TOSHIBA

FILE No. AEO-2202W

AIR CONDITIONER (MULTI TYPE)

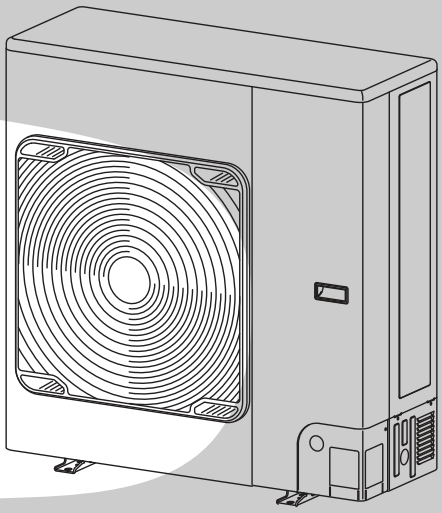
SERVICE MANUAL

Outdoor Unit

<MiNi-SMMS>
Model name:

<Heat Pump Model>

MCY-MUG0401HSW-E	**MCY-MUG0401HSW-TR**
MCY-MUG0501HSW-E	**MCY-MUG0501HSW-TR**
MCY-MUG0601HSW-E	**MCY-MUG0601HSW-TR**



Original instruction (English)

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This service manual provides relevant explanations about new outdoor unit.
Please refer to the following service manuals for each indoor units.

Model name	SVM File No.
<4-Way Cassette Type> MMU-UP***1HP-E/-TR (Made in Thailand model) MMU-UP***1H-E/-TR (Made in Japan model)	SVM-20095 A10-2004
<Compact 4-Way Cassette Type> MMU-UP***1MH-E/-TR (Made in Japan model)	A10-2004
<2-Way Cassette Type> MMU-UP***1WH-E/-TR (Made in Japan model)	A10-2004
<1-Way Cassette Type> MMU-UP***1SH-E/-TR (Made in Japan model) MMU-UP***1YHP-E/-TR (Made in Thailand model)	A10-2004 SVM-20107
<Concealed Duct Standard Type> MMD-UP***1BHP-E/-TR (Made in Thailand model)	SVM-20095
<Concealed Duct High Static Pressure Type> MMD-UP***1HP-E/-TR (Made in Thailand model)	SVM-20095
<Slim Duct Type> MMD-UP***1SPHY-E (Made in China model)	A10-2006
<Under Ceiling Type> MMC-UP***1HP-E/-TR (Made in Thailand model)	SVM-20095
<High Wall Type> MMK-UP***1HP-E/-TR (Made in Thailand model) MMK-UP***1HPL-E (Made in Thailand model)	SVM-20095 SVM-20095

SAFETY CAUTION

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. • 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. • 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. • 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. • 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. • 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. • 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 'Safety' working clothing
Electrical-related work	Gloves to provide protection for electricians Insulating shoes Clothing to provide protection from electric shock
Work done at heights (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]

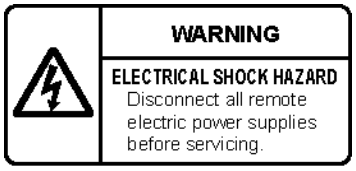
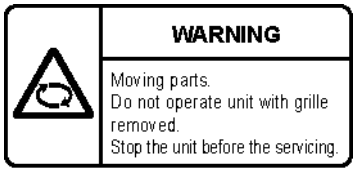
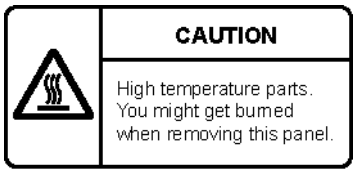
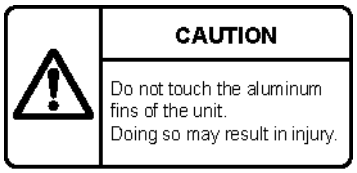
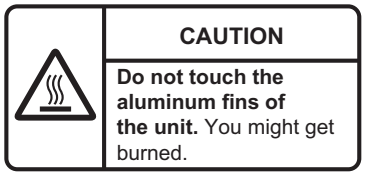
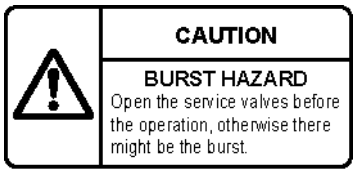
Indication	Explanation
⚠ **DANGER**	Indicates contents assumed that an imminent danger causing a death or serious injury of the repair engineers and the third parties when an incorrect work has been executed.
⚠ **WARNING**	Indicates possibilities assumed that a danger causing a death or serious injury 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]

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

Warning indications on the air conditioner unit

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

	**WARNING** (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.

Precautions for safety

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

⚠ DANGER

Turn off breaker.	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 intake grille 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 electric box 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 electric box 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 an error 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”

⚠ WARNING

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. 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. 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. 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. 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 unit. 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. You may fall or the objects may fall off the outdoor unit and result in injury.
	Use forklift truck to carry in the air conditioner units and use winch or hoist at installation of them
	When transporting the air conditioner, wear shoes with additional protective toe caps.
	When transporting the air conditioner, do not take hold of the bands around the packing carton. 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.
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 earth wires are connected properly.
	Connect earth wire. (Grounding work) Incomplete earthing causes an electric shock. Do not connect earth wires to gas pipes, water pipes, and lightning rods or earth wires for telephone wires.

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

 Prohibition of modification.	Do not modify the products.Do not also disassemble or modify the parts. 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.
 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, put a sign in place so that noone will approach the work location before proceeding with the work. 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.
 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. When repairing the refrigerating cycle, take the following measures. 1) Be attentive to fire around the cycle. When using a gas stove, etc., be sure to put out fire before work; otherwise the oil mixed with refrigerant gas may catch fire. 2) Do not use a brazing in the closed room. When using it without ventilation, carbon monoxide poisoning may be caused. 3) Do not bring inflammables close to the refrigerant cycle, otherwise fire of the brazing may catch the inflammables.
 Refrigerant	The refrigerant used by this air conditioner is the R32.
	Check the used refrigerant name and use tools and materials of the parts which match with it. For the products which use R32 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.
	Do not use any refrigerant different from the one specified for complement or replacement. 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. For an air conditioner which uses other refrigerant (R22, etc.), never use R32. If different types of refrigerant are mixed, abnormal high pressure generates in the refrigerating cycle and an injury due to breakage may be caused.
	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. 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 other than R410A 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 installation work, check the refrigerant gas does not leak. If the refrigerant gas leaks in the room, poisonous gas generates when gas touches to fire such as fan heater, stove or cooking stove though the refrigerant gas itself is innocuous.
	Never recover the refrigerant into the outdoor unit. 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. 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 (500VMΩ) to check the resistance is 1 MΩ 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. If the refrigerant gas touches to a fire, poisonous gas generates. 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. If the leaked refrigerant gas comes in contact with fire, noxious gas may generate.
	After installation work, check the refrigerant gas does not leak. If the refrigerant gas leaks in the room, poisonous gas generates when gas touches to fire such as fan heater, stove or cooking stove though the refrigerant gas itself is innocuous.
Compulsion	When the refrigerant gas leaks, find out the leaked position and repair it surely. If the leaked position cannot be found out and the repair work is interrupted, reclaim and tighten the service valve, otherwise the refrigerant gas may leak into the room. The poisonous gas generates when gas touches to fire such as fan heater, stove or cooking stove though the refrigerant gas itself is innocuous. When installing equipment which includes a large amount of charged refrigerant in a sub-room, it is necessary that the concentration does not the limit even if the refrigerant leaks. If the refrigerant leaks and exceeds the limit concentration, an accident of shortage of oxygen is caused.
	Tighten the flare nut with a torque wrench in the specified manner. 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. If an incorrect installation is done, a trouble of the refrigerating cycle, water leak, electric shock or fire is caused.
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.
Do not operate the unit with the valve closed.	Check the following matters before a test run after repairing piping. • Connect the pipes surely and there is no leak of refrigerant. • The valve is opened. 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 sucked and causes further abnormal high pressure resulted in burst or injury.
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. 1) The earth wire is correctly connected. 2) The power cord is not caught in the product. 3) There is no inclination or unsteadiness and the installation is stable. If check is not executed, a fire, an electric shock or an injury is caused.
	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 rupture, injury, etc.

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

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.
	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.
	When the service panel of the outdoor unit is to be opened in order for the fan motor, 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. 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. In addition, before proceeding with the repair work, wear the kind of insulated heat-resistant gloves designed to protect electricians.
Installation	Only a qualified installer or service person is allowed to do installation work. Inappropriate installation may result in water leakage, electric shock or fire.
	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 nonspecified products may result in fire, electric shock, water leakage or other failure. 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.
	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.

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 or qualified service person 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 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.

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

Declaration of Conformity

Manufacturer: Toshiba Carrier Air-Conditioning Europe Sp.z o.o.
ul. Gdańska 131, 62-200 Gniezno, Poland

TCF holder: Toshiba Carrier Air-Conditioning Europe Sp.z o.o.
ul. Gdańska 131, 62-200 Gniezno, Poland

Hereby declares that the machinery described below:

Generic Denomination: Air Conditioner

Model / type: MCY-MUG0401HSW-E, MCY-MUG0501HSW-E, MCY-MUG0601HSW-E
MCY-MUG0401HSW-TR, MCY-MUG0501HSW-TR, MCY-MUG0601HSW-TR

Commercial name: Mini-Super Modular Multi System Air Conditioner (MiNi-SMMS series)

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

Complies with the provisions of the following harmonized standard: EN 378-2: 2016

Name: Hori Masato
Position: GM, Quality Assurance & Design Engineering Dept.
Date: 14 November, 2022
Place Issued: Poland

NOTE

- This declaration becomes invalid if technical or operational modifi cations are introduced without the manufacturer's consent.

Disposal

How to dispose of air conditioners in accordance with the 2002/96/EC Directive WEEE (Waste Electrical and Electronic Equipment) is provided in the manual supplied with your product.

Specifications

Model type	Sound power level (dBA)		Weight (kg)
	Cooling	Heating	
MCY-MUG0401HSW-E	69	71	100
MCY-MUG0401HSW-TR			
MCY-MUG0501HSW-E	70	72	100
MCY-MUG0501HSW-TR			
MCY-MUG0601HSW-E	71	73	100
MCY-MUG0601HSW-TR			

About 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. due to a malfunction, a fire, or 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 there is a high risk of the accumulation, ventilate the room with a local exhaust ventilator.
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, causing 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, causing 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 occurs in the refrigerating cycle, causing injury due to the breakage.

7 After installation work has been completed, 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, water leakage, electric shock, or 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 be mixed, 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 1.6 times higher than that of the former refrigerant (R22), use tools and parts for high pressure resistance 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.

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 pipes or joints to which little impurities adhere.

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 thickness 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

○: R410A tools available
△: Partly unavailable, ×: R410A tools unavailable

No.	Installation/service tools		Use	Applicability to R32 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 R410A or R32 using the conventional flare tools, adjustment of projection margin is necessary. For this adjustment, a copper pipe gauge, etc. is 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 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 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 that of 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 equipment but also a fire etc.

General tools

IIn addition to the above exclusive tools, the following equipment is necessary as the general tools.

(1) Pipe cutter
(2) Reamer
(3) Pipe bender
(4) Level vial
(5) Screwdriver (+, –)
(6) Spanner or Adjustable 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
(4) Electroscope

5. Safety precautions related to regulations on Installation and Service.

Make sure installation, servicing, maintenance and repair comply with instructions from TOSHIBA and with applicable legislation (for example, national gas regulation) and are executed only by authorized people.

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.

	**WARNING** (Risk of fire)	This mark is for R32 refrigerant only. Refrigerant type is written on nameplate of outdoor unit. In case that refrigerant type is R32, this unit uses a flammable refrigerant. 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

- Model 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 or an operating electric heater.)
- Do not pier d 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.

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 assessable 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.
- Install the system according to Installation Manual and avoid the likelihood hydraulic shock damaging the system.

- Solenoid valves shall not block in liquid refrigerant unless adequate relief is provided to the refrigerant system low pressure side.
- Install the system according to Installation Manual so that it does not shut off in the liquid refrigerant.
- 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 base 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.
- When installing the system that used flammable refrigerant in a non-ventilated space, it shall be installed in the large space or with safety equipment as designated below, so as to prevent the refrigerant from staying and causing a fire of explosion by the refrigerant leak.
- 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.
- Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.
- Only mechanical fittings can be used. (Example; Brazing+flame connection)
- Refrigerating system shall use only permanent joints indoors except for site-made joints directly connecting the indoor unit to the refrigerant piping, of factory made mechanical joints in compliance with ISO 14903.

Unventilated area

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

Installation

- Appliance shall be installed, operated and stored in a room with a floor area larger than [Amin] m2.
- For appliances using R32 refrigerant connected via an air duct system to one or more rooms,
  - no auxiliary devices, which may be a potential ignition source, shall be installed in the duct work.(example: hot surfaces with a temperature exceeding 700 °C and electric switching device)
- There shall be no operation ignition sources (example: open flames, an operating gas appliance or an operating electric heater) in case the floor area is less than the minimum floor area A (m2)
- [Amin] is the minimum floor area.
  Please refer to Installation Manual , in order to comply with the contents above.
- The total amount of refrigerant in the system must be less than or equal to the maximum allowable total amount of refrigerant. The maximum allowable amount of refrigerant is 13.1 [kg].
- Keep the installation height according to the indoor unit type.
  Ceiling-mounted unit (include Duct type) : 2.2m or more.
  Wall- mounted and under celling unit : 1.8m or more.
  But install the indoor unit at least 2.5m above the floor lever since otherwise the users may injure themselves or receive electric shocks if they poke their fingers of other objects into the indoor unit while the air conditioner is running.
- Connect both the air inlet and outlet of the duct directly to the same room.
- Do not use a space such as a false ceiling as the air inlet or the outlet of the duct.
- The position where the safety Shut-off valve can be installed differs depending on the setting of safety measures. For more information on shut-off valves, see chapter 8-4-5 for deails.

Information on servicing

1. **Check to the area**
   - Prior to begging work on systems containing flammable
     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 vapor 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.

- All installers 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.

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.
- Only equipment approved by the manufacturer shall be used for duct work.

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 of CO2 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 of 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.
- Make sure that the exhaust port of the vacuum pump is not close to the ignition source and that ventilation is possible.

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. Check 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 containing 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.
- It 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. Repairs 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 used 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) is 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 my 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 of 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 pipe-work 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, 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 labeled 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 appropriated 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.
- Do not use the unit until it is confirmed that the portion from which the refrigerant leaked is repaired.
- When installing, relocating, or servicing the air conditioner, use only the specified refrigerant (R32) to charge the refrigerant lines. Do not mix if with any other refrigerant and do not allow air to remain in the lines.

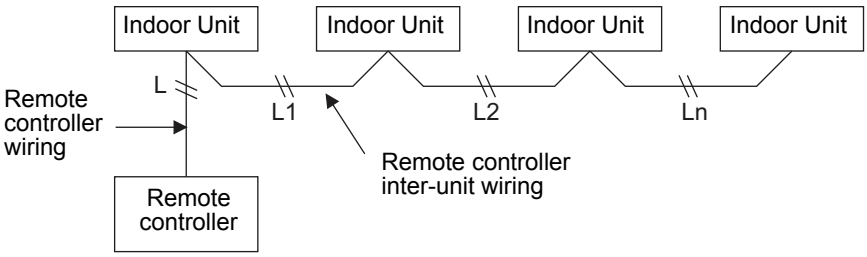
Communication type, model names and the maximum number of connectable units

◆ **Only TU2C Link can be used for the communication specifications of this air conditioner. 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)
Outdoor unit	MCY-MUG*** ↑ This letter indicates U series model.
Indoor unit	MM*-UP*** ↑ This letter indicates U series model.
Wired remote controller	RBC-A**U*** ↑ This letter indicates U series model.
Wireless remote controller kit & receiver unit	RBC-AXU*** ↑ This letter indicates U series model.
Remote sensor	TBC-TC**U*** ↑ This letter indicates U series model.

◆ **There are restrictions on the wiring specifications and the number of units that can be connected.**

(1) For wiring specifications, carry out the installation, maintenance, or repair according to the attached Installation Manual.
(2) The max number of connectable indoor units will be 16.



1 Product summary

1-1. Outdoor unit

Power supply	Corresponding HP		
Single-phase	4HP	5HP	6HP
220-240V (50Hz)	MCY-MUG0401HSW	MCY-MUG0501HSW	MCY-MUG0601HSW
Cooling capacity (kW) *1	12.1	14.0	15.5
Heating capacity (kW) *1	12.5	16.0	17.0

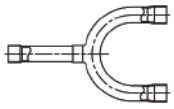
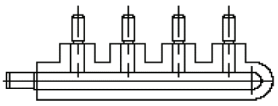
*1 Rated conditions
Cooling: Indoor air temperature 27 °C DB / 19 °C WB,
Outdoor air temperature 35 °C DB
Heating:Indoor air temperature 20 °C DB,
Outdoor air temperature 7 °C DB / 6 °C WB

1-2. Connectable indoor units

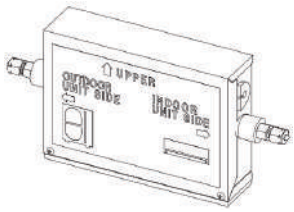
Model type	Model name
4-way Cassette	MMU-UP∗∗∗∗H∗
Compact 4-way Cassette	MMU-UP∗∗∗∗MH∗
2-way Cassette	MMU-UP∗∗∗∗WH∗
1-way Cassette	MMU-UP∗∗∗∗YH∗
	MMU-UP∗∗∗∗SH∗
Concealed Duct Standard	MMD-UP∗∗∗∗BH∗
Concealed Duct High Static Pressure	MMD-UP∗∗∗∗H∗
Slim Duct	MMD-UP∗∗∗∗SPH∗
Under Ceiling	MMC-UP∗∗∗∗H∗
High Wall	MMK-UP∗∗∗∗H∗

* For details on these models, read the owner's manuals that come with the outdoor units.

1-3. Branching joints and headers

Model type	Model name	Appearance
Y-shape branching joint	RBM-BY55E	
4-branching header	RBM-HY1043E	
8-branching header	RBM-HY1083E	

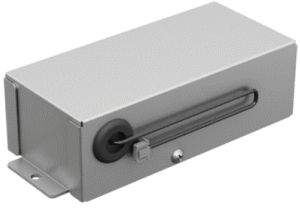
1-4. PMV kit

Model type	Model name	Appearance
007 to 014 types	RBM-PMV0361U-E	
015 to 027 types	RBM-PMV0901U-E	

1-5. Shut-off Valve unit

Model type	Model name	Appearance
4HP types	RBM-SV1121HUPE	
6.4HP types	RBM-SV1801HUPE	

1-6. Battery kit

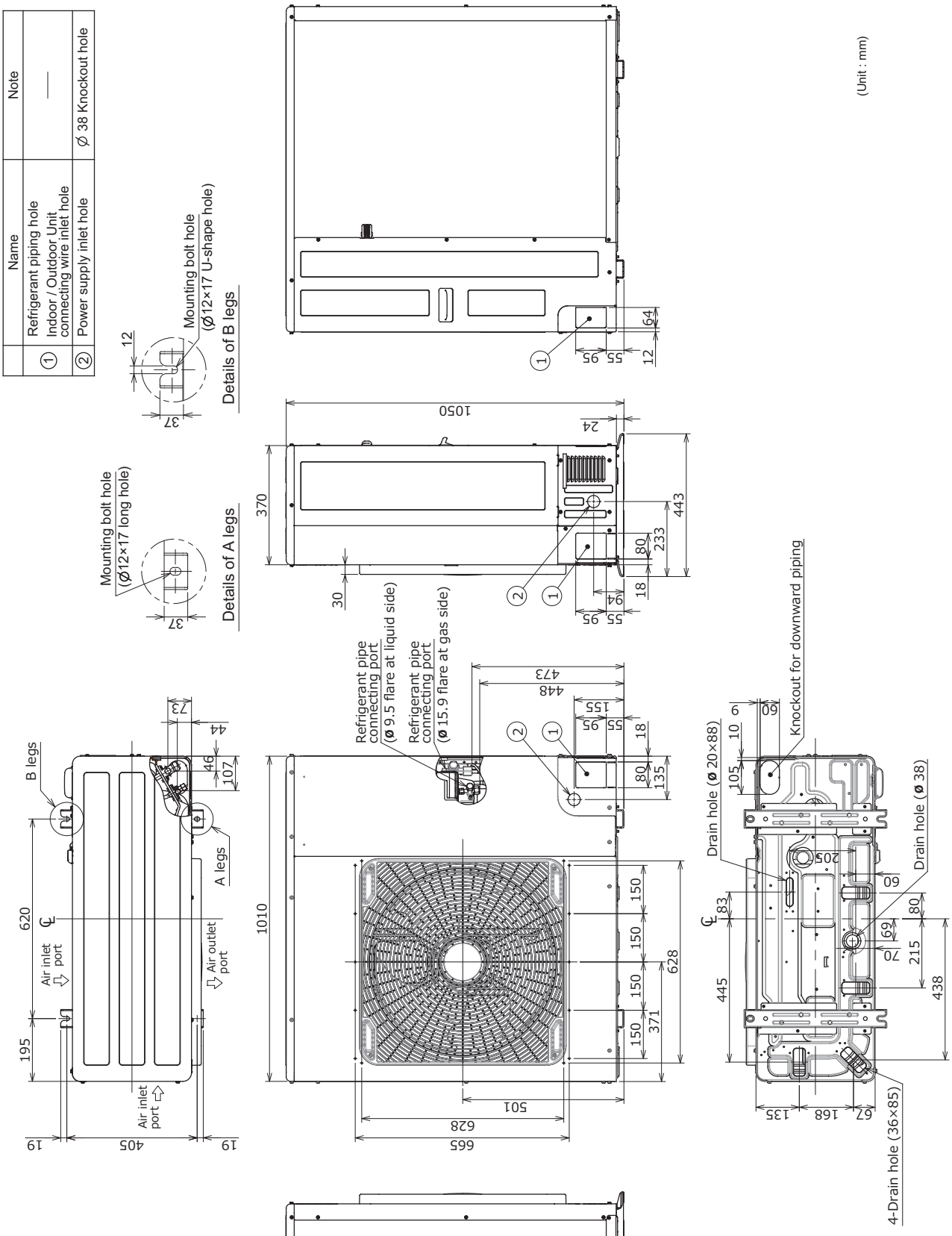
Model type	Appearance
TCB-BT1UPE	

1-7. Leak Detector

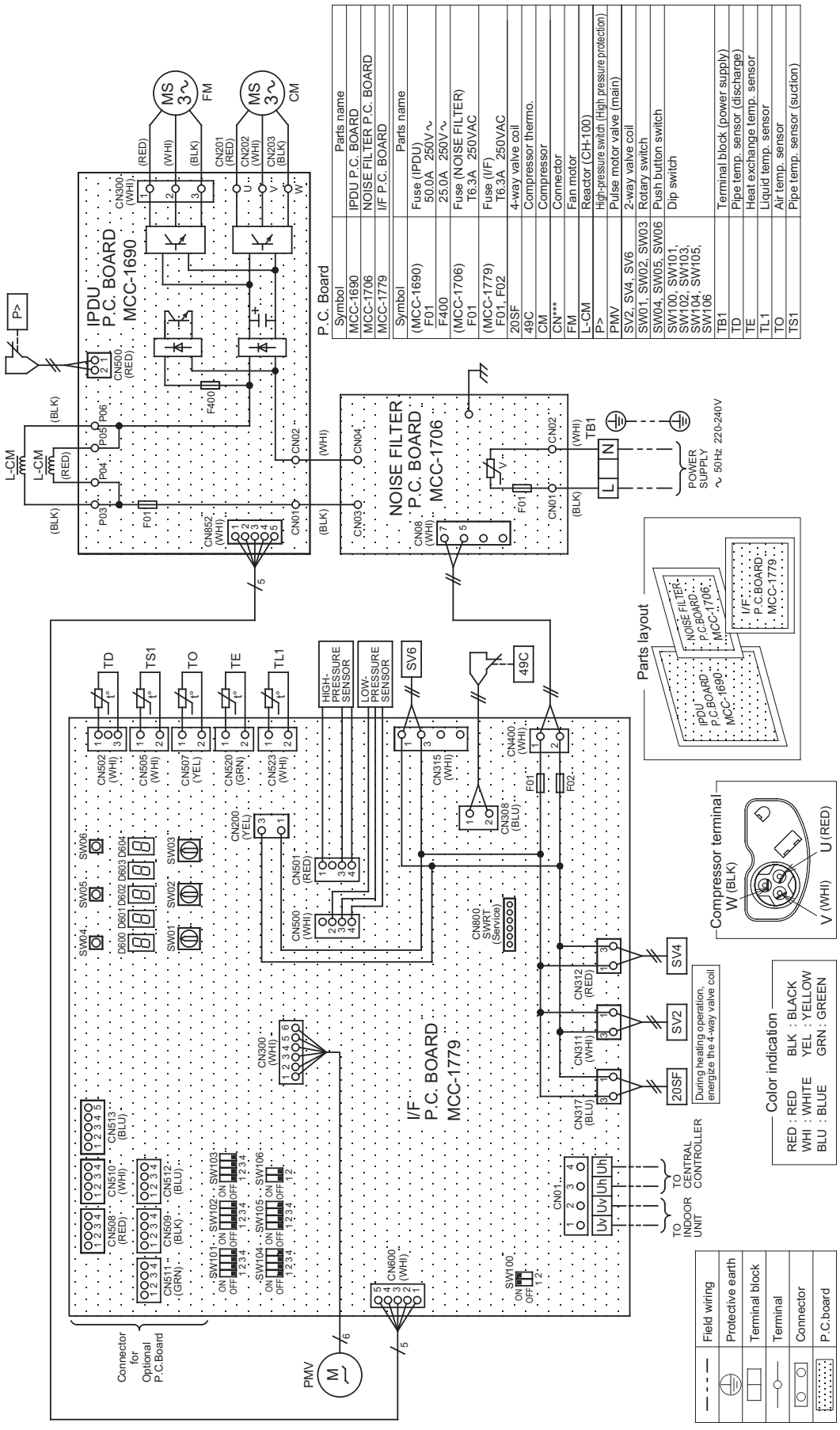
Model type	Appearance
TCB-LD1UPE	

2 Construction views

	Name	Note
①	Refrigerant piping hole Indoor / Outdoor Unit connecting wire inlet hole	—
②	Power supply inlet hole	∅ 38 Knockout hole



3 Wiring diagram



4 Parts rating

4-1. Outdoor unit

No.	Name	Model	Specification
1	Compressor	DX422A3F-2CM	Output: 5.60 kW
2	4-way valve coil	STF-H01AJ2605A1	AC220-240V, 50/60Hz
3	SV2, SV4, SV6 valve coil	FQ-G593	AC220-240V, 50/60Hz
4	Pulse motor valve coil	PQ-M10012-000231	DC12V
5	Pressure sensor (For high pressure)	NSK-BH038D-725	DC5V 0-3.73MPa
6	Pressure sensor (For low pressure)	NSK-BH010D-725	DC5V 0-0.98MPa
7	High-pressure SW	ACB-4UB286W	OFF:4.15MPa ON:3.2MPa
8	Fan motor	ICF-280-A100-1	DC280-340V/100W

4-2. Outdoor inverter

No.	Name	Model	Specification
1	Power supply terminal block	JXO-6003	AC600V/60A
2	Communication terminal block (MCC-1779)	HP-T4053-1-4PS2	AC30V (or no more than DC42V/1A, 6P)
3	Reactor	CH-100	10mH/16A
4	Interface P.C. board	MCC-1779	—
5	IPDU P.C. board	MCC-1690	—
6	Fuse (MCC-1690)	GAC1 50A	50A/AC250V (P.C. board)
7	Comp. motor drive IPM (MCC-1690)	PSS50SA2F6	50A/600V (P.C. board)
8	Fan motor drive IPM (MCC-1690)	PSS10S92E6	10A/600V (P.C. board)
9	Noise filter P.C. board	MCC-1706	—
10	Line filter (MCC-1706)	TOR-03	30A/AC500V
11	Power relay (MCC-1690)	BR-401L	AC240V/40A
12	PTC thermistor (MCC-1690)	ZPR0RCH150B250	8Arms/AC276V
13	Pipe temp. sensor (TD)	—	–30°C ~ 130°C (Ambient temp. range)
14	Pipe temp. sensor (TS1)	—	–20°C ~ 80°C (Ambient temp. range)
15	Pipe temp. sensor (TE)	—	–20°C ~ 80°C (Ambient temp. range)
16	Pipe temp. sensor (TO)	—	–20°C ~ 80°C (Ambient temp. range)
17	Pipe temp. sensor (TL1)	—	–20°C ~ 80°C (Ambient temp. range)

4-3. Shut-off value unit

Model type	Parts Name	Model	Specification
RBM-SV1121HUPE RBM-SV1801HUPE	Pulse motor valve coil	PAM-MD12TF-305 PMV-L, D	DC12V Connector : White
		PAM-MD12TF-306 PMV-S	DC12V Connector : Blue
	P.C. board	MCC-1771	-

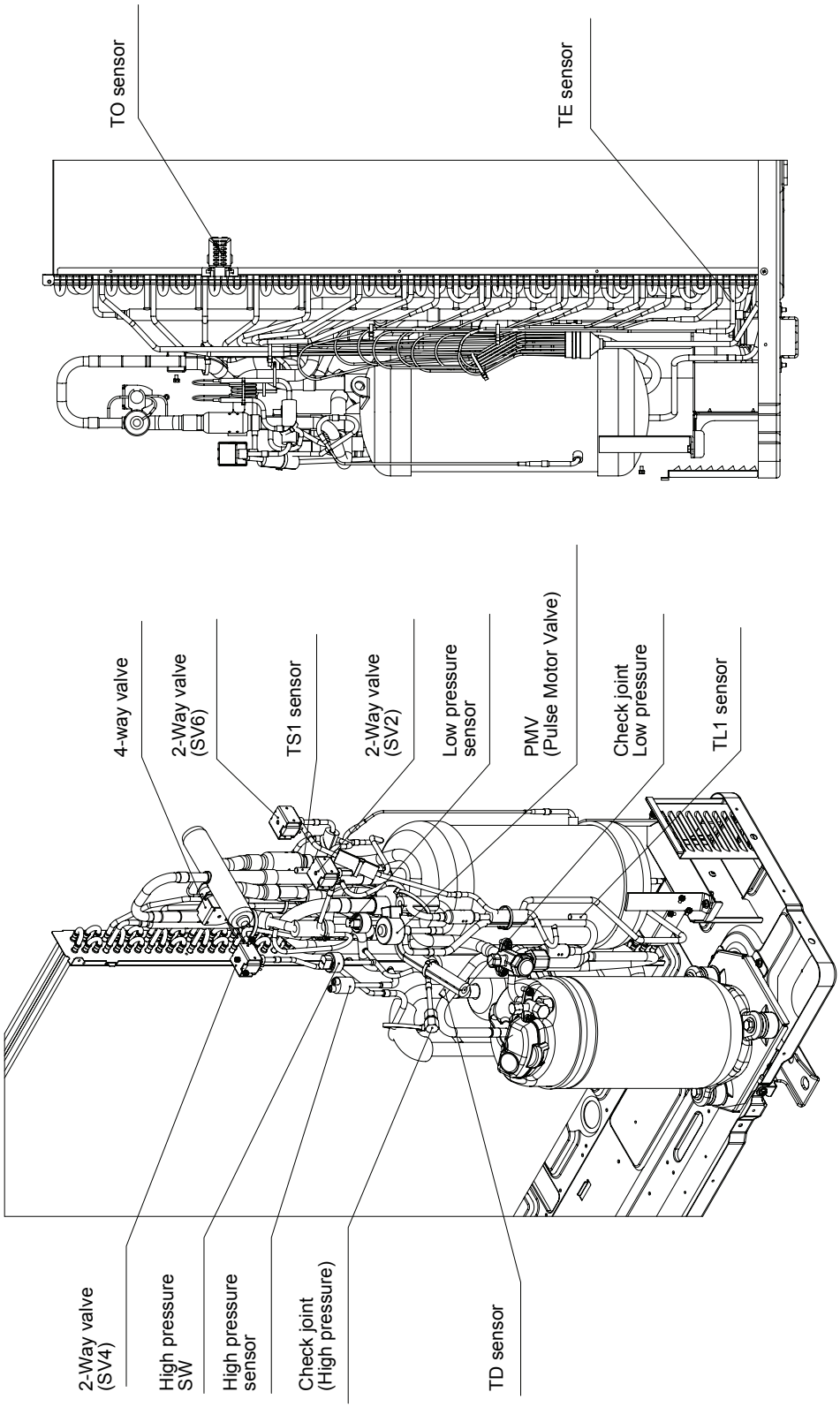
4-4. Battery kit

Model type	Parts Name	Model	Specification
TCB-BK1UPE	Battery Assembly (Ni-MH)	T6BK120AAHU	Nominal voltage: 7.2V
	P.C. board	MCC-1772	-

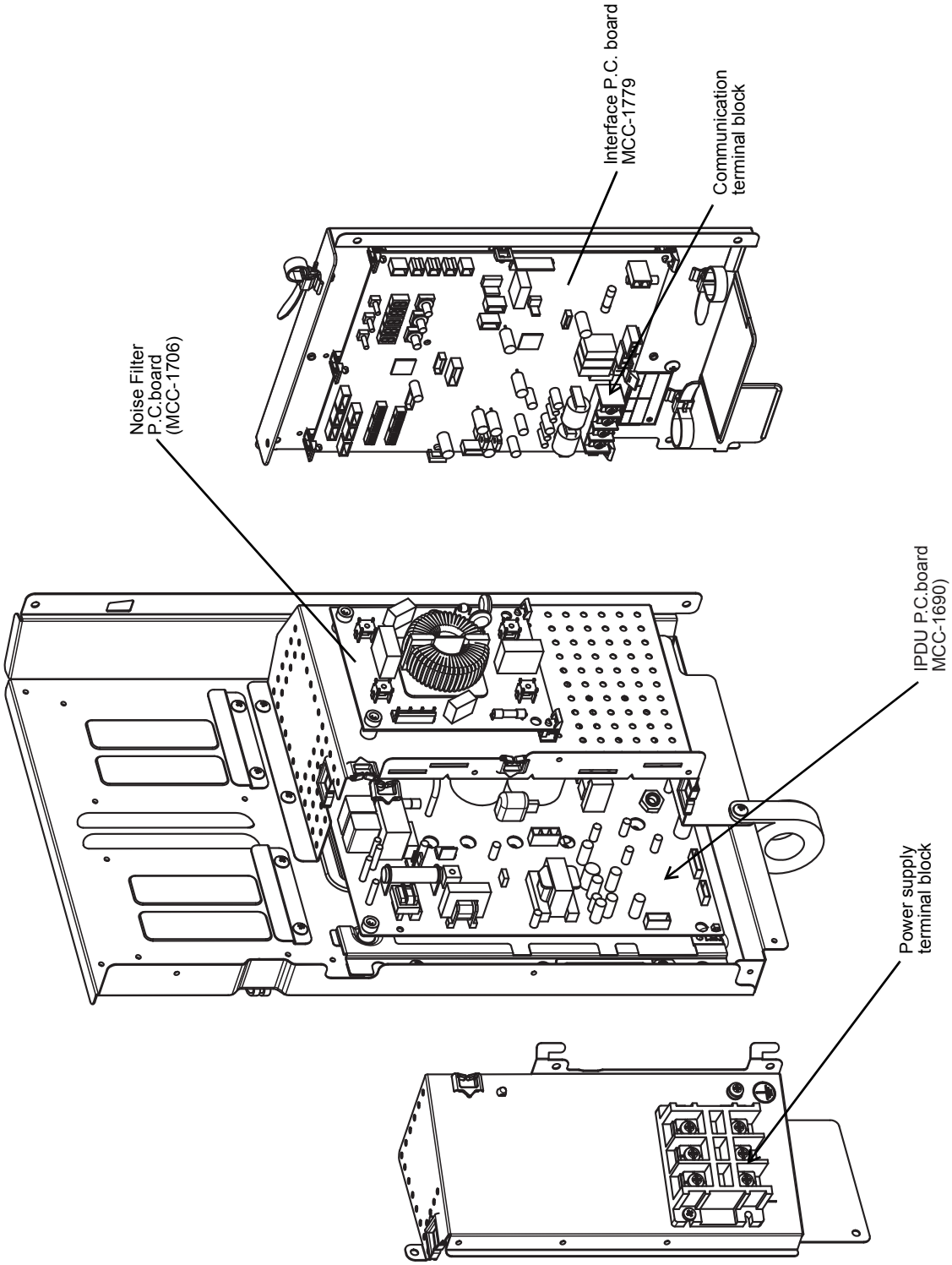
4-5. Leak Detector

Model type	Parts Name	Model	Specification
TCB-LD1UPE	Refrigerant sensor module	FIS-5084	DC5V
	P.C. board	MCC-1782	-

4-6. Parts layout in outdoor unit

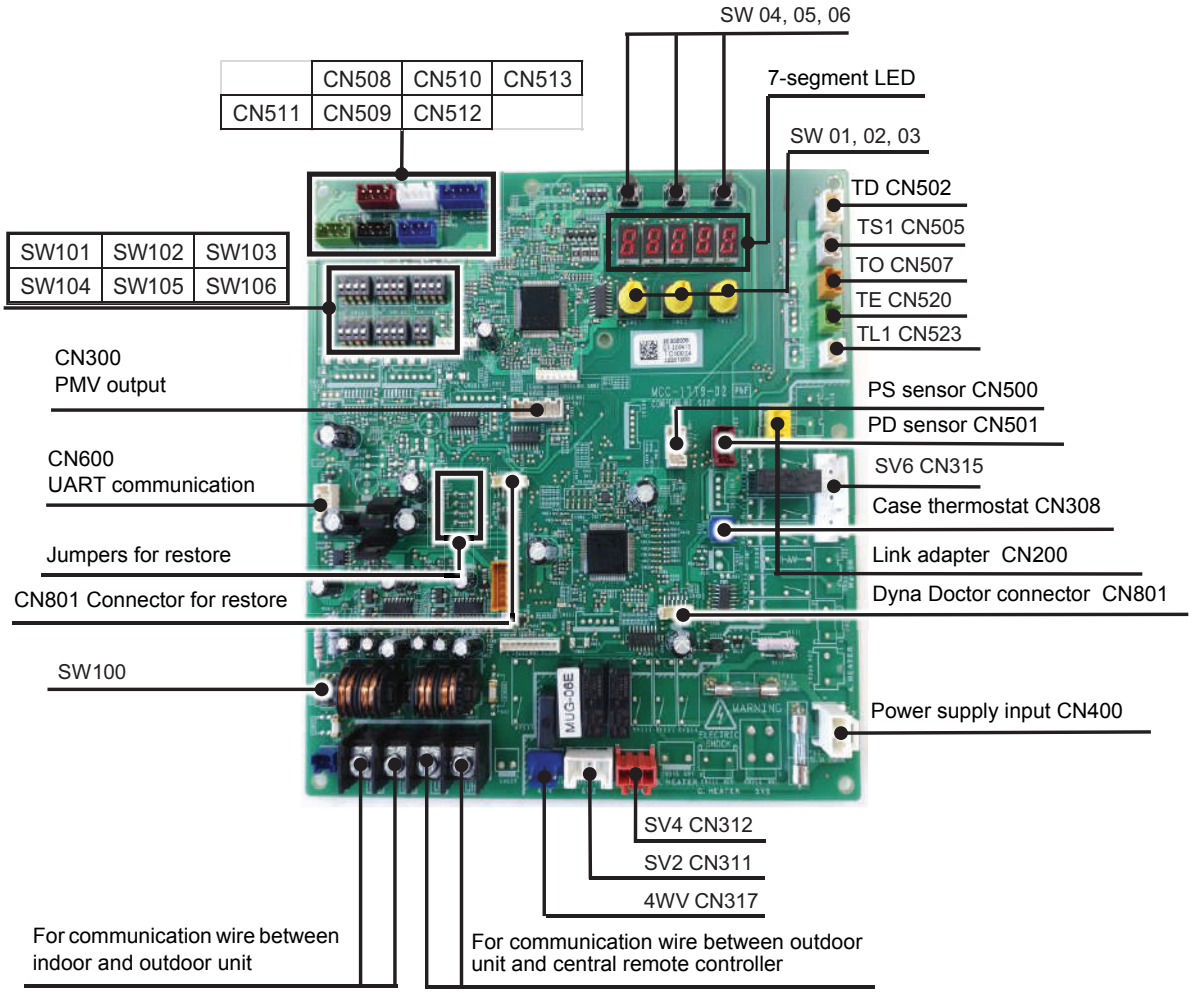


4-7. Parts layout in inverter assembly

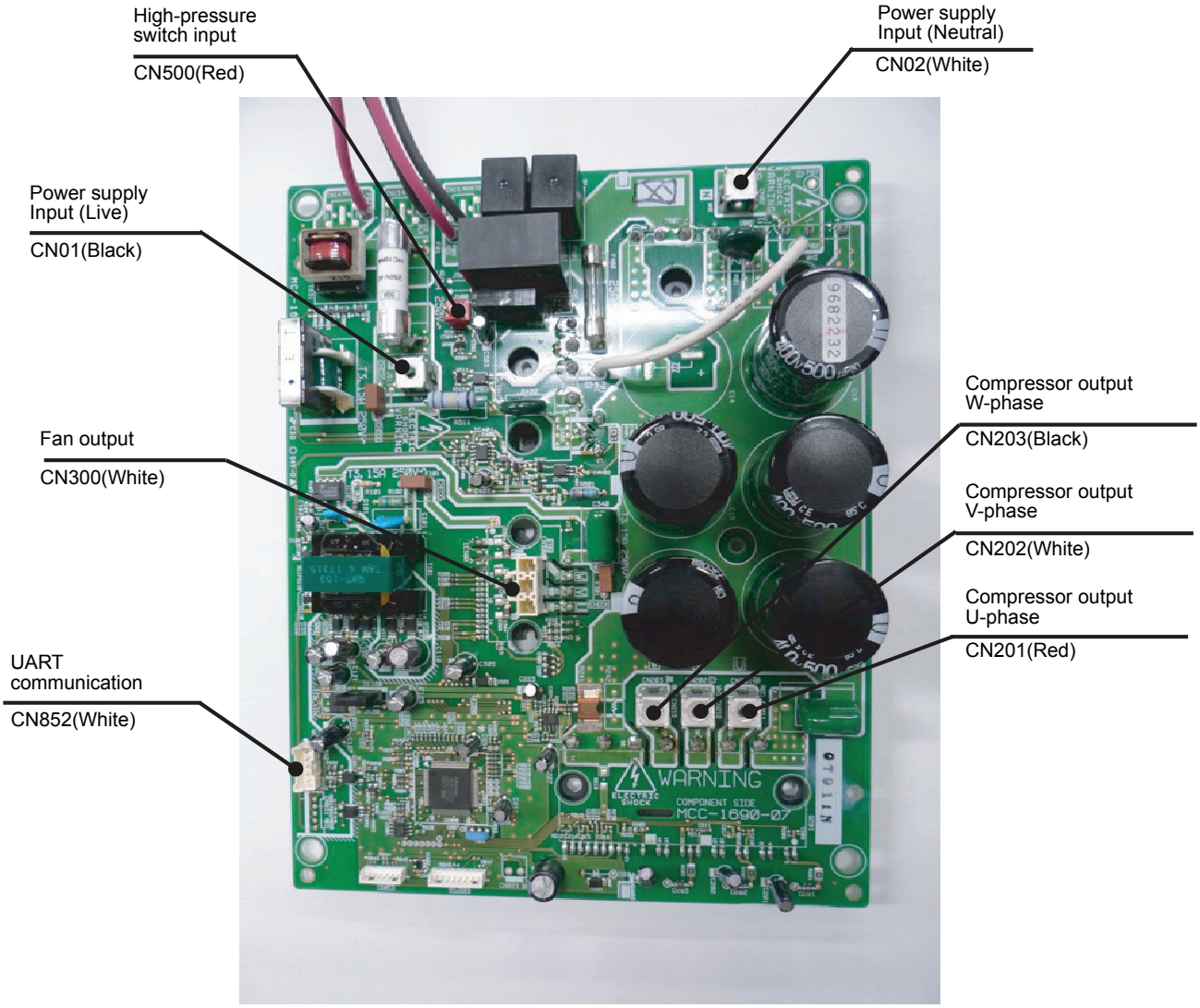


4-8. Outdoor (inverter) print circuit board

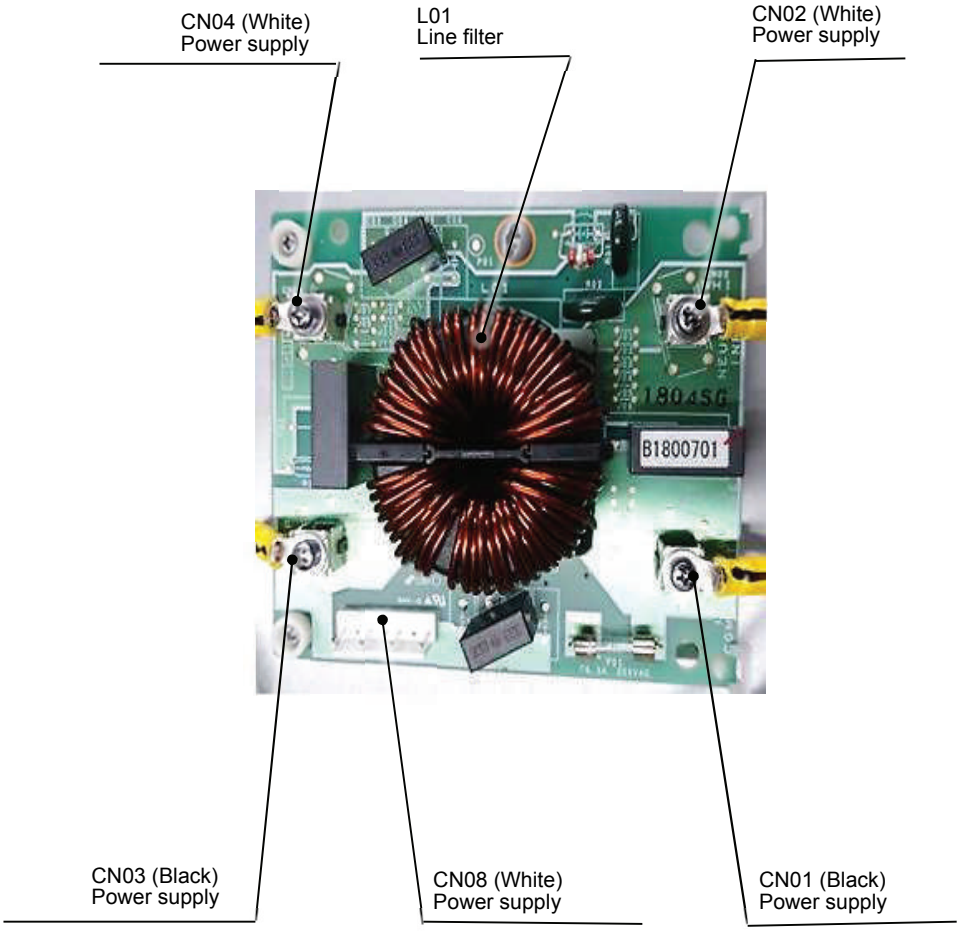
4-8-1. Interface P.C. board (MCC-1779)



4-8-2. IPDU P.C. board (MCC-1690)



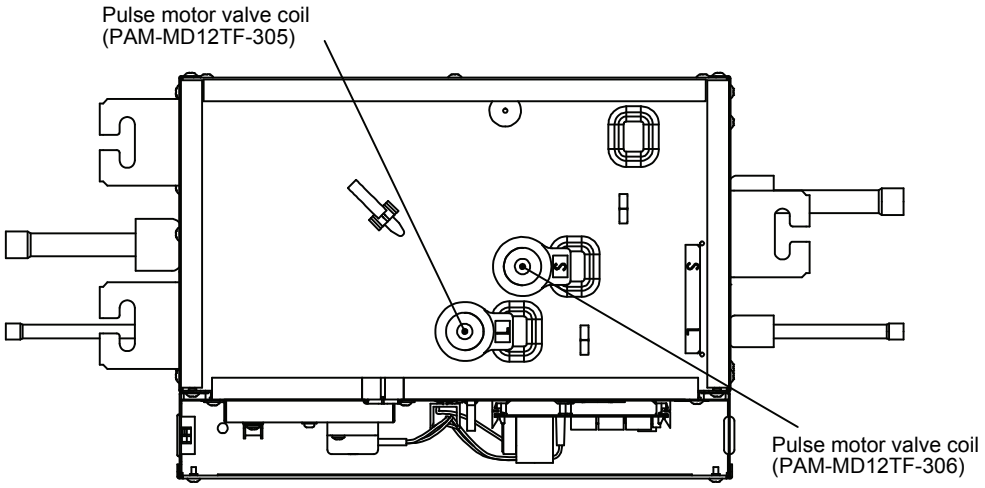
4-8-3. Noise filter P.C. board (MCC-1706)

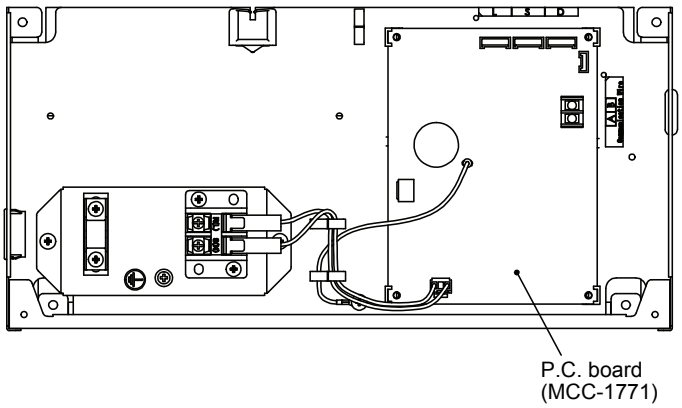


4-9. Parts Layout in Shut-off Valve unit, Battery kit and Leak Detector

4-9-1. Parts Layout in Shut-off Valve unit

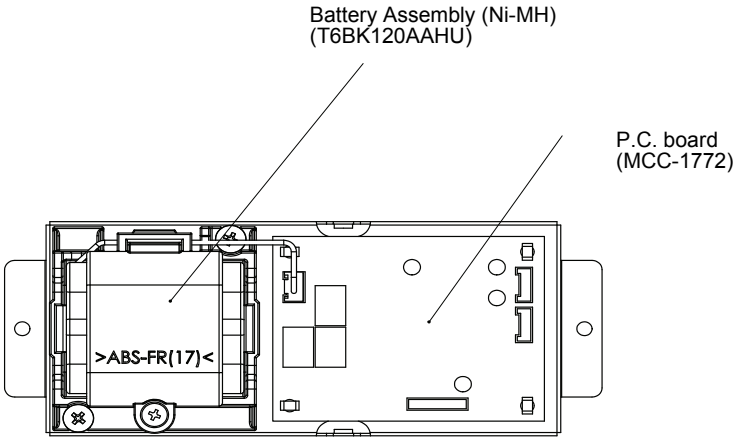
Model: RBM-SV1121HUPE
RBM-SV1801HUPE





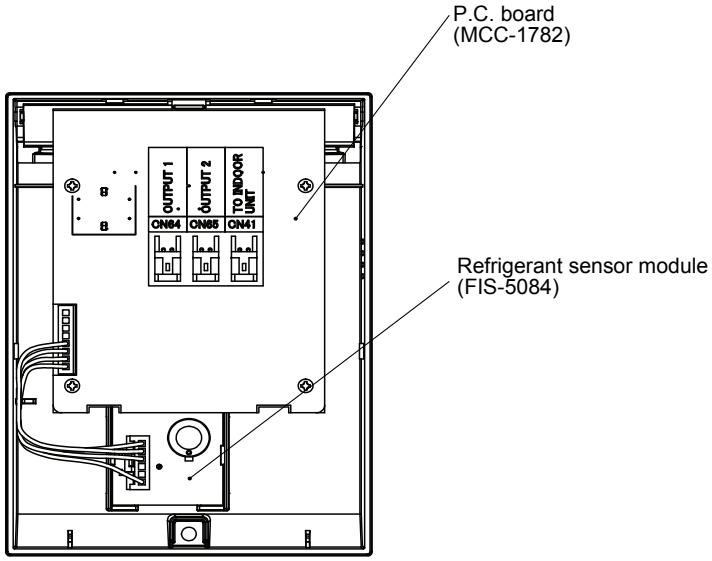
4-9-2. Part layout in Battery kit

Model: TCB-BT1UPE



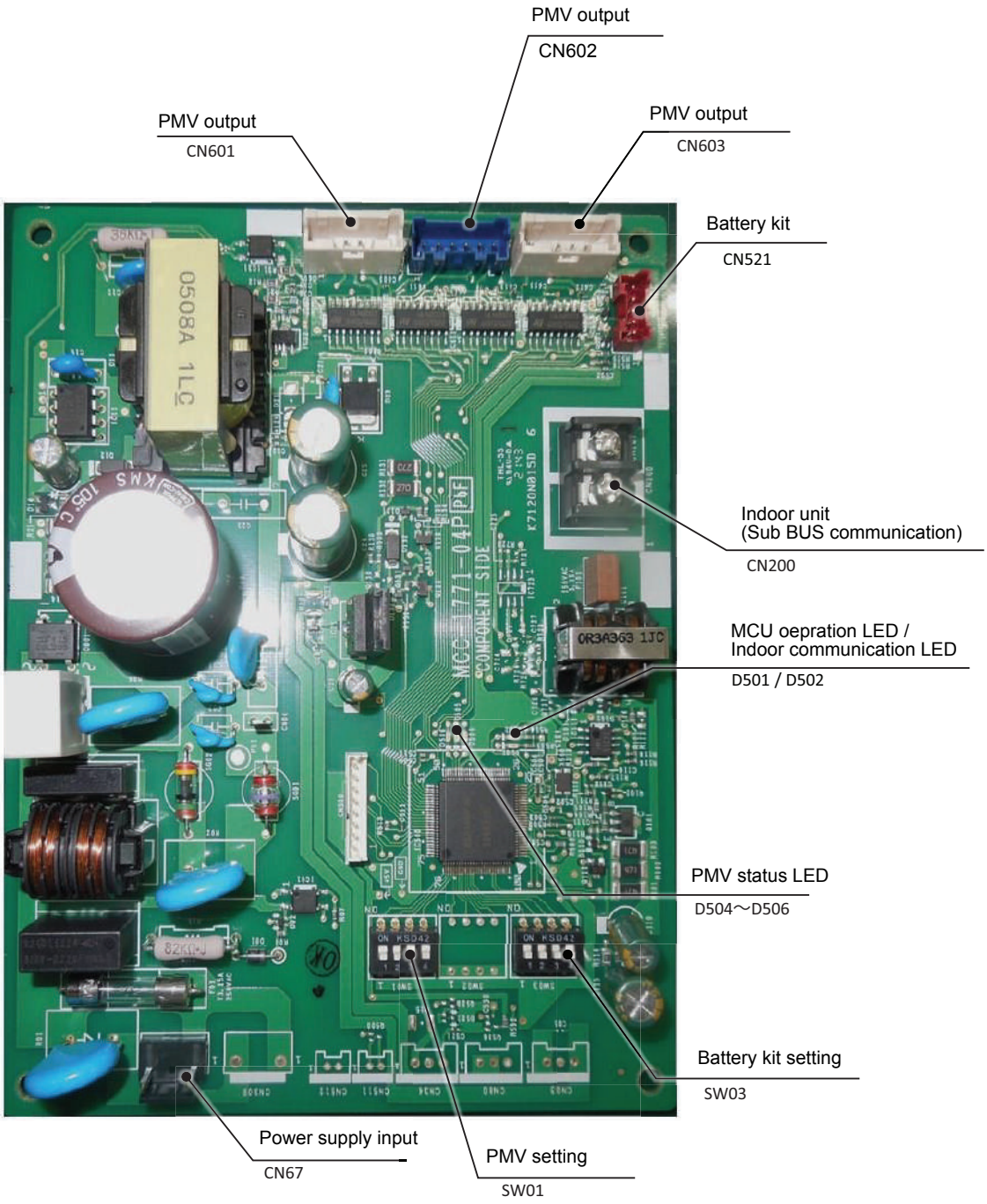
4-9-3. Part layout in Leak Detector

Model: TCB-LD1UPE

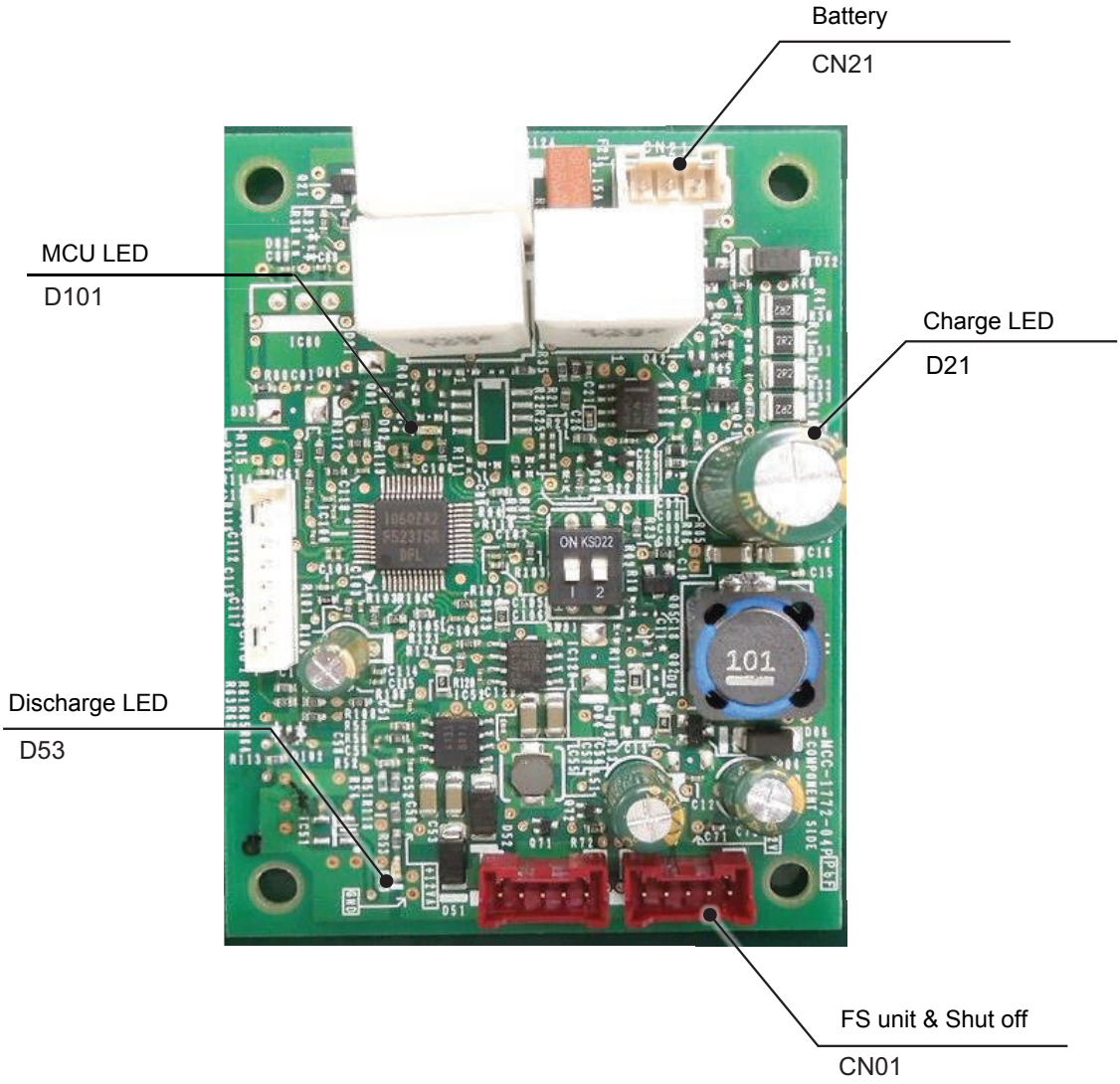


4-10. Print circuit board of Shut-off Valve unit, Battery kit and Leak Detector

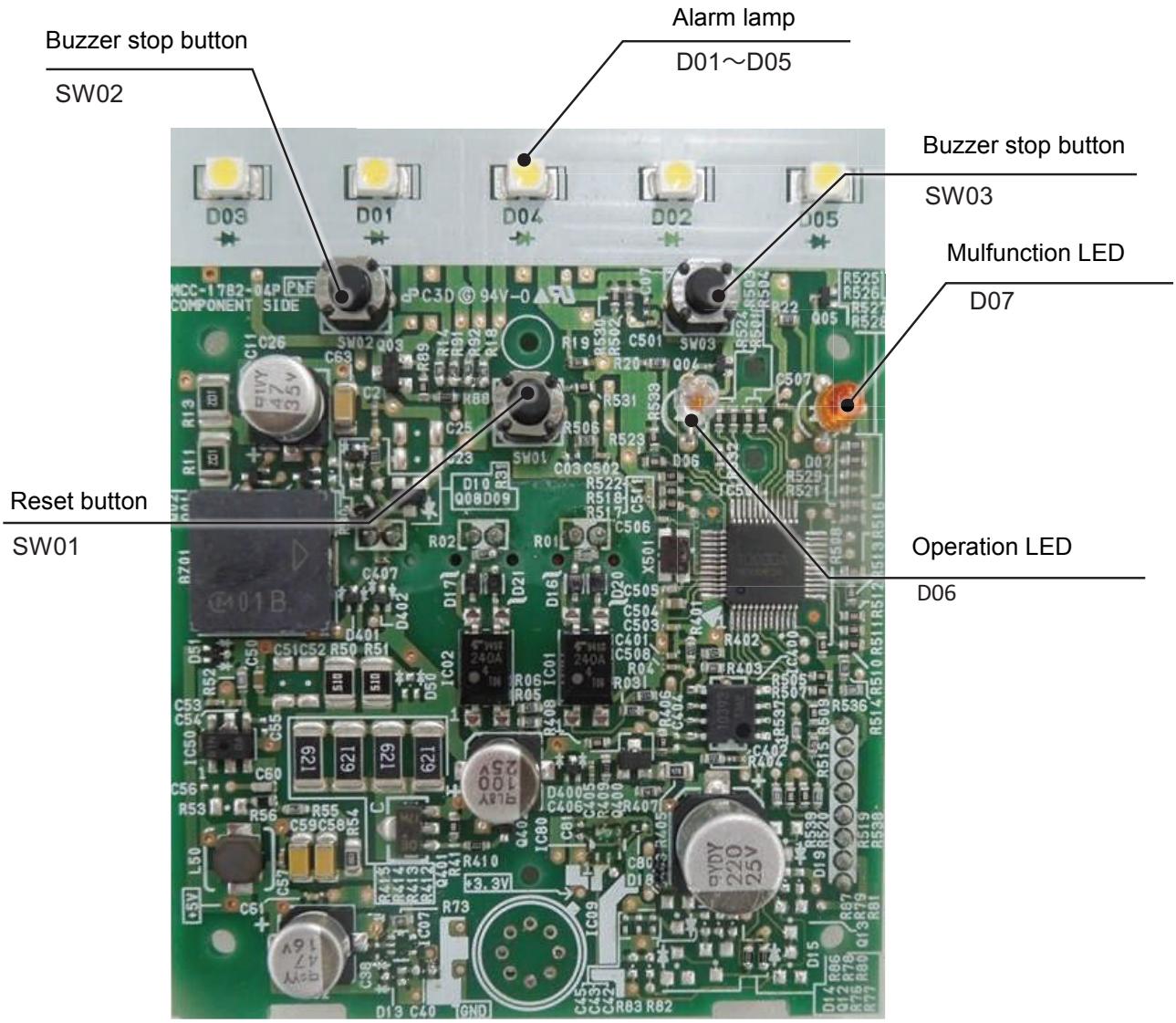
4-10-1. Shut-off Valve unit P.C. board (MCC-1771)

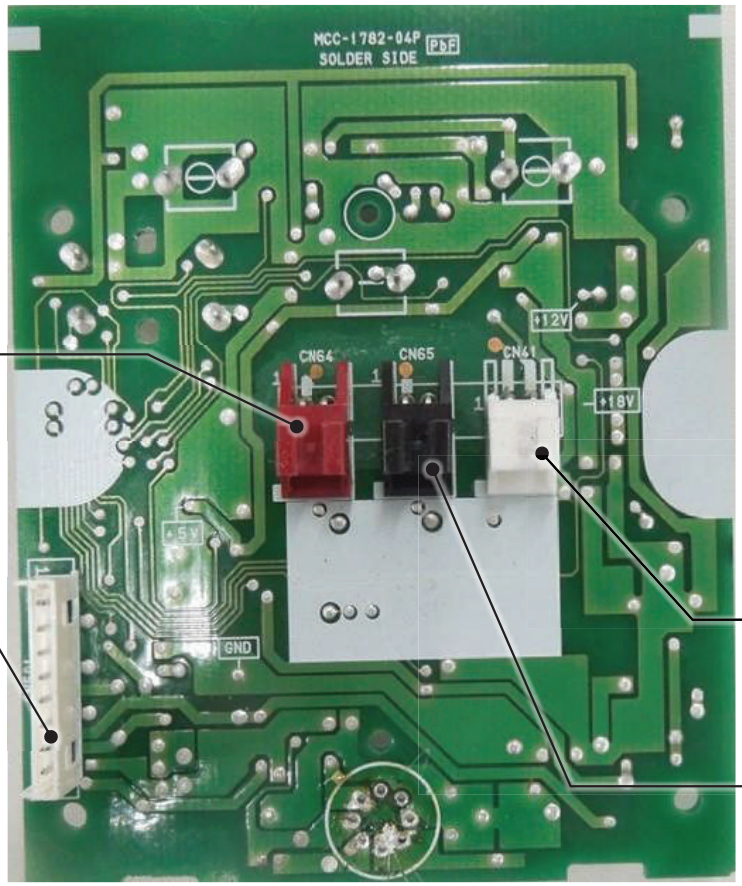


4-10-2. Battery kit P.C. board (MCC-1772)



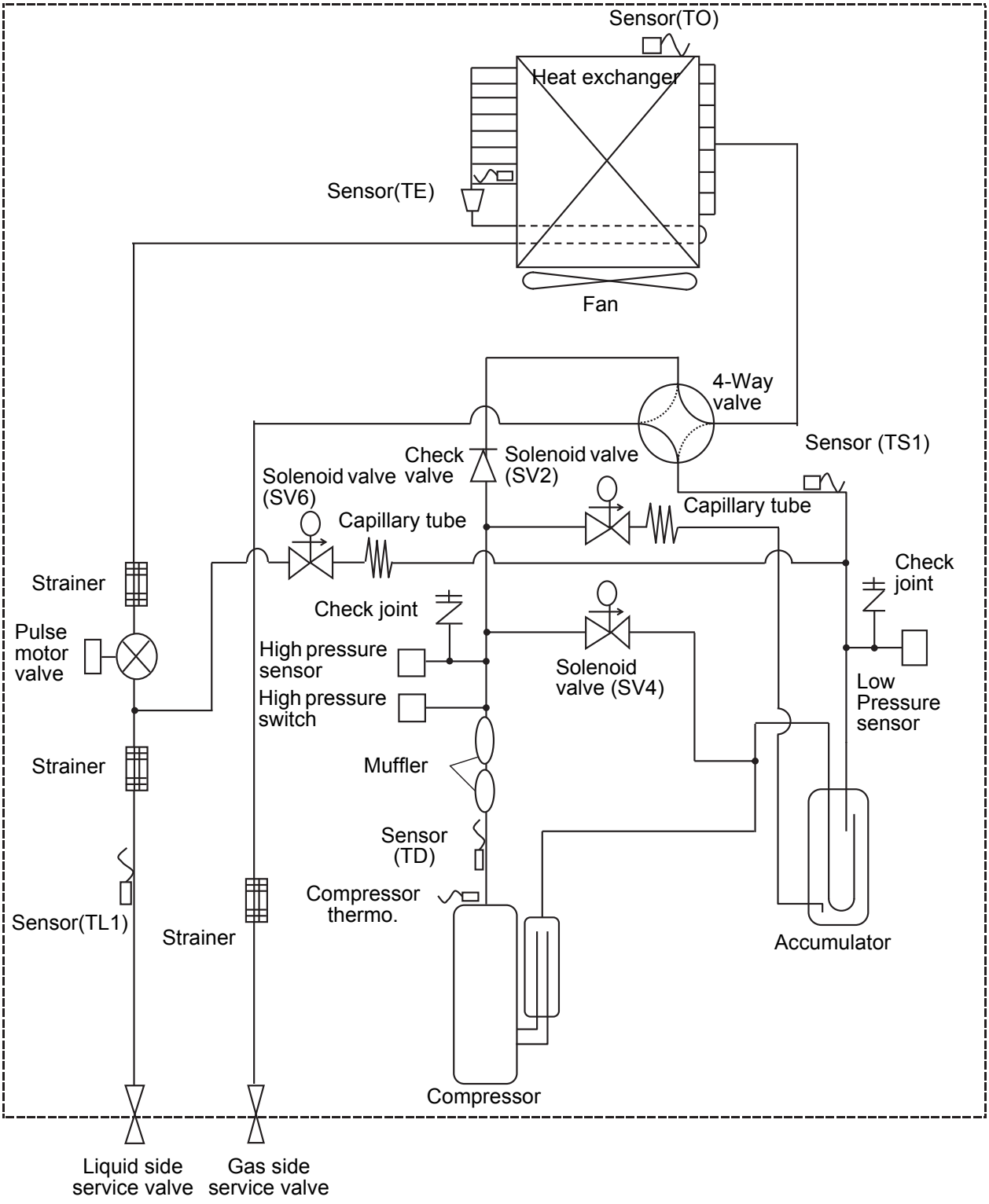
4-10-3. Leak Detector P.C. board (MCC-1782)




MCC-1782-04P
SOLDER SIDE
PBF
CN64
CN65
CN61
+12V
+18V
+5V
GND
Output1
CN64
Refrigerant leak sonsor
CN501
Indoor unit (Sub BUS communication)
CN41
Output2
CN65

5 Refrigerant piping systematic drawing

Outdoor unit

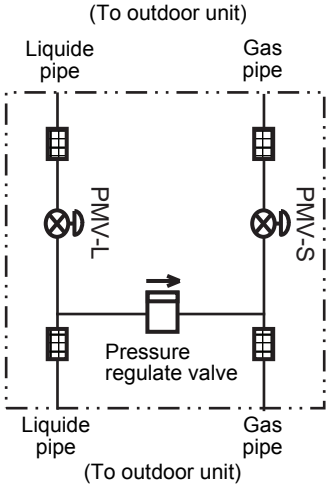


Explanation of functional parts

Functional part name		Functional outline
Solenoid valve	SV2	(Hot gas bypass) (Connector CN311 : White) 1) Low pressure release function 2) High pressure release function 3) Gas balance function during stop time 4) Hot gas bypass into accumulator
	SV4	(Start compensation valve of compressor) (Connector CN312: Red) 1) For gas balance start 2) High pressure release function 3) Low pressure release function
	SV6	(Connector CN315: White) 1) Preventive function for compressor discharge temperature rising.
4-way valve		(Connector CN317:Blue) 1) Cooling / heating exchange 2) Reverse defrost
Pulse motor valve	PMV1	(Connector CN300: White) 1) Super heat control function in heating operation 2) Liquid line shut-down function while follower unit stops 3) Subcool adjustment function in cooling operation
Temp. sensor	TD	(Connector CN502: White) 1) Protection of compressor discharge temp. 2) Used for discharge temperature release
	TS1	(Connector CN505: White) 1) Controls PMV super heat in heating operation
	TE	(Connector CN520: Green) 1) Controls defrost in heating operation 2) Controls outdoor fan in heating operation
	TL1	(Connector CN523: White) 1) Detects under cool in cooling operation
	TO	(Connector CN507: Yellow) 1) Detects outside temperature
Pressure sensor	High pressure sensor	(Connector CN501: Red) 1) Detects high pressure and controls compressor capacity 2) Detects high pressure in cooling operation, and controls the fan in low ambient cooling operation 3) Detects under cool in indoor unit in heating operation
	Low pressure sensor	(Connector CN500: White) 1) Detects low pressure in cooling operation, and controls compressor capacity 2) Detects low pressure in heating operation, and controls the super heat

Shut-off valve unit

RBM-SV1121HUPE / RBM-SV1801HUPE

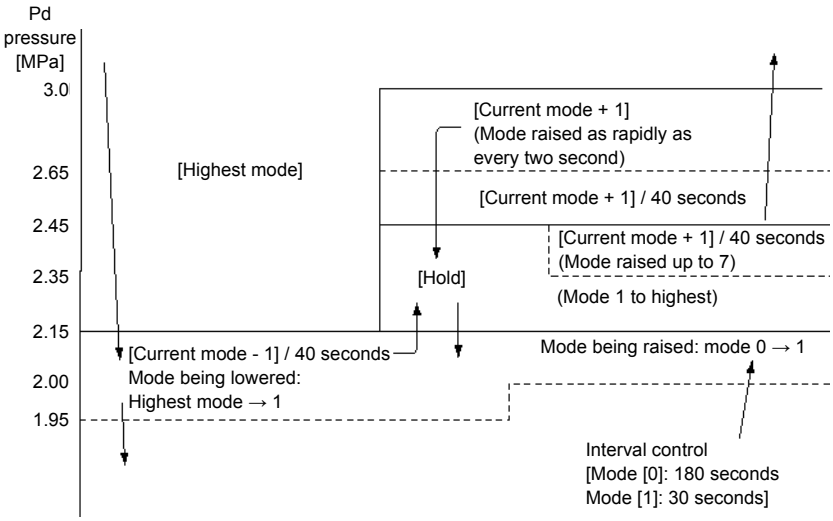
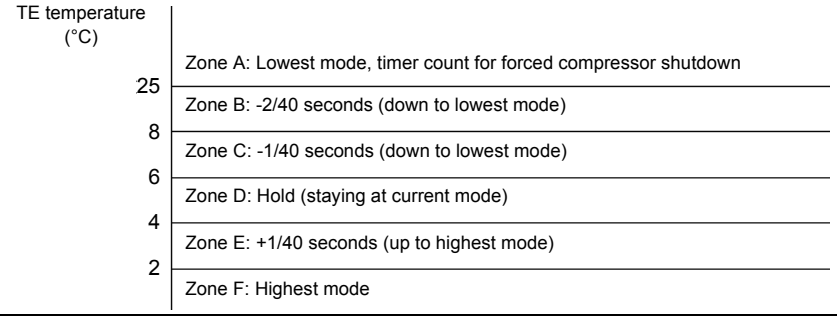


Shut-off valve unit function part explanation

Functional part name		Functional outline
Pulse motor valve	PMV-S	1) Change refrigerant flow for Cooling / Heating cycle 2) Stop refrigerant flow in pump-down and shut-off operation when refrigerant leakage is detected.
	PMV-L	1) Stop refrigerant flow in pump-down and shut-off operation when refrigerant leakage is detected.
Pressure regulate valve		This valve will open if the refrigerant pressure inside the pipe between PMV-L and indoor unit PMV will increase abnormally by gasification during safety shut-off operation.

6 Control outline

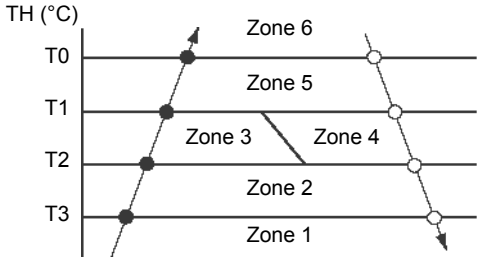
Outdoor unit

Item	Description of operation, numerical data, and other information	Remarks
1. Pulse motor valve (PMV) control	1) During air conditioner operation, the pulse count of a PMV (pulse motor valve) is controlled between 30 and 500. 2) During cooling, the PMV opening is controlled on the basis of measurements provided by the TL1 temperature sensor and the PD pressure sensor (subcool control). 3) During heating, the PMV opening is controlled on the basis of measurements provided by the TS1 and TD temperature sensors and the PS pressure sensor (super heat control). 4) PMV is fully closed when the air conditioner is in thermostat OFF state or upon being turned off normally or shut down due to an abnormality.	
2. Outdoor fan control	1. Cooling fan control 1) Outdoor fan speed (mode) is controlled on the basis of measurements provided by the Pd pressure sensor. 2) For a specified period after the start of cooling operation, the outdoor unit controls outdoor fan speed (mode) on the basis of measurements provided by the Pd pressure sensor.  * Available control modes are 0 (at rest) to 31.	• The fan speed corresponding to the highest mode varies with the HP capacity of the outdoor unit.
	2. Heating fan control 1) Outdoor fan speed (mode) is controlled on the basis of measurements provided by the TE temperature sensor. 2) If TE > 25 °C is continuously detected for 5 minutes, the operation may stop. 3) For a specified period after air conditioner startup and during defrosting, this control is disabled. 4) When refrigerant is in extremely short supply, this control may cause the air conditioner to be repeatedly turned on and off.  	• The fan speed corresponding to the highest mode varies with the HP capacity of the outdoor unit.
3. Capacity control	The compressor is controlled on the basis of capacity demand issued by indoor controllers.	

Item	Description of operation, numerical data, and other information	Remarks
4. Refrigerant / Oil recovery control	1. During cooling operation, this function is executed to regularly to recover the refrigerant / oil from the indoor units and connecting pipe-work back to the outdoor unit. This function is also performed to prevent stagnated refrigerant accumulating in the outdoor heat exchanger during low ambient cooling. 1) Control conditions • Cooling oil recovery operation is executed approximately every 3 hours. 2) Contents of control • The recovery period lasts for approximately 2 or 3 minutes though this is dependant on the system capacity. 2. Refrigerant recovery control in heating room This function is executed regularly to recover the liquid refrigerant from the indoor unit. It is also used to recover oil present in the outdoor heat exchanger during the heating overload operation (except during defrost operation). 1) Heating operation oil, recovery control is executed approximately every 4 hours. 2) The period of recovery lasts for approximately 2 to 10 minutes though this is dependent upon the load condition.	
5. Defrosting control (reverse defrosting method)	1. Defrosting commencement conditions 1) After the heating operation commences, the value detected for the TE sensor temperature between 10 and 20 minutes, the value detected for the To sensor temperature, the rotation speed of the compressor, and the super heat value are saved, and the estimated evaporation temperature for conditions without frost formation is calculated. 2) After the heating operation runs for 30 minutes, the defrosting control engages when the value detected for the TE sensor temperature falls below the cumulative TE temperature during the heating operation, and the frost formation rate calculated from the estimated evaporation temperature for conditions without frost formation, the value detected for the TE sensor temperature during the heating operation, and the detection value of the To sensor temperature exceeds a certain level. 3) In addition to (2) above, the total operation time is calculated when the value detected for the TE sensor temperature falls below the cumulative TE temperature during the heating operation, and the defrosting control engages after 180 minutes.	• Frost formation temperature is -1.5 °C.
	2. Details of defrosting control 1) The compressor currently in operation is operated at the minimum speed. 2) When a specified amount of time passes from the time the compressors reached the minimum speed, the outdoor fans are turned off by closing the 4-way valves. 3) The compressor operates at the target rotational speed for defrosting control.	• To protect the refrigerating cycle circuit, the fan mode may be controlled during defrosting.
	3. Defrosting termination conditions • Defrosting termination conditions are met when the TE temperature sensor measurement reaches a specified value (roughly 12 °C) a certain period of time after the commencement of defrosting control. In that event, defrosting termination control takes over.	• During defrosting control, compressors are controlled so that their speeds do not exceed 66.0 rps.
	4. Details of defrosting termination control 1) Compressors are operated at the minimum speed. 2) When a specified amount of time passes, the 4-way valves are opened. 3) Indoor heating refrigerant recovery control is performed. For control details, see “ 4. Refrigerant / Oil recovery control”.	

Item	Description of operation, numerical data, and other information	Remarks
6. Release valve control	1. SV2 gas balance control This control function is aimed at achieving gas balance by opening SV2 while compressor is turned off so as to reduce its startup load the next time it is turned on. 1) Control conditions • The compressor has been turned off. 2) Control details • The control point is changed according to ΔP (PD pressure - PS pressure) registered just before the compressor was turned off. • When ΔP ≥ 1.3MPa, SV2 is opened. When this results in ΔP ≤ 1.1MPa, SV2 is closed. • When ΔP ≤ 1.3MPa, SV2 is closed. 2. SV2 high pressure release control (Heating) This control function is aimed at mitigating pressure rise while a compressor is in operation at low speeds. 1) Control conditions • Heating operation is in progress (except periods of defrosting control). • A speed of the compressor is in operation at low speeds of up to 77 rps. 2) Control details • When PD pressure becomes ≥ 3.4 MPa, SV2 is opened. • When PD pressure becomes ≤ 2.8 MPa, SV2 is closed. 3) Termination conditions • Shutdown, thermostat OFF, defrosting operation, or cooling operation. • The speed of the compressor rises to 82 rps or more. 3. SV2 high pressure release control (Cooling) This control function is aimed at mitigating pressure rise. 1) Control conditions • Cooling operation is in progress. 2) Control details • When PD pressure becomes ≥ 3.8 MPa, SV2 is opened. • When PD pressure becomes ≤ 3.6 MPa, SV2 is closed. 3) Termination conditions • Shutdown, thermostat OFF, or heating operation. 4. SV2 low pressure release control This control function is aimed at preventing a rapid fall in pressure during transient operation. The control is always provided except during periods of stoppage or thermostat OFF. 1) Control details (heating) • When PS pressure becomes ≤ 0.1 MPa, SV2 is opened. • When PS pressure becomes ≥ 0.2 MPa, SV2 is closed. 2) Control details (cooling) • When PS pressure becomes ≤ 0.25 MPa, SV2 is opened. • When PS pressure becomes ≥ 0.30 MPa, SV2 is closed. 5. SV2 Capacity release control This control function is aimed at suppressing freeze of indoor unit heat exchangers due to excessive capacity during cooling operation for small capacity units. 1) Control conditions • When the compressor speed is less than 25 rps during cooling operation. • When TD sensor temperature ≤ 96 °C is detected. 2) Control details • When any of the indoor units that are thermostat-ON detects TCJ ≤ 3 °C or TC1 ≤ 3 °C, SV2 is turned ON. • When all of the indoor units that are thermostat-ON detects TCJ > 7 °C or TC1 > 7 °C, SV2 is turned OFF. 3) Termination conditions • When the system is stopped and the thermostat is off. • When TD sensor temperature > 102 °C is detected. • When the compressor speed is above 30 rps. 6. SV4 low pressure release control This control function is aimed at providing low pressure protection. 1) Control details (heating) When PS pressure becomes ≤ 0.1 MPa, SV4 is opened; when PS pressure becomes ≥ 0.2MPa, SV4 is closed. 2) Control details (cooling) When PS pressure and PD pressure become ≤ 0.14 MPa and ≤ 1.8 MPa, respectively, SV4 is opened; when PS pressure and PD pressure become ≥ 0.24 MPa and ≥ 2.2 MPa, respectively, SV4 is closed.	

<table>
<tr><th>Item</th><th>Description of operation, numerical data, and other information</th><th>Remarks</th></tr>
<tr><td>6. Release valve control (Continued)</td><td>7. SV6 cooling bypass control
1) Control conditions
• This control is always provided except during periods of defrosting , stoppage or thermostat OFF.
2) Control details
• When TD sensor temperature becomes ≥ 92 °C, SV6 is opened.
• When TD sensor temperature becomes < 80 °C, SV6 is closed.</td><td></td></tr>
<tr><td>7. Frequency release control</td><td>High pressure release control
This function is to correct the operation command of the compressor and suppress the rise of high pressure.
1. Cooling frequency release control
1) Control contents
The operation frequency is decreased by 1 step when PD pressure ≥ 3.8 MPa.
It is decreased by 1 step every 1 seconds until PD pressure drops below 3.8 MPa.
2) Release condition
• When PD pressure ≤ 3.6 MPa
• Stop, thermostat OFF.
2. Heating frequency release control
1) Control contents
The operation frequency is decreased by 1 step when PD pressure ≥ 3.4 MPa.
It is decreased by 1 step every 10 seconds until PD pressure drops below 3.4 MPa.
2) Release condition
• When PD pressure ≤ 3.2 MPa
• When refrigerant recovery control starts in all heating mode
• During defrost operation, stop, thermostat OFF.</td><td></td></tr>
<tr><td>8. A3-IPDU control</td><td>IPDU controls inverter compressors by issuing commands relating to compressor speeds, speed increases / decreases, and current release control values via the interface P.C. board.
The main control functions of the IPDU P.C. board are described below.
1. Current release control
The purpose of this control is to prevent high pressure rise and overheating of electric parts by reducing the compressor speed when the maximum current and maximum power value set for each model are exceeded.
The maximum current and power value for each outdoor unit are as follows.
<table><tr><th>Outdoor unit HP capacity</th><th>Maximum current</th><th>Maximum power</th></tr><tr><td>4</td><td>23.5A</td><td>5.1kW</td></tr><tr><td>5</td><td>26.5A</td><td>5.8kW</td></tr><tr><td>6</td><td>28.0A</td><td>6.1kW</td></tr></table></td><td></td></tr>
</table>

<table>
<tr><th>Item</th><th>Description of operation, numerical data, and other information</th><th>Remarks</th></tr>
<tr><td>8. A3-IPDU control (continued)</td><td>2. Heat sink temperature detection control
1) This control performs the IGBT overheat protection by the detection of the TH sensor in Module Q201 for compressor driven in IPDU.
2) Increments the Fan operation mode by 1 when TH ≥ 75 °C is detected. Increments the Fan operation mode by 1 per 5 seconds to the maximum hereinafter.
3) Returns to the normal fan mode control at TH < 70 °C after 2).
4) Controls the output frequency by the TH sensor value so that the IGBT temperature does not become a given value, in addition to 1) - 3).
 

Zone 1: Normal operation.
Zone 2: Slower frequency rising speed than normal.
Zone 3: Maintains the current frequency.
Zone 4: Maintains the current frequency.
Zone 5: Reduces the frequency.
Zone 6: Stop the operation.
The following table shows the temperature control value for each outdoor unit's horse power:
<table>
<tr><th>Outdoor unit horse power</th><th>T0</th><th>T1</th><th>T2</th><th>T3</th></tr>
<tr><td>4 HP</td><td rowspan="3">95 °C</td><td rowspan="3">85 °C</td><td rowspan="3">80 °C</td><td rowspan="3">75 °C</td></tr>
<tr><td>5 HP</td></tr>
<tr><td>6 HP</td></tr>
</table>
5) Stops the compressor at TH ≥ 95 °C. (By the control of Zone 6 above)
6) The compressor restarts in 2 minutes and 30 seconds when the failure count is incremented. The failure is confirmed when the count becomes "4". The check code display is [P07]. (The compressor does not restart.)
3. Overcurrent protection control
1) When the overcurrent protection circuit on an IPDU P.C. board detects an abnormal current, the compressor is shut down.
2) The compressor is restarted 2 minutes and 30 seconds later, with a failure count of 1 recorded. If the compressor successfully operates for at least 10 minutes after a restart, the failure count is cleared.
3) If the failure count reaches 8, the check code is confirmed as final.</td><td>• IPDU is provided with a TH sensor.</td></tr>
<tr><td>9. Compressor case thermo control</td><td>• The compressor stops when the compressor case thermostat is activated.
• Whenever this condition occurs, 1 count is added to the system failure count.
• After a period of 5 minutes, the compressor is reactivated and the failure count cleared if the operation continues without further failure for a period of 10 minutes or more.
• If the failure count reaches 4, the check code [H04] is displayed.</td><td>• The case thermostat is normally closed and connected to interface P.C. board.</td></tr>
<tr><td>10. High pressure SW control</td><td>1) When the high pressure SW of an inverter compressor is activated, the compressor is shut down with a failure count of 1 recorded.
2) The compressor is restarted 5 minutes later, and, if it successfully operates for at least 10 minutes, the failure count is cleared.
3) If the failure reaches 4, the check code is confirmed as final. The check code [P04] is displayed.</td><td>The high-pressure SW is normally closed and connected to IPDU P.C. board.</td></tr>
</table>

<Other points to note>

1 Cooling operation under low outside temperature conditions

1) If pressure falls to extremely low levels, indoor units may be shut down via freeze prevention control based on the indoor TC sensor.
2) If pressure falls to extremely low levels, frequency may be reduced via cooling capacity control.
3) When the discharge temperature sensor reading falls below 60 °C, the frequency may be increased above the level called for by the command received from the indoor unit.

2 PMV (Pulse Motor Valve)

1) When the power is turned on, PMVs generate a tapping sound as they are initialized. If this sound is not heard, there is a possibility of faulty PMV operation. However, in a noisy environment, it may simply be drowned out by ambient noise.
2) Do not separate the actuator (head section) from any PMV during operation. It may result in an inaccurate opening.
3) When transporting (relocating) the set, do not, under any circumstances, keep the actuator separated. It may damage the valve by causing it to close and exposing it to pressure from sealed liquid.
4) When reattaching the actuator after its removal, push it in firmly until a click sound is heard. Then, turn the power off and back on again.

7 APPLIED CONTROL AND FUNCTIONS

7-1. Method to Set Outdoor Unit Function Code No. (O.DN)

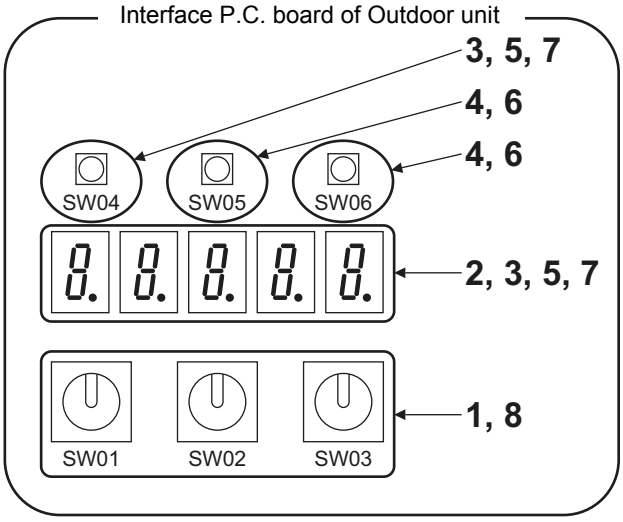
The settings can be changed by operating the switches on the interface board.
In the TU2C-Link communication system, it can also be done by operating the wired remote controller.

Applicable controls setup

(settings at the site)
Basic procedure
Be sure to stop the air conditioner before making settings.
(Change the setup while the air conditioner is networking.)

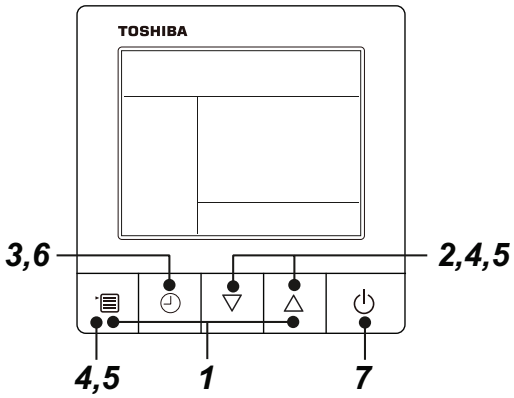
When switching settings from the interface P.C. board of the outdoor unit

1. Set the rotary switch of the interface P.C. board on the outdoor unit to SW01= [9], SW02= [1] and SW03= [1].
2. The 7-segment display shows “d n.S E t”.
3. When SW04 is pressed, the 7-segment display switches to “d n.0 0 1” and the outdoor unit code NO. [001] is displayed.
4. Change outdoor unit code NO. [* * *] with SW05 or SW06.
   Press SW05 to advance the code. Press and hold SW05 to advance in 5 steps.
   Press SW06 to return the code. Press and hold SW05 to return in 5 steps.
5. When SW04 is pressed, the 7-segment display blinks “d.* * * *” and the setting data [* * * *] being set is displayed.
6. Change setting data [* * * *] with SW05 or SW06.
   Press SW05 to advance the data. Press SW06 to return the setting data.
7. Push and hold SW04 for more than 2 seconds.
   When the flashing stops and remain lit on the display, the setting is complete.
   (To return to the item code setting after completing the setting, or to return to the item code setting without setting, press SW04 once.)
8. Set the rotary switch on the interface P.C. board of the outdoor unit back to SW01= [1], SW02= [1], SW03= [1].
9. Reset the power of the outdoor unit (power off for one minute or more).

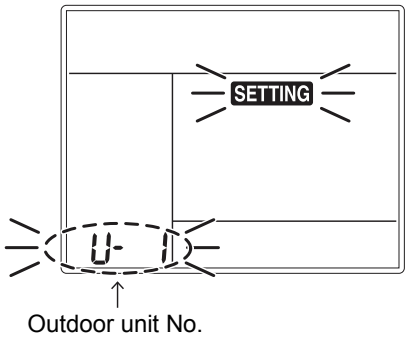


When switching from the wired remote controller

Basic procedure
Be sure to stop the air conditioner before making settings. (Change the setup while the air conditioner is not working.) <RBC-ASCU11*>

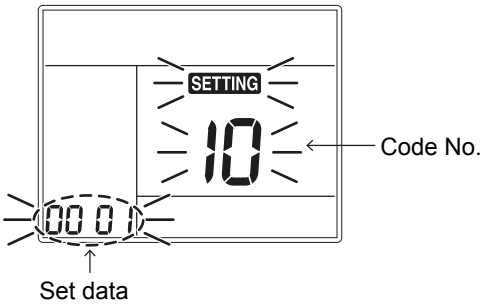


1 **Push and hold menu button and [△] setting button simultaneously for 10 seconds or more.**
- After a while, the display flashes as shown in the figure. “ALL” is displayed as outdoor unit numbers during initial communication immediately after the power has been turned on.



2 **Each time [▽] [△] setting button is pushed, outdoor unit numbers in the group control change cyclically. Select the outdoor unit No."U- 1" to change settings for.**
- The fan of the selected outdoor unit runs. The outdoor unit can be confirmed for which to change settings.

3 **Push OFF timer button to confirm the selected outdoor unit.**



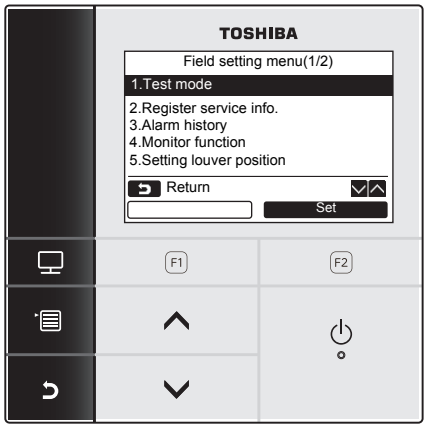
4 **Push the menu button to make Code No. [∗∗] flash.**
Change Code No. [∗∗] with [▽] [△] setting button.

5 **Push the menu button to make Set data [∗∗∗∗] flash.**
Change Set data [∗∗∗∗] with [▽] [△] setting button.

6 **Push OFF timer button to complete the set up.**
• To change other settings, repeat from Procedure ***4***.

7 **When all the settings have been completed, push ON/OFF button to finish the settings. (Return to the normal mode).**
"SETTING" flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while " SETTING " is flashing.)

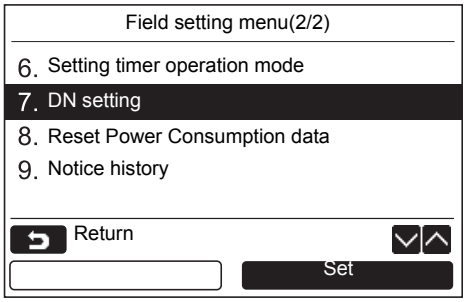
<RBC-AMSU5*>



1 **Push the [MENU] button to display the menu screen.**

2 **Push and hold the [MENU] button and the [∨] button at the same time to display the "Field setting menu".**

→ Push and hold the buttons for more than 4 seconds.



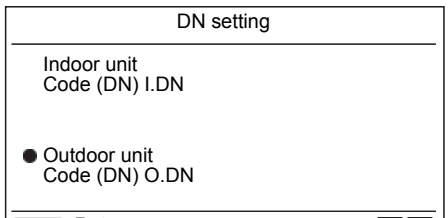
3 **Push the [∧] / [∨] button to select "7. DN setting" on the "Field setting menu" screen, then push the " Set" [F2] button.**

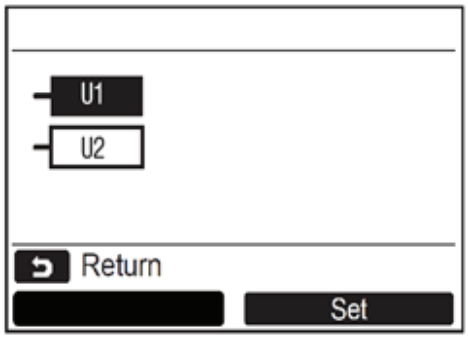
→ Push the [∧] / [∨] button to select the outdoor unit and push the " Set" [F2] button.

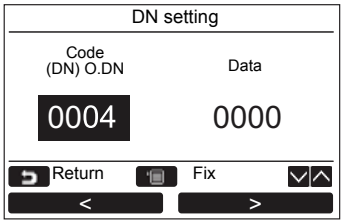
→ For a connected system, select the outdoor unit "U- 1". (The fan of the selected outdoor unit will operatre.)

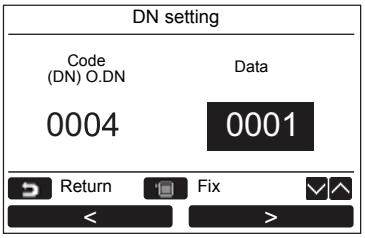
→ Move the cursor to select "Code(DN)" with the "<" [F1] button, then set "Code(DN)" with the [∧] / [∨] button.

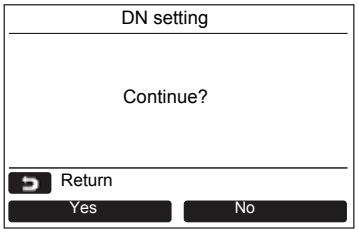
→ Move the cursor to select "Data" with the ">" [F2] button, then set "Data" with the [∧] / [∨] button.











4 **Refer to the Installation Manual supplied with the outdoor unit or service manual for details about the Code(DN) and Data.**

5 **Push the [MENU] button to set the other Code(DN) and Data. After "Continue?" is displayed on the screen, push the Yes" [F1] button.**

6 **Push the " No" [F2] button to finish the setting operation. " Setting" appears on the screen for a while, then the screen returns to the "Field setting menu" screen.**

→ Pushing the " No" [F2] button displays the unit selection screen when the group control is used. Push the [CANCEL] button on the unit selection screen to finish the setting operation. "Setting" appears on the screen for a while, then the screen returns to the "Field setting menu" screen.

Outdoor Unit Function Code No. (O. DN) Table (Includes Functions Needed to Perform Applied Control on Site)

<table>
<tr><th>DN</th><th>Item</th><th>Description</th><th>At shipment</th></tr>
<tr><td>003</td><td>Type Setting</td><td>Code range : 0000 to 0255
<table><tr><th>Model name</th><th>O.DN [003]</th></tr><tr><td>Undefined</td><td>0000</td></tr><tr><td>MCY-MUG0401*</td><td>0001</td></tr><tr><td>MCY-MUG0501*</td><td>0002</td></tr><tr><td>MCY-MUG0601*</td><td>0003</td></tr></table></td><td>According to type</td></tr>
<tr><td>007</td><td>Compressor Maintenance Period Time</td><td>0000 : 0h
0001 to 0063
(1000 h to 63000 h)</td><td>0000 : 0h</td></tr>
<tr><td>008</td><td>Operation Mode Selection Control</td><td>0000 : Non-selected Indoor units keep stand-by state (thermostat OFF).
0001 : Changing non-selected indoor units the mode selected</td><td>0000 : Non-Priority</td></tr>
<tr><td>009</td><td>Capacity / Power Demand Control</td><td>0000 : Capacity demand
0001 : Power demand</td><td>0000 : Capacity demand</td></tr>
<tr><td>00A</td><td>Power consumption upper limit standard value setting Heating (For power demand)_High</td><td rowspan="4">Code range
[0A] [0C] : 0000 to 0255 (1 kW to 255 kW)
[0B] [0D] : 0000 to 0099 (0.00 kW to 0.99 kW)
<table><tr><th colspan="2" rowspan="2">Power consumption upper limit standard value</th><th colspan="2">DN Code</th></tr><tr><th>Heating</th><th>[00A]</th><th>[00B]</th></tr><tr><td colspan="2"></td><td>Cooling</td><td>[00C]</td><td>[00D]</td></tr><tr><td colspan="3">No power demand function</td><td>0000</td><td>0000</td></tr><tr><td colspan="3">0.01 kW</td><td>0000</td><td>0001</td></tr><tr><td colspan="3">0.02 kW</td><td>0000</td><td>0002</td></tr><tr><td colspan="3">–</td><td>–</td><td>–</td></tr><tr><td colspan="3">–</td><td>–</td><td>–</td></tr><tr><td colspan="3">10.00 kW</td><td>0010</td><td>0000</td></tr><tr><td colspan="3">–</td><td>–</td><td>–</td></tr><tr><td colspan="3">–</td><td>–</td><td>–</td></tr><tr><td colspan="3">30.50 kW</td><td>0030</td><td>0050</td></tr><tr><td colspan="3">–</td><td>–</td><td>–</td></tr><tr><td colspan="3">–</td><td>–</td><td>–</td></tr></table></td><td>0000 : 0kW</td></tr>
<tr><td>00b</td><td>Power consumption upper limit standard value setting Heating (For power demand)_Low</td><td>0000 : 0kW</td></tr>
<tr><td>00C</td><td>Power consumption upper limit standard value setting Cooling (For power demand)_High</td><td>0000 : 0kW</td></tr>
<tr><td>00d</td><td>Power consumption upper limit standard value setting Cooling (For power demand)_Low</td><td>0000 : 0kW</td></tr>
<tr><td>00E</td><td>Setting Value during Demand Control</td><td rowspan="3">Setting Value during Demand Control for demand standard specifications can be set with DN code [00E]. Its value for expansion specifications can be set in two steps (DN codes [00F], [010]) during the normal operation and demand control (setting value DN Code [00E]).
<table><tr><th></th><th colspan="3">DN Code</th></tr><tr><th>Demand control</th><th>[00E]</th><th>[00F]</th><th>[010]</th></tr><tr><td>100%</td><td>0</td><td>0</td><td>0</td></tr><tr><td>95%</td><td>1</td><td>1</td><td>1</td></tr><tr><td>90%</td><td>2</td><td>2</td><td>2</td></tr><tr><td>85%</td><td>3</td><td>3</td><td>3</td></tr><tr><td>80%</td><td>4</td><td>4</td><td>4 (Factory default)</td></tr><tr><td>75%</td><td>5</td><td>5</td><td>5</td></tr><tr><td>70%</td><td>6</td><td>6</td><td>6</td></tr><tr><td>65%</td><td>7</td><td>7</td><td>7</td></tr><tr><td>60%</td><td>8</td><td>8 (Factory default)</td><td></td></tr><tr><td>55%</td><td></td><td></td><td></td></tr><tr><td>50%
–
0%</td><td>10
11 to 14
15 (Factory default)</td><td>10
11 to 14
15</td><td>10
11 to 14
15</td></tr></table></td><td>0015 : 0%
(Forcedly stop)</td></tr>
<tr><td>00F</td><td>Setting value during Demand Control (Expansion 1)</td><td>0008 : 60%</td></tr>
<tr><td>010</td><td>Setting Value during Demand Control (Expansion 2)</td><td>0004 : 80%</td></tr>
<tr><td>018</td><td>Priority Operation Mode Setting</td><td>0000 : Priority heating
0001 : Priority cooling
0002 : Priority operation unit No.
0003 : Priority indoor unit</td><td>0000 : Priority heating</td></tr>
</table>

019	Outdoor Fan High Static Pressure Shift	0000 : Usual	0001 : High Static Pressure Operation	0000 : Usual
01A	Operation standby Heating standby	0000 : None	0001 : Standby	0000 : None
027	Night operation (sound reduction) control mode setting	0000 : mode 1 (50 dB) 0002 : mode 3 (44 dB)	0001 : mode 2 (47 dB)	0000 : mode 1
03F	Operation Control during Overflow Detection of Indoor Unit	0000 : System abnormal stop	0001 : System continuous operation (Stop the corresponding indoor unit.)	0000 : System abnormal stop
040	Operation Control during Outside Abnormal Input Switching control in receiving [L30][L02] from indoor)	0000 : System continuous operation (Stop the corresponding indoor unit.)	0001 : System abnormal stop	0000 : System continuous operation (Stop the corresponding indoor unit.)
045	Low frost mode setting	0000: Usual	001: Low frost operation	0001: Mode 1
082	Communication setting	0000: TCC-Link	0003 : TU2C-Link	0000: TCC-Link

7-2. Applied Control of Outdoor Unit

The outdoor fan high static pressure support and priority operation mode setting (cooling / heating / number of units / or priority indoor unit) functions are available by setting relevant switches provided on the interface P.C. board of the outdoor unit.

7-2-1. Outdoor Fan High Static Pressure Shift

Setup

Change the outdoor DN code. (O.DN [019]) into “Outdoor Fan High Static Pressure operation.”
This function must be enabled with every discharge duct connected outdoor unit.

Purpose/characteristics

Outdoor DN Code (O.DN) Setting Operation	Operation
O.DN [019] = 0000	Normal operation
O.DN [019] = 0001	Outdoor Fan High Static Pressure operation

Specifications

Increase the speed of the propeller fan units on the outdoor fan to allow the installation of a duct with a maximum external static pressure not greater than specified in the table below. If a discharge duct with a resistance greater than 15 Pa (1.5 mmAq) is to be used, enable this function. The maximum external static pressures of single units are shown below (Table 1).

Table 1: Maximum External Static Pressures of Single Outdoor Units

Model	MCY-MUG	0401*	0501*	0601*
Maximum external static pressure	(Pa)	20	20	20
(∗) Outdoor unit air flow	(m^3/min)	72	75	75

(∗) Calculate duct resistance from outdoor unit air flow.

7-2-2. Priority Operation Mode Setting

Purpose/characteristics

This function allows switching between priority cooling and priority heating.
Four patterns of priority operation mode setting are available as shown in the table below. Select a suitable priority mode according to the needs of the customer.

Setup

⚠ CAUTION

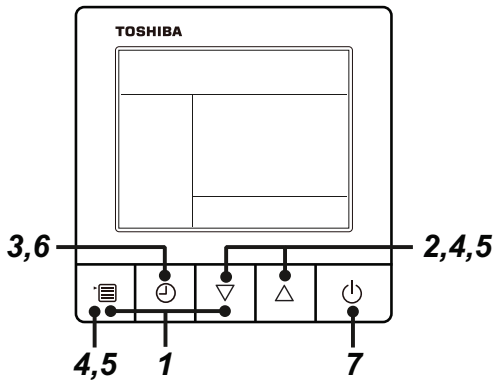
In the case of the priority indoor unit mode, it is necessary to set up the specific indoor unit chosen for priority operation (a single unit only).

(1) Outdoor unit setup method

Outdoor DN Code (O.DN) Setting	Operation
O.DN [018] = 0000	Priority heating (factory default)
O.DN [018] = 0001	Priority cooling
O.DN [018] = 0002	Priority operation based on No. of units in operation (priority given to the operation mode with the largest share of units in operation)
O.DN [018] = 0003	Priority indoor unit (priority given to the operation mode of the specific indoor unit set up for priority operation)

(2) Indoor unit setup method for priority indoor unit mode
The setting can be changed only when the system is at rest. (Be sure to turn off the system prior to this operation.)

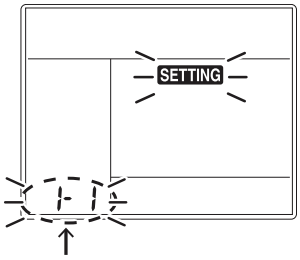
<RBC-ASCU11*>



Priority set 0001
No priority set 0000

1 Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.

- After a while, the display flashes as shown in the figure. “ALL” is displayed as indoor unit numbers during initial communication immediately after the power has been turned on.

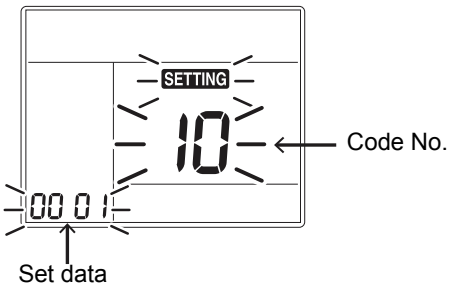


Indoor unit No.

2 **Each time [▽] [△] setting button is pushed, indoor unit numbers in the group control change cyclically. Select the indoor unit to change settings for.**

• The fan of the selected indoor unit runs . The indoor unit can be confirmed for which to change settings

3 **Push OFF timer button to confirm the selected indoor unit.**



4 **Push the menu button to make Code No. [04] flash. Change Code No. [04] with [▽] [△] setting button.**

5 **Push the menu button to make Set data [0001] flash. Change Set data [0001] with [▽] [△] setting button.**

Priority set 0001 No priority set 0000

6 **Push OFF timer button to complete the set up.**

• To change other settings of the selected indoor unit, repeat from Procedure ***4***.

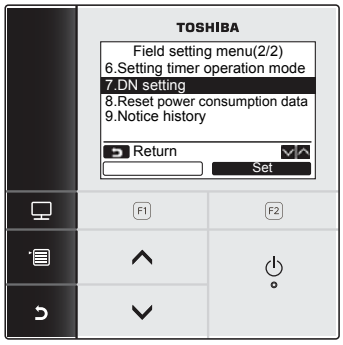
7 **When all the settings have been completed, push ON/OFF button to finish the settings. (Return to the normal mode).**

" SETTING " flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while " SETTING " is flashing.)

• To change settings of another indoor unit, repeat from Procedure ***1***.

<RBC-AMSU5*>

Display example of AMS*5*

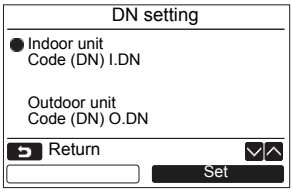


1 **Push the [MENU] button to display the menu screen.**

2 **Push and hold the [MENU] button and the [∨] button at the same time to display the "Field setting menu".**

Push and hold the buttons for more than 4 seconds.

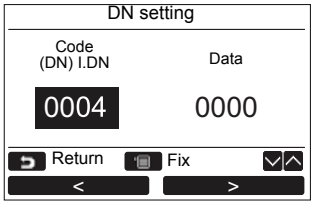
3 **Push the [∧] / [∨] button to select "7. DN setting" on the "Field setting menu" screen, then push the " Set" [F2] button.**

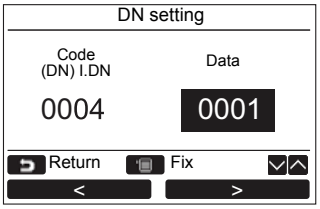


→ Push the [∧] / [∨] button to select the indoor unit and push the " Set" [F2] button.
The fan and louver of the indoor unit operate. When the group control is used, the fan and louver of the selected indoor unit operate.

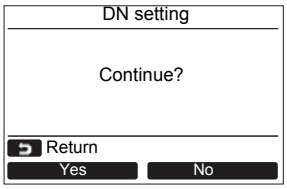
4 **Move the cursor to select "DN code" with the " <" [F1] button, then set "0004" with the [∧] / [∨] button.**

5 **Move the cursor to select "data" with the " >" [F2] button, then set "0001" with the [∧] / [∨] button.**





6 Push the [MENU] button to set the other DN codes, then "Continue?" is displayed on the screen.



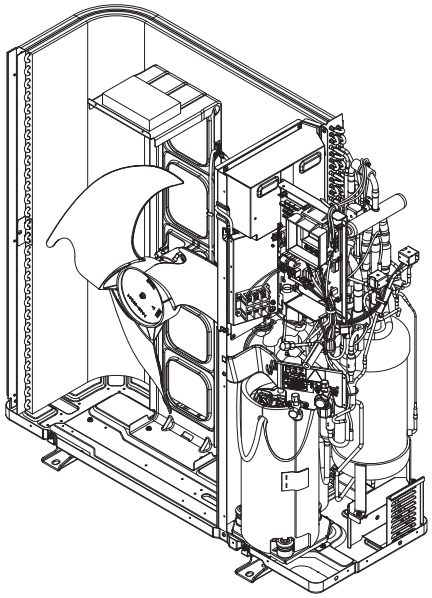
7 Push the " No No setting operation. " No" [F2] button to finish the " appears on the screen for a while, then the screen returns to the "Field setting menu" screen.

Pushing the " No No" [F2] button displays the unit selection screen when the group control is used. Push the [CANCEL] button on the unit selection screen to finish the setting operation. "⌛" appears on the screen for a while, then the screen returns to the "Field setting menu" screen.

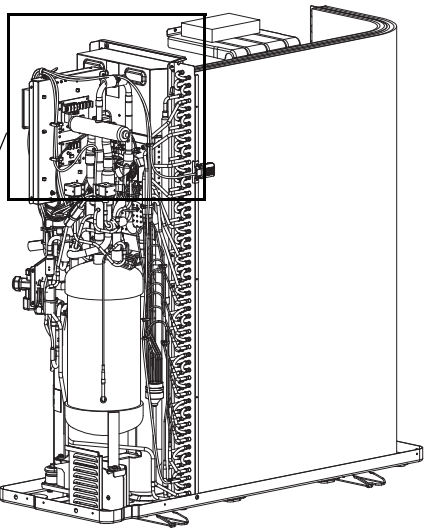
8 Push the [CANCEL] button to return.

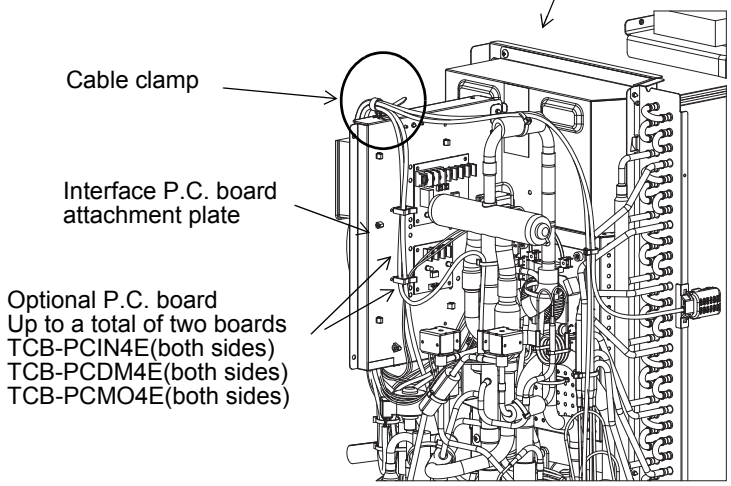
7-2-3. Applied control of outdoor unit by optional P.C. board

7-2-3-1. Optional P.C. board of outdoor unit installation



Holes for installing supports are provided on the back face of interface P.C. board attachment plate.
Use the supports to install the optional P.C. boards.





Wiring connections

(1) Refer to the details on the wiring diagrams.

(2) Be sure to use the shield wire to prevent noise trouble, and perform the grounding at both sides of shield wires.

(3) Fasten the external wires to the cable clamps.

7-2-3-2. Applied Control of Outdoor Unit

Optional control P.C. boards provide access to a range of functions as listed below.

No.	Function	Outdoor unit for control P.C. board Connectio	Control P.C. board to be used			Outdoor unit interface P.C. board setting*			
			TCBP-CDM4E	TCBP-CMO4E	TCBP-CIN4E	Connector No.	DIP SW No.	Bit ON	Outdoor unit DN Code (O.DN)
1	Power peak-cut Control (Standard) *Limit a maximum capacity	Outdoor unit	✓	—	—	CN513 (blue)	—	—	[009]=0 (Factory default)
	Power peak-cut Control (Standard) *Limit a maximum power	Outdoor unit	✓	—	—	CN513 (blue)	—	—	[009]=1
	Power peak-cut Control (For one input function) *Limit a maximum capacity	Outdoor unit	✓	—	—	CN513 (blue)	SW105	1	[009]=0 (Factory default)
	Power peak-cut Control (For one input function) *Limit a maximum power	Outdoor unit	✓	—	—	CN513 (blue)	SW105	1	[009]=1
2	Power peak-cut Control (Enhanced Function) *Limit a maximum capacity	Outdoor unit	✓	—	—	CN513 (blue)	SW105	2	[009]=0 (Factory default)
	Power peak-cut Control (Enhanced Function) *Limit a maximum power	Outdoor unit	✓	—	—	CN513 (blue)	SW105	2	[009]=1
3	Snowfall Fan Control	Outdoor unit	–	✓	—	CN509 (black)	—	—	—
4	External master ON / OFF control	Outdoor unit	–	✓	—	CN512 (blue)	—	—	—
5	Night operation (sound reduction) control	Outdoor unit	–	✓	—	CN508 (red)	—	—	—
6	Operation mode selection control	Outdoor unit	–	✓	—	CN510 (white)	—	—	[008]=0 (Factory default)
	Operation Mode Selection Control (forced choice)	Outdoor unit	–	✓	—	CN510 (white)	—	—	[008]=1
7	Trouble/Operation output	Outdoor unit	–	—	✓	CN511 (green)	—	—	—

To limit a maximum power, set the outdoor unit O.DN code to [009]=1, and set the criteria value of a maximum power consumption with O.DN code [00A], [00B], [00C] and [00D]. Input the values for both cooling and heating.
Outdoor unit DN Code (O.DN) [00C], [00D]
Criteria value setting for a maximum cooling power
(e.g.) When the maximum standard value of cooling power consumption is set as 19.35 kW = 19.35kW

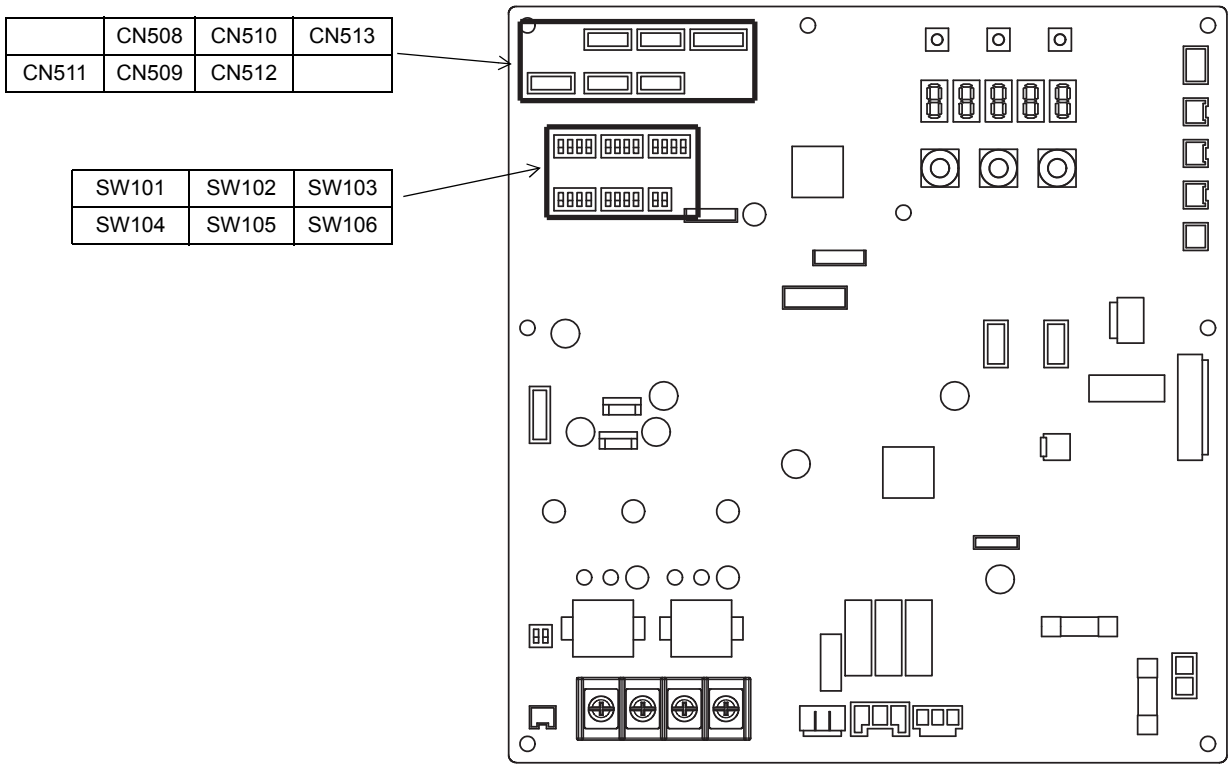
Outdoor unit DN Code (O.DN)	[00C]	[00D]
Value	19	35

Outdoor unit DN Code (O.DN) [00A], [00B]
Criteria value setting for a maximum heating power
(e.g.) When the maximum standard value of heating power consumption is set as 14.00 kW = 14.00kW

Outdoor unit DN Code (O.DN)	[00A]	[00B]
Value	14	00

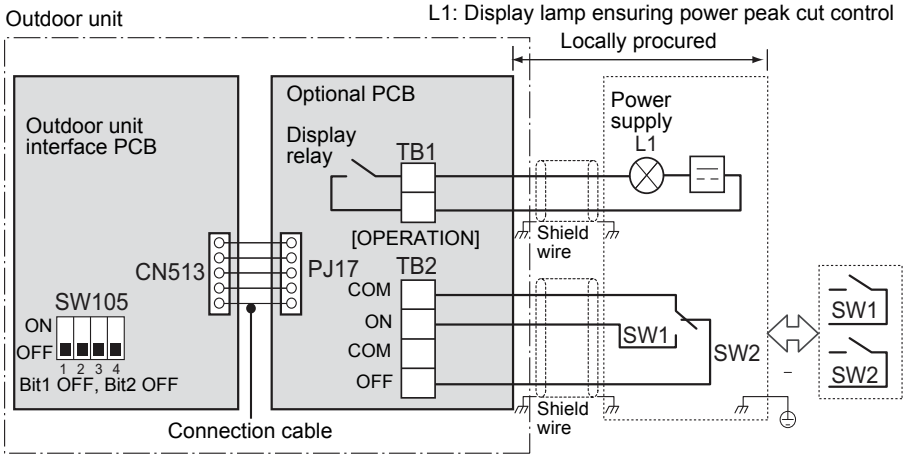
Layout of Outdoor Unit Interface P.C. Board

* For Applicable controls, switch the DIP SW on the P.C. board or set the outdoor unit O.DN.



7-2-3-3. Power peak-cut Control (Standard)

(1) Four-core cable support



For SW1 and SW2, be sure to provide novoltage contacts for each terminal.
The input signals of SW1 and SW2 may be pulse input (100 msec or more) or continuous make.

Operation

The demand request signal from the outside restricts the maximum capability (or maximum electric power) of an outdoor unit.
L1: Power peak-cut control indication lamp SW1: Power peak-cut control ON switch (ON as long as target power peak-cut control has been reached or exceeded, normally OFF)*1
SW2: Power peak-cut control OFF switch (OFF as long as target power peak-cut control has not been reached or exceeded, normally ON)*1
*1 The inputs of SW1 and SW2 can be either pulse (100 msec or longer) or step signals.
Do not turn on SW1 and SW2 simultaneously.
* Be sure to provide a contact for each terminal.

Power peak-cut control settings

[2-stage switching] < SW105 bit1 OFF, bit2 OFF >

Demand: power peak-cut control

Control item	Optional P.C.board			Outdoor unit interface P.C.board			
	Input		Display relay	SW105		Outdoor unit DN Code [00E]	
	SW1	SW2	(L1)	Bit1	Bit2	Factory default [00E] = 15	[00E] = 0 to 10
Input demand OFF signal to release the demand	OFF	ON	OFF	OFF	OFF	100% (normal operation)	100% (normal operation)
Input demand ON signal to control the demand	ON	OFF	ON	OFF	OFF	0% (forced stop)	Approx. X (50% to 100%) (upper limit regulated)

* The upper limit X% can be regulated with the outdoor DN Code (O.DN) [00E].

Outdoor unit DN Code (O.DN) [00E]	**X**
0	100%
1	95%
2	90%
3	85%
4	80%
5	75%
6	70%
7	65%
8	60%
9	55%
10	50%
15 (factory default)	0% (forced stop)

Note 1: Specifications of display relay contact

- The terminal for display output ([Operation] terminal) must satisfy the following electrical rating.

<Electrical Rating>
220 to 240 VAC, 10 mA or more, 1 A or less
24 VDC, 10 mA or more, 1 A or less (non-conductive load)

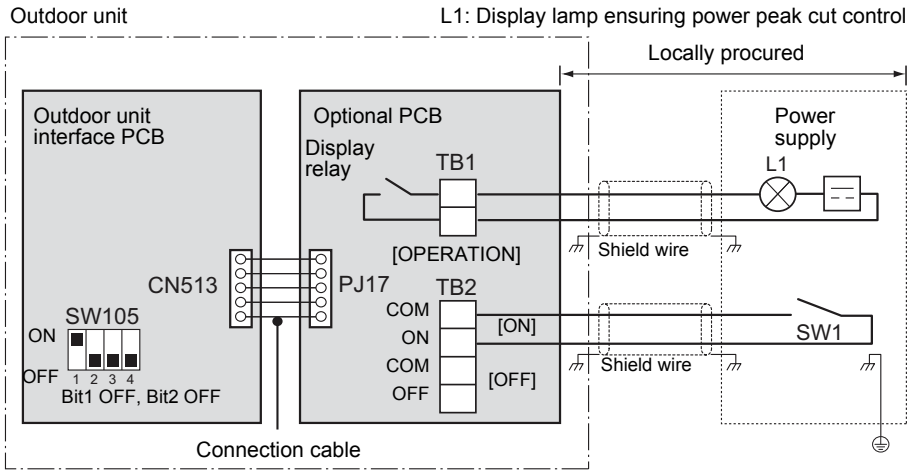
When connecting a conductive load (e.g. relay coil) to the display relay load, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.

Note 2: COM contact specifications

- COM terminals have DC12 V output with a basic insulation. Use a switch, such as a relay or photocoupler, insulated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.
- DC12 V has a current-limiting resistor of 3.3kΩ.
- For non-voltage contacts, use a relay with minimum applicable load of DC12V,3mA or less.

(2) Two-core cable support

Setting SW105 bit1 on I/F P.C.board of the outdoor unit to ON allows ON/OFF power peak-cut control to be switched using [ON] terminal input (SW1) alone.



[2-stage switching] < SW105 bit1 OFF, bit2 OFF >
Power peak-cut control turns ON when SW 1 in the wiring example is ON (continuous make).

Demand: power peak-cut control

Control item	Optional P.C.board		Outdoor unit interface P.C.board			
	Input	Display relay	SW105		Outdoor unit DN Code [00E]	
	SW1	(L1)	Bit1	Bit2	Factory default [00E] = 15	[00E] = 0 to 10
Input demand OFF signal to release the demand	OFF	OFF	ON	OFF	100% (normal operation)	100% (normal operation)
Input demand ON signal to control the demand	ON	ON			0% (forced stop)	Approx. X (50% to 100%) (upper limit regulated)

* The upper limit X% can be regulated with the outdoor DN Code (O.DN) [00E].

Outdoor unit DN Code (O.DN) [00E]	**X**
0	100%
1	95%
2	90%
3	85%
4	80%
5	75%
6	70%
7	65%
8	60%
9	55%
10	50%
15 (factory default)	0% (forced stop)

Note 1: Specifications of display relay contact

- The terminal for display output ([Operation] terminal) must satisfy the following electrical rating.

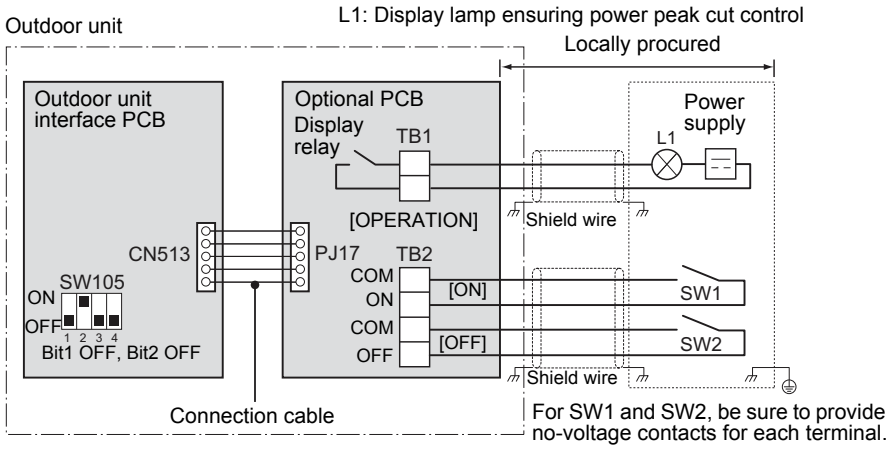
<Electrical Rating>
220 to 240 VAC, 10 mA or more, 1 A or less
24 VDC, 10 mA or more, 1 A or less (non-conductive load)

When connecting a conductive load (e.g. relay coil) to the display relay load, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.

Note 2: COM contact specifications

- COM terminals have DC12 V output with a basic insulation. Use a switch, such as a relay or photocoupler, insulated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.
- DC12 V has a current-limiting resistor of 3.3kΩ.
- For non-voltage contacts, use a relay with minimum applicable load of DC12V,3mA or less.

7-2-3-4. Power peak-cut Control (Extended)



Operation

The demand request signal from the outside restricts the maximum capability (or maximum electric power) of an outdoor unit.

L1: Power peak-cut control indication lamp

SW1: Power peak-cut control ON switch*1

SW2: Power peak-cut control OFF switch*1

*1 The inputs of SW1 and SW2 can be either pulse (100 msec or longer) or step signals.

* Be sure to provide a contact for each terminal.

Extended power peak-cut control settings

[4-stage switching] <SW105 Bit1 ON, Bit2 ON>

Demand: power peak-cut control

Control item	Optional P.C.board			Outdoor unit interface P.C.board			
	Input		Display relay	SW105		Outdoor DN Code [✱✱✱✱]	
	SW1	SW2	(L1)	Bit1	Bit2	Factory default [00E] = 15, [00F] = 8, [010] = 4	[00E] = X, [00F] = Y, [010] = Z
Input demand OFF signal to release the demand	OFF	OFF	OFF	OFF	ON	100% (normal operation)	100% (normal operation)
Input demand ON signal to control the demand	ON	OFF	ON			Approx. 80% (upper limit regulated)	Approx. Z% (50% to 100%) (upper limit regulated)
Input demand ON signal to contral the demand	OFF	ON	ON			Approx. 60% (upper limit regulated)	Approx. Y% (50% to 100%) (upper limit regulated)
Input demand ON signal to contral the demand	ON	ON	ON			0% (forced stop)	Approx. X% (50% to 100%) (upper limit regulated)

* The upper limit X%, Y%, Z% can be regulated with the outdoor DN Code (O.DN) [00E] [00F] [010].

Outdoor unit DN Code (O.DN) [00E]	X
0	100%
1	95%
2	90%
3	85%
4	80%
5	75%
6	70%
7	65%
8	60%
9	55%
10	50%
15 (factory default)	0% (forced stop)

Outdoor unit DN Code (O.DN) [00E]	X
0	100%
1	95%
2	90%
3	85%
4	80%
5	75%
6	70%
7	65%
8 (factory default)	60%
9	55%
10	50%
15	0% (forced stop)

Outdoor unit DN Code (O.DN) [00E]	X
0	100%
1	95%
2	90%
3	85%
4 (factory default)	80%
5	75%
6	70%
7	65%
8	60%
9	55%
10	50%
15	0% (forced stop)

Note 1: Specifications of display relay contact

- The terminal for display output ([Operation] terminal) must satisfy the following electrical rating.

<Electrical Rating>
220 to 240 VAC, 10 mA or more, 1 A or less
24 VDC, 10 mA or more, 1 A or less (non-conductive load)

When connecting a conductive load (e.g. relay coil) to the display relay load, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.

Note 2: COM contact specifications

- COM terminals have DC12 V output with a basic insulation. Use a switch, such as a relay or photocoupler, insulated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.
- DC12 V has a current-limiting resistor of 3.3kΩ.
- For non-voltage contacts, use a relay with minimum applicable load of DC12V,3mA or less.

[Power peak-cut control through electric power]

For the Power peak-cut control, the Power peak-cut control through electric power can be set by Outdoor unit DN code (O.DN) [009].

The Power peak-cut control through electric power regulates outdoor unit output so that power consumption does not exceed the upper limit value set.

(1) To change into the power peak-cut control through power, set the outdoor unit DN code to [009] = 1.
 * To return to the power peak-cut control through capacity, set the outdoor unit DN code to [009] = 0.

(2) Check that the criteria value of a maximum power in cooling or heating is set to [00A] to [00D].
 For the connected outdoor units system, set the criteria value of a maximum power consumption (the total of each outdoor unit power) to the outdoor unit.

Outdoor unit DN Code (O.DN) [00C], [00D]
Criteria value setting for a maximum cooling power
(e.g.) When the maximum standard value of cooling power consumption is set as 19.35 kW = 19.35kW

Outdoor unit DN Code (O.DN)	[00C]	[00D]
Value	19	35

Outdoor unit DN Code (O.DN) [00A], [00B]
Criteria value setting for a maximum heating power
(e.g.) When the maximum standard valu e of heating power consumption is set as 14.00 kW = 14.00kW

Outdoor unit DN Code (O.DN)	[00A]	[00B]
Value	14	00

(3) If ON signal is input from the optional P.C. board, the power peak-cut control through electric power operates.
Input method of ON signal for power peak-cut control is the same as that for normal peak-cut control.
Refer to “Standard”, “For one input function”, or “Enhanced Function”.

The power peak-cut control regulates the outdoor unit capacity so that it does not exceed the upper limit value (X%,Y%,Z% of the criteria value for a maximum power set in (2)) set by [00E] [00F] [010] of (O.DN). (e.g.) If the criteria value of maximum heating power during 80% demand control is set to 14.00kW, the upper limit control becomes 11.2kW (14.00kW×80%=11.20kW), the outdoor unit output is controlled so that the power consumption does not exceed 11.20kW.

NOTE 1: To protect a refrigerant cycle, the power peak-cut may not be operated during the defrost operation, oil recovery operation, or refrigerant recovery operation.

NOTE 2: For demand OFF, the outdoor unit may operate beyond the setting criteria value of a maximum power consumption because the power limit control does not function.

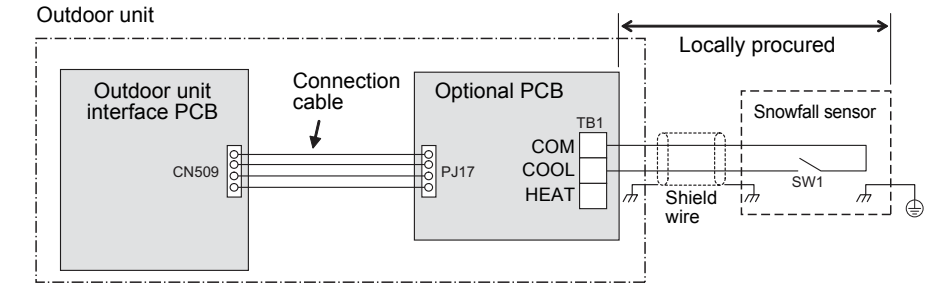
NOTE 3: Power consumption is estimated, causing approx. ±5 % difference from the actual power consumption.
To perform accurate power peak-cut control, use a demand controller and electric power meter.

NOTE 4: The power consumption of the indoor units is not included.

NOTE 5: When power consumption does not decrease or expected effects are not obtained, change the upper limit value of X%, Y%, Z% or the criteria value for a maximum power.

NOTE 6: In the case of Upper limit 100% (normal operation), the operation is without peak-cut control.
Peak-cut control is not performed with the value set to O.DN [00A] - [00D].

7-2-3-5. Snowfall Fan Control



SW1: Snowfall detection switch (snowfall sensor)

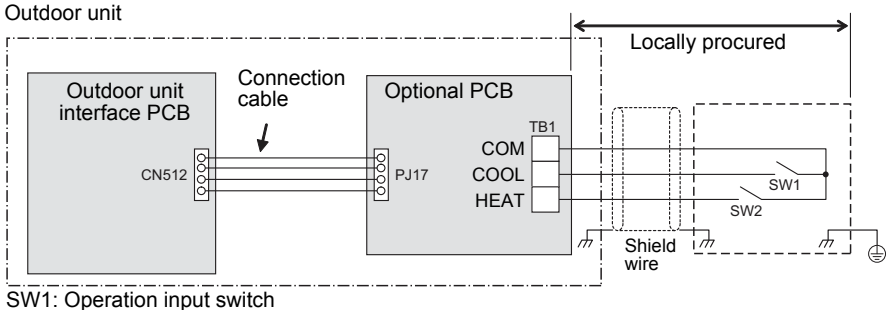
Operation

An external snowfall signal turns on the outdoor unit fan.

Terminal	Input signal	Operation
COOL (SW1)	ON → OFF	Snowfall fan control (Turn on outdoor unit fan)
	ON → OFF	Normal operation (Cancels control)

The input signal is recognized during its rising/falling phase.
(After reaching the top/bottom of the rising/falling edge, the signal must remain there for at least 100 ms.)
COM terminals have DC12 V output with a basic insulation. Use a switch, such as a relay or photocoupler, insulated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.
DC12 V has a current-limiting resistor of 3.3kΩ.
For non-voltage contacts, use a relay with minimum applicable load of DC12V,3mA or less.

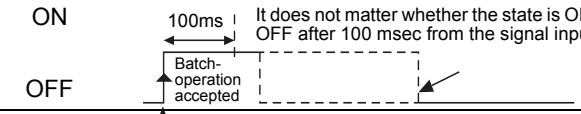
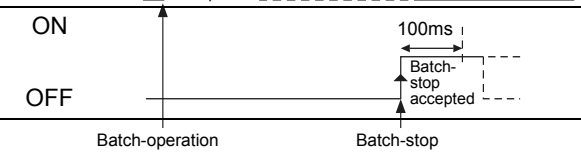
7-2-3-6. External master ON/OFF Control



SW1: Operation input switch
SW2: Stop input switch

Operation

The system is started/stopped from the outdoor unit.

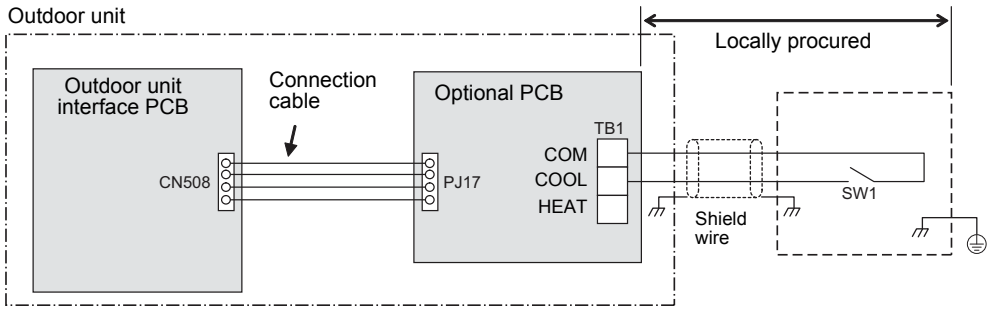
Terminal	Input signal	Operation
COOL (SW1)		Turns on all indoor units
HEAT (SW2)		Turns off all indoor units

- Input signal is detected in the rising edge between OFF and ON of SW1/SW2 and the control is accepted in 100 msec from the edge.
- When COOL terminals (SW1 and SW2) are simultaneously turned ON, the control turned ON first is valid, and the control turned ON later is invalid.

⚠ CAUTION

(1) Do not turn on the COOL (SW1) and HEAT (SW2) terminals simultaneously.
(2) COM terminals have DC12 V output with a basic insulation. Use a switch, such as a relay or photocoupler, insulated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.
DC12 V has a current-limiting resistor of 3.3kΩ.
For non-voltage contacts, use a relay with minimum applicable load of DC12V,3mA or less.

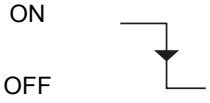
7-2-3-7. Night operation (sound reduction) Control



SW1: Night time signal switch

Operation

This function decreases noise at night or other times as necessary.

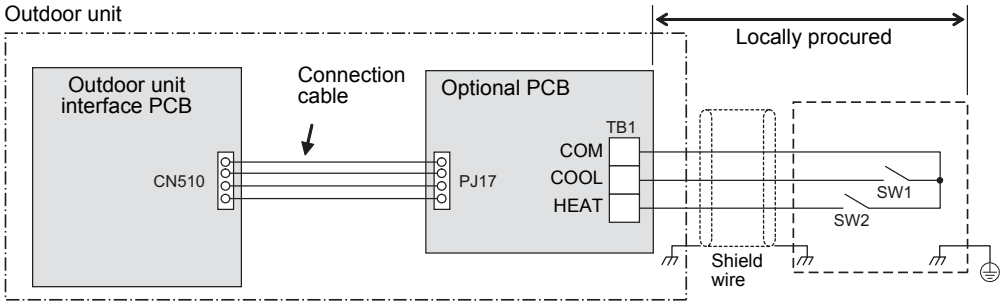
Terminal	Input signal	Operation
COOL (SW1)		Night time control
		Normal operation

The input signal is recognized during its rising/falling phase.
(After reaching the top/bottom of the rising/falling edge, the signal must remain there for at least 100 ms.)
Change the outdoor DN code (O.DN [027]) to set the night operation sound.
The system's capacity is reduced during low-noise operation.
The table below provides a rough guide to this capacity reduction.

Model MCY-MUG	Mode setting	mode 1	mode 2	mode 3
	Outdoor DN cord (O.DN [027]) setting	0000	0001	0002
0401* 0501* 0601*	Night operation sound reduction dB(A) (COOL/HEAT)	50	47	44
	Capacity (COOL/HEAT)	90%	75%	60%

* Position of noise measuring device: 1 m from the front face of the set and 1.5 m above ground (anechoic sound)
• COM terminals have DC12 V output with a basic insulation.
  Use a switch, such as a relay or photo coupler, insulated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.
• DC12 V has a current-limiting resistor of 3.3kΩ.
• For non-voltage contacts, use a relay with minimum applicable load of DC12V,3mA or less.

7-2-3-8. Operation Mode Selection Control



SW1: Cooling mode specified input switch
SW2: Heating mode specified input switch

NOTE

SW1: COOL mode selection switch
SW2: HEAT mode selection switch

Input signal		Operation
COOL (SW1)	HEAT (SW2)	
OFF	OFF	Normal operation
ON	OFF	Only cooling operation allowed
OFF	ON	Only heating operation allowed

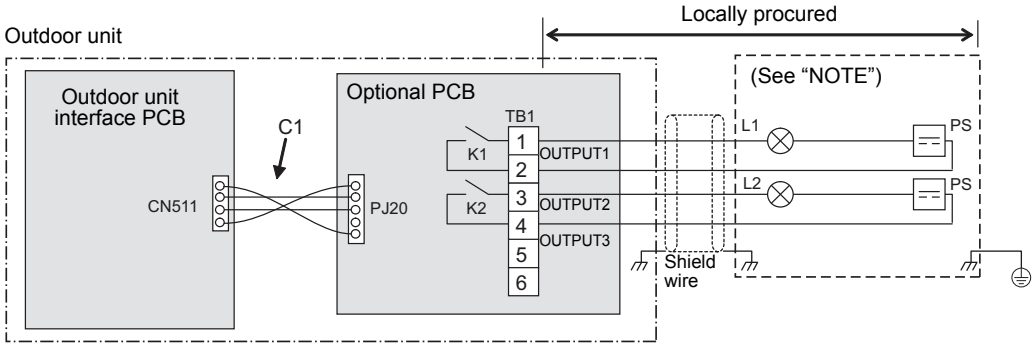
Indoor unit operation intervention function

The statuses of indoor units operating in a mode other the selected operation mode can be switched by setting the outdoor DN Code of the outdoor unit.

<table>
<tr><th>Outdoor DN Code (O.DN)</th><th>Details of Processing</th></tr>
<tr><td>O.DN [008] = 0 (factory default)</td><td>Unauthorized indoor units in a mode other than the P.C.board selection modes are not treated as priority (thermostat OFF state).
<table>
<tr><th rowspan="2">P.C. board selection mode</th><th colspan="2">Input Signal</th><th rowspan="2">Remote control</th><th rowspan="2">Operation State</th></tr>
<tr><th>COOL (SW1)</th><th>COOL (SW1)</th></tr>
<tr><td rowspan="3">Normal</td><td rowspan="3">OFF</td><td rowspan="3">OFF</td><td>✱ or 💧</td><td rowspan="3">Follow the remote controller.</td></tr>
<tr><td>✺</td></tr>
<tr><td>🌀</td></tr>
<tr><td rowspan="3">Cooling operation only allowed</td><td rowspan="3">ON</td><td rowspan="3">OFF</td><td>✱ or 💧</td><td>Follow the remote controller (Normal cooling operation).</td></tr>
<tr><td>✺</td><td>Thermostat OFF (Air blow operation at super-slow blow rate)</td></tr>
<tr><td>🌀</td><td>Follow the remote controller (Normal air blow operation).</td></tr>
<tr><td rowspan="3">Heating operation only allowed</td><td rowspan="3">OFF</td><td rowspan="3">ON</td><td>✱ or 💧</td><td>Thermostat OFF (Air blow operation at blow rate set on remote control)</td></tr>
<tr><td>✺</td><td>Follow the remote controller (Normal heating operation).</td></tr>
<tr><td>🌀</td><td>Follow the remote controller (Normal air blow operation).</td></tr>
</table></td></tr>
<tr><td>O.DN [008]= 1</td><td>Only operation modes and air blow operation selected on the P.C.board can be selected on the remote controller.
When the input signal is turned ON, indoor units operated in a mode other than the P.C.board selection mode are forcibly switched to the P.C.board selection modes.
<table>
<tr><th rowspan="2">P.C. board selection mode</th><th colspan="2">Input Signal</th><th colspan="2" rowspan="2">Remote control</th></tr>
<tr><th>COOL (SW1)</th><th>COOL (SW1)</th></tr>
<tr><td>Normal</td><td>OFF</td><td>OFF</td><td colspan="2">✱, 💧, ✺ or 🌀</td></tr>
<tr><td>COOL</td><td>ON</td><td>OFF</td><td>• Only ✱, 💧, or 🌀 can be selected.
• Indoor units in Heat mode are forcibly switched to the Cool mode.</td><td rowspan="2">When using the remote control, (mode select control) indicator is displayed.</td></tr>
<tr><td>HEAT</td><td>OFF</td><td>ON</td><td>• Only ✺ or 🌀 can be selected.
• Indoor units in Cool or Dry mode are forcibly switched to the Heat mode.</td></tr>
</table></td></tr>
</table>

- COM terminals have DC12 V output with a basic insulation. Use a switch, such as a relay or photocoupler, insulated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.
- DC12 V has a current-limiting resistor of 3.3kΩ.
- For non-voltage contacts, use a relay with minimum applicable load of DC12V,3mA or less.

7-2-3-9. Trouble/Operation Output



Operation

In-operation output: An in-operation indication signal is output as long as at least one indoor unit is in operation in the line.

Trouble output: Trouble indication signal is output if trouble occurs in at least one indoor/outdoor unit in the line.

Note 1: Output Relay (K1, K2) Contact Specifications

- Output terminals (OUTPUT1, 2) must satisfy the following electrical rating.
- When connecting a conductive load (e.g. relay coil) to loads K1 and K2, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.

<Electrical Rating> 220 to 240 VAC, 10 mA or more, 1 A or less 24 VDC, 10 mA or more, 1 A or less (non-conductive load)

C1	Attached connection cable 1 (4wires)
CN511	Connector on interface side (green)
K1, K2	Relays
L1	Trouble indication Lamp
L2	Operation indication Lamp
OUTPUT1	Trouble output
OUTPUT2	Operation output
PJ20	Connector on optional P.C.board side
PS	Power supply unit
TB1	Terminal block

7-3. Notice Code

- Notice Code is a function only in TC2U-Link communication.
- When the outdoor or indoor unit detects its conditions requiring caution or maintenance, this function notices you to check your units with the spanner icon (Notice code icon) on the wired remote controller or central controller display.
- Even while the notice code icon is displayed, the air conditioner can operate normally.
- A maximum of five notice codes can be issued simultaneously in one system (line).

1. Notice Code Icon Display on Wired Remote Controller

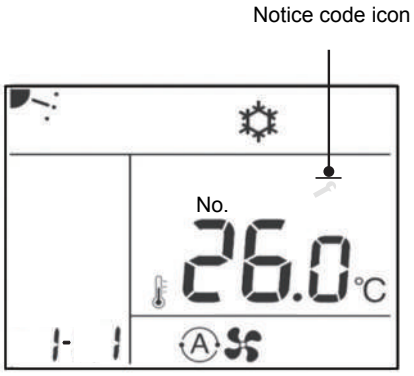
Set the notice codes from remote controller so that the notice code mark is displayed on the remote controller display when the outdoor unit issues the notice codes.

Please follow the steps below to set the notice code on the unit.

(1) Set the notice codes, which will be displayed, on the Indoor unit DN Code (I. DN) “180” to “189” from the remote controller.
Enter one of the notice codes for each DN Code. You can set it on any of “180” to “189”.
A maximum 10 types of the notice codes can be set on a single indoor unit.

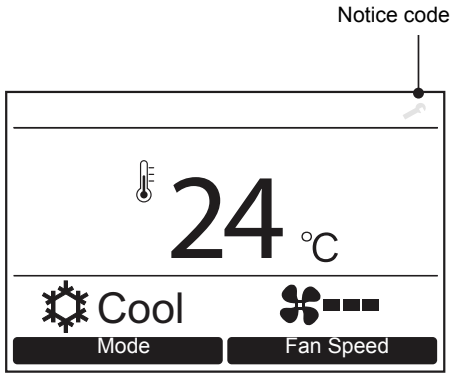
(2) A notice code icon will be displayed on the remote controller when any of the 10 notice codes set is received into the remote controller.
If the notice code that is not set is received, a notice code icon is not displayed.
Set the notice code that you want from the remote controller.

<RBC-ASCU1*>

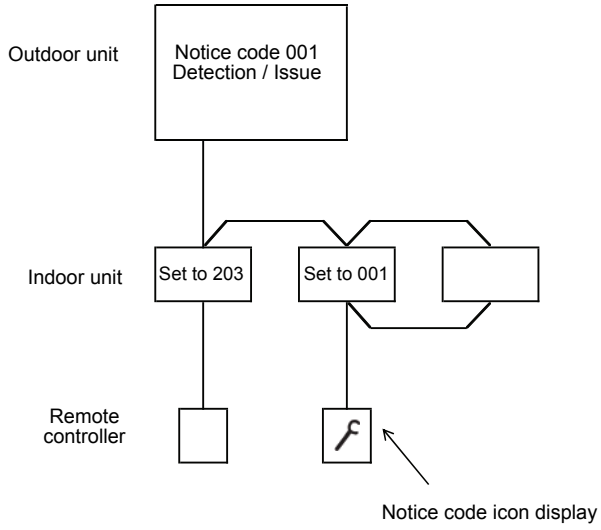


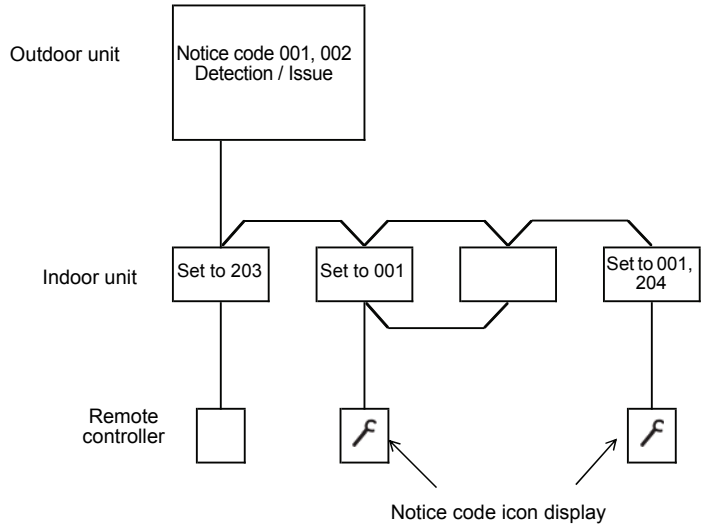
e.g.1. When the outdoor unit detects and issues the notice code “001”, the notice code icon is displayed remote controller connected to the indoor unit on which the “001” was set.

<RBC-ASMU5*>



e.g.2. When the outdoor unit detects and issues the notice code "001" or "204", the notice code icon is displayed on the remote controller connected to the indoor unit on which the "001" or "204" were set.





2. Notice Code Display (7-segment display) on Outdoor Interface P.C. Board

The notice codes detected or issued from the outdoor unit can be confirmed with 7-segment display on the P.C. board.

(The notice codes detected or issued from the other outdoor unit cannot be displayed.)

(1) Displaying the notice code being issued now

Setting the SW01, SW02, SW03 to 1, 1, 14 respectively displays the notice code being issued from the outdoor unit on the 7-segment display 7-segment display [n. 1. .∗∗∗] ∗∗∗ : Notice code

Every time SW04 is pushed for 1-second, the display changes and the second notice code or each subsequent code is displayed (up to fifth code).

[n. 1. ∗∗∗] (First) to [n. 2. ∗∗∗] (Second) to • • • to [n. 5. ∗∗∗] (Fifth) to [n. 1. ∗∗∗] (First)

(2) Displaying the notice code history

Setting the SW01, SW02, SW03 to 1, 2, 14 respectively displays the notice code history being issued from the outdoor unit on the 7-segmen 7-segment display [h. 1. ∗∗∗] ∗∗∗ : Notice code

Every time SW04 is pushed for 1-second, the display changes and the second notice code or each subsequent code is displayed (up to tenth code history).

[h. 1. ∗∗∗] (First) to [h. 2. ∗∗∗] (Second) • • • to [h. A. ∗∗∗] (Tenth) to [h. 1. ∗∗∗] (First)

(3) Clearing the notice code history

To clear the notice code history recorded in the outdoor unit, follow the steps below.

Set the SW01, SW02, SW03 to 2, 15, 8 respectively.

7-segment display [n. c]

When SW04 is pushed and held for 5-second, the notice code histories recorded in the outdoor unit are cleared.

7-segment display [n. c C L]

3. Notice Code List

Notice code No.	Item	Content
001	Compressor maintenance timer over	This notice code is detected or issued from the outdoor unit when the actual operation cumulative time of the compressor exceeds the compressor maintenance time set. The compressor maintenance time is not set at the factory. To use the notice code, set the compressor maintenance time* on O.DN“007”.
203	Shut-off Valve unit battery dead	The battery kit connected to the Shut-off Valve unit has reached the end of its life.
204	Leak Detector life advance display	The Leak Detector will soon reach the end of its life.

* Setting the compressor maintenance time to detect the time exceeded

Enter the compressor maintenance time to be detected as time over into Outdoor unit DN Code (O.DN) “007”.

Input values ×1,000=Detection time

e.g. When O.DN [007]=20 is set

20 × 1,000=20,000 hours • • • The notice code “001” is detected and issued when the actual operation cumulative time of comp.1 or comp.2 will exceed 20,000 hours.

7-4. Night operation (Sound reduction control)

■ Overview

T he 'Night operation' function of RBC-AMSU5* remote control can be used. It reduces the sound of outdoor unit putting priority on quietness during night time operation, etc., and the operation time can be set.

■ Setup method

1 **Push the [MENU] button.**

2 **Push the [∧] / [∨] button to select "6.Night operation" on the menu screen, then push the " Set" [F2] button.**

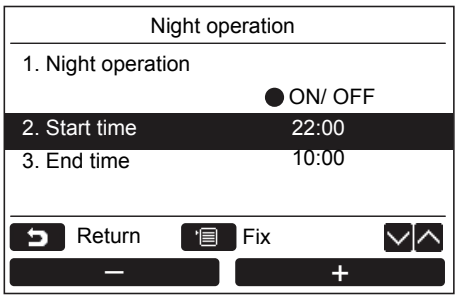
3 **Push the [∧] / [∨] button to select "1.Night operation" on the "Night operation" screen.**

4 **Push the " ←● " [F1] / " ●→ " [F2] button to select "ON" or "OFF".**
→ Select "ON" when the function is used.

5 **Push the [MENU] button.**
→ Push the [∧] / [∨] button to select "2.Start time" or "3.End time" for setting the Night operation time

* Adjust the clock before setting the Night operation.

To set the Night operation time



1 **Push the [∧] / [∨] button to select "2.Start time" on the "Night operation" screen.**

2 **Push the " - " [F1] / " + " [F2] button to set the time.**

3 **Push the [∧] / [∨] button to select "3.End time".**

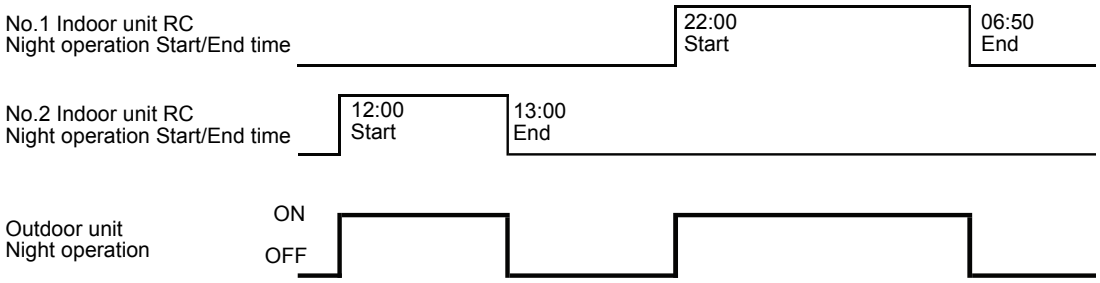
4 **Push the " - " [F1] / " + " [F2] button to set the time.**

5 **Push the [MENU] button.**
→ The screen returns to the menu screen.

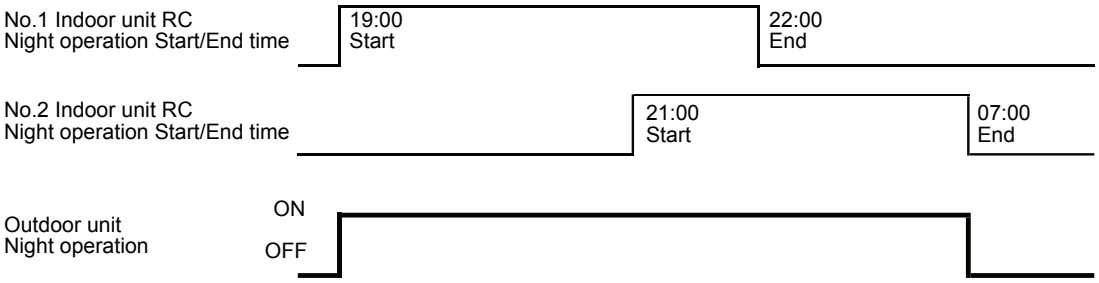
■ Control outline

- During the 'Outdoor unit sound reduction' control, the outdoor unit operates in the same way as in the 'Night operation Control' with optional control P.C.board. For the operation of outdoor unit during 'Night operation Control', please refer to '7-2-3-7. Night operation (sound reduction) Control'.
- Cooling / heating performance may be reduced a little because the operation priority is put on the quietness for the Night operation.
- " $^{z}z_{z}$ " appears on the detailed display when the Night operation is activated.
- The Night operation cannot be set on the Follower remote controller in the two remote controller system. " ⃠ No function" is displayed on the screen.
- The 24-hour operation of Night operation is performed when the end time is the same as the start time.
- After setting, the 'Night operation Control' operates according to the start time and the end time, even when the remote control is off.

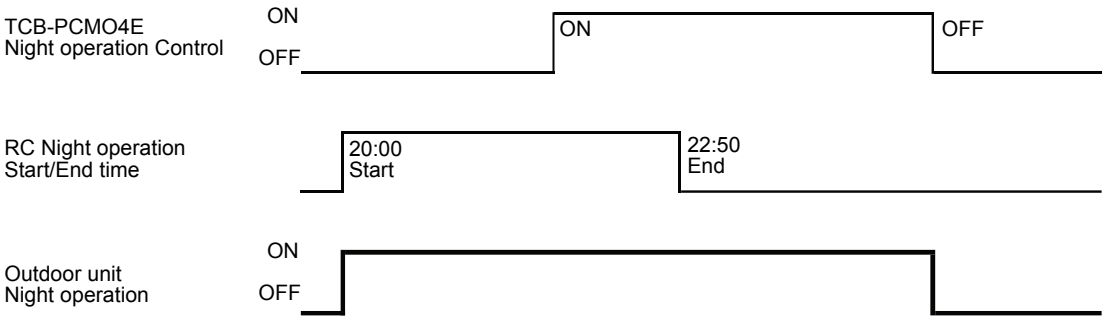
- The 'Night operation can be set by a number of remote controls. It operates according to the start time and the end time set by each remote controls.



- If the 'Night operation' time set by a number of remote controls overlaps, it starts at the start time set by any one of the remote controls, and ends when all remote controls reach the end time.



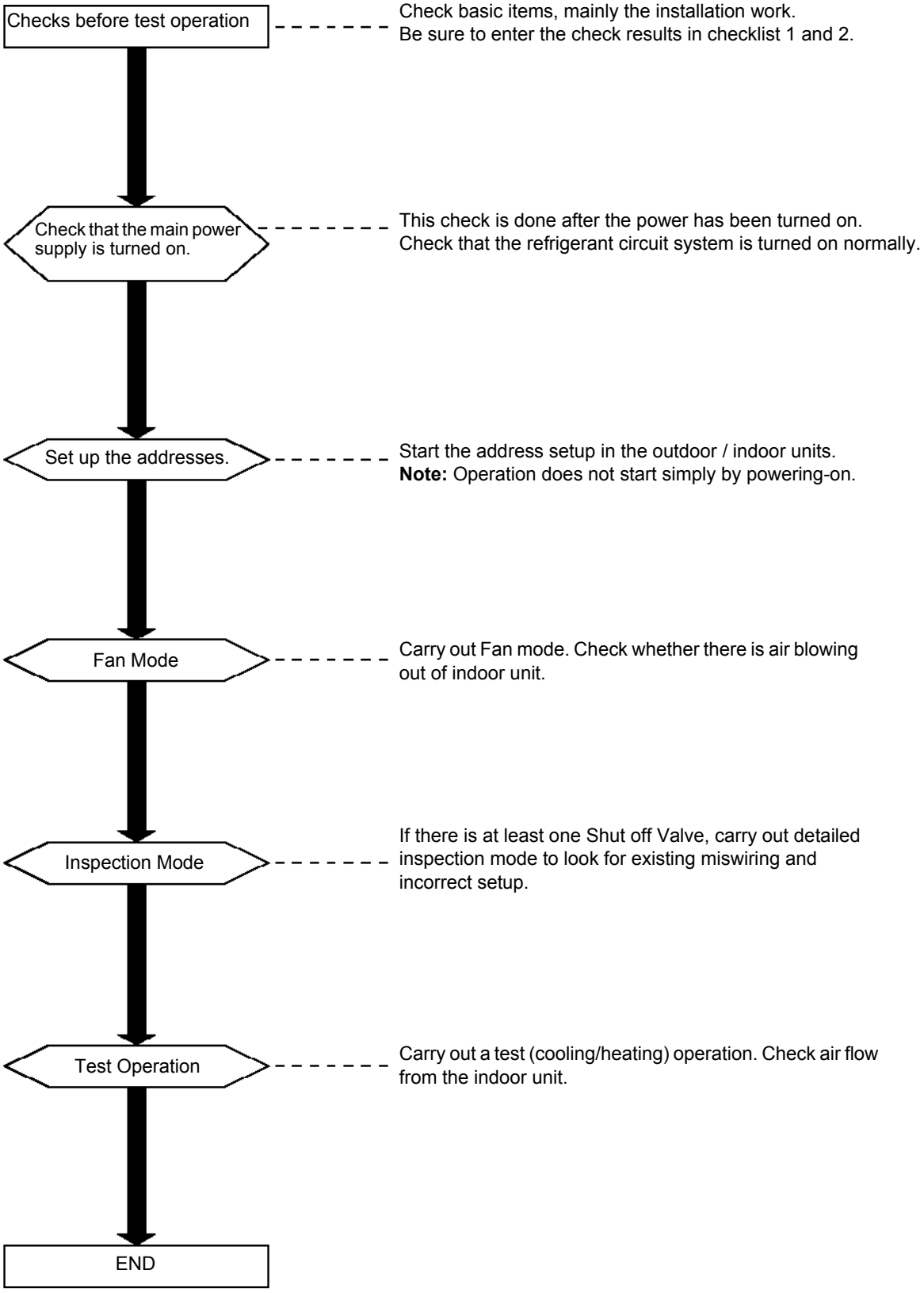
- The 'Night operation' with remote controls, and the 'Night Operation Control' with optional control P.C.board (TCB-PCMO4E) connected to the outdoor unit, can be used together. The outdoor unit operates in 'Night Operation' when either control is effective.



8 Test operation

8-1. Procedure and summary of test operation

A test operation is executed with the following procedure. When problems or an error occurs at any step, remove the causes of the problem or error referring to “9 Troubleshooting.”

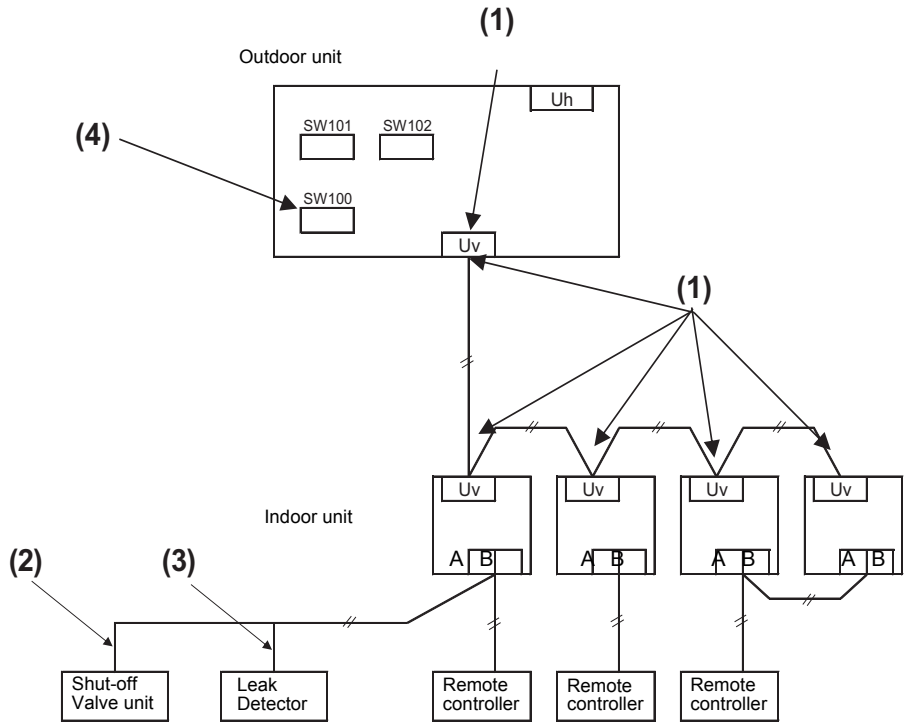


8-2. Check items before test operation (before powering-on)

Prior to the test operation, check the following items to verify there are no problems with the installation work.

Main check items for electric wiring

The communication system differs from previous period model air conditioners.
Check wiring points again carefully.



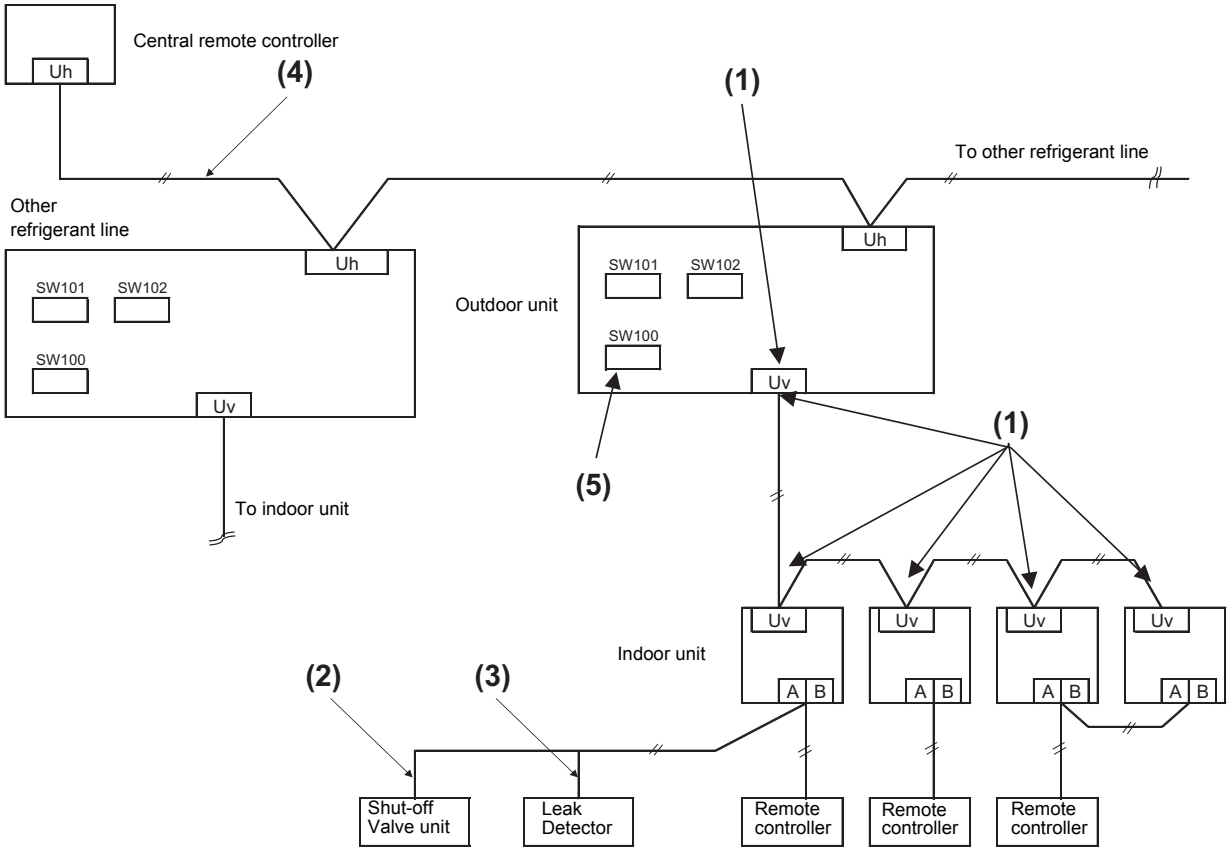
Main check items	Check
(1) Are the indoor and outdoor communication lines connected to the Uv terminals?	
(2*) Is the communication line between Shut-off Valve unit and indoor unit connected to A, B terminals?	
(3*) Is the communication line between Leak Detector and indoor unit connected to A, B terminals?	
(4*) Is the termination resistor (SW100-bit 2) on the interface P.C. board of the outdoor unit turned on?	
(5*) Is the end terminal of the shield wire earthed at the outdoor unit side?	

* Check item (2) or (3) only when the safety device (Shut-off Valve unit, Leak Detector) is connected.

NOTE

The figure above does not show all the electric wires.
For details, refer to the installation manuals for the outdoor unit, indoor unit, remote controller, or optional devices.

In the case that a central control system is connected (before address setup)



Main check items	Check
(1) Are the indoor and outdoor communication lines connected to the Uv terminals?	
(2*) Is the communication line between Shut-off Valve unit and indoor unit connected to A, B terminals?	
(3*) Is the communication line between Leak Detector and indoor unit connected to A, B terminals?	
(4) Is the communication line of the central control system connected to the outdoor unit Uh terminals of each refrigerant line? (Connecting to other than Uh terminals cause troubles.)	
(5) Is the termination resistor (SW100-bit 2) on the interface P.C. board of the outdoor unit turned on? * Does the smallest header unit of a system address turn on SW100-bit 1 (termination resistor of Uh line)? Does the outdoor unit of other refrigerant systems turn off SW100-bit 1? (See “7-4-3. Address Setup Procedure”)	
(6) Is the end terminal of the shield wire earthed at the outdoor unit side?	

* Check item (2) or (3) only when the safety device (Shut-off Valve unit, Leak detector) is connected.

NOTE

The figure above does not show all the electric wires.
For details, refer to the installation manuals for the outdoor unit, indoor unit, remote controller, or optional devices.

Checklist 1

Using Checklist 1, check that there are no problems with the installation work.

Is the capacity of the circuit breaker (Earth leakage breaker) appropriate?	Outdoor unit	[ ] A	Indoor unit	[ ] A	
Is the gauge of the power cable correct?	Outdoor unit	[ ] mm^2	Indoor unit	[ ] mm^2	
Is the control communication line correct?	Indoor-outdoor connection terminals (Uv) [ ] Central control system connection terminals (Uh) [ ]				
Is the power of indoor units supplied collectively?					
Is it grounded to earth?					
Is the resistance sufficient? (10 MΩ or higher)	[ ] MΩ or higher				
Is the main power voltage sufficient? (within 220-240 V ±10%)	[ ] V				
Is the diameter of connecting pipe correct?					
Is the branch kit correct?					
Is the water drain of the indoor unit arranged so that it flows without accumulation?					
Is the heat insulation of pipes sufficient? (connecting pipes, branch kit)					
Is there no short circuit of discharge air in the indoor / outdoor units?					
After an airtightness test of the pipes, are vacuuming and adding of refrigerant executed?					
Are the valves of all the outdoor units fully opened?		Gas side		Liquid side	
	Outdoor unit	[ ]		[ ]	

Checklist 2

Calculate the additional amount of refrigerant from the following:

Additional refrigerant charge amount at local site	=	{ Real length of liquid pipe	X	Additional refrigerant charge amount per 1 m liquid pipe (Table 1)	+	Corrective amount of refrigerant depending on the indoor units (Table 2)	+	Compensation by outdoor HP (Table 3) }	X	**0.9**
		(A)				(B)		(C)		

Firstly enter the total length for each liquid pipe in the following table and then calculate the additional amount of refrigerant by pipe length.

(Table 1) Additional amount of refrigerant by pipe length

Pipe diameter on the liquid side	Standard amount of refrigerant kg/m	Total pipe length on each liquid side m	Additional amount of refrigerant pipe diameter on each liquid side kg
DIA.6.4	0.025 ×	=	kg
DIA.9.5	0.055 ×	=	kg
		Additional amount of refrigerant by pipe length (A)	kg

Next, refer to the following table for the corrective amount of refrigerant depending on the indoor units (B).

(Table 2) Corrective amount of refrigerant depending on the indoor units

Unit: kg

		Capacity rank	003	005	007	008	009	011	012	013	015	017	018	020	024	027	030	034	036	042	048	056
		Capacity code (Equivalent to HP)	0.3	0.6	0.8	0.9	1.0	1.1	1.25	1.5	1.7	1.85	2.0	2.25	2.5	3.0	3.2	3.6	4.0	4.5	5.0	6.0
Indoor unit model name	4-way cassette	MMU-UP****H*	–	–	–	–	0.4	–	0.4	–	1.2	–	1.2	–	1.2	1.2	1.2	–	1.2	–	1.2	1.2
		MMU-UP****HP*	–	–	–	–	0.4	–	0.4	–	0.8	–	0.8	–	0.8	0.8	0.8	0.8	1.2	1.2	1.2	1.2
		MMU-UP****MH*	–	0.3	0.4	–	0.4	–	0.4	–	0.6	–	0.6	–	–	–	–	–	–	–	–	–
	2-way cassette	MMU-UP****WH*	–	–	0.4	–	0.4	–	0.4	–	0.5	–	0.7	–	0.7	0.7	0.7	–	1.1	–	1.1	1.1
	1-way cassette	MMU-UP****YH	0.4	0.4	0.4	–	0.4	–	0.4	–	0.4	–	0.4	–	0.5	0.5	–	–	–	–	–	–
		MMU-UP****SH*	–	–	–	–	–	–	–	–	0.5	–	0.5	–	0.6	–	–	–	–	–	–	–
	Duct	MMD-UP****BH*	–	0.5	0.5	–	0.5	–	0.5	–	0.5	–	0.5	–	0.7	0.7	0.7	0.7	1.1	1.1	1.1	1.1
		MMD-UP****SPH*	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.7	0.7	0.7	–	–	–	–	–	–
		MMD-UP****H*	–	–	–	–	–	–	–	–	–	–	0.7	–	0.7	0.7	–	–	1.1	–	1.1	1.1
	Under-ceiling	MMC-UP****H*	–	–	–	–	–	–	–	–	–	–	0.6	–	0.6	0.8	0.8	–	1.2	–	1.2	1.2
	High wall	MMK-UP****H*	0.3	0.3	0.3	–	0.3	–	0.3	–	0.7	–	0.7	–	0.7	0.9	0.9	–	0.9	–	–	–
		MMK-UP****DH*	–	0.3	0.3	–	0.3	–	0.3	–	0.4	–	0.4	–	–	–	–	–	–	–	–	–

	Indoor unit model	Capacity rank	B (Corrective amount of refrigerant) (kg)
Unit 1			kg
Unit 2			kg
Unit 3			kg
Unit 4			kg
Unit 5			kg
Unit 6			kg
Unit 7			kg
Unit 8			kg
Unit 9			kg
Unit 10			kg
Unit 11			kg
Unit 12			kg
Unit 13			kg
	Corrective amount of refrigerant depending on the indoor units (B)		kg

(Table 3) Compensation by outdoor HP

Outdoor unit type	MUG0401	MUG0501	MUG0601
Compensation by outdoor HP (kg)	- 1.6	- 1.6	- 1.6

Lastly, add 0.9 times the total of the additional amount of refrigerant by pipe length (A), the corrective amount of refrigerant depending on the indoor units (B) and the corrective amount of refrigerant by outdoor HP (C).

<Additional amount of refrigerant>

Additional amount of refrigerant by pipe length (A)	kg
Corrective amount of refrigerant depending on the indoor units (B)	kg
Compensation by outdoor HP (C)	kg
Additional refrigerant charge amount at local site {(A) + (B) + (C)} x 0.9	kg

8-3. Check at main power-on

After turning on the main power of the indoor units and outdoor unit in the refrigerant line to conduct a test operation, check the following items in each outdoor and indoor unit.
(After turning on the main power, be sure to check in order: indoor unit → outdoor unit.)

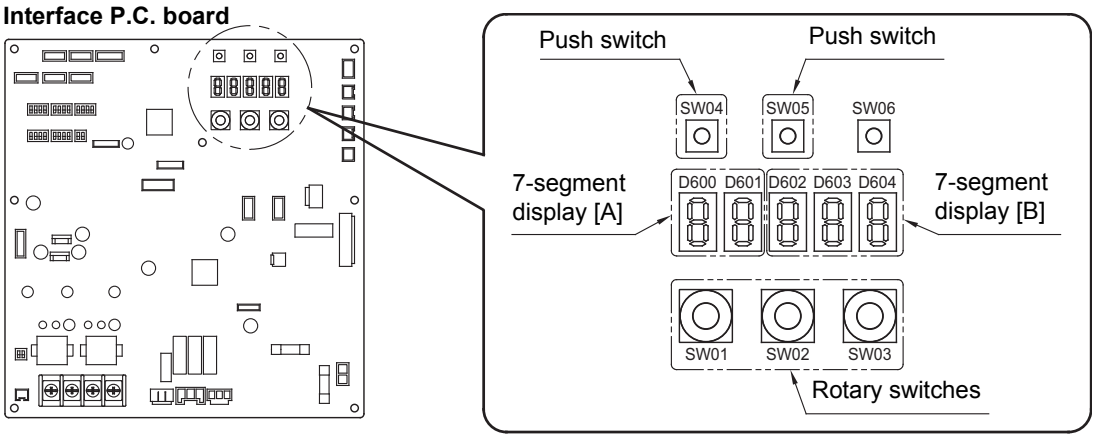
<Check on the outdoor unit>

(1) Check that all the rotary switches, SW01, SW02, and SW03, on the interface P.C. board of the outdoor unit are set to "1."

(2) If another check code is displayed on the 7-segment display [B], remove the cause of the problem referring to Section, "9 Troubleshooting".

(3) Check that "L08" is displayed on the 7-segment display [B] on the interface P.C. board of the outdoor unit. (L08: Indoor address not set up)

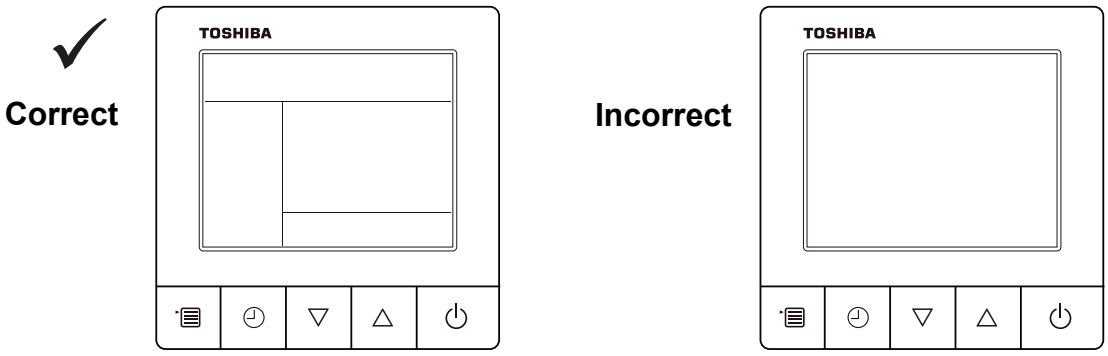
(If the address setup operation has already been completed during servicing, etc., the above check code is not displayed, and only "U1" is displayed on the 7-segment display [A].)



<Check on the indoor unit>

(1) Display check on the remote controller (in the case of a wired remote controller)

Check that a frame, as shown in the following figure at left, is displayed on the LC display section of the remote controller.



If no frame is displayed, as shown in the above figure at right, the remote controller does not have a normal supply of power; check the following items.

- Check the power supply of the indoor unit.
- Check the cabling between the indoor unit and the remote controller.
- Check whether there is a cutoff of wire around the indoor control P.C. board or not, and check for connection failures of the connectors.
- Check for failure of the transformer for the indoor electrical control box.
- Check for failure of the indoor control P.C. board.

8-4. Address setup

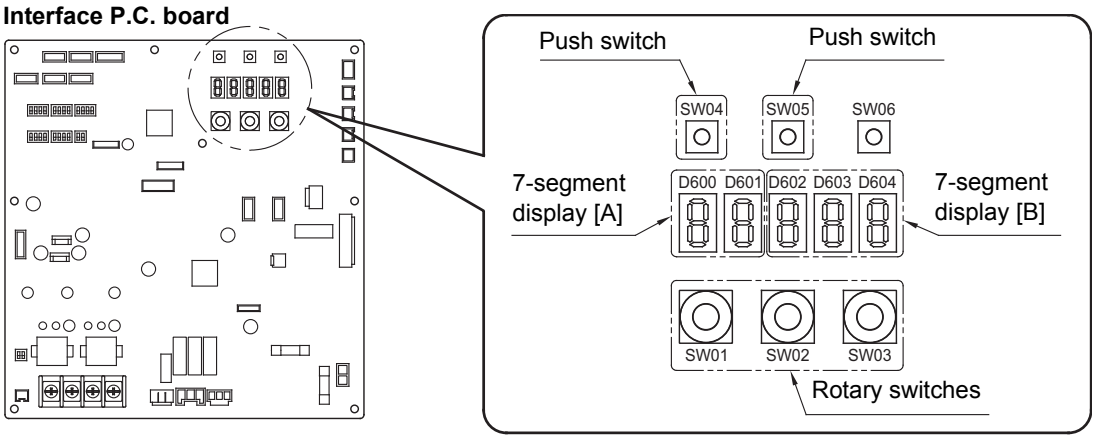
This product requires address setup before operation.
Follow this procedure for address setup.

8-4-1. Precautions

(1) Address setup is not performed simply by turning on the power supply.
(2) For indoor units, address setup can be done either by manual address setup or by automatic address setup:
Automatic address setup: Setup from SW06 on the interface P.C. board of the outdoor unit
Manual address setup: Setup from the wired remote controller. (For details, refer to "8-4-3. Address setup procedure.")
(3) Automatic setup usually takes about 5 minutes per line. In some cases, however, it may take up to 10 minutes.
(4) It is unnecessary to operate the air conditioner to achieve address setup.

8-4-2. Address setup and check procedure

<table>
<tr><th>Procedure</th><th>Item</th><th>Operation and check contents</th></tr>
<tr><td>1</td><td>Outdoor unit setting</td><td>Turn on DIP switch 2 of SW100.</td></tr>
<tr><td>2</td><td>Indoor unit power-on</td><td>Turn on the power of the indoor unit for the refrigerant line for which the address is to be set up.</td></tr>
<tr><td>3</td><td>Outdoor unit power-on</td><td>Turn on the power of the outdoor unit for the refrigerant line for which the address is to be set up.</td></tr>
<tr><td>4</td><td>7-segment display check</td><td>Check that "L08" is displayed on the 7-segment display [B] on the interface P.C. board of the outdoor unit in the system where the address is to be set up.</td></tr>
<tr><td>5</td><td>Address setup start</td><td>Confirm the items in "8-4-3. Address setup procedure," and then set up the address according to the operation procedure.
(Be careful to note that the setup operation may differ in group control and central control systems.)
Note:
The address cannot be set up if switches are not operated.</td></tr>
<tr><td>6</td><td>Display check after setup</td><td>• After address setup, "U1" " " is displayed on the 7-segment display.
• If an error code is displayed on the 7-segment display [B], remove the cause of the problem referring to "9 Troubleshooting."</td></tr>
<tr><td>7</td><td>Communication setting start</td><td>Confirm the items in "8-4-3. Address Setup Procedure," and then set up the communication according to the operation procedure.
Note:
The address cannot be set up if switches are not operated.</td></tr>
<tr><td>8</td><td>Display check after communication setup</td><td>• After communication setup, "c.c." "Fin" is displayed on the 7-segment display.
• If a unit that has already been set for communication is connected, it cannot be set correctly.
In this case, clear the communication settings and set again.</td></tr>
<tr><td>9</td><td>System information check after setup</td><td>Using the 7-segment display function, check the system information of the scheduled system.
(This check is executed on the interface P.C. board of the outdoor unit.)
<table>
<tr><th></th><th colspan="3">Rotary switch setup</th><th colspan="2">7-segment display</th></tr>
<tr><td></td><td>SW01</td><td>SW02</td><td>SW03</td><td>[A]</td><td>[B]</td></tr>
<tr><td>System capacity</td><td>1</td><td>2</td><td>3</td><td>[Number of horsepower]</td><td>[H P]</td></tr>
<tr><td>Number of cennected indoor units</td><td>1</td><td>4</td><td>3</td><td>[Number of connected units]</td><td></td></tr>
<tr><td rowspan="2">Communication Type</td><td rowspan="2">2</td><td rowspan="2">16</td><td rowspan="2">2</td><td colspan="2">[Type]</td></tr>
<tr><td colspan="2">Type : 0=TCC-Link, 1=TU2C-Link</td></tr>
</table>
After the above checks, return rotary switches SW01, SW02, and SW03 to 1/1/1.</td></tr>
</table>

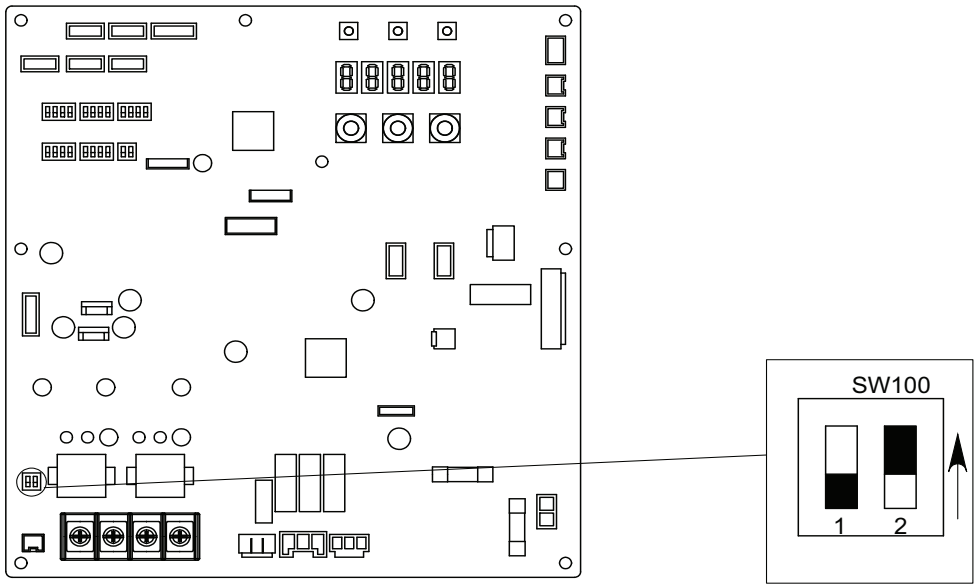


◆Before address setup

It is necessary to set the DIP-SW on the outdoor unit interface P.C. board.
Follow the steps below to set the DIP switch on the outdoor unit interface P.C. board.

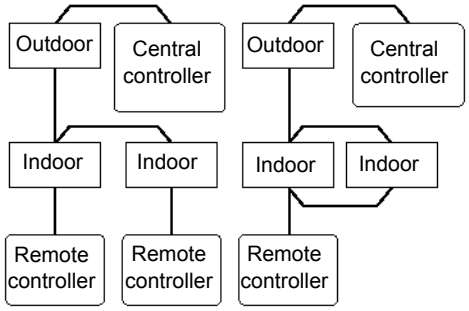
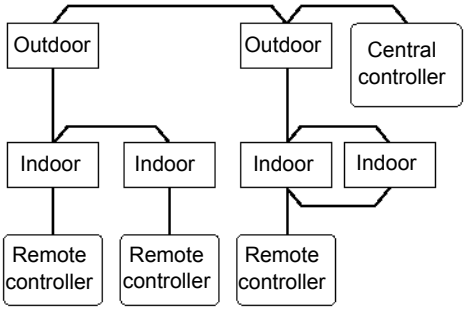
1. Outdoor unit setting

Turn on DIP-SW 2 of SW100. (Termination resistor of Uv line)



2. Line (system) address setting

For the central control among two or more refrigerant lines

(Example)	controlling a single refrigerant line centrally	controlling 2 or more refrigerant lines centrally
System wiring diagram		
Line (system) address setting	No	Set the address

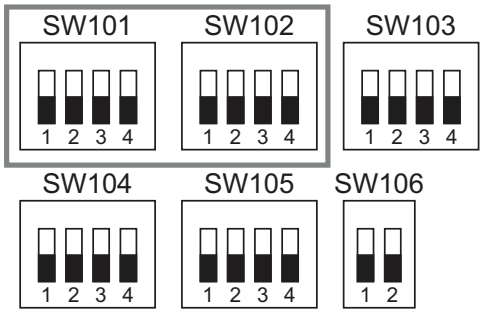
(1) Set a line (system) address for each system using SW 101 and 102 on the interface P.C. board on the outdoor unit of each system. (Factory default: Address 1)

NOTE

Be sure to set different address on each system. Do not use a same address as another system (another refrigerant line or the DI-SDI series).

Interface P.C. board on the outdoor unit

Line address switches on the outdoor interface PC board (O : switch on, X : switch off)



Line (system) address	SW101				SW102			
	1	2	3	4	1	2	3	4
1		x	x	x	x	x	x	x
2		x	x	x	x	x	x	○
3		x	x	x	x	x	○	x
4		x	x	x	x	x	○	○
5		x	x	x	x	○	x	x
6		x	x	x	x	○	x	○
7		x	x	x	x	○	○	x
8		x	x	x	x	○	○	○
9		x	x	x	○	x	x	x
10		x	x	x	○	x	x	○
11		x	x	x	○	x	○	x
12		x	x	x	○	x	○	○
13		x	x	x	○	○	x	x
14		x	x	x	○	○	x	○

Line (system) address	SW101				SW102			
	1	2	3	4	1	2	3	4
15		x	x	x	○	○	○	x
16		x	x	x	○	○	○	○
17		x	x	○	x	x	x	x
18		x	x	○	x	x	x	○
19		x	x	○	x	x	○	x
20		x	x	○	x	x	○	○
21		x	x	○	x	○	x	x
22		x	x	○	x	○	x	○
23		x	x	○	x	○	○	x
24		x	x	○	x	○	○	○
25		x	x	○	○	x	x	x
26		x	x	○	○	x	x	○
27		x	x	○	○	x	○	x
28		x	x	○	○	x	○	○

Note: if you set it to something other than the table, the system address will be 28.
DIP-SW 1 of SW101 is for outdoor unit setting, so it is not used for system address setting.

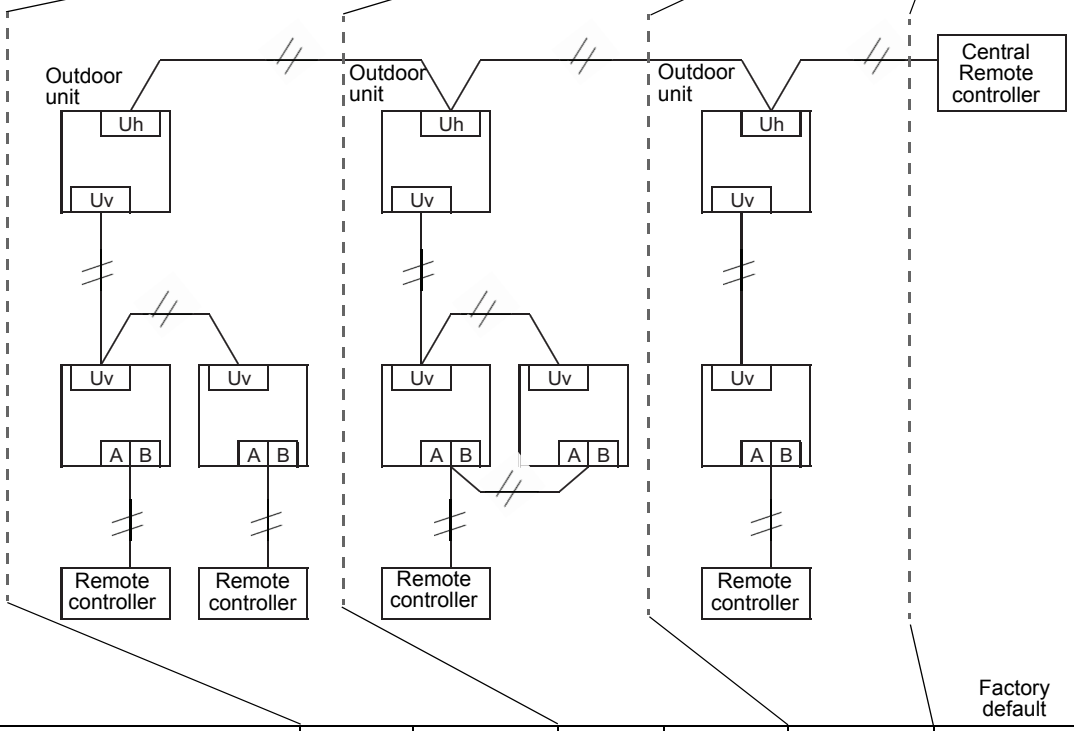
(2) After completing address setting of all systems, turn ON DIP switch 1 of SW100 on the outdoor unit interface P.C. board of the smallest system address number.

Switch setting (setting example when controlling 2 or more refrigerant lines centrally)

Outdoor units (setting manually)

* The items in bold font must be set manually.

Outdoor unit's interface P.C. board	Outdoor unit	Outdoor unit	Outdoor unit	Factory default
SW101 Bit2-4, SW102 Bit1-4 (Line (system) address)	**1**	**2**	**3**	1
SW100 Bit1 (Termination resistor of central control line (Uh))	ON	**OFF**	**OFF**	ON
SW100 Bit2 (Termination resistor of indoor and outdoor communication line(Uv))	ON	ON	ON	ON



						Factory default
Line (system) address	1	1	2	2	3	Un
Indoor unit address	1	2	1	2	1	Un
Group address	0	0	1	2	0	Un

8-4-3. Address setup procedure

1. Automatic address setup

Follow the steps below to set up the address by the automatic operation.

Only when the addresses of all indoor units in the same system are not set, the following addresses will be set automatically.

- System address (indoor unit DN code[12]) • • • The system address of the indoor units are automatically set to the same number as the system address set in both SW101 and 102 of the outdoor unit interface P.C. board.
- Indoor address (indoor unit DN code[13]) • • • Indoor address automatically set in order from 1.
- Group address (indoor unit DN code[14]) • • • The host and guest group addresses (header =1, follower = 2) are automatically set for the indoor units connected in group by remote controller.

1 **Turn on indoor units first, and then turn on outdoor unit.**

2 **About one minute after turning the power on, confirm that the 7-segment display on the interface P.C. board of the outdoor unit indicates** **U. 1. Err (U. 1. flash)** **and** **L08** **alternately at 1 second intervals.**

3 **Press SW06 for more than 1 second to start the automatic address setting.**
(It may take up to 10 minutes (normally about 5 minutes) to complete one line's setting.)

4 **The 7-segment display indicates** **Auto 1 → Auto 2 → Auto 3** **.**
The setting is complete when the display changes to **U. 1. - - - (U. 1. flash)** **or** **U. 1. - - - (U. 1. light)** **.**

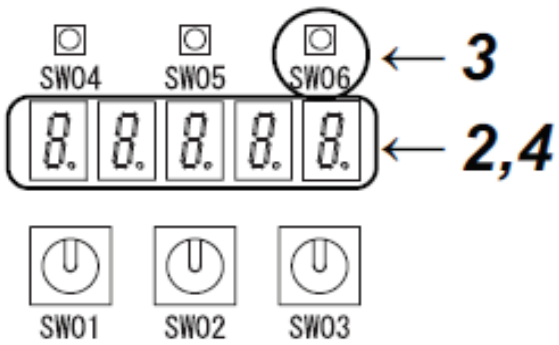
5 **Repeat steps 2 to 4 for other refrigerant lines.**

6 **Set the central control address.**
(For the setting of the central control address, refer to the installation manuals of the central control devices.)

NOTE

"L02" is displayed when an indoor unit incompatible with R32 refrigerant is connected. If so ,please check whether the connected indoor unit is compatible with A2L refrigerant.

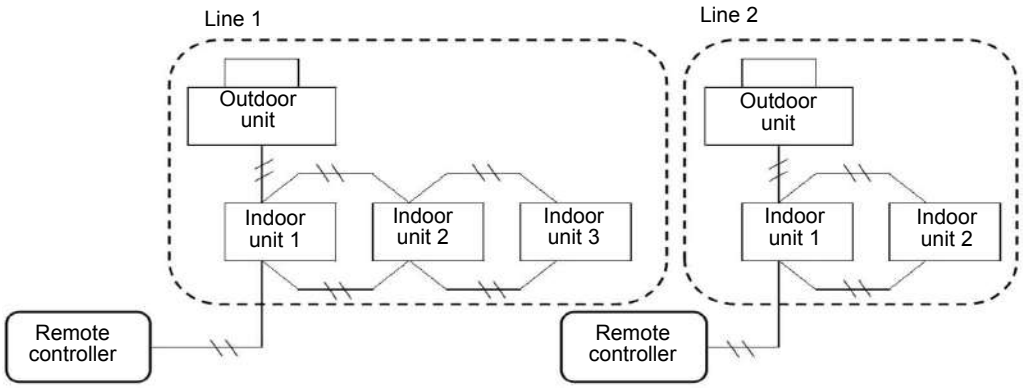
Interface P.C. board on the outdoor unit



2. Manual address setting with the remote controller

With indoor wiring work completed and outdoor wiring work not done—in cases where indoor unit addresses are decided in advance from the wired remote controller, or where addresses are change after address setup.

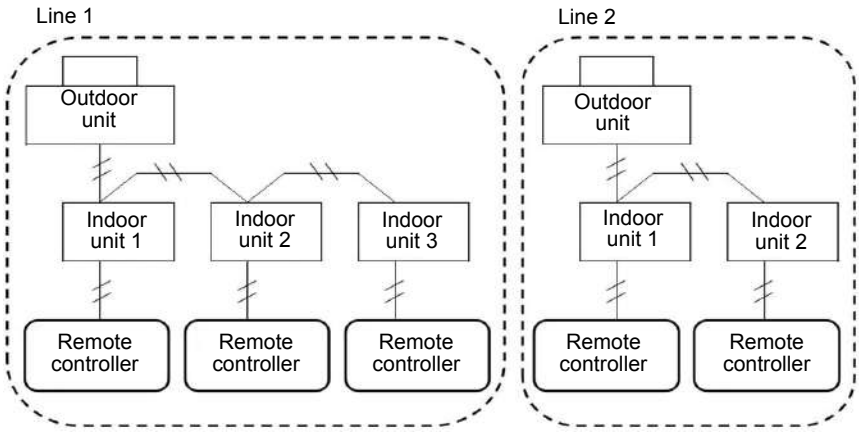
(Wiring example of 2 refrigerant lines)



Line (system) address	1	1	1		2	2
Indoor unit address	1	2	3		1	2
Group address	1 Header	2 Follower	2 Follower		1 Header	2 Follower

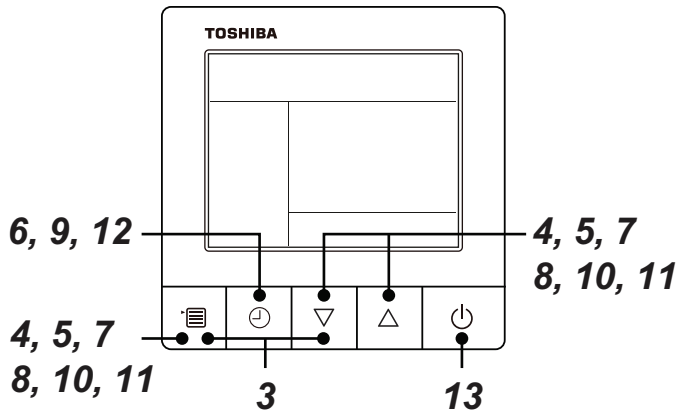
For the above example, disconnect the remote controller connections between the indoor units and connect a wired remote controller individually before manual address setup.

(Wiring during manual address setup)



After address setup, return to the original wiring over remote controllers.

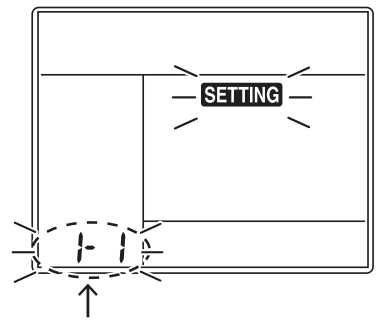
<RBC-ASCU1*>

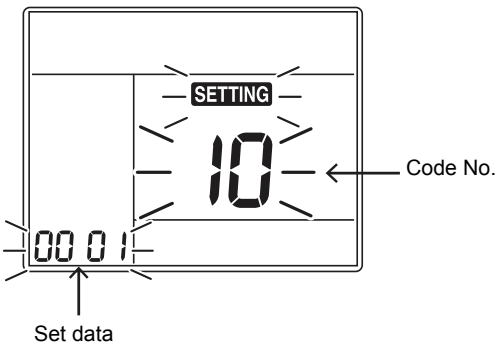


1 **Pair the indoor unit to set and the remote controller one-to-one.**

2 **Turn on the power.**

3 **Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.**
After a while, the display flashes as shown in the figure.
"ALL" is displayed as indoor unit numbers during initial communication immediately after the power has been turned on.





<Line (system) address>

4 **Push the menu button to make Code No. flash. Change Code No. [12] with [▽] [△] setting button.**

5 **Push the menu button to make Set data [∗∗∗∗] flash. Push the [▽] [△] buttons repeatedly to change the value indicated in the SET DATA section.**

6 **Push the Timer off button.**
(When the display changes from [– –] to Set data [∗∗∗∗] flashing, the setup is completed.)

<Indoor unit address>

7 **Push the menu button to make Code No. flash. Change Code No. [13] with [▽] [△] setting button.**

8 **Push the menu button to make Set data [∗∗∗∗] flash. Push the [▽] [△] buttons repeatedly to change the value indicated in the SET DATA section.**

9 **Push the Timer off button.**
(When the display changes from [– –] to Set data [∗∗∗∗] flashing, the setup is completed.)

<Group address>

10 **Push the menu button to make Code No. flash. Change Code No. [14] with [▽] [△] setting button.**

11 **Push the menu button to make Set data [∗∗∗∗] flash. Push the [▽] [△] buttons repeatedly to change the value indicated in the SET DATA section.**

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

12 **Push the Timer off button.**
(When the display changes from [– –] to Set data [∗∗∗∗] flashing, the setup is completed.)

13 **When all the settings have been completed, push ON/OFF button to determine the settings. SETTING flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while SETTING is flashing.)**

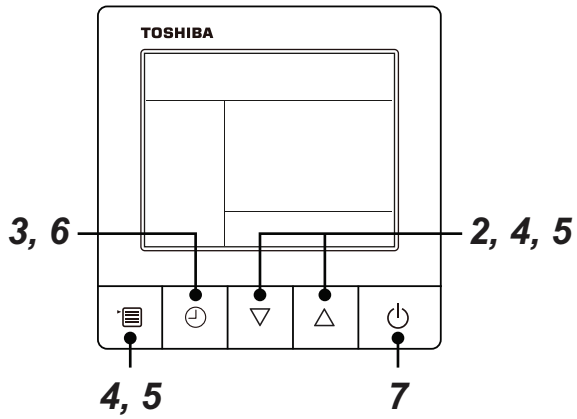
14 **To change settings of another indoor unit, repeat from Procedure 1 .**

NOTE

"L02" is displayed when an indoor unit incompatible with R32 refrigerant is connected.
If so ,please check whether the connected indoor unit is compatible with A2L refrigerant.

3. Changing the indoor unit address in same group address using a remote controller

The method to change the address of indoor units which are connected with same group address. (The method is available when the addresses have already been set automatically.)



(Execute it while the units are stopped.)

1 **Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.**
(If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)

2 **Each time [▽] [△] setting button is pushed, indoor unit numbers in the group control change cyclically.**
Select the indoor unit to change settings for.
(The fan and louvers of the selected indoor unit are activated.)
(The fan of the selected indoor unit is turned on.)

3 **Push the Timer off button.**

4 **Push the menu button to make Code No. flash. Change Code No. to 13 with [▽] [△] setting button.**

5 **Push the menu button to make Set data [****] flash.**
Push the [▽] [△] buttons repeatedly to change the value indicated in the SET DATA section to that you want.

6 **Push the Timer off button.**
(When the display changes from [– –] to Set data [****] flashing, the setup is completed.)

7 **When all the settings have been completed, push ON/OFF button to determine the settings.**

"SETTING" flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while "SETTING" is flashing.)

8 **To change settings of another indoor unit, repeat from Procedure 1.**

NOTE

"L02" is displayed when an indoor unit incompatible with R32 refrigerant is connected.
If so ,please check whether the connected indoor unit is compatible with A2L refrigerant.

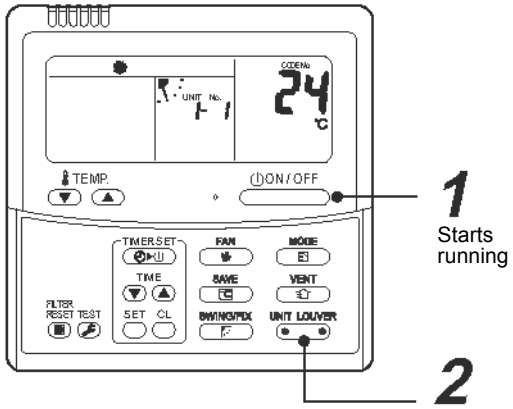
■ Confirming the indoor unit addresses and the position of an indoor unit using the remote controller

◆ Confirming the numbers and positions of indoor units

To see the indoor unit address of an indoor unit having location data.

▼In the case of individual units (the indoor unit corresponds to the wired remote controller one to one), or in the case of one group control unit.

<RBC-AMT*>**



(Execute it while the units are running.)

<RBC-ASCU11-*>

There is no such function in this remote controller.

1 **Push the ON/OFF button if the units stop.**

2 **Push the UNIT LOUVER button (left side of the button).**

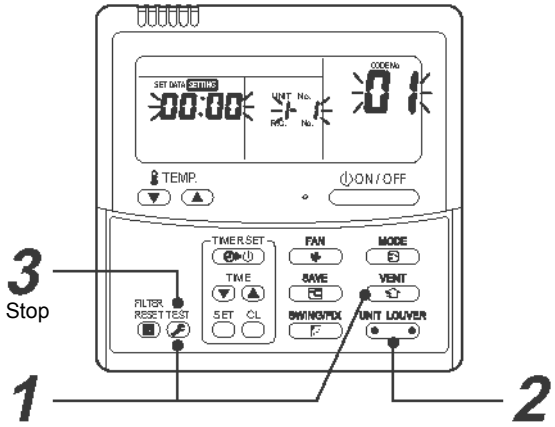
A unit numbers 1-1 is indicated on the LCD (it will disappear after a few seconds). The indicated number shows the system address and indoor unit address of the unit.

When 2 or more indoor units are connected to the remote controller (group-controlled units), a number of other connected units appears each time you push the UNIT LOUVER button (left side of the button).

To find an indoor unit's position from its address

▼When checking unit numbers controlled as a group

<RBC-AMT*>**



(Execute it while the units are stopped.)

The indoor unit numbers in a group are indicated one after another. The fan and louvers of the indicated units are activated.

1 **Push and hold the VENT and TEST buttons at the same time for more than 4 seconds.**

- ALL appears on UNIT No. on the LCD display.
- The fans and louvers of all the indoor units in the group are activated.

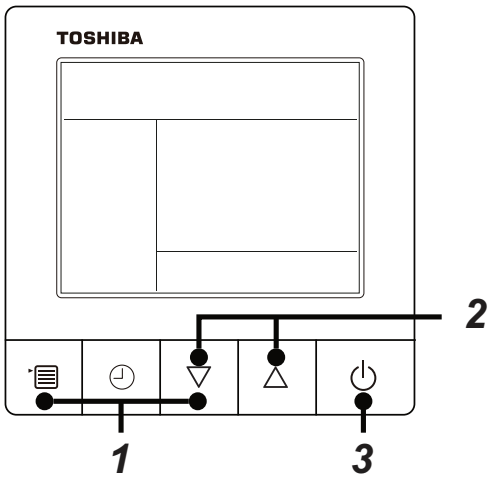
2 **Push the UNIT LOUVER button (left side of the button). Each time you push the button, the indoor unit numbers are indicated one after another.**

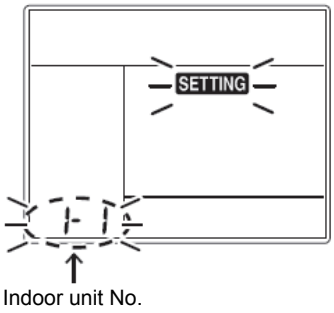
- The first-indicated unit number is the address of the outdoor unit.
- Only the fan and louvers of the indicated indoor unit are activated.

3 **Push the TEST button to finish the procedure.**

All the indoor units in the group stop.

<RBC-ASCU11-*>





1 **Push and hold the [menu + ▽] buttons at same time for more than 10 seconds. e.g.) A unit number 1-1 is indicated on the LCD. The indicated number shows the system address and indoor unit address of the unit.**

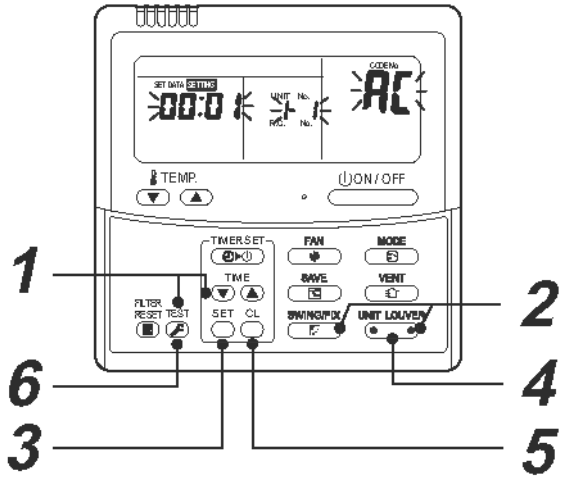
2 **When 2 or more indoor units are connected to the remote controller (group-controlled units), a number of other connected units appears each time you push the [▽] or [△] buttons.**

3 **Push the [ON/OFF] button, return to the normal mode.**

▼To check all the indoor unit addresses using an arbitrary wired remote controller.
(When communication wirings of 2 or more refrigerant lines are interconnected for central control)

<RBC-AMT*>**

There is no such function in this remote controller.



(Execute it while the units are stopped.)

You can check indoor unit addresses and positions of the indoor units in a single refrigerant line.
When an outdoor unit is selected, the indoor unit numbers of the refrigerant line of the selected unit are indicated one after another and the fan and louvers of the indicated indoor units are activated.

1 **Push and hold the TIME ▼ and TEST buttons at the same time for more than 4 seconds. At first, the line 1 and CODE No. AC (Address Change) are indicated on the LCD display. (Select an outdoor unit.)**

2 **Push the UNIT LOUVER (left side of the button) and SWING/FIX buttons repeatedly to select a system address.**

3 **Push the SET button to confirm the system address selection.**

- The address of an indoor unit connected to the selected refrigerant line is indicated on the LCD display and its fan and louvers are activated.

4 **Push the UNIT LOUVER button (left side of the button). Each time you push the button, the indoor unit numbers of the selected refrigerant line are indicated one after another.**

- Only the fan and louvers of the indicated indoor unit are activated.

<RBC-ASCU11-*>

There is no such function in this remote controller.

■ Procedure to setup address 65 to 128 from the remote controller

Under TCC-Link settings (factory shipping settings), setting addresses from 65 and above are not available from the remote controller. Setting the indoor address or the zone address to 65 to 128 must be done under TU2C-Link settings, which can be performed by the procedures shown below.

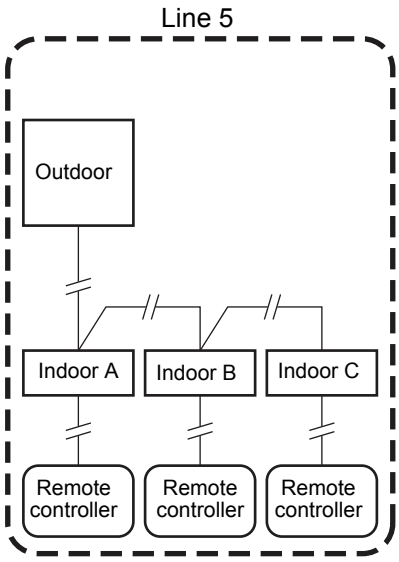
* Be sure that all of the outdoor units, indoor units, and the remote controller in the same system support TU2C-Link.
  TU2C-Link communication is not available if any of these do not support TU2C-Link.

Method 1 (Changing the address after automatic address setup)

Follow the procedures below if the power supply and communication line wiring work has been completed.

1) Turn the power for every outdoor unit and indoor unit on.
2) Perform "Automatic address setup" from the outdoor unit.
   The system address, indoor address, and the group address will be set for every indoor unit in the system automatically.
3) Perform "Communication setting" from the outdoor unit.
   TU2C-Link will be set if all the outdoor units, indoor units, and the remote controller support TU2C-Link.
   (Outdoor DN code (O.DN) [082]=0003, indoor DN code (I.DN) [FC]=0003)
   For the units in the farthest rooms, the indoor termination resistor will automatically be set to on.
   (Indoor DN code (I.DN) [1FC]=0001 (ON))
4) Change the indoor address (or the group address) to any address within 1 to 128 according to the method to change the indoor address using the remote controller.

<Example> When the indoor address of line 5 is set to 126-128



2) After the automatic address setting		Indoor A	Indoor B	Indoor C
Line (system) address	I.DN [12]	**0005**	**0005**	**0005**
Indoor address	I.DN [13]	**0001**	**0002**	**0003**
Group address	I.DN [14]	**0001**	**0002**	**0002**
Communication setting	I.DN [FC]	0000	0000	0000
Indoor termination resistor	I.DN [1FC]	0000	0000	0000

3) After the automatic communication settings

Line (system) address	I.DN [12]	0005	0005	0005
Indoor address	I.DN [13]	0001	0002	0003
Group address	I.DN [14]	0001	0002	0002
Communication setting	I.DN [FC]	**0003**	**0003**	**0003**
Indoor termination resistor	I.DN [1FC]	0000	0000	**0001**

4) After changing the indoor address with the remote control.

Line (system) address	I.DN [12]	0005	0005	0005
Indoor address	I.DN [13]	**0126**	**0127**	**0128**
Group address	I.DN [14]	0001	0002	0002
Communication setting	I.DN [FC]	0003	0003	0003
Indoor termination resistor	I.DN [1FC]	0000	0000	0001

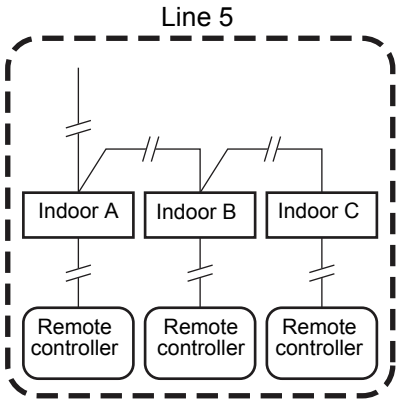
Method 2 (Setting the address manually from the remote controller)

Follow the procedure below if setting the indoor unit address manually from the remote controller is desired due to the indoor address not being set (factory default) and automatic address setting not being possible for reasons such as the outdoor unit installation not being installed.

<RBC-AMSU51∗>

1) Arrange one indoor unit and one remote controller set to 1 by 1.
   Turn on the power.
2) After confirming that "SETTING" is blinking on the remote controller, turn the screen to the "Field setting menu" by pushing the "MENU" and " ∨ " together for 4 seconds or longer.
   Select the "7. DN setting" using the " ∧ " and " ∨ " button and push the "F2(Set)" button.
   Select the "Indoor unit" using the " ∧ " and " ∨ " button and push the "F2(Set)" button.
3) Set the Indoor Unit Function Code (I.DN) to [14], and the Data to [0000] (Individual).
   • Set the group address to (individual).
4) Set the Indoor Unit Function Code (I.DN) to [FC], and the Data to [0003](Individual).
   • Set the system to TU2C-Link communication.
5) Push the "MENU" button and complete the settings for the time being.
6) After the remote controller reboots, turn the screen to the "Field setting menu" by pushing the "MENU" and " ∨ " together for 4 seconds or longer.
7) Bring up the "DN setting" screen by following the same procedure as in 2) above, and change to the Function Code (DN) I.DN setting screen of “Indoor unit”.
8) Set the Line address by setting the Indoor Unit Function Code (I.DN) to [12].
9) Set the indoor unit address by setting the Indoor Unit Function Code (I.DN) to [13].
10) When connecting to the remote controller group control, Set the DN code to [14], Data [0001] (header) for the header indoor unit, and the DN code to [14], Data [0002] (follower) for the follower indoor unit.
11) If necessary, set the zone address to the Indoor Unit Function Code (I.DN) to [03].

<Example> When the indoor address of line 5 is set to 126-128



Before making settings (At shipment)		Indoor A	Indoor B	Indoor C
Line (system) address	I.DN [12]	00Un	00Un	00Un
Indoor address	I.DN [13]	00Un	00Un	00Un
Group address	I.DN [14]	00Un	00Un	00Un
Communication setting	I.DN [FC]	0000	0000	0000
Indoor termination resistor	I.DN [1FC]	0000	0000	0000

After setting 3) and 4)

Line (system) address	I.DN [12]	00Un	00Un	00Un
Indoor address	I.DN [13]	00Un	00Un	00Un
Group address	I.DN [14]	**0000**	**0000**	**0000**
Communication setting	I.DN [FC]	**0003**	**0003**	**0003**
Indoor termination resistor	I.DN [1FC]	0000	0000	0000

After setting 8),9) and 10) (11))

Line (system) address	I.DN [12]	**0005**	**0005**	**0005**
Indoor address	I.DN [13]	**0126**	**0127**	**0128**
Group address	I.DN [14]	**0001**	**0002**	**0002**
Communication setting	I.DN [FC]	0003	0003	0003
Indoor termination resistor	I.DN [1FC]	0000	0000	0000

<Setting the indoor termination resistor manually (if the farthest room is known)>

12) Set the Indoor Unit Function Code I.DN [1FC] to "0001" (indoor termination resistor ON).
13) After installing the outdoor unit, set the Outdoor Unit Function Code O.DN [82] to "0003" (TU2C-Link) for the outdoor unit.
14) Reset the outdoor / indoor unit power supply to complete the setting.

<Setting the indoor termination resistor automatically (if the farthest room is unknown)>

The indoor termination resistor settings will be available after installing the outdoor unit and performing the communication method settings from the outdoor unit, thus the farthest room will be detected automatically, and indoor termination resistor can be set.

Make sure that this is done after 11), **since the communication method settings has to be performed after changing back to TCC-LINK settings**.

15) Clear the communication method from the outdoor unit after installing the outdoor unit.
All the communication method settings for the indoor and outdoor unit in the same system will be set to TCC-LINK.
(The indoor addresses will not be changed at this time.)
16) Perform the communication method settings from the outdoor unit. If all of the outdoor unit, the indoor units, and the remote controller in the same system supports TU2C-LINK, they will be set to TU2C-LINK settings, and the indoor termination resistor settings will turn on automatically.
17) Reset the outdoor / indoor unit power supply to complete the setting.

<When the farthest indoor unit is known and the indoor termination resistor is set manually>

12) After setting the indoor termination resistor

Line (system) address	I.DN [12]	0005	0005	0005
Indoor address	I.DN [13]	0126	0127	0128
Group address	I.DN [14]	0001	0002	0002
Communication setting	I.DN [FC]	0003	0003	0003
Indoor termination resistor	I.DN [1FC]	0000	0000	**0001**

<If you do not know the farthest indoor unit and use automatic communication settings>

15) After resetting communication settings

Line (system) address	I.DN [12]	0005	0005	0005
Indoor address	I.DN [13]	0126	0127	0128
Group address	I.DN [14]	0001	0002	0002
Communication setting	I.DN [FC]	**0000**	**0000**	**0000**
Indoor termination resistor	I.DN [1FC]	0000	0000	0000

16) After automatic communication setting

Line (system) address	I.DN [12]	0005	0005	0005
Indoor address	I.DN [13]	0126	0127	0128
Group address	I.DN [14]	0001	0002	0002
Communication setting	I.DN [FC]	**0003**	**0003**	**0003**
Indoor termination resistor	I.DN [1FC]	0000	0000	**0001**

■ Resetting the address (Resetting to the factory default (address undecided))

Method 1

Clearing each address separately using a wired remote controller.

Set the system address, indoor unit address and group address to “00Un” using a wired remote controller. (For the setting procedure, refer to the address setting procedures using the wired remote controller on the previous pages.)

* Address not set will be either "00Un" or "0099", depending on the type of the remote controller.

Central control address (I.DN [03]) • Indoor unit address (I.DN [13])

Communication Type	Unfixed	Display order
TU2C-LINK	00Un	• • • ⇔0128⇔00Un⇔0001⇔ • • •

Line address (I.DN [12])

Communication Type	Unfixed	Display order
TU2C-LINK	00Un	• • • ⇔0128⇔00Un⇔0001⇔ • • •

Group address (I.DN [14])

Communication Type	Unfixed	Display order
TU2C-LINK	00Un	• • • ⇔0002⇔00Un⇔0000⇔ • • •

Method 2

Clearing all the indoor unit addresses on a refrigerate line at once from the outdoor unit.

1 **Turn off the refrigerant line to reset to the factory default.**

2 **Turn on the indoor and outdoor units of the refrigerant line for which you want to initialize the addresses. About one minute after turning on the power, confirm that the 7-segment display on the outdoor unit indicates “U.1. - - -” and operate the interface P.C. board on the outdoor unit of the refrigerant line as follows.**

SW01	SW02	SW03	SW04	Clearable addresses
2	1	2	Confirm that the 7-segment display indicates “A.d.buS” and turn SW04 ON for more than five seconds.	System/indoor unit/group address
2	2	2	Confirm that the 7-segment display indicates “A.d.nEt” and turn SW04 ON for more than five seconds.	Central control address

3 **Confirm that the 7-segment display indicates “A.d. c.L.” and set SW01, SW02 and SW03 to 1, 1, 1 respectively.**

4 **After finished clearing the address successfully, “U.1.Err” and “L08 “ appear alternatively at second intervals on the 7-segment display.**

5 **Set the addresses again after finishing the clearance.**

Communication setting

This product need setting TU2C-Link communication after the address setting.

⚠ CAUTION

- Be sure to complete the address setting before communication setting.
- It may takes about 1 to 3 minutes to address one refrigerant line.
- Settings on the outdoor unit are required for communication setting.
  (Communication setting is not started simply by turning on the power.)
- If a unit that has already been set for communication is connected, it cannot be set correctly.
  In this case, clear the communication settings and set again.
- The indoor unit DN code (FC) and outdoor unit DN code (82) are automatically set for the set communication.
  In the case of the TU2C-LINK system, the termination resistor (indoor unit DN code (1FC)) of the indoor unit that maximizes the wiring length from the outdoor unit is automatically set.

■ Communication setting (Auto setting)

1. Turn on indoor units first, and then turn on outdoor units.
2. Set the rotary switches on the interface P.C. board of the outdoor unit SW01 to [2], SW02 to [16] and SW03 to [2].
3. The 7-segment display switches between “c.c. b P S” and “c.c. 0” at 1-second intervals.
4. Push and hold SW04 for more than 5 seconds.
5. The 7-segment display flashes “c.c.i n”.
6. The 7-segment display switches between “c.c. i n” and “c.c. ∗∗∗” at 1-second intervals.
   Check the number of connected indoor units [∗∗∗].
   If the number of indoor units is right, move on to 7.

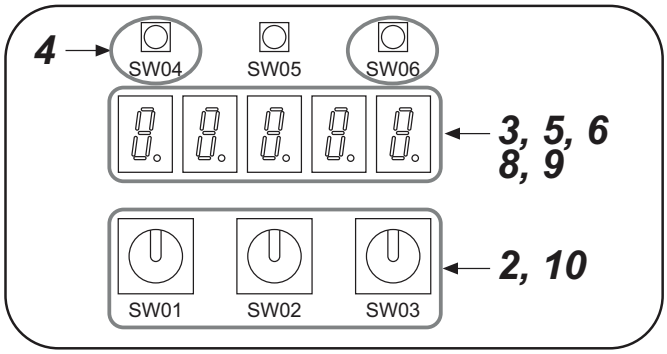
   When the number of the connected indoor units differs from the number of indoor units displayed on the 7-segment display, clear the communication type setting to eliminate the cause.
   To clear the communication type setting, push and hold the SW05 for 5 seconds or more.
   The 7-segment display flashes “c.c.r S t” .
   After a while, the 7-segment display switches between “c. c. b p s” and “c.c. 0” Set the rotary switch back to SW01 to [1], SW02 to [1], SW03 to [1].

7. Push and hold SW06 for more than 5 seconds.
8. The 7-segment display flashes “c.c.b p s”.
   After that, the setting is complete when the 7-segment display changes to “c.c F i n”.
   (If the 7-segment display changes to “c.c. E r r”, try again.)
9. After a while, the 7-segment display switches between “c.c. b p s” and “c.c. 1” (or “ c.c. o ”) at 1-second intervals.
   When a TCC-Link compatible device is connected, "L02" is displayed. If "L02" is displayed, please check whether the connected device is a device compatible with TU2C-Link
10. Set the rotary switch on the interface P.C. board of the outdoor unit back to SW01=[1], SW02=[1], SW03=[1].

Communication Type	7-segment display		Outdoor unit DN code No.(O.DN)	Indoor unit DN code No.(I.DN)		
			[082] (Communication setting)	[FC] (Communication setting)	[1FC] (Indoor termination resistor setup)	
TU2C-Link (U series and future models)	[A] [c.c.] [c.c.]	[B] [b P S] [1]	0003	0003	The farthest indoor unit (*1) 0001	Indoor units other than the left column 0000
TCC-Link (Other than U series)	[A] [c.c.] [c.c.]	[B] [b P S] [0]	0000	0000	0000	

*1 : Only the indoor unit that has the longest wiring length from the outdoor unit.
The indoor address of the indoor unit with the termination resistor turned on is confirm the items in "8-7-12. Monitor Function of Remote Controller Switch".

Interface P.C. board on the outdoor unit

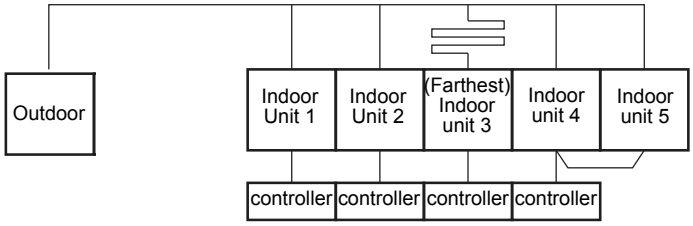


■ Procedure to set up the communication method manually

The communication method and the termination resistor settings can be changed by setting the outdoor DN code (O.DN) and the Indoor Unit Function Code (I.DN).
(See also 7-1. Method to set Outdoor Unit Function Code No. (O.DN) for operation method.)

<Procedure to set the TU2C-Link communication setting>

1) Set the Outdoor Unit Function Code (O.DN) [082] of all outdoor units to "0003".
2) Set the Indoor Unit Function Code (I.DN) [FC] of all indoor units to "0003".
3) Set the Indoor Unit Function Code (I.DN) [1FC] of the farthest indoor unit to "0001" (set the indoor termination resistor to ON).
   * If which indoor unit is the unit in the farthest room is unknown, perform the communication method automatic setup.



O.DN[82] Communication setting	3

3	3	3	3	3	I.DN[FC] Communication setting
0	0	1	0	0	I.DN[1FC] Indoor termination resistor setup

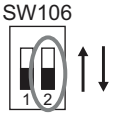
Line (system) address (DIP SW)	7

7	7	7	7	7	I.DN[12] Line (system) address
1	2	3	4	5	I.DN[13] Indoor unit address
0	0	0	1 (Header)	2 (Follower)	I.DN[14] Group address

■ Procedure to clear the communication method (restoring the factory default [TCC-Link communication settings])

- This is a function in which the communication method setting for all the outdoor units and indoor units (every outdoor unit connected to the Uc line and every indoor unit connected to the Uv line) will reset to the TCCLink communication settings. Also, the indoor termination resistor settings for every indoor unit will be set back to OFF.
- The addresses for the indoor units (indoor address, line address, group address, and the zone address) will not be cleared.
- This function is also effective with unaddressed indoor units if connected to the Uv line.
- This function will not be available if there are no indoor units that can communicate with the outdoor unit. There must be at least one indoor unit that can communicate with the outdoor unit (in which the communication method is matched with the outdoor unit and its address is already set) to use this function. This function is available even if the communication method settings for the indoor unit and outdoor unit in the same system of TCC-Link and TU2C-Link coexist. The settings for the outdoor unit to be operated can be either TCC-Link communication settings or TU2C-Link communication settings.

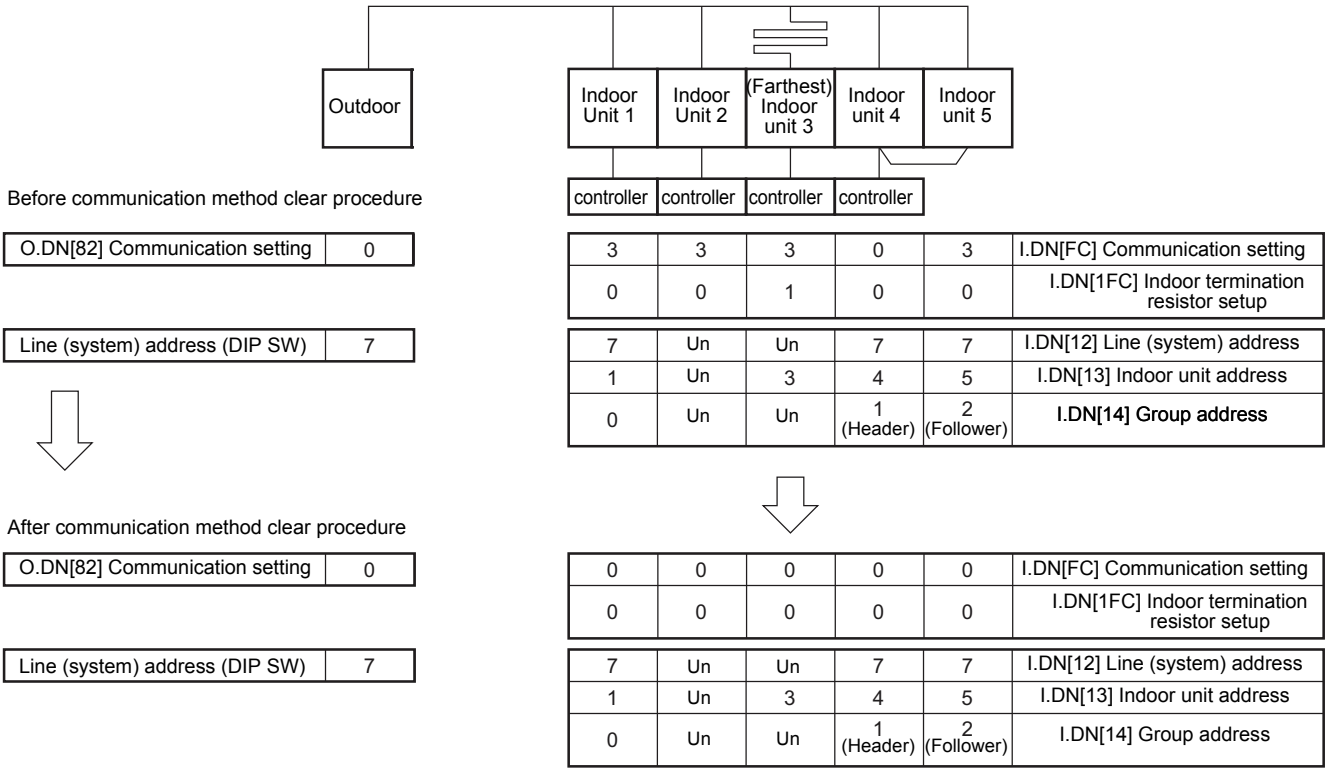
SW106



[Operation method]

1. Turn off indoor units first, and then turn off outdoor units.
2. Turn on DIP switch 2 of SW106 on the outdoor unit interface P.C.boards.
3. Turn on the outdoor unit first, then turn on the indoor unit after about 20 seconds.
4. The 7-segment display indication " - r S t. - ". Check all the units have turned on more than app 1 minute. Turn off all the indoor and outdoor units.
5. Turn off DIP switch 2 of SW106 on the outdoor unit interface P.C.board.

<Example> Communication method clear operation in a system with mixed communication settings



■ In the case of an increase in address-undefined indoor units (extension, etc.)

To set up the indoor address of a unit with an address that is undefined due to the extension of indoor units or replacement of P.C. board, etc., follow the methods below.

1. Clear the communication setting

Setup procedure

(1) Turn off indoor unit first, and then turn off outdoor units.
(2) Turn on DIP switch 2 of SW106 on the outdoor unit interface P.C. board.
(3) Turn on the outdoor unit first, then turn on the indoor unit after about 20 second.
(4) The 7-segment display indication " - r S t. - ". Check all the units have turned on more than approx. 1 minute. Turn off all the indoor and outdoor units.
(5) Turn off DIP switch 2 of SW106 on the outdoor unit interface P.C. board.

2. Address setting

Method 1

Set up an address individually from a wired remote controller.
(Line address, Indoor address, Group address, Central address)
For the setup method, refer to "Manual address setup from the remote controller." above.

Method 2

Set up an address from the outdoor unit.

* Leave the addresses of the units for which addresses have already been set up as they are. Set up an address only for the unit where the address is undefined.
Addresses are allocated from lower numbers.

Setup procedure

(1) Turn on the indoor/outdoor power for the refrigerant line for which an address is to be set up.
After approximately 1 minute, check that "U.1. - - -" is displayed on the 7-segment display.
(2) Execute the following operation on the interface PC board of the unit.

SW01	SW02	SW03	SW04
2	14	2	After checking that "In.At" is displayed on the 7-segment display, push SW04 for 5 seconds or more.

"AUTO1" → "AUTO2" → "AUTO3" → ... → "AUTO9" ... is counted and displayed on the 7-segment display.

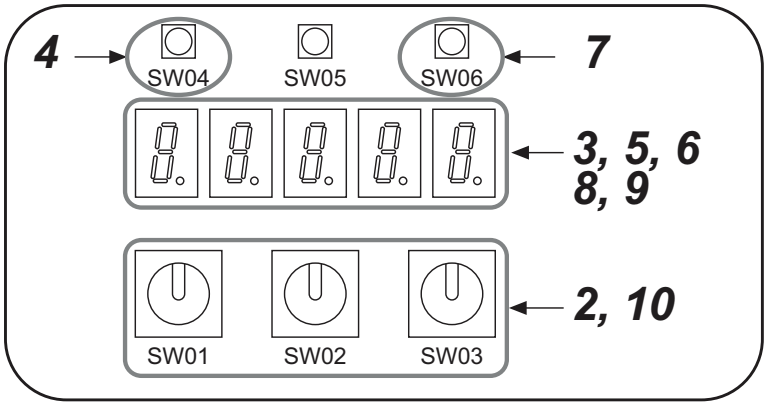
(3) When "U.1. - - -" is displayed on the 7-segment display, the setup operation finished.
Turn off the indoor/outdoor power.

3. Communication setting (Auto setting)

Setup procedure

(1) Turn on indoor units first, and then turn on outdoor units.
(2) Set the rotary switch of the interface P.C. board on the outdoor unit to SW01=[2], SW02=[16] and SW03=[2].
(3) The 7-segment display switches between “c.c. b p s” and “c.c. 0” at 1-second intervals.
(4) Push and hold SW04 for more than 5 seconds.
(5) The 7-segment display flashes “c.c.i n”.
(6) The 7-segment display switches between “c.c. i n” and “c.c. ***” at 1-second intervals.
Check the number of connected indoor units [***].
(When the number of the connected indoor units differs from the number of indoor units displayed on the 7-segment display, clear the communication type setting to eliminate the cause.
To clear the communication type setting, push and hold the SW05 for 5 seconds or more.
The 7-segment display flashes “c.c.r S t”.
After a while, the 7-segment display switches between “c.c. b p s” and “c.c. 0”.
Set the rotary switch back to SW01 to [1], SW02 to [1], SW03 to [1].)
(7) Push and hold SW06 for more than 5 seconds.
(8) The 7-segment display flashes “c.c.b p s”.
After that, the setting is complete when the 7-segment display changes to “c.c F i n”.
(If the 7-segment display changes to “c.c. E r r “, try again.)
(9) After a while, the 7-segment display switches between “c.c. b p s” and “c.c. 1” (or “c.c. o”) at 1-second intervals.
(10) Set the rotary switch on the interface P.C. board of the outdoor unit back to SW01=[1], SW02=[1], SW03=[1].

Interface P.C. board on the outdoor unit



■ Procedures for adding an indoor unit with communication method and address already set

In cases of adding a new indoor unit with the TU2C-Link setup or address setup already completed due to relocation etc., perform the setup 1) to 3) below.

1) Communication method

- Set the communication method of the indoor unit and the already existing system to the same settings.

Method 1 The communication method and indoor termination resistor can be set automatically after performing "Clear communication method", by setting the address to the added indoor unit, and then performing "Automatic setting of communication method".

Method 2 Change the indoor DN code (I.DN) [FC] of the additional indoor unit to match the communication method of the existing system.
If the indoor unit to be added is in the farthest room, turn the indoor termination resistor on, and turn the indoor termination resistor off for the other (already existing) indoor units.

2) Indoor termination resistor

- Turn the indoor termination resistor for one of the indoor units in the farthest room ON.
  If which indoor unit is the unit in the farthest room is unknown, check the address for the indoor unit that the indoor termination resistor has been automatically set by performing "communication method automatic setup" after performing "communication method setup".

3) Address setup

- Change the system address to match the already-existing system.
- Make sure not to set duplicate indoor addresses.

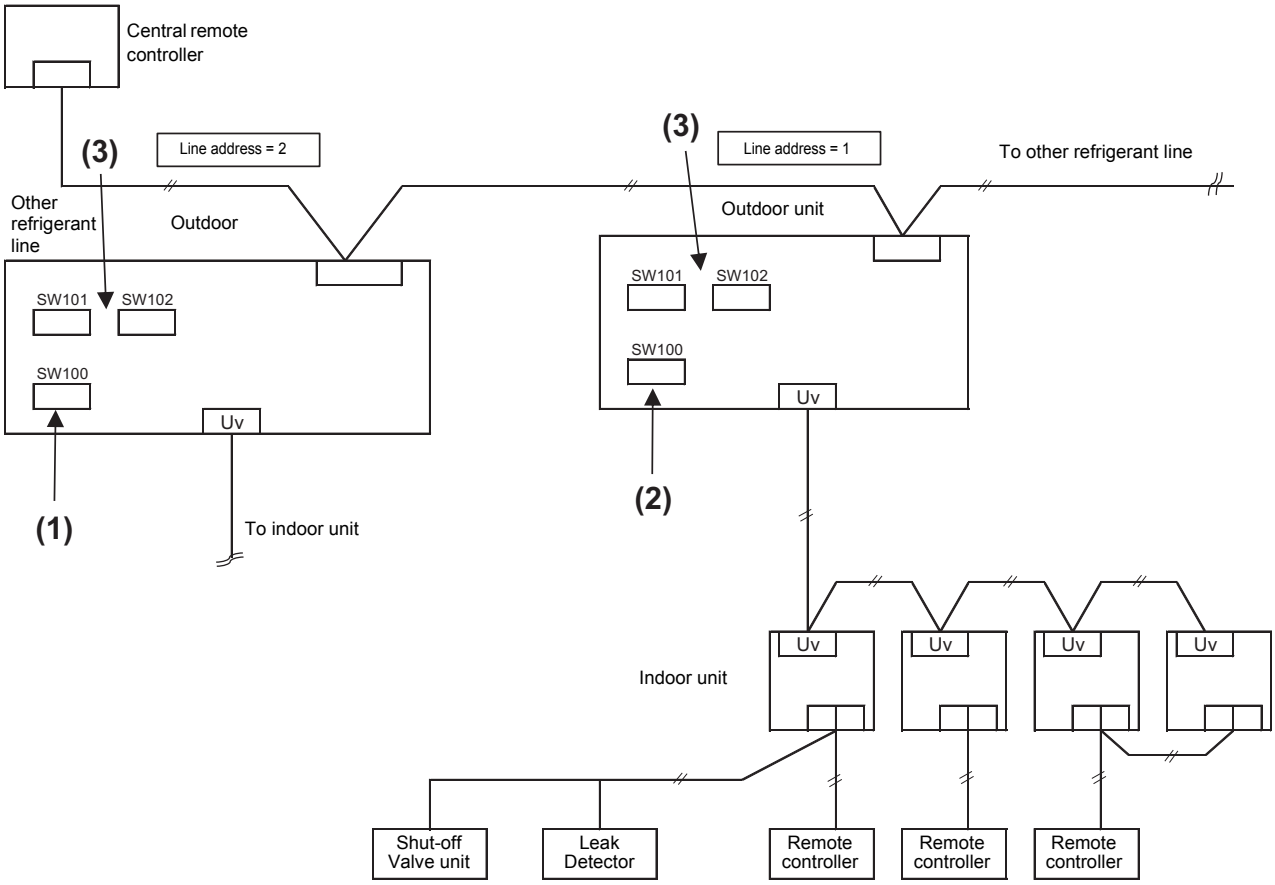
Method 1 Perform the method "In case of adding an unaddressed indoor unit (due to expansion etc.)" after setting the communication method of the indoor unit to be added to that of the alreadyexisting system, and clearing the address.

Method 2 Change the communication method setting and the address for the indoor unit to be added manually from the indoor DN code (I.DN).

- Clear all indoor addresses, system address, and group addresses at once… Set the rotary switch SW01/SW02/SW03 on outdoor unit to [2/1/2], and press SW04 for five seconds or longer.
- Clear all zone addresses at once … Set the rotary switch SW01/SW02/SW03 on outdoor unit to [2/ 2/2], and press SW04 for five seconds or longer.
- Automatic address setting … Press SW06 on outdoor unit when all indoor units have no indoor address set, and a "L08" error is occurring.
- Automatic address setting for unaddressed indoor units … Set the rotary switch SW01/SW02/SW03 on outdoor unit to [2/14/2], and press the SW04 five seconds or longer.

8-4-4. Check after address setup when central control system is connected

When the central control system is connected, check that the following setup has finished after address setup.



	Main check items	Check
Termination resistor	(1) Is the termination resistor (SW100-bit1) of the header unit with the smallest line address number in the central control turned on? (Setup is unnecessary for follower units. (Factory default : ON))	
	(2) Is the termination resistor (SW100-bit1) of the header units, except for the line with the smallest central control line address, turned off? (Setup is unnecessary for follower units. (Factory default : ON))	
Line address	(3) Are addresses in the line address (SW101, SW102) not duplicated in each refrigerant line?	

NOTE

The figure above does not show all the electric wires.
For details, refer to the installation manuals for the outdoor unit, indoor unit, remote controller, or optional devices.

8-4-5. Setting when connecting safety equipment

■ Setting when connecting indoor units to Shut-off Valve unit, and when connecting safety equipment

[Cautions to connection of indoor unit]

- When connecting the indoor units to Shut-off Valve unit, it is necessary to set up indoor DN CODE No.. Be sure to set up indoor DN CODE No. after setup of address.
- When connecting the indoor units to Shut-off Valve unit, it is possible to connect with multiple groups and connect individually.
- Even if no additional safety equipment is required, be sure to set safety measures (Indoor DN CODE No. [107]).

[**Connection rules**]

- Shut-off Valve unit are allowed in the system.
- Simultaneous connection of 2 or more Shut-off Valve units to the same indoor unit is not allowed.
- Group settings across Shut-off Valve units are not allowed.

[Setting rules]

- The safety measures for indoor units set in the group shall be the same. (Allow mixing in the system.)
- Only one Leak Detector is used in a group.

■ How to set up the indoor DN CODE No. [FE] (Shut-off Valve unit address)

- As for every Shut-off Valve unit, set up indoor DN CODE No. “FE” within the range of 1~128. This CODE No. should not be duplicate in one system.

1 **Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.** (If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)

2 **Each time [▽] [△] setting button is pushed, indoor unit numbers in the group control change cyclically. Select the indoor unit to change settings for.** (The fan and louvers of the selected indoor unit are activated.) (The fan of the selected indoor unit is turned on.)

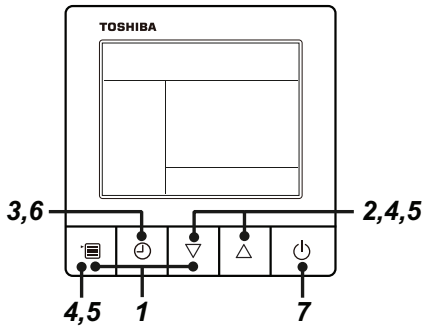
3 **Push the Timer off button.**

4 **Push the menu button to make Code No. flash. Change Code No. [FE] with [▽] [△] setting button.**

5 **Push the menu button to make Set data [****] flash. Push the [▽] [△] buttons repeatedly to change the value indicated in the SET DATA section to that you want.**

6 **Push the Timer off button. (When the display changes from [– –] to Set data [****] flashing, the setup is completed.)**

7 **When all the settings have been completed, push ON/OFF button to determine the settings. "SETTING" flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while "SETTING" is flashing.)**



(Execute it while the units are stopped.)

■ How to set up the indoor DN CODE No. [107] (Safety measures)

- It is necessary to set up safety measures.
- If the settings and actual connections are different, the system will not be able to operate.
  The 7-segment display on the interface P.C. board of outdoor unit indicates "L13 (Safety measures setting mismatch)" or "L14 (Safety measures non-conformity)".

0 : No safety equipment is required
1 : Pump-down operation
2 : Individual shut-off operation
3 : Only Leak Detector

1 **Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.** (If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)

2 **Each time [▽] [△] setting button is pushed, indoor unit numbers in the group control change cyclically. Select the indoor unit to change settings for.** (The fan and louvers of the selected indoor unit are activated.) (The fan of the selected indoor unit is turned on.)

3 **Push the Timer off button.**

4 **Push the menu button to make Code No. flash. Change Code No. [107] with [▽] [△] setting button.**

5 **Push the menu button to make Set data [****] flash. Push the [▽] [△] buttons repeatedly to change the value indicated in the SET DATA section to that you want.**

6 **Push the Timer off button.**
(When the display changes from [－－] to Set data [****] flashing, the setup is completed.)

7 **When all the settings have been completed, push ON/OFF button to determine the settings. "SETTING" flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while "SETTING" is flashing.)**

■ How to set up the indoor DN CODE No. [108] (Circulation flow operation mode of the indoor unit)

- It is necessary to set whether or not the indoor unit is in circulation flow operation when refrigerant leakage is detected.
- If the CODE No. [107] sets to 2 (Individual shut-off operation), circulation flow operation is not performed even if the CODE No. [108] sets to 0.

0 : Circulation flow operation
1 : Not circulation flow operation

1 **Push and hold menu button and [▽] setting button simultaneously for 10 seconds or more.**
(If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)

2 **Each time [▽] [△] setting button is pushed, indoor unit numbers in the group control change cyclically. Select the indoor unit to change settings for.** (The fan and louvers of the selected indoor unit are activated.) (The fan of the selected indoor unit is turned on.)

3 **Push the Timer off button.**

4 **Push the menu button to make Code No. flash. Change Code No. [108] with [▽] [△] setting button.**

5 **Push the menu button to make Set data [****] flash. Push the [▽] [△] buttons repeatedly to change the value indicated in the SET DATA section to that you want.**

6 **Push the Timer off button.**
(When the display changes from [−−] **to Set data [****] flashing, the setup is completed.)**

7 **When all the settings have been completed, push ON/OFF button to determine the settings. "SETTING" flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while "SETTING" is flashing.)**

◆ [Set up example]

[14] : Group address
- 0 : Individual
- 1 : Header unit
- 2 : Follower unit

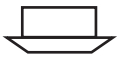
[FE] : Shut-off Valve unit address
- • Should not be duplicate in one system.
- • Factory default : Un

[107] : Safety measures
- 0 : No safety equipment is required
- 1 : Pump-down operation
- 2 : Individual shut-off operation
- 3 : Only Leak Detector

[108] : Circulation flow operation mode of the indoor unit
- 0 : Circulation flow operation
- 1 : Not circulation flow operation


: Outdoor unit


: Remote controller


: Indoor Unit


: Leak Detector

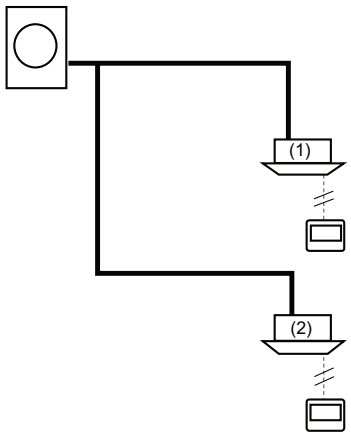
: Shut-off Valve unit


: Battery kit

: Piping

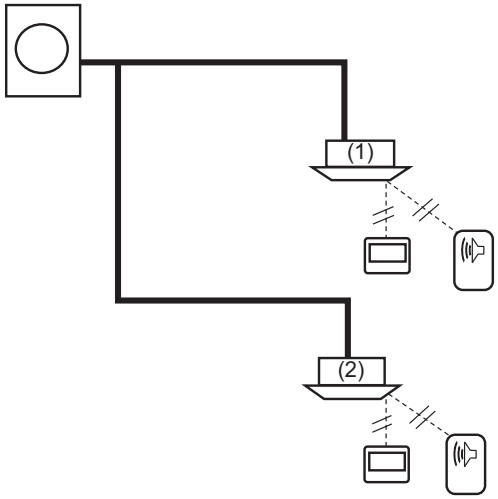
: Control Wiring

1. In case of connecting no safety equipment.



Indoor unit	(1)	(2)	
[14]	0	0	
[FE]	Un	Un	It is not necessary to set up.
[107]	0	0	
[108]	0	0	It is not necessary to set up.

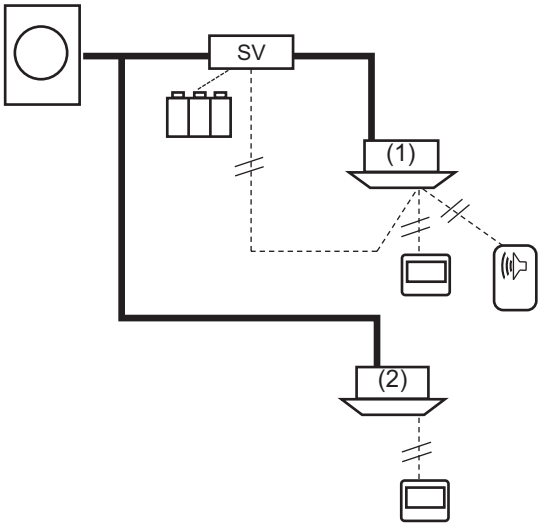
2. In case of connecting Leak Detectors to each indoor units.



Indoor unit	(1)	(2)
[14]	0	0
[FE]	Un	Un
[107]	3	3
[108]	0	0

It is not necessary to set up.

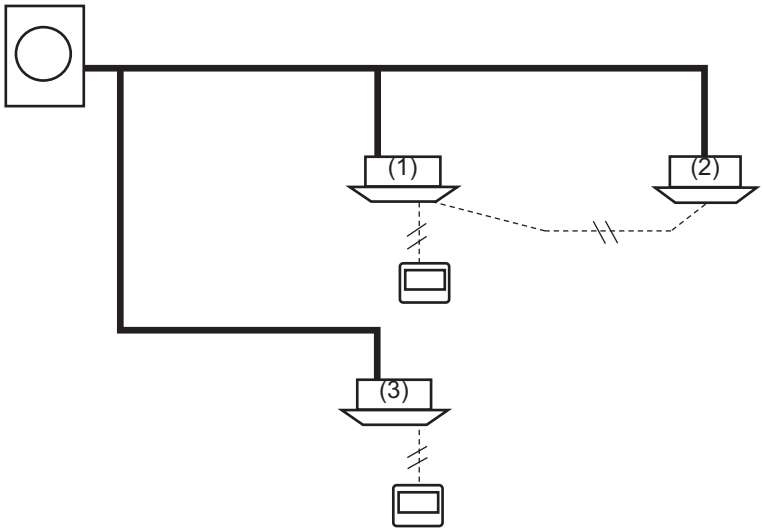
3. In case of connecting one indoor unit and Lead Detector to Shut-off Valve unit.



Indoor unit	(1)	(2)
[14]	0	0
[FE]	1	Un
[107]	1 or 2	0
[108]	0 or 1*	0

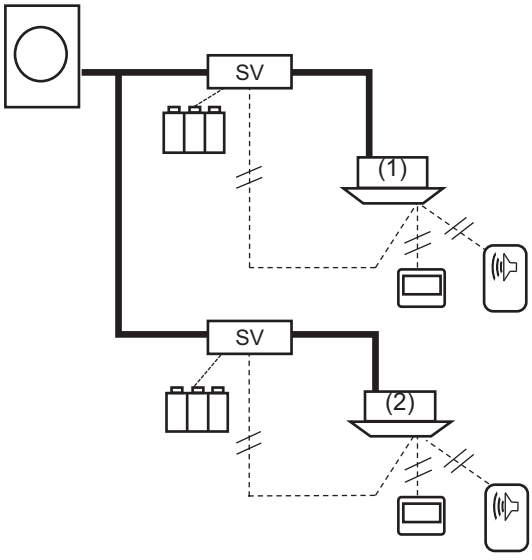
*When you set up CODE No. “107” to 2, please set up CODE No. "108" to 1.

4. In case of connecting one group operation of indoor units and one indoor unit to no safety equipment and two remote controller.



Indoor unit	(1)	(2)	(3)	
[14]	1	2	0	
[FE]	Un	Un	Un	It is not necessary to set up.
[107]	0	0	0	
[108]	0	0	0	It is not necessary to set up.

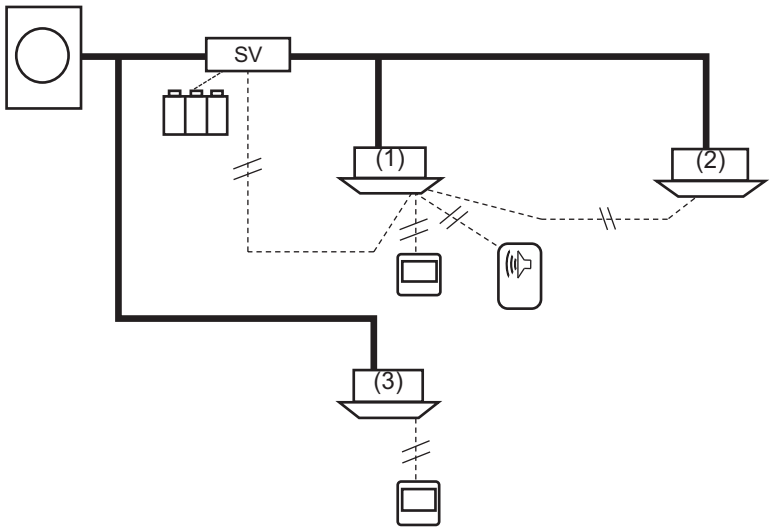
5. In case of connecting each indoor units and Leak Detectors to Shut-off Valve unit.



Indoor unit	(1)	(2)
[14]	0	0
[FE]	1	2
[107]	1 or 2	1 or 2
[108]	0 or 1*	0 or 1*

*When you set up CODE No. “107” to 2, please set up CODE No. "108" to 1.

6. In case of connecting one group operation of indoor units and Leak Detectors to Shut-off Valve unit.

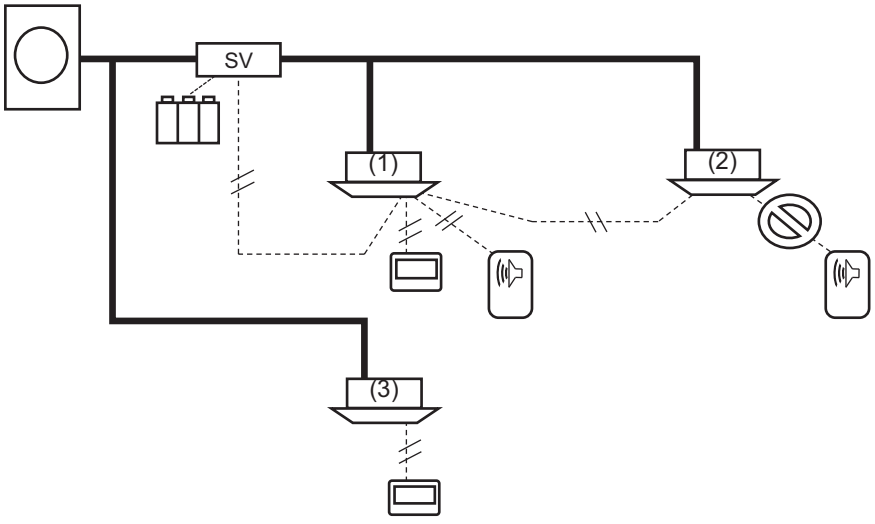


Indoor unit	(1)	(2)	(3)
[14]	1	2	0
[FE]	1	1	Un
[107]	1 or 2	1 or 2	0
[108]	0 or 1*	0 or 1*	0

*1: Code No."FE" is necessary set up same No. in (1) and (2).
*2: When you set up CODE No. “107” to 2, please set up CODE No. "108" to 1.

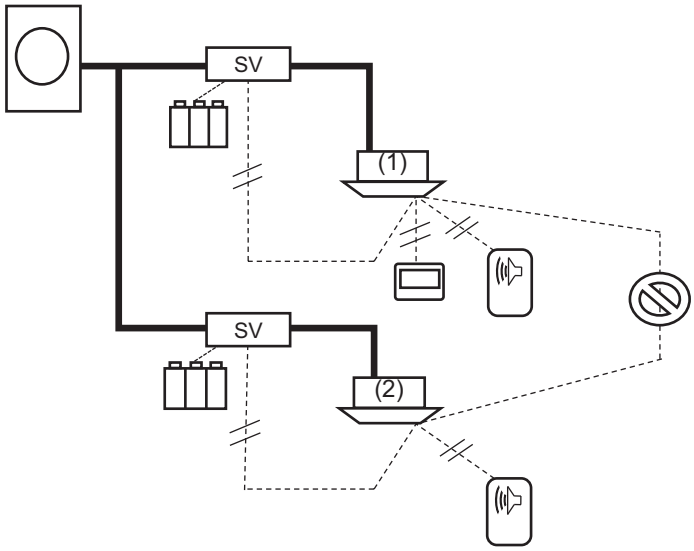
Incorrect connection

1. Only one leak Detector can be connected to indoor units with a group setting.



Incorrect connection

2. Group setting of indoor units across Shut-off Valve unit is not possible.



(1) Installation conditions for each requirement

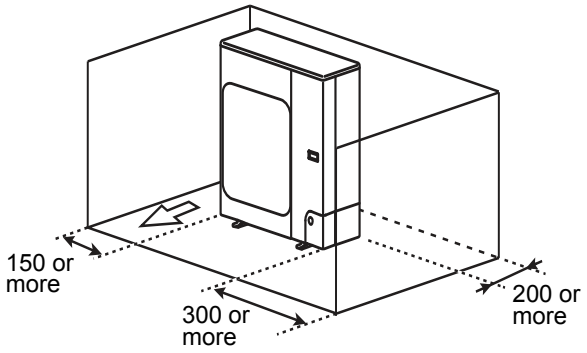
- To comply with the requirements of enhanced tightness refrigerating systems of IEC 60335-2-40, the system is equipped with Shut-off Valve unit, Leak Detector and Battery kit. And each systems have the appropriate safety systems in according to the system specifications. In case the requirements of this manual are followed, no additional safety measures are needed.
- Follow the installation requirements below to ensure that the complete system is compliant to legislation.
- If you have any questions, please contact the dealer where you purchased the product.
- Depending on the conditions, safety measures (optional parts) may be required.
- System compliance has been completed to IEC60335-2-40 Ed6. If EN378 compliance is required please refer separately to EN378 for guidance.

1) Installation conditions for each requirement

- Please observe the following warning and install according to “4. Installation of R32 refrigerant air conditioner”.

⚠ WARNING

Basically the outdoor unit has to be installed in outdoor area.
The outdoor unit has to be installed at least one side of 4 sides surrounding the unit open.
When installing indoors such as in a machine room, it shall be installed in accordance with IEC60335-2-40.
For other installation conditions, please contact the dealer where you purchased the product.



2) Indoor unit installation

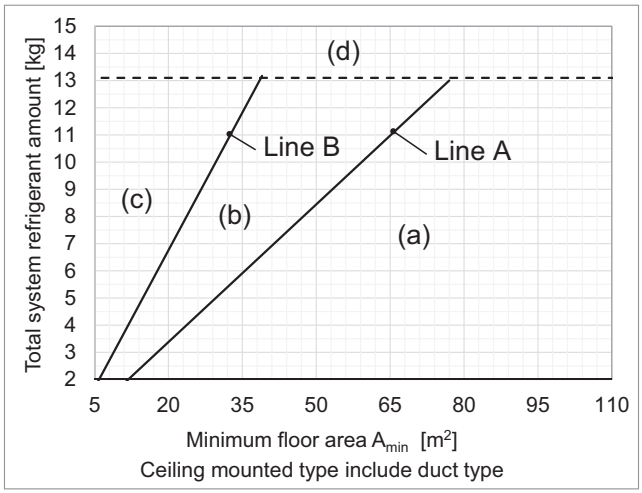
For the installation of the indoor unit, refer to the installation manual attached to the indoor unit.
For the indoor unit installation of R32 air conditioning system, check the following before installing.

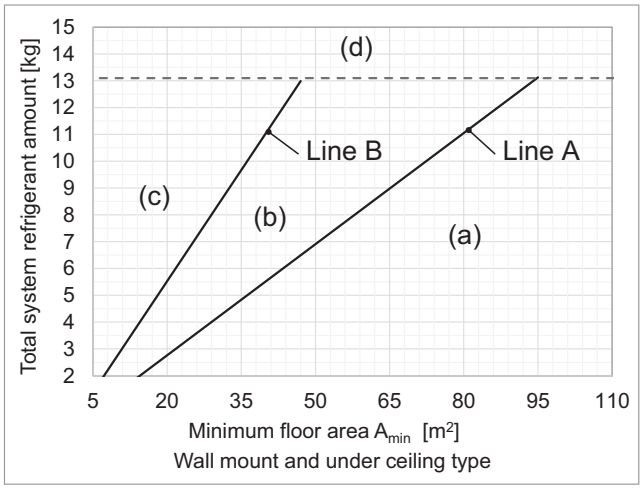
⚠ WARNING

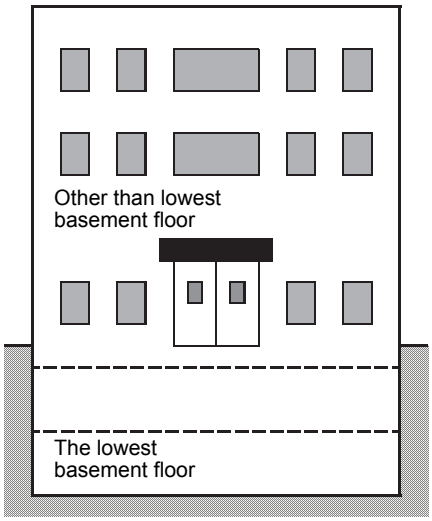
- Appliance shall be installed, operated and stored in a room with a floor area larger than minimum floor area [A_{min}] m^2.
- For appliances using R32 refrigerant connected via an air duct system to one or more rooms, No auxiliary devices, which may be a potential ignition source, shall be installed in the duct work. (example: hot surfaces with a temperature exceeding 700°C and electric switching device)
- The supply and return air shall be directly ducted to the space. Open areas such as false ceilings shall not be used as a return air duct;
- There shall be no operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) in case the floor area is less than the minimum floor area A (m²).
  For the applicable floor area and minimum floor area [A_{min}], refer to [1] to [5] below.
- Piping shall be installed according to the instruction in "6 Refrigerant piping". [A_{min}] is determined by the length of the connection pipe, types of indoor unit, etc.

[1] [Confirmation of installation space and floor area]

- Make sure that each indoor unit meet the installation height and floor area specified by indoor unit type and the total system refrigerant amount.
- Please refer to the numerical values of line A and line B in the graphs below.







	Other than the lowest basement floor	The lowest floor of the basement	LFL threshold
Area (a)	No safety measured required.	No safety measured required.	A large space of LFL/4 or less.
Area (b)	Leak detector required.	Leak detector and safety shut-off valve required.	A large space of LFL/4 - LFL/2.
Area (c)	Leak detector and safety shut-off valve required.	Installation not permitted.	A narrow space of LFL/2 or more.
Area (d)	Installation not permitted.	Installation not permitted.	Maximum allowable total refrigerant amount determined from LFL

■ Line A

Minimum floor area A_{min} [m^2]	Total system refrigerant [kg]	
	Ceiling mounted type (include duct type)	Wall mount and under ceiling type
5	0.84	0.69
6	1.01	0.82
7	1.18	0.96
8	1.35	1.10
9	1.51	1.24
10	1.68	1.38
11	1.85	1.51
12	2.02	1.65
13	2.19	1.79
14	2.36	1.93
15	2.53	2.07
16	2.70	2.21
17	2.87	2.34
18	3.03	2.48
19	3.20	2.62
20	3.37	2.76
21	3.54	2.90
22	3.71	3.03
23	3.88	3.17
24	4.05	3.31
25	4.22	3.45
26	4.39	3.59
27	4.55	3.73
28	4.72	3.86
29	4.89	4.00
30	5.06	4.14
31	5.23	4.28
32	5.40	4.42
33	5.57	4.55
34	5.74	4.69
35	5.90	4.83
36	6.07	4.97
37	6.24	5.11
38	6.41	5.24
39	6.58	5.38
40	6.75	5.52
41	6.92	5.66
42	7.09	5.80
43	7.26	5.94
44	7.42	6.07
45	7.59	6.21
46	7.76	6.35
47	7.93	6.49
48	8.10	6.63
49	8.27	6.76
50	8.44	6.90
55	9.28	7.59
60	10.13	8.28
65	10.97	8.97
70	11.81	9.67
75	12.66	10.36
80	-	11.05
85	-	11.74
90	-	12.43
95	-	-

■ Line B

Minimum floor area A_{min} [m^2]	Total system refrigerant [kg]	
	Ceiling mounted type (include duct type)	Wall mount and under ceiling type
5	1.68	1.38
6	2.02	1.65
7	2.36	1.93
8	2.70	2.21
9	3.03	2.48
10	3.37	2.76
11	3.71	3.03
12	4.05	3.31
13	4.39	3.59
14	4.72	3.86
15	5.06	4.14
16	5.40	4.42
17	5.74	4.69
18	6.07	4.97
19	6.41	5.24
20	6.75	5.52
21	7.09	5.80
22	7.42	6.07
23	7.76	6.35
24	8.10	6.63
25	8.44	6.90
26	8.78	7.18
27	9.11	7.46
28	9.45	7.73
29	9.79	8.01
30	10.13	8.28
31	10.46	8.56
32	10.80	8.84
33	11.14	9.11
34	11.48	9.39
35	11.81	9.67
36	12.15	9.94
37	12.49	10.22
38	12.83	10.49
39	-	10.77
40	-	11.05
41	-	11.32
42	-	11.60
43	-	11.88
44	-	12.15
45	-	12.43
46	-	12.70
47	-	-
48	-	-
49	-	-
50	-	-
55	-	-
60	-	-
65	-	-
70	-	-
75	-	-
80	-	-
85	-	-
90	-	-
95	-	-

⚠ WARNING

- The total amount of refrigerant in the system must be less than or equal to the maximum allowable total amount of refrigerant.
  The maximum allowable amount of refrigerant = 13.1 [kg].
- Keep the installation height according to the indoor unit type.

  Ceiling-mounted unit (include Duct type.) : 2.2 m or more.
  Wall-mounted and under ceiling unit : 1.8 m or more.

  But 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.

NOTE

- The maximum total amount of refrigerant allowed depends on the area of the room the system serves and the room on the lowest floor of the basement.
- Please confirm that the condition for total system refrigerant amount is satisfied for [5] [To determine the limit on the amount of additional refrigerant].

If the installation becomes impossible in the condition of [1], redesign the system again.

[2] [Safety measures]

This unit is equipped with Leak Detectors and Shut-off Valve units for safety.
For each indoor unit, the number of safety devices varies depending on the installation floor, total system refrigerant amount, indoor unit installation height, and LFL value.
It's not necessary to install the safety devices when the air conditioning system is installed in a large space of LFL/4 or less.(each indoor room, outdoor area)

LD : Leak Detector
SV : Shut-off Valve units

Area	Safety system	Safety measures		Safety system operation	subsequent status
(a)	No safety measures	0 pc.	-	No safety system operation.	Not applicable
(a)(b)	Leak Detector only.	1 pc.	LD	When a leak is detected, operation stops.	Operation cannot be continued.
(a)(b)(c)	Pump-down operation.	2 pcs.	LD or SV unit	When a leak is detected, a system does Refrigerant recovery to outdoor unit by pump-down operation and closes all safety shut-off valves. After that, all systems stop.	Operation cannot be continued. (Refrigerant system will be locked.)
(a)(b)(c)	Individual shut-off	2 pcs.	LD or SV unit	When a leak is detected, safety shut-off valves close only for the indoor units which refrigerant is leaked. After that, all systems stop.	Operation cannot be continued only for the indoor units which refrigerant is detected. Other indoor units can continue to operate.

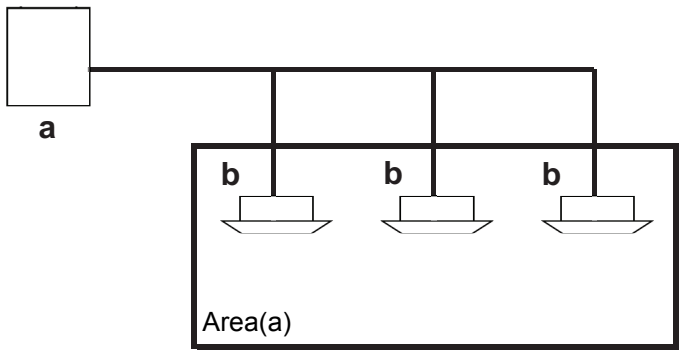
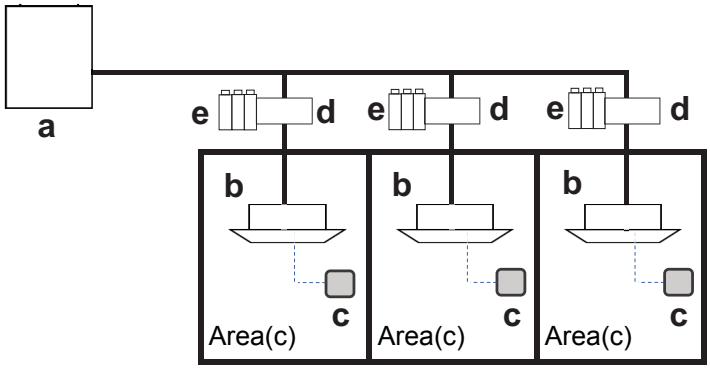
⚠ WARNING

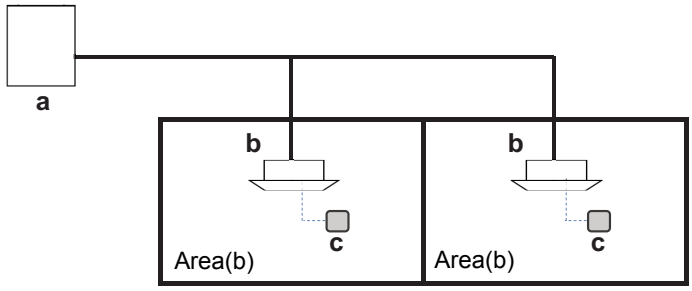
- For Leak Detector to function, the unit shall be powered on at all times after installation, except during service.
- If LFL area is (c), install Battery kit in each applicable Shut-off Valve unit.
  They can shut-off the refrigerant by Battery kits even in the event of a power failure.
  (Make sure there are no leaks before use as charging may not be in time during a continuous system power off.)

NOTE

- If there are multiple indoor units with different safety systems in refrigerant system, safety system behaviors may be different in each indoor unit.

(Installation patterns for each safety measure)
The table below shows installation example of safety measures for each safety system.
Position where Leak Detector and Shut-off Valve unit can be installed is determined by room area, combination, indoor unit type and capacity, etc.
For details, refer to [3] [Leak Detector installation] and [4] [Shut-off Valve installation].
[Each safety system and installation example]

Indoor DN CODE No [107]	Installation example	Case
[00]		• When installing in a room corresponding to area (a), set the CODE No. [107] to [00]. No additional safety measures are required.
[01] or [02]		• When installing in a room corresponding to area (c), set the CODE No. [107] to [01] or [02]. • Be sure to install Leak Detector. • Be sure to connect the Shut-off Valve unit and install the battery unit. • When the CODE No. [107] is set to [01], the entire system will be stopped when refrigerant leakage is detected. • When the CODE No. [107] is set to [02], the corresponding indoor unit wii be stopped when refrigerant leakage is detected (other indoor units can continue operation). • The position where the Shut-off Valve unit can be installed is different according to the setting of the CODE No. [107] ([01] or [02]).

Indoor DN CODE No [107]	Installation example	Case
[03]		• When the CODE No. [107] is set to [03] by area (b), the entire system stops when refrigerant leakage is detected. • Be sure to install Leak Detectors. This setting can only be used in rooms that fall under area (b).

a : Outdoor unit, b : Indoor unit, c : Leak Detector, d : Shut-off Valve unit, e : Battery kit

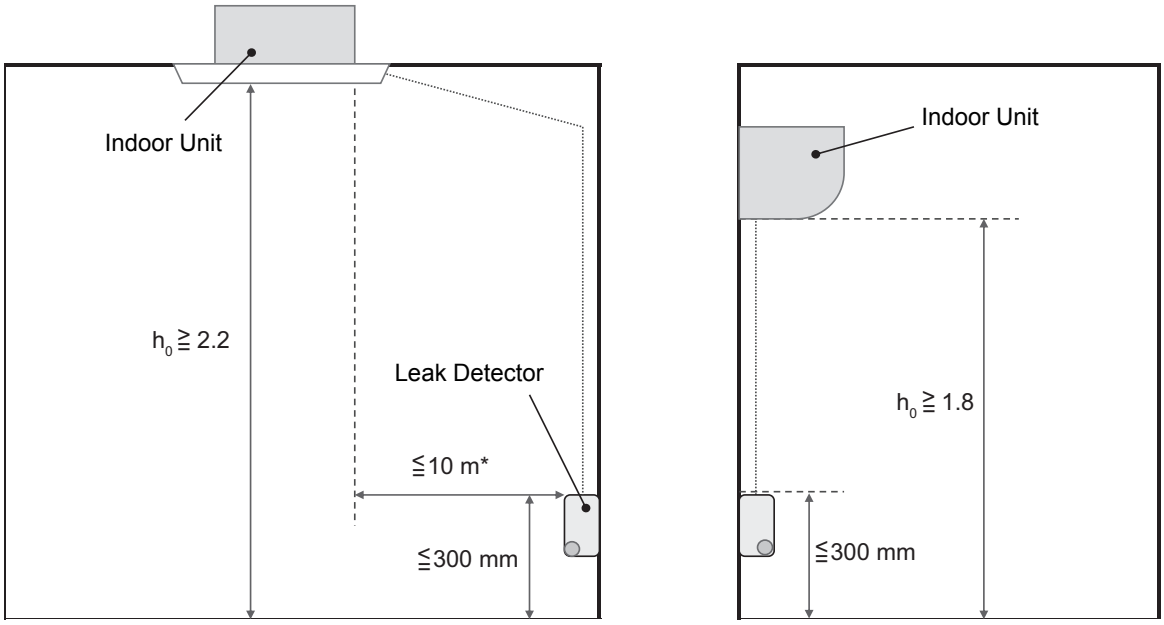
[3] [Leak Detector installation]

See Installation Manual included in Leak Detector for information on installing Leak Detector.
The Leak Detector implements have safety measures to light up in red and to sound a buzzer, that will warn in case of a refrigerant leak.
For the leak detector installation of R32 air conditioning system, check the following before installing.

⚠ WARNING

- Leak Detector used as a safety device for the air conditioning system shall be used the specified Toshiba optional product.
- Leak Detector installation shall be complied with the following requirements.
  1. Leak detector shall be installed in each room that requires a safety measure.
  2. The installation position shall be determined by the type and height of the indoor unit and the presence or the absence of obstacles between the indoor unit and Leak Detector.
- Leak Detector shall be installed outside the indoor unit within a height of 300 mm from the floor.
- Leak Detector shall be located within 10 m horizontal distance in line sight of the unit and on a wall within the room in which the unit is installed, or 7 m, if not in line sight of the unit, and on a wall within the room in which the unit is installed. The distance from the unit to Leak Detector shall be measured as the shortest horizontal unobstructed path between the unit and the nearest Leak Detector.
- The alarm shall always be 15 dB(A) louder than the room background noise.
  Leak Detector can generate a 65 dB(A) alarm. (Sound pressure level, measured at a distance of 1 m from the alarm.)
  If the surrounding environment is noisy in a particular room, we recommend that you use an external alarm (by local power supply) in that room.
  Leak Detector has output terminals to external ventilation and an external alarm.
  When taking safety measures using external ventilation or an external alarm, install according to the installation manual for Leak Detector.

[Installation positions of Leak Detector]

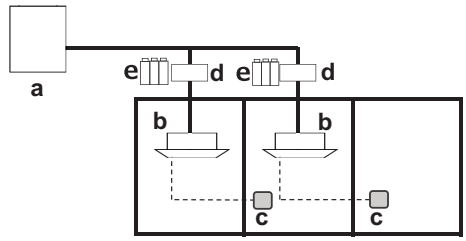
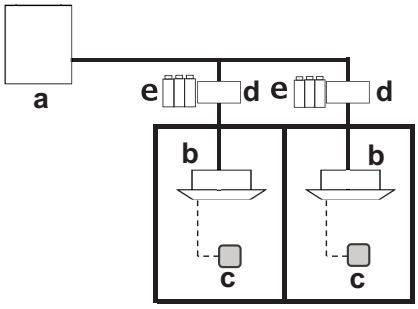
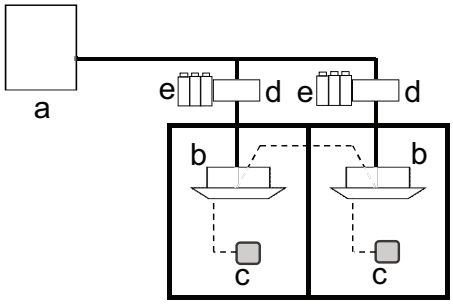
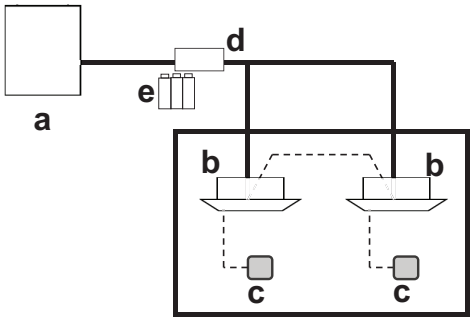
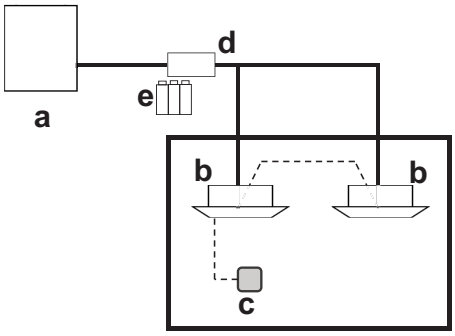
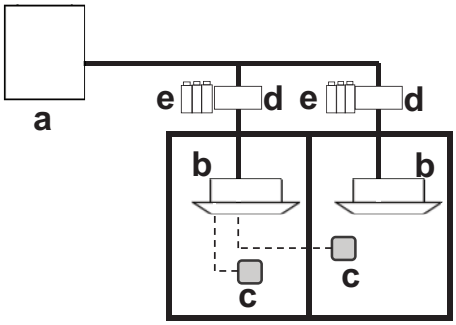
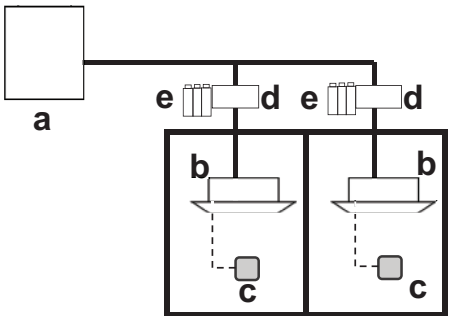


* It must be placed within a horizontal distance of 10 meters and on the wall in the room where the indoor unit is installed.
  However, when it does not enter the field of view on a straight line from Leak Detector, it is within 7 m at the shortest horizontal distance without obstacles and installed on the wall in the room where the indoor unit is installed.

NOTE

Leak Detector generates visual and auditory warnings.

[The examples for safety device installations]
The location of Leak Detector varies depending on the safety system and the room.

	Incorrect	Correct	Case
1			• Install Leak Detector in same room as the connected indoor unit.
2			• Group setting of indoor unit across Shut-off Valve unit is not possible
3			• Only one Leak Detector can be connected to indoor units with a group setting.
4			• Multiple Leak Detectors cannot be connected to one indoor unit.

a : Outdoor unit, b : Indoor unit, c : Leak Detector, d : Shut-off Valve unit, e : Battery kit

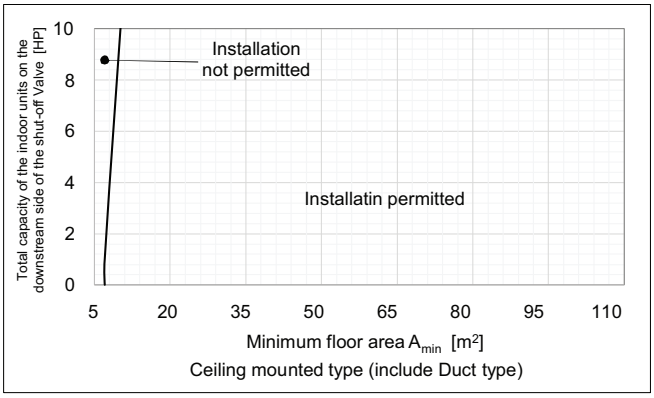
[4] [Shut-off valve unit installation]

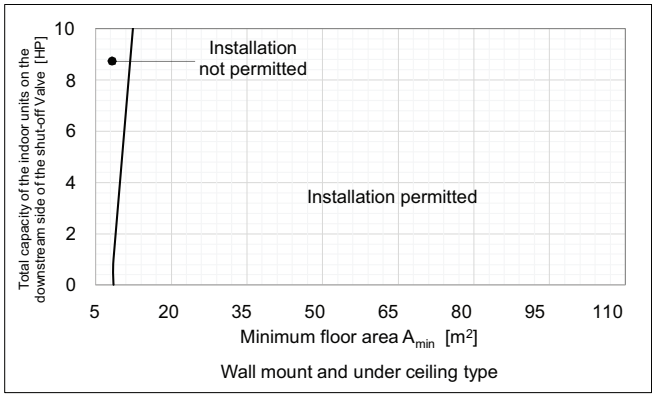
For Shut-off Valve unit installation, see Installation Manual included in Shut-off Valve unit. The position where Shut-off Valve unit can be installed differs depending on the indoor unit, the setting of safety measures (pump down or individual shut-off), etc.
The installation position shall be determined according to the following.
When Shut-off Valve unit is installed in area that is occupied space, please contact your main dealer.
If a Shut-off Valve unit is to be used as a safety measure, a Battery kit must be installed. For details, refer to the installation manual of Shut-off Valve unit.

■ Recovery by pump down (Set up the indoor DN CODE No. [107] to 1)

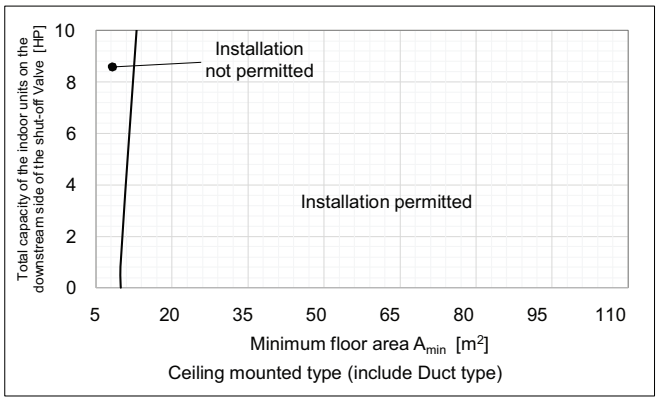
The allowable installation position differs depending on the length of the total connecting pipe.

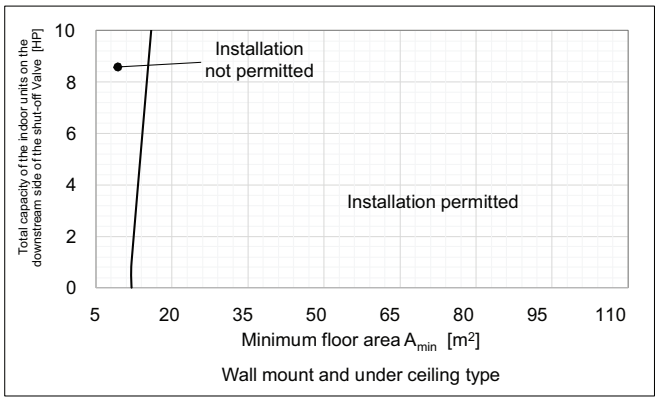
◆ The total connection pipe length on the downstream side of Shut-off Valve unit is 10m.



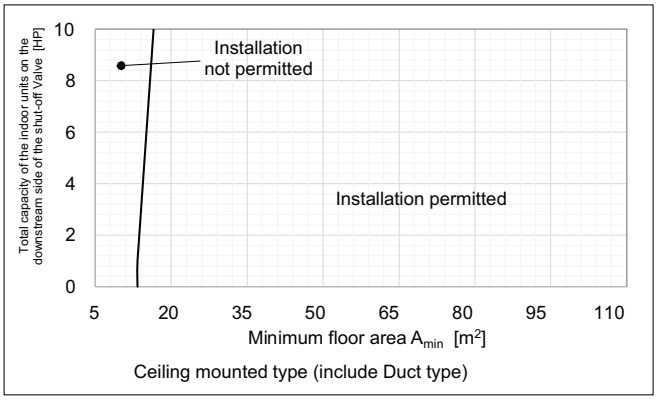


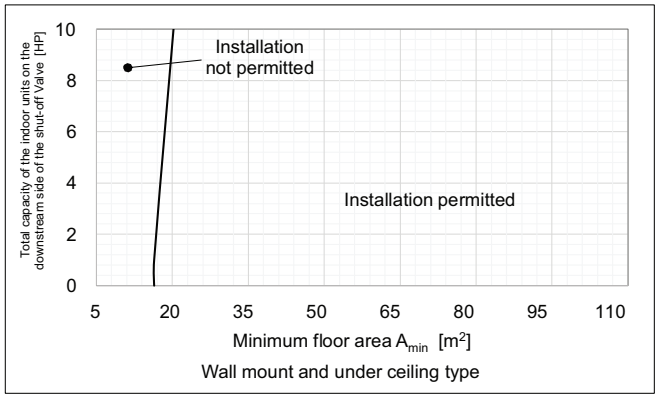
◆ The connection pipe length on the downstream side of the Shut-off Valve is 50m.



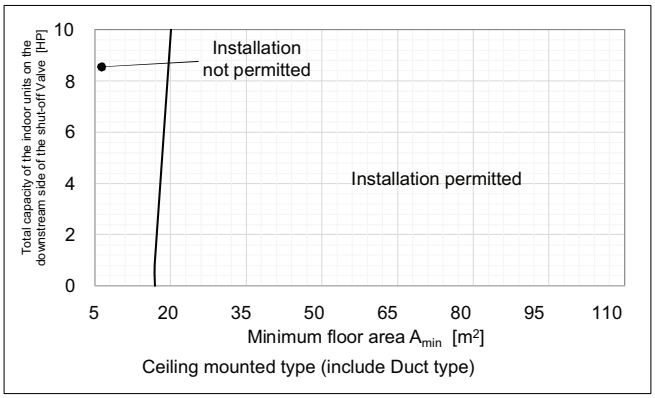


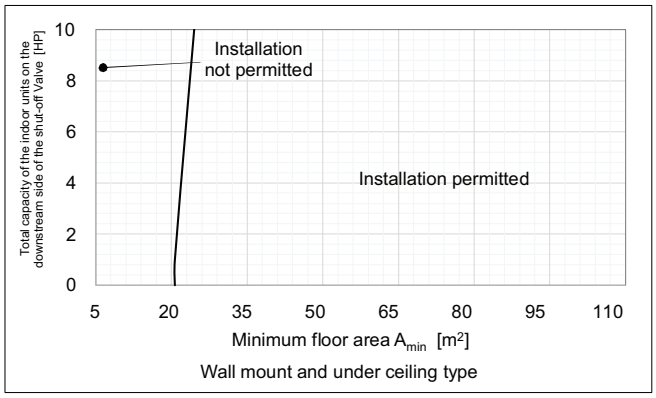
◆ The connection pipe length on the downstream side of the Shut-off Valve is 100m.



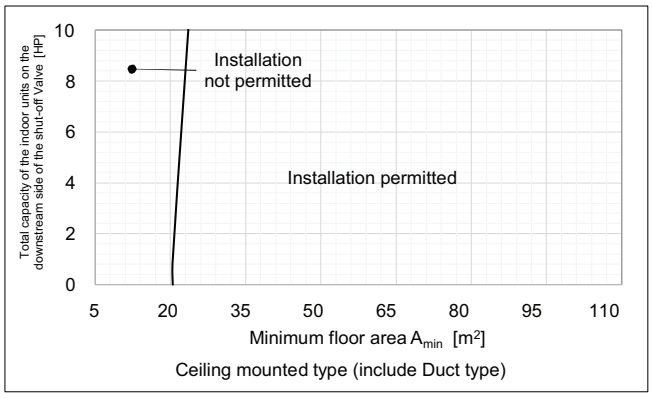


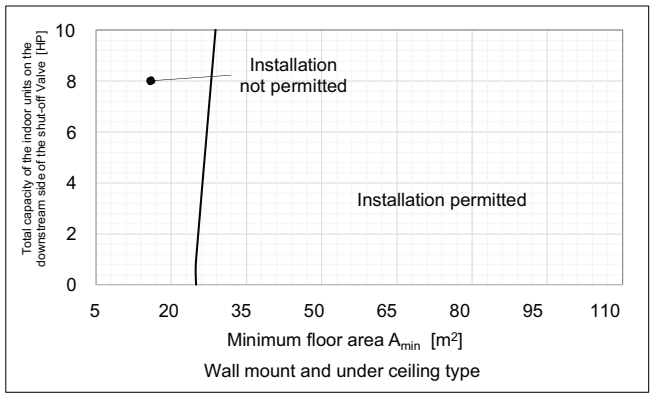
◆ The connection pipe length on the downstream side of the Shut-off Valve is 150m.



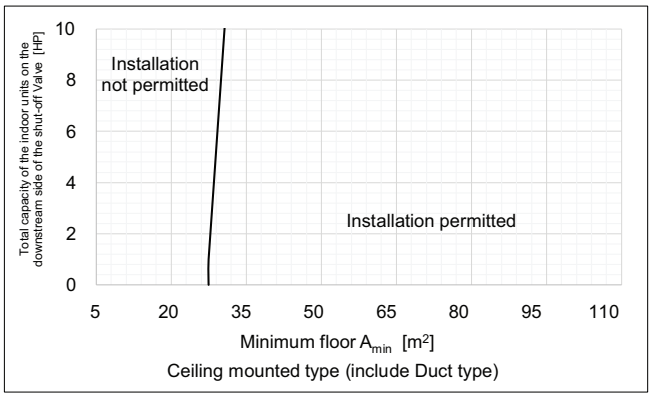


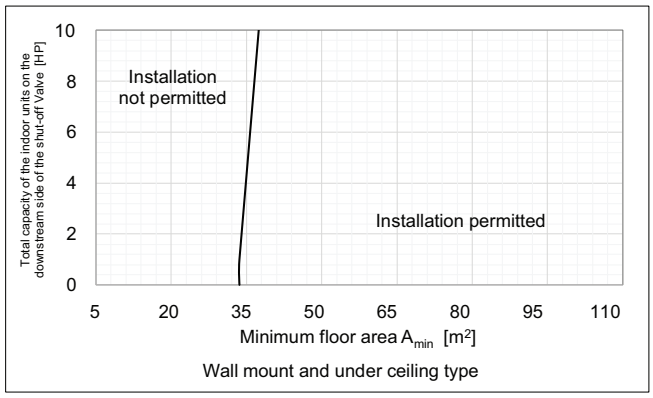
◆ The connection pipe length on the downstream side of the Shut-off Valve is 200m.





◆ The connection pipe length on the downstream side of the Shut-off Valve is 300m.





■ Installation position of Shut-off valve unit in case of recovery by pump down

◆ Ceiling mounted type (include Duct type)

Minimum floor area A_{min} [m^2]	Total connectable pipe length to the downstream side of Shut-off Valve unit [m]						
	Total capacity of indoor units on the downstream side of Shut-off Valve unit [HP]						
	1 HP*	2 HP	3 HP	4 HP	5 HP	6 HP	7.8 HP
5	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–
7	9.6	4.6	–	–	–	–	–
8	23.7	18.8	13.8	8.8	3.8	–	–
9	37.9	32.9	28.0	23.0	18.0	13.0	4.0
10	52.1	47.1	42.1	37.1	32.2	27.2	18.2
11	66.3	61.3	56.3	51.3	46.3	41.4	32.4
12	80.5	75.5	70.5	65.5	60.5	55.5	46.6
13	94.6	89.7	84.7	79.7	74.7	69.7	60.7
14	108.8	103.8	98.8	93.9	88.9	83.9	74.9
15	123.0	118.0	113.0	108.0	103.0	98.1	89.1
16	137.2	132.2	127.2	122.2	117.2	112.2	103.3
17	151.3	146.4	141.4	136.4	131.4	126.4	117.4
18	165.5	160.5	155.6	150.6	145.6	140.6	131.6
19	179.7	174.7	169.7	164.7	159.8	154.8	145.8
20	193.9	188.9	183.9	178.9	173.9	169.0	160.0
21	208.1	203.1	198.1	193.1	188.1	183.1	174.2
22	222.2	217.3	212.3	207.3	202.3	197.3	188.3
23	236.4	231.4	226.4	221.5	216.5	211.5	202.5
24	250.6	245.6	240.6	235.6	230.6	225.7	216.7
25	264.8	259.8	254.8	249.8	244.8	239.8	230.9
26	278.9	274.0	269.0	264.0	259.0	254.0	245.0
27	293.1	288.1	283.2	278.2	273.2	268.2	259.2
28	300.0	300.0	297.3	292.3	287.4	282.4	273.4
29	300.0	300.0	300.0	300.0	300.0	296.6	287.6
30	300.0	300.0	300.0	300.0	300.0	300.0	300.0
31	300.0	300.0	300.0	300.0	300.0	300.0	300.0
32	300.0	300.0	300.0	300.0	300.0	300.0	300.0
33	300.0	300.0	300.0	300.0	300.0	300.0	300.0
34	300.0	300.0	300.0	300.0	300.0	300.0	300.0
35	300.0	300.0	300.0	300.0	300.0	300.0	300.0
36	300.0	300.0	300.0	300.0	300.0	300.0	300.0
37-110	300.0	300.0	300.0	300.0	300.0	300.0	300.0

* Including less than 1HP

◆ Wall mount and under ceiling type

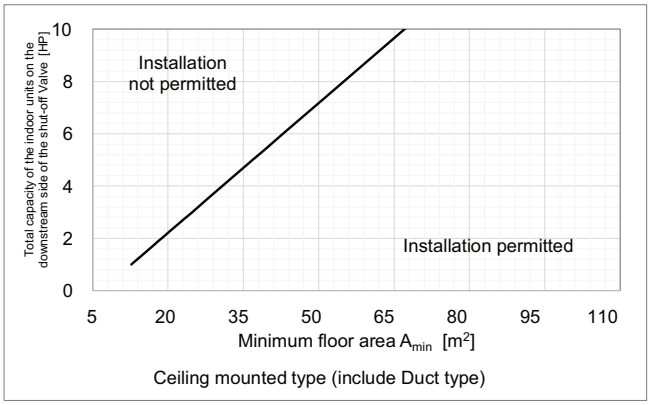
Minimum floor area A_{min} [m^2]	Total connectable pipe length to the downstream side of Shut-off Valve unit [m]						
	Total capacity of indoor units on the downstream side of Shut-off Valve unit [HP]						
	1 HP*	2 HP	3 HP	4 HP	5 HP	6 HP	7.8 HP
5	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–
7	–	–	–	–	–	–	–
8	3.1	–	–	–	–	–	–
9	14.7	9.7	4.8	–	–	–	–
10	26.3	21.3	16.4	11.4	6.4	1.4	–
11	37.9	32.9	28.0	23.0	18.0	13.0	4.0
12	49.5	44.5	39.6	34.6	29.6	24.6	15.6
13	61.1	56.1	51.2	46.2	41.2	36.2	27.2
14	72.7	67.7	62.8	57.8	52.8	47.8	38.8
15	84.3	79.3	74.4	69.4	64.4	59.4	50.4
16	95.9	90.9	86.0	81.0	76.0	71.0	62.0
17	107.5	102.5	97.6	92.6	87.6	82.6	73.6
18	119.1	114.1	109.2	104.2	99.2	94.2	85.2
19	130.7	125.7	120.8	115.8	110.8	105.8	96.8
20	142.3	137.3	132.4	127.4	122.4	117.4	108.4
21	153.9	148.9	144.0	139.0	134.0	129.0	120.0
22	165.5	160.5	155.6	150.6	145.6	140.6	131.6
23	177.1	172.1	167.2	162.2	157.2	152.2	143.2
24	188.7	183.7	178.8	173.8	168.8	163.8	154.8
25	200.3	195.3	190.4	185.4	180.4	175.4	166.4
26	211.9	206.9	202.0	197.0	192.0	187.0	178.0
27	223.5	218.5	213.6	208.6	203.6	198.6	189.6
28	235.1	230.1	225.2	220.2	215.2	210.2	201.2
29	246.7	241.7	236.8	231.8	226.8	221.8	212.8
30	258.3	253.3	248.4	243.4	238.4	233.4	224.4
31	269.9	264.9	260.0	255.0	250.0	245.0	236.0
32	281.5	276.5	271.6	266.6	261.6	256.6	247.6
33	293.1	288.1	283.2	278.2	273.2	268.2	259.2
34	300.0	299.7	294.8	289.8	284.8	279.8	270.8
35	300.0	300.0	300.0	300.0	296.4	291.4	282.4
36	300.0	300.0	300.0	300.0	300.0	300.0	294.0
37-110	300.0	300.0	300.0	300.0	300.0	300.0	300.0

* Including less than 1HP

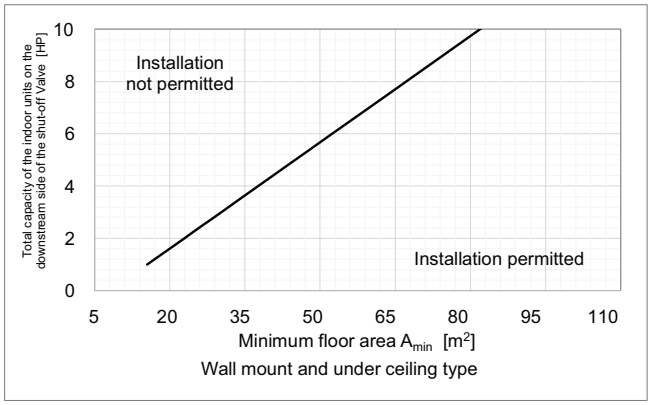
■ Individual shut-off (Set up the indoor DN CODE No. [107] to 2)

The allowable installation position differs depending on
the length of the total connecting pipe.

◆ The total connection pipe length on the downstream side of Shut-off Valve unit is 10m.



Ceiling mounted type (include Duct type)



Wall mount and under ceiling type

■ Installation position of Shut-off Valve unit in case of individual shut-off

◆ Ceiling mounted type (include Duct type)

Minimum floor area A_{min} [m^2]	Connectable pipe length to the downstream side of Shut-off Valve [m] Total capacity of indoor units on the downstream side of Shut-off Valve [HP]						
	1 HP*	2 HP	3 HP	4 HP	5 HP	6 HP	7.8 HP
5	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–
7	–	–	–	–	–	–	–
8	–	–	–	–	–	–	–
9	–	–	–	–	–	–	–
10	2.6	–	–	–	–	–	–
11	5.3	–	–	–	–	–	–
12	8.0	–	–	–	–	–	–
13	10.8	–	–	–	–	–	–
14	13.5	–	–	–	–	–	–
15	16.2	–	–	–	–	–	–
16	18.9	2.5	–	–	–	–	–
17	21.7	5.2	–	–	–	–	–
18	24.4	7.9	–	–	–	–	–
19	27.1	10.7	–	–	–	–	–
20	29.8	13.4	–	–	–	–	–
21	32.6	16.1	–	–	–	–	–
22	35.3	18.8	2.4	–	–	–	–
23	38.0	21.6	5.1	–	–	–	–
24	40.7	24.3	7.8	–	–	–	–
25	43.5	27.0	10.6	–	–	–	–
26	46.2	29.7	13.3	–	–	–	–
27	48.9	32.4	16.0	–	–	–	–
28	51.6	35.2	18.7	2.3	–	–	–
29	54.3	37.9	21.4	5.0	–	–	–
30	57.1	40.6	24.2	7.7	–	–	–
31	59.8	43.3	26.9	10.4	–	–	–
32	62.5	46.1	29.6	13.2	–	–	–
33	65.2	48.8	32.3	15.9	–	–	–
34	68.0	51.5	35.1	18.6	2.2	–	–
35	70.7	54.2	37.8	21.3	4.9	–	–
36	73.4	57.0	40.5	24.1	7.6	–	–
37	76.1	59.7	43.2	26.8	10.3	–	–
38	78.9	62.4	46.0	29.5	13.1	–	–
39	81.6	65.1	48.7	32.2	15.8	–	–
40	84.3	67.8	51.4	34.9	18.5	2.0	–
41	87.0	70.6	54.1	37.7	21.2	4.8	–
42	89.7	73.3	56.8	40.4	23.9	7.5	–
43	92.5	76.0	59.6	43.1	26.7	10.2	–
44	95.2	78.7	62.3	45.8	29.4	12.9	–
45	97.9	81.5	65.0	48.6	32.1	15.7	–
46	100.6	84.2	67.7	51.3	34.8	18.4	–
47	103.4	86.9	70.5	54.0	37.6	21.1	–
48	106.1	89.6	73.2	56.7	40.3	23.8	–
49	108.8	92.4	75.9	59.5	43.0	26.6	–
50	111.5	95.1	78.6	62.2	45.7	29.3	–
55	125.1	108.7	92.2	75.8	59.3	42.9	13.3
60	138.8	122.3	105.9	89.4	73.0	56.5	26.9
65	152.4	135.9	119.5	103.0	86.6	70.1	40.5
70	166.0	149.5	133.1	116.6	100.2	83.7	54.1
75	179.6	163.2	146.7	130.3	113.8	97.4	67.7
80	193.2	176.8	160.3	143.9	127.4	111.0	81.4
85	206.8	190.4	173.9	157.5	141.0	124.6	95.0
90	220.5	204.0	187.6	171.1	154.7	138.2	108.6
95	234.1	217.6	201.2	184.7	168.3	151.8	122.2
100	247.7	231.2	214.8	198.3	181.9	165.4	135.8
110	274.9	258.5	242.0	225.6	209.1	192.7	163.1

* Including less than 1HP

◆ Wall mount and under ceiling type

Minimum floor area A_{min} [m^2]	Connectable pipe length to the downstream side of Shut-off Valve [m] Total capacity of indoor units on the downstream side of Shut-off Valve [HP]						
	1 HP*	2 HP	–	4 HP	5 HP	6 HP	7.8 HP
5	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–
7	–	–	–	–	–	–	–
8	–	–	–	–	–	–	–
9	–	–	–	–	–	–	–
10	–	–	–	–	–	–	–
11	–	–	–	–	–	–	–
12	2.1	–	–	–	–	–	–
13	4.3	–	–	–	–	–	–
14	6.6	–	–	–	–	–	–
15	8.8	–	–	–	–	–	–
16	11.0	–	–	–	–	–	–
17	13.2	–	–	–	–	–	–
18	15.5	–	–	–	–	–	–
19	17.7	1.3	–	–	–	–	–
20	19.9	3.5	–	–	–	–	–
21	22.2	5.7	–	–	–	–	–
22	24.4	7.9	–	–	–	–	–
23	26.6	10.2	–	–	–	–	–
24	28.8	12.4	–	–	–	–	–
25	31.1	14.6	0.4	–	–	–	–
26	33.3	16.9	2.6	–	–	–	–
27	35.5	19.1	4.9	–	–	–	–
28	37.8	21.3	7.1	–	–	–	–
29	40.0	23.5	9.3	–	–	–	–
30	42.2	25.8	11.5	–	–	–	–
31	44.4	28.0	13.8	–	–	–	–
32	46.7	30.2	16.0	–	–	–	–
33	48.9	32.4	18.2	–	–	–	–
34	51.1	34.7	20.5	1.8	–	–	–
35	53.4	36.9	22.7	4.0	–	–	–
36	55.6	39.1	24.9	6.2	–	–	–
37	57.8	41.4	27.1	8.5	–	–	–
38	60.0	43.6	29.4	10.7	–	–	–
39	62.3	45.8	31.6	12.9	–	–	–
40	64.5	48.0	33.8	15.1	–	–	–
41	66.7	50.3	36.0	17.4	0.9	–	–
42	69.0	52.5	38.3	19.6	3.1	–	–
43	71.2	54.7	40.5	21.8	5.4	–	–
44	73.4	57.0	42.7	24.1	7.6	–	–
45	75.6	59.2	45.0	26.3	9.8	–	–
46	77.9	61.4	47.2	28.5	12.1	–	–
47	80.1	63.6	49.4	30.7	14.3	–	–
48	82.3	65.9	51.6	33.0	16.5	0.1	–
49	84.5	68.1	53.9	35.2	18.7	2.3	–
50	86.8	70.3	65.0	37.4	21.0	4.5	–
55	97.9	81.5	76.2	48.6	32.1	15.7	–
60	109.1	92.6	87.3	59.7	43.3	26.8	–
65	120.2	103.7	98.4	70.8	54.4	37.9	8.3
70	131.3	114.9	109.6	82.0	65.5	49.1	19.5
75	142.5	126.0	120.7	93.1	76.7	60.2	30.6
80	153.6	137.2	131.9	104.3	87.8	71.4	41.8
85	164.8	148.3	143.0	115.4	99.0	82.5	52.9
90	175.9	159.4	154.1	126.5	110.1	93.6	64.0
95	187.0	170.6	165.3	137.7	121.2	104.8	75.2
100	198.2	181.7	187.6	148.8	132.4	115.9	86.3
110	220.5	204.0	187.6	171.1	154.7	138.2	108.6

* Including less than 1HP

■ Shut-off Valve unit Installation

When Shut-off Valve unit is installed , the allowable installation position differs depending on the total amount of refrigerant. The installation position shall be determined according to the following formula.

◆ $L_{\varphi 9.52}+L_{\varphi 6.35}/3 \geqq (m_c - 8) \times 14$

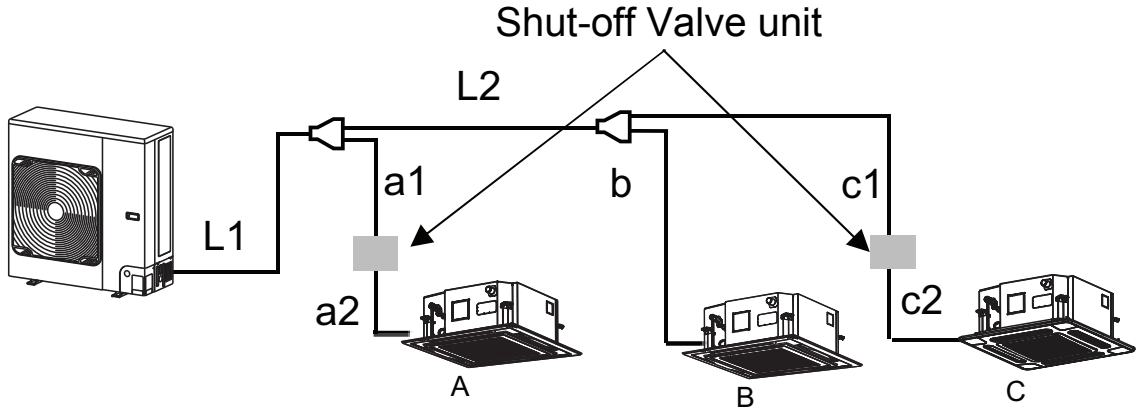
$L_{\varphi 9.52}$: Total length of φ9.52 liquid pipe between outdoor unit and Shut-off valve unit or indoor unit. [m]

$L_{\varphi 6.35}$: Total length of φ6.35 liquid pipe between 1st branching section and Shut-off Valve unit or indoor unit. [m]

m_c : Total amount of refrigerant [kg]

*If the calculation indicates negative, replace it as 0.

Example: 060 type



Liquid Pipe	
L1	9.52
L2	9.52
a1	9.52
a2	9.52
b	6.35
c1	6.35
c2	6.35

Indoor unit	
A	MMU-UP 0241HP*
B	MMU-UP0181HP*
C	MMU-UP0071MH*

$L_{\varphi 9.52}$ = L1 + L2 + a1

$L_{\varphi 6.35}$ = b + c1

* Notice that liquid pipe [b] is included.

[5] [To determine the limit on the amount of additional refrigerant]

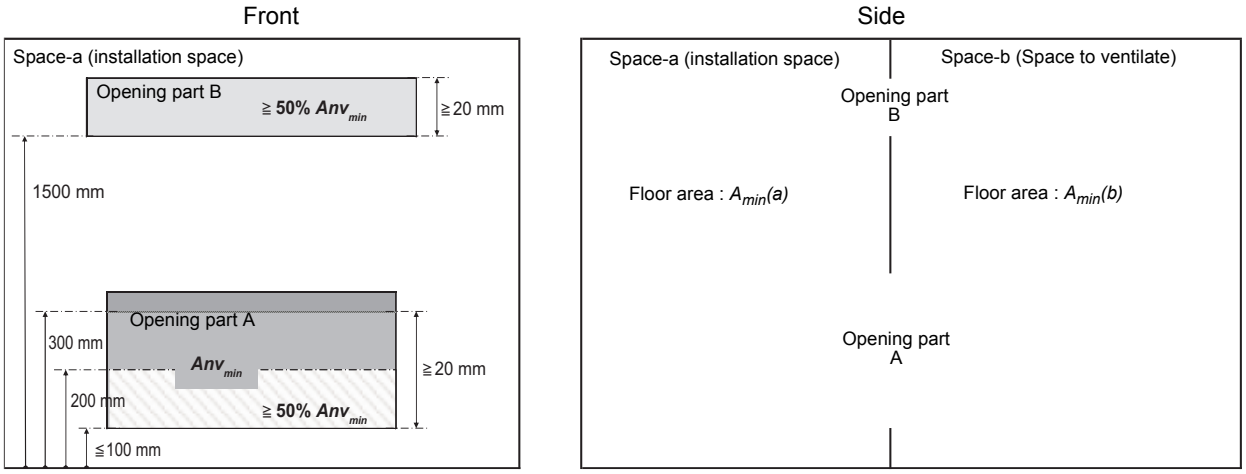
Determine the smallest room area to calculate the total allowable refrigerant charge limit in the system.
The area of the smallest room being served by the system is decided in the following contents to determine the maximum allowable total charge of the system.

(1) The area of a room can be determined by projecting walls, doors and partitions onto the floor and calculating from the enclosed area.
(2) Spaces connected by only false ceilings, ductwork, or similar connections shall not be considered a single space.
(3) If the partition between 2 rooms on the same floor meets certain requirements then the rooms are considered as one room and the areas of the rooms may be added up. In this way, it is possible to increase the A_{min} value used to calculate the maximum allowed charge.

One of the following 2 requirements shall be met to add up room areas.

1) A room on the same floor, connected by a permanent opening that extends to the floor, and is intended for people to pass through, and can be considered as a single room.
2) Rooms on the same floor that are connected by openings that meet the following conditions can be considered as one room.

The opening shall consist of two parts to allow air circulation.
• A_{min} (a) + A_{min}(b) ≧ m_c / (0.25 x LFL x H) = m_c / 0.04605 (m^2)
• Anv_{min} > 0.0123 [m^2]



the opening can't be connected to the outdoors.
the opening can't be closed.
the lower opening shall be ≥ 0.012 m² (minimum opening area for natural ventilation [Anv_{min}]).
Areas of openings greater than 300 mm from the floor are not included in the calculation when determining Anv_{min}.
50% of Anv_{min} or more is less than 200 mm from the floor.
the bottom of the bottom opening is 100 mm or less from the floor the height of the opening is ≧ 20 mm.

For the upper opening :
the opening can't be connected to the outdoors.
the opening can't be closed.
the upper opening shall be ≥ 0.006 m² (50% of Anv_{min}).
The bottom of the upper opening shall be at least 1500 mm from the floor.
the height of the opening is ≥ 20 mm.

Note) The requirements for the upper opening can be met by a drop ceiling, ventilation ducts, or similar arrangements that provide airflow between connected rooms.

(4) Connect both the air inlet and outlet directly to the same room.
(5) Do not use a space such as a false ceiling as the air inlet or the outlet of the duct.
(6) There shall be no auxiliary device (for example, an electric switch device whose surface is 700°C) that can be a potential ignition source in the duct work.
(7) Only equipment approved by the manufacturer shall be used for duct work.

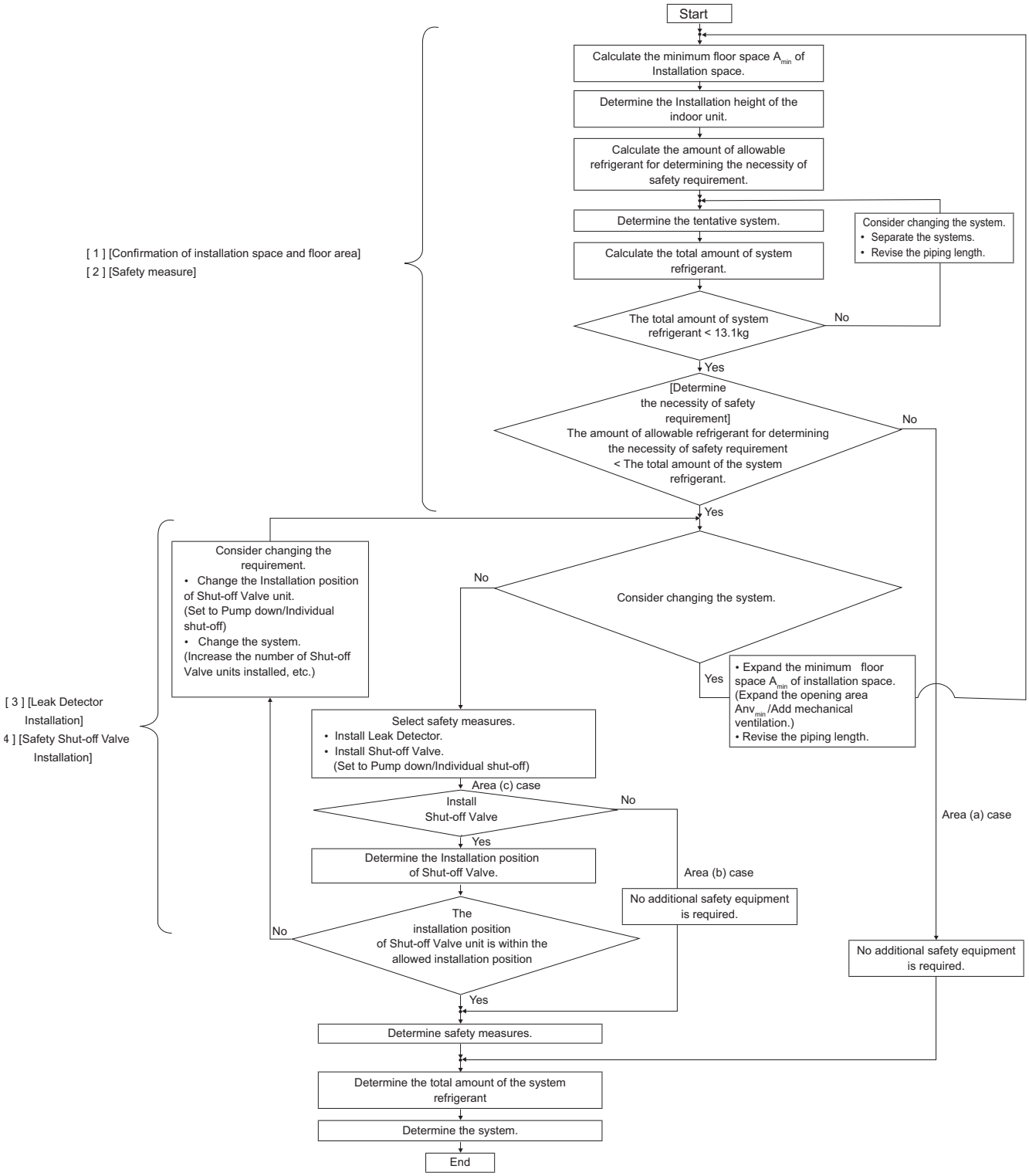
⚠ CAUTION

For appliances connected via an air duct system to one or more rooms using an A2L refrigerant

- which include a separate section with refrigerant containing components except pipes (e.g. compressors, condensers), and
- which are isolated from the airflow and located in a room smaller than minimum floor area [Amin] then IEC60335-2-40 Clause GG.4 (ventilated enclosure) can be applied, where the required ventilation can be provided by the ventilation system.
  That section shall have an opening to the outdoor or indoor air-stream to be able to ventilate the refrigerant to an area in compliance with Annex GG.

Safety measure selection flow

Based on the installation conditions calculated above, determine the installation specifications according to the following safety measure selection flow.



8-5. Troubleshooting in test operation

If there are phenomena such as the output of a check code or the remote controller is not accepted when powered-on after wiring work or during address setup operation, the following causes are considered.

8-5-1. A check code is displayed on the remote controller

Check the code displayed on the indoor remote controller	Outdoor unit 7-segment display	Cause	Counter measures
E04	–	When outdoor power is off	Check that the outdoor unit power is on
	L08	Address setup error • Only line addresses of the connected indoor units are undefined. • The outdoor line address and the line addresses of all the indoor units do not match. • The indoor addresses are duplicated. (Units except those displaying E04 are duplicated.) • A outdoor unit is not set up in group control (except groups displaying E04).	Set up the address again.
	E08 ⇔ -XX Alternate blinking	Duplication of indoor addresses (address number in the sub code of the check code are duplicated).	Set up the address again.
	E07	When the termination resistor (SW100 bit2) in the communication line between indoor and outdoor units (Uv) on the outdoor unit has not been turned on or two or more termination resistors have been turned on (After address setup, when termination resistor setup is changed after powering-on)  SW100	Check SW100 bit 1 or bit 2 of the outdoor unit. No connection between multiple refrigerant lines: Turn off SW100 bit 1 and turn on bit 2. Connection between multiple refrigerant lines: Turn on SW100 bit 1 of only the connected outdoor unit for one line. Turn on SW100 bit2 of all outdoor the units. *Factory default : SW100 bit 1 is off, bit 2 is off.
		Transmission circuit error at the interface side (P.C. board failure)	Replace the interface P.C. board.
	E06	After address setup, communication from all the indoor units is interrupted under the condition that a normal operation can be performed.	Check and correct disconnection of the indoor/outdoor communication line (the communication line between the outdoor unit and the leading indoor unit). Check for the influence of communication noise. In TU2C-LINK communication system, if the termination resistor is not set in any of the indoor units.
E16	E16.XX	Exceeded the number or capacity of connected indoor units	Adjust the number or capacity of connected indoor units.
E23	E23	Communication between outdoor units has stopped.	Check the number of connected outdoor units. Check that outdoor unit power is on.
E25	E25	Duplication of outdoor addresses (only when an outdoor address was manually set up)	Do not use manual setup for outdoor addresses.
E26	E26 ⇔ -XX E26 Alternate blinking	Number of connected outdoor units has decreased. • When installing an outdoor backup • The power of a follower unit is not turned on.	Correction of the cause of trouble occurrence • If it occurs when installing a backup, clear the trouble after setup finishes. • If the power of a follower unit is not turned on, turn on the power.
L02	L02	• When an indoor unit that does not support A2L refrigerant is connected	• Replace indoor unit.
L04	L04	Duplication of outdoor line addresses • Line address setup error (occurred after connection between U1 / U2 and U3 / U4 connectors)	Modify the line address setup of the outdoor unit between lines. (Set up SW13 and SW14 on the interface P.C. board.)
L05(*)	L06	Duplication of indoor units with priority	Set up priority only for one indoor unit.
L06(*)	None	There are two or more indoor units set up with priority.	Among indoor units indicating “L05,” set one unit with priority.
L08	L08	Address setup error • Only indoor addresses of all the connected indoor units are undefined.	Set up the addresses again. Modify the setup.
* “L05”: Displayed on the indoor unit set up with priority “L06”: Displayed on the indoor units except the one set up with priority			

Check the code displayed on the indoor remote controller	Outdoor unit 7-segment display	Cause	Counter measures
L13	L13	• When the safety measures settings for indoor units connected to the same Shut-off Valve unit are mixed with "Pump-down operation" setting and "Individual shut-off operation" setting. • When the safety measures settings for indoor units connected to the same Shut-off Valve unit are mixed with "Individual shut-off" setting and "Only Leak Detector" setting. • When the same Shut-off Valve unit address is set in different remotecontrol groups.	• Correct the connection of the indoor unit. • Correct safety measures settings. • Correct the address settings of Shut-off Valve unit. • Correct communication line. • Replace the indoor unit P.C.board.
L14	L14	• When the safety measures settings for indoor unit is set other than "no safety measures required" and the leak detector is not connected when the power is turned on • When the safety measures setting of the indoor unit is set to "Pump-down operation" or "individual shut-off operation"	• Correct safety measures settings. • Connect Leak Detector. • Correct safety measures settings. • Connect Shut-off Valve unit. • Correct connection of connector. • Replace indoor unit P.C.board.

8-5-2. No Remote Controller Response with Check Code

(Operation from the indoor remote controller is not accepted, and a check code is displayed on the 7- segment display of the interface PC board of the Outdoor unit)

Indoor remote controller status	Outdoor unit 7-segment display	Cause	Counter measures
No response	L08	Line addresses and indoor addresses of all the connected indoor units are not set.	Set up addresses.
		There is no header unit of group control.	Set up a group address.
	E19 ⇔ -00 Alternate blinking	Indoor unit power is not turned on.	Turn on the power again. (In the order: indoor ? outdoor)
		Indoor / outdoor communication line is not correctly connected to the Uv terminal of the outdoor unit. (Indoor / outdoor cannot communicate before address setup.)	Correct wiring
		• When the termination resistor (SW100 bit2) on the outdoor unit has not been turned on. • When two or more termination resistors (SW100 bit2) have been turned on (After address setup,when termination resistor setup is changed after powering-on)  SW100	Check SW100 bit 1 and bit 2 of the outdoor unit. • [No connection between multiple refrigerant lines] Turn off SW100 bit 1 and turn on bit 2. • [Connection between multiple refrigerant lines] Turn on SW100 bit 1 of only the connected outdoor unit for one line. Turn on SW100 bit 2 of all outdoor the units. * Factory default : SW100 bit 1 and bit 2 are ON.
	E19 ⇔ -02 Alternate blinking	When an indoor/outdoor communication line(Uv) for other refrigerant line(system) is connected.	Correct wiring
	E19 ⇔ -01 Alternate blinking	Address setup is performed under the condition of connecting across multiple refrigerant lines.	Correct wiring

8-5-3. No Remote Controller Response without Check Code

(There is no display of a check code on the 7-segment display on the interface PC board of the Outdoor unit, although there is indoor unit that is not accepting operation from the indoor remote controller)

Indoor remote controller status	Outdoor unit 7-segment display	Cause	Counter measures
No response	None	The communication line is not connected between indoor and outdoor (the unit that does not respond to the indoor remote controller).	Improve the wiring.
		Line address and indoor address are not set (the unit that does not respond to the indoor remote controller).	Set up the address.
		The power of the outdoor unit of the group is not turned on in indoor group control (the unit that does not respond to the indoor remote controller).	Turn on the power.
		Group address is set to the follower unit for individual control (the unit that does not respond to the indoor remote controller).	Set the group address to “0” in the case of individual control.
No display on the indoor remote controller (no line is output.)	None	The power is not turned on (the unit that is not displayed on the indoor remote controller).	Turn on the power.
		The indoor remote controller is not connected with a wire (the unit that is not displayed on the indoor remote controller).	Improve the wiring.
		Miswiring of the indoor remote controller (the unit that is not displayed on the indoor remote controller)	Improve the wiring.
		Indoor remote controller communication circuit error (the unit that is not displayed on the indoor remote controller) If 220 V is incorrectly applied to the indoor remote controller terminal, the remote controller communication circuit fails.	Remove the fast-on terminal connected to indoor remote controller terminals A / B, and check the voltage. If voltage is not applied (normally 15 to 18 V), replace the P.C. board.

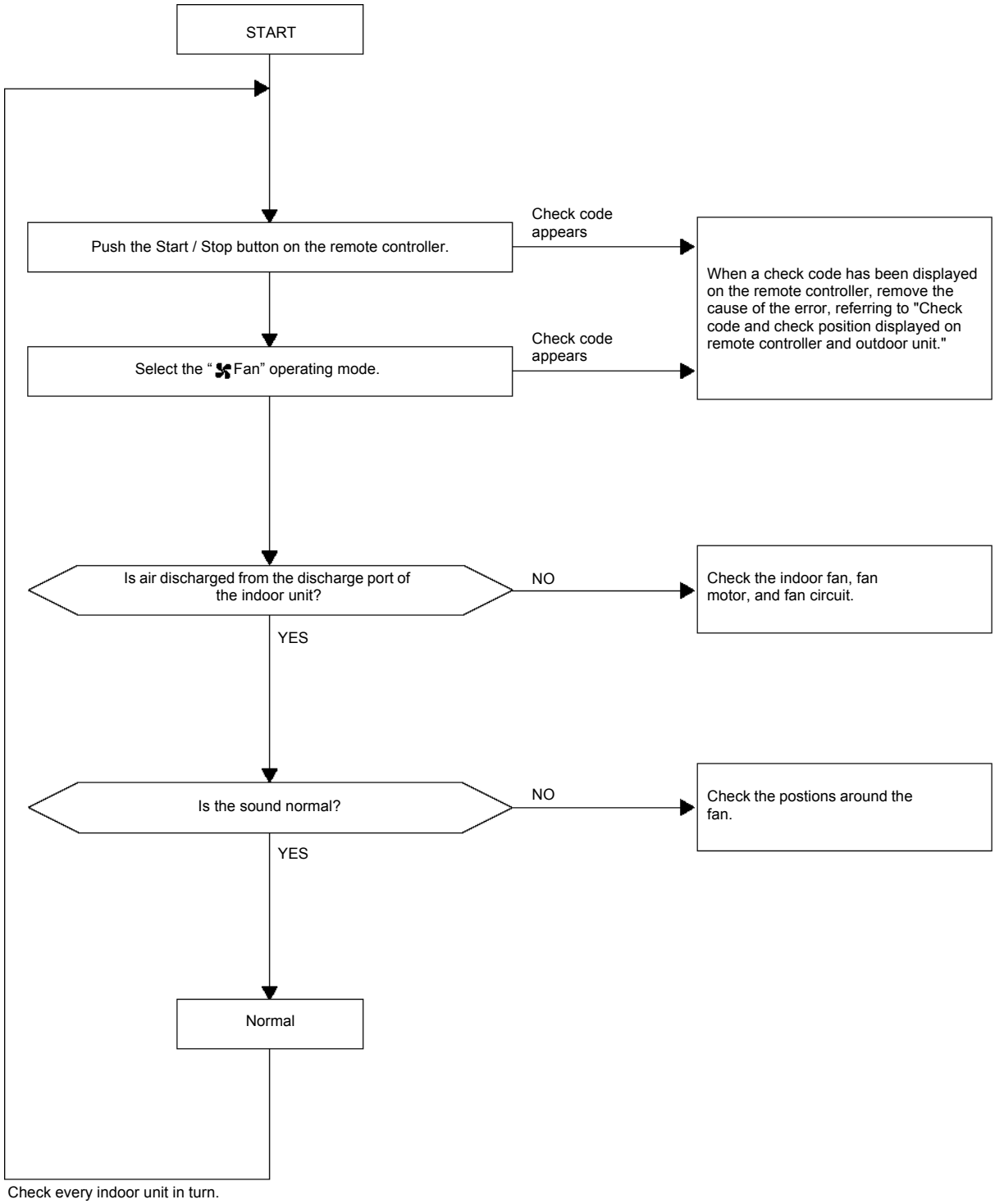
8-5-4. Connected Indoor/Outdoor Unit Quantity Check

In checking the number of connected outdoor units and connected indoor units after address setup, a lower number of connected units is displayed. (There are outdoor / indoor units that do not operate in a test operation.)

Status	Cause	Counter measures
The number of connected indoor units is too few.	Miswiring of communication lines between indoor units or an unconnected wire. (Address setup operation finished without recognizing a mis wired indoor unit.)	After modification of wiring, set up the addresses again and check the number of connected indoor units.
The number of indoor units connected to a group is few in group operation from an indoor remote controller.	The indoor remote controller is not connected with wire. Miswiring of the indoor remote controller	Using the main indoor remote controller connected to a group, start a test operation, specify the unit that is not operating (the unit not connected to the group), and then check the wiring.
	Indoor remote controller communication circuit trouble If 220 V is incorrectly applied to the remote controller terminal, the remote controller communication circuit fails.	Using the main indoor remote controller connected to a group, start a test operation and then specify the unit that is not operating (the unit not connected to the group). Remove the quick connect terminal connected to remote controller terminals A/B, and check the voltage. If voltage is not applied (normally 15 to18 V), replace the PC board.

8-6. Test operation check

8-6-1. Fan check



8-6-2. Inspection mode (safety measures)

◆ When connecting a Shut-off Valve unit, perform the following detailed inspection mode.

This mode verifies that safety measures are properly connected.

The detailed inspection mode is performed on the interface P.C. board of the outdoor unit.

Detailed inspection mode is completed in about 30 minutes.

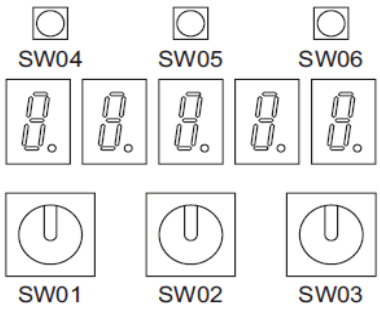
<Detailed inspection mode start operation>

1. Set the rotary switch on the interface board of the outdoor unit to SW01 = [2], SW02 = [15], SW03= [16].

7-segment display	
[A] [FS]	[B] [ ]

2. Press SW04 for at least 5 seconds.

7-segment display	
[A] [FS]	[B] [CH]



If the detailed inspection mode successfully completes, the following will be displayed.

7-segment display	
[A] [FS]	[B] [--]

If there is an incorrect electrical wiring, incorrect piping connection, incorrect indication, etc., the following will be displayed.

If there are multiple indoor units with errors, press SW06 to change the address display of the indoor unit. If there is only one indoor unit with an error, the display remains the same.

7-segment display		
[A] [FS]	[B] [Err] ⇕ [#] ↓ # : Address of error indoor unit	The indication changes every 0.5 second.

If [Err] is indicated on 7-segment display, execute cooling/heating test run for each indoor unit and check cool/hot air is blowing. Also, check the piping connections, wiring connections, and settings again. If there is no problem after checking again, the system is normal. When you modify piping connections, wiring connections, or settings, execute detailed inspection mode again. Please contact a qualified service person if there is any trouble during test run.

*[Err] may be indicated even if there is no problem.

• When the temperature difference is large between in each indoor unit.

• When the Shut-off Valve unit is connected to the main pipe from the outdoor unit.

<Detailed inspection mode start operation>

Return the rotary switch on the interface board of the outdoor unit to SW01 = [1], SW02 = [1], and SW03 = [1].

7-segment display	
[A] [U1]	[B] [ ]

◆ When using Leak Detector, perform the following simple inspection mode.

The simple inspection mode is performed with Leak Detector.
The simple inspection mode should be performed for each Leak Detector.
If you run a simple inspection mode while normal operation, this operation stops.
The simple inspection mode can be performed during the detailed inspection mode.
(Detailed inspection mode operation does not stop.)
Simple inspection mode ends after 3 minutes from the start.

<Simple inspection mode start operation>

Press the reset switch on Leak Detector for at least 5 seconds.
(Please use a precision screwdriver, etc.).

7-segment display	
[A] [Sd]	[B] [CH]

It is not displayed during detailed inspection mode.

Leak Detector works.
For the operation of Leak Detector, refer to the operating instructions of Leak Detector.
If the simple inspection mode operates normally, the following is displayed.
(It is not displayed during detailed inspection mode.)

7-segment display	
[A] [Sd]	[B] [- -]

If there is a disconnection, etc., the following display will be displayed.

7-segment display	
[A] [Sd]	[B] [Err]

<Simple inspection mode end operation>

Press the alarm stop switch on Leak Detector for at least 5 seconds.

7-segment display	
[A] [U1]	[B] [ ]

8-6-3. Cooling / Heating test operation check

The cooling / heating test operation check can be performed on both the indoor remote controller and the outdoor unit interface P.C. board.

(1) Test operation start / stop operation

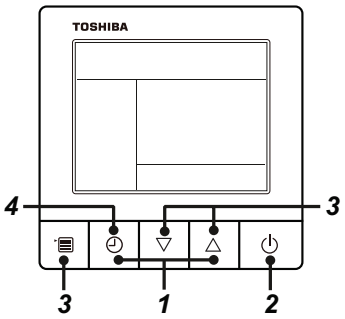
Test operation from the indoor remote controller

- Wired remote controller: Refer to the items below in “Test operation” of the wired remote controller.
- Wireless remote controller: Refer to the items below in “Test operation” of the wireless remote controller.

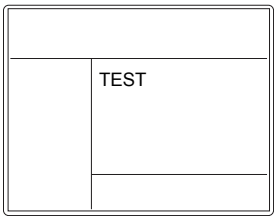
▼Wired remote controller
<RBC-ASCU11*>

Be sure to stop the air conditioner before making settings.

(Change the setup while the air conditioner is not working.)



1 **Push and hold OFF timer button and [△] setting button simultaneously for 10 seconds or more. [TEST] is displayed on the display part and the test run is permitted.**



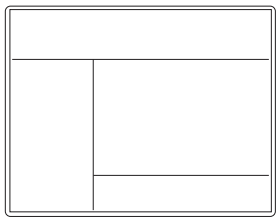
2 **Push ON/OFF button.**

3 **Push menu button to select the operation mode. Select [Cool] or [Heat] with [▽] [△] setting button.**

- Do not run the air conditioner in a mode other than [Cool] or [Heat].
- The temperature setting function does not work during test run.
- The check code is displayed as usual.

4 **After the test run, push OFF timer button to stop a test run.**

([TEST] disappears on the display and the air conditioner enters the normal stop mode.)



8-6-4. Pump-down test operation

◆ Perform pump-down test operation by the following operation.

NOTE When performing this operation, be sure to perform "8-6-2. Inspection mode (safety measures)" and "8-6-3. Cooling / Heating test operation check" in advance.

<Pump-down test start operation>

1. Set the rotary switches on the interface P.C. board of the outdoor unit to SW01=[2], SW02=[15], SW03=[15].

7-segment display	
[A]	[B]
[Pt.]	[ ]

2. Push SW04 for at least 5 seconds.
   Check that [CH] is displayed on 7-segment display [B] and [Test run] is displayed on the remote controller.

7-segment display	
[A]	[B]
[Pt.]	[CH]

If pump-down test operation successfully completes, the following will be displayed.
([Test run] on the remote controller disappears ,and " ⏻ " is displayed when push ON/OFF button.).

7-segment display	
[A]	[B]
[Pt.]	[J30]

If a trouble occurs during pump down operation, the following will be displayed.

7-segment display	
[A]	[B]
[Pt.]	[***]

***: Check code (Refer to "9-2. Troubleshooting method")

<Pump-down test end operation>

1.Reset system power.

2.Set the rotary switches to SW01=[2], SW02=[1], SW03=[9].

7-segment display	
[A]	[B]
[o.U.]	[L o c] (While system is locked.) [ ] (Others)

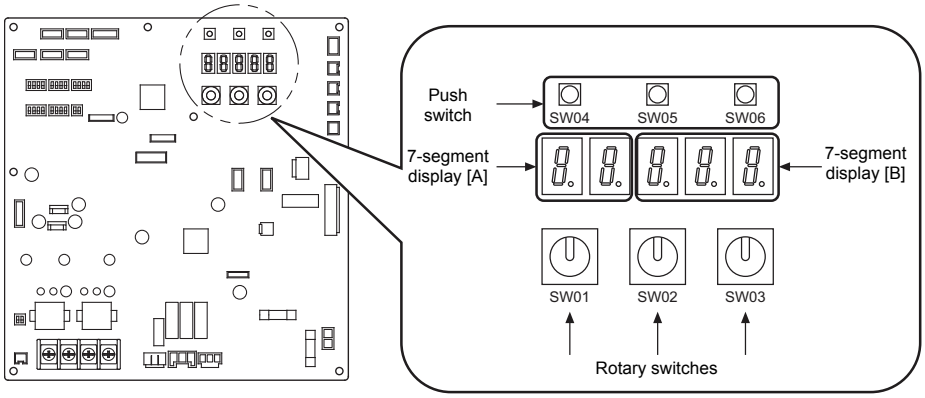
3.Push SW05 for at least 5 seconds.

7-segment display	
[A]	[B]
[o.U.]	[CL] (for 5 seconds)

4.Reset system power again.

5.Return the rotary switches to SW01=[1], SW02=[1], SW03=[1].

Interface P.C. board



▼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

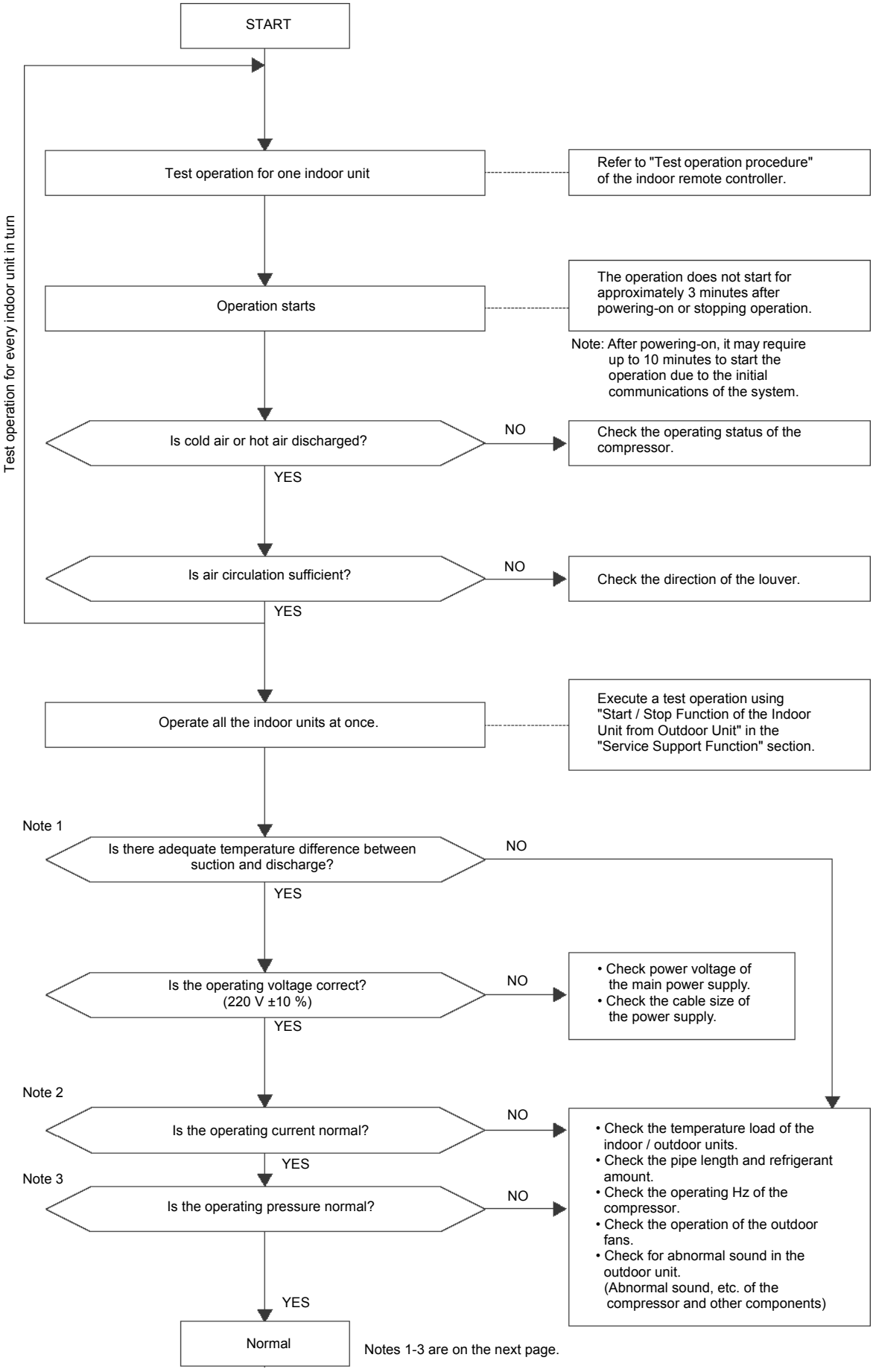
Test operation from the outdoor unit

- Refer to "7-7-2. Function to Start/Stop (ON/OFF) Indoor Unit from Outdoor Unit" in "7-7. Service Support Function."

⚠ CAUTION

- The test run is a forced run that ignores the set temperature. Be sure to stop the test run after work, paying attention to the room temperature.
- After 60 minutes, the test run will be completed to protect the equipment, and the normal operation will be started according to the set temperature.

(2) Test operation



Notes 1-3 are on the next page.

Note 1: Criteria for the difference between suction and discharge temperatures

(1) Cooling operation

After operating for a minimum of 30 minutes in “COOL” mode, if the ΔT dry bulb temperature difference between suction and discharge air of the indoor unit is 8 °C or more, it is normal.

(2) Heating operation

After operating for a minimum of 30 minutes in “HEAT” mode, if the ΔT dry bulb temperature difference between suction and discharge air of the indoor unit is 15 °C or more, it is normal.

* If demand from the indoor unit on the outdoor unit is low because the difference between the temperature set by the remote controller and the temperature of the room is small, then the ΔT temperature difference is small.
* Consider that ΔT temperature difference may diminish in cases of a system in which the connected indoor unit capacity exceeds the outdoor unit capacity, the pipe length is long, or a large difference exists among outdoor units.

Note 2: Criteria for operating power current

The table below shows the maximum current for each outdoor unit. Under standard conditions, operating current is about 80 % of the value shown in the table below.

Outdoor unit	MCY-MUG	0401	0501	0601
Current value	(A)	23.5	26.5	28.0

Note 3: Criteria for cycle status

(1) These data are based on operating a 4-way Air Cassette type air conditioner of 100 % connection with standard piping length.

Data may vary depending on temperature conditions, installed pipe length, and room shape combinations, or indoor unit connection capacity.

For pressure criteria in different temperature conditions, refer to (2).

Outdoor unit MCY-MUG	Operating mode	Pressure (MPa)		Pipe surface temperature (°C)					Compressor drive revolution frequency (rps)*	Indoor fan	Air temperature condition (DB / WB) (°C)	
		Pd	Ps	Discharge (TD)	Suction (TS1)	Indoor heat exchanger (TC)	Outdoor heat exchanger (TE)	Liquid temperature (TL1)			Indoor TA	Outdoor TO
0401*	Cooling	2.9	1.1	90	18	14	41	41	44	High	27/19	35/-
	Heating	2.2	0.7	77	4	30	3	29	45	High	20/-	7/6
0501*	Cooling	3.1	1.0	96	17	13	42	41	53	High	27/19	35/-
	Heating	2.3	0.7	82	4	31	2	29	52	High	20/-	7/6
0601*	Cooling	3.3	1.0	98	15	13	40	42	57	High	27/19	35/-
	Heating	2.3	0.7	81	1	30	1	28	60	High	20/-	7/6

* This compressor is driven with a 4-pole motor. The value of the compressor frequency (rps) measured with a clamp meter at the compressor lead line is two times the rotation count (rps) of the compressor.
* The temperature of the indoor heat exchanger (TC) indicates TCJ sensor temperature when cooling, and TC2 sensor temperature when heating, respectively.

(2) Criteria for operating pressure

Operating mode		Cooling	Heating
Indoor temperature (°C)		18~32	15~25
Outdoor temperature (°C)		25~35	5~10
Pressure	High pressure (MPa)	2.0~3.3	2.5~3.3
	Low pressure (MPa)	0.5~0.9	0.5~0.7

* Criteria after 15 minutes or more has passed since operating started

(3) On rotations of outdoor fans

Outdoor fans may rotate slowly to control pressure when cooling with low outer air temperature or heating with excessive load. For control content, also refer to items in Section 6, “Control Outline: Outdoor Unit, Outdoor Fan Control.”

8-7. Service support function

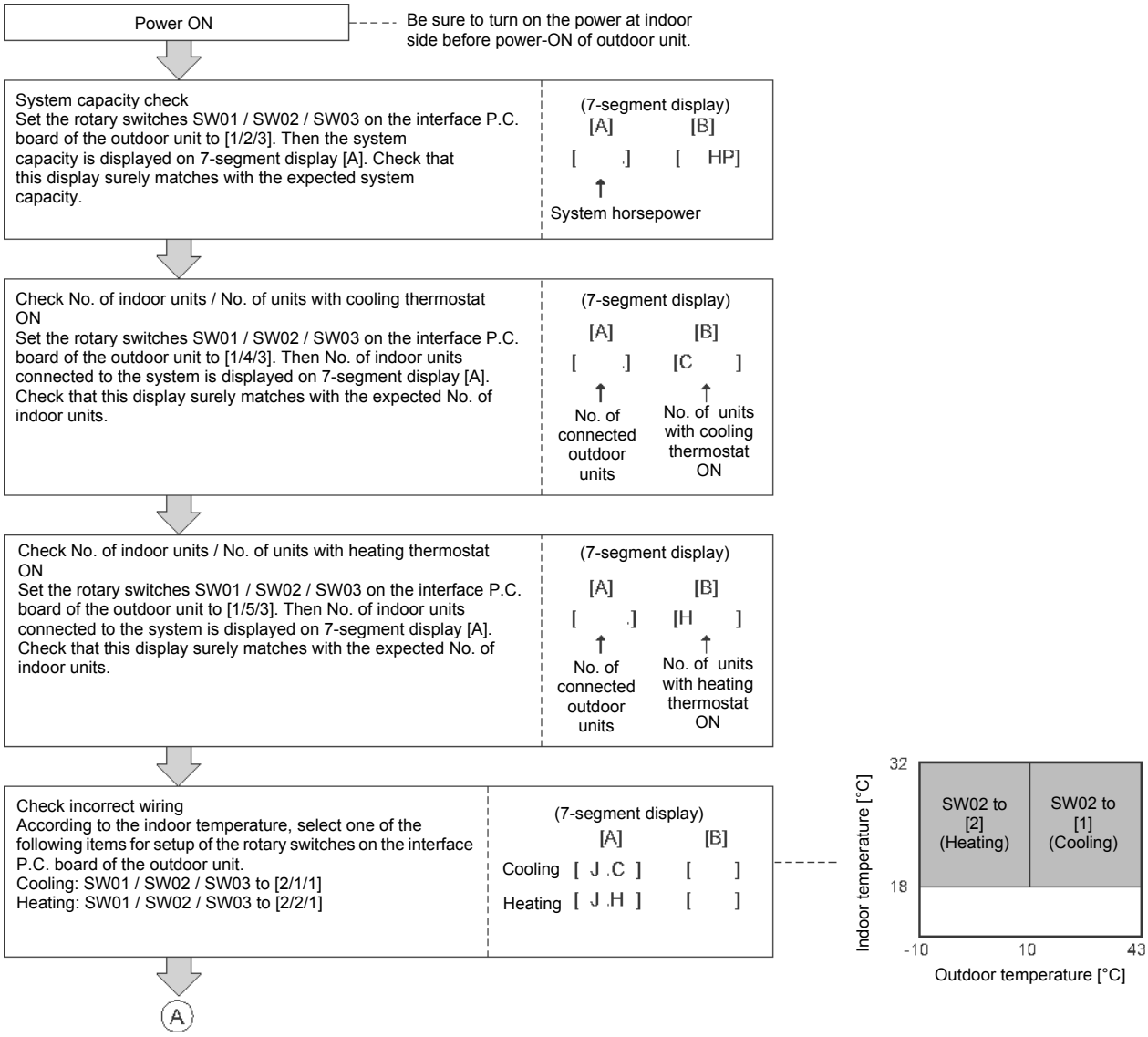
8-7-1. Check function for connecting of refrigerant and control lines

This function is provided to check misconnection of the refrigerant pipes and the control transmission line (Wiring over lines) between indoor unit and outdoor unit by using the switch on the interface P.C. board of the outdoor unit.
However, be sure to check the following items prior to executing this check function.

1 **This check function does not work when a group operation by remote controller is performed and it is used over outdoor units.**

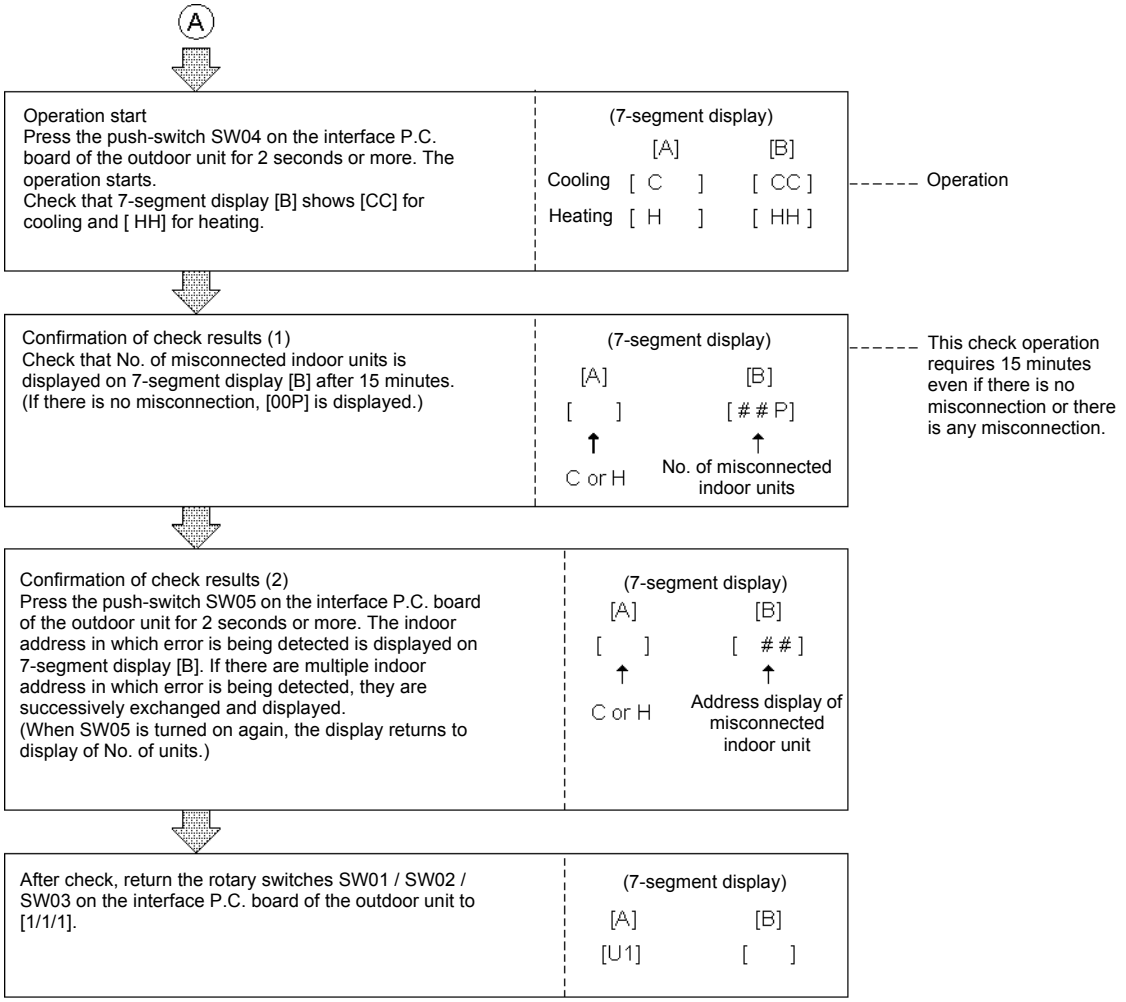
2 **When using this check system, be sure to check for each 1 line in the unit of outdoor unit. If checking the multiple lines at the same time, misjudgment may be caused.**

(Check procedure)

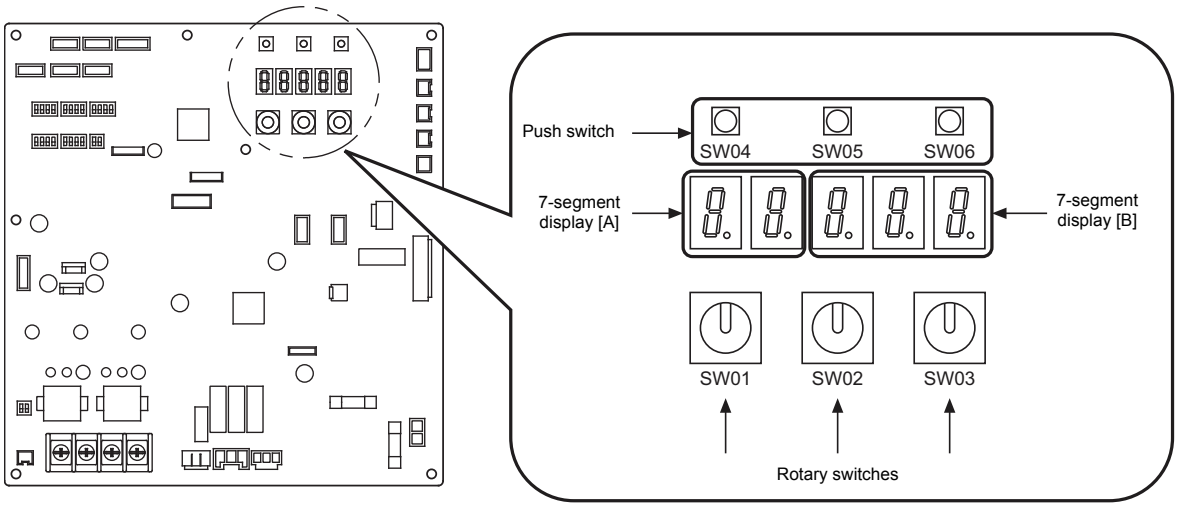


On rotations of outdoor fans:

Outdoor fans may rotate slowly to control pressure when cooling with low outer air temperature or heating with excessive load. For control content, also refer to items in Section 6, “Control Outline: Outdoor Unit, Outdoor Fan Control.”



Interface P.C. board



8-7-2. Function to start / stop (ON / OFF) indoor unit from outdoor unit

The following functions of the indoor unit can start or stop by the switches on the interface P.C. board of the outdoor unit.

No	Function	Outline	Setup / Release	7-segment display
1	Cooling test operation	Changes the mode of all the connected indoor units collectively to cooling test operation. Note) Control operation same as usual test operation from remote controller is performed.	[Setup] Set SW01/SW02/SW03 to [2/5/1], and press SW04 for 2 seconds or more. [Release] Return SW01 / SW02 / SW03 to [1/1/1].	Section A [C.] Section B [– C]
2	Heating test operation	Changes the mode of all the connected indoor units collectively to heating test operation. Note) Control operation same as usual test operation from remote controller is performed.	[Setup] Set SW01/SW02/SW03 to [2/6/1], and press SW04 for 2 seconds or more. [Release] Return SW01 / SW02 / SW03 to [1/1/1].	Section A [H.] Section B [– H]
3	Fan test operation	Changes operation mode of all the connected indoor units collectively to test operation mode. Note) Control operation same as usual test operation from remote control is performed.	[Setup] Set SW01/SW02/SW03 to [2/9/1], and push SW04 for 2 seconds or more. [Release] Return SW01/SW02/SW03 to [1/1/1].	Section A [F.] Section B [– F]
4	Batch start	Starts all the connected indoor units collectively. Note) The contents follow to the setup of remote controller.	[Setup] Set SW01/SW02/SW03 to [2/7/1], and press SW04 for 2 seconds or more. [Release] Return SW01 / SW02 / SW03 to [1].	Section A [C.H] Section B [11] [00] is displayed on Section B for 5 seconds.
	Batch stop	Stops all the connected indoor units collectively.	[Setup] Set SW01/SW02/SW03 to [2/7/1], and press SW05 for 2 seconds or more. [Release] Return SW01 / SW02 / SW03 to [1].	Section A [C.H] Section B [00] [00] is displayed on Section B for 5 seconds.
5	Individual start	Starts the specified indoor unit. Notes) • The contents follow to the setup of remote controller. • The other indoor units keep the status as they are.	[Setup] Set SW01 to [16], set SW02 and SW03 to address No. (1 to 128) to be started, and press SW04 for 2 seconds or more. [Release] Return SW01 / SW02 / SW03 to [1/1/1].	Section C [ ] Section D [ ] Section C: Displays the corresponding indoor address. Section D: Displays [11] for 5 seconds from operation-ON.
	Individual stop	Stops the specified indoor unit. Note) The other indoor units keep the status as they are.	[Setup] Set SW01 to [16], set SW02 and SW03 to address No. (1 to 128) to be stopped, and press SW05 for 2 seconds or more. [Release] Return SW01 / SW02 / SW03 to [1/1/1].	Section C [ ] Section D [ ] Section C: Displays the corresponding indoor address. Section D: Displays [00] for 5 seconds from operation-OFF.
	Individual test operation	Operates the specified indoor unit. Note) The other indoor units keep the status as they are.	[Setup] Set SW01 to [16], set SW02 and SW03 to address No. to be operated, and press SW04 for 10 seconds or more. [Release] Return SW01 / SW02 / SW03 to [1/1/1].	Section C [ ] Section D [ ] Section C: Displays the corresponding indoor address. Section D: Displays [FF] for 5 seconds from test operation-ON.

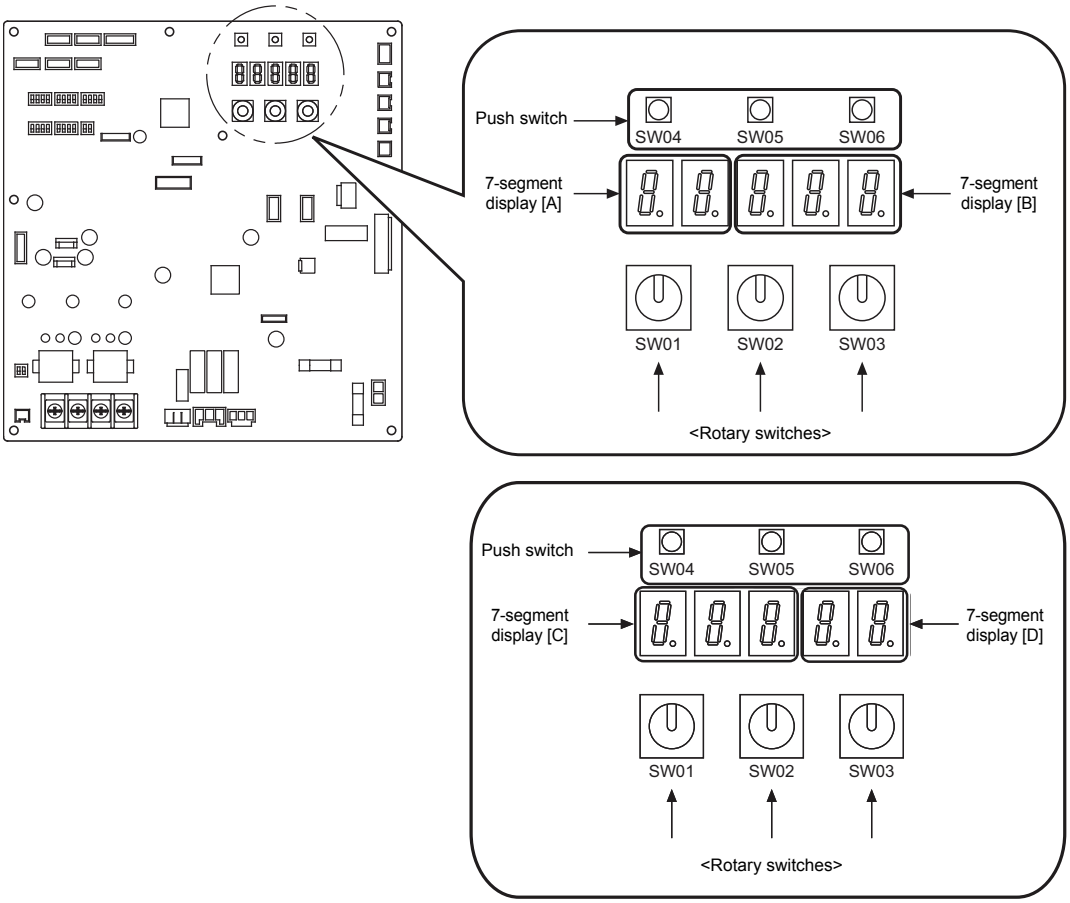
NOTE 1) This start / stop function only sends the signals from the outdoor unit to the indoor unit, such as start, stop, operation mode, etc. It does not resend the signals even if the indoor unit does not follow the sent signals.

NOTE 2) The above controls are not used during abnormal stop.

NOTE 3) If the signal receiving unit of the Compact 4-way Cassette type has never received a signal from the wireless remote controller, the indoor unit cannot be started or stopped (ON/OFF) from the outdoor unit. In the case above, follow the steps below.

1) Point the wireless remote controller at the receiving unit on the indoor unit and press the START/ STOP button on the wireless remote controller.
2) Confirm that the receiving unit sounds “Pi” and the operation lamp (green) on the receiving unit lights up, and then start/stop (ON/OFF) the indoor unit from the outdoor unit.

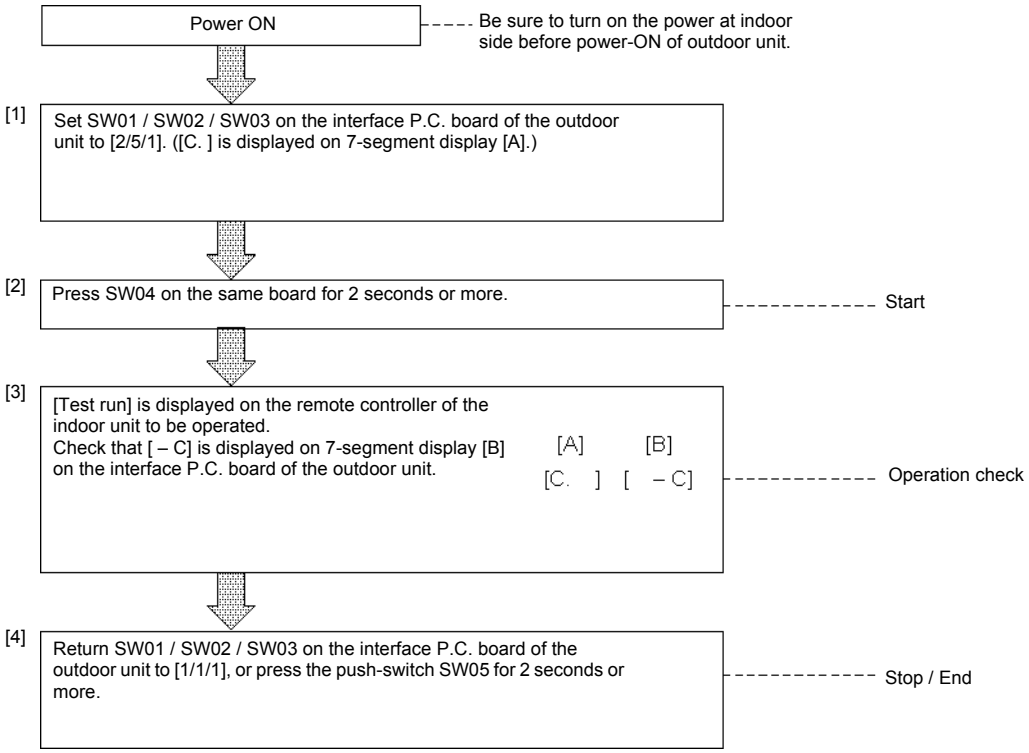
Interface P.C. board



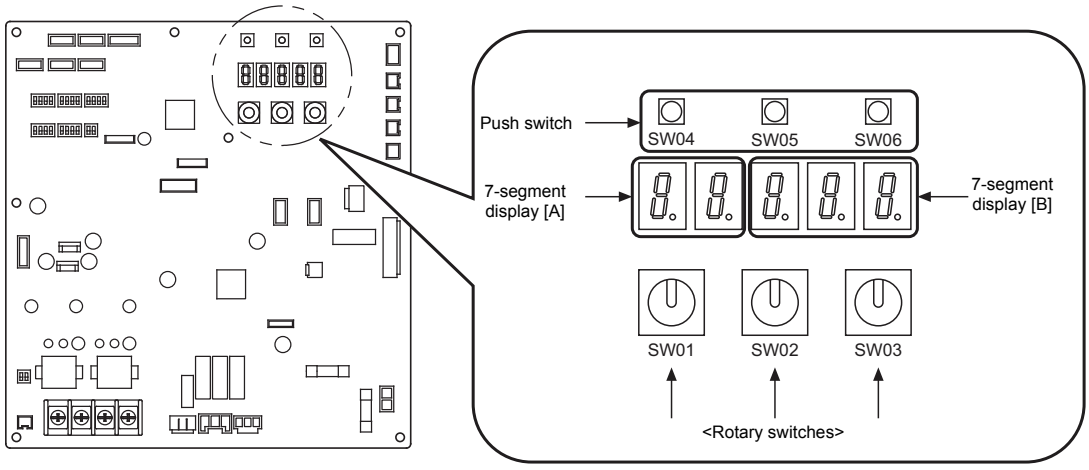
(1) Cooling test operation function

This function is provided to change collectively the mode of all the indoor units connected to the same system for the cooling test operation mode, by using switches on the interface P.C. board of the outdoor unit.

<Operation procedure>



Interface P.C. board



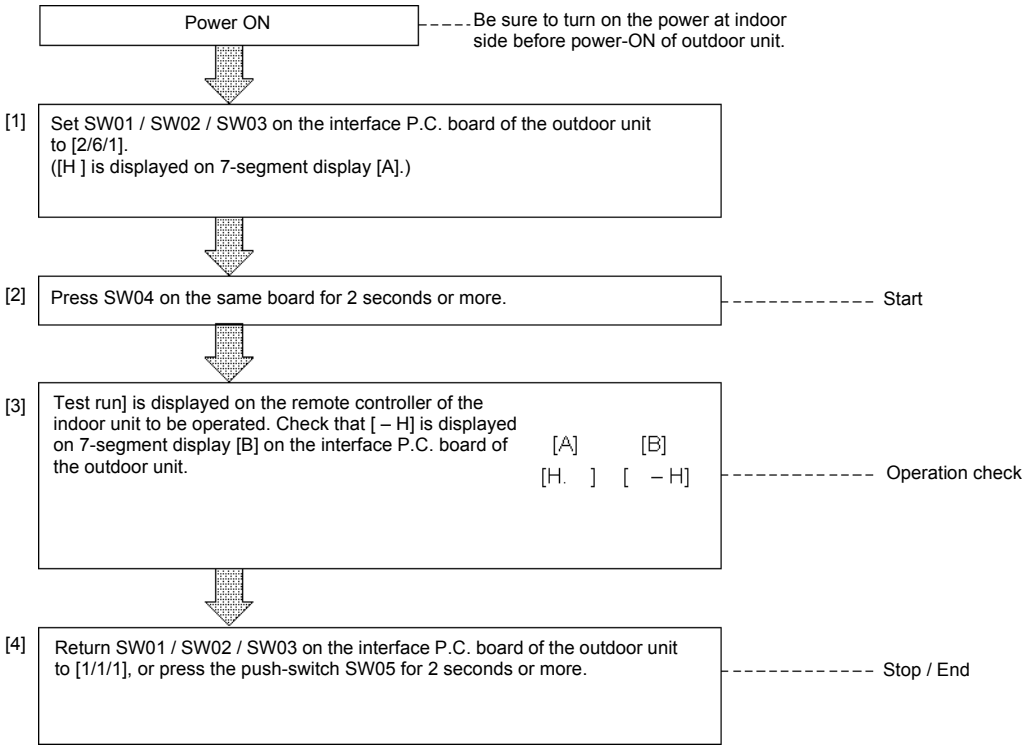
NOTE) The test operation returns to the normal operation after 60 minutes.

- The test run is a forced run that ignores the set temperature. Be sure to stop the test run after work, paying attention to the room temperature.
- After 60 minutes, the test run will be completed to protect the equipment, and the normal operation will be started according to the set temperature. However, if there is no remote controller (using a Central controller), please manually stop the test run after 60 minutes because there are some type of indoor unit that will continue operating test run even after 60 minutes.

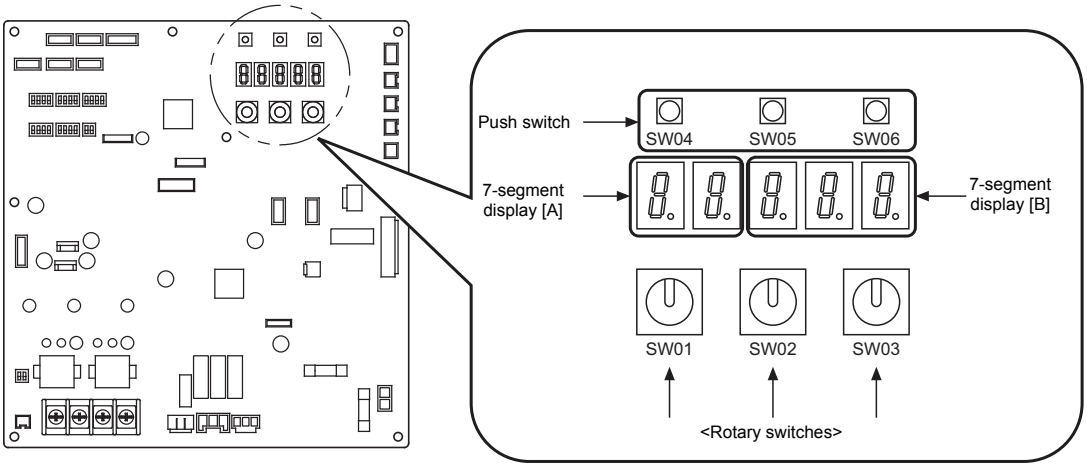
(2) Heating test operation function

This function is provided to change collectively the mode of all the indoor units connected to the same system for the heating test operation mode, by using switches on the interface P.C. board of the outdoor unit.

<Operation procedure>



Interface P.C. board



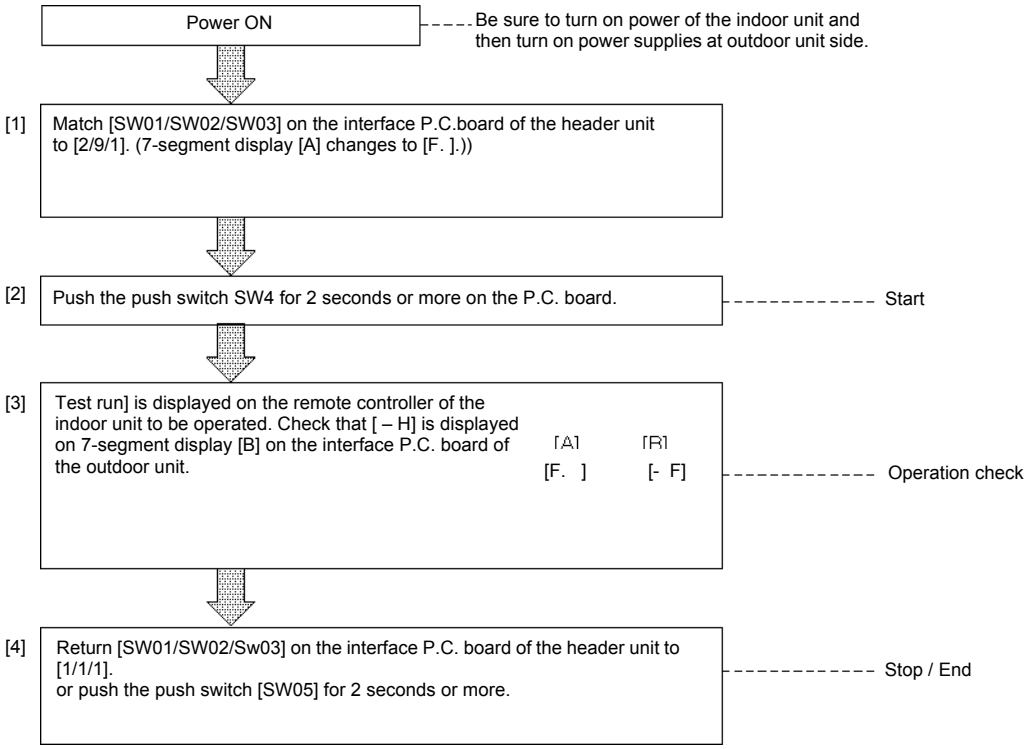
NOTE) The test operation returns to the normal operation after 60 minutes.

- The test run is a forced run that ignores the set temperature. Be sure to stop the test run after work, paying attention to the room temperature.
- After 60 minutes, the test run will be completed to protect the equipment, and the normal operation will be started according to the set temperature. However, if there is no remote controller (using a Central controller), please manually stop the test run after 60 minutes because there are some type of indoor unit that will continue operating test run even after 60 minutes.

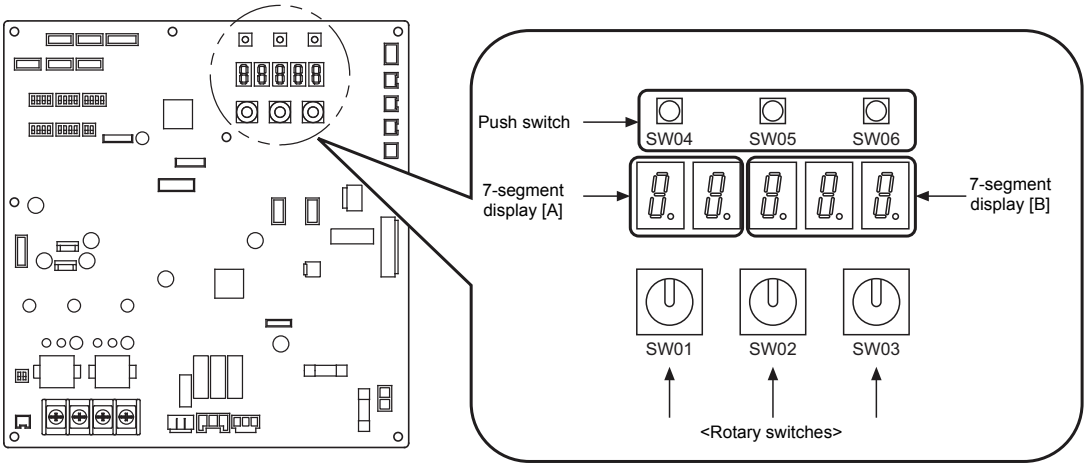
(3) Fan test operation function

This function is provided to change collectively the mode of all the indoor units connected to the same system for the fan test operation mode by using switches on the interface P.C. board of the Outdoor unit.

<Operation procedure>



Interface P.C. board



NOTE)

- Be sure to stop the test run after work.
- The test run finished after 60 minutes and the operation returns to normal operation. However, if there is no remote controller (using a central controller), please manually stop the test run after 60 minutes because there are some type of indoor unit that will continue operating test run even after 60 minutes.

(4) Batch start / stop (ON / OFF) function

This function is provided to start / stop collectively all the indoor units connected to the same system by using switches on the interface board of the outdoor unit.

<Operation procedure>

Power ON

Be sure to turn on the power at indoor side before power-ON of outdoor unit.

If an error is already displayed with SW01 / SW02 / SW03 being [1/1/1], return the status to normal one according to troubleshooting and then execute a test operation.

Set up the operation mode of the remote controller.
(If it is not set up, the operation continues with the current mode.)
(FAN / COOL / HEAT)

The unit which is not given with priority by heating priority control, cooling priority control, and selection of cooling or heating mode is not operated.
In this case, "operation ready" or "operation mode controlled" is displayed on the remote controller.

Set SW01 / SW02 / SW03 on the interface P.C. board of the outdoor unit to [2/7/1].
([C.H] is displayed on 7-segment display [A].)

Press SW04 on the same board for 2 seconds or more. — Start

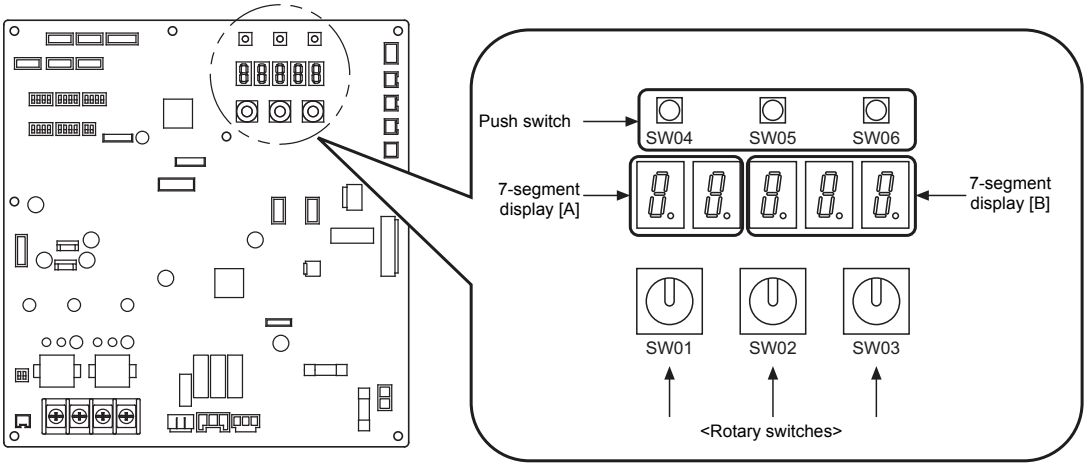
The indoor unit to be started operates. — Operation check

If the discharge temperature does not change though COOL or HEAT has been set up from the remote controller, misconnection is considered.

Press the push-switch SW05 on the interface P.C. board of the outdoor unit for 2 seconds or more. — Stop

After test operation, return the rotary switches SW01 / SW02 / SW03 on the interface P.C. board of the outdoor unit to [1/1/1]. — End

Interface P.C. board



(5) Individual start / stop (ON / OFF) individual test operation function

This function is provided to start / stop (ON / OFF) individually each indoor unit connected to the same system by using switches on the interface P.C. board of the outdoor unit.

Set SW01 [16] and set SW02, SW03 to indoor address No. (1 to 128) to be started (Refer to the following table*) - only the setup indoor unit starts operation.

(If the indoor unit which operates in a group by the remote controller, the follower unit cannot be individually started or stopped. When SW02 and SW03 are set to follower unit address No. [- -] is displayed on 7-segment display [D] on the interface P.C. board of the outdoor unit.)

<Operation procedure>

Power ON

Be sure to turn on the power at indoor side before power-ON of outdoor unit.

If an error is already displayed with SW01 / SW02 / SW03 being [1/1/1], return the status to normal one according to troubleshooting and then execute a test operation.

Set up the operation mode of the remote controller.
(If it is not set up, the operation continues with the current mode.)

The unit which is not given with priority by heating priority control, cooling priority control, and selection of cooling or heating mode is not operated. In this case, "operation ready" or "operation mode controlled" is displayed on the remote controller.

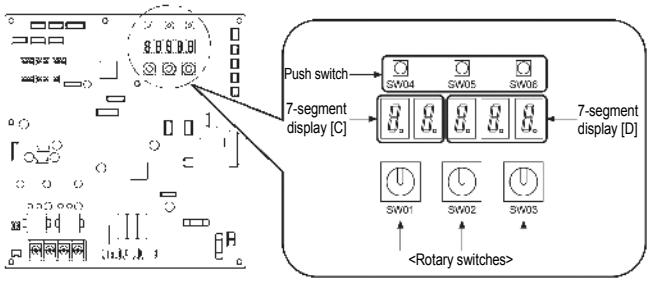
Match the rotary switches on the interface P.C. board of the outdoor unit to the following table*.

(7-segment display)

[C] Address display of corresponding indoor unit

[D] [00] is displayed for 5 seconds after operation-ON.

Interface P.C. board



Press the push-switch SW04 on the same board for 2 seconds or more.
(If pressed continuously for 10 seconds or more, the operation changes to the individual test operation.)

(7-segment display)

[C] Address display of corresponding indoor unit

[D] [11] is displayed for 5 seconds after operation-ON. (For individual test operation, [FF] is displayed.)

Start

The indoor unit to be started operates.

Operation check

If the discharge temperature does not change though COOL or HEAT has been set up from the remote controller, misconnection is considered.

Press the push-switch SW05 on the interface P.C. board of the outdoor unit for 2 seconds or more.

(7-segment display)

[C] Address display of corresponding indoor unit

[D] [00] is displayed for 5 seconds after operation-ON.

After test operation, return the display select switches SW01 / SW02 / SW03 on the interface P.C. board of the outdoor unit to [1/1/1].

End

SW01	SW02	SW03	Indoor unit Address	
11	1 to 16	1	1 to 16	Set number of SW02
11	1 to 16	2	17 to 32	Set number of SW02 + 16
11	1 to 16	3	33 to 48	Set number of SW02 + 32
11	1 to 16	4	49 to 64	Set number of SW02 + 48
11	1 to 16	5	65 to 80	Set number of SW02 + 64
11	1 to 16	6	81 to 96	Set number of SW02 + 80
11	1 to 16	7	97 to 112	Set number of SW02 + 96
11	1 to 16	8	113 to 128	Set number of SW02 + 112

NOTE) The individual test operation returns to the normal operation after 60 minutes.

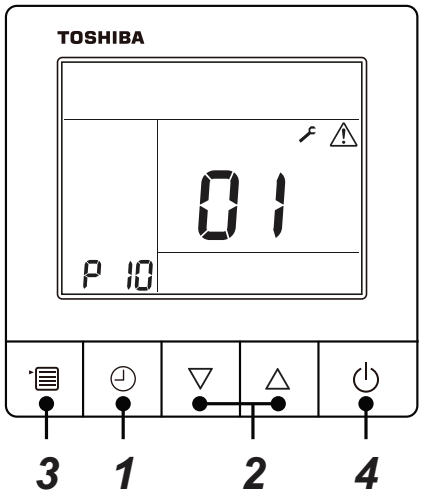
- The test run is a forced run that ignores the set temperature. Be sure to stop the test run after work, paying attention to the room temperature.
- After 60 minutes, the test run will be completed to protect the equipment, and the normal operation will be started according to the set temperature. However, if there is no remote controller less setting is set, some indoor models will not complete the test run even after 60 minutes have passed.

8-7-3. Check Code Clearing Function

(1) Clearing from the main remote controller

<RBC-ASCU11*>

▼Clearing a check code of the outdoor unit
There is no such function in the remote controller.



1 **Push the [OFF timer] button for over 10 seconds.**

2 **Each time the [▽] or [△] button is pushed, the recorded troubleshooting history is displayed in sequence.**

3 **Push the [menu] button for over 10 seconds, doing so deletes the entire troubleshooting history of the indoor unit.**

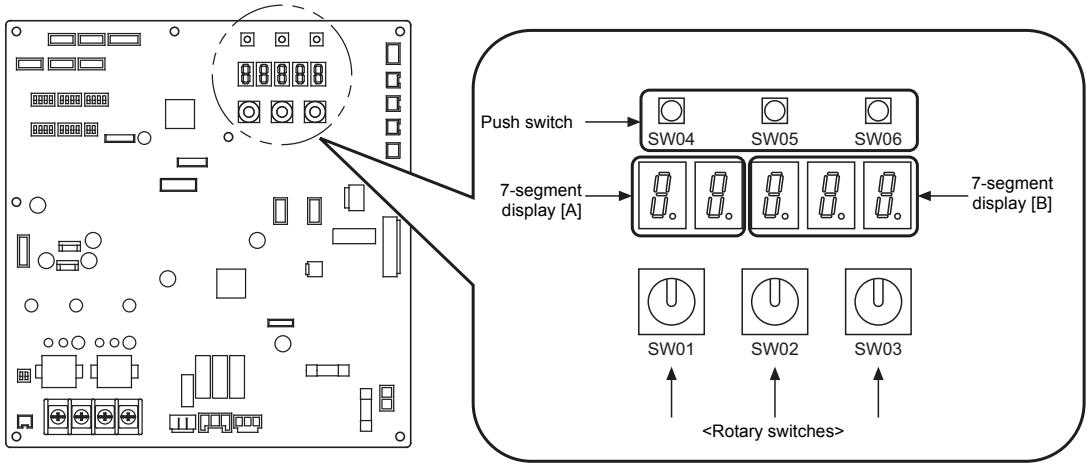
4 **After you have finished checking, push the [ON/OFF] button to return to normal mode.**

(2) Clearing check code by using switches on the interface P.C. board of the outdoor unit

Using the switches on the interface P.C. board of the header unit, this function is to clear the currently detected check code for each refrigerant circuit system without resetting the power supply.
Check codes in both outdoor and indoor units are once cleared, and check code detection is performed again.

[1]	Set the rotary switches on the interface P.C. board of the outdoor unit as follows. Set SW01 / SW02 / SW03 to [2/16/1]	7-segment display [A] [B] [E r][ ]
[2]	Press the push-switch SW04 on the same board for 5 seconds or more.	
[3]	[C L] is displayed in 7-segment display [B] on the board (for 5 seconds), and the error is completely cleared.	7-segment display [A] [B] [E r][C L]

Interface P.C. board



(3) Clearing check code by resetting power

This function is provided to clear check code in a system by resetting the power of all the outdoor and the indoor units. As same as the clearing method by the interface P.C. board, errors of both the outdoor and the indoor units are once cleared, and error detection is performed again.

<Method>

(1) Be sure to reset power of both the outdoor and the indoor units.

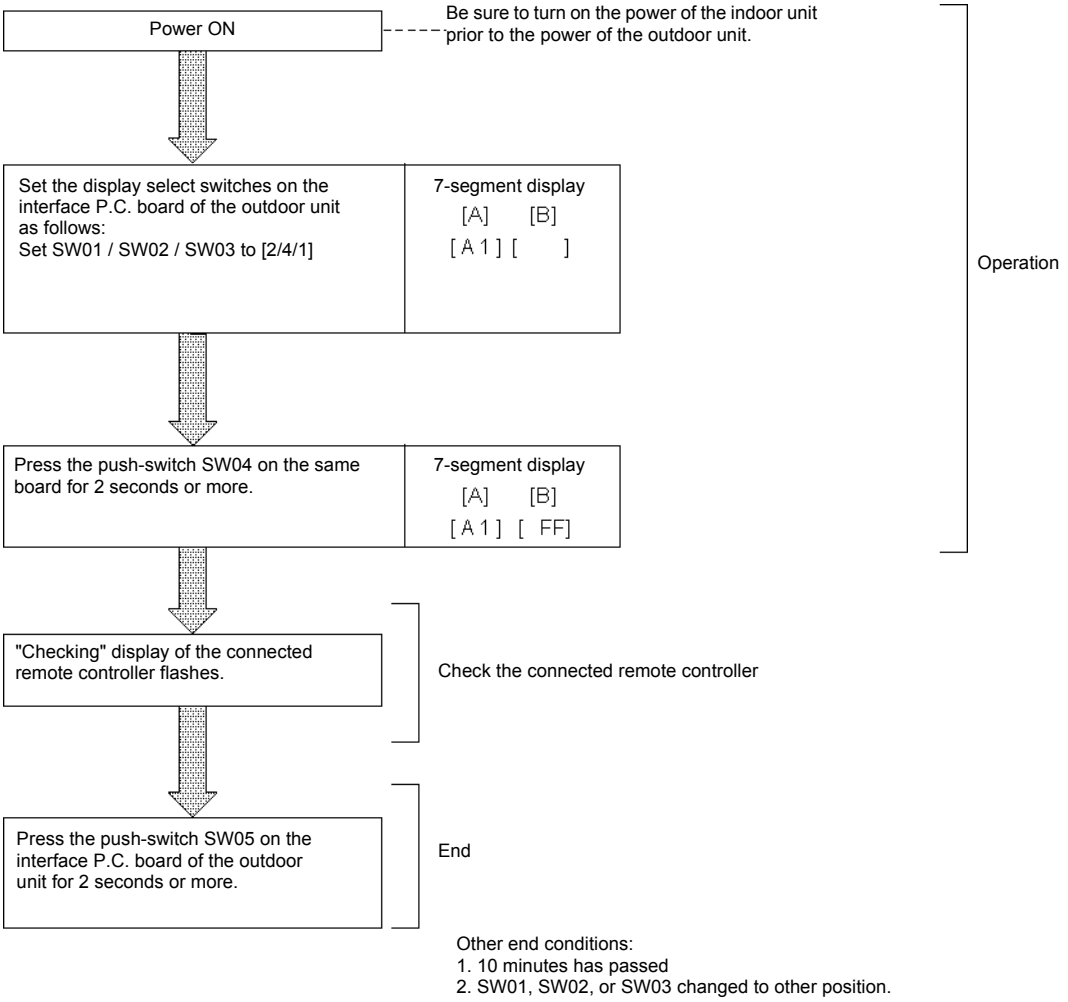
(2) Turn on the power of the indoor unit prior to the power of the outdoor unit.
(If the power is turned on in reverse order, a check code [E19] (No. of outdoor unit trouble) is output.)

NOTE) After power reset, it requires usually 3 minutes to power-on due to the initial communication of the system. In some cases, it requires max. 10 minutes.

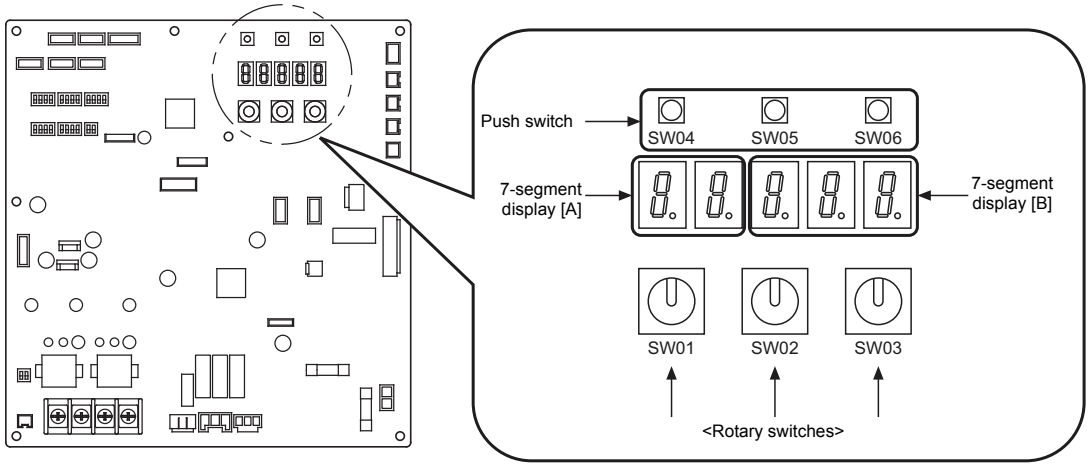
8-7-4. Remote controller distinction function

This function is provided to distinguish the remote controller connected to the indoor unit from the outdoor unit for a refrigerant circuit system by using switches on the interface P.C. board of the outdoor unit.

<Distinction procedure>



Interface P.C. board



8-7-5. Pulse Motor Valve (PMV) Forced Open/Close Function in Indoor Unit

This function is provided to open or close forcedly PMV for 2 minutes in all the indoor units by the switch operation on the interface P.C. board of the outdoor unit.
This function is also used to open PMV fully when turning off the power and executing an operation.

<Operation>

[Open fully]

Set the switches SW01 / SW02 / SW03 on the interface P.C. board of the outdoor unit to [2/3/1], and press SW04 for 2 seconds or more.
(Display appears on 7-segment display for 2 minutes as follows.) [P] [FF]

[Close fully]

Set the switches SW01 / SW02 / SW03 on the interface P.C. board of the outdoor unit to [2/3/1], and press SW05 for 2 seconds or more.
(Display appears on 7-segment display for one minute as follows.) [P] [00]

[Clear]

After 2 minutes (1 minutes for “Close fully”) after setting up, the opening automatically returns to the normal opening.

8-7-6. Pulse Motor Valve (PMV) Forced Open/Close Function and Solenoid valve Forced ON/OFF Function in Outdoor Unit

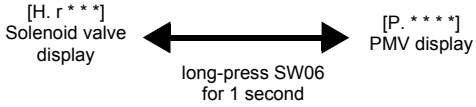
The solenoid valves provided to outdoor units can be forced ON(open) and OFF(close) by switching operations at the interface P.C. board of the outdoor unit.
Also, the pulse motor valves (PMV1) of the outdoor unit can be forced to full-open, half open, and full-closed for two minutes.
Use this function to check for valve or PMV malfunctioning, clogging, and so forth.

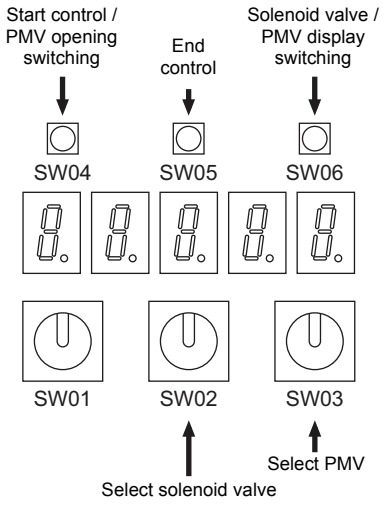
[Control start method]

(1) Set the rotary switches [SW01/SW02/SW03] on the interface P.C. board of the outdoor unit to [2/1/3].
When [H.r] is displayed, press the push switch [SW04] for one second or longer, which changes the display to [H. r – – –], and this control is started.

[Method to switch solenoid valve/PMV display]

(1) Solenoid valve display is made immediately after starting control.
The 7-segment display is [H. r * * *].
(2) Pressing the push switch [SW06] switches the display to [P.*], which is PMV display.
Each time the push switch [SW06] is pressed, the display changes
between solenoid valve display and pulse motor valve (PMV) display.





(3) Follow the method below for solenoid valve and PMV operations.
* Take care, as operations of each of the solenoid valve and PMV are enabled, regardless of which is displayed.

[Method of operating solenoid valve (forced ON/OFF)

(1) After starting this control, SV2 will come ON. [H.r 2] will be displayed in the 7-segment display in the solenoid valve display screen.

(2) Any desired solenoid valve can be forced ON/OFF by changing the setting No. of the rotary switch [SW02]. The following table shows the forced-ON/OFF/normal control patterns for each solenoid valve.

(○: Forced ON, – : normal control, ×: Forced OFF)

SW02	7-segment display	Operation pattern of solenoid valve		
	[B]	SV2	SV4	SV6
1	[2]	○	–	–
2	[4]	–	○	–
4	[6]	–	–	○
15	[OFF]	×	×	×
16	[ALL]	○	○	○

[Method of operating pulse motor valve (PMV) (forced open/close)]

(1) Use the rotary switch [SW03] to select the PMV to operate.
When [P#.] is displayed in the PMV display, PMV# is operating according to normal control.
(#: selected PMV No.)

(2) Pressing the push switch [SW04] for one second sets the selected PMV# to full-open.
The PMV display will be [P# . F o].
Each time the push switch [SW04] is pressed again for one second, the opening changes in the order of full open [P# . F o] → half-open [P# . C o] → full-closed [P# . F c] → normal control [P# .] → full-open [P# . F o] → ... , and so on.

(3) The PMV opening returns to normal control after two minutes elapses from changing the opening.

(Operation method example) Operation of PMV 1

Rotary switch			Push switch	7-segment display (pulse motor valve (PMV) display)	Opening	
SW01	SW02	SW03	SW04 (Change PMV opening)			
2	* Used in solenoid valve selection	3	Long-press 1 second Long-press 1 second Long-press 1 second Long-press 1 second	[P1.] [P1.F o] [P1.C o] [P1.F c]	PMV1 Normal control PMV1 Full-open PMV1 Half-open PMV1 Full-closed	2 minutes elapsed 2 minutes elapsed 2 minutes elapsed

[Cancelation method]

To cancel (end) control of this function, perform one of the following methods.
The solenoid valve and pulse motor valve (PMV) will return to normal control.

- Press the push switch [SW05] for one second or longer.
- Set the rotary switch [SW01] to other than [2].

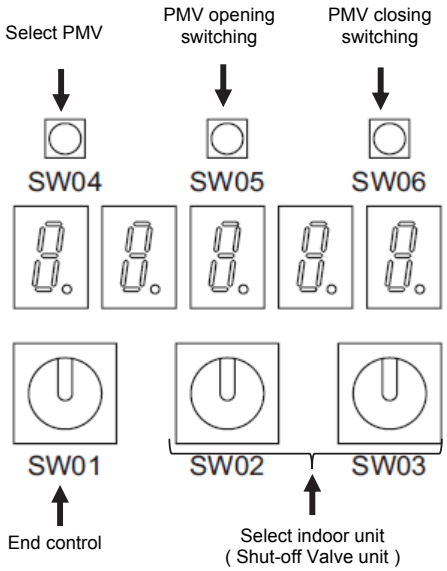
8-7-7. Pulse motor valve (PMV) forced open / close function in Shut-off Valve unit.

The pulse motor valves (PMV-L , PMV-S) of the Shut-off Valve unit can be forced to full-open and full-closed for 30 minutes. Use this function to check for PMV malfunctioning, clogging, misconnection, and so forth.

[Control start method]

(1) Set SW01 [11] and set SW02, SW03 to indoor address No. (1 to 128) to be started (Refer to the following table*) . Only the shut-off valve unit connecting to the setup indoor unit starts operation. [F S. o n] is displayed for two seconds.

SW01	SW02	SW03	Indoor unit Address	
11	1 to 16	1	1 to 16	Set number of SW02
11	1 to 16	2	17 to 32	Set number of SW02 + 16
11	1 to 16	3	33 to 48	Set number of SW02 + 32
11	1 to 16	4	49 to 64	Set number of SW02 + 48
11	1 to 16	5	65 to 80	Set number of SW02 + 64
11	1 to 16	6	81 to 96	Set number of SW02 + 80
11	1 to 16	7	97 to 112	Set number of SW02 + 96
11	1 to 16	8	113 to 128	Set number of SW02 + 112



[Method to switch PMV display]

(1) PMV-L display is made immediately after starting control.
The 7-segment display is [P L. * * *] ⟺ [P L. … o P] or [P L. … c L] (0.5 second period) ***: indoor unit address No.

OP	PMV full-open
cL	PMV full-close

(2) Each time the push switch [SW04] is pushed for one second or more., the display changes PMV-L display and PMV-S display.

(3) Follow the method below for PMV operations.

*There is no PMV-D in Shut-off Valve unit, but PMV-D is displayed when the push switch [SW04] is pushed. Do not perform the method below for PMV-D display.

[Method of operating pulse motor valve (PMV) (forced open/close)]

(1) When [P#.] is displayed on the PMV display, PMV# is operating according to normal control.
(#: L(PMV-L) or S(PMV-S))

(2) Pressing the push switch [SW05] for one second sets the selected PMV # to full-open.
The PMV display will be [P #. * * *] ⟺ [P #. … o P]. (0.5 second period)

(3) Pressing the push switch [SW06] for one second sets the selected PMV # to full-close.
The PMV display will be [P #. * * *] ⟺ [P #. … c L]. (0.5 second period)

(4) The PMV opening returns to normal control after 30 minutes elapses from changing the opening.

(5) To operate a different PMV, select with the rotary switch [SW03], [SW02] and the push switch [SW04], and operate the opening with the push switch [SW05] and the closing with the push switch [SW06]. Even when [SW02], [SW03] and [SW04] is switched, the PMV opening operated immediately before remains effective, PMV openings can be operated in parallel.

[Cancellation method]

To cancel (end) control of this function, perform one of the following methods. The pulse motor valve (PMV) will return to normal control.

• Set the rotary switch [SW01] to other than [11].

8-7-8. Fan operation check in outdoor unit

This function is provided to check the fan operation of the outdoor unit by using switches on the interface P.C. board in the outdoor unit. The frequency of the fan speed can be controlled by setting of the switches. Use this function to check the operation or abnormal sound in the fan system. And, use this function while the system is stopped.

NOTE) Do not use this function during operation of the compressor. It may damage the compressor.

[Operation]

(1) Set the switches SW01 / SW02 / SW03 on the interface P.C. board of the outdoor unit to [2/1/4].

(2) When [F. d] is displayed in 7-segment display [A], keep pressing the switch SW04 for 2 seconds or more.

(3) When [31] is displayed in 7-segment display [B], the fan starts operation. (Max. mode operation)

(4) After that, by changing the setup number of the switches SW02 and SW03, 7-segment display [B] and the fan mode are changed.

(Mode output pattern of the fan is as follows.)

SW02	SW03	7-segment display [B]	Fan mode
1	4	[31]	31
2		[30]	30
3		[29]	29
4		[28]	28
5		[27]	27
6		[26]	26
7		[25]	25
8		[24]	24
9		[23]	23
10		[22]	22
11		[21]	21
12		[20]	20
13		[19]	19
14		[18]	18
15		[17]	17
16		[16]	16
1	5	[15]	15
2		[14]	14
3		[13]	13
4		[12]	12
5		[11]	11
6		[10]	10
7		[9]	9
8		[8]	8
9		[7]	7
10		[6]	6
11		[5]	5
12		[4]	4
13		[3]	3
14		[2]	2
15		[1]	1
16		[0]	0

[Clear]

This function is cleared by one of the following operations.

(1) When SW01 setting number was changed to other number.

(2) Press-switch SW05 was pressed for 2 seconds or more.

8-7-9. Manual adjustment function of outside temperature (TO) sensor

This function is provided to fix TO sensor value manually by the switch operation on the interface P.C. board in the outdoor unit. When the unit stops abnormally due to TO sensor failure, etc, an emergent operation is available by setting up the value manually to position near the current outside temperature.

[Operation]

(1) Set the rotary switches on the interface P.C. board to numbers as follows:
- SW01 / SW02 / SW03 to [2/1/15]
- 7-segment display: [t o]

(2) Keep pressing the push-switch SW04 on the interface P.C. board for 1 second or more. The mode changes to the TO sensor value fix manual mode.

(3) Pressing the push-switch SW04 increases the setting temperature and pressing the SW05 decreases the setting temperature. Set the temperature to any values.

[Clear]

Return SW01 / SW02 / SW03 on the interface P.C. board in the outdoor unit to [1/1/1].

NOTE) If operated with TO sensor fixed by this function, the system control operation of the air conditioner may not be based on the specification of the product. Therefore an emergent operation should be restricted to a day or so.
When the outside temperature is 45ºC or more, set to 45ºC (SW02=”9")

<Service support function list>

SW01	SW02	SW03	7-segment display [A]	Function contents
2	1	1	[J . C]	Refrigerant circuit and control communication line check function (Cooling operation)
	2		[J . H]	Refrigerant circuit and control communication line check function (Heating operation)
	3		[P .]	Indoor PMV forced full open function
	4		[A . 1]	Indoor remote controller discriminating function
	5		[C .]	Cooling test operation function
	6		[H .]	Heating test operation function
	7		[C . H]	Indoor collective start/stop (ON/OFF) function
	9		[F .]	Fan test operation function
	16		[E . r]	Check code clear function

2	1~16	3	[H . r]	Solenoid valve forced open/close function
2	1~16	4~5	[F . d]	Fan forced operation function
2	1~16	15	[t . o]	Outside temperature sensor manual adjustment function

16	1 to 16	1	[01] to [16]	Indoor No. 1 to 16	Set number of SW02
		2	[17] to [32]	Indoor No. 17 to 32	Set number of SW02 + 16
		3	[33] to [48]	Indoor No. 33 to 48	Set number of SW02 + 32
		4	[49] to [64]	Indoor No. 49 to 64	Set number of SW02 + 48
		5	[65] to [80]	Indoor No. 65 to 80	Set number of SW02 + 64
		6	[81] to [96]	Indoor No. 81 to 96	Set number of SW02 + 80
		7	[97] to [112]	Indoor No. 97 to 112	Set number of SW02 + 96
		8	[113] to [128]	Indoor No. 113 to 128	Set number of SW02 + 112

8-7-10. Confirmation of the check code (L02, L11, L13, L14) occurred during installation

Use this function to check for the check codes (L02, L11, L13, L14) that may occur during installation.

[Method to switch the check codes L02 display]
(1) Set the rotary switches [SW01/SW02/SW03] on the interface P.C. board of the outdoor unit to [12/1/1]. The 7-segment display is [L02-**]. (** : Indoor unit address No.)
(2) If there is more than one corresponding indoor unit, the display of the indoor unit address ** changes every time the push switch [SW04] is pressed.

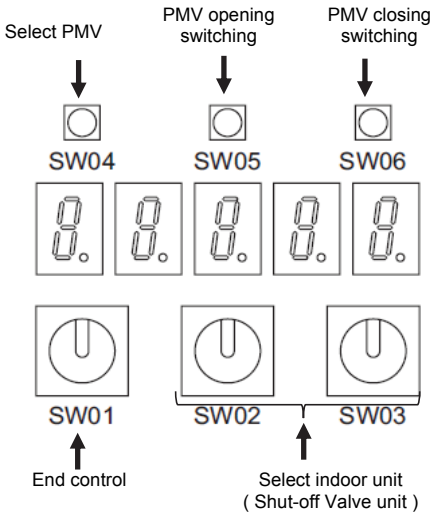
[Method to switch the check codes L11 display]
(1) Set the rotary switches [SW01/SW02/SW03] on the interface P.C. board of the outdoor unit to [12/1/2]. The 7-segment display is [L11-**]. (** : Indoor unit address No.)
(2) If there is more than one corresponding indoor unit, the display of the indoor unit address ** changes every time the push switch [SW04] is pressed.

[Method to switch the check codes L13 display]
(1) Set the rotary switches [SW01/SW02/SW03] on the interface P.C. board of the outdoor unit to [12/1/3]. The 7-segment display is [L13-**]. (** : Indoor unit address No.)
(2) If there is more than one corresponding indoor unit, the display of the indoor unit address ** changes every time the push switch [SW04] is pressed.

[Method to switch the check codes L14 display]
(1) Set the rotary switches [SW01/SW02/SW03] on the interface P.C. board of the outdoor unit to [12/1/4]. The 7-segment display is [L14-**]. (** : indoor unit address No.)
(2) If there is more than one corresponding indoor unit, the display of the indoor unit address ** changes every time the push switch [SW04] is pressed.

8-7-11. Confirmation of the number of Shut-off Valve units connected

Use this function to check for the number of Shut-off Valve units connected.
[Method to display the number of Shut-off Valve units connected display]
(1) Set the rotary switches [SW01/SW02/SW03] on the interface P.C. board of the outdoor unit to [1/12/16]. The 7-segment display is [F.S. **].
(2) Push switch [SW04].The 7-segment display chanhes [S.o. **] and the number of Shut-off Valve units id displayed.
(** : Number of Shut-off Valve units)



8-7-12. Monitor function of remote controller switch

When using a remote controller with the model name RBC-ASCU11*, the following monitor functions can be used.

Calling of display screen

<Content>

The sensor temperature or operation status of the remote controller, indoor unit, or the outdoor unit can be known by calling up the service monitor mode from the remote controller.

[Procedure]

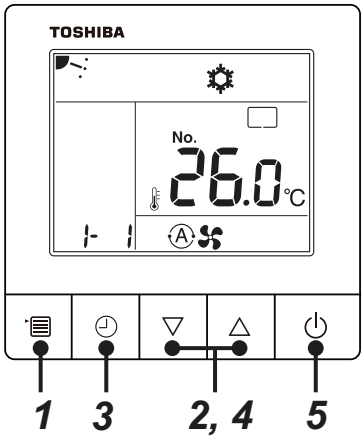
1 **Push the [menu] button for over 10 seconds.**

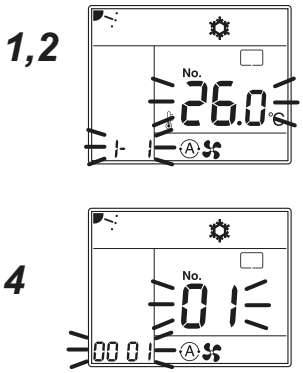
2 **Every pushing [▽] [△] buttons, the indoor unit numbers in group control are displayed successively.**

3 **Push the [OFF timer] button to confirm the selected indoor unit.**
Then monitor the sensor temperature or operation status of indoor unit and the outdoor unit in the corresponding refrigerant line.

4 **Every pushing [▽] [△] buttons, CODE No. of the item is changed successively.**

5 **After you have finished checking, push the [ON/OFF] button to return to normal mode.**





	CODE No.	Data name	Display format	Unit	Remote controller display example
Indoor unit data *2	00	Room temperature (Use to control)	×1	°C	[0024] = 24 °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	×1	°C	
	07	Indoor fan motor number of revolutions	×1	rpm	[1000] = 1000 rpm
	08	Indoor PMV opening	×1 / 10	pls	[0150] = 1500 pls
	F3	Filter sign time	×1	h	[2500] = 2500 h
	F9	Suction exchanger (TSA) *1 temperature of air to air heat	×1	°C	[0024] = 24 °C
	FA	Outside air temperature (TOA) *1	×1	°C	
System data	0A	No. of connected indoor units	×1	unit	[0006] = 6 units
	0B	Total horsepower of connected indoor units	×10	HP	[0006] = 6 HP
	0C	No. of connected indoor units	×1	unit	[0001] = 1 units
	0D	Total horsepower of outdoor units	×10	HP	[0060] = 6 HP
Outdoor unit individual data 1 *3	10	High-pressure sensor detection pressure (Pd)	×100	MPa	[0123] = 1.23 MPa
	11	Low-pressure sensor detection pressure (Ps)	×100	MPa	
	12	Compressor discharge temperature (TD)	×1	°C	[0024] = 24 °C
	14	Suction temperature (TS1)	×1	°C	
	16	Outdoor heat exchanger temperature (TE)	×1	°C	
	19	Outside ambient temperature (TO)	×1	°C	
	1A	Temperature at liquid side (TL1)	×1	°C	
	62	PMV opening	×1	pls	[0500] = 500 pls
	66	Compressor current (I)	×10	A	[0105] = 10.5 A
	68	Compressor revolutions	×10	rps	[0642]= 64.2rps
	6A	Outdoor fan mode	×1	mode	[0027] = 27 mode
	6B	Inverter of Compressor heat sink temperature (TH)	×1	°C	[0024] = 24 °C
	6D	Inverter of outdoor fan heat sink temperature (TH Fan)	×1	°C	
	6F	Outdoor unit horsepower	×1	HP	[0060] = 6 HP
	B0	Heating/cooling recovery control	0 : Normal 1 : Recovery controlled		[0010]=Heating recovery control [0001]=Cooling recovery control
	B5	Instantaneous electric power	×1/10	W	[0090]=900W
	B6	Integrated electric power consumption	×1/100	Wh	[0090]=9000Wh
	B8	Termination resistor setting indoor unit address display	9999 : No setting 1~ : Setting address		[0010]=Heating recovery control [0001]=Cooling recovery control
	B9	Communications protocol	0 : TCC-LINK 1 : TU2C-LINK		[0000]=TCC-LINK [0001]=TU2C-LINK
	BA	Uv line communication speed	0 : 9600 bps 1 : 19200 bps		[0000]=9600bps [0001]=19200bps
	BB	Demand control	0 : Normally 1 : Demand control		[0000]=Normally [0001]=Demand control

*1 Only a part of indoor unit types is installed with the discharge temperature sensor. This temperature is not displayed for other types.
*2 When the units are connected to group, data of the header indoor unit only can be displayed.
*3 The upper digit of “CODE No.” indicates the outdoor unit number.

9 Troubleshooting

9-1. Overview

(1) Before engaging in troubleshooting

(a) Applicable models

Indoor units: MMO-UPOOO, Outdoor units: MCY-MUGOOO1HSW*

(b) Tools and measuring devices required

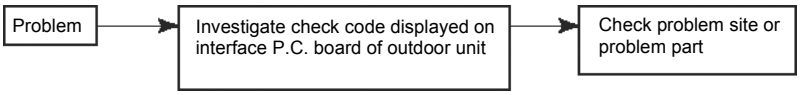
- Screwdrivers (Philips, flat head), spanners, long-nose pliers, nipper, pin to push reset switch, etc.
- Multimeter, thermometer, pressure gauge, etc.

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

NO.	Behavior	Possible cause
1	A compressor would not start	• Could it just be the 3-minute delay period (3 minutes after compressor shutdown)? • Could it just be the air conditioner having gone thermo OFF? • Could it just be the air conditioner operating in fan mode or put on the timer? • Could it just be the system going through initial communication?
2	An indoor fan would not start	• Could it just be cold air discharge prevention control, which is part of heating?
3	An outdoor fan would not start or would change speed for no reason	• Could it just be cooling operation under low outside temperature conditions? • Could it just be defrosting operation?
4	An indoor fan would not stop	• Could it just be the elimination of residual heat 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	• Could it just be the air conditioner operation under external or remote controllerl?

(2) Troubleshooting procedure

When a problem occurs, proceed with troubleshooting in accordance with the procedure shown below.



NOTE

Rather than a genuine fault (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.

9-2. Troubleshooting method

The remote controllers (main remote controller and central control remote controller) and the interface P.C. board of an outdoor unit are provided with an LCD display (remote controller) or a 7-segment display (outdoor interface P.C. board) to display operational status. Using this self-diagnosis feature, the fault site / faulty part may be identified in the event of a fault 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 fault in consultation with the list.

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

List of Check Codes (Indoor Unit)

(Check code detected by indoor unit)

○: 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 problem site	Description of Check code
central control or main remote controller display	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation	Timer	Ready	Flash		
E03	–	–	☼	●	●		Indoor-remote controller periodic communication trouble	Communication from remote controller or network adaptor has been lost (so has central control communication).
E04	–	–	●	●	☼		Indoor-outdoor periodic communication trouble	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	–	–	☼	●	●		Indoor inter-MCU communication trouble	MCU communication between main controller and motor microcontroller is failure.
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 Shut-off Valve unit(s)	There is no communication from Shut-off Valve unit(s)
E18	–	–	☼	●	●		Trouble 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) trouble	Heat exchanger temperature sensor (TCJ) has been open / short-circuited.
F02	–	–	☼	☼	●	ALT	Indoor heat exchanger temperature sensor (TC2) trouble	Heat exchanger temperature sensor (TC2) has been open / short-circuited.
F03	–	–	☼	☼	●	ALT	Indoor heat exchanger temperature sensor (TC1) trouble	Heat exchanger temperature sensor (TC1) has been open / short-circuited.
F10	–	–	☼	☼	●	ALT	Room air temperature sensor (TA/TSA) trouble	Room air temperature sensor (TA/TSA) has been open / short-circuited.
F11	–	–	☼	☼	●	ALT	Discharge air temperature sensor (TF/TFA) trouble	Discharge temperature sensor (TA/TFA) has been open / short-circuited.
F29	–	–	☼	☼	●	SIM	P.C. board or other indoor trouble	Open/Short-circuit of indoor air suction temperature sensor (TRA) was detected.
F30	–	–	☼	☼	○		Occupancy sensor trouble	There is no signal from Occupancy sensor
J29	–	–	●	☼	☼	SIM	Leak Detector Trouble	• There is no communication from Leak Detector • A Malfunction signal received from Leak Detector.
J30	J30	Detected indoor unit address *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.
L03	–	–	☼	●	☼	SIM	Duplicated indoor group header unit	There is more than one header unit in group.
L07	–	–	☼	●	☼	SIM	Connection of group control cable to stand-alone indoor unit	There is at least one stand-alone indoor unit to which group control cable is connected.

Check code			Display of receiving unit				Typical problem site	Description of Check code
central control or main remote controller display	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation	Timer	Ready	Flash		
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.
L20	–	–	☼	○	☼	SIM	Duplicated central control address	There is duplication in central control address setting.
L30	L30	Detected indoor unit No.	☼	○	☼	SIM	Indoor external trouble input (interlock)	Unit shutdown has been caused by external error input (CN80).
P01	–	–	●	☼	☼	ALT	Indoor AC fan trouble	Indoor AC fan error is detected (activation of fan motor thermal relay).
P10	P10	Detected indoor unit No.	●	☼	☼	ALT	Indoor overflow trouble	Float switch has been activated.
P12	–	–	●	☼	☼	ALT	Indoor DC fan trouble	Indoor DC fan error (e.g. overcurrent or lock-up) is detected.
P31	–	–	☼	●	☼	ALT	Other indoor unit trouble	Follower unit cannot be operated due to outdoor unit alarm (E03 / L03 / L07 / L08).

(Check code detected by main remote controller)

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

(Check code detected by central control device)

Check code			Display of receiving unit				Typical problem site	Description of Check code
Central control	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation	Timer	Ready	Flash		
C05	–	–	No indication (when main remote controller 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	–	–	–				Blanket alarm for general-purpose device control interface	Device connected to general-purpose device control interface is failure.
P30	–	–	As per alarm unit (see above)				Group control follower unit error	Group follower unit isis failure (unit No. and above detail [✲✲] displayed on main remote controller).
S01	–	–	–				Failure central control communication (reception)	Central control device is unable to receive signal.

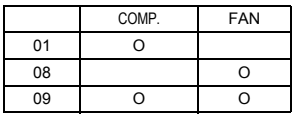
Note: The same error, e.g. a communication error, may result in the display of different check codes depending on the device that detects it. Moreover, check codes detected by the main remote controller / central control device do not necessarily have a direct impact on air conditioner operation.

List of Check Codes (Outdoor Unit)

(Check codes detected by outdoor interface - typical examples)

○: Lighting, ☼: Flashing, ●: Goes off
ALT: Flashing is alternately when there are two flashing LED
SIM: Simultaneous flashing when there are two flashing LED

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

Check code			Display of receiving unit				Typical problem site	Description of Check code
Outdoor 7-segment display		Central control or main remote controller display	Indicator light block					
	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). • In TU2C-LINK communication system, if the termination resistor is not set in any of the indoor units. • The number of indoor units connected is decreasing. (detected when power is turned on)
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	E12	☼	●	●		Automatic address starting trouble	• Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line 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 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.
E20	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.
E31	 80: Communication trouble between MCU and Sub MCU Circle (O): Trouble P.C. board	E31	●	●	☼		P.C. board communication trouble Sub MCU communication trouble	There is no communication between P.C. boards in inverter box.
F04	–	F04	☼	☼	○	ALT	Outdoor discharge temperature sensor (TD) trouble	Outdoor discharge temperature sensor (TD) has been open/short-circuited.
F06	–	F06	☼	☼	○	ALT	Outdoor heat exchanger liquid side temperature sensor (TE) trouble	Outdoor heat exchanger liquid side temperature sensors (TE) have been open/ short-circuited.
F07	01 : TL1 sensor	F07	☼	☼	○	ALT	Outdoor liquid temperature sensor (TL1) trouble	Outdoor liquid temperature sensor (TL1) 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.
F12	01 : TS1 sensor	F12	☼	☼	○	ALT	Outdoor suction temperature sensor (TS1) trouble	Outdoor suction temperature sensor (TS1) has been open/short- circuited.
F15	–	F15	☼	☼	○	ALT	Outdoor temperature sensor (TE,TL1) wiring trouble	Wiring trouble in outdoor temperature sensors (TE,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.
F23	–	F23	☼	☼	○	ALT	Low pressure sensor (Ps) trouble	Output voltage of low pressure sensor (Ps) is zero.

	COMP.	FAN
01	O	
08		O
09	O	O

Check code		Central control or main remote controller display	Display of receiving unit				Typical problem site	Description of Check code
Outdoor 7-segment display			Indicator light block					
	Sub-code		Operation	Timer	Ready	Flash		
F24	–	F24	☼	☼	O	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	☼	☼	O	SIM	Outdoor EEPROM trouble	Outdoor EEPROM is failure (alarm and shutdown for Outdoor unit)
H04	–	H04	☼	O	☼		Comp. case thermo operation	The case thermo operation has been detected.
H06	–	H06	●	☼	●		Activation of low-pressure protection	Low pressure (Ps) sensor detects abnormally low operating pressure.
L02	Detected indoor unit address	L04	☼	O	☼	SIM	Indoor unit incompatible with A2L refrigerant	• Indoor unit incompatible with TU2C-Link is connected. • Indoor unit incompatible with R32 is connected.
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	☼	O	☼	SIM	Outdoor capacity not set	Outdoor unit capacity has not been set (After P.C. board exchange)
L11	Detected indoor unit address		☼	O	☼	SIM	Unsuitable safety device connected	FS unit is connected.
L13	Detected indoor unit address		☼	O	☼	SIM	Mismatch of safety device settings	• Safety measures CODE No. setting of indoor unit connected to same Shut-off Valve unit is mismatched. "No safety measures required" does not apply. * Mixture of "pump down operation" and "Only Leak Detector" is not case.
L14	L14 Detected indoor unit address		☼	O	☼	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. • Safety measures CODE No.setting of indoor unit is set to "pump down operation" or "individual shut-off operation" and Shut-off Valve unit is not connected.
L29	<table><tr><td></td><td>COMP.</td><td>FAN</td></tr><tr><td>01</td><td>O</td><td></td></tr><tr><td>08</td><td></td><td>O</td></tr><tr><td>09</td><td>O</td><td>O</td></tr></table> Circle (O): Trouble P.C. board	L29	☼	O	☼	SIM	Trouble in number of P.C. boards	There are insufficient number of P.C. board in inverter box.
	00	L29	☼	O	☼	SIM	The number of P.C. board trouble	The number of inverter P.C. board is more than that of setting of outdoor interface P.C. board.
L30	Detected indoor unit No.	(L30)	☼	O	☼	SIM	Indoor external trouble input (interlock)	Indoor unit has been shut down for external trouble input in one refrigerant line (detected by indoor unit).
P03	–	P03	☼	●	☼	ALT	Outdoor discharge (TD) temperature trouble	Outdoor discharge temperature sensor (TD) has detected abnormally high temperature.
P04	1*	P04	☼	●	☼	ALT	Activation of high-pressure SW	High-pressure SW is activated.
P05	00: Power detection trouble 01: Open phase	P05	☼	●	☼	ALT	Power detection trouble / Open phase detection / Power supply miswiring detection	Open phase is detected when power is turned on.
P07	–	P07	☼	●	☼	ALT	Heat sink overheating trouble	Temperature sensor built into IPM (TH) detects overheating.

Check code		Central control or main remote controller display	Display of receiving unit				Typical problem site	Description of Check code
Outdoor 7-segment display			Indicator light block					
	Sub-code		Operation	Timer	Ready	Flash		
P10	Indoor unit No. detected	(P10)	●	☼	☼	ALT	Indoor unit overflow	Indoor unit has been shutdown in one refrigerant line due to detection of overflow (detected by indoor unit).
P11	–	P11	●	☼	☼	ALT	Outdoor heat exchanger freeze trouble	Remaining frost on outdoor heat exchanger has been detected repeatedly.
P13	–	P13	●	☼	☼	ALT	Outdoor liquid backflow detection trouble	State of refrigerant cycle circuit indicates liquid backflow operation.
P14	01: Outdoor unit valve is close	P14	●	☼	☼	ALT	Another refrigerant cycle protection	Outdoor unit valve is forget to open during test run.
P15	01: TS1 condition 02: TD condition	P15	☼	●	☼	ALT	Gas leak detection	Outdoor suction temperature sensor (TS1) detects sustained and repeated high temperatures that exceed standard value.
P19	–	P19	☼	●	☼	ALT	4-way valve reversing trouble	Abnormality in refrigerating cycle is detected during heating operation.
P20	–	P20	☼	●	☼	ALT	Activation of high-pressure protection	High pressure (Pd) sensor detects high pressure that exceeds standard value.

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

Check code		Central control or main remote controller display	Display of receiving unit				Typical problem site	Description of Check code
Outdoor 7-segment display			Indicator light block					
	Sub-code		Operation	Timer	Ready	Flash		
F13	1∗	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∗	H01	●	☼	●		Compressor breakdown	Inverter current (Idc) detection circuit detects overcurrent.
H02	1∗	H02	●	☼	●		Compressor trouble (lockup)	Compressor lockup is detected
H03	1∗	H03	●	☼	●		Current detection circuit trouble	Abnormal current is detected while inverter compressor is turned off.
H17	1∗	H17	●	☼	●		Compressor trouble (Step out)	Compressor is in step-out condition.
P05	1*: Compressor *E : Fan moter	P05	☼	●	☼	ALT	Inverter Vdc trouble	Inverter DC voltage is too high (over voltage) or too low (under voltage).
P07	1∗	P07	☼	●	☼	ALT	Heat sink overheat trouble	Temperature sensor built into IPM (TH) detects overheating.
P22	*0: IGBT short circuit *1: Position detection circuit trouble *3: Motor lockup trouble *4: Motor current trouble *C: TH sensor temperature trouble *D: TH sensor short circuit, release trouble (*: Fan motor number)	P22	☼	●	☼	ALT	Outdoor fan P.C. board trouble	Outdoor fan P.C. board detects trouble.
P26	1∗	P26	☼	●	☼	ALT	Compressor start up trouble	Open phase or IPM over current for compressor is detected.
P29	1∗	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

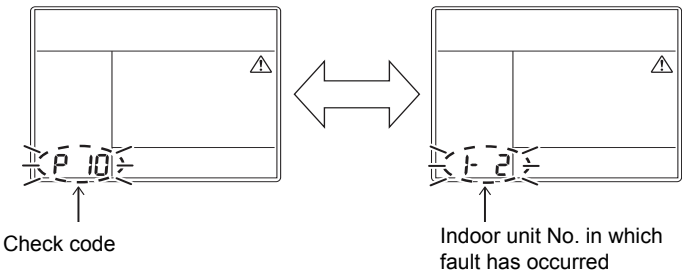
9-3. Troubleshooting based on information displayed on remote controller

Using main remote controller (RBC-ASCU11*)

<RBC-ASCU11*>

(1) Checking and testing

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.



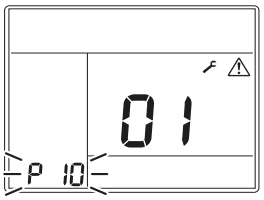
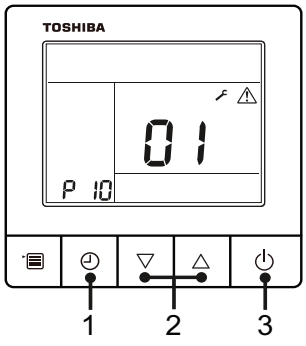
(2) Troubleshooting history and confirmation

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. • [01: Order of troubleshooting history] appears in the temperature indicator. • 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. The troubleshooting history appears in order from [01] (newest) to [04] (oldest). **⚠ CAUTION** In the troubleshooting history mode, DO NOT push the Menu button for over 10 seconds, doing so deletes the entire troubleshooting history of theindoor unit.	
3	After you have finished checking, push the ON/OFF button to return to the regular mode. • 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>

<Corresponding alphanumerical letters>

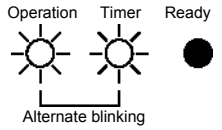
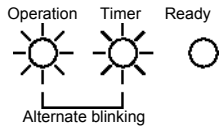
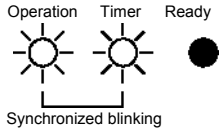
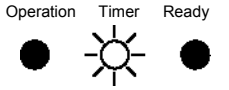
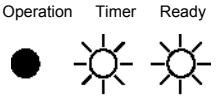
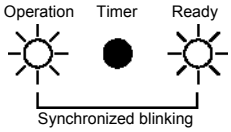
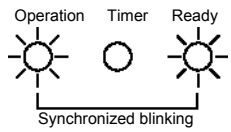
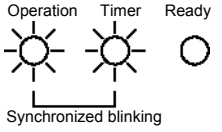
0 1 2 3 4 5 6 7 8 9 A b C d E F H J L P

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

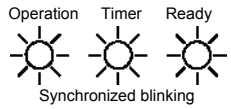
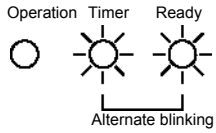
To identify the check code, check the 7-segment display on the outdoor unit. To check for check codes not displayed on the 7-segment display, consult the “List of Check Codes (Indoor Unit)” in “9-2. Troubleshooting method”.

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

Light block	Check code	Cause of trouble		
Operation Timer Ready ● ● ● All lights out	–	Power turned off or error 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		
	E17	Communication trouble between indoor unit(s) and Shut-off Valve unit(s)		
	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)		
	E07	Trouble transmission in indoor-outdoor communication		
	E15	Indoor unit not found during automatic address setting		
	E16	Injection circuit trouble		
	E20	Detection of refrigerant piping communication trouble during automatic address setting		
Operation Timer Ready ● ☼ ☼ Alternate blinking	E31	P.C. board communication trouble		
	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		
	P14	Outdoor unit valve is closed		
Operation Timer Ready ☼ ● ☼ Alternate blinking	P03	Outdoor discharge (TD) temperature trouble		
	P04	Activation of outdoor high-pressure SW		
	P05	Open phase / power failure / Miswiring of power Inverter DC voltage (Vdc) trouble 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		
	P19	Outdoor 4-way valve reversing trouble		
	P20	Activation of high-pressure protection		
	P22	Outdoor fan P.C. board trouble		
	P26	Compressor trouble / Wire connection trouble Compressor leads trouble Compressor P.C. board trouble		
	P29	Compressor position detection circuit trouble		
	P31	Shutdown of other indoor unit in group due to Trouble (group follower unit trouble)		

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/TSA) trouble	
	F11	Discharge temperature sensor (TF) trouble	
	F04	Discharge temperature sensor (TD) trouble	Outdoor unit temperature sensor trouble
	F06	Heat exchanger temperature sensor (TE) trouble	
	F07	Liquid temperature sensor (TL1) trouble	
	F08	Outside air temperature sensor (TO) trouble	
	F12	Suction temperature sensor (TS1) trouble	
	F13	Heat sink sensor (TH) trouble	
	F15	Wiring error in heat exchanger sensor (TE) and liquid temperature sensor (TL1) Outdoor unit temperature sensor wiring / installation trouble	
	F16	Wiring error in outdoor high pressure sensor (Pd) and low pressure sensor (Ps) Outdoor pressure sensor wiring Trouble	
	F23	Low pressure sensor (Ps) Trouble	Outdoor unit pressure sensor Trouble
	F24	High pressure sensor (Pd) Trouble	
	F29	Trouble in indoor EEPROM	
	H01	Compressor breakdown	Outdoor unit compressor related trouble
	H02	Compressor lockup	
	H03	Current detection circuit Trouble	
	H04	Comp. case thermo operation	
	H06	Abnormal drop in low-pressure sensor (Ps) reading	Protective shutdown of outdoor unit
	H17	Compressor trouble (Step-out)	
	J29	Leak Detector trouble	
	J30	Refrigerant leak detection	
	J31	Duplicated priority indoor unit (as displayed on priority indoor unit)	
	L02	Outdoor unit model mismatched trouble	
	L03	Duplicated indoor group outdoor 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 stand-alone indoor unit	
	L08	Indoor group address not set	
	L09	Indoor capacity not set	
	L04	Duplicated outdoor refrigerant line address	
	L10	Outdoor capacity not set	
	L11	Shut-off Valve unit installation trouble	
	L13	Safety measures setting unmatched	
	L14	Safety measures nonconformity	
	L20	Duplicated central control address	
	L29	Trouble in number of P.C. boards	
	L30	Indoor external interlock trouble	
	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 (automatic cooling / heating setting for model incapable of it and heating setting for cooling-only model)

9-4. Check codes displayed on remote controller and 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)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
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. • Check for failure in central control communication line. • Check termination resistor 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. • Check for failure in central control communication line. • Check termination resistor setting. • Check power supply for devices at other end of central control communication line. • 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.
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). • Check for broken wire or connector bad contact. • Check indoor power supply. • Check for failure in indoor P.C. board. • Check remote controller address settings (when two remote controllers are in use). • 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. Replace remote controller as necessary.
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.
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 unit and outdoor unit. • Check indoor address setting. • Check communication wiring between indoor unit and outdoor unit. • Check outdoor unit termination resistor setting (SW100, Bit 2).

<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">Controller</th><th colspan="2">Outdoor 7-segment display</th></tr>
<tr><th>Check code</th><th>Sub-code</th></tr>
<tr><td>(Depending on indoor unit status)</td><td rowspan="3"></td><td>—</td><td>I/F</td><td>Dropping out of indoor unit</td><td>All stop</td><td>All indoor unit initially communicating normally fails to return signal for specified length of time.</td><td rowspan="3">• Check power supply to indoor unit.(Is power turned on?)
• Check communication wiring between indoor unit and outdoor unit.
• Check connection of communication connectors on indoor unit P.C. board.
• Check for failure in indoor unit P.C. board.
• Check for failure in outdoor unit P.C. board (I/F).
• Check indoor unit termination resistor setting (I.DN[1FC]).</td></tr>
<tr><td>(Depending on indoor unit status)</td><td>E06</td><td>Detected indoor unit address</td><td>I/F</td><td>Dropping out of indoor unit</td><td>Stop of corresponding unit</td><td>Condition 1
One or moreIndoor unit initially communicating normally fails to return signal for specified length of time.
Condition 2
Outdoor unit I / F board SW103, Bit4 : ON (Factory default:OFF)</td></tr>
<tr><td>(Depending on indoor unit status)</td><td>—</td><td>I/F</td><td>Indoor unit termination resistor setting torouble</td><td>All stop</td><td>Termination resistor is not set in any indoor unit.</td></tr>
<tr><td>—</td><td>E07</td><td>—</td><td>I/F</td><td>Indoor-outdoor communication circuit trouble (detected at outdoor end)</td><td>All stop</td><td>Signal cannot be transmitted from outdoor to indoor units for 30 seconds continuously.</td><td>• Check outdoor termination resistor setting (SW100, Bit 2).
• Check connection of indoor-outdoor communication circuit.</td></tr>
<tr><td>E08</td><td>E08</td><td>Duplicated indoor address</td><td>Indoor unit I/F</td><td>Duplicated indoor address</td><td>All stop</td><td>More than one indoor unit are assigned same address.</td><td>• Check indoor addresses.
• Check for any change made to remote controller connection (group/ individual) since indoor address setting.</td></tr>
<tr><td>E09</td><td>—</td><td>—</td><td>Remote controller</td><td>Duplicated master remote controller</td><td>Stop of corresponding unit</td><td>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.)</td><td>• Check remote controller settings.
• Check remote controller P.C. boards.</td></tr>
<tr><td>E10</td><td>—</td><td>—</td><td>Indoor unit</td><td>Indoor inter-MCU communication trouble</td><td>Stop of corresponding unit</td><td>Communication cannot be established/maintained upon turning on of power or during communication.</td><td>• Check for failure in indoor P.C. board</td></tr>
<tr><td>E12</td><td>E12</td><td>01:Indoor-outdoor communication</td><td>I/F</td><td>Automatic address starting trouble</td><td>All stop</td><td>• Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress.</td><td>• Check whether the outdoor unit of other systems or the indoor unit is connected to Uv (U1/U2) line.
• Perform automatic address setting again after disconnecting communication cable to that refrigerant line.</td></tr>
<tr><td>E15</td><td>E15</td><td>—</td><td>I/F</td><td>Indoor unit not found during automatic address setting</td><td>All stop</td><td>Indoor unit cannot be detected after indoor automatic address setting is started.</td><td>• Check connection of indoor-outdoor communication line.
• Check for trouble in indoor power supply system.
• Check for noise from other devices.
• Check for power failure.
• Check for failure in indoor P.C. board.</td></tr>
<tr><td>E16</td><td>E16</td><td>00:Capacity over
01-:No. of units connected</td><td>I/F</td><td>Too many indoor units connected</td><td>All stop</td><td>• Combined capacity of indoor units is too large.

There are more indoor units connected than described below table.

<table><tr><th>Outdoor unit model</th><th>The number of indoor units</th></tr><tr><td>0401 type</td><td>8</td></tr><tr><td>0501 type</td><td>10</td></tr><tr><td>0601 type</td><td>13</td></tr></table></td><td>• Check capacities of indoor units connected.
• Check combined HP capacities of indoor units.
• Check HP capacity settings of outdoor units.
• Check No. of indoor units connected.
• 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)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
E17	—	—	Indoor unit	communication trouble between indoor units and Shut-off Valve units	Stop of corresponding units	There is no communication from Shut-off Valve units	• Check order in which power was turned on. • Check indoor units - Shut-off Valve units cable
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. • Check indoor power supply wiring. • Check P.C. boards of indoor units.
E20	E20	02: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 the indoor unit is connected to Uv (U1/U2) line
E31	E31	<table><tr><td></td><td>COMP.</td><td>FAN</td></tr><tr><td>01</td><td>O</td><td></td></tr><tr><td>08</td><td></td><td>O</td></tr><tr><td>09</td><td>O</td><td>O</td></tr></table> Circle (O): Trouble P.C. board	I/F	P.C. board communication trouble	All stop	Communication is disrupted between P.C. board in inverter box.	• Check wiring and connectors involved in communication between P.C. board I/F P.C. board for bad contact or broken wire. • Check for failure in outdoor P.C. board (I/F, comp. P.C. board or Fan P.C. board). • Check for external noise.
		80		Communication trouble between MCU and Sub MCU	All stop	Communication between MCU and Sub MCU stopped.	• Operation of power supply reset (OFF for 60 seconds or more) • Outdoor I/F PC board trouble check
F01	—	—	Indoor unit	Indoor TCJ sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TCJ sensor connector and wiring. • Check resistance characteristics of TCJ sensor. • Check for failure in indoor P.C. board.
F02	—	—	Indoor unit	Indoor TC2 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TC2 sensor connector and wiring. • Check resistance characteristics of TC2 sensor. • Check for failure in indoor P.C. board.
F03	—	—	Indoor unit	Indoor TC1 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TC1 sensor connector and wiring. • Check resistance characteristics of TC1 sensor. • Check for failure in indoor P.C. board.
F04	F04	—	I/F	TD sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TD sensor connector. • Check resistance characteristics of TD sensor. • Check for failure in outdoor P.C. board (I/F).
F06	F06	—	I/F	TE sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TE sensor connectors. • Check resistance characteristics of TE sensors. • Check for failure in outdoor P.C. board (I/F).
F07	F07	01: TL1 sensor trouble	I/F	TL1 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TL1 sensor connectors. • Check resistance characteristics of TL1 sensors. • 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 connectors. • Check resistance characteristics of TO sensors. • 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)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
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. • Check resistance characteristics of TA sensor. • 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. • Check resistance characteristics of TF sensor. • Check for failure in indoor P.C. board.
F12	F12	01: TS1 sensor trouble	I/F	TS1 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TS1 sensor connector • Check resistance characteristics of TS1 sensor. • Check for failure in indoor P.C. board.
F13	F13	1*	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, so replace Compressor P.C. board.
F15	F15	—	I/F	Outdoor temperature sensor wiring trouble (TE, 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 TE and TL1 sensors. • Check resistance characteristics of TE and TL1 sensors. • Check for outdoor P.C. board (I/F) trouble
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. • Check connection of low-pressure Ps sensor connector. • Check for failure in pressure sensors Pd and Ps. • Check for trouble in outdoor P.C. board (I/F). • 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. • Check connection of Ps sensor connector. • Check for failure in Ps sensor. • Check for compressor poor compression. • Check for failure in 4-way valve. • Check for failure in outdoor P.C. board (I/F). • 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). Pd > 4.15MPa despite compressor having been turned off.	• Check connection of Pd sensor connector. • Check for failure in Pd sensor. • 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	Outdoor P.C. board (I/F) does not operate normally.	• Check power supply voltage. • Check power supply noise. • Check for failure in outdoor P.C. board (I/F).
H01	H01	1*	Compressor P.C. board	Compressor breakdown	All stop	Inverter current detection circuit detects overcurrent and shuts system down.	• Check power supply voltage. (AC220-240V ± 10%). • Check for failure in compressor. • Check for possible cause of abnormal overloading. • Check for failure in outdoor P.C. board (Compressor).

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
H02	H02	1*	Compressor P.C. board	Compressor trouble (lockup)	All stop	Overcurrent is detected several seconds after startup of inverter compressor.	• Check for failure in compressor. • Check compressor system wiring, particularly for open phase. • Check connection of connectors/ terminals on compressor P.C. board. • Check conductivity of case heater. (Check for refrigerant problem inside compressor.)
H03	H03	1*	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. • Check failure in outdoor P.C. board (Compressor).
H04	H04	—	I/F	Compressor case thermostat operation	All stop	Compressor case thermostat performed protective operation.	• Check compressor case thermostat circuit. (Connector, wiring, P.C. board) • Check full opening of service valve. (Gas and liquid side) • Check outdoor PMV clogging. • Check SV4 circuit leakage. • Check miswiring / misinstallation of SV4. • Check valve open status of indoor PMV. • Check 4-way valve trouble. • Check refrigerant amount shortage.
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). • Check outdoor PMV for clogging. • Check for failure in SV4 circuits. • Check for failure in low- pressure Ps sensor. • Check indoor filter for clogging. • Check valve opening status of indoor PMV. • Check refrigerant piping for clogging. • Check operation of outdoor fan (during heating). • Check for insufficiency in refrigerant quantity.
H17	H17	1*	Compressor P.C. board	Compressor trouble (Step-out)	All stop	Compressor is in step-out condition.	• Check power supply voltage. (AC220-240V ± 10%). • Check for failure in compressor. • Check for possible cause of abnormal overloading. • Check for failure in outdoor P.C. board (compressor).
L02	L02	Detected indoor unit address	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.)
		—	I/F	Indoor unit incompatible with A2L refrigerant	All stop	• Indoor unit incompatible with TU2C-LINK is connected. • Indoor unit incompatible with R32 refrigerant is connected.	• Check Indoor unit model. • Check if an indoor unit compatible with R32 refrigerant is connected. • Check if remote controller of Flow Selector unit compatible with TU2C-LINK is connected.
L03	—	—	Indoor unit	Duplicated indoor header unit	Stop of corresponding unit	There are more than one header units in group.	• Check indoor addresses. • 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.
J03	—	—	Indoor unit	Duplicated Shut-off valve unit		More than one Shut-off Valve unit(s) have been set up in one refrigerant line.	• Check indoor unit(s) - Shut-off Valve unit(s) cable

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
J29	—	—	Indoor unit	Leak Detector Trouble	• Continued operation • All stop (detected when power is turned on)	• There is no communication from Leak Detector • A Malfunction signal received from Leak Detector.	• Check Malfunction LED of Leak Detector. • Check disconnection and connectors of Leak • Check PC board defects of Leak Detector. • Check PC board defects of indoor unit.
J30	J30	Detected indoor unit address	Indoor unit	Refrigerant leak detection	All stop (The safety CODE No. setting of the indoor unit is "pump down operation" or "Only Leak Detector)"	Leak Detector detects refrigerant leak	• Check refrigerant detection status of Leak Detector. • Check refrigerant leaks from indoor unit.
	—	—			Stop of corresponding unit(s) (The safety CODE No. setting of the indoor unit is "Individual shut-off operation")		
J31	—	—	Indoor unit	Refrigerant leak detection sensor exceeding its life of the product	Continued operation	Energization time of Leak Detector has reached its useful life.	• Check Malfunction LED of Leak Detector.
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. **Note:** **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. (I.DN = 11)
L10	L10	—	I/F	Outdoor capacity not set	All stop	Initial setting of I/F P.C. board has not been implemented.	• Check model setting of P.C. board for servicing outdoor I/F P.C. board.
L11	L11	Detected indoor unit address	I/F	Unsuitable safety device connected	All stop	FS unit is connected.	• Check if FS unit is not connected. • Check if Shut- off Valve unit is installed correctly.
L13	L13	Detected indoor unit address	I/F	Mismatch of safety device settings	All stop	• Safety measures CODE No. setting of indoor unit connected to same Shut-off Valve unit is mismatched. * No safety measures required" does not apply. * Mixture of "pump down operation" and "Only Leak Detector" is not case.	• Check safety measures CODE No. settings of indoor units. • Check Shut-off Valve unit address CODE No. setting of indoor unit. • Check group setting CODE No. setting of indoor unit. • Check PC board defects of indoor unit.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
L14	L14	Detected indoor unit address	I/F	Safety measures nonconformity	All stop	• 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. • Safety measures CODE No. setting of indoor unit is set to "pump down operation" or "individual shut-off operation" and Shut-off Valve unit is not connected.	• Check safety measures CODE No. settings of indoor units. • Check disconnection and connectors of Leak Detector. • Check PC board defects of Leak Detector. • Check connection of communication line between indoor unit and Shut-off Valve unit. • Check PC board defects of Shut-off Valve unit. • Check PC board defects in the indoor unit.
L20	—	—	Network adaptor Indoor unit	Duplicated central control address	All stop	There is duplication in central control address setting.	• Check central control addresses.
L29	L29	<table><tr><td></td><td>COMP.</td><td>FAN</td></tr><tr><td>01</td><td>O</td><td></td></tr><tr><td>08</td><td></td><td>O</td></tr><tr><td>09</td><td>O</td><td>O</td></tr></table>Circle (O): Trouble P.C. board	I/F	Trouble in No. of P.C. board	All stop	Insufficient number of P.C. board are detected when power is turned on.	• Check model setting of P.C. board for servicing outdoor I/F P.C. board. • Check connection of UART communication connector. • Check compressor P.C. board, fan P.C. board, and I/F P.C. board for failure.
		00	I/F	The number of inverter P.C. boards is abnormal.	All stop	The number of inverter P.C. board is more than that of setting of outdoor interface P.C. board.	• Check I/F P.C. board exchange has been correctly performed as a procedure. • Check for failure in I/F P.C. board. • Check for inverter P.C. board for compressors and inverter P.C. board for fan
L30	L30	Detected indoor address	Indoor unit	Indoor external interlock (External abnormal input)	Stop of corresponding unit	Indoor unit has been shut down due to external abnormal input signal.	**When external device is connected:** 1) Check for trouble in external device. 2) Check for trouble in indoor P.C. board. **When external device is not connected:** 1) Check for trouble in indoor P.C. board.
—	L31	—	I/F	Extended IC trouble	Continued operation	There is part failure in P.C. board (I/F).	• Check outdoor P.C. board (I/F).
P01	—	—	Indoor unit	Indoor fan motor trouble	Stop of corresponding unit	Indoor AC fan trouble is detected (activation of fan motor thermal relay).	• Check the lock of fan motor (AC fan). • Check wiring.
P03	P03	—	I/F	Discharge temperature TD trouble	All stop	Discharge temperature (TD) exceeds 115 ˚C.	• Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check outdoor PMV for clogging. • Check resistance characteristics of TD sensor. • Check for insufficiency in refrigerant quantity. • Check for failure in 4-way valve. • Check for leakage of SV4 circuit. • Check SV4 circuit (wiring or installation trouble.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
P04	P04	1*	I/F	Activation of high-pressure SW	All stop	High-pressure SW is activated.	• Check connection of high-pressure SW connector. • Check for failure in Pd pressure sensor. • Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check for failure in outdoor fan. • Check for failure in outdoor fan motor. • Check outdoor PMV for clogging. • Check indoor/outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction/discharge air flows. • Check for failure in outdoor P.C. board (I/F). • Check for trouble in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring trouble. • Check for failure operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check for refrigerant overcharging.
P05	P05	00: Power detection trouble 01: Open phase	I/F	Power detection trouble / Open phase detection	All stop	• Open phase is detected when power is turned on.	• Check for failure in outdoor P.C. board (I/F). • Check wiring of outdoor power supply. • Check power supply voltage.
		1*	Compressor P.C. board	Compressor Vdc trouble	All stop	• Inverter DC voltage is too high (over voltage) or too low (under voltage).	
P07	P07	1*	Compressor P.C. board	Heat sink overheating trouble	All stop	Temperature sensor built into IPM (TH) is overheated.	• Check outdoor fan system trouble. • Check IPM and heat sink for thermal performance for failure installation. (e.g. mounting screws and thermal conductivity) • Check for failure in Compressor P.C. board. (failure IPM built-in temperature sensor (TH))
P10	P10	Detected indoor address	Indoor unit	Indoor overflow trouble	All stop	• Float switch operates. • Float switch circuit is open-circuited or disconnected at connector.	• Check float switch connector. • Check operation of drain pump. • Check drain pump circuit. • Check drain pipe for clogging. • Check for failure in indoor P.C. board.
P11	—	—	I/F	Outdoor heat exchanger freeze trouble	All stop	Abnormal frost formation on outdoor heat exchanger is detected repeatedly during heating operation.	• Check shortage of refrigerant. • Check connection of TE sensor. • Check resistance characteristics of TE sensors. • Check disconnection of TS1 sensor. • Check resistance characteristics of TS1 sensor. • Check outdoor I/F P.C. board malfunction. • Check operation of 4 way valve. • Check operation of outdoor PMV. • Check short circuit from outlet air to inlet air.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
P12	—	—	Indoor unit	Indoor fan motor trouble	Stop of corresponding unit	• Motor speed measurements continuously deviate from target value. • Overcurrent protection is activated.	• Check connection of fan connector and wiring. • Check for failure in fan motor. • Check for failure in indoor P.C. board. • Check impact of outside air treatment (OA).
P13	P13	—	I/F	Outdoor liquid backflow detection trouble	All stop	<During heating operation> When system is in heating operation, outdoor PMV continuously registers opening of 42 pulse or less while under super heat control.	• Check full-close operation of outdoor PMV. • Check for failure in Pd or Ps sensor. • Check failure in outdoor P.C. board (I/F). • Check capillary of oil separator oil return circuit for clogging. • Check for leakage of check valve in discharge pipe
P14	P14	01: Outdoor unit valve is closed	I/F	Another refrigerant cycle protection	All stop	Outdoor unit valve is forgotten to open during test run.	• Check service valves to confirm full opening. (both gas and liquid sides) • Check connection indoor-outdoor unit communication cable. • Check indoor unit sensor and PMV. • Check for broken or clogging at refrigerant piping.
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. <TS trouble judgment criterion> In cooling operation: 60 ˚C In heating operation: 40 ˚C	• Check for insufficiency in refrigerant quantity. • Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check PMV for clogging. • Check resistance characteristics of TS1 sensor. • Check for failure in 4-way valve. • Check SV4 circuit for leakage
		02: TD condition	I/F	Gas leak detection (TD condition)	All stop	Protective shutdown due to sustained discharge temperature (TD) at or above 108 ˚C for at least 10 minutes is repeated four times or more.	• Check for insufficiency in refrigerant quantity. • Check PMV for clogging. • Check resistance characteristics of TD sensor. • Check indoor filter for clogging. • Check piping for clogging. • Check SV4 circuit (for leakage or coil installation trouble).
P19	P19	—	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 valves. • Check for coil failure in 4- way valve and loose connection of its connector. • Check resistance characteristics of TS1 sensors. • Check output voltage characteristics of Pd and Ps pressure sensors. • Check for wiring trouble involving TE1 and TL1 sensors.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
P20	P20	—	I/F	Activation of high-pressure protection	All stop	<During cooling operation> Pd sensor detects pressure equal to or greater than 3.9 MPa. <During heating operation> Pd sensor detects pressure equal to or greater than 3.6 MPa.	• Check for failure in Pd pressure sensor. • Check service valves (gas side, liquid side) to confirm full opening. • Check for failure in outdoor fan. • Check for failure in outdoor fan motor. • Check outdoor PMV for clogging. • Check indoor/outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction/discharge air flows. • Check for failure in outdoor P.C. board (I/F). • Check for failure in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring trouble. • Check for trouble operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check for refrigerant overcharging.
P22	P22	0: IGBT shortcircuit 1: Position detection circuit trouble 3: Motor lockup trouble C: TH Sensor temperature trouble (: Fan motor number)	IPDU	Outdoor fan IPDU trouble	All stop	(Sub code: 0) Fan IPDU over current protection circuit. Flow of current equal to or greater than the specified value is detected during startup of the fan.	• Check fan motor. • Check for defect in fan IPDU P.C. board.
					All stop	(Sub code: 1) Fan IPDU position detection circuit. Position detection is not going on normally.	• Check fan motor. • Check connection of fan motor connector. • Check for defect in fan IPDU P.C. board.
					All stop	(Sub code: 3) Gusty wind, an obstruction, or another external factor. Speed estimation is not going on normally.	• Check fan motor. • Check for defect in fan IPDU P.C. board.
					All stop	(Sub code: C) Higher temperature than the specified value is detected during operation of the fan.	• Check fan motor. • Check for defect in fan IPDU P.C. board.
P26	P26	1*	Compressor P.C. board	Compressor start up trouble	All stop	Open phase or IPM overcurrent for compressor is detected.	• Check for failure in compressor. • Check connection of connectors / terminals on compressor and compressor P.C.board. • Check winding resistance between phases of compressor. • Check for failure in compressor P.C.baord.
P29	P29	1*	Compressor P.C. board	Compressor position detection circuit trouble	All stop	Position detection is not going on normally.	• Check wiring and connector connection. • Check for compressor layer short-circuit. • Check for failure in compressor P.C. board.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Controller	Outdoor 7-segment display						
	Check code	Sub-code					
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. • Check address settings.
	(L20 displayed.)			Duplicated central control address	Continued operation	There is duplication in central control addresses.	
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.
S01	—	—	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. • Check for failure in central control communication line. • Check termination resistor setting. • Check power supply for devices at other end of central control communication line. • Check failure in P.C. boards of devices at other end of central control communication line.

▼Points to Note When Servicing Compressor

(1) When checking the outputs of inverters, remove the wiring from the compressors.

▼How to Check Inverter Output

(1) Turn off the power supply.

(2) Remove compressor leads from the IPDU P.C. board. (Be sure to remove all the leads.)

(3) Turn on the power supply and start cooling or heating operation.

Be careful not to make simultaneous contact with two or more faston connectors for compressor leads or a faston connector and some other object (e.g. the unit cabinet).

(4) Check the output voltage inverter-side (CN201, 202, 203).

If the result is unsatisfactory according to the judgment criteria given in the table below, replace the IPDU P.C. board.

No.	Measured leads	Criterion
1	Red-White	200-280V
2	White-Black	200-280V
3	Black-Red	200-280V

* When connecting the compressor leads back to the compressor terminals after checking the output, check the faston connectors thoroughly to ensure that they are not crooked. If there is any loose connector, tighten it with a pair of pliers, etc. before connecting the lead.

▼How to Check Resistance of Compressor Winding

(1) Turn off the power supply.

(2) Remove compressor leads from the compressors.

(3) With compressor, check the phase-to-phase winding resistances and winding-to-outdoor cabinet resistance using a multimeter.

- Earth fault?
  → It is normal if the winding-to-outdoor cabinet resistance is 10 MΩ or more.
- Inter-winding short circuit?
  → It is normal if the phase-to-phase resistances are in the 0.3-0.6 Ω range. (Use a digital multimeter.)

▼How to Check Outdoor Fan Motor

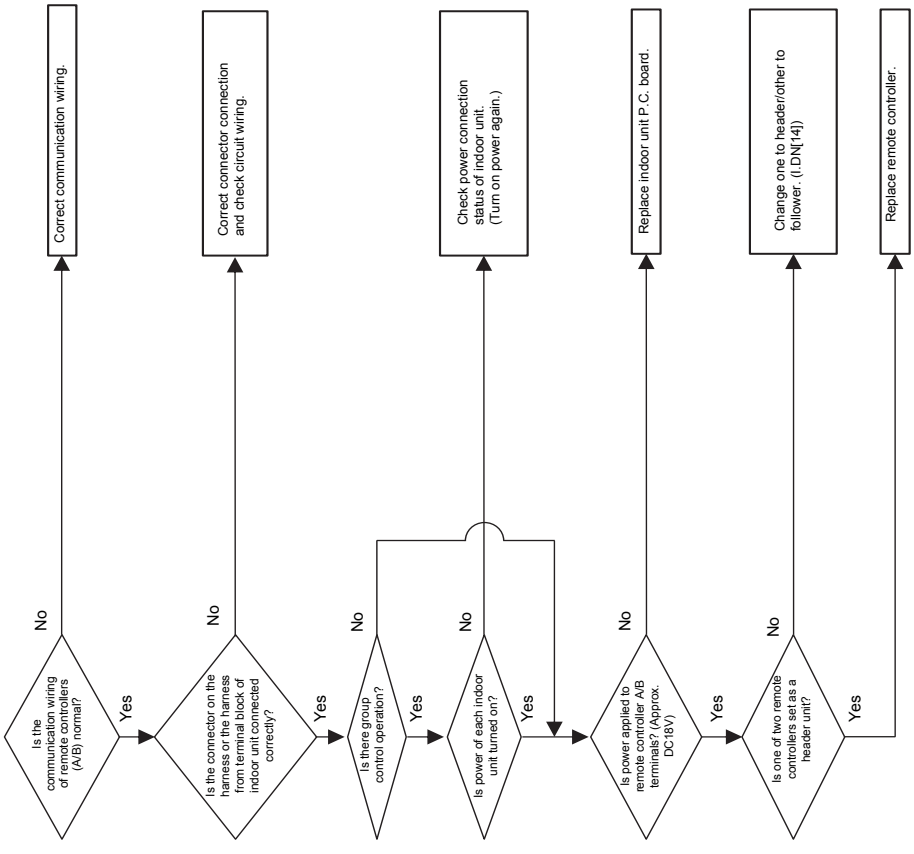
(1) Turn off the power supply.

(2) Remove fan motor leads from the IPDU P.C. board for the outdoor fan (CN300).

(3) Rotate the fan by hand. If the fan does not turn, the fan motor is faulty (locked up). Replace the fan motor.If the fan turns, measure the phase-to-phase winding resistances using a multimeter. It is normal if the measurements are in the 15.6-19.0 Ω range. (Use a digital multimeter.)

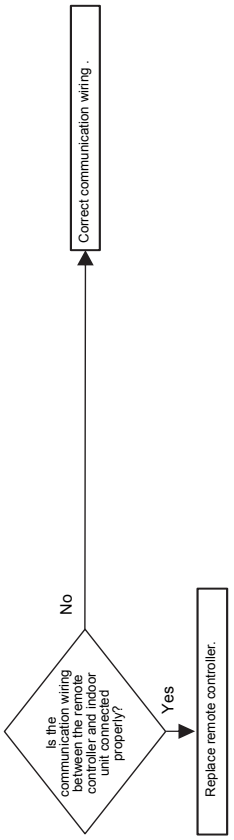
9-5. Diagnosis procedure for each check code

Check code	Check code name	Cause
[E01]	Communication error between the indoor unit and remote controller (detected on the remote controller)	1. Remote controller wiring trouble 2. Indoor unit power trouble 3. Indoor unit P.C. board trouble 4. Remote controller address setup trouble 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

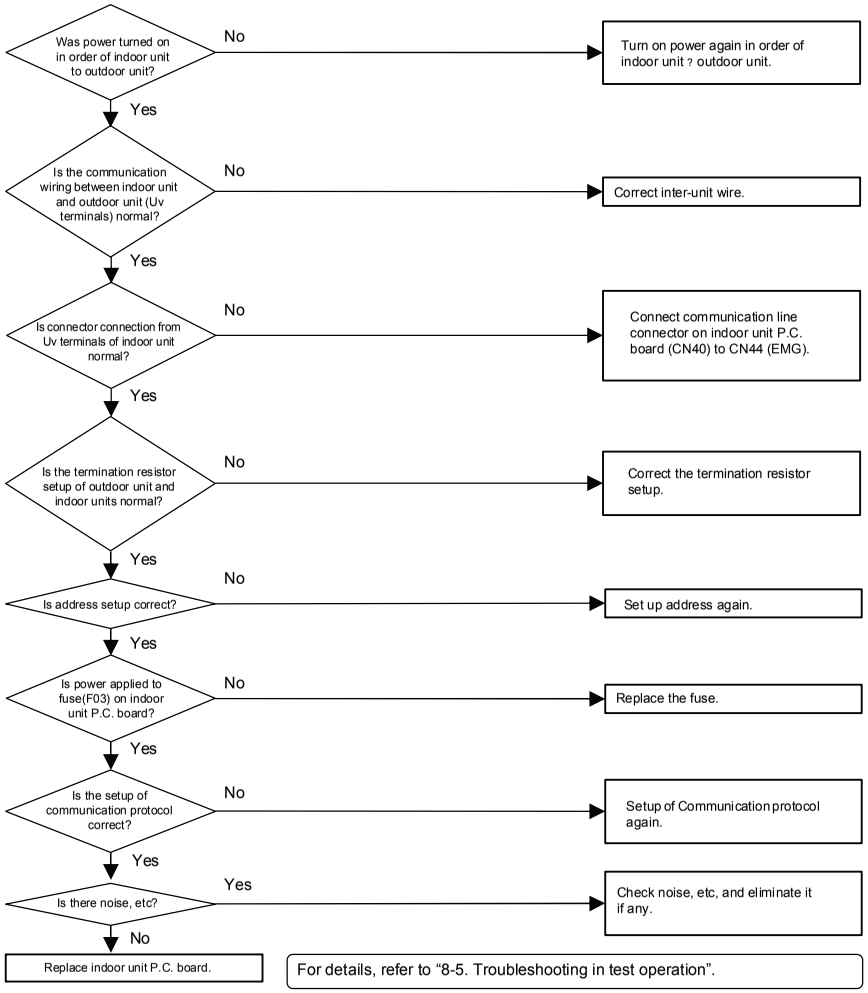
* The check code is not indicated on the central control device or the 7-segment indication on the outdoor unit.



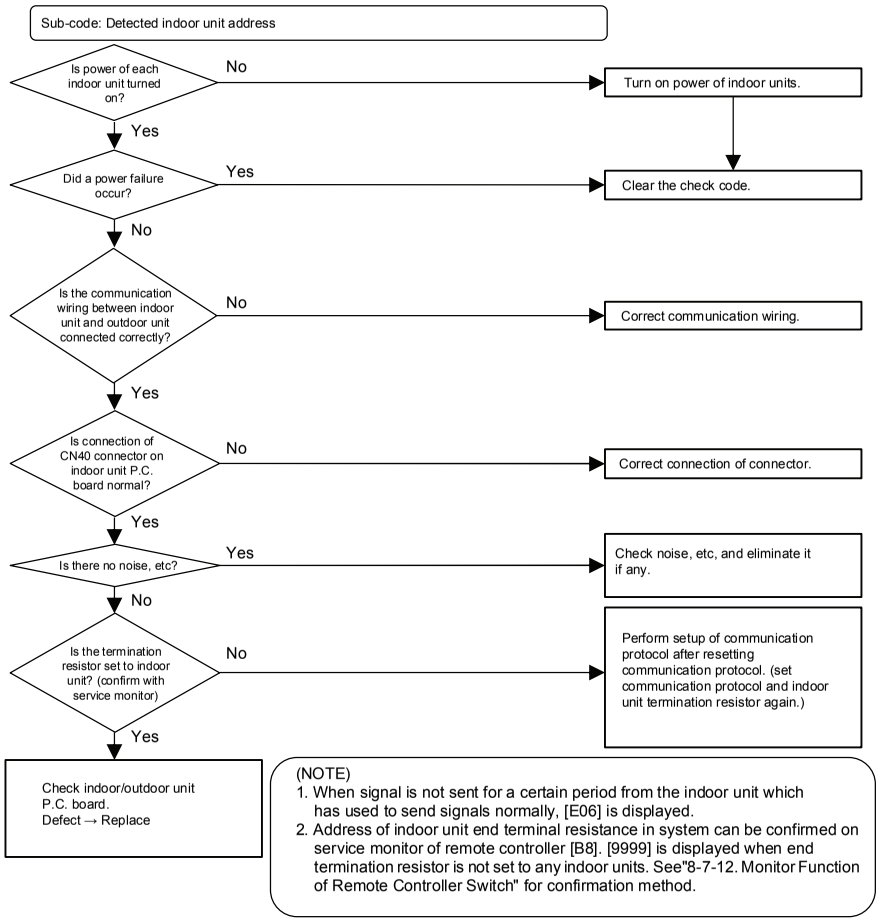
Check code	Check code name	Cause
[E03]	Communication error between the indoor unit and remote controller (detected on the indoor unit)	No communication from the remote controller / communication adapter

The trouble is detected when the indoor unit cannot receive the signal from the wired remote controller.
Check the communication wiring from the remote controller (A/B).
The check code [E03] is not indicated on the remote controller as its communication is down.
However, the code is indicated on the central controller.

Check code	Check code name	Cause
[E04]	Indoor/Outdoor communication circuit trouble (Detected at indoor unit side)	1. Power of outdoor unit was firstly turned on. 2. Communication wiring trouble between indoor unit and outdoor unit 3. Termination resistor setup trouble for indoor unit and outdoor unit. 4. Address setup trouble 5. Incorrect setup of communication protocol



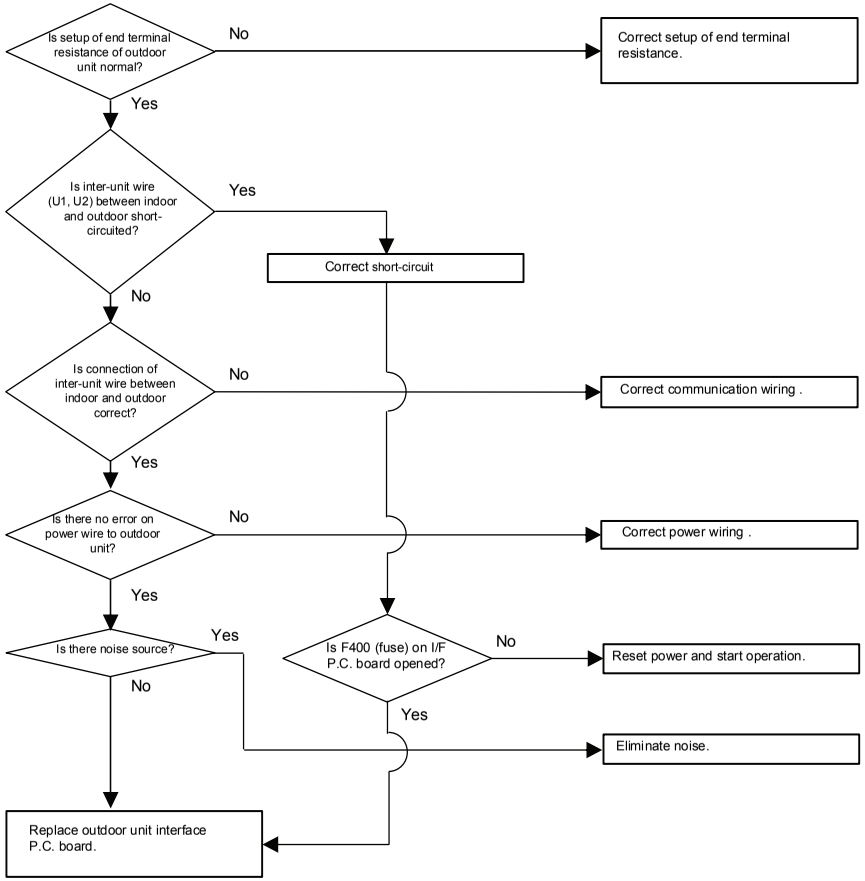
Check code	Check code name	Cause
[E06]	Decreased number of indoor units	1. Communication wiring (Uv) trouble between indoor unit and outdoor unit. 2. Communication connector or P.C. board trouble on indoor unit. 3. Interface P.C. board trouble on outdoor unit. 4. Power supply of indoor units (Is power turned on?) 5. Communication trouble for indoor unit with termination resistor



(NOTE)
1. When signal is not sent for a certain period from the indoor unit which has used to send signals normally, [E06] is displayed.
2. Address of indoor unit end terminal resistance in system can be confirmed on service monitor of remote controller [B8]. [9999] is displayed when end termination resistor is not set to any indoor units. See"8-7-12. Monitor Function of Remote Controller Switch" for confirmation method.

If "E06" appears on check code display or 7-segment display when the number of IDUs (Indoor units) connected in the system has been reduced (In case of IDUs powering off, or removing or transporting the unit), confirm whether all IDUs are powered. If the number of IDUs connected has been reduced, set rotary SW01/02/03 to 1/15/15 and push SW04 on Interface P.C. board 5second or more and clear the number of IDUs recorded. Finally, confirm that the number of IDUs recorded on Interface P.C.board is equal to that of IDUs currently connected. To confirm the number of IDUs recorded on the Interface P.C. board, refer to "9-6. 7-Segment Display Function".

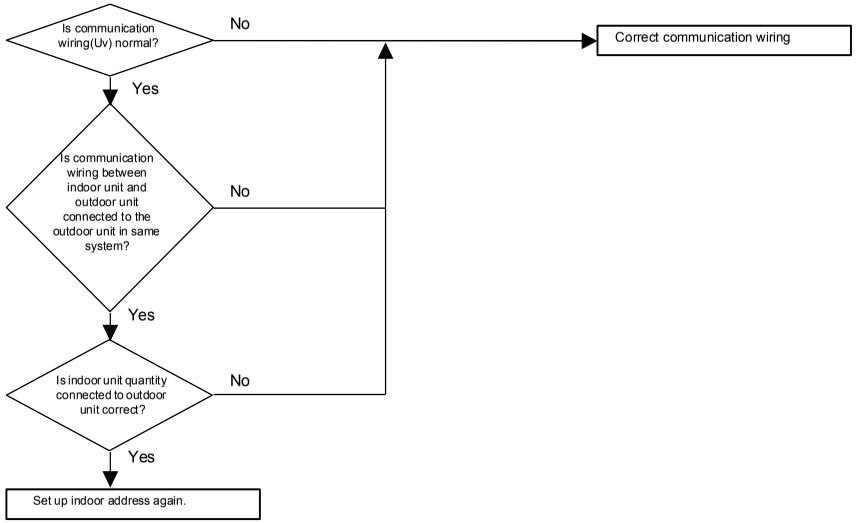
Check code	Check code name	Cause
[E07]	Indoor / Outdoor communication circuit trouble (Detected at outdoor side)	1. Indoor / outdoor unit end terminal resistance setup trouble 2. Indoor / outdoor unit communication wiring trouble



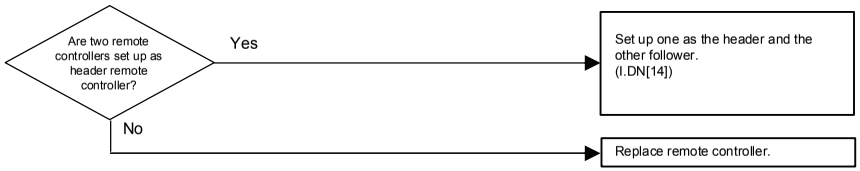
Check code	Check code name	Cause
[E08]	Duplicated indoor addresses	Indoor addresses are duplicated

Sub-code: Duplicated indoor address

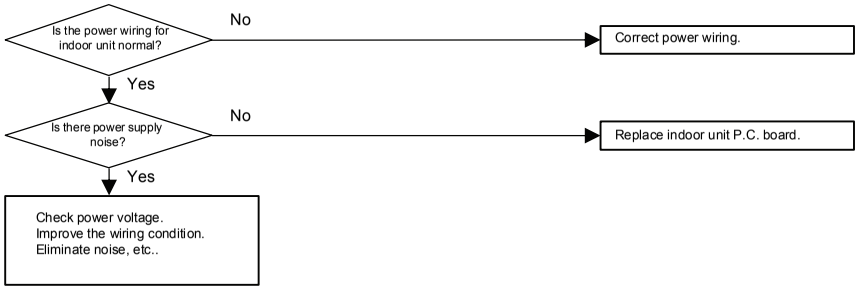
Using a wired remote controller, check the setup indoor unit CODE No. (I.DN) [12], [13], and [14].
When there is no address duplication, check to the following flowchart.



Check code	Check code name	Cause
[E09]	Duplicated hearder remote controller	Setup of header remote controller is duplicated

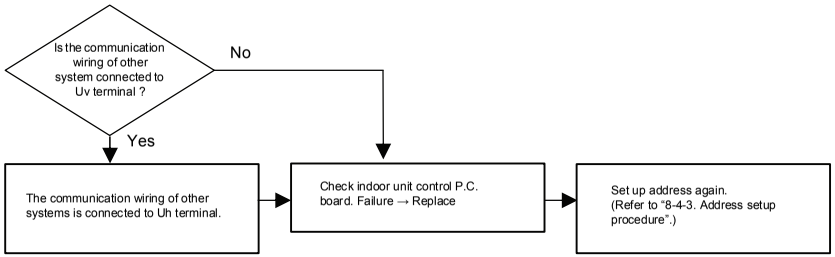


Check code	Check code name	Cause
[E10]	Communication trouble between indoor unit MCUs.	Indoor unit P.C. board trouble.



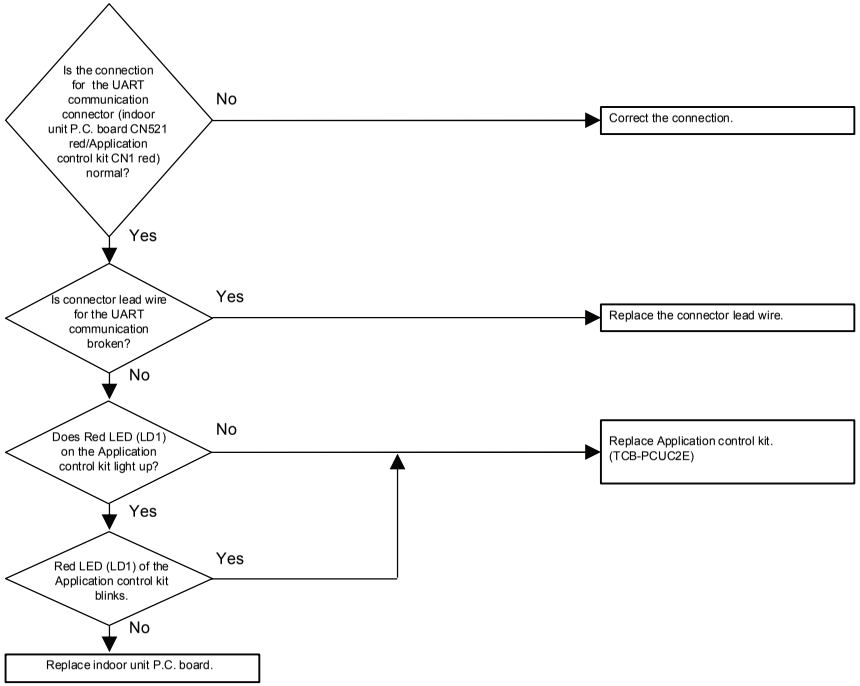
Check code	Check code name	Cause
[E12]	Automatic address start trouble	Starting automatic addressing of indoor units during automatic addressing in another refrigerant line. (Sub-code: 01)

Sub-code: 01: Communication between indoor unit and outdoor unit



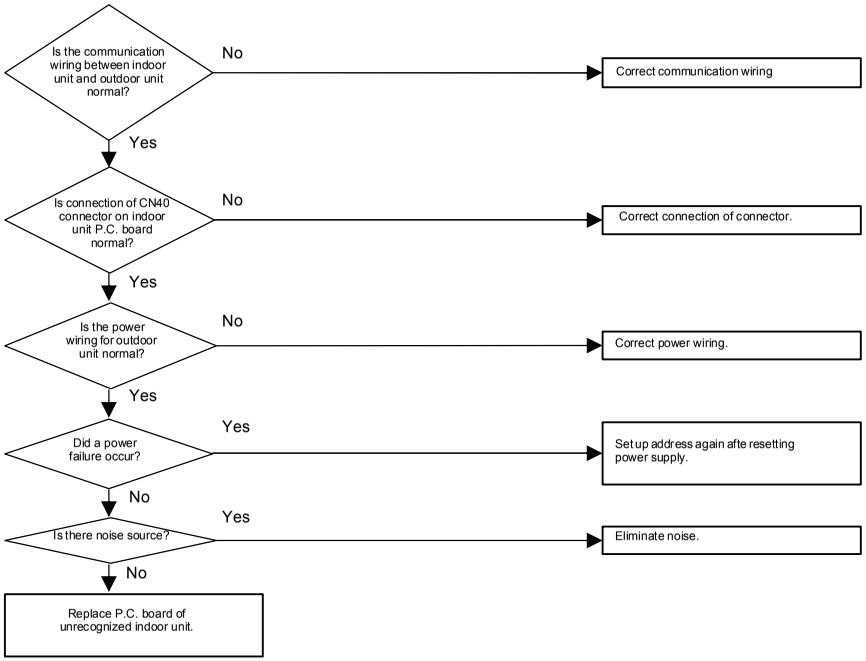
Check code	Check code name	Cause
[E11]	Communication trouble between Application control kit and indoor unit	1.Application control kit trouble 2. Indoor P.C. board trouble

For 4-way cassette type, Compact 4-way cassette type 2-way cassette type, 1-way cassette type (SH), Floor standing type.



Check code	Check code name	Cause
[E15]	No corresponding indoor unit during automatic address	1. Communication wiring trouble between indoor unit and outdoor unit 2. Indoor unit power trouble 3. Noise from surrounding devices 4. Power failure 5. Indoor unit P.C. board trouble

When this check code is displayed even if indoor unit addresses were set again after power had been reset, check the following flowchart.

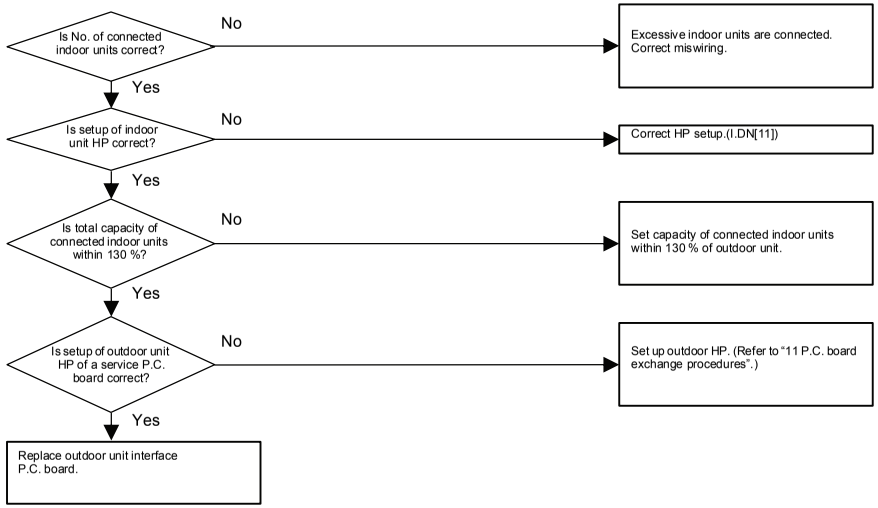


Check code	Check code name	Cause
[E16]	Number / capacity of connected indoor units beyond the limit	1. There are more than 13 connected indoor units. 2. Capacity over of total connected indoor units. 3. Incorrect setup of indoor unit horse power

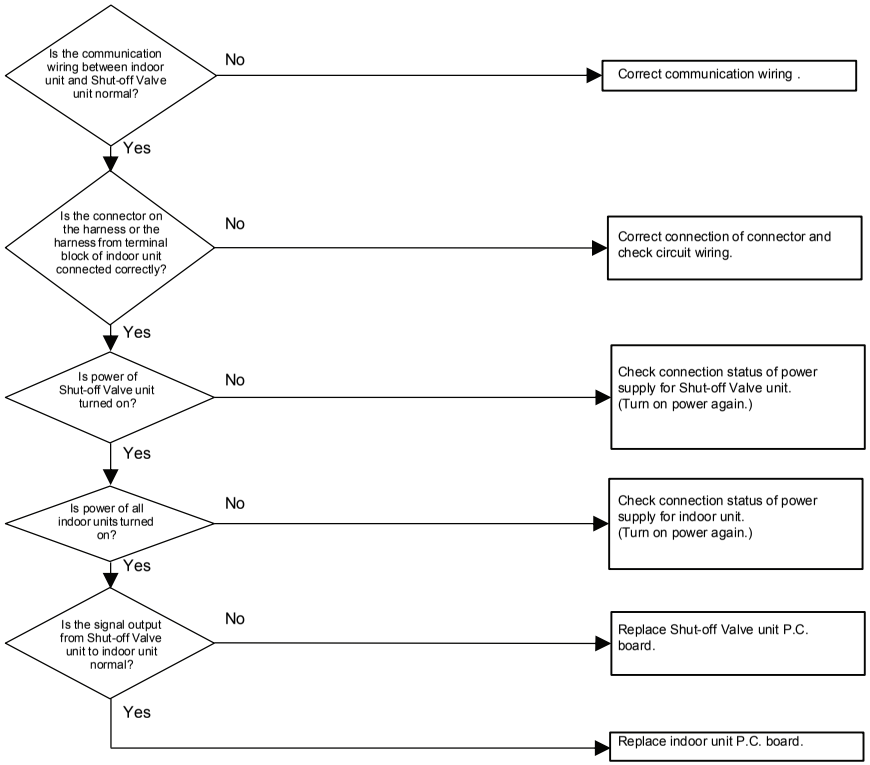
Sub-code: 00 : Capacity over, 01-: number of connected units.

(Note)
The number of connectable indoor units depends on the model of outdoor unit.

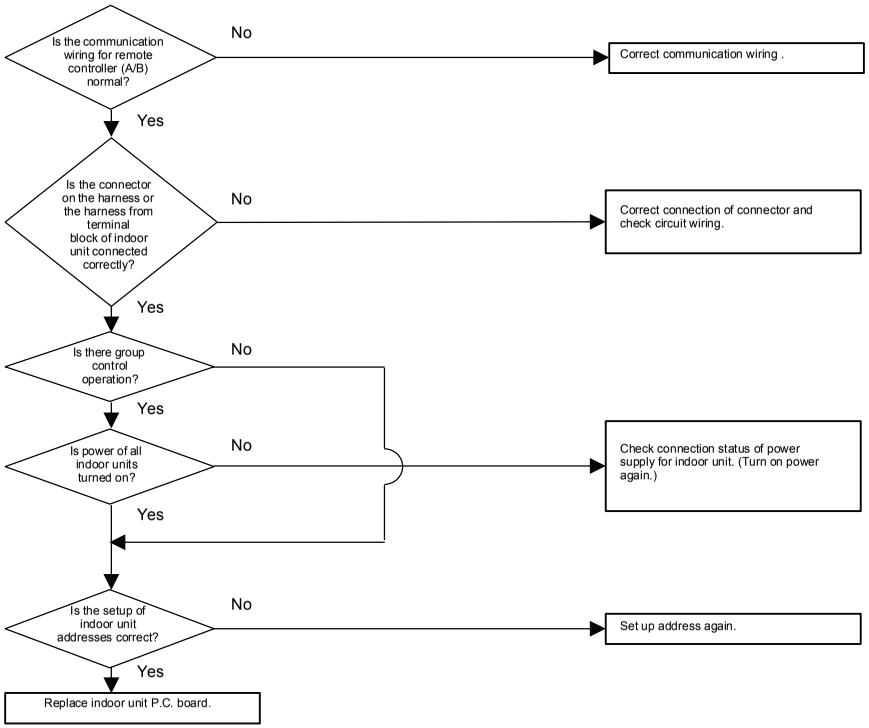
Model name	MCY-MUG0401*	MCY-MUG0501*	MCY-MUG0601*
No. of connectable indoor units	8	10	13



Check code	Check code name	Cause
[E17]	Communication trouble between indoor unit(s) and Shut-off Valve	1. Power of indoor unit was firstly turned on. 2. Communication wiring trouble between Shut-off Valve unit and indoor unit. 3. Indoor unit power trouble 4. Indoor unit P.C. board trouble 5. Shut-off Valve unit address setup trouble 6. Shut-off Valve unit P.C. board trouble



Check code	Check code name	Cause
[E18]	Communication trouble between indoor header unit and follower unit	Communication between indoor header unit and follower unit is unavailable



Check code	Check code name	Cause
[E20]	Indoor unit connected to other system during automatic address setting	When starting automatic indoor address setting, indoor unit for other system is connected.

Sub-code 02: Connection of an indoor unit for other system

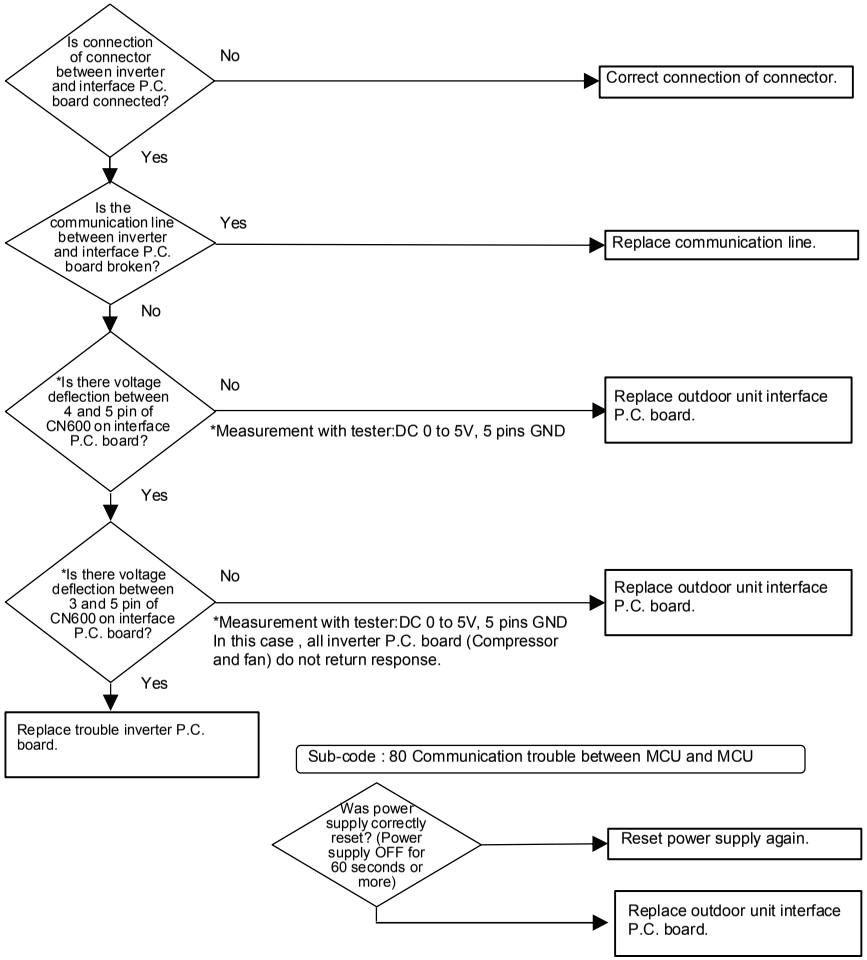
Separate the communication wiring between refrigerant systems(lines) following the address setting method.

Check code	Check code name	Cause
[F31]	Outdoor unit P.C. boards communication trouble	1. Communication wiring trouble between inverter and interface P.C. board. 2. Interface P.C. board trouble 3. Inverter P.C. board trouble 4. External noise

Sub-code:

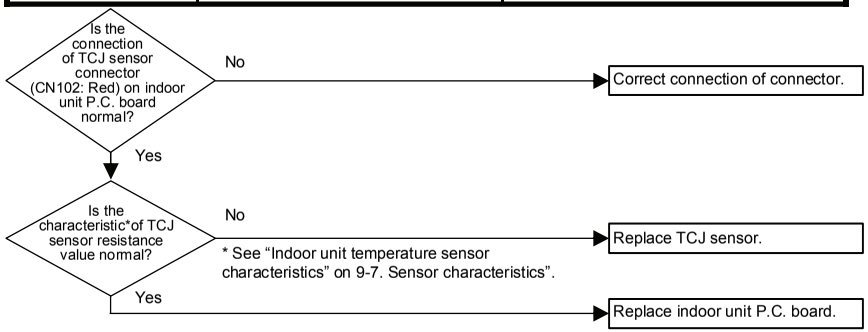
	Inverter P.C. board	
	Compressor	Fan
01	○	
08		○
09	○	○

Circle ○ Trouble P.C. boards

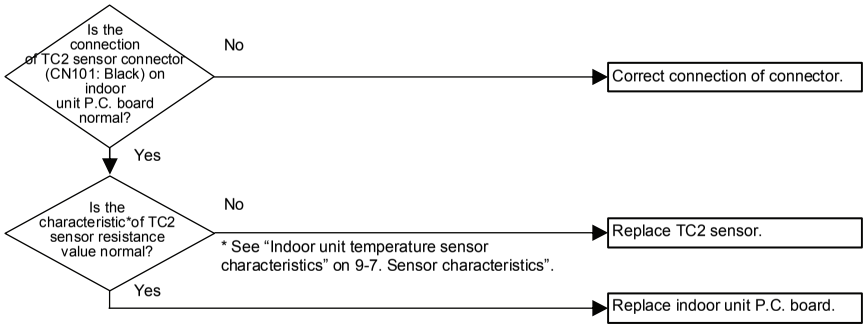


Sub-code : 80 Communication trouble between MCU and MCU

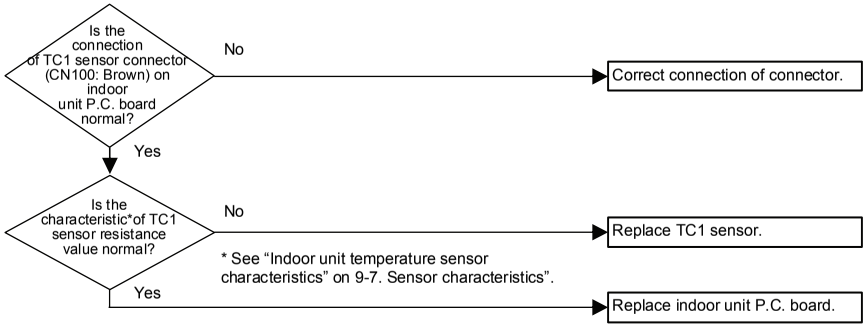
Check code	Check code name	Cause
[F01]	TCJ sensor trouble	Indoor unit TCJ sensor Open/Short-circuit



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



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



Check code	Check code name	Cause
[F04]	TD sensor trouble	Outdoor unit TD sensor Open/Short-circuit

This check code means detection of Open / Short of TD sensor. Check disconnection of connector (TD sensor: CN502, White) and characteristic of sensor resistance value. (See “Outdoor unit temperature sensor characteristics” on “9-7. Sensor characteristics”.)
If sensor is normal, replace outdoor unit interface P.C. board.

Check code	Check code name	Cause
[F06]	TE sensor trouble	Outdoor unit TE sensor Open/Short-circuit

This check code means detection of Open / Short of TE sensor. Check disconnection of connector (TE sensor: CN520, Green) and characteristic of sensor resistance value. (See “Outdoor unit temperature sensor characteristics” on “9-7. Sensor characteristics”.)
If sensor is normal, replace outdoor unit interface P.C. board.

Check code	Check code name	Cause
[F07]	TL1 sensor trouble	Outdoor unit TL1 sensor Open/Short-circuit

Sub-code: 01:TL1

This check code means detection of Open / Short of TL1 sensor. Check disconnection of connector (TL1 sensor: CN523, White) and characteristic of sensor resistance value. (See “Outdoor unit temperature sensor characteristics” on “9-7. Sensor characteristics”.)
If sensor is normal, replace outdoor unit interface P.C. board.

Check code	Check code name	Cause
[F08]	TO sensor trouble	Outdoor unit TO sensor Open/Short-circuit

This check code means detection of Open / Short of TO sensor. Check disconnection of connector (TO sensor: CN507, Yellow) and characteristic of sensor resistance value. (See “Outdoor unit temperature sensor characteristics” on “9-7. Sensor characteristics”.)
If sensor is normal, replace outdoor unit interface P.C. board.

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

This check code means detection of Open / Short of TA /TSA sensor. Check disconnection of connector (TA /TSA sensor :CN104, Yellow) and characteristic of sensor resistance value. (See “Indoor unit temperature sensor characteristics” on “9-7.Sensor characteristics”.)
If sensor is normal, replace indoor unit P.C. board.

Check code	Check code name	Cause
[F11]	TF sensor trouble	Intdoor unit TF sensor Open/Short-circuit

This check code means detection of Open / Short of TF sensor. Check disconnection of connector (TF sensor: CN103, Green) and characteristic of sensor resistance value. (See “Indoor unit temperature sensor characteristics” on “9-7. Sensor characteristics”.)
If sensor is normal, replace indoor unit P.C. board.

Check code	Check code name	Cause
[F12]	TS1 sensor trouble	Outdoor unit TS1 sensor Open/Short-circuit

Sub-code: 01:TL1

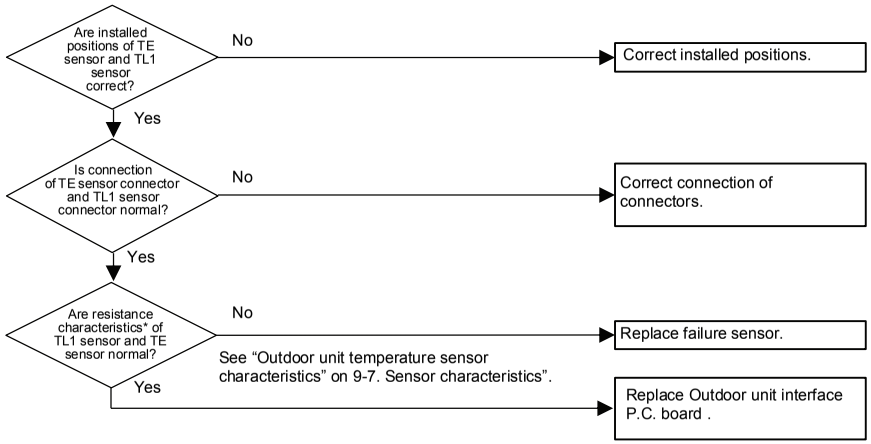
This check code means detection of Open / Short of TS1 sensor. Check disconnection of connector (TS1 sensor: CN505, White) and characteristic of sensor resistance value. (See “Outdoor unit temperature sensor characteristics” on “9-7. Sensor characteristics”.)
If sensor is normal, replace outdoor unit interface P.C. board.

Check code	Check code name	Cause
[F13]	TH sensor trouble	IPM built-in sensor trouble in compressor P.C. board

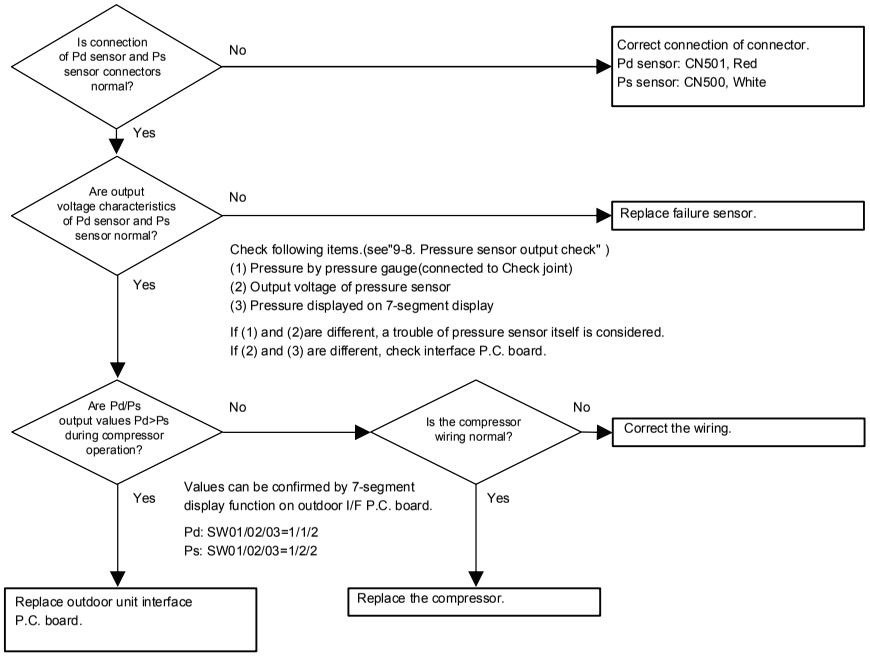
Sub-code: 1* :Compressor

This check code means IPM built-in temperature sensor trouble.
Replace compressor P.C. board.

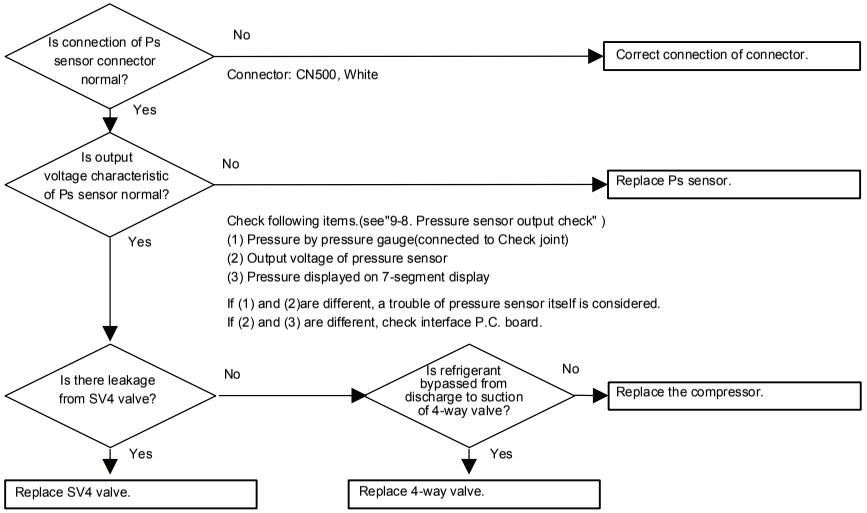
Check code	Check code name	Cause
[F15]	Outdoor unit temperature sensor miswiring(TE, TL1)	1. Misinstallation and misconnection of TE sensor and TL1 sensor 2. Resistance characteristics trouble of TE sensor andTL1 sensor 3. Outdoor unit interface P.C. board trouble



Check code	Check code name	Cause
[F16]	Outdoor unit pressure sensor miswiring (Pd, Ps)	1. High-pressure Pd sensor and low pressure sensor Ps are exchanged. 2. Output voltage of each sensor is zero.



Check code	Check code name	Cause
[F23]	Ps sensor trouble	1. Output voltage trouble of Ps sensor in outdoor unit. 2. SV4 or 4-way valve trouble



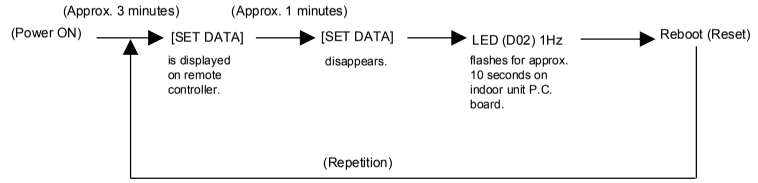
Check code	Check code name	Cause
[F24]	Pd sensor trouble	Output voltage trouble of Pd sensor in outdoor unit.

This check code means output voltage trouble of Pd sensor. Check disconnection of connector (Pd sensor: CN501, red) and characteristic of sensor output value. (See “Outdoor unit pressure sensor characteristics” on “9-7. Sensor characteristics”.)
If sensor is normal, replace outdoor unit interface P.C. board.

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

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

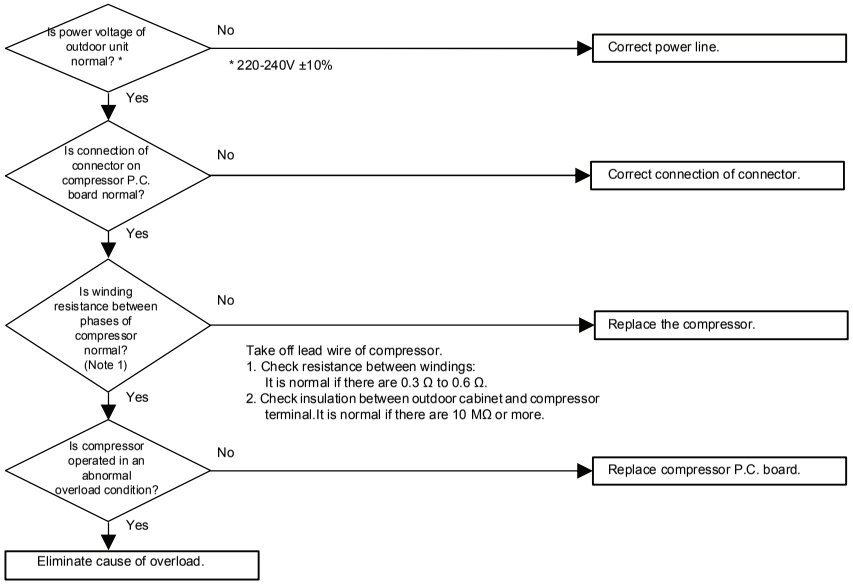
* If EEPROM was not inserted when power was turned on or it is impossible to read/write EEPROM data, the automatic address mode is repeated.



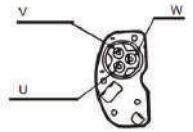
Check code	Check code name	Cause
[F31]	Outdoor unit EEPROM trouble	1. Outdoor unit power trouble (Voltage, noise, etc.) 2. Outdoor I/F P.C. board trouble

Check code	Check code name	Cause
[H01]	Compressor breakdown	1. Outdoor unit power supply trouble 2. Compressor P.C. board trouble 3. Compressor trouble 4. Abnormal overload in operation

Sub-code 1*:Compressor



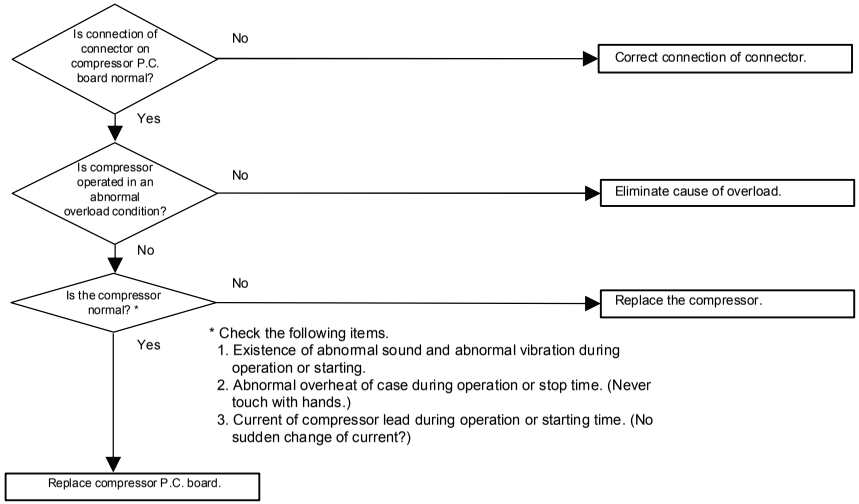
(Note 1)
After checking winding resistance , when connecting the lead wire again to the compressor terminal, check surely there is no distortion on the Fasten receptacle terminal.
If it is loosened, caulk it with pinchers, etc. and then connect lead wire to the terminal firmly.



Details of compressor terminal

Check code	Check code name	Cause
[H02]	Compressor trouble (Lock)	1. Compressor P.C. board trouble 2. Compressor trouble 3. Abnormal overload in operation

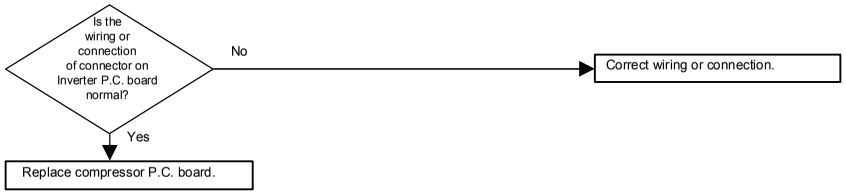
Sub-code 1*:Compressor



* Check the following items.
1. Existence of abnormal sound and abnormal vibration during operation or starting.
2. Abnormal overheat of case during operation or stop time. (Never touch with hands.)
3. Current of compressor lead during operation or starting time. (No sudden change of current?)

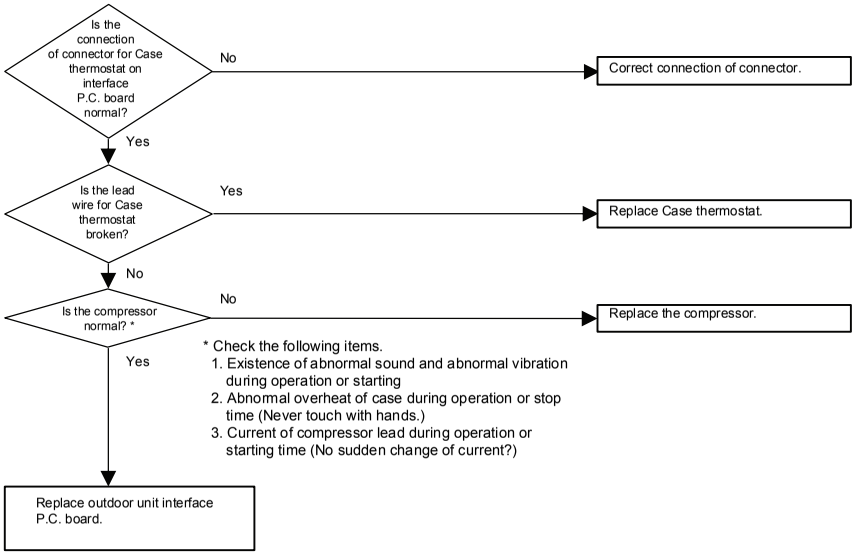
Check code	Check code name	Cause
[H03]	Current detective circuit trouble	1. Wiring or connection of connector trouble on compressor P.C. board 2. Compressor P.C. board trouble

Sub-code 1*:Compressor



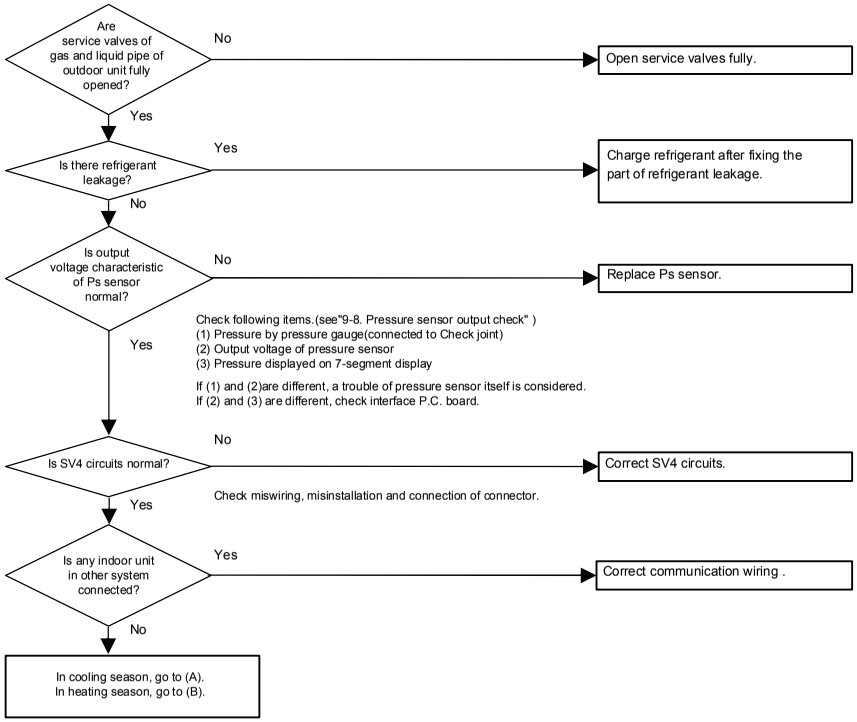
Check code	Check code name	Cause
[H04]	Compressor case thermostat operation	1. Case thermostat trouble 2. Compressor trouble 3. Outdoor unit interface P.C. board trouble

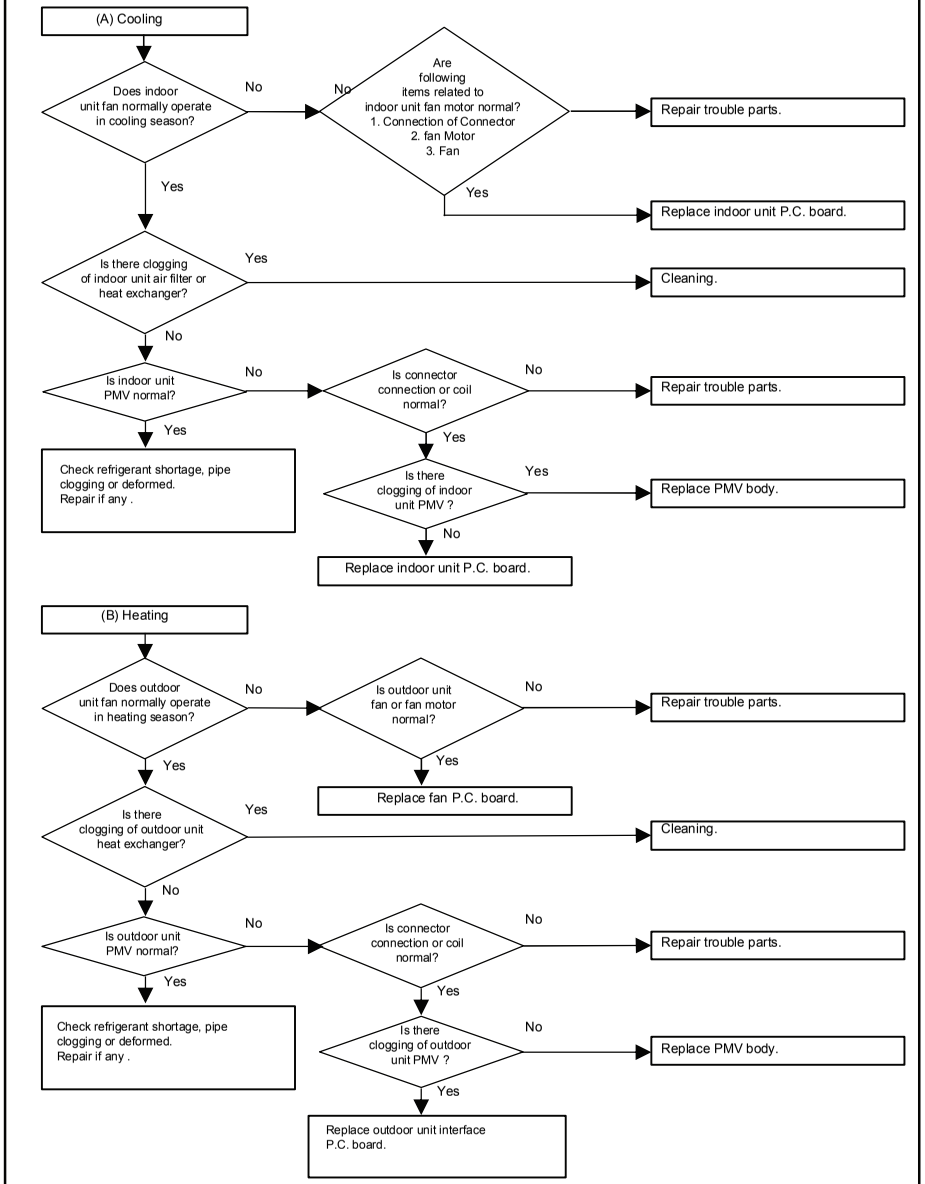
When this check code is displayed even if Is there no miswiring or misinstallation on TD sensor, check the following flowchart.



* Check the following items.
1. Existence of abnormal sound and abnormal vibration during operation or starting
2. Abnormal overheat of case during operation or stop time (Never touch with hands.)
3. Current of compressor lead during operation or starting time (No sudden change of current?)

Check code	Check code name	Cause
[H06]	Low-pressure protective operation	1. Service valve close 2. Refrigerant leakage or shortage 3. Ps sensor trouble 4. SV4 circuit trouble 5. Miswiring of communication between indoor unit and outdoor unit 6. Indoor/outdoor unit fan and trouble 7. Indoor/outdoor unit PMV clogging 8. Indoor/outdoor unit heat exchanger clogging

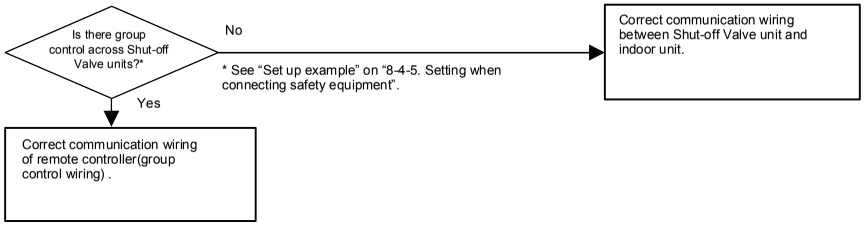




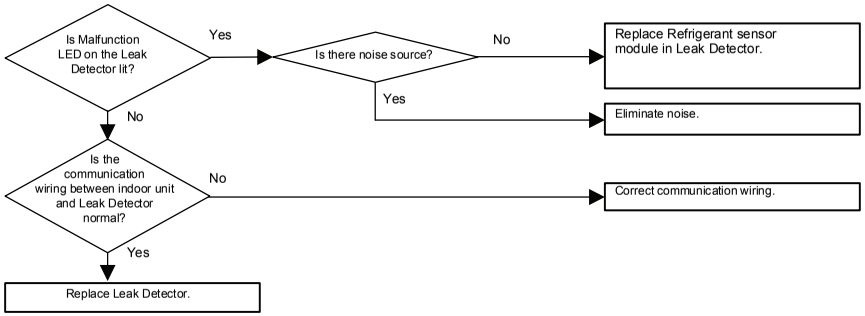
Check code	Check code name	Cause
[H17]	Compressor trouble (step-out etc.)	Refer to the clause of [H01].

Refer to the clause of [H01] for a diagnostic procedure.

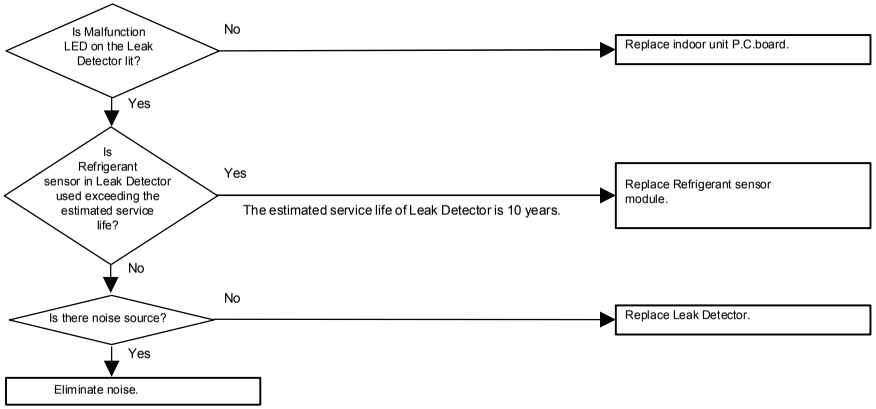
Check code	Check code name	Cause
[J03]	Duplication of Shut-off Valve units	1. Group control across Shut-off Valve units 2. More than one Shut-off Valve units connected to one indoor unit



Check code	Check code name	Cause
[J29]	Leak Detector trouble	1. Refrigerant sensor trouble 2. Communication wiring trouble between indoor unit and Leak Detector 3. Leak Detector P.C.board trouble

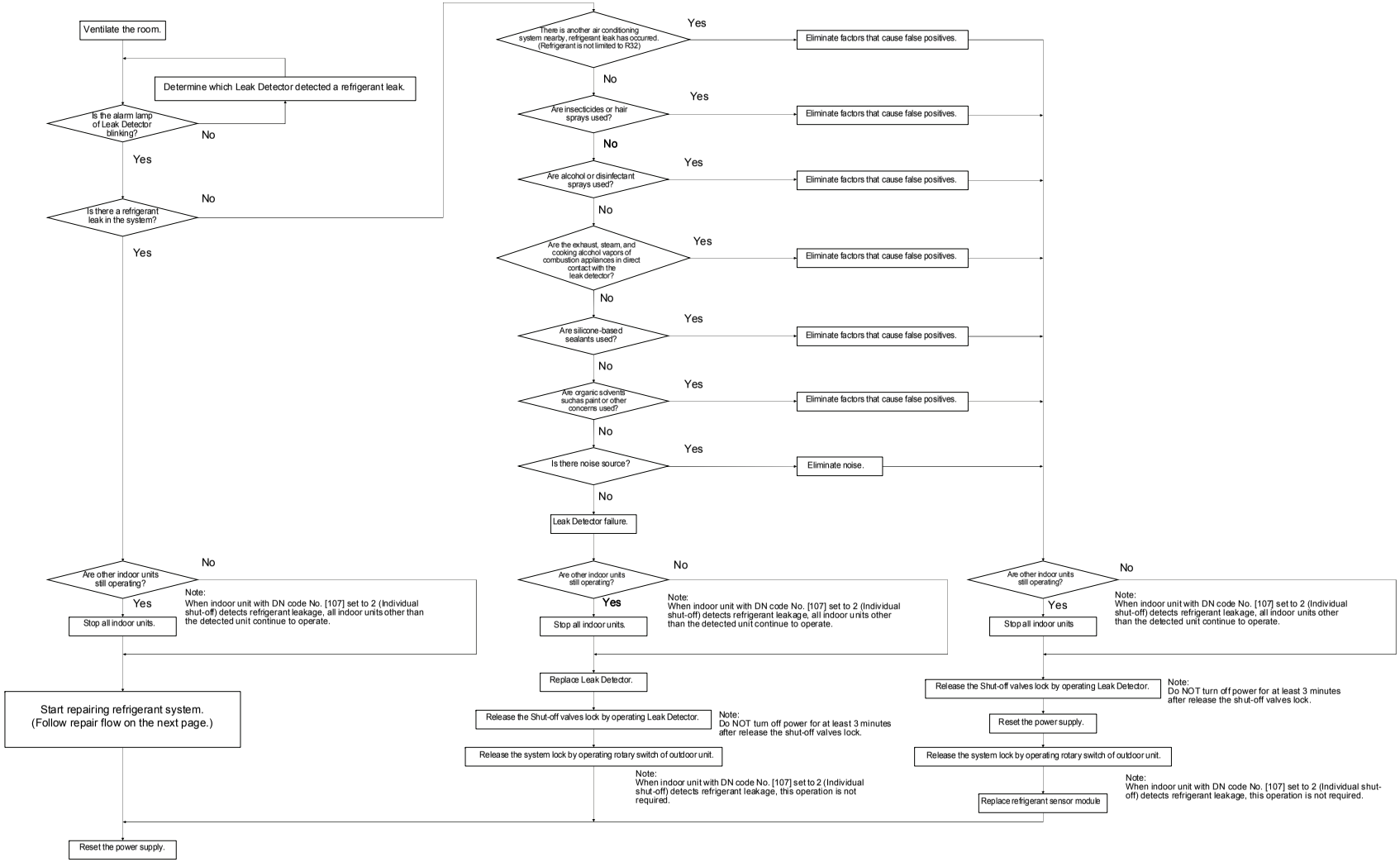


Check code	Check code name	Cause
[J31]	Refrigerant sensor exceeding its life of the product	1. Refrigerant sensor trouble (Exceeding its life of the product) 2. Leak Detector P.C.board trouble 3. Indoor unit P.C. board trouble



Check code	Check code name	Cause
[J30]	Refrigerant leak detection	Leak Detector detects a refrigerant leak

Caution:
Unless otherwise specified, do NOT turn off power until the diagnosis is complete excluding when replacing the leak detector.

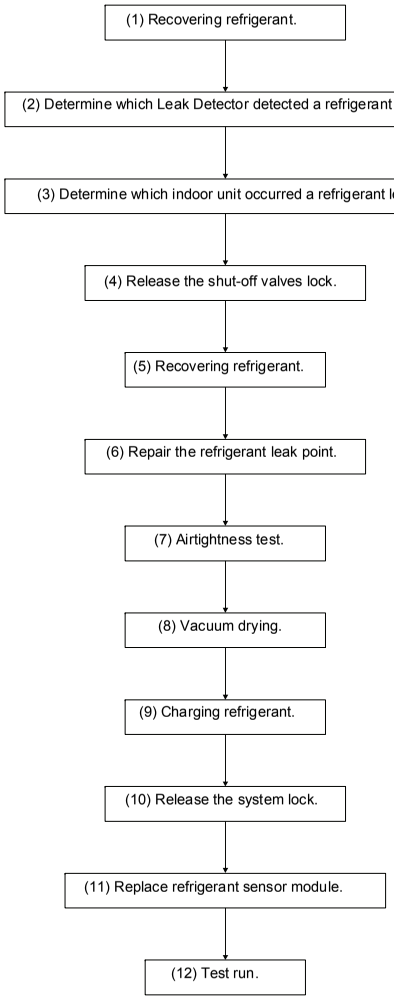


Recovery method after refrigerant leakage detection

This product has a function to lock SV(Shut-off Valve) unit and system when a refrigerant leakage is detected.
While SV unit is locked, shut-off valve in SV unit is closed and fixed, and compressor cannot start operating while system is locked.
Follow this repair flow to repair and release.

Caution:
- Please ventilate thoroughly before operating, it can be dangerous if the refrigerant is stagnant.

Note:
- Start repairing with the system power turned ON.
- Check DN code No. [107] setting. (Leak Detector sounds again, and please stop it again refer to "8-11. System operation when the Leak Detector detects refrigerant leak.".)



Note:

(1) Recovering refrigerant.
Refrigerant should be collected before unlock SV unit described below.
The refrigerant may leak again from the part where the refrigerant leaked, which may become dangerous.

(2) Determine which Leak Detector detected a refrigerant leak.
When Leak Detector detects a refrigerant leak, alarm lamp is blinking. (1 Hz)

(4) Release the shut-off valves lock by operating Leak Detector.
Perform this operation even if the system is only connected to the indoor unit whose DN code No. [107] is set to "3:Leak Detector only".
*This operation should be performed on all Leak Detectors that detected refrigerant leakage.With sufficient ventilation,release the shut-off valves lock.

Push and hold the alarm lamp button and reset button of Leak Detector at the same time for at least 5 seconds,and release after that. (Please push the reset button using a tool such as a precision screwdriver.)
The following actions are performed:
- Leak Detector makes a sound of "beep, beep, beep, beeeeeep"
- Shut-off valves that was locked will be released. (All locked shut-off valves in the system will be released with in 3 minutes.)
  Do NOT turn off power until operation is completed.

After release the shut-off valves lock, reset system power. When indoor unit DN code [107] is set to 1 or 3, the shut -off valve will not open untill power is reset.
When a system power reset, Malfunction LED of Leak Detector will turn ON and Notice code is displayed on remote controller.
[Caution]
After release the shut-off valves lock, refrigerant remaining downstream side of the shut -off valves may flow from leakage point.
(Especially, when DN code [107] set to 3, some refrigerant remains.)
When refrigerant leakage continues, close the shut-off valve connected to leak point. (Close PMV-L and PMV-S).
Refer to "8-7-7. Pulse Motor Valve (PMV) Forced Open/Close Function in FS unit and shut-off valve unit" for how to operate the shut-off valve
After reset system power, the 7-segment display changes from check code "J30" to "[U.1.Loc]". Because it is normal, continue next operation.

(5) Recovering refrigerant. (Again)
After release the shut-off valves lock, check refrigerant pressure.If pressure is rising, recover refrigerant again.

(6) Repair the refrigerant leak point.
Turn off system power and repair leakage point, or replace indoor unit.After repair is completed, turn on system power.

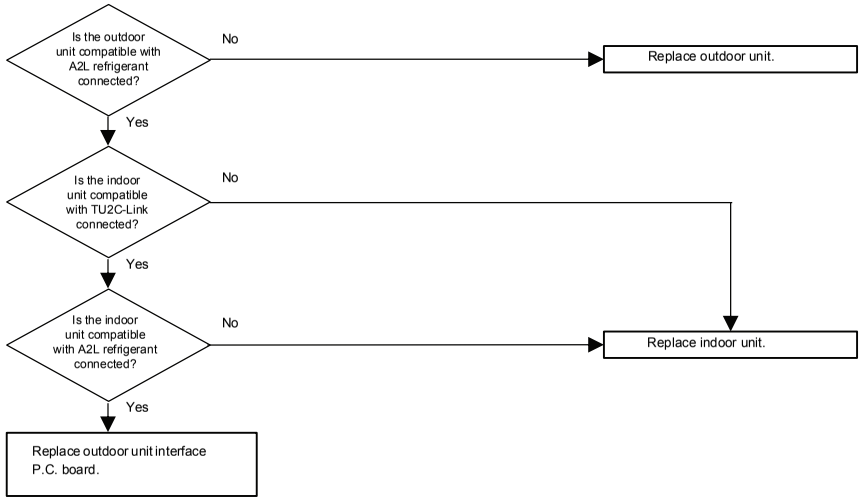
(10)Release the system lock.
Be sure to perform this operation after release the shut -off valves lock.Set the rotary switch [SW01/SW02/SW03] on the interface P.C. board of the outdoor unit to [2/1/9].
7-segment display: [o. U.L o c] (While system is locked.)
[o. U.… … …? (Others.)
Push and hold SW05 more than 5 seconds, system lock is released.
7-segment display: [o. U.… C. L? (for 5 seconds)

(11)Replace refrigerant sensor module in Leak Detector.
After a sufficient ventilation, replace refrigerant sensor module. Refrigerant sensor will become unusable once it has been exposed to refrigerant (Not limited to R32)
If more than one Leak Detector detect refrigerant leaks, replace refrigerant sensor module of all detected Leak Detectors..
After replacing refrigerant sensor module, confirm that Malfunction LED is turned off and Notice code is cleared.

(12) Test run.
After completing all the work, system power reset and start test run.

[Remarks: How to manual system lock.]
This product has a function to manual system lock.Set the rotary switch [SW01/SW02/SW03] on the I/F board of the outdoor unit to [2/1/9].
Push and hold SW04 more than 5 seconds, system is locked.To release manual system lock, push and hold SW05 more than 5 seconds

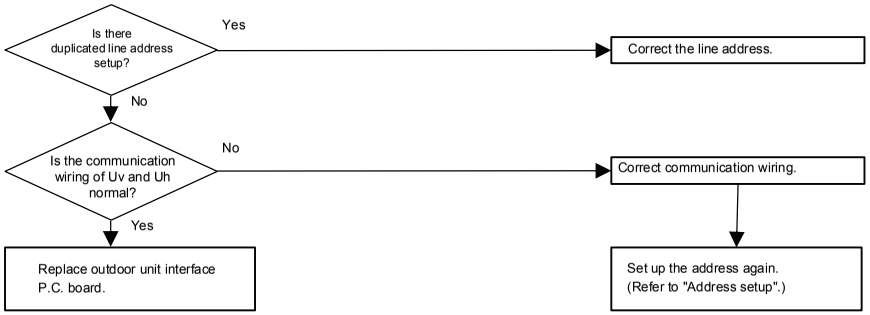
Check code	Check code name	Cause
[L02]	Indoor unit incompatible with A2L refrigerant	1. When the indoor unit incompatible with TU2C-Link is connected 2. When the indoor unit incompatible with R32 refrigerants connected



Check code	Check code name	Cause
[L03]	Duplicated indoor header units	There are two or more indoor header units in a 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
[L04]	Duplicated setup of outdoor line address	Outdoor line addresses are duplicated



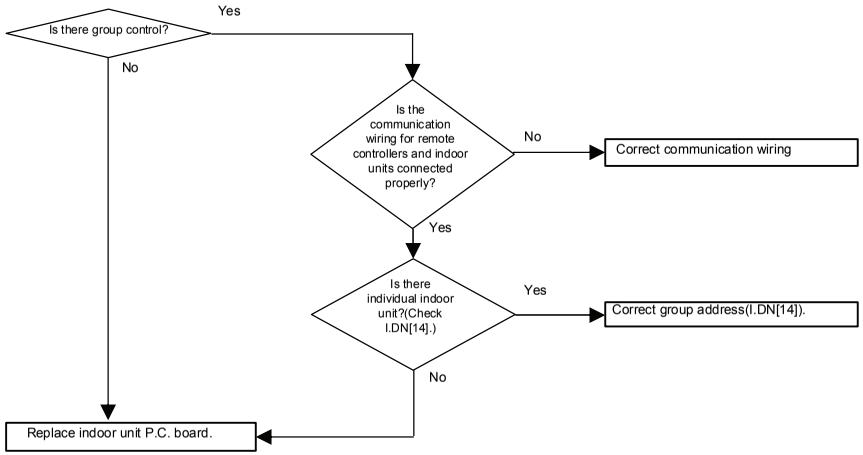
Check code	Check code name	Cause
[L05]	Duplicated indoor units with priority (Displayed on indoor unit with priority)	Two or more indoor units with priority are duplicated

Two or more indoor units with priority are detected and this check code is displayed on those units.
• As only one indoor unit with priority is valid, change the setup.

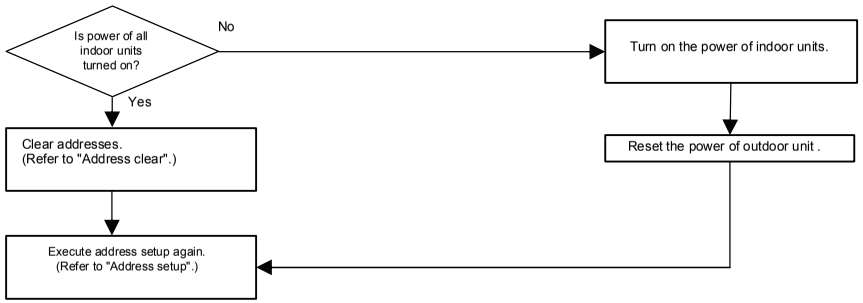
Check code	Check code name	Cause
[L06]	Duplicated indoor units with priority (Displayed on the indoor units other than with priority and on the outdoor unit)	Two or more indoor units with priority are duplicated

Two or more indoor units with priority are detected and this check code is displayed on other than those units and on the outdoor unit.
• As only one indoor unit with priority is valid, change the setup.

Check code	Check code name	Cause
[L07]	An individual indoor unit exists in a group control.	There is an individual indoor unit in a group control.

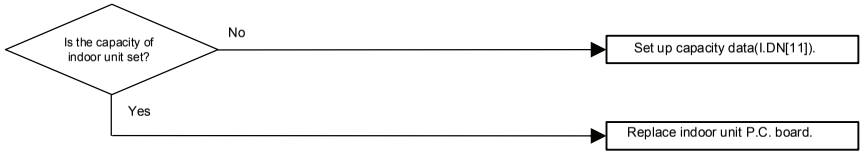


Check code	Check code name	Cause
[L08]	Indoor unit address /Group address unset	Indoor unit addresses is unset



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

Check code	Check code name	Cause
[L09]	Indoor unit capacity unset	Indoor unit capacity is unset



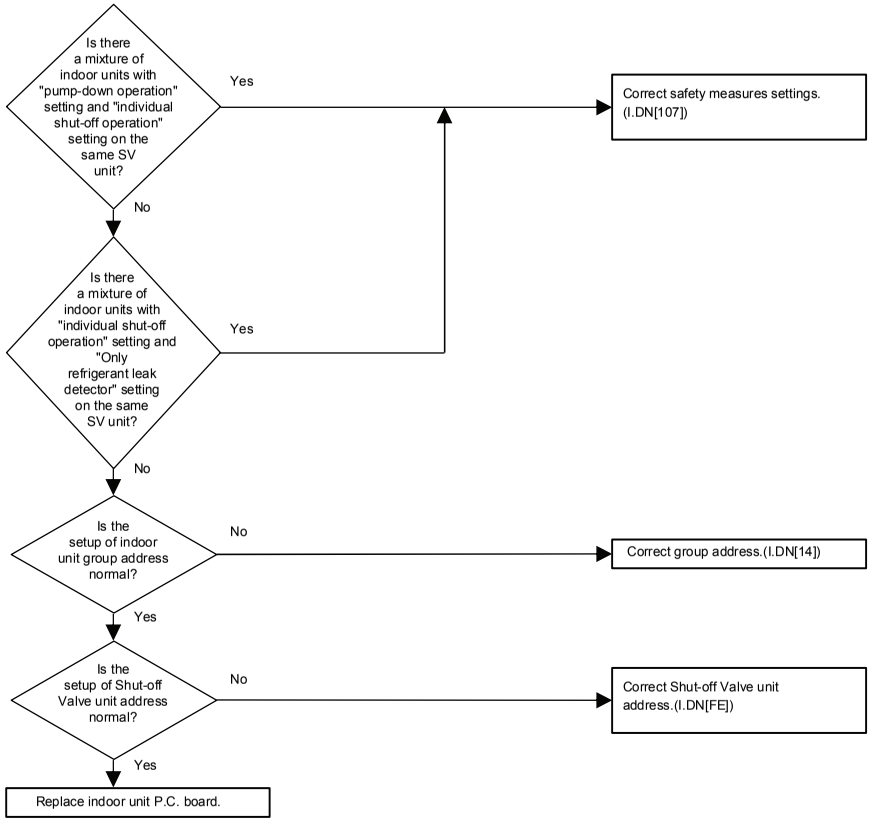
Check code	Check code name	Cause
[L10]	Outdoor unit capacity unset	Outdoor unit capacity has not been set up by outdoor unit DN code after replacing with service interface P.C. board.

This code is displayed when outdoor unit DN code[03] (outdoor unit capacity)has not been set up after replacing interface P.C. board.
Please set up the data according to "11-1-1. Interface P.C. Board Replacement Procedure".

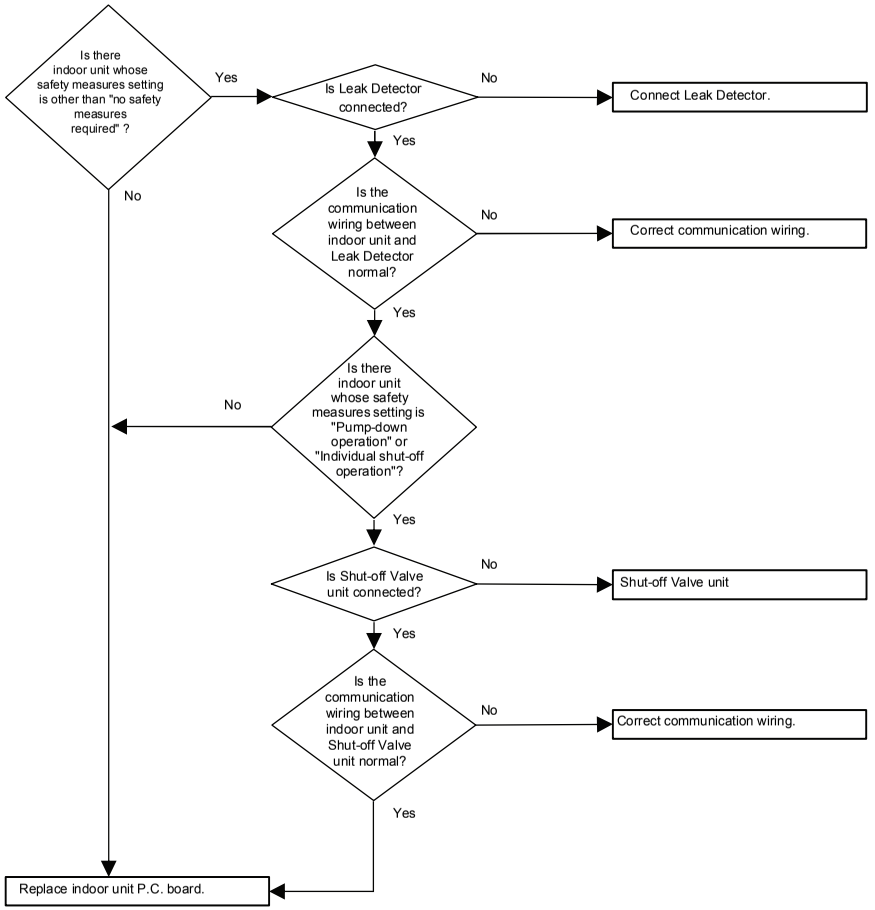
Check code	Check code name	Cause
[L11]	Unsuitable safety device connected	Flow selector unit is connected

This code is displayed when Flow selector (FS)unit is connected to the outdoor unit .
(This outdoor unit can be connected only Shut-off Valve unit.)
This code is also displayed when Shut-off Valve unit P.C. board is replaced and setup of DIP switch SW01 and SW03 on it is incorrect.
Please set up DIP switch according to "11-4.Shut-off Valve unit including Battery kit".

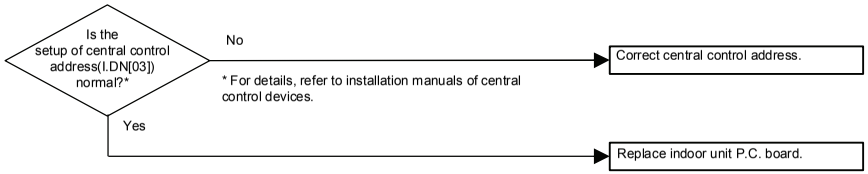
Check code	Check code name	Cause
[L13]	Mismatch of safety device settings	1. When the safety measures settings for indoor units connected to the same Shut-off Valve(SV)unit are mixed with "Pump-down operation "and "Individual shut-off operation" 2. When the safety measures settings for indoor units connected to the same SV unit are mixed with "Individual shut-off" and "Only refrigerant Leak Detector" 3. When the same Shut-off Valve unit address is set in different remote control groups.



Check code	Check code name	Cause
[L14]	Mismatch of safety device settings	1. When the safety measures setting of the indoor unit is set other than "no safety measures required" and Leak Detector is not connected when the power is turned on 2. When the safety measures setting of the indoor unit is set to "Pump-down operation" or "individual shut-off operation" and Shut-off Valve unit is not connected

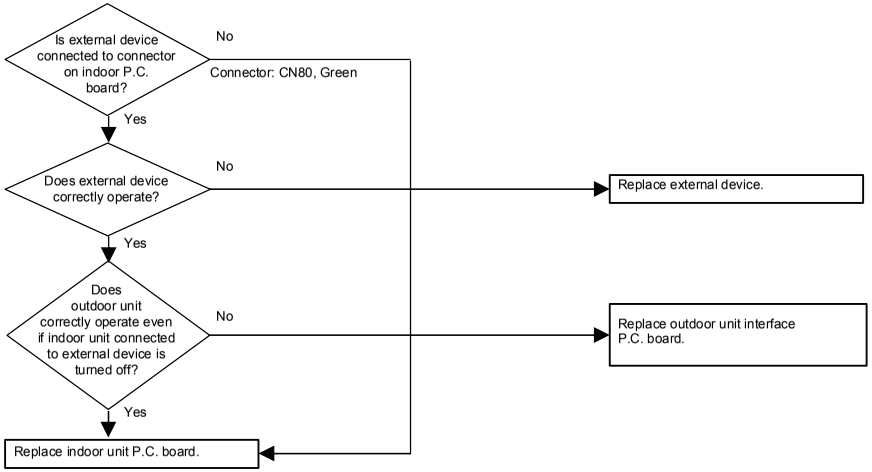


Check code	Check code name	Cause
[L20]	Duplicated central control addresses	Indoor unit Central control addresses are duplicated

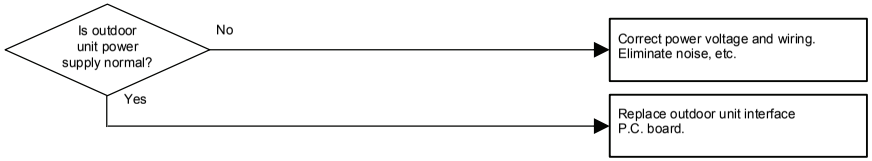


Check code	Check code name	Cause
[L30]	Interlock from external device	When there is input from external device to the indoor unit.

This check code is displayed when there is input from external device to the indoor unit through Application control kit.
Check external device, Application control kit and the wiring between them, and correct if there is any trouble .
When Application control kit is not connected to the indoor unit, check to the following flowchart.



Check code	Check code name	Cause
[L31]	Other interface P.C. board troubles	1. Outdoor unit power trouble 2. Outdoor unit interface P.C. board trouble



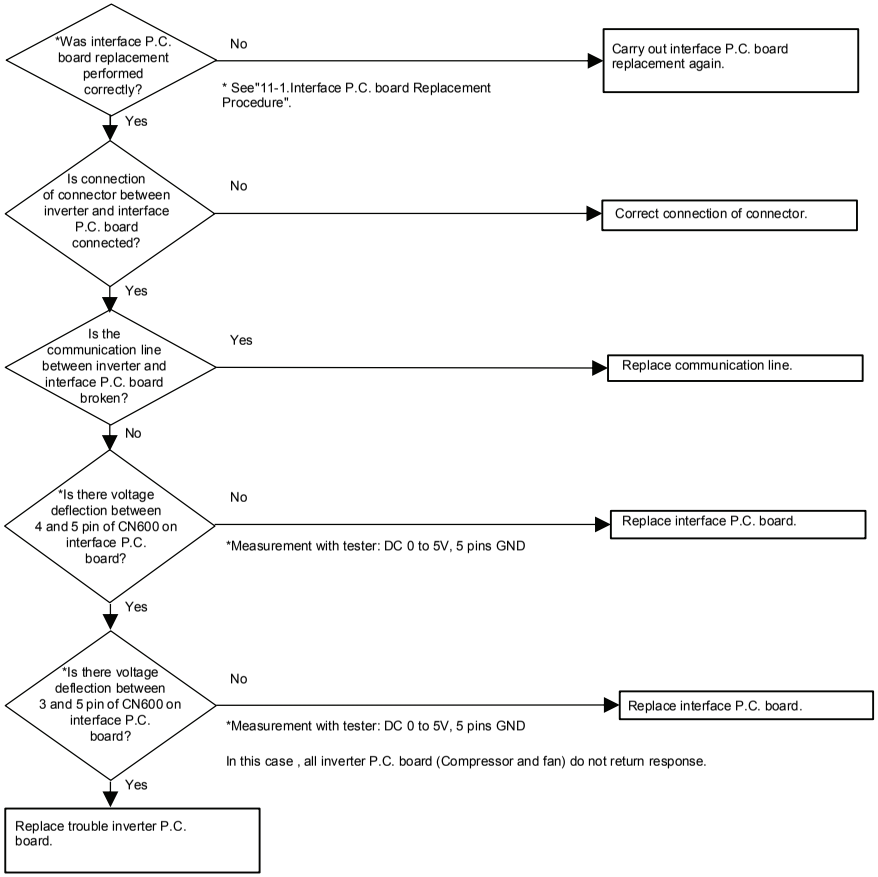
Check code	Check code name	Cause
[L29]	Inverter P.C. board quantity trouble	1. Incorrect setup after replacement of outdoor unit interface P.C. board 2. Communication trouble between inverter P.C. board and interface P.C. board. 3. Inverter P.C. board and interface P.C. board trouble

Sub-code:

	Inverter P.C. board	
	Compressor	Fan
01	○	
08		○
09	○	○

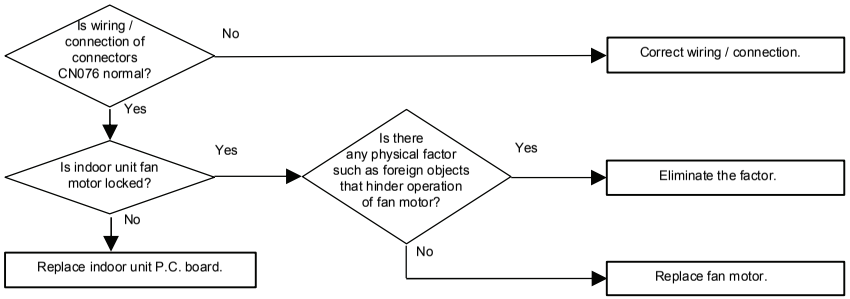
Circle ○ Trouble P.C. boards

00:The number of inverter P.C. board is more than that of setting of outdoor unit interface P.C. board.



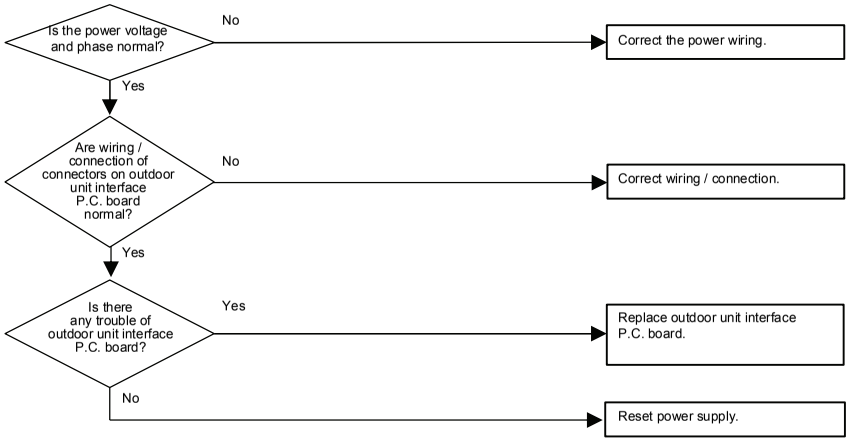
Check code	Check code name	Cause
[P01]	Indoor unit fan motor trouble	1. Wire/connection of connector trouble 2. Indoor unit fan motor trouble

* For the models equipped with AC fan motor only

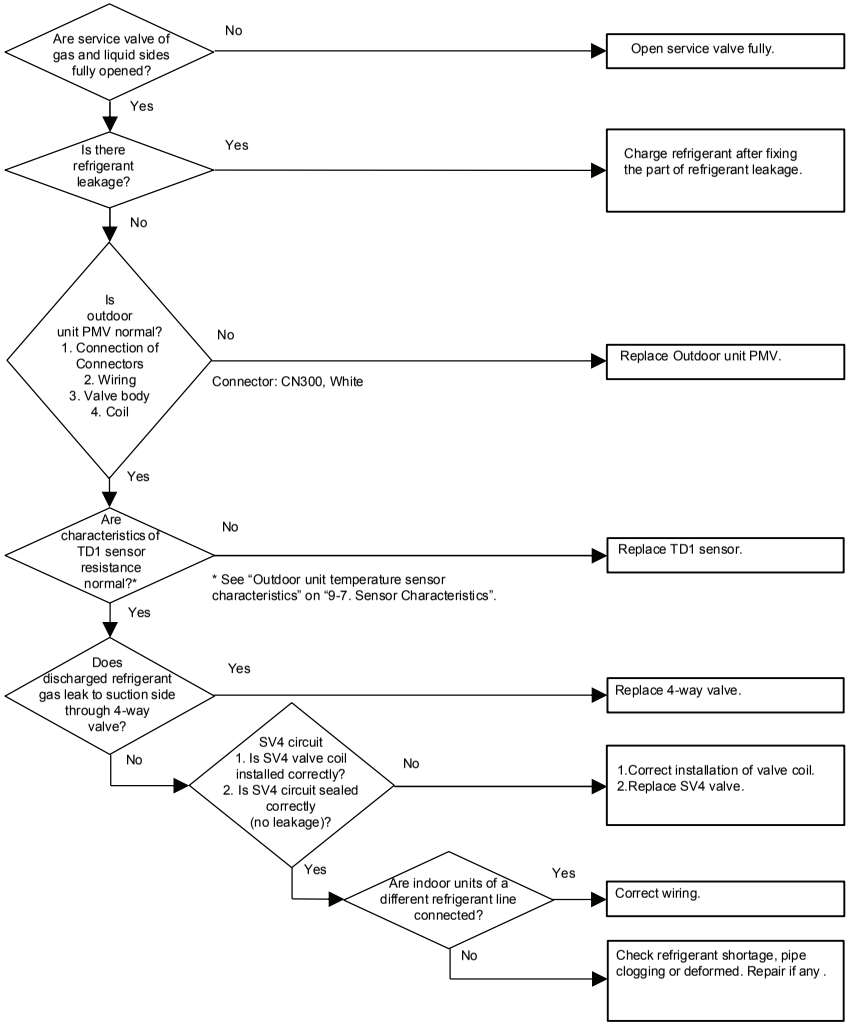


Check code	Check code name	Cause
[P05]	Power detection trouble, open phase detection	Phase trouble or power failure of the power supply to the outdoor unit.

Sub-code: 00 : Power detection trouble
01 : Open phase detection
1* : Compressor Vdc trouble

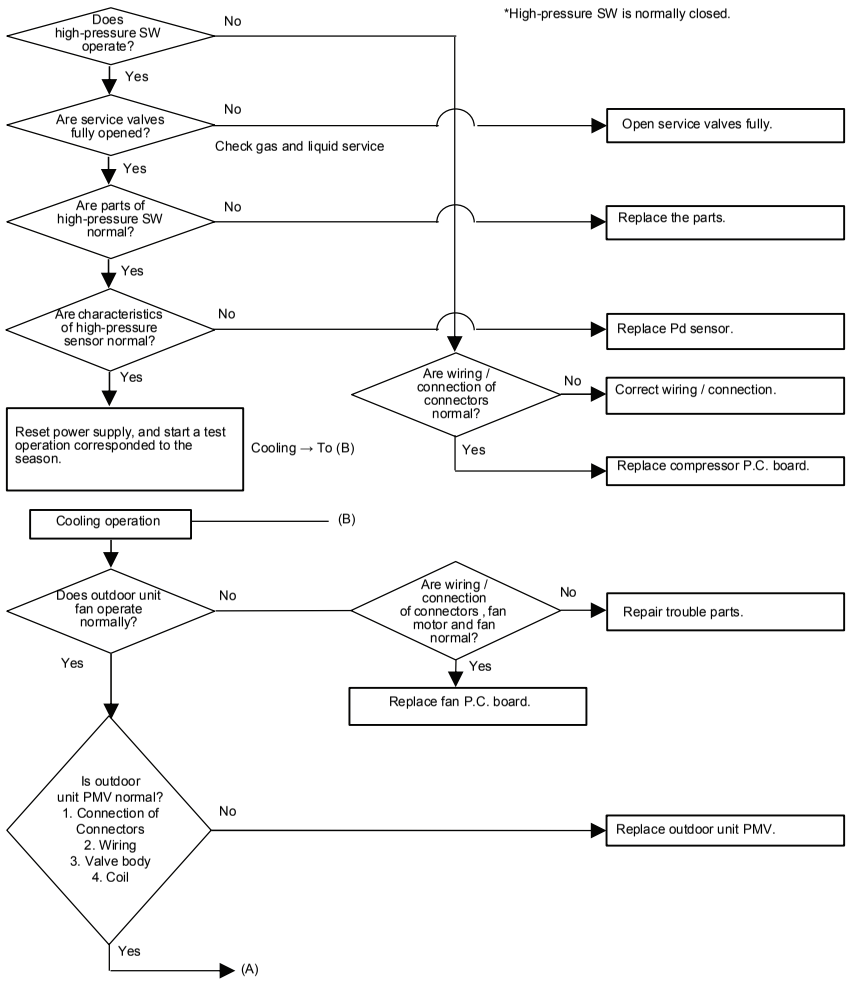


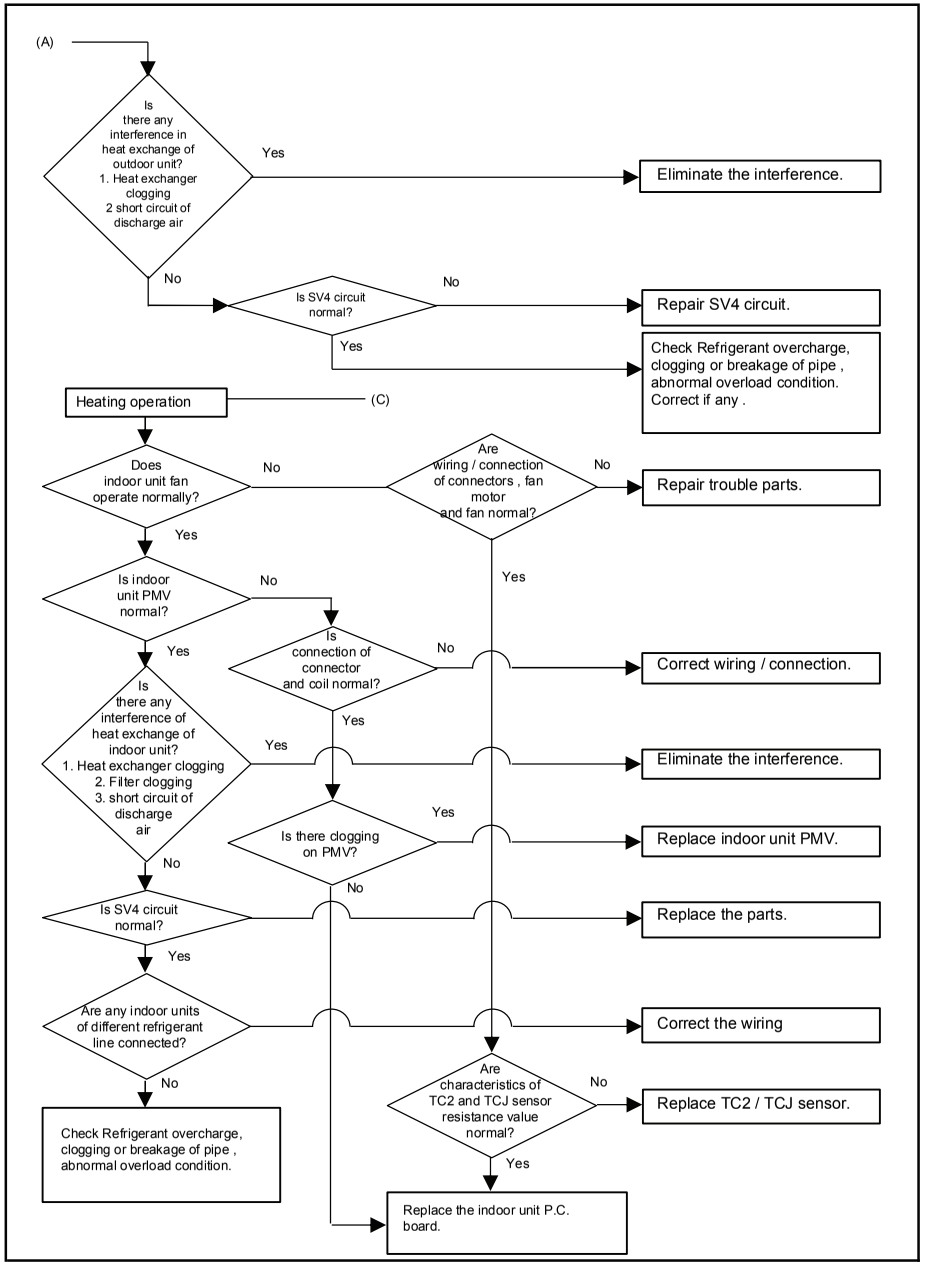
Check code	Check code name	Cause
[P03]	Discharge temp TD trouble	1. Service valve of outdoor unit closed 2. Outdoor unit PMV trouble 3. TD sensor trouble 4. Refrigerant shortage, clogging of refrigerant piping 5. 4-way valve trouble 6. SV4 circuit leakage, misinstallation



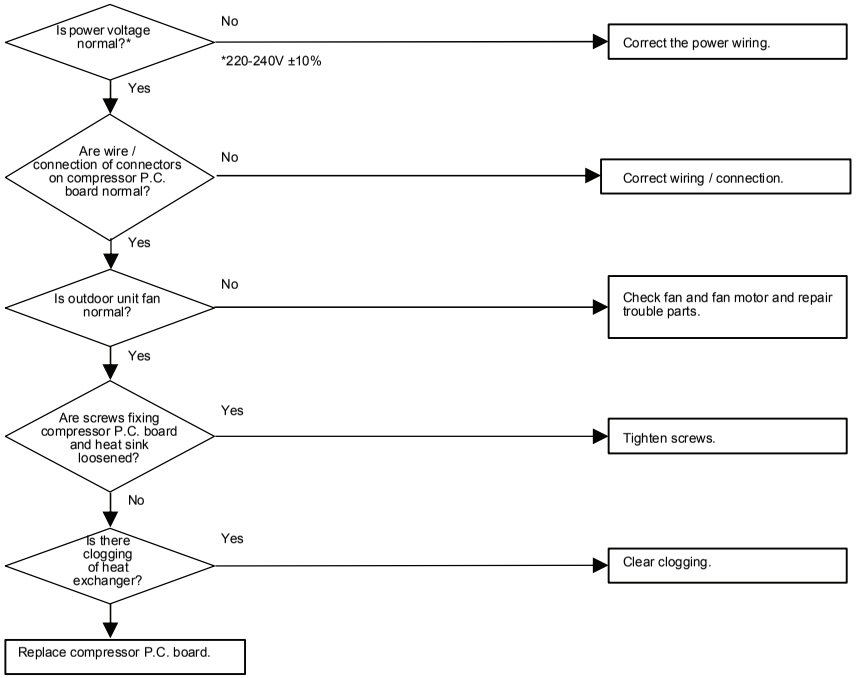
Check code	Check code name	Cause
[P04]	Activation of high-pressure SW	1. High-pressure SW trouble 2. Service valve closed 3. Pd sensor trouble 4. Indoor/outdoor unit fan trouble 5. Indoor/outdoor unit PMV choke 6. Indoor/outdoor unit heat exchanger clogging, short circuit of discharge air 7. SV4 circuit trouble 8. Outdoor unit check valve trouble 9. Refrigerant overcharge

*High-pressure SW is normally closed.

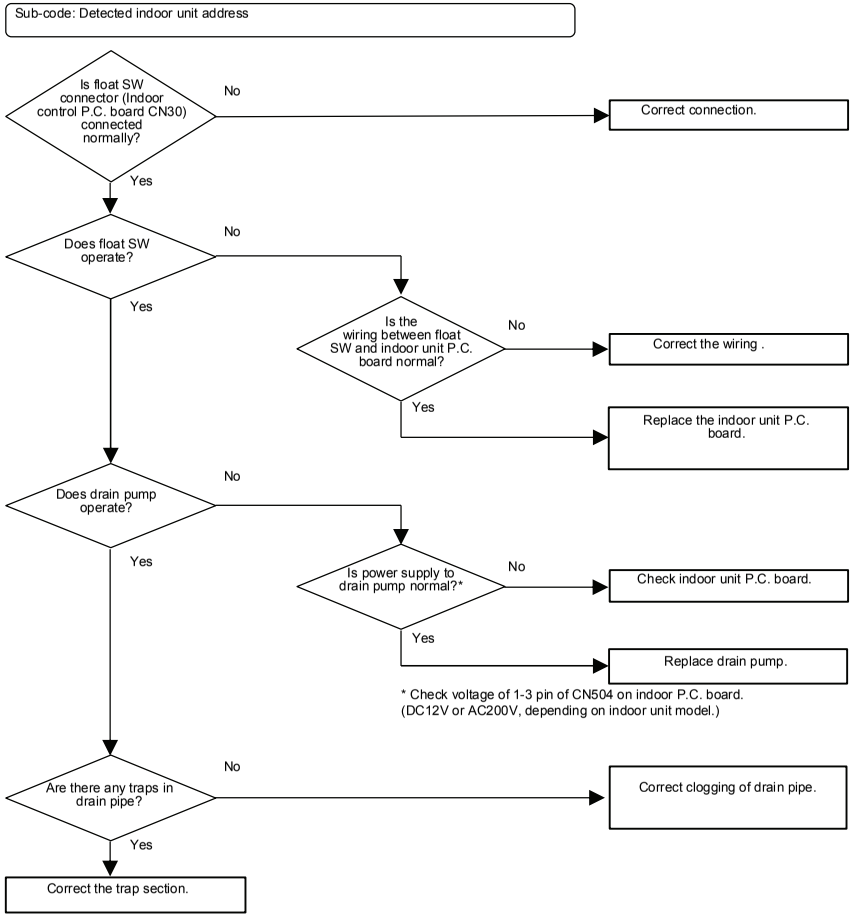




Check code	Check code name	Cause
[P07]	Heat sink overheat trouble	1. Power voltage trouble 2. Outdoor unit fan trouble 3. Heat sink installation trouble 4. Clogging of outdoor unit heat excheanger 5. Compressor P.C. board trouble

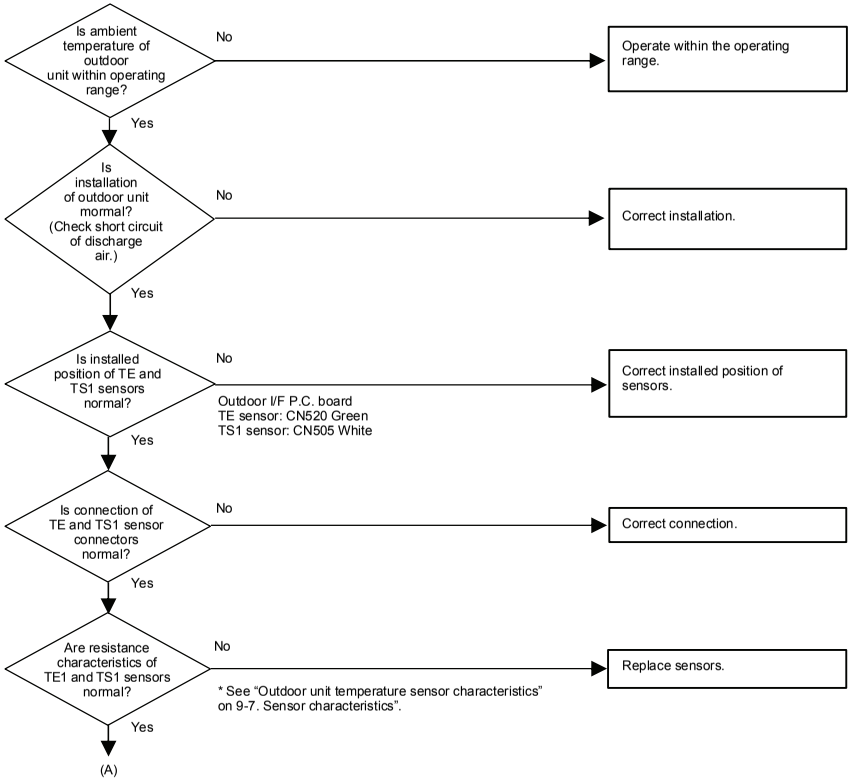


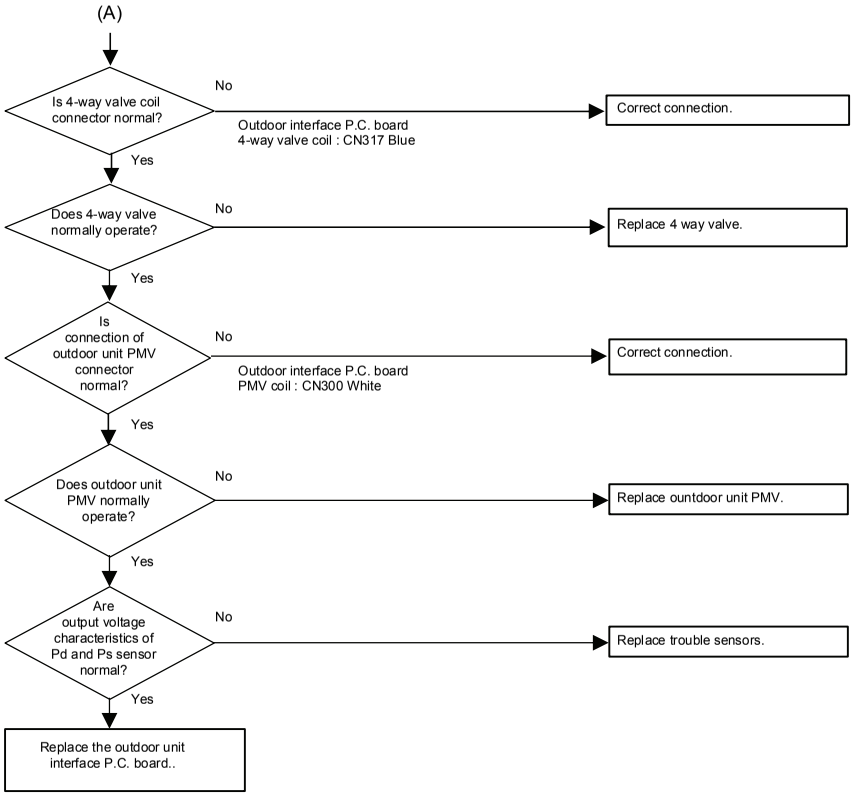
Check code	Check code name	Cause
[P10]	Water overflow in an indoor unit	1. Float SW malfunction 2. Drain pump malfunction 3. Clogging of drain pipe 4. Indoor unit P.C. board trouble



* Check voltage of 1-3 pin of CN504 on indoor P.C. board.
(DC12V or AC200V, depending on indoor unit model.)

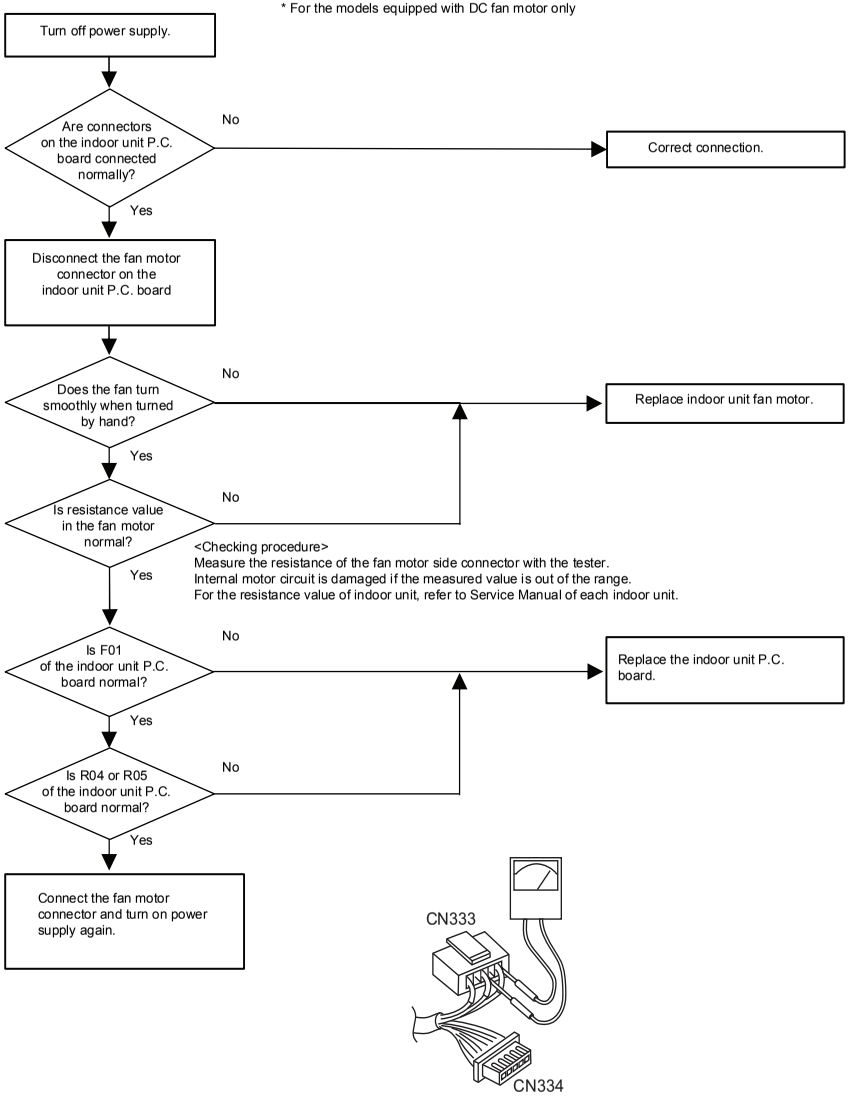
Check code	Check code name	Cause
[P11]	Outdoor unit heat exchanger freeze trouble	1. Refrigerant shortage 2. TE1sensor trouble 3. TS1 sensor trouble 4. 4-way valve trouble 5. Outdoor unit PMV trouble 6. Pd, Ps sensor trouble 7. Outdoor unit interface P.C. board trouble 8. short circuit of discharge air from outdoor unit



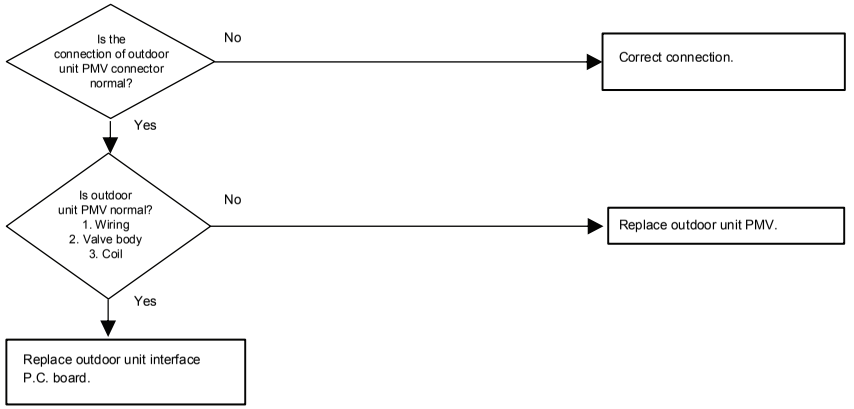


Check code	Check code name	Cause
[P12]	Indoor unit fan motor trouble	1. Wire/connection of connector trouble of fan motor 2. Fan motor trouble 3. Indoor unit P.C. board trouble

* For the models equipped with DC fan motor only

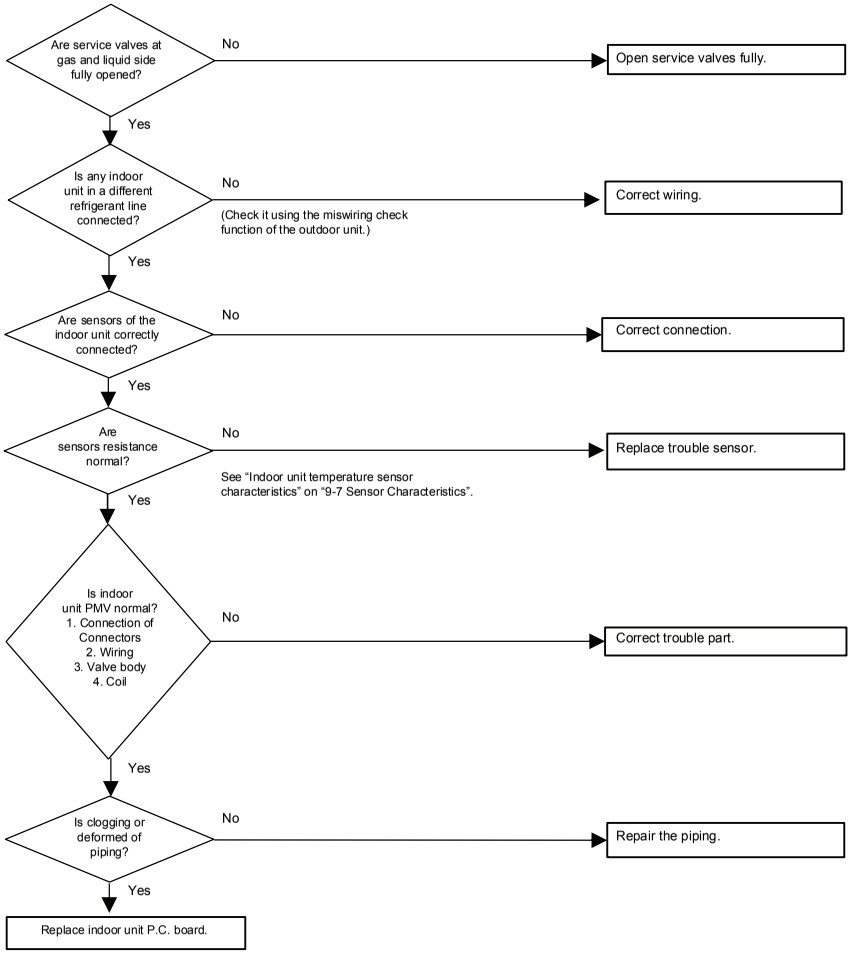


Check code	Check code name	Cause
[P13]	Outdoor unit liquid back detection trouble	1. Outdoor unit PMV trouble 2. Outdoor unit interface P.C. board trouble

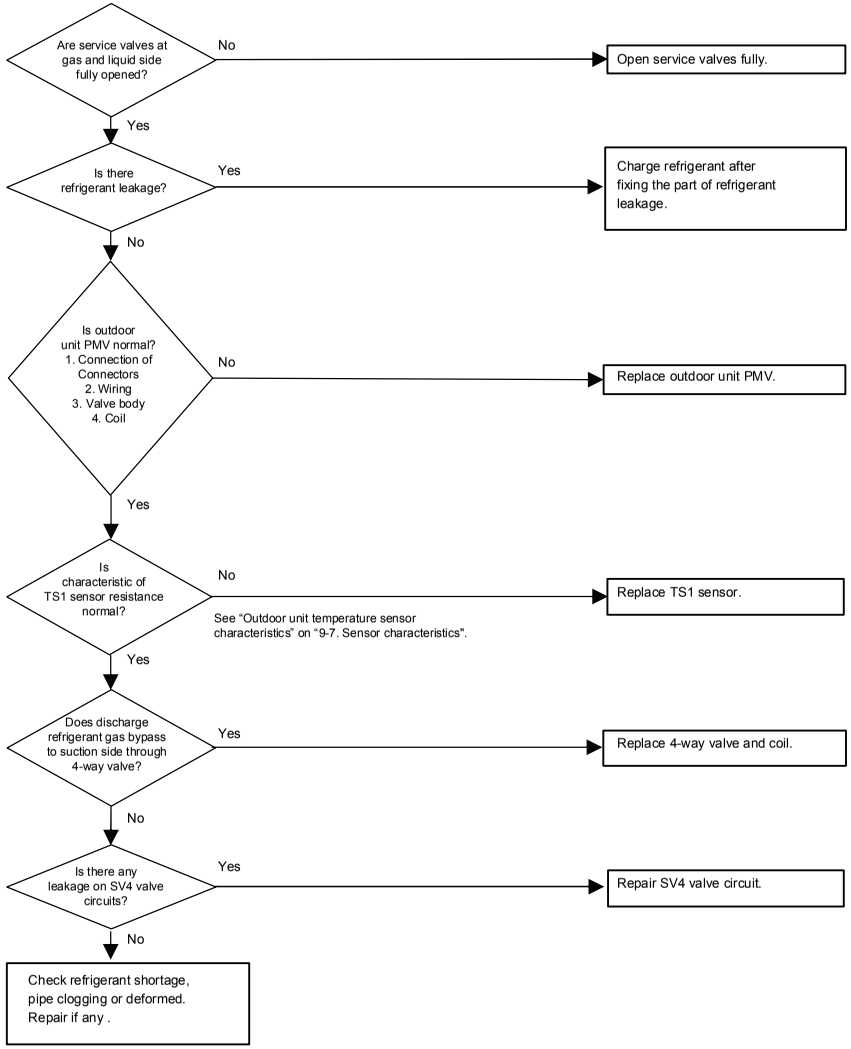


Check code	Check code name	Cause
[P14]	Another refrigerant cycle protection	1. Service valve closed 2. Communication wiring trouble between indoor unit and outdoor unit 3. Indoor unit sensor or PMV trouble 4. Clogging or deformed of piping

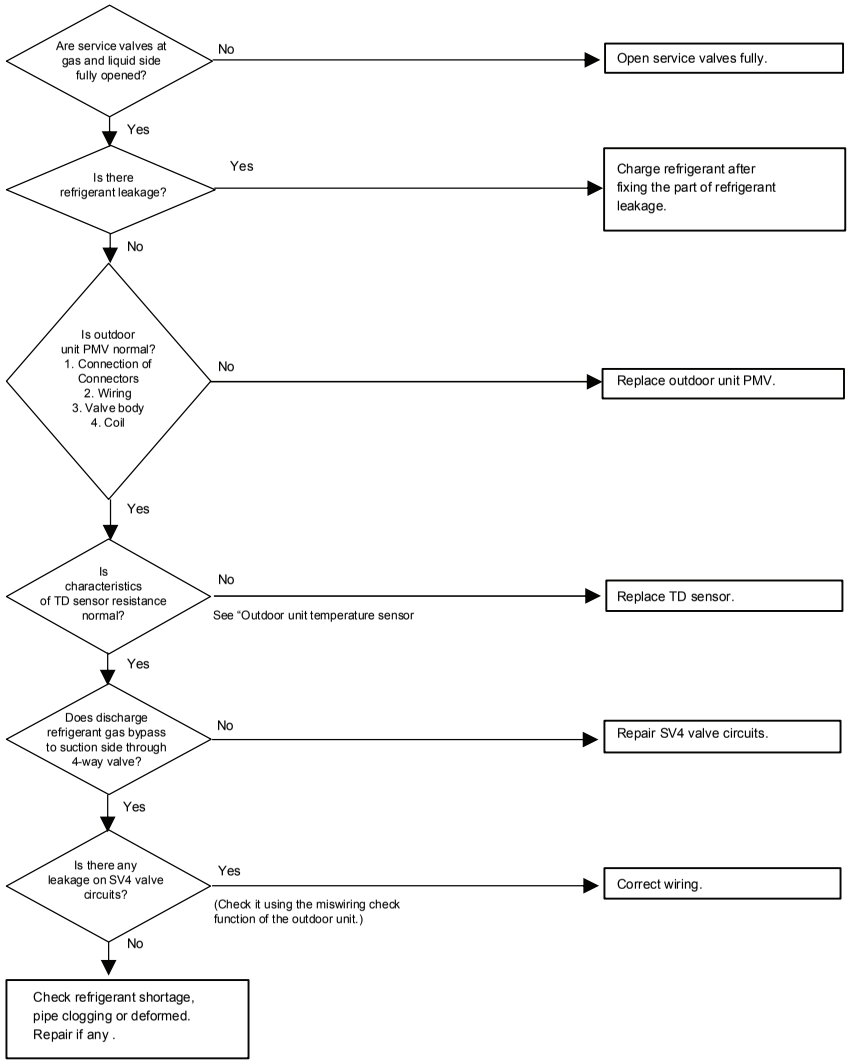
Sub-code: 01 : Outdoor unit service valve is closedRepair faulty parts.



Check code	Check code name	Cause
[P15]	Gas leak detection TS condition (Sub-code: 01)	1. Outdoor unit service valve closed 2. Outdoor unit PMV trouble 3. TS1 sensor trouble 4. Refrigerant shortage, clogging refrigerant piping 5. 4-way valve trouble 6. SV4 circuit trouble

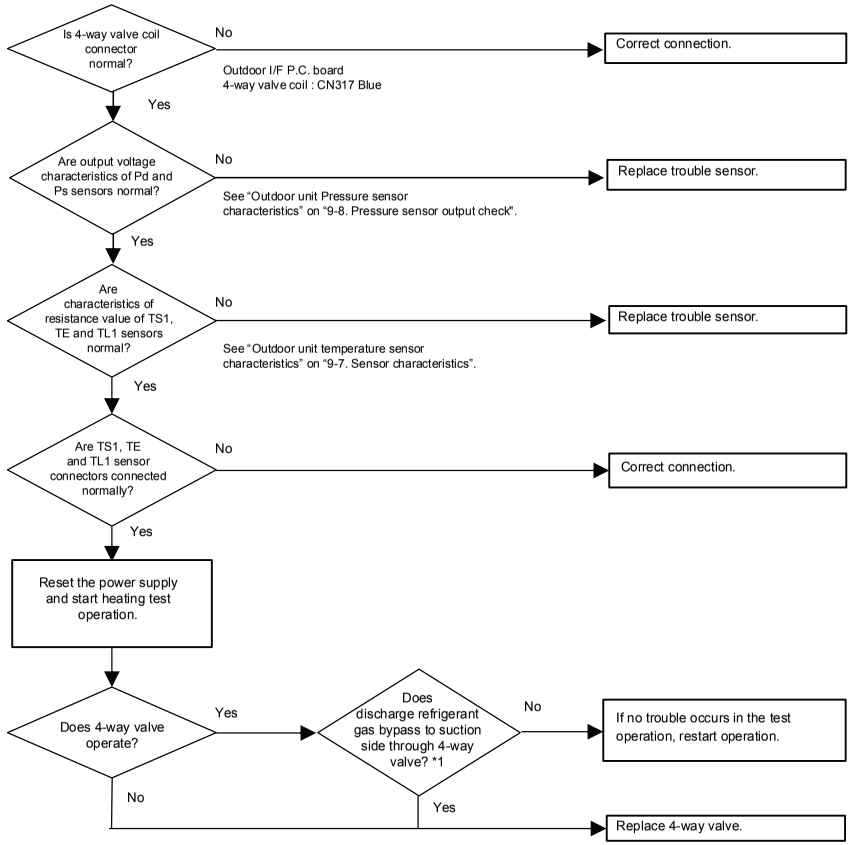


Check code	Check code name	Cause
[P15]	Gas leak detection TD condition (Sub-code: 02)	1. Outdoor unit service valve closed 2. Outdoor unit PMV trouble 3. TD sensor trouble 4. SV4 circuit trouble 5. Refrigerant shortage, clogging refrigerant piping



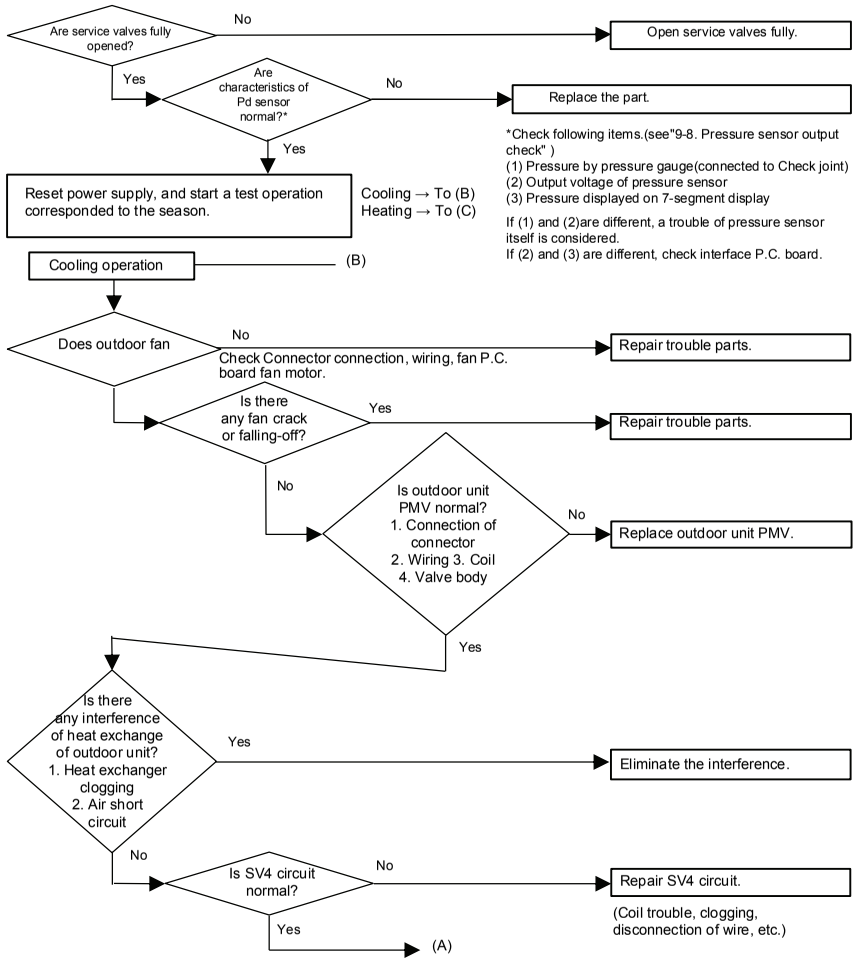
Check code	Check code name	Cause
[P19]	4-way valve reverse trouble	1. 4-way valve trouble 2. TS1/TE sensor trouble 3. Pd/ Ps sensor trouble 4. TE/TL1 sensor misconnection

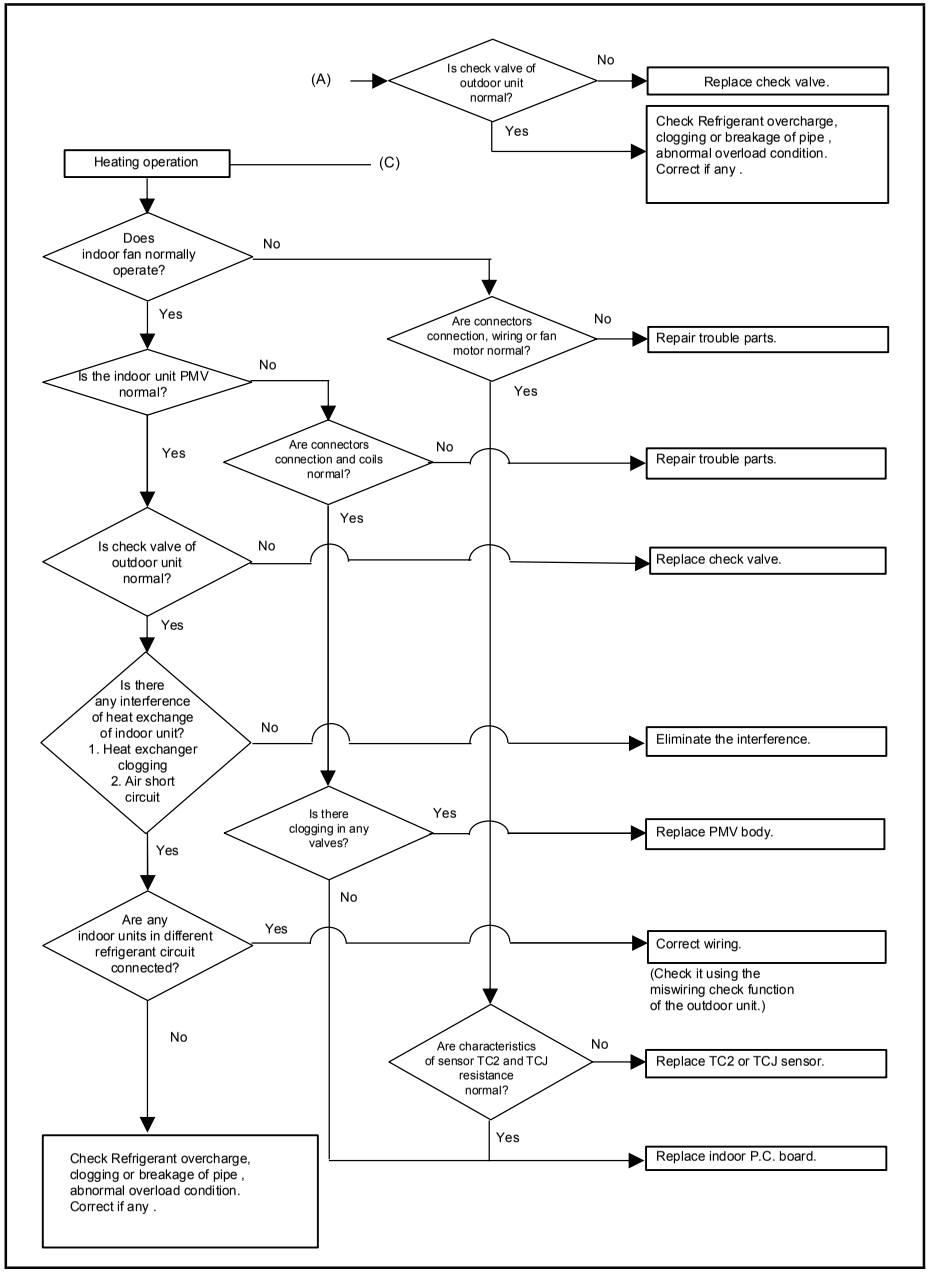
Sub-code: Detected outdoor unit No.



*1 Check TS1 and TE temperature of the outdoor unit which is running.
(I/F) SW01=[1], SW02=[7], SW03=[2] TS1 sensor temperature
SW01=[1], SW02=[10], SW03=[2] TE sensor temperature
<Judgment criteria>
TE sensor: Normal if TE is 30°C or less in the seasons except summer (Outside temp 20°C or lower)
TS1 sensor: Normal if TS is 50°C or less in the seasons except summer (Outside temp 20°C or lower)

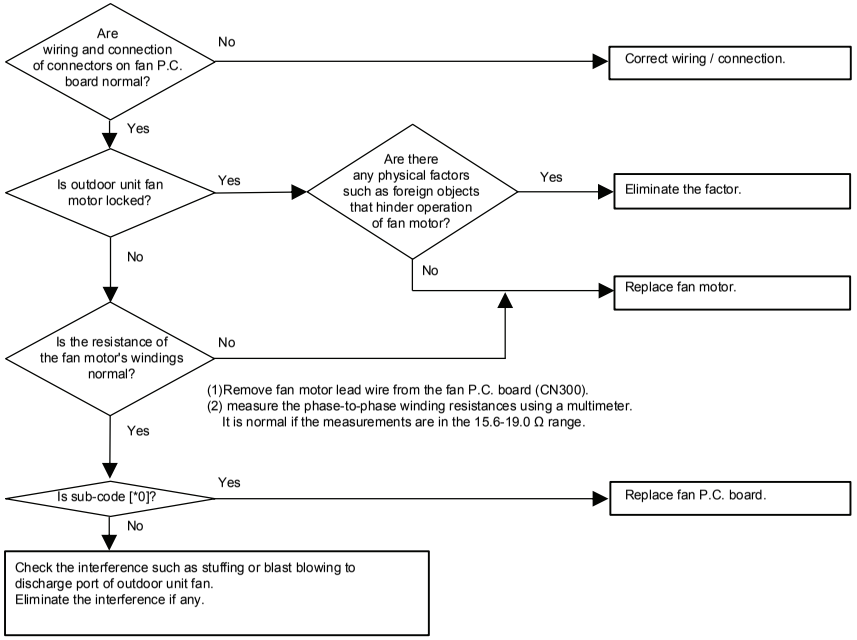
Check code	Check code name	Cause
[P20]	High-pressure protective operation	1. Pd sensor trouble 2. Outdoor unit service valve closed 3. Indoor/outdoor unit fan trouble 4. Indoor/outdoor unit PMV clogging 5. Indoor/outdoor unit heat exchanger clogging 6. SV4 circuit trouble 7. Outdoor unit interface P.C. board trouble 8. Outdoor unit check valve trouble 9. Refrigerant overcharge





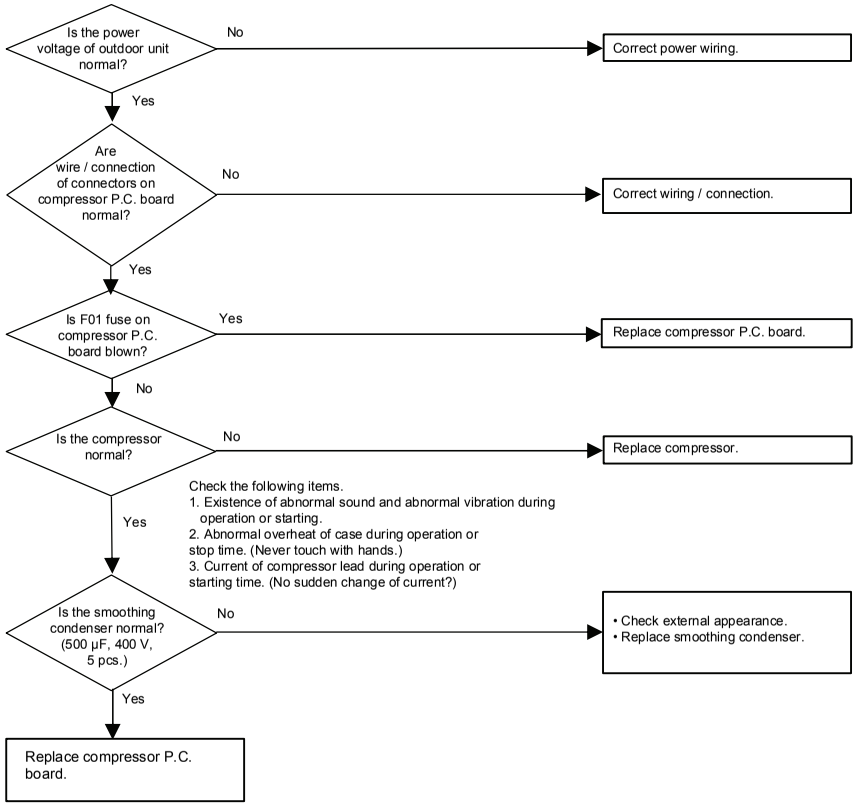
Check code	Check code name	Cause
[P22]	Outdoor unit fan motor trouble	1. Fan lock 2. Wire/connection of connector trouble 3. Fan P.C. board trouble 4. Overload 5. External cause such as blast

Sub-code:
*0: IGBT short circuit
*1: Position detection circuit trouble
*3: Motor lock trouble
*C: TH Sensor temperature trouble



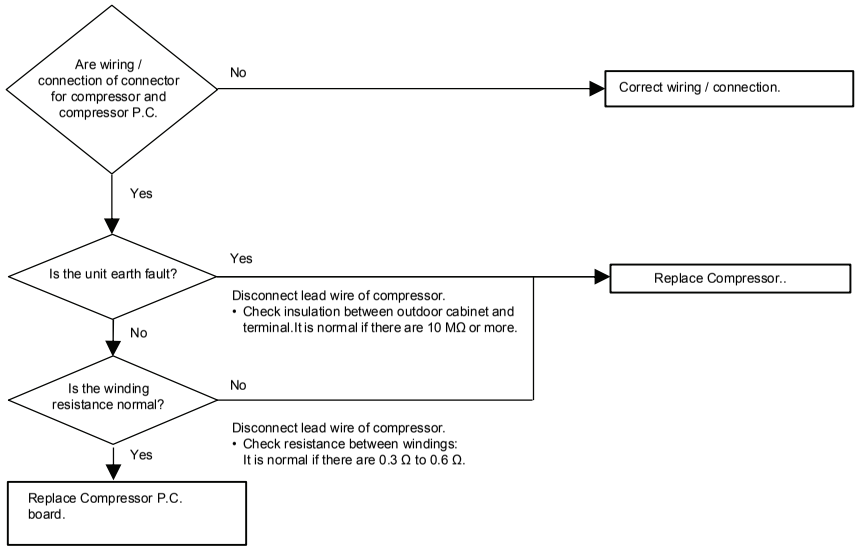
Check code	Check code name	Cause
[P26]	IPM short-circuit protection trouble	1. Outdoor unit power supply trouble 2. Wire/connection of connector trouble 3. Compressor trouble 4. Compressor P.C. board trouble

Sub-code: 1*: Compressor



Check code	Check code name	Cause
[P29]	Compressor position detective circuit trouble	1. Wire/connection of connector trouble 2. Compressor trouble 3. Compressor P.C. board trouble

Sub-code: 1*: Compressor



Check code	Check code name	Cause
[P31]	Other indoor trouble (Group follower unit trouble)	Another indoor unit in the group is abnormal

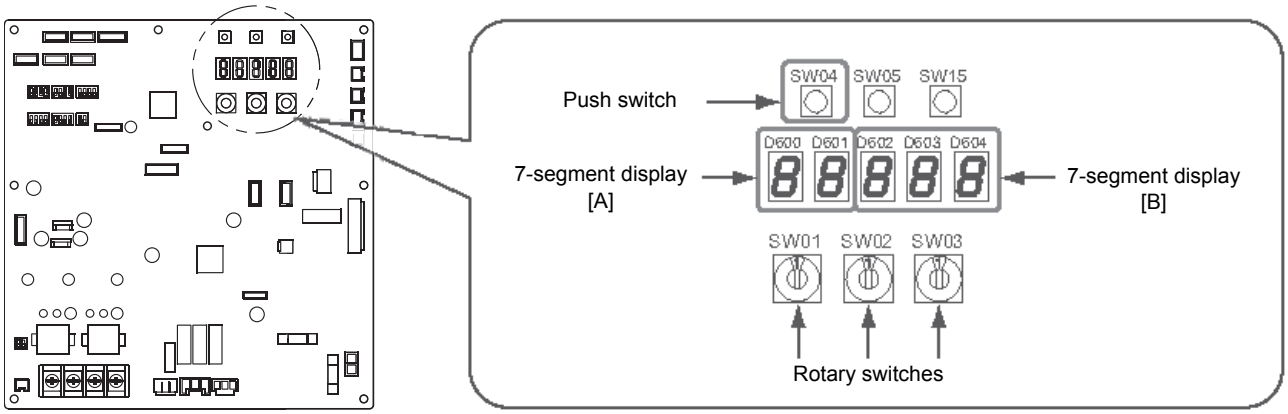
When the header indoor unit in the group control detects check code [E03], [L03], [L07] or [L08], the follower unit in the group detects [P31] and stops. There are no check code display and alarm record of the main remote controller.

9-6. 7-segment display function

7-segment display on outdoor unit (interface P.C. board)

The interface control P.C. board features a 7-segment LED display designed to check operational status. Display items can be changed by changing the combination of the number settings of rotary switches provided on the P.C. board (SW01, SW02 and SW03).

Interface P.C. board

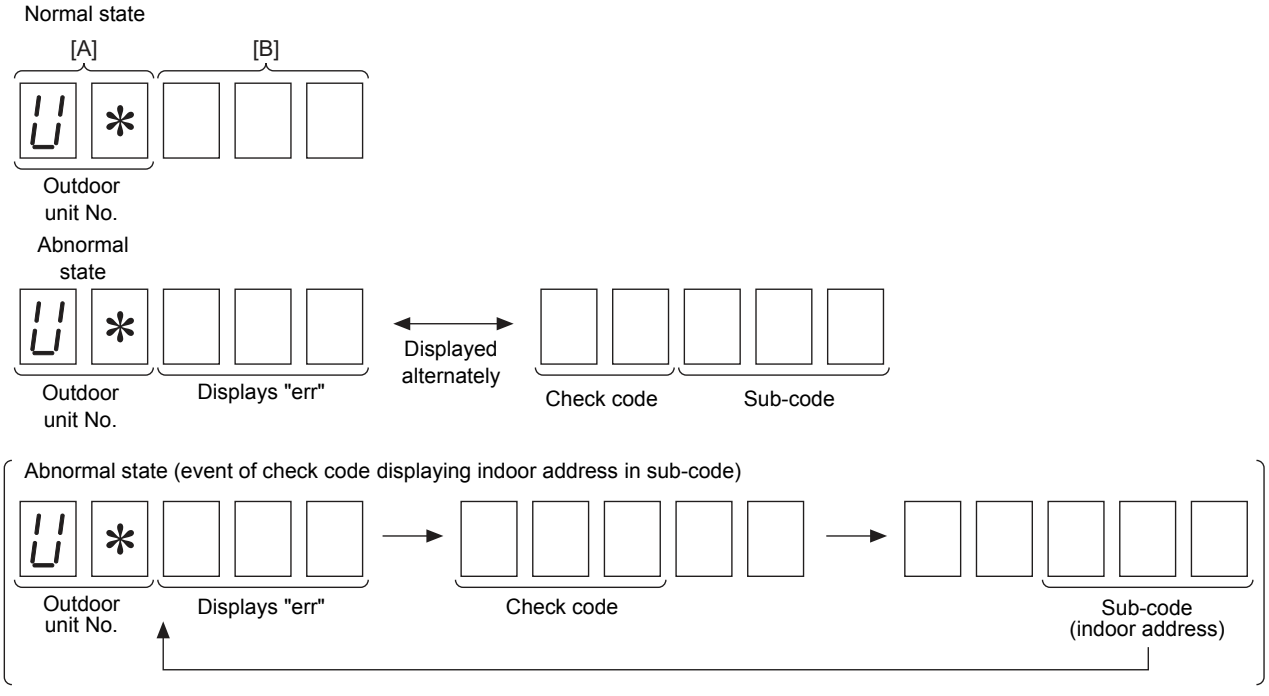


Checking procedure to be followed in event of abnormal shutdown

If the system is shut down due to an error in the outdoor unit, perform checks in the following steps:

1 **Open the panel of the outdoor unit, and check the 7-segment display.**

The check code is displayed in the 7-segment display.
* Switch settings when confirming check code: set [SW01/ SW02/ SW03] to [1/1/1].



2 **Check the check code and follow the applicable diagnostic procedure.**

(1) Display of system information (displayed on outdoor unit)

SW01	SW02	SW03	Display detail				
1	1	3	-	-			
	2		System capacity	A	[…4]~[...6] : 4 to 6 HP		
				B	[HP]		
	3		No. of outdoor units	A	[…1] : 1		
				B	[…P]		
	4		No. of indoor units connected / No. of units with cooling thermostat ON	(1)	[... ... ... 0] ~ [... ... 13] : 0 ~ 13 (Number of connected units)		
				(2)	[C ... ... 0] ~ [C ... 13] : 0 ~ 13 (Number of cooling thermostat ON) *Switch the display of (1) and (2) with SW04		
	5		No. of indoor units connected / No. of units with heating thermostat ON	(1)	[... ... ... 0] ~ [... ... 13] : 0 ~ 13 (Number of connected units)		
				(2)	[H ... ... 0] ~ [H ... 13] : 0 ~ 13 (Number of heating thermostat ON) *Switch the display of (1) and (2) with SW04		
	6		Amount of compressor command correction	A	Value displayed in hexadecimal format		
				B			
	7		Release control	A	Normal: [r. …], During release control: [r.1]		
				B	–		
	8		–		–		
	9		–		–		
	10		Refrigerant / oil recovery operation	A	Oil recovery in cooling: [C1], Normal: [C …]		
				B	Refrigerant recovery in heating: [H1], Normal: [H …]		
	11		Automatic addressing	A	[Ad]		
				B	During automatic addressing: [… FF], Normal: [… … …]		
	12		Power pick-cut	A	[dU]		
				B	Normal: [… … …], During 50-90 % capacity operation: [_50-_90] While control is based on BUS line input: [E50-E90]		
	13		Optional control (P.C. board input)	Displays optional control status		A	B
				Operation mode selection: During priority heating (normal)		h.∗.	∗.∗.∗.
					Priority cooling	c.∗.	∗.∗.∗.
					Heating only	H.∗.	∗.∗.∗.
					Cooling only	C.∗.	∗.∗.∗.
					Priority given to No. of indoor units in operation	n.∗.	∗.∗.∗.
					Priority given to specific indoor unit	U.∗.	∗.∗.∗.
				External master ON / OFF: Normal		∗…..	∗.∗.∗.
					Start input	∗.1.	∗.∗.∗.
					Stop input	∗.0.	∗.∗.∗.
				Night operation: Normal		∗.∗.	….∗.∗.
					Start input	∗.∗.	1.∗.∗.
				Snowfall operation: Normal		∗.∗.	∗.….∗.
					Start input	∗.∗.	∗.1.∗.
	14		Optional control (BUS line input)	Same as above			
	15		-	-			
	16	15	No. of indoor units connected.	A	[io.]		
				B	[...0.] ~ [...13] : 0 to 13		

(2) Display of outdoor unit information (Displayed on Outdoor Unit)

SW01	SW02	SW03	Display detail				
1	1	1	Check code data	A	Outdoor unit No.: [U1]		
				B	If there is no check code, [U. 1. - - -] is displayed. If there is check code [U. 1. err] ⟺ [OOO]. [△△] ([OOO] : Check code, [△△] : Sub-code) (The display switches alternately).		
	2		–	–			
	3		Operation mode	A	Stop [… …] Normal cooling: [… C], Normal heating: [… H], Normal defrosting: [… J]		
				B	–		
	4		Outdoor unit HP capacity	A	4HP: [… 4], 5HP: [… 5], 6HP: [… 6],		
				B	[…HP]		
	5		Compressor operation command				
			Normal: Compressor speed (rps) is displayed in decimal format. 7-segment display (A/B):[***, * H]				
			<SW04> push SW function: Switches to display of operating current (decimal value). 7-segment display (A/B): [i1. **.*] Pressing of <SW05> restores normal display.				
	6		Outdoor fan mode	A	[FP]		
				B	Mode 0 to 31: [… 0] to [31]		
	7		–	–			
	8		–	–			
	9		Control valve output data	Displays control output status of solenoid valve		A	B
				4-way valve: ON		H. 1	… … …
				4-way valve: OFF		H. 0	… … …
	10			SV2: ON		2.1	… … …
				SV2: OFF		2.0	… … …
	11			SV4: ON / SV6: OFF SV4: OFF / SV6: ON		4. 1 4. 0	… 6.1 … 6.1
	12		–	–		–	–
	13		–	–		–	–
	14		PMV opening	Displays opening data in decimal format (total opening)		＊＊	＊＊. P
	15		–	–		–	–
	16		–	–			

(3) Display of outdoor cycle data (Displayed on Outdoor Unit)

SW01	SW02	SW03	Display detail				
1	1	2	Pd pressure data	Pd pressure (MPaG) is displayed in decimal format. (MPaG: Approx. 10 times magnitude of kg/cm^{2}G)		A	B
						P d.	∗. ∗ ∗
	2		Ps pressure data	Ps pressure (MPaG) is displayed in decimal format.		P S.	∗. ∗ ∗
	3		PL pressure conversion data	Converted PL pressure (MPaG) is displayed in decimal format.		P L.	∗. ∗ ∗
	4		TD sensor data	Temperature sensor reading (°C) is displayed in decimal format. • Letter symbol and data are displayed alternately, for 1 second and display for 3 seconds, respectively. • Data is displayed in [∗] • Data with negative value is displayed as [– ∗] [∗ ∗ ∗].	Letter symbol	t d	… … …
					Data	∗	∗. ∗ ∗
	5		–		–	–	–
					–	–	–
	7		TS1 sensor data		Letter symbol	t S	1 … …
					Data	∗	∗. ∗ ∗
	8		–		–	–	–
					–	–	–
	9		–		–	–	–
					–	–	–
	10		TE sensor data		Letter symbol	t E	… …
					Data	∗	∗. ∗ ∗
	11		–		–	–	–
					–	–	–
	12		–		–	–	–
					–	–	–
	13		TL1 sensor data		Letter symbol	t L	… …
					Data	∗	∗. ∗ ∗
	14		–		–	–	–
					–	–	–
	15		–		–	–	–
					–	–	–
	16		TO sensor data		Letter symbol	t o	1 … …
					Data	∗	∗. ∗ ∗

(4) Display of indoor unit information (displayed on outdoor unit)

SW01	SW02	SW03	Display detail		
4	1~16	1~8	Indoor check code	B	No check code: [– – –]
			Indoor BUS communication signal receiving status	B	Upon receiving signal: [… … 1], Other times: [… … …]
5			Indoor HP capacity	B	... 0.3, ...0.4, ...0.5, ...0.6 ... 0.8, ...1.0, ...1.2, ...1.7, ...2.0 ... 2.5, ...3.0, ...3.2, ...4.0, ...5.0 ... 6.0, ...8.0, ...10.0, ...16.0, ...20.0
			Indoor request command (S code, operation mode)	B	[#. … ∗] # represents mode: COOL: [C. … ∗], HEAT: [H. … ∗] FAN: [F. … ∗], OFF: [S. … ∗] ∗ represents S code: [#. … 0] to [#. … F]
6			Indoor PMV opening data	B	Displayed in decimal format
7			Indoor temperature sensor data1	B	Switch temperature display of TA, TCJ, TC1 and TC2 with SW06
8			Indoor temperature sensor data2	B	Switch temperature display of TF, TA2 and TA3 with SW06
9	1	1	Outdoor DN code setting		Outdoor DN code setting

Note: Indoor address No. is selected by setting SW02 and SW03 and displayed on 7-segment display, section A.

SW02	SW03	Indoor address	7-segment display section A
1~16	1	SW02 setting number	[01]~[16]
1~16	2	SW02 setting number +16	[17]~[32]
1~16	3	SW02 setting number +32	[33]~[48]
1~16	4	SW02 setting number +48	[49]~[64]
1~16	5	SW02 setting number +64	[65]~[80]
1~16	6	SW02 setting number +80	[81]~[96]
1~16	7	SW02 setting number +96	[97]~[112]
1~16	8	SW02 setting number +112	[113]~[128]

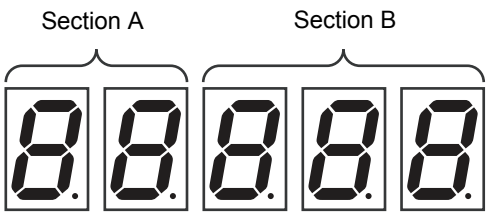
(5) Display of outdoor EEPROM writing check code (Displayed on Outdoor unit)

* The latest check code written in the EEPROM of outdoor unit is displayed.
(This function is used to check the check code after the resetting of the power supply.)

To display the check code, press SW04 and hold for at least 5 seconds after setting SW01 to 03 as shown in the table below.

SW01	SW02	SW03	Indoor address	7-segment display section A	
1	1	16	Latest check code of outdoor unit (U1)	E. 1.	∗∗∗

• 7-Segment Display



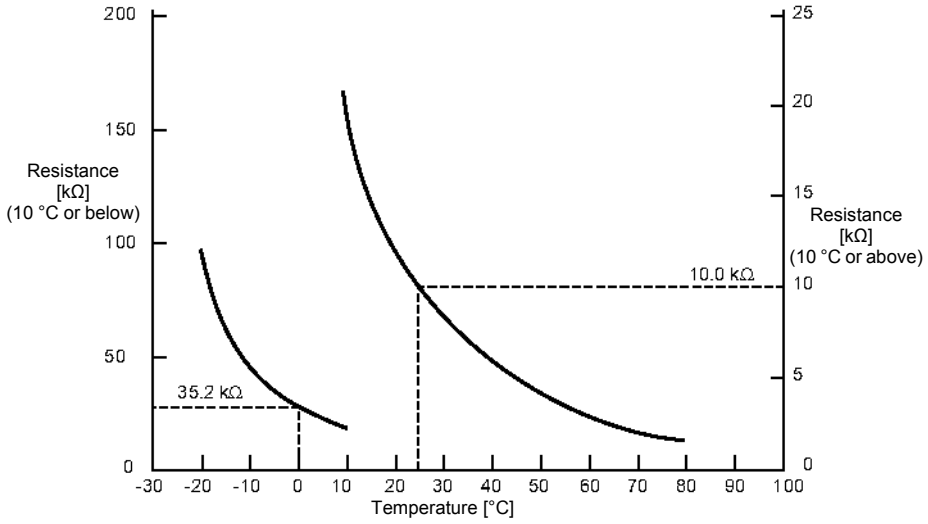
Set SW01 / SW02 / SW03 to [1/1/16] and press SW04 and hold for at least 5 seconds. The latest check code of the outdoor unit (U1) will be displayed.

9-7. Sensor characteristics

Outdoor Unit

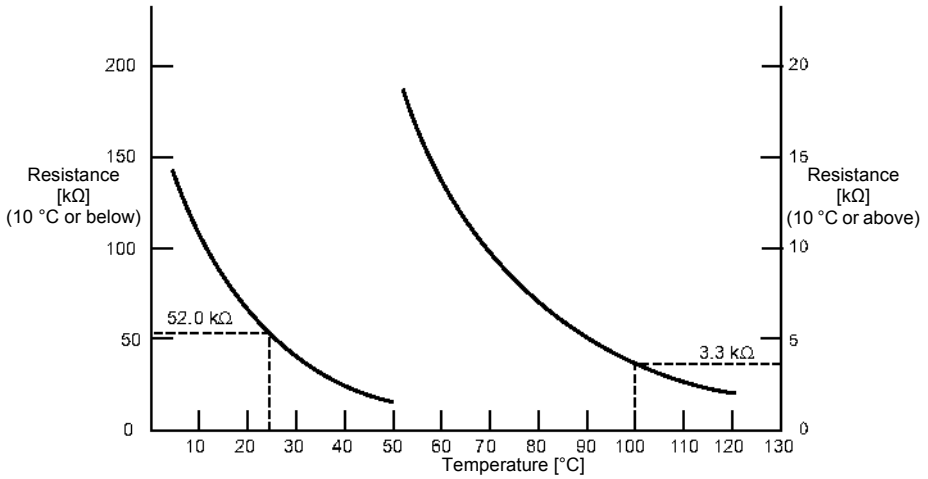
▼Temperature sensor characteristics

Outdoor TS1, TE, TL1 and TO sensors



Temperature [°C]	Resistance [kΩ]
-20	114.8
-15	83.9
-10	62.1
-5	46.5
0	35.2
5	26.9
10	20.7
15	16.1
20	12.7
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.9
60	2.4
65	2.0
70	1.7
75	1.4
80	1.2

Outdoor TD sensor



Temperature [°C]	Resistance [kΩ]
0	181.5
5	138.5
10	107.2
15	83.6
20	65.7
25	52.0
30	41.5
35	33.4
40	27.1
45	22.1
50	18.1
55	14.9
60	12.4
65	10.4
70	8.7
75	7.3
80	6.2
85	5.3
90	4.5
95	3.9
100	3.3
105	2.9
110	2.5
115	2.2
120	1.9

Outdoor Unit

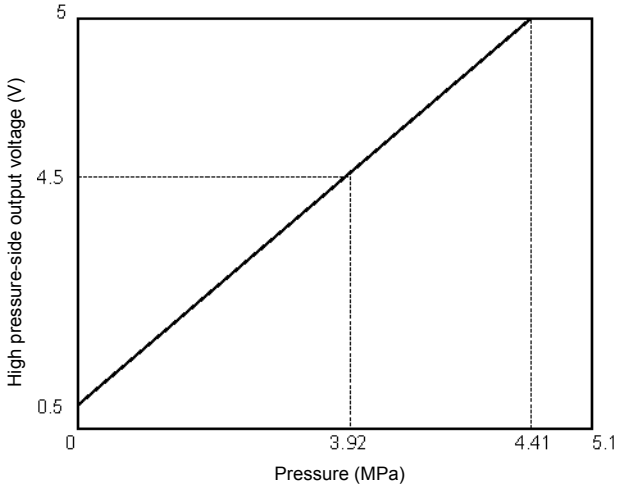
▼Pressure sensor characteristics

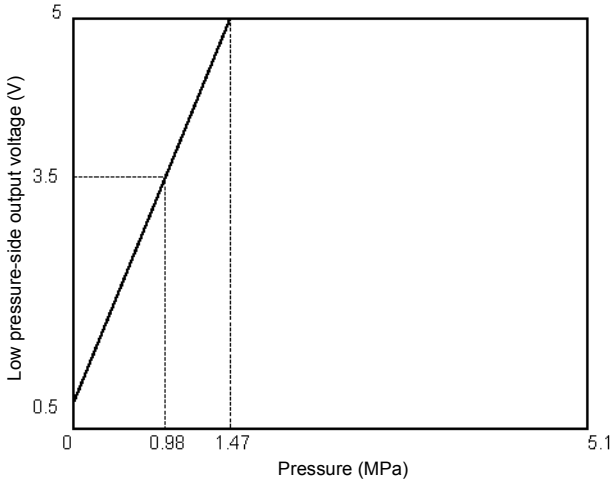
• Input / output wiring summary

Pin No.	High pressure side (Pd)		Low pressure side (Ps)	
	Input / output name	Lead wire color	Input / output name	Lead wire color
1	OUTPUT	White	—	—
2	—	—	OUTPUT	White
3	GND	Black	GND	Black
4	+5 V	Red	+5 V	Red

• Output voltage vs. pressure

High pressure side (Pd)	Low pressure side (Ps)
0.5~4.5 V 0~3.92 MPa	0.5~3.5 V 0~0.98 MPa

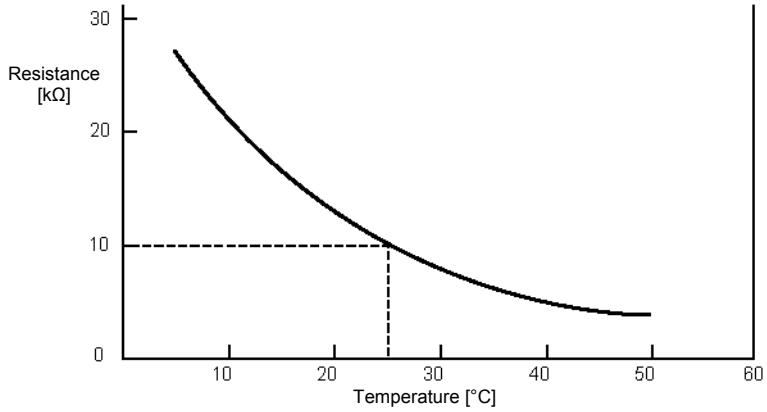




Indoor Unit

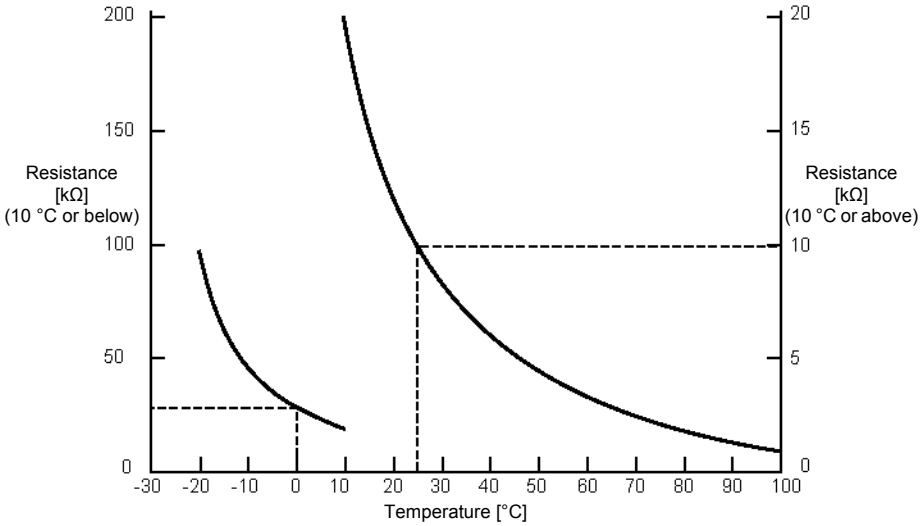
▼Temperature sensor characteristics

Indoor TA sensor



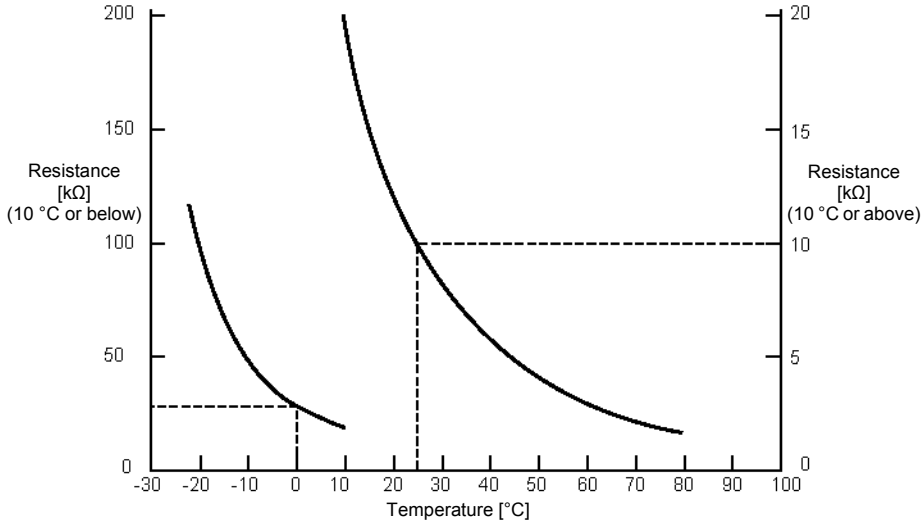
Temperature [°C]	Resistance [kΩ]
0	33.9
5	26.1
10	20.3
15	15.9
20	12.6
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.8
60	2.4

Indoor TC1 sensor



Temperature [°C]	Resistance [kΩ]
-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 [kΩ]
-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

9-8. Pressure sensor output check

Outdoor Unit

▼Pd sensor characteristics

0 to 3.92 MPa (0.5 to 4.5 V output for 0 to 3.92 MPa)

Voltage readings across pins 1 and 3 of CN501 on indoor unit main P.C. board (with negative-side probe of multimeter placed on pin 3)

VOLT	Pd (MPa)	Pd (kg/cm^2)	VOLT	Pd (MPa)	Pd (kg/cm^2)	VOLT	Pd (MPa)	Pd (kg/cm^2)	VOLT	Pd (MPa)	Pd (kg/cm^2)	VOLT	Pd (MPa)	Pd (kg/cm^2)
0.00	0.00	0.0	1.00	0.49	5.0	1.99	1.46	14.9	2.99	2.44	24.9	3.98	3.42	34.8
0.02	0.00	0.0	1.02	0.51	5.2	2.01	1.48	15.1	3.01	2.46	25.1	4.00	3.44	35.0
0.04	0.00	0.0	1.04	0.53	5.4	2.03	1.50	15.3	3.03	2.48	25.3	4.02	3.45	35.2
0.06	0.00	0.0	1.06	0.54	5.5	2.05	1.52	15.5	3.05	2.50	25.5	4.04	3.48	35.4
0.08	0.00	0.0	1.07	0.56	5.7	2.07	1.54	15.7	3.07	2.52	25.7	4.06	3.49	35.6
0.10	0.00	0.0	1.09	0.58	5.9	2.09	1.56	15.9	3.09	2.54	25.9	4.08	3.51	35.8
0.12	0.00	0.0	1.11	0.60	6.1	2.11	1.58	16.1	3.11	2.56	26.1	4.10	3.53	36.0
0.14	0.00	0.0	1.13	0.62	6.3	2.13	1.60	16.3	3.13	2.57	26.3	4.12	3.55	36.2
0.16	0.00	0.0	1.15	0.64	6.5	2.15	1.62	16.5	3.15	2.59	26.4	4.14	3.57	36.4
0.18	0.00	0.0	1.17	0.66	6.7	2.17	1.64	16.7	3.16	2.61	26.6	4.16	3.59	36.6
0.20	0.00	0.0	1.19	0.68	6.9	2.19	1.66	16.9	3.18	2.63	26.8	4.18	3.61	36.8
0.22	0.00	0.0	1.21	0.70	7.1	2.21	1.67	17.1	3.20	2.65	27.0	4.20	3.63	37.0
0.23	0.00	0.0	1.23	0.72	7.3	2.23	1.69	17.3	3.22	2.67	27.2	4.22	3.65	37.2
0.25	0.00	0.0	1.25	0.74	7.5	2.25	1.71	17.5	3.24	2.69	27.4	4.24	3.67	37.4
0.27	0.00	0.0	1.27	0.76	7.7	2.27	1.73	17.7	3.26	2.71	27.6	4.26	3.69	37.6
0.29	0.00	0.0	1.29	0.77	7.9	2.29	1.75	17.9	3.28	2.73	27.8	4.28	3.70	37.8
0.31	0.00	0.0	1.31	0.79	8.1	2.31	1.77	18.0	3.30	2.75	28.0	4.30	3.72	38.0
0.33	0.00	0.0	1.33	0.81	8.3	2.32	1.79	18.2	3.32	2.77	28.2	4.32	3.74	38.2
0.35	0.00	0.0	1.35	0.83	8.5	2.34	1.81	18.4	3.34	2.79	28.4	4.34	3.76	38.4
0.37	0.00	0.0	1.37	0.85	8.7	2.36	1.83	18.6	3.36	2.80	28.6	4.36	3.78	38.6
0.39	0.00	0.0	1.39	0.87	8.9	2.38	1.85	18.8	3.38	2.82	28.8	4.38	3.80	38.8
0.41	0.00	0.0	1.41	0.89	9.1	2.40	1.87	19.0	3.40	2.84	29.0	4.40	3.82	38.9
0.43	0.00	0.0	1.43	0.91	9.3	2.42	1.89	19.2	3.42	2.86	29.2	4.41	3.84	39.1
0.45	0.00	0.0	1.45	0.93	9.5	2.44	1.90	19.4	3.44	2.88	29.4	4.43	3.86	39.3
0.47	0.00	0.0	1.47	0.95	9.6	2.46	1.92	19.6	3.46	2.90	29.6	4.45	3.88	39.5
0.49	0.00	0.0	1.48	0.97	9.8	2.48	1.94	19.8	3.48	2.92	29.8	4.47	3.90	39.7
0.51	0.01	0.1	1.50	0.99	10.0	2.50	1.96	20.0	3.50	2.94	30.0	4.49	3.92	39.9
0.53	0.03	0.3	1.52	1.00	10.2	2.52	1.98	20.2	3.52	2.96	30.2	4.51	3.93	40.1
0.55	0.05	0.5	1.54	1.02	10.4	2.54	2.00	20.4	3.54	2.98	30.4	4.53	3.95	40.3
0.57	0.07	0.7	1.56	1.04	10.6	2.56	2.02	20.6	3.56	3.00	30.5	4.55	3.97	40.5
0.59	0.08	0.9	1.58	1.06	10.8	2.58	2.04	20.8	3.57	3.02	30.7	4.57	3.99	40.7
0.61	0.10	1.1	1.60	1.08	11.0	2.60	2.06	21.0	3.59	3.03	30.9	4.59	4.01	40.9
0.63	0.12	1.3	1.62	1.10	11.2	2.62	2.08	21.2	3.61	3.05	31.1	4.61	4.03	41.1
0.65	0.14	1.4	1.64	1.12	11.4	2.64	2.10	21.4	3.63	3.07	31.3	4.63	4.05	41.3
0.66	0.16	1.6	1.66	1.14	11.6	2.66	2.12	21.6	3.65	3.09	31.5	4.65	4.07	41.5
0.68	0.18	1.8	1.68	1.16	11.8	2.68	2.13	21.8	3.67	3.11	31.7	4.67	4.09	41.7
0.70	0.20	2.0	1.70	1.18	12.0	2.70	2.15	22.0	3.69	3.13	31.9	4.69	4.11	41.9
0.72	0.22	2.2	1.72	1.20	12.2	2.72	2.17	22.2	3.71	3.15	32.1	4.71	4.13	42.1
0.74	0.24	2.4	1.74	1.21	12.4	2.73	2.19	22.3	3.73	3.17	32.3	4.73	4.15	42.3
0.76	0.26	2.6	1.76	1.23	12.6	2.75	2.21	22.5	3.75	3.19	32.5	4.75	4.16	42.5
0.78	0.28	2.8	1.78	1.25	12.8	2.77	2.23	22.7	3.77	3.21	32.7	4.77	4.18	42.7
0.80	0.30	3.0	1.80	1.27	13.0	2.79	2.25	22.9	3.79	3.23	32.9	4.79	4.20	42.9
0.82	0.31	3.2	1.82	1.29	13.2	2.81	2.27	23.1	3.81	3.25	33.1	4.81	4.22	43.0
0.84	0.33	3.4	1.84	1.31	13.4	2.83	2.29	23.3	3.83	3.26	33.3	4.82	4.24	43.2
0.86	0.35	3.6	1.86	1.33	13.6	2.85	2.31	23.5	3.85	3.28	33.5	4.84	4.26	43.4
0.88	0.37	3.8	1.88	1.35	13.8	2.87	2.33	23.7	3.89	3.30	33.7	4.86	4.28	43.6
0.90	0.39	4.0	1.90	1.37	13.9	2.89	2.35	23.9	3.89	3.32	33.9	4.88	4.30	43.8
0.92	0.41	4.2	1.91	1.39	14.1	2.91	2.36	24.1	3.91	3.34	34.1	4.90	4.32	44.0
0.94	0.43	4.4	1.93	1.41	14.3	2.93	2.38	24.3	3.93	3.36	34.3	4.92	4.34	44.2
0.96	0.45	4.6	1.95	1.43	14.5	2.95	2.40	24.5	3.95	3.38	34.5	4.94	4.36	44.4
0.98	0.47	4.8	1.97	1.44	14.7	2.97	2.42	24.7	3.97	3.40	34.7	4.96	4.38	44.6
												4.98	4.39	44.8

Outdoor Unit

▼Ps sensor characteristics

0 to 0.98 MPa (0.5 to 3.5 V output for 0 to 0.98 MPa)

Voltage readings across pins 2 and 3 of CN500 on indoor unit main P.C. board (with negative-side probe of multimeter placed on pin 3)

VOLT	Pd (MPa)	Pd (kg/cm^2)	VOLT	Pd (MPa)	Pd (kg/cm^2)	VOLT	Pd (MPa)	Pd (kg/cm^2)	VOLT	Pd (MPa)	Pd (kg/cm^2)	VOLT	Pd (MPa)	Pd (kg/cm^2)
0.00	0.00	0.0	1.00	0.16	1.7	1.99	0.49	5.0	2.99	0.81	8.3	3.98	1.14	11.6
0.02	0.00	0.0	1.02	0.17	1.7	2.01	0.49	5.0	3.01	0.82	8.4	4.00	1.15	11.7
0.04	0.00	0.0	1.04	0.18	1.8	2.03	0.50	5.1	3.03	0.83	8.4	4.02	1.15	11.7
0.06	0.00	0.0	1.06	0.18	1.8	2.05	0.51	5.2	3.05	0.83	8.5	4.04	1.16	11.8
0.08	0.00	0.0	1.07	0.19	1.9	2.07	0.51	5.2	3.07	0.84	8.6	4.06	1.17	11.9
0.10	0.00	0.0	1.09	0.19	2.0	2.09	0.52	5.3	3.09	0.85	8.6	4.08	1.17	11.9
0.12	0.00	0.0	1.11	0.20	2.0	2.11	0.53	5.4	3.11	0.85	8.7	4.10	1.18	12.0
0.14	0.00	0.0	1.13	0.21	2.1	2.13	0.53	5.4	3.13	0.86	8.8	4.12	1.18	12.1
0.16	0.00	0.0	1.15	0.21	2.2	2.15	0.54	5.5	3.15	0.86	8.8	4.14	1.19	12.1
0.18	0.00	0.0	1.17	0.22	2.2	2.17	0.55	5.6	3.16	0.87	8.9	4.16	1.20	12.2
0.20	0.00	0.0	1.19	0.23	2.3	2.19	0.55	5.6	3.18	0.88	8.9	4.18	1.20	12.3
0.22	0.00	0.0	1.21	0.23	2.4	2.21	0.56	5.7	3.20	0.88	9.0	4.20	1.21	12.3
0.23	0.00	0.0	1.23	0.24	2.4	2.23	0.56	5.8	3.22	0.89	9.1	4.22	1.22	12.4
0.25	0.00	0.0	1.25	0.25	2.5	2.25	0.57	5.8	3.24	0.90	9.1	4.24	1.22	12.5
0.27	0.00	0.0	1.27	0.25	2.6	2.27	0.58	5.9	3.26	0.90	9.2	4.26	1.23	12.5
0.29	0.00	0.0	1.29	0.26	2.6	2.29	0.58	6.0	3.28	0.91	9.3	4.28	1.24	12.6
0.31	0.00	0.0	1.31	0.26	2.7	2.31	0.59	6.0	3.30	0.92	9.3	4.30	1.24	12.7
0.33	0.00	0.0	1.33	0.27	2.8	2.32	0.60	6.1	3.32	0.92	9.4	4.32	1.25	12.7
0.35	0.00	0.0	1.35	0.28	2.8	2.34	0.60	6.1	3.34	0.93	9.5	4.34	1.25	12.8
0.37	0.00	0.0	1.37	0.28	2.9	2.36	0.61	6.2	3.36	0.94	9.5	4.36	1.26	12.9
0.39	0.00	0.0	1.39	0.29	3.0	2.38	0.62	6.3	3.38	0.94	9.6	4.38	1.27	12.9
0.41	0.00	0.0	1.41	0.30	3.0	2.40	0.62	6.3	3.40	0.95	9.7	4.40	1.27	13.0
0.43	0.00	0.0	1.43	0.30	3.1	2.42	0.63	6.4	3.42	0.95	9.7	4.41	1.28	13.0
0.45	0.00	0.0	1.45	0.31	3.2	2.44	0.64	6.5	3.44	0.96	9.8	4.43	1.29	13.1
0.47	0.00	0.0	1.47	0.32	3.2	2.46	0.64	6.5	3.46	0.97	9.9	4.45	1.29	13.2
0.49	0.00	0.0	1.48	0.32	3.3	2.48	0.65	6.6	3.48	0.97	9.9	4.47	1.30	13.2
0.51	0.00	0.0	1.50	0.33	3.3	2.50	0.65	6.7	3.50	0.98	10.0	4.49	1.31	13.3
0.53	0.01	0.1	1.52	0.34	3.4	2.52	0.66	6.7	3.52	0.99	10.1	4.51	1.31	13.4
0.55	0.02	0.2	1.54	0.34	3.5	2.54	0.67	6.8	3.54	0.99	10.1	4.53	1.32	13.4
0.57	0.02	0.2	1.56	0.35	3.5	2.56	0.67	6.9	3.56	1.00	10.2	4.55	1.32	13.5
0.59	0.03	0.3	1.58	0.35	3.6	2.58	0.68	6.9	3.57	1.01	10.2	4.57	1.33	13.6
0.61	0.03	0.4	1.60	0.36	3.7	2.60	0.69	7.0	3.59	1.01	10.3	4.59	1.34	13.6
0.63	0.04	0.4	1.62	0.37	3.7	2.62	0.69	7.1	3.61	1.02	10.4	4.61	1.34	13.7
0.65	0.05	0.5	1.64	0.37	3.8	2.64	0.70	7.1	3.63	1.02	10.4	4.63	1.35	13.8
0.66	0.05	0.5	1.66	0.38	3.9	2.66	0.71	7.2	3.65	1.03	10.5	4.65	1.36	13.8
0.68	0.06	0.6	1.68	0.39	3.9	2.68	0.71	7.3	3.67	1.04	10.6	4.67	1.36	13.9
0.70	0.07	0.7	1.70	0.39	4.0	2.70	0.72	7.3	3.69	1.04	10.6	4.69	1.37	14.0
0.72	0.07	0.7	1.72	0.40	4.1	2.72	0.72	7.4	3.71	1.05	10.7	4.71	1.38	14.0
0.74	0.08	0.8	1.74	0.41	4.1	2.73	0.73	7.4	3.73	1.06	10.8	4.73	1.38	14.1
0.76	0.09	0.9	1.76	0.41	4.2	2.75	0.74	7.5	3.75	1.06	10.8	4.75	1.39	14.2
0.78	0.09	0.9	1.78	0.42	4.3	2.77	0.74	7.6	3.77	1.07	10.9	4.77	1.39	14.2
0.80	0.10	1.0	1.80	0.42	4.3	2.79	0.75	7.6	3.79	1.08	11.0	4.79	1.40	14.3
0.82	0.11	1.1	1.82	0.43	4.4	2.81	0.76	7.7	3.81	1.08	11.0	4.81	1.41	14.3
0.84	0.11	1.1	1.84	0.44	4.5	2.83	0.76	7.8	3.83	1.09	11.1	4.82	1.41	14.4
0.86	0.12	1.2	1.86	0.44	4.5	2.85	0.77	7.8	3.85	1.09	11.2	4.84	1.42	14.5
0.88	0.12	1.3	1.88	0.45	4.6	2.87	0.78	7.9	3.89	1.10	11.2	4.86	1.43	14.5
0.90	0.13	1.3	1.90	0.46	4.6	2.89	0.78	8.0	3.89	1.11	11.3	4.88	1.43	14.6
0.92	0.14	1.4	1.91	0.46	4.7	2.91	0.79	8.0	3.91	1.11	11.4	4.90	1.44	14.7
0.94	0.14	1.5	1.93	0.47	4.8	2.93	0.79	8.1	3.93	1.12	11.4	4.92	1.45	14.7
0.96	0.15	1.5	1.95	0.48	4.8	2.95	0.80	8.2	3.95	1.13	11.5	4.94	1.45	14.8
0.98	0.16	1.6	1.97	0.48	4.9	2.97	0.81	8.2	3.97	1.13	11.5	4.96	1.46	14.9
												4.98	1.47	14.9

9-9. System operation when the Leak Detector detects a refrigerant leak.

When Leak Detector detects a refrigerant leak, the indoor unit connected the Leak Detector issues [J30] notification.
When a refrigerant leak is detected, the alarm LED flashes and the buzzer rings.
The alarm can be stopped by pushing the alarm lamp button for at least 2 seconds, after buzzer sounds 1 minute.

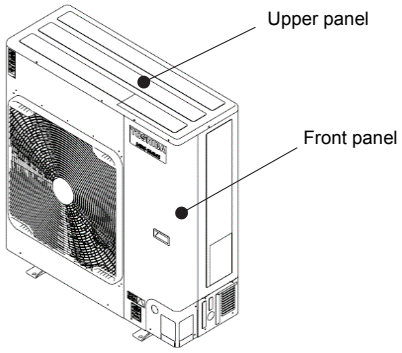
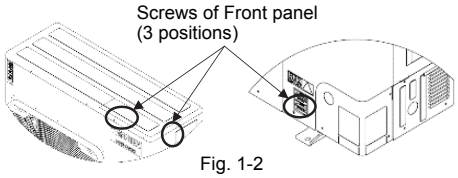
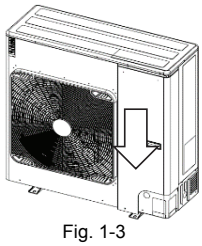
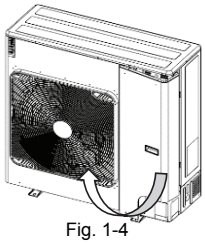
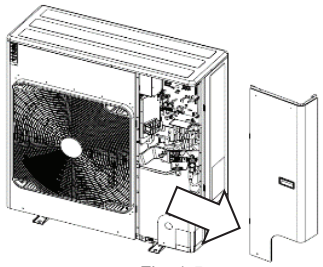
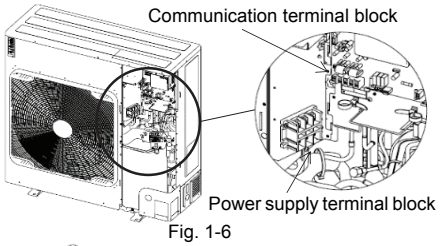
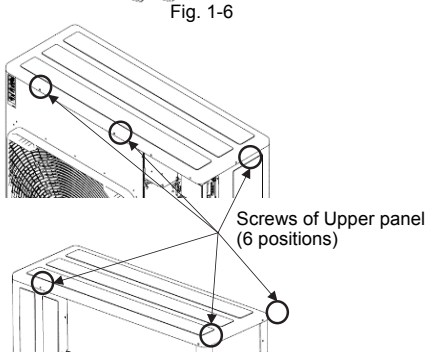
When Leak Detector connected to an indoor unit whose DN code No.[107] is set to "1: Pump down operation" detects a refrigerant leak, all Shut-off Valve units will be closed and the system will be locked.
[J30] will be displayed on the 7-segment display of the interface P.C. board of the outdoor unit.

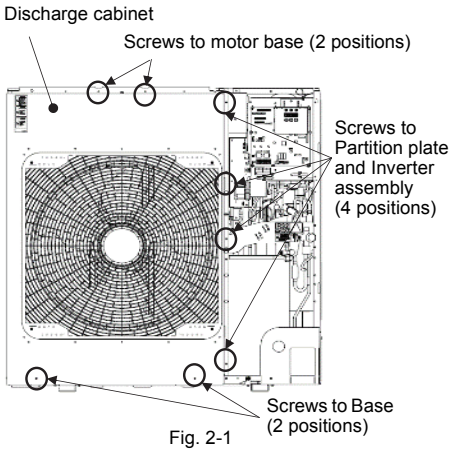
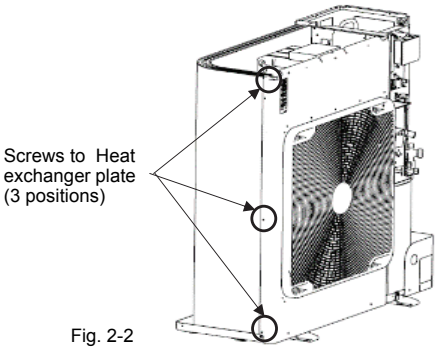
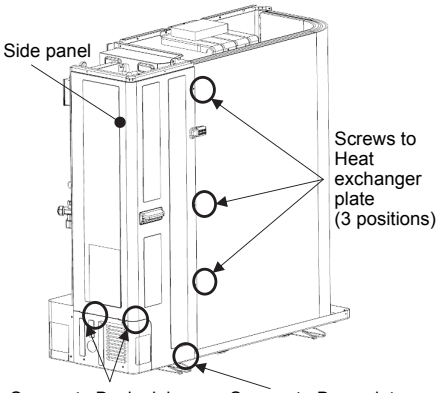
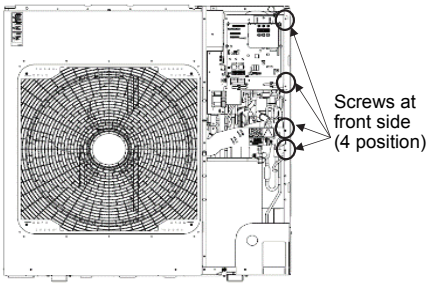
When Leak Detector connected to an indoor unit whose DN code No.[107] is set to "3: Leak Detector Only" detects a refrigerant leak, the system will be locked.
However, if there is even one indoor unit whose DN code No.[107] is set to "1: Pump down operation", all Shut-off Valve units will be closed and the system will be locked.
[J30] will be displayed on the 7-segment display of the interface P.C. board of the outdoor unit.

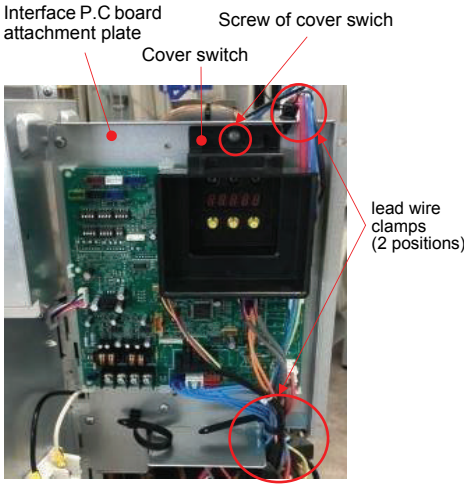
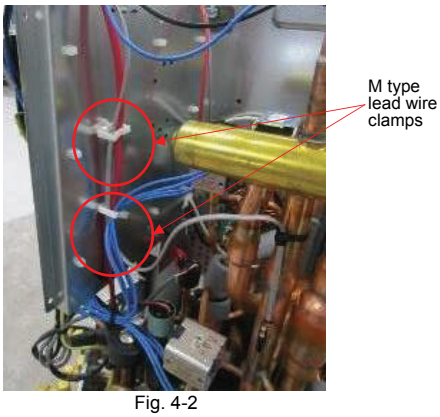
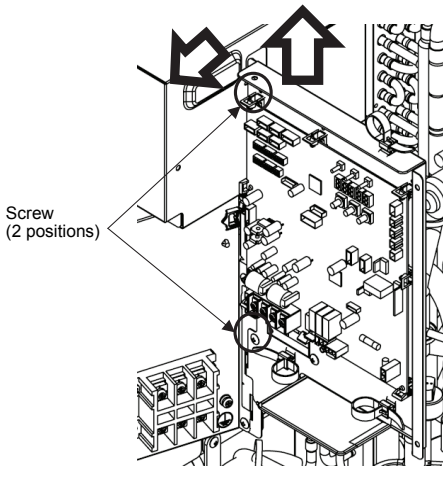
When Leak Detector connected to an indoor unit whose DN code No.[107] is set to "2: Individual shut-off" detects a refrigerant leak, Shut-off Valve unit of the corresponding indoor unit will be closed and only the corresponding indoor unit will be prevented from operating.
[J30] will not be displayed on the 7-segment display of the interface P.C. board of the outdoor unit.

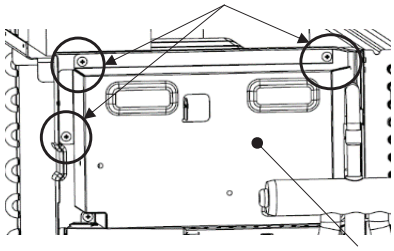
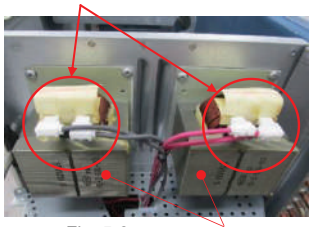
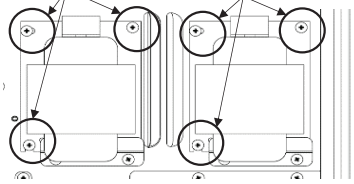
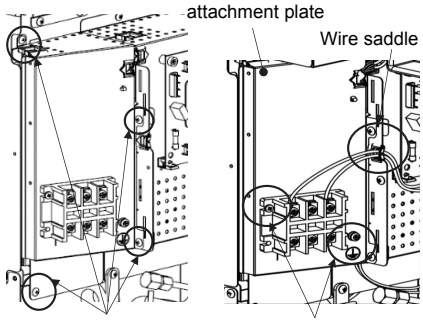
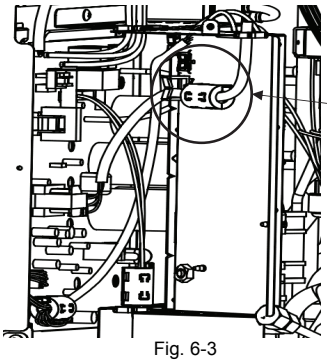
Please refer to "9-5.Diagnosis procedure for each check code" for more explanation of the leak detection.

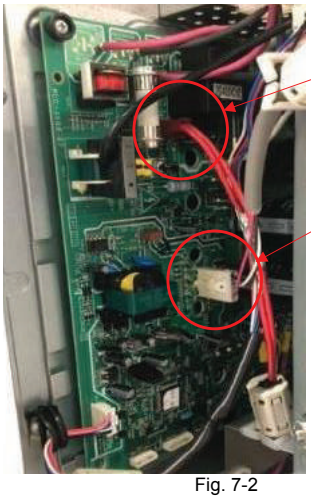
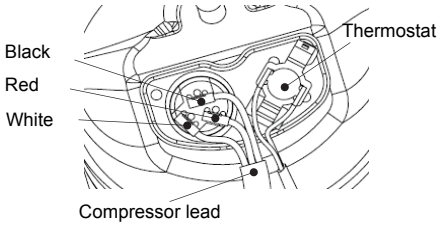
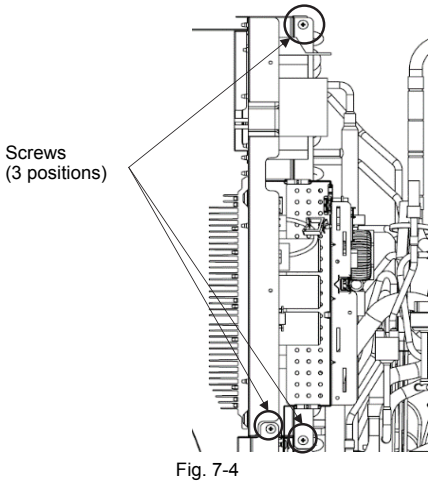
10 Outdoor unit parts replacement methods

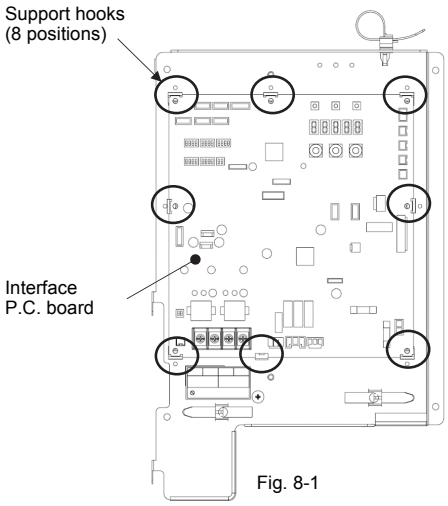
No.	Component	Procedure	Remarks
1	Front panel Upper panel	**⚠WARNING** **Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks.** **NOTE** **Wear gloves when working on it.** **Failure to observe this precaution may cause injury due to components, etc.** **1. Detachment** 1) Turn off the air conditioner and the breaker switch. 2) Remove the screws of the Front panel. (screw:M4 x 10 , 3 pcs)(Fig. 1-2) • After removing the screws slide the Front panel downwards.(Fig. 1-3) • Pull the Front panel to the right, loosen the right claw.(Fig. 1-4) • Pull the Front panel to the right, loosen the left claw, and then remove the Front panel. (Fig. 1-5) 3) Remove the Power supply wire and Indoor / Outdoor communication wire from the power supply terminal block and communication terminal block.(Fig. 1-6) 4) Remove the upper panel. (screws:M4 x 10 , 6 pcs)(Fig. 1-7) **2. Attachment** 1) Mount the upper panel. (screws:M4 x 10 , 6 pcs)(Fig. 1-7) 2) Connect the power supply wires and Indoor / Outdoor connection wire to the terminals, and fix them with the cord clamp.(Fig. 1-6) **NOTE** **Fix the power wire and indoor / outdoor communication wire along the pipes using commercially available binding bands so that they do not come into contact with the compressor, gas side valve, gas side pipe, and discharge pipe.** 3) Mount by reversing the detachment procedure, attach the Front panel in order.	  Fig. 1-2  Fig. 1-3  Fig. 1-4  Fig. 1-5  Fig. 1-6  Fig. 1-7

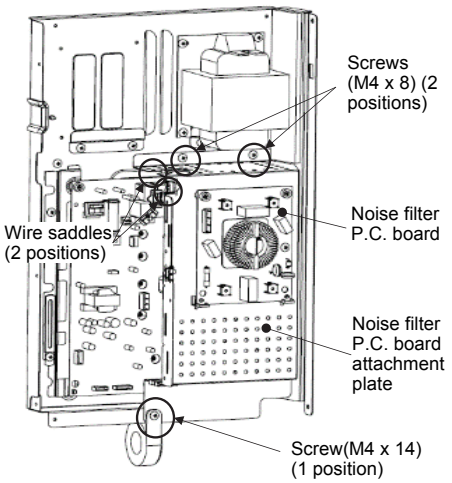
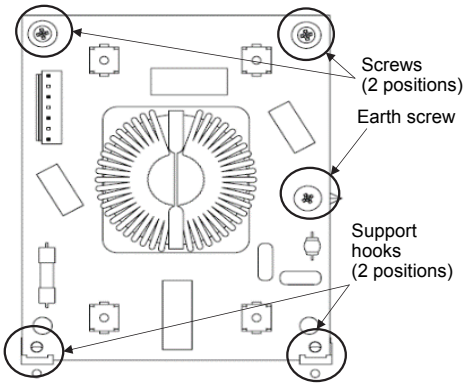
No.	Component	Procedure	Remarks
2	Discharge cabinet	**1. Detachment** 1) Remove the Front panel and Upper panel. [Step.1] 2) Remove the screws of the Discharge cabinet fixed with Partition plate and Inverter assembly. (M4 × 10 , 4 pcs)(Fig. 2-1) 3) Remove the screws of the Discharge cabinet and Base. (M4 × 10 , 2 pcs)(Fig. 2-1) 4) Remove the screws of the Discharge cabinet and Motor base. (M4 × 10 , 2 pcs)(Fig. 2-1) 5) Remove the screws of the Discharge cabinet and Heat exchanger plate. (M4 × 10 , 3 pcs)(Fig. 2-2) **2. Attachment** 1) Mount by reversing the detachment procedure, attach the Discharge cabinet in order.	 Fig. 2-1  Fig. 2-2
3	Side panel	**1. Detachment** 1) Remove the Front panel and Upper panel.[Step.1] 2) Remove the screws of the Side panel and Heat exchanger plate.(M4 × 10 , 3 pcs)(Fig. 3-1) 3) Remove the screw of the Side panel and Base plate (M4 × 10 , 1 pcs)(Fig. 3-1) 4) Remove the screws of the Side panel and Back piping panel.(M4 × 10 , 2 pcs)(Fig. 3-1) 5) Remove the screws of the Side panel at front side. (M4 x 10 , 4 pcs)(Fig. 3-2) **2. Attachment** 1) Mount by reversing the detachment procedure, attach the Side panel in order.	 Fig. 3-1  Fig. 3-2

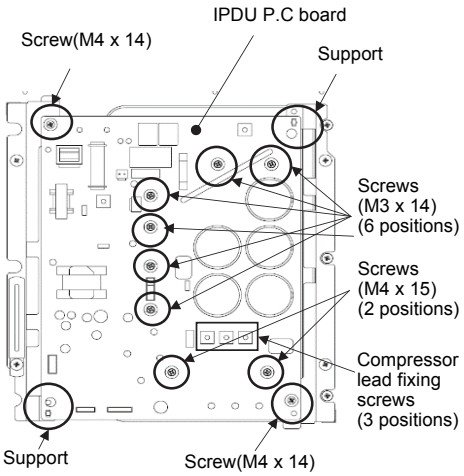
No.	Component	Procedure	Remarks
4	Interface P.C.board attachment plate	**⚠ WARNING** **Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks.** **1. Detachment** 1) Remove the Front panel, Upper panel and Side panel.[Step.1, Step.3 2) "Release the upper wire clamps and the lower wire clamp which fix the sensor lead. (2 positions) (Fig. 4-1)" 3) Remove the screw of the Interface P.C board attachment plate and Cover switch. (Fig. 4-1) 4) Remove all the sensor lead clamped in the M type wire clamps in the back face of Interface P.C. board attachment plate (2 positions).(Fig 4-2) **⚠ CAUTION** **Disengage the lock on the housing to unplug the connector.** CN502: TD sensor (3P,white) CN505: TS1 sensor (2P,white) CN507: TE sensor (2P,green) CN520: TO sensor (2P,yellow) CN523: TL1 sensor (2P,white) CN317: 4-way valve coil (3P,blue) CN300: PMV coil (6P,white) CN311: 2-way valve coil-SV2 (3P,white) CN312: 2-way valve coil-SV4 (3P,red) CN317: 2-way valve coil-SV6 (3P,white) CN308: Thermostat (2P,blue) CN501: High-pressure sensor (4P,red) CN500: Low-pressure sensor (4P,white) CN600: Connection with IPDU P.C. board (CN852) (5P,white) CN400: Connection with Noise filter P.C. board (CN08)(2P,white) 5)Remove the 2 screws. (M4 x 8 , 2 pcs)(Fig. 4-3) 6)Lift Interface P.C. board attachment plate upward until you can remove it frontward, and remove it. (Fig. 4-3) **2. Attachment** 1) Install it in the reverse of the procedure to remove it.	 Fig. 4-1  Fig. 4-2  Fig. 4-3

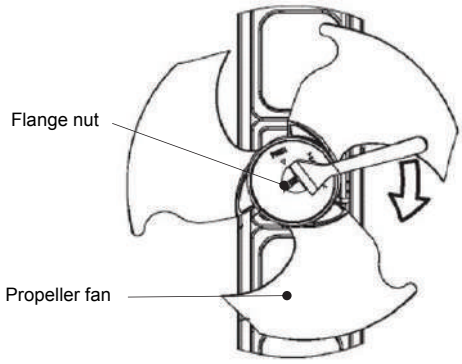
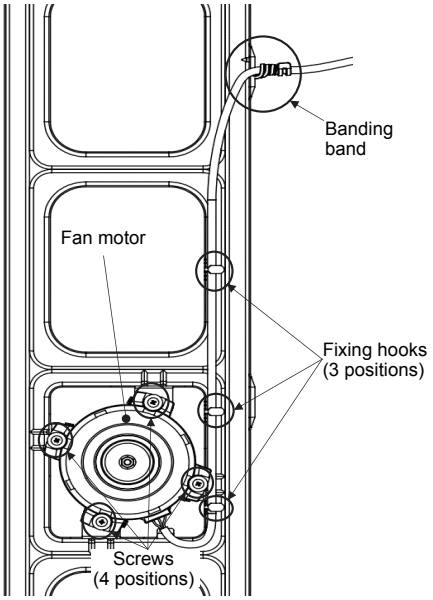
No.	Component	Procedure	Remarks
5	Reactor	**⚠ WARNING** **Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks.** **1. Detachment** 1) "Remove the Front panel, Discharge cabinet, Side panel, Interface P.C. attachment plate. [Step.1 - Step.4]" 2) Remove the screws of reactor covering plate. (M4 x 10 , 3 pcs),(Fig. 5-1) 3) Remove 4 connectors from 2 reactors. (4 positions)(Fig. 5-2) 4) Remove the screws of 2 reactors, and remove the reactors. (M4 x 8 , 6 pcs)(Fig. 5-3) **2. Attachment** 1) Install it in the reverse of the procedure to remove it. When mounting, connect lead wires of the same color to each reactor. **⚠ CAUTION** **If the lead wire colors are connected in alternation, it will cause trouble.**	Screws (3 positions)  Reactor covering plate Fig. 5-1 Connectors (4 positions)  Fig. 5-2 Reactors Screws (3 positions) Screws (3 positions)  Fig. 5-3
6	Terminal attachment plate	**⚠ WARNING** **Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks.** **1. Detachment** 1) Remove the Front panel, Discharge cabinet, Side panel, Interface P.C. attachment plate, plate, Reactors. [Step.1 - Step.5] 2) Remove the screws of power Terminal attachment plate.(M4 x 10 , 4 pcs)(Fig. 6-1) 3) Remove the screws of power terminal and remove the lead between power terminal and noise filter P.C board out of wire saddle. (M4 x 16 , 2 pcs) (Fig. 6-2) 4) Remove the clamp filter from M type lead wire clamp at inside the Terminal attachment plate and remove Terminal attachment plate. (Fig. 6-3) **⚠ CAUTION** **To remove the round terminal and install it again, face the flat surface up and tighten the terminal with a tightening torque of 2.5 ± 0.1 Nm.** **2. Attachment** 1) Install it in the reverse of the procedure to remove it.	Terminal attachment plate Wire saddle  Screws of plate (4 positions) Fig. 6-1 Screws of power terminal (2 positions) Fig. 6-2  Clamp filter and M type lead wire clamp Fig. 6-3

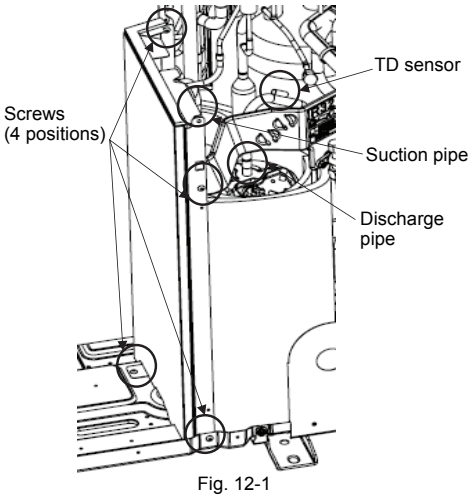
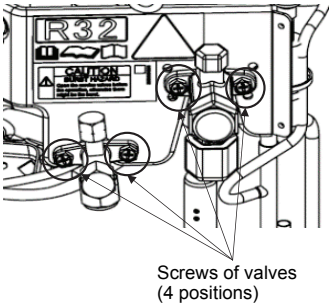
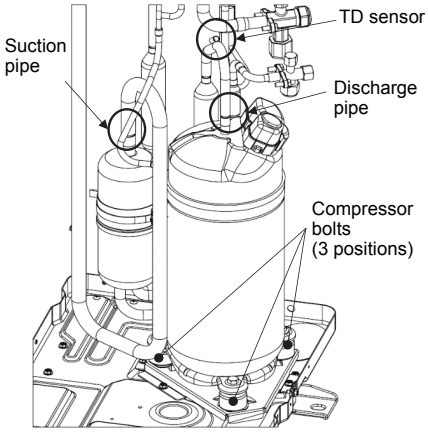
No.	Component	Procedure	Remarks
7	IPDU P.C. board assembly	**⚠ WARNING** **Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks.** **1. Detachment** 1) "Remove the Front panel, Upper panel, Discharge panel, Side panel, Interface P.C. attachment plate, reactors and Terminal attachment plate. [Step.1 - Step.6]" 2) Release the fan motor's lead from cord clamp. (Fig. 7-1) 3) Remove the connector of fan motor's lead and high pressure switch from IPDU P.C board. (Fig. 7-2) CN300: Fan motor lead(3P, white) CN500: High pressure switch lead(2P, red) **⚠ CAUTION** **Disengage the lock on the housing to unplug the connector.** 4) Remove the terminal cover of the compressor, and the compressor lead.(Fig. 7-3) **⚠ CAUTION** **Be sure the Faston connector on the lead wire doesn't bend and become loose when connecting it or removing it from the compressor's lead wires.** **Compressor lead wire precautions** • Attach the compressor's leads to the specified terminals. • Do not press Faston terminals two times. • Replace the compressor's lead wires it they are inserted into a Faston connector once and then removed. • The compressor's lead wires must come out vertically as shown as. • Be careful to not put excessive stress on the lead wires and the terminals. • After passing the lead wire through the bushing, attach the terminal cover. When doing this, be careful that you do not pinch the lead wire in the terminal cover. **⚠ WARNING** **If the Faston connector becomes loose, it could lead to overheating or fire.** 5) Remove the screws of the IPDU P.C board assembly and get it off from the hook of heat exchanger's side plate.(M4 x 10 , 3 pcs)(Fig. 7-4) 6) Put the Inverter assembly out of unit. **2. Attachment** 1) Install it in the reverse of the procedure to remove it.	 Fig. 7-1  Fig. 7-2  Fig. 7-3  Fig. 7-4

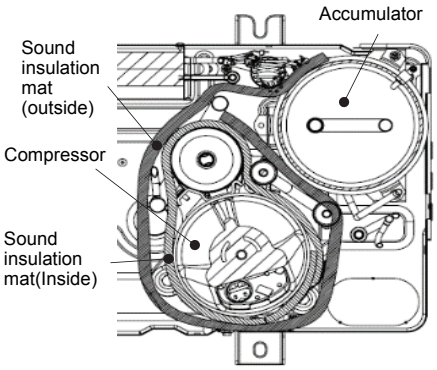
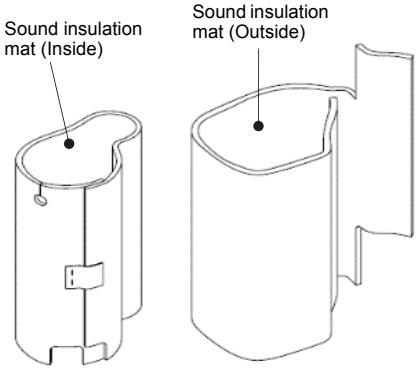
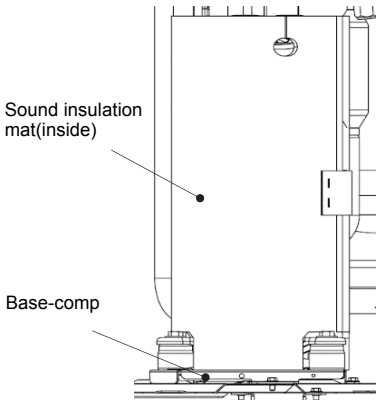
No.	Component	Procedure	Remarks
8	Interface P.C. board	**⚠ WARNING** **Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks.** **1. Detachment** 1)Remove the Front panel, Upper panel, Side panel, Discharge cabinet, Interface P.C board attachment plate. [Step.1 - Step.4] 2)Remove the support hooks (8 positions) which fix the board and remove the interface P.C board. (Fig. 8-1) **2. Attachment** 1) Install it in the reverse of the procedure to remove it.	 Fig. 8-1

No.	Component	Procedure	Remarks
9	Noise filter P.C. board	**⚠ WARNING** **Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks.** **1. Detachment** 1)Remove the Front panel, Upper panel, Side panel, Discharge cabinet, Interface P.C. board attachment plate IPDU P.C. board assembly. [Step1 - Step7] 2)Remove the two leads from wire saddle. (Fig. 9-1) 3)Remove the screws of Noise filter P.C board attachment plate. (M4 x 8 , 2 pcs)(M4 x 14 , 1 pcs)(Fig. 9-1) 4)Remove the connector connected between the Noise filter P.C board and another component. **⚠ CAUTION** **Disengage the lock on the housing to unplug the connector.** CN01: Connection with power supply terminal block(L) (black). (M4) CN02: Connection with power supply terminal block(N) (white). (M4) CN03: Connection with comp-IPDU P.C. board (CN01) (black). (M4) CN04: Connection with comp-IPDU P.C. board (CN02) (white). (M4) CN08: Connection with interface P.C. board (CN400) (white) P01: earth screw (M4) 5) "Remove the 3 screws from Noise filter P.C board (Fig. 9-2)(M3 x 20 , 2pcs)(M4 x 8 Earth screw, 1pcs)" 6) Remove the support hooks (2 positions) from Noise filter P.C board. 7) Remove the Noise filter P.C. board and the Noise filter P.C. board attachment plate. **2. Attachment** 1)Install it in the reverse of the procedure to remove it. 2)The tightening torques is as follows. M3 : 0.55 ± 0.1Nm M4 : 1.20 ± 0.1Nm	 Fig. 9-1  Fig. 9-2

No.	Component	Procedure	Remarks
10	IPDU P.C board	**⚠ WARNING** **Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks.** **1. Detachment** 1)Remove the Front panel, Upper panel, Side panel, Discharge cabinet, Interface P.C board attachment plate, and Noise filter P.C. board attachment plate. [Step1 - Step9] 2)Remove the connector connected between the IPDU P.C board and another component. CN01:Connection with noise filter P.C board (CN03) (black) CN02:Connection with noise filter P.C board (CN04) (white) CN852:Connection with interface P.C. board (CN600) (white) 3) Remove the compressor fixing screws (M4 x 8, 3 pcs).(3 positions) CN201:Compressor lead (red) (M4) CN202:Compressor lead (white) (M4) CN203:Compressor lead (black) (M4) 4) Remove the screws on the IPDU P.C board. (Screws with washers M3 x 14 , 6 pcs) (Binding head screws M4 x 15 , 2 pcs)(Fig. 10-1) 5)"Remove the 2 screws and 2 supports. (Fixing screws M4 x 14 ,2 pcs)(Fig. 10-1)" 6)Remove the IPDU P.C. board.(Fig. 10-1) **2. Attachment** 1) Install it in the reverse of the procedure to remove it. 2) Apply the thermal grease to the heat sink before Install the IPDU P.C board. (Refer to page 11-2 IPDU P.C. board replacement procedure.) 3) The tightening torques is as follows. M3 : 0.55 ± 0.1Nm M4 : 1.20 ± 0.1Nm	 Fig. 10-1

No.	Component	Procedure	Remarks
11	Fan motor	**1. Detachment** 1)Remove the Front panel, Upper panel, Discharge cabinet and Fan motor lead. [Step.1, Step.2, Step.7] 2)Remove the Connector connected between the Fan motor and IPDU P.C. board. 3)"Remove the Flange nut which fix the Fan motor and Propeller fan. To loosen it, turn the flange nut clockwise. (Fig. 11-1) (To tighten it, turn it counterclockwise.)" 4)Remove the Propeller fan. 5)Cut the banding band.(Fig. 11-2) 6)Remove the Fan motor leads from the Motor base. (Fig. 11-2) 7)Hold the fan Motor and remove the 4 fixing screws so that the fan motor doesn't fall off. (Fig. 11-2) 8)Remove the Fan motor. **2. Attachment** 1) Install it in the reverse of the procedure to remove it. **⚠ CAUTION** • Make sure to arrange the lead wires such that water cannot get inside the mechanical compartment. • Tighten the flange nut by 4.9 N m (50 kgf cm) • Adjust the length of the fan motor leads at the inverter box to take up any excess slack and ensure that the fan motor leads don't come in contact with the propeller fan. • Be careful so that the heat exchanger and fan motor lead doesn't come into contact.	 Fig. 11-1  Fig. 11-2

No.	Component	Procedure	Remarks
12	Compressor (Removing)	1) Collect the refrigerant gas with the recovery equipment. 2) "Remove the Front panel, Upper panel, Discharge cabinet, Side panel, and P.C. board assemblies [Step1 - Step7]" 3) Remove the partition plate. (M4 x 10 , 4) (Fig. 12-1) 4) Remove the screws of the two valves from the valve fixing plate. And remove the valve fixing plate. (hexagonal screws: M5 x 16, each 2)(Fig. 12-2) 5) Remove the sound-insulation mat. (Fig. 13-1 , 13-2) 6) Remove the TD sensor, and binding band. (Fig. 12-2) 7) Braze the discharge and suction pipes connected to the compressor using the burner. (Fig. 12-3) **⚠ CAUTION** **Be careful when brazing by the burner to remove the pipes. Oil remaining in the pipes may generate fire when the brazing melts.** 8) Pull up the discharge and suction pipes. 9) "Remove the compressor bolts fixing the compressor to the bottom plate. (hexagonal bolts:M6 x 15 , 3)(Fig. 12-3)" 10) Pull out the compressor. **⚠ CAUTION** **The compressor weighs over 20kg. Two persons should work together.**	 Fig. 12-1  Fig. 12-2  Fig. 12-3

No.	Component	Procedure	Remarks
13	Compressor (Installation)	**1.Installation of compressor** Install the compressor in the reverse procedure of removal. **⚠ CAUTION** **The tightening torque of the hexagonal bolt to fix the compressor is 11.0 N?m (110 kgf cm).** **2.Installation of sound-insulation mat** Install the sound insulation mat (inside), and sound-insulation mat (outside) (Fig. 13-1 , 13-2) **⚠ CAUTION** **Be sure to install Sound insulation mat(inside) on top of Base-comp.(Fig. 13-3)** **3.Vacuuming** 1) Connect the vacuum pump to the valve charge ports on the liquid and gas pipes. 2) Vacuum until the vacuum low-pressure gauge indicates -755 mmHg. **⚠ CAUTION** **Before vacuuming, open PMV fully. Vacuuming of the outdoor heat exchanger will not occur if PMV is closed.** [Method of opening compulsion of PMV completely.] • Turn on the power to the outdoor unit. • Short circuit CN300 on I/F P.C board. • Turn off the power to the outdoor unit within two minutes of short-circuiting. **3.Refrigerant charging** • Add the same amount of refrigerant as the remaining refrigerant from the charge port of the valve.	 Fig. 13-1  Fig. 13-2  Fig. 13-3

<table>
<tr><th>No.</th><th>Component</th><th>Procedure</th><th>Remarks</th></tr>
<tr><td>14</td><td>PMV coil</td><td>
1. Detachment
1)Remove the Front panel , Upper panel and Side panel. [Step.1 - Step.3]
2)Remove the Connector of PMV coil from the interface P.C. board. CN300:PMV coil (6P:white)
3)"Remove the lead wire from the lead wire clamp and the banding band. (Fig. 14-1)
4)Rotate the coil, and remove PMV coil. (Fig. 14-2)
2. Attachment
1) Install it in the reverse of the procedure to remove it.

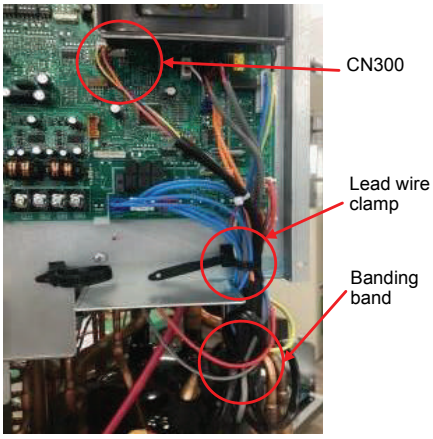
⚠ CAUTION
Be sure to fix the lead wire with a banding band on the market.
Match the positioning extrusion of the coil surely to the concavity of PMV body to fix it.
</td><td>


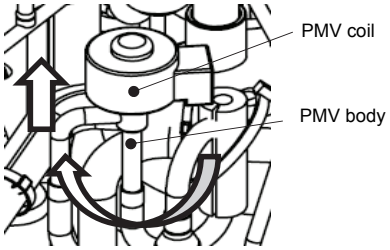
Fig. 14-1


Fig. 14-2
</td></tr>
<tr><td>15</td><td>Fan guard</td><td>
1. Detachment
1)Remove the Discharge cabinet.[Step.2]

⚠ CAUTION
For scratch protection, work on a carton box, cloth, or the like.

2)Remove the Screws of the Fan guard.
(screw:M4 x 10 , 4 pcs. Fig. 15-1)
3)Remove the hook of the Fan guard by pushing it with a flat-head screw driver or the like. (Fig. 15-2)
4)Remove the fan guard from the discharge cabinet.

2. Attachment
1) Insert the upper protrusion of the Fan guard into the square hole of the discharge cabinet, and insert the hook. Push the hooks (4 positions) with your hand to fix them.

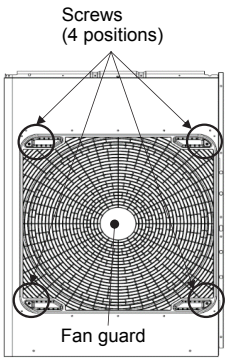
⚠ CAUTION
Confirm that all the Hooks are securely fixed to specified positions.
</td><td>


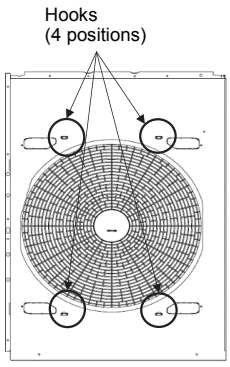
Fig. 15-1


Fig. 15-2
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Component</th><th>Procedure</th><th>Remarks</th></tr>
<tr>
<td>16</td>
<td>Power supply wires and Indoor / Outdoor connecting wires</td>
<td>

1. Detachment

1)Remove the Power wire and Indoor / Outdoor communication wire from the power supply terminal block and communication terminal block. [Step1]

2)Cut the banding bands which fix Indoor / Outdoor connecting wires and Power supply wires to the Valve fixing plate. (Fig. 16-1)

2. Attachment

1) Connect the Indoor / Outdoor connection wires and Power supply wires to the terminal.

⚠ WARNING

Make sure the ground wire is connected. Incomplete earthing may lead to electric shock.

2) Fix each wire tightly to the Valve fixing plate with the banding bands.(Fig. 16-2)

⚠ CAUTION

Measure the diameter of the wire to be fixed, and fasten the wire with the supplied banding band (T50-RHSW from HellermannTyton), so that length A of the surplus portion of the tie satisfies the following expression. (Fig. 16-2,16-3)

A=183-L

L= Diameter of wire D (mm) x π

A: Minimum length of surplus portion of banding band (mm)

L: Circumferential length of wire (mm)

Banding band specifications:

Model	Material	Flame retardant grade	manufacturer
T50R-HSW	Nylon 66	UL94V-2	Hellermann Tyton

3)Cut off the surplus portion(A) of the banding band.

4)Mount the Front panel by reversing the detachment procedure.

</td>
<td>

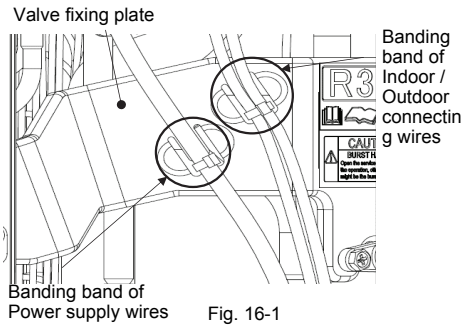


Fig. 16-1

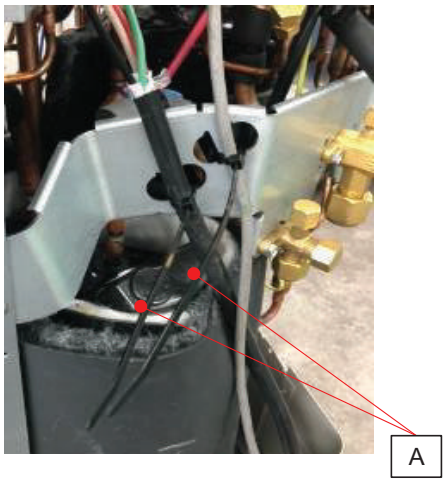


Fig. 16-2

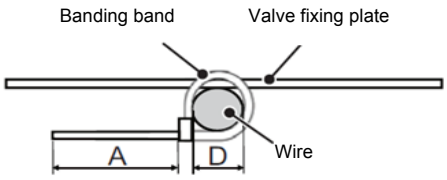


Fig. 16-3

</td>
</tr>
</table>

11 P.C. board exchange procedures

11-1. Interface P.C. board Replacement Procedure

1. Applicable models

MCY-MUG0401HSW-*, MCY-MUG0501HSW-*, MCY-MUG0601HSW-*

*: The characters in accordance with the destination may attach to the end of model name.

2. Shipped parts list

Please make sure that before you do the work, the following parts are shipped all.

No	Parts name	Quantity
1	P.C. board Replacement Procedure Manual (A4 paper)	1
2	Service P.C. board MCC-1779 (Interface P.C. board)	1
3	Data copy cable	1

3. Replacement steps

(1) Turn off the power of the outdoor unit.

(2) Immediately after turning off the power of the outdoor unit, the electrolytic capacitors inside the unit will still have a high voltage, and there is a risk of electric shocks. Therefore, wait at least 5 minutes after turning off the power before starting the replacement procedure.

(3) Disconnect all the connectors which are connected to the old interface P.C. board.
(Since the connectors may be damaged if they are pulled out by grasping their lead wires, be sure to take hold of the connectors themselves when disconnecting them.)

(4) To remove the old interface P.C. board, remove it from the 8 card-edge spacers ①.

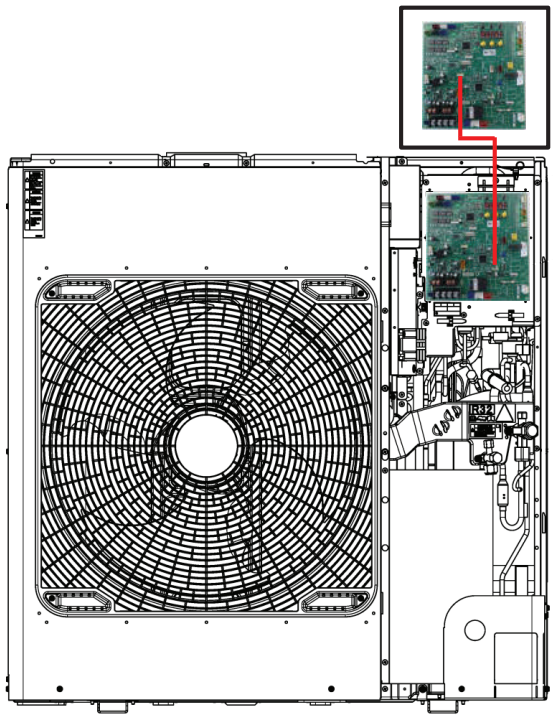
(5) Set the DIP switches of the new P.C. board to the settings used before replacement.

(6) Install the new P.C. board in the outdoor control unit.
(Check that the card edge spacers are securely fixed in place.)

(7) Connect the leads that came off when replacing the new P.C. board, as shown on the wiring diagram display panel.
(Check that the connectors have been inserted correctly and securely to prevent connection errors.)

(8) Copy the data from the old P.C. board.

How to copy the data from the old P.C. board



Old P.C. board

① Cut the jumpers J801, J802, J803 and J804 on the old P.C. board.
② Connect the CN801 on the board with a data copy cable.
③ Put an Insulation under the old P.C. board for safety.

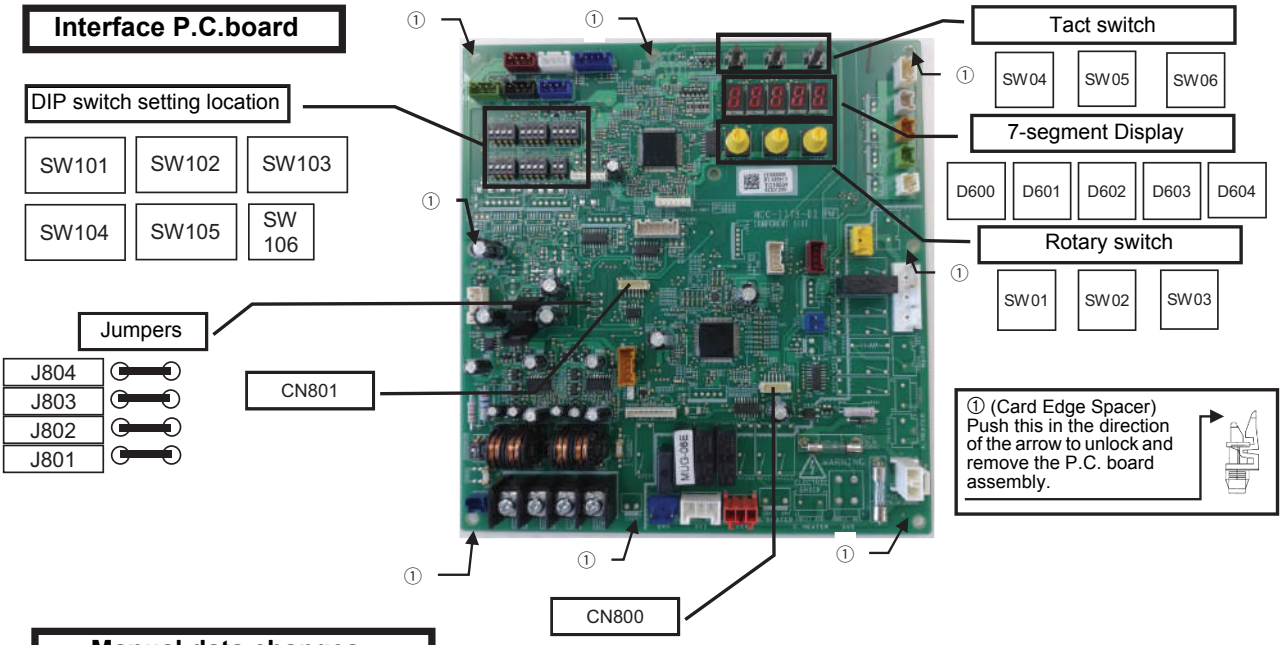
New P.C. board

④ Connect the CN800 on the new board with the data copy cable.
⑤ After turning on the power, set the rotary switch to (15, 16, 1) and press the tact switch SW04 for 5 seconds to copy the data. When complete, the LED will display “end”.

If you get an error

“Err 1” The data copy cable may be unplugged.
“Err 2” There is already data on the new P.C. board
“Err 3~8” Copy failed. Please try several times.
If you cannot, set the model manually.

(9) After turning off the power, wait at least 5 minutes before starting the next operation.
(10) Remove the data copy cable.
(11) After having replaced the board follow the instructions in section 8-4. “Address setup” in the service manual.
(12) If any of the components on the new P.C. board have been bent in the course of the replacing the board, rework them so that they do not come into contact with the other components.
(13) Install the cover, turn on the power, and check operation.



Manual data changes

If you failed to copy the data, change the data in the table according to the service manual.
However, if it is changed by this method, it will return to the factory state.

Data No.	Model No.	Model name
DN003	1	MCY-MUG0401HSW-*
	2	MCY-MUG0501HSW-*
	3	MCY-MUG0601HSW-*

11-2. IPDU P.C.board Replacement Procedure

1. Shipped parts list

Please make sure that before you do the work, the following parts are shipped all.

No	Parts name	Quantity
1	P.C.board Replacement Procedure Manual English and Chinese each 1page A4 paper double side print.	1
2	Service P.C.board MCC-1690 (IPDU P.C.board)	1
3	Card Spacer (No.③)	2

2. Replacement steps

(1) Turn off the power of the outdoor control unit. (Turn off the power of the outdoor unit.)

(2) Immediately after turning off the power of the outdoor unit, the electrolytic capacitors inside the unit will still have a high voltage, and there is a risk of electric shocks. Therefore, wait at least 5 minutes after turning off the power before starting the replacement procedure.

(3) Make sure that the voltage between the –side of DB01 and the +side DB02 is low before working.

(4) Disconnect all the screws ④ , screw ⑤ and screws ⑥ and connectors which are connected to the malfunctioning IPDU P.C. board. (Since the connectors may be damaged if they are pulled out by grasping their lead wires, be sure to take hold of the connectors themselves when disconnecting them.)

(5) Remove the malfunctioning IPDU P.C. board from the 2 single-touch spacers ① and 2 card spacers ③ . (Take care when removing the IPDU P.C. board not to damage the 2 card spacers③. If a card spacer ③ has been damaged, be sure to use a card spacer③ packed with the board and replace the damaged card spacer by following the steps in the service guide. Failure to replace it may cause the IPDU P.C. board to malfunction.)

(6) The screws and single-touch spacers ① which were removed will be used again when the service P.C. board is installed so keep them in a safe place to ensure that they will not be lost or misplaced.

(7) When replacing the board, install the removed single-touch spacers ① on the service P.C. board, and evenly apply silicone heat sink compound to the heat-sink surfaces of the IPM, IGBT and rectifier devices on the service P.C. board. Then install the board in the outdoor control unit.
Failure to apply the silicone heat sink compound may cause the service P.C. board to malfunction.
(Tightening torque for screws ② (M4x14) used to secure single-touch spacers ① : 1.2 ±0.1 N•m)

(8) When replacing the board, use the removed screws④(M4x8) , screws ⑤(M3x14) and screws ⑥(M4×15) to connect the disconnected lead wires following the wiring diagram display panel. **(Check that the wires have been inserted correctly and securely to prevent connection errors.)**

(9) If screws ④ , screws ⑤ and screws ⑥ are not tightened sufficiently, the contact between the terminals will deteriorate, possibly causing malfunctioning so pay attention when tightening the screws. However, under no circumstances must power-driven screwdrivers or air screwdrivers be used when installing the replacement P.C. board using such a device may damage the components.
(Tightening torque: screw ④ , ⑥ 1.2 ±0.1 N•m、screw ⑤ 0.55±0.1N・m)

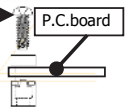
(10) If any of the components on the P.C. board have been bent in the course of the replacing the board, rework them so that they do not come into contact with the other components.

(11) Install the cover, turn on the power, and check operation.

IPDU P.C.board

① Single-touch spacer
② Screw(M4×14)

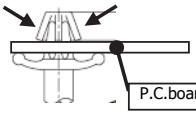
First remove the Screws ②, and then remove the P.C. board assembly.

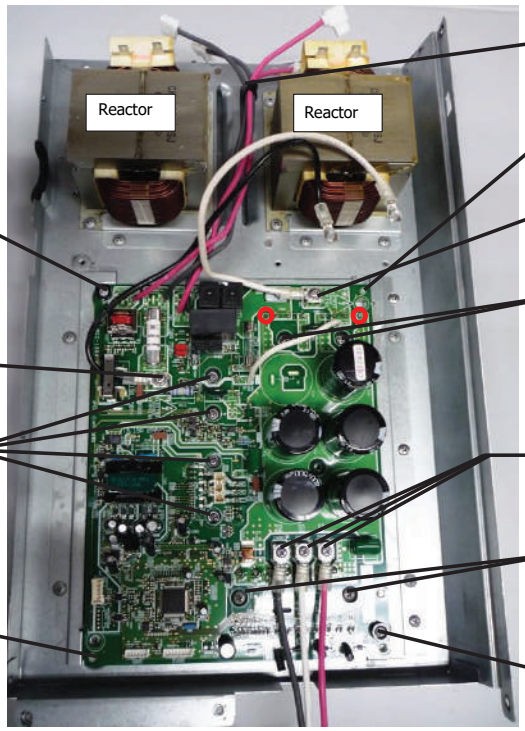


④ Screw(M4×8)
Used to secure the lead wire
Screw tightening torque: 1.2 ±0.1 N•m

⑤ Screw(M3×14)
Used to secure the IGBT, IPM and rectifiers
Screw tightening torque: 0.55 ±0.1 N•m

③ Card spacer
Push this in the direction of the arrow to unlock and remove the P.C. board assembly.





Caution: Wiring not to touch the Reactor core.

③ Card spacer

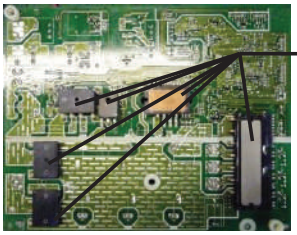
④ Screw(M4×8)
Used to secure the lead wire
Screw tightening torque: 1.2 ±0.1 N•m

⑤ Screw(M3×14)
Used to secure the rectifiers
Screw tightening torque: 0.55 ±0.1 N•m

④ Screw(M4×8)
Used to secure the lead wire
Screw tightening torque: 1.2 ±0.1 N•m

⑥ Screw(M4×15)
Used to secure the IPM
Screw tightening torque: 1.2 ±0.1 N•m

① Single-touch spacer
② Screw(M4×14)



Evenly apply the silicon heat sink compound to the heat-sink surfaces of the IPM, IGBT and rectifier devices.
Caution: It must be ensured that no dust, etc. adheres to the heat-sink surfaces of the IPM, IGBT and rectifier devices.

Standard for heat silicone heat sink compound:
Manufacturer: Shin-Etsu Chemical Co., Ltd.
Type: G746 or G747

11-3.Noise filter P.C.board Replacement Procedure

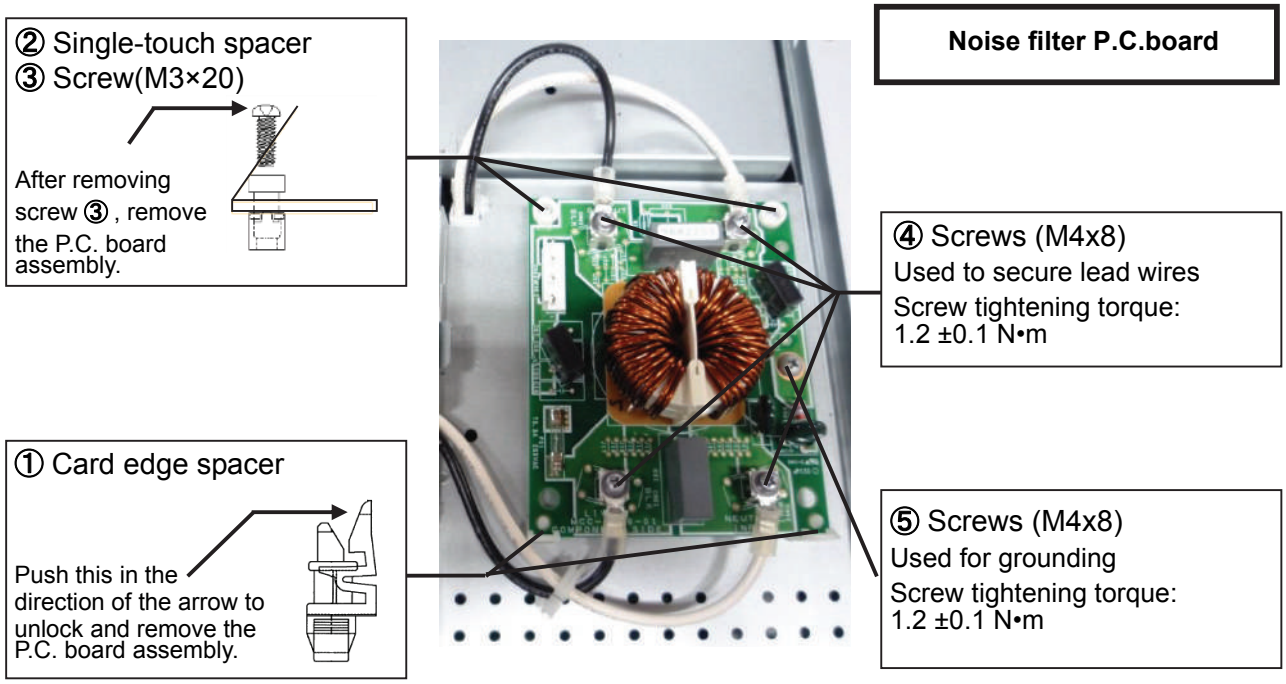
1. Shipped parts list

Please make sure that before you do the work, the following parts are shipped all.

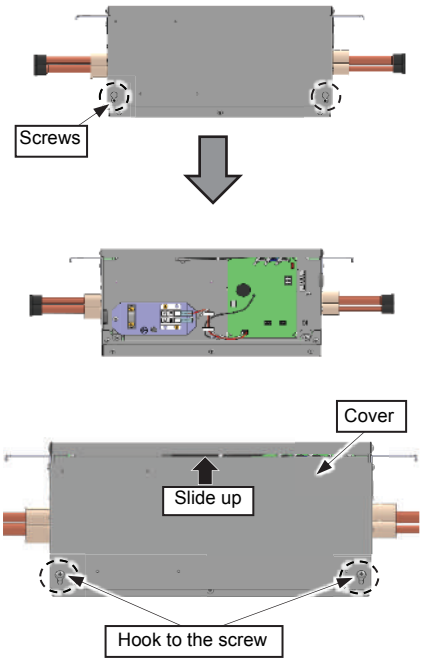
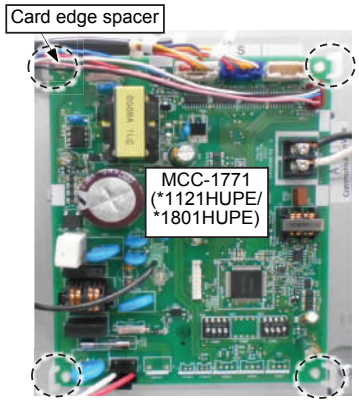
No	Parts name	Quantity
1	P.C.board Replacement Procedure Manual (English and Chinese each 1page A4 paper double side print.)	1
2	Service P.C.board MCC-1690 (IPDU P.C.board)	1

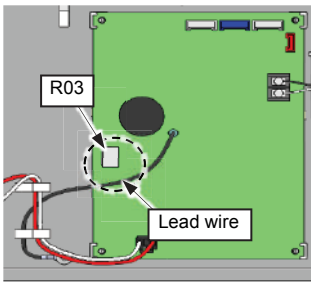
2. Replacement steps

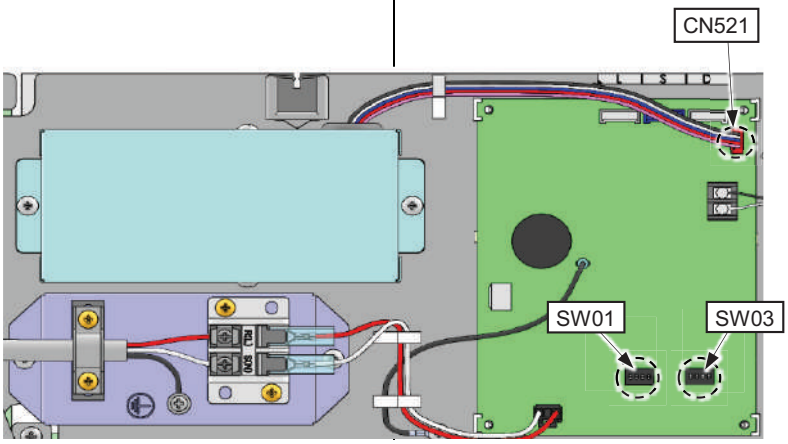
(1) Turn off the power of the outdoor control unit. (Turn off the power of the outdoor unit.)
(2) Immediately after turning off the power of the outdoor unit, the electrolytic capacitors inside the unit will still have a high voltage, and there is a risk of electric shocks. Therefore, wait at least 5 minutes after turning off the power before starting the replacement procedure.
(3) Disconnect all the screws and connectors which are connected to the malfunctioning noise filter P.C. board. (Since the connectors may be damaged if they are pulled out by grasping their lead wires, be sure to take hold of the connectors themselves when disconnecting them.)
(4) Remove the malfunctioning noise filter P.C. board from the two card edge spacers ① and two single-touch spacers ② .
(5) The screws and single-touch spacers ② which were removed will be used again when the service P.C. board is installed so keep them in a safe place to ensure that they will not be lost or misplaced.
(6) When replacing the board, install the removed single-touch spacers② on the service P.C. board, and install the board in the outdoor control unit. (Tightening torque for screws ③ **(M3x20) used to secure single-touch spacers ② : 0.55 ±0.1 N•m)**
(7) When replacing the board, use the removed screws ④ and screws ⑤ (M4x **8**) to connect the disconnected lead wires following the wiring diagram display panel. (Check that the wires have been inserted correctly and securely to prevent connection errors.)
(8) If screws④ and screws⑤ are not tightened sufficiently, the contact between the terminals will deteriorate, possibly causing malfunctioning so pay attention when tightening the screws. However, under no circumstances must power-driven screwdrivers or air screwdrivers be used when installing the replacement P.C. board using such a device may damage the components. **(Screw ④ , ⑤ tightening torque : 1.2 ±0.1 N•m)**
(9) If any of the components on the P.C. board have been bent in the course of the replacing the board, rework them so that they do not come into contact with the other components.
(10) Install the cover, turn on the power, and check operation.



11-4. Shut-off Valve unit including Battery kit

No.	Part	Work procedure	Remarks
1	Electrical control box cover	**⚠ WARNING** ▪ Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object. ▪ Stop the power supply of the air conditioner and turn off switch of the power supply breaker. **1. Detachment** 1)Loosen fixing screws. (M4 x 8, 2 pcs) 2)Pull the cover downward and then remove the cover. **2. Attachment** 1)Hook the electrical control box cover on the screw on the upper side. (2 places) 2)Slide up the cover and fit it in. Work carefully so as not to pinch the wires inside the box. 3)Slide up the cover and fit it in.	
2	P.C.board (MCC-1771)	1)Perform work of procedure 1-1 Detachment. (Electrical control box cover) 2)Remove connectors which are connected from the control P.C.board to the other parts. CN04: Earth wire (Faston tab) CN67: Power supply wires (Black) CN200: Communication wire (Terminal block) CN521: Battery kit wire (Red) CN581: Communication wire (Yellow) CN601: PMV-L (White) CN602: PMV-S (Blue) 3)Unlock the locks of the card edge spacer (4 places) and then remove the control P.C.board.	

No.	Part	Work procedure	Remarks
		2. Attachment 1)Fix the control P.C. board to the card edge spacers. (4 places) 2)Connect the connectors disconnected in item 1-2) as before. For connectors, check there is no missing or contact failure. The lead wire should be wired so as not to touch the cement resistance R03. 3)DIP switch SW01 and SW03 should be set according to the table below. Settings vary depending on the model and whether or not the Battery kit is connected to CN521.	



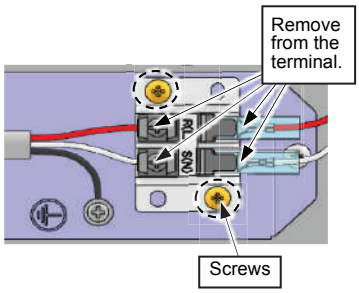
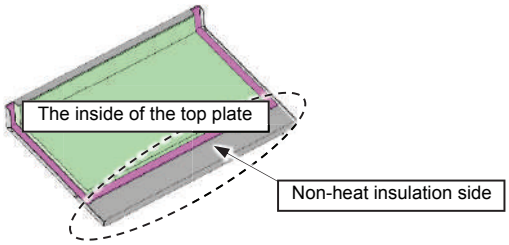
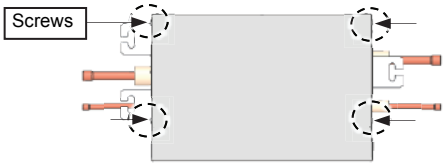
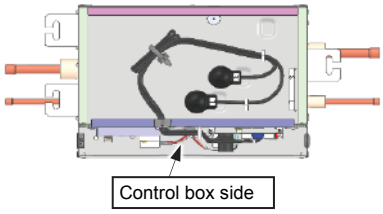
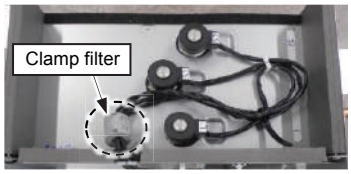
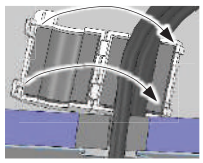
▼ If the Battery kit (CN521) is not connected. (Factory setting)

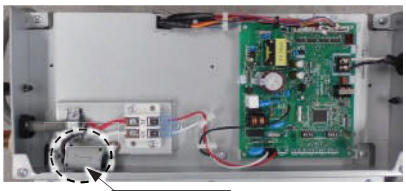
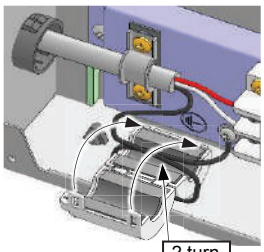
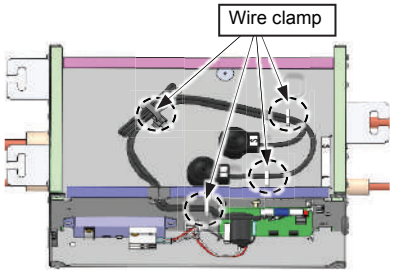
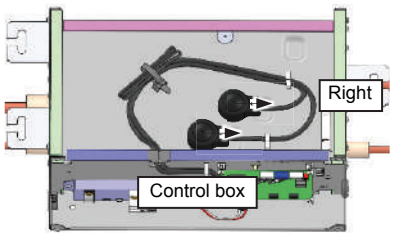
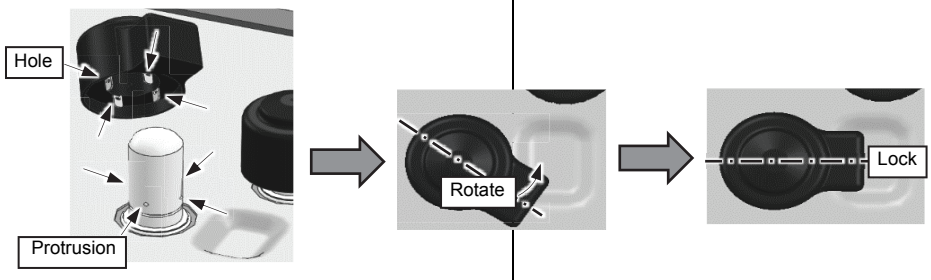
RBM-***	Setting of SW01	Setting of SW03
SV1121HUPE	ON / OFF SW01 1 2 3 4	ON / OFF SW03 1 2 3 4
SV1801HUPE	ON / OFF SW01 1 2 3 4	ON / OFF SW03 1 2 3 4

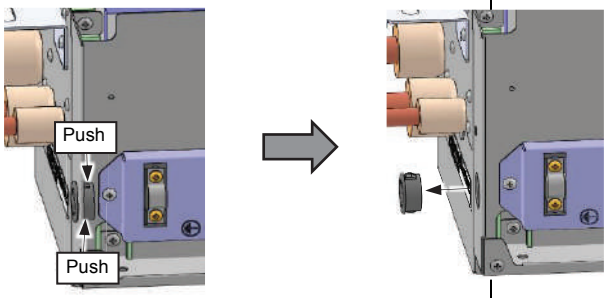
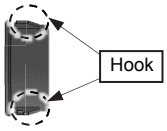
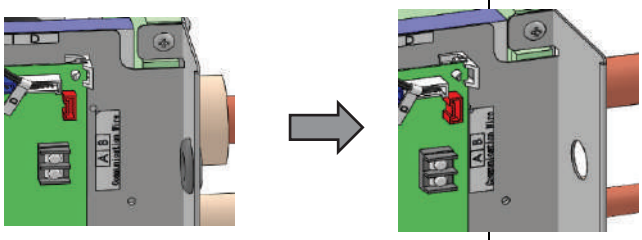
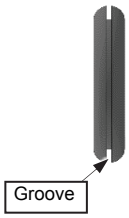
▼ If the Battery kit (CN521) is connected.

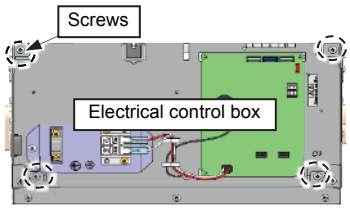
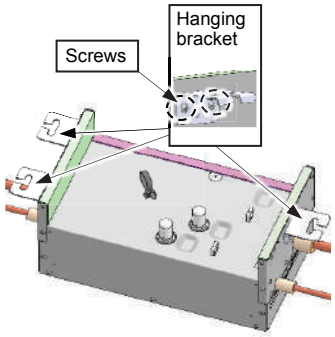
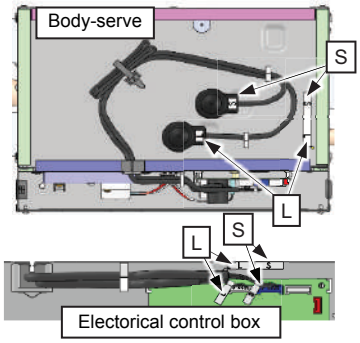
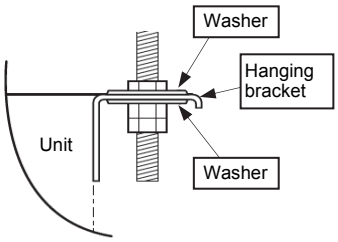
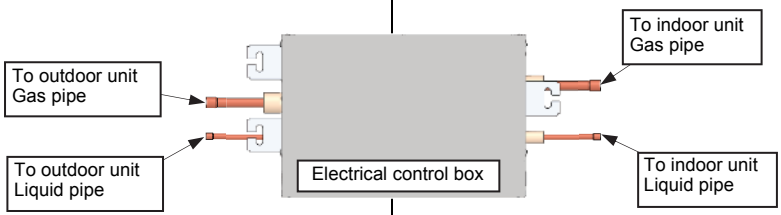
RBM-***	Setting of SW01	Setting of SW03
SV1121HUPE	ON / OFF SW01 1 2 3 4	ON / OFF SW03 1 2 3 4
SV1801HUPE	ON / OFF SW01 1 2 3 4	ON / OFF SW03 1 2 3 4

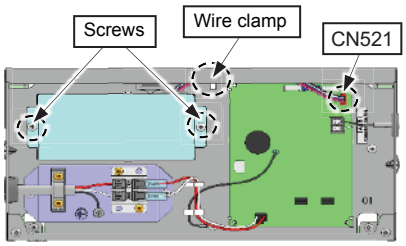
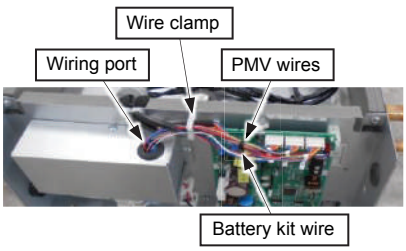
4)Attach the electrical control box cover.
(Refer to 1. of 2 Attachment)

No.	Part	Work procedure	Remarks
3	Terminal	**1. Detachment** 1)Perform work of procedure 1-1 Detachment. (Electrical control box cover) 2)Remove the wires from the terminal. 3)Remove the screws fixing the terminal. (M4 x 14, 2 pcs) **2. Attachment** 1)Fix the terminal with screws as before. (M4 x 14, 2 pcs) 2)Connect the wires disconnected as before. 3)Attach the electrical control box cover. (Refer to 1. of 2 Attachment)	
4	Top plate	**1. Detachment** 1)Remove the fixing screws (M4 x 8, 4 pcs) 2)Remove the top plate. **2. Attachment** 1)Fix the Top plate with the screws as before. (M4 x 8, 4 pcs.) Fit the non-heat insulation material side to the control box side. Work carefully so as not to pinch the wires inside the unit. 	 (ex. RBM-SV1801HUPE) 
5	Clamp filter for PMV wires (ZCAT3035-1330)	**1. Detachment** 1)Perform work of procedure 4-1 Detachment. 2)Remove the clamp filter from the PMV wires. **2. Attachment** 1)Attach the clamp filter to the three PMV wires that have been put together. To prevent the clamp filter from opening, securely fit the two claws on it. 2)Attach the top plate. (Refer to 4. of 2 Attachment)	 

No.	Part	Work procedure	Remarks
5	Clamp filter for earth wire (ZCAT3035-1330)	**1. Detachment** 1)Perform work of procedure 1-1 Detachment. (Electrical control box cover) 2)Remove the clamp filter from the earth wire. **2. Attachment** 1)Make two turn on the earth wire and attach the clamp filter to it. To prevent the clamp filter from opening, securely fit the two claws on it. 2)Attach the electrical control box cover. (Refer to 1. of 2 Attachment)	 
6	Coil-PMV	**1. Detachment** 1)Perform work of procedure 1. -1) (Electrical control box cover) and 4. -1) (Top plate). 2)Remove the PMV wire from the wire clamp as appropriate. 3)Disconnect the PMV wire connector from the control P.C. board. 4)Remove the Coil-PMV. **2. Attachment** 1)Fix the Coil-PMV assembly as before. Rotate the Coil-PMV to lock the Body-PMV by mating the protrusions of the Body-PMV with the holes in the Coil-PMV. When performing this task, the Coil-PMV wires should be oriented to the right as viewed from the control box. 2)Connect the wires disconnected as before. 3)Attach wire clamps to the PMV wires as before. 4)Attach the electrical control box cover and the top plate. (Refer to 1. -2) and 4. -2)).	 PMV wire direction  

No.	Part	Work procedure	Remarks
7	BUSHING	**1. Detachment** 1)Perform work of procedure 1-1 Detachment. (Electrical control box cover) 2)Push 2 hooks and remove the bushing from the electrical control box.  **2. Attachment** 1)Attach the bushing to the electrical control box. Push the bushing to hook the hooks onto the steel plate certainly. 2)Attach the electrical control box cover. (Refer to 1. of 2 Attachment)	
8	BUSHING	**1. Detachment** 1)Perform work of procedure 1. of 1 Detachment. (Electrical control box cover) 2)Remove the bushing from the electrical control box.  **2. Attachment** 1)Attach the bushing to the electrical control box. Push the bushing to hook the hooks onto the steel plate certainly. 2)Attach the electrical control box cover. (Refer to 1. of 2 Attachment)	

No.	Part	Work procedure	Remarks
9	BODY-SERVE	Before the work, be sure to recover the refrigerant of outdoor unit into cylinders or another unit connected to the same system. **1. Detachment** 1)Remove connecting pipes from the Shut-off Valve unit. 2)Remove the Shut-off Valve unit from three hanging-bolts. 3)Perform work of procedure 6. of 1 Detachment. (Coil-PMV for type 1121, 1801: L,S) 4)Remove screws of the electrical control box. (M4 x 8, 4 pcs) 5)Remove screws of the three hanging brackets. (M4 x 8, 6 pcs) **2. Attachment** 1)Attach the three hanging brackets with the screws. (M4 x 8, 6 pcs) 2)Attach the electrical control box with the screws. (M4 x 8, 4 pcs) 3)Perform work of procedure 6. of 2 Attachment. (Coil-PMV for type 1121, 1801: L, S) Attach Coil-PMV according to the coil nameplate on the Body-serve. Connect the Coil-PMV wire connectors to the control P.C. board according to the coil nameplate on the electrical control box. 4)Hang the Shut-off Valve unit by fixing three hanging brackets with washers. Put washers at up and down of the three hanging brackets to hang down the Flow Selector unit. Check that four sides are horizontal with a level gauge. (Horizontal degree: Within 5 mm) 5)Connect and braze the connecting pipe as before.	    

No.	Part	Work procedure	Remarks
10	Battery kit	**⚠ WARNING** • Do not connect anything except TOSHIBA Battery kit. • This kit includes a nickel-metal hydride battery (NiMH). For your safety, please read instruction manual in Battery kit carefully and handle it with care. • Do not touch this kit for at least 1 minute after disconnecting power supply at servicing. **1. Detachment** 1) Perform work of procedure 1. of 1 Detachment. (Electrical control box cover) 2) Remove the wiring connector from the control P.C. board. CN521: Battery kit wire (RED) 3) Remove the Battery kit wire from the wire clamp. 4) Remove the screws from the electrical control box. (M4 x 6, 2 pcs.) 5) Remove the Battery kit being careful not to contact the P.C. board. 6) Be sure to dispose of the removed Battery kit in accordance with 14-4.Disposal method for Battery kit. **2. Attachment** 1) Fix the Battery kit with screws as before. (M4 x 6, 2 pcs.) The Battery kit should be installed so that the wiring port is at the upper right. Be careful not to pinch other wires with the sheet metal cover of the Battery kit. Be careful to avoid contact between the Battery kit and the P.C. board. 2) Connect the Battery kit wiring connector to the control P.C. board as before. Do not pull the wire too hard. The connector inside the Battery kit may come off. 3) Attach the Battery kit wire to the wire clamp as before. The Battery kit wire should be as far below the PMV wires as possible.	 

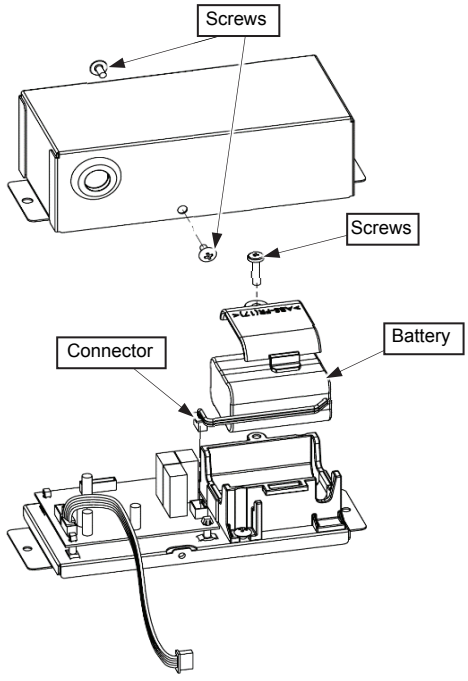
11-5. Disposal method for Battery kit

- Disassemble the nickel-metal hydride battery (NiMH) built into this product and dispose of it or recycle it in accordance with the laws and regulations of your country / region.
- When disposing of batteries, keep batteries of different electrochemical systems separate from each other.

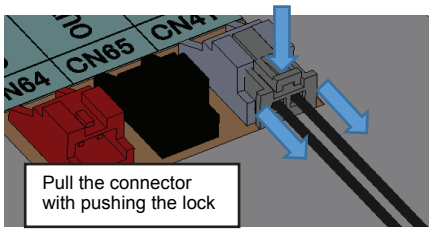
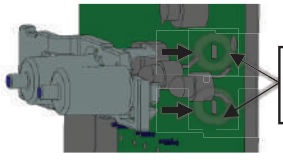
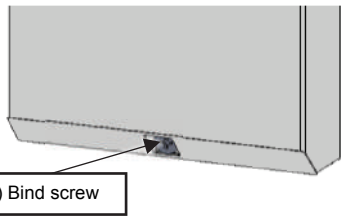
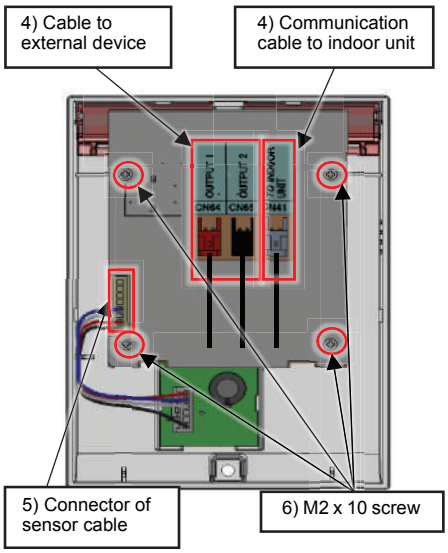
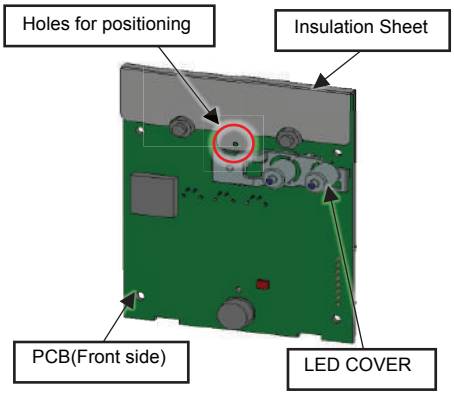
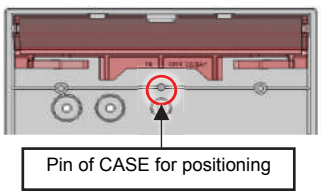
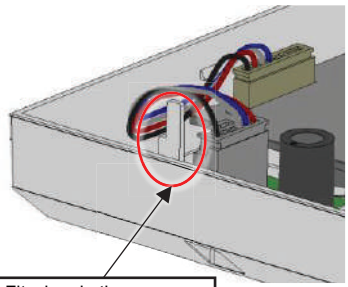
⚠ WARNING

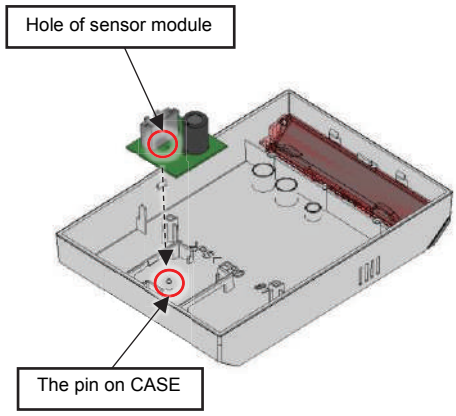
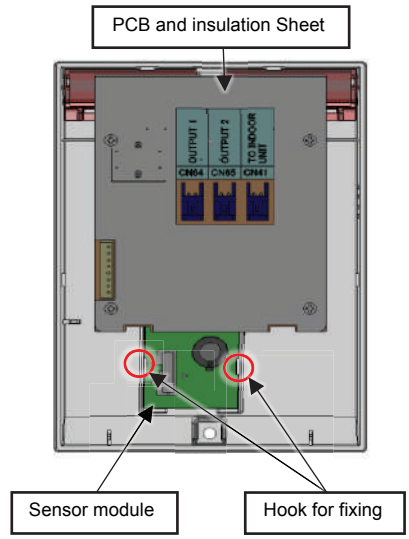
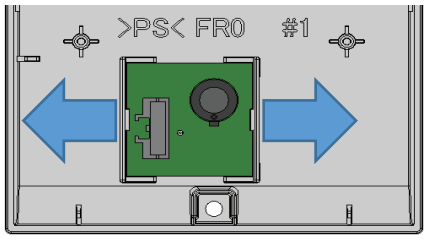
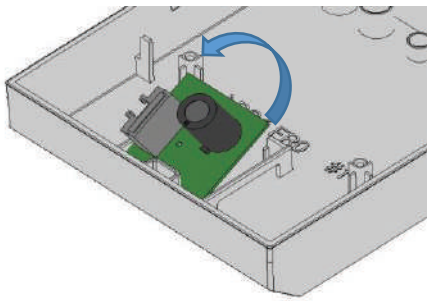
- This kit includes a nickel-metal hydride battery (NiMH). For your safety, please read Instruction Manual in Battery kit carefully and handle it with care.
- Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part.
- Do not use the removed battery for other equipment.
- Do not disassemble or modify the battery.
- Do not throw it into a fire or heat it. It may cause the battery to explode or catch fire.
- Do not leave it in direct sunlight, in a car under the scorching sun, in front of a stove, or in a hot place. It may cause battery leakage.
- Do not place anything on the Battery kit or place the Battery kit where it can easily fall. It may cause overheating, fire, or electric shock.
- Keep out of the reach of children. It may cause injury, battery leakage, heat generation, or explosion.
- Do not store outside the allowable temperature range.
- Do not replace the battery alone. In particular, never use different batteries. It may cause battery leakage, heat generation, or explosion.
- Do not give a strong impact or throw. It may cause injury, battery leakage, heat generation, or explosion.
- If leaked liquid gets into your eyes, rinse thoroughly with clean water without rubbing and seek medical attention immediately. It may cause blindness.
- If the alkaline solution leaked from the battery gets on your hands or clothes, immediately wash it off with clean water.

How to disassemble
1) Remove the screws for fixing the Battery kit sheet metal cover. (M4 x 6, 2 pcs)
2) Remove the fixing screw for resin parts. (M4 x12, 1 pc)
3) Disconnect the battery wiring connector from the P.C. board, the battery removal completed.



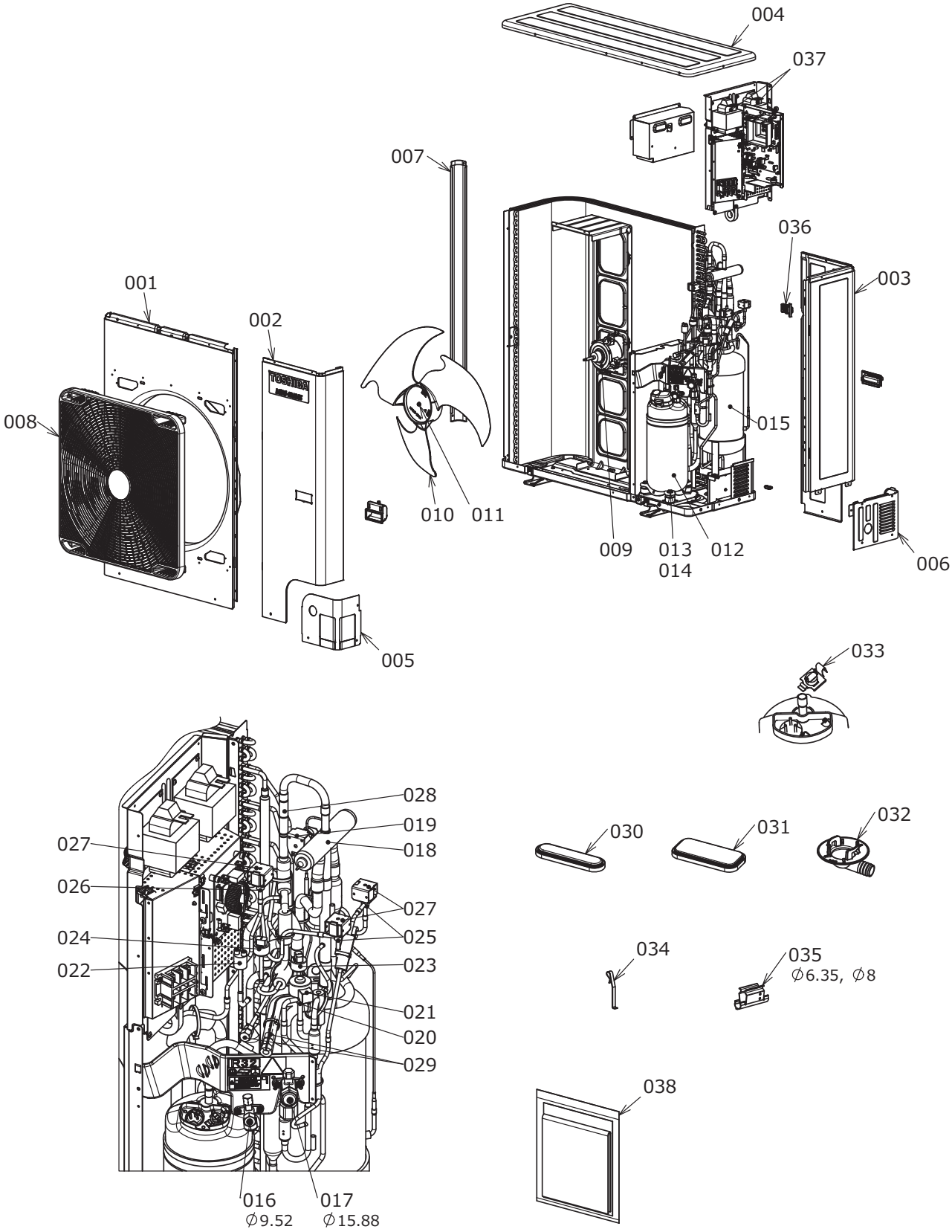
11-6. Leak Detector

No.	Part	Work procedure	Remarks
1	Print Circuit Board (PCB)	**1. Detachment** 1)Stop the air conditioner operation, and turn off the circuit breaker to shut off the power supply. 2)Remove the bind screw which fix the CASE of the Leak Detector. (M3 x 8, 1 pcs) 3)Remove the CASE of the Leak Detector. 4)Detach the connector of communication cable from PCB. If any external device is connected to Output 1 or 2, detach them too. 5)Detach the connector of sensor cable from PCB. 6)Remove the screw from which fix PCB. (M2 x 10, 4 pcs) 7)Remove the PCB from CASE. 8)Remove the Insulation sheet from PCB. 9)Remove the LED COVER from PCB. **NOTE** **When detach the connector of communication cable or that of cable to external device, do not pull the cable directly.** **At first, take hold of connector housing with your two fingers.** **Then pull the connector with pushing the lock.**  **2. Attachement** 1) Attach the LED COVER to PCB. Be sure to insert the hook of LED COVER to square hole of PCB.  2)Attach the PCB and Insulation sheet to CASE. Be sure to fit in the holes of PCB and Insulation sheet to pin of CASE. 3)Fix PCB with screws.(M2 x 10, 4 pcs) 4)Attach the connector of sensor cable to connector. After then, fit sensor cable wire in groove which is on side of CASE. 5)Carry out the installation by following reverse procedure in the Detachment 1) to 4).	    

No.	Part	Work procedure	Remarks
2	Sensor module	**1. Detachment** 1)Carry out the same procedure as Detachment 1) to 6) of PCB. 2)Remove the PCB. 3)Remove the Connector of sensor cable from sensor module. 4)Remove the sensor module from CASE. **NOTE** **Do not remove the sensor module before detach the PCB.** **Otherwise it may cause the damage to sensor module or PCB.** **NOTE** **In each procedures, do not touch, damage, or dirty the top of sensor on module.** **It may cause detecting performance of sensor is decreased.** **NOTE** **When attach the sensor module, be careful at direction of sensor module.** **And be sure to fit hole of sensor module in the pin on CASE.**  **2. Attachement** Carry out the installation by following reverse procedure in the Detachment 1) to 4).	 Way of detachment the sensor module 1)Widen the gap between two Hooks with two of your thumb being careful not to break the CASE.  2)With widening the gap, flip up the sensor module with index finger and remove module. 

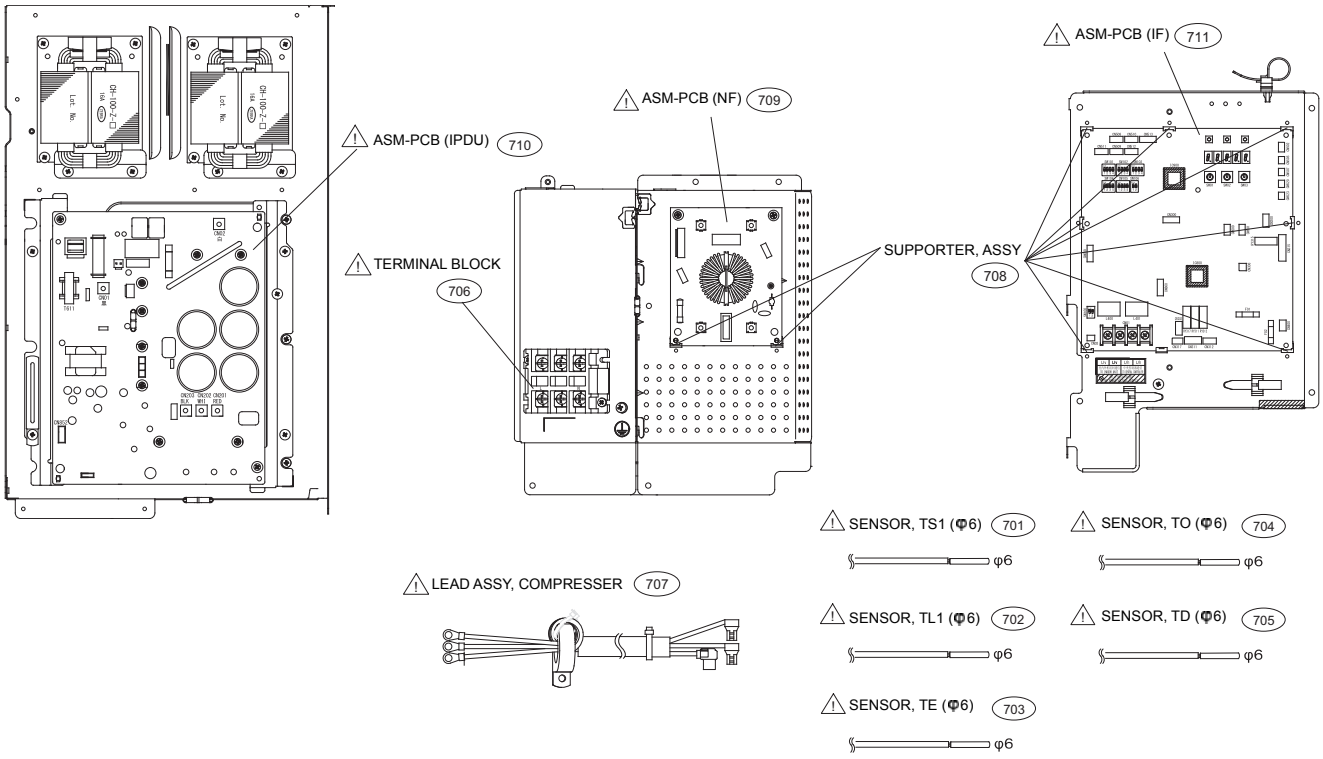
12 Exploded diagram / parts list

12-1. Outdoor unit



Location No.	Part No.	Description	Q'ty/Set		
			MCY-MUG***1 HSW-(E/TR)		
			040	050	060
001	43P00005	PANEL, AIR OUTLET	1	1	1
002	43P00017	PANEL, FRONT, ASSY	1	1	1
003	43P00020	PANEL, SIDE, RIGHT, ASSY	1	1	1
004	43P00008	PANEL, ROOF, ASSY	1	1	1
005	43P00009	PANEL, FRONT, PIPING	1	1	1
006	43P00010	PANEL, BACK, PIPING, ASSY	1	1	1
007	43P00011	STAY	1	1	1
008	43P09001	GUARD, FAN	1	1	1
009	43P21003	MOTOR, FAN, ICF-280-A100-1	1	1	1
010	43P20001	FAN, PROPELLER, PS561-E	1	1	1
011	43P97001	NUT, FLANGE	1	1	1
012	43P42010	COMPRESSOR, ASSY	1	1	1
013	43P42007	RUBBER, CUSHION, A3	3	3	3
014	43P42001	BOLT, COMPRESSOR	3	3	3
015	43P48002	ACCUMULATOR	1	1	1
016	43P46022	LIQUID, VALVE, ASSY, φ9.52	1	1	1
017	43P46026	VALVE, PACKED, φ15.88	1	1	1
018	43P46030	VALVE, 4-WAY	1	1	1
019	43P46021	COIL, VALVE, 4-WAY	1	1	1
020	43P46031	BODY, PMV	1	1	1
021	43P46032	COIL, PMV	1	1	1
022	43P51006	SWITCH, PRESSURE	1	1	1
023	43P51007	SENSOR, LOW PRESSURE	1	1	1
024	43P51008	SENSOR, HIGH PRESSURE	1	1	1
025	43P46027	VALVE, 2-WAY, φ1.2	2	2	2
026	43P46028	VALVE, 2-WAY, φ2.3	1	1	1
027	43P46029	COIL, VALVE, 2-WAY	3	3	3
028	43P46024	VALVE, CHECKED	1	1	1
029	43P46025	JOINT, CHECK	2	2	2
030	43P79008	CAP, WATERPROOF	1	1	1
031	43P79009	CAP, WATERPROOF	4	4	4
032	43P19002	NIPPLE, DRAIN	1	1	1
033	43P50016	THERMOSTAT, BIMETAL, ASSY	1	1	1
034	43P63001	HOLDER, SENSOR, 16mm	1	1	1
035	43P63003	HOLDER, SENSOR, φ6.35, φ8	1	1	1
036	43P63002	HOLDER, SENSOR (TO)	1	1	1
037	43P58003	REACTOR, CH-100	2	2	2
038	43P11001	CUSHION, ASSY	1	1	1

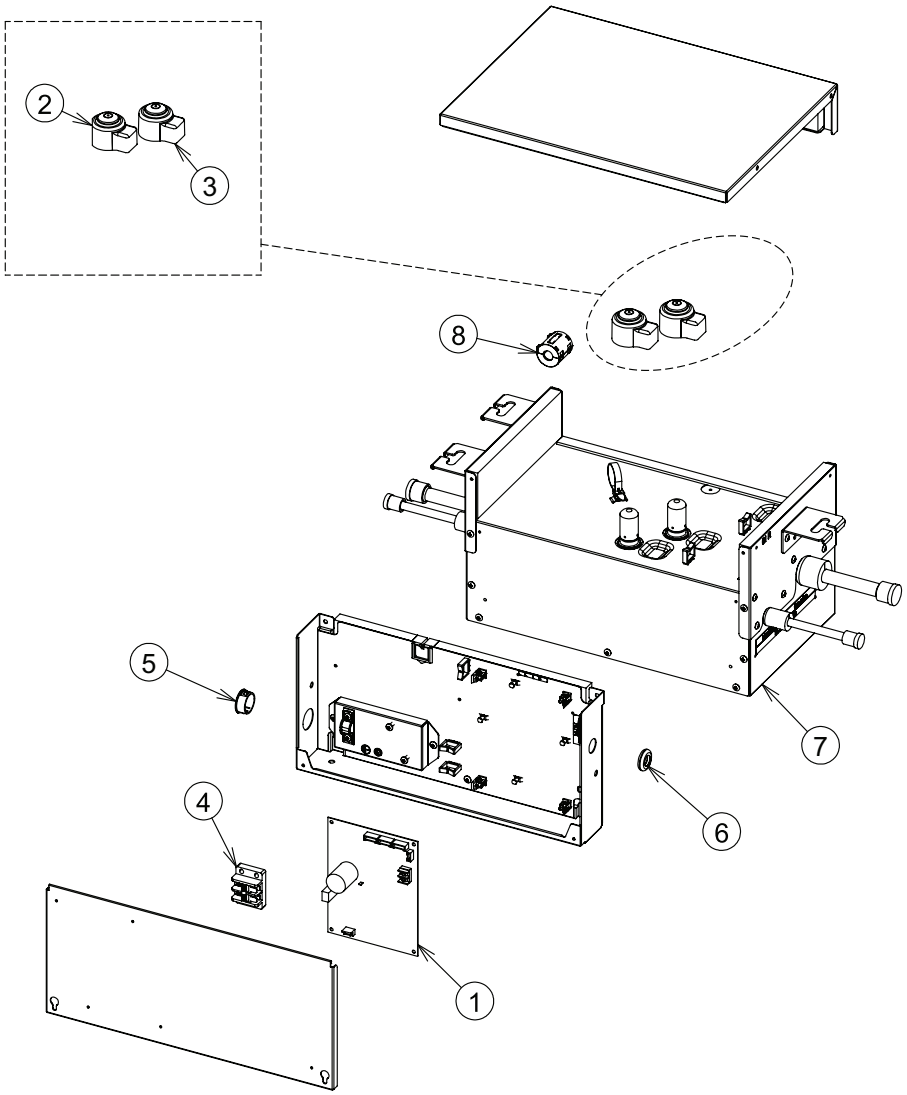
12-2. Inverter assembly



Location No.	Part No.	Description	Q'ty/Set		
			MCY-MUG***1HSW-(E/TR)		
			040	050	060
701	43150465	SENSOR, TS1	1	1	1
702	43150466	SENSOR, TL1	1	1	1
703	43150467	SENSOR, TE	1	1	1
704	43150468	SENSOR, TO	1	1	1
705	43150469	SENSOR, TD	1	1	1
706	43160745	TERMINAL BLOCK, 60A	1	1	1
707	43160746	LEAD ASSY, COMPRESSOR	1	1	1
708	43163087	SUPPOTER, ASSY	3	3	3
709	4316W062	PC BOARD ASSY, MCC-1706	1	1	1
710	4316W063	PC BOARD ASSY, MCC-1690	1	1	1
711	4316W064	PC BOARD ASSY, MCC-1779	1	1	1

12-3. Shut-off Valve unit

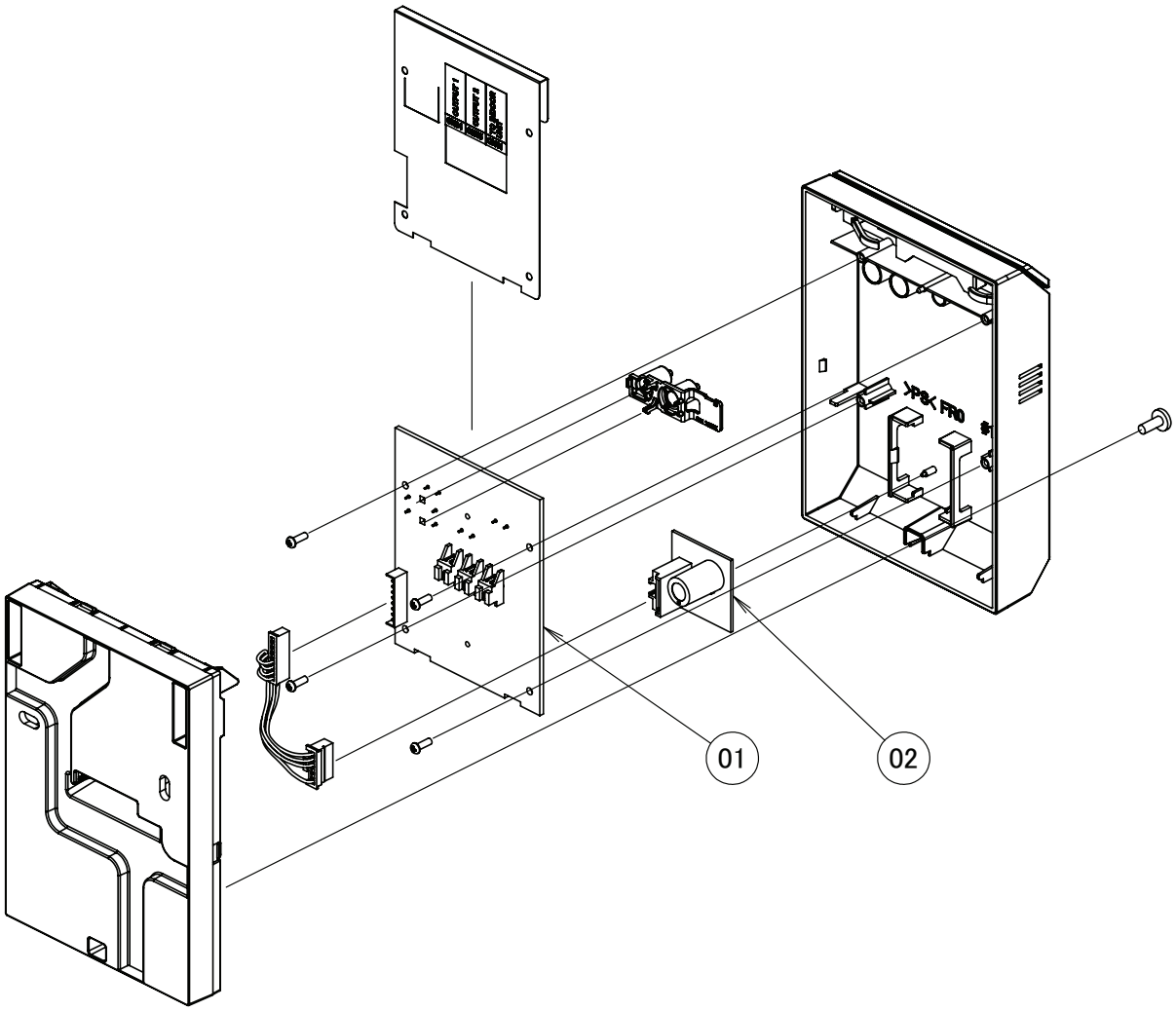
Model: RBM-SV1121HUPE, RBM-SV1801HUPE



Location No.	Part No.	Description	Q'ty/Set	
			RBM-SV****HUPE	
			1121	1801
1	43TN9650	PC BOARD ASSY, MCC-1771	1	1
2	43T46546	COIL, PMV, PAM-MD12TF-305	1	1
3	43T46548	COIL, PMV, PAM-MD12TF-306	1	1
4	43T60592	SERV-TERMINAL	1	1
5	43T96310	BUSHING	1	1
6	43T96309	BUSHING	1	1
7	43T00907	BODY ASSY, SERVICE	1	
7	43T00908	BODY ASSY, SERVICE		1

12-4. Leak Detector

Model: TCB-LD1UPE



Location No.	Part No.	Description	Q'ty / Set
001	43TN9744	PC BOARD ASSY	1
002	43T50431	R32 SENSING MODULE	1

Toshiba Carrier Air-Conditioning Europe Sp. z o.o.

ul. Gdańska 131, 62-200 Gniezno, Poland