TOSHIBA

Carrier

FILE NO. A11-020
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SERVICE MANUAL

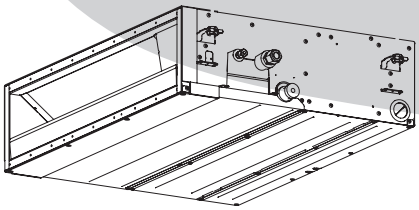
AIR-CONDITIONER
(MULTI TYPE)

<Slim Ducted Type>

MMD- AP0074SPH2UL
MMD- AP0094SPH2UL
MMD- AP0124SPH2UL
MMD- AP0154SPH2UL
MMD- AP0184SPH2UL

<High Static Ducted Type>

MMD- AP0304H2UL
MMD- AP0364H2UL
MMD- AP0484H2UL



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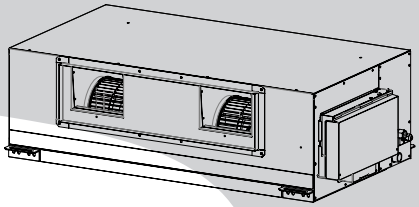

<High Static Ducted Type>

HFC
R410A

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CONTENTS

SAFETY CAUTION 3

1. SPECIFICATIONS 8
2. CONSTRUCTION VIEWS (EXTERNAL VIEWS) 10
3. WIRING DIAGRAM 14
4. PARTS RATING 16
5. FAN CHARACTERISTICS 17
6. REFRIGERATIN GCYCLE DIAGRAM 19
7. CONTROL OUTLINE 20
8. APPLIED CONTROL AND FUNCTION 27
9. TROUBLESHOOTING 54
10. DETACHMENTS 81
11. P.C. BOARD EXCHANGE PROCEDURES 95
12. EXPLODED VIEWS AND PARTS LIST 100

SAFETY CAUTION

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

[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.

[Confirmation of warning label on the main unit]

Confirm that labels are indicated on the specified positions
(Refer to the Parts disassembly diagram (Outdoor unit).)

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

⚠ **DANGER**	
❗ Turn off breaker.	**Turn "OFF" the breaker before removing the front panel and cabinet, otherwise an electric shock is caused by high voltage resulted in a death or injury.** During operation, a high voltage with 400V or higher of circuit (∗) at secondary circuit of the high-voltage transformer is applied. If touching a high voltage with the naked hands or body, an electric shock is caused even if using an electric insulator. ∗ :# For details, refer to the electric wiring diagram.
❗ Execute discharge between terminals.	**When removing the front panel or cabinet, execute short-circuit and discharge between high-voltage capacitor terminals.** If discharge is not executed, an electric shock is caused by high voltage resulted in a death or injury. After turning off the breaker, high voltage also keeps to apply to the high-voltage capacitor.
⃠ Prohibition	**Do not turn on the breaker under condition that the front panel and cabinet are removed.** An electric shock is caused by high voltage resulted in a death or injury.

⚠ WARNING	
Check earth wires.	**Before troubleshooting or repair work, check the earth wire is connected to the earth terminals of the main unit, otherwise an electric shock is caused when a leak occurs.** If the earth wire is not correctly connected, contact an electric engineer for rework.
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.	**For spare parts, use those specified (∗).** If unspecified parts are used, a fire or electric shock may be caused. ∗: For details, refer to the parts list.
Do not bring a child close to the equipment.	**Before troubleshooting or repair work, do not bring a third party (a child, etc.) except the repair engineers close to the equipment.** It causes an injury with tools or disassembled parts. Please inform the users so that the third party (a child, etc.) does not approach the equipment.
Insulating measures	**Connect the cut-off lead wires with crimp contact, etc, put the closed end side upward and then apply a water-cut method, otherwise a leak or production of fire is caused at the users' side.**
No fire	**When 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	**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. **Do not useany refru\igerant different from the onespecified for complement or replacement.** Otherwise, abnormally high pressuremay be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body. **For an air conditioner which uses R410A, never use other refrigerant than R410A.** **For an air conditioner which uses other refrigerant (R22, etc.), never use R410A.** If different types of refrigerant are mixed, abnormal high pressure generates in the refrigerating cycle and an injury due to breakage may be caused. **Do not charge refrigerant additionally.** If charging refrigerant additionally when refrigerant gas leaks, the refrigerant composition in the refrigerating cycle changes resulted in change of air conditioner characteristics or refrigerant over the specified standard amount is charged and an abnormal high pressure is applied to the inside of the refrigerating cycle resulted in cause of breakage or injury. Therefore if the refrigerant gas leaks, recover the refrigerant in the air conditioner, execute vacuuming, and then newly recharge the specified amount of liquid refrigerant. In this time, never charge the refrigerant over the specified amount. **When recharging the refrigerant in the refrigerating cycle, do not mix the refrigerant or air other than R410A into the specified refrigerant.** If air or others is mixed with the refrigerant, abnormal high pressure generates in the refrigerating cycle resulted in cause of injury due to breakage. **After installation work, check the refrigerant gas does not leak.** If the refrigerant gas leaks in the room, poisonous gas generates when gas touches to fire such as fan heater, stove or cocking stove though the refrigerant gas itself is innocuous. **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/Cabling	**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.

⚠ WARNING	
Insulator check	**After the work has finished, be sure to use an insulation tester set (500V Megger) to check the resistance is 2MΩ or more between the charge section and the non-charge metal section (Earth position).** If the resistance value is low, a disaster such as a leak or electric shock is caused at user's side.
Ventilation	**When the refrigerant gas leaks during work, execute ventilation.** If the refrigerant gas touches to a fire, poisonous gas generates. A case of leakage of the refrigerant and the closed room full with gas is dangerous because a shortage of oxygen occurs. Be sure to execute ventilation.
Be attentive to electric shock	**When checking the circuit inevitably under condition of the power-ON, use rubber gloves and others not to touch to the charging section.** If touching to the charging section, an electric shock may be caused. **When you access inside of the service panel to repair electric parts, wait for about five minutes after turning off the breaker. Do not start repairing immediately.** Otherwise you may get electric shock by touching terminals of high-voltage capacitors. Natural discharge of the capacitor takes about five minutes.
Compulsion	**When the refrigerant gas leaks, find up the leaked position and repair it surely.** If the leaked position cannot be found up and the repair work is interrupted, pump-down and tighten the service valve, otherwise the refrigerant gas may leak into the room. The poisonous gas generates when gas touches to fire such as fan heater, stove or cocking stove though the refrigerant gas itself is innocuous. **When installing equipment which includes a large amount of charged refrigerant such as a multi air conditioner in a sub-room, it is necessary that the density does not the limit even if the refrigerant leaks.** If the refrigerant leaks and exceeds the limit density, an accident of shortage of oxygen is caused. **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	**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.
Check after reinstallation	**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.
	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.

⚠ CAUTION	
Put on gloves	**Be sure to put on the gloves (*) and a long sleeved shirt: otherwise an injury may be caused with the parts, etc.** (*) Heavy gloves such as work gloves
Cooling check	**When the power was turned on, start to work after the equipment has been sufficiently cooled.** As temperature of the compressor pipes and others became high due to cooling/heating operation, a burn may be caused.

• New Refrigerant (R410A)

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

1. Safety Caution Concerned to New Refrigerant

The pressure of R410A is high 1.6 times of that of the former refrigerant (R22).

Accompanied with change of refrigerant, the refrigerating oil has been also changed.

Therefore, be sure that water, dust, the former refrigerant or the former refrigerating oil is not mixed into the refrigerating cycle of the air conditioner with new refrigerant during installation work or service work.

If an incorrect work or incorrect service is performed, there is a possibility to cause a serious accident.

Use the tools and materials exclusive to R410A to purpose a safe work.

2. Cautions on Installation/Service

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

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

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

3) In the installation time, use clean pipe materials and work with great attention so that water and others do not mix in because pipes are affected by impurities such as water, oxide scales, oil, etc.

   Use the clean pipes.

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

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

5) R410A refrigerant is azeotropic mixture type refrigerant.

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

3. Pipe Materials

For the refrigerant pipes, copper pipe and joints are mainly used.

It is necessary to select the most appropriate pipes to conform to the standard.

Use clean material in which impurities adhere inside of pipe or joint to a minimum.

1) Copper pipe

<Piping>

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

When using a long copper pipe for R410A, it is recommended to select “Copper or copper-base pipe without seam” and one with bonded oil amount 0.0001 lbs / 32’ 10” (40mg / 10m) or less.

Also do not use crushed, deformed, discolored (especially inside) pipes.
(Impurities cause clogging of expansion valves and capillary tubes.)

<Flare nut>

Use the flare nuts which are attached to the air conditioner unit.

2) Joint

The flare joint and socket joint are used for joints of the copper pipe.

The joints are rarely used for installation of the air conditioner. However clear impurities when using them.

4. Tools

1. Required Tools for R410A

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

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

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

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

Tools whose specifications are changed for R410A and their interchangeability

No.	Used tool	Usage	R410A air conditioner installation		Conventional air conditioner installation
			Existence of new equipment for R410A	Whether conventional equipment can be used	Whether conventional equipment can be used
①	Flare tool	Pipe flaring	Yes	*(Note)	Yes
②	Copper pipe gauge for adjusting projection margin	Flaring by conventional flare tool	Yes	*(Note)	*(Note)
③	Torque wrench	Tightening of flare nut	Yes	No	No
④	Gauge manifold	Evacuating, refrigerant charge, run check, etc.	Yes	No	No
⑤	Charge hose				
⑥	Vacuum pump adapter	Vacuum evacuating	Yes	No	Yes
⑦	Electronic balance for refrigerant charging	Refrigerant charge	Yes	Yes	Yes
⑧	Refrigerant cylinder	Refrigerant charge	Yes	No	No
⑨	Leakage detector	Gas leakage check	Yes	No	Yes

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

General tools (Conventional tools can be used.)

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

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

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

1) Clamp meter
2) Thermometer
3) Insulation resistance tester (Megger)
4) Electroscope

1. SPACIFICATIONS

1-1. Slim Ducted Type

MMD-AP0074SPH2UL, AP0094SPH2UL, AP0124SPH2UL, AP0154SPH2UL, AP0184SPH2UL

Model name			MMD-	AP0074SPH2UL	AP0094SPH2UL	AP0124SPH2UL	AP0154SPH2UL	AP0184SPH2UL
Cooling Capacity			kBtu/h	7.5	9.5	12	15.4	18
Heating Capacity			kBtu/h	8.5	10.5	13.5	17	20
Electrical characteristics	Power supply			230V (208/230V) 1phase 60Hz				
	Power consumption		kW	0.043	0.043	0.048	0.061	0.071
Appearance				Zinc hot dipping steel plate				
Dimension	Unit	Height	In	8.3				
		Width	In	33.3				
		Depth	In	25.4				
	Packing	Height	In	10.5				
		Width	In	41				
		Depth	In	30.3				
Total Weight	Unit		lb	49			51	
	Packed unit		lb	57			60	
Heat exchanger				Finned tube				
Fan unit	Fan			Centrifugal fan				
	Standard air flow (High/Mid/Low)		cfm	318/ 276/ 235		353/ 306/ 265	406/ 353/ 306	459/ 400/ 341
	Motor output		W	60				
	External static pressure		In WG	0.08 (Factory setting) -0.14 -0.02				
Air filter				Field supply				
Connecting pipe	Gas side		In	3/8"	3/8"	3/8"	1/2"	1/2"
	Liquid side		In	1/4"	1/4"	1/4"	1/4"	1/4"
	Drain port (Nominal dia.)		In	VP25(Polyvinyl chloride tube: External Dia.1-1/4 Internal Dia.1)				
Sound pressure level (High/Mid/Low) (*2)		Under air inlet	dB(A)	39/ 36/ 33		41/ 38/ 35	41/ 38.5/ 35	44.5/ 41/ 37.5
		Back air inlet	dB(A)	31/ 30/ 28		32.5/ 31.5/ 28.5	34.5/ 33.5/ 30	37/ 34/ 32
Option parts	Auxiliary fresh air frange			TCB-FF101URUL				

Note
(*1) Non attached filter
(*2) The actual values in an external opeating environment are generally higher than the indicated values due to the contribution from ambient noise.

1-2. High Static Ducted Type

MMD- AP0304H2UL, AP0364H2UL, AP0484H2UL

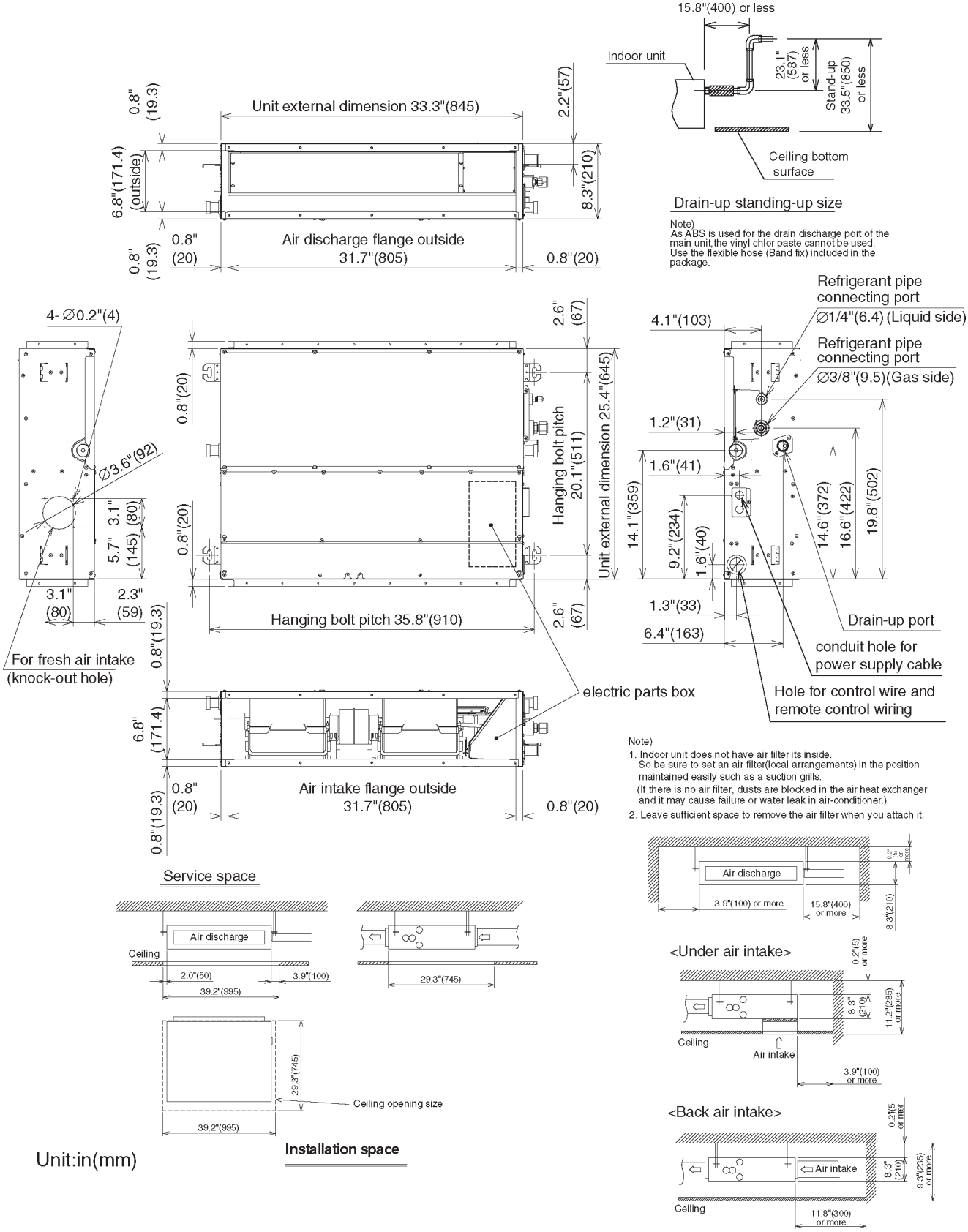
Model name			MMD-	AP0304H2UL	AP0364H2UL	AP0484H2UL
Cooling Capacity			kBtu/h	30	36	48
Heating Capacity			kBtu/h	34	40	54
Electrical characteristics	Power supply			230V (208/230V) 1phase 60Hz		
	Power consumption		kW	0.38/0.41		
Appearance				Zinc hot dipping steel plate		
Dimension	Unit	Height	In	15.0		
		Width	In	33.5		47.2
		Depth	In	26.0		
	Packing	Height	In	17.0		
		Width	In	42.6		56.4
		Depth	In	31.9		
Total Weight	Unit		lb	128		154
	Packed unit		lb	141		176
Heat exchanger				Finned tube		
Fan unit	Fan			Centrifugal fan		
	Standard air flow		cfm	926		1235
	Motor output		W	260		
	External static pressure (*1)	Factory setting (208/230V)	In WG	0.641/0.814		0.296/0.519
		208V (High tap/Mid tap/Low tap) (*3)	In WG	1.075 - 0.641 - 0.287		0.606 - 0.296 - Non
		230V (High tap/Mid tap/Low tap) (*3)	In WG	1.175 - 0.814 - 0.506		0.801 - 0.519 - 0.114
	Air flow limit	Lower limit	cfm	755.2		988.2
		Upper limit	cfm	1132.8		1447.1
Air filter				Field supply		
Connecting pipe	Gas side		In	5/8"		
	Liquid side		In	3/8"		
	Drain port (Nominal dia.)		In	VP25(Polyvinyl chloride tube: External Dia.1-1/4 Internal Dia.1)		
Sound pressure level (*2)		208V (High/Mid/Low)	dB(A)	49.5/45/41		47/44/ -
		230V (High/Mid/Low)	dB(A)	51/47/43		49/46/43

Note
(*1) Non attached filter
(*2) The actual values in an external opeating environment are generally higher than the indicated values due to the contribution from ambient noise.
(*3) The tap is set by wire connection change of fan motor.

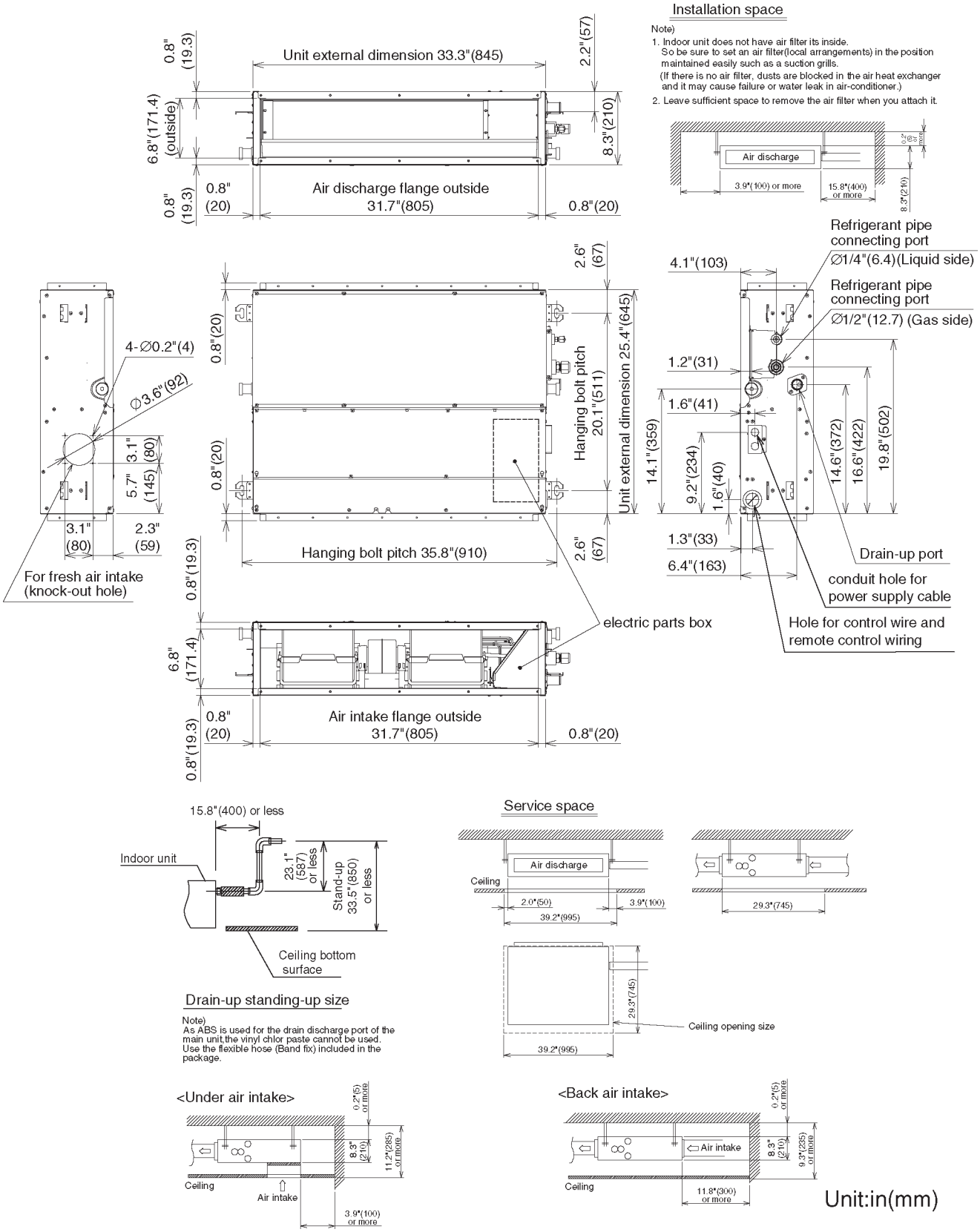
2. CONSTRUCTION VIEWS (EXTERNAL VIEWS)

2-1. Slim Ducted Type

MMD- AP0074SPH2UL, MMD- AP0094SPH2UL, MMD- AP0124SPH2UL

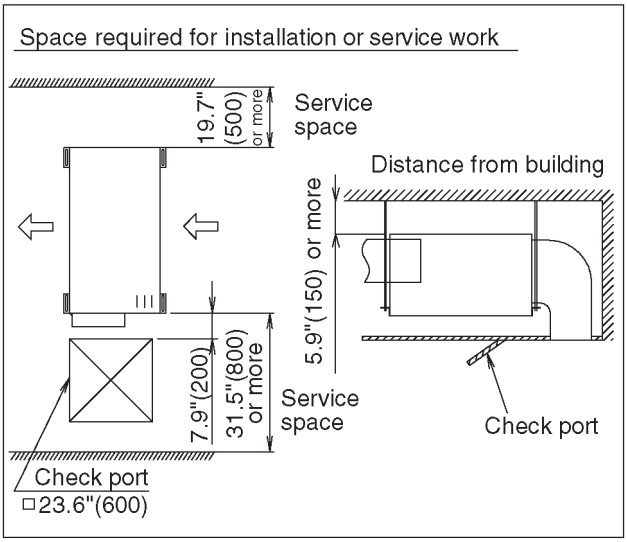


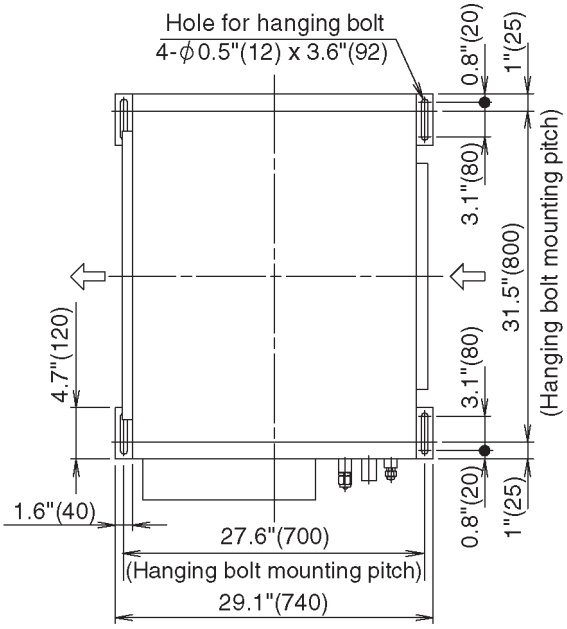
MMD- AP0154SPH2UL, MMD- AP0184SPH2UL

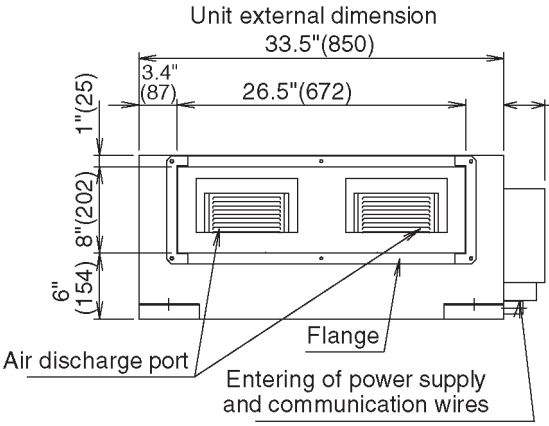


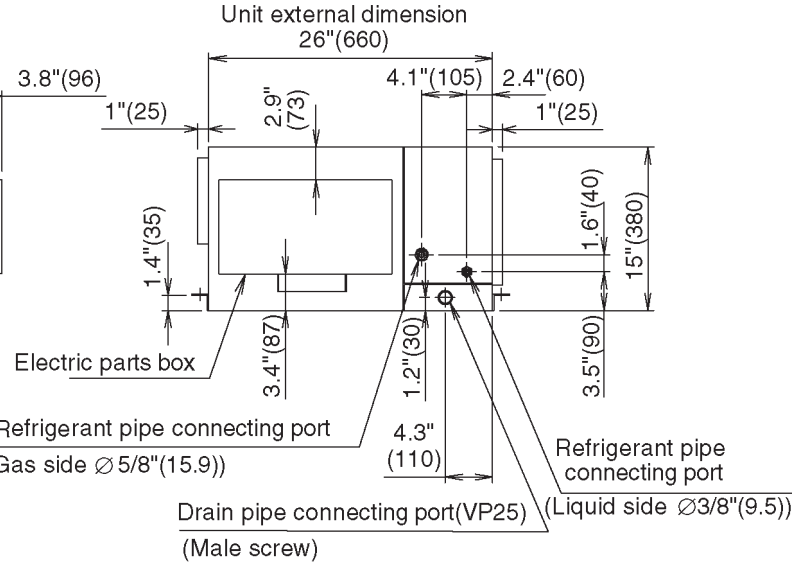
2-2. High Static Ducted Type

MMD- AP0304H2UL, MMD- AP0364H2UL







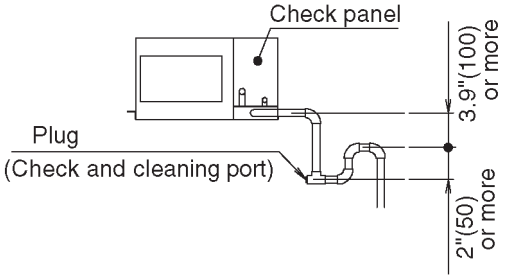


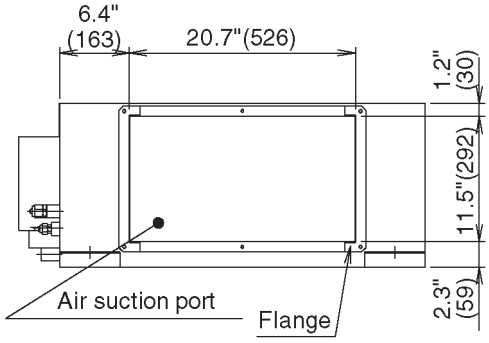
<Note>

1. Indoor unit does not have air filter its inside.
   So be sure to set an air filter(local arrangements) in the position maintained easily such as a suction grills.
   (If there is no air filter, dusts are blocked in the air heat exchanger and it may cause failure or water leak in air-conditioner.)
2. Leave sufficient space to remove the air filter when you attach it.

Attention

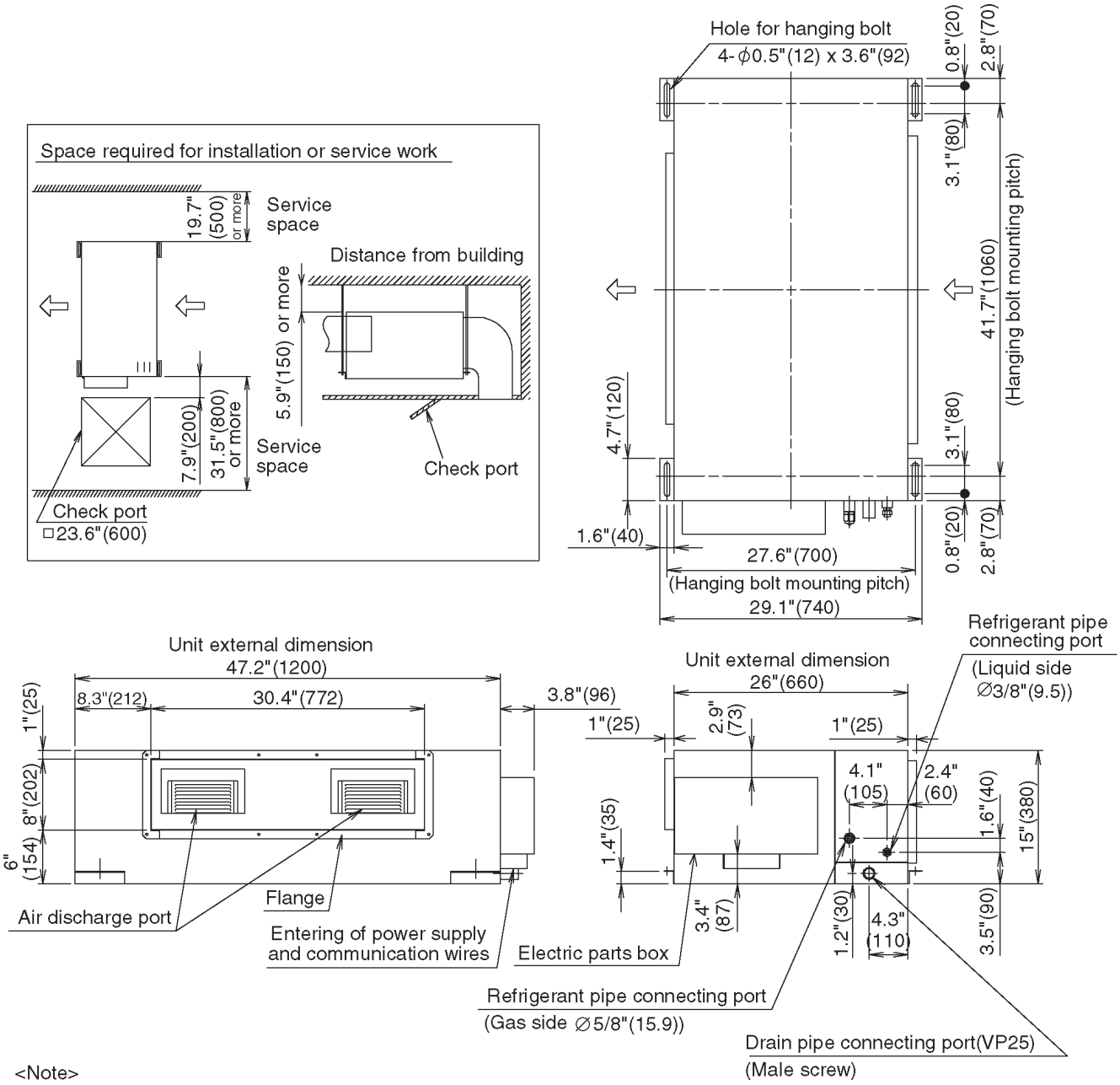
Be sure to set the plug and to make it to be able to cleaning, because garbage in drain piping piles up easily in drain trap.





Unit:in(mm)

MMD- AP0484H2UL



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   So be sure to set an air filter(local arrangements) in the position maintained easily such as a suction grills.
   (If there is no air filter, dusts are blocked in the air heat exchanger and it may cause failure or water leak in air-conditioner.)
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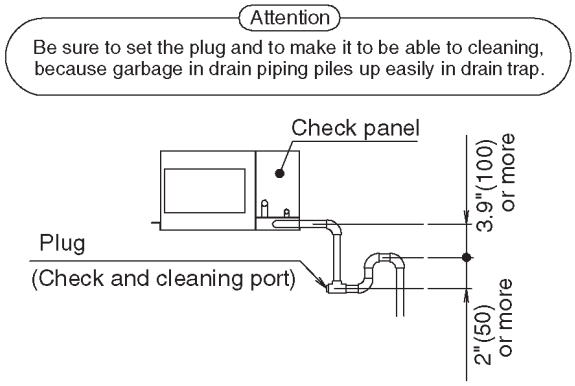
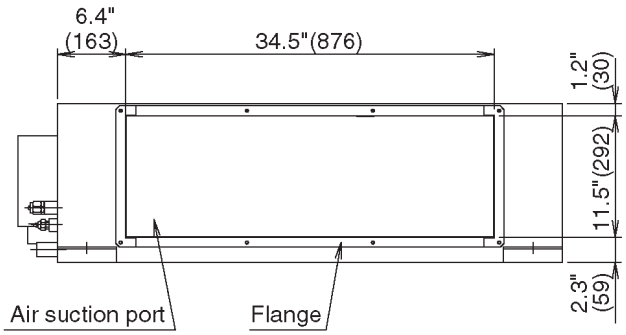
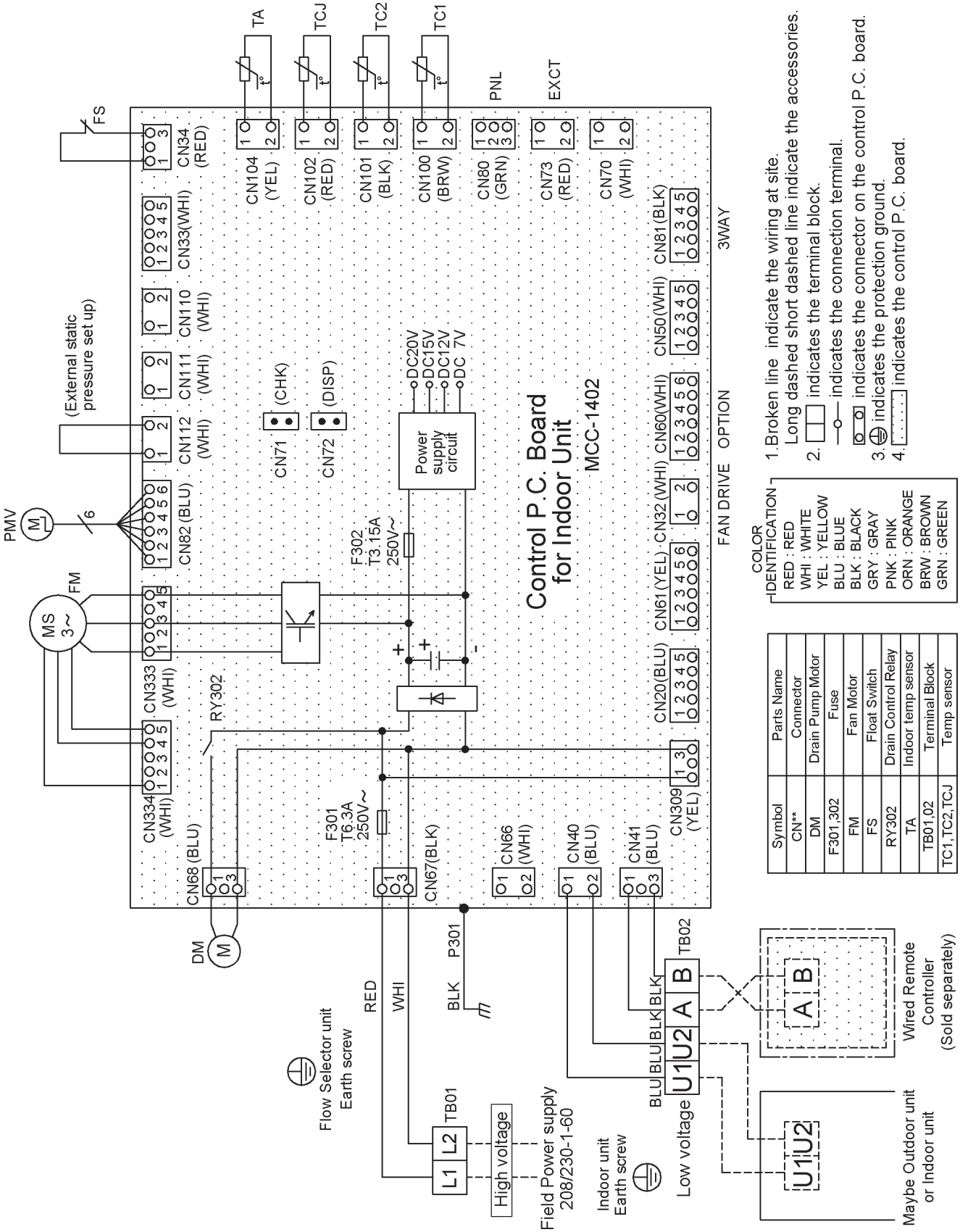




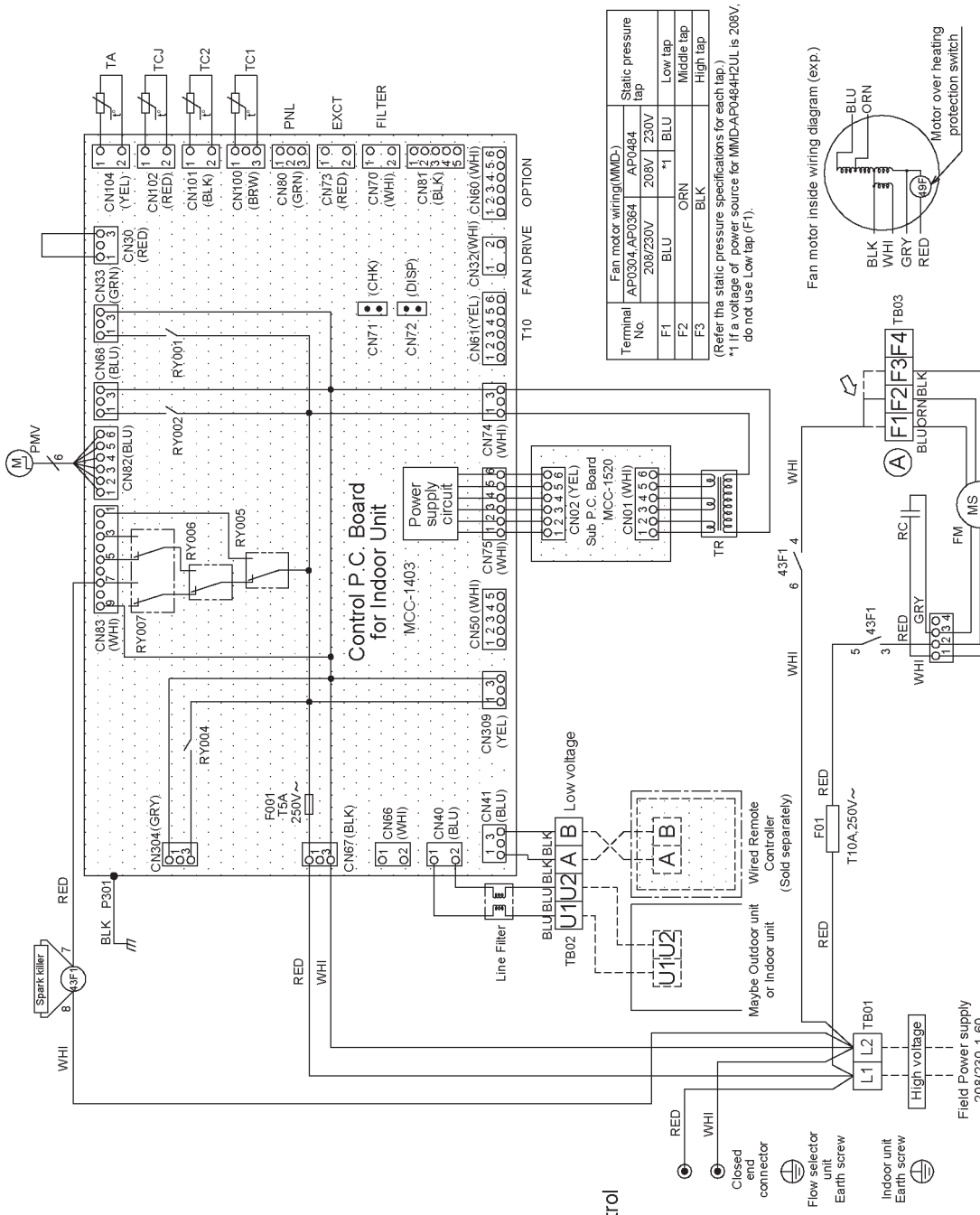
Unit:in(mm)

3. WIRING DIAGRAM

3-1. Slim Ducted Type



3-2. High Static Ducted Type



Symbol	Parts Name
43F1	Fan motor Control Relay
CN**	Connector
F01	Fuse
F001	Fuse
FM	Fan Motor
PMV	Pulse Motor Valve
RC	Running Capacitor
RY005,006,007	Fan Motor Control Relay
TA	Indoor temp sensor
TB01,02,03	Terminal Block
TC1,TC2,TCJ	Temp sensor
TR	Transformer

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.
5. Ⓐ position is connected to terminal block when change to static pressure. exchange the lead wire of arrow(⇗) position after check the terminal number as figure and lead wire's color of fan motor.

COLOR IDENTIFICATION

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

4. PARTS RATING

4-1. Slim Ducted Type

Model name MMD-AP	0074SPH2UL	0094SPH2UL	0124SPH2UL	0154SPH2UL	0184SPH2UL
Fan motor	SWF-340U60-1A				
Drain pump motor	ADP-1406				
Float switch	FS-0218-102				
Pulse motor	EFM-MD12TF-1				
Pulse motor valve	EDM-B25YGTF-3			EDM-B40YGTF-3	
TA sensor	Lead wire length : 6.1 in (155mm)				
TC1 sensor	Ø4, Lead wire length : 47.2 in (1200mm), Vinyl tube (Blue)				
TC2 sensor	Ø6, Lead wire length : 47.2 in (1200mm), Vinyl tube (Black)				
TCJ sensor	Ø6, Lead wire length : 47.2 in (1200mm), Vinyl tube (Red)				

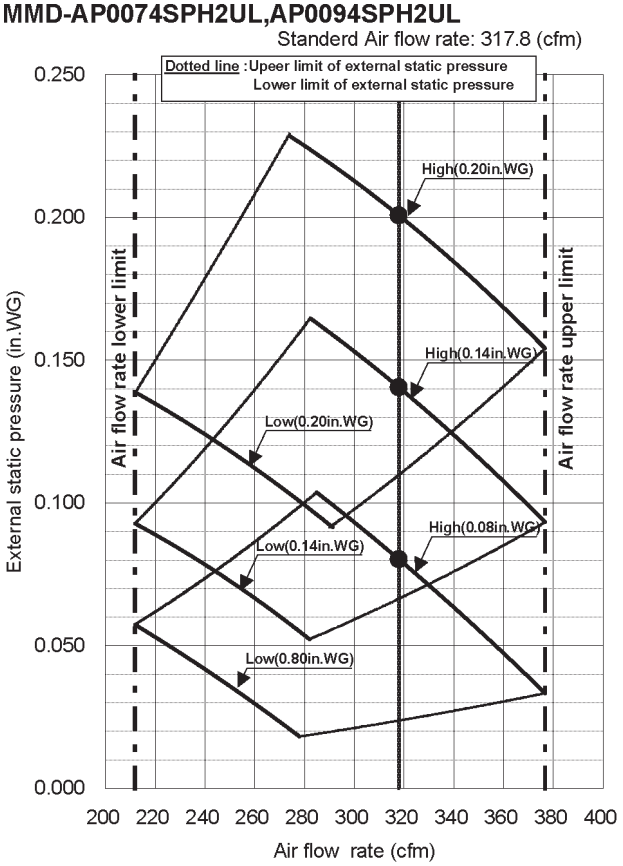
4-2. High Static Ducted Type

Model name MMD-AP	0304H2UL	0364H2UL	0484H2UL
Fan motor	STF-230U260-4C		STF-230U260-4B
Running capacitor	AC400V, 10μF		AC450V, 13μF
Pulse motor	EFM-MD12TF-1		
Pulse motor valve	EDM-B40YGTF-2	EDM-B60YGTF-1	
Transformer	TT-12		
TA sensor	Lead wire length : 47.2 in (1200mm)		
TC1 sensor	Ø4, Lead wire length : 47.2 in (1200mm), Vinyl tube (Blue)		
TC2 sensor	Ø6, Lead wire length : 47.2 in (1200mm), Vinyl tube (Black)		
TCJ sensor	Ø6, Lead wire length : 47.2 in (1200mm), Vinyl tube (Red)		

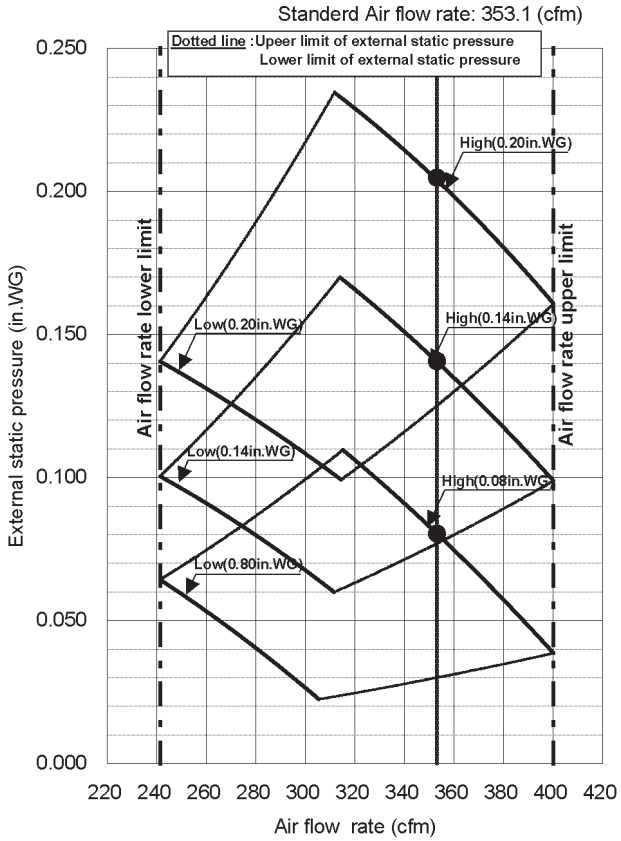
5. FAN CHARACTERISTIC

5-1. Slim Ducted Type (No filter)

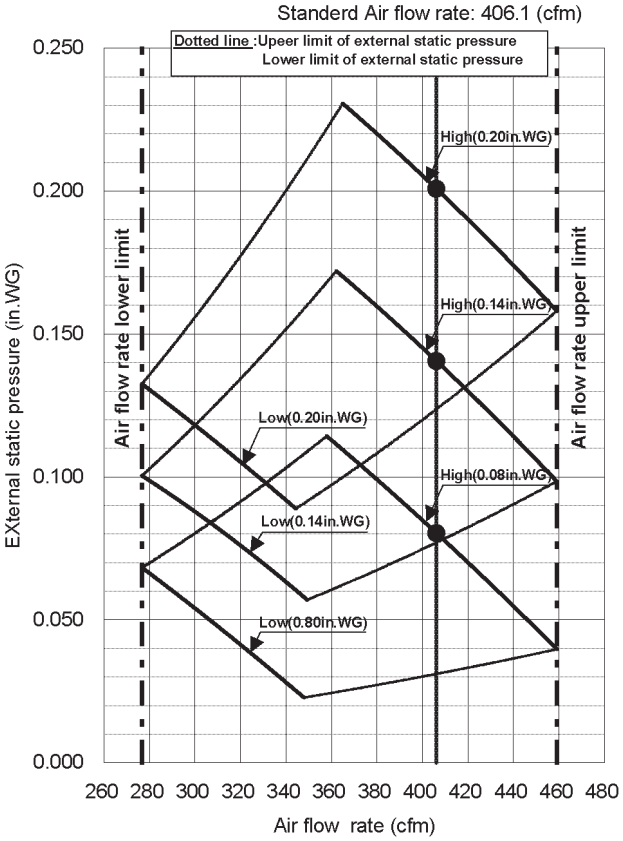
MMD-AP0074SPH2UL,AP0094SPH2UL



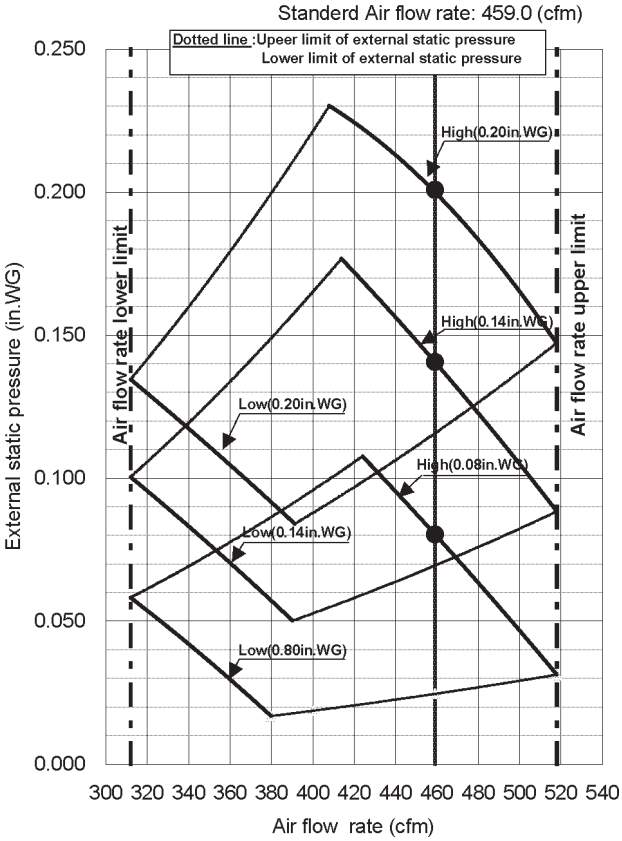
MMD-AP0124SPH2UL



MMD-AP0154SPH2UL



MMD-AP0184SPH2UL

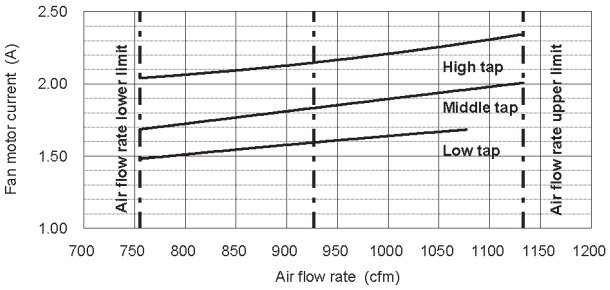


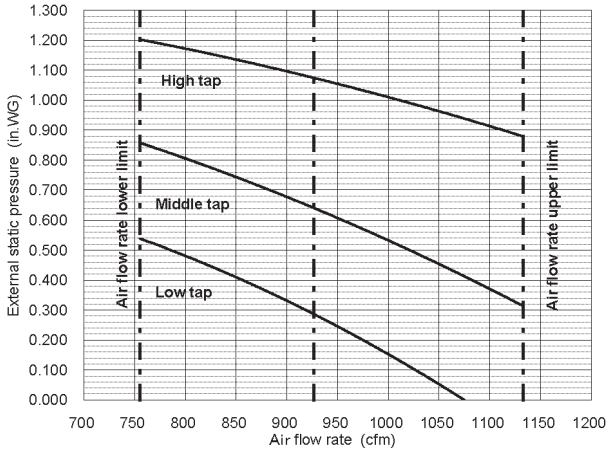
5-2. High Static Ducted Type

MMD-AP0304H2UL,AP0364H2UL

Power source : 208V/60Hz

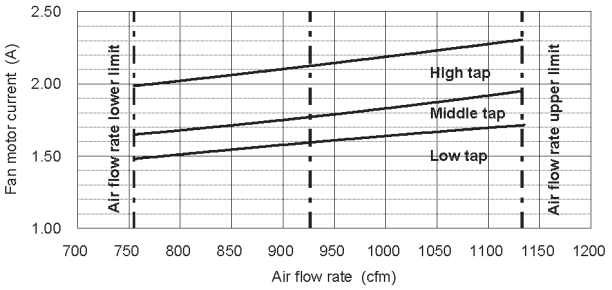
tap	External static pressure (in.WG)	Standard air flow rate (cfm)
High	1.075	926
Middle	0.641	
Low	0.287	

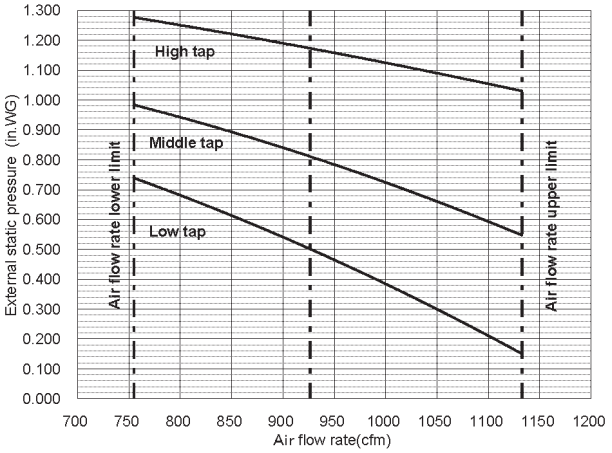




Power source : 230V/60Hz

tap	External static pressure (in.WG)	Standard air flow rate (cfm)
High	1.175	926
Middle	0.814	
Low	0.506	

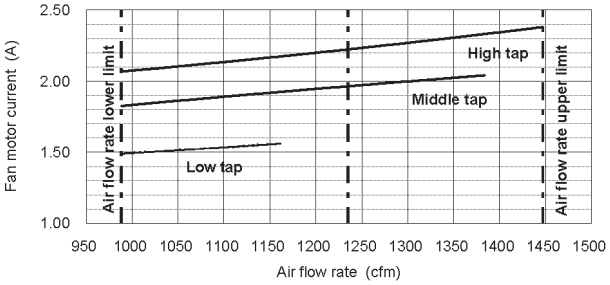


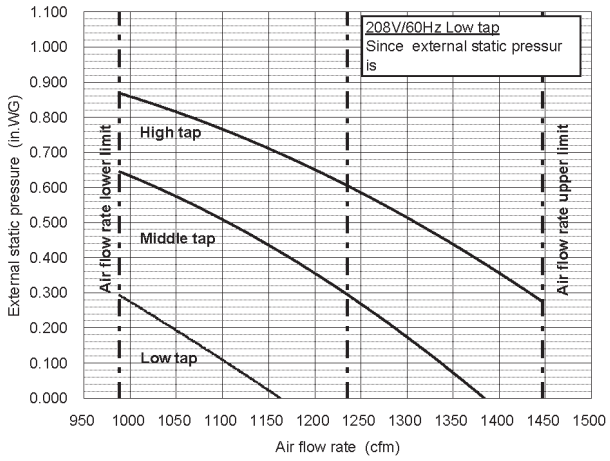


MMD-AP0484H2UL

Power source : 208V/60Hz

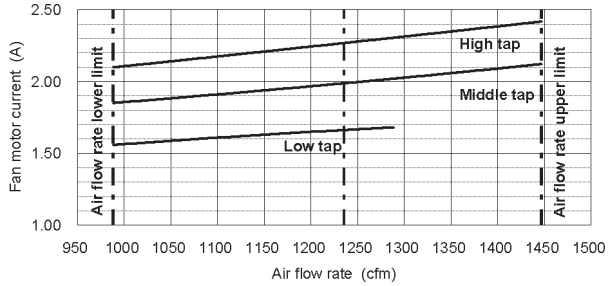
tap	External static pressure (in.WG)	Standard air flow rate (cfm)
High	0.606	1235
Middle	0.296	
Low	—	

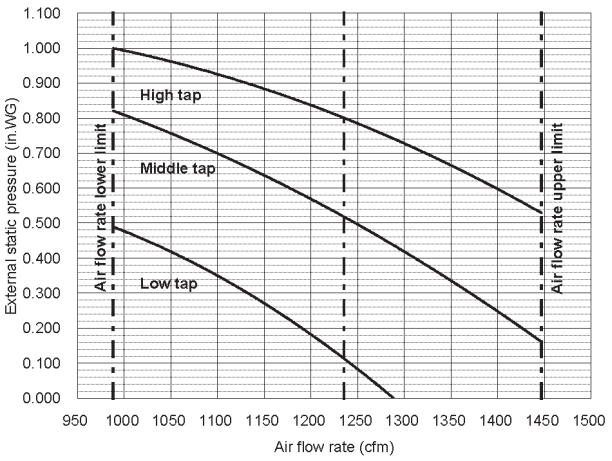




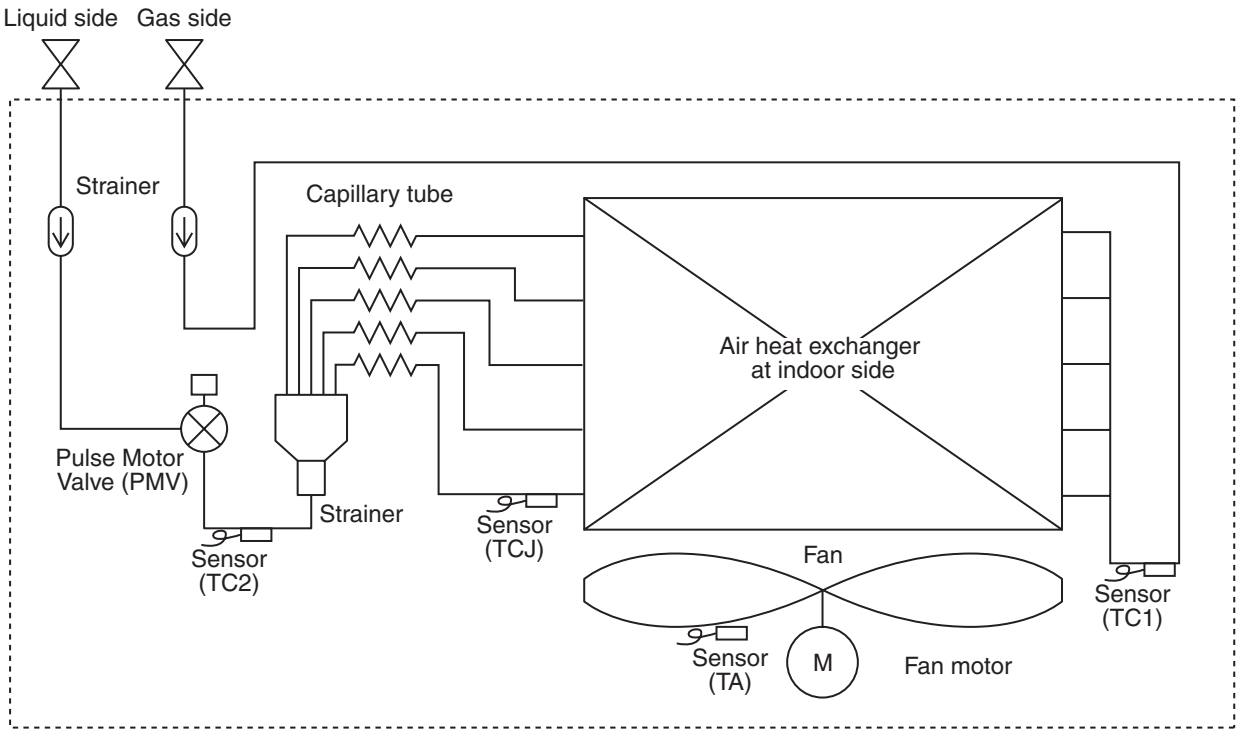
Power source : 230V/60Hz

tap	External static pressure (in.WG)	Standard air flow rate (cfm)
High	0.801	1235
Middle	0.519	
Low	0.114	





6. REFRIGERATING CYCLE DIAGRAM

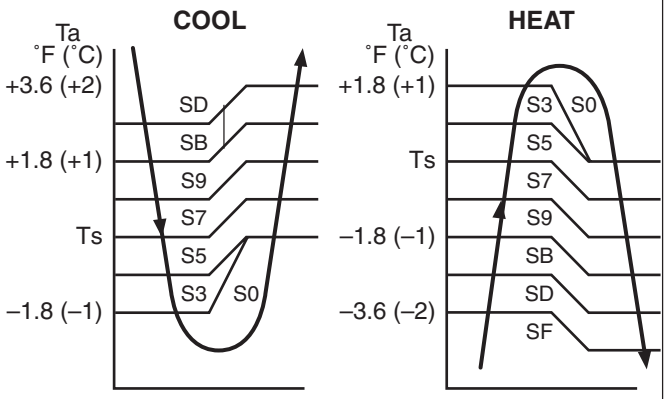
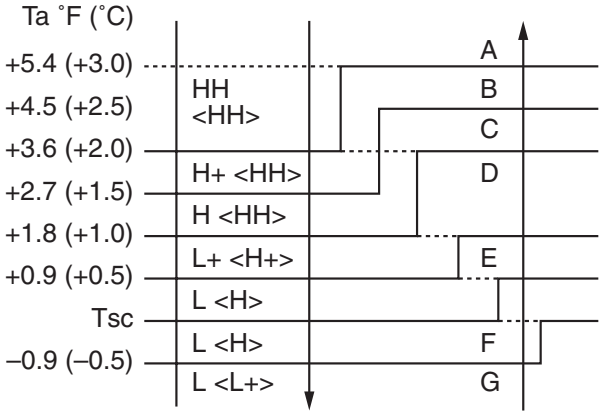


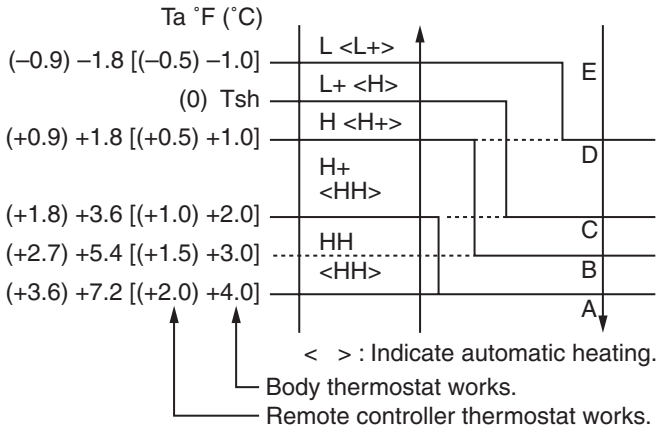
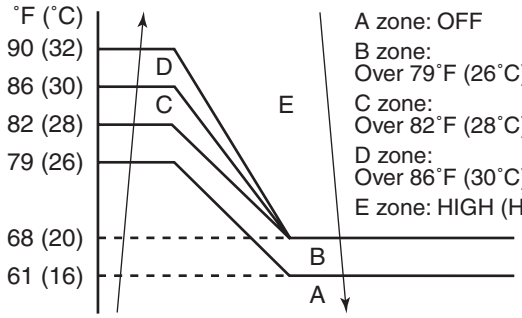
Functional part name		Functional outline
Pulse Motor Valve	PMV	(Connector CN082 (6P): Blue) 1) Controls super heat in cooling operation 2) Controls under cool in heating operation 3) Recovers refrigerant oil in cooling operation 4) Recovers refrigerant oil in heating operation
Temp. sensor	1. TA	(Connector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

7. CONTROL OUTLINE

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>1</td><td>When power supply is reset</td><td>1) Distinction of outdoor unit
When the power supply is reset, the outdoors are distinguished and the control is selected according to the distinguished result.
2) Setting of indoor fan speed and existence of air direction adjustment
Based on EEPROM data, select setting of the indoor fan speed and the existence of air direction adjustment.
3) If resetting the power supply during occurrence of a trouble, the check code is once cleared. After ON/OFF button of the remote controller was pushed and the operation was resumed, if the abnormal status continues, the check code is again displayed on the remote controller.</td><td>Air speed (rpm)/
Air direction adjustment</td></tr>
<tr><td>2</td><td>Operation mode selection</td><td>1) Based on the operation mode selecting command from the remote controller, the operation mode is selected.
<table>
<tr><th>Remote controller command</th><th>Control outline</th></tr>
<tr><td>STOP</td><td>Air conditioner stops.</td></tr>
<tr><td>FAN</td><td>Fan operation</td></tr>
<tr><td>DRY</td><td>Drying operation</td></tr>
<tr><td>COOL</td><td>Cooling operation</td></tr>
<tr><td>HEAT</td><td>Heating operation</td></tr>
</table></td><td></td></tr>
<tr><td>3</td><td>Room temp. control</td><td>1) Adjustment range: Remote controller setup temperature (°F [°C])
<table>
<tr><th></th><th>COOL/DRY</th><th>HEAT</th></tr>
<tr><td>Wired type</td><td>64°F [18°C] to 84°F [29°C]</td><td>64°F [18°C] to 84°C [29°C]</td></tr>
<tr><td>Wireless type</td><td>64°F [18°C] to 86°F [30°C]</td><td>61°F [16°C] to 86°F [30°C]</td></tr>
</table>
2) Using the Item code 06, the setup temperature in heating operation can be corrected.
<table>
<tr><th>Setup data</th><th>0</th><th>2</th><th>4</th><th>6</th></tr>
<tr><td>Setup temp. Correction</td><td>+0°F [+0°C]</td><td>+3.6°F [+2°C]</td><td>+7.2°F [+4°C]</td><td>+10.8°F [+6°C]</td></tr>
</table>
Setting at shipment
<table>
<tr><th>Setup data</th><td>2</td></tr>
</table></td><td>Shift of suction temperature in heating operation

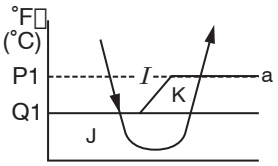
Except while sensor of the remote controller is controlled
(Code No. [32], “0001”)</td></tr>
</table>

No.	Item	Outline of specifications	Remarks
4	Automatic capacity control	1) Based on the difference between Ta and Ts, the operation capacity is determined by the outdoor unit.  	Ts: Setup temp. Ta: Room temp.
5	Air speed selection	1) Operation with (HH), (H), (L) or [AUTO] mode is carried out by the command from the remote controller. 2) When the air speed mode [AUTO] is selected, the air speed varies by the difference between Ta and Ts. **<COOL>**  < > : Indicate automatic cooling. • Controlling operation in case when thermo of remote controller works is same as a case when thermo of the body works. • If the air speed has been changed once, it is not changed for 3 minutes. However when the air volume is exchanged, the air speed changes. • When cooling operation has started, select a downward slope for the air speed, that is, the high position. • If the temperature is just on the difference boundary, the air speed does not change.	HH > H+ > H > L+ > L > UL Code No. 32 0000: Body thermo. (Main unit) 0001: Remote controller thermo.

No.	Item	Outline of specifications	Remarks
5	Air speed selection (Continued)	**<HEAT>**  Value in the parentheses indicates one when thermostat of the remote controller works. Value without parentheses indicates one when thermostat of the body works. • If the air speed has been changed once, it is not changed for 1 minute. However when the air speed exchanged, the air speed changes. • When heating operation has started, select an upward slope for the air speed, that is, the high position. • If the temperature is just on the difference boundary, the air speed does not change. • In TC2 ≥ 140°F[60°C], the air speed increases by 1 step.	TC2: Indoor heat exchanger sensor temperature
6	Prevention of cold air discharge	1. In heating operation, the higher temperature of TC2 sensor and TCJ sensor is compared with temperature of TC1 sensor and then the lower temperature is used to set the upper limit of the fan tap. • When B zone has continued for 6 minutes, the operation shifts to C zone. • In defrost time, the control point is set to +10.8°F[6°C].  A zone: OFF B zone: Over 79˚F (26˚C), below 82˚F (28˚C), ULTRA LOW (LL) C zone: Over 82˚F (28˚C), below 86˚F (30˚C), LOW (L) D zone: Over 86˚F (30˚C), below 90˚F (32˚C), MED (H) E zone: HIGH (HH)	• TCJ: Temperature of indoor heat exchanger sensor • In D and E zones, priority is given to remote controller air speed setup. • In A zone " ❄ " is displayed.

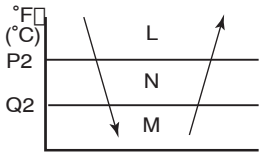
<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr>
<td>7</td>
<td>Freeze prevention control
(Low temp. release)</td>
<td>
1. In all cooling operation, the air conditioner operates as de-scribed below based upon temp. detected by TC1, TC2 and TCJ sensors.

When “J” zone is detected for 5 minutes, the thermostat is forcedly off.
In “K” zone, the timer count is interrupted, and held.
When “I” zone is detected, the timer is cleared and the operation returns to the normal operation.
If “J” zone continues, operation of the indoor fan in LOW mode continues until it reaches the “I” zone.
It is reset when the following conditions are satisfied.

Reset conditions
1) TC1 > 54°F [12°C] and TC2 > 54°F [12°C] and TCJ > 54°F [12°C].
2) 20 minutes passed after stop.


<table>
<tr><th></th><th>TC1</th><th>TC2, TCJ</th></tr>
<tr><td>P1</td><td>50°C [10°C]
41°C [5°C]</td><td>14°C
[–10°C]</td></tr>
<tr><td>Q1</td><td>32°F [0°C]</td><td>7°F [–14°C]</td></tr>
</table>
2. In all cooling operation, the air conditioner operates as described below based upon temp. detected by TC2 and TCJ sensors.

When “M” zone is detected for 30 minutes, the thermostat is forcedly off.
In “N” zone, the timer count is interrupted and held.
When shifting to “M” zone again, the timer count restarts and continues.
If “L” zone is detected, the timer is cleared and the operation returns to normal operation.

Reset conditions
1) TC1 > 54°F [12°C] and TC2 > 54°F [12°C] and TCJ > 54°F [12°C].
2) 20 minutes passed after stop.


<table>
<tr><th></th><th>TC2, TCJ</th></tr>
<tr><td>P2</td><td>41°F [5°C]</td></tr>
<tr><td>Q2</td><td>28°F [–2.0°C]</td></tr>
</table>
</td>
<td>
TC1: Temperature of indoor heat exchanger sensor

( ) value:
When the power supply is turned on, the forced thermo OFF if the temperature is less than this indicated temperature.

∗ In a Model without TC2, TC2 is not judged.
</td>
</tr>
<tr>
<td>8</td>
<td>Recovery control for cooling oil (Refrigerant)</td>
<td>
The indoor unit which is under STOP/Thermo-OFF status or which operates in [FAN] mode performs the following controls when it received the cooling oil (Refrigerant) recovery signal from the outdoor unit.
1) Opens PMV of the indoor unit with a constant opening degree.
2) Operates the drain pump for approx. 1 minute during recovery control and after finish of control.
</td>
<td>
• Recovery operation is usually performed every 2 hours 5 minuts.
</td>
</tr>
</table>

No.	Item	Outline of specifications	Remarks
9	Recovery control for heating refrigerant (Oil)	The indoor unit which is under STOP/Thermo-OFF status or which operates in [FAN] mode performs the following controls when it received the heating refrigerant (Oil) recovery signal from the outdoor unit. 1) Opens PMV of the indoor unit with a constant opening degree. 2) Detects temperature of TC2 and then closes PMV.	• The indoor unit which is under thermo-OFF (COOL) status or which operates in [FAN] mode stops the indoor fan and displays [READY ⊛]. • Recovery operation is usually performed every 1 hour. (When there is even 1 indoor unit which the thermo unit is off)
10	Compensation control for short intermittent operation	1) For 3 minutes after start of operation, the operation is forcedly continued even if the unit enters in Thermo-OFF condition. 2) However the thermostat is OFF giving prior to COOL/HEAT selection, READY ⊛ for operation and protective control.	Usually the priority is given to 5 minutes at outdoor controller side.
11	Drain pump control	1) In cooling operation, this control anytime operates the drain pump. 2) During operation of the drain pump, if the float switch operates, the drain pump continuously operates and a check code is issued. 3) During stop status of the drain pump, if the float switch operates, the thermostat is forcedly off and this control operates the drain pump. After continuous operation of the float switch for approx. 5 minutes, this control stops the operation and a check code is issued.	Check Code [P10]
12	Display of filter sign [▦] ∗ Separately set type TCB-AX21UL is prepared.	1) The filter sign is displayed with LC by sending the filter-reset signal to the remote controller when the specified time (150H/2500H) elapsed as a result of integration of the operation time of the indoor fan. 2) The integrated timer is cleared when the filter-reset signal is received from the remote controller. In this time, if the specified time elapsed, the counted time is reset and the LC display is deleted. **Filter time** 2500H	[▦ FILTER] goes on.

No.	Item	Outline of specifications	Remarks
13	Display of [READY] [HEAT READY]	**< READY>** Displayed on the remote controller 1) When the following check codes are indicated • Open phase of power supply wiring [P05] was detected. • There is an indoor unit that detected the indoor overflow [P10]. • There is an indoor unit that detected the interlock alarm [L30]. 2) During Force Thermo-OFF • [COOL/DRY] operation is unavailable because the other indoor unit operates with [HEAT] mode. • [HEAT] operation is unavailable because COOL priority (SW11-bit1 of the Outdoor I/F P. C. board is ON) is set and the other indoor unit operates with [COOL/DRY] mode. 3) The above indoor units that cannot operate stay in Thermo-OFF status. 4) The indoor fan stops because the system performs [Recovery operation for heating refrigerant (Oil)].	• **<READY ⏻ >** display No display for wireless type remote controller
		<HEAT READY> Displayed on the remote controller 1. Normal thermo. OFF • During heating, the indoor unit goes thermo OFF as the heating temperature setting is reached. 2. During heating, the fan rotates at a breeze speed (UL or lower) or remains stationary to prevent cold air from being discharged (including defrosting operation). 3. Forced thermo OFF • “HEAT” operation is unavailable because at least one indoor unit is operating in “COOL/DRY” mode under priority cooling setting (bit 1 of SW11 on outdoor I/FP.C. board ON).	• **<HEAT READY ☼ >** display
14	Selection of central control mode	1) Selection of the contents that can be operated by the remote controller at the indoor unit side is possible according to setting at the central controller side. 2) Setting contents	

• **In case of TCC-LINK central control**

Operation from TCC-LINK central control	Operation on RBC-AMT32UL						On RBC-AMT32UL
	ON/OFF setting	Operation selection	Timer setting	Temp. setting	Air speed setting	Air direction setting	
Individual	○	○	○	○	○	○	[Central control] display
[Central 1]	×	○	×	○	○	○	
[Central 2]	×	×	×	×	○	○	
[Central 3]	○	×	○	×	○	○	
[Central 4]	○	×	○	○	○	○	

(○: Operation possible ×: Operation impossible)

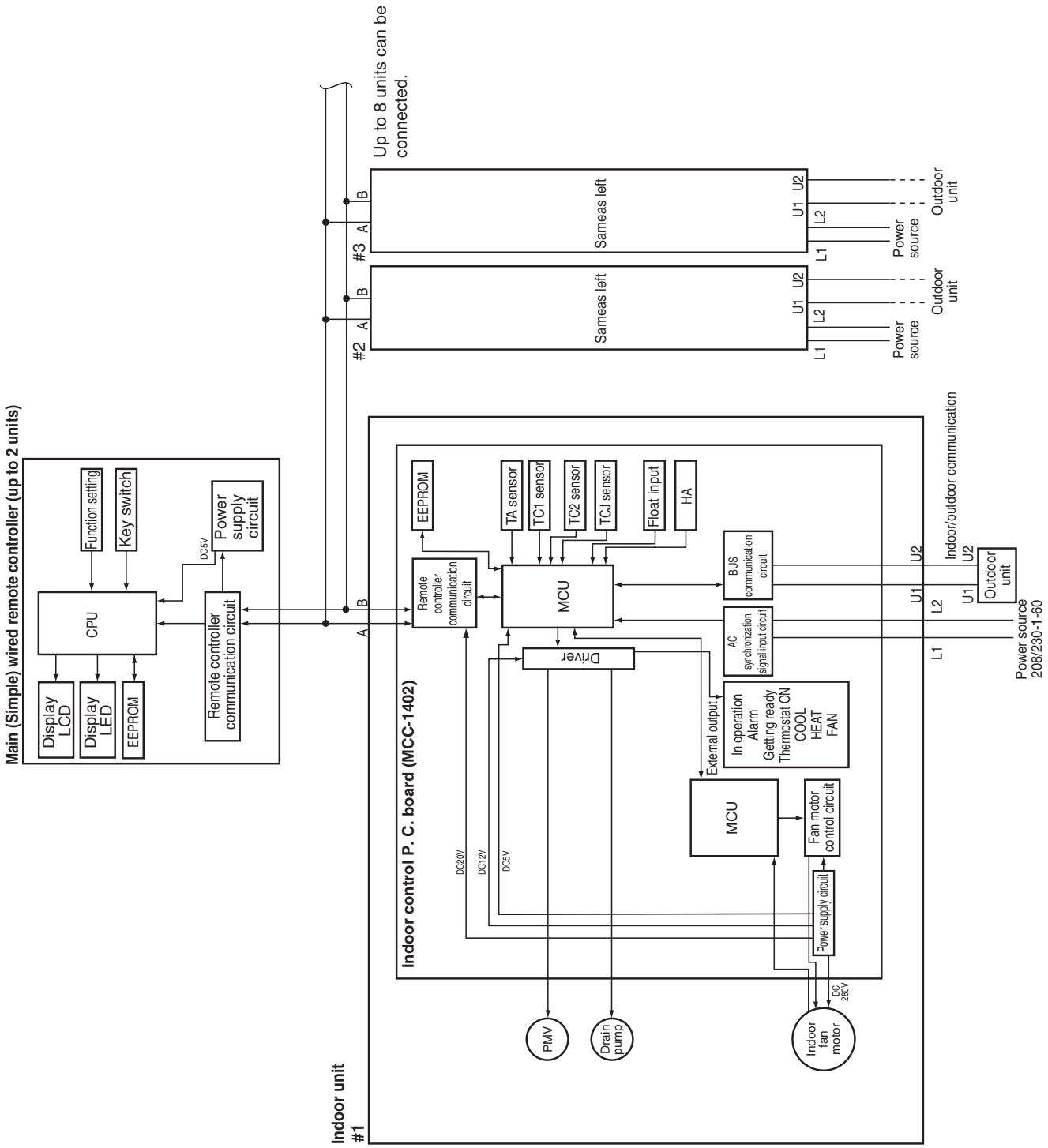
No.	Item	Outline of specifications	Remarks
15	DC motor	1) When the fan stator, positioning is performed for the starter and the rotor. (Vibrate slightly) 2) DC motor operates according to the command from the indoor controller. **(Note)** If the fan rotates by entry of outside air, etc while the air conditioner stopped, the indoor unit may operate as the fan motor stops. **(Note)** If the fan lock was detected, the operation of the indoor unit stops and the error is displayed. **(Note)** If the incorrect duct design was found during installation work or you carelessly opened the service panel (drain pump) of the main unit during operation, the check code [P12] is output and the motor stops.	Check code [P12]
16	Save operation	1) The save operation starts when SAVE button on the remotecontroller is turned on. 2) While the save operation is performed, segment goes on the screen of the wired remote controller. 3) The request capacity ratio is restricted to approx. 75% during save operation. 4) If the save operation was validated, the contents are held during the operation stop, the operation mode change and the resetting of power supply. Therefore the operation at the next time also will be activated with “Save operation is valid”.	

8. APPLIED CONTROL AND FUNCTION

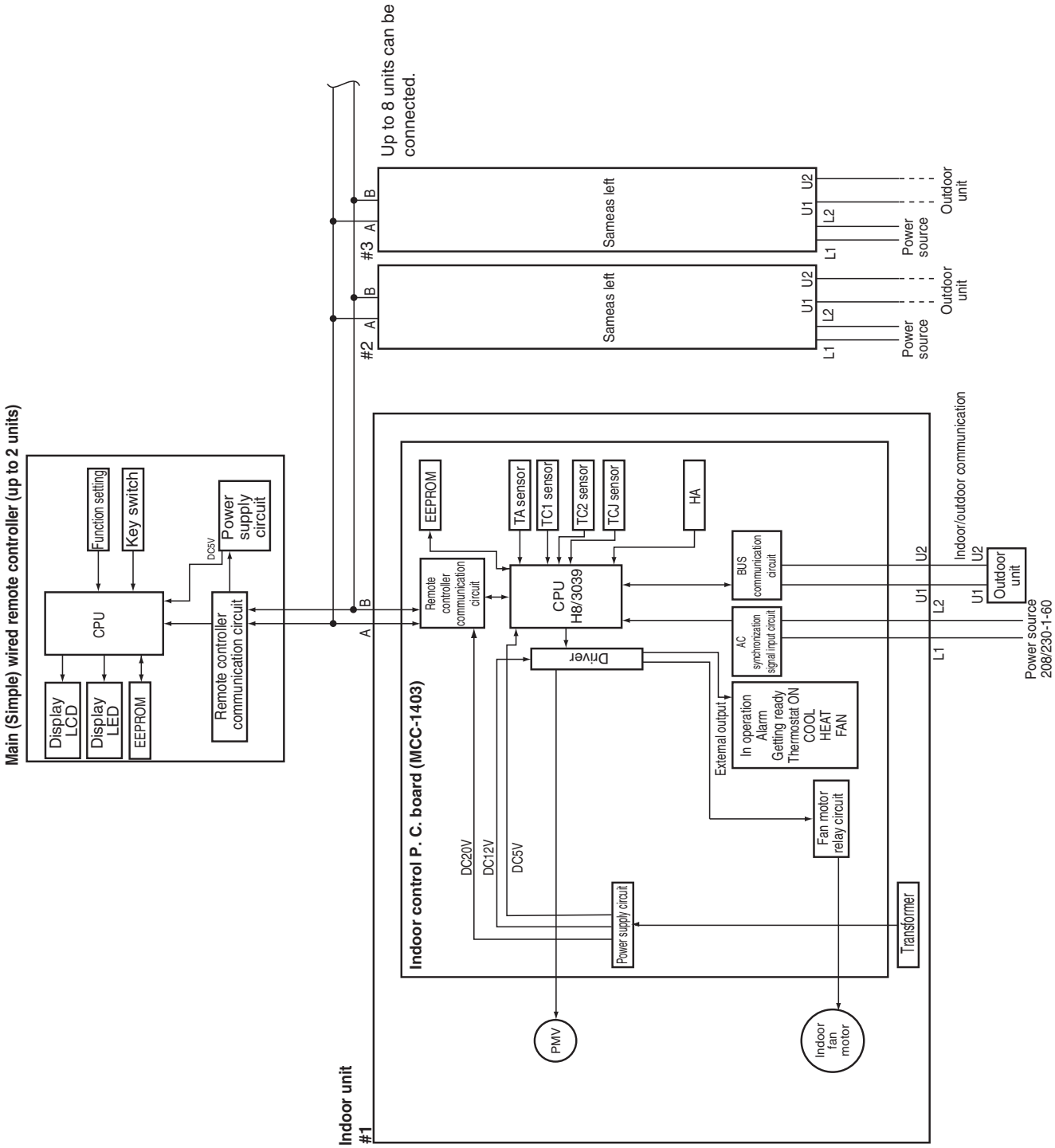
8-1. Indoor Controller Block Diagram

8-1-1. When Main (Simple) Wired Remote Controller Connected

<Slim Ducted Type>

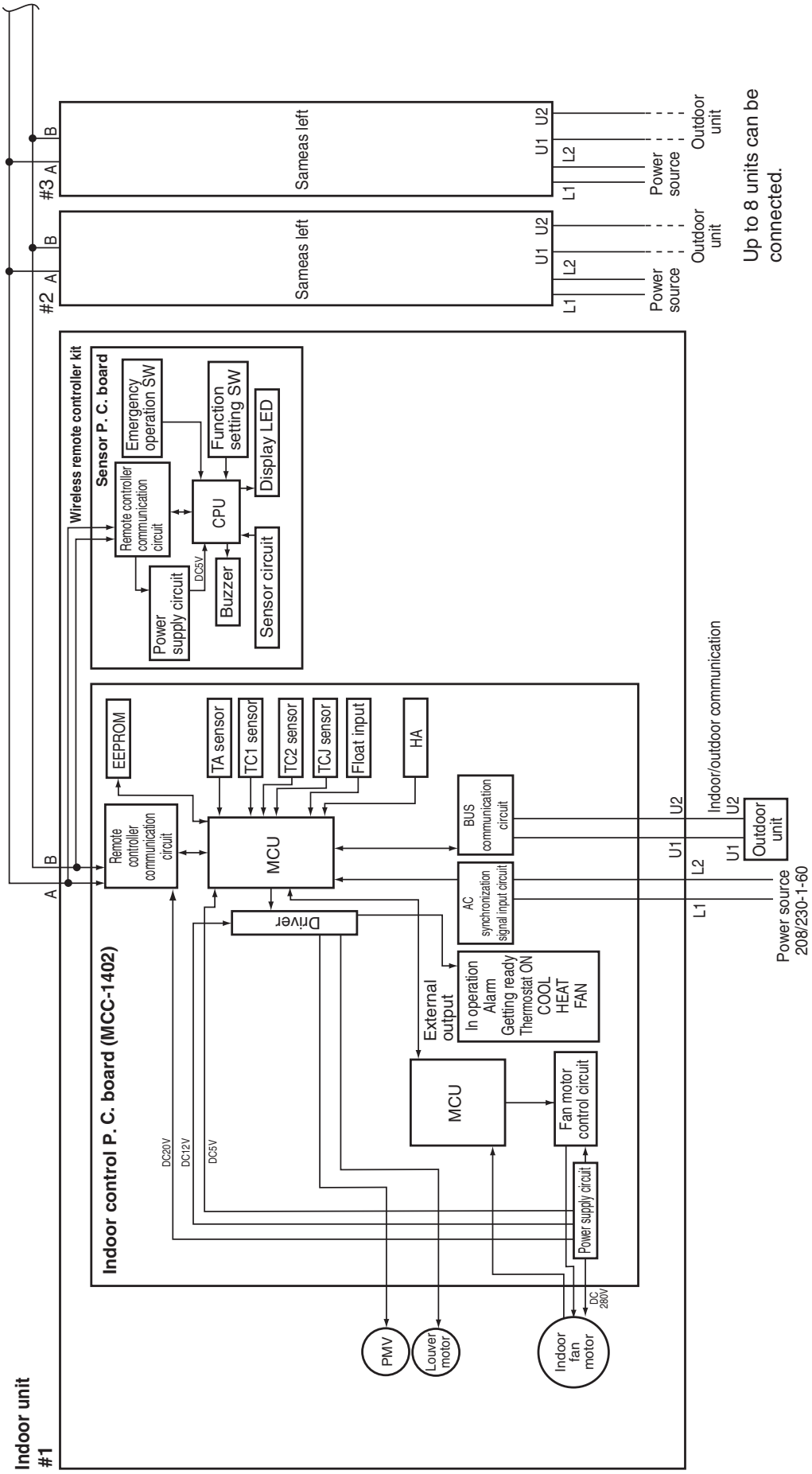


<High Static Ducted Type>

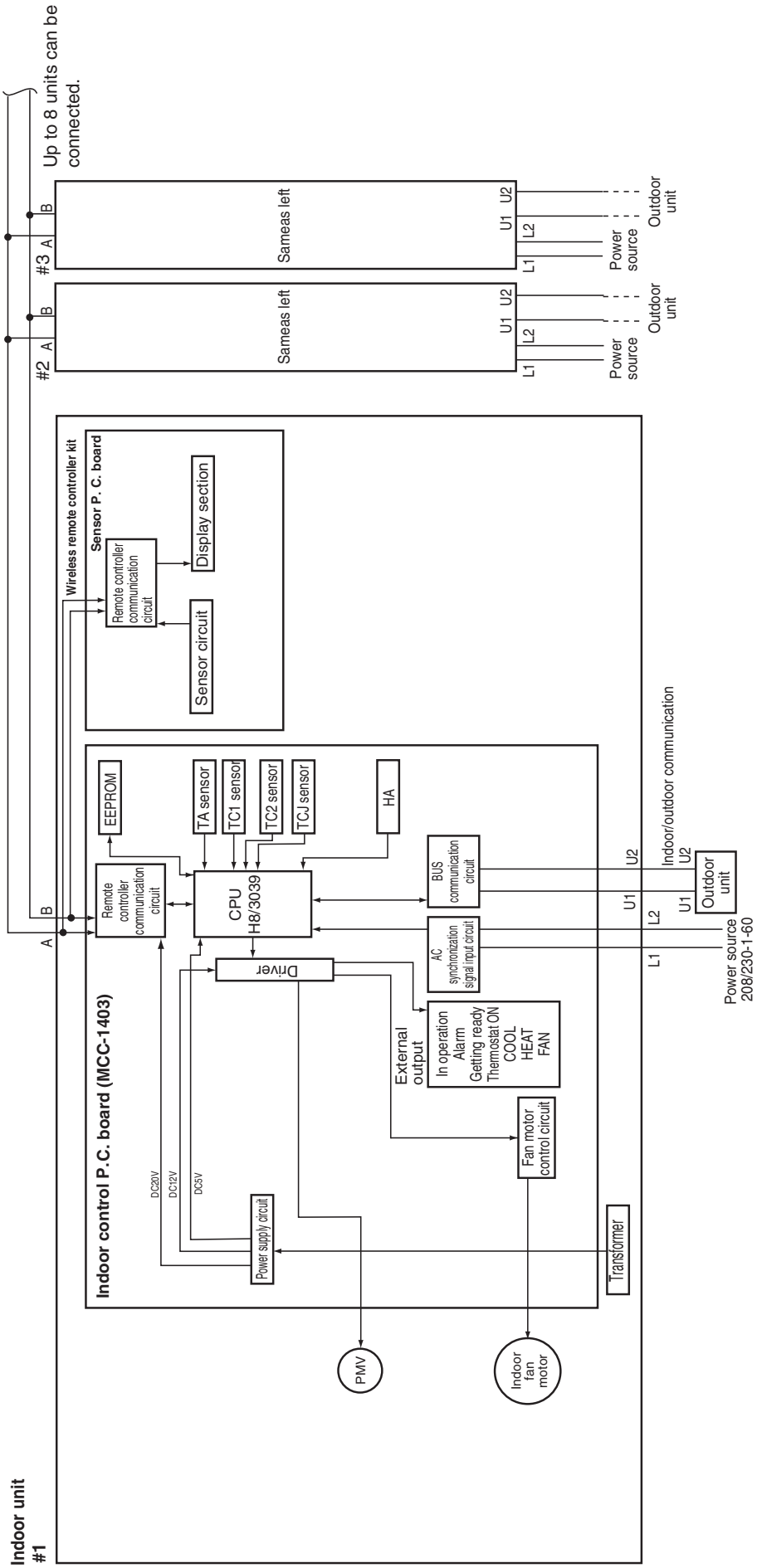


8-1-2. When Wireless Remote Controller Kit Connected

<Slim Ducted Type>

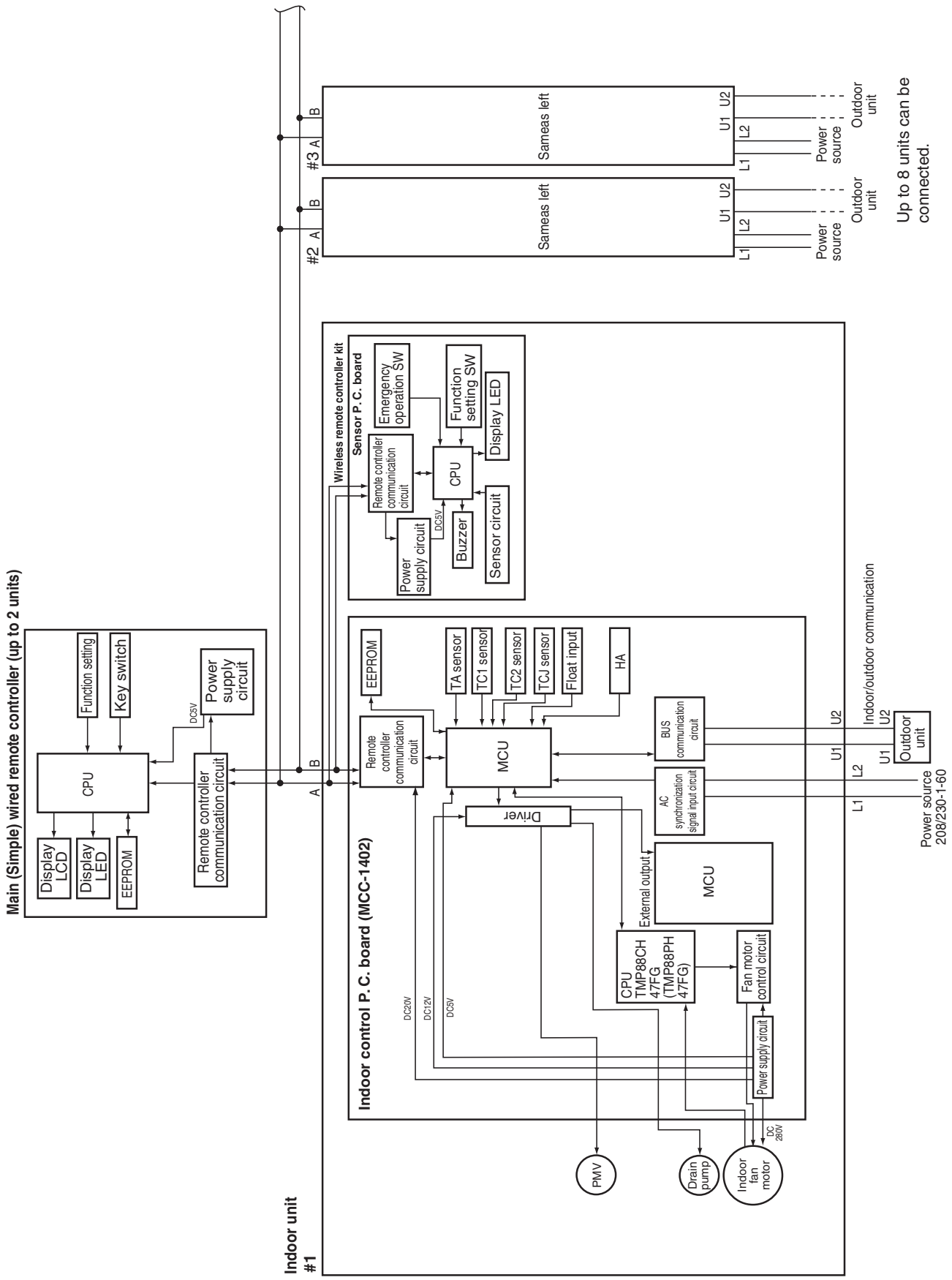


<High Static Ducted Type>

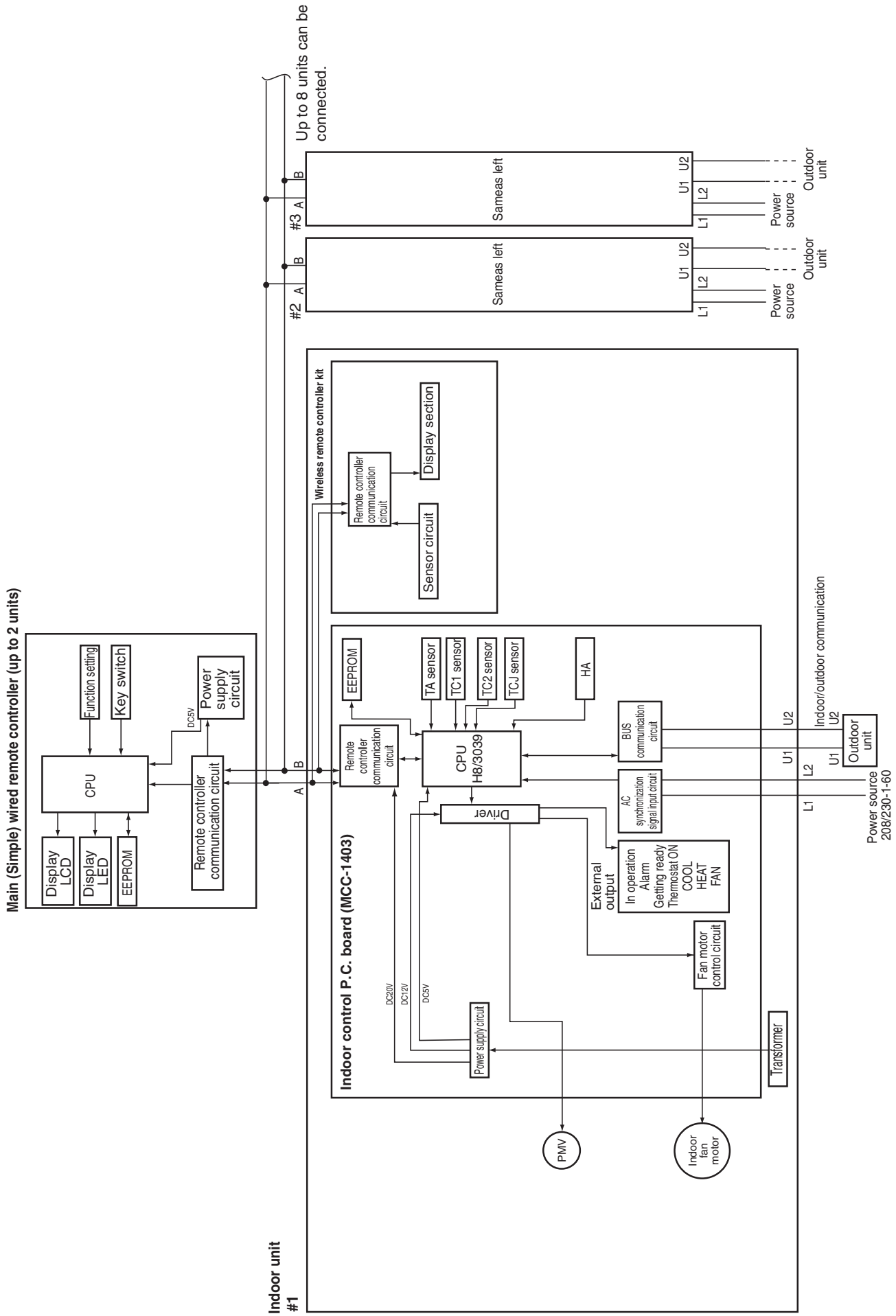


8-1-3. When Both Wired (Simple) Remote Controller and Wireless Remote Controller Kit Connected

<Slim Ducted Type>

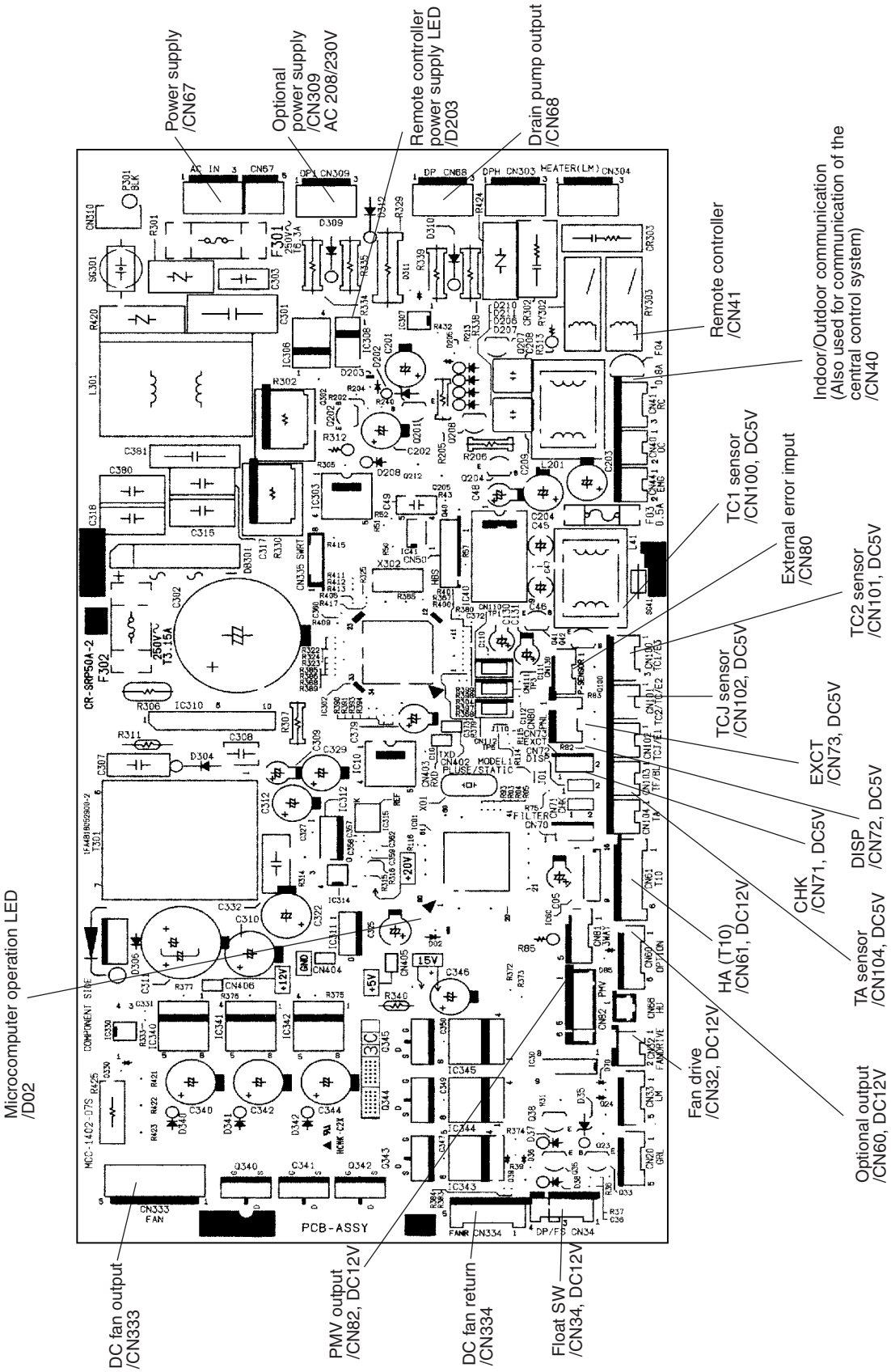


<High Static Ducted Type>

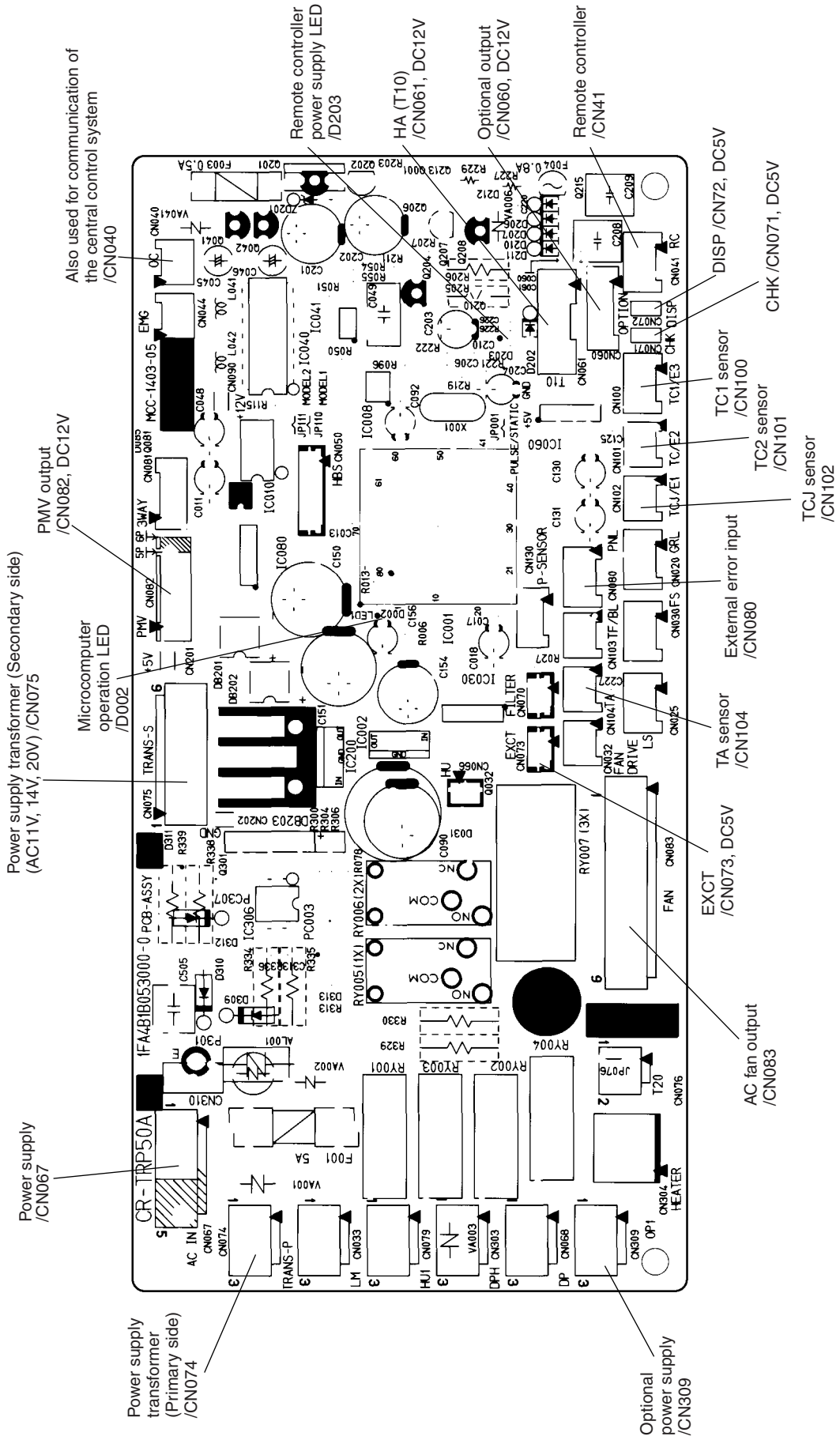


8-1-4. Indoor Printed Circuit Board

MCC-1402 <Slim ducted type>



MCC-1403 <High static ducted type>



8-1-5. P.C. Board Optional Switch/Connector Specifications

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

8-2. Functions at test run

■ Cooling/Heating test run check

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

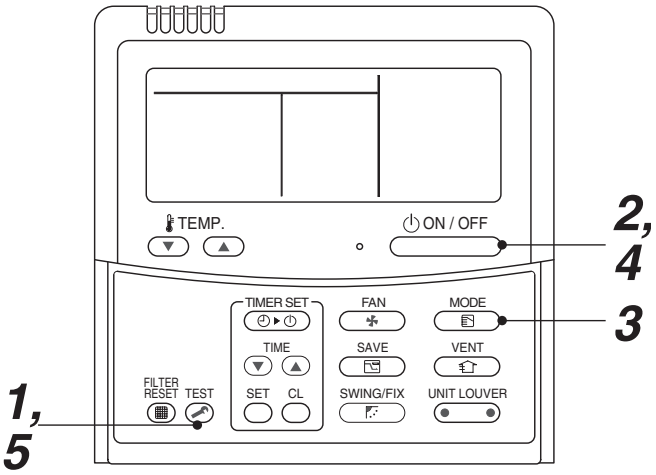
1. Start/Finish operation of test run

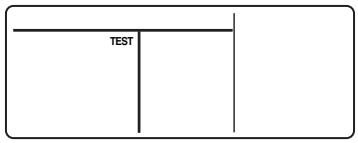
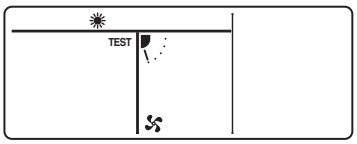
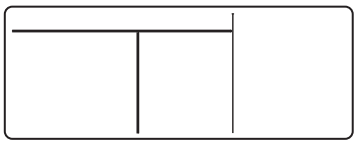
⊙ Test run from indoor remote controller

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

◆ In case of wired remote controller

<RBC-AMT32UL>

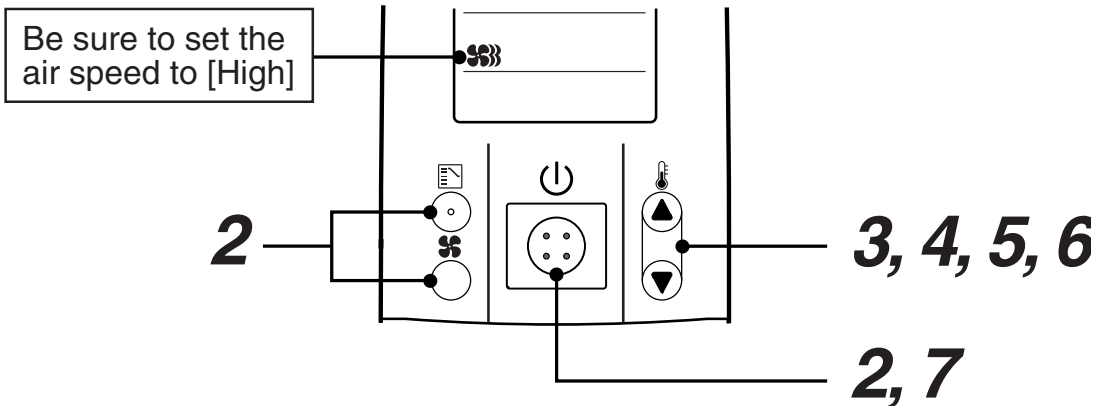


Procedure	Operation contents
1	Push [TEST] button for 4 seconds or more. [TEST] is displayed at the display part and the mode enters in TEST mode. 
2	Push [ON/OFF] button.
3	Change the mode from [COOL] to [HEAT] using [MODE] button. • Do not use [MODE] button for other mode except [COOL]/[HEAT] modes. • The temperature cannot be adjusted during test run. • The error detection is performed as usual. 
4	After test run, push [ON/OFF] button to stop the operation. (Display on the display part is same to that in Procedure **1** .)
5	Push [TEST] button to clear the TEST mode. ([TEST] display in the display part disappears and status becomes the normal stop status.) 

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

<In case of wireless remote controller (TCB-AX21UL)>

Procedure	Description	
1	Turn on power of the air conditioner.	
	The operation is not accepted for 5 minutes when power has been turned on at first time after installation, and 1 minute when power has been turned on at the next time and after. After the specified time has passed, perform a test operation.	
2	Push [**Start**/**Stop**] button and change the operation mode to [**COOL**] or [**HEAT**] with [**Mode**] button. Then change the fan speed to [**High**] using [**Fan**] button.	
	Test cooling operation	**Test heating operation**
3	Set temperature to [64°F (18°C)] using [**Temperature set**] button.	Set temperature to [86°F (30°C)] using [**Temperature set**] button.
4	After checking the receiving sound “Pi”, immediately push [**Temperature set**] button to set to [66°F (19°C)]	After checking the receiving sound “Pi”, immediately push [**Temperature set**] button to set to [84°F (29°C)].
5	After checking the receiving sound “Pi”, immediately push [**Temperature set**] button to set to [64°F (18°C)].	After checking the receiving sound “Pi”, immediately push [**Temperature set**] button to set to [86°F (30°C)].
6	Then repeat the procedure **4** → **5** → **4** → **5** . After approx. 10 seconds, all the display lamps on the sensor part of wireless remote controller, [**Operation**] (Green), [**Timer**] (Green), and [**Ready**] (Yellow) flash and the air conditioner starts operation. If the lamps do not flash, repeat the procedure **2** and after.	
7	After the test operation, push [**Start**/**Stop**] button to stop the operation.	



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

This function is provided to check the operation of the indoor unit singly without communication with the remote controller or the outdoor unit. This function can be used regardless of operation or stop of the system.

However, if using this function for a long time, a trouble of the equipment may be caused. Limit using this function within several minutes.

[How to operate]

1) Short-circuit CHK pin (CN71 on the indoor P.C. board).
   The operation mode differs according to the indoor unit status in that time.

   Normal time: Both float SW and fan motor are normal.
   Abnormal time: Either one of float SW or fan motor is abnormal.
2) Restricted to the normal time, if short-circuiting DISP pin (CN72 on the indoor P.C. board) in addition to short-circuit of CHK pin (CN71 on the indoor P.C. board), the minimum opening degree (30pls) can be set to the indoor PMV only.

   When open DISP pin, the maximum opening degree (1500pls) can be obtained again.

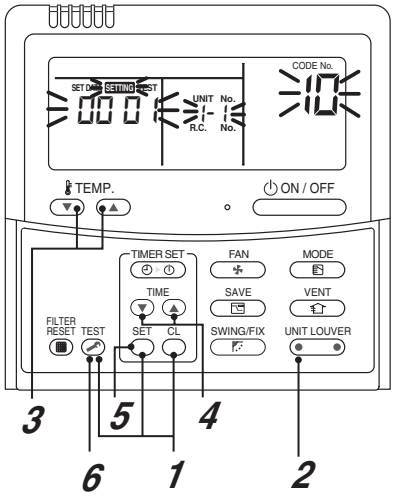
[How to clear]

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

	Short-circuit of CHK pin(CN71)		
	Normal time		**Abnormal time**
	DISP pin open(CN71)	**DISP pin short circuit(CN71)**	
Fan motor	(H)	(H)	Stop
Indoor PMV (*)	Max. opening degree (1500pls)	Min. opening degree (30pls)	Min. opening degree (30pls)
Drain pump	ON	ON	ON
Communication	All ignored	All ignored	All ignored
P.C. board LED	Lights	Lights	Flashes

8-3. Method to Set Indoor Unit Function DN Code

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



<Procedure> To be performed only when system at rest

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

The unit No. displayed first is the address of the header indoor unit in group control.
Then the fan and louver of the selected indoor unit move.

2 **Each time the "Select unit" side of the UNIT LOUVER button is pushed, one of the indoor unit Nos. under group control is displayed in turn. Then the fan of the selected indoor unit move.**

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 indoor unit, 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.**

Function CODE No. (DN Code) Table (Includes All Functions Needed to Perform Applied Control on Site)

DN	Item	Description	At shipment
01	Filter display delay timer	0000: None 0001: 150H 0002: 2500H 0003: 5000H 0004: 10000H	According to type
02	Dirty state of filter	0000: Standard 0001: High degree of dirt (Half of standard time)	0000: Standard
03	Central control address	0001: No.1 unit to 0064: No.64 unit 0099: Unfixed	0099: Unfixed
04	Specific indoor unit priority	0000: No priority 0001: Priority	0000: No priority
06	Heating temp shift	0000: No shift 0001: +1˚C(+1.8˚F) 0002: +2˚C(+3.6˚F) to 0010: +10˚C(+18˚F) (Up to +6 recommended)	0002: +2˚C(+3.6˚F) (Floor type 0000: 0˚C)
0d	Existence of [AUTO] mode	0000: Provided 0001: Not provided (Automatic selection from connected outdoor unit)	0001: Not provided
0F	Cooling only	0000: Heat pump 0001: Cooling only (No display of [AUTO] [HEAT])	0000: Heat pump
10	Type	0005: Slim Ducted Type 0006: High static Ducted Type	According to model type
11	Indoor unit capacity	0000: Unfixed 0001 to 0034	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 0001: Header unit of group 0002: Follower unit of group	0099: Unfixed
28	Automatic restart of power failure	0000: None 0001: Restart	0001: Restart
2A	Selection of option/error input (CN213)	0000: Filter input 0001: Alarm input (Option parts) 0002: External interlock	0002: External interlock
2E	HA terminal (CN61) select	0000: Usual 0001: Leaving-ON prevention control 0002: Fire alarm input	0000: Usual (HA terminal)
31	Ventilating fan control	0000: Unavailable 0001: Available	0000: Unavailable
32	TA sensor selection	0000: Body TA sensor 0001: Remote controller sensor	0000: Body TA sensor
33	Temperature unit select	0000: ˚C 0001: ˚F : (at factory shipment)	0001: ˚F

DN	Item	Description	At shipment
5d	Static pressure selection	Slim Ducted 0001: Standard 1 (factory defoult) 0003: High static pressure 2 0006: High static pressure 3	0001: Standard
60	Timer setting (wired remote controller)	0000: Available (can be performed) 0001: Unavailable (cannot be performed)	0000: Available
92	Outside interlock release condition	0000: Operation stop 0001: Release communication signal receive	0000: Operation stop

Type
DN code “10”

Value	Type	Model
0005	Slim Ducted	MMD-AP***SPH2UL
0006	High static Ducted	MMD-AP***H2UL

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

Indoor Unit Capacity
DN code “11”

Value	Capacity
0000*	Invalid
0001	007 type
0003	009 type
0005	012 type
0007	015 type
0009	018 type
0010	021 type
0011	024 type
0012	027 type
0013	030 type
0015	036 type
0016	042 type
0017	048 type
0018	056 type
0021	072 type
0023	096 type
~	–

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

8-4. Applied Control in Indoor Unit

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

[Wiring and setup]

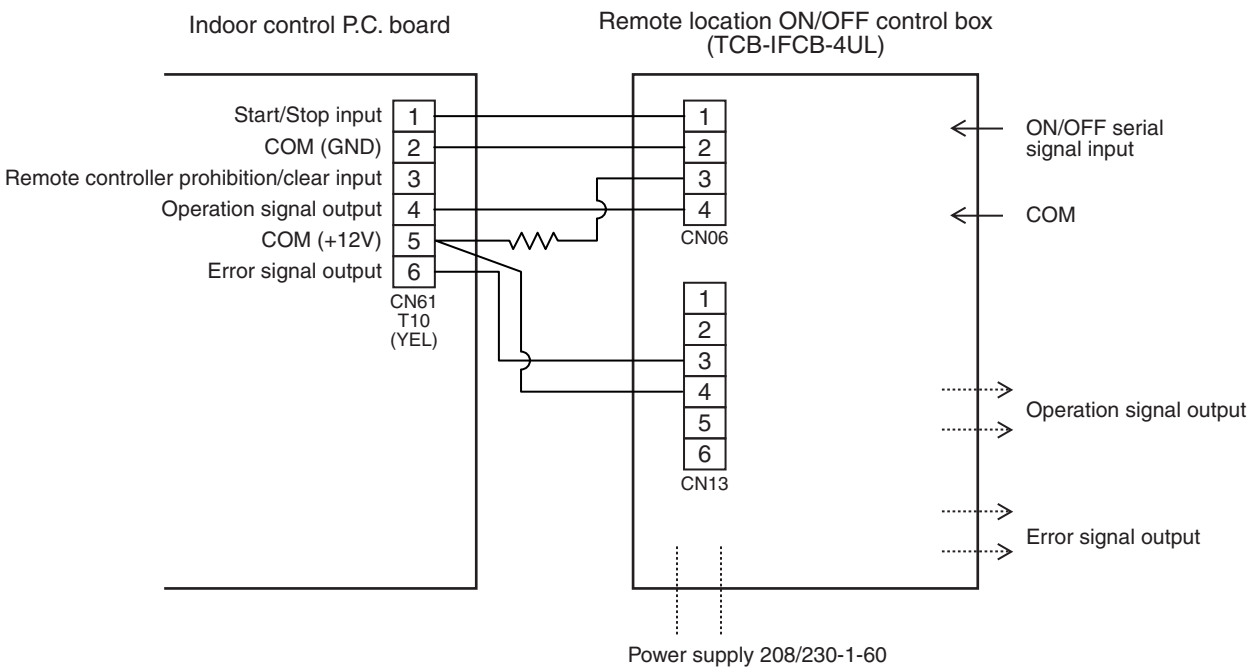
- Use the exclusive connector for connection with the indoor control P.C. board.
- In a group control, the system can operate when connecting with any indoor unit (Control P.C. board) in the group. However when taking out the operation/error signal from the other unit, it is necessary to take out from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

1. Control items

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

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

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



■ Ventilating fan control from remote controller

[Function]

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

1. Operation

Handle a wired remote controller in the following procedure.

∗ Use the wired remote controller during stop of the system.

∗ Be sure to set up the wired remote controller to the header unit. (Same in group control)

∗ In a group control, if the wired remote controller is set up to the header unit, both header and follower units are simultaneously operable.

1 Push concurrently SET + CL + TEST buttons for 4 seconds or more.

The unit No. displayed firstly indicates the header indoor unit address in the group control.

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

2 Every pushing UNIT LOUVER button(button at left side), the indoor unit numbers in group control are displayed successively.

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

3 Using the temperature setup ▼ / ▲ button, specify the CODE No. 31.

4 Using the timer time ▼ / ▲ button, select the SET DATA. (At shipment: 0000)

The setup data are as follows:

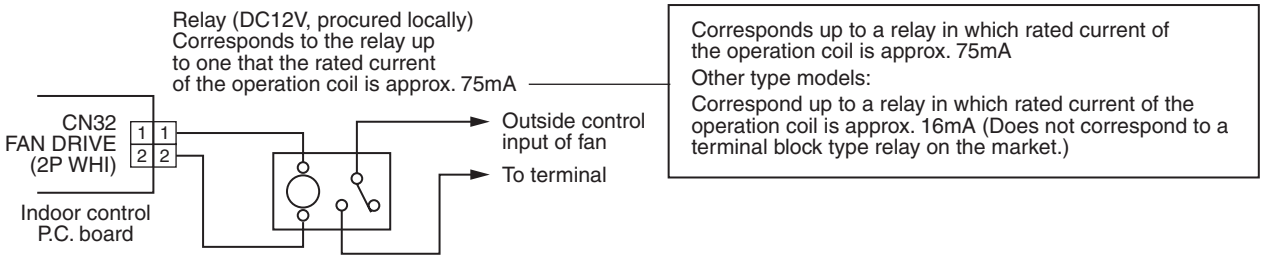
SET DATA	Handling of operation of air to air heat exchanger or ventilating fan
0000	Unavailable (At shipment)
0001	Available

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

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

6 Pushing TEST returns the status to the usual stop status.

2. Wiring



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

■ Leaving-ON prevention control

[Function]

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

1. Control items

1) Outside contact ON : The start/stop operation from the remote controller is allowed.
(Status that card is inserted in the card switch box)

2) Outside contact OFF : If the indoor unit is operating, it is stopped forcedly.
(Start/Stop prohibited to remote controller)
(Status that card is taken out from the card switch box)

* When the card switch box does not perform the above contact operation, convert it using a relay with b contact.

2. Operation

Handle the wired remote controller switch in the following procedure.

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

1 Push concurrently SET + CL + TEST buttons for 4 seconds or more.

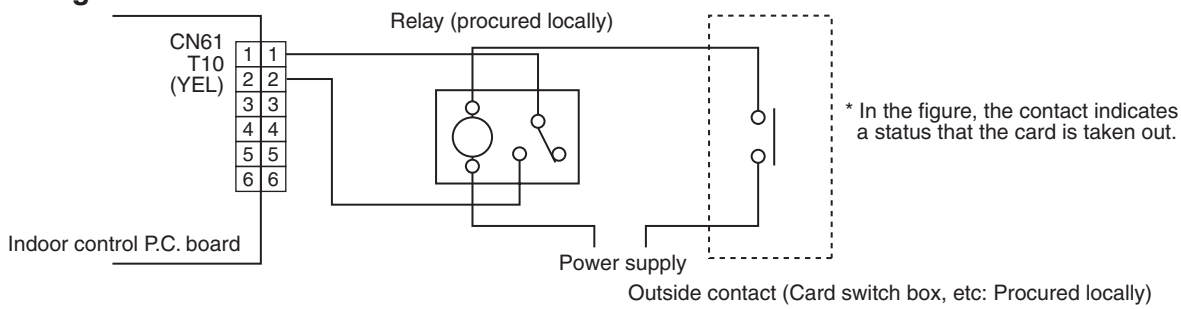
2 Using the temperature setup ▼ / ▲ button, specify the CODE No. 2E .

3 Using the timer time ▼ / ▲ button, set 0001 to the setup data.

4 Push SET button.

5 Push TEST button. (The status returns to the usual stop status.)

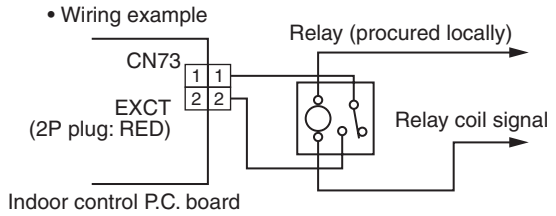
3. Wiring



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

■ Power peak-cut from indoor unit

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



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

■ Address setup (Manual setting from Wired remote controller)

In case that addresses of the indoor units will be determined prior to piping work after wiring work

- Set an indoor unit per a remote controller.
- Turn on power supply.

1 **Push SET + CL + TEST buttons simultaneously for 4 seconds or more.**

2 **(Line address)**
Using the temperature setup ▼ / ▲ buttons, set 12 to the CODE No.

3 **Using timer time ▼ / ▲ buttons, set the line address.**

4 **Push SET button. (OK when display goes on.)**

5 **(Indoor unit address)**
Using the temperature setup ▼ / ▲ buttons, set 13 to the CODE No.

6 **Using timer time ▼ / ▲ buttons, set 1 to the line address.**

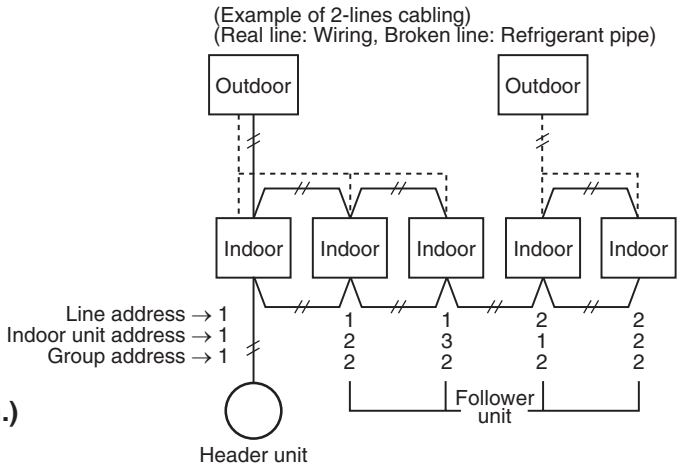
7 **Push SET button. (OK when display goes on.)**

8 **(Group address)**
Using the temperature setup ▼ / ▲ buttons, set 14 to the CODE No.

9 **Using timer time ▼ / ▲ buttons, set 0000 to Individual, 0001 to Header unit and 0002 to follower unit.**

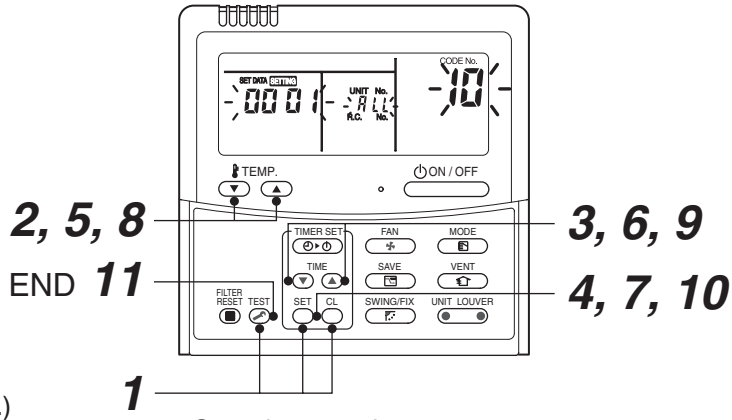
10 **Push SET button. (OK when display goes on.)**

11 **Push TEST button.**
Setup completes.
(The status returns to the usual stop status.)



For the above example, perform setting by connecting singly the wired remote controller without remote controller inter-unit cable.

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



<Operation procedure>

1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 9 → 10 → 11 END

Note 1)

When setting the line address from the remote controller, do not use Address 29 and 30.

As they are addresses which cannot be set to the outdoor unit, if they are set, the check code [E04] (Indoor/Outdoor communication circuit error) is issued.

Note 2)

When an address was manually set from the remote controller and the central control over the refrigerant lines is carried out, perform the following setting for the Header unit of each line.

- Set the line address for every line using SW13 and 14 on the interface P.C. board of the Header unit in each line.
- Except the least line address No., turn off SW30-2 on the interface P.C. board of the Header units in the lines connected to the identical central control.
  (Draw the terminal resistances of indoor/outdoor and central control line wirings together.)
- For each refrigerant line, connect the relay connector between Header unit [U1U2] and [U3U4] terminals.
- After then set the central control address.
  (For setting of the central control address, refer to the Installation manual for the central control equipment.)

■ Confirmation of indoor unit No. position

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

- In case of individual operation (Wired remote controller : indoor unit = 1 : 1)
  (Follow to the procedure during operation)

<Procedure>

1 **Push ON / OFF button (button at left side) if the unit stops.**

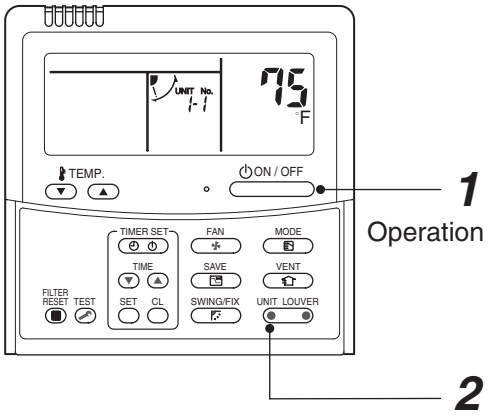
2 **Push UNIT LOUVER button (button at left side).**

Unit No. 1- 1 is displayed on LCD.

(It disappears after several seconds.)

The displayed unit No. indicate line address and indoor unit address.

(When other indoor units are connected to the identical remote controller (Group control unit), other unit numbers are also displayed every pushing UNIT LOUVER button(button at left side).



<Operation procedure>

1 → 2 END

2. To know the position of indoor unit by address

- To confirm the unit No. in the group control
  (Follow to the procedure during operation) (in this procedure, the indoor units in group control stop.)

<Procedure>

The indoor unit numbers in the group control are successively displayed, and fan, louver, and drain pump of the corresponding indoor unit are turned on.
(Follow to the procedure during operation)

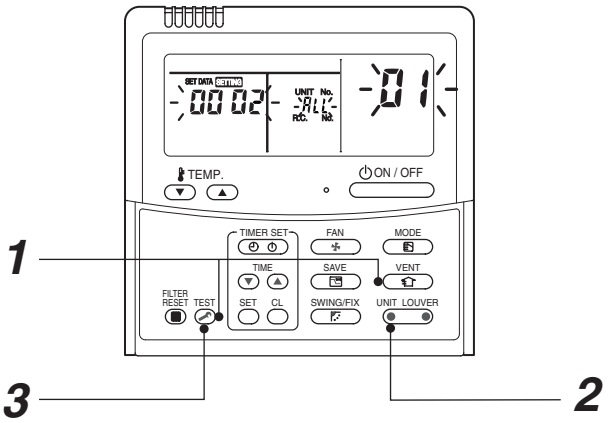
1 **Push VENT and TEST buttons simultaneously for 4 seconds or more.**

- Unit No. ALL is displayed.
- Fans and louvers of all the indoor units in the group control operate.

2 **Every pushing UNIT LOUVER button(button at left side), the unit numbers in the group control are successively displayed.**

- The unit No. displayed at the first time indicates the master unit address.
- Fan and louver of the selected indoor unit only operate.

3 **Push TEST button to finish the procedure. All the indoor units in the group control stop.**



<Operation procedure>

1 → 2 → 3 END

■ How to check all the unit No. from an arbitrary wired remote controller

<Procedure> Carry out this procedure during stop of system.

The indoor unit No. and the position in the identical refrigerant piping can be checked.

An outdoor unit is selected, the identical refrigerant piping and the indoor unit No. are displayed one after the other, and then its fan and louver are on.

1 **Push the timer time button ▼ + TEST simultaneously for 4 seconds or more.**
First line 1 and CODE No. AC (Address Change) are displayed. (Select outdoor unit.)

⇩

2 **Select line address using UNIT LOUVER / SWING/FIX button.**

⇩

3 **Determine the selected line address using SET button.**

- The address of the indoor unit connected to the refrigerant piping of the selected outdoor unit is displayed and the fan and the louver are on.

⇩

4 **Every pushing UNIT LOUVER button (button at left side), the indoor unit No. in the identical piping is displayed one after the other.**

- Only fan and louver of the selected indoor unit start operation.

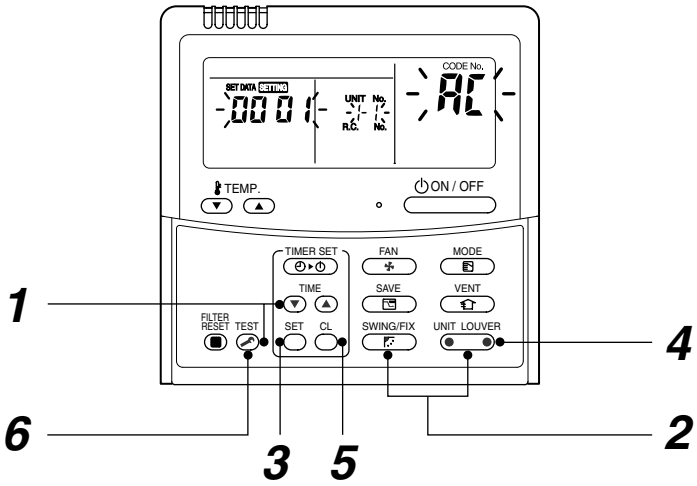
[To select the other line address]

5 **Push CL button and the operation returns to Procedure *2*.**

* The indoor address of other line can be continuously checked.

⇩

6 **Push TEST button and then the procedure finishes.**



<Operation procedure>

1→ 2→ 3→ 4→ 5→ 6 END

■ How to change an indoor unit address by using a wired remote control

Use this method to change the address of indoor units (one to one or group control) that have had the original address set automatically.

This procedure must be done while the units are not operating.

1 **Simultaneously push and hold the "SET ", "CL ", and "TEST " buttons for more than 4 seconds. If there are 2 or more units in a group, the first "UNIT No." indicated is the header unit.**

⇩

2 **Push the left end of the "UNIT LOUVER " button repeatedly to select an indoor unit address to change. If 2 or more units are controlled in a group the fan and louvers of the selected unit will be energized.**

⇩

3 **Push the TEMP. / buttons repeatedly to select 13 for CODE No.**

⇩

4 **Push the TIME / buttons repeatedly to change the value indicated in the SET DATA section.**

⇩

5 **Push the "SET " button, to save address.**

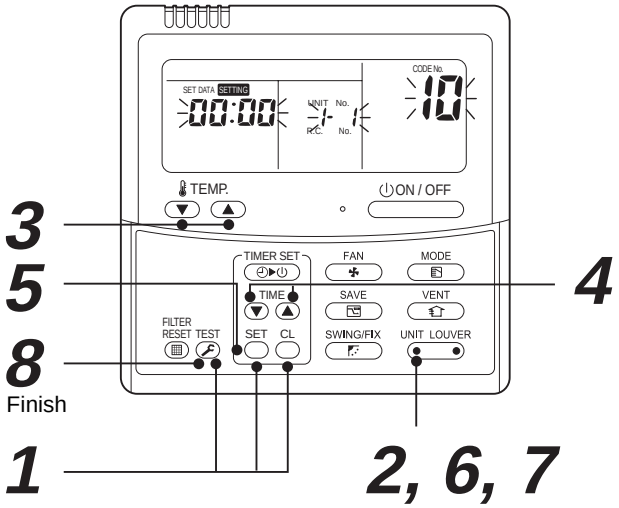
⇩

6 **Push left and of the "UNIT LOUVER " button repeatedly to select another indoor unit addresses to change. Repeat steps 4 through 6 to continue changing indoor unit address and make each of them unique.**

7 **Push the left end of the "UNIT LOUVER " button to review/confirm the revised addresses.**

⇩

8 **If the addresses have been changed correctly, push the "TEST " button to finish the procedure.**



■ How to change all indoor addresses from an arbitrary wired remote controller

(It is possible when setting has finished by automatic addresses.)

Contents: The indoor unit addresses in each identical refrigerant piping line can be changed from an arbitrary wired remote controller.

⊙ Enter in address check/change mode and then change the address.

<Procedure> Carry out this procedure during stop of system.

1 **Push the timer time button ▼ + TEST simultaneously for 4 seconds or more.**
First line 1 and CODE No. AC (Address Change) are displayed.

⇩

2 **Select line address using UNIT LOUVER / SWING/FIX button.**

⇩

3 **Push the SET button.**

- The address of the indoor unit connected to the refrigerant piping of the selected outdoor unit is displayed and the fan and the louver are on.
  First the current indoor address is displayed. (Line address is not displayed.)

⇩

4 **TIME ▼▲ button push up/down the indoor address of the SET DATA.**

The set data is changed to a new address.

⇩

5 **Push SET button to determine the set data.**

⇩

6 **Every pushing UNIT LOUVER button (button at left side), the indoor unit No. in the identical piping is displayed one after the other.**

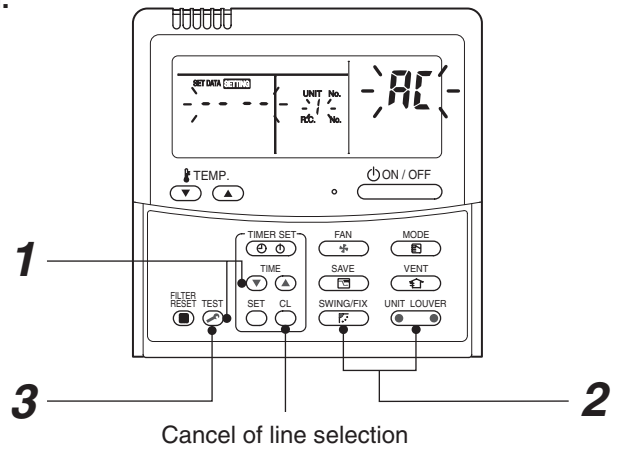
- Only fan and louver of the selected indoor unit start operation.
  Repeat the Procedures **4** to **6** to change all the indoor addresses so that they are not duplicated.

⇩

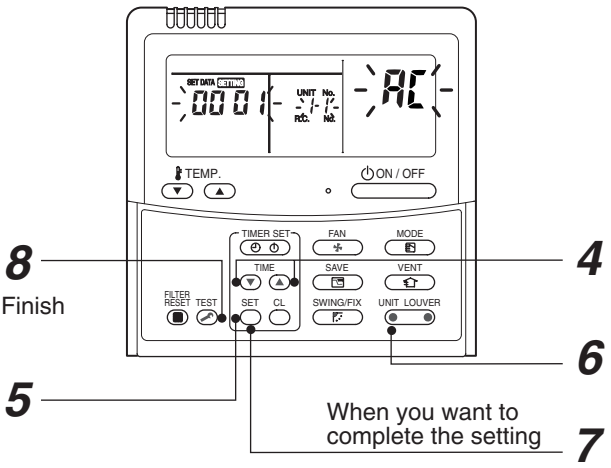
7 **Push SET button.**
(All the indications of LCD go on.)

⇩

8 **Push TEST button and then the procedure finishes.**



If the UNIT No. is not call up here, the outdoor unit in that line does not exist.
Push CL button to select a line again in the Procedure **2**.



<Operation procedure>

1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 END

■ Function to clear error

1. Clearing method from remote controller

⊙ How to clear error of outdoor unit

In the unit of refrigerant line connected by indoor unit of the remote controller to be operated, the error of the outdoor unit currently detected is cleared. (Error of the indoor unit is not cleared.)

The service monitor function of the remote controller is utilized.

<Method>

1 **Push CL + TEST buttons simultaneously for 4 seconds or more to change the mode to service monitor mode.**

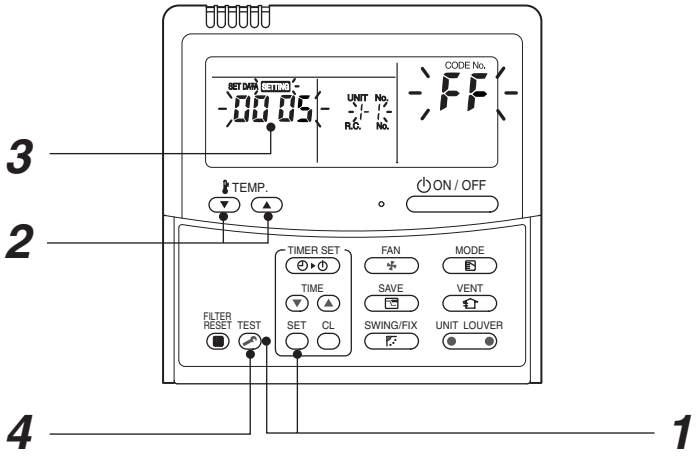
2 **Push TEMP. button to set the item code to [FF].**

3 **The display of A part in the following figure is counted as "0005" → "0004" → "0003" → "0002" → "0001" → "0000" with 5-seconds interval.**

When "0000" appear, the error was cleared.

∗ However counting from "0005" is repeated on the display screen.

4 **When pushing TEST button, the status becomes normal.**



<Operation procedure>

1 → 2 → 3 → 4

Returns to normal status

⊙ How to clear error of indoor unit

The error of indoor unit is cleared by ON / OFF button of the remote controller.
(Only error of the indoor unit connected with remote controller to be operated is cleared.)

■ Monitoring function of remote controller switch

When using the remote controller (Model Name: RBC-AMT32UL), the following monitoring function can be utilized.

Calling of display

<Contents>

The temperature of each sensor of the remote controller, indoor unit and outdoor unit and the operating status can be checked by calling the service monitor mode from the remote controller.

<Procedure>

1 **Push TEST + CL buttons simultaneously for 4 seconds or more to call up the service monitor mode. The service monitor goes on and firstly the temperature of the CODE No. 00 is displayed.**

⇩

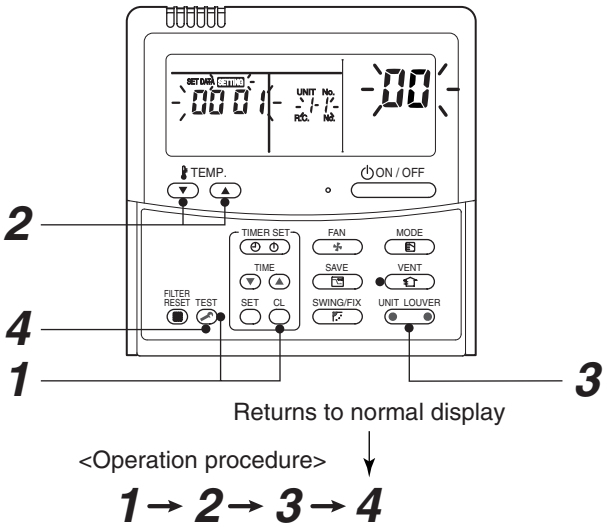
2 **Push TEMP. button to change CODE No. (CODE No.) to the CODE No. to be monitored.**
For display code, refer to the following table.

⇩

3 **Push UNIT LOUVER button (button at left side) to change to item to be monitored.**
The sensor temperature of indoor unit or outdoor unit in its refrigerant line and the operating status are monitored.

⇩

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



	CODE No.	Data name	Display format	Unit	Remote controller display example
Indoor unit data *2	00	Room temperature (During control)	×1	˚F	[0081]=71˚F(27˚C)
	01	Room temperature (Remote controller)	×1	˚F	
	02	Indoor suction temperature (TA)	×1	˚F	[0075]=75˚F(24˚C)
	03	Indoor coil temperature (TCJ)	×1	˚F	
	04	Indoor coil temperature (TC2)	×1	˚F	
	05	Indoor coil temperature (TC1)	×1	˚F	
	06	Indoor discharge temperature (TF) *1	×1	˚F	
	08	Indoor PMV opening	×1/10	pls	[0150]=1500pulse
System data	0A	No. of connected indoor units	×1	unit	[0024]=24 units
	0B	Total capacity of connected indoor units	×10	ton	[0215]=21.5ton
	0C	No. of connected outdoor units	×1	unit	[0002]=2 units
	0D	Total capacity of outdoor units	×10	ton	[0160]=16ton

	CODE No.		Data name	Display format	Unit	Remote controller display example
	U1	U2				
Outdoor unit individual data 1 *3	10	20	High-pressure sensor detention pressure (Pd)	×10	psi	[4350]=435psi
	11	21	Low-pressure sensor detention pressure (Ps)	×10	psi	
	12	22	Compressor 1 discharge temperature (Td1)	×1	˚F	[0075]=75˚F(24˚C)
	13	23	Compressor 2 discharge temperature (Td2)	×1	˚F	
	14	24	Compressor 3 discharge temperature (Td3)	×1	˚F	
	15	25	Suction temperature (TS)	×1	˚F	
	16	26	Outdoor coil temperature 1 (TE1)	×1	˚F	
	17	27	Outdoor coil temperature 2 (TE2)	×1	˚F	
	18	28	Temperature at liquid side (TL)	×1	˚F	
	19	29	Outside ambient temperature (TO)	×1	˚F	
	1A	2A	PMV1 + 2 opening	×1	pls	[0500] =500pulse
	1B	2B	PMV4 opening	×1	pls	
	1C	2C	Compressor 1 current (I1)	×10	A	[0135]=13.5A
	1D	2D	Compressor 2 current (I2)	×10	A	
	1E	2E	Compressor 3 current (I3)	×10	A	
	1F	2F	Outdoor fan current (IFan)	×10	A	

	CODE No.		Data name	Display format	Unit	Remote controller display example
	U1	U2				
Outdoor unit individual data 2 *4	50	60	Compressor 1 revolutions	×10	rps	[0642]=64.2rps
	51	61	Compressor 2 revolutions	×10	rps	
	52	62	Compressor 3 revolutions	×10	rps	
	53	63	Outdoor fan mode	×1	mode	[0058]= 58 mode
	54	64	Compressor IPDU 1 heat sink temperature	×1	˚F	[0075]=75˚F(24˚C)
	55	65	Compressor IPDU 2 heat sink temperature	×1	˚F	
	56	66	Compressor IPDU 3 heat sink temperature	×1	˚F	
	57	67	Outdoor fan IPDU heat sink temperature	×1	˚F	
	58	-	Heating/cooling recovery controlled *5	0: Normal 1: Recovery controlled		[0010]=Heating recovery controlled [0001]=Cooling recovery controlled
	59	-	Pressure release *5	0: Normal 1: Release controlled		[0010]=Pressure release controlled
	5A	-	Discharge temperature release *5			[0001]=Discharge temperature release controlled
	5B	-	Follower unit release (U2/U2/U4 outdoor units) *5			[0100]=U2 outdoor unit release controlled [0010]=U3 outdoor unit release controlled [0001]=U4 outdoor unit release controlled
	5F	6F	Outdoor unit capacity	×10	ton	[0080]=8ton

*1 Only a part of indoor unit types is installed with the discharge temperature sensor. This temperature is not displayed for other types.
*2 When the units are connected to 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 an CODE No. -4 indicates the outdoor unit number.
1∗, 5∗ ... U1 outdoor unit (Header unit)
2∗, 6∗ ... U2 outdoor unit (Follower unit 1)
5 Only the CODE No. 5 of U1 outdoor unit (Header unit) is displayed.

■ Changing of settings for Celsius display

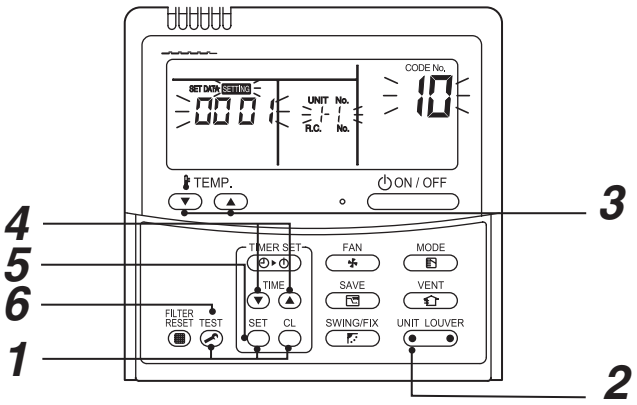
- **Push ON / OFF button if the unit stops.**

Procedure 1

Push simultaneously TEST + SET + CL buttons for 4 seconds or more.

After a while, the display part flashes as shown right. Check the displayed CODE No. is [10].

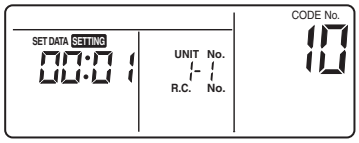
- When the CODE No. is other than [10], push TEST button to erase the display and repeat procedure from the first step. (After pushing TEST button, operation of the remote controller is not accepted for approx. 1 minute.) (For a group control, No. of the firstly displayed indoor unit becomes the header unit.)



Procedure 2

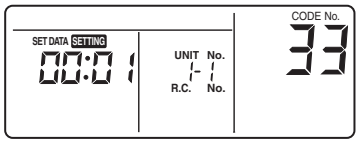
Every pushing UNIT LOUVER button (button at left side), the indoor unit No. in the group control is displayed in order. Select the indoor unit of which setup is changed.

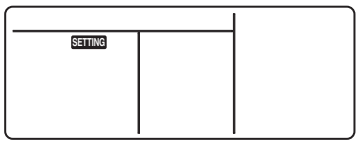
In this time, the position of the indoor unit of which setup is changed can be confirmed because fan and louver of the selected indoor unit operate.



Procedure 3

1. Using temp. setup TEMP. buttons, specify CODE No. [33].
   (CODE No. [33]: Fahrenheit display)
2. Using timer TIME buttons, change the line address from [0001] to [0000]
3. Push SET button. In this time, the setup finishes when the display changes from flashing to lighting.





Procedure 4

After check of the changed contents, push TEST button. (Setup is determined.)

When pushing TEST button, the display disappears and the status becomes the usual stop status.
(When pushing TEST button the operation from the remote controller is not accepted for approx. 1 minute.)

- If the operation from the remote controller is not accepted even 1 minute or more passed after pushing TEST button, it is considered that the address setup is incorrect. In this case, the automatic address must be again set up.

  When changing the settings from Celsius to Fahrenheit indication, follow to the reverse order of the above procedure.

9. TROUBLESHOOTING

9-1. Overview

(1) Before engaging in troubleshooting

(a) Applicable models

All Super Module Multi (SMMS-i) models.

(Indoor units: MMD-APOOO, Outdoor units: MMY-MAPOOO)

(b) Tools and measuring devices required

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

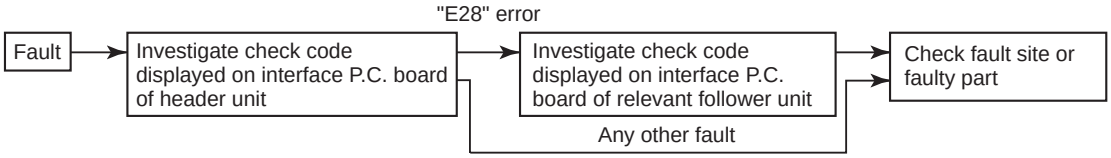
Multimeter, thermometer, pressure gauge, etc.

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

NO.	Behavior	Possible cause
1	A compressor would not start	Could it just be the 3-minute delay period (3 minutes after compressor shutdown)? Could it just be the air conditioner having gone thermo OFF? Could it just be the air conditioner operating in fan mode or put on the timer? Could it just be the system going through initial communication?
2	An indoor fan would not start	Could it just be cold air discharge prevention control, which is part of heating?
3	An outdoor fan would not start or would change speed for no reason	Could it just be cooling operation under low outside temperature conditions? Could it just be defrosting operation?
4	An indoor fan would not stop	Could it just be the elimination of residual heat being performed as part of the air conditioner shutdown process after heating operation?
5	The air conditioner would not respond to a start/stop command from a remote controller	Could it just be the air conditioner operation under external or remote control?

(2) Troubleshooting procedure

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



NOTE

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

9-2. Troubleshooting Method

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

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

- When investigating a fault on the basis of a display provided on the indoor remote controller or TCC-LINK central control remote controller - See the “TCC-LINK remote control or main remote controller display” section of the list.
- When investigating a fault on the basis of a display provided on an outdoor unit - See the “Outdoor 7-segment display” section of the list.
- When investigating a fault on the basis of a wireless remote controller-controlled indoor unit - See the “Light sensor indicator light block” section of the list.

List of Check Codes (Indoor Unit)

(Error detected by indoor unit)

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

Check code			Display of receiving unit				Typical fault site	Description of error
TCC-LINK central control or main remote controller display	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation	Timer	Ready	Flash		
E03	–	–	◎	●	●		Indoor-remote controller periodic communication error	Communication from remote controller or network adaptor has been lost (so has central control communication).
E04	–	–	●	●	◎		Indoor-outdoor periodic communication error	Signals are not being received from outdoor unit.
E08	E08	Duplicated indoor address	◎	●	●		Duplicated indoor address	Indoor unit detects address identical to its own.
E10	–	–	◎	●	●		Indoor inter-MCU communication error	MCU communication between main controller and motor microcontroller is faulty.
E18	–	–	◎	●	●		Error in periodic communication between indoor header and follower unit	Periodic communication between indoor header and follower units cannot be maintained.
F01	–	–	◎	◎	●	ALT	Indoor heat exchanger temperature sensor (TCJ) error	Heat exchanger temperature sensor (TCJ) has been open/short-circuited.
F02	–	–	◎	◎	●	ALT	Indoor heat exchanger temperature sensor (TC2) error	Heat exchanger temperature sensor (TC2) has been open/short-circuited.
F03	–	–	◎	◎	●	ALT	Indoor heat exchanger temperature sensor (TC1) error	Heat exchanger temperature sensor (TC1) has been open/short-circuited.
F10	–	–	◎	◎	●	ALT	Ambient temperature sensor (TA) error	Ambient temperature sensor (TA) has been open/ short-circuited.
F11	–	–	◎	◎	●	ALT	Discharge temperature sensor (TF) error	Discharge temperature sensor (TF) has been open/ short-circuited.
F29	–	–	◎	◎	●	SIM	P.C. board or other indoor error	Indoor EEPROM is abnormal (some other error may be detected).
L03	–	–	◎	●	◎	SIM	Duplicated indoor group header unit	There is more than one header unit in group.
L07	–	–	◎	●	◎	SIM	Connection of group control cable to stand-alone indoor unit	There is at least one stand-alone indoor unit to which group control cable is connected.
L08	L08	–	◎	●	◎	SIM	Indoor group address not set	Address setting has not been performed for one or more indoor units (also detected at outdoor unit end).
L09	–	–	◎	●	◎	SIM	Indoor capacity not set	Capacity setting has not been performed for indoor unit.
L20	–	–	◎	○	◎	SIM	Duplicated central control address	There is duplication in central control address setting.
L30	L30	Detected indoor unit No.	◎	○	◎	SIM	Indoor external error input (interlock)	Unit shutdown has been caused by external error input (CN213)
P01	–	–	●	◎	◎	ALT	Indoor AC fan error	Indoor AC fan error is detected (activation of fan motor thermal relay).
P10	P10	Detected indoor unit No.	●	◎	◎	ALT	Indoor overflow error	Float switch has been activated.
P12	–	–	●	◎	◎	ALT	Indoor DC fan error	Indoor DC fan error (e.g. overcurrent or lock-up) is detected. In the case of incorrect duct setting performed at installation or if an access panel for the maintenance is removed while indoor unit is in operation
P31	–	–	◎	●	◎	ALT	Other indoor unit error	Follower unit cannot be operated due to header unit alarm (E03/L03/L07/L08).

(Error detected by main remote controller)

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

(Error detected by central control device)

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

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

List of Check Codes (Outdoor Unit)

(Errors detected by SMMS-i outdoor interface - typical examples)

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

Check code			Display of receiving unit				Typical fault site	Description of error
Outdoor 7-segment display		TCC-LINK central control or main remote controller display	Indicator light block					
	Sub-code		Operation	Timer	Ready	Flash		
E06	Number of indoor units from which signal is received normally	E06	●	●	◎		Dropping out of indoor unit	Indoor unit initially communicating normally fails to return signal (reduction in number of indoor units connected).
E07	–	(E04)	●	●	◎		Indoor-outdoor communication circuit error	Signal cannot be transmitted to indoor units (indoor units left without communication from outdoor unit).
E08	Duplicated indoor address	(E08)	◎	●	●		Duplicated indoor address	More than one indoor unit is assigned same address (also detected at indoor unit end).
E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	E12	◎	●	●		Automatic address starting error	• 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	●	●	◎		Error 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 error	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 error	Outdoor header unit detects fault relating to follower outdoor unit (detail displayed on follower outdoor unit).
E31		E31	●	●	◎		IPDU communication error	There is no communication between IPDUs (P.C. boards) in inverter box.
F04	–	F04	◎	◎	○	ALT	Outdoor discharge temperature sensor (TD1) error	Outdoor discharge temperature sensor (TD1) has been open/short-circuited.
F05	–	F05	◎	◎	○	ALT	Outdoor discharge temperature sensor (TD2) error	Outdoor discharge temperature sensor (TD2) has been open/short-circuited.
F06	01: TE1 02: TE2	F06	◎	◎	○	ALT	Outdoor heat exchanger temperature sensor (TE1, TE2) error	Outdoor heat exchanger temperature sensors (TE1, TE2) have been open/short-circuited.
F07	–	F07	◎	◎	○	ALT	Outdoor liquid temperature sensor (TL) error	Outdoor liquid temperature sensor (TL) has been open/short-circuited.
F08	–	F08	◎	◎	○	ALT	Outdoor outside air temperature sensor (TO) error	Outdoor outside air temperature sensor (TO) has been open/short-circuited.
F11	–	F11						

	A3-IPDU 1	A3-IPDU 2	A3-IPDU 3	Fan IPDU		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): Faulty IPDU				
08				O					
09	O			O					

Check code			Display of receiving unit				Typical fault site	Description of error
Outdoor 7-segment display		TCC-LINK central control or main remote controller display	Indicator light block					
	Sub-code		Operation ⏻	Timer ◷	Ready ☼	Flash		
F12	–	F12	◎	◎	○	ALT	Outdoor suction temperature sensor (TS1) error	Outdoor suction temperature sensor (TS1) has been open/short-circuited.
F15	–	F15	◎	◎	○	ALT	Outdoor temperature sensor (TE1, TL) wiring error	Wiring error in outdoor temperature sensors (TE1, TL) has been detected.
F16	–	F16	◎	◎	○	ALT	Outdoor pressure sensor (Pd, Ps) wiring error	Wiring error in outdoor pressure sensors (Pd, Ps) has been detected.
F22	–	F22	◎	◎	○	ALT	Outdoor discharge temperature sensor (TD3) error	Outdoor discharge temperature sensor (TD3) has been open/short-circuited.
F23	–	F23	◎	◎	○	ALT	Low pressure sensor (Ps) error	Output voltage of low pressure sensor (Ps) is zero.
F24	–	F24	◎	◎	○	ALT	High pressure sensor (Pd) error	Output voltage of high pressure sensor (Pd) is zero or provides abnormal readings when compressors have been turned off.
F31	–	F31	◎	◎	○	SIM	Outdoor EEPROM error	Outdoor EEPROM is faulty (alarm and shutdown for header unit and continued operation for follower unit)
H05	–	H05	●	◎	●		Outdoor discharge temperature sensor (TD1) wiring error	Wiring/installation error 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 (TK1-5) detects abnormally low oil level.
H08	01: TK1 sensor error 02: TK2 sensor error 03: TK3 sensor error 04: TK4 sensor error 05: TK5 sensor error	H08	●	◎	●		Error in temperature sensor for oil level detection (TK1-5)	Temperature sensor for oil level detection (TK1-5) has been open/short-circuited.
H15	–	H15	●	◎	●		Outdoor discharge temperature sensor (TD2) wiring error	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD2) has been detected.
H16	01: TK1 oil circuit error 02: TK2 oil circuit error 03: TK3 oil circuit error 04: TK4 oil circuit error 05: TK5 oil circuit error	H16	●	◎	●		Oil level detection circuit error	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 error	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD3) has been detected.
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 has been set up as priority indoor unit.
		L06	◎	●	◎	SIM	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	More than one indoor unit has been set up as priority indoor unit.
L08	–	(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	◎	○	◎	SIM	Outdoor capacity not set	Outdoor unit capacity has not been set (after P.C. board replacement).
L17	–	L17	◎	○	◎	SIM	Outdoor model incompatibility error	Old model outdoor unit (prior to 3 series) has been connected.
L18	–	L18	◎	○	◎	SIM	Cooling/heating selection unit error	Cooling/heating cycle error resulting from piping error is detected.
L28	–	L28	◎	○	◎	SIM	Too many outdoor units connected	More than four outdoor units have been connected.

Check code			Display of receiving unit				Typical fault site	Description of error
Outdoor 7-segment display		TCC-LINK central control or main remote controller display	Indicator light block					
	Sub-code		Operation	Timer	Ready	Flash		
L29	<table><tr><th></th><th>A3-IPDU 1</th><th>A3-IPDU 2</th><th>A3-IPDU 3</th><th>Fan IPDU</th><th></th><th>A3-IPDU 1</th><th>A3-IPDU 2</th><th>A3-IPDU 3</th><th>Fan IPDU</th></tr><tr><td>01</td><td>O</td><td></td><td></td><td></td><td>0A</td><td></td><td>O</td><td></td><td>O</td></tr><tr><td>02</td><td></td><td>O</td><td></td><td></td><td>0B</td><td>O</td><td>O</td><td></td><td>O</td></tr><tr><td>03</td><td>O</td><td>O</td><td></td><td></td><td>0C</td><td></td><td></td><td>O</td><td>O</td></tr><tr><td>04</td><td></td><td></td><td>O</td><td></td><td>0D</td><td>O</td><td></td><td>O</td><td>O</td></tr><tr><td>05</td><td>O</td><td></td><td>O</td><td></td><td>0E</td><td></td><td>O</td><td>O</td><td>O</td></tr><tr><td>06</td><td></td><td>O</td><td>O</td><td></td><td>0F</td><td>O</td><td>O</td><td>O</td><td>O</td></tr><tr><td>07</td><td>O</td><td>O</td><td>O</td><td></td><td colspan="5" rowspan="3">Circle (O): Faulty IPDU</td></tr><tr><td>08</td><td></td><td></td><td></td><td>O</td></tr><tr><td>09</td><td>O</td><td></td><td></td><td>O</td></tr></table>	L29	◎	○	◎	SIM	Error 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 error input (interlock)	Indoor unit has been shut down for external error input in one refrigerant line (detected by indoor unit).
P03	–	P03	◎	●	◎	ALT	Outdoor discharge (TD1) temperature error	Outdoor discharge temperature sensor (TD1) has detected abnormally high temperature.
P05	00: Open phase detected 01: Compressor 1 02: Compressor 2 03: Compressor 3	P05	◎	●	◎	ALT	Open phase/power failure Inverter DC voltage (Vdc) error MG-CTT error	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 03: Compressor 3	P07	◎	●	◎	ALT	Heat sink overheating error	Temperature sensor built into IGBT (TH) detects overheating.
P10	Indoor unit No. detected	(P10)	●	◎	◎	ALT	Indoor unit overflow	Indoor unit has been shutdown in one refrigerant line due to detection of overflow (detected by indoor unit).
P13	–	P13	●	◎	◎	ALT	Outdoor liquid backflow detection error	State of refrigerant cycle circuit indicates liquid backflow operation.
P15	01: TS condition 02: TD condition	P15	◎	●	◎	ALT	Gas leak detection	Outdoor suction temperature sensor (TS1) detects sustained and repeated high temperatures that exceed standard value.
P17	–	P17	◎	●	◎	ALT	Outdoor discharge (TD2) temperature error	Outdoor discharge temperature sensor (TD2) detects abnormally high temperature.
P18	–	P18	◎	●	◎	ALT	Outdoor discharge (TD3) temperature error	Outdoor discharge temperature sensor (TD3) detects abnormally high temperature.
P19	Outdoor unit No. detected	P19	◎	●	◎	ALT	4-way valve reversing error	Abnormality in refrigerating cycle is detected during heating operation.
P20	–	P20	◎	●	◎	ALT	Activation of high-pressure protection	High pressure (Pd) sensor detects high pressure that exceeds standard value.

MG-CTT: Magnet contactor

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

Check code			Display of receiving unit				Typical fault site	Description of error
Outdoor 7-segment display		TCC-LINK central control or main remote controller display	Indicator light block					
	Sub-code		Operation ⏻	Timer ◷	Ready ☼	Flash		
F13	01: Compressor 1 02: Compressor 2 03: Compressor 3	F13	◎	◎	○	ALT	Error 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 error (lockup)	Compressor lockup is detected
H03	01: Compressor 1 02: Compressor 2 03: Compressor 3	H03	●	◎	●		Current detection circuit error	Abnormal current is detected while inverter compressor is turned off.
P04	01: Compressor 1 02: Compressor 2 03: Compressor 3	P04	◎	●	◎	ALT	Activation of high-pressure SW	High-pressure SW is activated.
P07	01: Compressor 1 02: Compressor 2 03: Compressor 3	P07	◎	●	◎	ALT	Heat sink overheating error	Temperature sensor built into IGBT (TH) detects overheating.
P22	0 : IGBT circuit 1 : Position detection circuit error 3 : Motor lockup error 4 : Motor current detection C : TH sensor error D : TH sensor error E : Inverter DC voltage error (outdoor fan) Note: Although letters 0 to F appear at locations indicated by “ ”, please ignore them.	P22	◎	●	◎	ALT	Outdoor fan IPDU error	Outdoor fan IPDU detects error.
P26	01: Compressor 1 02: Compressor 2 03: Compressor 3	P26	◎	●	◎	ALT	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	◎	●	◎	ALT	Compressor position detection circuit error	Compressor motor position detection error is detected.

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

9-3. Troubleshooting Based on Information Displayed on Remote Controller

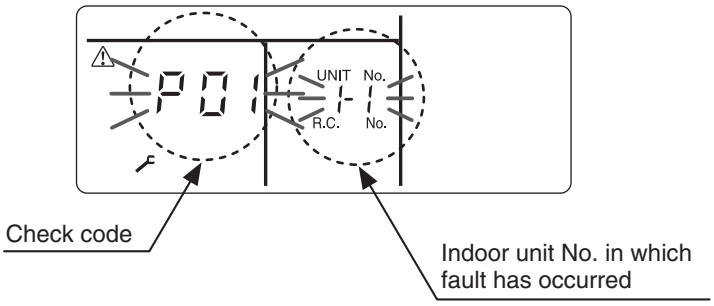
Using main remote controller (RBC-AMT32UL)

(1) Checking and testing

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

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

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



(2) Error history

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

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

<Procedure> To be performed when system at rest

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

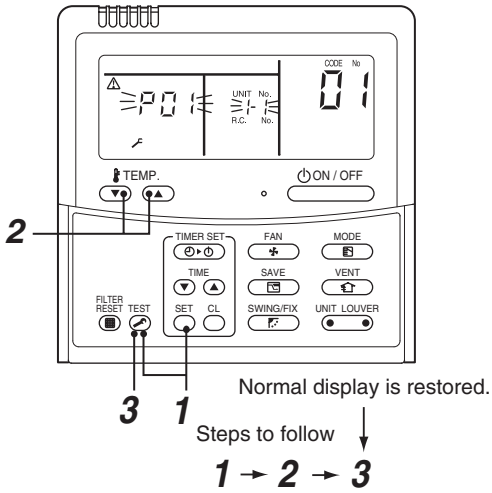
The letters " SERVICE CHECK" light up, and the check code "01" is displayed, indicating the error history. This is accompanied by the indoor unit No. to which the error history is related and a check code.

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

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

Note: Error history contains four items.

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



REQUIREMENT

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

How to read displayed information

<7-segment display symbols>

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

<Corresponding alphanumerical letters>

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

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

To identify the check code, check the 7-segment display on the header unit. To check for check codes not displayed on the 7-segment display, consult the “List of Check Codes (Indoor Unit)” in “9-2. Troubleshooting Method”.

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

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

MG-CTT: Magnet contactor

Light block	Check code	Cause of fault	
Operation Timer Ready Alternate blinking	F01	Heat exchanger temperature sensor (TCJ) error	Indoor unit temperature sensor errors
	F02	Heat exchanger temperature sensor (TC2) error	
	F03	Heat exchanger temperature sensor (TC1) error	
	F10	Ambient temperature sensor (TA) error	
	F11	Discharge temperature sensor (TF) error	
Operation Timer Ready Alternate blinking	F04	Discharge temperature sensor (TD1) error	Outdoor unit temperature sensor errors
	F05	Discharge temperature sensor (TD2) error	
	F06	Heat exchanger temperature sensor (TE1, TE2) error	
	F07	Liquid temperature sensor (TL) error	
	F08	Outside air temperature sensor (TO) error	
	F12	Suction temperature sensor (TS1) error	
	F13	Heat sink sensor (TH) error	
	F15	Wiring error in heat exchanger sensor (TE1) and liquid temperature sensor (TL) Outdoor unit temperature sensor wiring/installation error	
	F16	Wiring error in outdoor high pressure sensor (Pd) and low pressure sensor (Ps) Outdoor pressure sensor wiring error	
	F22	Outdoor discharge temperature sensor (TD3) error	Outdoor unit pressure sensor errors
	F23	Low pressure sensor (Ps) error	
	F24	High pressure sensor (Pd) error	
Operation Timer Ready Synchronized blinking	F29	Fault in indoor EEPROM	
Operation Timer Ready Blinking	H01	Compressor breakdown	Outdoor unit compressor-related errors
	H02	Compressor lockup	
	H03	Current detection circuit error	
	H05	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD1)	
	H06	Abnormal drop in low-pressure sensor (Ps) reading	Protective shutdown of outdoor unit
	H07	Abnormal drop in oil level	
	H08	Error in temperature sensor for oil level detection circuit (TK1, TK2, TK3, TK4 or TK5)	
	H15	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD2)	
	H16	Oil level detection circuit error - Error in outdoor unit TK1, TK2, TK3, TK4 or TK5 circuit	
	H25	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD3)	
Operation Timer Ready Synchronized blinking	L03	Duplicated indoor group header unit	
	L05	Duplicated priority indoor unit (as displayed on priority indoor unit)	
	L06	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	
	L07	Connection of group control cable to stand-alone indoor unit	
	L08	Indoor group address not set	
	L09	Indoor capacity not set	
Operation Timer Ready Synchronized blinking	L04	Duplicated outdoor refrigerant line address	
	L10	Outdoor capacity not set	
	L17	Outdoor model incompatibility error	
	L18	Flow selector units error	
	L20	Duplicated central control address	
	L28	Too many outdoor units connected	
	L29	Error in number of IPDUs	
	L30	Indoor external interlock error	

Light block	Check code	Cause of fault
Operation Timer Ready Synchronized blinking	F31	Outdoor EEPROM error

Other (indications not involving check code)

Light block	Check code	Cause of fault
Operation Timer Ready Synchronized blinking	–	Test run in progress
Operation Timer Ready Alternate blinking	–	Setting incompatibility (automatic cooling/heating setting for model incapable of it and heating setting for cooling-only model)

9-4. Check Codes Displayed on Remote Controller and 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.

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
E01	–	–	Remote controller	Indoor-remote controller communication error (detected at remote controller end)	Stop of corresponding unit	Communication between indoor P.C. board and remote controller is disrupted.	• Check remote controller inter-unit tie cable (A/B). • Check for broken wire or connector bad contact. • Check indoor power supply. • Check for defect in indoor P.C. board. • Check remote controller address settings (when two remote controllers are in use). • Check remote controller P.C. board.
E02	–	–	Remote controller	Remote controller transmission error	Stop of corresponding unit	Signal cannot be transmitted from remote controller to indoor unit.	• Check internal transmission circuit of remote controller. --- Replace remote controller as necessary.
E03	–	–	Indoor unit	Indoor-remote controller communication error (detected at indoor end)	Stop of corresponding unit	There is no communication from remote controller (including wireless) or network adaptor.	• Check remote controller and network adaptor wiring.
E04	–	–	Indoor unit	Indoor-outdoor communication circuit error (detected at indoor end)	Stop of corresponding unit	Indoor unit is not receiving signal from outdoor unit.	• Check order in which power was turned on for indoor and outdoor units. • Check indoor address setting. • Check indoor-outdoor tie cable. • Check outdoor termination resistance setting (SW30, Bit 2).
E06	E06	No. of indoor units from which signal is received normally	I/F	Dropping out of indoor unit	All stop	Indoor unit initially communicating normally fails to return signal for specified length of time.	• Check power supply to indoor unit. (Is power turned on?) • Check connection of indoor-outdoor communication cable. • Check connection of communication connectors on indoor P.C. board. • Check connection of communication connectors on outdoor P.C. board. • Check for defect in indoor P.C. board. • Check for defect in outdoor P.C. board (I/F).
–	E07	–	I/F	Indoor-outdoor communication circuit error (detected at outdoor end)	All stop	Signal cannot be transmitted from outdoor to indoor units for 30 seconds continuously.	• Check outdoor termination resistance setting (SW30, Bit 2). • Check connection of indoor-outdoor communication circuit.

Check code			Location of detection	Description	System status	Error 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 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 error	Stop of corresponding unit	Communication cannot be established/maintained upon turning on of power or during communication.	• Check for defect in indoor P.C. board
E12	E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	I/F	Automatic address starting error	All stop	• Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress. • 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 error in indoor power supply system. • Check for noise from other devices. • Check for power failure. • Check for defect in indoor P.C. board.
E16	E16	00: Overloading 01-: No. of units connected	I/F	Too many indoor units connected	All stop	• Combined capacity of indoor units exceeds 120% 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. ★ The system including Medium Static Ducted may not sometimes output the error code [16] because the microcomputer cannot judge that even if the connection of the indoor units was over its maximum capacity 120%.	• Check capacities of indoor units connected. • Check combined HP capacities of indoor units. • Check HP capacity settings of outdoor units. • Check No. of indoor units connected. • Check for defect in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
E18	–	–	Indoor unit	Error in communication between indoor header and follower units	Stop of corresponding unit	Periodic communication between indoor header and follower units cannot be maintained.	• Check remote controller wiring. • Check indoor power supply wiring. • Check P.C. boards of indoor units.
E19	E19	00: No header unit 02: Two or more header units	I/F	Error 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 defect 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 error	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 defect 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	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 defect in outdoor P.C. board (I/F).
E28	E28	Detected outdoor unit No.	I/F	Outdoor follower unit error	All stop	Outdoor header unit receives error 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 an error 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.

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
E31	E31	<table><tr><th></th><th colspan="3">A3-IPDU</th><th>Fan IPDU</th></tr><tr><th></th><th>1</th><th>2</th><th>3</th><th></th></tr><tr><td>01</td><td>O</td><td></td><td></td><td></td></tr><tr><td>02</td><td></td><td>O</td><td></td><td></td></tr><tr><td>03</td><td>O</td><td>O</td><td></td><td></td></tr><tr><td>04</td><td></td><td></td><td>O</td><td></td></tr><tr><td>05</td><td>O</td><td></td><td>O</td><td></td></tr><tr><td>06</td><td></td><td>O</td><td>O</td><td></td></tr><tr><td>07</td><td>O</td><td>O</td><td>O</td><td></td></tr><tr><td>08</td><td></td><td></td><td></td><td>O</td></tr><tr><td>09</td><td>O</td><td></td><td></td><td>O</td></tr><tr><td>0A</td><td></td><td>O</td><td></td><td>O</td></tr><tr><td>0B</td><td>O</td><td>O</td><td></td><td>O</td></tr><tr><td>0C</td><td></td><td></td><td>O</td><td>O</td></tr><tr><td>0D</td><td>O</td><td></td><td>O</td><td>O</td></tr><tr><td>0E</td><td></td><td>O</td><td>O</td><td>O</td></tr><tr><td>0F</td><td>O</td><td>O</td><td>O</td><td>O</td></tr></table> Symbol O signifies site of IPDU error.	I/F	IPDU communication error	All stop	Communication is disrupted between IPDUs (P.C. boards) in inverter box.	• Check wiring and connectors involved in communication between IPDU-I/F P.C. board for bad contact or broken wire. • Check for defect in outdoor P.C. board (I/F, A3-IPDU or Fan IPDU). • Check for external noise.
F01	–	–	Indoor unit	Indoor TCJ sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TCJ sensor connector and wiring. • Check resistance characteristics of TCJ sensor. • Check for defect in indoor P.C. board.
F02	–	–	Indoor unit	Indoor TC2 sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TC2 sensor connector and wiring. • Check resistance characteristics of TC2 sensor. • Check for defect in indoor P.C. board.
F03	–	–	Indoor unit	Indoor TC1 sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TC1 sensor connector and wiring. • Check resistance characteristics of TC1 sensor. • Check for defect in indoor P.C. board.
F04	F04	–	I/F	TD1 sensor error	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 defect in outdoor P.C. board (I/F).
F05	F05	–	I/F	TD2 sensor error	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 defect in outdoor P.C. board (I/F).
F06	F06	01: TE1 sensor error 02: TE2 sensor error	I/F	TE1/TE2 sensor error	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 defect in outdoor P.C. board (I/F).
F07	F07	–	I/F	TL sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TL sensor connector. • Check resistance characteristics of TL sensor. • Check for defect in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
F08	F08	–	I/F	TO sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TO sensor connector. • Check resistance characteristics of TO sensor. • Check for defect in outdoor P.C. board (I/F).
F10	–	–	Indoor unit	Indoor TA sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TA sensor connector and wiring. • Check resistance characteristics of TA sensor. • Check for defect in indoor P.C. board.
F11	–	–	Indoor unit	Indoor TF sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TF sensor connector and wiring. • Check resistance characteristics of TF sensor. • Check for defect in indoor P.C. board.
F12	F12	–	I/F	TS1 sensor error	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 defect in outdoor P.C. board (I/F).
F13	F13	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	TH sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Defect in IGBT built-in temperature sensor Replace A3-IPDU P.C. board.
F15	F15	–	I/F	Outdoor temperature sensor wiring error (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) error.
F16	F16	–	I/F	Outdoor pressure sensor wiring error (Pd, Ps)	All stop	Readings of high-pressure Pd sensor and low-pressure Ps sensor are switched. Output voltages of both sensors are zero.	• Check connection of high-pressure Pd sensor connector. • Check connection of low-pressure Ps sensor connector. • Check for defect in pressure sensors Pd and Ps. • Check for error in outdoor P.C. board (I/F). • Check for deficiency in compressive output of compressor.
F22	F22	–	I/F	TD3 sensor error	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 defect in outdoor P.C. board (I/F).
F23	F23	–	I/F	Ps sensor error	All stop	Output voltage of Ps sensor is zero.	• Check for connection error involving Ps sensor and Pd sensor connectors. • Check connection of Ps sensor connector. • Check for defect in Ps sensor. • Check for deficiency in compressive output of compressor. • Check for defect in 4-way valve. • Check for defect in outdoor P.C. board (I/F). • Check for defect in SV4 circuit.
F24	F24	–	I/F	Pd sensor error	All stop	Output voltage of Pd sensor is zero (sensor open-circuited). Pd > 601psi (4.15MPa) despite compressor having been turned off.	• Check connection of Pd sensor connector. • Check for defect in Pd sensor. • Check for defect in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
F29	–	–	Indoor unit	Other indoor error	Stop of corresponding unit	Indoor P.C. board does not operate normally.	• Check for defect in indoor P.C. board (faulty EEPROM)
F31	F31	–	I/F	Outdoor EEPROM error	All stop *1	Outdoor P.C. board (I/F) does not operate normally.	• Check power supply voltage. • Check power supply noise. • Check for defect in outdoor P.C. board (I/F).
H01	H01	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. (AC208/220V± 10%) • Check for defect in compressor. • Check for possible cause of abnormal overloading. • Check for defect in outdoor P.C. board (A3-IPDU).
H02	H02	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Compressor error (lockup) MG-CTT error	All stop	Overcurrent is detected several seconds after startup of inverter compressor.	• Check for defect in compressor. • Check power supply voltage. (AC208/220V± 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 defect 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 error	All stop	Current flow of at least specified magnitude is detected despite inverter compressor having been shut turned off.	• Check current detection circuit wiring. • Check defect in outdoor P.C. board (A3-IPDU).
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 defect 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, 2). • Check for defect in SV2 or SV4 circuits. • Check for defect in low-pressure Ps sensor. • Check indoor filter for clogging. • Check valve opening status of indoor PMV. • Check refrigerant piping for clogging. • Check operation of outdoor fan (during heating). • Check for insufficiency in refrigerant quantity.

MG-CTT: Magnet contactor

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

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
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 defect. • Check oil return circuit of oil separator for clogging. • Check oil equalizing circuit for clogging.
H08	H08	01: TK1 sensor error 02: TK2 sensor error 03: TK3 sensor error 04: TK4 sensor error 05: TK5 sensor error	I/F	Error 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 defect 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 defect 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 defect 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 defect 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 defect in outdoor P.C. board (I/F).
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 defect in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
H16	H16	01: TK1 oil circuit error 02: TK2 oil circuit error 03: TK3 oil circuit error 04: TK4 oil circuit error 05: TK5 oil circuit error	I/F	Oil level detection circuit error	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 error involving TK1, TK2, TK3, TK4, and TK5 sensors • Check for faulty operation in SV3E or SV3F valve. • Check for clogging in oil equalizing circuit capillary and faulty 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 error involving TK1, TK2, TK3, TK4, and TK5 sensors • Check for faulty operation in SV3E or SV3F valve. • Check for clogging in oil equalizing circuit capillary and faulty 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 error involving TK1, TK2, TK3, TK4, and TK5 sensors • Check for faulty operation in SV3E or SV3F valve. • Check for clogging in oil equalizing circuit capillary and faulty 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 error involving TK1, TK2, TK3, TK4, and TK5 sensors • Check for faulty operation in SV3E or SV3F valve. • Check for clogging in oil equalizing circuit capillary and faulty 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 error involving TK1, TK2, TK3, TK4, and TK5 sensors • Check for faulty operation in SV3E valve. • Check for clogging in oil equalizing circuit capillary and faulty operation in check valve. • Check for refrigerant entrapment inside compressor.
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 defect in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
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 stand-alone indoor unit	Stop of corresponding unit	There is at least one stand-alone indoor unit to which group control cable is connected.	• Check indoor addresses.
L08	L08	–	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	–	–	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.
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 defect in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
L29	L29	<table><tr><td></td><td colspan="3">A3-IPDU</td><td>Fan</td></tr><tr><td></td><td>1</td><td>2</td><td>3</td><td>IPDU</td></tr><tr><td>01</td><td>O</td><td></td><td></td><td></td></tr><tr><td>02</td><td></td><td>O</td><td></td><td></td></tr><tr><td>03</td><td>O</td><td>O</td><td></td><td></td></tr><tr><td>04</td><td></td><td></td><td>O</td><td></td></tr><tr><td>05</td><td>O</td><td></td><td>O</td><td></td></tr><tr><td>06</td><td></td><td>O</td><td>O</td><td></td></tr><tr><td>07</td><td>O</td><td>O</td><td>O</td><td></td></tr><tr><td>08</td><td></td><td></td><td></td><td>O</td></tr><tr><td>09</td><td>O</td><td></td><td></td><td>O</td></tr><tr><td>0A</td><td></td><td>O</td><td></td><td>O</td></tr><tr><td>0B</td><td>O</td><td>O</td><td></td><td>O</td></tr><tr><td>0C</td><td></td><td></td><td>O</td><td>O</td></tr><tr><td>0D</td><td>O</td><td></td><td>O</td><td>O</td></tr><tr><td>0E</td><td></td><td>O</td><td>O</td><td>O</td></tr><tr><td>0F</td><td>O</td><td>O</td><td>O</td><td>O</td></tr></table>Symbol O signifies site of IPDU error.	I/F	Error 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 defect.
L30	L30	Detected indoor address	Indoor unit	External interlock of indoor unit	Stop of corresponding unit	• Signal is present at external error input terminal (CN213) for 1 minute.	**When external device is connected to CN213 connector:** 1) Check for defect in external device. 2) Check for defect in indoor P.C. board. **When external device is not connected to CN213 connector:** 1) Check for defect in indoor P.C. board.
–	L31	–	I/F	Extended IC error	Continued operation	There is part failure in P.C. board (I/F).	Check outdoor P.C. board (I/F).
P01	–	–	Indoor unit	Indoor fan motor error	Stop of corresponding unit		• Check the lock of fan motor (AC fan). • Check wiring.
P03	P03	–	I/F	Discharge temperature TD1 error	All stop	Discharge temperature (TD1) exceeds 239°F(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 defect in 4-way valve. • Check for leakage of SV4 circuit. • Check SV4 circuit (wiring or installation error in SV41, SV42 or SV43).

Check code			Location of detection	Description	System status	Error 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 defect in Pd pressure sensor. • Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check for defect in outdoor fan. • Check for defect in outdoor fan motor. • Check outdoor PMVs (PMV1, 2) for clogging. • Check indoor/outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction/discharge air flows. • Check SV2 circuit for clogging. • Check for defect in outdoor P.C. board (I/F). • Check for error in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring error. • Check for faulty operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check 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 defect in outdoor P.C. board (I/F).
		01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side		Inverter DC voltage (Vdc) error (compressor) MG-CTT error			
P07	P07	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU I/F	Heat sink overheating error	All stop	Temperature sensor built into IGBT (TH) is overheated.	• Check power supply voltage. • Check outdoor fan system error. • Check heat sink cooling duct for clogging. • Check IGBT and heat sink for thermal performance for faulty installation. (e.g. mounting screws and thermal conductivity) • Check for defect in A3-IPDU. (faulty IGBT built-in temperature sensor (TH))
P10	P10	Detected indoor address	Indoor unit	Indoor overflow error	All stop	• Float switch operates. • Float switch circuit is open-circuited or disconnected at connector.	• Check float switch connector. • Check operation of drain pump. • Check drain pump circuit. • Check drain pipe for clogging. • Check for defect in indoor P.C. board.
P12	–	–	Indoor unit	Indoor fan motor error	Stop of corresponding unit	• Motor speed measurements continuously deviate from target value. • Overcurrent protection is activated.	• Check connection of fan connector and wiring. • Check for defect in fan motor. • Check for defect in indoor P.C. board. • Check impact of outside air treatment (OA). • In the case of incorrect duct setting performed at installation or if an access panel for the maintenance is removed while indoor unit is in operation

MG-CTT: Magnet contactor

Check code			Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display						
	Check code	Sub-code					
P13	P13	–	I/F	Outdoor liquid backflow detection error	All stop	<During cooling operation> When system is in cooling operation, high pressure is detected in follower unit that has been turned off. <During heating operation> When system is in heating operation, outdoor PMV 1 or 2 continuously registers opening of 100p or less while under SH control.	• Check full-close operation of outdoor PMV (1, 2, 4). • Check for defect in Pd or Ps sensor. • Check gas balancing circuit (SV2) for clogging. • Check balance pipe. • Check SV3B circuit for clogging. • Check defect in outdoor P.C. board (I/F). • Check capillary of oil separator oil return circuit for clogging. • Check for leakage of check valve in discharge pipe convergent section.
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 error judgment criterion> In cooling operation:140°F(60°C) In heatling operation:104°F(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 defect in 4-way valve. • Check SV4 circuit for leakage
		02: TD condition	I/F	Gas leak detection (TD condition)	All stop	Protective shutdown due to sustained discharge temperature (TD1, TD2 or TD3) at or above 226°F(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 error).
P17	P17	–	I/F	Discharge temperature TD2 error	All stop	Discharge temperature (TD2) exceeds 239°F(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 defect in 4-way valve. • Check SV4 circuit for leakage. • Check SV4 circuit (for wiring or installation error involving SV41, SV42 and SV43).
P18	P18	–	I/F	Discharge temperature TD3 error	All stop	Discharge temperature (TD3) exceeds 239°F(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 defect in 4-way valve. • Check SV43 circuit for leakage. • Check SV4 circuit (for wiring or installation error involving SV41, SV42 and SV43).

Check code			Location of detection	Description	System status	Error 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 error	All stop	Abnormal refrigerating cycle data is collected during heating operation.	• Check for defect in main body of 4-way valve. • Check for coil defect in 4-way valve and loose connection of its connector. • Check resistance characteristics of TS1 and TE1 sensors. • Check output voltage characteristics of Pd and Ps pressure sensors. • Check for wiring error 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 522psi(3.6MPa).	• Check for defect in Pd pressure sensor. • Check service valves (gas side, liquid side) to confirm full opening. • Check for defect in outdoor fan. • Check for defect in outdoor fan motor. • Check outdoor PMVs (PMV1, 2, 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 defect in outdoor P.C. board (I/F). • Check for defect in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring error. • Check for faulty operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check SV5 valve circuit. • Check for refrigerant overcharging.

Check code				Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
Main remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Sub-code						
P22	P22	0 : IGBT circuit 1 : Position detection circuit error 3 : Motor lockup error 4 : Motor current detection C : TH sensor temperature error D : TH sensor error E : Inverter DC voltage error (outdoor fan) **Note:** **Although letters 0 to F appear at locations indicated by " ", please ignore them.**	1A	IPDU	Outdoor fan IPDU error	All stop	(Sub code: 0) Fan IPDU over current protection circuit Flow of current equal to or greater than the specified value is detected during startup of the fan.	• Check fan motor. • Check for defect in fan IPDU P.C. board.
						All stop	(Sub code: 1) Fan IPDU position detection circuit Position detection is not going on normally.	• Check fan motor. • Check connection of fan motor connector. • Check for defect in fan IPDU P.C. board.
						All stop	(Sub code: 3) Gusty wind, an obstruction, or another external factor Speed estimation is not going on normally.	• Check fan motor. • Check for defect in fan IPDU P.C. board.
						All stop	(Sub code: 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 defect in fan IPDU P.C. board.
						All stop	(Sub code: C) Higher temperature than the specified value is detected during operation of the fan.	• Check fan motor. • Check for defect in fan IPDU P.C. board.
						All stop	(Sub code: D) The resistance value of the sensor is infinite or zero (open or short circuit).	• Check for defect in fan IPDU P.C. board.
						All stop	(Sub code: E) Fan IPDU DC voltage protection circuit The DC voltage higher or lower than the specified value is detected.	• Check power voltage of the main power supply. • Check for defect in fan IPDU P.C. board. • Check connection of fan IPDU P.C. board.
P26	P26	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	14	IPDU	G-TR short-circuit protection error	All stop	Overcurrent is momentarily detected during startup of compressor.	• Check connector connection and wiring on A3-IPDU P.C. board. • Check for defect in compressor (layer short-circuit). • Check for defect in outdoor P.C. board (A3-IPDU).
P29	P29	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	16	IPDU	Compressor position detection circuit error	All stop	Position detection is not going on normally.	• Check wiring and connector connection. • Check for compressor layer short-circuit. • Check for defect in A3-IPDU P.C. board.
P31	–	–	47	Indoor unit	Other indoor error (group follower unit error)	Stop of corresponding unit	There is error in other indoor unit in group, resulting in detection of E07/L07/L03/L08.	• Check indoor P.C. board.

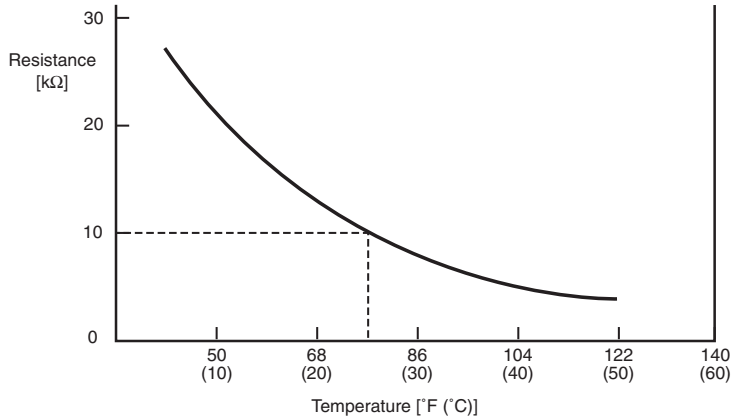
Errors Detected by TCC-LINK Central Control Device

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

9-5. Sensor Characteristics

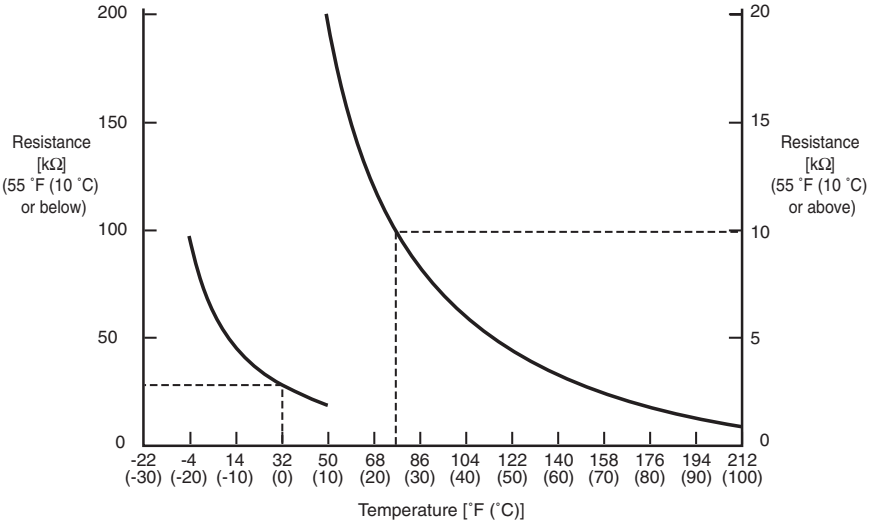
Indoor Unit

■ Temperature sensor characteristics



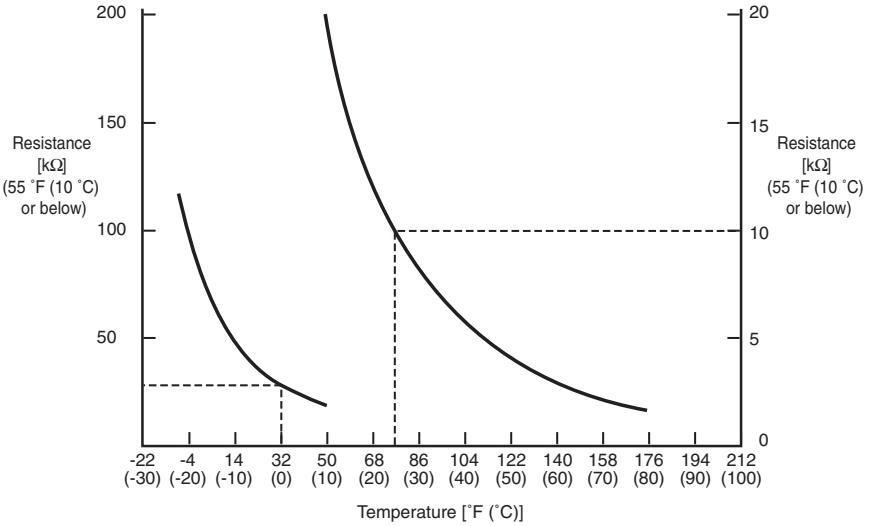
Temperature [˚F (˚C)]	Resistance [kΩ]
32 (0)	33.9
41 (5)	26.1
50 (10)	20.3
59 (15)	15.9
68 (20)	12.6
77 (25)	10.0
86 (30)	8.0
95 (35)	6.4
104 (40)	5.2
113 (45)	4.2
122 (50)	3.5
131 (55)	2.8
140 (60)	2.4

Indoor TC1 sensor



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

Indoor TC2 and TCJ sensors



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

10. DETACHMENTS

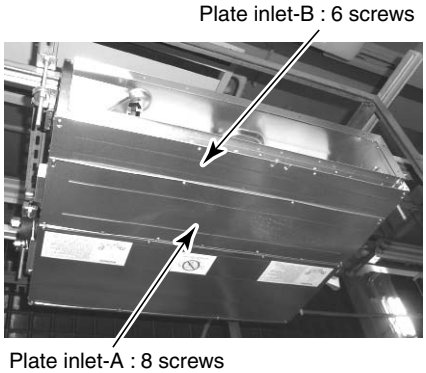
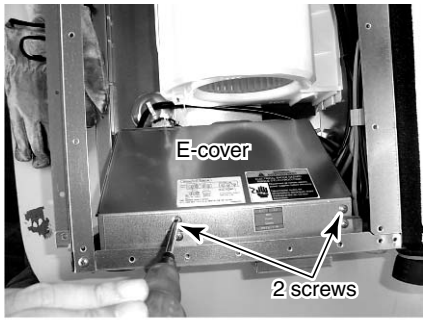
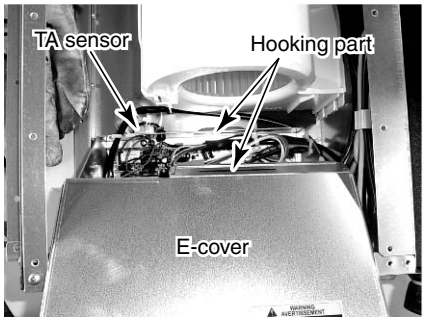
10-1. Slim Ducted Type

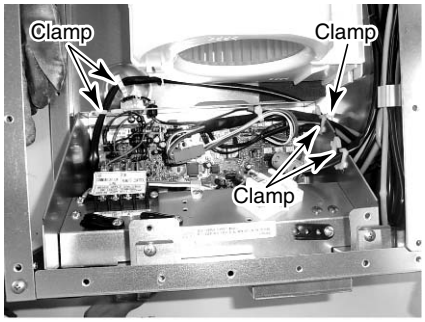
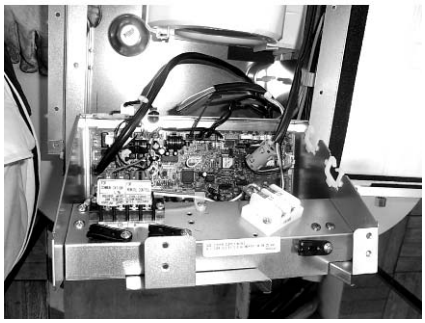
⚠ WARNING

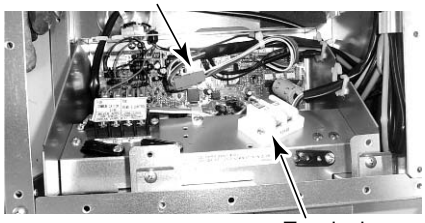
Before replacement of the parts, be sure to stop operation of the air conditioner and turn off switch of the breaker.

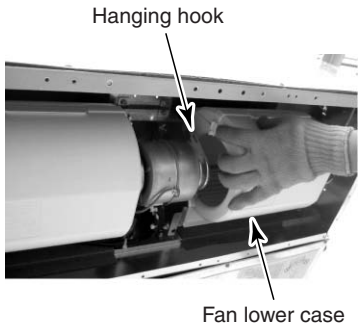
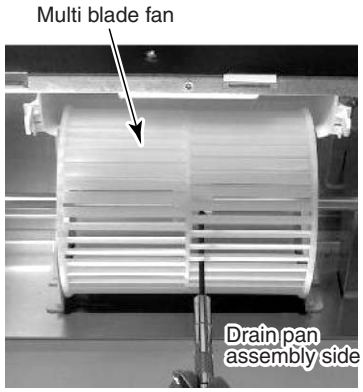
⚠ CAUTION

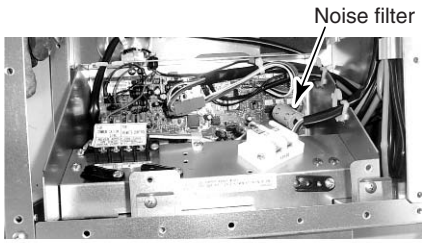
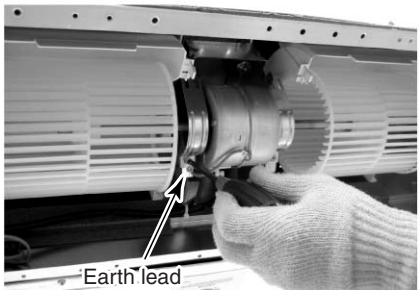
Be sure to put on the gloves at disassembling work; otherwise an injury will be caused by a part, etc.

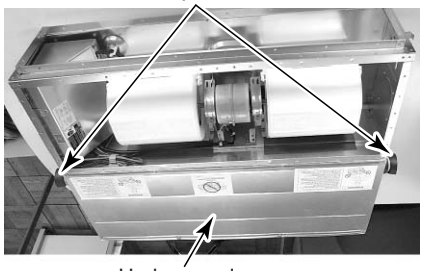
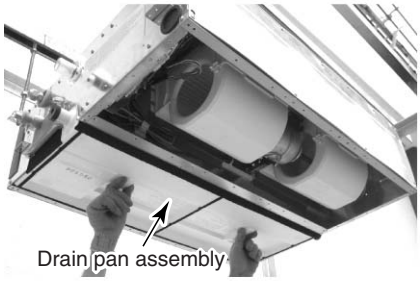
No.	Part name	Procedure	Remarks
①	Plate inlet-A Plate inlet-B	**1. Detachment** 1) Take off fixing screws while holding the plate inlet-A with hands to remove it. (M4, 0.39" (10mm), 8 pcs) 2) Take off fixing screws while holding the plate inlet-B with hands to remove it. (M4, 0.39" (10mm), 6 pcs) **NOTE :** Be careful that sheeting metal does not fall when removing the plate inlet. **2. Attachment** 1) Using the screws taken off in procedure **1.** of ①, attach the plate inlets in order of B → A while holding them not to fall down.	
②	E-cover	**1. Detachment** 1) Perform work **1.** of ①. 2) Take off screws fixing E-cover, and then remove hooks of the hooking part by lifting up. (M4, 0.39" (10mm), 2 pcs) **2. Attachment** 1) Hang on E-cover to hooks of the hooking part so that it does not fall down. **NOTE :** Be sure not to catch TA sensor in the E-cover; otherwise the equipment cannot operate correctly. 2) Using the screws taken off in procedure **1.** of ②, attach E-cover while holding it with hands without clearance. **NOTE :** If there is clearance, dust may enter in the electric parts box.	 

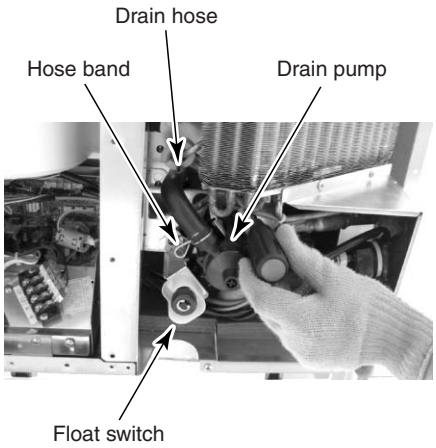
No.	Part name	Procedure	Remarks
③	E-box	**1. Detachment** 1) Perform works **1.** of ① and **1.** of ②. 2) Remove clamps at upper part of the photo. 3) Take off screws fixing E-box. (M4, 0.39" (10mm), 2 pcs) E-box does not fall down under condition that screws are taken off. 4) Remove the E-box over sheeting metal which was fixed with screws. **2. Attachment** 1) Insert hooks of E-box into the hooking part of the main body. 2) Store E-box as before, and then attach it by using screws taken off in procedure **1.** 3) of ③. **NOTE :** • Be sure to fix surely as before the lead wires of which clamps were taken off. • Check that lead wires of the drain pump do not reach the fan so that they are not caught in the fan, and then fix them.	 

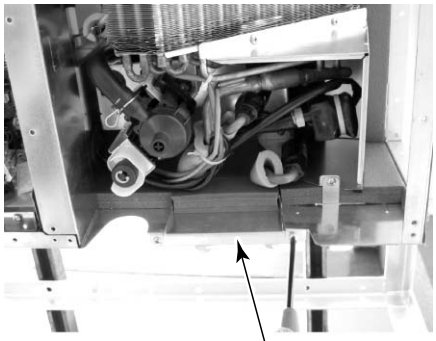
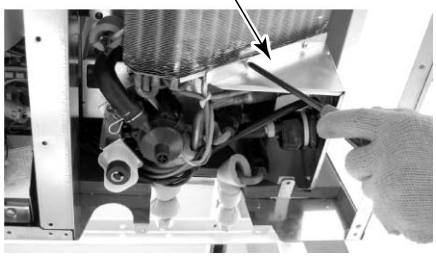
No.	Part name	Procedure	Remarks
④	P.C. board assembly	**1. Detachment** 1) Perform works **1.** of ①, **1.** of ②, and **1.** of ③. 2) Disconnect connectors which are connected from P.C. board assembly to other parts. **NOTE :** Unlock the lock of the housing to disconnect the connectors. CN40 : Indoor/Outdoor communication (2P: Blue) CN41 : Remote controller terminal (3P: Blue) CN67 : Power supply terminal (3P: Black) CN100 : TC1 sensor (3P: Brown) CN101 : TC2 sensor (2P: Black) CN102 : TCJ sensor (2P: Red) CN333 : Fan motor power supply (5P: White) CN334 : Detection of fan motor position (5P: White) Relay connector (CN82): PMV lead (6P: Blue) CN34 : Float SW (3P: Red) CN68 : Drain pump lead (3P: Blue) 3) Unlock the lock of the card edge spacer, and then remove P.C. board assembly. **2. Attachment** 1) Attach P.C. board assembly to the card edge spacer. 2) Using wires connect connectors as before, which were disconnected in procedure **1.** 2) of ④. **NOTE :** Check there is no missing or poor contact of the connectors.	

No.	Part name	Procedure	Remarks
⑤	Multi blade fan, fan lower case, fan upper case	**1. Detachment** 1) Perform work **1.** of ①. 2) Take off hanging hooks at both sides of the lower fan case to remove fan lower case. 3) Remove the upper fan case while taking off hooks of fan upper case which are hooked to the partition board. 4) Loosen hexagonal hole screw of the multi blade fan to remove multi blade fan from the shaft. If necessary, remove multi blade fan and then remove fan upper case. **2. Attachment** 1) Determine the position so that multi blade fan positions at the center of the fan upper case, and then fix it with hexagonal hole screw. **NOTE :** • Arrange the multi blade fan so that screws position at the right side against the drain pan assembly. • Fix multi blade fan with torque wrench 3.6 ft•lbs (4.9 N•m) or more. 2) Hook the lower fan case as before and attach it with hooks. **NOTE :** Finally check whether the multi blade fan turns surely and smoothly or not.	  Arrange the multi blade fan so that screws position at the right side against the drain pan assembly.

No.	Part name	Procedure	Remarks
⑥	Fan motor	**1. Detachment** 1) Perform works **1.** of ①, **1.** of ②, **1.** of ⑤. 2) Remove lead wires which are connected to the following connectors of P.C. board assembly. **NOTE :** Unlock locks of the housing, and then remove the connectors. CN333: Fan motor power supply (5P: White) CN334: Detection of fan motor (5P: White) 3) Remove the noise filter from lead wire to detect fan motor position. 4) Take off screws of fan motor fixing bracket. Earth wires of the motor are tightened together. (M5, 0.39" (10mm), 2 pcs) Remove tie wrap which fixes the lead wires. 5) Remove fixing bracket of the fan motor by holding it with hands so that the fan motor does not fall down. **2. Attachment** 1) Mount the fan motor as before in order, Fan motor → Fixing bracket of fan motor → Noise filter → Lead wire process → E-cover. **NOTE :** Check there is no missing or poor contact of the connectors. Check also that the multi blade fan turns surely and smoothly, and check together-tightening of motor earth.	 

No.	Part name	Procedure	Remarks
⑦	Under panel Drain pan assembly	**1. Detachment** 1) Take off the drain cap and drain the drain water accumulated in the drain pan assembly. **NOTE :** When taking off drain cap and drain hose, be sure receive drain water in a bucket, etc. 2) Take off screws fixing the under panel while holding it to remove. (M4, 0.39" (10mm), 8 pcs) **NOTE :** Be careful that sheeting metal does not fall when removing the under panel. 3) Pull out the drain pan assy. by holding handle at lower part. **NOTE :** When pulling out the drain pan assy., never pull out the drain socket by drawing it with hands. If doing so, water leak may be caused. 4) Pull out it to some extent, lay hand on the bump at suction side, and then remove the drain pan assembly. **2. Attachment** 1) Hook and attach the drain pan assy. to the flange at discharge side, and then push in. 2) Using screws taken off in procedure **1.** 2) of ⑦, attach under panel by holding with hands. 3) Attach drain cap, as before, which were taken off in procedure **1.** 1) of ⑦. **NOTE :** Finally, be sure to check there is no water leakage from each attached part.	Drain cap or drain hose  Under panel  Drain pan assembly NO GOOD Never hold and pull the drain socket.

No.	Part name	Procedure	Remarks
⑧	Drain pump, Float switch, Drain hose	**1. Detachment** 1) Perform works in procedures **1.** of ①, **1.** of ②, **1.** of ⑦. 2) Disconnect lead wires which are connected to the following connectors of P.C. board assembly. **NOTE :** Unlock locks of the housing to remove the connectors. CN34: float SW (3P: Red) CN68: Drain pump lead (3P: Blue) 3) Loosen hose band, remove cap of the drain hose, and take off screws while holding the sheeting metal on which float switch and drain pump are put on. Remove them with care that pipes are not damaged. (M4, 0.39" (10mm), 2 pcs) **NOTE :** If the pipes are damaged, refrigerant leak may be caused. Take out them with great care. **2. Attachment** 1) Attach ASSY sheeting metal which was removed in procedure **1.** 3) of ⑧ with care that pipes are not damaged, and then fix it with screws. 2) Insert the drain hose into the inlet of drain pump, and then fix it with hose band. Arrange handle of the hose band at contrary side of heat exchanger side and at direction remote from drain pan assembly. 3) Carry out wiring as before, and then perform work of procedure **2.** of ⑦. **NOTE :** Finally check whether they correctly operate or not.	

No.	Part name	Procedure	Remarks
⑨	Evaporator assembly	**1. Detachment** **NOTE :** Recover refrigerant gas and then remove the refrigerant piping of the indoor unit.Remove the indoor unit and carry out the work on the floor. etc. 1) Recover refrigerant, and then remove refrigerant pipes at indoor unit side. 2) Perform works of procedures **1.** of ①, **1.** of ②, **1.** of ⑦. Remove sensors. 3) Take off screws of the pipe holder, and remove the pipe holder. (M4, 0.39" (10mm), 2 pcs) 4) Take off screws of the heat exchanger support board (Pipe side), and remove the heat exchanger support board (Pipe side). (M4, 0.39" (10mm), 4 pcs) 5) Take off screws of the heat exchanger support board (Opposite side) which fixes terminal block of the evaporator assembly. (M4, 0.39" (10mm), 2 pcs) 6) Remove the evaporator assembly. **2. Attachment** 1) Fasten the parts as before in order, Evaporator assembly → Pipe holder → Set sensors → Drain pan assembly → Under panel. 2) Connect the refrigerant pipe as before, and then perform vacuuming.	 Pipe holder Heat exchanger support board (Pipe side) 

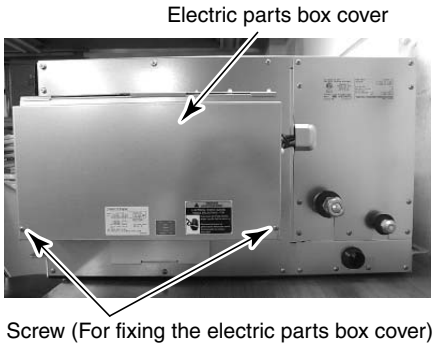
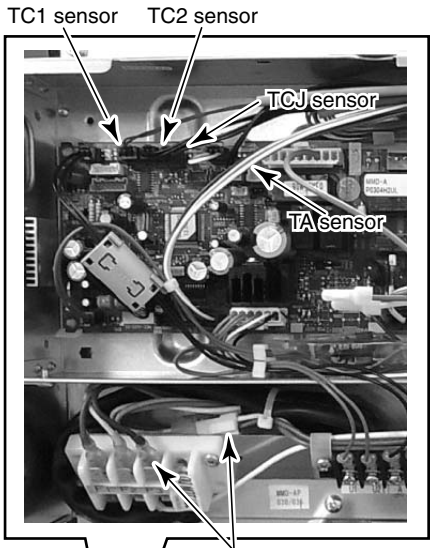
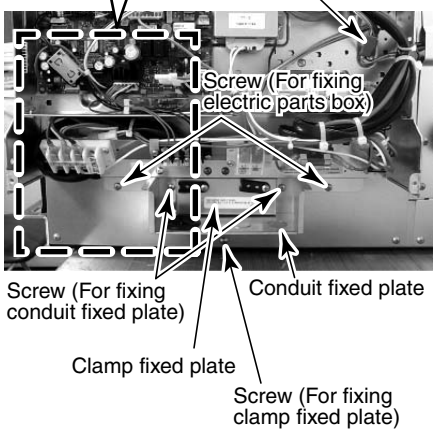
10-2. High Static Ducted Type

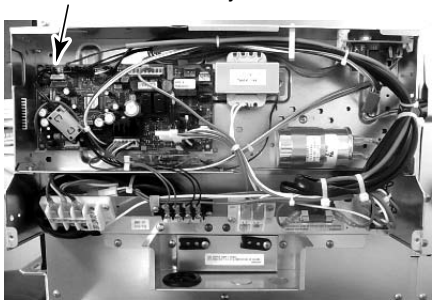
⚠ WARNING

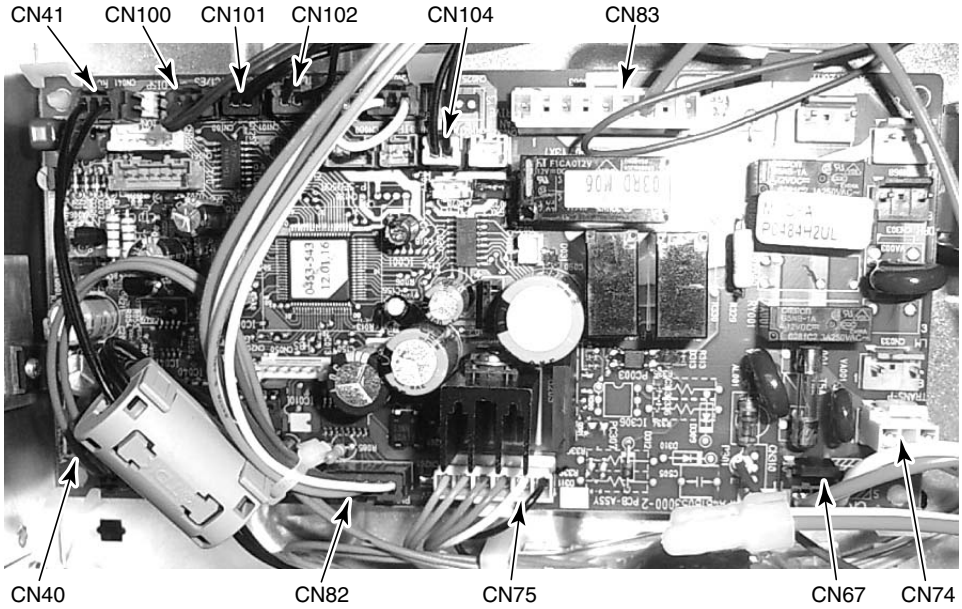
Before replacement of the parts, be sure to stop operation of the air conditioner and turn off switch of the breaker.

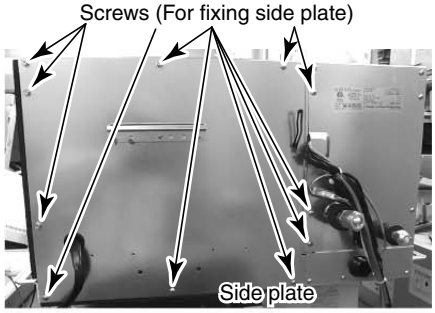
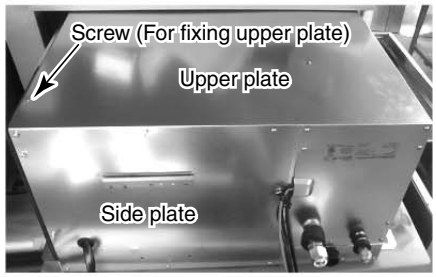
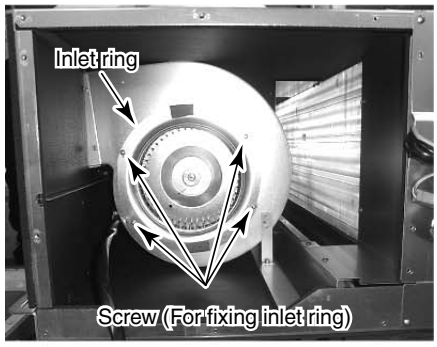
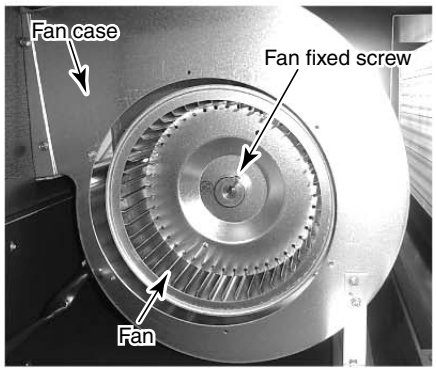
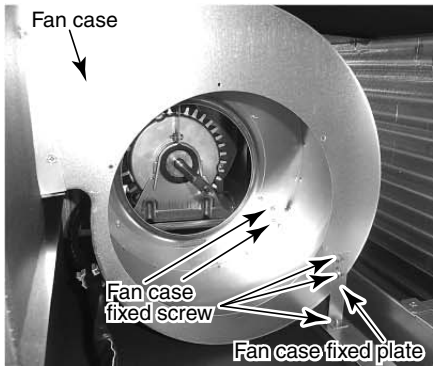
⚠ CAUTION

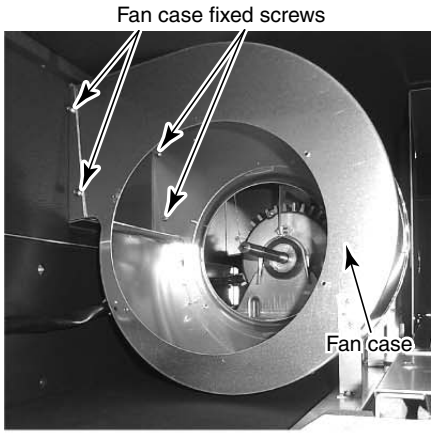
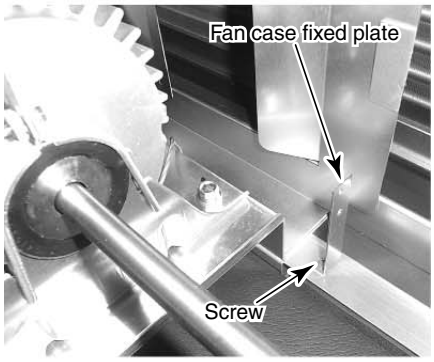
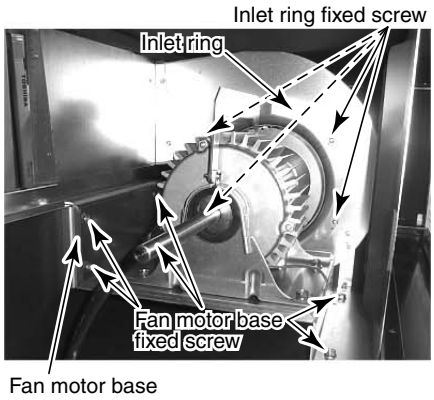
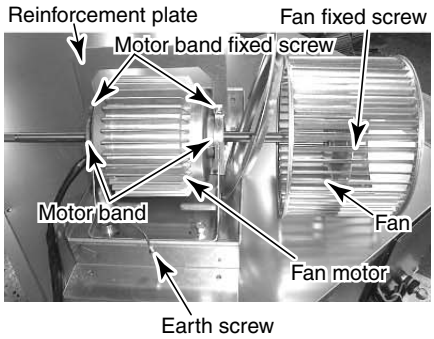
Be sure to put on the gloves at disassembling work; otherwise an injury will be caused by a part, etc.

No.	Part name	Procedure	Remarks
①	Electric parts box	1) Remove screw of the electric parts box cover and then remove the cover. 2) Remove the power supply wire, the indoor/outdoor connecting wire, and the remote controller wires from each terminal blocks. 3) Remove connectors of TC1,TC2, TCJ and TA sensor lead wires from the control P.C. board. Remove the fan motor lead wires (3 pcs.) from the terminal block. Remove the relay connector of the fan motor lead wire. Remove the connector of PMV lead wire. **NOTE :** First unlock the housing and then remove the connectors. CN100 : TC1 sensor CN101 : TC2 sensor CN102 : TCJ sensor CN104 : TA (Room temperature) sensor 4) Remove screws of the conduit fixed plate and then remove the conduit fixed plate. 5) Remove fixing screws of the clamp fixed plate and then remove the clamp fixed plate. 6) Remove fixing screws of the electric parts box and then remove the electric parts box. **⚠ Cautions at attachment** Connect Faston of the fan motor lead to the terminal block as original. <table><tr><td>Terminal block No.</td><td>F1</td><td>F2</td><td>F3</td></tr><tr><td>Wire color</td><td>Blue</td><td>Orange</td><td>Black</td></tr></table>	  

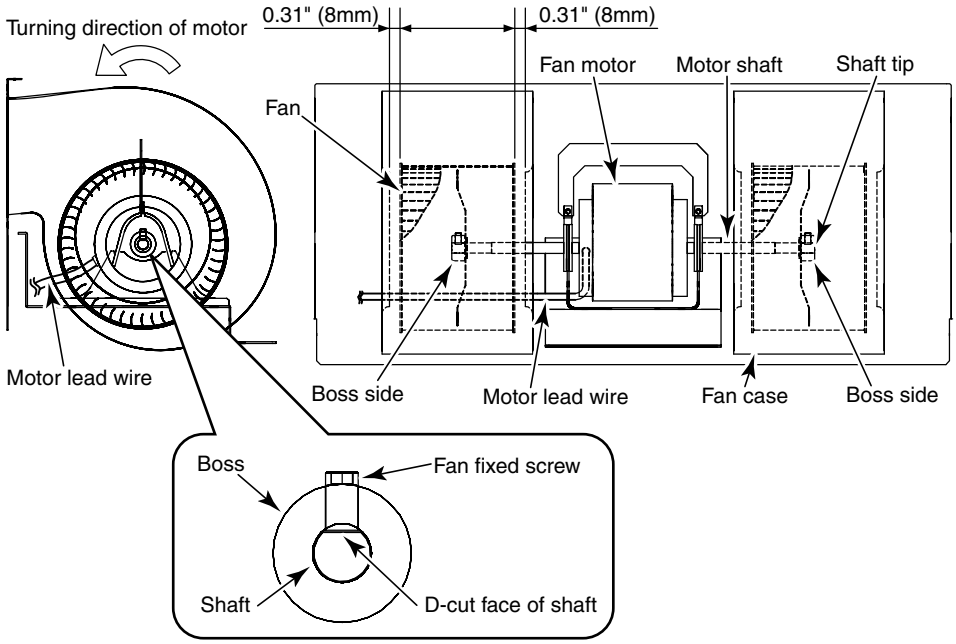
No.	Part name	Procedure	Remarks
②	Control P.C. board	1) Remove cover of the electric parts box. (Refer to ①.) 2) Remove each connector from P.C. board. **NOTE :** Unlock the housing and then remove the connector. CN40 : Indoor/Outdoor communication (2P: Blue) Communication terminal block: 2P CN41 : Remote controller terminal (3P: Blue) Remote controller terminal block: 2P CN67 : Power supply terminal (3P: Black) CN74 : Trance former (3P: White) CN75 : Sub P.C. board (6P: White) CN82 : PMV lead (6P: Blue) CN83 : Fan motor (9P: White) CN100 : TC1 sensor (3P: Brown) CN101 : TC2 sensor (2P: Black) CN102 : TCJ sensor (2P: Red) CN104 : TA sensor (2P: Yellow) 3) Take off the lock of the card edge spacer and then remove P.C. board assembly. **⚠ Caution at attachment** • Using wire, connect connectors as before, which were disconnected in procedure 2) of ②. • Check there is no missing or poor contact of the connectors.	P.C. board assembly 

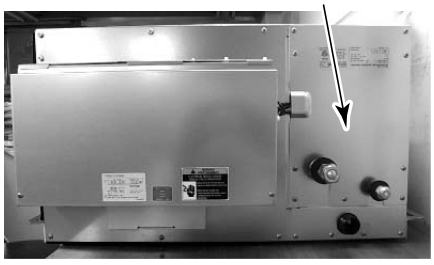
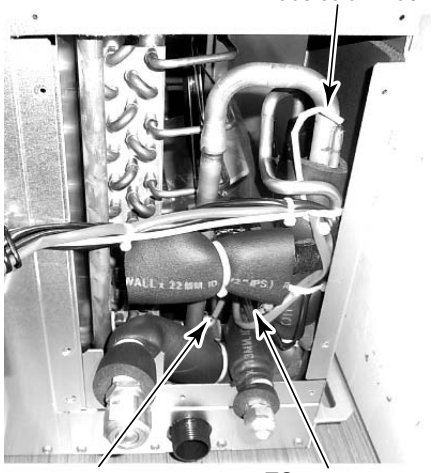
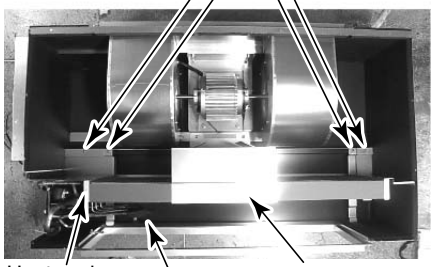


No.	Part name	Procedure	Remarks
③	Fan, Fan motor	1) Remove the electric parts box. (Refer to ①.) 2) Remove fixing screws of the side plate and then remove the side plate.	
		3) Remove screw (1 position) for fixing the upper plate.	
		4) Remove the fixing screw of the inlet ring and then remove the inlet ring.	
		5) Using a hexagonal wrench, loosen the fan fixed screw and then pull out the fan from the fan case.	
		6) Remove screws which fix the fan case and then remove the fan case fixed plate.	

No.	Part name	Procedure	Remarks
	Fan, Fan motor (continue)	7) Remove screws for fixing the fan case while lifting up the upper plate a little and then pull out the fan case to the side plate side.	
		8) Remove fixed screw of the fan case fixed plate and then remove the fan case fixed plate.	
		9) Remove fixed screws of the inlet ring to remove the inlet ring. Remove fixed screws of the fan motor base and then pull out the fan motor base up to side plate side of the frame.	
		10) Remove the motor band fixed screw and the fan motor earth wire fixed screw to remove the fan motor. Using a hexagonal wrench, loosen the fixed screw and then pull out the fan from the shaft.	

No.	Part name	Procedure	Remarks
	Fan, Fan motor (continue)	**⚠ Caution at attachment** • Attach the motor in the direction so that the root of the motor lead wire is positioned as shown as follows. • Attach the fixed screw of the fan surely to “D” cut face of the motor. • Attach the fan in the direction so that boss side of the fan is positioned at outside of the frame. • Fasten the fan so that boss part of the fan and the shaft top are laid at even face.After attachment, turn the fan and check there is no hitting or rubbing of the fan with fan case or no abnormal sound.	



No.	Part name	Procedure	Remarks
④	Heat exchanger TC1, TC2, TCJ sensor	**NOTE :** Recover refrigerant gas and then remove the refrigerant piping of the indoor unit.Remove the indoor unit and carry out the work on the floor. etc. 1) Remove the service panel. 2) Remove the upper plate. Remove TC1 sensor, TC2 sensor and TCJ sensor form the sensor holder. Remove the relay connector of PMV lead wire in the electric parts box. 3) Remove the pipe fixed plate. 4) Remove the wind direction plate. (For 048 type only) 5) Remove fixed screws of the heat exchanger assembly. 6) Lift up the heat exchanger and then remove it.	Service panel  TC1 sensor Tube color: Blue  TCJ sensor Tube color: Red TC2 sensor Tube color: Black Fixed screws for heat exchanger assembly  Heat exchanger assembly Wind direction plate (For 048 type only) Pipe fixed plate

11. P. C. BOARD EXCHANGE PROCEDURES

■ Indoor unit

11-1. Replacement of indoor P.C. board

Part code	Model type	P.C. board type
431-6V-445	MMD-AP∗∗∗SPH2UL series	MCC-1402
431-6V-502	MMD-AP∗∗∗H2UL series	MCC-1403

Points to note when replacing indoor P.C. board assembly

The electrically erasable programmable read-only memory (hereinafter EEPROM, IC10) mounted on an indoor 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 / group addresses, high ceiling adjustment setting and the like (during installation, either automatically or manually). Proceed with the replacement of an indoor P.C. board assembly in accordance with the procedure described below.

After completion of the work, check the settings again, including the indoor unit 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 indoor unit 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 indoor 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. high ceiling adjustment setting and optional connection setting): **Procedure 3**

⇩

Resetting power supply (applicable to all indoor 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 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.)

* In the case of group control, the unit No. displayed first is the indoor unit No. of the header unit.

At the same time, the CODE No. (DN code) 10 is displayed, and the fan of the selected indoor unit comes on, with the louver swinging, depending on the model.

2 Each time the UNIT LOUVER button is pushed, one of the indoor unit No. under group control is displayed in turn.

* The fan of the selected indoor unit 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 10 to 01. (To set filter sign lighting time)

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 TEST button to bring the system back to normal off state.

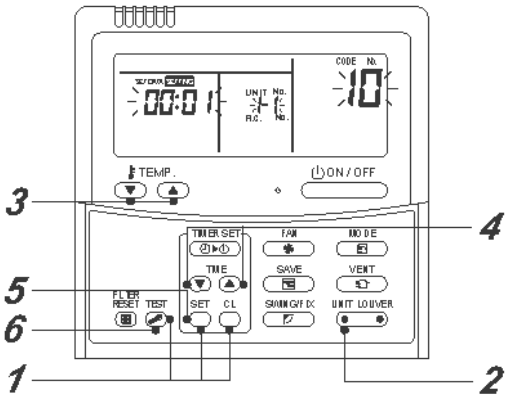
(It takes the system about 1 minute to become responsive to remote controller operation.)

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

The type and capacity of the indoor unit are necessary for fan speed setting.

Remote controller operation diagram

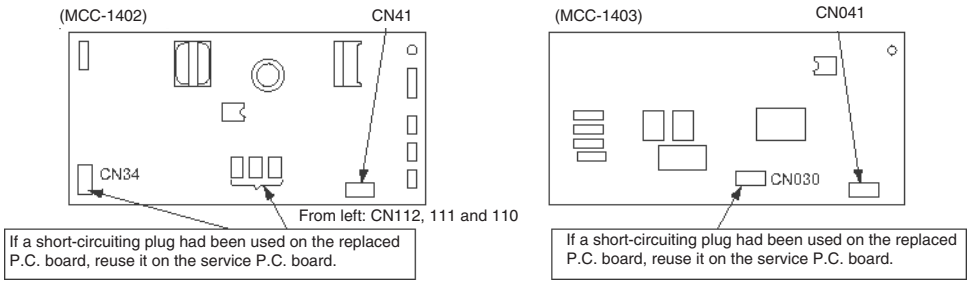
<Fig. 1 RBC-AMT32UL>



Procedure 2: replacing P.C. board

1 Replace the faulty P.C. board with a service P.C. board.

Be sure to replicate the old jumper setting (removal), and connector short-circuit setting (e.g. CN34) on the service P.C. board. (See the diagram at below.)



2 It is necessary to establish a one-to-one correspondence between the indoor unit being serviced and the remote controller.

Turn on the indoor unit using one of the methods described below according to the system configuration.

(1) Single (stand-alone) operation

Turn on the indoor unit and proceed to **Procedure 3**.

(2) Group operation

A) If it is possible to selectively turn on the indoor unit being serviced

Turn on the indoor unit being serviced and proceed to **Procedure 3**.

B) If it is not possible to selectively turn on the indoor unit being serviced (**Case 1**)

a) Temporarily disconnect the group control wiring from terminals A and B of the indoor unit being serviced.

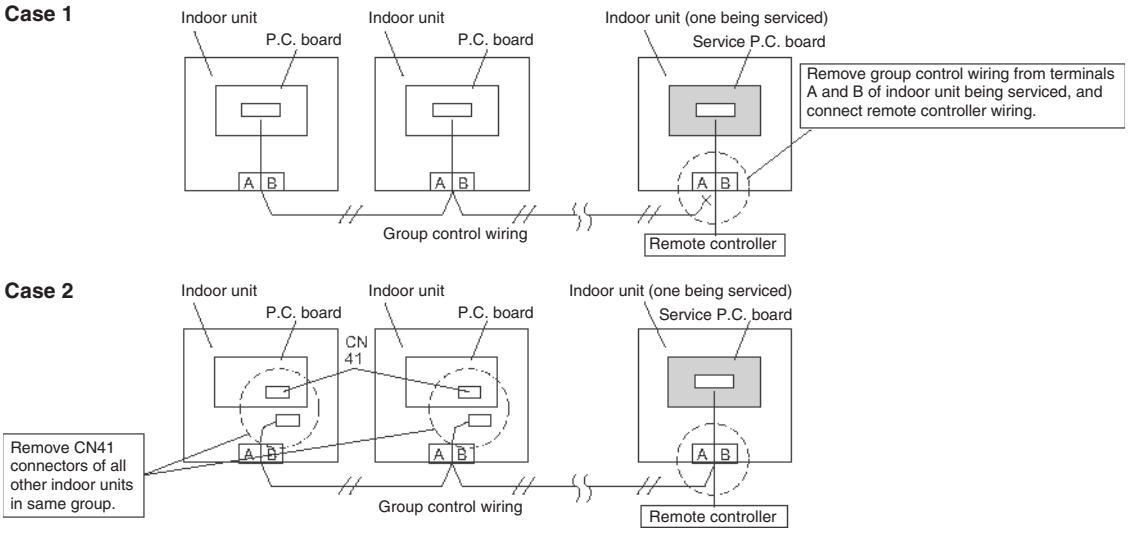
b) Connect the remote controller wiring to the terminals, turn on the indoor unit, and proceed to **Procedure 3**.

* 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 indoor unit being serviced (**Case 2**)

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

b) Turn on the indoor unit and proceed to **Procedure 3**.



* Be sure to restore the temporarily removed group control wiring and CN41 connectors to their initial states after Procedure 3 has been completed.

Procedure 3: writing setting data in EEPROM

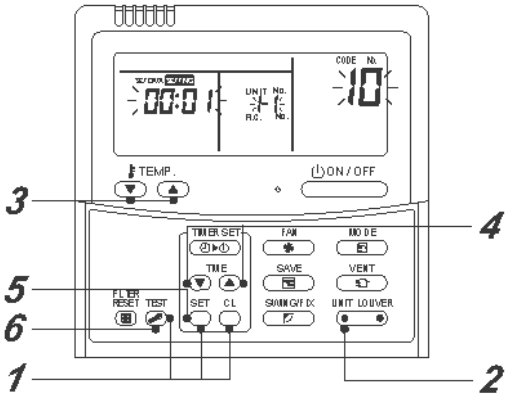
(The EEPROM of the service P.C. board has been set to the factory default values.)

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, and the fan of the indoor unit comes on, with the louver swinging, depending on the model.

<Fig. 1 RBC-AMT32UL>



2 Push the left part of the UNIT LOUVER button to display the indoor unit No. one by one in the group control. Specify the indoor unit 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 indoor unit.

(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.

(For example, 0001 is for the 4-way cassette 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, 0012 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 01 (To set filter sign lighting time)

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.

(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.

Table

CODE No. table (Please record the objective unit data at field)

DN	Item	Memo	At shipment
01	Filter sign lighting time		0002: 2500 hour
02	Dirty state of filter		0000: Standard
03	Central control address		0099: Unfixed
06	Heating suction temp shift		0002: +3.6˚F (+2˚C)
0C	PRE-DEF indication selection		0000: Standard
0F	Cooling only		0000: Heat pump
10	Type		According to model type
11	Indoor unit capacity (See below table)		According to capacity type
12	Refrigerant line address		0099: Unfixed
13	Indoor unit address		0099: Unfixed
14	Group adress		0099: Unfixed
28	Automatic restart from power cut		0001: Available
2A	Option input selection (CN80)		0002: External emergency input
2b	Thermo output selection (T10③)		0000: Thermo ON
2E	Input selection (T10①)		0000: Operation input
32	Sensor selection		0000: Available
60	Timer set (Wired remote controller)		0000: Available

Type (CODE No. [10])

Setup data	Type	Model abb. name
0001*	Invalid	—
0005	Slim Ducted	MMD-AP***SPH2UL
0006	High Static Ducte	MMD-AP***H2UL

Indoor unit capacity (CODE No.[11])

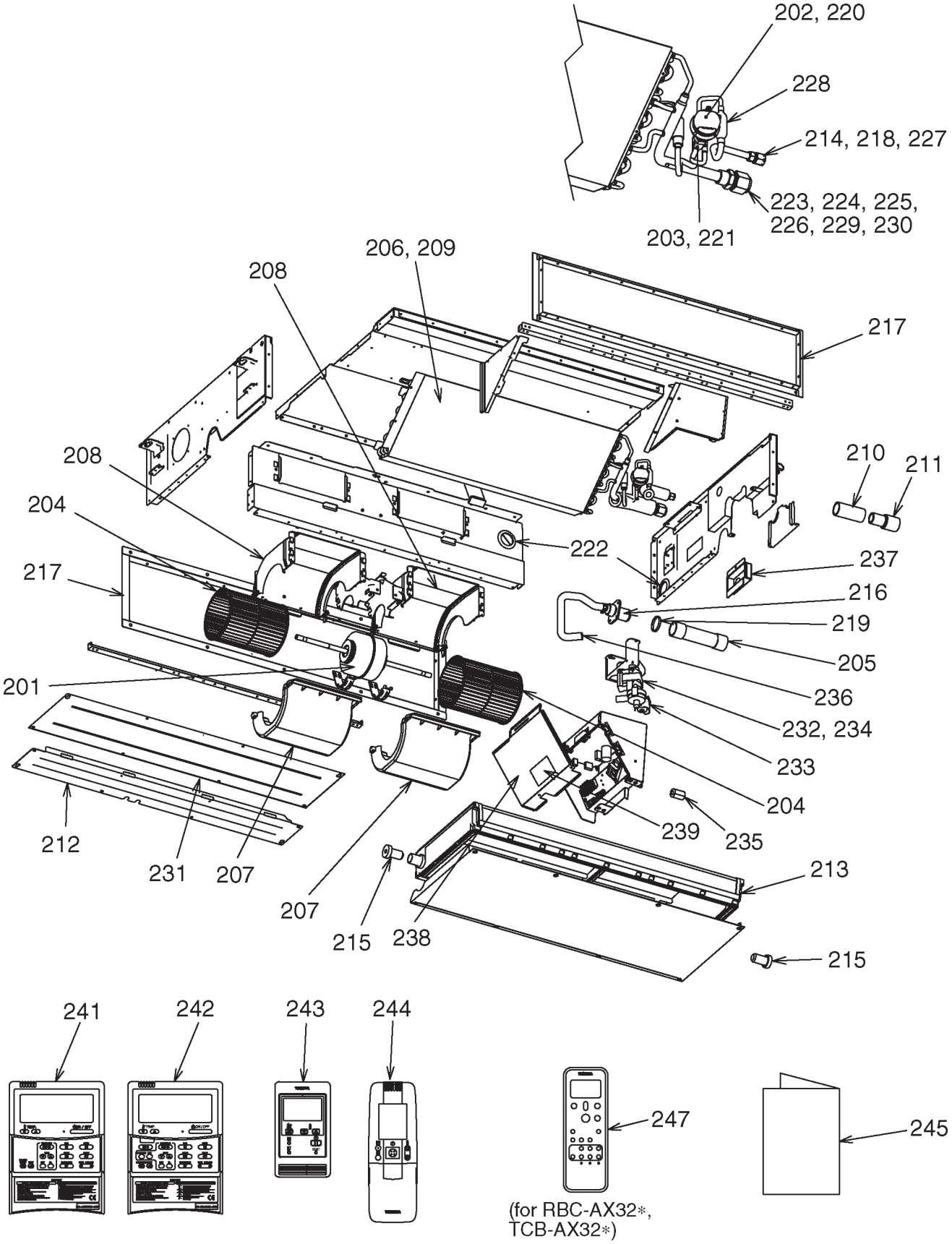
Setup data	Model	Setup data	Model
0001*	Invalid	0009	018 type
0001	007 type	0010	021 type
0002	—	0011	024 type
0003	009 type	0012	027 type
0004	—	0013	030 type
0005	012 type	0014	—
0006	—	0015	036 type
0007	015 type	0017	048 type
0008	—	—	—

* Initial value EEPROM installed on supplied service P.C. board.

12. EXPLODED VIEWS AND PARTS LIST

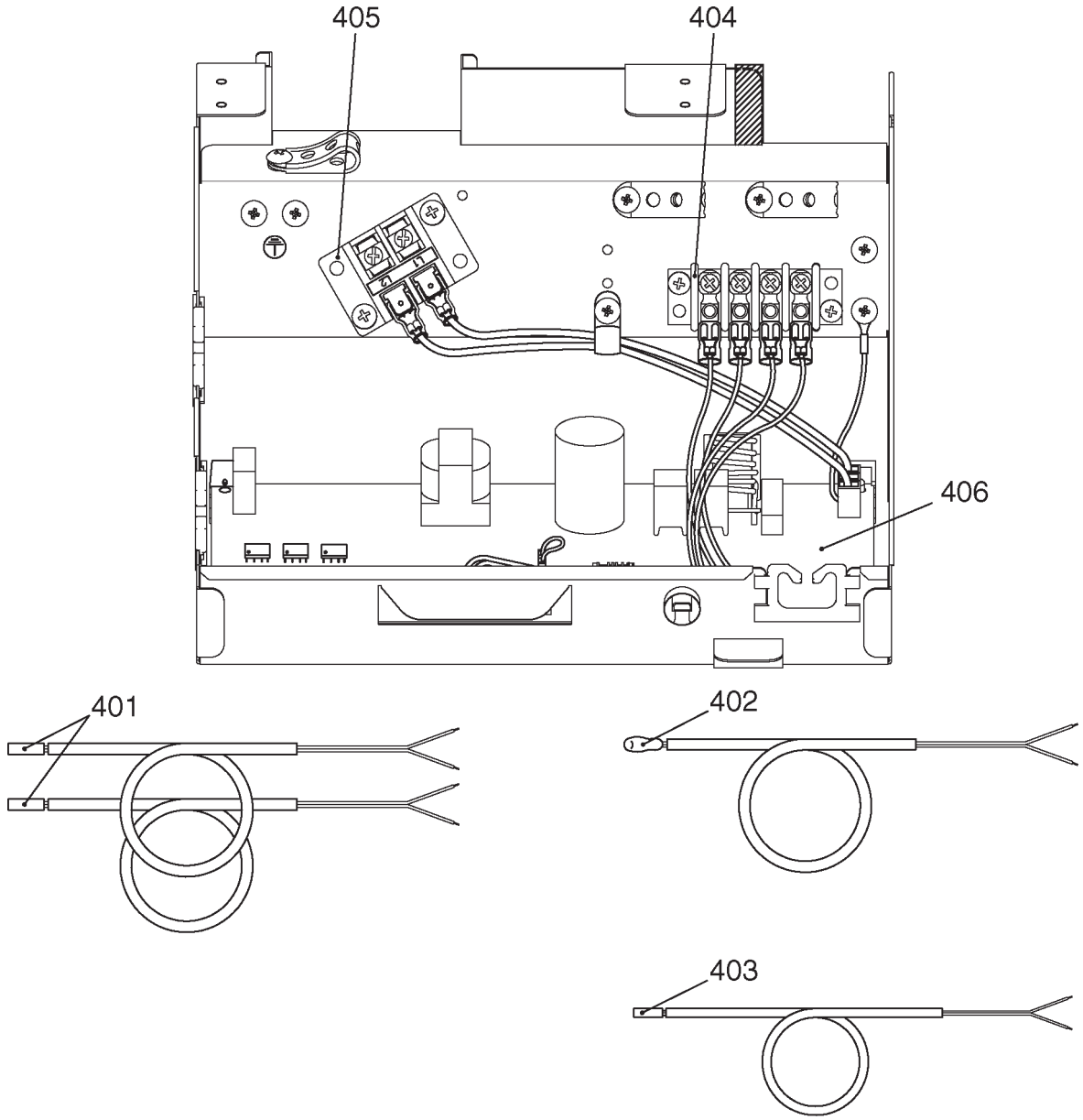
12-1. Slim Ducted Type

MMD-AP0074SPH2UL, AP0094SPH2UL, AP0124SPH2UL, AP0154SPH2UL, AP0184SPH2UL



Location No.	Parts No.	Description	Model Name		MMD-AP∗∗∗∗SPH2UL		
			0074	0094	0124	0154	0184
201	4312C055	MOTOR, FAN	1	1	1	1	1
202	4314N106	MOTOR, PMV, EFM-MD12TF-4	1	1	1	1	1
203	43146713	VALVE, PMV	1	1	1		
204	43120227	FAN, MULTI BLADE	2	2	2	2	2
205	43170244	HOSE, DRAIN	1	1	1	1	1
206	4314J478	REFRIGERATION CYCLE ASSY				1	1
207	43122084	CASE, FAN, LOWER	2	2	2	2	2
208	43122085	CASE, FAN, UPPER	2	2	2	2	2
209	4314J477	REFRIGERATION CYCLE ASSY	1	1	1		
210	43171082	SOCKET, DRAIN	1	1	1	1	1
211	43171080	SOCKET, PAN DRAIN	1	1	1	1	1
212	43100319	PLATE, INLET-B	1	1	1	1	1
213	43172228	PAN ASSY, DRAIN	1	1	1	1	1
214	43149351	SOCKET, 1/4 IN	1	1	1	1	1
215	43179129	CAP DRAIN	2	2	2	2	2
216	43170240	HOSE, DRAIN	1	1	1	1	1
217	4310A060	FLANGE	2	2	2	2	2
218	43F49697	BONNET, 1/4 IN	1	1	1	1	1
219	43179159	BAND, HOSE	1	1	1	1	1
220	43149314	SHEET, PMV	1	1	1	1	1
221	43146714	VALVE, PMV				1	1
222	43196109	BUSHING	2	2	2	2	2
223	43049776	SOCKET, 3/8 IN	1	1	1		
224	43149353	SOCKET, 1/2 IN				1	1
225	43047688	NUT, FLARE, 1/2, IN				1	1
226	43149355	NUT, FLARE, 3/8, IN	1	1	1		
227	43F47685	NUT, FLARE, 1/4 IN	1	1	1	1	1
228	43147662	STRAINER	1	1	1	1	1
229	43F47609	BONNET, 3/8 IN	1	1	1		
230	43047692	BONNET, 1/2 IN				1	1
231	4310A056	PLATE, INLET-A	1	1	1	1	1
232	4312C097	PUMP, ASSY WIRING	1	1	1	1	1
233	43151302	SWITCH, FLOAT	1	1	1	1	1
234	43179126	RUBBER, PUMP DRAIN	3	3	3	3	3
235	43F60029	FILTER,NOISE	1	1	1	1	1
236	43079249	BAND, HOSE	1	1	1	1	1
237	43102653	PLATE	1	1	1	1	1
238	43162075	COVER, E-PARTS	1	1	1	1	1
239	431S8138	LABEL, WARNING	1	1	1	1	1
241	43166013	REMOTE CONTROLLER, SX-TA01UE	1	1	1	1	1
242	43166014	REMOTE CONTROLLER, SX-TB01UE	1	1	1	1	1
243	43166015	REMOTE CONTROLLER, SX-UA01UE	1	1	1	1	1
244	43166016	REMOTE CONTROLLER, WX-TA01UES	1	1	1	1	1
245	431S8213	OWNER'S MANUAL	1	1	1	1	1

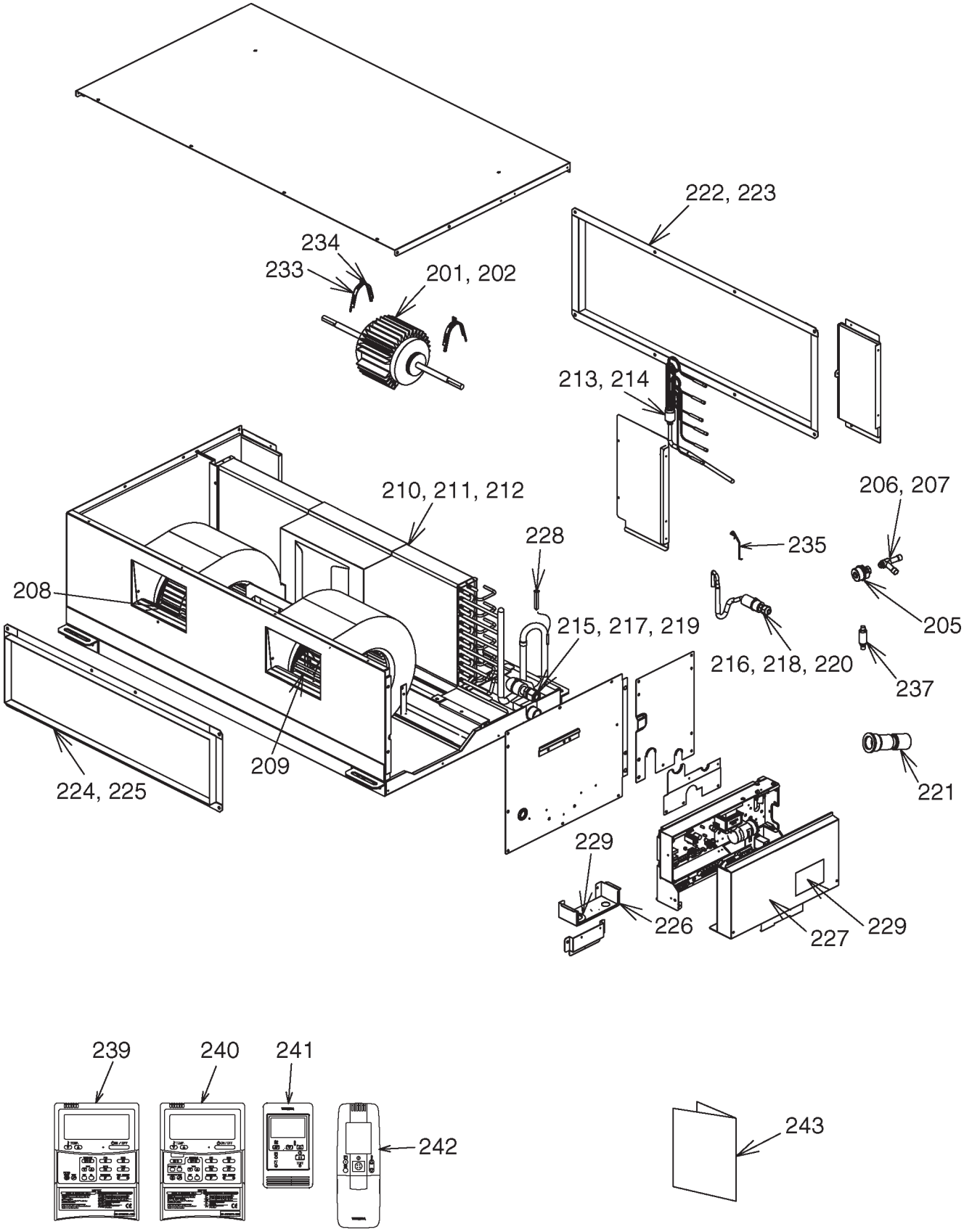
Electric Parts



Location No.	Parts No.	Description	Model Name MMD-AP∗∗∗∗SPH2UL				
			0074	0094	0124	0154	0184
401	43050425	Sensor Ass'y, Service, TC(F6)	2	2	2	2	2
402	43F50426	Sensor Service, TA	1	1	1	1	1
403	43150320	Sensor Ass'y, Service, TG(F6)	1	1	1	1	1
404	43160574	Terminal, 4P	1	1	1	1	1
405	43160626	Terminal Block, 2P, 20A	1	1	1	1	1
406	4316V445	PC Board Ass'y, MCC-1402	1	1	1	1	1

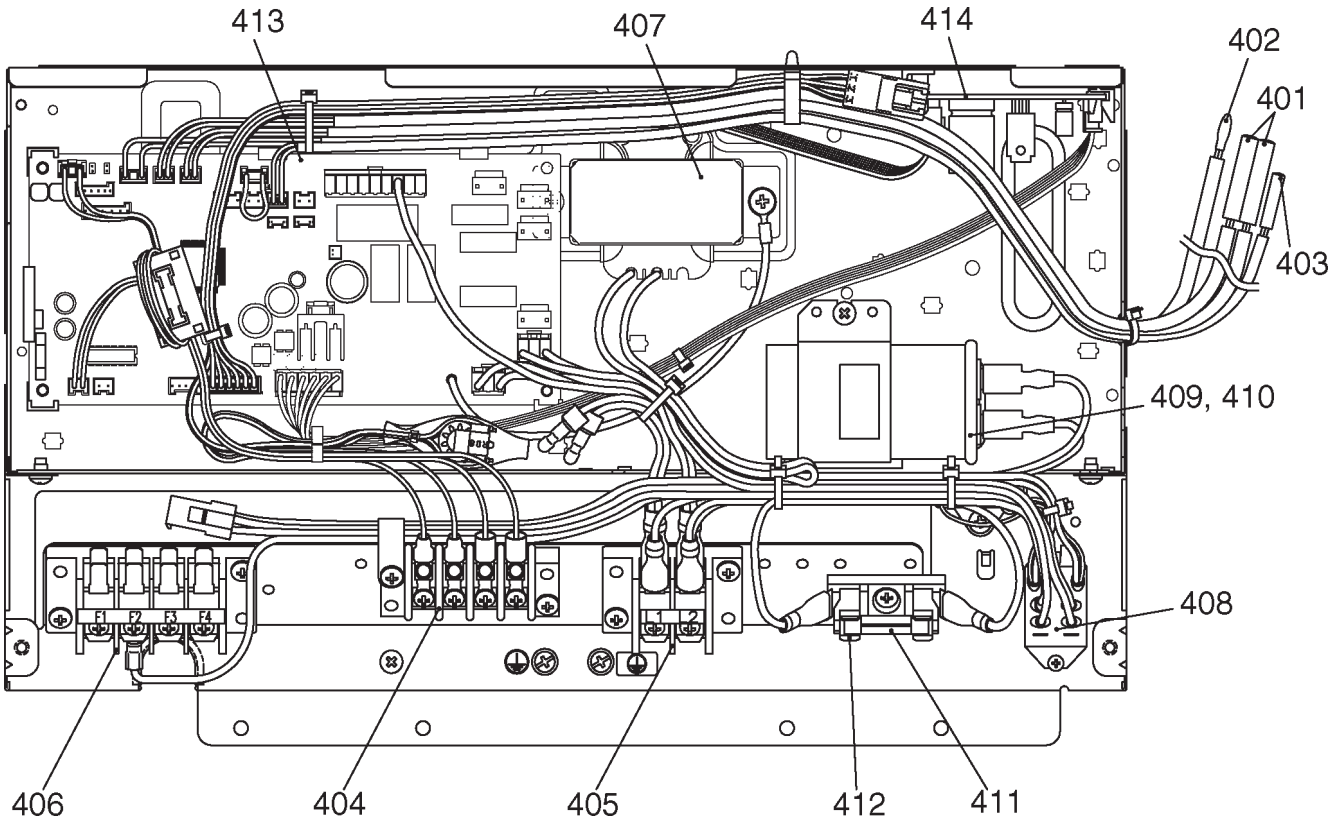
12-1. High static Ducted Type

MMD-AP0304H2UL, AP0364H2UL, AP0484H2UL



Location No.	Parts No.	Description	Model Name	MMD-AP∗∗∗∗H2UL	
			0304	0364	0484
201	4312C098	MOTOR, FAN, STF-230U260-4B			1
202	4312C099	MOTOR, FAN, STF-230U260-4C	1	1	
205	43146743	MOTOR, PMV, EFM-MD12TF-1	1	1	1
206	43146726	BODY, PMV	1		
207	43146723	BODY, PMV		1	1
208	43020352	FAN	1	1	1
209	43020353	FAN	1	1	1
210	4314J479	REFRIGERATION CYCLE ASSY	1		
211	4314J480	REFRIGERATION CYCLE ASSY		1	
212	4314J481	REFRIGERATION CYCLE ASSY			1
213	43147660	DISTRIBUTOR ASSY	1	1	
214	43147661	DISTRIBUTOR ASSY			1
215	43147194	BONNET, 5/8 IN	1	1	1
216	43F47609	BONNET, 3/8 IN	1	1	1
217	43149352	NUT, FLARE, 5/8, IN	1	1	1
218	43149355	NUT, FLARE, 3/8, IN	1	1	1
219	43149354	SOCKET, 5/8, IN	1	1	1
220	43049776	SOCKET, 3/8 IN	1	1	1
221	43171081	SOCKET, DRAIN	1	1	1
222	4310A062	FLANGE	1	1	1
223	4310A061	FLANGE			1
224	4310A064	FLANGE	1	1	
225	4310A063	FLANGE			1
226	43119524	PLATE	1	1	1
227	43162076	COVER, E-PARTS	1	1	1
228	43107215	HOLDER, SENSOR	1	1	1
229	431S8138	LABEL, WARNING	1	1	1
230	41179575	BUSHING	1	1	1
233	43139154	BAND, MOTOR, LEFT	2	2	2
234	43139155	BAND, MOTOR, RIGHT	2	2	2
235	43F19904	HOLDER, SENSOR (TS)	2	2	2
237	43147664	STRAINER	1	1	1
239	43166013	REMOTE CONTROLLER, SX-TA01UE	1	1	1
240	43166014	REMOTE CONTROLLER, SX-TB01UE	1	1	1
241	43166015	REMOTE CONTROLLER, SX-UA01UE	1	1	1
242	43166016	REMOTE CONTROLLER, WX-TA01UES	1	1	1
243	431S8213	OWNER'S MANUAL	1	1	1

Electric Parts



Location No.	Parts No.	Description	Model Name MMD-AP∗∗∗∗H2UL		
			0304	0364	0484
401	43050425	Sensor Ass'y, Service, TC(F6)	2	2	2
402	43F50426	Sensor Service, TA	1	1	1
403	43150320	Sensor Ass'y, Service, TG(F6)	1	1	1
404	43160574	Terminal, 4P	1	1	1
405	43160626	Terminal Block, 2P, 20A	1	1	1
406	43160554	Terminal Block, 4P, 20A	1	1	1
407	43158182	TRANSFORMER, TT-12	1	1	1
408	43154141	RELAY, LY2F-L	1	1	1
409	43155193	CAPACITOR	1	1	
410	43155174	CAPACITOR			1
411	43160637	FUSE, 10A	1	1	1
412	43F60859	FUSE BLOCK, 30A, 250V	1	1	1
413	4316V502	PC BOARD ASSY, MCC-1403	1	1	1
414	4316V247	P.C.BOARD ASSEMBLY, MCC-1520	1	1	1

WARNINGS ON REFRIGERANT LEAKAGE

Important

Check of Concentration Limit

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

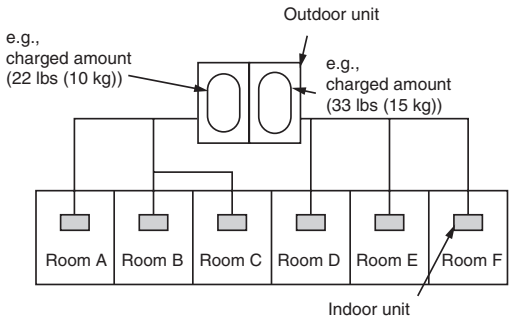
The refrigerant R410A which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its concentration should rise 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.

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

The concentration limit of R410A which is used in multi air conditioners is 0.019 lbs/ft³ (0.3kg/m³).

NOTE 1 :

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



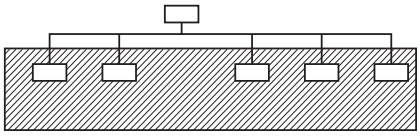
For the amount of charge in this example:

The possible amount of leaked refrigerant gas in rooms A, B and C is 22 lbs (10kg).
The possible amount of leaked refrigerant gas in rooms D, E and F is 33 lbs (15kg).

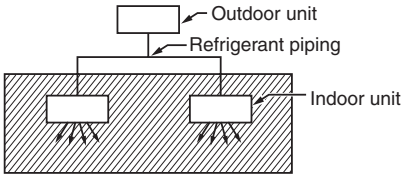
NOTE 2 :

The standards for minimum room volume are as follows.

1) No partition (shaded portion)

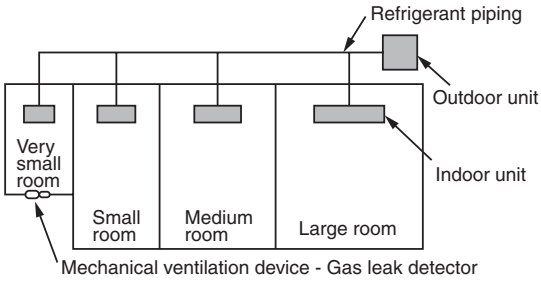


2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).



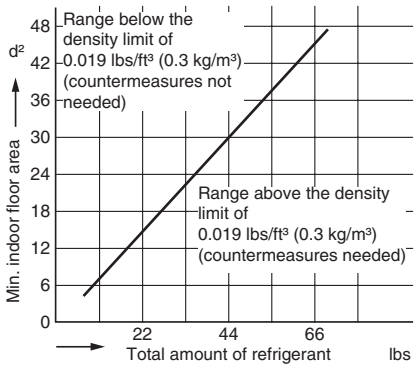
3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object.

But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



NOTE 3 :

The minimum indoor floor area compared with the amount of refrigerant is roughly as follows:
(When the ceiling is 8.9 ft (2.7m) high)



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Revision record

First issue	—	—	Mar., 2012
Revision 1	Change of service part number of PMV motor.	Page 101	Oct., 2014