) Remove three screws secured on the drain-up mechanism cover and remove the drain-up mechanism cover.

NOTICE

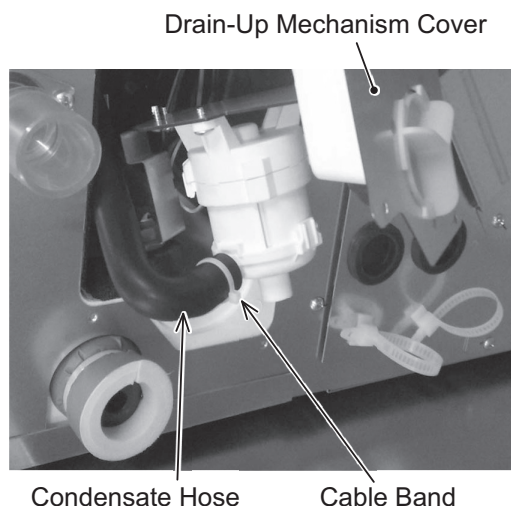
The condensate hose is molded part so there is slight resistance when removing the drain-up mechanism cover. Handle carefully so it does not come to contact with other parts in the surrounding area. It may break the condensate hose or cause water leakage.

Tool

Phillips Screwdriver



- When the drain-up mechanism cover is removed



NOTE:

The surface of condensate pan condition can be checked without removing the cable band.

⚠ WARNING

TURN OFF all POWER supply switches.

4.2.2.9 Checking Operation of Electronic Expansion Valve Coil

- (1) Remove three screws securing the piping cover and remove the piping cover.

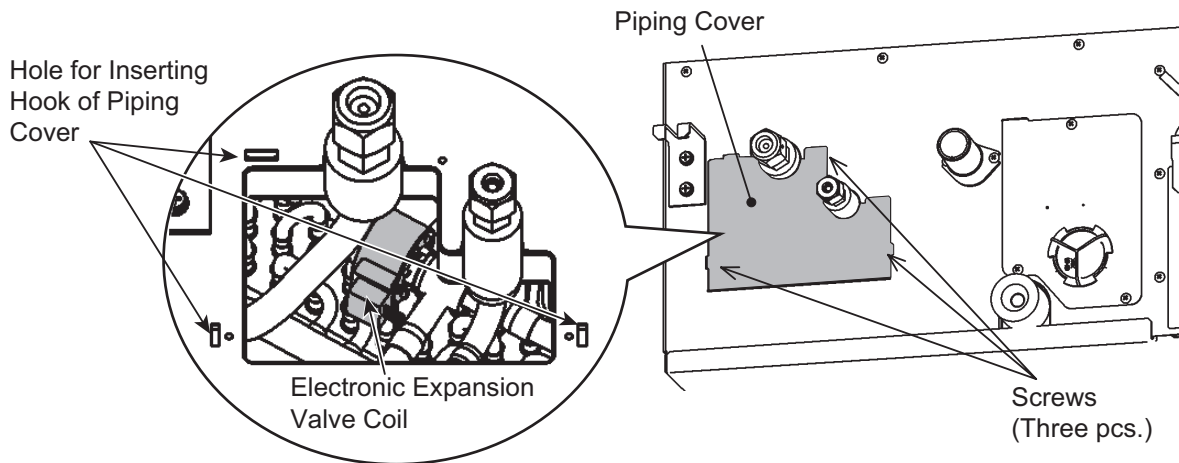
⚠ CAUTION

Work carefully to prevent the piping cover from falling.

- (2) The electronic expansion valve can be seen from the inspection opening. Turn on the power temporarily, touch the electronic expansion valve coil with hand, and check its operation.
- (3) When attaching the cover, place the upper side hook and then secure the cover with three screws.

| | |
|------|----------------------|
| Tool | Phillips Screwdriver |
|------|----------------------|

- When the piping cover is removed.



WARNING

TURN OFF all POWER supply switches.

4.2.2.10 Removing Condensate Pan

CAUTION

This procedure must be performed by 2 persons preventing the part from falling.

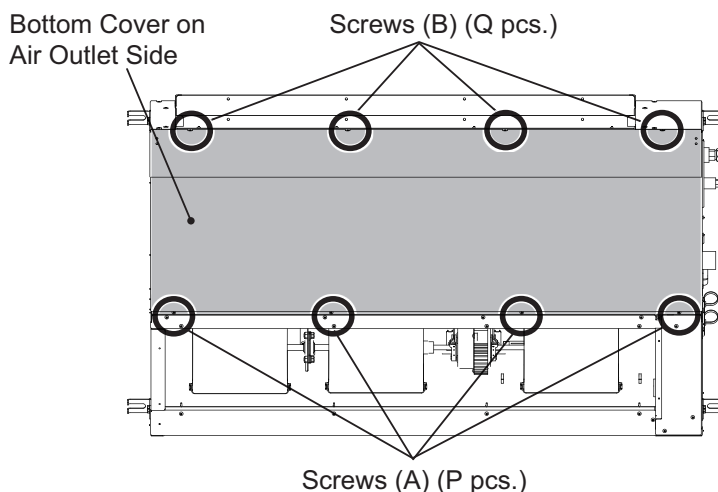
NOTICE

Drain the remaining water in the condensate pan through the condensate hole and confirm that no water remains. For details of this work procedures, refer to the Installation and Maintenance Manual.

- Remove the securing screws (A) and securing screws (B) for the bottom cover on the air outlet side and remove the cover. The quantity of screws (A) and (B) are shown in the table below.

| Model | Quantity of screw (A) P | Quantity of screw (B) Q |
|--|-------------------------|-------------------------|
| (H,Y,C)IDH015B22S, (H,Y,C)IDM006-015B22S | 2 | 3 |
| (H,Y,C)IDH018-027B22S, (H,Y,C)IDM018-027B22S | 3 | 3 |
| (H,Y,C)IDH030-054B22S, (H,Y,C)IDM030-054B22S | 4 | 4 |

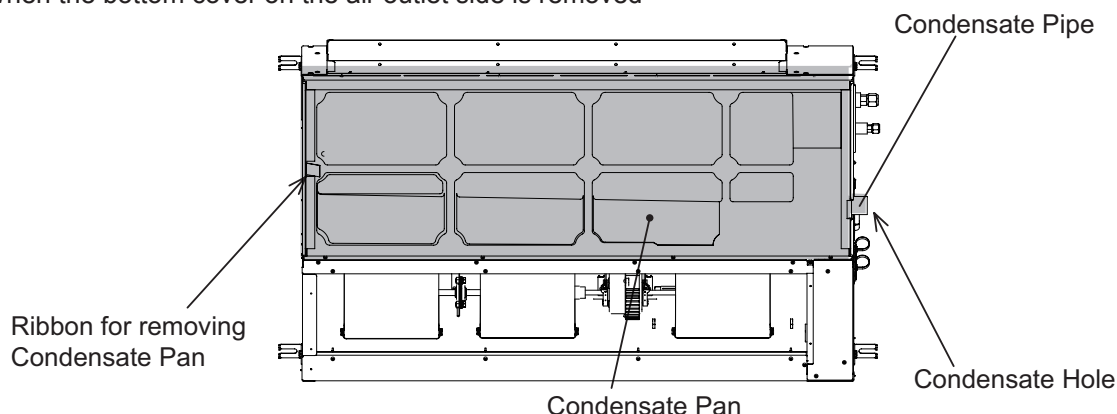
Tool Phillips Screwdriver, Bucket (Capacity of Approx. 1.3 gal. (5 liters))



- Remove the condensate pan using the ribbon for removing the condensate pan and condensate pipe.

Tool Phillips Screwdriver, Bucket (Capacity of Approx. 1.3 gal. (5 liters))

- When the bottom cover on the air outlet side is removed



⚠ WARNING

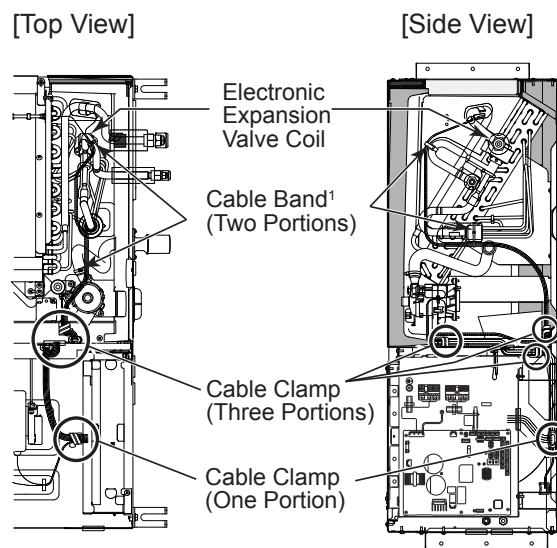
TURN OFF all POWER supply switches.

4.2.2.11 Removing Electronic Expansion Valve Coil

- (1) Remove the condensate pan according to Section 4.2.2.10 "Removing Condensate Pan".
- (2) Remove the drain-up mechanism cover according to Section 4.2.2.8 "Checking Dirt (Slime) on Condensate Pan (Removing Drain-Up Mechanism Cover)".
- (3) Cut the cable band¹ (two positions) that bundles the thermistor for each pipe (one each for liquid and gas) and the wiring for the expansion valve motor and then remove the wiring from the cable clamp.
- (4) Rotate the electronic expansion valve coil, remove the detents on the electronic expansion valve coil and the projection parts of the electronic expansion valve body, and then pull the electronic expansion valve coil upward to remove it.

At this time, take care not to twist the piping.

| | |
|------|--|
| Tool | Phillips Screwdriver, Nipper, Cable Band |
|------|--|



- (5) Insert the replacement electronic expansion valve coil into the electronic expansion valve body. Align the detents on the electronic expansion valve coil with the projection parts on the electronic expansion valve body and secure them.

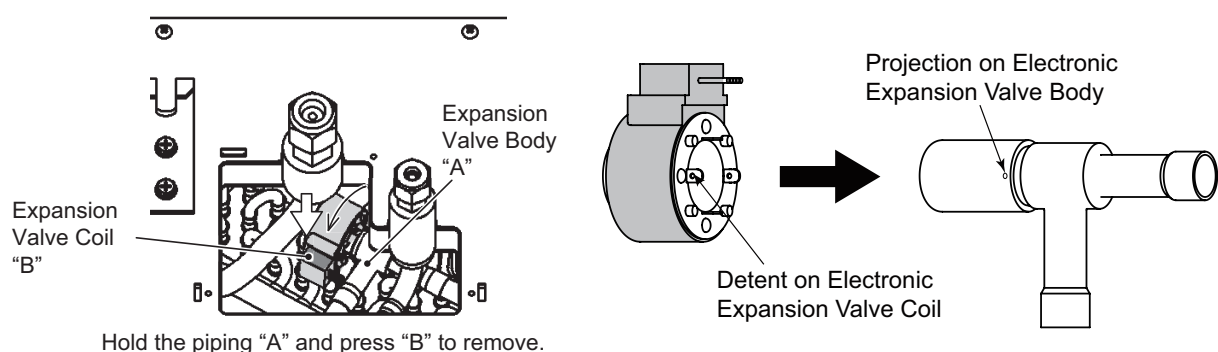
NOTICE

The detents of expansion valve coil are located 90° apart in a circle and the projection parts of expansion valve body are located 180° apart in a circle.

Make sure to fit the projection parts into the detents.

If the electronic expansion valve coil is inserted improperly, it may cause malfunction.

| | |
|------|--|
| Tool | Phillips Screwdriver, Nipper, Cable Band |
|------|--|



Hold the piping "A" and press "B" to remove.

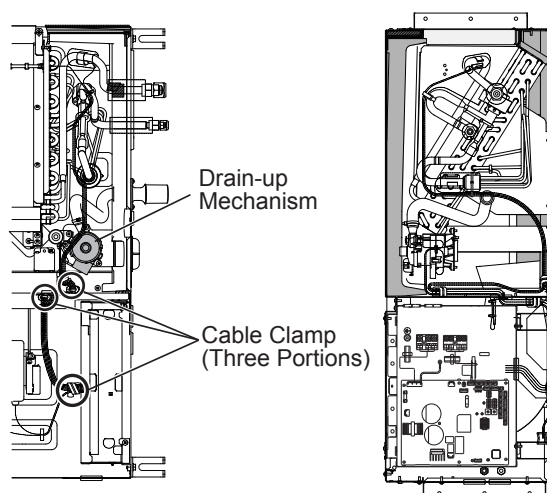
⚠ WARNING**TURN OFF all POWER supply switches.**

- (6) When the procedure above is completed, secure the wiring for the expansion valve coil near the electronic expansion valve coil with a cable band. At this time, secure them so that the end of the vinyl tube of the wiring for the expansion valve coil faces down. Then, secure the thermistor for each pipe (one each for liquid and gas) and the wiring for the expansion valve coil with a cable band.

4.2.2.12 Removing Drain-Up Mechanism

- (1) Remove the condensate pan according to Section 4.2.2.10 "Removing Condensate Pan".
- (2) Remove the electrical box cover according to Section 4.2.2.2 "Removing Electrical Box Cover".
- (3) Remove the drain-up mechanism connector (CN36) from PCB and pull out the wiring for the drain-up mechanism from the electrical box.
- (4) Loosen the cable clamps (three portions) and remove the wiring for the drain-up mechanism.

| Tool | Phillips Screwdriver, Nipper |
|------|------------------------------|
|------|------------------------------|



- (5) Peel off the insulation that bundles the wiring for the drain-up mechanism and float switch.

⚠ WARNING

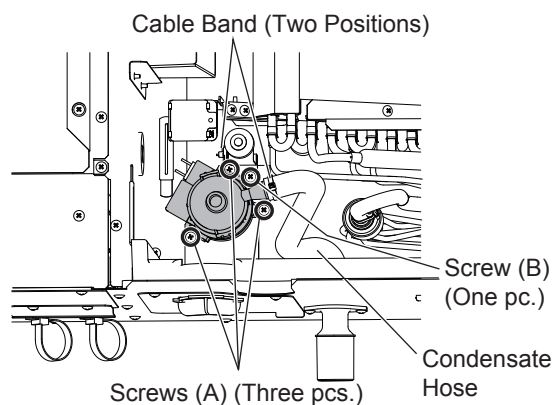
TURN OFF all POWER supply switches.

- (6) Remove three securing screws (A) and one securing screw (B) for the drain-up mechanism and cut the cable bands (two positions).

NOTICE

Handle the drain-up mechanism carefully not to drop it when removing.

| Tool | |
|------------------------------|--|
| Phillips Screwdriver, Nipper | |



- (7) Pull out the condensate hose from the drain-up mechanism and remove the drain-up mechanism.

WARNING

TURN OFF all POWER supply switches.

4.2.2.13 Removing Float Switch

NOTICE

When handling the float switch, do not use electric screwdriver. Be sure to tighten the screws manually. If the float switch falls on the floor or other hard surface, it may cause to malfunction.

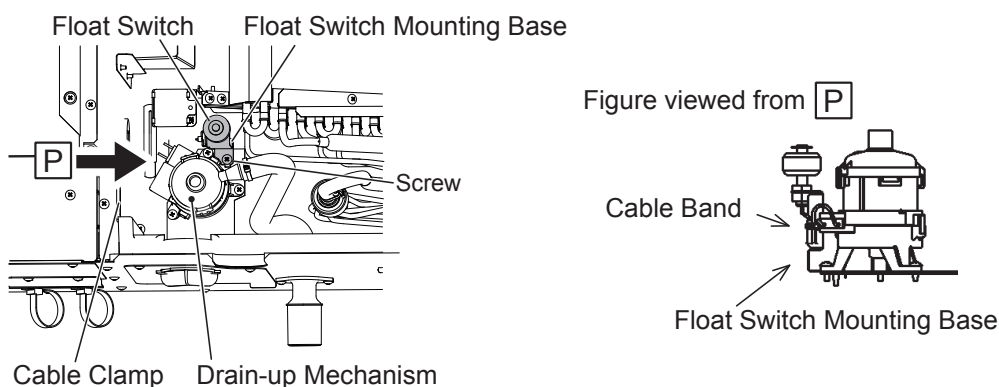
- (1) Remove the condensate pan according to Section 4.2.2.10 "Removing Condensate Pan".
- (2) Remove the electrical box cover according to Section 4.2.2.2 "Removing Electrical Box Cover".
- (3) Remove the float switch relay connector and pull out the wiring for the float switch from the electrical box.
- (4) Loosen the cable clamp and remove the wiring for the float switch.
- (5) Peel off the insulation that bundles the wiring for the drain-up mechanism and float switch.
- (6) Cut the cable band securing the lead wires on the float switch mounting base.
- (7) Removing the float switch

The float switch is secured next to the drain-up mechanism. Remove one securing screw for the float switch mounting base to remove the float switch.

NOTICE

When reassembling, bundle the wiring for the drain-up mechanism and the wiring for the float switch with the packing, secure the wiring for the float switch using a cable band, and secure them using a screw. The packing is included with the service parts for the float switch. Provide cable bands on the local site.

| | |
|------|--|
| Tool | Phillips Screwdriver, Cable Band, Nipper |
|------|--|



WARNING

TURN OFF all POWER supply switches.

4.2.2.14 Removing Liquid Pipe, Gas Pipe and Air Outlet Thermistors

- (1) Remove the condensate pan according to Section 4.2.2.10 "Removing Condensate Pan".
- (2) Remove the electrical box cover according to Section 4.2.2.2 "Removing Electrical Box Cover".
- (3) Remove each thermistor connector (THM2, THM3, and THM5) from PCB and pull out the wiring for each thermistor from the electrical box.
- (4) Cut the cable bands (two positions) bundling the thermistor for each pipe (one each for liquid and gas) and the wiring for the expansion valve coil. Then remove the wiring from the cable clamp.
- (5) Remove the butyl sheet and then remove the thermistor holder from the gas pipe. Then remove the gas pipe thermistor.
- (6) Remove the butyl sheet and then remove the thermistor holder from the liquid pipe. Then remove the liquid pipe thermistor.

NOTICE

[For Reattaching the Part]

1. Secure the wiring from the gas pipe and liquid pipe thermistors on the piping using a cable band¹ as shown in Figure A. (Provide cable bands on the local site.)
2. Face the end of the vinyl tube of the gas pipe and liquid pipe thermistors to the bottom of the unit and arrange it as shown in Figure B. Attaching incorrectly may cause condensation to enter the electrical box.

Tool Phillips Screwdriver, Cable Band, Nipper

Figure A

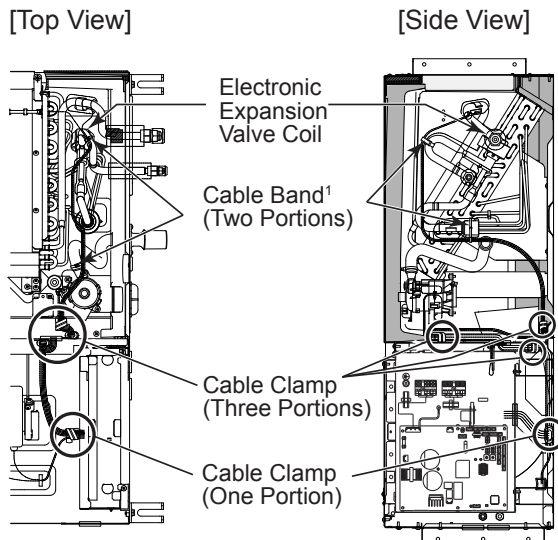
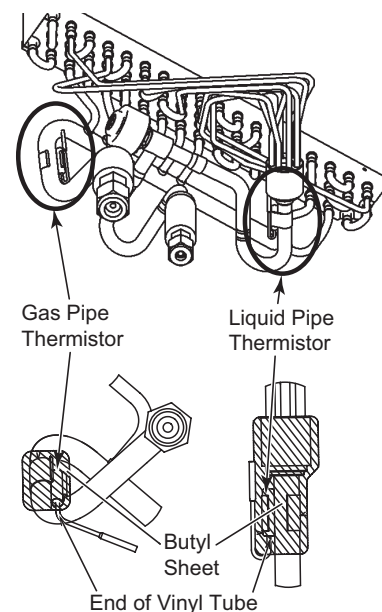


Figure B

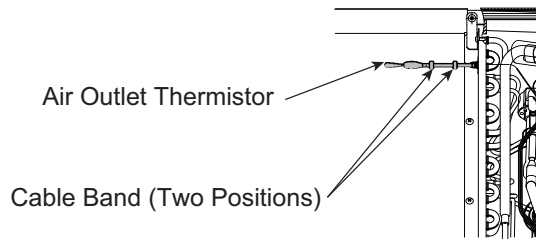


WARNING

TURN OFF all POWER supply switches.

- (7) Cut the cable bands (two positions) securing the air outlet thermistor and remove the air outlet thermistor.

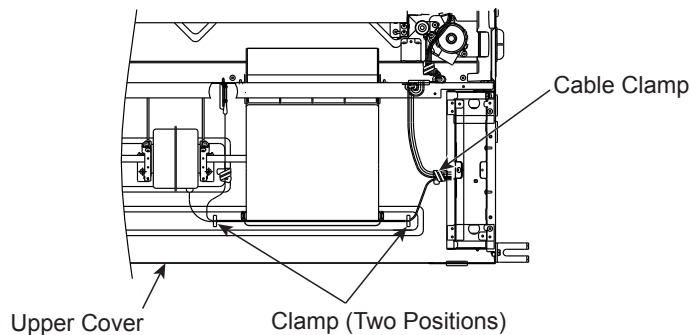
| | |
|------|--|
| Tool | Phillips Screwdriver, Cable Band, Nipper |
|------|--|



4.2.2.15 Removing Air Inlet Thermistor

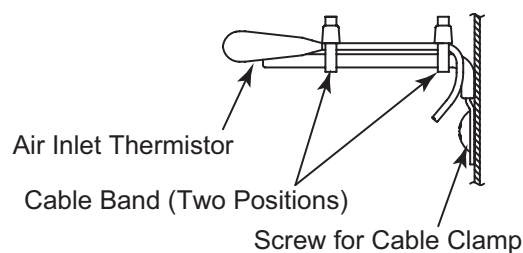
- (1) Remove the electrical box cover according to Section 4.2.2.2 "Removing Electrical Box Cover".
- (2) Remove the air inlet thermistor connector (THM1) from PCB and pull out the wiring from the electrical box.
- (3) Remove the screw for the cable clamp securing the air inlet thermistor.

| | |
|------|--|
| Tool | Phillips Screwdriver, Cable Band, Nipper |
|------|--|



- (4) Remove the wiring from the clamps (two positions) and cable clamp (one position), cut the cable bands (two positions), and remove the air inlet thermistor.

| | |
|------|--|
| Tool | Phillips Screwdriver, Cable Band, Nipper |
|------|--|



4.3 Main Parts

4.3.1 for Outdoor Unit

Refer to the Service Manual for Outdoor Unit.

4.3.2 for Change-Over Box

Refer to the Service Manual for Outdoor Unit.

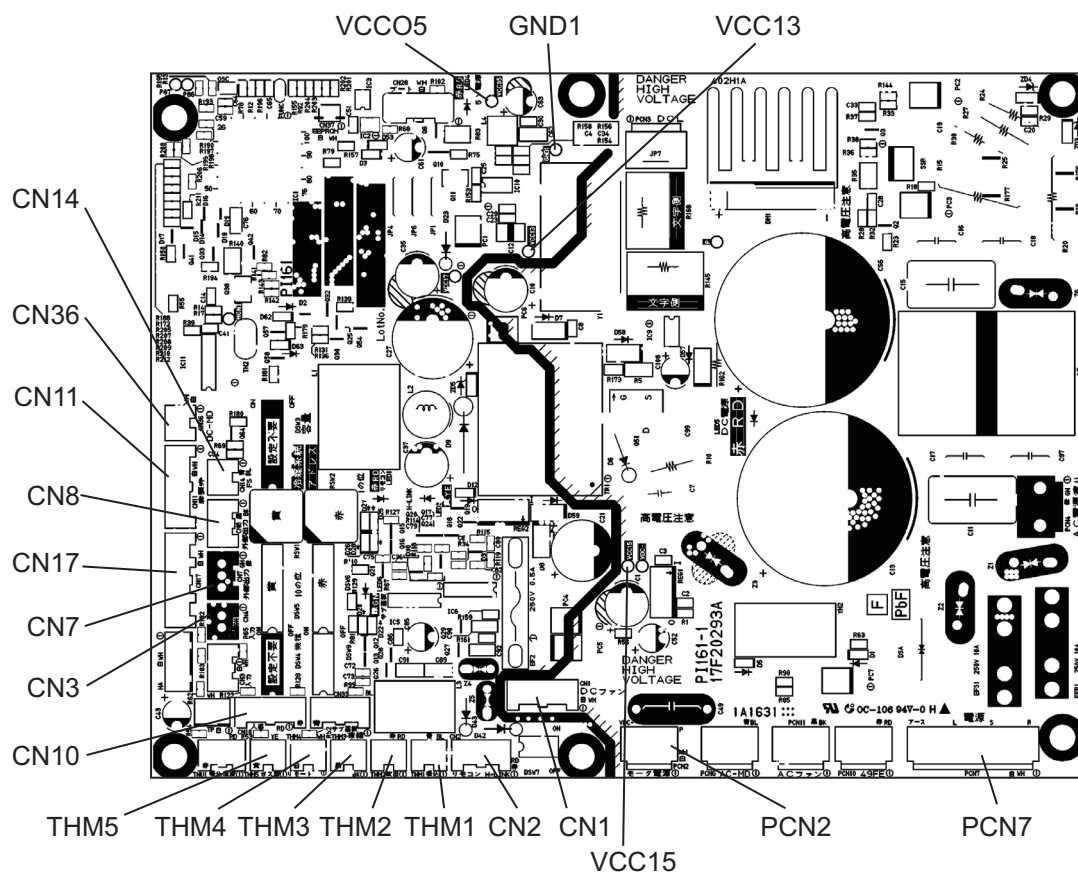
(Main Parts)

4.3.3 for Indoor Units

4.3.3.1 Printed Circuit Board

- Ducted (High and Medium Static)

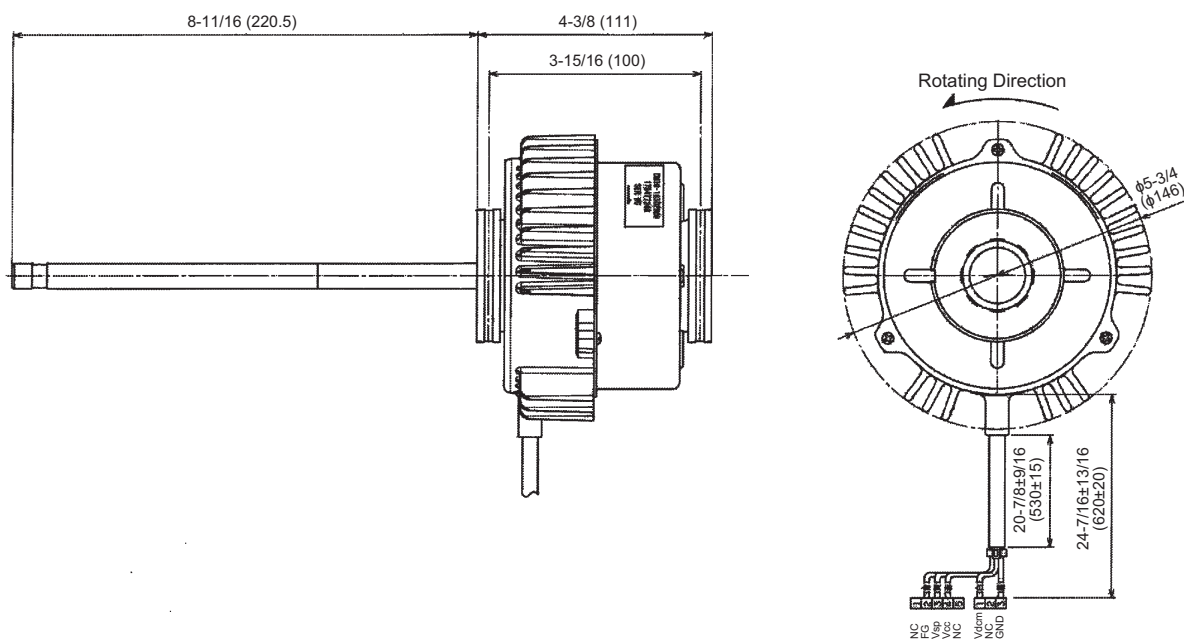
Arrangement of Connectors and Check Points for Control PCB1 (PI161)



4.3.3.2 Fan Motor

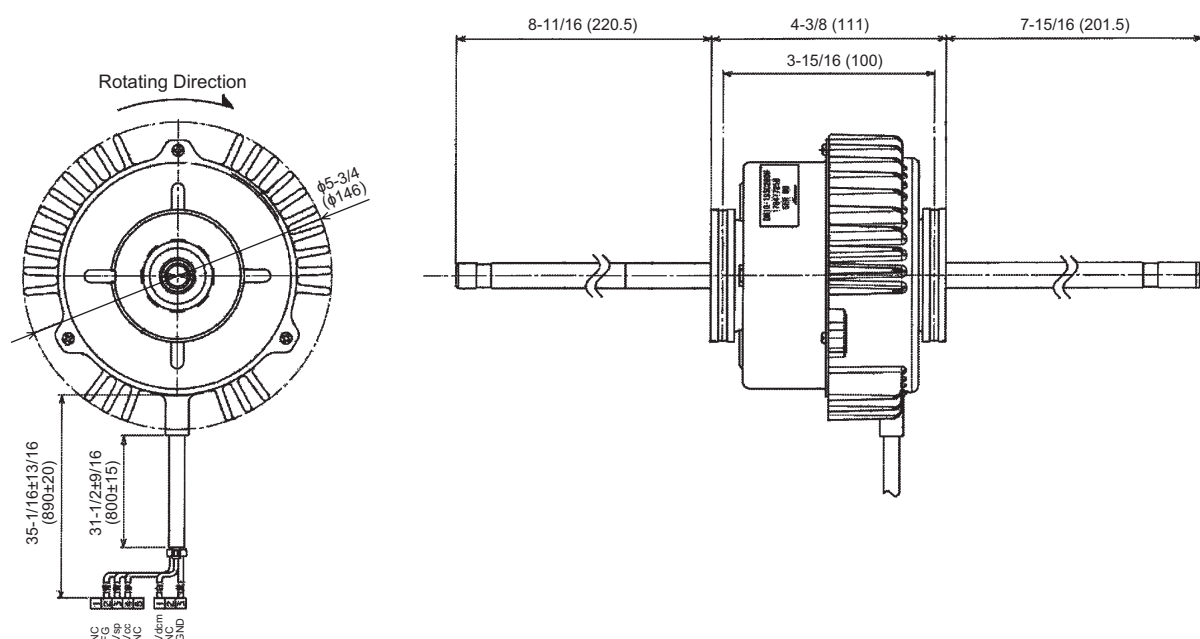
- for (H,Y,C)IDH015B22S
(H,Y,C)IDM006B22S, (H,Y,C)IDM008B22S, (H,Y,C)IDM012B22S and (H,Y,C)IDM015B22S

Unit: inch (mm)



- for (H,Y,C)IDH018B22S, (H,Y,C)IDH024B22S and (H,Y,C)IDH027B22S
(H,Y,C)IDM018B22S, (H,Y,C)IDM024B22S and (H,Y,C)IDM027B22S

Unit: inch (mm)

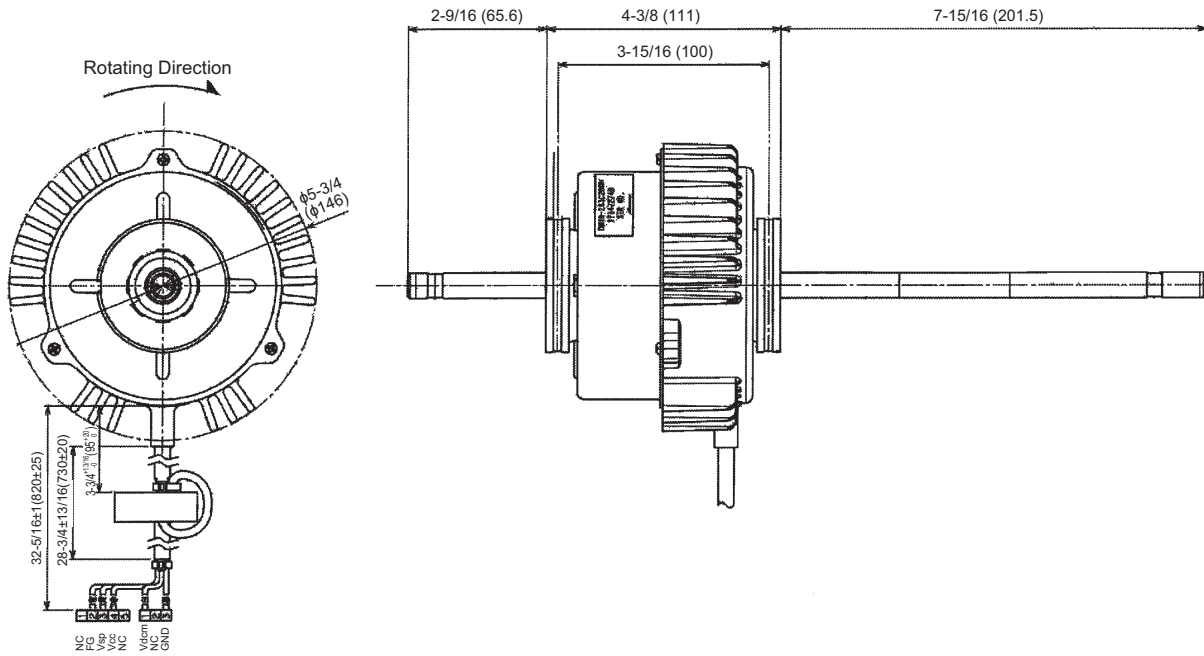


MAINTENANCE

(Main Parts)

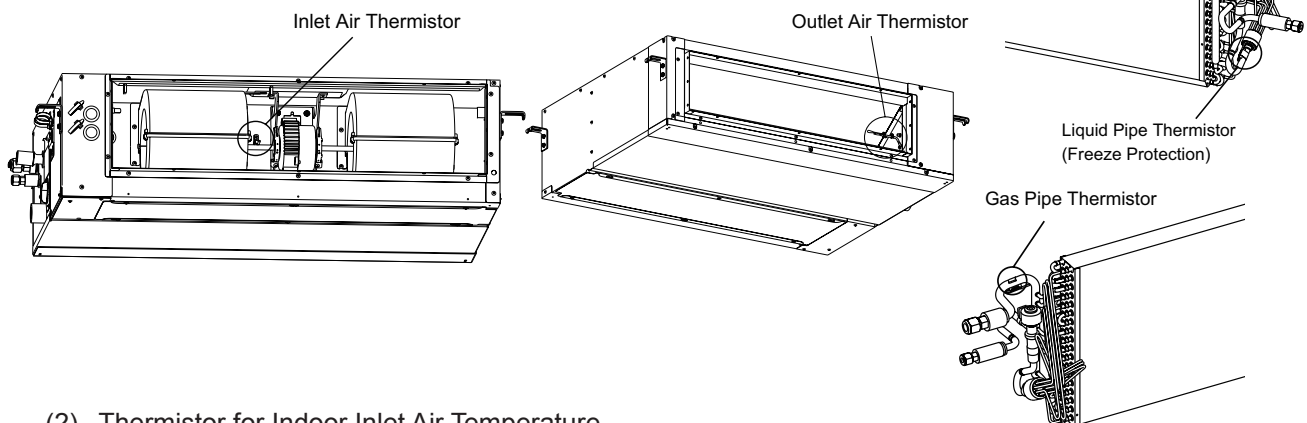
- for (H,Y,C)IDH030B22S, (H,Y,C)IDH036B22S, (H,Y,C)IDH048B22S and (H,Y,C)IDH054B22S
(H,Y,C)IDM030B22S, (H,Y,C)IDM036B22S, (H,Y,C)IDM048B22S and (H,Y,C)IDM054B22S

Unit: inch (mm)



4.3.3.3 Thermistor

(1) Position of Thermistor



(2) Thermistor for Indoor Inlet Air Temperature (For Room Temperature Control)

The room temperature is controlled by the thermistor for indoor inlet air temperature detecting the temperature at the suction air inlet of the indoor unit.

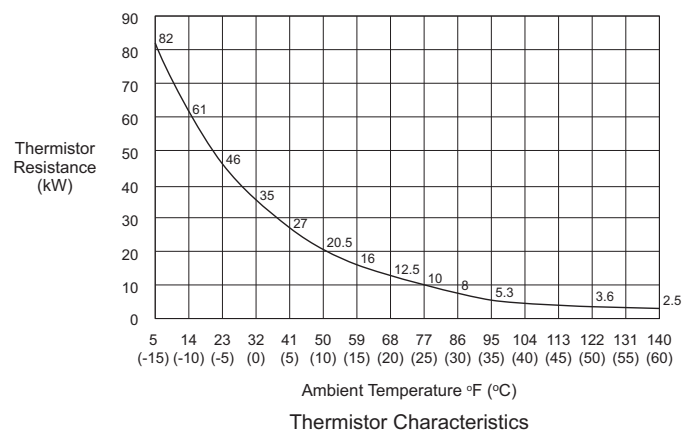
The setting temperature is indicated on the LCD of the wired controller by number. Adjust the setting temperature for prevention from excessive cooling and heating.

It is recommended to set the temperature as follows;

Economical Cooling Operation: 81°F (27°C) to 84°F (29°C)

Economical Heating Operation: 64°F (18°C) to 68°F (20°C)

The resistance characteristics of the thermistor is shown in the above figure.



ATTENTION:

The thermo-off temperature of the indoor unit inlet air thermistor is set higher than the temperature indicated on the wired controller by 7°F (4°C) and the maximum is 86°F (30°C), because the suction air temperature during heating operation has a tendency to become higher than that of the occupied zone, intending comfortable heating operation.

(3) Thermistor for Indoor Outlet Air Temperature (For Discharge Air Temperature Control)

The thermistor for indoor outlet air temperature is utilized for the control of prevention from cold air discharge in heating operation, etc.

The resistance characteristics of the thermistor is shown in the above figure.

(4) Thermistor for Liquid Pipe Temperature of Indoor Heat Exchanger

When the temperature of the heat exchanger is below 32°F (0°C), the thermostat is turned OFF automatically and when it is over 57°F (14°C), the thermostat is turned ON again.

To Prevent freezing of the heat exchanger in COOL and DRY operation.

The resistance characteristics of the thermistor is shown in the above figure.

(5) Thermistor for Gas Pipe Temperature of Indoor Heat Exchanger

When the temperature of the heat exchanger is below 32°F (0°C), the thermostat is turned OFF automatically and when it is over 57°F (14°C), the thermostat is turned ON again.

To Prevent freezing of the heat exchanger in COOL and DRY operation.

The evaporating temperature in heating operation is detected.

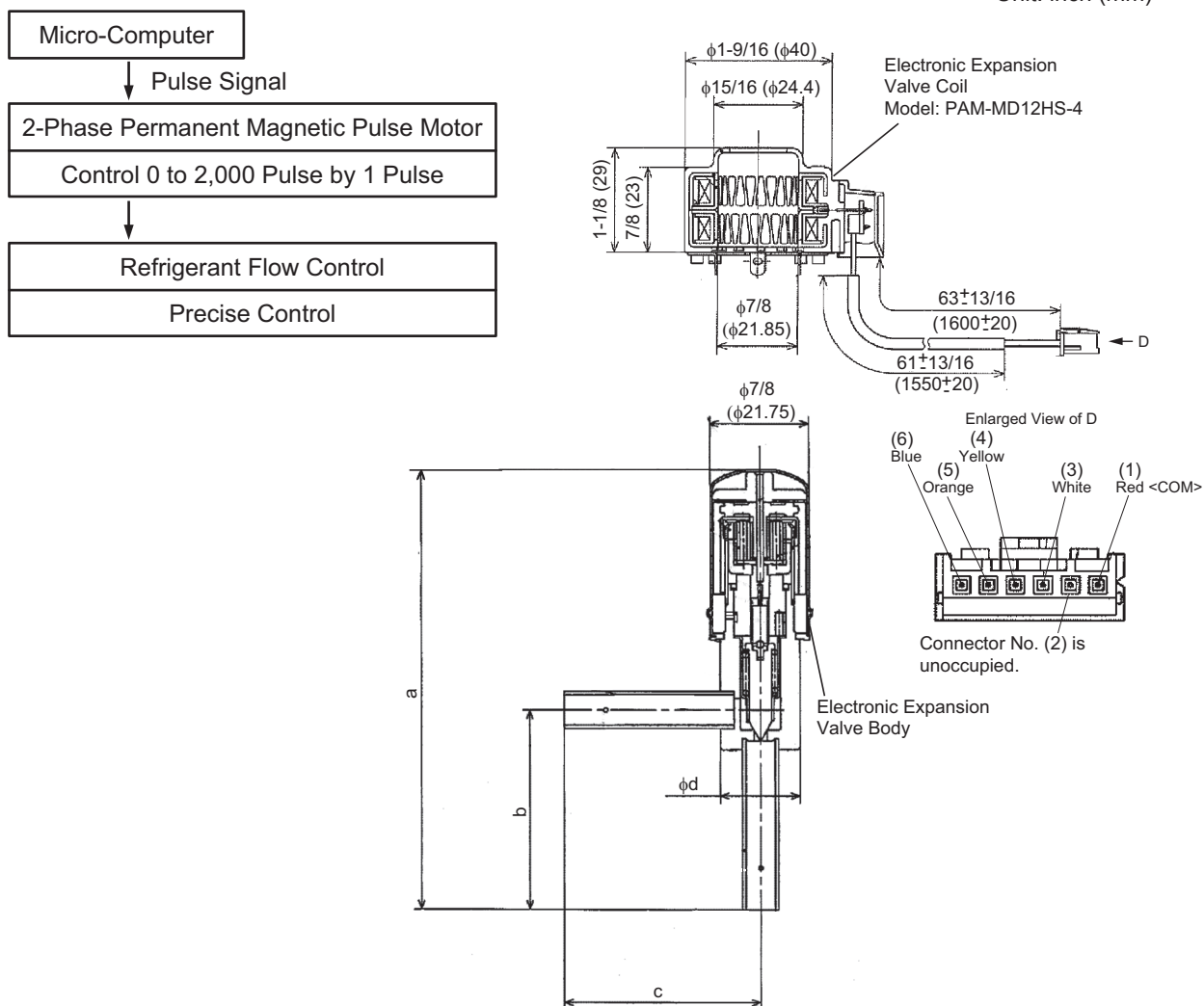
The resistance characteristics of the thermistor is shown in the above figure.

MAINTENANCE

(Main Parts)

4.3.3.4 Electronic Expansion Valve

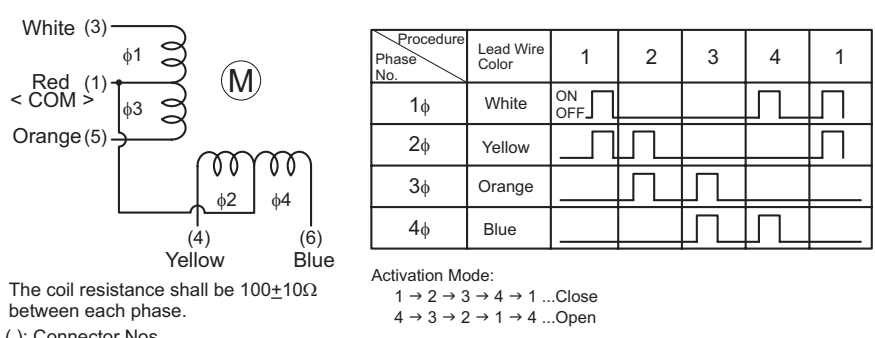
Unit: inch (mm)



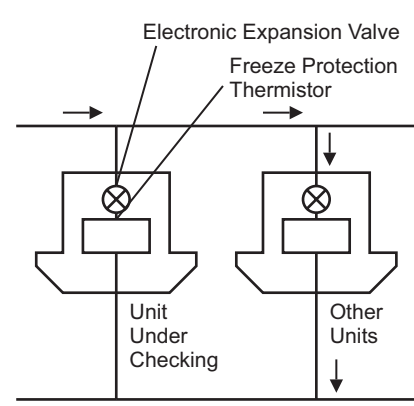
Unit: inch (mm)

| Applicable Indoor Unit | | Dimension | | | | Valve Body |
|------------------------|----------------------|---------------|-----------------|-----------------|-----------------|---------------|
| Ducted High Static | Ducted Medium Static | a | b | c | d | |
| 015 | 006-015 | 3-3/4 (96) | 1-11/16 (43) | 1-11/16 (43) | 11/16 (17.5) | PAM-B40YGHS-1 |
| 018-027 | 018-027 | 3-7/8 (98) | 1-15/16 (49) | 1-13/16 (46) | 13/16 (20) | PAM-B80YGHS-1 |
| 030-054 | 030-054 | 3-7/8 (98) | 1-15/16 (49) | 1-13/16 (46) | 13/16 (20) | PAM-BA0YGHS-1 |

Specifications

| Items | Specifications |
|---|---|
| Type | PAM Type |
| Refrigerant Used | R410A |
| Working Temperature Range | -22°F to 158°F (-30°C to 70°C) |
| Mounting Direction | Drive Shaft in Vertical Direction, Motor Upside and 90° in Four Direction |
| Flow Direction | Reversible |
| Drive Method | 4-Phase Pulse Motor Method |
| Rated Voltage | DC12V±1.2V |
| Drive Condition | 100~250PPS 2 Phase Excitation |
| Wiring Diagram, Drive Circuit and Activation Mode |  <p>The coil resistance shall be $100 \pm 10 \Omega$ between each phase. (): Connector Nos.</p> <p>Activation Mode: 1 → 2 → 3 → 4 → 1 ...Close 4 → 3 → 2 → 1 → 4 ...Open</p> |

• Checking Method of Electronic Expansion Valve for Indoor Unit

| | Indoor Unit Electronic Expansion Valve |
|---------------------------|--|
| Locked (Fully Closed) | Check for the liquid pipe temperature during heating operation. It is abnormal if the temperature does not increase. |
| Locked (Slightly Open) | It is abnormal under the following conditions. The temperature of freeze protection thermistor becomes lower than the suction air temperature when the unit being checked is stopped and the other units are in cooling operation. |
| Locked (Fully Open) |  |

5. External Input/Output and Function Setting

5.1 DIP Switch Settings of Outdoor Unit

Refer to the Service Manual for Outdoor Unit.

5.2 High Static Pressure Setting of Outdoor Unit

Refer to the Service Manual for Outdoor Unit.

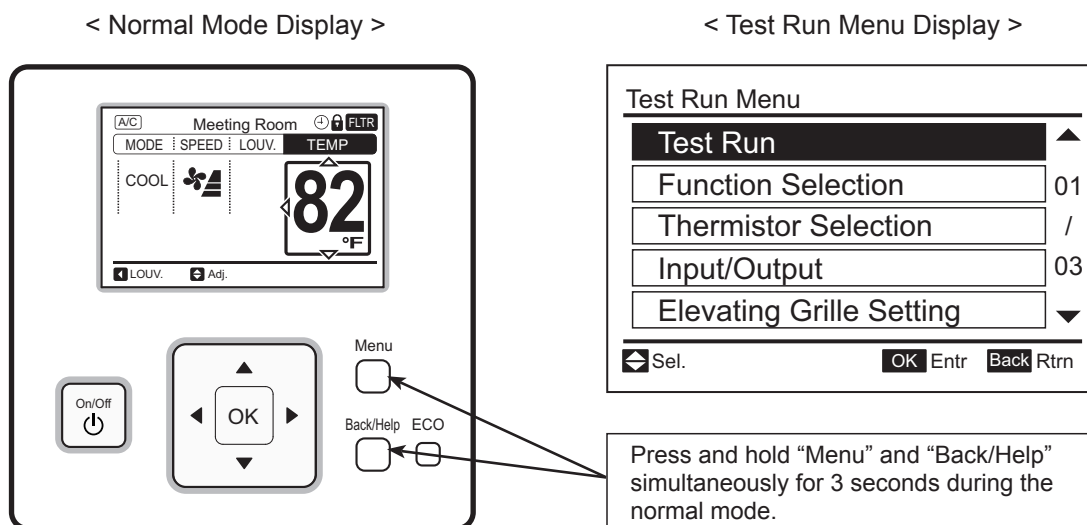
5.3 External Input/Output and Function Setting Mode for Outdoor Unit

Refer to the Service Manual for Outdoor Unit.

5.4 External Input/Output and Function Setting Mode for Indoor Unit

- Setting Method from Wired Controller

The function selection and the input/output setting can be set from the test run menu.



• Function Selection and Input/Output Setting

1. Press and hold "Menu" and "Back/Help" simultaneously for at least three seconds during the normal mode (when unit is not operated). The Test Run menu is displayed.

| Test Run Menu | |
|------------------------------------|----|
| Test Run | ▲ |
| Function Selection | 01 |
| Thermistor Selection | / |
| Input/Output | 03 |
| Elevating Grille Setting | ▼ |
| ◀ Sel. OK Entr Back Rtrn | |

2. Select "Function Selection" or "Input/Output" from the Test Run menu and press "OK".

3. Select the indoor unit by pressing "△ ▽ ◀ ▶" and touch "OK".
(This screen is NOT displayed when the number of an indoor unit connected with the controller is "1". In this case, "4" is displayed.)

| Function Selection | | | |
|------------------------------------|--|--|--|
| All | | | |
| 01-01 | | | |
| 01-02 | | | |
| 01-03 | | | |
| 01-04 | | | |
| ◀ Sel. OK Entr Back Rtrn | | | |

Function Selection

4. Press "△ ▽" and select the item.

| Function Selection:01-03 | |
|--|---------|
| Item | Setting |
| b1 | ◀ 00 ▶ |
| b2 | 00 |
| b3 | 00 |
| b4 | 00 |
| b5 | 00 |
| ◀ Sel. ▶ Adj. OK Entr Back Rtrn | |

5. Press "◀ ▶" and change the setting.

| Function Selection:01-03 | |
|--|---------|
| Item | Setting |
| b1 | 00 |
| b2 | 00 |
| b3 | ◀ 01 ▶ |
| b4 | 00 |
| b5 | 00 |
| ◀ Sel. ▶ Adj. OK Entr Back Rtrn | |

Input/Output Setting

4. Press "△ ▽" and select the item.

| Input/Output:01-03 | | |
|--|---------|-----------|
| Item | Setting | Connector |
| Input 1 | ◀ 00 ▶ | CN3 1-2 |
| Input 2 | 00 | CN3 2-3 |
| Output1 | 00 | CN7 1-2 |
| Output2 | 00 | CN7 1-3 |
| Output3 | 00 | CN8 1-2 |
| ◀ Sel. ▶ Adj. OK Entr Back Rtrn | | |

5. Press "◀ ▶" and change the setting.

| Input/Output:01-03 | | |
|--|---------|-----------|
| Item | Setting | Connector |
| Input 1 | 00 | CN3 1-2 |
| Input 2 | 00 | CN3 2-3 |
| Output1 | ◀ 01 ▶ | CN7 1-2 |
| Output2 | 00 | CN7 1-3 |
| Output3 | 00 | CN8 1-2 |
| ◀ Sel. ▶ Adj. OK Entr Back Rtrn | | |

6. Press "OK" so that the confirmation screen is displayed.

7. Select "Yes" and press "OK".
The Test Run menu is displayed after the setting is confirmed.
If "No" is selected, the screen returns to "4".

8. Press "Back/Help" on the Test Run menu to return to the normal mode.

| Function Selection:01-03 | |
|-------------------------------------|----|
| Confirm function selection setting? | |
| Yes | No |
| ◀ Sel. OK Entr Back Rtrn | |

(Figure for Function Selection)

To set other units, press "Back/Help" at "4" and "5" so that the screen returns to "3".
(If the number of an indoor unit connected with the controller is "1", the screen returns to "1".)

5.4.1 External Input and Output Settings

On the Indoor Unit Printed Circuit Board (PCB), there are two input terminals (CN3) to receive external signals and three output terminals (CN7, CN8) to send signals out. Functions shown in these tables are available when setting input and output terminals.

Input and Output Number Display and Connectors

| Input Number Display | Port | Factory Setting | | Setting |
|-------------------------|---------|--|------------|---------|
| Input/Output Indication | | Setting Item | Indication | |
| Input 1 | CN3 1-2 | Remote ON/OFF 1 (Level) | 03 | |
| Input 2 | CN3 2-3 | Prohibiting Remote Control after Manual Stoppage | 06 | |
| Output 1 | CN7 1-2 | Operation | 01 | |
| Output 2 | CN7 1-3 | Alarm | 02 | |
| Output 3 | CN8 1-2 | Thermo-ON for Heating | 06 | |

Input and Output Settings and Display Codes

| Code Indicated | Input | Output |
|----------------|---|-----------------------|
| 00 | Not set | Not set |
| 01 | Room Thermostat (for Cooling) | Operation |
| 02 | Room Thermostat (for Heating) | Alarm |
| 03 | Remote ON/OFF 1 (Level) | Cooling |
| 04 | Remote ON/OFF 2 (Operation) | Thermo-ON for Cooling |
| 05 | Remote ON/OFF 2 (Stoppage) | Heating |
| 06 | Forbidding Remote Control after Manual Stoppage | Thermo-ON for Heating |
| 07 | Remote Cooling / Heating Change | Total Heat Exchanger |
| 09 | Setback Temperature | N/A |

NOTES:

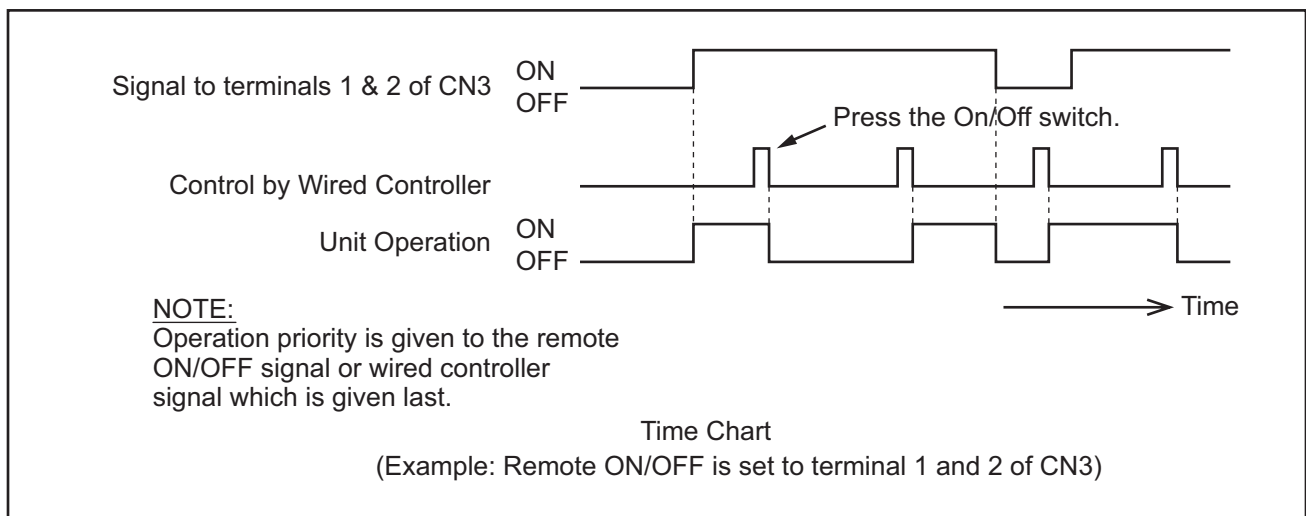
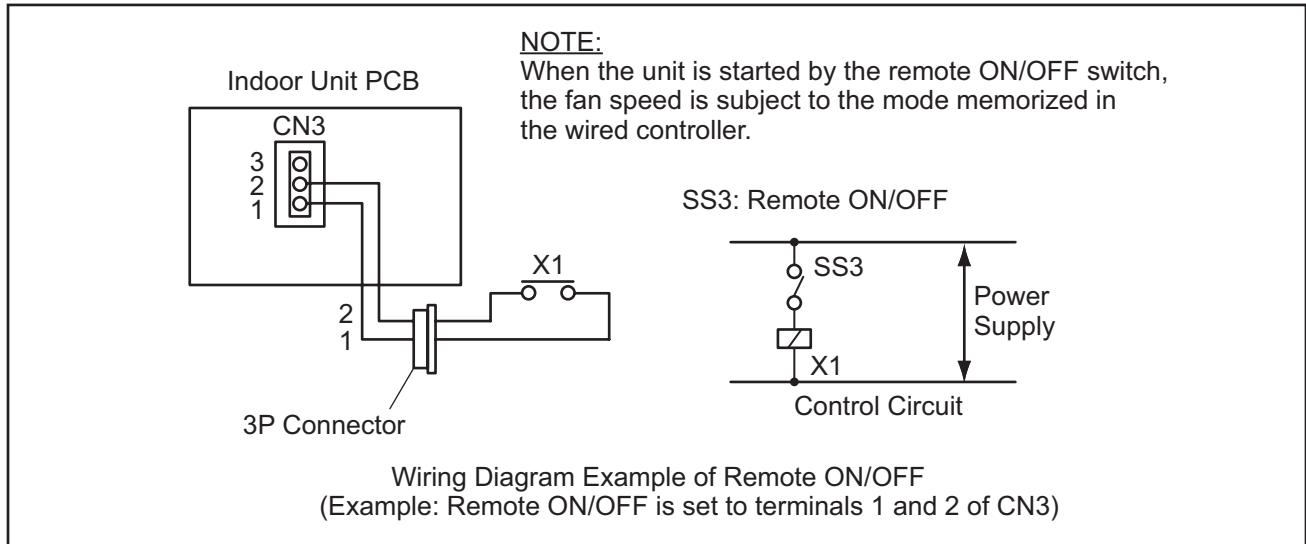
1. Change the optional setting after waiting at least three minutes elapsed time after start-up.
2. Do not set the elevating grille for the total heat exchanger.
3. Record the setting conditions for each input and output in the "Setting" column of the table.
4. When PSC-5RA (optional) is used for connection between the auxiliary heater and indoor unit, DO NOT connect connector (CN7) to indoor unit PCB. Otherwise, fire may result.
Use another PSC-5RA (optional) for input/output integration functionality.

5.4.1.1 Remote Control ON/OFF Function

This function provides a control to stop and start the system automatically from a remote place. Four methods are available by using each signal from a building management system.

(1) Remote ON/OFF 1 (Level Signal Input) [Input Setting: Code (03)]

This is an ON/OFF function from a remote place by using level signals (ON/OFF). An example of basic wiring and time chart is shown below.

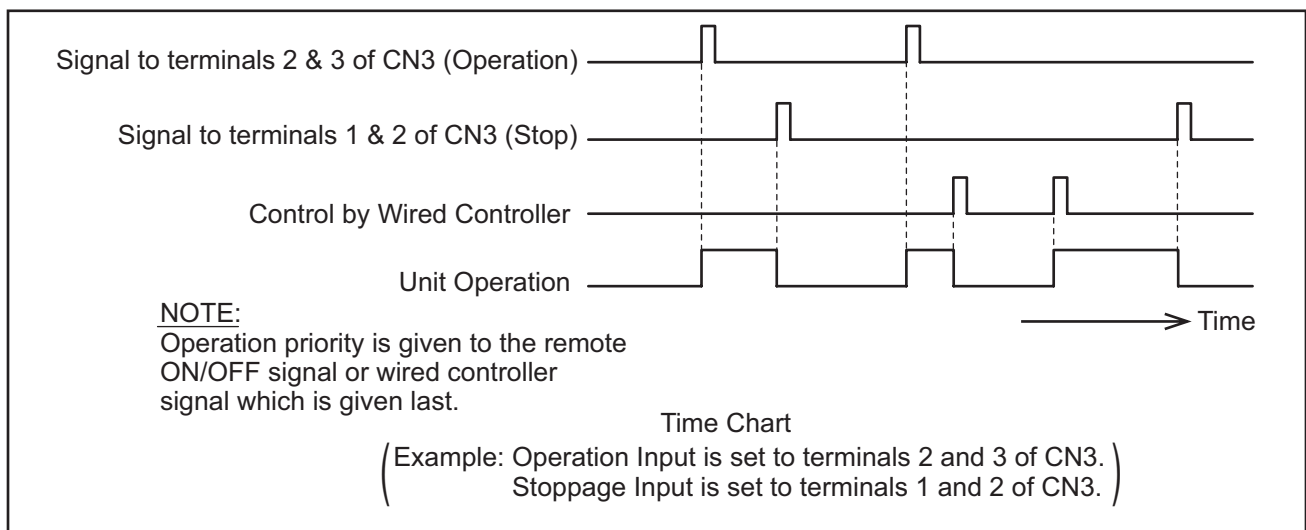
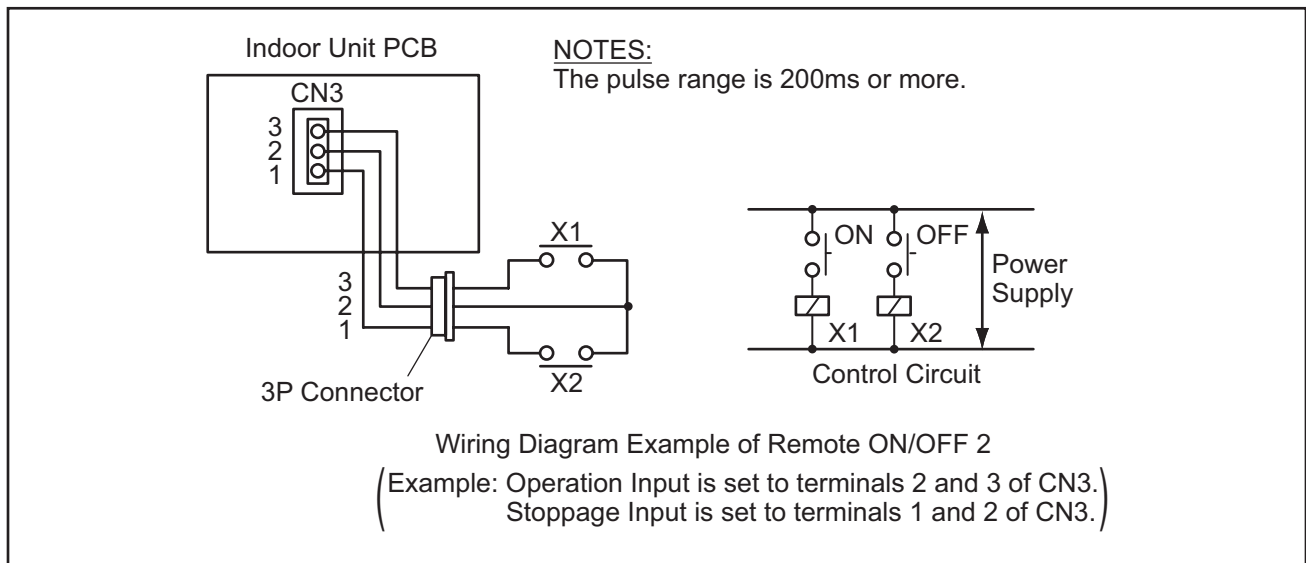


NOTES:

- Picking up signal within 10 seconds after power supply is turned ON is not possible due to initialization of the components.
Do not change the signal (On/Off) in this period.
- Wired Controller is required for this function.
- If multiple indoor units are connected to the same communication cable for wired controller, input the signal to any of these indoor units.
- When the communication cable is not used in the twin, triple and quad combinations for simultaneous operation, input the signal to the main indoor unit.

(2) Remote ON/OFF 2 (Pulse Signal Input) [Input Setting: Code (04)]

This is an ON/OFF function from a remote place by using pulse signals. An example of a basic wiring and time chart is shown below.



NOTES:

1. Picking up signal within 10 seconds after power supply is turned ON is not possible due to initialization of the components.
Do not change the signal (On/Off) in this period.
2. Wired Controller is required for this function.
3. If multiple indoor units are connected to the same communication cable for wired controller, input the signal to any of these indoor units.
4. When the communication cable is not used in the twin, triple and quad combinations for simultaneous operation, input the signal to the main indoor unit.

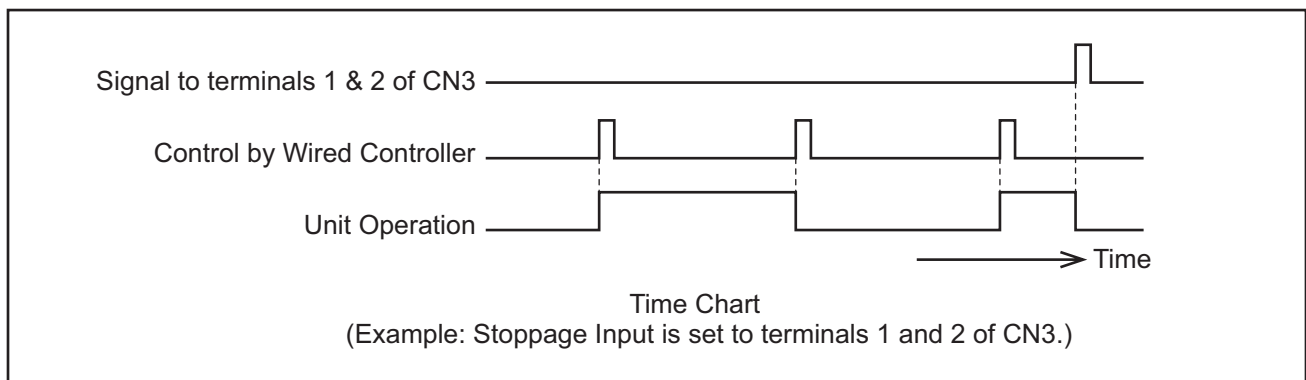
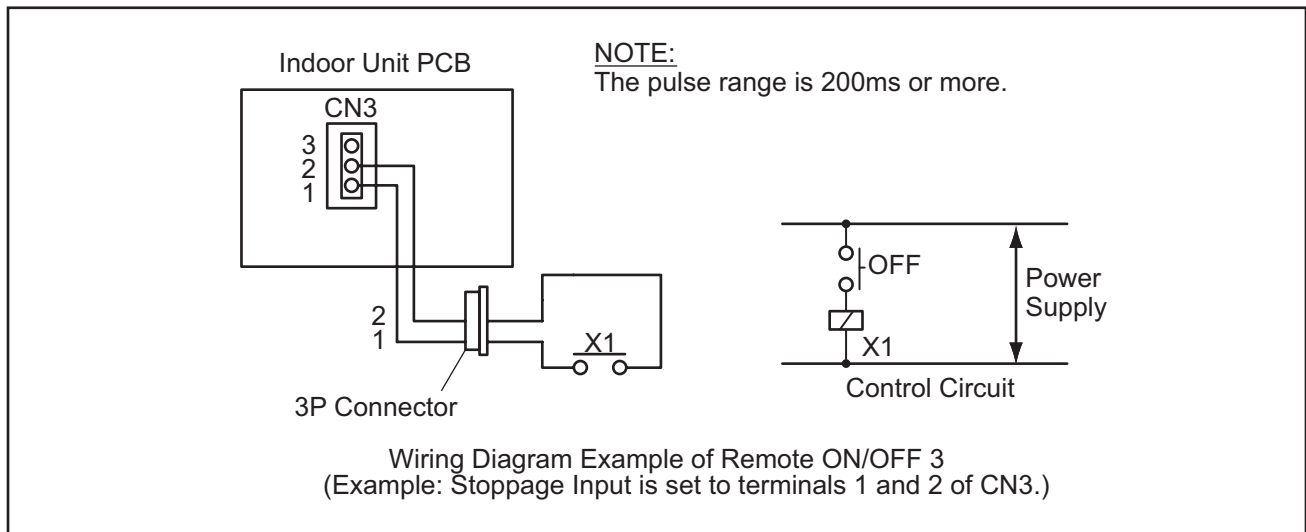
EXTERNAL INPUT/OUTPUT AND FUNCTION SETTING

(3) Remote ON/OFF 3 (Pulse Signal Input) [Input Setting: Code (05)]

The setting for Remote ON/OFF 3 shall be the same as that for Remote ON/OFF 2. By using the signal from a building management system, the indoor units can be stopped.

If a signal is input during the stoppage of the indoor units, the unit remains unchanged.

An example of basic wiring and time chart is shown below.

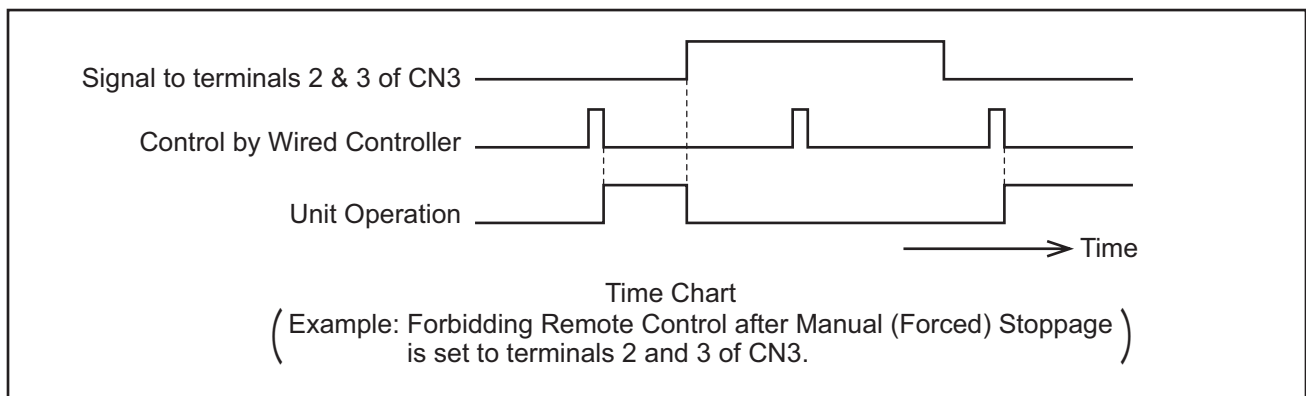
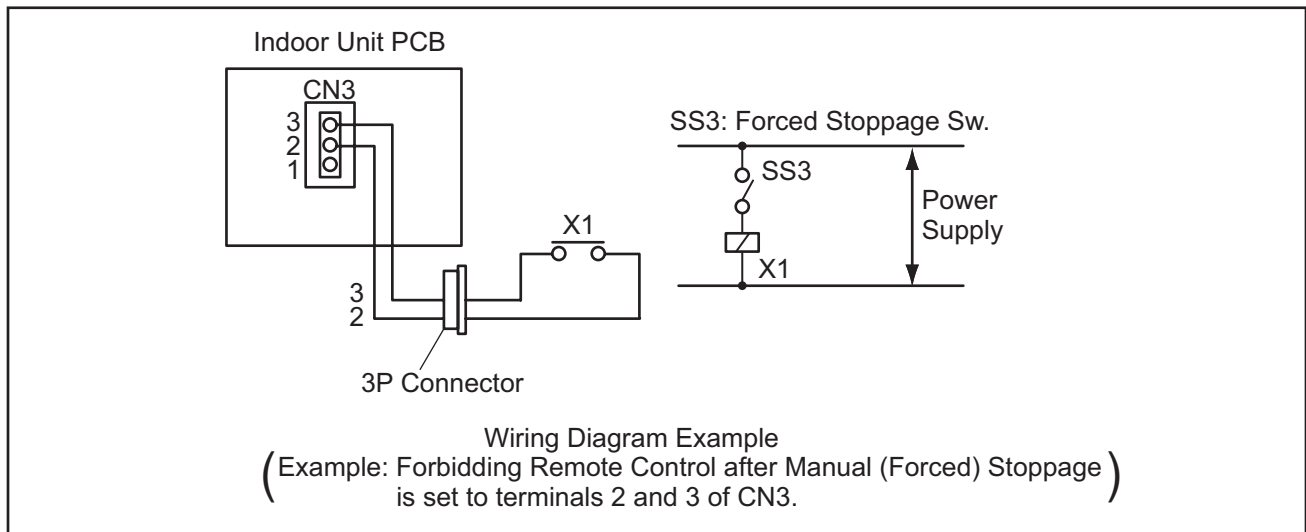


NOTES:

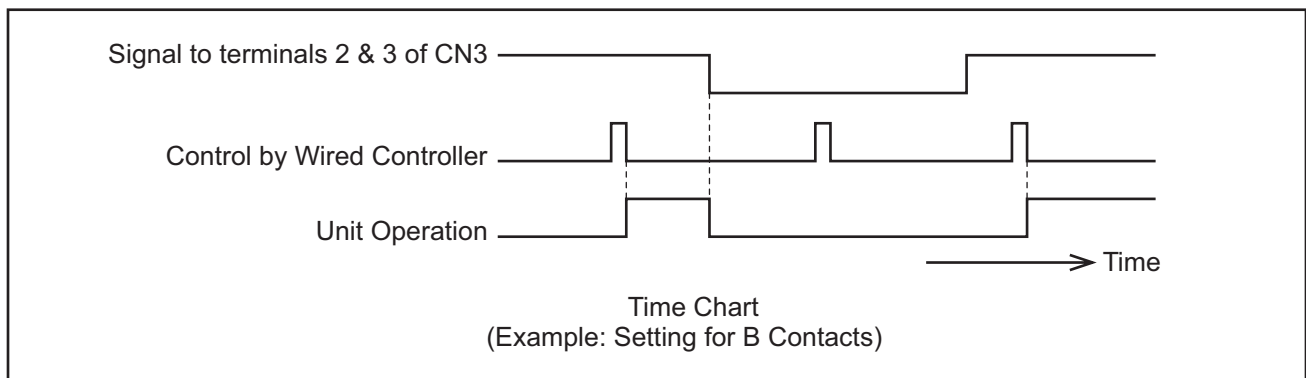
1. Picking up signal within 10 seconds after power supply is turned ON is not possible due to initialization of the components.
Do not change the signal (On/Off) in this period.
2. Wired Controller is required for this function.
3. If multiple indoor units are connected to the same communication cable for wired controller, input the signal to any of these indoor units.
4. When the communication cable is not used in the twin, triple and quad combinations for simultaneous operation, input the signal to the main indoor unit.

(4) Forbidding Remote Control after Manual (Forced) Stoppage (Level Signal Input)
[Input Setting: Code (06)]

By using the signal from a building management system, the indoor units can be stopped and the individual commands from the wired controller are canceled. An example of basic wiring and time chart is shown below.



This function can be used for B contacts if using “Selection of Forced Stoppage Logic” in Section 5.4.2.1 “Function Selection Item.” An example of time chart is shown below.



NOTES:

1. Picking up signal within 10 seconds after power supply is turned ON is not possible due to initializing of components.
Do not change the signal (On/Off) in this period.
2. Wired Controller is required for this function.
3. The following ON/OFF functions are not available after the manual (forced) stoppage because commands from the wired controller are cancelled.
 - a. ON/OFF function from a remote place
 - b. ON/OFF function by the centralized controller while the wired controller is used.

Table 5.1 Specifications on Required Components for (1) to (4) Functions

| Component | | Manufacturer or Specifications | Remarks |
|------------------------------|-------------|--|--|
| Auxiliary Relay (X1, X2) | | OMRON Mini Power Relay Model: MY2F or Equivalent | Voltage 220V |
| Changeover Switch (SS2, SS3) | | Manual Type | |
| 3P Connector Cable | | Optional Part PCC-1A (Connectable to JST Connector XARP-3), 12V | Five Cable with Connectors as One Set |
| Cable (Indoor) | Low Voltage | AWG22 (0.3mm ²) | less than 12V |
| | 220V Class | Use size selected for the unit. | |
| Cable (Outdoor) | Low Voltage | AWG20 or AWG18 (0.5 to 0.75mm ²) | less than 12V |
| | 220V Class | AWG14 (2mm ²) | |

NOTES:

1. Make the wires CN3 as short as possible. Do not install the wires with the 220V power line. Install them more than 12 in. (30cm) away from each other. (Intersecting them is acceptable.)
If the wires are installed along the power line, comply with the following points to prevent noise.
 - a. Pass either of the low voltage wire and 220V power line through a metal conduit tube and ground one end.
 - b. Use a shielded wire for a low voltage wire and ground one end.
The maximum wiring length is 230 ft. (70m).
2. When using this function, it is recommended that safety devices such as an electric leakage breaker or smoke detector, etc., be used because this is an unattended function.

5.4.1.2 Power Supply ON/OFF 1 (Automatic Operation When Power Supply Is ON)

This function is utilized to run/stop the unit by turning ON/OFF the power supply. When this function is utilized in the condition that there is no person to operate the unit, monitor the system for disaster prevention. When using this function, refer to operation for Wired Controller item (30) "Power Supply ON/OFF 1 (Automatic Operation When Power Supply Is ON) (d1)" for the setting.

NOTES:

1. The unit is stopped even when the power supply is turned ON/OFF due to power failure. If power failure occurs during the stoppage of the unit, the operation is restarted after the power supply is restored.
2. Wired Controller is required for this function.
3. When the communication cable is not used in the twin, triple and quad combinations for simultaneous operation, set this function only to the main indoor unit.

5.4.1.3 Power Supply ON/OFF 2 (Restarting Function After Power Failure)

This function is utilized to restart the unit operation automatically when the power supply is restored after the power failure over 2 seconds. In case of a power failure for 2 seconds or less, the system resumes normal operation after a 3-minute compressor delay.

When this function is utilized in the condition that there is no person to operate the unit, monitor the system for disaster prevention. When using this function, refer to operation for wired controller item (32) "Power Supply ON/OFF 2 (Restarting Function After Power Failure) (d3)" for the setting.

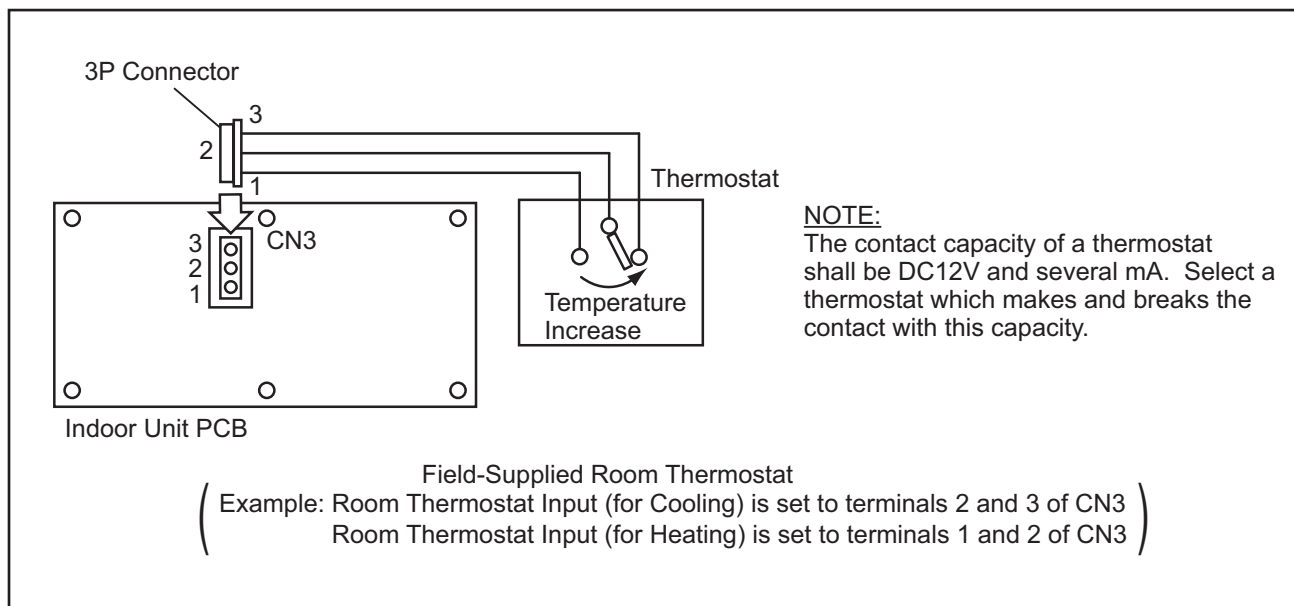
NOTES:

1. If power failure occurs during the stoppage of the unit, the unit remains stopped after the power supply is restored.
2. Wired Controller is required to be connected for setting this function.
3. When the communication cable is not used in the twin, triple and quad combinations for simultaneous operation, set this function only to the main indoor unit.

5.4.1.4 Control by Field-Supplied Room Thermostat

[Input Setting: Code (01) (for Cooling), Code (02) (for Heating)]

In a case where a field-supplied room thermostat is used instead of the inlet thermistor of the indoor unit in order to run/stop the compressor, connect wires as shown below.



Operation

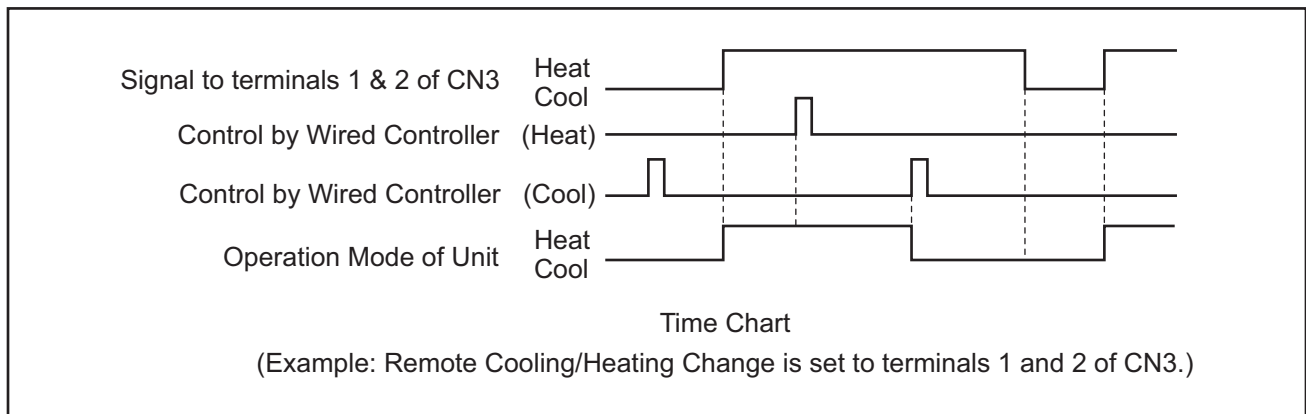
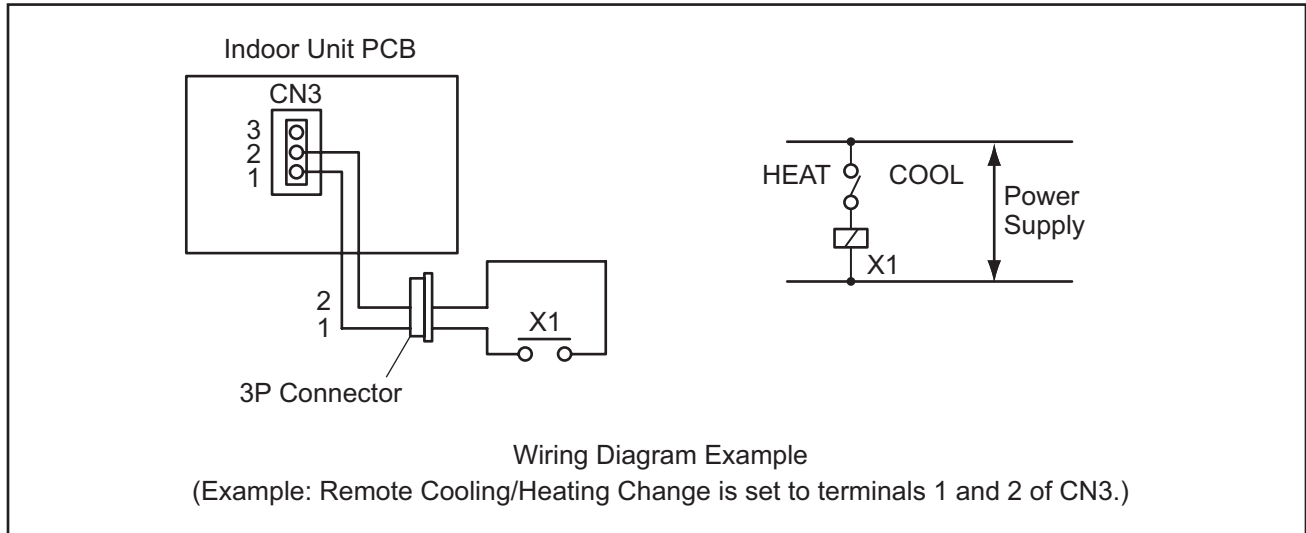
- Cooling Operation: Compressor is ON by closing terminals 2 and 3 of CN3
Compressor is OFF by opening terminals 2 and 3 of CN3
- Heating Operation: Compressor is ON by closing terminals 1 and 2 of CN3
Compressor is OFF by opening terminals 1 and 2 of CN3

NOTES:

- Make the wires CN3 as short as possible. Do not install the wires along the 220V power line. Install them more than 12 in. (30cm) away from each other. (Intersecting them is acceptable.)
If the wires are installed along the power line, comply with the following points to prevent noise.
 - Pass either of the low voltage wire and 220V power line through a metal tube and ground one end.
 - Use a shielded wire for a low voltage wire and ground one end.
 The maximum wiring length is 230 ft. (70m).
- When using this function, it is recommended that safety devices such as an electric leakage breaker or smoke detector, etc., be used because this is an unattended function.
- For a thermostat, do not use a thermostat which uses mercury for a switch, because chattering is likely to occur at ON/OFF.
- Use a thermostat with a differential of 2°F (1.5°C) or more.
- Comply with the following points. If not, a high-voltage circuit breaker is activated or the unit repeats ON/OFF operation.
 - Install a thermostat where air inlet temperature can be detected correctly.
 - Install a thermostat where discharge air from the unit does not blow directly against it.
- When using a room thermostat, set each room thermostat (for cooling and heating) correctly. If any of them are set incorrectly, the other room thermostats do not operate.

5.4.1.5 Remote Cooling/Heating Change [Input Setting: Code (07)]

The cooling or heating operation mode can be changed by giving a contact signal from the outside to the unit. Set this function to CN3 with a wired controller according to Section 5.4.2.1 "Function Selection Item." This function detects ON to OFF transition and OFF to ON transition. Of the commands by this signal and a wired controller, the command given later is preferentially executed. An example of basic wiring and time chart is shown below.



NOTES:

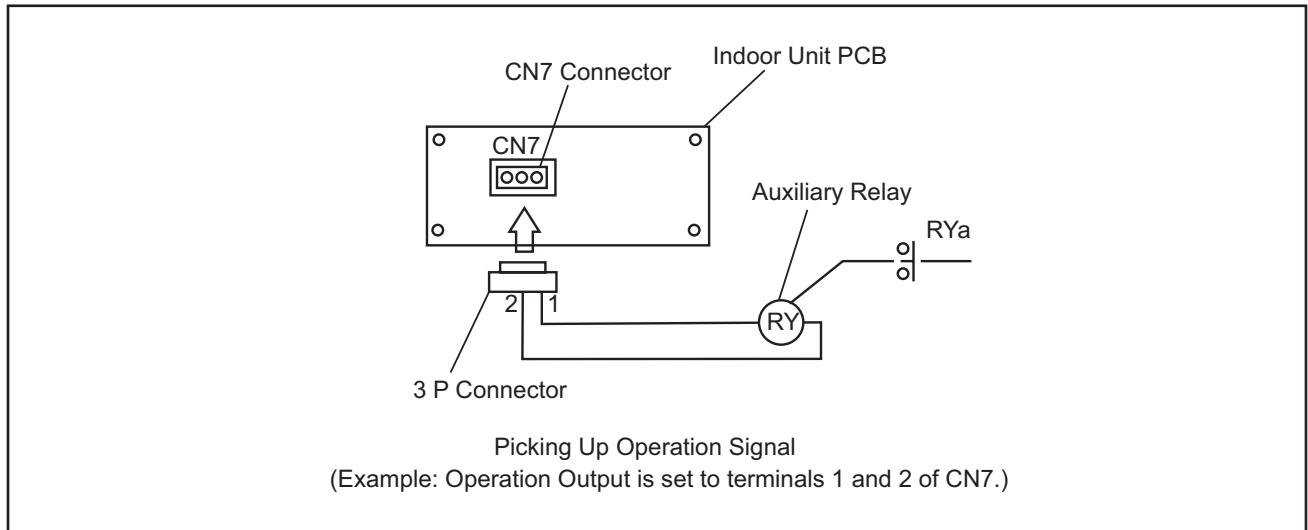
1. Wired Controller is required for this function.
2. Refer to Table 5.1 for details of the required components.
3. If multiple indoor units are connected to the same communication cable for wired controller, input the signal to any of these indoor units.
4. When the communication cable is not used in the twin, triple and quad combinations for simultaneous operation, set this function only to the main indoor unit.

5.4.1.6 Picking Up Operation Signal

Up to 3 of the following 7 signals can be picked up by setting this function to CN7 and CN8 according to the following figures. Make sure to use a field-supplied Relay and 3 Pin Connector Kit PSC-5RA for picking up signals. The wiring length shall be 230 ft. (70m) or less. The settings for picking up signals (1), (2) and (4) are already set at the factory.

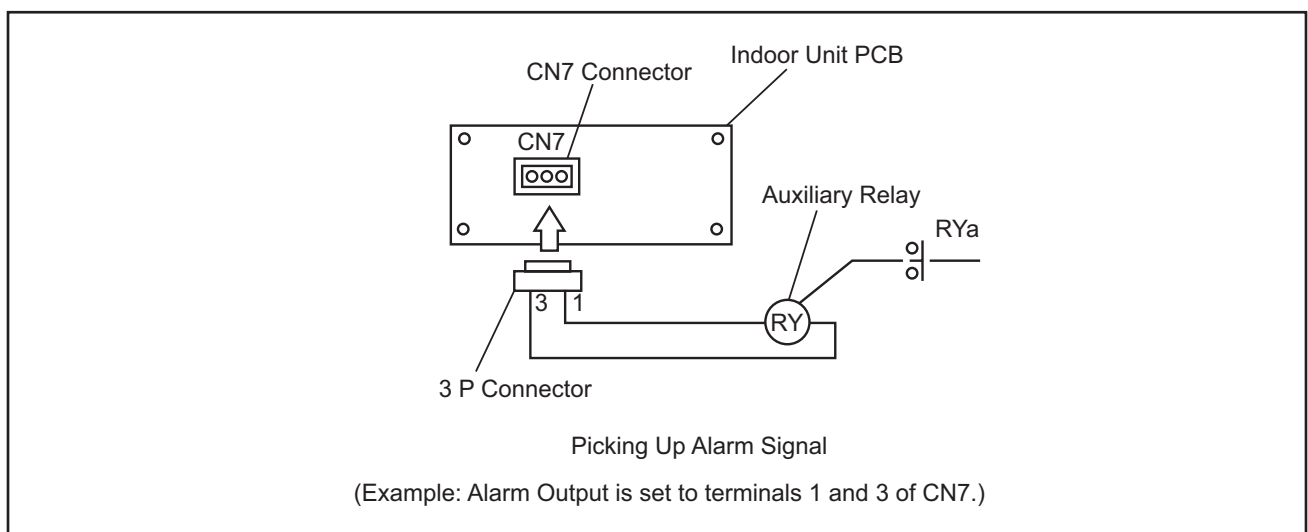
(1) Picking Up Operation Signal [Output Setting: Code (01)]

This function is utilized to pick up an operation signal that has nothing to do with the compressor stoppage by a thermistor. An example of basic wiring is shown below. The contact of the auxiliary relay "RYa" is closed when this operation signal is given. This function enables the signal check during remote control operation and an interlock of the fan for air inlet, etc. The contact of the auxiliary relay "RYa" is opened while the protection devices are activated.



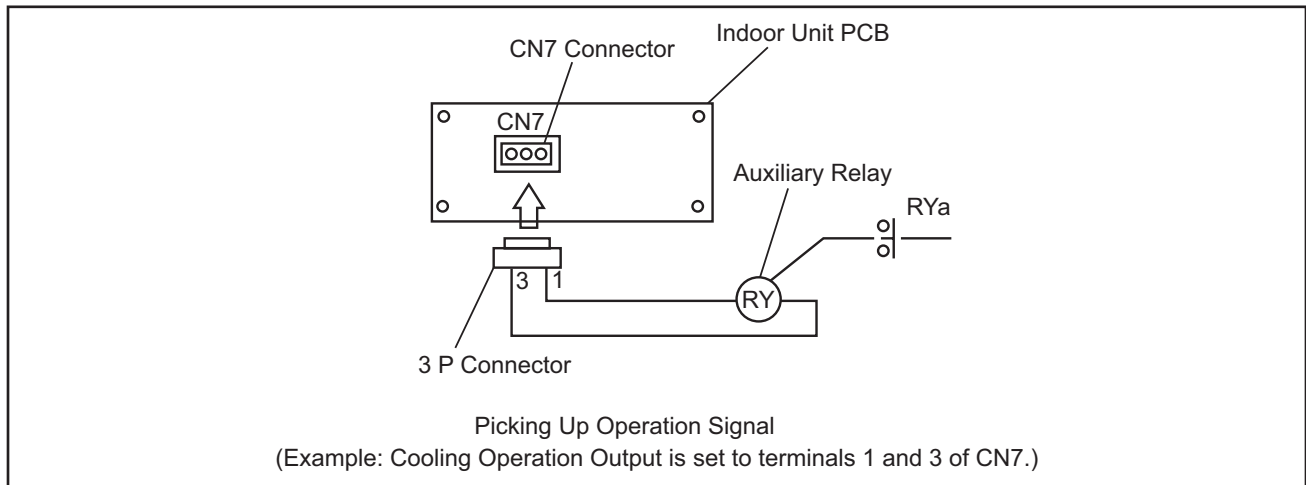
(2) Picking Up Alarm Signal [Output Setting: Code (02)]

This signal is utilized to pick up an alarm signal while safety devices are activated. However, this function is not available during abnormal communication of the wired controller. An example of basic wiring is shown below. The contact of the auxiliary relay "RYa" is closed while the protection devices are activated.



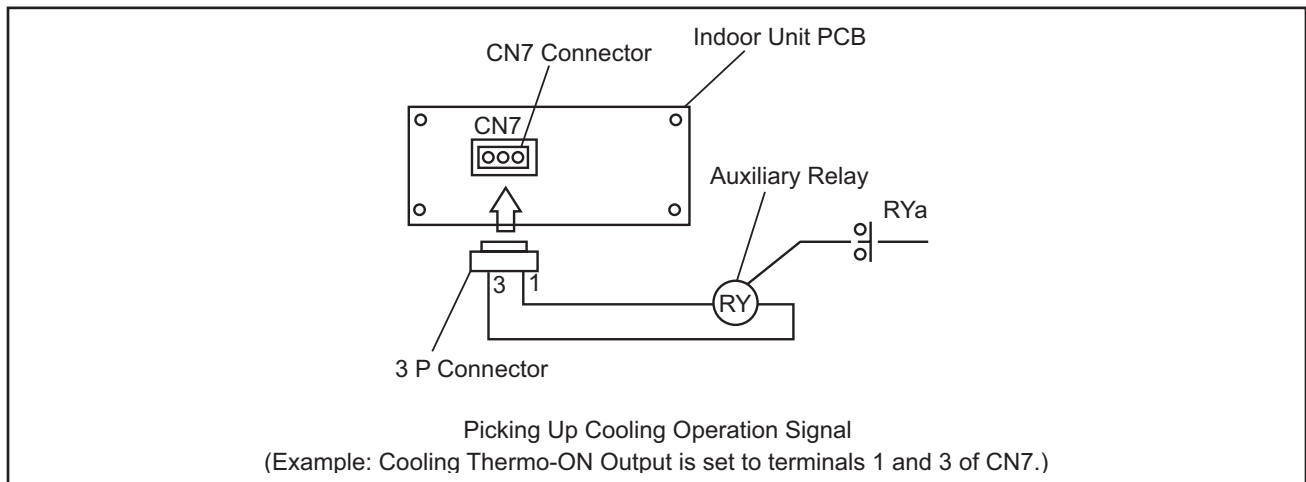
(3) Picking Up Cooling Operation Signal [Output Setting: Code (03)]

This function is utilized to pick up a cooling operation signal that has nothing to do with the compressor stoppage by a thermistor. An example of basic wiring is shown below. The contact of the auxiliary relay "RYa" is closed when this operation signal is given.



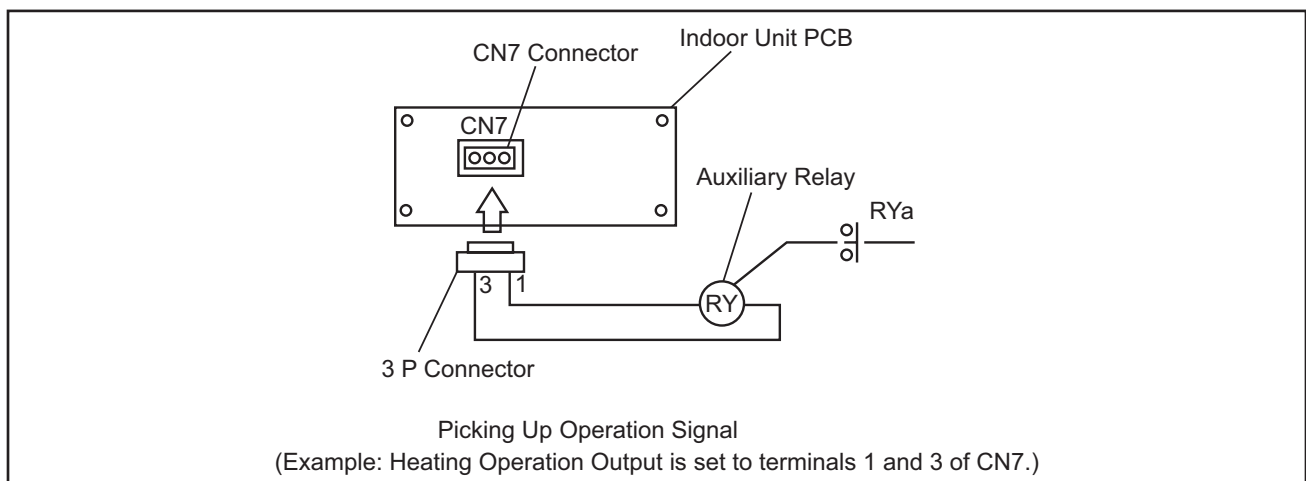
(4) Picking Up Cooling Thermo-ON Signal [Output Setting: Code (04)]

This function is utilized to pick up a thermo-ON signal during the cooling operation. An example of basic wiring is shown below. The contact of the auxiliary relay "RYa" is closed during thermo-ON in cooling operation.



(5) Picking Up Heating Operation Signal [Output Setting: Code (05)]

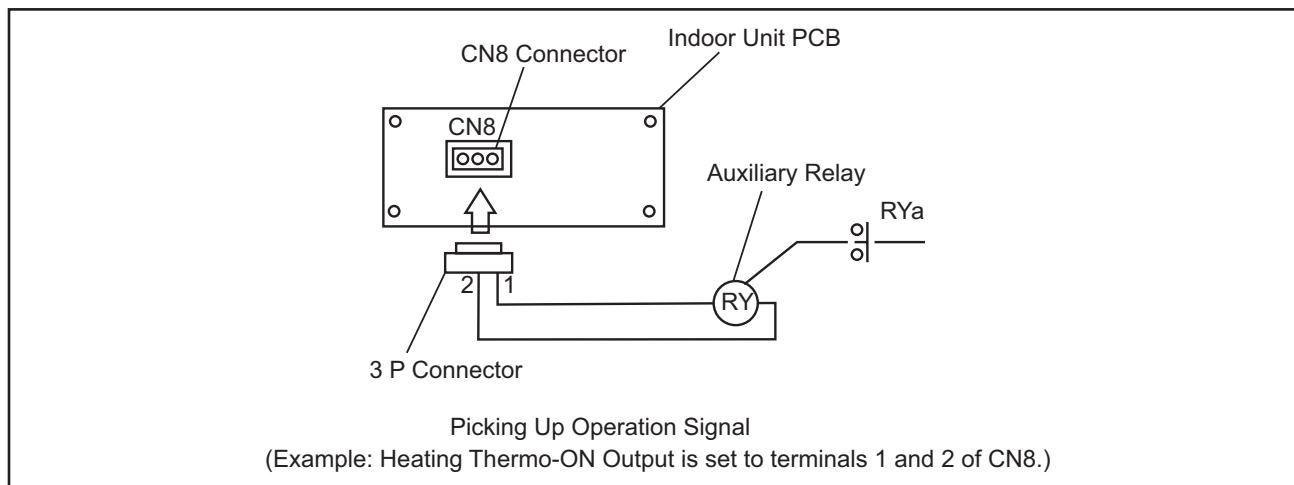
This function is utilized to pick up a heating operation signal that has nothing to do with the compressor stoppage by a thermistor. An example of basic wiring is shown below. The contact of the auxiliary relay "RYa" is closed when this operation signal is given.



EXTERNAL INPUT/OUTPUT AND FUNCTION SETTING

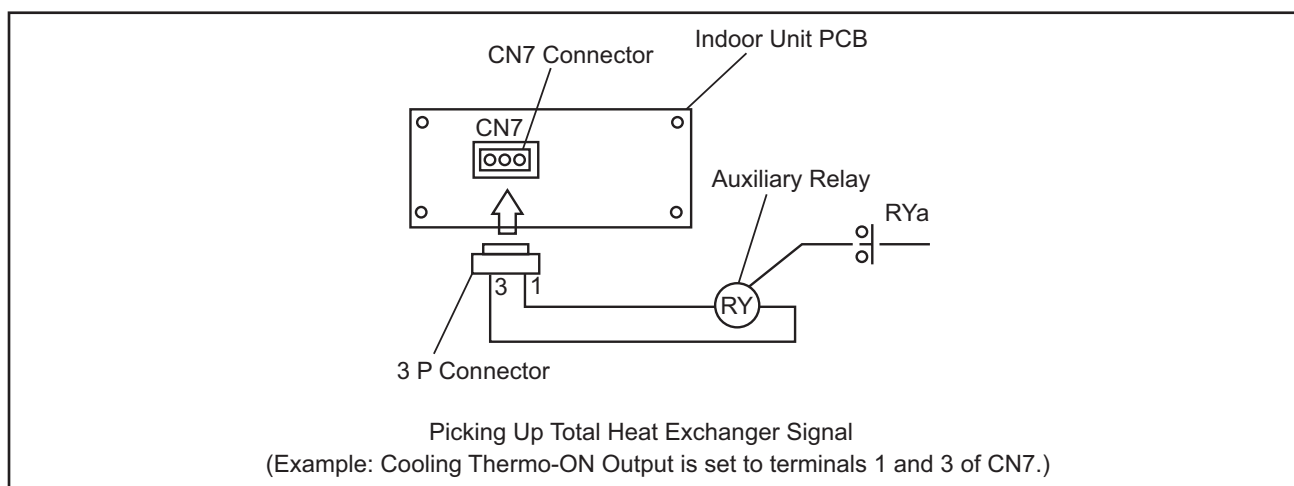
(6) Picking Up Heating Thermo-ON Signal [Output Setting: Code (06)]

This function is utilized to pick up a thermo-ON signal during the heating operation. An example of basic wiring is shown below. The contact of the auxiliary relay “RYa” is closed during thermo-ON in heating operation. Use this function for operation of a circulator or a humidifier.



(7) Picking Up Total Heat Exchanger Signal [Output Setting: Code (07)]

This function is utilized to pick up a total heat exchanger signal during the ventilation mode selected with a wired controller. An example of basic wiring is shown below.



NOTE:

These are examples using general-purpose relay.

5.4.2 Function Setting

5.4.2.1 Function Selection Item

- for Ducted

| No. | Items | Optional Function | Individual Setting | Setting Condition | Contents |
|-----|-------|--|--------------------|--------------------------------------|--|
| 1 | b1 | Cancellation of Heating Temperature Compensation due to Uneven Heat Load | ○ | 00 01 02 03 04 | Standard (Set Temp. +7°F (+4°C)) Removal (Set Temp.) Set Temp. +3°F (+2°C) Set Temp. +5°F (+3°C) Set Temp. +2°F (+1°C) |
| 2 | b2 | Circulator Function during Heating Thermo-OFF | ○ | 00 01 | Not Available Available |
| 3 | b3 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 4 | b4 | Change of Filter Cleaning Time | ○ | 00 01 02 03 04 | Standard 1,200 hrs (Factory-Setting) 100 hrs 1,200 hrs 2,500 hrs No Indication |
| 5 | b5 | Fixing of Operation Mode | × | 00 01 | Standard Fixed |
| 6 | b6 | Fixing of Setting Temperature | × | 00 01 | Standard Fixed |
| 7 | b7 | Fixing of Operation as Exclusive Cooling Unit | × | 00 01 | Standard Fixed |
| 8 | b8 | Automatic COOL/HEAT Operation | × | 00 01 | Not Available Available |
| 9 | b9 | Fixing of Fan Speed | × | 00 01 | Standard Fixed |
| 10 | bA | Not Prepared | - | - | Not Used |
| 11 | bb | Cooling Temperature Compensation due to Uneven Heat Load | ○ | 00 01 02 | Standard (No Compensation) Set Temp. -2°F (-1°C) Set Temp. -3°F (-2°C) |
| 12 | bC | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 13 | bd | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 14 | bE | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 15 | C1 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 16 | C2 | Not Prepared | - | - | Not Used |
| 17 | C3 | Not Prepared | - | - | Not Used |
| 18 | C4 | Not Prepared | - | - | Not Used |
| 19 | C5 | Hi Speed (Except for Hi Speed during Heating Thermo-OFF) | ○ | 00 01 02 | Standard Hi Speed 1 (*2) Hi Speed 2 |
| 20 | C6 | Hi Speed during Heating Thermo-OFF | ○ | 00 01 | Not Available Available |
| 21 | C7 | Canceling of Enforced 3 Minutes Minimum Operation Time of Compressor | ○ | 00 01 | Standard Cancellation |
| 22 | C8 | Thermistor of Wired Controller (*6) | ○ | 00 01 02 00 01 02 | < If Wired Controller Thermistor is Selected > Control by Indoor Suction Thermistor Control by Thermistor of Wired Controller Control by Average Value of Indoor Suction Thermistor and Thermistor of Wired Controller < If Remote Sensor is Selected > Control by Average Value of Indoor Suction Thermistor and Remote Sensor Control by Remote Sensor Same as "00" |
| 23 | C9 | Not Prepared | - | - | Not Used |
| 24 | CA | Not Prepared | - | - | Not Used |

EXTERNAL INPUT/OUTPUT AND FUNCTION SETTING

| No. | Items | Optional Function | Individual Setting | Setting Condition | Contents |
|-----|-------|--|--------------------|-------------------|--|
| 25 | Cb | Selection of Forced Stoppage Logic | ○ | 00 01 | Forced Stoppage Input: A Contact Forced Stoppage Input: B Contact |
| 26 | CC | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 27 | Cd | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 28 | CE | Fan Operation Control during Heating Thermo-OFF | ○ | 00 01 | Not Available (LOW) SLOW |
| 29 | CF | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 30 | d1 | Power Supply ON/OFF 1 | ○ | 00 01 | Not Available Available |
| 31 | d2 | Not Prepared | - | - | Not Used |
| 32 | d3 | Power Supply ON/OFF 2 | ○ | 00 01 | Not Available Available |
| 33 | d4 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 34 | d5 | Prevention for Heating Discharge Air Temp. Decrease | ○ | 00 01 | Not Available Available |
| 35 | d6 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 36 | d7 | Not Prepared | - | - | Not Used |
| 37 | E1 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 38 | E2 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 39 | E3 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 40 | E4 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 41 | E5 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 42 | E6 | Indoor Fan Operation Time After Cooling Operation Stoppage | ○ | 00 01 02 | Not Available 60 min. 120 min. |
| 43 | E7 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 44 | E8 | Fan Operation Control during Heating Thermo-OFF | ○ | 00 01 | Not Available (LOW) SLOW |
| 45 | E9 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 46 | EA | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 47 | Eb | Fan Operation Control during Cooling Thermo-OFF | ○ | 00 01 02 | Not Available LOW LOW |
| 48 | EC | Forced Thermo-ON Stoppage during Cooling | ○ | 00 01 | Not Available Available |
| 49 | Ed | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 50 | EE | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 51 | EF | Automatic Fan Speed Control (High 2) | ○ | 00 01 | Not Available Available |
| 52 | F0 | Not Prepared | - | - | Not Used |

| No. | Items | Optional Function | Individual Setting | Setting Condition | Contents |
|-----|-------|--|--------------------|--|---|
| 53 | F1 | Automatic OFF Timer Setting * Do not set the functions "0C"~"0F" when 2 (two) wired controllers are used in the same controller group | × | 00 01 02 • • 23 24 0A 0B 0C 0D 0E 0F | No Function OFF Timer by 1 hr OFF Timer by 2 hrs • • OFF Timer by 23 hrs OFF Timer by 24 hrs OFF Timer by 30 min. OFF Timer by 90 min. OFF Timer by 40 min. OFF Timer by 45 min. OFF Timer by 50 min. OFF Timer by 55 min. } Do not set them when two wired controllers are used. |
| 54 | F2 | Wired Controller Main-Sub Setting | × | 00 01 | Main Sub |
| 55 | F3 | Automatic Reset of Setting Temperature (*1) | × | 00 01 | Not Available Available |
| 56 | F4 | Automatic Reset Time | × | 00 01 02 03 | 30 min. (Factory-Setting) 15 min. 60 min. 90 min. |
| 57 | F5 | Automatic Reset Temperature for Cooling (*3) | × | 66 (19) 68 (20) 70 (21) 72 (22) 74 (23) 76 (24) 77 (25) 78 (26) 80 (27) 82 (28) 84 (29) 86 (30) | 66°F (19°C) 68°F (20°C) 70°F (21°C) 72°F (22°C) 74°F (23°C) 76°F (24°C) 77°F (25°C) (Factory-Setting) 78°F (26°C) 80°F (27°C) 82°F (28°C) 84°F (29°C) 86°F (30°C) |
| 58 | F6 | Automatic Reset Temperature for Heating (*4) | × | 62 (17) 64 (18) 66 (19) 68 (20) 70 (21) 72 (22) 74 (23) 76 (24) 77 (25) 78 (26) 80 (27) 82 (28) 84 (29) 86 (30) | 62°F (17°C) 64°F (18°C) 66°F (19°C) 68°F (20°C) 70°F (21°C) (Factory-Setting) 72°F (22°C) 74°F (23°C) 76°F (24°C) 77°F (25°C) 78°F (26°C) 80°F (27°C) 82°F (28°C) 84°F (29°C) 86°F (30°C) |
| 59 | F7 | Operation Stoppage Prevention by Wired Controller Operational Error (*5) | × | 00 01 | Not Available Available |
| 60 | F8 | Lock Function for Operation Mode Selection | × | 00 01 | Not Available Available (Factory-Setting) |
| 61 | F9 | Lock Function for Temperature Setting | × | 00 01 | Not Available Available (Factory-Setting) |
| 62 | FA | Lock Function for Fan Speed Selection | × | 00 01 | Not Available Available (Factory-Setting) |
| 63 | Fb | Lock Function for Swing Louver Operation | × | 00 01 | Not Available Available (Factory-Setting) |

EXTERNAL INPUT/OUTPUT AND FUNCTION SETTING

| No. | Items | Optional Function | Individual Setting | Setting Condition | Contents |
|-----|-------|--|--------------------|--|---|
| 64 | FC | Cooling Lower Limit for Setting Temperature (*3) | × | 00 01 02 03 04 05 06 07 08 09 10 | 66°F (19°C) 68°F (20°C) 70°F (21°C) 72°F (22°C) 74°F (23°C) 76°F (24°C) 77°F (25°C) 78°F (26°C) 80°F (27°C) 82°F (28°C) 84°F (29°C) |
| 65 | Fd | Heating Upper Limit for Setting Temperature (*4) | × | 00 01 02 03 04 05 06 07 08 09 10 11 12 | 86°F (30°C) 84°F (29°C) 82°F (28°C) 80°F (27°C) 78°F (26°C) 77°F (25°C) 76°F (24°C) 74°F (23°C) 72°F (22°C) 70°F (21°C) 68°F (20°C) 66°F (19°C) 64°F (18°C) |
| 66 | FE | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 67 | FF | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 68 | H1 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 69 | H2 | Indication of Hot Start | × | 00 01 | Indication No Indication |
| 70 | H3 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 71 | H4 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 72 | J1 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 73 | J2 | Not Prepared | - | - | Not Used |
| 74 | J3 | Run Indicator Color | × | 00 01 | Green Red |
| 75 | J4 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 76 | J5 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 77 | J6 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 78 | J7 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 79 | J8 | Eco-operation (*7) | × | 00 01 | Not Available Available |
| 80 | J9 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 81 | JA | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 82 | Jb | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 83 | K1 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 84 | K2 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 85 | K3 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 86 | K4 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 87 | K5 | Motion Sensor Detection Level | ○ | 00 01 02 | Standard High Low |
| 88 | K6 | Operation Setting during Thermistor of Wired Controller or Remote Sensor | ○ | 00 01 02 03 | ALL COOL/DRY HEAT ALL |
| 89 | K7 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 90 | K8 | Not Prepared | - | - | Not Used (Use as 00 conditions) |

| No. | Items | Optional Function | Individual Setting | Setting Condition | Contents |
|-----|-------|--|--------------------|--|--|
| 91 | K9 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 92 | KA | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 93 | L1 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 94 | L2 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 95 | L3 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 96 | L4 | Fan Speed Up during Energy-Saving Forced Thermo-OFF | ○ | 00 01 | Not Available (Standard) Available |
| 97 | L5 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 98 | L6 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 99 | L7 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 100 | L8 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 101 | L9 | Auxiliary Heater OFF at Defrosting Operation | ○ | 00 01 | Heater ON Heater OFF |
| 102 | LA | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 103 | Lb | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 104 | P1 | Setting Temperature | × | 00 01 | Every 1°F (0.5°C) Every 2°F (1°C) |
| 105 | P2 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 106 | P3 | Thermistor Selection | × | 00 01 02 03 | Inlet Air Thermistor Outlet Air Thermistor Thermistor of Wired Controller Remote Sensor |
| 107 | P4 | Display of Thermistor Temperature | × | 00 01 | Not Available Available |
| 108 | P5 | Setting Temperature Display during Fan Operation | × | 00 01 | Displayed Undisplayed |
| 109 | P6 | ECO Button Operation | × | 00 01 | Available Not Available |
| 110 | P7 | Menu Button Operation | × | 00 01 | Not Available Available |
| 111 | P8 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 112 | P9 | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 113 | PA | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 114 | Pb | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 115 | PC | Not Prepared | - | - | Not Used (Use as 00 conditions) |
| 116 | q1 | Auxiliary Heater Setting | ○ | 00 01 | Not Available Available |
| 117 | q2 | Auxiliary Heater ON Compensation (for Auxiliary Heater Setting) | ○ | 00 01 02 03 04 05 06 07 08 09 | -3°F (-1.5°C) -3°F (-2°C) -4°F (-2.5°C) -5°F (-3°C) -6°F (-3.5°C) -7°F (-4°C) -8°F (-4.5°C) -9°F (-5°C) -1°F (-0.5°C) -2°F (-1°C) |
| 118 | q3 | Auxiliary Heater OFF Compensation (for Auxiliary Heater Setting) | ○ | 00 01 | 0°F (0.0°C) 1°F (0.5°C) |

EXTERNAL INPUT/OUTPUT AND FUNCTION SETTING

| No. | Items | Optional Function | Individual Setting | Setting Condition | Contents |
|-----|-------|--|--------------------|--|--|
| 119 | q4 | Ambient Temperature Restriction Setpoint (*8) (for Auxiliary Heater Setting) | ○ | 00 01 02 03 04 05 06 07 08 | -4°F (-20°C) 2°F (-17°C) 8°F (-13°C) 14°F (-10°C) 20°F (-7°C) 26°F (-3°C) 32°F (0.0°C) -13°F (-25°C) -8°F (-22°C) |
| 120 | q5 | Ambient Temperature Restriction Setpoint Compensation (*8) (for Auxiliary Heater Setting) | ○ | 00 01 02 03 04 05 06 | 4°F (2.5°C) 5°F (3.0°C) 6°F (3.5°C) 1°F (0.5°C) 2°F (1.0°C) 3°F (1.5°C) 3°F (2.0°C) |
| 121 | q6 | Not Prepared | - | - | Not Used |
| 122 | q7 | Not Prepared | - | - | Not Used |
| 123 | q8 | Not Prepared | - | - | Not Used |
| 124 | q9 | Not Prepared | - | - | Not Used |
| 125 | qA | Not Prepared | - | - | Not Used |
| 126 | qb | Not Prepared | - | - | Not Used |
| 127 | qC | Not Prepared | - | - | Not Used |
| 128 | qd | Not Prepared | - | - | Not Used |
| 129 | r1 | Dual Setpoint (for Automatic COOL/HEAT Operation) | ○ | 00 01 | Not Available Available |
| 130 | r2 | Cooling/Heating Changeover Temperature (for Automatic COOL/HEAT Operation) | ○ | 00 01 02 03 04 05 | 2°F (1.0°C) 3°F (1.5°C) 3°F (2.0°C) 4°F (2.5°C) 5°F (3.0°C) 1°F (0.5°C) |
| 131 | r3 | Setback Temperature Compensation (During card key removal, setpoint is setbackted) | ○ | 00 01 02 03 04 05 06 07 08 09 10 | 4°F (2.5°C) 5°F (3.0°C) 6°F (3.5°C) 7°F (4.0°C) 8°F (4.5°C) 9°F (5.0°C) 10°F (5.5°C) 1°F (0.5°C) 2°F (1.0°C) 3°F (1.5°C) 3°F (2.0°C) |
| 132 | r4 | Not Prepared | - | - | Not Used |
| 133 | r5 | Not Prepared | - | - | Not Used |
| 134 | r6 | Not Prepared | - | - | Not Used |
| 135 | r7 | Not Prepared | - | - | Not Used |
| 136 | r8 | Not Prepared | - | - | Not Used |
| 137 | r9 | Not Prepared | - | - | Not Used |
| 138 | rA | Not Prepared | - | - | Not Used |
| 139 | rb | Not Prepared | - | - | Not Used |
| 140 | S1 | Not Prepared | - | - | Not Used |
| 141 | S2 | Not Prepared | - | - | Not Used |
| 142 | S3 | Not Prepared | - | - | Not Used |
| 143 | S4 | Not Prepared | - | - | Not Used |

| No. | Items | Optional Function | Individual Setting | Setting Condition | Contents |
|-----|-------|-------------------|--------------------|-------------------|----------|
| 144 | S5 | Not Prepared | - | - | Not Used |
| 145 | S6 | Not Prepared | - | - | Not Used |
| 146 | S7 | Not Prepared | - | - | Not Used |
| 147 | S8 | Not Prepared | - | - | Not Used |

*1): In case that the set temperature is changed and the temperature is kept for a specific time set by "F4", it automatically changes to the temperature set by "F5" or "F6." (In case that the set temperature of "F5" and "F6" is out of range, the upper or lower limit temperature is applied.)

*2): In Case of Ducted Type Models

| Setting | Description |
|---------|----------------------------|
| 00 | Standard (Factory-Setting) |
| 01 | High Static Pressure 1 |
| 02 | High Static Pressure 2 |

*3): Applicable to fan, cooling and dry operation modes.

*4): Applicable to heating operation mode.

*5): Operation is stopped by pressing the "⏻" (On/Off) button for 3 seconds.

*6): The sensor value at "C8" is indicated. When the thermistor of wired controller is used, the average value of the thermistor of wired controller and the thermistor of indoor air inlet is indicated.

*7): When the unit is restarted by the wired controller, the temperature automatically changes to the setting temperature of "F5" or "F6".

*8): Be sure to use only the "00" setting condition when combining optional function settings, "q4" and "q5," with a water source unit. The water source unit detects entering water temperature instead of outdoor ambient temperature. This setting does not function.

NOTES:

1. Wait at least 3 minutes from initial power ON to change the optional setting.
2. The above optional functions with "X" mark at the individual setting can change the condition only when "All Rooms" is selected in the Test Run Menu > Function Selection Menu.

5.4.2.2 Description of Function Selection Item

(1) Cancellation of Heating Temperature Compensation due to Uneven Heat Load (b1)

This function is utilized when the setting temperature of the wired controller and the inlet air temperature of the indoor unit are required to be equal.

This is useful when the inlet air thermistor is relocated to the outside of the indoor unit.

Setting Temperature for Room Temperature Control during Heating

| Setting Condition | Actual Control Temperature |
|-------------------|--|
| 00 (Standard) | Wired Controller Setting Temperature (Indicated Value) +7°F (+4°C) |
| 01 | Wired Controller Setting Temperature (Indicated Value) |
| 02 | Wired Controller Setting Temperature (Indicated Value) +3°F (+2°C) |
| 03 | Wired Controller Setting Temperature (Indicated Value) +5°F (+3°C) |
| 04 | Wired Controller Setting Temperature (Indicated Value) +2°F (+1°C) |

NOTE:

The maximum setting temperature after correction is as follows.

Inverter Multi Unit: 94°F (34°C)

(2) Circulator Function during Heating Thermo-OFF (b2)

In the standard factory setting, the air flow volume changes to "LOW" automatically to prevent a cold draft during heating Thermo-OFF.

Therefore, the air flow might not be distributed uniformly in the room depending on the installation location of the air conditioner or room structure. In such case, it is recommended to utilize this function.

The function keeps the air flow volume during Thermo-OFF at the same level as during Thermo-ON. The air flow in the room is kept at the same level as during Thermo-ON so the room temperature is uniformly-distributed. If using the air conditioner with auto swing function, the auto swing function is activated even during heating Thermo-OFF.

NOTE:

The temperature sensibility and demands for air flow distribution differ depending on the person. It is therefore recommended to discuss these matters with customers thoroughly and then install the unit accordingly.

(3) Not Prepared (b3)**(4) Change of Filter Cleaning Time (b4)**

The period before filter sign indication is set according to indoor unit model before shipment.

The filter sign ("FLTR" on wired controller) is indicated according to the filter cleaning time (Factory Setting). However, this filter cleaning time can be changed depending on the condition of the filter as shown in the table below.

| Period for Filter Sign Indication | Approx. 1,200 hrs. | Approx. 100 hrs. | Approx. 1,200 hrs. | Approx. 2,500 hrs. | No Indication |
|--|-------------------------|------------------|--------------------|--------------------|---------------|
| Liquid Crystal Display on Wired Controller | 00 (Factory Setting) | 01 | 02 | 03 | 04 |

NOTE:

While "Control by External Input" is valid, the filter sign displays "No Indication" if the external input is disconnected.

(5) Fixing of Operation Mode (b5)

This function is utilized when the operation mode is not required to be changed.

When this function is valid, the set operation mode cannot be changed by the wired controller.

(6) Fixing of Setting Temperature (b6)

This function is utilized when setting temperature is not required to be changed.

When this function is valid, the setting temperature cannot be changed by the wired controller.

(7) Fixing of Operation as Exclusive Cooling Unit (b7)

This function is utilized when exclusive cooling operation is required.

This function invalidates the heating operation and the automatic COOL/HEAT operation, as the operation of exclusive cooling unit.

(8) Automatic COOL/HEAT Operation (b8)

This function is utilized to change cooling and heating operation automatically (the same operation mode for indoor units in the same refrigerant cycle).

This function is invalid when the outdoor unit is cooling-only model or the function of "Fixing of Operation as Exclusive Cooling Unit" is valid.

(9) Fixing of Fan Speed (b9)

This function is utilized to fix the fan speed.

When this function is valid, the fan speed can not be changed by the wired controller.

(10) Not Prepared (bA)**(11) Cooling Temperature Compensation due to Uneven Heat Load (bb)**

This function is utilized to provide the longer cooling operation time than the standard.

When this function is valid, Thermo-ON/OFF is controlled under the lower temperature conditions than the setting temperature (the indicated value) of the wired controller.

Setting Temperature for Room Temperature Control during Cooling

| Setting Condition | Actual Control Temperature |
|-------------------|--|
| 00 (Standard) | Wired Controller Setting Temperature (Indicated Value) |
| 01 | Wired Controller Setting Temperature (Indicated Value) -2°F (-1°C) |
| 02 | Wired Controller Setting Temperature (Indicated Value) -3°F (-2°C) |

NOTE:

The minimum setting temperature after correction is 66°F (19°C).

(12) Not Prepared (bC)**(13) Not Prepared (bd)****(14) Not Prepared (bE)****(15) Not Prepared (C1)****(16) Not Prepared (C2)****(17) Not Prepared (C3)****(18) Not Prepared (C4)****(19) Hi Speed (External Static Pressure Setting) (C5)**

The factory setting of external static pressure is set to Standard Pressure Setting.

The setting can be changed to High Pressure Setting 1 or High Pressure Setting 2.

| | Setting Condition | High Static Type | Medium Static Type |
|----------------------------|-------------------|---------------------|---------------------|
| Standard (Factory Setting) | 00 | 0.2 in. W.G (50Pa) | 0.2 in. W.G (50Pa) |
| High Pressure Setting 1 | 01 | 0.4 in. W.G (100Pa) | 0.4 in. W.G (100Pa) |
| High Pressure Setting 2 | 02 | 0.8 in. W.G (200Pa) | 0.6 in. W.G (150Pa) |

(20) Hi Speed during Heating Thermo-OFF (C6)

This function is utilized to increase the fan speed during heating Thermo-OFF with the function (19).

(The fan speed does not increase during heating Thermo-OFF even if the function (19) is set at "01" or "02")

(21) Canceling of Enforced 3 Minutes Minimum Operation Time of Compressor (C7)

The function (3) "Enforced 3 Minutes Minimum Operation Time of Compressor" is the standard function. This function is utilized to cancel the function (3) "Enforced 3 Minutes Minimum Operation Time of Compressor" (Enforced 3 Minutes Compressor Guard).

NOTE:

The compressor operation is stopped immediately as following conditions.

- The protection device is activated.
- The operation stop button is pressed.

(22) Thermistor of Wired Controller (C8)

This function is utilized to control the unit by the built-in thermistor of the wired controller (wired controller thermistor) instead of the inlet air thermistor.

Set this function at "01" or "02" when utilizing this function.

However, even if this function is set at "01" or "02", if the detecting temperature is abnormal due to the failure of the thermistor of the wired controller, etc., the control is changed to the inlet air thermistor of the indoor unit automatically.



The option part Remote Sensor (THM-R2A) will control the unit when it connected.

| Selected Thermistor | Setting | Controlled Indoor Temp. |
|--------------------------------|---------|---|
| Thermistor of Wired Controller | 00 | Indoor Suction Thermistor |
| | 01 | Thermistor of Wired Controller |
| | 02 | Average Value of Indoor Suction Thermistor and Thermistor of Wired Controller |
| Remote Sensor | 00 | Average Value of Indoor Suction Thermistor and Thermistor of Wired Controller |
| | 01 | Remote Sensor |
| | 02 | Same as 00 |

(23) Not Prepared (C9)**(24) Not Prepared (CA)****(25) Selection of Forced Stoppage Logic (Cb)**

This function is utilized to select the logic of the contact for forced stoppage signal input.

The setting condition and the logic of the contact are as shown below.

| Setting Condition | Logic of Contact | Sequence | Activation | |
|-------------------|------------------|---|-----------------|-----------------|
| | | | Contact "Open" | Contact "Close" |
| 00 | A Contact |  | Normal | Forced Stoppage |
| 01 | B Contact |  | Forced Stoppage | Normal |

(26) Not Prepared (CC)**(27) Not Prepared (Cd)****(28) Fan Operation Control during Heating Thermo-OFF (CE)**

This function is utilized to prevent the perception of cold draft by reducing the indoor fan speed during heating Thermo-OFF.

| Setting Condition | Fan Operation during Thermo-OFF |
|-------------------|---------------------------------|
| 00 | LOW |
| 01 * | SLOW |

* When the Wired Controller Thermistor is used instead of the inlet air thermistor and the Function Setting C8 is changed to "01" the fan operation during Thermo-OFF is stop.

(29) Not Prepared (CF)**(30) Power Supply ON/OFF 1 (Automatic Operation when Power Supply Is ON) (d1)**

This function is utilized to run/stop the unit by turning ON/OFF the power supply.

When this function is utilized in the condition that there is no person to operate the unit, monitor the system for potential unit failure.

NOTE:

The unit is stopped even when the power supply is turned ON/OFF due to power failure. If power failure occurs during the stoppage of the unit, the operation is restarted after the power supply is restored.

(31) Not Prepared (d2)

(32) Power Supply ON/OFF 2 (Restarting Function After Power Failure) (d3)

This function is utilized to restart the unit operation automatically when the power supply is restored after a power failure of over 2 seconds. In case of power failure for 2 seconds or less, the standard unit retains all the operational functions and restarts the operation automatically. (The compressor restarts operation after 3 minutes guard in addition to power failure time for up to 2 seconds.)

When this function is utilized in the condition that there is no person to operate the unit, monitor the system for potential unit failure.

NOTES:

1. If power failure occurs during the stoppage of the unit, the unit remains stopped after the power supply is restored.
2. When the compressor does not reach the fixed temperature, the system may not restart automatically after turning on the power supply by hot-start control.
*Hot-start Control: The control program that does not operate the compressor even after the power is turned ON if the compressor does not reach the fixed temperature.

(33) Not Prepared (d4)**(34) Prevention for Heating Discharge Air Temperature Decrease (d5)**

This function is utilized to prevent discharge air temperature decrease during the heating operation by making the actual fan speed lower than the speed indicated on the wired controller.

| | Large | ← | Fan Speed | → | Small |
|---------------------------------|-------|---|-----------|-----|-------|
| Indications on Wired Controller | HIGH2 | | HIGH | MED | LOW |
| Actual Fan Speed | HIGH | | MED | LOW | LOW |

NOTE:

The above table shows when the optional function setting "Hi Speed" is set as standard (00) by the wired controller.

(35) Not Prepared (d6)**(36) Not Prepared (d7)****(37) Not Prepared (E1)****(38) Not Prepared (E2)****(39) Not Prepared (E3)****(40) Not Prepared (E4)****(41) Not Prepared (E5)****(42) Indoor Fan Operation Time After Cooling Operation Stoppage (E6)**

This function is utilized to prevent condensation upon cooling operation stoppage by "SLOW" indoor fan operation to dry. "SLOW" operation (for 60 minutes or 120 minutes by setting) continues even when the cooling operation is stopped.

(43) Not Prepared (E7)**(44) Fan Operation Control during Heating Thermo-OFF (E8)**

This function is utilized to prevent the perception of cold draft by reducing the indoor fan speed during heating Thermo-OFF.

| Setting Condition | Fan Operation during Thermo-OFF |
|-------------------|---------------------------------|
| 00 | LOW |
| 01 * | SLOW |

* When the Remote Sensor is used instead of the inlet air thermistor and the Function Setting C8 is changed to "01" the fan operation during Thermo-OFF is stop.

(45) Not Prepared (E9)**(46) Not Prepared (EA)****(47) Fan Operation Control during Cooling Thermo-OFF (Eb)**

This function is utilized to prevent diffusion of odor and high humidity by reducing the indoor fan speed during cooling Thermo-OFF.

| Setting Condition | Fan Operation during Thermo-OFF |
|-------------------|---------------------------------|
| 00 | Operation at Set Fan Speed |
| 01 | LOW |
| 02 | LOW |

(48) Forced Thermo-ON Stoppage during Cooling (EC)

This function is utilized to force Thermo-ON and then stop the operation when cooling operation is stopped.

This is effective to prevent abnormal odor because the heat exchanger is rinsed with drain water to keep in the clean condition.

(49) Not Prepared (Ed)**(50) Not Prepared (EE)****(51) Automatic Fan Speed Control (Corresponding to HIGH2) (EF)**

This function is utilized to increase the maximum fan speed to "HIGH2" setting condition when the maximum fan speed remain "HIGH" by default.

The fan speed setting (EF) by Wired Controller are shown below.

| Function Selection EF Setting | Wired Controller Setting | | | | |
|----------------------------------|--------------------------|-------|------|-----|-----|
| | AUTO | HIGH2 | HIGH | MED | LOW |
| 00 | HIGH - LOW | HIGH2 | HIGH | MED | LOW |
| 01 | HIGH2 - LOW | HIGH2 | HIGH | MED | LOW |

NOTE:

This function is not available when the auxiliary heater is enabled. Fan speed is either "HIGH" or "HIGH2" during this time.

(52) Not Prepared (F0)**(53) Automatic OFF Timer Setting (F1)**

This function is utilized to set the OFF timer function automatically when the unit is operated by the wired controller. During the operation with the automatic OFF timer setting function, the cancellation of the OFF timer and the changing of the setting period for OFF timer can not be performed.

However, the OFF timer function is canceled when the unit is stopped. When the unit is operated again after stoppage, the setting period for OFF timer is set by the optional setting.

The setting condition and the setting period for OFF timer are shown below.

< Example for CIW01 >

| Setting Condition | Setting Period for OFF Timer |
|-------------------|------------------------------|
| 00 | Invalid |
| 01 | 1 hour |
| 02 | 2 hours |
| ⋮ | ⋮ |
| 23 | 23 hours |
| 24 | 24 hours |
| 0A | 30 minutes |
| 0B | 90 minutes |
| 0C | 40 minutes |
| 0D | 45 minutes |
| 0E | 50 minutes |
| 0F | 55 minutes |

NOTES:

1. This function is not available when the unit is controlled by the centralized controller, the remote control connecting with Central Controllers.
2. The range of setting period for OFF timer differs depending on the wired controller model.

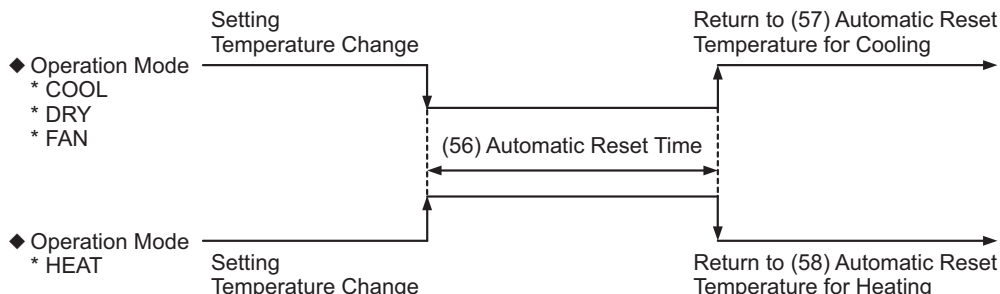
(54) Wired Controller Main-Sub Setting (F2)

This function is utilized when two wired controller are installed in one system.

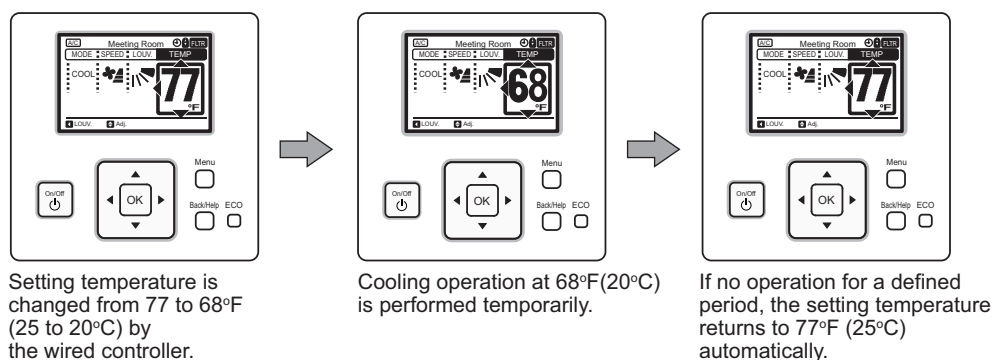
Set one wired controller to main "00", the other wired controller to sub "01".

(55) Automatic Reset of Setting Temperature (F3)

This function is utilized to economize the operation. When this function is valid, in the case that the set temperature is not changed for certain period of time by the function (56) “Automatic Reset Time (F4)”, the set temperature automatically returns to (57/58) “Automatic Reset Temperature for Cooling/Heating (F5/F6)” as following conditions. It is effective to optimize the setting temperature and provide energy saving. However, the setting temperature is not automatically reset in the case that “Automatic COOL/HEAT Operation” mode, or “Prohibiting Operation by Wired Controller” is set by the centralized controller.



<Example> Automatic Reset Temperature for Cooling is 77°F (25°C)

**(56) Automatic Reset Time (F4)**

This function is utilized to set the automatic reset time with the set temperature. The setting conditions and automatic reset time are as follows:

| Setting Condition | Automatic Reset Time of Setting Temperature |
|-------------------|---|
| 00 | 30 minutes (Factory-Setting) |
| 01 | 15 minutes |
| 02 | 60 minutes |
| 03 | 90 minutes |

(57) Automatic Reset Temperature for Cooling (F5)

This function is utilized to set the automatic reset temperature for FAN/COOL/DRY operation. The setting conditions and the automatic reset temperature for cooling are as follows:



| Setting Condition | Setting Temperature for Automatic Reset |
|-------------------|---|
| 66 (19) | 66°F (19°C) |
| 68 (20) | 68°F (20°C) |
| 70 (21) | 70°F (21°C) |
| 72 (22) | 72°F (22°C) |
| 74 (23) | 74°F (23°C) |
| 76 (24) | 76°F (24°C) |
| 77 (25) | 77°F (25°C) (Factory-Setting) |
| 78 (26) | 78°F (26°C) |
| 80 (27) | 80°F (27°C) |
| 82 (28) | 82°F (28°C) |
| 84 (29) | 84°F (29°C) |
| 86 (30) | 86°F (30°C) |

(58) Automatic Reset Temperature for Heating (F6)

This function is utilized to set the automatic reset temperature for HEAT operation.
The setting conditions and the automatic reset temperature for heating are as follows:

| Setting Condition | Setting Temperature for Automatic Reset |
|-------------------|---|
| 62 (17) | 62°F (17°C) |
| 64 (18) | 64°F (18°C) |
| 66 (19) | 66°F (19°C) |
| 68 (20) | 68°F (20°C) |
| 70 (21) | 70°F (21°C) (Factory-Setting) |
| 72 (22) | 72°F (22°C) |
| 74 (23) | 74°F (23°C) |
| 76 (24) | 76°F (24°C) |
| 77 (25) | 77°F (25°C) |
| 78 (26) | 78°F (26°C) |
| 80 (27) | 80°F (27°C) |
| 82 (28) | 82°F (28°C) |
| 84 (29) | 84°F (29°C) |
| 86 (30) | 86°F (30°C) |

(59) Operation Stoppage Prevention by Wired Controller Operational Error (F7)

This function is utilized to prevent the accidental operational stoppage caused by inadvertently pressing “” (ON/OFF) on the wired controller. When this function is valid, the operation is stopped by pressing “” (ON/OFF) button on the wired controller for more than 3 seconds. However, the enabling method is not changed.






Operation Lock (60) to (63)

Four operation lock functions are available as shown below.

These functions are utilized to restrict each switch operation from the wired controller.

When these functions are valid, modification of each function is prohibited.

All operation lock functions are valid (“01” setting) before shipment.

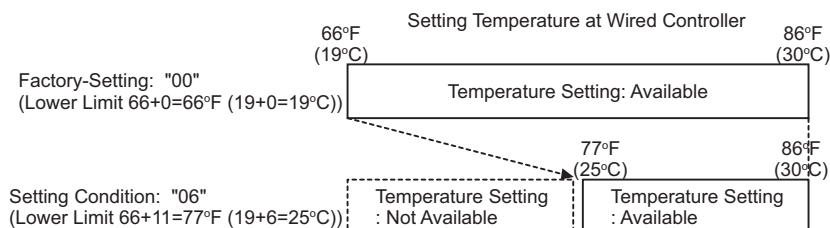
Each switch operation becomes unavailable by pressing “” and “Back/Help” (return) buttons simultaneously for more than 3 seconds when these functions are set as “01”. The indication “” (operation lock indicator) is indicated on the wired controller. If “” and “Back/Help” (return) switches are pressed simultaneously for more than 3 seconds during “” (operation lock indicator) is indicated, “” indication is turned OFF and each switch operation is available. These functions are to restrict the operations of the wired controller only. If operation is performed from the centralized controller, the command from the centralized controller is given priority.

(60) Lock Function for Operation Mode Selection (F8)**(61) Lock Function for Temperature Setting (F9)****(62) Lock Function for Fan Speed Selection (FA)****(63) Lock Function for Swing Louver Operation (Fb)**

(64) Cooling Lower Limit for Setting Temperature (FC)

This function is utilized to limit the lowest setting temperature for FAN/COOL/DRY operations. When this function is valid, it provides the appropriate cooling operation and energy saving. The setting conditions and the minimum setting temperature for cooling are as follows:

<Example>



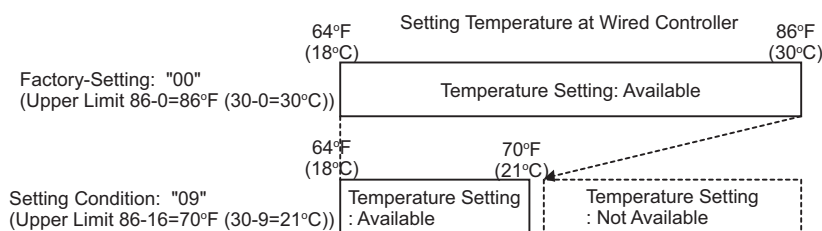
| Setting Condition | Details | Minimum Setting Temperature (FAN/COOL/DRY) * |
|-------------------|---------------------------------------|--|
| 00 | Standard Value | 66°F (19°C) |
| 01 | Lower Limit +2°F (Lower Limit +1°C) | 68°F (20°C) |
| 02 | Lower Limit +4°F (Lower Limit +2°C) | 70°F (21°C) |
| 03 | Lower Limit +6°F (Lower Limit +3°C) | 72°F (22°C) |
| 04 | Lower Limit +8°F (Lower Limit +4°C) | 74°F (23°C) |
| 05 | Lower Limit +10°F (Lower Limit +5°C) | 76°F (24°C) |
| 06 | Lower Limit +11°F (Lower Limit +6°C) | 77°F (25°C) |
| 07 | Lower Limit +12°F (Lower Limit +7°C) | 78°F (26°C) |
| 08 | Lower Limit +14°F (Lower Limit +8°C) | 80°F (27°C) |
| 09 | Lower Limit +16°F (Lower Limit +9°C) | 82°F (28°C) |
| 10 | Lower Limit +18°F (Lower Limit +10°C) | 84°F (29°C) |

* In case of Standard Unit

(65) Heating Upper Limit for Setting Temperature (Fd)

This function is utilized to limit the highest setting temperature for HEAT operation. When this function is valid, it provides the appropriate heating operation and energy saving. The setting conditions and the heating upper limit for the setting temperature are as follows:

<Example>



| Setting Condition | Details | Setting Temperature Upper Limit (HEAT) * |
|-------------------|---------------------------------------|--|
| 00 | Standard Value | 86°F (30°C) |
| 01 | Upper Limit -2°F (Upper Limit -1°C) | 84°F (29°C) |
| 02 | Upper Limit -4°F (Upper Limit -2°C) | 82°F (28°C) |
| 03 | Upper Limit -6°F (Upper Limit -3°C) | 80°F (27°C) |
| 04 | Upper Limit -8°F (Upper Limit -4°C) | 78°F (26°C) |
| 05 | Upper Limit -9°F (Upper Limit -5°C) | 77°F (25°C) |
| 06 | Upper Limit -10°F (Upper Limit -6°C) | 76°F (24°C) |
| 07 | Upper Limit -12°F (Upper Limit -7°C) | 74°F (23°C) |
| 08 | Upper Limit -14°F (Upper Limit -8°C) | 72°F (22°C) |
| 09 | Upper Limit -16°F (Upper Limit -9°C) | 70°F (21°C) |
| 10 | Upper Limit -18°F (Upper Limit -10°C) | 68°F (20°C) |
| 11 | Upper Limit -20°F (Upper Limit -11°C) | 66°F (19°C) |
| 12 | Upper Limit -22°F (Upper Limit -12°C) | 64°F (18°C) |

* In case of Standard Unit

(66) Not Prepared (FE)

(67) Not Prepared (FF)

(68) Not Prepared (H1)

(69) Indication of Hot Start (H2)

When this function is set as “No Indication” (01), “HOT-ST” is not indicated on the wired controller.

(70) Not Prepared (H3)

(71) Not Prepared (H4)

(72) Not Prepared (J1)

(73) Not Prepared (J2)

(74) Run Indicator Color (J3)

This function is utilized to set the run indicator color.

| Setting Conditions | Color |
|--------------------|-------|
| 00 | Green |
| 01 | Red |

NOTE:

The red run indicator is flashing during the alarm.

(75) Not Prepared (J4)

(76) Not Prepared (J5)

(77) Not Prepared (J6)

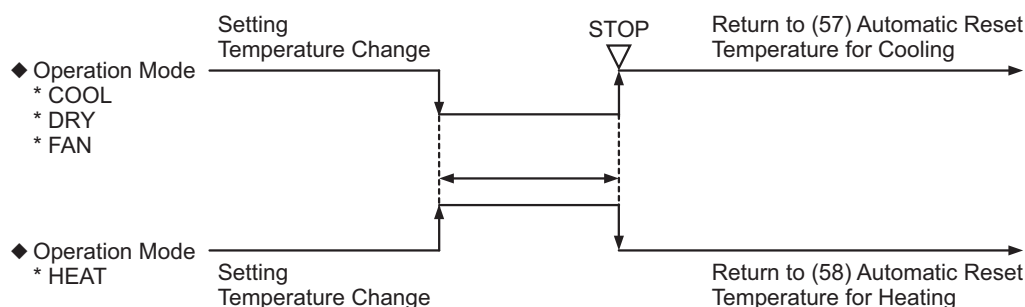
(78) Not Prepared (J7)

(79) Eco-operation (J8)

This function is utilized to effectively optimize the setting temperature and provide energy saving.

When the setting temperature is changed during the air conditioning operation and while the operation is started/stopped by ON/OFF button on the wired controller, the set temperature automatically returns to (57/58) “Automatic Reset Temperature for Cooling/Heating (F5/F6)” as in the following figure.

However, the setting temperature is not automatically reset in the case that “Automatic COOL/HEAT Operation” mode, or “Prohibiting Operation by Wired Controller” is set by the centralized controller.



(80) Not Prepared (J9)

(81) Not Prepared (JA)

(82) Not Prepared (Jb)

(83) Not Prepared (K1)

(84) Not Prepared (K2)

(85) Not Prepared (K3)

(86) Not Prepared (K4)

(87) Motion Sensor Detection Level (K5)

This function is utilized to determine the amount of human activity depending on the reaction rate as in the following table.

When "HIGH" (01) is set, the threshold of the amount of human activity is smaller than the standard.

As the result, the detection level of human sensor becomes higher sensitivity.

When "LOW" (02) is set, the threshold of the amount of human activity is larger than the standard.

As a result, the detection level of human sensor becomes lower.

| Setting Conditions Amount of Human Activity | 00 (Factory Setting) | 01 | 02 |
|--|---|---|---|
| | Standard | High Sensitive | Low Sensitive |
| Extra Large | $80\% \leq \text{Reaction Rate}$ | $60\% \leq \text{Reaction Rate}$ | $80\% \leq \text{Reaction Rate}$ |
| Large | $30\% \leq \text{Reaction Rate} < 80\%$ | $20\% \leq \text{Reaction Rate} < 60\%$ | $40\% \leq \text{Reaction Rate} < 80\%$ |
| Small | $3\% < \text{Reaction Rate} < 30\%$ | $3\% < \text{Reaction Rate} < 20\%$ | $20\% < \text{Reaction Rate} < 40\%$ |
| No Available | $\text{Reaction Rate} \leq 3\%$ | $\text{Reaction Rate} \leq 3\%$ | $\text{Reaction Rate} \leq 20\%$ |

(88) Operation Setting during Thermistor of Wired Controller or Remote Sensor (K6)

This function is utilized to enable/disable the function "Thermistor of Wired Controller (C8)" for each operation mode.

| Setting Condition | Operation Mode |
|-------------------|----------------|
| 00 | ALL |
| 01 | COOL / DRY |
| 02 | HEAT |
| 03 | Same as "00" |

NOTE:

All modes are enabled during Automatic COOL/HEAT operation mode.

(89) Not Prepared (K7)**(90) Not Prepared (K8)****(91) Not Prepared (K9)****(92) Not Prepared (KA)****(93) Not Prepared (L1)****(94) Not Prepared (L2)****(95) Not Prepared (L3)****(96) Fan Speed During Energy-Saving Forced Thermo-OFF (L4)**

This function is utilized to increase the fan speed to prevent the deterioration of comfortableness due to force thermo-OFF for energy saving during cooling operation.

| Setting Condition | Air Volume During Force Thermo-OFF | | | |
|-------------------|------------------------------------|-------|------|-----|
| Airflow Volume | HIGH2 | HIGH | MED | LOW |
| 00 (Standard) | HIGH2 | HIGH | MED | LOW |
| 01 (Hi Speed) | HIGH2 | HIGH2 | HIGH | MED |

(97) Not Prepared (L5)**(98) Not Prepared (L6)****(99) Not Prepared (L7)****(100) Not Prepared (L8)**

(101) Auxiliary Heater OFF at Defrost Operation (L9)

This function is utilized to activate/deactivate heater during defrost operation when heater operation is enabled.

The setting conditions and the heater during defrost are as follows:

| Setting Condition | Heater during Defrost | Fan Operation |
|-------------------|-----------------------|---------------|
| 00 | ON | SLOW |
| 01 | OFF | STOP |

(102) Not Prepared (LA)**(103) Not Prepared (Lb)****(104) Setting Temperature (P1)**

This function is utilized to provide setting temperature for every 1°F (0.5°C) at "00" and every 2°F (1°C) at "01".

Control differential of thermistor also uses the temperature for every 1°F (0.5°C) at "00" and every 2°F (1°C) at "01".

(105) Not Prepared (P2)**(106) Thermistor Selection (P3)**

This function is utilized to select the thermistor with function (107).

| Setting Condition | Thermistor (Sensor) |
|-------------------|------------------------------|
| 00 | Inlet Air Thermistor |
| 01 | Outlet Air Thermistor |
| 02 | Thermistor of Remote Control |
| 03 | Remote Sensor |

(107) Display of Thermistor Temperature (P4)

This function is utilized to display the temperature of the sensor selected at (106).

(108) Setting Temperature Display during Fan Operation (P5)

This function is utilized to undisplay the setting temperature during fan mode operation.

(109) ECO Button Operation (P6)

This function is prohibiting "ECO" button operation by setting at "01"

(110) Menu Button Operation (P7)

This function is utilized to invalidate the menu button.

(111) Not Prepared (P8)**(112) Not Prepared (P9)****(113) Not Prepared (PA)****(114) Not Prepared (Pb)****(115) Not Prepared (PC)****(116) Auxiliary Heater Setting (q1)**

This function is utilized to activate/deactivate auxiliary heater operation.

When this function is valid, the "auxiliary heater" signal is output from indoor unit PCB connector depending on indoor and outdoor temperature.

NOTES:

- "Auxiliary heater" signal does not output during Test Run.
- Fan delay will start for 120 seconds when the unit is turned OFF from the wired controller or during defrost operation (when optional function L9 on the wired controller is set to "01").
- Fan delay will not start when an alarm has occurred.
- Airflow volume of indoor unit is restricted to HIGH or HIGH2 during the auxiliary heater ON is output.
- In case the auxiliary heater is connected and the setting is enabled, during following instances the auxiliary heater alone without heat pump may operate in heating mode.

During Defrosting Operation
Low Ambient Temperature

(117) Auxiliary Heater ON Compensation (for Auxiliary Heater Setting) (q2)

This function is utilized to change the indoor temperature condition to activate auxiliary heater. This function is invalid when the function of "Auxiliary Heater Setting" is invalid.

| Setting Condition | Actual Control Temperature |
|-------------------|--|
| 00 (Standard) | Wired Controller Setting Temperature (Indicated Value) -3°F (-1.5°C) |
| 01 | Wired Controller Setting Temperature (Indicated Value) -3°F (-2°C) |
| 02 | Wired Controller Setting Temperature (Indicated Value) -4°F (-2.5°C) |
| 03 | Wired Controller Setting Temperature (Indicated Value) -5°F (-3°C) |
| 04 | Wired Controller Setting Temperature (Indicated Value) -6°F (-3.5°C) |
| 05 | Wired Controller Setting Temperature (Indicated Value) -7°F (-4°C) |
| 06 | Wired Controller Setting Temperature (Indicated Value) -8°F (-4.5°C) |
| 07 | Wired Controller Setting Temperature (Indicated Value) -9°F (-5°C) |
| 08 | Wired Controller Setting Temperature (Indicated Value) -1°F (-0.5°C) |
| 09 | Wired Controller Setting Temperature (Indicated Value) -2°F (-1°C) |

(118) Auxiliary Heater OFF Compensation (for Auxiliary Heater Setting) (q3)

This function is utilized to change the indoor temperature condition to deactivate auxiliary heater. This function is invalid when the function of "Auxiliary Heater Setting" is invalid.

| Setting Condition | Actual Control Temperature |
|-------------------|--|
| 00 (Standard) | Wired Controller Setting Temperature (Indicated Value) |
| 01 | Wired Controller Setting Temperature (Indicated Value) +1°F (-0.5°C) |

(119) Ambient Temperature Restriction Setpoint (for Auxiliary Heater Setting) (q4)

This function is utilized to change the outdoor ambient temperature condition to Thermo-OFF and operate with auxiliary heater only.

If the ambient temperature is below (q4), the operation is forced thermo-OFF. With this function, heating operation is performed only by the auxiliary heater. There is no air conditioner operation. This function is invalid when the function of "Auxiliary Heater Setting" is invalid.

| Setting Condition | Setting Temperature (q4) |
|-------------------|--------------------------|
| 00 (Standard) | -4°F (-20°C) |
| 01 | 2°F (-17°C) |
| 02 | 8°F (-13°C) |
| 03 | 14°F (-10°C) |
| 04 | 20°F (-7°C) |
| 05 | 26°F (-3°C) |
| 06 | 32°F (0.0°C) |
| 07 | -13°F (-25°C) |
| 08 | -8°F (-22°C) |

NOTE:

Be sure to use only the "00" setting condition when combining this "q4" function with a water source unit.

(120) Ambient Temperature Restriction Setpoint Compensation (for Auxiliary Heater Setting) (q5)

This function is utilized to change the outdoor ambient temperature condition to change operation from auxiliary heater only to Thermo-ON with auxiliary heater.

This function is invalid when the function of "Auxiliary Heater Setting" is invalid.

| Setting Condition | Actual Control Temperature |
|-------------------|----------------------------|
| 00 (Standard) | (q4) + 4°F (2.5 °C) |
| 01 | (q4) + 5°F (3.0 °C) |
| 02 | (q4) + 6°F (3.5 °C) |
| 03 | (q4) + 1°F (0.5 °C) |
| 04 | (q4) + 2°F (1.0 °C) |
| 05 | (q4) + 3°F (1.5 °C) |
| 06 | (q4) + 3°F (2.0 °C) |

NOTE:

Be sure to use only the "00" setting condition when combining this "q5" function with a water source unit.

(121) Not Prepared (q6)

(122) Not Prepared (q7)

(123) Not Prepared (q8)

(124) Not Prepared (q9)

(125) Not Prepared (qA)

(126) Not Prepared (qb)

(127) Not Prepared (qC)

(128) Not Prepared (qd)

(129) Dual Setpoint (for Automatic COOL/HEAT Operation) (r1)

This function is utilized to activate/deactivate dual setpoint of cooling and heating in automatic cooling and heating operation.

This function is invalid when the function of "Automatic COOL/HEAT Operation" is invalid.

(130) Cooling/Heating Changeover Temperature (for Automatic COOL/HEAT Operation) (r2)

This function is utilized to change the indoor temperature condition to Thermo-ON/OFF.

This function is invalid when the function of "Dual Setpoint" is invalid.

In case dual setpoint is selected in automatic heating/cooling operation, during auto mode both cooling setpoint and heating setpoint can be selected.

By default, temperature when the heating/cooling mode changes are as follows.

Cooling mode changes to heating mode when the indoor temperature is heating setpoint -2°F (-1°C).

Heating mode changes to cooling mode when the indoor temperature is cooling setpoint +2°F (+1°C).

| Setting Condition | Actual Control Temperature |
|-------------------|----------------------------|
| 00 (Standard) | 2°F (1.0 °C) |
| 01 | 3°F (1.5 °C) |
| 02 | 3°F (2.0 °C) |
| 03 | 4°F (2.5 °C) |
| 04 | 5°F (3.0 °C) |
| 05 | 1°F (0.5 °C) |

(131) Setback Temperature Compensation (During card key removal, setpoint is setback) (r3)

This function is utilized to change the indoor temperature condition to Thermo-ON/OFF.

In case the setback operation is enabled and the card key is removed, setpoint is compensated and fan operate at "LOW" speed.

By default,

Cooling: Setpoint +4°F (+2.5°C)

Heating: Setpoint -4°F (-2.5°C)

When the external signal is detected (card key is inserted), return to the original setting temperature.

Compensation for setback operation can be changed as shown in the table below.

| Setting Condition | Actual Control Temperature |
|-------------------|---|
| 00 (Standard) | Wired Controller Setting Temperature (Indicated Value) +4°F (2.5 °C) |
| 01 | Wired Controller Setting Temperature (Indicated Value) +5°F (3.0 °C) |
| 02 | Wired Controller Setting Temperature (Indicated Value) +6°F (3.5 °C) |
| 03 | Wired Controller Setting Temperature (Indicated Value) +7°F (4.0 °C) |
| 04 | Wired Controller Setting Temperature (Indicated Value) +8°F (4.5 °C) |
| 05 | Wired Controller Setting Temperature (Indicated Value) +9°F (5.0 °C) |
| 06 | Wired Controller Setting Temperature (Indicated Value) +10°F (5.5 °C) |
| 07 | Wired Controller Setting Temperature (Indicated Value) +1°F (0.5 °C) |
| 08 | Wired Controller Setting Temperature (Indicated Value) +2°F (1.0 °C) |
| 09 | Wired Controller Setting Temperature (Indicated Value) +3°F (1.5 °C) |
| 10 | Wired Controller Setting Temperature (Indicated Value) +3°F (2.0 °C) |

(132) Not Prepared (r4)

(133) Not Prepared (r5)

(134) Not Prepared (r6)

(135) Not Prepared (r7)

(136) Not Prepared (r8)

(137) Not Prepared (r9)

(138) Not Prepared (rA)

(139) Not Prepared (rb)

(140) Not Prepared (S1)

(141) Not Prepared (S2)

(142) Not Prepared (S3)

(143) Not Prepared (S4)

(144) Not Prepared (S5)

(145) Not Prepared (S6)

(146) Not Prepared (S7)

(147) Not Prepared (S8)

5.5 Functions from Wired Controller

The functions are available from the wired controller CIW01 as follows.

Regarding setting procedure, refer to the “Operation Manual” for the Wired Controller.

5.5.1 Power Saving Function

NOTE:

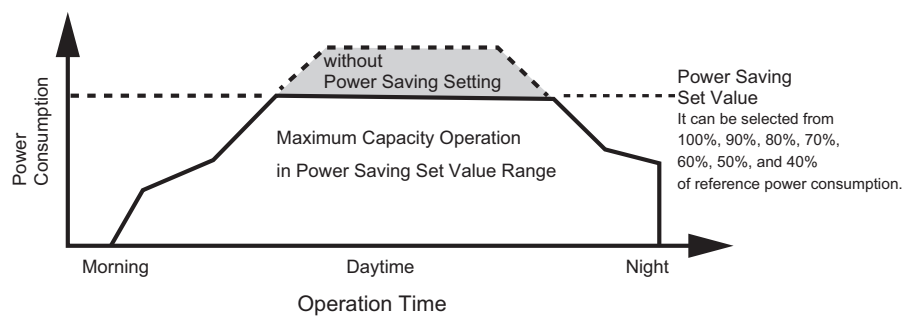
The following functions (1)~(3) cannot be operated at the same time.

(1) Outdoor Unit Capacity Control

The demand function setting can be controlled from wired controller. Select from “Peak Cut Control” and “Moderate Control” according to the situation.

“Peak Cut Control” Function

The peak cut control reduces the power consumption range when it exceeds the value of the power saving setting.

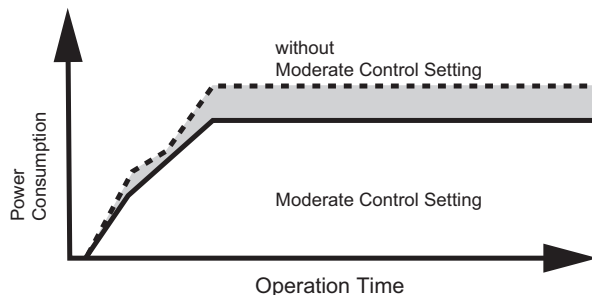


NOTES:

1. The power set value (%) is just a criterion. The power set value for this function is different from the actual power value in precision. Use the demand controller (option) when it is necessary to manage the maximum power correctly.
2. The cooling capacity is decreased according to the power saving setting value for the reducing of compressor motor revolution.
3. The actual electrical power consumption may be higher than the value displayed on the screen under certain operating condition such as protective control.
4. This function is used to inhibit power consumption of the operating. Do not use it for minimize the capacity of current and the voltage for the power circuit, power supply wiring, GFCI, transformer, etc. It may cause actuation of the interrupter and equipment fault.
5. Power consumption depends on connected outdoor unit.

“Moderate Control” Function

The moderate control moderate the air conditioning capacity not to exceed the value of the power saving setting.

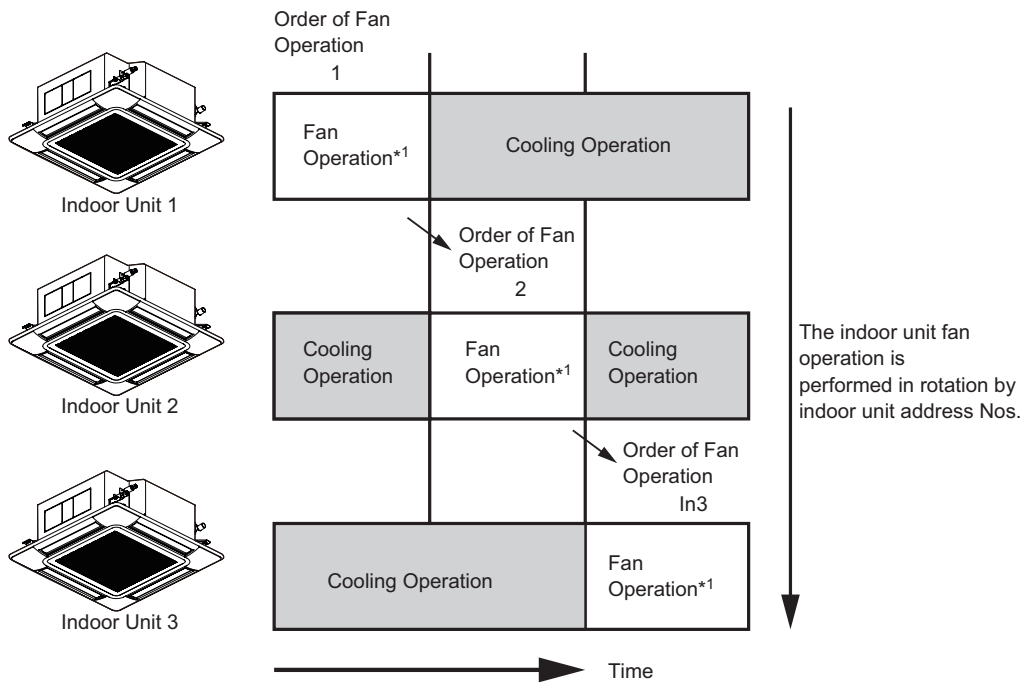


NOTES:

1. The moderate control setting value can be set from 40% to 100% of regular capacity by every 10%.
2. The setting value is just a criterion. It might be different according to the actual service condition and operating condition.

(2) Rotation Control Function

The rotation control switches multiple indoor unit operating mode to FAN mode (Thermo-OFF) in order one by one.

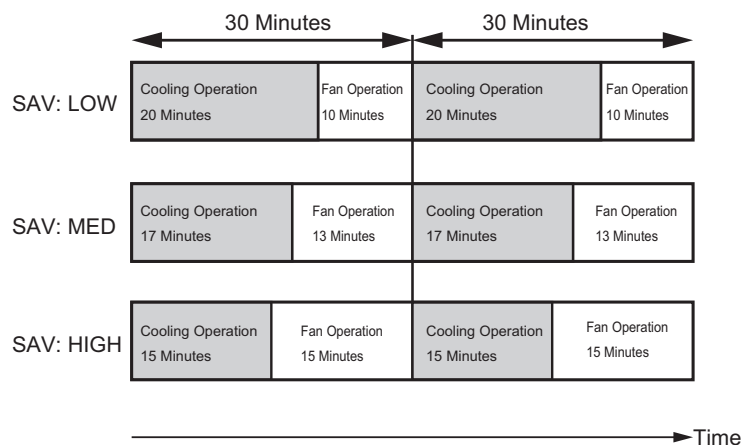


NOTES:

1. The fan mode time can be selected in the interval of three minutes, five minutes and ten minutes.
2. It is possible to change the rotation assigned number according to the minimum differential between the setting temperature and indoor temperature.

(3) Intermittent Control Function

The intermittent control repeats Cooling/Heating and Fan (Thermo-OFF) mode in fixed intervals.



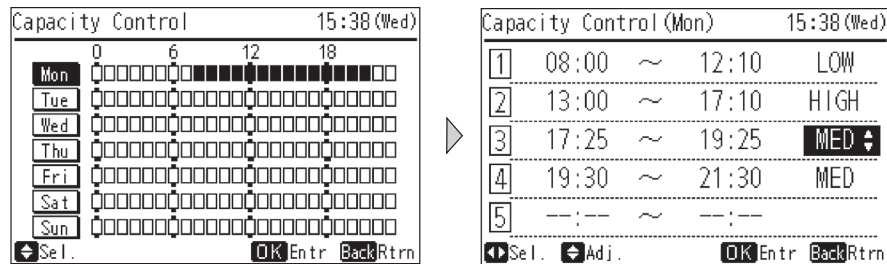
NOTE:

The fan mode is repeated in the interval of five minutes (SAV: LOW), ten minutes (SAV: MED) and fifteen minutes (SAV: HIGH) during heating operation.

5.5.2 Schedule Function

(1) Power Saving Schedule Function

The power saving schedule function is utilized to set the power saving schedule on indoor unit capacity control and intermittent control up to five settings a day each day of the week.



The display of Noise Reduction Schedule is the same.

(2) Operation Noise Reduction Schedule Function

The operation noise reduction schedule function is utilized to set the operation noise reduction schedule up to five settings a day each day of the week.

NOTE:

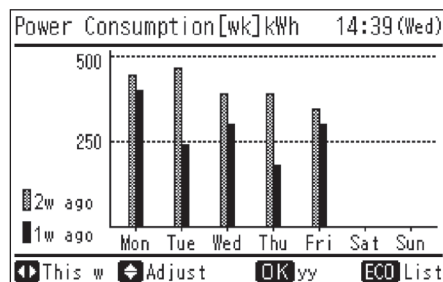
The operation noise reduction setting may decrease the Cooling/Heating capacity.

For detail, refer to Section "Sound Reduced Function" in the "Service Manual" for the outdoor unit.

5.5.3 Indication Function

(1) Power Consumption Display Function

This function displays the power consumption of the outdoor unit compressor. The value of each displayed in Graph/List format is one day, one week and one year. The display period of consumption comparison can be selected from one day before/Today to 1 year ago/This year.

**NOTE:**

The power consumption for outdoor unit compressor is displayed.

(2) Power Saving Guide

Press "ECO" button and then the power saving guide is displayed to support the setting. Easy access to the confirmation and setting screen from the current setting status screen.

5.5.4 Comfort Function

Following functions are not available depending on connected outdoor unit.

(1) Quick Function

This function is used when decreasing/increasing the indoor temperature quickly.

This function operates as follows for 30 minutes from the operation start-up.

This function is only available when the operation mode is COOL or HEAT.

The unit starts each time in quick mode until the setting is canceled.

| Setting Condition | Compressor Frequency | | | Indoor Fan |
|-------------------|----------------------|----------------------|-----------------------|---------------|
| | Upper Limit | Target Frequency | Variation Width | |
| Default Setting | - | - | - | - |
| COOL | Default Setting +20% | Default Setting +20% | Default Setting +200% | Automatically |
| HEAT | Default Setting +20% | Default Setting +20% | Default Setting +50% | - |

NOTES:

1. If this function is set, indoor fan speed is automatically controlled regardless fan speed setting from wired controller. (If there is an upper/lower limit of airflow, do not use this function.)
In case of Ducted (EconoFresh), do not use this function. If it is used for Ducted (EconoFresh), the thermal load of the room may significantly increase depending on the outdoor temperature conditions.
2. The upper limit and target frequency of the compressor are same as Function Setting "Hc" or "Hh".
3. This function may increase power consumption.

(2) Power Up Setting

If the cooling/heating capacity seems insufficient during the normal operation, set this function.

By setting this function, the target frequency and upper limit of the compressor are set higher as follows.

| Setting Condition | Power Up Mode | | | |
|---------------------|--|----------------------|--|----------------------|
| | Compressor Frequency for Cooling Operation | | Compressor Frequency for Heating Operation | |
| | Upper Limit | Target Frequency | Upper Limit | Target Frequency |
| 0 (Default Setting) | - | - | - | - |
| 1 | Default Setting +20% | Default Setting +20% | - | - |
| 2 | - | - | Default Setting +20% | Default Setting +20% |
| 3 | Default Setting +20% | Default Setting +20% | Default Setting +20% | Default Setting +20% |

NOTE:

The upper limit and target frequency of the compressor are same as Function Setting "Hc" or "Hh".

6. Field Work Instructions

Refer to Section 3 “Troubleshooting” when dealing with problems or difficulties.
If you cannot solve the problem, contact your distributor or contractor.

6.1 Caution for Refrigerant Leakage

- **Special Attention Regarding Refrigerant Gas Leakage**

Make sure that the entire VRF system meets ASHRAE Standard 15 or, any local codes, regarding Safety. The ASHRAE Standard 15 provides safeguards for life, limb, health, and property, and prescribes safety requirements.

The standard is recognized as the main guide for personal safety involving refrigeration systems. It strives to ensure a safe application of refrigerant systems by limiting the maximum charge so that a complete discharge due to a leak into a small, occupied, and enclosed room can never exceed the allowable limit.

6.2 Modifications of Charging Refrigerants Other than Those Specified by Johnson Controls



Johnson Controls' air conditioners are designed and manufactured based on using specified refrigerants. The applicable refrigerants are specified for each unit's models.

Using any refrigerants besides the specified refrigerants may cause mechanical problems, malfunction, and failure, and **in the worst case, it endangers safety seriously and may cause a fire or an explosion.**

Therefore, **Do not charge non-specified refrigerants or any of the following in the refrigerant system of a unit.**

- * **Hydrocarbon Refrigerants such as Propane**
- * **Oxygen, or Flammable Gases such as Acetylene**
- * **Poisonous Gases**

The types of refrigerants are indicated in the Installation and Maintenance Manuals, Engineering Manuals, Service Manuals, and the specification label for each unit. **Be aware that Johnson Controls does not take any responsibility for unit failure, malfunction, or any accidents caused by charging non-specified refrigerants or others as noted above.**

6.3 Maintenance Work

(1) For Outdoor Unit and Indoor Unit

(a) Fan and Fan Motor

- Lubrication - All fan motors are pre-lubricated and sealed at the factory. Therefore, no lubricating maintenance is required.
- Sound and Vibration - Inspect for abnormal sounds or vibration.
- Rotation - Check that the fan rotates counterclockwise and inspect the rotating speed.
- Insulation - Inspect for electrical insulation resistance.

(b) Heat Exchanger

- Clogging - Inspect for any accumulated dirt and dust and remove any at regular intervals. As for an outdoor unit, other obstacles such as growing grass and pieces of paper, which might interrupt air flow, should also be removed.

(c) Piping Connection

- Leakage - Inspect for refrigerant leakage at piping connections.

(d) Cabinet

- Stain and Lubricant - Inspect for any stain or lubricant and remove it, if any.
- Securing Screw - Inspect for loose or missing screws and secure or replace as required.
- Insulation - Inspect for peeling thermal insulation material on the cabinet and repair it, if any.

(e) Electrical Equipment

- Activation - Inspect for abnormal activation of the magnetic contactor, auxiliary relay, or printed circuit board (PCB).
- Line Condition - Pay attention to working voltage, amperage and phase balance. Inspect for faulty contact caused by loosened terminal connections, oxidized contacts, foreign matter, and other items. Inspect for electrical insulation resistance.

(f) Control and Protective Devices

- Setting - Do not readjust the setting in the field.

(2) For Outdoor Unit Only

(a) Compressor

- Sound and Vibration - Inspect for abnormal sounds or vibration.
- Activation - Check that the voltage drop of the power supply line is within 16% at start and within 2% during operation.

(b) Reversing Valve

- Activation - Inspect for any abnormal activating sound.

(c) Strainer

- Clogging - Check that there is no temperature difference between the ends.

(d) Ground Wiring

- Ground Line - Inspect for continuity to the earth ground.

(e) Crankcase Heater

- Activation - Apply power to the outdoor unit(s) at least 12 hours prior to operation of the system for preheating of the compressor oil.

(3) For Indoor Unit Only

(a) Air Filter

- Cleaning - Inspect for, and remove, any accumulated dirt and dust and remove according to the "Engineering Manual".

(b) Condensate Pan, Drain-up Mechanism and Condensate Pipe

- Condensate Line - Inspect and clean the condensate line at least twice a year.
- Drain-up Mechanism - Inspect for activation of drain-up mechanism.

(c) Float Switch

- Activation - Inspect for activation of float switch.

6.4 Service and Maintenance Record by 7-Segment Display

Refer to the Service Manual for Outdoor Unit.

6.5 Service and Maintenance Record by Wired Controller

Data Sheet for Checking by Wired Controller

I.U.: Indoor Unit, O.U.: Outdoor Unit, Comp.: Compressor

| | | | | | | | | |
|---|------------------------------------|--------------|----|-------|-------|-------|-------|-------|
| Time | | | | : | : | : | : | : |
| I.U. Model | | | | | | | | |
| I.U. Serial No. | | | | | | | | |
| I.U. No. / Alarm Code | | | | | | | | |
| | Check Mode 1 | Check Mode 2 | | 1 • 2 | 1 • 2 | 1 • 2 | 1 • 2 | 1 • 2 |
| B Temp. Indication | | | | | | | | |
| | Set Temp. | b1 | -- | | | | | |
| | Inlet Air Temp. | b2 | q1 | | | | | |
| | Discharge Air Temp. | b3 | q2 | | | | | |
| | Liquid Pipe Temp. | b4 | q3 | | | | | |
| | Remote Thermistor Temp. | b5 | -- | | | | | |
| | Outdoor Air Temp. | b6 | q4 | | | | | |
| | Gas Pipe Temp. | b7 | q5 | | | | | |
| | Evaporating Temp. at Heating | b8 | q6 | | | | | |
| | Condensing Temp. at Cooling | b9 | q7 | | | | | |
| | Comp. Top Temp. | bA | q8 | | | | | |
| | Thermo Temp. of Wired Controller | bb | -- | | | | | |
| | Not Prepared | bC | -- | | | | | |
| C Micro-Computer State Indication | | | | | | | | |
| | I.U. Micro-Computer | C1 | -- | | | | | |
| | O.U. Micro-Computer | C2 | -- | | | | | |
| D Stopping Cause State Indication | | | | | | | | |
| | Cause Code of Indoor Unit Stoppage | d1 | -- | | | | | |
| E Alarm Occurrence | | | | | | | | |
| | Times of Abnormality | E1 | -- | | | | | |
| | Times of Power Failure | E2 | -- | | | | | |
| | Times of Abnormal Communication | E3 | -- | | | | | |
| | Times of Inverter Tripping | E4 | -- | | | | | |
| F Automatic Louver State | | | | | | | | |
| | Louver Sensor State | F1 | -- | | | | | |
| H Pressure, Frequency State Indication | | | | | | | | |
| | Discharge Pressure | H1 | q9 | | | | | |
| | Suction Pressure | H2 | qA | | | | | |
| | Control Information | H3 | qb | | | | | |
| | Operating Frequency | H4 | qC | | | | | |
| J I.U. Capacity Indication | | | | | | | | |
| | I.U. Capacity | J1 | -- | | | | | |
| | O.U. Code | J2 | -- | | | | | |
| | Refrigerant System Number | J3 | -- | | | | | |
| | Refrigerant System Number | J4 | -- | | | | | |
| L Opening of Expansion Valve | | | | | | | | |
| | I.U. Expansion Valve | L1 | qd | | | | | |
| | O.U. Expansion Valve 1 | L2 | qE | | | | | |
| | O.U. Expansion Valve 2 | L3 | -- | | | | | |
| | O.U. Expansion Valve B | L4 | -- | | | | | |

NOTE:

Refer to Section 3.1.4 "Checking Wired Controller" for items in check mode.

| | | | | | | | | |
|---|---|----|----|--|--|--|--|--|
| P | Compressor Condition Indication (Reference) | | | | | | | |
| | Comp. Current | P1 | qF | | | | | |
| | Accumulated Operation Time of Comp. | P2 | -- | | | | | |
| Q | Sensor Condition Indication | | | | | | | |
| | Motion Sensor Response Rate | q1 | -- | | | | | |
| | Radiation Sensor Temp. | q2 | -- | | | | | |
| | Motion Sensor1 Response Rate | q3 | -- | | | | | |
| | Motion Sensor2 Response Rate | q4 | -- | | | | | |
| | Motion Sensor3 Response Rate | q5 | -- | | | | | |
| | Motion Sensor4 Response Rate | q6 | -- | | | | | |
| | Setting Temp. Collected Value | q7 | -- | | | | | |

Client: _____
 Installation Date: _____
 System No.: _____
 Date Checked: _____
 Checked by: _____

| | |
|--------|--|
| Result | |
| | |

NOTE:

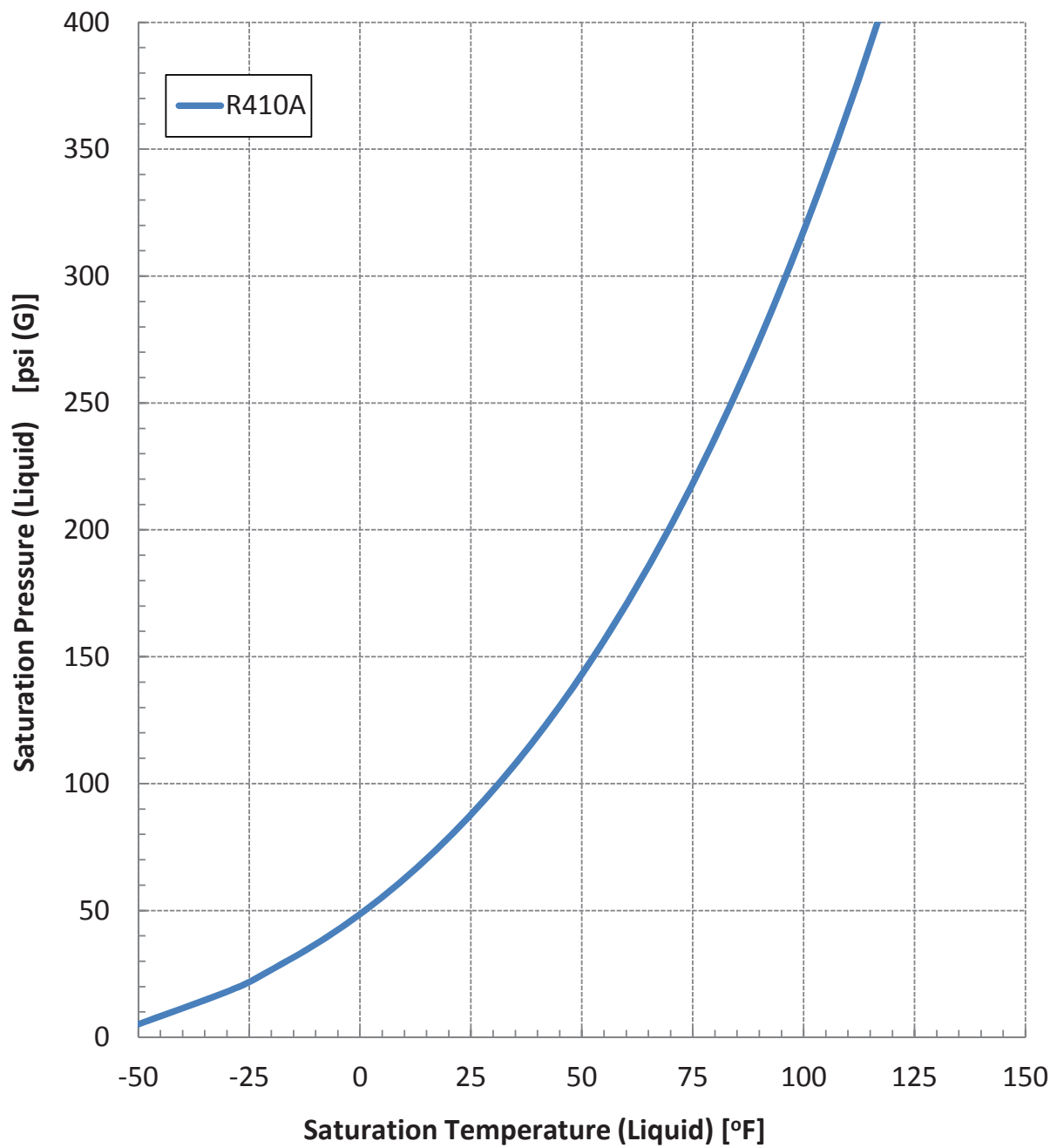
Refer to Section 3.1.4 "Checking Wired Controller" for items in check mode.

6.6 Service and Maintenance Record

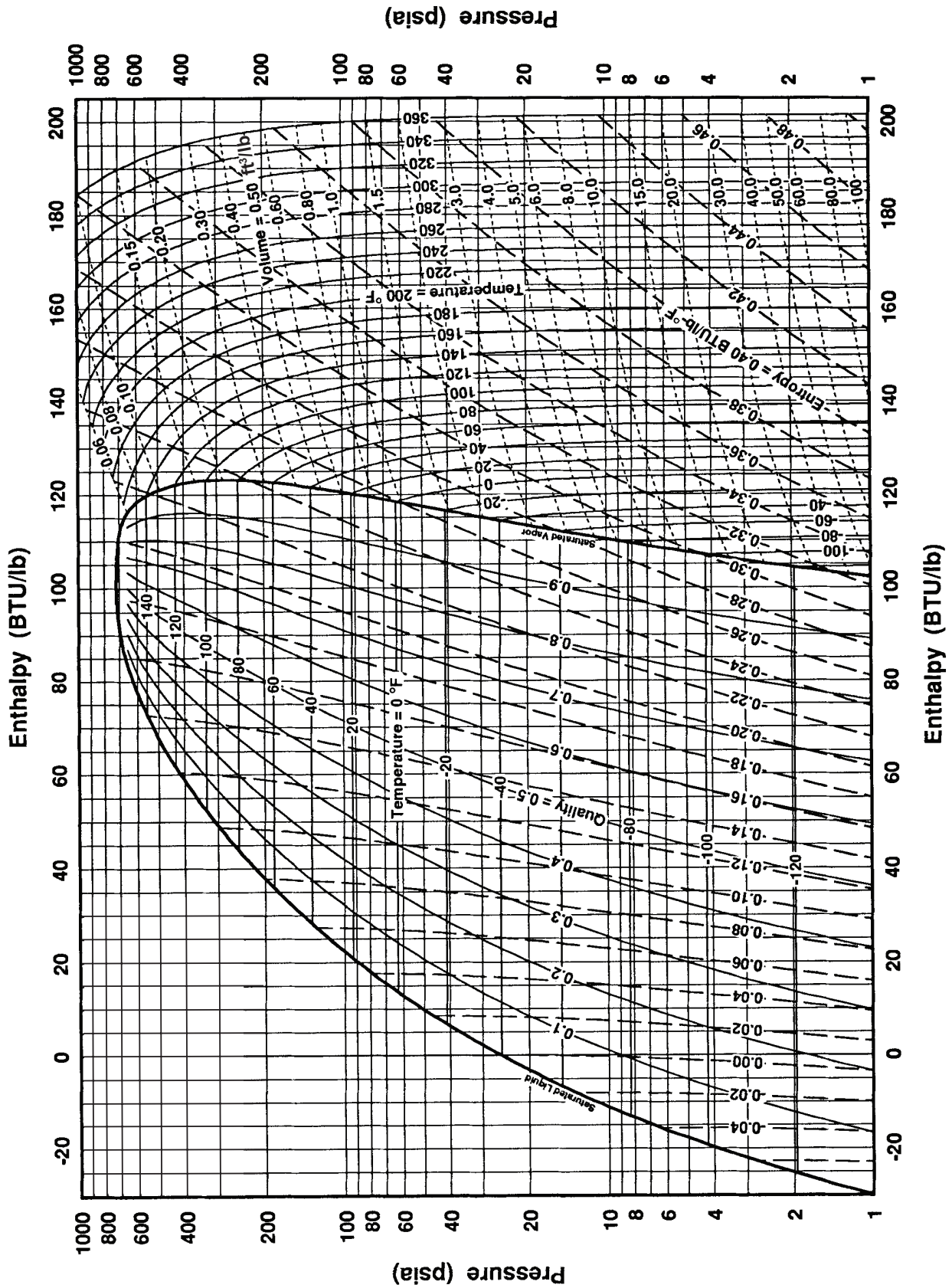
Service and Maintenance Record

| No. | Check Item | Action | Judgment |
|-----|--|---|----------------------------|
| 1 | Is service space sufficient? | | YES or NO |
| 2 | Short Circuit of Discharged Air? | | YES or NO |
| 3 | Any Heat Influence? | | YES or NO |
| 4 | Is ground wiring connected? | | YES or NO |
| 5 | Refrigeration Piping | | GOOD or NOT GOOD |
| 6 | Fixing of Units | | GOOD or NOT GOOD |
| 7 | Any Damage on External or Internal Surface? | | YES or NO |
| 8 | Checking of Screws and Bolts | Tighten them if they are loosened. | TIGHTENED or NOT TIGHTENED |
| 9 | Tightening of Terminal Screws | Tighten all terminal screws with a Phillips screwdriver. | TIGHTENED or NOT TIGHTENED |
| 10 | Are compressor terminals tightly fixed? | Check all compressor terminals are tightly fixed. | GOOD or NOT GOOD |
| 11 | Insulation Resistance | Measure insulation resistance with insulation resistance-meter. Comp. and Fan Motor: greater than 3MΩ Others: greater than 3MΩ | GOOD or NOT GOOD |
| 12 | Does condensate water smoothly flow? | Check for smooth flow by pouring water. | GOOD or NOT GOOD |
| 13 | Check for leakage at compressor. | Check for any leakage. | GOOD or NOT GOOD |
| 14 | Check for leakage at outdoor heat exchanger. | Check for any leakage. | GOOD or NOT GOOD |
| 15 | Check for leakage at indoor heat exchanger. | Check for any leakage. | GOOD or NOT GOOD |
| 16 | Check for leakage at reversing valve. | Check for any leakage. | GOOD or NOT GOOD |
| 17 | Check for leakage at check valve. | Check for any leakage. | GOOD or NOT GOOD |
| 18 | Check for leakage at accumulator. | Check for any leakage. | GOOD or NOT GOOD |
| 19 | Check for leakage at strainer. | Check for any leakage. | GOOD or NOT GOOD |
| 20 | Check for leakage at electronic expansion valve. | Check for any leakage. | GOOD or NOT GOOD |
| 21 | Check for leakage at piping. | Check for any leakage. | GOOD or NOT GOOD |
| 22 | Check direction of fans. | by Viewing or Airflow Volume | GOOD or NOT GOOD |
| 23 | Voltage among each phase. | Check the voltage is within the specified range. | GOOD or NOT GOOD |
| 24 | Vibration and Sound | Check fan, compressor, piping. | GOOD or NOT GOOD |
| 25 | Activation of Each Operation Mode | Check activation of COOL, HEAT, STOP and TEMP. switches. | GOOD or NOT GOOD |
| 26 | High Pressure Cut-out Switch | Check actual activation value. | GOOD or NOT GOOD |
| 27 | Check activation of drain-up mechanism. | Check it during cooling operation. | GOOD or NOT GOOD |
| 28 | Indoor Inlet Air Temp. (DB/WB) | | °F DB/ °F WB |
| 29 | Indoor Outlet Air Temp. (DB/WB) | | °F DB/ °F WB |
| 30 | Outdoor Inlet Air Temp. (DB/WB) | | °F DB/ °F WB |
| 31 | Outdoor Outlet Air Temp. (DB/WB) | | °F DB/ °F WB |
| 32 | High Pressure Sensor | | psi(G) |
| 33 | Low Pressure Sensor | | psi(G) |
| 34 | Operating Voltage | | V |
| 35 | Operating Current | | A |
| 36 | Instruction for Cleaning of Air Filter to Client | | DONE or NOT YET |
| 37 | Instruction for Cleaning Method to Client | | DONE or NOT YET |
| 38 | Instruction for Operation to Client | | DONE or NOT YET |

6.7 Saturation Curve for Refrigerant



6.8 Mollier Chart for R410A



7. Service Parts List

SERVICE PARTS LIST

Refer to the Service Parts List for Ducted (High Static and Medium Static).

