

AIR CONDITIONER (MULTI TYPE) SERVICE MANUAL

Outdoor Unit

<Mini-SMMS>

Model name:

<Heat Pump Model>

MCY-MAP0604HT8 (ZG) MCY-MAP0804HT8 (ZG)

MCY-MAP0604HT7 (ZG) MCY-MAP0804HT7 (ZG)

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

4-way Air Cassette Type
(MMU-AP***2H)

A08-004

Compact 4-way Cassette (600 × 600) Type
(MMU-AP***4MH-E)

A10-033

1-way Air Cassette Type SH / (4 series)

A10-033

(MMU-AP***4SH-E / 4YH-E)

2-way Air Cassette Type (2 series)

A10-007

(MMU-AP***2WH)

Slim Duct Type

A10-033

(MMD-AP***4SPH-E)

High-wall Type (3 series)

SVM-09059

(MMK-AP***3H)

Console Type

SVM-11036

Other indoor units

(Made in Japan model) SMMS (1 series) A03-009, A03-010

(Made in China model) SVM-A-07-010

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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 for you.

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 and from heat 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 and from heat

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

[Confirmation of warning label on the main unit]
Confirm that labels are indicated on the specified positions
If removing the label during parts replace, stick it as the original.

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

Precautions for safety

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



 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 or qualified service person is allowed to remove the intake grille of the indoor unit or service panel of the outdoor unit 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.
 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. Before operating the air conditioner after having completed the work, check that the electrical control 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 control 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 is allowed to do this kind of work.

WARNING

	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 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 or qualified service person 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 transporting the air conditioner, wear shoes with protective toe caps, protective gloves and other protective clothing. When connecting the electrical wires, repairing the electrical parts or undertaking other electrical jobs, wear gloves to provide protection for electricians and from heat, 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. Only a qualified installer or qualified service person 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. When 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. When executing address setting, test run, or troubleshooting through the checking window on the electrical control box, put on insulated gloves to provide protection from electric shock. Otherwise you may receive an electric shock. Do not touch the aluminum fin of the outdoor unit. 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 of the outdoor unit and result in injury. 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. Before troubleshooting or repair work, check the earth wire is connected to the earth terminals of the main unit, otherwise an electric shock is caused when a leak occurs. If the earth wire is not correctly connected, contact an electric engineer for rework. After completing the repair or relocation work, check that the ground wires are connected properly. Be sure to connect earth wire. (grounding work) Incomplete grounding causes an electric shock. Do not connect ground wires to gas pipes, water pipes, and lightning rods or ground wires for telephone wires.
 Check earth wires.	Do not modify the products. Do not also disassemble or modify the parts. It may cause a fire, electric shock or injury.
 Prohibition of modification.	
 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 control 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 no-one 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 user's 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 welder 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 welder may catch the inflammables.
 Refrigerant	The refrigerant used by this air conditioner is the R410A.
	Check the used refrigerant name and use tools and materials of the parts which match with it. For the products which use R410A refrigerant, the refrigerant name is indicated at a position on the outdoor unit where is easy to see. To prevent miss-charging, the route of the service port is changed from one of the former R22.
	For an air conditioner which uses R410A, never use other refrigerant than R410A. For an air conditioner which uses other refrigerant (R22, etc.), never use R410A. 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 cocking stove though the refrigerant gas itself is innocuous.
 Assembly / Wiring	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.
	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 (500 V Megger) 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.

 Compulsion	When the refrigerant gas leaks, find up the leaked position and repair it surely. If the leaked position cannot be found up and the repair work is interrupted, pump-down and tighten the service valve, otherwise the refrigerant gas may leak into the room. 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 such as a multi air conditioner in a sub-room, it is necessary that the density does not the limit even if the refrigerant leaks. If the refrigerant leaks and exceeds the limit density, an accident of shortage of oxygen is caused. Tighten the flare nut with a torque wrench in the specified manner. 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. 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.
 Check after repair	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. 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. 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 pump-down work shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air, etc. to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in reputing, injury, etc. When 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 electric shock and heat. When the service panel of the outdoor unit is to be opened in order for the fan motor, reactor, inverter or the areas around these parts to be repaired immediately after the air conditioner has been shut down, set the circuit breaker to the OFF position, and then wait at least 10 minutes before opening the service panel. 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.
 Do not operate the unit with the valve closed.	
 Check after reinstallation	
 Cooling check	

 Installation	Only a qualified installer or qualified service person is allowed to install the air conditioner. If the air conditioner is installed by an unqualified individual, a fire, electric shocks, injury, water leakage, noise and/or vibration may result.
	Before starting to install the air conditioner, read carefully through the Installation Manual, and follow its instructions to install the air conditioner.
	Be sure to use the company-specified products for the separately purchased parts. Use of non-specified 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 qualified service person.
	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.

New refrigerant (R410A)

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

1. Safety caution concerned to new refrigerant

The pressure of R410A is high 1.6 times of that of the former refrigerant (R22). Accompanied with change of refrigerant, the refrigerating oil has been also changed. Therefore, 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 new refrigerant 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 R410A to purpose a safe work.

2. Cautions on installation / service

(1) Do not mix the other refrigerant or refrigerating oil.

For the tools exclusive to R410A, shapes of all the joints including the service port differ from those of the former refrigerant in order to prevent mixture of them.

(2) As the use pressure of the new refrigerant is high, use material thickness of the pipe and tools which are specified for R410A.

(3) 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 scales, oil, etc. Use the clean pipes.

Be sure to brazing with flowing nitrogen gas. (Never use gas other than nitrogen gas.)

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

(5) R410A refrigerant is azeotropic mixture type refrigerant. Therefore use liquid type to charge the refrigerant. (If using gas for charging, composition of the refrigerant changes and then characteristics of the air conditioner change.)

3. Pipe materials

For the refrigerant pipes, copper pipe and joints are mainly used. It is necessary to select the most appropriate pipes to conform to the standard. Use clean material in which impurities adhere inside of pipe or joint to a minimum.

(1) Copper pipe

<Piping>

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

When using a long copper pipe for R410A, it is recommended to select "Copper or copper-base pipe without seam" and one with bonded oil amount 40 mg / 10 m 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.

(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

(1) Required Tools for R410A

Mixing of different types of oil may cause a trouble such as generation of sludge, clogging of capillary, etc. Accordingly, the tools to be used are classified into the following three types.

- 1) Tools exclusive for R410A (Those which cannot be used for conventional refrigerant (R22))
- 2) Tools exclusive for R410A, but can be also used for conventional refrigerant (R22)
- 3) Tools commonly used for R410A and for conventional refrigerant (R22)

The table below shows the tools exclusive for R410A and their interchangeability.

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

Explanation of symbols

- △ : Newly prepared (It is necessary to use it exclusively with R410A, separately from those for R22 or R407C.)
 ◎ : Former tool is available.

Used tools	Usage	Proper use of tools / parts
Gauge manifold	Vacuuuming, charging refrigerant and operation check	△ Exclusive to R410A
Charging hose		△ Exclusive to R410A
Charging cylinder	Charging refrigerant	Unusable (Use the Refrigerant charging balance.)
Gas leak detector	Checking gas leak	△ Exclusive to R410A
Vacuum pump	Vacuum drying	Usable if a counter-flow preventive adapter is attached
Vacuum pump with counter-flow	Vacuum drying	◎ R22 (Existing article)
Flare tool	Flare processing of pipes	◎ Usable by adjusting size
Bender	Bending processing of pipes	◎ R22 (Existing article)
Refrigerant recovery device	Recovering refrigerant	△ Exclusive to R410A
Torque wrench	Tightening flare nut	△ Exclusive to Ø12.7 mm and Ø15.9 mm
Pipe cutter	Cutting pipes	◎ R22 (Existing article)
Refrigerant canister	Charging refrigerant	△ Exclusive to R410A Enter the refrigerate name for identification
Welding machine / Nitrogen gas cylinder	Welding of pipes	◎ R22 (Existing article)
Refrigerant charging balance	Charging refrigerant	◎ R22 (Existing article)

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

(Note 2) Charging cylinder for R410A is being currently developed.

General tools (Conventional tools can be used.)

In addition to the above exclusive tools, the following equipments which serve also for R22 are necessary as the general tools.

- | | |
|---|--|
| (1) Vacuum pump | (7) Screwdriver (+, -) |
| Use vacuum pump by attaching vacuum pump adapter. | (8) Spanner or Monkey wrench |
| (2) Torque wrench | (9) Hole core drill |
| (3) Pipe cutter | (10) Hexagon wrench (Opposite side 4 mm) |
| (4) Reamer | (11) Tape measure |
| (5) Pipe bender | (12) Metal saw |
| (6) Level vial | |

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

- (1) Clamp meter
- (2) Thermometer
- (3) Insulation resistance tester
- (4) Electroscop

1 Product summary

1-1. Outdoor unit

Model name Heat pump	Corresponding HP	Power supply	Cooling capacity (kW) *1	Heating capacity (kW) *1
MCY-MAP0604HT8 MCY-MAP0604HT8ZG	6HP	3phase 4wires 50 Hz 380-415 V	15.5	18.0
MCY-MAP0804HT8 MCY-MAP0804HT8ZG	8HP	3phase 4wires 50 Hz 380-415 V	22.4	25.0
MCY-MAP0604HT7 MCY-MAP0604HT7ZG	6HP	3phase 4wires 60 Hz 380 V	15.5	18.0
MCY-MAP0804HT7 MCY-MAP0804HT7ZG	8HP	3phase 4wires 60 Hz 380 V	22.4	25.0

*1 Rated conditions

Cooling: Indoor air temperature 27 °C DB / 19 °C WB,

Outdoor air temperature 35 °C DB

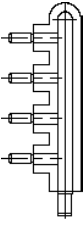
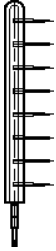
Heating: Indoor air temperature 20 °C DB,

Outdoor air temperature 7 °C DB / 6 °C WB

1-2. Connectable indoor units

Model type	Model name
4-way cassette	MMU-AP***2H
Compact 4-way cassette	MMU-AP***1MH / 4MH-E
2-way cassette	MMU-AP***2H
1-way cassette	MMU-AP***1YH / 2SH / 4YH-E / 2SH-E
Concealed duct, standard type	MMD-AP***1BH / 4BH-E
Concealed duct, high static pressure	MMD-AP***1H / 4H-E
Slim duct	MMD-AP***1SPH / 4SPH-E
Ceiling	MMC-AP***1H / 4H-E
High-wall	MMK-AP***2H / 3H / 3H-T / 4MH-E
Floor standing cabinet type	MML-AP***1H / 4H-E
Floor standing Concealed type	MML-AP***1BH / 4BH-E
Floor standing	MMF-AP***1H / 4H-E
Console	MML-AP***4NH-E

1-3. Branching joints and headers *1

	Model name	Appearance
Y-shape branching joint	RBM-BY55E	
4-branching header *1	RBM-HY1043E	
8-branching header *1	RBM-HY1083E	

*1 For each line after branching header, total indoor capacity code must be 6.0 maximum.

1-4. PMV kit

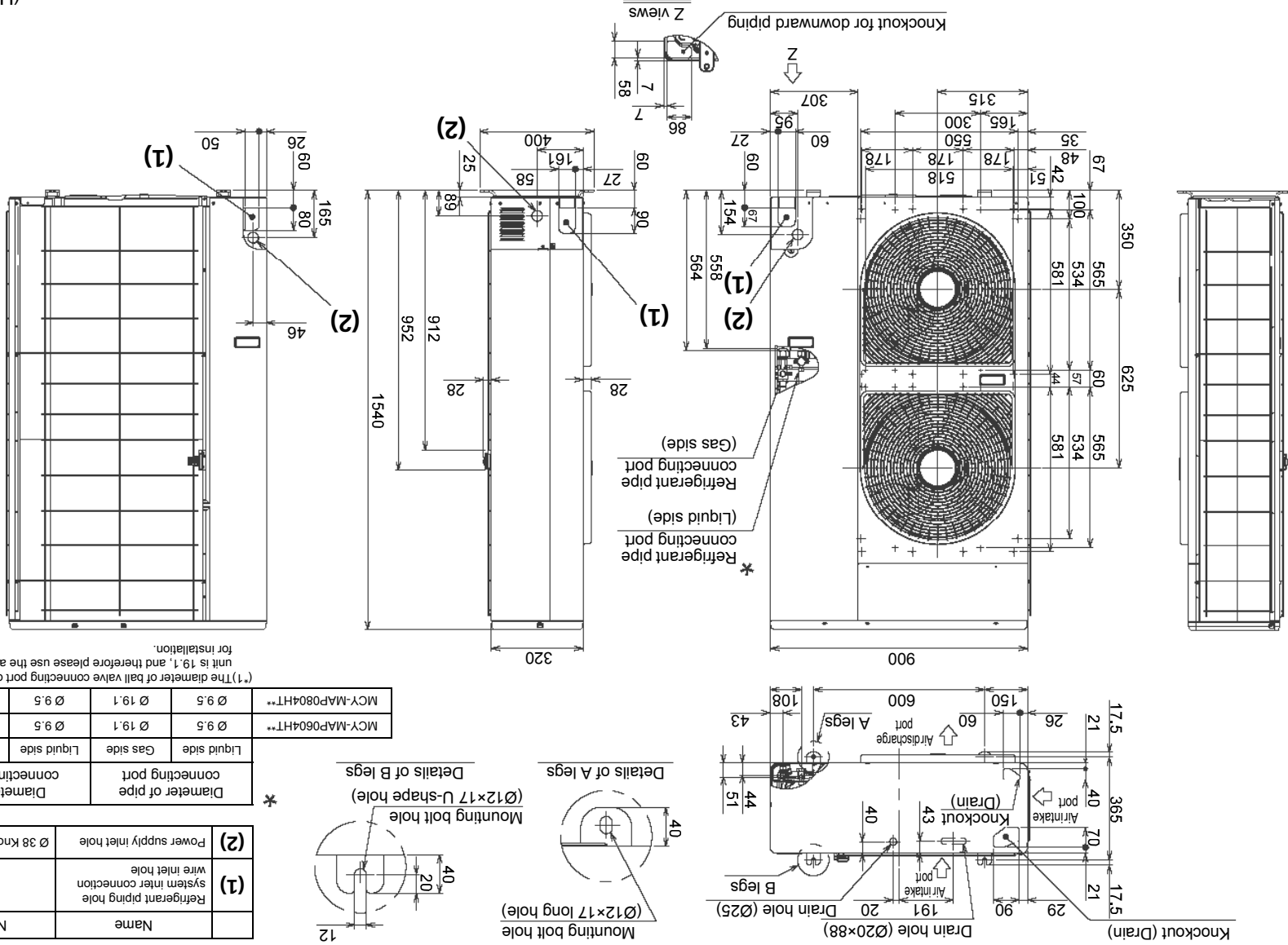
Model type	Indoor unit capacity type	Appearance
RBM-PMV0361E	007, 009, 012 type	
RBM-PMV0901E	015, 018, 024 type	

2 Construction views

	Name	(1)	(2)
	Refrigerant piping hole	Refrigerant piping hole	Refrigerant piping hole
	Refrigerant piping hole	Refrigerant piping hole	Refrigerant piping hole
	Power supply inlet hole	Power supply inlet hole	Power supply inlet hole
	Wire inlet hole	Wire inlet hole	Wire inlet hole
	Knockout hole	Knockout hole	Knockout hole
	Note		

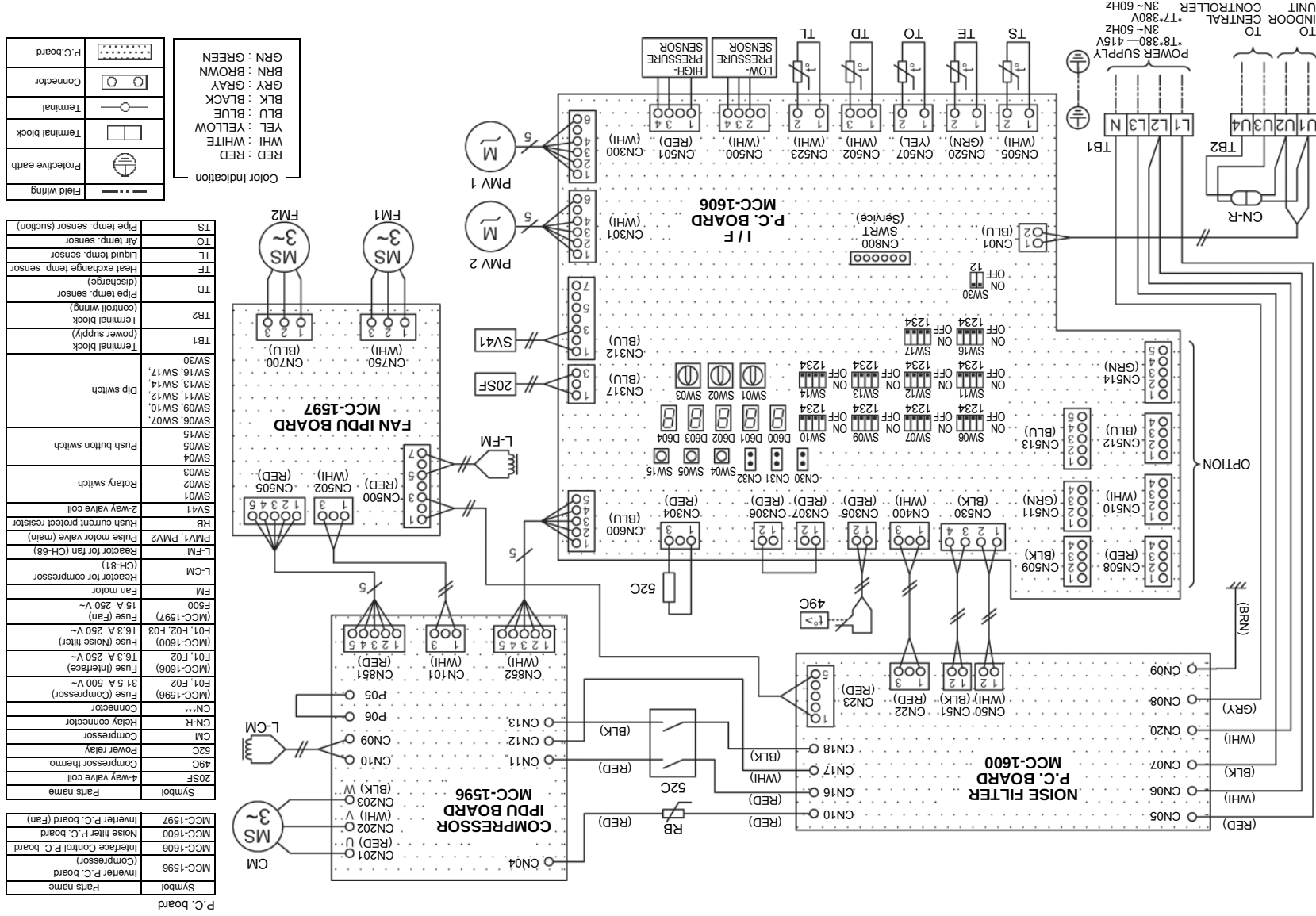
Diameter of connecting port	Diameter of pipe		Diameter of connecting pipe	
	Liquid side	Gas side	Liquid side	Gas side
MCV-MAP0604HT**	Ø 9.5	Ø 19.1	Ø 9.5	Ø 19.1
	Ø 9.5	Ø 19.1	Ø 9.5	Ø 19.1
MCV-MAP0804HT**	Ø 9.5	Ø 19.1	Ø 9.5	Ø 19.1
	Ø 9.5	Ø 19.1	Ø 9.5	Ø 19.1

(*1) The diameter of ball valve connecting port on the outdoor unit is 19.1, and therefore please use the accessory joint for installation.



(Unit: mm)

3 Wiring diagram



4 Parts rating

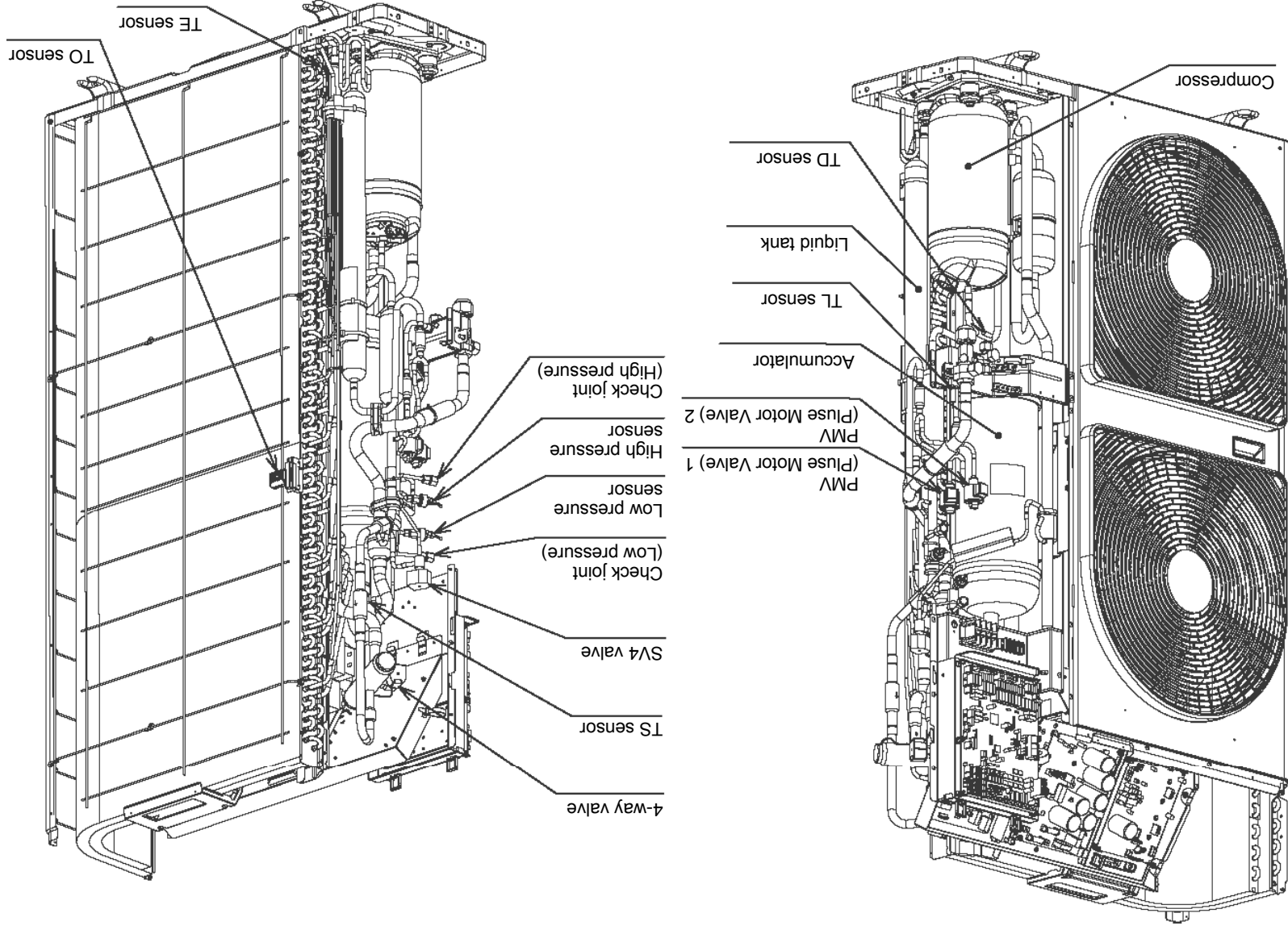
4-1. Outdoor unit

No.	Name	Model	Specification
1	Compressor	DA422A3F-2AMD	Output: 3.75 kW
2	4-way valve coil	MCY-MAP**04HT8**	AC220-240 V 50 Hz
		MCY-MAP**04HT7**	AC208-230 V 60 Hz
3	SV4 valve coil	MCY-MAP**04HT8**	AC220-240 V 50 Hz
		MCY-MAP**04HT7**	AC208-230 V 60 Hz
4	Pulse motor valve coil	UKV-A040	DC12 V
5	Pressure sensor (For high pressure)	NSK-BC038F-067	0.5-4.3 V / 0-3.73 MPa
6	Pressure sensor (For low pressure)	NSK-BC010F-067	0.5-3.5 V / 0-0.98 MPa
7	Fan motor	WDF-340-A100-1	DC280-340 V / 100 W

4-2. Outdoor inverter

No.	Name	Model	Specification
1	Power supply terminal block	JXO-3004	AC600 V / 75 A, 4 P
2	Communication terminal block	JXO-B2F	AC30 V (or no more than DC42 V) / 1 A, 6 P
3	Reactor (For comp.)	CH-81(CH-44)	1.4 mH / 20 A
4	Reactor (For fan)	CH-68	18 mH / 5 A
5	P.C. board (I/F board)	MCC-1606	—
6	P.C. board (IPDU for Comp.)	MCC-1596	—
7	Fuse (MCC-1596)	GAC1 31.5A	31.5 A / AC500 V (P.C. board)
8	Comp. motor drive IPM (MCC-1596)	PS22A76	25 A / DC1200 V (P.C. board)
9	P.C. board (IPDU for fan)	MCC-1597	—
10	Fuse (MCC-1597)	GDT250V15A	15 A / AC250 V (P.C. board)
11	Fan motor drive IPM (MCC-1597)	FSBF10CH60BT	10 A / DC600 V (P.C. board)
12	P.C. board (Noise filter)	MCC-1600	—
13	Line filter (MCC-1600)	—	3 mH / AC400 V / 25 A (P.C. board)
14	Power relay	EL200 / 240A2-F(M)	20 A / AC480 V
15	PTC thermistor	MZ32-101RMARD01E	13 A / AC500 V
16	Pipe temp. sensor (TD)	—	-30 °C ~ 135 °C (Ambient temp. range)
17	Pipe temp. sensor (TS)	—	-20 °C ~ 80 °C (Ambient temp. range)
18	Heat exchanger temp. sensor (TE)	—	-20 °C ~ 80 °C (Ambient temp. range)
19	Outside temp. sensor (TO)	—	-20 °C ~ 80 °C (Ambient temp. range)
20	Liquid temp. sensor (TL)	—	-20 °C ~ 80 °C (Ambient temp. range)

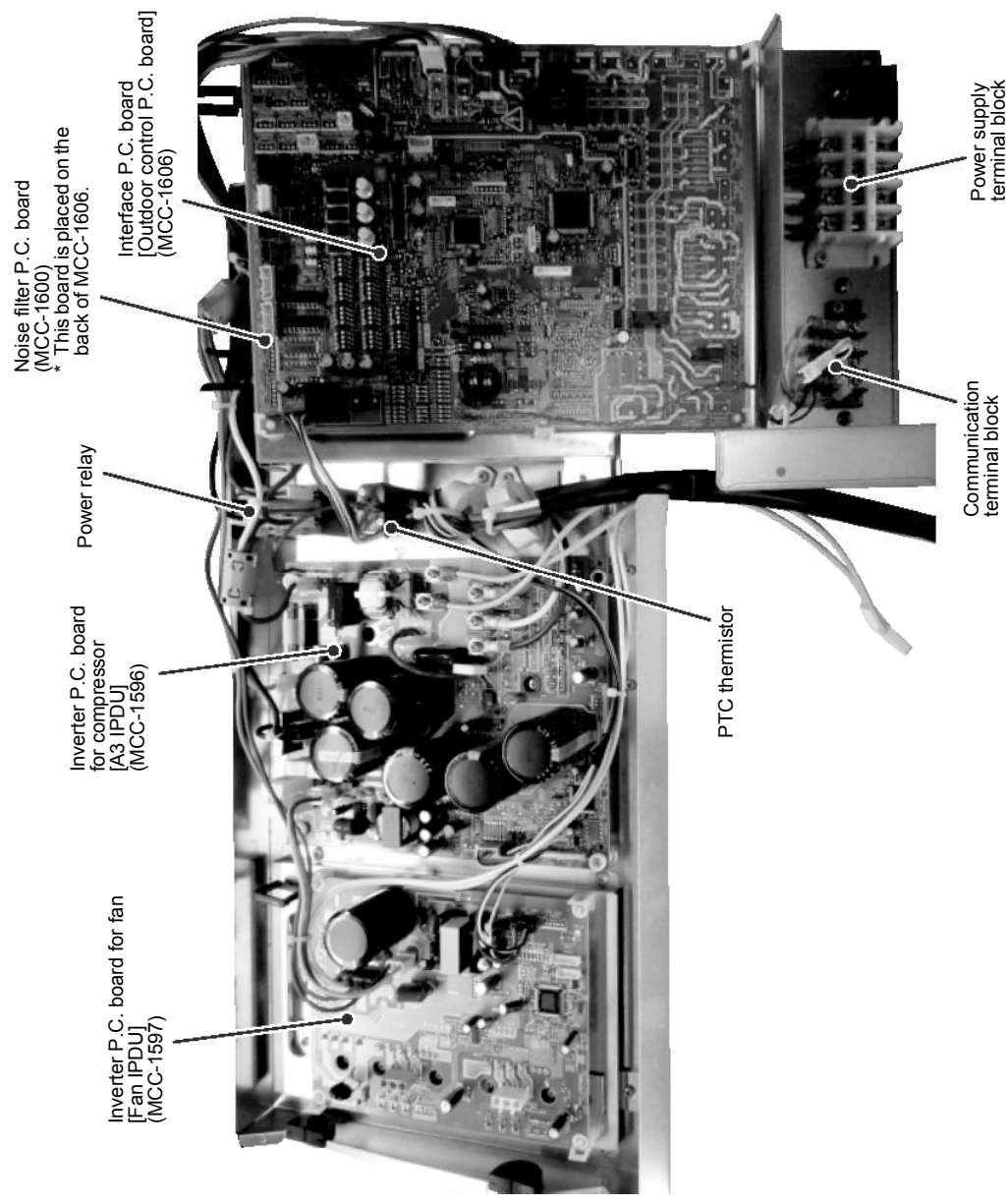
4-3. Parts layout in outdoor unit



4-4. Parts layout in inverter assembly

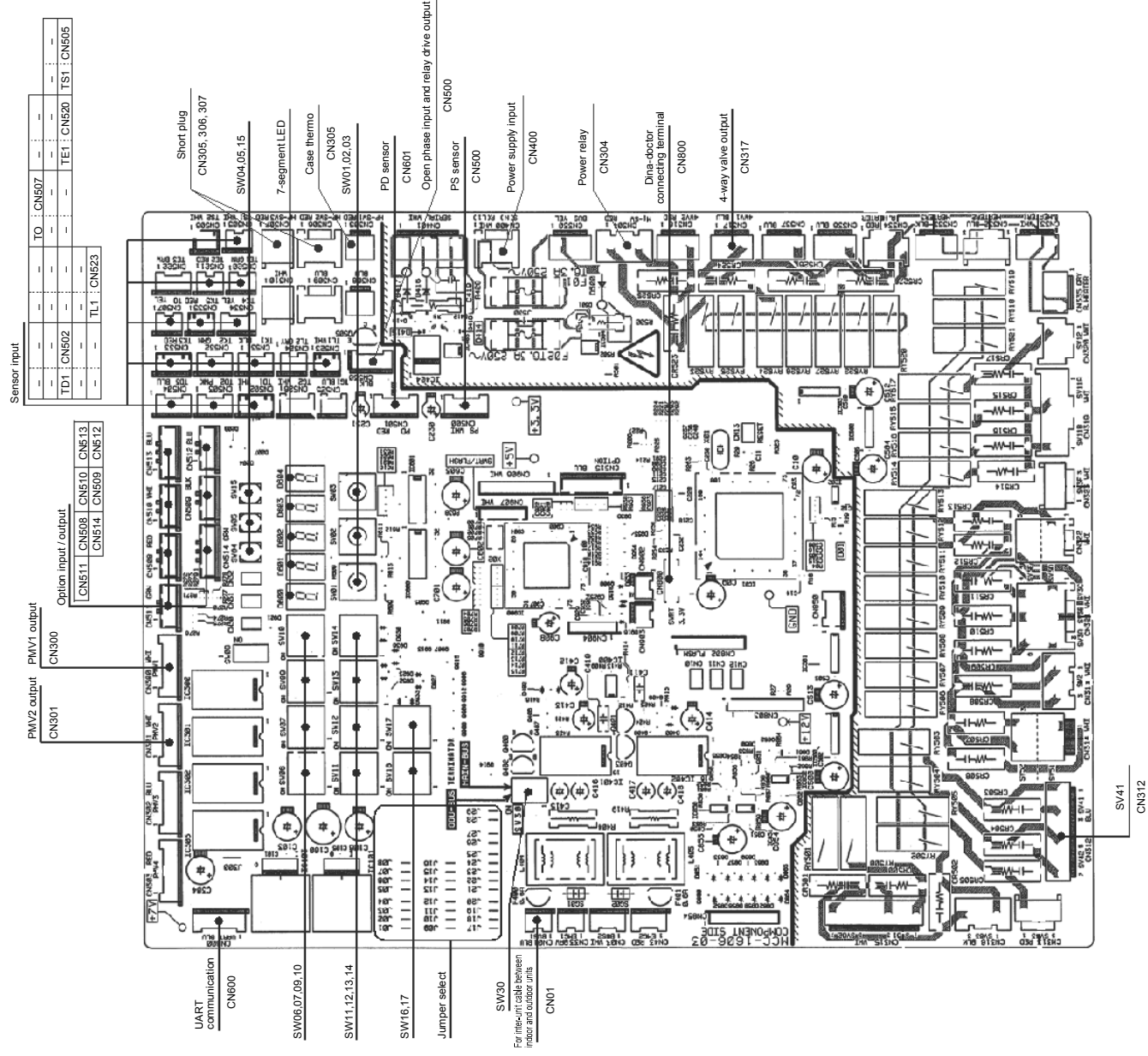
Outdoor unit (6, 8HP)

Model: MCY-MAP0604**, MCY-MAP0804**

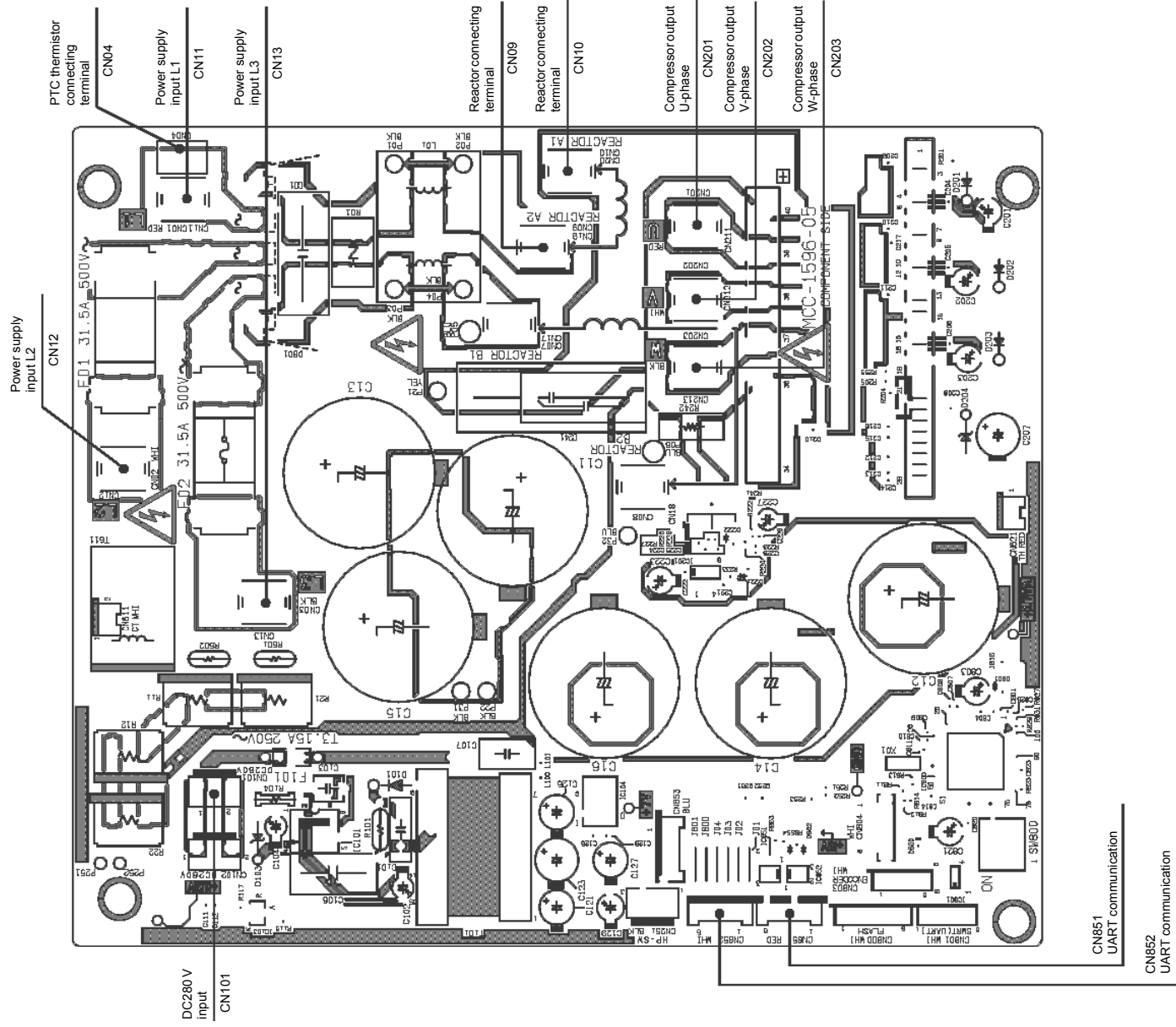


4-5. Outdoor (inverter) print circuit board

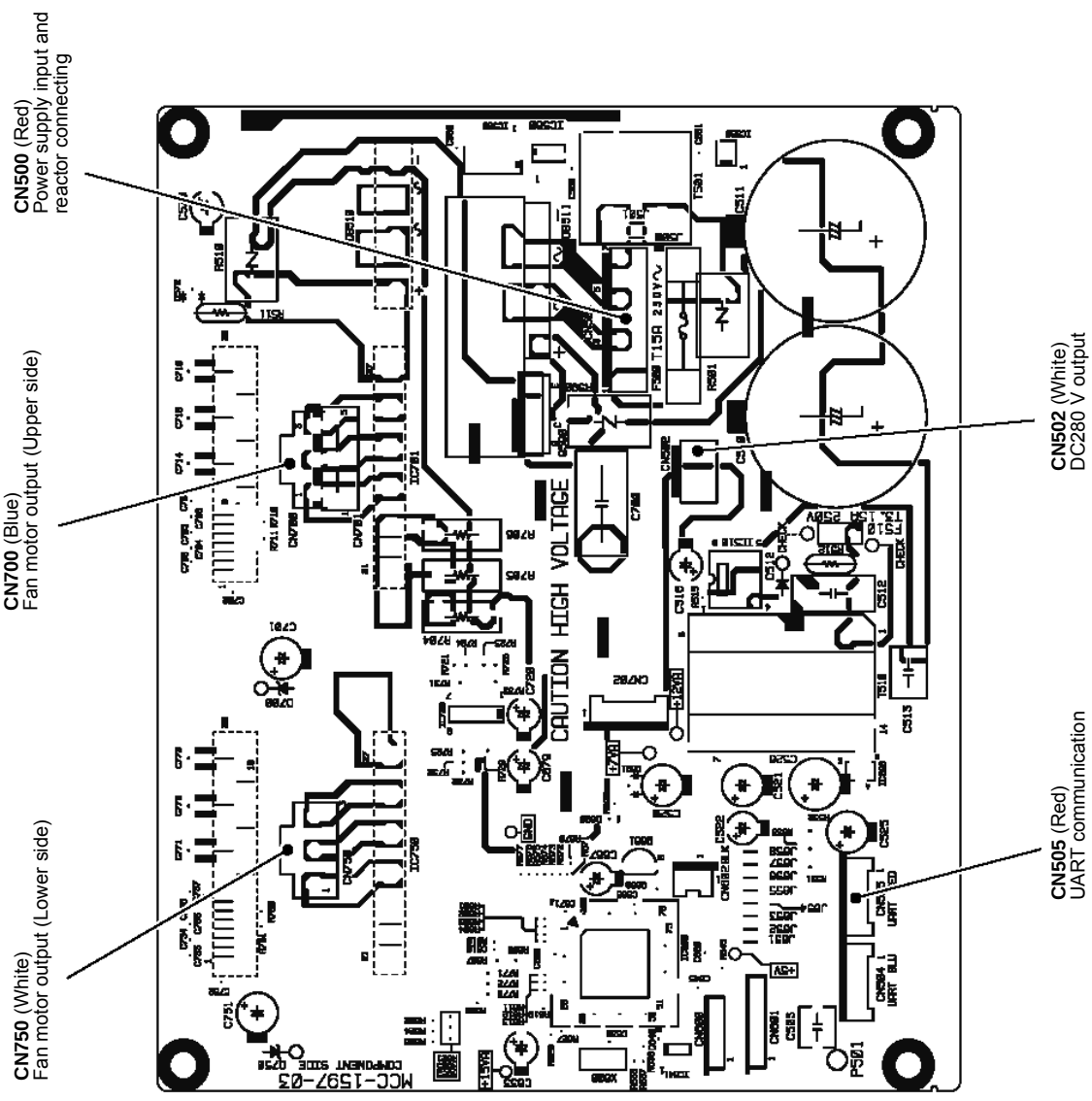
4-5-1. Interface P.C. board (MCC-1606)



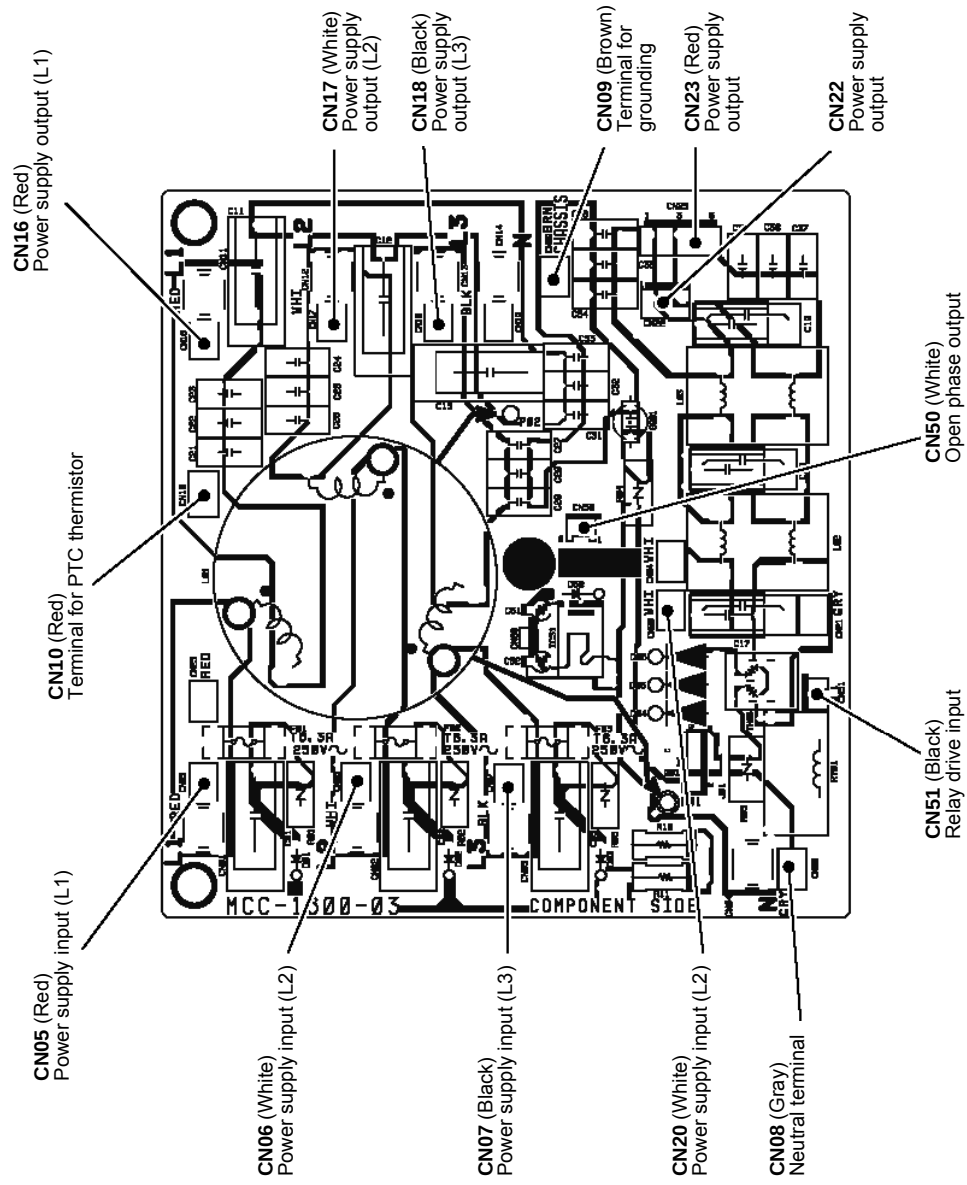
4-5-2. Inverter P.C. board for compressor (MCC-1596) A3-IPDU



4-5-3. Fan motor IPDU (MCC-1597)



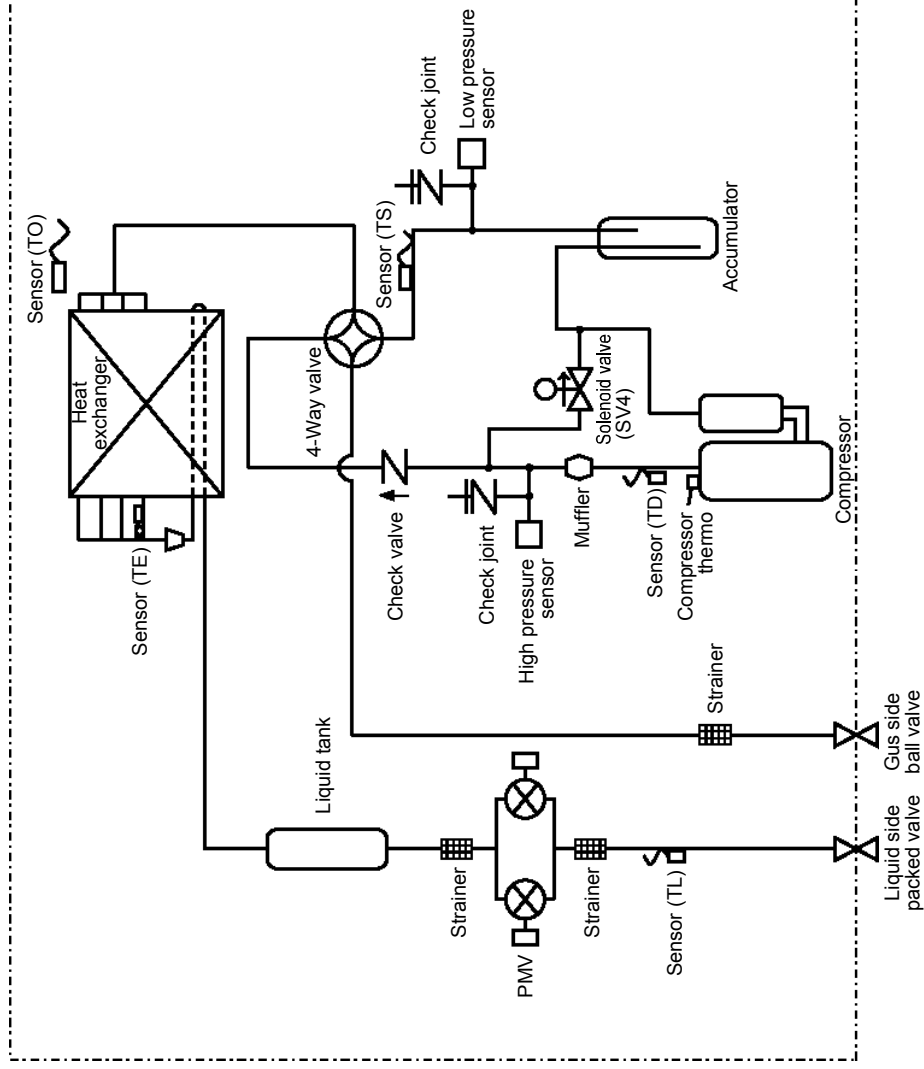
4-5-4. Noise filter (MCC-1600)



5 Refrigerant piping systematic drawing

Outdoor unit

Model: MCY-MAP0604*, MCY-MAP0804*



Explanation of functional parts

Functional part name		Functional outline
Solenoid valve	SV4	(Start compensation valve of compressor) (Connector CN312: Blue(HT8),Yellow(HT7)) 1) For gas balance start 2) High pressure release function 3) Low pressure release function
	4-way valve	(Connector CN317: Blue(HT8),Yellow(HT7)) 1) Cooling / heating exchange 2) Reverse defrost
Pulse motor valve	PMV1, 2	(Connector CN300, 301: White) 1) Super heat control function in heating operation 2) Liquid line shut-down function while follower unit stops 3) Under cool adjustment function in cooling operation
	TD	(Connector CN502: White) 1) Protection of compressor discharge temp. 2) Used for discharge temperature release
Temp. sensor	TS	(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
	TL	(Connector CN523: White) 1) Detects under cool in cooling operation
	TO	(Connector CN507: Yellow) 1) Detects outside temperature
	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
Pressure sensor	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

6 Control outline

■ Outdoor unit

Item	Description of operation, numerical data, and other information	Remarks
1. Pulse motor valve (PMV) control	PMV1, 2 control (PMV1 and 2) 1) During air conditioner operation, the pulse count of a PMV (pulse motor valve) is controlled between 90 and 1000. 2) During cooling, the PMV opening is controlled on the basis of measurements provided by the TL temperature sensor and the Pd pressure sensor (under cool control). 3) During heating, the PMV opening is controlled on the basis of measurements provided by the TS and TD temperature sensors and the PS pressure sensor (super heat control). 4) PMVs are fully closed when the air conditioner is in thermo OFF state or upon being turned off normally or shut down due to an abnormality.	During heating, PMV control may be provided with PMV1 alone, operated at 45 pulses (minimum), with PMV2 turned off.
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.

Item	Description of operation, numerical data, and other information	Remarks												
2. Outdoor fan control (continued)	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. <table><tr><td>TE temperature (°C)</td><td>Zone A: Lowest mode, timer count for forced compressor shutdown</td></tr><tr><td>25</td><td>Zone B: -2/20 seconds (down to lowest mode)</td></tr><tr><td>8</td><td>Zone C: -1/20 seconds (down to lowest mode)</td></tr><tr><td>6</td><td>Zone D: Hold (staying at current mode)</td></tr><tr><td>4</td><td>Zone E: +1/20 seconds (up to highest mode)</td></tr><tr><td>2</td><td>Zone F: Highest mode</td></tr></table>	TE temperature (°C)	Zone A: Lowest mode, timer count for forced compressor shutdown	25	Zone B: -2/20 seconds (down to lowest mode)	8	Zone C: -1/20 seconds (down to lowest mode)	6	Zone D: Hold (staying at current mode)	4	Zone E: +1/20 seconds (up to highest mode)	2	Zone F: Highest mode	The fan speed corresponding to the highest mode varies with the HP capacity of the outdoor unit.
TE temperature (°C)	Zone A: Lowest mode, timer count for forced compressor shutdown													
25	Zone B: -2/20 seconds (down to lowest mode)													
8	Zone C: -1/20 seconds (down to lowest mode)													
6	Zone D: Hold (staying at current mode)													
4	Zone E: +1/20 seconds (up to highest mode)													
2	Zone F: Highest mode													
3. Capacity control	The compressor is controlled on the basis of capacity demand issued by indoor controllers.													
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 hour. 2) The period of recovery lasts for approximately 2 to 10 minutes though this is dependent upon the load condition.	- Control for refrigerant / oil recovery is performed approximately every 3 hours. - Recovery lasts for approximately 2 or 3 minutes though this is dependent upon the system capacity.												
5. Defrosting control (reverse defrosting method)	1. Defrosting commencement conditions - During heating operation, the cumulative duration of operation in which TE sensor temperature falls below frost formation temperature is measured, and when this reaches 55 minutes, defrosting control is introduced. (Just after startup or upon changeover from cooling to heating, the target cumulative duration is 25 minutes.) 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. 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. 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".	- Frost formation temperature is -1.5 °C. - To protect the refrigerating cycle circuit, the fan mode may be controlled during defrosting. - During defrosting control, compressors are controlled so that their speeds do not exceed 52.1 rps.												

Item	Description of operation, numerical data, and other information	Remarks									
6. Release valve control	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 ≥ 0.2 MPa, 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 ≥ 0.19 MPa and ≥ 2.2 MPa, respectively, SV4 is closed.										
7. Frequency release control	High pressure release control This function is to correct the operation command of the compressor and suppress the rise of high pressure. 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, thermo OFF.										
8. A3-IPDU control	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 To prevent inverter input current from exceeding the specified value, output frequency is controlled with AC input current as detected by T611 mounted on the control P.C. board. Zone A: Compressors are operated normally. Zone D: The current operating frequency is maintained. Zone B: Operating frequency is lowered. Zone C: The lowering of operating frequency is halted to maintain the current frequency. Current control values for various outdoor units are shown below. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Outdoor unit HP capacity</th><th>I₁</th><th>I₂</th></tr> </thead> <tbody> <tr> <td>6</td><td>16.5</td><td>16.0</td></tr> <tr> <td>8</td><td>16.5</td><td>16.0</td></tr> </tbody> </table>	Outdoor unit HP capacity	I ₁	I ₂	6	16.5	16.0	8	16.5	16.0	
Outdoor unit HP capacity	I ₁	I ₂									
6	16.5	16.0									
8	16.5	16.0									

Item	Description of operation, numerical data, and other information	Remarks															
8. A3-IPDU control (continued)	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 A3-IPDU. 2) Increments the Fan operation mode by 1 when TH $\geq$ 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). TH (°C) T0 T1 T2 T3 Zone 6 Zone 5 Zone 4 Zone 3 Zone 2 Zone 1 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>6 HP</td><td>88 °C</td><td>80 °C</td><td>75 °C</td><td>70 °C</td></tr><tr><td>8 HP</td><td></td><td></td><td></td><td></td></tr></table> 5) Stops the compressor at TH $\geq$ 88 °C. (By the control of Zone 6 above) 6) The compressor restarts in 2 minutes and 30 seconds when the error count is incremented. The error is confirmed when the count becomes "4". The error 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 an error count of 1 recorded. If the compressor successfully operates for at least 10 minutes after a restart, the error count is cleared. 3) If the error count reaches 8, the error is confirmed as final. 4. Compressor case thermo control - The compressor stops when the compressor case thermostat is activated. - Whenever this condition occurs, a 1 count is added to the system error count. - After a period of 2 minutes and 30 seconds, the compressor is reactivated and the error count cleared if the operation continues without further error for a period of 10 minutes or more. - If the error count reaches 4, the check code [H04] is displayed.	Outdoor unit horse power	T0	T1	T2	T3	6 HP	88 °C	80 °C	75 °C	70 °C	8 HP					A3-IPDU is provided with a TH sensor.
Outdoor unit horse power	T0	T1	T2	T3													
6 HP	88 °C	80 °C	75 °C	70 °C													
8 HP																	
		The case thermostat is normally closed and connected to interface P.C. board.															

<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)

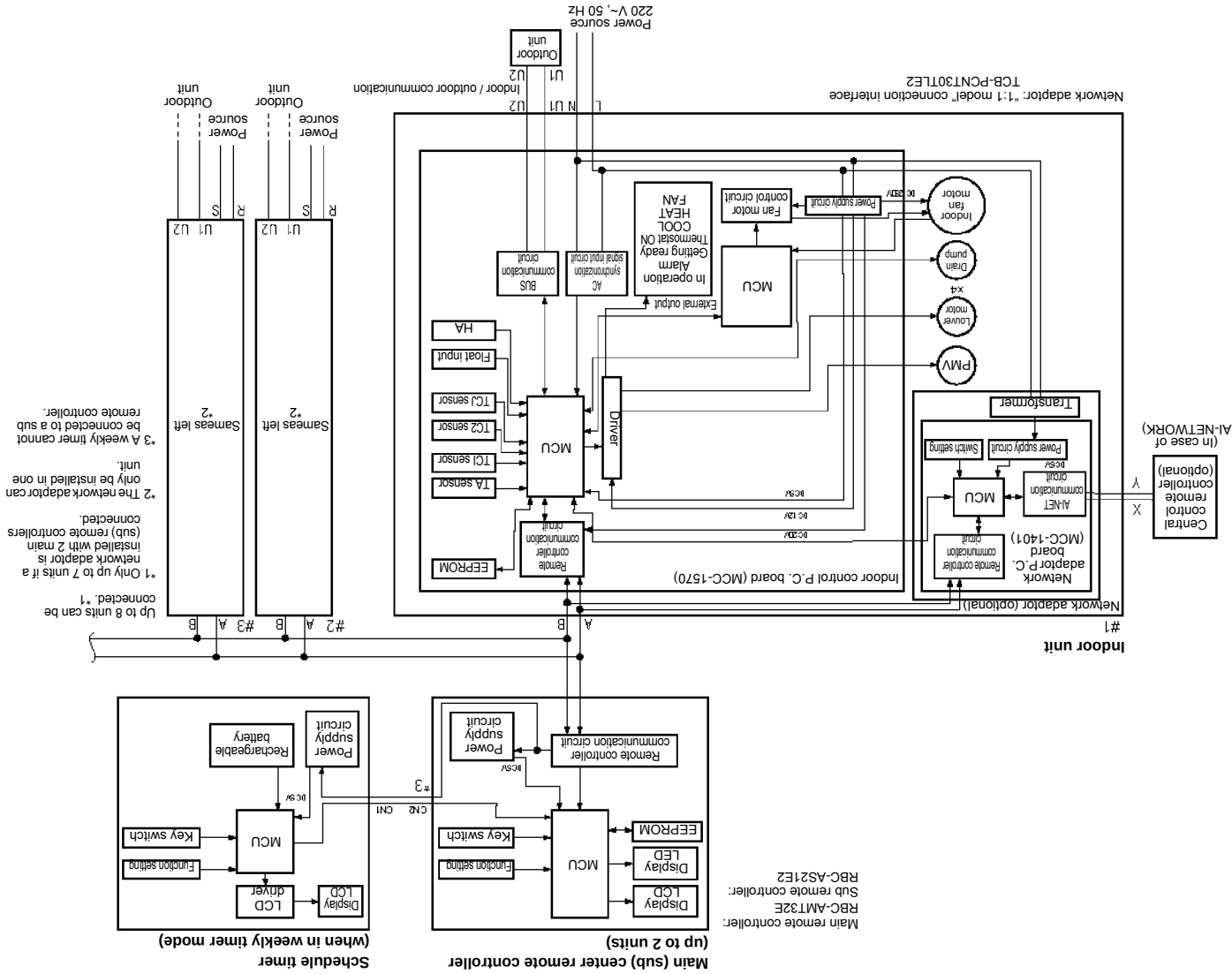
- 1) When the power is turned on, PMVs generate a tapping sound as they are initialized. If this sound is not heard, there is a possibility of faulty PMV operation. However, in a noisy environment, it may simply be drowned out by ambient noise.
- 2) Do not separate the actuator (head section) from any 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 (including circuit configuration)

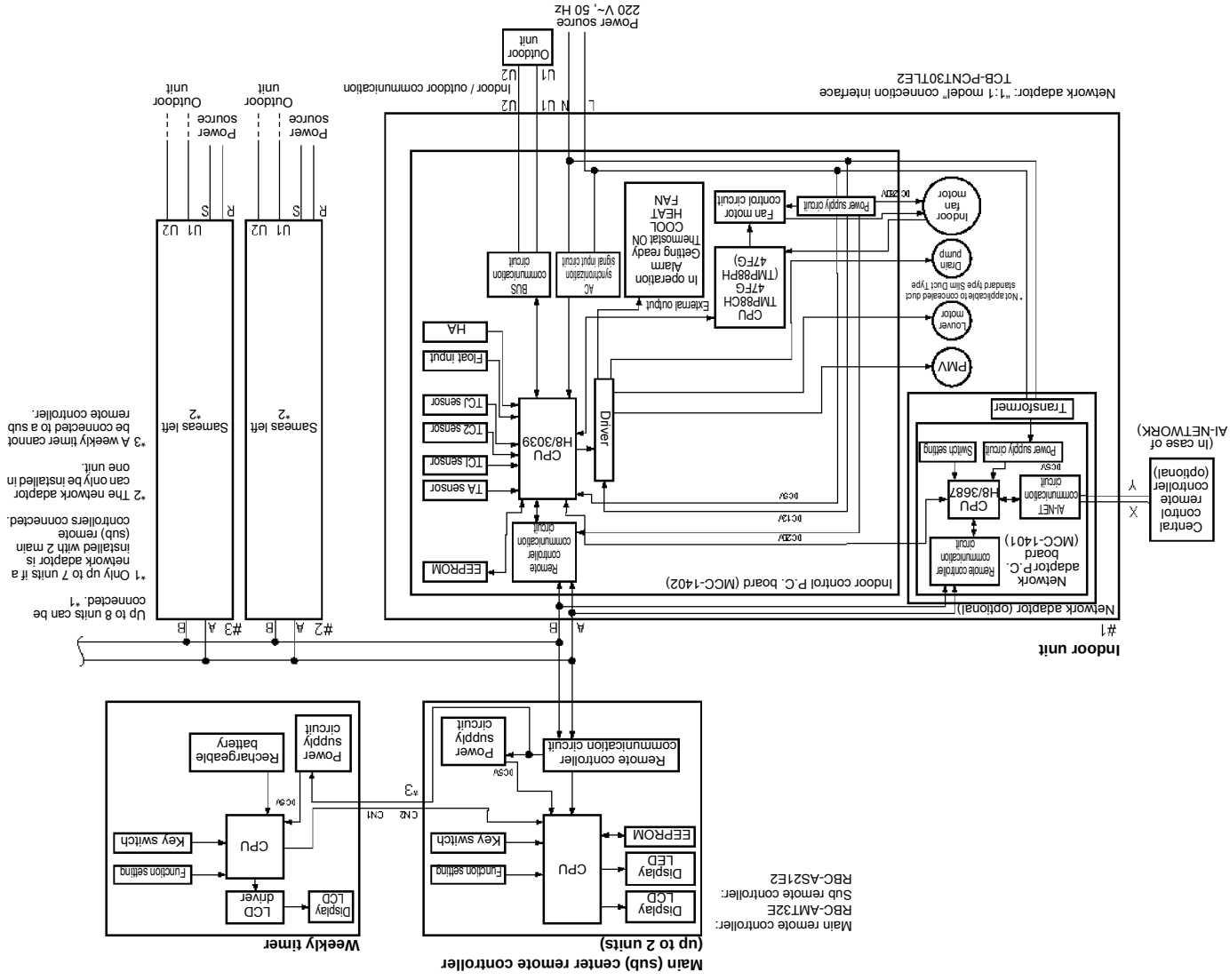
7-1. Indoor controller block diagram

7-1-1. When main (sub) remote controller connected

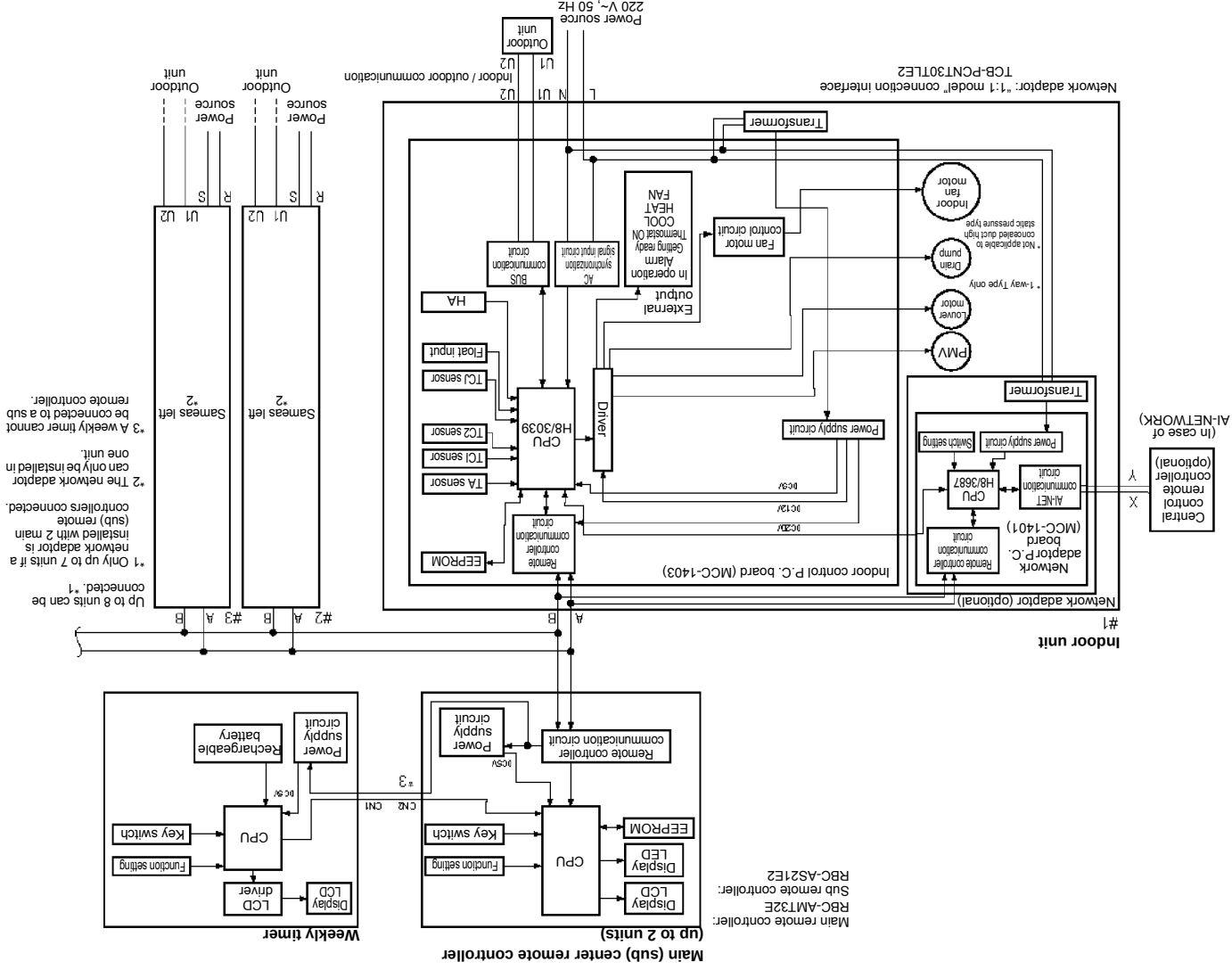
<New 4-way Air Cassette Type> (MMU-AP***2H)



<Compact 4-way Air Cassette Type, 1-way Air Cassette (SH) Type, 2-way Air Cassette Type, Ceiling Type, Concealed Duct Standard Type, Slim Duct Type>

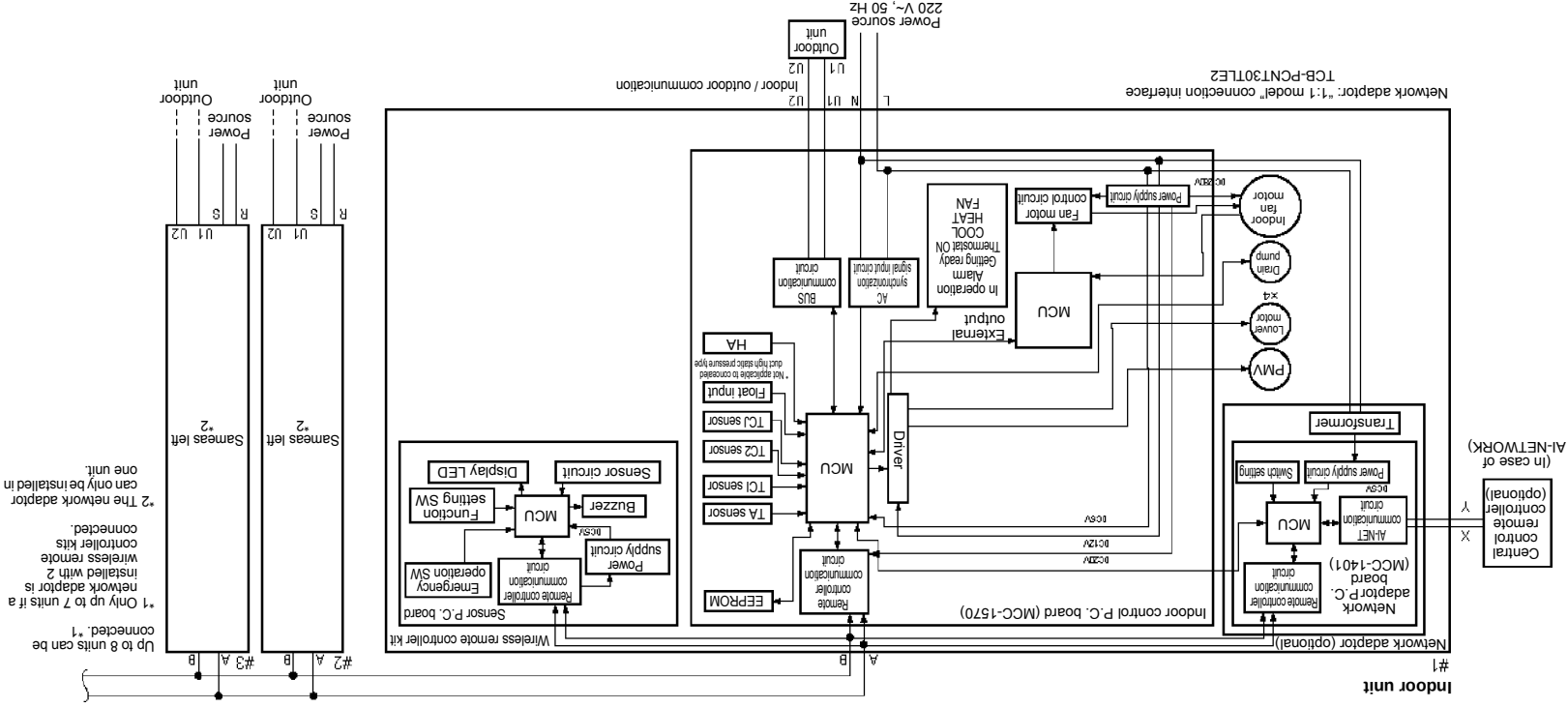


<1-way Air Cassette (YH) Type, Floor Standing Type, Concealed Duct High Static Pressure Type, Floor Standing Concealed Type, Floor Standing Cabinet Type>

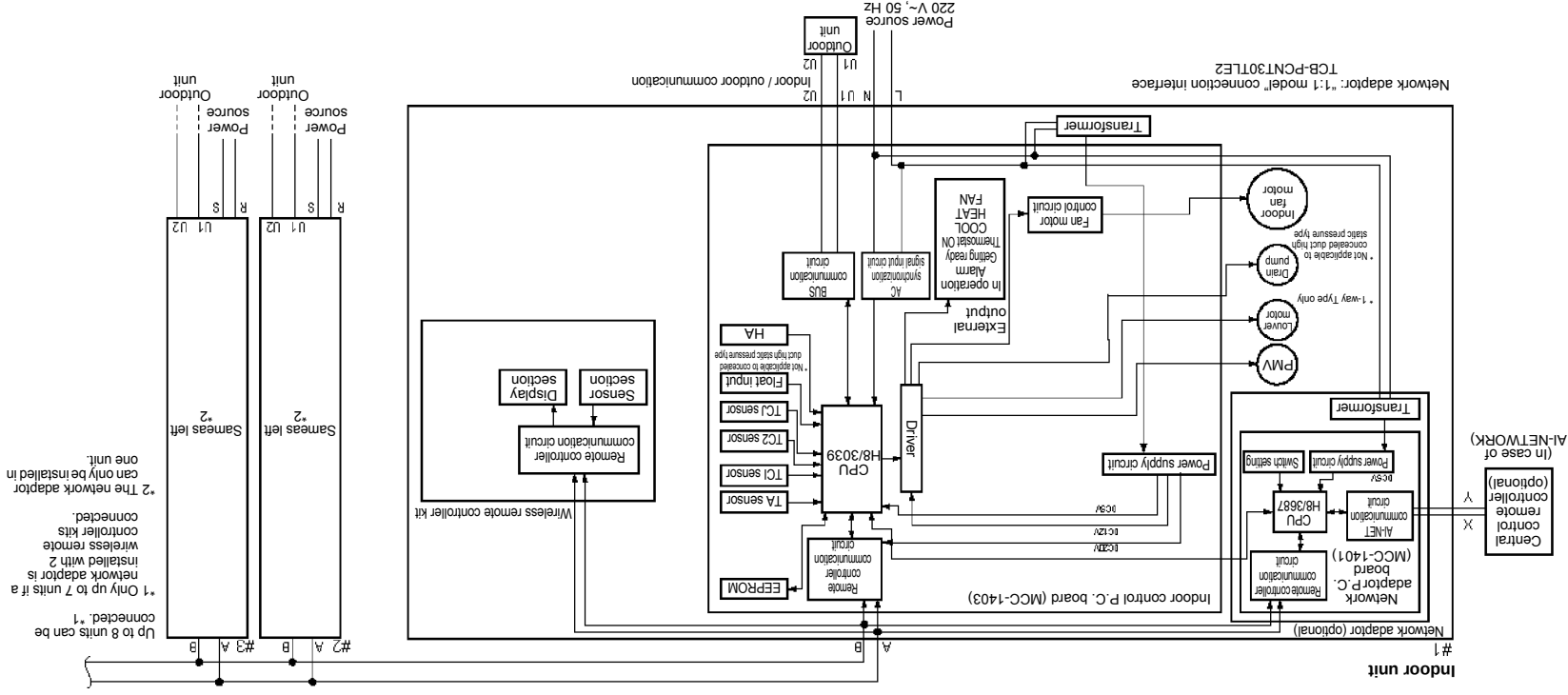


7-1-2. When wireless remote controller kit connected

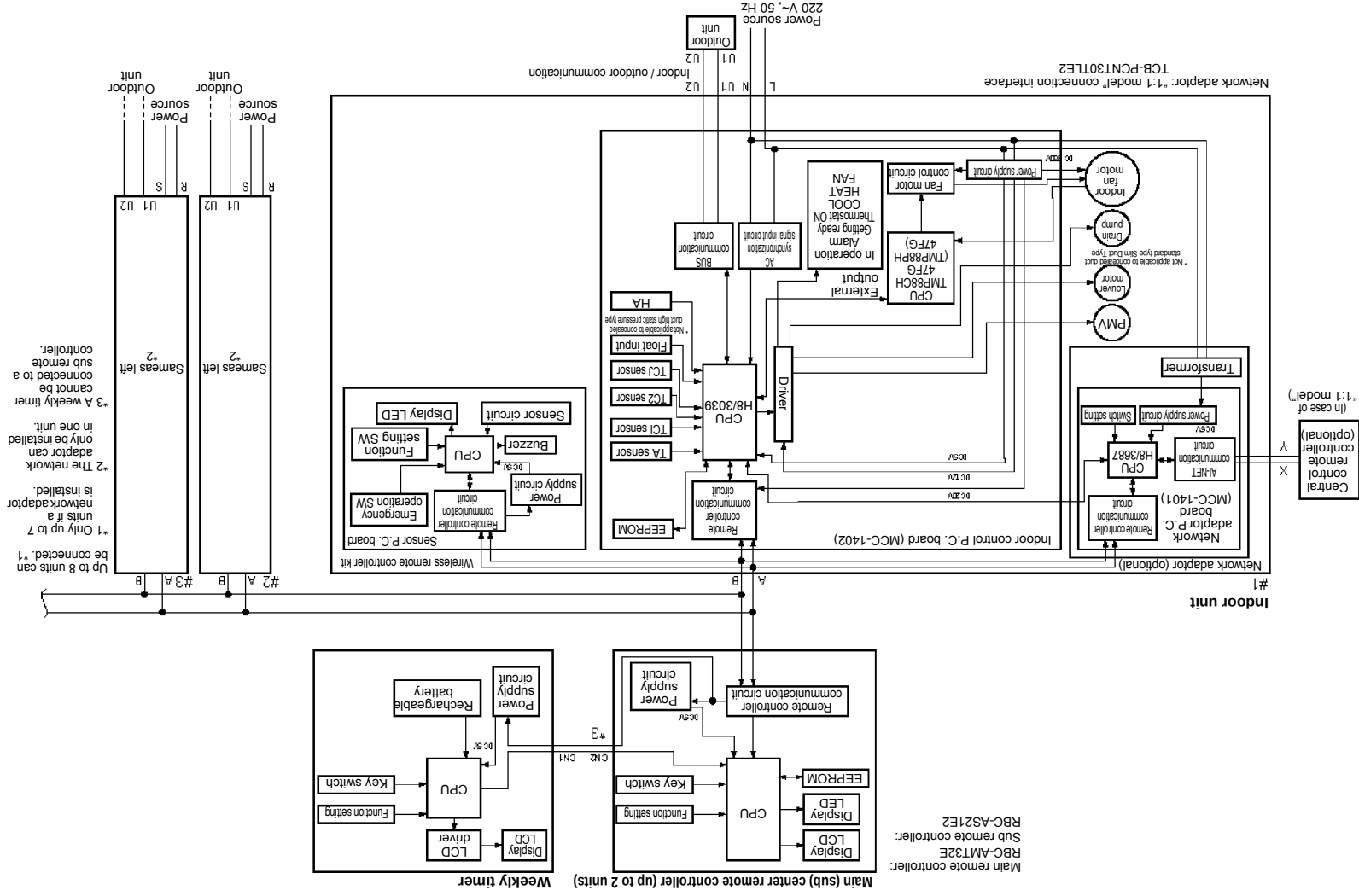
<New 4-way Air Cassette Type> (MMU-AP***2H)



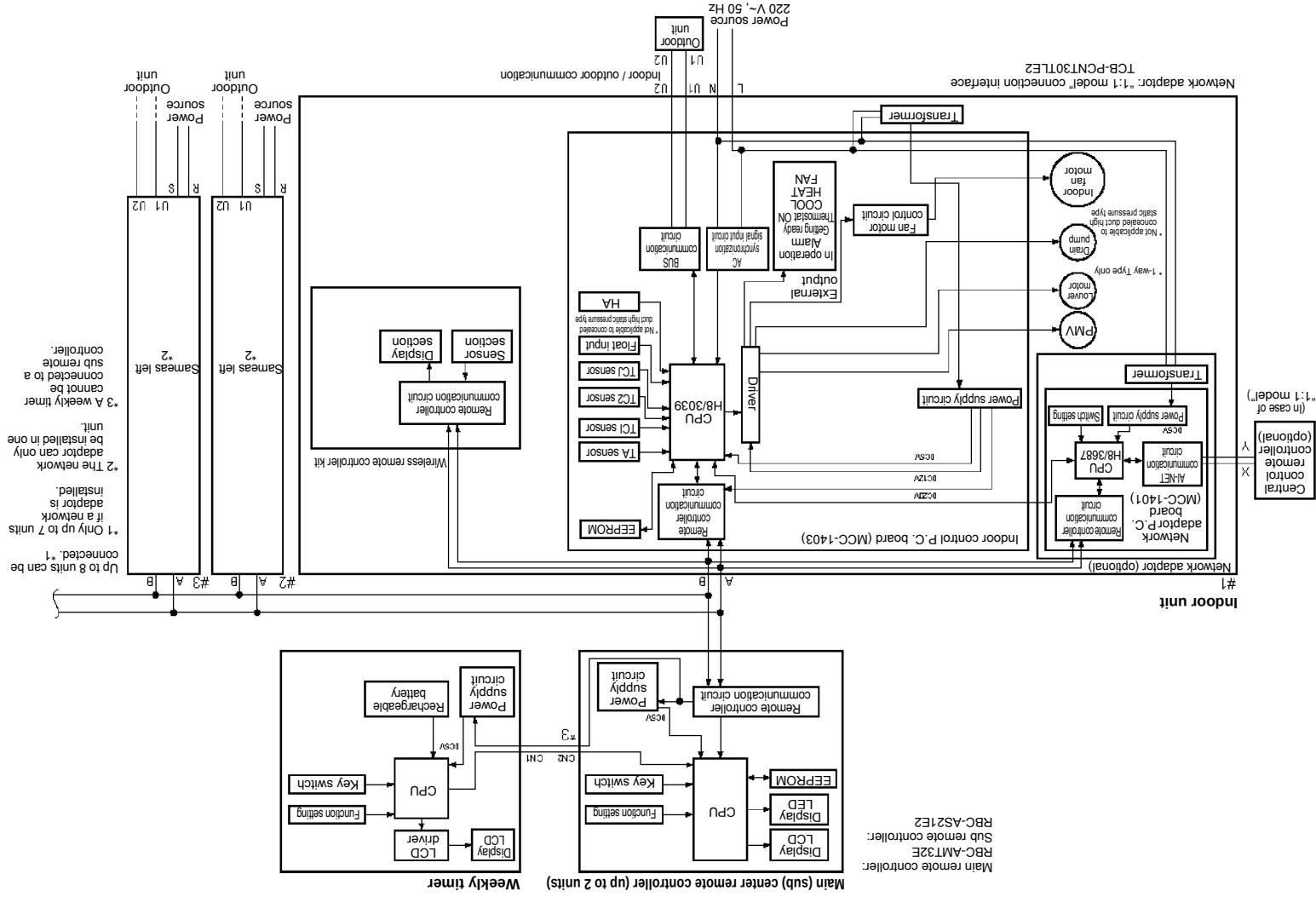
<1-way Air Cassette (YH) Type, Floor Standing Type, Concealed Duct High Static Pressure Type, Floor Standing Concealed Type, Floor Standing Cabinet Type>



<Compact 4-way Air Cassette Type, 1-way Air Cassette (SH) Type, 2-way Air Cassette Type, Ceiling Type, Concealed Duct Standard Type, Slim Duct Type>

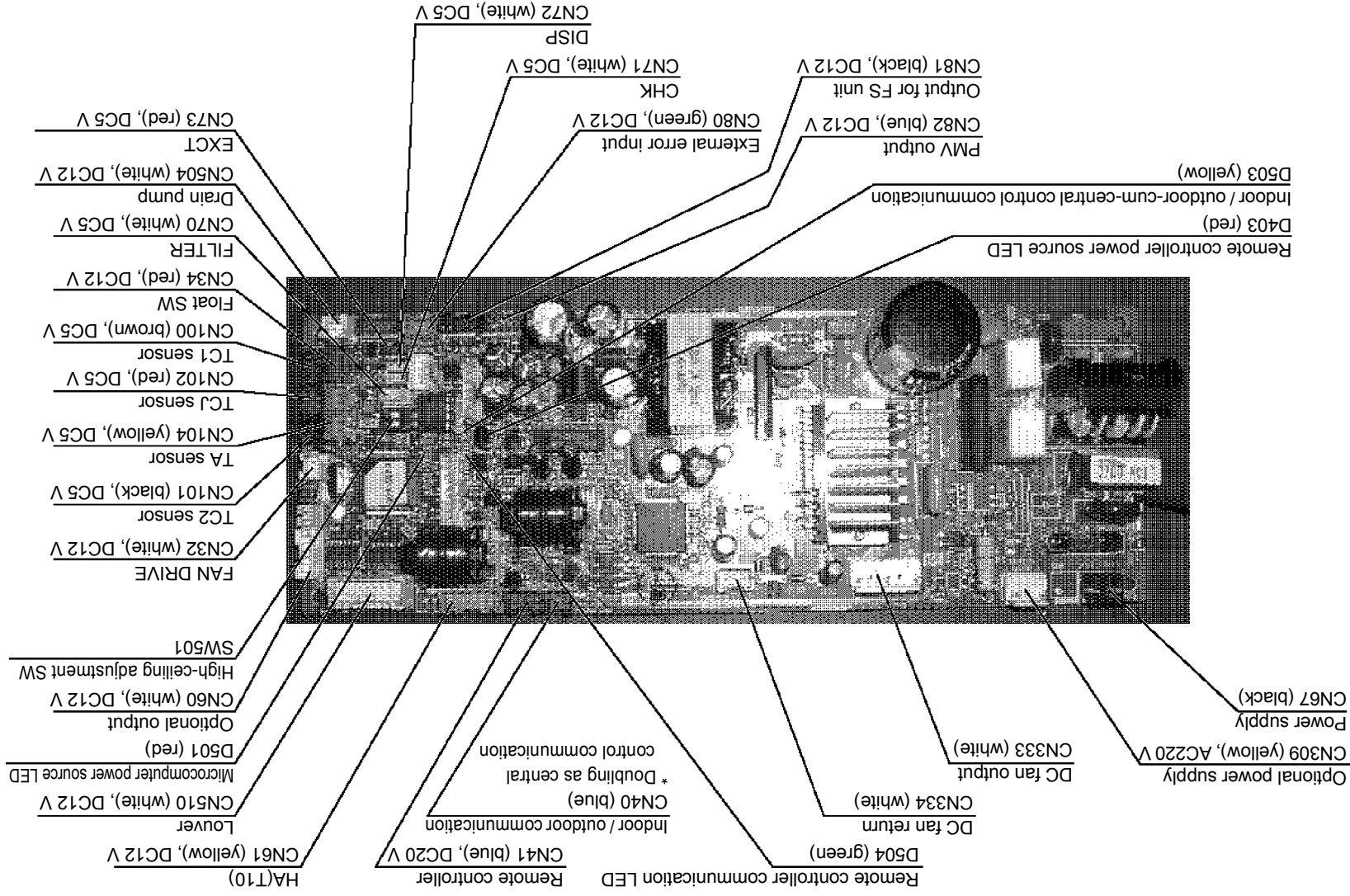


<1-way Air Cassette (YH) Type, Floor Standing Type, Concealed Duct High Static Pressure Type, Floor Standing Concealed Type, Floor Standing Cabinet Type>

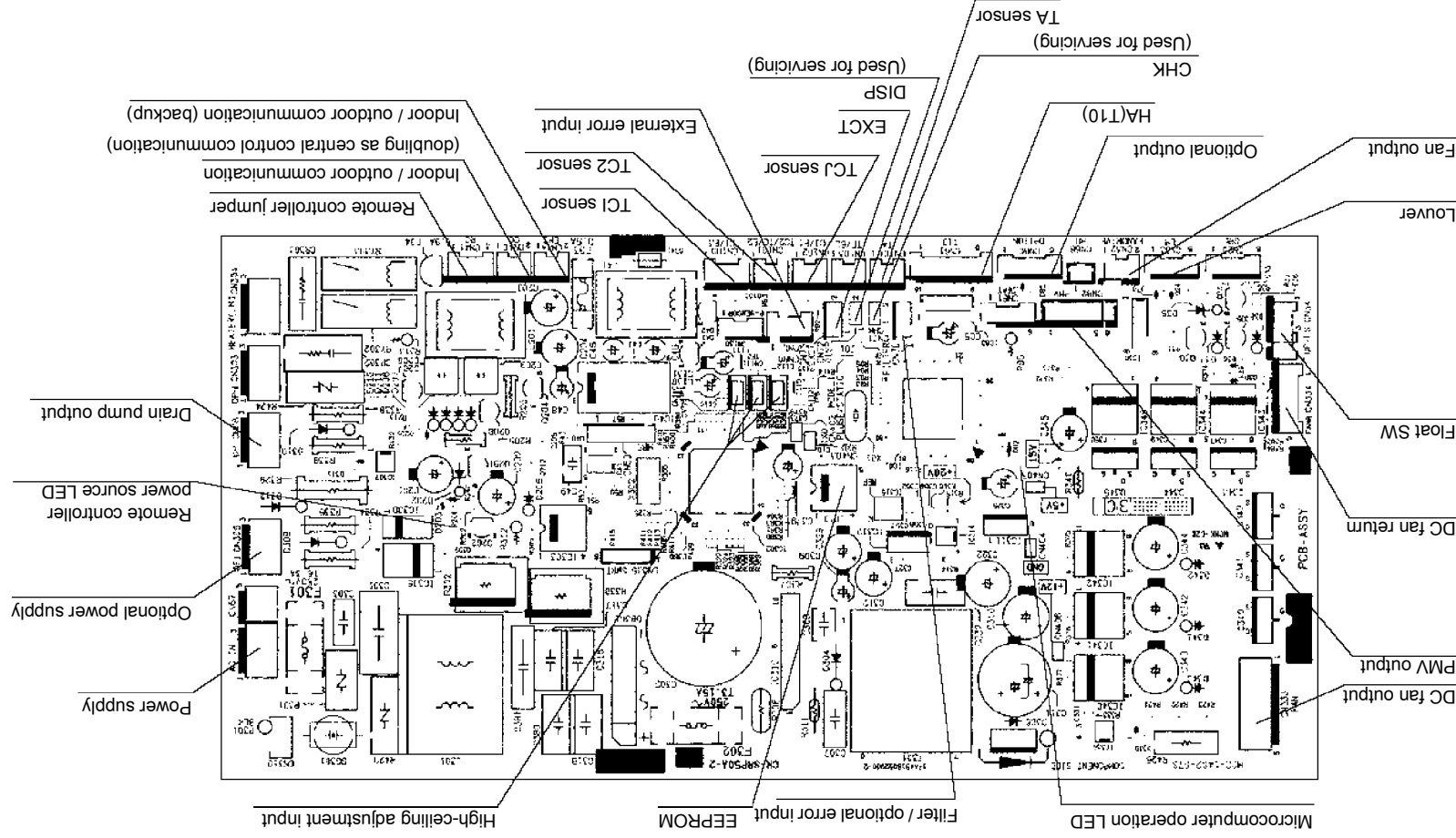


7-2. Indoor printed circuit board

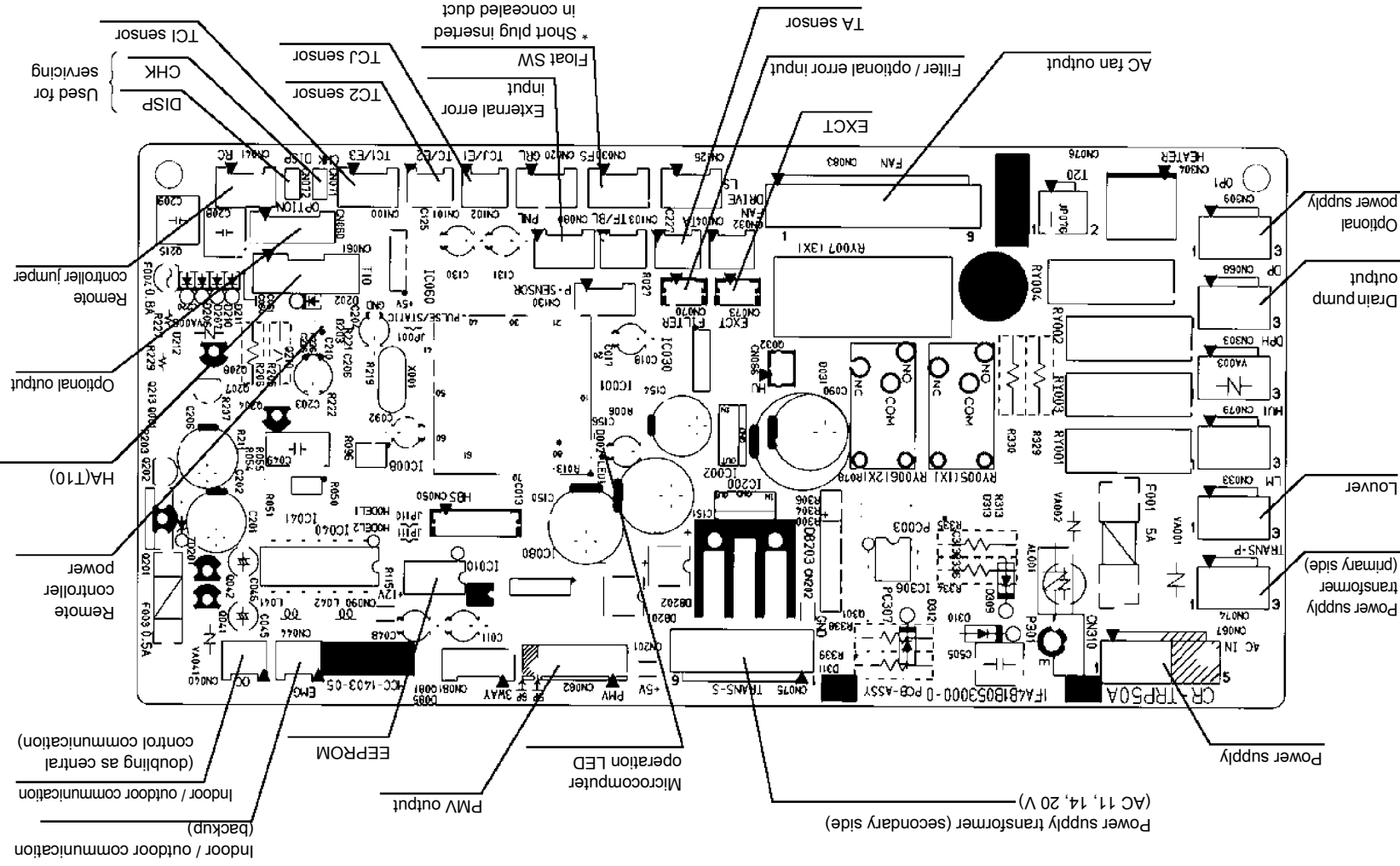
MCC-1570 <New 4-way Air Cassette Type> (MMU-AP**2H)



MCC-1402 <Compact 4-way Air Cassette Type, 1-way Air Cassette (SH) Type, 2-way Air Cassette Type, Ceiling Type, Concealed Duct Standard Type, Slim Duct Type>



MCC-1403 <1-way Air Cassette (YH) Type, Floor Standing Type, Concealed Duct High Static Pressure Type, Floor Standing Concealed Type, Floor Standing Cabinet Type>



7-3. Optional connector specifications of indoor P.C. board

Function	Connector No.	Pin No.	Specification	Remarks
Fan output	CN32	1	DC12 V	Factory default setting: ON when indoor unit in operation and OFF when indoor unit at rest * Fan can be operated on its own by pressing FAN button on remote controller (DN = 31)
		2	Output	
HA	CN61	1	Start / stop input	Start / stop input for HA (J01: In place / Removed = Pulse input (factory default) / Step input)
		2	0 V (COM)	
		3	Remote controller disabling input	Enables / disables start / stop control via remote controller
		4	In-operation output	ON during operation (HA answerback signal)
		5	DC12 V (COM)	
		6	Alarm output	ON while alarm ON
Optional output	CN60	1	DC12 V (COM)	
		2	Defrosting output	ON while outdoor unit defrosted
		3	Thermostat ON output	ON while real thermostat ON (compressor ON)
		4	Cooling output	ON while air conditioner in cooling or related operation (COOL, DRY or cooling under AUTO mode)
		5	Heating output	ON while air conditioner in heating operation (HEAT or heating under AUTO mode)
		6	Fan output	ON while indoor fan ON (air cleaner in use or via interlock wiring)
External error input	CN80	1	DC12 V (COM)	Generates test code L30 and automatically shuts down air conditioner (only if condition persists for 1 minute)
		2	DC12 V (COM)	
		3	External error input	
FILTER Optional error	CN70	1	"FILTER / optional / humidifier setting" input	Factory default setting to be humidifier (evaporative + drain pump OFF)
		2	0 V	Used for control of optional error input (display of action of protective device for equipment connected externally) * "Optional error input" setting to be performed via the remote controller (DN = 24)
CHK Operation check	CN71	1	Check mode input	Used for indoor operation check (prescribed operational status output, such as indoor fan "H" or drain pump ON, to be generated without communication with outdoor unit or remote controller)
		2	0 V	
DISP Display mode	CN72	1	Display mode input	Product display mode - Communication just between indoor unit and remote controller enabled (upon turning on of power) Timer short-circuited out (always)
		2	0 V	
EXCT Demand	CN73	1	Demand input	Imposes thermostat OFF on indoor unit
		2	0 V	

7-4. Test operation of indoor unit

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

This function is provided to check the operation of the indoor unit singly without communication with the remote controller or the outdoor unit. This function can be used regardless of operation or stop of the system. However, if using this function for a long time, a trouble of the equipment may be caused. Limit using this function within several minutes.

[How to operate]

- 1) Short-circuit CHK pin (CN71 on the indoor P.C. board).
The operation mode differs according to the indoor unit status in that time.
Normal time: Both float SW and fan motor are normal.
Abnormal time: Either one of float SW or fan motor is abnormal.
- 2) Restricted to the normal time, if short-circuiting DISP pin (CN72 on the indoor P.C. board) in addition to short-circuit of CHK pin (CN71 on the indoor P.C. board), the minimum opening degree (30 pls) can be set to the indoor PMV only.
When open DISP pin, the maximum opening degree (1500 pls) can be obtained again.

[How to clear]

Open CHK pin. While the system is operating, it stops once but automatically returns to operation after several minutes.

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

- To exchange the indoor PMV coil, set the indoor PMV to Max. opening degree.
- For the detailed positions of CHK pin (CN71 on indoor P.C. board) and DISP pin (CN72 on indoor P.C. board), refer to the indoor P.C. board MCC-1570.

7-5. Method to set indoor unit function DN code

(When performing this task, be sure to use a wired remote controller.)

<Procedure> To be performed only when system at rest

- 1 Push the  +  +  buttons simultaneously and hold for at least 4 seconds.

The unit No. displayed first is the address of the header indoor unit in group control.

Then the fan and louver of the selected indoor unit move.

- 2 Each time the “Select unit” side of the  button is pressed, one of the indoor unit Nos. under group control is displayed in turn. Then the fan and louver of the selected indoor unit move.

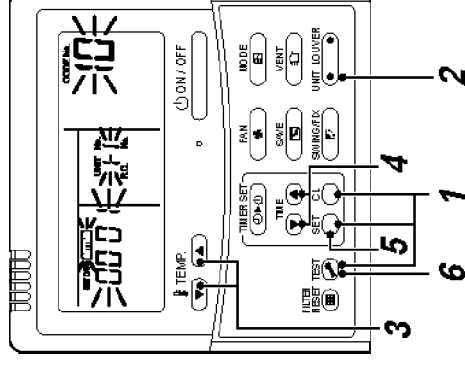
- 3 Use the  (▲) button to select the CODE No. (DN code) of the desired function.

- 4 Use the  (▲) button to select the desired SET DATA associated with the selected function.

- 5 Push the  button. (The display changes from flashing to steady.)

- To change the selected indoor unit, go back to step 2.
- To change the selected function, go back to step 3.

- 6 When the  button is pushed, the system returns to normal off state.



Function CODE No. (DN Code) table (Includes all functions needed to perform applied control on site)

DN	Item	Description	At shipment
01	Filter display delay timer	0000: None 0002: 2500H 0004: 10000H	According to type
02	Dirty state of filter	0000: Standard 0001: High degree of dirt (Half of standard time)	0000: Standard
03	Central control address	0001: No. 1 unit 0099: Unfixed	0099: Unfixed
04	Specific indoor unit priority	0000: No priority 0001: Priority	0000: No priority
06	Heating temp shift	0000: No shift 0002: +2 °C to 0001: +1 °C 0010: +10 °C (Up to +6 recommended)	0002: +2 °C (Floor type 0000: 0 °C)
0d	Existence of [AUTO] mode	0000: Provided 0001: Not provided (Automatic selection from connected outdoor unit)	0001: Not provided
0F	Cooling only	0000: Heat pump 0001: Cooling only (No display of [AUTO] [HEAT])	0000: Heat pump
10	Type	0001: 4-way Air Cassette	Depending on model type
11	Indoor unit capacity	0000: Unfixed	According to capacity type
12	Line address	0001: No. 1 unit to 0030: No. 30 unit	0099: Unfixed
13	Indoor unit address	0001: No. 1 unit to 0064: No. 64 unit	0099: Unfixed
14	Group address	0000: Individual 0002: Follower unit of group	0099: Unfixed
19	Louver type (Air direction adjustment)	0000: No louver 0002: (1-way Air Cassette type, Ceiling type) 0003: (2-way Air Cassette type) 0004: (4-way Air Cassette type)	According to type
1E	Temp difference of [AUTO] mode selection COOL → HEAT, HEAT → COOL	0000: 0 deg to 0010: 10 deg (For setup temperature, reversal of COOL / HEAT by ± (Data value) / 2)	0003: 3 deg (Ts±1.5)
28	Automatic restart of power failure	0000: None	0000: None
2A	Selection of option / error input (CN70)	0000: Filter input 0002: None	0002: None
31	Ventilating fan control	0000: Unavailable	0000: Unavailable
32	TA sensor selection	0000: Body TA sensor	0000: Body TA sensor
33	Temperature unit select	0000: °C (factory default)	0000: °C
F0	Swing mode	0001: Standard 0003: Cycle swing	0001: Standard
F1	Louver fixed position (Louver No.1)	0000: Release 0005: Downward discharge position	0000: Not fixed
F2	Louver fixed position (Louver No.2)	0000: Release 0005: Downward discharge position	0000: Not fixed
F3	Louver fixed position (Louver No.3)	0000: Release 0005: Downward discharge position	0000: Not fixed
F4	Louver fixed position (Louver No.4)	0000: Release 0005: Downward discharge position	0000: Not fixed

DN	Item	Description				At shipment		
5d	High-ceiling adjustment (Air flow selection)	1-way air cassette (SH)					0000: Standard	
		Value	Type	AP015, AP018	AP024			
		0000	Standard (factory default)	3.5 m or less		3.8 m or less		
		0001	High-ceiling (1)	4.0 m or less		4.0 m or less		
		0003	High-ceiling (3)	4.2 m or less		4.2 m or less		
		2-way air cassette						
		Value	Type	AP007~AP030	AP036~AP056			
		0000	Standard (factory default)	2.7 m or less		2.7 m or less		
		0001	High-ceiling (1)	3.2 m or less (*)		3.0 m or less		
		0003	High-ceiling (3)	3.8 m or less (*)		3.5 m or less		
		* The high-ceiling installation of model AP007 to AP012 can only be undertaken when the combined capacity of the indoor units connected is 100 % or less than the capacity of the outdoor unit. Do not proceed with high-ceiling installation if this limit is exceeded.						
			4-way air cassette	AP009~AP012				
Value	Type			4 directions	3 directions	2 directions	2 directions	
Air flow at outlet								
0000	Standard (factory default)			2.7 m	2.8 m	3.0 m	3.2 m	3.5 m
0001	High-ceiling (1)			–	–	–	3.2 m	3.8 m
0003	High-ceiling (3)			–	–	–	3.5 m	–
AP024~AP030						AP036~AP056		
Value	Type			4 directions	3 directions	2 directions	3 directions	2 directions
Air flow at outlet								
0000	Standard (factory default)			3.0 m	3.3 m	3.6 m	3.0 m	3.6 m
0001	High-ceiling (1)			3.3 m	3.5 m	3.8 m	3.3 m	3.8 m
0003	High-ceiling (3)			3.6 m	3.8 m	–	3.6 m	–
	Built-in filter	Ceiling						
		Value	Type	AP015~AP056				
		0000	Standard (factory default)	3.5 m or less				
		0001	High-ceiling (1)	4.0 m or less				
		2-way air cassette						
		0000: Standard filter (factory default)						
		0001: Super long-life filter						
		4-way air cassette						
		0000: Standard filter (factory default)						
		Ceiling						
		0000: Standard filter (factory default)						
		Concealed duct standard						
0000: Standard filter (factory default)								
0001: High-efficiency filter (65 %, 90 %)								
60	Static pressure selection	Slim Duct						
		0000: Standard (factory default)						
		0001: High static pressure 1						
		0003: High static pressure 2						
		0006: Low static pressure						
		0000: Available (can be performed)						
		0000: Standard (factory default)						
		0001: High static pressure 1						
		0003: High static pressure 2						
		0006: High static pressure 3						
		0001: Unavailable (cannot be performed)					0000: Available	
		92	External interlock release condition	0001: Release signal received				
D0	Whether the power saving mode can be set by the remote controller	0001: Valid					0000: Valid	

Type
DN code “10”

Value	Type	Model
0000	1-way Air Cassette	MMU-AP***SH*
0001*1	4-way Air Cassette	MMU-AP***H*
0002	2-way Air Cassette	MMU-AP***WH*
0003	1-way Air Cassette (Compact)	MMU-AP***YH*
0004	Concealed Duct Standard	MMD-AP***BH*
0005	Slim Duct	MMD-AP***SPH *(SH*)
0006	Concealed Duct High Static Pressure	MMD-AP***H*
0007	Ceiling	MMC-AP***H*
0008	High Wall	MMK-AP***H*
0010	Floor Standing Cabinet	MML-AP***H*
0011	Floor Standing Concealed	MML-AP***BH*
0013	Floor Standing	MMF-AP***H*
0014	Compact 4-way Air Cassette	MMU-AP***MH*
0018	Console	MML-AP***NH*

*1 Default value stored in EEPROM mounted on service P.C. board

Indoor unit capacity
DN code “11”

Value	Capacity
0000*	Invalid
0001	007 type
0003	009 type
0005	012 type
0007	015 type
0009	018 type
0011	024 type
0012	027 type
0013	030 type
0015	036 type
0017	048 type
0018	056 type

*1 Default value stored in EEPROM mounted on service P.C. board

7-6. Applied control of indoor unit

Control system using remote controller interface (TCB-IFCB4E2)

Wiring and setting

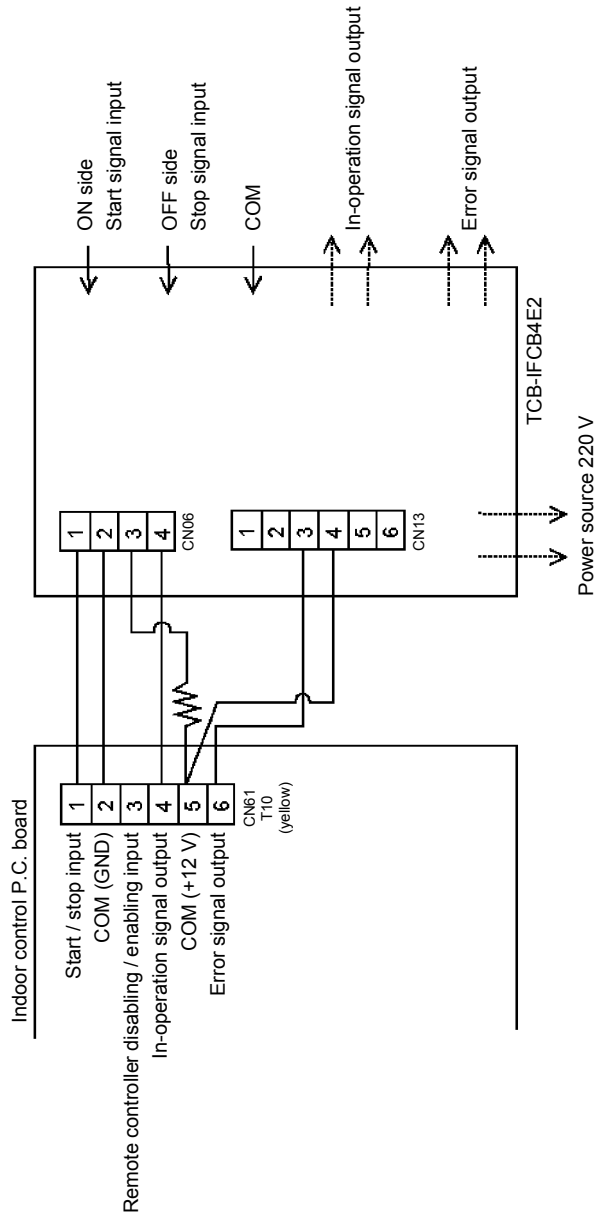
In the case of group control, the control system functions as long as it is connected to one of the indoor units (control P.C. board) in the group. If it is desired to access the operation and error statuses of other units, relevant signals must be brought to it from those units individually.

▼ Control items

- | | |
|-------------------------|--|
| (1) Start / stop input | Start / stop of unit |
| (2) In-operation signal | Output present while unit in normal operation |
| (3) Error signal | Output present while alarm (e.g. serial communication error or operation of protective device for indoor / outdoor unit) being activated |

▼ Wiring diagram of control system using remote controller interface (TCB-IFCB4E2)

Input IFCB4E2: No-voltage ON / OFF serial signal
Output No-voltage contact (in-operation and error indication)
Contact capacity: Max. AC 240 V, 0.5 A



▼ Ventilating fan control from remote controller

[Function]

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

1. Operation

Handle a wired remote controller in the following procedure.

- * Use the wired remote controller during stop of the system.
- * Be sure to set up the wired remote controller to the outdoor unit. (Same in group control)
- * In a group control, if the wired remote controller is set up to the outdoor unit, both header and follower units are simultaneously operable.

1 Push concurrently + + buttons for 4 seconds or more.

The unit No. displayed firstly indicates the header indoor unit address in the group control.
In this time, the fan of the selected indoor unit turns on.

2 Every pushing button, the indoor unit numbers in group control are displayed successively.

In this time, the fan of the selected indoor unit only turns on.

3 Using the setup temp or button, specify the CODE No. 31.

4 Using the timer time or button, select the SET DATA. (At shipment: 0000) The setup data are as follows:

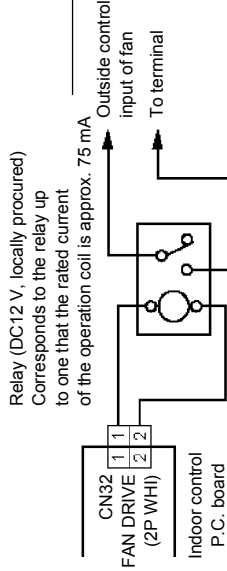
SET DATA	Handling of operation of air to air heat exchanger or ventilating fan
0000	Unavailable (At shipment)
0001	Available

5 Push button. (OK if display goes on.)

- To change the selected indoor unit, go to the procedure 2).
- To change the item to be set up, go to the procedure 3).

6 Pushing returns the status to the usual stop status.

2. Wiring



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

Compact 4-way Air Cassette type
4-way Air Cassette type
1-way Air Cassette type (2 series)
Concealed Duct Standard type
Slim Duct type
Ceiling type
High Wall type
Corresponds up to a relay in which rated current of the operation coil is approx. 75 mA
Other type models:
Correspond up to a relay in which rated current of the operation coil is approx. 16 mA (Does not correspond to a terminal block type relay on the market.)

▼ Leaving-ON prevention control

[Function]

- This function controls the indoor units individually. It is connected with cable to the control P.C. board of the indoor unit.
- In a group control, it is connected with cable to the indoor unit (Control P.C. board), and the CODE No. 2E is set to the connected indoor unit.
- It is used when the start operation from outside if unnecessary but the stop operation is necessary.
- Using a card switch box, card lock, etc, the forgotten-OFF of the indoor unit can be protected.
- When inserting a card, start / stop operation from the remote controller is allowed.
- When taking out a card, the system stops if the indoor unit is operating and start / stop operation from the remote controller is forbidden.

1. Control items

- 1) Outside contact ON: The start / stop operation from the remote controller is allowed.
(Status that card is inserted in the card switch box)
 - 2) Outside contact OFF: If the indoor unit is operating, it is stopped forcibly.
(Start / stop prohibited to remote controller)
(Status that card is taken out from the card switch box)
- * When the card switch box does not perform the above contact operation, convert it using a relay with b contact.

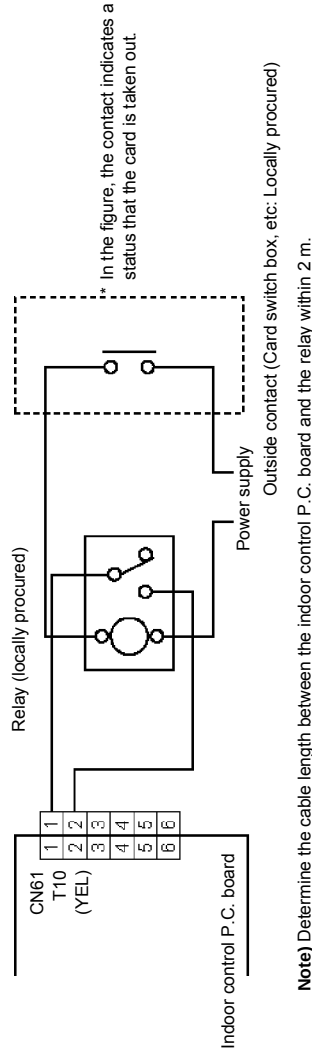
2. Operation

Handle the wired remote controller switch in the following procedure.

- * Use the wired remote controller switch during stop of the system.

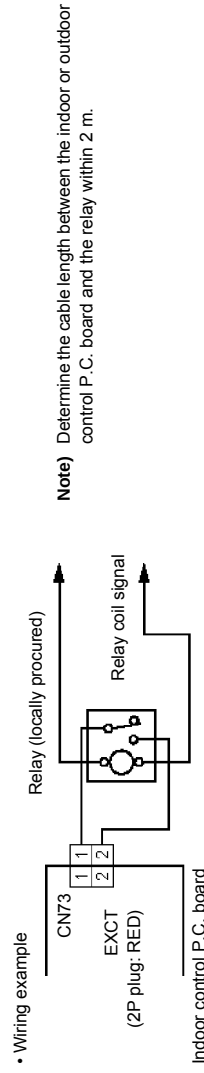
- 1 Push concurrently + + buttons for 4 seconds or more.
- 2 Using the setup temp or button, specify the CODE No. **2E**.
- 3 Using the timer time or button, set **000 /** to the SET DATA.
- 4 Push button.
- 5 Push button. (The status returns to the usual stop status.)

3. Wiring



▼ Power peak-cut from indoor unit

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



7-7. Applied control for 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 made available by setting relevant switches provided on the interface P.C. board of the outdoor unit.

7-7-1. 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

SW11		Operation
Bit 1	Bit 2	
OFF	OFF	
ON	OFF	
OFF	ON	
ON	ON	Priority indoor unit (priority given to the operation mode of the specific indoor unit set up for priority operation)

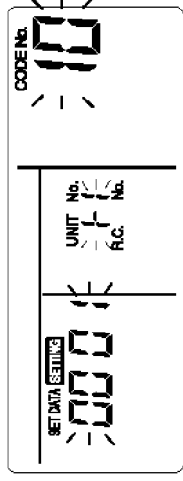
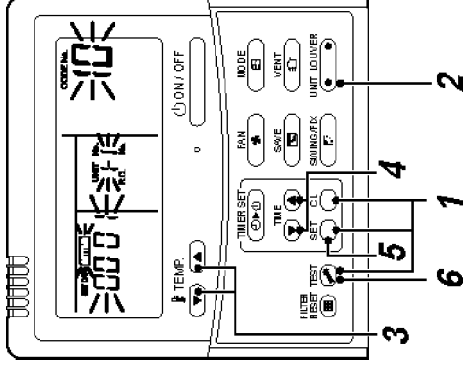
(2) Indoor unit setup method for priority indoor unit mode

The setting can be changed only when the system is at rest. (Be sure to turn off the system prior to this operation.)

- 1 Push the  +  +  buttons simultaneously and hold for at least 4 seconds. The display window will start flashing in a little while.**

Verify that the displayed CODE No. is 10.

- If the displayed CODE No. is not 10, press the  button to erase the display and repeat the procedure from the beginning.
(Note that the system does not respond to remote controller operation for about 1 minute after the  button is pushed.)
(In the case of group control, the indoor unit No. displayed first indicates the outdoor unit.)



- 2 Each time the  button is pushed, one of the indoor unit Nos. under group control is displayed in turn. Select the indoor unit whose setting is to be changed.**

The fan and louver of the selected indoor unit then come on, so that the position of this unit can be confirmed.

- 3 Use the  button to select the CODE No. 04.**

- 4 Use the  button to select the SET DATA 0001.**

Priority set 0001 No priority set 0000

- 5 Push the  button.**

The setup is finished when the display changes from flashing to steady.

- 6 Upon finishing the setup, push the  button. (This finalizes the setting.)**

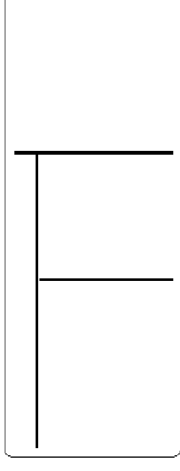
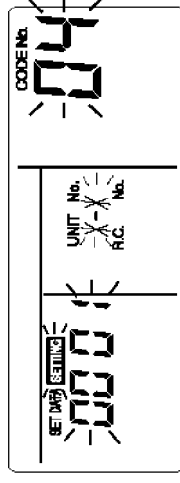
When the  button is pushed, the display goes blank, and the system returns to normal off state.

(Note that the system does not respond to remote controller operation for about 1 minute after the  button is pushed.)

NOTE

Priority can be given to only one indoor unit. If more than one indoor unit is accidentally set to priority, an error code (L5 or L6: Duplicated indoor unit priority setting) will be displayed.
All units displaying L5 have been set to 0001 (priority). Keep the unit to which priority should be given as it is, and change the value back to 0000 (no priority) for all the rest.

Error code	Description
L5	Duplicated indoor unit priority setting (The unit is set to 0001.)
L6	Duplicated indoor unit priority setting (The unit is set to 0000.)



7-8. Applied control of outdoor unit

7-8-1. Optional P.C. board of outdoor unit installation

Placing position

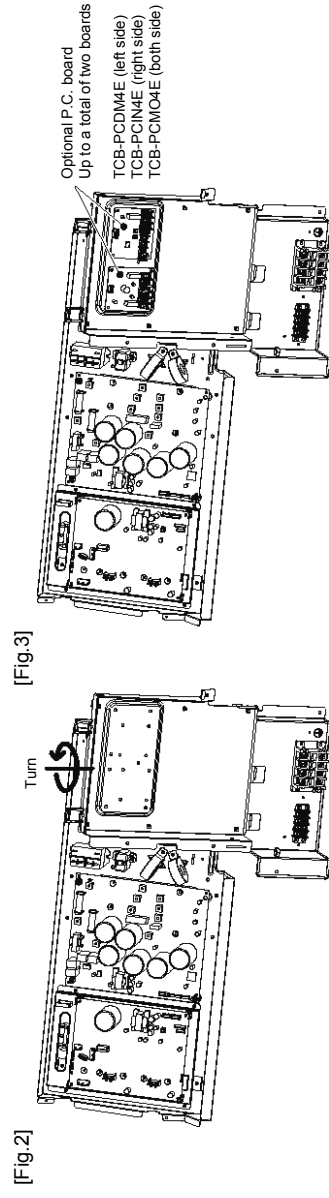
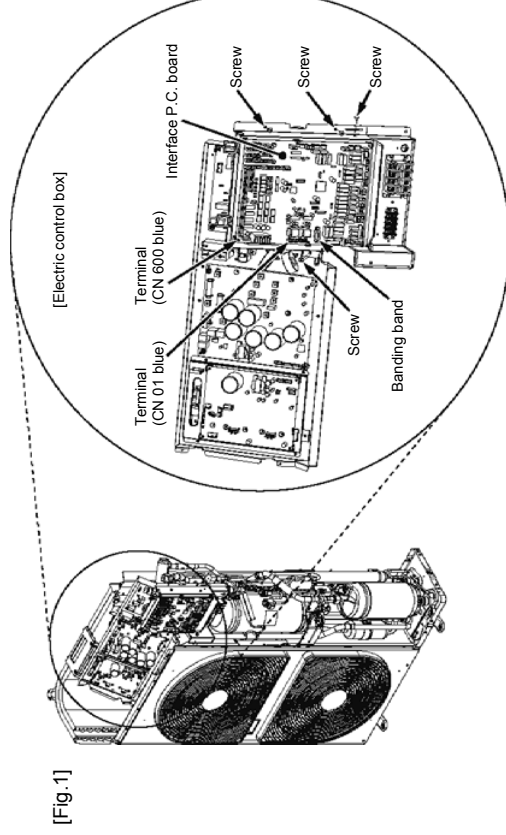
Install these optional P.C. board to the reverse side of the Interface P.C. board on outdoor unit.
Be sure to turn off the power switch before installing.

(1) If the screw of the position shown in Fig. 1 is removed, two terminals (CN01 and CN600) are detach.

Cut the binding band, an interface P.C. board will be opened.

(2) Place this P.C. board by using the support of the electric control box.

There are four installation holes to place the support of the electric control box.

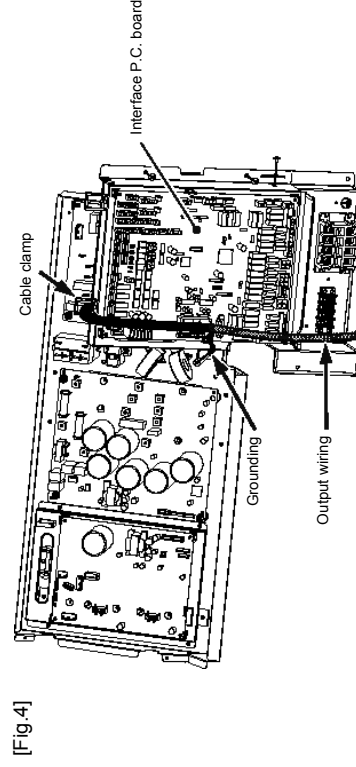


Wiring

(1) Refer to the "Wiring diagram" when wiring.

(2) Be sure to use the shield wire to prevent noise trouble.

(3) Attach the output wiring with the cable clamp, and connect the wiring with the grounding at sides of shield wire.

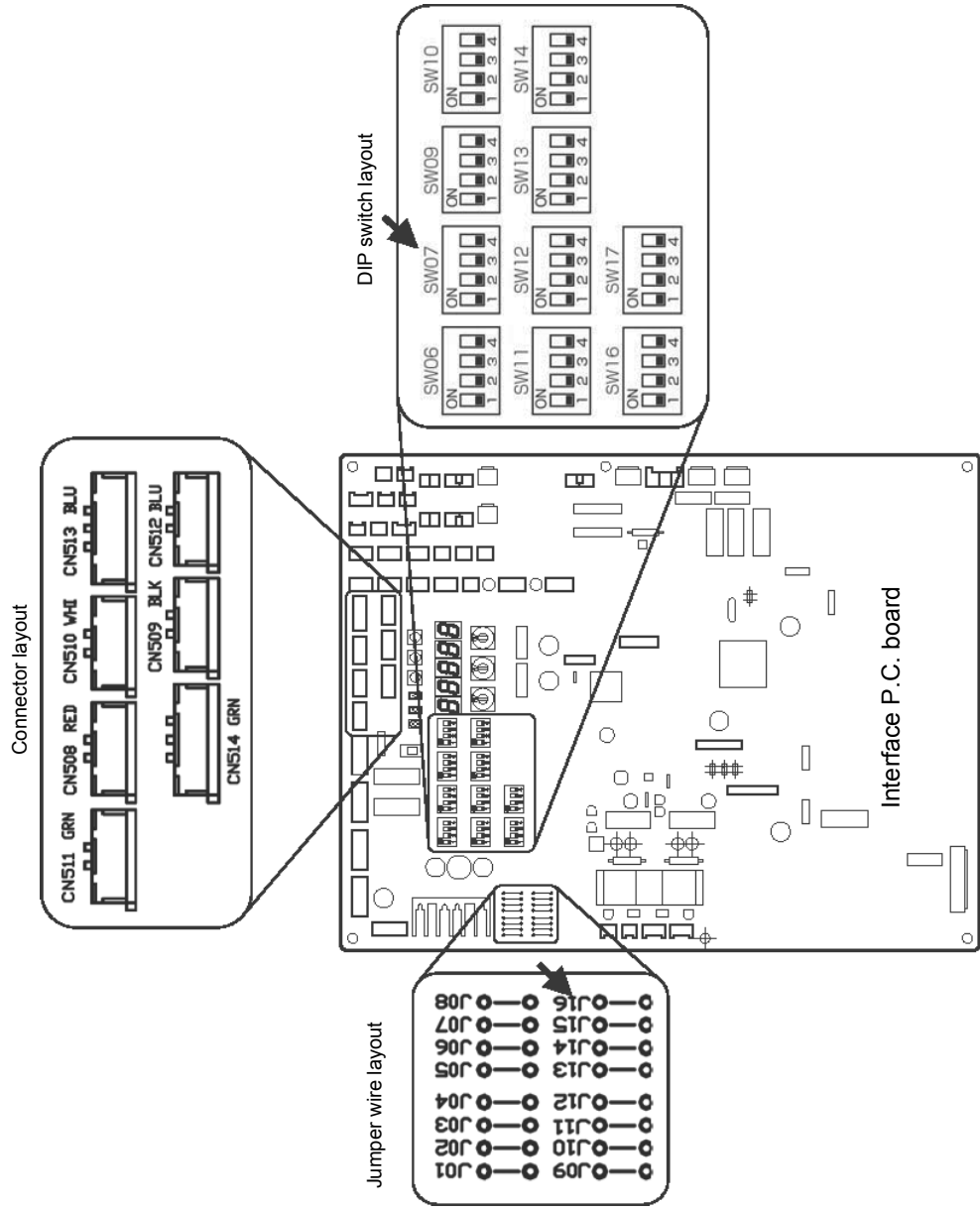


Optional control P.C. boards provide access to a range of functions as listed below.

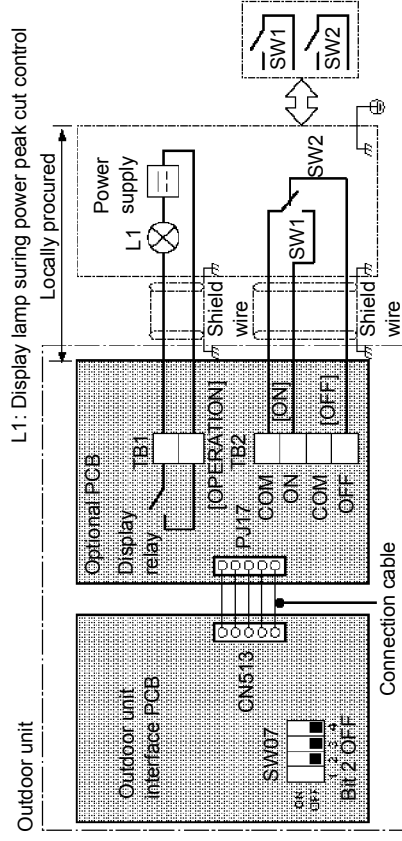
No.	Function	Control P.C. board to be used			Outdoor unit interface P.C. board setting*			
		PCDM4E	PCMO4E	PCIN4E	Connector No.	DIP SW No.	Bit	Jumper to be removed
1	Power peak-cut control (Standard)	✓	-	-	CN513 (blue)	SW07	1	-
	Power peak-cut control (For one input function)	✓	-	-	CN513 (blue)	SW07	1	J16
2	Power peak-cut control (Enhanced Functions)	✓	-	-	CN513 (blue)	SW07	1,2	-
3	Snowfall fan control	-	✓	-	CN509 (black)	-	-	-
4	External master ON / OFF control	-	✓	-	CN512 (blue)	-	-	-
5	Night operation (sound reduction) control	-	✓	-	CN508 (red)	-	-	-
6	Operation mode selection control	-	✓	-	CN510 (white)	-	-	-
7	Error / Operation output	-	-	✓	CN511 (green)	-	-	-

Layout of outdoor unit interface P.C. board

* DIP switch settings and jumper wire statuses vary from function to function.



7-8-2. Power peak-cut control (standard)



For SW1 and SW2, be sure to provide no-voltage contacts for each terminal.
The input signals of SW1 and SW2 may be pulse input (100 msec or more) or continuous make.

Operation

An external power peak-cut control signal limits the peak capacity of the 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 wider) or step signals.
Do not turn on SW1 and SW2 simultaneously.

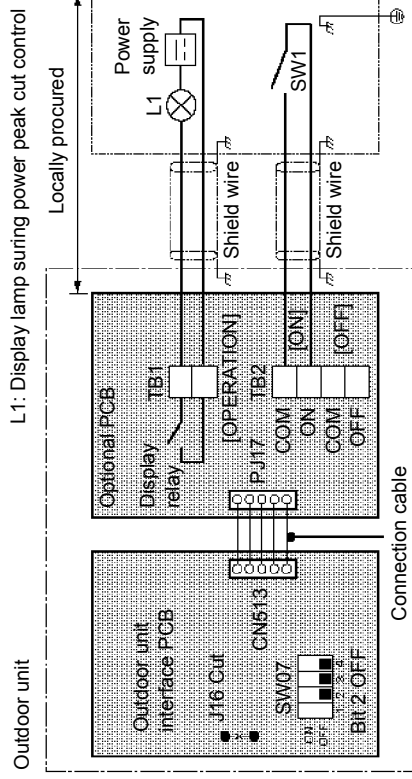
* Be sure to provide a contact for each terminal.

Power peak-cut control settings

Power peak-cut control P.C. board	SW1	SW2	L1	Interface P.C. board of outdoor unit	
				SW07 Bit 1 OFF	SW07 Bit 1 ON
Power peak-cut control ON signal received	ON	OFF	ON	0 % (forced stop)	60 % capacity (upper limit regulated)
Power peak-cut control OFF signal received	OFF	ON	OFF	100 % (normal operation)	100 % (normal operation)

Two-core cable support

It allows ON / OFF power peak-cut control to be implemented using a power peak-cut control ON input (SW1) alone, provided that the J16 jumper wire on the interface P.C. board of the outdoor unit has been removed.



<SW07 Bit 2 OFF (two-step control)>

Power peak-cut control is enabled as long as SW1, as shown on the wiring diagram, is ON (continuously).

Jumper wire J16	SW07 Bit 1		Indicator relay (L1)
	Input SW1	Bit 1 OFF	Bit 1 ON
Cut	OFF	0 % (forced stop)	60 % capacity (upper limit regulated)
	ON	100 % (normal operation)	100 % (normal operation)
			OFF
			ON

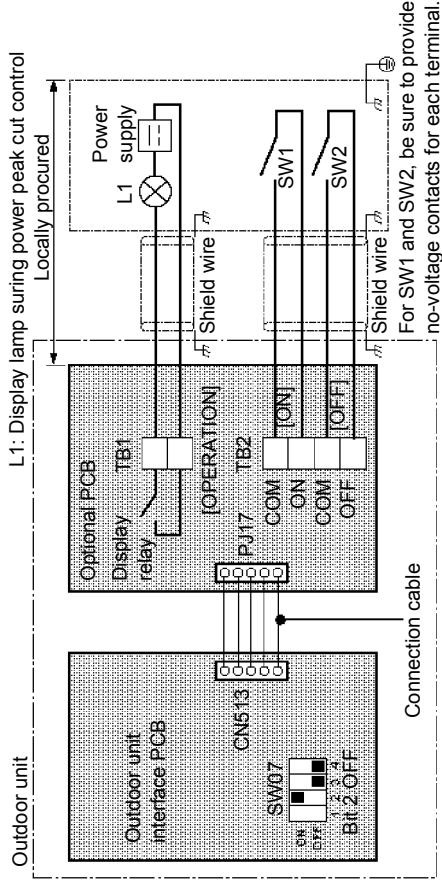
Note 1: Specifications of display relay contact

- 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.

7-8-3. Power peak-cut control (extended)



Operation

An external power peak-cut control signal limits the peak capacity of the 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 wider) or step signals.

* Be sure to provide a contact for each terminal.

Extended power peak-cut control settings

Specifications of display relay contact

Indication lamp	External power peak-cut control signals		Peak capacity I/F SW07 Bit 1	
	SW1	SW2	OFF	ON
L1	OFF	OFF	100 % (normal operation)	100 % (normal operation)
OFF	ON	OFF	80 % (upper limit regulated)	85 % (upper limit regulated)
ON	OFF	ON	60 % (upper limit regulated)	75 % (upper limit regulated)
ON	ON	ON	0 % (forced stop)	60 % (upper limit regulated)

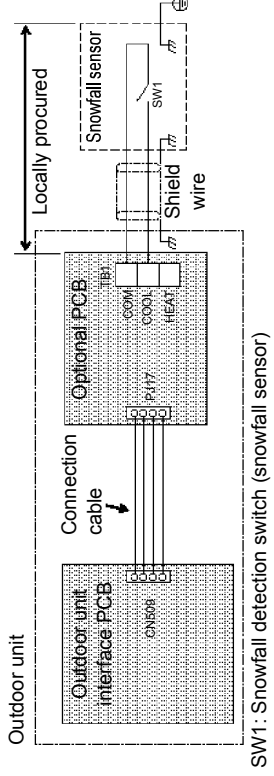
Note 1: Specifications of display relay contact

- 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 VAC, 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.

7-8-4. Snowfall fan control



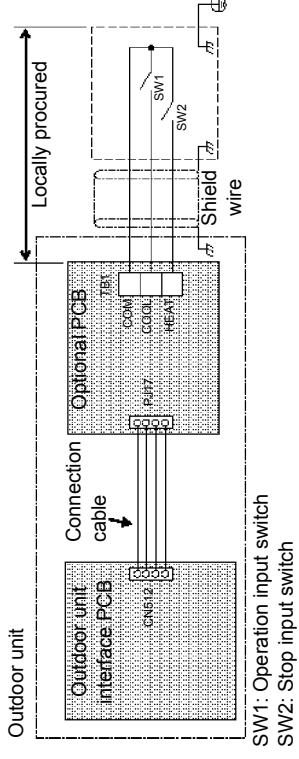
Operation

An external snowfall signal turns on the outdoor unit fan.

Terminal	Input signal	Operation
COOL (SW1)	ON	Snowfall fan control (Turns on outdoor unit fan)
	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.)

7-8-5. External master ON / OFF control



Operation

The system is started / stopped from the outdoor unit.

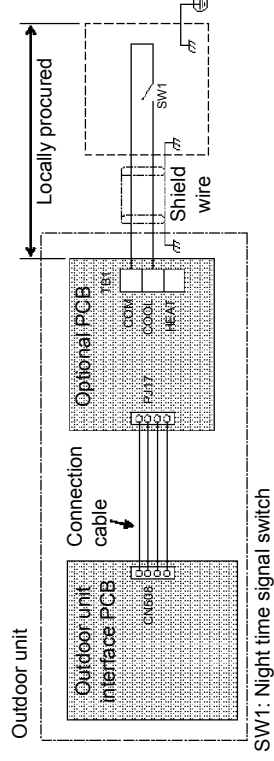
Terminal	Input signal	Operation
COOL (SW1)	ON	Turns on all indoor units
HEAT (SW2)	ON	Turns off all indoor units

The input signal is recognized during its falling phase. (After reaching the bottom of the falling edge, the signal must remain there for at least 100 ms.)

CAUTION

- (1) Do not turn on the COOL (SW1) and HEAT (SW2) terminals simultaneously.
 - (2) Be sure to provide a contact for each terminal.
- External signal: No-voltage pulse contact

7-8-6. Night operation (sound reduction) control



Operation

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

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

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.)

The system's capacity is reduced during low-noise operation.

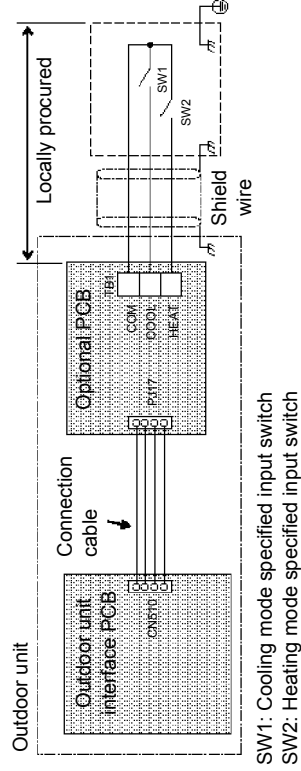
The table below provides a rough guide to this capacity reduction.

Outdoor unit (base unit)	During low-noise mode* dB(A)	Capacity	
		Cooling	Heating
Model 0604*	50	approx. 85 %	approx. 60 %
Model 0804*	50	approx. 65 %	approx. 50 %

Relative to maximum capacity

* Position of noise measuring device: 1 m from the front face of the set and 1.5 m above ground (anechoic sound)

7-8-7. Operation mode selection control



NOTE

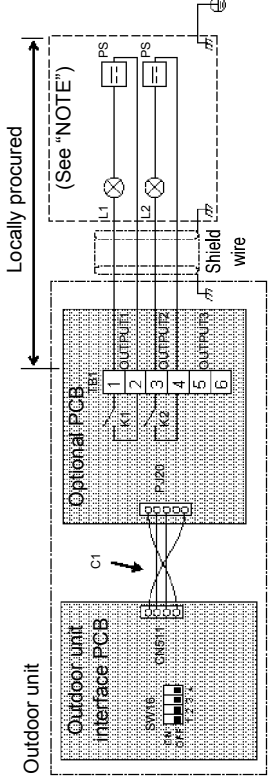
SW1: COOL mode selection switch

SW2: HEAT mode selection switch

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

* The display " (Operation mode selection control in progress)" appears on the remote controller

7-8-8. Error / 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.

Error output: An error indication signal is output if an error 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>

220-240 VAC, 10 mA or more, 1 A or less

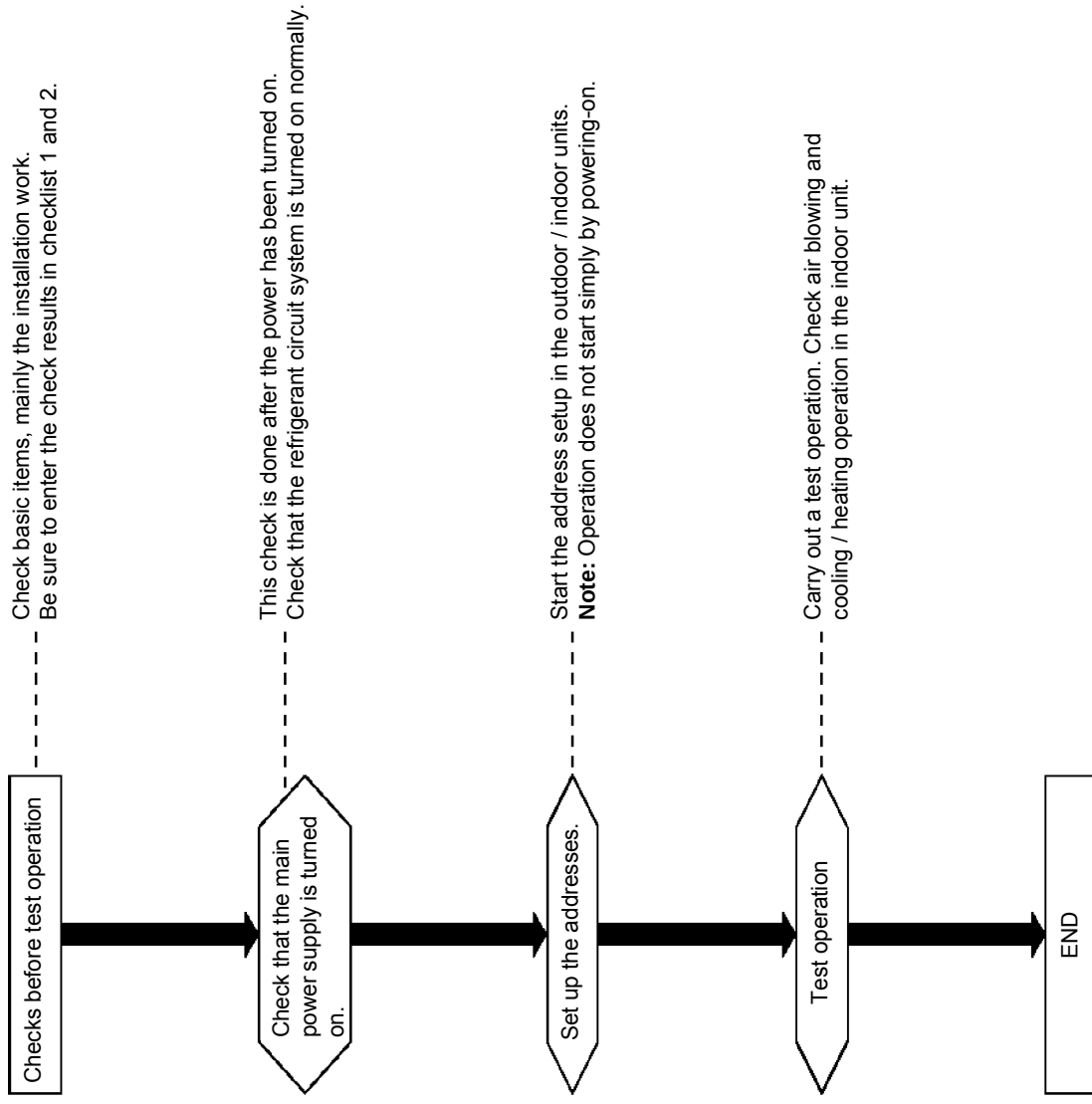
24 VDC, 10 mA or more, 1 A or less (non-conductive load)

C1	Connector cable 1
CN511	Connector on interface side (green)
K1,K2	Relays
L1	Error indication Lamp
L2	Operation indication Lamp
OUTPUT1	Error output
OUTPUT2	Operation output
P/J20	Connector on optional PCB side
PS	Power supply unit
TB1	Terminal block

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."



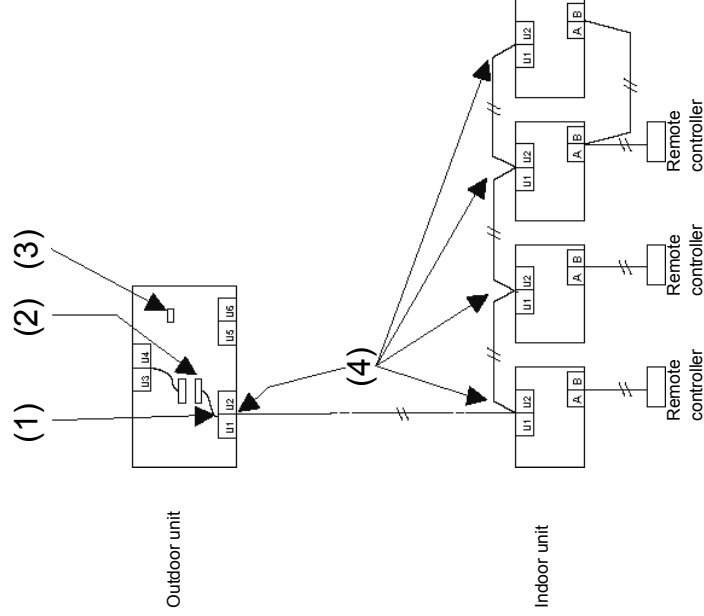
8-2. Check items before test operation (before powering-on)

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 that of R22 or R407 refrigerant “Modular Multi system” air conditioners. Check wiring points again carefully.

(1) In the case that a central control system is not connected:

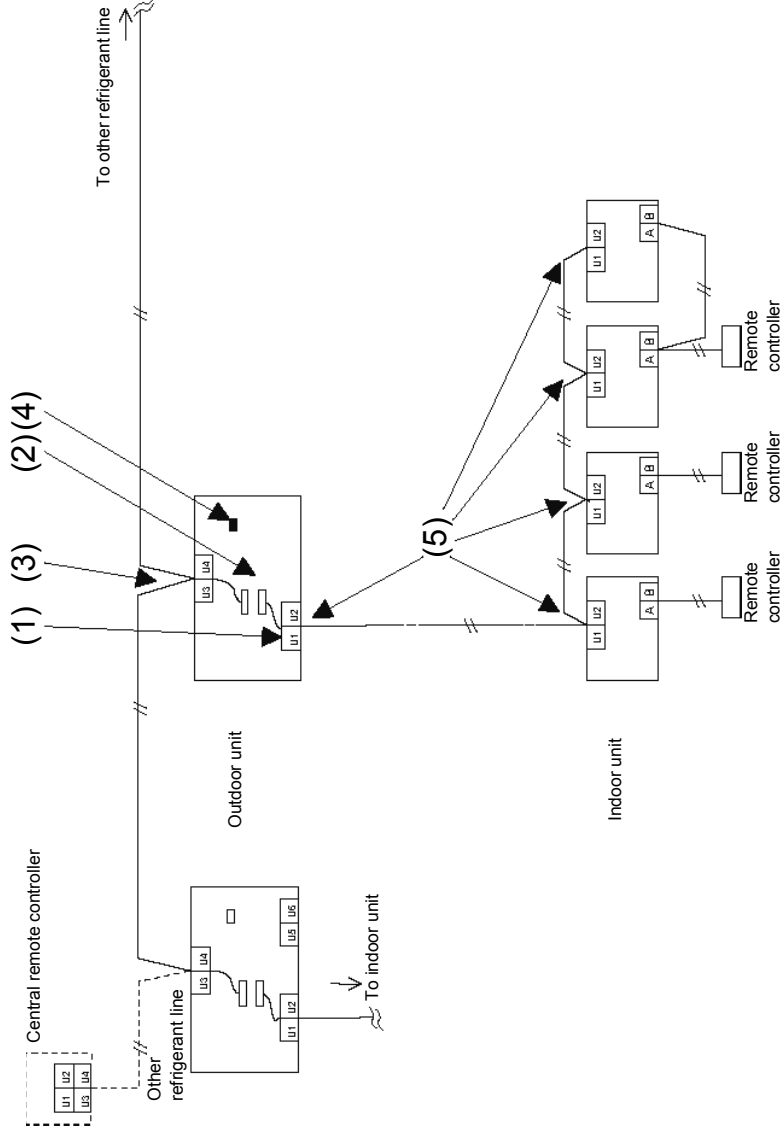


Main check items		Check
(1) Are the indoor and outdoor communication lines of the outdoor unit connected to the U1 / U2 terminals?		
(2) Is the relay connector between the U1 / U2 terminal and the U3 / U4 terminal removed? (Set up factory default)		
(3) Is the terminal resistance (SW30-bit 2) on the interface P.C. board of the outdoor unit turned on? (Set up factory default)		
(4) Is the end terminal of the shield wire earthed?		

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.

(2) 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 of the outdoor unit connected to the U1 / U2 terminals?	
(2) Is the relay connector between the U1 / U2 terminal and the U3 / U4 terminal removed? (Set up factory default) (Keep the relay connector disconnected before address setup.)	
(3) Is the communication line of the central control system connected to the outdoor unit U3 / U4 terminals of each refrigerant line? (The communication line of the central control system may be connected to the communication lines of the indoor / outdoor communication lines.)	
(4) Is the terminal resistance (SW30-bit 2) on the interface P.C. board of the outdoor unit turned on? (Set up factory default) * After address setup and test operation check, turn on the SW30-bit 2 of the outdoor unit for the smallest line address, and turn off SW30-bit 2 of the outdoor unit for other refrigerant lines. ("8-4-3. Address setup procedure")	
(5) Is the end terminal of the shield wire earthed?	
(6) When the refrigerant line and the central control system of the DI-SDI series are connected: → Are Network adapter (TCB-PCNT30TLE2) correctly connected? → When the DI-SDI series operates with group, twin, or triple operation, are the adapters connected to the header unit of the indoor unit?	

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 (U1, U2)	
	Central control system connection terminals (U3, U4)	
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 380 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?		
	Outdoor unit	Gas side Liquid side

Checklist 2

Calculate the additional amount of refrigerant from the following:

Additional refrigerant charge amount at local site	=	Real length of liquid pipe	×	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)

(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
Ø6.4	0.025 ×	=	kg
Ø9.5	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

	Capacity rank Equivalent to HP	007	009	012	015	018	024	027	030	036	048	056
		0.8	1.0	1.25	1.7	2.0	2.5	3.0	3.2	4.0	5.0	6.0
Indoor unit model name	4-way cassette	MMU-AP***H	—	0.4	0.4	0.8	0.8	0.8	0.8	1.2	1.2	1.2
	2-way cassette	MMU-AP***WH	0.4	0.4	0.4	0.6	—	—	—	—	—	—
	1-way cassette	MMU-AP***YH(-E)/SH(-E)	0.4	0.4	0.4	0.5	0.7	0.7	0.7	1.1	1.1	1.1
		MMD-AP***BH(-E)	0.3	0.3	0.3	0.5	0.5	0.6	—	—	—	—
	Duct	MMD-AP***SPH(-E)	0.3	0.3	0.3	0.5	0.5	0.8	0.8	1.1	1.1	1.1
		MMD-AP***H(-E)	—	—	—	0.8	1.0	1.0	—	—	—	—
	Ceiling	MMC-AP***H(-E)	—	—	—	0.5	0.7	0.7	—	1.1	1.1	—
	High wall	MMK-AP***3H(-T)	0.5	0.5	0.5	0.7	0.7	—	—	—	—	—
		MMK-AP***4MH-E/2H	0.3	0.3	0.3	—	—	—	—	—	—	—
	Floor standing	MMF-AP***H(-E)	—	—	—	0.7	0.7	1.0	1.0	—	1.3	1.3
		MML-AP***H(-E)	0.5	0.5	0.5	0.5	0.8	0.8	—	—	—	—
		MML-AP***BH(-E)	0.3	0.3	0.3	0.5	0.5	0.7	—	—	—	—
		MML-AP***NH-E	0.5	0.5	0.5	0.5	—	—	—	—	—	—

(kg)

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
Corrective amount of refrigerant depending on the indoor units (B)		kg

Next, refer to the following table for the corrective amount of refrigerant by outdoor HP (C).

(Table 3) Compensation by outdoor HP

Outdoor unit type	MAP 060	MAP 080
Compensation by outdoor HP (kg)	- 1.6	- 1.0

Lastly, add 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). This is the final additional amount of refrigerant.

If a minus sign is indicated as the result, do not add the refrigerant (= 0 kg).

<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)	kg

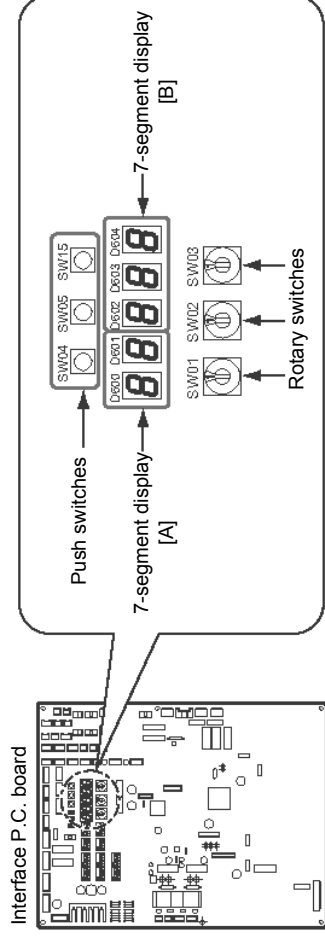
8-3. Check at main power-on

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>

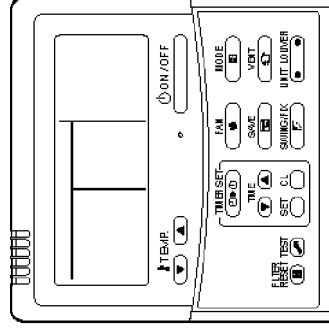
- (1) Check that all the rotary switches, SW01, SW02, and SW03, on the interface P.C. board of the outdoor unit are set to "1."
 - (2) If another check code is displayed on the 7-segment display [B], remove the cause of the problem referring to Section, "9 Troubleshooting".
 - (3) Check that "L08" is 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].)



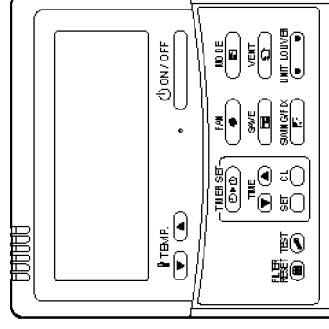
<Check on the indoor unit>

- (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.



Normal status
(power supplied and operation stopped)



When power is not supplied normally

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

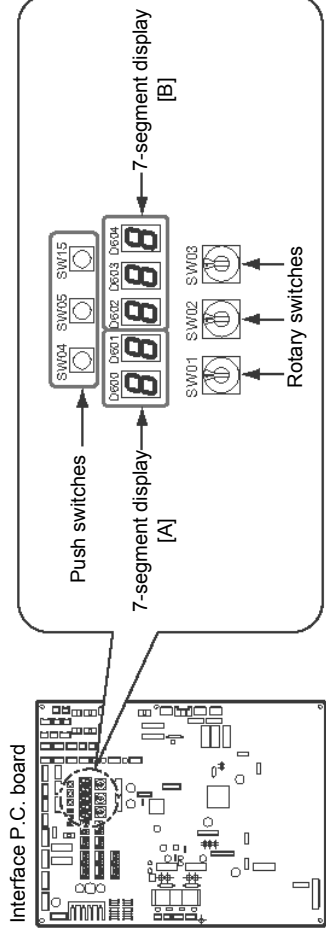
This product requires address setup before operation.
Follow this procedure for address setup.

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 SW15 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

Procedure	Item	Operation and check contents																							
1	Indoor unit power-on	Turn on the power of the indoor unit for the refrigerant line for which the address is to be set up.																							
2	Outdoor unit power-on	Turn on the power of the outdoor unit for the refrigerant line for which the address is to be set up.																							
3	7-segment display check	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.																							
4	Address setup start	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.																							
5	Display check after setup	• 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."																							
6	System information check after setup	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 border="1"><thead><tr><th rowspan="2"></th><th colspan="3">Rotary switch setup</th><th colspan="2">7-segment display</th></tr><tr><th>SW01</th><th>SW02</th><th>SW03</th><th>[A]</th><th>[B]</th></tr></thead><tbody><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>Total capacity of indoor units</td><td>1</td><td>3</td><td>3</td><td></td><td>[Number of horsepower]</td></tr></tbody></table> After the above checks, return rotary switches SW01, SW02, and SW03 to 1/1/1.		Rotary switch setup			7-segment display		SW01	SW02	SW03	[A]	[B]	System capacity	1	2	3	[Number of horsepower]	[H P]	Total capacity of indoor units	1	3	3		[Number of horsepower]
	Rotary switch setup			7-segment display																					
	SW01	SW02	SW03	[A]	[B]																				
System capacity	1	2	3	[Number of horsepower]	[H P]																				
Total capacity of indoor units	1	3	3		[Number of horsepower]																				



8-4-3. Address setup procedure

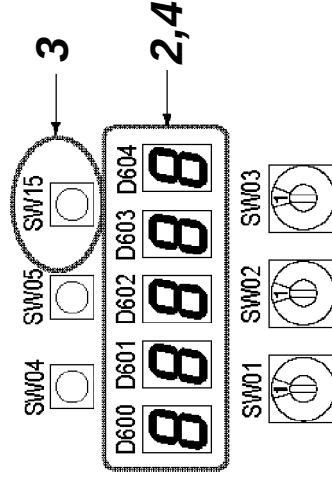
- No central control: go to Address setting procedure 1
 Central control of 2 or more refrigerant lines: go to Address setting procedure 2

(Example)	When controlling a single refrigerant line centrally	When controlling 2 or more refrigerant lines centrally
Address setting procedure	To procedure 1	To procedure 2
System wiring diagram		

◆ Address setting procedure 1

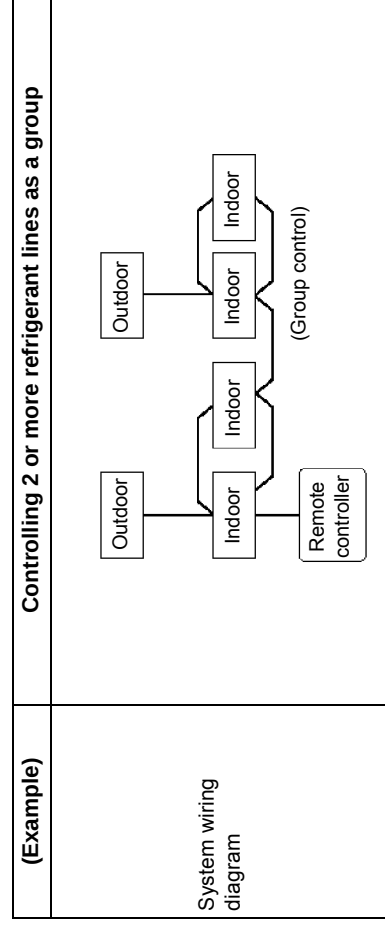
- 1 Turn on indoor units first, and then turn on outdoor unit.
- 2 About one minute after turning the power on, confirm that the 7-segment display on the interface P.C. board of the outdoor unit indicates .
- 3 Press SW 15 to start the automatic address setting.
 (It may take up to 10 minutes (normally about 5 minutes) to complete one line's setting.)
- 4 The 7-segment display indicates .
 After the indication, starts flashing on the display.
 When the flashing stops and remain lit on the display, the setting is complete.

Interface P.C. board on the outdoor unit



REQUIREMENT

- When 2 or more refrigerant lines are controlled as a group, be sure to turn on all the indoor units in the group before setting addresses.
- If you set the unit addresses of each line separately, each line's header indoor unit is set separately. In that case, the CODE No. "L03" (Indoor outdoor unit overlap) is indicated as running starts. Change the group address to make one unit the outdoor unit using wired remote controller.



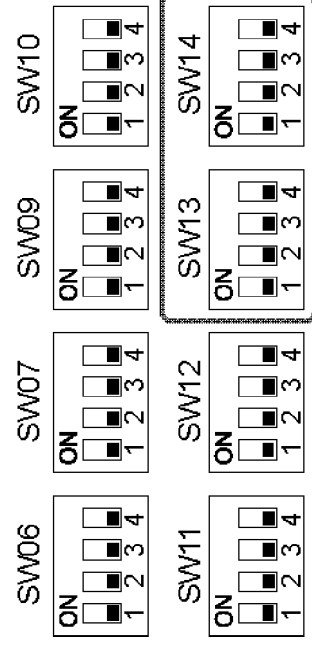
◆ Address setting procedure 2

- 1 Set a system address for each system using SW 13 and 14 on the interface P.C. board on the outdoor unit of each system.
(Factory default: Address 1)

NOTE

Be sure to set a unique address on each system. Do not use a same address as another system (refrigerant line) or a custom side.

Interface P.C. board on the outdoor unit



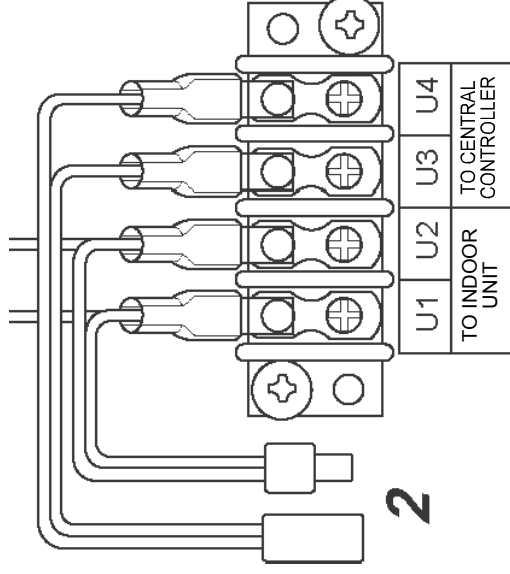
Line address switches on the outdoor interface P.C. board (O: switch on, X: switch off)

Line address	SW13				SW14			
	1	2	3	4	1	2	3	4
1				X	X	X	X	X
2				X	O	X	X	X
3				X	X	O	X	X
4				X	O	O	X	X
5				X	X	O	O	X
6				X	O	O	X	X
7				X	X	O	O	X
8				X	O	O	O	X
9				X	X	X	X	O
10				X	O	X	X	O
11				X	X	O	X	O
12				X	O	O	X	O
13				X	X	X	O	O
14				X	O	X	O	O

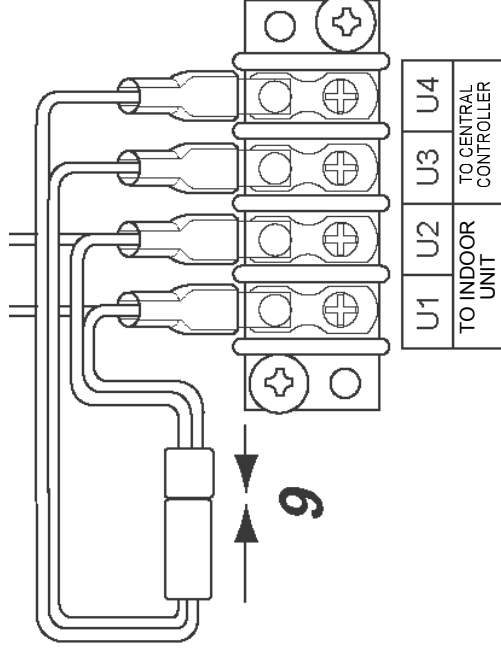
Line address	SW13				SW14			
	1	2	3	4	1	2	3	4
15				X	X	O	O	O
16				X	O	X	O	O
17				O	X	X	X	X
18				O	O	X	X	X
19				O	X	O	X	X
20				O	O	O	X	X
21				O	X	X	O	X
22				O	O	X	O	X
23				O	X	O	O	X
24				O	O	O	O	X
25				O	X	X	X	O
26				O	O	X	X	O
27				O	X	O	X	O
28				O	O	O	O	O

Not used for setup of line address (do not change setup.)

- 2 Be sure to disconnect the relay connectors between the [U1U2] and [U3U4] terminals on all the outdoor unit that will be connected to the central control. (Factory default: disconnected)



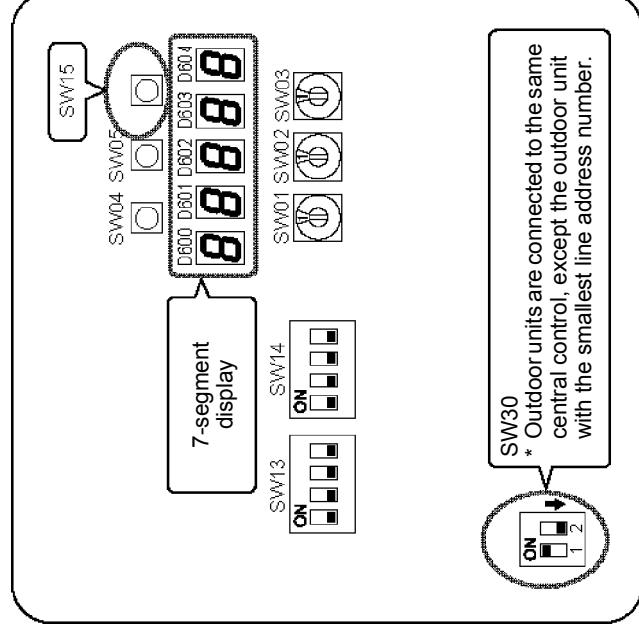
- 3 Turn on indoor units first, and then turn on outdoor unit.
- 4 About 1 minute after turning the power on, confirm that the 7-segment display on the interface P.C. board of the outdoor unit indicates .
- 5 Press SW 15 to start the automatic address setting.
(It may take up to 10 minutes (normally about 5 minutes) to complete one line's setting.)
- 6 The 7-segment display indicates .
After the indication, starts flashing on the display.
When the flashing stops and , remains lit on the display, the setting is complete.
- 7 Repeat steps 4 to 6 for other refrigerant lines.
- 8 After completing address setting of all systems, turn off dip switch 2 of SW30 on the interface P.C. boards of all the outdoor units connected to the same central control, except the unit that has the lowest address.
(For unifying the termination of the wiring for the central control of indoor and outdoor unit)
- 9 Connect the relay connectors between the [U1, U2] and [U3, U4] terminals of the outdoor unit of each refrigerant line.



10 Set the central control address.

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

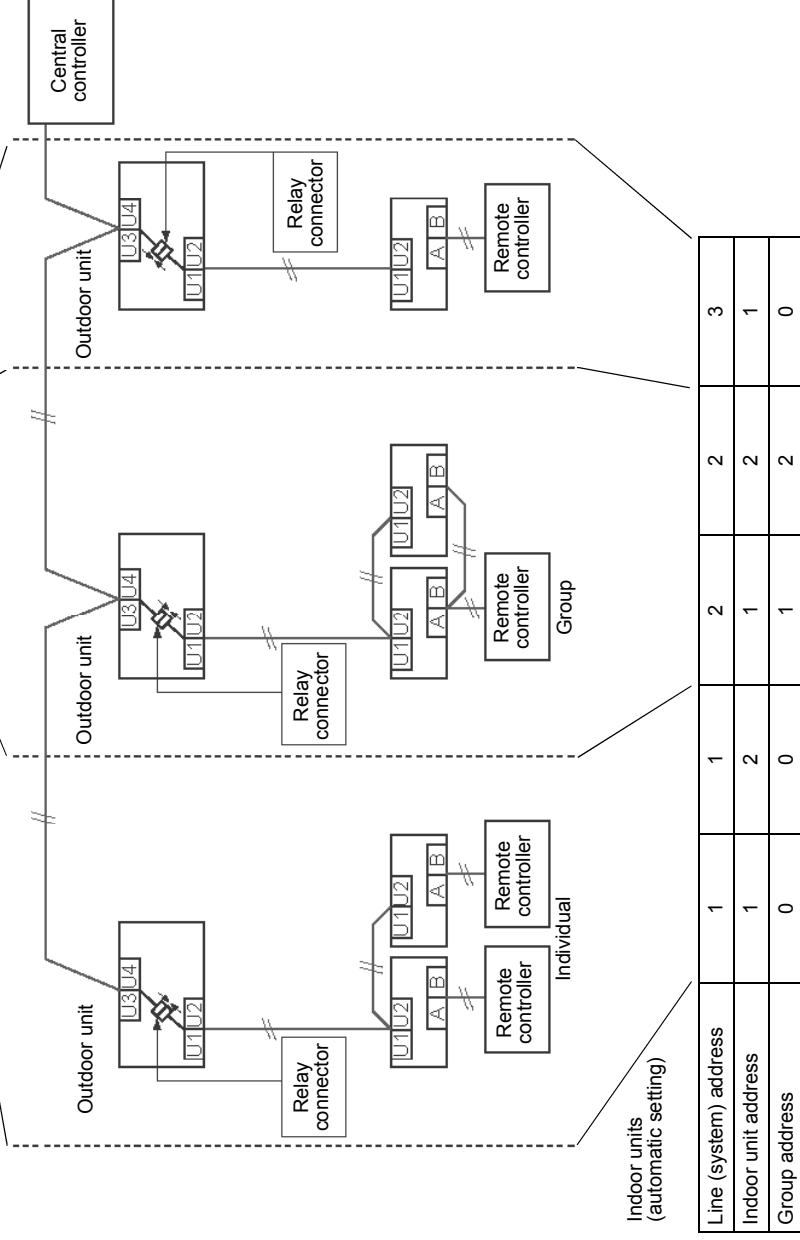
Outdoor unit interface P.C. board



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
SW13, 14 (Line (system) address)	1	2	3	1
Dip switch 2 of SW30 (Terminator of indoor / outdoor communication line and central control line)	ON	Set to OFF after setting addresses.	Set to OFF after setting addresses.	ON
Relay connector	Connect after setting addresses.	Connect after setting addresses.	Connect after setting addresses.	Open



CAUTION

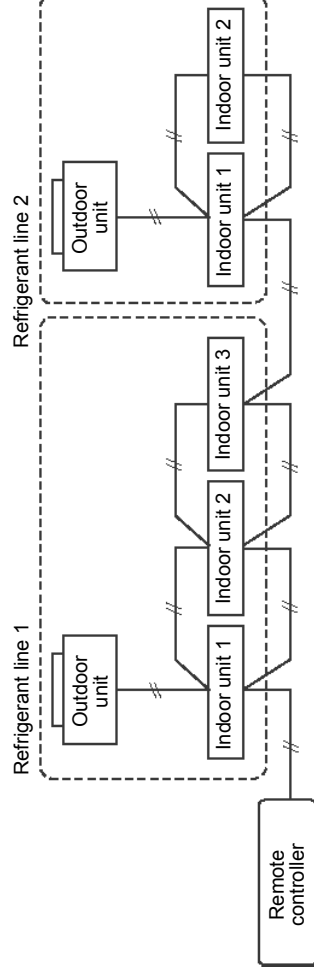
Relay connector connection

Never connect relay connectors between the [U1, U2] and [U3, U4] terminals before completing address setting of all the refrigerant lines. Otherwise, the addresses cannot be set correctly.

Manual address setting with the remote controller

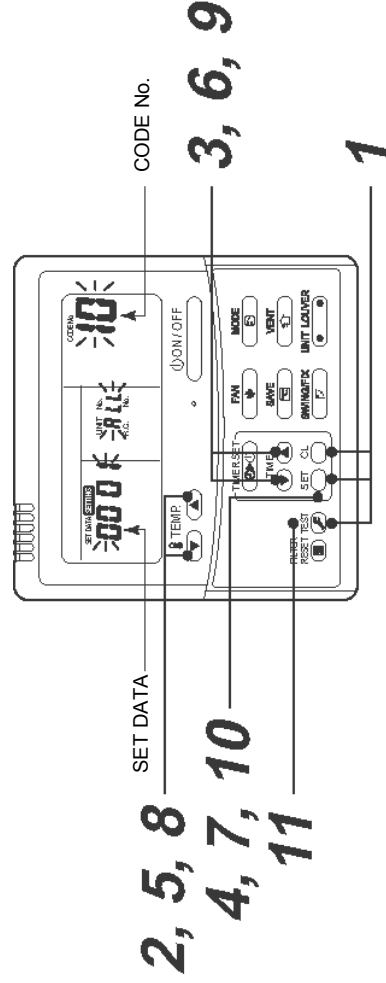
Procedure when setting indoor units' addresses first under the condition that indoor wiring has been completed and outdoor wiring has not been started (manual setting using the remote controller)

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	2	2	2	2
	Outdoor unit	Follower unit	Follower unit	Follower unit	Follower unit

In the example above, disconnect the remote controller connections between the indoor units and connect a wired remote controller to the target unit directly before address setting.



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

Turn on the power.

- 1 Push and hold the , , and buttons at the same time for more than 4 seconds. LCD starts flashing.

<Line (system) address>

2 Push the TEMP.  /  buttons repeatedly to set the CODE No. to **12**.

3 Push the TIME  /  buttons repeatedly to set a system address.

(Match the address with the address on the interface P.C. board of the outdoor unit in the same refrigerant line.)

4 Push  button.
(It is OK if the display turns on.)

<Indoor unit address>

5 Push the TEMP.  /  buttons repeatedly to set the CODE No. to **13**.

6 Push the TIME  /  buttons repeatedly to set an indoor unit address.

7 Push the  button.
(It is OK if the display turns on.)

<Group address>

8 Push the TEMP.  /  buttons repeatedly to set the CODE No. to **14**.

9 Push the TIME  /  buttons repeatedly to set a group address. If the indoor unit is individual, set the address to **0000** ; outdoor unit, **0001** ; follower unit, **0002** .

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

10 Push the  button.
(It is OK if the display turns on.)

11 Push the  button.

The address setting is complete.

(**SETTING** flashes. You can control the unit after **SETTING** has disappeared.)

NOTE

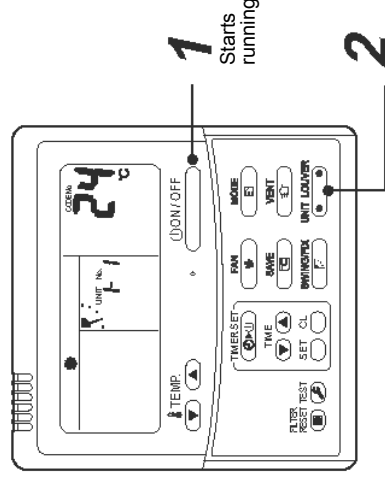
- Do not use address numbers **29** or **30** when setting system addresses using the remote controller.
These 2 address numbers cannot be used on outdoor units and the CODE No. **[E04]** (Indoor / outdoor communication error) will appear if they are mistakenly used.
- If you set addresses to indoor units in 2 or more refrigerate lines manually using the remote controller and will control them centrally, set the outdoor unit of each line as below.
 - Set a system address for the outdoor unit of each line with SW13 and 14 of their interface P.C. boards.
 - Turn off dip switch 2 of SW30 on the interface P.C. boards of all the outdoor units connected to the same central control, except the unit that has the lowest address. (For unifying the termination of the wiring for the central control of indoor and outdoor units)
 - Connect the relay connectors between the [U1, U2] and [U3, U4] terminals on the outdoor unit of each refrigerate line.
 - After finishing all the settings above, set the address of the central control devices. (For the setting of the central control address, refer to the installation manuals of the central control devices.)

■ 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 which you know the position of

- ▼ When the unit is individual (the indoor unit is paired with a wired remote controller one-to-one), or it is a group-controlled one.



(Execute it while the units are running.)

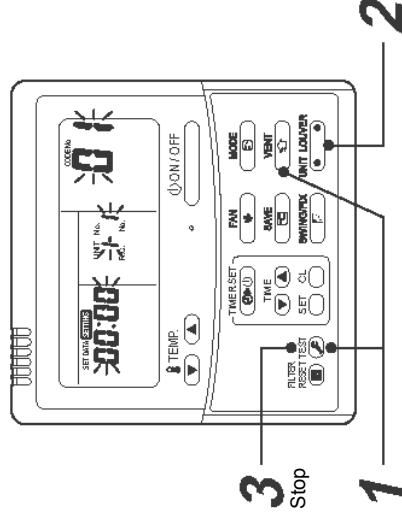
- 1 Push the **ON/OFF** button if the units stop.

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

To find an indoor unit's position from its address

- ▼ When checking unit numbers controlled as a group

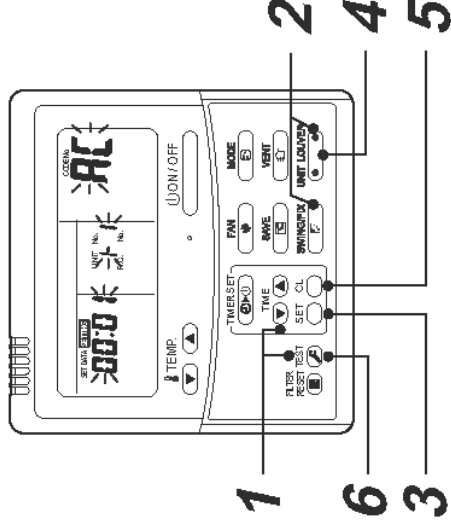


(Execute it while the units are stopped.)

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  and  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  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  button to finish the procedure.
All the indoor units in the group stop.

- ▼ 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)



(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  buttons at the same time for more than 4 seconds. At first, the line 1 and CODE No. **ALL** (Address Change) are indicated on the LCD display. (Select an outdoor unit.)
- 2** Push the  (left side of the button) and  buttons repeatedly to select a system address.
- 3** Push the  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  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.

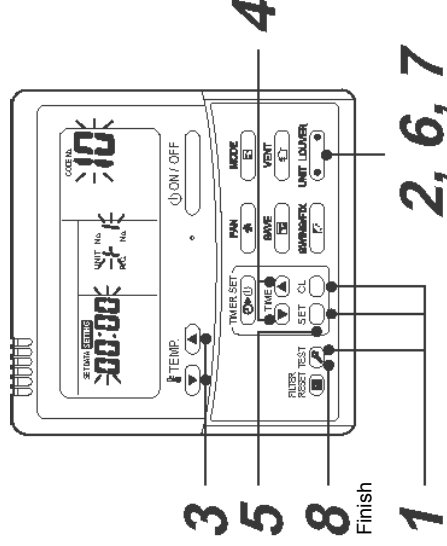
◆ To select another system address

- 5 Push the  button to return to step 2.
 - After returning to step 2, select another system address and check the indoor unit addresses of the line.
- 6 Push the  button to finish the procedure.

■ Changing the indoor unit address using a remote controller

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

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



(Execute it while the units are stopped.)

- 1 Push and hold the , , and  buttons at the same time for more than 4 seconds.
(If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)
- 2 Push the  button (left side of the button) repeatedly to select an indoor unit number to change if 2 or more units are controlled in a group. (The fan and louvers of the selected indoor unit are activated.)
(The fan of the selected indoor unit is turned on.)
- 3 Push the TEMP.  /  buttons repeatedly to select / 3 for CODE No..
- 4 Push the TIME  /  buttons repeatedly to change the value indicated in the SET DATA section to that you want.
- 5 Push the  button.
- 6 Push the  button (left side of the button) repeatedly to select another indoor UNIT No. to change.
Repeat steps 4 to 6 to change the indoor unit addresses so as to make each of them unique.
- 7 Push the  button (left side of the button) to check the changed addresses.
- 8 If the addresses have been changed correctly, push the  button to finish the procedure.

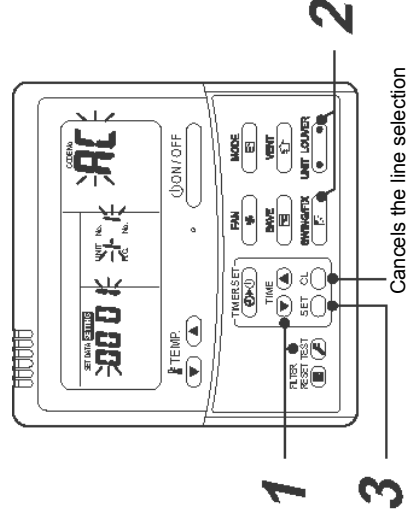
▼ To change all the indoor unit addresses using an arbitrary wired remote controller.
(The method is available when the addresses have already been set automatically.)

(When communication wirings of 2 or more refrigerant lines are interconnected for central control)

NOTE

You can change the addresses of indoor units in each refrigerant line using an arbitrary wired remote controller.

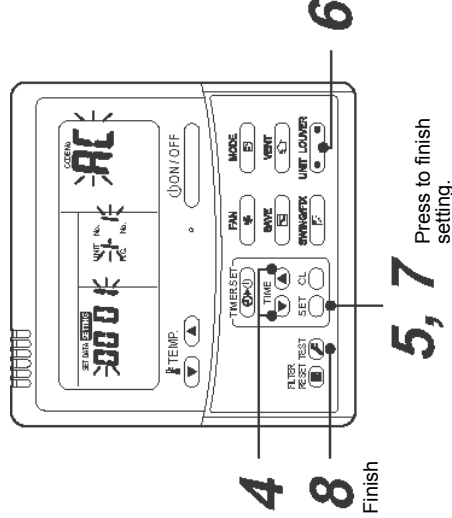
- * Enter the address check / change mode and change the addresses.



If no number appears on UNIT No., no outdoor unit exists on the line. Push button and select another line following step 2.

(Execute it while the units are stopped.)

- 1 Push and hold the **TIME** and **SWING/CLK** 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.
- 2 Push (left side of the button) and buttons repeatedly to select a system address.
- 3 Push the button.
 - The address of one of the indoor units connected to the selected refrigerant line is indicated on the LCD display and the fan and louvers of the unit are activated.
At first, the current indoor unit address is displayed in SET DATA.
(No system address is indicated.)



4 Push the **TIME** / buttons repeatedly to change the value of the indoor unit address in SET DATA.

Change the value in SET DATA to that of a new address.

5 Push the button to confirm the new address on SET DATA.

6 Push the button (left side of the button) repeatedly to select another address to change. Each time you push the button, the indoor unit numbers in a refrigerant line are indicated one after another. Only the fan and louvers of the selected indoor unit are activated.

Repeat steps **4** to **6** to change the indoor unit addresses so as to make each of them unique.

7 Push the button.

(All the segments on the LCD display light up.)

8 Push the button to finish the procedure.

■ 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 "0099" using a wired remote controller.

(For the setting procedure, refer to the address setting procedures using the wired remote controller on the previous pages.)

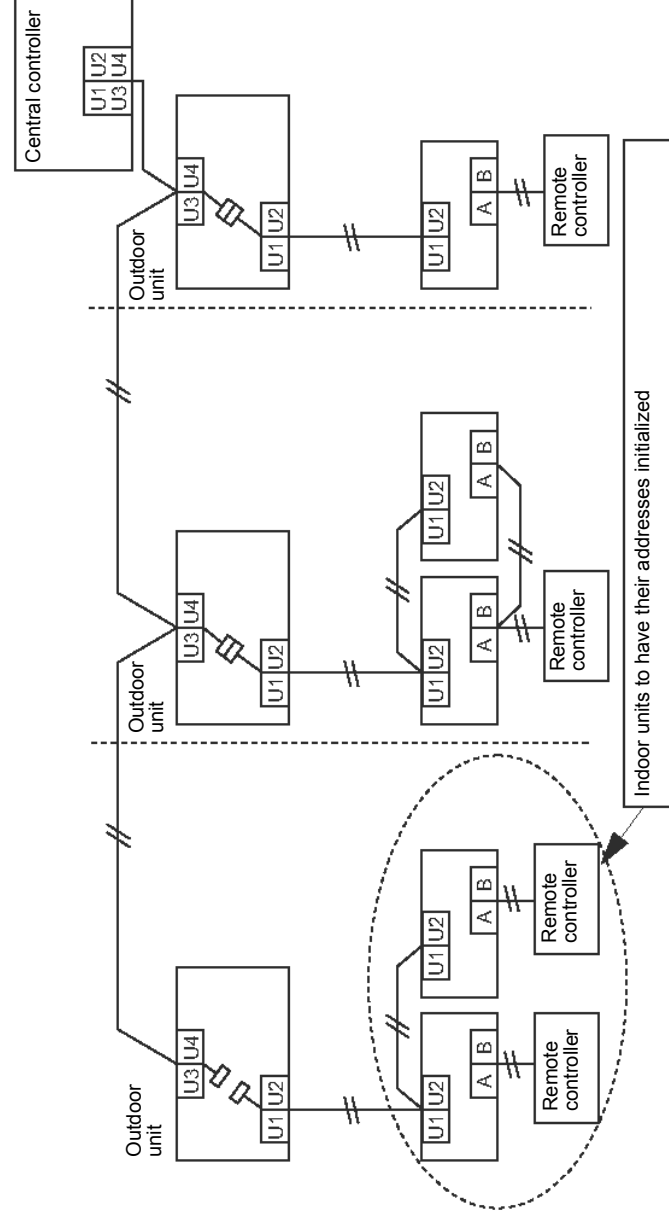
Method 2

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

1 Turn off the refrigerant line to reset to the factory default and set the outdoor unit of the line as below.

1) Disconnect the relay connectors between the [U1, U2] and [U3, U4] terminals.
(Leave them as they are if they have already been disconnected.)

2) Turn on dip switch 2 of SW30 on the interface P.C. board of the outdoor unit if the switch is OFF.
(Leave it as it is if it has already been set to ON.)



- 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 a time “U.1.L08” appears on the 7-segment display if the address clearing has been completed successfully.
If the 7-segment display indicates “A.d. n.G.”, the outdoor unit may still be connected with other refrigerant lines. Check the connection of the relay connectors between [U1, U2] and [U3, U4].

NOTE

Take care to carry out the procedure above correctly; otherwise, addresses in other refrigerant lines may also be cleared.

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

■ 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.

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

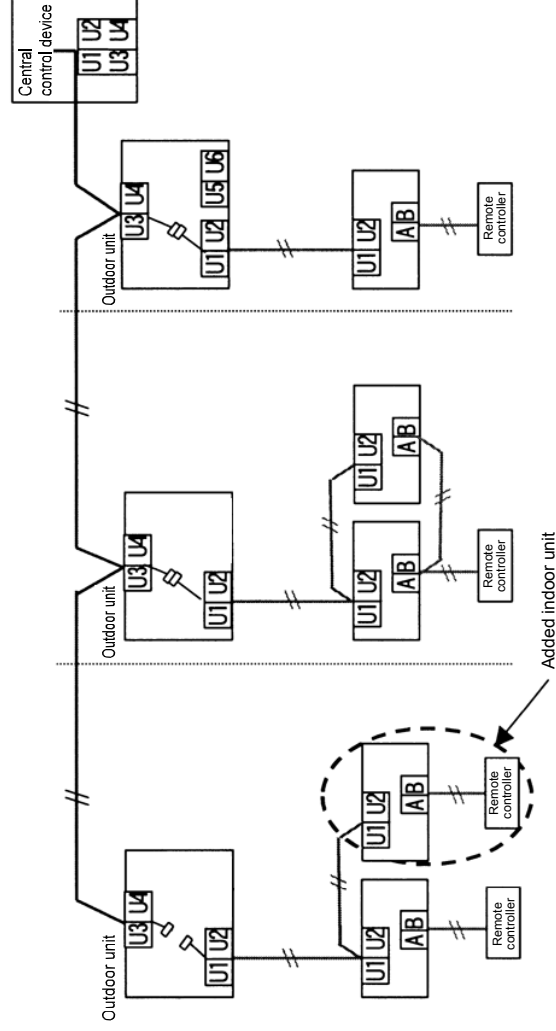
Set up an address from the outdoor unit.

- * 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

Set up the outdoor units in the refrigerant line to which indoor units have been added, as follows.

- 1 Remove the relay connector between U1 / U2 and U3 / U4.**
- 2 If it is off, turn on SW30-bit 2 on the interface P.C. board at outdoor unit side.**
*Turn off the power, and then execute the operation.



- 3 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.
- 4 Execute the following operation on the interface P.C. board of the outdoor 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.

- 5 When “U.1. - - -” is displayed on the 7-segment display, the setup operation finished.**

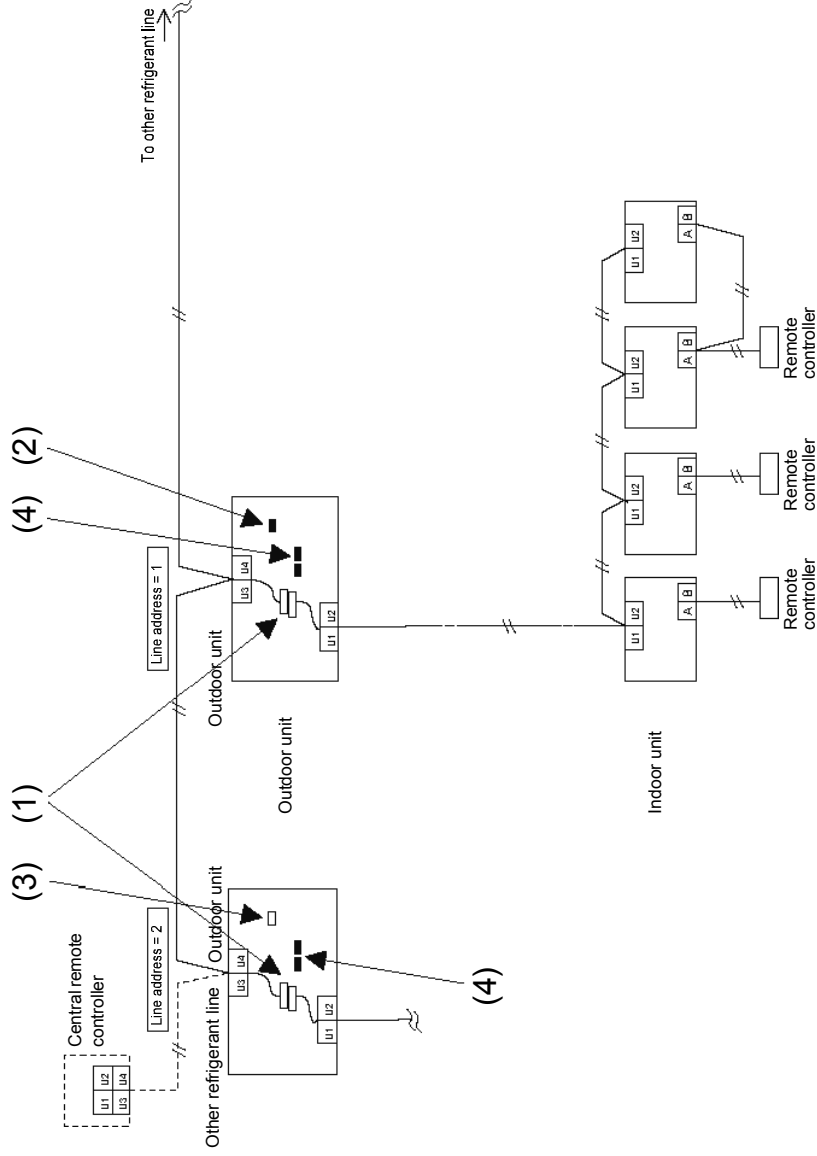
Turn off the indoor / outdoor power.

- 6 Return to the following setup as before.**

- Relay connector
- SW30-bit 2
- SW01, SW02, SW03

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
Relay connector	(1) Is the relay connector of the outdoor unit connected after address setup?	
Terminal resistance	(2) Is the end resistance (SW30-bit 2) of the outdoor unit with the smallest line address number in the central control turned on? (3) Is the terminal resistance (SW30-bit 2) of the outdoor unit, except for the line with the smallest central control line address, turned off?	
Line address	(4) Are addresses in the line address (SW13, SW14) 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.

8-5. 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	Countermeasures
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.)	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	Indoor / Outdoor communication circuit error. (Detected by outdoor side)	Check SW30 bit 2 of the outdoor unit. No connection between multiple refrigerant lines: SW30 bit 2 is on. Check the communication connector between indoor and outdoor unit.
	E06	Transmission circuit error at the interface side (P.C. board failure) After address setup, communication from all the indoor units is interrupted under the condition that a normal operation can be performed.	Replace the interface P.C. board. Check and correct disconnection of the indoor / outdoor communication line. Check for the influence of communication noise.
E16	E16 ⇄ -XX Alternate blinking	Exceeded the number or capacity of connected indoor units	Adjust the number or capacity of connected indoor units.
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(*)		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

8-5-2. Operation from the indoor remote controller is not accepted, and a check code is displayed on the 7-segment display of the interface P.C. board of the outdoor unit.

Indoor remote controller status	Outdoor unit 7-segment display	Cause	Countermeasures
No response	L08	Line addresses and indoor addresses of all the connected indoor units are not set.	Set up addresses.
	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 U1 / U2 terminal of the outdoor unit. (Indoor / outdoor cannot communicate before address setup.)	Correct wiring
	E20 ⇔ -01 Alternate blinking	Address setup is performed under the condition of connecting multiple refrigerant lines.	Correct wiring

8-5-3. There is no display of a check code on the 7-segment display on the interface P.C. board of the outdoor unit, although there is indoor unit that is not accepting operation from the indoor remote controller.

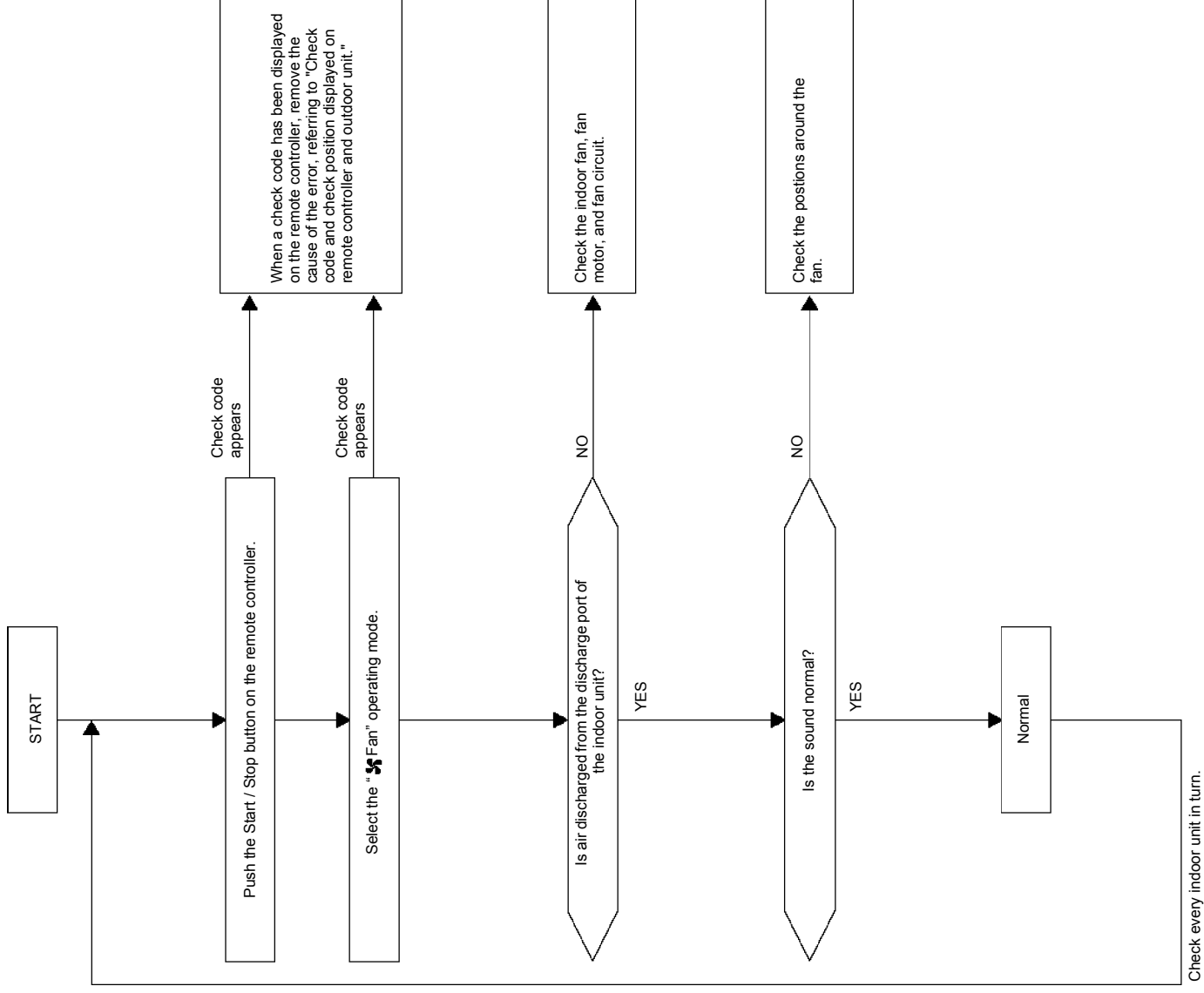
Indoor remote controller status	Outdoor unit 7-segment display	Cause	Countermeasures
No response	None	The communication line is not connected between indoor and outdoor (the unit that does not respond to the indoor remote controller).	Modify the wiring.
		Line address and indoor address are not set (the 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).	Modify the wiring.
		Miswiring of the indoor remote controller (the unit that is not displayed on the indoor remote controller)	Modify 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. 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	Countermeasures
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 miswired indoor unit.)	After modification of wiring, set up the addresses again and check the number of connected indoor units.
The number of outdoor units connected to a group is too 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 error 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 fast-on terminal connected to remote controller terminals A / B, and check the voltage. If voltage is not applied (normally 15 to 18 V), replace the P.C. board.

8-6. Test operation check

8-6-1. Fan check



8-6-2. Cooling / Heating test operation check

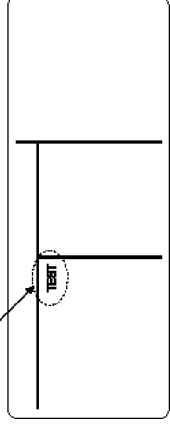
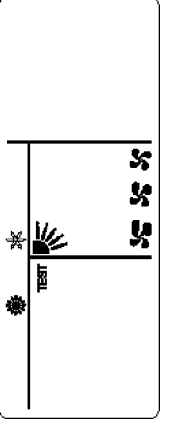
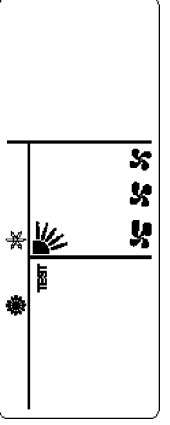
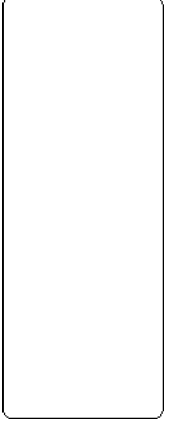
The cooling / heating test operation check can be performed on both the indoor remote controller and the outdoor unit interface P.C. board.

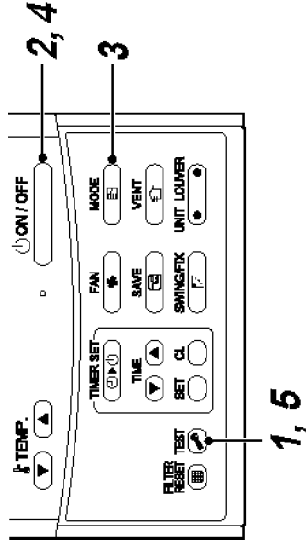
(1) Test operation start / stop operation

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.

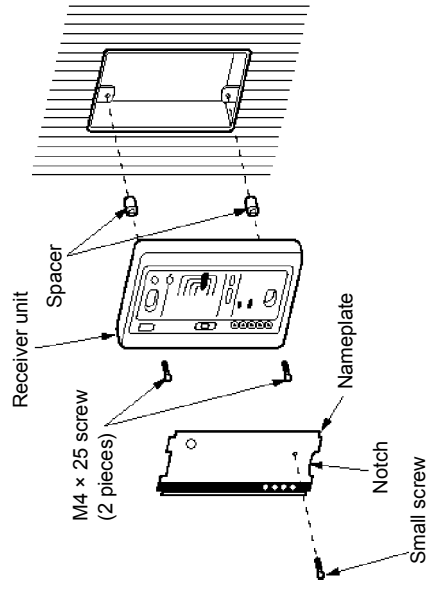
▼ Wired remote controller

Procedure	Operation content
1	When the Test button is pushed for 4 seconds or more, "TEST" is displayed in the display section, and the unit enters test operating mode. 
2	Push the ON/OFF button. 
3	Using the Select Mode button, select the "COOL" or "HEAT" operating mode. • Do not use an operating mode other than "COOL" or "HEAT". • Temperature adjustment is unavailable during test operation. • Error is detected as usual. 
4	When the test operation has finished, push the ON/OFF button to stop the operation. (The same display as in procedure 1 appears in the display section.)
5	Push the Test button to clear the test operating mode. (("TEST" disappears from the display section, and the status returns to the normal stopped status.) 



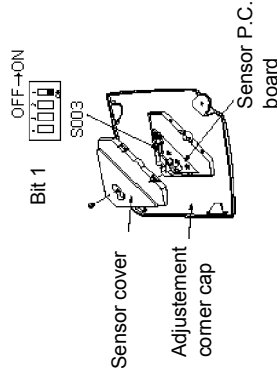
▼ Wireless remote controller (Except the 4-way Air Cassette type and the Ceiling type)

Procedure	Operation content
1	Remove the nameplate of the receiver section by inserting a screwdriver or similar tool into the notch at the bottom of the plate, and set the DIP switch to "TEST RUN ON."
2	Execute a test operation with the ON button on the wireless remote controller. • The "ON", "COOL", and "HEAT" LEDs blink during test operation. • Under "TEST RUN ON" status, temperature adjustment from the wireless remote controller is invalid. Do not use this method of operation other than for test operation because the equipment will be damaged.
3	Use either the "COOL" or "HEAT" operation mode for a test operation. • The outdoor unit does not operate for approximately 3 minutes after powering-on or stopping operation.
4	After the test operation is finished, stop the air conditioner from the wireless remote controller, and return the DIP switch of the sensor section to its original position. (A 60-minute timer clearing function is attached to the sensor section in order to prevent continuous test operation.)



▼ Wireless remote controller (4-way Air Cassette type)

Procedure	Operation content
1	Turn off the air conditioner's power. Remove the adjustment corner cap attached to the sensor section from the ceiling panel. For removing method, follow the installation manual attached to the ceiling panel. (Be careful when handling the sensor section because it has cables connected to it.) Remove the sensor cover from the adjustment corner cap (held with 1 screw).
2	Change Bit 1, "TEST," of switch S003 on the sensor P.C. board from "off" to "on." Replace the sensor cover and attach the adjustment corner cap with the sensors to the ceiling panel. Turn on the air conditioner's power.
3	Push the  button of the wireless remote controller, and select the  "COOL" or  "HEAT" operating mode with the Mode button. (All display lamps on the wireless remote controller sensor section blink during the test operation.) - Do not use any operating mode other than  "COOL" or  "HEAT". - Error is detected as usual.
4	When the test operation has finished, push the  button to stop the operation.
5	Turn off the air conditioner's power. Change Bit 1 of switch S003 on the sensor P.C. board from "on" to "off." Attach the adjustment corner cap with the sensors to the ceiling panel.



▼ Wireless remote controller (Ceiling type)

Procedure	Operation content						
1	Turn on the air conditioner's power. This operation is not accepted for 5 minutes when power has been turned on for the first time after installation, and for 1 minute when power has been turned on the second and subsequent times after that. After the specified time has passed, perform the test operation.						
2	Push the  button and change the operating mode to  "COOL" or  "HEAT" with the Mode button. Then change the fan speed to  "High" using the "Fan" button.						
3	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Test cooling operation</th><th style="width: 50%;">Test heating operation</th></tr> <tr> <td>Set the temperature to 18 °C using the Temperature setting button.</td><td>Set the temperature to 30 °C using the Temperature setting button.</td></tr> <tr> <td>After checking for the receiving "beep" tone, immediately push the Temperature setting button to set it to 19 °C.</td><td>After checking for the receiving "beep" tone, immediately push the Temperature setting button to set it to 29 °C.</td></tr> </table>	Test cooling operation	Test heating operation	Set the temperature to 18 °C using the Temperature setting button.	Set the temperature to 30 °C using the Temperature setting button.	After checking for the receiving "beep" tone, immediately push the Temperature setting button to set it to 19 °C.	After checking for the receiving "beep" tone, immediately push the Temperature setting button to set it to 29 °C.
Test cooling operation	Test heating operation						
Set the temperature to 18 °C using the Temperature setting button.	Set the temperature to 30 °C using the Temperature setting button.						
After checking for the receiving "beep" tone, immediately push the Temperature setting button to set it to 19 °C.	After checking for the receiving "beep" tone, immediately push the Temperature setting button to set it to 29 °C.						
4	After checking for the receiving "beep" tone, immediately push the Temperature setting button to set it to 19 °C.						
5	After checking for the receiving "beep" tone, immediately push the Temperature setting button to set it to 18 °C.						
6	Then repeat steps 4 → 5 → 4 → 5 . After approximately 10 seconds, the "OPERATION" (green) and "READY" (yellow) display lamps on the sensor part of the wireless remote controller blink, and the air conditioner starts operating. If the lamps do not blink, repeat step 2 and the subsequent steps.						
7	After the test operation, push the Start / Stop button to stop the operation.						

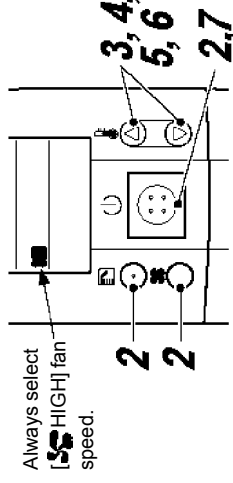
Outline of test operation from the wireless remote controller

Test cooling operation:

Start → 18 °C → 19 °C → 18 °C → 19 °C → 18 °C → 19 °C → 18 °C → 19 °C → 18 °C → 19 °C → Stop

Test heating operation:

Start → 30 °C → 29 °C → 30 °C → 29 °C → 30 °C → 29 °C → 30 °C → 29 °C → 30 °C → (Test operation) → Stop

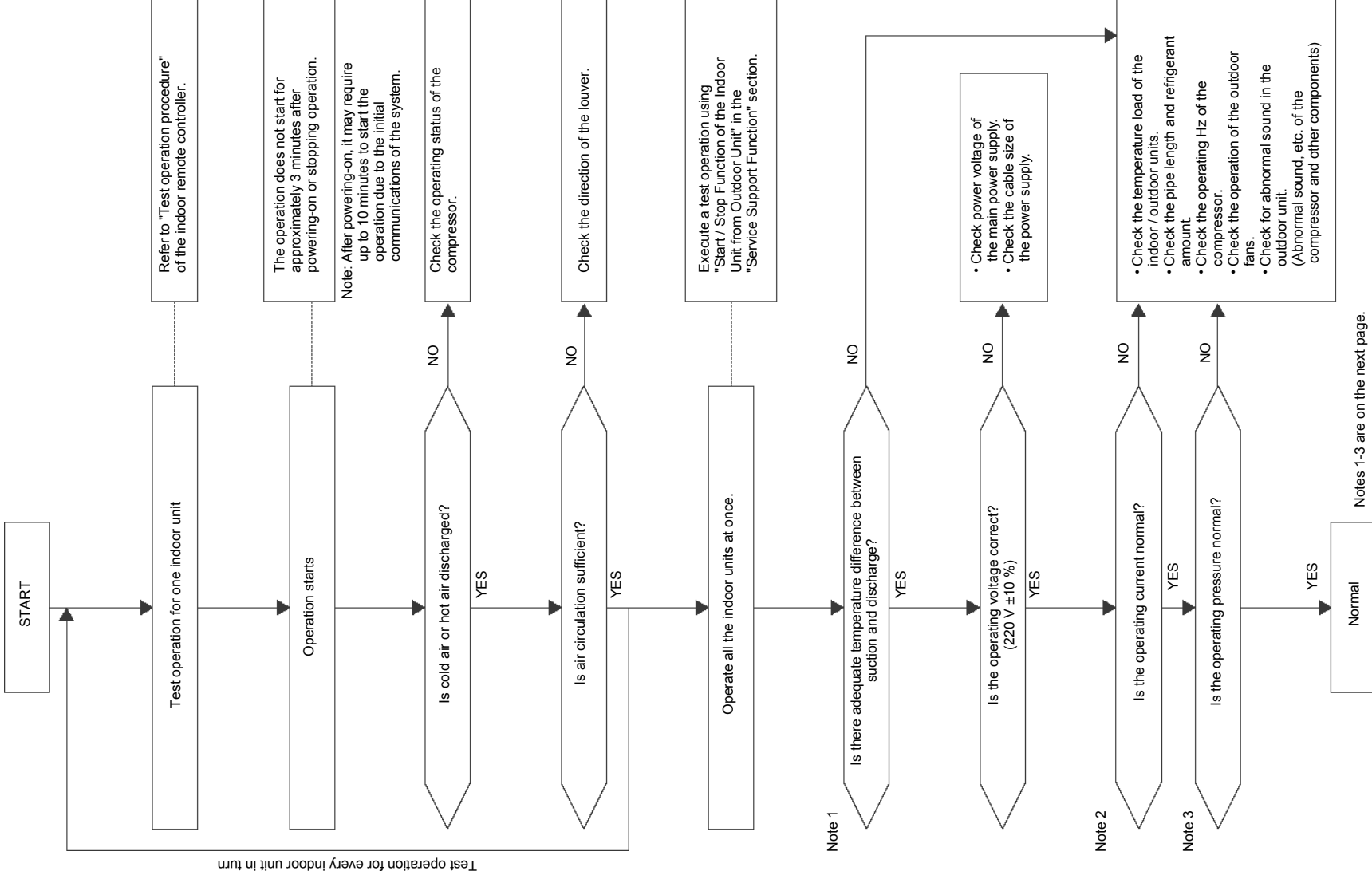


Test operation from the outdoor unit

- Refer to "8-7-2. Function to start / stop (ON / OFF) indoor unit from outdoor unit" in "8-7. Service support function".

Note: The test operation returns to normal operating mode after 60 minutes.

(2) Test operation



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-MAP	0604*	0804*
Current value	(A)	16.5	16.5

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- MAP	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 (TS)	Indoor heat exchanger (TC)	Outdoor heat exchanger (TE)	Liquid temperature (TL)		Indoor	Outdoor
0604*	Cooling	2.8	0.9	76	17	12	43	42	67	High	27/19
	Heating	2.5	0.7	73	3	32	2	28	69	High	20/-
0804*	Cooling	3.2	0.8	90	16	11	38	39	89	High	27/19
	Heating	2.6	0.6	75	1	30	2	26	86	High	20/-

* 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
	Low pressure (MPa)	0.5~0.9

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

(3) On rotations of outdoor fans

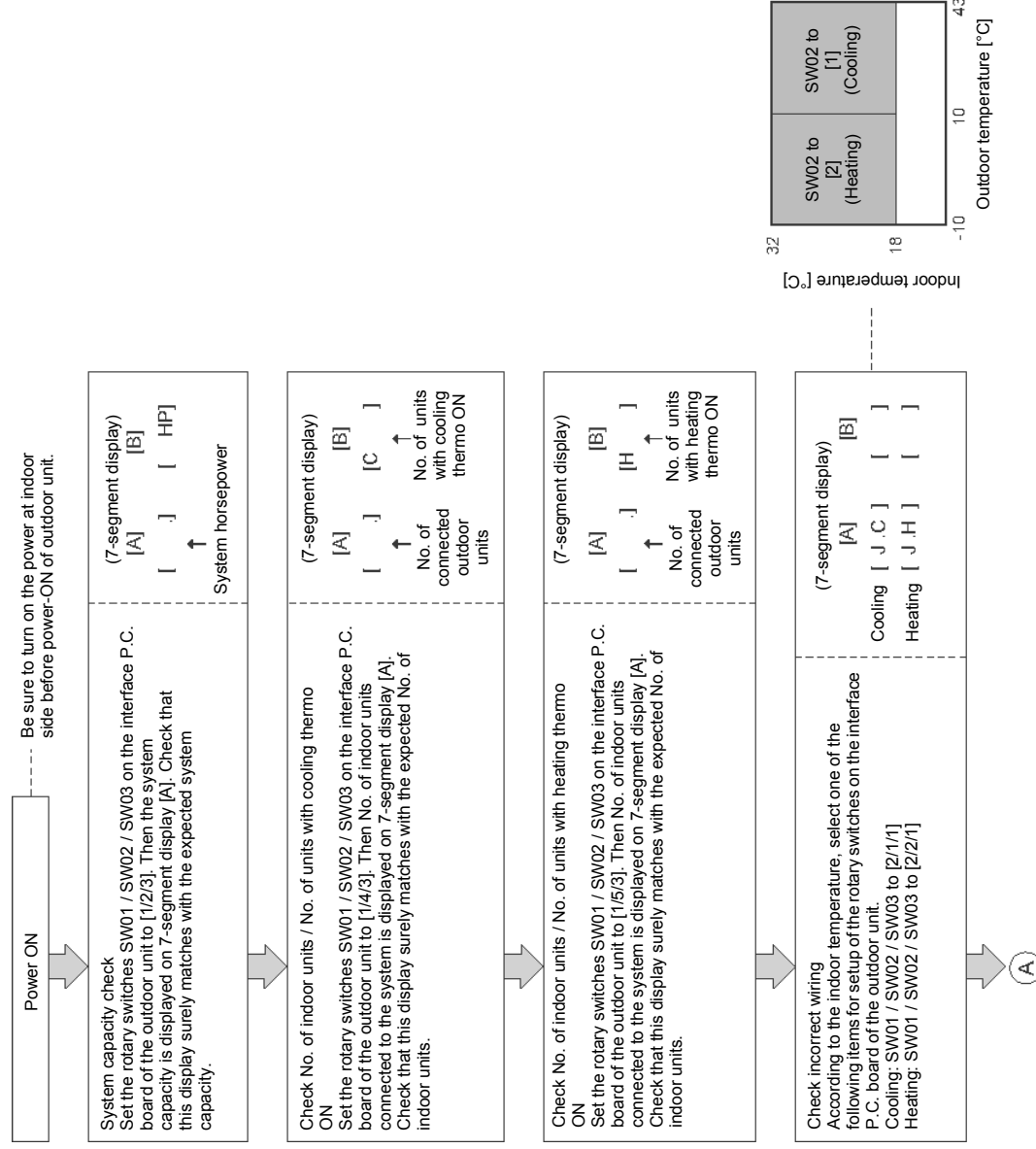
Outdoor fans may rotate slowly to control pressure when cooling with low outer air temperature or heating with excessive load. For control content, also refer to items in Section 5, “Control Outline: Outdoor Unit, Outdoor Fan Control.”

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)



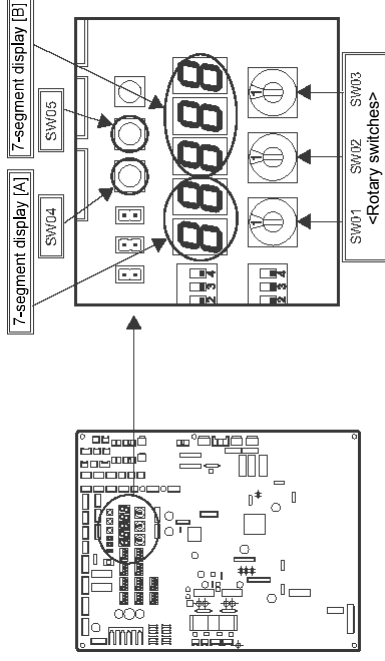
8-7-2. Function to start / stop (ON / OFF) indoor unit from outdoor unit

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. [Release] Return SW01 / SW02 / SW03 to [1/1/1].	Section A [C.] Section B [- C]
	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. [Release] Return SW01 / SW02 / SW03 to [1/1/1].	Section A [H.] Section B [- H]
3	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. [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. [Release] Return SW01 / SW02 / SW03 to [1].	Section A [C.H] Section B [00] [00] is displayed on Section B for 5 seconds.
4	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 64) to be started, and press SW04. [Release] Return SW01 / SW02 / SW03 to [1/1/1].	Section A [] Section B [] Section A: Displays the corresponding indoor address. Section B: 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 64) to be stopped, and press SW05. [Release] Return SW01 / SW02 / SW03 to [1/1/1].	Section A [] Section B [] Section A: Displays the corresponding indoor address. Section B: 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 A [] Section B [] Section A: Displays the corresponding indoor address. Section B: 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.

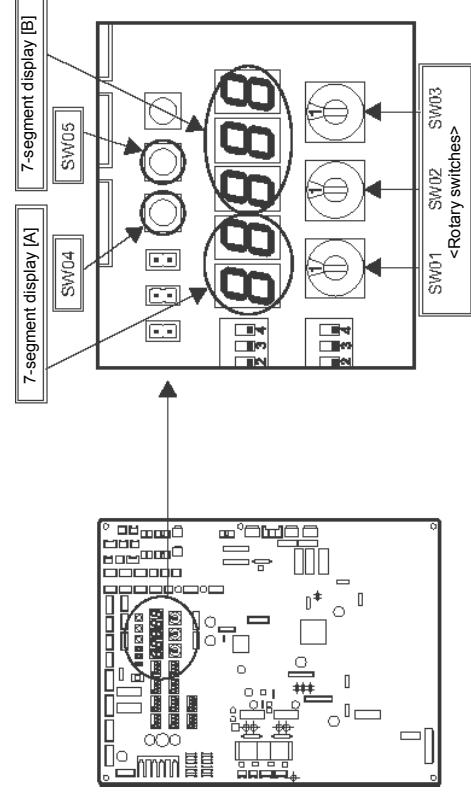
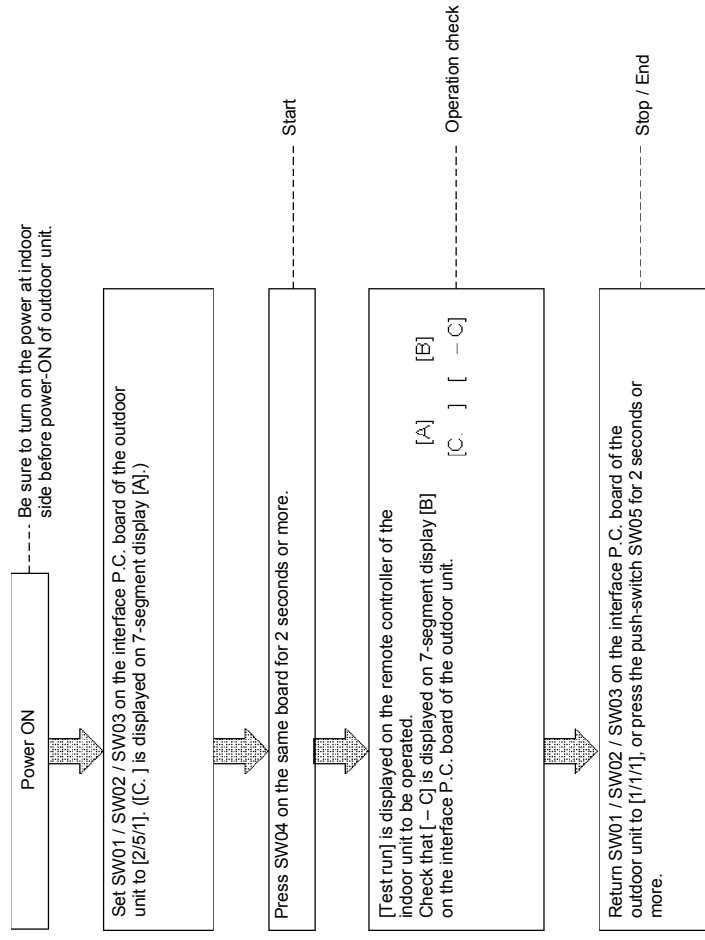
NOTE 2) The above controls are not used during abnormal stop.



(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 board of the outdoor unit.

<Operation procedure>

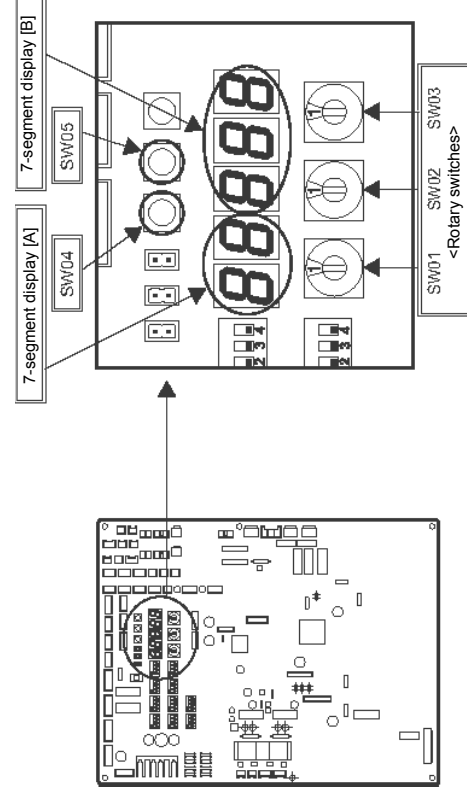
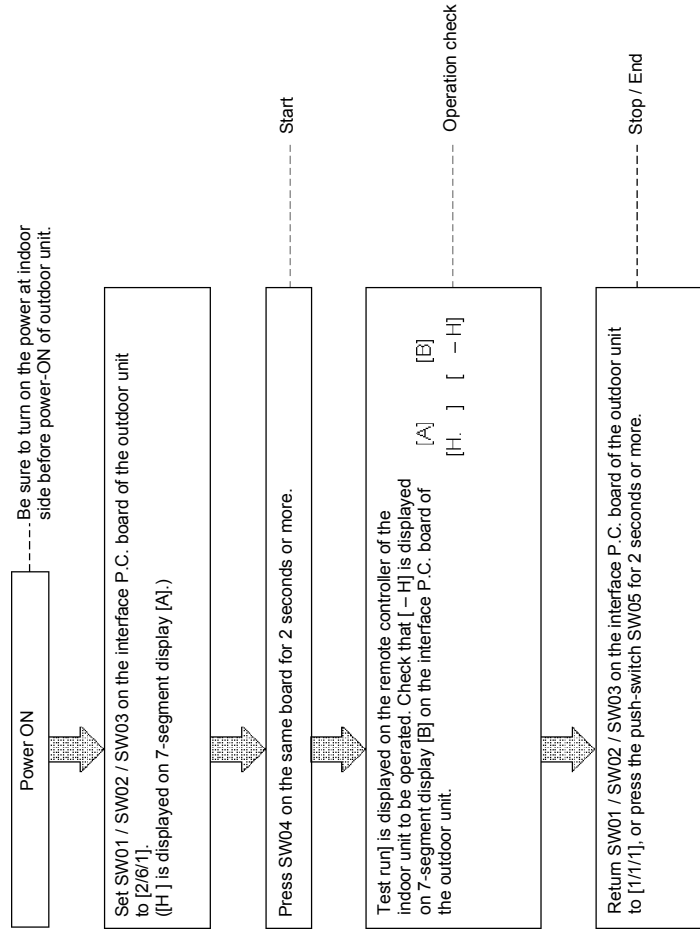


NOTE) The test operation returns to the normal operation after 60 minutes.

(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 board of the outdoor unit.

<Operation procedure>

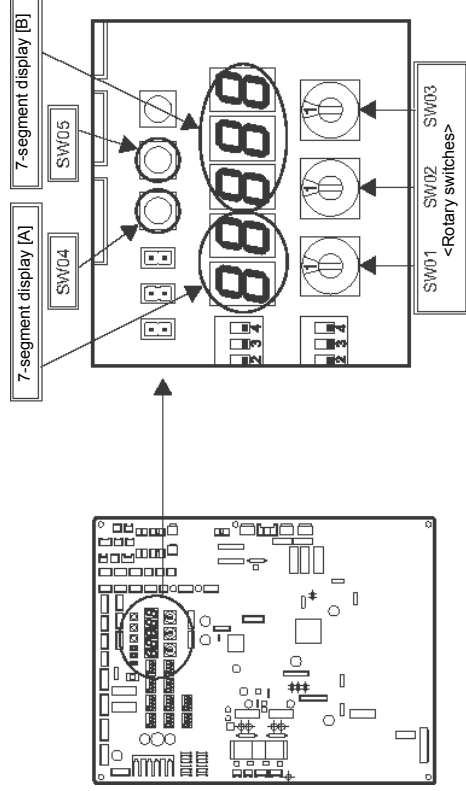
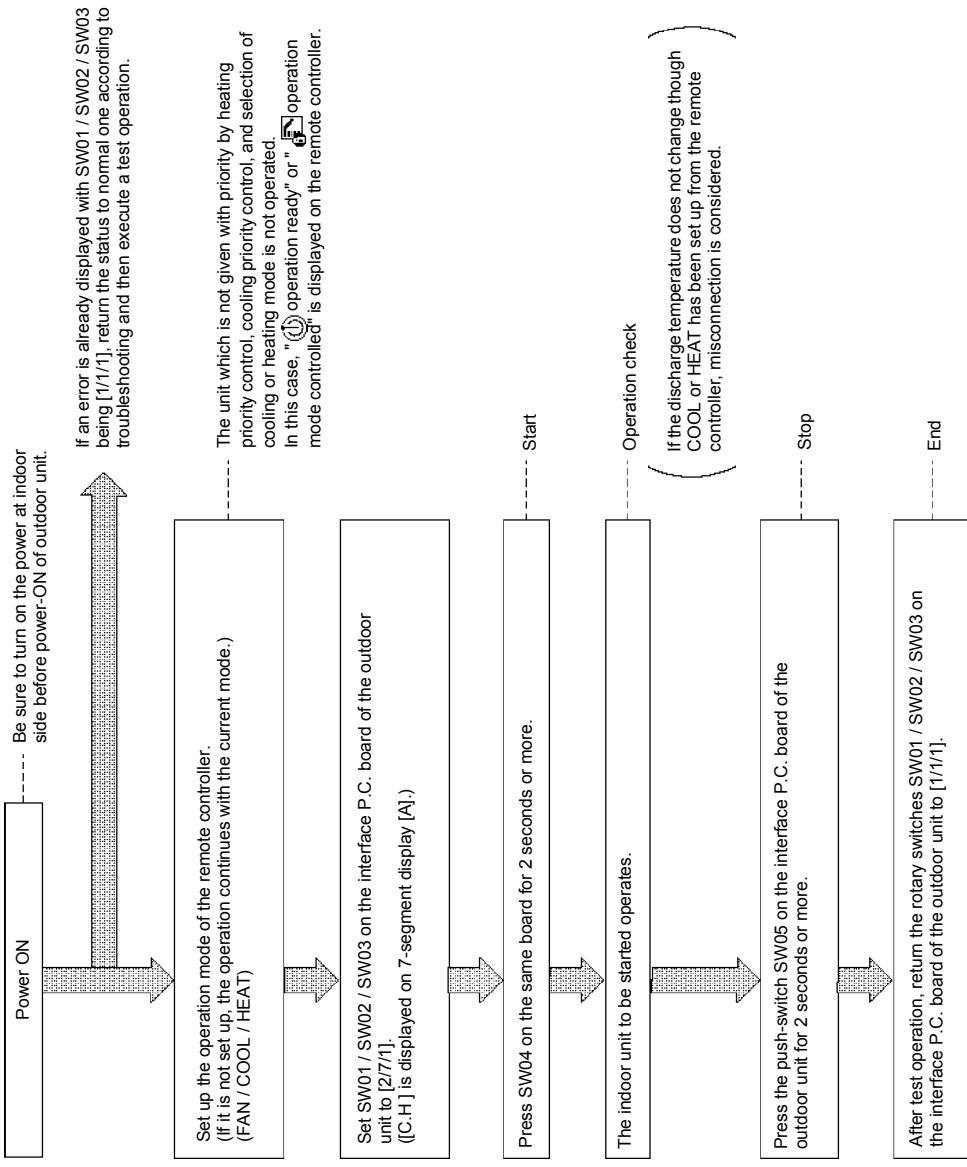


NOTE) The test operation returns to the normal operation after 60 minutes.

(3) 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>



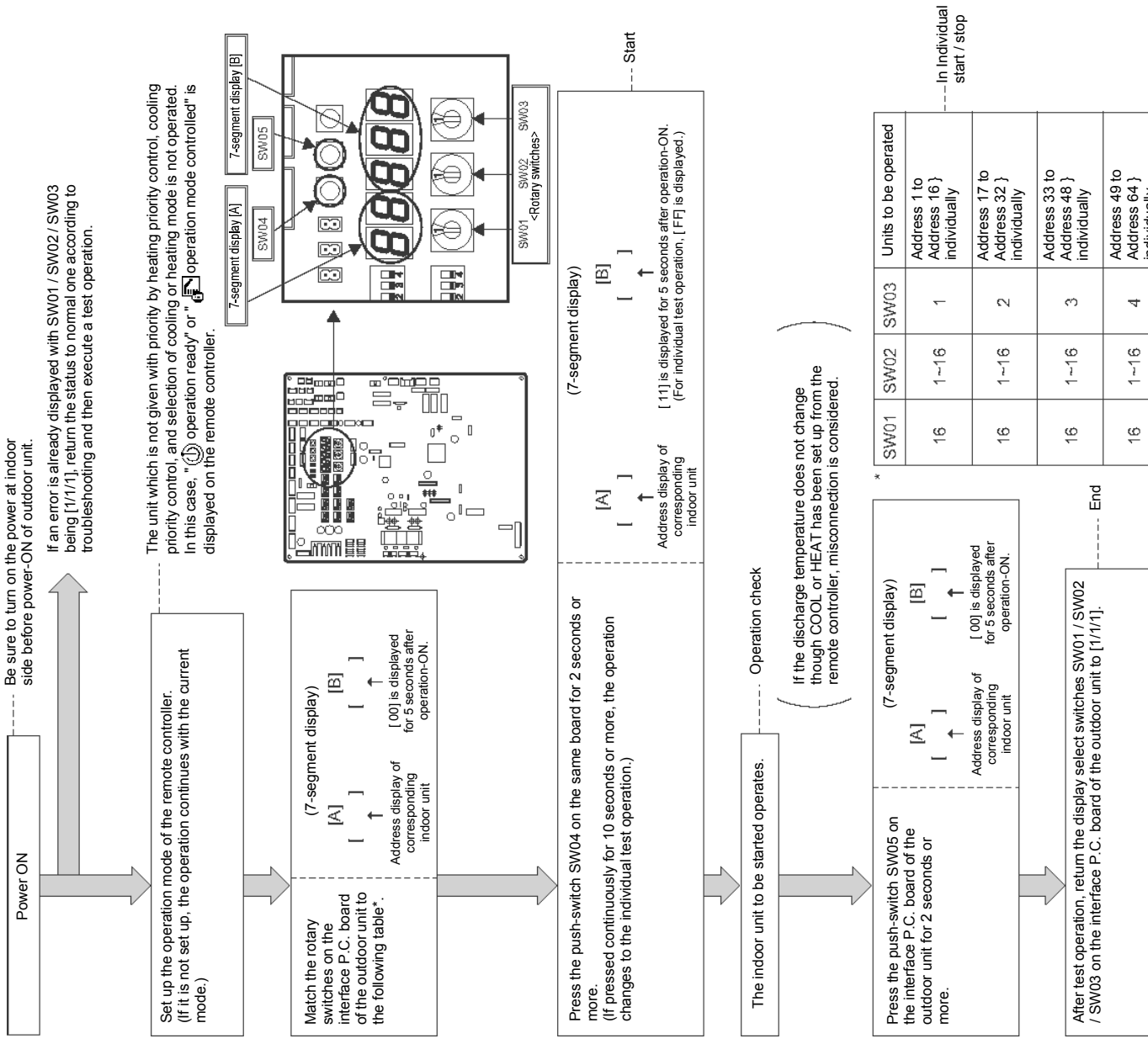
(4) Individual start / stop (ON / OFF) individual test operation function

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

Set SW01 [16] and set SW02, SW03 to indoor address No. (1 to 64) to be started (Refer to the following table*) - only the setup indoor unit starts operation.

(In the rotary switches of the indoor unit which operates in a group by the remote controller, the follower unit cannot be individually started or stopped. In this case, [- -] is displayed on 7-segment display [B] on the interface P.C. board of the outdoor unit.)

<Operation procedure>



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

8-7-3. Error clearing function

(1) Clearing from the main remote controller

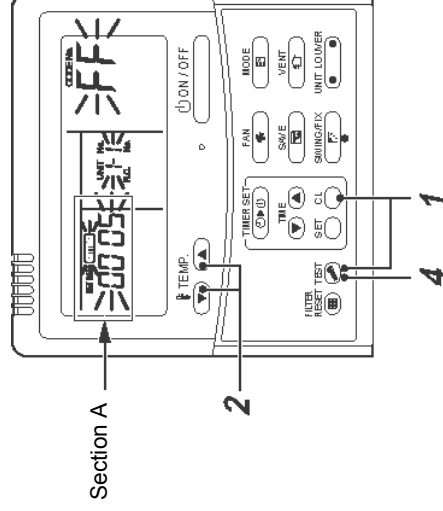
▼ Error clearing in outdoor unit

Error of the outdoor unit currently detected is cleared by the unit of one refrigerant circuit system to which the indoor units operated by the remote controller is connected. (Error of the indoor unit is not cleared.)

For clearing errors, the service monitor function of the remote controller is used.

<Method>

- 1 Change the mode to service monitor mode by pushing  +  buttons simultaneously for 4 seconds or more.
- 2 Using  buttons, set CODE No. to "FF".
- 3 The display in Section A in the following figure is counted with interval of 5 seconds as "0005" --> "0004" --> "0003" --> "0002" --> "0001" --> "0000".
When the count arrives "0000", the error is cleared.
*However, counting from "0005" is repeated on the display.
- 4 When  button is pushed, the status returns to the normal status.



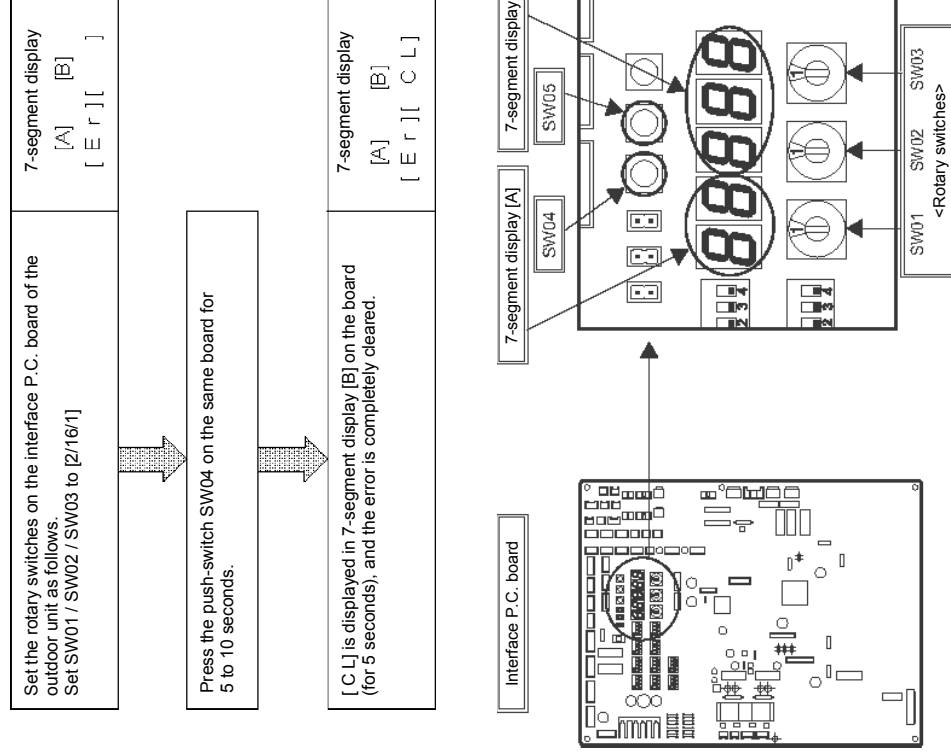
▼ Error clearing in indoor unit

Error in the indoor unit is cleared by  button on the remote controller.

(Only error of the indoor unit connected with operating remote controller is cleared.)

(2) Clearing error by using switches on the interface board of the outdoor unit

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



(3) Clearing error by resetting power

This function is provided to clear error 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.

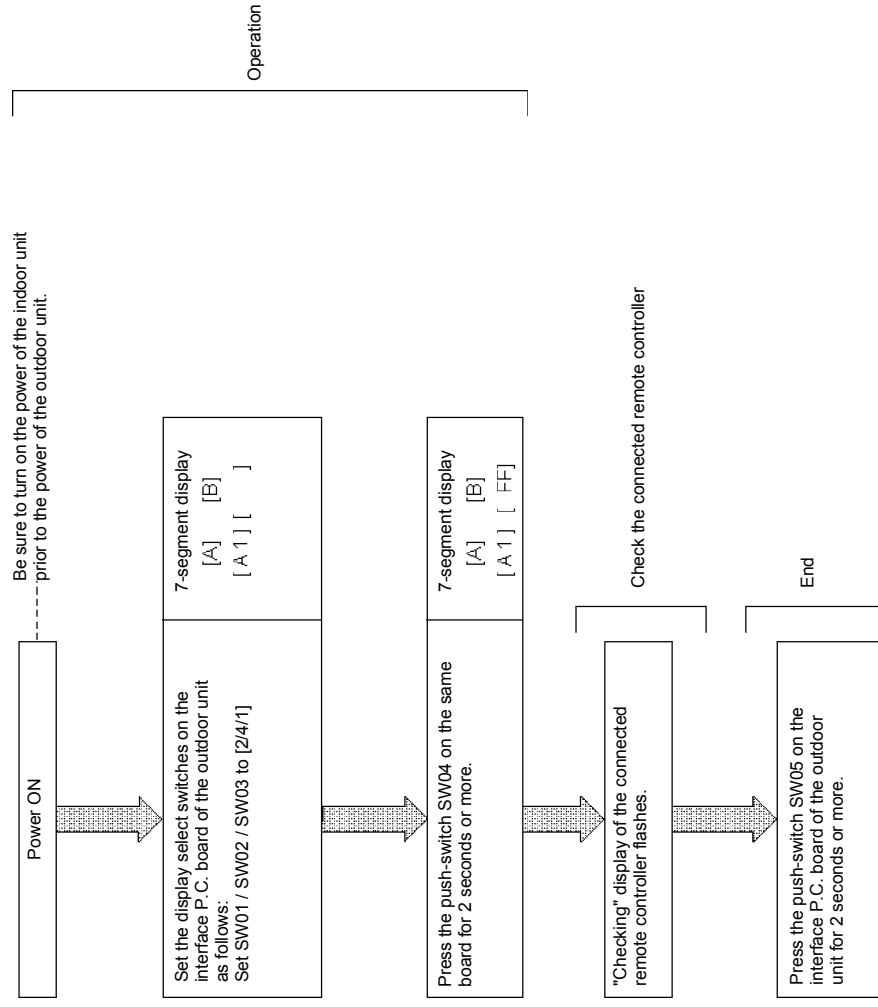
<Method>

- (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.

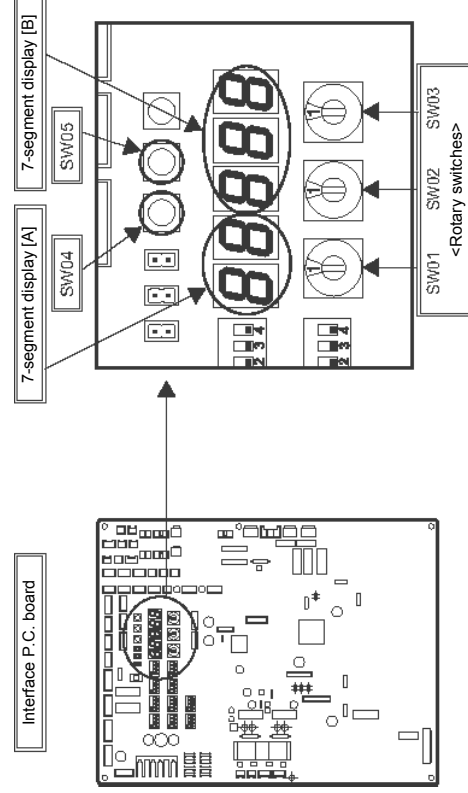
NOTE) After power reset, it requires usually 3 minutes to power-on due to the initial communication of the system. In some cases, it requires max. 10 minutes.

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>



Other end conditions:
1. 10 minutes has passed
2. SW01, SW02, or SW03 changed to other position.



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 fully / close fully function in outdoor unit

This function is provided to forcedly open or close fully P.M.V. (PMV1 / PMV2) used in the outdoor unit for 2 minutes.

[PMV1 / PMV2 Open fully]

Short circuit CN30 on the interface board of the outdoor unit.

[PMV1 / PMV2 Close fully]

Short circuit CN31 on the interface board of the outdoor unit.

[Clear]

For both open fully and close fully, after 2 minutes, the opening returns to the normal opening. Be sure to remove the cord used for short circuit after confirmation.

8-7-7. Solenoid valve forced open / close function in outdoor unit

This function is provided to forcibly open each solenoid valve mounted in the outdoor unit by the switch operation on the interface P.C. board in the outdoor unit. Use this function to check there is no refrigerant clogging with ON / OFF operation of the solenoid valve.

[Operation]

- (1) Set the switches SW01 / SW02 / SW03 on the interface P.C. board of the outdoor unit to [2/1/3].
- (2) When [H. r] is displayed in 7-segment display [A], keep pressing the switch SW04 for 2 seconds or more.
- (3) [2] is displayed in 7-segment display [B].
- (4) After then, ON and OFF of SV4 solenoid valve are exchanged by changing the setup number of the switch SW02.

(ON / OFF output pattern of each solenoid valve is as shown below.)

NOTE 1) Display in 7-segment display [B] is exchanged just when the number of SW02 has been changed; on the other hand, the solenoid valve output is exchanged when SW02 has been kept with the same number for 5 seconds or more.

NOTE 2) The mark [O] in the table indicates that the corresponding solenoid valve is forcibly turned on.

NOTE 3) The mark [-] in the table indicates that ON / OFF of the solenoid valve is controlled based upon the specifications of the air conditioner.

NOTE 4) The mark [×] in the table indicates that the corresponding solenoid valve is forcibly turned off with this operation.

SW02	7-segment display [B]	Operation pattern of solenoid valve	
		SV4	
1	[2]	-	
2	[5]	-	
3	[41]	O	
15		×	
16	ALL	O	

* If the outdoor unit has no valve, then 7-segment display [B] shows [- -].

[Clear]

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

NOTE) As this function is not based on the specified general control, be sure to release this mode after checking.

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 [63] 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) As shown in the following table, TO sensor value can be fixed by setting the rotary switch SW02 on the interface P.C. board.

[Clear]

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

SW02	7-segment display [B]	TO sensor value
1	[10]	10 °C
2	[15]	15 °C
3	[20]	20 °C
4	[25]	25 °C
5	[30]	30 °C
6	[35]	35 °C
7	[40]	40 °C
8	[43]	43 °C
9	[45]	45 °C
10	[-15]	-15 °C
11	[-10]	-10 °C
12	[- 5]	-5 °C
13	[0]	0 °C
14	[2]	2 °C
15	[5]	5 °C
16	[7]	7 °C

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.

<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
	16		[E . r]	Error clear function
2	1~16	3	[H . r]	Solenoid valve forced open / close function
2		4~5	[F . d]	Fan forced operation function
2		15	[t . o]	Outside temperature sensor manual adjustment function
16	1~16	1	[0 1]~[1 6]	Indoor individual start / stop (ON / OFF) function
		2	[1 7]~[3 2]	
		3	[3 3]~[4 8]	
		4	[4 9]~[6 4]	

8-7-10. Monitor function of remote controller switch

When using a remote controller with the model name RBC-AMT32E, 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  +  buttons simultaneously for 4 seconds or more to call up the service monitor mode.

The service monitor goes on, and temperature of the CODE No. 00 is firstly displayed.

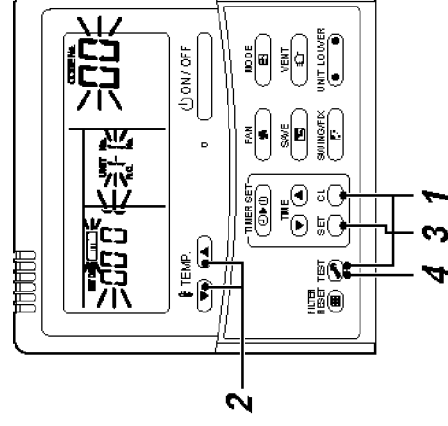
- 2** Push the temperature setup   buttons to select the CODE No. to be monitored.

For displayed codes, refer to the table next page.

- 3** Push button to determine the item to be monitored.

Then monitor the sensor temperature or operation status of indoor unit and the outdoor unit in the corresponding refrigerant line.

- #### 4 Pushing button returns the display to the normal display.



CODE No.	Data name	Display format	Unit	Remote controller display example
00	Room temperature (During control)	x1	°C	
01	Room temperature (Remote controller)	x1	°C	
02	Indoor suction temperature (TA)	x1	°C	
03	Indoor coil temperature (TCU)	x1	°C	[0024] = 24 °C
04	Indoor coil temperature (TC2)	x1	°C	
05	Indoor coil temperature (TC1)	x1	°C	
06	Indoor discharge temperature (TF) *1	x1	°C	
08	Indoor PMV opening	x1 / 10	pls	[0150] = 1500 pls
0A	No. of connected indoor units	x1	unit	[0008] = 8 units
0B	Total horsepower of connected indoor units	x10	HP	[0008] = 8 HP
0C	No. of connected indoor units	x1	unit	[0004] = 4 units
0D	Total horsepower of outdoor units	x10	HP	[0080] = 8 HP
10	Compressor discharge temperature (Td)	x1	°C	[0024] = 24 °C
12	High-pressure sensor detection pressure (Pd)	x100	MPa	
13	Low-pressure sensor detection pressure (Ps)	x100	MPa	[0123] = 1.23 MPa
14	Suction temperature (TS)	x1	°C	
15	Outdoor coil temperature (TE)	x1	°C	
16	Temperature at liquid side (TL)	x1	°C	
17	Outside ambient temperature (TO)	x1	°C	[0024] = 24 °C
18	Low-pressure saturation temperature (TU)	x1	°C	
19	Compressor current (I)	x10	A	[0135] = 13.5 A
1B	PMV1 + 2 opening	x1 / 10	pls	[0050] = 500 pls
1D	Compressor ON / OFF	—	—	[0001] = Compressor is ON
1E	Outdoor fan mode	x1	mode	[0027] = 27 mode
1F	Outdoor unit horsepower	x1	HP	[0008] = 8 HP

*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-APOOO, Outdoor units: MCY-MAPOOOO4*

(b) Tools and measuring devices required

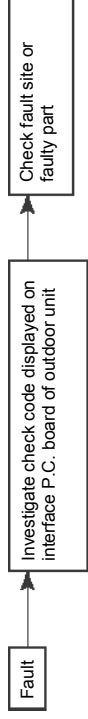
- Screwdrivers (Philips, flat head), spanners, long-nose pliers, nipper, pin to push reset switch, etc.
- Multimeter, thermometer, pressure gauge, etc.

(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 controller?

(2) Troubleshooting procedure

When a fault 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 fault on the basis of a display provided on the indoor remote controller or TCC-LINK central control remote controller - See the "TCC-LINK remote controller or main remote controller display" section of the list.
- When investigating a fault on the basis of a display provided on an outdoor unit - See the "Outdoor 7-segment display" section of the list.
- When investigating a fault 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)

(Error detected by indoor unit)

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)

○: Lighting, ✱: Flashing, ●: Goes off

ALT: Flashing is alternately when there are two flashing LED

SIM: Simultaneous flashing when there are two flashing LED

Check code		Display of receiving unit				Typical fault site	Description of error	
TCC-LINK 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 error	Communication from remote controller or network adaptor has been lost (so has central control communication).
E04	-	-	●	●	✱		Indoor-outdoor periodic communication error	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 error	MCU communication between main controller and motor microcontroller is faulty.
E18	-	-	✱	●	●		Error 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 (TC1) error	Heat exchanger temperature sensor (TC1) has been open / short-circuited.
F02	-	-	✱	✱	●	ALT	Indoor heat exchanger temperature sensor (TC2) error	Heat exchanger temperature sensor (TC2) has been open / short-circuited.
F03	-	-	✱	✱	●	ALT	Indoor heat exchanger temperature sensor (TC1) error	Heat exchanger temperature sensor (TC1) has been open / short-circuited.
F10	-	-	✱	✱	●	ALT	Ambient temperature sensor (TA) error	Ambient temperature sensor (TA) has been open / short-circuited.
F11	-	-	✱	✱	●	ALT	Discharge temperature sensor (TF) error	Discharge temperature sensor (TF) has been open / short-circuited.
F29	-	-	✱	✱	●	SIM	P.C. board or other indoor error	Indoor EEPROM is abnormal (some other error may be detected).
L03	-	-	✱	●	✱	SIM	Duplicated indoor group outdoor unit	There is more than one outdoor 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.
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 error input (interlock)	Unit shutdown has been caused by external error input (CN80).
P01	-	-	●	✱	✱	ALT	Indoor AC fan error	Indoor AC fan error is detected (activation of fan motor thermal relay).
P10	P10	Detected indoor unit No.	●	✱	✱	ALT	Indoor overflow error	Float switch has been activated.
P12	-	-	●	✱	✱	ALT	Indoor DC fan error	Indoor DC fan error (e.g. overcurrent or lock-up) is detected.
P31	-	-	✱	●	✱	ALT	Other indoor unit error	Follower unit cannot be operated due to outdoor unit alarm (E03 / L03 / L07 / L08).

(Error detected by main remote controller)

Check code			Display of receiving unit				Typical fault site	Description of error
Main remote controller	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation ⏴	Timer ⌚	Ready ⚡	Flash		
E01	—	—	※	●	●		No master remote controller, faulty remote controller communication (reception)	Signals cannot be received from indoor unit; master remote controller has not been set (including two remote controller control).
E02	—	—	※	●	●		Faulty 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).

(Error detected by central control device)

Check code		Display of receiving unit				Typical fault site	Description of error
TCC-LINK central control	Outdoor 7-segment display		Indicator light block				
		Sub-code	Operation 	Timer 	Ready 		
C05	-	-	No indication (when main remote controller also in use)			Faulty central control communication (transmission)	Central control device is unable to transmit signal due to duplication of central control device.
C06	-	-				Faulty central control communication (reception)	Central control device is unable to receive signal.
-	-	-				Multiple network adapters	Multiple network adapters are connected to remote controller communication line.
C12	-	-				Blanket alarm for general-purpose device control interface	Device connected to general-purpose device control interface for TCC-LINK is faulty.
P30	-	-	As per alarm unit (see above)			Group control follower unit error	Group follower unit is faulty (unit No. and above detail [***] displayed on main remote controller).

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)

(Errors detected by outdoor interface - typical examples)

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)

○ : Lighting, ✱ : Flashing, ● : Goes off
ALT: Flashing is alternately when there are two flashing LED
SIM: Simultaneous flashing when there are two flashing LED

Check code			Display of receiving unit				Typical fault site	Description of error																								
Outdoor 7-segment display		TCC-LINK 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	●	●	✱		Dropping out of indoor unit	Indoor unit initially communicating normally fails to return signal (reduction in number of indoor units connected).																								
E07	-	(E04)	●	●	✱		Indoor-outdoor communication circuit error	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 is assigned same address (also detected at indoor unit end).																								
E12	-	E12	✱	●	●		Automatic address starting error	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: Overloading 01: Number of units connected	E16	●	●	✱		Too many indoor units connected / overloading	Combined capacity of indoor units is too large (more than 130 % of combined capacity of outdoor units).																								
E20	01: Connection of outdoor unit from other refrigerant line 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	<table><tr><td></td><td>A3-IPDU</td><td>Fan IPDU</td></tr><tr><td>01</td><td>○</td><td>1 (Upper) 2 (Lower)</td></tr><tr><td>02</td><td></td><td></td></tr><tr><td>03</td><td>○</td><td>○</td></tr><tr><td>04</td><td></td><td>○</td></tr><tr><td>05</td><td>○</td><td>○</td></tr><tr><td>06</td><td></td><td>○</td></tr><tr><td>07</td><td>○</td><td>○</td></tr></table>		A3-IPDU	Fan IPDU	01	○	1 (Upper) 2 (Lower)	02			03	○	○	04		○	05	○	○	06		○	07	○	○	E31	●	●	✱		IPDU communication error	There is no communication between IPDUs (P.C. boards) in inverter box.
	A3-IPDU	Fan IPDU																														
01	○	1 (Upper) 2 (Lower)																														
02																																
03	○	○																														
04		○																														
05	○	○																														
06		○																														
07	○	○																														
F04	-	F04	✱	✱	●	ALT	Outdoor discharge temperature sensor (TD) error	Outdoor discharge temperature sensor (TD) has been open / short-circuited.																								
F06	-	F06	✱	✱	○	ALT	Outdoor heat exchanger temperature sensor (TE) error	Outdoor heat exchanger temperature sensors (TE) have been open / short-circuited.																								
F07	-	F07	✱	✱	○	ALT	Outdoor liquid temperature sensor (TL) error	Outdoor liquid temperature sensor (TL) has been open / short-circuited.																								
F08	-	F08	✱	✱	○	ALT	Outdoor outside air temperature sensor (TO) error	Outdoor outside air temperature sensor (TO) has been open / short-circuited.																								
F12	-	F12	✱	✱	○	ALT	Outdoor suction temperature sensor (TS) error	Outdoor suction temperature sensor (TS) has been open / short-circuited.																								
F15	-	F15	✱	✱	○	ALT	Outdoor temperature sensor (TE, TL) wiring error	Wiring error in outdoor temperature sensors (TE, TL) has been detected.																								
F16	-	F16	✱	✱	○	ALT	Outdoor pressure sensor (Pd, Ps) wiring error	Wiring error in outdoor pressure sensors (Pd, Ps) has been detected.																								
F23	-	F23	✱	✱	○	ALT	Low pressure sensor (Ps) error	Output voltage of low pressure sensor (Ps) is zero.																								
F24	-	F24	✱	✱	○	ALT	High pressure sensor (Pd) error	Output voltage of high pressure sensor (Pd) is zero or provides abnormal readings when compressors have been turned off.																								
F31	-	F31	✱	✱	○	SIM	Outdoor EEPROM error	Outdoor EEPROM is faulty (alarm and shutdown for outdoor unit and continued operation for follower unit).																								
H04	-	H04	○	✱	○		Comp. case thermo operation	The case thermo operation has been detected.																								
H05	-	H05	●	✱	●		Outdoor discharge temperature sensor (TD) wiring error	Wiring / installation error or detachment of outdoor discharge temperature sensor (TD) has been detected.																								

Check code			Display of receiving unit				Typical fault site	Description of error																																
Outdoor 7-segment display		TCC-LINK central control or main remote controller display	Indicator light block																																					
	Sub-code		Operation 	Timer 	Ready 	Flash 																																		
H06	-		●	※	●		Activation of low-pressure protection	Low pressure (Ps) sensor detects abnormally low operating pressure.																																
L04	-		※	○	※	SIM	Duplicated outdoor refrigerant line address	Identical refrigerant line address has been assigned to outdoor units belonging to different refrigerant piping systems.																																
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 has 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 has been set up as priority indoor unit.																																
		(L08)	※	●	※	SIM	Indoor group address not set	Address setting has not been performed for one or more indoor units (also detected at indoor end).																																
		L10	※	○	※	SIM	Outdoor capacity not set	Outdoor unit capacity has not been set (after P.C. board replacement).																																
L29	<table><tr><td></td><td>A3-IPDU</td><td colspan="2">Fan IPDU</td></tr><tr><td>01</td><td>○</td><td>1 (Upper)</td><td>2 (Lower)</td></tr><tr><td>02</td><td></td><td></td><td></td></tr><tr><td>03</td><td>○</td><td>○</td><td></td></tr><tr><td>04</td><td></td><td></td><td>○</td></tr><tr><td>05</td><td>○</td><td></td><td>○</td></tr><tr><td>06</td><td></td><td>○</td><td>○</td></tr><tr><td>07</td><td>○</td><td>○</td><td>○</td></tr></table> Circle (○): Faulty IPDU			A3-IPDU	Fan IPDU		01	○	1 (Upper)	2 (Lower)	02				03	○	○		04			○	05	○		○	06		○	○	07	○	○	○		※	○	※	Error in number of IPDUs	There are insufficient number of IPDUs (P.C. boards) in inverter box.
	A3-IPDU	Fan IPDU																																						
01	○	1 (Upper)	2 (Lower)																																					
02																																								
03	○	○																																						
04			○																																					
05	○		○																																					
06		○	○																																					
07	○	○	○																																					
L30	Detected indoor unit No.		(L30)	※	○	※	SIM	Indoor external error input (interlock)	Indoor unit has been shut down for external error input in one refrigerant line (detected by indoor unit).																															
P03	-		P03	※	●	※	ALT	Outdoor discharge (TD) temperature error	Outdoor discharge temperature sensor (TD) has detected abnormally high temperature.																															
P05	00: Open phase detected		P05	※	●	※	ALT	Open phase / power failure Inverter DC voltage (Vdc) error	Open phase is detected when power is turned on. Inverter DC voltage is too high (overvoltage) or too low (undervoltage).																															
P07	-		P07	※	●	※	ALT	Heat sink overheating error	Temperature sensor built into IGBT (TH) detects overheating.																															
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).																															
P13	-		P13	●	※	※	ALT	Outdoor liquid backflow detection error	State of refrigerant cycle circuit indicates liquid backflow operation.																															
P15	01: TS condition 02: TD condition		P15	※	●	※	ALT	Gas leak detection	Outdoor suction temperature sensor (TS) detects sustained and repeated high temperatures that exceed standard value.																															
P19	-		P19	※	●	※	ALT	4-way valve reversing error	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.																															

(Errors detected by IPDU featuring in outdoor unit - typical examples)

Check code			Display of receiving unit				Typical fault site	Description of error
Outdoor 7-segment display		TCC-LINK central control or main remote controller display	Indicator light block					
	Sub-code		Operation 	Timer 	Ready 	Flash 		
F13	—	F13	※	※	○	ALT	Error in temperature sensor built into indoor IGBT (TH)	Temperature sensor built into indoor IGBT (TH) has been open / short-circuited.
H01	—	H01	●	※	●		Compressor breakdown	Inverter current (Idc) detection circuit detects overcurrent.
H02	—	H02	●	※	●		Compressor error (lockup)	Compressor lockup is detected.
H03	—	H03	●	※	●		Current detection circuit error	Abnormal current is detected while inverter compressor is turned off.
P07	—	P07	※	●	※	ALT	Heat sink overheating error	Temperature sensor built into IGBT (TH) detects overheating.
P22	0*: IGBT circuit 1*: Position detection circuit error 3*: Motor lockup error E*: Inverter DC voltage error (outdoor fan) Note: Although letters 0 to F appear at locations indicated by “*”, please ignore them.	P22	※	●	※	ALT	Outdoor fan IPDU error	Outdoor fan IPDU detects error.
P26	—	P26	※	●	※	ALT	Activation of G-Tr (IGBT) short-circuit protection	Short-circuit protection for compressor motor driver circuit components is activated (momentary overcurrent).
P29	—	P29	※	●	※	ALT	Compressor position detection circuit error	Compressor motor position detection error is detected.

Note: The above check codes are examples only, and different check codes may be displayed depending on the outdoor unit configuration (e.g. a Super heat recovery multi system). For details, see the service manual for the outdoor unit.

9-3. Troubleshooting based on information displayed on remote controller

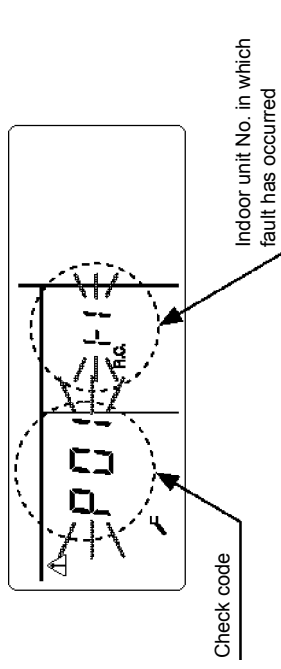
Using main remote controller (RBC-AMT32E)

(1) Checking and testing

When a fault occurs to an air conditioner, a check code and indoor unit No. are displayed on the display window of the remote controller.

Check codes are only displayed while the air conditioner is in operation.

If the display has already disappeared, access error history by following the procedure described below.



(2) Error history

The error history access procedure is described below (up to four errors stored in memory). Error history can be accessed regardless of whether the air conditioner is in operation or shut down.

<Procedure> To be performed when system at rest

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

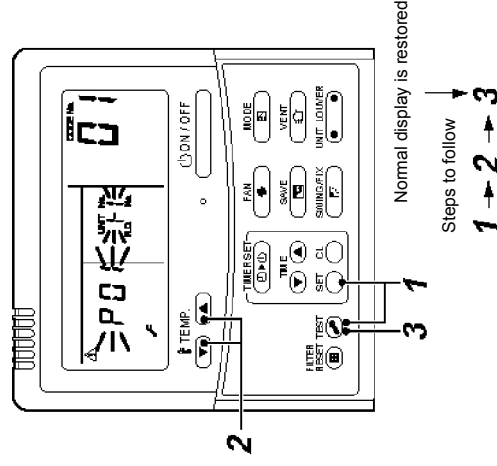
The letters "SERVICE CHECK" light up, and the check code "01" is displayed, indicating the error history. This is accompanied by the indoor unit No. to which the error history is related and a check code.

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

Check code "01" (latest) → Check code "04" (oldest)

Note: Error history contains four items.

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



REQUIREMENT

Do not push the **TEST** button as it would erase the whole error history of the indoor unit.

How to read displayed information

<7-segment display symbols>

0 1 2 3 4 5 6 7 8 9 A b c d e f H u l P

<Corresponding alphanumerical letters>

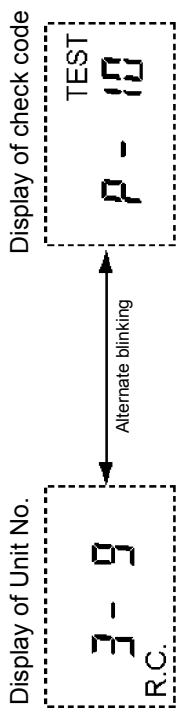
0 1 2 3 4 5 6 7 8 9 A b c d e f H J L P

Using TCC-LINK central control remote controller (TCB-SC642TLE2)

(1) Checking and testing

When a fault occurs to an air conditioner, a check code and indoor unit No. are displayed on the display window of the remote controller. Check codes are only displayed while the air conditioner is in operation.

If the display has already disappeared, access error history by following the procedure described below.



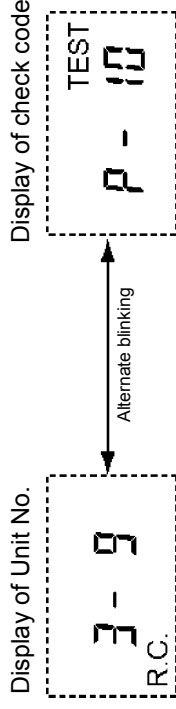
(2) Error history

The error history access procedure is described below (up to four errors stored in memory).

Error history can be accessed regardless of whether the air conditioner is in operation or shut down.

- 1** Push the + buttons simultaneously and hold for at least 4 seconds.
- 2** The letters “ SERVICE CHECK” light up, and the check code “01” is displayed.
- 3** When a group No. is selected (blinking), if there is an error history, the UNIT No. and the latest error history information are displayed alternately.

*During this procedure, the temperature setting feature is unavailable.



- 4** To check other error history items, push the button to select another check code (01-04.).
- 5** To check check code relating to another group, push (ZONE) and (GROUP) buttons to select a group No.
Do not push the button as it would erase the whole error history of the selected group.
- 6** To finish off the service check, push the button.

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 fault
Operation ● Timer ● Ready ● All lights out	–	Power turned off or error in wiring between receiving and indoor units
Operation ☀ Timer ● Ready ● Blinking	E01	Faulty reception
	E02	Faulty transmission
	E03	Loss of communication
	E08	Duplicated indoor unit No. (address)
	E09	Duplicated master remote controller
	E10	Indoor unit inter-MCU communication error
Operation ● Timer ● Ready ☀ Blinking	E12	Automatic address starting error
	E18	Error or poor contact in wiring between indoor units, indoor power turned off
	E04	Error or poor contact in wiring between indoor and outdoor units (loss of indoor-outdoor communication)
	E06	Faulty reception in indoor-outdoor communication (dropping out of indoor unit)
	E07	Faulty transmission in indoor-outdoor communication
	E15	Indoor unit not found during automatic address setting
	E16	Too many indoor units connected / overloading
	E20	Detection of refrigerant piping communication error during automatic address setting
	E31	IPDU communication error
	P01	Indoor AC fan error
Operation ● Timer ☀ Ready ☀ Alternate blinking	P10	Indoor overflow error
	P12	Indoor DC fan error
	P13	Outdoor liquid backflow detection error
	P03	Outdoor discharge (TD) temperature error
	P05	Open phase / power failure Inverter DC voltage (Vdc) error
	P07	Outdoor heat sink overheating error - Poor cooling of electrical component (IGBT) of outdoor unit
	P15	Gas leak detection - insufficient refrigerant charging
	P19	Outdoor 4-way valve reversing error
	P20	Activation of high-pressure protection
	P22	Outdoor fan IPDU error
Operation ☀ Timer ☀ Ready ● Alternate blinking	P26	Outdoor G-Tr short-circuit error
	P29	Compressor position detection circuit error
	P31	Shutdown of other indoor unit in group due to fault (group follower unit error)
	F01	Heat exchanger temperature sensor (TCJ) error
	F02	Heat exchanger temperature sensor (TC2) error
	F03	Heat exchanger temperature sensor (TC1) error
	F10	Ambient temperature sensor (TA) error
	F11	Discharge temperature sensor (TF) error
		Indoor unit temperature sensor errors

Light block	Check code	Cause of fault	
Operation  Timer  Ready  Alternate blinking	F04	Discharge temperature sensor (TD) error	Outdoor unit temperature sensor errors
	F06	Heat exchanger temperature sensor (TE) error	
	F07	Liquid temperature sensor (TL) error	
	F08	Outside air temperature sensor (TO) error	
	F12	Suction temperature sensor (TS) error	
	F13	Heat sink sensor (TH) error	
	F15	Wiring error in heat exchanger sensor (TE) and liquid temperature sensor (TL) Outdoor unit temperature sensor wiring / installation error	
	F16	Wiring error in outdoor high pressure sensor (Pd) and low pressure sensor (Ps) Outdoor pressure sensor wiring error	Outdoor unit pressure sensor errors
	F23	Low pressure sensor (Ps) error	
	F24	High pressure sensor (Pd) error	
	F29	Fault in indoor EEPROM	
	H01	Compressor breakdown	
	H02	Compressor lockup	
	H03	Current detection circuit error	
	H04	Comp. case thermo operation	Protective shutdown of outdoor unit
	H05	Wiring / installation error or detachment of outdoor discharge temperature sensor (TD)	
	H06	Abnormal drop in low-pressure sensor (Ps) reading	
	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	Indoor external interlock error
	L09	Indoor capacity not set	
	L04	Duplicated outdoor refrigerant line address	
	L10	Outdoor capacity not set	
	L29	Error in number of IPDUs	
	L30	Indoor external interlock error	
	F31	Outdoor EEPROM error	

Other (indications not involving check code)

Light block	Check code	Cause of fault
Operation  Timer  Ready  Synchronized blinking	–	Test run in progress
Operation  Timer  Ready  Alternate blinking	–	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	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Sub-code						
E01	-	-	-	Remote controller	Indoor-remote controller communication error (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 defect 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 error	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	-	-	97	Indoor unit	Indoor-remote controller communication error (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	-	-	04	Indoor unit	Indoor-outdoor communication circuit error (detected at indoor end)	Stop of corresponding unit	Indoor unit is not receiving signal from outdoor unit.	• Check order in which power was turned on for indoor and outdoor units. • Check indoor address setting. • Check indoor-outdoor tie cable. • Check outdoor termination resistance setting (SW30, Bit 2).
E06	E06	No. of indoor units from which signal is received normally	04	I/F	Dropping out of indoor unit	All stop	Indoor unit initially communicating normally fails to return signal for specified length of time.	• Check power supply to indoor unit. • (Is power turned on?) • Check connection of indoor-outdoor communication cable. • Check connection of communication connectors on indoor P.C. board. • Check connection of communication connectors on outdoor P.C. board. • Check for defect in indoor P.C. board. • Check for defect in outdoor P.C. board (I/F).
-	E07	-	-	I/F	Indoor-outdoor communication circuit error (detected at outdoor end)	All stop	Signal cannot be transmitted from outdoor to indoor units for 30 seconds continuously.	• Check outdoor termination resistance setting (SW30, Bit 2). • Check connection of indoor-outdoor communication circuit.
E08	E08	Duplicated indoor address	96	Indoor unit I/F	Duplicated indoor address	All stop	More than one indoor unit is assigned same address.	• Check indoor addresses. • Check for any change made to remote controller connection (group / individual) since indoor address setting.

Check code				Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AL-NET central control remote controller					
	Check code	Sub-code						
E09	-	-	99	Remote controller	Duplicated master remote controller	Stop of corresponding unit	In two remote controller configuration (including wireless), both controllers are set up as master. (Header indoor unit is shut down with alarm, while follower indoor units continue operating.)	- Check remote controller settings. - Check remote controller P.C. boards.
E10	-	-	CF	Indoor unit	Indoor inter-MCU communication error	Stop of corresponding unit	Communication cannot be established / maintained upon turning on of power or during communication.	Check for defect in indoor P.C. board.
E12	E12	-	42	I/F	Automatic address starting error	All stop	Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress.	Perform automatic address setting again after disconnecting communication cable to that refrigerant line.
E15	E15	-	42	I/F	Indoor unit not found during automatic address setting	All stop	Indoor unit cannot be detected after indoor automatic address setting is started.	- Check connection of indoor-outdoor communication line. - Check for error in indoor power supply system. - Check for noise from other devices. - Check for power failure. - Check for defect in indoor P.C. board.
E16	E16	-	89	I/F	Too many indoor units connected	All stop	- Combined capacity of indoor units exceeds 130 % of combined capacity of outdoor units. Note: If this code comes up after backup setting for outdoor unit failure is performed, perform "No overloading detected" setting. <"No overloading detected" setting method> Turn on SW09 / Bit 2 on I/F P.C. board of outdoor unit. - More than 8 indoor units are connected.	- 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 defect in outdoor P.C. board (I/F).
E18	-	-	97-99	Indoor unit	Error 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	-	42	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.	Disconnect inter-line tie cable in accordance with automatic address setting method explained in "Address setting" section.
E31	E31	-	CF	I/F	IPDU communication error	All stop	Communication is disrupted between IPDUs (P.C. boards) in inverter box.	- Check wiring and connectors involved in communication between IPDU-I/F P.C. board for bad contact or broken wire. - Check for defect in outdoor P.C. board (I/F, A3-IPDU or Fan IPDU). - Check for external noise.

Check code					Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AI-MET central control remote controller						
	Check code	Sub-code							
F01	-	-	0F	Indoor unit	Indoor TCJ sensor error	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 defect in indoor P.C. board.	
F02	-	-	0d	Indoor unit	Indoor TC2 sensor error	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 defect in indoor P.C. board.	
F03	-	-	93	Indoor unit	Indoor TC1 sensor error	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 defect in indoor P.C. board.	
F04	F04	-	19	I/F	TD sensor error	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 defect in outdoor P.C. board (I/F).	
F06	F06	-	18	I/F	TE sensor error	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 defect in outdoor P.C. board (I/F).	
F07	F07	-	18	I/F	TL sensor error	All stop	Sensor resistance is infinity or zero (open / short circuit).	• Check connection of TL sensor connector. • Check resistance characteristics of TL sensor. • Check for defect in outdoor P.C. board (I/F).	
F08	F08	-	1b	I/F	TO sensor error	All stop	Sensor resistance is infinity or zero (open / short circuit).	• Check connection of TO sensor connector. • Check resistance characteristics of TO sensor. • Check for defect in outdoor P.C. board (I/F).	
F10	-	-	0C	Indoor unit	Indoor TA sensor error	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 defect in indoor P.C. board.	
F11	-	-		Indoor unit	Indoor TF sensor error	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 defect in indoor P.C. board.	
F12	F12	-	A2	I/F	TS sensor error	All stop	Sensor resistance is infinity or zero (open / short circuit).	• Check connection of TS sensor connector. • Check resistance characteristics of TS sensor. • Check for defect in outdoor P.C. board (I/F).	

Check code					Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AI-NET central remote controller						
	Check code	Sub-code							
F13	F13	-		43	TH sensor error	All stop	Sensor resistance is zero (short circuit).	• Defect in IGBT built-in temperature sensor → Replace A3-IPDU P.C. board.	
F15	F15	-		18	Outdoor temperature sensor wiring error (TE, TL)	All stop	During compressor operation in HEAT mode, TE continuously provides temperature reading higher than indicated by TL by at least specified margin for 3 minutes or more.	• Check installation of TE and TL sensors. • Check resistance characteristics of TE and TL sensors. • Check for outdoor P.C. board (I/F) error.	
F16	F16	-		43	Outdoor pressure sensor wiring error (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 defect in pressure sensors Pd and Ps. • Check for error in outdoor P.C. board (I/F). • Check for deficiency in compressive output of compressor.	
F23	F23	-		43	Ps sensor error	All stop	Output voltage of Ps sensor is zero.	• Check for connection error involving Ps sensor and Pd sensor connectors. • Check connection of Ps sensor connector. • Check for defect in Ps sensor. • Check for deficiency in compressive output of compressor. • Check for defect in 4-way valve. • Check for defect in outdoor P.C. board (I/F). • Check for defect in SV4 circuit.	
F24	F24	-		43	Pd sensor error	All stop	Output voltage of Pd sensor is zero (sensor open-circuited). Pd > 4.15 MPa despite compressor having been turned off.	• Check connection of Pd sensor connector. • Check for defect in Pd sensor. • Check for defect in outdoor P.C. board (I/F).	
F29	-	-		12	Other indoor error	Stop of corresponding unit	Indoor P.C. board does not operate normally.	• Check for defect in indoor P.C. board (faulty EEPROM)	
F31	F31	-		1C	Outdoor EEPROM error	All stop	Outdoor P.C. board (I/F) does not operate normally.	• Check power supply voltage. • Check power supply noise. • Check for defect in outdoor P.C. board (I/F).	
H01	H01	-		1F	Compressor breakdown	All stop	Inverter current detection circuit detects overcurrent and shuts system down.	• Check power supply voltage. (AC380 V ± 10 %). • Check for defect in compressor. • Check for possible cause of abnormal overloading. • Check for defect in outdoor P.C. board (A3-IPDU).	
H02	H02	-		1d	Compressor error (lockup) MG-CTT error	All stop	Overcurrent is detected several seconds after startup of inverter compressor.	• Check for defect in compressor. • Check power supply voltage. (AC380 V ± 10 %). • Check compressor system wiring, particularly for open phase. • Check connection of connectors / terminals on A3-IPDU P.C. board. • Check for defect in outdoor P.C. board (A3-IPDU).	

Check code					Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AI-MET central control remote controller						
	Check code	Sub-code							
H03	H03	-	17	IPDU	Current detection circuit error	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 defect in outdoor P.C. board (A3-IPDU).	
H04	H04	-	44	I/F	Compressor case thermo operation	All stop	Compressor case thermostat performed protective operation.	• Check compressor case thermo 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 error. • Check refrigerant amount shortage.	
H05	H05	-		I/F	TD sensor miswiring (incomplete insertion)	All stop	Discharge temperature of compressor does not increase despite compressor being in operation.	• Check installation of TD sensor. • Check connection of TD sensor connector and wiring. • Check resistance characteristics of TD sensor. • Check for defect in outdoor P.C. board (I/F).	
H06	H06	-	20	I/F	Activation of low-pressure protection	All stop	Low-pressure Ps sensor detects operating pressure lower than 0.02 MPa.	• Check service valves to confirm full opening (both gas and liquid sides). • Check outdoor PMVs for clogging (PMV1, 2). • Check for defect in SV4 circuits. • Check for defect 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.	
L03	-	-	96	Indoor unit	Duplicated indoor outdoor unit	Stop of corresponding unit	There is more than one outdoor unit in group.	• Check indoor addresses. • Check for any change made to remote controller connection (group / individual) since indoor address setting.	
L04	L04	-	96	I/F	Duplicated outdoor line address	All stop	There is duplication in line address setting for outdoor units belonging to different refrigerant piping systems.	• Check line addresses.	
L05	-	-	96	I/F	Duplicated priority indoor unit (as displayed on priority indoor unit)	All stop	More than one indoor unit has been set up as priority indoor unit.	• Check display on priority indoor unit.	
L06	L06	No. of priority indoor units	96	I/F	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	All stop	More than one indoor unit have been set up as priority indoor unit.	• Check displays on priority indoor unit and outdoor unit.	

Check code				Location of detection	Description	System status	Error detection condition(s)	Check items (locations)																															
Main remote controller	Outdoor 7-segment display	AI-NET central control remote controller																																					
	Check code	Sub-code																																					
L07	—	—	99	Indoor unit	Connection of group control cable to stand-alone indoor unit	Stop of corresponding unit	There is at least one stand-alone indoor unit to which group control cable is connected.	• Check indoor addresses.																															
L08	L08	—	99	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	—	—	46	Indoor unit	Indoor capacity not set	Stop of corresponding unit	Capacity setting has not been performed for indoor unit.	Set indoor capacity. (DN = 11)																															
L10	L10	—	88	I/F	Outdoor capacity not set	All stop	Jumper wire provided on P.C. board for servicing I/F P.C. board has not been removed as required for given model.	Check model setting of P.C. board for servicing outdoor I/F P.C. board.																															
L20	—	—	98	AI-NET indoor unit	Duplicated central control address	All stop	There is duplication in central control address setting.	• Check central control addresses. • Check network adaptor P.C. board.																															
L29	L29	<table><tr><td></td><td>A3-IPDU</td><td>1 (Upper)</td><td>2 (Lower)</td></tr><tr><td>01</td><td>0</td><td>0</td><td></td></tr><tr><td>02</td><td></td><td>0</td><td></td></tr><tr><td>03</td><td>0</td><td>0</td><td></td></tr><tr><td>04</td><td></td><td></td><td>0</td></tr><tr><td>05</td><td>0</td><td></td><td>0</td></tr><tr><td>06</td><td></td><td>0</td><td>0</td></tr><tr><td>07</td><td>0</td><td>0</td><td>0</td></tr></table>		A3-IPDU	1 (Upper)	2 (Lower)	01	0	0		02		0		03	0	0		04			0	05	0		0	06		0	0	07	0	0	0	CF	I/F	Error in No. of IPDUs	All stop	• Check model setting of P.C. board for servicing outdoor I/F P.C. board. • Check connection of UART communication connector. • Check A3-IPDU, fan IPDU, and I/F P.C. board for defect.
	A3-IPDU	1 (Upper)	2 (Lower)																																				
01	0	0																																					
02		0																																					
03	0	0																																					
04			0																																				
05	0		0																																				
06		0	0																																				
07	0	0	0																																				
L30	L30	Detected indoor address	b6	Indoor unit	External interlock of indoor unit	Stop of corresponding unit	• Signal is present at external error input terminal (CN80) for 1 minute. When external device is connected to CN80 connector: 1) Check for defect in external device. 2) Check for defect in indoor P.C. board. When external device is not connected to CN80 connector: 1) Check for defect in indoor P.C. board.																																
—	L31	—	—	I/F	Extended IC error	Continued operation	There is part failure in P.C. board (I/F).	Check outdoor P.C. board (I/F).																															
P01	—	—	11	Indoor unit	Indoor fan motor error	Stop of corresponding unit		• Check the lock of fan motor (AC fan). • Check wiring.																															
P03	P03	—	1E	I/F	Discharge temperature TD error	All stop	Discharge temperature (TD) exceeds 115 °C.	• Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check outdoor PMVs (PMV1, 2) for clogging. • Check resistance characteristics of TD sensor. • Check for insufficiency in refrigerant quantity. • Check for defect in 4-way valve. • Check for leakage of SV4 circuit. • Check SV4 circuit (wiring) or installation error in SV4.																															

Check code					Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AL-NET central control remote controller						
	Check code	Sub-code							
P05	P05	00:		AF	I/F	Detection of open phase / phase sequence Inverter DC voltage (Vdc) error (compressor)	All stop	- Open phase is detected when power is turned on. - Inverter DC voltage is too high (overvoltage) or too low (undervoltage).	- Check for defect in outdoor P.C. board (I/F). - Check for defect in outdoor power supply wiring. - Check for defect in wiring of CN400 and CN530 on interface P.C. board.
P07	P07		-	1C	IPDU I/F	Heat sink overheating error	All stop	Temperature sensor built into IGBT (TH) is overheated.	- Check power supply voltage. - Check outdoor fan system error. - Check heat sink cooling duct for clogging. - Check IGBT and heat sink for thermal performance for faulty installation. (e.g. mounting screws and thermal conductivity) - Check for defect in A3-IPDU. (faulty IGBT built-in temperature sensor (TH))
P10	P10	Detected indoor address		0b	Indoor unit	Indoor overflow error	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 defect in indoor P.C. board.
P12	-	-		11	Indoor unit	Indoor fan motor error	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 defect in fan motor. - Check for defect in indoor P.C. board. - Check impact of outside air treatment (OA).
P13	P13	-		47	I/F	Outdoor liquid backflow detection error	All stop	<During cooling operation> When system is in cooling operation, high pressure is detected in follower unit that has been turned off. <During heating operation> When system is in heating operation, outdoor PMV 1 or 2 continuously registers opening of 100 p or less while under SH control.	- Check full-dose operation of outdoor PMV (1, 2). - Check for defect in Pd or Ps sensor. - Check defect 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 convergent section.

Check code					Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AI-NET central control remote controller						
	Check code	Sub-code							
P15	P15	01: TS condition	AE	I/F	Gas leak detection (TS 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 error 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 PMVs (PMV1, 2) for clogging. • Check resistance characteristics of TS sensor. • Check for defect 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 PMVs (PMV 1, 2) for clogging. • Check resistance characteristics of TD sensors. • Check indoor filter for clogging. • Check piping for clogging. • Check SV4 circuit (for leakage or coil installation error).	
P19	P19	Detected outdoor unit No.	8	I/F	4-way valve reversing error	All stop	Abnormal refrigerating cycle data is collected during heating operation.	• Check for defect in main body of 4-way valve. • Check for coil defect in 4-way valve and loose connection of its connector. • Check resistance characteristics of TS and TE sensors. • Check output voltage characteristics of Pd and Ps pressure sensors. • Check for wiring error involving TE and TL sensors.	
P20	P20	-	22	I/F	Activation of high-pressure protection	All stop	Pd sensor detects pressure equal to or greater than 3.7 MPa.	• Check for defect in Pd pressure sensor. • Check service valves (gas side, liquid side) to confirm full opening. • Check for defect in outdoor fan. • Check for defect in outdoor fan motor. • Check outdoor PMVs (PMV1, 2) for clogging. • Check indoor / outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction / discharge air flows. • Check for defect in outdoor P.C. board (I/F). • Check for defect in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring error. • Check for faulty operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check for refrigerant overcharging.	

Check code					Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AL-NET central control remote controller					
	Check code	Sub-code						
P22		0*: IGBT circuit 1*: Position detection circuit error 3*: Motor lockup error E*: Inverter DC voltage error (outdoor fan) Note: Although letters 0 to F appear at locations indicated by “*”, please ignore them.	1A	Outdoor fan IPDU error	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.	
	P22	P22				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: E*) Fan IPDU DC voltage protection circuit The DC voltage higher or lower than the specified value is detected.	- Check power voltage of the main power supply. - Check for defect in fan IPDU P.C. board. - Check connection of fan IPDU P.C. board.	
P26	P26	—	14	G-TR short-circuit protection error	All stop	Overcurrent is momentarily detected during startup of compressor.	- Check connector connection and wiring on A3-IPDU P.C. board. - Check for defect in compressor (layer short-circuit). - Check for defect in outdoor P.C. board (A3-IPDU).	
P29	P29	—	16	Compressor position detection circuit error	All stop	Position detection is not going on normally.	- Check wiring and connector connection. - Check for compressor layer short-circuit. - Check for defect in A3-IPDU P.C. board.	
P31	—	—	47	Other indoor error (group follower unit error)	Stop of corresponding unit	There is error in other indoor unit in group, resulting in detection of E07 / L07 / L03 / L08.	Check indoor P.C. board.	

Errors detected by TCC-LINK central control device

Check code				Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AL-NET central control remote controller					
	Sub-code							
C05	-			TCC-LINK	TCC-LINK central control device transmission error	Continued operation	Central control device is unable to transmit signal.	• Check for defect in central control device. • Check for defect in central control communication line. • Check termination resistance setting.
C06	-				TCC-LINK central control device reception error	Continued operation	Central control device is unable to receive signal.	• Check for defect in central control device. • Check for defect in central control communication line. • Check termination resistance setting. • Check power supply for devices at other end of central control communication line. • Check defect in P.C. boards of devices at other end of central control communication line.
C12	-			General-purpose device I/F	Blanket alarm for general-purpose device control interface	Continued operation	Error signal is input to control interface for general-purpose devices.	• Check error input.
P30	Differs according to nature of alarm-causing error			TCC-LINK	Group control follower unit error	Continued operation	Error occurs in follower unit under group control. (P30) is displayed on central control remote controller.)	• Check check code of unit that has generated alarm.
	(L20 displayed.)				Duplicated central control address	Continued operation	There is duplication in central control addresses.	• Check address settings.

▼ 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 (A3-IPDU). (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	380~580 V
2	White-Black	380~580 V
3	Black-Red	380~580 V

- * 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.

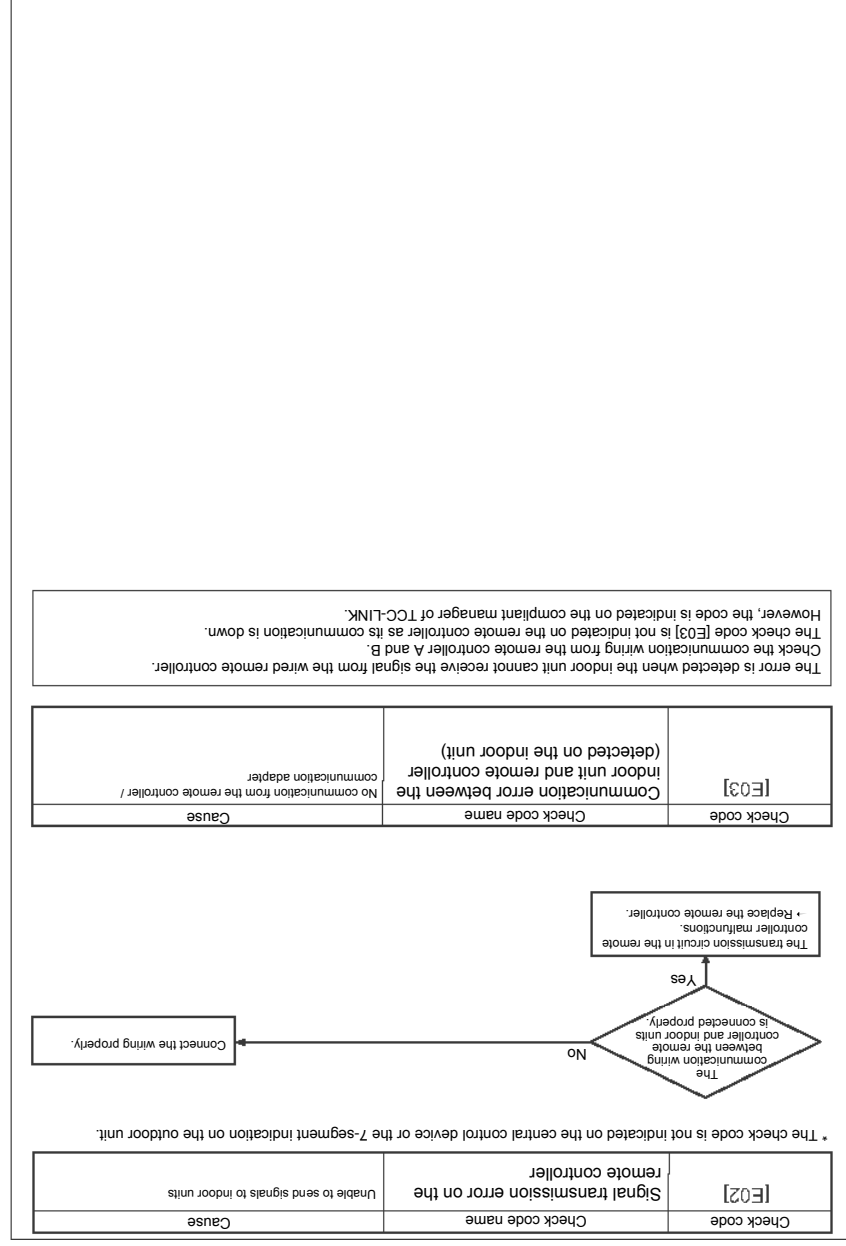
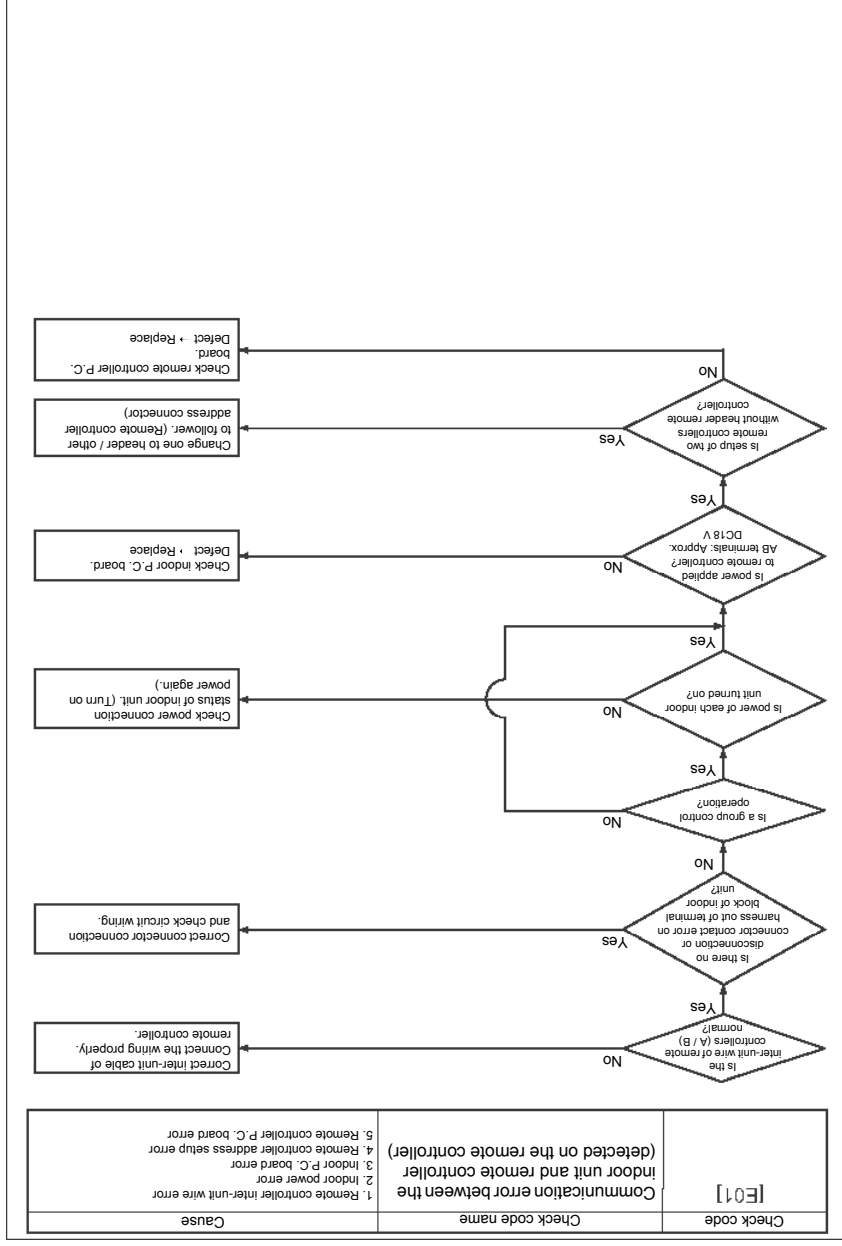
▼ How to Check Resistance of Compressor Winding

- (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 0.6-1.0 Ω range. (Use a digital multimeter.)

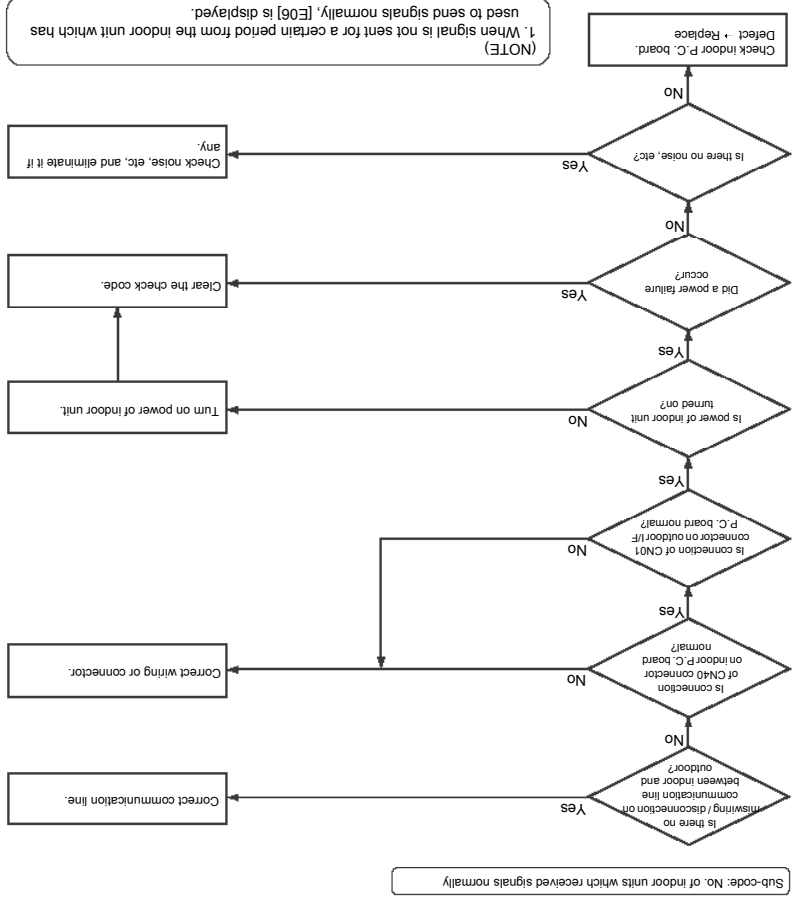
▼ How to Check Outdoor Fan Motor

- (1) Turn off the power supply.
- (2) Remove fan motor leads from the IPDU P.C. board for the outdoor fan (CN750 (Under side FM), CN700 (Upper side FM)).
- (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.)

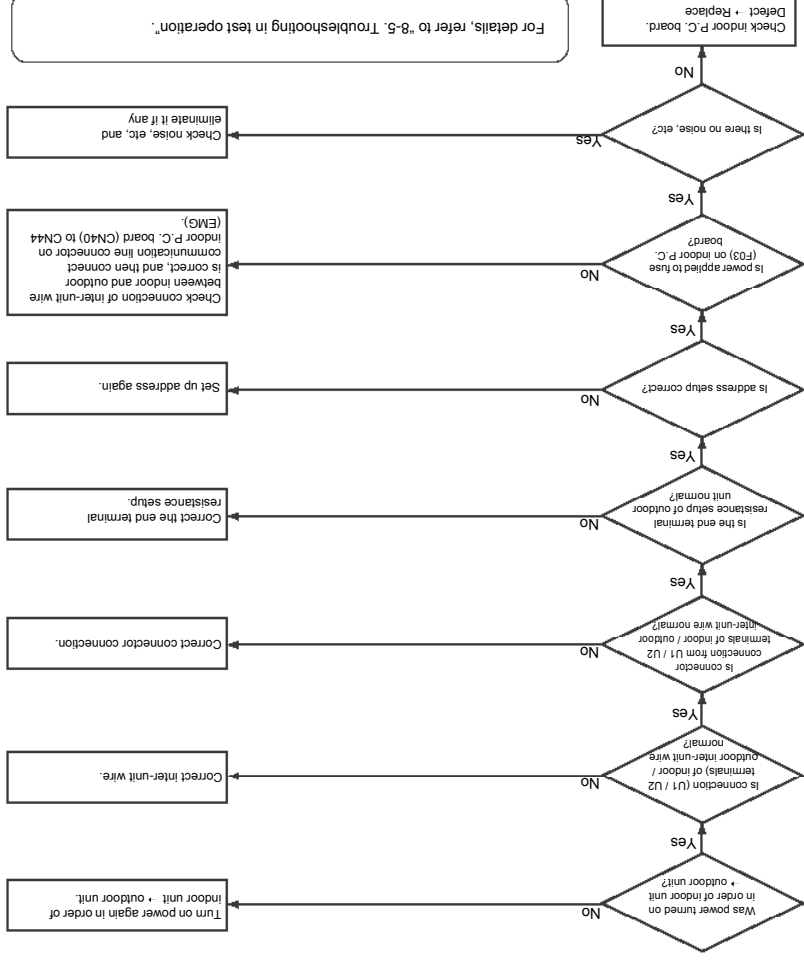
9-5. Diagnosis procedure for each check code



Check code	[E06]
Check code name	Decreased number of indoor units
Cause	1. Communication lines (U1, U2) connection error between indoor and outdoor 2. Communication connector's connection error on indoor unit, error on P.C. board 3. Communication connector's connection error on outdoor unit, error on I/F board 4. Power supply of indoor unit (is power turned on?)



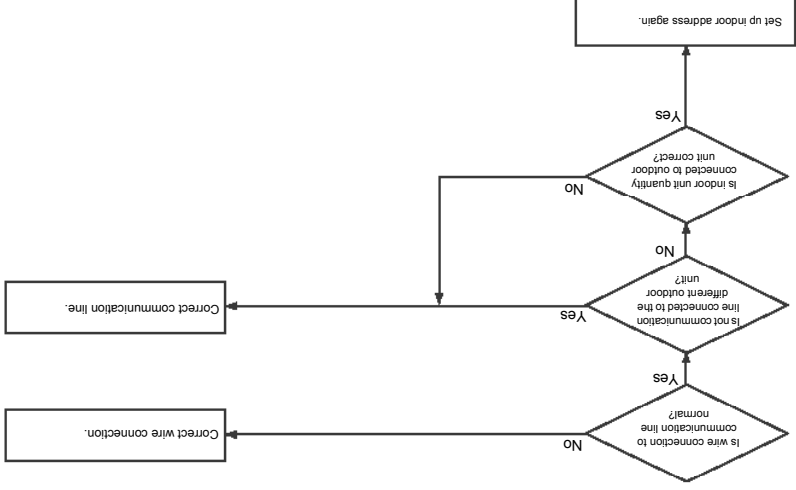
Check code	[E04]
Check code name	Indoor / Outdoor communication circuit error (Detected at indoor side)
Cause	1. Power of outdoor unit was firstly turned on 2. Connection error of communication line between indoor and outdoor 3. End terminal resistance setup error on communication between indoor and outdoor 4. Address setup error



Check code	FE08	Duplicated indoor addresses	Cause
Indoor addresses are duplicated			

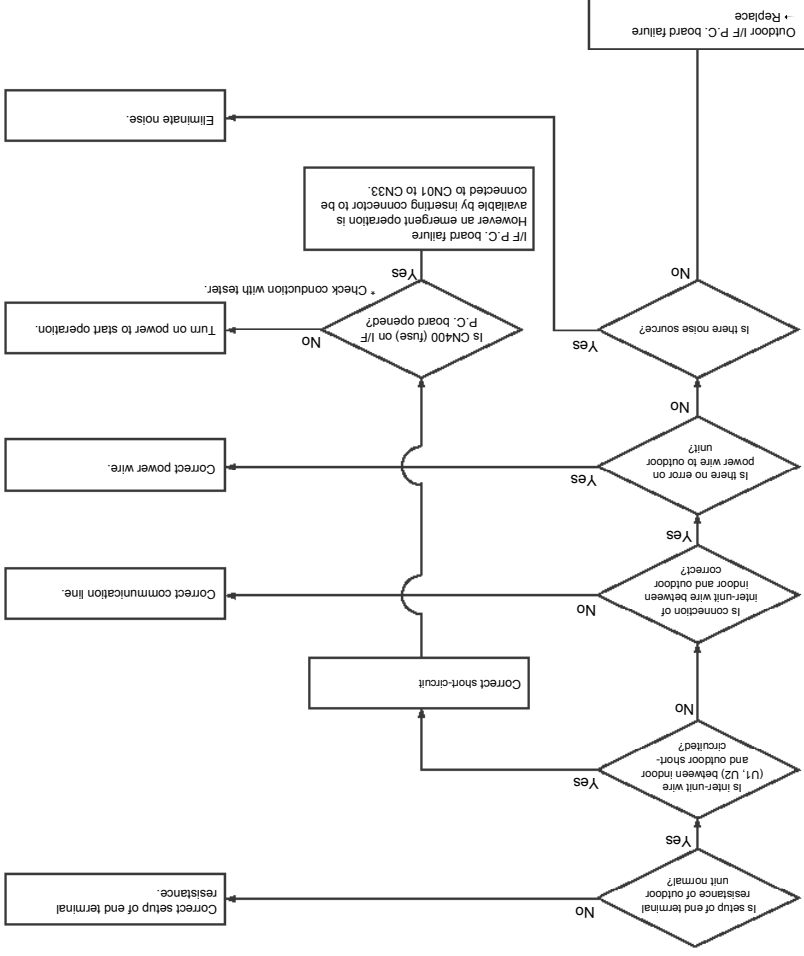
Using a wired remote controller (RBC-AMT32E), check the setup CODE No. (DN code) 12, 13, and 14.

When there is no address duplication, check to the following flowchart.



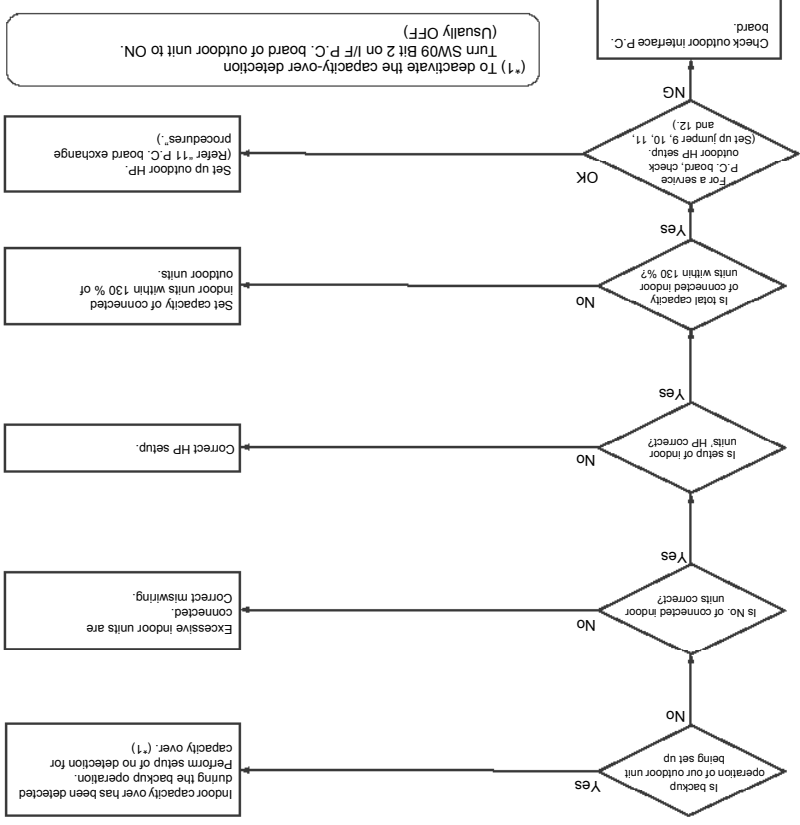
Sub-code: Duplicated indoor address

Check code	FE07	Indoor / Outdoor communication circuit error (Detected at outdoor side)	Cause
1. Indoor / outdoor communication end terminal resistance setup error			
2. Indoor / outdoor communication connection error			

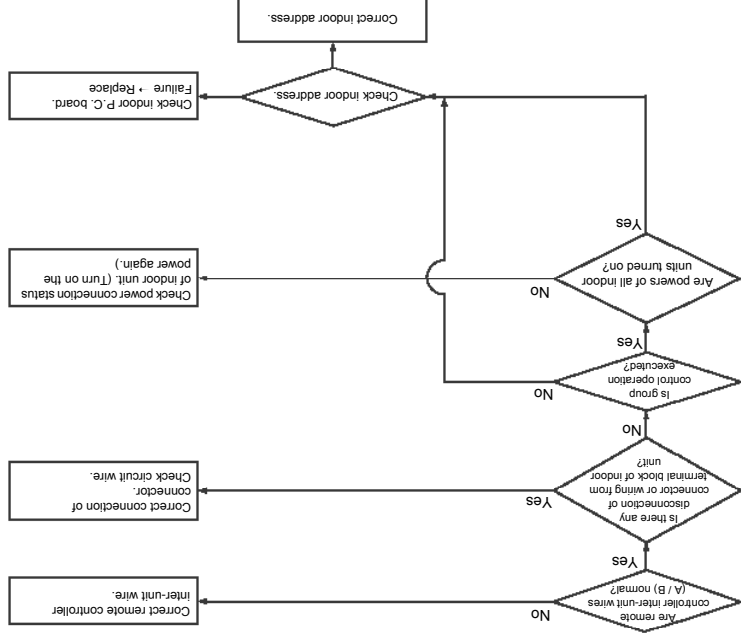


Check code	Check code name	Cause
[E16]	Number / capacity of connected indoor units beyond the limit	1. There are 8 or more connected indoor units 2. Capacity over of total connected indoor units 3. Incorrect setup of indoor units power

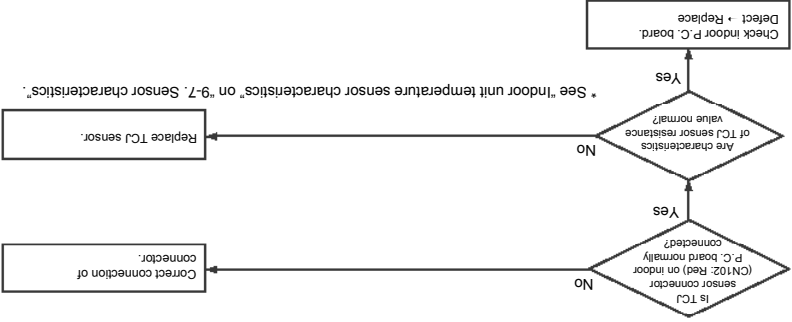
Sub-code: 00: Capacity over, 01:- number of connected units



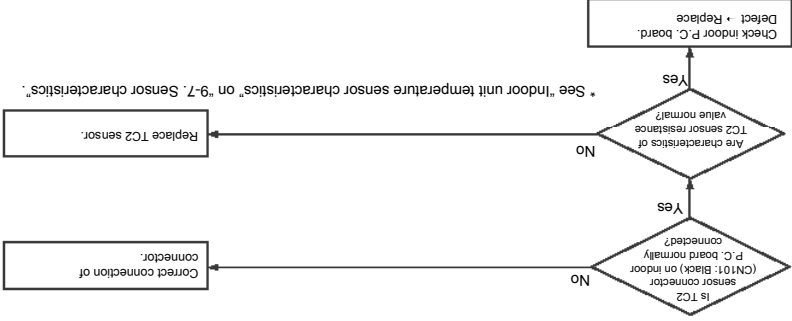
Check code	Check code name	Cause
[E18]	Communication error between indoor header and follower	Regular communication between indoor header and follower is unavailable



Check code	[F01]	Indoor TCJ sensor error	TCJ sensor Open / Short	Cause
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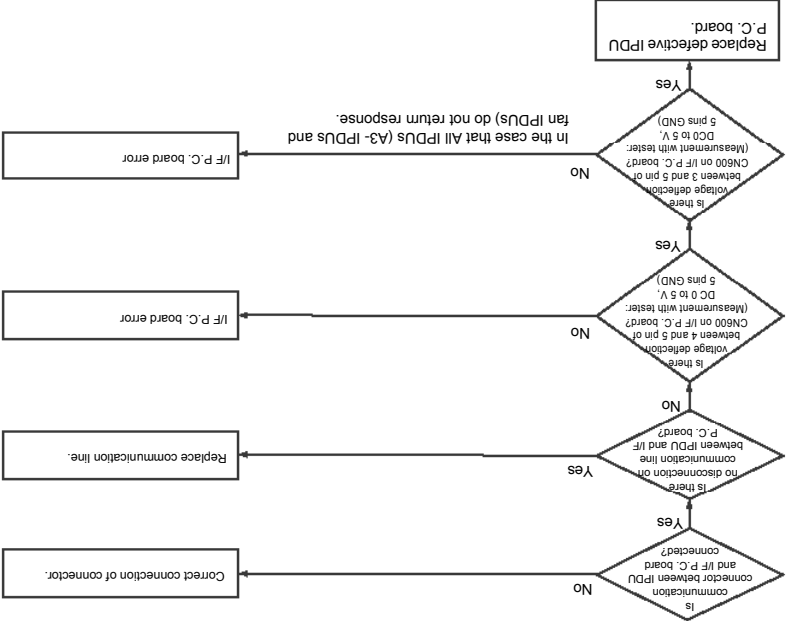
Check code	[F02]	Indoor TC2 sensor error	TC2 sensor Open / Short	Cause
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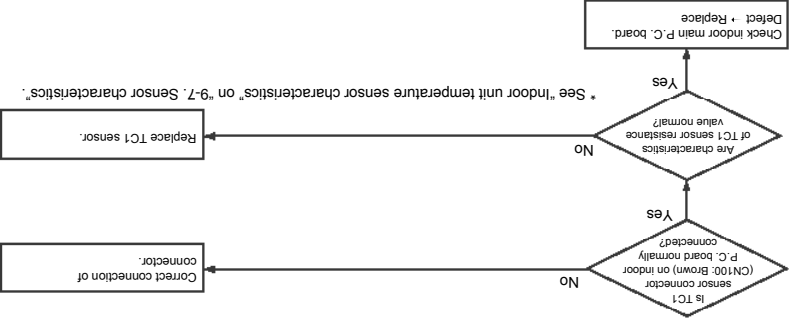
Check code	[F31]	IPDU communication error	1. Connection error of communication line between IPDU and I/F P.C. board 2. I/F P.C. board error 3. IPDU P.C. board error 4. External noise	Cause
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Sub-code		Fan IPDU	1 (Upper)	2 (Lower)
07	○		○	○
06			○	○
05	○		○	○
04				○
03	○		○	
02			○	
01	○			

Circle (○): Faulty IPDU



Check code	[F03]	Indoor TC1 sensor error	TC1 sensor Open / Short	Cause
Check code name				



Check code	[F04]	TD sensor error	TD sensor Open / Short	Cause
Check code name				

This error code means detection of Open / Short of TD sensor. Check disconnection of circuit for connection of connector (TD sensor: CN502, White) and characteristics of sensor resistance value. (See "Outdoor unit temperature sensor characteristics" on "9-7. Sensor characteristics".)

If sensor is normal, replace outdoor I/F P.C. board.

Check code	[F06]	TE sensor error	TE sensor Open / Short	Cause
Check code name				

This error code means detection of Open / Short of TE sensor. Check disconnection of circuit for connection of connector (TE sensor: CN520, Green) and characteristics of sensor resistance value. (See "Outdoor unit temperature sensor characteristics" on "9-7. Sensor characteristics".)

If sensor is normal, replace outdoor I/F P.C. board.

Check code	[F07]	TL sensor error	TL sensor Open / Short	Cause
Check code name				

This error code means detection of Open / Short of TL sensor. Check disconnection of circuit for connection of connector (TL sensor: CN523, White) and characteristics of sensor resistance value. (See "Outdoor unit temperature sensor characteristics" on "9-7. Sensor characteristics".)

If sensor is normal, replace outdoor I/F P.C. board.

Check code	[F08]	TO sensor error	TO sensor Open / Short	Cause
Check code name				

This error code means detection of Open / Short of TO sensor. Check disconnection of circuit for connection of connector (TO sensor: CN507, Yellow) and characteristics of sensor resistance value. (See "Outdoor unit temperature sensor characteristics" on "9-7. Sensor characteristics".)

If sensor is normal, replace outdoor I/F P.C. board.

Check code	[F10]	Indoor TA sensor error	TA sensor Open / Short	Cause
Check code name				

This error code means detection of Open / Short of TA sensor. Check disconnection of circuit for connection of connector (TA sensor: CN104, Yellow) and characteristics of sensor resistance value. (See "Indoor unit temperature sensor characteristics" on "9-7. Sensor characteristics".)

If sensor is normal, replace indoor P.C. board.

Check code	[F12]	TS sensor error	TS sensor Open / Short	Cause
Check code name				

This error code means detection of Open / Short of TS1 sensor. Check disconnection of circuit for connection of connector (TS sensor: CN505, White) and characteristics of sensor resistance value. (See "Outdoor unit temperature sensor characteristics" on "9-7. Sensor characteristics".)

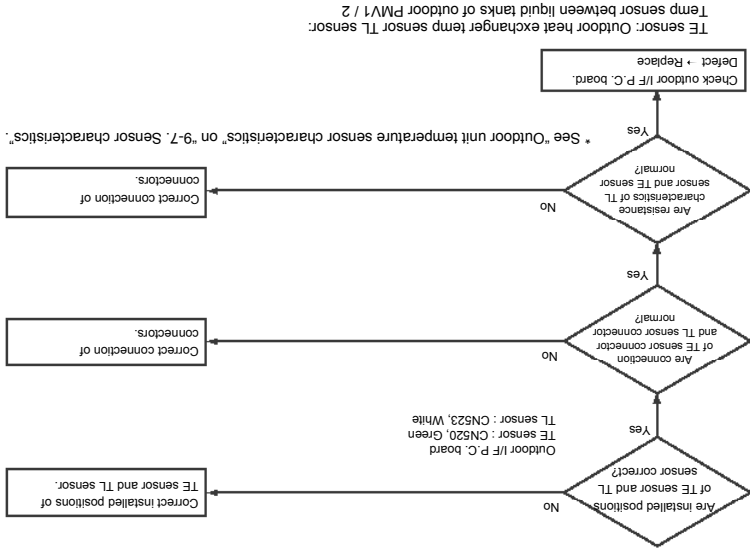
If sensor is normal, replace outdoor I/F P.C. board.

Check code	[F13]	TH sensor error	IGBT built-in sensor error in A3-IPDU	Cause
Check code name				

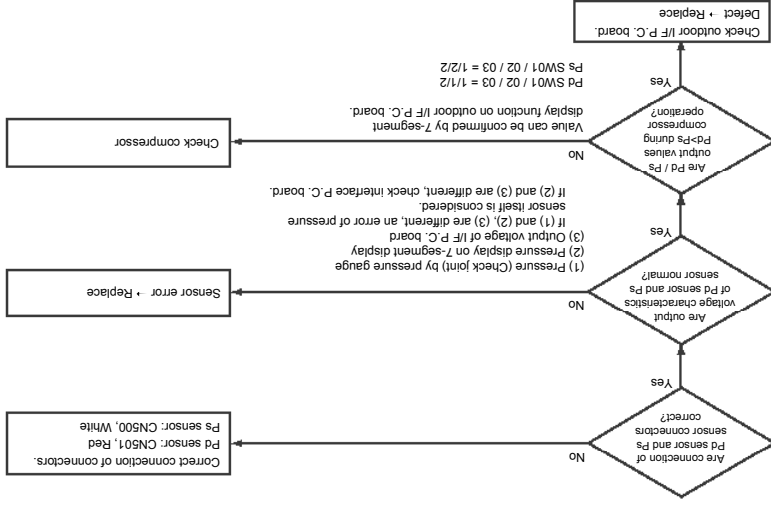
This error code means IGBT built-in temperature sensor error. Check connection of connectors CN06 on IPDU P.C. board and CN600 on I/F P.C. board.

If sensor is normal, replace IPDU P.C. board.

Check code	Check code name	Cause
[F15]	Outdoor temp sensor miswiring (TE, TL)	1. Misinstallation and misconnection of TE sensor and TL sensor 2. Resistance characteristics error of TE sensor and TL sensor 3. Outdoor P.C. board (I/F) error



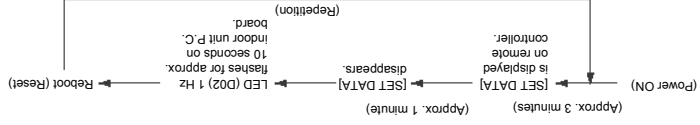
Check code	Check code name	Cause
[F16]	Outdoor pressure sensor miswiring (Pd, Ps)	1. High-pressure Pd sensor and low pressure sensor Ps are exchanged 2. Output voltage of each sensor is zero



Check code	Indoor other error	Cause
		Indoor P.C. board error

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

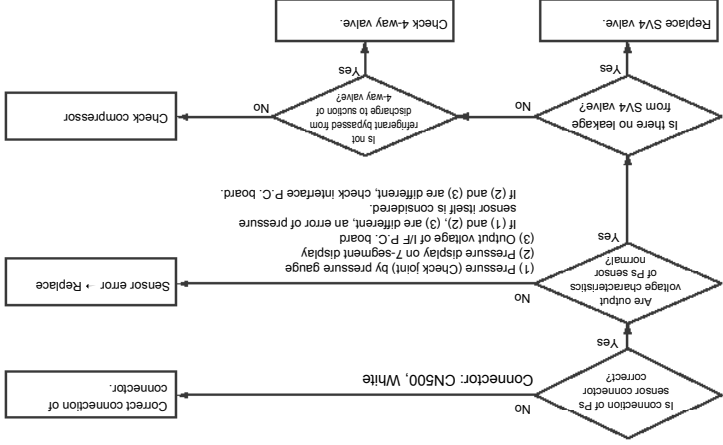
* If EEPROM was not inserted when power was turned on or it is absolutely impossible to read / write EEPROM data, the automatic address mode is repeated. In this case, [97 error] is displayed on AI-NET central controller.



Check code	[F31]	Check code name
Cause	Outdoor EEPROM error 1. Outdoor unit power error (Voltage, noise, etc.) 2. Outdoor I/F P.C. board error	



Check code	[F23]	Check code name
Cause	Ps sensor error Output voltage error of Ps sensor	

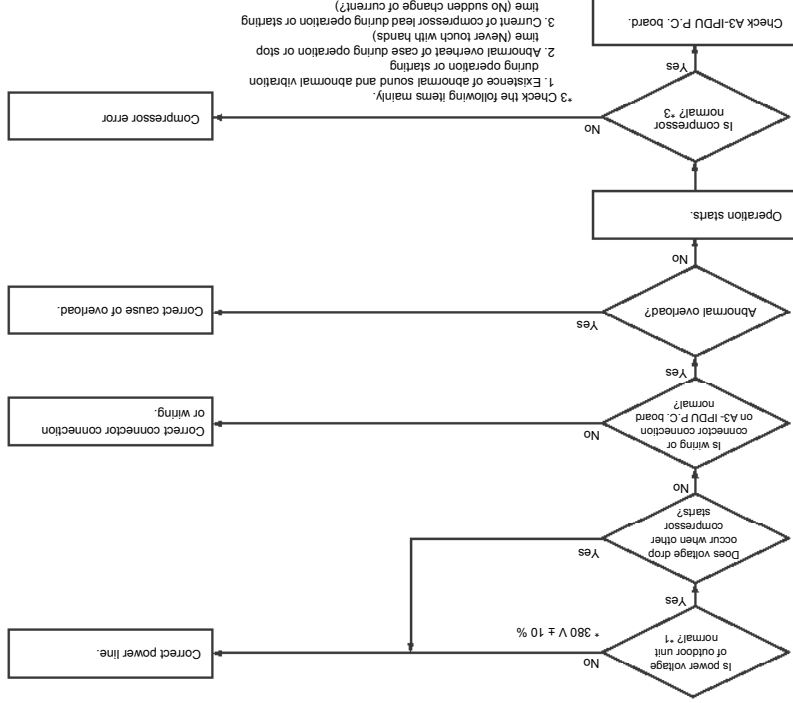


Check code	[F24]	Check code name
Cause	Pd sensor error Output voltage error of Pd sensor	

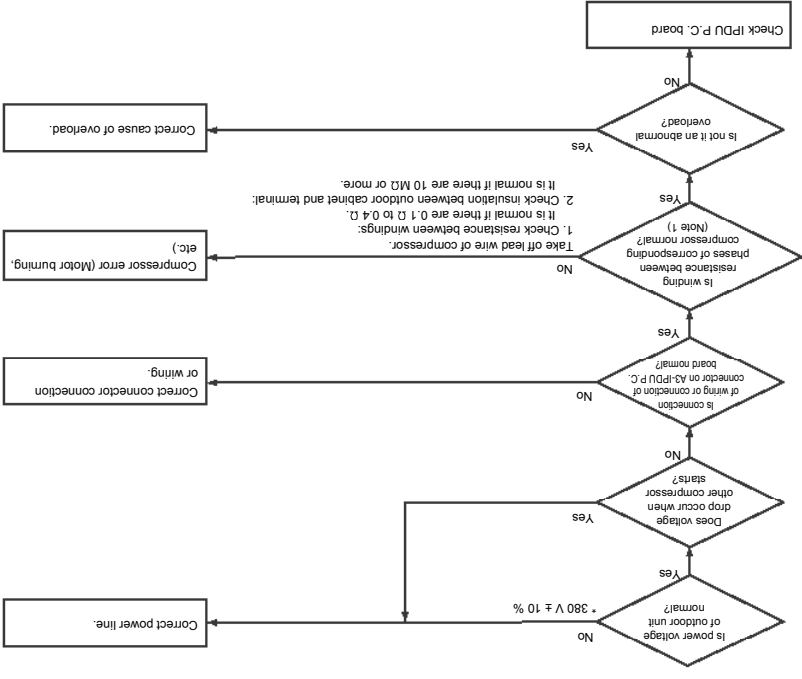
It is output voltage error of Pd sensor. Check disconnection of connection of connector (Pd sensor: CN501, red) circuit and output voltage of sensor.

If the sensor is normal, replace outdoor I/F P.C. board.

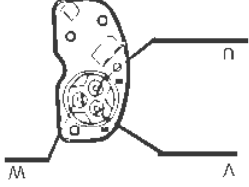
Check code	Check code name	Cause
[H02]	Compressor error (Lock)	1. Outdoor unit power line error 2. Compressor circuit system error 3. Compressor error 4. Refrigerant stagnation in compressor shell 5. A3-IPDU P.C. board error



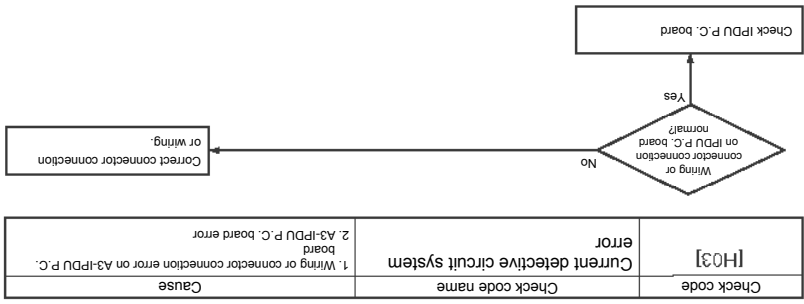
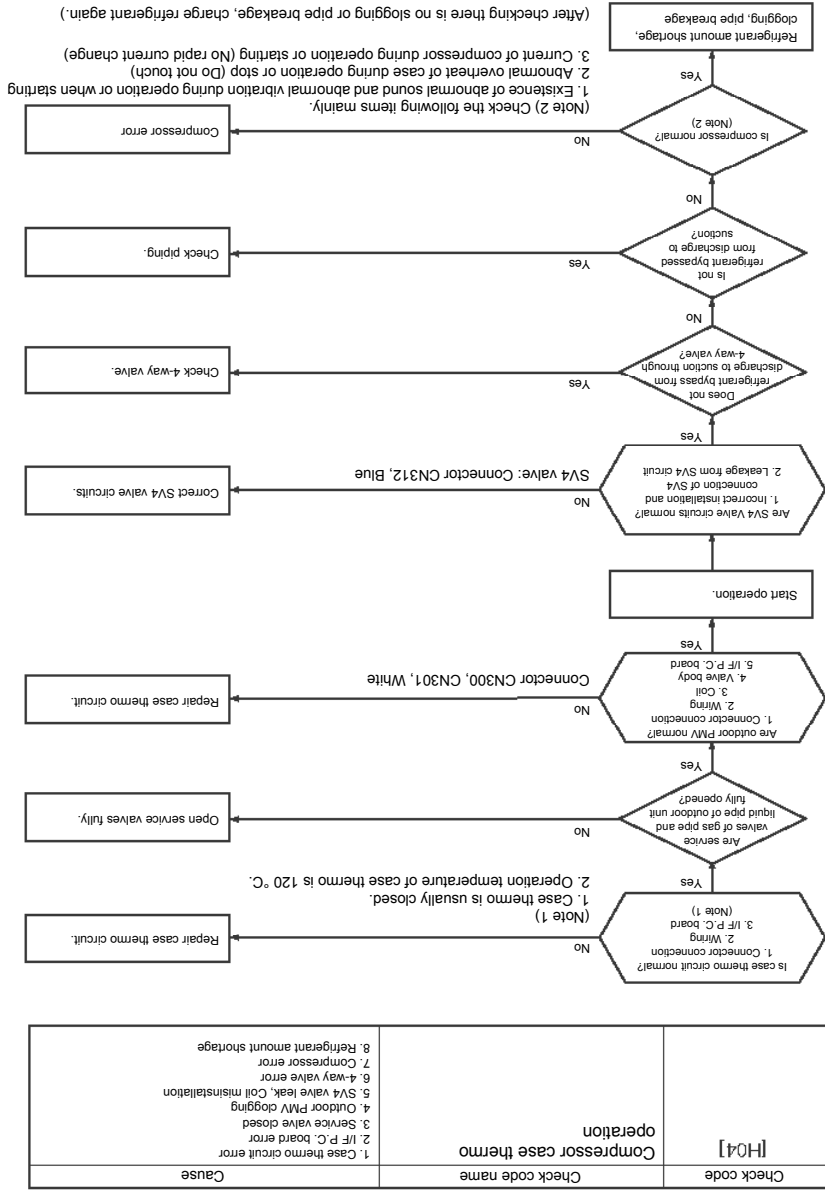
Check code	Check code name	Cause
[H01]	Compressor breakdown has Rotor-stop conduction occurred.	1. Outdoor unit power line error 2. Compressor circuit system error 3. Compressor error 4. Abnormal overload in operation 5. A3-IPDU P.C. board error



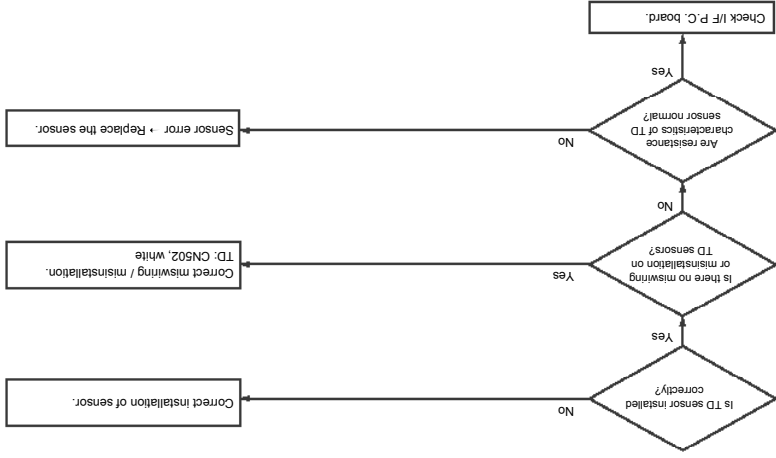
Details of compressor power connecting section



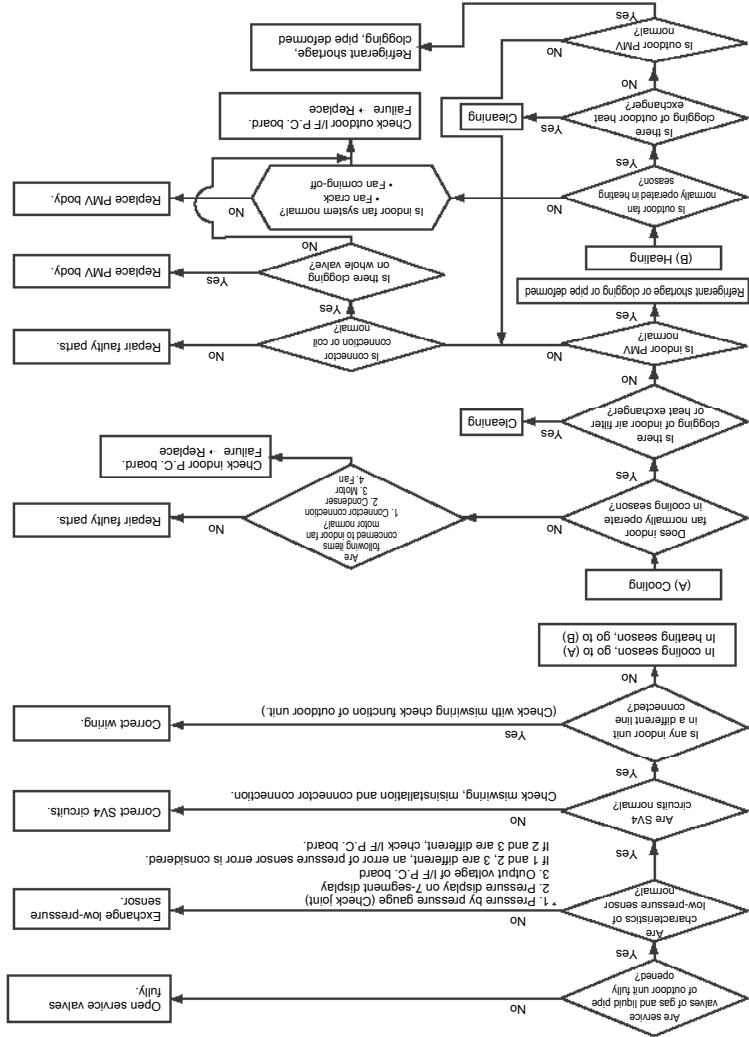
(Note 1)
After checking the output, when connecting the compressor lead again to the compressor terminal, check surely there is no distortion on the Fasten receptacle terminal. If it is loosened, caulk it with pinchers, etc and then connect lead to the terminal firmly.



Check code	Check code name	Cause
[H05]	Outdoor discharge temperature sensor (TD) misconnection	1. Coming-off of TD sensor 2. Misinstallation of TD sensor, miswiring, characteristics error of resistance value



Check code	Check code name	Cause
[H06]	Low-pressure protective operation	1. Service valve close 2. Ps sensor error 3. SV4 circuit error 4. Miswiring of communication between indoor and outdoor 5. Indoor / outdoor fan and condenser error 6. Indoor / outdoor PMV clogging 7. Indoor / outdoor heat exchanger clogging 8. Refrigerant shortage



Check code

[L03]

Duplicated indoor outdoor units

Check code name

Cause

There are two or more indoor outdoor units in a group during group control

1) Check whether the connection on remote controllers (group and / or individual) has been changed since the group configuration and address checking on the remote controllers finished.

2) If the group configuration and address are normal when power has been turned on, the mode automatically shifts to address setup mode. For setting up addresses again, refer to "Address setup".

Check code

[L04]

Duplicated setup of outdoor line address

Check code name

Cause

Outdoor line addresses are duplicated

Is there duplicated line address setup?

Yes

Correct the line address setup.

Correct the wire connection.

Re-set up the address. (Refer to "Address setup.")

Are wire connections of indoor units (U1, U2, U3, U4) normal?

Yes

Check outdoor I/F P.C. board.

Failure → Replace

Check code

[L05]

Duplicated indoor units with priority (Displayed on indoor unit with priority)

Check code name

Cause

Two or more prior indoor units exist

This check code is displayed on the indoor unit set as a prior one when two or more prior indoor units are detected. Priority setup with two or more units is not available. As only one indoor unit with priority is valid, change the setup.

Check code

[L06]

Duplicated indoor units with priority (Displayed on the indoor units other than ones with priority and on the outdoor unit)

Check code name

Cause

Two or more indoor units with priority are duplicated

Sub-code: amount of indoor units with priority

When priority is given to two or more indoor units, this check code is displayed on indoor units other than the units set as prior ones and the outdoor unit.

As only one indoor unit with priority is valid, change the setup.

Is there group cabling?

Yes

Check the addresses of setup item code DN 12, 13, and 14.

There is individual indoor unit.

Correct indoor group address.

Check indoor P.C. board.

Failure → Replace

Check code

[L07]

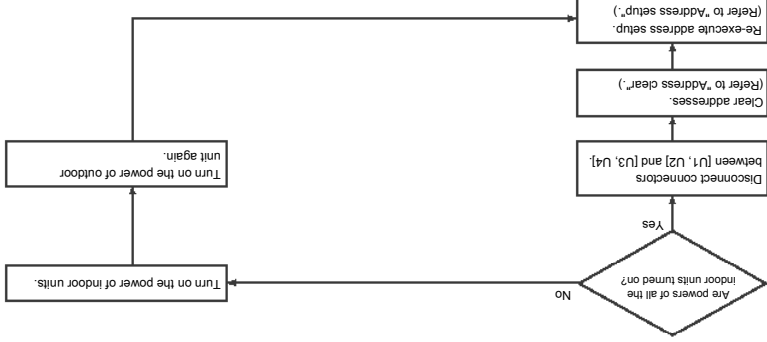
A group line exists in an individual indoor unit

Check code name

Cause

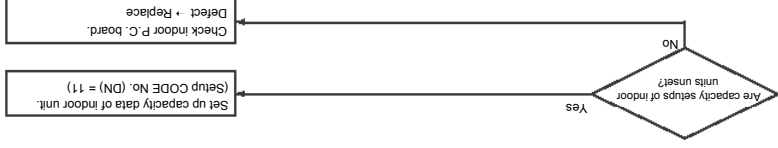
A group line is connected to an individual indoor unit

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



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

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



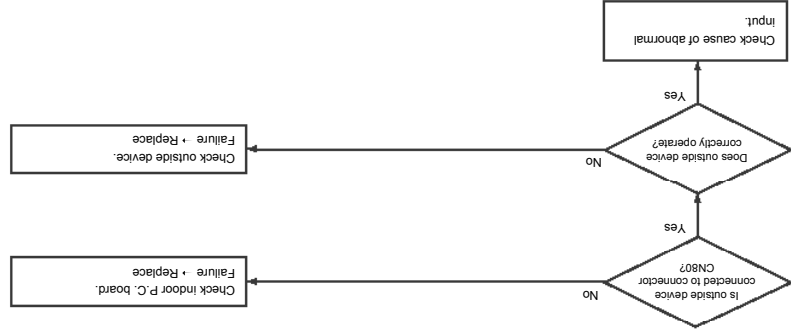
Check code	[L10]	Outdoor capacity unset
Cause	On the outdoor IF P.C. board for service, the model selecting jumper has not been set up so as to match with the model	

I/F P.C. board Assy service for the outdoor unit is common to this series. A setup for model selection different from that for P.C. board with trouble is necessary. Set up a model based upon the P.C. board Assy exchange procedure.

Check code	[L20]	Duplicated central control addresses
Cause	Central control addresses are duplicated	



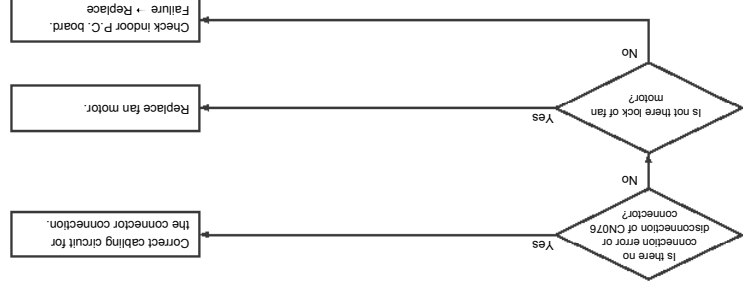
Check code	IL30]	Interlock in indoor unit
Cause	Abnormal input from the outside	



Check code	IL31]	Other IPDU errors
Cause	1. Outdoor unit power error 2. Outdoor i/f P.C. board error	



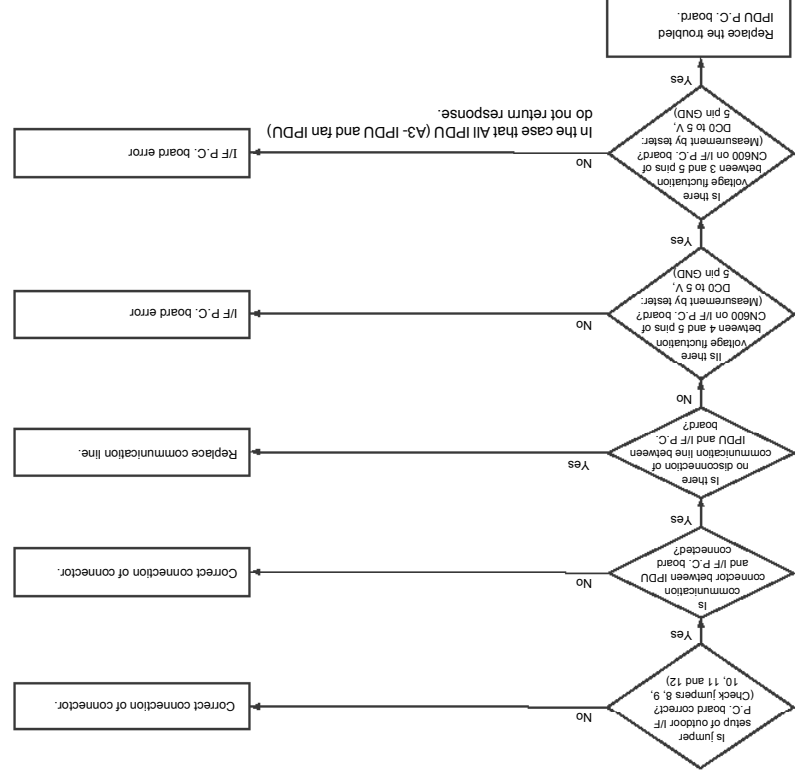
Check code	IP01]	Indoor fan motor error
Cause	1. Wiring error 2. Check fan motor	



* For the models equipped with AC fan motor only

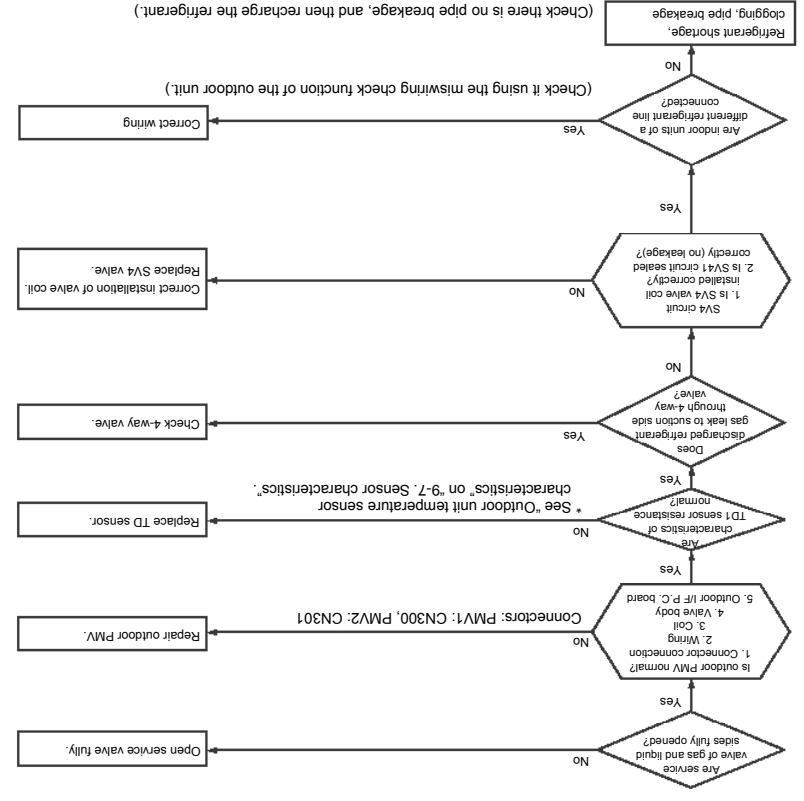
Check code	IL29]	IPDU quantity error
Cause	1. Incorrect model setup in service for i/f P.C. board 2. Communication error between A3-IPDU, fan IPDU 3. A3-IPDU, fan IPDU, i/f P.C. board error	

Sub-code		Circle (O): Faulty IPDU									
	A3-IPDU	Fan IPDU									
	1 (Upper)	2 (Lower)	01	02	03	04	05	06	07		
			O	O	O	O	O	O	O	O	O



In the case that All IPDU (A3-IPDU and fan IPDU) do not return response.

Check code	[P03]	
Check code name	Discharge temp TD error	
Cause	1. Service valve of outdoor unit closed 2. Outdoor PMV error 3. TD sensor error 4. Refrigerant shortage, clogging of refrigerant piping 5. 4-way valve error 6. SV4 circuit leakage, misinstallation	

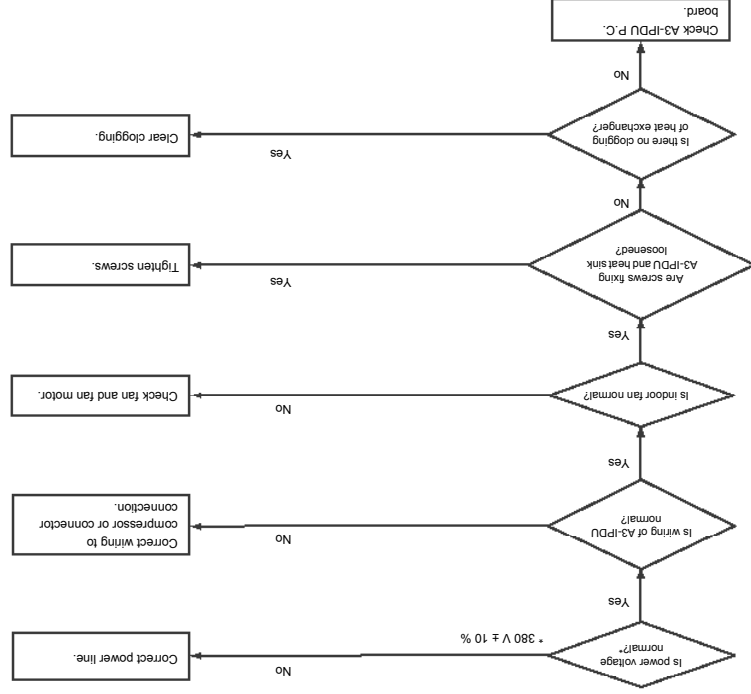


Check code	[P05]	
Check code name	Phase error detected, power failure detected, abnormal inverter DC voltage (on compressor)	
Cause	Phase error or power failure of the power supply to the outdoor unit	

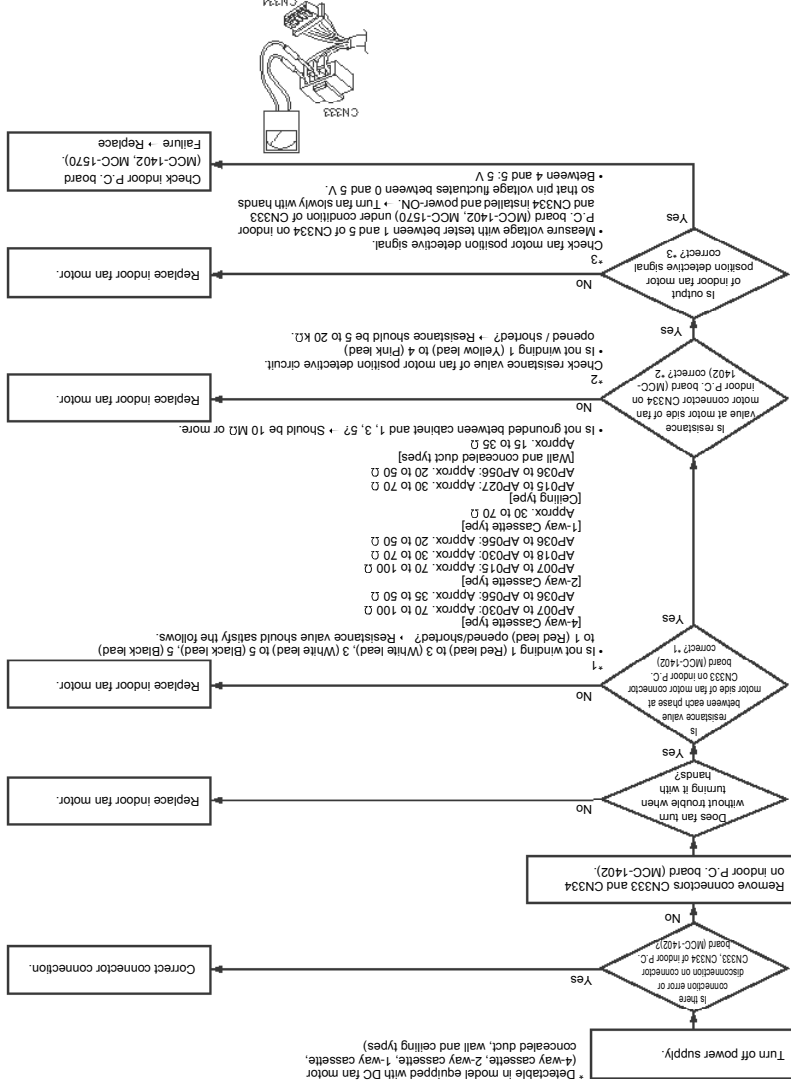
Sub-code: 00: Phase error / power failure is detected.

• Check the phase of the power line to the outdoor unit.
 • Check there are no loosened connectors, etc.
 • Check for defect in wiring connection of CN400 and CN530 on interface P.C. board.

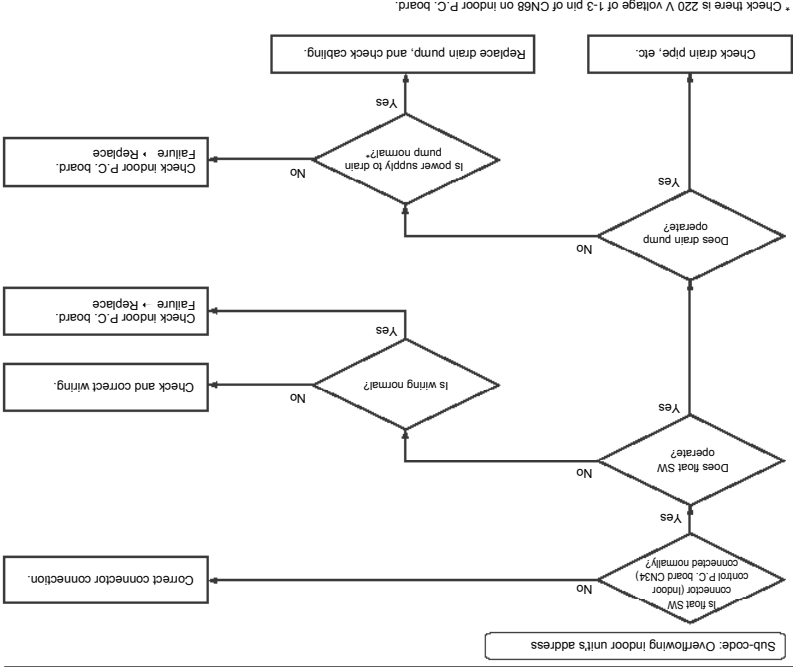
Check code	[P07]	
Check code name	Heat sink overhear error	
Cause	1. Power voltage error 2. Outdoor fan system error 3. Heat sink installation error 4. Clogging of the cooling duct for the heat sink 5. A3-IPDU P.C. board error	



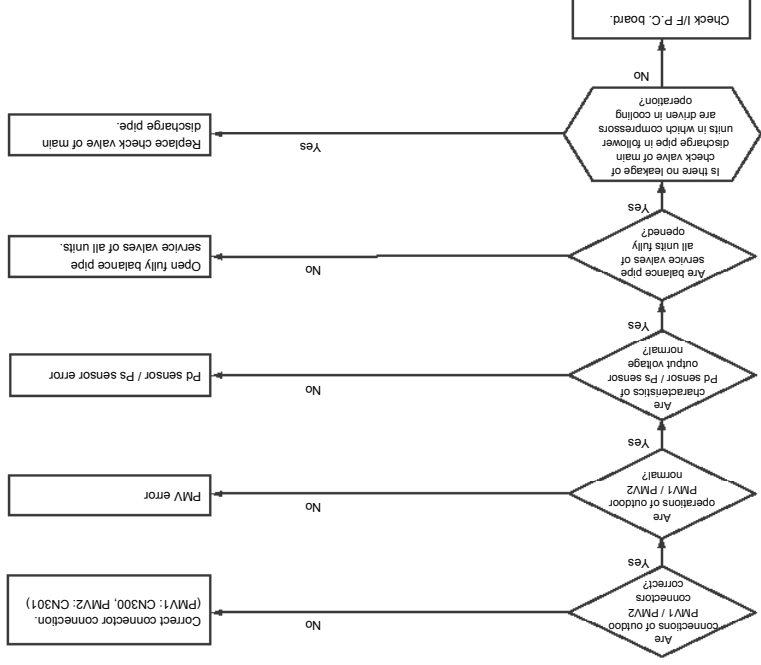
Check code	[P12]
Check code name	Indoor fan motor error
Cause	1. Wiring error of fan motor connector 2. Fan motor error 3. Indoor P.C. board error



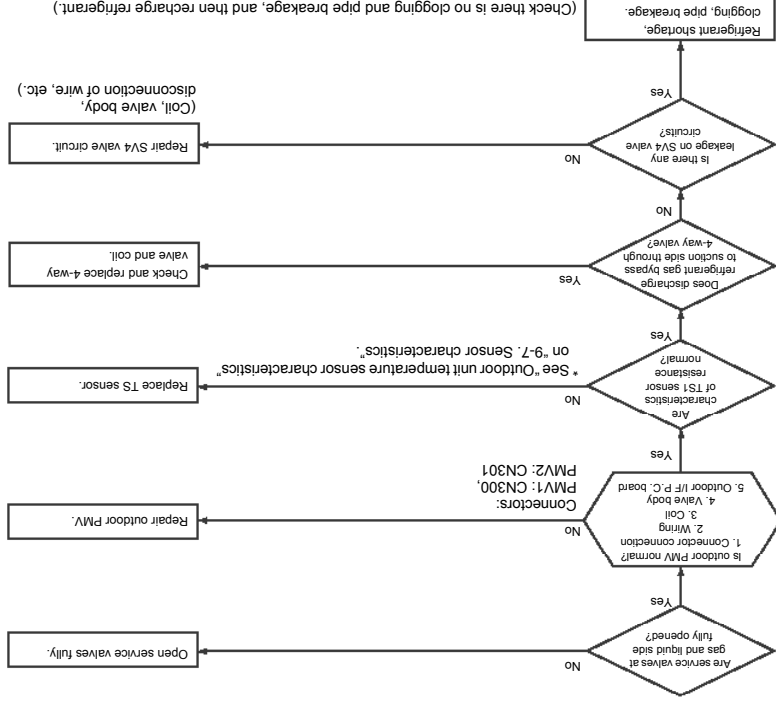
Check code	[P10]
Check code name	Water overflow in an indoor unit
Cause	1. Float SW malfunction 2. Drain pump malfunction 3. Clogging of drain pipe 4. Indoor P.C. board error

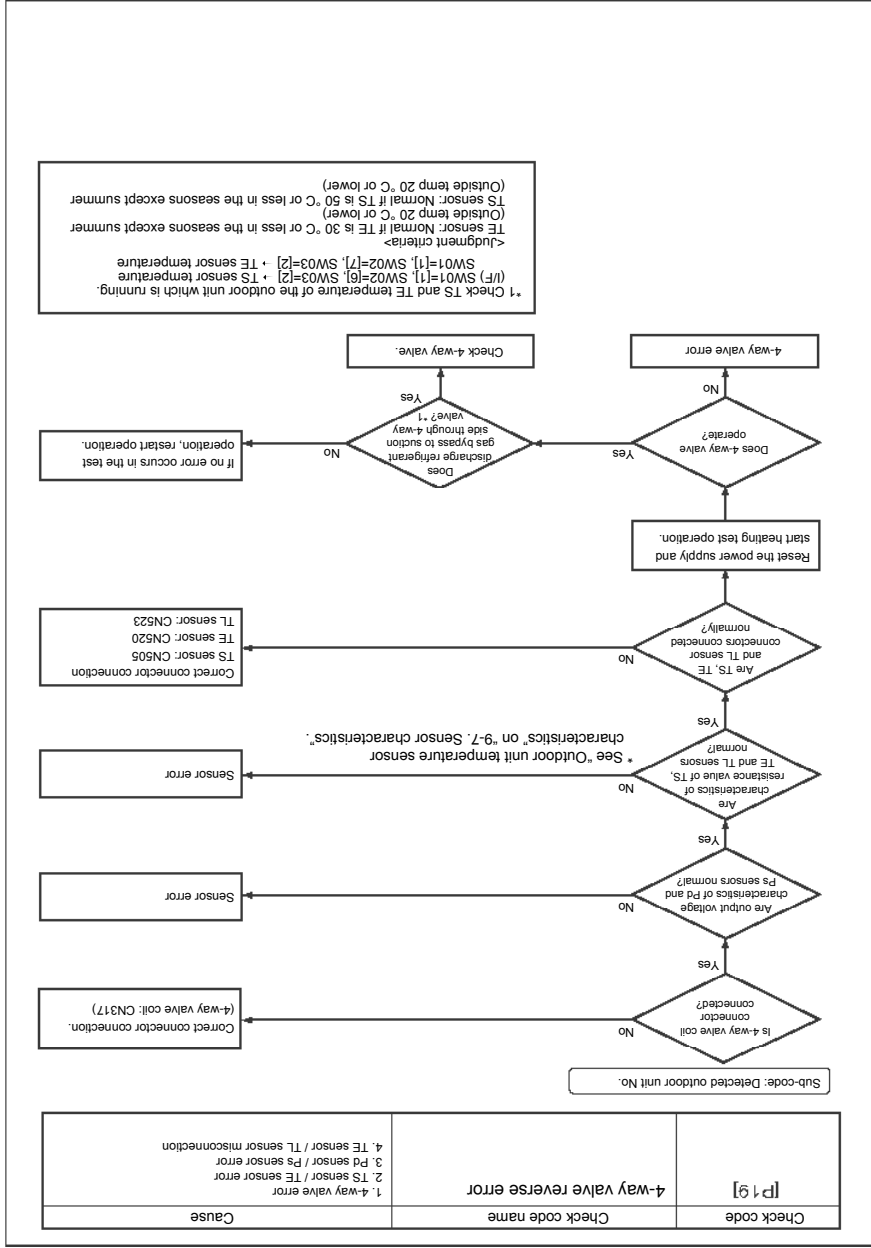
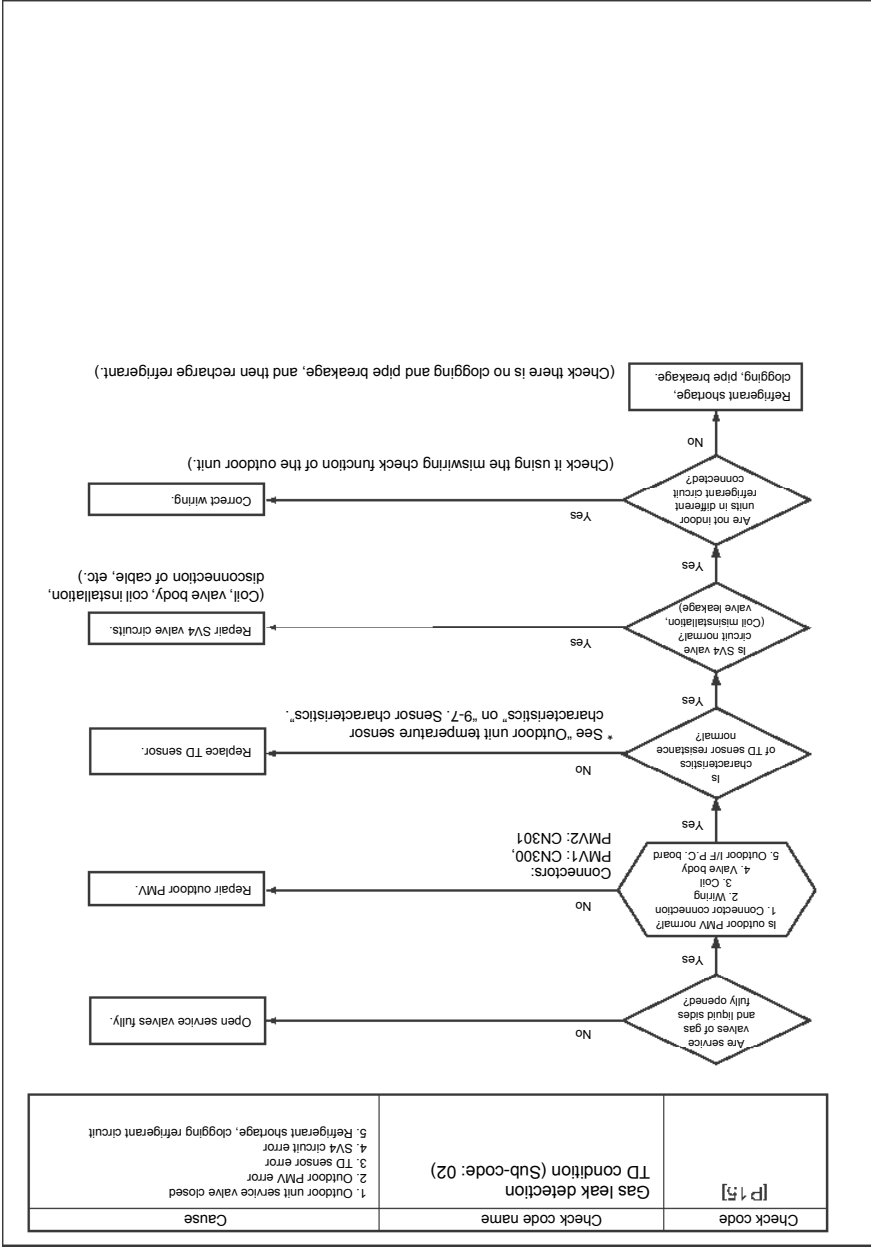


Check code	Check code name	Cause
[P13]	Outdoor liquid back detection error	1. PMV1 / PMV2 error 2. Pd sensor, Ps sensor error 3. Leakage at a check valve on a main discharge pipe 4. Outdoor I/F P.C. board error

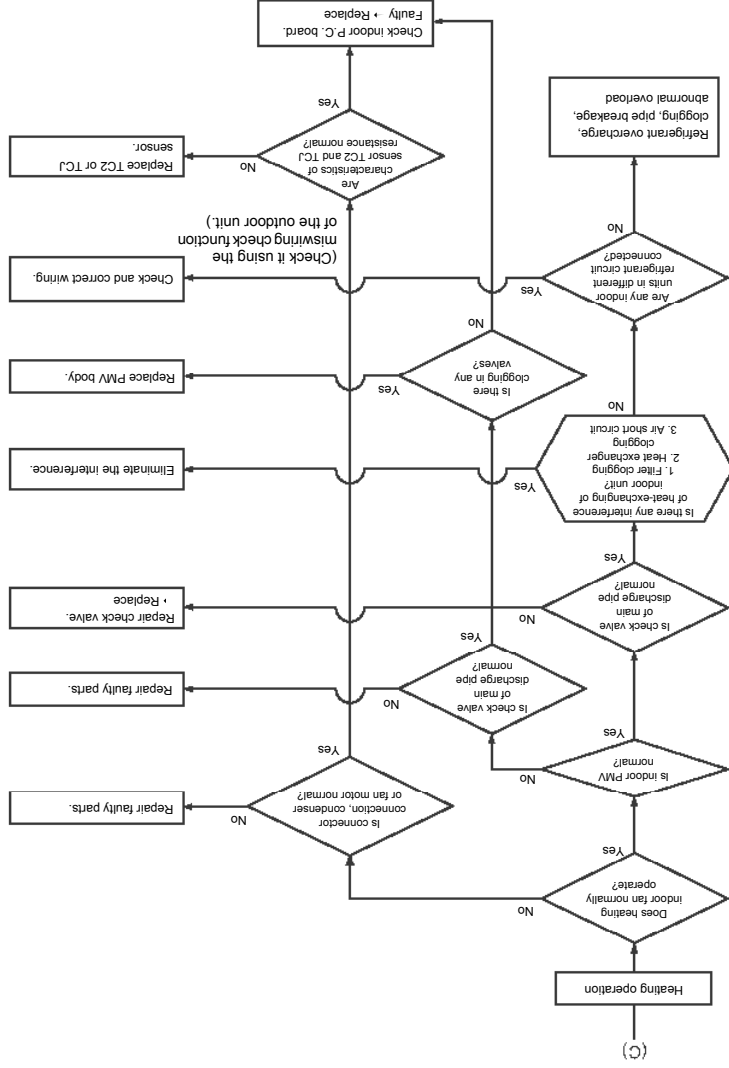
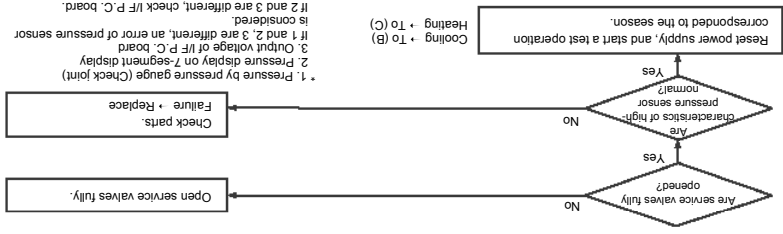


Check code	Check code name	Cause
[P15]	Gas leak detection TS condition (Sub-code: 01)	1. Outdoor unit service valve closed 2. Outdoor PMV error 3. TS1 sensor error 4. Refrigerant shortage, clogging refrigerant circuit 5. 4-way valve error 6. SV4 circuit error



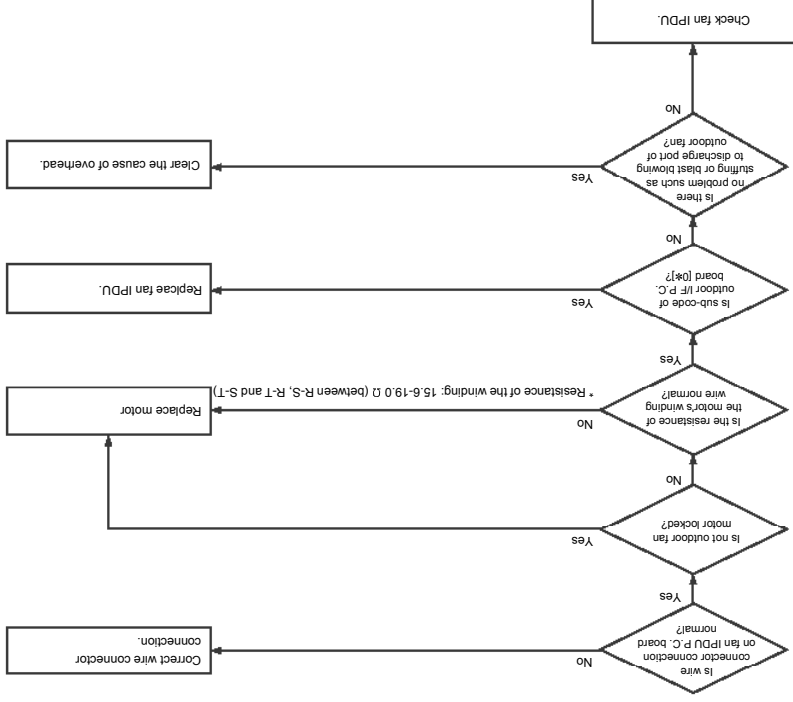


Check code	Check code name	Cause
[P20]	High-pressure protective operation	1. Pd sensor error 2. Service valve closed. 3. Indoor / outdoor fan error 4. Indoor / outdoor PMV clogging 5. Indoor / outdoor heat exchanger clogging 6. SV4 circuit error 7. Outdoor I/F P.C. board error 8. Operation error or check valve of main discharge pipe 9. Refrigerant overcharge

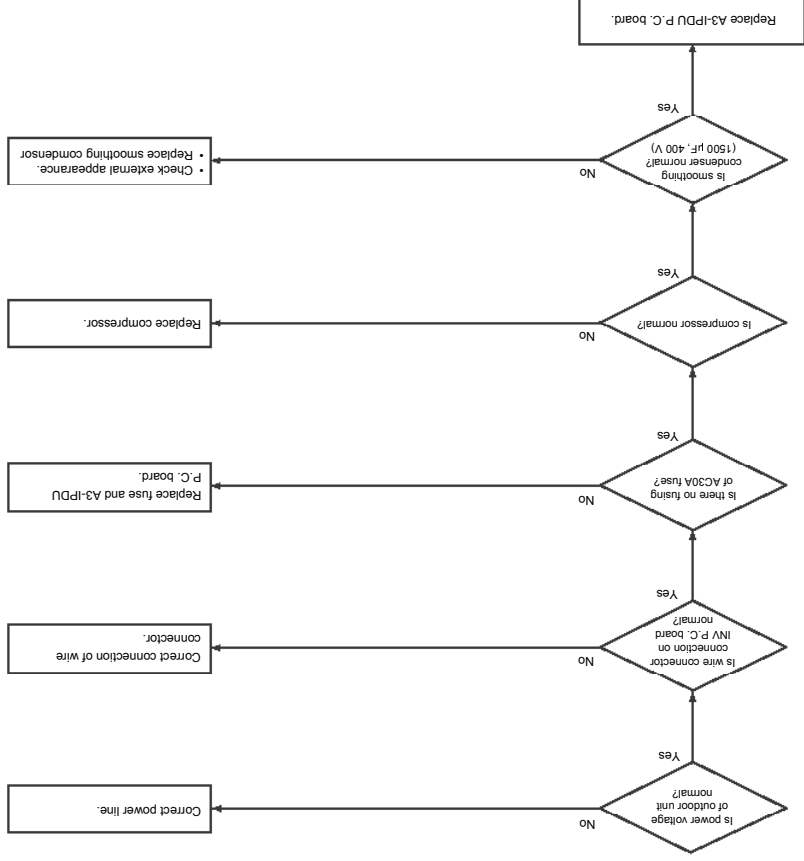


Check code	Check code name	Cause
[P22]	Outdoor fan IPDU error	1. Fan lock 2. Fan IPDU P.C. board error 3. Overload 4. External cause such as blast

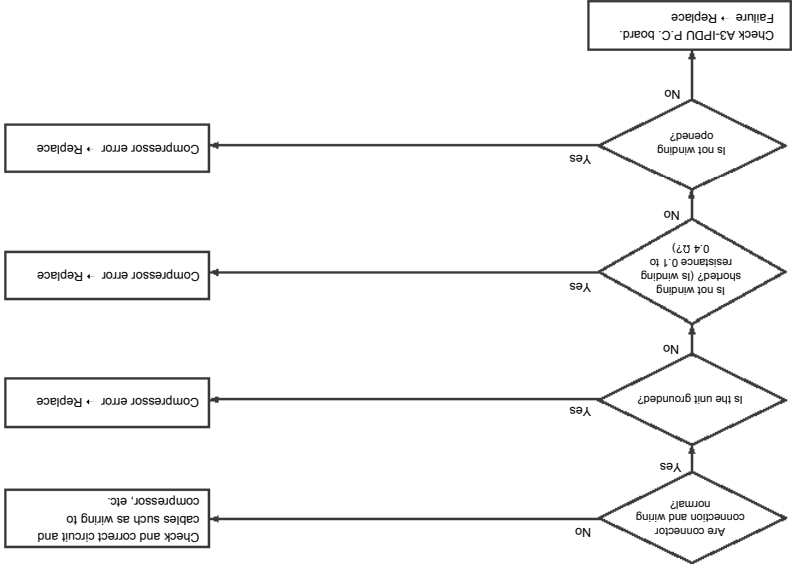
Sub-code:
0*: GBT short circuit error
1*: Position detection circuit error
3*: Motor lock
E*: Fan Vdc error
Ignore the indication (0-F) on "*" digit.



Check code	Check code name	Cause
[P26]	G-Tr short-circuit protection error	1. Outdoor unit power error 2. IPDU error / Wire connection error 3. Compressor error 4. IPDU P.C. board error



Check code	[P29]	Compressor position detective	Cause
Check code name			1. Wire / connector connection error 2. Compressor error 3. A3-IPDU P.C. board error



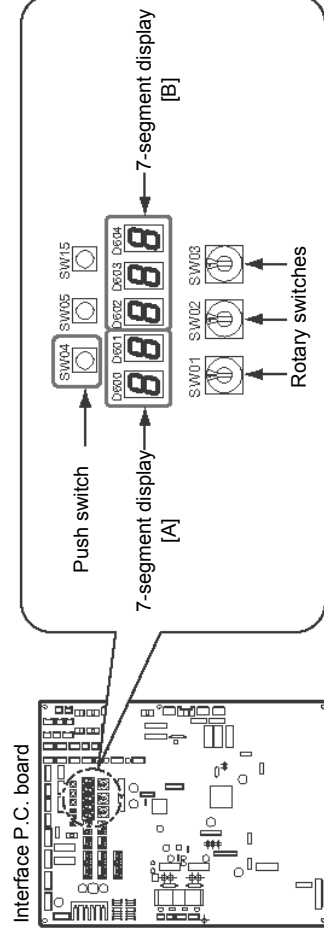
Check code	[P31]	Other indoor error (Group follower unit error)	Cause
Check code name			Another indoor unit in the group is abnormal

When the outdoor unit of the group detected error [E03], [L03], [L07] or [L08], the follower unit of the group displays [P31] error 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).



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 right-hand section of the 7-segment display [B].

[U1] [000] ([000]: Check code)

* To check the check code, set the rotary switches SW01 / SW02 / SW03 to [1/1/1].

If there is a sub-code, the display alternates between the check code [000] (3 seconds) and the sub-code [000] (1 second).

2 Check the check code and follow the applicable diagnostic procedure.

3 Perform checks in accordance with the diagnostic procedure applicable to the check code.

(1) Display of system information (displayed on outdoor unit)

SW01		SW02	SW03	Display detail			
1				Unused		A B	
	1						
	2			System capacity	A [...6]~[...8];6 to 8 HP B [HP]		
	3			Total capacity of indoor units	A [i, ...4, 80]~[i, 10, 40] B		
	4			No. of indoor units connected / No. of units with cooling thermo ON	A [...0.]~[...8];0 to 8 (No. of units connected) B [C...0]~[C...8];0 to 8 (No. of units with cooling thermo ON)		
	5			No. of indoor units connected / No. of units with heating thermo ON	A [...0.]~[...8];0 to 8 (No. of units connected) B [H...0]~[H...8];0 to 8 (No. of units with heating thermo ON)		
	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			–	A – B –		
	9			–	A – B –		
	10			Refrigerant / oil recovery operation	A Oil recovery in cooling: [C1], Normal: [C ...] B Refrigerant recovery in heating: [H1], Normal: [H ...]		
	11	3		Automatic addressing	A [Adj] 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]		
				Optional control (P.C. board input)	Displays optional control status	A B	
	13				Operation mode selection: During priority heating (normal)	h.*. c.*. H.*. C.*. n.*. U.*. *.... *.1. *.0. *.*. *.*. 1.*. *.*. *.1.*.	***. ***. ***. ***. ***. ***. ***. ***. ***. ***. ***. ***. ***.
					Priority cooling		
					Heating only		
					Cooling only		
					Priority given to No. of indoor units in operation		
					Priority given to specific indoor unit		
					External master ON / OFF: Normal		
					Start input		
					Stop input		
					Night operation: Normal		
					Start input		
					Snowfall operation: Normal		
					Start input		
	14			Optional control (BUS line input)	Same as above		
15			Unused				
16			–	A – B –			

(2) Display of outdoor unit information (displayed on outdoor unit)

SW01	SW02	SW03	Display detail		
1			Error data	A Outdoor unit No.: [U1]	
	1			B Check code (only latest one displayed) If there is no check code, [---] is displayed. If there is sub-code, check code [**] and sub-code [-**] are displayed alternately, for 3 seconds and 1 second, respectively.	
	2			A -	
				B -	
	3		Operation mode	A Stop [...]	
				Normal cooling: [... C], Normal heating: [... H], Normal defrosting: [... J]	
	4		Outdoor unit HP capacity	B -	
				A 6 HP: [... 6], 8 HP: [... 8]	
				B [... HP]	
	5		Compressor operation command	* Operation data of compressor is displayed. Data display with hexadecimal notation.	
			Outdoor fan mode	A [FP]	
	6			B Mode 0 to 31: [... 0] to [31]	
	7			A -	
				B -	
	8	1		A -	
				B -	
	9		4-way valve output data	Displays control output status of solenoid valve	
1				4-way valve: ON	A H.1
				4-way valve: OFF	B H.0
	10			-	-
				-	-
				-	-
	11		SV4 valve output data	SV4: ON	4.1
				SV4: OFF	4.0
				-	-
				-	-
	12			-	-
				-	-
				-	-
	13			-	-
	14		PMV1 / PMV2 opening	Displays opening data in decimal format (total opening)	
	15			-	** **
				-	-
	16			A -	-
				B -	-

(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
	2		Ps pressure data	Ps pressure (MPaG) is displayed in decimal format.	P d.	* * *
	3		PL pressure conversion data	Converted PL pressure (MPaG) is displayed in decimal format.	P S.	* * *
	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 with negative value is displayed as [-*] [**].	P L.	* * *
	5		TS sensor data		t d	 *
	6		TE sensor data		*	* * *
	7		TL sensor data		t S	 *
	8		TO sensor data		*	* * *
	9		—		Letter symbol	 *
	10		—		Data	* * *
	11		—		Letter symbol	 *
	12		—		Data	* * *
	13		—		Letter symbol	 *
	14		—		Data	* * *
	15		—		—	—
	16		—		—	—

(4) Display of indoor unit information (displayed on outdoor unit)

SW01	SW02	SW03	Display detail
4			Indoor BUS communication signal receiving status B Upon receiving signal: [... .. 1], Other times: [... ..]
5			Indoor check code B No check code: [- - -]
6			Indoor HP capacity B 0, 2, 0, 5, 0, 8, ... 1, 1, 2, 1, 7, ... 2, 2, 5, ... 3, 3, 2, ... 4, ... 5, ... 6, ... 8, 1, 0, 1, 6, 2, 0
7			Indoor request command (S code, operation mode) 1~4 B [# ... *] # represents mode: COOL: [C, ... *], HEAT: [H, ... *] FAN: [F, ... *], OFF: [S, ... *] * represents S code: [#, ... 0] to [#, ... F]
8	1~16		Indoor PMV opening data B Displayed in decimal format
9			Indoor TA sensor data B Displayed in decimal format
11			Indoor TC-J sensor data B Displayed in decimal format
12			Indoor TC-1 sensor data B Displayed in decimal format
13	1~4		Indoor TC-2 sensor data B Displayed in decimal format

Note: Indoor address No. is selected by setting SW02 and SW03 and displayed on 7-segment display, section A.

SW03	SW02	Indoor address	7-segment display section A
1	1~16	SW02 setting number	[01]~[16]
2	1~16	SW02 setting number +16	[17]~[32]
3	1~16	SW02 setting number +32	[33]~[48]
4	1~16	SW02 setting number +48	[49]~[64]

* Although 64 indoor unit addresses (Nos. 01-64) are theoretically available, the number of indoor units that can be connected to the same refrigerant piping system is limited to 8.

(5) Display of outdoor EEPROM writing error code (displayed on outdoor unit)

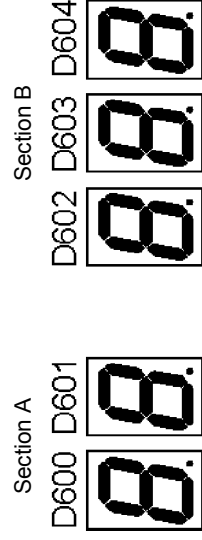
* The latest error code written in the EEPROM of outdoor unit is displayed.

(This function is used to check the error code after the resetting of the power supply.)

To display the error 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 error code of outdoor unit (U1)	E. 1. ***

• 7-Segment Display

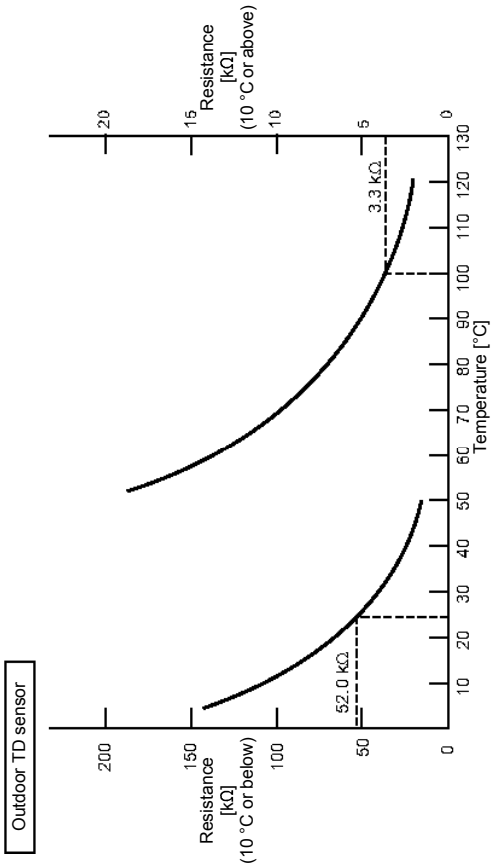
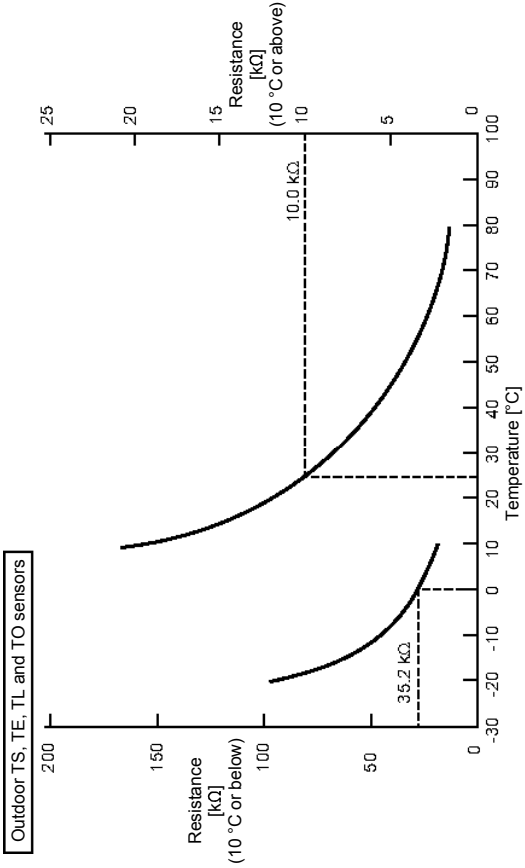


Set SW01 / SW02 / SW03 to [1/1/16] and press SW04 and hold for at least 5 seconds. The latest error code of the outdoor unit (U1) will be displayed.

9-7. Sensor characteristics

Outdoor Unit

▼ Temperature sensor characteristics



Outdoor Unit

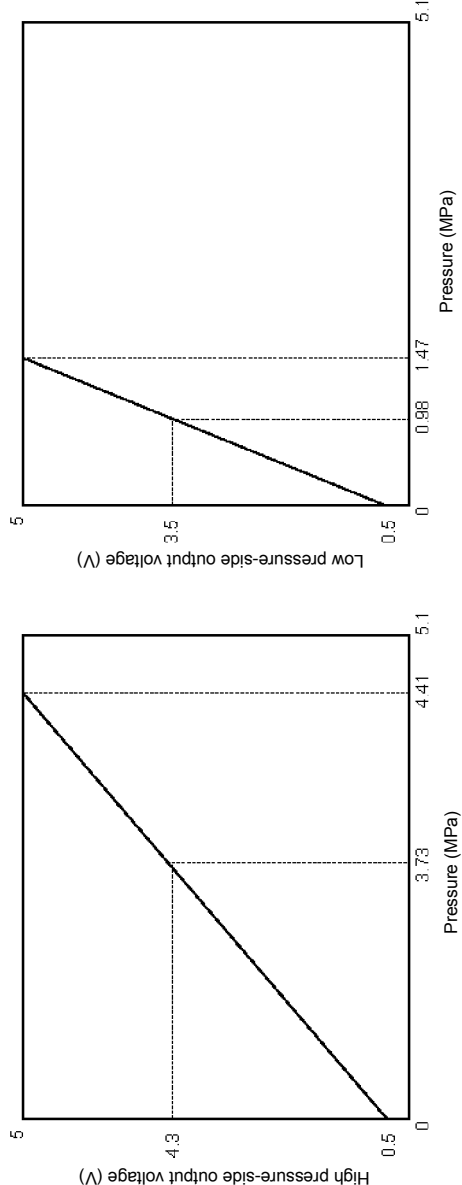
▼ Pressure sensor characteristics

- 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

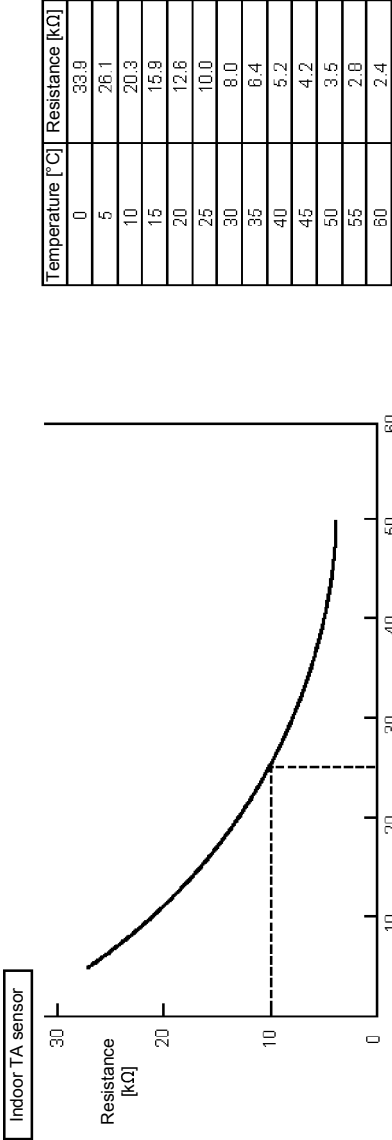
- Output voltage vs. pressure

High pressure side (Pd)	Low pressure side (Ps)
0.5~4.3 V 0~3.73 MPa	0.5~3.5 V 0~0.98 MPa

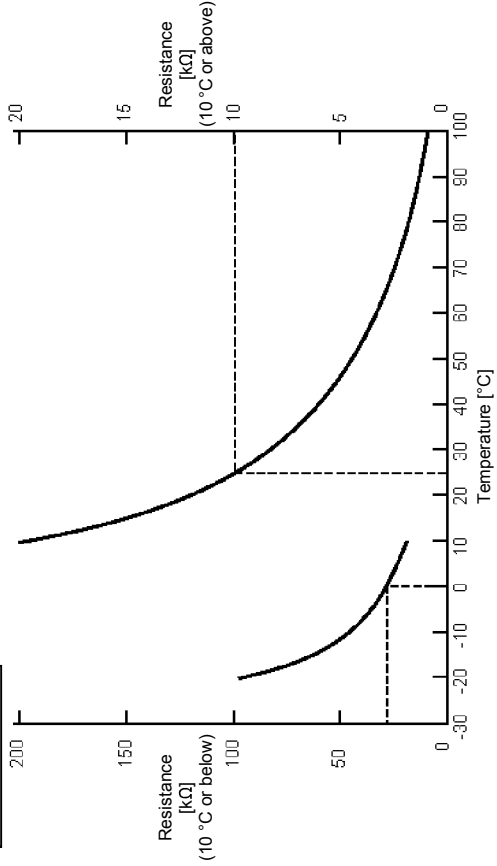


Indoor Unit

▼ Temperature sensor characteristics

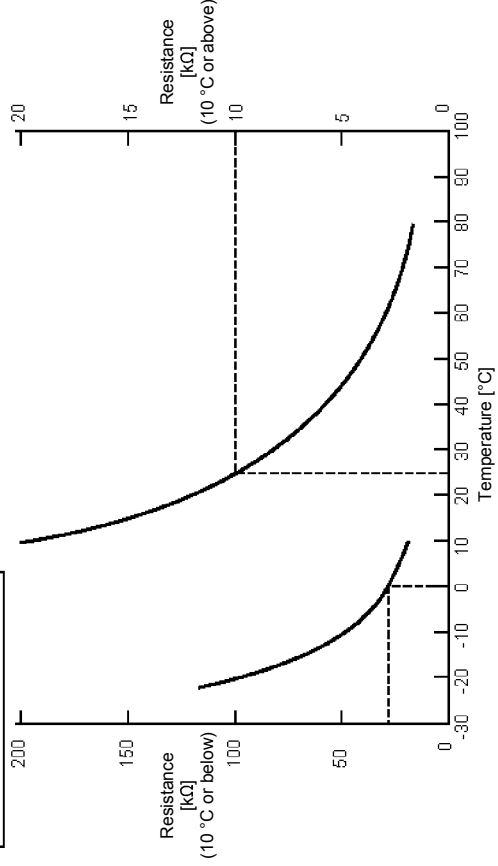


Indoor TC1 sensor



Temperature [°C]	Resistance [kΩ]
-20	89.9
-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 4.41 MPa (0.5 to 5 V output for 0 to 4.41 MPa)

Voltage readings across pins 2 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

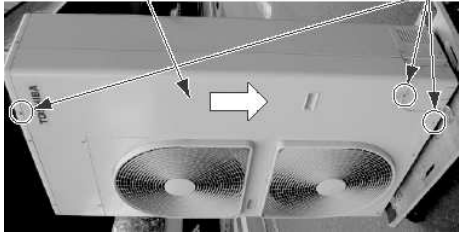
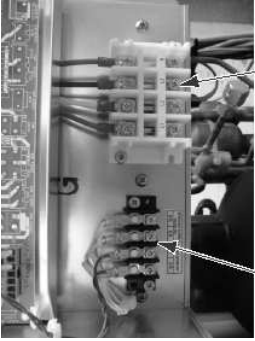
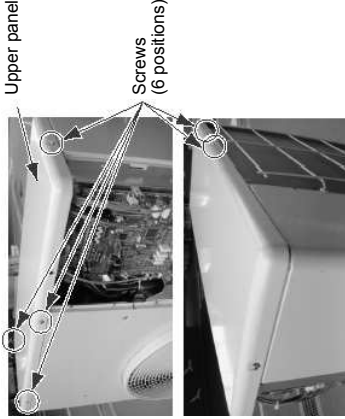
▼ Ps sensor characteristics

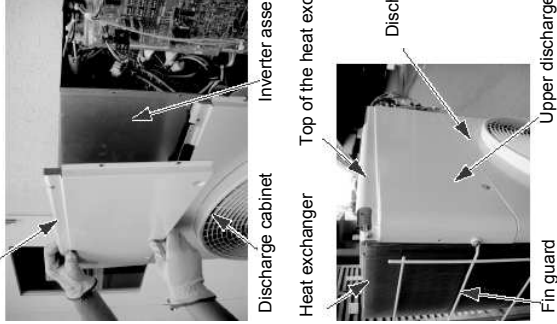
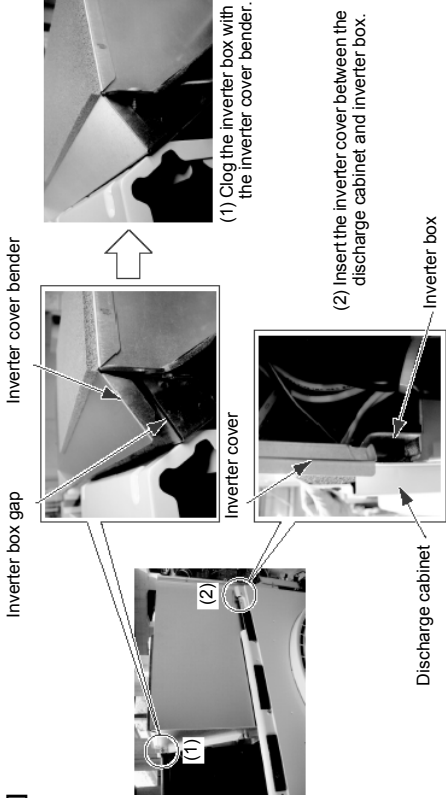
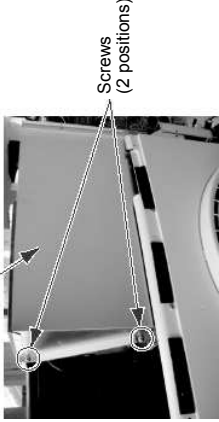
0 to 1.47 MPa (0.5 to 5 V output for 0 to 1.47 MPa)

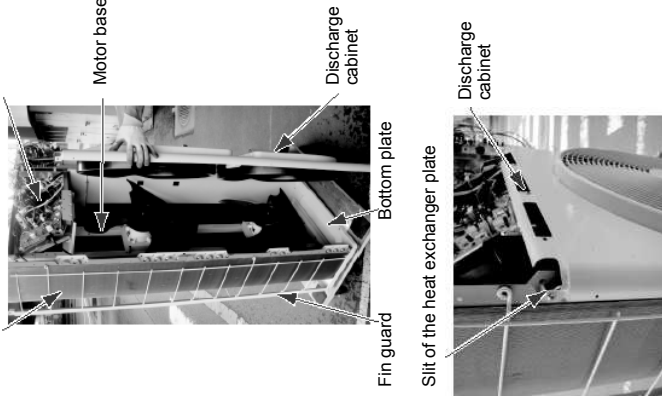
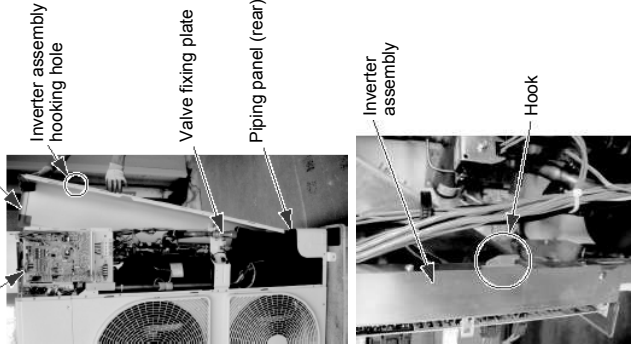
Voltage readings across pins 2 and 3 of CN500 on indoor unit main P.C. board (with negative-side probe of multimeter placed on pin 3)

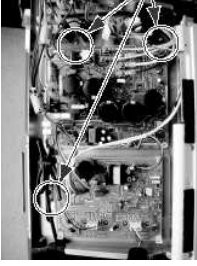
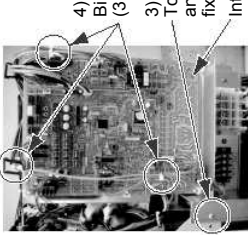
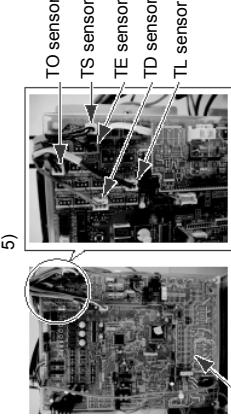
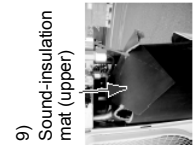
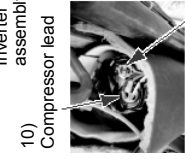
VOLT	Pd (MPa)	Pd (kg/cm ²)	VOLT	Pd (MPa)	Pd (kg/cm ²)	VOLT	Pd (MPa)	Pd (kg/cm ²)	VOLT	Pd (MPa)	Pd (kg/cm ²)	VOLT	Pd (MPa)	Pd (kg/cm ²)
0.00	0.00	0.0	1.00	0.16	1.7	1.99	0.49	5.0	2.99	0.81	8.3	3.98	1.14	11.6
0.02	0.00	0.0	1.02	0.17	1.7	2.01	0.49	5.0	3.01	0.82	8.4	4.00	1.15	11.7
0.04	0.00	0.0	1.04	0.18	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

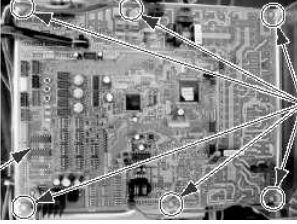
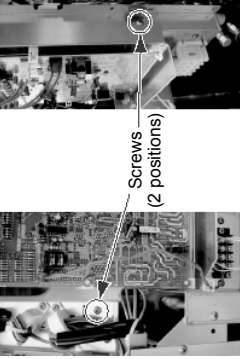
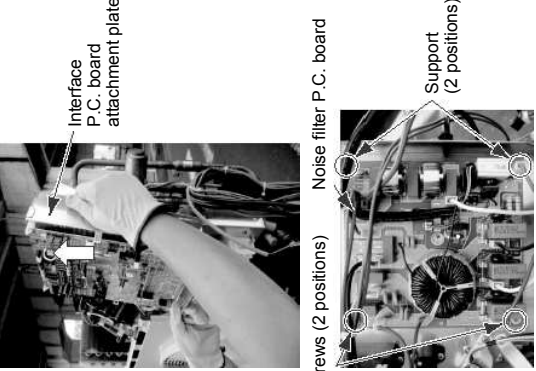
10 Outdoor unit parts replacement methods

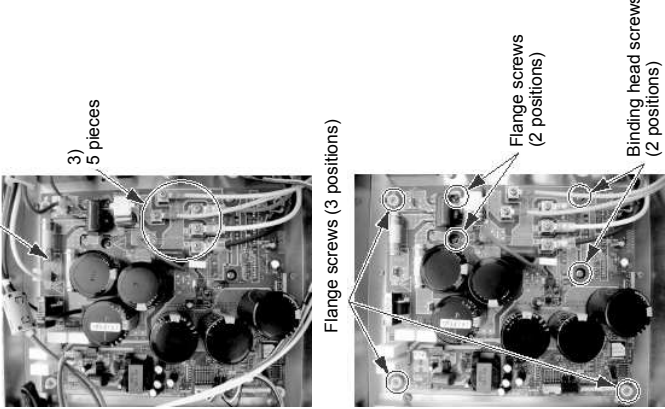
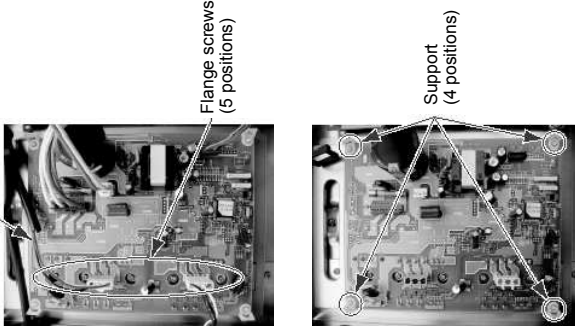
No.	Component	Procedure	Remarks
1	Common	⚠ WARNING Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks. NOTE Wear gloves when working on it. Failure to observe this precaution may cause injury due to components, etc. 1. Detachment 1) Turn off the air conditioner and the breaker switch. 2) Remove the front panel. (hexagonal screws: M4 x 10, 3) • Remove the screws, and then pull the front panel downward to remove it. 3) Remove the power wire and system interconnection wire from the power supply terminal block and communication terminal block. 4) Remove the upper panel. (hexagonal screws: M4 x 10, 6) 2. Attachment 1) Mount the upper panel. (hexagonal screws: M4 x 10, 6) 2) Connect the power wire and indoor / outdoor connection wire to the terminals, and fix them with the cord clamp. 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 the front panel. (hexagonal screws: M4 x 10, 3)	  

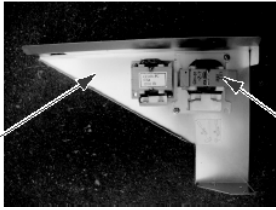
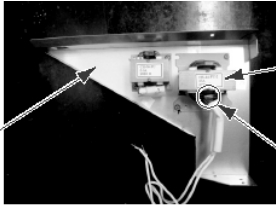
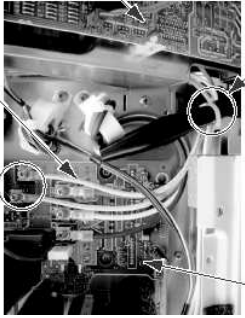
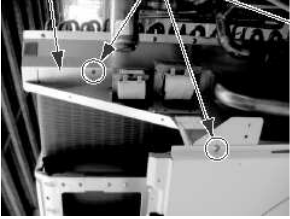
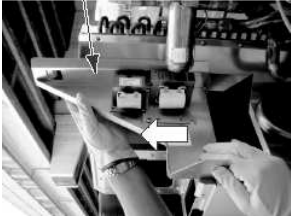
No.	Component	Procedure	Remarks
2	Upper discharge cabinet	1. Detachment 1) Perform Step 1 of 1. 2) Remove the screws of the upper discharge cabinet and inverter assembly. (ST1T $\phi 4 \times 8$, 2) 3) Remove the screws of the upper discharge cabinet and discharge cabinet. (hexagonal screws: M4 x 10, 2) 4) Remove the screws of the upper discharge cabinet and heat exchanger plate. (ST1T $\phi 4 \times 8$, 1) 5) Remove the screws of the upper discharge cabinet and fin guard. (hexagonal screws: M4 x 10, 1) 2. Attachment 1) Put the upper left side of the upper discharge cabinet on the top of the heat exchanger plate, and fix it with screws. (ST1T $\phi 4 \times 8$, 1) 2) Insert the other removed screws into the original positions.	
3	Inverter cover	1. Detachment 1) Perform Step 1 of 1 and Step 1 of 2. 2) Remove the screws of the inverter cover and inverter assembly. (ST1T $\phi 4 \times 8$, 2) 2. Attachment Mount the inverter cover. • Clog the inverter box gap with the inverter cover bender as shown in (1), and insert and mount the inverter cover between the discharge cabinet and inverter box. (ST1T $\phi 4 \times 8$, 2) [Note] 	

No.	Component	Procedure	Remarks
4	Discharge cabinet	1. Detachment 1) Perform Step 1 of 1, Step 1 of 2 and Step 1 of 3. 2) Remove the screws of the discharge cabinet, top of the partition plate, and partition plate. (ST1T $\phi 4 \times 8$, 4) 3) Remove the screws of the discharge cabinet and bottom plate. (hexagonal screws: M4 x 10, 2) 4) Remove the screws of the discharge cabinet and heat exchanger plate. (ST1T $\phi 4 \times 8$, 1) 5) Remove the screws of the discharge cabinet and motor base. (ST1T $\phi 4 \times 8$, 2) 6) Remove the screws of the discharge cabinet and fin guard. (hexagonal screws: M4 x 10, 1) 2. Attachment 1) Put the upper left side of the discharge cabinet on the heat exchanger plate slit, and fix it with screws. (ST1T $\phi 4 \times 8$, 1) 2) Insert the other removed screws into the original positions.	
5	Side cabinet	1. Detachment 1) Perform Step 1 of 1. 2) Remove the screws of the inverter assembly and side cabinet. (ST1T $\phi 4 \times 8$, 3) 3) Remove the screws of the side cabinet and valve fixing plate. (ST1T $\phi 4 \times 8$, 2) 4) Remove the screws of the side cabinet and piping panel (rear). (hexagonal screws: M4 x 10, 1) 5) Remove the screws of the side cabinet and bottom plate. (hexagonal screws: M4 x 10, 1) 6) Remove the screws of the side cabinet, fin guard, and heat exchanger plate. (hexagonal screws: M4 x 10, 4) 2. Attachment 1) Insert the hooking tabs on the inverter assembly securely into the tab holes on the side cabinet. 2) Insert the other removed screws into the original positions. NOTE Fix the removed binding bands with a commercially available binding band.	

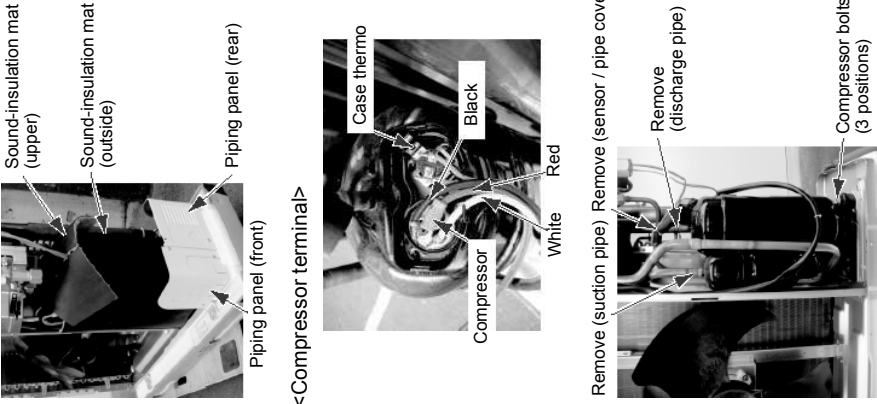
No.	Component	Procedure	Remarks
6	Inverter assembly	⚠ WARNING Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks. 1) Perform Step 1 of 1, Step 1 of 2 and Step 1 of 3 and 5. 2) Remove the screws of the inverter assembly, motor base, and top of the partition plate. (Earth screws $\Phi 4 \times 8$, 3) 3) Remove the screws of the inverter assembly and top of the partition plate. (ST1T $\Phi 4 \times 8$, 1) 4) Cut the binding bands fixing the wires (3 positions). 5) Remove the connector connected between the interface P.C. board and another component. CN502... TD sensor (3P: White) CN507... TO sensor (2P: Yellow) CN520... TE sensor (2P: Green) CN505... TS sensor (2P: Green) CN523... TL sensor (2P: White) CN317... 4-way valve coil (3P: Blue(HT8), Yellow(HT7)) CN300... PMV coil (6P: White) CN301... PMV coil (6P: White) CN312... 2-way valve coil (7P: Blue(HT8), Yellow(HT7)) CN305... Case thermo (2P: Red) CN501... High-pressure sensor (4P: Red) CN500... Low-pressure sensor (4P: White) 6) Remove the cord clamp fixing the wires. 7) Remove the connector connected between the fan motor and Fan IPDU. CN700... Fan motor lead (3P: Blue) CN750... Fan motor lead (3P: White) 8) Remove the lead wires from two reactors. * Unlock the housing part before removing the connector. 9) Remove the sound-insulation mat (upper). 10) Cut the binding band of the compressor lead wire and suction pipe. 11) Remove the terminal cover and then lead of the compressor. 12) Pull up the inverter assembly to remove it. NOTE Fix the removed binding bands with a commercially available binding band.	        

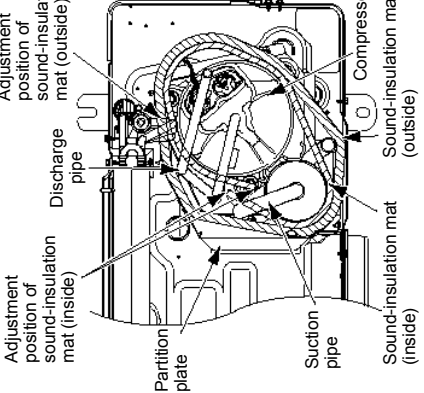
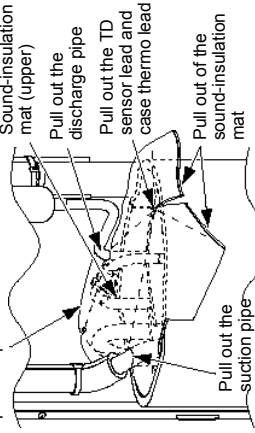
No.	Component	Procedure	Remarks
7	Interface P.C. board	 WARNING Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks. 1) Perform Step 1 of 1 and Steps 4) and 5) of 6. 2) Remove the connector connected between another interface P.C. board and another component. - CN01 ... Connection to communication terminal block (2P: Blue) - CN304 ... Connection to power relay (3P: Red) - CN400 ... Connection to noise filter P.C. board (CN22) (3P: White) - CN530 ... Connection to noise filter P.C. board (CN50, CN51) (3P: Black) - CN600 ... Connection to comp-IPDU P.C. board (CN852) (5P: Blue) * Unlock the housing part before removing the connector. 3) Remove the support hooks (6 positions) fixing the board to remove the interface board. 4) Mount a new interface P.C. board.	Interface P.C. board 
8	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) Perform Step 1 of 1, Steps 4) and 5) of 6, and Step 2) of 7. 2) Remove the screws fixing the interface P.C. board attachment plate, and pull the attachment board in the direction of the arrow to remove it. (ST1T $\phi 4 \times 8, 2$) 3) Remove the connector connected between the noise filter P.C. board and another component. - CN05 ... (Red) Connection to power supply terminal block - CN06 ... (White) Connection to power supply terminal block - CN07 ... (Black) Connection to power supply terminal block - CN08 ... (Gray) Connection to power supply terminal block - CN20 ... (White) Connection to power supply terminal block - CN10 ... (Red) Connection to Posister - CN16 ... (Red) Connection to power relay - CN17 ... (White) Connection to power relay - CN18 ... (Black) Connection to power relay - CN09 ... (Brown) Earth wire - CN23 ... (Red) Connection to Fan IPDU P.C. board - CN22 ... (Red) Connection to interface P.C. board - CN50 ... (Red) Connection to interface P.C. board - CN51 ... (White) Connection to interface P.C. board - CN530 ... (Black) Connection to interface P.C. board 4) Remove the 2 screws and support hooks (2 positions) fixing the noise filter P.C. board to remove it. 5) Mount a new noise filter P.C. board.	 

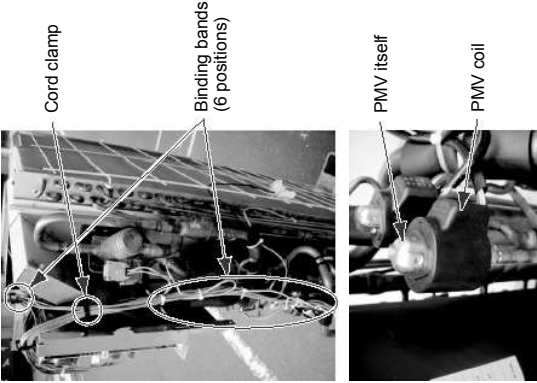
No.	Component	Procedure	Remarks
9	Comp-IPDU P.C. board	 WARNING Do not detach the inverter for 5 minutes after turning off the breaker as doing so may cause electric shocks. 1) Perform Step 1 of 1, Step 1) of 2, and 3. 2) Remove the connector connected between the Comp-IPDU P.C. board and another component. - CN852... Connection to interface P.C. board (CN600) (3P: White) - CN851... Connection to Fan IPDU P.C. board (CN505) (5P: Red) - CN101... Connection to Fan IPDU P.C. board (CN502) (3P: White) - CN04 ... Connection to Posister (Red) - CN11 ... Connection to power relay (Red) - CN12 ... Connection to noise filter P.C. board (CN17) (White) - CN13 ... Connection to power relay (Black) * Unlock the housing part before removing the connector. 3) Remove the screws for the reactors and comp. leads. (Screws for the reactors and comp leads $\Phi 7 \times 8$, 5) - CN09 ... Reactor wire - CN10 ... Reactor wire - CN201... Comp. lead (Red) - CN202... Comp. lead (White) - CN203... Comp. lead (Black) 4) Remove the Comp-IPDU P.C. board fixing screws. (Flange screws $\Phi 3 \times 14$, 2) (Binding head screws $\Phi 4 \times 15$, 2) 5) Remove the screws fixing the Comp-IPDU P.C. board to remove it. (Flange screws $\Phi 3 \times 14$, 3) 6) Mount a new Comp-IPDU P.C. board.	Comp-IPDU P.C. board 
10	Fan 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) Perform Step 1 of 1, Step 1) of 2, and 3. 2) Remove the connector connected between the Fan IPDU P.C. board and another component. - CN500... Connection to reactor lead and noise filter P.C. board (CN23) (Red) - CN502... Connection to comp-IPDU P.C. board (CN101) (White) - CN505... Connection to comp-IPDU P.C. board (CN851) (Red) - CN700... Upper fan motor lead (3P: Blue) - CN750... Lower fan motor lead (3P: White) 3) Remove the Fan IPDU P.C. board fixing screws. (Flange screws $\Phi 3 \times 14$, 5) 4) Remove the support hooks (4 positions) fixing the Fan IPDU P.C. board to remove it. 5) Mount a new Fan IPDU P.C. board.	Fan IPDU P.C. board 

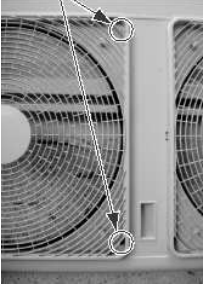
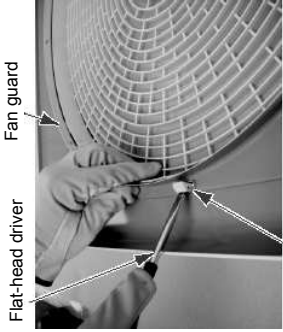
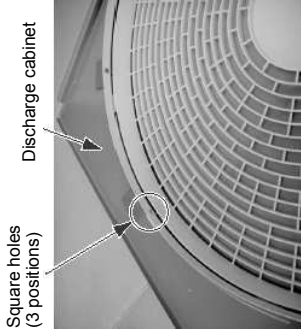
No.	Component	Procedure	Remarks
11	Reactor replacement	1) Perform Step 1 of 1, Step 1 of 2, 3, 5, and 6. 2) Remove the fixing screws of the upper part of the partition plate. (ST1T $\Phi 4 \times 8$, 3) 3) Pull up the upper part of the partition plate to remove it. 4) Remove the reactor. (ST1T $\Phi 4 \times 8$, 2 for each) 5) Mount a new reactor. [Note on reactor replacement]  CH-81 Direction of reactor lead [Note on reactor replacement]  CH-44 NOTE When the CH-81 reactor is replaced, it will change to the CH-44 reactor as the service component. Also replace the lead wire as it is to be changed. Remove the two screws for electrical connection  CH-81 reactor lead wire (yellow) Interface P.C. board Comp-IPDU P.C. board Cut the binding band	 Upper part of partition plate Screws (3 positions)  Upper part of partition plate  Upper part of partition plate  Screws (2 positions) Screws (2 positions)

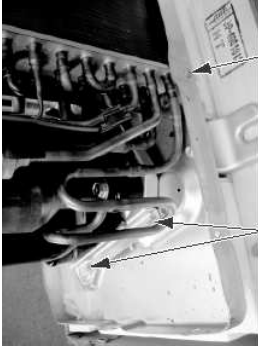
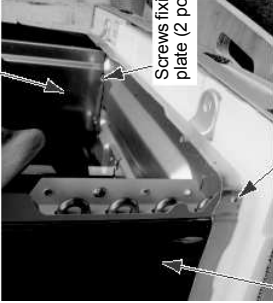
No.	Component	Procedure	Remarks
12	Fan motor	1) Perform Step 1 of 1, Step 1 of 2, Step 1 of 3, and Step 1 of 4. 2) Remove the flange nut fixing the fan motor and propeller fan. • Turn the flange nut clockwise to loosen it. (To tighten it, turn it counterclockwise.) 3) Remove the propeller fan. 4) Remove the fan motor leads from the Fan IPDU P.C. board. CN700... Upper fan motor lead (3P: Blue) CN750... Lower fan motor lead (3P: White) 5) Cut the binding bands of the motor base and fan motor leads (3 positions) to loosen the metal band. 6) Remove the fan motor leads from the fan motor lead fixing rubbers in the inverter box penetration. 7) Hold the fan motor and remove the 4 fixing screws so that the fan motor does not fall off. * Notes on attachment the fan motor • Tighten the flange nut by 6.9 N•m (70 kgf•cm). • Adjust the length of the fan motor lead using the fan motor lead fixing rubber so that the fan motor lead is not loose and does not come into contact with the propeller fan. • Attach the fan motor lead fixing rubber and put the protrusion in the inverter box so that water does not get inside. • Be careful so that the heat exchanger and fan motor lead do not come into contact.	Flange nut Turn it clockwise to loosen it.  Propeller fan   Fan motor lead fixing rubber (upper) (Attach it so that the protrusion points this way.) Fan IPDU P.C. board Fan motor lead fixing rubber (lower) (Attach it so that the protrusion points this way.)
		NOTE Fix the fan motor lead to the motor base using the motor base metal band and commercially available binding band so that the fan motor lead does not come into contact with the propeller fan.	 Metal band Binding band Binding band

No.	Component	Procedure	Remarks
13	Compressor	1. Removing the malfunctioning compressor 1) Collect the refrigerant gas with the recovery equipment. 2) Perform Step 1 of 1 and Step 1 of 5. 3) Remove the piping panel (front, rear). (hexagonal screws: M4 x 10, 5) 4) Remove the sound-insulation mat (upper, outside, inside). 5) Remove the terminal cover, comp lead, and then case thermo. NOTE Insulate the removed compressor terminals with insulating tapes or the like. Remove the compressor only when replacing the compressor. 6) Remove the TD sensor and pipe cover fixed to the discharge pipe. 7) Brazing the discharge and suction pipes connected to the compressor using the burner to remove the soldering. NOTE Be careful when brazing the soldering with the burner to remove the pipes. Oil remaining in the pipes may generate fire when the soldering 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) 10) Pull out the compressor. NOTE The compressor weighs over 20 kg. Two persons should work together. If there is no oil in the compressor, it weighs 22 kg.	 Sound-insulation mat (upper) Sound-insulation mat (outside) Piping panel (front) Piping panel (rear) Case thermo Compressor Black White Red Remove (suction pipe) Remove (sensor / pipe cover) Remove (discharge pipe) Compressor bolts (3 positions) <Compressor terminal>

No.	Component	Procedure	Remarks
13	Compressor (continued)	2. Installation of compressor Install the compressor in the reverse procedure of removal. NOTE The tightening torque of the hexagonal bolt to fix the compressor is 11.0 N·m (110 Kgf·cm). 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. NOTE Before vacuuming, open PMV fully. Vacuuming of the outdoor heat exchanger will not occur if PMV is closed. Full opening of PMV • Turn on the power to the outdoor unit. • Confirm that Bit 1 on SW12 is OFF. • Short CN30 on I/F P.C. board on the outdoor unit. • Turn off the power to the outdoor unit within 2 minutes of short-circuiting. 4. Refrigerant charging Add the same amount of refrigerant as the remaining refrigerant from the charge port of the valve. 5. Installation of sound-insulation mat 1) Start installing the sound-insulation mat (inside) from the "adjustment position" between the compressor and pipe, and the sound-insulation mat (outside) up to the "adjustment position" between the pipe and partition plate. 2) Install the sound-insulation mat (upper) as shown in the right figure so that water drops do not fall down from the accumulator or pipes to the compressor terminal.	    Adjustment position of sound-insulation mat (inside) Discharge pipe Partition plate Suction pipe Sound-insulation mat (inside) Compressor Sound-insulation mat (outside) Sound-insulation mat (inside) Sound-insulation mat (outside) Sound-insulation mat (upper) Fold in between the sound-insulation mat (outside) and partition plate. Sound-insulation mat (upper) Pull out the discharge pipe Pull out the TD sensor lead and case thermo lead Pull out of the sound-insulation mat Pull out the suction pipe

No.	Component	Procedure	Remarks
14	PMV coil	1. Detachment 1) Perform Step 1 of 1 and Step 1 of 5. 2) Remove the cord clamp, and cut the binding bands fixing the wires (6 positions). 3) Remove the connector of the PMV coil from the interface P.C. board. CN300... PMV coil (6P: White) CN301... PMV coil (6P: White) 4) Pull up and rotate the coil to remove it from the PMV. 2. Attachment Adjust the protrusion for coil position adjustment to the concavity of PMV to fix it. NOTE Fix the removed binding bands with a locally procured binding band.	 The left photograph shows the internal wiring of the PMV coil with labels: 'Cord clamp' pointing to a metal clamp, and 'Binding bands (6 positions)' pointing to six white wires. The right photograph shows the 'PMV itself' and the 'PMV coil' being attached to it.

No.	Component	Procedure	Remarks
15	Fan guard	1. Detachment 1) Perform Step 1 of 1, Step 1 of 2, Step 1 of 3, and Step 1 of 4. NOTE For scratch protection, work on a carton box, cloth, or the like. 2) Remove the screws fixing the fan guard. (hexagonal screws: M4 x 10, 2) 3) Remove the discharge cabinet, and place it with the fan guard facing down. 4) Remove the screws fixing the bell mouth. (ST1T $\Phi 4 \times 8$, 2) 5) Remove the bell mouth. 6) Remove the hook of the fan guard by pushing it with a flat-head driver or the like. 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 (5 positions) with your hand to fix them. NOTE Confirm that all the hooks are securely fixed to specified positions. 2) Hook the hooks (3 positions) on the top of the bell mouth to the square holes on the discharge cabinet. 3) After installation, fix the fan guard with the screws. (ST1T $\Phi 4 \times 8$, 2)	 Screws (2 positions)  Discharge cabinet Bell mouth Remove screws (2 positions)  Bell mouth  Discharge cabinet Fan guard  Flat-head driver Hook Square holes (3 positions)  Bell mouth Hooks (3 positions)

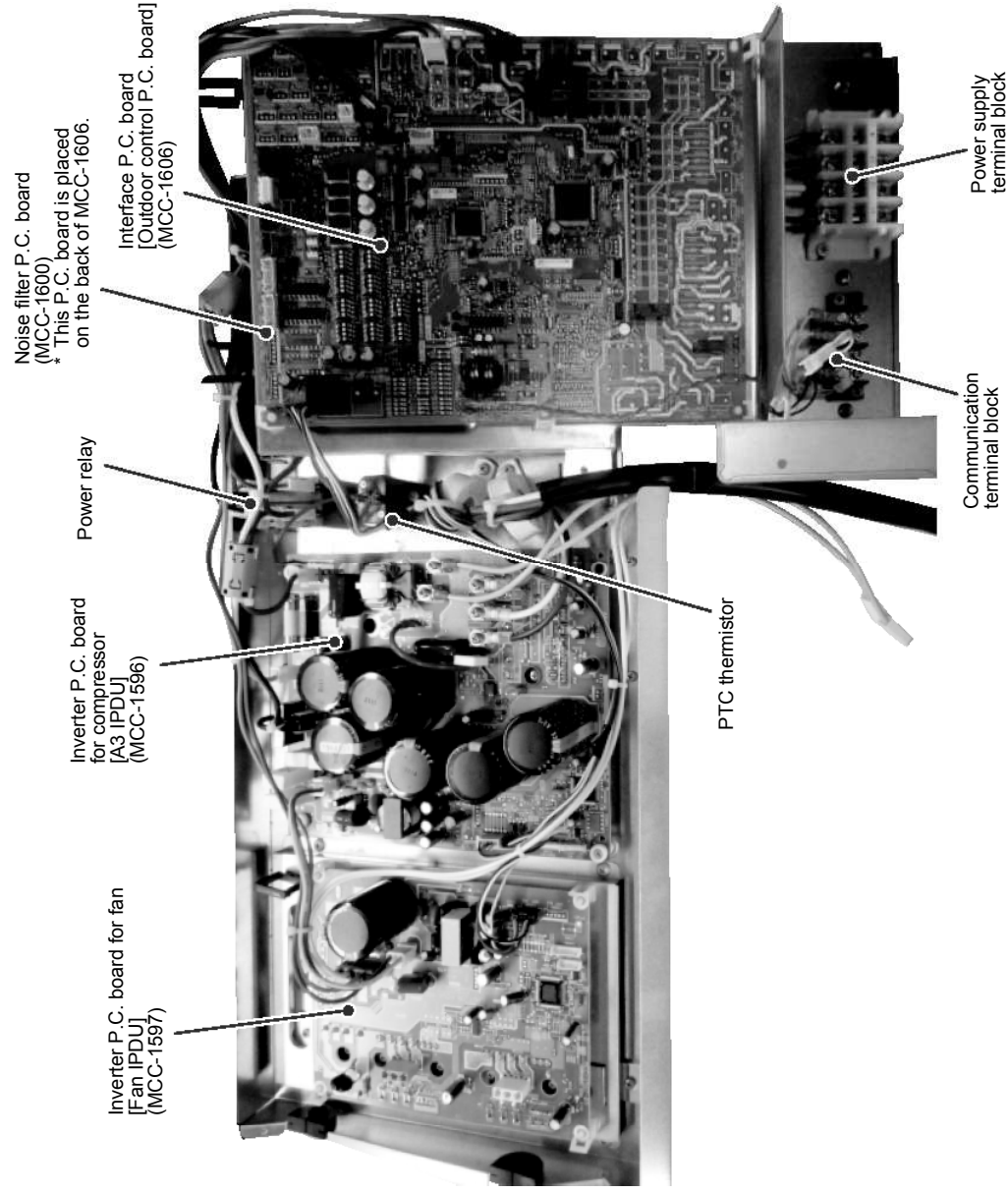
No.	Component	Procedure	Remarks
16	Bottom plate assembly	Replacing bottom plate assembly 1) Perform Step 1 of 1, Step 1 of 2, Step 1 of 3, Step 1 of 4, 5, and 6. 2) Remove the screws fixing the motor base and bottom board, and pull up the motor base assembly to remove it. (ST1T $\phi 4 \times 8$, 4) 3) Remove the screws fixing the heat exchanger and bottom plate. (ST1T $\phi 4 \times 8$, 2) 4) Remove the screws fixing the partition plate and bottom plate. (ST1T $\phi 4 \times 8$, 2) 5) Remove the screws fixing the compressor attachment plate and bottom plate. (hexagonal screws: M4 x 10, 5) 6) Remove the fin guard. (hexagonal screws: M4 x 10, 2) 7) Hold up the heat exchanger, partition plate, compressor, and piping assembly, and place them on a new bottom plate assembly.	 Motor base assembly Screws fixing the motor base and bottom plate (4 positions)  Screws fixing the compressor attachment plate Screws fixing the heat exchanger Partition plate  Screws fixing the partition plate (2 positions) Heat exchanger Screws fixing the heat exchanger  Screws fixing the compressor attachment plate Compressor attachment plate
		NOTE Two or more persons should work on replacing the bottom plate assembly. Be careful not to apply excessive force to the pipes to deform them. Be careful not to injure yourself with the fin of the heat exchanger or end of plate.	

11 P.C. board exchange procedures

11-1. List of service P.C. boards

Part code	Description	Applicable model	P.C. board type code
4316V470	Interface P.C. board	MCY-MAP0604HT** MCY-MAP0804HT**	MCC-1606
4316V471	Comp-IPDU P.C. board		MCC-1596
4316V472	Fan IPDU P.C. board		MCC-1597
4316V473	Noise filter P.C. board		MCC-1600

11-2. Configuration of inverter assembly



11-3.Interface P.C. board replacement procedure (MCC-1606)

1. Preparation (model change)

This service P.C. board is commonly installed in different models. If the P.C. board assembly is to be replaced, check the displayed inspection contents and replace the P.C. board with the correct version for the model and follow this procedure.

2. Replacement steps

(1) Turn off the power supply of the outdoor unit.

(2) Remove all the connectors connected to the interface P.C. board.

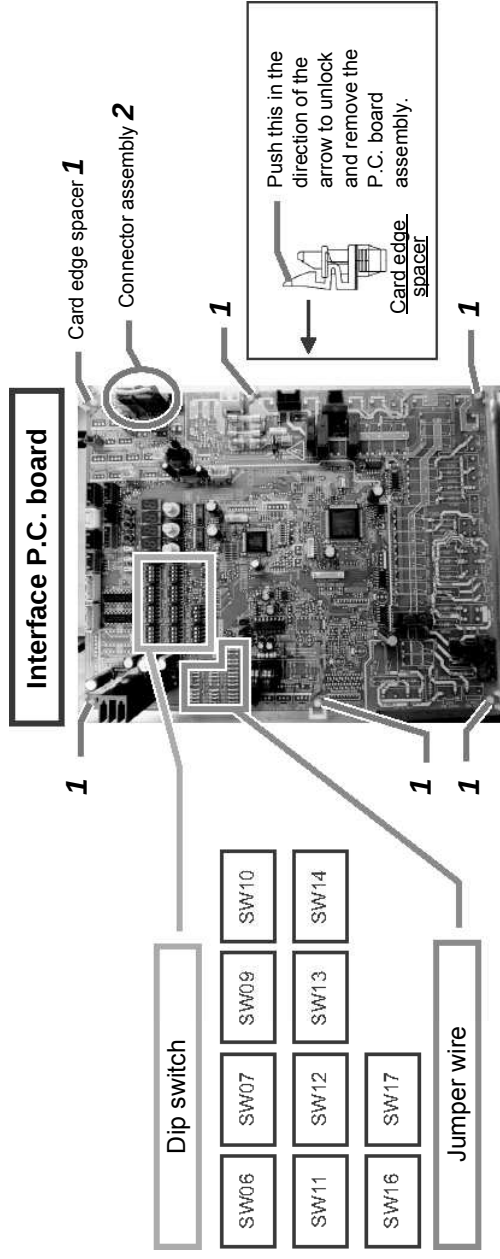
- Hold the connectors when removing them.
- The connector assembly **2** connected to CN306 and 307 is used when installing the service P.C. board. Store it in a safe place.

(3) Remove the interface P.C. board from the six card edge spacers (**1**).

(4) Disconnect the jumper wires of the service P.C. board, as instructed in the table below. The jumper setting differs from the one to be replaced.

If the model is not specified, inspection code “L 10” is displayed and the outdoor unit will not operate.

Service P.C. board	Model name	Factory default	Jumper wire			
			J09	J10	J11	J12
MCY-MAP0604HT**			Yes	Yes	Yes	Yes
MCY-MAP0804HT**			Disconnect	Disconnect	Leave intact	Leave intact
			Leave intact	Leave intact	Disconnect	Leave intact



(5) Set dip switch settings of the service P.C. board to the switch settings used before replacement.

(6) Connect the connector assembly **2** removed in (2) on the previous page to CN306 and 307 on the service P.C. board.

(7) After setting the jumper wires of the service P.C. board, install the service P.C. board in the inverter assembly. (Confirm that it is securely fixed to the card edge spacers.)

(8) Connect the lead wire connectors removed when replacing the P.C. board by following the wiring diagram. (Confirm that they are correctly and securely inserted.)

(9) If a component part on the P.C. board is bent during P.C. board replacement, adjust it manually so that it is not in contact with other parts / components.

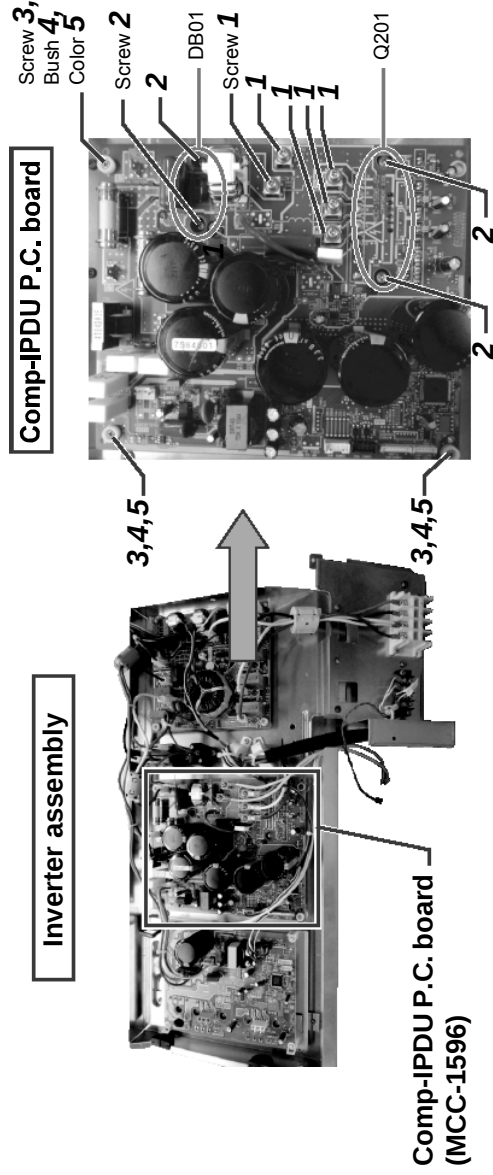
(10) Install the cover then turn on the power supply. Check the operation.

11-4. Comp-IPDU P.C. board replacement procedure (MCC-1596)

Replacement steps

If the P.C. board assembly is to be replaced, follow this procedure.

- (1) Turn off the power supply to the outdoor unit, and wait for one minute. Discharge the capacitor on the P.C. board, and confirm that the LED (D800) is turned off.
- (2) Remove the connectors, fasteners and five screws **(1)** connected to the Comp-IPDU P.C. board.
 - Hold the connectors and fasten terminals, and be careful not to drop them.
 - The removed screws are used when installing the service P.C. board. Store them in a safe place.
- (3) Remove 4 screws **(2)** that fix the P.C. board to the heat sink.
 - The removed screws are used when installing the service P.C. board. Store them in a safe place.
- (4) Remove 3 screws **(3)** that fix the Comp-IPDU P.C. board to the heat sink.
 - The removed screws are used when installing the service P.C. board. Store them in a safe place.



**Comp-IPDU P.C. board
(MCC-1596)**

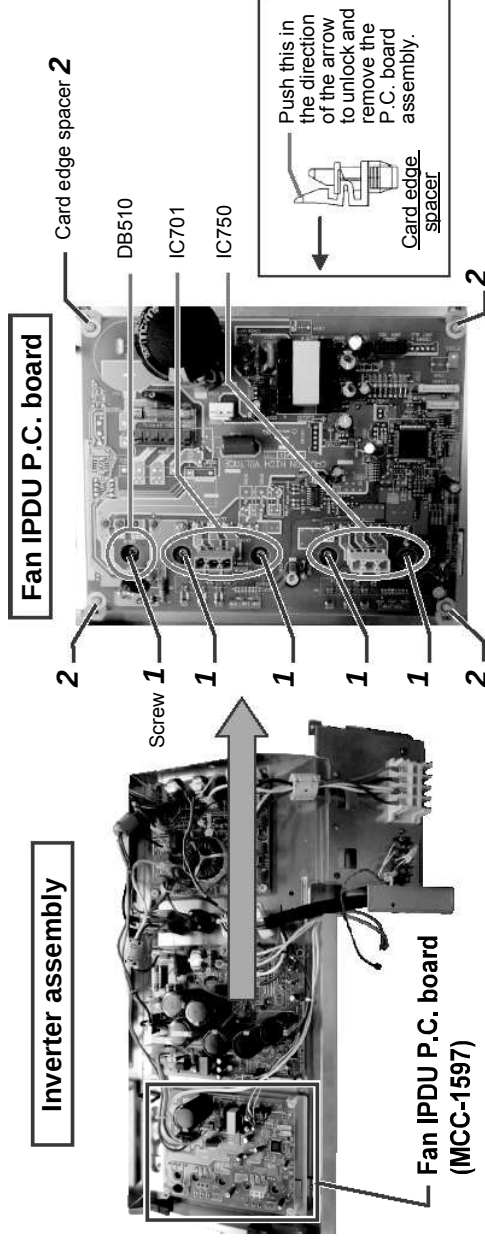
- (5) If dust or dirt is adhered or a scratch occurs on the heat sink with the P.C. board removed, the capacitor discharge may deteriorate and may cause malfunction. Be careful when removing.
- (6) Apply the thermal grease onto the semiconductors (DB01, Q201) on the service P.C. board. Install the bush **4** and color **5** on the 3 positions in the above diagram, and adjust the hole positions of the heat sink. If dust or dirt is adhered or a scratch occurs on the P.C. board attachment, the capacitor discharge may deteriorate and may cause malfunction. Be careful when installing.
- (7) Fix the semiconductors (DB01, Q201) firmly to the heat sink with four screws **(2)** removed in (3) above. If the screws are loose, the capacitor discharge may deteriorate and may cause malfunction. Be careful when fixing. When installing the P.C. board, do not use electric drivers or air drivers as they could damage the components. (Screw tightening torque DB01: 0.55 N•m, Q201: 1.2 N•m)
- (8) Fix the three positions of the bush **4** and color **5** with three screws **(3)** removed in (4) above. (Screw tightening torque 0.55 N•m)
- (9) Connect the connectors and fasten terminals with five screws **(1)**. (Screw tightening torque 1.2 N•m) (Confirm that they are correctly and securely inserted.) Thread the black lead to be connected to CN13 through T611. If the screws are loose, the screw terminals may overheat and may cause malfunction. Be careful when fixing. When installing the P.C. board, do not use electric drivers or air drivers as they could damage the components.
- (10) If a component part on the P.C. board is bent during P.C. board replacement, adjust it manually so that it is not in contact with other parts / components.
- (11) Install the cover then turn on the power supply. Check the operation.

11-5.Fan IPDU P.C. board replacement procedure (MCC-1597)

Replacement steps

If the P.C. board assembly is to be replaced, follow this procedure.

- (1) Turn off the power supply to the outdoor unit, and wait for one minute. Discharge the capacitor on the P.C. board, and confirm that the LED (D640) is turned off.
- (2) Remove all the connectors connected to the Fan IPDU P.C. board.
 - Hold the connectors when removing them.
- (3) Remove 5 screws (1) that fix the P.C. board to the heat sink.
 - The removed screws are used when installing the service P.C. board. Store them in a safe place.
- (4) Unlock 4 card edge spacers (2) that fix the Fan IPDU P.C. board to remove the P.C. board assembly.



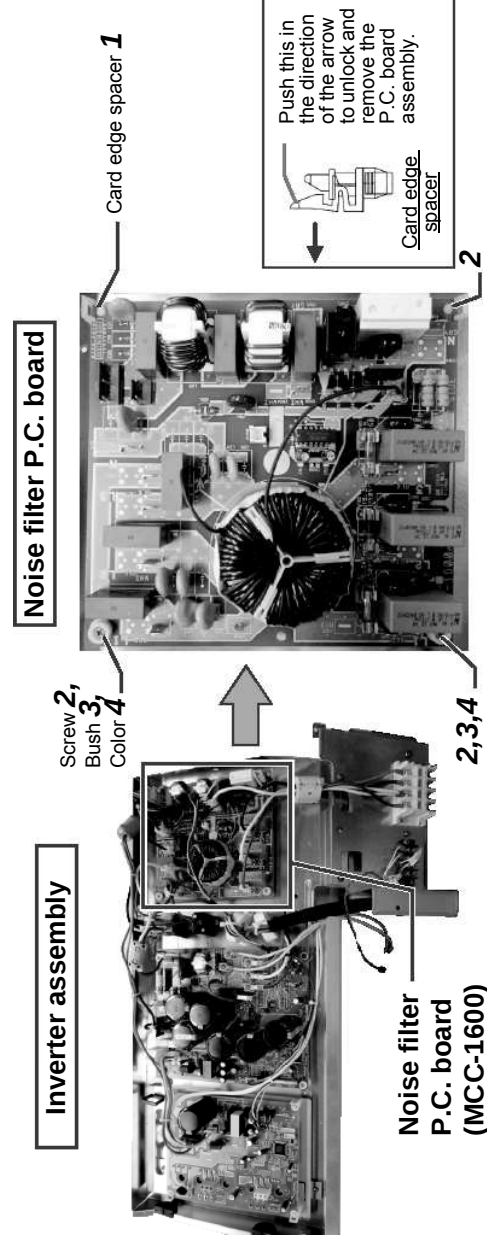
- (5) If dust or dirt is adhered or a scratch occurs on the sub heat sink with the P.C. board removed, the capacitor discharge may deteriorate and may cause malfunction. Be careful when removing.
- (6) Apply the thermal grease onto the semiconductors (DB510, IC701, IC750) on the service P.C. board. Adjust the hole positions of the sub heat sink and heat sink to install them to the service P.C. board (Confirm that it is securely fixed to the card edge spacer 2.)
- (7) Fix the service P.C. board firmly to the heat sink with five screws (1) removed in (3) above. If the screws are loose, the capacitor discharge may deteriorate and may cause malfunction. Be careful when fixing. When installing the P.C. board, do not use electric drivers or air drivers as they could damage the components. (Screw tightening torque DB510, IC701, IC750: 0.55 N•m)
- (8) Connect the connectors. Confirm that they are correctly and securely inserted.
- (9) If a component part on the P.C. board is bent during P.C. board replacement, adjust it manually so that it is not in contact with other parts / components.
- (10) Install the cover then turn on the power supply. Check the operation.

11-6.Noise filter P.C. board replacement procedure (MCC-1600)

Replacement steps

If the P.C. board assembly is to be replaced, follow this procedure.

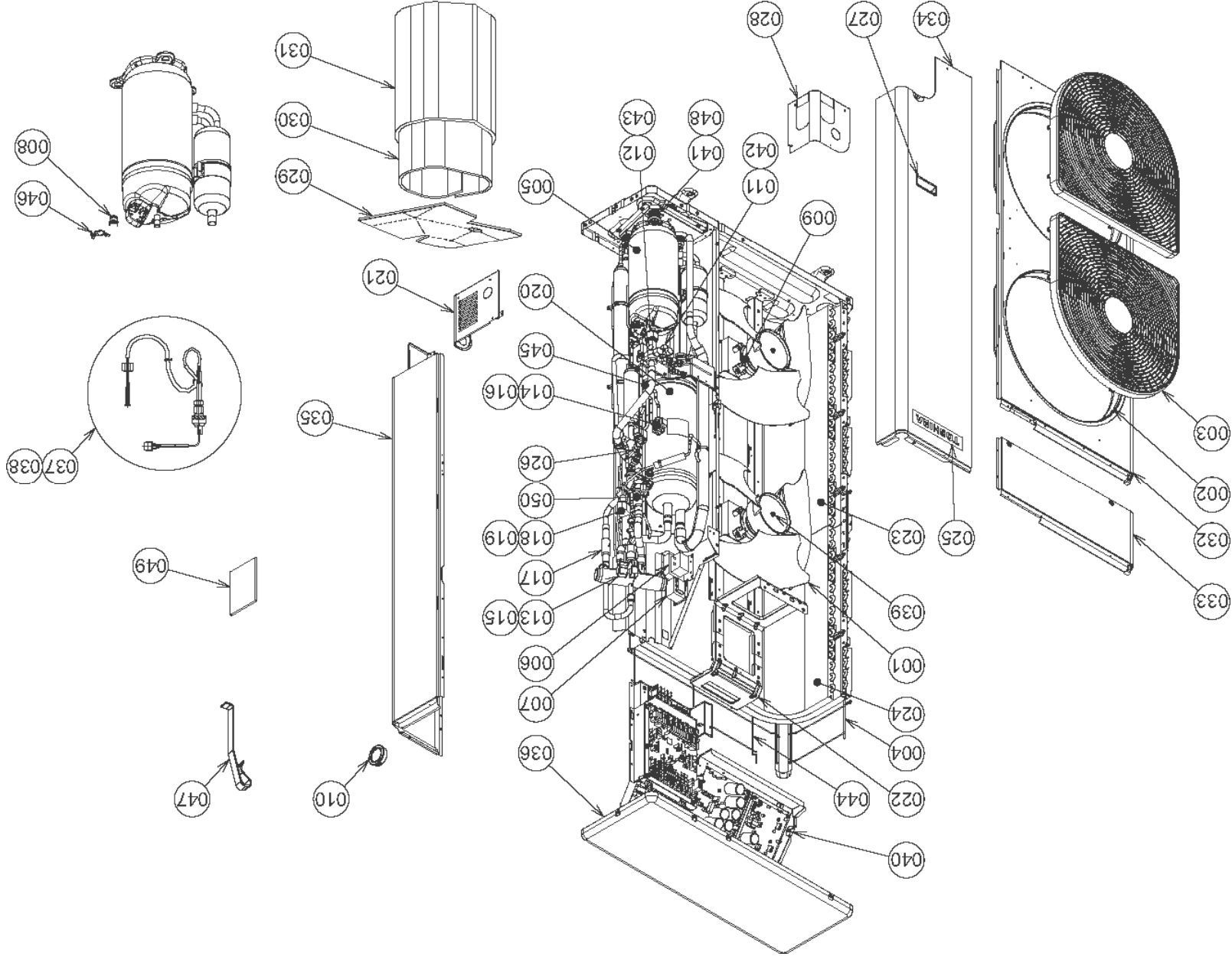
- (1) Turn off the power of the outdoor control. (Turn off the outdoor unit.)
- (2) Remove all the connectors and fasten terminals connected to the Noise filter P.C. board.
 - Hold the connectors and fasten terminals when removing them.
- (3) Remove 2 screws (2) that fix the Noise filter P.C. board.
 - The removed screws are used when installing the service P.C. board. Store them in a safe place.
- (4) Unlock 2 card edge spacers (1) that fix the Noise filter P.C. board to remove the P.C. board assembly.



- (5) Install the bush 3 and color 4 on the service P.C. board (see the above figure), and fix the P.C. board firmly with two screws (2) and two card edge spacers (1) removed in (3) above. (Screw tightening torque 0.55 N•m)
- (6) Connect the connectors and fasten terminals. Confirm that they are correctly and securely inserted.
- (7) If a component part on the P.C. board is bent during P.C. board replacement, adjust it manually so that it is not in contact with other parts / components.
- (8) Install the cover then turn on the power supply. Check the operation.

12 Exploded diagram / parts list

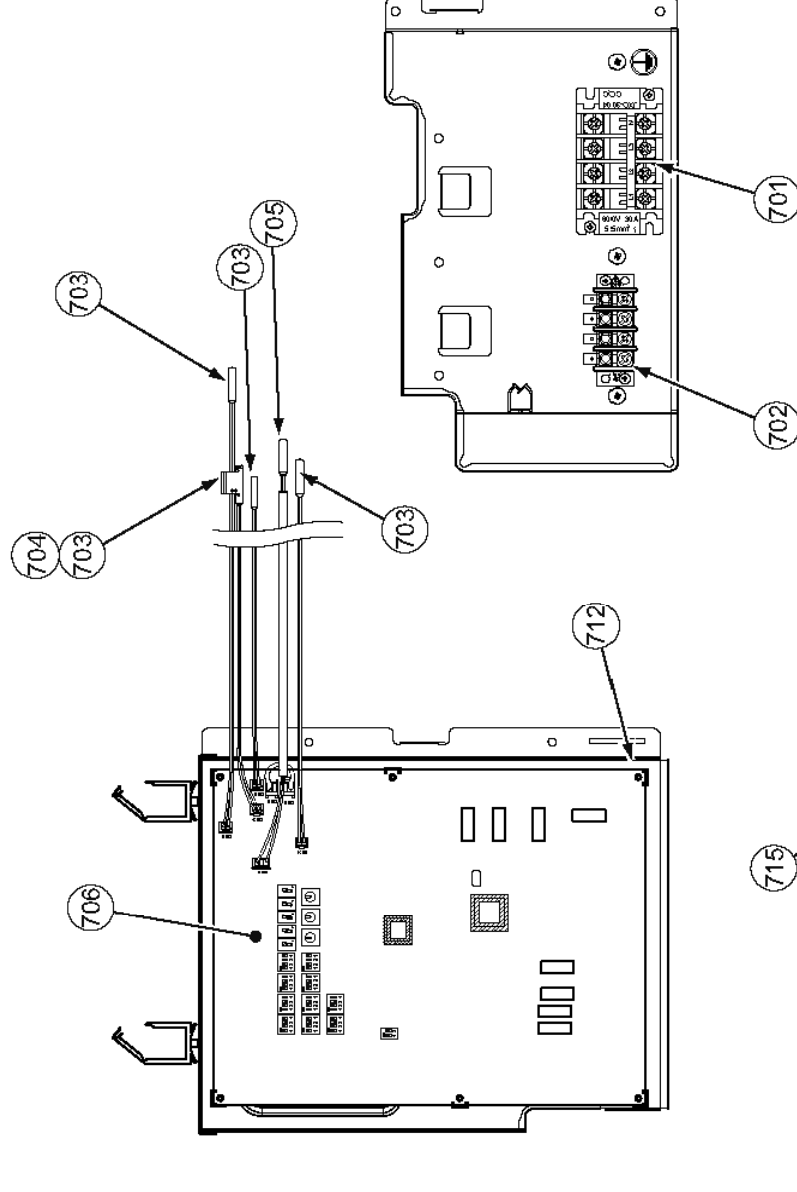
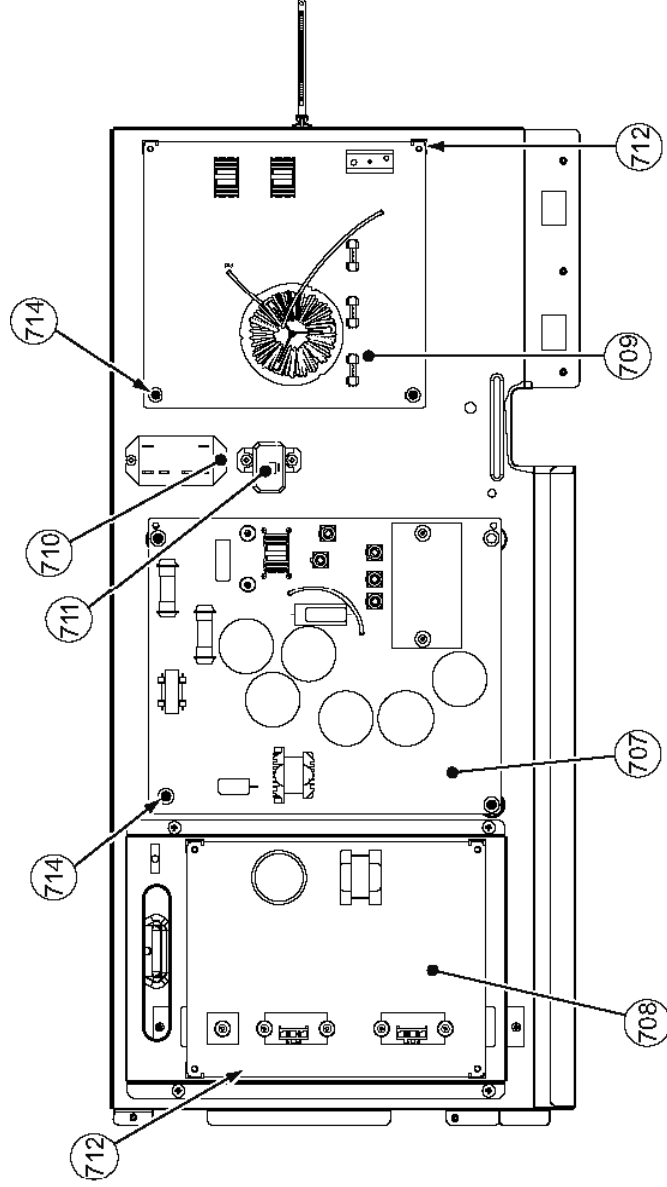
SMMS-i Outdoor unit



Ref. No.	Part No.	Description	MCY-MAP			
			**04HT8	**04HT7	**04HT8ZG	**04HT7ZG
001	43120224	FAN, PROPELLER, PE492	2	2	2	2
002	43122065	BELL MOUTH	2	2	2	2
003	43191651	GUARD, FAN	2	2	2	2
004	43141520	COMPRESSOR, DA422A3F-2AMD, ROHS	1	1	1	1
005	43158199	REACTOR	1	1	1	1
006	43158207	REACTOR	1	1	1	1
007	43050407	THERMOSTAT, BIMETAL	1	1	1	1
008	4312C090	MOTOR, FAN, WDF-340-A100-1	2	2	2	2
009	4316V135	BUSH	1	1	1	1
010	43046442	VALVE, PACKED, 9.52DIA	1	1	1	1
011	43146725	VALVE, BALL, SBV-JA6GTC-1, ROHS	1	1	1	1
012	43146722	COIL, SOLENOID, STF-01AJ502E1	1	0	1	0
013	43146739	COIL, SOLENOID	0	1	0	1
014	43146634	VALVE, PULSE, MODULATING	2	2	2	2
015	4314N042	VALVE, 4WAY	1	1	1	1
016	4314N030	COIL, PMV, UKV-A040	2	2	2	2
017	4314N065	VALVE, CHECK	1	1	1	1
018	4314N047	COIL, VALVE, 2WAY	1	0	1	0
019	4314N048	COIL, SOLENOID, AC208-230, 60HZ	0	1	0	1
020	4314N067	VALVE, 2WAY, FDF6A42	1	1	1	1
021	43148208	ACCUMULATOR	1	1	0	0
022	43148209	ACCUMULATOR	0	0	1	1
023	43100345	PANEL, BACK, PIPING, ROHS	1	1	1	1
024	43122131	BASE ASSY, MOTOR	1	1	0	0
025	43122132	BASE ASSY, MOTOR	0	0	1	1
026	4314G304	CONDENSER ASSY, LOWER	1	1	0	0
027	4314G305	CONDENSER ASSY, UP	1	1	0	0
028	4314G306	CONDENSER ASSY, LOWER	0	0	1	1
029	4314G307	CONDENSER ASSY, UP	0	0	1	1
030	4301P703	MARK, TOSHIBA	1	1	1	1
031	43146676	JOINT,CHECK	2	2	2	2
032	43119390	HANGER	3	3	3	3
033	43100347	PANEL, FRONT, PIPING, ROHS	1	1	1	1
034	43111335	INSULATOR, SOUND, IN	1	1	1	1
035	43111336	INSULATOR, SOUND, OUT	1	1	1	1
036	43111354	INSULATOR, SOUND, UP	1	1	1	1
037	43107286	GUARD, FIN, SIDE	1	1	1	1
038	43107287	GUARD, FIN, BACK	1	1	1	1
039	43100329	CABINET ASSY, OUT	1	1	1	1
040	43100332	CABINET ASSY, UP	1	1	1	1
041	43100335	CABINET ASSY, FRONT	1	1	1	1
042	43100338	PANEL ASSY, SIDE	1	1	1	1
043	43100341	CABINET ASSY, TOP	1	1	1	1
044	43151313	SENSOR ASSY, LOW PRESSURE	1	1	1	1
045	43151314	SENSOR ASSY, HIGH PRESSURE	1	1	1	1
046	43197164	NUT, FLANGE	0	0	2	2
047	43047669	NUT, FLANGE	2	2	0	0
048	43196113	BUSHING	2	2	2	2

Ref. No.	Part No.	Description	MCY-MAP			
			**04HT8	**04HT7	**04HT8ZG	**04HT7ZG
049	43149324	RUBBER, CUSHION	3	3	3	3
050	43047246	BONNET, 3/8 IN	1	1	1	1
051	43147451	BONNET, 3/4 IN	1	1	1	1
052	43147666	STRAINER	2	2	2	2
053	43063317	HOLDER,THERMOSTAT	1	1	1	1
054	43019904	HOLDER, SENSOR (TS)	3	3	3	3
055	43197183	BOLT, COMPRESSOR	3	3	0	0
056	43197184	BOLT, COMPRESSOR	0	0	3	3
057	431S8245	OWNER'S MANUAL, MCY-MAP0604HT8	1	1	1	1
058	4314Q004	STRAINER	1	1	1	1

Inverter assembly



Ref. No.	Part No.	Description	MCY-MAP	
			0604HT**	0804HT**
701	43160579	TERMINAL, 4P, POWER SUPPLY	1	1
702	43160561	TERMINAL, 4P, COMMUNICATION	1	1
703	43050425	SENSOR ASSY, SERVICE	4	4
704	43063325	HOLDER, SENSOR (TE)	1	1
705	43150315	SENSOR, TD (F6)	1	1
706	4316V470	PC BOARD ASSY, I/F, MCC-1606	1	1
707	4316V471	PC BOARD ASSY, COMP-IPDU, MCC-1596	1	1
708	4316V472	PC BOARD ASSY, FAN-IPDU, MCC-1597	1	1
709	4316V473	PC BOARD ASSY, N/F, MCC-1600	1	1
710	43154177	RELAY	1	1
711	43153007	THERMISTOR, PTC	1	1
712	43063248	SUPPORTER, ASSY	3	3
713	43183020	COLLAR	5	5
714	43282001	BUSHING	5	5
715	43160627	LEAD ASSY, COMPRESSOR	1	1

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