TOSHIBA

AIR CONDITIONER (MULTI TYPE)

SERVICE MANUAL

Hot Water Module
Mid temperature type

Model name:

MMW-AP0271LQ-E
MMW-AP0561LQ-E
MMW-AP0271LQ-TR
MMW-AP0561LQ-TR

CONTTENTS

Please read carefully through these instructions that contain important information, 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

Agent	Qualifications and knowledge which the agent must have
Qualified installer (∗1)	• The qualified installer is a person who installs, maintains, relocates and removes the air conditioners (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. • 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. • 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. • 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.
Qualified service person (∗1)	• 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. • 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. • 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. • 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.

Definition of Protective Gear

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

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

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

[Explanation of indications]

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

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

[Explanation of illustrated marks]

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

Warning indications on the hot water module

Warning indication	Description
WARNING **ELECTRICAL SHOCK HAZARD** Disconnect all remote electric power supplies before servicing.	**WARNING** **ELECTRICAL SHOCK HAZARD** Disconnect all remote electric power supplies before servicing.

Precautions for Safety

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

⚠ DANGER

⊙ Turn off breaker.	Before carrying out the installation, maintenance, repair or removal work, be sure to set the circuit breaker for both the hot water module and outdoor units to the OFF position. Otherwise, electric shocks may result.
	Before opening the electrical parts box cover 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. 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.
	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.
⊙ Electric shock hazard	When you access inside of the electrical parts box cover to repair electric parts, wait for about five minutes after turning off the breaker. Do not start repairing immediately.Otherwise you may get electric shock by touching terminals of high-voltage capacitors. Natural discharge of the capacitor takes about five minutes.
⊘ Prohibition	Place a "Work in progress" sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out. There is a danger of electric shocks if the circuit breaker is set to ON by mistake.
	Before operating the hot water module after having completed the work, check that the electrical parts box cover 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.
⊙ Stay on protection	If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the electrical parts box cover of one or more of the 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.

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

⚠ **WARNING**

⊕ General	Before starting to repair the hot water module, read carefully through the Service Manual, and repair the hot water module by following its instructions.
	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.
	Do not use any refrigerant different from the one specified for complement or replacement. Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body.
	Only a qualified installer (*1) or qualified service person (*1) is allowed to carry out the electrical work of the 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.
	When transporting the hot water module, wear shoes with protective toe caps, protective gloves and other protective clothing.
	When connecting the electrical wires, repairing the electrical parts or undertaking other electrical jobs, wear gloves to provide protection for electricians, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.
	Electrical wiring work shall be conducted according to law and regulation in the community and Installation Manual. Failure to do so may result in electrocution or short-circuit.
	When working at heights, use a ladder which complies with the ISO 14122 standard, and follow the procedure in the ladder's instructions. Also wear a helmet for use in industry as protective gear to undertake the work.
	When working at heights, put a sign in place so that no-one will approach the work location, before proceeding with the work. Parts and other objects may fall from above, possibly injuring a person below.
	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.
	Do not climb onto or place objects on top of the outdoor unit. You may fall or the objects may fall of the outdoor unit and result in injury.
	When transporting the hot water module, wear shoes with additional protective toecap.
	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.
⊕ Check earth wires.	Before troubleshooting or repair work, check the earth wire is connected to the earth terminals of the hot water module, otherwise an electric shock is caused when a leak occurs. If the earth wire is not correctly connected, contact an electric engineer for rework
	After completing the repair or relocation work, check that the ground wires are connected properly.
	Be sure to connect earth wire. (Grounding work) Incomplete grounding causes an electric shock. Do not connect ground wires to gas pipes, water pipes, and lightning rods or ground wires for telephone wires.
⊘ Prohibition of modification.	Do not modify the products. Do not also disassemble or modify the parts. It may cause a fire, electric shock or injury.
⊕ Use specified parts.	When any of the electrical parts are to be replaced, ensure that the replacement parts satisfy the specifications given in the Service Manual (or use the parts contained on the parts list in the Service Manual). Use of any parts which do not satisfy the required specifications may give rise to electric shocks, smoking and / or a fire.
⊕ Do not bring a child close to the equipment.	If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the electrical parts box cover of one or more of the 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.
⊕ Insulating measures	Connect the cut-off lead wires with crimp contact, etc., put the closed end side upward and then apply a watercut method, otherwise a leak or production of fire is caused at the users f side.

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

⊘ No fire	When performing repairs using a gas burner, replace the refrigerant with nitrogen gas because the oil that coats the pipes may otherwise burn. When repairing the refrigerating cycle, take the following measures. 1) Be attentive to fire around the cycle. When using a gas stove, etc., be sure to put out fire before work; otherwise the oil mixed with refrigerant gas may catch fire. 2) Do not use a welder in the closed room. When using it without ventilation, carbon monoxide poisoning may be caused. 3) Do not bring inflammables close to the refrigerant cycle, otherwise fire of the welder may catch the inflammables.
❗ Refrigerant	The refrigerant used by this hot water module is the R410A.
	Check the used refrigerant name and use tools and materials of the parts which match with it. For the products which use R410A refrigerant, the refrigerant name is indicated at a position on the outdoor unit where is easy to see. To prevent miss charging, the route of the service port is changed from one of the former R22.
	For an 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.
	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.
	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.
	When recharging the refrigerant in the refrigerating cycle, do not mix the refrigerant or air other than R410A into the specified refrigerant. If air or others is mixed with the refrigerant, abnormal high pressure generates in the refrigerating cycle resulted in cause of injury due to breakage.
	After installation work, check the refrigerant gas does not leak. If the refrigerant gas leaks in the room, poisonous gas generates when gas touches to fire such as fan heater, stove or cocking stove though the refrigerant gas itself is innocuous.
	Never recover the refrigerant into the outdoor unit. When the equipment is moved or repaired, be sure to recover the refrigerant with recovering device. The refrigerant cannot be recovered in the outdoor unit; otherwise a serious accident such as breakage or injury is caused.
❗ Assembly / Wiring	After repair work, surely assemble the disassembled parts, and connect and lead the removed wires as before. Perform the work so that the cabinet or panel does not catch the inner wires. If incorrect assembly or incorrect wire connection was done, a disaster such as a leak or fire is caused at user's side.
❗ Insulator check	After the work has finished, be sure to use an insulation tester set (500 VMΩ) 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 fs side.
❗ Ventilation	When the refrigerant gas leaks during work, execute ventilation. If the refrigerant gas touches to a fire, poisonous gas generates. A case of leakage of the refrigerant and the closed room full with gas is dangerous because a shortage of oxygen occurs. Be sure to execute ventilation.
❗ Compulsion	When the refrigerant gas leaks, find out the leaked position and repair it surely. If the leaked position cannot be found out and the repair work is interrupted, pump-down and tighten the service valve, otherwise the refrigerant gas may leak into the room. The poisonous gas generates when gas touches to fire such as fan heater, stove or cocking stove though the refrigerant gas itself is innocuous. When installing equipment which includes a large amount of charged refrigerant in a sub-room, it is necessary that the concentration does not the limit even if the refrigerant leaks. If the refrigerant leaks and exceeds the limit concentration, an accident of shortage of oxygen is caused.
	Tighten the flare nut with a torque wrench in the specified manner. Excessive tighten of the flare nut may cause a crack in the flare nut after a long period, which may result in refrigerant leakage.
	Nitrogen gas must be used for the airtight test.
	The charge hose must be connected in such a way that it is not slack.
	For the installation / moving / reinstallation work, follow to the Installation Manual. If an incorrect installation is done, a trouble of the refrigerating cycle, water leak, electric shock or fire is caused.

ⓘ **Check after repair**	Once the repair work has been completed, check for refrigerant leaks, and check the insulation resistance and water drainage. Then perform a trial run to check that the 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. • Connect the pipes surely and there is no leak of refrigerant. • The valve is opened. Running the compressor under condition that the valve closes causes an abnormal high pressure resulted in damage of the parts of the compressor and etc. and moreover if there is leak of refrigerant at connecting section of pipes, the air is sucked and causes further abnormal high pressure resulted in burst or injury.
ⓘ **Check after reinstallation**	Only a qualified installer (*1) or qualified service person (*1) is allowed to relocate the 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. 1) The earth wire is correctly connected. 2) The power cord is not caught in the product. 3) There is no inclination or unsteadiness and the installation is stable. If check is not executed, a fire, an electric shock or an injury is caused.
	When carrying out the pump-down work shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air, etc. to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in 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.
	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.
	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 pump-down work shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air, etc. to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in repture, injury, etc.

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

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.

Domestic Hot Water Installation Example

Typical Installations examples include –
- Office use, where there is a requirement for DHW, such as small canteen or Rest
- Apartment block, where there is a requirement for DHW, such as kitchen, Shower and
- 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 under-floor heating circuits.
- Small Businesses, for example coffee shops, hairdressers etc, where there is a requirement for a single heating solution.

Connectable units

VRF products

- The outdoor unit which is connectable to "Hot Water Module" is SMMS-i, SMMS-e, SHRM-e, and MiNi-SMMS-e.
- The system does not work when it connect to "MiNi-SMMS","SMMS(5,6HP)" and "SHRM-i.
- BMS units can not be connected with these units.

2. SPECIFICATION

Model				MMW-AP0271LQ-E	MMW-AP0561LQ-E
Heating capacity *1			(kW)	8.0	16.0
Electical characteristics	Power supply *2			1 phase 50Hz 230V (220-240V)	
	Running current		(A)	0.08	0.08
	Power consumption		(W)	14	14
Appearance				Zinc hot dipping steel plate	
Dimention	Unit	Hight	(mm)	580	
		Width (leg inclued)	(mm)	400 (467)	
		Depth	(mm)	250	
	Packed *3	Hight	(mm)	357	
		Width	(mm)	638	
		Depth	(mm)	833	
Weight	Unit		(kg)	17.8	20.3
	Packed		(kg)	23	25
Design Pressure	Refrigerant side		(Mpa)	3.73	
	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	(°CWB)	23 or less	
			RH(%)	30-85	
		Outdoor (SMMS-i) (at heating)	(°CWB)	-20 to 19	
		Outdoor (SMMS-e) (at heating)	(°CWB)	-25 to 19 *4	
		Outdoor (SHRM-e) (at heating)	(°CWB)	-25 to 28 *4	
		Outdoor (MiNi-SMMS-e) (at heating)	(°CWB)	-20 to 19	
	Water inlet side		(°C)	15 or more and 45 or less	
	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	
	Refrigerat 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 : entering condenser water temp. 30°C leaving condenser water temp. 35°C Outdoor air temp. 7°CDB / 6°CWB
 The standard piping means that mian pipe length is 5m, nranching 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 Low ambient heating (-20°C or less) for extended periods of time is not allowed.

Model				MMW-AP0271LQ-TR	MMW-AP0561LQ-TR
Heating capacity *1			(kW)	8.0	16.0
Electical characteristics	Power supply *2			1 phase 50Hz 230V (220-240V)	
	Running current		(A)	0.08	0.08
	Power consumption		(W)	14	14
Appearance				Zinc hot dipping steel plate	
Dimention	Unit	Hight	(mm)	580	
		Width (leg inclued)	(mm)	400 (467)	
		Depth	(mm)	250	
	Packed *3	Hight	(mm)	357	
		Width	(mm)	638	
		Depth	(mm)	833	
Weight	Unit		(kg)	17.8	20.3
	Packed		(kg)	23	25
Design Pressure	Refrigerant side		(Mpa)	3.73	
	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	(˚CWB)	23 or less	
			RH(%)	30-85	
		Outdoor (SMMS-i) (at heating)	(˚CWB)	-20 to 19	
		Outdoor (SMMS-e) (at heating)	(˚CWB)	-25 to 19 *4	
		Outdoor (SHRM-e) (at heating)	(˚CWB)	-25 to 28 *4	
		Outdoor (MiNi-SMMS-e) (at heating)	(˚CWB)	-20 to 19	
	Water inlet side		(˚C)	15 or more and 45 or less	
	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	
	Refrigerat 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 : entering condenser water temp. 30˚C leaving condenser water temp. 35˚C Outdoor air temp. 7˚CDB / 6˚CWB
  The standard piping means that mian pipe length is 5m, nranching pipe length is 2.5m of branch piping connected with a 0 meter height.
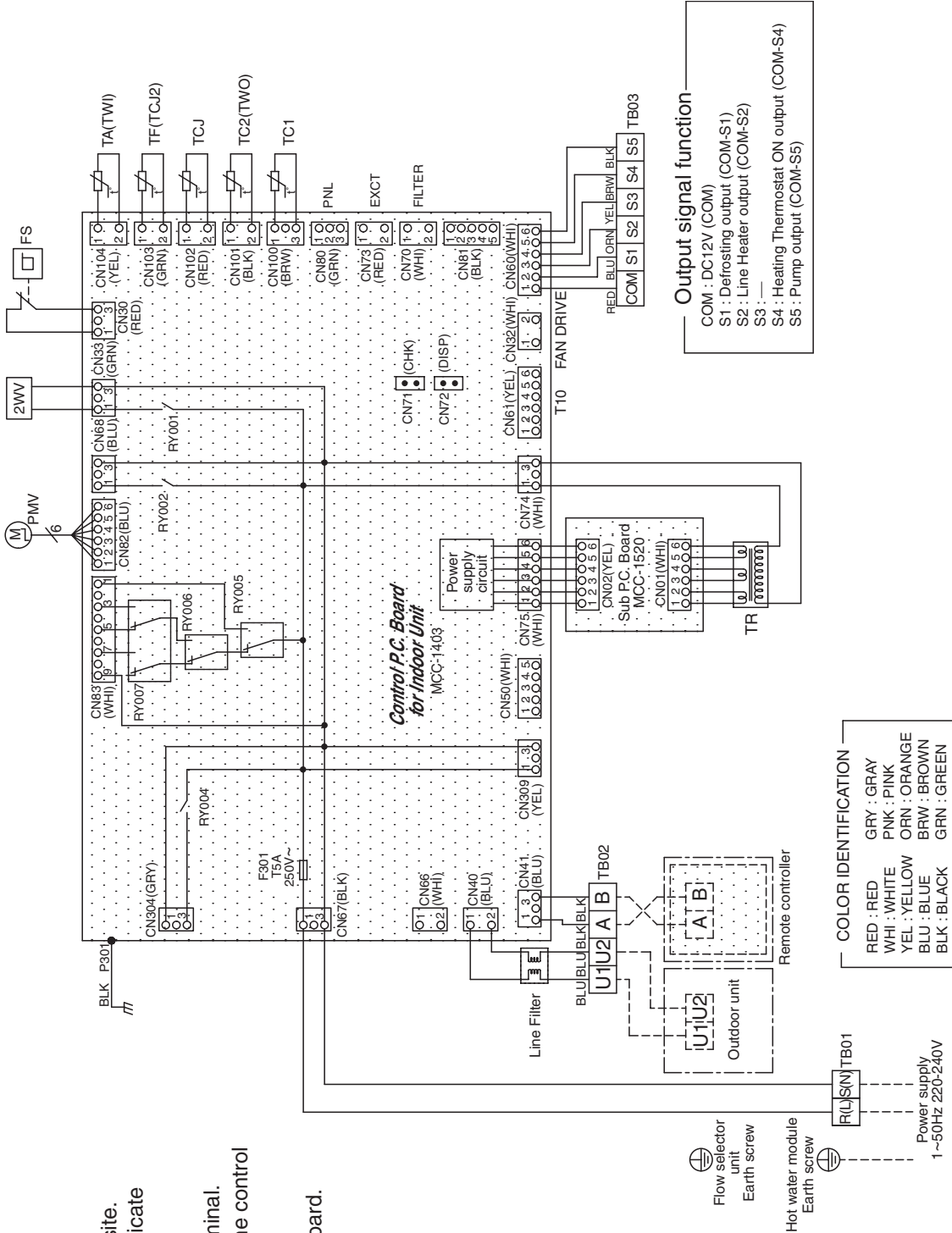*2 The source voltage must not fluctuate more than ±10%.
*3 The unit is packed in a sideways state.
*4 Low ambient heating (-20˚C or less) for extended periods of time is not allowed.

3. WIRING DIAGRAMS

Output signal function

COM : DC12V (COM)
S1 : Defrosting output (COM-S1)
S2 : Line Heater output (COM-S2)
S3 : —
S4 : Heating Thermostat ON output (COM-S4)
S5 : Pump output (COM-S5)

COLOR IDENTIFICATION

RED : RED	GRY : GRAY
WHI : WHITE	PNK : PINK
YEL : YELLOW	ORN : ORANGE
BLU : BLUE	BRW : BROWN
BLK : BLACK	GRN : GREEN

1. Broken line indicate the wiring at site.
   Long dashed short dashed line indicate the accessories.
2. ☐ indicates the terminal block.
   —○～ indicates the connection terminal.
   ◎ ○ indicates the connector on the control P.C. board.
3. ⏚ indicates the protection ground.
4. ⋯⋯ indicates the control P.C. board.

Symbol	Parts Name
CN**	Connector
RY001	2Way Valve Relay
F301	Fuse
PMV	Pulse Motor Valve
TB01,02,03	Terminal Block
TC1,TCJ,TF	Temp sensor
TC2,TA	Temp sensor
TR	Transformer
2WV	2Way Valve
FS	Flow Switch

4. PARTS RATING

Model MMW-	AP0271LQ-E	AP0271LQ-TR	AP0561LQ-E	AP0561LQ-TR
Transformer	TT-13			
Flow switch	VK320M, Cap color Blue		VK320M, Cap color Black	
Pulse motor	EFM-MD12TF-1			
Pulse motor valve	EDM-B40YGTF-3		EDM-B60YGTF-1	
2 way valve coil	FQ-G593, AC220-240V 50/60Hz, Lead wire length 800 mm			
2 way valve body	FDF2A88			
TWI (TA) 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			
TWO (TC2) 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			
TCJ2 (TF) sensor	DIA 6 size lead wire length:1000 mm Vinyl tube (Gray), connector color Green			

5. REFRIGERANT CYCLE DIAGRAM
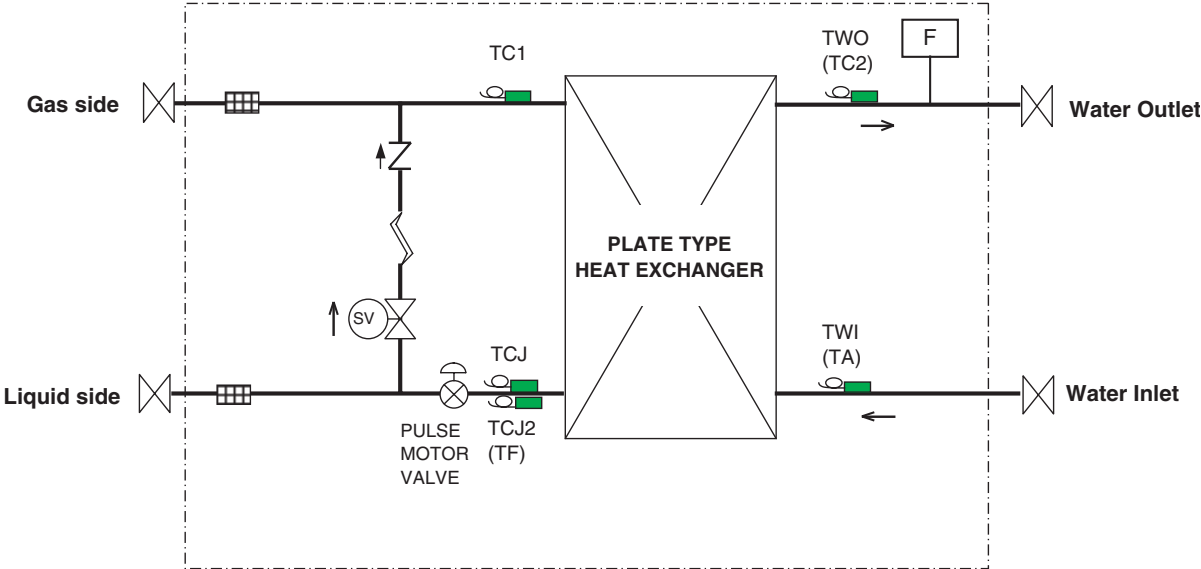
Symbol						
	SV		↑Z	▦	▬⌐	F
	Solenoid valve	Capillary tube	Check valve	Strainer	Tempe. sensor	Flow switch

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. Indoor fan speed and air flow direction control availability settings Settings such as indoor fan speed and air flow direction control availability are replaced on the basis of EEPROM data. 3. 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. | Remote controller command	Control outline
---	---
STOP	Hot water module shutdown
HEAT	Heating operation		Ts: Temperature setting
3	Water outlet temperature control	1. Adjustment range - remote controller temperature setting (˚C) |	HEAT
---	---
Wired type	25~50		
4	Water temperature control	After heating start, water temperature is controled the follwing tasks; Themal OFF with the following conditions. 1) I zone continued for 10 minutes. 2) The zone become J zone. 3) When TS=TWI 4) When state TWI ≥ 45˚C continued for 1 minute, or state TWI ≥ 44˚C and TWO ≥ 46˚C continued for 1 minute 	TWO: Water outlet temperature TWI: Water inlet temperature

No.	Item	Specification	Remarks
5	Heater control	1. While the heating thermal ON, the heater relay is output by difference between Ts and TWI, and difference between Ts and TWO, Ts and TG. Start condition: A and B as shown on the right, Table 1 or Table 2 Release condition: A or B as shown on the right, Table 1 or Table 2 2. In case of Ts > 45°C, the heater relay is output as shown below by the difference between Ts and TWO. 	TG: Satisfaction temperature of discharge pressure

6	Water Heat exchanger frost prevention	As the following description, the pump heater is controlled based upon the detected temperature of TC1 sensor, TCJ sensor, TCJ2 sensor, TWO sensor, and TWI sensor, regardless of Start/Stop operation.
		1) Pump ON condition
		  (1) When any one of temperature of TC1 sensor, TCJ sensor, TCJ2 sensor, TWO sensor or TWI sensor decreased below 5°C
		  (2) When TC1 < 10°C and TCJ-TC1 ≥ 5°C
		2) Pump OFF condition
		  When all the temperature of TC1 sensor, TCJ sensor, TCJ2 sensor, TWO sensor, and TWI sensor increased above 12°C
		3) Heater ON condition
		  (1) When 65 seconds progressed after the pump was OFF, TWI or TWO decreased below 15°C
		4) Heater OFF condition
		  The state TWI or TWO ≥ 15°C continued for 2 minutes or more.
			TC1: Gas Temperature
			TCJ: Liquid Temperature
			TCJ2: Liquid Temperature

7	Cooling oil (refrigerant) recovery control	While the outdoor unit is recovering cooling oil (refrigerant), the hot water modules perform the following control tasks: 1) Close the hot water module PMV to a certain degree. 2) Engage in recovery control for a specified period of time and return to stand by at the end of this period upon terminating the control. 3) Open the SV valve throughout the recovery control period.	• Recovery operation normally takes place roughly every 2 hours.

8	Heating refrigerant (oil) recovery control	While the outdoor unit is recovering heating refrigerant (oil), the hot water modules perform the following control tasks:
		1) Open the indoor PMV to a certain degree.
		2) Control the indoor fan according to the operation mode.
		  Indoor units operating in heating thermostat ON / OFF state]
		  Non-operational hot water modules]
		3) Terminate the recovery operation depending on the TWO temperature reading. The timing of termination is determined by each indoor unit.
			• Recovery operation normally takes place roughly every hour.
			• The opening position of the hot water module PMV depending on capacity of the hot water modules.

Table 1

	Ts – TWI (A)	Ts – TWO (B)
P1	7°C	2°C
Q1	5°C	0°C

Table 2

	Ts – TWO (A)	Ts – TG (B)
P1	2°C	−11°C
Q1	0°C	−14°C

No.	Item	Specification	Remarks
9	Defrosting control	While the outdoor unit is engaged in defrosting control, the hot water modules perform the following control tasks: 1) Close the hot water module PMV to a certain degree and open the SV valve. As defrosting control comes to an end, it gives way to heating refrigerant (oil) recovery control. (For control details, see "Heating refrigerant (oil) recovery control" above.)	• For defrosting commencement conditions, see Outdoor Unit Service Manual.
10	Short intermittent operation compensation control	1. For 5 minutes after startup, the system is forced to continue operating even if it reaches the thermostat OFF region. 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.	
11	Operation standby Heating standby	<Operation standby> .... Displayed on remote controller 1. When any of the DN codes listed below is displayed • "P05" - Detection of an open phase in the power supply wiring • "P10" - Detection of indoor flooding in at least one indoor unit with the exception of the hot water module. • "L30" - Detection of an interlock alarm in at least one indoor unit 2. The system is engaged in a heat refrigerant (oil) recovery operation. <Heating standby> .... Displayed on remote controller 1. Normal thermostat OFF • During heating, the indoor unit goes thermostat OFF as the heating temperature setting is reached. 2. Forced thermostat OFF • "HEAT" operation is unavailable because at least one indoor unit is operating in "COOL / DRY" mode .	• "OPERATION STANDBY ⏻" displayed • "HEATING STANDBY ❋" displayed
12	Selection of central control mode	1. The range of operations that can be performed via an indoor unit remote controller can be determined through the setting of the central controller. 2. Setting details TCC-Link central control	• In the case of a wired remote controller, "CENTRAL CONTROL IN PROGRESS ▤" is displayed (lit up) while in central control mode. • The display blinks when a control function inaccessible to a remote controller is chosen.

Table for No. 12:

Operation via TCC-Link central control	Operation via RBC-AMT32E						RBC-AMT32E display
	Start / stop selection	Operation mode selection	Timer setting	Temperature setting	Fan speed setting	Air flow direction setting	
Individual	O	O	O	O	O	O	
Central 1	×	O	×	O	O	O	"CENTRAL CONTROL IN PROGRESS"
Central 2	×	×	×	×	O	O	
Central 3	O	×	O	×	O	O	
Central 4	O	×	O	O	O	O	

(O: Accessible   ×: Inaccessible)

7. APPLIED CONTROL AND FUNCTIONS

7-1. Hot Water Module printed circuit board
MCC-1403

Labels (left side, top to bottom):
- Remote controller communication LED D203 (Red)
- HA(T10) CN61 (Yellow), DC12V
- Output signal function CN60 (White), DC12V
- Remote controller CN41 (Blue), DC20V
- Indoor/Outdoor communication CN40 (Blue)
- PMV output CN82 (Blue), DC12V
- Power supply LED of microprocessor D02 (Red)
- Power supply transformer (secondary side) CN75 (White), AC11/14/20V
- Power supply CN67 (Black), AC220 – 240V
- Power supply transformer (primary side) CN74 (White), AC220 – 240V
- 2 way valve CN33 (Green), AC220 – 240V

Labels (right side, top to bottom):
- DISP CN72 (White), DC5V
- CHK CN71 (White), DC5V
- TC1 sensor CN100 (Brown), DC5V
- TWO (TC2) sensor CN101 (Black), DC5V
- TCJ sensor CN102 (Red), DC5V
- Flow switch CN30 (Red), DC12V
- TCJ2 (TF) sensor CN103 (Green), DC5V
- TWI (TA) sensor CN104 (Yellow), DC5V

7-2. Optional connector specifications of hot water module P.C. board

Function	Connector No.	Pin No.	Specification	Remarks
HA	CN61	1	Start / stop input	Start / stop input for HA (J01: In place / Removed = Pulse input (factory default) / Step input)
		2	0 V (COM)	—
		3	Remote controller disabling input	Enables / disables start / stop control via remote controller
		4	In-operation output	ON during operation (HA answerback signal)
		5	DC12 V (COM)	—
		6	Alarm output	ON while alarm ON
Option output (*1)	CN60	1	DC12V(COM)	—
		2	Defrosting output	ON while outdoor unit ON
		3	Heater output	—
		4	—	—
		5	Heating thermostat output	ON while heating thermostat ON (compresor ON)
		6	Pump output	—
External trouble input	CN80	1	DC12 V (COM)	Generates test code L30 and automatically shuts down air conditioner (only if condition persists for 1 minute)
		2	DC12 V (COM)	
		3	External trouble input	
CHK Operation check	CN71	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	CN72	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 (CN 60) is equipped.
Refer to **3. WIRING DIAGRAM**.

7-3. 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 singly without communication with the remote controller or the outdoor unit. This function can be used regardless of operation or stop of the system. However, if using this function for a long time, a trouble of the equipment may be caused. Limit using this function within several minutes.

[How to operate]

1) Short-circuit CHK pin (CN71 on the hot water module P.C. board).
   The operation mode differs according to the hot water module status in that time.
   Normal time: Both float SW and fan motor are normal.
   Abnormal time: Either one of float SW or fan motor is abnormal.

2) Restricted to the normal time, if short-circuiting DISP pin (CN72 on the hot water module P.C. board) in addition to short-circuit of CHK pin (CN71 on the hot water module P.C. board), the minimum opening degree (30 pls) can be set to the hot water module PMV only.
   When open DISP pin, the maximum opening degree (1500 pls) can be obtained again.

[How to clear]

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

	Short-circuit of CHK pin		
	Normal time		Abnormal time
	DISP pin open	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 (CN71 on hot water module P.C. board) and DISP pin (CN72 on hot water module P.C. board), refer to the hot water module P.C. board MCC-1403.

7-4. Method to set hot water module function DN code

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

<Procedure> To be performed only when system at rest

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

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

2 Each time the "Select unit" side of the UNIT LOUVER 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 TEMP. button to select the CODE No. (DN code) of the desired function.

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

5 Push the SET 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 SET button is pushed, the system returns to normal off state.
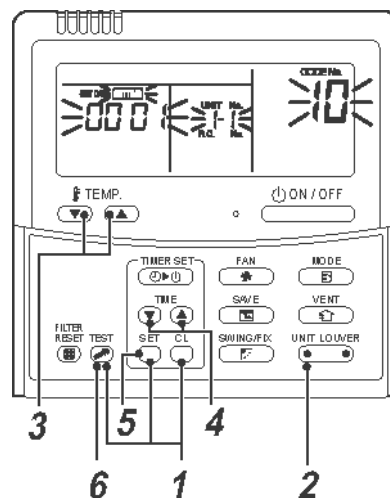
NOTE: In case of the hot water module, remove the front panel so that P.C. board is visible and then check the D02 LED at the center of P.C. board goes on to judge whether DN is being set or not.
The LED goes on while DN code is being set.

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 0099: Unfixed		0099: Unfixed
10	Type	0060: Hot Water Module * Refer to Type CODE No. [10]		Depending on model type
11	Indoor unit capacity	0000: Unfixed to 0001 to 0040 * Refer to Indoor Unit Capacity CODE No. [11]		According to capacity type
12	Line address	0001: No.1 unit to 0030: No.30 unit		0099: Unfixed
13	Indoor unit address	0001: No.1 unit to 0064: No.64 unit		0099: Unfixed
14	Group address	0000: Individual 0002: Follower unit of group	0001: Header unit of group	0099: Unfixed
28	Automatic restart of power failure	0000: None	0001: Restart	0000: None
2E	HA terminal (CN61) select	0000: Usual 0002: Fire alarm input	0001: Leaving-ON prevention control	0000: Usual (HA terminal)
60	Timer setting (wired remote controller)	0000: Available (can be performed)	0001: Unavailable (cannot be performed)	0000: Available

Type
DN code "10"

Value	Type	Model
0060*	Hot Water Module	MMW-AP✱✱✱✱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

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

7-5. 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

Line (system) address	1	1	1		2	2
Indoor unit address	1	2	3		1	2
Group address	1 Header unit	2 Follower unit	2 Follower unit		2 Follower unit	2 Follower unit
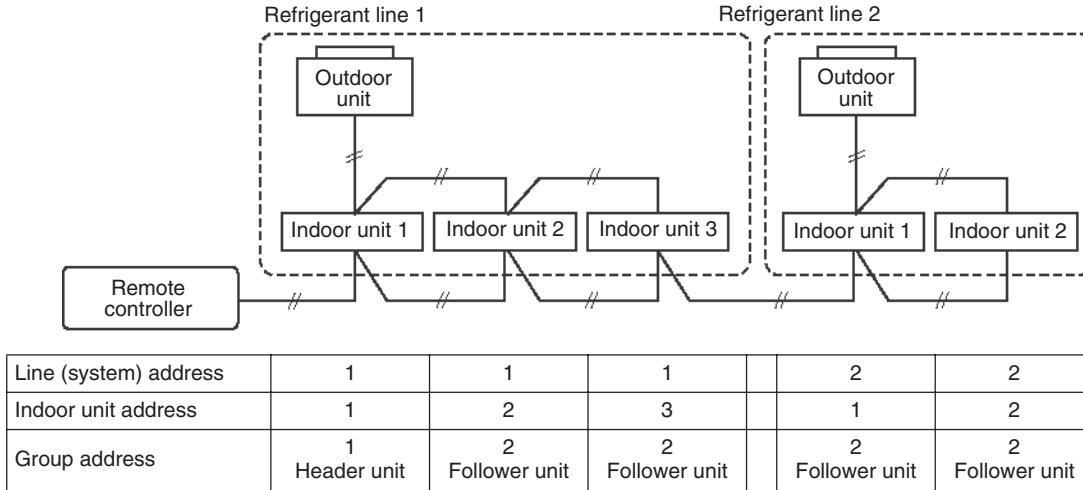
In the example above, disconnect the remote controller connections between the indoor units and connect a wired remote controller to the target unit directly before address setting.
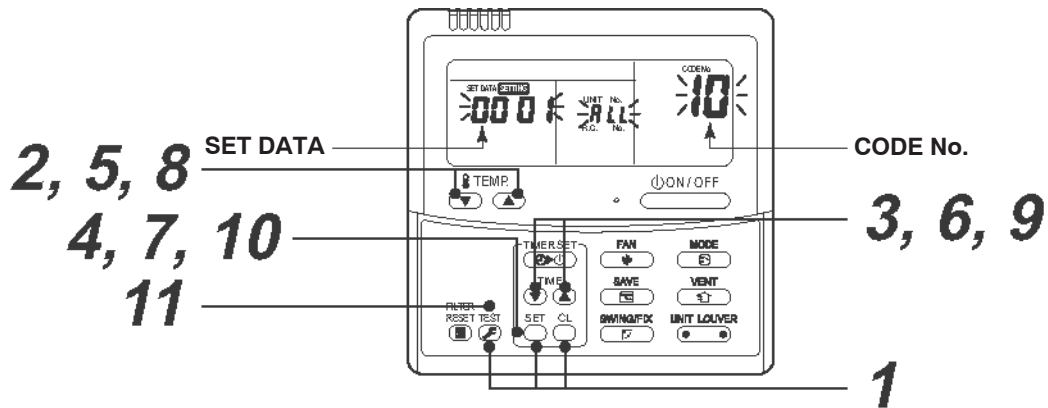
Pair the indoor unit to set and the remote controller one-to-one.

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 *l2*.

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 ⊙ᴺᴱᵀ button.

(It is OK if the display turns on.)

<Indoor unit address>

5 Push the TEMP. (▼) / (▲) buttons repeatedly to set the CODE No. to *l3*.

6 Push the TIME (▼) / (▲) buttons repeatedly to set an indoor unit address.

7 Push the ⊙ˢᴱᵀ button.

(It is OK if the display turns on.)

<Group address>

8 Push the TEMP. (▼) / (▲) buttons repeatedly to set the CODE No. to *l4*.

9 Push the TIME (▼) / (▲) buttons repeatedly to set a group address. If the indoor unit is individual, set the address to *0000* ; header unit, *000 l* ; follower unit, *0002* .

10 Push the ⊙ˢᴱᵀ button.

(It is OK if the display turns on.)

11 Push the ⊙ᵀᴱˢᵀ button.

The address setting is complete.
(SETING flashes. You can control the unit after SETING has disappeared.)


NOTE

1. **Do not use address numbers 29 or 30 when setting system addresses using the remote controller.**
   These 2 address numbers cannot be used on outdoor units and the CODE No. [E04] (Indoor / outdoor communication trouble) will appear if they are mistakenly used.
2. **If you set addresses to indoor units in 2 or more refrigerate lines manually using the remote controller and will control them centrally, set the header outdoor unit of each line as below.**
   - 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.)
3. **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 see the indoor unit address of an indoor unit which you know the position of

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

1 Starts running

2
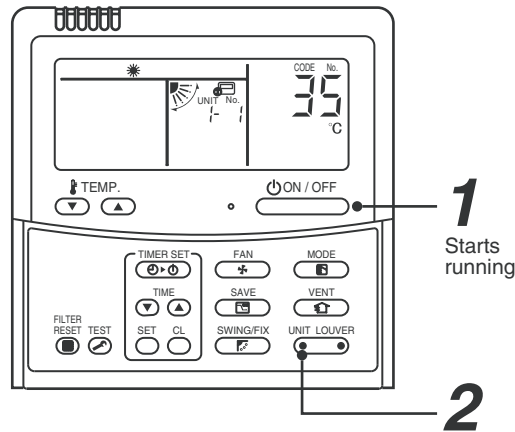
(Execute it while the units are running.)

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

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

A unit numbers $1-1$ is indicated on the LCD (it will disappear after a few seconds). The indicated number shows the system address and indoor unit address of the unit.
When 2 or more indoor units are connected to the remote controller (group-controlled units), a number of other connected units appears each time you push the UNIT LOUVER button (left side of the button).

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 find an indoor unit's position from its address

▼ When checking unit numbers controlled as a group
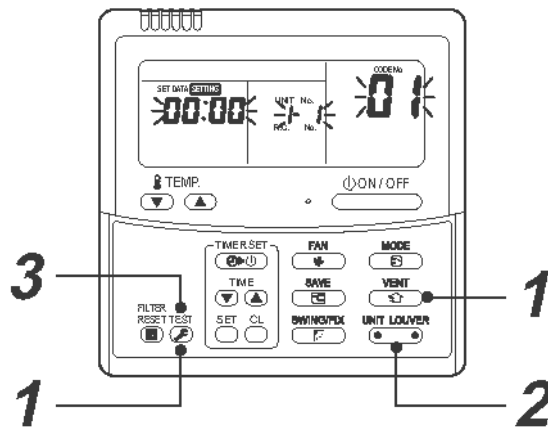
(Execute it while the units are stopped.)

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

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

  • ⠁⌊⌊ appears on UNIT No. on the LCD display.

  • The fans and louvers of all the indoor units in the group are activated.

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

  • The first-indicated unit number is the address of the 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.

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)
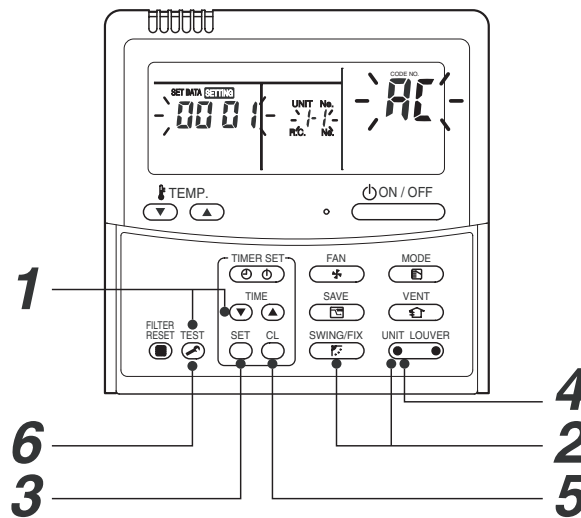
(Execute it while the units are stopped.)

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. **RC** (Address Change) are indicated on the LCD display.
(Select an outdoor unit.)

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

3 Push the SET button to confirm the system address selection.
   • The address of an indoor unit connected to the selected refrigerant line is indicated on the LCD display and its fan and louvers are activated.

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

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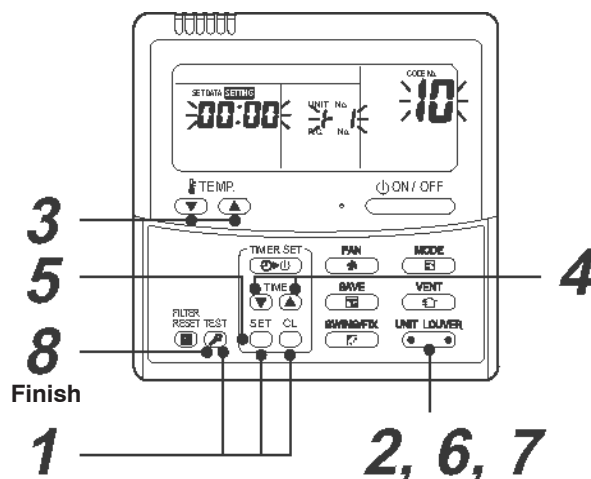
◆ Changing the indoor unit address using a remote controller

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

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

(Execute it while the units are stopped.)

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

(If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)

2 Push the $\substack{\text{UNIT LOUVER}}$ 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 ⊟ 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 $\substack{\text{UNIT LOUVER}}$ 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 $\substack{\text{UNIT LOUVER}}$ 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.

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.

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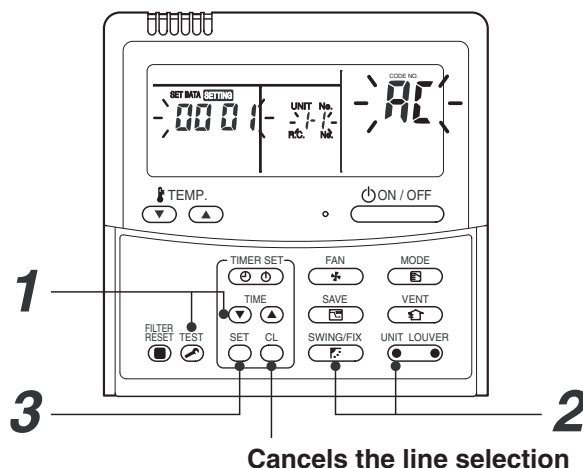
If no number appears on UNIT No., no outdoor unit exists on the line. Push ⭕ CL button and select another line following step *2*.

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

3 **Push the ⭕ SET 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.)
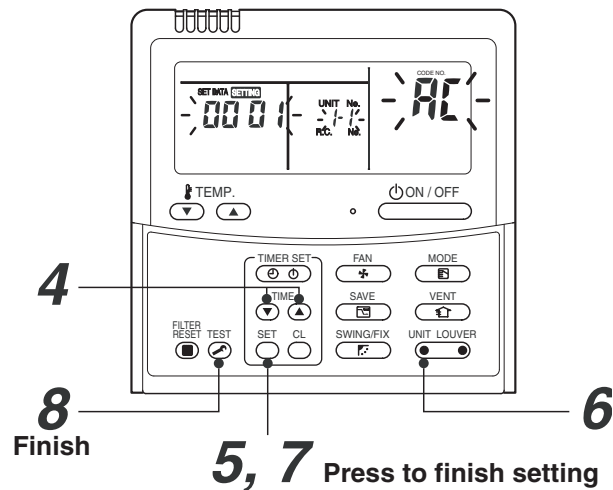
4 Push the TIME ▼ / ▲ buttons repeatedly to change the value of the indoor unit address in SET DATA.
Change the value in SET DATA to that of a new address.

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.

◆ Check code clearing function

How to clear the check code using the wired remote controller

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

1 Push and hold the ⟳, and ⟲ 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 ⟲ to return the display to normal.
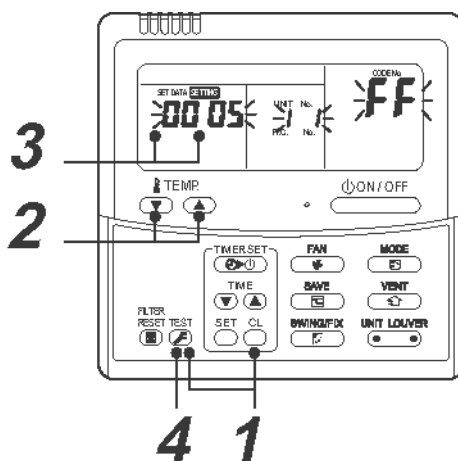
▼ **Clearing a check code of the indoor unit**
   Push the ⟳ON/OFF button on the remote controller.
   (Only the check code of the indoor unit controlled by the remote controller will be cleared.)

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

The following monitoring function is available if the remote controller of RBC-ATM32E is used.
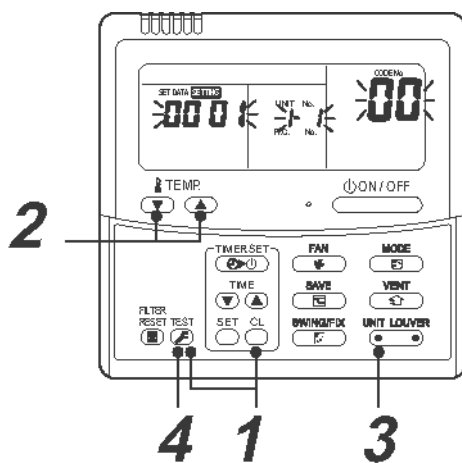
▼ **Content**

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 temperature of CODE No. 🔲🔲 appears at first.

2 Push the 🌡TEMP. button to change to CODE No. of the item to monitor. Refer to the following table for CODE No.

3 Push the UNIT LOUVER 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 🕖 to return the display to normal.

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.

◆ Target outdoor unit for hot water module

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

	CODE No.	Data	Format	Unit	Remote controller display example
Hot water module *1	00	Water inlet temperature (in control)	×1	˚C	
	02	Water inlet Temperature (TWI (TA))	×1	˚C	
	03	Heat exchanger Temperature (TCJ)	×1	˚C	[0024]=24 ˚C
	04	Water outlet Temperature (TWO (TC2))	×1	˚C	
	05	Heat exchanger Temperature (TC1)	×1	˚C	
	06	Heat exchanger temperature (TCJ2 (TF))	×1	˚C	
	08	PMV	×1/10	pls	[0150]=1500 pls
	F9	Air Suction Temperature of direct expansion coil (TSA)	×1	˚C	[0024]=24 ˚C
	FA	Outdoor Air Temperature (TOA)	×1	˚C	
System data	0A	Number of connected indoor units	×1	–	[0048]=48
	0B	Total horse power of connected indoor units	×10	HP	[0415]=41.5HP
	0C	Number of connected outdoor units	×1	–	[0004]=4
	0D	Total horse power of outdoor units	×10	HP	[0420]=42HP

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	CODE No.				Data	Format	Unit	Remote controller display example
	U1	U2	U3	U4				
Individual data 1 of outdoor unit *2	10	20	30	40	Detection pressure of high-pressure sensor (Pd)	×100	MPa	[0123]=1.23 MPa
	11	21	31	41	Detection pressure of low-pressure sensor (Ps)	×100	MPa	
	12	22	32	42	Discharge temperature of compressor 1 (Td1)	×1	˚C	
	13	23	33	43	Discharge temperature of compressor 2 (Td2)	×1	˚C	
	14	24	34	–	Discharge temperature of compressor 3 (Td3)	×1	˚C	[0024]=24 ˚C
	15	25	35	45	Suction Temperature (TS)	×1	˚C	
	16	26	36	46	Coil Temperature 1 (TE1)	×1	˚C	
	17	27	37	–	Coil Temperature 2 (TE2)	×1	˚C	
	18	28	38	48	Liquid Temperature (TL)	×1	˚C	
	19	29	39	49	Outdoor Temperature (TO)	×1	˚C	
	1A	2A	3A	4A	PMV1 + 2	×1	pls	[0050]=500 pls
	1B	2B	3B	–	PMV4	×1	pls	
	1C	2C	3C	4C	Current of compressor 1 (I1)	×10	A	
	1D	2D	3D	4D	Current of compressor 2 (I2)	×10	A	[0135]=13.5 A
	1E	2E	3E	–	Current of compressor 3 (I3)	×10	A	
	1F	2F	3F	4F	Outdoor fan current (IFan)	×10	A	

*1 In the case of group connection, only the header indoor unit data can be displayed.
*2 The upper digit of CODE No. indicates the outdoor unit No.

	CODE No.				Data	Format	Unit	Remote controller display example
	U1	U2	U3	U4				
Individual data 2 of outdoor unit *3	50	60	70	80	Rotation of compressor 1	×10	rps	[0642]=64.2 rps
	51	61	71	81	Rotation of compressor 2	×10	rps	
	52	62	72	–	Rotation of compressor 3	×10	rps	
	53	63	73	83	Outdoor fan mode	×1	Mode	[0058]=Mode 58
	54	64	74	84	Heat sink temperature of compressor IPDU1	×1	˚C	[0024]=24 ˚C
	55	65	75	85	Heat sink temperature of compressor IPDU2	×1	˚C	
	56	66	76	–	Heat sink temperature of compressor IPDU3	×1	˚C	
	57	67	77	87	Heat sink temperature of outdoor fan IPDU	×1	˚C	
	58	–	–	–	In heat/cool collecting control *4	0: Normal 1: In collecting control		[0010] = In heat collecting control [0001] = In cool collecting control
	59	–	–	–	Pressure release *4			[0010] = In pressure release control
	5A	–	–	–	Discharge temperature release *4			[0001] = In discharge temperature release control
	5B	–	–	–	Terminal unit release (U2 / U3 / U4 outdoor unit) *4	0: Normal 1: In release control		[0100] = In U2 outdoor unit release control [0010] = In U3 outdoor unit release control [0001] = In U4 outdoor unit release control
	5F	6F	7F	8F	Horse power of outdoor unit	×1	HP	[0016]=16HP

*3 The upper digit of CODE No. minus 4 indicates the outdoor unit number.
Example : 5∗ minus 4 is 1∗.
1∗, 5∗... U1 outdoor unit (Header unit)
2∗, 6∗ ... U2 outdoor unit (follower unit 1)
3∗, 7∗ ... U3 outdoor unit (follower unit 2)
4∗, 8∗ ... U4 outdoor unit (follower unit 3)

*4 Only CODE No. 5∗ of U1 outdoor unit (Header unit) is displayed.

\<SMMS-e\>

	CODE No.	Data name	Display format	Unit	Remote controller display example
Indoor unit data *2	00	Room temperature (Use to control)	×1	°C	[0024]=24°C
	01	Room temperature (Remote controller)	×1	°C	
	02	Indoor suction air temperature (TA)	×1	°C	
	03	Indoor coil temperature (TCJ)	×1	°C	
	04	Indoor coil temperature (TC2)	×1	°C	
	05	Indoor coil temperature (TC1)	×1	°C	
	06	Indoor discharge air temperature (TF) *1	×1	°C	
	08	Indoor PMV opening	×1/10	pls	[0150]=1500pls
	F3	Filter sign time	×1	h	[2500] = 2500h
	F9	Suction temperature of air to air heat exchanger (TSA) *1	×1	°C	[0024] = 24°C
	FA	Outside air temperature (TOA) *1	×1	°C	
System data	0A	No. of connected indoor units	×1	unit	[0048]=48 units
	0B	Total horsepower of connected indoor units	×10	HP	[0415]=41.5HP
	0C	No. of connected outdoor units	×1	unit	[0003]=3 units
	0D	Total horsepower of outdoor units	×10	HP	[0420]=42HP

	CODE No.			Data name	Display format	Unit	Remote controller display example
	U1	U2	U3				
Outdoor unit individual data 1 *3	10	20	30	High-pressure sensor detention pressure (Pd)	×100	MPa	[0123] = 1.23MPa
	11	21	31	Low-pressure sensor detention pressure (Ps)	×100	MPa	
	12	22	32	Compressor 1 discharge temperature (TD1)	×1	°C	[0024] = 24°C
	13	23	33	Compressor 2 discharge temperature (TD2)	×1	°C	
	15	25	35	Outdoor coil temperature (TE1)	×1	°C	
	16	26	36	Outdoor coil temperature (TE2)	×1	°C	
	17	27	37	Outdoor coil temperature (TG1)	×1	°C	
	18	28	38	Outdoor coil temperature (TG2)	×1	°C	
	19	29	39	Outside ambient temperature (TO)	×1	°C	
	1A	2A	3A	Suction temperature (TS1)	×1	°C	
	1C	2C	3C	Suction temperature (TS3)	×1	°C	
	1D	2D	3D	Temperature at liquid side (TL1)	×1	°C	
	1E	2E	3E	Temperature at liquid side (TL2)	×1	°C	
	1F	2F	3F	Temperature at liquid side (TL3)	×1	°C	

	CODE No.			Data name	Display format	Unit	Remote controller display example
	U1	U2	U3				
Outdoor unit individual data 2 *4	50	60	70	PMV1 opening	×1	pls	[0500] = 500pls
	51	61	71	PMV3 opening	×1	pls	
	52	62	72	PMV4 opening	×1	pls	
	53	63	73	1 fan model : Compressor 1 curent (I1) / 2 fan model : Compressor 1 and Outdoor fan 1 current (I1)	×10	A	[0135] = 13.5A
	54	64	74	1 fan model : Compressor 2 and Outdoor fan 1 current (I2) / 2 fan model : Compressor 2 and Outdoor fan 2 current (I2)	×10	A	
	56	66	76	Compressor 1 revolutions	×10	rps	[0642] = 64.2rps
	57	67	77	Compressor 2 revolutions	×10	rps	
	59	69	79	Outdoor fan mode	×1	mode	[0058] = 58 mode
	5A	6A	7A	Compressor IPDU 1 heat sink temperature	×1	°C	[0024] = 24°C
	5B	6B	7B	Compressor IPDU 2 heat sink temperature	×1	°C	
	5D	6D	7D	Outdoor fan IPDU 1 heat sink temperature	×1	°C	
	5E	6E	7E	Outdoor fan IPDU 2 heat sink temperature	×1	°C	
	5F	6F	7F	Outdoor unit horsepower	×1	HP	[0016] = 16HP

	CODE No.	Data name	Display format	Unit	Remote controller display example
Outdoor unit individual data 3 *5	90	Heating/cooling recovery controlled	0: Normal / 1: Recovery controlled		[0010]=Heating recovery controlled / [0001]=Cooling recovery controlled
	91	Pressure release	0: Normal / 1: Release controlled		[0010]=Pressure release controlled
	92	Discharge temperature release			[0001]=Discharge temperature release controlled
	93	Follower unit release (U2/U3 outdoor units)			[0100]=U2 outdoor unit release controlled / [0010]=U3 outdoor unit release controlled / [0001]=U4 outdoor unit release controlled

*1 Only a part of indoor unit types is installed with the discharge air temperature sensor. This temperature is not displayed for other types.
*2 When the units are connected to a group, data of the header indoor unit only can be displayed.
*3 The first digit of an CODE No. indicates the outdoor unit number.
*4 The upper digit of CODE No. minus 4 indicates the outdoor unit number.
   Example : 5∗ minus 4 is 1∗.
   1∗, 5∗ ... U1 outdoor unit (Header unit)
   2∗, 6∗ ... U2 outdoor unit (Follower unit 1)
   3∗, 7∗ ... U3 outdoor unit (Follower unit 2)
5 Only the CODE No. 9 of U1 outdoor unit (Header unit) is displayed.

◆ LED display of circuit board

1. D02 (Red)
   - Lights up when the power is turned on (Microcomputer works)
   - Blinks at 1-second intervals (0.5-second): No EEPROM, or writing trouble
   - Blinks at 10-second intervals (5-second): No DISP mode
   - Blinks at 2-second intervals (1-second): Function change being set (EEPROM)
2. D203 (Red): Remote controller communication
   - The group header unit lights up for the first half 5 seconds while communicating with the remote controller
   - Blinks for the second half 5 seconds at 0.2-second intervals (0.1-second) during communication between group indoor header and follower

7-6. Test operation check

Test operation

```
                        ┌──────────────┐
                        │    START     │
                        └──────┬───────┘
                               │
    ┌──────────────────────────┤
    │                          ▼
    │              ┌───────────────────────────────┐ . . . . . Refer to "Test operation procedure"
    │              │ Test operation for one indoor │           of the indoor remote controller.
    │              │           unit                │
    │              └───────────────┬───────────────┘
    │                              ▼
    │              ┌───────────────────────────────┐ . . . . . The operation does not start for
    │              │      Operation starts         │           approximately 3 minutes after
    │              └───────────────┬───────────────┘           powering-on or stopping operation.
    │                              │
    │                              │          Note: After powering-on, it may
    │                              │                require up to 10 minutes to start
    │                              │                the operation due to the initial
    │                              │                communications of the system.
    │                              ▼
    │         ╱─────────────────────────────────────╲   NO   ┌──────────────────────────┐
    │        ⟨ Is cold air or hot air discharged?     ⟩─────▶│ Check the operating      │
    │        ⟨ Is hot water discharged? (Hot water     ⟩      │ status of the compressor.│
    │         ╲        module)                        ╱       └──────────────────────────┘
    │                       │ YES
    │                       ▼
    │         ╱─────────────────────────────────────╲   NO   ┌──────────────────────────┐
    │        ⟨  Is air circulation sufficient?        ⟩─────▶│ Check the direction of   │
    │        ⟨  Is water circulation sufficient?       ⟩      │ the louver.              │
    │         ╲     (Hot water module)                ╱       │ Check the pump, the      │
    │                       │ YES                             │ strainer and the air vent│
    └───────────────────────┤                                │ valve. (Hot water module)│
                            ▼                                 └──────────────────────────┘
              ┌───────────────────────────────┐ . . . . . Execute a test operation using
              │ Operate all the indoor units  │           "Start/Stop Function of the Indoor
              │          at once.             │           Unit from Outdoor Unit" in the
              └───────────────┬───────────────┘           "Service Support Function" section.
```

Test operation for every indoor unit in turn

Note 1

```
         ╱─────────────────────────────────────╲
        ⟨ Is there adequate temperature difference⟩  NO
        ⟨  between suction and discharge?          ⟩─────────────────────┐
        ⟨ Is there adequate temperature difference ⟩                     │
        ⟨  between water inlet and water outlet?    ⟩                     │
         ╲        (Hot water module)              ╱                      │
                       │ YES                                             │
                       ▼                                                 │
         ╱─────────────────────────────────────╲   NO   ┌───────────────┤
        ⟨  Is the operating voltage correct?     ⟩─────▶│ • Check power │
        ⟨  Indoor units   : 220-240 V ±10%        ⟩      │   voltage of  │
        ⟨  outdoor units : 380-415 V ±10%         ⟩      │   the main    │
         ╲                                       ╱       │   power supply.│
                       │ YES                             │ • Check the   │
```

Note 2
```
         ╱─────────────────────────────────────╲   NO   ┌──────────────────────────────┐
        ⟨     Is the operating current normal?    ⟩─────▶│ • Check the temperature load │
         ╲                                       ╱       │   of the indoor/outdoor units.│
```

Note 3
```
                       │ YES                             │ • Check the water flow rate  │
         ╱─────────────────────────────────────╲   NO   │   and them use isolating valve│
        ⟨    Is the operating pressure normal?    ⟩─────▶│   to adjust. (Hot water module)│
         ╲                                       ╱       │ • Check the pipe length and  │
                       │ YES                             │   refrigerant amount.        │
                       ▼                                 │ • Check the operating Hz of  │
              ┌──────────────────┐                       │   the compressor.            │
              │     Normal       │                       │ • Check the operation of the │
              └──────────────────┘                       │   outdoor fans.              │
                                                         │ • Check for abnormal sound in│
                                                         │   the outdoor unit.          │
        Notes 1-3 are on the next page.                  │   (Abnormal sound, etc. of   │
                                                         │   the compressor and other   │
                                                         │   components)                │
                                                         └──────────────────────────────┘
```

- Check power voltage of the main power supply.
- Check the cable size of the power supply.

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.

<SMMS-i>

Outdoor unit	MMY-MAP	0804*	1004*	1204*	1404*	1604*
Current value	(A)	23.5	25.5	28.5	33.2	36.5

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Outdoor unit	MMY-MAP	0806*	1006*	1206*	1406*	1606*	1806*	2006*	2206*
Current value	(A)	20.5	21.5	26.1	31.0	35.8	40.6	44.9	49.3

<SHRM-e>

Outdoor unit	MMY-MAP	0806*	1006*	1206*	1406*	1606*	1806*	2006*
Current value	(A)	21.5	26.1	31.0	35.8	40.6	44.9	49.3

<MiNi-SMMS-e>

Outdoor unit	MCY-MHP	0806*	1006*
Current value	(A)	17.0	20.0

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 temperatre (TL)	Compressor 1	Compressor 2	Compressor 3		Indoor	Outdoor	
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	30
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	30
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	30
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	30
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	30

*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.

\<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 temperatre (TL3)	Compressor 1	Compressor 2		Indoor	Outdoor
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
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/-	7/6

*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.

\<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 temperatre (TL3)	Compressor 1	Compressor 2		Indoor	Outdoor
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.

\<MiNi-SMMS-e\>

Outdoor unit MCY-MHP	Operating mode	Pressure (MPa)		Pipe surface temperature (°C)					Compressor drive revolution frequency (rps)	Indoor fan	Air temperature condition (DB/WB) (°C)	
		Pd	Ps	Discharge (TD)	Suction (TS1)	Indoor heat exchanger (TC)	Outdoor heat exchanger (TE)	Liquid temperatre (TL3)			Indoor	Outdoor
0806HS8	Cooling	3.0	0.9	82	14	11	41	28	62	High	27/19	35/-
	Heating	2.5	0.7	69	1	28	1	28	57	High	20/-	7/6
1006HS8	Cooling	3.3	0.9	90	14	10	41	26	82	High	27/19	35/-
	Heating	2.7	0.7	77	1	28	1	27	71	High	20/-	7/6

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

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

(2) Criteria for operating pressure

<SMMS-i>

Operating mode		Cooling	Heating
Indoor temperature (˚C)		18~32	15~32
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

<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

<MiNi-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

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

(3) On rotations of outdoor fans
Outdoor fans may rotate slowly to control pressure when cooling with low outer air temperature or heating with excessive load. For control content, see Outdoor Unit Service Manual.

8. TROUBLESHOOTING

8-1. Overview

(1) Before engaging in troubleshooting

    (a) Applicable models

        Super Module Multi (SMMS-i and SMMS-e) models
        Super Heat Recovery Multi (SHRM-e) models
        MiNi Super Module Multi (MiNi-SMMS-e) models
        (Indoor units: MMW-APOOO, Outdoor units: MMY-MAPOOO* and MCY-MHPOOO*)

    (b) Tools and measuring devices required

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

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

NO.	Behavior	Possible cause
1	A compressor would not start	• Could it just be the 3-minute delay period (3 minutes after compressor shutdown)? • Could it just be the hot water module having gone thermostat OFF ? • Could it just be the hot water module put on the timer ? • Could it just be the system going through initial communication ?
2	A pump would not start	• Could it just be the outdoor unit under cooling operation ? As the priority is usually given to operation of the indoor unit connected to the same outdoor unit, the hot water module is in the waiting status usually while the indoor unit works in cooling mode. • Could it just be out of the water temperature using range ? Hot water module is not possible to operat when water temperatue above 60˚C
3	An outdoor fan would not start or would change speed for no reason	• Could it just be defrosting operation ?
4	A pump would not stop	• Could it just be defrosting or under oil (refrigerant) recovery control ?
5	The air conditioner would not respond to a start / stop command from a remote controller	• Could it just be the hot water module operation under external controller ?
6	The water temperature dose not increase	• Could it just be the water flow rate is out of using range ? Using renge of hot water module is rated ±15%

(2) Troubleshooting procedure

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

```
                                        "E28" trouble
 ┌─────────┐   ┌──────────────────────┐   ┌──────────────────────┐   ┌──────────────────┐
 │ Trouble │──▶│ Investigate check    │──▶│ Investigate check    │──▶│ Check trouble    │
 └─────────┘   │ code displayed on    │   │ code displayed on    │   │ site or          │
               │ interface P.C. board │   │ interface P.C. board │   │ trouble part     │
               │ of header unit       │   │ of relevant follower │   │                  │
               └──────────────────────┘   │ unit                 │   └──────────────────┘
                                          └──────────────────────┘
                                           Any other trouble
```
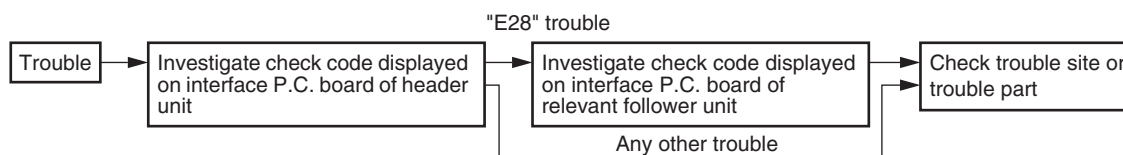
NOTE

Rather than a genuine 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.

---

(3) When water does not warm up.

Check code is not indicated on the remote controller. — NO → Follow the check items in check code.

↓ YES

Check the following value in operation

$UC = TG - TCJ$

TG : Saturation temperature converted from outdoor unit PD pressure at the R410A side.
TCJ : The liquid pipe temperature of the unit

— $TWI < 55°C$ and $UC \geq 30$ K
or
$TWI \geq 55°C$ and $UC \geq 25$ K → Check at the R410A side. Go to **(A)**

↓ $TWI < 55°C$ and $UC < 30$ K
or
$TWI \geq 55°C$ and $UC < 25$ K

Is power supply voltage of M-HWM within following range? 198V ~ 264V — NO → Power supply voltage check

↓ YES

Is M-HWM ambient temperature within the use temperature range? — NO → Install the M-HWM in a place within the use temperature range.

↓ YES

Is M-HWM PMV2 normal?
1. Connector connection
2. Wiring
3. Coil
4. Valve body
5. M-HWM I/F P.C. board
— NO → Repair M-HWM PMV2

↓ YES

Is M-HWM sensor normal?
1.TWI
2.TWO
3.TD
4.TS
5.PD
6.PS
— NO → Sensor trouble → Replace

↓ YES

Is M-HWM water flow volume within the use range? — NO → Use a water flow volume within the use range

↓ YES

$TWO-TWI \geq 2K$? — NO → Water heat exchanger trouble

↓ YES

Check the water circulation at your using side from buffer tank or cylinder tank.

(A)

Is outdoor unit ambient temperature within the use temperature range?
-25°CDB ~ 40°CDB
-25°CWB ~ 28°CWB

→ NO → Install the outdoor unit in a place within the use temperature range.

YES ↓

Is M-HWM TC1 temperature less than room temperature + 5°C?

→ NO → M-HWM cascade heat exchanger trouble

YES ↓

Is discharge gas pipe temperature of FS unit connected to M-HWM more than room temperature + 5°C?
* Do not touch the discharge gas pipe directly. It's very dangerous since the temperature at the discharge gas pipe rises to approximately 100°C.
(see the figure below)

FS unit = Flow selector unit

→ NO → Outdoor unit or connection pipe (between outdoor unit and M-HWM FS unit) trouble

YES ↓

Check FS unit.
1.SVD coil and valve body
2.SVS coil and valve body
3.Discharge gas pipe check valve
4.P.C. board
5.Wiring (coil)
6.Wiring (between FS unit and M-HWM)
7.Power supply

Failure → replace

Flow selector unit
(FS unit)

Discharge gas pipe
* Do not touch by hand, since piping is very hot.

Flow selector unit - Multi port type
(FS unit)

Discharge gas pipe
* Do not touch by hand, since piping is very hot.

8-2. Troubleshooting method

The remote controllers (main remote controller and central control remote controller) and the interface P.C. board of an outdoor unit are provided with an LCD display (remote controller) or a 7-segment display (outdoor interface P.C. board) to display operational status. Using this self-diagnosis feature, the 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 TCC-LINK central control remote controller -
  See the "TCC-LINK remote controller 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 "Light sensor indicator light block" section of the list.

List of check codes (indoor unit)
(Check code detected by indoor unit)

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)
Indoor unit (including Hot Water Module)

Check code			Typical trouble site	Description of check code
TCC-LINK central control or main remote controller display	Outdoor 7-segment display			
		Sub-code		
A01	A01	Detected indoor nuit No.	Flow switch operation trouble	When water flow rate is reduced.
A02	A02	Detected indoor nuit No.	Water temperature decrease trouble	Water temperature continued the low status regardless of that the heater pump is operating.
A04	A04	Detected indoor nuit No.	Activation of water heat exchanger frost protection	Frost protection for water heat exchanger is activated
E03	—	—	Indoor-remote controller periodic communication trouble	Communication from remote controller or network adaptor has been lost (so has central control communication).
E04	—	—	Indoor-outdoor periodic communication trouble	Signals are not being received from outdoor unit.
E08	E08	Duplicated indoor address	Duplicated indoor address	Indoor unit detects address identical to its own.
E10	—	—	Indoor inter-MCU communication trouble	MCU communication between main controller and motor microcontroller is trouble.
E18	—	—	Trouble 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) trouble	Heat exchanger temperature sensor (TCJ) has been open / short-circuited.
F03	—	—	Indoor heat exchanger temperature sensor (TC1) trouble	Heat exchanger temperature sensor (TC1) has been open / short-circuited.
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 trouble	Indoor EEPROM is abnormal (some other trouble may be detected)
L03	—	—	Duplicated indoor group header unit	There is more than one header unit in group.
L07	—	—	Connection of group control cable to stand-alone indoor unit	There is at least one stand-alone indoor unit to which group control cable is connected.
L08	L08	—	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 trouble input (interlock)	Unit shutdown has been caused by external trouble input (CN80).
P31	—	—	Other indoor unit trouble	Follower unit cannot be operated due to header unit alarm (E03 / L03 / L07 / L08).

(Check code detected by main remote controller)   Indoor unit (including Hot Water Module)

Check code			Typical trouble site	Description of Check code
Main remote controller	**Outdoor 7-segment display**			
		Sub-code		
E01	—	—	No master remote controller, trouble remote controller communication (reception)	Signals cannot be received from indoor unit; master remote controller has not been set (including two remote controller control).
E02	—	—	Trouble remote controller communication (transmission)	Signals cannot be transmitted to indoor unit.
E09	—	—	Duplicated master remote controller	Both remote controllers have been set as master remote controller in two remote controller control (alarm and shutdown for header unit and continued operation for follower unit)

(Check code detected by central control device)

Check code			Typical trouble site	Description of Check code
TCC-LINK central control	**Outdoor 7-segment display**			
		Sub-code		
C06	—	—	Trouble central control communication (reception)	Central control device is unable to receive signal.
C12	—	—	Blanket alarm for generalpurpose device control interface	Device connected to general-purpose device control interface for TCC-LINK is trouble.
P30	—	—	Group control follower unit trouble	Group follower unit is trouble (unit No. and above detail [∗∗∗] displayed on main remote controller)

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 SMMS-i outdoor interface - typical examples)

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)
Indoor unit (including Hot Water Module)

Check code		TCC-LINK central control or main remote controller display	Typical trouble site	Description of Check code
Outdoor 7-segment display				
	Sub-code			
E06	Number of indoor units from which signal is received normally	E06	Dropping out of indoor unit	Indoor unit initially communicating normally fails to return signal (reduction in number of indoor units connected).
E07	—	(E04)	Indoor-outdoor communication circuit 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 is assigned same address (also detected at indoor unit end).
E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	E12	Automatic address starting trouble	Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress. Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.
E15	—	E15	Indoor unit not found during automatic address setting	Indoor unit fails to communicate while automatic address setting for indoor units is in progress.
E16	00: Overloading 01: Number of units connected	E16	Too many indoor units connected / overloading	Combined capacity of indoor units is too large (more than 135 % of combined capacity of outdoor units). ✳
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	Dropping out 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	(see sub-code table below)	E31	IPDU communication trouble	There is no communication between IPDUs (P. C. boards) in inverter box.
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 02: TE2	F06	Outdoor heat exchanger temperature sensor (TE1, TE2) trouble	Outdoor heat exchanger temperature sensors (TE1, TE2) have been open / short-circuited.
F07	—	F07	Outdoor liquid temperature sensor (TL) trouble	Outdoor liquid temperature sensor (TL) 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.
F11	—	F11		
F12	—	F12	Outdoor suction temperature sensor (TS1) trouble	Outdoor suction temperature sensor (TS1) has been open / short-circuited.
F13	01: Compressor 1 02: Compressor 2 03: Compressor 3	F13	Outdoor IGBT built-in temperature sensor (TH) trouble	Open-circuit or short-circuit of the outdoor IGBT built-in temperature sensor (TH) was detected.
F15	—	F15	Outdoor temperature sensor (TE1, TL) wiring trouble	Wiring trouble in outdoor temperature sensors (TE1, TL) 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	• Check connection of TCJ2 (TF) sensor connector. • Check resistance characteristics of TCJ2 (TF) sensor.
F22	—	F22	Outdoor discharge temperature sensor (TD3) trouble	Outdoor discharge temperature sensor (TD3) has been open / short-circuited.
F23	—	F23	Low pressure sensor (Ps) trouble	Output voltage of low pressure sensor (Ps) is zero.

E31 sub-code table:

Sub-code	A3-IPDU 1	A3-IPDU 2	A3-IPDU 3	Fan IPDU	Sub-code	A3-IPDU 1	A3-IPDU 2	A3-IPDU 3	Fan IPDU
01	O				0A	O			O
02		O			0B	O	O		O
03	O	O			0C			O	O
04			O		0D	O		O	O
05	O		O		0E		O	O	O
06		O	O		0F	O	O	O	O
07	O	O	O		Circle (O): Trouble IPDU				
08				O					
09	O			O					

✳ When the indoor unit connection capacity is calculated, AP005 is calculated as 0.8 HP.

Check code			Typical trouble site	Description of Check code
Outdoor 7-segment display		TCC-LINK central control or main remote controller display		
	Sub-code			
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.
F25	—	F25	Indoor TWI (TA) sensor trouble	• Check connection of TWI (TA) sensor connector. • Check resistance characteristics of TWI (TA) sensor.
F26	—	F26	Indoor TWO (TC2) sensor trouble	• Check connection of TWO (TC2) sensor connector. • Check resistance characteristics of TWO (TC2) sensor.
F31	—	F31	Outdoor EEPROM trouble	Outdoor EEPROM is trouble (alarm and shutdown for header unit and continued operation for follower unit)
H01	01: Compressor 1 02: Compressor 2 03: Compressor 3	H01	Compressor breakdown	Overcurrent of the inverter current (Idc) detection circuit was detected.
H02	01: Compressor 1 02: Compressor 2 03: Compressor 3	H02	Compressor trouble (Lock)	Compressor lock was detected.
H03	01: Compressor 1 02: Compressor 2 03: Compressor 3	H03	Current detection circuit trouble	Current trouble was detected while the compressor was stopped.
H05	—	H04	Compressor 1 case thermostat activation	Compressor 1 case thermostat was activated for protection.
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	Activation of low-pressure protection	Temperature sensor for oil level detection (TK1-5) detects abnormally low oil level.
H08	01: TK1 sensor trouble 02: TK2 sensor trouble 03: TK3 sensor trouble 04: TK4 sensor trouble 05: TK5 sensor trouble	H08	Trouble in temperature sensor for oil level detection (TK1-5)	Temperature sensor for oil level detection (TK1-5) has been open / short-circuited.
H14	—	H14	Compressor 2 case thermostat activation	Compressor 2 case thermostat was activated for protection.
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 03: TK3 oil circuit trouble 04: TK4 oil circuit trouble 05: TK5 oil circuit trouble	H16	Oil level detection circuit trouble	No temperature change is detected by temperature sensor for oil level detection (TK1-5) despite compressor having been started.
H25	—	H25	Outdoor discharge temperature sensor (TD3) wiring trouble	Wiring / installation trouble or detachment of outdoor discharge temperature sensor (TD3) has been detected.
L02	—	L02	Outdoor unit combination trouble	Check the soft ware version on the I/F PC board of the outdoor unit.
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)	L06	Duplicated priority indoor unit (as displayed on priority indoor unit)	More than one indoor unit has been set up as priority indoor unit.
			Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	More than one indoor unit has been set up as priority indoor unit.
L08	—	(L08)	SIM Indoor group address not set	Address setting has not been performed for one or more indoor units (also detected at indoor end).
L10	—	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 (prior to 3 series) has been connected.
L18	—	L18	FS (Flow Selector) unit trouble	Cooling / heating cycle trouble resulting from piping trouble is detected.
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 four outdoor units have been connected.

Check code			Typical trouble site	Description of Check code
Outdoor 7-segment display		TCC-LINK central control or main remote controller display		
	Sub-code			
L29	SMMS-i (Series 4) A3-IPDU (1 2 3) / Fan IPDU A3-IPDU (1 2 3) / Fan IPDU 01: O 0A: O / O 02: O 0B: O O / O 03: O O 0C: O O / O 04: O 0D: O O / O 05: O O 0E: O O / O 06: O O 0F: O O O / O 07: O O O Circle (O): Trouble IPDU 08: O 09: O O	L29	Trouble in number of IPDUs	There are insufficient number of IPDUs (P.C. boards) in inverter box.
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	—		Outdoor discharge (TD1) temperature trouble	Outdoor discharge temperature sensor (TD1) has detected abnormally high temperature.
P04	P0301: Compressor 1 02: Compressor 2 03: Compressor 3	P04	High-pressure SW activation	High-pressure SW was activated.
P05	00: Open phase detected	P05	Open phase / power failure	Open phase is detected when power is turned on. Inverter DC voltage is too high (overvoltage) or too low (undervoltage).
	01: Compressor 1 ALT 02: Compressor 2 03: Compressor 3		Inverter DC voltage (Vdc) trouble MG-CTT trouble	
P07	01: Compressor 1 02: Compressor 2 03: Compressor 3	P07	Heat sink overheating trouble	Temperature sensor built into IGBT (TH) detects overheating.
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).
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.
P18	—	P18	Outdoor discharge (TD3) temperature trouble	Outdoor discharge temperature sensor (TD3) 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.
F13	01: Compressor 1 02: Compressor 2 03: Compressor 3	F13	Trouble in temperature sensor built into indoor IGBT (TH)	Temperature sensor built into indoor IGBT (TH) has been open / short-circuited.
H01	01: Compressor 1 02: Compressor 2 03: Compressor 3	H01	Compressor breakdown	Inverter current (Idc) detection circuit detects overcurrent.
H02	01: Compressor 1 02: Compressor 2 03: Compressor 3	H02	Compressor trouble (lockup)	Compressor lockup is detected
H03	01: Compressor 1 02: Compressor 2 03: Compressor 3	H03	Current detection circuit trouble	Abnormal current is detected while inverter compressor is turned off.
P04	01: Compressor 1 02: Compressor 2 03: Compressor 3	P04	Activation of high-pressure SW	High-pressure SW is activated.
P07	—	P07	Heat sink overheating trouble	Temperature sensor built into IGBT (TH) detects overheating.
P20	—	P20	High-pressure protection activation	High-pressure (Pd) sensor detected a value over the criteria.

MG-CTT: Magnet contactor

Check code		TCC-LINK central control or main remote controller display	Typical trouble site	Description of Check code
Outdoor 7-segment display				
	Sub-code			
P22	SMMS-i (Series 4) 0..: IGBT circuit 1..: Position detection circuit trouble 3..: Motor lockup trouble 4..: Motor current detection C..: TH sensor trouble D..: TH sensor trouble E..: Inverter DC voltage trouble (outdoor fan) Note: Although letters 0 to F appear at locations indicated by "∗", please ignore them.	P22	Outdoor fan IPDU trouble	Outdoor fan IPDU detects trouble.
P26	01: Compressor 1 02: Compressor 2 03: Compressor 3	P26	Activation of G-Tr (IGBT) short-circuit protection	Short-circuit protection for compressor motor driver circuit components is activated (momentary overcurrent).
P29	01: Compressor 1 02: Compressor 2 03: Compressor 3	P29	Compressor position detection circuit trouble	Compressor motor position detection trouble is detected.
A01	—	A01	Flow switch protective operation	• Check the pump. • Check the strainer. • Check the flow switch. (Type, directtion of attachment and point of contact)
A02	—	A02	Water temperature decrease trouble	• Check the water temperature. • Check the heat insulator of wate pipes.
A04	—	A04	Plate type heatexchanger freezing protective operation	• Check the line heater. • Check the PMV coil and PMV. • Check the 2way valve coil and 2way valve.

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

List of Check Codes (Outdoor Unit)

(Check code detected by SMMS-e outdoor interface - typical examples)

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

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)
○ : Lighting, ◎ : Flashing, ● : Goes off
ALT.: Flashing is alternately when there are two flashing LED
SIM: Simultaneous flashing when there are two flashing LED

Check code Outdoor 7-segment display	Sub-code	TCC-LINK central control or main remote controller display	Operation ⏻	Timer ⏱	Ready ❄	Flash	Typical trouble site	Description of Check code
E06	Number of indoor units from which signal is received normally	E06	●	●	◎		Signal lack of indoor unit	Indoor unit initially communicating normally fails to return signal (reduction in number of indoor units connected).
E07	–	(E04)	●	●	◎		Indoor-outdoor communication circuit trouble	Signal cannot be transmitted to indoor units (→ indoor units left without communication from outdoor unit).
E08	Duplicated indoor address	(E08)	◎	●	●		Duplicated indoor address	More than one indoor unit are assigned same address (also detected at indoor unit end).
E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	E12	◎	●	●		Automatic address starting trouble	• Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress. • Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.
E15	–	E15	●	●	◎		Indoor unit not found during automatic address setting	Indoor unit fails to communicate while automatic address setting for indoor units is in progress.
E16	00: Overloading 01: Number of units connected	E16	●	●	◎		Too many indoor units connected/overloading	Combined capacity of indoor units is too large (more than 135% of combined capacity of outdoor units).
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	(see sub-table below)	E31	●	●	◎		IPDU communication trouble Sub MCU communication trouble	There is no communication between IPDUs (P.C. boards) in inverter box.
F04	–	F04	◎	◎	○	ALT	Outdoor discharge temperature sensor (TD1) trouble	Outdoor discharge temperature sensor (TD1) has been open/short-circuited.
F05	–	F05	◎	◎	○	ALT	Outdoor discharge temperature sensor (TD2) trouble	Outdoor discharge temperature sensor (TD2) has been open/short-circuited.
F06	01: TE1 02: TE2	F06	◎	◎	○	ALT	Outdoor heat exchanger liquid side temperature sensor (TE1, TE2) trouble	Outdoor heat exchanger liquid side temperature sensors (TE1, TE2) have been open/short-circuited.
F07	01: TL1 02: TL2 03: TL3	F07	◎	◎	○	ALT	Outdoor liquid temperature sensor (TL1,TL2,TL3) trouble	Outdoor liquid temperature sensor (TL1,TL2,TL3) has been open/short-circuited.
F08	–	F08	◎	◎	○	ALT	Outdoor outside air temperature sensor (TO) trouble	Outdoor outside air temperature sensor (TO) has been open/short-circuited.
F09	01: TG1 02: TG2						Outdoor heat exchanger gas side temperature sensor (TG1,TG2) trouble	Outdoor heat exchanger gas side temperature sensors (TG1, TG2) have been open/short-circuited.

E31 sub-code table:

	A3-IPDU		Fan-IPDU		A3-IPDU		Fan-IPDU	
	1	2	1	2	1	2	1	2
01	O				10				O
02		O			11	O			O
03	O	O			12		O		O
08			O		13	O	O		O
09	O		O		18			O	O
0A		O	O		19	O		O	O
0B	O	O	O		1A		O	O	O
					1B	O	O	O	O

Circle (O): Trouble IPDU

80 : Communication trouble between MCU and Sub MCU

Check code		TCC-LINK central control or main remote controller display	Display of receiving unit				Typical trouble site	Description of Check code
Outdoor 7-segment display			Indicator light block					
	Sub-code		Operation ⏻	Timer ⏲	Ready ❄	Flash		
F12	01: TS1 03: TS3	F12	◎	◎	○	ALT	Outdoor suction temperature sensor (TS1,TS3) trouble	Outdoor suction temperature sensor (TS1,TS3) has been open/short-circuited.
F15	–	F15	◎	◎	○	ALT	Outdoor temperature sensor (TE1,TL1) wiring trouble	Wiring trouble in outdoor temperature sensors (TE1,TL1) has been detected.
F16	–	F16	◎	◎	○	ALT	Outdoor pressure sensor (Pd, Ps) wiring trouble	Wiring trouble in outdoor pressure sensors (Pd, Ps) has been detected.
F23	–	F23	◎	◎	○	ALT	Low pressure sensor (Ps) trouble	Output voltage of low pressure sensor (Ps) is zero.
F24	–	F24	◎	◎	○	ALT	High pressure sensor (Pd) trouble	Output voltage of high pressure sensor (Pd) is zero or provides abnormal readings when compressors have been turned off.
F31	–	F31	◎	◎	○	SIM	Outdoor EEPROM trouble	Outdoor EEPROM is 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,TK4,TK5) detects abnormally low oil level.
H08	01: TK1 sensor trouble 02: TK2 sensor trouble 04: TK4 sensor trouble 05: TK5 sensor trouble	H08	●	◎	●		Trouble in temperature sensor for oil level detection (TK1,TK2,TK4,TK5)	Temperature sensor for oil level detection (TK1,TK2,TK4,TK5) 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 04: TK4 oil circuit trouble 05: TK5 oil circuit trouble	H16	●	◎	●		Oil level detection circuit trouble	No temperature change is detected by temperature sensor for oil level detection (TK1,TK2,TK4,TK5) despite compressor having been started.
L04	–	L04	◎	○	◎	SIM	Duplicated outdoor refrigerant line address	Identical refrigerant line address has been assigned to outdoor units belonging to different refrigerant piping systems.
L06	Number of priority indoor units (check code L05 or L06 depending on individual unit)	L05	◎	●	◎	SIM	Duplicated priority indoor unit (as displayed on priority indoor unit)	More than one indoor unit have been set up as priority indoor unit.
		L06	◎	●	◎	SIM	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	More than one indoor unit have been set up as priority indoor unit.
L08	–	(L08)	◎	●	◎	SIM	Indoor group address not set	Address setting have not been performed for one or more indoor units (also detected at indoor end).
L10	–	L10	◎	○	◎	SIM	Outdoor capacity not set	Outdoor unit capacity has not been set (after P.C. board replacement).
L17	–	L17	◎	○	◎	SIM	Outdoor model incompatibility trouble	Old model outdoor unit (prior to 6 series) has been connected.
L23	02: Switch setting trouble of outdoor unit	L23	◎	○	◎	SIM	SW setting trouble	Switch setting trouble of outdoor units when HWM (Hot Water module) is connected.
L28	–	L28	◎	○	◎	SIM	Too many outdoor units connected	More than three outdoor units have been connected.

Check code			Display of receiving unit					
Outdoor 7-segment display		TCC-LINK central control or main remote controller display	Indicator light block				Typical trouble site	Description of Check code
	Sub-code		Operation ⏻	Timer ⏱	Ready ✸	Flash		
L29	(see sub-code matrix below)	L29	◎	○	◎	SIM	Trouble in number of IPDUs	There are insufficient number of IPDUs (P.C. boards) in inverter box.
L30	Detected indoor unit No.	(L30)	◎	○	◎	SIM	Indoor external trouble input (interlock)	Indoor unit has been shut down for external trouble input in one refrigerant line (detected by indoor unit).
P03	–	P03	◎	●	◎	ALT	Outdoor discharge (TD1) temperature trouble	Outdoor discharge temperature sensor (TD1) has detected abnormally high temperature.
P05	00: Open phase detected 01: Compressor 1 02: Compressor 2	P05	◎	●	◎	ALT	Open phase/power failure Inverter DC voltage (Vdc) trouble MG-CTT trouble	Open phase is detected when power is turned on. Inverter DC voltage is too high (overvoltage) or too low (undervoltage).
P07	01: Compressor 1 02: Compressor 2	P07	◎	●	◎	ALT	Heat sink overheating trouble	Temperature sensor built into IPM (TH) detects overheating.
P10	Indoor unit No. detected	(P10)	●	◎	◎	ALT	Indoor unit overflow	Indoor unit has been shutdown in one refrigerant line due to detection of overflow (detected by indoor unit).
P13	–	P13	●	◎	◎	ALT	Outdoor liquid backflow detection trouble	State of refrigerant cycle circuit indicates liquid backflow operation.
P15	01: TS condition 02: TD condition	P15	◎	●	◎	ALT	Gas leak detection	Outdoor suction temperature sensor (TS1) detects sustained and repeated high temperatures that exceed standard value.
P17	–	P17	◎	●	◎	ALT	Outdoor discharge (TD2) temperature trouble	Outdoor discharge temperature sensor (TD2) detects abnormally high temperature.
P19	Outdoor unit No. detected	P19	◎	●	◎	ALT	4-way valve reversing trouble	Abnormality in refrigerating cycle is detected during heating operation.
P20	–	P20	◎	●	◎	ALT	Activation of high-pressure protection	High pressure (Pd) sensor detects high pressure that exceeds standard value.

L29 Sub-code matrix (Circle (O): Trouble IPDU):

	A3-IPDU 1	A3-IPDU 2	Fan-IPDU 1	Fan-IPDU 2		A3-IPDU 1	A3-IPDU 2	Fan-IPDU 1	Fan-IPDU 2
01	O				10				O
02		O			11	O			O
03	O	O			12			O	
08			O		13	O	O		O
09	O		O		18			O	O
0A		O	O		19	O		O	O
0B	O	O	O		1A			O	O
					1B	O		O	O

MG-CTT: Magnet contactor

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(Check code detected by IPDU featuring in SMMS-e standard outdoor unit - typical examples)

Check code			Display of receiving unit				Typical trouble site	Description of Check code
Outdoor 7-segment display		TCC-LINK central control or main remote controller display	Indicator light block					
	Sub-code		Operation ⏻	Timer 🕐	Ready ❊	Flash		
F13	01: Compressor 1 02: Compressor 2	F13	◎	◎	○	ALT	Trouble in temperature sensor built into indoor IPM (TH)	Temperature sensor built into indoor IPM (TH) has been open/short-circuited.
H01	01: Compressor 1 02: Compressor 2	H01	●	◎	●		Compressor breakdown	Inverter current (Idc) detection circuit detects overcurrent.
H02	01: Compressor 1 02: Compressor 2	H02	●	◎	●		Compressor trouble (lockup)	Compressor lockup is detected
H03	01: Compressor 1 02: Compressor 2	H03	●	◎	●		Current detection circuit trouble	Abnormal current is detected while inverter compressor is turned off.
P04	01: Compressor 1 02: Compressor 2	P04	◎	●	◎	ALT	Activation of high-pressure SW	High-pressure SW is activated.
P07	01: Compressor 1 02: Compressor 2	P07	◎	●	◎	ALT	Heat sink overheating trouble	Temperature sensor built into IPM (TH) detects overheating or has been short-circuited.
P22	#0:Element short-circuit #1:Position detection circuit trouble #3:Motor lock trouble #4:Motor current trouble #C:TH Sensor temperature trouble #D:TH Sensor short-circuit/release trouble #E:Vdc voltage trouble ∗Put in Fan IPDU No. in [#] mark	P22	◎	●	◎	ALT	Outdoor fan IPDU trouble	Outdoor fan IPDU detects trouble.
P26	01: Compressor 1 02: Compressor 2	P26	◎	●	◎	ALT	Activation of IPM short-circuit protection	Short-circuit protection for compressor motor driver circuit components is activated (momentary overcurrent).
P29	01: Compressor 1 02: Compressor 2	P29	◎	●	◎	ALT	Compressor position detection circuit trouble	Compressor motor position detection trouble is detected.

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

8-3. Troubleshooting based on information displayed on remote controller

Using main remote controller (RBC-AMT32E)

(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.

Check code

Indoor unit No. in which trouble has occurred
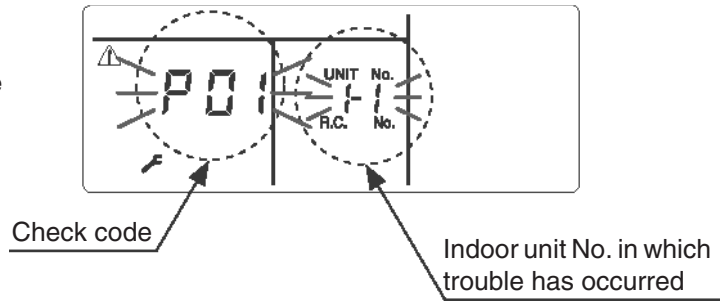
(2) Check code history

The check code history access procedure is described below (up to four check code 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 ⏀ + ○ buttons simultaneously and holding for at least 4 seconds.

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

2 To check other check code history items, press the ⏀ button to select another check code.

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

3 When the ⏀ button is pushed, normal display is restored.

Normal display is restored.

Steps to follow

1 → 2 → 3
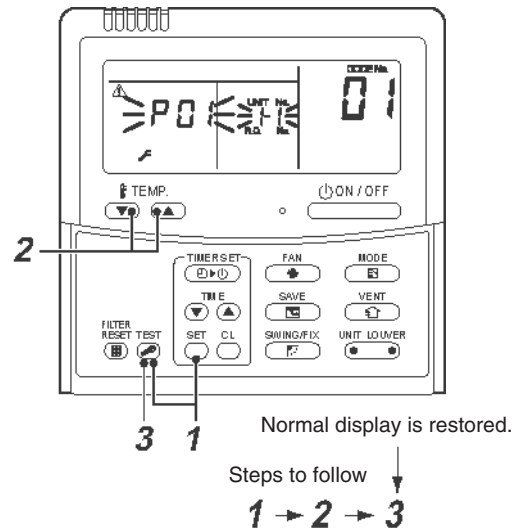
NOTE

Do not push the ○ button as it would erase the whole check code history of the indoor unit.

How to read displayed information

<7-segment display symbols>

0123456789AbCdEFHJLP

<Corresponding alphanumerical letters>

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

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

(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.

Display of Unit No.

UNIT No.
3 - 9
R.C.   No.

← Alternate blinking →

Display of check code

TEST
P - 10
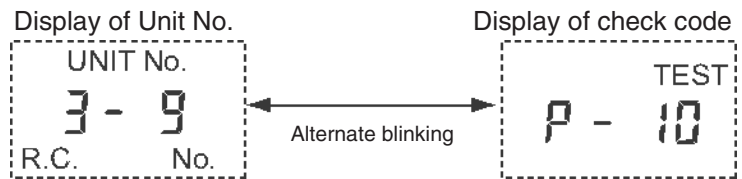
(2) Check code history

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

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

2 **The letters " 🔧 SERVICE CHECK" light up, and the check code "01" is displayed.**

3 **When a group No. is selected (blinking), if there is a check code history, the UNIT No. and the latest check code history information are displayed alternately.**

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

Display of Unit No.

UNIT No.
3 - 9
R.C.   No.

← Alternate blinking →

Display of check code

TEST
P - 10
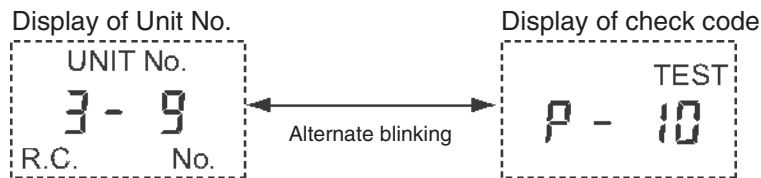
4 **To check other check code history items, push the ⊽TEMP.△ button to select another check code (01-04.).**

5 **To check check code relating to another group, push (ZONE) and (GROUP) ◁▷ buttons to select a group No.**
Do not push the ⭕ button as it would erase the whole check code history of the selected group.

6 **To finish off the service check, push the 🕑 button.**

8-4. (1) Check codes displayed on remote controller and SMMS-i 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.

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)
Indoor unit (including Hot Water Module)

Check code — Main remote controller	Check code — Outdoor 7-segment display — Check code	Check code — Outdoor 7-segment display — Sub-code	Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
E01	—	—	Remote controller	Indoor-remote controller communication trouble (detected at remote controller end)	Stop of corresponding unit	Communication between indoor P.C. board and remote controller is disrupted.	• Check remote controller inter-unit tie cable (A / B). • Check for broken wire or connector bad contact. • Check indoor power supply. • Check for trouble in indoor P.C. board. • Check remote controller address settings (when two remote controllers are in use). • Check remote controller P.C. board.
E02	—	—	Remote controller	Remote controller transmission trouble	Stop of corresponding unit	Signal cannot be transmitted from remote controller to indoor unit.	• Check internal transmission circuit of remote controller. --- Replace remote controller as necessary.
E03	—	—	Indoor unit	Indoor-remote controller communication trouble (detected at indoor end)	Stop of corresponding unit	There is no communication from remote controller (including wireless) or network adaptor.	• Check remote controller and network adaptor wiring.
E04	—	—	Indoor unit	Indoor-outdoor communication circuit trouble (detected at indoor end)	Stop of corresponding unit	Indoor unit is not receiving signal from outdoor unit.	• Check order in which power was turned on for indoor and outdoor units. • Check indoor address setting. • Check indoor-outdoor tie cable. • Check outdoor termination resistance setting (SW30, Bit 2).
E06	E06	No. of indoor units from which signal is received normally	I/F	Dropping out of indoor unit	All stop	Indoor unit initially communicating normally fails to return signal for specified length of time.	• Check power supply to indoor unit. (Is power turned on?) • Check connection of indoor-outdoor communication cable. • Check connection of communication connectors on indoor P.C. board. • Check connection of communication connectors on outdoor P.C. board. • Check for trouble in indoor P.C. board. • Check for trouble in outdoor P.C. board (I/F).
—	E07	—	I/F	Indoor-outdoor communication circuit trouble (detected at outdoor end)	All stop	Signal cannot be transmitted from outdoor to indoor units for 30 seconds continuously.	• Check outdoor termination resistance setting (SW30, Bit 2). • Check connection of indoor-outdoor communication circuit.
E08	E08	Duplicated indoor address	Indoor unit I/F	Duplicated indoor address	All stop	More than one indoor unit is assigned same address.	• Check indoor addresses. • Check for any change made to remote controller connection (group / individual) since indoor address setting.
E09	—	—	Remote controller	Duplicated master remote controller	Stop of corresponding unit	In two remote controller configuration (including wireless), both controllers are set up as master. (Header indoor unit is shut down with alarm, while follower indoor units continue operating.)	• Check remote controller settings. • Check remote controller P.C. boards.
E10	—	—	Indoor unit	Indoor inter-MCU communication trouble	Stop of corresponding unit	Communication cannot be established / maintained upon turning on of power or during communication.	• Check for trouble in indoor P.C. board

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
E12	E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	I/F	Automatic address starting trouble	All stop	• Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress. • Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.	• Perform automatic address setting again after disconnecting communication cable to that refrigerant line.
E15	E15	—	I/F	Indoor unit not found during automatic address setting	All stop	Indoor unit cannot be detected after indoor automatic address setting is started.	• Check connection of indoor-outdoor communication line. • Check for trouble in indoor power supply system. • Check for noise from other devices. • Check for power failure. • Check for trouble in indoor P.C. board.
E16	E16	00: Overloading 01-: No. of units connected	I/F	Too many indoor units connected	All stop	• Combined capacity of indoor units exceeds 135% of combined capacity of outdoor units. ∗ **Note: If this code comes up after backup setting for outdoor unit failure is performed, perform "No overloading detected" setting.** <"No overloading detected" setting method> Turn on SW09/Bit 2 on I/F P.C. board of outdoor header unit. • More than 48 indoor units are connected.	• Check capacities of indoor units connected. • Check combined HP capacities of indoor units. • Check HP capacity settings of outdoor units. • Check No. of indoor units connected. • Check for trouble in outdoor P.C. board (I/F).
E18	—	—	Indoor unit	Trouble in communication between indoor header and follower units	Stop of corresponding unit	Periodic communication between indoor header and follower units cannot be maintained.	• Check remote controller wiring. • Check indoor power supply wiring. • Check P.C. boards of indoor units.
E19	E19	00: No header unit 02: Two or more header units	I/F	Trouble in number of outdoor header units	All stop	• There is more than one outdoor header unit in one line. • There is no outdoor header unit in one line.	Outdoor header unit is outdoor unit to which indoor-outdoor tie cable (U1,U2) is connected. • Check connection of indoor-outdoor communication line. • Check for trouble in outdoor P.C. board (I/F).
E20	E20	01: Connection of outdoor unit from other line 02: Connection of indoor unit from other line	I/F	Connection to other line found during automatic address setting	All stop	Equipment from other line is found to have been connected when indoor automatic address setting is in progress.	Disconnect inter-line tie cable in accordance with automatic address setting method explained in "Address setting" section.
E23	E23	—	I/F	Outdoor-outdoor communication transmission trouble	All stop	Signal cannot be transmitted to other outdoor units for at least 30 seconds continuously.	• Check power supply to outdoor units. (Is power turned on?) • Check connection of tie cables between outdoor units for bad contact or broken wire. • Check communication connectors on outdoor P.C. boards. • Check for trouble in outdoor P.C. board (I/F). • Check termination resistance setting for communication between outdoor units.

∗ When the indoor unit connection capacity is calculated, AP005 is calculated as 0.8 HP.

Check code — Main remote controller	Check code — Outdoor 7-segment display — Check code	Check code — Outdoor 7-segment display — Sub-code	Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
E25	E25	—	I/F	Duplicated follower outdoor address	All stop	There is duplication in outdoor addresses set manually.	**Note:** **Do not set outdoor addresses manually.**
E26	E26	Address of outdoor unit from which signal is not received normally	I/F	Dropping out of outdoor unit	All stop	Outdoor unit initially communicating normally fails to return signal for specified length of time.	• Backup setting is being used for outdoor units. • Check power supply to outdoor unit. (Is power turned on?) • Check connection of tie cables between outdoor units for bad contact or broken wire. • Check communication connectors on outdoor P.C. boards. • Check for trouble in outdoor P.C. board (I/F).
E28	E28	Detected outdoor unit No.	I/F	Outdoor follower unit trouble	All stop	Outdoor header unit receives check code from outdoor follower unit.	• Check check code displayed on outdoor follower unit. <Convenient functions> If SW04 is pressed and held for at least 1 second while [E28] is displayed on the 7-segmentdisplay 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.
E31	E31	SMMS-i (Series 4) See IPDU trouble site table below. Symbol O signifies site of IPDU trouble.	I/F	IPDU communication trouble	All stop	Communication is disrupted between IPDUs (P.C. boards) in inverter box.	• Check wiring and connectors involved in communication between IPDU-I/F P.C. board for bad contact or broken wire. • Check for trouble in outdoor P.C. board (I/F, A3-IPDU or Fan IPDU). • Check for external noise.
F01	—	—	Indoor unit	Indoor TCJ sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TCJ sensor connector and wiring. • Check resistance characteristics of TCJ sensor. • Check for trouble in indoor P.C. board.
F02	—	—	Indoor unit	Indoor TC2 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TC2 sensor connector and wiring. • Check resistance characteristics of TC2 sensor. • Check for trouble in indoor P.C. board.

IPDU trouble site (E31 sub-code, SMMS-i Series 4):

	A3-IPDU 1	A3-IPDU 2	A3-IPDU 3	Fan IPDU
01	O			
02		O		
03	O	O		
04			O	
05	O		O	
06		O	O	
07	O	O	O	
08				O
09	O			O
0A		O		O
0B	O	O		O
0C			O	O
0D	O		O	O
0E		O	O	O
0F	O	O	O	O

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					
F03	—	—	Indoor unit	Indoor TC1 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TC1 sensor connector and wiring. • Check resistance characteristics of TC1 sensor. • Check for trouble in indoor P.C. board.
F04	F04	—	I/F	TD1 sensor trouble	All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TD1 sensor connector. • Check resistance characteristics of TD1 sensor. • Check for trouble in outdoor P.C. board (I/F).
F05	F05	—	I/F	TD2 sensor trouble	All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TD2 sensor connector. • Check resistance characteristics of TD2 sensor. • Check for trouble in outdoor P.C. board (I/F).
F06	F06	01: TE1 sensor trouble 02: TE2 sensor trouble	I/F	TE1/TE2 sensor trouble	All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TE1/TE2 sensor connectors. • Check resistance characteristics of TE1/TE2 sensors. • Check for trouble in outdoor P.C. board (I/F).
F07	F07	—	I/F	TL sensor trouble	All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TL sensor connector. • Check resistance characteristics of TL sensor. • Check for trouble in outdoor P.C. board (I/F).
F08	F08	—	I/F	TO sensor trouble	All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TO sensor connector. • Check resistance characteristics of TO sensor. • Check for trouble in outdoor P.C. board (I/F).
F10	—	—	Indoor unit	Indoor TA sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TA sensor connector and wiring. • Check resistance characteristics of TA sensor. • Check for trouble in indoor P.C. board.
F11	—	—	Indoor unit	Indoor TF sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TF sensor connector and wiring. • Check resistance characteristics of TF sensor. • Check for trouble in indoor P.C. board.
F12	F12	—	I/F	TS1 sensor trouble	All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TS1 sensor connector. • Check resistance characteristics of TS1 sensor. • Check for trouble in outdoor P.C. board (I/F).
F13	F13	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	TH sensor trouble	All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Trouble in IGBT built-in temperature sensor → Replace A3-IPDU P.C. board.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
F15	F15	—	I/F	Outdoor temperature sensor wiring trouble (TE1, TL)	All stop	During compressor operation in HEAT mode, TE1 continuously provides temperature reading higher than indicated by TL by at least specified margin for 3 minutes or more.	• Check installation of TE1 and TL sensors. • Check resistance characteristics of TE1 and TL sensors. • Check for outdoor P.C. board (I/F) trouble.
F16	F16	—	I/F	Outdoor pressure sensor wiring trouble (Pd, Ps)	All stop	Readings of high-pressure Pd sensor and lowpressure Ps sensor are switched. Output voltages of both sensors are zero.	• Check connection of highpressure Pd sensor connector. • Check connection of lowpressure Ps sensor connector. • Check for trouble in pressure sensors Pd and Ps. • Check for trouble in outdoor P.C. board (I/F). • Check for deficiency in compressive output of compressor.
F22	F22	—	I/F	TD3 sensor trouble	All stop	Sensor resistance is infinity or zero. (open / short-circuit)	• Check connection of TD3 sensor connector. • Check resistance characteristics of TD3 sensor. • Check for trouble in outdoor P.C. board (I/F).
F23	F23	—	I/F	Ps sensor trouble	All stop	Output voltage of Ps sensor is zero.	• Check for connection trouble involving Ps sensor and Pd sensor connectors. • Check connection of Ps sensor connector. • Check for trouble in Ps sensor. • Check for deficiency in compressive output of compressor. • Check for trouble in 4-way valve. • Check for trouble in outdoor P.C. board (I/F). • Check for trouble in SV4 circuit.
F24	F24	—	I/F	Pd sensor trouble	All stop	Output voltage of Pd sensor is zero (sensor open-circuited). Pd > 4.15 MPa despite compressor having been turned off.	• Check connection of Pd sensor connector. • Check for trouble in Pd sensor. • Check for trouble in outdoor P.C. board (I/F).
F29	—	—	Indoor unit	Other indoor trouble	Stop of corresponding unit	Indoor P.C. board does not operate normally.	• Check for trouble in indoor P.C. board (troubled EEPROM)
F31	F31	—	I/F	Outdoor EEPROM trouble	All stop *1	Outdoor P.C. board (I/F) does not operate normally.	• Check power supply voltage. • Check power supply noise. • Check for trouble in outdoor P.C. board (I/F).
H01	H01	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Compressor breakdown	All stop	Inverter current detection circuit detects overcurrent and shuts system down.	• Check power supply voltage. (AC200 V ± 10 %). • Check for trouble in compressor. • Check for possible cause of abnormal overloading. • Check for trouble in outdoor P.C. board (A3-IPDU).

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

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
H02	H02	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Compressor trouble (lockup) MG-CTT trouble	All stop	Overcurrent is detected several seconds after startup of inverter compressor.	• Check for trouble in compressor. • Check power supply voltage. (AC200 V ± 10 %). • Check compressor system wiring, particularly for open phase. • Check connection of connectors / terminals on A3-IPDU P.C. board. • Check conductivity of case heater. (Check for refrigerant entrapment inside compressor.) • Check for trouble in outdoor P.C. board (A3-IPDU). • Check outdoor MG-CTT.
H03	H03	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Current detection circuit trouble	All stop	Current flow of at least specified magnitude is detected despite inverter compressor having been shut turned off.	• Check current detection circuit wiring. • Check trouble in outdoor P.C. board (A3-IPDU).
H05	H05	—	I/F	TD1 sensor miswiring (incomplete insertion)	All stop	Discharge temperature of compressor 1 (TD1) does not increase despite compressor being in operation.	• Check installation of TD1 sensor. • Check connection of TD1 sensor connector and wiring. • Check resistance characteristics of TD1 sensor. • Check for trouble
H06	H06	—	I/F	Activation of low-pressure protection	All stop	Low-pressure Ps sensor detects operating pressure lower than 0.02 MPa.	• Check service valves to confirm full opening (both gas and liquid sides). • Check outdoor PMVs for clogging (PMV1, 2). • Check for trouble in SV2 or SV4 circuits. • Check for trouble in low pressure Ps sensor. • Check indoor filter for clogging. • Check valve opening status of indoor PMV. • Check refrigerant piping for clogging. • Check operation of outdoor fan (during heating). • Check for insufficiency in refrigerant quantity.
H07	H07	—	I/F	Low oil level protection	All stop	Operating compressor detects continuous state of low oil level for about 2 hours.	<All outdoor units in corresponding line to be checked> • Check balance pipe service valve to confirm full opening. • Check connection and installation of TK1, TK2, TK3, TK4, and TK5 sensors. • Check resistance characteristics of TK1, TK2, TK3, TK4, and TK5 sensors. • Check for gas or oil leak in same line. • Check for refrigerant entrapment inside compressor casing. • Check SV3A, SV3B, SV3C, SV3D, SV3E, and SV3F valves for trouble. • Check oil return circuit of oil separator for clogging. • Check oil equalizing circuit for clogging.

MG-CTT: Magnet contactor

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 03: TK3 sensor trouble 04: TK4 sensor trouble 05: TK5 sensor trouble	I/F	Trouble in temperature sensor for oil level detection	All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TK1 sensor connector. • Check resistance characteristics of TK1 sensor. • Check for trouble in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TK2 sensor connector. • Check resistance characteristics of TK2 sensor. • Check for trouble in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TK3 sensor connector. • Check resistance characteristics of TK3 sensor. • Check for trouble in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TK4 sensor connector. • Check resistance characteristics of TK4 sensor. • Check for trouble in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open / short-circuit).	• Check connection of TK5 sensor connector. • Check resistance characteristics of TK5 sensor. • Check for trouble in outdoor P.C. board (I/F).
H14	H14	—	I/F	Compressor 2 case thermostat activation	All stop	Compressor 2 case thermostat was activated.	• Check Compressor 2 case thermostat circuit. (Connector, Wiring, Circuit board) • Open and check the service valve. (Gas side, Liquid side) • Check the outdoor PMV clogging (PMV1, 2). • Check the SV42 circuit. • Check the SV4 circuit (SV41 / 42 miswiring). • Check the opening status of indoor PMV. • Check the four-way valve trouble. • Check the refrigerant shortage.
H15	H15	—	I/F	TD2 sensor miswiring (incomplete insertion)	All stop	Air discharge temperature of (TD2) does not increase despite compressor 2 being in operation.	• Check installation of TD2 sensor. • Check connection of TD2 sensor connector and wiring. • Check resistance characteristics of TD2 sensor. • Check for trouble in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
H16	H16	SMMS-i (4 series) 01: TK1 oil circuit trouble 02: TK2 oil circuit trouble 03: TK3 oil circuit trouble 04: TK4 oil circuit trouble 05: TK5 oil circuit trouble	I/F	Oil level detection circuit trouble	All stop	No temperature change is detected by TK1 despite compressor 1 having been started.	• Check for disconnection of TK1 sensor. • Check resistance characteristics of TK1 sensor. • Check for connection trouble involving TK1, TK2, TK3, TK4, and TK5 sensors. • Check for troubled operation in SV3E or SV3F valve. • Check for clogging in oil equalizing circuit capillary and troubled operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK2 despite compressor 2 having been started.	• Check for disconnection of TK2 sensor. • Check resistance characteristics of TK2 sensor. • Check for connection trouble involving TK1, TK2, TK3, TK4, and TK5 sensors. • Check for troubled operation in SV3E or SV3F valve. • Check for clogging in oil equalizing circuit capillary and troubled operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK3 despite compressor 3 having been started.	• Check for disconnection of TK3 sensor. • Check resistance characteristics of TK3 sensor. • Check for connection trouble involving TK1, TK2, TK3, TK4, and TK5 sensors. • Check for troubled operation in SV3E or SV3F valve. • Check for clogging in oil equalizing circuit capillary and troubled operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK4 despite compressor having been started.	• Check for disconnection of TK4 sensor. • Check resistance characteristics of TK4 sensor. • Check for connection trouble involving TK1, TK2, TK3, TK4, and TK5 sensors. • Check for troubled operation in SV3E or SV3F valve. • Check for clogging in oil equalizing circuit capillary and troubled operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK5 despite compressor having been started.	• Check for disconnection of TK5 sensor. • Check resistance characteristics of TK5 sensor. • Check for connection trouble involving TK1, TK2, TK3, TK4, and TK5 sensors. • Check for troubled operation in SV3E valve. • Check for clogging in oil equalizing circuit capillary and troubled operation in check valve. • Check for refrigerant entrapment inside compressor.

Main remote controller	Check code (Outdoor 7-segment display)		Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Check code	Sub-code					
H25	H25	—	I/F	TD3 sensor miswiring (incomplete insertion)	All stop	Air discharge temperature (TD3) does not increase despite compressor 3 being in operation.	• Check installation of TD3 sensor. • Check connection of TD3 sensor connector and wiring. • Check resistance characteristics of TD3 sensor. • Check for trouble in outdoor P.C. board (I/F).
L02	L02	—	Indoor unit	Outdoor unit model mismatch trouble	Only the target unit stopped	Trouble was found on the outdoor unit model.	• Check the model name of the outdoor unit. • Check the miswiring of the communication line between indoor and outdoor.
L03	—	—	Indoor unit	Duplicated indoor header unit	Stop of corresponding unit	There is more than one header unit in group.	• Check indoor addresses. • Check for any change made to remote controller connection (group / individual) since indoor address setting.
L04	L04	—	I/F	Duplicated outdoor line address	All stop	There is duplication in line address setting for outdoor units belonging to different refrigerant piping systems.	• Check line addresses.
L05	—	—	I/F	Duplicated priority indoor unit (as displayed on priority indoor unit)	All stop	More than one indoor unit has been set up as priority indoor unit.	• Check display on priority indoor unit.
L06	L06	No. of priority indoor units	I/F	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	All stop	More than one indoor unit have been set up as priority indoor unit.	• Check displays on priority indoor unit and outdoor unit.
L07	—	—	Indoor unit	Connection of group control cable to standalone indoor unit	Stop of corresponding unit	There is at least one stand-alone indoor unit to which group control cable is connected.	• Check indoor addresses.
L08	L08	—	Indoor unit	Indoor group / addresses not set	Stop of corresponding unit	Address setting has not been performed for indoor units.	• Check indoor addresses. **Note:** **This code is displayed when power is turned on for the first time after installation.**
L09	—	—	Indoor unit	Indoor capacity not set	Stop of corresponding unit	Capacity setting has not been performed for indoor unit.	Set indoor capacity. (DN = 11)
L10	L10	—	I/F	Outdoor capacity not set	All stop	Jumper wire provided on P.C. board for servicing I/F P.C. board has not been removed as required for given model.	Check model setting of P.C. board for servicing outdoor I/F P.C. board.
L17	L17	Target indoor address	I/F	Outdoor unit model mismatch trouble		The outdoor unit model is duplicate. The Cool/Heat Flex series 1/2 are duplicate.	• Check the outdoor unit model.
L18	L18	—	I/F	Cool / heat switch unit trouble	Only the target unit stopped	The heating operation was performed without the coolonly setting configured in a cool-only room where a cool / heat switch unit is not connected.	• Check the remote controller setting. (DN="0F") • Check the cool / heat switching unit. Check the piping connection of the switching unit. (Miswiring of discharge gas / suction gas) Check the SVS / SVD valve miswiring / misinstallation.

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					
L20	—	—	AI-NET Indoor unit	Duplicated central control address	All stop	There is duplication in central control address setting.	• Check central control addresses. • Check network adaptor P.C. board (applicable to AI-NET).
L23	L23	02: Switch setting trouble of outdoor unit	I/F	Switch setting trouble	All stop	Switch setting trouble of outdoor units when HWM (Hot Water module) is connected.	• Check setting of SW09 Bit 4 on outdoor I/F P.C. board. (SW09 Bit 4:ON)
L28	L28	—	I/F	Too many outdoor units connected	All stop	There are more than four outdoor units.	• Check No. of outdoor units connected (Only up to 4 units per system allowed). • Check communication lines between outdoor units. • Check for trouble in outdoor P.C. board (I/F).
L29	L29	SMMS-i (Series 4) *(see IPDU table below)*	I/F	Trouble in No. of IPDUs	All stop	Insufficient number of IPDUs 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 A3-IPDU, fan IPDU, and I/F P.C. board for trouble.
L30	L30	Detected indoor address	Indoor unit	External interlock of indoor unit	Stop of corresponding unit	• Signal is present at external trouble input terminal (CN80) for 1 minute.	**When external device is connected to CN80 connector:** 1) Check for trouble in external device. 2) Check for trouble in indoor P.C. board. **When external device is not connected to CN80 connector:** 1) Check for trouble in indoor P.C. board.
—	L31	—	I/F	Extended IC trouble	Continued operation	There is part failure in P.C. board (I/F).	Check outdoor P.C. board (I/F).
P01	—	—	Indoor unit	Indoor fan motor trouble	Stop of corresponding unit		• Check the lock of fan motor (AC fan). • Check wiring.
P03	P03	—	I/F	Discharge temperature TD1 trouble	All stop	Discharge temperature (TD1) exceeds 115 ˚C.	• Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check outdoor PMVs (PMV1, 2, 4) for clogging. • Check resistance characteristics of TD1 sensor. • Check for insufficiency in refrigerant quantity. • Check for trouble in 4-way valve. • Check for leakage of SV4 circuit. • Check SV4 circuit (wiring or installation trouble in SV41, SV42 or SV43).

L29 Sub-code — SMMS-i (Series 4):

	A3-IPDU			Fan IPDU
	1	2	3	
01	O			
02		O		
03	O	O		
04			O	
05	O		O	
06		O	O	
07	O	O	O	
08				O
09	O			O
0A		O		O
0B	O	O		O
0C			O	O
0D	O		O	O
0E		O	O	O
0F	O	O	O	O

Symbol O signifies site of IPDU trouble.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
P04	P04	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Activation of high-pressure SW	All stop	High-pressure SW is activated.	• Check connection of high-pressure SW connector. • Check for trouble in Pd pressure sensor. • Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check for trouble in outdoor fan. • Check for trouble in outdoor fan motor. • Check outdoor PMVs (PMV1, 2) for clogging. • Check indoor / outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction / discharge air flows. • Check SV2 circuit for clogging. • Check for trouble in outdoor P.C. board (I/F). • Check for trouble in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring trouble. • Check for troubled operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check SV5 valve circuit. • Check for refrigerant overcharging.
P05	P05	SMMS-i (Series 4) 00: 01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	I/F	Detection of open phase / phase sequence Inverter DC voltage (Vdc) trouble (compressor) MG-CTT trouble	All stop	• Open phase is detected when power is turned on. • Inverter DC voltage is too high (overvoltage) or too low (undervoltage).	• Check for trouble in outdoor P.C. board (I/F).
P07	P07	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU I/F	Heat sink overheating trouble	All stop	Temperature sensor built into IGBT (TH) is overheated.	• Check power supply voltage. • Check outdoor fan system trouble. • Check heat sink cooling duct for clogging. • Check IGBT and heat sink for thermal performance for troubled installation. (e.g. mounting screws and thermal conductivity) • Check for trouble in A3-IPDU. (troubled IGBT built-in temperature sensor (TH))
P10	P10	Detected indoor address	Indoor unit	Indoor overflow trouble	All stop	• Float switch operates. • Float switch circuit is open-circuited or disconnected at connector.	• Check float switch connector. • Check operation of drain pump. • Check drain pump circuit. • Check drain pipe for clogging. • Check for trouble in indoor P.C. board.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
P12	—	—	Indoor unit	Indoor fan motor trouble	Stop of corresponding unit	• Motor speed measurements continuously deviate from target value. • Overcurrent protection is activated.	• Check connection of fan connector and wiring. • Check for trouble in fan motor. • Check for trouble in indoor P.C. board. • Check impact of outside air treatment (OA).
P13	P13	—	I/F	Outdoor liquid backflow detection trouble	All stop	<During cooling operation> When system is in cooling operation, high pressure is detected in follower unit that has been turned off. <During heating operation> When system is in heating operation, outdoor PMV 1 or 2 continuously registers opening of 100p or less while under SH control.	• Check full-close operation of outdoor PMV (1, 2, 4). • Check for trouble in Pd or Ps sensor. • Check gas balancing circuit (SV2) for clogging. • Check balance pipe. • Check SV3B circuit for clogging. • Check trouble in outdoor P.C. board (I/F). • Check capillary of oil separator oil return circuit for clogging. • Check for leakage of check valve in discharge pipe convergent section.
P15	P15	01: TS condition	I/F	Gas leakdetection (TS1 condition)	All stop	Protective shutdown due to sustained suction temperature at or above judgment criterion for at least 10 minutes is repeated four times or more. <TS trouble judgment criterion> In cooling operation: 60 ˚C In heating operation: 40 ˚C	• Check for insufficiency in refrigerant quantity. • Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check PMVs (PMV1, 2) for clogging. • Check resistance characteristics of TS1 sensor. • Check for trouble in 4-way valve. • Check SV4 circuit for leakage
		02: TD condition	I/F	Gas leak detection (TD condition)	All stop	Protective shutdown due to sustained discharge temperature (TD1, TD2 or TD3) at or above 108 ˚C for at least 10 minutes is repeated four times or more.	• Check for insufficiency in refrigerant quantity. • Check PMVs (PMV 1, 2) for clogging. • Check resistance characteristics of TD1, TD2 and TD3 sensors. • Check indoor filter for clogging. • Check piping for clogging. • Check SV4 circuit (for leakage or coil installation trouble).
P17	P17	—	I/F	Discharge temperature TD2 trouble	All stop	Discharge temperature (TD2) exceeds 115 ˚C.	• Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check outdoor PMVs (PMV1, 2, 4) for clogging. • Check resistance characteristics of TD2 sensor. • Check for trouble in 4-way valve. • Check SV4 circuit for leakage. • Check SV4 circuit (for wiring or installation trouble involving SV41, SV42 and SV43).

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					
P18	P18	—	I/F	Discharge temperature TD3 trouble	All stop	Discharge temperature (TD3) exceeds 115 ˚C.	• Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check outdoor PMVs (PMV1, 2, 4) for clogging. • Check resistance characteristics of TD3 sensor. • Check for trouble in 4-way valve. • Check SV43 circuit for leakage. • Check SV4 circuit (for wiring or installation trouble involving SV41, SV42 and SV43).
P19	P19	Detected outdoor unit No.	I/F	4-way valve reversing trouble	All stop	Abnormal refrigerating cycle data is collected during heating operation.	• Check for trouble in main body of 4-way valve. • Check for coil trouble in 4-way valve and loose connection of its connector. • Check resistance characteristics of TS1 and TE1 sensors. • Check output voltage characteristics of Pd and Ps pressure sensors. • Check for wiring trouble involving TE1 and TL sensors.
P20	P20	—	I/F	Activation of high-pressure protection	All stop	Pd sensor detects pressure equal to or greater than 3.6 MPa.	• Check for trouble in Pd pressure sensor. • Check service valves (gas side, liquid side) to confirm full opening. • Check for trouble in outdoor fan. • Check for trouble in outdoor fan motor. • Check outdoor PMVs (PMV1, 2, 4) for clogging. • Check indoor / outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction / discharge air flows. • Check SV2 circuit for clogging. • Check for trouble in outdoor P.C. board (I/F). • Check for trouble in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring trouble. • Check for troubled operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check SV5 valve circuit. • Check for refrigerant overcharging.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
P22	P22	SMMS-i (Series 4) 0∗: IGBT circuit 1∗: Position detection circuit trouble 3∗: Motor lockup trouble 4∗: Motor current detection C∗: TH sensor temperature trouble D∗: TH sensor trouble E∗: Inverter DC voltage trouble (outdoor fan) **Note: Although letters 0 to F appear at locations indicated by "∗", please ignore them.**	IPDU	Outdoor fan IPDU trouble	All stop	(Sub code: 0∗) Fan IPDU over current protection circuit Flow of current equal to or greater than the specified value is detected during startup of the fan.	• Check fan motor. • Check for trouble in fan IPDU P.C. board.
					All stop	(Sub code: 1∗) Fan IPDU position detection circuit Position detection is not going on normally.	• Check fan motor. • Check connection of fan motor connector. • Check for trouble in fan IPDU P.C. board.
					All stop	(Sub code: 3∗) Gusty wind, an obstruction, or another external factor Speed estimation is not going on normally.	• Check fan motor. • Check for trouble in fan IPDU P.C. board.
					All stop	(Sub code: 4∗) Fan IPDU over current protection circuit Flow of current equal to or greater than the specified value is detected during operation of the fan.	• Check fan motor. • Check connection of fan motor connector. • Check for trouble in fan IPDU P.C. board.
					All stop	(Sub code: C∗) Higher temperature than the specified value is detected during operation of the fan.	• Check fan motor. • Check for trouble in fan IPDU P.C. board.
					All stop	(Sub code: D∗) The resistance value of the sensor is infinite or zero (open or short-circuit).	• Check for trouble in fan IPDU P.C. board.
					All stop	(Sub code: E∗) Fan IPDU DC voltage protection circuit The DC voltage higher or lower than the specified value is detected.	• Check power voltage of the main power supply. • Check for trouble in fan IPDU P.C. board. • Check connection of fan IPDU P.C. board.
P26	P26	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	G-TR short-circuit protection trouble	All stop	Overcurrent is momentarily detected during startup of compressor.	• Check connector connection and wiring on A3-IPDU P.C. board. • Check for trouble in compressor (layer short-circuit). • Check for trouble in outdoor P.C. board (A3-IPDU).
P29	P29	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Compressor position detection circuit trouble	All stop	Position detection is not going on normally.	• Check wiring and connector connection. • Check for compressor layer short-circuit. • Check for trouble in A3-IPDU P.C. board.
P31	—	—	Indoor unit	Other indoor trouble (group follower unit trouble)	Stop of corresponding unit	There is trouble in other indoor unit in group, resulting in detection of E07/L07/L03/L08.	• Check indoor P.C. board.

(2) Check Codes Displayed on Remote Controller and SMMS-e Outdoor Unit (7-Segment Display on I/F Board) and Locations to Be Checked

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

Main remote controller	Check code	Sub-code	Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
	Check code — Outdoor 7-segment display						
	Check code	Sub-code					
A01	A01	Detected indoor unit No.	Indoor unit (M-HWM)	Flow switch operation trouble	All stop	When water flow rate is reduced.	• Check the pump. • Check the strainer. • Check the flow switch. (Type, directtion of attachment and point of contact)
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.	• Check the water temperature. • Check the heat insulator of water pipes.
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.	• Check the line heater • Check the PMV coil and PMV. • Check the 2-way valve coil and 2-way valve
E01	—	—	Remote controller	Indoor-remote controller communication trouble (detected at remote controller end)	Stop of corresponding unit	Communication between indoor P.C. board and remote controller is disrupted.	• Check remote controller inter-unit tie cable (A/B). • Check for broken wire or connector bad contact. • Check indoor power supply. • Check for trouble in indoor P.C. board. • Check remote controller address settings (when two remote controllers are in use). • Check remote controller P.C. board.
E02	—	—	Remote controller	Remote controller transmission trouble	Stop of corresponding unit	Signal cannot be transmitted from remote controller to indoor unit.	• Check internal transmission circuit of remote controller. --- Replace remote controller as necessary.
E03	—	—	Indoor unit	Indoor-remote controller communication trouble (detected at indoor end)	Stop of corresponding unit	There is no communication from remote controller (including wireless) or network adaptor.	• Check remote controller and network adaptor wiring.
E04	—	—	Indoor unit	Indoor-outdoor communication circuit trouble (detected at indoor end)	Stop of corresponding unit	Indoor unit is not receiving signal from outdoor unit.	• Check order in which power was turned on for indoor and outdoor units. • Check indoor address setting. • Check indoor-outdoor tie cable. • Check outdoor terminator resistor setting (SW30, Bit 2).
E06	E06	No. of indoor units from which signal is received normally	I/F	Signal lack of indoor unit	All stop	Indoor unit initially communicating normally fails to return signal for specified length of time.	• Check power supply to indoor unit. (Is power turned on?) • Check connection of indoor-outdoor communication cable. • Check connection of communication connectors on indoor P.C. board. • Check connection of communication connectors on outdoor P.C. board. • Check for trouble in indoor P.C. board. • Check for trouble in outdoor P.C. board (I/F).
—	E07	—	I/F	Indoor-outdoor communication circuit trouble (detected at outdoor end)	All stop	Signal cannot be transmitted from outdoor to indoor units for 30 seconds continuously.	• Check outdoor terminator resistor setting (SW30, Bit 2). • Check connection of indoor-outdoor communication circuit.

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					
E08	E08	Duplicated indoor address	Indoor unit I/F	Duplicated indoor address	All stop	More than one indoor unit are assigned same address.	• Check indoor addresses. • Check for any change made to remote controller connection (group/individual) since indoor address setting.
E09	—	—	Remote controller	Duplicated master remote controller	Stop of corresponding unit	In two remote controller configuration (including wireless), both controllers are set up as master. (Header indoor unit is shut down with alarm, while follower indoor units continue operating.)	• Check remote controller settings. • Check remote controller P.C. boards.
E10	—	—	Indoor unit	Indoor inter-MCU communication trouble	Stop of corresponding unit	Communication cannot be established/maintained upon turning on of power or during communication.	• Check for trouble in indoor P.C. board
E12	E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	I/F	Automatic address starting trouble	All stop	• Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress. • Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.	• Perform automatic address setting again after disconnecting communication cable to that refrigerant line.
E15	E15	—	I/F	Indoor unit not found during automatic address setting	All stop	Indoor unit cannot be detected after indoor automatic address setting is started.	• Check connection of indoor-outdoor communication line. • Check for trouble in indoor power supply system. • Check for noise from other devices. • Check for power failure. • Check for trouble in indoor P.C. board.
E16	E16	00: Overloading 01-: No. of units connected	I/F	Too many indoor units connected	All stop	• Combined capacity of indoor units exceeds 135% of combined capacity of outdoor units. **Note:** **If this code comes up after backup setting for outdoor unit failure is performed, perform "No overloading detected" setting.** <"No overloading detected" setting method> Turn on SW09/Bit 2 on I/F P.C. board of outdoor header unit. • More than 64 indoor units are connected.	• Check capacities of indoor units connected. • Check combined HP capacities of indoor units. • Check HP capacity settings of outdoor units. • Check No. of indoor units connected. • Check for trouble in outdoor P.C. board (I/F).
E18	—	—	Indoor unit	Trouble in communication between indoor header and follower units	Stop of corresponding unit	Periodic communication between indoor header and follower units cannot be maintained.	• Check remote controller wiring. • Check indoor power supply wiring. • Check P.C. boards of indoor units.
E19	E19	00: No header unit 02: Two or more header units	I/F	Trouble in number of outdoor header units	All stop	• There are more than one outdoor header units in one line. • There is no outdoor header unit in one line.	Outdoor header unit is outdoor unit to which indoor-outdoor tie cable (U1,U2) is connected. • Check connection of indoor-outdoor communication line. • Check for trouble in outdoor P.C. board (I/F).
E20	E20	01: Connection of outdoor unit from other line 02: Connection of indoor unit from other line	I/F	Connection to other line found during automatic address setting	All stop	Equipment from other line is found to have been connected when indoor automatic address setting is in progress.	Disconnect inter-line tie cable in accordance with automatic address setting method explained in "Address setting" section.

Main remote controller	Check code (Outdoor 7-segment display) Check code	Sub-code	Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
E23	E23	—	I/F	Outdoor-outdoor communication transmission trouble	All stop	Signal cannot be transmitted to other outdoor units for at least 30 seconds continuously.	• Check power supply to outdoor units. (Is power turned on?) • Check connection of tie cables between outdoor units for bad contact or broken wire. • Check communication connectors on outdoor P.C. boards. • Check for trouble in outdoor P.C. board (I/F). • Check termination resistance setting for communication between outdoor units.
E25	E25	—	I/F	Duplicated follower outdoor address	All stop	There is duplication in outdoor addresses set manually.	**Note:** **Do not set outdoor addresses manually.**
E26	E26	Address of outdoor unit from which signal is not received normally	I/F	Signal lack of outdoor unit	All stop	Outdoor unit initially communicating normally fails to return signal for specified length of time.	• Backup setting is being used for outdoor units. • Check power supply to outdoor unit. (Is power turned on?) • Check connection of tie cables between outdoor units for bad contact or broken wire. • Check communication connectors on outdoor P.C. boards. • Check for trouble in outdoor P.C. board (I/F).
E28	E28	Detected outdoor unit No.	I/F	Outdoor follower unit trouble	All stop	Outdoor header unit receives check code from outdoor follower unit.	• Check check code displayed on outdoor follower unit. <Convenient functions> If SW04 is pressed and held for at least 1 second while [E28] is displayed on the 7-segment display of outdoor header unit, the fan of the outdoor unit that has been shut down due to 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.
E31	E31	(see sub-code table below)	I/F	IPDU communication trouble	All stop	Communication is disrupted between IPDUs (P.C. boards) in inverter box.	• Check wiring and connectors involved in communication between IPDU-I/F P.C. board for bad contact or broken wire. • Check for trouble in outdoor P.C. board (I/F, A3-IPDU or Fan IPDU). • Check for external noise.
		80		Communication trouble between MCU and Sub MCU	All stop	Communication between MCU and Sub MCU stopped.	• Operation of power supply reset (OFF for 60 seconds or more) • Outdoor I/F PC board trouble check

Sub-code table for E31:

	A3-IPDU 1	A3-IPDU 2	Fan-IPDU 1	Fan-IPDU 2
01	O			
02		O		
03	O	O		
08			O	
09	O		O	
0A		O	O	
0B	O	O	O	
10				O
11	O			O
12		O		O
13	O	O		O
18			O	O
19	O		O	O
1A		O	O	O
1B	O	O	O	O

Circle (O): Troubled IPDU

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					
F01	—	—	Indoor unit	Indoor TCJ sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TCJ sensor connector and wiring. • Check resistance characteristics of TCJ sensor. • Check for trouble in indoor P.C. board.
F02	—	—	Indoor unit	Indoor TC2 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TC2 sensor connector and wiring. • Check resistance characteristics of TC2 sensor. • Check for trouble in indoor P.C. board.
F03	—	—	Indoor unit	Indoor TC1 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TC1 sensor connector and wiring. • Check resistance characteristics of TC1 sensor. • Check for trouble in indoor P.C. board.
F04	F04	—	I/F	TD1 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TD1 sensor connector. • Check resistance characteristics of TD1 sensor. • Check for trouble in outdoor P.C. board (I/F).
F05	F05	—	I/F	TD2 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TD2 sensor connector. • Check resistance characteristics of TD2 sensor. • Check for trouble in outdoor P.C. board (I/F).
F06	F06	01: TE1 sensor trouble 02: TE2 sensor trouble	I/F	TE1/TE2 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TE1/TE2 sensor connectors. • Check resistance characteristics of TE1/TE2 sensors. • Check for trouble in outdoor P.C. board (I/F).
F07	F07	01: TL1 sensor trouble 02: TL2 sensor trouble 03: TL3 sensor trouble	I/F	TL1/TL2/TL3 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TL1/TL2/TL3 sensor connector. • Check resistance characteristics of TL1/TL2/TL3 sensor. • Check for trouble in outdoor P.C. board (I/F).
F08	F08	—	I/F	TO sensor trouble	All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TO sensor connector. • Check resistance characteristics of TO sensor. • Check for trouble in outdoor P.C. board (I/F).
F09	F09	01: TG1 sersor trouble 02: TG2 sersor trouble	I/F	TG1/TG2 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TG1/TG2 sensor connectors. • Check resistance characteristics of TG1/TG2 sensors. • Check for trouble in outdoor P.C. board (I/F).
F10	—	—	Indoor unit	Indoor TA sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TA sensor connector and wiring. • Check resistance characteristics of TA sensor. • Check for trouble in indoor P.C. board.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
F11	—	—	Indoor unit	Indoor TF sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TF sensor connector and wiring. • Check resistance characteristics of TF sensor. • Check for trouble in indoor P.C. board.
F12	F12	01: TS1 sersor trouble 03: TS3 sensor trouble	I/F	TS1/TS3 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TS1/TS3 sensor connector • Check resistance characteristics of TS1/TS3 sensor. • Check for trouble in indoor P.C. board.
F13	F13	01: Compressor 1 side 02: Compressor 2 side	IPDU	TH sensor trouble	All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Trouble in IPM built-in temperature sensor → Replace A3-IPDU P.C. board.
F15	F15	—	I/F	Outdoor temperature sensor wiring trouble (TE1, TL1)	All stop	During compressor operation in HEAT mode, TL1 continuously provides temperature reading higher than indicated by TL1 by at least specified margin for 3 minutes or more.	• Check installation of TE1 and TL1 sensors. • Check resistance characteristics of TE1 and TL1 sensors. • Check for outdoor P.C. board (I/F) trouble.
F16	F16	—	I/F	Outdoor pressure sensor wiring trouble (Pd, Ps)	All stop	Readings of high-pressure Pd sensor and lowpressure Ps sensor are switched. Output voltages of both sensors are zero.	• Check connection of high-pressure Pd sensor connector. • Check connection of low-pressure Ps sensor connector. • Check for trouble in pressure sensors Pd and Ps. • Check for trouble in outdoor P.C. board (I/F). • Check for deficiency in compressive output of compressor.
F23	F23	—	I/F	Ps sensor trouble	All stop	Output voltage of Ps sensor is zero.	• Check for connection trouble involving Ps sensor and Pd sensor connectors. • Check connection of Ps sensor connector. • Check for trouble in Ps sensor. • Check for deficiency in compressive output of compressor. • Check for trouble in 4-way valve. • Check for trouble in outdoor P.C. board (I/F). • Check for trouble in SV4 circuit.
F24	F24	—	I/F	Pd sensor trouble	All stop	Output voltage of Pd sensor is zero (sensor open-circuited). Pd > 4.15MPa despite compressor having been turned off.	• Check connection of Pd sensor connector. • Check for trouble in Pd sensor. • Check for trouble in outdoor P.C. board (I/F).
F29	—	—	Indoor unit	Other indoor trouble	Stop of corresponding unit	Indoor P.C. board does not operate normally.	• Check for trouble in indoor P.C. board (troubled EEPROM)
F31	F31	—	I/F	Outdoor EEPROM trouble	All stop *1	Outdoor P.C. board (I/F) does not operate normally.	• Check power supply voltage. • Check power supply noise. • Check for trouble in outdoor P.C. board (I/F).
H01	H01	01: Compressor 1 side 02: Compressor 2 side	IPDU	Compressor breakdown	All stop	Inverter current detection circuit detects overcurrent and shuts system down.	• Check power supply voltage. (AC380-415V ± 10%). • Check for trouble in compressor. • Check for possible cause of abnormal overloading. • Check for trouble in outdoor P.C. board (A3-IPDU).

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

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
H02	H02	01: Compressor 1 side 02: Compressor 2 side	IPDU	Compressor trouble (lockup) MG-CTT trouble	All stop	Overcurrent is detected several seconds after startup of inverter compressor.	• Check for trouble in compressor. • Check power supply voltage. (AC380-415V ± 10%). • Check compressor system wiring, particularly for open phase. • Check connection of connectors/terminals on A3-IPDU P.C. board. • Check conductivity of case heater. (Check for refrigerant problem inside compressor.) • Check for trouble in outdoor P.C. board (A3-IPDU). • Check outdoor MG-CTT.
H03	H03	01: Compressor 1 side 02: Compressor 2 side	IPDU	Current detection circuit trouble	All stop	Current flow of at least specified magnitude is detected despite inverter compressor having been shut turned off.	• Check current detection circuit wiring. • Check trouble in outdoor P.C. board (A3-IPDU).
H05	H05	—	I/F	TD1 sensor miswiring (incomplete insertion)	All stop	Discharge temperature of compressor 1 (TD1) does not increase despite compressor being in operation.	• Check installation of TD1 sensor. • Check connection of TD1 sensor connector and wiring. • Check resistance characteristics of TD1 sensor. • Check for trouble in outdoor P.C. board (I/F).
H06	H06	—	I/F	Activation of low-pressure protection	All stop	Low-pressure Ps sensor detects operating pressure lower than 0.02MPa.	• Check service valves to confirm full opening (both gas and liquid sides). • Check outdoor PMVs for clogging (PMV1, 3). • Check for trouble in SV2 or SV4 circuits. • Check for trouble in low-pressure Ps sensor. • Check indoor filter for clogging. • Check valve opening status of indoor PMV. • Check refrigerant piping for clogging. • Check operation of outdoor fan (during heating). • Check for insufficiency in refrigerant quantity.
H07	H07	—	I/F	Low oil level protection	All stop	Operating compressor detects continuous state of low oil level for about 2 hours.	<All outdoor units in corresponding line to be checked> • Check balance pipe service valve to confirm full opening. • Check connection and installation of TK1, TK2, TK4, and TK5 sensors. • Check resistance characteristics of TK1, TK2, TK4, and TK5 sensors. • Check for gas or oil leak in same line. • Check for refrigerant problem inside compressor casing. • Check SV3A, SV3B, SV3C, SV3D valves for trouble. • Check oil return circuit of oil separator for clogging. • Check oil equalizing circuit for clogging.

MG-CTT: Magnet contactor

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 04: TK4 sensor trouble 05: TK5 sensor trouble	I/F	Trouble in temperature sensor for oil level detection	All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TK1 sensor connector. • Check resistance characteristics of TK1 sensor. • Check for trouble in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TK2 sensor connector. • Check resistance characteristics of TK2 sensor. • Check for trouble in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TK4 sensor connector. • Check resistance characteristics of TK4 sensor. • Check for trouble in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open/short-circuit).	• Check connection of TK5 sensor connector. • Check resistance characteristics of TK5 sensor. • Check for trouble in outdoor P.C. board (I/F).
H15	H15	—	I/F	TD2 sensor miswiring (incomplete insertion)	All stop	Discharge temperature of (TD2) does not increase despite compressor 2 being in operation.	• Check installation of TD2 sensor. • Check connection of TD2 sensor connector and wiring. • Check resistance characteristics of TD2 sensor. • Check for trouble in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
H16	H16	01: TK1 oil circuit trouble 02: TK2 oil circuit trouble 04: TK4 oil circuit trouble 05: TK5 oil circuit trouble	I/F	Oil level detection circuit trouble	All stop	No temperature change is detected by TK1 despite compressor 1 having been started.	• Check for disconnection of TK1 sensor. • Check resistance characteristics of TK1 sensor. • Check for connection trouble involving TK1, TK2, TK4 and TK5 sensors. • Check for clogging in oil equalizing circuit capillary and troubled operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK2 despite compressor 2 having been started.	• Check for disconnection of TK2 sensor. • Check resistance characteristics of TK2 sensor. • Check for connection trouble involving TK1, TK2, TK4 and TK5 sensors. • Check for clogging in oil equalizing circuit capillary and troubled operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK4 despite compressor having been started.	• Check for disconnection of TK4 sensor. • Check resistance characteristics of TK4 sensor. • Check for connection trouble involving TK1, TK2, TK4 and TK5 sensors. • Check for clogging in oil equalizing circuit capillary and troubled operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK5 despite compressor having been started.	• Check for disconnection of TK5 sensor. Check resistance characteristics of TK5 sensor. • Check for connection trouble involving TK1, TK2, TK4 and TK5 sensors. • Check for clogging in oil equalizing circuit capillary and troubled operation in check valve. • Check for refrigerant entrapment inside compressor.
L02	L02	—	Indoor unit	Outdoor units model disagreement trouble	Stop of corresponding unit	In case of different outdoor unit (Not corresponded to Air to Air Heat Exchanger type)	• Check outdoor unit model. (Check whether the outdoor unit corresponds to Air to Air Heat Exchanger type or not.)
L03	—	—	Indoor unit	Duplicated indoor header unit	Stop of corresponding unit	There are more than one header units in group.	• Check indoor addresses. • Check for any change made to remote controller connection (group/ individual) since indoor address setting.
L04	L04	—	I/F	Duplicated outdoor line address	All stop	There is duplication in line address setting for outdoor units belonging to different refrigerant piping systems.	• Check line addresses.
L05	—	—	I/F	Duplicated priority indoor unit (as displayed on priority indoor unit)	All stop	More than one indoor units have been set up as priority indoor unit.	• Check display on priority indoor unit.

Main remote controller Check code	Outdoor 7-segment display Check code	Sub-code	Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
L06	L06	No. of priority indoor units	I/F	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	All stop	More than one indoor units have been set up as priority indoor unit.	• Check displays on priority indoor unit and outdoor unit.
L07	—	—	Indoor unit	Connection of group control cable to standalone indoor unit	Stop of corresponding unit	There is at least one standalone indoor unit to which group control cable is connected.	• Check indoor addresses.
L08	L08	—	Indoor unit	Indoor group / addresses not set	Stop of corresponding unit	Address setting has not been performed for indoor units.	• Check indoor addresses. **Note:** This code is displayed when power is turned on for the first time after installation.
L09	—	—	Indoor unit	Indoor capacity not set	Stop of corresponding unit	Capacity setting has not been performed for indoor unit.	Set indoor capacity. (DN = 11)
L10	L10	—	I/F	Outdoor capacity not set	All stop	Jumper wire provided on P.C. board for servicing I/F P.C. board has not been removed as required for given model.	Check model setting of P.C. board for servicing outdoor I/F P.C. board.
L20	—	—	Network adaptor Indoor unit	Duplicated central control address	All stop	There is duplication in central control address setting.	• Check central control addresses. • Check network adaptor P.C. board .
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 Bit 4 on outdoor I/F P.C. board. (SW09 Bit 4:ON)
L28	L28	—	I/F	Too many outdoor units connected	All stop	There are more than three outdoor units.	• Check No. of outdoor units connected (Only up to 3 units per system allowed). • Check communication lines between outdoor units. • Check for trouble in outdoor P.C. board (I/F).
L29	L29	(see IPDU table below)	I/F	Trouble in No. of IPDUs	All stop	Insufficient number of IPDUs 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 A3-IPDU, fan IPDU, and I/F P.C. board for trouble.
L30	L30	Detected indoor address	Indoor unit	External interlock of indoor unit	Stop of corresponding unit	• Signal is present at external trouble input terminal (CN80) for 1 minute.	**When external device is connected to CN80 connector:** 1) Check for trouble in external device. 2) Check for trouble in indoor P.C. board. **When external device is not connected to CN80 connector:** 1) Check for trouble in indoor P.C. board.
—	L31	—	I/F	Extended IC trouble	Continued operation	There is part failure in P.C. board (I/F).	Check outdoor P.C. board (I/F).
P01	—	—	Indoor unit	Indoor fan motor trouble	Stop of corresponding unit		• Check the lock of fan motor (AC fan). • Check wiring.

Sub-code for L29:

	A3-IPDU 1	A3-IPDU 2	Fan-IPDU 1	Fan-IPDU 2
01	O			
02		O		
03	O	O		
08			O	
09	O		O	
0A		O	O	
0B	O	O	O	
10				O
11	O			O
12		O		O
13	O	O		O
18			O	O
19	O		O	O
1A		O	O	O
1B	O	O	O	O

Circle (O): Trouble IPDU

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					
P03	P03	—	I/F	Discharge temperature TD1 trouble	All stop	Discharge temperature (TD1) exceeds 115 ˚C.	• Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check outdoor PMVs (PMV1, 3) for clogging. • Check resistance characteristics of TD1 sensor. • Check for insufficiency in refrigerant quantity. • Check for trouble in 4-way valve. • Check for leakage of SV4 circuit. • Check SV4 circuit (wiring or installation trouble in SV41 or SV42).
P04	P04	01: Compressor 1 side 02: Compressor 2 side	IPDU	Activation of high-pressure SW	All stop	High-pressure SW is activated.	• Check connection of high-pressure SW connector. • Check for trouble in Pd pressure sensor. • Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check for trouble in outdoor fan. • Check for trouble in outdoor fan motor. • Check outdoor PMVs (PMV1, 3) for clogging. • Check indoor/outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction/discharge air flows. • Check SV2 circuit for clogging. • Check for trouble in outdoor P.C. board (I/F). • Check for trouble in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring trouble. • Check for troubled operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check SV5 valve circuit. • Check for refrigerant overcharging.
P05	P05	00:	I/F	Detection of open phase/ phase sequence	All stop	• Open phase is detected when power is turned on. • Inverter DC voltage is too high (overvoltage) or too low (undervoltage).	• Check for trouble in outdoor P.C. board (I/F). • Check wiring of outdoor power supply.
		01: Compressor 1 side 02: Compressor 2 side		Inverter DC voltage (Vdc) trouble (compressor) MG-CTT trouble			
P07	P07	01: Compressor 1 side 02: Compressor 2 side	IPDU I/F	Heat sink overheating trouble	All stop	Temperature sensor built into IPM (TH) is overheated.	• Check power supply voltage. • Check outdoor fan system trouble. • Check heat sink cooling duct for clogging. • Check IPM and heat sink for thermal performance for troubled installation. (e.g. mounting screws and thermal conductivity) • Check for trouble in A3-IPDU (troubled IPM built-in temperature sensor (TH))

MG-CTT: Magnet contactor

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
P10	P10	Detected indoor address	Indoor unit	Indoor overflow trouble	All stop	• Float switch operates. • Float switch circuit is open-circuited or disconnected at connector.	• Check float switch connector. • Check operation of drain pump. • Check drain pump circuit. • Check drain pipe for clogging. • Check for trouble in indoor P.C. board.
P12	—	—	Indoor unit	Indoor fan motor trouble	Stop of corresponding unit	• Motor speed measurements continuously deviate from target value. • Overcurrent protection is activated.	• Check connection of fan connector and wiring. • Check for trouble in fan motor. • Check for trouble in indoor P.C. board. • Check impact of outside air treatment (OA).
P13	P13	—	I/F	Outdoor liquid backflow detection trouble	All stop	<During cooling operation> When system is in cooling operation, high pressure is detected in follower unit that has been turned off. <During heating operation> When system is in heating operation, outdoor PMV 1 or 3 continuously registers opening of 300p or less while under superheat control.	• Check full-close operation of outdoor PMV (1, 3, 4). • Check for trouble in Pd or Ps sensor. • Check gas balancing circuit (SV2) for clogging. • Check balance pipe. • Check SV3B circuit for clogging. • Check trouble in outdoor P.C. board (I/F). • Check capillary of oil separator oil return circuit for clogging. • Check for leakage of check valve in discharge pipe convergent section.
P15	P15	01: TS condition	I/F	Gas leakdetection (TS1 condition)	All stop	Protective shutdown due to sustained suction temperature at or above judgment criterion for at least 10 minutes is repeated four times or more. <TS trouble judgment criterion> In cooling operation: 60 ˚C In heating operation: 40 ˚C	• Check for insufficiency in refrigerant quantity. • Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check PMVs (PMV1, 3) for clogging. • Check resistance characteristics of TS1 sensor. • Check for trouble in 4-way valve. • Check SV4 circuit for leakage
		02: TD condition	I/F	Gas leak detection (TD condition)	All stop	Protective shutdown due to sustained discharge temperature (TD1 or TD2) at or above 108 ˚C for at least 10 minutes is repeated four times or more.	• Check for insufficiency in refrigerant quantity. • Check PMVs (PMV 1, 3) for clogging. • Check resistance characteristics of TD1 and TD2 sensors. • Check indoor filter for clogging. • Check piping for clogging. • Check SV4 circuit (for leakage or coil installation trouble).
P17	P17	—	I/F	Discharge temperature TD2 trouble	All stop	Discharge temperature (TD2) exceeds 115 ˚C.	• Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check outdoor PMVs (PMV1, 3, 4) for clogging. • Check resistance characteristics of TD2 sensor. • Check for trouble in 4-way valve. • Check SV4 circuit for leakage. • Check SV4 circuit (for wiring or installation trouble involving SV41 and SV42).

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					
P19	P19	Detected outdoor unit No.	I/F	4-way valve reversing trouble	All stop	Abnormal refrigerating cycle data is collected during heating operation.	• Check for trouble in main body of 4-way valve. • Check for coil trouble in 4-way valve and loose connection of its connector. • Check resistance characteristics of TS1 and TE1,TE2 sensors. • Check output voltage characteristics of Pd and Ps pressure sensors. • Check for wiring trouble involving TE1 and TL1 sensors.
P20	P20	—	I/F	Activation of high-pressure protection	All stop	<During cooling operation> Pd sensor detects pressure equal to or greater than 3.85 MPa. <During heating operation> Pd sensor detects pressure equal to or greater than 3.6 MPa.	• Check for trouble in Pd pressure sensor. • Check service valves (gas side, liquid side) to confirm full opening. • Check for trouble in outdoor fan. • Check for trouble in outdoor fan motor. • Check outdoor PMV (PMV1, 3, 4) for clogging. • Check indoor/outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction/ discharge air flows. • Check SV2 circuit for clogging. • Check for trouble in outdoor P.C. board (I/F). • Check for trouble in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring trouble. • Check for troubled operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check SV5 valve circuit. • Check for refrigerant overcharging.

Check code			Location of detection	Description	System status	Check code detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
P22	P22	#0: Element short-circuit	IPDU	Outdoor fan IPDU trouble *Put in Fan IPDU No. in [#] mark	All stop	(Sub code: #0) Fan IPDU over current protection circuit Flow of current equal to or greater than the specified value is detected during startup of the fan.	• Check fan motor. • Check for trouble in fan IPDU P.C. board.
		#1: Position detection circuit trouble			All stop	(Sub code: #1) Fan IPDU position detection circuit Position detection is not going on normally.	• Check fan motor. • Check connection of fan motor connector. • Check for trouble in fan IPDU P.C. board.
		#3: Motor lock trouble			All stop	(Sub code: #3) Gusty wind, an obstruction, or another external factor Speed estimation is not going on normally.	• Check fan motor. • Check for trouble in fan IPDU P.C. board.
		#4: Motor current trouble			All stop	(Sub code: #4) Fan IPDU over current protection circuit Flow of current equal to or greater than the specified value is detected during operation of the fan.	• Check fan motor. • Check connection of fan motor connector. • Check for trouble in fan IPDU P.C. board.
		#C: TH sensor temperature trouble			All stop	(Sub code: #C) Higher temperature than the specified value is detected during operation of the fan.	• Check fan motor. • Check for trouble in fan IPDU P.C. board.
		#D: TH sensor short circuit/release trouble			All stop	(Sub code: #D) The resistance value of the sensor is infinite or zero (open or short-circuit).	• Check for trouble in fan IPDU P.C. board.
		#E: Vdc voltage trouble			All stop	(Sub code: #E) Fan IPDU DC voltage protection circuit The DC voltage higher or lower than the specified value is detected.	• Check power voltage of the main power supply. • Check for trouble in fan IPDU P.C. board. • Check connection of fan IPDU P.C. board.
P26	P26	01: Compressor 1 side 02: Compressor 2 side	IPDU	IPM shortcircuit protection trouble	All stop	Overcurrent is momentarily detected during startup of compressor.	• Check connector connection and wiring on A3-IPDU P.C. board. • Check for trouble in compressor (layer shortcircuit). • Check for trouble in outdoor P.C. board (A3-IPDU).
P29	P29	01: Compressor 1 side 02: Compressor 2 side	IPDU	Compressor position detection circuit trouble	All stop	Position detection is not going on normally.	• Check wiring and connector connection. • Check for compressor layer short-circuit. • Check for trouble in A3-IPDU P.C. board.
P31	—	—	Indoor unit	Other indoor trouble (group follower unit trouble)	Stop of corresponding unit	There is trouble in other indoor unit in group, resulting in detection of E07/L07/L03/L08.	• Check indoor P.C. board.

Check code detected by TCC-LINK central control device

Indoor unit (including Hot Water Module)

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

8-5. 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

```
Dose flow SW operate ?  --NO-->  Is circuit wiring normal ?  --NO-->  Check and correct wiring.
       |                                    |
      YES                                  YES
       |                                    |
       |                                    +---------------------->  Check M-HWM control P.C. board.
       v
Are parts of flow SW normal ?  --NO----------------------------->  Check parts.
       |
      YES
       |
       v
Dose water pump operate ?  --NO-->  Is circuit wiring normal ?  --NO-->  Check and correct wiring.
       |                                    |
      YES                                  YES
       |                                    |
       |                                    v
       |                            Is M-HWM I/F P.C. board normal ?  --NO-->  Replace M-HWM I/F P.C. board.
       |                                    |
       |                                   YES
       |                                    |
       |                                    +---------------------->  Check water pump Failure → replace
       |
       +--------------------------------------------------------->  Water pipe clogging.
```
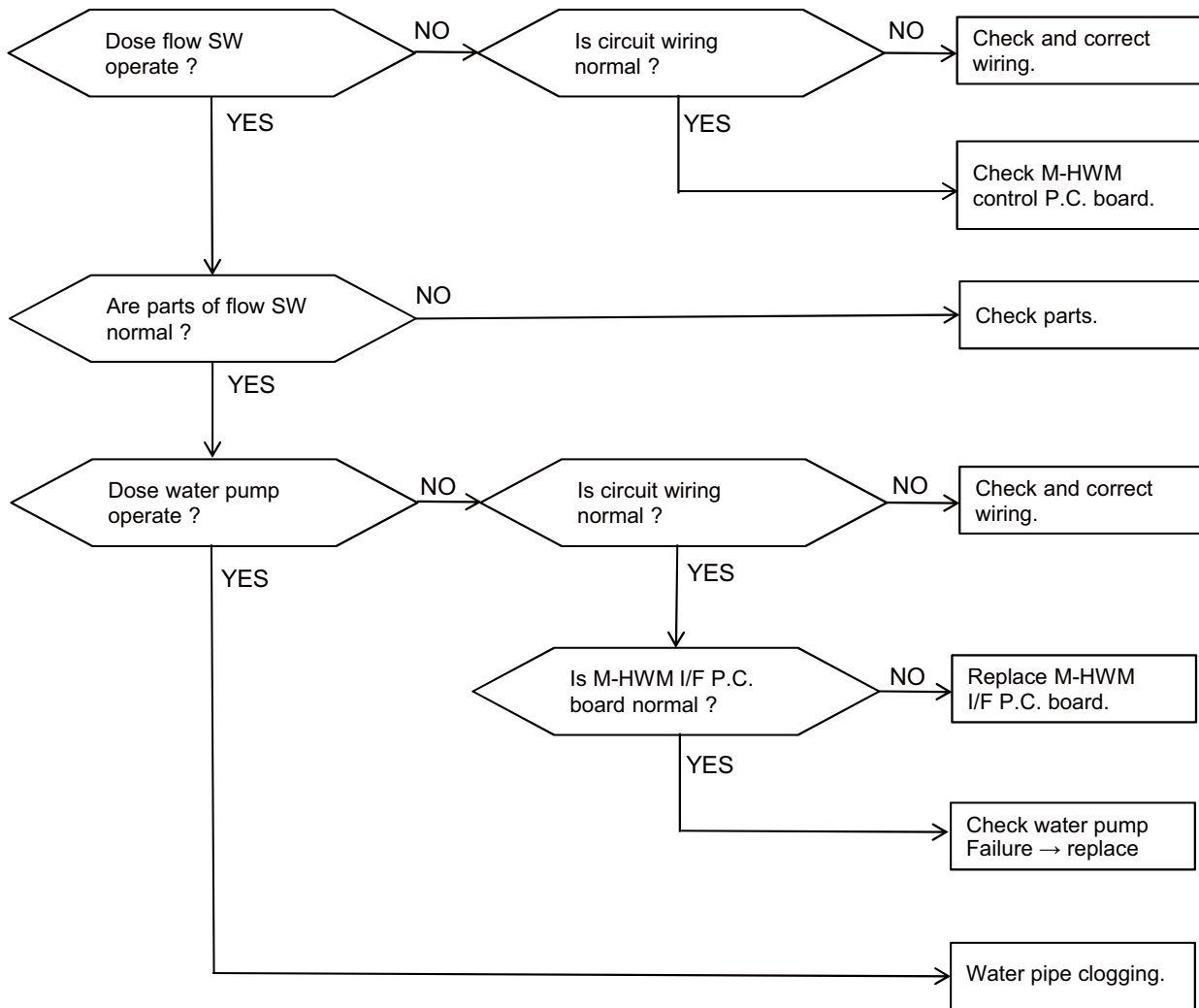
(Check there is no clogging in water pipe.)

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

Is the water heater connected ?

NO → Check setting of DN code 61
Heater connection: 1
No heater connection: 0

YES

Is the water heater normal ?

NO → Are characteristics of TWI (TA) and TWO (TC2) sensor resistance normal ?

NO → Check and correct

YES → Replace M-HWM I/F P.C. board.

YES

Is the water heater capacity selection correct ?

NO → Select the correct

YES

Are characteristics of TWI (TA) and TWO (TC2) sensor resistance normal ?

NO → Replace TWI (TA) or TWO (TC2) sensor.

YES → ・Replace M-HWM I/F P.C. board.
・Check M-HWM ambient temperature.
Out of use range → remove M-HWM

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

Are characteristics of TWI (TA) and TWO (TC2) sensor resistance normal ?

NO → Replace TWI (TA) or TWO (TC2) sensor.

YES

Is M-HWM ambient temperature within the use range ?

NO → Install M-HWM and water pipes in the freeze-free place.

YES

Replace M-HWM control P.C. board.
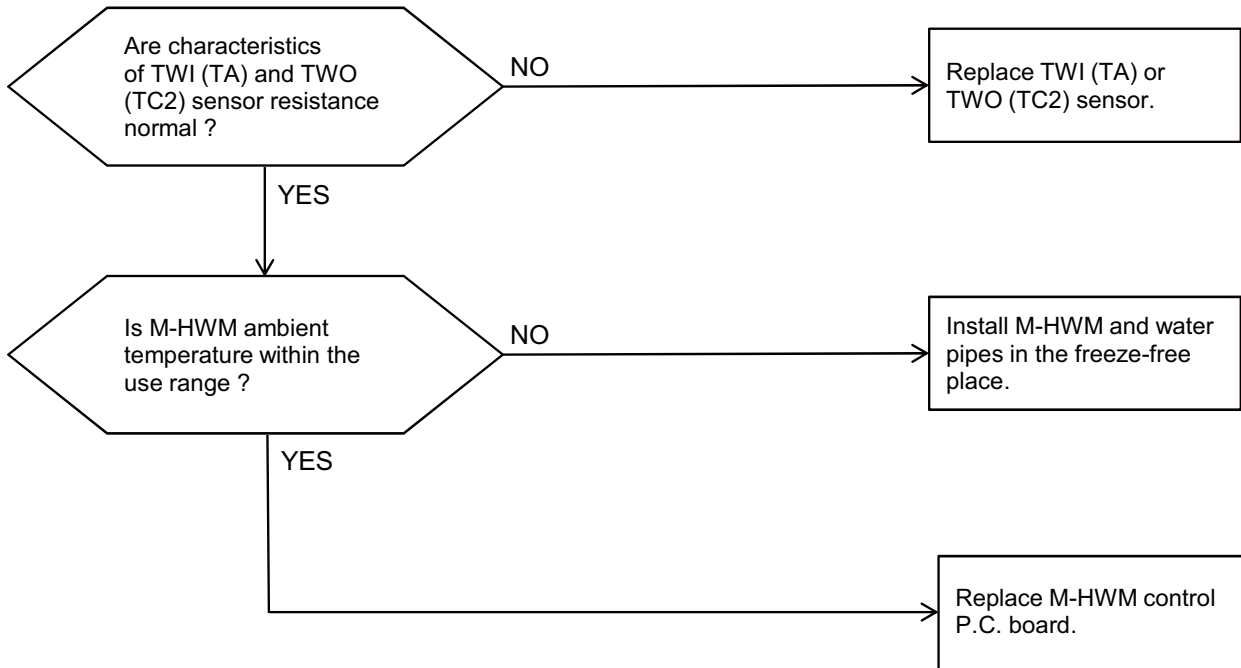
Check code	Check code name	Cause
[L23]-02	Switch setting trouble of outdoor unit	Switch setting trouble of outdoor unit when HWM is connected.

Does the system include Hot water module ?

NO → Outdoor unit can be communicating with Hot water module in the other system. Check whether communication lines are correctly connected.

YES

Check setting of SW09 Bit4 on I/F P.C. board of outdoor unit. Turn on Bits4 of SW09 when HWM is connected.

Check code	Check code name	Cause
[E06]	Decreased number of indoor units	1. Communication lines (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?)

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

Is the wiring of the communication line between indoor and outdoor correct? — No → Correct communication line.

Yes ↓

Is connection of CN40 connector on indoor P.C. board normal? — No → Correct wiring or connector.

Yes ↓

Is connection of CN01 connector on outdoor I/F P.C. board normal? — No →

Yes ↓

Is power of indoor unit turned on? — No → Turn on power of indoor unit.

Yes ↓

Did a power failure occur? — Yes → Clear the check code.

No ↓

Is there noise, etc? — Yes → Check noise, etc, and eliminate it if any.

No ↓

Replace indoor P.C. board.

(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.

• 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 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 on I/F P.C. board is OFF, turn on Bits 4 of SW09 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 matches with that of HWM units currently connected.
Setting a rotary switch on I/F P.C. board as shown in the table below allow you to confirm the number of HWM units recorded on I/F P.C. board.

Note:
When turning on Bits 4 of SW09, 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 HWM 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.

No. of HWM recorded on the I/F P.C. board	Rotary switch setup			7-segment display	
	SW01	SW02	SW03	A	B
	1	16	15	[ho]	[.....]

8-6. Sensor characteristics

Indoor unit

▼ Temperature sensor characteristics

TC1 sensor
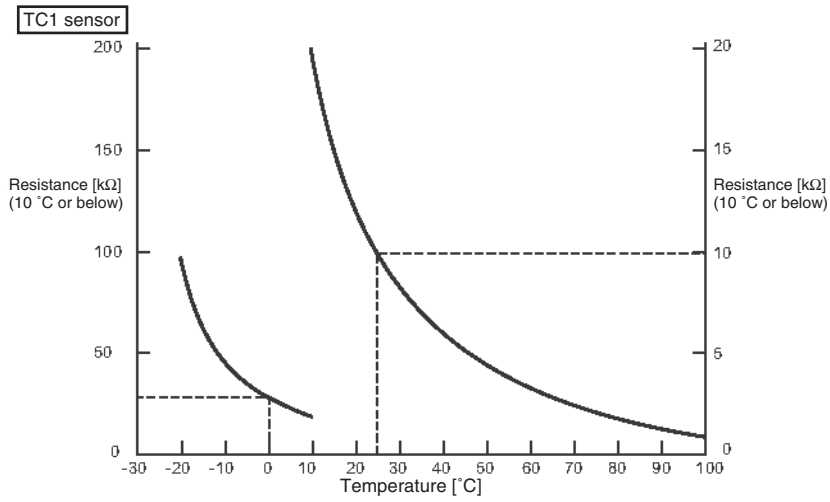
Temperature [°C]	Resistance [kΩ]
-20	98.3
-15	73.7
-10	55.8
-5	42.6
0	32.8
5	25.5
10	20.0
15	15.7
20	12.5
25	10.0
30	8.1
35	6.5
40	5.3
45	4.4
50	3.6
55	3.0
60	2.5
65	2.1
70	1.7
75	1.5
80	1.2
85	1.1
90	0.9
95	0.8
100	0.7

TWI (TA), TCJ2 (TF), TCJ and TWO (TC2) sensor
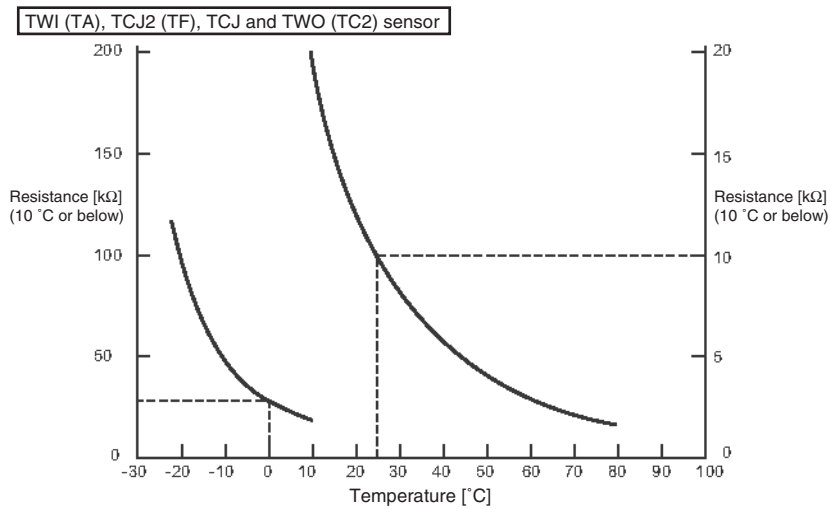
Temperature [°C]	Resistance [kΩ]
-20	102.9
-15	76.6
-10	57.7
-5	44.0
0	38.8
5	26.1
10	20.4
15	16.0
20	12.6
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.8
60	2.3
65	1.9
70	1.6
75	1.4
80	1.2

9. P.C. BOARD EXCHANGE PROCEDURES

■ Hot water module

Replacement of Hot water module P.C. boards

Part code	Model type	P.C. board type
431-6V-529	MMW-AP✽✽1LQ series	MCC-1403

Points to note when replacing hot water module P.C. board assembly

The electrically erasable programmable read-only memory (hereinafter EEPROM, IC10) mounted on a P.C. board holds important setting data, including the type and capacity codes intrinsic to the model (set at the factory), as well as the line / indoor (including hot water module) / group addresses, and the like (during installation, either automatically or manually). Proceed with the replacement of a P.C. board assembly in accordance with the procedure described below.

After completion of the work, check the settings again, including the hot water module No. and group header / follower designation, and confirm the integrity of the refrigerating cycle by conducting a test operation, etc.

<Replacement procedure>

Method 1

If it is possible to turn on the hot water module and read the setting data from the P.C. board to be replaced via a wired remote controller -

Reading EEPROM data: **Procedure 1**

⇩

Replacing P.C. board and turning on power: **Procedure 2**

⇩

Writing EEPROM data in new EEPROM: **Procedure 3**

⇩

Resetting power supply (applicable to all hot water module units connected to remote controller in case of group operation)

Method 2

If it is not possible to read the setting data due to the failure of the EEPROM itself -
Replacing P.C. board and turning on power: **Procedure 2**

⇩

Writing EEPROM data on basis of information supplied by customer (e.g. optional connection setting): **Procedure 3**

⇩

Resetting power supply (applicable to all hot water module units connected to remote controller in case of group operation)

Procedure 1: reading setting data from EEPROM

(Read the setting data from EEPROM, including both the factory settings and any modifications made to them on site.)

1 **Push the ⏱ + ⚙ + ⟳ buttons simultaneously and hold for at least 4 seconds. (This number corresponds to the same number shown on the Remote Controller Operation Diagram.)**

  * In the case of group control, the unit No. displayed first is the indoor unit (including Hot Water Module) No. of the header unit.
    At the same time, the CODE No. (DN code) $I0$ is displayed.

2 **Each time 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.**

  * The fan of the selected indoor unit (including Hot Water Module) comes on, with the louvers swinging, depending on the model.

3 **The ⬇TEMP.⬆ button allows you to move the CODE No. (DN code) up / down by one place.**

4 **First, change the CODE No. (DN code) from $I0$ to 03. (To set central control address)**

  Jot down the setting data displayed.

5 **Change the CODE No. (DN code) using the ⬇TEMP.⬆ button.**

  Again, jot down the setting data displayed.

6 **Repeat step 5 until all the setting data has been jotted down. (See the CODE No. list.)**

  * CODE No. (DN code) go from 01 to FF with a few gaps along the way.

7 **When finished, push the ⏱ button to bring the system back to normal off state.**

  (It takes the system about 1 minute to become responsive to remote controller operation.)

CODE No. (DN code) necessary at minimum

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

Remote controller operation diagram

<Fig. 1 RBC-AMT32E>

<Fig. 2 RBC-AMS41E>
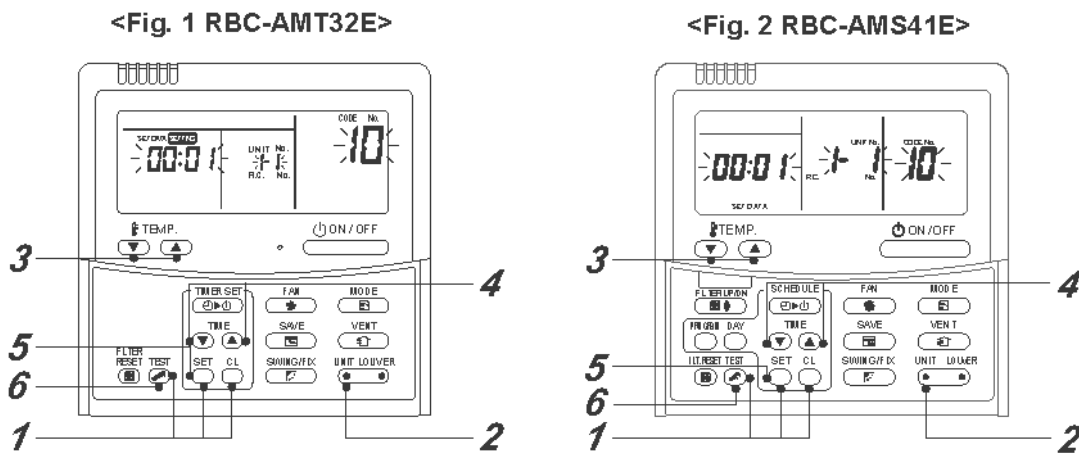
Procedure 2: replacing P.C. board

1 **Replace the troubled 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.)
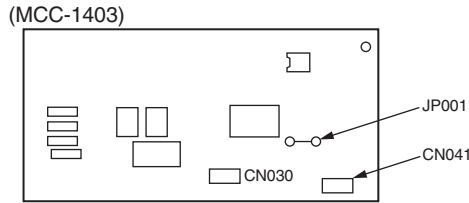

(MCC-1403)

JP001
CN041
CN030

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 CN41 connectors of all other hot water modules in the same group.
      b) Turn on the hot water module and proceed to **Procedure 3**.

Case 1 (*1)

Hot water module — P.C. board

Hot water module — P.C. board

Hot water module (one being serviced) — Service P.C. board

Remove group control wiring from terminals A and B of indoor unit being serviced, and connect remote controller wiring.

A B | A B | A B

Group control wiring

Remote controller

Case 2 (*1)

Hot water module — P.C. board

Hot water module — P.C. board

Hot water module (one being serviced) — Service P.C. board

CN 41

Remove CN41 connectors of all other indoor units in same group.

A B | A B | A B

Group control wiring

Remote controller

* Be sure to restore the temporarily removed group control wiring and CN41 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.

Procedure 3: writing setting data in EEPROM

(The EEPROM of the service P.C. board has been set to the factory default values.)

1 **Push the ⌖TEST + ○SET + ○CL buttons simultaneously and hold for at least 4 seconds. (This number corresponds to the same number shown on the Remote Controller Operation Diagram.)**

(Under UNIT No., 𝐴𝐿𝐿 is displayed.)
At the same time, the CODE No. (DN code) 𝟣𝟢 is displayed.

<Fig. 1 RBC-AMT32E>

**2** **Push the ⟨UNIT LOUVER⟩ button (left side of the button) to display the indoor unit (including Hot Water Module) No. one by one in the group control. Specify the indoor unit (including Hot Water Module) No. whose service PC board was replaced.**
(This operation is not available if the UNIT No. shows 𝐴𝐿𝐿 .)

3 **The ⌖TEMP. button allows you to moved the CODE No.**

(DN code) up / down by one place.

4 **First, set the type and capacity codes of the hot water module.**

(Changing the type and capacity codes in EEPROM overwrites the factory default settings.)

(1) Set the CODE No. (DN code) to 𝟣𝟢 (no change)

(2) Use the ⟨TIME⟩ button to select the type.
(0060 is for the hot water module type.) - See the CODE No. list.

(3) Push the ○SET button. (The display should change from flashing to steady.)

(4) Use the ⌖TEMP. button to set the CODE No. (DN code) to 𝟣𝟣.

(5) Use the ⟨TIME⟩ button to set the capacity code.
(For example, 0011 is for the 027 type.) - See the CODE No. list.

(6) Push the ○SET button. (The display should change from flashing to steady.)

(7) Push the ⌖TEST button to bring the system back to normal off state.

5 **Next, write any setting changes made on-site after installation, such as address settings, in the EEPROM. Perform the tasks specified in step 1 again.**

6 **Use the ⌖TEMP. button to set the CODE No. (DN code) to 𝟢𝟥 (To set central control address)**

7 **Check the value displayed with the value jotted down in Procedure 1 and information proved by the customer.**

(1) If there is a discrepancy, change the setting in accordance with the jotted-down value, and push the ○SET button.
(The display should change from flashing to steady.)

(2) If there is no discrepancy, do nothing.

8 **Use the ⌖TEMP. button to change the CODE No. (DN code).**

Again, check the value, and change the setting if necessary.

9 **Repeat steps 6 and 7 until all the settings are checked.**

10 **When finished, push the ⌖TEST button to bring the system back to normal off state.**

In the case of group operation, turn the unit off, reconnect the indoor-indoor group control wiring and CN41 connectors, and turn on all the indoor units (including Hot Water Module).
(It takes the system about 1 minute to become responsive to remote controller operation.)

*CODE No. (DN code) go from 𝟢𝟣 to 𝐹𝐹 with a few gaps along the way.
If you realize you have wrongly corrected a certain setting after pushing the ○SET button, you can recover the initial value by pushing the ○CL button, provided that the CODE No. (DN code) is yet to be changed.
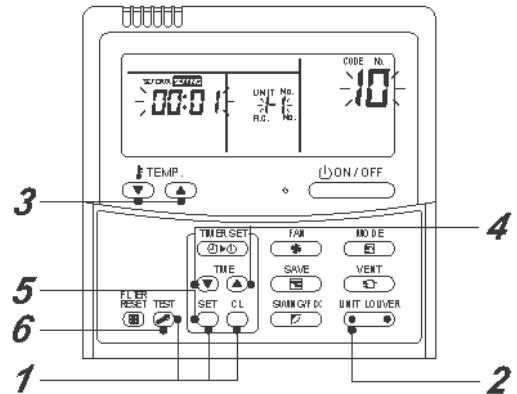
CODE No. list (Example)

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-AP∗∗∗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
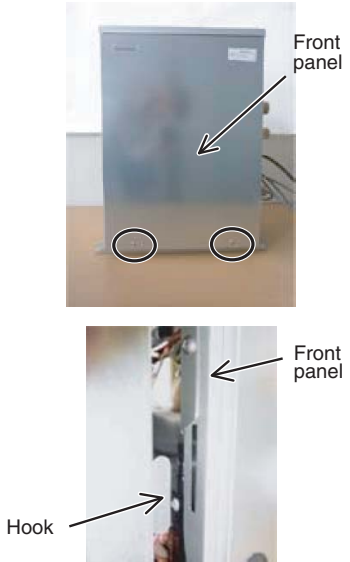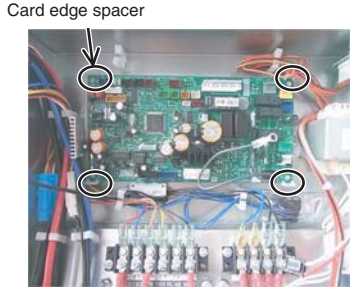
10. DETACHMENTS
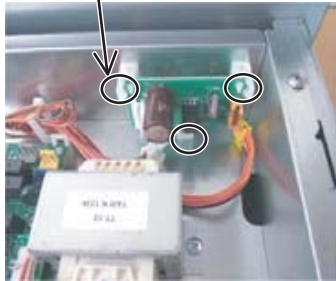
⚠ **WARNING**

Stop the air conditioner(including HWM) operation, and turn off the circuit breaker.
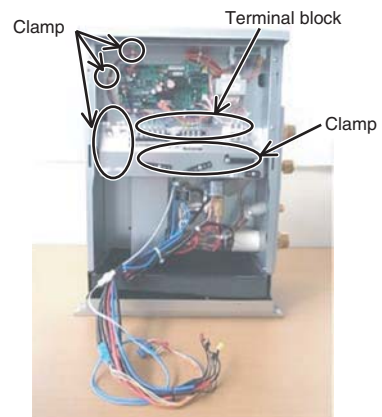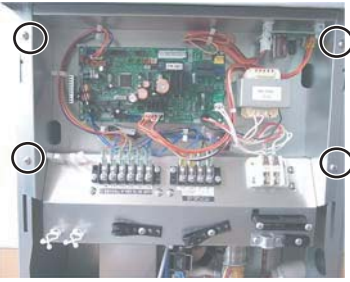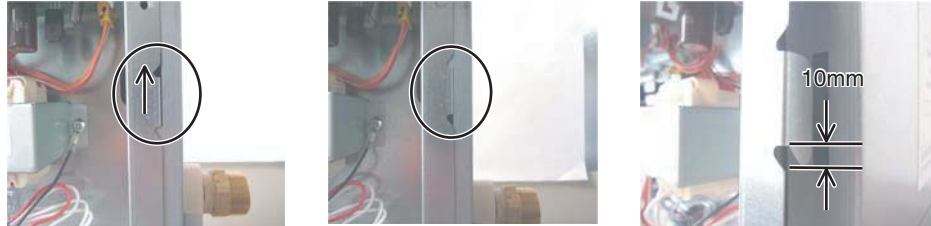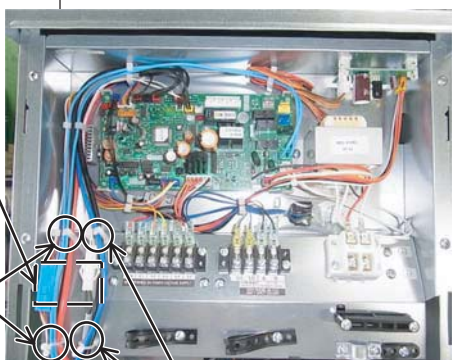
⚠ **CAUTION**
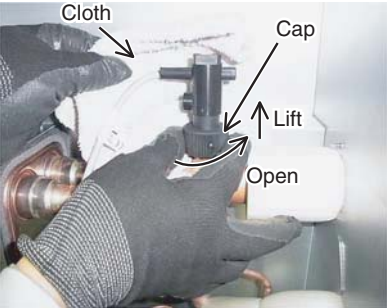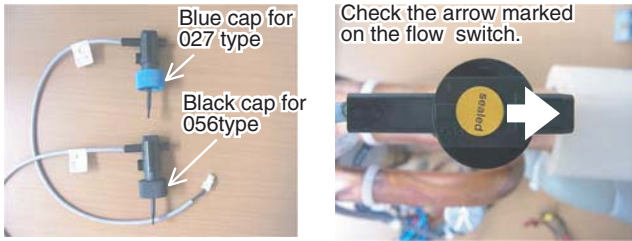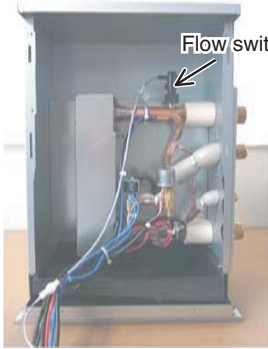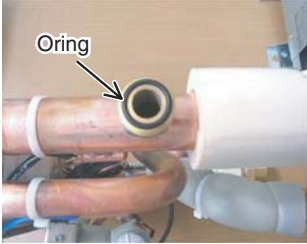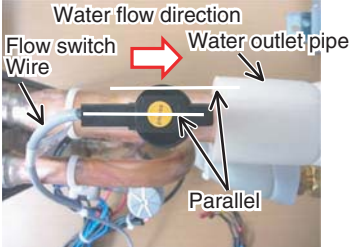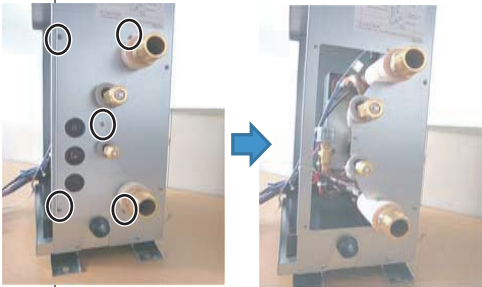
Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.

No.	Part to be replaced	Work procedure	Remarks
①	Front panel	**1. Detachment** 1) Remove the screws for the front panel.(4x10, 2pcs.) 2) Pull the front panel downward and then remove the front panel. **2. Attachment** 1) Carry out installation by following the detachment procedure in reverse. Be careful of the hook provided on the front panel.	Front panel Front panel Hook
②	P.C. board (MCC-1403)	**1. Detachment** 1) Carry out the detachment of item ① (Front panel). 2) Remove connectors which are connected from the control P.C.board to the other parts. 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 3P CN074 .... TRANS-P White 3P CN075 .... TRANS-S White 6P CN060 .... OPTION White 6P CN040 .... OC Blue 2P CN041 .... RC Blue 3P P301 ...... E Black Black Wire ⚠ **CAUTION** Unlock the lock of the housing part and then remove the connector. 3) Unlock the locks of the card edge spacer (4 positions) and then remove the control P.C. board. **2. Attachment** 1) Carry out installation by following the detachment procedure in reverse.	Card edge spacer

— 95 —
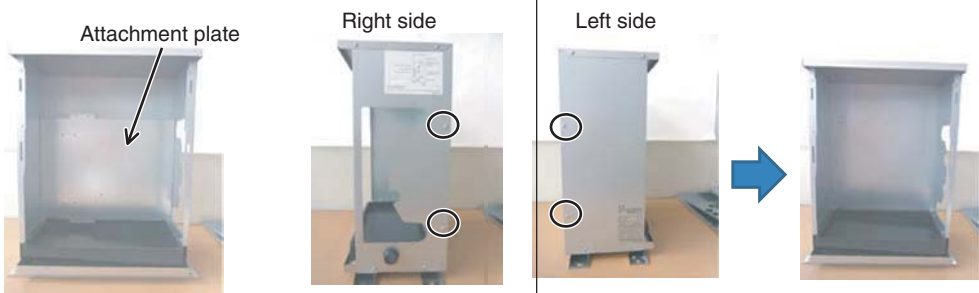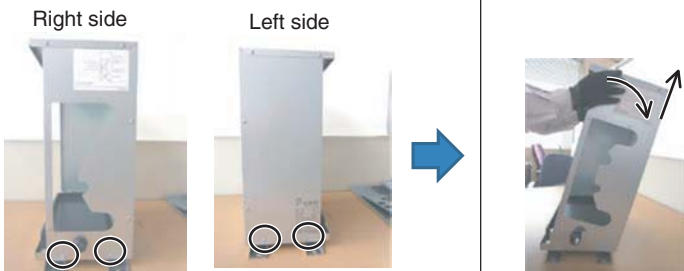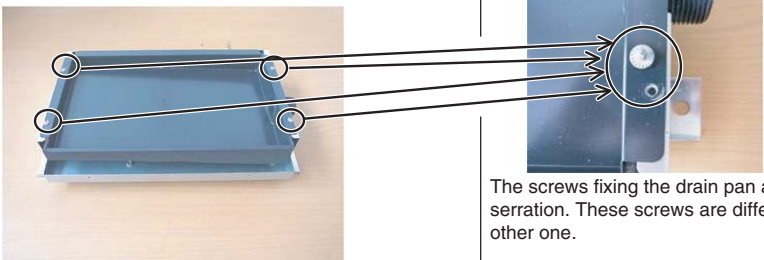
No.	Part to be replaced	Work procedure	Remarks
③	P.C. board (MCC-1520)	**1. Detachment** 1) Carry out the detachment of item ① (Front panel). 2) Remove connectors which are connected from the control P.C.board to the other parts. CN01 .... White 6P CN02 .... Yellow 6P ⚠ **CAUTION** Unlock the lock of the housing part and then remove the connector. 3) Unlock the locks of the card edge spacer (3 positions) and then remove the control P.C. board. **2. Attachment** 1) Carry out installation by following the detachment procedure in reverse.	Card edge spacer
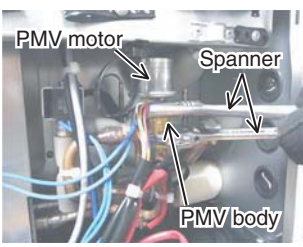
No.	Part to be replaced	Work procedure	Remarks
④	Electrical control box	**1. Detachment** 1) Carry out the detachment of item ① (Front panel). 2) Remove connectors which are connected from the control P.C.board to the other parts and then remove wiring from the clamp. CN030 ... FS (Flow switch) Red 3P 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 3) Remove wires which are connected to the terminal block and then remove wiring from the clamp. 4) Remove the screws for the electrical control box.(4x10, 4pcs.) 5) Lift the electrical control box up to about 10mm, pull the electrical control box and then remove the electrical control box. ⚠ **CAUTION** Be careful of the hook provided on the Electrical control box to detach properly.	Clamp Terminal block Clamp

2. Attachment

1) Carry out installation by following the detachment procedure in reverse.

NOTE:
• Let TCJ, TWI (TA), TCJ2 (TF), PMV and LM (2way valve coil) wiring pass throuh the left side clamps.
• Let TC1, TWO (TC2) and FS (flow switch) wiring pass through the right side clamps.
• Let PMV and FS (flow switch) relay connectors locate in the electrical control box.

PMV relay conector (Blue)
Flow switch relay conector (White)

Left side clamps:
TCJ, TWI (TA), TCJ2 (TF), PMV and LM (2way valve coil) wiring are passed through.

Right side clamps:
TC1, TWO (TC2) and FS (flow switch) wiring are passed through.
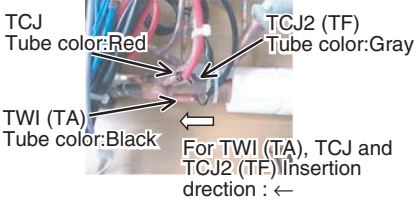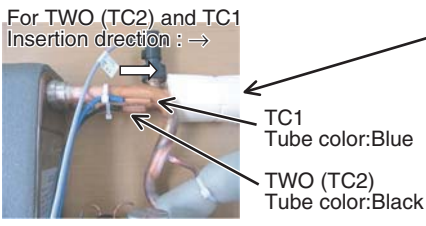
No.	Part to be replaced	Work procedure	Remarks
⑤	Flow switch	**1. Detachment** 1) Close the water supply source valve. 2) Carry out the detachment of item ④ (Electrical control box). 3) Slowly, turn the cap of flow switch completely and then lift the flow switch upward. **NOTE:** Use some clothes to avoid water dropping. Cloth Cap Lift Open **2. Attachment** 1) Carry out installation by following the detachment procedure in reverse. **NOTE:** • The flow switch connection uses a O-ring for water seal. Be careful not to scratch the O-ring. Otherwise, water leakage may occur. • Place the flow switch parallel to the water outlet pipe. • The flow switch wire is placed on the right side. Refer to item ④ (Electrical control box). • Be careful to attach the proper flow switch as shown below. • 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. • Carry out the work of air ventilation in water circuit. Blue cap for 027 type Black cap for 056type Check the arrow marked on the flow switch.	Flow switch Oring Water flow direction Flow switch Wire Water outlet pipe Parallel
⑥	Pipe cover panel	**1. Detachment** 1) Remove wires which are connected to the terminal block and then remove wiring from the wiring port. 2) Remove the screws for the pipe cover panel.(4x10, 5pcs.) **2. Attachment** 1) Carry out installation by following the detachment procedure in reverse.	

No.	Part to be replaced	Work procedure	Remarks
⑦	Heat exchanger assembly	**1. Detachment** 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. 2) Carry out the detachment of item ④ (Electrical control box) and item ⑥ (pipe cover plate). 3) Remove the screws for the heat exchanger assembly fixing plate as shown below.(4x10, 7pcs.) For the unit for 056 type:4x10, 8pcs. 4) Remove the heat exchanger assembly from the unit as shown below. 056 type only Heat exchanger assembly fixing plate 200mm or more When removing these two screws, use a screwdriver as shown on the right. 5) Remove sensors, 2way valve coil and flow switch attached the heat exchanger assembly. 6) Carry out installation by following the detachment procedure in reverse. ⚠ **CAUTION** • Be careful in the insertion direction of attaching the sensor, as shown below. • Be careful to attach the flow switch, as shown item ⑤ (flow switch). For TWO (TC2) and TC1 Insertion direction : → TC1 TWO (TC2) 2way valve coil direction TCJ TCJ2 (TF) TWI (TA) For TWI (TA), TCJ and TCJ2 (TF) Insertion direction : ← **2. Attachment** 1) Carry out installation by following the detachment procedure in reverse. **NOTE:** • To attach the heat exchanger assembly on the proper position, replace the heat exchanger assembly edge on the enboss, as shown below. Enboss Heat exchanger assembly edge	

No.	Part to be replaced	Work procedure	Remarks
⑦	Heat exchanger assembly (Continued)	**⚠ CAUTION** After the vacuuming is completed, carry out the following procedure before adding refrigerant. • 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. • After connecting the refrigerant pipes, check that the connection has no leakage, and then carry out vacuuming. • 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. • 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. • Carry out the work of air ventilation in water circuit.	
⑧	Cabinet	**1. Detachment** 1) Carry out the detachment of item ⑦ (Heat exchanger assembly). 2) Remove the screws for the cabinet and then remove the attachment plate, as shown below.(4x10, 4pcs.) Attachment plate Right side Left side 3) Remove the screws for the cabinet, tilt the cabinet and then lift the cabinet upward, as shown below.(4x10, 4pcs.) Right side Left side **2. Attachment** 1) Carry out installation by following the detachment procedure in reverse.	
⑨	Drain pan	**1. Detachment** 1) Remove the drain pipe. 2) Carry out the detachment of item ⑧ (Cabinet). 3) Remove the screws for the drain pan.(4x10, 4pcs.) **⚠ CAUTION** • Be careful of using the different screw, as shown below. **2. Attachment** 1) Carry out installation by following the detachment procedure in reverse.	The screws fixing the drain pan are with serration. These screws are different from other one.

No.	Part to be replaced	Work procedure	Remarks
⑩	Base and legs	**1. Detachment** 1) Carry out the detachment of item ⑨ (Drain pan). 2) Remove the screws for the legs.(5x10, 8pcs.) Base Leg **2. Attachment** 1) Carry out installation by following the detachment procedure in reverse.	

⑪	2way valve coil	**1. Detachment**
		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.
		
		  CN033 ... (LM) 2way valve Green 3P
		
		3) Remove the screw for the 2way valve coil.(M5x6.5, 1pc.)
		
		2. Attachment
		1) Carry out installation by following the detachment procedure in reverse.
		
		NOTE:
		• Control the tightening torque for the 2way valve coil to 2.0 ± 0.5N•m.
		• Be careful in the insertion direction of attaching the 2way valve coil, as shown below.
		• Let 2 way valve coil wiring pass through the letf side clamps.
		  Refer to item ④ (Electrical control box).
			Spanner 2way valve coil
			
			2way valve coil drection

⑫	PMV motor	**1. Detachment**
		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.
		
		  CN082 ... PMV Blue 6P
		
		3) Loosen the nuts fixing PMV motor with double spanner to remove PMV motor.
		
		2. Attachment
		1) Carry out installation by following the detachment procedure in reverse.
		
		NOTE
		• Control the tightening torque for the PMV motor to 7.84 ± 0.98N•m.
		• Let PMV wiring pass through the letf side clamps.
		  Refer to item ④ (Electrical control box).
			PMV motor Spanner
			
			PMV body

No.	Part to be replaced	Work procedure	Remarks

⑬	Sensor TCJ, TCJ2 (TF) and TWI (TA)	**1. Detachment**
		1) Carry out the detachment of item ① (Front panel).
		2) Remove connectors which are connected from the control P.C.board to the other parts and then remove wiring from the clamp.
		
		   CN102 .... TCJ Red 2P
		   CN103 .... TCJ2 (TF) Green 2P
		   CN104 .... TWI (TA) Yellow 2P
		
		2. Attachment
		1) Carry out installation by following the detachment procedure in reverse.
		
		NOTE:
		• Be careful in the insertion direction about attaching the sensor, as shown below.
		• Let TCJ, TWI (TA) and TCJ2 (TF) wiring pass through the letf side clamps.
		  Refer to item ④ (Electrical control box).
			
			TCJ Tube color:Red TCJ2 (TF) Tube color:Gray
			TWI (TA) Tube color:Black
			For TWI (TA), TCJ and TCJ2 (TF) Insertion direction : ←

⑭	Sensor TC1 and TWO (TC2)	**1. Detachment**
		1) Carry out the detachment of item ④ (Electrical control box).
		2) Remove connectors which are connected from the control P.C.board to the other parts and then remove wiring from the clamp.
		
		   CN101 ... TWO (TC2) Black 2P
		   CN100 ... TC1 Brown 3P
		
		2. Attachment
		1) Carry out installation by following the detachment procedure in reverse.
		
		NOTE:
		• Be careful in the insertion direction about attaching the sensor, as shown below.
		• Let TC1 and TWO (TC2) wiring pass through the right side clamps.
		  Refer to item ④ (Electrical control box).
		
		For TWO (TC2) and TC1 Insertion direction : →
		TC1 Tube color:Blue
		TWO (TC2) Tube color:Black	

11. EXPLODED DIAGRAM / SERVICE PARTS LIST

MMW-AP0271LQ-E, MMW-AP0561LQ-E
MMW-AP0271LQ-TR, MMW-AP0561LQ-TR

229

222

218, 219, 220

201
No label

224

228

202

227

223

225, 226

203

215, 216, 217

221

230

No, 229, 230 are not
included in No. 210, 211

210, 211

212

213, 214

230

209

204
No label

205

231, 232

208
10 pieces/pkg.

206

207

Location No.	Part No.	Description	Q'ty/Set MMW-			
			AP0271 LQ-E	AP0561 LQ-E	AP0271 LQ-TR	AP0561 LQ-TR
201	4310A109	CABINET, MAIN	1	1	1	1
202	43119530	PANEL, PIPE COVER	1	1	1	1
203	43019830	BUSHING	3	3	3	3
204	4310A111	PANEL, FRONT	1	1	1	1
205	43172249	PAN, DRAIN	1	1	1	1
206	4310A110	BASE	1	1	1	1
207	4310A112	LEG	2	2	2	2
208	43197190	SCREW, SET M5 L10	1	1	1	1
209	37517876	MARK, TOSHIBA	1	1	1	1
210	4314J508	PIPE, ASSY, WATER HEAT EXCHANGER	1		1	
211	4314J509	PIPE, ASSY, WATER HEAT EXCHANGER		1		1
212	4314N047	COIL, VALVE, 2WAY, FQ-G593	1	1	1	1
213	37551737	SWITCH, FLOW	1		1	
214	37551735	SWITCH, FLOW		1		1
215	43049776	SOCKET	1	1	1	1
216	43149355	NUT, FLARE, 3/8, IN	1	1	1	1
217	43F47609	BONNET	1	1	1	1
218	43149354	SOCKET	1	1	1	1
219	43149352	NUT, FLARE, 5/8, IN	1	1	1	1
220	43194029	BONNET, 5/8 IN	1	1	1	1
221	43147664	STRAINER	1	1	1	1
222	4314Q114	STRAINER, SCREEN	1	1	1	1
223	37547751	VALVE, CHECKED, BCV-302DY	1	1	1	1
224	43146743	MOTOR, PMV, EFM-MD12TF-1	1	1	1	1
225	43146714	VALVE, PMV, EDM-B40YGTF-3	1		1	
226	43146723	BODY, PMV		1		1
227	4314N079	VALVE, 2WAY, FDF2A88	1	1	1	1
＊228	43047527	TUBE, CAPILLARY, ID2.0X2000L	1	1	1	1
229	43107215	HOLDER, SENSOR	1	1	1	1
230	43F19904	HOLDER, SENSOR (TS)	4	4	4	4
231	431S8295	OWNER'S MANUAL	1	1		
232	431S8296	OWNER'S MANUAL			1	1

＊ The capillary tube is provided as the service part with the length of 2000 mm. Paying proper regard to the burr or others, cut the tube to 1000 mm each to use it.

E-Parts

402 TC1

401 TWI (TA), TWO (TC2)
TCJ, TCJ2 (TF)
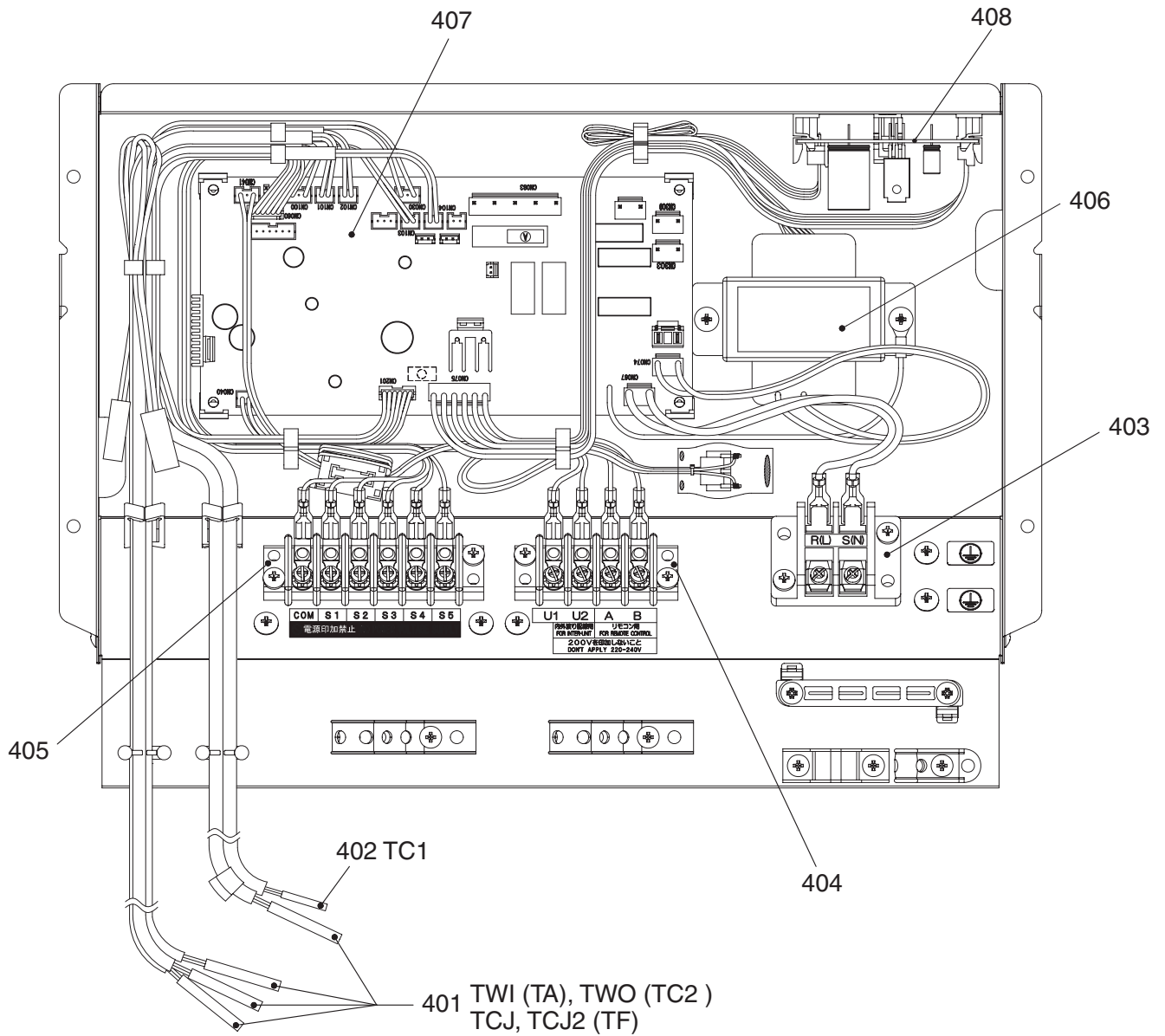
Location No.	Part No.	Description	Q fty/Set MMW-			
			AP0271 LQ-E	AP0561 LQ-E	AP0271 LQ-TR	AP0561 LQ-TR
401	43050425	SENSOR ASSY, SERVICE,TC(F6)	4	4	4	4
402	43150320	SENSOR ASSY, SERVICE,TG(F4)	1	1	1	1
403	43160626	TERMINAL BLOCK, 2P, 20A	1	1	1	1
404	43160561	TERMINAL,4P	1	1	1	1
405	43160548	TERMINAL,6P	1	1	1	1
406	43158187	TRANSFORMER, TT-13	1	1	1	1
407	4316V529	P.C.BOARD ASSY, MCC-1403	1	1	1	1
408	4316V247	P.C.BOARD ASSY, MCC-1520	1	1	1	1

12. OWNER'S MANUAL (EXCERPT)

2 Part names

■ Mid temperature Hot Water Module

Water outlet

Water inlet

Electrical control box

Earth screw
Equipped on the electrical
control box

Drain pan

■ High temperature Hot Water Module

Water outlet

Water inlet

Electrical control box

Earth screw
Equipped on the electrical
control box
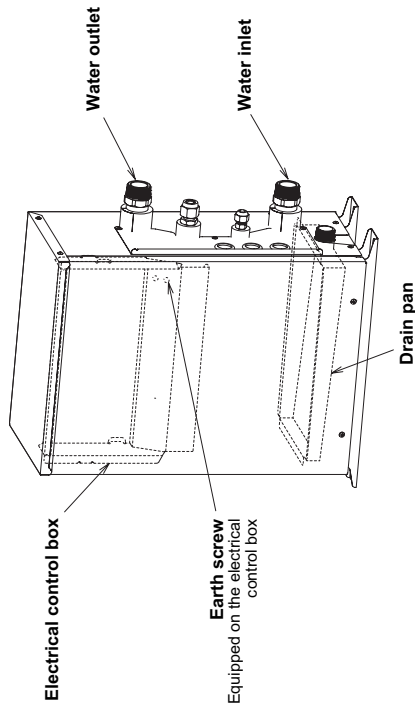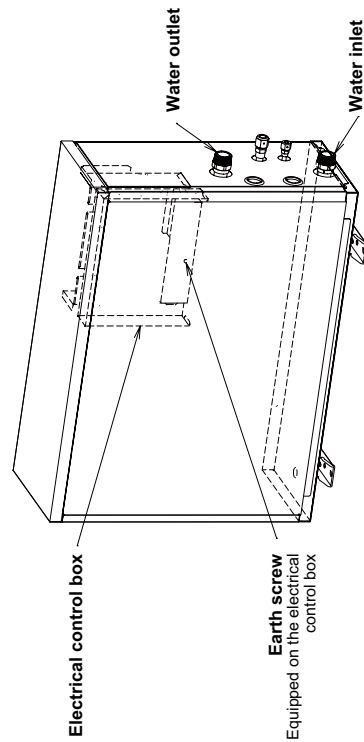
3 Part names and functions of the remote controller

3-1. Standard remote controller (RBC-AMT32E)

Display
section

Operation
section

■ Display section

All indicators are displayed in the display example below.
Actually, only the selected options will be displayed.

- SETTING blinks on the display of the remote controller the first time the power switch is turned on.
- The initial settings progress while SETTING is blinking. Start to use the remote controller after SETTING has disappeared.
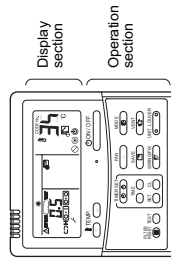
NOTE

The LCD may temporarily be blurred due to static electricity.

1 SETTING indicator
Displayed when setting the timer or other functions.

2 Operation mode indicator
Indicates the operation mode selected.

3 Check code indicator
Displayed when the protective device activates or a trouble occurs.

4 Time display
Indicates time concerning the timer.
(Indicates a check code when a trouble occurs)

5 Timer mode indicator
Displays the timer mode.

6 TEST run indicator
Displayed during test run.

7 Set temperature display
The selected set temperature is displayed.

8 Pre-heat indicator
Displayed when defrost cycle is initiated.

9 No function indicator
Displayed when the function requested is not available on that model.

10 Central control indicator
Displayed when the air conditioner is controlled centrally and used with central control devices such as the central remote controller.
If the use of the remote controller is prohibited by the central control, 🔲 blinks when the ON/OFF, MODE, or TEMP. button on the remote controller is pushed, and the buttons do not function.
(Settings that can be configured on the remote controller differ depending on the mode of the central control. For details, read the Owner's Manual of the central remote controller.)

11 Operation mode controlled indicator
Displayed when the operation mode is restricted.

12 Operation ready display
This display appears on some models.

13 Service display
Displayed while the protective device works or a trouble occurs.

⚠ CAUTION

Remote controller sensor cannot be used for the hot water module. Remote controller sensor has no function when remote controller is connected to the hot water module.

■ Operation section

Once the settings have been configured, all you need to do is push the ⏻ON/OFF button from then on.
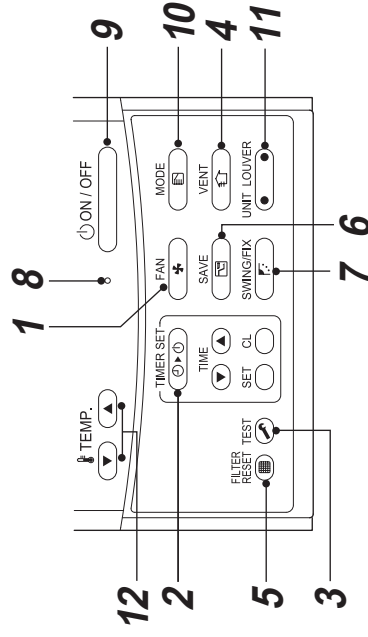
1 FAN button **(Fan speed select button)**
No function.

2 TIMER SET button **(Timer set button)**
Use to setup the timer.

3 TEST button **(TEST button)**
Use only for service.
(During normal operation, do not use this button.)

4 VENT button
No function.

5 FILTER RESET button **(Filter reset button)**
No function.

6 SAVE button **(Power save operation)**
No function.

7 SWING/FIX button
No function.

8 Operation lamp
Lights up during running.
Blinks when a trouble occurs or the protective device activates.

9 ⏻ON/OFF button
Turns on the unit when pushed, and turns off when pushed again.

10 MODE button **(Operation mode select button)**
Heating mode is only available. Only heating symbol is displayed.

11 UNIT LOUVER button **(Unit / Louver select button)**
UNIT button:
No function.
LOUVER button:
No function.

12 ↕TEMP. button
Adjusts the set temperature.
Select the desired set point by pushing ↕ TEMP. ▼ or ↕ TEMP. ▲.

3-2. Wired remote controller (RBC-AMS55E-ES/EN)

Refer to Owner's Manual of RBC-AMS55E-ES/EN for the detailed operation method.

Model name label

The button LED lights while the Hot water module is running.

Temperature sensor
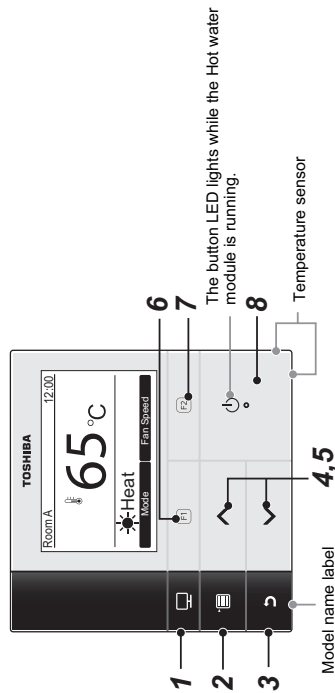
1 **[MONITOR] button**
Displays the monitoring screen.

2 **[MENU] button**
Displays the menu screen.
For menu items, refer to following table.

3 **[CANCEL] button**
Functions as indicated on the screen, such as returning to the previous menu screen.

4 **[∧] button**
During normal operation: adjusts the temperature.
On the menu screen: selects a menu item.

5 **[∨] button**
During normal operation: adjusts the temperature.
On the menu screen: selects a menu item.

6 **[F1] button**
Varies its function according to the setting screen.

7 **[F2] button**
Varies its function according to the setting screen.

8 **[ON/OFF] button**

	Menu items	Available function	No function
1	Wind Direction		✓
2	Individual louver		✓
3	Louver setting		✓
4	Off reminder timer	✓	
5	Schedule timer	✓	
6	Night operation		✓
7	Filter sign		✓
8	Auto grille		✓
9	Energy saving		✓
10	Initial setting		✓
11	Ventilation		✓
12	Soft cooling setting		✓
13	Occupancy sensor		✓
14	Power consumption		✓
15	Information	✓	

Switching between the normal display and detailed display

Push and hold the [CANCEL] button and [MONITOR] button at the same time for more than 4 seconds to switch the display mode.
The normal display mode is selected as a factory default setting.

Normal display mode (factory default)
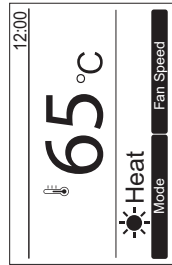
Detailed display mode
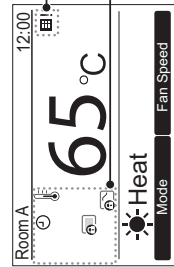
Icons appear on the screen when the detailed display mode is selected.

▼ Icon list

	Shows the central control device prohibits the use of the remote controller	
	Shows operation switching control is in progress.	
	Shows a timer function is activated.	

4 Basic operation

When you use the hot water module for the first time or change the settings, follow the procedures below.
From next time, pushing the ⏻ON/OFF button starts running of the hot water module with the chosen settings.

■ Preparation

Turn on the power switch

- When turned on, the separation line appears and SETTING blinks on the remote controller display.
- *The remote controller will not work for about 1 minute after turning on the power. This is not a malfunction.*

REQUIREMENT

- Keep the power switch turned on during use.
- When you resume using the hot water module after a long period of disuse, turn on the power switch at least 12 hours before starting running.

■ Operations
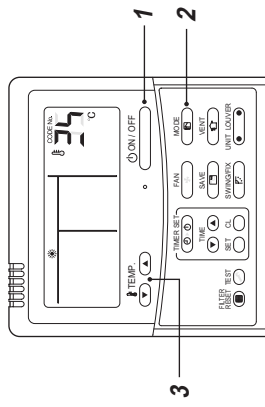
1 **Push the ⏻ON/OFF button.**
The operation lamp lights up.

2 **Push the "MODE 🔲" button to select a operation mode.**
Only heating symbol is displayed. Heating mode is only available.

☀ Heating

3 **Push the "TEMP. ▼ ▲" buttons.**
Push ▲ to increase the temperature, and ▼ to decrease the temperature.

	Operation mode	Setting range	Factory default
Mid temperature Hot Water Module	HEAT	25 to 50 °C	35 °C
High temperature Hot Water Module	HEAT	50 to 82 °C	65 °C

4 **Push the ⏻ON/OFF button to stop running.**
The operation lamp turns off.

5 Timer operation

Select a timer type from the following three: (Max. 168 hours)

OFF timer	: Stops running after the specified period.
Repeat-OFF timer	: Stops running after the specified period every time you use the hot water module.
On timer	: Starts running after the specified period.

■ Setting the timer
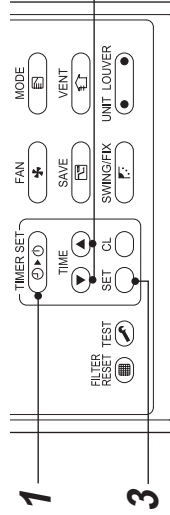
1 **Push the TIMER SET ⏱▶⏱ button.**
Each time you push the button, the timer mode and indication change in the following order:

⏱▶⏱ → 🔄 → ⏱▶⏰
Off (Off timer) → Off (Repeat Off timer) → On (On timer)

No indication (Timer function is deactivated)

- SETTING and the time indicator blink.

2 **Push the TIME ▼ ▲ buttons to set the period of time until the timer actions.**

- The time setting increases in 0.5-hour (30-minute) increments each time you push ▲. The setting increases in 1-hour increments if it is over 1d (24 hours). The maximum is 7d (168 hours).
  On the remote controller, settings between 0.5h and 23.5h (*1) are displayed as is.
  If it is over 24 hours (*2), the days and hours appear.
- The time setting decreases in 0.5-hour (30-minute) decrements (0.5 hours to 23.5 hours) or 1-hour decrements (24 hours to 168 hours) each time you push ▼.

- **34 hours (*2)**

  ⏱d indicates 1 day (24 hours).
  ⏱h indicates 10 hours. (Total: 34 hours)

  SETTING
  ⏱d⏱⏱h⏱
  Days   Hours

3 **Push the SET ⏺ button.**
SETTING disappeared, the time indication is displayed, and ⏱▶⏰ or ⏱▶⏱ display flashes.
(When using the ON timer, all indications other than the time and ⏱▶⏰ turn off.)

■ Cancelling the timer

1 **Push the 🔄 button.**
The timer indicator disappears.

NOTE

When using Repeat OFF timer, pushing the ⏻ON/OFF button after stopping by the timer starts running again and the timer will stop the running again after the specified period.

Example of remote controller display

- **23.5 hours (*1)**

  SETTING
  23.5

6 Installation

■ Location

- Hot water module is allowed to install indoors.
- Avoid installing near machines emitting high frequency waves.
- Not suitable for chemical plants such as liquefied carbon dioxide refrigerant plants.
- Do not install the hot water module in locations where iron or other metal dust is present. If iron or other metal dust adheres to or collects on the interior of the hot water module, it may spontaneously combust and start a fire.
- A failure may occur in certain locations such as the following:
  - Areas with large amount of oil droplets (including machine oil) or vapors
  - Salty areas near oceans, etc.
  - Hot springs emitting sulfidizing gas, etc.
  - Heavily acidic or alkaline places.

  Special maintenance or parts are required for use in the above places. For details, contact the dealer where you purchased the product.
- Leave an enough space around the air intake and discharge of the outdoor unit so that the ventilation is not restricted.
- Avoid places where strong wind may blow against the air intake and discharge of the outdoor unit.
- Attach a snow stand, snow hood, etc. to the outdoor unit for use in snowfall areas. For details, contact the dealer where you purchased the product.
- Make sure drain water from the outdoor unit and the hot water module are emitted into places with good drainage.
- Keep a distance of at least 1 m between the hot water module / remote controller and a TV or radio. Failure to observe this precaution may cause visual disturbance or noise.
- Leave a distance of at least 1.5 m between the hot water module and a fire alarm. If this precaution is not observed, the alarm may not work properly or detect fire in case of fire.

■ Be careful of operation sounds

- Locate the unit in a place secure enough so that the sounds and vibrations do not increase.
- If something is placed near the air discharge of the outdoor unit, noise may increase.
- Be careful not to disturb your neighbors with cool / heat air or noise coming from the air discharge of the outdoor unit.
- 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.)
- Location such as living rooms and bed rooms where you can easily be bothered by noise. Noise may become a problem.

7 Notes on operations and performance

The protective device may activate in the following cases:

During cooling
- When the air intake or air discharge of the outdoor unit is blocked.
- When strong wind blows continuously against the air discharge of the outdoor unit.

During heating
- When dust or dirt is excessively adhered to the strainer (locally procured) of water pipe.
- When the water flow rate is lower.

> **NOTE**
>
> When the protective device activates, turn off the power switch, remove the cause, and then restart running.

■ Check before operation

- Turn on the power switch at least 12 hours before starting operation.
- Make sure the earth wire is securely connected.

■ Defrosting during heating

- If frost falls on the outdoor unit during heating, defrosting is automatically performed (for approximately 2 - 10 minutes) to increase the heating effect.
- The Hot water module keeps operating the pump during defrosting.
- The hot water module stops the compressor operation during defrosting. (For High temperature Hot water module type.)

■ 3-minute protection

The outdoor unit will not operate for approximately 3 minutes after the air conditioner (including hot water module) has been immediately restarted after stopping, or the power switch has been turned on. This is to protect the system.

■ Power failure

- In the case of a power failure, all operations stop.
- To resume operations, push the ON/OFF button.

■ Protective device (High pressure switch)

The high pressure switch stops the air conditioner (including hot water module) automatically when excessive load is applied to the air conditioner system. If the protective device activates, the unit's running stops and the operation lamp blinks. When the protective device activates, the ∱ indicator and the check code are displayed on the remote controller.

■ Protective operations (For High temperature Hot Water Module)

When the water temperature is low, the hot water module stops.

■ Cooling / Heating operations

<Connecting to SMMS-e, MiNi-SMMS-e>
Each unit can be controlled individually. However, indoor units connected to the same outdoor unit cannot perform cooling and heating simultaneously. When you attempt simultaneous operation, hot water module performing heating are stopped, and the running preparation indicator ⓦ is displayed on the remote controller.

An indoor unit performing cooling continues running. When you attempt an operation without the configured settings, the running preparation indicator ⓦ is displayed on the remote controller and operation stops. If operation is fixed to cooling or heating by the air conditioner administrator, only the configured settings apply to the operation.

8 Maintenance

⚠ WARNING

For daily maintenance, make sure to ask the qualified service person particularly following models as the maintenance requires high-place work;

■ Cleaning the hot water module and remote controller

· Ask qualified service person to clean the hot water module for the models listed in the warning on the top of this chapter.
· Wipe with a dry, soft cloth.
· Do not use benzine, thinner, scouring powder, chemical cloth, etc. as those may cause deformation or breakage.
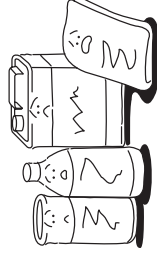
■ If unused for over a month

· Before a long period of none use, purge the water out of the pipes and thoroughly let them dry. (The water in piping freezes in winter.)
· Turn off the main power switch.

■ Periodic inspection

· After being used for a long period of time, the parts may deteriorate or malfunction, or the drainage may worsen, due to heat, moisture, dust, or general usage.
· In addition to the maintenance, it is recommended that you have a inspection (charges apply) performed by the dealer where you purchased the unit, etc.

■ Before the operating season

Ask a qualified service person to clean the drain pan.

⚠ CAUTION

Clean the drain pan
Without cleaning, the drain pan may be filled with waste, and water may overflow onto the floor.

<Connecting to SHRM-e>

· If the Standard indoor unit is used at outside temperature out of the operating conditions, safety protection may operate, which may cause cooling or heating not to operate.
  At that time, "🔆" Pre-heat indicator lights on the operation section.

■ Characteristics of heating

· When the outside temperature increases, the outdoor unit may stop.
· When the outside temperature increases, the hot water module can operate while other indoor units may not operate heating but can operate cooling. (For High temperature Hot Water Module type.)
· When indoor unit and Hot water module are simultaneously operated under the low outside temperature, operation start of the indoor unit may be delayed.

■ Characteristics of simultaneously heating or cooling (SHRM-e)

· When the outside temperature lower during operation, the outdoor fan may stop.

9 Troubleshooting

When the following symptoms are found, check the points described below before asking repair servicing.

	Symptom	Cause
It is not a failure.	Outdoor unit	• White misty cold air or water is out.	• Fan of the outdoor unit stops automatically and performs defrost operation.
		• Sometimes, noise of air leak is heard.	• Solenoid valve works when defrost operation starts or finishes.
	Hot water module	• "Swish" sound is heard sometimes.	• When the operation has started, during the operation, or immediately after the operation has stopped, a sound such as water flows may be heard, and the operation sound may become larger for 2 or 3 minutes immediately after the operation has started. They are flowing sound of refrigerant or draining sound of dehumidifier.
		• "⟳" indication is lit.	• When heating operation cannot be performed because another indoor unit performs cooling operation. (SMMS-e, MiNi-SMMS-e) • Is outside temperature out of operation temperature range?
		• "🔥" indication is lit.	• When the manager of the air conditioner or the hot water module has fixed the operation to COOL or HEAT, and an operation contrary to the setup operation is performed.
		• Sound is output from the stand by hot water module.	• Since refrigerant is flowed temporarily to prevent stay of oil or refrigerant, sound of flowing refrigerant may be heard when hot water module operates in HEAT mode.
	Pump, Line heater	• The pump and line heater operates automatically during hot water module is stand by.	• The pump and line heater operates for frost protection of water heat exchanger, when water temperature decreases or outdoor unit start operation or refrigerant (oil) recovery control.
		• When power of the hot water module is turned on, "Ticktock" sound is heard.	• Sound is generated when the expansion valve operates when power has been turned on.
		• LCD blurs when it is touched.	• LCD may temporarily blur by static electricity.
Check again.		Operates or stops automatically.	• Is the timer "ON" or "OFF"?
		Does not operate.	• Is it a power failure? • Is the power switch turned off? • Is the power fuse or breaker blown? • Has the protective device operated? (The operation lamp goes on.) • Is the timer "ON"? (The operation lamp goes on.) • Are COOL and HEAT selected simultaneously? "⟳" indication is lit on the display of the remote controller. (SMMS-e, MiNi-SMMS-e) • Is outside temperature out of operation temperature range?
		Water is not warmed sufficiently?	• Is water temperature becoming low at the inlet side of Hot water module? If water temperature at the inlet for Hot water module is low, the Hot water module may sometimes stop to prevent it from freezing. • Is the water supply or water discharge in water piping obstructed? • Is appropriate temperature on remote controller set? • Is outside temperature out of operation temperature range? • Are indoor unit and Hot water module simultaneously operated in heating? If total operation capacity is large, water may be difficult to be warmed sufficiently.

⚠ CAUTION

If any of the following conditions occur, turn off the main power supply switch and immediately contact the dealer:

• Switch operation does not work properly.

• The main power fuse often blows out, or the circuit breaker is often activated.

• A foreign matter or water fall inside the hot water module.

• When the hot water module does not operate even after the cause of the protective device activation has been removed.
(The operation lamp and ⚡ on the remote controller are flashing. When ⚡ and a combination of *R*, *E*, *F*, *H*, *L*, or *P* and a number are displayed on the remote controller, also inform a qualified service person of the display content.)

• Any other unusual conditions are observed.

10 Specifications

Model	Sound pressure level (dB(A)) Heating	Weight (kg) Main unit
MMW-AP0271LQ-E	*	17.8
MMW-AP0561LQ-E	*	20.3
MMW-AP0481CHQ-E	*	100

* Under 70 dB(A)

Hot water module operating conditions

For proper performance, operate the hot water module under the following temperature conditions:

Mid temperature Hot Water Module

Heating operation *1	Outside temperature (Heat pump)	: -25°C to 19°C (Wet bulb temp.) *2
	Outside temperature (Heat recovery)	: -25°C to 28°C (Wet bulb temp.) *2
	Outside temperature (MiNi-SMMS-e)	: -20°C to 19°C (Wet bulb temp.)
	Water inlet temperature	: 15°C to below 50°C
Indoor atmosphere *1	Indoor temperature	: 5°C to 32°C (Dry bulb temp.)
		: 24°C or less (Wet bulb temp.)
	Indoor Relative humidity	: 30% to 85%
	Allowable dew point	: 23°C or less (Wet bulb temp.)

⚠ **CAUTION** Be careful of installation atmosphere.
It becomes a cause of failure of a product by dewing or freezing.

*1 If Hot Water Module is used outside of the above conditions, safety protection may operate.
*2 Low ambient heating (-20°C or less) for extended periods of time is not allowed.

High temperature Hot Water Module

Heating operation *1	Outside temperature (Heat recovery)	: -25°C to 28°C (Wet bulb temp.) *2
	Water inlet temperature	: 15°C to below 80°C
Indoor atmosphere *1	Indoor temperature	: 5°C to 32°C (Dry bulb temp.)
		: 24°C or less (Wet bulb temp.)
	Indoor Relative humidity	: 30% to 85%
	Allowable dew point	: 23°C or less (Wet bulb temp.)

⚠ **CAUTION** Be careful of installation atmosphere.
It becomes a cause of failure of a product by dewing or freezing.

*1 If Hot Water Module is used outside of the above conditions, safety protection may operate.
*2 Low ambient heating (-20°C or less) for extended periods of time is not allowed.

Confirmation and check

When a trouble occurred in the air conditioner or the hot water module, the check code and the indoor unit No. appear on the display part of the remote controller.

The check code is only displayed during the operation.

If the display disappears, operate the air conditioner or hot water module according to the following "Confirmation of trouble log" for confirmation.
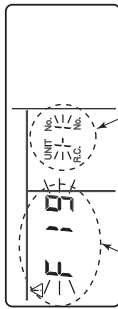
Check code — Indoor unit No. in which a trouble occurred

Confirmation of trouble log

When a trouble occurred on the air conditioner or the hot water module, the trouble log can be confirmed with the following procedure. (The trouble log is stored in memory up to 4 troubles.)

The log can be confirmed from both operating status and stop status.

Procedure	Description
1	When pushing [SET] and [TEST] buttons at the same time for 4 seconds or more, the following display appears. If [✔ Service check] is displayed, the mode enters in the trouble log mode. • [01: Order of trouble log] is displayed in CODE No. window. • [Check code] is displayed. • [Indoor unit address in which a trouble occurred] is displayed in UNIT No. Every pushing of [▼ / ▲] button used to set temperature, the trouble log stored in memory is displayed in order. The numbers in CODE No. indicate CODE No. [01] (latest) to [04] (oldest).
2	⚠ **CAUTION** Do not push ⟳ button because all the trouble log of the indoor unit will be deleted.
3	After confirmation, push [TEST] button to return to the usual display.

1. Check the troubles according to the above procedure.
2. Ask an authorized dealer or qualified service (maintenance) professional to repair or maintain the air conditioner or the hot water module.
3. More details of the check code are explained in Service Manual.

13. INSTALLATION MANUAL (EXCERPT)

2 Accessory parts

Part name	Qty	Shape	Usage
Installation Manual	1	This manual	(Hand over to customers) (For other languages that do not appear in this Installation Manual, please refer to the enclosed CD-R.)
Owner's Manual	1	—	(Hand over to customers) (For other languages that do not appear in the Owner's Manual, please refer to the enclosed CD-R.)
CD-ROM	1	—	Installation Manual, Owner's Manual
Heat insulator	1		For heat insulation of Gas pipe connecting section
	1		For heat insulation of Liquid pipe connecting section

3 System control of Hot Water Module

3.1 System able to be combined for SMMS-e and SHRM-e Series (MMY-***)

The Mid temperature Hot water module (M-HWM) is connectable to SMMS-e and SHRM-e.

In case of connecting at least one Hot water module in SHRM-e system, all of Flow Selector unit type should be Single port type Flow Selector unit (long piping model) or Multi port type Flow Selector unit.

The Free Air intake type and Air to Air Heat Exchanger with DX Coil cannot be connected with the same refrigerant system.

M-HWM: Mid temperature Hot water module
H-HWM: High temperature Hot water module
HWM: Mid temperature Hot water module and High temperature Hot water module

No.	Item				SMMS-e	SHRM-e
1	Indoor connection capacity(*1)	Total	Standard indoor unit + M-HWM + H-HWM		-	90 - 200% (*2) (*3)
			Standard indoor unit + M-HWM		65 - 115% (*3)	90 - 135% (*2) (*3)
		Allowed capacity	Standard indoor unit		50 - 115%	50 - 120% (*2)
			M-HWM		0 - 50% (*3)	0 - 67.5% (*2) (*3)
			H-HWM		-	0 - 100% (*2) (*3)
			M-HWM + H-HWM		-	0 - 100% (*2) (*3)
2	Maximum indoor unit quantity	Total	Standard indoor unit + M-HWM + H-HWM		-	32
			Standard indoor unit + M-HWM		64	32
		Allowed number	Standard indoor unit		2 - 64	2 - 32
			M-HWM		0 - 2	0 - 14
			H-HWM		-	0 - 12
			M-HWM + H-HWM		-	0 - 14
3	Height difference	Height difference between outdoor and indoor units H1 (*4) (Including HWM)	H2 > 3m	Upper outdoor units	50 m	50 m
				Lower outdoor units	30 m	30 m
			H2 ≤ 3m	Upper outdoor units	70 m	70 m
				Lower outdoor units	40 m	30 m
		Height difference between indoor units (Including HWM) H2, H4, H5 (*4)	Indoor - Indoor H2	Upper outdoor units	3 m (*5)	40 m
				Lower outdoor units	10 m (*5)	15 m (*6)
			HWM - HWM H4	Upper outdoor units	3 m	40 m
				Lower outdoor units	3 m	15 m (*6)
			Indoor - HWM H5	Upper outdoor units	3 m (*5)	40 m
				Lower outdoor units	10 m (*5)	15 m (*6)
		Height between outdoor units H3			5 m	5 m
		Height difference between indoor units in group control by one Flow Selector unit H6			-	0.5 m

(*1): Ratio of connected total indoor unit capability to outdoor unit capability
(*2): Maximum indoor connection capacity is varied depending on the height difference between indoor unit H2, H4, H5.

Combination of indoor units		SHRM-e
Standard indoor unit + M-HWM + H-HWM	H2, H4, H5 ≤ 15 m	Max. 200% (Standard indoor unit <120%)
	15 m < H2, H4, H5	Max. 125% (Standard indoor unit <100%)
Standard indoor unit + M-HWM	H2, H4, H5 ≤ 15 m	Max. 135% (Standard indoor unit <120%)
	15 m < H2, H4, H5	Max. 125% (Standard indoor unit <100%)

(*3): HWM connecting capacity should be smaller than standard indoor unit.
(*4): As for 44HP to 54HP of SHRM-e, contact our agent.
(*5): When M-HWM and standard indoor units are not operated simultaneously, it is possible up to 40 m.
(*6): When system capacity is greater than 28HP, height difference between indoor units is limited to 3 m. If the height difference between indoor units exceeds 3 m with a capacity greater than 28HP there may be a case of capacity shortage in cooling.

Design the system that total capacity of simultaneous heating operation is 100% or less. If total capacity of simultaneous heating is over 100%, then each indoor units or HWM performance is descended.

▼ Figure 1
M-HWM: Mid temperature Hot water module
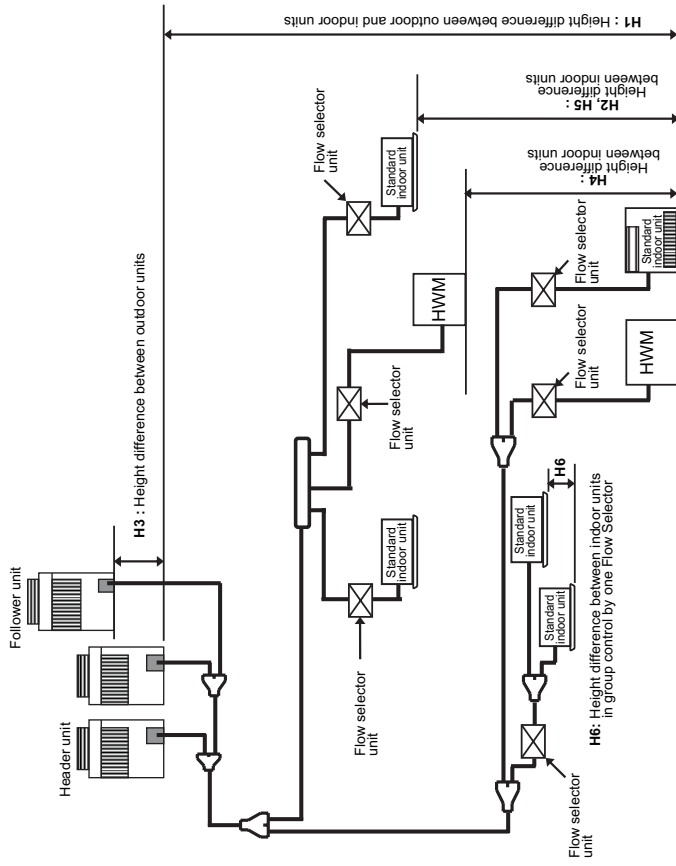
H1: Height difference between outdoor units and indoor units (Including HWM)
H2: Height difference between standard indoor units
H3: Height difference between outdoor units
H4: Height difference between HWMs
H5: Height difference between standard indoor units and HWMs

It is prohibited to connect the standard indoor unit and the HWM to the same Flow Selector unit in SHRM-e system.
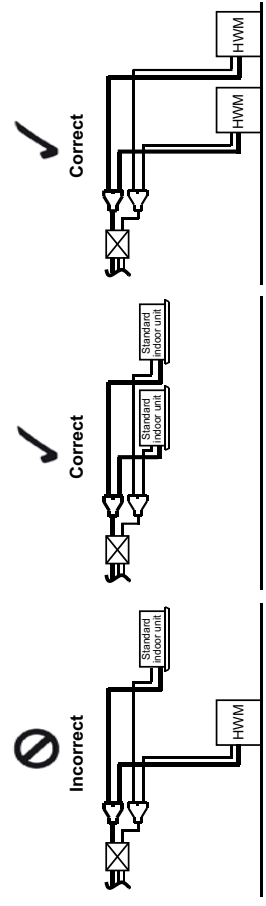
In the case of SMMS-e system including the Hot water module

M-HWM: Mid temperature Hot water module

▼ **Capacity code of Mid temperature Hot water module**
The capacity code of the Hot water module is different from the capacity code of the standard indoor unit.

Mid temperature Hot water module			MMW-AP0271LQ-E	MMW-AP0561LQ-E
Capacity rank type				
Capacity code			027	056
Capacity code	Equivalent to HP	(HP)	2.5	5
Equivalent to capacity		(kW)	7.1	14.0

▼ **Capacity code of standard indoor unit**

Capacity rank type			005	007	009	012	015	018	024	027
Capacity code	Equivalent to HP	(HP)	0.6	0.8	1	1.25	1.7	2	2.5	3
Equivalent to capacity		(kW)	1.7	2.2	2.8	3.6	4.5	5.6	7.1	8.0

Capacity rank type			030	036	048	056	072	096
Capacity code	Equivalent to HP	(HP)	3.2	4	5	6	8	10
Equivalent to capacity		(kW)	9.0	11.2	14.0	16.0	22.4	28.0

SMMS-e		Capacity code of outdoor unit (HP)	Maximum indoor unit quantity	Total capacity code of indoor units (HP) Standard indoor unit + M-HWM — Total capacity 65 - 115%
	MMY-MAP0806HT8P	8	18	5.2 to 9.2
	MMY-MAP1006HT8P	10	22	6.5 to 11.5
	MMY-MAP1206HT8P	12	27	7.8 to 13.8
	MMY-MAP1406HT8P	14	31	9.1 to 16.1
	MMY-MAP1606HT8P	16	36	10.4 to 18.4
	MMY-MAP1806HT8P	18	40	11.7 to 20.7
	MMY-MAP2006HT8P	20	45	13.0 to 23.0
	MMY-MAP2206HT8P	22	49	14.3 to 25.3
	MMY-MAP2416HT8P	24	54	15.6 to 27.6
	MMY-MAP2616HT8P	26	58	16.9 to 29.9
	MMY-MAP2816HT8P	28	63	18.2 to 32.2
	MMY-MAP3016HT8P	30	64	19.5 to 34.5
	MMY-MAP3216HT8P	32	64	20.8 to 36.8
Standard model	MMY-MAP3416HT8P	34	64	22.1 to 39.1
	MMY-MAP3616HT8P	36	64	23.4 to 41.4
	MMY-MAP3816HT8P	38	64	24.7 to 43.7
	MMY-MAP4016HT8P	40	64	26.0 to 46.0
	MMY-MAP4216HT8P	42	64	27.3 to 48.3
	MMY-MAP4416HT8P	44	64	28.6 to 50.6
	MMY-MAP4616HT8P	46	64	29.9 to 52.9
	MMY-MAP4816HT8P	48	64	31.2 to 55.2
	MMY-MAP5016HT8P	50	64	32.5 to 57.5
	MMY-MAP5216HT8P	52	64	33.8 to 59.8
	MMY-MAP5416HT8P	54	64	35.1 to 62.1
	MMY-MAP5616HT8P	56	64	36.4 to 64.4
	MMY-MAP5816HT8P	58	64	37.7 to 66.7
	MMY-MAP6016HT8P	60	64	39.0 to 69.0
	MMY-MAP2026HT8P	20	45	13.0 to 23.0
	MMY-MAP2226HT8P	22	49	14.3 to 25.3
High efficiency / Heating capacity priority model	MMY-MAP3626HT8P	36	64	23.4 to 41.4
	MMY-MAP3826HT8P	38	64	24.7 to 43.7
	MMY-MAP4026HT8P	40	64	26.0 to 46.0
	MMY-MAP4226HT8P	42	64	27.3 to 48.3
	MMY-MAP4426HT8P	44	64	28.6 to 50.6
	MMY-MAP5426HT8P	54	64	35.1 to 62.1

H2, H4, H5: Height difference between indoor unit (Including HWM)

In the case of SHRM-e system including the Hot water module

M-HWM: Mid temperature Hot water module
H-HWM: High temperature Hot water module

SHRM-e	Capacity code of outdoor unit (HP)	Maximum indoor unit quantity	Total capacity code of indoor units (HP) Standard indoor unit + M-HWM + H-HWM		Total capacity code of indoor units (HP) Standard indoor unit + M-HWM	
			H2, H4, H5 ≤15m Total capacity 90 - 200% (Standard indoor unit <120%)	15m <H2, H4, H5 Total capacity 90 - 125% (Standard indoor unit <100%)	H2, H4, H5 ≤15m Total capacity 90 -135% (Standard indoor unit <120%)	15m <H2, H4, H5 Total capacity 90 - 125% (Standard indoor unit <100%)
MMY-MAP0806FT8P	8	18	7.2 to 16.0	7.2 to 10.0	7.2 to 10.8	7.2 to 10.0
MMY-MAP1006FT8P	10	22	9.0 to 20.0	9.0 to 12.5	9.0 to 13.5	9.0 to 12.5
MMY-MAP1206FT8P	12	27	10.8 to 24.0	10.8 to 15.0	10.8 to 16.2	10.8 to 15.0
MMY-MAP1406FT8P	14	31	12.6 to 28.0	12.6 to 17.5	12.6 to 18.9	12.6 to 17.5
MMY-MAP1606FT8P	16	32	14.4 to 32.0	14.4 to 20.0	14.4 to 21.6	14.4 to 20.0
MMY-MAP1806FT8P	18	32	16.2 to 36.0	16.2 to 22.5	16.2 to 24.3	16.2 to 22.5
MMY-MAP2006FT8P	20	32	18.0 to 37.0 (*1)	18.0 to 25.0	18.0 to 25.0 (*2)	18.0 to 25.0
MMY-MAP2206FT8P	22	32	19.8 to 44.0	19.8 to 27.5	19.8 to 29.7	19.8 to 27.5
MMY-MAP2416FT8P	24	32	21.6 to 48.0	21.6 to 30.0	21.6 to 32.4	21.6 to 30.0
MMY-MAP2616FT8P	26	32	23.4 to 52.0	23.4 to 32.5	23.4 to 35.1	23.4 to 32.5
MMY-MAP2816FT8P	28	32	25.2 to 56.0	25.2 to 35.0	25.2 to 37.8	25.2 to 35.0
MMY-MAP3016FT8P	30	32	27.0 to 60.0	27.0 to 37.5	27.0 to 40.5	27.0 to 37.5
MMY-MAP3216FT8P	32	32	28.8 to 64.0	28.8 to 40.0	28.8 to 43.2	28.8 to 40.0
MMY-MAP3416FT8P	34	32	30.6 to 68.0	30.6 to 42.5	30.6 to 45.9	30.6 to 42.5
MMY-MAP3616FT8P	36	32	32.4 to 72.0	32.4 to 45.0	32.4 to 48.6	32.4 to 45.0
MMY-MAP3816FT8P	38	32	34.2 to 72.2 (*1)	34.2 to 47.5	34.2 to 49.4 (*2)	34.2 to 47.5
MMY-MAP4016FT8P	40	32	36.0 to 74.0 (*1)	36.0 to 50.0	36.0 to 50.0 (*2)	36.0 to 50.0
MMY-MAP4216FT8P	42	32	37.8 to 84.0	37.8 to 52.5	37.8 to 56.7	37.8 to 52.5
MMY-MAP4416FT8P	44	32	39.6 to 88.0	39.6 to 55.0	39.6 to 59.4	39.6 to 55.0
MMY-MAP4616FT8P	46	32	41.4 to 92.0	41.4 to 57.5	41.4 to 62.1	41.4 to 57.5
MMY-MAP4816FT8P	48	32	43.2 to 96.0	43.2 to 60.0	43.2 to 64.8	43.2 to 60.0
MMY-MAP5016FT8P	50	32	45.0 to 100	45.0 to 62.5	45.0 to 67.5	45.0 to 62.5
MMY-MAP5216FT8P	52	32	46.8 to 104	46.8 to 65.0	46.8 to 70.2	46.8 to 65.0
MMY-MAP5416FT8P	54	32	48.6 to 108	48.6 to 67.5	48.6 to 72.9	48.6 to 67.5

H2, H4, H5: Height deference between indoor unit (Including HWM)
(*1): 20HP and 40HP: 90-185% 38HP: 90-190%
(*2): 20HP and 40HP: 90-125% 38HP: 90-130%

▼ Capacity code of Hot water module
The capacity code of the Hot water module is different from the capacity code of the standard indoor unit.

Hot water module		Mid temperature		High temperature
		MMW-AP0271LQ-E	MMW-AP0561LQ-E	MMW-AP0481CHQ-E
Capacity rank type				
Capacity code		027	056	048
Equivalent to HP	(HP)	2.5	5	5
Equivalent to capacity	(kW)	7.1	14.0	12.5

▼ Capacity code of standard indoor unit

Capacity rank type		005	007	009	012	015	018	024	027	030	036	048	056	072	096
Capacity code Equivalent to HP	(HP)	0.6	0.8	1	1.25	1.7	2	2.5	3	3.2	4	5	6	8	10
Equivalent to capacity	(kW)	1.7	2.2	2.8	3.6	4.5	5.6	7.1	8.0	9.0	11.2	14.0	16.0	22.4	28.0

■ Example of Installation for Hot Water Module water piping

• To install the hot water module, connect the pump and line heater, (procured locally).

• Do not connect more than one hot water module to one pump and one line heater, (procured locally).

• Be sure to install one pump and one line heater to one hot water module as shown in the following examples.

• Be sure to attach the air vent valve (procured locally) vertically at the highest possible place where air tends to rise.
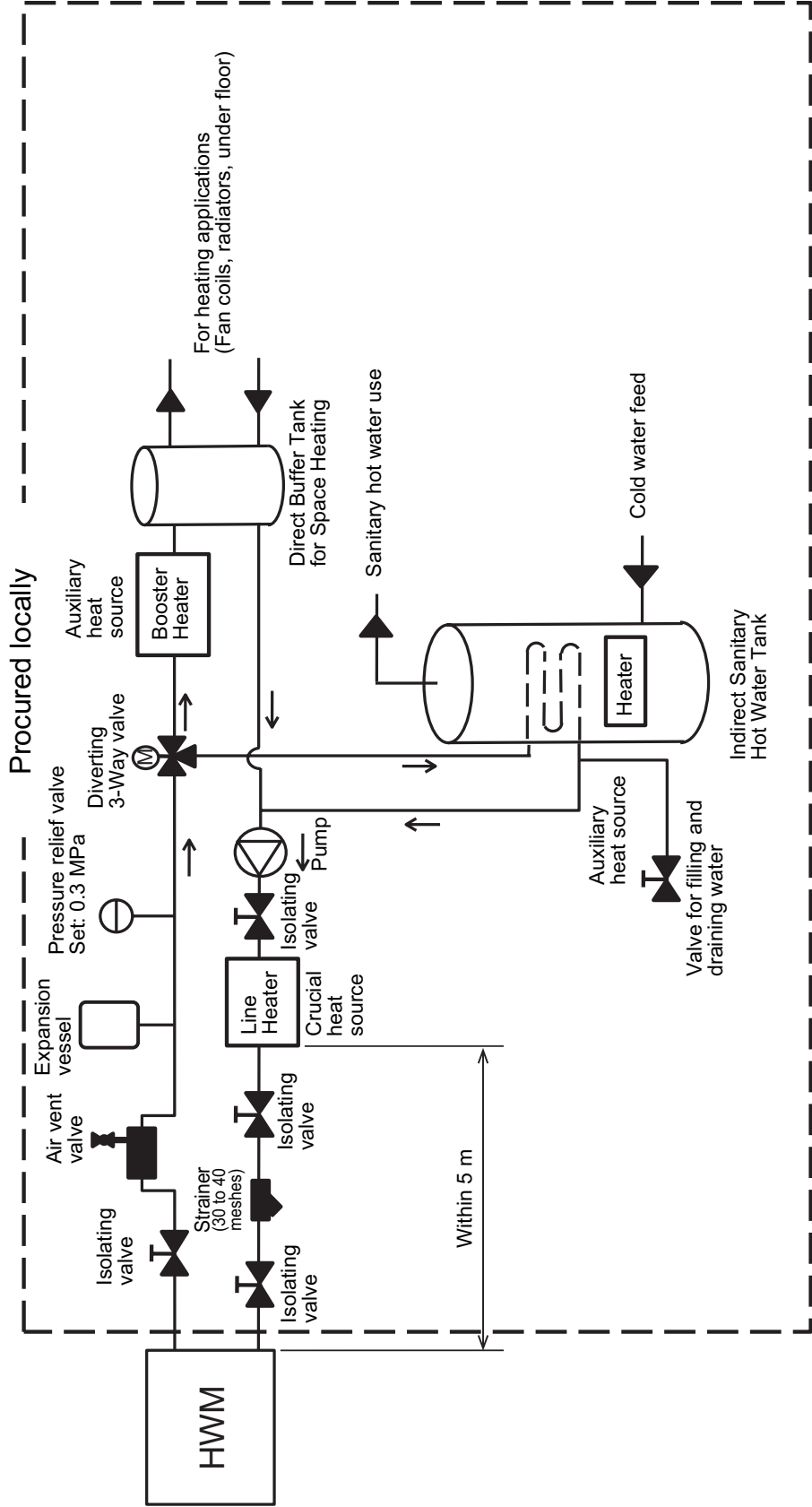
HWM: Hot Water Module

Sample 1.

Sample 2.

HWM: Hot Water Module

Procured locally

For heating applications
(Fan coils, radiators, under floor)

Direct Buffer Tank
for Space Heating

Auxiliary heat source

Booster Heater

Valve for filling and
draining water

Pressure relief valve
Set: 0.3 MPa

Expansion vessel

Pump

Isolating valve

Line Heater

Crucial heat source

Air vent valve

Isolating valve

Strainer
(30 to 40 meshes)

Within 5 m

Isolating valve

Isolating valve

HWM

Sample 3.

HWM: Hot Water Module

Procured locally

Sanitary hot water use

Cold water feed

Heater

Indirect Sanitary
Hot Water Tank

Auxiliary heat source

Valve for filling and
draining water

Pressure relief valve
Set: 0.3 MPa

Expansion vessel

Pump

Isolating valve

Line Heater

Crucial heat source

Air vent valve

Isolating valve

Strainer
(30 to 40 meshes)

Within 5 m

Isolating valve

Isolating valve

HWM
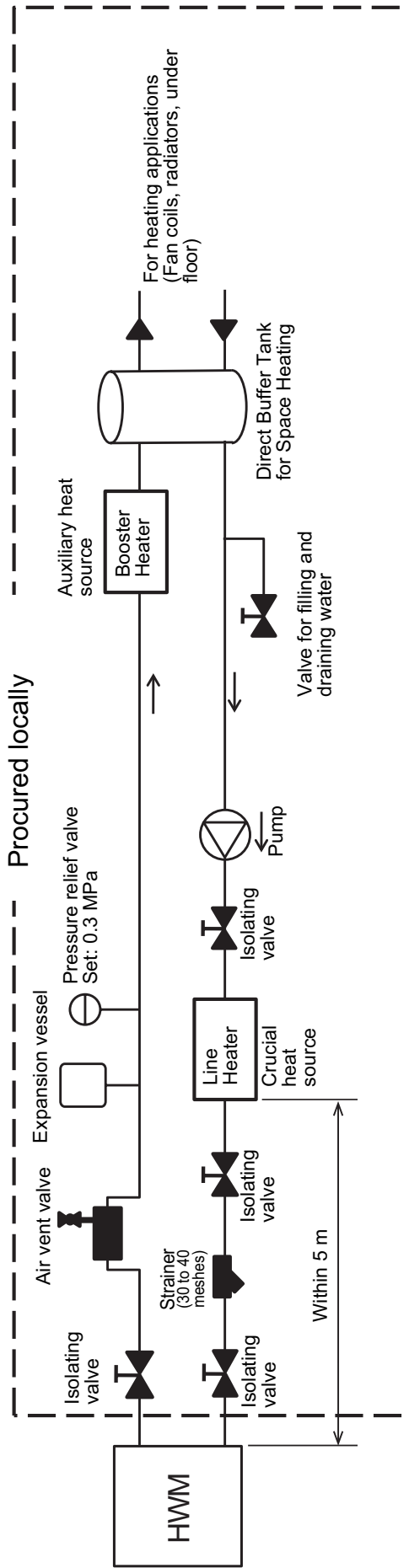
3.2 System able to be combined for MiNi-SMMS-e series (MCY-***)

The Mid temperature Hot Water Module is connectable to MiNi-SMMS-e.
M-HWM: Mid temperature Hot Water Module

No.	Item				M-HWM connection	Without M-HWM connection
1	System capacity				Depending on the outdoor unit to be connected	
2	Indoor connection capacity			Max.	130% (*1) (Excluding M-HWM) 200% (Including M-HWM)	130% (*1)
				Min.	80% (*1) (Excluding M-HWM)	80% (*1)
3	M-HWM connection capacity per refrigerant system			Max.	100% or less	-
4	Height difference	Height between outdoor and indoor units (including M-HWM) H1		Upper outdoor units	(*2)	(*2)
				Lower outdoor units	(*2)	(*2)
		Height between indoor units (including M-HWM) H2, H3, H4	Indoor - Indoor H2	Upper outdoor units	10m	See Figure 1 / (*3)
				Lower outdoor units	10m	
			Indoor - M-HWM H4	Upper outdoor units	10m	-
				Lower outdoor units	10m	-
			M-HWM - M-HWM H3	Upper outdoor units	10m	-
				Lower outdoor units	10m	-

(*1): For more information, please read the Installation Manual provided with the outdoor unit. (Total capacity code of connectable indoor units)
(*2): For more information, please read the Installation Manual provided with the outdoor unit. (Where H1 is indicated)
(*3): Please read the Installation Manual provided with the outdoor unit. (Where H2 is indicated)

▼ Capacity code of outdoor unit, Maximum indoor unit quantity and total capacity code of indoor unit

MiNi-SMMS-e	Capacity code of outdoor unit (HP)	Maximum indoor unit quantity	Total capacity code of indoor units (HP) Standard indoor unit + M-HWM Total capacity 80 - 200%
MCY-MHP0806HS8*	8	12	6.4 to 16.0
MCY-MHP1006HS8*	10	16	8.0 to 20.0

▼ Capacity code of Mid temperature Hot water module
The capacity code of the Hot water module is different from the capacity code of the standard indoor unit.

Mid temperature Hot water module			MMW-AP0271LQ-E	MMW-AP0561LQ-E
Capacity rank type			027	056
Capacity code	Equivalent to HP	(HP)	2.5	5
Equivalent to capacity		(kW)	7.1	14.0

▼ Capacity code of standard indoor unit

Capacity rank type			005	007	009	012	015	018	024	027
Capacity code	Equivalent to HP	(HP)	0.6	0.8	1	1.25	1.7	2	2.5	3
Equivalent to capacity		(kW)	1.7	2.2	2.8	3.6	4.5	5.6	7.1	8.0

Capacity rank type			030	036	048	056
Capacity code	Equivalent to HP	(HP)	3.2	4	5	6
Equivalent to capacity		(kW)	9.0	11.2	14.0	16.0

M-HWM : Mid temperature Hot Water Module

<Lower outdoor units >

Standard indoor unit

Standard indoor unit

M-HWM指定

M-HWM

H2 ≦10m

H3 ≦10m

H4 ≦10m

H1
(Outdoor units installed lower than indoor units)
*4

*4. Please read the Installation Manual provided with the outdoor unit. (Where H1 is indicated)
H1: Height difference between outdoor units and indoor units (including M-HWM)
H2: Height difference between standard indoor units
H3: Height difference between M-HWMs
H4: Height difference between standard indoor units and M-HWMs

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▼**Figure 1**
<Upper outdoor units>

For M-HWM connections, height difference restrictions between standard indoor units (H2), between M-HWM units (H3), and between standard indoor units and M-HWM units (H4)

Standard indoor unit

Standard indoor unit

M-HWM

M-HWM

H2 ≦10m

H3 ≦10m

H4 ≦10m

H1
(Outdoor units installed higher than indoor units)
*4
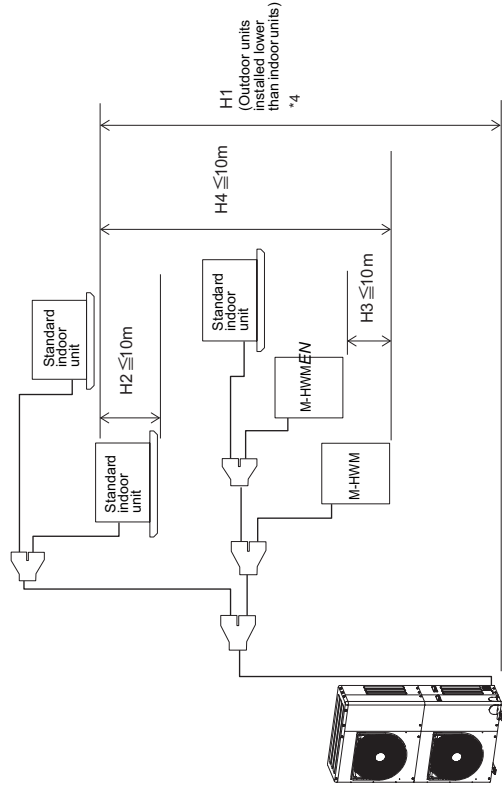
*4. Please read the Installation Manual provided with the outdoor unit. (Where H1 is indicated)
H1: Height difference between outdoor units and indoor units (including M-HWM)
H2: Height difference between standard indoor units
H3: Height difference between M-HWMs
H4: Height difference between standard indoor units and M-HWMs

■ **Example of Installation for Hot Water Module water piping for MiNi-SMMS-e series (MCY-***)**

• To install the hot water module, connect the pump and line heater, (procured locally).

• Do not connect more than one hot water module to one pump and one line heater, (procured locally).

• Be sure to install one pump and one line heater to one hot water module as shown in the following examples.

• Be sure to attach the air vent valve (procured locally) vertically at the highest possible place where air tends to rise.

HWM: Hot Water Module

Sample 1.

Procured locally

Isolating valve

Air vent valve Expansion vessel

Strainer (30 to 40 meshes)

Isolating valve

Isolating valve

Within 5 m

HWM

Line Heater

Crucial heat source

Pressure relief valve Set: 0.3 MPa

Isolating valve

Pump

Auxiliary heat source

Booster Heater

Valve for filling and draining water

Direct Buffer Tank for Space Heating

For heating applications (Fan coils, radiators, under floor)
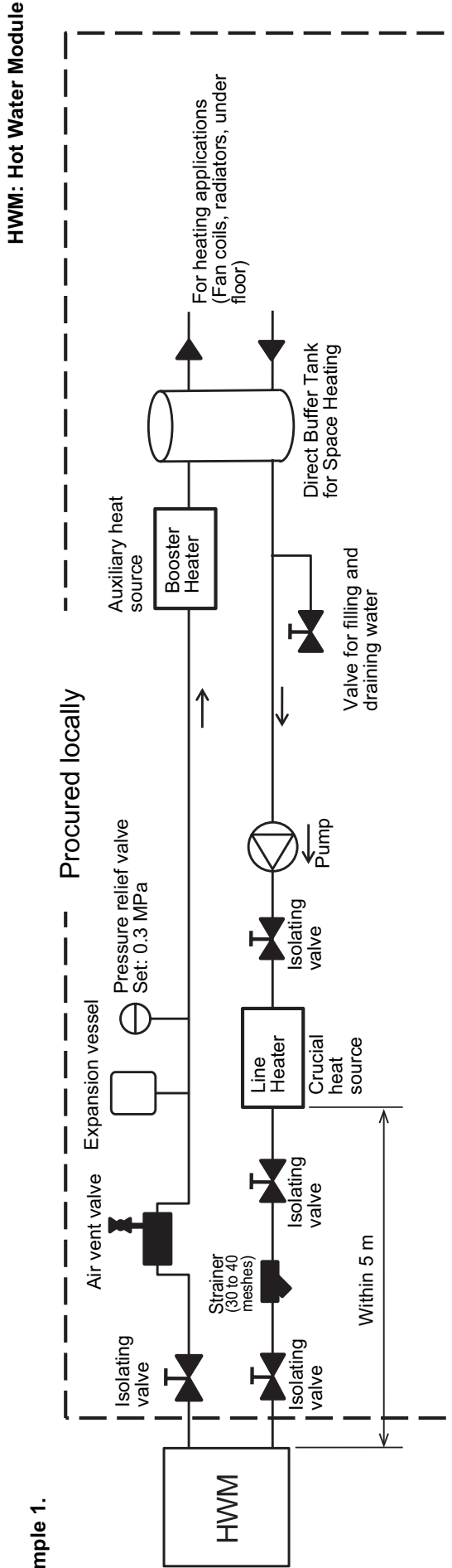
4 Selection of installation place

Avoid installing in the following places

Select a location for the indoor unit where the cool or warm air will circulate evenly.
Avoid installation in the following kinds of locations.

- Saline area (coastal area)
- Locations with acidic or alkaline atmospheres (such as areas with hot springs, factories where chemicals or pharmaceuticals are made and places where the exhaust air from combustion appliances will be sucked into the unit).
  Doing so may cause the heat exchanger and other parts to become corroded.
- Locations with atmospheres with mist of cutting oil or other types of machine oil.
  Doing so may cause the heat exchanger to become corroded, mists caused by the blockage of the heat exchanger to be generated, the plastic parts to be damaged, the heat insulators to peel off, and other such problems to result.
- Locations where vapors from food oils are formed (such as kitchens where food oils are used).
  The plastic parts to be damaged, and other such problems to result.
- Locations where an in-house power generator is used for the power supply.
  The power line frequency and voltage may fluctuate, and the hot water module may not work properly as a result.
- On truck cranes, ships or other moving conveyances.
- The hot water module must not be used for special applications (such as for storing food, plants, precision instruments or art works).
  (The quality of the items stored may be degraded.)
- Locations where high frequencies are generated (by inverter equipment, in-house power generators, medical equipment or communication equipment).
  (Malfunctioning or control trouble in the hot water module or noise may adversely affect the equipment's operation.)
- Locations where there is anything under the unit installed that would be compromised by wetness.
  (If the drain has become blocked or when the humidity is over 85%, condensation from the hot water module will drip, possibly causing damage to anything underneath.)
- In the case of the wireless type of system, rooms with the inverter type of fluorescent lighting or locations exposed to direct sunlight.
  (The signals from the wireless remote controller may not be sensed.)
- Locations where organic solvents are being used.
- The hot water module cannot be used for liquefied carbonic acid cooling or in chemical plants.
- Location near doors or windows where the hot water module may come into contact with high-temperature, high-humidity outdoor air.
  (Condensation may occur as a result.)
- Locations where special sprays are used frequently.
- Places where iron or other metal dust is present. If iron or other metal dust adheres to or collects on the interior of the hot water module, it may spontaneously combust and start a fire.
- Locations such as living rooms and bedrooms where you can easily be bothered by noise. Noise may become a problem.

⚠ CAUTION

- Do not install hot water module in a place where water freezes.
- Do not install the hot water module in a place where combustible gas may leak.
- Do not install the hot water module in a place exposed to rain or water.
- Do not install the hot water module near equipment which generates heat.
- Do not install the hot water module to a movable object.
- Do not install the hot water module in a place exposed to vibration.
- The hot water module must be installed in accordance with national wiring regulation.
- The hot water module must not be installed in a high humidity condition area.
- The hot water module must not be installed in a high dusty area.

5 Installation

⚠ CAUTION

Strictly comply with the following rules to prevent damage of the hot water modules and human injury.

- Do not put a heavy article on the hot water module or let a person get on it. (Even units are packaged)
- Carry in the hot water module as it is packaged if possible. If carrying in the hot water module unpacked by necessity, use buffering cloth or other material to not damage the unit.
- To move the hot water module, hold the bottom face of the unit only. Do not apply force to the other parts (refrigerant pipe, drain pan, water pipe, foamed parts, resin parts or other parts).
- Carry the package by two or more persons, and do not bundle it with plastic band at positions other than specified.
- To protect yourself from injury, always use PPE (Personal Protective Equipment), that is, wear gloves.
- Install the Hot water module in a place strong enough to withstand the following weights:
  Hot water module weight with no water 17.8 kg (027) 20.3 kg (056)
  Hot water module weight with full water 18.4 kg (027) 21.6 kg (056)

■ Installation atmosphere

Installation atmosphere of the unit is as follows. Be careful of installation atmosphere.
It becomes a cause of failure of a product by dewing or freezing.

Installation atmosphere	Dry-bulb temp. (°C)	5 to 32
	Wet-bulb temp. (°C)	24 (Max.)
	RH (%)	30 to 85
	Allowable dew point (°C Wet-bulb temp)	23 or less

Permissible range

Dry bulb temperature (°C)
Relative humidity (%)

■ Installation space

Reserve sufficient space required for installation or service work.

(Unit: mm)

Front side
1000 or more
500 or more
200 or more
50 or more

Front side
50 or more
200 or more

■ Fixing the hot water module to floor

1. Fix the hot water module with M8 anchor bolts at 4 positions. 20 mm projection is appropriate for an anchor bolt.

(Unit: mm)

M8 anchor bolt 4 positions/unit

20

• Anchor bolt positions are as shown below:

(Unit: mm)

160

435

14×12 long hole

⚠ WARNING

• **Be sure to install the hot water module in a place able to bear its weight.**
If strength is insufficient, the unit may fall down resulting in human injury.

• **Perform specified installation work to protect earthquakes.**
If the hot water module is imperfectly installed, an accident by falling or dropping may be caused.

⚠ CAUTION

• Drain water is discharged from the hot water module.
(Especially while operating)
Install the hot water module in a place with good drainage.

• For installation, be careful of the strength and level of the foundation so that abnormal sounds (vibration or noise) are not generated.

• Be sure to install the hot water module in a place strong enough to withstand its weight. If the base is unstable, reinforce with a concrete base.
• The hot water module must be anchored on a level surface. Use a level to check after installation.
• If the hot water module is installed near a room where noise is a problem, using an anti-vibration stand on the base of the unit is recommended.

■ External dimensions(Unit: mm)

250
(40) 160 50
Anchor bolt hole pitch
(15) 50 110 50 25
35
33.5
16
4-14×12 Long hole
400
435
467
Anchor bolt hole pitch
(33.5)
(16)

R1-1/4 (PT1-1/4Screw) Water Outlet
R1-1/4(PT1-1/4Screw) Water Inlet
R1 (PT1 Screw) Drain
(76)
174
269
95
225
74 60
19
65
73
50
165 50 50
Refrigerant pipe connecting port Ø15.9 Gas side
3-Ø26
Power supply wiring port
Control wiring port
External signal wiring port
Refrigerant pipe connecting port Ø9.5 Liquid side

580
80
25
18
1.5
25.5
62.5
15
25

– 126 –

6 Water piping

⚠ WARNING

- Install water pipes according to the regulations of respective countries.
- Install water pipes in the freeze-free place.
- Make sure that water pipes have sufficient pressure resistance. The design pressure is 1.0 MPa.

⚠ CAUTION

- Do not use zinc plated water pipes. When steel pipes are used, insulate both ends of the pipes.
- Copper pipes are recommended.
- The water to be used must meet the water quality standard specified in EU directive 98/83 EC.
- **After the vacuuming is completed, carry out the following procedure before adding refrigerant.**
  Plate heat exchanger may explode because the water in the plate heat exchanger frozen.
  To avoid this phenomenon, ensure that the VRF system is fully commissioned, including the control system, before filling the water circuit.
- The hot water module and the buffer/cylinder tank must be installed on the same floor height.
- The water piping on the inlet side of the hot water module must not be connected with right-angled loop piping (refer to the figure below).
- When flow switch detects a decrease in the water flow rate, the outdoor unit stops.

Incorrect

Pump

Buffer or Cylinder tank

Incorrect

Pump

Buffer or Cylinder tank

- Fix the unit in a horizontal position.
  When unit is fixed to slant, it may cause overflow of drainage.
- Install the unit within the dimension according to the figure below.
- Use level gauge or vinyl hose to confirm whether the unit is fix horizontally.

Front view

0 to 5 mm

Set the drain pipe connecting port side within 5 mm lower than opposite side.

Side view

± 5 mm

Set the front and air back sides are within 5 mm with each other.

■ Remove the part for transportation

Be sure to remove the transportation part before operating the unit.

Transportation part

■ Water piping and line heater installation

- Install a suitably sized expansion vessel, 3 bar (0.3 MPa) pressure relief valve, water drain, and fill valve (procured locally).
  Follow all local regulations for the installation of closed circuit heating systems.
- Make the piping route a closed circuit. (An open water circuit may cause a failure.)
- Before a long period of none use, purge the water out of the pipes and thoroughly let them dry.
  Do not add brine to the circulating water.
- Do not use the water used for the unit for drinking or food manufacturing.
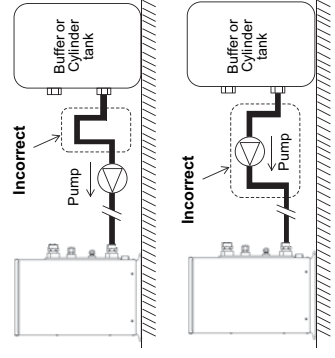- To insure easy maintenance, inspection, and replacement of the unit, use a proper joint, valve, etc (procured locally) on the water inlet and outlet port.
- Be sure to install a strainer with 30 to 40 meshes (procured locally) on the water inlet pipe. If a strainer is not installed, this may cause impaired performance, or damage to the plate heat exchanger from freezing.
- Install a suitable air vent (procured locally) on the water pipe. After sending water through the pipe, be sure to vent the excess air.
- Be sure to attach the air vent valve vertically at the highest possible place where air tends to rise.
- To avoid water leak, wrap some sealing tape around the screw part.
- Water pipes can get very hot, depending on the preset temperature. Wrap the water pipes with heat insulation (procured locally) to prevent burns.
- Be sure to install the line heater (procured locally) on the water inlet side. In addition, position it within 5 m of the water inlet pipe of the hot water module.
- Follow the table below to select a line heater (procured locally) within the range of 40 to 50 % of the hot water module's rated capacity.

Hot water module model name	Capacity of line heater (kW)
MMW-AP0271LQ-E	3.2~4.0
MMW-AP0561LQ-E	6.4~8.0

Water outlet R1-1/4
Air vent valve
Expansion vessel
Pressure relief valve
Set: 0.3 MPa
Isolating Valve
Line Heater
Pump
Valve for filling and draining water
Water inlet R1-1/4
Strainer
Crucial heater source
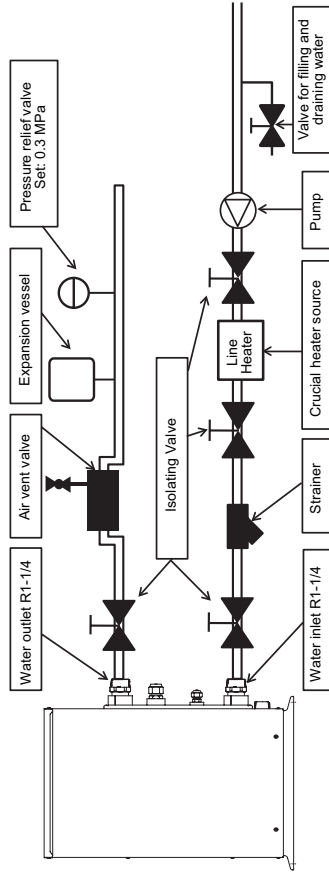
■ Pipe size, material and insulator

The following specification for piping work and insulating process are procured locally.

Model	MMW-		AP027	AP056
Connecting pipe (unit side)	Inlet		R1-1 / 4	R1-1 / 4
	Outlet			
Water pipe				
Connecting pipes material	Copper pipes are recommended			
Insulator	Formed polyethylene foam, thickness: 10 mm or more			

■ Characteristics of hot water module flow rate and pressure loss

The following graph shows the range of flow rates used for the hot water module, and the characteristic pressure losses. Use this as an aid in the local pump procurement process.

027type

	Min.	Rated	Max.
Water flow rate (L/min)	19.5	22.9	26.3
Pressure loss (kPa)	28.5	40.5	53.5
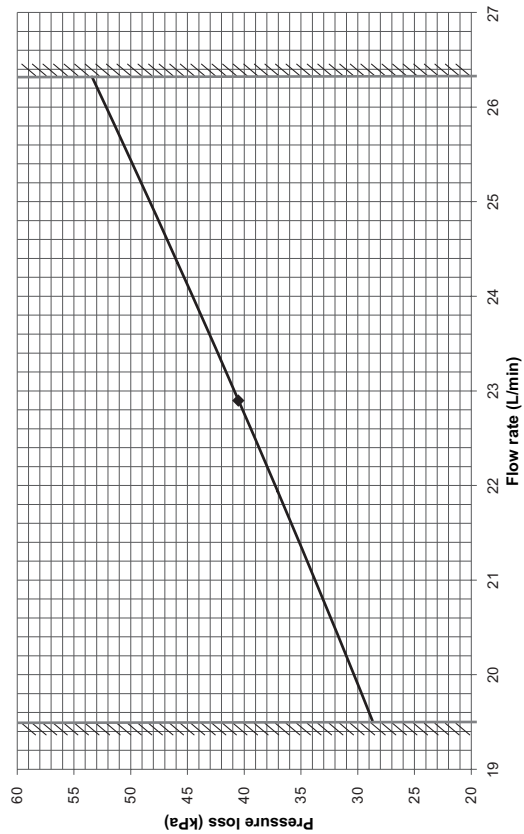
056type

	Min.	Rated	Max.
Water flow rate (L/min)	38.9	45.8	52.6
Pressure loss (kPa)	35.2	44.2	58.2
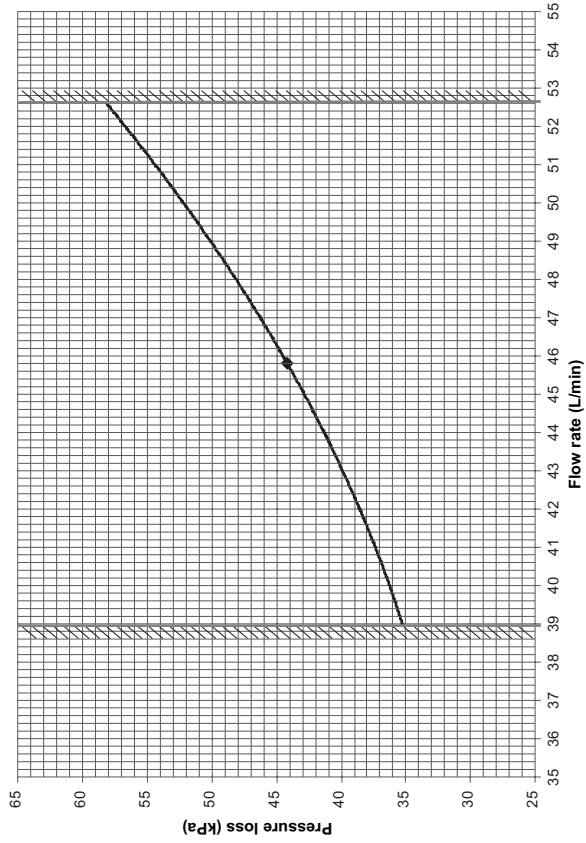
7 Drain piping

⚠ CAUTION

• **Following the Installation Manual, perform the drain piping work so that water is properly drained. Apply a heat insulation so as not to cause a dew condensation.**
Inappropriate piping work may result in water leakage in the room and wet furniture.

• **After opening the knockout hole, deburr the edge.**
Burrs adhered to opening of the knockout hole may causes an injury by touching it.

Drain piping

Support bracket
1.5 m to 2 m
As long as possible (Appox. 10 cm)
Downward slope 1/100 or more
Drain connection R1 (steel)

• Provide the indoor drain piping with proper heat insulation.
• Provide the area where the pipe connects to the indoor unit with proper heat insulation. Improper heat insulation will cause condensation to form.
• The drain pipe must be sloping downward (at an angle of 1/100 or more), and do not run the pipe up and down (arched shape) or allow it to form traps. Doing so may cause abnormal sounds.
• Restrict the length of the traversing drain pipe to 20 meters or less. For a long pipe, provide support brackets at intervals of 1.5 to 2 meters to prevent flapping.
• Install the collective piping as shown in the following figure.
• Do not provide any air vents. Otherwise, the drain water will spout, causing water to leak.
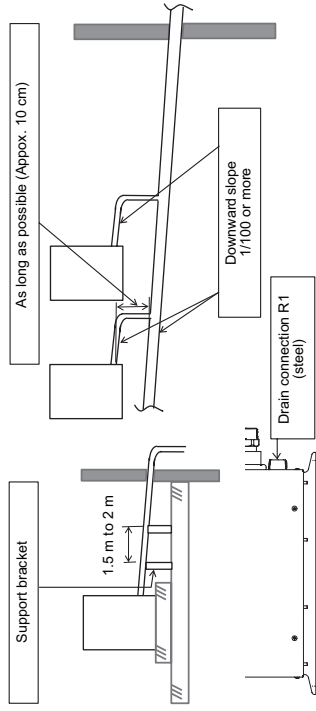• Do not allow any force to be applied to the connection area with the drain pipe.
• To avoid water leak, wrap some sealing tape around the screw part.
• Drain connection is made from steel. Do not connect the joint pipe made from stainless steel.

■ Pipe material, size and insulator

The following materials for piping work and insulating process are procured locally.

Pipe material	Hard vinyl chloride pipe, VP25A (Nominal outer diameter 32 mm)
Insulator	Foamed polyethylene foam, thickness: 10 mm or more

■ Connecting drain pipe

Wrap some sealing tape around the screw part to avoid water leak.

REQUIREMENT
• Connect the hard vinyl chloride pipes certainly so that water does not leak by using adhesive agent for vinyl chloride.
• It takes some time to dry and indurate the adhesive agent. (Refer to the manual of adhesive agent.) Do not apply any extra force on the connecting section until the adhesive agent dried.

■ Check the draining

In the test run, check that water drain is properly performed and water does not leak from the connecting part of the pipes. Check draining also when installed in heating period.

Check the water drainage is surely performed at the trial operation.
Check also no water leakage is found at the pipe connecting part.

Drain pipe
Water entering
Front panel
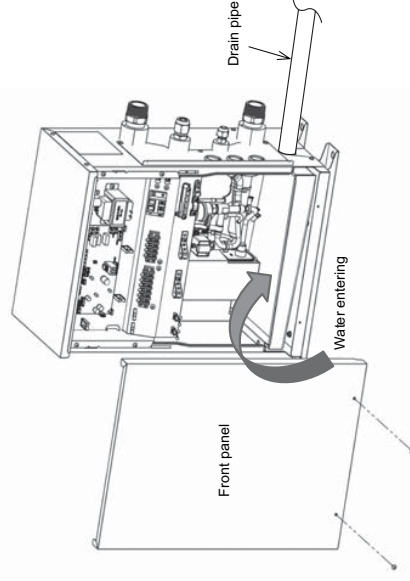
REQUIREMENT
Enter water gradually using a kettle or a hose from drain pan of the discharge port.

⚠ CAUTION
Pour water slowly.
If it is poured urgently, water is spread inside of the indoor unit resulted in a trouble.

■Heat insulating process

• After drain check, covering the heat insulator for drain connecting section, wrap the drain pipe with heat insulator (Locally procured) without clearance from the end of the drain pipe connecting port of the hot water module.

To cover the pipe and the hot water module with a heat insulator, do not make a space between them.

Unit

Heat insulator (locally procured)

Heat insulator (locally procured)

PVC pipe (locally procured)

Fix the insulator with adhesive tape

■Check the following contents

Water outlet

Water inlet

Drain

To avoid water leak, wrap some sealing tape around the screw part.

8 Refrigerant piping

⚠CAUTION

When the refrigerant pipe is long, provide support brackets at intervals of 2.5 m to 3 m to clamp the refrigerant pipe. Otherwise, abnormal sound may be generated.
Use the flare nut attached with the indoor unit or R410A flare nut.
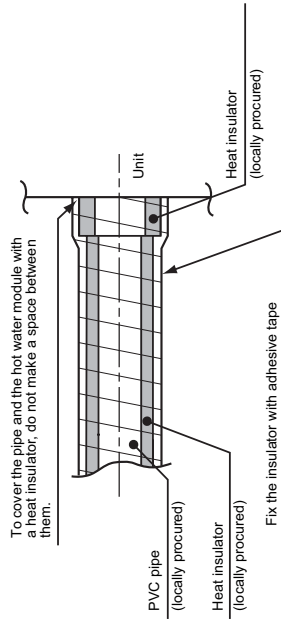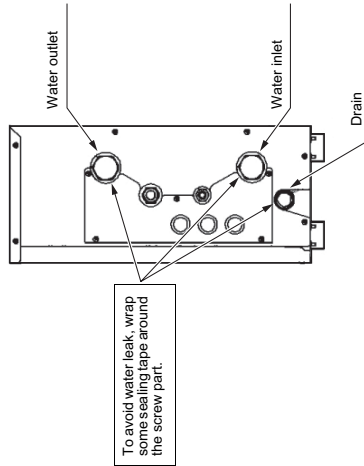
■Permissible piping length and height difference

They vary depending on the outdoor unit. For details, refer to the Installation Manual attached to the outdoor unit, and this manual (Refer to "3. System control of Hot Water Module").

■Pipe size

Model MMW-	Pipe size (mm)	
	Gas side	Liquid side
AP027 to AP056	Ø15.9	Ø9.5

■Connecting refrigerant piping

Flaring

1 Cut the pipe with a pipe cutter.
Remove burrs completely. (Remaining burrs may cause gas leakage.)

2 Insert a flare nut into the pipe, and flare the pipe.
Use the flare nut provided with the unit or the one used for the R410A refrigerant. The flaring dimensions for R410A are different from the ones used for the conventional R22 refrigerant. A new flare tool manufactured for use with the R410A refrigerant is recommended, but the conventional tool can still be used if the projection margin of the copper pipe is adjusted to be as shown in the following table.

Projection margin in flaring: B (Unit: mm)

Outer dia. of copper pipe	R410A tool used	Conventional tool used
6.4, 9.5	0 to 0.5	1.0 to 1.5
12.7, 15.9		
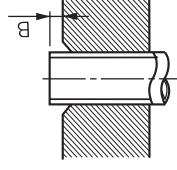
Flaring diameter size: A (Unit: mm)

Outer dia. of copper pipe	A $^{+0}_{-0.4}$
6.4	9.1
9.5	13.2
12.7	16.6
15.9	19.7
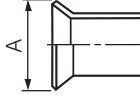
* In case of flaring for R410A with the conventional flare tool, pull it out approx. 0.5 mm more than that for R22 to adjust to the specified flare size. The copper pipe gauge is useful for adjusting projection margin size.

• The sealed gas was sealed at the atmospheric pressure so when the flare nut is removed, there will no "whooshing" sound: This is normal and is not indicative of trouble.

• Use two wrenches to connect the indoor unit pipe.
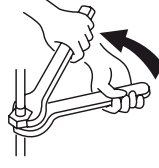
Work using double spanner

• Use the tightening torque levels as listed in the table below.

Outer dia. of connecting pipe (mm)	Tightening torque (N•m)
6.4	14 to 18 (1.4 to 1.8 kgf•m)
9.5	33 to 42 (3.3 to 4.2 kgf•m)
12.7	50 to 62 (5.0 to 6.2 kgf•m)
15.9	63 to 77 (6.3 to 7.7 kgf•m)

• Tightening torque of flare pipe connections. Pressure of R410A is higher than that of R22. (Approx. 1.6 times) Therefore, using a torque wrench, tighten the flare pipe connecting sections which connect the indoor and outdoor units of the specified tightening torque.
Incorrect connections may cause not only a gas leak, but also a trouble of the refrigeration cycle.

⚠ **CAUTION**

Tightening with an excessive torque may crack the nut depending on installation conditions.

■ **Airtight test / air purge, etc.**

For air tightness test, adding refrigerant, refer to the Installation Manual attached to the outdoor unit.

⚠ **CAUTION**

• Do not supply power to the indoor unit and the hot water module until the airtight test and vacuuming are completed. (If the indoor unit or the hot water module is powered on, the pulse motor valve is fully closed, which extends the time for vacuuming.)

• **After the vacuuming is completed, carry out the following procedure before adding refrigerant.**
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.

■ **Open the valve fully**

Open the valve of the outdoor unit fully.

■ **Heat insulation process**

Apply heat insulation for the pipes separately at liquid side and gas side.

• For the heat insulation to the pipes at gas side, use the material with heat-resisting temperature 120 °C or higher.

• To use the attached heat insulation pipe, apply the heat insulation to the pipe connecting section of the hot water module securely without gap.

REQUIREMENT

• Apply the heat insulation to the pipe connecting section of the hot water module securely up to the root without exposure of the pipe. (The pipe exposed to the outside causes water leak.)

• Wrap heat insulator with its slits facing up (ceiling side).

Hot water module
Union   Flare nut
Heat insulator of the pipe
Heat insulation pipe (Accessory)   Banding band (locally procured)
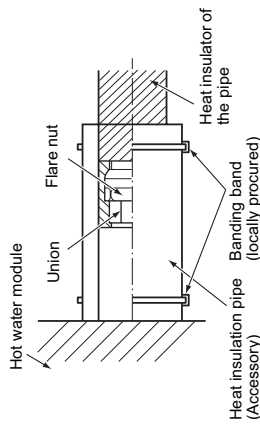
■ **Installation of remote controller (Sold separately)**

For installation of the wired remote controller, follow the Installation Manual attached with the remote controller.

• Pull out the remote controller cord together with the refrigerant pipe or drain pipe.
Pass the remote controller cord through upper side of the refrigerant pipe and drain pipe.

• Do not leave the remote controller at a place exposed to the direct sunlight and near a stove.

9 Electrical connection

⚠WARNING

- **Use the specified wires for wiring connect the terminals.**
  Securely fix them to prevent external forces applied to the terminals from affecting the terminals.

  Incomplete connection or fixation may cause a fire or other trouble.

- **Connect earth wire. (grounding work)**

  Incomplete grounding cause an electric shock.

  Do not connect earth wires to gas pipes, water pipes, lightning conductor or telephone earth wires.

- **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.

⚠CAUTION

- If incorrect / incomplete wiring is carried out, it will cause an electrical fire or smoke.

- Install an earth leakage breaker that is not tripped by shock waves. If an earth leakage breaker is not installed, an electric shock may be caused.

- Use the cord clamps attached to the product.

- Do not damage or scratch the conductive core and inner insulator of power and inter-connecting wires when peeling them.

- Use the power cord and Inter-connecting wire of specified thickness, type, and protective devices required.

- Do not connect 220 V – 240 V power to the terminal blocks (Ⓤ, Ⓥ, Ⓐ, Ⓑ) for control wiring and the terminal blocks (COM, S1, S2, S3, S4, S5) for output function. (Otherwise, the system will fail.)

- Do not damage or scratch the conductive core and inner insulator of power and inter-connecting wires when peeling them.

- Perform the electric wiring so that it does not come to contact with the high-temperature part of the pipe.
  The coating may melt resulting in an accident.

- For power supply wiring, strictly conform to the Local Regulation in each country.
- For wiring of power supply of the outdoor units, follow the Installation Manual of each outdoor unit.
- Perform the electric wiring so that it does not come to contact with the high-temperature part of the pipe. The coating may melt resulting in an accident.
- After connecting wires to the terminal blocks, provide a trap and fix wires with the cord clamp.
- Run the refrigerant piping line and control wiring line in the same line.
- Do not turn on the power of the hot water module until vacuuming of the refrigerant pipes completes.

■Power supply wire and communication wires specifications

Power supply wire and communication wires are procured locally.
For the power supply specifications, follow to the table below. If capacity is little, it is dangerous because overheat or burnout may be caused.
For specifications of the power capacity of the outdoor unit and the power supply wires, refer to the Installation Manual attached to the outdoor unit.

Hot water module power supply

- For the power supply of the hot water module, prepare the exclusive power supply separated from that of the outdoor unit.
- Arrange the power supply, circuit breaker, and main switch of the hot water module connected to the same outdoor unit so that they are commonly used.
- Power supply wire specification: Cable 3-core 2.5 mm², **in conformity with Design 60245 IEC 57.**

▼ Power supply

Power supply	220 V – 240 V ~, 50 Hz	
Power supply switch / circuit breaker or power supply wiring / fuse rating for hot water module should be selected by the accumulated total current values of the hot water module.		
Power supply wiring	Below 50 m	2.5 mm²

Control wiring, Central controller wiring

- 2-core with polarity wires are used for the Control wiring between indoor unit (including hot water module) and outdoor unit and Central controller wiring.
- To prevent noise trouble, use 2-core shield wire.
- The length of the communication line means the total length of the inter-unit wire length between indoor (including hot water module) and outdoor units and outdoor units added with the central control system wire length.

▼ Communication line

Control wiring between indoor units (including hot water module), and outdoor unit (2-core shield wire)	Wire size	(Up to 1000 m) 1.25 mm²
Central control line wiring (2-core shield wire)		(Up to 2000 m) 2.0 mm²

(*) : In the case of multiple refrigerant systems

Remote controller wiring

- 2-core with non-polarity wire is used for wiring of the remote controller wiring and group remote controllers wiring.

Remote controller wiring, remote controller inter-unit wiring	Wire size: 0.5 mm² to 2.0 mm²	

Connecting to SMMS-e, MiNi-SMMS-e

Total wire length of remote controller wiring and remote controller inter-unit wiring (L1+L2)	In case of wired type only	Up to 500 m
	In case of wireless type included	Up to 400 m
Total wire length of remote controller inter-unit wiring (L2)		Up to 200 m

Connecting to SHRM-e

Total wire length between indoor unit and Flow selector unit (L2+L3)	Up to 200 m
Total wire length between remote controller and Flow selector unit (L1+L2+L3)	Up to 300 m
Maximum wire length of remote controller (L1)	Up to 300 m

Output signal function wiring

- To prevent noise trouble, use 2-core shield wire.

Output function wiring (2-core shield wire)	Wire size	(up to 2 m) 0.5 mm²

⚠ CAUTION

The remote controller wire (Communication line) and AC 220 – 240 V wires cannot be parallel to contact each other and cannot be stored in the same conduits. If doing so, a trouble may be caused on the control system due to noise or other factor.

■ Wiring between indoor (including hot water module) and outdoor units

NOTE

- An outdoor unit connected with control wiring between indoor (including hot water module) and outdoor units wire becomes automatically the header unit.
- Do not turn off the circuit breaker of the hot water module when the circuit breaker of the system (outdoor unit) is set to the ON position.
- It becomes a cause of a trouble.

▼ Wiring example

■Wiring for Flow selector unit (FS unit) for SHRM-e

Connect communication wire of FS unit to terminal A, B (no polarity) of Hot Water Module.
when the Hot water module connects to SHRM-e system.

Power supply wire

Communication wire (FS unit)
Remote controller wire
Control wire

• In case of connecting at least one Hot Water Module in SHRM-e system, all of FS units in the system should be Single port type FS unit (long piping model) or Multiport type FS unit.

■Remote controller wiring

• Strip off approx. 9 mm the wire to be connected.

▼Wiring diagram

Terminal block

A
B

Remote controller unit

Terminal block for remote controller wiring of hot water module

A
B

Remote controller wire (Locally procured)
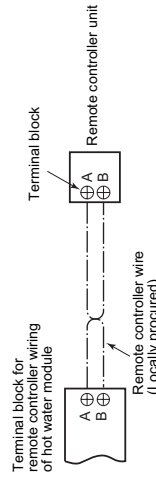
■Output signal function wiring

Connect the following output signals from the hot water module.

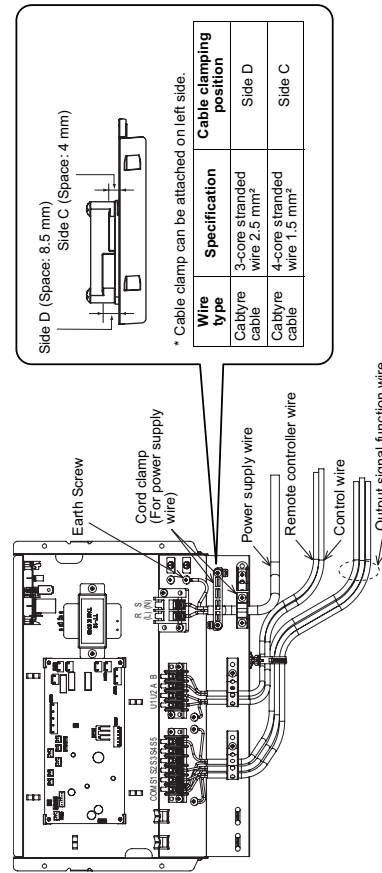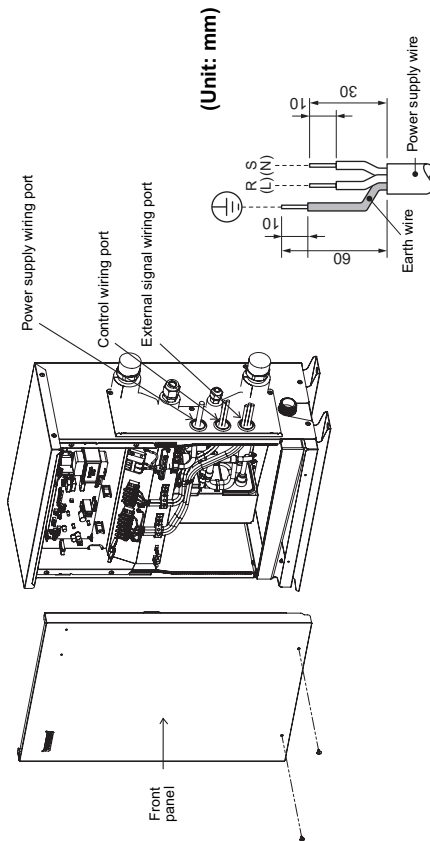| Terminal block No.	Function	Comments
COM	DC12V (COM)	Common for connector S2 ~ S5
S1	Defrosting output (COM-S1)	DC12V Relay coil is less than 16mA.
S2	Line heater output (COM-S2)	DC12V Relay coil is less than 16mA.
S3	-	-
S4	Heating thermostat ON output (COM-S4)	DC12V Relay coil is less than 16mA.
S5	Pump output (COM-S5)	DC12V Relay coil is less than 16mA.

■Wire connection
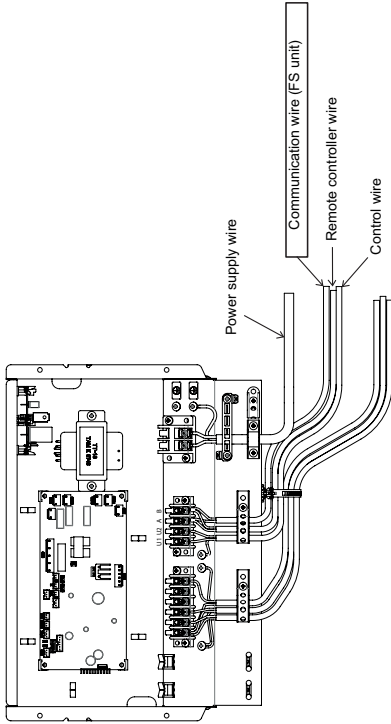
• Connect the wires matching the terminal numbers. Incorrect connection causes a trouble.
• Pass the wires through the bushing of wire connection holes of the hot water module.
• Keep a margin (Approx. 100 mm) on a wire to hang down the electrical control box at servicing or other purpose.
• The low-voltage circuit is provided for the remote controller. (Do not connect the high-voltage circuit)

• Remove the front panel of the hot water module by taking off the mounting screws (2 positions).
• Tighten the screws of the terminal block, and fix the wires with cord clamp attached to the electrical control box. (Do not apply tension to the connecting section of the terminal block.)
• Mount the front panel of the hot water module without pinching wires.

Power supply wiring port
Control wiring port
External signal wiring port

Front panel

(Unit: mm)

30
10
10
60

R S (L)(N)

Power supply wire
Earth wire

* Cable clamp can be attached on left side.

Wire type	Specification	Cable clamping position
Cabtyre cable	3-core stranded wire 2.5 mm²	Side D
Cabtyre cable	4-core stranded wire 1.5 mm²	Side C

Side D (Space: 8.5 mm)   Side C (Space: 4 mm)

Side D
Side C

Earth Screw
Cord clamp (For power supply wire)

Power supply wire
Remote controller wire
Control wire
Output signal function wire

10 Applicable controls

When the hot water module is used for the first time, it will take some moments after the power has been turned on before the remote controller becomes available for operations: This is normal and is not indicative of trouble.

- Concerning the automatic addresses (The automatic addresses are set up by performing operations on the outdoor interface circuit board.)
  While the automatic addresses are being set up, no remote controller operations can be performed. Setup takes up to 10 minutes (usually about 5 minutes).
- When the power is turned on after automatic address setup
  It takes up to 10 minutes (usually about 3 minutes) for the outdoor unit to start operating after the power has been turned on.

Before the hot water module was shipped from the factory, all units are set to [STANDARD] (factory default). If necessary, change the indoor unit (including hot water module) settings. The settings are changed by operating the wired remote controller.
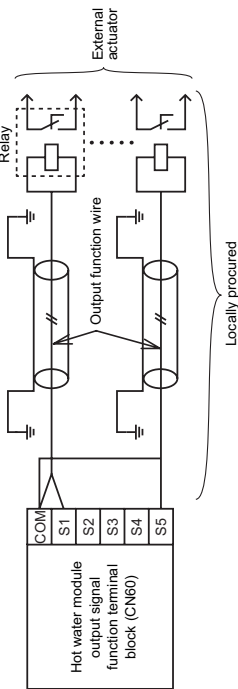
* The settings cannot be changed using only a wireless remote controller, simple remote controller or group control remote controller by itself so install a wired remote controller separately as well.

■ Basic procedure for changing settings

Change the settings while the hot water module is not working. (**Stop the hot water module before making settings.**)

⚠ CAUTION

Set only the CODE No. shown in the following table: Do NOT set any other CODE No.
If a CODE No. not listed is set, it may not be possible to operate the hot water module or other trouble with the product may result.

■ Group control

In a group control, a remote controller can control up to maximum 8 units.

- The wired remote controller only can control a group control. The wireless remote controller is unavailable for this control.
- For wiring procedure and wires of the individual line (Identical refrigerant line) system, refer to "Electrical Connection" in this Manual.
- Wiring between indoor units in a group is performed in the following procedure.
- Connect the hot water modules by connecting the remote controller wires from the remote controller terminal blocks (A, B) of the hot water module connected with a remote controller to the remote controller terminal blocks (A, B) of the other hot water modules. (Non-polarity)
- For address setup, refer to the Installation Manual attached to the outdoor unit.

■ Remote controller sensor

⚠ CAUTION

Remote controller sensor cannot be used for the hot water module. Remote controller sensor has no function when remote controller is connected to the hot water module.

Hot water module output signal function terminal block (CN60) — COM, S1, S2, S3, S4, S5 — Relay — Output function wire — External actuator — Locally procured

Auxiliary relays (locally procured) must be connected to output signal function wirings to allow connection to the hot water module output signal functions. The maximum current output signal, from each of the output signal function wirings, is 16 mA. Please ensure the rated current of the relay coil is less than 16 mA to avoid damage to the hot water module P.C. board.

▼ Output function wire

⚠ CAUTION

Output signal functions are separated from primary basic insulation.

- To prevent noise trouble, use 2-core shield wire.
- Determine the wire length between the hot water module output signal function terminal block and the relay up to 2 m.
- Locally procure and install protective devices such as the heater and pump.

■ Address setup
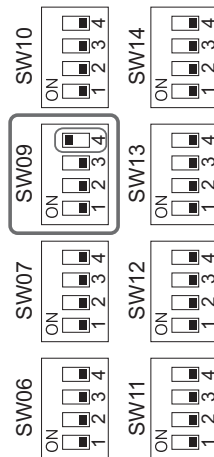
Set up the addresses as per the Installation Manual supplied with the outdoor unit.
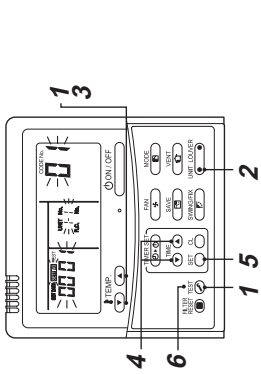
⚠ CAUTION

Set the DIP switch 4 of SW09 on the P.C. board of the header outdoor unit "ON". (Factory default is "OFF")
VRF system will be stopped to avoid water freezing when the power supply is disconnected.
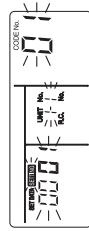
Interface P.C. board on the header outdoor unit

SW06 SW07 SW09 SW10
SW11 SW12 SW13 SW14

<RBC-AMT32E>

1 Push and hold [🕐] button and "TEMP." [▼] button simultaneously for at least 4 seconds. After a while, the display flashes as shown in the figure. Confirm that the CODE No. is [01].

- If the CODE No. is not [01], push [🕐] button to clear the display content, and repeat the procedure from the beginning. (No operation of the remote controller is accepted for a while after [🕐] button is pushed.)
(While hot water modules are operated under the group control, "ALL" is displayed first. When [🕐] is pushed, the indoor unit number displayed following "ALL" is the header unit.)

2 Each time [🕐] button is pushed, hot water module numbers in the control group change cyclically. Select the hot water module to change settings for.

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 P.C. board

LED

Flashing

(* Display content varies with the indoor unit (including hot water module) model.)
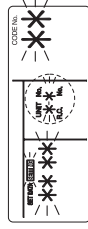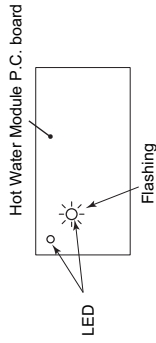
3 Specify CODE No. [✱✱] with "TEMP." [▼] / [▲] buttons.

4 Select SET DATA [✱✱✱] with "TIME" [▼] / [▲] buttons.

5 Push [🕐] button. When the display changes from flashing to lit, the setup is completed.

- To change settings of another hot water module, repeat from Procedure **2**.
- To change other settings of the selected hot water module, repeat from Procedure **3**.

Use [🕐] button to clear the settings. To make settings after [🕐] button was pushed, repeat from Procedure **2**.

6 When settings have been completed, push [🕐] button to determine the settings.

When [🕐] button is pushed, SETTING flashes and then the display content disappears and the hot water module enters the normal stop mode.
(While SETTING is flashing, no operation of the remote controller is accepted.)

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TOSHIBA

Field setting menu(1/2)
1. Test mode
2. Register service info.
3. Alarm history
4. Monitor function
5. Setting louver position
⤺ Return   Set
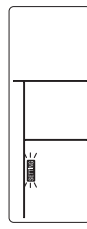
1 Push the [▥ MENU] button to display the menu screen.

2 Push and hold the [▥ MENU] button and the [⌄] button at the same time to display the "Field setting menu".
→Push and hold the buttons for more than 4 seconds.

3 Push the [↰ CANCEL] button to return.

Item	Function
1. Test mode	Settings for when performing the test operation after installation
2. Register service info	Registration of information about the contact number for service, model name and serial number of the indoor unit and outdoor unit
3. Alarm history	List of latest 10 alarm data: information of check code, date, time, and unit
4. Monitor function	Monitoring data of sensor temperature, rotating speed of the compressor or other factor.
5. Setting louver position	Change the louver indication setting to match the indoor unit type.
6. Setting timer operation mode	Set whether or not the operation mode can be selected when setting the schedule timer.
7. DN setting	Advanced settings using DN code
8. Reset power consumption data	Resetting the power consumption data saved in the remote controller.

11 Test run

Perform the advanced settings for the air conditioner.
Carry out the setting operation while the indoor unit is stopped. (Turn off the air conditioning unit before starting the setting operation.)
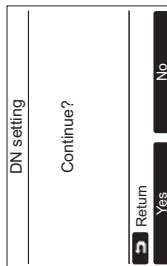
DN setting
Code (DN) 10 Data 0000
Return Fix

DN setting
Code (DN) 10 Data 0001
Return Fix

DN setting
Continue?
Return Yes No
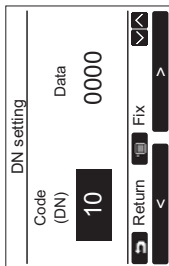
1 **Push the [∧]/[∨] button to select "7. DN setting" on the "Field setting menu" screen, then push the " Set " [F2] button.**

→The fan and louver of the indoor unit operate. When the group control is used, the fan and louver of the selected indoor unit operate.

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

→Move the cursor to select "Data" with the " > " [F2] button, then set "Data" with the [∧]/[∨] button.
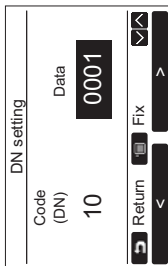
2 **Refer to the Installation Manual supplied with the indoor unit or service manual for details about the Code(DN) and Data.**

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

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

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

<RBC-AMT32E>

2, 4
3
1, 5

■ Before test run

- Before turning on the power supply, carry out the following procedure.

  1) By using 500 V-megger, check that resistance of 1 MΩ or more exists between the terminal block L to N and the earth (grounding). If resistance of less than 1 MΩ is detected, do not run the unit.

  2) Check the valve of the outdoor unit being opened fully.

- To protect the compressor at activation time, leave power-ON for 12 hours or more before operating.

- Do not press the electromagnetic contactor to forcibly perform a test run. (This is very dangerous because the protective device does not work.)

- Before starting a test run, set addresses by following the Installation Manual supplied with the outdoor unit.

- Before carrying out a test run, complete the water supply (10 °C or more) to the water pipe system and the wiring for the pump.
  The entire system stops by detecting a check code (check code: A01) when the water is not supplied to the Hot Water Module and when the water does not circulate.
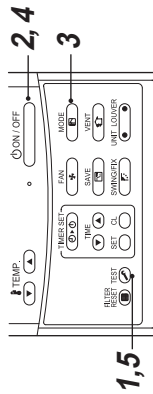
■ Execute a test run

Operate the unit with the wired remote controller as usual.
For the procedure of the operation, refer to the attached Owner's Manual to the outdoor unit.
A forced test run can be executed in the following procedure even if the operation stops by thermostat-OFF.
In order to prevent a serial operation, the forced test run is released after 60 minutes have passed and returns to the usual operation.

1 **Push TEST button for 4 seconds or more. [TEST] is displayed on the display part and the selection of mode in the test mode is permitted.**
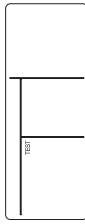
2 **Push ON/OFF button.**

3 **Select the operation mode with MODE button, [Heat].**

- Cannot select the hot water module in a mode other than [Heat].
- The temperature controlling function does not work during test run.
- The detection of trouble is performed as usual.

4 **After the test run, push ON/OFF button to stop a test run.**
(Display part is same as procedure *1*.)

5 **Push TEST check button to cancel (release from) the test run mode.**
([TEST] disappears on the display and the status returns to a normal.)
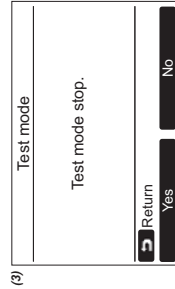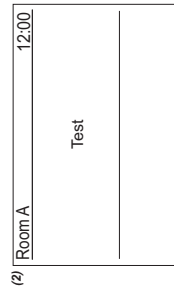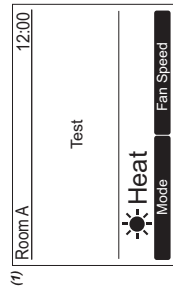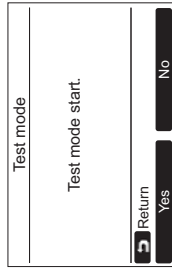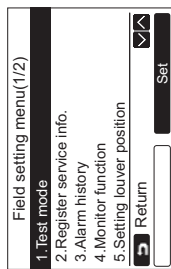
⚠ CAUTION

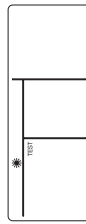Do not use the forced test run for cases other than the test run because it applies an excessive load to the devices.
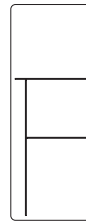
Using the Service monitor with the [MONITOR] button during the test mode

---

1 Push the [∧]/[∨] button to select "1. Test mode" on the "Field setting menu" screen, then push the " Set " [F2] button.

→Pushing the " Yes " [F1] button sets the test mode and the screen returns to the "Field setting menu" screen.
Push [CANCEL] twice, the screen (2) appears.

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

Test mode
Test mode start.
Return   Yes   No

2 Push the [ON / OFF] button to start the test mode. The screen (1) shown in the left appears. (The screen (2) appears when the operation is stopped.)

→Perform the test mode in the "Cool" or "Heat" mode.
→Temperature setting cannot be adjusted during the test mode.
→Check codes are displayed as usual.

(1) Room A   12:00
Test
Heat
Mode   Fan Speed

3 When the test mode is finished, push the [∧]/[∨] button to select "1. Test mode" on the "Field setting menu" screen, then push the " Set " [F2] button.
The screen (3) appears.

→Pushing the " Yes " [F1] button stops the test mode screen and continues the normal operation.

(2) Room A   12:00
Test

(3) Test mode
Test mode stop.
Return   Yes   No

NOTE

The test mode stops after 60 minutes and the screen returns to the normal / detailed display.

Push the [MONITOR] button

Room A   12:00
Test
Heat
Mode   Fan Speed

Monitor function
Code   Data
00   0024
Return

Monitor function
Code   Data
00   0024
Return

1 Push the [∧]/[∨] button to select "4. Monitor function" on the "Field setting menu" screen, then push the " Set " [F2] button.
→Push the [∧]/[∨] button to select the code to check data.

2 Refer to the Installation Manual supplied with the indoor unit or outdoor unit or service manual for details about the check code and data.

3 Push the [CANCEL] button to return to the "Field setting menu" screen.

12 Maintenance

▼ Periodic Maintenance

- For environmental conservation, it is strongly recommended that the indoor and outdoor units of the air conditioner (including hot water module) in use be cleaned and maintained regularly to ensure efficient operation of the air conditioner.

When the air conditioner (including hot water module) is operated for a long time, periodic maintenance (once a year) is recommended.

Furthermore, regularly check the outdoor unit for rust and scratches, and remove them or apply rustproof treatment, if necessary.

As a general rule, when an indoor unit is operated for 8 hours or more daily, clean the indoor unit and outdoor unit at least once every 3 months. Ask a professional for this cleaning / maintenance work.

Such maintenance can extend the life of the product though it involves the owner's expense.

Failure to clean the indoor and outdoor units regularly will result in poor performance, freezing, water leakage, and even compressor failure.

Inspection before maintenance

Following inspection must be carried out by a qualified installer or qualified service person.

Parts	Inspection method
Drain pan	Access from inspection opening and remove the front panel. Check if there is any clogging or drain water is polluted.

▼ Maintenance List

Part	Unit	Check (visual / auditory)	Maintenance
Heat exchanger	Outdoor	Dust / dirt clogging, scratches	Wash the heat exchanger when it is clogged.
Fan motor	Outdoor	Sound	Take appropriate measures when abnormal sound is generated.
Air inlet / outlet grilles	Outdoor	Dust / dirt, scratches	Fix or replace them when they are deformed or damaged.
Drain pan	Hot water module	Dust / dirt clogging, drain contamination	Clean the drain pan and check the downward slope for smooth drainage.
Exterior	Hot water module / Outdoor	• Rust, peeling of insulator • Peeling / lift of coat	Apply repair coating.
Water pipes	Hot water module	Rust, leakage Evidence of leakage	Checking
Strainer	Hot water module	Dust / dirt clogging	Checking
Air vent valve	Hot water module	Air entrainment	Checking an air vent valve

It recommends that a pump and a strainer are maintained periodically.

■ Items to check before conducting a trial operation

Check the following items before the trial operation. The numbers in (parentheses) are the chapter numbers in the table of contents of the installation manual.

		Check
Installation work	Is the equipment attached to the legs with bolts? (See chapter 5.)	
	Is there sufficient open space around the equipment for servicing? (See chapter 5.)	
	Have the criteria for selecting a location to install the equipment been met? (See chapter 4.)	
	Are all of the pipes connected correctly? (See chapter 5.)	
	Are there no water leaks?	
	Is the flow rate suitable? (See chapter 6.)	
	Is the strainer in a suitable location? (See chapters 3 and 6.)	
	Is the line heater in a suitable location and is the flow rate suitable? (See chapters 3 and 6.)	
Piping work	Have suitable safety devices for pressure relief and expansion tanks been installed? (See chapters 3 and 6.)	
	Is the shut-off valve in a suitable location? (See chapters 3 and 6.)	
	Is the air vent valve in a suitable location? (See chapters 3 and 6.)	
	Is the piping material suitably heat resistant and corrosion resistant? (See chapters 6 to 8.)	
	Can water discharge through the drain? (See chapter 7.)	
	Was the heat-retention work done suitably? (See chapters 6 to 8.)	
Electric wiring work	Is the electric wiring connected correctly? (See chapter 9.)	
	Is the electric wiring thick enough? (See chapter 9.)	
	Is the power fed from a dedicated ground fault circuit breaker?	
	Is the output terminal wired? (See chapter 9.)	
	Is the addressed fixed? (*1)	
Outdoor unit board settings	Has DIP switch 4 of SW09 on the interface board of the header outdoor unit been set to "ON" (factory default is "OFF")? (See chapter 9.) (*2)	

*1 Do not operate the air conditioner (run the compressor) before the address to the hot water module is fixed. Doing so will cause the heat exchanger in the hot water module to freeze, rupture, and leak water.

*2 Set DIP switch 4 of SW09 on the P.C. board of the header outdoor unit to "ON" (factory default is "OFF"). The VRF system will be stopped to avoid water freezing when the power supply is disconnected.

NOTE

Before you run the compressor, always confirm that the hot water module is operable (power on, address fixed, communication wiring complete).

Failure to do this will cause the heat exchanger in the hot water module to freeze, rupture, and leak water.
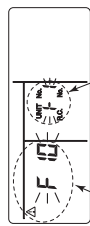
13 Troubleshooting

<RBC-AMT32E>

■ Confirmation and check

When a trouble occurred in the hot water module, a check code and indoor UNIT No. (including hot water module) appear on the display part of the remote controller.
The check code is only displayed during the operation.
If the display disappears, operate the hot water module according to the following "Confirmation of trouble log" for confirmation.
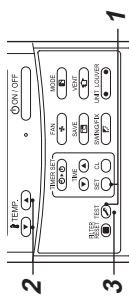
Check code

Indoor UNIT No. (including hot water module) in which a trouble occurred

■ Confirmation of trouble log

When a trouble occurred on the hot water module, the trouble log can be confirmed with the following procedure. (The trouble log is stored in memory up to 4 trouble.)
The log can be confirmed from both operating status and stop status.

1

When [SET] and [TEST] buttons are pushed simultaneously for 4 seconds or more, the following display appears.
If [⌿] is displayed, the mode enters in the trouble log mode.

- [**01**: Order of trouble log] is displayed in CODE No..
- [Check code] is displayed in CHECK.
- [Indoor unit address in which a trouble occurred] is displayed in Unit No..
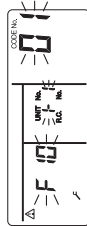
2

Every pushing of [TEMP.] button used to set temperature, the trouble log stored in memory is displayed in order.
The numbers in CODE No. indicate CODE No. [**01**] (latest) → [**04**] (oldest).

REQUIREMENT

Do not push [ ] button because all the trouble log of the indoor unit (including hot water module) will be deleted.

3

After confirmation, push [TEST] button to return to the usual display.

<RBC-AMS55E-ES/EN>

■ Confirmation and check
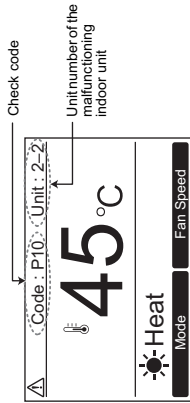
Check code

Unit number of the malfunctioning indoor unit

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

* The check code appears only while the unit is running.

Push the [MONITOR] button or [CANCEL] button to display the check information screen.
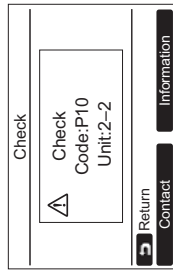
While the check information screen appears:
Push the "[Contact] Contact" [F1] button to display the contact number for service.
Push the "[Information] Information" [F2] button to display the model name and serial number of the unit.

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In addition to the CODE No. on the remote controller of an indoor unit, you can diagnose failure type of an outdoor unit by checking the 7-segment display on the interface P.C. board.
Use the function for various checks.
Set every DIP switch to OFF after checking.

7-Segment display and check code

Rotary switch setting value			Indication	LED	
SW01	SW02	SW03			
1	1	1	Outdoor unit check code	A	Outdoor unit number (U1 to U8)
				B	Check code display*

* If a check code has an auxiliary code, the display indicates the check code for three seconds and the auxiliary code for one second alternately.

Check code (indicated on the 7-segment display on the outdoor unit) for SMMS-e and SHRM-e Series (MMY-.*)**
Indicated when SW01 = [1], SW02 = [1], and SW03 = [1].

Check code		Check code name
Indication on 7-segment display on the outdoor unit	Auxiliary code	
A01	Detected Hot water module address	Flow switch operation trouble
A02	Detected Hot water module address	Water temperature decrease trouble
A03	Detected Hot water module address	Activation of water heat exchanger frost protection
E06	Number of indoor units and Hot Water Module which received normally	Decrease of number of indoor units and Hot Water Module
E07	—	Indoor / outdoor communication circuit trouble
E08	Duplicated indoor addresses	Duplication of indoor addresses.
E12	01: Communication between indoor and outdoor units 02: Communication between outdoor units	Automatic addressing start trouble
E15	—	No indoor unit during automatic addressing
E16	00: Capacity over 01~: Number of connected units	Capacity over / number of connected indoor units
E19	00: Header is nothing 02: 2 or more header units	Number of header outdoor unit trouble
E20	01: Other line outdoor connected 02: Other line indoor connected	Other lines connected during automatic addressing
E23	—	Communication transmission trouble between outdoor units
E25	—	Duplicated follower outdoor address set up
E26	Number of outdoor units which received normally	Decrease of connected outdoor units
E28	Detected outdoor unit number	Follower outdoor unit trouble
E31	IPDU quantity information(*1)	IPDU communication trouble
E31	80	Communication trouble between MCU and sub MCU
F04	—	TD1 sensor trouble
F05	—	TD2 sensor trouble
F06	01: TE1 sensor 02: TE2 sensor	TE1 sensor trouble / TE2 sensor trouble
F07	01: TL1 sensor	TL1 sensor trouble
F08	—	TO sensor trouble

Check code		Check code name
Indication on 7-segment display on the outdoor unit	Auxiliary code	
F12	01: TS1 sensor 02: TS2 sensor	TS1 or TS2 sensor trouble
F13	01: Compressor 1 02: Compressor 2	TH (Heat sink) sensor trouble
F15	—	Outdoor temp. sensor miswiring (TE1, TL1)
F16	—	Outdoor pressure sensor miswiring (Pd, Ps)
F23	—	Ps sensor trouble
F24	—	Pd sensor trouble
F31	—	Outdoor EEPROM trouble
H01	01: Compressor 1 02: Compressor 2	Compressor breaking down
H02	01: Compressor 1 02: Compressor 2	Compressor trouble (Locked)
H03	01: Compressor 1 02: Compressor 2	Current detection circuit trouble
H05	—	TD1 sensor miswiring
H06	—	Low pressure protective operation
H07	Detected outdoor unit number	Oil level down detection (Indicated only on the header outdoor unit)
H08	01: TK1 sensor trouble 02: TK2 sensor trouble 04: TK4 sensor trouble 05: TK5 sensor trouble	Temperature sensor trouble for oil level
H15	—	TD2 sensor miswiring
H16	01: TK1 oil circuit trouble 02: TK2 oil circuit trouble 04: TK4 oil circuit trouble 05: TK5 oil circuit trouble	Oil level detector circuit trouble
J10	Detected indoor unit address	Flow selector units overflow trouble
L02	Model mismatch of indoor and outdoor unit	System shutdown trouble from indoor unit
L04	—	Outdoor system address duplication
L06	Number of prior indoor units	Duplication of indoor units with priority
L08	—	Indoor unit group / address unset
L10	—	Outdoor unit capacity unset.
L12	01: Flow selector unit (s) installation trouble	Flow selector unit (s) system trouble
L17	—	Inconsistent models of outdoor units
L18	Detected indoor unit address	Flow selector unit trouble
L23	01: Clean Converter setting trouble 02: Hot Water Module setting trouble	Setting trouble
L24	01: Duplication of flow selector unit address 02: Indoor unit (s) operation mode priority setting	Flow selector unit (s) setting trouble
L28	—	Outdoor connected quantity over
L29	IPDU number information(*1)	IPDU quantity trouble
L30	Detected indoor unit address	External interlock of indoor unit
L31	—	Compressor IPDU trouble
P03	—	Discharge temperature TD1 trouble
P04	01: Compressor 1 02: Compressor 2	High-pressure SW system operation

Check code (indicated on the 7-segment display on the outdoor unit) for MiNi-SMMS-e series (MCY-*)**
Indicated when SW01 = [1], SW02 = [1], and SW03 = [1].

Check code		Check code name
Indication on 7-segment display on the outdoor unit	**Auxiliary code**	
A01	Detected Hot water module address	Flow switch operation trouble
A02	Detected Hot water module address	Water temperature decrease trouble
A03	Detected Hot water module address	Activation of water heat exchanger frost protection
E06	Number of indoor units which received normally	Decrease of number of indoor units, or HWM unit only
E07	—	Indoor / Outdoor communication circuit trouble
E08	Duplicated indoor addresses	Duplication of indoor addresses
E15	—	No indoor unit during automatic addressing
E16	00: Capacity over 01 or more: No. of connected units	Number of connected capacity over / indoor units
E20	01: Other line outdoor connected 02: Other line indoor connected	Other line connected during automatic addressing
E31	IPDU quantity information *1	IPDU communication trouble
F04	—	TD sensor trouble
F06	—	TE sensor trouble
F07	01: TL1 sensor 03: TL3 sensor	TL1 or TL3 sensor trouble
F08	—	TO sensor trouble
F12	01: TS1 sensor 03, 04: TS3 sensor	TS1 or TS3 sensor trouble
F13		TH sensor (Board installed) trouble
F15		Outdoor temp. sensor miswiring (TE, TL1)
F16		Outdoor pressure sensor miswiring (Pd, Ps)
F23		Ps sensor trouble
F24		Pd sensor trouble
F31		Outdoor program trouble
H01		Compressor breakdown
H02		Compressor trouble (Lock)
H03		Current detective circuit system trouble
H05		TD sensor trouble
H06		Low-pressure protective operation
H07		Oil level down detection
H08	01	TK sensor trouble for oil level
H16	01	Oil level detector circuit trouble
L04		Outdoor system address duplicated
L06	Number of indoor units with priority	Duplication of indoor units with priority
L08		Indoor group / Address unset
L10		Outdoor capacity unset
L23	02	SW setting trouble when connecting to HWM unit
L29	IPDU quantity information *1	IPDU quantity trouble
L30	Detected indoor unit address	External interlock of indoor unit
P03		Discharge temp TD trouble
P04		High-pressure switch trouble

Check code		Check code name
Indication on 7-segment display on the outdoor unit	**Auxiliary code**	
P05	01: Compressor 1 02: Compressor 2	Compressor Vdc trouble AC detection circuit trouble
P07	01: Compressor 1 02: Compressor 2	Heat sink overheat trouble
P10	Detected indoor unit address	Indoor overflow trouble
P13	—	Outdoor unit flow back trouble detected
P15	01: TS condition 02: TD condition	Gas leak detection
P17	—	Discharge temperature TD2 trouble
P19	Detected outdoor unit number	4-way valve inverse trouble
P20	—	High-pressure protective operation
P22	#0: Element short circuit #E: Vdc voltage trouble #1: Position detection circuit trouble #2: Input current sensor trouble #3: Motor lock trouble #C: Sensor temperature trouble (No TH sensor) #4: Motor current trouble #D: Sensor short circuit/release trouble (No TH sensor) #5: Synchronization/step-out trouble *Put in Fan IPDU No. in [#] mark.	Outdoor fan IPDU trouble
P26	01: Compressor 1 02: Compressor 2	IPM short protection trouble
P29	01: Compressor 1 02: Compressor 2	Compressor position detecting circuit trouble

*1 IPDU number information
01: Compressor 1 trouble
02: Compressor 2 trouble
03: Compressor 1 and 2 trouble
08: Fan 1 trouble
09: Compressor 1, Fan 1 trouble
0A: Compressor 2, Fan 1 trouble
0B: Compressor 1 and 2, Fan 1 trouble

Check code		Check code name
Indication on 7-segment display on the outdoor unit		
	Auxiliary code	
P05	00	Phase missing detection
	E (: FAN motor number)	Fan motor Vdc trouble
	—	Compressor Vdc trouble
P07	—	Heat sink overheat trouble
P10	Detected indoor unit address	Indoor overflow trouble
P13	—	Outdoor liquid back detection trouble
P15	01: TS1 condition 02: TD condition	Gas leak detection
P19	—	4-way valve operation trouble
P20	—	High-pressure protective operation
P22	*0: Elemental device short *1: Position detective circuit trouble *2: Input current sensor trouble *3: Fan motor lock trouble *4: Motor current trouble *5: Synchronize, step out trouble *C: Sensor temperature trouble *D: Sensor short, free trouble (* : Fan motor number)	Outdoor fan IPDU trouble
P26	—	Compressor IPM short protection trouble
P29	—	Compressor position detective circuit system trouble

*1 IPDU number information
01: Compressor
02: Fan 1
03: Compressor and Fan 1
04: Fan 2
05: Compressor and Fan 2
06: Fan 1 and Fan 2
07: Compressor and Fan1 and 2

WARNINGS ON REFRIGERANT LEAKAGE

Check of Concentration Limit

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

The refrigerant R410A which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its concentration should rise excessively. Suffocation from leakage of R410A is almost non-existent. With the recent increase in the number of high concentration buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.

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

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

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

$$\text{Concentration limit (kg/m}^3\text{)}$$

Refrigerant Concentration Limit shall be in accordance with local regulations.

NOTE 1 :
If there are 2 or more refrigerating systems in a single refrigerating device, the amounts of refrigerant should be as charged in each independent device.
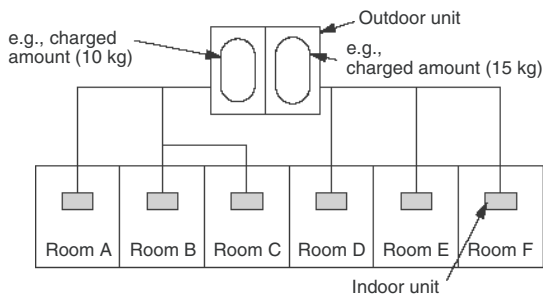
For the amount of charge in this example:
- The possible amount of leaked refrigerant gas in rooms A, B and C is 10 kg.
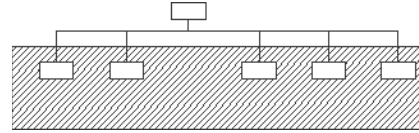- The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

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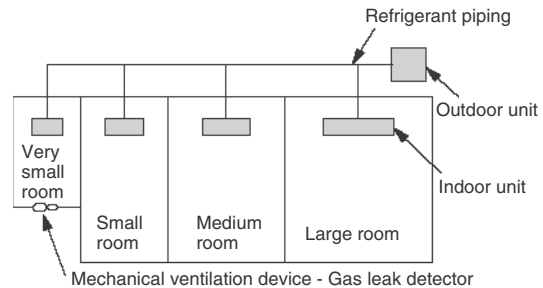The standards for minimum room volume are as follows.
(1) No partition (shaded portion)

(2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15 % or larger than the respective floor spaces at the top or bottom of the door).
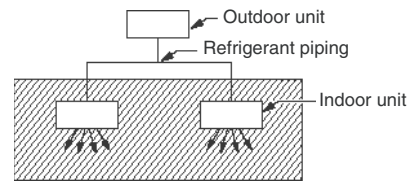
(3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.

Toshiba Carrier Corporation

Revision record

First issue	—	—	May., 2014
Revision 1	Exchange to Installation Manual	Page 101 to 134	Apr., 2015
Revision 2	Sensor name change	Page 14, 15, 16, 17, 19, 33, 34, 36, 37, 39, 41, 42, 62, 68, 70, 72, 75, 78	Nov., 2015
Revision 3	The contents addition of SMMS-e	Page 11, 18, 33, 36, 37, 38, 40, 45, 46, 47, 48, 51, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77 **13. INSTALLATION MANUAL (EXCERPT)**	Aug., 2016
Revision 4	The contents addition of MiNi-SMMS-e	Page 2, 11, 12, 13, 19, 22, 23, 34, 36, 39, 40, 41, 42, 43, 44, 48, 52, 66, 71, 79, 85, 86, 87, 88 **12. OWNER'S MANUAL (EXCERPT)** **13. INSTALLATION MANUAL (EXCERPT)**	Dec., 2019