TOSHIBA

FILE NO. A10-2006
Ver.2: Jul.2022

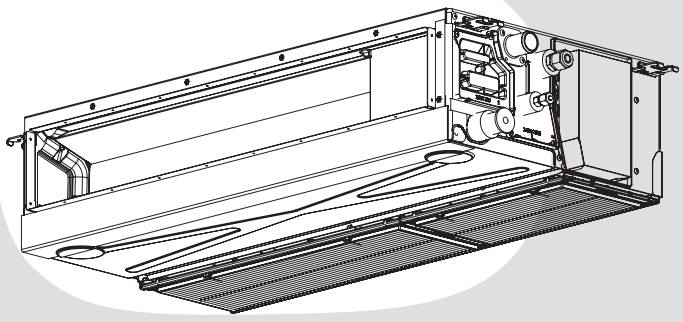
# SERVICE MANUAL

# AIR-CONDITIONER
## MULTI TYPE

## INDOOR UNIT
### < Slim duct type>

***For R32 or R410A:***

| | |
|---|---|
| **MMD-UP0031SPHY-E** | **MMD-UP0031SPHY-TR** |
| **MMD-UP0051SPHY-E** | **MMD-UP0051SPHY-TR** |
| **MMD-UP0071SPHY-E** | **MMD-UP0071SPHY-TR** |
| **MMD-UP0091SPHY-E** | **MMD-UP0091SPHY-TR** |
| **MMD-UP0121SPHY-E** | **MMD-UP0121SPHY-TR** |
| **MMD-UP0151SPHY-E** | **MMD-UP0151SPHY-TR** |
| **MMD-UP0181SPHY-E** | **MMD-UP0181SPHY-TR** |
| **MMD-UP0241SPHY-E** | **MMD-UP0241SPHY-TR** |
| **MMD-UP0271SPHY-E** | **MMD-UP0271SPHY-TR** |



# CONTENTS

Please read carefully through these instructions that contain important information which complies with the Machinery Directive (Directive 2006/42/EC), and ensure that you understand them.

## Generic Denomination: Air Conditioner

## Definition of Qualified Installer or Qualified Service Person

The air conditioner must be installed, maintained, repaired and removed by a qualified installer or qualified service person. When any of these jobs is to be done, ask a qualified installer or qualified service person to do them.
A qualified installer or qualified service person is an agent who has the qualifications and knowledge described in the table below.

| Agent | Qualifications and knowledge which the agent must have |
|---|---|
| Qualified installer (*1) | • The qualified installer is a person who installs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations.<br>• The qualified installer who is allowed to do the electrical work involved in installation, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.<br>• The qualified installer who is allowed to do the refrigerant handling and piping work involved in installation, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.<br>• The qualified installer who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. |
| Qualified service person (*1) | • The qualified service person is a person who installs, repairs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, repair, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations.<br>• The qualified service person who is allowed to do the electrical work involved in installation, repair, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.<br>• The qualified service person who is allowed to do the refrigerant handling and piping work involved in installation, repair, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.<br>• The qualified service person who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. |

## Definition of Protective Gear

When the air conditioner is to be transported, installed, maintained, repaired or removed, wear protective gloves and 'safety' work clothing.
In addition to such normal protective gear, wear the protective gear described below when undertaking the special work detailed in the table below.
Failure to wear the proper protective gear is dangerous because you will be more susceptible to injury, burns, electric shocks and other injuries.

| Work undertaken | Protective gear worn |
|---|---|
| All types of work | Protective gloves<br>'Safety' working clothing |
| Electrical-related work | Gloves to provide protection for electricians<br>Insulating shoes<br>Clothing to provide protection from electric shock |
| Work done at heights<br>(50 cm or more) | Helmets for use in industry |
| Transportation of heavy objects | Shoes with additional protective toe cap |
| Repair of outdoor unit | Gloves to provide protection for electricians |

The important contents concerned to the safety are described on the product itself and on this Service Manual.
Please read this Service Manual after understanding the described items thoroughly in the following contents (Indications / Illustrated marks), and keep them.

### [Explanation of indications]

| Indication | Explanation |
|---|---|
| ⚠ DANGER | Indicates contents assumed that an imminent danger causing a death or serious injury of the repair engineers and the third parties when an incorrect work has been executed. |
| ⚠ WARNING | Indicates possibilities assumed that a danger causing a death or serious injury of the repair engineers, the third parties, and the users due to troubles of the product after work when an incorrect work has been executed. |
| ⚠ CAUTION | Indicates contents assumed that an injury or property damage (*) may be caused on the repair engineers, the third parties, and the users due to troubles of the product after work when an incorrect work has been executed. |

* Property damage: Enlarged damage concerned to property, furniture, and domestic animal / pet

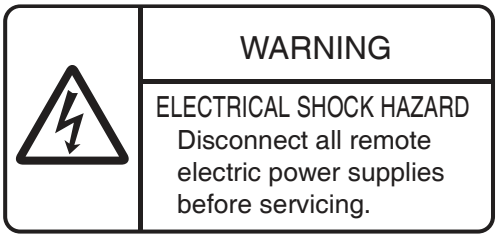
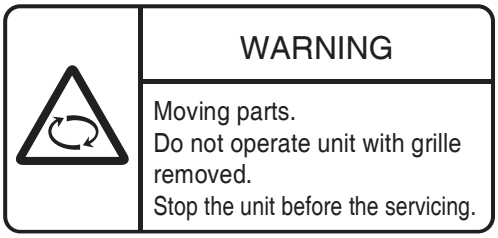
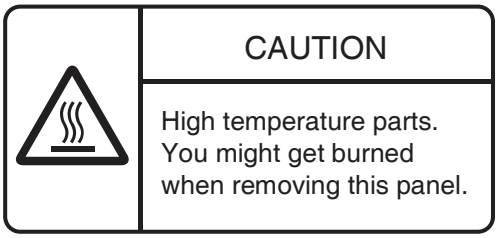
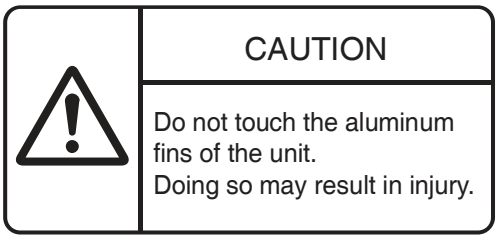
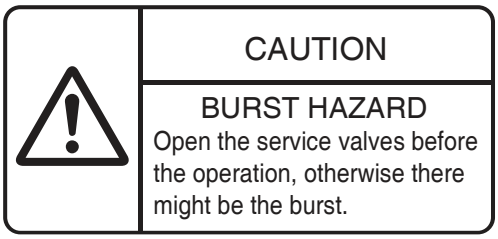
### [Explanation of illustrated marks]

| Indication | Explanation |
|---|---|
|  | Indicates prohibited items (Forbidden items to do)<br>The sentences near an illustrated mark describe the concrete prohibited contents. |
|  | Indicates mandatory items (Compulsory items to do)<br>The sentences near an illustrated mark describe the concrete mandatory contents. |
|  | Indicates cautions (Including danger / warning)<br>The sentences or illustration near or in an illustrated mark describe the concrete cautious contents. |

## Warning Indications on the Air Conditioner Unit

### [Confirmation of warning label on the main unit]

Confirm that labels are indicated on the specified positions
If removing the label during parts replace, stick it as the original.

| Warning indication | Description |
|---|---|
|  | WARNING<br><br>ELECTRICAL SHOCK HAZARD<br>Disconnect all remote electric power supplies before servicing. |
|  | WARNING<br><br>Moving parts.<br>Do not operate unit with grille removed.<br>Stop the unit before the servicing. |
|  | CAUTION<br><br>High temperature parts.<br>You might get burned when removing this panel. |
|  | CAUTION<br><br>Do not touch the aluminium fins of the unit.<br>Doing so may result in injury. |
|  | CAUTION<br><br>BURST HAZARD<br>Open the service valves before the operation, otherwise there might be the burst. |

# PRECAUTIONS FOR SAFETY

The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.

## ⚠ DANGER

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|---|---|
| Turn off braeaker | Before carrying out the installation, maintenance, repair or removal work, be sure to set the circuit breaker for both the indoor and outdoor units to the OFF position. Otherwise, electric shocks may result. |
| | Before opening the electrical box cover of the indoor unit or service panel of the outdoor unit, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in electric shocks through contact with the interior parts. Only a qualified installer (*1) or qualified service person (*1) is allowed to remove the intake grille of the indoor unit or service panel of the outdoor unit and do the work required. |
| | Before opening the suction board cover, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in injury through contact with the rotation parts. Only a qualified installer (*1) or qualified service person (*1) is allowed to remove the suction board cover and do the work required. |
| | Before starting to repair the outdoor unit fan or fan guard, be absolutely sure to set the circuit breaker to the OFF position, and place a “Work in progress” sign on the circuit breaker. |
| | When cleaning the filter or other parts of the indoor unit, set the circuit breaker to OFF without fail, and place a “Work in progress” sign near the circuit breaker before proceeding with the work. |
| | When you have noticed that some kind of trouble (such as when a check code display has appeared, there is a smell of burning, abnormal sounds are heard, the air conditioner fails to cool or heat or water is leaking) has occurred in the air conditioner, do not touch the air conditioner yourself but set the circuit breaker to the OFF position, and contact a qualified service person. Take steps to ensure that the power will not be turned on (by marking “out of service” near the circuit breaker, for instance) until qualified service person arrives. Continuing to use the air conditioner in the trouble status may cause mechanical problems to escalate or result in electric shocks or other failure. |
| Electric shock hazard | When you access inside of the service panel to repair electric parts, wait for about five minutes after turning off the breaker. Do not start repairing immediately.Otherwise you may get electric shock by touching terminals of high-voltage capacitors. Natural discharge of the capacitor takes about five minutes. |
| | When checking the electric parts, removing the cover of the electric parts box of Indoor Unit and/or service panel of Outdoor Unit inevitably to determine the failure, use gloves to provide protection for electricians, insulating shoes, clothing to provide protection from electric shock and insulating tools. Be careful not to touch the live part. Electric shock may result. Only “Qualified service person” is allowed to do this work. |
| Prohibition | Place a “Work in progress” sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out. There is a danger of electric shocks if the circuit breaker is set to ON by mistake. |
| | When checking the electric parts, removing the cover of the electric parts box of Indoor Unit and/or front panel of outdoor unit inevitably to determine the failure, put a sign “Do not enter” around the site before the work. Failure to do this may result in third person getting electric shock. |
| | Before operating the air conditioner after having completed the work, check that the electrical parts box cover of the indoor unit and service panel of the outdoor unit are closed, and set the circuit breaker to the ON position. You may receive an electric shock if the power is turned on without first conducting these checks. |
| Stay on protection | If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the electrical parts box cover of one or more of the indoor units and the service panel of the outdoor unit removed in order to find out exactly where the trouble lies, wear insulated heat-resistant gloves, insulated boots and insulated work overalls, and take care to avoid touching any live parts. You may receive an electric shock if you fail to heed this warning. Only qualified service person (*1) is allowed to do this kind of work. |

(*1) Refer to the “Definition of Qualified Installer or Qualified Service Person”

## ⚠ WARNIG

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| General | Before starting to repair the air conditioner, read carefully through the Service Manual, and repair the air conditioner by following its instructions. |
| | Only qualified service person (*1) is allowed to repair the air conditioner.<br>Repair of the air conditioner by unqualified person may give rise to a fire, electric shocks, injury, water leaks and / or other problems. |
| | Do not use any refrigerant different from the one specified for complement or replacement.<br>Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body. |
| | Only a qualified installer (*1) or qualified service person (*1) is allowed to carry out the electrical work of the air conditioner.<br>Under no circumstances must this work be done by an unqualified individual since failure to carry out the work properly may result in electric shocks and / or electrical leaks. |
| | When the air conditioner is to be transported, installed, maintained, repaired or removed, wear protective gloves and 'safety' work clothing. |
| | To connect the electrical wires, repair the electrical parts or undertake other electrical jobs, wear gloves to provide protection for electricians, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks. |
| | Electrical wiring work shall be conducted according to law and regulation in the community and installation manual. Failure to do so may result in electrocution or short circuit. |
| | Use wiring that meets the specifications in the Installation Manual and the stipulations in the local regulations and laws. Use of wiring which does not meet the specifications may give rise to electric shocks, electrical leakage, smoking and/or a fire. |
| | Only a qualified installer (*1) or qualified service person (*1) is allowed to undertake work at heights using a stand of 50 cm or more or to remove the intake grille of the indoor unit to undertake work. |
| | When working at heights, use a ladder which complies with the ISO 14122 standard, and follow the procedure in the ladder's instructions.<br>Also wear a helmet for use in industry as protective gear to undertake the work. |
| | Before working at heights, put a sign in place so that no-one will approach the work location, before proceeding with the work. Parts and other objects may fall from above, possibly injuring a person below. While carrying out the work, wear a helmet for protection from falling objects. |
| | When executing address setting, test run, or troubleshooting through the checking window on the electric parts box, put on insulated gloves to provide protection from electric shock. Otherwise you may receive an electric shock. |
| | Do not touch the aluminum fin of the outdoor unit.<br>You may injure yourself if you do so. If the fin must be touched for some reason, first put on protective gloves and safety work clothing, and then proceed. |
| | Do not climb onto or place objects on top of the outdoor unit.<br>You may fall or the objects may fall off of the outdoor unit and result in injury. |
| | Use forklift to carry in the air conditioner units and use winch or hoist at installation of them. |
| | When transporting the air conditioner, wear shoes with protective toe caps, protective gloves and other protective clothing. |
| | When transporting the air conditioner, do not take hold of the bands around the packing carton.<br>You may injure yourself if the bands should break. |
| | Be sure that a heavy unit (10 kg or heavier) such as a compressor is carried by two persons. |
| Electric shock hazard | When you access inside of the electric cover to repair electric parts, wait for about five minutes after turning off the breaker. Do not start repairing immediately. Otherwise you may get electric shock by touching terminals of high-voltage capacitors. Natural discharge of the capacitor takes about five minutes. |

(*1) Refer to the "Definition of Qualified Installer or Qualified Service Person"

| | |
|---|---|
| Prohibition | Place a “Work in progress” sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out. There is a danger of electric shocks if the circuit breaker is set to ON by mistake. |
| | When checking the electric parts, removing the cover of the electric parts box of Indoor Unit and/or front panel of Outdoor Unit inevitably to determine the failure, put a sign “Do not enter” around the site before the work. Failure to do this may result in third person getting electric shock. |
| | Before operating the air conditioner after having completed the work, check that the electrical parts box cover of the indoor unit and service panel of the outdoor unit are closed, and set the circuit breaker to the ON position. You may receive an electric shock if the power is turned on without first conducting these checks. |
| Stay on protection | If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the electrical parts box cover of one or more of the indoor units and the service panel of the outdoor unit removed in order to find out exactly where the trouble lies, wear insulated heat-resistant gloves, insulated boots and insulated work overalls, and take care to avoid touching any live parts. You may receive an electric shock if you fail to heed this warning.<br>Only qualified service person (*1) is allowed to do this kind of work. |
| Check earth wires. | Before troubleshooting or repair work, check the earth wire is connected to the earth terminals of the main unit, otherwise an electric shock is caused when a leak occurs. If the earth wire is not correctly connected, contact an electric engineer for rework. |
| | After completing the repair or relocation work, check that the ground wires are connected properly. |
| | Be sure to connect earth wire. (Grounding work) Incomplete grounding causes an electric shock.<br>Do not connect ground wires to gas pipes, water pipes, and lightning rods or ground wires for telephone wires. |
| Prohibition of modification. | Do not modify the products. Do not also disassemble or modify the parts.<br>It may cause a fire, electric shock or injury. |
| Use specified parts. | When any of the electrical parts are to be replaced, ensure that the replacement parts satisfy the specifications given in the Service Manual (or use the parts contained on the parts list in the Service Manual). Use of any parts which do not satisfy the required specifications may give rise to electric shocks, smoking and/or a fire. |
| | Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak. |
| Do not bring a child close to the equipment. | If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the electrical parts box cover of one or more of the indoor units and the service panel of the outdoor unit removed in order to find out exactly where the trouble lies, place Keep out signs around the work site before proceeding. Third-party individuals may enter the work site and receive electric shocks if this warning is not heeded. |
| Insulating measures | Connect the cut-off lead wires with crimp contact, etc., put the closed end side upward and then apply a water-cut method, otherwise a leak or production of fire is caused at the users’ side. |
| | Under no circumstances, the power supply wire or the indoor and outdoor connecting wire must not be connected in the middle (Connection using a solder less terminal etc.)<br>Connection trouble in the places where the wire is connected in the middle may give rise to smoking and/or a fire. |
| No fire | When performing repairs using a gas burner, replace the refrigerant with nitrogen gas because the oil that coats the pipes may otherwise burn.<br>When repairing the refrigerating cycle, take the following measures.<br>1) Be attentive to fire around the cycle.<br>When using a gas stove, etc., be sure to put out fire before work; otherwise the oil mixed with refrigerant gas may catch fire.<br>2) Do not use a welder in the closed room.<br>When using it without ventilation, carbon monoxide poisoning may be caused.<br>3) Do not bring inflammables close to the refrigerant cycle, otherwise fire of the welder may catch the inflammables. |

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| Refrigerant | The refrigerant used by this air conditioner is the R32/R410A.(R32 for some model only). |
| | Check the used refrigerant name and use tools and materials of the parts which match with it.<br>For the products which use R32/R410A refrigerant, the refrigerant name is indicated at a position on the outdoor unit where is easy to see. To prevent miss-charging, the route of the service port is changed from one of the former R22.<br>Be careful for miss-charging since a charging port of R32 is the same diameter as that of R410A. |
| | Do not use any refrigerant different from the one specified for complement or replacement.<br>Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body. |
| | For an air conditioner which uses R32, never use other refrigerant than R32.<br>For an air conditioner which uses other refrigerant (R22, R410A etc.), never use R32.<br>If different types of refrigerant are mixed, abnormal high pressure generates in the refrigerating cycle and an injury due to breakage may be caused.<br>If the different type of refrigerants are mixed in, be sure to recharge the refrigerant |
| | When the air conditioner has been installed or relocated, follow the instructions in the Installation Manual and purge the air completely so that no gases other than the refrigerant will be mixed in the refrigerating cycle. Failure to purge the air completely may cause the air conditioner to malfunction. |
| | Do not charge refrigerant additionally.<br>If charging refrigerant additionally when refrigerant gas leaks, the refrigerant composition in the refrigerating cycle changes resulted in change of air conditioner characteristics or refrigerant over the specified standard amount is charged and an abnormal high pressure is applied to the inside of the refrigerating cycle resulted in cause of breakage or injury. Therefore if the refrigerant gas leaks, recover the refrigerant in the air conditioner, execute vacuuming, and then newly recharge the specified amount of liquid refrigerant. In this time, never charge the refrigerant over the specified amount. |
| | When recharging the refrigerant in the refrigerating cycle, do not mix the refrigerant or air into the specified refrigerant. If air or others is mixed with the refrigerant, abnormal high pressure generates in the refrigerating cycle resulted in cause of injury due to breakage. |
| | After the installation work, confirm that refrigerant gas does not leak. If refrigerant gas leaks into the room and flows near a fire source, such as a cooking range, it may generate noxious gases, causing a fire. |
| | Never recover the refrigerant into the outdoor unit.<br>When the equipment is moved or repaired, be sure to recover the refrigerant with recovering device. The refrigerant cannot be recovered in the outdoor unit; otherwise a serious accident such as breakage or injury is caused. |
| Assembly/ Wiring | After repair work, surely assemble the disassembled parts, and connect and lead the removed wires as before. Perform the work so that the cabinet or panel does not catch the inner wires.<br>If incorrect assembly or incorrect wire connection was done, a disaster such as a leak or fire is caused at user's side. |
| Insulator check | After the work has finished, be sure to use an insulation tester set (500V Megger) to check the resistance is 1MΩ or more between the charge section and the non-charge metal section (Earth position). If the resistance value is low, a disaster such as a leak or electric shock is caused at user's side. |
| Ventilation | When the refrigerant gas leaks during work, execute ventilation.<br>If the refrigerant gas touches to a fire, it may generate noxious gases, causing a fire.<br>A case of leakage of the refrigerant and the closed room full with gas is dangerous because a shortage of oxygen occurs. Be sure to execute ventilation. |
| | If refrigerant gas has leaked during the installation work, ventilate the room immediately.<br>If the leaked refrigerant gas comes in contact with fire, it may generate noxious gases, causing a fire. |

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|  <br>Compulsion | When the refrigerant gas leaks, find up the leaked position and repair it surely.<br>If the leaked position cannot be found up and the repair work is interrupted, pump-down and tighten the service valve, otherwise the refrigerant gas may leak into the room.<br>When gas touches to fire such as fan heater, stove or cocking stove, it may generate noxious gases, causing a fire though the refrigerant gas itself is innocuous.<br>When installing equipment which includes a large amount of charged refrigerant such as a multi air conditioner in a sub-room, it is necessary that the density does not the limit even if the refrigerant leaks. If the refrigerant leaks and exceeds the limit density, an accident of shortage of oxygen is caused. |
| | Tighten the flare nut with a torque wrench in the specified manner.<br>Excessive tighten of the flare nut may cause a crack in the flare nut after a long period, which may result in refrigerant leakage. |
| | Nitrogen gas must be used for the airtight test. |
| | The charge hose must be connected in such a way that it is not slack. |
| | For the installation/moving/reinstallation work, follow to the Installation Manual.<br>If an incorrect installation is done, a trouble of the refrigerating cycle, water leak, electric shock or fire is caused. |
| | Install the outdoor unit properly in a location that is durable enough to support the weight of the outdoor unit. Insufficient durability may cause the outdoor unit to fall, which may result in injury. |
|  <br>Check after repair | Once the repair work has been completed, check for refrigerant leaks, and check the insulation resistance and water drainage. Then perform a trial run to check that the air conditioner is running properly. |
| | After repair work has finished, check there is no trouble. If check is not executed, a fire, electric shock or injury may be caused. For a check, turn off the power breaker. |
| | After repair work (installation of front panel and cabinet) has finished, execute a test run to check there is no generation of smoke or abnormal sound. If check is not executed, a fire or an electric shock is caused. Before test run, install the front panel and cabinet. |
| | Be sure to fix the screws back which have been removed for installation or other purposes. |
|  <br>Do not operate the unit with the valve closed. | Check the following matters before a test run after repairing piping.<br>• Connect the pipes surely and there is no leak of refrigerant.<br>• The valve is opened.<br>Running the compressor under condition that the valve closes causes an abnormal high pressure resulted in damage of the parts of the compressor and etc. and moreover if there is leak of refrigerant at connecting section of pipes, the air is suctioned and causes further abnormal high pressure resulted in burst or injury. |
|  <br>Check after reinstallation | Only a qualified installer (*1) or qualified service person (*1) is allowed to relocate the air conditioner. It is dangerous for the air conditioner to be relocated by an unqualified individual since a fire, electric shocks, injury, water leakage, noise and/or vibration may result. |
| | Check the following items after reinstallation.<br>1) The earth wire is correctly connected.<br>2) The power cord is not caught in the product.<br>3) There is no inclination or unsteadiness and the installation is stable.<br>If check is not executed, a fire, an electric shock or an injury is caused. |
|  <br>Cooling check | When the service panel of the outdoor unit is to be opened in order for the compressor or the area around this part to be repaired immediately after the air conditioner has been shut down, set the circuit breaker to the OFF position, and then wait at least 10 minutes before opening the service panel. If you fail to heed this warning, you will run the risk of burning yourself because the compressor pipes and other parts will be very hot to the touch. In addition, before proceeding with the repair work, wear the kind of insulated heat-resistant gloves designed to protect electricians. |
| | When the service panel of the outdoor unit is to be opened in order for the fan motor, reactor, inverter or the areas around these parts to be repaired immediately after the air conditioner has been shut down, set the circuit breaker to the OFF position, and then wait at least 10 minutes before opening the service panel.<br>If you fail to heed this warning, you will run the risk of burning yourself because the fan motor, reactor, inverter heat sink and other parts will be very hot to the touch.<br>In addition, before proceeding with the repair work, wear the kind of insulated heat-resistant gloves designed to protect electricians. |
|  <br>Cooling | Take care not to get burned by compressor pipes or other parts when checking the cooling cycle while running the unit as they get heated while running. Be sure to put on gloves providing protection for heat. |

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| Installation | Only a qualified installer (*1) or qualified service person (*1) is allowed to install the air conditioner. If the air conditioner is installed by an unqualified individual, a fire, electric shocks, injury, water leakage, noise and/or vibration may result. |
| | Before starting to install the air conditioner, read carefully through the Installation Manual, and follow its instructions to install the air conditioner. |
| | Be sure to use the company-specified products for the separately purchased parts. Use of no specified products may result in fire, electric shock, water leakage or other failure.<br>Have the installation performed by a qualified installer. |
| | Do not supply power from the power terminal block equipped on the outdoor unit to another outdoor unit. Capacity overflow may occur on the terminal block and may result in fire. |
| | Do not install the air conditioner in a location that may be subject to a risk of expire to a combustible gas. If a combustible gas leaks and becomes concentrated around the unit, a fire may occur. |
| | Install the indoor unit at least 2.5 m above the floor level since otherwise the users may injure themselves or receive electric shocks if they poke their fingers or other objects into the indoor unit while the air conditioner is running. |
| | Install a circuit breaker that meets the specifications in the installation manual and the stipulations in the local regulations and laws. |
| | When transporting the air conditioner, use a forklift and when moving the air conditioner by hand, move the unit with 4 people. |
| | Install a circuit breaker that meets the specifications in the installation manual and the stipulations in the local regulations and laws. |
| | Install the circuit breaker where it can be easily accessed by the agent. |
| | If you install the unit in a small room, take appropriate measures to prevent the refrigerant from exceeding the limit concentration even if it leaks. Consult the dealer from whom you purchased the air conditioner when you implement the measures. Accumulation of highly concentrated refrigerant may cause an oxygen deficiency accident. |
| | Do not place any combustion appliance in a place where it is directly exposed to the wind of air conditioner, otherwise it may cause imperfect combustion. |
| Compulsion | When carrying out the pump-down work shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air, etc. to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in reputing, injury, etc. |
| | When removing the welding parts of suction and discharge pipe for the compressor, remove them at the place ventilated well after recovering the refrigerant. Improper recovering may cause the spurt of the refrigerant and the refrigeration oil, causing a injury. |
| Prohibition | Do not vent gases to the atmosphere.<br>Venting gases to the atmosphere is prohibited by the law. |

## ⚠ CAUTION

| | |
|---|---|
| Wearing of gloves | Ensure wearing of gloves when performing any work in order to avoid injury from parts, etc.<br>Failure to wear the proper protective gloves cause a injury due to the parts, etc. |
| Confirm | When performing the welding work, check whether refrigerant leaks or remains.<br>If the leakage refrigerant gas touches a fire source, it may generate noxious gases, causing a fire. |

### Explanations given to user

If you have discovered that the fan grille is damaged, do not approach the outdoor unit but set the circuit breaker to the OFF position, and contact a qualified service person to have the repairs done.
Do not set the circuit breaker to the ON position until the repairs are completed.

### Relocation

- Only a qualified installer (*1) or qualified service person (*1) is allowed to relocate the air conditioner. It is dangerous for the air conditioner to be relocated by an unqualified individual since a fire, electric shocks, injury, water leakage, noise and / or vibration may result.
- When carrying out the reclaim work shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air, etc. to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in reputing, injury, etc.

(*1) Refer to the “Definition of Qualified Installer or Qualified Service Person”

### Precautions for using R32 refrigerant

The basic installation work procedures are the same as conventional refrigerant (R410A, R22) models.
However, Please read through this manual after understanding the contents below;
These safety cautions describe important matters concerning safety to prevent injury to users or other people and damages to property. Please read through this manual after understanding the contents below (meanings of indications), and be sure to follow the description;

### Meanings of symbols displayed on the unit

| | | |
|---|---|---|
|  | **WARNING**<br>(Risk of fire) | This mark is for R32 refrigerant only. Refrigerant type is written on nameplate of outdoor unit.<br>In case that refrigerant type is R32, this unit uses a flammable refrigerant.<br>If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is risk of fire. |
|  | Read the OWNER’S MANUAL carefully before operation. | |
|  | Service personnel are required to carefully read the OWNER’S MANUAL and INSTALLATION MANUAL before operation. | |
|  | Further information is available in the OWNER’S MANUAL, INSTALLATION MANUAL, and the like. | |

## ⚠ WARNING

- Models that use refrigerant R32 and R410A have a different charging port thread diameter to prevent erroneous charging with refrigerant R22 and for safety.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.)
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odor.
- The manufacturer may provide other suitable examples or may provide additional information about the refrigerant odor.

## ⚠ CAUTION

When a flammable refrigerant is used, all appliances shall be charged with refrigerant at the manufacturing location or charged on site as recommended by the manufacturer.
A part of an appliance that is charged on site, which requires brazing or welding in the installation shall not be shipped with a flammable refrigerant charge. Joints made in the installation between parts of the refrigerating system, with at least one part charged, shall be made in accordance with the following.

- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe and/or any uncharged refrigerating system part.
- Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be refabricated.
- Refrigerant tubing shall be protected or enclosed to avoid damage. Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that may be displaced during normal operations shall be protected against mechanical damage.

**General (Installation space / area)**

- The installation of pipe-work shall be kept to a minimum.
- Pipe-work shall be protected from physical damage.
- The compliance with national gas regulations shall be observed.
- The mechanical connections shall be accessible for maintenance purposes.
- In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
- When disposing of the product is used, be based on national regulations with properly processed.
- The servicing shall be performed only as recommended by the manufacturer.
- Where the appliance using flammable refrigerants is installed, Be aware that;
  - The appliance shall be stored in a well-ventilated area where The room size corresponds to The room area as specified for operation.
  - The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).
  - The appliance shall be stored so as to prevent mechanical damage from occurring.
- Equipment piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.
- Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.
- Protection devices, piping and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.
- Provision shall be made for expansion and contraction of long runs of piping.
- Piping in refrigerating systems shall be so designed and installed to minimize the likelihood hydraulic shock damaging the system.
- Solenoid valves shall be correctly positioned in the piping to avoid hydraulic shock.

- Solenoid valves shall not block in liquid refrigerant unless adequate relief is provided to the refrigerant system low pressure side.
- Steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation.
- Flexible pipe elements shall be protected against mechanical damage, excessive stress by torsion, or other forces. They should be checked for mechanical damage annually.
- The indoor equipment and pipes shall be securely mounted and guarded such that accidental rupture of equipment cannot occur from such events as moving furniture or reconstruction activities.
- Where safety shut off valves are specified, the minimum room area may be determined based on the maximum amount of refrigerant that can be leaked as determined in Installation Manual.
- Where safety shut off valves are specified, the location of the valve in the refrigerating system relative to the occupied spaces shall be as described in Installation Manual.
- Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.
- The total refrigerant charge in the system cannot exceed the requirements for minimum floor area of the smallest room that is served. For minimum floor area requirements for indoor units, see the installation and owner's manual of the outdoor unit.
- When connecting to an outdoor unit of R32 refrigerant and using a leak detector, always turn on the power of the indoor unit after installation except during service in order to detect refrigerant leakage and take safety measures.

**Unventilated area**

- The appliance shall be stored so as to prevent mechanical damage from occurring.

**Information on servicing**

**1.Check to the area**

- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the precautions in item 2 to 6 shall be complied with prior to conducting work on the system.

**2.Work procedure**

- Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.
- When connecting to an outdoor unit of R32 refrigerant and using a leak detector, the fan may automatically operate even if the air conditioner is stopped when a refrigerant leak is detected. Be careful not to get injured by the fan.

**3.General work area**

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

**4.Checking for presence of refrigerant**

- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non sparking, adequately sealed or intrinsically safe.

**5.Presence of fire extinguisher**

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

**6.No ignition sources**

- No person carrying out work in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
- All possible ignition sources including cigarette smoking, should be kept sufficiently far away from the site of

installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

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

**8.Checks to the refrigeration equipment**
- Where electrical components are being changed, installer shall be fit for the purpose and to the correct specification.
- At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt consult the manufacturer’s technical department for assistance.
- The following checks shall be applied to installations using flammable refrigerants.
  - The charge size is in accordance with the room size within which the refrigerant containing parts are installed.
  - The ventilation machinery and outlets are operating adequately and are not obstructed.
  - If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
  - Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
  - Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant contain- ing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

**9.Checks to electrical devices**
- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.
- Initial safety checks shall include;
  - That capacitors are discharged to avoid possibility of sparking.
  - That there no live electrical components and wiring are exposed while charging, recovering or purging the system.
  - That there is continuity of earth bonding.

**10. Repairs to sealed components**
- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.
- If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected.
- This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- Replacement parts shall be in accordance with the manufacturer’s specifications.

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

**11. Repair to intrinsically safe components**

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere.
- The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer.
- Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

**12. Cabling**

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
- Check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

**13. Detection of flammable refrigerants**

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.
- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode containing chlorine.
- If a leak is suspected, all naked flames shall be removed/extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

**14. Leak detection methods**

- Electronic leak detectors shall be used to detect flammable refrigerants leak, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- If a leak is suspected, all naked flames shall be removed/extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.
- Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

**15. Removal and evacuation**

- When breaking into the refrigerant circuit to make repairs or for any other purpose, Conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:
  - remove refrigerant;
  - purge the circuit with inert gas;
  - evacuate;
  - purge again with inert gas;
  - open the circuit by cutting or brazing;
- The refrigerant charge shall be recovered into the correct recovery cylinders.

- The system shall be “Flushed” with OFN to render the unit safe.
- This process may need to be repeated several times.
- Compressed air or oxygen shall not be used for purging refrigerant systems.
- Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.
- This process shall be repeated until no refrigerant is within the system.
- When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- This operation is absolutely vital if brazing operations on the pipework are to take place.
- Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation available.

**16. Charging procedures**

- In addition to conventional charging procedures, the following requirements shall be followed.
  - Ensure That contamination of different refrigerants does not occur when using charging equipment.
  - Hoses or lines shall be as short as possible to minimize The amount of refrigerant contained in them.
  - Cylinders shall be kept upright.
  - Ensure That The refrigeration system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete (if not already).
  - Extreme care shall be taken not to overfill The refrigeration system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
- The system shall be leak tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.

**17. Decommissioning**

- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details.
- It is recommended good practice that all refrigerants are recovered safely.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required to reuse of reclaimed refrigerant.
- It is essential that electrical power is available before the task is commenced.
  a) Become familiar with the equipment and its operation.
  b) Isolate system electrically.
  c) Before attempting the procedure ensure that:
  - Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
  - All personal protective equipment is available and being used correctly;
  - The recovery process is supervised at All times by a competent person;
  - Recovery equipment and Cylinders conform to The appropriate standards.
  d) Pump down refrigerant system, if possible.
  e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
  f) Make sure that cylinder is situated on the scales before recovery takes place.
  g) Start the recovery machine and operate in accordance with manufacturer’s instructions.
  h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
  i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
  j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
  k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

**18. Labelling**

- Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant.
- The label shall be dated and signed.
- Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

**19. Recovery**

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge are available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropiated refrigerants.
- In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
- Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.

# Declaration of Conformity

| | |
|---|---|
| Manufacturer: | Toshiba Carrier Air Conditioning (China) Co., Ltd.<br>No.181, Weiken Street, Baiyang Block, Hangzhou Qiantang New Area,<br>Zhejiang Province, China |
| TCF holder: | TOSHIBA CARRIER EUROPE S.A.S<br>Route de Thil<br>01120 Montluel FRANCE |

Hereby declares that the machinery described below:

| | |
|---|---|
| Generic Denomination: | Air Conditioner |
| Model / type: | MMD-UP0031SPHY-E, MMD-UP0051SPHY-E, MMD-UP0071SPHY-E,<br>MMD-UP0091SPHY-E, MMD-UP0121SPHY-E, MMD-UP0151SPHY-E,<br>MMD-UP0181SPHY-E, MMD-UP0241SPHY-E, MMD-UP0271SPHY-E |
| Commercial name: | Super Modular Multi System Air Conditioner<br>Super Heat Recovery Multi System Air Conditioner<br>Mini-Super Modular Multi System Air Conditioner (MiNi-SMMS series) |

Complies with the provisions of the “Machinery Directive 2006 / 42 / EC” and the regulations transposing into national law

| | |
|---|---|
| Name: | Shi Zhangxi |
| Position: | Senior Manager<br>Quality Assurance & Service Engineering Dept. |
| Date: | 01 April, 2022 |
| Place Issued: | China |

**NOTE)** This declaration becomes invalid if technical or operational modifications are introduced without the manufacturer’s consent.

# Declaration of Conformity

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| Manufacturer: | Toshiba Carrier Air Conditioning (China) Co., Ltd.<br>No.181, Weiken Street, Baiyang Block, Hangzhou Qiantang New Area,<br>Zhejiang Province, China |
| TCF holder: | TOSHIBA CARRIER UK LTD.<br>Porsham Close Belliver Industrial Estate Roborough Plymouth Devon<br>PL6 7DB United Kingdom |

Hereby declares that the machinery described below:

| | |
|---|---|
| Generic Denomination: | Air Conditioner |
| Model / type: | MMD-UP0031SPHY-E, MMD-UP0051SPHY-E, MMD-UP0071SPHY-E,<br>MMD-UP0091SPHY-E, MMD-UP0121SPHY-E, MMD-UP0151SPHY-E,<br>MMD-UP0181SPHY-E, MMD-UP0241SPHY-E, MMD-UP0271SPHY-E |
| Commercial name: | Super Modular Multi System Air Conditioner<br>Super Heat Recovery Multi System Air Conditioner<br>Mini-Super Modular Multi System Air Conditioner (MiNi-SMMS series) |

Complies with the provisions of the Supply of Machinery (Safety) Regulations 2008

| | |
|---|---|
| Name: | Shi Zhangxi |
| Position: | Senior Manager<br>Quality Assurance & Service Engineering Dept. |
| Date: | 01 April, 2022 |
| Place Issued: | China |

**NOTE)** This declaration becomes invalid if technical or operational modifications are introduced without the manufacturer's consent.

# 1. SPECIFICATIONS

## R32 or R410A

| MODEL NAME | MMD-UP***1SPHY-E/TR | | | 003 | 005 | 007 | 009 | 012 | 015 | 018 | 024 | 027 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling/Heating Capacity (*1) | | | kW | 0.9/1.0 | 1.7/1.9 | 2.2/2.5 | 2.8/3.2 | 3.6/4.0 | 4.5/5.0 | 5.6/6.3 | 7.1/8.0 | 8.0/9.0 |
| Electrical characteristics (50/60Hz) | Power supply | | | 1 phase 220-240V ~ 50H 208-230V ~ 60Hz | | | | | | | | |
| | Factory setting | Running current | A | 0.34 / 0.36 | 0.36 / 0.37 | 0.40 / 0.42 | 0.42 / 0.44 | 0.44 / 0.46 | 0.47 / 0.49 | 0.53 / 0.56 | 0.69 / 0.73 | 0.74 / 0.78 |
| | | Power consumption | kW | 0.018 / 0.018 | 0.020 / 0.020 | 0.026 / 0.026 | 0.029 / 0.029 | 0.031 / 0.031 | 0.035 / 0.035 | 0.044 / 0.044 | 0.067 / 0.067 | 0.072 / 0.072 |
| | | Starting current | A | 0.60 / 0.63 | 0.62 / 0.65 | 0.69 / 0.73 | 0.73 / 0.77 | 0.77 / 0.81 | 0.82 / 0.86 | 0.92 / 0.97 | 1.21 / 1.27 | 1.30 / 1.36 |
| | Standard ESP (*2) | Running current | A | 0.37 / 0.39 | 0.40 / 0.41 | 0.46 / 0.48 | 0.48 / 0.50 | 0.52 / 0.54 | 0.54 / 0.57 | 0.60 / 0.63 | 0.83 / 0.87 | 0.88 / 0.93 |
| | | Power consumption | kW | 0.024 / 0.024 | 0.026 / 0.026 | 0.035 / 0.035 | 0.038 / 0.038 | 0.043 / 0.043 | 0.046 / 0.046 | 0.054 / 0.054 | 0.086 / 0.086 | 0.092 / 0.092 |
| | | Starting current | A | 0.65 / 0.69 | 0.69 / 0.73 | 0.81 / 0.85 | 0.84 / 0.88 | 0.90 / 0.95 | 0.95 / 0.99 | 1.04 / 1.10 | 1.45 / 1.53 | 1.54 / 1.62 |
| Appearance | | | | Zinc hot dipping steel plate | | | | | | | | |
| Dimension | Height | | mm | 210 | | | | | | | | |
| | Width | | mm | 700 | | | | | 900 | | 1100 | |
| | Depth | | mm | 450 | | | | | | | | |
| Net Weight | | | kg | 15 | | | | | 18 | | 21 | |
| Total Weight | | | kg | 19 | | | | | 23 | | 26 | |
| Heat exchanger | | | | Finned tube | | | | | | | | |
| Soundproof / Heat-insulating meterial | | | | Polyethlene foam + Polyurethane foam | | | | | | | | |
| Fan unit | Fan | | | Centrifugal fan (Sirocco fan) | | | | | | | | |
| | Motor output | | W | 50 | | | | | 94 | | | |
| Airflow | Standard | | $m^3/h$ | 410 | 450 | 540 | 570 | 600 | 690 | 780 | 1080 | 1140 |
| | Mid.+ | | $m^3/h$ | 390 | 430 | 500 | 530 | 550 | 660 | 760 | 1010 | 1060 |
| | Mid | | $m^3/h$ | 370 | 410 | 460 | 500 | 520 | 640 | 730 | 950 | 980 |
| | Low+ | | $m^3/h$ | 360 | 390 | 430 | 460 | 470 | 590 | 690 | 900 | 940 |
| | Low | | $m^3/h$ | 350 | 380 | 400 | 420 | 440 | 550 | 650 | 860 | 910 |
| External Static Pressure (*Factory setting) | | | Pa | 10*- 20 - 30 - 40 -50 (5steps) | | | | | | | | |
| Controller | | | | Remote controller | | | | | | | | |
| Air filter | | | | Standard filter (Long life filter) | | | | | | | | |

(Continued)

| MODEL NAME | MMD-UP***1SPHY-E/TR | | | 003 | 005 | 007 | 009 | 012 | 015 | 018 | 024 | 027 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Connecting pipe | Gas side | | mm | Dia.9.5 | | | | | Dia.12.7 | | Dia.15.9 | |
| | Liquid side | | mm | Dia.6.4 | | | | | | | Dia.9.5 | |
| Drain port (Nominal dia. mm) | | | | 25 (Polyvinyl chlorode tube) | | | | | | | | |
| Sound pressure level <Factory setting> | Under air inlet | High | dBA | 37 | 39 | 41 | 42 | 44 | 42 | 44 | 47 | 48 |
| | | Mid.+ | dBA | 36 | 38 | 40 | 41 | 42 | 40 | 43 | 46 | 47 |
| | | Mid. | dBA | 35 | 37 | 39 | 40 | 40 | 39 | 42 | 44 | 45 |
| | | Low+ | dBA | 34 | 35 | 38 | 38 | 39 | 38 | 41 | 43 | 44 |
| | | Low | dBA | 32 | 34 | 35 | 36 | 37 | 37 | 39 | 41 | 43 |
| | Back air inlet | High | dBA | 29 | 30 | 31 | 32 | 33 | 33 | 34 | 36 | 37 |
| | | Mid.+ | dBA | 28 | 29 | 30 | 31 | 32 | 31 | 33 | 35 | 36 |
| | | Mid. | dBA | 27 | 28 | 29 | 29 | 30 | 30 | 32 | 33 | 34 |
| | | Low+ | dBA | 26 | 27 | 28 | 28 | 29 | 29 | 31 | 32 | 33 |
| | | Low | dBA | 25 | 26 | 26 | 26 | 27 | 28 | 29 | 30 | 32 |
| Sound power level <Factory setting> | | High | dBA | 46 | 49 | 52 | 54 | 54 | 52 | 56 | 60 | 61 |
| | | Mid.+ | dBA | 45 | 47 | 51 | 52 | 51 | 51 | 55 | 58 | 59 |
| | | Mid. | dBA | 44 | 46 | 49 | 50 | 50 | 50 | 54 | 56 | 58 |
| | | Low+ | dBA | 43 | 45 | 47 | 48 | 48 | 49 | 52 | 55 | 56 |
| | | Low | dBA | 42 | 44 | 45 | 46 | 46 | 46 | 51 | 53 | 55 |
| Sound pressure level <Standard external static pressure(*2)> | Under air inlet | High | dBA | 39 | 41 | 43 | 44 | 46 | 45 | 46 | 50 | 51 |
| | | Mid.+ | dBA | 38 | 40 | 42 | 43 | 44 | 43 | 45 | 49 | 50 |
| | | Mid. | dBA | 37 | 39 | 41 | 42 | 42 | 42 | 44 | 47 | 48 |
| | | Low+ | dBA | 36 | 37 | 40 | 40 | 41 | 40 | 43 | 46 | 47 |
| | | Low | dBA | 34 | 36 | 37 | 38 | 39 | 39 | 41 | 44 | 46 |
| | Back air inlet | High | dBA | 31 | 32 | 33 | 34 | 35 | 35 | 36 | 39 | 40 |
| | | Mid.+ | dBA | 30 | 31 | 32 | 33 | 34 | 34 | 35 | 38 | 39 |
| | | Mid. | dBA | 29 | 30 | 31 | 31 | 32 | 32 | 34 | 36 | 37 |
| | | Low+ | dBA | 28 | 29 | 30 | 30 | 31 | 31 | 33 | 35 | 36 |
| | | Low | dBA | 27 | 28 | 28 | 28 | 29 | 30 | 31 | 33 | 35 |
| Sound power level <Standard external static pressure(*2)> | | High | dBA | 51 | 53 | 54 | 56 | 57 | 55 | 57 | 64 | 65 |
| | | Mid.+ | dBA | 50 | 52 | 52 | 54 | 56 | 54 | 56 | 63 | 64 |
| | | Mid. | dBA | 49 | 51 | 49 | 52 | 53 | 53 | 55 | 60 | 61 |
| | | Low+ | dBA | 48 | 49 | 48 | 50 | 51 | 52 | 54 | 59 | 60 |
| | | Low | dBA | 47 | 48 | 46 | 49 | 49 | 49 | 52 | 58 | 59 |

Note

(*1) Rated conditions Cooling: Indoor 27 degC Dry Bulb / 19 degC Wet Bulb, Outdoor 35 degC Dry Bulb.
Heating: Indoor 20 degC Dry Bulb, Outdoor 7 degC Dry Bulb / 6 degC Wet Bulb.
Based on equivalent piping length of 7.5 m and piping height difference of 0 m.

(*2) Standard external static pressure UP003~018:30Pa, UP024~027:40Pa.

# 2. REFRIGERANT R410A AND R32

## Refrigerant R410A

This air conditioner adopts the new refrigerant HFC (R410A) which does not damage the ozone layer.

The working pressure of the new refrigerant R410A is 1.6 times higher than conventional refrigerant (R22). The refrigerating oil is also changed in accordance with change of refrigerant, so be careful that water, dust, and existing refrigerant or refrigerating oil are not entered in the refrigerant cycle of the air conditioner using the new refrigerant during installation work or servicing time.

The next section describes the precautions for air conditioner using the new refrigerant. Conforming to contents of the next section together with the general cautions included in this manual, perform the correct and safe work.

## 3-1.Safety During Installation/Servicing

As R410A's pressure is about 1.6 times higher than that of R22, improper installation/servicing may cause a serious trouble. By using tools and materials exclusive for R410A, it is necessary to carry out installation/servicing safely while taking the following precautions into consideration.

1. Never use refrigerant other than R410A in an airc onditioner which is designed to operate with R410A.
   If other refrigerant than R410A is mixed, pressure in the refrigeration cycle becomes abnormally high, and it may cause personal injury, etc. by a rupture.
2. Confirm the used refrigerant name, and use tools and materials exclusive for the refrigerant R410A.
   The refrigerant name R410A is indicated on the visible place of the outdoor unit of the air conditioner using R410A as refrigerant. To prevent mischarging, the diameter of the service port differs from that of R22.
3. If a refrigeration gas leakage occurs during installation/servicing, be sure to ventilate fully.
   If the refrigerant gas comes into contact with fire, a poisonous gas may occur.
4. When installing or removing an air conditioner, do not allow air or moisture to remain in the refrigeration cycle. Otherwise, pressure in the refrigeration cycle may become abnormally high so that a rupture or personal injury may be caused.
5. After completion of installation work, check to make sure that there is no refrigeration gas leakage.
   If the refrigerant gas leaks into the room, coming into contact with fire in the fan-driven heater, space heater, etc., a poisonous gas may occur.
6. When an air conditioning system charged with a large volume of refrigerant is installed in a small room, it is necessary to exercise care so that, even when refrigerant leaks, its concentration does not exceed the marginal level.
   If the refrigerant gas leakage occurs and its concentration exceeds the marginal level, an oxygen starvation accident may result.
7. Be sure to carry out installation or removal according to the installation manual.
   Improper installation may cause refrigeration trouble, water leakage, electric shock, fire, etc.
8. Unauthorized modifications to the air conditioner may be dangerous. If a breakdown occurs please call a qualified air conditioner technician or electrician.
   Improper repair's may result in water leakage, electric shock and fire, etc.

## 3-2. Refrigerant Piping Installation

### 3-2-1.Piping Materials and Joints Used

For the refrigerant piping installation, copper pipes and joints are mainly used. Copper pipes and joints suitable for the refrigerant must be chosen and installed. Furthermore, it is necessary to use clean copper pipes and joints whose interior surfaces are less affected by contaminants.

**1. Copper Pipes**

It is necessary to use seamless copper pipes which are made of either copper or copper alloy and it is desirable that the amount of residual oil is less than 40 mg/10 m. Do not use copper pipes having a collapsed, deformed or discolored portion (especially on the interior surface).

Otherwise, the expansion valve or capillary tube may become blocked with contaminants.

As an air conditioner using R410A incurs pressure higher than when using R22, it is necessary to choose adequate materials.

Thicknesses of copper pipes used with R410A are as shown in Table 3-2-1. Never use copper pipes thinner than 0.8 mm even when it is available on the market.

## Refrigerant R32

This air conditioner adopts a new HFC type refrigerant (R32) which does not deplete the ozone layer.

**1. Safety Caution Concerned to Refrigerant R32**

Be sure that water, dust, the former refrigerant or the former refrigerating oil is not mixed into the refrigerating cycle of the air conditioner with refrigerant R32 during installation work or service work.

If an incorrect work or incorrect service is performed, there is a possibility to cause a serious accident.

Use the tools and materials exclusive to R32 to purpose a safe work.

## 2. Safety and Cautions on Installation/Service

### <Safety items>

When gas concentration and ignition energy are happened at the same time, R32 has a slight possibility of burning. Although it will not ignite under normal work environment conditions, be aware that the flame spreads if ignition should occur.

It is necessary to carry out installation/servicing safely while taking the following precautions into consideration.

1) Never use refrigerant other than specified refrigerant (R32) in an air conditioner which is designed to operate with the specified refrigerant (R32).

   If other refrigerant than R32 is used, it may cause personal injury, etc. by a malfunction, a fire, a rupture.

2) Since R32 is heavier than air, it tends to accumulate on the bottom (near the floor).

   Ventilate properly for the working environment to prevent its combustion.

   Especially in a basement or a closed room where is the high risk of the accumulation,

   ventilate the room with a local exhaust ventilation.

   If refrigerant leakage is confirmed in the room or the place where the ventilation is insufficient, do not work until the proper ventilation is performed and the work environment is improved.

3) When performing brazing work, be sure to check for leakage refrigerant or residual refrigerant.

   If the leakage refrigerant comes into contact with fire, a poisonous gas may occur or it may cause a fire. Keep adequate ventilation during the work.

4) When refrigerant gas leaks during work, execute ventilation. If the leakage refrigerant comes into contact with a fire, a poisonous gas may occur or it may cause a fire.

5) In places where installing / repairing air-conditioning equipment, etc., keep the source of ignition such as gas combustion equipment, petroleum combustion equipment, electric heater etc. away. Do not smoke in the place.

6) When installing or removing an air conditioner, do not mix air in the refrigerant cycle.

   If air or others is mixed with the refrigerant, abnormal high pressure generates in the refrigerating cycle, causing injury due to the breakage.

7) After installation work complete, confirm that refrigerant gas is not leaking on the flare connection part or others. If leaked refrigerant comes to contact with a fire, toxic gas may occur, causing a fire.

8) Perform the installation work and re-installation according to the installation manual.

   Pay attention especially to the area of application. Improper installation may cause refrigeration trouble or water leakage, electric shock and fire etc.

9) Unauthorized modifications to the air conditioner may be dangerous. If a breakdown occurs please call a qualified air conditioner technician or electrician.

   Improper repair may result in water leakage, electric shock and fire, etc.

10) Carry out the airtight test with nitrogen at a specified pressure. Do not use oxygen or acetylene gas absolutely as it may cause an explosion.

11) Always carry a refrigerant leakage detection sensor during the work and work while

    checking that no refrigerant leaks around working environment.

12) If the leakage refrigerant comes into contact with fire, it may cause a fire.

    Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

### <Caution items>

1) The opposite side dimension of the air-conditioner's flared nut using R32 and the shape of the charge port are the same as those of R410A.

2) Be careful not to charge refrigerant by mistake. Should the different type of refrigerant mix in, be sure to recharge the refrigerant

3) Do not mix the other refrigerant or refrigerating oil with the refrigerant.

4) Since the pressure of R32 is high 1.6 times of that of the former refrigerant (R22), use tools and parts with high pressure withstand specification similar to R410A.

5) In the installation time, use clean pipe materials and work with great attention so that water and others do not mix in because pipes are affected by impurities such as water, oxide film, oil, etc. Use the clean pipes. Be sure to braze while flowing nitrogen gas in the pipe. (Never use gas other than nitrogen gas.)

6) For the earth protection, use a vacuum pump for air purge.

7) R32 refrigerant is Single-component refrigerant that does not change its composition.

   Although it is possible to charge the refrigerant with either liquid or gas, charge it with liquid.

   (If using gas for charging, composition of the refrigerant changes and then characteristics of the air conditioner change.)

## 3. Pipe Materials

For the refrigerant pipes, copper pipe and joints are mainly used.

It is necessary to select the most appropriate pipes to conform to the standard.

Use clean material in which impurities adhere inside of pipe or joint to a minimum.

**1) Copper pipe**

**<Piping>**

The pipe thickness, flare finishing size, flare nut and others differ according to a refrigerant type.

When using a long copper pipe for R32, it is recommended to select “Copper or copper-base pipe without seam” and one with bonded oil amount 40mg/10m or less.

Also do not use crushed, deformed, discolored (especially inside) pipes.

(Impurities cause clogging of expansion valves and capillary tubes.)

**<Flare nut>**

Use the flare nuts which are attached to the air conditioner unit.

Be sure to select the pipes with copper thickness in the table below since the pressure of an air conditioner using R32 is higher than that of R22.

| Nominal diameter | Outer diameter (mm) | Thickness (mm) R410A or R32 |
|---|---|---|
| 1/2 | 6.4 | 0.80 |
| 3/8 | 9.5 | 0.80 |
| 1/2 | 12.7 | 0.80 |
| 5/8 | 15.9 | 1.00 |

Make sure not to use a thin copper pipe such as 0.7 mm copper thichness in the market.

**2) Joint**

The flare joint and socket joint are used for joints of the copper pipe.

The joints are rarely used for installation of the air conditioner.

However clear impurities when using them.

## 4. Tools

Tools exclusive for R32/R410A (The following tools for R32/R410A are required.)

○: R32/R410A tools available

△: Partly unavailable, ×: R32/R410A tools unavailable

| No | Installation/service tools | | Use | Applicability to R32/ R410A air conditioner or not | Applicability to R22 air conditioner or not |
|---|---|---|---|---|---|
| | Tools / Equipment | specification | | | |
| 1 | Flare tool | Clutch type | Pipe flaring | ○ | ○ |
| 2 | Copper pipe gauge for adjusting projection margin | — | Flaring by conventional flare tool | ○ | — |
| 3 | Torque wrench | — | Tightening of flare nut | ○ | × |
| 4 | Gauge manifold | Port size 1/2"-20UNF (5/16" Flare) | Evacuating, refrigerant charge, run check, etc. | ○ Note 2 | × |
| 5 | Charge hose | High-voltage | | ○ | × |
| 6 | Vacuum pump | — | Vacuum drying | ○ Note 3 1/2"-20UNF(5/16" Flare) | △ Connection diameter 1/4" |
| 7 | Vacuum pump adapter | — | Vacuum drying | ○ Note 4 1/2"-20UNF(5/16" Flare) | △ Connection diameter 1/4" |
| 8 | Electronic balance for refrigerant charging | For 10 kg or 20 kg cylinder | Refrigerant charge | ○ | ○ |
| 9 | Leakage detector | — | Gas leakage check | ○ Note 5 | ○ Note 5 |
| 10 | Refrigerant cylinder | — | Refrigerant charge | × Note 6 | × |
| 11 | Refrigerant recovery cylinder | Exclusive for R32 | Refrigerant recovery container | × Note 7 | × |
| 12 | Refrigerant recovery device | — | Refrigerant recovery device | ○ Note 8 | △ Connection diameter 1/4" |

**Note 1** When flaring is carried out for R32/R410A using the conventional flare tools, adjustment of projection margin is necessary. For this adjustment, a copper pipe gauge, etc. are necessary.

**Note 2** When saturation temperature is described, the gauge manifold differs for R410A and R32.
If saturation temperature reading is required, special tools exclusive for R32 are required.

**Note 3** Since R32 has a slight possibility of burning, be sure to use the tools corresponding to R32.

**Note 4** Like R410, a Vacuum pump adapter needs installing to prevent a Vacuum pump oil (mineral oil) from flowing backward into the Charge hose. Mixing of the Vacuum pump oil into R32 refrigerant may cause a trouble such as generation of sludge, clogging of capillary, etc.

**Note 5** Be sure to use those tools after confirming they correspond to each refrigerant.

**Note 6** For a refrigerant cylinder exclusive for R32, the paint color (or label color) of the cylinder is set to the specified color (light blue) together with the indication of the refrigerant name.

**Note 7** Although the container specification is the same as R410A, use a recovering container exclusive for R32 to avoid mixing with other refrigerants.

**Note 8** Be careful for miss-charging of the refrigerant during work. Miss-charging of the refrigerant type may cause not only damage of the equipments but also a fire etc.

**General tools**

In addition to the above exclusive tools, the following equipments are necessary as the general tools.

1. Pipe cutter
2. Reamer
3. Pipe bender
4. Level vial
5. Screwdriver (+, –)
6. Spanner or Monkey wrench
7. Hole core drill
8. Tape measure
9. Metal saw

Also prepare the following equipments for other installation method and run check.

1. Clamp meter
2. Thermometer
3. Insulation resistance tester (Megger)
4. Electroscope

## Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge are available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants.
- In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using recovery machine check that it is satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
- Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.

## Decommissioning

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

a) Become familiar with the equipment and its operation.
b) Isolate system electrically.
c) Before attempting the procedure ensure that:
- mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- all personal protective equipment is available and being used correctly;
- the recovery process is supervised at all times by a competent person;
- recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.
e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from the various parts of the system.
f) Make sure that cylinder is situated on the scales before recovery takes place.
g) Start the recovery machine and operate in accordance with manufacturers instructions.
h) Do not overfill cylinders (No more than 80% volume liquid change).
i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process complete, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be changed into another refrigerant system unless it has been cleaned and checked.

### Labelling

- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.
- The label shall be dated and signed.
- Ensure that are labels on the equipment stating the equipment contains flammable refrigerant.

**Table 3-2-1 Thicknesses of annealed copper pipes**

| | | Thickness (mm) | |
|---|---|---|---|
| **Nominal diameter** | **Outer diameter (mm)** | **R410A or R32** | **R22** |
| 1/4 | 6.35 | 0.80 | 0.80 |
| 3/8 | 9.52 | 0.80 | 0.80 |
| 1/2 | 12.70 | 0.80 | 0.80 |
| 5/8 | 15.88 | 1.00 | 1.00 |

**5. Joints**

For copper pipes, flare joints or socket joints are used. Prior to use, be sure to remove all contaminants.

a) Flare Joints

Flare joints used to connect the copper pipes cannot be used for pipings whose outer diameter exceeds 20 mm. In such a case, socket joints can be used.

Sizes of flare pipe ends, flare joint ends and flare nuts are as shown in Tables 3-2-3 to 3-2-6 below.

b) Socket Joints

Socket joints are such that they are brazed for connections, and used mainly for thick pipings whose diameter is larger than 20 mm.

Thicknesses of socket joints are as shown in Table 3-2-2.

**Table 3-2-2 Minimum thicknesses of socket joints**

| Nominal diameter | Reference outer diameter of copper pipe jointed (mm) | Minimum joint thickness (mm) |
|---|---|---|
| 1/4 | 6.35 | 0.50 |
| 3/8 | 9.52 | 0.60 |
| 1/2 | 12.70 | 0.70 |
| 5/8 | 15.88 | 0.80 |

**(Note 1)** When flaring is carried out for R32/R410A using the conventional flare tools, adjustment of projection margin is necessary. For this adjustment, a copper pipe gauge, etc. are necessary.

## 3-2-2. Processing of Piping Materials

When performing the refrigerant piping installation, care should be taken to ensure that water or dust does not enter the pipe interior, that no other oil than lubricating oils used in the installed air-water heat pump is used, and that refrigerant does not leak. When using lubricating oils in the piping processing, use such lubricating oils whose water content has been removed. When stored, be sure to seal the container with an airtight cap or any other cover.

**1. Flare processing procedures and precautions**

a) Cutting the Pipe

By means of a pipe cutter, slowly cut the pipe so that it is not deformed.

b) Removing Burrs and Chips

If the flared section has chips or burrs, refrigerant leakage may occur.

Carefully remove all burrs and clean the cut surface before installation.

c) Insertion of Flare Nut

d) Flare Processing

Make certain that a clamp bar and copper pipe have been cleaned.

By means of the clamp bar, perform the flare processing correctly.

Use either a flare tool for R410A/R32 or conventional flare tool.

Flare processing dimensions differ according to the type of flare tool. When using a conventional flare tool, be sure to secure “dimension A” by using a gauge for size adjustment.

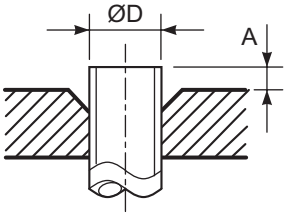



**Fig. 3-2-1 Flare processing dimensions**

**Table 3-2-3 Dimensions related to flare processing for R410A or R32**

| Nominal diameter | Outer diameter (mm) | Thickness (mm) | A (mm) | | |
|---|---|---|---|---|---|
| | | | Flare tool clutch type | Conventional flare tool | |
| | | | | Clutch type | Wing nut type |
| 1/4 | 6.35 | 0.8 | 0 to 0.5 | 1.0 to 1.5 | 1.5 to 2.0 |
| 3/8 | 9.52 | 0.8 | 0 to 0.5 | 1.0 to 1.5 | 1.5 to 2.0 |
| 1/2 | 12.70 | 0.8 | 0 to 0.5 | 1.0 to 1.5 | 2.0 to 2.5 |
| 5/8 | 15.88 | 1.0 | 0 to 0.5 | 1.0 to 1.5 | 2.0 to 2.5 |
| 3/4 | 19.05 | 1.2 | 0 to 0.5 | 1.0 to 1.5 | 2.0 to 2.5 |

**Table 3-2-4 Dimensions related to flare processing for R22**

| Nominal diameter | Outer diameter (mm) | Thickness (mm) | A (mm) | | |
|---|---|---|---|---|---|
| | | | Flare tool for R22 clutch type | Conventional flare tool | |
| | | | | Clutch type | Wing nut type |
| 1/4 | 6.35 | 0.8 | 0 to 0.5 | 0.5 to 1.0 | 1.0 to 1.5 |
| 3/8 | 9.52 | 0.8 | 0 to 0.5 | 0.5 to 1.0 | 1.0 to 1.5 |
| 1/2 | 12.70 | 0.8 | 0 to 0.5 | 0.5 to 1.0 | 1.5 to 2.0 |
| 5/8 | 15.88 | 1.0 | 0 to 0.5 | 0.5 to 1.0 | 1.5 to 2.0 |
| 3/4 | 19.05 | 1.2 | 0 to 0.5 | - | - |

**Table 3-2-5 Flare and flare nut dimensions for R410A or R32**

| Nominal diameter | Outer diameter (mm) | Thickness (mm) | Dimension (mm) | | | | Flare nut width (mm) |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | |
| 1/4 | 6.35 | 0.8 | 9.1 | 9.2 | 6.5 | 13 | 17 |
| 3/8 | 9.52 | 0.8 | 13.2 | 13.5 | 9.7 | 20 | 22 |
| 1/2 | 12.70 | 0.8 | 16.0 | 16.6 | 12.9 | 23 | 26 |
| 5/8 | 15.88 | 1.0 | 19.0 | 19.7 | 16.0 | 25 | 29 |
| 3/4 | 19.05 | 1.2 | 24.0 | - | 19.2 | 28 | 36 |

**Table 3-2-6 Flare and flare nut dimensions for R22**

| Nominal diameter | Outer diameter (mm) | Thickness (mm) | Dimension (mm) | | | | Flare nut width (mm) |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | |
| 1/4 | 6.35 | 0.8 | 9.0 | 9.2 | 6.5 | 13 | 17 |
| 3/8 | 9.52 | 0.8 | 13.0 | 13.5 | 9.7 | 20 | 22 |
| 1/2 | 12.70 | 0.8 | 16.0 | 16.2 | 12.9 | 20 | 24 |
| 5/8 | 15.88 | 1.0 | 19.0 | 19.7 | 16.0 | 23 | 27 |
| 3/4 | 19.05 | 1.0 | 23.3 | 24.0 | 19.2 | 34 | 36 |

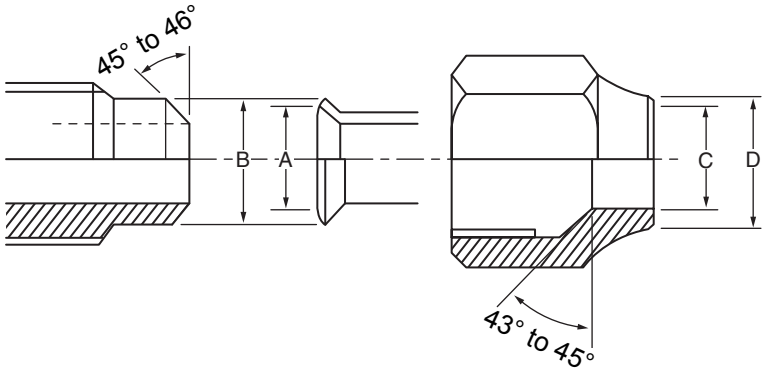



**Fig. 3-2-2 Relations between flare nut and flare seal surface**

**2. Flare Connecting Procedures and Precautions**

a) Make sure that the flare and union portions do not have any scar or dust, etc.
b) Correctly align the processed flare surface with the union axis.
c) Tighten the flare with designated torque by means of a torque wrench. The tightening torque for R410A or R32 is the same as that for conventional R22. Incidentally, when the torque is weak, the gas leakage may occur. When it is strong, the flare nut may crack and may be made non-removable. When choosing the tightening torque, comply with values designated by manufacturers. Table 3-2-7 shows reference values.

**NOTE :**

When applying oil to the flare surface, be sure to use oil designated by the manufacturer.
If any other oil is used, the lubricating oils may deteriorate and cause the compressor to burn out.

**Table 3-2-7 Tightening torque of flare for R410A or R32 [Reference values]**

| Nominal diameter | Outer diameter (mm) | Tightening torque N•m (kgf•cm) | Tightening torque of torque wrenches available on the market N•m (kgf•cm) |
|---|---|---|---|
| 1/4 | 6.35 | 14 to 18 (140 to 180) | 16 (160), 18 (180) |
| 3/8 | 9.52 | 33 to 42 (330 to 420) | 42 (420) |
| 1/2 | 12.70 | 50 to 62 (500 to 620) | 55 (550) |
| 5/8 | 15.88 | 63 to 77 (630 to 770) | 65 (650) |
| 3/4 | 19.05 | 100 to 120 (10.0 to 12.0) | - |

## 3-3. Recharging of Refrigerant

When it is necessary to recharge refrigerant, charge the specified amount of new refrigerant according to the following steps.

Recover the refrigerant, and check no refrigerant remains in the equipment.

↓

Connect the charge hose to packed valve service port at the outdoor unit's gas side.

↓

Connect the charge hose to the vacuum pump adapter.

↓

Open fully both packed valves at liquid and gas sides.

↓

Place the handle of the gauge manifold Low in the fully opened position, and turn on the vacuum pump's power switch. Then, evacuating the refrigerant in the cycle.

↓

When the compound gauge's pointer has indicated –0.1 Mpa (–76 cmHg), place the handle Low in the fully closed position, and turn off the vacuum pump's power switch.

↓

Keep the status as it is for 1 to 2 minutes, and ensure that the compound gauge's pointer does not return.

↓

Set the refrigerant cylinder to the electronic balance, connect the connecting hose to the cylinder and the connecting port of the electronic balance, and charge **liquid refrigerant**.

(For refrigerant charging, see the figure below.)

1. Never charge refrigerant exceeding the specified amount.
2. If the specified amount of refrigerant cannot be charged, charge refrigerant **bit by bit** in COOL mode.
3. Do not carry out additional charging.
   When additional charging is carried out if refrigerant leaks, the refrigerant composition changes in the refrigeration cycle, that is characteristics of the air conditioner changes, refrigerant exceeding the specified amount is charged, and working pressure in the refrigeration cycle becomes abnormally high pressure, and may cause a rupture or personal injury.

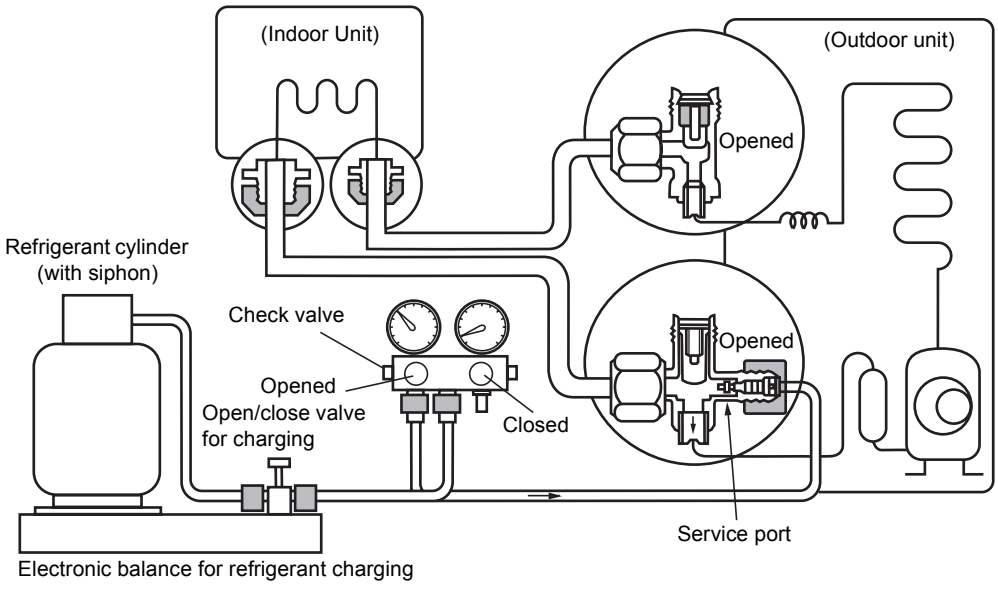



**Fig. 3-3-1 Configuration of refrigerant charging**

1. Be sure to make setting so that **liquid** can be charged.
2. When using a cylinder equipped with a siphon, liquid can be charged without turning it upside down.

R410A Model

It is necessary for charging refrigerant under condition of liquid because R410A is mixed type of refrigerant.

Accordingly, when charging refrigerant from the refrigerant cylinder to the equipment, charge it turning the cylinder upside down if cylinder is not equipped with siphon.

R32 Model

R32 refrigerant is a Single-component refrigerant that does not change its composition.

Although it is possible to charge the refrigerant with either liquid or gas, charge it with liquid.

(If using gas for charging, composition of the refrigerant changes and then characteristics of the air conditioner change.)

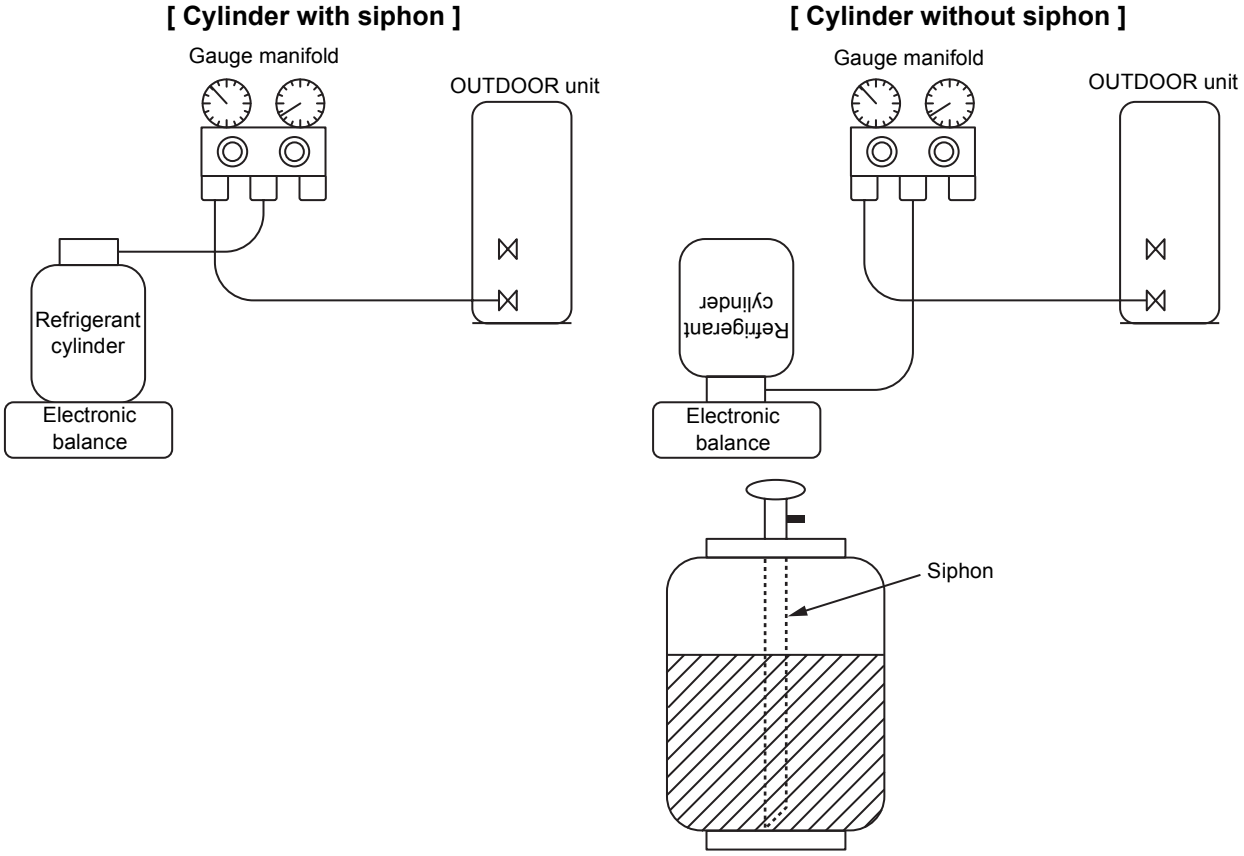



**Fig. 3-3-2**

## 3-4. Brazing of Pipes

### 3-4-1. Materials for Brazing

**1. Silver brazing filler**

Silver brazing filler is an alloy mainly composed of silver and copper. It is used to join iron, copper or copper alloy, and is relatively expensive though it excels in solderability.

**2. Phosphor bronze brazing filler**

Phosphor bronze brazing filler is generally used to join copper or copper alloy.

**3. Low temperature brazing filler**

Low temperature brazing filler is generally called solder, and is an alloy of tin and lead. Since it is weak in adhesive strength, do not use it for refrigerant pipes.

1. Phosphor bronze brazing filler tends to react with sulfur and produce a fragile compound water solution, which may cause a gas leakage. Therefore, use any other type of brazing filler at a hot spring resort, etc., and coat the surface with a paint.
2. When performing brazing again at time of servicing, use the same type of brazing filler.

### 3-4-2. Flux

**1. Reason why flux is necessary**

- By removing the oxide film and any foreign matter on the metal surface, it assists the flow of brazing filler.
- In the brazing process, it prevents the metal surface from being oxidized.

- By reducing the brazing filler's surface tension, the brazing filler adheres better to the treated metal.

**2. Characteristics required for flux**

- Activated temperature of flux coincides with the brazing temperature.
- Due to a wide effective temperature range, flux is hard to carbonize.
- It is easy to remove slag after brazing.
- The corrosive action to the treated metal and brazing filler is minimum.
- It excels in coating performance and is harmless to the human body.

As the flux works in a complicated manner as described above, it is necessary to select an adequate type of flux according to the type and shape of treated metal, type of brazing filler and brazing method, etc.

**3. Types of flux**

- **Noncorrosive flux**

  Generally, it is a compound of borax and boric acid.

  It is effective in case where the brazing temperature is higher than 800°C.

- **Activated flux**

  Most of fluxes generally used for silver brazing are this type.

  It features an increased oxide film removing capability due to the addition of compounds such as potassium fluoride, potassium chloride and sodium fluoride to the borax-boric acid compound.

**4. Piping materials for brazing and used brazing filler/flux**

| Piping material | Used brazing filler | Used flux |
|---|---|---|
| Copper - Copper | Phosphor copper | Do not use |
| Copper - Iron | Silver | Paste flux |
| Iron - Iron | Silver | Vapor flux |

1. Do not enter flux into the refrigeration cycle.
2. When chlorine contained in the flux remains within the pipe, the lubricating oil deteriorates. Therefore, use a flux which does not contain chlorine.
3. When adding water to the flux, use water which does not contain chlorine (e.g. distilled water or ion-exchange water).
4. Remove the flux after brazing.

### 3-4-3. Brazing

As brazing work requires sophisticated techniques, experiences based upon a theoretical knowledge, it must be performed by a person qualified.

In order to prevent the oxide film from occurring in the pipe interior during brazing, it is effective to proceed with brazing while letting dry Nitrogen gas (N2) flow.

**Never use gas other than Nitrogen gas.**

**1. Brazing method to prevent oxidation**

1) Attach a reducing valve and a flow-meter to the Nitrogen gas cylinder.
2) Use a copper pipe to direct the piping material, and attach a flow-meter to the cylinder.
3) Apply a seal onto the clearance between the piping material and inserted copper pipe for Nitrogen in order to prevent backflow of the Nitrogen gas.
4) When the Nitrogen gas is flowing, be sure to keep the piping end open.
5) Adjust the flow rate of Nitrogen gas so that it is lower than 0.05 $m^3$/Hr or 0.02 MPa (0.2kgf/$cm^2$) by means of the reducing valve.
6) After performing the steps above, keep the Nitrogen gas flowing until the pipe cools down to a certain extent (temperature at which pipes are touchable with hands).
7) Remove the flux completely after brazing.

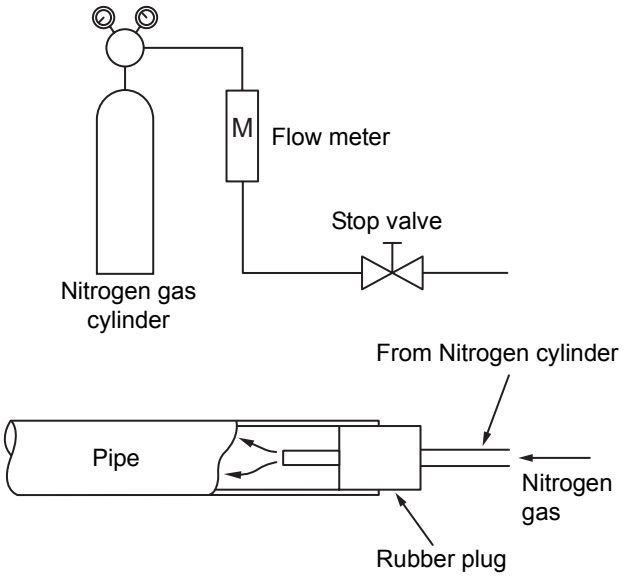
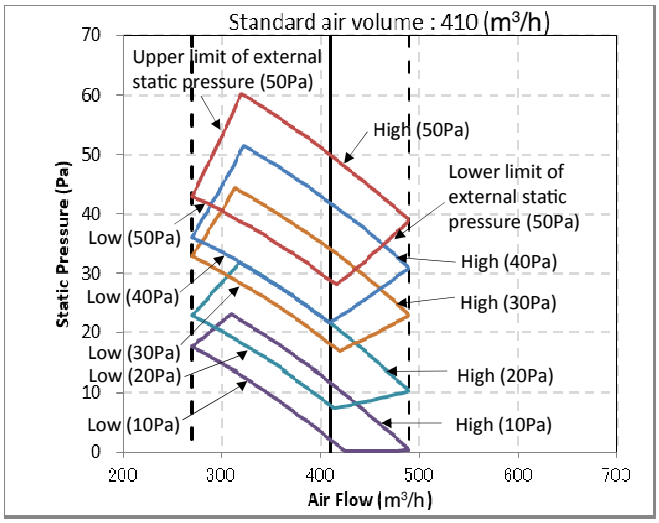


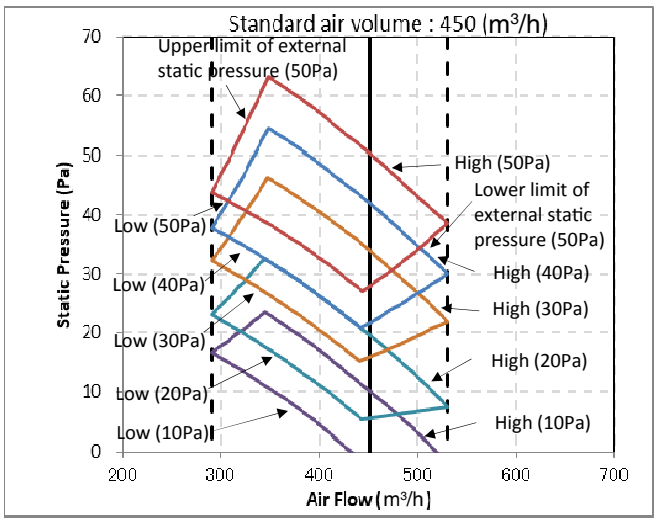

**Fig. 3-4-1 Prevention of oxidation during brazing**

# 3. FAN CHARACTERISTICS

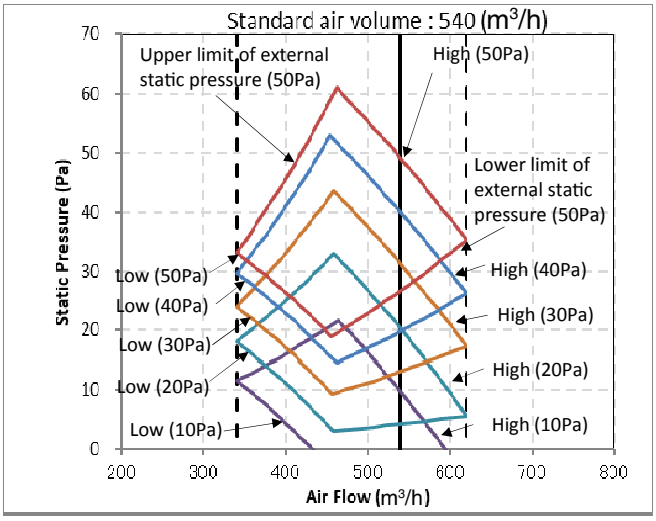
### 003 type



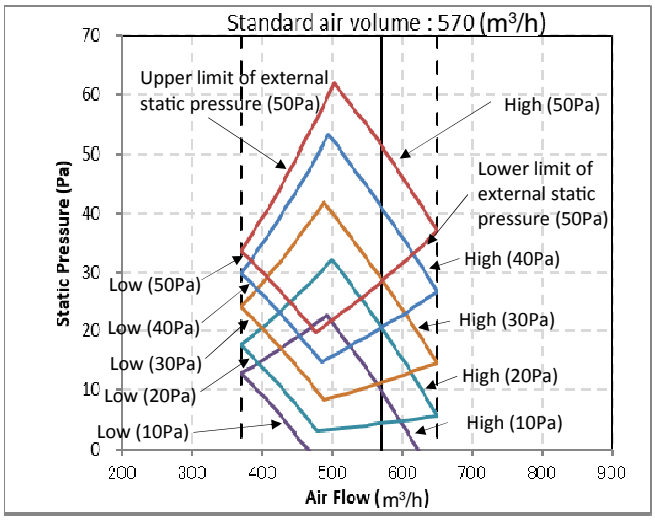

### 005 type



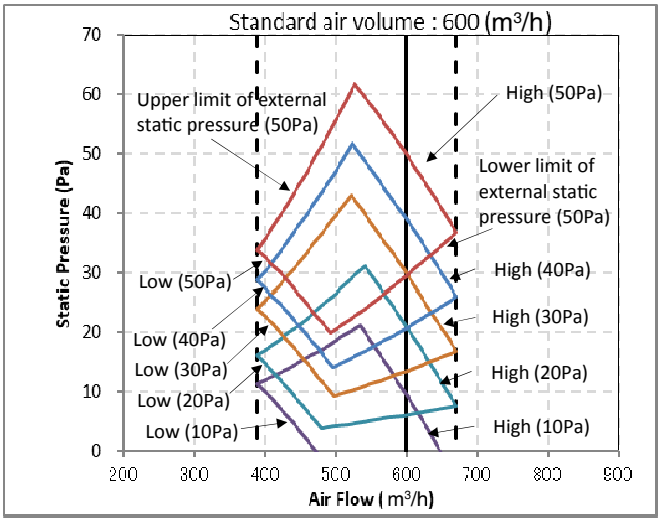

### 007 type



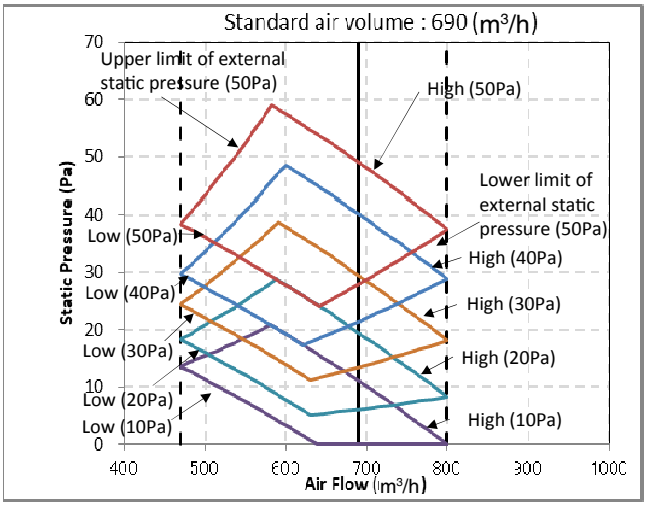

### 009 type



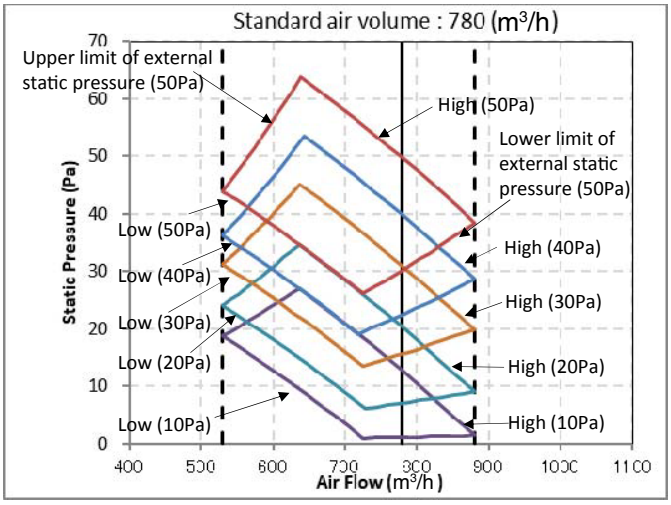

### 012 type



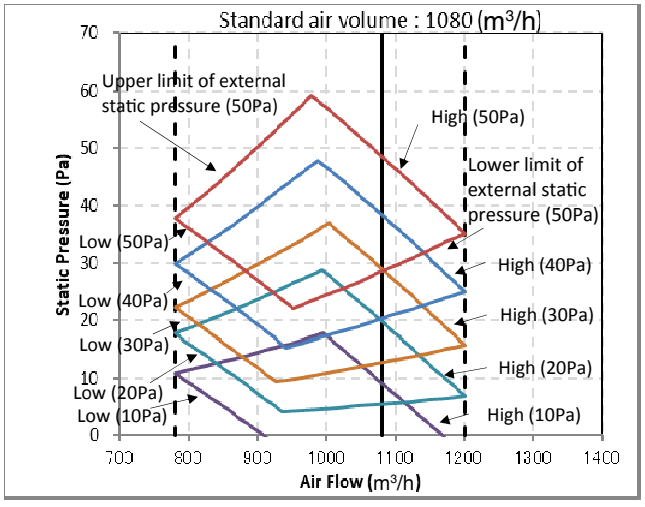
**015 type**



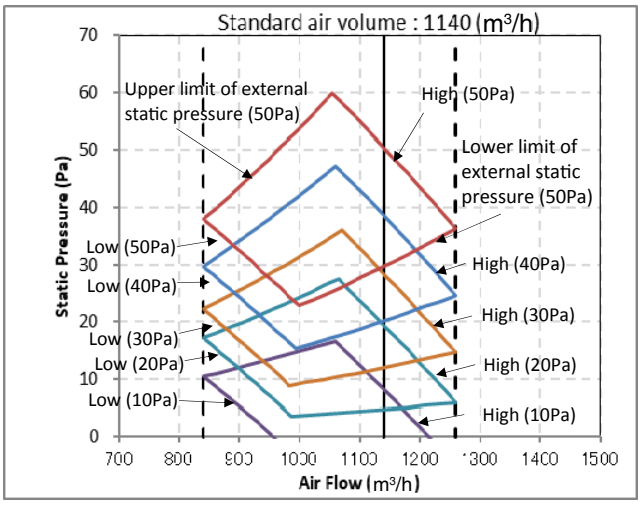

**018 type**




**024 type**

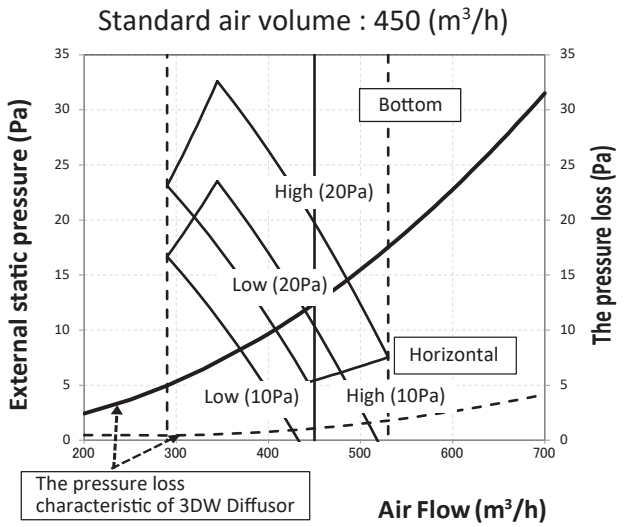



**027 type**

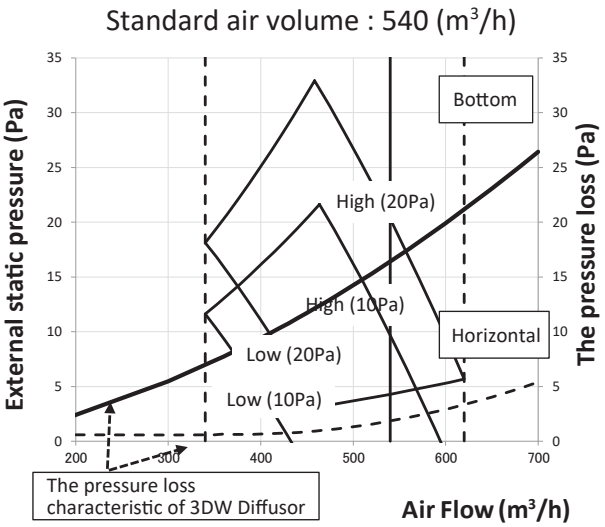


**The pressure loss characteristic of 3DW Diffusor**
**MMD-UP***1SPHY*-E/TR series**

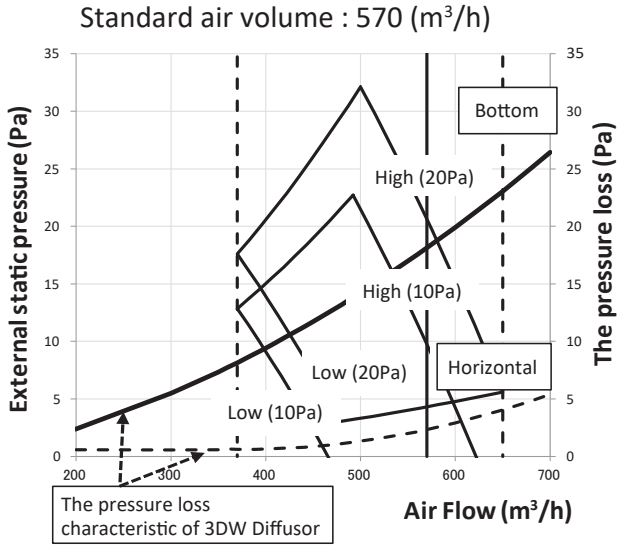
## 005 Type



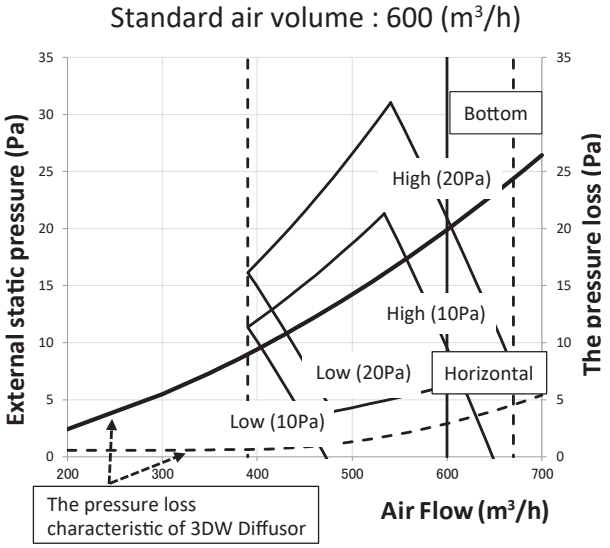

## 007 Type



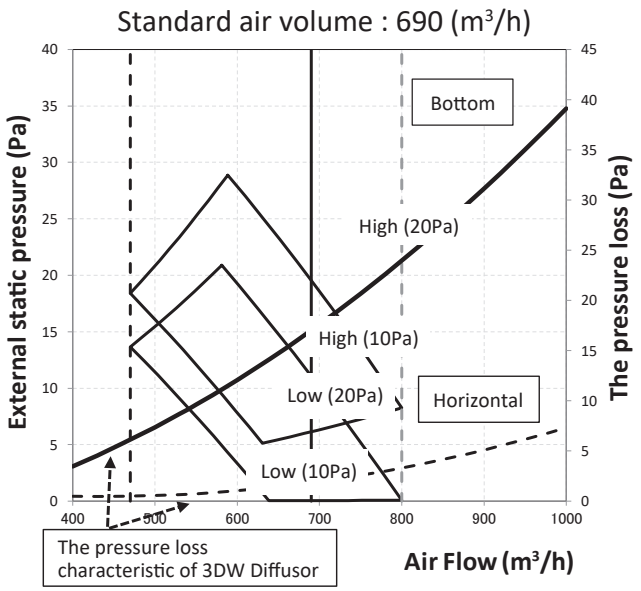

## 009 Type



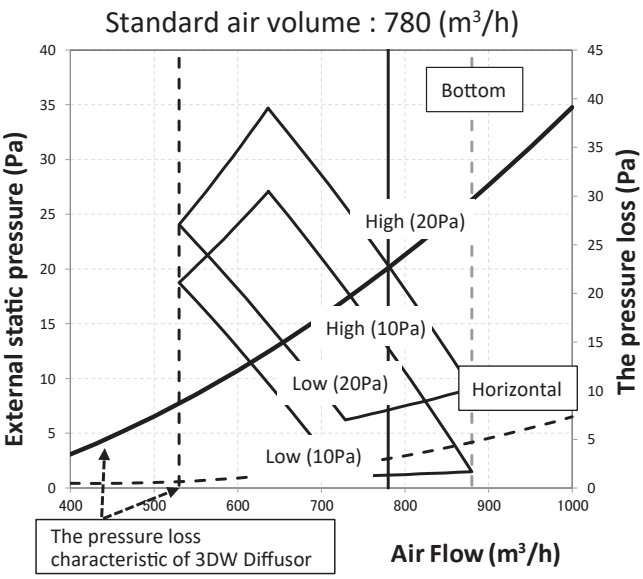

## 012 Type



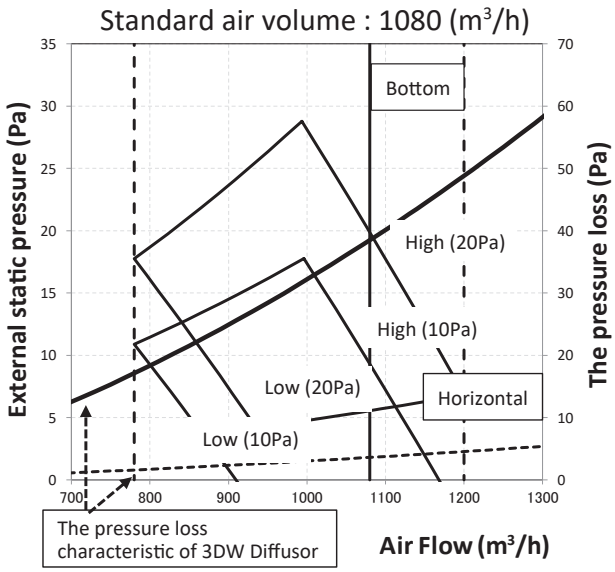
## 015 Type



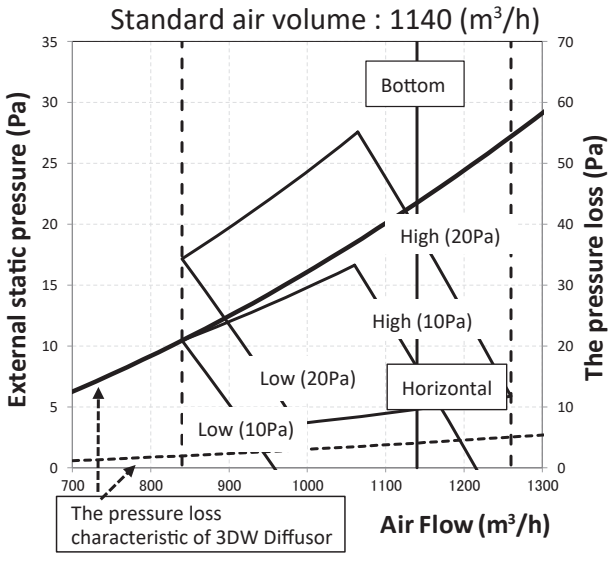

## 018 Type




## 024 Type

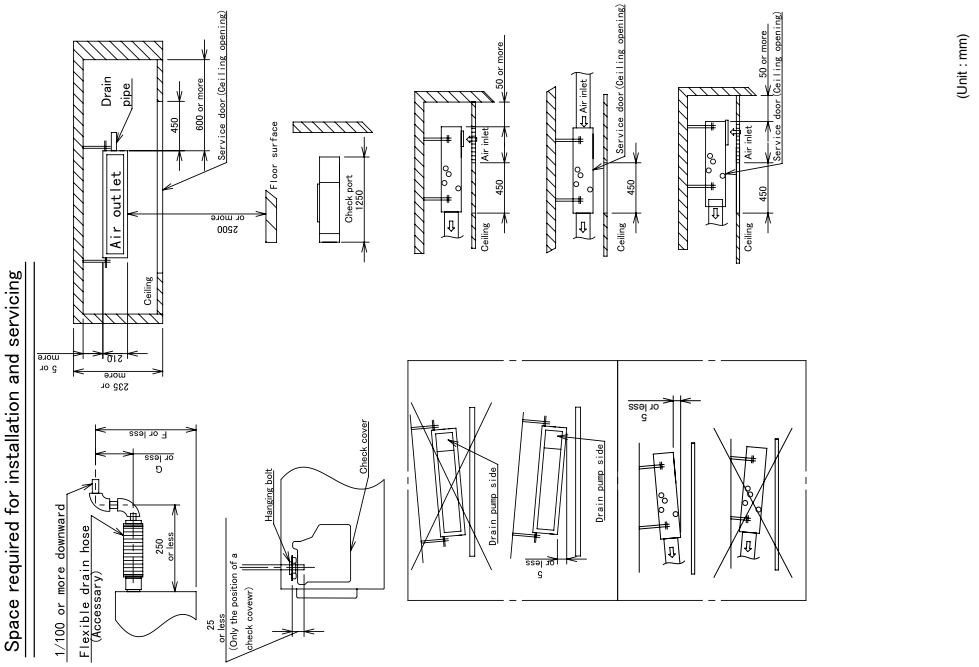


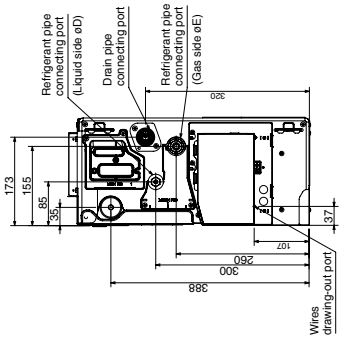

## 027 Type



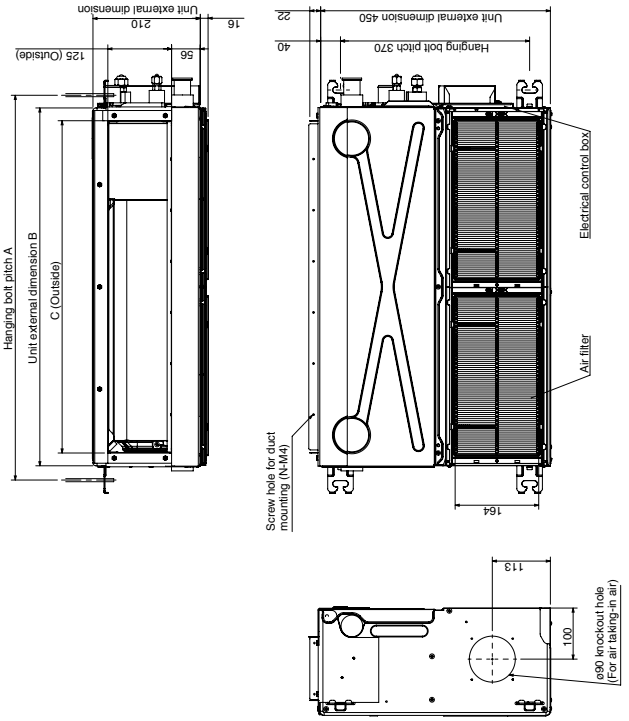
# 4. CONSTRUCTION VIEWS (EXTERNAL VIEWS)

(Unit : mm)

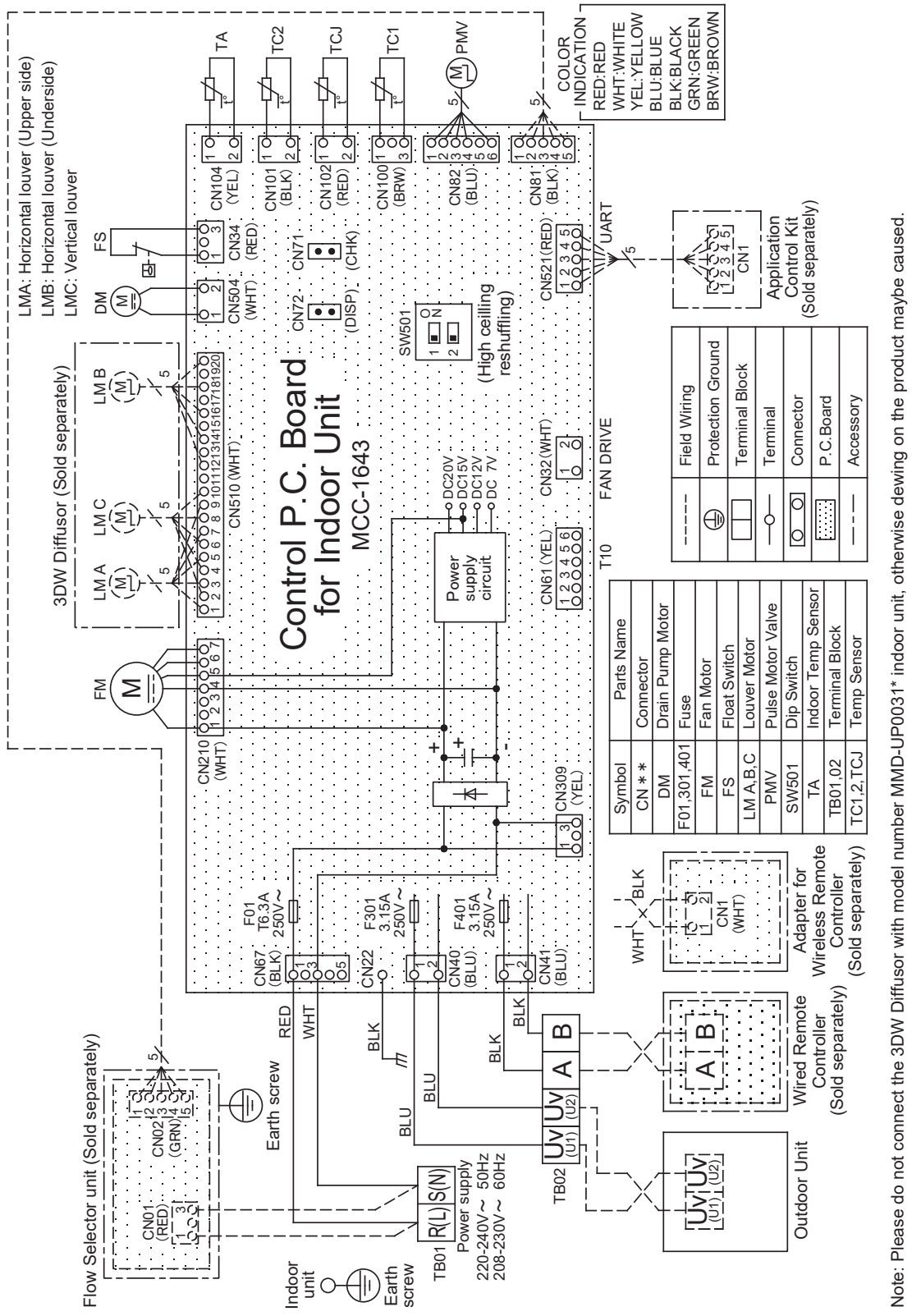



| Model type | A | B | C | D | E |
|---|---|---|---|---|---|
| 003-012 | 770 | 700 | 650 | 9.5 | 6.4 |
| 015-018 | 970 | 900 | 850 | 12.7 | 6.4 |
| 024-027 | 1170 | 1100 | 1050 | 15.9 | 9.5 |



# 5. WIRING DIAGRAMS



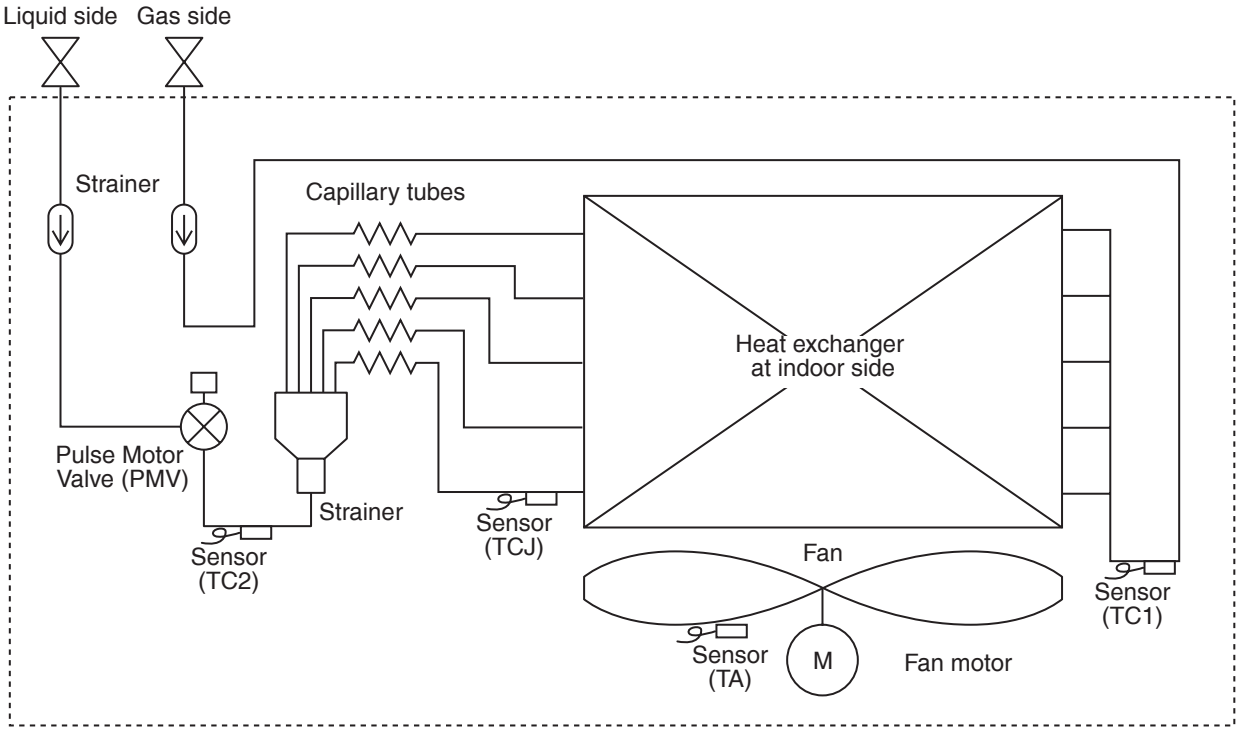

Note: Please do not connect the 3DW Diffusor with model number MMD-UP0031* indoor unit, otherwise dewing on the product maybe caused.

# 6. PARTS RATING

| Model MMD-UP***1SPHY* | 003 | 005 | 007 | 009 | 012 | 015 | 018 | 024 | 027 |
|---|---|---|---|---|---|---|---|---|---|
| Fan motor | ICF-340WD50-1 | | | | | ICF-340WD94-3 | | | |
| Drain pump | MDP-1401 | | | | | | | | |
| Float switch | FS-0218-904 | | | | | | | | |
| Pulse motor valve | PAM-B25YGTF-1 | | | | | PAM-B40YGTF-1 | | | |
| P.C. board | MCC-1643 | | | | | | | | |
| TA sensor | Lead wire length : 328mm Vinyl tube | | | | | | | | |
| TC1 sensor | Dia.4 size lead wire length : 1200mm Vinyl tube (Blue) | | | | | | | | |
| TC2 sensor | Dia.6 size lead wire length : 1000mm Vinyl tube (Black) | | | | | | | | |
| TCJ sensor | Dia.6 size lead wire length : 1000mm Vinyl tube (Red) | | | | | | | | |

# 7. REFRIGERATION CYCLE DIAGRAM

Indoor unit

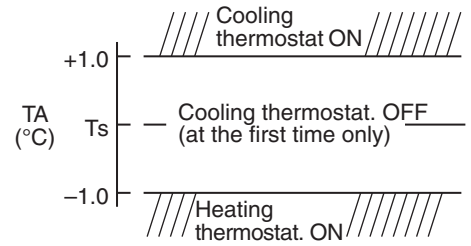



Explanation of functional parts in indoor unit

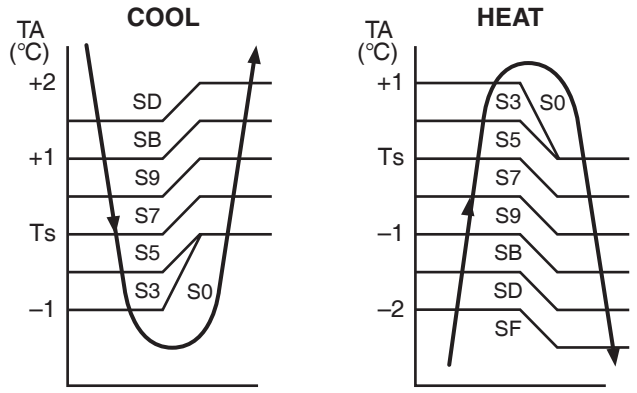
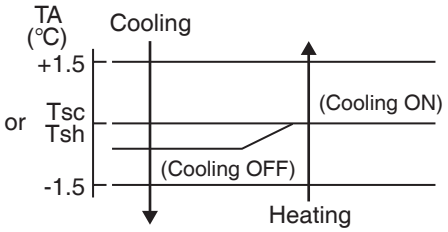
| Functional part name | | Functional outline |
|---|---|---|
| Pulse Motor Valve | PMV | (Connector CN82 (6P): Blue)<br>1) Controls superheat in cooling operation<br>2) Controls subcool in heating operation<br>3) Recovers refrigerant oil in cooling operation<br>4) Recovers refrigerant oil in heating operation |
| Temp. sensor | 1. TA | (Connector CN104 (2P): Yellow)<br>1) Detects indoor suction temperature |
| | 2. TC1 | (Connector CN100 (3P): Brown)<br>1) Controls PMV superheat in cooling operation |
| | 3. TC2 | (Connector CN101 (2P): Black)<br>1) Controls PMV subcool in heating operation |
| | 4. TCJ | (Connector CN102 (2P): Red)<br>1) Controls PMV superheat in cooling operation |

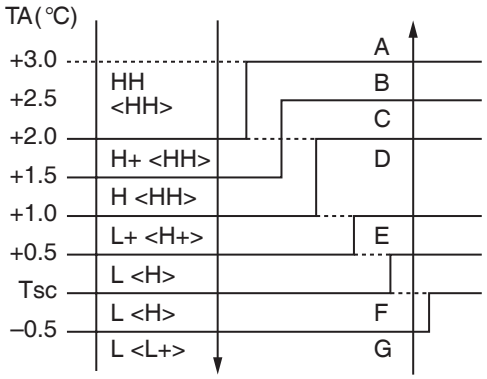
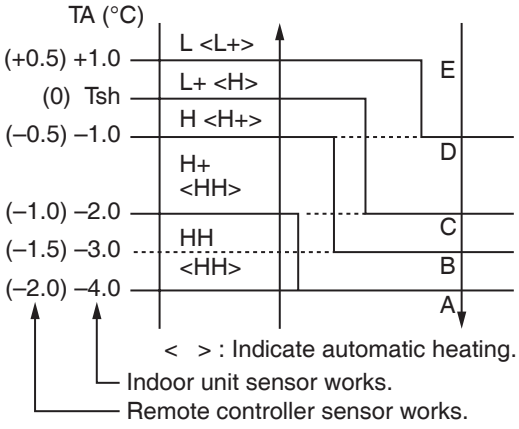
# 8. CONTROL OUTLINE

## 8-1. Control Specifications

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>1</td><td>When power supply is reset</td><td>1) Distinction of outdoor unit<br>When the power supply is reset, the outdoors are distinguished and the control is selected according to the distinguished result.<br>2) Setting of indoor fan speed and existence of air direction adjustment<br>Based on EEPROM data, select setting of the indoor fan speed and the existence of air direction adjustment.<br>3) If resetting the power supply during occurrence of a trouble, the check code is once cleared. After ON/OFF button of the remote controller was pushed and the operation was resumed, if the abnormal status continues, the check code is again displayed on the remote controller.</td><td></td></tr>
<tr><td>2</td><td>Operation mode selection</td><td>1) Based on the operation mode selecting command from the remote controller, the operation mode is selected.
<table>
<tr><th>Remote controller command</th><th>Control outline</th></tr>
<tr><td>STOP</td><td>Operation stops.</td></tr>
<tr><td>FAN</td><td>Fan operation</td></tr>
<tr><td>COOL</td><td>Cooling operation</td></tr>
<tr><td>DRY</td><td>Dry operation</td></tr>
<tr><td>HEAT</td><td>Heating operation</td></tr>
<tr><td>AUTO</td><td>• TA and Ts automatically select COOL/HEAT operation mode for operation.<br>• The operation is performed as shown in the following figure according to TA value at the first time only.<br>(In the range of Ts – 1 < TA < Ts + 1, Cooling thermostat OFF (Fan) / Setup air volume operation continues.)<br> 

* Automatic mode is able to be selected only in heat recovery system outdoor unit type.<br>While a wireless remote controller is used, the mode is notified by “Pi Pi” (two times) receiving sound and the alternate flashing of [TIMER ] and [READY ]. To clear the alternate flashing, change the mode on the wireless remote controller.</td></tr>
</table>
</td><td>TA: Room temp.<br>Ts: Setup temp.</td></tr>
<tr><td>3</td><td>Room temp. control</td><td>1) Adjustment range: Remote controller setup temperature (°C)
<table>
<tr><th></th><th>COOL/DRY</th><th>HEAT</th><th>AUTO*</th></tr>
<tr><td>Wired type</td><td>18 to 29</td><td>18 to 29</td><td>18 to 29</td></tr>
<tr><td>Wireless type</td><td>17 to 30</td><td>17 to 30</td><td>17 to 27</td></tr>
</table>
</td><td>* Heat recovery system only</td></tr>
</table>

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>3</td><td>Room temp. control (Continued)</td><td>2) By setting the CODE No. 06, the setup temperature in heating operation can be compensated.<br><table><tr><th>Setup data</th><td>0</td><td>2</td><td>4</td><td>6</td></tr><tr><th>Setup temp. compensation</th><td>+0°C</td><td>+2°C</td><td>+4°C</td><td>+6°C</td></tr></table>The initial factory default value<br><table><tr><th>Setup data</th><td>2</td></tr></table></td><td>Suction air temperature shift of heating operation<br><br>Except while sensor of the remote controller is controlled</td></tr>
<tr><td>4</td><td>Automatic capacity control</td><td>1) Based on the difference between TA and Ts, the operation capacity is determined by the outdoor unit.<br> 
</td><td>Ts: Setup temp.<br>TA: Room temp.</td></tr>
<tr><td>5</td><td>Automatic cooling/heating control<br>* Heat recovery system outdoor unit type only</td><td>1) The judgment of selecting COOL/HEAT is carried out as shown below. When TA exceeds Tsh by 1.5 for 10 minutes, the operation is thermostat OFF then, the heating operation (thermostat OFF) is changed to cooling operation.<br> 
<br>* Description in the parentheses shows an example of cooling ON/OFF.<br>When TA is less than Tsh by 1.5 for 10 minutes, the operation is thermostat OFF then, the cooling operation (thermostat OFF) is changed to heating operation.<br>2) For the automatic capacity control after judgment of cooling/heating, refer to item No.4.<br>3) For temperature compensation of room temp. control in automatic heating, refer to item No.3.</td><td>Tsc: Setup temp. in cooling operation<br>Tsh: Setup temp. in heating operation + temp. compensation of room temp. control</td></tr>
</table>

| No. | Item | Outline of specifications | Remarks |
|---|---|---|---|
| 6 | Fan speed selection | 1) Operation with (HH), (H+), (H), (L+), (L) or [AUTO] mode is carried out by the command from the remote controller.<br>2) When the fan speed mode [AUTO] is selected, the fan speed varies by the difference between TA and Ts.<br>**<COOL>**<br>  <br><br>< > : Indicate automatic cooling.<br>• Controlling operation in case when thermo of remote controller works is same as a case when thermo of the body works.<br>• If the fan speed has been changed once, it is not changed for 3 minutes. However when the air volume is changed, the fan speed changes.<br>• When cooling operation has started, select a downward slope for the air speed, that is, the high position.<br>• If the temperature is at the difference boundary, the fan speed is not changed.<br>**<HEAT>**<br>  <br><br>< > : Indicate automatic heating.<br>Indoor unit sensor works.<br>Remote controller sensor works.<br>( ) : indicate the value when the remote controller sensor is worked.<br>• If the fan speed has been changed once, it is not changed for 1 minute. However when the air speed changed, the fan speed changes.<br>• When heating operation has started, select an upward slope for the fan speed, that is, the high position.<br>• If the temperature is at the difference boundary, the fan speed is not changed.<br>• If TC2 ≥ 60˚C, the fan speed increases by 1 step. | HH > H+ > H > L+ > L > UL<br>Depends on fan speed mode selection at the remote controller. (H+) and (L+) cannot be selected.<br>Code No. 32<br>0000: Indoor unit sensor (Main unit)<br>0001: Remote controller sensor.<br>TC2: Indoor heat exchanger sensor temperature |

| No. | Item | Outline of specifications | Remarks |
|---|---|---|---|
| 6 | Fan speed selection (Continued): | | Setting of external static pressure mode at code no. [5D] or at SW501 on P.C. board. |

**MMD-UP0031SPHY-E/TR, MMD-UP0051SPHY-E/TR**

| CODE No. [5d] | Factory default | | Type1 | | Type2 | | Type3 | | Type4 | | Type5 | | Type6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0000 | | 0001 | | 0002 | | 0003 | | 0004 | | 0005 | | 0006 | |
| SW501 (1)(2) | OFF-OFF | | ON-OFF | | - | | OFF-ON | | - | | - | | ON-ON | |
| Tap | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT |
| F1 | | | | | | | | | | | | | HH | HH |
| F2 | | | | | | | | | HH | HH | HH | HH | H+ | H+ |
| F3 | | | | | | | HH | HH | H+ | H+ | H+ | H+ | H | H |
| F4 | | | | | | | H+ | H+ | H | H | H | H | L+ | L+ |
| F5 | | | | | HH | HH | H | H | L+ | L+ | L+ | L+ | L | L |
| F6 | | | HH | HH | H+ | H+ | L+ | L+ | L | L | L | L | | |
| F7 | | | H+ | H+ | H | H | L | L | | | | | | |
| F8 | HH | HH | H | H | L+ | L+ | | | | | | | | |
| F9 | H+ | H+ | L+ | L+ | L | L | | | | | | | | |
| FA | H | H | L | L | | | | | | | | | | |
| FB | L+ | L+ | | | | | | | | | | | | |
| FC | L | L | | | | | | | | | | | | |
| FD | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL |

**MMD-UP0071SPHY-E/TR, MMD-UP0091SPHY-E/TR, MMD-UP0121SPHY-E/TR**

| CODE No. [5d] | Factory default | | Type1 | | Type2 | | Type3 | | Type4 | | Type5 | | Type6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0000 | | 0001 | | 0002 | | 0003 | | 0004 | | 0005 | | 0006 | |
| SW501 (1)(2) | OFF-OFF | | ON-OFF | | - | | OFF-ON | | - | | - | | ON-ON | |
| Tap | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT |
| F1 | | | | | | | | | | | | | HH | HH |
| F2 | | | | | | | | | HH | HH | HH | HH | H+ | H+ |
| F3 | | | | | | | HH | HH | H+ | H+ | H+ | H+ | H | H |
| F4 | | | HH | HH | HH | HH | H+ | H+ | H | H | H | H | | |
| F5 | | | | | H+ | H+ | | | | | | | L+ | L+ |
| F6 | HH | HH | H+ | H+ | H | H | H | H | L+ | L+ | L+ | L+ | | |
| F7 | | | H | H | | | | | | | L | L | L | L |
| F8 | H+ | H+ | | | L+ | L+ | L+ | L+ | L | L | | | | |
| F9 | H | H | L+ | L+ | L | L | L | L | | | | | | |
| FA | L+ | L+ | L | L | | | | | | | | | | |
| FB | L | L | | | | | | | | | | | | |
| FC | | | | | | | | | | | | | | |
| FD | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL |

| No. | Item | Outline of specifications | Remarks |
|---|---|---|---|
| 6 | Fan speed selection (Continued): | | Setting of external static pressure mode at code no. [5D] or at SW501 on P.C. board. |

**MMD-UP0151SPHY-E/TR, MMD-UP0181SPHY-E/TR**

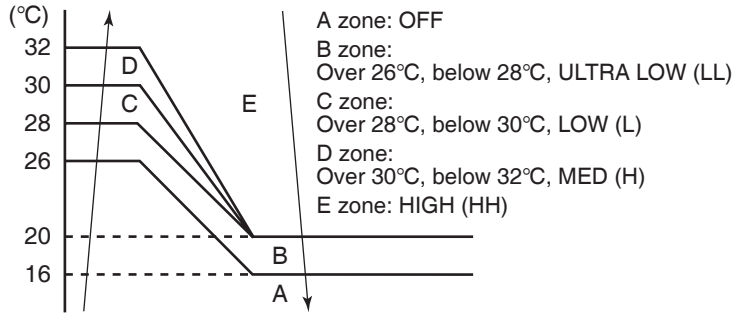
| CODE No. [5d] | Factory default | | Type1 | | Type2 | | Type3 | | Type4 | | Type5 | | Type6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0000 | | 0001 | | 0002 | | 0003 | | 0004 | | 0005 | | 0006 | |
| SW501 (1)(2) | OFF-OFF | | ON-OFF | | - | | OFF-ON | | - | | - | | ON-ON | |
| Tap | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT |
| F1 | | | | | | | | | | | | | HH | HH |
| F2 | | | | | | | | | HH | HH | HH | HH | H+ | H+ |
| F3 | | | | | | | | | H+ | H+ | H+ | H+ | H | H |
| F4 | | | | | | | HH | HH | H | H | H | H | L+ | L+ |
| F5 | | | | | HH | HH | H+ | H+ | | | L+ | L+ | | |
| F6 | | | HH | HH | H+ | H+ | H | H | L+ | L+ | | | L | L |
| F7 | | | H+ | H+ | H | H | L+ | L+ | | | L | L | | |
| F8 | HH | HH | H | H | L+ | L+ | | | L | L | | | | |
| F9 | H+ | H+ | L+ | L+ | | | L | L | | | | | | |
| FA | H | H | | | L | L | | | | | | | | |
| FB | L+ | L+ | L | L | | | | | | | | | | |
| FC | L | L | | | | | | | | | | | | |
| FD | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL |

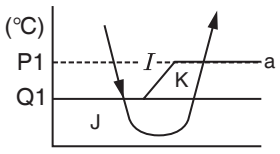
**MMD-UP0241SPHY-E/TR, MMD-UP0271SPHY-E/TR**

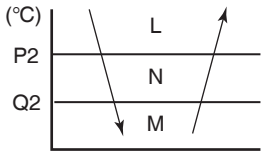
| CODE No. [5d] | Factory default | | Type1 | | Type2 | | Type3 | | Type4 | | Type5 | | Type6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0000 | | 0001 | | 0002 | | 0003 | | 0004 | | 0005 | | 0006 | |
| SW501 (1)(2) | OFF-OFF | | ON-OFF | | - | | OFF-ON | | - | | - | | ON-ON | |
| Tap | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT | COOL | HEAT |
| F1 | | | | | | | | | | | | | HH | HH |
| F2 | | | | | | | | | HH | HH | HH | HH | H+ | H+ |
| F3 | | | | | | | HH | HH | H+ | H+ | H+ | H+ | | |
| F4 | | | | | HH | HH | | | | | H | H | H | H |
| F5 | | | HH | HH | | | H+ | H+ | | | | | | |
| F6 | | | | | H+ | H+ | | | H | H | L+ | L+ | L+ | L+ |
| F7 | HH | HH | H+ | H+ | H | H | H | H | L+ | L+ | L | L | L | L |
| F8 | H+ | H+ | H | H | L+ | L+ | L+ | L+ | L | L | | | | |
| F9 | H | H | L+ | L+ | L | L | L | L | | | | | | |
| FA | L+ | L+ | L | L | | | | | | | | | | |
| FB | L | L | | | | | | | | | | | | |
| FC | | | | | | | | | | | | | | |
| FD | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL | LL |

3) In heating operation, the mode changes to [LL] if thermostat is turned off.

4) When the optional R32 Refrigerant Leak Dictor is connected and a leak of R32 Refrigerant is detected, the fan may operate at speed [HH].
For details, refer to item No. 26 "Leak detector control".

| No. | Item | Outline of specifications | Remarks |
|---|---|---|---|
| 7 | Prevention of cold air discharge | In heating operation, the lowest temperature between TC1 sensor and the highest temperature between TC2 and TCJ sensor is set as the upper bound of the fan speed mode control.<br>• When B zone has been continuing for 6 minutes, the operation shifts to C zone.<br>• For the defrosting operation, the control point is set to +6°C.<br>  | TCJ: Temperature of indoor heat exchanger sensor<br>• In D and E zones, priority is given to remote controller fan speed setup.<br>• In A zone " ❁ " is displayed. |

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>8</td><td>Freeze prevention control (Low temp. release)</td><td>
1. In all cooling operation, the air conditioner operates as described below based upon temp. detected by TC1, TC2 and TCJ sensors.<br>
• When “J” zone is detected for 5 minutes, the thermostat is forcedly off.<br>
• In “K” zone, the timer count is interrupted, and held.<br>
• When “I” zone is detected, the timer is cleared and the operation returns to the normal operation.<br>
• If “J” zone continues, operation of the indoor fan in LOW mode continues until it reaches the “I” zone. It is reset when the following conditions are satisfied.<br>
Reset conditions<br>
1) TC1 ≧ 12°C and TC2 ≧ 12°C and TCJ ≧ 12°C<br>
2) 20 minutes passed after stop.<br>


<table>
<tr><th></th><th>TC1</th><th>TC2, TCJ</th></tr>
<tr><td>P1</td><td>10°C (5°C)</td><td>–10°C</td></tr>
<tr><td>Q1</td><td>0°C</td><td>–14°C</td></tr>
</table>
2. In all cooling operation, the air conditioner operates as described below based upon temp. detected by TC2 and TCJ sensors.<br>
• When “M” zone is detected for 45 minutes, the thermostat is forcedly off.<br>
• In “N” zone, the timer count is interrupted and held.<br>
• When shifting to “M” zone again, the timer count restarts and continues.<br>
• If “L” zone is detected, the timer is cleared and the operation returns to normal operation.<br>
Reset conditions<br>
1) TC1 ≧ 12°C and TC2 ≧ 12°C and TCJ ≧ 12°C<br>
2) 20 minutes passed after stop.<br>


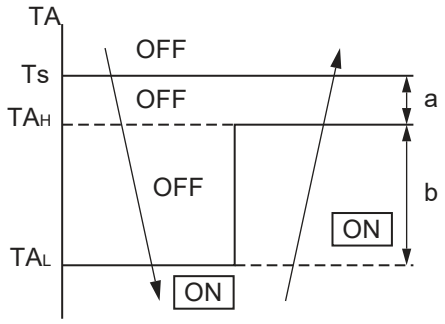
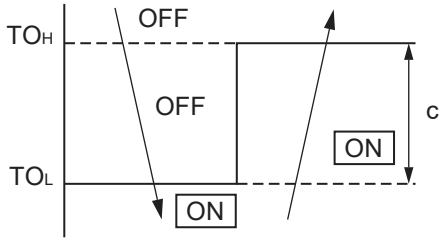
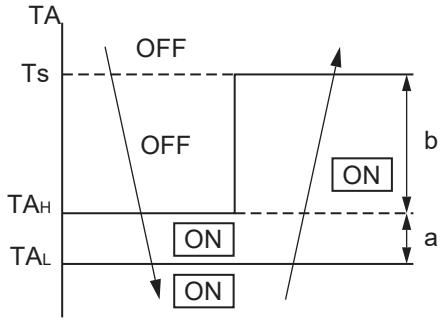
<table>
<tr><th></th><th>TC2, TCJ</th></tr>
<tr><td>P2</td><td>5°C</td></tr>
<tr><td>Q2</td><td>–2°C</td></tr>
</table>
</td><td>
TC1: Temperature of indoor heat exchanger sensor<br><br>
( ) value:<br>
When the power supply is turned on, the forced thermostat becomes OFF if the temperature is less than this indicated temperature.
</td></tr>
<tr><td>9</td><td>Refrigerant (Oil) recovery control in cooling operation</td><td>
Indoor units during stop/thermostat OFF or FAN operation perform following controls when a refrigerant (compressor oil) recovery signal is received from outdoor unit at the cooling operation,<br>
(1) Opening the indoor unit PMV at constant valve opening. (For a maximum of about 4 minutes)<br>
(2) Operating the drain pump for about one minute, during recovery control and after the control finished.<br>
Also, indoor unit fan or louvers may operate depending on the indoor unit type.
</td><td>Control is performed per two hours or when the outdoor unit determines its need.(It varies depending on the indoor units connected.)</td></tr>
</table>

| No. | Item | Outline of specifications | Remarks |
|---|---|---|---|
| 10 | Refrigerant (Oil) recovery control in heating operation | Indoor units during stop/thermostat OFF or FAN operation perform following controls when a refrigerant (compressor oil) recovery signal is received from outdoor unit at the heating operation,<br>(1) Opening the indoor unit PMV at constant valve opening. (For a maximum of about 20 minutes)<br>(2) TC2 temperature is detected to close its PMV. Also, the fan, louvers, drain pump may operate for about one minute after recovery control finished depending on indoor unit types, until the number of recovery control reaches the predetermined number.<br>NOTE<br>The PMV, indoor fan, or louvers may operate through the outdoor unit instruction.<br>For its detail, refer to the outdoor unit service guide. | Indoor unit during cooling thermostat OFF or FAN operation stops the indoor fan and displays "Operation standby ⏻".<br><br>Control is performed per one hour or when the outdoor unit determines its need.(It varies depending on the indoor units connected.) |
| 11 | Compensation control for short intermittent operation | 1) For 3 minutes after start of operation, the operation is forcedly continued even if the unit enters in thermostat. OFF condition.<br>2) However the thermostat is OFF giving prior to COOL/HEAT selection, READY ✺ for operation and protective control. | Usually the priority is given to 5 minutes at outdoor controller side. |
| 12 | Drain pump control | 1) Drain pump operates during cooling operation. (including DRY operation)<br>2) While the drain pump is operating, if the float switch is operated, the outdoor unit will stop operating but the drain pump will keep continuously operating. After that, the check code is issued.<br>3) When the drain pump stops operating, if the float switch is operated, the outdoor unit will stop and the drain pump will start operating. After the float switch is being operating for roughly 5 minutes, the check code will be issued. | Check Code [P10] |
| 13 | Elimination of retained heat | 1) When the unit stopped from [HEAT] operation, the indoor fan operates with [L] for approx. 30 seconds. | |
| 14 | HA control | 1) ON/OFF operation is available by input of HA signal from the remote site when connecting to remote controller or the remote ON/OFF interface.<br>2) The HA terminal is ON/OFF depending on HA control output.<br>3) The I/O specifications of HA is in accordance with JEMA standard. | When using HA terminal (CN61) for the remote ON/OFF, a connector sold separately is necessary.<br>In case of group operation, use the connector to connect HA terminal to either header or follower indoor unit. |

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>15</td><td>Display of [READY] [HEAT READY]</td><td>< READY> Displayed on the remote controller<br>1) When the following check codes are indicated<br>• Open phase of power supply wiring [P05] was detected.<br>• There is an indoor unit that detected the indoor overflow [P10].<br>• There is an indoor unit that detected the interlock alarm [L30].<br>2) During forced thermostat OFF<br>• [COOL/DRY] operation is unavailable because the other indoor unit operates with [HEAT] mode.<br>• [HEAT] operation is unavailable because COOL priority (SW11-bit1 of the Outdoor I/F P. C. board is ON) is set and the other indoor unit operates with [COOL/DRY] mode.<br>3) When the indoor unit which is in the condition of 1) or 2) keeps being in thermostat OFF status.<br>4) When the indoor fan stops because the system performs [Recovery operation for heating refrigerant (Oil)].<br><br><HEAT READY> Displayed on the remote controller<br>When the indoor fan stops in order to prevent discharge of cool air when heating operation started or during heating operation. (including the defrost operation during thermostat OFF)</td><td>• < READY> ⏻ display<br>No display for wireless type remote controller<br><br>• <HEAT READY><br>“ ❁ ” display</td></tr>
<tr><td>16</td><td>Alarm output setup</td><td>The alarm output from the indoor P.C. board is output in each indoor unit during group control, but it can be set so as to be output in the header unit and follower units.<br>Following the table below, register the setting data in DN Code "79".
<table>
<tr><th>DN</th><th>Alarm output of the header indoor unit</th><th>Setting data</th></tr>
<tr><td rowspan="2">79</td><td>Not including the state of follower units</td><td>0000 (Factory default)</td></tr>
<tr><td>Including the state of follower units</td><td>0001</td></tr>
</table></td><td>Connector CN61<br>(Refer to Notice code signal)<br><br>Be sure to change the setting data while operation stops.</td></tr>
<tr><td>17</td><td>Display of filter sign [ ▦ ]<br>(Not provided to the wireless type)</td><td>1) The filter sign is displayed with LC by sending the filter-reset signal to the remote controller when the specified time (2500H) elapsed as a result of integration of the operation time of the indoor fan.<br>2) The integrated timer is cleared when the filter-reset signal is received from the remote controller.<br>In this time, if the specified time elapsed, the counted time is reset and the liquid crystal display is deleted.</td><td>[ ▦ FILTER] goes on.<br>The filter sign is not displayed in RBC-ASCU11-*.</td></tr>
<tr><td>18</td><td>Selection of central control mode</td><td>1) Selection of the contents that can be operated by the remote controller at the indoor unit side is possible according to setting at the central controller side.<br>2) Setting contents
<table>
<tr><th rowspan="2">Operation from central controller</th><th colspan="5">Operation on remote controller</th></tr>
<tr><th>ON/OFF setting</th><th>Operation selection</th><th>Temp. setting</th><th>Fan speed setting</th><th>Air direction setting</th></tr>
<tr><td>Individual</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>[Central 1]</td><td>×</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>[Central 2]</td><td>×</td><td>×</td><td>×</td><td>○</td><td>○</td></tr>
<tr><td>[Central 3]</td><td>○</td><td>×</td><td>×</td><td>○</td><td>○</td></tr>
<tr><td>[Central 4]</td><td>○</td><td>×</td><td>○</td><td>○</td><td>○</td></tr>
</table>
(○: Operation possible ×: Operation impossible)</td><td></td></tr>
</table>

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>19</td><td>DC motor</td><td>1) When the fan starts, positioning is performed for the starter and the rotor. (Vibrate slightly)<br>2) DC motor operates according to the command from the indoor controller.<br>(Note) If the fan rotates by entry of outside air, etc while the air conditioner stopped, the indoor unit may operate as the fan motor stops.<br>(Note) If the fan lock was detected, the operation of the indoor unit stops and the check code is displayed.</td><td>Check code [P12]</td></tr>
<tr><td>20</td><td>Power saving mode</td><td>(In the case of RBC-AMT***)<br>1. Push the SAVE button on the remote controller<br>2. The “ ” segment lights up on the wired remote controller display.<br>3. The requirement capacity ratio is limited to approximately 75 %.<br>4. If the power saving operation is enabled, the settings are retained when the operation is stopped, when the mode is changed, or when the power is reset. The power saving operation will be enabled at the next time the operation starts.<br>• The operation may differ depending on the connected outdoor unit. Refer to the Service Manual of the outdoor unit.</td><td></td></tr>
<tr><td>21</td><td>Occupancy sensor</td><td>1) During the Occupancy sensor operation (DN code: [B5] [0001] and [B6] [0002 to 0005]), when there is no people in the Occupancy sensor range, it is automatically switched to the operation for the absence.<br>2) The Occupancy sensor operation can change by [DN code : B6] as follows, and operates according to the operation at absent time, if time or absence of the setting contents continues. However time counting starts after the room temperature is stabilized. (after for 30 minutes operation)<br>DN [B6]<table><tr><th>Data</th><th>Setting contents</th></tr><tr><td>0000</td><td>Invalid</td></tr><tr><td>0001 to 0005</td><td>30 minutes to 150 minutes (30 minutes each)</td></tr></table>3) The operation at absent time can be changed by [DN code : B7].<br>DN [B7]<table><tr><th>Data</th><th>Operation at absent time</th></tr><tr><td>0000</td><td>Circulator</td></tr><tr><td>0001</td><td>Operation stop</td></tr></table>4) If the operation at absent time stops during group operation, or absence is fixed in each system, the operation starts circular operation once, and then the operation stops when absence was determined on all group.<br>* DN [06] and DN [B7] can be set on the "Occupancy sensor" menu of the wired remote controller RBC - AMSU5*.</td><td>The Occupancy sensor can be set up by wired remote controller RBC-AMSU5*</td></tr>
</table>

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>22</td><td>Soft cooling</td><td>* Wired remote controller : RBC-AMSU5* is required.<br>1) Sensation of draft can be suppressed by controlling performance and correcting the louver angle during cooling operation.<br>2) However, it may not cool well because the operation will be performed with the cooling capacity suppressed.<br>3) Perform operations from the remote controller menu to use soft cooling.</td><td></td></tr>
<tr><td>23</td><td>Dual set point (AUTO mode)</td><td>1) The temperature for heating operations and cooling operations can be set separately in AUTO mode when dual set point is valid.<br>2) The compressor will turn off (thermostat-OFF) when reaching the set temperature for heating operations and cooling operations.<br>3) Set CODE No. (DN) [77] to enable Dual set point.<br>DN [77]<table><tr><th>Data</th><th>Dual set point</th></tr><tr><td>0000</td><td>Unavailable (Factory default)</td></tr><tr><td>0002</td><td>Available</td></tr></table></td><td>This function cannot be used with remote controllers that are not RBC-AMSU5*.</td></tr>
</table>

| No. | Item | Outline of specifications | Remarks |
|---|---|---|---|
| 24 | Secondary heating | Secondary heating can be used while heating operations are performed.<br><br><Control Outline (Normal Mode)><br>1) If the difference between the indoor temperature and the outdoor temperature is large while the air conditioner is operating, turn ON the secondary heating.<br>2) This function is valid when the CODE No. (DN) [DC] is set to “0001” (0.5°C) to “0010” (5.0°C) using the wired remote controller, and the output to the external heating source will turn ON if the room temperature satisfies the condition.<br>3) The output will always stay ON while defrosting operations are being performed.<br>  <br><br>4) The output can be turned on by the outdoor temperature when CODE No. (DN) [C7] is set to “0001” (1°C) to “0010” (10°C) using the wired remote controller.<br>  <br><br><Control Outline (Flip Mode)><br>1) If the difference between the room temperature and the set temperature is large while using secondary heating, run the air conditioner.<br>2) This function is valid when the CODE No. (DN) [C5] is set to “0001” (Flip mode) or the CODE No. (DN) [C7] is set to “0001” (1°C) to “0010” (10°C) using the wired remote controller, and when the output is switched ON when the room temperature satisfies the conditions.<br>* The outdoor temperature determination is invalid whilst this control is performed.<br>  <br> | $TA_H$ : Temp.set air high (= $T_s$ - a )<br>$TA_L$ : Temp.set air low (= $TA_H$ - b )<br><br>$TO_H$ : Temp.set out high<br>$TO_L$ : Temp.set out low (= $TO_H$ - c ) |

| No. | Item | Outline of specifications | Remarks |
|---|---|---|---|
| 24 | Secondary heating (Continued) | | |

DN [C5]

| Data | Secondary heating mode |
|---|---|
| 0000 | Normal mode (Factory default) |
| 0001 | Flip mode |

DN [C6]

| Data | $TO_H$: Set temp. out (high) [°C] |
|---|---|
| -0015 to 0015 | "-0015": -15°C to "0015": 15°C<br>"0000": 0°C (Factory default) |

DN [C7]

| Data | c : $TO_H$ - $TO_L$ [°C] |
|---|---|
| 0000 | Unavailable (Factory default) |
| 0001 to 0010 | 0001: 1°C to "0010": 10°C |

DN [DB]

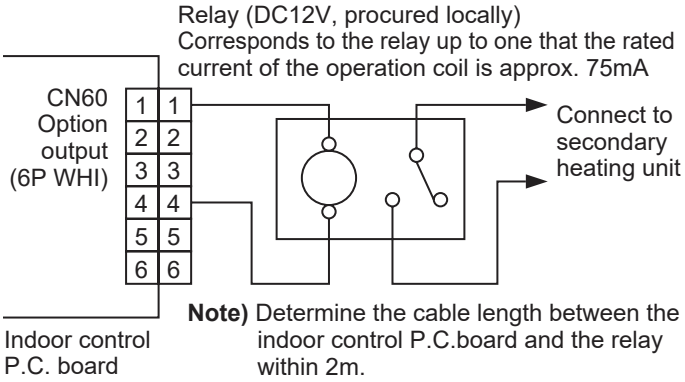
| Data | b : $TA_H$ - $TA_L$ [°C] |
|---|---|
| 0001 to 0010 | "0001": 0.5°C to "0010": 5.0°C<br>"0006": 3°C (Factory default) |

DN [DC]

| Data | a : $T_S$ - $TA_H$ (Normal mode)[°C]<br>$TA_L$ - $T_S$ (Flip mode)[°C] |
|---|---|
| 0000 | Unavailable (Factory default) |
| 0001 to 0010 | 0001: 1°C to "0010": 10°C |

<Wiring>

1) Use ① - ④ pin (Cooling output, DC 12 V) of CN60 on indoor P.C. board for output.




**Note)** Determine the cable length between the indoor control P.C.board and the relay within 2m.

2) If there is no CN60 on the P.C. board (MCC-1643 model), install separately-sold Application control kit (TCB-PCUC2E), and use "OUT1 to OUT3" of the Signal output terminal block (TB1). At this time, select "1" (Cool dry output) for "SW1 to SW3". Following the installation manual of the Application control kit for detailed contents relating to wiring.

* The output state can be checked from “Monitor function” on the wired remote controller. See page 82 or the manual for the remote controller for operation methods of “Monitor function”.

| Monitor<br>CODE No. E5 | Secondary heating output<br>- - - -: Unavailable<br>0000: OFF<br>0001: ON |
|---|---|

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>25</td><td>R32 refrigerant Safety measures setting</td><td>・When connecting to an outdoor unit that uses R32 refrigerant, the following settings must be made according to the safety system used.<br>* Floor-mounted models cannot be connected to outdoor units that use R32 refrigerant.<br><br>・Set the CODE No.(DN)[107] for each indoor unit.<br>For details of each item, refer to the Install Manual and Service Manual of the outdoor unit.<br>SDN [107]<table><tr><th>Data</th><th>Safety measures</th></tr><tr><td>0000</td><td>No safety measures</td></tr><tr><td>0001</td><td>Pump-down operation (Factory default)</td></tr><tr><td>0002</td><td>Individual shut-ff operation</td></tr><tr><td>0003</td><td>Leak detectors only</td></tr></table>* When using the optional R32 refrigerant leak detector, select a data other than "0000".</td><td>Indoor unit type usable with R32 refrigerant:<br>4-way cassette type,<br>Compact 4-way cassette type,<br>2-way cassette type,<br>1-way casette type</td></tr>
<tr><td>26</td><td>R32 refrigerant Leak detector control</td><td>Refrigerant detection control<br>1) When the optional R32 refrigerant leak detector is connected and safety measures are set (Item No. 25), the indoor unit controls to detect refrigerant leakage.<br>2) When the indoor unit receives the refrigerant leak detection signal, check code J30 (Refrigerant leak detection) is displayed on the remote controller.<br>3) When refrigerant leakage is detected, ventilation output (CN32) is turned ON.<br>Refer to "8-3. Indoor Print Circuit Board" for details on ventilation output (CN32).<br>4) When DN[107] (R32 Safety measures) is "0001" or "0003" and DN[108] (Circulation flow operation mode) is "0000", the fan of the indoor unit is operated to prevent refrigerant from stagnating in the room (Fan speed is HH, louver position is middle). In this case, the fan continues to operate even if the operation is stopped by the remote controller.<br>5) When the indoor unit receives a refrigerant leak clear signal from the leak detector, it stops ventilation output and fan operation.<br><br>Refrigerant sensor maintenance control<br>* Operation is possible under the following conditions.<br>1) When the signal of refrigerant sensor trouble is received or the signal from the leak detector is interrupted, the indoor unit displays check code J29 (Refrigerant leak detection sensor trouble) on the wired remote controller.<br>2) If the pre-life signal of the refrigerant sensor is received, the indoor unit outputs the notification code No. 204 (Leak detector life advance display) and displays the icon of the notification code on the wired remote controller.<br>3) When the end-of-life signal of the refrigerant sensor is received, the indoor unit displays check code J31 (Come to end of the refrigerant leak detection sensor) on the wired remote controller.</td><td></td></tr>
<tr><td>27</td><td>Battery kit Lifetime Notification</td><td>When the indoor unit detects that the battery kit connected to the FS unit or shutoff valve has reached the end of its service life, it outputs notification code No. 203 (Flow Selector unit battery dead) and displays a notification code icon on the wired remote controller.</td><td>R32 refrigerant systems only</td></tr>
</table>

# 9. COMMUNICATION TYPE, MODEL NAMES AND THE MAXIMUM NUMBER OF CONNECTABLE UNITS

## 9-1. This air conditioning (U series) has new communication specifications, and TU2C-Link (U series) and TCC-Link (other than U series) differ in a communication type. For the communication type and the model names such as each unit or remote controllers, refer to the following table.

| Communication type | TU2C-Link (U series and future models) | TCC-Link (Other than U series) |
|---|---|---|
| Outdoor unit | MMY-M**U**P***<br>↑<br>This letter indicates U series model. | Other than U series<br>MMY-MAP***<br>MCY-MHP*** |
| Indoor unit | MM* -**U**P***<br>↑<br>This letter indicates U series model. | Other than U series<br>MM* -AP*** |
| Wired remote controller | RBC-A**__U__***<br>↑<br>This letter indicates U series model. | Other than U series |
| Wireless remote controller kit & receiver unit | RBC-AX**U***<br>↑<br>This letter indicates U series model. | Other than U series |
| Remote sensor | TCB-TC**__U__***<br>↑<br>This letter indicates U series model. | Other than U series |

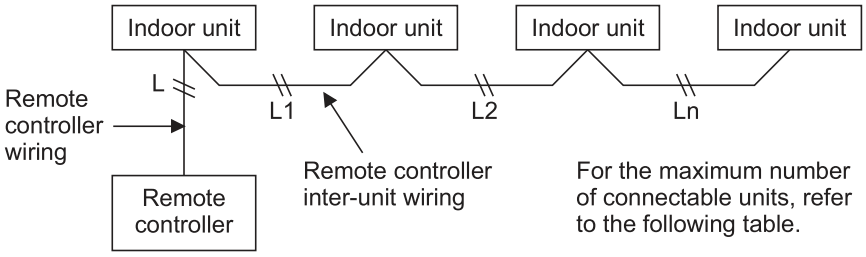
U series outdoor unit : SMMS-u (MMY-MUP*** )
Other than U series outdoor unit : SMMS-i, SMMS-e etc. ( MMY-MAP*** )

## 9-2. If TU2C-Link (U series) is combined with TCC-Link (other than U series), the wiring specifications and the maximum number of connectable indoor units during group control operation will be changed.

(1) For wiring specifications, carry out the installation, maintenance, or repair according to the attached Installation Manual.

(2) For a communication type combination and the max. number of connectable indoor units, refer to the following table.

- Only when all outdoor unit, indoor unit and remote control are a U series, communication method is TU2C-LINK, and the maximum number of connectable units will be 16.




**The combination of unit type and the number of the maximum connection of a communication method**

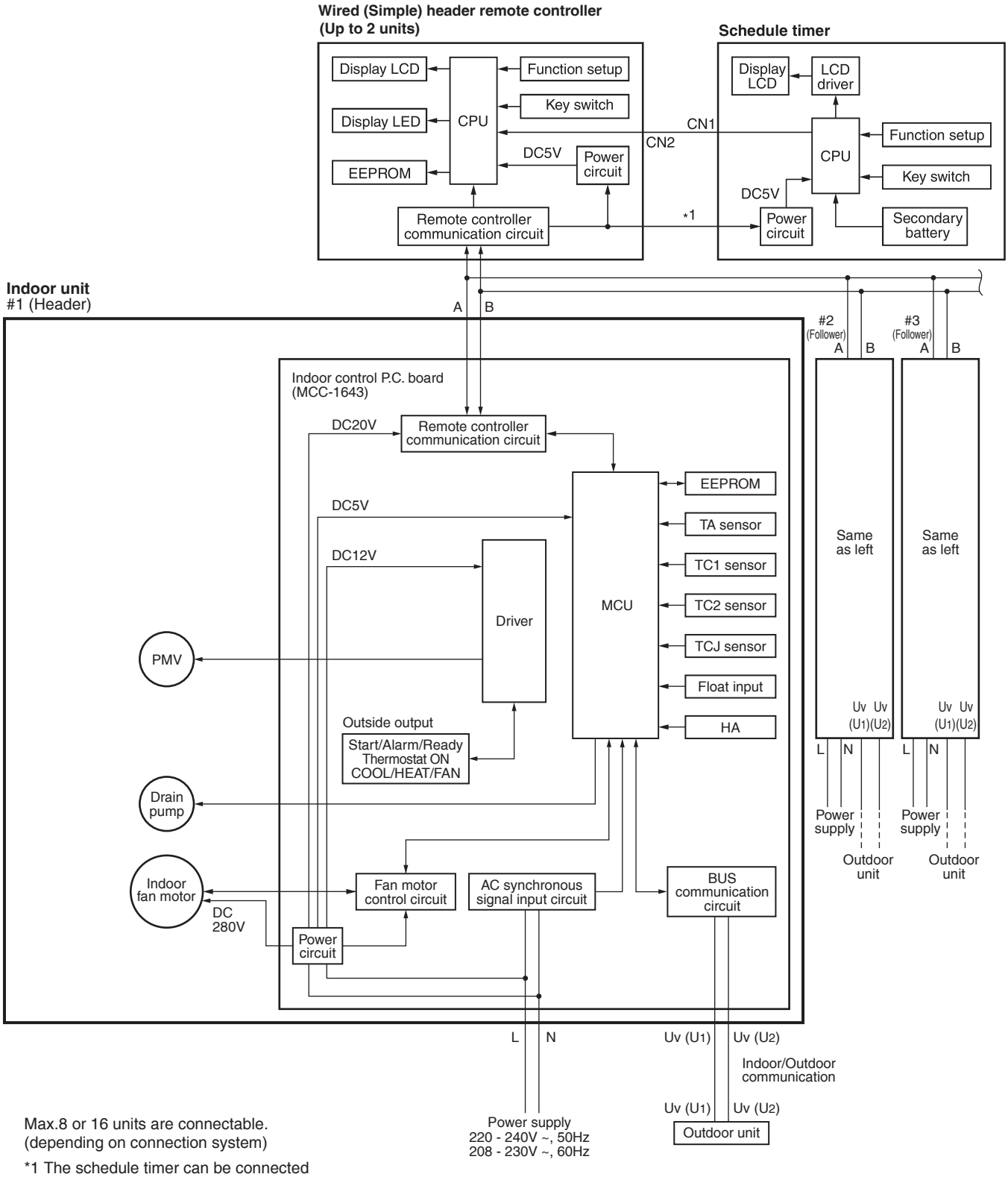
| | Unit type | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Outdoor unit | U series | U series | U series | U series | * | * | * | * |
| Indoor unit | U series | U series | * | * | U series | U series | * | * |
| Remote controller<br>Remote sensor | U series | * | U series | * | U series | * | U series | * |
| Communication type | TU2C-Link | TCC-Link | | | | | | |
| Maximum number of connectable units | 16 | 8 | | | | | | |

* Other than U series

# 10. APPLIED CONTROL AND FUNCTIONS

## 10-1. Indoor Controller Block Diagram

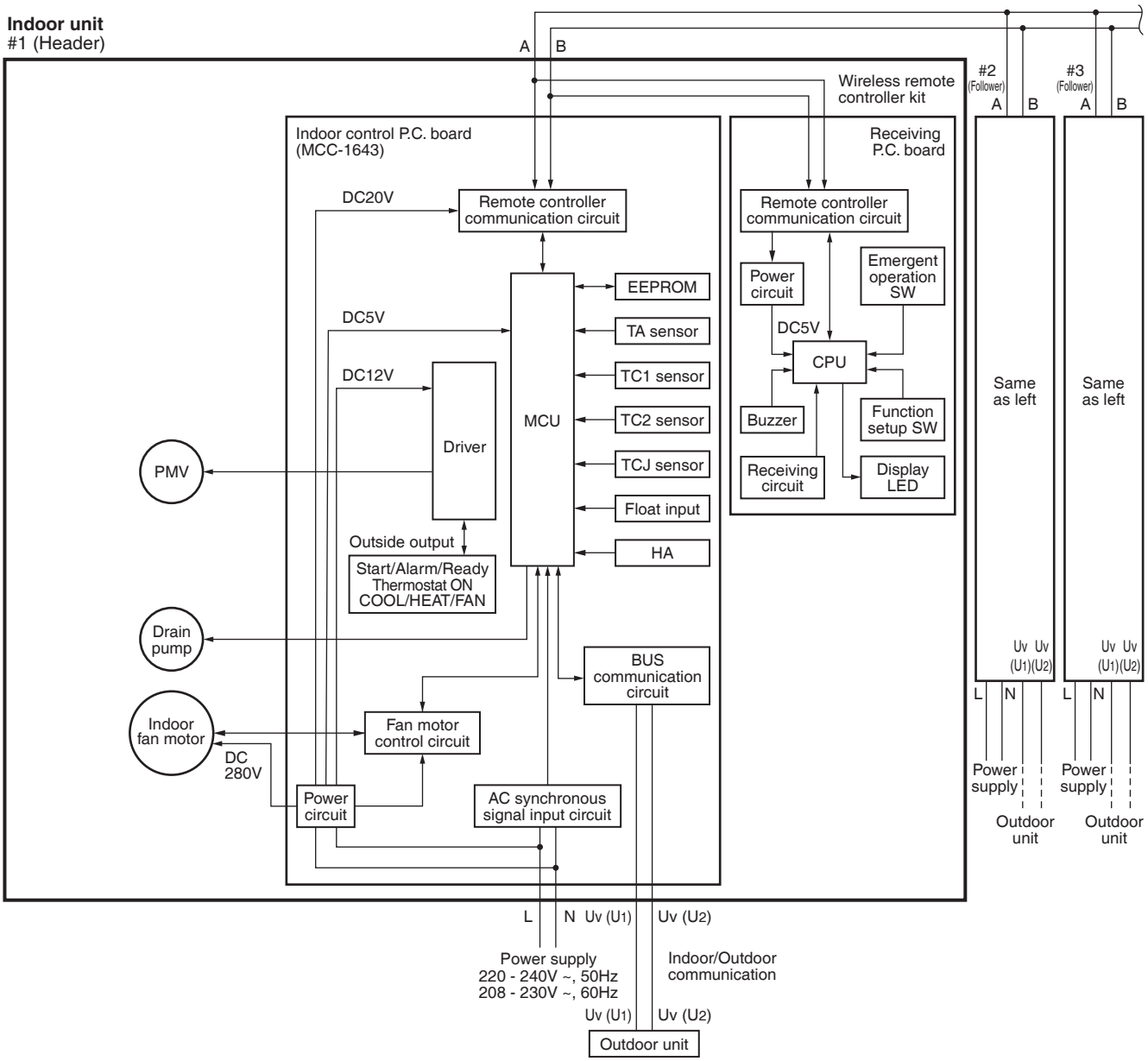
### 1. Connection of wired remote controller



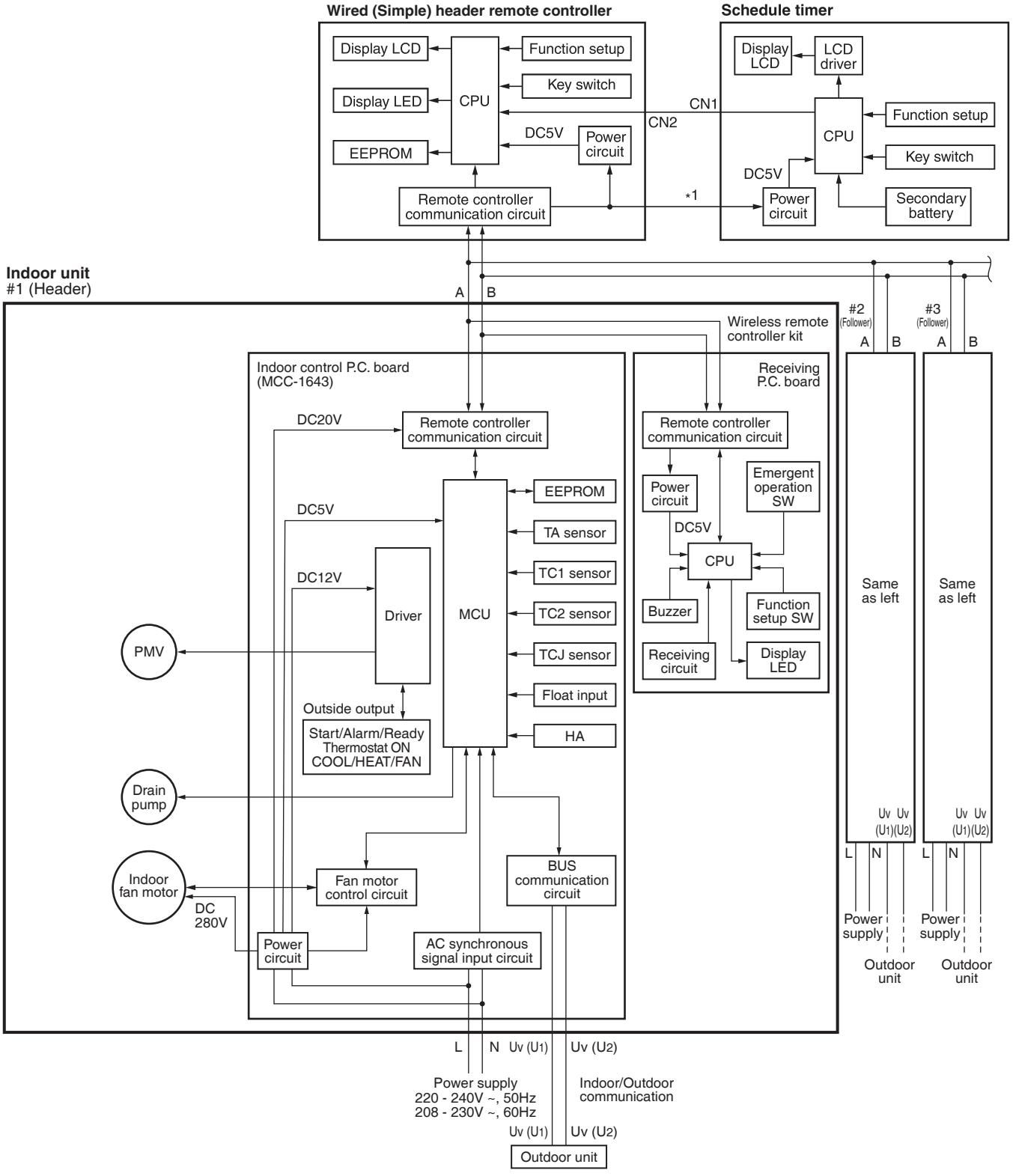

Max.8 or 16 units are connectable.
(depending on connection system)

*1 The schedule timer can be connected to only RBC-AMT***.

## 2. Connection of wireless remote controller kit



## 3. Connection of both wired remote controller and wireless remote controller kit

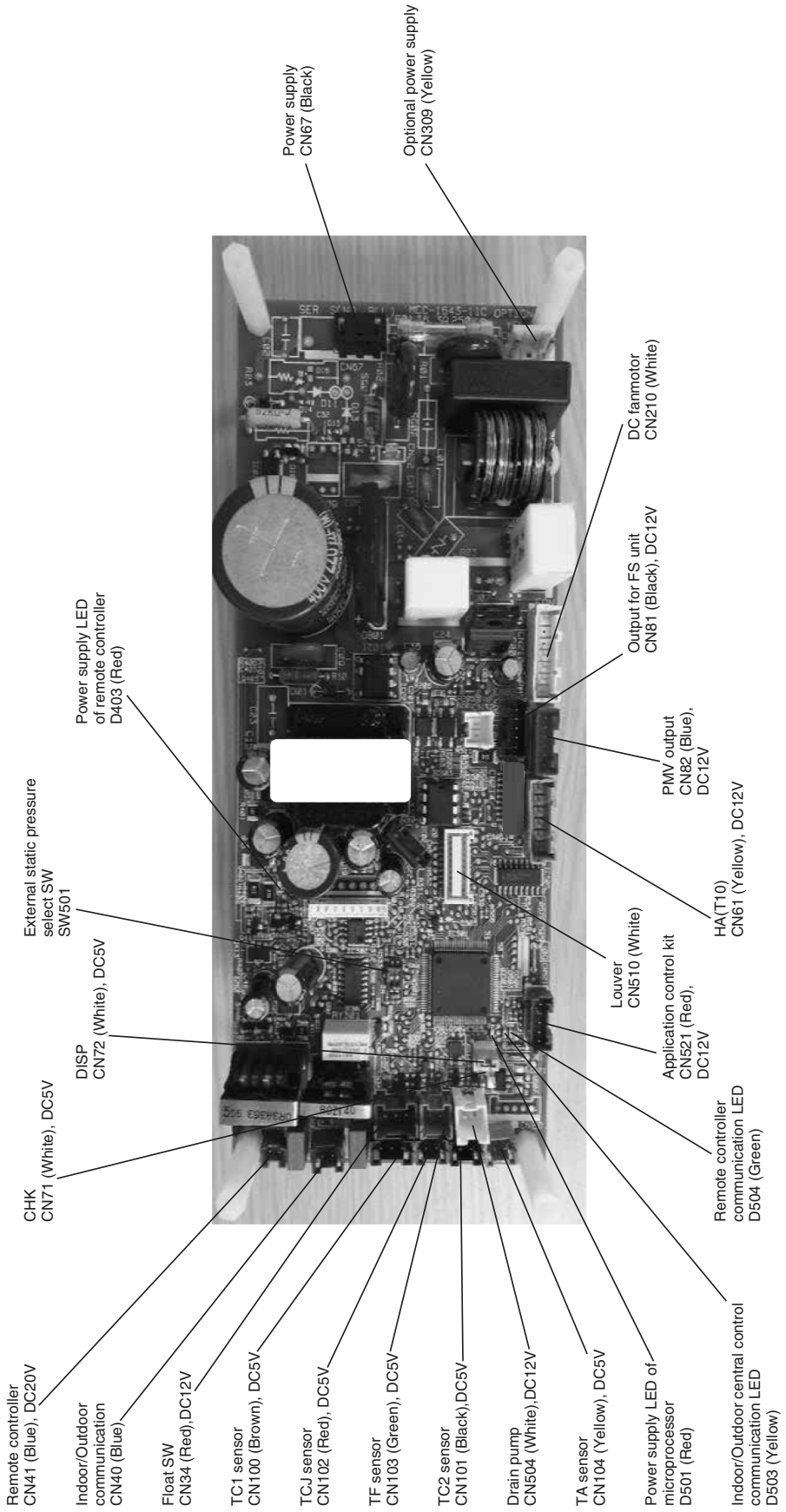



Max.8 or 16 units are connectable.
(depending on connection system)

*1 The schedule timer can be connected to only RBC-AMT***.

## 10-2. Indoor P.C. board

**MCC-1643**



## Optional connector specifications of indoor P.C. board (MCC-1643)

| Connector No. | Color | Function | Slim Duct | 4-way Cassette | Compact 4-way Cassette | 2-way Cassette | 1-way Cassette (SH) | Floor standing | Pin No. | Specifications | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CN32 | White | Ventilation output | ○ | ○ | ○ | ○ | ○ | ○ | ①<br>② | DC12V<br>Output (Open collector) | Setting at shipment: Interlock of ON by indoor unit operation, with OFF by stop operation<br>* The single operation setting by FAN button on the remote controller is performed on the remote controller (DN=31). |
| CN34 | Red | Input for float SW | ● | ● | ● | ● | ● | × (With short-circuit connector) | ①<br>②<br>③ | DC12V<br>NC<br>Float SW input | Normal when between ①−③ short-circuits, but abnormal when open-circuits. (check code "P10" appears) |
| CN61 | Yellow | HA | ○ | ○ | ○ | ○ | ○ | ○ | ①<br>②<br>③<br>④<br>⑤<br>⑥ | ON/OFF input<br>0V（COM）<br>Remote controller prohibited input<br>Operation output (Open collector)<br>DC12V（COM)<br>Warning output (Open collector) | HA ON/OFF input (J01: YES/NO=Pulse (At shipment from factory) /Static input selection)<br>Permission/Prohibition of remote controller operation stop is performed by input.<br>Operation ON (Answer back of HA)<br>Warning output ON |
| CN71 | White | CHK Operation check | ○ | ○ | ○ | ○ | ○ | ○ | ①<br>② | Check mode input<br>0V | This check is used to check indoor operation. (Performs operation of indoor fan “H” , Louver horizontal and Drain pump ON without communication with outdoor and remote controller) |
| CN72 | White | DISP Exhibition mode | ○ | ○ | ○ | ○ | ○ | ○ | ①<br>② | DISP mode input<br>0V | Communication is available by indoor unit and remote controller only (When the power is turned on). Shortening time of timer (Always) |
| CN81 | Black | Output for Flow selector unit | △ | △ | △ | △ | △ | △ | ①<br>②<br>③<br>④<br>⑤ | DC12V<br>EP valve output (Open collector)<br>Balance valve output (Open collector)<br>Suction valve output (Open collector)<br>Discharge valve output (Open collector) | |
| CN309 | Yellow | Output power supply for option | ○ | ○ | ○ | ○ | ○ | ○ | ①<br>③ | AC230V<br>AC230V | This can be used as power supply for option devices. |
| CN521 | Red | Connection for option P.C.board | △ | △ | △ | △ | △ | △ | ①<br>②<br>③<br>④<br>⑤ | DC12V<br>DC5V<br>Send<br>Receive<br>0V | Connected Application control kit (TCB-PCUC2E) |

● : Use in standard, ○ : Available, △: Use by connecting parts sold separately, × : Unavailable

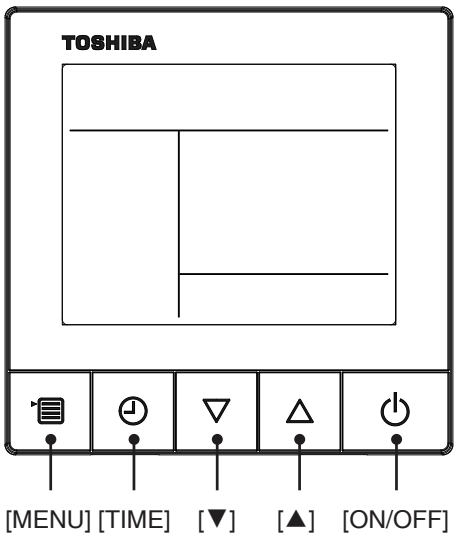
* To use the functions operated by CN60, CN80, CN70 and CN73, which are provided for other P.C.board, use the Application control kit (TCB-PCUC2E) sold separately.

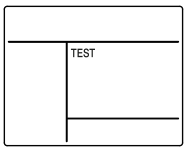
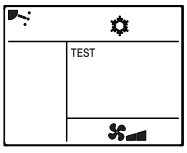
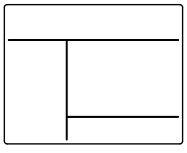
## 10-3. Functions at test run

### ■ Cooling/Heating test run check

The test run for cooling/heating can be performed from either indoor remote controller or outdoor interface P.C. board. Refer to the Installation Manual and Service Manual of outdoor unit for the procedure of the test run from an outdoor interface P.C. board.

### ◆ In case of wired remote controller




| Procedure | Operation contents |
|---|---|
| *1* | Push [TIME] and [▲] buttons and hold for more than 10 seconds.<br>If [TEST] is displayed on screen, it shows that the system is currently in test run mode.   |
| *2* | Push [ON/OFF] button to start the air conditioner. |
| *3* | Using [MENU] button to change the cooling or heating mode<br>• Do not use [MENU] button to change modes other than cooling and heating modes.<br>• Under heating and cooling operations, a command for fixing test running frequency will be output.<br>• The temperature cannot be adjusted during the test run, but the fan speed can be selected.<br>• Fault detection is operating normally, but do not use this function in "test run" as this will cause load on the equipment.   |
| *4* | Push [ON/OFF] button to stop the operation after the test run. |
| *5* | Push [TIME] button to clear the TEST mode, [TEST] display in the display part disappears and the status returns to the normal stop status.<br>(To prevent a continuous test run operation, the remote controller will be shut off automatically after 60 minutes.)  |

### ◆ In case of wireless remote controller

**1** Turn on the power of the air conditioner.
When power is turned on for the first time after installation, it takes approx. 5 minutes until the remote controller becomes available. In the case of subsequent power-on, it takes approx. 1 minute until the remote controller becomes available.
Execute a test run after the predetermined time has passed.

**2** Push “ON/OFF” button on the remote controller, select [ Cool ] or [ Heat ] with “MODE” button, and then select [ HIGH ] with “FAN” button.

**3**

| Cooling test run | Heating test run |
|---|---|
| Set the temperature to 17 ˚C with the temp. setup buttons. | Set the temperature to 30 ˚C with the temp. setup buttons. |

**4**

| Cooling test run | Heating test run |
|---|---|
| After confirming a signal receiving sound “beep” immediately set the temperature to 18 ˚C with the temp. setup buttons. | After confirming a signal receiving sound “beep” immediately set the temperature to 29 ˚C with the temp. setup buttons. |

**5**

| Cooling test run | Heating test run |
|---|---|
| After confirming a signal receiving sound “beep” immediately set the temperature to 17 ˚C with the temp. setup buttons. | After confirming a signal receiving sound “beep” immediately set the temperature to 30 ˚C with the temp. setup buttons. |

**6** Repeat procedures ***4 → 5 → 4 → 5***.
Indicators “Operation” (green), “Timer” (green), and “Ready” (orange) in the wireless receiver section flash in approx. 10 seconds, and the air conditioner starts operation. If any of these indicators does not flash, repeat procedures 2 to 5.

**7** Upon completion of the test run, push “ON/OFF” button to stop operation.

<Overview of test run operations using the wireless remote controller>

▼ Cooling test run:
ON/OFF → 17 °C → 18 °C → 17 °C → 18 °C → 17 °C → 18 °C → 17 °C → (test run) → ON/OFF

▼ Heating test run:
ON/OFF → 30 °C → 29 °C → 30 °C → 29 °C → 30 °C → 29 °C → 30 °C → (test run) → ON/OFF

**Note)** The test run returns to the normal operation after 60 minutes.

## ■ Check function for operation of indoor unit (Functions at indoor unit side)

This function is provided to check the operation of the indoor unit individually without connecting to the remote controller or the outdoor unit. This function can be used regardless of the ON/OFF operation.

However, it is recommend to avoid using this function for along time, otherwise the trouble of the equipment may occurred.

### [How to operate]

1) Short-circuit CHK pin (CN71 on the indoor P.C. board).
   The operation mode may differ according to the indoor unit status at that time.

   Normal time: Both float SW and fan motor are normal.
   Abnormal time: Either one of float SW or fan motor is abnormal.
2) During the normal time, the minimum opening degree (30pls) of the indoor PMV can be set only when both CHK pin (CN71) and DISP pin (CN72) on the indoor P.C board are short-circuited. If the short-circuit at DISP pin (CN72) is opened, the indoor PMV will be at the maximum opening degree (1500pls).

### [How to clear]

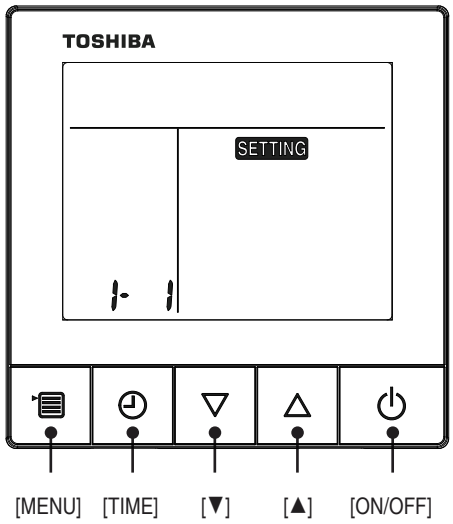
Open CHK pin.If the system is on operation, it will temporarily stop then automatically restart after a while.

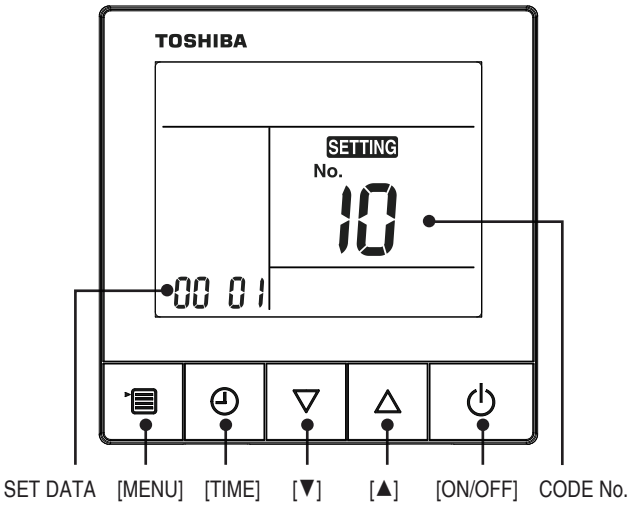
| | **Short-circuit of CHK pin** | | |
|---|---|---|---|
| | **Normal time** | | **Abnormal time** |
| | **DISP pin open** | **DISP pin short circuit** | |
| Fan motor | (H) | (H) | Stop |
| Indoor PMV (∗) | Max. opening degree (1500pls) | Min. opening degree (30pls) | Min. opening degree (30pls) |
| ※Drain pump | ON | ON | ON |
| Communication | All ignored | All ignored | All ignored |
| P.C. board LED | Lights | Lights | Flashes |

- To exchange the indoor PMV coil, set the indoor PMV to Max. opening degree.
- For the detailed positions of CHK pin (CN71 on indoor P.C. board) and DISP pin (CN72 on indoor P.C. board), refer to the indoor P.C. board MCC-1643.

## 10-4. Setup of Selecting Function in Indoor Unit (Be Sure to Execute Setup by a Wired Remote Controller)

**<Procedure>** Execute the setup operation while the unit stops.




***1*** **In STOP status push [MENU] and [▼] buttons simultaneously for at least 10 seconds.**

- In the air-conditioning group control mode, SETTING and the indoor unit No.1-N are displayed first. 1 is the piping system address (the value of the refrigerant piping system is the same as the number of outdoor units, and one outdoor unit is displayed as 1). The indoor unit address represented by N is the main indoor unit address.
- In the non-group control mode (only one indoor unit), only 1-1 is displayed on the left.

***2*** **Push [▼] or [▲] button to adjust the indoor unit number. The indoor unit number in the group control will be changed cyclically. Select an indoor unit to change the settings and push [TIME] button to confirm.**

The fan of the selected indoor unit starts its operation and the swing operation of the louvers starts after confirmation.

***3*** **Using [▼] or [▲] button, select the CODE No. [**] to be set.**

***4*** **Use [MENU] button to adjust the flash from CODE No. to SET DATA on the left. Select the specified SET DATA [****] as required.**

(Set the SET DATA of CODE No. [33] from [0000] to [0001], and change the unit of the temperature on the remote controller from "°C" to "°F".)

***5*** **Push [MENU] button to adjust the flash to CODE No. on the right after pushing [TIME] button to confirm.**

- To change the settings of another indoor unit, push [ON/OFF] button to close the current setting, and repeat from step ***1***.
- To change other settings of the indoor unit, repeat from step ***3***.

***6*** **Push [ON/OFF] button to complete the setting when the setting is completed.**

When [ON/OFF] button is pushed, SETTING flashes, then the display disappears and the air conditioner enters the normal stop mode.

(When SETTING flashes, it cannot receive operation instructions from the remote controller.)

## Indoor unit function Code No. (DN Code) table

(includes functions needed to perform applied control on site)

| DN | Item | Description | At shipment |
|---|---|---|---|
| 01 | Filter display delay timer | 0000: None 0001: 150H<br>0002: 2500H 0003: 5000H<br>0004: 10000H | Depending on model type |
| 02 | Dirty state of filter | 0000: Standard<br>0001: High degree of dirt (Half of standard time) | 0000: Standard |
| 03 | Central control address | 0001: No.1 unit to 0064: No.64 unit … TCC-LINK<br>0001: No.1 unit to 0128: No.128 unit … TU2C-LINK<br>00Un: Unfixed (When using U series remote controller)<br>0099: Unfixed (Other than U series remote controller) | 00Un/0099: Unfixed *1 |
| 04 | Specific indoor unit priority | 0000: No priority 0001: Priority | 0000: No priority |
| 06 | Heating temp. shift | 0000: 0 °C 0001: +1 °C<br>0002: +2 °C to 0010: +10 °C<br>(Up to +6 recommended) | Depending on model type |
| 0b | Demand control (CN73 / CN4) | 0000: Demand input 0001: O2 sensor input<br>0002: Card input setup.3 0003: Fire alarm input<br>0004: Card input setup.4 (Normal open)<br>0005: Fire alarm input 0006: Notice code (202)<br>(Normal close)<br>0007: Card input setup.5 0008: Card input setup.1<br>0009: Card input setup.2 | 0000: Demand input |
| 0d | Existence of [AUTO] mode | 0000: Provided<br>0001: Not provided<br>(Automatic selection from connected outdoor unit) | 0001: Not provided |
| 0F | Cooling only | 0000: Heat pump<br>0001: Cooling only (No display of [AUTO] [HEAT]) | 0000: Heat pump |
| 10 | Type | 0015: Compact Slim Duct type<br>(Depending on model type) | 0015: Compact Slim Duct type |
| 11 | Indoor unit capacity | 0000: Unfixed 0001 to 0044 | According to capacity type |
| 12 | Line address | 0001: No.1 unit to 0030: No.30 unit … TCC-LINK<br>0001: No.1 unit to 0128: No.128 unit … TU2C-LINK<br>00Un: Unfixed (When using U series remote controller)<br>0099: Unfixed (Other than U series remote controller) | 00Un/0099: Unfixed *1 |
| 13 | Indoor unit address | 0001: No.1 unit to 0064: No.64 unit … TCC-LINK<br>0001: No.1 unit to 0128: No.128 unit … TU2C-LINK<br>00Un: Unfixed (When using U series remote controller)<br>0099: Unfixed (Other than U series remote controller) | 00Un/0099: Unfixed *1 |
| 14 | Group address | 0000: Individual 0001: Header unit of group<br>0002: Follower unit of group<br>00Un: Unfixed (When using U series remote controller)<br>0099: Unfixed (Other than U series remote controller) | 00Un/0099: Unfixed *1 |
| 19 | Louver type (wind direction adjustment) | 0000: default 0002: 1way | 0000: default |
| 1E | Temp difference of [AUTO] mode selection COOL → HEAT, HEAT → COOL | 0000: 0 °C to 0010: 10 °C (Ts ± 5°C)<br>Ts:Remote controller setup temp. | 0003: 3 °C (Ts ±1.5 °C ) |
| 28 | Automatic restart of power failure | 0000: None 0001: Restart | 0000: None |
| 2A | Selection of option/Trouble input (TCB-PCUC2E: CN3) | 0000: Filter input 0001: Alarm input<br>0002: None (Air washer, etc.) | 0002: None |
| 2E | HA terminal (CN61) select | 0000: Usual 0001: Card input setup.1 (3)<br>0002: Fire alarm input 0003: Card input setup.2 (4)<br>(Normal open)<br>0004: Notice code (201) 0005: Card input setup.5 | 0000: Usual (HA terminal) |
| 31 | Ventilating fan control | 0000: Unavailable 0001: Available | 0000: Unavailable |
| 32 | TA sensor selection | 0000: Indoor unit TA sensor 0001: Remote controller sensor | 0000: Indoor unit TA sensor |

<table>
<tr><th>DN</th><th>Item</th><th>Description</th><th>At shipment</th></tr>
<tr><td>33</td><td>Temperature unit select</td><td>0000: °C<br>0001: °F</td><td>0000: °C</td></tr>
<tr><td>5d</td><td>External static pressure</td><td><table><tr><td>Set data</td><td>0000</td><td>0001</td><td>0003</td><td>0004</td><td>0006</td></tr><tr><td>External static pressure</td><td>10Pa (Factory setting)</td><td>20Pa</td><td>30Pa</td><td>40Pa</td><td>50Pa</td></tr></table>The list abpve is when SW501-1 and SW501-2 is OFF.</td><td>0000: Standard</td></tr>
<tr><td>60</td><td>Timer setting (wired remote controller)</td><td>0000: Available (can be performed)<br>0001: Unavailable (cannot be performed)</td><td>0000: Available</td></tr>
<tr><td>77</td><td>Dual set point</td><td>0000: Unavailable<br>0002: Available</td><td>0000: Unavailable</td></tr>
<tr><td>79</td><td>Alarm output setup of the header unit</td><td>0000: Not including the state of following unit<br>0001: Including the state of following unit</td><td>0000: Not including the state of following unit</td></tr>
<tr><td>b3</td><td>Soft cooling</td><td>0000: Unavailable<br>0001: Available</td><td>0001: Available</td></tr>
<tr><td>d0</td><td>Whether the power saving mode can be set by the remote controller</td><td>0000: Invalid<br>0001: Valid</td><td>0001: Valid</td></tr>
<tr><td>E0</td><td>Destination</td><td>0000: Japan<br>0004: Global</td><td>0004: Global</td></tr>
<tr><td>E6</td><td>Wireless remote controller A-B selection</td><td>0000: A<br>0001: B</td><td>0000: A</td></tr>
<tr><td>F6</td><td>Presence of Application control kit (TCB-PCUC2E)</td><td>0000: None<br>0001: Exist</td><td>0000: None</td></tr>
<tr><td>FC</td><td>Communication protocol *2</td><td>0000 : TCC-LINK<br>0003:TU2C-LINK</td><td>0000: TCC-LINK</td></tr>
<tr><td>Fd</td><td>Priority operation mode (FS unit)</td><td>0000: Heating<br>0001: Cooling</td><td>0000: Heating</td></tr>
<tr><td>FE</td><td>FS unit address</td><td>0001: No.1 unit to 0064: No.64 unit … TCC-LINK<br>0001: No.1 unit to 0128: No.128 unit … TU2C-LINK<br>00Un: Unfixed (When using U series remote controller)<br>0099: Unfixed (Other than U series remote controller)</td><td>00Un/0099: Unfixed *1</td></tr>
<tr><td>105</td><td>Flow Selector unit and shut-off valve unit port address</td><td>0001: Port No.1 ~ 0012: Port No.12</td><td>0001: Port No. 1</td></tr>
<tr><td>106</td><td>Combining branches mode of Flow Selector unit</td><td>0000: No combination<br>0001: Combination</td><td>0000: No combination</td></tr>
<tr><td>107</td><td>Safety measures</td><td>0000: No safety measures<br>0001: Pump-down operation<br>0002: Individual shut-off operation<br>0003: Leak detector only</td><td>0001: Pump down</td></tr>
<tr><td>108</td><td>Circulation flow operation mode of the indoor unit</td><td>0000: ON<br>0001: OFF</td><td>0000: ON</td></tr>
</table>

| DN | Item | Description | At shipment |
|---|---|---|---|
| 119 | Vertical louver type (compact slim duct only) | 0000: No louver 0002 : 3D LOUVER | 0000: No louver |
| 180 | Notice code number 01 | 0000: None<br>0001 ~ 0255: Notice code<br>0129: Notice code (201)<br>0130: Notice code (202)<br>(0001 ~ 0255: TU2C-LINK only) | 0000: None |
| 181 | Notice code number 02 | | 0000: None |
| 182 | Notice code number 03 | | 0000: None |
| 183 | Notice code number 04 | | 0000: None |
| 184 | Notice code number 05 | | 0000: None |
| 185 | Notice code number 06 | | 0000: None |
| 186 | Notice code number 07 | | 0000: None |
| 187 | Notice code number 08 | | 0000: None |
| 188 | Notice code number 09 | | 0000: None |
| 189 | number 10 | | 0000: None |
| 103 | Remote controller | 0000 : Use 0001: Do not use<br>• Indoor unit production after Oct-2021 does not need this DN setting. | 0000: Use |
| 1FB | Central device control state | 0000: No central device control (Remote controller use is possible)<br>0001: Central device control (Remote controller use is impossible) | 0000: No central device control |
| 1FC | Indoor Unit terminating resistance | 0000: OFF 0001: ON | 0000: OFF |

*1 Display order of “00Un”and “0099” varies depending on remote controller models or communication types.

For Central control address (DN [03]), Indoor unit address (DN [13]), FS unit address (DN [FE])

| Remote controller | Communication type | Display order |
|---|---|---|
| U series | TU2C-LINK | ··· ⇔ 0128 ⇔ 00Un ⇔ 0001 ⇔ ··· |
| | TCC-LINK | ··· ⇔ 0064 ⇔ 00Un ⇔ 0001 ⇔ ··· |
| Other than U series | TCC-LINK | ··· ⇔ 0064 ⇔ 0099 ⇔ 0001 ⇔ ··· |

For Line address (DN [12])

| Remote controller | Communication type | Display order |
|---|---|---|
| U series | TU2C-LINK | ··· ⇔ 0128 ⇔ 00Un ⇔ 0001 ⇔ ··· |
| | TCC-LINK | ··· ⇔ 0030 ⇔ 00Un ⇔ 0001 ⇔ ··· |
| Other than U series | TCC-LINK | ··· ⇔ 0030 ⇔ 0099 ⇔ 0001 ⇔ ··· |

For Group address (DN [14])

| Remote controller | Communication type | Display order |
|---|---|---|
| U series | TU2C-LINK<br>TCC-LINK | ··· ⇔ 0002 ⇔ 00Un ⇔ 0000 ⇔ ··· |
| Other than U series | TCC-LINK | ··· ⇔ 0002 ⇔ 0099 ⇔ 0000 ⇔ ··· |

*2 Communication protocol can be automatically switched with the setup in the outdoor unit during installation.

## TYPE

| Setup data | Type | Abbreviated Model name |
|---|---|---|
| 0015 | Slim duct type | MMD-UP***1SPHY* |

## Indoor unit capacity

### CODE No. [11]

| | |
|---|---|
| 0044 | 003 type |
| 0041 | 005 type |
| 0001 | 007 type |
| 0003 | 009 type |
| 0005 | 012 type |
| 0007 | 015 type |
| 0009 | 018 type |
| 0011 | 024 type |
| 0012 | 027 type |

## 10-5. Applied Control in Indoor Unit

### ■ Remote location ON/OFF control box (TCB-IFCB-4E2)

**[Wiring and setup]**

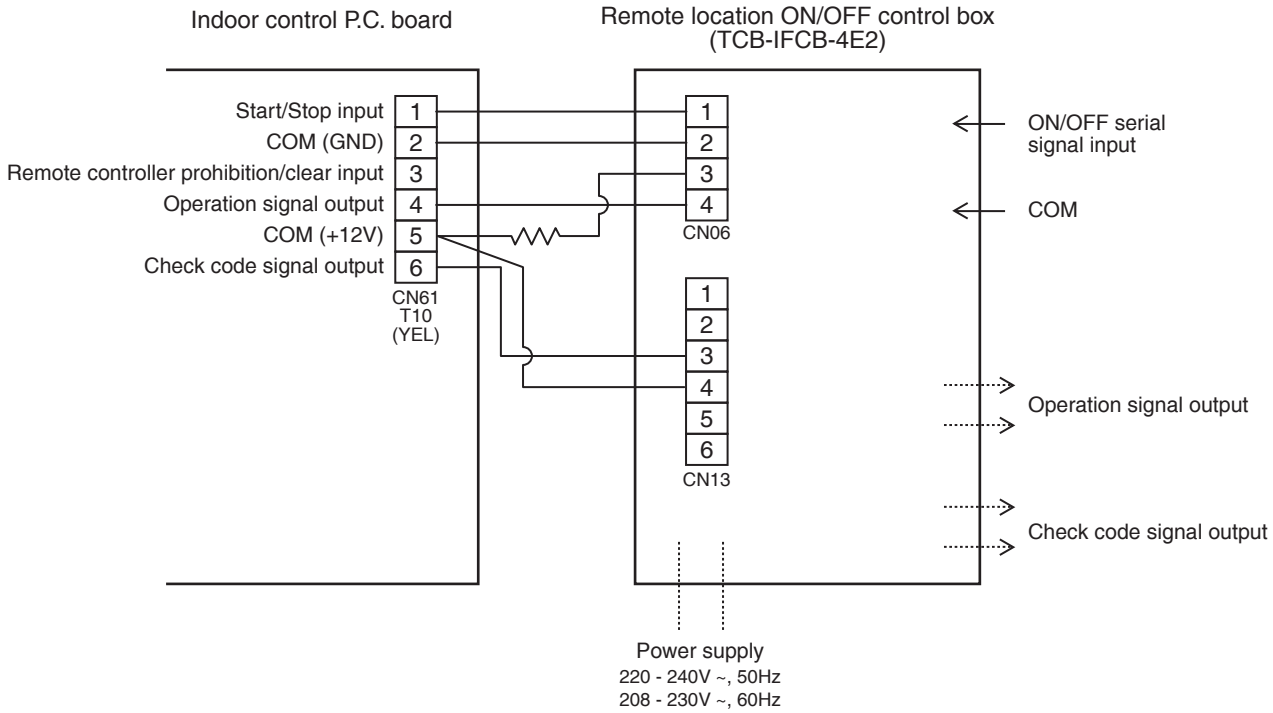
In the case of group control, the control system functions as long as it is connected to one of the indoor units (control P.C. board) in the group. If it is desired to access the operation and trouble statuses of other units, relevant signals must be brought to it from those units individually.

**1. Control items**

1) Start/Stop input signal : Operation start/stop in unit
2) Operation signal : Output during normal operation
3) Check code Output : Output during alarm
(Serial communication trouble or indoor/outdoor protective device) operation

**2. Wiring diagram using remote control interface (TCB-IFCB-4E2)**

Input IFCB-4E2 : No voltage ON/OFF serial signal
Output No voltage contact for operation, check code display
Contact capacity: Below Max. 240V 0.5A



## ■ Ventilating fan control from remote controller

**[Function]**

- The start/stop operation can be operated from the wired remote controller when air to air heat exchanger or ventilating fan is installed in the system.
- The fan can be operated even if the indoor unit is not operating.
- Use a fan which can receive the no-voltage normally-open contact as an outside input signal.
- In a group control, the units are collectively operated and they can not be individually operated.

### 1. Operation

Handle a wired remote controller in the following procedure.

∗ Use the wired remote controller during stop of the system.

∗ Be sure to set up the wired remote controller to the header unit. (Same in group control)

∗ In a group control, if the wired remote controller is set up to the header unit, both header and follower units are simultaneously operable.

***1*** **Push [MENU] and [▼] buttons simultaneously for at least 10 seconds.**

- In the air-conditioning group control mode, SETTING and the indoor unit No. are displayed. The indoor unit number displayed first is the main indoor unit number.
- In the non-group control mode (only one indoor unit), only 1-1 is displayed on the left.

***2*** **Push [▼] or [▲] button to adjust the indoor unit number. The indoor unit number in the group control will be changed cyclically. Select an indoor unit to change the settings and push [TIME] button to confirm.**

The fan of the selected indoor unit starts its operation and the swing operation of the louvers starts after confirmation.

***3*** **Using [▼] or [▲] button, set the CODE No. to [31].**

***4*** **Use [MENU] button to adjust the flash from CODE No. to SET DATA on the left. Use [▼] or [▲] button to select the selected SET DATA. (factory default: 0000)**

The setting data is as follows:

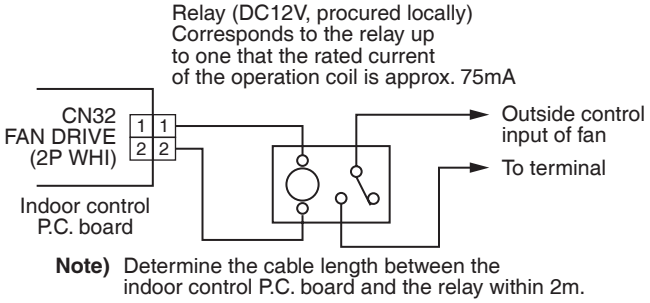
| Setup data | Handling of operation of air to air heat exchanger or ventilating fan |
|---|---|
| 0000 | Unavailable (At shipment) |
| 0001 | Available |

***5*** **Push [MENU] button to adjust the flash to CODE No. on the right after pushing [TIME] button to confirm.**

- To change the settings of another indoor unit, push [ON/OFF] button to close the current setting, and repeat from step ***1***.
- To change other settings of the indoor unit, repeat from step ***3***.

***6*** **Push [ON/OFF] button to complete the setting when the setting is completed.**

### 2. Wiring




**Note)** Determine the cable length between the indoor control P.C. board and the relay within 2m.

## ■ Auto-off feature control

### [Function]

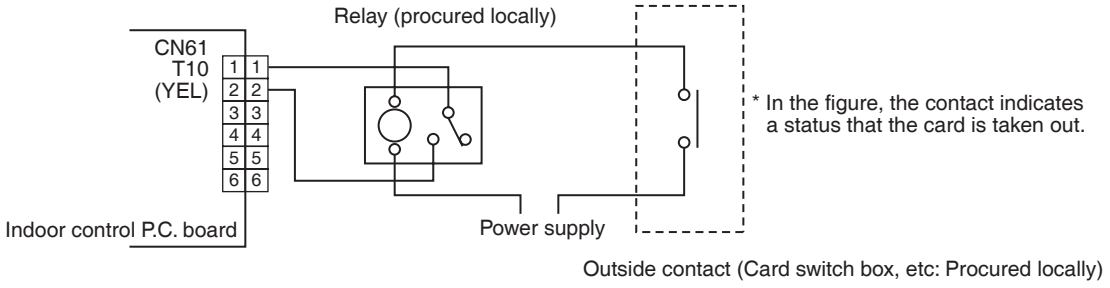
- This function controls the indoor units individually. It is used when the start operation from outside is unnecessary but the stop operation is necessary.
- A card switch box or card lock helps protect customers from forgetting to turn off the indoor unit. (not including the following Card Input 3)
- It is connected with connector on the indoor control P.C. board, and switched with the Code No. and jumper wire setup for use.
- Available connectors are CN61 or CN73. For models without CN73, CN4 on the optional Application control kit (TCB-PCUC2E) can be used.

* Leaving-ON prevention control cannot be set with both CN61 and CN73 (CN4). If both of them are set, CN73 (CN4) setting automatically turns to a factory default.

### [Setup method]

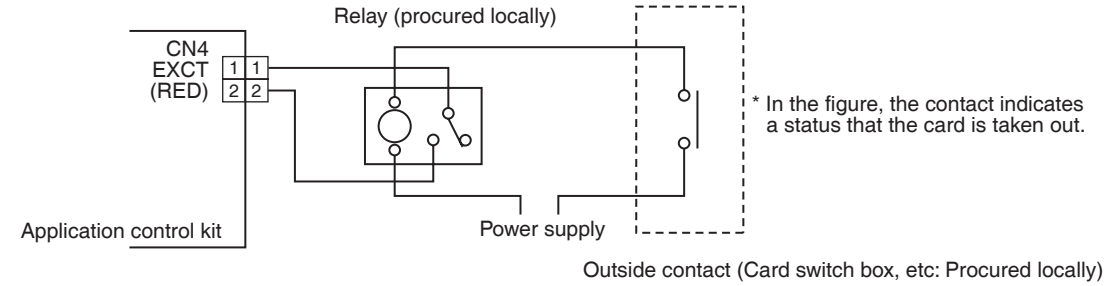
### (1) Wiring

Connecting to the CN61 connector




**NOTE)** Determine the cable length between the indoor control P.C. board and the relay within 3m.

Connecting to the Application control kit (TCB-PCUC2E, connector : CN4)




**NOTE)** Determine the cable length between the indoor control P.C. board and the relay within 3m.

### (2) Code (DN) setup

Set Code (DN) according to “9-5. Method to set indoor unit function DN code”.

| Connector | Jumper wire (J01) | Code No. (DN) | Set data | Function |
|---|---|---|---|---|
| CN61 | Short-circuit (Factory default) | 002E | 0000 (Factory default) | "HA normal setup" (pulse) |
| | | | 0001 | "Card Input 1" setup |
| | | | 0003 | "Card Input 2" setup |
| | | | 0005 | "Card Input 5" setup |
| | Open-circuit (cut) | | 0000 (Factory default) | "HA normal setup" (Static) |
| | | | 0001 | "Card Input 3" setup |
| | | | 0003 | "Card Input 4" setup |
| CN73 (CN4) | Short-circuit (Factory default) or Open-circuit (cut) | 000b | 0000 (Factory default) | "EXCT demand" setup (Forced thermostat-OFF) |
| | | | 0002 | "Card Input 3" setup |
| | | | 0004 | "Card Input 4" setup |
| | | | 0007 | "Card Input 5" setup |
| | | | 0008 | "Card Input 1" setup |
| | | | 0009 | "Card Input 2" setup |

* If you set "Card Input 1 to 5" for Code No. of CN61 and CN73, Code No. 000b setup becomes unavailable and the functions of Card Input 1 to 5 in CN73 cannot be used.

## [Control items]

| Function | External contact terminal | |
|---|---|---|
| | Close (Status that card is inserted) | Open (Status that card is taken out) |
| **Card Input 1** | Manual prohibition release<br>(Manual operation) | Manual prohibition<br>(Operation stop) |
| **Card Input 2** | Manual prohibition release<br>(Automatic operation) | Manual prohibition<br>(Operation stop) |
| **Card Input 3** | Operation status continues<br>(Do nothing) | Operation status continues and setting temperature changes<br>(COOL/DRY: 29ºC, HEAT: 18ºC) |
| **Card Input 4** | Manual prohibition release<br>(The status returns to operating condition before removing the card.) | Manual prohibition<br>(Operation stop) |
| **Card Input 5** | 1) To change a setting temperature by changing data at DN code No. 172 to 174.<br>2) The operation mode can be set by changing data (0000, 0001, 0002) at DN code No. 16b.<br>0000: operation mode is the same at the current mode. (factory setting default)<br>0001: operation mode returns to the previous mode when card was inserted. (in case of the previous mode is off operation, the operation mode is also off.)<br>0002: operation mode starts at the same previous mode when the card was inserted. (the operation mode is on operation even the previous mode is off operation.)<br>See contents below for DN settings and detailed operations. | 1) To change a setting temperature, fan speed and wind direction by changing data at DN code No. 16C to 171.<br>2) The operation mode can be set by changing data (0000, 0001) at DN code No. 16A.<br>0000: operation mode is the same at the current mode. (factory setting default)<br>0001: operation automatically starts.<br>See contents below for DN settings and detailed operations. |

* For the card switch box that does not involve contact operation described above, convert signals with a relay including a normally-closed contact.

## [Card input setup.5 Code (DN)]

| DN | Item | Description | At shipment |
|---|---|---|---|
| 16C | Open mode Set temp. (Cool, Dry) | -0015 : -15ºC to 0060 : 60ºC | 0027 : 27ºC |
| 16d | Open mode Set temp. (Heat) | -0015 : -15ºC to 0060 : 60ºC | 0020 : 20ºC |
| 16E | Open mode Set temp. (Auto) | -0015 : -15ºC to 0060 : 60ºC | 0024 : 24ºC |
| 16F | Open mode Fan speed (All operation mode) | 0000 : No change 0001 : HH 0002 : H 0003 : L | 0000 : No change |
| 170 | Open mode Wind direction (Cool, Dry, Fan) | 0000 : No change 0001 : F1 0002 : F2 0003 : F3 | 0000 : No change |
| 171 | Open mode Wind direction (Heat) | 0000 : No change 0001 : F1 0002 : F2 0003 : F3<br>0004 : F4 0005 : F5 | 0000 : No change |
| 16A | Open mode Operation | 0000 : No change 0001 : Run operation | 0000 : No change |
| 172 | Close mode Set temp. (Cool, Dry) | -0015 : -15ºC to 0060 : 60ºC | 0024 : 24ºC |
| 173 | Close mode Set temp. (Heat) | -0015 : -15ºC to 0060 : 60ºC | 0024 : 24ºC |
| 174 | Close mode Set temp. (Auto) | -0015 : -15ºC to 0060 : 60ºC | 0024 : 24ºC |
| 16b | Close mode Operation | 0000 : No change<br>0001 : Card ON mode operation<br>0002 : Run operation (Card ON mode setting) | 0000 : No change |

**[The example of Card Input 5 setting]**

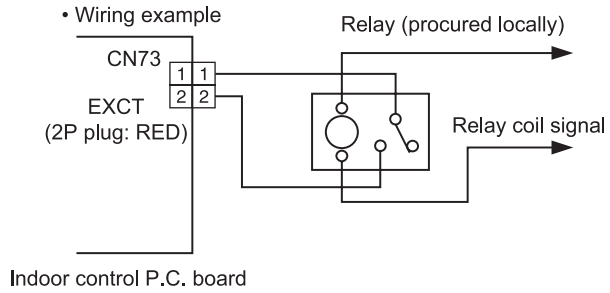
| Case. | Code No. (DN) setting | | | | | | | | | External contact terminal | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | [16A] data | [16b] data | [16C] data | [16d] data | [16F] data | [170] data | [171] data | [172] data | [173] data | Close (Status that card is inserted) | Open (Status that card is taken n out) |
| (1) | 0000 | 0000 | 0027 | 0020 | 0000 | 0000 | 0000 | 0024 | 0024 | - The operation mode continues running at the same as the current mode.<br>- The setting temperature of cooling/dry and heating mode is changed to 24°C and 24°C respectively due to change in code No. 172, 173. | - The operation mode continues running at the same as the current mode.<br>- the setting temperature of cooling/dry and heating mode is changed to 27°C and 20°C respectively due to change in code No. 16C, 16d. |
| (2)* | 0000 | 0001 | 0027 | 0020 | 0003 | 0001 | 0001 | 0024 | 0024 | - The operation mode is running at the same mode as the last time when the card was inserted due to change in code no. 16b.<br>* The operation mode will be off if the mode at the last time was in off operation. Also, the fan speed will be the same as the last time when the card was inserted.<br>- The setting temperature of cooling/dry and heating mode is changed to 24°C and 24°C respectively due to change in code No. 172, 173. | - The operation mode continues running at the same as the current mode.<br>- The setting temperature of cooling/dry and heating mode is changed to 27°C and 20°C respectively due to change in code no. 172, 173.<br>- The fan speed for all operation modes is changed due to change in code no.16F.<br>- The wind direction of Cooling/dry/fan and heating mode are changed due to change in code No. 170, 171 respectively. |
| (3)* | 0000 | 0002 | 0027 | 0020 | 0003 | 0001 | 0001 | 0024 | 0024 | - The operation mode is running at the same mode as the last time when the card was inserted. Also, the operation mode will be on even the mode was in off operation at the last time due to change in code no. 16B.<br>* The fan speed will be the same as the last time when the card is inserted.<br>- The setting temperature of cooling/dry and heating mode is changed to 24°C and 24°C respectively due to change in code No. 172, 173. | Same operation as case (2) |
| (4) | 0001 | 0000 | 0027 | 0020 | 0003 | 0001 | 0001 | 0024 | 0024 | - The operation mode continues running at the same as the current mode.<br>- The setting temperature of cooling/dry and heating mode is changed to 24°C and 24°C respectively due to change in code No. 172, 173. | - Due to change in code no. 16A, the operation mode will be as below.<br>・when the operation is ON, the operation mode will continue running at the same as the current mode.<br>・when the operation is OFF, the air conditioner will turn on automatically.<br>- The setting temperature of cooling/dry and heating mode is changed to 27°C and 20°C respectively due to change in code No. 172, 173.<br>- The fan speed for all operation modes is changed due to change in code no.16F.<br>- The wind direction of Cooling/dry/fan and heating mode are changed due to change in code No. 170, 171 respectively. |

* The history operation mode is only recorded when the card is inserted even if the operation mode is changed when the card is taken out, there is no related to the history operation mode.

## ■ Power peak-cut from indoor unit

When the relay is turned on, a forced thermostat OFF operation starts.

- For indoor P.C. boards other than MCC-1643, the “EXCT” is input with connector CN73 on the P.C. board. MCC-1643 requires Application control kit (TCB-PCUC2E) for input of a forced thermostat OFF “EXCT”. Please refer to the manual of Application control kit for a detailed setting.




**Note)** Determine the cable length between the indoor or outdoor control P.C. board and the relay within 2 m.

## ■ Address setup (Manual setting from remote controller)

**In case that addresses of the indoor units will be determined prior to piping work after cabling work**

- Set an indoor unit per a remote controller.
- Turn on power supply.

**1** **Push [MENU] and [▼] buttons simultaneously for at least 10 seconds.**

**2** **Push [▼] or [▲] button to adjust the indoor unit number, and push [TIME] button to confirm.**

**Line address settings:**

**3** **Using [▼] or [▲] button, set the CODE No. to [12].**

**4** **Use [MENU] button to adjust the flash from CODE No. to SET DATA on the left. Use [▼] or [▲] button to set the line address.**

**5** **Push [MENU] button to adjust the flash to CODE No. on the right after pushing [TIME] button to confirm.**

**Setting of indoor unit address:**

**6** **Using [▼] or [▲] button, set the CODE No. to [13].**

**7** **Use [MENU] button to adjust the flash from CODE No. to SET DATA on the left. Use [▼] or [▲] button to set the address of the indoor unit.**

**8** **Push [MENU] button to adjust the flash to CODE No. on the right after pushing [TIME] button to confirm.**

**Setting of group address:**

**9** **Using [▼] or [▲] button, set the CODE No. to [14].**

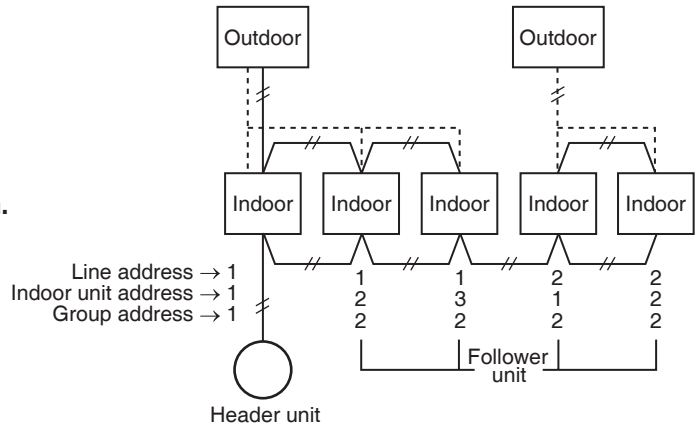
**10** **Use [MENU] button to adjust the flash from CODE No. to SET DATA on the left. Set 0000 as a standalone unit, set 0001 as a main unit, set 0002 as a sub unit.**

**11** **Push [MENU] button to adjust the flash to CODE No. on the right after pushing [TIME] button to confirm.**

**12** **Push [ON/OFF] button to complete the setting when the setting is completed.**

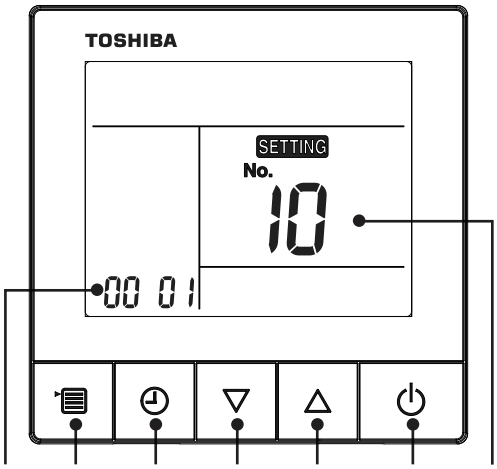
- To change the settings of another indoor unit, repeat from step ***1***.
- Repeat steps ***1*** to ***9*** until all indoor unit addresses are set and with no duplication.

(Example of -2lines cabling)
(Real line: Cabling, Broken line: Refrigerant pipe)




For the above example, perform setting by connecting singly the wired remote controller without remote controller inter-unit cable.

Group address
Individual : 0000
Header unit : 0001
Follower unit : 0002
} In case of group control




**Note 1)**

When setting the line address from the remote controller, do not use Address 29 and 30.
As they are addresses which cannot be set to the outdoor unit, if they are set, the check code [E04] (Indoor/Outdoor communication circuit trouble) is issued.

**Note 2)**

When an address was manually set from the remote controller and the central control over the refrigerant lines is carried out, perform the following setting for the Master unit of each line.

- Set the line address for every line using SW13 and 14 on the interface P.C. board of the center unit in each line.
- Except the least line address No., turn off SW2-30 on the interface P.C. board of the Master units in the lines connected to the identical central control.
  (Draw the terminal resistances of indoor/outdoor and central control line wirings together.)
- For each refrigerant line, connect the relay connector between Master unit [U1U2] and [U3U4] terminals.
- After then set the central control address.
  (For setting of the central control address, refer to the Installation manual for the central control equipment.)

## ■ Confirmation of indoor unit No. position

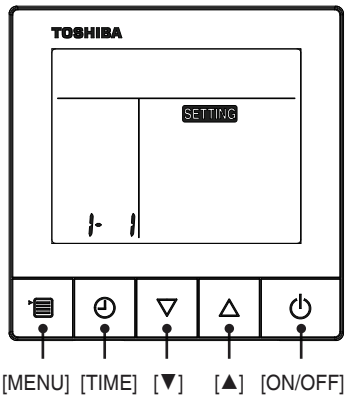
### 1. To know the indoor unit addresses though position of the indoor unit is recognized

- In case of individual operation (Wired remote controller : indoor unit = 1 : 1)
  (Follow to the procedure during operation)

**<Procedure>**

**1** **When the indoor unit is stopped, push [MENU] and [▼] buttons simultaneously for at least 10 seconds.**

- After entering, the screen displays SETTING and the indoor unit number. The indoor unit number displayed first is the main indoor unit number.
- In the non-group control mode (only one indoor unit), only 1-1 is displayed on the left.
  The displayed 1-1 indicates the address of the piping system and the address of the indoor unit.
- If other indoor units are connected to the same remote controller (group control), when [▼] or [▲] button is pushed, the addresses of other indoor units will be displayed in order.




**2** **Push [ON/OFF] button to exit after checking.**

### 2. To know the position of indoor unit by address

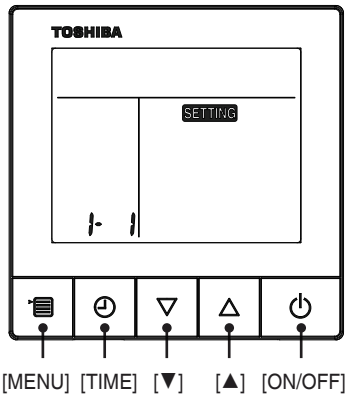
- To confirm the unit No. in the group control
  (Follow to the procedure during operation) (in this procedure, the indoor units in group control stop.)

**<Procedure>**

The indoor unit numbers in the group control are successively displayed, and fan, louver, and drain pump of the corresponding indoor unit are turned on.
(Follow to the procedure during operation)

**1** **Push [MENU] and [▼] buttons simultaneously for at least 10 seconds.**

- In the air-conditioning group control mode, SETTING and the indoor unit No. are displayed. The indoor unit number displayed first is the main indoor unit number.
- In the non-group control mode (only one indoor unit), only 1-1 is displayed on the left.
  The displayed 1-1 indicates the address of the piping system and the address of the indoor unit.



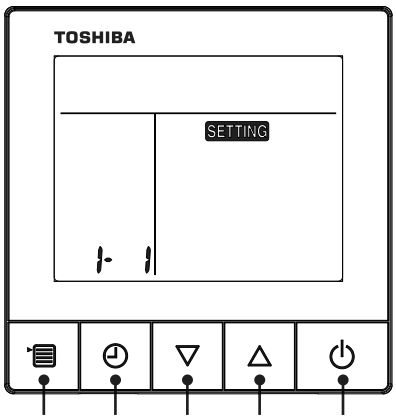

**2** **Push [▼] or [▲] button to adjust the indoor unit address. The indoor unit number in the group control will be changed cyclically. Select the indoor unit number to be identified, and push [TIME] button to confirm. The fan of the selected indoor unit starts its operation and the swing operation of the louvers starts after confirmation to determine the position of the indoor unit.**

**3** **Push [ON/OFF] button to return to the normal mode after confirmation.**
When [ON/OFF] button is pushed, SETTING flashes, then the display disappears and the air conditioner enters the normal stop mode.
(When SETTING flashes, it cannot receive operation instructions from the remote controller.)

## ◆ Changing the indoor unit address using a remote controller

**To change an indoor unit address using a wired remote controller.**

**▼ The method to change the address of an individual indoor unit (the indoor unit is paired with a wired remote controller one-to-one), or an indoor unit in a group. (The method is available when the addresses have already been set automatically.)**




**(Perform this operation when the air conditioner is stopped)**

***1*** **Push [MENU] and [▼] buttons simultaneously for at least 10 seconds.**
- In the air-conditioning group control mode, SETTING and the indoor unit No. are displayed. The indoor unit number displayed first is the main indoor unit number.
- In the non-group control mode (only one indoor unit), only 1-1 is displayed on the left. The displayed 1-1 indicates the address of the piping system and the address of the indoor unit.

***2*** **Push [▼] or [▲] button to adjust the indoor unit number. The indoor unit number in the group control will be changed cyclically. Select an indoor unit to change the settings and push [TIME] button to confirm.**
The fan of the selected indoor unit starts its operation and the swing operation of the louvers starts after confirmation.

***3*** **Using [▼] or [▲] button, set the CODE No. to [13].**

***4*** **Use [MENU] button to adjust the flash from CODE No. to SET DATA on the left. Select the specified SET DATA [****] as required.**

***5*** **Push [MENU] button to adjust the flash to CODE No. on the right after pushing [TIME] button to confirm.**

***6*** **Push [ON/OFF] button to complete the setting when the setting is completed.**
- To change the settings of another indoor unit, repeat from step ***1*** to reselect the indoor unit number.
- Repeat steps ***1*** to ***6*** to change the indoor unit addresses so as to make each of them unique.

## ■ Check code clearing function

### 1. Clearing method from remote controller

#### Clearing a check code of the outdoor unit

Clear the currently detected outdoor unit for each refrigerant line to which the indoor unit controlled by the remote controller is connected. (The indoor unit check code is not cleared.)
Use the service monitoring function of the remote controller.

**<Method>**

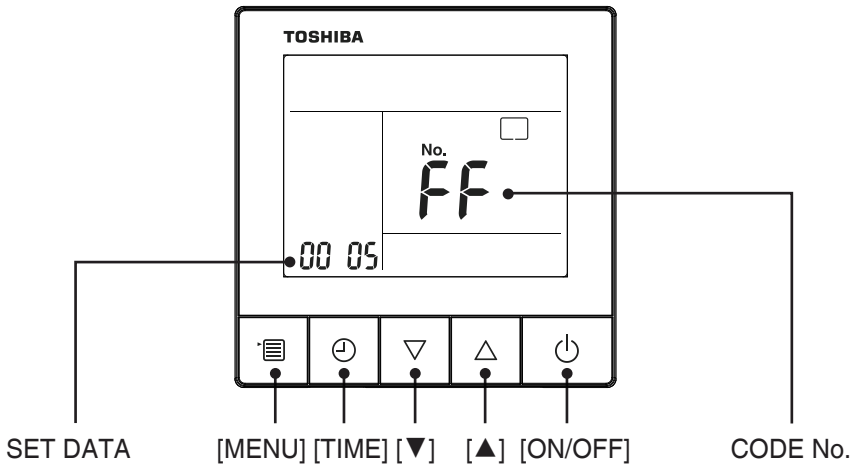
***1*** **Push and hold [MENU] button for at least 10 seconds to call the service monitor mode.**
The service monitor indicator lights up and displays the main indoor unit number first.

***2*** **Push [▼] or [▲] button, select the indoor unit number to be monitored, and push [TIME] button to enter the sensor monitor interface.**
[00] is displayed at the CODE No.

***3*** **Using [▼] or [▲] button, set the CODE No. to [FF].**

A 5-second countdown figure is displayed on the left:
[0005]→[0004]→[0003]→[0002]→[0001]→[0000]
The check code is cleared when it reaches [0000].
* The countdown figure from [0005] is repeatedly displayed.

***4*** **Push [ON/OFF] button to complete the setting.**




#### Clearing a check code of the indoor unit

Push the ON / OFF button on the remote controller.
(Only the check code of the indoor unit controlled by the remote controller will be cleared.)

## ■ Monitoring function of remote controller switch

**When using the remote controller (Model Name: RBC-ASCU11*), the following monitoring function can be utilized.**

### Calling of display

**<Contents>**

The temperature of each sensor of the remote controller, indoor unit and outdoor unit and the operating status can be checked by calling the service monitor mode from the remote controller.

**<Procedure>**

***1*** **Push and hold [MENU] button for at least 10 seconds to call the service monitor mode. (It is possible to enable the switch monitor mode during the normal operation or shutting down) The service monitor indicator lights up and displays the main indoor unit number first.**

⇩

***2*** **Push [▼] or [▲] button, select the indoor unit number to be monitored, and push [TIME] button to enter the sensor monitor interface. The temperature of CODE No. [00] is displayed first. The number on the left represents the current temperature.**

⇩

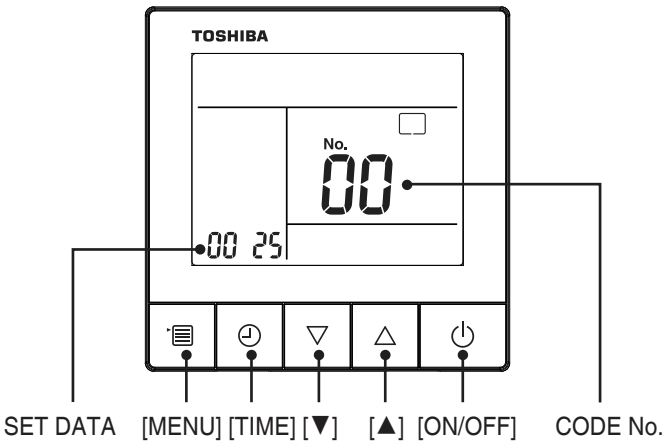
***3*** **Push [▼] or [▲] button to select the sensor number (CODE No.) to monitor. (See table below)**

- The SET DATA at the left side shows the corresponding sensor temperature.
- The sensor temperature of the indoor unit, the refrigerant line temperature of the outdoor unit, and the current ambient temperature are all within the monitor range.
- The data value of each item is not the real time, but value delayed by a few seconds.

⇩

***4*** **Push [ON/OFF] button to return to the normal display.**

If it is required to call other indoor unit temperature to display, please repeat from step ***1***.



## ◆ Indoor service monitor list

| | Code No. | Data name | Display format | Unit | Remote controller display example |
|---|---|---|---|---|---|
| Indoor unit data * | 00 | Room temperature (Use to control) | ×1 | °C | |
| | 01 | Room temperature (Remote controller) | ×1 | °C | |
| | 02 | Indoor suction air temperature (TA) | ×1 | °C | |
| | 03 | Indoor coil temperature (TCJ) | ×1 | °C | |
| | 04 | Indoor coil temperature (TC2) | ×1 | °C | |
| | 05 | Indoor coil temperature (TC1) | ×1 | °C | |
| | 06 | Indoor discharge air temperature (TF) * | ×1 | °C | |
| | 07 | Indoor fan motor number of revolutions** | ×1 | rpm | [0600] = 600rpm |
| | 08 | Indoor PMV opening | ×1/10 | pls | [0150]=1500pls |
| | E5 | Secondary heating output | - | - | [0000]=OFF, [0001]=ON |
| | F3 | Filter sign time | ×1 | h | [2500] = 2500h |
| | F9 | Suction temperature of air to air heat exchanger (TSA) * | ×1 | ℃ | [0024] = 24°C |
| | FA | Outside air temperature (TOA) * | ×1 | ℃ | |

* When the units are connected to a group, data of the header indoor unit only can be displayed.
** There is also a model which cannot be displayed.

• Refer to the service manual of an outdoor unit for "outdoor service monitor list".

## ■ LED display on P.C. board

### 1. D501 (Red)

- D501 goes on at the same time when the power supply is turned on.
  (Goes on with operation of the main microprocessor)
- D501 flashes with 1-second interval (every 0.5 second) : When there is no EEPROM or write-in trouble
- D501 flashes with 10-seconds interval (every 5 second) : In DISP mode
- D501 flashes with 2-seconds interval (every 1 second) : During setting of function exchange (EEPROM)

### 2. D403 (Red)

- D403 goes on when power is supplied to the remote controller. (ON in hardware)

### 3. D503 (Yellow): Indoor/Outdoor central control

- D503 goes on for 5 seconds at the first half during communication with the central controller.
- D503 flashes for 5 seconds with 0.2-second interval at the latter half during communication with outdoor unit. (Goes on for 0.1 second, goes off for 0.1 second)

### 4. D504 (Green): Remote controller communication

- D504 goes on for 5 seconds at the first half during communication with remote controller.
  (Header unit of group)
- In the group indoor unit, D504 flashes for 5 seconds with 0.2-second interval at the latter half during communication between header and follower unit. (Goes on for 0.1 second, goes off for 0.1 second)

# 11. TROUBLESHOOTING

## 11-1. Overview

(1) Before engaging in troubleshooting

(a) Applicable models
All Super Modular Multi System (SMMS-∗) models.
(Indoor units: MM∗-UP∗∗∗, Outdoor units: MMY-M∗P∗∗∗)

(b) Tools and measuring devices required
- Screwdrivers (Philips, flat head), spanners, long-nose pliers, nipper, pin to push reset switch, etc.
- Multimeter, thermometer, pressure gauge, etc.

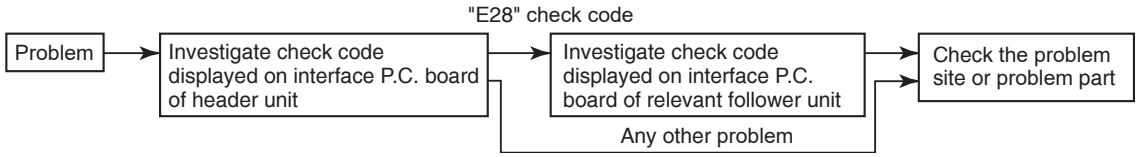
(c) Things to check prior to troubleshooting (behaviors listed below are normal)

| NO. | Behavior | Possible cause |
|---|---|---|
| 1 | A compressor would not start | • The air conditioner is being controlled by the 3-minute protective function.<br>• It is in standby status though the room temperature has reached the setup temperature.<br>• It is being operated in timer mode or fan mode.<br>• It is being in initial communication. |
| 2 | An indoor fan would not start | • The air conditioner is being controlled by the cool air discharge preventive function in "heating"? |
| 3 | An outdoor fan would not start or would change speed for no reason | • The air conditioner is being operated in "cooling" under the low outside air temperature.<br>• It is being operated in defrost operation. |
| 4 | An indoor fan would not stop | • The air conditioner is being controlled by function of residual heat elimination being performed as part of the air conditioner shutdown process after heating operation. |
| 5 | The air conditioner would not respond to a start/stop command from a remote controller | • The air conditioner is being operated under external or remote controller. |

### ⚠ CAUTION

The cooling performance may be declining considerably when total operating capacity of cooling indoor units is less than 4 HP while ambient temperature is below.

(2) Troubleshooting procedure
When a problem occurs, proceed with troubleshooting in accordance with the procedure shown below.




**NOTE**

Rather than a product trouble (see the List of Check Codes below), the problem could have been caused by a microprocessor malfunction attributable to a poor quality of the power source or an external noise. Check for possible noise sources, and shield the remote controller wiring and signal wires as necessary.

# 11-2. Troubleshooting method

The remote controllers (main remote controller and central control device) and the interface P.C. board of an outdoor unit are provided with an a 7-segment display (outdoor interface P.C. board) to display operational status. Using this self-diagnosis feature, the trouble site / trouble part may be identified in the event of a trouble by following the method described below.

The list below summarizes check codes detected by various devices. Analyze the check code according to where it is displayed and work out the nature of the trouble in consultation with the list.

- When investigating a trouble on the basis of a display provided on the indoor remote controller or central control device - See the “central control device or main remote controller display” section of the list.
- When investigating a trouble on the basis of a display provided on an outdoor unit - See the “Outdoor 7-segment display” section of the list.
- When investigating a trouble on the basis of a wireless remote controller-controlled indoor unit - See the “Indicator light block” section of the list.

## List of check codes (indoor unit)

(Check code detected by indoor unit)

IPDU: Compressor / Fan inverter P.C. board
◯: Lighting,◎: Flashing,●: Goes off
ALT.: Flashing is alternately when there are two flashing LED
SIM: Simultaneous flashing when there are two flashing LED

| Check code | | | Display of receiving unit | | | | Typical trouble on site | Description of check code |
|---|---|---|---|---|---|---|---|---|
| Remote controller display | Outdoor 7-segment display | | Indicator light block | | | | | |
| | Sub-code | | Operation ⏻ | Timer 🕘 | Ready ✺ | Flash | | |
| E03 | — | — | ◎ | ● | ● | | Indoor-remote controller periodic communication check code | Communication from remote controller or network adaptor has been lost (so has central control communication). |
| E04 | — | — | ● | ● | ◎ | | Indoor-outdoor periodic communication check code | Signals are not being received from outdoor unit. |
| E08 | E08 | Duplicated indoor address | ◎ | ● | ● | | Duplicated indoor address | Indoor unit detects address identical to its own. |
| E10 | — | — | ◎ | ● | ● | | Communication trouble between indoor unit MCU | Communication trouble between main MCU and the motor microcomputer MCU |
| E11 | — | — | ◎ | ● | ● | | Communication check code between Application control kit and indoor unit | Communication check code between Application control kit and indoor unit P.C. board |
| E17 | — | — | ◎ | ● | ● | | Communication trouble between indoor unit(s) and Flow Selector (FS) unit(s) | There is no communication from FS unit(s). |
| E18 | — | — | ◎ | ● | ● | | Check cod in periodic communication between indoor header and follower unit | Periodic communication between indoor header and follower units cannot be maintained. |
| F01 | — | — | ◎ | ◎ | ● | ALT | Indoor heat exchanger temperature sensor (TCJ) check code | Heat exchanger temperature sensor (TCJ) has been open / short-circuit. |
| F02 | — | — | ◎ | ◎ | ● | ALT | Indoor heat exchanger temperature sensor (TC2) check code | Heat exchanger temperature sensor (TC2) has been open / short-circuit. |
| F03 | — | — | ◎ | ◎ | ● | ALT | Indoor heat exchanger temperature sensor (TC1) check code | Heat exchanger temperature sensor (TC1) has been open / short-circuit. |
| F10 | — | — | ◎ | ◎ | ● | ALT | Ambient temperature sensor (TA) check code | Ambient temperature sensor (TA) has been open / short-circuit. |
| F11 | — | — | ◎ | ◎ | ● | ALT | Discharge temperature sensor (TF) check code | Discharge temperature sensor (TF) has been open / short-circuit. |
| F29 | — | — | ◎ | ◎ | ● | SIM | P.C. board or other indoor check code | Indoor EEPROM is abnormal (some other trouble may be detected). |
| F30 | — | — | ◎ | ◎ | ◯ | ALT | Occupancy sensor trouble | Occupancy sensor trouble has been detected. |
| J01 | — | — | ● | ◎ | ◎ | SIM | Communication trouble between indoor unit and Flow Selector unit | There is no communication from indoor unit(s). |
| J02 | — | — | ● | ◎ | ◎ | SIM | Communication trouble between control boards in FS unit | Communication trouble between PC boards of multiport type FS unit. |
| J29 | — | — | ● | ◎ | ◎ | SIM | Leak Detector Trouble | • There is no communication from Leak Detector.<br>• Refrigerant leak detection sensor trouble. |
| J30 | — | Detected indoor unit address<br>*Not displayed depending on the DN code (I.DN) setting | ● | ◎ | ◎ | SIM | Refrigerant leak detection. | Leak Detector detects refrigerant leak. |
| J31 | — | — | ● | ◎ | ◎ | SIM | Refrigerant leak detection sensor exceeding its life of the product | Energization time of the Leak Detector has reached its useful life. |

| Check code | | | Display of receiving unit | | | | Typical trouble on site | Description of check code |
|---|---|---|---|---|---|---|---|---|
| Remote controller display | Outdoor 7-segment display | | Indicator light block | | | | | |
| | | Sub-code | Operation | Timer | Ready | Flash | | |
| L02 | L02 | Detected indoor unit address | ◎ | ● | ○ | SIM | Indoor unit incompatible with A2L refrigerant | Indoor unit incompatible with TU2C-Link is connected.<br>• Indoor unit incompatible with R32 refrigerant is connected. |
| L03 | — | — | ◎ | ● | ◎ | SIM | Duplicated indoor group header unit | There is more than one header unit in group. |
| L07 | — | — | ◎ | ● | ◎ | SIM | Connection of group control cable to a single indoor unit | There is at least one a single indoor unit to which group control cable is connected. |
| L08 | L08 | — | ◎ | ● | ◎ | SIM | Indoor group address not set | Address setting has not been performed for one or more indoor units (also detected at outdoor unit end). |
| L09 | — | — | ◎ | ● | ◎ | SIM | Indoor capacity not set | Capacity setting has not been performed for indoor unit. |
| L11 | L11 | Detected indoor unit address | ◎ | ○ | ◎ | SIM | Flow selector unit not connected | • The outdoor unit is set to “HR” and there is no connection to the FS unit.<br>• It is not set to “Cooling only”. |
| L12 | L12 | 01 : Flow Selector (FS) unit (s) installation trouble | ◎ | ○ | ◎ | SIM | Flow Selector (FS) unit(s) system trouble | FS unit(s) outside the application setting |
| L13 | L13 | Detected indoor unit address | ◎ | ○ | ◎ | SIM | Safety measures setting unmatched | • Safety measures CODE No. setting of indoor unit connected to same FS unit (or shut-off valve unit) is mismatched.<br>* “No safety measures required” does not apply.<br>* Mixture of “pump down operation” and “Only Leak Detector” is not case.<br>• Indoor unit is not connected to port1 of multiport type FS unit.<br>• The +1 port address of FS unit port with port combining branched is set.<br>* Next to combining branches port (No.+1 side) must not be port addressed.<br>• One port in an FS unit has multiple indoor unit group settings and a group across multiple ports.<br>• The same port address of FS unit is set in different remote control groups. (Multiple remote control groups exist on ports in the same FS unit.) |
| L14 | L14 | Detected indoor unit address | ◎ | ○ | ◎ | SIM | Safety measures nonconformity | • Safety measures CODE No. setting of indoor unit is set other than “no safety measures required” and Leak Detector is not connected at the time of power input.<br>• Safety measures CODE No. setting of indoor unit is set to “pump down operation” or “individual shut-off operation” and FS unit or shut-off valve unit is not connected.<br>• Safety CODE No. setting of indoor unit connected to multiport type FS unit is set to “Individual shut off operation”. |
| L18 | L18 | Detected indoor unit address | ◎ | ○ | ◎ | SIM | Cooling/heating FS unit trouble | Cooling/heating cycle trouble resulting from piping trouble is detected |
| L20 | — | — | ◎ | ○ | ◎ | SIM | Duplicated central control address | There is duplication in central control address setting. |
| L22 | — | — | ◎ | ○ | ◎ | SIM | DX-kit (heat source capacity command) non-compliant equipment in the group. | There is a DX-kit (heat source capacity command) non-compliant equipment in the group. (DDC control, TA control and TF control are mixed.) |
| L24 | L24 | 01: Duplication of FS units address L24 FS unit(s) setting trouble<br>02: Indoor units operation mode priority setting | ◎ | ○ | ◎ | | FS unit(s) setting trouble | • FS unit(s) detects address identical to its own.<br>• Duplicated priority indoor units operation mode. |
| L30 | L30 | Detected indoor unit No. | ◎ | ○ | ◎ | SIM | Indoor external check code input (interlock) | Unit shutdown has been caused by external check code input (CN80). |
| P01 | — | — | ● | ◎ | ◎ | ALT | Indoor AC fan check code | Indoor AC fan check code is detected (activation of fan motor thermal relay). |
| P10 | P10 | Detected indoor unit No. | ● | ◎ | ◎ | ALT | Indoor overflow check code | Float switch has been activated. |
| P12 | — | — | ● | ◎ | ◎ | ALT | Indoor DC fan check code | • Indoor DC fan check code (e.g. overcurrent or lock-up) is detected. |
| P16 | P16 | 01: PMV5<br>02: PMV6<br>03: Misinstallation of PMV5 and PMV6 | ◎ | ● | ◎ | ALT | Injection circuit trouble | • Discharge temperature of either Comp 1 or Comp 2 is within the normal control range, and discharge temperature of the other is very low.<br>• Discharge temperature of either Comp 1 or Comp 2 is very high, and discharge temperature of the other is very low. |
| P31 | — | — | ◎ | ● | ◎ | ALT | Other indoor unit check code | Follower unit cannot be operated due to header unit alarm (E03 /L03 / L07 / L08). |
| S01 | — | — | | | | | | Receiving trouble in central control device. |

(Check code detected by remote controller)

| Check code | | | Display of receiving unit | | | | Typical trouble site | Description of trouble |
|---|---|---|---|---|---|---|---|---|
| Remote control | Outdoor 7-segment display | | Indicator light block | | | | | |
| | | Sub-code | Operation | Timer | Ready | Flash | | |
| E01 | – | – | ◎ | ● | ● | | No master remote control, failure remote control communication (reception) | Signals cannot be received from indoor unit; master remote control has not been set (including two remote control). |
| E02 | – | – | ◎ | ● | ● | | Failure remote control communication (transmission) | Signals cannot be transmitted to indoor unit. |
| E09 | – | – | ◎ | ● | ● | | Duplicated master remote control | Both remote controls have been set as master remote control in two remote control (alarm and shutdown for header unit and continued operation for follower unit) |

(Check code detected by central control device)

| Check code | | | Display of receiving unit | | | | Typical trouble site | Description of trouble |
|---|---|---|---|---|---|---|---|---|
| Central control | Outdoor 7-segment display | | Indicator light block | | | | | |
| | | Sub-code | Operation | Timer | Ready | Flash | | |
| C05 | – | – | No indication (when main remote control also in use) | | | | Failure central control communication (transmission) | Central control device is unable to transmit signal due to duplication of central control device |
| C06 | – | – | | | | | Failure central control communication (reception) | Central control device is unable to receive signal. |
| C12 | – | – | – | | | | Bracket alarm for general-purpose device control interface | Device connected to general-purpose device control interface is trouble. |
| P30 (L20) | – | – | (L20 is displayed.) | | | | Communication Link | • Duplication addresses of indoor units in central control device<br>• With the combination of air conditioning system, the indoor unit may detect the check code of L20 |
| S01 | – | – | | | | | | Receiving trouble in central control device |

**Note:** The same trouble, e.g. a communication trouble, may result in the display of different check codes depending on the device that detects it. Moreover, check codes detected by the main remote controller / central control device do not necessarily have a direct impact on air conditioner operation.

## Flow selector unit (FS unit) Relation

(Check code detected by indoor unit)

| Check code | | | Display of receiving unit | | | | Typical trouble site | Description of trouble |
|---|---|---|---|---|---|---|---|---|
| Main remote control | Outdoor 7-segment display | | Indicator light block | | | | | |
| | | Sub-code | Operation | Timer | Ready | Flash | | |
| E17 | – | – | ◎ | ● | ● | | Communication trouble between indoor unit (s) and FS unit (s) | There is no communication from FS unit(s) |
| J03 | – | – | ● | ◎ | ◎ | | Duplicated FS units | More than one FS units have been set up in one refrigerant line. |
| J10 | – | – | ● | ◎ | ◎ | | FS unit overflow trouble | FS unit has been shutdown in one refrigerant line due to detection of overflow |
| J11 | – | – | ● | ◎ | ◎ | | FS unit temperature sensor (TCS) trouble | FS unit temperature sensor (TCS) has been open/short-circuited. |
| L11 | L11 | Detected indoor unit address | ◎ | ○ | ◎ | SIM | Flow Selector unit not connected | |
| L12 | L12 | – | ◎ | ○ | ◎ | | FS unit(s) system trouble | FS unit(s) outside the application setting |
| L18 | L18 | Detected indoor unit address | ◎ | ○ | ◎ | SIM | Flow Selector unit trouble | |
| L24 | L24 | 01: Duplication of Flow Selector unit address<br>02: Indoor unit operation mode priority setting | ◎ | ○ | ◎ | SIM | Flow Selector unit setting trouble | |

## List of Check Codes (Outdoor Unit)

(Check code detected by outdoor interface - typical examples)

If "HELLO" is displayed on the oudoor 7-segment for 1 minute or more, turn off the power supply once and then turn on the power supply again after passage of 30 seconds or more. When the same symptom appears, it is considered there is a possibility of I/F board trouble.

◯ : Lighting, ◎ : Flashing, ● : Goes off
ALT.: Flashing is alternately when there are two flashing LED
SIM: Simultaneous flashing when there are two flashing LED

| Check code | | | Display of receiving unit | | | | | |
|---|---|---|---|---|---|---|---|---|
| Outdoor 7-segment display | | Central control or main remote controller display | Indicator light block | | | | Typical problem site | Description of problem |
| | Sub-code | | Operation ⏻ | Timer 🕘 | Ready | Flash | | |
| E06 | Number of indoor units from which signal is received normally | E06 | ● | ● | ◎ | | Signal lack of indoor unit | • Indoor unit initially communicating normally fails to return signal (reduction in number of indoor units connected).<br>• In TU2C-LINK communication system, if the termination resistance is not set in any of the indoor units. |
| E07 | – | (E04) | ● | ● | ◎ | | Indoor-outdoor communication circuit trouble | Signal cannot be transmitted to indoor units (→ indoor units left without communication from outdoor unit). |
| E08 | Duplicated indoor address | (E08) | ◎ | ● | ● | | Duplicated indoor address | More than one indoor unit are assigned same address (also detected at indoor unit end). |
| E12 | 01: Indoor-outdoor communication<br>02: Outdoor-outdoor communication | E12 | ◎ | ● | ● | | Automatic address starting trouble | • Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress.<br>• Outdoor automatic address setting is started while automatic address setting for indoor units is in progress. |
| E15 | – | E15 | ● | ● | ◎ | | Indoor unit not found during automatic address setting | Indoor unit fails to communicate while automatic address setting for indoor units is in progress. |
| E16 | 00: Capacity over<br>01: Number of units connected | E16 | ● | ● | ◎ | | Too many indoor units connected/capacity over | Combined capacity of indoor units is too large. The maximum combined of indoor units shown in the specification table. |
| E19 | 00: No header unit<br>02: Two or more header units | E19 | ● | ● | ◎ | | Trouble in number of outdoor header units | There is no or more than one outdoor header unit in one refrigerant line. |
| E20 | 01: Connection of outdoor unit from other refrigerant line<br>02: Connection of indoor unit from other refrigerant line | E20 | ● | ● | ◎ | | Connection to other refrigerant line found during automatic address setting | Indoor unit from other refrigerant line is detected while indoor automatic address setting is in progress. |
| E23 | – | E23 | ● | ● | ◎ | | Outdoor-outdoor communication transmission trouble | Signal cannot be transmitted to other outdoor units. |
| E25 | – | E25 | ● | ● | ◎ | | Duplicated follower outdoor address | There is duplication in outdoor addresses set manually. |
| E26 | Address of outdoor unit from which signal is not received normally | E26 | ● | ● | ◎ | | Signal lack of outdoor unit | Follower outdoor unit initially communicating normally fails to do so (reduction in number of follower outdoor units connected). |
| E28 | Detected outdoor unit No. | E28 | ● | ● | ◎ | | Outdoor follower unit trouble | Outdoor header unit detects trouble relating to follower outdoor unit (detail displayed on follower outdoor unit). |
| E31 | P.C.board: Compressor 1, 2 / Fan Motor 1, 2<br>01 O<br>02 O<br>03 O O<br>08 O<br>09 O O<br>0A O O<br>0B O O O<br>10 O<br>P.C.board: Compressor 1, 2 / Fan Motor 1, 2<br>11 O O<br>12 O O<br>13 O O O<br>18 O<br>19 O O<br>1A O O<br>1B O O O<br>Circle (O): Trouble P.C. board<br>80 : Communication trouble between MCU and Sub MCU | E31 | ● | ● | ◎ | | P.C. board communication trouble<br>Sub MCU communication trouble | There is no communication between P.C. boards in inverter box. |
| F04 | – | F04 | ◎ | ◎ | ○ | ALT | Outdoor discharge temperature sensor (TD1) trouble | Outdoor discharge temperature sensor (TD1) has been open/short-circuited. |
| F05 | – | F05 | ◎ | ◎ | ○ | ALT | Outdoor discharge temperature sensor (TD2) trouble | Outdoor discharge temperature sensor (TD2) has been open/short-circuited. |
| F06 | 01: TE1 sensor<br>02: TE2 sensor<br>03: TE3 sensor | F06 | ◎ | ◎ | ○ | ALT | Outdoor heat exchanger liquid side temperature sensor (TE1, TE2, TE3) trouble | Outdoor heat exchanger liquid side temperature sensors (TE1, TE2, TE3) have been open/short-circuited. |
| F07 | 01: TL1 sensor<br>02: TL2 sensor<br>03: TL3 sensor | F07 | ◎ | ◎ | ○ | ALT | Outdoor liquid temperature sensor (TL1,TL2,TL3) trouble | Outdoor liquid temperature sensor (TL1,TL2,TL3) has been open/short-circuited. |
| F08 | – | F08 | ◎ | ◎ | ○ | ALT | Outdoor outside air temperature sensor (TO) trouble | Outdoor air temperature sensor (TO) has been open/short-circuited. |
| F09 | 01: TG1 sensor<br>02: TG2 sensor<br>03: TG3 sensor | F09 | ◎ | ◎ | ○ | ALT | Outdoor heat exchanger gas side temperature sensor (TG1, TG2, TG3) trouble | Outdoor heat exchanger gas side temperature sensors (TG1, TG2, TG3) have been open/short-circuited. |

| Check code | | | Display of receiving unit | | | | | |
|---|---|---|---|---|---|---|---|---|
| Outdoor 7-segment display | | Central control or main remote controller display | Indicator light block | | | | Typical problem site | Description of problem |
| | Sub-code | | Operation ⏻ | Timer 🕘 | Ready ❁ | Flash | | |
| F12 | 01: TS1 sensor<br>03: TS3 sensor | F12 | ◎ | ◎ | ○ | ALT | Outdoor suction temperature sensor (TS1,TS3) trouble | Outdoor suction temperature sensor (TS1,TS3) has been open/short-circuited. |
| F15 | – | F15 | ◎ | ◎ | ○ | ALT | Outdoor temperature sensor (TE1,TL1) wiring trouble | Wiring trouble in outdoor temperature sensors (TE1,TL1) has been detected. |
| F16 | – | F16 | ◎ | ◎ | ○ | ALT | Outdoor pressure sensor (Pd, Ps) wiring trouble | Wiring trouble in outdoor pressure sensors (Pd, Ps) has been detected. |
| F22 | – | F22 | ◎ | ◎ | ○ | ALT | TD3 sensor trouble | |
| F23 | – | F23 | ◎ | ◎ | ○ | ALT | Low pressure sensor (Ps) trouble | Output voltage of low pressure sensor (Ps) is zero. |
| F24 | – | F24 | ◎ | ◎ | ○ | ALT | High pressure sensor (Pd) trouble | Output voltage of high pressure sensor (Pd) is zero or provides abnormal readings when compressors have been turned off. |
| F31 | – | F31 | ◎ | ◎ | ○ | SIM | Outdoor EEPROM trouble | Outdoor EEPROM is failure (alarm and shutdown for header unit and continued operation for follower unit) |
| H04 | – | H04 | ● | ◎ | ● | | Compressor 1 case thermostat operation | |
| H05 | – | H05 | ● | ◎ | ● | | Outdoor discharge temperature sensor (TD1) wiring trouble | Wiring/installation trouble or detachment of outdoor discharge temperature sensor (TD1) has been detected. |
| H06 | – | H06 | ● | ◎ | ● | | Activation of low-pressure protection | Low pressure (Ps) sensor detects abnormally low operating pressure. |
| H07 | – | H07 | ● | ◎ | ● | | Low oil level protection | Temperature sensor for oil level detection (TK1,TK2) detects abnormally low oil level. |
| H08 | 01: TK1 sensor trouble<br>02: TK2 sensor trouble | H08 | ● | ◎ | ● | | Trouble in temperature sensor for oil level detection (TK1,TK2) | Temperature sensor for oil level detection (TK1,TK2) has been open/short-circuited. |
| H14 | – | H14 | ● | ◎ | ● | | Compressor 2 case thermostat operation | |
| H15 | – | H15 | ● | ◎ | ● | | Outdoor discharge temperature sensor (TD2) wiring trouble | Wiring/installation trouble or detachment of outdoor discharge temperature sensor (TD2) has been detected. |
| H16 | 01: TK1 oil circuit trouble<br>02: TK2 oil circuit trouble | H16 | ● | ◎ | ● | | Oil level detection circuit trouble | No temperature change is detected by temperature sensor for oil level detection (TK1,TK2) despite compressor having been started. |
| H25 | – | H25 | ● | ◎ | ● | | TD3 sensor miswiring | |
| L02 | Detected indoor unit address | L02 | ◎ | ● | ◎ | SIM | Model mismatch of indoor and outdoor unit<br>Indoor unit incompatible with A2L (R32) refrigerant | |
| L04 | – | L04 | ◎ | ○ | ◎ | SIM | Duplicated outdoor refrigerant line address | Identical refrigerant line address has been assigned to outdoor units belonging to different refrigerant piping systems. |
| L05 | – | – | ◎ | ● | ◎ | SIM | Duplicated indoor units with priority (Displayed in indoor unit with priority) | |
| L06 | Number of priority indoor units (check code L05 or L06 depending on individual unit) | L05 | ◎ | ● | ◎ | SIM | Duplicated priority indoor unit (as displayed on priority indoor unit) | More than one indoor unit have been set up as priority indoor unit. |
| | | L06 | ◎ | ● | ◎ | SIM | Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit) | More than one indoor unit have been set up as priority indoor unit. |
| L08 | – | (L08) | ◎ | ● | ◎ | SIM | Indoor group address not set | Address setting have not been performed for one or more indoor units (also detected at indoor end). |
| L10 | – | L10 | ◎ | ○ | ◎ | SIM | Outdoor capacity not set | Outdoor unit capacity has not been set (after P.C. board replacement). |
| L13 | Detected indoor unit address | L13 | ◎ | ○ | ◎ | SIM | Safety device setting unmatch | |
| L14 | Detected indoor unit address | L14 | ◎ | ○ | ◎ | SIM | Safety device nonconformity | |

<table>
<tr><th colspan="2">Check code</th><th rowspan="3">Central control or main remote controller display</th><th colspan="4">Display of receiving unit</th><th rowspan="3">Typical problem site</th><th rowspan="3">Description of problem</th></tr>
<tr><th colspan="2">Outdoor 7-segment display</th><th colspan="4">Indicator light block</th></tr>
<tr><th></th><th>Sub-code</th><th>Operation ⏻</th><th>Timer 🕘</th><th>Ready ❋</th><th>Flash</th></tr>
<tr><td>L17</td><td>–</td><td>L17</td><td>◎</td><td>○</td><td>◎</td><td>SIM</td><td>Outd oor model incompatibility trouble</td><td>Old model outdoor unit has been connected.</td></tr>
<tr><td>L23</td><td>–</td><td>L23</td><td>◎</td><td>○</td><td>◎</td><td>SIM</td><td>SW setting mistake</td><td></td></tr>
<tr><td>L28</td><td>–</td><td>L28</td><td>◎</td><td>○</td><td>◎</td><td>SIM</td><td>Too many outdoor units connected</td><td>Morethanfive outdoor units have been connected.</td></tr>
<tr><td rowspan="2">L29</td><td><table><tr><th></th><th colspan="2">P.C.board<br>Compressor</th><th colspan="2">P.C.board<br>Fan Motor</th><th></th><th colspan="2">P.C.board<br>Compressor</th><th colspan="2">P.C.board<br>Fan Motor</th></tr><tr><th></th><th>1</th><th>2</th><th>1</th><th>2</th><th></th><th>1</th><th>2</th><th>1</th><th>2</th></tr><tr><td>01</td><td>O</td><td></td><td></td><td></td><td>11</td><td>O</td><td></td><td></td><td>O</td></tr><tr><td>02</td><td></td><td>O</td><td></td><td></td><td>12</td><td></td><td>O</td><td></td><td>O</td></tr><tr><td>03</td><td>O</td><td>O</td><td></td><td></td><td>13</td><td>O</td><td>O</td><td></td><td>O</td></tr><tr><td>08</td><td></td><td></td><td>O</td><td></td><td>18</td><td></td><td></td><td></td><td>O</td></tr><tr><td>09</td><td>O</td><td></td><td>O</td><td></td><td>19</td><td>O</td><td></td><td></td><td>O</td></tr><tr><td>0A</td><td></td><td>O</td><td>O</td><td></td><td>1A</td><td></td><td>O</td><td></td><td>O</td></tr><tr><td>0B</td><td>O</td><td>O</td><td>O</td><td></td><td>1B</td><td>O</td><td>O</td><td></td><td>O</td></tr><tr><td>10</td><td></td><td></td><td></td><td>O</td></tr></table>Circle (O): Trouble P.C. board</td><td>L29</td><td>◎</td><td>○</td><td>◎</td><td>SIM</td><td>Trouble in number of P.C. boards</td><td>There are insufficient number of P.C. board in inverter box.</td></tr>
<tr><td>00</td><td>L29</td><td>◎</td><td>○</td><td>◎</td><td>SIM</td><td>The number of P.C. board trouble</td><td>When there is much number of an inverter P.C. board to model setting of an interface P.C. board.</td></tr>
<tr><td>L30</td><td>Detected indoor unit No.</td><td>(L30)</td><td>◎</td><td>○</td><td>◎</td><td>SIM</td><td>Indoor external trouble input (interlock)</td><td>Indoor unit has been shut down for external trouble input in one refrigerant line (detected by indoor unit).</td></tr>
<tr><td>–</td><td>–</td><td>L31</td><td></td><td>–</td><td></td><td></td><td></td><td></td></tr>
<tr><td>P03</td><td>–</td><td>P03</td><td>◎</td><td>●</td><td>◎</td><td>ALT</td><td>Outdoor discharge (TD1) temperature trouble</td><td>Outdoor discharge temperature sensor (TD1) has detected abnormally high temperature.</td></tr>
<tr><td>P05</td><td>00: Power detection trouble<br>01: Open phase<br>02: Power supply miswiring</td><td>P05</td><td>◎</td><td>●</td><td>◎</td><td>ALT</td><td>Power detection trouble /Open phase detection /Power supply miswiring detection</td><td>Open phase is detected when power is turned on. Inverter DC voltage is too high (overvoltage) or too low (undervoltage).</td></tr>
<tr><td rowspan="2">P07</td><td>1 : Compressor 1 heat sink trouble<br>2 : Compressor 2 heat sink trouble</td><td rowspan="2">P07</td><td rowspan="2">◎</td><td rowspan="2">●</td><td rowspan="2">◎</td><td rowspan="2">ALT</td><td>Heat sink overheating trouble</td><td>Temperature sensor built into IPM (TH) detects overheating.</td></tr>
<tr><td>04: Heat sink dew condensation</td><td>Heat sink dew condensation trouble</td><td>Outdoor liquid temperature sensor (TL2) has detected abnormally low temperature.</td></tr>
<tr><td>P10</td><td>Indoor unit No. detected</td><td>(P10)</td><td>●</td><td>◎</td><td>◎</td><td>ALT</td><td>Indoor unit overflow</td><td>Indoor unit has been shutdown in one refrigerant line due to detection of overflow (detected by indoor unit).</td></tr>
<tr><td>P11</td><td>–</td><td>P11</td><td>●</td><td>◎</td><td>◎</td><td>ALT</td><td>Outdoor heat exchanger freeze trouble</td><td>Remaining frost on outdoor heat exchanger has been detected repeatedly.</td></tr>
<tr><td>P13</td><td>–</td><td>P13</td><td>●</td><td>◎</td><td>◎</td><td>ALT</td><td>Outdoor liquid backflow detection trouble</td><td>State of refrigerant cycle circuit indicates liquid backflow operation.</td></tr>
<tr><td>P14</td><td>01: Outdoor unit valve is closed</td><td>P14</td><td>●</td><td>◎</td><td>◎</td><td>ALT</td><td>Another refrigerant cycle protection</td><td></td></tr>
<tr><td>P15</td><td>01: TS condition<br>02: TD condition</td><td>P15</td><td>◎</td><td>●</td><td>◎</td><td>ALT</td><td>Gas leak detection</td><td>Outdoor suction temperature sensor (TS1) detects sustained and repeated high temperatures that exceed standard value.</td></tr>
<tr><td>P16</td><td>01: PMV5<br>02: PMV6<br>03: SV7</td><td>P16</td><td>◎</td><td>●</td><td>◎</td><td>ALT</td><td>Injection circuit trouble</td><td></td></tr>
<tr><td>P17</td><td>–</td><td>P17</td><td>◎</td><td>●</td><td>◎</td><td>ALT</td><td>Outdoor discharge (TD2) temperature trouble</td><td>Outdoor discharge temperature sensor (TD2) detects abnormally high temperature.</td></tr>
<tr><td>P18</td><td>–</td><td>P18</td><td>◎</td><td>●</td><td>◎</td><td>ALT</td><td>Discharge temp. TD3 trouble</td><td></td></tr>
<tr><td>P19</td><td>Outdoor unit No. detected</td><td>P19</td><td>◎</td><td>●</td><td>◎</td><td>ALT</td><td>4-way valve reversing trouble</td><td>Abnormality in refrigerating cycle is detected during heating operation.</td></tr>
<tr><td>P20</td><td>–</td><td>P20</td><td>◎</td><td>●</td><td>◎</td><td>ALT</td><td>Activation of high-pressure protection</td><td>High pressure (Pd) sensor detects high pressure that exceeds standard value.</td></tr>
</table>

MG-CTT: Magnet contactor

(Check code detected by Inverter of Compressor featuring in outdoor unit - typical examples)

| Check code | | | Display of receiving unit | | | | Typical problem site | Description of proplem |
|---|---|---|---|---|---|---|---|---|
| Outdoor 7-segment display | | Central control or main remote controller display | Indicator light block | | | | | |
| | Sub-code | | Operation ⏻ | Timer 🕘 | Ready ❁ | Flash | | |
| F13 | 1∗: Compressor 1<br>2∗: Compressor 2 | F13 | ◎ | ◎ | ○ | ALT | Trouble in temperature sensor built into indoor IPM (TH) | Temperature sensor built into indoor IPM (TH) has been open/short-circuited. |
| H01 | 1∗: Compressor 1<br>2∗: Compressor 2 | H01 | ● | ◎ | ● | | Compressor breakdown | Inverter current (Idc) detection circuit detects overcurrent. |
| H02 | 1∗: Compressor 1<br>2∗: Compressor 2 | H02 | ● | ◎ | ● | | Compressor trouble (lockup) | Compressor lockup is detected |
| H03 | 1∗: Compressor 1<br>2∗: Compressor 2 | H03 | ● | ◎ | ● | | Current detection circuit trouble | Abnormal current is detected while inverter compressor is turned off. |
| H28 | 1∗: Compressor 1<br>2∗: Compressor | H28 | ● | ◎ | ● | | Compressor motor winding trouble | Compressor motor winding is layer shorted. |
| P04 | 01: Compressor 1<br>02: Compressor 2 | P04 | ◎ | ● | ◎ | ALT | Activation of high-pressure SW | High-pressure SW is activated. |
| P05 | 01: Compressor 1 side<br>02: Compressor 2 side | P05 | ◎ | ● | ◎ | ALT | Compressor Vdc trouble | Inverter DC voltage is too high (overvoltage) or too low (undervoltage). |
| P07 | 01: Compressor 1 side<br>02: Compressor 2 side | P07 | ◎ | ● | ◎ | ALT | Heat sink overheat trouble | Temperature sensor built into IPM (TH) detects overheating. |
| P11 | – | P11 | ● | ◎ | ◎ | ALT | Outdoor heat exchanger freeze trouble | Remaining frost on outdoor heat exchanger has been detected repeatedly. |
| P22 | 1∗: Fan P.C. board 1<br>2∗: Fan P.C. board 2 | P22 | ◎ | ● | ◎ | ALT | Outdoor fan P.C. board trouble | Outdoor fan P.C. board detects trouble. |
| P25 | 1∗: Compressor 1<br>2∗: Compressor | P25 | ◎ | ● | ◎ | ALT | Compressor P.C. board trouble | IPM for compressor is broken. (Short-circuit etc.) |
| P26 | 1∗: Compressor 1<br>2∗: Compressor 2 | P26 | ◎ | ● | ◎ | ALT | Activation of IPM, compressor short-circuit protection | Short-circuit protection for compressor motor driver circuit components is activated (momentary overcurrent). |
| P29 | 1∗: Compressor 1<br>2∗: Compressor 2 | P29 | ◎ | ● | ◎ | ALT | Compressor position detection circuit trouble | Compressor motor position detection trouble is detected. |

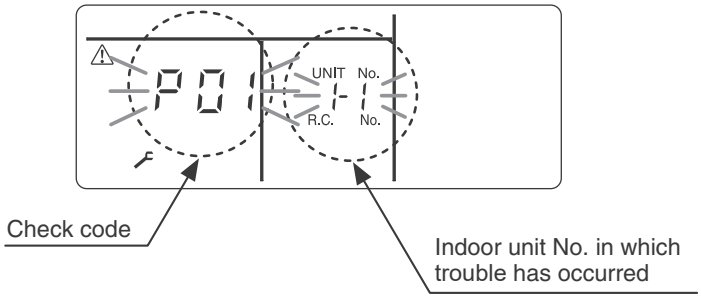
Note: The above check codes are examples only, and different check codes may be displayed depending on the outdoor unit configuration

# 11-3. Troubleshooting based on information displayed on remote controller

**<RBC-AMTU3∗>**

(1) Checking and testing

When a trouble occurs to an air conditioner, a check code and indoor unit No. are displayed on the display window of the remote controller.
Check codes are only displayed while the air conditioner is in operation.
If the display has already disappeared, access check code history by following the procedure described below.




(2) Trouble history

The trouble history access procedure is described below (up to four check codes stored in memory).
Check code history can be accessed regardless of whether the air conditioner is in operation or shut down.

**<Procedure>** To be performed when system at rest

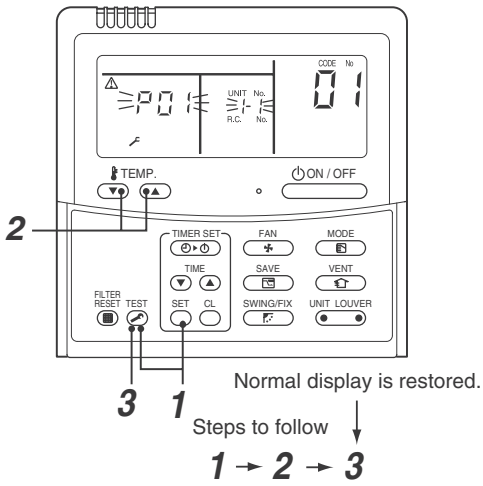
***1*** **Invoke the SERVICE CHECK mode by pressing the TEST + SET buttons simultaneously and holding for at least 4 seconds.**

The letters "SERVICE CHECK" light up, and the check code "01" is displayed, indicating the trouble history. This is accompanied by the indoor unit No. to which the trouble history is related and a check code.

***2*** **To check other trouble history items, press the TEMP. button to select another check code.**

Check code "01" (latest) → Check code "04" (oldest)
Note: Trouble history contains four items.

***3*** **When the TEST button is pushed, normal display is restored.**



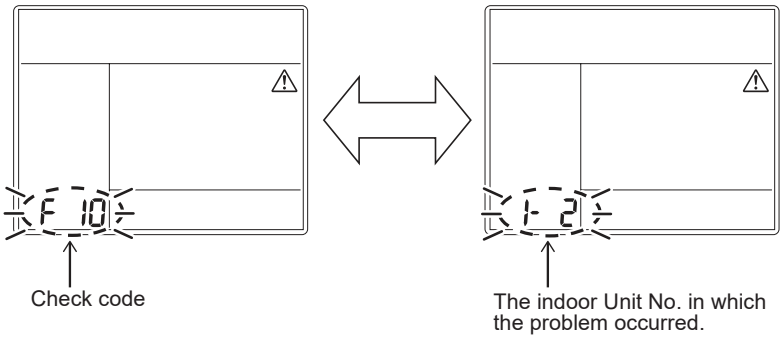

## ⚠ CAUTION

Do not push the CL button as it would erase the whole trouble history of the indoor unit.

**<RBC-ASCU11-∗>**

(1) Confirmation and check

If a problem occurs with the air conditioner, the OFF timer indicator alternately shows the check code and the indoor Unit No. in which the problem occurred.




(2) Troubleshooting history and confirmation

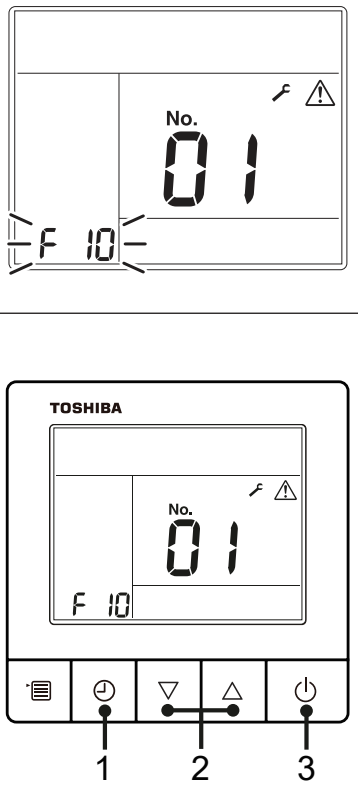
You can check the troubleshooting history with the following procedure if a problem occurs with the air conditioner.

(The troubleshooting history records up to 4 incidents.)

You can check it during operation or when operation is stopped.

- If you check the troubleshooting history during OFF timer operation, the OFF timer will be canceled.

| Procedure | Description of operation |
|---|---|
| 1 | Push the OFF timer button for over 10 seconds and the indicators appear as an image indicating the troubleshooting history mode has been entered. If [ Service check] is displayed, the mode enters in the troubleshooting history mode.<br>• [01: Order of troubleshooting history] appears in the temperature indicator.<br>• The OFF timer indicator alternately shows the [check code] and the [indoor Unit No. ] in which the problem occurred. |
| 2 | Each time the setting button is pushed, the recorded troubleshooting history is displayed in sequence.<br>The troubleshooting history appears in order from [01] (newest) to [04] (oldest).<br>**⚠ CAUTION**<br>In the troubleshooting history mode, DO NOT push the Menu button for over 10 seconds, doing so deletes the entire troubleshooting history of the indoor unit. |
| 3 | After you have finished checking, push the ON/OFF button to return to the regular mode.<br>• If the air conditioner is operating, it remains operated even after the ON/OFF button has been pushed. To stop its operation, push the ON/OFF button again. |




**How to read displayed information**

<7-segment display symbols>

0123456789AbCdEFHJLP

<Corresponding alphanumerical letters>

0 1 2 3 4 5 6 7 8 9 A b C d E F H J L P

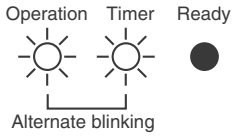
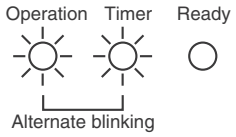
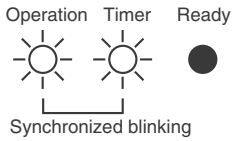
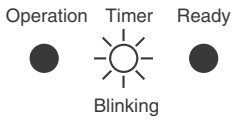
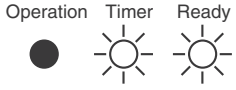
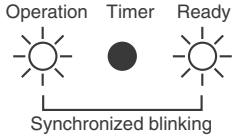
## Using indoor unit indicators (receiving unit light block) (wireless type)

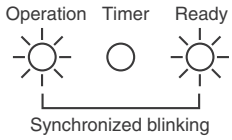
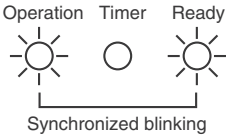
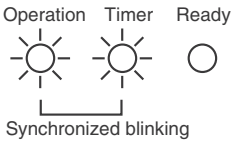
To identify the check code, check the 7-segment display on the header unit. To check for check codes not displayed on the 7-segment display, consult the “List of Check Codes (Indoor Unit)” in “10-2. Troubleshooting method”.

● : Goes off ○ : Lighting ☼ : Blinking (0.5 seconds)

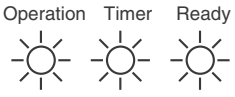
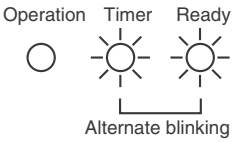
| Light block | Check code | Cause of trouble | | |
|---|---|---|---|---|
| Operation ● Timer ● Ready ● All lights out | – | Power turned off or trouble in wiring between receiving and indoor units | | |
| Operation ☼ Timer ● Ready ● Blinking | E01 | Trouble reception | Receiving unit | Trouble or poor contact in wiring between receiving unit and indoor units |
| | E02 | Trouble transmission | | |
| | E03 | Loss of communication | | |
| | E08 | Duplicated indoor unit No. (address) | | Setting trouble |
| | E09 | Duplicated master remote controller | | |
| | E10 | Communication trouble between indoor unit MCU | | |
| | E11 | Communication trouble between Application control kit and indoor unit P.C. board | | |
| | E12 | Automatic address starting trouble | | |
| | E18 | Trouble or poor contact in wiring between indoor units, indoor power turned off | | |
| Operation ● Timer ● Ready ☼ Blinking | E04 | Trouble or poor contact in wiring between indoor and outdoor units (loss of indoor-outdoor communication) | | |
| | E06 | • Trouble reception in indoor-outdoor communication (dropping out of indoor unit)<br>• In TU2C-LINK communication system, if the termination resistance is not set in any of the indoor units | | |
| | E07 | Trouble transmission in indoor-outdoor communication | | |
| | E15 | Indoor unit not found during automatic address setting | | |
| | E16 | Too many indoor units connected / overloading | | |
| | E19 | Trouble in number of outdoor header units | | |
| | E20 | Detection of refrigerant piping communication trouble during automatic address setting | | |
| | E23 | Trouble transmission in outdoor-outdoor communication | | |
| | E25 | Duplicated follower outdoor address | | |
| | E26 | Trouble reception in outdoor-outdoor communication, dropping out of outdoor unit | | |
| | E28 | Outdoor follower unit trouble | | |
| | E31 | P.C. board communication trouble | | |
| Operation ● Timer ☼ Ready ☼ Alternate blinking | P01 | Indoor AC fan trouble | | |
| | P10 | Indoor overflow trouble | | |
| | P11 | Outdoor heat exchanger freezing trouble | | |
| | P12 | Indoor DC fan trouble | | |
| | P13 | Outdoor liquid backflow detection trouble | | |
| Operation ☼ Timer ● Ready ☼ Alternate blinking | P03 | Outdoor discharge (TD1) temperature trouble | | |
| | P04 | Activation of outdoor high-pressure SW | | |
| | P05 | Open phase / power failure<br>Inverter DC voltage (Vdc) trouble<br>MG-CTT trouble | | |
| | P07 | Outdoor heat sink overheating trouble - Poor cooling of electrical component (IGBT) of outdoor unit | | |
| | P15 | Gas leak detection - insufficient refrigerant charging | | |
| | P17 | Outdoor discharge (TD2) temperature trouble | | |
| | P18 | Outdoor discharge (TD3) temperature trouble | | |
| | P19 | Outdoor 4-way valve reversing trouble | | |
| | P20 | Activation of high-pressure protection | | |
| | P22 | Outdoor fan P.C. board trouble | | |
| | P26 | Outdoor IPM, Compressor short-circuit trouble | | |
| | P29 | Compressor position detection circuit trouble | | |
| | P31 | Shutdown of other indoor unit in group due to trouble (group follower unit trouble) | | |

MG-CTT: Magnet contactor

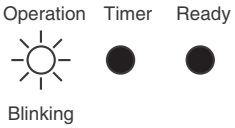
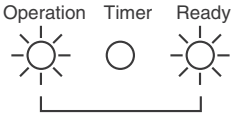
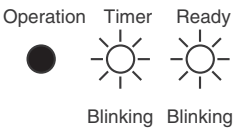
| Light block | Check code | Cause of trouble | |
|---|---|---|---|
|  | F01 | Heat exchanger temperature sensor (TCJ) trouble | Indoor unit temperature sensor trouble |
| | F02 | Heat exchanger temperature sensor (TC2) trouble | |
| | F03 | Heat exchanger temperature sensor (TC1) trouble | |
| | F10 | Ambient temperature sensor (TA) trouble | |
| | F11 | Discharge temperature sensor (TF) trouble | |
|  | F04 | Discharge temperature sensor (TD1) trouble Discharge | Outdoor unit temperature sensor trouble |
| | F05 | temperature sensor (TD2) trouble | |
| | F06 | Heat exchanger temperature sensor (TE1, TE2) trouble | |
| | F07 | Liquid temperature sensor (TL) trouble | |
| | F08 | Outside air temperature sensor (TO) trouble | |
| | F09 | TG1,TG2 or TG3 sensor trouble | |
| | F12 | Suction temperature sensor (TS1) trouble | |
| | F13 | Heat sink sensor (TH) trouble | |
| | F15 | Wiring trouble in heat exchanger sensor (TE1) and liquid temperature sensor (TL)<br>Outdoor unit temperature sensor wiring / installation trouble | |
| | F16 | Wiring trouble in outdoor high pressure sensor (Pd) and low pressure sensor (Ps)<br>Outdoor pressure sensor wiring trouble | |
| | F22 | Outdoor discharge temperature sensor (TD3) trouble | |
| | F23 | Low pressure sensor (Ps) trouble | Outdoor unit pressure sensor trouble |
| | F24 | High pressure sensor (Pd) trouble | |
| | F30 | Occupancy sensor trouble | |
| | F31 | Indoor unit EEPROM trouble | |
|  | F29 | Failure in indoor EEPROM | |
|  | H01 | Compressor breakdown | Outdoor unit compressor related trouble |
| | H02 | Compressor lockup | |
| | H03 | Current detection circuit trouble | |
| | H04 | Comp. 1 case thermostat operation | |
| | H05 | Wiring / installation trouble or detachment of outdoor discharge temperature sensor (TD1) | |
| | H06 | Abnormal drop in low-pressure sensor (Ps) reading | Protective shutdown of outdoor unit |
| | H07 | Abnormal drop in oil level | |
| | H08 | Trouble in temperature sensor for oil level detection circuit (TK1, TK2, TK3, TK4 or TK5) | |
| | F14 | Comp. 2 case thermostat operation | |
| | H15 | Wiring / installation trouble or detachment of outdoor discharge temperature sensor (TD2) | |
| | H16 | Oil level detection circuit trouble - Trouble in outdoor unit TK1, TK2, TK3, TK4 or TK5 circuit | |
| | H25 | Wiring / installation trouble or detachment of outdoor discharge temperature sensor (TD3) | |
|  | J29 | The refrigerant leak detection sensor trouble | |
| | J30 | Refrigerant leak detection | |
| | J31 | Come to the end of refrigerant leak detection sensor life | |
|  | L02 | Model mismatched of indoor and outdoor unit | |
| | L03 | Duplicated indoor group header unit | |
| | L05 | Duplicated priority indoor unit (as displayed on priority indoor unit) | |
| | L06 | Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit) | |
| | L07 | Connection of group control cable to a single indoor unit | |
| | L08 | Indoor group address not set | |
| | L09 | Indoor capacity not set | |

| Light block | Check code | Cause of trouble |
|---|---|---|
|  | L04 | Duplicated outdoor refrigerant line address |
| | L10 | Outdoor capacity not set |
| | L12 | Flow Selector unit system trouble |
| | L17 | Outdoor model incompatibility trouble |
| | L18 | Flow selector units trouble |
| | L20 | Duplicated central control address |
| | L24 | Flow Selector unit setting trouble |
| | L28 | Too many outdoor units connected |
|  | L29 | Trouble in number of P.C. boards |
| | L30 | Indoor external interlock trouble (External abnormal input) |
|  | F30 | Occupancy sensor trouble |
| | F31 | Outdoor EEPROM trouble |

## Other (indications not involving check code)

| Light block | Check code | Cause of trouble |
|---|---|---|
|  | – | Test run in progress |
|  | – | Setting incompatibility<br>(automatic cooling / heating setting for model incapable of it and heating setting for cooling-only model) |

## Flow selector unit (FS unit) Relation

| Light block | Check code | Cause of trouble |
|---|---|---|
|  | E17 | Communication trouble between indoor unit(s) and FS unit(s) |
|  | L12 | FS unit(s) system trouble |
| | L24 | FS unit(s) setting trouble |
|  | J02 | Communication trouble between control boards in Flow Selector unit |
| | J03 | Duplicated FS units |
| | J10 | FS unit overflow trouble |
| | J11 | FS unit temperature sensor(TCS) trouble |
| | J29 | Refrigerant leak detection sensor trouble |
| | J30 | Refrigerant leak detection |
| | J30 | Refrigerant leak detection sensor exceeding its life of the product |

# 11-4. Check Codes Displayed on Remote Controller and SMMS series Outdoor Unit (7-Segment Display on I/F Board) and Locations to Be Checked

For other types of outdoor units, refer to their own service manuals.

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| E01 | — | — | Remote controller | Indoor-remote controller communication trouble (detected at remote controller end) | Stop of corresponding unit | Communication between indoor P.C. board and remote controller is disrupted. | • Check remote controller inter-unit tie cable (A/B).<br>• Check for broken wire or connector bad contact.<br>• Check indoor power supply.<br>• Check for failure in indoor P.C. board.<br>• Check remote controller address settings (when two remote controllers are in use).<br>• Check remote controller P.C. board. |
| E02 | — | — | Remote controller | Remote controller transmission trouble | Stop of corresponding unit | Signal cannot be transmitted from remote controller to indoor unit. | • Check internal transmission circuit of remote controller.<br>--- Replace remote controller as necessary. |
| E04 | — | — | Indoor unit | Indoor-outdoor communication circuit trouble (detected at indoor end) | Stop of corresponding unit | Indoor unit is not receiving signal from outdoor unit. | • Check order in which power was turned on for indoor and outdoor units.<br>• Check indoor address setting.<br>• Check indoor-outdoor tie cable.<br>• Check outdoor terminator resistor setting (SW100, Bit 2). |
| E04 | E06 | No. of indoor units from which signal is received normally | I/F | Dropping out of indoor unit | All stop | **Condition 1**<br>All indoor unit initially communicating normally fails to return signal for specified length of time.<br><br>**Condition 2**<br>Outdoor I / F board SW103, Bit4 : OFF (Factory default) | • Check power supply to indoor unit. (Is power turned on?)<br>• Check connection of indoor-outdoor communication cable.<br>• Check connection of communication connectors on indoor P.C. board.<br>• Check connection of communication connectors on outdoor P.C. board.<br>• Check for failure in indoor P.C. board.<br>• Check for failure in outdoor P.C. board (I/F). |
| | — | — | Indoor unit | Indoor-outdoor communication circuit trouble | Only specified indoor units stop | **Condition 1**<br>Indoor unit initially communicating normally fails to return signal for specified length of time. | • Check power supply to indoor unit. (Is power turned on?)<br>• Check indoor-outdoor power-on sequence.<br>• Check indoor address setting<br>• Check wiring of Indoor-outdoor communication wires<br>• Check outdoor terminator resistor setting (SW100, Bit 2). |

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| E04/E06 | E06 | No. of indoor units from which signal is received normally | Indoor unit | Indoor-outdoor communication circuit trouble (E04) | All stop | **Condition 1**<br>One indoor unit or more initially communicating normally fails to return signal for specified length of time.<br><br>**Condition 2**<br>Outdoor I / F board SW103, Bit4 : ON<br>(To switch the check code detection condition.)<br>SW103<br>  <br><br>Display on main remote controller.<br>Indoor units unavailable for indoor / outdoor communication. :E04<br>Indoor units available for indoor / outdoor communication. : E06<br><br>In TU2C-LINK communication system, if the termination resistance is not set in any of the indoor units. | • Check power supply to indoor unit.<br>(Is power turned on?)<br>• Check indoor-outdoor power-on sequence.<br>• Check indoor address setting<br>• Check wiring of Indoor-outdoor communication wires<br>• Check outdoor terminator resistor setting (SW100, Bit 2). |
| | | | I/F | Dropping out of indoor unit (E06) | | | • Check power supply to indoor unit.<br>(Is power turned on?)<br>• Check connection of indoor-outdoor communication cable.<br>• Check connection of communication connectors on indoor P.C. board.<br>• Check connection of communication connectors on outdoor P.C. board.<br>• Check for failure in indoor P.C. board.<br>• Check for failure in outdoor P.C. board (I/F). |
| — | E07 | — | I/F | Indoor-outdoor communication circuit trouble (detected at outdoor end) | All stop | Signal cannot be transmitted from outdoor to indoor units for 30 seconds continuously. | • Check outdoor terminator resistor setting (SW100, Bit 2).<br>• Check connection of indoor-outdoor communication circuit. |
| E08 | E08 | Duplicated indoor address | Indoor unit<br>I/F | Duplicated indoor address | All stop | More than one indoor unit are assigned same address. | • Check indoor addresses.<br>• Check for any change made to remote controller connection (group/ individual) since indoor address setting. |
| E09 | — | — | Remote controller | Duplicated master remote controller | Stop of corresponding unit | In two remote controller configuration (including wireless), both controllers are set up as master. (Header indoor unit is shut down with alarm, while follower indoor units continue operating.) | • Check remote controller settings.<br>• Check remote controller P.C. boards. |
| E10 | — | — | Indoor unit | Indoor inter-MCU communication trouble | Stop of corresponding unit | Communication cannot be established/maintained upon turning on of power or during communication. | • Check for failure in indoor P.C. board |
| E12 | E12 | 01: Indoor-outdoor communication<br>02: Outdoor-outdoor communication | I/F | Automatic address starting trouble | All stop | • Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress.<br>• Outdoor automatic address setting is started while automatic address setting for indoor units is in progress. | • Check whether the outdoor unit of other systems or the indoor unit is connected to Uv (U1/U2) line or Uc (U5/U6) line.<br>• Perform automatic address setting again after disconnecting communication cable to that refrigerant line. |
| E15 | E15 | — | I/F | Indoor unit not found during automatic address setting | All stop | Indoor unit cannot be detected after indoor automatic address setting is started. | • Check connection of indoor-outdoor communication line.<br>• Check for trouble in indoor power supply system.<br>• Check for noise from other devices.<br>• Check for power failure.<br>• Check for failure in indoor P.C. board. |

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| E16 | E16 | 00:<br>Capacity over<br>01-:<br>No. of units connected | I/F | Too many indoor units connected | All stop | • Combined capacity of indoor units is too large.<br><br>**Note:**<br>**If this code comes up after backup setting for outdoor unit failure is performed, perform "No capacity over detected" setting.**<br><"No capacity over detected" setting method><br>Turn on SW103 / Bit 3 on I/F P.C. board of outdoor header unit.<br>For Cooling Only model, this check code is not displayed even if it exceeds the combined capacity of indoor units.<br><br>• More than 128 indoor units are connected. | • Check capacities of indoor units connected.<br>• Check combined HP capacities of indoor units.<br>• Check HP capacity settings of outdoor units.<br>• Check No. of indoor units connected.<br>• Check for failure in outdoor P.C. board (I/F). |
| E18 | — | — | Indoor unit | Trouble in communication between indoor header and follower units | Stop of corresponding unit | Periodic communication between indoor header and follower units cannot be maintained. | • Check remote controller wiring.<br>• Check indoor power supply wiring.<br>• Check P.C. boards of indoor units. |
| E19 | E19 | 00:<br>No header unit<br>02:<br>Two or more header units | I/F | Trouble in number of outdoor header units | All stop | • There are more than one outdoor header units in one line.<br>• There is no outdoor header unit in one line. | The outdoor unit which turned on SW101 and the bit 1 of the interface P.C. board is set to Header unit.<br>• Check SW101 bit 1 of follower outdoor unit.<br>• Check connection of indoor-outdoor communication line.<br>• Check for failure in outdoor P.C. board (I/F). |
| E20 | E20 | 01:<br>Connection of outdoor unit from other line<br>02:<br>Connection of indoor unit from other line | I/F | Connection to other line found during automatic address setting | All stop | Equipment from other line is found to have been connected when indoor automatic address setting is in progress. | Check whether the outdoor unit of other systems or the indoor unit is connected to Uv (U1/U2) line or Uc (U5/U6) line. |
| E23 | E23 | — | I/F | Outdooroutdoor communication transmission trouble | All stop | Signal cannot be transmitted to other outdoor units for at least 30 seconds continuously. | • Check power supply to outdoor units. (Is power turned on?)<br>• Check connection of tie cables between outdoor units for bad contact or broken wire.<br>• Check communication connectors on outdoor P.C. boards.<br>• Check for failure in outdoor P.C. board (I/F).<br>• Check termination resistance setting for communication between outdoor units. |
| E25 | E25 | — | I/F | Duplicated follower outdoor address | All stop | There is duplication in outdoor addresses set manually. | **Note:**<br>**Do not set outdoor addresses manually.** |
| E26 | E26 | Address of outdoor unit from which signal is not received normally | I/F | Signal lack of outdoor unit | All stop | Outdoor unit initially communicating normally fails to return signal for specified length of time. | • Backup setting is being used for outdoor units.<br>• Check power supply to outdoor unit. (Is power turned on?)<br>• Check connection of tie cables between outdoor units for bad contact or broken wire.<br>• Check communication connectors on outdoor P.C. boards.<br>• Check for failure in outdoor P.C. board (I/F). |

<table>
<tr><th colspan="3">Check code</th><th rowspan="3">Location of detection</th><th rowspan="3">Description</th><th rowspan="3">System status</th><th rowspan="3">Check code detection condition(s)</th><th rowspan="3">Check items (locations)</th></tr>
<tr><th rowspan="2">Main remote controller</th><th colspan="2">Outdoor 7-segment display</th></tr>
<tr><th>Check code</th><th>Sub-code</th></tr>
<tr><td>The check code which occurred follower outdoor unit is displayed</td><td>E28</td><td>Detected outdoor unit No.</td><td>I/F</td><td>Outdoor follower unit trouble</td><td>All stop</td><td>Outdoor header unit receives trouble code from outdoor follower unit.</td><td>• Check check code displayed on outdoor follower unit.<br><Convenient functions><br>If SW04 is pressed and held for at least 1 second while [E28] is displayed on the 7-segment display of outdoor header unit, the fan of the outdoor unit that has been shut down due to an trouble comes on.<br>If SW04 and SW05 are pressed simultaneously, the fans of normal outdoor units come on.<br>To stop the fan or fans, press SW05 on its own.</td></tr>
<tr><td rowspan="2">E31</td><td rowspan="2">E31</td><td>P.C.board<br>Compressor / Fan Motor<br>1 2 1 2<br>01 O<br>02 O<br>03 O O<br>08 O<br>09 O O<br>0A O O<br>0B O O O<br>10 O<br>11 O O<br>12 O O<br>13 O O O<br>18 O<br>19 O O<br>1A O O<br>1B O O O<br>Circle (O): Trouble P.C. board</td><td>I/F</td><td>P.C. board communication trouble</td><td>All stop</td><td>Communication is disrupted between P.C. board in inverter box.</td><td>• Check wiring and connectors involved in communication between P.C. board I/F P.C. board for bad contact or broken wire.<br>• Check for failure in outdoor P.C. board (I/F, comp. P.C. board or Fan P.C. board).<br>• Check for external noise.</td></tr>
<tr><td>80</td><td></td><td>Communication trouble between MCU and Sub MCU</td><td>All stop</td><td>Communication between MCU and Sub MCU stopped.</td><td>• Operation of power supply reset (OFF for 60 seconds or more)<br>• Outdoor I/F PC board trouble check</td></tr>
<tr><td>F01</td><td>—</td><td>—</td><td>Indoor unit</td><td>Indoor TCJ sensor trouble</td><td>Stop of corresponding unit</td><td>Sensor resistance is infinity or zero (open/short circuit).</td><td>• Check connection of TCJ sensor connector and wiring.<br>• Check resistance characteristics of TCJ sensor.<br>• Check for failure in indoor P.C. board.</td></tr>
<tr><td>F02</td><td>—</td><td>—</td><td>Indoor unit</td><td>Indoor TC2 sensor trouble</td><td>Stop of corresponding unit</td><td>Sensor resistance is infinity or zero (open/short circuit).</td><td>• Check connection of TC2 sensor connector and wiring.<br>• Check resistance characteristics of TC2 sensor.<br>• Check for failure in indoor P.C. board.</td></tr>
<tr><td>F03</td><td>—</td><td>—</td><td>Indoor unit</td><td>Indoor TC1 sensor trouble</td><td>Stop of corresponding unit</td><td>Sensor resistance is infinity or zero (open/short circuit).</td><td>• Check connection of TC1 sensor connector and wiring.<br>• Check resistance characteristics of TC1 sensor.<br>• Check for failure in indoor P.C. board.</td></tr>
<tr><td>F04</td><td>F04</td><td>—</td><td>I/F</td><td>TD1 sensor trouble</td><td>All stop</td><td>Sensor resistance is infinity or zero (open/short circuit).</td><td>• Check connection of TD1 sensor connector.<br>• Check resistance characteristics of TD1 sensor.<br>• Check for failure in outdoor P.C. board (I/F).</td></tr>
</table>

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| F05 | F05 | — | I/F | TD2 sensor trouble | All stop | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TD2 sensor connector.<br>• Check resistance characteristics of TD2 sensor.<br>• Check for failure in outdoor P.C. board (I/F). |
| F06 | F06 | 01: TE1 sensor trouble<br>02: TE2 sensor trouble<br>03: TE3 sensor trouble | I/F | TE1/TE2/TE3 sensor trouble | All stop | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TE1/TE2/TE3 sensor connectors.<br>• Check resistance characteristics of TE1/TE2/TE3 sensors.<br>• Check for failure in outdoor P.C. board (I/F). |
| F07 | F07 | 01: TL1 sensor trouble<br>02: TL2 sensor trouble<br>03: TL3 sensor trouble | I/F | TL1/TL2/TL3 sensor trouble | All stop | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TL1/TL2/TL3 sensor connector.<br>• Check resistance characteristics of TL1/TL2/TL3 sensor.<br>• Check for failure in outdoor P.C. board (I/F). |
| F08 | F08 | — | I/F | TO sensor trouble | All stop | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TO sensor connector.<br>• Check resistance characteristics of TO sensor.<br>• Check for failure in outdoor P.C. board (I/F). |
| F09 | F09 | 01: TG1 sensor trouble<br>02: TG2 sensor trouble<br>03: TG3 sensor trouble | I/F | TG1/TG2/TG3 sensor trouble | All stop | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TG1/TG2/TG3 sensor connectors.<br>• Check resistance characteristics of TG1/TG2/TG3 sensors.<br>• Check for failure in outdoor P.C. board (I/F). |
| F10 | — | — | Indoor unit | Indoor TA sensor trouble | Stop of corresponding unit | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TA sensor connector and wiring.<br>• Check resistance characteristics of TA sensor.<br>• Check for failure in indoor P.C. board. |
| F11 | — | — | Indoor unit | Indoor TF sensor trouble | Stop of corresponding unit | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TF sensor connector and wiring.<br>• Check resistance characteristics of TF sensor.<br>• Check for failure in indoor P.C. board. |
| F12 | F12 | 01: TS1 sensor trouble<br>03: TS3 sensor trouble | I/F | TS1/TS3 sensor trouble | All stop | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TS1/TS3 sensor connector<br>• Check resistance characteristics of TS1/TS3 sensor.<br>• Check for failure in indoor P.C. board. |
| F13 | F13 | 1: Compressor 1 side<br>2: Compressor 2 side | Compressor P.C. board | TH sensor trouble | All stop | Sensor resistance is infinity or zero (open/short circuit). | • Failure in IPM built-in temperature sensor<br>→ Replace Compressor P.C. board. |
| F15 | F15 | — | I/F | Outdoor temperature sensor wiring trouble (TE1, TL1) | All stop | During compressor operation in HEAT mode, TL1 continuously provides temperature reading higher than indicated by TL1 by at least specified margin for 3 minutes or more. | • Check installation of TE1 and TL1 sensors.<br>• Check resistance characteristics of TE1 and TL1 sensors.<br>• Check for outdoor P.C. board (I/F) trouble |

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| F16 | F16 | — | I/F | Outdoor pressure sensor wiring trouble (Pd, Ps) | All stop | Readings of high-pressure Pd sensor and low-pressure Ps sensor are switched. Output voltages of both sensors are zero. | • Check connection of high-pressure Pd sensor connector.<br>• Check connection of low-pressure Ps sensor connector.<br>• Check for failure in pressure sensors Pd and Ps.<br>• Check for trouble in outdoor P.C. board (I/F).<br>• Check for compressor poor compression. |
| F23 | F23 | — | I/F | Ps sensor trouble | All stop | Output voltage of Ps sensor is zero. | • Check for connection trouble involving Ps sensor and Pd sensor connectors.<br>• Check connection of Ps sensor connector.<br>• Check for failure in Ps sensor.<br>• Check for compressor poor compression.<br>• Check for failure in 4-way valve.<br>• Check for failure in outdoor P.C. board (I/F).<br>• Check for failure in SV4 circuit. |
| F24 | F24 | — | I/F | Pd sensor trouble | All stop | Output voltage of Pd sensor is zero (sensor open-circuited).<br>Pd > 4.15MPa despite compressor having been turned off. | • Check connection of Pd sensor connector.<br>• Check for failure in Pd sensor.<br>• Check for failure in outdoor P.C. board (I/F). |
| F29 | — | — | Indoor unit | Other indoor trouble | Stop of corresponding unit | Indoor P.C. board does not operate normally. | • Check for failure in indoor P.C. board (failure EEPROM) |
| F31 | F31 | — | I/F | Outdoor EEPROM trouble | All stop *1 | Outdoor P.C. board (I/F) does not operate normally. | • Check power supply voltage.<br>• Check power supply noise.<br>• Check for failure in outdoor P.C. board (I/F). |
| H01 | H01 | 1: Compressor 1 side<br>2: Compressor 2 side | Compressor P.C. board | Compressor breakdown | All stop | Inverter current detection circuit detects overcurrent and shuts system down. | • Check power supply voltage. (AC380V-415V ± 10%).<br>• Check for failure in compressor.<br>• Check for possible cause of abnormal overloading.<br>• Check for failure in outdoor P.C. board (Compressor). |
| H02 | H02 | 1: Compressor 1 side<br>2: Compressor 2 side | Compressor P.C. board | Compressor trouble (lockup)<br>MG-CTT trouble | All stop | Overcurrent is detected several seconds after startup of inverter compressor. | • Check for failure in compressor.<br>• Check power supply voltage. (AC380V-415V ± 10%).<br>• Check compressor system wiring, particularly for open phase.<br>• Check connection of connectors/terminals on compressor P.C. board.<br>• Check conductivity of case heater. (Check for refrigerant problem inside compressor.)<br>• Check for failure in outdoor P.C. board (Compressor).<br>• Check outdoor MG-CTT. |
| H03 | H03 | 1: Compressor 1 side<br>2: Compressor 2 side | Compressor P.C. board | Current detection circuit trouble | All stop | Current flow of at least specified magnitude is detected despite inverter compressor having been shut turned off. | • Check current detection circuit wiring.<br>• Check failure in outdoor P.C. board (Compressor). |

*1 Total shutdown in case of header unit
Continued operation in case of follower unit

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| H05 | H05 | — | I/F | TD1 sensor miswiring (incomplete insertion) | All stop | Discharge temperature of compressor 1 (TD1) does not increase despite compressor being in operation. | • Check installation of TD1 sensor.<br>• Check connection of TD1 sensor connector and wiring.<br>• Check resistance characteristics of TD1 sensor.<br>• Check for failure in outdoor P.C. board (I/F). |
| H06 | H06 | — | I/F | Activation of low-pressure protection | All stop | Low-pressure Ps sensor detects operating pressure lower than 0.02MPa. | • Check service valves to confirm full opening (both gas and liquid sides).<br>• Check outdoor PMVs for clogging (PMV1, 2, 3).<br>• Check for failure in SV4 circuits.<br>• Check for failure in low-pressure Ps sensor.<br>• Check indoor filter for clogging.<br>• Check valve opening status of indoor PMV.<br>• Check refrigerant piping for clogging.<br>• Check operation of outdoor fan (during heating).<br>• Check for insufficiency in refrigerant quantity. |
| H07 | H07 | — | I/F | Low oil level protection | All stop | Operating compressor detects continuous state of low oil level for about 2 hours. | <All outdoor units in corresponding line to be checked><br>• Check connection and installation of TK1 and TK2 sensors.<br>• Check resistance characteristics of TK1 and TK2 sensors.<br>• Check for gas or oil leak in same line.<br>• Check for refrigerant problem inside compressor casing.<br>• Check SV3D, SV3F valves for failure.<br>• Check oil return circuit of oil separator for clogging.<br>• Check oil equalizing circuit for clogging. |
| H08 | H08 | 01: TK1 sensor trouble<br>02: TK2 sensor trouble | I/F | Trouble in temperature sensor for oil level detection | All stop | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TK1 sensor connector.<br>• Check resistance characteristics of TK1 sensor.<br>• Check for failure in outdoor P.C. board (I/F). |
| | | | | | All stop | Sensor resistance is infinity or zero (open/short circuit). | • Check connection of TK2 sensor connector.<br>• Check resistance characteristics of TK2 sensor.<br>• Check for failure in outdoor P.C. board (I/F). |
| H15 | H15 | — | I/F | TD2 sensor miswiring (incomplete insertion) | All stop | Discharge temperature of (TD2) does not increase despite compressor 2 being in operation. | • Check installation of TD2 sensor.<br>• Check connection of TD2 sensor connector and wiring.<br>• Check resistance characteristics of TD2 sensor.<br>• Check for failure in outdoor P.C. board (I/F). |

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| H16 | H16 | 01: TK1 oil circuit trouble<br>02: TK2 oil circuit trouble | I/F | Oil level detection circuit trouble | All stop | No temperature change is detected by TK1 despite compressor 1 having been started. | • Check for disconnection of TK1 sensor.<br>• Check resistance characteristics of TK1 sensor.<br>• Check for connection trouble involving TK1 and TK2 sensors<br>• Check for clogging in oil equalizing circuit capillary.<br>• Check for refrigerant entrapment inside compressor. |
| | | | | | | No temperature change is detected by TK2 despite compressor 2 having been started. | • Check for disconnection of TK2 sensor.<br>• Check resistance characteristics of TK2 sensor.<br>• Check for connection trouble involving TK1 and TK2 sensors<br>• Check SV3F valve malfunction.<br>• Check for clogging in oil equalizing circuit capillary.<br>• Check for refrigerant entrapment inside compressor. |
| H17 | H17 | 1: Compressor 1 side<br>2: Compressor 2 side | Compressor P.C. board | Compressor trouble (Step-out) | All stop | Judged that the synchronization could not be taken. | • Check power supply voltage. (AC380V-415V ± 10%).<br>• Check for failure in compressor.<br>• Check for possible cause of abnormal overloading.<br>• Check for failure in outdoor P.C. board (compressor). |
| L02 | L02 | — | Indoor unit | Outdoor units model disagreement trouble | Stop of corresponding unit | In case of different outdoor unit (Not corresponded to Air to Air Heat Exchanger type) | • Check outdoor unit model. (Check whether the outdoor unit corresponds to Air to Air Heat Exchanger type or not.) |
| L03 | — | — | Indoor unit | Duplicated indoor header unit | Stop of corresponding unit | There are more than one header units in group. | • Check indoor addresses.<br>• Check for any change made to remote controller connection (group/ individual) since indoor address setting. |
| L04 | L04 | — | I/F | Duplicated outdoor line address | All stop | There is duplication in line address setting for outdoor units belonging to different refrigerant piping systems. | • Check line addresses. |
| L05 | — | — | I/F | Duplicated priority indoor unit (as displayed on priority indoor unit) | All stop | More than one indoor units have been set up as priority indoor unit. | • Check display on priority indoor unit. |
| L06 | L06 | No. of priority indoor units | I/F | Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit) | All stop | More than one indoor units have been set up as priority indoor unit. | • Check displays on priority indoor unit and outdoor unit. |
| L07 | — | — | Indoor unit | Connection of group control cable to standalone indoor unit | Stop of corresponding unit | There is at least one standalone indoor unit to which group control cable is connected. | • Check indoor addresses. |
| L08 | L08 | — | Indoor unit | Indoor group / addresses not set | Stop of corresponding unit | Address setting has not been performed for indoor units. | • Check indoor addresses.<br>**Note:**<br>**This code is displayed when power is turned on for the first time after installation.** |
| L09 | — | — | Indoor unit | Indoor capacity not set | Stop of corresponding unit | Capacity setting has not been performed for indoor unit. | Set indoor capacity. (DN = 11) |

<table>
<tr><th colspan="3">Check code</th><th rowspan="2">Location of detection</th><th rowspan="2">Description</th><th rowspan="2">System status</th><th rowspan="2">Check code detection condition(s)</th><th rowspan="2">Check items (locations)</th></tr>
<tr><th rowspan="2">Main remote controller</th><th colspan="2">Outdoor 7-segment display</th></tr>
<tr><th>Check code</th><th>Sub-code</th></tr>
<tr><td>L10</td><td>L10</td><td>—</td><td>I/F</td><td>Outdoor capacity not set</td><td>All stop</td><td>Initial setting of I/F P.C. board has not been implemented.</td><td>• Check model setting of P.C. board for servicing outdoor I/F P.C. board.</td></tr>
<tr><td>L20</td><td>—</td><td>—</td><td>Network adaptor Indoor unit</td><td>Duplicated central control address</td><td>All stop</td><td>There is duplication in central control address setting.</td><td>• Check central control addresses.</td></tr>
<tr><td>L23</td><td>—</td><td>—</td><td>I/F</td><td>SW setting mistake</td><td>All stop</td><td>Outdoor P.C. board (I/F) does not operate normally.</td><td>• Check switch setting of outdoor P.C. board (I/F).</td></tr>
<tr><td>L28</td><td>L28</td><td>—</td><td>I/F</td><td>Too many outdoor units connected</td><td>All stop</td><td>There are more than 5 outdoor units.</td><td>• Check No. of outdoor units connected (Only up to 5 units per system allowed).<br>• Check communication lines between outdoor units.<br>• Check for failure in outdoor P.C. board (I/F).</td></tr>
<tr><td rowspan="2">L29</td><td rowspan="2">L29</td><td>
<table>
<tr><th></th><th colspan="4">P.C.board</th></tr>
<tr><th></th><th colspan="2">Compressor</th><th colspan="2">Fan Motor</th></tr>
<tr><th></th><th>1</th><th>2</th><th>1</th><th>2</th></tr>
<tr><td>01</td><td>O</td><td></td><td></td><td></td></tr>
<tr><td>02</td><td></td><td>O</td><td></td><td></td></tr>
<tr><td>03</td><td>O</td><td>O</td><td></td><td></td></tr>
<tr><td>08</td><td></td><td></td><td>O</td><td></td></tr>
<tr><td>09</td><td>O</td><td></td><td>O</td><td></td></tr>
<tr><td>0A</td><td></td><td>O</td><td>O</td><td></td></tr>
<tr><td>0B</td><td>O</td><td>O</td><td>O</td><td></td></tr>
<tr><td>10</td><td></td><td></td><td></td><td>O</td></tr>
<tr><td>11</td><td>O</td><td></td><td></td><td>O</td></tr>
<tr><td>12</td><td></td><td>O</td><td></td><td>O</td></tr>
<tr><td>13</td><td>O</td><td>O</td><td></td><td>O</td></tr>
<tr><td>18</td><td></td><td></td><td></td><td>O</td></tr>
<tr><td>19</td><td>O</td><td></td><td></td><td>O</td></tr>
<tr><td>1A</td><td></td><td>O</td><td></td><td>O</td></tr>
<tr><td>1B</td><td>O</td><td>O</td><td></td><td>O</td></tr>
</table>
Circle (O): Trouble P.C. board</td><td>I/F</td><td>Trouble in No. of P.C. board</td><td>All stop</td><td>Insufficient number of P.C. board are detected when power is turned on.</td><td>• Check model setting of P.C. board for servicing outdoor I/F P.C. board.<br>• Check connection of UART communication connector.<br>• Check compressor P.C. board, fan P.C. board, and I/F P.C. board for failure.</td></tr>
<tr><td>00</td><td>I/F</td><td>The number of inverter P.C. boards is abnormal.</td><td>All stop</td><td>When there is much number of an inverter P.C. board to model setting of an interface P.C. board.</td><td>• Check I/F P.C.board exchange has been correctly performed as a procedure.<br>• Check for failure in I/F P.C. board.<br>• Check for inverter P.C. board for compressors and inverter P.C. board for fan.</td></tr>
<tr><td>L30</td><td>L30</td><td>Detected indoor address</td><td>Indoor unit</td><td>Indoor external interlock (External abnormal input)</td><td>Stop of corresponding unit</td><td>• Indoor unit has been shut down due to external abnormal input signal.</td><td>When external device is connected:<br>1) Check for trouble in external device.<br>2) Check for trouble in indoor P.C. board.<br>When external device is not connected:<br>1) Check for trouble in indoor P.C. board.</td></tr>
<tr><td>—</td><td>L31</td><td>—</td><td>I/F</td><td>Extended IC trouble</td><td>Continued operation</td><td>There is part failure in P.C. board (I/F).</td><td>Check outdoor P.C. board (I/F).</td></tr>
<tr><td>P01</td><td>—</td><td>—</td><td>Indoor unit</td><td>Indoor fan motor trouble</td><td>Stop of corresponding unit</td><td></td><td>• Check the lock of fan motor (AC fan).<br>• Check wiring.</td></tr>
<tr><td>P03</td><td>P03</td><td>—</td><td>I/F</td><td>Discharge temperature TD1 trouble</td><td>All stop</td><td>Discharge temperature (TD1) exceeds 115 ¤C.</td><td>• Check outdoor service valves (gas side, liquid side) to confirm full opening.<br>• Check outdoor PMVs (PMV1, 2, 3, 4) for clogging.<br>• Check resistance characteristics of TD1 sensor.<br>• Check for insufficiency in refrigerant quantity.<br>• Check for failure in 4-way valve.<br>• Check for leakage of SV4 circuit.<br>• Check SV4 circuit (wiring or installation trouble in SV41 or SV42).</td></tr>
</table>

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| P04 | P04 | 1: Compressor 1 side<br>2: Compressor 2 side | I/F | Activation of high-pressure SW | All stop | High-pressure SW is activated. | • Check connection of high-pressure SW connector.<br>• Check for failure in Pd pressure sensor.<br>• Check outdoor service valves (gas side, liquid side) to confirm full opening.<br>• Check for failure in outdoor fan.<br>• Check for failure in outdoor fan motor.<br>• Check outdoor PMVs (PMV1, 2, 3) for clogging.<br>• Check indoor/outdoor heat exchangers for clogging.<br>• Check for short-circuiting of outdoor suction/discharge air flows.<br>• Check for failure in outdoor P.C. board (I/F).<br>• Check for trouble in indoor fan system (possible cause of air flow reduction).<br>• Check opening status of indoor PMV.<br>• Check indoor-outdoor communication line for wiring trouble.<br>• Check for failure operation of check valve in discharge pipe convergent section.<br>• Check gas balancing SV4 valve circuit.<br>• Check for refrigerant overcharging. |
| P05 | P05 | 00: Power detection trouble<br>01: Open phase<br>02: Power supply miswiring | I/F | Power detection trouble / Open phase detection / Power supply miswiring | All stop | • Open phase is detected when power is turned on.<br>• Inverter DC voltage is too high (overvoltage) or too low (undervoltage). | • Check for failure in outdoor P.C. board (I/F).<br>• Check wiring of outdoor power supply.<br>• Check power supply voltage. |
| | | 1: Compressor 1 side<br>2: Compressor 2 side | Compressor P.C. board | Compressor Vdc trouble | | | |
| P07 | P07 | 1: Compressor 1 side<br>2: Compressor 2 side | Compressor P.C. board | Heat sink overheating trouble | All stop | Temperature sensor built into IPM (TH) is overheated. | • Check outdoor fan system trouble.<br>• Check IPM and heat sink for thermal performance for failure installation. (e.g. mounting screws and thermal conductivity)<br>• Check for failure in Compressor P.C. board. (failure IPM built-in temperature sensor (TH)) |
| | | 01: Compressor 1 heat sink trouble<br>02: Compressor 2 heat sink trouble<br>04: Heat sink dew condensation | I/F | Heat sink overheating trouble<br>Heat sink dew condensation trouble | All stop | Condensation detection on heat sink has occurred four times or more in operation.<br>Temperature sensor built into IPM (TH) is overheated. | • Check outdoor fan system trouble.<br>• Check IPM and heat sink for thermal performance for troubled installation. (e. g. mounting screws and thermal conductivity)<br>• Check for failure in compressor P.C. board. (failure IPM built-in temperature sensor (TH))<br>• Check shortage of refrigerant.<br>• Check outdoor service valves.<br>• Check connection of TL2 sensor.<br>• Check resistance characteristics of TL2 sensor.<br>• Check resistance characteristics of TO sensor.<br>• Check malfunctions of Pd and Ps sensors.<br>• Check outdoor I/F P.C. board malfunction.<br>• Check PMV2 and PMV3 |

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| P10 | P10 | Detected indoor address | Indoor unit | Indoor overflow trouble | All stop | • Float switch operates.<br>• Float switch circuit is open-circuited or disconnected at connector. | • Check float switch connector.<br>• Check operation of drain pump.<br>• Check drain pump circuit.<br>• Check drain pipe for clogging.<br>• Check for failure in indoor P.C. board. |
| P11 | — | — | I/F | Outdoor heat exchanger freeze trouble | All stop | • Outdoor heat exchanger remaining frost detection has occurred eight times or more due to abnormal frost formation in heating operation. | • Check shortage of refrigerant.<br>• Check connection of TE1, TE2 and TE3 sensors.<br>• Check resistance characteristics of TE1, TE2, and TE3 sensors.<br>• Check disconnection of TS1 sensor.<br>• Check resistance characteristics of TS1 sensor.<br>• Check outdoor I/F P.C. board malfunction.<br>• Check operation of 4 way valve.<br>• Check operation of outdoor PMV (1, 2, 3).<br>• Check short circuit from outlet air to inlet air. |
| P12 | — | — | Indoor unit | Indoor fan motor trouble | Stop of corresponding unit | • Motor speed measurements continuously deviate from target value.<br>• Overcurrent protection is activated. | • Check connection of fan connector and wiring.<br>• Check for failure in fan motor.<br>• Check for failure in indoor P.C. board.<br>• Check impact of outside air treatment (OA). |
| P13 | P13 | — | I/F | Outdoor liquid backflow detection trouble | All stop | <During cooling operation><br>When system is in cooling operation, high pressure is detected in the unit that has been turned off.<br><br><During heating operation><br>When system is in heating operation, low pressure is detected to be high in unit that has been turned off. | • Check full-close operation of outdoor PMV (1, 2, 3, 4).<br>• Check for failure in Pd or Ps sensor.<br>• Check failure in outdoor P.C. board (I/F).<br>• Check capillary of oil separator oil return circuit for clogging.<br>• Check for leakage of check valve in discharge pipe |
| P15 | P15 | 01: TS condition | I/F | Gas leak detection (TS1 condition) | All stop | Protective shutdown due to sustained suction temperature at or above judgment criterion for at least 10 minutes is repeated four times or more.<br><TS trouble judgment criterion><br>In cooling operation: 60 ¤C<br>In heating operation: 40 ¤C | • Check for insufficiency in refrigerant quantity.<br>• Check outdoor service valves (gas side, liquid side) to confirm full opening.<br>• Check PMVs (PMV1, 2, 3, 4) for clogging.<br>• Check resistance characteristics of TS1 sensor.<br>• Check for failure in 4-way valve.<br>• Check SV4 circuit for leakage |
| | | 02: TD condition | I/F | Gas leak detection (TD condition) | All stop | Protective shutdown due to sustained discharge temperature (TD1 or TD2) at or above 108 ¤C for at least 10 minutes is repeated four times or more. | • Check for insufficiency in refrigerant quantity.<br>• Check PMVs (PMV 1, 2, 3, 4) for clogging.<br>• Check resistance characteristics of TD1 and TD2 sensors.<br>• Check indoor filter for clogging.<br>• Check piping for clogging.<br>• Check SV4 circuit (for leakage or coil installation trouble). |

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| P17 | P17 | — | I/F | Discharge temperature TD2 trouble | All stop | Discharge temperature (TD2) exceeds 115 ¤C. | • Check outdoor service valves (gas side, liquid side) to confirm full opening.<br>• Check outdoor PMVs (PMV1, 2, 3, 4) for clogging.<br>• Check resistance characteristics of TD2 sensor.<br>• Check for failure in 4-way valve.<br>• Check SV4 circuit for leakage.<br>• Check SV4 circuit (for wiring or installation trouble involving SV41 and SV42). |
| P19 | P19 | 0#: 4-way valves<br>1#: 4-way valve1<br>2#: 4-way valve2<br>*Put in outdoor unit No. in [#] mark. | I/F | 4-way valve reversing trouble | All stop | Abnormal refrigerating cycle data is collected during heating operation. | • Check for failure in main body of 4-way valve.<br>• Check for coil failure in 4-way valve and loose connection of its connector.<br>• Check resistance characteristics of TS1 and TE1,TE2 sensors.<br>• Check output voltage characteristics of Pd and Ps pressure sensors.<br>• Check for wiring trouble involving TE1 and TL1 sensors. |
| P20 | P20 | — | I/F | Activation of high-pressure protection | All stop | <During cooling operation><br>Pd sensor detects pressure equal to or greater than 3.85 MPa.<br><During heating operation><br>Pd sensor detects pressure equal to or greater than 3.6 MPa. | • Check for failure in Pd pressure sensor.<br>• Check service valves (gas side, liquid side) to confirm full opening.<br>• Check for failure in outdoor fan.<br>• Check for failure in outdoor fan motor.<br>• Check outdoor PMV (PMV1, 2, 3, 4) for clogging.<br>• Check indoor/outdoor heat exchangers for clogging.<br>• Check for short-circuiting of outdoor suction/ discharge air flows.<br>• Check for failure in outdoor P.C. board (I/F).<br>• Check for failure in indoor fan system (possible cause of air flow reduction).<br>• Check opening status of indoor PMV.<br>• Check indoor-outdoor communication line for wiring trouble.<br>• Check for troble operation of check valve in discharge pipe convergent section.<br>• Check gas balancing SV4 valve circuit.<br>• Check for refrigerant overcharging. |

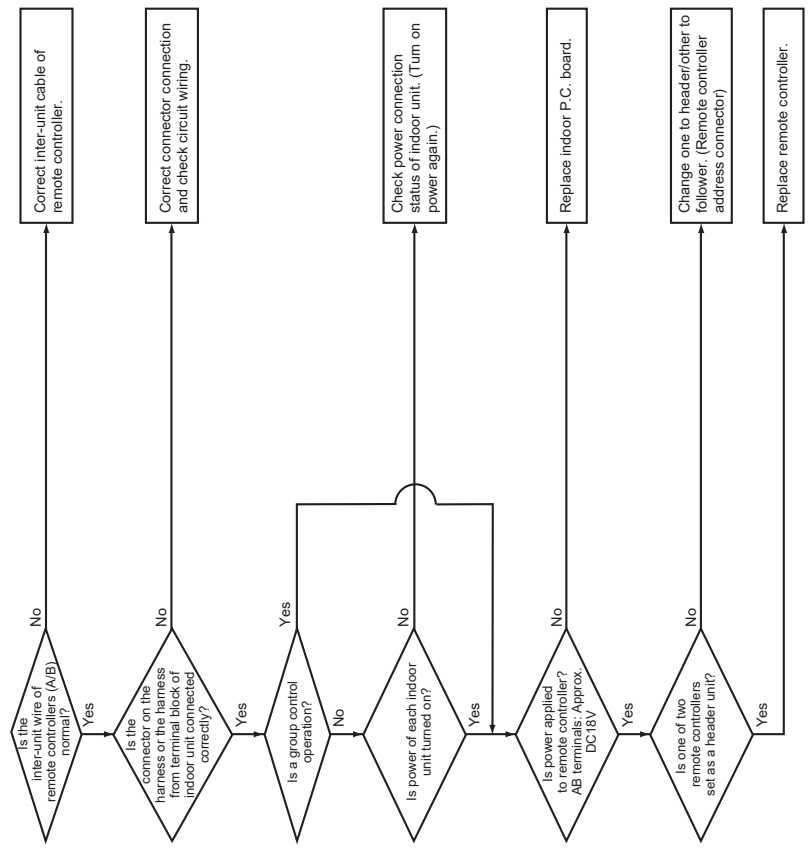
| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| P22 | P22 | 1∗: Fan P.C. board 1<br>2∗: Fan P.C. board 2 | Fan INV. P.C. board | Outdoor fan P.C. board trouble | All stop | Protected operation of Fan inverter P.C. board | • Check fan motor.<br>• Check for failure in fan P.C. board.<br>• Check connection of fan motor connector.<br>• Check power voltage of the main power supply. |
| P26 | P26 | 1∗: Compressor 1 side<br>2∗: Compressor 2 side | Compressor P.C. board | IPM, Compressor shortcircuit protection trouble | All stop | Overcurrent is momentarily detected during startup of compressor. | • Check connector connection and wiring on compressor P.C. board.<br>• Check for failure in compressor (layer shortcircuit).<br>• Check for failure in outdoor P.C. board ( Compressor). |
| P29 | P29 | 1∗: Compressor 1 side<br>2∗: Compressor 2 side | Compressor P.C. board | Compressor position detection circuit trouble | All stop | Position detection is not going on normally. | • Check wiring and connector connection.<br>• Check for compressor layer short-circuit.<br>• Check for failure in compressor P.C. board. |
| P31 | — | — | Indoor unit | Other indoor trouble (group follower unit trouble) | Stop of corresponding unit | There is trouble in other indoor unit in group, resulting in detection of E07/L07/L03/L08. | • Check indoor P.C. board. |

## Check codes displayed on Central Control Device

| Check code | | | Location of detection | Description | System status | Check code detection condition(s) | Check items (locations) |
|---|---|---|---|---|---|---|---|
| Main remote controller | Outdoor 7-segment display | | | | | | |
| | Check code | Sub-code | | | | | |
| E03 | — | — | Indoor unit | Indoor-remote controller communication trouble (detected at indoor end) | Stop of corresponding unit | There is no communication from remote controller (including wireless) or network adaptor. | • Check remote controller and network adaptor wiring. |
| C05 | — | | Central control device | Central control device transmission trouble | Continued operation | Central control device is unable to transmit signal. | • Check for failure in central control device.<br>• Check for failure in central control communication line.<br>• Check termination resistance setting. |
| C06 | — | | Central control device | Central control device reception trouble | Continued operation | Central control device is unable to receive signal. | • Check for failure in central control device.<br>• Check for failure in central control communication line.<br>• Check terminator resistor setting.<br>• Check power supply for devices at other end of central control communication line.<br>• Check failure in P.C. boards of devices at other end of central control communication line. |
| C12 | — | | General-purpose device I/F | Batch alarm for general-purpose device control interface | Continued operation | Trouble signal is input to control interface for general-purpose devices. | • Check trouble input. |
| P30 | Differs according to nature of alarm-causing trouble | | Central control device | Group control follower unit trouble | Continued operation | Trouble occurs in follower unit under group control. ([P30] is displayed on central control remote controller.) | • Check check code of unit that has generated alarm. |
| | (L20 displayed.) | | | Duplicated central control address | Continued operation | There is duplication in central control addresses. | • Check address settings. |

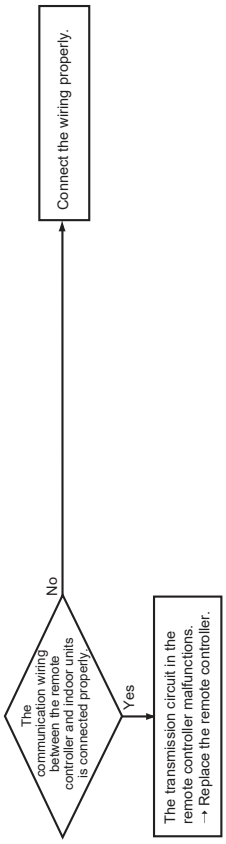
# 11-5. Diagnostic Procedure for Each Check Code (Indoor Unit)

| Check code | Check code name | Cause |
|---|---|---|
| [E01] | Communication trouble between the indoor unit and remote controller (detected on the remote controller) | 1. Remote controller inter-unit wire trouble<br>2. Indoor power trouble<br>3. Indoor P.C. board trouble<br>4. Remote controller address setup trouble<br>5. Remote controller P.C. board trouble |




| Check code | Check code name | Cause |
|---|---|---|
| [E02] | Signal transmission trouble on the remote controller | Unable to send signals to indoor units |

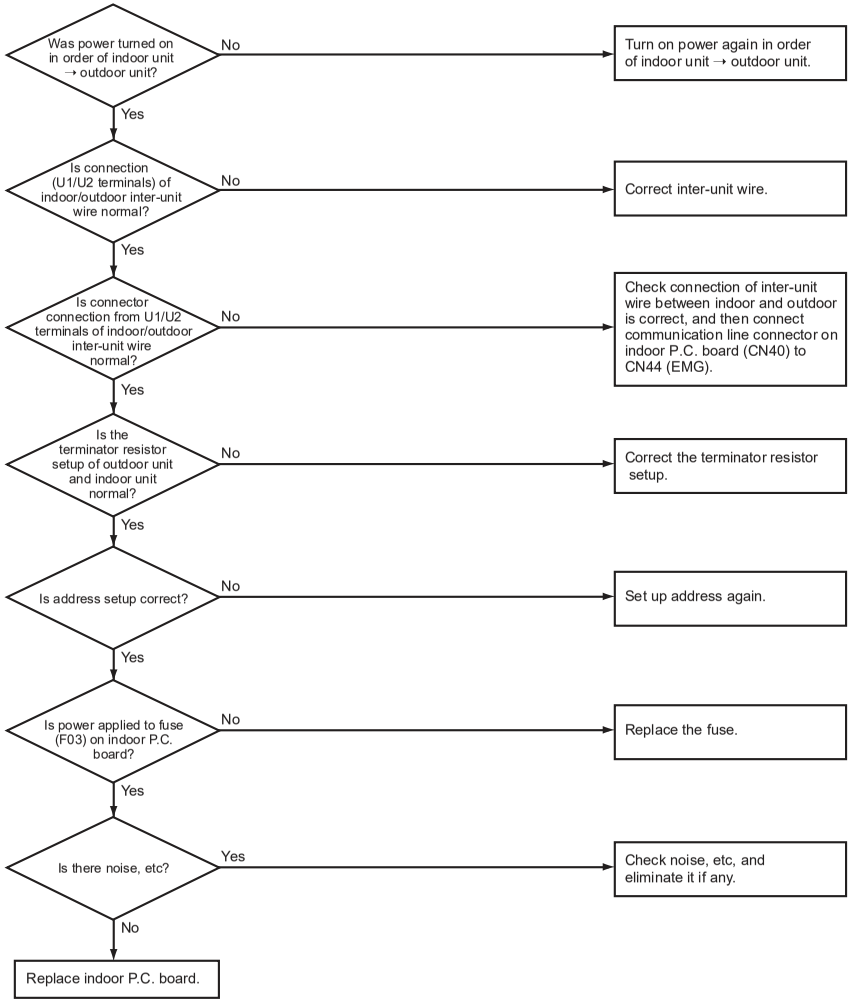
* The check code is not indicated on the central control device or the 7-segment indication on the outdoor unit.




| Check code | Check code name | Cause |
|---|---|---|
| [E03] | Communication trouble between the indoor unit and remote controller (detected on the indoor unit) | 1. No signal from a wired remote control and a wireless receiving unit.<br>2. In case the Central remote controller is used without changing DN code [103]. (Indoor unit before Oct. 2021 manufacture) |

- A check code [E03] is displayed when an indoor unit cannot receive the signal from a wired remote control and a wireless receiving unit. Check the communication wiring from the remote controller A and B.
- When using an air conditioner without a remote controller by indoor unit before Oct. 2021 manufacture, the setting change to 0001 from 0000 is required in the DN code [103]. A check code [E03] will be displayed, if it is used without making a setting change.
- Since communication is impossible, this check code [E03] is not displayed on a wired remote control. Check code [E03] will be displayed on the Central remote controller.

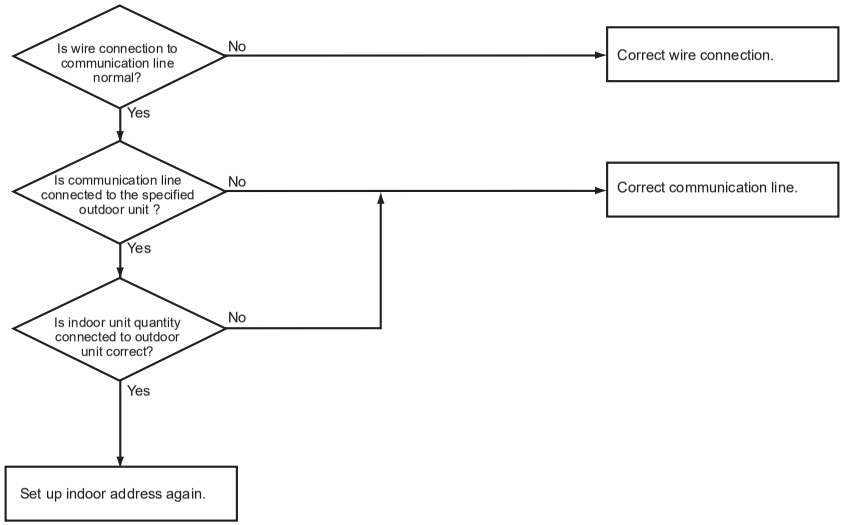
| Check code | Check code name | Cause |
|---|---|---|
| [E04] | Indoor/Outdoor communication circuit trouble (Detected at indoor side) | 1. Power of outdoor unit was firstly turned on.<br>2. Connection trouble of communication line between indoor and outdoor<br>3. Terminator resistor setup trouble on communication between indoor and outdoor<br>4. Address setup trouble |



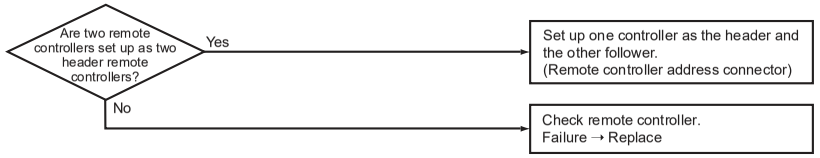

| Check code | Check code name | Cause |
|---|---|---|
| [E08] | Duplicated indoor addresses | Indoor addresses are duplicated. |

Sub-code: Duplicated indoor address

Using a wired remote controller, check the setup CODE No. (DN code) 12, 13, and 14.
When there is no address duplication, check to the following flowchart.

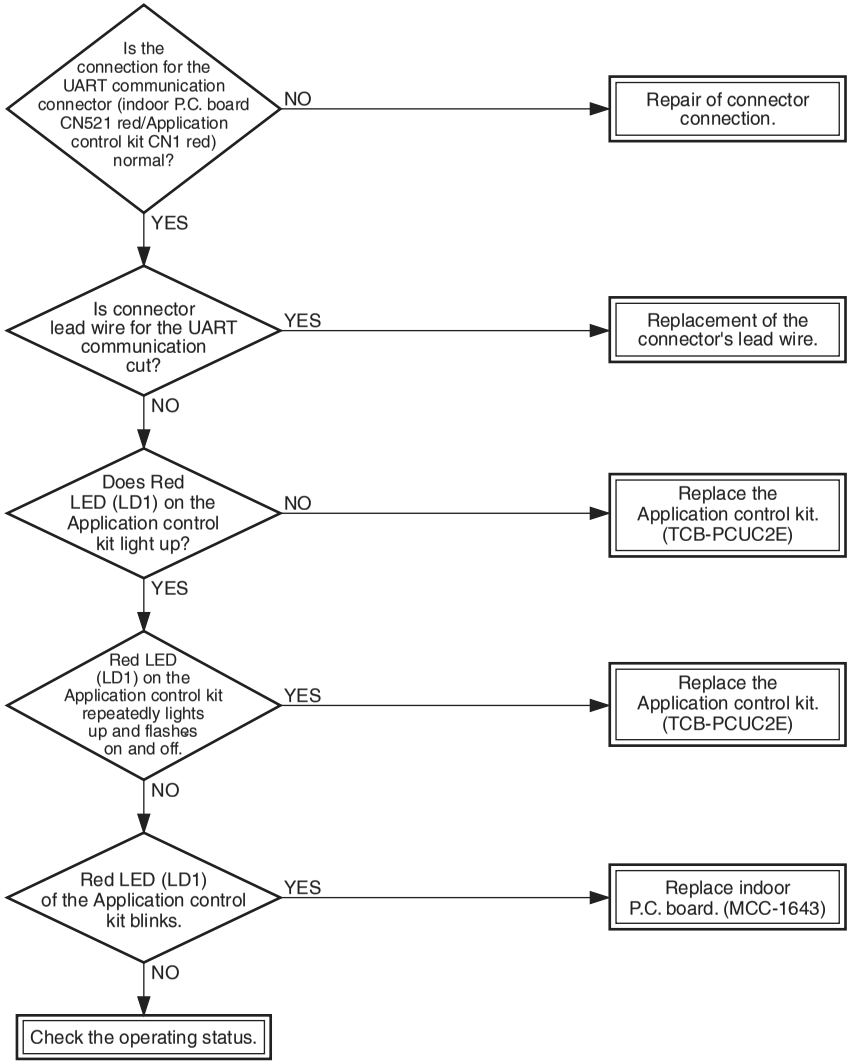


| Check code | Check code name | Cause |
|---|---|---|
| [E09] | Duplicated header remote controller | Setup of header remote controller is duplicated. |

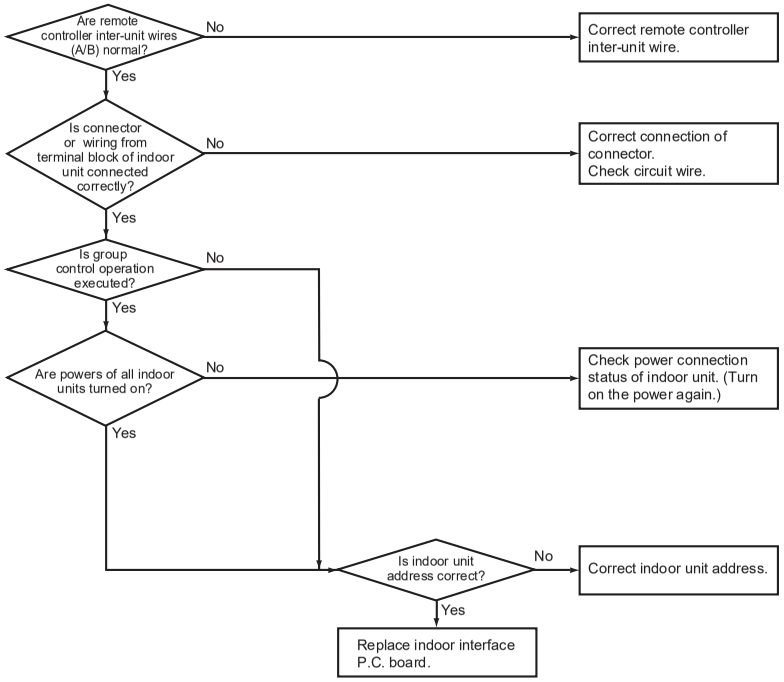



| Check code | Check code name | Cause |
|---|---|---|
| [E10] | Communication trouble between indoor MCUs. | Indoor P.C. board trouble. |

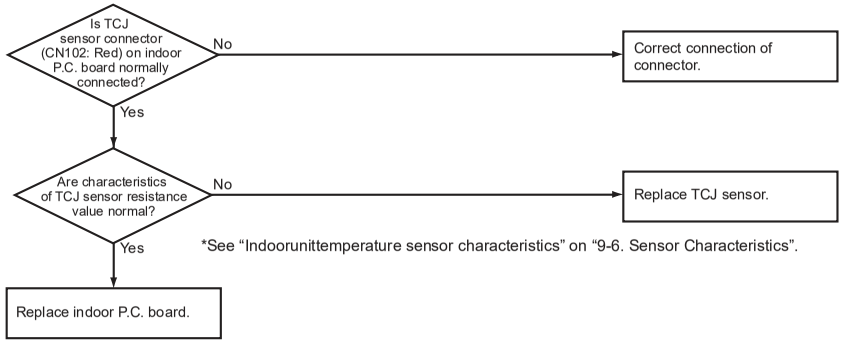

| Check code | Check code name | Cause |
|---|---|---|
| [E11] | Communication trouble between Application control kit and Indoor unit | 1.Application control kit trouble<br>2. Indoor P.C. board trouble |



| Check code | Check code name | Cause |
|---|---|---|
| [E18] | Communication trouble between indoor header and follower | Regular communication between indoor header and follower is unavailable. |

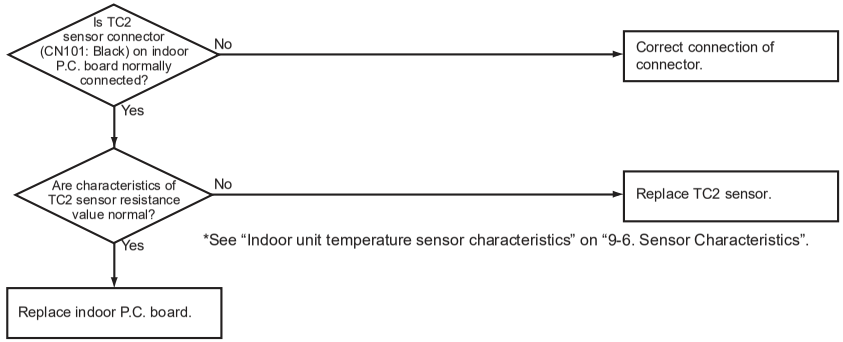



| Check code | Check code name | Cause |
|---|---|---|
| [F01] | Indoor TCJ sensor trouble | TCJ sensor Open/Short-circuit |



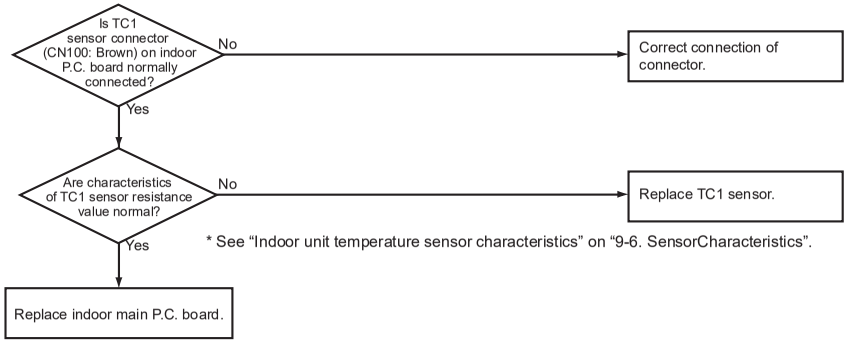

*See “Indoorunittemperature sensor characteristics” on “9-6. Sensor Characteristics”.

| Check code | Check code name | Cause |
|---|---|---|
| [F02] | Indoor TC2 sensor trouble | TC2 sensor Open/Short-circuit |




*See “Indoor unit temperature sensor characteristics” on “9-6. Sensor Characteristics”.

| Check code | Check code name | Cause |
|---|---|---|
| [F03] | Indoor TC1 sensor trouble | TC1 sensor Open/Short-circuit |




* See “Indoor unit temperature sensor characteristics” on “9-6. SensorCharacteristics”.

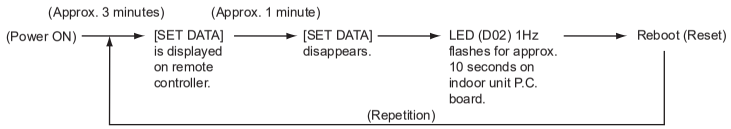
| Check code | Check code name | Cause |
|---|---|---|
| [F10] | Indoor TA/TSA sensor trouble | TA sensor Open/Short-circuit |

This trouble code means detection of Open/Short-circuit of TA sensor. Check disconnection of circuit for connection of connector (TA /TSA sensor : CN104, Yellow) and characteristics of sensor resistance value. (See “Indoor unit temperaturesensor characteristics” on “9-6. Sensor Characteristics”.)
If sensor is normal, replace indoor P.C. board.

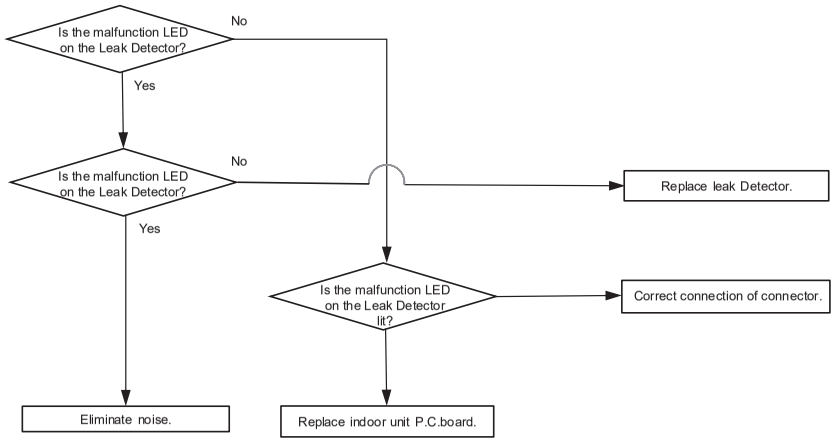
| Check code | Check code name | Cause |
|---|---|---|
| [F29] | Indoor other trouble | Indoor P.C. board trouble |

This trouble is detected during operation of air conditioner of IC10 non-volatile memory (EEPROM) on indoor unit P.C.board. Replace service P.C. board.

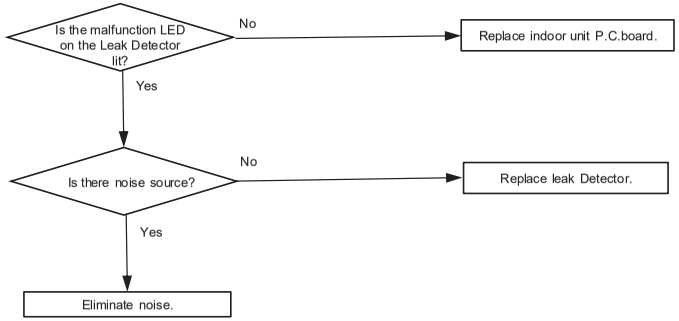
* If EEPROM was not inserted when power was turned on or it is absolutely impossible to read/write EEPROM data, the automatic address mode is repeated.



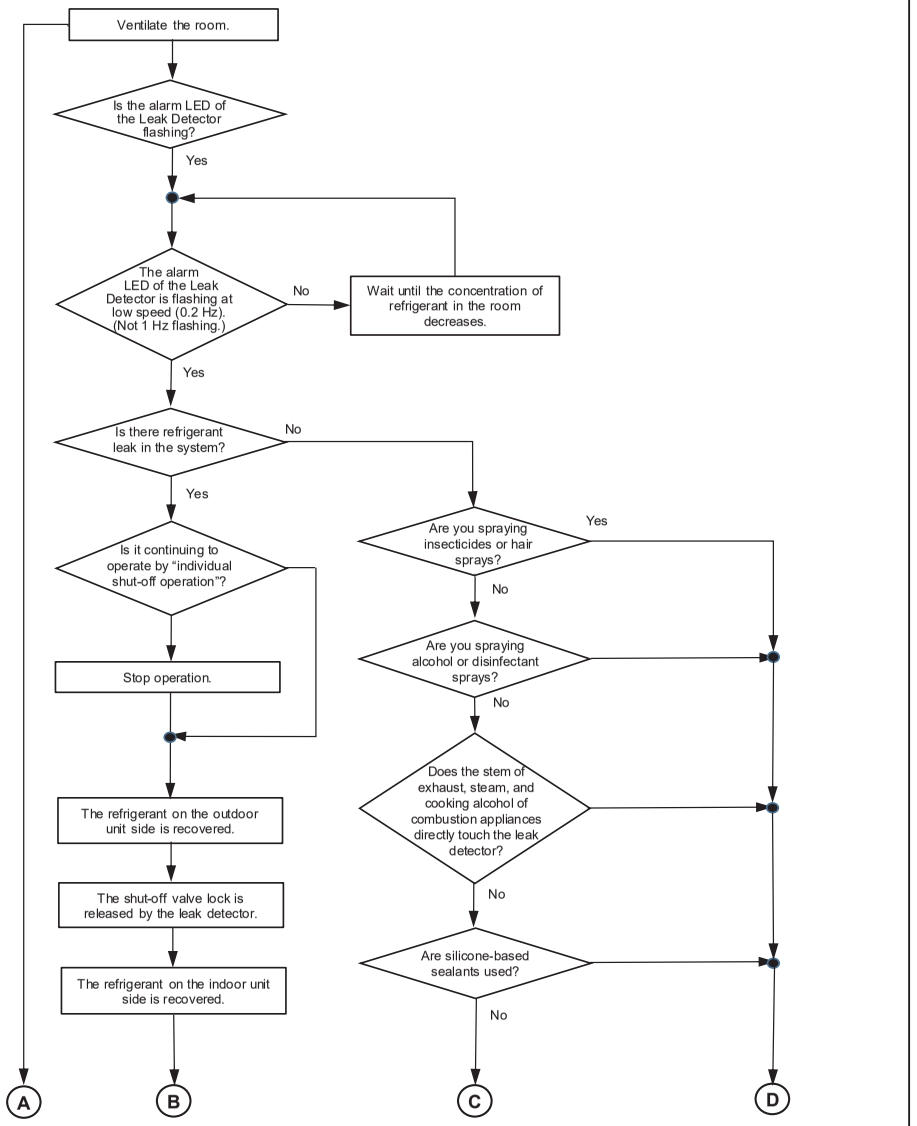

| Check code | Check code name | Cause |
|---|---|---|
| [J29] | Leak Detector trouble | 1. Indoor unit / Leak Detector communication connector trouble.<br>2. Refrigerant sensor trouble.<br>3. Leak Detector P.C. board trouble. |

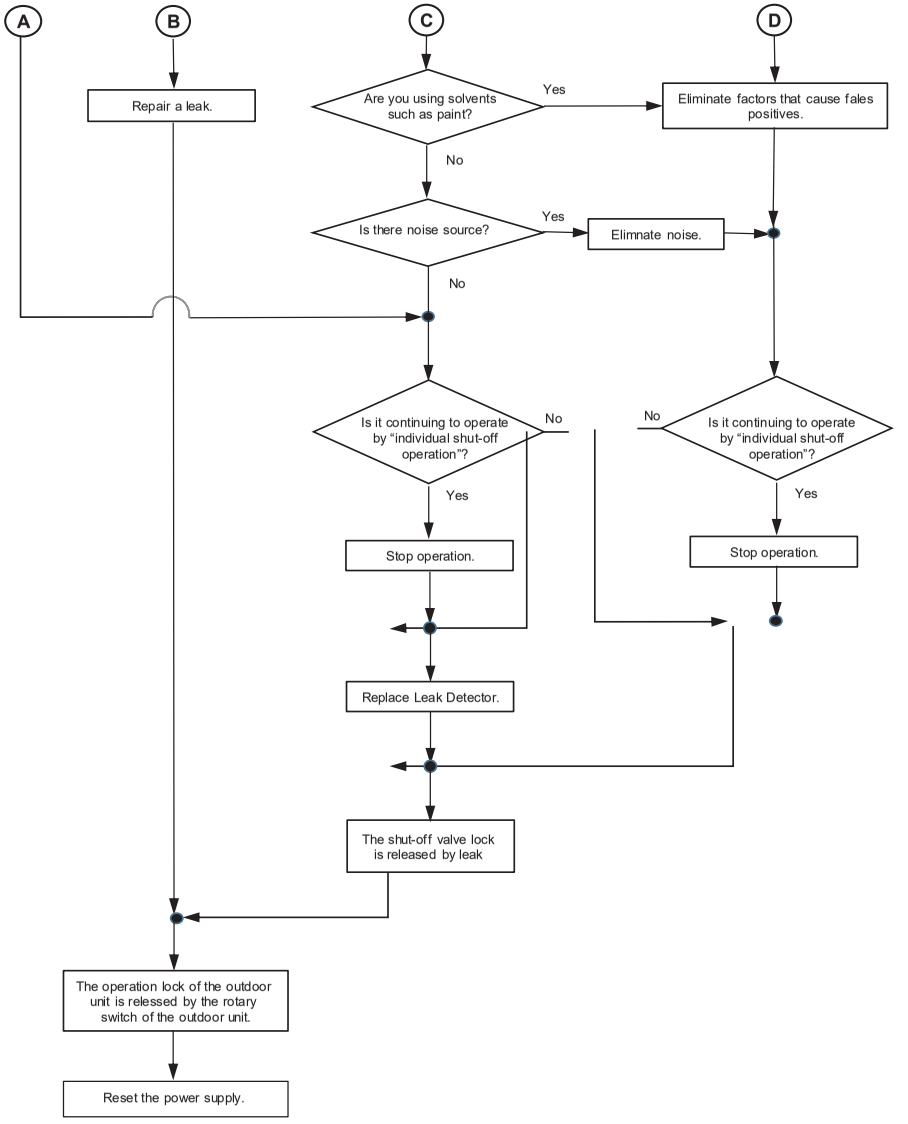



| Check code | Check code name | Cause |
|---|---|---|
| [J31] | Refrigerant leak detection sensor exceeding its of the product. | 1. Refrigerant sensor trouble (Exceeding its life of the product)<br>2. Leak Detector P.C. board trouble. |



| Check code | Check code name | Cause |
|---|---|---|
| [J30] | Refrigerant leak detection | 1. Refrigerant leak detection |

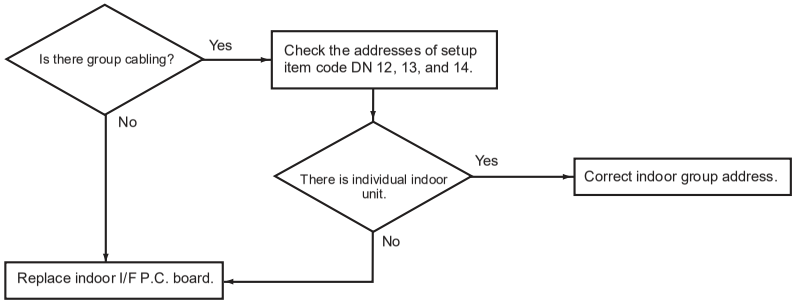


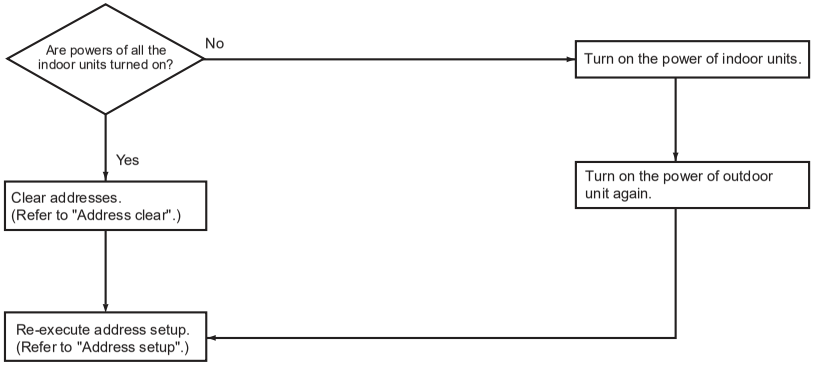
| Check code | Check code name | Cause |
|---|---|---|
| [L03] | Duplicated indoor header units | There are two or more indoor header units in a group during group control. |

1) Check whether the connection on remote controllers (group and/or individual) has been changed since the group configuration and address checking on the remote controllers finished.
2) If the group configuration and address are normal when power has been turned on, the mode automatically shifts to address setup mode. For setting up addresses again, refer to "Address setup".

| Check code | Check code name | Cause |
|---|---|---|
| [L07] | A group line exists in an individual indoor unit | A group line is connected to an individual indoor unit. |

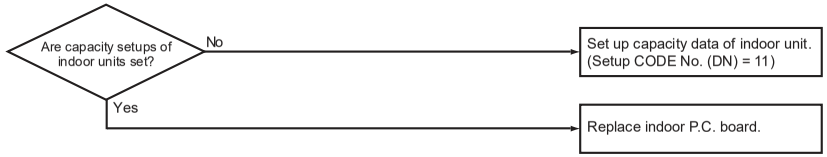



| Check code | Check code name | Cause |
|---|---|---|
| [L08] | Indoor group / address unset | Indoor unit address is unset |

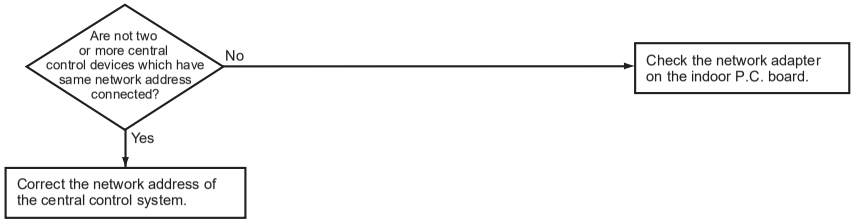



Note) This code is displayed when the power is turned on at the first time after installation. (Because the address is not yet set up)

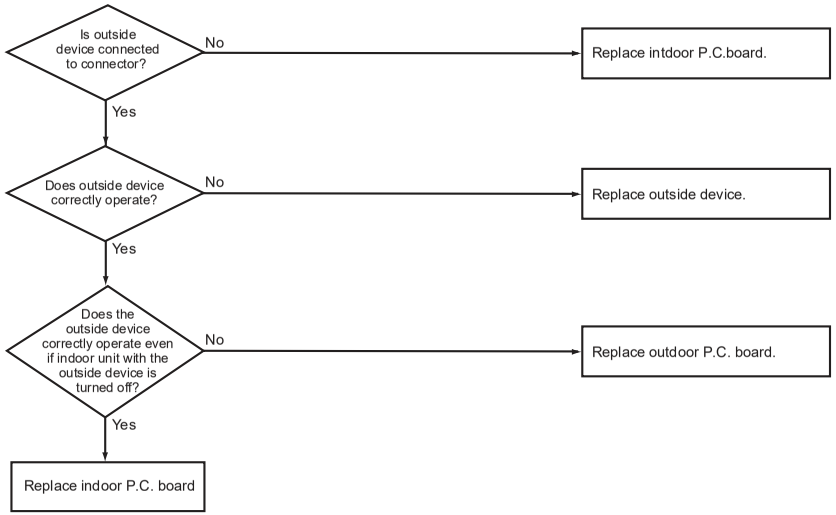
| Check code | Check code name | Cause |
|---|---|---|
| [L09] | Indoor capacity unset | Indoor unit's capacity is unset |




| Check code | Check code name | Cause |
|---|---|---|
| [L20] | Duplicated central control addresses | Central control addresses are duplicated. |

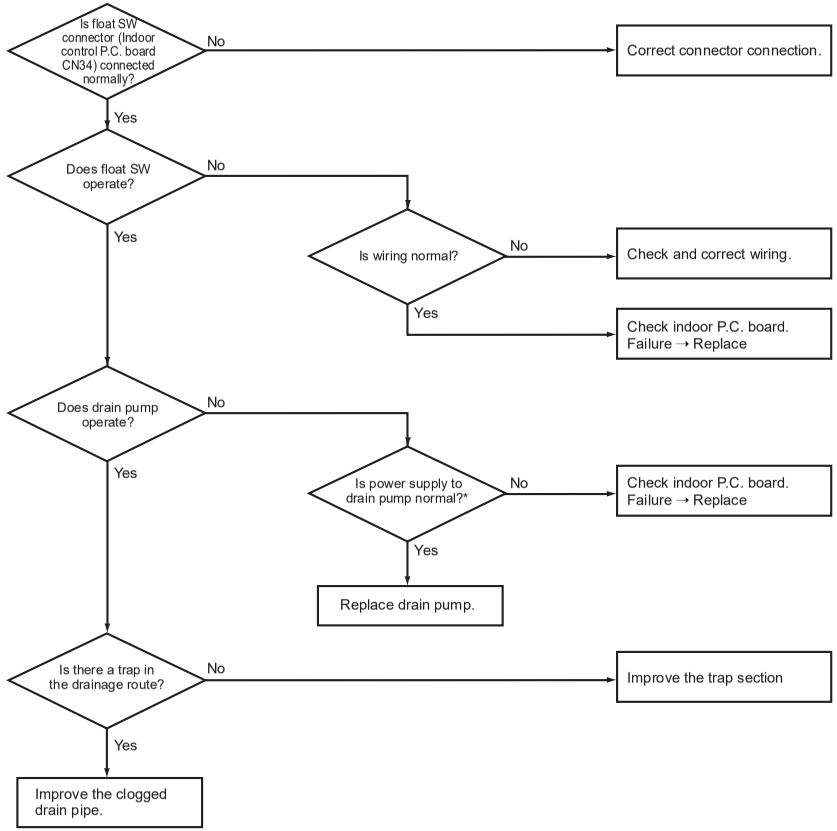


| Check code | Check code name | Cause |
|---|---|---|
| [L30] | Interlock in indoor unit from outside | Abnormal input from the outside |



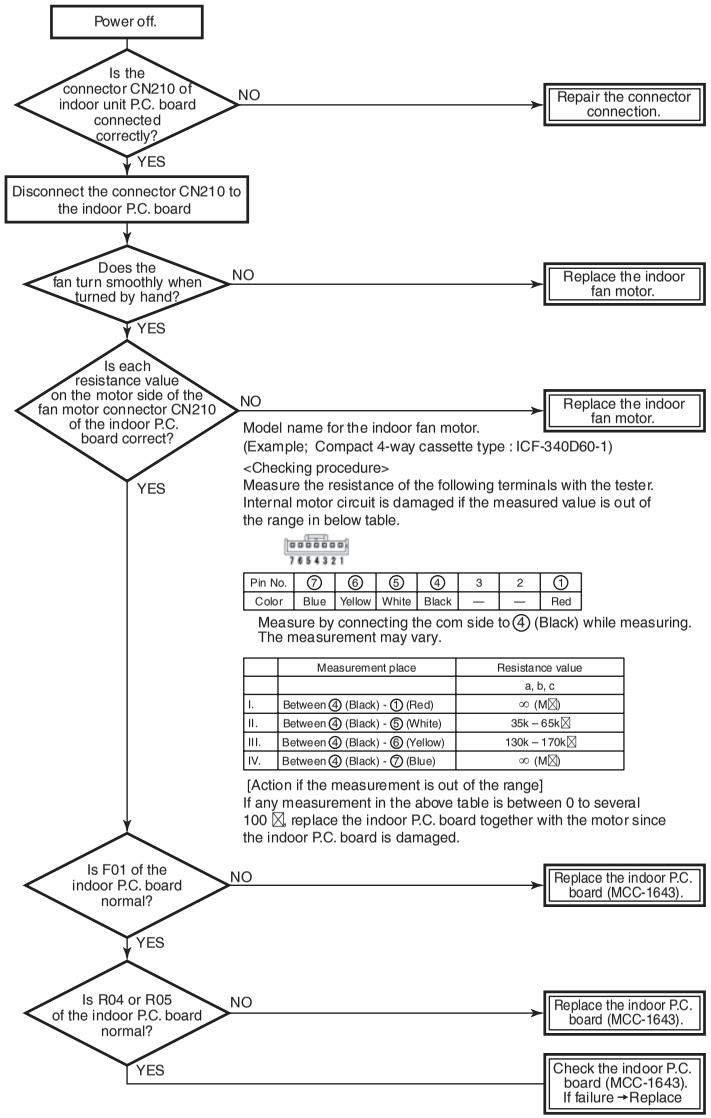

| Check code | Check code name | Cause |
|---|---|---|
| [P10] | Water overflow in an indoor unit | 1. Float SW malfunction<br>2. Drain pump malfunction<br>3. Clogging of drain pipe<br>4. Indoor P.C. board trouble |

Sub-code: Overflowing indoor unit's address




* Check there is 220V-240V voltage of 1-3 pin of CN504 on indoor P.C. board.

| Check code | Check code name | Cause |
|---|---|---|
| [P12] | Indoor fan motor trouble | 1. Wiring trouble of fan motor connector<br>2. Fan motor trouble<br>3. Indoor P.C. board trouble |




Model name for the indoor fan motor.
(Example; Compact 4-way cassette type : ICF-340D60-1)

<Checking procedure>
Measure the resistance of the following terminals with the tester.
Internal motor circuit is damaged if the measured value is out of the range in below table.




| Pin No. | ⑦ | ⑥ | ⑤ | ④ | 3 | 2 | ① |
|---|---|---|---|---|---|---|---|
| Color | Blue | Yellow | White | Black | — | — | Red |

Measure by connecting the com side to ④ (Black) while measuring.
The measurement may vary.

| | Measurement place | Resistance value |
|---|---|---|
| | | a, b, c |
| I. | Between ④ (Black) - ① (Red) | ∞ (MΩ) |
| II. | Between ④ (Black) - ⑤ (White) | 35k – 65kΩ |
| III. | Between ④ (Black) - ⑥ (Yellow) | 130k – 170kΩ |
| IV. | Between ④ (Black) - ⑦ (Blue) | ∞ (MΩ) |

[Action if the measurement is out of the range]
If any measurement in the above table is between 0 to several 100 Ω, replace the indoor P.C. board together with the motor since the indoor P.C. board is damaged.

| Check code | Check code name | Cause |
|---|---|---|
| [P31] | Other indoor trouble<br>(Group follower unit trouble) | Another indoor unit in the group is abnormal. |

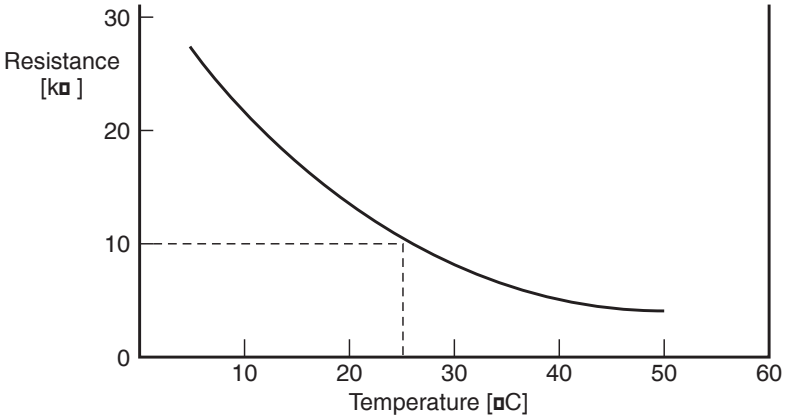
When the header unit of the group detected trouble [E03], [L03], [L07] or [L08], the follower unit of the group displays [P31] trouble and stops. There are no check code display and alarm record of the main remote controller.

## 11-6. Sensor charateristics

### Indoor unit

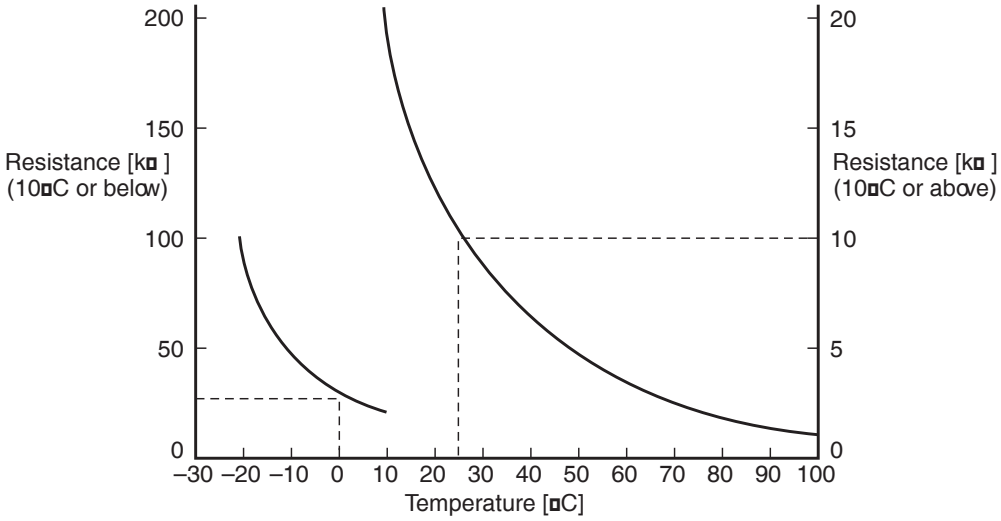
### ▼ Temperature sensor characteristics

Indoor TA sensor



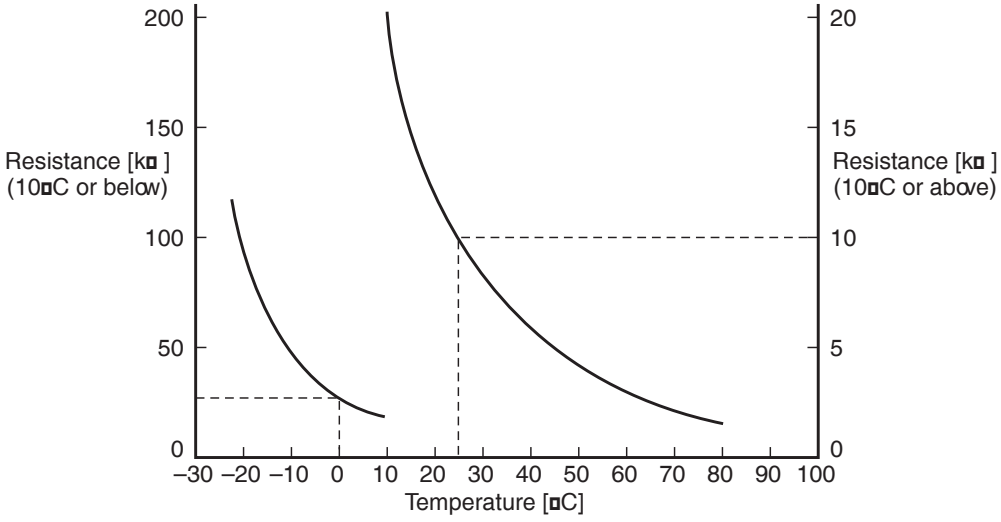

| Temperature [¤C] | Resistance [k¤ ] |
|---|---|
| 0 | 33.9 |
| 5 | 26.1 |
| 10 | 20.3 |
| 15 | 15.9 |
| 20 | 12.6 |
| 25 | 10.0 |
| 30 | 8.0 |
| 35 | 6.4 |
| 40 | 5.2 |
| 45 | 4.2 |
| 50 | 3.5 |
| 55 | 2.6 |
| 60 | 2.4 |

Indoor TC1 sensor




| Temperature [¤C] | Resistance [k¤ ] |
|---|---|
| –20 | 99.9 |
| –15 | 74.1 |
| –10 | 55.6 |
| –5 | 42.2 |
| 0 | 32.8 |
| 5 | 25.4 |
| 10 | 19.8 |
| 15 | 15.6 |
| 20 | 12.4 |
| 25 | 10.0 |
| 30 | 8.1 |
| 35 | 6.5 |
| 40 | 5.3 |
| 45 | 4.4 |
| 50 | 3.6 |
| 55 | 3.0 |
| 60 | 2.5 |
| 65 | 2.1 |
| 70 | 1.8 |
| 75 | 1.5 |
| 80 | 1.3 |
| 85 | 1.1 |
| 90 | 1.0 |
| 95 | 0.8 |
| 100 | 0.7 |

Indoor TC2 and TCJ sensors




| Temperature [¤C] | Resistance [k¤ ] |
|---|---|
| –20 | 115.2 |
| –15 | 84.2 |
| –10 | 62.3 |
| –5 | 46.6 |
| 0 | 35.2 |
| 5 | 26.9 |
| 10 | 20.7 |
| 15 | 16.1 |
| 20 | 12.6 |
| 25 | 10.0 |
| 30 | 8.0 |
| 35 | 6.4 |
| 40 | 5.2 |
| 45 | 4.2 |
| 50 | 3.5 |
| 55 | 2.8 |
| 60 | 2.4 |
| 65 | 2.0 |
| 70 | 1.6 |
| 75 | 1.4 |
| 80 | 1.2 |

## ■ Precision metering valve (PMV) coil characteristics

| Measured parts | Resistance values (at 20°C) |
|---|---|
| Red - White | 180 ~ 220 Ω |
| Red - Yellow | 180 ~ 220 Ω |
| Red - Orange | 180 ~ 220 Ω |
| Red - Blue | 180 ~ 220 Ω |

### <Maintenance/Check list>

Aiming in environmental preservation, it is strictly recommended to clean and maintain the indoor/outdoor units of the operating air conditioning system regularly to secure effective operation of the air conditioner.

It is also recommended to maintain the units once a year regularly when operating the air conditioner for a long time.

Check periodically signs of rust or scratches, etc. on coating of the outdoor units.
Repair the defective position or apply the rust resisting paint if necessary.

If an indoor unit operates for approx. 8 hours or more per day, usually it is necessary to clean the indoor/outdoor units once three months at least.

These cleaning and maintenance should be carried out by a qualified dealer.

Although the customer has to pay the charge for the maintenance, the life of the unit can be prolonged.

Failure to clean the indoor/outdoor units regularly will cause shortage of capacity, freezing, water leakage or trouble on the compressor.

| Part name | Object | | Contents of check | Contents of maintenance |
|---|---|---|---|---|
| | Indoor | Outdoor | | |
| Heat exchanger | ○ | ○ | • Blocking with dust, damage check | • Clean it when blocking is found. |
| Fan motor | ○ | ○ | • Audibility for sound | • When abnormal sound is heard |
| Filter | ○ | — | • Visual check for dirt and breakage | • Clean with water if dirty<br>• Replace if any breakage |
| Fan | ○ | ○ | • Visual check for swing and balance<br>• Check adhesion of dust and external appearance. | • Replace fan when swinging or balance is remarkably poor.<br>• If a large dust adheres, clean it with brush or water. |
| Drain pan | ○ | — | • Check blocking by dust and dirt of drain water. | • Clean drain pan, Inclination check |
| External appearance | — | ○ | • Check rust and pealing of insulator<br>• Check pealing and floating of coating film | • Coating with repair painting |

# 12. REPLACEMENT OF SERVICE P.C. BOARD

## ⚠ CAUTION

<Model name: MMD-UP***1SPHY*>

For this model, please make all the following settings.

| CODE No.(DN) | Setting data | Description |
|---|---|---|
| E0 | 0004 | Grobal model |
| CF | Depending on model | model setting |

### <Note: when replacing the P.C. board for indoor unit servicing>

The nonvolatile memory (hereafter called EEPROM, IC503) on the indoor unit P.C. board before replacement includes the model specific type information and capacity codes as the factory-set value and the important setting data which have been automatically or manually set when the indoor unit is installed, such as system/ indoor/group addresses, high ceiling select setting, etc.

When replacing the P.C. board for indoor unit servicing, follow the procedures below.

After replacement completes, confirm whether the settings are correct by checking the indoor unit No., Group header unit/follower unit settings and perform the cooling cycle confirmation through the trial operation.

### <Replacement procedures>

## *CASE 1*

**Before replacement, the indoor unit can be turned on and the setting data can be read out by wired remote control operation.**

EEPROM data read out **[1]**

⇩

Replacement of P.C. board for Indoor unit servicing and power on **[2]**

⇩

Writing the read out EEPROM data **[3]**

⇩

Power reset
(for all indoor units connected to the remote control when the group operation control is performed.)

## *CASE 2*

**The EEPROM before replacement is defective and the setting data cannot be read out.**

Replacement of P.C. board for Indoor unit servicing and power on **[2]**

⇩

Writing the setting data to EEPROM, such as high ceiling installation setting and optional connection setting, etc., based on the customer information. **[3]**

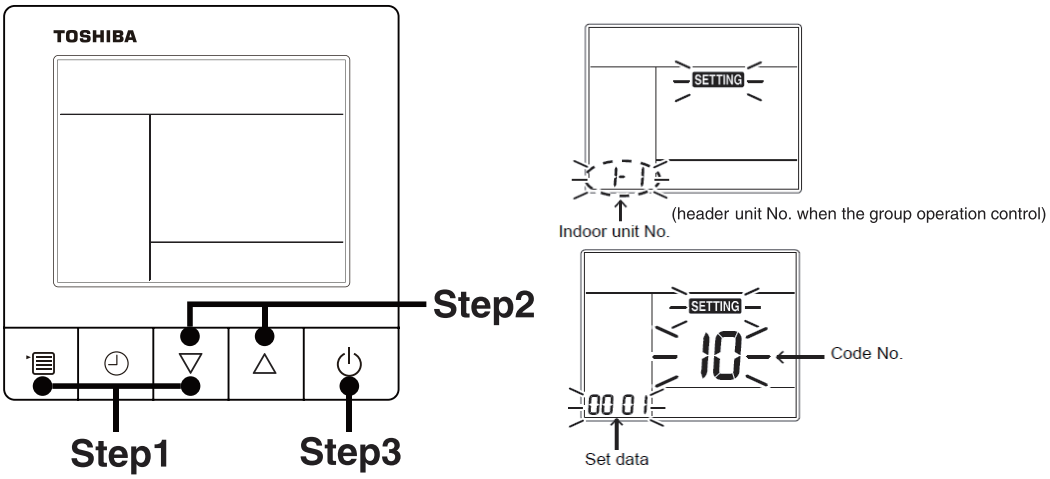
⇩

Power reset
(for all indoor units connected to the remote control when the group operation control is performed.)

## [1] Setting data read out from EEPROM

The setting data modified on the site, other than factory-set value, stored in the EEPROM shall be read out.

**<RBC-ASCU11-∗>**




**Step1** Push and hold the [menu + ▽ ] buttons at same time for more than 10 seconds.

*When the group operation control is performed, the unit No. displayed for the first time is the header unit No.
At this time, the Code No. (DN) shows “10”. Also, the fan of the indoor unit selected starts its operation and the swing operation also starts if it has the louvers.

**Step2** Every time when the [ ▽ or △ ] button is pushed, the indoor unit No. under the group control is displayed in order. Specify the indoor unit No. to be replaced.

1. Change the Code No. (DN) to 10 → 01 by pushing [ ▽ or △ ] buttons setting. (this is the setting for the filter sign lighting time.)
   At this time, be sure to write down the setting data displayed.
2. Change the Code No. (DN) by pushing [ ▽ or △ ] buttons.
   Similarly, be sure to write down the setting data displayed.
3. Repeat the step 2-2 to set the other settings in the same way and write down the setting data as shown in the table 1 (example).

**<RBC-AMTU3∗>**

## [1] Setting data read out from EEPROM

The setting data modified on the site, other than factory-set value, stored in the EEPROM shall be read out.

**Step 1** Push SET , CL and TEST button on the remote controller simultaneously for more than 4 seconds.

*When the group operation control is performed, the unit No. displayed for the first time is the header unit No.
At this time, the CODE No. (DN) shows “ 10 ”. Also, the fan of the indoor unit selected starts its operation and the swing operation also starts if it has the louvers.

**Step 2** Every time when the UNIT LOUVER (left side button) button is pushed, the indoor unit No. under the group control is displayed in order. Specify the indoor unit No. to be replaced.

1. **Change e the CODE No. (DN) to 10 → 01 by pushing ▼ / ▲ buttons for the temperature setting. (this is the setting for the filter sign lighting time.)**
   **At this time, be sure to write down the setting data displayed.**
2. Change the CODE No. (DN) by pushing ▼ / ▲ buttons for the temperature setting.
   Similarly, be sure to write down the setting data displayed.
3. Repeat the step 2-2 to set the other settings in the same way and write down the setting data as shown in the table 1 (example).

**CODE No. required at least**

| DN | Contents |
|---|---|
| 10 | Type |
| 11 | Indoor unit capacity |
| 12 | System address |
| 13 | Indoor unit address |
| 14 | Group address |
| 5d | External static pressure |
| CF | Model setting |
| E0 | Destination |
| FC | Communication protocol |

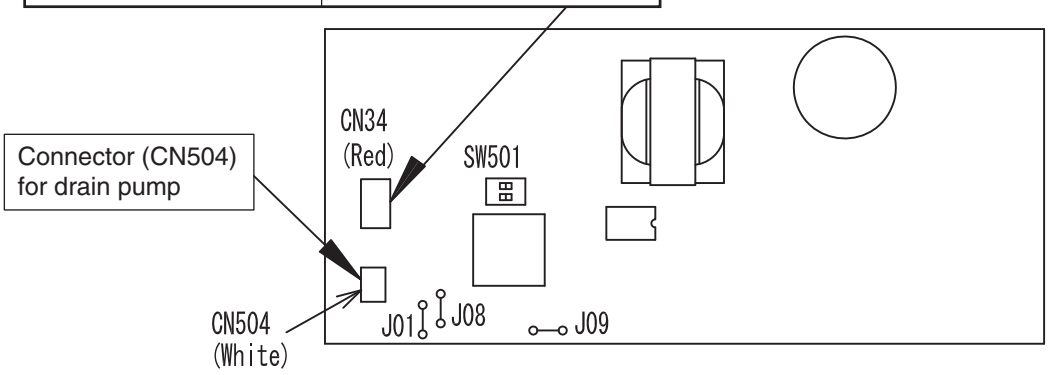
1. The Code No. for the Indoor unit type and Indoor unit capacity are required to set the rotation number setting of the fan.
2. If the system/indoor/group addresses are different from those before replacement, the auto-address setting mode starts and the manual resetting may be required again.
   (when the multiple units group operation including twin system.)

## [2] P.C. Board for indoor unit servicing replacement procedures

**Step 1** Replace the P.C. board to the P.C. board for indoor unit servicing.

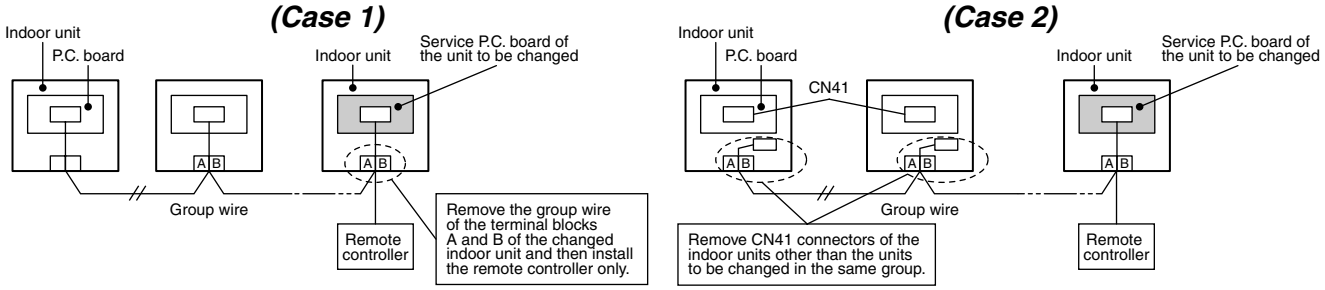
At this time, perform the same setting of the jumper wire (J01, J08, J09) setting (cut), switch SW501, (short-circuit) connector CN34 as the setting of the P.C. board before replacement.

| Models | MMD-UP***1SPHY** |
|---|---|
| CN34's status before replacement | The CN34 connector is mounted on the PC board, connected with a floating switch connector |
| When replacement, the corresponding method of CN34 on the replacement of PC board | Insert the the floating switch connector into CN34 on the replacement of PC board, and don't use the attached short circuit connector |




**Step 2** It is necessary to set indoor unit to be exchanged: Remote controller = 1 : 1
Based upon the system configuration, turn on power of the indoor unit with one of the following items.

1) Single (Individual) operation. Turn on power of the indoor units and proceed to **[3]**.
2) Group operation
   A) In case that power of the exchanged indoor unit only can be turned on
      Turn on power of the exchanger indoor unit only and proceed to **[3]**.
   B) In case that power of the indoor units cannot be turned on individually ***(Case 1)***
      a) Remove temporarily the group wire connected to the terminal blocks A and B of the exchanged indoor unit.
      b) After connecting the remote controller wire only to the removed terminal block, turn on power of the indoor units and proceed to **[3]**.
         ∗ When the above methods cannot be used, follow to the two cases below.
   C) In case that power of the indoor units cannot be turned in individually ***(Case 2)***
      a) Remove all CN41 connectors of the indoor units in the same group except those of the exchanged indoor unit.
      b) Turn on power of the indoor units and proceed to **[3]**.
         ∗ After **[3]** operation has finished, be sure to return the temporarily removed group wire or CN41 connector to the original connection.




## [3] Writing the setting data to EEPROM

The settings stored in the EEPROM of the P.C. board for indoor unit servicing are the factory-set values.

**<RBC-ASCU11-∗>**

**Step 1** Push and hold the [menu + ▽ ] buttons at same time for more than 10 seconds.

* When the group operation control is performed, the unit No. displayed for the first time is the header unit No.
  At this time, the Code No. (DN) shows “10”. Also, the fan of the indoor unit selected starts its operation and the swing operation also starts if it has the louvers.

**Step 2** Every time when the [ ▽ or △ ] button is pushed, the indoor unit No. in the group control operation are displayed in order.
(The settings stored in the EEPROM of the P.C. board for indoor unit servicing are the factory-set values.)
Specify the indoor unit No. with its P.C. board replaced to the P.C. board for indoor unit servicing.
(You cannot perform this operation if “ALL” is displayed.)

**Step 3** Select the Code No. (DN) can be selected by pushing the [ ▽ or △ ] button.

- Set the indoor unit type and capacity.
  The factory-set values shall be written to the EEPROM by changing the type and capacity.

1. Push the [menu] button to make Code No. flash. And set the Code No. (DN) to10 .
2. Push the [menu] button to make SET DATA flash. And select the type by pushing the [ ▽ or △ ] buttons.
   (For example, 4-way Cassette Type is set to “0001”. Refer to table 2)
3. Push [OFF timer] button.
   (The changed data is set.)
4. Change the Code No. (DN) to”11” by pushing the [ ▽ or △ ] buttons.
5. Select the capacity by pushing the [ ▽ or △ ] buttons.
   (For example, UP009 Type is set to “0003”. Refer to table 3)
6. Push [OFF timer] button.
   (The changed data is set.)

**Step 4** Write the on-site setting data to the EEPROM, such as address setting, etc. Perform the steps 1 and 2 above again.

**Step 5** Change the Code No. (DN) to “01” by pushing the [ ▽ or △ ] buttons.
(this is the setting for the filter sign lighting time.)

**Step 6** Check the setting data displayed at this time with the setting data put down in [1].

1. If the setting data is different, modify the setting data by pushing the [ ▽ or △ ] buttons to the data put down in [1].
2. If the data is the same, proceed to next step.

**Step 7** Change the Code No. (DN) by pushing the [ ▽ or △ ] buttons.
As described above, check the setting data and modify to the data put down in [1].

**Step 8** Repeat the steps 6 and 7.

**Step 9** After the setting completes, push the [ON/OFF] button to return to the normal stop status.
(It takes approx. 1 min until the remote controller operation is available again.)

**<RBC-AMTU3∗>**

**Step 1** Push SET , CL and TEST buttons on the remote controller simultaneously for more than 4 seconds.

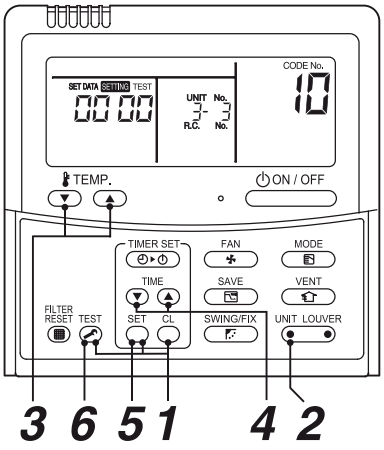
∗ In the group control operation, the unit No. displayed for the first time is the header unit No.. At this time, the CODE No. (DN) shows " 10 ". Also, the fan of the indoor unit selected starts its operation and the swing operation starts if it has the louvers.
(The unit No. " ALL " is displayed if the auto-address setting mode is interrupted in [2] step 2 a))

**Step 2** Every time when UNIT LOUVER (left side button) button is pushed, the indoor unit No. in the group control operation are displayed in order.
(The settings stored in the EEPROM of the P.C. board for indoor unit servicing are the factory-set values.)
Specify the indoor unit No. with its P.C. board replaced to the P.C. board for indoor unit servicing.
(You cannot perform this operation if " ALL " is displayed.)

**Step 3** Select the CODE No. (DN) can be selected by pushing the ▼ / ▲ button for the temperature setting.

• Set the indoor unit type and capacity.
The factory-set values shall be written to the EEPROM by changing the type and capacity.

1. Set the CODE No. (DN) to 10 . (without change)
2. Select the type by pushing ▼ / ▲ buttons for the timer setting.
(For example, 4-way Cassette Type is set to "0001 ". Refer to table 2)
3. Push SET button.
(The operation completes if the setting data is displayed.)
4. Change the CODE No. (DN) to " 11 " by pushing ▼ / ▲ buttons for the temperature setting.
5. Select the capacity by pushing ▼ / ▲ buttons for the timer setting.
(For example, UP018 Type is set to "0009 ". Refer to table 3)
6. Push SET button.
(The setting completes if the setting data are displayed.)




**Step 4** Write the on-site setting data to the EEPROM, such as address setting, etc. Perform the steps 1 and 2 above again.

**Step 5** Change the CODE No. (DN) to " 01 " by pushing ▼ / ▲ buttons for the temperature setting. (this is the setting for the filter sign lighting time.)

**Step 6** Check the setting data displayed at this time with the setting data put down in [1].

1. If the setting data is different, modify the setting data by pushing ▼ / ▲ buttons for the timer setting to the data put down in [1].
The operation completes if the setting data is displayed.
2. If the data is the same, proceed to next step.

**Step 7** Change the CODE No. (DN) by pushing ▼ / ▲ buttons for the temperature setting.
As described above, check the setting data and modify to the data put down in [1].

**Step 8** Repeat the steps 6 and 7.

**Step 9** After the setting completes, push TEST button to return to the normal stop status.
(It takes approx. 1 min until the remote controller operation is available again.)

Even after modifying the data wrongly and pushing SET button, it is possible to return to the data before modification by pushing CL button if the CODE No. (DN) is not changed.

**Table 1. Setting data (CODE No. table (example))**

| DN | Item | Factory-set value |
|---|---|---|
| 01 | Filter sign lighting time | Depending on Type |
| 02 | Filter pollution level | 0000: standard |
| 03 | Central control address | 00Un/0099: Unfixed |
| 06 | Heating suction temperature shift | Depending on model type |
| 0F | Cooling only | 0000: Heat pump |
| 10 | Type | Depending on model type |
| 11 | Indoor unit capacity | Depending on capacity type |
| 12 | System address | 00Un/0099: Unfixed |
| 13 | Indoor unit address | 00Un/0099: Unfixed |
| 14 | Group address | 00Un/0099: Unfixed |
| 19 | Louver type (wind direction adjustment) | Depending on Type. |
| 1E | Temperature range of cooling/heating automatic SW control point | 0003: 3°C (Ts±1.5°C) |
| 28 | Power failure automatic recovery | 0000: None |
| 2b | Thermo output SW (T10 ③) | 0000: Thermo ON |
| 31 | Ventilation fan (standalone) | 0000: Not available |
| 32 | Sensor SW | 0000: Body sensor |
| 5d | External static pressure | 0000: Standard |
| 60 | Timer setting (wired remote controller) | 0000: Available |
| d0 | Remote controller operation save function | 0001: Able |
| E0 | Destination SW | 0004: Global |
| F6 | Presence of Application control kit | 0000: None |
| 119 | Vertical louver type (compact slim duct only) | 0000: No louver |

**Table 2. Type: CODE No. 10**

| Setting data | Type | Model name |
|---|---|---|
| 0015 | Slim duct | MMD-UP***1SPHY* |

**Table 3.**
**Indoor unit capacity: CODE No. 11**

| Setup data | Model |
|---|---|
| 0000* | Invalid |
| 0044 | 003 type |
| 0041 | 005 type |
| 0001 | 007 type |
| 0003 | 009 type |
| 0005 | 012 type |
| 0007 | 015 type |
| 0009 | 018 type |
| 0011 | 024 type |
| 0012 | 027 type |

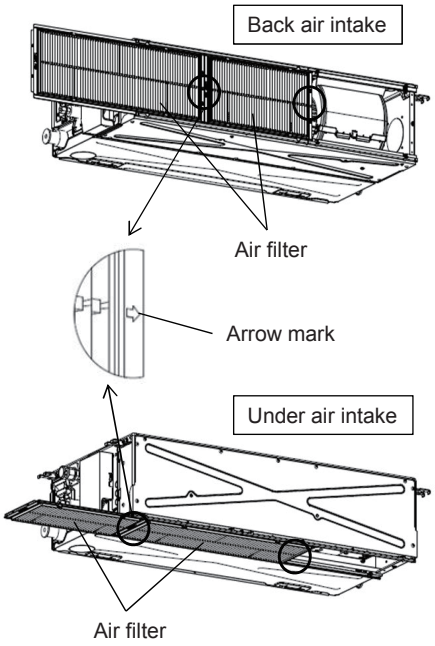
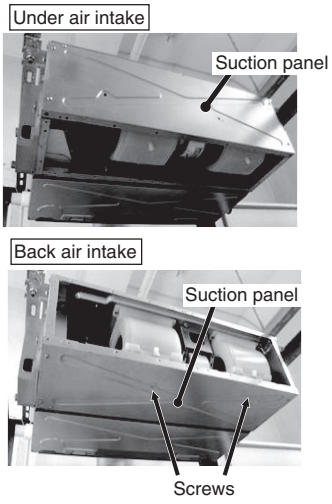
# 13. DETACHMENTS

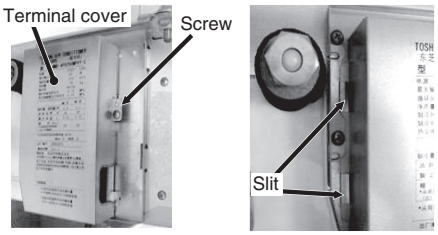
**⚠WARNING**

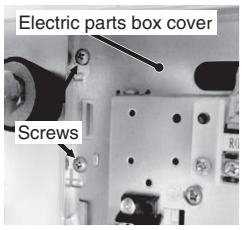
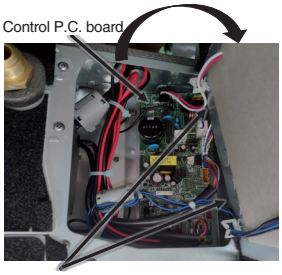
Be sure to stop operation of the air conditioner before work and then turn off switch of the breaker.

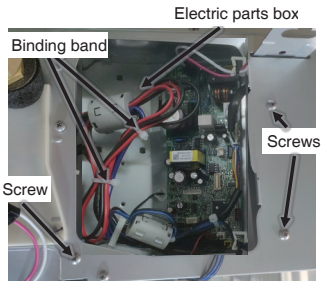
**⚠CAUTION**

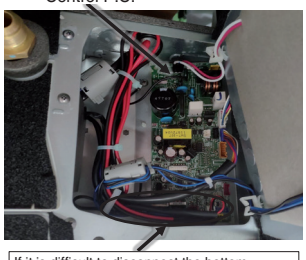
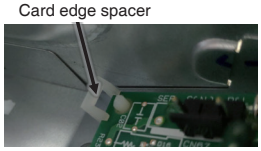
Be sure to put on gloves during working time; otherwise an injury will be caused by a part etc.

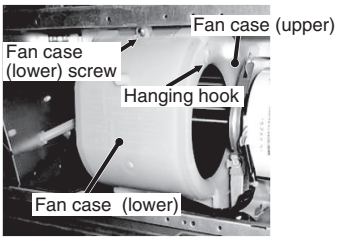
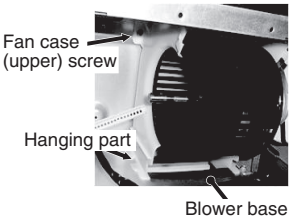
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ① | Air filter | **1. Detachment**<br>1) Slide the filter toward the opposite side of the arrow mark and then pull out the filter. (Pull out the first filter, then the second filter will be pulled out connected with the first filter.)<br>**2. Attachment**<br>1) Insert the filter in the filter rail toward the arrow mark, slide it until the filter stops and then fix it. (Insert the second filter in the same direction after inserting the first filter.) |  |
| ② | Suction panel | **1. Detachment**<br>1) Holding the suction panel with your hand, remove the screws fixing the panel in place.<br>(UP003~012: M4×10 7 pcs)<br>(UP015~027: M4×10 9 pcs)<br>**NOTE)**<br>• Be careful that the suction panel doesn't fall while at work.<br>• For the back air intake, remove the screws (2 locations) used to fix the fan case (lower) in place as well.<br>**2. Attachment**<br>1) While holding the suction panel with your hand so that the panel does not fall off, tighten the screws that you removed in step 1-1) of "②Suction panel." |  |

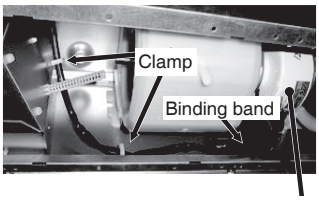
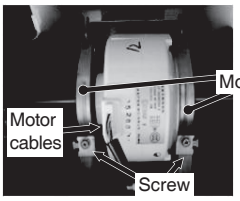
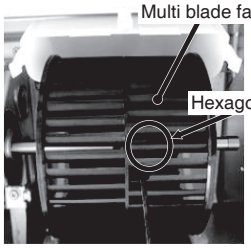
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ③ | Terminal cover | **1. Detachment**<br>1) Slightly loosen the screw holding the terminal cover in place.<br>(M4×10 1 pcs)<br>2) Lifting the terminal cover upward, pull the right side of the cover toward you and then disengage the claws on the left side of the cover from their slits to detach the terminal cover.<br><br>**2. Attachment**<br>1) Insert the claws on the left side of the terminal cover into their slits.<br>2) Moving the terminal cover downward, insert the cover in the gap between the terminal box and screw that you loosened in step 1-1) of "③Terminal cover" and tighten the screw to fix the cover in place. |  |

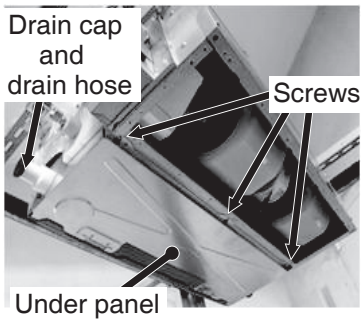
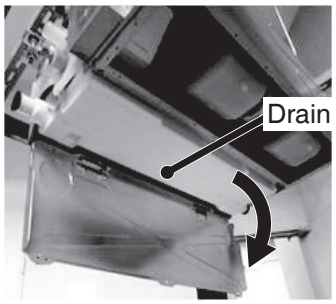
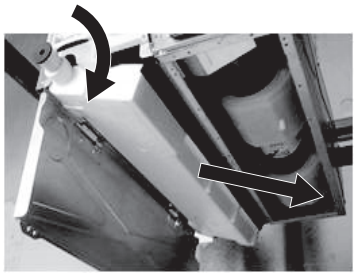
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ④ | Electric parts box cover | **1. Detachment**<br>1) Perform step 1 of "③Terminal cover" as required.<br>(You may be able to perform this procedure without removing the electric parts box cover.)<br>2) Slightly loosen the screw holding the electric parts box cover in place.<br>(M4×10 2 pcs)<br>3) Lifting the electric parts box cover upward, pull the left side of the cover toward you to open it.<br><br>**NOTE)**<br>If it is difficult to open the electric parts box cover because of the power supply and communication cables connected to the cover, disconnect these cables and perform the procedure.<br><br>4) Disconnect the following connectors from the control P.C. board.<br><br>**NOTE)**<br>Unlock the lock of the housing to disconnect the connectors.<br>CN40 …Indoor/Outdoor communication (2P: Blue)<br>CN41 …Remote control connector (2P: Blue)<br>CN67 …Power supply connector (5P/3P: Black)<br><br>5) Lift the electric parts box cover upward and pull the cover to the left toward you to detach it from the claws on the right side.<br><br>**2. Attachment**<br>1) Insert the hooking plates of the main body into the hook holes on the right side of the electric parts box cover.<br>2) Reconnect the cables that you disconnected in step 1-4) of "④Electric parts box cover."<br>3) Moving the electric parts box cover downward, close the electric parts box cover. Insert the cover in the gap between the box and screws that you loosened in step 1-2) of "④Electric parts box cover" and use the screws to fix the cover into place. |  <br>  |

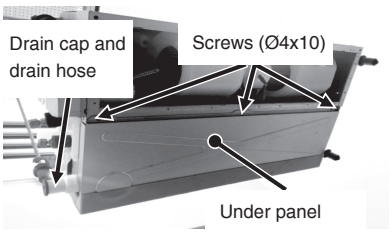
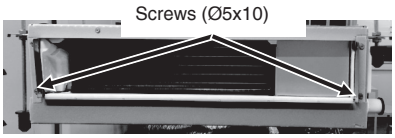
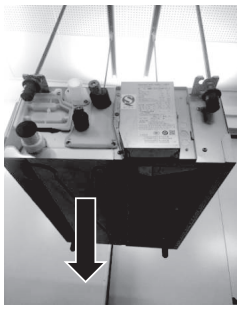
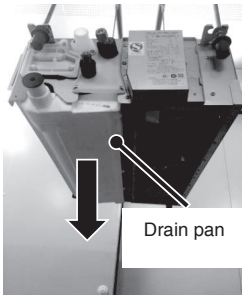
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑤ | Electric parts box | **1. Detachment**<br>1) For the back air intake, perform the procedure in 1 of "②Suction panel."<br>2) Perform the procedure in 1 of "④Electric parts box cover."<br>3) Remove the binding bands and clamps inside the electric parts box.<br>4) Remove the screws that fix the electric parts box into place.<br>(M4×10 3 pcs)<br>The electric parts box will not fall off even when the screws are removed.<br>5) Move the electric parts box in the direction opposite to the air blow-off port side to disengage the hooking plates and then remove the electric parts box from the under air intake side.<br><br>**2. Attachment**<br>1) Insert the hooking plates of the electric parts box into the hooking parts of the main body.<br>2) Carefully restore the electric parts box to its original state without getting the cables caught by the box. Fix the box using the screws that you removed in step 1-4) of "⑤Electric parts box."<br><br>**NOTE)**<br>Make sure that the hooking plates are securely inserted into the hooking parts of the electric parts box.<br>(Hooking plates: 2 locations)<br><br>**NOTE)**<br>Make sure to securely fix the clamps and binding bands of the cables that you disconnected. |  <br>  |

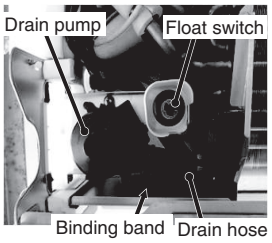
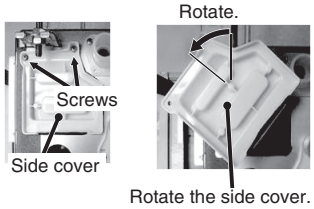
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑥ | Control P.C. board | **1. Detachment**<br>1) Perform the procedure in 1 of "④Electric parts box cover."<br>2) Disconnect the connectors from other components from the control P.C. board.<br><br>**NOTE)**<br>Unlock the lock of the housing to disconnect the connectors.<br>CN40 …Indoor/Outdoor communication terminal block (2P: Blue)<br>CN41 …Remote control connector (2P: Blue)<br>CN67 …Power supply connector (5P/3P: Black)<br>CN100 …TC1 sensor (2P: Brown)<br>CN101 …TC2 sensor (2P: Black)<br>CN102 …TCJ sensor (2P: Red)<br>CN104 …TA sensor (2P: Yellow)<br>CN210 …Fan motor power supply (7P: White)<br>CN82 …PMV lead (6P: Blue)<br><br>**NOTE)**<br>The following two connectors are connected only to the control P.C. board of a model equipped with a drain pump.<br>CN34 …Float switch (3P: Red)<br>CN504 …Drain pump lead (2P: White)<br><br>3) Unlock the card edge spacers (4 locations) to remove the control P.C. board.<br><br>**2. Attachment**<br>1) Attach the control P.C. board to the clamps.<br>2) Reconnect the cables that you disconnected in step 1-2) of "⑥Control P.C. board."<br><br>**NOTE)**<br>Check there is no missing or contact failure on the connectors. | Control P.C.<br>  <br>If it is difficult to disconnect the bottom connector,first remove the card edge spacers (2 locations at bottom), and then proceed.<br>Card edge spacer<br>  |

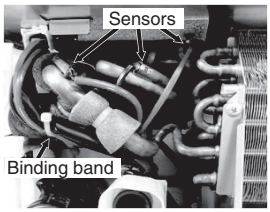
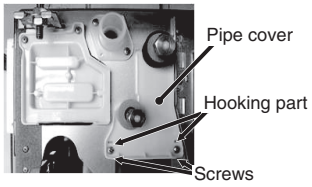
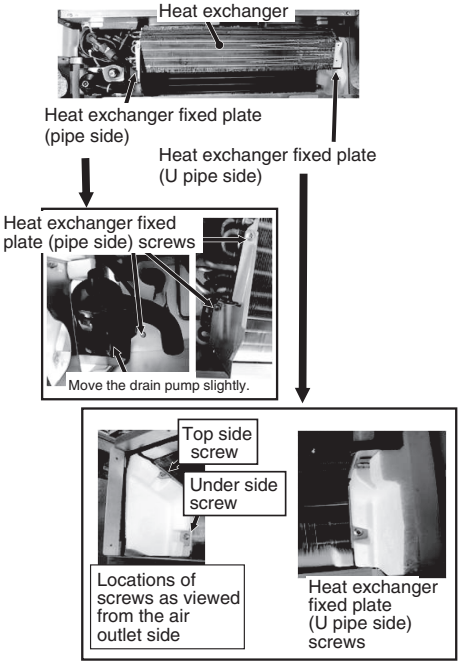
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑦ | Fan case (lower), Fan case (upper) | **1. Detachment**<br>1) For the back air intake, perform the procedure in 1 of "②Suction panel."<br>2) Remove the screw on the rear of the fan case (lower).<br>(One M4×10 screw for each fan case)<br>3) Disengage the hanging hooks on both sides of the fan case (lower) to remove the fan case (lower).<br>4) Remove the screws used to attach the fan case (upper).<br>(Two M4×10 left and right screws for each fan case)<br>5) Move the hooking plate of the fan case (upper), which is hooked to the blower base, downward to remove the fan case (upper).<br><br>**2. Attachment**<br>1) Use the hooking plate to hook the fan case (upper) to the blower base to attach the fan case (upper).<br><br>**NOTE)**<br>Make sure the fan case (upper) does not move even if you pull on it.<br><br>2) Use the screws that you removed in step 1-4) of "⑦Fan case (lower/upper)" to attach the fan case (upper).<br>3) Insert the tip of the fan case (lower) into the blower base and use the hooking plate to attach the fan case.<br>4) Use the screws that you removed in step 1-2) of "⑦Fan case (lower/upper)" to attach the fan case (upper). |  <br>  |

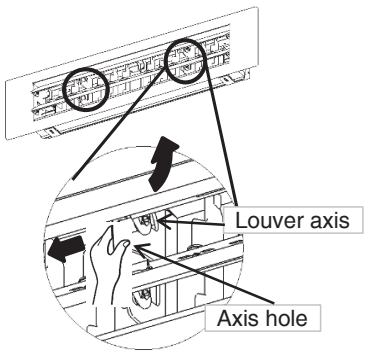
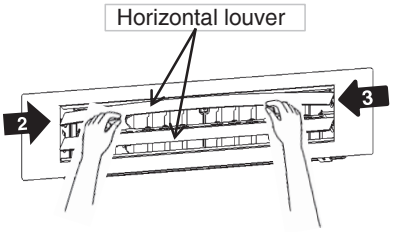
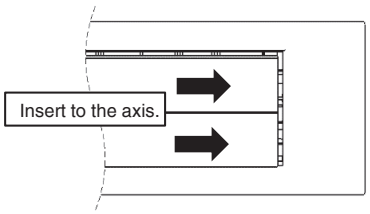
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑧ | Fan motor, Multi blade fan | **1. Detachment**<br>1) For the back air intake, perform the procedure in 1 of "②Suction panel."<br>2) Perform the procedure in steps 1-1), 1-2), 1-3) of "④Electric parts box cover."<br>3) Disconnect the following connector of the control P.C. board.<br><br>**NOTE)**<br>Unlock the lock of the housing to disconnect the connectors.<br>CN210 …Fan motor power supply (5P: White)<br><br>4) Detach the clamps and binding bands of the cable.<br>5) Perform the procedure in steps 1-2), 1-3) of "⑦Fan case (lower/upper)."<br>6) Remove the screws of the motor bands. (M5×10 2 pcs)<br>The motor band will not fall off even when the screws are removed.<br>7) Hold the motor bands with your hand so that they do not fall off, and remove the bands.<br>8) Loosen the hexagonal hole screw of the multi blade fan and remove the fan from the shaft.<br><br>**2. Attachment**<br>1) Insert the fan motor shaft into the multi blade fan, and secure it loosely. With the shaft still loosely secured, assemble the fan motor, and secure it using the motor band.<br><br>**NOTE)**<br>When assembling the fan motor, ensure that the motors cables are positioned on the left side facing the drain pan, and assemble the motor so that the motor cables are pointing straight down.<br><br>2) Align the position of the multi blade fan so that it is positioned at the center of the fan case (upper) and fix the fan using the hexagonal hole screw.<br><br>**NOTE)**<br>Arrange the multi blade fan so that screws position at the right side against the drain pan.<br><br>**NOTE)**<br>Fix multi blade fan with torque wrench 4.9 N•m or more.<br><br>3) Perform the procedure in steps 2-3) and 2-4) of "⑦Fan case (lower/upper)" to attach the fan case (lower).<br>4) Reconnect the cables that you disconnected in steps 1-3) and 1-4) of "⑧Fan motor, Multi blade fan".<br><br>**NOTE)**<br>Check there is no missing or poor contact of the connectors.<br>Finally check whether the multi blade fan turns surely and smoothly or not. |  <br>Fan motor<br>  <br>  <br>  <br>(Drain pan side) |

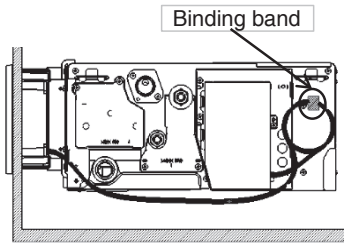
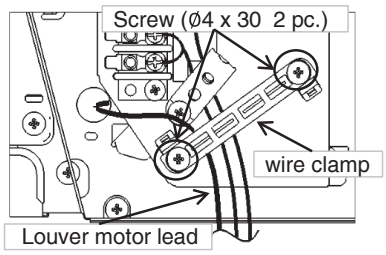
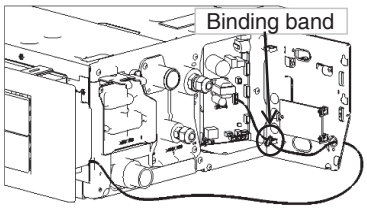
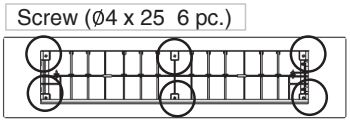
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑨-1 | Under panel, Drain pan (Form A) | **1. Detachment**<br>1) Take off the drain cap and drain the drain water accumulated in the drain pan. In case of natural drain model, drain the drain water by taking off hose band and drain hose.<br><br>**NOTE)**<br>When taking off drain cap and drain hose, be sure receive drain water in a bucket, etc.<br><br>2) Slightly loosen the screw holding the under panel in place. (M4x10 3pcs)<br>3) Move the under panel toward the air intake side to hang the panel.<br>4) Pull out the drain pan.<br><br>**NOTE)**<br>• When pulling out the drain pan, never pull out the drain socket by drawing it with hands. If doing so, water leak may be caused.<br>• When pulling out the drain pan, some drain water may still be left in the pan so be absolutely sure to discard this water.<br><br>5) After pulling out the drain pan slightly, pull it out again toward the air intake side to detach the pan.<br><br>**2. Attachment**<br>1) Hook the drain pan to the flange portion of the air intake side to attach the pan, and then push it in.<br>2) Hook the under panel on the screws that you untightened in step 1-2) of "⑨Under panel, Drain pan" and tighten these screws.<br>3) Attach the drain cap and drain hose that you removed in step 1-1) of "⑨Under panel, Drain pan." When you attach the drain cap and drain hose, be sure to insert them firmly into the base of the drain socket of the drain pan.<br><br>**NOTE)**<br>Finally, be sure to check there is no water leakage from each attached part. |  <br>  <br>  |

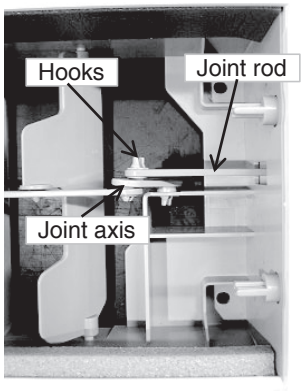
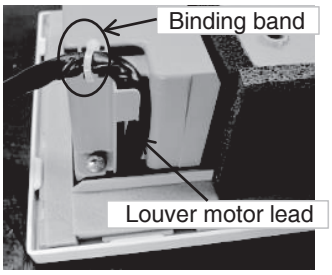
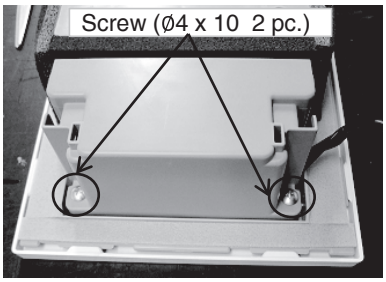
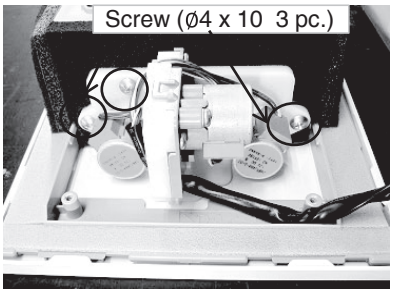
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑨-2 | Under panel, Drain pan (Form B) | **1. Detachment**<br>1) Tack off the drain cap and drain the drain water accumulated in the drain pan. In case off natural drain model, drain the drain water by taking off hose band and drain hose.<br><br>**NOTE)**<br>When taking off drain cap and drain hose, be sure receive drian water in a bucket,ect.<br><br>2) Slightly loosen the screw holding the under panel in place and on both sides of outlet. (Ø4x10 3pcs; Ø5x10 2pcs)<br>3) Slowly remove the under panel<br>4) Pull out the drain pan.<br><br>**NOTE)**<br>• When pulling out the drain pan.never pull out the drain socket by drawing it with hands. If doing so, water leak may be caused.<br>• When pulling out the drain pan, some drain water may still be left in the pan so be absolutely sure to discard this water.<br><br>5) After pulling out the drain pan slightly, to detach the pan.<br><br>**2. Attachment**<br>1) Align the drain panplate to the base of the drainage socket and push it into it.<br>2) Hook the under panel on the screws that you untightened in step 1-2) of "⑧Under panel, Drian pan" and tighten these screws.<br>3) Attach the drain cap and darin hose that you removed in step1-1) of "⑧Under panel, Drain pan." When you attach the drain cap and drain hose, be sure to insert them firmly into the base of the drain socket of the drain pan.<br><br>**NOTE)**<br>Finally, be sure to check there is no water leakage from leakage from each attached part. |  <br>  <br>  <br>  |

| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑩ | Drain pump, Float switch, Drain hose<br><br>*For only drain pump incorporated model | **1. Detachment**<br>1) Perform the procedure in steps 1-1), 1-2), 1-3) of "④Electric parts box cover" and 1 of "⑨Under panel, Drain pan."<br>2) Disconnect the following connectors and connected cables from the control P.C. board.<br><br>**NOTE)**<br>Unlock the lock of the housing to disconnect the connectors.<br>CN34 …Float switch (3P: Red)<br>CN504 …Drain pump lead (2P: White)<br><br>3) Detach the binding bands to disconnect the drain hose.<br>4) Detach the binding bands that bundle the drain pump and float switch cables and pull in the cables from the control P.C. board.<br>5) Remove the screws that fix the side cover. (M4×10 2 pcs)<br>6) Detach the side cover from the side plate and then rotate the cover. Next, pull out the drain pump and other drain pump kit components from the side.<br>(The drain pump and other drain pump kit components are fixed to the side cover.)<br><br>**NOTE)**<br>• If the pipes are damaged, refrigerant leak may be caused. Take out them with great care.<br>• One of two methods can be used: Either pull out the drain pump from the side or remove the screws (3 locations) used to fix the drain pump in place from the bottom side, and take out the drain pump from the bottom side.<br>• Please be careful to avoid damage to the foam part caused by the screws of drain pump kit.<br><br>**2. Attachment**<br>1) Carefully insert the side cover (which fixes the drain pump and other drain pump kit components removed in step 1-5) of "⑩Drain pump, Float switch, Drain hose") from the side, so that you do not damage the pipes. Then fix the side cover using the screws.<br>2) Insert the drain hose into the port of the drain pump and fix the hose using the binding bands.<br>3) Reconnect the cables and then perform the procedure in 2 of "⑨Under panel, Drain pan."<br><br>**NOTE)**<br>Finally check whether they correctly operate or not. |  <br>  |

| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑪ | Heat exchanger | **1. Detachment**<br>1) Recover refrigerant, and then remove refrigerant pipes at indoor unit side.<br>2) Perform the procedure in steps 1-1), 1-2), 1-3) of "④Electric parts box cover" and 1 of "⑨Under panel, Drain pan."<br>3) Disconnect the following connector of the control P.C. board.<br><br>**NOTE)**<br>Unlock the lock of the housing to disconnect the connectors.<br>CN82 …PMV (6P: White)<br><br>4) Remove the TC1, TC2, and TCJ sensors from the heat exchanger, and then detach the binding bands used for fixing cables, such as the sensor cables, PMV cable, and drain pump cable.<br>5) Remove the screws of the pipe cover. Next lift up the pipe cover and disengage the cover from the hooking parts to remove it.<br>(M4×10 2 pcs)<br>6) Remove the screws of the side cover to which the drain pump is attached, and slightly pull out the side cover.<br>(M4×10 2 pcs)<br>7) Remove the screws of the heat exchanger fixed plate (U pipe side), which are used for fixing the end plate of heat exchanger.<br>(M4×10 2 pcs)<br>8) Remove the screws of the heat exchanger fixed plate (pipe side) and detach the plate (pipe side).<br>(M4×10 3 pcs)<br><br>**NOTE)**<br>• One screw (1 location) is concealed by the drain pump. Shift the drain pump slightly in order to remove the screw.<br>• If it is difficult to remove the screws on the U pipe side, remove the under panel.<br>• When removing the top side screw on the U pipe side, use a longish screwdriver as necessary. Also, when removing the upper side screw, use a shortish screwdriver.<br><br>9) Detach the heat exchanger.<br><br>**2. Attachment**<br>1) Restore the components and cables to their original conditions and fix them in the following order: Sensors → Heat exchanger → Heat exchanger fixed plate (pipe side) → Heat exchanger fixed plate (Use the screws to fix the plate to the U pipe side.) → Pipe cover → Side cover → Drain pump → Under panel<br>2) Connect the refrigerant pipe as before, and then perform vacuuming. |  <br>  <br>  |

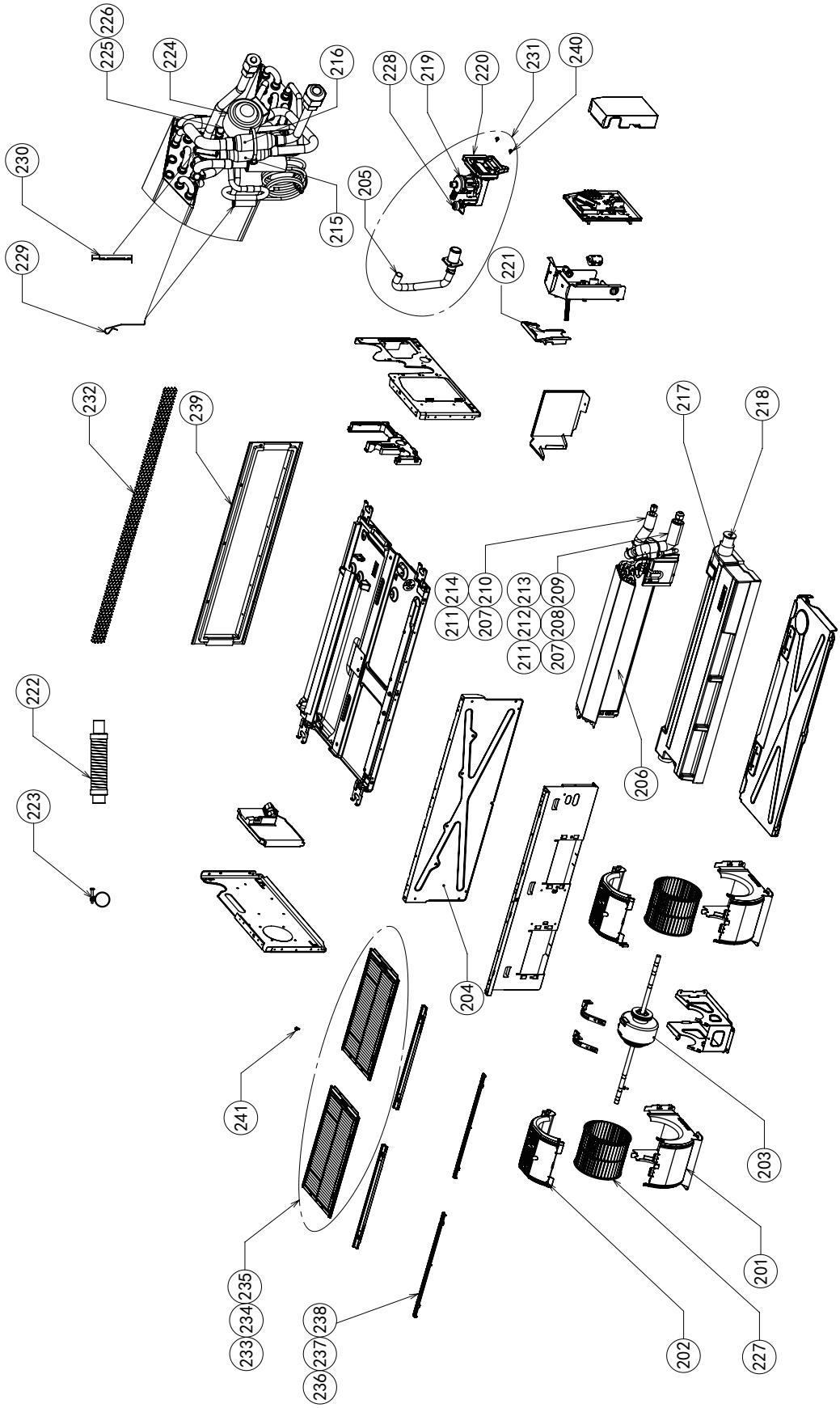
| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑫ | Horizontal louver | **1. Detachment**<br>1) Bend the gray axis hole plate to remove both left and right-handed side louver axises.<br>2) Slightly bend the horizontal louver as the figure then remove the left-handed side axis.<br>3) Pull out the vertical louver from right-handed side axis, then remove the horizontal louver.<br><br>**2. Attachment**<br>1) Install by using reverse sequences of detachment procedures step 1 of "⑫Horizontal louver".<br>2) Firmly insert 2 pieces of horizontal to the right-handed side axis. |  <br>  <br>  |

| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑬ | Panel assembly | **1. Detachment**<br>1) Perform step 1 of "⑫Horizontal louver"<br>2) Remove the binding band (1 pc.) fixing Lead wires.<br>3) Perform step 1 of "⑬Terminal cover"<br>4) Remove the screws (Ø4 x 30 2 pc.) fixing the wire clamp.<br>5) Perform step 1-1), 1-2), 1-3) of "④Electric parts box cover"<br>6) Remove the binding band (1 pc.) fixing Lead wires.<br>7) Disconnect the following connectors from the control P.C. board.<br><br>**NOTE)**<br>Unlock the lock of the housing to disconnect the connectors.<br>CN510 … Louver motor lead (20P: White)<br><br>8) Remove the screws (Ø4 x 25 6 pc.) fixing the Panel assembly.<br>9) Detach the Panel assembly.<br><br>**2. Attachment**<br>1) Use the screws that you removed in step 1-8) of "⑬Panel assembly" to attach the Panel assembly<br>2) Reconnect the cables that you disconnected in step 1-7) of "⑬Panel assembly"<br><br>**NOTE)**<br>Making sure to tightly fix the binding band of the lead wire that you disconnected.<br><br>3) Perform the procedure in steps 2-3) of "④Electric parts box cover" to attach the Electric parts box cover.<br>4) Use the screws that you removed in step 1-4) of "⑬Panel assembly" to fix the wire clamp and louver motor lead.<br>5) Perform the procedure in steps 2-1), 2-2) of "③Terminal cover" to attach the Terminal cover.<br><br>**NOTE)**<br>Making sure to tightly fix the binding band of the lead wire that you disconnected.<br><br>**NOTE)**<br>After wiring process,check carefully that louver motor leads do not touch the ceiling.<br><br>**NOTE)**<br>Whether it correctly operates or not,final check must be performed. |  <br>  <br>  <br>  |

| No. | Part name | Procedure | Remarks |
|---|---|---|---|
| ⑭ | Louver motor assembly | **1. Detachment**<br>1) Perform step 1 of "⑬Panel assembly "<br>2) Disengage the hooks of the joint axis to remove the joint rod.<br>3) Remove the binding band (1 pc.) fixing Lead wires.<br>4) Remove the screw (Ø4 x 10 2 pc.) fixing the motor cover.<br>5) Remove the screw (Ø4 x 10 3 pc.) fixing the louver motor assembly.<br>6) Detach the louver motor assembly.<br><br>**2. Attachment**<br>1) Use the screws that you removed in step 1-4), 1-5) of "⑭Louver motor assembly" to fix the louver motor assembly and the cover motor.<br><br>**NOTE)**<br>Making sure to tightly fix the binding band of the lead wire that you disconnected.<br><br>2) Attach the joint rod to the hooks of the joint axis.<br>3) Perform the procedure in steps 2 of "⑬ Panel assembly" to attach the Panel assembly.<br><br>**NOTE)**<br>Whether it correctly operates or not, final check must be performed. |  <br>  <br>  <br>  |

# 14. EXPLODED VIEWS AND PARTS LIST

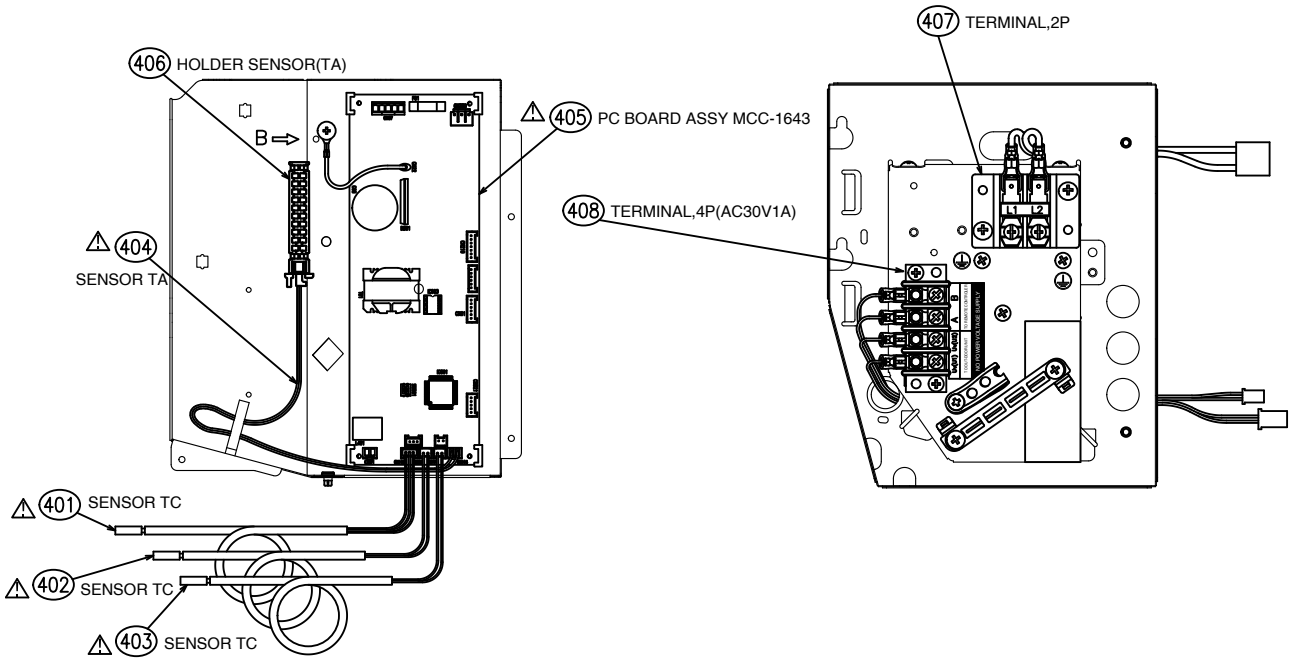
## 14-1. Slim duct type



| Location No. | Part No. | Description | Q'ty/Set MMD-UP***1SPHY-E/TR | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 003 | 005 | 007 | 009 | 012 | 015 | 018 | 024 | 027 |
| 201 | 43H22003 | CASE,FAN,UPPER | 2 | 2 | 2 | 2 | 2 | | | | |
| | 43H22004 | CASE,FAN,UPPER | | | | | | 2 | 2 | | |
| | 43H22005 | CASE,FAN,UPPER | | | | | | | | 2 | 2 |
| 202 | 43H22006 | CASE,FAN,LOWER | 2 | 2 | 2 | 2 | 2 | | | | |
| | 43H22007 | CASE,FAN,LOWER | | | | | | 2 | 2 | | |
| | 43H22008 | CASE,FAN,LOWER | | | | | | | | 2 | 2 |
| 203 | 43H21004 | MOTOR,FAN | | | | | | 1 | 1 | 1 | 1 |
| | 43H21011 | MOTOR,FAN | 1 | 1 | 1 | 1 | 1 | | | | |
| 204 | 43H00021 | PLATE,INLET | 1 | 1 | 1 | 1 | 1 | | | | |
| | 43H00022 | PLATE,INLET | | | | | | 1 | 1 | | |
| | 43H00023 | PLATE,INLET | | | | | | | | 1 | 1 |
| 205 | 43H70001 | HOSE,DRAIN | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 206 | 43H44047 | REFRIGERATION CYCLE ASSY | 1 | 1 | | | | | | | |
| | 43H44048 | REFRIGERATION CYCLE ASSY | | | 1 | 1 | 1 | | | | |
| | 43H44049 | REFRIGERATION CYCLE ASSY | | | | | | 1 | 1 | | |
| | 43H44050 | REFRIGERATION CYCLE ASSY | | | | | | | | 1 | 1 |
| 207 | 43H49027 | SOCKET | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 |
| 208 | 43H49028 | SOCKET | | | | | | 1 | 1 | | |
| 209 | 43H49035 | SOCKET | | | | | | | | 1 | 1 |
| 210 | 43H49029 | SOCKET | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| 211 | 43H49030 | NUT,FLARE | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 |
| 212 | 43H49031 | NUT,FLARE | | | | | | 1 | 1 | | |
| 213 | 43H49033 | NUT,FLARE | | | | | | | | 1 | 1 |
| 214 | 43H49032 | NUT,FLARE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| 215 | 43H47006 | STRAINER | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 216 | 43H47007 | STRAINER | 1 | 1 | 1 | 1 | 1 | | | | |
| 217 | 43H72001 | PAN ASSY,DRAIN | 1 | 1 | 1 | 1 | 1 | | | | |
| | 43H72002 | PAN ASSY,DRAIN | | | | | | 1 | 1 | | |
| | 43H72003 | PAN ASSY,DRAIN | | | | | | | | 1 | 1 |
| 218 | 43H79001 | CAP,DRAIN | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 219 | 43H77001 | PUMP,DRAIN | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 220 | 43H19006 | COVER ASSY,SIDE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 221 | 43H19007 | COVER,PIPE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 222 | 43H70002 | HOSE,DRAIN | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 223 | 43H79002 | BAND,HOSE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 224 | 43H46069 | COIL,PMV | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 225 | 43H46065 | BODY,PMV | 1 | 1 | 1 | 1 | 1 | | | | |
| 226 | 43H46068 | BODY,PMV | | | | | | 1 | 1 | 1 | 1 |
| 227 | 43H20006 | FAN,MULTI BLADE | 2 | 2 | 2 | 2 | 2 | | | | |
| | 43H20007 | FAN,MULTI BLADE | | | | | | 2 | 2 | | |
| | 43H20008 | FAN,MULTI BLADE | | | | | | | | 2 | 2 |
| 228 | 43H51002 | SWITCH,FLOAT | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 229 | 43H47008 | HOLDER,SENSOR(TC) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 230 | 43H47009 | HOLDER,SENSOR(TC1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 231 | 43H77002 | PUMP,DRAIN ASSY | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 232 | 43H39005 | EVAPORATOR, WIND | | | | | | | | 1 | 1 |

| Location No. | Part No. | Description | Q'ty/Set MMD-UP***1SPHY-E/TR | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 003 | 005 | 007 | 009 | 012 | 015 | 018 | 024 | 027 |
| 233 | 43H80030 | AIR FILTER | 1 | 1 | 1 | 1 | 1 | | | | |
| 234 | 43H80036 | AIR FILTER | | | | | | 1 | 1 | | |
| 235 | 43H80037 | AIR FILTER | | | | | | | | 1 | 1 |
| 236 | 43H80038 | RAIL,FILTER | 1 | 1 | 1 | 1 | 1 | | | | |
| 237 | 43H80039 | RAIL,FILTER | | | | | | 1 | 1 | | |
| 238 | 43H80040 | RAIL,FILTER | | | | | | | | 1 | 1 |
| 239 | 43H00024 | FLANGE,OUTLET | 1 | 1 | 1 | 1 | 1 | | | | |
| | 43H00025 | FLANGE,OUTLET | | | | | | 1 | 1 | | |
| | 43H00026 | FLANGE,OUTLET | | | | | | | | 1 | 1 |
| 240 | 43H97007 | SCREW | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 241 | 43H97008 | SCREW | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

## 14-2. Electric Parts

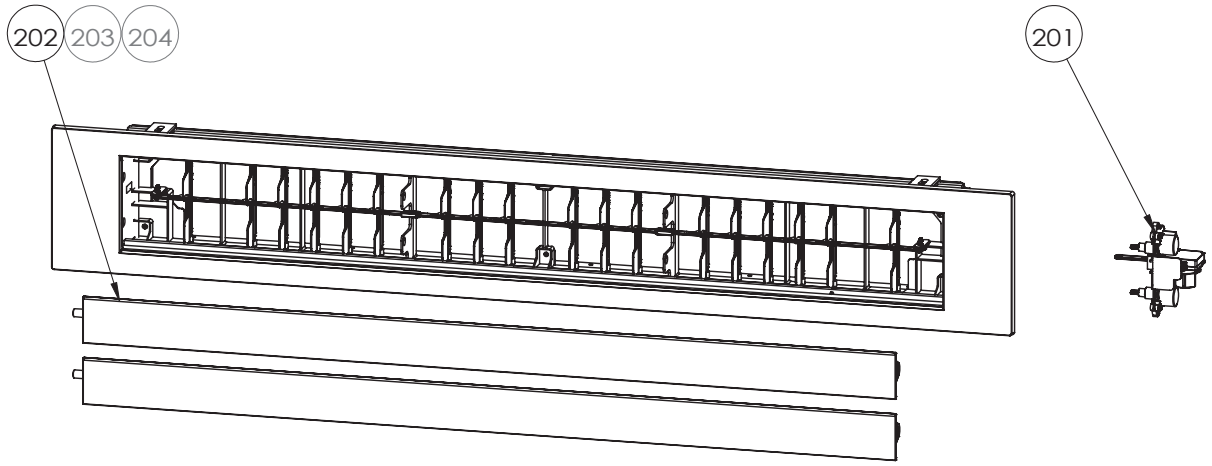



| Location No. | Part No. | Description | MMD-UP***1SPHY-E/TR | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 003 | 005 | 007 | 009 | 012 | 015 | 018 | 024 | 027 |
| 401 | 43H50009 | SENSOR, TC | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 402 | 43H50010 | SENSOR, TC | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 403 | 43H50011 | SENSOR, TC | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 404 | 43H50012 | SENSOR, TA | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 405 | *43H69082 | PC BOARD ASSY, MCC-1643 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 405 | 43H69092 | PC BOARD ASSY, MCC-1643 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 406 | 43H63001 | HOLDER, SENSOR(TA) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 407 | 43H60007 | TERMINAL, 2P | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 408 | 43H60004 | TERMINAL, 4P(AC30V1A) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

*43H69082 can only be used for products manufactured before April 2022.

## 14-3. 3DW Diffusor (Sold separately)

### TCB-TDL0141SDY-E/TR,TCB-TDL0181SDY-E/TR,TCB-TDL0271SDY-E/TR




| Location No. | Part No. | Description | TCB-TDL****SDY-E/TR | | |
|---|---|---|---|---|---|
| | | | 0141 | 0181 | 0271 |
| 201 | 43H2D001 | MOTOR,LOUVER,DC12V | 1 | 1 | 1 |
| 202 | 43H22018 | LOUVER ASSY | | | 2 |
| 203 | 43H22019 | LOUVER ASSY | | 2 | |
| 204 | 43H22020 | LOUVER ASSY | 2 | | |

# WARNINGS ON REFRIGERANT LEAKAGE

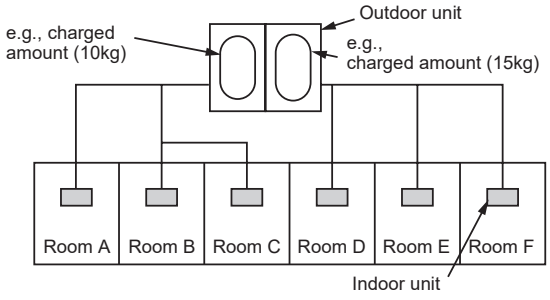
## Check of Concentration Limit

**The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its concentration will not exceed a set limit.**
The refrigerant R32/R410A which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its concentration should rise excessively. Suffocation from leakage of R32/R410A is almost non-existent. With the recent increase in the number of high concentration buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.
Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared with conventional individual air conditioners. If a single unit of the multi conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its concentration does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).
In a room where the concentration may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device.
The concentration is as given below.

$$\frac{\text{Total amount of refrigerant (kg)}}{\text{Min. volume of the indoor unit installed room } (m^3)} \leq \text{Concentration limit } (kg/m^3)$$

Refrigerant Concentration Limit shall be in accordance with local regulations.

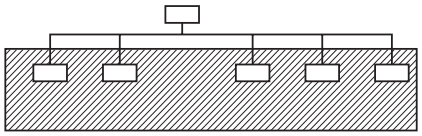
**NOTE 1 :**
If there are 2 or more refrigerating systems in a single refrigerating device, the amounts of refrigerant should be as charged in each independent device.



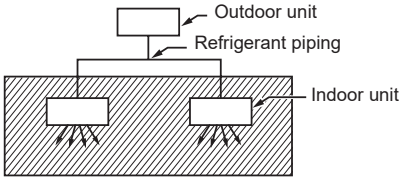

For the amount of charge in this example:
The possible amount of leaked refrigerant gas in rooms A, B and C is 10kg.
The possible amount of leaked refrigerant gas in rooms D, E and F is 15kg.

**Important**

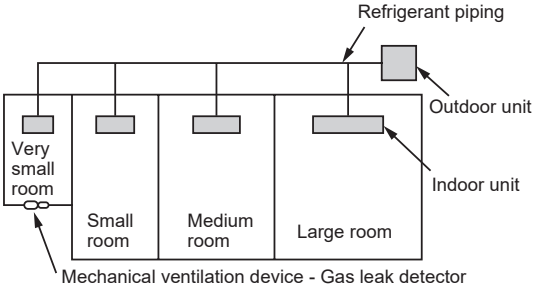
**NOTE 2 :**
The standards for minimum room volume are as follows.
(1) No partition (shaded portion)



(2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).




(3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



# Toshiba Carrier Air Conditioning (China) Co., Ltd.

**Revision record**

| | | | |
|---|---|---|---|
| First issue | - | - | - |
| Ver.1 | Contents change of check code E03 relation | P40.66.79.81 | 2021.08 |
| Ver.2 | The upgraded product can use both R32 and R410A refrigerant, and can use together with 3DW Diffusor accessory. | - | 2022.07 |