

# TOSHIBA

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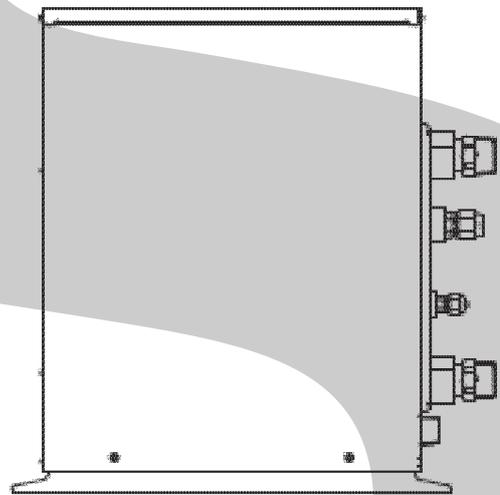
## AIR CONDITIONER (MULTI TYPE) SERVICE MANUAL

### Hot Water Module Mid temperature type

Model name:

**MMW-UP0271LQ-E(TR)**

**MMW-UP0561LQ-E(TR)**



# CONTENTS

<b>PRECAUTIONS FOR SAFETY</b> .....	<b>6</b>
<b>1. SUMMARIES OF PRODUCT CHARACTERISTICS</b> .....	<b>11</b>
<b>2. SPECIFICATIONS</b> .....	<b>12</b>
<b>3. WIRING DIAGRAMS</b> .....	<b>13</b>
<b>4. PARTS RATING</b> .....	<b>14</b>
<b>5. REFRIGERANT CYCLE DIAGRAM</b> .....	<b>15</b>
<b>6. CONTROL OUTLINE</b> .....	<b>16</b>
<b>7. COMMUNICATION TYPE, MODEL NAMES AND THE MAXIMUM NUMBER OF CONNECTABLE UNITS</b> .....	<b>19</b>
<b>8. APPLIED CONTROL AND FUNCTIONS</b> .....	<b>20</b>
8-1. Hot Water Module printed circuit board .....	20
8-2. Optional connector specifications of hot water module P.C. board .....	21
8-3. Test operation of hot water module unit .....	22
8-4. Method to set hot water module function DN code .....	23
8-5. Applied control of indoor unit (including Hot Water Module) .....	27
8-6. Test operation check .....	41
<b>9. TROUBLESHOOTING</b> .....	<b>45</b>
9-1. Overview .....	45
9-2. Troubleshooting method .....	46
9-3. Troubleshooting based on information displayed on remote controller .....	52
9-4. Check Codes Displayed on Remote Controller and SMMS-u Outdoor Unit (7-Segment Display on I/F Board) and Locations to Be Checked .....	54
9-5. Diagnostic Procedure for Each Check Code (Hot water module) .....	68
9-6. Sensor characteristics .....	72
<b>10. P.C. BOARD EXCHANGE PROCEDURES</b> .....	<b>73</b>
10-1. Replacement of indoor P.C. boards .....	73
<b>11. DETACHMENTS</b> .....	<b>80</b>
<b>12. EXPLODED DIAGRAM / SERVICE PARTS LIST</b> .....	<b>87</b>

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

## Generic Denomination: Hot Water Module

### Definition of Qualified Installer or Qualified Service Person

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

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

Agent	Qualifications and knowledge which the agent must have
Qualified installer (*1)	<ul style="list-style-type: none"> <li>• The qualified installer is a person who installs, maintains, relocates and removes the air conditioners (including the hot water modules) made by Toshiba Carrier Corporation. He or she has been trained to install, maintain, relocate and remove the air conditioners (including the hot water modules) made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations.</li> <li>• 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 (including the hot water modules) made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> <li>• 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 (including the hot water modules) made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> <li>• The qualified installer who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners (including the hot water modules) made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> </ul>
Qualified service person (*1)	<ul style="list-style-type: none"> <li>• The qualified service person is a person who installs, repairs, maintains, relocates and removes the air conditioners (including the hot water modules) made by Toshiba Carrier Corporation. He or she has been trained to install, repair, maintain, relocate and remove the air conditioners (including the hot water modules) made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations.</li> <li>• 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 (including the hot water modules) made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> <li>• 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 (including the hot water modules) made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> <li>• 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 (including the hot water modules) made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> </ul>

## Warning Indications on the Air Conditioner Unit

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

Confirm that labels are indicated on the specified positions

If removing the label during parts replace, stick it as the original.

Warning indication	Description		
<table border="1"><tr><td data-bbox="172 412 306 631"></td><td data-bbox="306 412 660 631"><p><b>WARNING</b></p><p><b>ELECTRICAL SHOCK HAZARD</b> Disconnect all remote electric power supplies before servicing.</p></td></tr></table>		<p><b>WARNING</b></p> <p><b>ELECTRICAL SHOCK HAZARD</b> Disconnect all remote electric power supplies before servicing.</p>	<p><b>WARNING</b></p> <p><b>ELECTRICAL SHOCK HAZARD</b> Disconnect all remote electric power supplies before servicing.</p>
	<p><b>WARNING</b></p> <p><b>ELECTRICAL SHOCK HAZARD</b> Disconnect all remote electric power supplies before servicing.</p>		

**Definition of Protective Gear**

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

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

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

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

The important contents concerned to the safety are described on the product itself and on this Service Manual.

Please read this Service Manual after understanding the described items thoroughly in the following contents (Indications / Illustrated marks), and keep them.

**[Explanation of indications]**

Indication	Explanation
 <b>DANGER</b>	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.
 <b>WARNING</b>	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.
 <b>CAUTION</b>	Indicates contents assumed that an injury or property damage (*) may be caused on the repair engineers, the third parties, and the users due to troubles of the product after work when an incorrect work has been executed.

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

**[Explanation of illustrated marks]**

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

# 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.	<p>Before carrying out the installation, maintenance, repair or removal work, be sure to set the circuit breaker for both the hot water module and outdoor units to the OFF position. Otherwise, electric shocks may result.</p> <p>Before opening the front panel of the hot water module 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.</p> <p>Only a qualified installer (*1) or qualified service person (*1) is allowed to remove the electrical parts box cover of the hot water module or service panel of the outdoor unit and do the work required.</p> <p>When you have noticed that some kind of trouble (such as when a check display has appeared, there is a smell of burning, abnormal sounds are heard, the hot water module fails to heat or water is leaking) has occurred in the hot water module, do not touch the hot water module 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 hot water module in the trouble status may cause mechanical problems to escalate or result in electric shocks or other failure.</p>
 Electric shock hazard	<p>When you access inside of the front 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.</p>
 Prohibition	<p>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.</p> <p>Before operating the hot water module after having completed the work, check that the front panel of the hot water module 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.</p>
 Stay on protection	<p>If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the front panel of one or more of the hot water modules and the service panel of the outdoor unit removed in order to find out exactly where the trouble lies, wear insulated heat-resistant gloves, insulated boots and insulated work overalls, and take care to avoid touching any live parts. You may receive an electric shock if you fail to heed this warning. Only qualified service person (*1) is allowed to do this kind of work.</p>

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

 **WARNING**

 General	<p>Before starting to repair the hot water module, read carefully through the Service Manual, and repair the hot water module by following its instructions.</p>
	<p>Only qualified service person (*1) is allowed to repair the hot water module. Repair of the hot water module by unqualified person may give rise to a fire, electric shocks, injury, water leaks and / or other problems.</p>
	<p>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.</p>
	<p>Only a qualified installer (*1) or qualified service person (*1) is allowed to carry out the electrical work of the hot water module. 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.</p>
	<p>When transporting the hot water module, wear shoes with protective toe caps, protective gloves and other protective clothing.</p>
	<p>When connecting the electrical wires, repairing the electrical parts or undertaking 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.</p>
	<p>Appliance shall be installed in accordance with national wiring regulations. Capacity shortage of power circuit or incomplete installation may cause an electric shock or a fire.</p>
	<p>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.</p>
	<p>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.</p>
	<p>When working at heights, put a sign in place so that no-one will approach the work location, before proceeding with the work. Parts and other objects may fall from above, possibly injuring a person below.</p>
	<p>Do not touch the plate heat exchanger of the unit. You may injure yourself if you do so. If the plate heat exchanger must be touched for some reason, first put on protective gloves and safety work clothing, and then proceed.</p>
	<p>Do not climb onto or place objects on top of the outdoor unit. You may fall or the objects may fall off the outdoor unit and result in injury.</p>
	<p>When transporting the hot water module, wear shoes with additional protective toe caps. When transporting the hot water module, do not hold the bands around the packing carton. You may injure yourself if the bands should break. Be sure that a heavy unit (10 kg or heavier) such as a compressor is carried by two persons.</p>
	 Check earth wires.
<p>After completing the repair or relocation work, check that the ground wires are connected properly.</p>	
<p>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.</p>	
 Prohibition of modification.	<p>Do not modify the products. Do not also disassemble or modify the parts. It may cause a fire, electric shock or injury.</p>
 Use specified parts.	<p>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.</p>
 Do not bring a child close to the equipment.	<p>If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the front panel of one or more of the hot water module 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.</p>
 Insulating measures	<p>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 f side.</p>

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

 No fire	<p>When performing repairs using a gas burner, replace the refrigerant with nitrogen gas because the oil that coats the pipes may otherwise burn.</p> <p>When repairing the refrigerating cycle, take the following measures.</p> <ol style="list-style-type: none"> <li>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.</li> <li>2) Do not use a welder in the closed room. When using it without ventilation, carbon monoxide poisoning may be caused.</li> <li>3) Do not bring inflammables close to the refrigerant cycle, otherwise fire of the welder may catch the inflammables.</li> </ol>
 Refrigerant	<p>The refrigerant used by this hot water module is the R410A.</p> <p>Check the used refrigerant name and use tools and materials of the parts which match with it. For the products which use R410A refrigerant, the refrigerant name is indicated at a position on the outdoor unit where is easy to see. To prevent miss charging, the route of the service port is changed from one of the former R22.</p> <p>For an hot water module which uses R410A, never use other refrigerant than R410A. For an hot water module which uses other refrigerant (R22, etc.), never use R410A. If different types of refrigerant are mixed, abnormal high pressure generates in the refrigerating cycle and an injury due to breakage may be caused.</p> <p>When the hot water module 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 hot water module to malfunction.</p> <p>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 hot water module 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 hot water module, execute vacuuming, and then newly recharge the specified amount of liquid refrigerant. In this time, never charge the refrigerant over the specified amount.</p> <p>When recharging the refrigerant in the refrigerating cycle, do not mix the refrigerant or air other than R410A into the specified refrigerant. If air or others is mixed with the refrigerant, abnormal high pressure generates in the refrigerating cycle resulted in cause of injury due to breakage.</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> <p>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.</p>
 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>
 Compulsion	<p>When the refrigerant gas leaks, find out the leaked position and repair it surely. If the leaked position cannot be found out and the repair work is interrupted, reclaim and tighten the service valve, otherwise the refrigerant gas may leak into the room. The poisonous gas generates when gas touches to fire such as fan heater, stove or cooking stove though the refrigerant gas itself is innocuous. When installing equipment which includes a large amount of charged refrigerant in a sub-room, it is necessary that the concentration does not the limit even if the refrigerant leaks. If the refrigerant leaks and exceeds the limit concentration, an accident of shortage of oxygen is caused.</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	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 hot water module is running properly.
	After repair work has finished, check there is no trouble. If check is not executed, a fire, electric shock or injury may be caused. For a check, turn off the power breaker.
	After repair work (installation of front panel and cabinet) has finished, execute a test run to check there is no generation of smoke or abnormal sound. If check is not executed, a fire or an electric shock is caused. Before test run, install the front panel and cabinet.
	Be sure to fix the screws back which have been removed for installation or other purposes.
 Do not operate the unit with the valve closed.	Check the following matters before a test run after repairing piping. <ul style="list-style-type: none"> <li>• Connect the pipes surely and there is no leak of refrigerant.</li> <li>• The valve is opened.</li> </ul> Running the compressor under condition that the valve closes causes an abnormal high pressure resulted in damage of the parts of the compressor and etc. and moreover if there is leak of refrigerant at connecting section of pipes, the air is sucked and causes further abnormal high pressure resulted in burst or injury.
 Check after reinstallation	Only a qualified installer (*1) or qualified service person (*1) is allowed to relocate the hot water module. It is dangerous for the hot water module to be relocated by an unqualified individual since a fire, electric shocks, injury, water leakage, noise and / or vibration may result.
	Check the following items after reinstallation. <ol style="list-style-type: none"> <li>1) The earth wire is correctly connected.</li> <li>2) The power cord is not caught in the product.</li> <li>3) There is no inclination or unsteadiness and the installation is stable.</li> </ol> If check is not executed, a fire, an electric shock or an injury is caused.
	When carrying out the reclaim work shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air, etc. to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in rupture, injury, etc.
 Cooling check	When the service panel of the outdoor unit is to be opened in order for the compressor or the area around this part to be repaired immediately after the hot water module has been shut down, set the circuit breaker to the OFF position, and then wait at least 10 minutes before opening the service panel. If you fail to heed this warning, you will run the risk of burning yourself because the compressor pipes and other parts will be very hot to the touch. In addition, before proceeding with the repair work, wear the kind of insulated heat-resistant gloves designed to protect electricians.
	Take care not to get burned by compressor pipes or other parts when checking the cooling cycle while running the unit as they get heated while running. Be sure to put on gloves providing protection for electric shock and heat.
	When the service panel of the outdoor unit is to be opened in order for the fan motor, reactor, inverter or the areas around these parts to be repaired immediately after the hot water module has been shut down, set the circuit breaker to the OFF position, and then wait at least 10 minutes before opening the service panel. If you fail to heed this warning, you will run the risk of burning yourself because the fan motor, reactor, inverter heat sink and other parts will be very hot to the touch. In addition, before proceeding with the repair work, wear the kind of insulated heat-resistant gloves designed to protect electricians.
 Installation	Only a qualified installer (*1) or qualified service person (*1) is allowed to install the hot water module. If the hot water module is installed by an unqualified individual, a fire, electric shocks, injury, water leakage, noise and / or vibration may result.
	Before starting to install the hot water module, read carefully through the Installation Manual, and follow its instructions to install the hot water module.
	Be sure to use the company-specified products for the separately purchased parts. Use of non-specified products may result in fire, electric shock, water leakage or other failure. Have the installation performed by a qualified installer.
	Do not supply power from the power terminal block equipped on the outdoor unit to another outdoor unit. Capacity overflow may occur on the terminal block and may result in fire.
	Do not install the hot water module in a location that may be subject to a risk of expire to a combustible gas. If a combustible gas leaks and becomes concentrated around the unit, a fire may occur.
	Do not install hot water module in a place where water freezes.
	Do not install water pipes in a location that is susceptible to freezing.
	Install a circuit breaker that meets the specifications in the Installation Manual and the stipulations in the local regulations and laws.
	Install the circuit breaker where it can be easily accessed by the qualified service person (*1).
	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 hot water module when you implement the measures. Accumulation of highly concentrated refrigerant may cause an oxygen deficiency accident.
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.	
Do not place any combustion appliance in a place where it is directly exposed to the wind of hot water module, otherwise it may cause imperfect combustion.	

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

## Explanations given to user

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

## Relocation

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

## Location

Do not install the Hot water module in locations where the operation sound may cause a disturbance. (Especially at the boundary line with a neighbor, do not install the Hot water module in locations where considering the noise.)

## Water piping

- Before a long period of none use, purge the water out of the pipes and thoroughly let them dry.
- Water pipes can get very hot, depending on the preset temperature. Wrap the water pipes with heat insulation (procured locally) to prevent burns.

## Heat insulation

Apply heat insulation for the pipes separately at liquid side and gas side. To use the attached heat insulation pipe, apply the heat insulation to the pipe connecting section of the hot water module securely without gap.

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

# ***Declaration of Conformity***

Manufacturer: TOSHIBA CARRIER CORPORATION  
336 Tadehara, Fuji-shi, Shizuoka-ken 416-8521 JAPAN

TCF holder: TOSHIBA CARRIER EUROPE S.A.S  
Route de Thil  
01120 Montluel FRANCE

Hereby declares that the machinery described below:

Generic Denomination: Hot Water Module

Model / type: MMW-UP0271LQ-E, MMW-UP0271LQ-TR  
MMW-UP0561LQ-E, MMW-UP0561LQ-TR

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

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

## **NOTE**

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

# 1. SUMMARIES OF PRODUCT CHARACTERISTICS

## CONCEPT

- To design and produce a mid temperature hot water module, capable of producing up to 50°C outlet water temperature, whilst maximizing the performance and efficiency of the entire VRF system.
- To be used in both space heating and domestic hot water applications. Typical applications include hotel, office and residential apartment suits.
- To create a single solution for our customers heating and domestic hot water requirements.

## Mid temperature Hot Water Module – CHARACTER

- New Design, specifically engineered for VRF application
- Operating Control designed specifically to maximize both performance and efficiency.
- Capacity line up - 8 kW & 16 kW
- All models come in single phase (220 – 240V ~ 50 Hz)

## Domestic Hot Water Installation Example

Typical Installations examples include –

- Office use, where there is a requirement for DHW, such as small canteen or rest room.
- Apartment block, where there is a requirement for DHW, such as kitchen, shower and bath.
- Hotel use, where there is an auxiliary requirement for DHW, for the purpose of cleaning and sanitary operations.
- Small Businesses, for example coffee shops, hairdressers etc. where there is a requirement for a single heating solution.

## Space Heating Installation Example

Typical Installations examples include –

- Office use, where there is a requirement for space heating via fan coils or AHU's.
- Apartment, where there is a requirement for space heating via under-floor heating.
- Hotel use, where there is an auxiliary requirement for space heating via a combination of fan coils, AHU or underfloor heating circuits.
- Small Businesses, for example coffee shops, hairdressers etc. where there is a requirement for a single heating solution.

## Connectable units

### VRF products

VRF products	SMMS-i	SMMS-i (5 HP, 6 HP)	SHRM-i	MiNi-SMMS	SMMS-e	SHRM-e	MiNi-SMMS-e	MiNi-SMMS-e (8, 10HP)	SMMS-u
Connectable	✓	–	–	–	✓	✓	–	✓	✓

- BMS units can not be connected with these units.
- The Fresh Air Intake type and Air to Air Heat Exchanger with DX Coil can not be connected with the same refrigerant system.
- For the MiNi-SMMS-e series, only connectable to below model: MCY-MHP0806HS8\*, MCY-MHP1006HS8\*

### Remote controller (TCC-LINK)

- RBC-AMT32E      • RBC-AMS41E      • RBC-AMS55E-ES/EN      • RBC-AS41E      • RBC-ASC11E/TR
- RBC-ASC21E      • TCB-EXS21TLE

### Remote controller (TU2C-LINK)

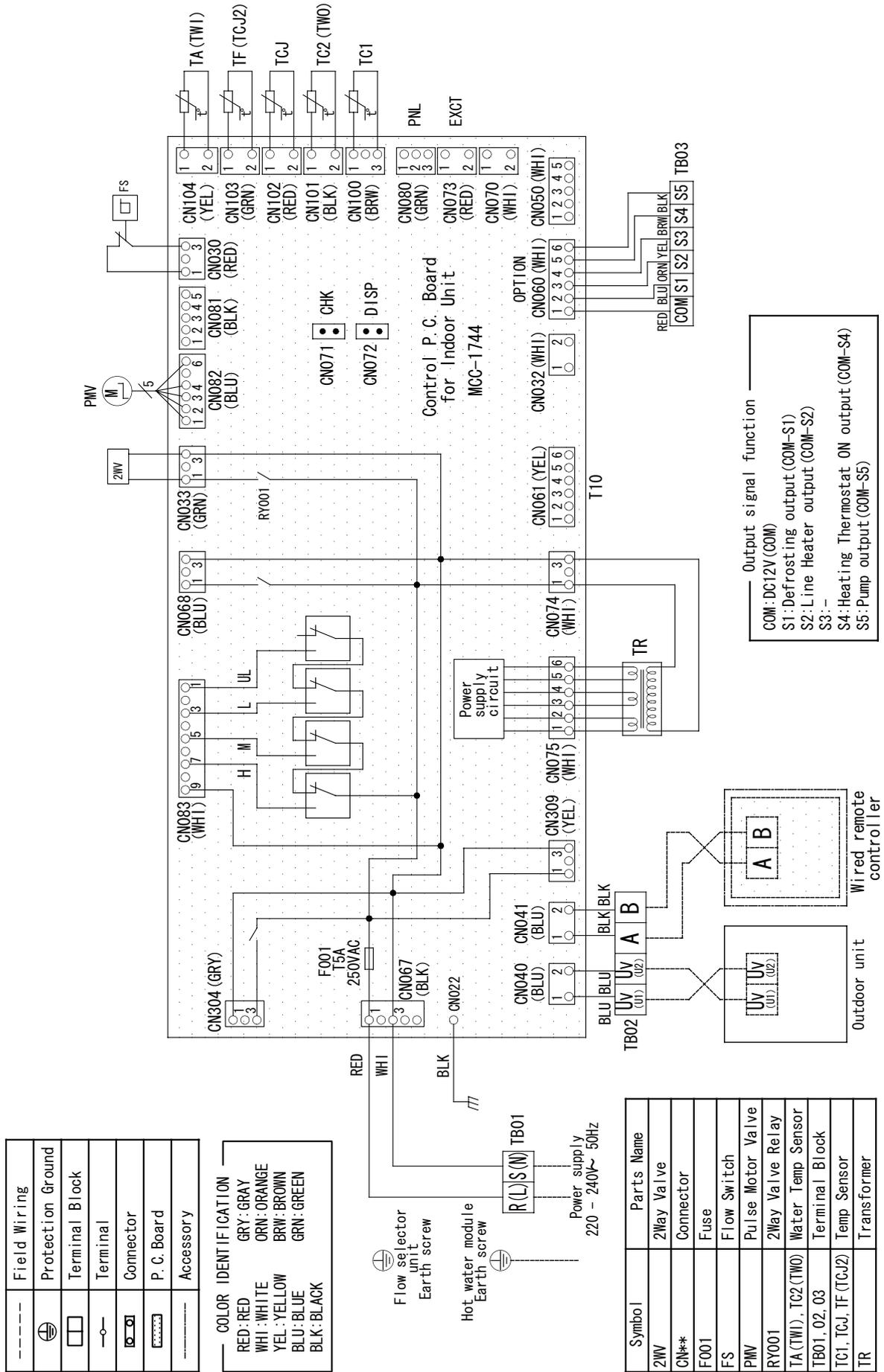
- RBC-ASCU11-E/TR      • RBC-AMTU31-E/TR      • RBC-AMSU51-ES/EN

## 2. SPECIFICATIONS

Model				MMW-UP0271LQ-E/TR	MMW-UP0561LQ-E/TR	
Heating capacity *1			(kW)	8.0	16.0	
Electrical characteristics	Power supply *2			1 phase 50Hz 220 – 240V		
	Running current			(A)	0.08	0.08
	Power consumption			(W)	14	14
Appearance				Zinc hot dipping steel plate		
Dimension	Unit	Height	(mm)	580		
		Width (leg include)	(mm)	400 (467)		
		Depth	(mm)	250		
	Packed *3	Height	(mm)	357		
		Width	(mm)	638		
		Depth	(mm)	833		
Weight	Unit	(kg)	17.8	20.3		
	Packed	(kg)	23	25		
Design Pressure	Refrigerant side		(MPa)	4.15		
	Water side		(MPa)	1.0		
Heat exchanger				Plate type heat exchanger		
Heat-insulating material				Polyethylene foam + Polyurethane foam		
Water flow rate	Standard		(L/min)	22.9	45.8	
	Min.		(L/min)	19.5	38.9	
Water pressure loss (at standard water flow rate)			(kPa)	40.5	44.2	
Controller				Remote controller		
Operation range	Ambient	Indoor	(°CDB)	5 – 32		
		Allowable dew point	(°CDB)	23 or less		
			RH(%)	30-85		
		Outdoor (at heating) SMMS-i	(°CDB)	-20 – 21		
			(°CWB)	-20 – 19		
		Outdoor (at heating) SMMS-e	(°CDB)	-25 – 21		
			(°CWB)	-25 – 19		
		Outdoor (at heating) SHRM-e	(°CDB)	-25 – 40		
			(°CWB)	-25 – 28		
		Outdoor (at heating) SMMS-u	(°CDB)	-25 – 21		
			(°CWB)	-25 – 19		
		Outdoor (at heating) MiNi SMMS-e	(°CDB)	-20 – 21		
	(°CWB)		-20 – 15			
Water inlet side		(°C)	15 – 45			
Water outlet side		(°C)	25 – 50			
Water filter				Strainer with Mesh 30 to 40 (procured locally)		
Connecting pipe	Water pipe	Inlet		R1 – 1/4		
		Outlet		R1 – 1/4		
	Refrigerate pipe	Gas pipe	(mm)	Dia. 15.9 flare connection		
		Liquid pipe	(mm)	Dia. 9.5 flare connection		
	Drain pipe			R1		
Sound pressure level			(dB(A))	25	27	
Installation place				Indoor		

- \*1 Rated conditions : Inlet water temp. 30°C outlet water temp. 35°C Outdoor air temp. 7°CDB / 6°CWB. The standard piping means that main pipe length is 5m, branching pipe length is 2.5m of branch piping connected with a 0 meter height.
- \*2 The source voltage must not fluctuate more than ±10%.
- \*3 The unit is packed in a sideways state.
- \*4 This specification is value as of December, 2020, please note that specification is subject to change without notice.

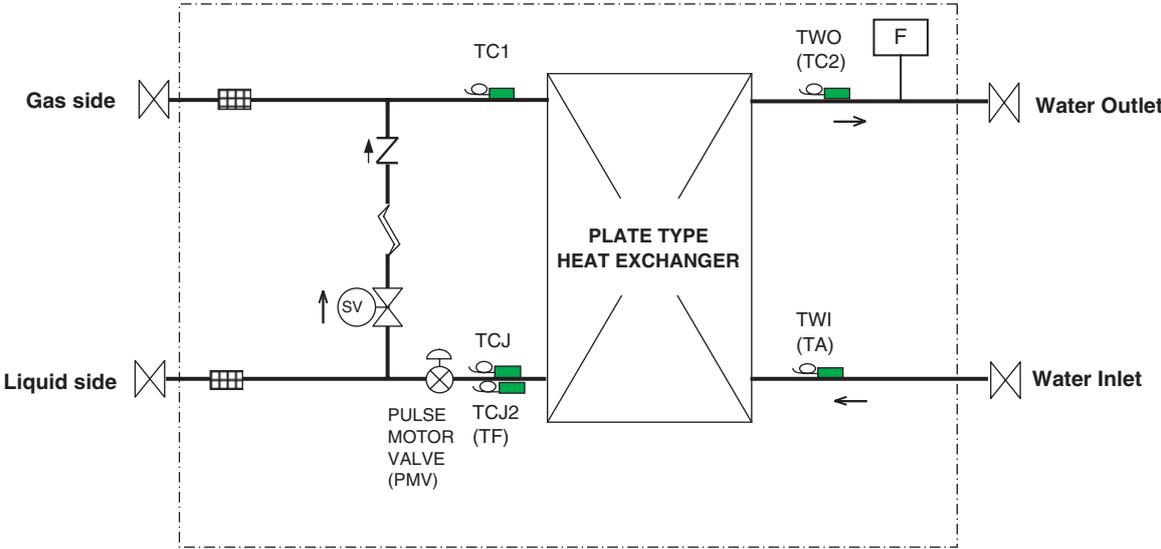
# 3. WIRING DIAGRAMS



## 4. PARTS RATING

Model	MMW-	UP0271LQ-E	UP0271LQ-TR	UP0561LQ-E	UP0561LQ-TR
Transformer		TT-13			
Flow switch		VK320M, Cap color Blue		VK320M, Cap color Black	
Pulse motor		PAM-MD12TF-301			
Pulse motor valve		PAM-B40YGTF-1		PAM-B60YGTF-1	
2 way valve coil		FQ-G593, AC220-240V 50/60Hz, Lead wire length 800 mm			
2 way valve body		FDF2A88			
TA (TWI) sensor		Dia. 6 size lead wire length:1200 mm Vinyl tube (Black), connector color Yellow			
TC1 sensor		Dia. 4 size lead wire length:1200 mm Vinyl tube (Blue), connector color Brown			
TC2 (TWO) sensor		Dia. 6 size lead wire length:1200 mm Vinyl tube (Black), connector color Black			
TCJ sensor		Dia. 6 size lead wire length:1200 mm Vinyl tube (Red), connector color Red			
TF (TCJ2) sensor		Dia. 6 size lead wire length:1000 mm Vinyl tube (Gray), connector color Green			

# 5. REFRIGERANT CYCLE DIAGRAM



Symbol						
	Solenoid valve	Capillary tube	Check valve	Strainer	Temp. sensor	Flow switch

# 6. CONTROL OUTLINE

No.	Item	Specification	Remarks																																																																											
1	Upon power supply reset	1. Identification of outdoor unit When the power supply is reset, the outdoor unit is identified, and control is redirected according to the identification result. 2. If power supply reset is performed in the wake of a trouble, the check code is cleared. If the abnormality persists after the Start / Stop button on the remote controller is pushed to resume operation, the check code is redisplayed on the remote controller.																																																																												
2	Operation selection	1. The operation mode changes in response to an operation selection command issued via the remote controller. <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>Remote controller command</th> <th>Control outline</th> </tr> </thead> <tbody> <tr> <td>STOP</td> <td>Hot water module shutdown</td> </tr> <tr> <td>HEAT</td> <td>Heating operation</td> </tr> </tbody> </table>	Remote controller command	Control outline	STOP	Hot water module shutdown	HEAT	Heating operation																																																																						
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3	Water outlet temperature control	1. Adjustment range - remote controller temperature setting (°C) <table border="1" style="margin: 10px auto;"> <thead> <tr> <th></th> <th>HEAT</th> </tr> </thead> <tbody> <tr> <td>Wired type</td> <td>25~50</td> </tr> </tbody> </table>		HEAT	Wired type	25~50																																																																								
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4	Water temperature control	After heating start, water temperature is controled the follwing tasks; Thermostat OFF with the following conditions. 1) TWO - Ts continued in I zone for 10 minutes. 2) TWO - Ts become J zone. 3) When Ts = TWI 4) When TWI ≥ 45°C continued for 1 minute, or TWI ≥ 44°C and TWO ≥ 46°C continued for 1 minute <div style="text-align: center;"> </div>	Ts: Temperature setting TWO: Water outlet temperature TWI: Water inlet temperature																																																																											
5	Control outline about pump, heater, and solenoid valve	As the following table, the pump , heater, and solenoid valve are controlled depending on Outdoor unit and HWM operation mode. <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>Outdoor unit operation mode</th> <th>HWM operation mode</th> <th>Pump *1</th> <th>Heater</th> <th>Solenoid valve</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Cooling</td> <td>Cooling thermostat ON</td> <td colspan="3">This operation mode does not exist because HWM has only Heating mode.</td> </tr> <tr> <td>Cooling thermostat OFF</td> <td colspan="3"></td> </tr> <tr> <td>Stop</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td rowspan="3">Cooling oil (refrigerant) recovery control</td> <td>Cooling thermostat ON</td> <td colspan="3">This operation mode does not exist because HWM has only Heating mode.</td> </tr> <tr> <td>Cooling thermostat OFF</td> <td colspan="3"></td> </tr> <tr> <td>Stop</td> <td>ON</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td rowspan="3">Heating</td> <td>Heating thermostat ON</td> <td>ON</td> <td>Depend on heater control. *2</td> <td>OFF</td> </tr> <tr> <td>Heating thermostat OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>Stop</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td rowspan="3">Heating refrigerant (oil) recovery control</td> <td>Heating thermostat ON</td> <td>ON</td> <td>Depend on heater control. *2</td> <td>OFF</td> </tr> <tr> <td>Heating thermostat OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>Stop</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td rowspan="3">Defrosting control</td> <td>Heating thermostat ON</td> <td>ON</td> <td>Depend on heater control. *2</td> <td>ON</td> </tr> <tr> <td>Heating thermostat OFF</td> <td>ON</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>Stop</td> <td>ON</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>Stop</td> <td>Stop</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> </tbody> </table>	Outdoor unit operation mode	HWM operation mode	Pump *1	Heater	Solenoid valve	Cooling	Cooling thermostat ON	This operation mode does not exist because HWM has only Heating mode.			Cooling thermostat OFF				Stop	OFF	OFF	OFF	Cooling oil (refrigerant) recovery control	Cooling thermostat ON	This operation mode does not exist because HWM has only Heating mode.			Cooling thermostat OFF				Stop	ON	OFF	ON	Heating	Heating thermostat ON	ON	Depend on heater control. *2	OFF	Heating thermostat OFF	ON	OFF	OFF	Stop	OFF	OFF	OFF	Heating refrigerant (oil) recovery control	Heating thermostat ON	ON	Depend on heater control. *2	OFF	Heating thermostat OFF	ON	OFF	OFF	Stop	OFF	OFF	OFF	Defrosting control	Heating thermostat ON	ON	Depend on heater control. *2	ON	Heating thermostat OFF	ON	OFF	ON	Stop	ON	OFF	ON	Stop	Stop	OFF	OFF	OFF	*1 It takes about 1 minute to operate the pump after HWM has started to operate. *2 For heater control, refer to item "No.6 Heater control". *3 "To prevent the Water Heat exchanger from freezing ,the pump and heater operate regardless of Outdoor unit / HWM operation mode. For details , refer to item "No.7 Water Heat exchanger frost prevention".
Outdoor unit operation mode	HWM operation mode	Pump *1	Heater	Solenoid valve																																																																										
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No.	Item	Specification	Remarks																		
6	Heater control	<p>1. While the heating thermostat ON, the heater relay is output by difference between Ts and TWI, and difference between Ts and TWO, Ts and TG.</p> <p>Heater ON condition: A and B as shown below Table 1 or Table 2  Heater OFF condition: A or B as shown below Table 1 or Table 2</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div data-bbox="446 369 869 638"> </div> <div data-bbox="925 336 1189 481"> <p>Table 1</p> <table border="1"> <thead> <tr> <th></th> <th>Ts - TWI (A)</th> <th>Ts - TWO (B)</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>7°C</td> <td>2°C</td> </tr> <tr> <td>Q1</td> <td>5°C</td> <td>0°C</td> </tr> </tbody> </table> </div> <div data-bbox="925 504 1189 649"> <p>Table 2</p> <table border="1"> <thead> <tr> <th></th> <th>Ts - TWO (A)</th> <th>Ts - TG (B)</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>2°C</td> <td>-11°C</td> </tr> <tr> <td>Q1</td> <td>0°C</td> <td>-14°C</td> </tr> </tbody> </table> </div> </div> <p>2. In case of <math>T_s &gt; 45^\circ\text{C}</math>, the heater relay is output as shown below by the difference between Ts and TWO.</p> <div data-bbox="383 716 869 1019"> </div>		Ts - TWI (A)	Ts - TWO (B)	P1	7°C	2°C	Q1	5°C	0°C		Ts - TWO (A)	Ts - TG (B)	P1	2°C	-11°C	Q1	0°C	-14°C	TG: Satisfaction temperature of discharge pressure
	Ts - TWI (A)	Ts - TWO (B)																			
P1	7°C	2°C																			
Q1	5°C	0°C																			
	Ts - TWO (A)	Ts - TG (B)																			
P1	2°C	-11°C																			
Q1	0°C	-14°C																			
7	Water Heat exchanger frost prevention	<p>As the following description, the pump and heater are controlled based upon TC1, TCJ, TCJ2, TWO and TWI, regardless of Start/Stop operation.</p> <ol style="list-style-type: none"> <li>Pump ON condition <ol style="list-style-type: none"> <li>When any one of TC1, TCJ, TCJ2, TWO or TWI became below 5°C</li> <li>When <math>TC1 &lt; 10^\circ\text{C}</math> and <math>TCJ - TC1 \geq 5^\circ\text{C}</math></li> </ol> </li> <li>Pump OFF condition <p>When all of TC1, TCJ, TCJ2, TWO and TWI became above 12°C</p> </li> <li>Heater ON condition <p>When TWI or TWO became below 15°C after the pump was OFF and 65 seconds progressed.</p> </li> <li>Heater OFF condition <p>TWI or TWO <math>\geq 15^\circ\text{C}</math> continued for 2 minutes.</p> </li> </ol>	TC1: Gas Temperature TCJ: Liquid Temperature TCJ2: Liquid Temperature																		
8	Cooling oil (refrigerant) recovery control	<p>While the outdoor unit is recovering cooling oil (refrigerant), the hot water modules perform the following control tasks:</p> <ol style="list-style-type: none"> <li>Close the hot water module PMV to a certain degree.</li> <li>Engage in recovery control for a specified period of time and return to stand by at the end of this period upon completing the control.</li> <li>Open the SV valve throughout the recovery control period.</li> </ol>	<ul style="list-style-type: none"> <li>Recovery operation normally takes place roughly every 2 hours.</li> </ul>																		
9	Heating refrigerant (oil) recovery control	<p>While the outdoor unit is recovering heating refrigerant (oil), the hot water modules perform the following control tasks:</p> <ol style="list-style-type: none"> <li>Open the indoor PMV to a certain degree.</li> <li>Complete the recovery operation depending on the TWO.  The time to complete is determined by each indoor unit.</li> </ol>	<ul style="list-style-type: none"> <li>Recovery operation normally takes place roughly every hour.</li> <li>The opening position of the hot water module PMV depends on capacity of the hot water modules.</li> </ul>																		

No.	Item	Specification	Remarks
10	Defrosting control	<p>While the outdoor unit is engaged in defrosting control, the hot water modules perform the following control tasks:</p> <p>1) Close the hot water module PMV to a certain degree and open the SV valve. After defrosting control is completed, heating refrigerant (oil) recovery control is performed. (For control details, see "Heating refrigerant (oil) recovery control" above.)</p>	<ul style="list-style-type: none"> <li>Control is performed per two hours or when the outdoor unit determines its need. (It varies depending on the indoor units connected.)</li> </ul>
11	Short intermittent operation compensation control	<p>1. For 5 minutes after startup, the system is forced to continue operating even if it reaches the thermostat OFF region.</p> <p>2. However, priority is given to cooling / heating selection, operation standby, and protective control, so that there is no overriding of thermostat OFF in these cases.</p>	
12	Operation standby Heating standby	<p>&lt;Operation standby&gt; ..... Displayed on remote controller</p> <p>1. When any of the check code listed below is displayed</p> <ul style="list-style-type: none"> <li>"P05" - Detection of an open phase in the power supply wiring</li> <li>"P10" - Detection of indoor flooding in at least one indoor unit except for the hot water module.</li> <li>"L30" - Detection of an interlock alarm in at least one indoor unit</li> </ul> <p>2. The system is engaged in a heat refrigerant (oil) recovery operation.</p> <p>&lt;Heating standby&gt; ..... Displayed on remote controller</p> <p>1. Normal thermostat OFF</p> <ul style="list-style-type: none"> <li>During heating operation, the hot water module goes thermostat OFF depending on water temperature. For details, refer to item "No.4 Water temperature control".</li> </ul> <p>2. Forced thermostat OFF</p> <ul style="list-style-type: none"> <li>"HEAT" operation is unavailable because at least one indoor unit is operating in "COOL / DRY" mode .</li> </ul>	<ul style="list-style-type: none"> <li>"OPERATION STANDBY </li> <li>"HEATING STANDBY </li> </ul>

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

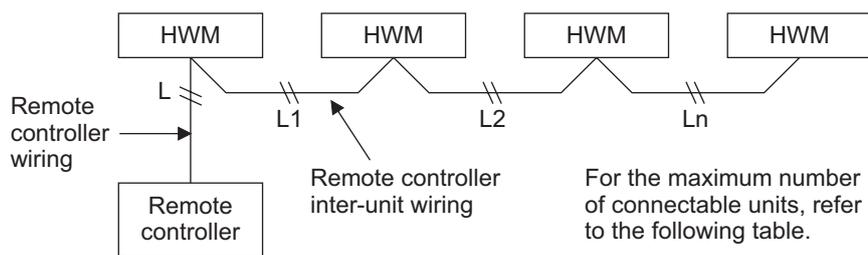
7-1. This air conditioning (U series) has new communication specifications, and TU2C-Link (U series) and TCC-Link (other than U series) differ in a communication type. For the communication type and the model names such as each unit or remote controllers, refer to the following table.

Communication type	TU2C-Link (U series and future models)	TCC-Link (Other than U series)
Outdoor unit	MMY-M <u>U</u> P*** ↑ This letter indicates U series model.	Other than U series MMY-MHP***, MMY-MAP*** MCY-MHP***
Indoor unit (Hot Water Module)	MM* - <u>U</u> P*** ↑ This letter indicates U series model.	Other than U series MM* -AP***
Wired remote controller	RBC-A** <u>U</u> *** ↑ This letter indicates U series model.	Other than U series

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

7-2. If TU2C-Link (U series) is combined with TCC-Link (other than U series), the wiring specifications and the maximum number of connectable indoor units during group control operation will be changed.

- (1) For wiring specifications, carry out the installation, maintenance, or repair according to the attached Installation Manual.
- (2) For a communication type combination and the max. number of connectable Hot Water Module, 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

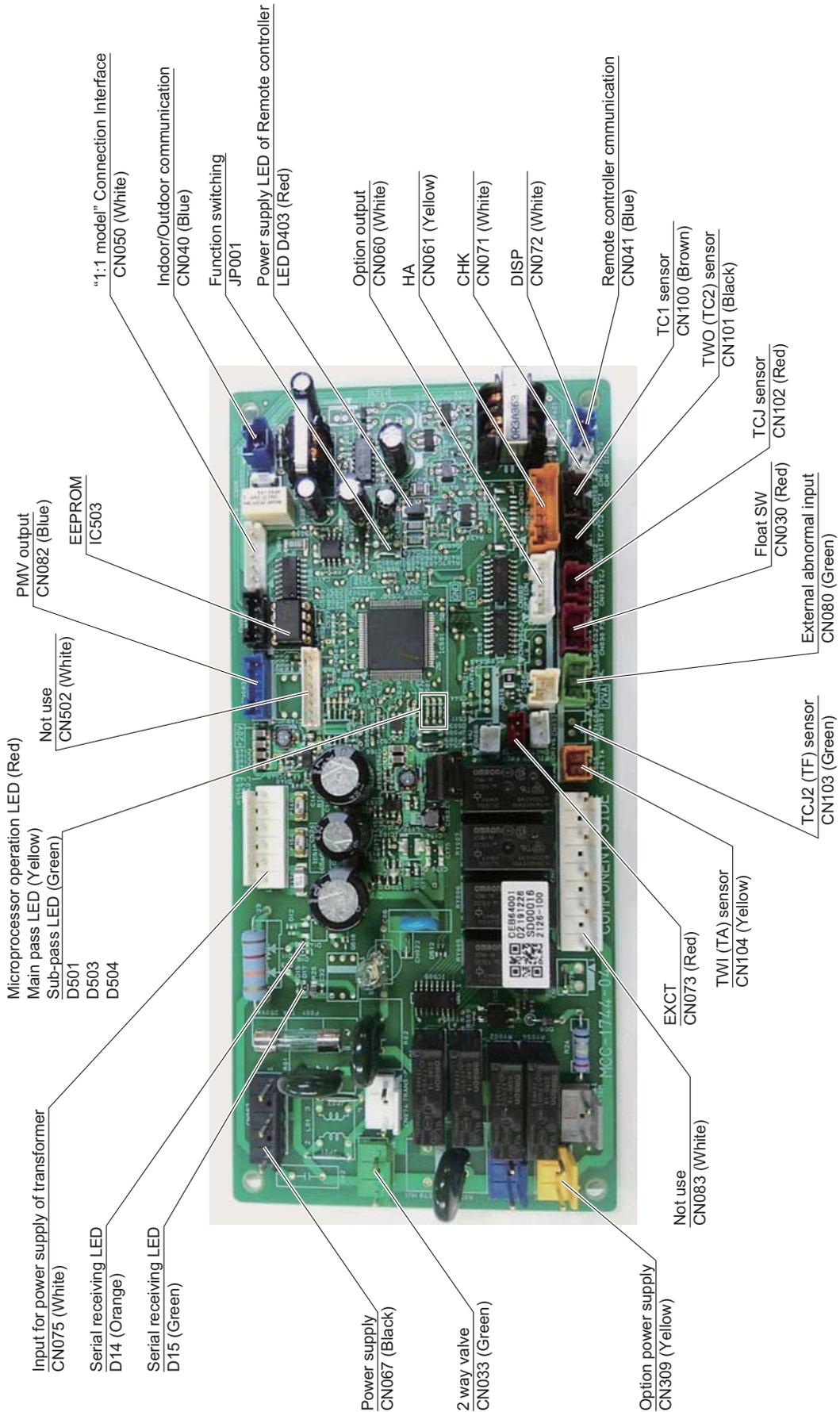
	Unit type							
	U series	U series	U series	U series	*	*	*	*
Outdoor unit	U series	U series	U series	U series	*	*	*	*
Indoor unit (HWM)	U series	U series	*	*	U series	U series	*	*
Remote controller	U series	*	U series	*	U series	*	U series	*
Communication type	TU2C-Link	TCC-Link						
Maximum number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

\* Other than U series

# 8. APPLIED CONTROL AND FUNCTIONS

## 8-1. Hot Water Module printed circuit board

MCC-1744



## 8-2. Optional connector specifications of hot water module P.C. board

Function	Connector No.	Pin No.	Specification	Remarks
HA	CN061	1	Start / stop input	Start / stop input for HA (J01: In place / Removed = Pulse input (factory default) / Step input)
		2	0 V (COM)	—
		3	Remote controller disabling input	Enables / disables start / stop control via remote controller
		4	In-operation output	ON during operation (HA answerback signal)
		5	DC12 V (COM)	—
		6	Alarm output	ON while alarm ON
Option output (*1)	CN060	1	DC12V(COM)	—
		2	Defrosting output	ON while outdoor unit ON
		3	Heater output	—
		4	—	—
		5	Heating thermostat output	ON while heating thermostat ON (compressor ON)
		6	Pump output	—
External trouble input	CN080	1	DC12 V (COM)	Generates test code L30 and automatically shuts down air conditioner (only if condition persists for 1 minute)
		2	DC12 V (COM)	
		3	External trouble input	
CHK Operation check	CN071	1	Check mode input	Used for hot water module operation check (prescribed operational status output, such as indoor PMV ON, to be generated without communication with outdoor unit or remote controller)
		2	0 V	
DISP Display mode	CN072	1	Display mode input	Product display mode - Communication just between hot water module and remote controller enabled (upon turning on of power) Timer short-circuited out (always)
		2	Display mode input	

(\*1) For hot water module, terminal block of option output (CN060) is equipped in the hot water module.  
Refer to **3. WIRING DIAGRAM**.

### 8-3. Test operation of hot water module unit

#### ▼ Check function for operation of hot water module (Functions at hot water module side)

This function is provided to check the operation of the hot water module individually without connecting to the remote controller or the outdoor unit. This function can be used regardless of the ON/OFF operation. However, it is recommend to avoid using this function for along time, otherwise the trouble of the equipment may occurred.

#### [How to operate]

- 1) Short-circuit CHK pin (CN071 on the hot water module P.C. board).  
The operation mode may differ according to the hot water module status at that time.  
Normal time: Both float SW and fan motor are normal.  
Abnormal time: Either one of float SW or fan motor is abnormal.
- 2) During the normal time, the minimum opening degree (30pls) of the indoor PMV can be set only when both CHK pin (CN71) and DISP pin (CN72) on the indoor P.C board are short-circuited. If the short-circuit at DISP pin (CN72) is opened, the indoor PMV will be at the maximum opening degree (1500pls).  
When open DISP pin, the maximum opening degree (1500 pls) can be obtained again.

#### [How to clear]

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

	Short-circuit of CHK pin		
	Normal time		Abnormal time
	DISP pin open	DISP pin short circuit	
Hot water module PMV (*)	Max. opening degree (1500 pls)	Min. opening degree (30 pls)	Min. opening degree (30 pls)
Communication	All ignored	All ignored	All ignored
P.C. board LED	Lights	Lights	Flashes

- To exchange the hot water module PMV coil, set the hot water module PMV to Max. opening degree.
- For the detailed positions of CHK pin (CN071 on hot water module P.C. board) and DISP pin (CN072 on hot water module P.C. board), refer to the hot water module P.C. board MCC-1744.

**8-4. Method to set hot water module function DN code**  
 (When performing this task, be sure to use a wired remote controller.)

**◆ Procedure**

Be sure to stop the air conditioner before making settings

<RBC-AMT\*\*\*>

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

The unit No. displayed first is the address of the header indoor unit (including Hot Water Module) in group control.

**2** Each time the “Select unit” side of the button (left side of the button) is pushed, one of the indoor unit (including Hot Water Module) No. under group control is displayed in turn.

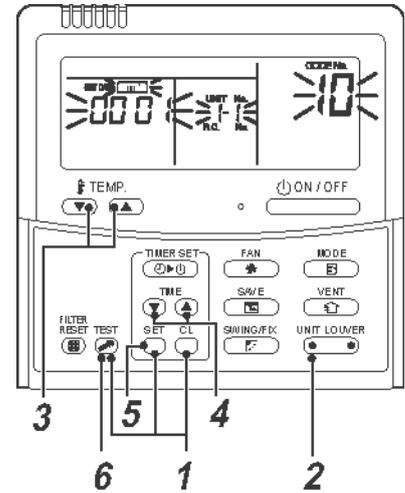
**3** Use the button to select the CODE No. (DN code) of the desired function.

**4** Use the button to select the desired SET DATA associated with the selected function.

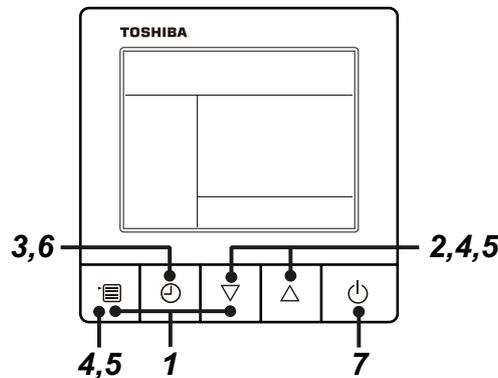
**5** Push the button. (The display changes from flashing to steady.)

- To change the selected hot water module, go back to step 2.
- To change the selected function, go back to step 3.

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

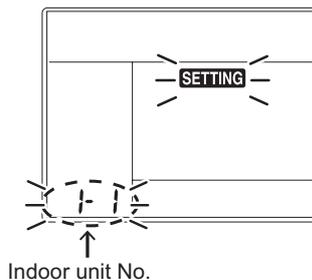


<RBC-ASCU11\*>



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

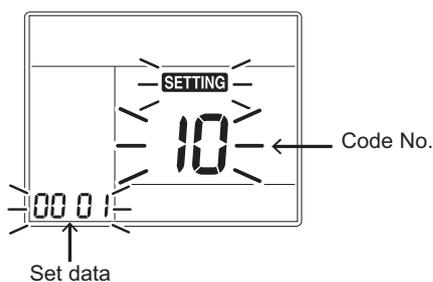
- After a while, the display flashes as shown in the figure. “ALL” is displayed as indoor unit numbers during initial communication immediately after the power has been turned on.



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

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

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



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

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

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

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

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

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

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

**NOTE:** In case of the hot water module, remove the front panel so that P.C. board is visible and then check the D02 LED at the center of P.C. board goes on to judge whether DN is being set or not. The LED goes on while DN code is being set.

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

DN	Item	Description	At shipment
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
0b	Demand control (CN73)	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 0002: Card input setup.3 (Normal open) 0006: Notice code (202) 0008: Card input setup.1	0000: Demand input
10	Type	0060: Hot Water Module * refer to Type DN code [10]	Depending on model type
11	Indoor unit capacity	0000: Unfixed * Refer to Indoor Unit Capacity DN code [11] 0001 to 0044	Depending on model 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
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
14	Group address	0000: Individual 0002: Follower unit of group 00Un: Unfixed (When using U series remote controller) 0099: Unfixed (Other than U series remote controller) 0001: Header unit of group	00Un/0099: Unfixed
28	Automatic restart of power failure	0000: None 0001: Restart	0000: None
2E	HA terminal (CN061) select	0000: Usual 0002: Fire alarm input (Normal open) 0004: Notice code (201) 0001: Card input setup.1 (3) 0003: Card input setup.2 (4) 0005: Card input setup.5	0000: Usual (HA terminal)
60	Timer setting (wired remote controller)	0000: Available (can be performed) 0001: Unavailable (cannot be performed)	0000: Available
E0	Destination	0000: Japan 0004: Global	0004: Global
FC	Communication protocol *1	0000: TCC-LINK 0003: TU2C-LINK	0000: TCC-LINK
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
180	Notice code number 01	0000: None 0001 ~ 0255 : Notice code 0129 : Notice code (201) 0130 : Notice code (202) (0001 ~ 0255 : TU2C-LINK only) (Refer to outdoor service manual)	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

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

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	
Other than U series	TCC-LINK	... ⇔ 0002 ⇔ 0099 ⇔ 0000 ⇔ ...

\*1 Communication protocol can be automatically switched with the setup in the outdoor unit during installation.

#### Type DN code "10"

Value	Type	Model
0060*	Hot Water Module	MMW-UP****LQ*

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

#### Indoor Unit Capacity DN code "11"

Value	Capacity
0000*	Invalid
0011	027 type
0017	056 type

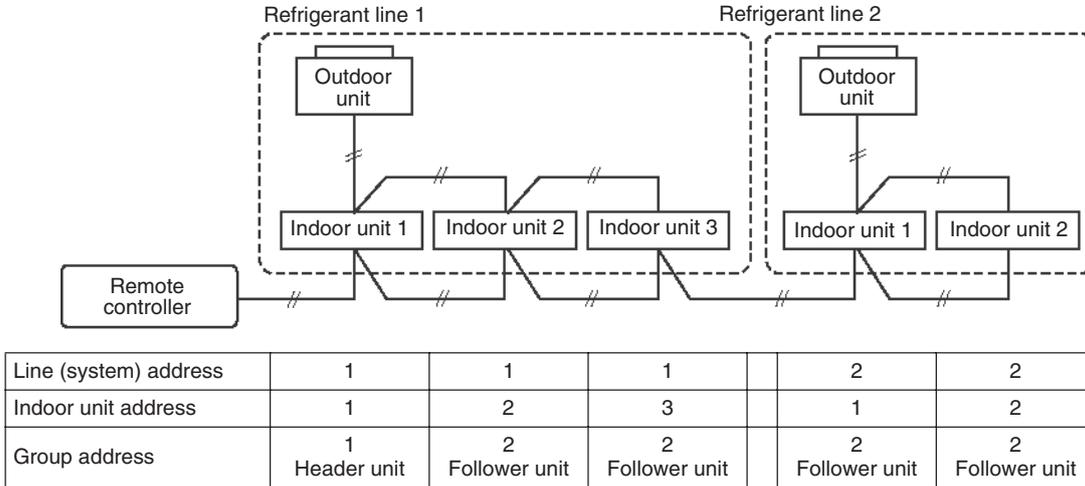
\*1 Default value stored in EEPROM mounted on service P.C. board

## 8-5. Applied control of indoor unit (including Hot Water Module)

### 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

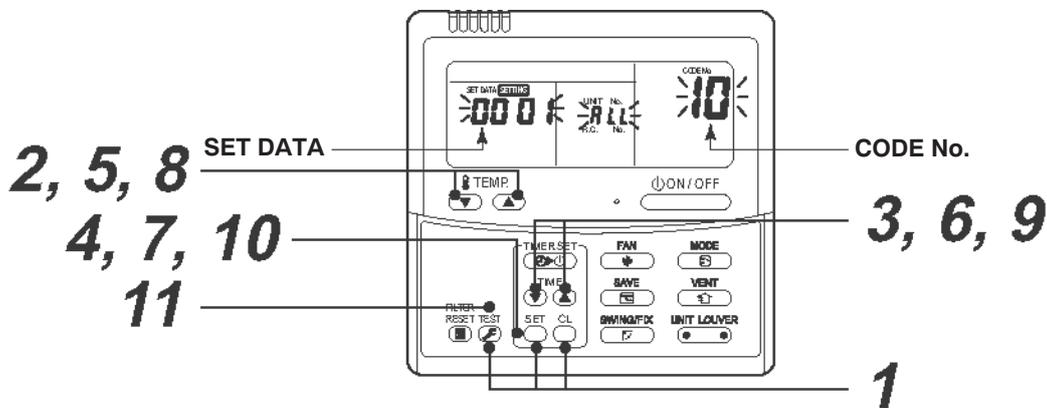


In the example above, disconnect the remote controller connections between the indoor units and connect a wired remote controller to the target unit directly before address setting.

#### NOTE

It is not possible to connect HWM and any indoor units together for group control.

#### <RBC-AMT\*\*\*>



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

Turn on the power.

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

<Line (system) address>

- 2** Push the TEMP.  /  buttons repeatedly to set the CODE No. to **12**.
- 3** Push the TIME  /  buttons repeatedly to set a system address.  
(Match the address with the address on the interface P.C. board of the header outdoor unit in the same refrigerant line.)
- 4** Push  button.  
(It is OK if the display turns on.)

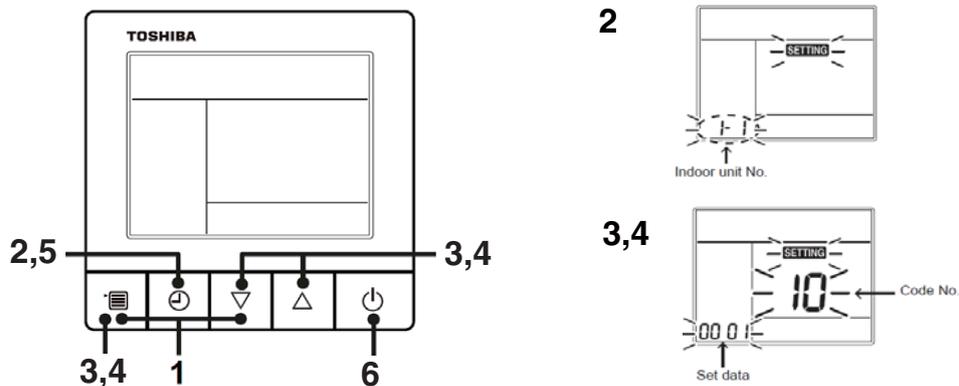
<Indoor unit address>

- 5** Push the TEMP.  /  buttons repeatedly to set the CODE No. to **13**.
- 6** Push the TIME  /  buttons repeatedly to set an indoor unit address.
- 7** Push the  button.  
(It is OK if the display turns on.)

<Group address>

- 8** Push the TEMP.  /  buttons repeatedly to set the CODE No. to **14**.
- 9** Push the TIME  /  buttons repeatedly to set a group address. If the indoor unit is individual, set the address to **0000** ; header unit, **0001** ; follower unit, **0002** .
- 10** Push the  button.  
(It is OK if the display turns on.)
- 11** Push the  button.  
The address setting is complete.  
( **SETTING** flashes. You can control the unit after **SETTING** has disappeared.)

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- 1** Push and hold the [menu +  ] buttons at same time for more than 10 seconds.
- 2** Push the [OFF timer] button to confirm the selected indoor unit.

<Line (system) address>

- 3** Push the [menu] button until the CODE No. flashes. And using the [  or  ] buttons, specify the CODE No.12.
- 4** Push the [menu] button until the SET DATA flashes. And using the [  or  ] buttons, set a system address.
- 5** Push the [OFF timer] button to confirm the SET DATA.

<Indoor unit address>

- 3** Push the [menu] button until the CODE No. flashes. And using the [▽ or △] buttons, specify the CODE No.13.
- 4** Push the [menu] button until the SET DATA flashes. And using the [▽ or △] buttons, set an indoor unit address.
- 5** Push the [OFF timer] button to confirm the SET DATA.

<Group address>

- 3** Push the [menu] button until the CODE No. flashes. And using the [▽ or △] buttons, specify the CODE No.14.
- 4** Push the [menu] button until the SET DATA flashes. And using the [▽ or △] buttons, set a group address.  
If the indoor unit is individual, set the address to 0000.  
(header unit : 0001, follower unit : 0002)  
Individual :0000  
Header unit :0001 } In case of group control  
Follower unit :0002 }
- 5** Push the [OFF timer] button to confirm the SET DATA.
- 6** When all the settings have been completed, push the [ON/OFF] button to return to normal mode.

**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.)
- 
- In case of the hot water module, remove the front panel so that P.C. board is visible and then check the DO2 LED at the center of P.C. board goes on to judge whether DN is being set or not. The LED goes on while DN code is being set.

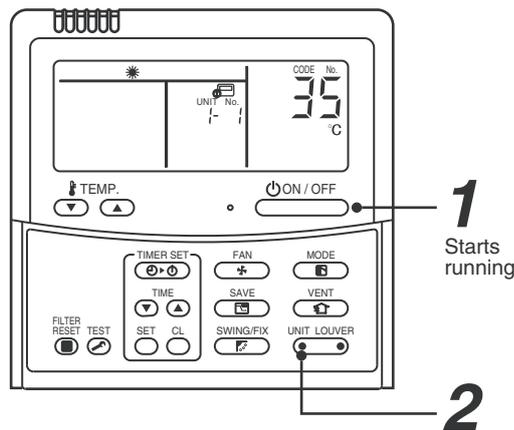
Confirming the indoor unit addresses and the position of an indoor unit using the remote controller

◆ **Confirming the numbers and positions of indoor units**

To know the indoor unit addresses though position of the indoor unit is recognized

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

<RBC-AMT\*\*\*>



(Execute it while the units are running.)

**1** Push the  button if the units stop.

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

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

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

**NOTE:** The LED on the P.C. board of the selected hot water module flashes. The hot water module for change settings can be confirmed.

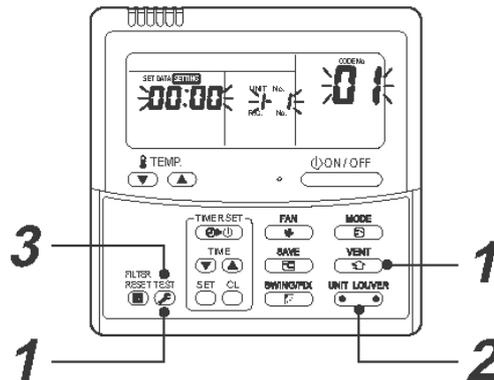
<RBC-ASCU11\*>

There is no such function in the remote controller.

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

▼ When checking unit numbers controlled as a group

<RBC-AMT\*\*\*>



(Execute it while the units are stopped.)

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

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

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

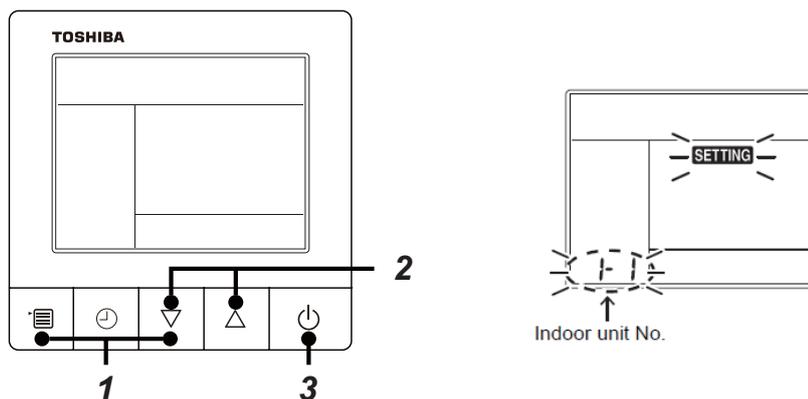
**2** Push the  button (left side of the button). Each time you push the button, the indoor unit numbers are indicated one after another.

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

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

All the indoor units in the group stop.

<RBC-ASCU11\*>



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

e.g.) A unit number 1-1 is indicated on the LCD. The indicated number shows the system address and indoor unit address of the unit.

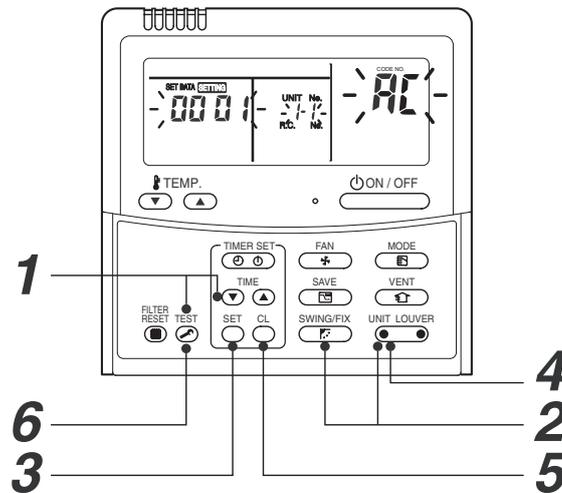
**2** When 2 or more indoor units are connected to the remote controller (group-controlled units), a number of other connected units appears each time you push the [ or ] buttons.

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

**NOTE:** The LED on the P.C. board of the selected hot water module flashes. The hot water module for change settings can be confirmed.

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

<RBC-AMT\*\*\*>



**(Execute it while the units are stopped.)**

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

- 1** Push and hold the TIME and buttons at the same time for more than 4 seconds. At first, the line 1 and CODE No. **AC** (Address Change) are indicated on the LCD display. (Select an outdoor unit.)
- 2** Push the (left side of the button) and buttons repeatedly to select a system address.
- 3** Push the button to confirm the system address selection.
  - The address of an indoor unit connected to the selected refrigerant line is indicated on the LCD display and its fan and louvers are activated.
- 4** Push the button (left side of the button). Each time you push the button, the indoor unit numbers of the selected refrigerant line are indicated one after another.
  - Only the fan and louvers of the indicated indoor unit are activated.

### ◆ To select another system address

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

**NOTE:** The LED on the P.C. board of the selected hot water module flashes. The hot water module for change settings can be confirmed.

<RBC-ASCU11\*>

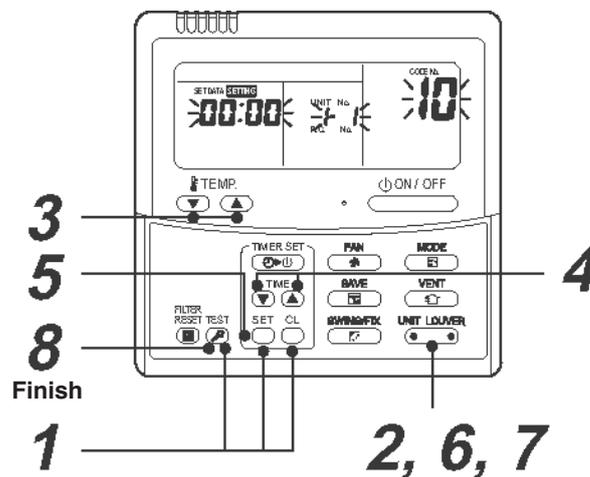
There is no such function in the remote controller.

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

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

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

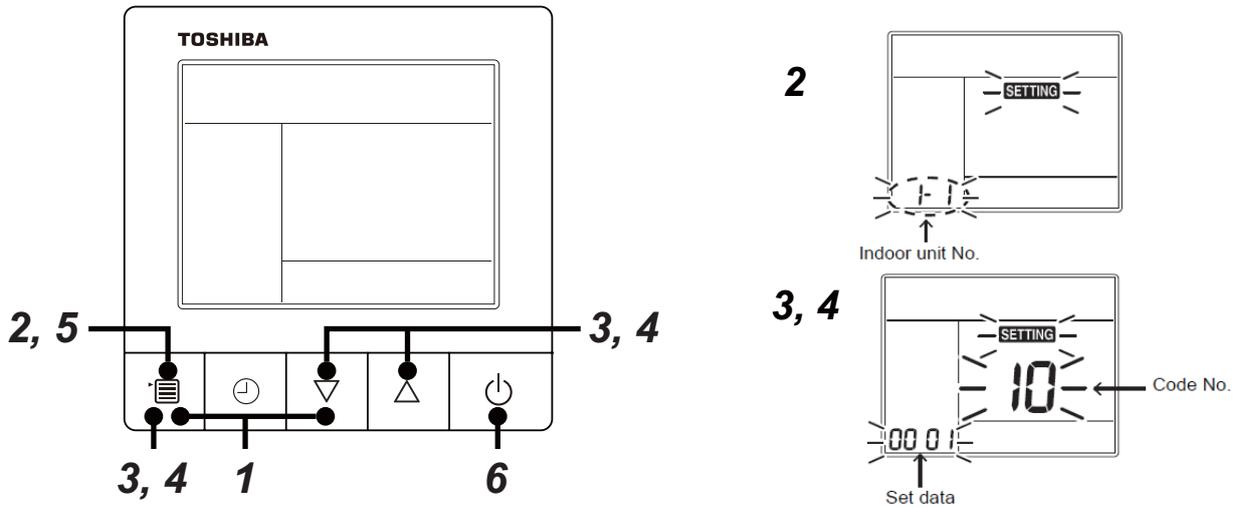
<RBC-AMT\*\*\*>



(Execute it while the units are stopped.)

- 1 Push and hold the , , and buttons at the same time for more than 4 seconds.  
(If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)
- 2 Push the button (left side of the button) repeatedly to select an indoor unit number to change if 2 or more units are controlled in a group. (The fan and louvers of the selected indoor unit are activated.)  
(The fan of the selected indoor unit is turned on.)
- 3 Push the TEMP. / buttons repeatedly to select **13** for CODE No..
- 4 Push the TIME / buttons repeatedly to change the value indicated in the SET DATA section to that you want.
- 5 Push the button.
- 6 Push the button (left side of the button) repeatedly to select another indoor UNIT No. to change.  
Repeat steps 4 to 6 to change the indoor unit addresses so as to make each of them unique.
- 7 Push the button (left side of the button) to check the changed addresses.
- 8 If the addresses have been changed correctly, push the button to finish the procedure.

<RBC-ASCU11\*>



- 1** Push and hold the [menu + ▽] buttons at same time for more than 10 seconds.
- 2** Push the [OFF timer] button to confirm the selected indoor unit.
- 3** Push the [menu] button until the CODE No. flashes. And using the [▽ or △] buttons, specify the CODE No.13.
- 4** Push the [menu] button until the SET DATA flashes. And using the [▽ or △] buttons, set an indoor unit address.
- 5** Push the [OFF timer] button to confirm the SET DATA.
- 6** When all the settings have been completed, push the [ON/OFF] button, return to normal mode.

**NOTE:** The LED on the P.C. board of the selected hot water module flashes. The hot water module for change settings can be confirmed.

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

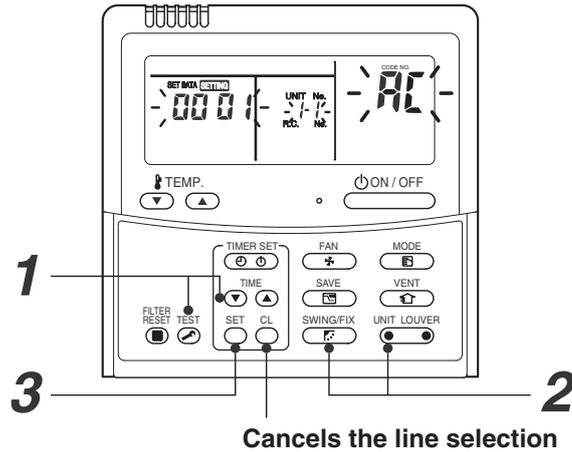
(When communication wirings of 2 or more refrigerant lines are interconnected for central control)

**NOTE**

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

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

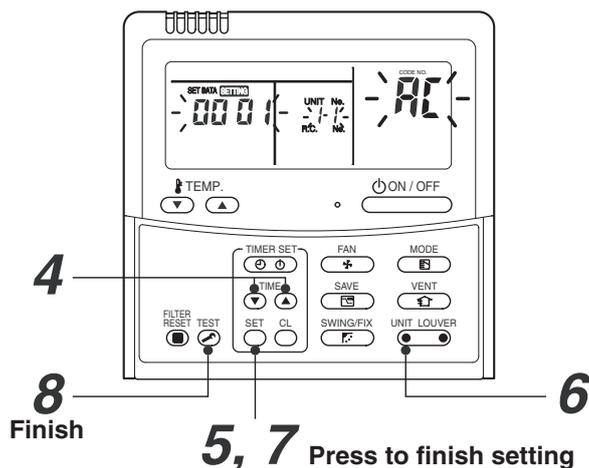
<RBC-AMT\*\*\*>



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

(Execute it while the units are stopped.)

- 1 Push and hold the TIME / buttons at the same time for more than 4 seconds.  
At first, the line 1 and CODE No. (Address Change) are indicated on the LCD display.
- 2 Push (left side of the button) and buttons repeatedly to select a system address.
- 3 Push the button.
  - The address of one of the indoor units connected to the selected refrigerant line is indicated on the LCD display and the fan and louvers of the unit are activated.  
At first, the current indoor unit address is displayed in SET DATA.  
(No system address is indicated.)



- 4** Push the **TIME** (▼) / (▲) buttons repeatedly to change the value of the indoor unit address in **SET DATA**.  
Change the value in **SET DATA** to that of a new address.
- 5** Push the **SET** button to confirm the new address on **SET DATA**.
- 6** Push the **UNIT LOUVER** button (left side of the button) repeatedly to select another address to change.  
Each time you push the button, the indoor unit numbers in a refrigerant line are indicated one after another. Only the fan and louvers of the selected indoor unit are activated.  
Repeat steps **4** to **6** to change the indoor unit addresses so as to make each of them unique.
- 7** Push the **SET** button.  
(All the segments on the LCD display light up.)
- 8** Push the **TEST** button to finish the procedure.

**NOTE:** The LED on the P.C. board of the selected hot water module flashes. The hot water module for change settings can be confirmed.

<RBC-ASCU11\*>

There is no such function in the remote controller.

## ◆ Check code clearing function

How to clear the check code using the wired remote controller

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

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

Use the service monitoring function of the remote controller.

**1** Push and hold the **CL**, and **TEST** for 4 seconds or longer to enter the service monitoring mode.

**2** Push the **TEMP.** button to set CODE No. to “FF”.

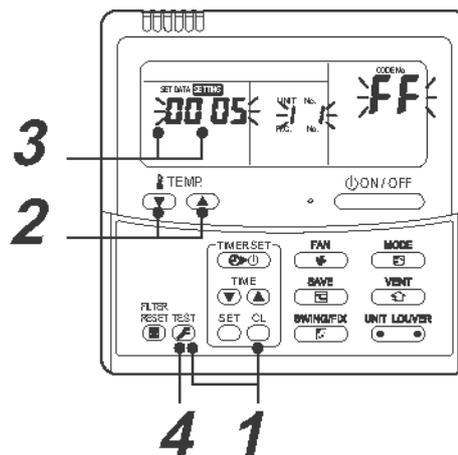
**3** The display in A of the following figure counts down as follows at 5-second intervals:  
“0005” → “0004” → “0003” → “0002” → “0001” → “0000”.

The check code is cleared when “0000” appears.

However, the display counts down from “0005” again.

**4** Push the **TEST** to return the display to normal.

<RBC-AMT\*\*\*>



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

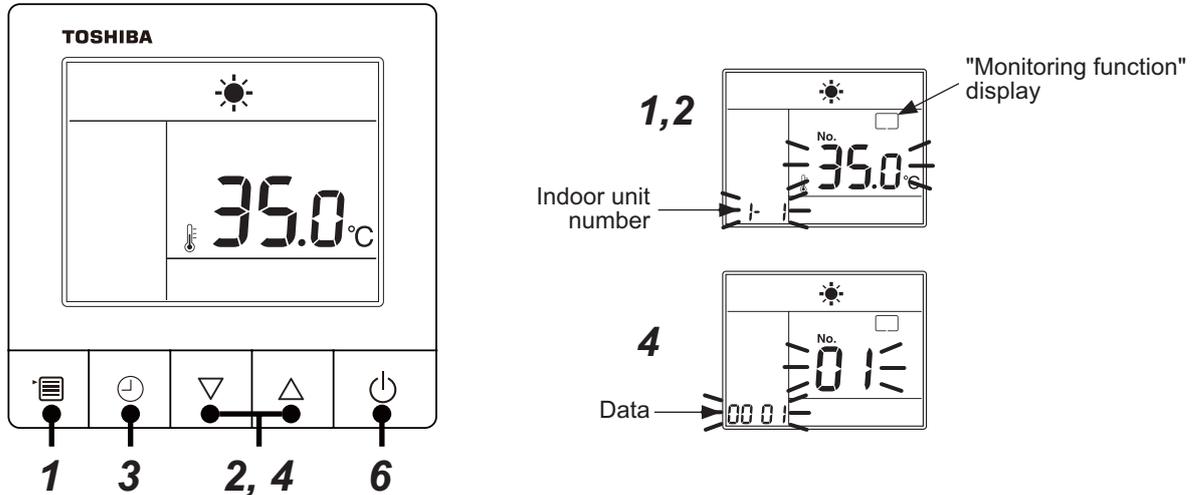
Push the **ON/OFF** button on the remote controller.

(Only the check code of the indoor unit controlled by the remote controller will be cleared.)

<RBC-ASCU11\*>

▼ Clearing a check code of the outdoor unit

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



- 1** Push the [menu] button for over 10 seconds.
- 2** Every pushing [▽ or △] buttons, the indoor unit numbers in group control are displayed successively.
- 3** Push the [OFF timer] button to confirm the selected indoor unit.
- 4** Every pushing [▽ or △] buttons to set CODE No. to “F”
- 5** The display in A of the following figure counts down as follows at 5-second intervals:  
“0005” → “0004” → “0003” → “0002” → “0001” → “0000”  
The check code is cleared when “000” appears.  
However, the display counts down from “005” again.
- 6** After you have finished checking, push the [ON/OFF] button to return to normal mode.

▼ Clearing a check code of the indoor unit

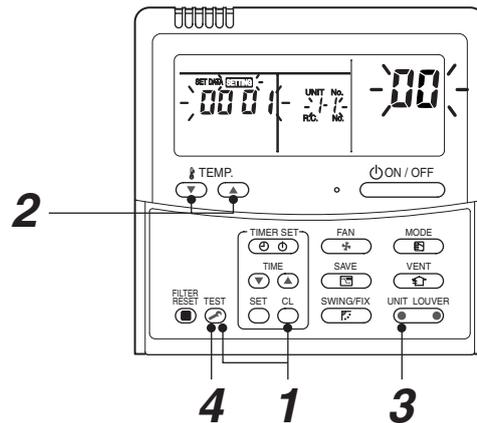
Push the ON / OFF button on the remote controller.

(Only the check code of the indoor unit controlled by the remote controller will be cleared.)

**NOTE:** The LED on the P.C. board of the selected hot water module flashes. The hot water module for change settings can be confirmed.

## ▼ Monitoring function of wired remote controller

<RBC-AMT\*\*\*>

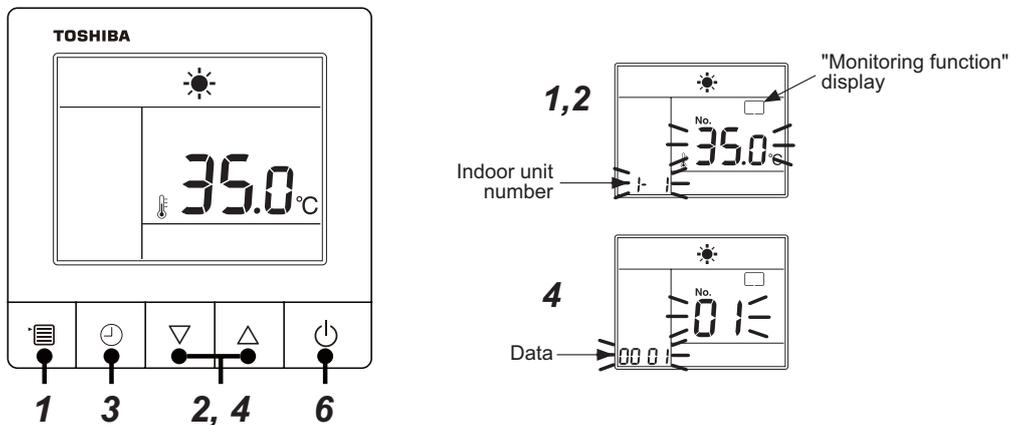


### Content

Enter the service monitoring mode using the remote controller to check the sensor temperature or operation status of the remote controller, indoor unit, and outdoor unit.

- 1** Push and hold the , and for 4 seconds or longer to enter the service monitoring mode.  
The service monitor lights up. The CODE No. **00** appears at first.
- 2** Push the button to change to CODE No. of the item to monitor. Refer to the next page for CODE No.
- 3** Push the left part of the button (left side of the button) to change to the item to monitor. Monitor the sensor temperature or operation status of the indoor unit and outdoor unit in the refrigerant line.
- 4** Push the button to return the display to normal.

<RBC-ASCU11\*>



- 1** Push the [menu] button for over 10 seconds. “Monitoring function” is displayed on a screen.
- 2** Every pushing [▽ or △] buttons, the indoor unit numbers in group control are displayed successively.
- 3** Push the [OFF timer] button to confirm the selected indoor unit.
- 4** Every pushing [▽ or △] buttons, CODE No. of the item is changed successively.
- 5** After you have finished checking, push the [ON/OFF] button, return to normal mode.

**NOTE:** The LED on the P.C. board of the selected hot water module flashes. The hot water module for change settings can be confirmed.

## ◆ Hot water module service monitor list

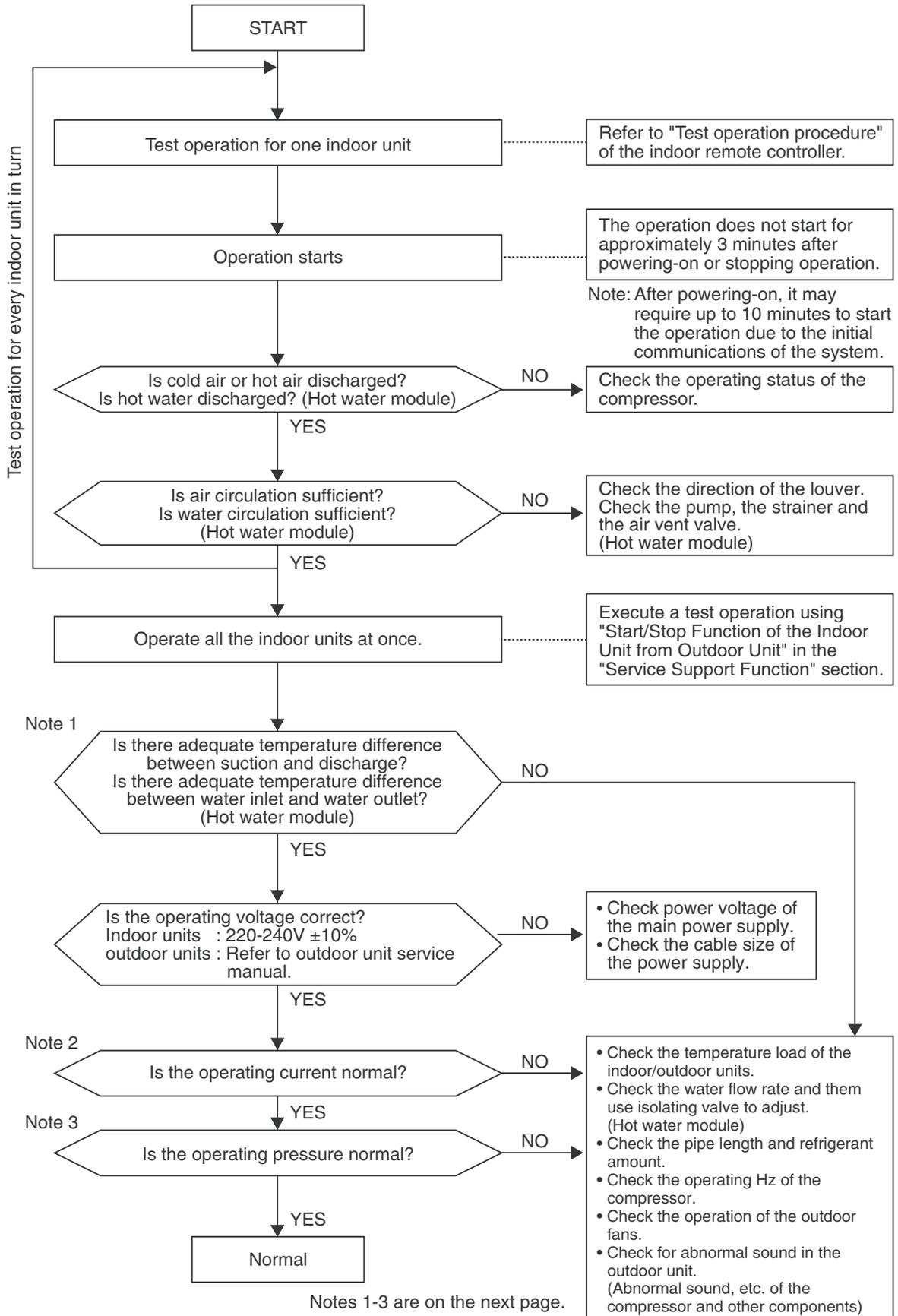
	CODE No.	Data name	Display format	Unit	Remote controller display example
Hot water module *1	00	Water inlet temperature (in control)	x1	°C	[0024]=24 °C
	02	Water inlet Temperature (TWI (TA))	x1	°C	
	03	Heat exchanger Temperature (TCJ)	x1	°C	
	04	Water outlet Temperature (TWO (TC2))	x1	°C	
	05	Heat exchanger Temperature (TC1)	x1	°C	
	06	Heat exchanger temperature (TCJ2 (TF))	x1	°C	
	08	PMV	x1/10	pls	[0150]=1500 pls
	F9	Air Suction Temperature of direct expansion coil (TSA)	x1	°C	[0024]=24 °C
	FA	Outdoor Air Temperature (TOA)	x1	°C	

\*1 When the units are connected to a group, data of the header Hot water module only can be displayed.

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

## 8-6. Test operation check

Test operation



**Note 1: Criteria for the difference between suction and discharge temperatures, between water inlet and water outlet temperature**

(1) Cooling operation

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

(2) Heating operation

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

After operating for a minimum of 30 minutes in “HEAT” mode, if the ΔT water temperature difference between water inlet and water outlet of the hot water module is 3 to 5 degrees, it is normal. (Hot water module)

\* If demand from the indoor unit on the outdoor unit is low because the difference between the temperature set by the remote controller and the temperature of the room or the difference between the temperature set by the remote controller and the water inlet temperature is small, then the ΔT temperature difference is small.

\* Consider that ΔT temperature difference may diminish in cases of a system in which the connected indoor unit capacity exceeds the outdoor unit capacity, the pipe length is long, or a large difference exists among outdoor units.

**Note 2: Criteria for operating power current**

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

Outdoor unit	MMY-MAP	0804*	1004*	1204*	1404*	1604*	1606*	1806*	2006*	2206*
Current value	(A)	23.5	25.5	28.5	33.2	36.5	35.8	40.6	44.9	49.3

Model	MMY-MUP***HT8	0801	1001	1201	1401	1601	1801	2001	2201	2401
Current value	(A)	15.4	20.5	24.5	27.5	30.5	34	36	51	54

**Note 3: Criteria for cycle status**

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

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

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

**<SMMS-i>**

Outdoor unit MMY-MAP	Pressure (MPa)		Pipe surface temperature (°C)						Number of compressor rotations (rps)*1			Indoor fan	Air temperature condition (DB/WB) (°C)		Inlet water temperature (°C) TWI (TA)
	Pd	Ps	Discharge (TD)	Suction (TS)	Hot water module TWO (TC2)*2	Indoor heat exchanger (TC)*2	Outdoor heat exchanger (TE)	Liquid temperature (TL)	Compressor	Compressor	Compressor		Indoor	Outdoor	
									1	2	3				
0804*	2.9	0.9	85	15	-	10	40	40	50	50	-	High	27/19	35/-	-
	3	0.7	85	5	35	35	3	30	50	50	-		High	20/-	7/6
1004*	3	0.8	85	15	-	8	40	40	65	65	-	High	27/19	35/-	-
	3.1	0.7	85	4	35	35	2	30	65	65	-		High	20/-	7/6
1204*	3.1	0.8	85	17	-	8	40	40	70	70	-	High	27/19	35/-	-
	3.1	0.7	90	2	35	35	2	30	75	75	-		High	20/-	7/6
1404*	3	0.8	85	15	-	10	40	40	60	60	60	High	27/19	35/-	-
	3.1	0.7	85	4	35	35	3	30	60	60	60		High	20/-	7/6
1604*	3.1	0.8	90	15	-	10	40	40	65	65	65	High	27/19	35/-	-
	3.1	0.7	90	2	35	35	2	30	65	65	65		High	20/-	7/6

**<SMMS-e>**

Outdoor unit MMY-MAP	Operating mode	Pressure (MPa)		Pipe surface temperature (°C)					Number of compressor rotations (rps) *1		Indoor fan	Air temperature condition (DB/WB) (°C)	
		Pd	Ps	Discharge (TD)	Suction (TS)	Indoor heat exchanger (TC)	Outdoor heat exchanger (TE)	Liquid temperature (TL3)	Compressor	Compressor		Indoor	Outdoor
									1	2			
1606*	Cooling	3.2	0.9	90	16	10	40	35	70	70	High	27/19	35/-
	Heating	2.8	0.7	85	3	30	2	25	70	70		High	20/-
1806*	Cooling	3.1	0.9	80	15	11	40	35	70	70	High	27/19	35/-
	Heating	2.8	0.7	70	4	30	3	25	75	75		High	20/-
2006*	Cooling	3.1	0.9	85	15	11	40	35	80	80	High	27/19	35/-
	Heating	2.8	0.6	75	3	30	2	25	85	85		High	20/-
2206*	Cooling	3.2	0.9	95	14	11	40	35	100	100	High	27/19	35/-
	Heating	2.7	0.6	75	3	30	2	20	85	85		High	20/-

\*1 This compressor is driven with a 4-pole motor. The value of the compressor frequency (rps) measured with a clamp meter at the compressor lead line is two times the rotation count (rps) of the compressor.

\*1 Each compressor may have a different frequency as a measure against resonance.

\*2 The temperature of the indoor heat exchanger (TC) indicates TCJ sensor temperature when cooling, and TWO (TC2) sensor temperature when heating, respectively. And the temperature of the Hot Water Module indicates TWO (TC2) sensor temperature when heating only.

<SHRM-e>

Outdoor unit MMY- MAP	Operating mode	Pressure (MPa)		Pipe surface temperature (°C)					Number of compressor rotations (rps)		Indoor fan	Air temperature condition (°C)	
		Pd	Ps	Discharge (TD)	Suction (TS)	Indoor heat exchanger (TC)	Outdoor heat exchanger (TE)	Liquid temperature (TL3)	Compressor	Compressor		Indoor	Outdoor
									1	2			
0806*	Cooling	2.9	0.9	80	16	10	40	30	50	50	High	27/19	35/-
	Heating	2.6	0.7	75	5	35	3	30	50	50	High	20/-	7/6
1006*	Cooling	3.1	0.9	85	16	11	40	30	60	60	High	27/19	35/-
	Heating	2.6	0.7	80	4	35	2	30	65	65	High	20/-	7/6
1206*	Cooling	3.2	0.9	90	16	11	40	30	70	70	High	27/19	35/-
	Heating	2.6	0.7	85	3	35	2	25	75	75	High	20/-	7/6
1406*	Cooling	3.2	0.9	90	16	10	40	35	60	60	High	27/19	35/-
	Heating	2.6	0.7	80	4	35	3	30	65	65	High	20/-	7/6
1606*	Cooling	3.2	0.9	90	16	10	40	35	70	70	High	27/19	35/-
	Heating	2.8	0.7	85	3	30	2	25	70	70	High	20/-	7/6
1806*	Cooling	3.1	0.9	80	15	11	40	35	70	70	High	27/19	35/-
	Heating	2.8	0.7	70	4	30	3	25	75	75	High	20/-	7/6
2006*	Cooling	3.1	0.9	85	15	11	40	35	80	80	High	27/19	35/-
	Heating	2.8	0.6	75	3	30	2	25	85	85	High	20/-	7/6

\* This compressor is driven with a 4-pole motor. The value of the compressor number of rotations (rps) measured with a clamp meter at the compressor lead line is two times the rotation count (rps) of the compressor.

\* Each compressor may have a different frequency as a measure against resonance.

\* The temperature of the indoor heat exchanger (TC) indicates TCJ sensor temperature when cooling, and TC2 sensor temperature when heating, respectively.

<SMMS-u>

Outdoor Unit MMY-MUP() HT8	Operating Mode	Pressure (MPa)		Pipe Surface Temperature (°C)					Compressor Rotation (rps)		Indoor Fan	Air Temperature (DB/WB)(°C)	
				Discharge	Suction	Indoor Heat Exchanger	Outdoor Heat Exchanger	Liquid Temperature	Compressor 1	Compressor 2		Outdoor	Indoo
		TD1	TS1						TC2	TE1			
		Pd	Ps										TO
0801	Cooling	3.0	1.0	79	21	15	39	26	50	—	High	35	27
	Heating	2.4	0.7	67	2	25	1	21	57	—	High	7	20
1001	Cooling	3.1	1.0	82	21	15	40	26	56	—	High	35	27
	Heating	2.8	0.7	79	2	23	0	17	63	—	High	7	20
1201	Cooling	3.4	1.1	86	21	15	40	29	65	—	High	35	27
	Heating	2.5	0.7	75	1	25	0	16	75	—	High	7	20
1401	Cooling	3.7	1.1	91	20	16	41	33	77	—	High	35	28
	Heating	2.4	0.7	73	1	26	-1	22	83	—	High	7	20
1601	Cooling	3.2	1.0	85	19	15	43	28	65	—	High	35	27
	Heating	2.5	0.6	71	-1	27	1	17	68	—	High	7	20
1801	Cooling	3.4	1.0	90	19	14	42	28	70	—	High	35	27
	Heating	2.5	0.6	72	-2	27	2	22	77	—	High	7	20
2001	Cooling	3.3	0.9	92	20	14	43	31	77	—	High	35	27
	Heating	2.5	0.6	79	0	25	0	1	82	—	High	7	20
2201	Cooling	3.5	1.0	94	27	15	42	29	71	70	High	35	27
	Heating	2.7	0.6	82	-1	25	0	-4	79	77	High	7	20
2401	Cooling	3.7	1.0	98	21	15	43	30	78	77	High	35	27
	Heating	2.6	0.6	81	-1	24	0	20	79	77	High	7	20

\* This compressor is driven with a 6-pole motor. The value of the compressor frequency (rps) measured with a clamp meter at the compressor lead line is three times the rotation count (rps) of the compressor.

\* Each compressor may have a different frequency as a measure against resonance.

\* The temperature of the indoor heat exchanger (TC) indicates TCJ sensor temperature when cooling, and TWO (TC2) sensor temperature when heating, respectively. And the temperature of the Hot Water Module indicates TWO (TC2) sensor temperature when heating only.

(2) Criteria for operating pressure

<SMMS-i>

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

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

<SMMS-e>

Operating mode		Cooling	Heating
Indoor temperature (°C)		18~32	15~25
Outdoor temperature (°C)		25~35	5~10
Pressure	High pressure (MPa)	2.0~3.7	2.5~3.3
	Low pressure (MPa)	0.5~0.9	0.5~0.7

<SHRM-e>

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

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

<SMMS-u>

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

\* Criteria after 14 minutes or more has passed since operating started

(3) On rotations of outdoor fans

Outdoor fans may rotate slowly to control pressure when cooling with low outer air temperature or heating with excessive load. For control content, also refer to service manual of outdoor unit.

# 9. TROUBLESHOOTING

## 9-1. Overview

(1) Before engaging in troubleshooting

(a) Applicable models

All Super Modular Multi System (SMMS-\*, SHRM-e) models.

(Indoor units: MMW-UP\*\*\*, Outdoor units: MMY-M\*P\*\*\*)

\*For MiNi-SMMS-e (MCY-MHP\*\*\*) models, also refer to MiNi-SMMS-e Service Manual.

(b) Tools and measuring devices required

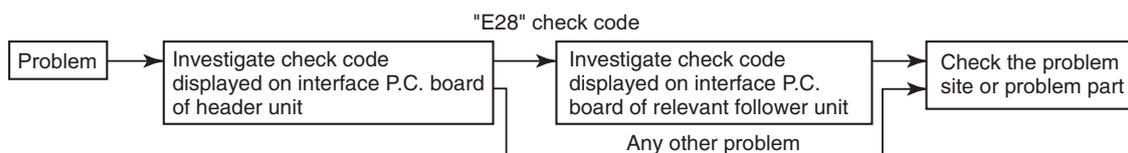
- Screwdrivers (Philips, flat head), spanners, long-nose pliers, nipper, pin to push reset switch, etc.
- Multimeter, thermometer, pressure gauge, etc.

(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"> <li>• The air conditioner is being controlled by the 3-minute protective function.</li> <li>• It is in standby status though the room temperature has reached the setup temperature.</li> <li>• It is being operated in timer mode or fan mode.</li> <li>• It is being in initial communication.</li> </ul>
2	An indoor fan would not start	<ul style="list-style-type: none"> <li>• The air conditioner is being controlled by the cool air discharge preventive function in "heating"?</li> </ul>
3	An outdoor fan would not start or would change speed for no reason	<ul style="list-style-type: none"> <li>• The air conditioner is being operated in "cooling" under the low outside air temperature.</li> <li>• It is being operated in defrost operation.</li> </ul>
4	An indoor fan would not stop	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
5	The air conditioner would not respond to a start/stop command from a remote controller	<ul style="list-style-type: none"> <li>• The air conditioner is being operated under external or remote controller.</li> </ul>
6	The water temperature dose not increase	<ul style="list-style-type: none"> <li>• Could it just be the water flow rate is out of using range ? Using range of hot water module is rated <math>\pm 15\%</math>.</li> </ul>

(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.

## 9-2. 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 LCD display (remote controller) or 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)

Indoor unit (including Hot Water Module)

Check code			Typical trouble on site	Description of check code
Remote controller display	Outdoor 7-segment display			
		Sub-code		
A01	A01	Detected indoor unit No.	Flow switch operation trouble	When water flow rate is reduced.
A02	A02	Detected indoor unit No.	Water temperature decrease trouble	Water temperature continued the low status regardless of that the heater pump is operating.
A04	A04	Detected indoor unit No.	Activation of water heat exchanger frost protection	Frost protection for water heat exchanger is activated.
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 code in periodic communication between indoor header and follower unit	Periodic communication between indoor header and follower units cannot be maintained.
F01	—	—	Indoor heat exchanger temperature sensor (TCJ) check code	Heat exchanger temperature sensor (TCJ) has been open / short-circuit.
F02	—	—	Indoor heat exchanger temperature sensor (TC2) check code	Heat exchanger temperature sensor (TC2) has been open / short-circuit.
F03	—	—	Indoor heat exchanger temperature sensor (TC1) check code	Heat exchanger temperature sensor (TC1) has been open / short-circuit.
F10	—	—	Ambient temperature sensor (TA) check code	Ambient temperature sensor (TA) has been open / short-circuit.
F11	—	—	Discharge temperature sensor (TF) check code	Discharge temperature sensor (TF) has been open / short-circuit.
F19	—	—	Indoor heat exchanger temperature sensor (TCJ2 (TF)) trouble	Heat exchanger temperature sensor (TCJ2 (TF)) has been open / short-circuited.
F25	—	—	Water inlet temperature sensor (TWI (TA)) trouble	Water inlet temperature sensor (TWI (TA)) has been open / short-circuited.
F26	—	—	Water outlet temperature sensor (TWO (TC2)) trouble	Water outlet temperature sensor (TWO (TC2)) has been open / short-circuited.
F29	—	—	P.C. board or other indoor check code	Indoor EEPROM is abnormal (some other trouble may be detected).
F30	—	—	Occupancy sensor trouble	Occupancy sensor trouble has been detected.
L03	—	—	Duplicated indoor group header unit	There is more than one header unit in group.
L07	—	—	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	—	Indoor group address not set	Address setting has not been performed for one or more indoor units (also detected at outdoor unit end).
L09	—	—	Indoor capacity not set	Capacity setting has not been performed for indoor unit.
L20	—	—	Duplicated central control address	There is duplication in central control address setting.
L30	L30	Detected indoor unit No.	Indoor external check code input (interlock)	Unit shutdown has been caused by external check code input (CN080).
P01	—	—	Indoor AC fan check code	Indoor AC fan check code is detected (activation of fan motor thermal relay).
P10	P10	Detected indoor unit No.	Indoor overflow check code	Float switch has been activated.
P12	—	—	Indoor DC fan check code	• Indoor DC fan check code (e.g. overcurrent or lock-up) is detected.
P31	—	—	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)

Indoor unit (including Hot Water Module)

Check code			Typical trouble site	Description of trouble
Remote control	Outdoor 7-segment display			
		Sub-code		
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			Typical trouble site	Description of trouble
Central control	Outdoor 7-segment display			
		Sub-code		
C05	–	–	Failure central control communication (transmission)	Central control device is unable to transmit signal due to duplication of central control device
C06	–	–	Failure central control communication (reception)	Central control device is unable to receive signal.
C12	–	–	Blanket alarm for general-purpose device control interface	Device connected to general-purpose device control interface is trouble.
P30 (L20)	–	–	Communication Link	<ul style="list-style-type: none"> <li>• Duplication addresses of indoor units in central control device</li> <li>• With the combination of air conditioning system, the indoor unit may detect the check code of L20</li> </ul>

**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.

## 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.

Indoor unit (including Hot Water Module)

Check code		Central control or main remote controller display	Typical problem site	Description of problem																																																																																								
Outdoor 7-segment display																																																																																												
	Sub-code																																																																																											
E06	Number of indoor units from which signal is received normally	E06	Signal lack of indoor unit	<ul style="list-style-type: none"> <li>Indoor unit initially communicating normally fails to return signal (reduction in number of indoor units connected).</li> <li>In TU2C-LINK communication system, if the termination resistance is not set in any of the indoor units.</li> <li>It is decreasing from the number of HWM recorded by the outdoor unit.</li> </ul>																																																																																								
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"> <li>Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress.</li> <li>Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.</li> </ul>																																																																																								
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 border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table> <p>Circle (O): Trouble P.C. board 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																																																																																					
01	○			11	○		○																																																																																					
02		○		12		○	○																																																																																					
03	○	○		13	○	○	○																																																																																					
08			○	18			○ ○																																																																																					
09	○		○	19	○		○ ○																																																																																					
0A		○	○	1A		○	○ ○																																																																																					
0B	○	○	○	1B	○	○	○ ○																																																																																					
10			○																																																																																									
F04	–	F04	Outdoor discharge temperature sensor (TD1) trouble	Outdoor discharge temperature sensor (TD1) has been open/short-circuited.																																																																																								
F05	–	F05	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	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	Outdoor liquid temperature sensor (TL1, TL2, TL3) trouble	Outdoor liquid temperature sensor (TL1, TL2, TL3) has been open/short-circuited.																																																																																								
F08	–	F08	Outdoor outside air temperature sensor (TO) trouble	Outdoor outside air temperature sensor (TO) has been open/short-circuited.																																																																																								
F09	01: TG1 sensor 02: TG2 sensor 03: TG3 sensor	F09	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.																																																																																								

**Indoor unit (including Hot Water Module)**

Check code		Central control or main remote controller display	Typical problem site	Description of problem
Outdoor 7-segment display	Sub-code			
F12	01: TS1 sensor 03: TS3 sensor 04 : TS3 sensor disconnect	F12	<ul style="list-style-type: none"> <li>Outdoor suction temperature sensor (TS1,TS3) trouble</li> <li>When TS3 detects an unusual temperature during compressor operation and PMV4 operation in cooling mode</li> </ul>	<ul style="list-style-type: none"> <li>Outdoor suction temperature sensor (TS1,TS3) has been open/short-circuited.</li> <li>When the disconnect of outdoor temperature sensor (TS3) is detected.</li> </ul>
F15	-	F15	Outdoor temperature sensor (TE1,TL1) wiring trouble	Wiring trouble in outdoor temperature sensors (TE1,TL1) has been detected.
F16	-	F16	Outdoor pressure sensor (Pd, Ps) wiring trouble	Wiring trouble in outdoor pressure sensors (Pd, Ps) has been detected.
F19	-	F19	Indoor TCJ2 (TF) sensor trouble	<ul style="list-style-type: none"> <li>Check connection of TCJ2 (TF) sensor connector.</li> <li>Check resistance characteristics of TCJ2 (TF) sensor.</li> </ul>
F23	-	F23	Low pressure sensor (Ps) trouble	Output voltage of low pressure sensor (Ps) is zero.
F24	-	F24	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	Outdoor EEPROM trouble	Outdoor EEPROM is trouble (alarm and shutdown for header unit and continued operation for follower unit)
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	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	Duplicated priority indoor unit (as displayed on priority indoor unit)	More than one indoor unit have been set up as priority indoor unit.
		L06	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)	Indoor group address not set	Address setting have not been performed for one or more indoor units (also detected at indoor end).
L10	-	L10	Outdoor capacity not set	Outdoor unit capacity has not been set (after P.C. board replacement).
L17	-	L17	Outdoor model incompatibility trouble	Old model outdoor unit has been connected.
L23	02: Switch setting trouble of outdoor unit	L23	Switch setting trouble	Switch setting trouble of outdoor units when HWM (Hot Water module) is connected.
L28	-	L28	Too many outdoor units connected	More than three outdoor units have been connected.

Indoor unit (including Hot Water Module)

Check code		Central control or main remote controller display	Typical problem site	Description of problem																																																																																								
Outdoor 7-segment display																																																																																												
Sub-code																																																																																												
L29	<table border="1"> <thead> <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> </thead> <tbody> <tr> <td>01</td> <td>O</td> <td></td> <td></td> <td>11</td> <td>O</td> <td></td> <td></td> </tr> <tr> <td>02</td> <td></td> <td>O</td> <td></td> <td>12</td> <td></td> <td>O</td> <td></td> </tr> <tr> <td>03</td> <td>O</td> <td>O</td> <td></td> <td>13</td> <td>O</td> <td>O</td> <td></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>O</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </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			02		O		12		O		03	O	O		13	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	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																																																																																						
1	2	1	2	1	2	1	2																																																																																					
01	O			11	O																																																																																							
02		O		12		O																																																																																						
03	O	O		13	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																																																																																									
	00		The number of P.C. board trouble	When there is much number of an inverter P.C. board to model setting of an interface P.C. board.																																																																																								
L30	Detected indoor unit No.	(L30)	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	Outdoor discharge (TD1) temperature trouble	Outdoor discharge temperature sensor (TD1) has detected abnormally high temperature.																																																																																								
P04	01: Compressor 1 02: Compressor 2	P04	Activation of high-pressure SW	High-pressure SW is activated.																																																																																								
P05	00: Power detection trouble 01: Open phase 02: Power supply miswiring	P05	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	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)	Indoor unit overflow	Indoor unit has been shutdown in one refrigerant line due to detection of overflow (detected by indoor unit).																																																																																								
P11	–	P11	Outdoor heat exchanger freeze trouble	Remaining frost on outdoor heat exchanger has been detected repeatedly.																																																																																								
P13	–	P13	Outdoor liquid backflow detection trouble	State of refrigerant cycle circuit indicates liquid backflow operation.																																																																																								
P15	01: TS condition 02: TD condition	P15	Gas leak detection	Outdoor suction temperature sensor (TS1) detects sustained and repeated high temperatures that exceed standard value.																																																																																								
P17	–	P17	Outdoor discharge (TD2) temperature trouble	Outdoor discharge temperature sensor (TD2) detects abnormally high temperature.																																																																																								
P19	Outdoor unit No. detected	P19	4-way valve reversing trouble	Abnormality in refrigerating cycle is detected during heating operation.																																																																																								
P20	–	P20	Activation of high-pressure protection	High pressure (Pd) sensor detects high pressure that exceeds standard value.																																																																																								
A01	–	A01	Flow switch protective operation	<ul style="list-style-type: none"> <li>• Check the pump.</li> <li>• Check the strainer.</li> <li>• Check the flow switch. (Type, direction of attachment and point of contact)</li> </ul>																																																																																								
A02	–	A02	Water temperature decrease trouble	<ul style="list-style-type: none"> <li>• Check the water temperature.</li> <li>• Check the heat insulator of wate pipes.</li> </ul>																																																																																								
A04	–	A04	Plate type heatexchanger freezing protective operation	<ul style="list-style-type: none"> <li>• Check the line heater.</li> <li>• Check the PMV coil and PMV.</li> <li>• Check the 2way valve coil and 2way valve.</li> </ul>																																																																																								

MG-CTT: Magnet contactor

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

Indoor unit (including Hot Water Module)

Check code		Central control or main remote controller display	Typical problem site	Description of problem
Outdoor 7-segment display				
	Sub-code			
F13	1*: Compressor 1 2*: Compressor 2	F13	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.
H17	1*: Compressor 1 2*: Compressor 2	H17	Compressor trouble (Step-out)	Judged that the synchronization could not be taken.
P05	1*: Compressor 1 2*: Compressor 2	P05	Compressor Vdc trouble	Inverter DC voltage is too high (overvoltage) or too low (undervoltage).
P07	1*: Compressor 1 2*: Compressor 2	P07	Heat sink overheat trouble	Temperature sensor built into IPM (TH) detects overheating.
P11	–	P11	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	Outdoor fan P.C. board trouble	Outdoor fan P.C. board detects trouble.
P26	1*: Compressor 1 2*: Compressor 2	P26	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	Compressor position detection circuit trouble	Compressor motor position detection trouble is detected.

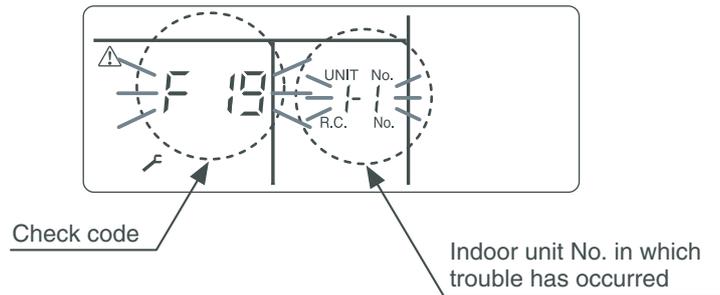
**Note:** The above check codes are examples only, and different check codes may be displayed depending on the outdoor unit configuration

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

#### <RBC-AMT\*\*\*>

##### (1) Checking and testing

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



##### (2) Trouble history

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

<Procedure> To be performed when system at rest

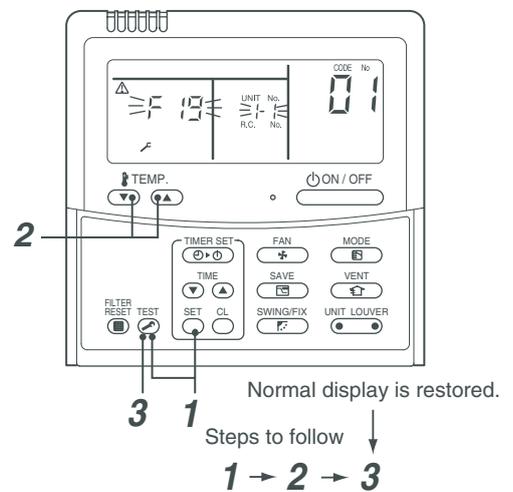
**1** Invoke the **SERVICE CHECK** mode by pressing the **TEST** + **SET** buttons simultaneously and holding for at least **4 seconds**.

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

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

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

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



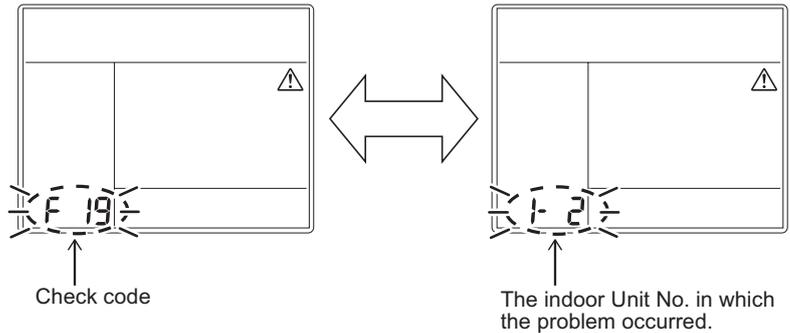
### **CAUTION**

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

<RBC-ASCU11\*>

(1) Confirmation and check

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



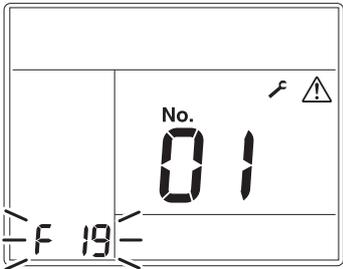
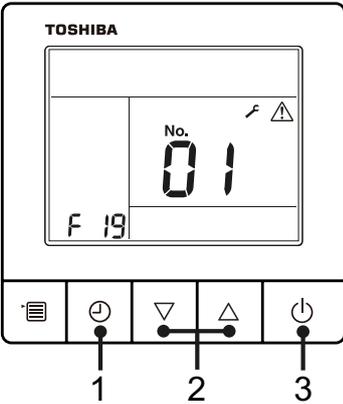
(2) Troubleshooting history and confirmation

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

(The troubleshooting history records up to 4 incidents.)

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

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

Procedure	Description of operation
<p><b>1</b></p>	<p>Push the OFF timer button for over 10 seconds and the indicators appear as an image indicating the troubleshooting history mode has been entered. If [  Service check] is displayed, the mode enters in the troubleshooting history mode.</p> <ul style="list-style-type: none"> <li>• [01: Order of troubleshooting history] appears in the temperature indicator.</li> <li>• The OFF timer indicator alternately shows the [check code] and the [indoor Unit No. ] in which the problem occurred.</li> </ul> 
<p><b>2</b></p>	<p>Each time the setting button is pushed, the recorded troubleshooting history is displayed in sequence. The troubleshooting history appears in order from [01] (newest) to [04] (oldest).</p> <p><b>CAUTION</b></p> <p>In the troubleshooting history mode, DO NOT push the Menu button for over 10 seconds, doing so deletes the entire troubleshooting history of the indoor unit.</p> 
<p><b>3</b></p>	<p>After you have finished checking, push the ON/OFF button to return to the regular mode.</p> <ul style="list-style-type: none"> <li>• If the air conditioner is operating, it remains operated even after the ON/OFF button has been pushed. To stop its operation, push the ON/OFF button again.</li> </ul>

How to read displayed information

<7-segment display symbols>



<Corresponding alphanumerical letters>

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

## 9-4. Check Codes Displayed on Remote Controller and SMMS-u 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.

Indoor unit (including Hot Water Module)

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					
A01	A01	Detected indoor unit No.	Indoor unit (M-HWM)	Flow switch operation trouble	All stop	When water flow rate is reduced.	<ul style="list-style-type: none"> <li>• Check the pump.</li> <li>• Check the strainer.</li> <li>• Check the flow switch. (Type, direction of attachment and point of contact)</li> </ul>
A02	A02	Detected indoor unit No.	Indoor unit (M-HWM)	Water temperature decrease trouble	All stop	Water temperature continued the low status regardless of that the water-heater and water pump is operating.	<ul style="list-style-type: none"> <li>• Check the water temperature.</li> <li>• Check the heat insulator of water pipes.</li> </ul>
A04	A04	Detected indoor unit No.	Indoor unit (M-HWM)	Activation of water heat exchanger frost protection	All stop	Frost protection for water heat exchanger is activated.	<ul style="list-style-type: none"> <li>• Check the line heater</li> <li>• Check the PMV coil and PMV.</li> <li>• Check the 2-way valve coil and 2-way valve.</li> </ul>
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"> <li>• Check remote controller inter-unit tie cable (A/B).</li> <li>• Check for broken wire or connector bad contact.</li> <li>• Check indoor power supply.</li> <li>• Check for failure in indoor P.C. board.</li> <li>• Check remote controller address settings (when two remote controllers are in use).</li> <li>• Check remote controller P.C. board.</li> </ul>
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"> <li>• Check internal transmission circuit of remote controller.</li> <li>--- Replace remote controller as necessary.</li> </ul>
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.	<ul style="list-style-type: none"> <li>• Check remote controller and network adaptor wiring.</li> </ul>
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"> <li>• Check order in which power was turned on for indoor and outdoor units.</li> <li>• Check indoor address setting.</li> <li>• Check indoor-outdoor tie cable.</li> <li>• Check outdoor terminator resistor setting (SW100, Bit 2).</li> </ul>

Indoor unit (including Hot Water Module)

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
E04	E06	No. of indoor units from which signal is received normally	I/F	Dropping out of indoor unit	All stop	<p><b>Condition 1</b> All indoor unit initially communicating normally fails to return signal for specified length of time.</p> <p><b>Condition 2</b> Outdoor I / F board SW09 or SW103, Bit4 : OFF (Factory default)</p>	<ul style="list-style-type: none"> <li>• Check power supply to indoor unit. (Is power turned on?)</li> <li>• Check connection of indoor-outdoor communication cable.</li> <li>• Check connection of communication connectors on indoor P.C. board.</li> <li>• Check connection of communication connectors on outdoor P.C. board.</li> <li>• Check for failure in indoor P.C. board.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
		—	—	Indoor unit	Indoor-outdoor communication circuit trouble	Only specified indoor units stop	<p><b>Condition 1</b> Indoor unit initially communicating normally fails to return signal for specified length of time.</p>
E04/E06	E06	No. of indoor units from which signal is received normally	Indoor unit	Indoor-outdoor communication circuit trouble (E04)	All stop	<p><b>Condition 1</b> One indoor unit or more initially communicating normally fails to return signal for specified length of time.</p> <p><b>Condition 2</b> Outdoor I / F board SW09 or SW103, Bit4 : ON (To switch the check code detection condition.)</p> <p>SW09 or SW103</p> 	<ul style="list-style-type: none"> <li>• Check power supply to indoor unit. (Is power turned on?)</li> <li>• Check indoor-outdoor power-on sequence.</li> <li>• Check indoor address setting</li> <li>• Check wiring of Indoor-outdoor communication wires</li> <li>• Check outdoor terminator resistor setting (SW100, Bit 2).</li> </ul>
			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"> <li>• Check outdoor terminator resistor setting (SW100, Bit 2).</li> <li>• Check connection of indoor-outdoor communication circuit.</li> </ul>
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"> <li>• Check indoor addresses.</li> <li>• Check for any change made to remote controller connection (group/ individual) since indoor address setting.</li> </ul>

## Indoor unit (including Hot Water Module)

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					
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"> <li>• Check remote controller settings.</li> <li>• Check remote controller P.C. boards.</li> </ul>
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"> <li>• Check for failure in indoor P.C. board</li> </ul>
E12	E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	I/F	Automatic address starting trouble	All stop	<ul style="list-style-type: none"> <li>• Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress.</li> <li>• Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the outdoor unit of other systems or the indoor unit is connected to Uv (U1/U2) line or Uc (U5/U6) line.</li> <li>• Perform automatic address setting again after disconnecting communication cable to that refrigerant line.</li> </ul>
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"> <li>• Check connection of indoor-outdoor communication line.</li> <li>• Check for trouble in indoor power supply system.</li> <li>• Check for noise from other devices.</li> <li>• Check for power failure.</li> <li>• Check for failure in indoor P.C. board.</li> </ul>
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"> <li>• Combined capacity of indoor units is too large.</li> </ul> <p><b>Note:</b> If this code comes up after backup setting for outdoor unit failure is performed, perform "No capacity over detected" setting.</p> <p>&lt;"No capacity over detected" setting method&gt; Turn on SW09 or SW103 / Bit 3 on I/F P.C. board of outdoor header unit. 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"> <li>• More than 128 indoor units are connected.</li> </ul>	<ul style="list-style-type: none"> <li>• Check capacities of indoor units connected.</li> <li>• Check combined HP capacities of indoor units.</li> <li>• Check HP capacity settings of outdoor units.</li> <li>• Check No. of indoor units connected.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
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"> <li>• Check remote controller wiring.</li> <li>• Check indoor power supply wiring.</li> <li>• Check P.C. boards of indoor units.</li> </ul>
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"> <li>• There are more than one outdoor header units in one line.</li> <li>• There is no outdoor header unit in one line.</li> </ul>	<p>The outdoor unit which turned on SW101 and the bit 1 of the interface P.C. board is set to Header unit.</p> <ul style="list-style-type: none"> <li>• Check SW101 bit 1 of follower outdoor unit.</li> <li>• Check connection of indoor-outdoor communication line.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
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.	Check whether the outdoor unit of other systems or the indoor unit is connected to Uv (U1/U2) line or Uc (U5/U6) line.

Indoor unit (including Hot Water Module)

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																																																																																														
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"> <li>• Check power supply to outdoor units. (Is power turned on?)</li> <li>• Check connection of tie cables between outdoor units for bad contact or broken wire.</li> <li>• Check communication connectors on outdoor P.C. boards.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> <li>• Check termination resistance setting for communication between outdoor units.</li> </ul>																																																																																									
E25	E25	—	I/F	Duplicated follower outdoor address	All stop	There is duplication in outdoor addresses set manually.	<b>Note:</b> <b>Do not set outdoor addresses manually.</b>																																																																																									
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"> <li>• Backup setting is being used for outdoor units.</li> <li>• Check power supply to outdoor unit. (Is power turned on?)</li> <li>• Check connection of tie cables between outdoor units for bad contact or broken wire.</li> <li>• Check communication connectors on outdoor P.C. boards.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>																																																																																									
The check code which occurred follower outdoor unit is displayed	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"> <li>• Check check code displayed on outdoor follower unit.</li> </ul> <p>&lt;Convenient functions&gt; 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 a 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.</p>																																																																																									
E31	E31	<table border="1"> <thead> <tr> <th colspan="4">P.C. board</th> </tr> <tr> <th></th> <th colspan="2">Compressor</th> <th colspan="2">Fan Motor</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr><td>01</td><td>○</td><td></td><td></td><td></td></tr> <tr><td>02</td><td></td><td>○</td><td></td><td></td></tr> <tr><td>03</td><td>○</td><td>○</td><td></td><td></td></tr> <tr><td>08</td><td></td><td></td><td>○</td><td></td></tr> <tr><td>09</td><td>○</td><td></td><td>○</td><td></td></tr> <tr><td>0A</td><td></td><td>○</td><td>○</td><td></td></tr> <tr><td>0B</td><td>○</td><td>○</td><td>○</td><td></td></tr> <tr><td>10</td><td></td><td></td><td></td><td>○</td></tr> <tr><td>11</td><td>○</td><td></td><td></td><td>○</td></tr> <tr><td>12</td><td></td><td>○</td><td></td><td>○</td></tr> <tr><td>13</td><td>○</td><td>○</td><td></td><td>○</td></tr> <tr><td>18</td><td></td><td></td><td>○</td><td>○</td></tr> <tr><td>19</td><td>○</td><td></td><td>○</td><td>○</td></tr> <tr><td>1A</td><td></td><td>○</td><td>○</td><td>○</td></tr> <tr><td>1B</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> </tbody> </table> <p>Circle (○): Trouble P.C. board</p>	P.C. board					Compressor		Fan Motor			1	2	1	2	01	○				02		○			03	○	○			08			○		09	○		○		0A		○	○		0B	○	○	○		10				○	11	○			○	12		○		○	13	○	○		○	18			○	○	19	○		○	○	1A		○	○	○	1B	○	○	○	○	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"> <li>• Check wiring and connectors involved in communication between P.C. board I/F P.C. board for bad contact or broken wire.</li> <li>• Check for failure in outdoor P.C. board (I/F, comp. P.C. board or Fan P.C. board).</li> <li>• Check for external noise.</li> </ul>
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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"> <li>• Operation of power supply reset (OFF for 60 seconds or more)</li> <li>• Outdoor I/F PC board trouble check</li> </ul>																																																																																									

## Indoor unit (including Hot Water Module)

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					
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"> <li>• Check connection of TCJ sensor connector and wiring.</li> <li>• Check resistance characteristics of TCJ sensor.</li> <li>• Check for failure in indoor P.C. board.</li> </ul>
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"> <li>• Check connection of TC2 sensor connector and wiring.</li> <li>• Check resistance characteristics of TC2 sensor.</li> <li>• Check for failure in indoor P.C. board.</li> </ul>
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"> <li>• Check connection of TC1 sensor connector and wiring.</li> <li>• Check resistance characteristics of TC1 sensor.</li> <li>• Check for failure in indoor P.C. board.</li> </ul>
F04	F04	—	I/F	TD1 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TD1 sensor connector.</li> <li>• Check resistance characteristics of TD1 sensor.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
F05	F05	—	I/F	TD2 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TD2 sensor connector.</li> <li>• Check resistance characteristics of TD2 sensor.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
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"> <li>• Check connection of TE1/TE2/TE3 sensor connectors.</li> <li>• Check resistance characteristics of TE1/TE2/TE3 sensors.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
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"> <li>• Check connection of TL1/TL2/TL3 sensor connector.</li> <li>• Check resistance characteristics of TL1/TL2/TL3 sensor.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
F08	F08	—	I/F	TO sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TO sensor connector.</li> <li>• Check resistance characteristics of TO sensor.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
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"> <li>• Check connection of TG1/TG2/TG3 sensor connectors.</li> <li>• Check resistance characteristics of TG1/TG2/TG3 sensors.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
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"> <li>• Check connection of TA sensor connector and wiring.</li> <li>• Check resistance characteristics of TA sensor.</li> <li>• Check for failure in indoor P.C. board.</li> </ul>

## Indoor unit (including Hot Water Module)

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					
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"> <li>• Check connection of TF sensor connector and wiring.</li> <li>• Check resistance characteristics of TF sensor.</li> <li>• Check for failure in indoor P.C. board.</li> </ul>
F12	F12	01: TS1 sensor trouble 03: TS3 sensor trouble 04: TS3 sensor disconnect	I/F	TS1/TS3 sensor trouble	All stop	<ul style="list-style-type: none"> <li>• Sensor resistance is infinity or zero (open/short circuit).</li> <li>• When TS3 detects an unusual temperature during compressor operation and PMV4 operation in cooling mode.</li> </ul>	<ul style="list-style-type: none"> <li>• Check connection of TS1/TS3 sensor connector</li> <li>• Check resistance characteristics of TS1/TS3 sensor.</li> <li>• The attachment check of TS3 sensor.</li> <li>• Check for failure in indoor P.C. board.</li> </ul>
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"> <li>• Failure in IPM built-in temperature sensor → Replace Compressor P.C. board.</li> </ul>
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"> <li>• Check installation of TE1 and TL1 sensors.</li> <li>• Check resistance characteristics of TE1 and TL1 sensors.</li> <li>• Check for outdoor P.C. board (I/F) trouble</li> </ul>
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"> <li>• Check connection of high-pressure Pd sensor connector.</li> <li>• Check connection of low-pressure Ps sensor connector.</li> <li>• Check for failure in pressure sensors Pd and Ps.</li> <li>• Check for trouble in outdoor P.C. board (I/F).</li> <li>• Check for deficiency in compressive output of compressor.</li> </ul>
F23	F23	—	I/F	Ps sensor trouble	All stop	Output voltage of Ps sensor is zero.	<ul style="list-style-type: none"> <li>• Check for connection trouble involving Ps sensor and Pd sensor connectors.</li> <li>• Check connection of Ps sensor connector.</li> <li>• Check for failure in Ps sensor.</li> <li>• Check for deficiency in compressive output of compressor.</li> <li>• Check for failure in 4-way valve.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> <li>• Check for failure in SV4 circuit.</li> </ul>
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"> <li>• Check connection of Pd sensor connector.</li> <li>• Check for failure in Pd sensor.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
F29	—	—	Indoor unit	Other indoor trouble	Stop of corresponding unit	Indoor P.C. board does not operate normally.	<ul style="list-style-type: none"> <li>• Check for failure in indoor P.C. board (trouble EEPROM)</li> </ul>
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"> <li>• Check power supply voltage.</li> <li>• Check power supply noise.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>

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

Indoor unit (including Hot Water Module)

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					
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"> <li>• Check power supply voltage. (AC380V ± 10%).</li> <li>• Check for failure in compressor.</li> <li>• Check for possible cause of abnormal overloading.</li> <li>• Check for failure in outdoor P.C. board (Compressor).</li> </ul>
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"> <li>• Check for failure in compressor.</li> <li>• Check power supply voltage. (AC380V ± 10%).</li> <li>• Check compressor system wiring, particularly for open phase.</li> <li>• Check connection of connectors/terminals on Compressor P.C. board.</li> <li>• Check conductivity of case heater. (Check for refrigerant problem inside compressor.)</li> <li>• Check for failure in outdoor P.C. board (Compressor).</li> <li>• Check outdoor MG-CTT.</li> </ul>
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"> <li>• Check current detection circuit wiring.</li> <li>• Check failure in outdoor P.C. board (Compressor).</li> </ul>
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"> <li>• Check installation of TD1 sensor.</li> <li>• Check connection of TD1 sensor connector and wiring.</li> <li>• Check resistance characteristics of TD1 sensor.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
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"> <li>• Check service valves to confirm full opening (both gas and liquid sides).</li> <li>• Check outdoor PMVs for clogging (PMV1, 2, 3).</li> <li>• Check for failure in SV4 circuits.</li> <li>• Check for failure in low-pressure Ps sensor.</li> <li>• Check indoor filter for clogging.</li> <li>• Check valve opening status of indoor PMV.</li> <li>• Check refrigerant piping for clogging.</li> <li>• Check operation of outdoor fan (during heating).</li> <li>• Check for insufficiency in refrigerant quantity.</li> </ul>
H07	H07	—	I/F	Low oil level protection	All stop	Operating compressor detects continuous state of low oil level for about 2 hours.	<p>&lt;All outdoor units in corresponding line to be checked&gt;</p> <ul style="list-style-type: none"> <li>• Check connection and installation of TK1 and TK2 sensors.</li> <li>• Check resistance characteristics of TK1 and TK2 sensors.</li> <li>• Check for gas or oil leak in same line.</li> <li>• Check for refrigerant problem inside compressor casing.</li> <li>• Check SV3D, SV3F valves for failure.</li> <li>• Check oil return circuit of oil separator for clogging.</li> <li>• Check oil equalizing circuit for clogging.</li> </ul>

Indoor unit (including Hot Water Module)

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					
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"> <li>• Check connection of TK1 sensor connector.</li> <li>• Check resistance characteristics of TK1 sensor.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
					All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TK2 sensor connector.</li> <li>• Check resistance characteristics of TK2 sensor.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
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"> <li>• Check installation of TD2 sensor.</li> <li>• Check connection of TD2 sensor connector and wiring.</li> <li>• Check resistance characteristics of TD2 sensor.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> </ul>
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.	<ul style="list-style-type: none"> <li>• Check for disconnection of TK1 sensor.</li> <li>• Check resistance characteristics of TK1 sensor.</li> <li>• Check for connection trouble involving TK1 and TK2 sensors</li> <li>• Check for clogging in oil equalizing circuit capillary.</li> <li>• Check for refrigerant entrapment inside compressor.</li> </ul>
						No temperature change is detected by TK2 despite compressor 2 having been started.	<ul style="list-style-type: none"> <li>• Check for disconnection of TK2 sensor.</li> <li>• Check resistance characteristics of TK2 sensor.</li> <li>• Check for connection trouble involving TK1 and TK2 sensors</li> <li>• Check SV3F valve malfunction.</li> <li>• Check for clogging in oil equalizing circuit capillary.</li> <li>• Check for refrigerant entrapment inside compressor.</li> </ul>
H17	H17	1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	Compressor trouble (out of sync)	All stop	Judged that the synchronization could not be taken.	<ul style="list-style-type: none"> <li>• Check power supply voltage. (AC380V ± 10%).</li> <li>• Check for failure in compressor.</li> <li>• Check for possible cause of abnormal overloading.</li> <li>• Check for failure in outdoor P.C. board (compressor).</li> </ul>
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"> <li>• Check outdoor unit model. (Check whether the outdoor unit corresponds to Air to Air Heat Exchanger type or not.)</li> </ul>
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"> <li>• Check indoor addresses.</li> <li>• Check for any change made to remote controller connection (group/individual) since indoor address setting.</li> </ul>
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"> <li>• Check line addresses.</li> </ul>

Indoor unit (including Hot Water Module)

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																																																																													
L05	—	—	I/F	Duplicated priority indoor unit (as displayed on priority indoor unit)	All stop	More than one indoor units have been set up as priority indoor unit.	• Check display on priority indoor unit.																																																																								
L06	L06	No. of priority indoor units	I/F	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	All stop	More than one indoor units have been set up as priority indoor unit.	• Check displays on priority indoor unit and outdoor unit.																																																																								
L07	—	—	Indoor unit	Connection of group control cable to standalone indoor unit	Stop of corresponding unit	There is at least one standalone indoor unit to which group control cable is connected.	• Check indoor addresses.																																																																								
L08	L08	—	Indoor unit	Indoor group / addresses not set	Stop of corresponding unit	Address setting has not been performed for indoor units.	• Check indoor addresses. <b>Note:</b> <b>This code is displayed when power is turned on for the first time after installation.</b>																																																																								
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)																																																																								
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	L23	02: Switch setting trouble of outdoor unit	I/F	SW setting trouble	All stop	Switch setting trouble of outdoor units when HWM (Hot Water module) is connected.	• Check setting of SW09 or SW103 Bit 4 on outdoor I/F P.C. board. (SW09 or SW103 Bit 4:ON)																																																																								
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 border="1"> <thead> <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> </thead> <tbody> <tr><td>01</td><td>○</td><td></td><td></td></tr> <tr><td>02</td><td></td><td>○</td><td></td></tr> <tr><td>03</td><td>○</td><td>○</td><td></td></tr> <tr><td>08</td><td></td><td></td><td>○</td></tr> <tr><td>09</td><td>○</td><td></td><td>○</td></tr> <tr><td>0A</td><td></td><td>○</td><td>○</td></tr> <tr><td>0B</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>10</td><td></td><td></td><td>○</td></tr> <tr><td>11</td><td>○</td><td></td><td>○</td></tr> <tr><td>12</td><td></td><td>○</td><td>○</td></tr> <tr><td>13</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>18</td><td></td><td></td><td>○</td></tr> <tr><td>19</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>1A</td><td></td><td>○</td><td>○</td></tr> <tr><td>1B</td><td>○</td><td>○</td><td>○</td></tr> </tbody> </table> <p>Circle (O): Trouble P.C. board</p>	P.C. board				Compressor		Fan Motor		1	2	1	2	01	○			02		○		03	○	○		08			○	09	○		○	0A		○	○	0B	○	○	○	10			○	11	○		○	12		○	○	13	○	○	○	18			○	19	○	○	○	1A		○	○	1B	○	○	○	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																																																																													
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00	I/F	The number of inverter P.C. boards is abnormal.	All stop	When there is much number of an inverter P.C. board to model setting of an interface P.C. board.	• Check I/F P.C. board exchange has been correctly performed as a procedure. • Check for failure in I/F P.C. board. • Check for inverter P.C. board for compressors and inverter P.C. board for fan.																																																																										

Indoor unit (including Hot Water Module)

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					
L30	L30	Detected indoor address	Indoor unit	Indoor external interlock (External abnormal input)	Stop of corresponding unit	<ul style="list-style-type: none"> <li>Indoor unit has been shut down due to external abnormal input signal.</li> </ul>	<p><b>When external device is connected:</b></p> <ol style="list-style-type: none"> <li>Check for trouble in external device.</li> <li>Check for trouble in indoor P.C. board.</li> </ol> <p><b>When external device is not connected:</b></p> <ol style="list-style-type: none"> <li>Check for trouble in indoor P.C. board.</li> </ol>
—	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		<ul style="list-style-type: none"> <li>Check the lock of fan motor (AC fan).</li> <li>Check wiring.</li> </ul>
P03	P03	—	I/F	Discharge temperature TD1 trouble	All stop	Discharge temperature (TD1) exceeds 115 °C.	<ul style="list-style-type: none"> <li>Check outdoor service valves (gas side, liquid side) to confirm full opening.</li> <li>Check outdoor PMVs (PMV1, 2, 3, 4) for clogging.</li> <li>Check resistance characteristics of TD1 sensor.</li> <li>Check for insufficiency in refrigerant quantity.</li> <li>Check for failure in 4-way valve.</li> <li>Check for leakage of SV4 circuit.</li> <li>Check SV4 circuit (wiring or installation trouble in SV41 or SV42).</li> </ul>
P04	P04	01: Compressor 1 side 02: Compressor 2 side	I/F	Activation of high-pressure SW	All stop	High-pressure SW is activated.	<ul style="list-style-type: none"> <li>Check connection of high-pressure SW connector.</li> <li>Check for failure in Pd pressure sensor.</li> <li>Check outdoor service valves (gas side, liquid side) to confirm full opening.</li> <li>Check for failure in outdoor fan.</li> <li>Check for failure in outdoor fan motor.</li> <li>Check outdoor PMVs (PMV1, 2, 3) for clogging.</li> <li>Check indoor/outdoor heat exchangers for clogging.</li> <li>Check for short-circuiting of outdoor suction/discharge air flows.</li> <li>Check for failure in outdoor P.C. board (I/F).</li> <li>Check for trouble in indoor fan system (possible cause of air flow reduction).</li> <li>Check opening status of indoor PMV.</li> <li>Check indoor-outdoor communication line for wiring trouble.</li> <li>Check for trouble operation of check valve in discharge pipe convergent section.</li> <li>Check gas balancing SV4 valve circuit.</li> <li>Check for refrigerant overcharging.</li> </ul>
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"> <li>Open phase is detected when power is turned on.</li> <li>Inverter DC voltage is too high (overvoltage) or too low (undervoltage).</li> </ul>	<ul style="list-style-type: none"> <li>Check for failure in outdoor P.C. board (I/F).</li> <li>Check wiring of outdoor power supply.</li> <li>Check power supply voltage.</li> </ul>
		1*: Compressor 1 side 2*: Compressor 2 side	Compressor P.C. board	Compressor Vdc trouble			

Indoor unit (including Hot Water Module)

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					
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"> <li>• Check outdoor fan system trouble.</li> <li>• Check IPM and heat sink for thermal performance for trouble installation. (e.g. mounting screws and thermal conductivity)</li> <li>• Check for failure in Compressor P.C. board. (trouble IPM built-in temperature sensor (TH))</li> </ul>
		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"> <li>• Check outdoor fan system trouble.</li> <li>• Check IPM and heat sink for thermal performance for troubled installation. (e. g. mounting screws and thermal conductivity)</li> <li>• Check for failure in compressor P.C. board. (failure IPM built-in temperature sensor (TH))</li> <li>• Check shortage of refrigerant.</li> <li>• Check outdoor service valves.</li> <li>• Check connection of TL2 sensor.</li> <li>• Check resistance characteristics of TL2 sensor.</li> <li>• Check resistance characteristics of TO sensor.</li> <li>• Check malfunctions of Pd and Ps sensors.</li> <li>• Check outdoor I/F P.C. board malfunction.</li> <li>• Check PMV2 and PMV3</li> </ul>
P10	P10	Detected indoor address	Indoor unit	Indoor overflow trouble	All stop	<ul style="list-style-type: none"> <li>• Float switch operates.</li> <li>• Float switch circuit is open-circuited or disconnected at connector.</li> </ul>	<ul style="list-style-type: none"> <li>• Check float switch connector.</li> <li>• Check operation of drain pump.</li> <li>• Check drain pump circuit.</li> <li>• Check drain pipe for clogging.</li> <li>• Check for failure in indoor P.C. board.</li> </ul>
P11	—	—	I/F	Outdoor heat exchanger freeze trouble	All stop	<ul style="list-style-type: none"> <li>• Outdoor heat exchanger remaining frost detection has occurred eight times or more due to abnormal frost formation in heating operation.</li> </ul>	<ul style="list-style-type: none"> <li>• Check shortage of refrigerant.</li> <li>• Check connection of TE1, TE2 and TE3 sensors.</li> <li>• Check resistance characteristics of TE1, TE2, and TE3 sensors.</li> <li>• Check disconnection of TS1 sensor.</li> <li>• Check resistance characteristics of TS1 sensor.</li> <li>• Check outdoor I/F P.C. board malfunction.</li> <li>• Check operation of 4 way valve.</li> <li>• Check operation of outdoor PMV (1, 2, 3).</li> <li>• Check short circuit from outlet air to inlet air.</li> </ul>
P12	—	—	Indoor unit	Indoor fan motor trouble	Stop of corresponding unit	<ul style="list-style-type: none"> <li>• Motor speed measurements continuously deviate from target value.</li> <li>• Overcurrent protection is activated.</li> </ul>	<ul style="list-style-type: none"> <li>• Check connection of fan connector and wiring.</li> <li>• Check for failure in fan motor.</li> <li>• Check for failure in indoor P.C. board.</li> <li>• Check impact of outside air treatment (OA).</li> </ul>

Indoor unit (including Hot Water Module)

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					
P13	P13	—	I/F	Outdoor liquid backflow detection trouble	All stop	<p>&lt;During cooling operation&gt; When system is in cooling operation, high pressure is detected in the unit that has been turned off.</p> <p>&lt;During heating operation&gt; 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"> <li>• Check full-close operation of outdoor PMV (1, 2, 3, 4).</li> <li>• Check for failure in Pd or Ps sensor.</li> <li>• Check failure in outdoor P.C. board (I/F).</li> <li>• Check capillary of oil separator oil return circuit for clogging.</li> <li>• Check for leakage of check valve in discharge pipe</li> </ul>
P15	P15	01: TS condition	I/F	Gas leak detection (TS1 condition)	All stop	<p>Protective shutdown due to sustained suction temperature at or above judgment criterion for at least 10 minutes is repeated four times or more.</p> <p>&lt;TS trouble judgment criterion&gt; In cooling operation: 60 °C In heating operation: 40 °C</p>	<ul style="list-style-type: none"> <li>• Check for insufficiency in refrigerant quantity.</li> <li>• Check outdoor service valves (gas side, liquid side) to confirm full opening.</li> <li>• Check PMVs (PMV1, 2, 3, 4) for clogging.</li> <li>• Check resistance characteristics of TS1 sensor.</li> <li>• Check for failure in 4-way valve.</li> <li>• Check SV4 circuit for leakage</li> </ul>
		02: TD condition	I/F	Gas leak detection (TD condition)	All stop	<p>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.</p>	<ul style="list-style-type: none"> <li>• Check for insufficiency in refrigerant quantity.</li> <li>• Check PMVs (PMV 1, 2, 3, 4) for clogging.</li> <li>• Check resistance characteristics of TD1 and TD2 sensors.</li> <li>• Check indoor filter for clogging.</li> <li>• Check piping for clogging.</li> <li>• Check SV4 circuit (for leakage or coil installation trouble).</li> </ul>
P17	P17	—	I/F	Discharge temperature TD2 trouble	All stop	Discharge temperature (TD2) exceeds 115 °C.	<ul style="list-style-type: none"> <li>• Check outdoor service valves (gas side, liquid side) to confirm full opening.</li> <li>• Check outdoor PMVs (PMV1, 2, 3, 4) for clogging.</li> <li>• Check resistance characteristics of TD2 sensor.</li> <li>• Check for failure in 4-way valve.</li> <li>• Check SV4 circuit for leakage.</li> <li>• Check SV4 circuit (for wiring or installation trouble involving SV41 and SV42).</li> </ul>
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"> <li>• Check for failure in main body of 4-way valve.</li> <li>• Check for coil failure in 4-way valve and loose connection of its connector.</li> <li>• Check resistance characteristics of TS1 and TE1, TE2 sensors.</li> <li>• Check output voltage characteristics of Pd and Ps pressure sensors.</li> <li>• Check for wiring trouble involving TE1 and TL1 sensors.</li> </ul>

Indoor unit (including Hot Water Module)

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					
P20	P20	—	I/F	Activation of high-pressure protection	All stop	<p>&lt;During cooling operation&gt; Pd sensor detects pressure equal to or greater than 3.85 MPa.</p> <p>&lt;During heating operation&gt; Pd sensor detects pressure equal to or greater than 3.6 MPa.</p>	<ul style="list-style-type: none"> <li>• Check for failure in Pd pressure sensor.</li> <li>• Check service valves (gas side, liquid side) to confirm full opening.</li> <li>• Check for failure in outdoor fan.</li> <li>• Check for failure in outdoor fan motor.</li> <li>• Check outdoor PMV (PMV1, 2, 3, 4) for clogging.</li> <li>• Check indoor/outdoor heat exchangers for clogging.</li> <li>• Check for short-circuiting of outdoor suction/ discharge air flows.</li> <li>• Check for failure in outdoor P.C. board (I/F).</li> <li>• Check for failure in indoor fan system (possible cause of air flow reduction).</li> <li>• Check opening status of indoor PMV.</li> <li>• Check indoor-outdoor communication line for wiring trouble.</li> <li>• Check for trouble operation of check valve in discharge pipe convergent section.</li> <li>• Check gas balancing SV4 valve circuit.</li> <li>• Check for refrigerant overcharging.</li> </ul>
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"> <li>• Check fan motor.</li> <li>• Check for failure in fan P.C. board.</li> <li>• Check connection of fan motor connector.</li> <li>• Check power voltage of the main power supply.</li> </ul>
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"> <li>• Check connector connection and wiring on compressor P.C. board.</li> <li>• Check for failure in compressor (layer shortcircuit).</li> <li>• Check for failure in outdoor P.C. board ( Compressor).</li> </ul>
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"> <li>• Check wiring and connector connection.</li> <li>• Check for compressor layer short-circuit.</li> <li>• Check for failure in compressor P.C. board.</li> </ul>
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"> <li>• Check indoor P.C. board.</li> </ul>

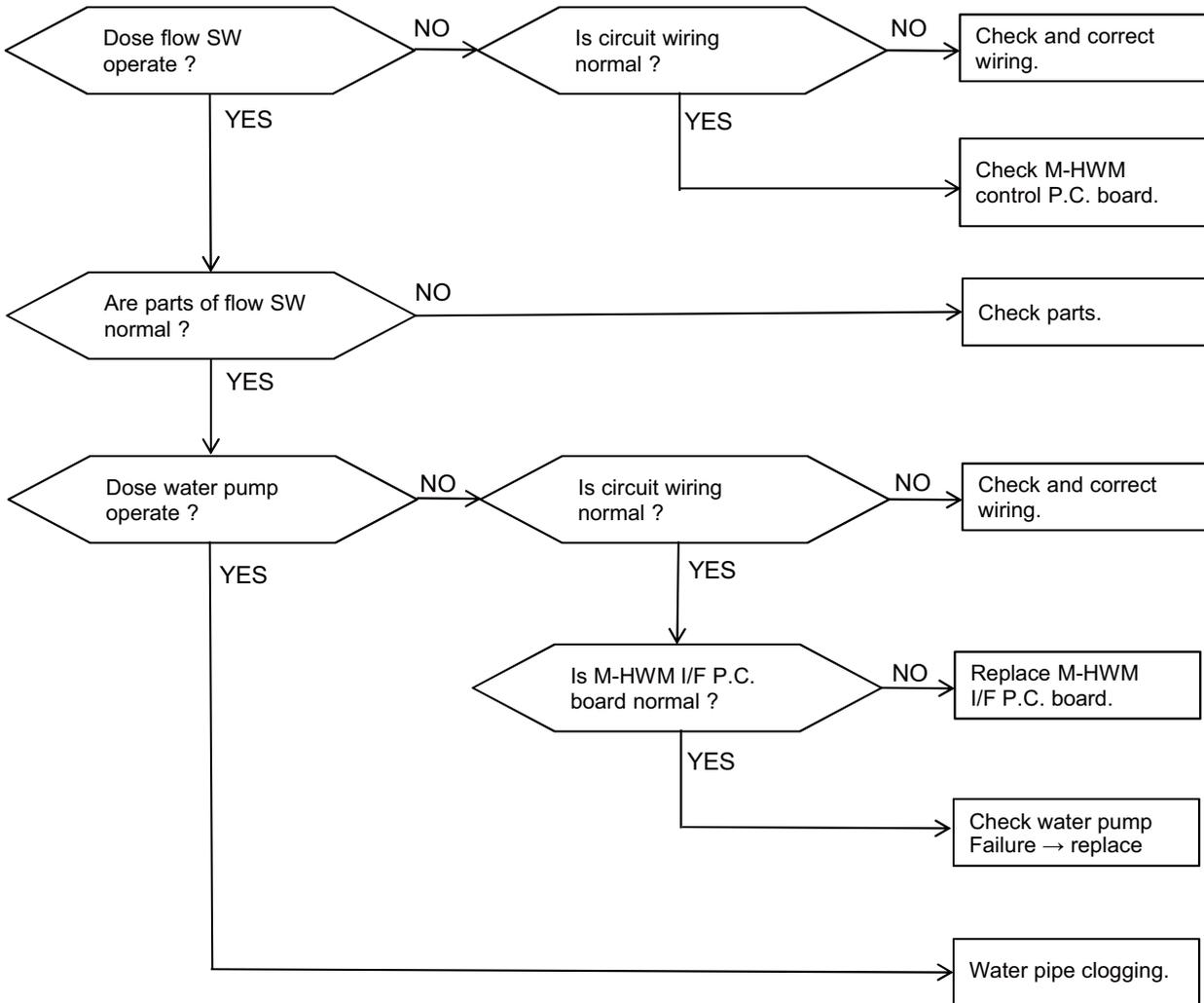
## Check codes Detected by Central Control Device

Indoor unit (including Hot Water Module)

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						
	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"> <li>• Check for failure in central control device.</li> <li>• Check for failure in central control communication line.</li> <li>• Check termination resistance setting.</li> </ul>	
	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"> <li>• Check for failure in central control device.</li> <li>• Check for failure in central control communication line.</li> <li>• Check terminator resistor setting.</li> <li>• Check power supply for devices at other end of central control communication line.</li> <li>• Check failure in P.C. boards of devices at other end of central control communication line.</li> </ul>	
	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.	<ul style="list-style-type: none"> <li>• Check trouble input.</li> </ul>	
	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.)	<ul style="list-style-type: none"> <li>• Check check code of unit that has generated alarm.</li> </ul>
		(L20 displayed.)			Duplicated central control address	Continued operation	There is duplication in central control addresses.	<ul style="list-style-type: none"> <li>• Check address settings.</li> </ul>

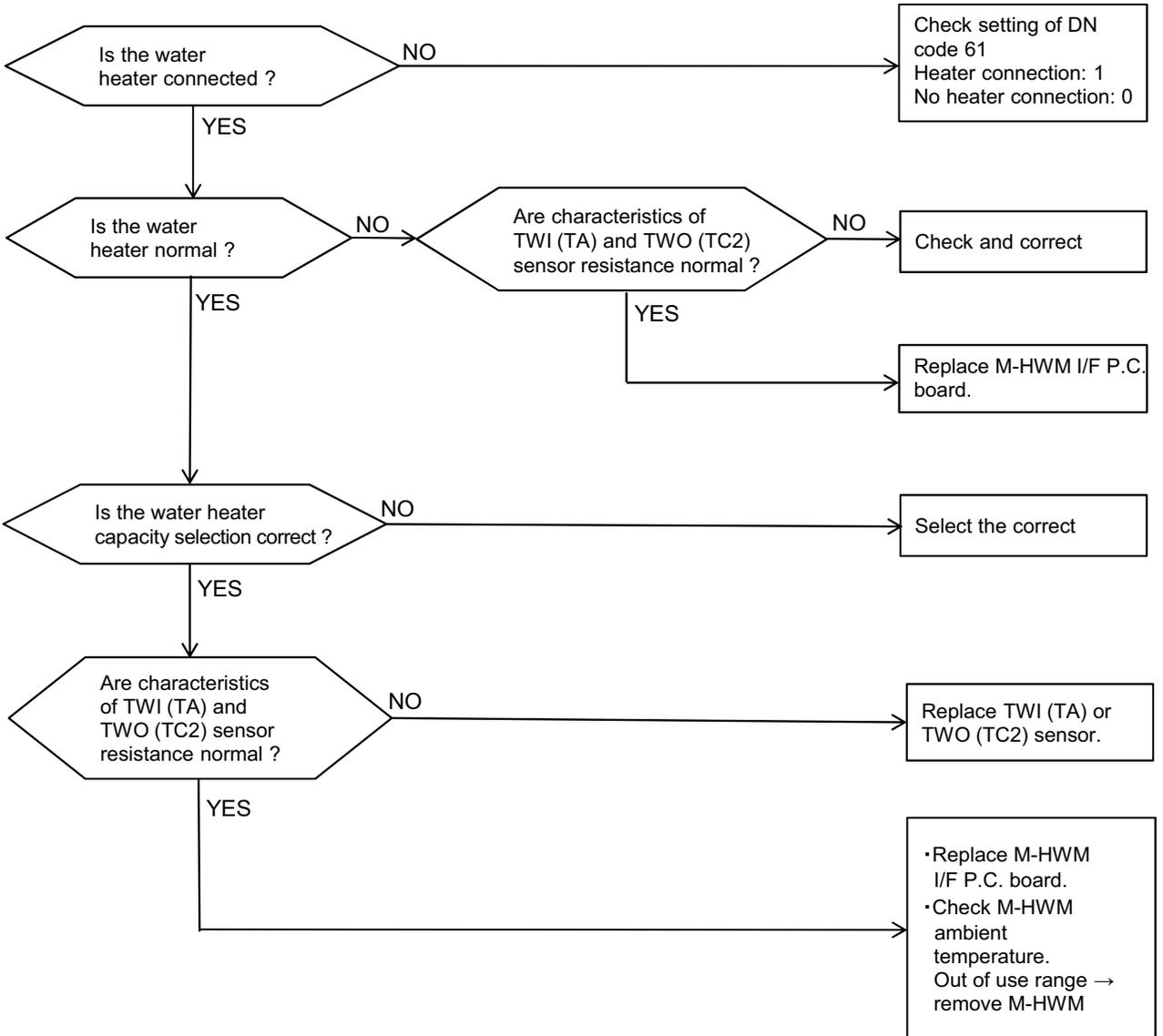
### 9-5. Diagnostic Procedure for Each Check Code (Hot water module)

Check code	Check code name	Cause
[A01]	Flow switch operation (M-HWM)	①Flow switch trouble ②Water pump trouble ③Clogging of water pipe ④M-HWM control P.C. board trouble ⑤M-HWM I/F P.C. board trouble

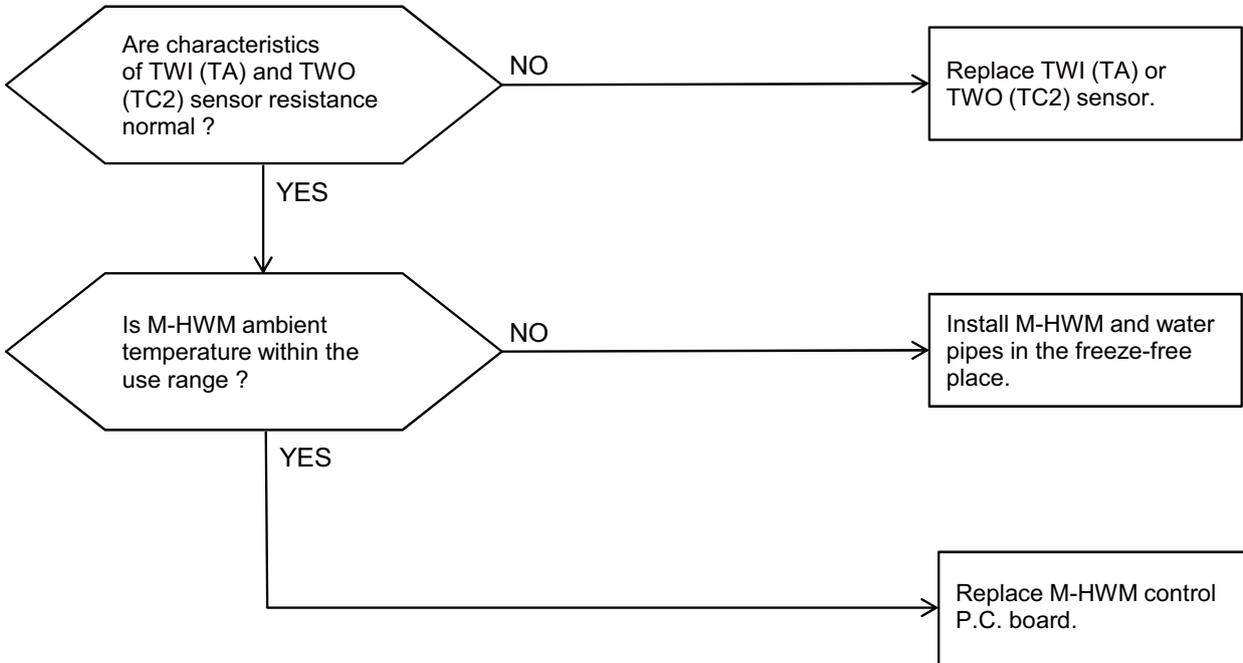


(Check there is no clogging in water pipe.)

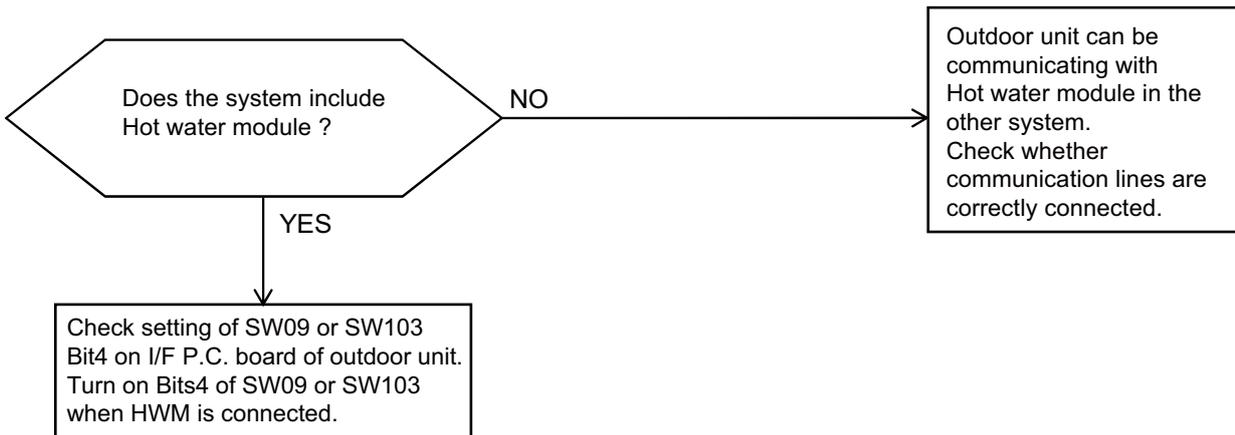
Check code	Check code name	Cause
[A02]	Water temperature decrease trouble (M-HWM)	①Water heater trouble ②M-HWM I/F P.C. board trouble ③TWI (TA) sensor trouble ④TWO (TC2) sensor trouble



Check code	Check code name	Cause
[A04]	Activation of water heat exchanger frost protection (M-HWM)	①M-HWM ambient temperature decrease ②M-HWM control P.C. board trouble ③TWI (TA) sensor trouble ④TWO (TC2) sensor trouble

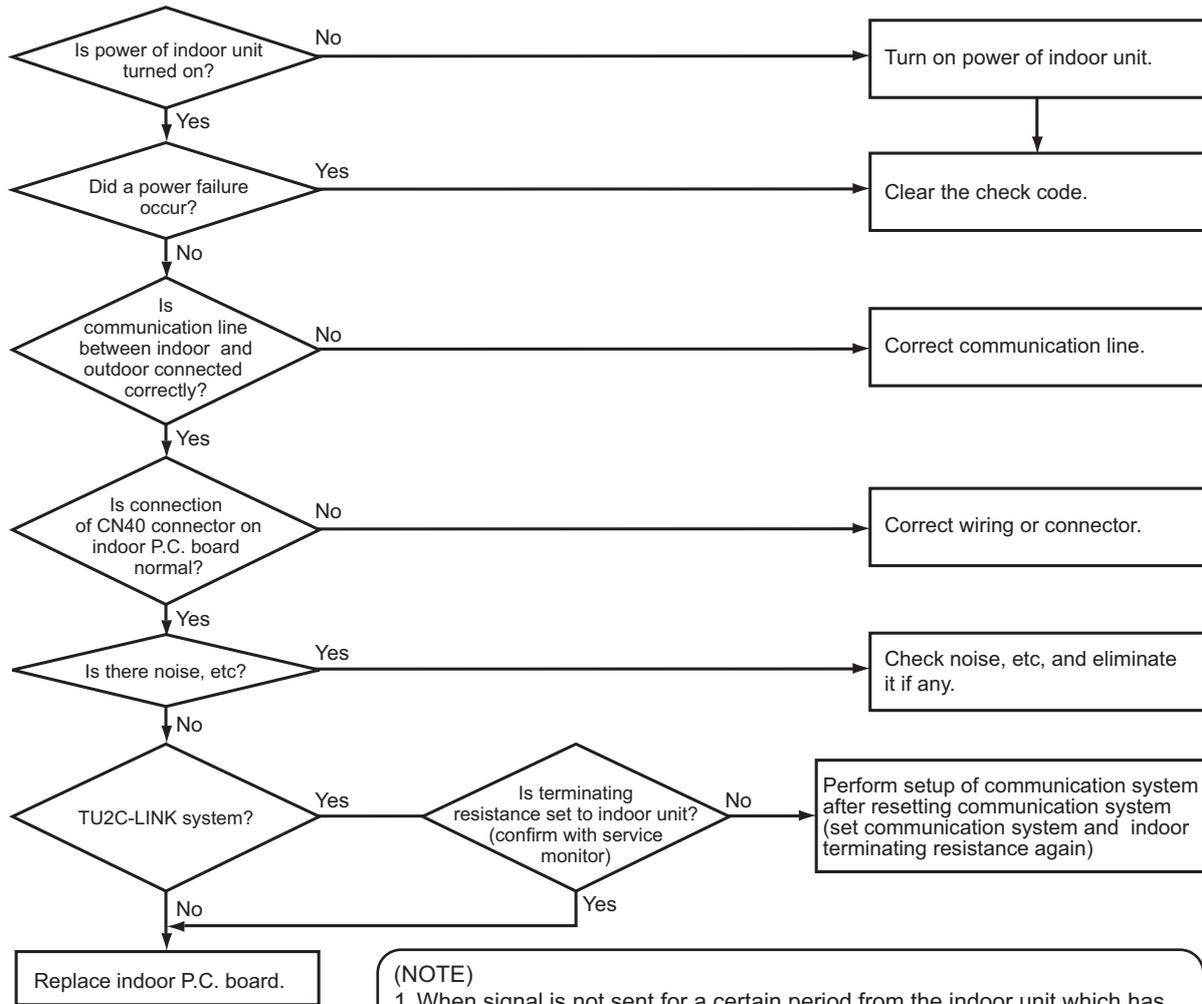


Check code	Check code name	Cause
[L23]-02	Switch setting trouble of outdoor unit	Switch setting trouble of outdoor unit when HWM is connected.



Check code	Check code name	Cause
[E06]	Decreased number of indoor units	1. Communication lines Uv (U1, U2) connection trouble between indoor and outdoor 2. Communication connector's connection trouble on indoor unit, trouble on P.C. board 3. Communication connector's connection trouble on outdoor unit, trouble on I/F board 4. Power supply of indoor unit (Is power turned on?) 5. Communication trouble with indoor unit with terminating resistance set (TU2C-LINK communication system only)

Sub-code: No. of indoor units which received signals normally



**(NOTE)**

1. When signal is not sent for a certain period from the indoor unit which has used to send signals normally, [E06] is displayed.
2. Address of indoor unit with terminating resistance set in system can be confirmed on service monitor of remote controller [B8]. [9999] is displayed in a case where no terminating resistance is set to any of the indoor units. See "▼Monitoring function of wired remote controller" for confirmation method.

• If "E06" appears on check code display or 7-segment display when the number of HWM (Hot water module) units connected in the system has been reduced (In case of HWM powering off, or removing or transporting the unit,) confirm whether all the indoor units including HWM are powered. If all the indoor units are powered, confirm the number of HWM units recorded on the I/F P.C.board. If the number of HWM units currently connected is lower than that of recorded HWM units, "E06" appears on the display. If the number of HWM units connected has been reduced, turn off Bits 4 of SW09 or SW103 on I/F P.C.board once and clear the number of HWM units recorded. If "L23-2" appears on the display when the Bits 4 of SW09 or SW103 on I/F P.C.board is OFF, turn on Bits 4 of SW09 or SW103 again while all the indoor units including HWM are powered. The indicators of "E06" and "L23-2" will be released. Finally, confirm that the number of HWM units recorded on I/F P.C.board is equal to that of HWM units currently connected. To confirm the number of HVM units recorded on the I/F P.C.board, refer to "8-6.7-Segment Display Function" in the service manual (A10-2003) of outdoor unit.

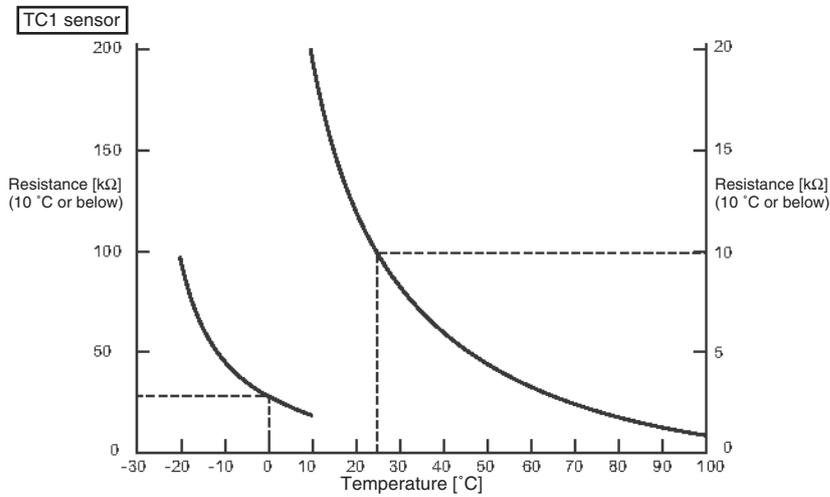
**Note:**

When turning on Bits 4 of SW09 or SW103, be sure to turn on the power of all the indoor units including HWM connected to pipe in the system. Failure to do so cause the number of HVM units that will be recorded on I/F P.C.board to incorrectly be recorded, causing the heat exchanger in HWM to freeze and resulting in its rupture.

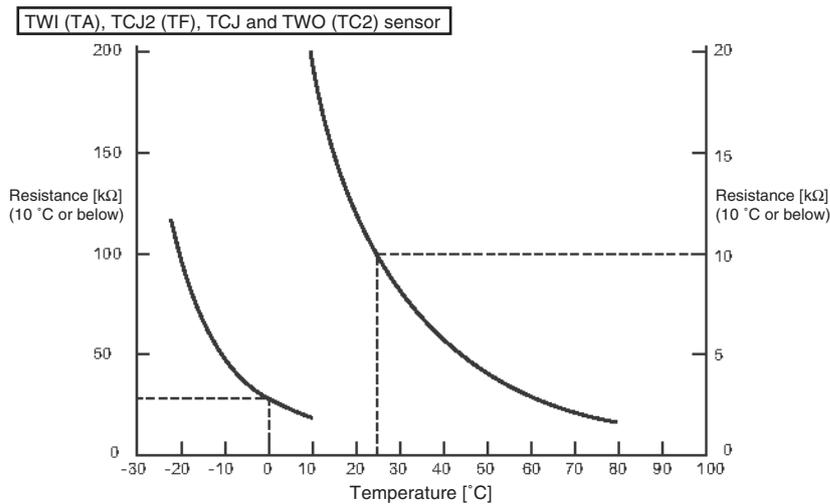
## 9-6. Sensor characteristics

### Indoor unit

#### ▼ Temperature sensor characteristics



Temperature [°C]	Resistance [kΩ]
-20	98.3
-15	73.7
-10	55.8
-5	42.6
0	32.8
5	25.5
10	20.0
15	15.7
20	12.5
25	10.0
30	8.1
35	6.5
40	5.3
45	4.4
50	3.6
55	3.0
60	2.5
65	2.1
70	1.7
75	1.5
80	1.2
85	1.1
90	0.9
95	0.8
100	0.7



Temperature [°C]	Resistance [kΩ]
-20	102.9
-15	76.6
-10	57.7
-5	44.0
0	38.8
5	26.1
10	20.4
15	16.0
20	12.6
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.8
60	2.3
65	1.9
70	1.6
75	1.4
80	1.2

#### ▼ Winding resistance of PMV (Pulse Motor Vale) coil

Measure position	Resistance value
White - Red (COM)	180 to 220 Ω
Yellow - Red (COM)	
Orange - Red (COM)	
Blue - Red (COM)	

at 20 °C

# 10. P.C. BOARD EXCHANGE PROCEDURES

## ■ Indoor unit

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### 10-1. Replacement of indoor P.C. boards

#### <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.

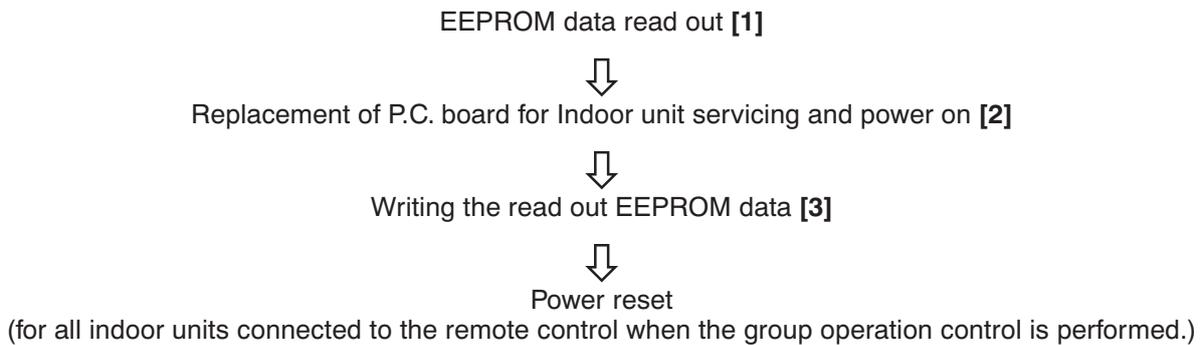
When replacing the P.C. board for indoor unit servicing, follow the procedures below.

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>

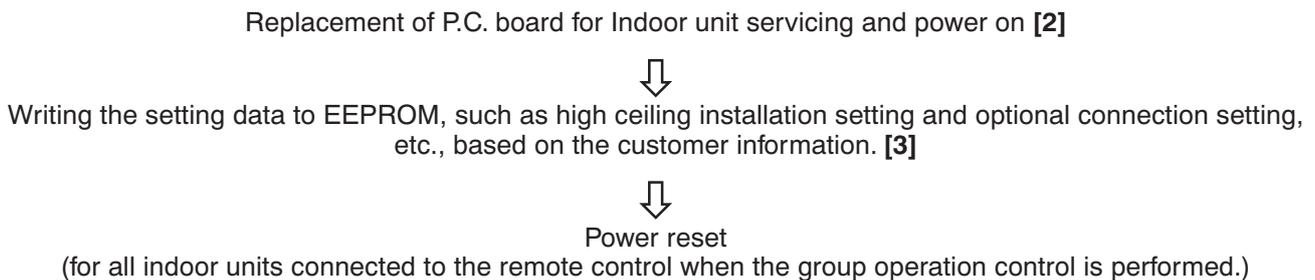
### CASE 1

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



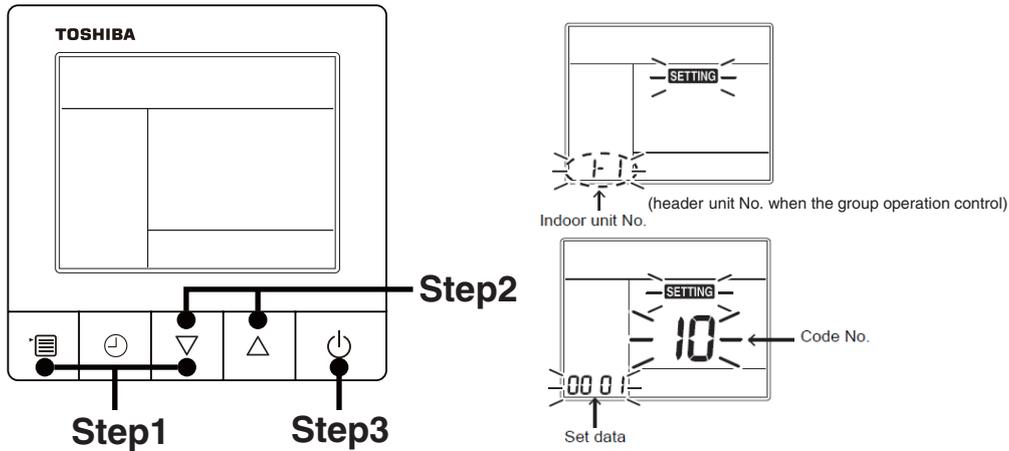
### CASE 2

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



## [1] Setting data read out from EEPROM

The setting data modified on the site, other than factory-set value, stored in the EEPROM shall be read out.  
<RBC-ASCU11\*>



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

\*When the group operation control is performed, the unit No. displayed for the first time is the header unit No.

At this time, the Code No. (DN) shows “10”. Also, the fan of the indoor unit selected starts its operation and the swing operation also starts if it has the louvers.

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

1. Change the Code No. (DN) to 10 → 01 by pushing [▽ or △] buttons setting. (this is the setting for the filter sign lighting time.)

At this time, be sure to write down the setting data displayed.

2. Change the Code No. (DN) by pushing [▽ or △] buttons. Similarly, be sure to write down the setting data displayed.

3. Repeat the step 2-2 to set the other settings in the same way and write down the setting data as shown in the table 1 (example).

\* The Code No. (DN) are ranged from “01” to “FE”. The Code No. (DN) may skip.

<RBC-AMT\*\*\*>

## [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  $\text{SET}$ ,  $\text{ON}$  and  $\text{TEST}$  button on the remote controller simultaneously for more than 4 seconds.

\*When the group operation control is performed, the unit No. displayed for the first time is the header unit No.

At this time, the CODE No. (DN) shows “10”. Also, the fan of the indoor unit selected starts its operation and the swing operation also starts if it has the louvers.

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

1. Change the CODE No. (DN) to 10 → 01 by pushing  $\text{DOWN}$  /  $\text{UP}$  buttons for the temperature setting. (this is the setting for the filter sign lighting time.)

At this time, be sure to write down the setting data displayed.

2. Change the CODE No. (DN) by pushing  $\text{DOWN}$  /  $\text{UP}$  buttons for the temperature setting. Similarly, be sure to write down the setting data displayed.

3. Repeat the step 2-2 to set the other settings in the same way and write down the setting data as shown in the table 1 (example).

\* The CODE No. (DN) are ranged from “01” to “FE”. The CODE No. (DN) may skip.

**CODE No. required at least**

DN	Contents
10	Type
11	Indoor unit capacity
12	System address
13	Indoor unit address
14	Group address

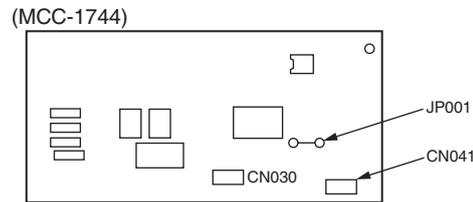
1. The Code No. for the Indoor unit type and Indoor unit capacity are required to set the rotation number setting of the fan.
2. If the system/indoor/group addresses are different from those before replacement, the auto-address setting mode starts and the manual resetting may be required again.  
(when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

**Step3** After writing down all setting data, push [ON/OFF] button to return to the normal stop status.  
(It takes approx. 1 min until the remote controller operation is available again.)

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

### 1 Replace the trouble P.C. board with a service P.C. board.

Be sure to replicate the old jumper setting (removal) on the service P.C. board. (See the diagram at below.)



### 2 It is necessary to establish a one-to-one correspondence between the hot water module being serviced and the remote controller.

Turn on the hot water module using one of the methods described below according to the system configuration.

#### (1) Single (stand-alone) operation

Turn on the hot water module and proceed to **Procedure 3**.

#### (2) Group operation

A) If it is possible to selectively turn on the hot water module being serviced

Turn on the hot water module being serviced and proceed to **Procedure 3**.

B) If it is not possible to selectively turn on the hot water module being serviced (**Case 1**)

a) Temporarily disconnect the group control wiring from terminals A and B of the hot water module being serviced.

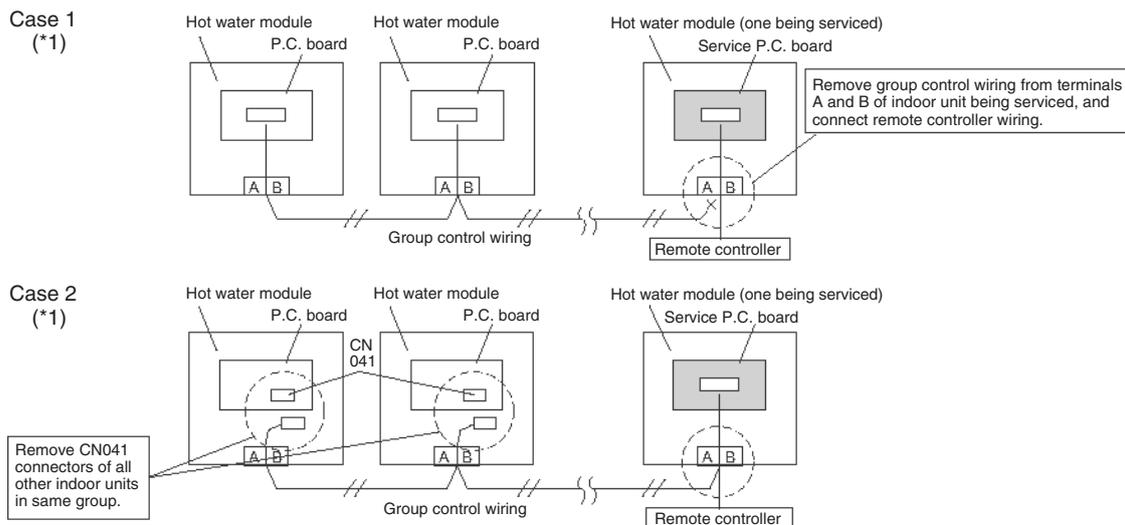
b) Connect the remote controller wiring to the terminals, turn on the hot water module, and proceed to **Procedure 3**.

\* If this method cannot be used, proceed to the alternative method described below (**Case 2**).

C) If it is not possible to selectively turn on the hot water module being serviced (**Case 2**)

a) Remove the CN041 connectors of all other hot water modules in the same group.

b) Turn on the hot water module and proceed to **Procedure 3**.



\* Be sure to restore the temporarily removed group control wiring and CN041 connectors to their initial states after Procedure 3 has been completed.

(\*1) Hot water module can connect up to two units in one refrigerative system.

### [3] Writing the setting data to EEPROM

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

#### <RBC-ASCU11\*>

- Step 1** Push and hold the [menu + ▽] buttons at same time for more than 10 seconds.  
\*When the group operation control is performed, the unit No. displayed for the first time is the header unit No.  
At this time, the Code No. (DN) shows "10". Also, the fan of the indoor unit selected starts its operation and the swing operation also starts if it has the louvers.
- Step 2** Every time when the [▽ or △] button is pushed, the indoor unit No. in the group control operation are displayed in order.  
(The settings stored in the EEPROM of the P.C. board for indoor unit servicing are the factory-set values.)  
Specify the indoor unit No. with its P.C. board replaced to the P.C. board for indoor unit servicing.  
(You cannot perform this operation if "ALL" is displayed.)
- Step 3** Select the Code No. (DN) can be selected by pushing the [▽ or △] button.  
• Set the indoor unit type and capacity.  
The factory-set values shall be written to the EEPROM by changing the type and capacity.
1. Push the [menu] button to make Code No. flash. And set the Code No. (DN) to 10 .
  2. Push the [menu] button to make SET DATA flash. And select the type by pushing the [•A or •C] buttons.  
(For example, Hot water module Type is set to "0050".)
  3. Push [OFF timer] button.  
(The changed data is set.)
  4. Change the Code No. (DN) to "11" by pushing the [▽ or △] buttons.
  5. Select the capacity by pushing the [▽ or △] buttons.  
(For example, UP027 Type is set to "00 1".)
  6. Push [OFF timer] button.  
(The changed data is set.)
- Step 4** Write the on-site setting data to the EEPROM, such as address setting, etc. Perform the steps 1 and 2 above again.
- Step 5** Change the Code No. (DN) to "28" by pushing the [▽ or △] buttons.  
(this is the setting for the power failure automatic recovery.)
- Step 6** Check the setting data displayed at this time with the setting data put down in [1].
1. If the setting data is different, modify the setting data by pushing the [▽ or △] buttons to the data put down in [1].
  2. If the data is the same, proceed to next step.
- Step 7** Change the Code No. (DN) by pushing the [▽ or △] buttons.  
As described above, check the setting data and modify to the data put down in [1].
- Step 8** Repeat the steps 6 and 7.
- Step 9** After the setting completes, push the [ON/OFF] button to return to the normal stop status.  
(It takes approx. 1 min until the remote controller operation is available again.)

## <RBC-AMT\*\*\*>

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

\* In the group control operation, the unit No. displayed for the first time is the header unit No..

At this time, the CODE No. (DN) shows “”. Also, the fan of the indoor unit selected starts its operation and the swing operation starts if it has the louvers.

(The unit No. “” is displayed if the auto-address setting mode is interrupted in [2] step 2 a))

**Step 2** Every time when (left side button) button is pushed, the indoor unit No. in the group control operation are displayed in order.  
(The settings stored in the EEPROM of the P.C. board for indoor unit servicing are the factory-set values.)

Specify the indoor unit No. with its P.C. board replaced to the P.C. board for indoor unit servicing.  
(You cannot perform this operation if “” is displayed.)

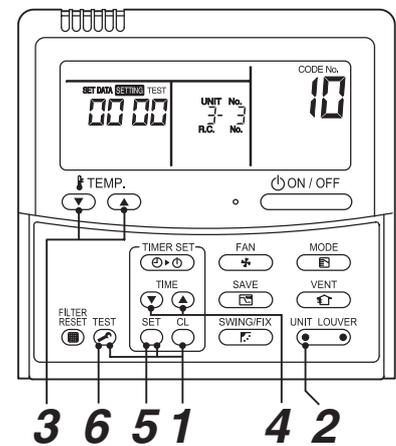
**Step 3** Select the CODE No. (DN) can be selected by pushing the / button for the temperature setting.

• Set the indoor unit type and capacity.

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

1. Set the CODE No. (DN) to . (without change)
2. Select the type by pushing / buttons for the timer setting.  
(For example, Hot water module Type is set to “”.)
3. Push button.  
(The operation completes if the setting data is displayed.)
4. Change the CODE No. (DN) to “” by pushing / buttons for the temperature setting.
5. Select the capacity by pushing / buttons for the timer setting.  
(For example, UP027 Type is set to “”.)
6. Push button.  
(The setting completes if the setting data are displayed.)

<Fig. 1 RBC-AMT\*\*\*>



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

**Step 5** Change the CODE No. (DN) to “” by pushing / buttons for the temperature setting.  
(this is the setting for the power failure automatic recovery.)

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

1. If the setting data is different, modify the setting data by pushing / buttons for the timer setting to the data put down in [1].

The operation completes if the setting data is displayed.

2. If the data is the same, proceed to next step.

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

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

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

\* The CODE No. (DN) are ranged from “” to “”. The CODE No. (DN) is not limited to be serial No.

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

**CODE No. list (Example)**

CODE No. (DN)	Item	Setting data	Factory-set value
03	Central control address		0099: Not determined
10	Type		Depending on model type
11	Indoor unit capacity		Depending on capacity type
12	System address		0099: Not determined
13	Indoor unit address		0099: Not determined
14	Group address		0099: Not determined
28	Power failure automatic recovery		0000: None
60	Timer setting (wired remote controller)		0000: Standard

**Type****Code No. [10]**

Setup data	Type	Model abb. name
0060	Hot water module	MMW-UP****LQ*

**Indoor unit capacity****CODE No. [11]**

Setup data	model
0000*	Invalid
0011	027 type
0017	056 type

\* The initial setup value of EEPROM installed on the service P.C. board

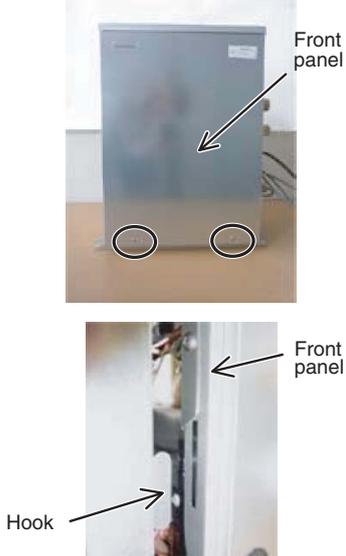
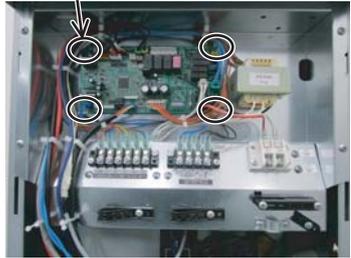
# 11. DETACHMENTS

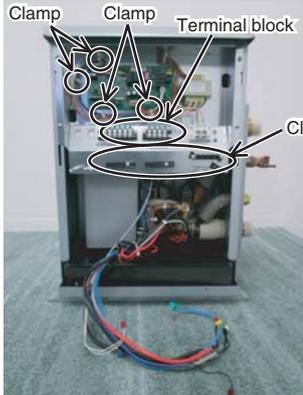
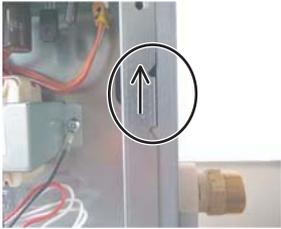
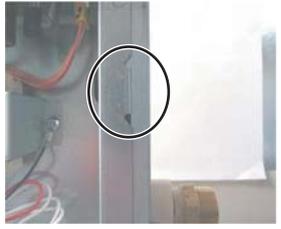
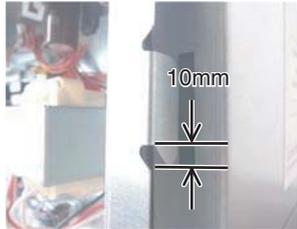
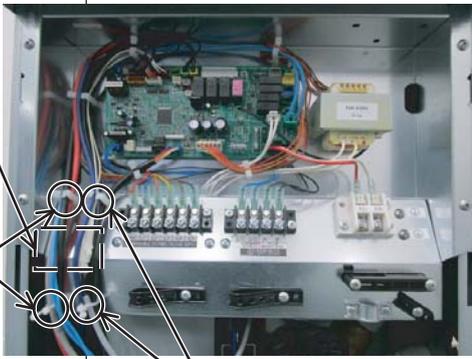
## WARNING

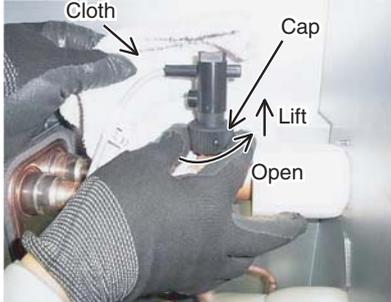
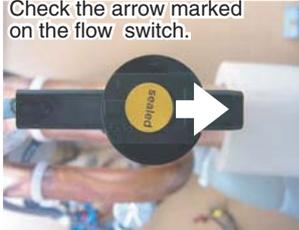
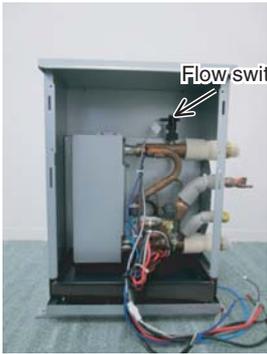
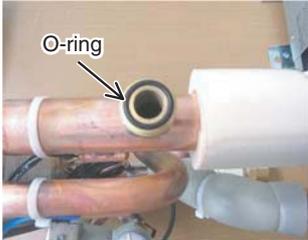
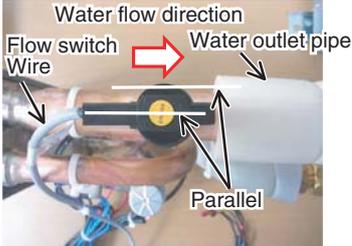
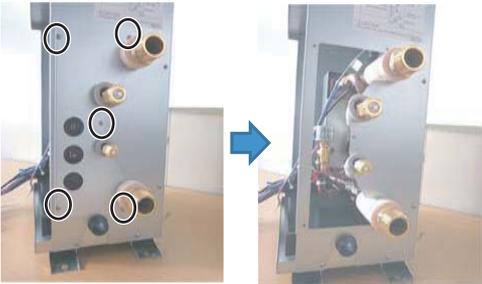
Stop the air conditioner(including HWM) operation, and turn off the circuit breaker.

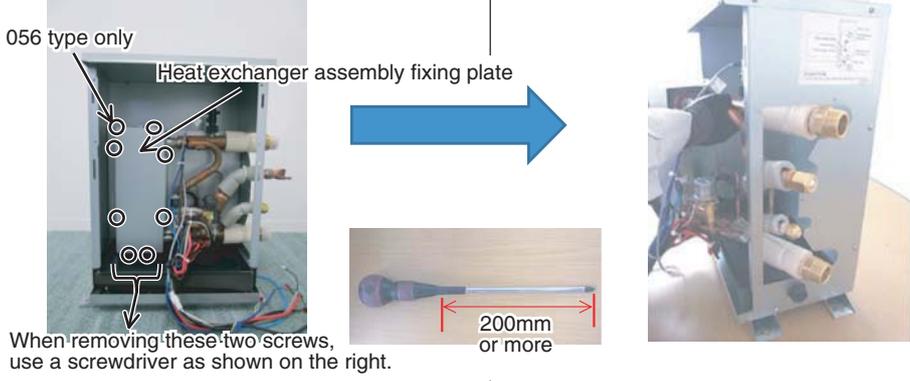
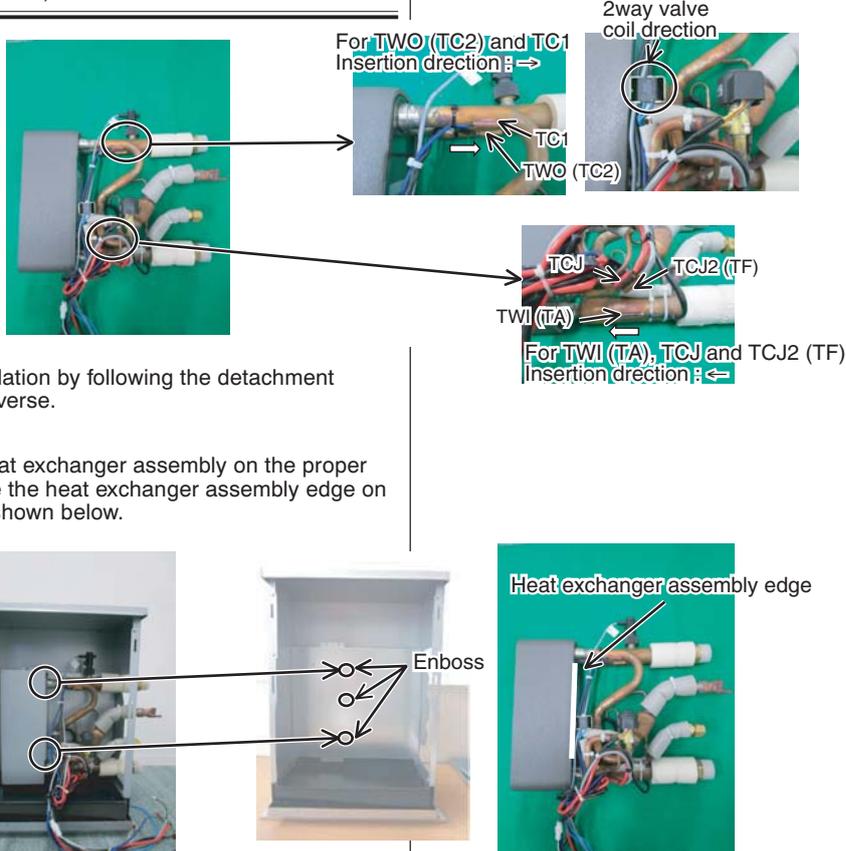
## CAUTION

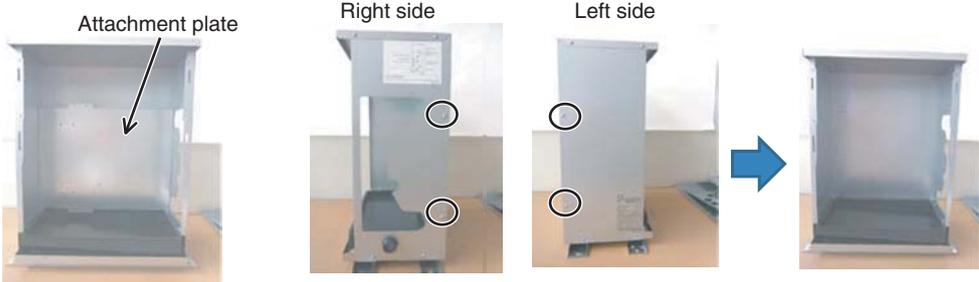
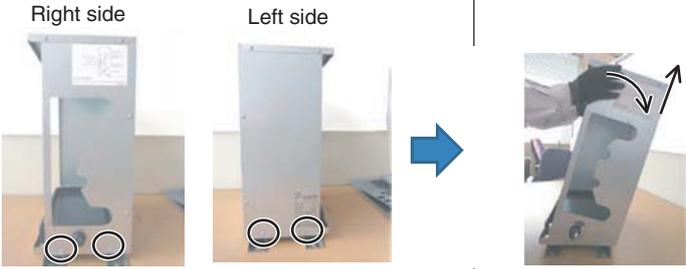
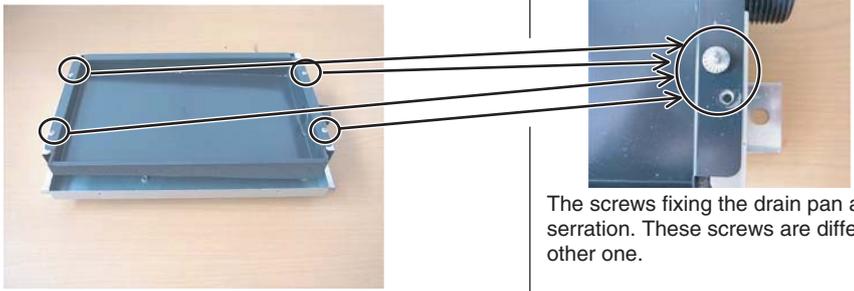
Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.

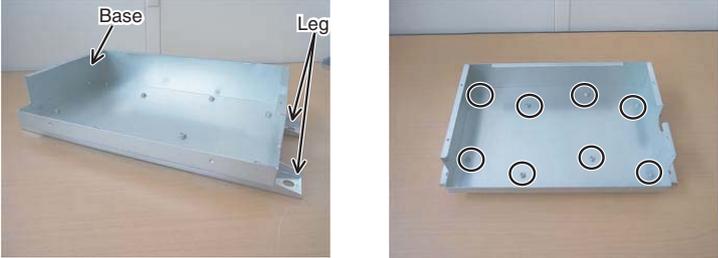
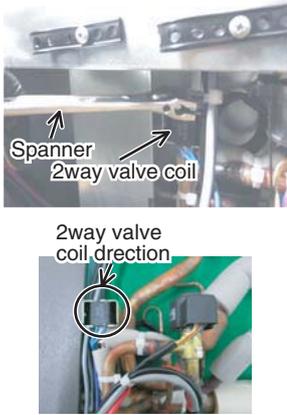
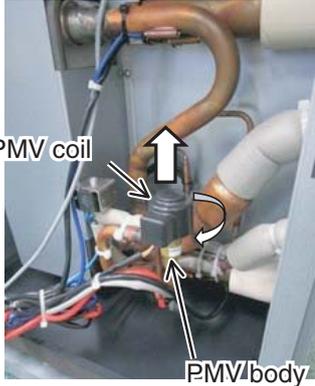
No.	Part to be replaced	Work procedure	Remarks																																										
①	Front panel	<p><b>1. Detachment</b></p> <p>1) Remove the screws for the front panel.(4x10, 2pcs.)</p> <p>2) Pull the front panel downward and then remove the front panel.</p> <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse. Be careful of the hook provided on the front panel.</p>	 <p>Front panel</p> <p>Front panel</p> <p>Hook</p>																																										
②	P.C. board (MCC-1744)	<p><b>1. Detachment</b></p> <p>1) Carry out the detachment of item ① (Front panel).</p> <p>2) Remove connectors which are connected from the control P.C.board to the other parts.</p> <table border="0" data-bbox="438 1205 821 1534"> <tr><td>CN030 .... FS(Flow switch)</td><td>Red</td><td>3P</td></tr> <tr><td>CN033 .... LM(2way valve)</td><td>Green</td><td>3P</td></tr> <tr><td>CN102 .... TCJ</td><td>Red</td><td>2P</td></tr> <tr><td>CN101 .... TWO (TC2)</td><td>Black</td><td>2P</td></tr> <tr><td>CN100 .... TC1</td><td>Brown</td><td>3P</td></tr> <tr><td>CN103 .... TCJ2 (TF)</td><td>Green</td><td>2P</td></tr> <tr><td>CN104 .... TWI (TA)</td><td>Yellow</td><td>2P</td></tr> <tr><td>CN082 .... PMV</td><td>Blue</td><td>6P</td></tr> <tr><td>CN067 .... AC IN</td><td>Black</td><td>6P</td></tr> <tr><td>CN074 .... TRANS-P</td><td>White</td><td>3P</td></tr> <tr><td>CN075 .... TRANS-S</td><td>White</td><td>6P</td></tr> <tr><td>CN060 .... OPTION</td><td>White</td><td>6P</td></tr> <tr><td>CN040 .... OC</td><td>Blue</td><td>2P</td></tr> <tr><td>CN041 .... RC</td><td>Blue</td><td>2P</td></tr> </table> <p><b> CAUTION</b></p> <p>Unlock the lock of the housing part and then remove the connector.</p> <p>3) Unlock the locks of the card edge spacer (4 positions) and then remove the control P.C. board.</p> <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse.</p>	CN030 .... FS(Flow switch)	Red	3P	CN033 .... LM(2way valve)	Green	3P	CN102 .... TCJ	Red	2P	CN101 .... TWO (TC2)	Black	2P	CN100 .... TC1	Brown	3P	CN103 .... TCJ2 (TF)	Green	2P	CN104 .... TWI (TA)	Yellow	2P	CN082 .... PMV	Blue	6P	CN067 .... AC IN	Black	6P	CN074 .... TRANS-P	White	3P	CN075 .... TRANS-S	White	6P	CN060 .... OPTION	White	6P	CN040 .... OC	Blue	2P	CN041 .... RC	Blue	2P	 <p>Card edge spacer</p>
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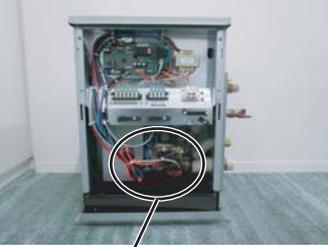
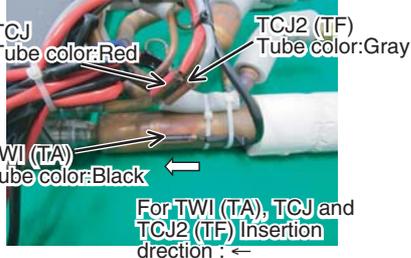
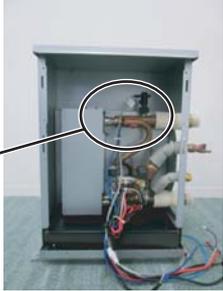
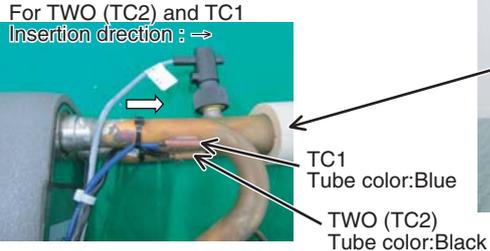
No.	Part to be replaced	Work procedure	Remarks																								
③	Electrical control box	<p><b>1. Detachment</b></p> <p>1) Carry out the detachment of item ① (Front panel).</p> <p>2) Remove connectors which are connected from the control P.C.board to the other parts and then remove wiring from the clamp.</p> <table border="0" data-bbox="440 338 826 528"> <tr> <td>CN030 ... FS (Flow switch)</td> <td>Red</td> <td>3P</td> </tr> <tr> <td>CN033 ... LM (2way valve)</td> <td>Green</td> <td>3P</td> </tr> <tr> <td>CN102 ... TCJ</td> <td>Red</td> <td>2P</td> </tr> <tr> <td>CN101 ... TWO (TC2)</td> <td>Black</td> <td>2P</td> </tr> <tr> <td>CN100 ... TC1</td> <td>Brown</td> <td>3P</td> </tr> <tr> <td>CN103 ... TCJ2 (TF)</td> <td>Green</td> <td>2P</td> </tr> <tr> <td>CN104 ... TWI (TA)</td> <td>Yellow</td> <td>2P</td> </tr> <tr> <td>CN082 ... PMV</td> <td>Blue</td> <td>6P</td> </tr> </table> <p>3) Remove wires which are connected to the terminal block and then remove wiring from the clamp.</p> <p>4) Remove the screws for the electrical control box.(4x10, 4pcs.)</p> <p>5) Lift the electrical control box up to about 10mm, pull the electrical control box and then remove the electrical control box.</p> <p><b>⚠ CAUTION</b></p> <p>Be careful of the hook provided on the Electrical control box to detach properly.</p> <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse.</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• Let TCJ, TWI (TA), TCJ2 (TF), PMV and LM (2way valve coil) wiring pass through the left side clamps.</li> <li>• Let TC1, TWO (TC2) and FS (flow switch) wiring pass through the right side clamps.</li> <li>• Let PMV and FS (flow switch) relay connectors locate in the electrical control box.</li> </ul>	CN030 ... FS (Flow switch)	Red	3P	CN033 ... LM (2way valve)	Green	3P	CN102 ... TCJ	Red	2P	CN101 ... TWO (TC2)	Black	2P	CN100 ... TC1	Brown	3P	CN103 ... TCJ2 (TF)	Green	2P	CN104 ... TWI (TA)	Yellow	2P	CN082 ... PMV	Blue	6P	      <p>Flow switch relay conector (White)</p> <p>Left side clamps: TCJ, TWI (TA), TCJ2 (TF) and LM (2way valve coil) wiring are passed through.</p> <p>Right side clamps: TC1, TWO (TC2), FS (flow switch) and PMV wiring are passed through.</p>
CN030 ... FS (Flow switch)	Red	3P																									
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CN102 ... TCJ	Red	2P																									
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CN103 ... TCJ2 (TF)	Green	2P																									
CN104 ... TWI (TA)	Yellow	2P																									
CN082 ... PMV	Blue	6P																									

No.	Part to be replaced	Work procedure	Remarks
④	Flow switch	<p><b>1. Detachment</b></p> <ol style="list-style-type: none"> <li>1) Close the water supply source valve.</li> <li>2) Carry out the detachment of item ③ (Electrical control box).</li> <li>3) Slowly, turn the cap of flow switch completely and then lift the flow switch upward.</li> </ol> <p><b>NOTE:</b> Use some clothes to avoid water dropping.</p>  <p><b>2. Attachment</b></p> <ol style="list-style-type: none"> <li>1) Carry out installation by following the detachment procedure in reverse.</li> </ol> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• The flow switch connection uses a O-ring for water seal. Be careful not to scratch the O-ring. Otherwise, water leakage may occur.</li> <li>• Place the flow switch parallel to the water outlet pipe.</li> <li>• The flow switch wire is placed on the right side. Refer to item ③ (Electrical control box).</li> <li>• Be careful to attach the proper flow switch as shown below.</li> <li>• After the flow switch replacement repair, open the water supply source valve and water piping valve to pass water through the unit, and check that the flow switch connection has no water leakage.</li> <li>• Carry out the work of air ventilation in water circuit.</li> </ul>  	  
⑤	Pipe cover panel	<p><b>1. Detachment</b></p> <ol style="list-style-type: none"> <li>1) Remove wires which are connected to the terminal block and then remove wiring from the wiring port.</li> <li>2) Remove the screws for the pipe cover panel.(4x10, 5pcs.)</li> </ol> <p><b>2. Attachment</b></p> <ol style="list-style-type: none"> <li>1) Carry out installation by following the detachment procedure in reverse.</li> </ol>	

No.	Part to be replaced	Work procedure	Remarks
⑥	Heat exchanger assembly	<p><b>1. Detachment</b></p> <ol style="list-style-type: none"> <li>1) Close the water supply source valve and the valve of water pipe connected to the unit, carry out the refrigerant recovery and then remove the refrigerant and water pipes.</li> <li>2) Carry out the detachment of item ③ (Electrical control box) and item ⑤ (pipe cover plate).</li> <li>3) Remove the screws for the heat exchanger assembly fixing plate as shown below. (4x10, 7pcs.) For the unit for 056 type: 4x10, 8pcs.</li> <li>4) Remove the heat exchanger assembly from the unit as shown below.</li> </ol>  <ol style="list-style-type: none"> <li>5) Remove sensors, 2way valve coil and flow switch attached the heat exchanger assembly.</li> <li>6) Carry out installation by following the detachment procedure in reverse.</li> </ol> <p><b>⚠ CAUTION</b></p> <ul style="list-style-type: none"> <li>• Be careful in the insertion direction of attaching the sensor, as shown below.</li> <li>• Be careful to attach the flow switch, as shown item ⑤ (flow switch).</li> </ul> <p><b>2. Attachment</b></p> <ol style="list-style-type: none"> <li>1) Carry out installation by following the detachment procedure in reverse.</li> </ol> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• To attach the heat exchanger assembly on the proper position, replace the heat exchanger assembly edge on the enboss, as shown below.</li> </ul> 	

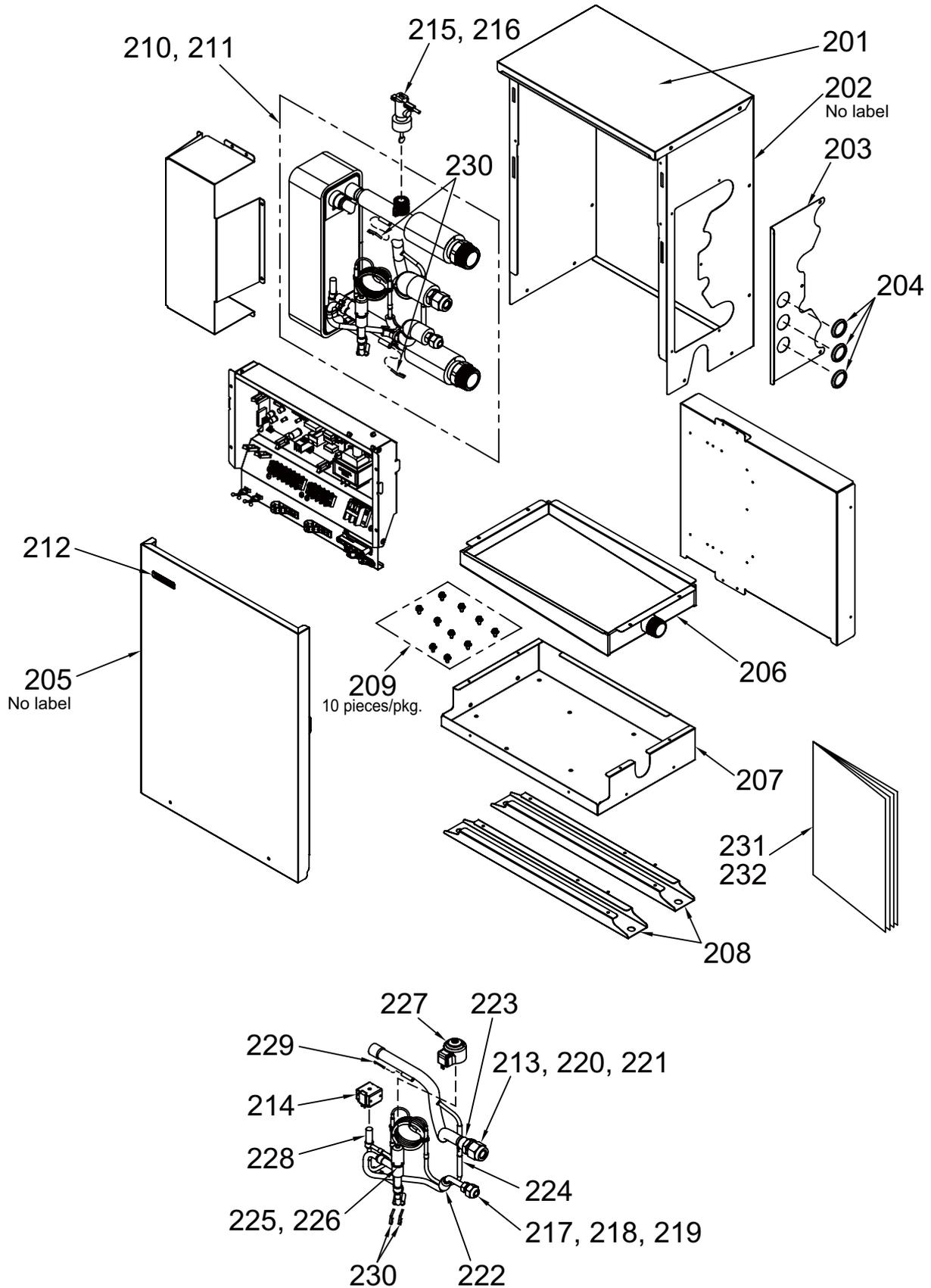
No.	Part to be replaced	Work procedure	Remarks
⑥	Heat exchanger assembly (Continued)	<p><b>⚠ CAUTION</b></p> <hr/> <p>After the vacuuming is completed, carry out the following procedure before adding refrigerant.</p> <ul style="list-style-type: none"> <li>• Plate heat exchanger may explode because the water in the plate heat exchanger frozen. To avoid this phenomenon, add refrigerant before carrying out a water supply to the water pipe system of the Hot water module.</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• After connecting the refrigerant pipes, check that the connection has no leakage, and then carry out vacuuming.</li> <li>• Control the tightening torque for the liquid side from 33 to 42 N•m, and the gas side is from 63 to 77 N•m.</li> <li>• After the heat exchanger assembly is replaced, open the water supply source valve and water piping valve to pass water through the unit, and check that the flow switch connection has no water leakage.</li> <li>• Carry out the work of air ventilation in water circuit.</li> </ul>	
⑦	Cabinet	<p><b>1. Detachment</b></p> <p>1) Carry out the detachment of item ⑥ (Heat exchanger assembly).</p> <p>2) Remove the screws for the cabinet and then remove the attachment plate, as shown below.(4x10, 4pcs.)</p>  <p>3) Remove the screws for the cabinet, tilt the cabinet and then lift the cabinet upward, as shown below.(4x10, 4pcs.)</p>  <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse.</p>	
⑧	Drain pan	<p><b>1. Detachment</b></p> <p>1) Remove the drain pipe.</p> <p>2) Carry out the detachment of item ⑦ (Cabinet).</p> <p>3) Remove the screws for the drain pan.(4x10, 4pcs.)</p> <p><b>⚠ CAUTION</b></p> <hr/> <ul style="list-style-type: none"> <li>• Be careful of using the different screw, as shown below.</li> </ul> <hr/>  <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse.</p>	<p>The screws fixing the drain pan are with serration. These screws are different from other one.</p>

No.	Part to be replaced	Work procedure	Remarks
⑨	Base and legs	<p><b>1. Detachment</b></p> <p>1) Carry out the detachment of item ⑨ (Drain pan).  2) Remove the screws for the legs.(5x10, 8pcs.)</p>  <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse.</p>	
⑩	2way valve coil	<p><b>1. Detachment</b></p> <p>1) Carry out the detachment of item ① (Front panel).  2) Remove connector which is connected from the control P.C.board to the other part and then remove wiring from the clamp.</p> <p>CN033 ... (LM) 2way valve Green 3P</p> <p>3) Remove the screw for the 2way valve coil.(M5x6.5, 1pc.)</p> <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse.</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• Control the tightening torque for the 2way valve coil to <math>2.0 \pm 0.5N \cdot m</math>.</li> <li>• Be careful in the insertion direction of attaching the 2way valve coil, as shown below.</li> <li>• Let 2 way valve coil wiring pass through the left side clamps.</li> </ul> <p>Refer to item ③ (Electrical control box).</p>	
⑪	PMV motor	<p><b>1. Detachment</b></p> <p>1) Carry out the detachment of item ① (Front panel).  2) Remove connector which is connected from the control P.C.board to the other part and then remove wiring from the clamp.</p> <p>CN082.....PMV BLU E6P</p> <p>3) While holding the PMV body so that it does not rotate, rotate the PMV coil slightly and remove it in the direction of the arrow.</p> <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse. Reinstall the PMV coil. Make sure it does not move.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• Be careful of the direction of the PMV coil.</li> <li>• Check that four projections of the fixed claw of PMV coil and PMV body have fitted in.</li> <li>• Of lead wires and cable tiesPlease note the position.</li> <li>• Let PMV wiring pass through the left side clamps.</li> </ul> <p>Refer to item3 (Electrical control box).</p>	

No.	Part to be replaced	Work procedure	Remarks
⑫	Sensor TCJ, TCJ2 (TF) and TWI (TA)	<p><b>1. Detachment</b></p> <p>1) Carry out the detachment of item ① (Front panel).</p> <p>2) Remove connectors which are connected from the control P.C.board to the other parts and then remove wiring from the clamp.</p> <p>CN102 .... TCJ        Red    2P  CN103 .... TCJ2 (TF) Green 2P  CN104 .... TWI (TA)    Yellow 2P</p> <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse.</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• Be careful in the insertion direction about attaching the sensor, as shown below.</li> <li>• Let TCJ, TWI (TA) and TCJ2 (TF) wiring pass through the left side clamps. Refer to item ③ (Electrical control box).</li> </ul>	 
⑬	Sensor TC1 and TWO (TC2)	<p><b>1. Detachment</b></p> <p>1) Carry out the detachment of item ③ (Electrical control box).</p> <p>2) Remove connectors which are connected from the control P.C.board to the other parts and then remove wiring from the clamp.</p> <p>CN101 ... TWO (TC2) Black 2P  CN100 ... TC1        Brown 3P</p> <p><b>2. Attachment</b></p> <p>1) Carry out installation by following the detachment procedure in reverse.</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• Be careful in the insertion direction about attaching the sensor, as shown below.</li> <li>• Let TC1 and TWO (TC2) wiring pass through the right side clamps. Refer to item ③ (Electrical control box).</li> </ul>	 

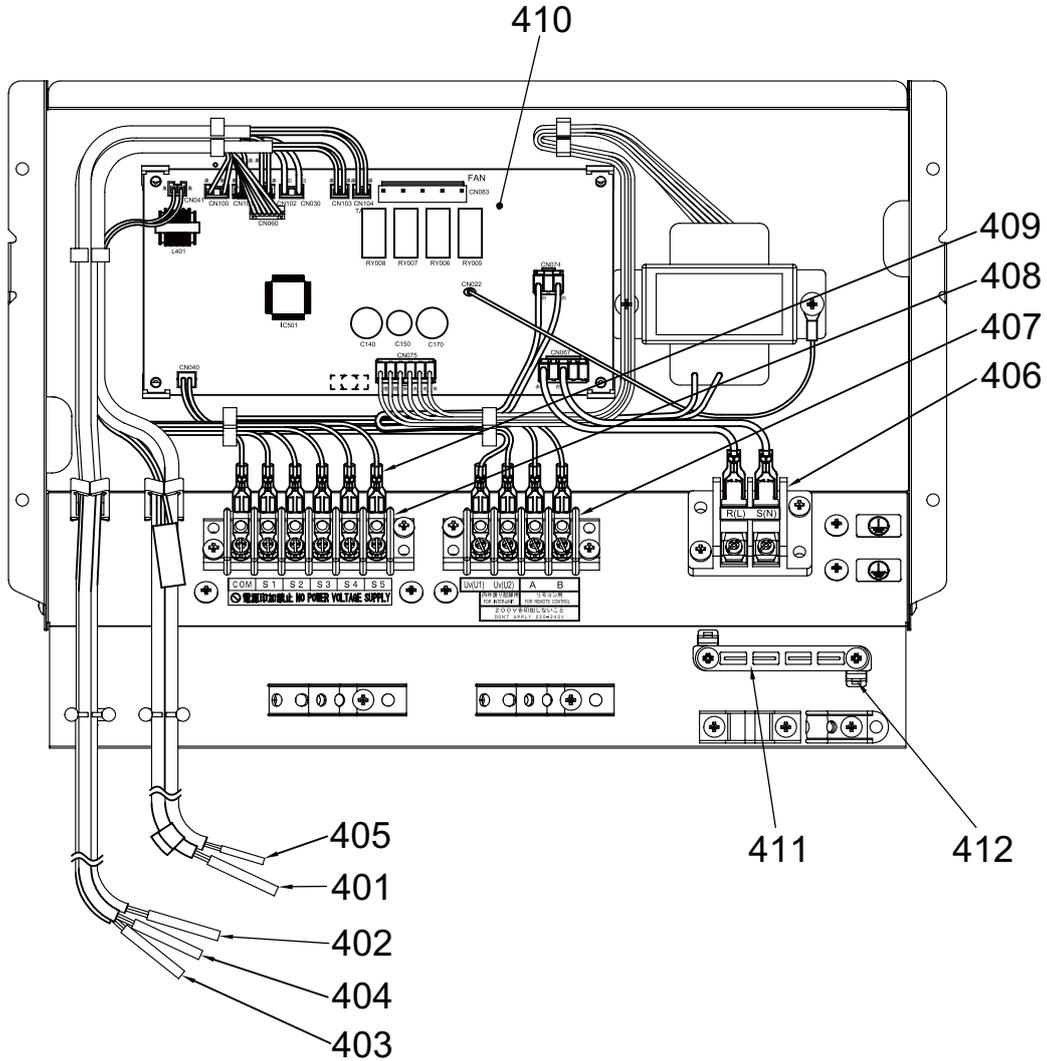
# 12. EXPLODED DIAGRAM / SERVICE PARTS LIST

MMW-UP0271LQ-E(TR), MMW-UP0561LQ-E(TR)



Location No.	Part No.	Description	Q'ty/Set		MMW-UP	
			0271LQ-E	0561LQ-E	0271LQ-TR	0561LQ-TR
201	4310A201	CABINET,UP	1	1	1	1
202	4310A200	CANINET	1	1	1	1
203	43119530	PANEL, PIPE COVER	1	1	1	1
204	43019830	BUSHING	3	3	3	3
205	4310A111	PANEL, FRONT	1	1	1	1
206	43172249	PAN, DRAIN	1	1	1	1
207	4310A110	BASE	1	1	1	1
208	4310A112	LEG	2	2	2	2
209	43197190	SCREW, SET	1	1	1	1
210	4314J608	PIPE ASSY, WATER HEAT EXCHANGE	1		1	
211	4314J610	PIPE ASSY, WATER HEAT EXCHANGER		1		1
212	37517876	MARK, TOSHIBA FOR ESTIA	1	1	1	1
213	43194029	BONNET, 15.88	1	1	1	1
214	4314N047	COIL, VALVE, 2WAY	1	1	1	1
215	37551737	SWITCH, FLOW	1		1	
216	37551735	SWITCH, FLOW		1		1
217	43049776	SOCKET, 9.52	1	1	1	1
218	43149355	NUT, FLARE, 9.52	1	1	1	1
219	43F47609	BONNET, 9.52	1	1	1	1
220	43149354	SOCKET, 15.88	1	1	1	1
221	43149352	NUT, FLARE, 15.88	1	1	1	1
222	43147664	STRAINER, ID 9.52	1	1	1	1
223	4314Q114	STRAINER, SCREEN	1	1	1	1
224	37547751	VALVE, CHECKED	1	1	1	1
225	4314N202	BODY, PMV, PAM-B40YGTF-1	1		1	
226	4314N203	BODY, PMV, PAM-B60YGTF-1		1		1
227	4314N205	COIL, PMV, PAM-MD12TF-301	1	1	1	1
228	4314N079	VALVE, 2WAY	1	1	1	1
229	43107215	HOLDER, SENSOR	1	1	1	1
230	43F19904	HOLDER, SENSOR (TS)	4	4	4	4
231	431S8480	OWNER'S MANUAL	1	1		
232	431S8481	OWNER'S MANUAL			1	1

E-Parts



Location No.	Part No.	Description	Q'ty/Set
401	43150424	SENSOR, TC	1
402	43150425	SENSOR, TC	1
403	43150431	SENSOR, TC	1
404	43150430	SENSOR, TC	1
405	43150414	SENSOR, TEMP.	1
406	43160626	TERMINAL BLOCK, 2P, 20A	1
407	43160694	TERMINAL, 4P	1
408	43160695	TERMINAL, 6P	1
409	43158204	TRANSFORMER, TT-13	1
410	4316V735	PC BOARD ASSY, MCC-1744	1
411	43163057	CLAMP, DOWN	1
412	43163058	CLAMP, UP	1

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