

TOSHIBA

Carrier

SERVICE MANUAL

AIR-CONDITIONER

MULTI TYPE

INDOOR UNIT

< 4-way cassette type >

MMU-UB0071HP-UL

MMU-UB0091HP-UL

MMU-UB0121HP-UL

MMU-UB0151HP-UL

MMU-UB0181HP-UL

MMU-UB0241HP-UL

MMU-UB0301HP-UL

MMU-UB0361HP-UL

MMU-UB0421HP-UL

MMU-UB0481HP-UL

MMU-UB0541HP-UL

R454B



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SAFETY CAUTION

Please read carefully through these instructions that contain important information and ensure that you understand them.

Generic Denomination: Air Conditioner

Definition of Qualified Installer or Qualified Service Person

The air conditioner must be installed, maintained, repaired and removed by a qualified installer or qualified service person. When any of these jobs is to be done, ask a qualified installer or qualified service person to do them for you.

A qualified installer or qualified service person is an agent who has the qualifications and knowledge described in the table below.

Agent	Qualifications and knowledge which the agent must have
Qualified installer	<ul style="list-style-type: none">• The qualified installer is a person who installs, maintains, relocates and removes the air conditioners. He or she has been trained to install, maintain, relocate and remove the air conditioners he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations.• The qualified installer who is allowed to do the electrical work involved in installation, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.• The qualified installer who is allowed to do the refrigerant handling and piping work involved in installation, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.• The qualified installer who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.
Qualified service person	<ul style="list-style-type: none">• The qualified service person is a person who installs, repairs, maintains, relocates and removes the air conditioners. He or she has been trained to install, repair, maintain, relocate and remove the air conditioners he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations.• The qualified service person who is allowed to do the electrical work involved in installation, repair, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.• The qualified service person who is allowed to do the refrigerant handling and piping work involved in installation, repair, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.• The qualified service person who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.

Definition of Protective Gear

When the air conditioner is to be transported, installed, maintained, repaired or removed, wear protective gloves and 'safety' work clothing.

In addition to such normal protective gear, wear the protective gear described below when undertaking the special work detailed in the table below.




Failure to wear the proper protective gear is dangerous because you will be more susceptible to injury, burns, electric shocks and other injuries.

Work undertaken	Protective gear worn
All types of work	Protective gloves 'Safety' working clothing
Electrical-related work	Gloves to provide protection for electricians and from heat Insulating shoes Clothing to provide protection from electric shock
Work done at heights (19.7"(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]

Indication	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





 <div> R454B Refrigerant Safety Group A2L </div>	WARNING (Risk of fire) This mark is for R454B refrigerant only. Refrigerant type is written on nameplate of outdoor unit. In case that refrigerant type is R454B, this unit uses a flammable refrigerant. If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is risk of fire.
	Read the OWNER'S MANUAL carefully before operation.
	Service personnel are required to carefully read the OWNER'S MANUAL and INSTALLATION MANUAL before operation.
	Further information is available in the OWNER'S MANUAL, INSTALLATION MANUAL, and the like.

Warning 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 aluminium 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, to avoid unnecessary pressure built up which could lead to explosion.
	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.








DANGER



 Turn off breaker	Before carrying out the installation, maintenance, repair or removal work, be sure to set the circuit breaker for both the indoor and outdoor units to the OFF position. Otherwise, electric shocks may result.
	Before opening the electrical box cover of the indoor unit or service panel of the outdoor unit, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in electric shocks through contact with the interior parts. Only a qualified installer 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.
	When checking the electric parts, removing the cover of the electric parts box of Indoor Unit and/or service panel of Outdoor Unit inevitably to determine the failure, use gloves to provide protection for electricians, insulating shoes, clothing to provide protection from electric shock and insulating tools. Be careful not to touch the live part. Electric shock may result. Only "Qualified service person" is allowed to do this work.
 Prohibition	Place a "Work in progress" sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out. There is a danger of electric shocks if the circuit breaker is set to ON by mistake.
	When checking the electric parts, removing the cover of the electric parts box of Indoor Unit and/or front panel of Outdoor Unit inevitably to determine the failure, put a sign "Do not enter" around the site before the work. Failure to do this may result in third person getting electric shock.
	Before operating the air conditioner after having completed the work, check that the electrical parts box cover of the indoor unit and service panel of the outdoor unit are closed, and set the circuit breaker to the ON position. You may receive an electric shock if the power is turned on without first conducting these checks.
 Stay on protection	If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the electrical parts box cover of one or more of the indoor units and the service panel of the outdoor unit removed in order to find out exactly where the trouble lies, wear insulated heat-resistant gloves, insulated boots and insulated work overalls, and take care to avoid touching any live parts. You may receive an electric shock if you fail to heed this warning. Only qualified service person is allowed to do this kind of work.

WARNING

 General	Before starting to repair the air conditioner, read carefully through the Service Manual, and repair the air conditioner by following its instructions.
	Only qualified service person 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 the air conditioner is to be transported, installed, maintained, repaired or removed, wear protective gloves and 'safety' work clothing.
	To connect the electrical wires, repair the electrical parts or undertake other electrical jobs, wear gloves to provide protection for electricians, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.
	Electrical wiring work shall be conducted according to law and regulation in the community and installation manual. Failure to do so may result in electrocution or short circuit.
	Use wiring that meets the specifications in the Installation Manual and the stipulations in the local regulations and laws. Use of wiring which does not meet the specifications may give rise to electric shocks, electrical leakage, smoking and/or a fire.
	Only a qualified installer or qualified service person is allowed to undertake work at heights using a stand of (19.7"(50 cm)) or more or to remove the intake grille of the indoor unit to undertake work.
	When working at heights, use a ladder which complies with the ISO 14122 standard, and follow the procedure in the ladder's instructions. Also wear a helmet for use in industry as protective gear to undertake the work.
	Before working at heights, put a sign in place so that no-one will approach the work location, before proceeding with the work. Parts and other objects may fall from above, possibly injuring a person below. While carrying out the work, wear a helmet for protection from falling objects.
	When executing address setting, test run, or troubleshooting through the checking window on the electric parts box, put on insulated gloves to provide protection from electric shock. Otherwise you may receive an electric shock.
	Do not touch the aluminum fin of the 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.
	Use forklift to carry in the air conditioner units and use winch or hoist at installation of them.
	When transporting the air conditioner, wear shoes with protective toe caps, protective gloves and other protective clothing.
	When transporting the air conditioner, do not take hold of the bands around the packing carton. You may injure yourself if the bands should break.
 Check earth wires.	Be sure that a heavy unit (22lbs(10 kg) or heavier) such as a compressor is carried by two persons.
	This air conditioner has passed the pressure test as specified in UL 60335-2-40 Annex EE.
	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.

 Prohibition of modification.	Do not modify the products. Do not also disassemble or modify the parts. It may cause a fire, electric shock or injury.
 Use specified parts.	When any of the electrical parts are to be replaced, ensure that the replacement parts satisfy the specifications given in the Service Manual (or use the parts contained on the parts list in the Service Manual). Use of any parts which do not satisfy the required specifications may give rise to electric shocks, smoking and / or a fire.
 Do not bring a child close to the equipment.	If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the electrical parts box cover of one or more of the indoor units and the service panel of the outdoor unit removed in order to find out exactly where the trouble lies, put a sign in place so that 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 watercut method, otherwise a leak or production of fire is caused at the users' side.
 No fire	When performing repairs using a gas burner, replace the refrigerant with nitrogen gas because the oil that coats the pipes may otherwise burn. When repairing the refrigerating cycle, take the following measures. 1) Be attentive to fire around the cycle. When using a gas stove, etc., be sure to put out fire before work; otherwise the oil mixed with refrigerant gas may catch fire. 2) Do not use a 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 R454B.
	Check the used refrigerant name and use tools and materials of the parts which match with it. For the products which use R454B refrigerant, the refrigerant name is indicated at a position on the outdoor unit where is easy to see.
	Do not use any refrigerant different from the one specified for complement or replacement. Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body.
	For an air conditioner which uses R454B, never use other refrigerant than R454B. For an air conditioner which uses other refrigerant (R22, etc.), never use R454B. 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 R454B into the specified refrigerant. If air or others is mixed with the refrigerant, abnormal high pressure generates in the refrigerating cycle resulted in cause of injury due to breakage.
	After installation work, check the refrigerant gas does not leak. If the refrigerant gas leaks in the room, poisonous gas generates when gas touches to fire such as fan heater, stove or cooking stove though the refrigerant gas itself is innocuous. Never recover the refrigerant into the outdoor unit. When the equipment is moved or repaired, be sure to recover the refrigerant with recovering device. The refrigerant cannot be recovered in the outdoor unit; otherwise a serious accident such as breakage or injury is caused.

 Assembly / Wiring	<p>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.</p>
 Insulator check	<p>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.</p>
 Ventilation	<p>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.</p> <p>If refrigerant gas has leaked during the installation work, ventilate the room immediately. If the leaked refrigerant gas comes in contact with fire, noxious gas may generate.</p> <p>After installation work, check the refrigerant gas does not leak. If the refrigerant gas leaks in the room, poisonous gas generates when gas touches to fire such as fan heater, stove or cooking stove though the refrigerant gas itself is innocuous.</p>
 Compulsion	<p>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.</p> <p>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.</p> <p>Nitrogen gas must be used for the airtight test.</p> <p>The charge hose must be connected in such a way that it is not slack.</p> <p>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.</p>
 Check after repair	<p>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.</p> <p>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.</p> <p>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.</p> <p>Be sure to fix the screws back which have been removed for installation or other purposes.</p>
 Do not operate the unit with the valve closed.	<p>Check the following matters before a test run after repairing piping.</p> <ul style="list-style-type: none"> • Connect the pipes surely and there is no leak of refrigerant. • The valve is opened. <p>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.</p>
 Check after reinstallation	<p>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.</p> <p>Check the following items after reinstallation.</p> <ol style="list-style-type: none"> 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. <p>If check is not executed, a fire, an electric shock or an injury is caused.</p> <p>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.</p>

 Cooling check	<p>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.</p>
	<p>Take care not to get burned by compressor pipes or other parts when checking the cooling cycle while running the unit as they get heated while running. Be sure to put on gloves providing protection for heat.</p>
 Installation	<p>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.</p>
	<p>Only a qualified installer or service person is allowed to do installation work. Inappropriate installation may result in water leakage, electric shock or fire.</p>
	<p>Before starting to install the air conditioner, read carefully through the Installation Manual, and follow its instructions to install the air conditioner.</p>
	<p>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.</p>
	<p>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.</p>
	<p>Do not install the air conditioner in a location that may be subject to a risk of exposure to a combustible gas. If a combustible gas leaks and becomes concentrated around the unit, a fire may occur.</p>
	<p>Install the indoor unit at least 8'2" (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.</p>
	<p>Install a circuit breaker that meets the specifications in the installation manual and the stipulations in the local regulations and laws.</p>
	<p>Install the circuit breaker where it can be easily accessed by the qualified service person.</p>
	<p>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.</p>
	<p>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.</p>

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.

• Refrigerant R454B

This air conditioner adopts a type refrigerant R454B which does not deplete the ozone layer.

1. Safety Caution Concerned to R454B Refrigerant

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 R454B 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 R454B, 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 R454B.

- (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) R454B 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 R454B, it is recommended to select "Copper or copper-base pipe without seam" and one with bonded oil amount 0.0001/lbs / 32'10" (40mg/10m)

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 R454B

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 R454B (Those which cannot be used for conventional refrigerant (R22))
- 2) Tools exclusive for R454B, but can be also used for conventional refrigerant (R22)
- 3) Tools commonly used for R454B and for conventional refrigerant (R22)

The table below shows the tools exclusive for R454B and their interchangeability.

- 4) Joint preparation are recommend to double-flare fitting accordance to ASHRAE15 requirements.

Tools exclusive for R454B (The following tools for R454B are required.)

Tools whose specifications are changed for R454B and their interchangeability

No.	Used tool	Usage	R454B air conditioner installation		Conventional air conditioner installation
			Existence of new equipment for R454B	Whether conventional equipment can be used	Whether conventional equipment can be used
①	Flare tool	Pipe flaring	Yes	*(Note)	Yes
②	Copper pipe gauge for adjusting projection margin	Flaring by conventional flare tool	Yes	*(Note)	*(Note)
③	Torque wrench	Tightening of flare nut	Yes	No	No
④	Gauge manifold	Evacuating, refrigerant charge, run check, etc.	Yes	No	No
⑤	Charge hose				
⑥	Vacuum pump adapter	Vacuum evacuating	Yes	No	Yes
⑦	Electronic balance for refrigerant charging	Refrigerant charge	Yes	Yes	Yes
⑧	Leakage detector	Gas leakage check	Yes	No	Yes
⑨	Charging cylinder	Refrigerant charge	(Note 2)	No	No

(Note 1) When flaring is carried out for R454B 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 R454B is being currently developed.

General tools (Conventional tools can be used.)

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

- | | |
|---------------------------------------------------------------------|----------------------------------------------|
| 1) Vacuum pump
Use vacuum pump by attaching vacuum pump adapter. | |
| 2) Torque wrench | 8) Spanner or Monkey wrench |
| 3) Pipe cutter | 9) Hole core drill |
| 4) Reamer | 10) Hexagon wrench (Opposite side 0.2"(4mm)) |
| 5) Pipe bender | 11) Tape measure |
| 6) Level vial | 12) Metal saw |
| 7) Screwdriver (+, -) | |

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

- | | |
|----------------|---------------------------------|
| 1) Clamp meter | 3) Insulation resistance tester |
| 2) Thermometer | 4) Electro-scope |

1. SPECIFICATIONS

4-way cassette type

Model name			MMU-UB0071HP-UL	MMU-UB0091HP-UL	MMU-UB0121HP-UL	MMU-UB0151HP-UL	MMU-UB0181HP-UL
Cooling Capacity (kBTU/h)			7.5	9.5	12.0	15.4	18.0
Heating Capacity (kBTU/h)			8.5	10.5	13.5	17.0	20.0
Electrical characteristics	Power supply		1Ph. 208/230V ~ 60Hz.				
	Running current (A)		0.23	0.23	0.23	0.28	0.29
	Power consumption (kW)		0.021	0.021	0.023	0.026	0.026
Appearance	Main unit		Zinc hot dipping steel plate				
	Ceiling panel	Model name	RBC-U33P-UL				
		Panel Color	White				
Outer dimension	Main unit	Height (in)	10.1 (256mm)				
		Width (in)	33.1 (840mm)				
		Depth (in)	33.1 (840mm)				
	Ceiling panel	Height (in)	1.2 (30mm)				
		Width (in)	37.5 (950mm)				
		Depth (in)	37.5 (950mm)				
Total weight	Main unit (lbs)		45 (18kg)		51 (23kg)		
	Ceiling panel (lbs)		10 (4kg)				
Heat exchanger			Finned tube				
Fan unit	Fan		Turbo fan				
	Standard air flow (H/M/L)	(cfm)	470 / 430 / 400	470 / 430 / 400	550 / 480 / 440	550 / 480 / 440	550 / 480 / 440
	Motor (W)		60				
Air filter			Standard filter attached (Long life filter)				
Controller			-	-	-	-	-
Sound pressure level (H/M/L) (dBA)			32.5 / 30.5 / 29	32.5 / 30.5 / 29	35 / 33 / 31	35 / 33 / 31	35 / 33 / 31
Sound power level (H/M/L) (dBA)			47.5 / 45.5 / 44	47.5 / 45.5 / 44	50 / 48 / 46	50 / 48 / 46	50 / 48 / 46
Connecting pipe		Gas side (in)	3/8			1/2	
		Liquid (in)	1/4			1/4	

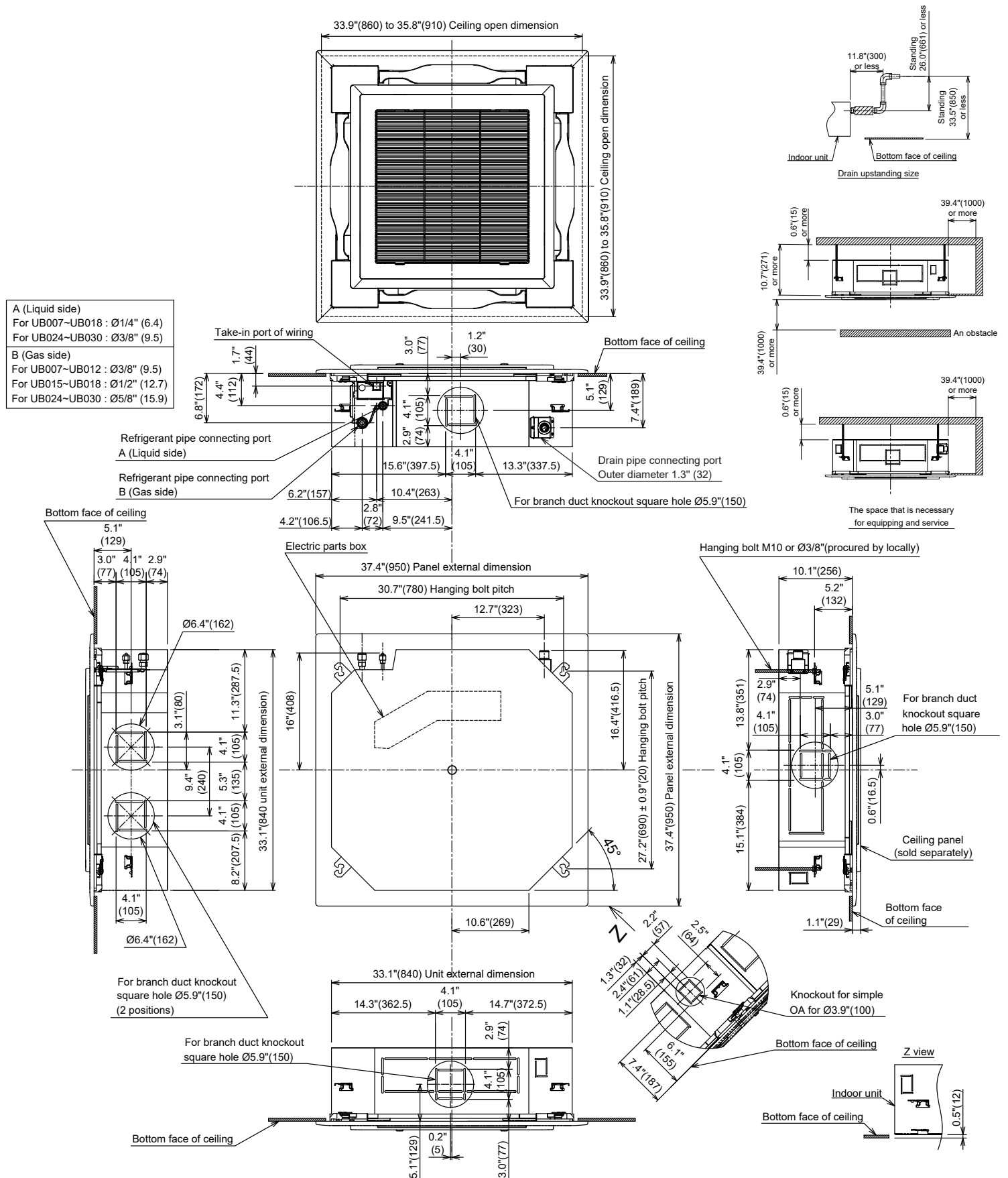
4-way cassette type

Model name			MMU-UB0241HP-UL	MMU-UB0301HP-UL	MMU-UB0361HP-UL	MMU-UB0421HP-UL	MMU-UB0481HP-UL	MMU-UB0541HP-UL
Cooling Capacity (kBTU/h)			24.0	30.0	36.0	42.0	48.0	54.0
Heating Capacity (kBTU/h)			27.0	34.0	40.0	47.5	54.0	60.0
Electrical characteristics	Power supply		1Ph. 208/230V ~ 60Hz.					
	Running current (A)		0.38	0.43	0.73	0.88	0.88	0.88
	Power consumption (kW)		0.036	0.043	0.088	0.112	0.112	0.112
Appearance	Main unit		Zinc hot dipping steel plate					
	Ceiling panel	Model name	RBC-U33P-UL					
		Panel Color	White					
Outer diamension	Main unit	Height (in)	10.1 (256mm)		12.6 (319mm)			
		Width (in)	33.1 (840mm)		33.1 (840mm)			
		Depth (in)	33.1 (840mm)		33.1 (840mm)			
	Ceiling panel	Height (in)	1.2 (30mm)					
		Width (in)	37.5 (950mm)					
		Depth (in)	37.5 (950mm)					
Total weight	Main unit (lbs)		51 (23kg)		60 (25kg)			
	Ceiling panel (lbs)		10 (4kg)					
Heat exchanger			Finned tube					
Fan unit	Fan		Turbo fan					
	Standard air flow (H/M/L)	(cfm)	670 / 540 / 490	730 / 630 / 510	1160 / 840 / 630	1250 / 840 / 670	1250 / 840 / 670	1250 / 890 / 720
	Motor (W)		60		130			
Air filter			Standard filter attached (Long life filter)					
Controller			-	-	-	-	-	-
Sound pressure level (H/M/L) (dBA)			38 / 33 / 31	41 / 36.5 / 34	46 / 40.5 / 36.5	48.5/40.5/37.5	48.5/40.5/37.5	48.5/40.5/37.5
Sound power level (H/M/L) (dBA)			53 / 48 / 46	56 / 51.5 / 49	61 / 55.5 / 51.5	63.5/55.5/52.5	63.5/55.5/52.5	63.5/55.5/52.5
Connecting pipe		Gas side (in)	5/8					
		Liquid (in)	3/8					

2. DIMENSIONAL DRAWING

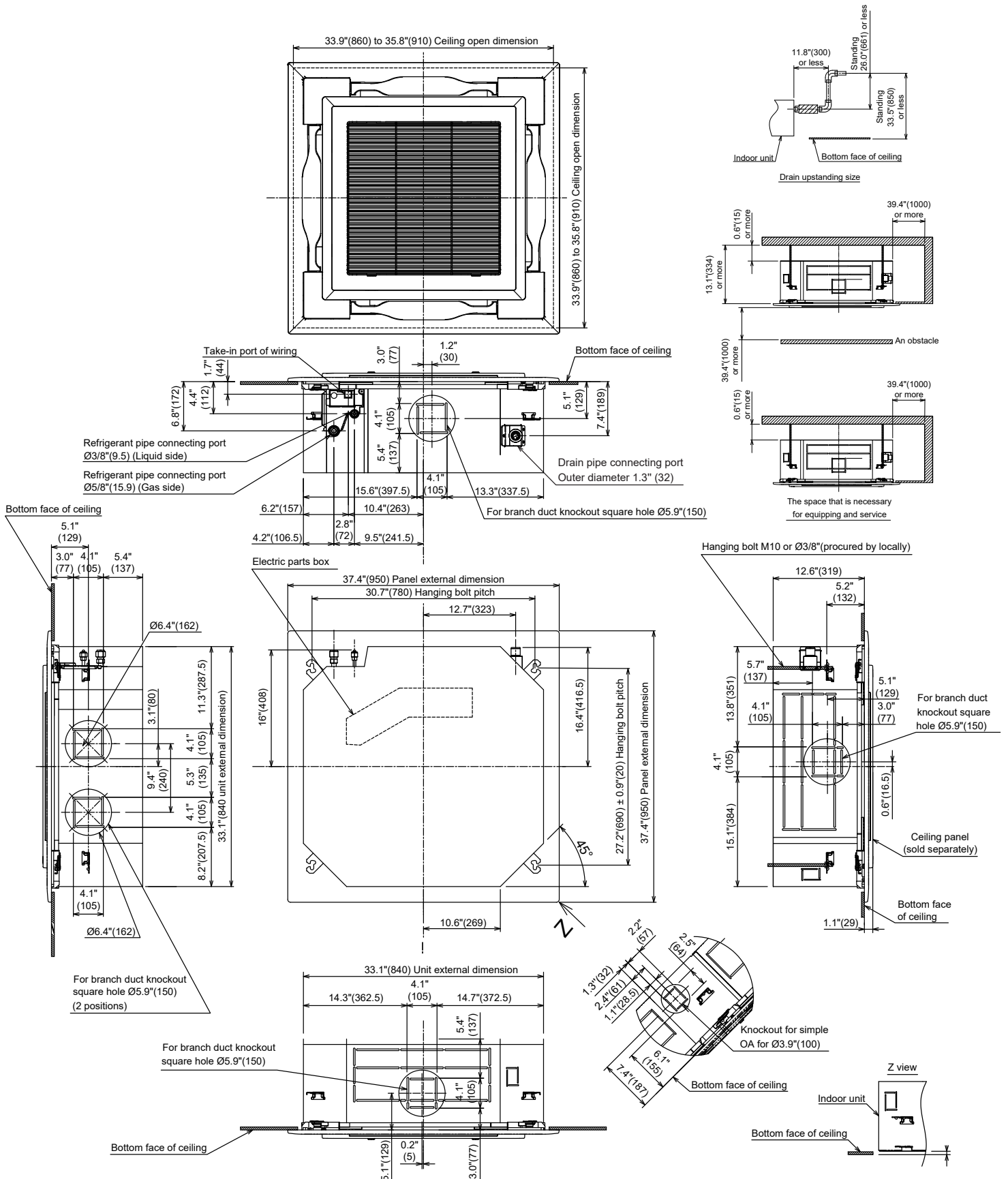
MMU-UB0071HP-UL, MMU-UB0091HP-UL, MMU-UB0121HP-UL, MMU-UB0151HP-UL,
MMU-UB0181HP-UL, MMU-UB0241HP-UL, MMU-UB0301HP-UL

Unit : in (mm)

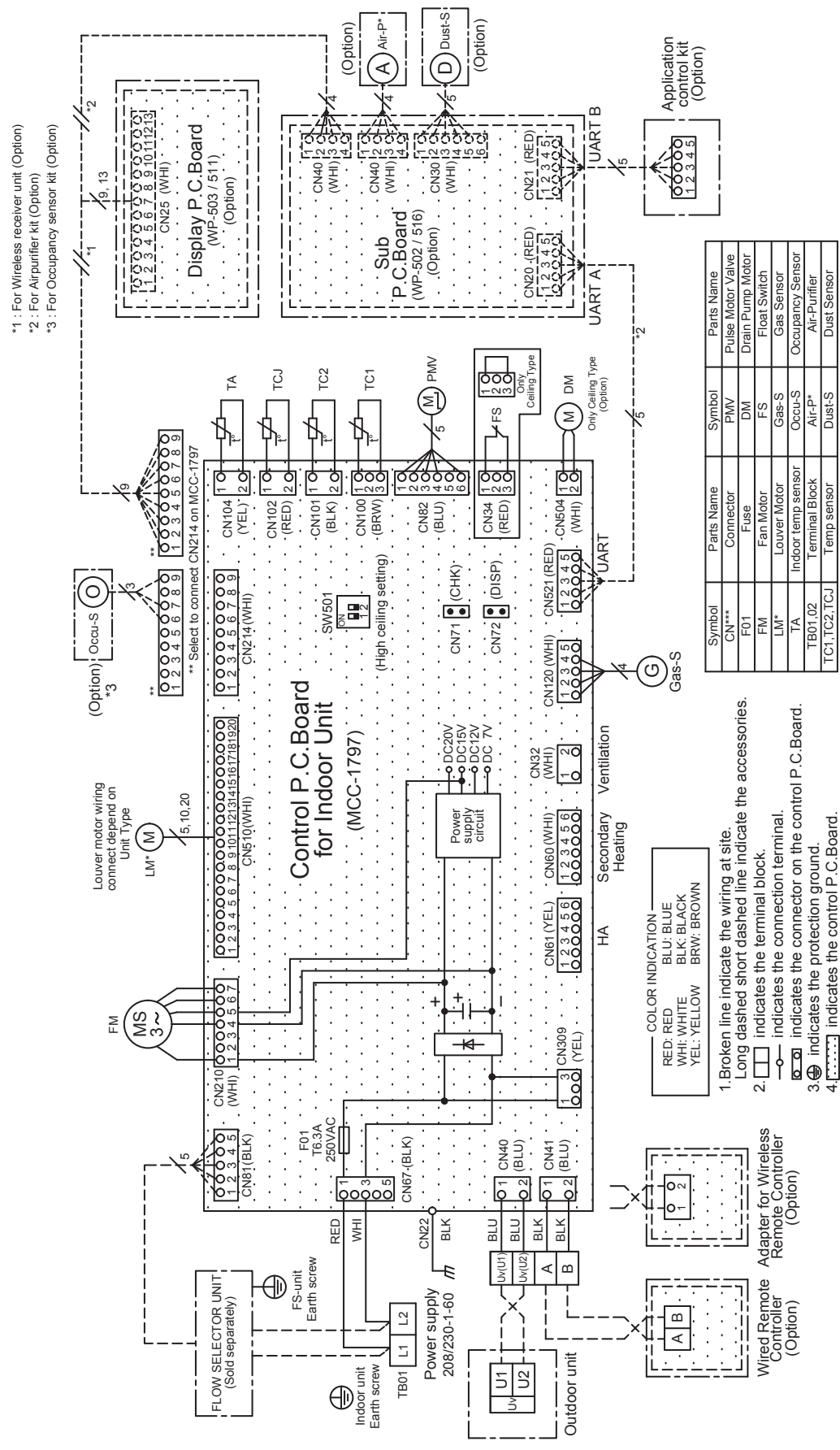


MMU-UB0361HP-UL, MMU-UB0421HP-UL, MMU-UB0481HP-UL, MMU-UB0541HP-UL

Unit : in (mm)



3. WIRING DIAGRAM

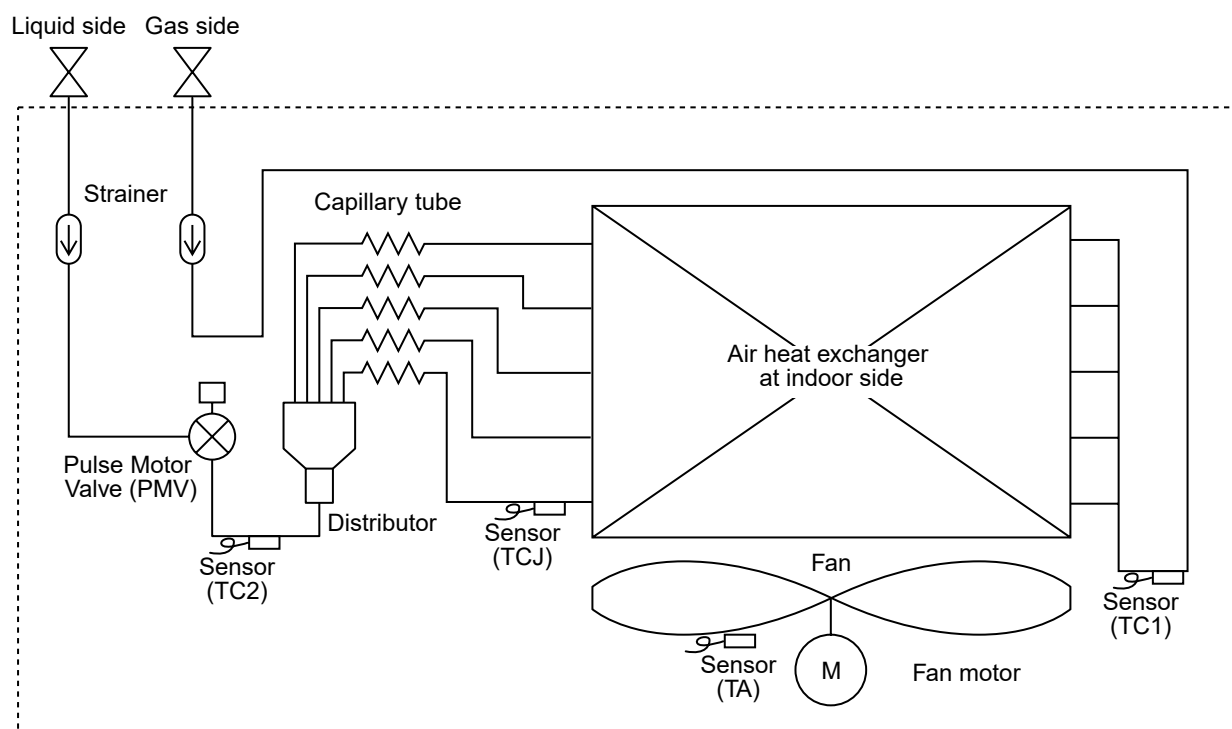


4. PARTS RATING

Model	MMU-						
	UB007	UB009	UB012	UB015	UB018	UB024	UB030
Fan motor	LDF-340-60AA1						
Motor for horizontal grille	MSBPC20F04						
Pulse motor valve	PAM-B25YGTF-2			PAM-B40YGTF-2			
TA sensor	12.9" (328 mm)						
TC1 sensor	Ø0.16"(4mm), 39.4" (1000mm)						
TC2 sensor	Ø0.24"(6mm), 39.4" (1000mm)						
TCJ sensor	Ø0.24"(6mm), 39.4" (1000mm)						
Float switch	FS-1A-31-3						
Drain pump motor	MDP-1401						

Model	MMU-			
	UB036	UB042	UB048	UB054
Fan motor	LDF-340-130AA1			
Motor for horizontal grille	MSBPC20F04			
Pulse motor valve	PAM-B60Y6TF-1			
TA sensor	12.9" (328 mm)			
TC1 sensor	Ø0.16"(4mm), 39.4" (1000mm)			
TC2 sensor	Ø0.24"(6mm), 39.4" (1000mm)			
TCJ sensor	Ø0.24"(6mm), 39.4" (1000mm)			
Float switch	FS-1A-31-3			
Drain pump motor	MDP-1401			

5. REFRIGERATING CYCLE DIAGRAM



Functional part name		Functional outline
Pulse Motor Valve	PMV	(Connector CN082 (6P): Blue) 1) Controls super heat in cooling operation 2) Controls under cool in heating operation 3) Recovers refrigerant oil in cooling operation 4) Recovers refrigerant oil in heating operation
Temp. sensor	1. TA	(Connector CN104 (2P): Yellow) 1) Detects indoor suction temperature
	2. TC1	(Connector CN100 (3P): Brown) 1) Controls PMV super heat in cooling operation
	3. TC2	(Connector CN101 (2P): Black) 1) Controls PMV under cool in heating operation
	4. TCJ	(Connector CN102 (2P): Red) 1) Controls PMV super heat in cooling operation

6. CONTROL OUTLINE

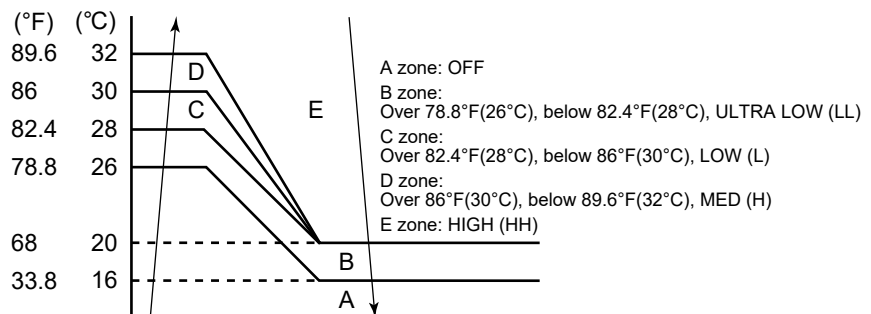
6-1. Control Specifications

No.	Item	Outline of specifications	Remarks														
1	When power supply is reset	<div>1) Distinction of outdoor unit When the power supply is reset, the outdoors are distinguished and the control is selected according to the distinguished result.</div> <div>2) Setting of indoor fan speed and existence of air direction adjustment Based on EEPROM data, select setting of the indoor fan speed and the existence of air direction adjustment.</div> <div>3) If resetting the power supply during occurrence of a trouble, the check code is once cleared. After ON/OFF button of the remote controller was pushed and the operation was resumed, if the abnormal status continues, the check code is again displayed on the remote controller.</div>															
2	Operation mode selection	<div>1) Based on the operation mode selecting command from the remote controller, the operation mode is selected.</div> <table><thead><tr><th>Remote controller command</th><th>Control outline</th></tr></thead><tbody><tr><td>STOP</td><td>Air conditioner stops.</td></tr><tr><td>FAN</td><td>Fan operation</td></tr><tr><td>COOL</td><td>Cooling operation</td></tr><tr><td>DRY</td><td>Dry operation</td></tr><tr><td>HEAT</td><td>Heating operation</td></tr><tr><td>AUTO (SHRM only)</td><td><div>ẽ Ta and Ts automatically select COOL/ HEAT operation mode for operation.</div><div>ẽ The operation is performed as shown in the following figure according to Ta value at the first time only. (In the range of Ts - 1 - 1.8°F (1°C) < Ta < Ts + 1, 1.8°F (1°C) + Cooling thermo. OFF (Fan) / Setup air volume operation continues.)</div><div><div><div>Ta °F</div><div>+1.8</div><div>+1.0</div><div>Ta (°C)</div><div>Ts</div><div>-1.0</div><div>-1.8</div></div><div><div>Cooling thermo. ON</div><div>Cooling thermo. OFF (at the first time only)</div><div>Heating thermo. ON</div></div></div><div><div>* In the SMMS-i and Mini-SMMS, the automatic mode cannot be selected. While a wireless remote controller is used, the mode is notified by "Pi Pi" (two times) receiving sound and the alternate flashing of [TIMER ☹] and [READY ☺]. To clear the alternate flashing, change the mode on the wireless remote controller.</div></div></td></tr></tbody></table> <div>Ta: Room temp. Ts: Setup temp.</div>	Remote controller command	Control outline	STOP	Air conditioner stops.	FAN	Fan operation	COOL	Cooling operation	DRY	Dry operation	HEAT	Heating operation	AUTO (SHRM only)	<div>ẽ Ta and Ts automatically select COOL/ HEAT operation mode for operation.</div> <div>ẽ The operation is performed as shown in the following figure according to Ta value at the first time only. (In the range of Ts - 1 - 1.8°F (1°C) < Ta < Ts + 1, 1.8°F (1°C) + Cooling thermo. OFF (Fan) / Setup air volume operation continues.)</div> <div><div><div>Ta °F</div><div>+1.8</div><div>+1.0</div><div>Ta (°C)</div><div>Ts</div><div>-1.0</div><div>-1.8</div></div><div><div>Cooling thermo. ON</div><div>Cooling thermo. OFF (at the first time only)</div><div>Heating thermo. ON</div></div></div> <div><div>* In the SMMS-i and Mini-SMMS, the automatic mode cannot be selected. While a wireless remote controller is used, the mode is notified by "Pi Pi" (two times) receiving sound and the alternate flashing of [TIMER ☹] and [READY ☺]. To clear the alternate flashing, change the mode on the wireless remote controller.</div></div>	
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3	Room temp. control	<div>1) Adjustment range: Remote controller setup temperature (°F)[°C])</div> <table><thead><tr><th></th><th>COOL/DRY</th><th>HEAT</th></tr></thead><tbody><tr><td>Wired type</td><td>64°F [18°C] to 84°F [29°C]</td><td>64°F [18°C] to 84°F [29°C]</td></tr><tr><td>Wireless type</td><td>63°F [17°C] to 86°F [30°C]</td><td>63°F [17°C] to 86°F [30°C]</td></tr></tbody></table>		COOL/DRY	HEAT	Wired type	64°F [18°C] to 84°F [29°C]	64°F [18°C] to 84°F [29°C]	Wireless type	63°F [17°C] to 86°F [30°C]	63°F [17°C] to 86°F [30°C]	<div>* For SHRM only</div>					
	COOL/DRY	HEAT															
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No.	Item	Outline of specifications	Remarks												
3	Room temp. control (Continued)	<div>2) Using the CODE No. 06, the setup temperature in heating operation can be corrected.</div> <table><tr><th>Setup data</th><td>0</td><td>2</td><td>4</td><td>6</td></tr><tr><th>Setup temp. correction</th><td>+0°C</td><td>+2°C (+3.6°F)</td><td>+4°C (+7.2°F)</td><td>+6°C (+10.8°F)</td></tr></table> <div>Setting at shipment</div> <table><tr><th>Setup data</th><td>2</td></tr></table>	Setup data	0	2	4	6	Setup temp. correction	+0°C	+2°C (+3.6°F)	+4°C (+7.2°F)	+6°C (+10.8°F)	Setup data	2	<div>Shift of suction temperature in heating operation</div> <div>Except while sensor of the remote controller is controlled</div>
Setup data	0	2	4	6											
Setup temp. correction	+0°C	+2°C (+3.6°F)	+4°C (+7.2°F)	+6°C (+10.8°F)											
Setup data	2														
4	Automatic capacity control	<div>1) Based on the difference between Ta and Ts, the operation capacity is determined by the outdoor unit.</div> <div><div><div>Ta(°F) +3.6 +1.8 Ts -1.8</div><div>Ta(°C) +2 +1 Ts -1</div><div>COOL</div></div><div><div>Ta(°F) +1.8 TS -1.8 -3.6</div><div>Ta(°C) +1 Ts -1 -2</div><div>HEAT</div></div></div> <div>Ts: Setup temp. Ta: Room temp.</div>													
5	Automatic cooling/heating control * For SHRM only	<div>1) The judgment of selecting COOL/HEAT is carried out as shown below. When +1.5 exceeds against Tsh 10 minutes OFF, heating operation (Thermo. OFF) exchanges to cooling operation. Description in the parentheses shows an example of cooling ON/OFF.</div> <div><div><div>Ta(°F) +2.7 or -2.7</div><div>Ta(°C) +1.5 Tsc Tsh -1.5</div><div>Cooling</div></div><div>When -1.5 lowers against Tsc 10 minutes and after thermo. OFF, cooling operation (Thermo. OFF) exchanges to heating operation.</div><div>2) For the automatic capacity control after judgment of cooling/heating, see Item 4.</div><div>3) For temperature correction of room temp. control in automatic heating, see Item 3.</div></div>	<div>* For SHRM only</div> <div>Tsc: Setup temp. in cooling operation</div> <div>Tsh: Setup temp. in heating operation + temp. correction of room temp. control</div>												

No.	Item	Outline of specifications	Remarks																																																																
6	Air speed selection	<p>1) Operation with (HH), (H), (L) or [AUTO] mode is carried out by the command from the remote controller.</p> <p>2) When the air speed mode [AUTO] is selected, the air speed varies by the difference between Ta and Ts.</p> <p><COOL></p> <p>Ta (°F) Ta (°C)</p> <table border="1"> <thead> <tr> <th>Ta (°F)</th> <th>Ta (°C)</th> <th>Mode</th> <th>Air Speed Level</th> </tr> </thead> <tbody> <tr> <td>+5.4</td> <td>+3.0</td> <td>HH</td> <td>A</td> </tr> <tr> <td>+4.5</td> <td>+2.5</td> <td><HH></td> <td>B</td> </tr> <tr> <td>+3.6</td> <td>+2.0</td> <td>H+ <HH></td> <td>C</td> </tr> <tr> <td>+2.7</td> <td>+1.5</td> <td>H <HH></td> <td>D</td> </tr> <tr> <td>+1.8</td> <td>+1.0</td> <td>L+ <H+></td> <td>E</td> </tr> <tr> <td>+0.9</td> <td>+0.5</td> <td>L <H></td> <td>F</td> </tr> <tr> <td>Tsc</td> <td>Tsc</td> <td>L <H></td> <td>F</td> </tr> <tr> <td>-0.9</td> <td>-0.5</td> <td>L <L+></td> <td>G</td> </tr> </tbody> </table> <p>< > : Indicate automatic cooling.</p> <ul style="list-style-type: none"> Controlling operation in case when thermo of remote controller works is same as a case when thermo of the body works. If the air speed has been changed once, it is not changed for 3 minutes. However when the air volume is exchanged, the air speed changes. When cooling operation has started, select a downward slope for the air speed, that is, the high position. If the temperature is just on the difference boundary, the air speed does not change. <p><HEAT></p> <p>Ta (°F) Ta (°C)</p> <table border="1"> <thead> <tr> <th>Ta (°F)</th> <th>Ta (°C)</th> <th>Mode</th> <th>Air Speed Level</th> </tr> </thead> <tbody> <tr> <td>(-0.9) -1.8</td> <td>(-0.5) -1.0</td> <td>L <L+></td> <td>E</td> </tr> <tr> <td>(0) Tsh</td> <td>(0) Tsh</td> <td>L+ <H></td> <td>E</td> </tr> <tr> <td>(+0.9) +1.8</td> <td>(+0.5) +1.0</td> <td>H <H+></td> <td>D</td> </tr> <tr> <td>(+1.8) +3.6</td> <td>(+1.0) +2.0</td> <td>H+ <HH></td> <td>C</td> </tr> <tr> <td>(+2.7) +5.4</td> <td>(+1.5) +3.0</td> <td>HH</td> <td>B</td> </tr> <tr> <td>(+3.6) +7.2</td> <td>(+2.0) +4.0</td> <td><HH></td> <td>A</td> </tr> </tbody> </table> <p>< > : Indicate automatic heating.</p> <p>Body thermostat works.</p> <p>Remote controller thermostat works.</p> <p>Value in the parentheses indicates one when thermostat of the remote controller works.</p> <p>Value without parentheses indicates one when thermostat of the body works.</p> <ul style="list-style-type: none"> If the air speed has been changed once, it is not changed for 1 minute. However when the air speed is exchanged, the air speed changes. When heating operation has started, select an upward slope for the air speed, that is, the high position. If the temperature is just on the difference boundary, the air speed does not change. 	Ta (°F)	Ta (°C)	Mode	Air Speed Level	+5.4	+3.0	HH	A	+4.5	+2.5	<HH>	B	+3.6	+2.0	H+ <HH>	C	+2.7	+1.5	H <HH>	D	+1.8	+1.0	L+ <H+>	E	+0.9	+0.5	L <H>	F	Tsc	Tsc	L <H>	F	-0.9	-0.5	L <L+>	G	Ta (°F)	Ta (°C)	Mode	Air Speed Level	(-0.9) -1.8	(-0.5) -1.0	L <L+>	E	(0) Tsh	(0) Tsh	L+ <H>	E	(+0.9) +1.8	(+0.5) +1.0	H <H+>	D	(+1.8) +3.6	(+1.0) +2.0	H+ <HH>	C	(+2.7) +5.4	(+1.5) +3.0	HH	B	(+3.6) +7.2	(+2.0) +4.0	<HH>	A	<p>HH > H+ > H > L+ > L > UL</p> <p>Code No. 32</p> <p>0000: Body thermo. (Main unit)</p> <p>0001: Remote controller thermo.</p>
Ta (°F)	Ta (°C)	Mode	Air Speed Level																																																																
+5.4	+3.0	HH	A																																																																
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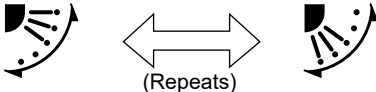
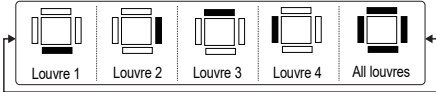
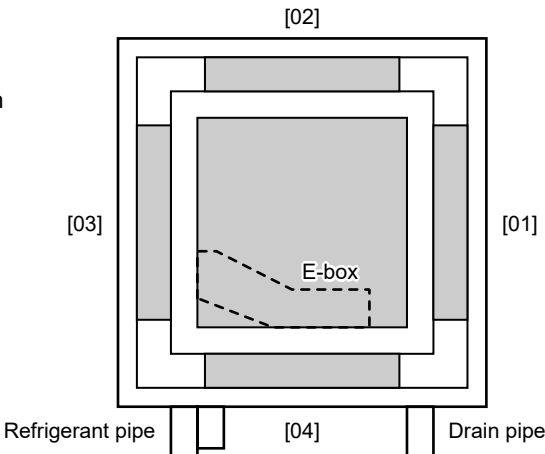
No.	Item	Outline of specifications	Remarks																																																																																																																						
6	Air speed selection (Continued):	<table><tr><th rowspan="2">CODE No. [5d]</th><th colspan="2">Standard</th><th colspan="2">Type 1</th><th colspan="2">Type 3</th></tr><tr><th colspan="2">0000</th><th colspan="2">0001</th><th colspan="2">0003</th></tr><tr><th>SW501 (1)/(2)</th><th colspan="2">OFF/OFF</th><th colspan="2">ON/OFF</th><th colspan="2">OFF/ON</th></tr><tr><th>Tap</th><th>COOL</th><th>HEAT</th><th>COOL</th><th>HEAT</th><th>COOL</th><th>HEAT</th></tr><tr><td>F1</td><td></td><td></td><td></td><td></td><td>HH</td><td>HH</td></tr><tr><td>F2</td><td></td><td></td><td>HH</td><td>HH</td><td></td><td></td></tr><tr><td>F3</td><td></td><td></td><td></td><td>H+</td><td>H+, H</td><td>H+, H</td></tr><tr><td>F4</td><td></td><td></td><td>H+</td><td></td><td></td><td></td></tr><tr><td>F5</td><td></td><td>HH</td><td></td><td>H</td><td></td><td></td></tr><tr><td>F6</td><td>HH</td><td></td><td>H</td><td></td><td>L+</td><td>L+</td></tr><tr><td>F7</td><td>H+</td><td>H+</td><td></td><td></td><td>L</td><td>L</td></tr><tr><td>F8</td><td></td><td>H</td><td></td><td>L+</td><td></td><td></td></tr><tr><td>F9</td><td>H</td><td></td><td>L+</td><td>L</td><td></td><td></td></tr><tr><td>FA</td><td></td><td>L+</td><td>L</td><td></td><td></td><td></td></tr><tr><td>FB</td><td>L+</td><td>L</td><td></td><td></td><td></td><td></td></tr><tr><td>FC</td><td>L</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>FD</td><td></td><td>LL</td><td></td><td>LL</td><td></td><td>LL</td></tr></table> <p>3) In heating operation, the mode changes to [LL] if thermostat is turned off.</p>	CODE No. [5d]	Standard		Type 1		Type 3		0000		0001		0003		SW501 (1)/(2)	OFF/OFF		ON/OFF		OFF/ON		Tap	COOL	HEAT	COOL	HEAT	COOL	HEAT	F1					HH	HH	F2			HH	HH			F3				H+	H+, H	H+, H	F4			H+				F5		HH		H			F6	HH		H		L+	L+	F7	H+	H+			L	L	F8		H		L+			F9	H		L+	L			FA		L+	L				FB	L+	L					FC	L						FD		LL		LL		LL	Selection of high ceiling type CODE No. : [5d] or selection of high ceiling on P.C. board SW501
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7	Prevention of cold air discharge	<p>1. In heating operation, the higher temperature of TC2 sensor and TCJ sensor is compared with temperature of TC1 sensor and then the lower temperature is used to set the upper limit of the fan tap.</p> <ul style="list-style-type: none">When B zone has continued for 6 minutes, the operation shifts to C zone.In defrost time, the control point is set to +6°C. <div><div><div>(°F) (°C)</div><div><div>89.6 32</div><div>86 30</div><div>82.4 28</div><div>78.8 26</div><div>68 20</div><div>33.8 16</div></div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div></div></div><div><div>A zone: OFF</div><div>B zone: Over 78.8°F(26°C), below 82.4°F(28°C), ULTRA LOW (LL)</div><div>C zone: Over 82.4°F(28°C), below 86°F(30°C), LOW (L)</div><div>D zone: Over 86°F(30°C), below 89.6°F(32°C), MED (H)</div><div>E zone: HIGH (HH)</div></div></div>	<p>TCJ: Temperature of indoor heat exchanger sensor</p> <ul style="list-style-type: none">In D and E zones, priority is given to remote control-ler air speed setup.In A zone “❄” is displayed.																																																																																																																						



No.	Item	Outline of specifications	Remarks
8	Freeze prevention control (Low temp. release)	<div><div><div>1. In all cooling operation, the air conditioner operates as described below based upon temp. detected by TC1, TC2 and TCJ sensors.</div><div><div><div>• When “J” zone is detected for 5 minutes, the thermostat is forcedly off.</div><div>• In “K” zone, the timer count is interrupted, and held.</div><div>• When “I” zone is detected, the timer is cleared and the operation returns to the normal operation.</div><div>• When becoming thermo. OFF continuing J zone, operation of the indoor fan in LOW mode continues until it reaches the “I” zone.</div></div><div>It is reset when the following conditions are satisfied.</div></div><div><div>Reset conditions</div><div><div>1) TC1 ≥ 53.6°F(12°C) and TC2 ≥ 53.6°F(12°C) and TCJ ≥ 53.6°F(12°C)</div><div>2) 20 minutes passed after stop.</div></div><div><div><div><div><div>(°F)</div><div>(°C)</div></div><div><div>P1</div><div>Q1</div></div><div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><d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No.	Item	Outline of specifications	Remarks		
10	Recovery control for heating refrigerant (Oil)	<p>The indoor unit which is under STOP/Thermo-OFF status or which operates in [FAN] mode performs the following controls when it received the heating refrigerant (Oil) recovery signal from the outdoor unit.</p> <p>1) Opens PMV of the indoor unit with a constant opening degree.</p> <p>2) Detects temperature of TC2 and then closes PMV.</p> <p>3) Counts No. of recovery controls and operates the indoor fan and the drain pump for approx. 1 minute after finish of recovery control until the control count reaches the specified count.</p>	<ul style="list-style-type: none">• The indoor unit which is under thermo-OFF (COOL) status or which operates in [FAN] mode stops the indoor fan and displays [READY ].• Recovery operation is usually performed every 1 hour.		
11	Compensation control for short intermittent operation	<p>1) For 5 minutes after start of operation, the operation is forcedly continued even if the unit enters in Thermo-OFF condition.</p> <p>2) However the thermostat is OFF giving prior to COOL/HEAT selection, READY  for operation and protective control.</p>			
12	Drain pump control	<p>1) In cooling operation (including DRY operation), this control anytime operates the drain pump.</p> <p>2) During operation of the drain pump, if the float switch operates, the drain pump continuously operates and a check code is issued.</p> <p>3) During stop status of the drain pump, if the float switch operates, the thermostat is forcedly off and this control operates the drain pump. After continuous operation of the float switch for approx. 5 minutes, this control stops the operation and a check code is issued.</p>	Check Code [P10]		
13	Elimination of retained heat	<p>1) When the unit stopped from [HEAT] operation, the indoor fan operates with [L] for approx. 30 seconds.</p>			
14	HA control	<p>1) ON/OFF operation is available by input of HA signal from the remote site when connected to remote controller or the remote ON/OFF interface.</p> <p>2) HA control outputs ON/OFF status to HA terminal.</p> <p>3) The I/O specifications of HA conform to JEMA standard.</p>	<p>When using HA terminal (CN61) for the remote ON/OFF, a connector sold separately is necessary.</p> <p>In case of group operation, use the connector to connect HA terminal to either header or follower indoor unit.</p>		
15	Display of filter sign [] (Not provided to the wireless type)	<p>1) The filter sign is displayed with LC by sending the filter-reset signal to the remote controller when the specified time (150H/2500H) elapsed as a result of integration of the operation time of the indoor fan.</p> <p>2) The integrated timer is cleared when the filter-reset signal is received from the remote controller. In this time, if the specified time elapsed, the counted time is reset and the LC display is deleted.</p> <table border="1"><tr><td>Filter time</td><td>2500H</td></tr></table>	Filter time	2500H	[ FILTER] goes on.
Filter time	2500H				

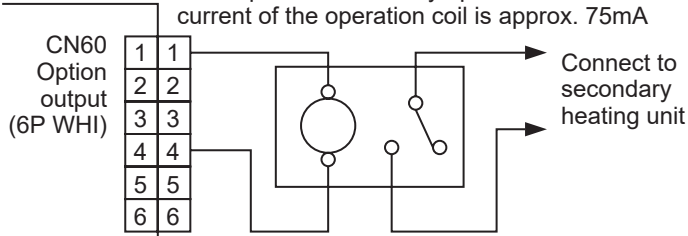
No.	Item	Outline of specifications	Remarks																																																		
16	Display of [READY] [HEAT READY]	<p>< READY> Displayed on the remote controller</p> <p>1) When the following check codes are indicated</p> <ul style="list-style-type: none">• Open phase of power supply wiring [P05] was detected.• There is an indoor unit that detected the indoor overflow [P10].• There is an indoor unit that detected the interlock alarm [L30]. <p>2) During Force Thermo-OFF</p> <ul style="list-style-type: none">• [COOL/DRY] operation is unavailable because the other indoor unit operates with [HEAT] mode.• [HEAT] operation is unavailable because COOL priority (SW11-bit1 of the Outdoor I/F P. C. board is ON) is set and the other indoor unit operates with [COOL/DRY] mode. <p>3) The above indoor units that cannot operate stay in Thermo-OFF status.</p> <p>4) The indoor fan stops because the system performs [Recovery operation for heating refrigerant (Oil)].</p> <p><HEAT READY> Displayed on the remote controller</p> <p>The indoor fan stops in order to prevent discharge of cool air when heating operation started or during heating operation. (including the defrost operation during thermo-OFF)</p>	<ul style="list-style-type: none">• < READY> displayNo display for wireless type remote controller• <HEAT READY> display																																																		
17	Selection of central control mode	<p>1) Selection of the contents that can be operated by the remote controller at the indoor unit side is possible according to setting at the central controller side.</p> <p>2) Setting contents</p> <p>• In case of TCC-LINK central control</p> <table><tr><th rowspan="2">Operation from TCC-LINK central control</th><th colspan="6">Operation on RBC-AMT32UL</th><th rowspan="2">On RBC-AMT32UL</th></tr><tr><th>ON/OFF setting</th><th>Operation selection</th><th>Timer setting</th><th>Temp. setting</th><th>Air speed setting</th><th>Air direction setting</th></tr><tr><td>Individual</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td rowspan="5">[Central control] display</td></tr><tr><td>[Central 1]</td><td>✕</td><td>○</td><td>✕</td><td>○</td><td>○</td><td>○</td></tr><tr><td>[Central 2]</td><td>✕</td><td>✕</td><td>✕</td><td>✕</td><td>○</td><td>○</td></tr><tr><td>[Central 3]</td><td>○</td><td>✕</td><td>○</td><td>✕</td><td>○</td><td>○</td></tr><tr><td>[Central 4]</td><td>○</td><td>✕</td><td>○</td><td>○</td><td>○</td><td>○</td></tr></table> <p>(○: Operation possible ✕: Operation impossible)</p>	Operation from TCC-LINK central control	Operation on RBC-AMT32UL						On RBC-AMT32UL	ON/OFF setting	Operation selection	Timer setting	Temp. setting	Air speed setting	Air direction setting	Individual	○	○	○	○	○	○	[Central control] display	[Central 1]	✕	○	✕	○	○	○	[Central 2]	✕	✕	✕	✕	○	○	[Central 3]	○	✕	○	✕	○	○	[Central 4]	○	✕	○	○	○	○	
Operation from TCC-LINK central control	Operation on RBC-AMT32UL						On RBC-AMT32UL																																														
	ON/OFF setting	Operation selection	Timer setting	Temp. setting	Air speed setting	Air direction setting																																															
Individual	○	○	○	○	○	○	[Central control] display																																														
[Central 1]	✕	○	✕	○	○	○																																															
[Central 2]	✕	✕	✕	✕	○	○																																															
[Central 3]	○	✕	○	✕	○	○																																															
[Central 4]	○	✕	○	○	○	○																																															

No.	Item	Outline of specifications	Remarks
18	Louver control:	<p>1) Louver position setup</p> <ul style="list-style-type: none"> When the louver position is changed, the position moves necessarily to downward discharge position once to return to the set position. The louver position can be set up in the following operation range. <p>In cooling/dry operation In heating/fan operation</p>  <ul style="list-style-type: none"> In group twin/triple operation, the louver positions can be set up collectively or individually. In case that HEAT refrigerant recovery control was performed in STOP status, the louver position becomes horizontal when the operation is resumed. <p>2) Swing setup</p> <ul style="list-style-type: none"> [SWING] is displayed and the following display is repeated. <p>In all operations</p>  <ul style="list-style-type: none"> In group operation, the louver positions can be set up collectively or individually. <p>3) When the unit stopped or the warning was output, the louver is automatically set to full closed position.</p> <p>4) When PRE-HEAT (Heating ready) is displayed (Heating operation started or defrost operation is performed), heating thermo is off or self-cleaning is performed, the louver is automatically set to horizontal discharge position.</p> <p>* The louver which air direction is individually set or the locked louver closes fully when the unit stops and the louver is automatically set to horizontal discharge position when PRE-HEAT (Heating ready) is displayed, heating thermo is off.</p> <p><<Individual air direction setup>></p> <ul style="list-style-type: none"> Press [<] and [>] to select louvers.  <p>In case of no input (key operation) for approx. 5 seconds during setting of individual air direction (during displaying of louver No. on the remote controller screen), the remote controller screen returns to the normal display screen.</p> <ul style="list-style-type: none"> For the air direction illustration during normal operation, the air direction of the least No. among the louvers which are block-set is displayed. While individual air direction is being set, the remote controller operation (Illustration of air direction) and operation of the real machine are linked. 	<p>The louver position at horizontal discharge position at under AP030 differs from that at over AP036.</p> <p>The swinging louver moves usually up to the ceiling side from the louver position of the set time.</p> <p>For the setup operation, refer to "How to set up louver individually" of Item "Setup at local site/ Others".</p> 

No.	Item	Outline of specifications	Remarks												
18	Louver control (Continued):	<p><<Selection of Swing mode>></p> <ul style="list-style-type: none">For the Swing mode, the following three types of modes are selectable and settable by keeping Swing/Direction on the remote controller. <p>1) Standard (4 pieces: same phase) swing → Data: [0001 (At shipment)]</p> <p>When Swing operation is selected, four louvers align at the horizontal discharge position and then start the Swing operation at the same time.</p> <p>2) Dual swing → Data: [0002]</p> <p>When operation is selected, the louvers of louver No. [1] and [03] move to the horizontal discharge position, the louvers of louver No. [02] and [04] move to the downward discharge position and then start the Swing operation at the same time.</p> <p>3) Cycle swing → Data: [0003]</p> <p>When operation is selected, the louver No. [01] moves to the horizontal discharge position, [03] to the downward discharge position, [02] and [04] to the middle position and then start the Swing operation at the same time.</p> <ul style="list-style-type: none">Three types of the swing modes can be also selected and set by the setup data of Item code (DN) [F0]. <p><<Louver lock (Louver fix)>></p> <ul style="list-style-type: none">For the air direction setup for each discharge port, the louver position can be locked during the normal operation.An arbitrary air direction of an arbitrary louver can be set on the remote controller.The louver lock can be set by registering the setup data to Item code (DN) [F1] to [F4] according to the following table. <table><tr><th>CODE No.</th><th>Objective louver No.</th><th>Setup data</th></tr><tr><td>F1</td><td>01</td><td rowspan="4">0000: Release (At shipment) 0001: Horizontal discharge position ~ 0005: Downward discharge position</td></tr><tr><td>F2</td><td>02</td></tr><tr><td>F3</td><td>03</td></tr><tr><td>F4</td><td>04</td></tr></table>	CODE No.	Objective louver No.	Setup data	F1	01	0000: Release (At shipment) 0001: Horizontal discharge position ~ 0005: Downward discharge position	F2	02	F3	03	F4	04	<p>Carry out setting operation during stop of the unit; otherwise the unit stops operation.</p> <p>For the setting operation, refer to [How to setup type of the swings] in Item “9 APPLIED CONTROL”</p> <p>Carry out setting operation during stop of the unit; otherwise the unit stops operation.</p>
CODE No.	Objective louver No.	Setup data													
F1	01	0000: Release (At shipment) 0001: Horizontal discharge position ~ 0005: Downward discharge position													
F2	02														
F3	03														
F4	04														

No.	Item	Outline of specifications	Remarks
18	Louver control (Continued):	<div><div><div><div></div><div>Control which ignores lock</div></div><div><div>①</div><div>Operation stop</div></div><div><div>②</div><div>When heating operation started</div></div><div><div>③</div><div>Heating thermo. OFF</div></div><div><div>④</div><div>During defrost operation</div></div><div><div>⑤</div><div>Initialize operation</div></div></div><div><div>Objective louver No.</div><div>Horizontal discharge position</div><div>Horizontal discharge position</div><div>Horizontal discharge position</div><div>Horizontal discharge position</div><div>Full-close position</div></div></div> <div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> 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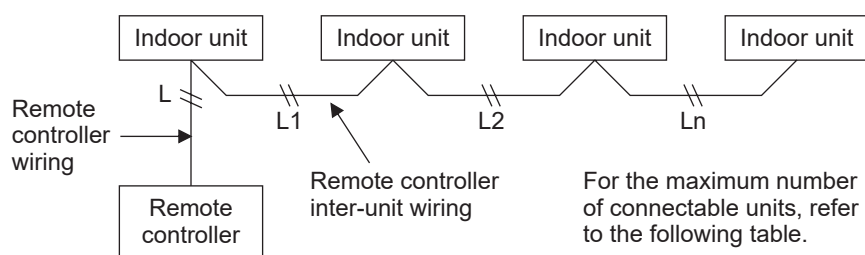
No.	Item	Outline of specifications	Remarks
21	Secondary heating	<p>Secondary heating can be used while heating operations are performed.</p> <p><Control Outline (Normal Mode)></p> <ol style="list-style-type: none"> 1) If the difference between the indoor temperature and the outdoor temperature is large while the air conditioner is operating, turn ON the secondary heating. 2) This function is valid when the CODE No. (DN) [DC] is set to "0001" (32.9°F(0.5°C)) to "0010" (41°F(5.0°C)) using the wired remote controller, and the output to the external heating source will turn ON if the room temperature satisfies the condition. 3) The output will always stay ON while defrosting operations are being performed. <p>4) The output can be turned on by the outdoor temperature when CODE No. (DN) [C7] is set to "0001" (33.8°F(1°C)) to "0010" (50°F(10°C)) using the wired remote controller.</p> <p><Control Outline (Flip Mode)></p> <ol style="list-style-type: none"> 1) If the difference between the room temperature and the set temperature is large while using secondary heating, run the air conditioner. 2) This function is valid when the CODE No. (DN) [C5] is set to "0001" (Flip mode) or the CODE No. (DN) [C7] is set to "0001" (33.8°F(1°C)) to "0010" (50°F(10°C)) using the wired remote controller, and when the output is switched ON when the room temperature satisfies the conditions. <p>* The outdoor temperature determination is invalid whilst this control is performed.</p>	<p>TA_H : Temp.set air high (= Ts - a) TA_L : Temp.set air low (= TA_H - b)</p> <p>TO_H : Temp.set out high TO_L : Temp.set out low (= TO_H - c)</p>

No.	Item	Outline of specifications		Remarks		
21	Secondary heating (Continued)	DN [C5]	Data	Secondary heating mode		
			0000	Normal mode (Factory default)		
			0001	Flip mode		
		DN [C6]	Data	TO _H : Set temp. out (high) [°F(°C)]		
			-0015 to 0015	"-0015": 5°F(-15°C) to "0015": 59°F(15°C) "0000": 32°F(0°C) (Factory default)		
		DN [C7]	Data	c : TO _H - TO _L [°F(°C)]		
			0000	Unavailable (Factory default)		
			0001 to 0010	0001: 33.8°F(1°C) to "0010": 50°F(10°C)		
DN [DB]	Data	b : TA _H - TA _L [°F(°C)]				
	0001 to 0010	"0001": 32.9°F(0.5°C) to "0010": 41°F(5.0°C) "0006": 37.4°F(3°C) (Factory default)				
DN [DC]	Data	a : Ts - TA _H (Normal mode)[°F(°C)] TA _L - Ts (Flip mode)[°F(°C)]				
	0000	Unavailable (Factory default)				
	0001 to 0010	0001: 33.8°F(1°C) to "0010": 50°F(10°C)				
<p><Wiring></p> <p>1) Use ① - ④ pin (Cooling output, DC 12 V) of CN60 on indoor P.C. board for output.</p> <div><p>Relay (DC12V, procured locally) Corresponds to the relay up to one that the rated current of the operation coil is approx. 75mA</p><p>Indoor control P.C. board</p><p>Note) Determine the cable length between the indoor control P.C.board and the relay within 2m.</p></div>						
<p>* The output state can be checked from "Monitor function" on the wired remote controller. The manual for the remote controller for operation methods of "Monitor function".</p> <table><tr><td>Monitor CODE No. E5</td><td>Secondary heating output - - - -: Unavailabl 0000: OFF 0001: ON</td></tr></table>					Monitor CODE No. E5	Secondary heating output - - - -: Unavailabl 0000: OFF 0001: ON
Monitor CODE No. E5	Secondary heating output - - - -: Unavailabl 0000: OFF 0001: ON					

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

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

- (1) For wiring specifications, carry out the installation, maintenance, or repair according to the attached Installation Manual.
- (2) For a communication type combination and the max. number of connectable indoor units, refer to the following table.
 - Only when all outdoor unit, indoor unit and remote control are a U series, communication method is TU2C-LINK, and the maximum number of connectable units will be 16.



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

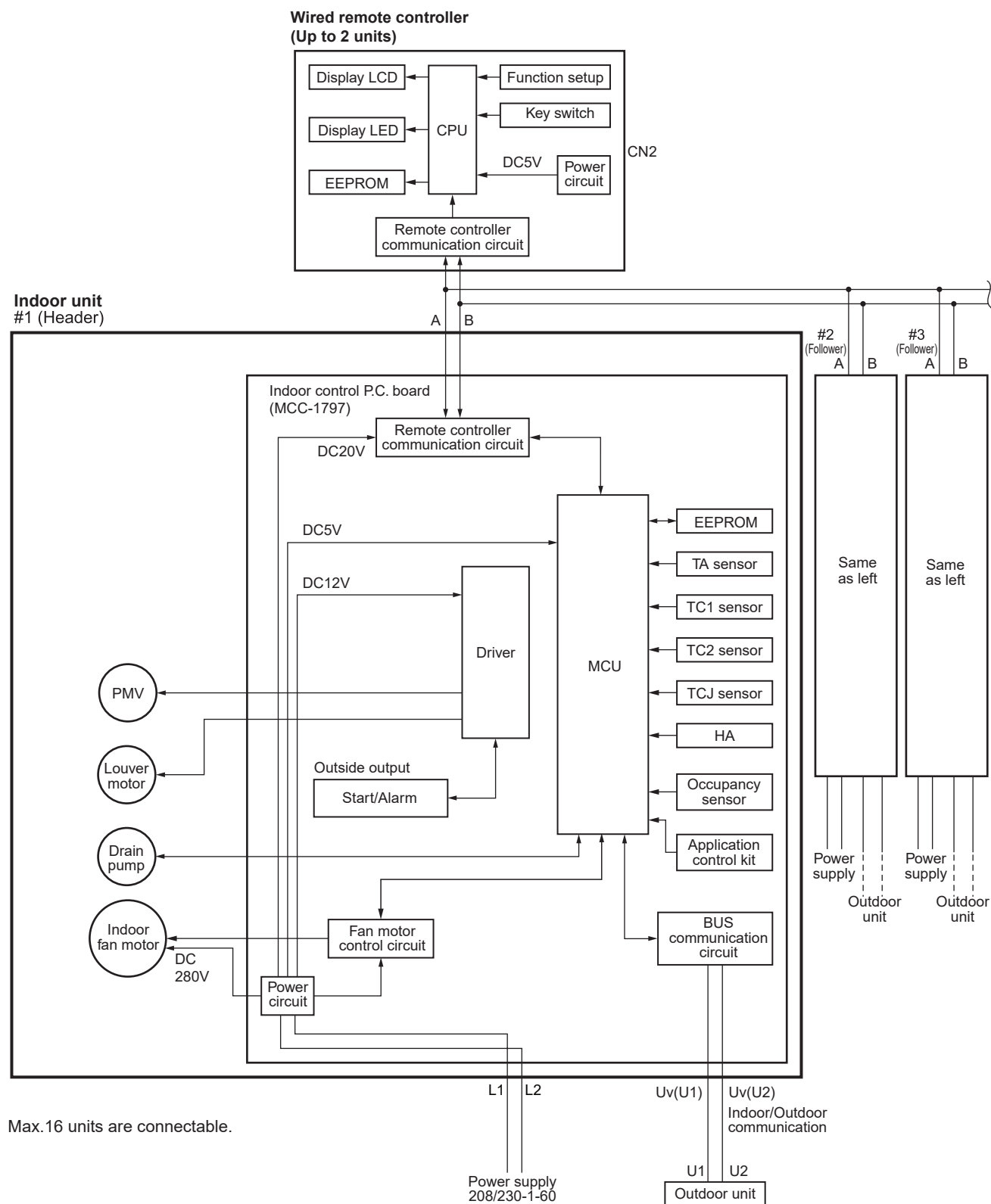
	Unit type							
	U series	U series	U series	U series	*	*	*	*
Outdoor unit	U series	U series	U series	U series	*	*	*	*
Indoor unit	U series	U series	*	*	U series	U series	*	*
Remote controller	U series	*	U series	*	U series	*	U series	*
Remote sensor	U series	*	U series	*	U series	*	U series	*
Communication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

* Other than U series

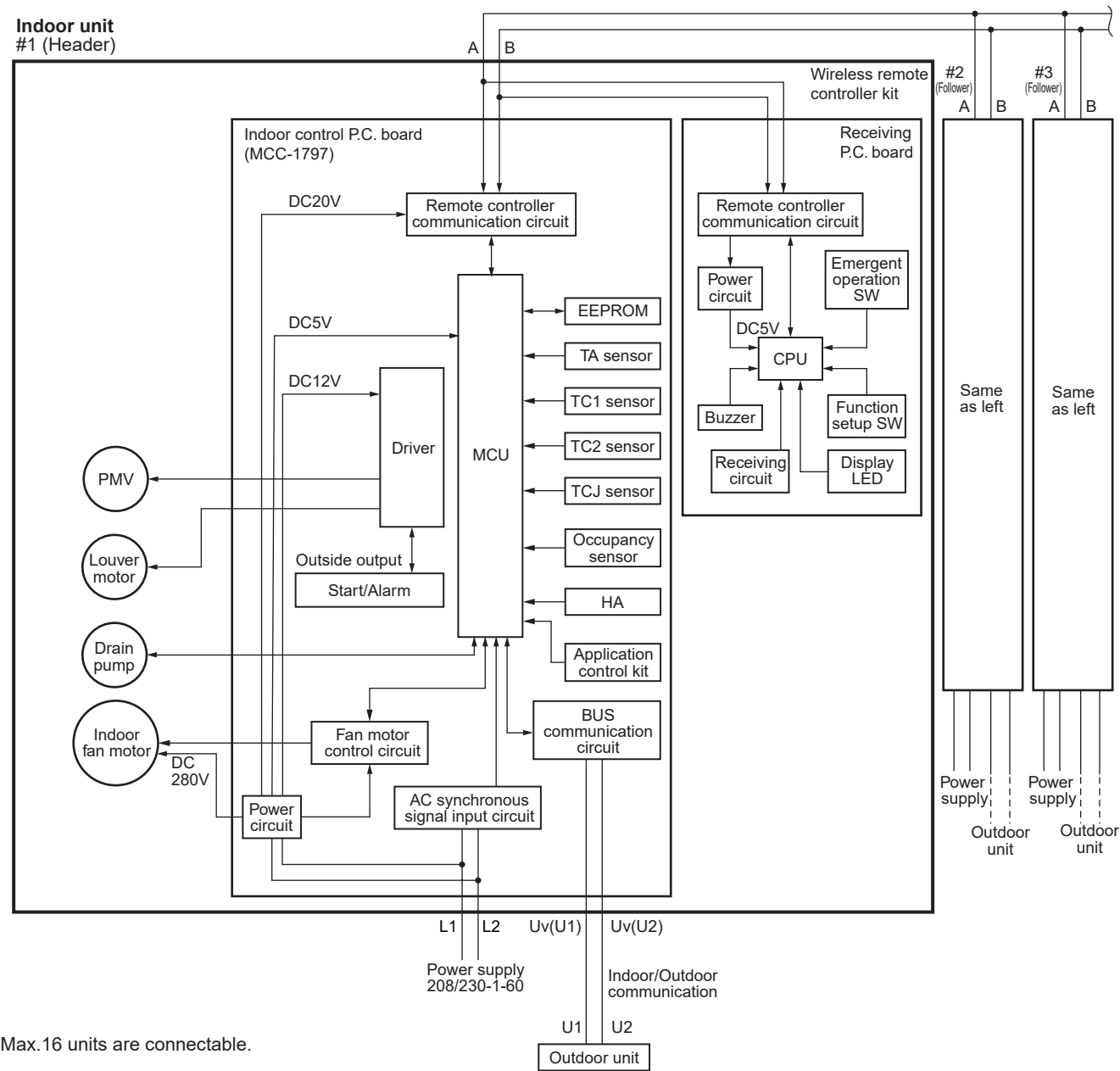
8. CONFIGURATION OF CONTROL CIRCUIT

8-1. Indoor controller block diagram (MCC-1797)

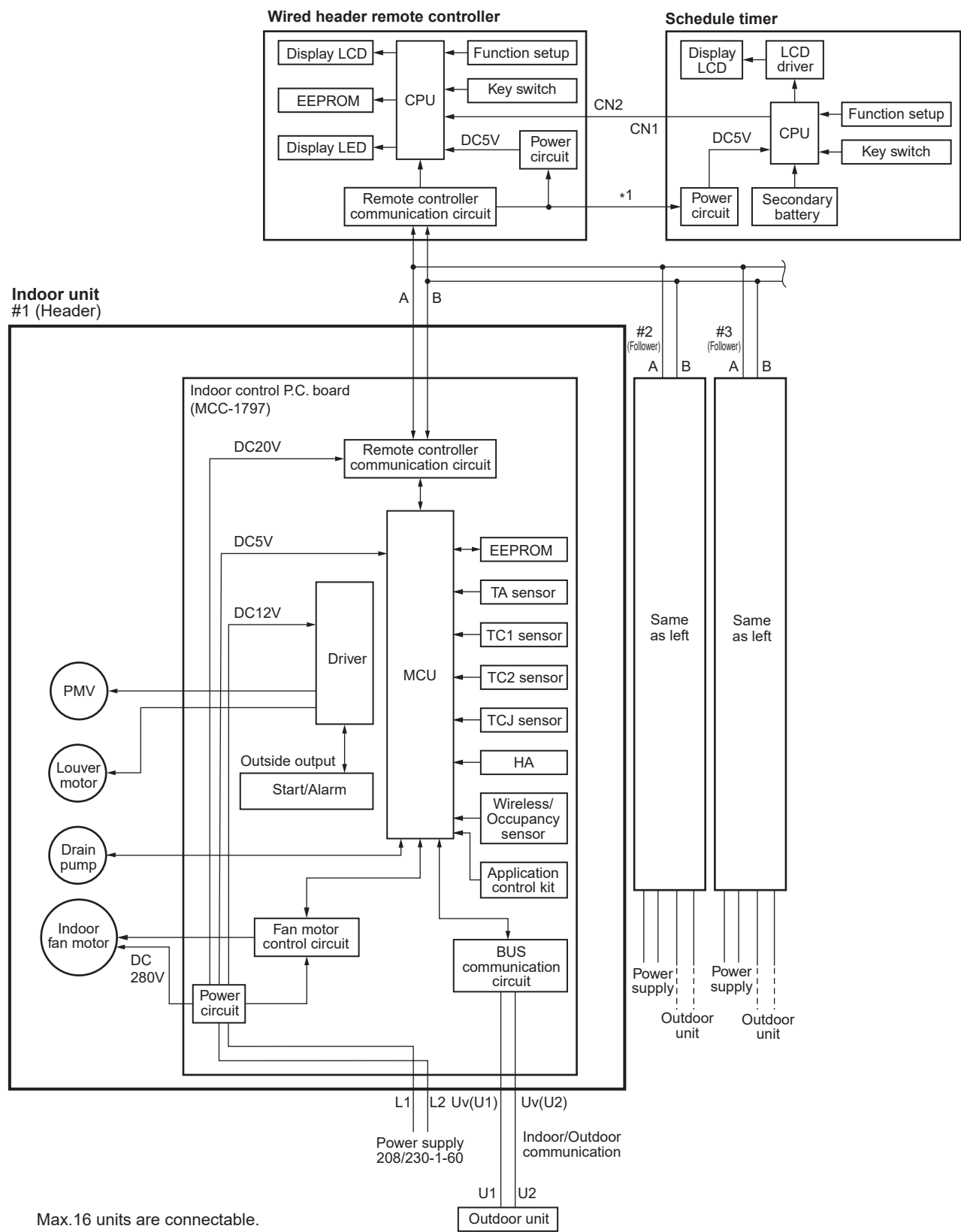
8-1-1. In case of connection of wired remote controller



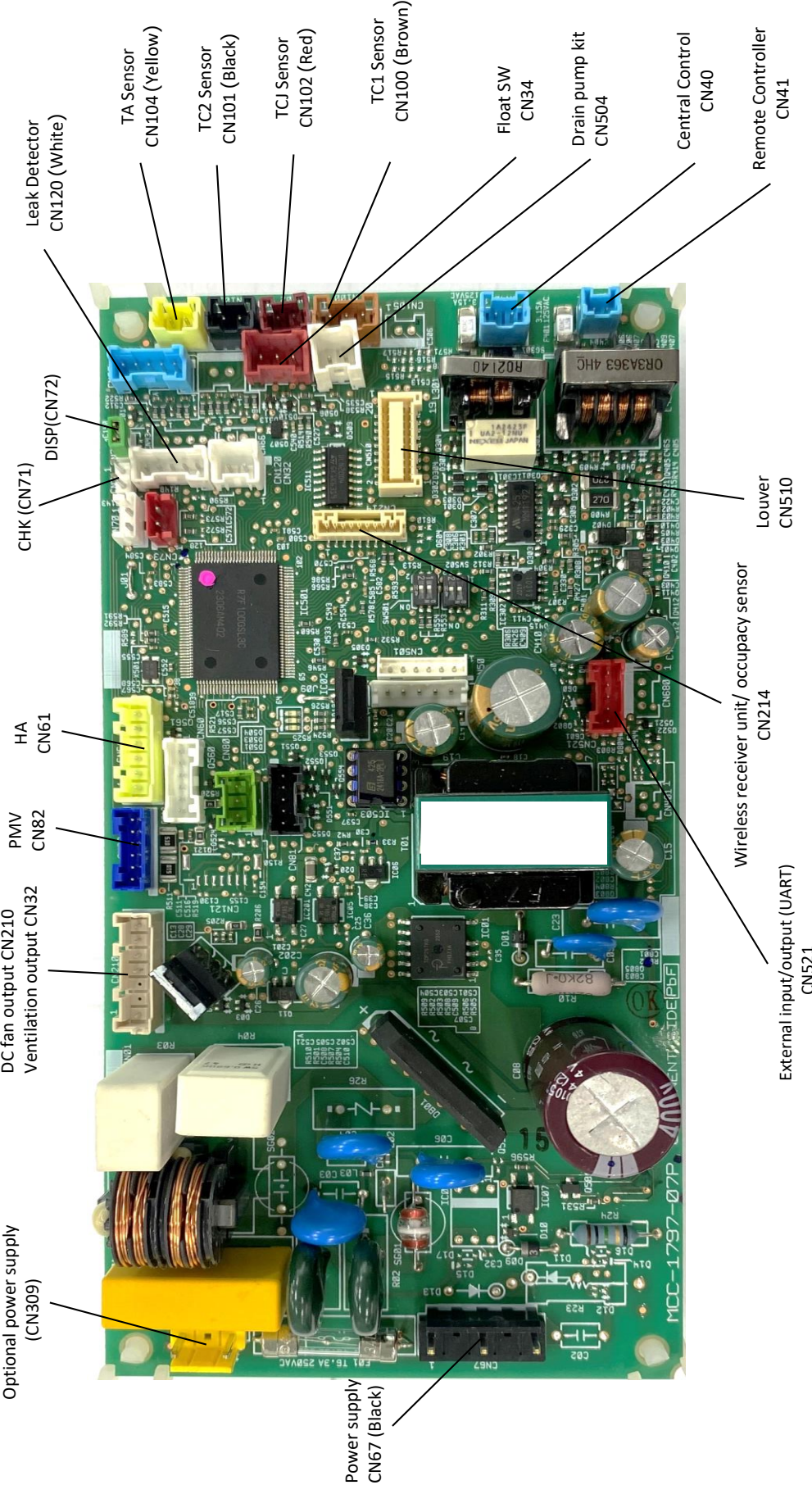
8-1-2. In case of connection of wireless remote controller



8-1-3. Connection of both wired remote controller and wireless remote controller



8-2. Indoor Print Circuit Board MCC-1797



8-3. Optional Connector Specifications of Indoor P.C. Board

Function	Connector No.	Pin No.	Specifications	Remarks
Secondary heating output / Ventilation output	CN32	①	DC12V	<u>Secondary Heating Output</u> (DN [191] = 01) Secondary heating can be used while heating operation are performed. <u>Ventilation Output</u> (DN [191] = 00) Single operation by FAN button on remote controller is set up from remote controller (DN = 31)
		②	Output	
Input for float SW	CN34	①	DC12V	Normal when between ① ~ ③ short-circuit but abnormal when open-circuit. (Check code "P10" appears)
		②	NC	
		③	Float SW input	
HA	CN61	①	ON/OFF input	HA ON/OFF input (J01: YES/NO=Pulse (At shipment) / Static input select)
		②	0V (COM)	
		③	Main prohibition input	Operation stop of main remote controller is permitted / prohibited by input.
		④	Operation output	ON during operation (Answerback of HA)
		⑤	DC12V (COM)	
		⑥	Alarm output	ON during alarm output
CHK operation check	CN71	①	Check mode input	Used for indoor operation check. (Outdoor does not communicate with remote controller, and outputs specified operation such as indoor fan "H", drain pump ON, etc.)
		②	0V	
DISP exhibition mode	CN72	①	Display mode input	Exhibition mode enables to communicate by indoor unit and remote controller only. (When power has been turned on.) Timer short (Usual)
		②	0V	
Output for Flow selector unit	CN81	①	DC12V	
		②	EP valve output (Open collector)	
		③	Balance valve output (Open collector)	
		④	Suction valve output (Open collector)	
		⑤	Discharge valve output (Open collector)	
Output power supply for option	CN309	①	AC230V	This can be used as power supply for option devices.
		③	AC230V	
Connection for option P.C.board	CN521	①	DC12V	Connected Application control kit (TCB-PCUC2E)
		②	DC5V	
		③	Send	
		④	Receive	
		⑤	0V	

8-4. Functions at test run

■ Cooling/Heating test run check

The test run for cooling/heating can be performed from either indoor remote controller or outdoor interface P.C. board.

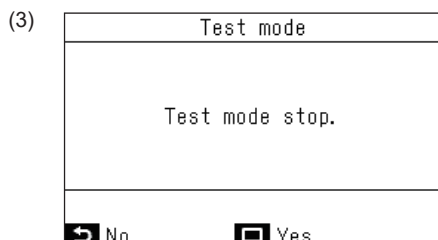
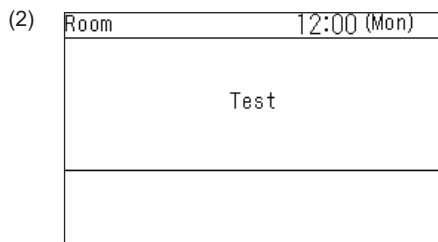
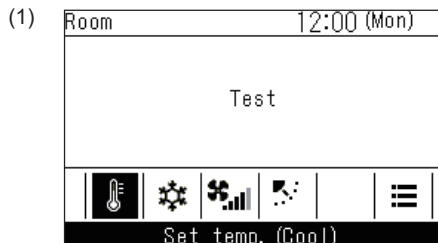
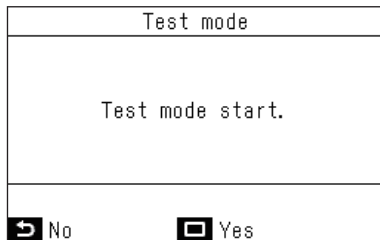
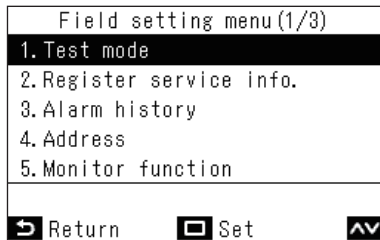
1. Start/Finish operation of test run

■ Test run from indoor remote controller

- └ Wired remote controller: Refer to the below item of “Test run” of the wired remote controller.
- └ Wireless remote controller: Refer to the next page item of “Test run” of the wireless remote controller.

◆ In case of wired remote controller

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1 In the “Field setting menu” screen, press

[] and [] to select “Test mode”, and then press [Set/Fix]

→ Test mode is set, and returns to the “Field setting menu” screen. Press the [Return] button 2 times, to open screen (2).

2 Press [ON/OFF]

- Operation starts, and in test mode screen (1) opens. (While stopped, it is screen (2))
- Test mode is done while the operating mode is set to “Cool” or “Heat”.
- The temperature cannot be set in test mode.
- Check codes are displayed in the normal way.

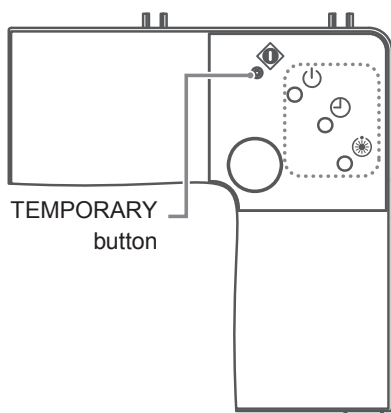
3 After completing test mode, in the “Field setting menu” screen, press [] and [] to select “Test mode”, and then press [Set/Fix]

- Screen (3) appears.
- Press [Set/Fix] to end test mode and do normal operation.

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

◆ In case of wireless remote controller

1. When TEMPORARY button is pushed for 10 seconds or more, "Pi!" sound is heard and the operation changes to a forced cooling operation. After approx. 3 minutes, a cooling operation starts forcedly. Check cool air starts blowing. If the operation does not start, check wiring again.
2. To stop a test operation, push TEMPORARY button once again (Approx. 1 second).
 - Check wiring / piping of the indoor and outdoor units in forced cooling operation.



■ 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 (30pls) can be set to the indoor PMV only.

When open DISP pin, the maximum opening degree (1500pls) 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	DISP pin short circuit	
Fan motor	(H)	(H)	Stop
Indoor PMV (*)	Max. opening degree (1500pls)	Min. opening degree (30pls)	Min. opening degree (30pls)
Louver	Horizontal	Horizontal	Immediate stop
Drain pump	ON	ON	ON
Communication	All ignored	All ignored	All ignored
P.C. board LED	Lights	Lights	Flashes

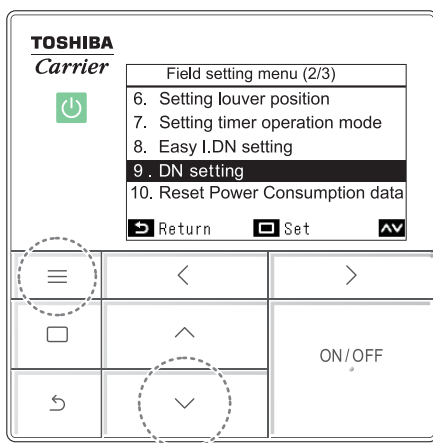
- To exchange the indoor PMV coil, set the indoor PMV to Max. opening degree.
- For the detailed positions of CHK pin (CN71 on indoor P.C. board) and DISP pin (CN72 on indoor P.C. board), refer to the indoor P.C. board MCC-1797.

9. APPLIED CONTROL

9-1. Setup of Selecting Function in Indoor Unit

(Be Sure to Execute Setup by a Wired Remote Controller)

<RBC-AWSU52-UL>



Field setting menu (2/3)
6. Setting louver position
7. Setting timer operation mode
8. Easy I.DN setting
9. DN setting
10. Reset Power Consumption data

- 1 Press [Menu] to open the “Menu”
- 2 Press and hold [Menu] and [] at the same time to open “Field setting menu”
→ Press and hold 4 seconds.

- 1 In the “Field setting menu” screen, press [] and [] to select “DN setting”, and then press [Set/Fix]
- 2 Press [] and [] to select “Indoor unit” or “Outdoor unit”, and the press [Set/Fix]

→ If “Indoor unit” was selected, the fans and lovvres of the indoor units operate.

When doing group connections:

→ The fans and lovvres of the selected indoor units operate.

- 3 Press [] to black highlight the item code (DN), and then press [] and [] to set the item code
- 4 Press [] to black highlight the data, and then press [] and [] to set the data
- 5 After finishing setting the data of the item code (DN), press [Set/Fix]
→ “Continue?” is displayed.
- 6 To set the data of other item codes (DN), press [Set/Fix]
To not do other settings, press [Return]
→ The changes are fixed, and the “Field setting menu” screen returns.
→ “” appears while data is changing.

When doing group connections:

→ Press [Return] to open the unit selection screen.
In the unit selection screen, press [Return] to briefly display “”, and then return to the “Field setting menu” screen.

NOTE

For details on item codes and data to be set, refer to the Installation Manual and Service manual of the indoor unit and outdoor unit.

Indoor unit function Code No. (DN Code) table

(includes functions needed to perform applied control on site)

DN	Item	Description	At shipment
01	Filter display delay timer	0000: None 0001: 150H 0002: 2500H 0003: 5000H 0004: 10000H	Depending on model 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 to 0064: No.64 unit ... TCC-LINK 0001: No.1 unit to 0128: No.128 unit ... TU2C-LINK 00Un: Unfixed (When using U series remote controller) 0099: Unfixed (Other than U series remote controller)	00Un/0099: Unfixed *1
04	Specific indoor unit priority	0000: No priority 0001: Priority	0000: No priority
06	Heating temp. shift	0000: 0°F(0°C) 0002: +3.6°F(+2°C) to 0001: +1.8°F(+1°C) 0010: +18°F(+10°C) (Up to +6 recommended)	Depending on model type
0b	Demand control (CN73 / CN4)	0000: Demand input 0002: Card input setup.3 0004: Card input setup.4 0005: Fire alarm input (Normal close) 0007: Card input setup.5 0009: Card input setup.2 0001: O2 sensor input 0003: Fire alarm input (Normal open) 0006: Notice cord (202) 0008: Card input setup.1	0000: Demand input
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	Refer to Type DN code "10" list	Depending on model type
11	Indoor unit capacity	0000: Unfixed 0001 to 0034 Refer to Indoor Unit Capacity DN code "11" list	According to capacity type
12	Line address	0001: No.1 unit to 0064: No.30 unit ... TCC-LINK 0001: No.1 unit to 0128: No.128 unit ... TU2C-LINK 00Un: Unfixed (When using U series remote controller) 0099: Unfixed (Other than U series remote controller)	00Un/0099: Unfixed *1
13	Indoor unit address	0001: No.1 unit to 0064: No.64 unit ... TCC-LINK 0001: No.1 unit to 0128: No.128 unit ... TU2C-LINK 00Un: Unfixed (When using U series remote controller) 0099: Unfixed (Other than U series remote controller)	00Un/0099: Unfixed *1
14	Group address	0000: Individual 0001: Header unit of group 0002: Follower unit of group 00Un: Unfixed (When using U series remote controller) 0099: Unfixed (Other than U series remote controller)	00Un/0099: Unfixed *1
19	Louver type (Air direction adjustment)	0000: No louver 0001: Swing only 0004: (4-way Air Discharge Cassette type, etc.)	Depending on model type
1E	Temp difference of [AUTO] mode selection COOL → HEAT, HEAT → COOL	0000: 0°F(0°C) to 0010: 18°F(10°C) (Ts ± 9.0°F(5°C)) Ts:Remote controller setup temp.	0003: 5.4°F(3°C) (Ts ±2.7°F(1.5°C))
28	Automatic restart of power failure	0000: None 0001: Restart	0001: Restart
2A	Selection of option/Trouble input (TCB-PCUC2E: CN3)	0000: Filter input 0002: None 0001: Alarm input (Air washer, etc.)	0002: None
2E	HA terminal (CN61) select	0000: Usual 0002: Fire alarm input (arbiter contact) 0004: Notice cord (201) 0001: Card input setup.1 (3) 0003: Card input setup.2 (4) 0005: Card input setup.5	0000: Usual (HA terminal)
31	Ventilating fan control	0000: Unavailable 0001: Available	0000: Unavailable
32	TA sensor selection	0000: Body TA sensor 0001: Remote controller sensor	0000: Body TA sensor

DN	Item	Description		At shipment
33	Temperature unit select	0000: °C	0001: °F	0001: °F
5d	External static pressure High-ceiling adjustment (Air flow selection)	Refer to page 23, item No.6		Depending on model type
60	Timer setting (wired remote controller)	0000: Available (can be performed)	0001: Unavailable (cannot be performed)	0000: Available
77	Dual set point	0000: Unavailable	0002: Available	0000: Unavailable
79	Alarm output setup of the header unit	0000: Not including the state of following unit	0001: Including the state of following unit	0000: Not including the state of following unit
7A	Change unit 0.9°F(0.5°C) or 1.8°F(1°C) on remote	0000: 1.8°F(1°C)	0001: 0.9°F(0.5°C)	0001: 0.9°F(0.5°C)
b3	Soft cooling	0000: Unavailable	0001: Available	0001: Available
b5	Occupancy sensor/ Wireless Remote controller Provided / None	0000: None 0002: Wireless remote controller provided	0001: Occupancy sensor provided	0000: None
b6	Occupancy sensor Enable / Invalid (Absence time judgment time)	0000: Invalid 0002: 60min. 0005: 150min.	0001: 30min. 0004: 120min.	0002: Enable (60 min.)
b7	Occupancy sensor operation at absent time	0000: Stand by	0001: operation stop	0000: Stand by
CF	4-way cassette type model name	0000: Standard Model	0001: larger case model	Depending on model type
d0	Whether the power saving mode can be set by the remote controller	0000: Invalid	0001: Valid	0001: Valid
E0	Destination	0000: Domestic	0001: North America	0001: North America
E6	Wireless remote controller A-B selection	0000: A	0001: B	0000: A
F0	Swing mode	0000 : Out of sync swing 0002 : Dual swing	0001 : 4-way sync swing 0003 : Cycle swing	0000: Not including 4-way 0001: 4-way (Compact)
F1	Louver fixed position (Louver No.1)	0000 : Release 0005 : Downward discharge position	0001 : Horizontal discharge position	0000: Not fixed
F2	Louver fixed position (Louver No.2)	0000 : Release 0005 : Downward discharge position	0001 : Horizontal discharge position	0000: Not fixed
F3	Louver fixed position (Louver No.3)	0000 : Release 0005 : Downward discharge position	0001 : Horizontal discharge position	0000: Not fixed
F4	Louver fixed position (Louver No.4)	0000 : Release 0005 : Downward discharge position	0001 : Horizontal discharge position	0000: Not fixed
F6	Presence of Application control kit (TCB-PCUC2E)	0000: None	0001: Exist	0000: None
FC	Communication protocol *2	0000: TCC-LINK	0003: TU2C-LINK	0000: TCC-LINK
Fd	Priority operation mode (FS unit)	0000: Heating	0001: Cooling	0000: Heating
FE	FS unit address	0001: No.1 unit to 0064: No.64 unit ... TCC-LINK 0001: No.1 unit to 0128: No.128 unit ... TU2C-LINK 00Un: Unfixed (When using U series remote controller) 0099: Unfixed (Other than U series remote controller)		00Un/0099: Unfixed *1

DN	Item	Description	At shipment
180	Notice code number 01	0000: None 0001 ~ 0255 : Notice code 0129 : Notice code (201) 0130 : Notice code (202) (0001 ~ 0255 : TU2C-LINK only)	0000: None
181	Notice code number 02		0000: None
182	Notice code number 03		0000: None
183	Notice code number 04		0000: None
184	Notice code number 05		0000: None
185	Notice code number 06		0000: None
186	Notice code number 07		0000: None
187	Notice code number 08		0000: None
188	Notice code number 09		0000: None
189	Notice code number 10		0000: None
191	Secondary Heat / Ventilation output port switching	0000: Ventilation output 0001: Secondary heating output	0001 : Secondary heating output
1FB	Central device control state	0000: No central device control (Remote controller use is possible) 0001: Central device control (Remote controller use is impossible)	0000: No central device control
1FC	Indoor Unit terminating resistance	0000: OFF 0001: ON	0000: OFF

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

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

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

For Line address (DN [12])

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

For Group address (DN [14])

Remote controller	Communication type	Display order
U series	TU2C-LINK	… ⇄ 0002 ⇄ 00Un ⇄ 0000 ⇄ …
	TCC-LINK	… ⇄ 0002 ⇄ 0099 ⇄ 0000 ⇄ …
Other than U series	TCC-LINK	… ⇄ 0002 ⇄ 0099 ⇄ 0000 ⇄ …

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

TYPE

CODE No. [10]

Setup data	Type	Abbreviated Model name
*1 0001	4-way Cassette	MMU-UB *** 1HP-UL

*1: Initial setting value of EEPROM installed on the service P.C. board

Indoor unit capacity

CODE No. [11]

Setup data	Model
0001	007
0003	009
0005	012
0007	015
0009	018
0011	024

Setup data	Model
0013	030
0015	036
0016	042
0017	048
0018	054

9-2. Applied Control in Indoor Unit

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

[Wiring and setup]

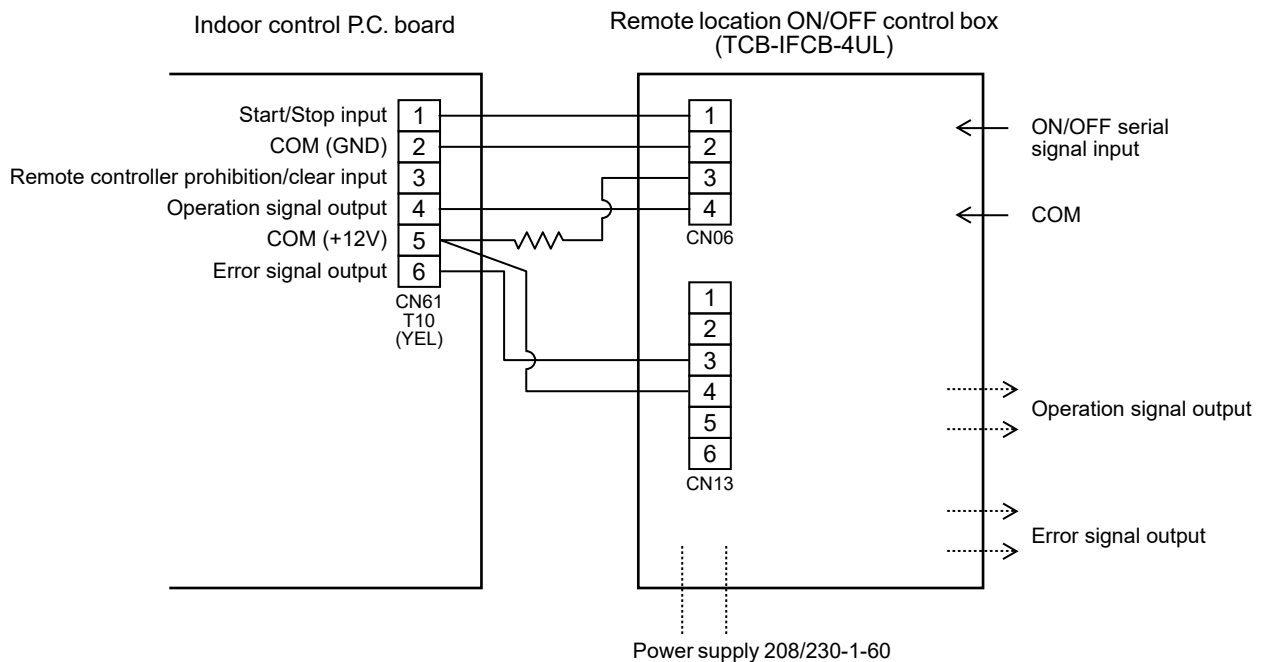
- Use the exclusive connector for connection with the indoor control P.C. board.
- In a group control, the system can operate when connecting with any indoor unit (Control P.C. board) in the group. However when taking out the operation/error signal from the other unit, it is necessary to take out from each unit individually.

1. Control items

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

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

Input IFCB-4UL : No voltage ON/OFF serial signal
Output No voltage contact for operation, error display
Contact capacity: Below Max. AC240V 0.5A



■ Ventilating fan control from remote controller

[Function]

- The start / stop operation can be operated from the wired remote controller when air to air heat exchanger or ventilating fan is installed in the system.
- The fan can be operated even if the indoor unit is not operating.
- Use a fan which can receive the no-voltage normally-open contact as an outside input signal.
- In a group control, the units are collectively operated and they cannot be individually operated.
- * **Ventilation function the code No.191 must be setting data 0000 (refer indoor unit function code no. table.)**

1. Operation

Handle a wired remote controller in the following procedure.

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

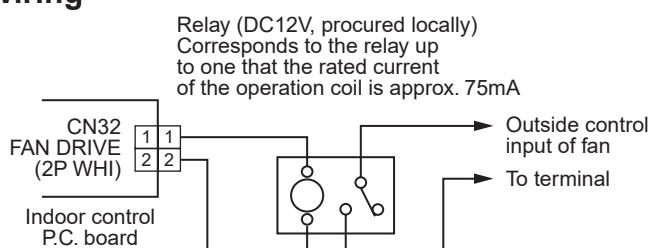
<RBC-AWSU52-UL>

- 1** Press [Menu] to open the “Menu”
- 2** Press and hold [Menu] and [] at the same time to open “Field setting menu”
→ Press and hold 4 seconds.
- 3** In the “Field setting menu” screen, press [] and [] to select “DN setting”, and then press [Set/Fix]
- 4** Press [] and [] to select “Indoor unit” or “Outdoor unit”, and the press [Set/Fix]
→ If “Indoor unit” was selected, the fans and lovvres of the indoor units operate.
When doing group connections:
→ The fans and louvers of the selected indoor units operate.
- 5** Press [] to black highlight the item code (DN), and then press [] and [] to set the item code No. 31.
- 6** Press [] to black highlight the data, and then press [] and [] to set the data (At shipment : 0000).

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

- 7** After finishing setting the data of the item code (DN), press [Set/Fix]
→ “Continue?” is displayed.
- 8** To set the data of other item codes (DN), press [Set/Fix] To not do other settings, press [Return]
→ The changes are fixed, and the “Field setting menu” screen returns.
→ “” appears while data is changing.
When doing group connections:
→ Press [Return] to open the unit selection screen.
In the unit selection screen, press [Return] to briefly display “”, and then return to the “Field setting menu” screen.

2. Wiring



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

■ Auto-off feature control

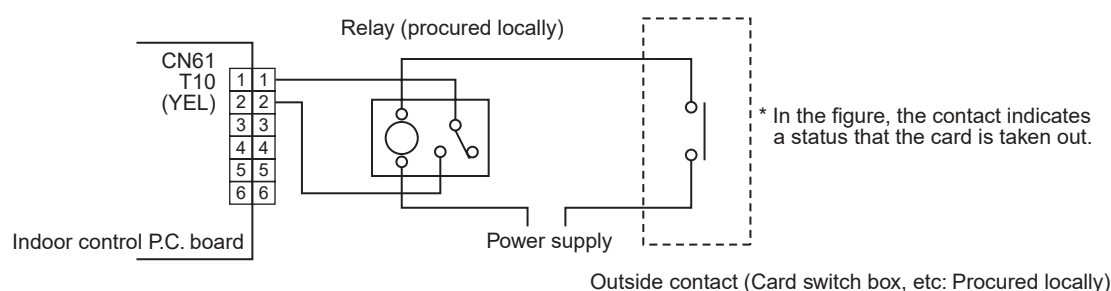
[Function]

- This function controls the indoor units individually. It is used when the start operation from outside is unnecessary but the stop operation is necessary.
- A card switch box or card lock helps protect customers from forgetting to turn off the indoor unit. (not including the following Card Input 3)
- It is connected with connector on the indoor control P.C. board, and switched with the Code No. and jumper wire setup for use.

[Setup method]

(1) Wiring

Connecting to the CN61 connector



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

(2) Code (DN) setup

Set Code (DN) according to set indoor unit function DN code.

Connector	Jumper wire (J01)	Code No. (DN)	Set data	Function
CN61	Short-circuit (Factory default)	002E	0000 (Factory default)	"HA normal setup" (pulse)
			0001	"Card Input 1" setup
			0003	"Card Input 2" setup
			0005	"Card Input 5" setup
	Open-circuit (cut)		0000 (Factory default)	"HA normal setup" (Static)
			0001	"Card Input 3" setup
			0003	"Card Input 4" setup

[Control items]

Function	External contact terminal	
	Close (Status that card is inserted)	Open (Status that card is taken out)
Card Input 1	Manual prohibition release (Manual operation)	Manual prohibition (Operation stop)
Card Input 2	Manual prohibition release (Automatic operation)	Manual prohibition (Operation stop)
Card Input 3	Operation status continues (Do nothing)	Operation status continues and setting temperature changes (COOL/DRY: 84.2°F(29°C), HEAT: 64.4°F(18°C))
Card Input 4	Manual prohibition release (The status returns to operating condition before removing the card.)	Manual prohibition (Operation stop)
Card Input 5	1) To change a setting temperature by changing data at DN code No. 172 to 174. 2) The operation mode can be set by changing data (0000, 0001, 0002) at DN code No. 16b. 0000: operation mode is the same at the current mode. (factory setting default) 0001: operation mode returns to the previous mode when card was inserted. (in case of the previous mode is off operation, the operation mode is also off.) 0002: operation mode starts at the same previous mode when the card was inserted. (the operation mode is on operation even the previous mode is off operation.) See contents below for DN settings and detailed operations.	1) To change a setting temperature, fan speed and wind direction by changing data at DN code No. 16C to 171. 2) The operation mode can be set by changing data (0000, 0001) at DN code No. 16A. 0000: operation mode is the same at the current mode. (factory setting default) 0001: operation automatically starts. See contents below for DN settings and detailed operations.

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

[Card input setup.5 Code (DN)]

DN	Item	Description	At shipment
16C	Open mode Set temp. (Cool, Dry)	-0015 : 5°F(-15°C) to 0060 : 140°F(60°C)	0027 : 80.6°F(27°C)
16d	Open mode Set temp. (Heat)	-0015 : 5°F(-15°C) to 0060 : 140°F(60°C)	0020 : 68°F(20°C)
16E	Open mode Set temp. (Auto)	-0015 : 5°F(-15°C) to 0060 : 140°F(60°C)	0024 : 75.2°F(24°C)
16F	Open mode Fan speed (All operation mode)	0000 : No change 0001 : HH 0002 : H 0003 : L	0000 : No change
170	Open mode Wind direction (Cool, Dry, Fan)	0000 : No change 0001 : F1 0002 : F2 0003 : F3	0000 : No change
171	Open mode Wind direction (Heat)	0000 : No change 0001 : F1 0002 : F2 0003 : F3 0004 : F4 0005 : F5	0000 : No change
16A	Open mode Operation	0000 : No change 0001 : Run operation	0000 : No change
172	Close mode Set temp. (Cool, Dry)	-0015 : 5°F(-15°C) to 0060 : 140°F(60°C)	0024 : 75.2°F(24°C)
173	Close mode Set temp. (Heat)	-0015 : 5°F(-15°C) to 0060 : 140°F(60°C)	0024 : 75.2°F(24°C)
174	Close mode Set temp. (Heat)	-0015 : 5°F(-15°C) to 0060 : 140°F(60°C)	0024 : 75.2°F(24°C)
16b	Close mode Operation	0000 : No change 0001 : Card ON mode operation 0002 : Run operation (Card ON mode setting)	0000 : No change

[The example of Card Input 5 setting]

Case.	Code No. (DN) setting									External contact terminal	
	[16A] data	[16b] data	[16C] data	[16d] data	[16F] data	[170] data	[171] data	[172] data	[173] data	Close (Status that card is inserted)	Open (Status that card is taken n out)
(1)	0000	0000	0027	0020	0000	0000	0000	0024	0024	<ul style="list-style-type: none"> The operation mode continues running at the same as the current mode. The setting temperature of cooling/dry and heating mode is changed to 75.2°F(24°C) and 75.2°F(24°C) respectively due to change in code No. 172, 173. 	<ul style="list-style-type: none"> The operation mode continues running at the same as the current mode. The setting temperature of cooling/dry and heating mode is changed to 80.6°F(27°C) and 68°F(20°C) respectively due to change in code No. 16C, 16d.
(2)*	0000	0001	0027	0020	0003	0001	0001	0024	0024	<ul style="list-style-type: none"> The operation mode is running at the same mode as the last time when the card was inserted due to change in code no. 16b. * The operation mode will be off if the mode at the last time was in off operation. Also, the fan speed will the same as the last time when the card is inserted. The setting temperature of cooling/dry and heating mode is changed to 75.2°F(24°C) and 75.2°F(24°C) respectively due to change in code No. 172, 173. 	<ul style="list-style-type: none"> The operation mode continues running at the same as the current mode. The setting temperature of cooling/dry and heating mode is changed to 80.6°F(27°C) and 68°F(20°C) respectively due to change in code no. 172, 173. The fan speed for all operation modes is changed due to change in code no.16F. The wind direction of Cooling/dry/fan and heating mode are changed due to change in code No. 170, 171 respectively.
(3)*	0000	0002	0027	0020	0003	0001	0001	0024	0024	<ul style="list-style-type: none"> The operation mode is running at the same mode as the last time when the card was inserted. Also, the operation mode will be on even the mode was in off operation at the last time due to change in code no. 16B. * The fan speed will the same as the last time when the card is inserted. The setting temperature of cooling/dry and heating mode is changed to 75.2°F(24°C) and 75.2°F(24°C) respectively due to change in code No. 172, 173. 	Same operation as case (2)
(4)	0001	0000	0027	0020	0003	0001	0001	0024	0024	<ul style="list-style-type: none"> The operation mode continues running at the same as the current mode. The setting temperature of cooling/dry and heating mode is changed to 75.2°F(24°C) and 75.2°F(24°C) respectively due to change in code No. 172, 173. 	<ul style="list-style-type: none"> Due to change in code no. 16A, the operation mode will be as below. When the operation is ON, the operation mode will continue running at the same as the current mode. When the operation is OFF, the air conditioner will turn on automatically. The setting temperature of cooling/dry and heating mode is changed to 80.6°F(27°C) and 68°F(20°C) respectively due to change in code No. 172, 173. The fan speed for all operation modes is changed due to change in code no.16F. The wind direction of Cooling/dry/fan and heating mode are changed due to change in code No. 170, 171 respectively.

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

■ Notice code signal

Notice code is a function dedicated to TU2C-Link communication.

See service manual for u series outdoor unit for details of Notice code.

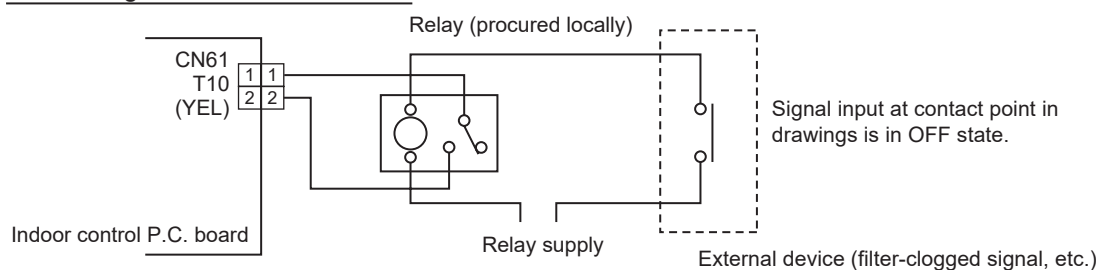
[Function]

- Notice Code is issued if there is signal input to connector of outdoor unit P.C. board. This can be used in cases such as when confirming state of outdoor unit (filter clogging, etc.) by air conditioner system.
- Used by switching functions with settings of Code No. (DN Code).
- Notice Code is continuously issued while input signal is ON.

[Setup method]

(1) Wiring

Connecting to the CN61 connector



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

(2) Code (DN) setup and Notice code

Set Code (DN) according to set indoor unit function DN code.

Connector	Code No. (DN)	Set data	Notice code
CN61	002E	0004	201

* Setting of Code No. (DN Code) is necessary to display Notice code mark at remote controller.

Set data corresponding to Notice code to be used to one of Code No. 180 to 189, in accordance with following table.
In case where data other than 0000 is already set, set to other Code No. (DN Code).

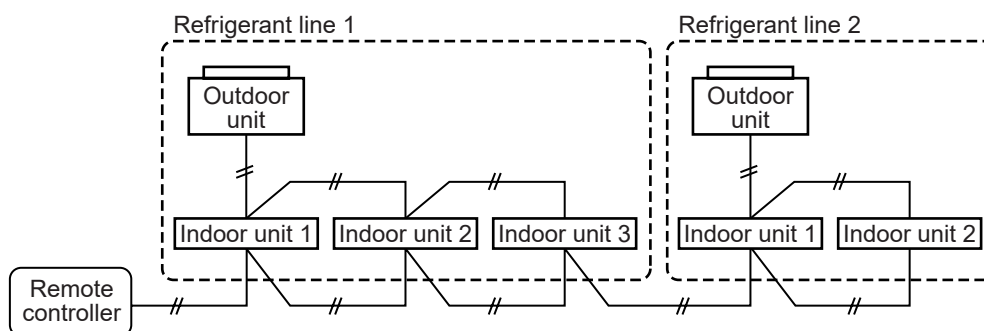
Code No. (DN)	Set data	Notice code
0180	0000	OFF (Factory default)
to	0129	201
0189	0130	202

* It may take up to ten minutes to be displayed on remote controller after Notice code is issued.

■ Manual address setting using 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)

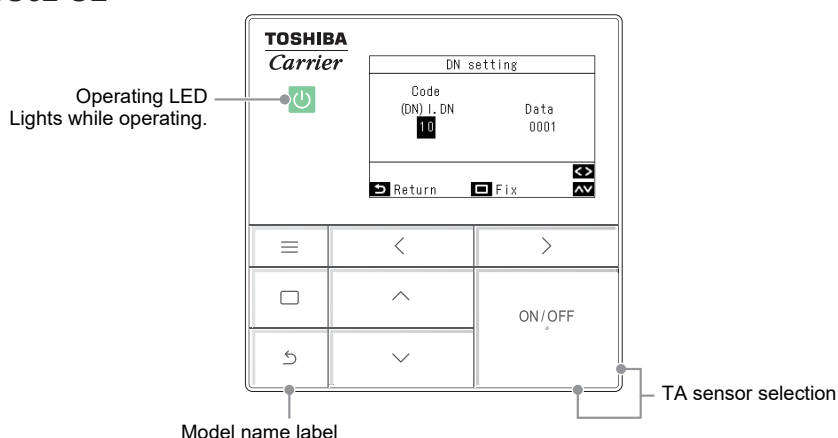
▼ Wiring example of 2 refrigerant lines



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

<RBC-AWSU52-UL>




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

- 1** Press [Menu] to open the “Menu”
- 2** Press and hold [Menu] and [Enter] at the same time to open “Field setting menu”
→ Press and hold 4 seconds.
- 3** In the “Field setting menu” screen, press [Up] and [Enter] to select “DN setting”, and then press [Set/Fix]
- 4** Press [Up] and [Enter] to select “Indoor unit” or “Outdoor unit”, and then press [Set/Fix]
→ If “Indoor unit” was selected, the fans and louvers of the indoor units operate.
When doing group connections:
→ The fans and louvers of the selected indoor units operate.




<Line (system) address>

- 5** Press [Left] to black highlight the item code (DN), and then press [Up] and [Enter] to set the item code No. to 12.
- 6** Press [Right] to black highlight the data, and then press [Up] and [Enter] to set the data system address.
(Match the address with the address on the interface P.C.board of the header outdoor unit in the same refrigerant line.)
- 7** After finishing setting the data of the item code (DN), press [Set/Fix]
→ “Continue?” is displayed.

<Indoor unit address>

- 8** Press [<] to black highlight the item code (DN), and then press [<] and [>] to set the item code No. to 13.
- 9** Press [>] to black highlight the data, and then press [<] and [>] to set the data indoor unit address.
- 10** After finishing setting the data of the item code (DN), press [ Set/Fix]
→“Continue?” is displayed.

<Group address>



- 11** Press [<] to black highlight the item code (DN), and then press [<] and [>] to set the item code No. to 14.
- 12** Press [>] to black highlight the data, and then press [<] and [>] to set the data indoor unit address.
a group address. If the indoor unit is individual, set the address to 0000; header unit, 0001; follower unit, 0002.
- | | | |
|---------------|--------|----------------------------|
| Individual | : 0000 | } In case of group control |
| Header unit | : 0001 | |
| Follower unit | : 0002 | |
- 13** After finishing setting the data of the item code (DN), press [ Set/Fix]
→“Continue?” is displayed.
- 14** To set the data of other item codes (DN), press [ Set/Fix] To not do other settings, press [ Return]

→ The changes are fixed, and the “Field setting menu” screen returns.

→ “” appears while data is changing.

When doing group connections:

→ Press [ Return] to open the unit selection screen.

In the unit selection screen, press [ Return] to briefly display “”, and then return to the “Field setting menu” screen.

NOTE

<In the case of combining with outdoor units of Super Modular Multi System u series (SMMS-u)>

- Turn ON DIP switch 1 of SW100 on the header outdoor unit interface P.C. board the lowest system address number.
- 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 manual of the central control devices.)

<In the case of combining with outdoor units other than Super Modular Multi System u series (SMMS-u)>

- Set a system address for the header 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 header 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 header 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.)

◆ To find an indoor unit's position from its address







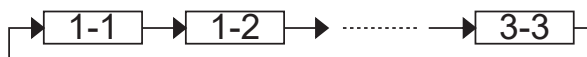



Procedure to know the position of indoor unit body by address while indoor unit No. is known.

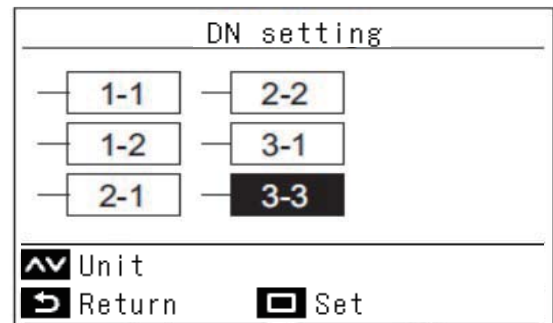
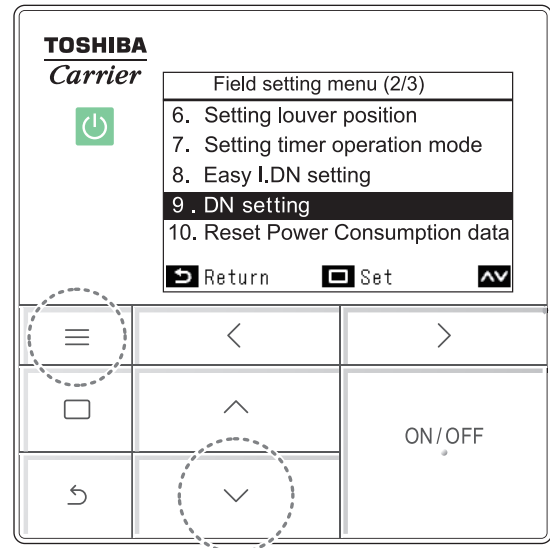
- Confirm each indoor unit address while indoor unit is stopped. (Be sure to stop air conditioner.)

<RBC-AWSU52-UL>

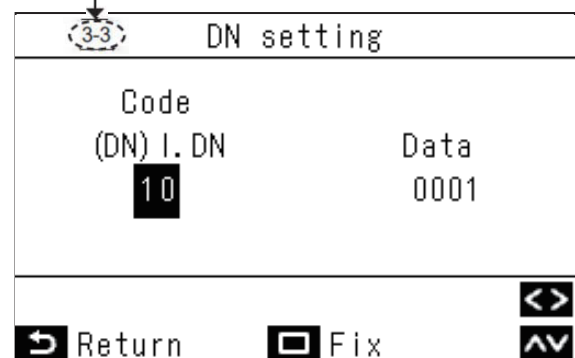
[Procedure]

The position of indoor unit body by address

- 1 Push the [ MENU] button to display the menu screen.
- 2 Push and hold the [ MENU] button and the [] button at the same time to display the "Field setting menu".
→ Push and hold the buttons for more than 4 seconds.
- 3 Push the [] / [] button to select "7. DN setting" on the "Field setting menu" screen, then push the "[] Set"
- 4 Push the unit to confirm the address of indoor unit.
→ The selected unit changes as follows each time the button is pushed:

- 5 Push the [ Set/Fix]
→ The setting display for the selected unit appears.
→ When the group control is used, the fan and louver of the selected indoor unit operate.
- 6 Push the [ MENU] button to set the other Code(DN) and Data. After "Continue?" is displayed on the screen, push the [ Return] to finish the setting operation. "⌚ Setting" appears on the screen for a while, then the screen returns to the "Field setting menu" screen.



Address is displayed here.



◆ Check code clearing function

How to clear the check code using the wired remote controller

<RBC-AW5U52-UL>

Displays the last 10 check codes, and at which unit and when they occurred.

Field setting menu (1/3)		
1. Test mode		
2. Register service info.		
3. Alarm history		
4. Address		
5. Monitor function		
Return	Set	

- 1 In the “Field setting menu” screen, press [] and [] to select “Alarm history”, and then press [Set/Fix]

Alarm history				
	Unit	Code	Date	Time
1.	1-3	E04	06/01/2022	01:56
2.	-	-	-	-
3.	-	-	-	-
4.	-	-	-	-
Reset				
Return				

NOTE

- The check code history data shows a history of 10 occurrences. If the occurrences exceed 10, the oldest data is deleted.
- If the same check code occurs repeatedly, the date of the first occurrence is displayed.

Deleting check code history

Alarm history	
Reset all alarm data.	
No	Yes

- 1 Press [Menu] while the “Alarm history” screen is displayed
→ “Reset all alarm data.” is displayed.
- 2 Press [Set/Fix]



REQUIREMENT




If you are using 2 remote controllers, delete the history at each remote controller.



▼ Monitoring function of wired remote controller

<RBC-AWSU52-UL>

Displays the codes and data indicating the operating condition and temperature of each sensor on the indoor units, outdoor units, and remote controllers.

Monitor function	
Code	Data
00	0024
 Return 	

1 In the “Field setting menu” screen, press [] and [] to select “Monitor function”, and then press [ Set/Fix]

→ Press [] and [] to change the item code and then check the data.

→ In a group connection, after a selection in the unit selection screen, move to the “Monitor function” screen.

2 Press [ Return]

→ Return to the “Field setting menu” screen.

◆ Indoor service monitor list

	Code No.	Data name	Display format	Unit	Remote controller display example
Indoor unit data *	00	Room temperature (Use to control)	×1	°F(°C)	
	01	Room temperature (Remote controller)	×1	°F(°C)	
	02	Indoor suction air temperature (TA)	×1	°F(°C)	
	03	Indoor coil temperature (TCJ)	×1	°F(°C)	
	04	Indoor coil temperature (TC2)	×1	°F(°C)	
	05	Indoor coil temperature (TC1)	×1	°F(°C)	
	06	Indoor discharge air temperature (TF) **	×1	°F(°C)	
	07	Indoor fan motor number of revolutions**	×1	rpm	[0600] = 600rpm
	08	Indoor PMV opening	×1/10	pls	[0150]=1500pls
	F3	Filter sign time	×1	h	[2500] = 2500h
	F9	Suction temperature of air to air heat exchanger (TSA) **	×1	°F(°C)	[0024] = 75.2°F(24°C)
	FA	Outside air temperature (TOA) **	×1	°F(°C)	

* When the units are connected to a group, data of the header indoor unit only can be displayed.

** There is also a model which cannot be displayed.

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

10. TROUBLESHOOTING

10-1. Overview

(1) Before engaging in troubleshooting

(a) Applicable models

All Super Modular Multi System (SMMS-*) models.

(Indoor units: MM*-UB***, Outdoor units: MMY-MUB***)

(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	<ul style="list-style-type: none">• The air conditioner is being controlled by the 3-minute protective function.• It is in standby status though the room temperature has reached the setup temperature.• It is being operated in timer mode or fan mode.• It is being in initial communication.
2	An indoor fan would not start	<ul style="list-style-type: none">• The air conditioner is being controlled by the cool air discharge preventive function in "heating"?
3	An outdoor fan would not start or would change speed for no reason	<ul style="list-style-type: none">• The air conditioner is being operated in "cooling" under the low outside air temperature.• It is being operated in defrost operation.
4	An indoor fan would not stop	<ul style="list-style-type: none">• The air conditioner is being controlled by function of residual heat elimination being performed as part of the air conditioner shutdown process after heating operation.
5	The air conditioner would not respond to a start/stop command from a remote controller	<ul style="list-style-type: none">• The air conditioner is being operated under external or remote controller.

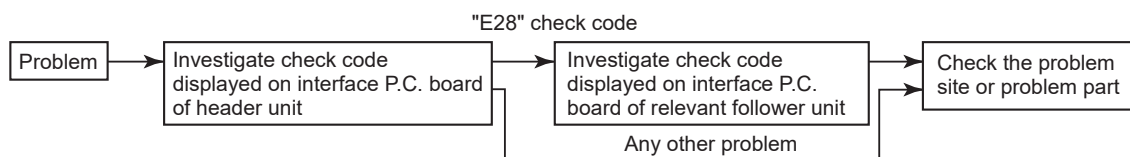


CAUTION

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

(2) Troubleshooting procedure

When a problem occurs, proceed with troubleshooting in accordance with the procedure shown below.



NOTE

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

10-2. Troubleshooting method

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

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

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

List of check codes (indoor unit)










































































(Check code detected by indoor unit)

IPDU: Compressor / Fan inverter P.C. board













○: Lighting, ⊙: Flashing, ●: Goes off

ALT.: Flashing is alternately when there are two flashing LED





SIM: Simultaneous flashing when there are two flashing LED

Check code			Display of receiving unit				Typical trouble on site	Description of check code
Remote controller display	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation 	Timer 	Ready 	Flash 		
E03	—	—					Indoor-remote controller periodic communication check code	Communication from remote controller or network adaptor has been lost (so has central control communication).
E04	—	—					Indoor-outdoor periodic communication check code	Signals are not being received from outdoor unit.
E08	E08	Duplicated indoor address					Duplicated indoor address	Indoor unit detects address identical to its own.
E10	—	—					Communication trouble between indoor unit MCU	Communication trouble between main MCU and the motor microcomputer MCU
E11	—	—					Communication check code between Application control kit and indoor unit	Communication check code between Application control kit and indoor unit P.C. board
E18	—	—					Check cod in periodic communication between indoor header and follower unit	Periodic communication between indoor header and follower units cannot be maintained.
F01	—	—				ALT	Indoor heat exchanger temperature sensor (TCJ) check code	Heat exchanger temperature sensor (TCJ) has been open / short-circuit.
F02	—	—				ALT	Indoor heat exchanger temperature sensor (TC2) check code	Heat exchanger temperature sensor (TC2) has been open / short-circuit.
F03	—	—				ALT	Indoor heat exchanger temperature sensor (TC1) check code	Heat exchanger temperature sensor (TC1) has been open / short-circuit.
F10	—	—				ALT	Ambient temperature sensor (TA) check code	Ambient temperature sensor (TA) has been open / short-circuit.
F11	—	—				ALT	Discharge temperature sensor (TF) check code	Discharge temperature sensor (TF) has been open / short-circuit.
F29	—	—				SIM	P.C. board or other indoor check code	Indoor EEPROM is abnormal (some other trouble may be detected).
F30	—	—				ALT	Occupancy sensor trouble	Occupancy sensor trouble has been detected.
L03	—	—				SIM	Duplicated indoor group header unit	There is more than one header unit in group.
L07	—	—				SIM	Connection of group control cable to a single indoor unit	There is at least one a single indoor unit to which group control cable is connected.
L08	L08	—				SIM	Indoor group address not set	Address setting has not been performed for one or more indoor units (also detected at outdoor unit end).
L09	—	—				SIM	Indoor capacity not set	Capacity setting has not been performed for indoor unit.
L20	—	—				SIM	Duplicated central control address	There is duplication in central control address setting.
L30	L30	Detected indoor unit No.				SIM	Indoor external check code input (interlock)	Unit shutdown has been caused by external check code input (CN80).
P01	—	—				ALT	Indoor AC fan check code	Indoor AC fan check code is detected (activation of fan motor thermal relay).
P10	P10	Detected indoor unit No.				ALT	Indoor overflow check code	Float switch has been activated.
P12	—	—				ALT	Indoor DC fan check code	• Indoor DC fan check code (e.g. overcurrent or lock-up) is detected.
P31	—	—				ALT	Other indoor unit check code	Follower unit cannot be operated due to header unit alarm (E03 /L03 / L07 / L08).

(Check code detected by remote controller)

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




















(Check code detected by central control device)

Check code			Display of receiving unit				Typical trouble site	Description of trouble
Central control	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation 	Timer 	Ready 	Flash 		
C05	—	—	No indication (when main remote control also in use)				Failure central control communication (transmission)	Central control device is unable to transmit signal due to duplication of central control device
C06	—	—					Failure central control communication (reception)	
C12	—	—	—				Bracket alarm for general-purpose device control interface	Device connected to general-purpose device control interface is trouble.
P30 (L20)	—	—	(L20 is displayed.)				Communication Link	<ul style="list-style-type: none">• Duplication addresses of indoor units in central control device• With the combination of air conditioning system, the indoor unit may detect the check code of L20

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

Flow selector unit (FS unit) Relation

(Check code detected by indoor unit)

Check code			Display of receiving unit				Typical trouble site	Description of trouble
Main remote control	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation 	Timer 	Ready 	Flash 		
E17	—	—					Communication trouble between indoor unit (s) and FS unit (s)	There is no communication from FS unit(s)
J03	—	—					Duplicated FS units	More than one FS units have been set up in one refrigerant line.
J10	—	—					FS unit overflow trouble	FS unit has been shutdown in one refrigerant line due to detection of overflow
J11	—	—					FS unit temperature sensor (TCS) trouble	FS unit temperature sensor (TCS) has been open/short-circuited.
L12	L12	—					FS unit(s) system trouble	FS unit(s) outside the application setting

List of Check Codes (Outdoor Unit)




(Check code detected by outdoor interface - typical examples)









































































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








































○ : Lighting, ◎ : Flashing, ● : Goes off

ALT.: Flashing is alternately when there are two flashing LED

SIM: Simultaneous flashing when there are two flashing LED




Check code			Display of receiving unit				Typical problem site	Description of problem																																																																																								
Outdoor 7-segment display		Central control or main remote controller display	Indicator light block																																																																																													
	Sub-code		Operation 	Timer 	Ready 	Flash																																																																																										
E06	Number of indoor units from which signal is received normally	E06	●	●	◎		Signal lack of indoor unit	Indoor unit initially communicating normally fails to return signal (reduction in number of indoor units connected).																																																																																								
E07	—	(E04)	●	●	◎		Indoor-outdoor communication circuit trouble	Signal cannot be transmitted to indoor units (→ indoor units left without communication from outdoor unit).																																																																																								
E08	Duplicated indoor address	(E08)	◎	●	●		Duplicated indoor address	More than one indoor unit are assigned same address (also detected at indoor unit end).																																																																																								
E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	E12	◎	●	●		Automatic address starting trouble	<ul style="list-style-type: none">Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress.Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.																																																																																								
E15	—	E15	●	●	◎		Indoor unit not found during automatic address setting	Indoor unit fails to communicate while automatic address setting for indoor units is in progress.																																																																																								
E16	00: Capacity over 01: Number of units connected	E16	●	●	◎		Too many indoor units connected/capacity over	Combined capacity of indoor units is too large. The maximum combined of indoor units shown in the specification table.																																																																																								
E19	00: No header unit 02: Two or more header units	E19	●	●	◎		Trouble in number of outdoor header units	There is no or more than one outdoor header unit in one refrigerant line.																																																																																								
E20	01: Connection of outdoor unit from other refrigerant line 02: Connection of indoor unit from other refrigerant line	E20	●	●	◎		Connection to other refrigerant line found during automatic address setting	Indoor unit from other refrigerant line is detected while indoor automatic address setting is in progress.																																																																																								
E23	—	E23	●	●	◎		Outdoor-outdoor communication transmission trouble	Signal cannot be transmitted to other outdoor units.																																																																																								
E25	—	E25	●	●	◎		Duplicated follower outdoor address	There is duplication in outdoor addresses set manually.																																																																																								
E26	Address of outdoor unit from which signal is not received normally	E26	●	●	◎		Signal lack of outdoor unit	Follower outdoor unit initially communicating normally fails to do so (reduction in number of follower outdoor units connected).																																																																																								
E28	Detected outdoor unit No.	E28	●	●	◎		Outdoor follower unit trouble	Outdoor header unit detects trouble relating to follower outdoor unit (detail displayed on follower outdoor unit).																																																																																								
E31	<table><tr><th colspan="4">P.C.board</th><th colspan="4">P.C.board</th></tr><tr><th colspan="2">Compressor</th><th colspan="2">Fan Motor</th><th colspan="2">Compressor</th><th colspan="2">Fan Motor</th></tr><tr><th>1</th><th>2</th><th>1</th><th>2</th><th>1</th><th>2</th><th>1</th><th>2</th></tr><tr><td>01</td><td>○</td><td></td><td></td><td>11</td><td>○</td><td></td><td>○</td></tr><tr><td>02</td><td></td><td>○</td><td></td><td>12</td><td></td><td>○</td><td>○</td></tr><tr><td>03</td><td>○</td><td>○</td><td></td><td>13</td><td>○</td><td>○</td><td>○</td></tr><tr><td>08</td><td></td><td></td><td>○</td><td>18</td><td></td><td></td><td>○</td></tr><tr><td>09</td><td>○</td><td></td><td>○</td><td>19</td><td>○</td><td></td><td>○</td></tr><tr><td>0A</td><td></td><td>○</td><td>○</td><td>1A</td><td></td><td>○</td><td>○</td></tr><tr><td>0B</td><td>○</td><td>○</td><td>○</td><td>1B</td><td>○</td><td>○</td><td>○</td></tr><tr><td>10</td><td></td><td></td><td>○</td><td></td><td></td><td></td><td></td></tr></table> <p>80 : Communication trouble between MCU and Sub MCU</p>	P.C.board				P.C.board				Compressor		Fan Motor		Compressor		Fan Motor		1	2	1	2	1	2	1	2	01	○			11	○		○	02		○		12		○	○	03	○	○		13	○	○	○	08			○	18			○	09	○		○	19	○		○	0A		○	○	1A		○	○	0B	○	○	○	1B	○	○	○	10			○					E31	●	●	◎		P.C. board communication trouble Sub MCU communication trouble	There is no communication between P.C. boards in inverter box.
P.C.board				P.C.board																																																																																												
Compressor		Fan Motor		Compressor		Fan Motor																																																																																										
1	2	1	2	1	2	1	2																																																																																									
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10			○																																																																																													
F04	—	F04	◎	◎	○	ALT	Outdoor discharge temperature sensor (TD1) trouble	Outdoor discharge temperature sensor (TD1) has been open/short-circuited.																																																																																								
F05	—	F05	◎	◎	○	ALT	Outdoor discharge temperature sensor (TD2) trouble	Outdoor discharge temperature sensor (TD2) has been open/short-circuited.																																																																																								
F06	01: TE1 sensor 02: TE2 sensor 03: TE3 sensor	F06	◎	◎	○	ALT	Outdoor heat exchanger liquid side temperature sensor (TE1, TE2, TE3) trouble	Outdoor heat exchanger liquid side temperature sensors (TE1, TE2, TE3) have been open/short-circuited.																																																																																								
F07	01: TL1 sensor 02: TL2 sensor 03: TL3 sensor	F07	◎	◎	○	ALT	Outdoor liquid temperature sensor (TL1, TL2, TL3) trouble	Outdoor liquid temperature sensor (TL1, TL2, TL3) has been open/short-circuited.																																																																																								
F08	—	F08	◎	◎	○	ALT	Outdoor outside air temperature sensor (TO) trouble	Outdoor air temperature sensor (TO) has been open/short-circuited.																																																																																								
F09	01: TG1 sensor 02: TG2 sensor 03: TG3 sensor	F09	◎	◎	○	ALT	Outdoor heat exchanger gas side temperature sensor (TG1, TG2, TG3) trouble	Outdoor heat exchanger gas side temperature sensors (TG1, TG2, TG3) have been open/short-circuited.																																																																																								

Check code			Display of receiving unit				Typical problem site	Description of problem
Outdoor 7-segment display		Central control or main remote controller display	Indicator light block					
	Sub-code		Operation 	Timer 	Ready 	Flash		
F12	01: TS1 sensor 03: TS3 sensor	F12				ALT	Outdoor suction temperature sensor (TS1,TS3) trouble	Outdoor suction temperature sensor (TS1,TS3) has been open/short-circuited.
F15	—	F15				ALT	Outdoor temperature sensor (TE1,TL1) wiring trouble	Wiring trouble in outdoor temperature sensors (TE1,TL1) has been detected.
F16	—	F16				ALT	Outdoor pressure sensor (Pd, Ps) wiring trouble	Wiring trouble in outdoor pressure sensors (Pd, Ps) has been detected.
F23	—	F23				ALT	Low pressure sensor (Ps) trouble	Output voltage of low pressure sensor (Ps) is zero.
F24	—	F24				ALT	High pressure sensor (Pd) trouble	Output voltage of high pressure sensor (Pd) is zero or provides abnormal readings when compressors have been turned off.
F31	—	F31				SIM	Outdoor EEPROM trouble	Outdoor EEPROM is failure (alarm and shutdown for header unit and continued operation for follower unit)
J29	—	J29				SIM	Leak Detector Trouble	<ul style="list-style-type: none">There is no communication from Leak DetectorA Malfunction signal received from Leal Detector.
J30	Detected indoor unit address *Not displayed depending on the DN code (I.DN) setting	J30				SIM	Refrigerant leak detection	Leak Detector detects refrigerant leak
J31	—	J31				SIM	Refrigerant leak detection sensor exceeding its life of the product	Energization time of the Leak Detector has reached its useful life.
H05	—	H05					Outdoor discharge temperature sensor (TD1) wiring trouble	Wiring/installation trouble or detachment of outdoor discharge temperature sensor (TD1) has been detected.
H06	—	H06					Activation of low-pressure protection	Low pressure (Ps) sensor detects abnormally low operating pressure.
H07	—	H07					Low oil level protection	Temperature sensor for oil level detection (TK1,TK2) detects abnormally low oil level.
H08	01: TK1 sensor trouble 02: TK2 sensor trouble	H08					Trouble in temperature sensor for oil level detection (TK1, TK2)	Temperature sensor for oil level detection (TK1,TK2) has been open/short-circuited.
H15	—	H15					Outdoor discharge temperature sensor (TD2) wiring trouble	Wiring/installation trouble or detachment of outdoor discharge temperature sensor (TD2) has been detected.
H16	01: TK1 oil circuit trouble 02: TK2 oil circuit trouble	H16					Oil level detection circuit trouble	No temperature change is detected by temperature sensor for oil level detection (TK1,TK2) despite compressor having been started.
L04	—	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 have been set up as priority indoor unit.
		L06				SIM	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	More than one indoor unit have been set up as priority indoor unit.
L08	—	(L08)				SIM	Indoor group address not set	Address setting have not been performed for one or more indoor units (also detected at indoor end).
L10	—	L10				SIM	Outdoor capacity not set	Outdoor unit capacity has not been set (after P.C. Board replacement).
L17	—	L17				SIM	Outdoor model incompatibility trouble	Old model outdoor unit has been connected.
L23	—	L23				SIM	SW setting mistake	
L28	—	L28				SIM	Too many outdoor units connected	More than five outdoor units have been connected.

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

MG-CTT: Magnet contactor

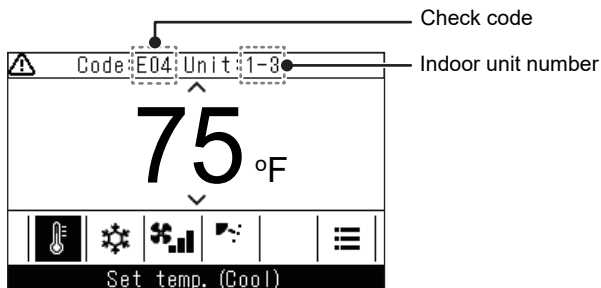
(Check code detected by Inverter of Compressor featuring in outdoor unit - typical examples)

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

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

10-3. Troubleshooting by check Display on Remote Controller

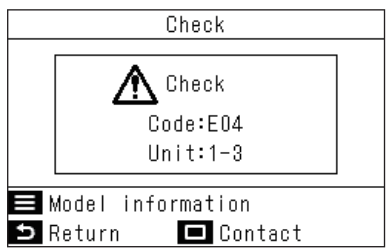
<RBC-AWSU52-UL>



When an error occurs in the air conditioner, the check code and the indoor unit number flash on the display of the remote controller.

* The check code is only displayed during the operation.

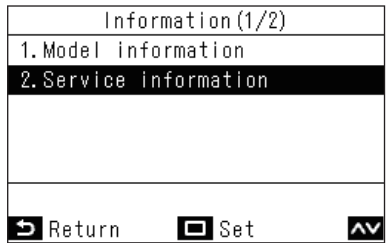
When the check code and indoor unit number are displayed, pressing [Return] opens the "Check" screen.



In the "Check" screen, press [Set/Fix] to show the contacts.
Press [Menu] to display "Model information".

■ Contact information for repairs

You can look for contact information for repairs.



1 In the "Information" screen, press [] and [] to select "Service information", and then press [Set/Fix]






















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


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

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



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

MG-CTT: Magnet contactor




Light block	Check code	Cause of trouble		
<div>Operation Timer Ready</div> <div>  </div> <div>Alternate blinking</div>	F01	Heat exchanger temperature sensor (TCJ) trouble		
	F02	Heat exchanger temperature sensor (TC2) trouble		
	F03	Heat exchanger temperature sensor (TC1) trouble		
	F10	Ambient temperature sensor (TA) trouble		
	F11	Discharge temperature sensor (TF) trouble		
<div>Operation Timer Ready</div> <div>  </div> <div>Alternate blinking</div>	F04	Discharge temperature sensor (TD1) trouble		
	F05	Discharge temperature sensor (TD2) trouble		
	F06	Heat exchanger temperature sensor (TE1, TE2) trouble		
	F07	Liquid temperature sensor (TL) trouble		
	F08	Outside air temperature sensor (TO) trouble		
	F09	TG1,TG2 or TG3 sensor trouble		
	F12	Suction temperature sensor (TS1) trouble		
	F13	Heat sink sensor (TH) trouble		
	F15	Wiring trouble in heat exchanger sensor (TE1) and liquid temperature sensor (TL) Outdoor unit temperature sensor wiring / installation trouble		
	F16	Wiring trouble in outdoor high pressure sensor (Pd) and low pressure sensor (Ps) Outdoor pressure sensor wiring trouble		
	F22	Outdoor discharge temperature sensor (TD3) trouble		
	F23	Low pressure sensor (Ps) trouble		
	F24	High pressure sensor (Pd) trouble		
F30	Occupancy sensor trouble			
F31	Indoor unit EEPROM trouble			
<div>Operation Timer Ready</div> <div>  </div> <div>Synchronized blinking</div>	F29	Failure in indoor EEPROM		
	H01	Compressor breakdown		
<div>Operation Timer Ready</div> <div>  </div> <div>Blinking</div>	H02	Compressor lockup		
	H03	Current detection circuit trouble		
	H04	Comp. 1 case thermostat operation		
	H05	Wiring / installation trouble or detachment of outdoor discharge temperature sensor (TD1)		
	H06	Abnormal drop in low-pressure sensor (Ps) reading		
	H07	Abnormal drop in oil level		
	H08	Trouble in temperature sensor for oil level detection circuit (TK1, TK2, TK3, TK4 or TK5)		
	F14	Comp. 2 case thermostat operation		
	H15	Wiring / installation trouble or detachment of outdoor discharge temperature sensor (TD2)		
	H16	Oil level detection circuit trouble - Trouble in outdoor unit TK1, TK2, TK3, TK4 or TK5 circuit		
	H25	Wiring / installation trouble or detachment of outdoor discharge temperature sensor (TD3)		
	<div>Operation Timer Ready</div> <div>  </div> <div>Blinking Blinking</div>	J29	Leak Detector trouble	
		J30	Refrigerant leak detection	
J31		Refrigerant leak detection sensor has reached product life		
L02		Model mismatched of indoor and outdoor unit		
<div>Operation Timer Ready</div> <div>  </div> <div>Synchronized blinking</div>	L03	Duplicated indoor group header unit		
	L05	Duplicated priority indoor unit (as displayed on priority indoor unit)		
	L06	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)		
	L07	Connection of group control cable to a single indoor unit		
	L08	Indoor group address not set		
	L09	Indoor capacity not set		
	L30	Indoor external interlock trouble (External abnormal input)		
<div>Operation Timer Ready</div> <div>  </div> <div>Synchronized blinking</div>	L04	Duplicated outdoor refrigerant line address		
	L10	Outdoor capacity not set		
	L17	Outdoor model incompatibility trouble		
	L18	Flow selector units trouble		
	L20	Duplicated central control address		
	L28	Too many outdoor units connected		
	L29	Trouble in number of P.C. boards		
	L30	Indoor external interlock trouble (External abnormal input)		

Light block	Check code	Cause of trouble
Operation Timer Ready  Synchronized blinking	F30	Occupancy sensor trouble
	F31	Outdoor EEPROM trouble

Other (indications not involving check code)

Light block	Check code	Cause of trouble
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)

Flow selector unit (FS unit) Relation

Light block	Check code	Cause of trouble
Operation Timer Ready  Blinking	E17	Communication trouble between indoor unit(s) and FS unit(s)
Operation Timer Ready  Synchronized blinking	L12	FS unit(s) system trouble
	L24	FS unit(s) setting trouble
Operation Timer Ready  Blinking Blinking	J01	Communication trouble between indoor unit(s) and FS unit (or SV unit)
	J02	Communication trouble between control boards in FS unit
	J03	Duplicated FS units
	J10	FS unit overflow trouble
	J11	FS unit temperature sensor(TCS) trouble

10-4. Check Codes Displayed on Remote Controller and SMMS

series Outdoor Unit (7-Segment Display on I/F Board) and Locations to Be Checked

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

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
E01	—	—	Remote controller	Indoor-remote controller communication trouble (detected at remote controller end)	Stop of corresponding unit	Communication between indoor P.C. board and remote controller is disrupted.	<ul style="list-style-type: none"> • Check remote controller inter-unit tie cable (A/B). • Check for broken wire or connector bad contact. • Check indoor power supply. • Check for failure in indoor P.C. board. • Check remote controller address settings (when two remote controllers are in use). • Check remote controller P.C. board.
E02	—	—	Remote controller	Remote controller transmission trouble	Stop of corresponding unit	Signal cannot be transmitted from remote controller to indoor unit.	<ul style="list-style-type: none"> • Check internal transmission circuit of remote controller. --- Replace remote controller as necessary.
E04	—	—	Indoor unit	Indoor-outdoor communication circuit trouble (detected at indoor end)	Stop of corresponding unit	Indoor unit is not receiving signal from outdoor unit.	<ul style="list-style-type: none"> • Check order in which power was turned on for indoor and outdoor units. • Check indoor address setting. • Check indoor-outdoor tie cable. • Check outdoor terminator resistor setting (SW100, Bit 2).
E04	E06	No. of indoor units from which signal is received normally	I/F	Dropping out of indoor unit	All stop	Condition 1 All indoor unit initially communicating normally fails to return signal for specified length of time. Condition 2 Outdoor I / F board SW103, Bit4 : OFF (Factory default)	<ul style="list-style-type: none"> • 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 failure in indoor P.C. board. • Check for failure in outdoor P.C. board (I/F).
	—	—	Indoor unit	Indoor-outdoor communication circuit trouble	Only specified indoor units stop	Condition 1 Indoor unit initially communicating normally fails to return signal for specified length of time.	<ul style="list-style-type: none"> • Check power supply to indoor unit. (Is power turned on?) • Check indoor-outdoor power-on sequence. • Check indoor address setting • Check wiring of Indoor-outdoor communication wires • Check outdoor terminator resistor setting (SW100, Bit 2).

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display	Sub-code					
E04/E06	E06	No. of indoor units from which signal is received normally	Indoor unit	Indoor-outdoor communication circuit trouble (E04)	All stop	<p>Condition 1 One indoor unit or more initially communicating normally fails to return signal for specified length of time.</p> <p>Condition 2 Outdoor I / F board SW103, Bit4 : ON (To switch the check code detection condition.)</p>  <p>SW103 ON 1 2 3 4</p> <p>Display on main remote controller. Indoor units unavailable for indoor / outdoor communication. : E04 Indoor units available for indoor / outdoor communication. : E06</p>	<ul style="list-style-type: none"> • Check power supply to indoor unit. (Is power turned on?) • Check indoor-outdoor power-on sequence. • Check indoor address setting • Check wiring of Indoor-outdoor communication wires • Check outdoor terminator resistor setting (SW100, Bit 2).
			I/F	Dropping out of indoor unit (E06)			
—	E07	—	I/F	Indoor-outdoor communication circuit trouble (detected at outdoor end)	All stop	Signal cannot be transmitted from outdoor to indoor units for 30 seconds continuously.	<ul style="list-style-type: none"> • Check outdoor terminator resistor setting (SW100, Bit 2). • Check connection of indoor-outdoor communication circuit.
E08	E08	Duplicated indoor address	Indoor unit I/F	Duplicated indoor address	All stop	More than one indoor unit are assigned same address.	<ul style="list-style-type: none"> • Check indoor addresses. • Check for any change made to remote controller connection (group/individual) since indoor address setting.
E09	—	—	Remote controller	Duplicated master remote controller	Stop of corresponding unit	In two remote controller configuration (including wireless), both controllers are set up as master. (Header indoor unit is shut down with alarm, while follower indoor units continue operating.)	<ul style="list-style-type: none"> • Check remote controller settings. • Check remote controller P.C. boards.
E10	—	—	Indoor unit	Indoor inter-MCU communication trouble	Stop of corresponding unit	Communication cannot be established/maintained upon turning on of power or during communication.	<ul style="list-style-type: none"> • Check for failure in indoor P.C. board
E12	E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	I/F	Automatic address starting trouble	All stop	<ul style="list-style-type: none"> • Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress. • Outdoor automatic address setting is started while automatic address setting for indoor units is in progress. 	<ul style="list-style-type: none"> • Perform automatic address setting again after disconnecting communication cable to that refrigerant line.
E15	E15	—	I/F	Indoor unit not found during automatic address setting	All stop	Indoor unit cannot be detected after indoor automatic address setting is started.	<ul style="list-style-type: none"> • Check connection of indoor-outdoor communication line. • Check for trouble in indoor power supply system. • Check for noise from other devices. • Check for power failure. • Check for failure in indoor P.C. board.

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
E16	E16	00: Capacity over 01-: No. of units connected	I/F	Too many indoor units connected	All stop	<ul style="list-style-type: none"> Combined capacity of indoor units is too large. <p>Note: If this code comes up after backup setting for outdoor unit failure is performed, perform "No capacity over detected" setting.</p> <p><"No capacity over detected" setting method> Turn on SW103 / Bit 3 on I/F P.C. board of outdoor header unit.</p> <p>For Cooling Only model, this check code is not displayed even if it exceeds the combined capacity of indoor units.</p> <ul style="list-style-type: none"> More than 128 indoor units are connected. 	<ul style="list-style-type: none"> Check capacities of indoor units connected. Check combined HP capacities of indoor units. Check HP capacity settings of outdoor units. Check No. of indoor units connected. Check for failure in outdoor P.C. board (I/F).
E18	—	—	Indoor unit	Trouble in communication between indoor header and follower units	Stop of corresponding unit	Periodic communication between indoor header and follower units cannot be maintained.	<ul style="list-style-type: none"> Check remote controller wiring. Check indoor power supply wiring. Check P.C. boards of indoor units.
E19	E19	00: No header unit 02: Two or more header units	I/F	Trouble in number of outdoor header units	All stop	<ul style="list-style-type: none"> There are more than one outdoor header units in one line. There is no outdoor header unit in one line. 	<p>Outdoor header unit is outdoor unit to which indoor-outdoor tie cable (U1,U2) is connected.</p> <ul style="list-style-type: none"> Check connection of indoor-outdoor communication line. Check for failure in outdoor P.C. board (I/F).
E20	E20	01: Connection of outdoor unit from other line 02: Connection of indoor unit from other line	I/F	Connection to other line found during automatic address setting	All stop	Equipment from other line is found to have been connected when indoor automatic address setting is in progress.	Disconnect inter-line tie cable in accordance with automatic address setting method explained in "Address setting" section.
E23	E23	—	I/F	Outdooroutdoor communication transmission trouble	All stop	Signal cannot be transmitted to other outdoor units for at least 30 seconds continuously.	<ul style="list-style-type: none"> Check power supply to outdoor units. (Is power turned on?) Check connection of tie cables between outdoor units for bad contact or broken wire. Check communication connectors on outdoor P.C. boards. Check for failure in outdoor P.C. board (I/F). Check termination resistance setting for communication between outdoor units.
E25	E25	—	I/F	Duplicated follower outdoor address	All stop	There is duplication in outdoor addresses set manually.	Note: Do not set outdoor addresses manually.
E26	E26	Address of outdoor unit from which signal is not received normally	I/F	Signal lack of outdoor unit	All stop	Outdoor unit initially communicating normally fails to return signal for specified length of time.	<ul style="list-style-type: none"> Backup setting is being used for outdoor units. Check power supply to outdoor unit. (Is power turned on?) Check connection of tie cables between outdoor units for bad contact or broken wire. Check communication connectors on outdoor P.C. boards. Check for failure in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)																																																																																								
Main remote controller	Outdoor 7-segment display																																																																																														
	Check code	Sub-code																																																																																													
E28	E28	Detected outdoor unit No.	I/F	Outdoor follower unit trouble	All stop	Outdoor header unit receives trouble code from outdoor follower unit.	<ul style="list-style-type: none">• Check check code displayed on outdoor follower unit. <Convenient functions> If SW04 is pressed and held for at least 1 second while [E28] is displayed on the 7-segment display of outdoor header unit, the fan of the outdoor unit that has been shut down due to an trouble comes on. If SW04 and SW05 are pressed simultaneously, the fans of normal outdoor units come on. To stop the fan or fans, press SW05 on its own.																																																																																								
E31	E31	<table><tr><th colspan="4">P.C. board</th></tr><tr><th colspan="2">Compressor</th><th colspan="2">Fan Motor</th></tr><tr><th></th><th>1</th><th>2</th><th>1</th><th>2</th></tr><tr><td>01</td><td>O</td><td></td><td></td><td></td></tr><tr><td>02</td><td></td><td></td><td>O</td><td></td></tr><tr><td>03</td><td>O</td><td>O</td><td></td><td></td></tr><tr><td>08</td><td></td><td></td><td></td><td>O</td></tr><tr><td>09</td><td>O</td><td></td><td></td><td>O</td></tr><tr><td>0A</td><td></td><td>O</td><td>O</td><td></td></tr><tr><td>0B</td><td>O</td><td>O</td><td>O</td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td>O</td></tr><tr><td>11</td><td>O</td><td></td><td></td><td>O</td></tr><tr><td>12</td><td></td><td>O</td><td></td><td>O</td></tr><tr><td>13</td><td>O</td><td>O</td><td></td><td>O</td></tr><tr><td>18</td><td></td><td></td><td></td><td>O</td></tr><tr><td>19</td><td>O</td><td></td><td></td><td>O</td></tr><tr><td>1A</td><td></td><td>O</td><td></td><td>O</td></tr><tr><td>1B</td><td>O</td><td>O</td><td></td><td>O</td></tr></table> <p>Circle (O): Trouble P.C. board</p>	P.C. board				Compressor		Fan Motor			1	2	1	2	01	O				02			O		03	O	O			08				O	09	O			O	0A		O	O		0B	O	O	O		10				O	11	O			O	12		O		O	13	O	O		O	18				O	19	O			O	1A		O		O	1B	O	O		O	I/F	P.C. board communication trouble	All stop	Communication is disrupted between P.C. board in inverter box.	<ul style="list-style-type: none">• Check wiring and connectors involved in communication between P.C. board I/F P.C. board for bad contact or broken wire.• Check for failure in outdoor P.C. board (I/F, comp. P.C. board or Fan P.C. board).• Check for external noise.
		P.C. board																																																																																													
Compressor		Fan Motor																																																																																													
	1	2	1	2																																																																																											
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		80		Communication trouble between MCU and Sub MCU	All stop	Communication between MCU and Sub MCU stopped.	<ul style="list-style-type: none">• Operation of power supply reset (OFF for 60 seconds or more)• Outdoor I/F PC board trouble check																																																																																								
F01	—	—	Indoor unit	Indoor TCJ sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TCJ sensor connector and wiring.• Check resistance characteristics of TCJ sensor.• Check for failure in indoor P.C. board.																																																																																								
F02	—	—	Indoor unit	Indoor TC2 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TC2 sensor connector and wiring.• Check resistance characteristics of TC2 sensor.• Check for failure in indoor P.C. board.																																																																																								
F03	—	—	Indoor unit	Indoor TC1 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TC1 sensor connector and wiring.• Check resistance characteristics of TC1 sensor.• Check for failure in indoor P.C. board.																																																																																								
F04	F04	—	I/F	TD1 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TD1 sensor connector.• Check resistance characteristics of TD1 sensor.• Check for failure in outdoor P.C. board (I/F).																																																																																								

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
F05	F05	—	I/F	TD2 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TD2 sensor connector.• Check resistance characteristics of TD2 sensor.• Check for failure in outdoor P.C. board (I/F).
F06	F06	01: TE1 sensor trouble 02: TE2 sensor trouble 03: TE3 sensor trouble	I/F	TE1/TE2/TE3 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TE1/TE2/TE3 sensor connectors.• Check resistance characteristics of TE1/TE2/TE3 sensors.• Check for failure in outdoor P.C. board (I/F).
F07	F07	01: TL1 sensor trouble 02: TL2 sensor trouble 03: TL3 sensor trouble	I/F	TL1/TL2/TL3 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TL1/TL2/TL3 sensor connector.• Check resistance characteristics of TL1/TL2/TL3 sensor.• Check for failure in outdoor P.C. board (I/F).
F08	F08	—	I/F	TO sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TO sensor connector.• Check resistance characteristics of TO sensor.• Check for failure in outdoor P.C. board (I/F).
F09	F09	01: TG1 sensor trouble 02: TG2 sensor trouble 03: TG3 sensor trouble	I/F	TG1/TG2/TG3 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TG1/TG2/TG3 sensor connectors.• Check resistance characteristics of TG1/TG2/TG3 sensors.• Check for failure in outdoor P.C. board (I/F).
F10	—	—	Indoor unit	Indoor TA sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TA sensor connector and wiring.• Check resistance characteristics of TA sensor.• Check for failure in indoor P.C. board.
F11	—	—	Indoor unit	Indoor TF sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TF sensor connector and wiring.• Check resistance characteristics of TF sensor.• Check for failure in indoor P.C. board.
F12	F12	01: TS1 sensor trouble 03: TS3 sensor trouble	I/F	TS1/TS3 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Check connection of TS1/TS3 sensor connector• Check resistance characteristics of TS1/TS3 sensor.• Check for failure in indoor P.C. board.
F13	F13	1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	TH sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none">• Failure in IPM built-in temperature sensor → Replace Compressor P.C. board.
F15	F15	—	I/F	Outdoor temperature sensor wiring trouble (TE1, TL1)	All stop	During compressor operation in HEAT mode, TL1 continuously provides temperature reading higher than indicated by TL1 by at least specified margin for 3 minutes or more.	<ul style="list-style-type: none">• Check installation of TE1 and TL1 sensors.• Check resistance characteristics of TE1 and TL1 sensors.• Check for outdoor P.C. board (I/F) trouble

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
F16	F16	—	I/F	Outdoor pressure sensor wiring trouble (Pd, Ps)	All stop	Readings of high-pressure Pd sensor and low-pressure Ps sensor are switched. Output voltages of both sensors are zero.	<ul style="list-style-type: none"> • Check connection of high-pressure Pd sensor connector. • Check connection of low-pressure Ps sensor connector. • Check for failure in pressure sensors Pd and Ps. • Check for trouble in outdoor P.C. board (I/F). • Check for compressor poor compression.
F23	F23	—	I/F	Ps sensor trouble	All stop	Output voltage of Ps sensor is zero.	<ul style="list-style-type: none"> • Check for connection trouble involving Ps sensor and Pd sensor connectors. • Check connection of Ps sensor connector. • Check for failure in Ps sensor. • Check for compressor poor compression. • Check for failure in 4-way valve. • Check for failure in outdoor P.C. board (I/F). • Check for failure in SV4 circuit.
F24	F24	—	I/F	Pd sensor trouble	All stop	Output voltage of Pd sensor is zero (sensor open-circuited). Pd > 4.15MPa despite compressor having been turned off.	<ul style="list-style-type: none"> • Check connection of Pd sensor connector. • Check for failure in Pd sensor. • Check for failure in outdoor P.C. board (I/F).
F29	—	—	Indoor unit	Other indoor trouble	Stop of corresponding unit	Indoor P.C. board does not operate normally.	<ul style="list-style-type: none"> • Check for failure in indoor P.C. board (failure EEPROM)
F31	F31	—	I/F	Outdoor EEPROM trouble	All stop *1	Outdoor P.C. board (I/F) does not operate normally.	<ul style="list-style-type: none"> • Check power supply voltage. • Check power supply noise. • Check for failure in outdoor P.C. board (I/F).
H01	H01	1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	Compressor breakdown	All stop	Inverter current detection circuit detects overcurrent and shuts system down.	<ul style="list-style-type: none"> • Check power supply voltage. (AC380V-415V ± 10%). • Check for failure in compressor. • Check for possible cause of abnormal overloading. • Check for failure in outdoor P.C. board (Compressor).
H02	H02	1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	Compressor trouble (lockup) MG-CTT trouble	All stop	Overcurrent is detected several seconds after startup of inverter compressor.	<ul style="list-style-type: none"> • Check for failure in compressor. • Check power supply voltage. (AC380V-415V ± 10%). • Check compressor system wiring, particularly for open phase. • Check connection of connectors/terminals on compressor P.C. board. • Check conductivity of case heater. (Check for refrigerant problem inside compressor.) • Check for failure in outdoor P.C. board (Compressor). • Check outdoor MG-CTT.
H03	H03	1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	Current detection circuit trouble	All stop	Current flow of at least specified magnitude is detected despite inverter compressor having been shut turned off.	<ul style="list-style-type: none"> • Check current detection circuit wiring. • Check failure in outdoor P.C. board (Compressor).

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

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
H05	H05	—	I/F	TD1 sensor miswiring (incomplete insertion)	All stop	Discharge temperature of compressor 1 (TD1) does not increase despite compressor being in operation.	<ul style="list-style-type: none"> • Check installation of TD1 sensor. • Check connection of TD1 sensor connector and wiring. • Check resistance characteristics of TD1 sensor. • Check for failure in outdoor P.C. board (I/F).
H06	H06	—	I/F	Activation of low-pressure protection	All stop	Low-pressure Ps sensor detects operating pressure lower than 0.02MPa.	<ul style="list-style-type: none"> • Check service valves to confirm full opening (both gas and liquid sides). • Check outdoor PMVs for clogging (PMV1, 2, 3). • Check for failure in SV4 circuits. • Check for failure in low-pressure Ps sensor. • Check indoor filter for clogging. • Check valve opening status of indoor PMV. • Check refrigerant piping for clogging. • Check operation of outdoor fan (during heating). • Check for insufficiency in refrigerant quantity.
H07	H07	—	I/F	Low oil level protection	All stop	Operating compressor detects continuous state of low oil level for about 2 hours.	<p><All outdoor units in corresponding line to be checked></p> <ul style="list-style-type: none"> • Check connection and installation of TK1 and TK2 sensors. • Check resistance characteristics of TK1 and TK2 sensors. • Check for gas or oil leak in same line. • Check for refrigerant problem inside compressor casing. • Check SV3D, SV3F valves for failure. • Check oil return circuit of oil separator for clogging. • Check oil equalizing circuit for clogging.
H08	H08	01: TK1 sensor trouble 02: TK2 sensor trouble	I/F	Trouble in temperature sensor for oil level detection	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> • Check connection of TK1 sensor connector. • Check resistance characteristics of TK1 sensor. • Check for failure in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> • Check connection of TK2 sensor connector. • Check resistance characteristics of TK2 sensor. • Check for failure in outdoor P.C. board (I/F).
H15	H15	—	I/F	TD2 sensor miswiring (incomplete insertion)	All stop	Discharge temperature of (TD2) does not increase despite compressor 2 being in operation.	<ul style="list-style-type: none"> • Check installation of TD2 sensor. • Check connection of TD2 sensor connector and wiring. • Check resistance characteristics of TD2 sensor. • Check for failure in outdoor P.C. board (I/F).

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display	Sub-code					
H16	H16	01: TK1 oil circuit trouble 02: TK2 oil circuit trouble	I/F	Oil level detection circuit trouble	All stop	No temperature change is detected by TK1 despite compressor 1 having been started. No temperature change is detected by TK2 despite compressor 2 having been started.	<ul style="list-style-type: none"> • Check for disconnection of TK1 sensor. • Check resistance characteristics of TK1 sensor. • Check for connection trouble involving TK1 and TK2 sensors • Check for clogging in oil equalizing circuit capillary. • Check for refrigerant entrapment inside compressor. • Check for disconnection of TK2 sensor. • Check resistance characteristics of TK2 sensor. • Check for connection trouble involving TK1 and TK2 sensors • Check SV3F valve malfunction. • Check for clogging in oil equalizing circuit capillary. • Check for refrigerant entrapment inside compressor.
H17	H17	1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	Compressor trouble (Step-out)	All stop	Judged that the synchronization could not be taken.	<ul style="list-style-type: none"> • Check power supply voltage. (AC380V-415V ± 10%). • Check for failure in compressor. • Check for possible cause of abnormal overloading. • Check for failure in outdoor P.C. board (compressor).
J01	—	—	FS unit	Communication trouble between indoor unit(s) and FS unit	Stop of corresponding unit(s) (Indoor unit(s) connected to the same FS unit)	FS unit not receiving signal from indoor unit(s)	<ul style="list-style-type: none"> • Check wiring between FS unit and indoor unit(s). • Check FS unit port address setting of indoor unit. • Check FS unit port combining branches setting of indoor unit.
J02	—	—	Indoor unit	Communication trouble between control boards in Flow Selector unit	Stop of corresponding unit(s) (Indoor units (s) connected to the same FS unit)	There is no communication from P.C.board after No.2 of FS unit Multi-port type.	<ul style="list-style-type: none"> • Check connector connection of FS unit for PC board communication. • Check for PC board defects in FS unit. • Check FS unit control number setting (SW01 of FS unit, Bit 1 to 4).
J03	—	—	Indoor unit	Duplicated FS units	Stop of corresponding unit(s)	Multiple FS unit (or SV units) are installed in one indoor unit.	<ul style="list-style-type: none"> • Check indoor unit(s) - FS unit(s) cable
J29	J29	Detected indoor unit address	Indoor unit or Leak Detector Interface	Leak Detector Trouble	When DN code 06B = 0001 or 0002 are set • All stop	<ul style="list-style-type: none"> • There is no communication from Leak Detector. • A Malfunction signal received from Leak Detector. 	<ul style="list-style-type: none"> • Check Malfunction LED of Leak Detector. • Check disconnection and connectors of Leak Detector. • Check PC board defects of Leak Detector. • Check PC board defects of indoor unit or Leak Detector Interface.
	—	—			• Continued operation • All stop (detected when power is turned on)		

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
J30	J30	Detected indoor unit address	Indoor unit or Leak Detector Interface	Refrigerant leak detection	All stop (Safety measures setting of indoor unit is "Pump-down operation" or "Leak Detector only")	Leak Detector detects refrigerant leak	<ul style="list-style-type: none">• Check refrigerant detection status of Leak Detector.• Check refrigerant leaks from indoor unit or Flow Selector / Shut-off Valve unit.• Check for false detection.
	—	—	Indoor unit	Stop of corresponding unit(s) (Safety measures setting of indoor unit is "Individual shut-off operation")			
J31	—	—	Indoor unit or Leak Detector Interface	Refrigerant leak detection sensor exceeding its life of the product	Continued operation	The energization time of refrigerant sensor has reached 10 years.	<ul style="list-style-type: none">• Check Malfunction LED of Leak Detector.• Check refrigerant sensor of Leak Detector.
L02	L02	—	Indoor unit	Outdoor units model disagreement trouble	Stop of corresponding unit	In case of different outdoor unit (Not corresponded to Air to Air Heat Exchanger type)	<ul style="list-style-type: none">• Check outdoor unit model. (Check whether the outdoor unit corresponds to Air to Air Heat Exchanger type or not.)
L03	—	—	Indoor unit	Duplicated indoor header unit	Stop of corresponding unit	There are more than one header units in group.	<ul style="list-style-type: none">• Check indoor addresses.• Check for any change made to remote controller connection (group/ individual) since indoor address setting.
L04	L04	—	I/F	Duplicated outdoor line address	All stop	There is duplication in line address setting for outdoor units belonging to different refrigerant piping systems.	<ul style="list-style-type: none">• Check line addresses.
L05	—	—	I/F	Duplicated priority indoor unit (as displayed on priority indoor unit)	All stop	More than one indoor units have been set up as priority indoor unit.	<ul style="list-style-type: none">• Check display on priority indoor unit.
L06	L06	No. of priority indoor units	I/F	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	All stop	More than one indoor units have been set up as priority indoor unit.	<ul style="list-style-type: none">• Check displays on priority indoor unit and outdoor unit.
L07	—	—	Indoor unit	Connection of group control cable to standalone indoor unit	Stop of corresponding unit	There is at least one standalone indoor unit to which group control cable is connected.	<ul style="list-style-type: none">• Check indoor addresses.
L08	L08	—	Indoor unit	Indoor group / addresses not set	Stop of corresponding unit	Address setting has not been performed for indoor units.	<ul style="list-style-type: none">• Check indoor addresses. <p>Note: This code is displayed when power is turned on for the first time after installation.</p>
L09	—	—	Indoor unit	Indoor capacity not set	Stop of corresponding unit	Capacity setting has not been performed for indoor unit.	Set indoor capacity. (DN = 11)

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

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
P04	P04	1*: Compressor 1 side 2*: Compressor 2 side	I/F	Activation of high-pressure SW	All stop	High-pressure SW is activated.	<ul style="list-style-type: none">• Check connection of high-pressure SW connector.• Check for failure in Pd pressure sensor.• Check outdoor service valves (gas side, liquid side) to confirm full opening.• Check for failure in outdoor fan.• Check for failure in outdoor fan motor.• Check outdoor PMVs (PMV1, 2, 3) for clogging.• Check indoor/outdoor heat exchangers for clogging.• Check for short-circuiting of outdoor suction/discharge air flows.• Check for failure in outdoor P.C. board (I/F).• Check for trouble in indoor fan system (possible cause of air flow reduction).• Check opening status of indoor PMV.• Check indoor-outdoor communication line for wiring trouble.• Check for failure operation of check valve in discharge pipe convergent section.• Check gas balancing SV4 valve circuit.• Check for refrigerant overcharging.
P05	P05	00: Power detection trouble 01: Open phase 02: Power supply miswiring	I/F	Power detection trouble / Open phase detection / Power supply miswiring	All stop	<ul style="list-style-type: none">• Open phase is detected when power is turned on.• Inverter DC voltage is too high (overvoltage) or too low (undervoltage).	<ul style="list-style-type: none">• Check for failure in outdoor P.C. board (I/F).• Check wiring of outdoor power supply.• Check power supply voltage.
		1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	Compressor Vdc trouble			
P07	P07	1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	Heat sink overheating trouble	All stop	Temperature sensor built into IPM (TH) is overheated.	<ul style="list-style-type: none">• Check outdoor fan system trouble.• Check IPM and heat sink for thermal performance for failure installation. (e.g. mounting screws and thermal conductivity)• Check for failure in Compressor P.C. board. (failure IPM built-in temperature sensor (TH))
		01: Compressor 1 heat sink trouble 02: Compressor 2 heat sink trouble 04: Heat sink dew condensation	I/F	Heat sink overheating trouble Heat sink dew condensation trouble	All stop	Condensation detection on heat sink has occurred four times or more in operation. Temperature sensor built into IPM (TH) is overheated.	<ul style="list-style-type: none">• Check outdoor fan system trouble.• Check IPM and heat sink for thermal performance for troubled installation. (e. g. mounting screws and thermal conductivity)• Check for failure in compressor P.C. board. (failure IPM built-in temperature sensor (TH))• Check shortage of refrigerant.• Check outdoor service valves.• Check connection of TL2 sensor.• Check resistance characteristics of TL2 sensor.• Check resistance characteristics of TO sensor.• Check malfunctions of Pd and Ps sensors.• Check outdoor I/F P.C. board malfunction.• Check PMV2 and PMV3

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
P10	P10	Detected indoor address	Indoor unit	Indoor overflow trouble	All stop	<ul style="list-style-type: none">• Float switch operates.• Float switch circuit is open-circuited or disconnected at connector.	<ul style="list-style-type: none">• Check float switch connector.• Check operation of drain pump.• Check drain pump circuit.• Check drain pipe for clogging.• Check for failure in indoor P.C. board.
P11	—	—	I/F	Outdoor heat exchanger freeze trouble	All stop	<ul style="list-style-type: none">• Outdoor heat exchanger remaining frost detection has occurred eight times or more due to abnormal frost formation in heating operation.	<ul style="list-style-type: none">• Check shortage of refrigerant.• Check connection of TE1, TE2 and TE3 sensors.• Check resistance characteristics of TE1, TE2, and TE3 sensors.• Check disconnection of TS1 sensor.• Check resistance characteristics of TS1 sensor.• Check outdoor I/F P.C. board malfunction.• Check operation of 4 way valve.• Check operation of outdoor PMV (1, 2, 3).• Check short circuit from outlet air to inlet air.
P12	—	—	Indoor unit	Indoor fan motor trouble	Stop of corresponding unit	<ul style="list-style-type: none">• Motor speed measurements continuously deviate from target value.• Overcurrent protection is activated.	<ul style="list-style-type: none">• Check connection of fan connector and wiring.• Check for failure in fan motor.• Check for failure in indoor P.C. board.• Check impact of outside air treatment (OA).
P13	P13	—	I/F	Outdoor liquid backflow detection trouble	All stop	<p><During cooling operation> When system is in cooling operation, high pressure is detected in the unit that has been turned off.</p> <p><During heating operation> When system is in heating operation, low pressure is detected to be high in unit that has been turned off.</p>	<ul style="list-style-type: none">• Check full-close operation of outdoor PMV (1, 2, 3, 4).• Check for failure in Pd or Ps sensor.• Check failure in outdoor P.C. board (I/F).• Check capillary of oil separator oil return circuit for clogging.• Check for leakage of check valve in discharge pipe
P15	P15	01: TS condition	I/F	Gas leak detection (TS1 condition)	All stop	Protective shutdown due to sustained suction temperature at or above judgment criterion for at least 10 minutes is repeated four times or more. <TS trouble judgment criterion> In cooling operation: 60 °C In heating operation: 40 °C	<ul style="list-style-type: none">• Check for insufficiency in refrigerant quantity.• Check outdoor service valves (gas side, liquid side) to confirm full opening.• Check PMVs (PMV1, 2, 3, 4) for clogging.• Check resistance characteristics of TS1 sensor.• Check for failure in 4-way valve.• Check SV4 circuit for leakage
		02: TD condition	I/F	Gas leak detection (TD condition)	All stop	Protective shutdown due to sustained discharge temperature (TD1 or TD2) at or above 108 °C for at least 10 minutes is repeated four times or more.	<ul style="list-style-type: none">• Check for insufficiency in refrigerant quantity.• Check PMVs (PMV 1, 2, 3, 4) for clogging.• Check resistance characteristics of TD1 and TD2 sensors.• Check indoor filter for clogging.• Check piping for clogging.• Check SV4 circuit (for leakage or coil installation trouble).

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
P17	P17	—	I/F	Discharge temperature TD2 trouble	All stop	Discharge temperature (TD2) exceeds 115 °C.	<ul style="list-style-type: none">• Check outdoor service valves (gas side, liquid side) to confirm full opening.• Check outdoor PMVs (PMV1, 2, 3, 4) for clogging.• Check resistance characteristics of TD2 sensor.• Check for failure in 4-way valve.• Check SV4 circuit for leakage.• Check SV4 circuit (for wiring or installation trouble involving SV41 and SV42).
P19	P19	Detected outdoor unit No.	I/F	4-way valve reversing trouble	All stop	Abnormal refrigerating cycle data is collected during heating operation.	<ul style="list-style-type: none">• Check for failure in main body of 4-way valve.• Check for coil failure in 4-way valve and loose connection of its connector.• Check resistance characteristics of TS1 and TE1,TE2 sensors.• Check output voltage characteristics of Pd and Ps pressure sensors.• Check for wiring trouble involving TE1 and TL1 sensors.
P20	P20	—	I/F	Activation of high-pressure protection	All stop	<During cooling operation> Pd sensor detects pressure equal to or greater than 3.85 MPa. <During heating operation> Pd sensor detects pressure equal to or greater than 3.6 MPa.	<ul style="list-style-type: none">• Check for failure in Pd pressure sensor.• Check service valves (gas side, liquid side) to confirm full opening.• Check for failure in outdoor fan.• Check for failure in outdoor fan motor.• Check outdoor PMV (PMV1, 2, 3, 4) for clogging.• Check indoor/outdoor heat exchangers for clogging.• Check for short-circuiting of outdoor suction/discharge air flows.• Check for failure in outdoor P.C. board (I/F).• Check for failure in indoor fan system (possible cause of air flow reduction).• Check opening status of indoor PMV.• Check indoor-outdoor communication line for wiring trouble.• Check for trouble operation of check valve in discharge pipe convergent section.• Check gas balancing SV4 valve circuit.• Check for refrigerant overcharging.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
P22	P22	1*: Fan P.C. board 1 2*: Fan P.C. board 2	Fan INV. P.C. board	Outdoor fan P.C. board trouble	All stop	Protected operation of Fan inverter P.C. board	<ul style="list-style-type: none">• Check fan motor.• Check for failure in fan P.C. board.• Check connection of fan motor connector.• Check power voltage of the main power supply.
P26	P26	1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	IPM, Compressor shortcircuit protection trouble	All stop	Overcurrent is momentarily detected during startup of compressor.	<ul style="list-style-type: none">• Check connector connection and wiring on compressor P.C. board.• Check for failure in compressor (layer shortcircuit).• Check for failure in outdoor P.C. board (Compressor).
P29	P29	1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	Compressor position detection circuit trouble	All stop	Position detection is not going on normally.	<ul style="list-style-type: none">• Check wiring and connector connection.• Check for compressor layer short-circuit.• Check for failure in compressor P.C. board.
P31	—	—	Indoor unit	Other indoor trouble (group follower unit trouble)	Stop of corresponding unit	There is trouble in other indoor unit in group, resulting in detection of E07/L07/L03/L08.	<ul style="list-style-type: none">• Check indoor P.C. board.

Check codes Displayed on by Central Control Device

Main remote controller	Check code		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
E03	—	—	Indoor unit	Indoor-remote controller communication trouble (detected at indoor end)	Stop of corresponding unit	There is no communication from remote controller (including wireless) or network adaptor.	• Check remote controller and network adaptor wiring.
C05	—		Central control device	Central control device transmission trouble	Continued operation	Central control device is unable to transmit signal.	<ul style="list-style-type: none"> • Check for failure in central control device. • Check for failure in central control communication line. • Check termination resistance setting.
C06	—		Central control device	Central control device reception trouble	Continued operation	Central control device is unable to receive signal.	<ul style="list-style-type: none"> • Check for failure in central control device. • Check for failure in central control communication line. • Check terminator resistor setting. • Check power supply for devices at other end of central control communication line. • Check failure in P.C. boards of devices at other end of central control communication line.
C12	—		General-purpose device I/F	Batch alarm for general-purpose device control interface	Continued operation	Trouble signal is input to control interface for general-purpose devices.	• Check trouble input.
P30	Differs according to nature of alarm-causing trouble		Central control device	Group control follower unit trouble	Continued operation	Trouble occurs in follower unit under group control. ([P30] is displayed on central control remote controller.)	• Check check code of unit that has generated alarm.
	(L20 displayed.)			Duplicated central control address	Continued operation	There is duplication in central control addresses.	• Check address settings.

▼ Points to Note When Servicing Compressor

(1) When checking the outputs of inverters, remove the wiring from all the compressors.

▼ How to Check Inverter Output

- (1) Turn off the power supply.
- (2) Remove compressor leads from the compressor P.C. board.
(The model with two compressor should remove the wiring for two sets (6 leads).)
- (3) Turn on the power supply and start cooling or heating operation.
- (4) Check the output voltage across each pair of inverter-side. If the result is unsatisfactory according to the judgment criteria given in the table below, replace the compressor P.C. board.

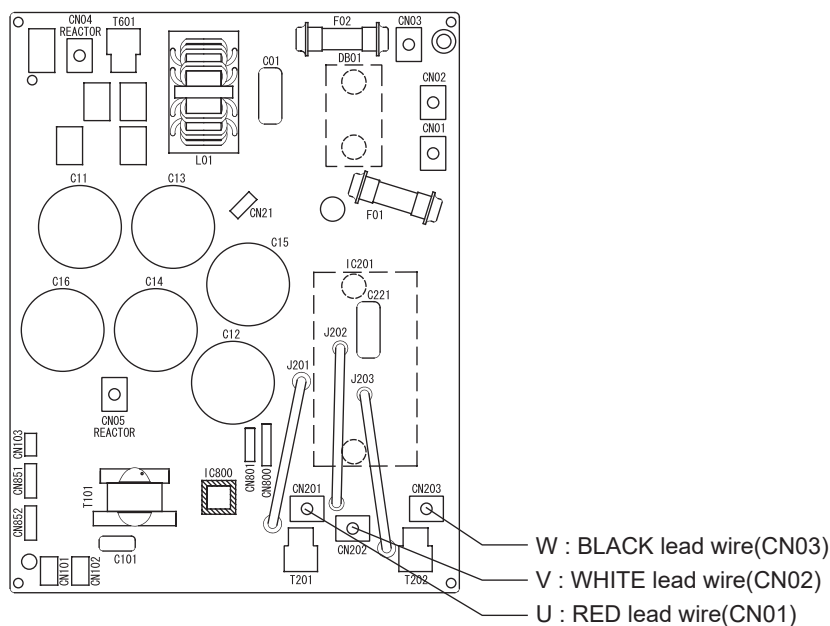
No.	Measured leads	Criterion
1	CN201 - CN202	380~580V
2	CN202 - CN203	380~580V
3	CN203 - CN201	380~580V

▼ How to Check Resistance of Compressor Winding

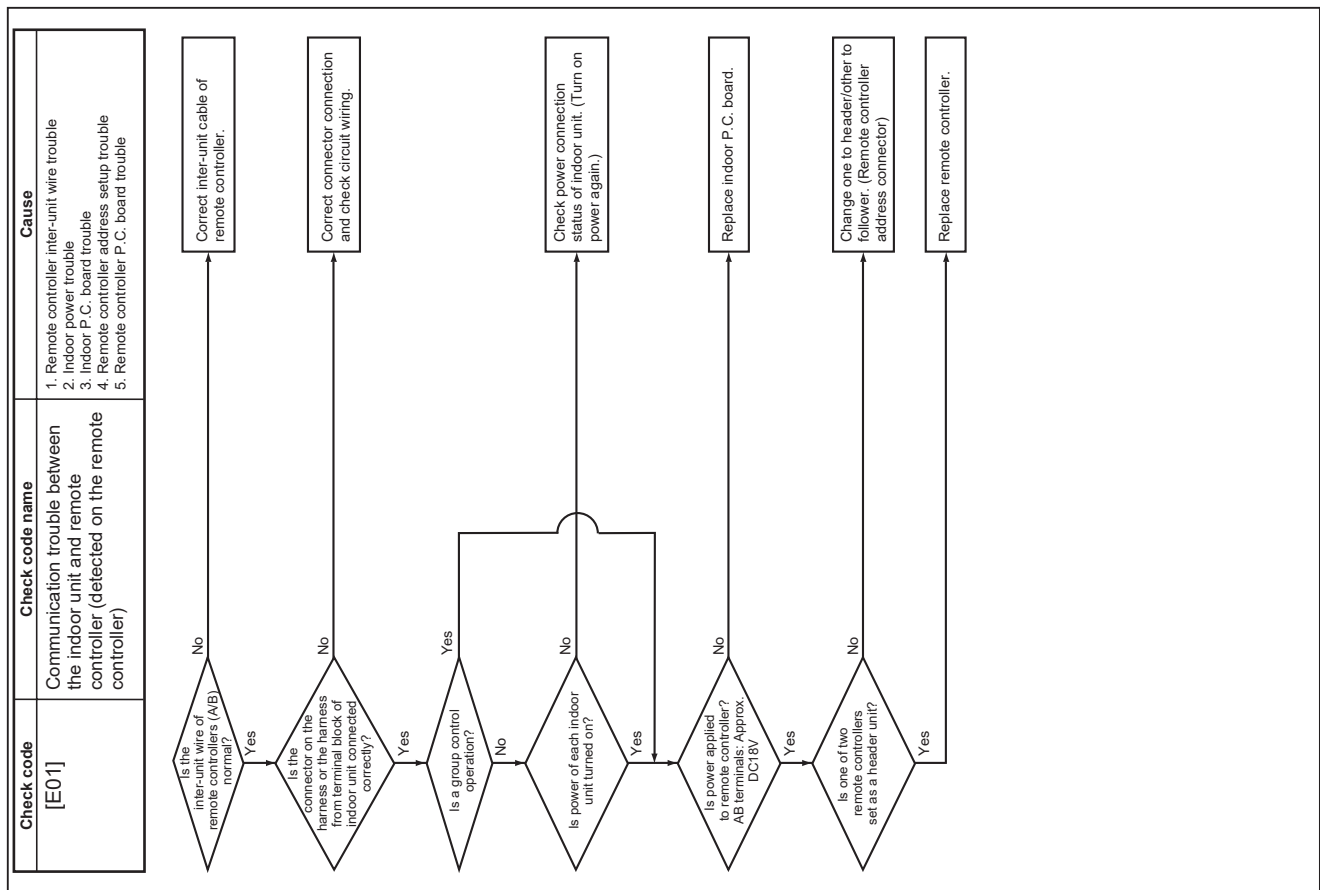
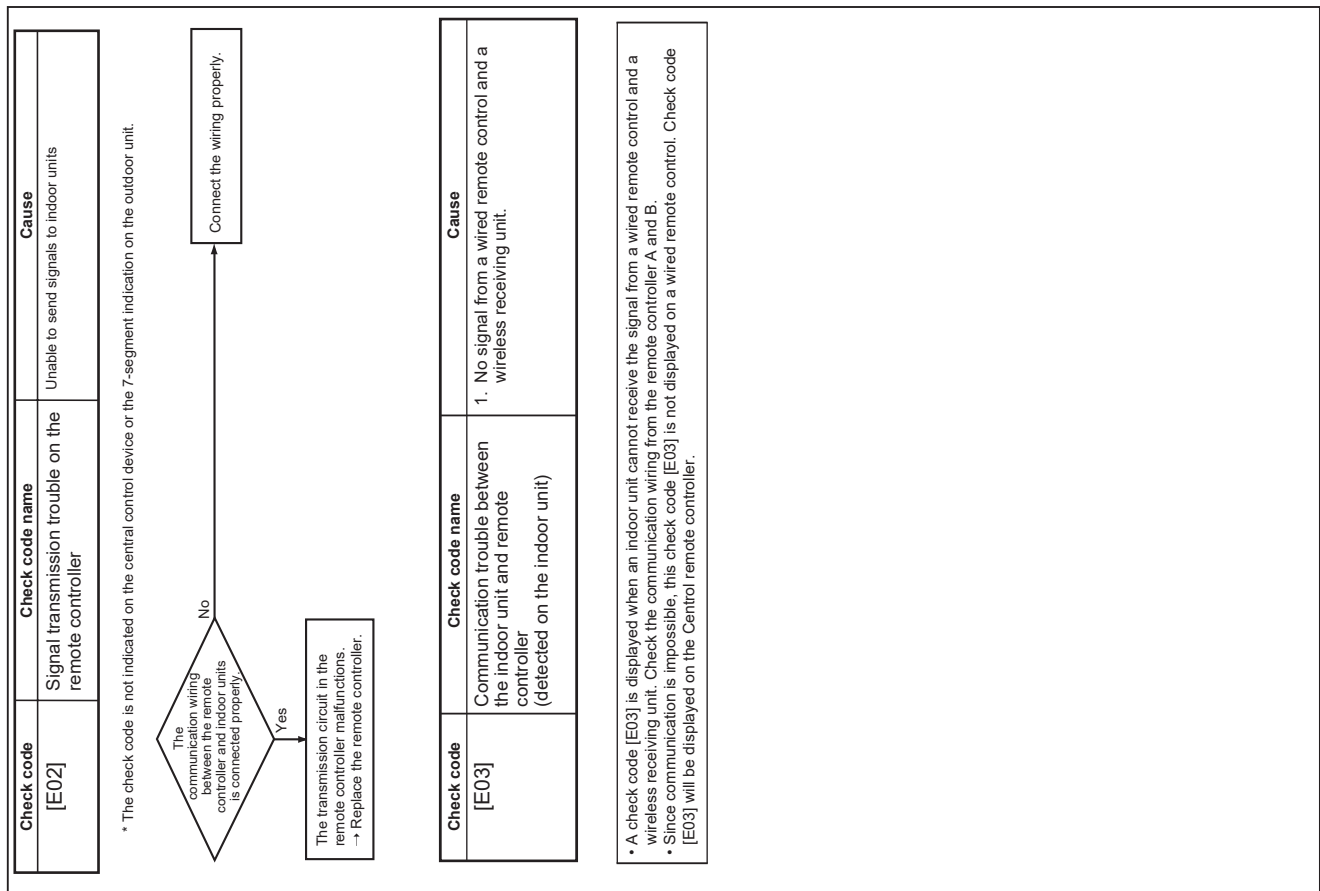
- (1) Turn off the power supply.
- (2) Remove compressor leads from the compressor P.C. board. (Be sure to remove all the leads.)
- (3) With each compressor, check the phase-to-phase winding resistances and winding-to-outdoor cabinet resistance using a multimeter.
 - Earth trouble?
→ It is normal if the winding-to-outdoor cabinet resistance is 10MΩ or more.
 - Inter-winding short circuit?
→ It is normal if the phase-to-phase resistances are in the 0.1-1.0Ω range. (Use a digital multimeter.)

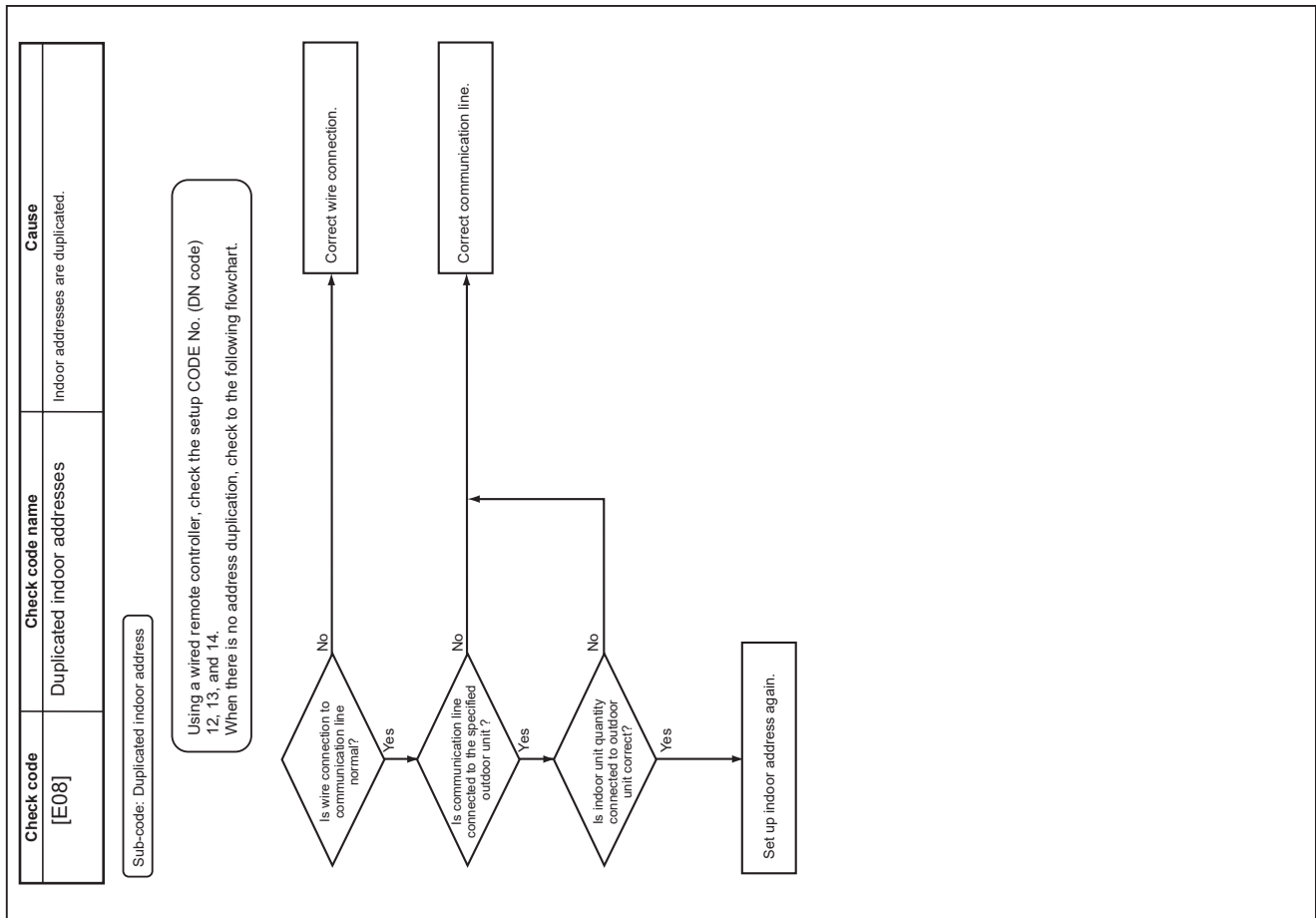
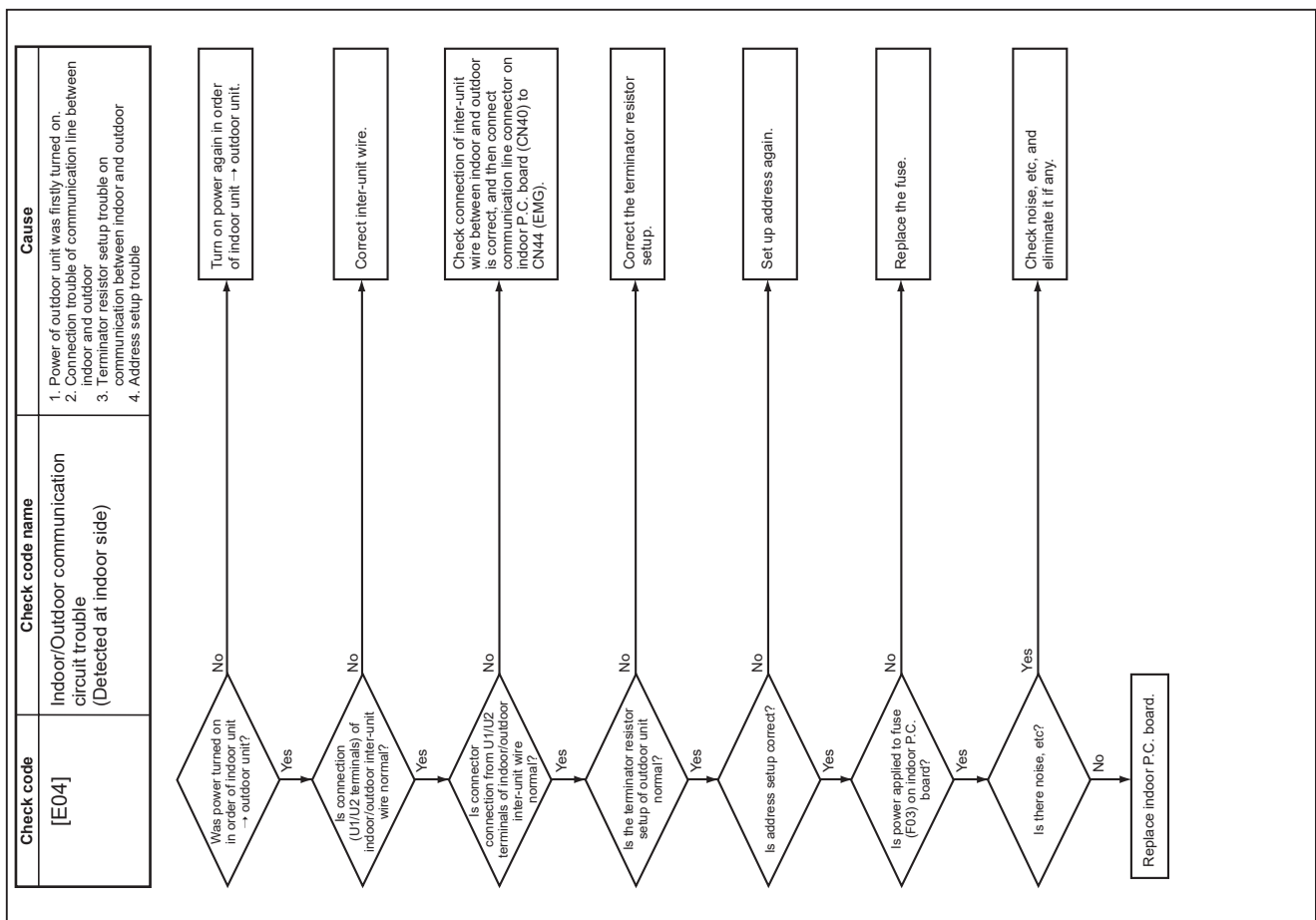
▼ How to Check Outdoor Fan Motor

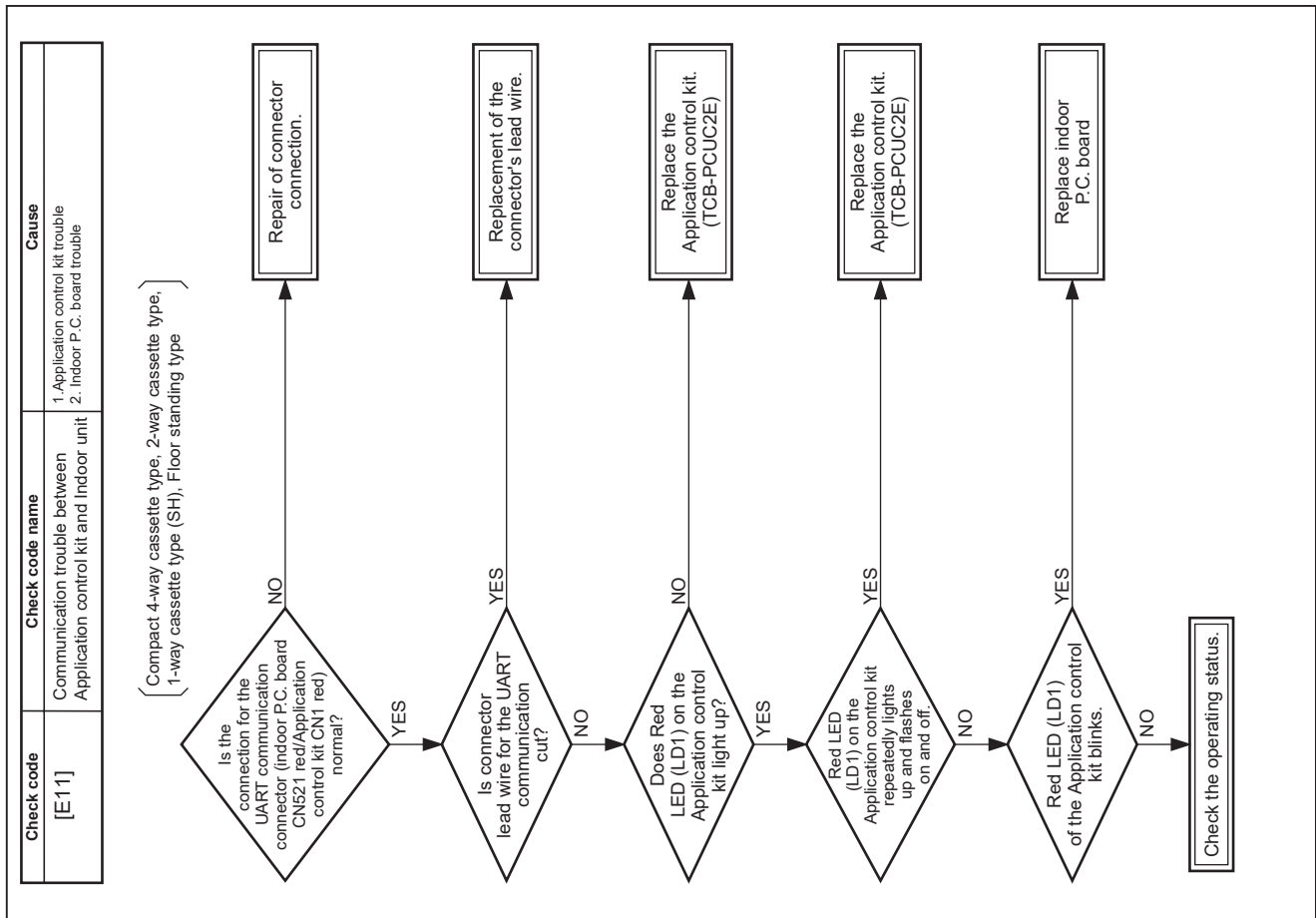
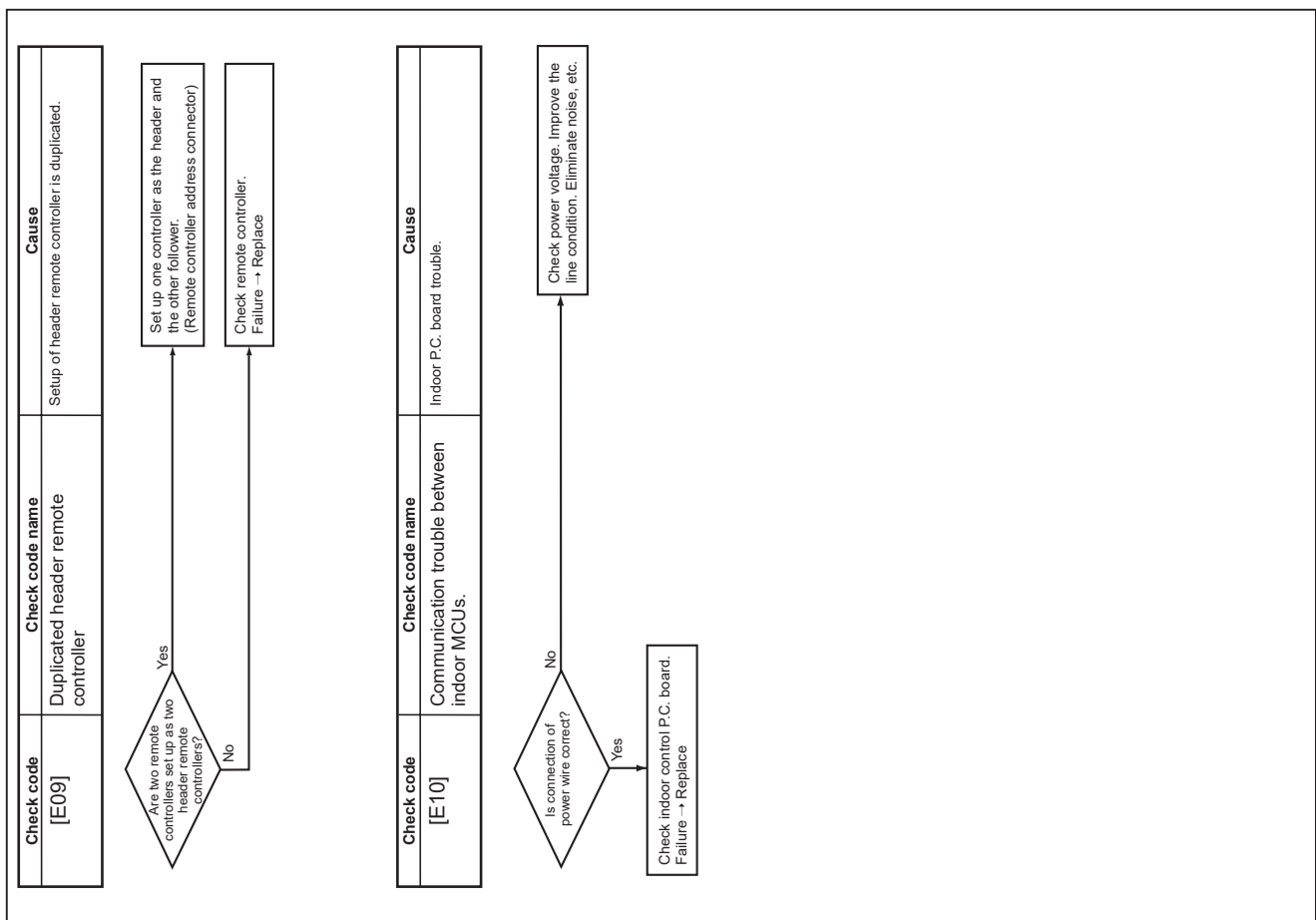
- (1) Turn off the power supply.
- (2) Remove fan motor leads from the fan P.C. board for the outdoor fan.
- (3) Rotate the fan by hand. If the fan does not turn, the fan motor is faulty (locked up). Replace the fan motor.
If the fan turns, measure the phase-to-phase winding resistances using a multimeter. It is normal if the measurements are in the 8.1-9.9 range. (Use a digital multimeter.)

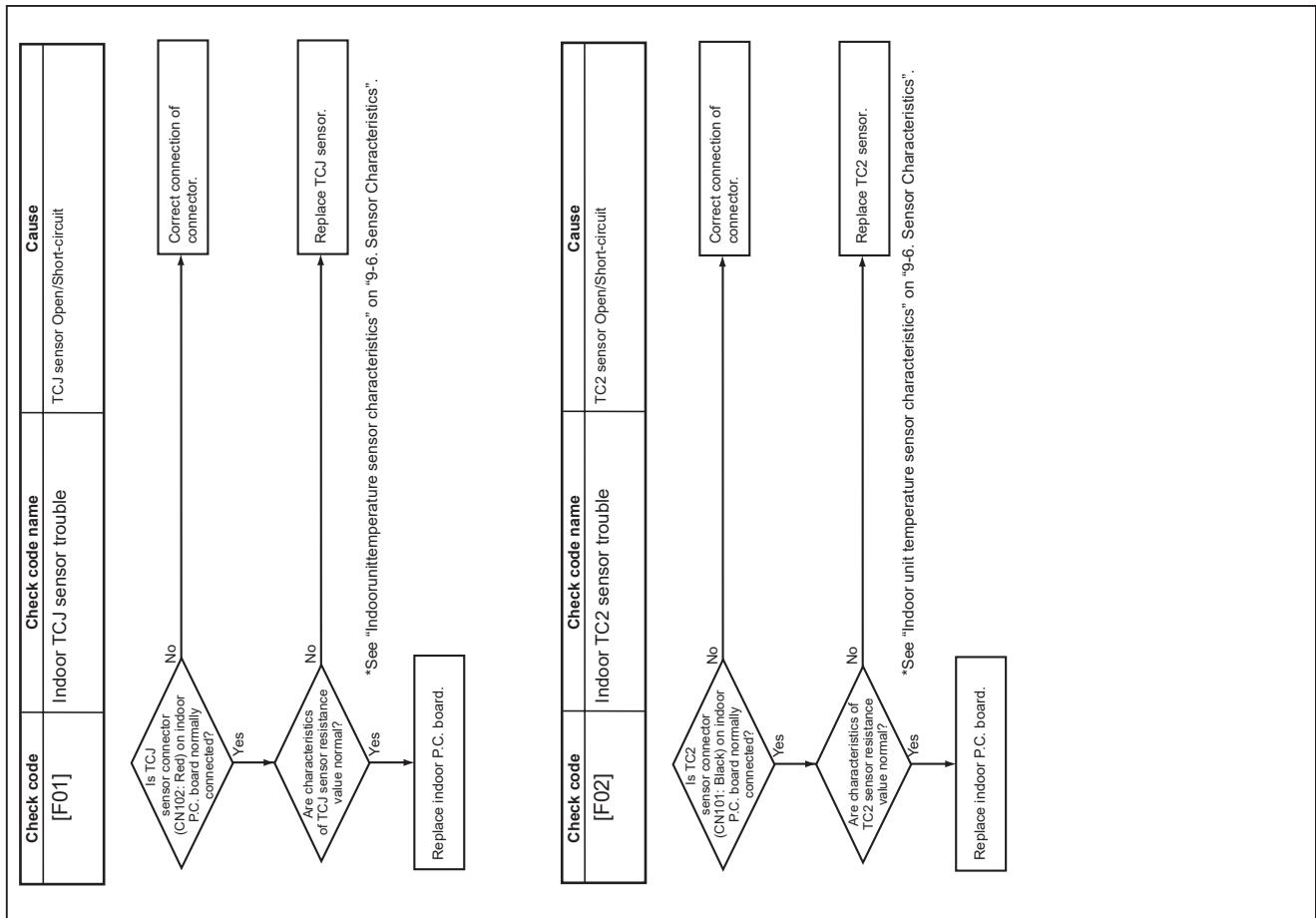
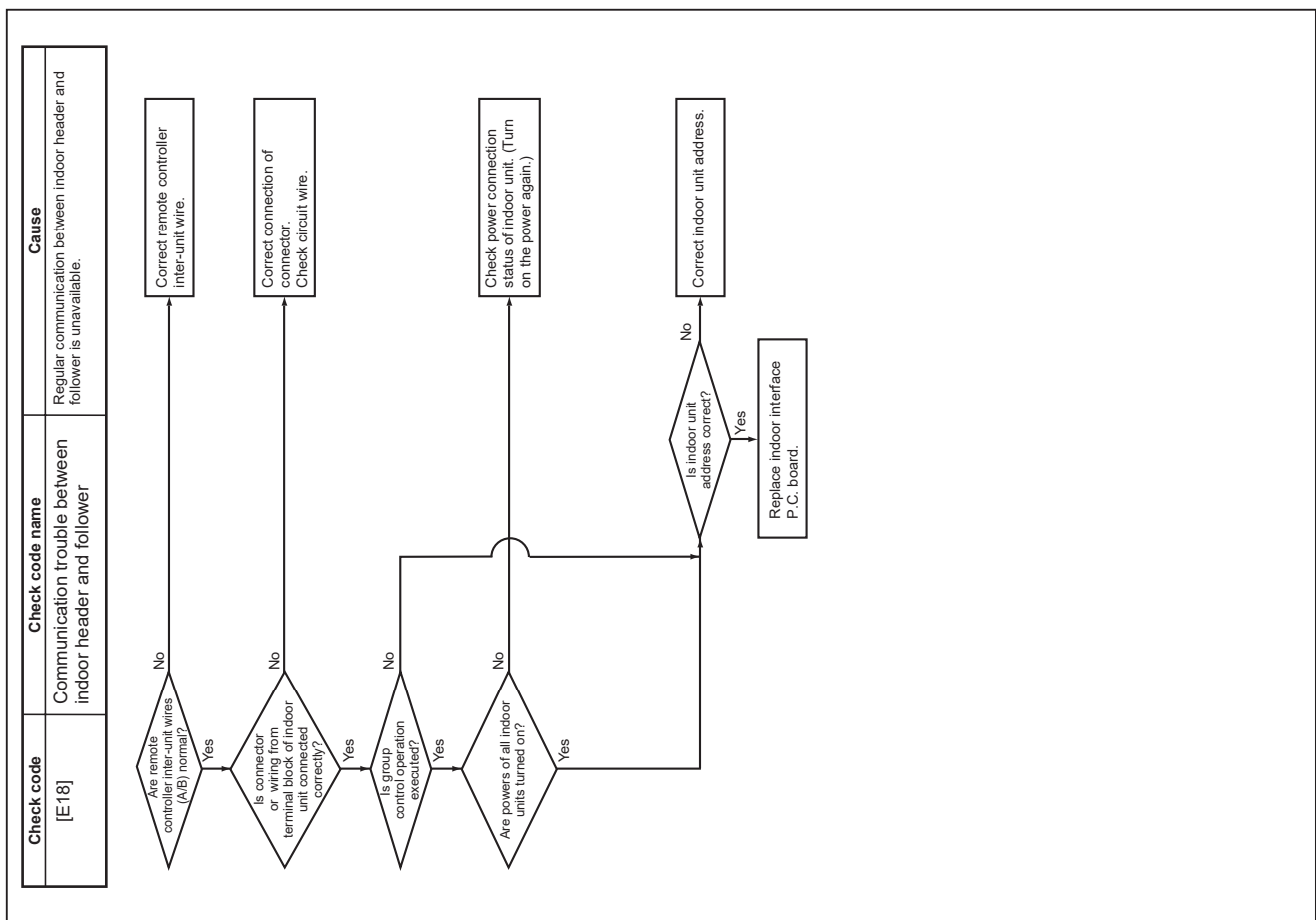


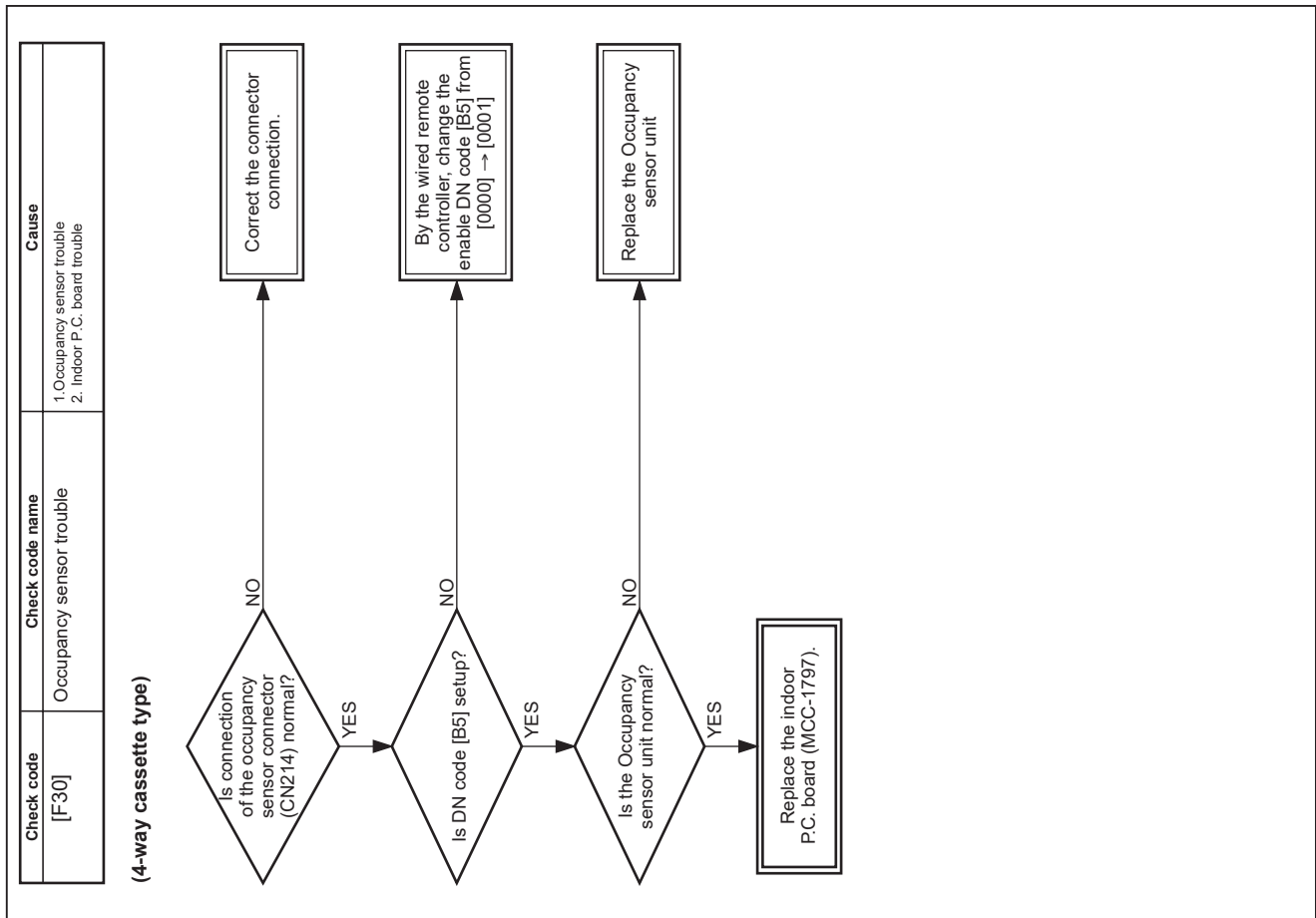
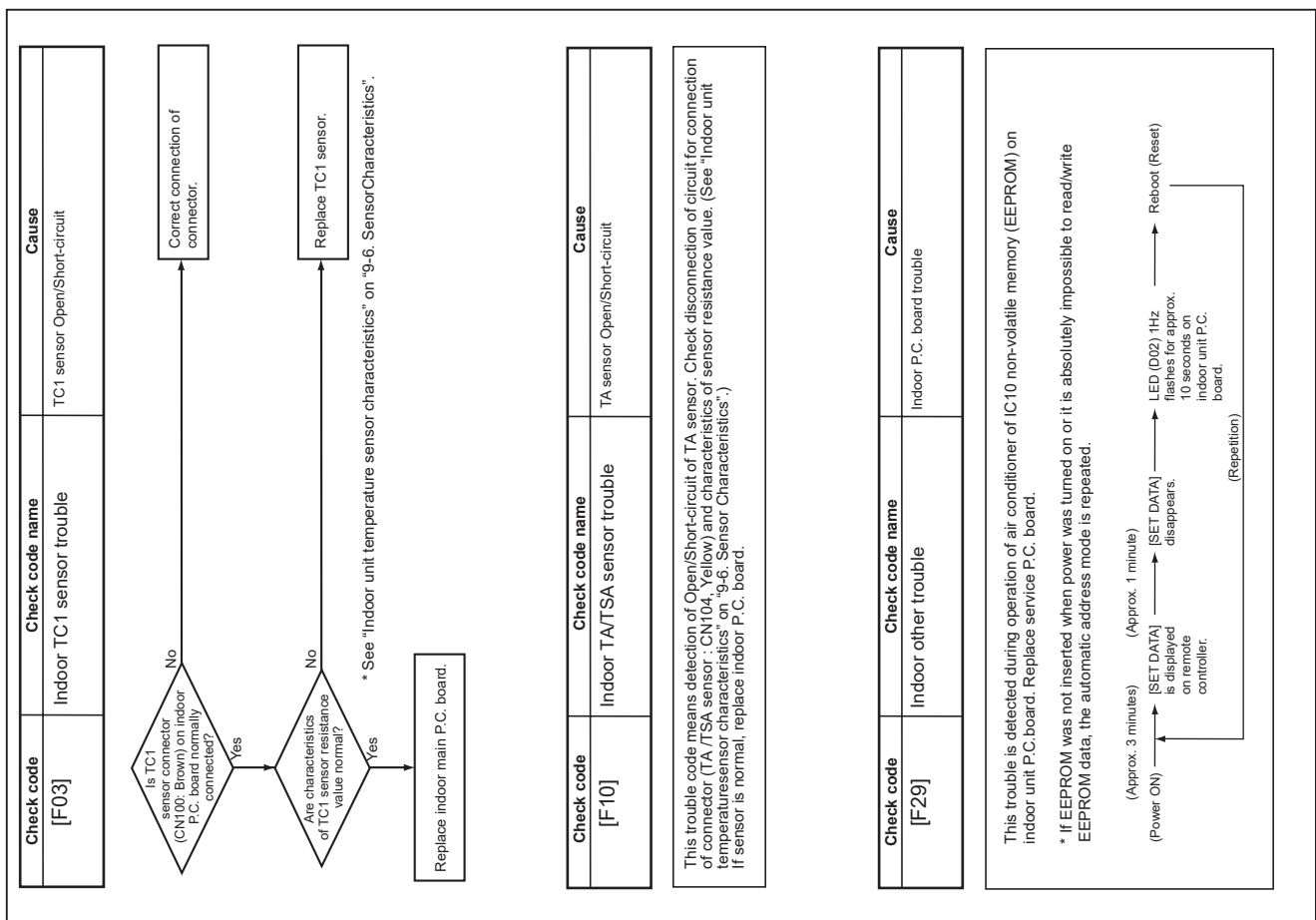
10-5. Diagnostic Procedure for Each Check Code (Indoor Unit)

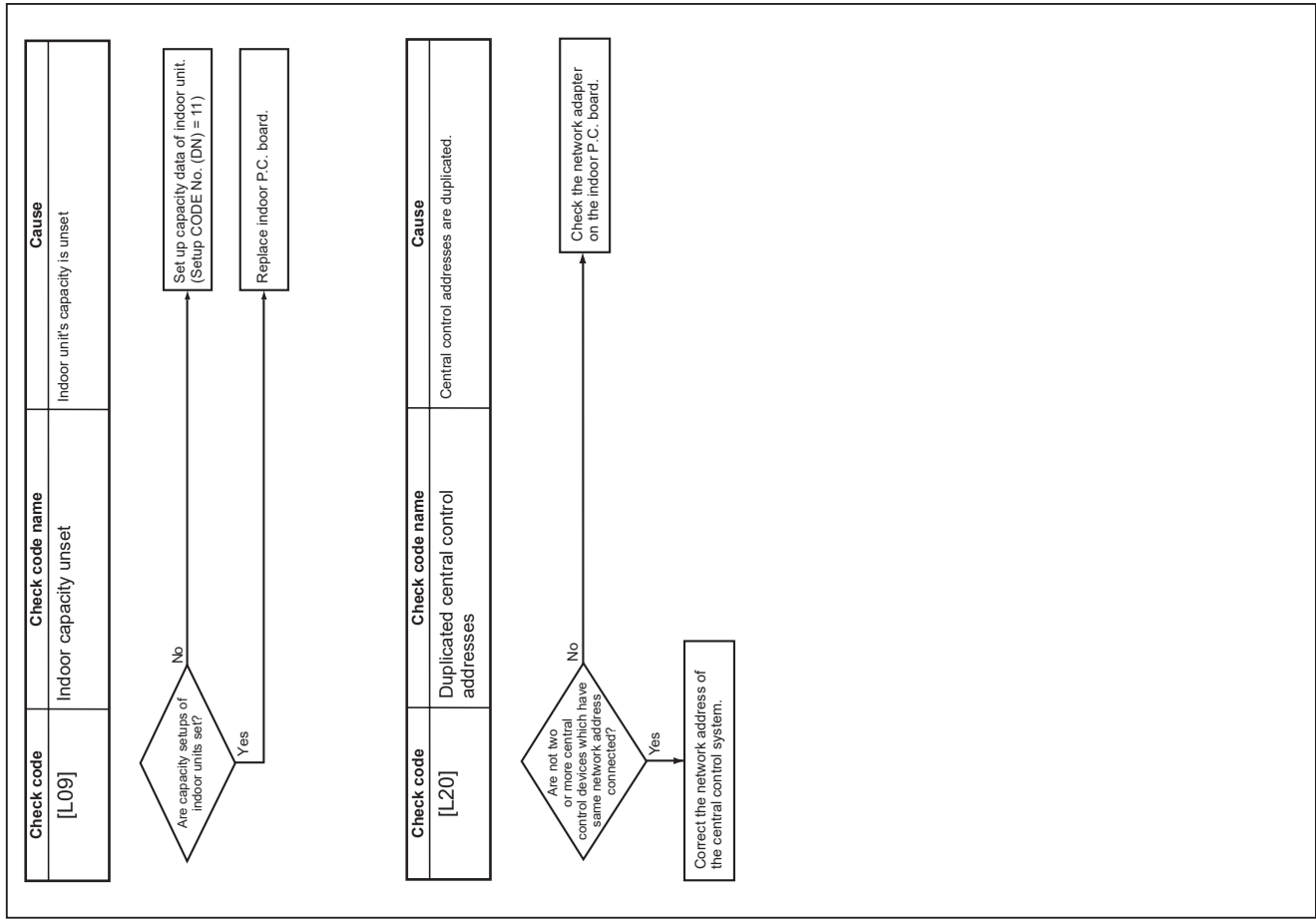
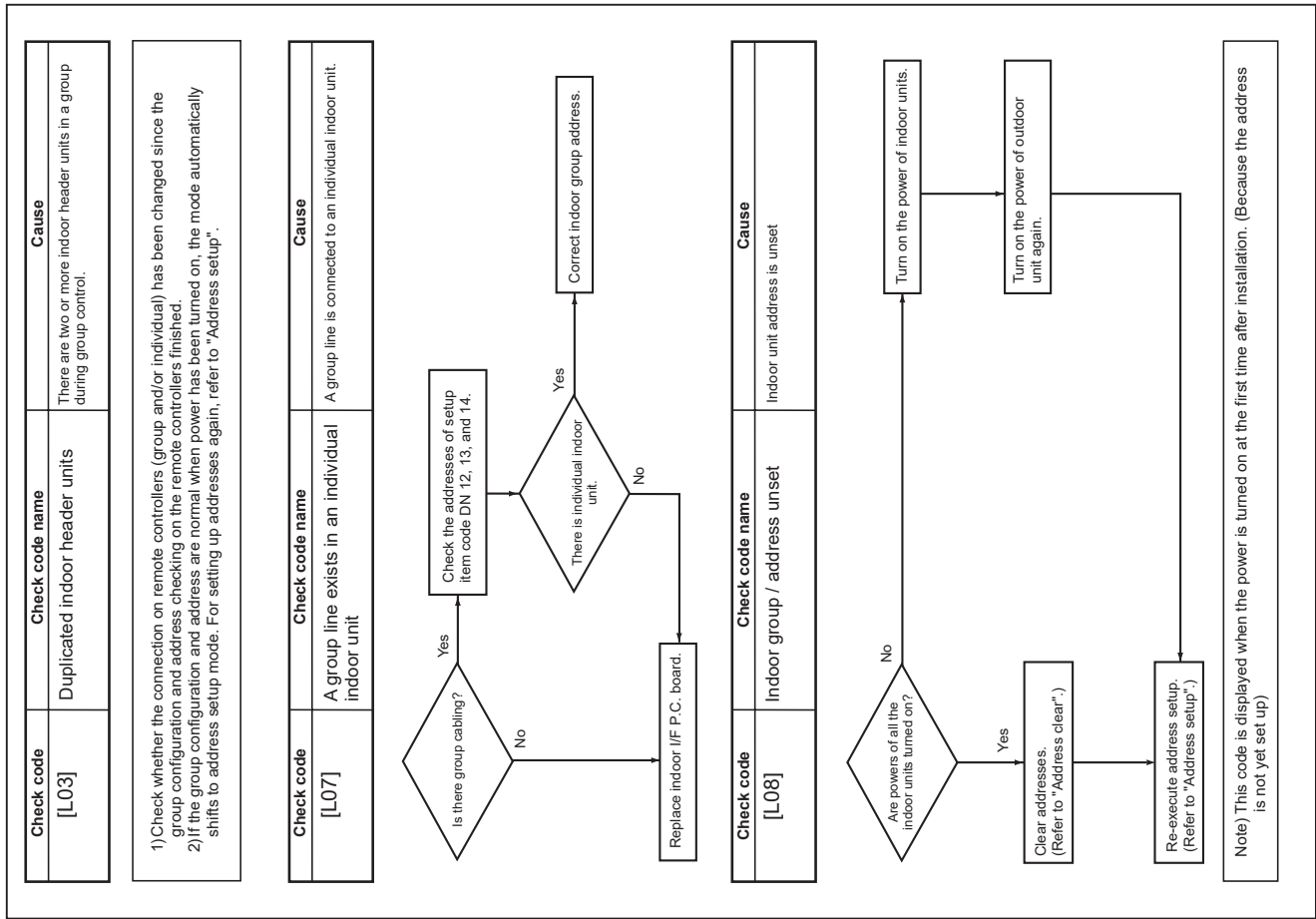


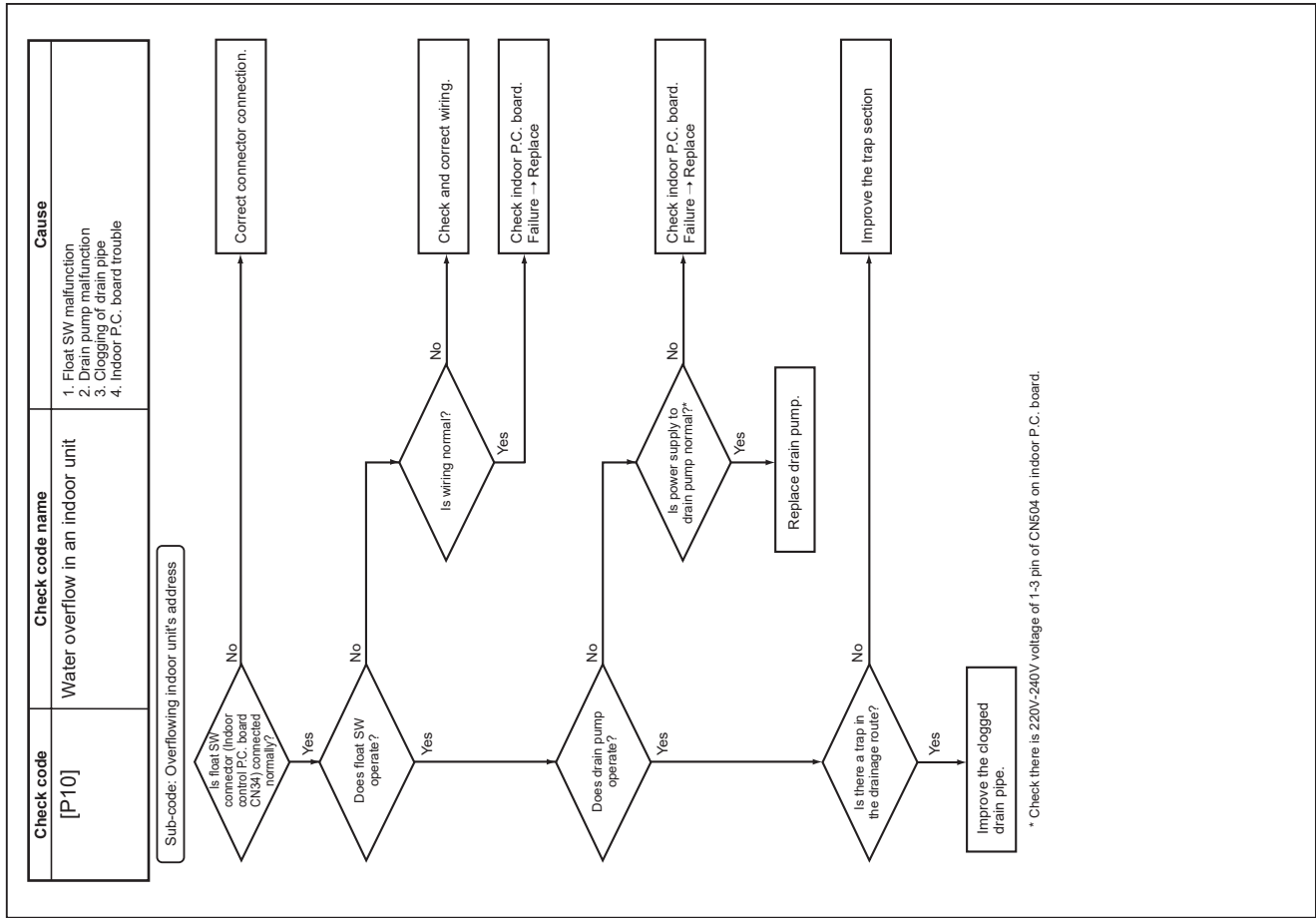
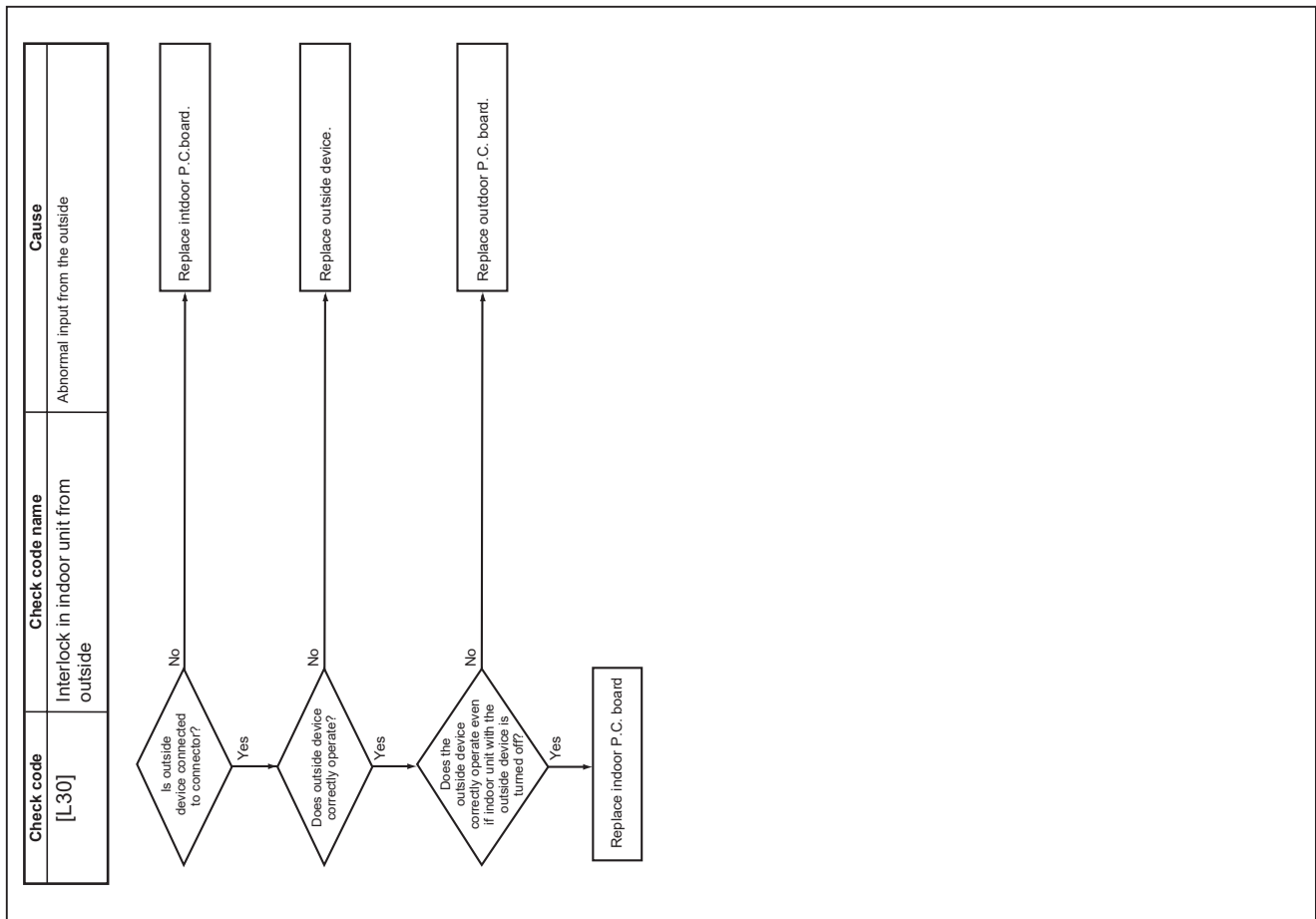


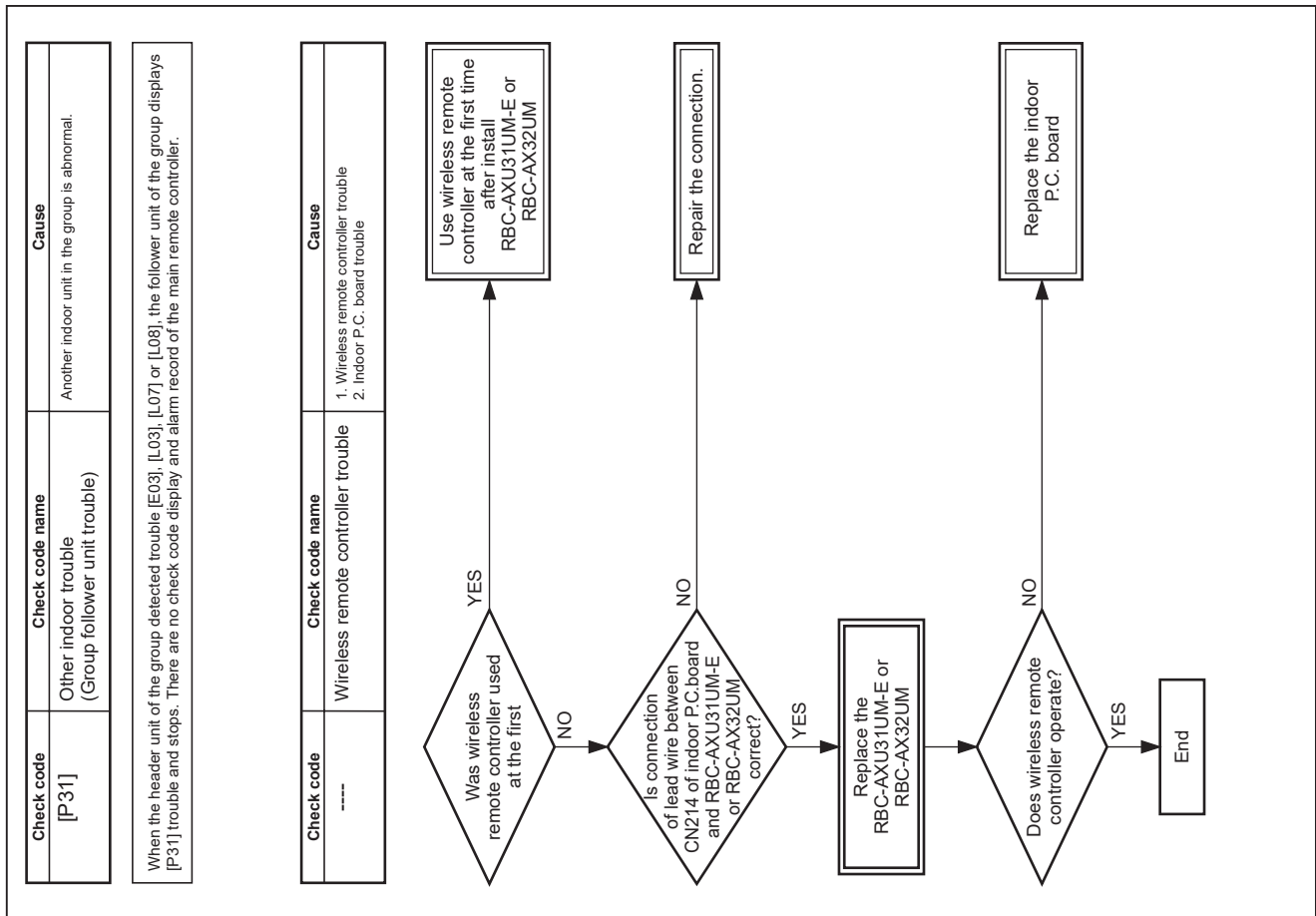
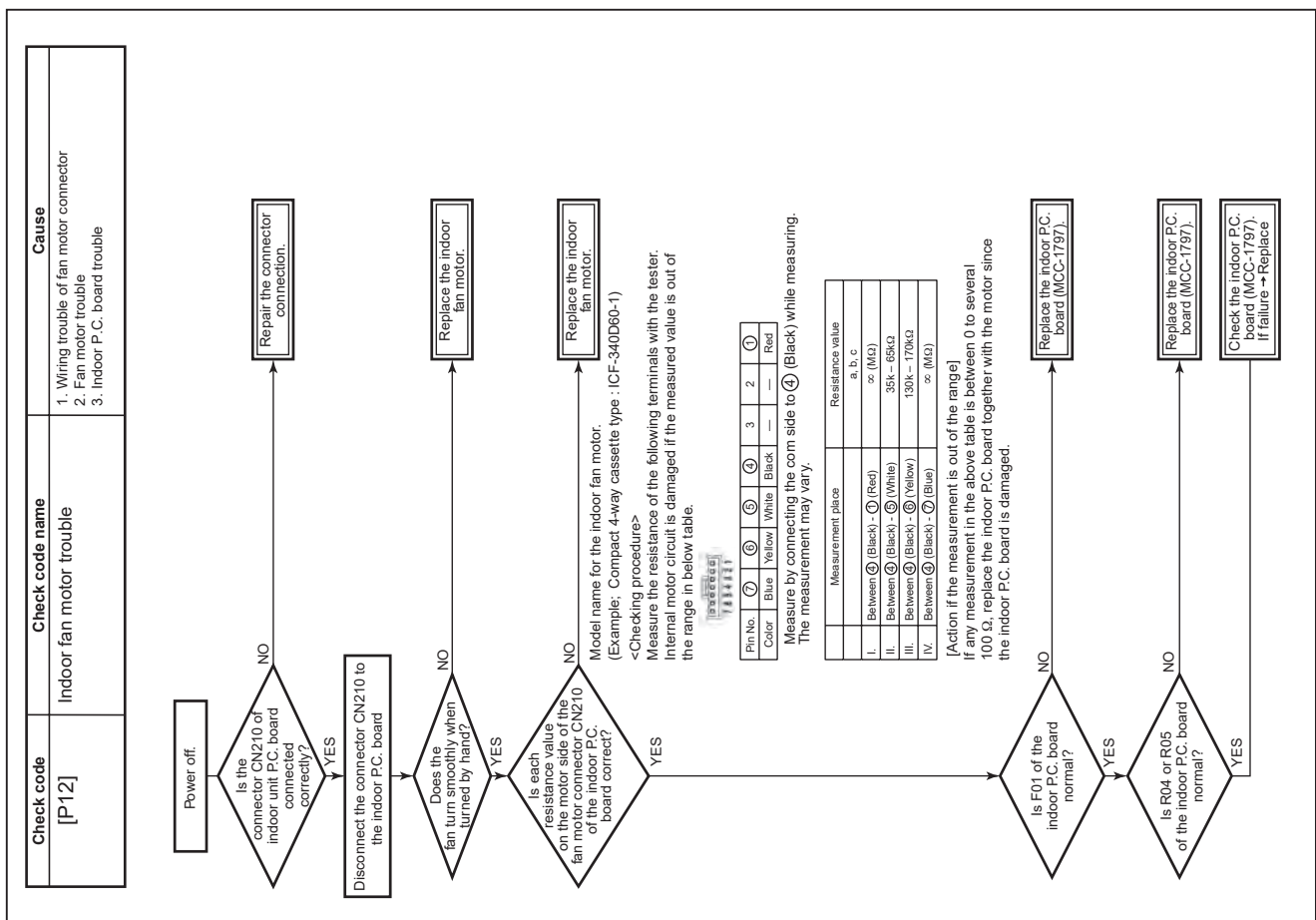


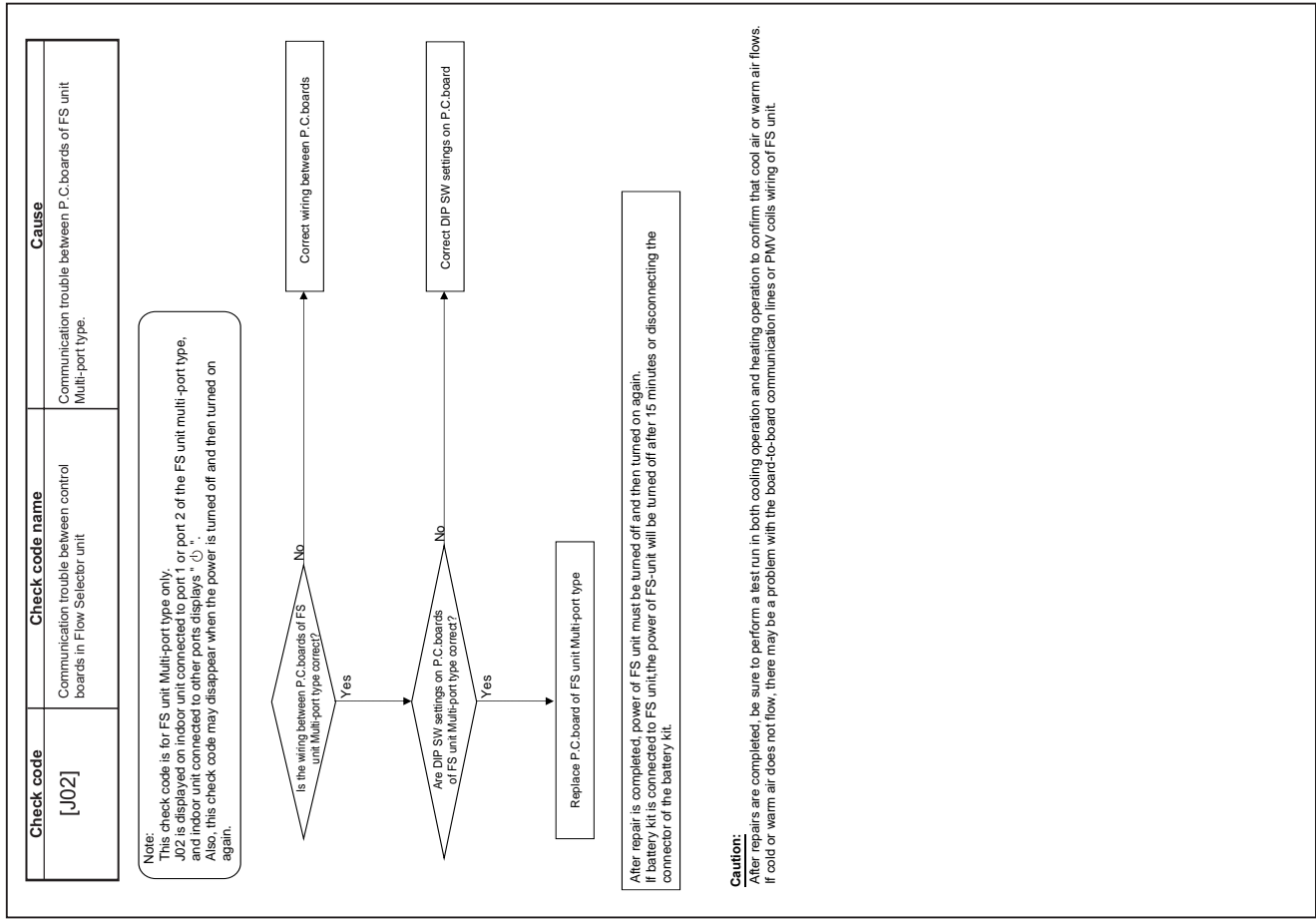
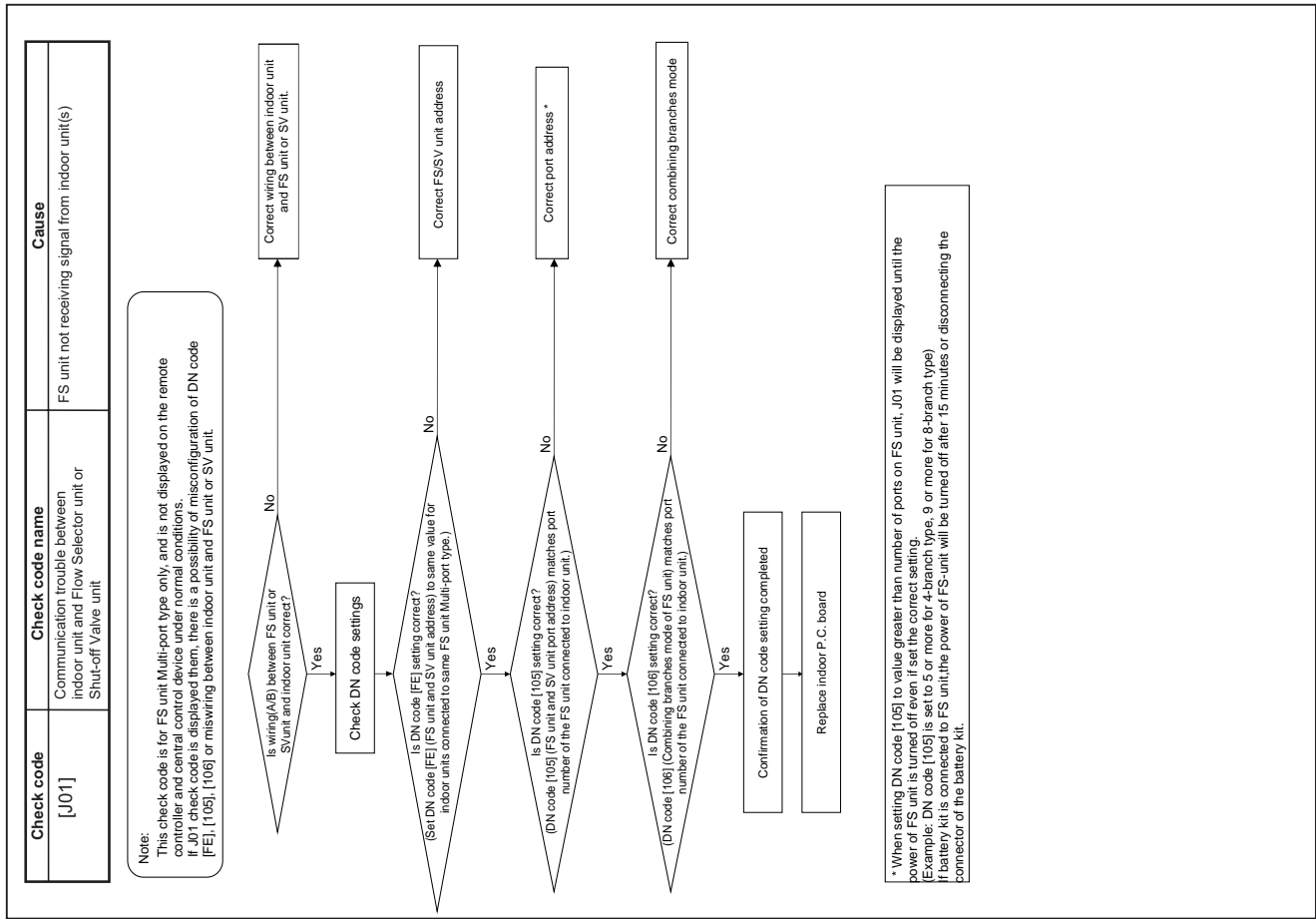


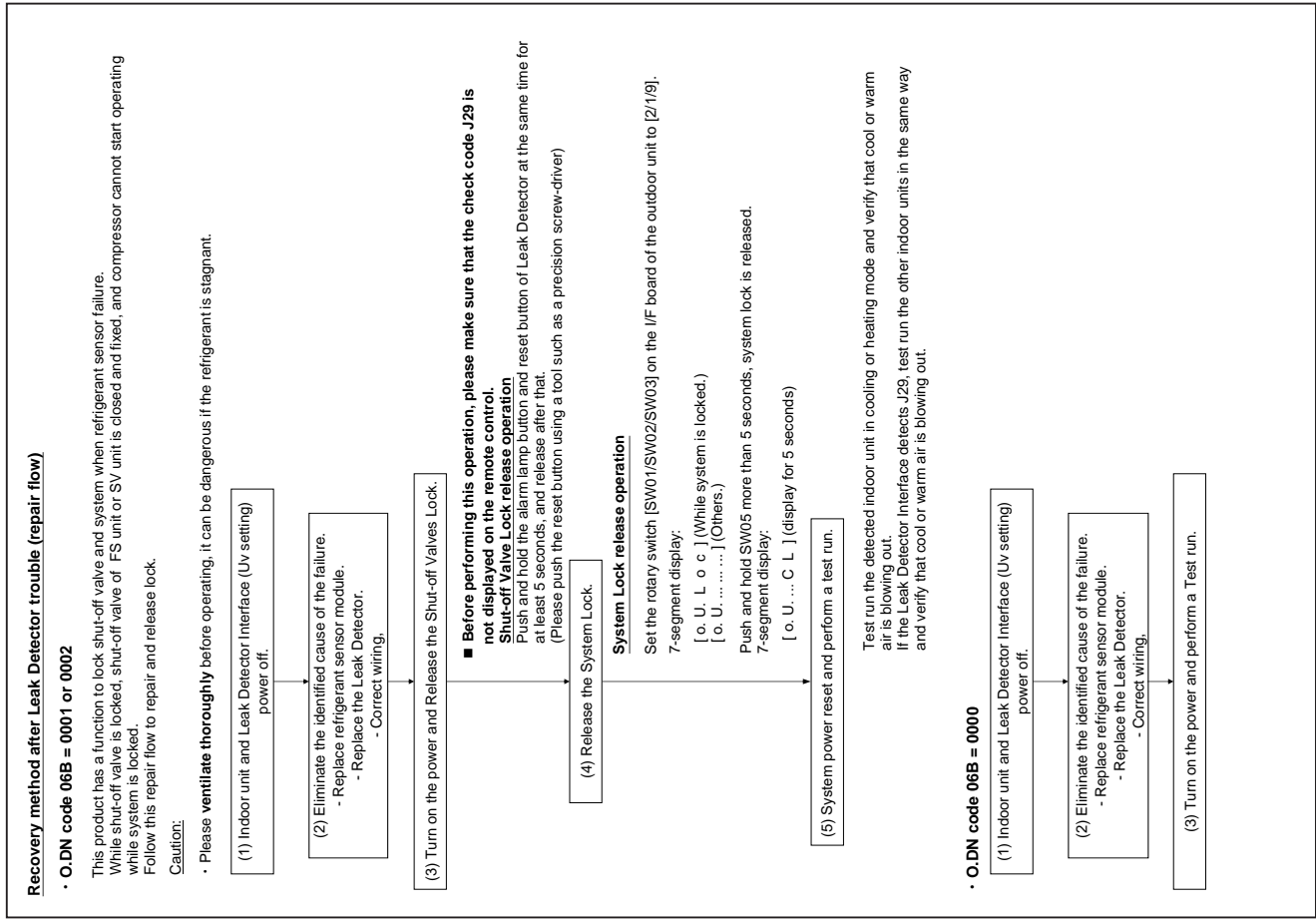
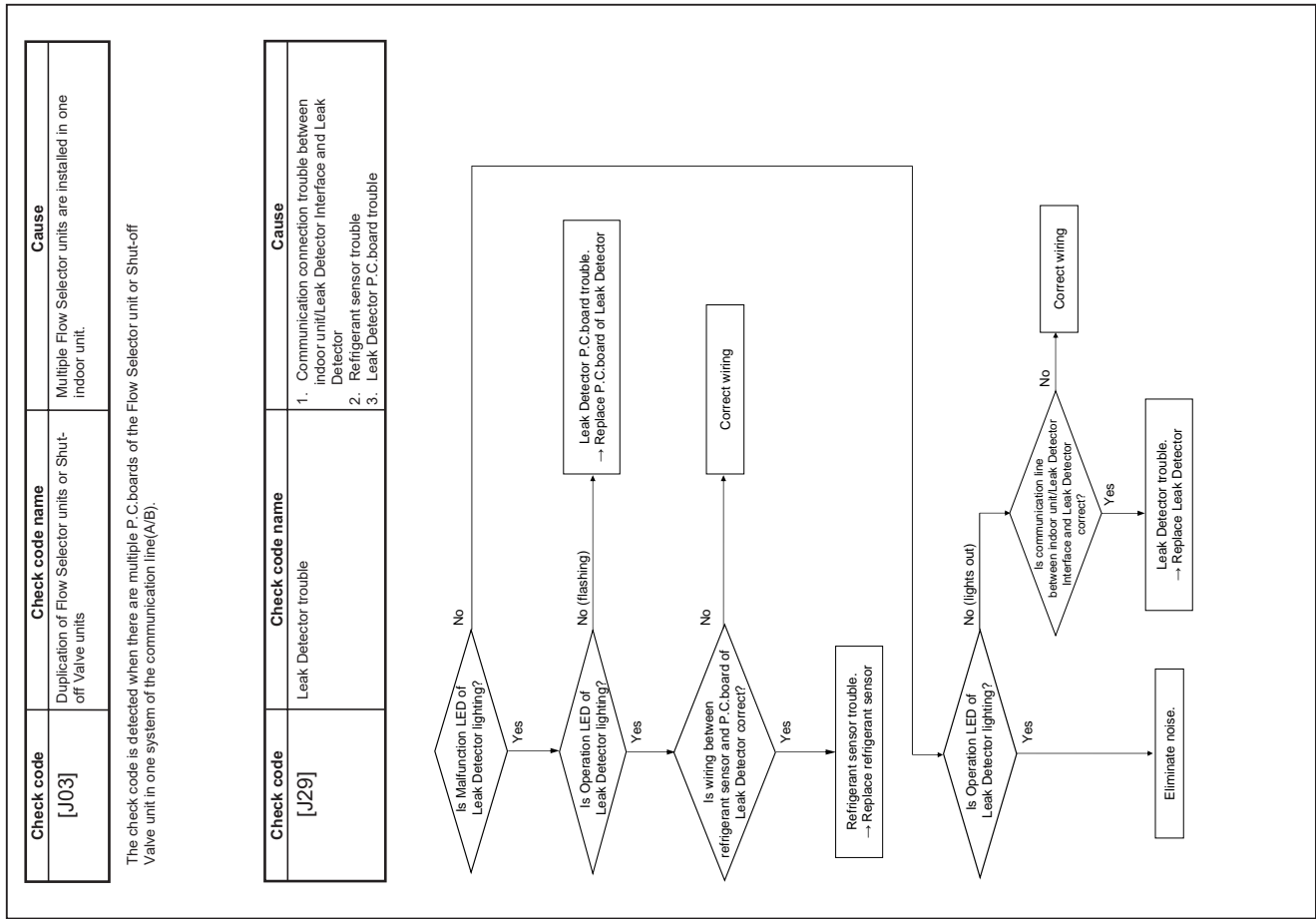


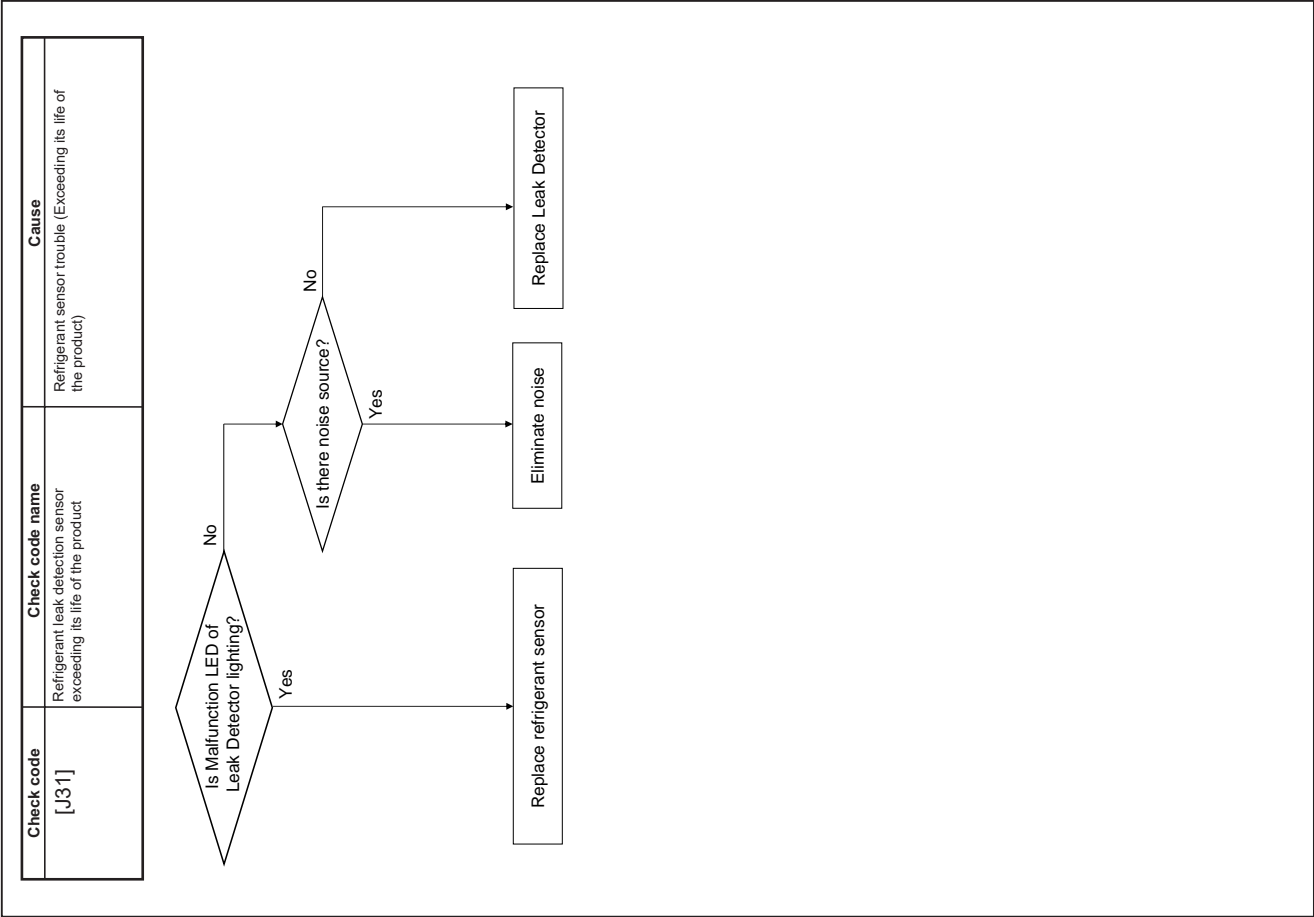












Recovery method after refrigerant leakage detection (repair flow)

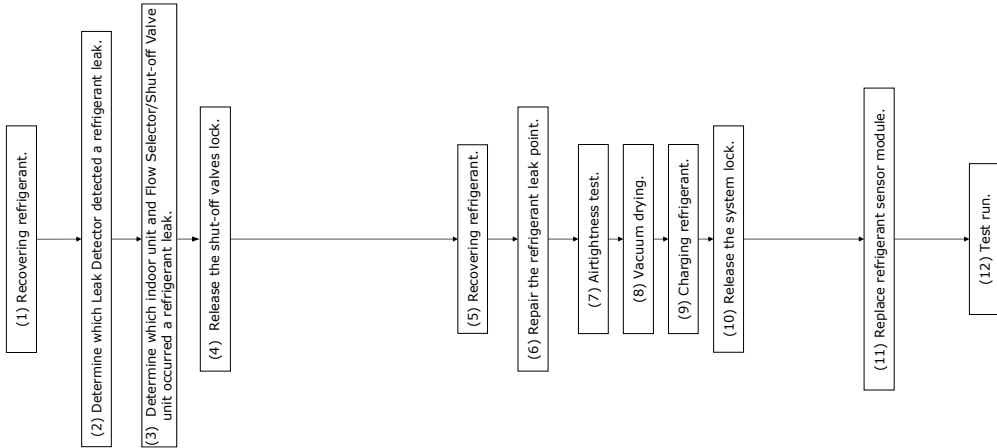
This product has a function to lock shut-off valve and system when refrigerant leakage is detected. While shut-off valve is locked, shut-off valve of FS unit or SV unit is closed and fixed, and compressor cannot start operating while system is locked. Follow this repair flow to repair and release lock.

Caution:

- Please **ventilate thoroughly** before operating, it can be dangerous if the refrigerant is stagnant.

Note:

- Start repairing with the system power turned ON.
- Check DN code No. [107] setting. (Leak Detector sounds again, and please stop it again refer to "8-11. System operation when the Leak Detector detects refrigerant leak.")
- Clarify the installation location of the Leak Detector through the Leak Detector Interface and Flow Selector/Shut-off Valve unit.



- (1) Recovering refrigerant.
Refrigerant should be collected before release the shut-off valves lock described below.
The refrigerant may leak again from the part where the refrigerant leaked, which may become dangerous.
- (2) Determine which Leak Detector detected a refrigerant leak.
When Leak Detector detects a refrigerant leak, alarm lamp is blinking. (1 Hz)
- (3) Determine which indoor unit and Flow Selector/Shut-off Valve unit occurred a refrigerant leak.
- (4) Release the shut-off valves lock by operating Leak Detector. *

With sufficient ventilation, release the shut-off valves lock.

Push and hold the alarm lamp button and reset button of Leak Detector at the same time for at least 5 seconds, and release after that. (Please push the reset button using a tool such as a precision screwdriver)

The following actions are performed:

- Leak Detector makes a sound of "beep, beep, beep, beeeeeep"
 - The shut-off valves that was locked will be released. (All shut-off valves lock in the system will be released within 3 minutes. **Do NOT turn off power until operation is completed.**)
- After release the shut-off valves lock, reset system power. When DN code [107] set to 1 or 3, the shut-off valve will not open until power is reset.

When a system power reset, Malfunction LED of Leak Detector will turn ON and Notice code is displayed on remote controller.

Caution:

After release the shut-off valves lock, refrigerant remaining downstream side of the shut-off valves may flow from leakage point. (Especially, when DN code [107] set to 3, some refrigerant remains.)
When refrigerant leakage continues, close the shut-off valve connected to leak point. (Close PMV-L, PMV-S, and PMV-D).
Refer to "7-7-7. Pulse Motor Valve (PMV) Forced Open/Close Function in FS unit and shut-off valve unit" for how to operate the shut-off valves.

- * Perform this release operation even if the system is only connected to the indoor unit with the indoor unit DN code No. [107] set to 3 "Leak Detector only".
- * The release operation should be performed on all Leak Detectors that detected refrigerant leakage.
- * Perform this release operation on the Leak Detector connected to the Leak Detector Interface.

- (5) Recovering refrigerant. (Again)
After release the shut-off valves lock, check refrigerant pressure. If pressure is rising, recover refrigerant again.

- (6) Repair the refrigerant leak point.
Turn OFF system power and repair leakage point, or replace indoor unit. After repair is completed, turn ON system power.

- (7) Airtightness test.

- (8) Vacuum drying.

- (9) Charging refrigerant

- (10) Release the system lock.

Be sure to perform this operation after release the shut-off valves lock.

Set the rotary switch [SW01/SW02/SW03] on the I/F board of the outdoor unit to [2/1/9].

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

[o. U.] (Others.)

Push and hold SW05 more than 5 seconds, system lock is released.

7-segment display: [o. U. ... C L] (display for 5 seconds)

- (11) Replace refrigerant sensor module in Leak Detector.

After a sufficient amount of ventilation, replace the refrigerant sensor module.

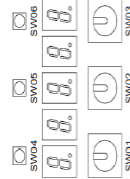
Refrigerant sensor will become unusable once it has been exposed to refrigerant. (Not limited to R454B)

If more than one Leak Detector detects a refrigerant leak, replace refrigerant sensor module of all detected

Leak Detectors.

After replacing refrigerant sensor module, confirm that Malfunction LED is turned off and Notice code is cleared.

- (12) After completing all the work, system power reset and start test run.



Remarks: How to manual system lock.

This product has a function to manual system lock.

Set the rotary switch [SW01/SW02/SW03] on the I/F board of the outdoor unit to [2/1/9].

Push and hold SW04 more than 5 seconds, system is locked.

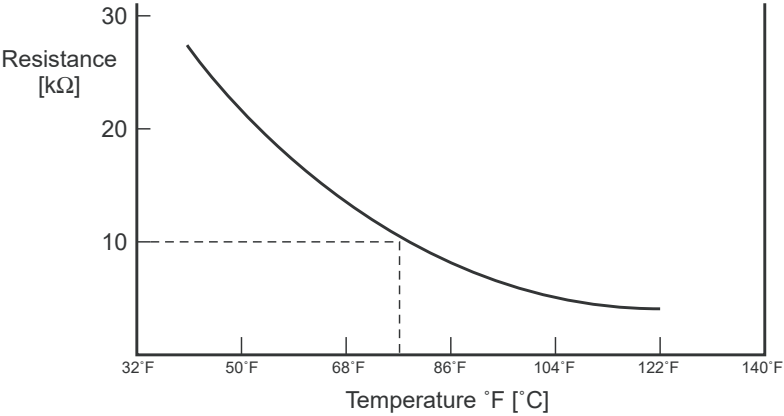
To release manual system lock, push and hold SW05 more than 5 seconds.

10-6. Sensor Characteristics

Indoor Unit

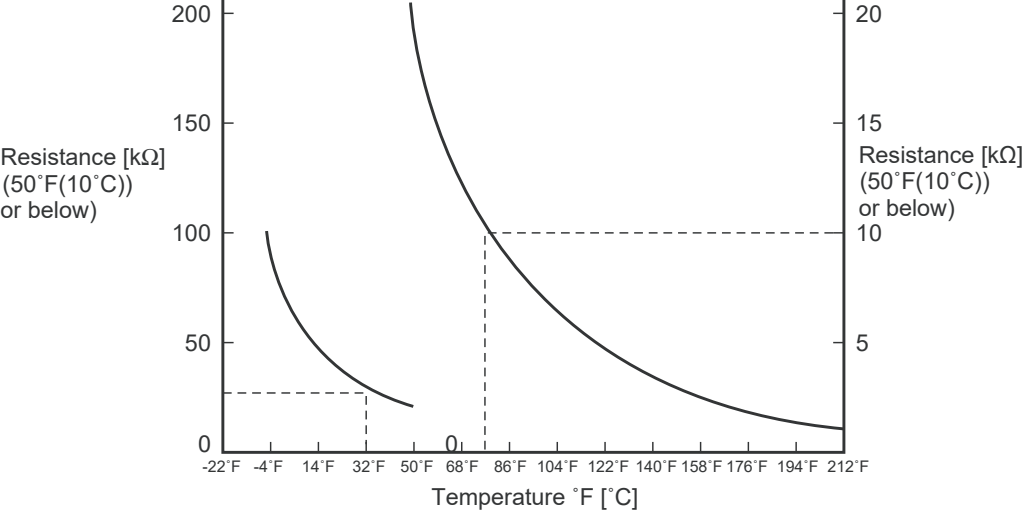
■ Temperature sensor characteristics

Indoor TA sensor



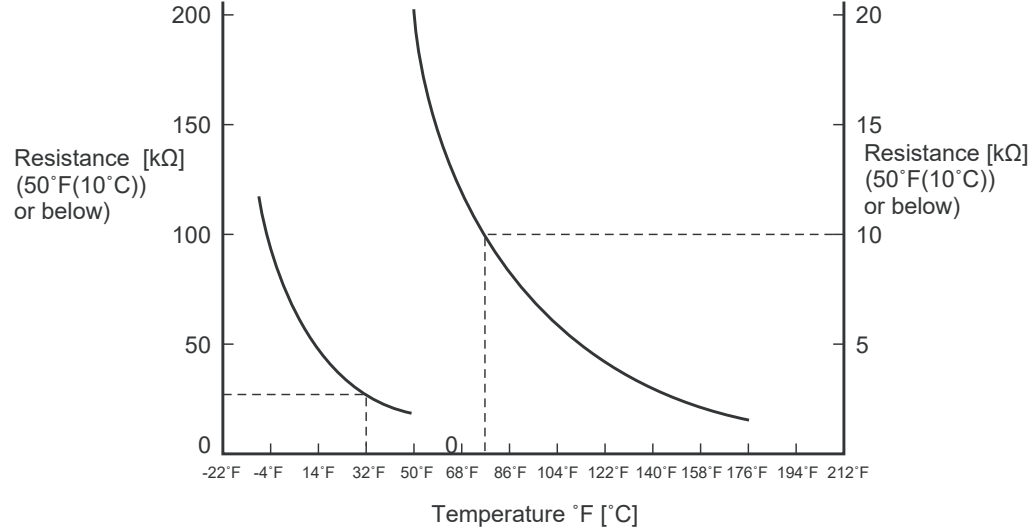
Temperature [°F(°C)]	Resistance [kΩ]
32°F(0°C)	33.9
41°F(5°C)	26.1
50°F(10°C)	20.3
59°F(15°C)	15.9
68°F(20°C)	12.6
77°F(25°C)	10.0
86°F(30°C)	8.0
95°F(35°C)	6.4
104°F(40°C)	5.2
113°F(45°C)	4.2
122°F(50°C)	3.5
131°F(55°C)	2.6
140°F(60°C)	2.4

Indoor TC1 sensor



Temperature [°F(°C)]	Resistance [kΩ]
-4°F(-20°C)	99.9
-5°F(-15°C)	74.1
-14°F(-10°C)	55.6
-23°F(-5°C)	42.2
32°F(0°C)	32.8
41°F(5°C)	25.4
50°F(10°C)	19.8
59°F(15°C)	15.6
68°F(20°C)	12.4
77°F(25°C)	10.0
86°F(30°C)	8.1
95°F(35°C)	6.5
104°F(40°C)	5.3
113°F(45°C)	4.4
122°F(50°C)	3.6
131°F(55°C)	3.0
140°F(60°C)	2.5
149°F(65°C)	2.1
158°F(70°C)	1.8
167°F(75°C)	1.5
176°F(80°C)	1.3
185°F(85°C)	1.1
194°F(90°C)	1.0
203°F(95°C)	0.8
212°F(100°C)	0.7

Indoor TC2 and TCJ sensors



Temperature [°F(°C)]	Resistance [kΩ]
-4°F(-20°C)	115.2
-5°F(-15°C)	84.2
-14°F(-10°C)	62.3
-23°F(-5°C)	46.6
32°F(0°C)	35.2
41°F(5°C)	26.9
50°F(10°C)	20.7
59°F(15°C)	16.1
68°F(20°C)	12.6
77°F(25°C)	10.0
86°F(30°C)	8.0
95°F(35°C)	6.4
104°F(40°C)	5.2
113°F(45°C)	4.2
122°F(50°C)	3.5
131°F(55°C)	2.8
140°F(60°C)	2.4
149°F(65°C)	2.0
158°F(70°C)	1.6
167°F(75°C)	1.4
176°F(80°C)	1.2

11. REPLACEMENT OF SERVICE P.C. BOARD

Replacement of P.C. Board for Indoor Unit Servicing

<Models>

MMU-UB***1HP -UL Series

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

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

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

<Replacement procedures>

■ Case 1

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

EEPROM data read out [1]



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



Writing the read out EEPROM data [3]



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

■ Case 2

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

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






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


[1] Setting data read out from EEPROM

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


Step 1 Push [ Menu] to open the "Menu"

Step 2 Push and hold [ Menu] and [] at the same time to open "Field setting menu".
(Push and hold 4 seconds.)




Step 3 Push [] and [] to select " DN setting", and then push [ Set / Fix].

Step 4 Select "Indoor unit", and the push [ Set / Fix].



Step 5 For group operation, all connected room in the system are displayed.

Select the unit whose EEPROM contents you want to read and push [ Set / Fix].

⇒ The fan of the selected indoor unit operates and the flap swings.

1. Push [] to black highlight the code (DN), and then push [] and [] to set the code No. to 1.

(This is the setting for the filter sign lighting time.) at this time, be sure to write down the setting data displayed.

2. Change the CODE No. (DN) by pushing  /  buttons.

Similarly, be sure to write down the setting data displayed.

3. Repeat the step 2 to set the other setting in the same way and write down the setting data in the manual that comes with the P.C board.

CODE No.required at least

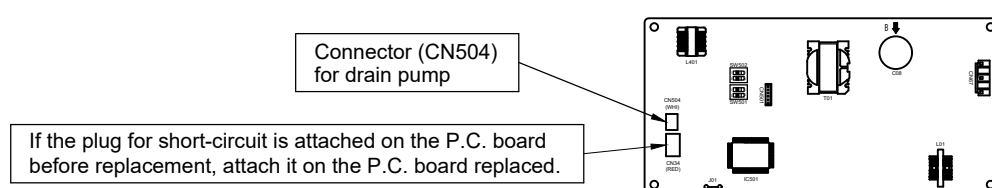
DN	Contents
10	Type
11	Indoor unit capacity
12	System address
13	Indoor unit address
14	Group address
FC	Communication protocol
1FC	Indoor Unit terminating resistance

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

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

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

At this time, perform the same setting of the jumper wire(J01) setting(cut),switch SW501, SW502 (short-circuit) connector CN34 as the setting of the P.C. board before replacement.



Step 2 It is necessary to set Indoor unit to be exchanged : Remote controller = 1:1

Based upon the system configuration, turn on power of the indoor unit with one of the following items.

1) Single (Individual) operation

Turn on power of the indoor units and proceed to [3].

2) Group operation

A) In case that power of the exchanged indoor unit only can be turned on

Turn on power of the exchanged indoor unit only and proceed to [3].

B) In case that power of the indoor units cannot be turned on individually (Case 1)

a) Remove temporarily the group wire connected to the terminal blocks A and B of the exchanged indoor unit.

b) After connecting the remote controller wire only to the removed terminal block, turn on power of the indoor units and proceed to [3].

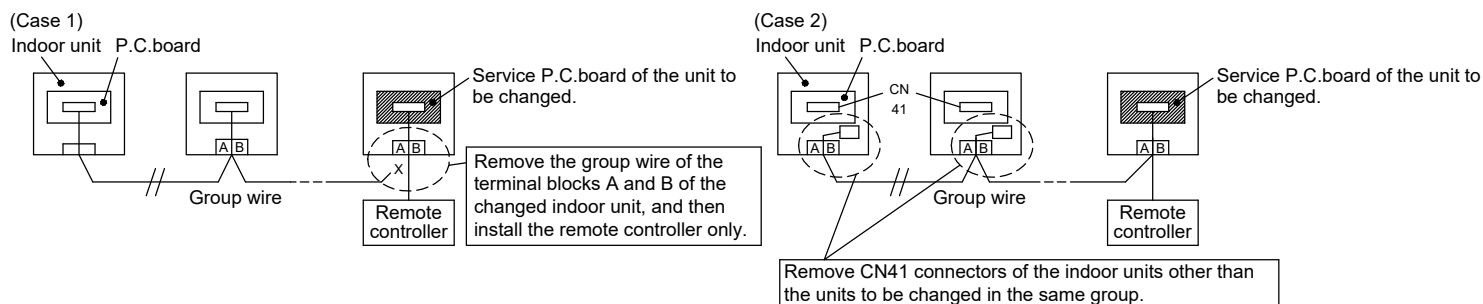
When the above methods cannot be used, follow to the two cases below.

C) In case that power of the indoor units cannot be turned in individually (Case 2)

a) Remove all CN41 connectors of the indoor units in the same group except those of the exchanged indoor unit.





































b) Turn on power of the indoor units and proceed to [3].

After [3] operation has finished, be sure to return the temporarily removed group wire or CN41 connector to the original connection.

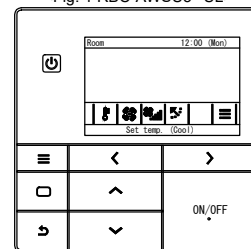


[3] Writing the setting data to EEPROM

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

- Step 1 Push [ Menu] to open the "Menu"
- Step 2 Push and hold [ Menu] and [] at the same time to open "Field setting menu".
(Push and hold 4 seconds.)
- Step 3 Push [] and [] to select " DN setting", and then push [ Set / Fix].
- Step 4 Select "Indoor unit", and the push [ Set / Fix].
- Step 5 For group operation, all connected room in the system are displayed.
Select the unit whose EEPROM contents you want to read and push [ Set / Fix].
⇒ The fan of the selected indoor unit operates and the flap swings.
- Step 6 Push [] to black highlight the code (DN), and then push [] and [] to set the code
(Set the indoor unit type and capacity)
The factory-set values shall be written to the EEPROM by changing the type and capacity.
1. Set the CODE No. (DN) to 10 (without change)
 2. Push [] to black highlight the data, and then push [] and [] to set the type.
(Refer to Type DN code "10".)
 3. After finishing setting the data of the code (DN), push [ Set / Fix]
⇒ "Continues ?" is displayed.
 4. To set the data of other codes (DN), push [ Set / Fix]
 5. Push [] to black highlight the code (DN), and then push [] and [] to set the code No. to 11.
 6. Push [] to black highlight the data, and then push [] and [] to set the capacity.
(Refer to indoor unit capacity DN code "11" on page 4.)
 7. After finishing setting the data of the code (DN), push [ Set / Fix]
⇒ "Continues ?" is displayed.
 8. Push [ Return]
When doing group connections :
⇒ Push [ Return] to open the unit selection screen. In the unit selection screen, push [ Return] to briefly display "  ", and then return to the "Field setting menu" screen.
- Step 7 Write the on-site setting data to the EEPROM, such as address setting etc. Perform the steps 1 and 4 above again.
- Step 8 Push [] to black highlight the code (DN), and then push [] and [] to set the code No. to 1.
(This is the setting for the filter sign lighting time.)
- Step 9 Check the setting data displayed at this time with the setting data put down in [1].
1. If the data is different, push [] to highlight the data in black and write, push [] and [] to change the data to what you wrote down, and push [ Set / Fix].
 2. If the data is the same, proceed to next step.
- Step 10 Push [] to black highlight the code (DN), and then push [] and [] to set the code.
As described above, check the setting data and modify to the data put down in [1].
- Step 11 Repeat the steps 8 and 9.
- Step 12 After the setting completes, push [ Return]
When doing group connections :
⇒ Push [ Return] to open the unit selection screen. In the unit selection screen, push [ Return] to briefly display "  ", and then return to the "Field setting menu" screen.
- Even after modifying the data wrongly and pushing [ Set / Fix] it is possible to return to the data before modification by pushing [ Return] if the CODE No. (DN) is not changed.

<Fig. 1 RBC-AWSU5*-UL>



<Fig.2 EEPROM layout diagram>

The EEPROM (IC503) is attached to the IC socket. When detaching the EEPROM, use a tweezers, etc. Be sure to attach the EEPROM by fitting its direction as shown in the figure.

* Do not bend the IC lead when replacing.

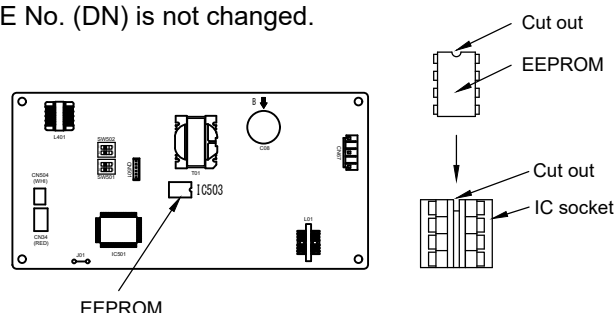


Table 1. Setting data(CODE No. table(example))

DN	Item	Setting data	Factory-set value
01	Filter display delay timer		0002 : 2500H
02	Dirty state of filter		0000 : Standard
03	Central control address		00Un/0099 : Unfixed
04	Specific indoor unit priority		0000 : No priority
06	Heating suction temperature shift		0002 : +2°C
0D	Automatic mode		0001 : No automatic
0F	Cooling only		0000 : Heat pump
10	Type		Depending on model type
11	Indoor unit capacity		According to capacity type
12	Line address		00Un/0099 : Unfixed
13	Indoor unit address		00Un/0099 : Unfixed
14	Group address		00Un/0099 : Unfixed
19	Flap type (Wind direction adjustment)		Depending on Type
1E	Temperature range of cooling/heating automatic SW control point		0003 : 3 deg (Ts±1.5)
28	Automatic restart of power failure	0001 : Enable	0000 : None
2A	Selection of option / Trouble input (TCB-PCUC2E: CN3)		0002 : None
2B	Thermo output SW		0000 : Thermo ON
2E	HA terminal (CN61) select		0000 : Usual (HA terminal)
31	Ventilating fan control		0000 : Unavailable
32	Sensor SW		0000 : Body sensor
33	Temperature unit select	0001 : Fahrenheit (°F)	0000 : Centigrade (°C)
5D	High ceiling setting		0000 : Default setting
60	Timer setting (wired remote controller)		0000 : Available
7A	Change unit 0.5°C or 1.0°C on remote	0001 : 1°C	0000 : 0.5°C
D0	Remote controller operation save function		0001 : Enable
E0	Region	0001 : North America	0000 : Domestic
F6	Presence of Application control kit (TCB-PCUC2E)		0000 : None
FC	Communication protocol		0000 : TCC-LINK
FE	FS unit adress		00Un/0099 : Unfixed
1Fb	Remote controller operation		0000 : Operation possible
1FC	Indoor Unit terminating resistance		0000 : OFF

Table 2. Type : CODE No.10

Setting data	Type	Type name abb.
0001 *1	4-way Air Discharge Cassette Type	MMU-UB***1HP-UL
0014	Compact 4-way Cassette Type	MMU-UB***1MHP-UL

*1 EEPROM initial value on the P.C. board for indoor unit servicing.

*2  **CAUTION**

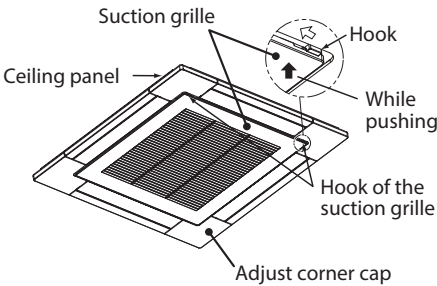
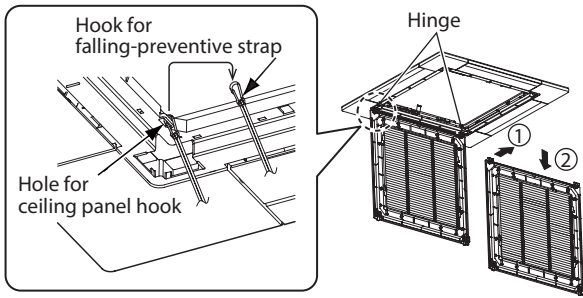
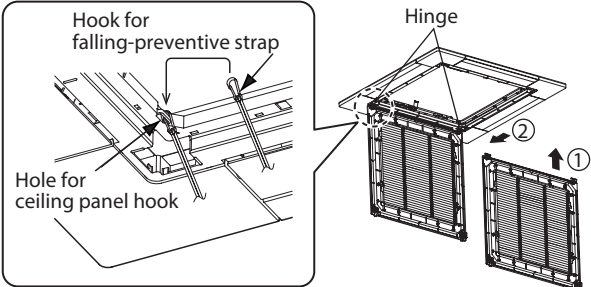
For the above model. Set the CODE no. to **"E0"** the setting data "0000" (initial) to "0001"

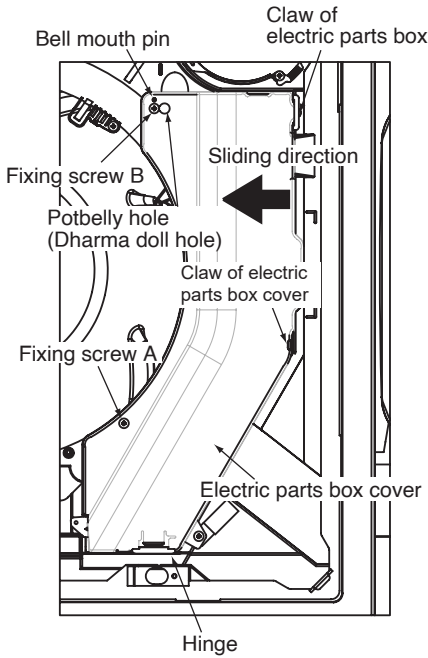
Table 3. Indoor unit capacity : CODE No.11

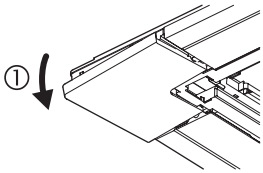
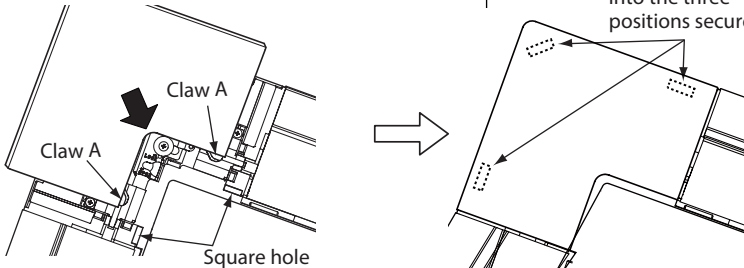
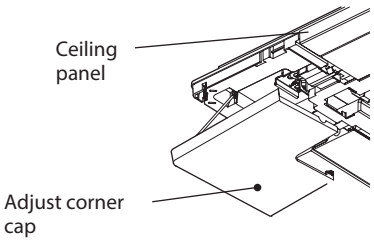
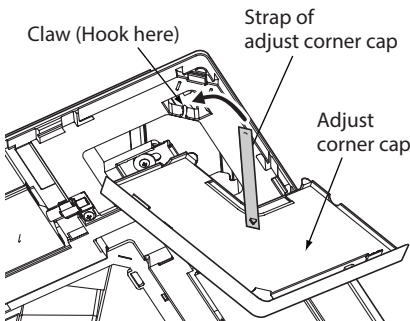
Setup data	Model
0000 *1	Invalid
0001	007 type
0003	009 type
0005	012 type
0007	015 type
0009	018 type
0011	024 type
0013	030 type
0015	036 type
0016	042 type
0017	048 type
0018	054 type

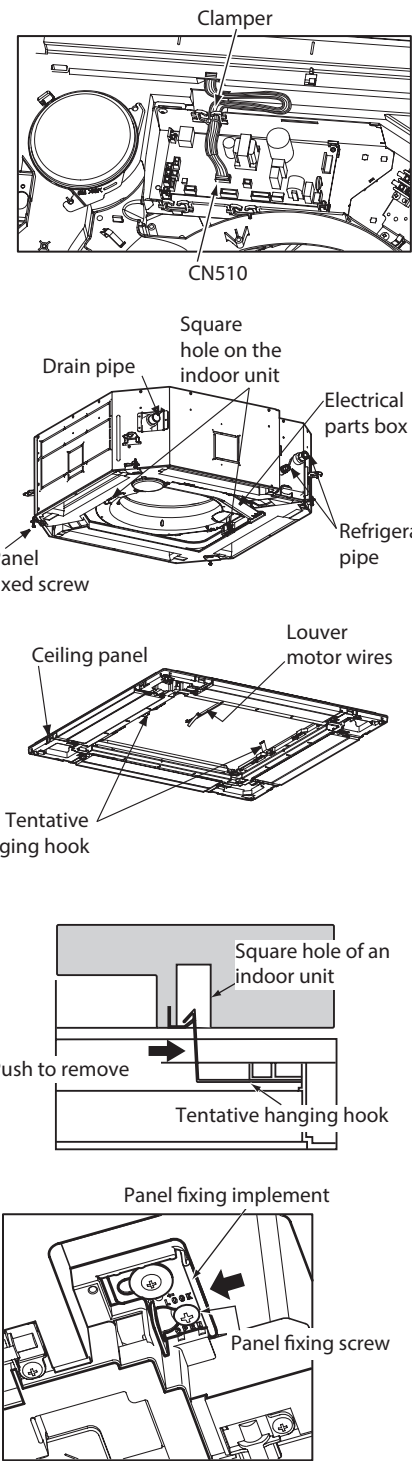
12. DETACHMENTS


Indoor Unit

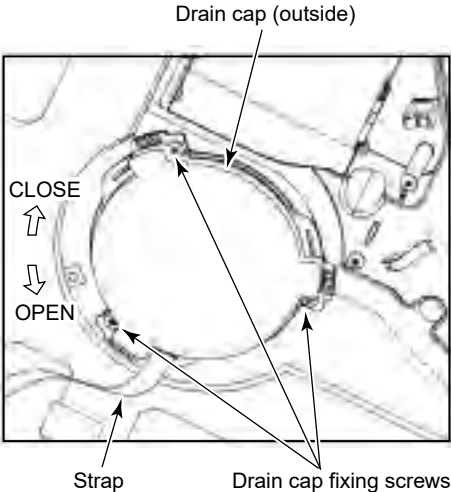
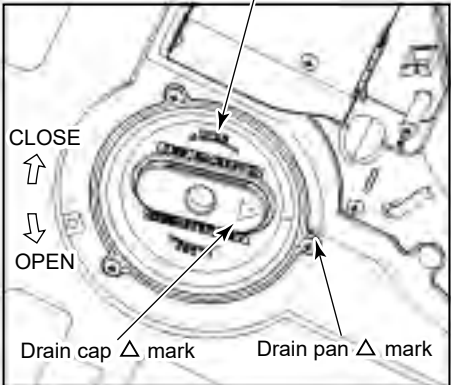
No.	Part name	Procedure	Remarks
①	Suction grille	<p>1. Detachment</p> <ol style="list-style-type: none">1) Stop operation of the air conditioner and then turn off switch of the breaker.2) Slide the 2 knobs of the suction grille inward and then hang down the suction grille.3) Remove a strap connecting the panel and the suction grille and then remove the suction grille. <p>2. Attachment</p> <ol style="list-style-type: none">1) Hook the suction grille to the panel.2) Attach strap of the suction grille to the panel as before.3) Close the suction grille, slide the knobs outward and then fix the panel.	  

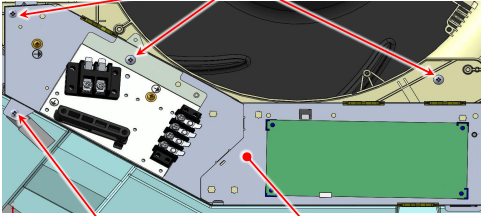
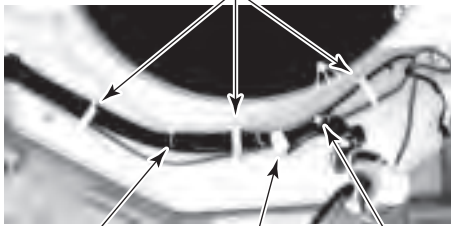
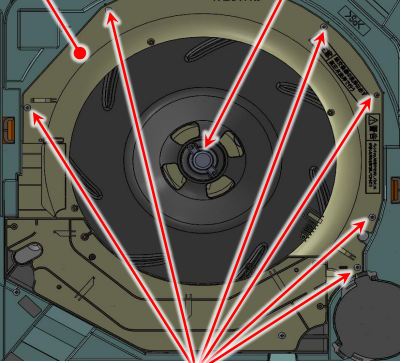
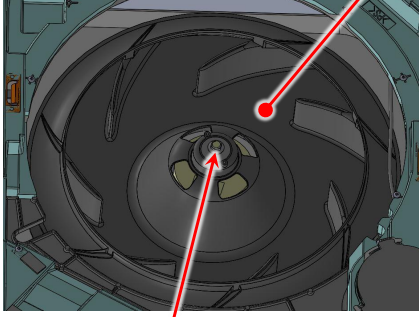
No.	Part name	Procedure	Remarks
②	Electric parts cover	<p>1. Detachment</p> <ol style="list-style-type: none"> 1) Carry out work of item 1. of ①. 2) Remove the fixing screw A which fix the electric parts cover and loosen the fixing screw B 3) Pull down the electric parts cover, remove pin of the bell mouth and then slide it to the arrow direction in order to open the claws and the electric parts box cover. <p>2. Attachment</p> <ol style="list-style-type: none"> 1) Close the electric parts cover and slide it, hook claw of the electric parts box, claw of the electric parts box cover and the Dharma doll hole, and then insert pin of the bell mouth into hole of the electric parts box cover. 2) Tighten the fixing screws A and B and then fix the electric parts box cover 3) Following to work of item 2 of ①, mount the suction grille as before. 	

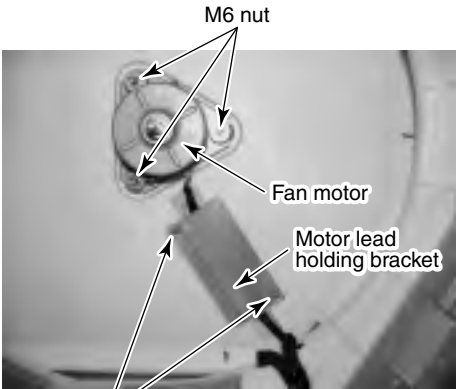
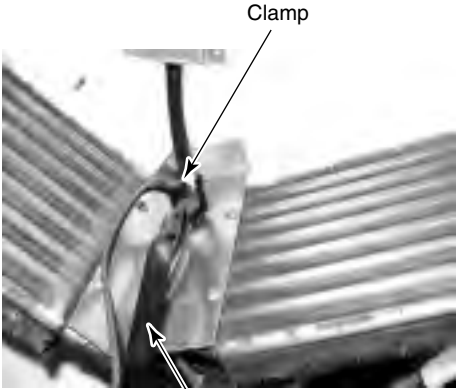
No.	Part name	Procedure	Remarks
③	Adjust corner cap	<p>1. Detachment</p> <p>1) Pull the knob of the adjust corner cap to the arrow direction. ①</p>  <div data-bbox="423 539 935 645" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE : The adjust corner cap will be kept being hung with a falling-preventive strap.</p> </div> <p>2. Attachment</p> <p>1) Hook the fall-prevention strap securely to the claw of the ceiling panel if it remain being removed.</p> <p>2) Insert claw of the adjust corner cap with the arrow direction into the square hole of the panel.(2 positions)</p> <p>3) Push claws of the adjust corner cap into the positions indicated with arrow marks so that they fit in 3 positions.</p> 	  <p>Push the claw B into the three positions securely.</p>

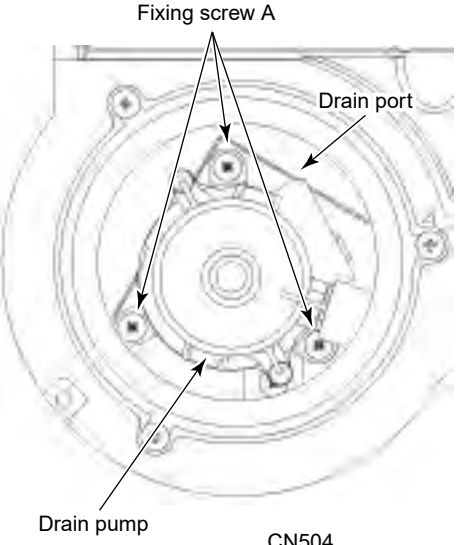
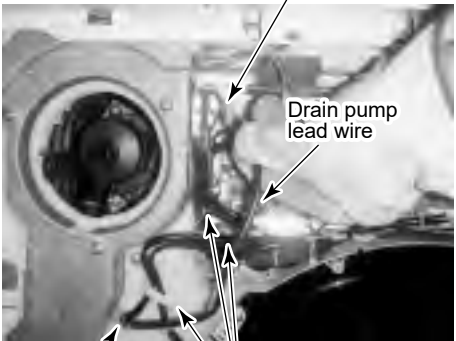
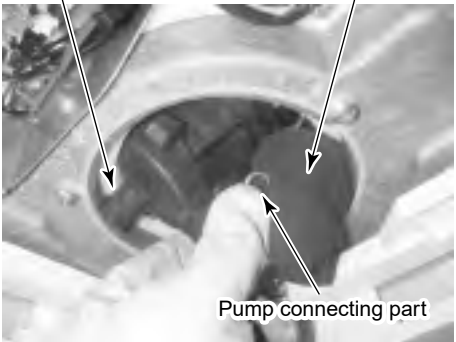
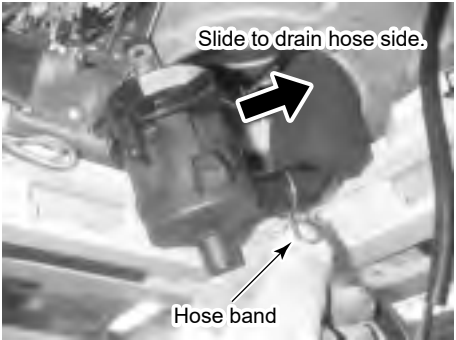
No.	Part name	Procedure	Remarks
④	Ceiling panel	<p>1. Detachment</p> <ol style="list-style-type: none"> 1) Carry out works of item 1 of ② and item 1 of ③. 2) Remove the flap connector (CN510, White, 20P) connected to the control P.C. board and then remove the lead wire from the clamp. <div data-bbox="415 467 950 605" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE : Unlock the lock of the housing part and then remove the connector.</p> </div> <ol style="list-style-type: none"> 3) Slide the panel fixing brackets(4 positions) outward. (Loosen the panel fixing 4 screws when the panel fixing brackets do not move.) 4) Push the tentative bracket outward and then remove the ceiling panel. <p>2. Attachment</p> <ol style="list-style-type: none"> 1) Insert the tentative brackets (2 positions) of the ceiling panel into square holes of the indoor unit and then hook the panel tentatively. <div data-bbox="415 1072 950 1245" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE : The ceiling panel has the directional properties against the indoor unit. Direct the louver motor wire to the electric parts box side of the indoor unit.</p> </div> <ol style="list-style-type: none"> 2) Pass the head of the panel fixing screw through hole of the panel fixing bracket and then slide the panel fixing bracket inward. 3) Tighten in the panel fixing screw to fix the ceiling panel. 4) Following to work of item 2 of ③, attach the adjust corner cap as before. 5) Connect the louver connector (CN510, White, 20P) as before and then fix the lead wire with clamp. 6) Following to work of item 2 of ②, mount the electric parts box cover and the suction grille as before. 	 <p>The diagrams illustrate the process of removing and installing the ceiling panel. The first diagram shows the internal components of the indoor unit with labels for the clamper, CN510 connector, drain pipe, square hole on the indoor unit, electrical parts box, refrigerant pipe, and panel fixed screw. The second diagram shows the ceiling panel being detached from the indoor unit, with labels for the ceiling panel, louver motor wires, and tentative hanging hook. The third diagram shows the ceiling panel being attached to the indoor unit, with labels for the square hole of an indoor unit, push to remove, and tentative hanging hook. The fourth diagram shows the panel fixing implement being used to secure the panel, with labels for the panel fixing implement and panel fixing screw.</p>

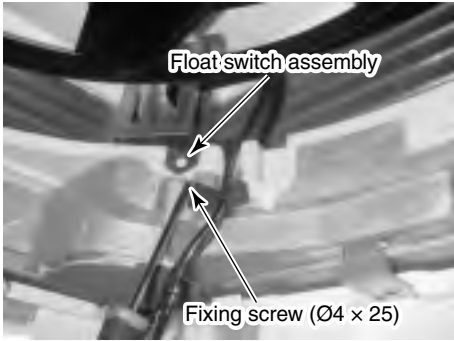
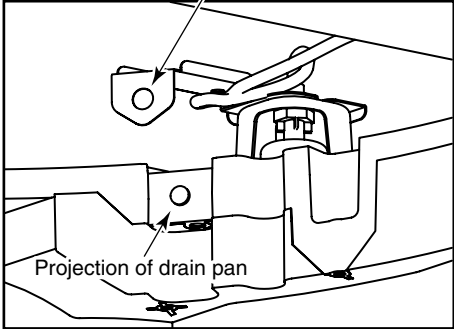
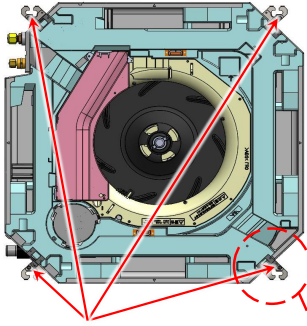
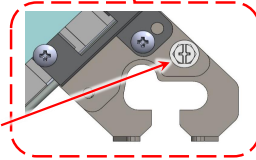
No.	Part name	Procedure	Remarks
⑤	Control P.C. board	<p>1. Detachment</p> <ol style="list-style-type: none"> 1) Carry out work of item 1 of ②. 2) Remove connectors which are connected from the control P.C. board to the other parts and then remove wiring from the clamp. CN510 : Louver motor (20P, White) CN34 : Float switch (3P, Red) CN504 : Drain pump (2P, White) CN100 : TC1 sensor (3P, Brown) CN101 : TC2 sensor (2P, Black) CN102 : TCJ sensor (2P, Red) CN104 : Room temp. Sensor (2P, Yellow) CN210 : Fan motor power supply (5P, White) CN82 : PMV (6P, Blue) <div data-bbox="453 898 922 1022" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE : Unlock the lock of the housing part and then remove the connector.</p> </div> <ol style="list-style-type: none"> 3) Unlock the locks of the card edge spacer (6 positions) and then remove the control P.C. board. <p>2. Attachment</p> <ol style="list-style-type: none"> 1) Fix the control P.C. board to the card edge spacer (6 positions) 2) Connect the connector removed in item 1 as before and then fix the wiring with the clamp. 3) Following to work of item 2 of ②, mount the electric parts box cover and the suction grille as before. <hr/> <p style="text-align: center;">CAUTION</p> <p>When exchanging P.C. board, mount the ferrite core attached to the existing earth lead to the earth lead of the new P.C. board.</p> <hr/>	

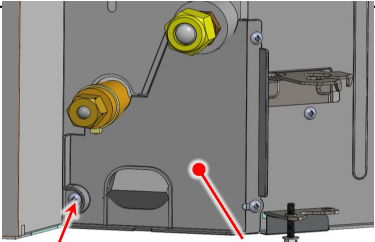
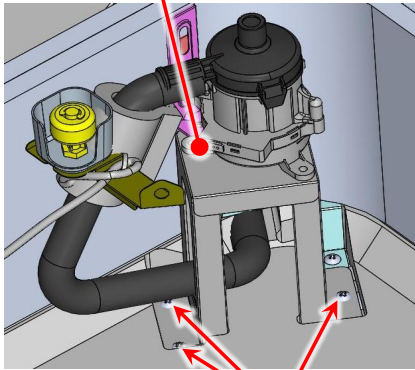
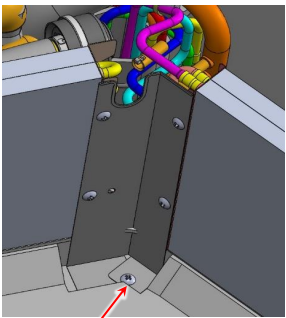
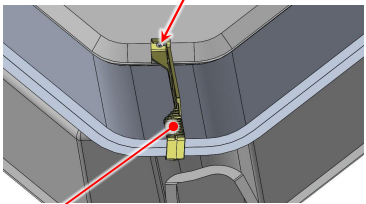
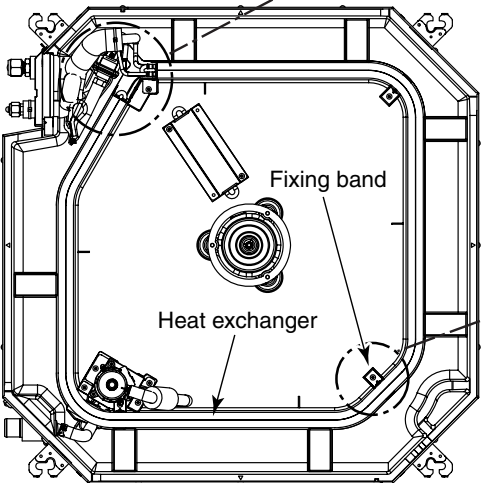
No.	Part name	Procedure	Remarks
⑥	Drain cap	<p>1. Detachment</p> <ol style="list-style-type: none"> 1) Carry out work of item 1 of ①. 2) Loosen screws (3 positions) fixing the drain cap (outside) and then turn the drain cap to the arrow mark direction to remove it. <div data-bbox="384 426 922 557" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE : The drain cap is hung down because a strap is attached to it (outside).</p> </div> <ol style="list-style-type: none"> 3) Loosen the cap by turn the drain cap (inside) for approx. 1 turn to OPEN → direction and then drain the drain water accumulated in the drain pan. <div data-bbox="384 721 922 1016" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE : Be sure to catch drain water using a bucket, etc. when loosening the drain cap. The insulating materials are adhered to the drain cap (outside) and opening part of the drain pan; be careful that they are not come off. If they are come off, stick them as before using double-faces tape, etc.</p> </div> <ol style="list-style-type: none"> 4) Turn the drain cap once again to OPEN → direction to remove it. <p>2. Attachment</p> <ol style="list-style-type: none"> 1) Insert the drain cap (inside), turn it to CLOSE → direction until the position where “Clashed sound” is heard and it cannot be turned more over (Position where △ mark of the drain pan matches with △ mark of the drain cap (inside)) and then fix it. <div data-bbox="384 1424 922 1710" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE : When attaching the drain cap (inside), remove dirt attached to the packing. And tighten in it noting so that the cap is not slantingly set. If attaching the drain cap as dust or dirt is attached or the cap is set slantingly, water leakage is caused.</p> </div> <ol style="list-style-type: none"> 2) Turn the drain cap (outside) to → direction and then attach it using the fixing screw as original. 3) Following to work of item 2 of ① , mount the suction grille as before. 	 

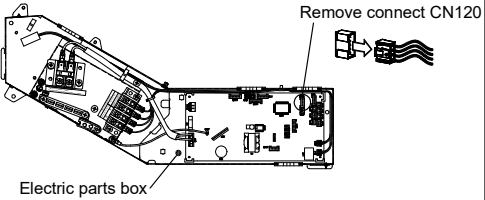
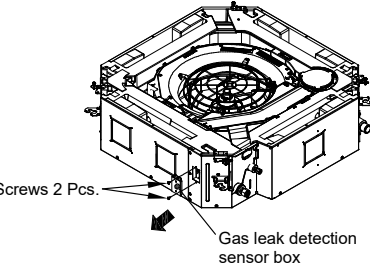
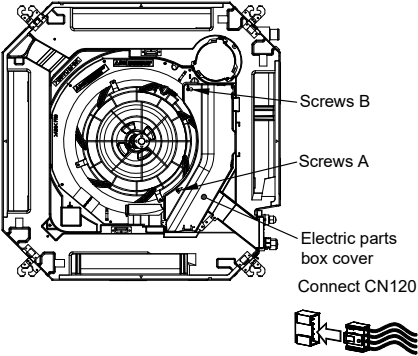
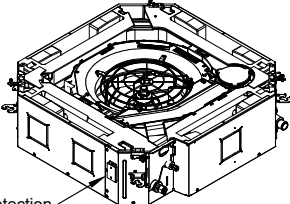
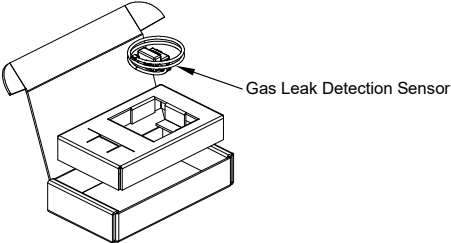
No.	Part name	Procedure	Remarks
⑦	Fan motor	<p>1. Detachment</p> <ol style="list-style-type: none"> 1) Carry out work of item 1 of ②. 2) Remove connectors which are connected from the control P.C. board to the other parts and then remove each wiring from the clamp. CN510 : Louver motor (20P, White) CN34 : Float switch (3P, Red) CN504 : Drain pump (2P, White) CN100 : TC1 sensor (3P, Brown) CN101 : TC2 sensor (2P, Black) CN102 : TCJ sensor (2P, Red) CN104 : Room temp. Sensor (2P, Yellow) CN210 : Fan motor power supply (5P, White) CN82 : PMV (6P, Blue) <div data-bbox="384 750 930 875" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE : Unlock the lock of the housing part and then remove the connector.</p> </div> <ol style="list-style-type: none"> 3) Remove the fixing screws A and B, and then remove the electric parts box. (Fixing screw A: $\varnothing 4 \times 10$, 3 pcs, Fixing screw B: $\varnothing 4 \times 10$, 1 pc.) 4) Remove the fan motor lead, TC sensor and TCJ sensor from clamp of the bell mouth. 5) Remove the fixing screws and then remove the bell mouth. ($\varnothing 4 \times 10$, 8 pcs.) 6) Remove the fixing screws and then remove the nut cap. ($\varnothing 4 \times 10$, 2 pcs.) 7) Remove the fixing nut and then remove the turbo fan. (M8 nut with flange, 1 pc.) 8) Remove the fixing screws and then remove the motor lead holding bracket. ($\varnothing 4 \times 8$, 2 pcs.) 9) Cut the bundling band and then remove it from the clamp. 10) Remove the fixing nut and then remove the fan motor. ($\varnothing 6$ nut, 3 pcs.) <p>2. Attachment</p> <ol style="list-style-type: none"> 1) Fix the parts as before in order of fan motor → motor lead holding bracket → turbo fan → nut cap → bell mouth. <div data-bbox="384 1703 930 2054" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE : Fix the motor lead to the clamp without slack as before using bundling band. When fixing the turbo fan, be sure to match the D-cut of the fan boss with D-cut of the motor shaft. Using a torque wrench, fix the turbo fan and tighten it to $5.4^{+0.5}_{-0.2}$ Nm. Using torque wrench, fix the fan motor (at 3 positions) and tighten it to $4.9^{+0.5}_{-0.2}$ Nm.</p> </div>	<p>Fixing screw A</p>  <p>Fixing screw B Electric parts box</p> <p>Clamp</p>  <p>Fan motor lead TC sensor TCJ sensor</p> <p>Bell mouth Nut cap</p>  <p>Fixing screw</p> <p>Turbo fan</p>  <p>M8 nut with flange</p>

No.	Part name	Procedure	Remarks
⑦	Fan motor (Continued)	<p>2. Attachment</p> <p>2) Fix the fan motor lead, TC sensor and TCJ sensor with the clamp of the bell mouth.</p> <p>3) Mount the electric parts box with the fixing screws A and B. ($\varnothing 4 \times 10$, 3 pcs. $\varnothing 4 \times 10$, 1 pc.)</p> <p>4) Connect the connector removed in item 1 as before and then fix wiring with the clamp.</p> <p>5) Following to work of item 2 of ②, mount the electric parts box cover and the suction grille as before.</p> <hr/> <p style="text-align: center;">CAUTION</p> <hr/> <p>When exchanging the fan motors of the models MMU-UP009 to UP030, take off lead wire from the clamp filter, which is connected to CN334 of the fan motor to be exchanged and then connect the removed lead wire to a new fan motor.</p> <hr/>	 <p>Fixing screws ($\varnothing 4 \times 8$)</p>  <p>Fan motor lead</p>

No.	Part name	Procedure	Remarks
⑧	Drain pump	<p>1. Detachment</p> <ol style="list-style-type: none"> 1) Carry out works of item 1 of ② and item 1 of ⑥. 2) Remove the drain pump connector (CN504, White, 2P) connected to the control P.C. board and then remove the lead wire from the clamp. 3) Remove the fixing screws and then remove the drain pump. (Ø4 × 10, 3 pcs.) 4) As shown in the right figure, first pull out the connecting part of the drain pump and the drain hose from the drain port and then take out the drain pump. 5) Set direction of the knob of the hose band downward, slide it from the pump connecting part to the hose side and then remove the drain hose from the drain pump. 6) Pass the connector of the drain pump lead wire through the wiring taking-out port and then take out the drain pump. <p>2. Attachment</p> <ol style="list-style-type: none"> 1) Enter your hand into the drain port and pass the connector of the drain pump lead wire through the wiring taking-out port. 2) Connect the drain hose to the drain pump as before. <div data-bbox="384 1129 922 1310" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE :</p> <p>Insert the drain hose up to the end of the drain pump connecting part, apply band to the white mark position of the hose and then set the band knob upward.</p> </div> <ol style="list-style-type: none"> 3) Return the drain pump to the indoor unit and then mount it as before using the fixing screws. (Ø4 × 10, 3 pcs.) 4) Connect the drain pump connector (CN504, White, 2P) to the control P.C. board and then fix it as before with the clamp. 5) Following to words of item 2 of ⑥ and item 2 of ②, mount the drain cap, the electric parts box cover and the suction grille as before. 	 <p>Fixing screw A</p> <p>Drain port</p> <p>Drain pump</p> <p>CN504</p>  <p>Drain pump lead wire</p> <p>Wiring taking-out port</p> <p>Clamp</p>  <p>Drain pump</p> <p>Drain hose</p> <p>Pump connecting part</p>  <p>Slide to drain hose side.</p> <p>Hose band</p>

No.	Part name	Procedure	Remarks
⑨	Float switch assembly	<p>1. Detachment</p> <ol style="list-style-type: none"> 1) Carry out works of item 1 of ⑦ and works from 1) to 5). 2) Remove the fixing screw and then remove the float switch assembly. (Ø4 × 25, 1 pc.) <p>2. Attachment</p> <ol style="list-style-type: none"> 1) Mount the float switch assembly as before with the fixing screw. <div data-bbox="402 573 941 698" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE : When mounting, match hole of the float switch assembly with projection of the drain pan.</p> </div> <ol style="list-style-type: none"> 2) Mount the bell mouth as before. (Ø4 × 10, 8 pcs.) 3) Following to works of item 2 of ⑦ and works from 2) to 5), attach the parts as before. 	 <p style="text-align: center;">Hole of float switch assembly</p> 
⑩	Drain pan	<p>1. Detachment</p> <ol style="list-style-type: none"> 1) Carry out works of item 1 of ④, item 1 of ⑥, item 1 of ⑦ and works from 2) to 5). 2) Remove the fixing screws to remove the drain pan. (Ø4 × 8, 4 pcs.) <p>2. Attachment</p> <ol style="list-style-type: none"> 1) Fix parts as before in order of drain cap → drain pan → bell mouth. 2) Following to works of item 2 of ⑦ and works from 2) to 5), attach parts as before. 	 <p style="text-align: center;">Fixing screws (Ø4 x 8)</p>  <p style="text-align: center;">Fixing screws (Ø4 x 8)</p>

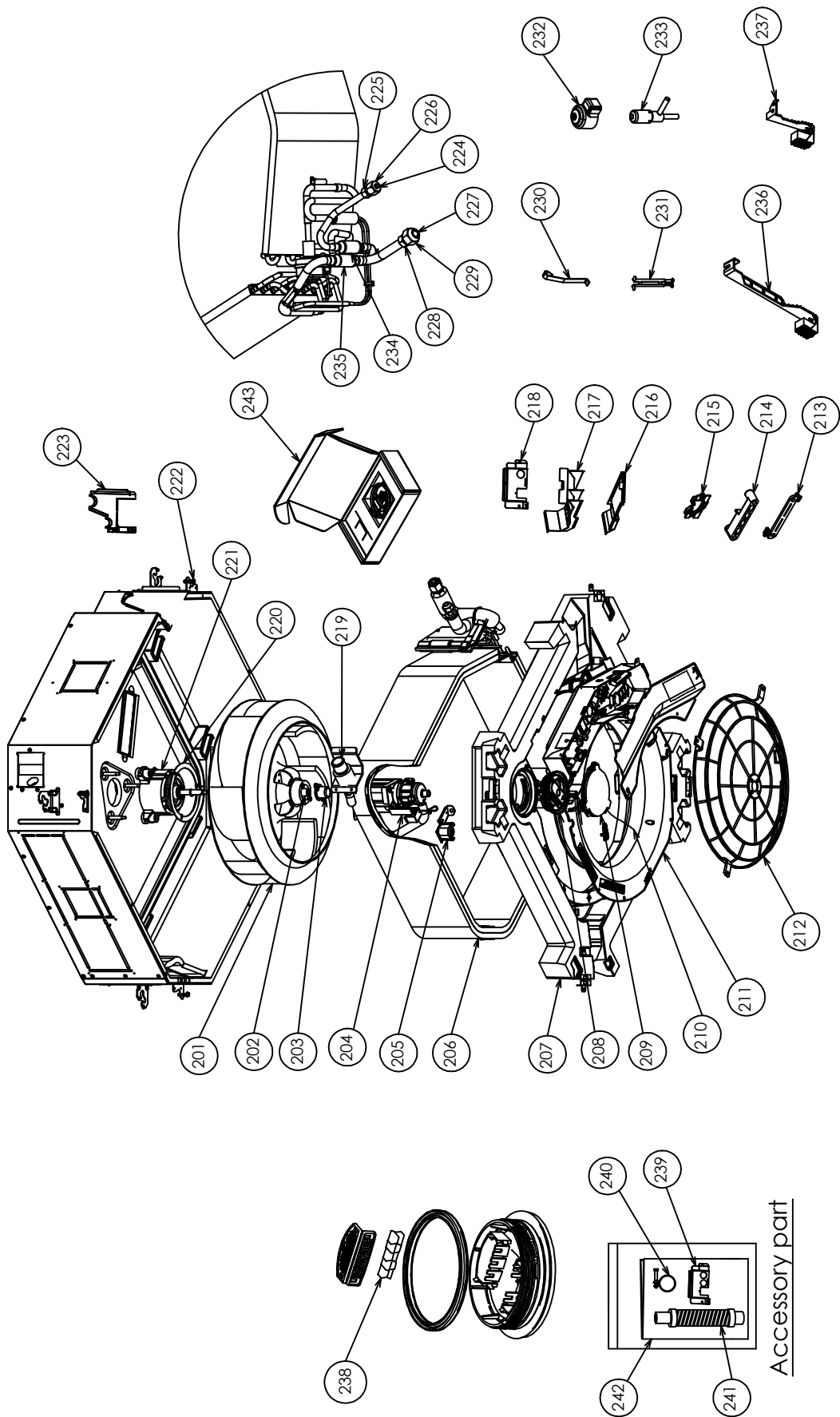
No.	Part name	Procedure	Remarks
⑪	Heat exchanger	<p>1. Detachment</p> <ol style="list-style-type: none"> 1) Recover the refrigerant gas. 2) Carry out work of item 1 of ⑩. 3) Remove refrigerant pipe at indoor unit side. 4) Remove the fixing screws and then remove the piping cover. (Ø4 x10, 3 pcs.) 5) Remove the drain hose from the drain pump and remove the fixing screws to remove the drain pump stand. (Ø4 x8, 3 pcs.) 6) While pushing the heat exchanger, remove the fixing band, fixing screws and the heat exchanger. (Ø4 x8, 3 pcs.) <p>2. Attachment</p> <ol style="list-style-type: none"> 1) Mount the heat exchanger with the fixing band and the fixing screws. (Ø4 x8, 3 pcs.) 2) Fix the parts as before in order of drain pump stand → piping cover. 3) Connect the refrigerant pipe as before and then apply vacuuming. 4) Following to work of item 2 of ⑩, attach the parts as before. 	 <p>Fixing screws (Ø4 x 10) Piping cover</p> <p>Drain pump stand</p>  <p>Fixing screws (Ø4 x 10)</p>  <p>Fixing screws (Ø4 x 10)</p>  <p>Fixing screw</p> <p>Fixing band</p> 

No.	Part name	Procedure	Remarks
⑫	Gas Leak Detection	<p>1. Detachment</p> <p>1) Perform works until opening of the electric parts box cover in works of item 1 of ②</p> <p>2) Remove the connectors which connect to gas leak detection sensor the control P.C. board CN120 : gas leak detection sensor (4P : White)</p>  <p>3) Remove the fixing screws (2 positions) of gas leak detection sensor box</p>  <p>2. Attachment</p> <p>1) Open gas leak detection sensor accessory.</p> <p>2) Insert the gas leak detection sensor into unit and fix it by the screw.</p> <p>3) Connect the gas leak detection sensor box wiring as original and close the electric parts box cover for fixing. Following to work of item 2 of ②</p> 	<p><u>Installation position (Inside Indoor Unit)</u></p>  <p><u>How to install Gas Leak Detection Sensor</u></p> <p>⚠ Caution : Turn off power supply before installation.</p> <p><u>Gas Leak Detection Sensor Accessory</u></p> 

13. EXPLODED VIEWS AND PARTS LIST

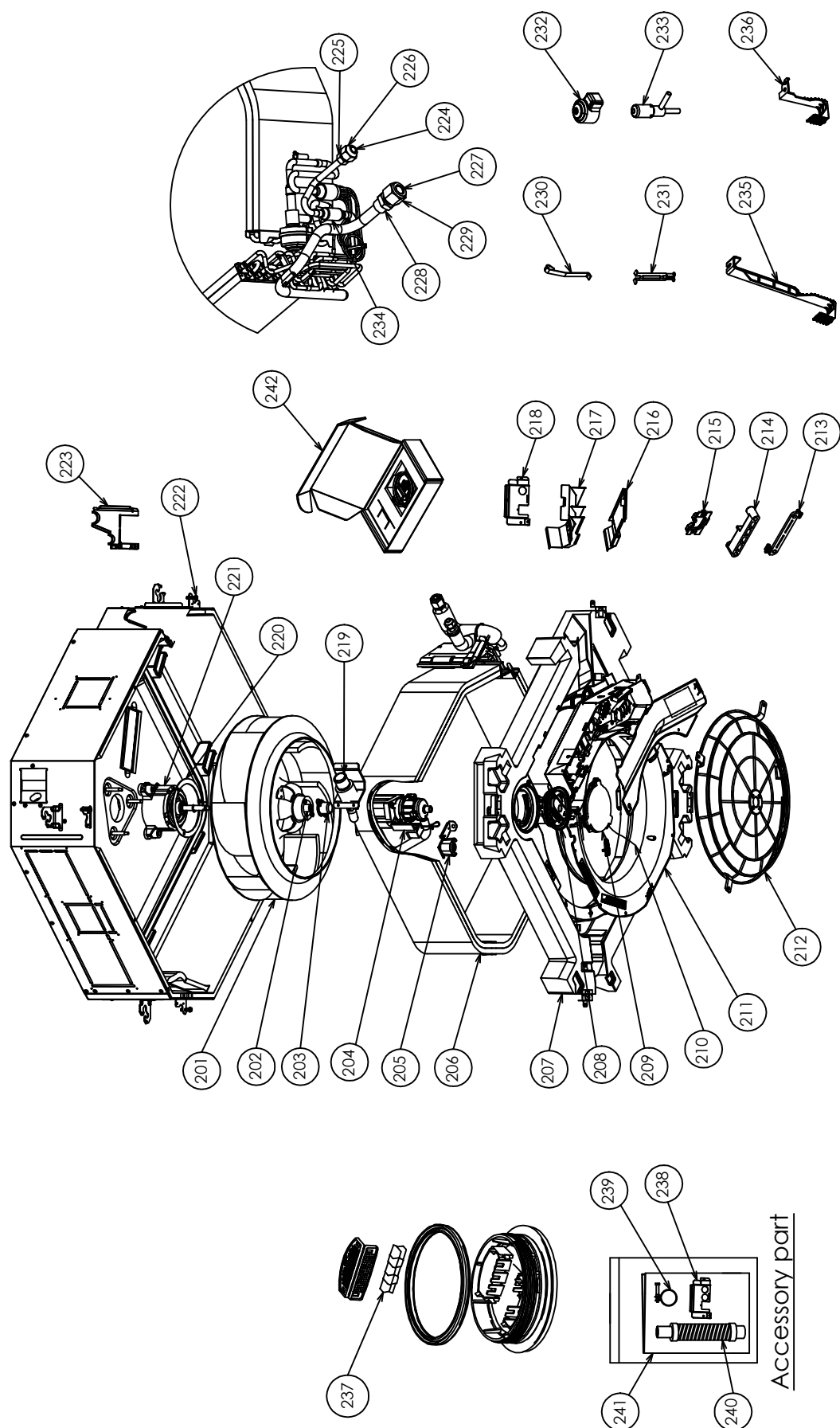
13-1. Indoor Unit

MMU-UB0071HP-UL, MMU-UB0091HP-UL

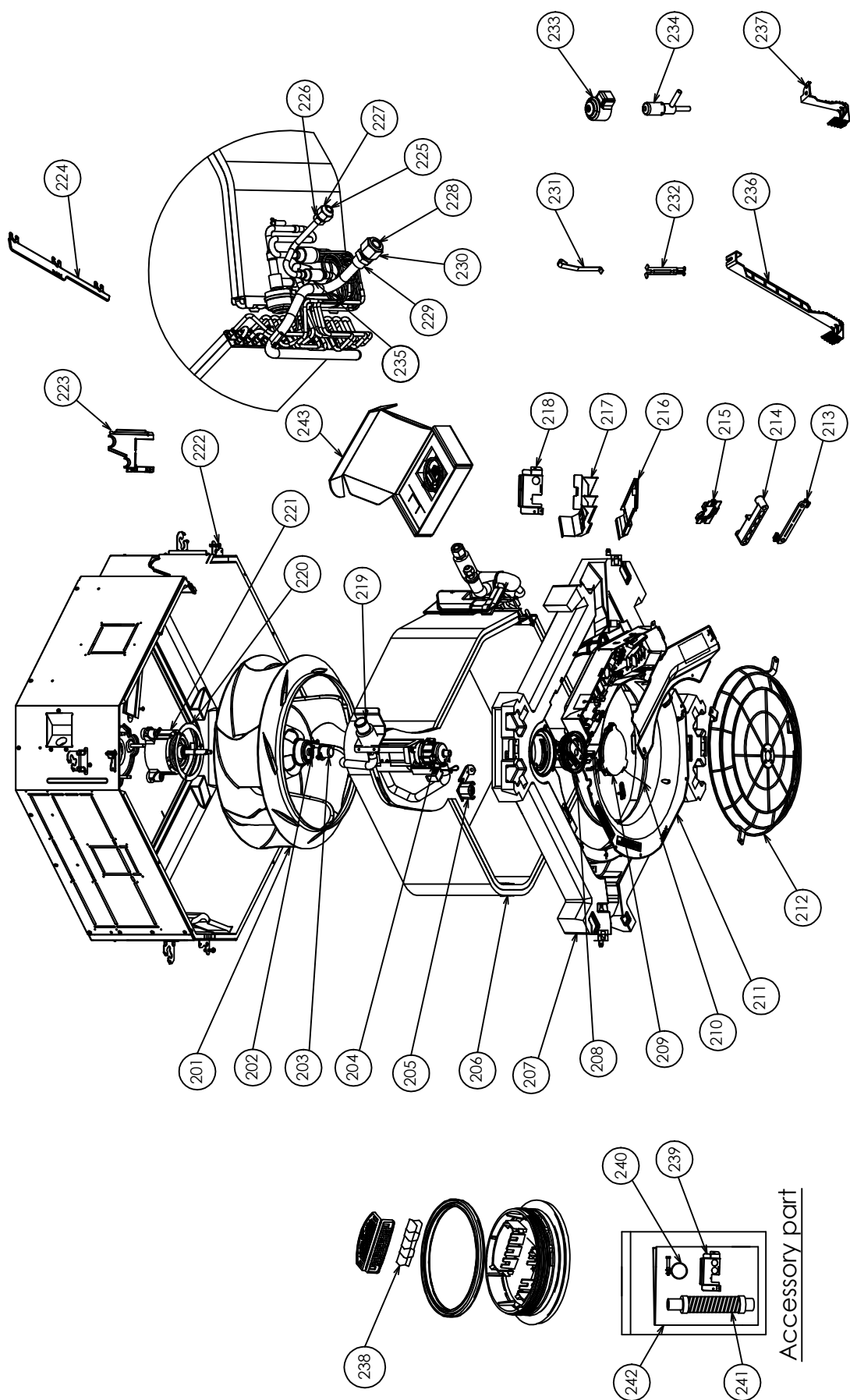


Location No.	Parts No.	Description	Model name MMU-UB****HP-UL	
			0071	0091
201	43T20335	FAN,ASSY TURB	1	1
202	43T97001	NUT	1	1
203	43T39353	CAP,NUT	1	1
204	43T77301	PUMP ASSY	1	1
205	43T51314	SWITCH ASSY FLOAT	1	1
206	43T44797	REFRIGERATION CYCLE ASSY	1	1
207	43T72361	PAN ASSY, DRAIN	1	1
208	43T79317	LID ASSY, INSIDE	1	1
209	43T79319	LID ASSY, OUTSIDE	1	1
210	43T83312	STRING	1	1
211	43T22322	BELL MOUTH	1	1
212	43T19357	GUARD,FAN	1	1
213	43T63347	CLAMP, WIRE	4	4
214	43T63348	CLAMP, DOWN	1	1
215	43T63349	CLAMP, UP	1	1
216	43T62389	COVER WIRE BOX ASSY	1	1
217	43T62390	WIRE BOX ASSY	1	1
218	43T62391	PLATE CONDUIT ASSY	1	1
219	43T71303	SOCKET, ASSY DRAIN	1	1
220	43T97316	WASHER	1	1
221	43T21545	FAN-MOTOR	1	1
222	43T97315	SCREW, FIX PANEL	4	4
223	43T04454	COVER ASSY	1	1
224	43T49405	PLASTIC BONNET 6.35DIA	1	1
225	43T82336	SOCKET	1	1
226	43T97320	NUT, FLARE, 1/4 IN	1	1
227	43T49406	PLASTIC BONNET 9.52DIA	1	1
228	43T82337	SOCKET	1	1
229	43T97321	NUT, FLARE, 3/8 IN	1	1
230	43T19333	HOLDER, SENSOR	2	2
231	43T19321	FIX-P-SENSOR	1	1
232	43T46515	COIL, PMV	1	1
233	43T46568	BODY, PMV	1	1
234	43T47386	STRAINER	1	1
235	43T47387	STRAINER	1	1
236	43T39447	EVAPORATOR BAND ASSEMBLY	2	2
237	43T39451	EVAPORATOR FIX BAND(C)	1	1
238	43T79318	ASM-GLASS (Anti Bacterial)	1	1
239	43T62392	PLATE CONDUIT ASSY	1	1
240	43T83311	BAND, HOSE	1	1
241	43T70326	HOSE, DRAIN	1	1
242	43T85961	INSTALLATION MANUAL	1	1
243	43T63421	PACKING SENSOR ASSEMBLY	1	1

MMU-UB0121HP-UL, MMU-UB0151HP-UL, MMU-UB0181HP-UL,
MMU-UB0241HP-UL, MMU-UB0301HP-UL

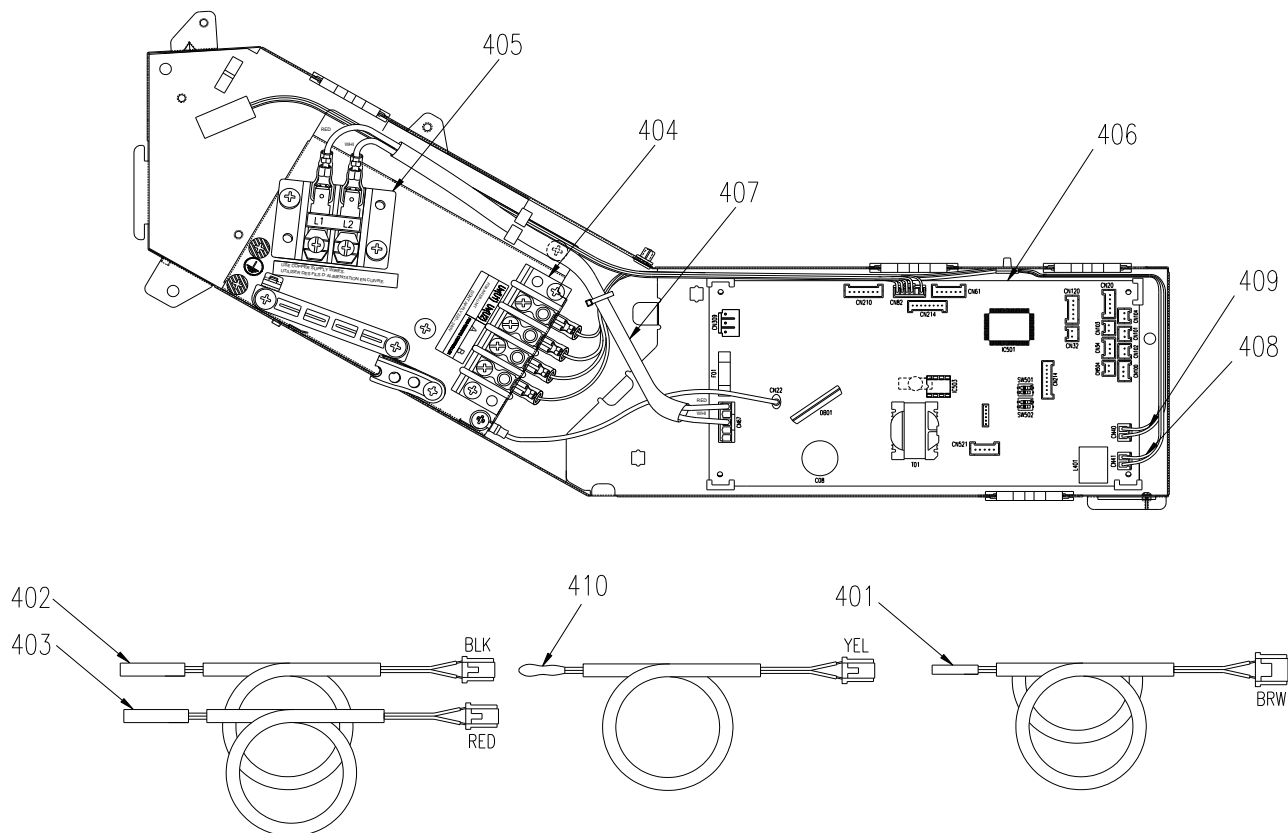


Location No.	Parts No.	Description	Model name MMU-UB****HP-UL				
			0121	0151	0181	0241	0301
201	43T20335	FAN,ASSY TURB	1	1	1	1	1
202	43T97001	NUT	1	1	1	1	1
203	43T39353	CAP,NUT	1	1	1	1	1
204	43T77301	PUMP ASSY	1	1	1	1	1
205	43T51314	SWITCH ASSY FLOAT	1	1	1	1	1
206	43T44893	REFRIGERANT CYCLE ASSY	1				
206	43T44798	REFRIGERANTION CYCLE ASSY		1	1		
206	43T44799	REFRIGERANTION CYCLE ASSY				1	1
207	43T72362	PAN ASSY, DRAIN	1	1	1	1	1
208	43T79317	LID ASSY, INSIDE	1	1	1	1	1
209	43T79319	LID ASSY, OUTSIDE	1	1	1	1	1
210	43T83312	STRING	1	1	1	1	1
211	43T22322	BELL MOUTH	1	1	1	1	1
212	43T19357	GUARD,FAN	1	1	1	1	1
213	43T63347	CLAMP, WIRE	4	4	4	4	4
214	43T63348	CLAMP, DOWN	1	1	1	1	1
215	43T63349	CLAMP, UP	1	1	1	1	1
216	43T62389	COVER WIRE BOX ASSY	1	1	1	1	1
217	43T62390	WIRE BOX ASSY	1	1	1	1	1
218	43T62391	PLATE CONDUIT ASSY	1	1	1	1	1
219	43T71303	SOCKET, ASSY DRAIN	1	1	1	1	1
220	43T97316	WASHER	1	1	1	1	1
221	43T21545	FAN-MOTOR	1	1	1	1	1
222	43T97315	SCREW, FIX PANEL	4	4	4	4	4
223	43T04454	COVER ASSY	1	1	1	1	1
224	43T49405	PLASTIC BONNET 6.35DIA	1	1	1		
224	43T49406	PLASTIC BONNET 9.52DIA				1	1
225	43T82336	SOCKET	1	1	1		
225	43T82337	SOCKET				1	1
226	43T97320	NUT, FLARE, 1/4 IN	1	1	1		
226	43T97321	NUT, FLARE, 3/8 IN				1	1
227	43T49406	PLASTIC BONNET 9.52DIA	1				
227	43T49407	PLASTIC BONNET 12.7DIA		1	1		
227	43T49412	PLASTIC BONNET 15.88DIA				1	1
228	43T82347	SOCKET	1				
228	43T82338	SOCKET		1	1		
228	43T82365	SOCKET				1	1
229	43T97321	NUT, FLARE, 3/8 IN	1				
229	43T97322	NUT, FLARE, 3/8 IN		1	1		
229	43T97323	NUT, FLARE, 5/8 IN				1	1
230	43T19333	HOLDER, SENSOR	2	2	2	2	2
231	43T19321	FIX-P-SENSOR	1	1	1	1	1
232	43T46515	COIL, PMV	1	1	1	1	1
233	43T46568	BODY, PMV	1				
233	43T46518	BODY, PMV		1	1	1	1
234	43T47386	STRAINER	1	1	1	1	1
235	43T39449	EVAPORATOR FIX BAND(A)	2	2	2	2	2
236	43T39451	EVAPORATOR FIX BAND(C)	1	1	1	1	1
237	43T79318	ASM-GLASS (Anti Bacterial)	1	1	1	1	1
238	43T62392	PLATE CONDUIT ASSY	1	1	1	1	1
239	43T83311	BAND, HOSE	1	1	1	1	1
240	43T70326	HOSE, DRAIN	1	1	1	1	1
241	43T85961	INSTALLATION MANUAL	1	1	1	1	1
242	43T63421	PACKING SENSOR ASSEMBLY	1	1	1	1	1



Location No.	Parts No.	Description	Model name MMU-UB****HP-UL			
			0361	0421	0481	0541
201	43T20334	FAN,ASSY TURB	1	1	1	1
202	43T97001	NUT	1	1	1	1
203	43T39353	CAP,NUT	1	1	1	1
204	43T77301	PUMP ASSY	1	1	1	1
205	43T51314	SWITCH ASSY FLOAT	1	1	1	1
206	43T44800	REFRIGERATION CYCLE ASSY	1	1	1	1
207	43T72363	PAN ASSY, DRAIN	1	1	1	1
208	43T79317	LID ASSY, INSIDE	1	1	1	1
209	43T79319	LID ASSY, OUTSIDE	1	1	1	1
210	43T83312	STRING	1	1	1	1
211	43T22322	BELL MOUTH	1	1	1	1
212	43T19357	GUARD,FAN	1	1	1	1
213	43T63347	CLAMP, WIRE	4	4	4	4
214	43T63348	CLAMP, DOWN	1	1	1	1
215	43T63349	CLAMP, UP	1	1	1	1
216	43T62389	COVER WIRE BOX ASSY	1	1	1	1
217	43T62390	WIRE BOX ASSY	1	1	1	1
218	43T62391	PLATE CONDUIT ASSY	1	1	1	1
219	43T71303	SOCKET, ASSY DRAIN	1	1	1	1
220	43T97316	WASHER	1	1	1	1
221	43T21550	FAN-MOTOR (LDF-340-130AA1)	1	1	1	1
222	43T97315	SCREW, FIX PANEL	4	4	4	4
223	43T04454	COVER ASSY	1	1	1	1
224	43T39352	PLATE,WIND	4	4	4	4
225	43T47332	BONNET, 9.52 DIA	1	1	1	1
226	43T82318	SOCKET	1	1	1	1
227	43T97312	NUT, FLARE, 3/8 IN	1	1	1	1
228	43T47334	BONNET; 15.88 DIA.	1	1	1	1
229	43T82321	SOCKET	1	1	1	1
230	43T97314	NUT, FLARE, 5/8 IN	1	1	1	1
231	43T19333	HOLDER, SENSOR	2	2	2	2
232	43T19321	FIX-P-SENSOR	1	1	1	1
233	43T46515	COIL, PMV	1	1	1	1
234	43T46513	BODY, PMV	1	1	1	1
235	43T47386	STRAINER	1	1	1	1
236	43T39450	EVAPORATOR FIX BAND(B)	2	2	2	2
237	43T39451	EVAPORATOR FIX BAND(C)	1	1	1	1
238	43T79318	ASM-GLASS (Anti Bacterial)	1	1	1	1
239	43T62392	PLATE CONDUIT ASSY	1	1	1	1
240	43T83311	BAND, HOSE	1	1	1	1
241	43T70326	HOSE, DRAIN	1	1	1	1
242	43T85961	INSTALLATION MANUAL	1	1	1	1
243	43T63421	PACKING SENSOR ASSEMBLY	1	1	1	1

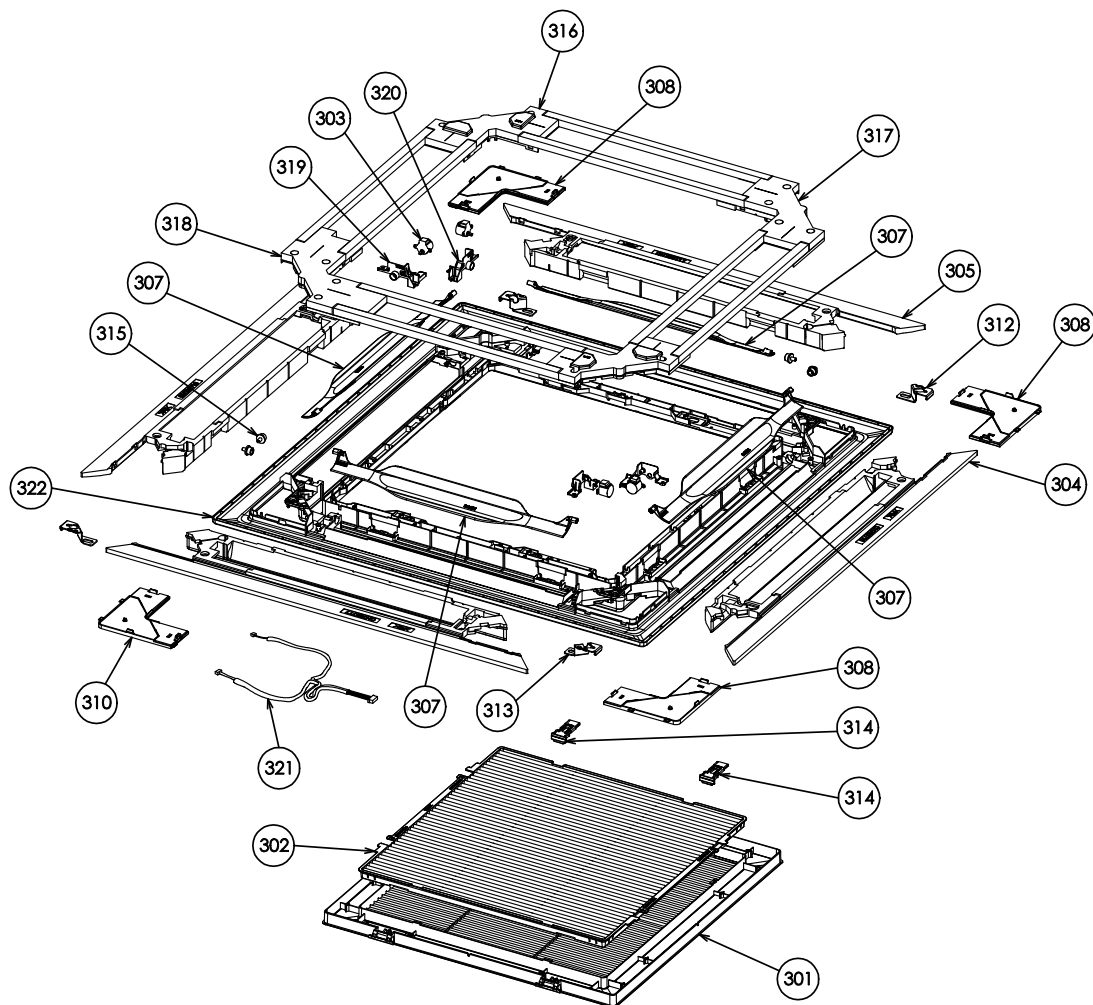
13-2. Electric parts



Location No.	Part No.	Description	Model name MMU-UB****HP-UL					
			0071	0091	0121	0151	0181	0241
401	43T50411	TC-SENSOR	1	1	1	1	1	1
402	43T50387	TC-SENSOR (TC2)	1	1	1	1	1	1
403	43T50386	TCJ SENSOR (RED)	1	1	1	1	1	1
404	43T60362	TERMINAL	1	1	1	1	1	1
405	43T60435	SERV-TERMINAL	1	1	1	1	1	1
406	43TNV644	PC BOARD ASSY (MCC-1797)	1	1	1	1	1	1
407	43T60547	ASM-HOUSING(PW)	1	1	1	1	1	1
408	43T60543	ASM-HOUSING(BUS)	1	1	1	1	1	1
409	43T60584	ASM-HOUSING(REM)	1	1	1	1	1	1
410	43T50409	TA-SENSOR	1	1	1	1	1	1

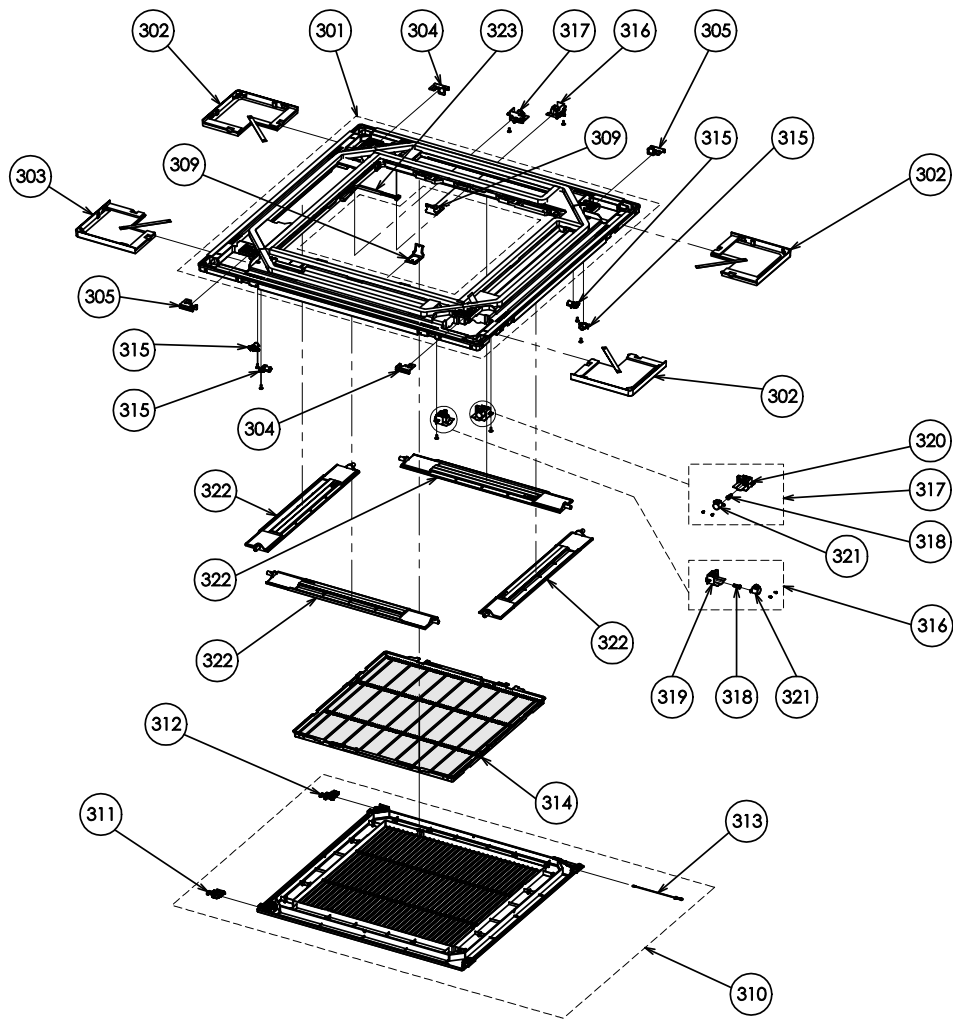
Location No.	Part No.	Description	Model name MMU-UB****HP-UL				
			0301	0361	0421	0481	0541
401	43T50411	TC-SENSOR	1	1	1	1	1
402	43T50387	TC-SENSOR (TC2)	1	1	1	1	1
403	43T50386	TCJ SENSOR (RED)	1	1	1	1	1
404	43T60362	TERMINAL	1	1	1	1	1
405	43T60435	SERV-TERMINAL	1	1	1	1	1
406	43TNV644	PC BOARD ASSY (MCC-1797)	1	1	1	1	1
407	43T60547	ASM-HOUSING(PW)	1	1	1	1	1
408	43T60543	ASM-HOUSING(BUS)	1	1	1	1	1
409	43T60584	ASM-HOUSING(REM)	1	1	1	1	1
410	43T50409	TA-SENSOR	1	1	1	1	1

RBC-U32PGP-UL



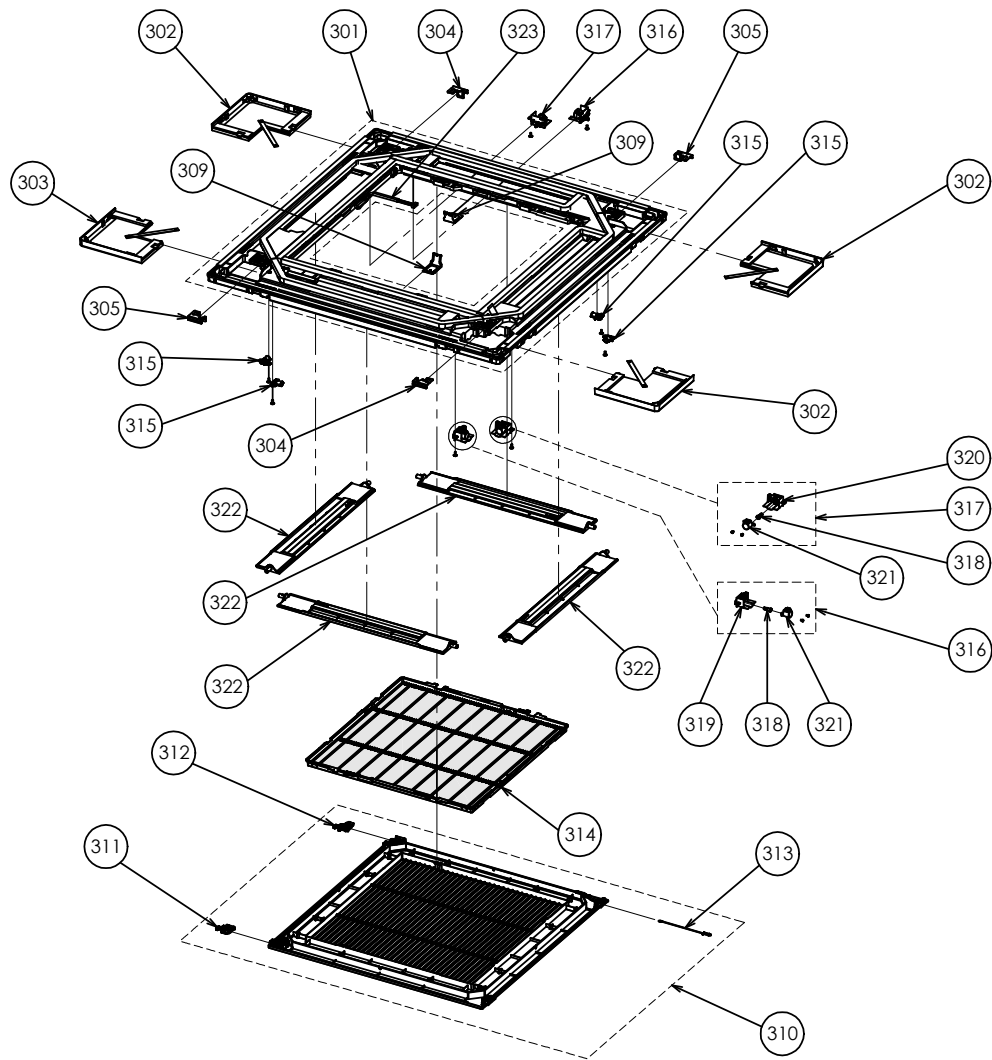
Location No.	Part No.	Description	RBC-U32PGP-UL
301	43T09533	GRILLE AINL	1
302	43T80350	AIR FILTER	1
303	43T21434	STEPPING-MOTOR	4
304	43T07317	AIR OUTLET FOAM (A)	2
305	43T07318	AIR OUTLET FOAM (B)	2
307	43T09531	LOUVER	4
308	43T01317	PANEL-COVER-ASSEMBLY	3
310	43T01332	ASM-COVER-PANEL	1
312	43T07320	PANEL FIX PLATE (A)	2
313	43T07321	PANEL FIX PLATE (B)	2
314	43T07324	HOOK	2
315	43T07319	AXIS CAP	4
316	43T03403	COVER(MOTOR)-ASSEMBLY	2
317	43T03401	COVER ASSEMBLY	1
318	43T03402	COVER ASSEMBLY	1
319	43T07322	MOTOR FIXURE	2
320	43T07323	MOTOR FIXURE	2
321	43T60530	LEAD-MOTOR	1
322	43T00714	PANEL	1

RBC-U33P-UL



Location No.	Parts No.	Description	RBC-U33P-UL
301	43T00885	PANEL, INSULATOR ASSY	1
302	43T01338	PANEL, COVER ASSY	3
303	43T01343	PANEL,COVER,ASSY; TOSHIBA CARRIER	1
304	43T07330	PLATE, FIX PANEL (A)	2
305	43T07331	PLATE, FIX PANEL (B)	2
309	43T07332	HANGER FIXTURE	2
310	43T09625	GRILLE AIR INLET ASSY	1
311	43T07333	GRILLE HOOK LEFT	1
312	43T07334	GRILLE HOOK RIGHT	1
313	43T19390	STRING	1
314	43T80369	AIR FILTER	1
315	43T07335	AXIS CAP	4
316	43T07336	MOTOR FIXTURE ASSY	2
317	43T07337	MOTOR FIXTURE ASSY	2
318	43T07338	AXIS COVER	4
319	43T07339	MOTOR FIXTURE	2
320	43T07340	MOTOR FIXTURE	2
321	43T21434	STEPPING-MOTOR	4
322	43T22390	HORIZONTAL LOUVER ASSY	4
323	43T60587	LEAD MOTOR	1

RBC-U33PB-UL



Location No.	Parts No.	Description	RBC-U33PB-UL
301	43T00926	PANEL, INSULATOR ASSY	1
302	43T01348	PANEL, COVER ASSY	3
303	43T01350	PANEL, COVER, ASSY; TOSHIBA CARRIER	1
304	43T07330	PLATE, FIX PANEL (A)	2
305	43T07331	PLATE, FIX PANEL (B)	2
309	43T07332	HANGER FIXTURE	2
310	43T09644	GRILLE AIR INLET ASSY	1
311	43T07343	GRILLE HOOK LEFT	1
312	43T07344	GRILLE HOOK RIGHT	1
313	43T19390	STRING	1
314	43T80369	AIR FILTER	1
315	43T07335	AXIS CAP	4
316	43T07336	MOTOR FIXTURE ASSY	2
317	43T07337	MOTOR FIXTURE ASSY	2
318	43T07338	AXIS COVER	4
319	43T07339	MOTOR FIXTURE	2
320	43T07340	MOTOR FIXTURE	2
321	43T21434	STEPPING-MOTOR	4
322	43T22398	HORIZONTAL LOUVER ASSY	4
323	43T60587	LEAD MOTOR	1

WARNINGS ON REFRIGERANT LEAKAGE

Important

Check of Concentration Limit

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its concentration will not exceed a set limit.

The refrigerant R454B which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its concentration should rise excessively. Suffocation from leakage of R454B is almost non-existent. With the recent increase in the number of high concentration buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.

Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared with conventional individual air conditioners. If a single unit of the multi conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its concentration does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).

In a room where the concentration may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device.

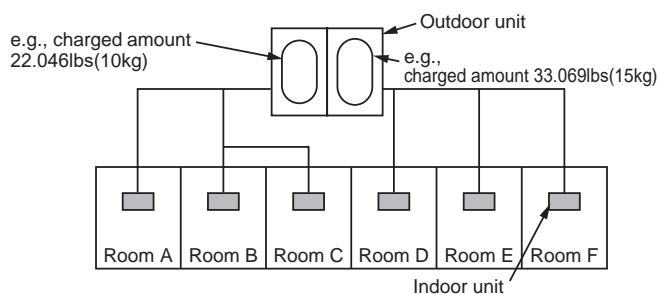
The concentration is as given below.

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

Refrigerant Concentration limit shall be in accordance with local regulation.

NOTE 1 :

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



For the amount of charge in this example:

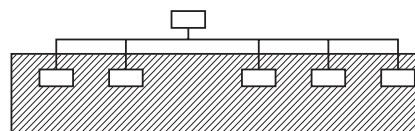
The possible amount of leaked refrigerant gas in rooms A, B and C is 22.046lbs (10kg).

The possible amount of leaked refrigerant gas in rooms D, E and F is 33.069lbs (15kg).

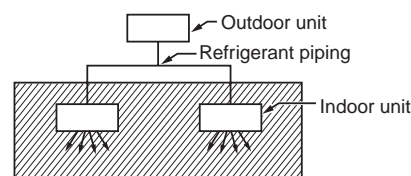
NOTE 2 :

The standards for minimum room volume are as follows.

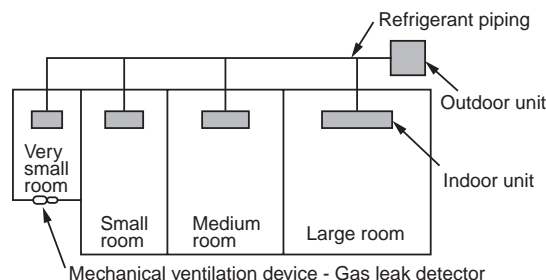
- 1) No partition (shaded portion)



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



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



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