TOSHIBA

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SERVICE MANUAL

MiNi-SMMS

HFC
R410A

Mini-*SUPER MODULAR MULTI SYSTEM* AIR CONDITIONER

Outdoor Unit

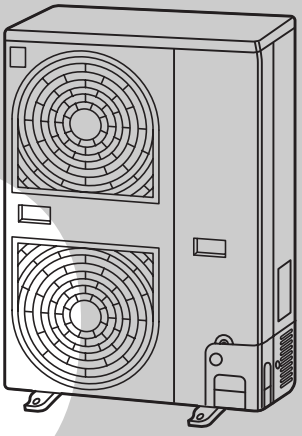
[Inverter Unit]

MCY-MAP0401HT, HTZ, HTZG
MCY-MAP0501HT, HTZ, HTZG
MCY-MAP0601HT, HTZ, HTZG
MCY-MAP0401HT2D, HT2DZ, HT2DZG
MCY-MAP0501HT2D, HT2DZ, HT2DZG
MCY-MAP0601HT2D, HT2DZ, HT2DZG

PMV Kit

RBM-PMV0361E
RBM-PMV0901E

In addition to description for the normal-type model, descriptions about the models with anti-corrosion (based on JRA Standard light protection and heavy protection) models are added in this Manual.



PRINTED IN JAPAN, Sep.,2006 ToMo

WARNINGS ON REFRIGERANT LEAKAGE

Check of Concentration Limit

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

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

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

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

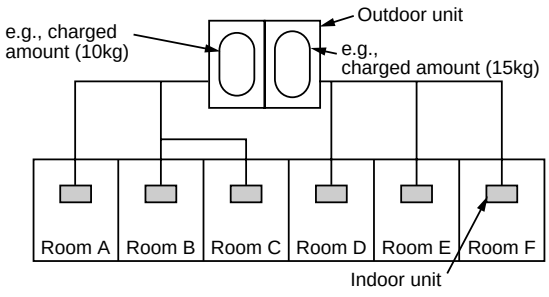
The concentration is as given below.

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

The concentration limit of R410A which is used in multi air conditioners is 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:

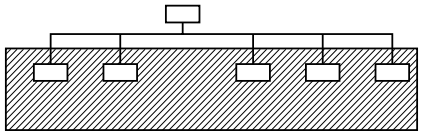
The possible amount of leaked refrigerant gas in rooms A, B and C is 10kg.
The possible amount of leaked refrigerant gas in rooms D, E and F is 15kg.

Important

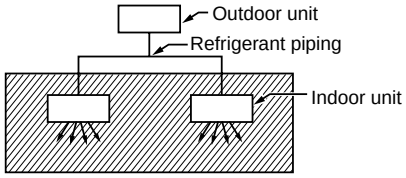
NOTE 2 :

The standards for minimum room volume are as follows.

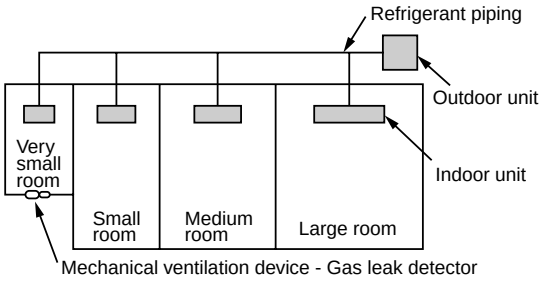
(1) No partition (shaded portion)



(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).

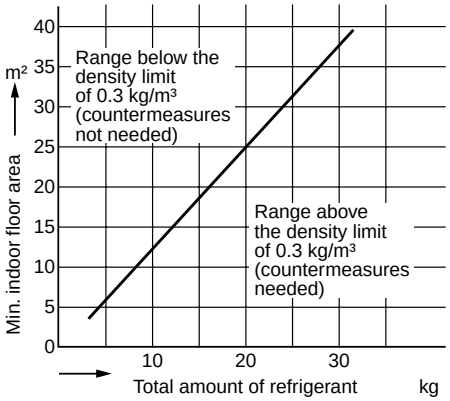


(3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the 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 2.7m high)



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In addition to description for the normal-type model, descriptions about the models with anti-corrosion (based on JRA Standard light protection and heavy protection) models are added in this Manual.

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.

[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	**(For more details, please refer Page 7 to Page 9)** This air conditioner adopts a new HFC type refrigerant (R410A) which does not deplete the ozone layer. **Check the used refrigerant name and use tools and materials of the parts which match with it.** For the products which use R410A refrigerant, the refrigerant name is indicated at a position on the outdoor unit where is easy to see. To prevent miss-charging, the route of the service port is changed from one of the former R22. **For an air conditioner which uses R410A, never use other refrigerant than R410A. For an air conditioner which uses other refrigerant (R22, etc.), never use R410A.** If different types of refrigerant are mixed, abnormal high pressure generates in the refrigerating cycle and an injury due to breakage may be caused. **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/Wiring	**After repair work, surely assemble the disassembled parts, and connect and lead the removed cables as before. Perform the work so that the cabinet or panel does not catch the inner cables.** If incorrect assembly or incorrect cable 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 mugger) 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.
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 rerair	**After repair work has finished, check there is no trouble.** If check is not executed, a fire, electric shock or injury may be caused. For a check, turn off the power breaker.
	After repair work (installation of front panel and cabinet) has finished, execute a test run to check there is no generation of smoke or abnormal sound. If check is not executed, a fire or an electric shock is caused. Before test run, install the front panel and cabinet.
Check after reinstallation	**Check the following items after reinstallation.** 1) The earth wire is correctly connected. 2) The power cord is not caught in the product. 3) There is no inclination or unsteadiness and the installation is stable. If check is not executed, a fire, an electric shock or an injury is caused.

⚠ CAUTION	
Put on gloves	**Be sure to put on gloves (∗) during repair work.** If not putting on gloves, 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)

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 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 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 new equipment can be used with conventional refrigerant
①	Flare tool	Pipe flaring	Yes	*(Note 1)	Yes
②	Copper pipe gauge for adjusting projection margin	Flaring by conventional flare tool	Yes	*(Note 1)	*(Note 1)
③	Torque wrench	Connection 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
⑩	Charging cylinder	Refrigerant charge	(Note 2)	No	No

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

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

General tools (Conventional tools can be used.)

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

1) Vacuum pump
   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 (Volt meter)

5. Recharge of Refrigerant

When recharge of the refrigerant is required, charge the new refrigerant with the specified amount in the procedure as described below.

Recover the refrigerant and check there is no refrigerant in the equipment.

↓

Connect the charge hose to the packed valve service ports at gas side, liquid side of the outdoor unit.

↓

Connect the charge hose to vacuum pump adaptor.

↓

Open the packed valves fully at liquid and gas sides, and then return the valve at gas side a little to the closed side.

↓

Open fully PMV of the outdoor unit.
- Turn on power of the outdoor unit.
- Short CN30 on I/F P.C. board of the outdoor unit.
- Turn off power of the outdoor unit within 2 minutes after shorting CN30.

↓

Open fully the handle on the Low side of the gauge manifold, and then turn on the power of vacuum pump for vacuuming.

↓

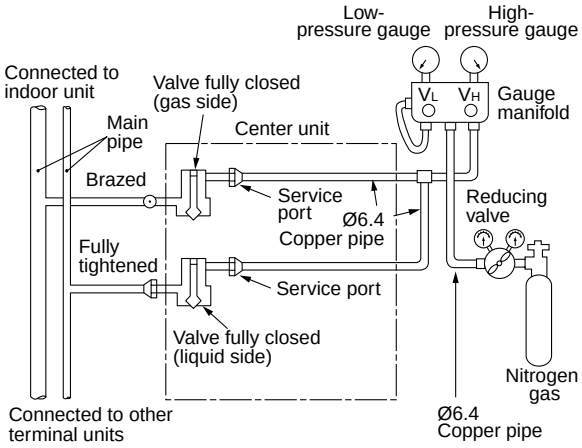
When the pressure has lowered until indication of the compound gauge pointed –0.1MPa (–76cmHg), open fully the handle Low and turn off the power of vacuum pump.

↓

Leave it as it is for 1 to 2 minutes and check the indicator of the compound gauge does not return.

↓

Set the refrigerant cylinder on the electronic balance, connect the charge hose to connecting ports of the cylinder and the gauge manifold, and then charge the liquid refrigerant from the service port at liquid side. (Shield with the gauge manifold so that refrigerant does not flow to gas side.)

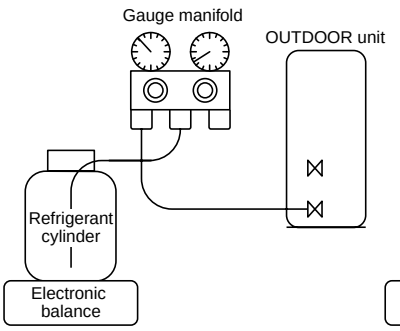


① Never charge the refrigerant over the specified amount.
② Do not charge the additional refrigerant.
If charging refrigerant additionally when refrigerant gas leaks, the refrigerant composition in the refrigerating cycle changes resulted in change of air conditioner characteristics or refrigerant over 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.

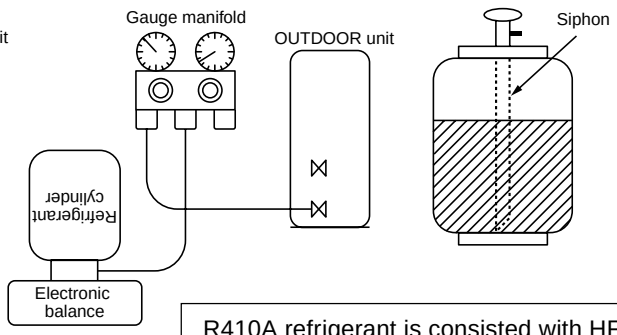
4mm-hexagonal wrench is required.

① Set the equipment so that liquid refrigerant can be charged.
② When using a cylinder with siphon pipe, liquid can be charged without inverting the cylinder.

[Cylinder with siphon]



[Cylinder without siphon]



R410A refrigerant is consisted with HFC mixed refrigerant. Therefore if the refrigerant gas is charged, the composition of the charged refrigerant changes and characteristics of the equipment changes.

6. Environmental concern

Use “Vacuum pump method” for an air purge (Discharge of air in the connecting pipe) in installation time.

- Do not discharge flon gas into the air to protect the earth environment.
- Using the vacuum pump method, clear the remaining air (Nitrogen, etc.) in the unit. If the air remains, the pressure in the refrigerating cycle becomes abnormally high and an injury could occur through failure of the product.

1. DESIGN METHODS

1-1. System Overview

1-1-1. Outdoor Units

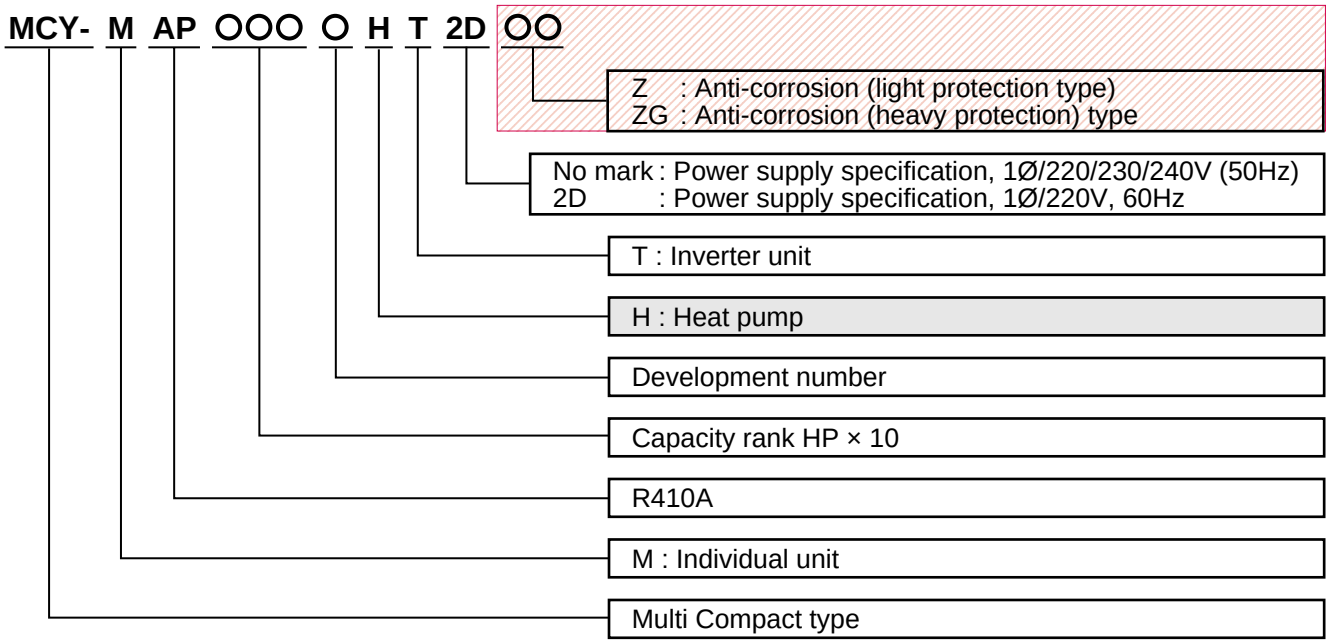
Corresponding HP		Inverter unit		
		4HP	5HP	6HP
Model name	Heat pump (50Hz)	MCY-MAP0401HT MCY-MAP0401HTZ MCY-MAP0401HTZG	MCY-MAP0501HT MCY-MAP0501HTZ MCY-MAP0501HTZG	MCY-MAP0601HT MCY-MAP0601HTZ MCY-MAP0601HTZG
	Heat pump (60Hz)	MCY-MAP0401HT2D MCY-MAP0401HT2DZ MCY-MAP0401HT2DZG	MCY-MAP0501HT2D MCY-MAP0501HT2DZ MCY-MAP0501HT2DZG	MCY-MAP0601HT2D MCY-MAP0601HT2DZ MCY-MAP0601HT2DZG
Cooling capacity (kW) ∗1		12.1	14.0	15.5
Heating capacity (kW) ∗1		12.5	16.0	18.0
No.of connectable indoor units		6	8	9

∗1 Rated conditions

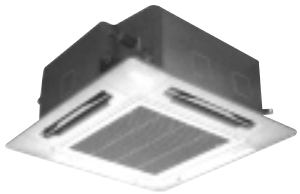
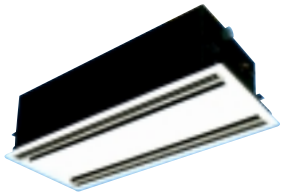
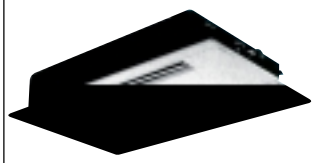
Cooling:Indoor air temperature 27°C DB/19°C WB,
Outdoor air temperature 35°C DB

Heating:Indoor air temperature 20°C DB,
Outdoor air temperature 7°C DB/6°C WB

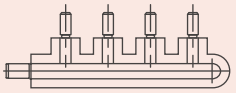
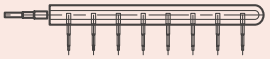
Allocation standard of model name



1-1-2. Indoor Units

Type	Appearance	Model name	Capacity rank	Capacity code	Cooling capacity (kW)	Heating capacity (kW)	PMV Kit
4-way Air Discharge Cassette Type		**MMU-AP0091H**	009 type	1.00	2.8	3.2	——
		MMU-AP0121H	012 type	1.25	3.6	4.0	——
		MMU-AP0151H	015 type	1.70	4.5	5.0	——
		MMU-AP0181H	018 type	2.00	5.6	6.3	——
		MMU-AP0241H	024 type	2.50	7.1	8.0	——
		MMU-AP0271H	027 type	3.00	8.0	9.0	——
		MMU-AP0301H	030 type	3.20	9.0	10.0	——
		MMU-AP0361H	036 type	4.00	11.2	12.5	——
		MMU-AP0481H	048 type	5.00	14.0	16.0	——
Compact 4-way Air Discharge (600 × 600) Type		**MMU-AP0071MH**	007 type	0.80	2.2	2.5	Available
		MMU-AP0091MH	009 type	1.00	2.8	3.2	Available
		MMU-AP0121MH	012 type	1.25	3.6	4.0	Available
		MMU-AP0151MH	015 type	1.70	4.5	5.0	Available
		MMU-AP0181MH	018 type	2.00	5.6	6.3	Available
2-way Air Discharge Cassette Type		**MMU-AP0071WH**	007 type	0.80	2.2	2.5	——
		MMU-AP0091WH	009 type	1.00	2.8	3.2	——
		MMU-AP0121WH	012 type	1.25	3.6	4.0	——
		MMU-AP0151WH	015 type	1.70	4.5	5.0	——
		MMU-AP0181WH	018 type	2.00	5.6	6.3	——
		MMU-AP0241WH	024 type	2.50	7.1	8.0	——
		MMU-AP0271WH	027 type	3.00	8.0	9.0	——
		MMU-AP0301WH	030 type	3.20	9.0	10.0	——
1-way Air Discharge Cassette Type		**MMU-AP0071YH**	007 type	0.80	2.2	2.5	Available
		MMU-AP0091YH	009 type	1.00	2.8	3.2	Available
		MMU-AP0121YH	012 type	1.25	3.6	4.0	Available
		MMU-AP0152SH	015 type	1.70	4.5	5.0	Available
		MMU-AP0182SH	018 type	2.00	5.6	6.3	Available
		MMU-AP0242SH	024 type	2.50	7.1	8.0	Available
Concealed Duct Standard Type		**MMD-AP0071BH**	007 type	0.80	2.2	2.5	——
		MMD-AP0091BH	009 type	1.00	2.8	3.2	——
		MMD-AP0121BH	012 type	1.25	3.6	4.0	——
		MMD-AP0151BH	015 type	1.70	4.5	5.0	——
		MMD-AP0181BH	018 type	2.00	5.6	6.3	——
		MMD-AP0241BH	024 type	2.50	7.1	8.0	——
		MMD-AP0271BH	027 type	3.00	8.0	9.0	——
		MMD-AP0301BH	030 type	3.20	9.0	10.0	——
		MMD-AP0361BH	036 type	4.00	11.2	12.5	——
		MMD-AP0481BH	048 type	5.00	14.0	16.0	——
Slim Duct Type		**MMD-AP0071SPH**	007 type	0.80	2.2	2.5	Available
		MMD-AP0091SPH	009 type	1.00	2.8	3.2	Available
		MMD-AP0121SPH	012 type	1.25	3.6	4.0	Available
		MMD-AP0151SPH	015 type	1.70	4.5	5.0	Available
		MMD-AP0181SPH	018 type	2.00	5.6	6.3	Available
Concealed Duct High Static Pressure Type		**MMD-AP0181H**	018 type	2.00	5.6	6.3	——
		MMD-AP0241H	024 type	2.50	7.1	8.0	——
		MMD-AP0271H	027 type	3.00	8.0	9.0	——
		MMD-AP0361H	036 type	4.00	11.2	10.0	——
		MMD-AP0481H	048 type	5.00	14.0	16.0	——
Under Ceilling Type		**MMC-AP0151H**	015 type	1.70	4.5	5.0	——
		MMC-AP0181H	018 type	2.00	5.6	6.3	——
		MMC-AP0241H	024 type	2.50	7.1	8.0	——
		MMC-AP0271H	027 type	3.00	8.0	9.0	——
		MMC-AP0361H	036 type	4.00	11.2	12.5	——
		MMC-AP0481H	048 type	5.00	14.0	16.0	——

1-1-3. Branching Joints and Headers *1

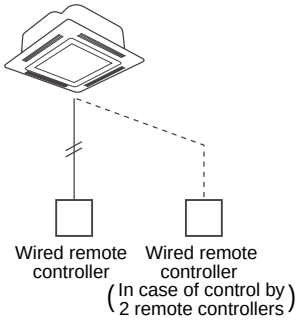
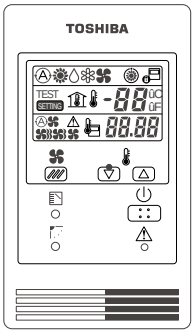
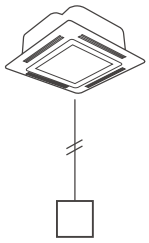
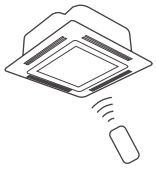
	Model name	Appearance
Y-shape branching joint	**RBM-BY53E**	
4-branching header *1	**RBM-HY1043E**	
8-branching header *1	**RBM-HY1083E**	

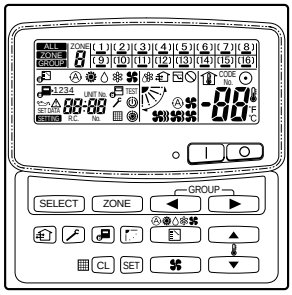
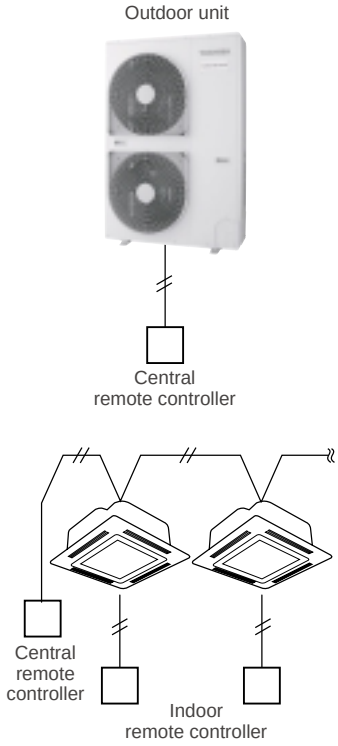
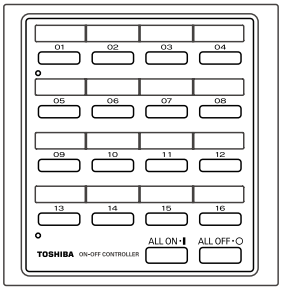
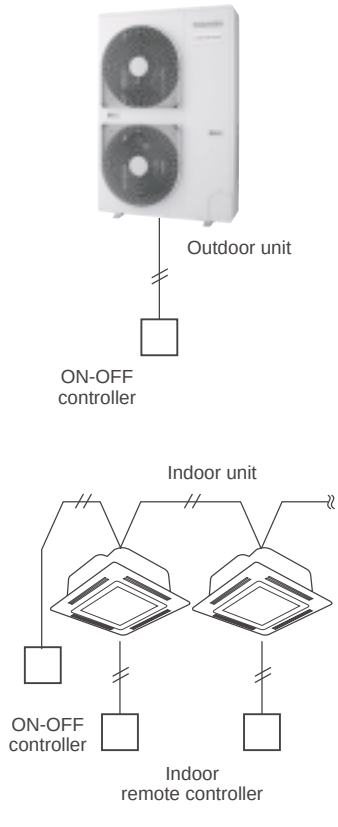
*1: For each line after branching header, total indoor capacity code must be 6.0 maximum.

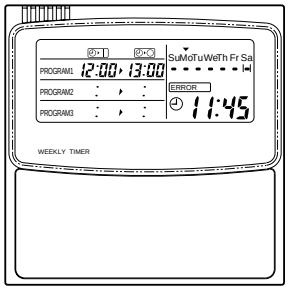
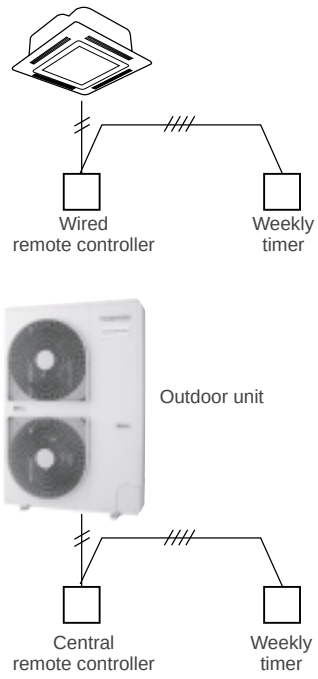
1-1-4. PMV Kit

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

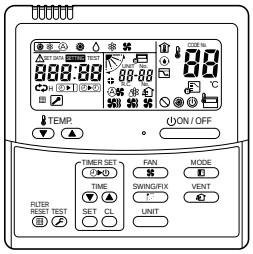
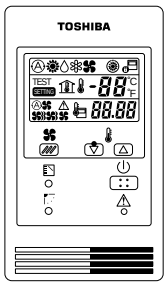
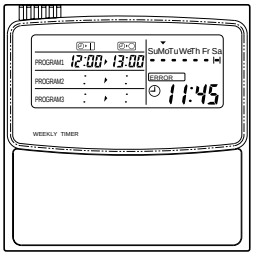
1-1-5. Remote Controller

<table>
<tr><th>Name</th><th>Model name</th><th>Appearance</th><th>Application</th><th>Function</th></tr>
<tr><td>Wired remote controller</td><td>RBC- AMT31E</td><td> </td><td>Connected to indoor unit
 
</td><td>• Start / Stop
• Mode Change
• Temperature setting
• Fan speed
• Timer function
1) On or off elapsed timer with 30 minutes increments. Automatic off function.
2) Weekly when combined with RBC-EXW21E2 weekly schedule operation can be operated.
• Filter dirty indicator
Displays automatically maintenance time of indoor filter by flashes.
• Self-diagnosis function. Pressing “CHECK” button displays status code.
• Control by 2 remote controllers is available. Two remote controllers can be connected to one indoor unit.
The indoor unit can be separately operated from a different location.</td></tr>
<tr><td>Simple wired remote controller</td><td>RBC- AS21E2</td><td> 
</td><td>Connected to indoor unit
 
Simple remote controller</td><td>• Start / Stop
• Temperature setting
• Change of air flow
• Check code display</td></tr>
<tr><td rowspan="3">Wireless remote controller kit</td><td>TCB-AX21E2</td><td rowspan="3"> </td><td> </td><td rowspan="3">• Start / Stop
• Mode change
• Temperature setting
• Change of air flow
• Timer function
On or off timer operation, setting in 30 minutes increments.
Automatic Off function.
• Control by 2 remote controllers is available. Two wireless remote controllers can operate one indoor unit.
The indoor unit can be separately operated from a different location.
• Check code display
TCB-AX21U(W)-E2
(for 4-way air discharge cassette)
RBC-AX22CE2 (for under ceiling)
TCB-AX21-E2 (for other units except for the concealed duct high static pressure)
  </td></tr>
<tr><td>RBC-AX22CE2</td><td>
</td></tr>
<tr><td>TCB- AX21U(W)-E2</td><td> </td></tr>
</table>

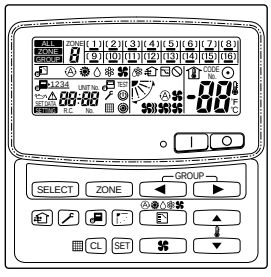
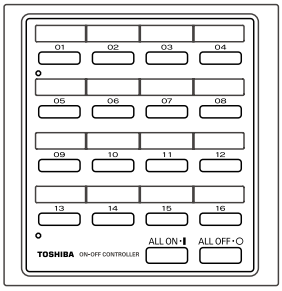
Name	Model name	Appearance	Application	Performance
Central remote controller	**TCB- SC642TLE2**		**Connected to outdoor unit or indoor unit** 	Individual control up to 64 indoor units. Individual control for max. 64 indoor units divided into 4 zones. (Up to 16 indoor units for each zone) Up to 16 outdoor units are connectable. Four selectable central control settings to restrict individual remote controller operations. Setting for one of 1 to 4 zones is available. Can be used with other central control devices (Up to 10 central control devices with in one control circuit) Two selectable control modes (Central controller mode. Remote controller mode) Setting of simultaneous ON/OFF 3 times for each day of the week combined with a weekly timer.
ON- OFF controller	**TCB- CC163TLE2**		**Connected to outdoor unit or indoor unit** 	• Individual control up to 16 indoor units. • Setting of simultaneous ON-OFF 3 times for each day of the week when combined with a weekly timer. • Connected to 2 remote controllers is possible.

Name	Model name	Appearance	Application	Performance
Weekly timer	**RBC- EXW21E2**		**Connected to central remote controller or wired remote controller**  	Weekly schedule operation 1) Setting different start / stop time for each day of the week 2) ON / OFF can be set 3 times a day. 3) “CHECK“ “PROGRAM” “DAY” button copying of settings easy. 4) Two different schedules for a week can be specified. (Summer schedule and winter schedule, etc.) 5) “CANCEL” “DAY” button enables holiday setting. 6) If power supply fails, the setting contents are stored in the memory for 100 hours.

■ Remote controllers

Name	Wired remote controller	Simple wired remote controller	Weekly timer
Appearance			
Model name	RBC-AMT31E	RBC-AS21E2	RBC-EXW21E2

Name	Wireless remote controller kit		
Appearance	Receiver section	Receiver section	Receiver section mounted separately
Model name	RBC-AX21U (W)-E2	RBC-AX22CE2	TCB-AX21E2
Type	4-way Air Discharge Cassette type	Under Ceiling type 1-way Air Discharge Cassette type (MMU-AP✻✻✻2SH Series)	Separate sensor type

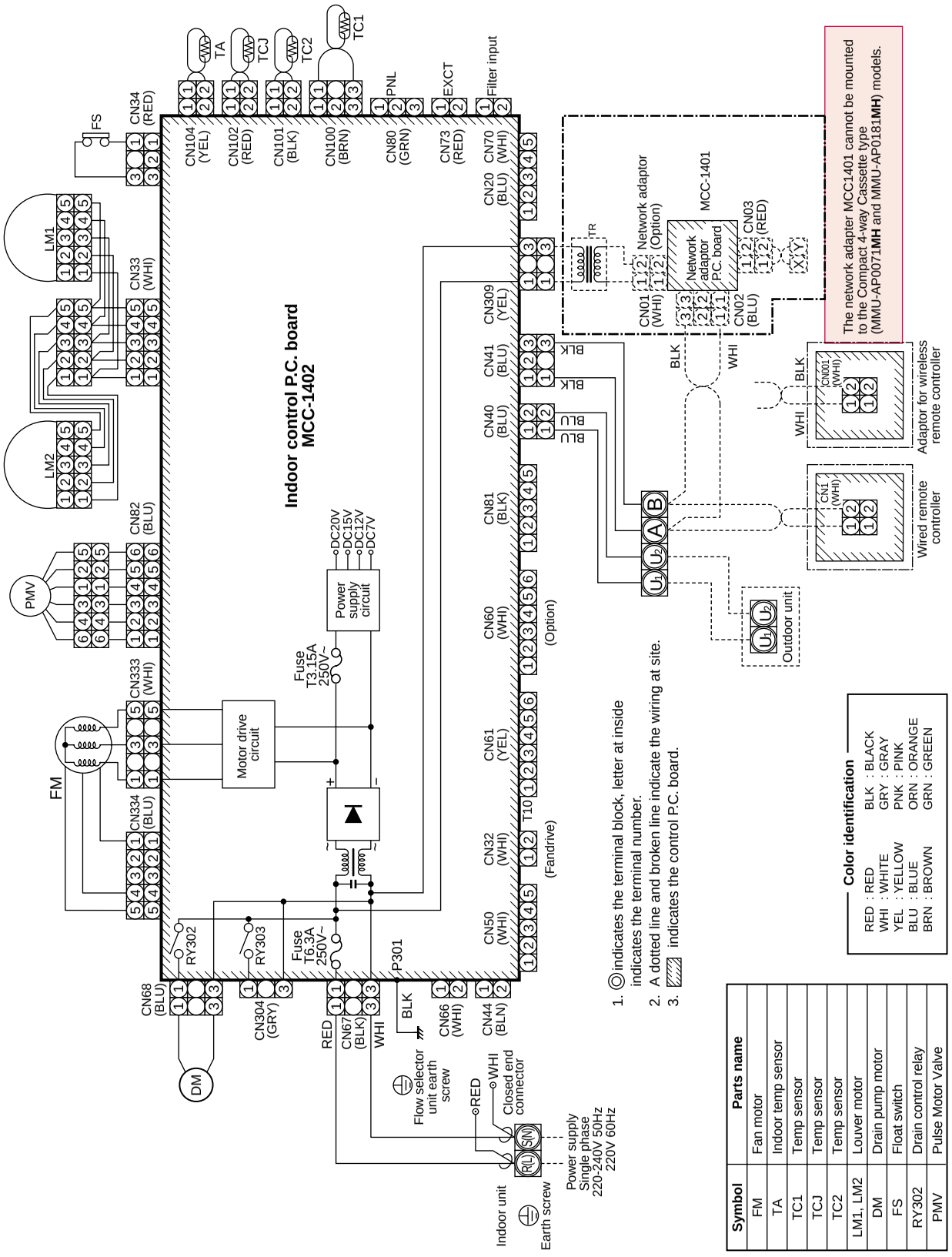
Name	Central remote controller	ON, OFF controller
Appearance		
Model name	TCB-SC642TLE2	TCB-CC163TLE2
Type	64 system center controller	—

2. WIRING DIAGRAM

2-1. Indoor Unit

2-1-1. 4-way Air Discharge Cassette Type

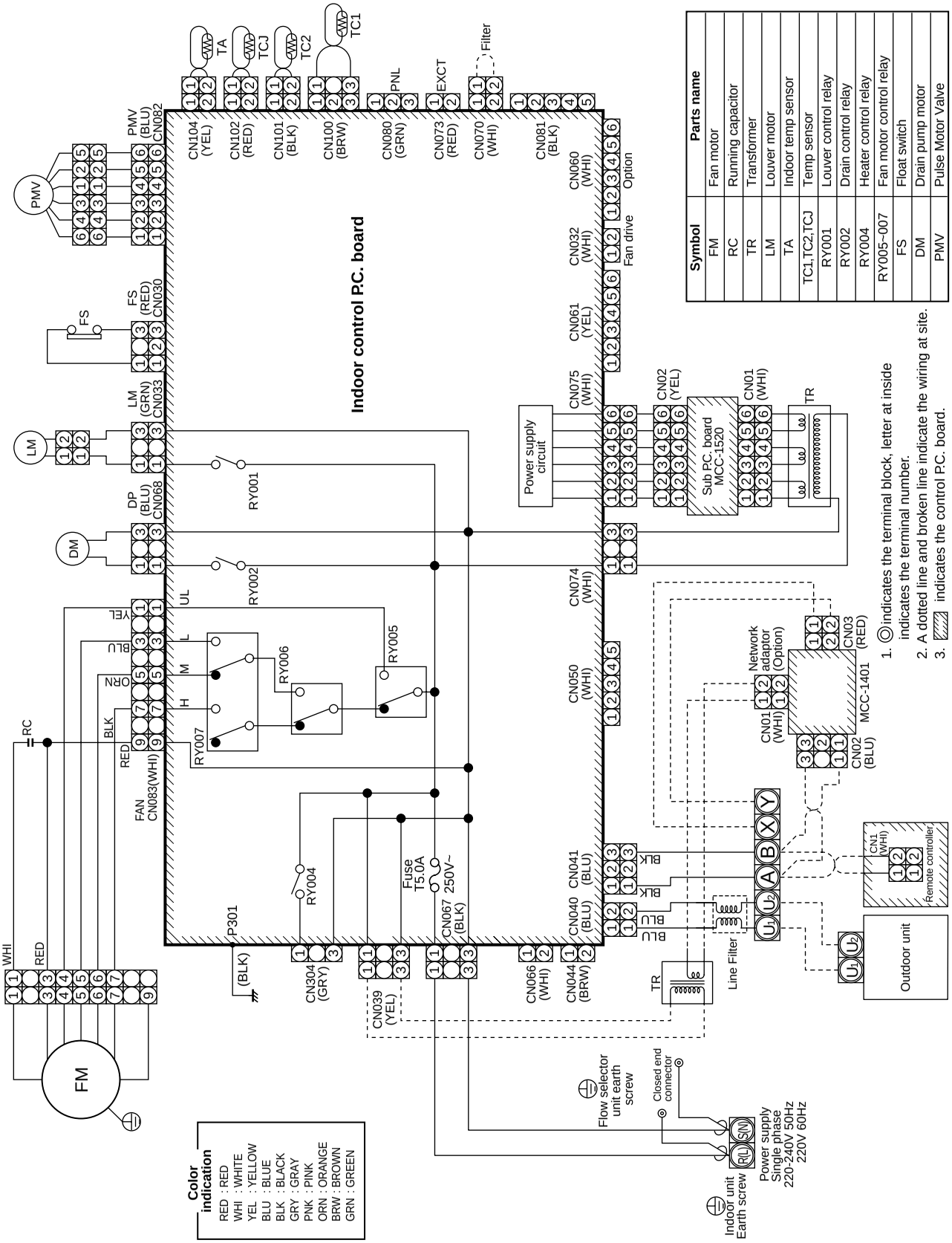
Model: MMU-AP0091H, AP0121H, AP0151H, AP0181H, AP0241H,
MMU-AP0271H, AP0301H, AP0361H, AP0481H, AP0561H,
MMU-AP0071MH, AP0091MH, AP0121MH, AP0151MH, AP0181MH



Symbol	Parts name
FM	Fan motor
TA	Indoor temp sensor
TC1	Temp sensor
TCJ	Temp sensor
TC2	Temp sensor
LM1, LM2	Louver motor
DM	Drain pump motor
FS	Float switch
RY302	Drain control relay
PMV	Pulse Motor Valve

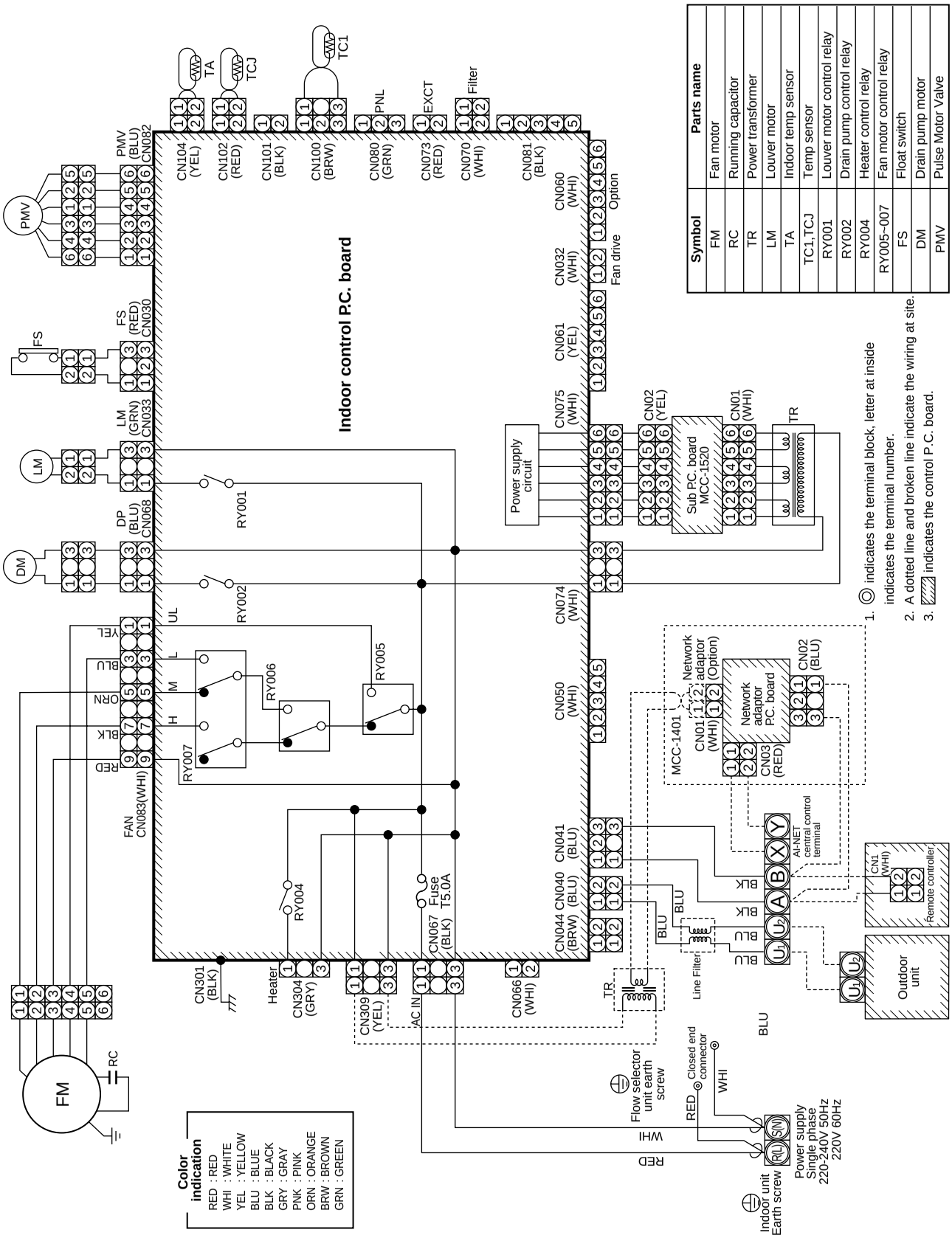
2-1-2. 2-way Air Discharge Cassette Type

Model: MMU-AP0071WH, AP0091WH, AP0121WH, AP0151WH, AP0181WH, MMU-AP0241WH, AP0271WH, AP0301WH, AP0481WH



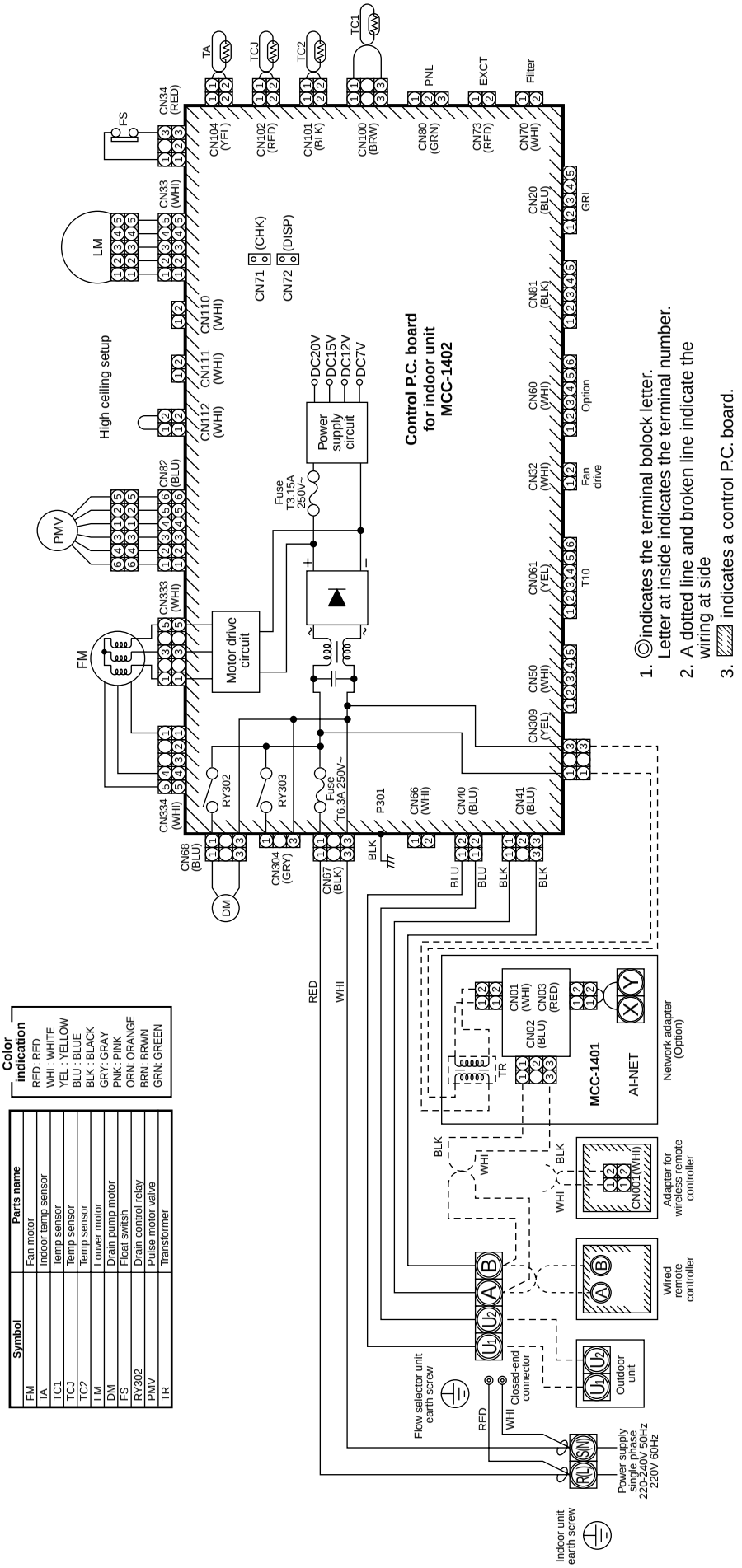
2-1-3. 1-way Air Discharge Cassette Type (Compact type)

Model: MMU-AP0071YH, AP0091YH, AP0121YH



2-1-4. 1-way Air Discharge Cassette Type

Model: MMU-AP0152SH, AP0182SH, AP0242SH



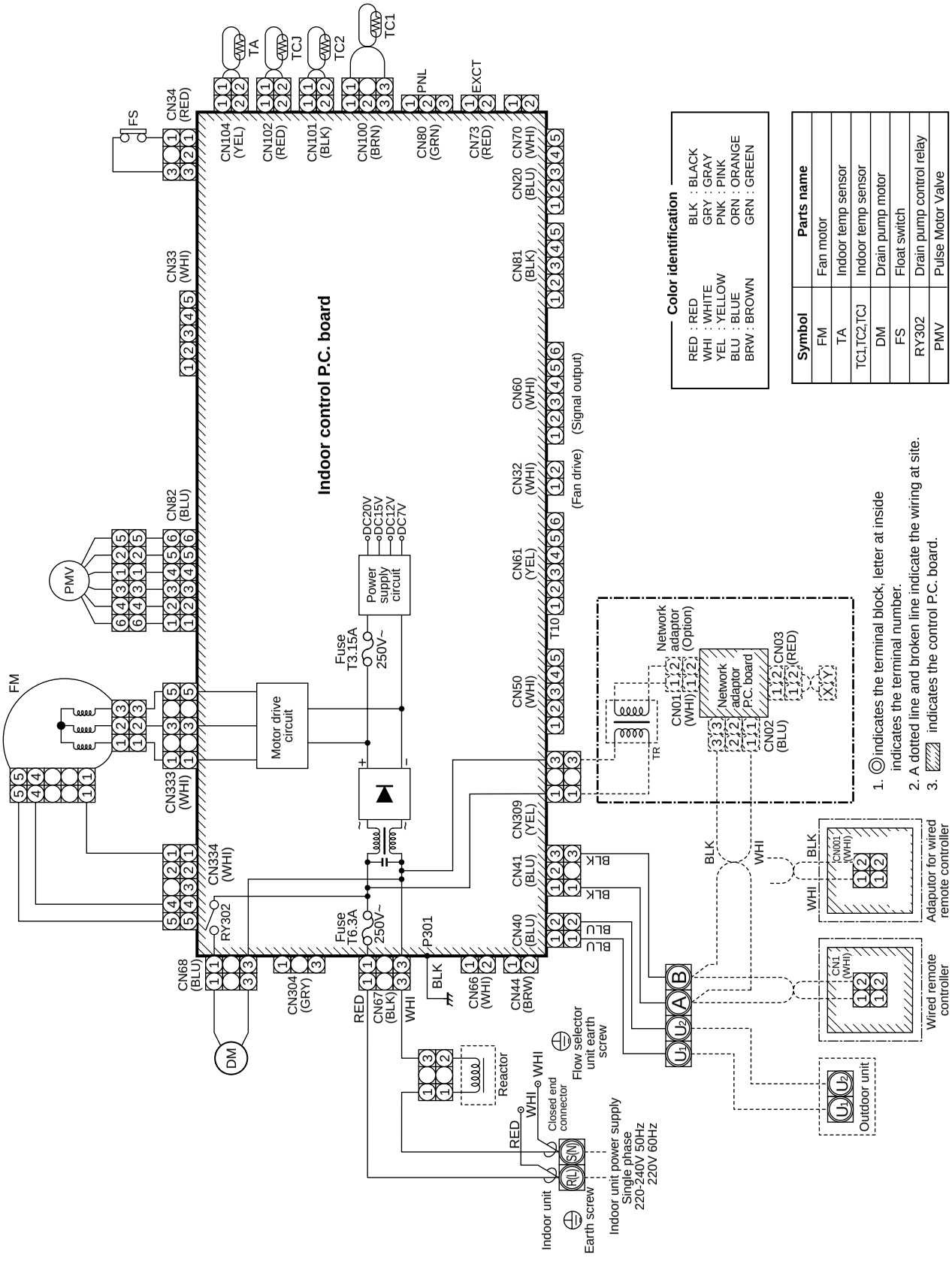
Symbol	Parts name
FM	Fan motor
TA	Indoor temp sensor
TC1	Temp sensor
TCJ	Temp sensor
TC2	Temp sensor
LM	Louver motor
DM	Drain pump motor
FS	Float switch
RY302	Drain control relay
PMV	Pulse motor valve
TR	Transformer

Color indication

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

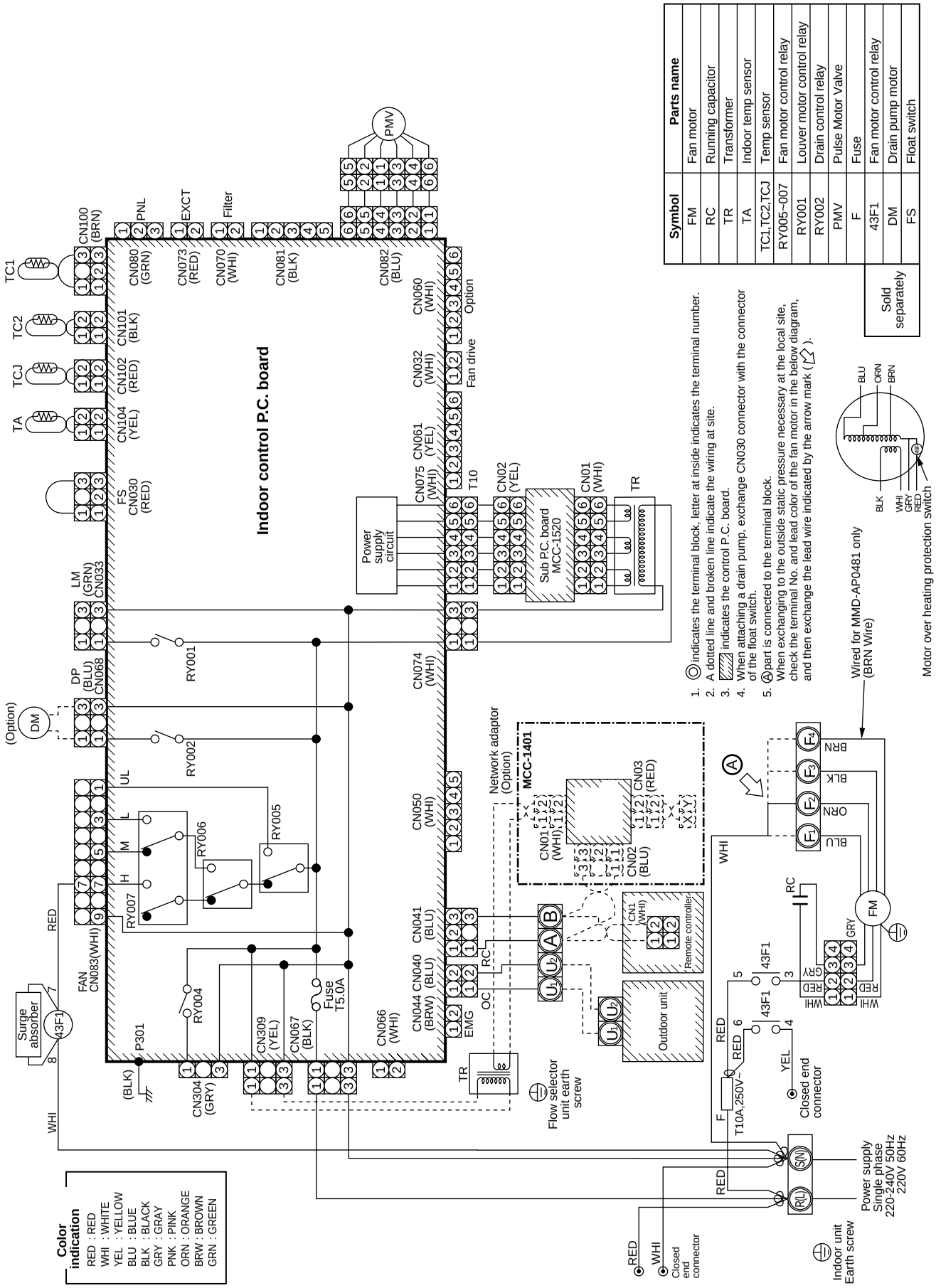
2-1-5. Concealed Duct Standard Type

Model: MMD-AP0071BH, AP0091BH, AP0121BH, AP0151BH, AP0181BH, AP0241BH
MMD-AP0271BH, AP0301BH, AP0361BH, AP0481BH, AP0561BH



2-1-6. Concealed Duct High Static Pressure Type

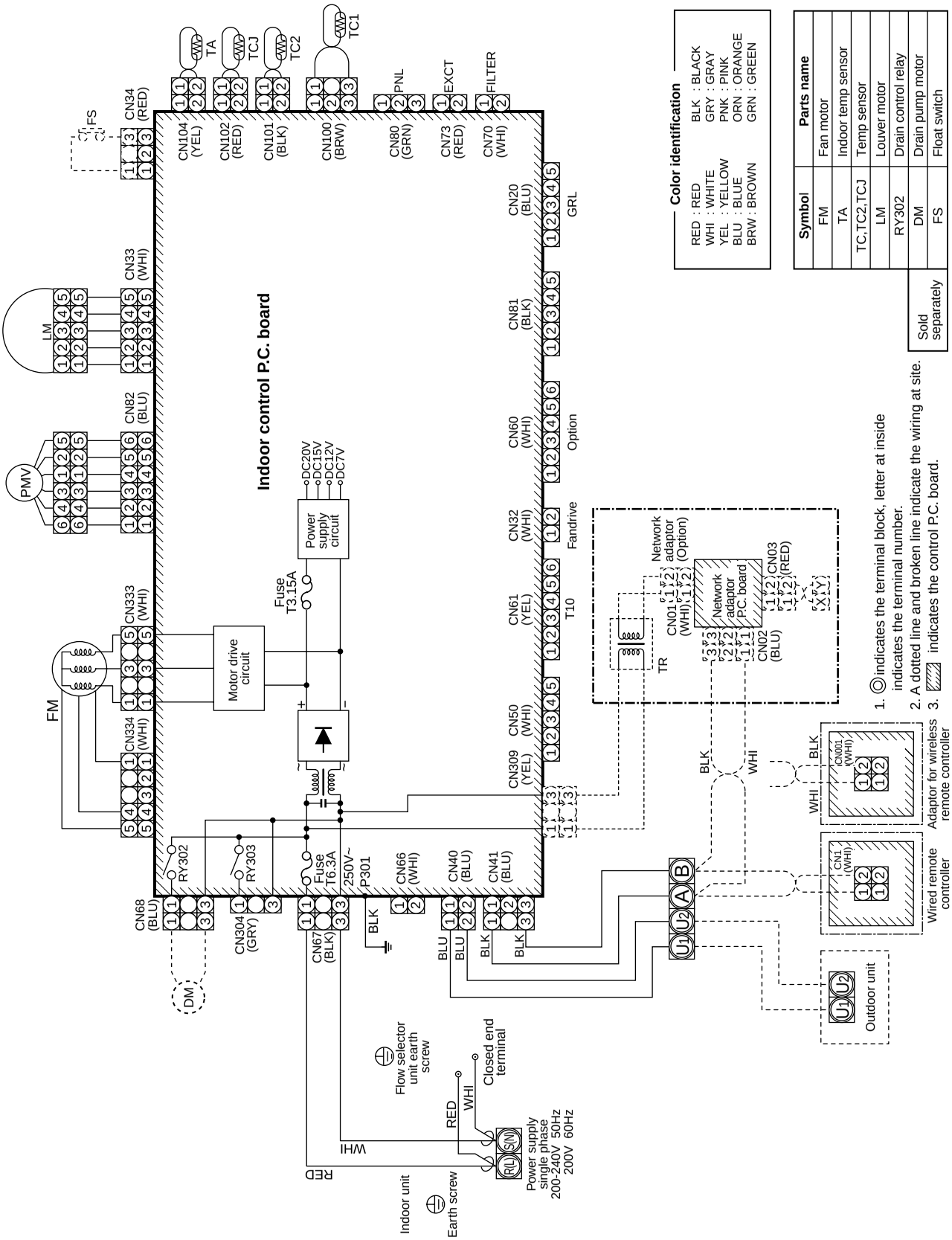
Model: MMD-AP0181H, AP0241H, AP0271H, AP0361H, AP0481H



Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Transformer
TA	Indoor temp sensor
TC1,TC2,TCJ	Temp sensor
RY005~007	Fan motor control relay
RY001	Louver motor control relay
RY002	Drain control relay
PMV	Pulse Motor Valve
F	Fuse
43F1	Fan motor control relay
DM	Drain pump motor
FS	Float switch

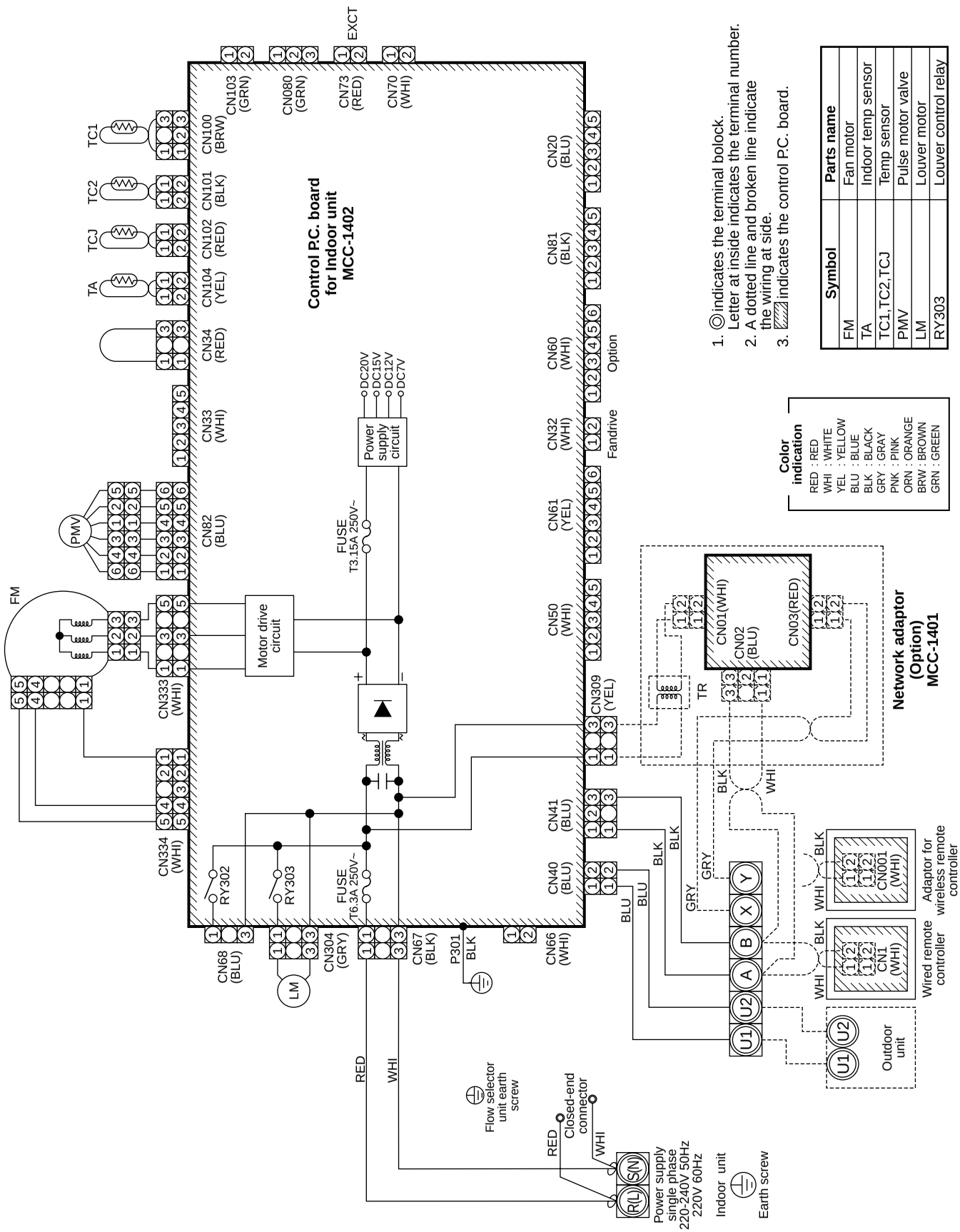
2-1-7. Under Ceiling Type

Model: MMC-AP0151H, AP0181H, AP0241H, AP0271H, AP0361H, AP0481H

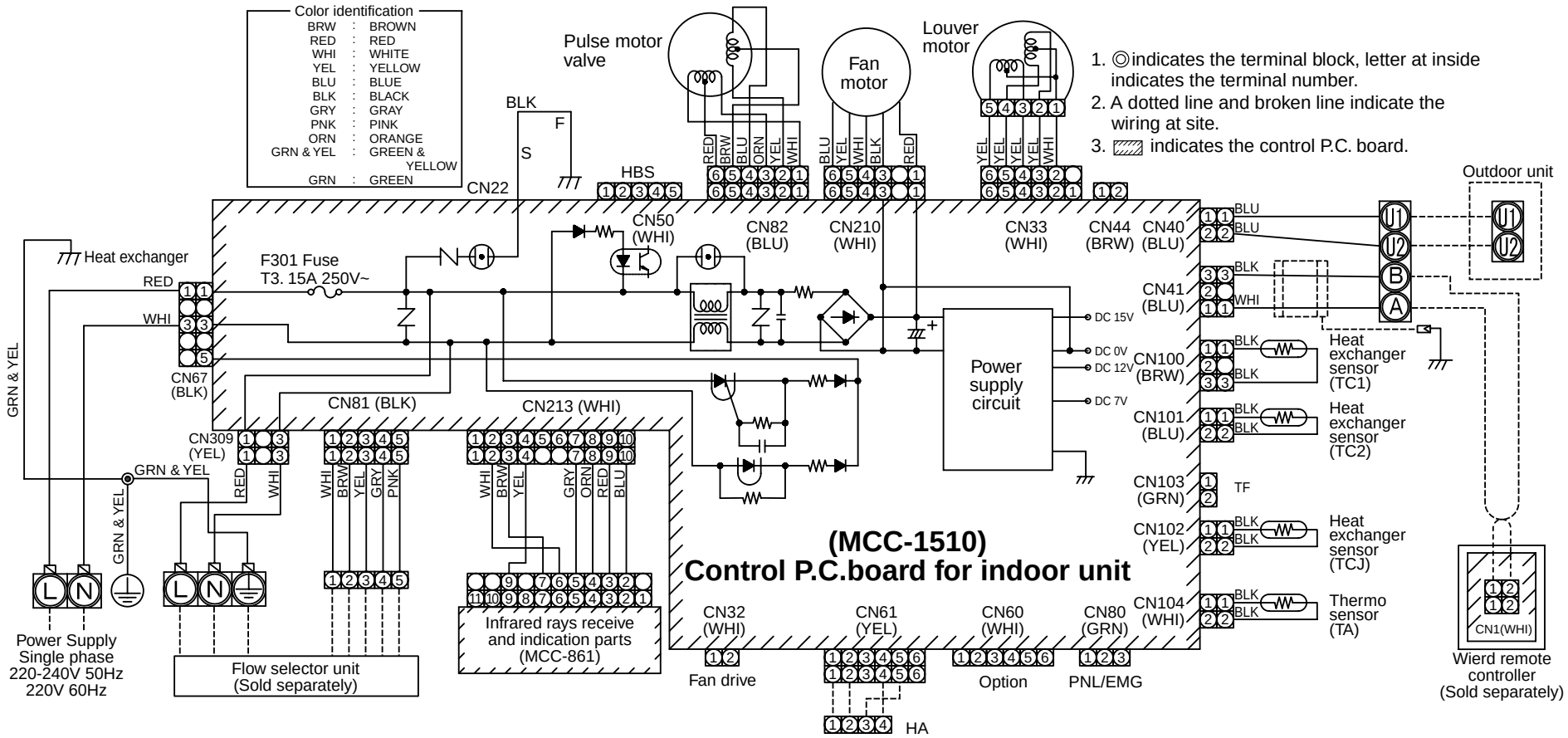


2-1-8. High Wall Type

Model: MMK-AP0071H, AP0091H, AP0121H, AP0151H, AP0181H, AP0241H

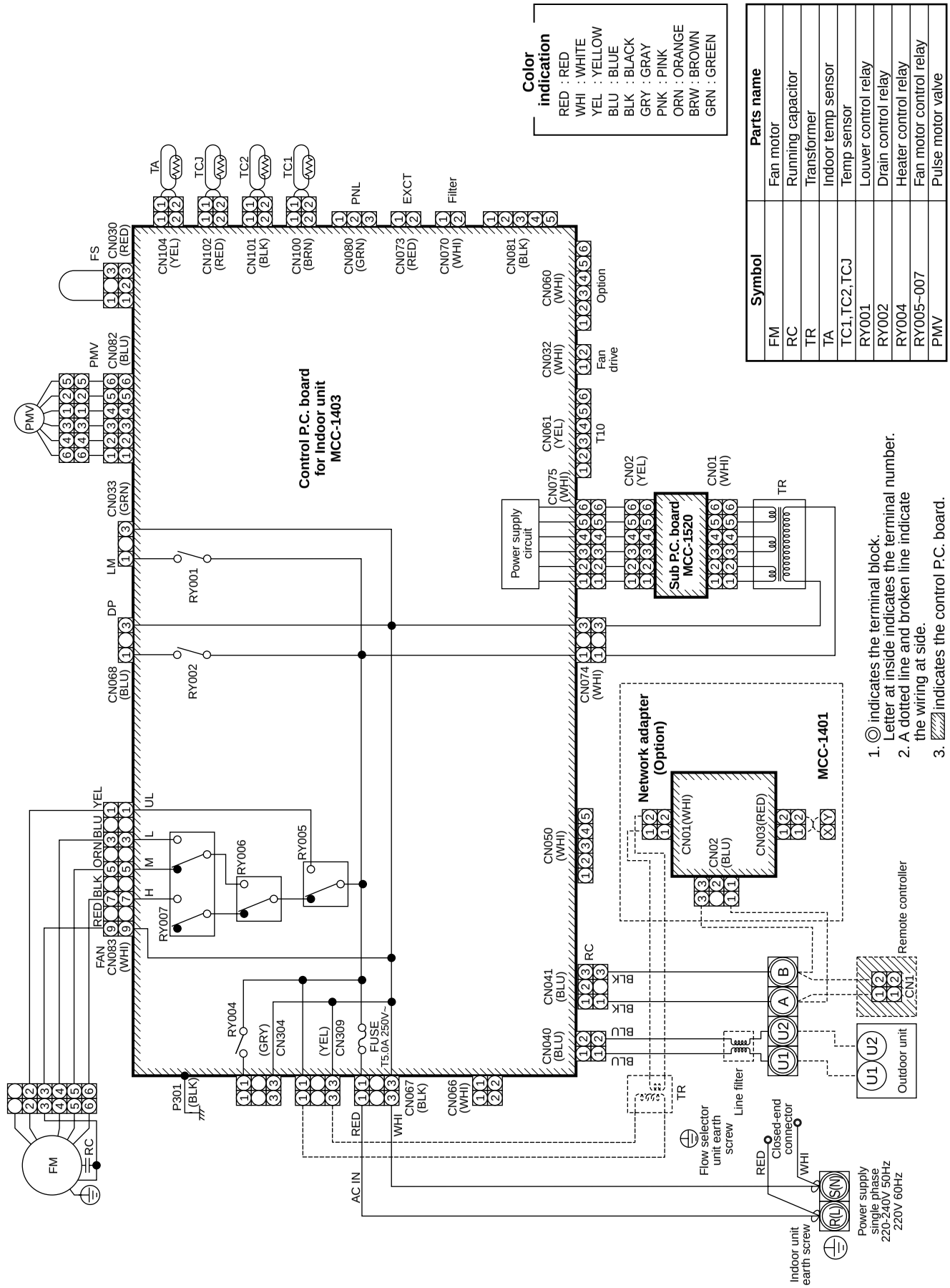


Symbol	Parts name
FM	Fan motor
TA	Indoor temp sensor
TC1,TC2,TCJ	Temp sensor
PMV	Pulse motor valve
LM	Louver motor
RY303	Louver control relay


Color identification
BRW : BROWN
RED : RED
WHI : WHITE
YEL : YELLOW
BLU : BLUE
BLK : BLACK
GRY : GRAY
PNK : PINK
ORN : ORANGE
GRN & YEL : GREEN & YELLOW
GRN : GREEN
1. ◎indicates the terminal block, letter at inside indicates the terminal number.
2. A dotted line and broken line indicate the wiring at site.
3. ▨ indicates the control P.C. board.
Pulse motor valve
Fan motor
Louver motor
Outdoor unit
Heat exchanger
F301 Fuse
T3. 15A 250V~
CN22
HBS
CN50 (WHI)
CN82 (BLU)
CN210 (WHI)
CN33 (WHI)
CN44 (BRW)
CN40 (BLU)
CN41 (BLU)
CN100 (BRW)
CN101 (BLU)
CN103 (GRN)
CN102 (YEL)
CN104 (WHI)
CN67 (BLK)
CN81 (BLK)
CN213 (WHI)
CN309 (YEL)
Power supply circuit
DC 15V
DC 0V
DC 12V
DC 7V
Heat exchanger sensor (TC1)
Heat exchanger sensor (TC2)
Heat exchanger sensor (TCJ)
Thermo sensor (TA)
TF
(MCC-1510)
Control P.C.board for indoor unit
CN32 (WHI)
CN61 (YEL)
CN60 (WHI)
CN80 (GRN)
Fan drive
Option
PNL/EMG
HA
Power Supply
Single phase
220-240V 50Hz
220V 60Hz
Flow selector unit
(Sold separately)
Infrared rays receive and indication parts
(MCC-861)
Wierd remote controller
(Sold separately)
CN1(WHI)

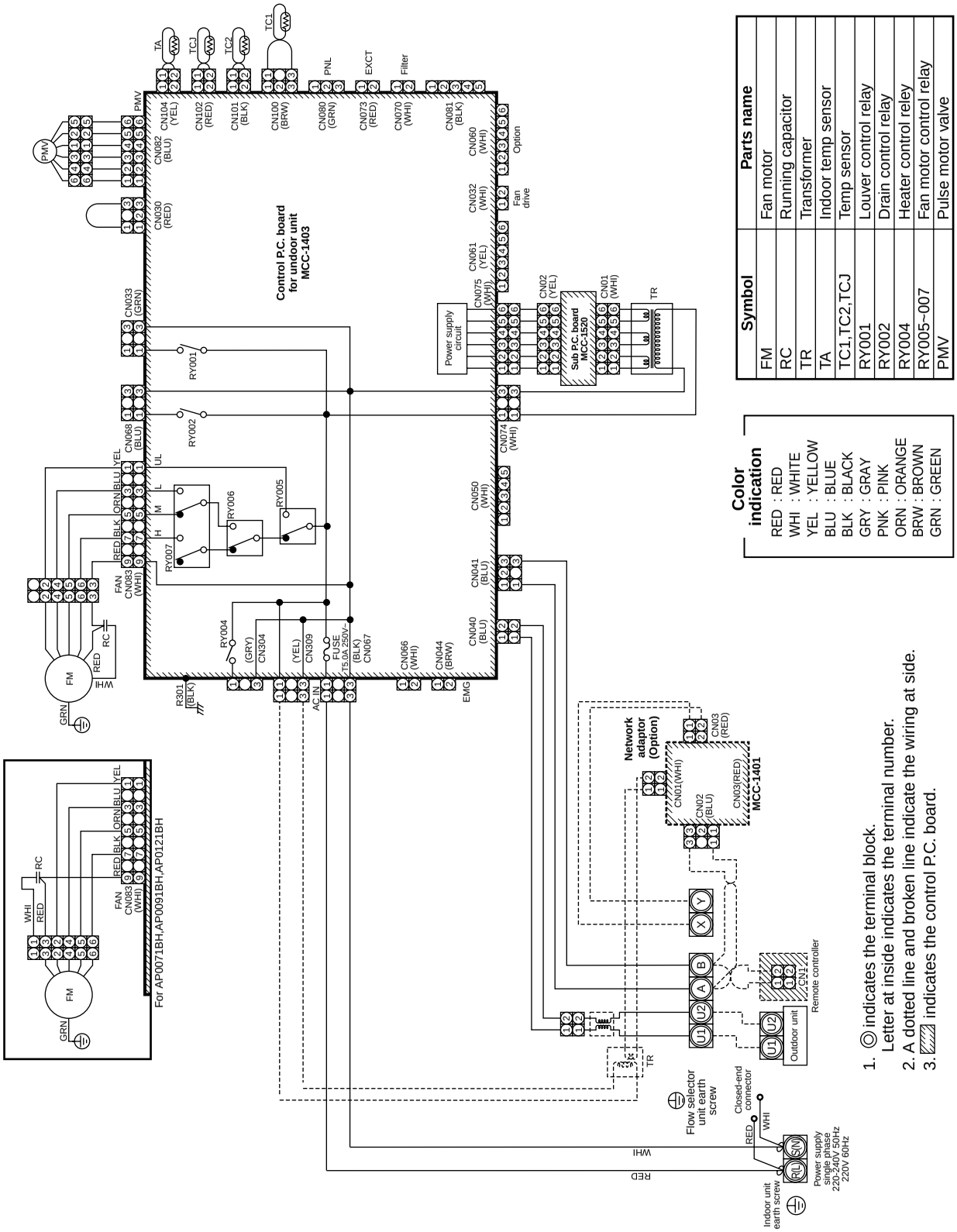
2-1-9. Floor Standing Cabinet Type

Model: MML-AP0071H, AP0091H, AP0121H, AP0151H, AP0181H, AP0241H



2-1-10. Floor Standing Concealed Type

Model: MML-AP0071BH, AP0091BH, AP0121BH, AP0151BH, AP0181BH, AP0241BH

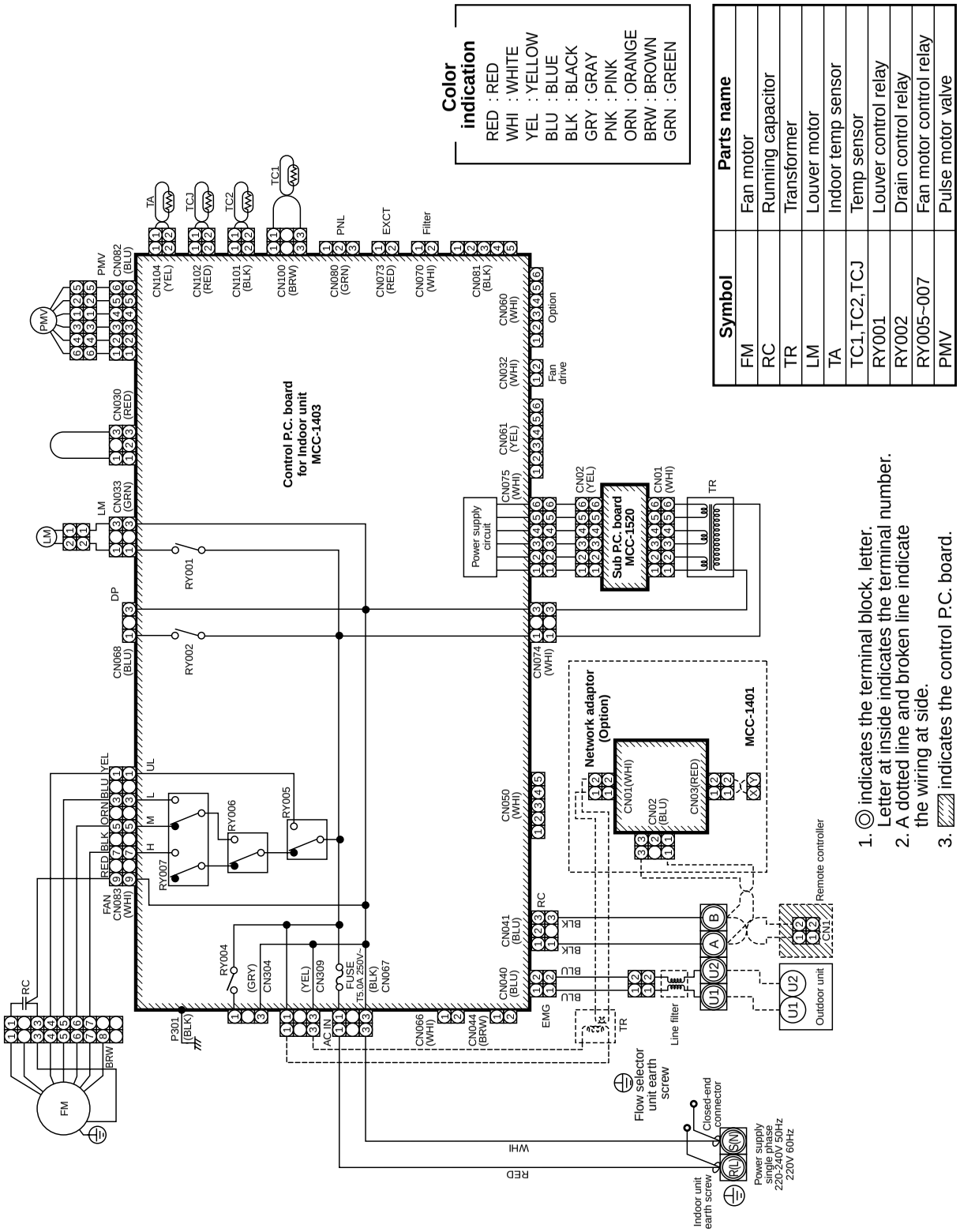


Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Transformer
TA	Indoor temp sensor
TC1,TC2,TCJ	Temp sensor
RY001	Louver control relay
RY002	Drain control relay
RY004	Heater control reley
RY005~007	Fan motor control relay
PMV	Pulse motor valve

1. ◎ indicates the terminal block.
   Letter at inside indicates the terminal number.
2. A dotted line and broken line indicate the wiring at side.
3. ▨ indicates the control P.C. board.

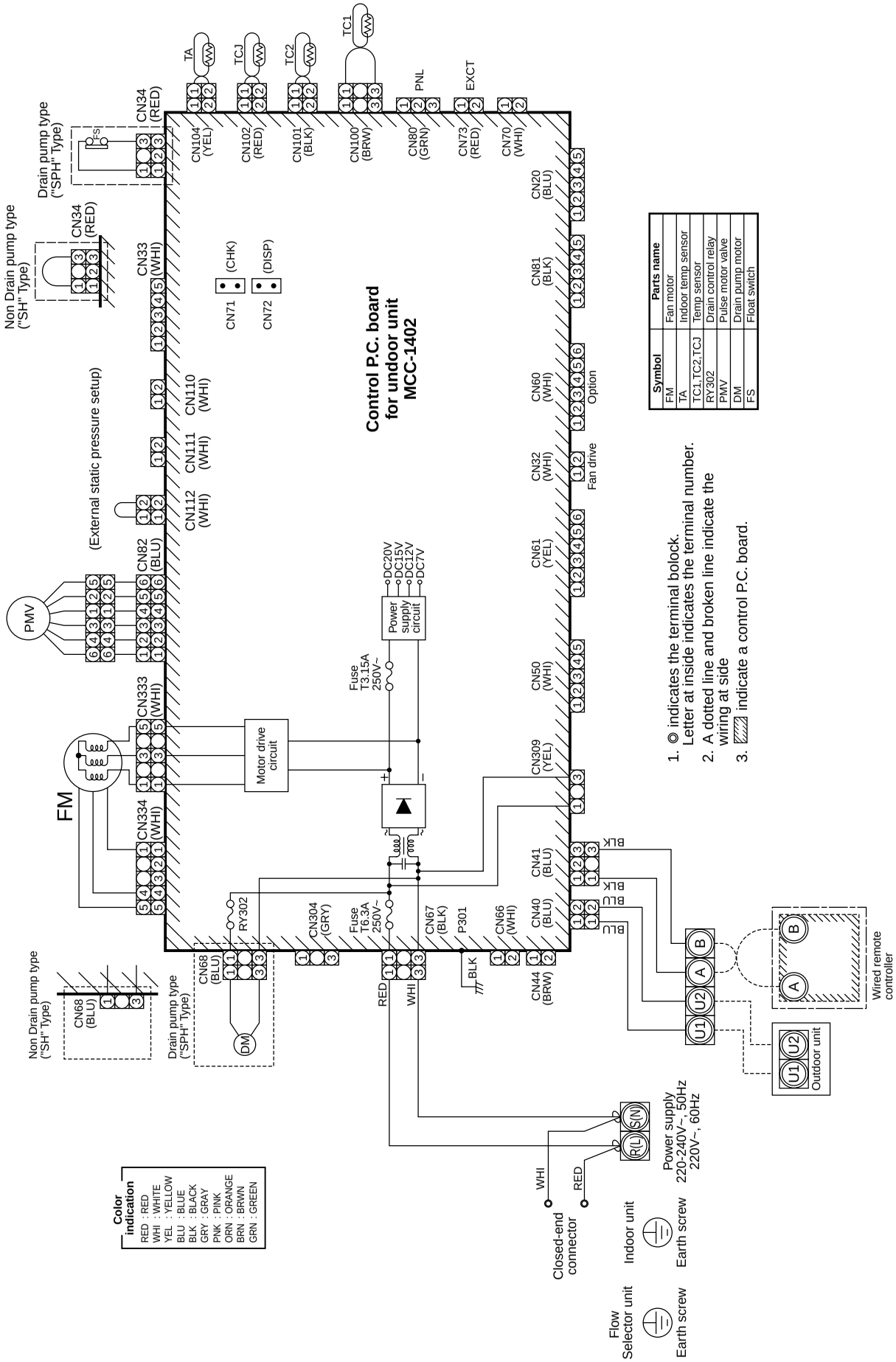
2-1-11. Floor Standing Type

Model: MMF-AP0151H, AP0181H, AP0241H, AP0271H, AP0361H, AP0481H, AP0561H



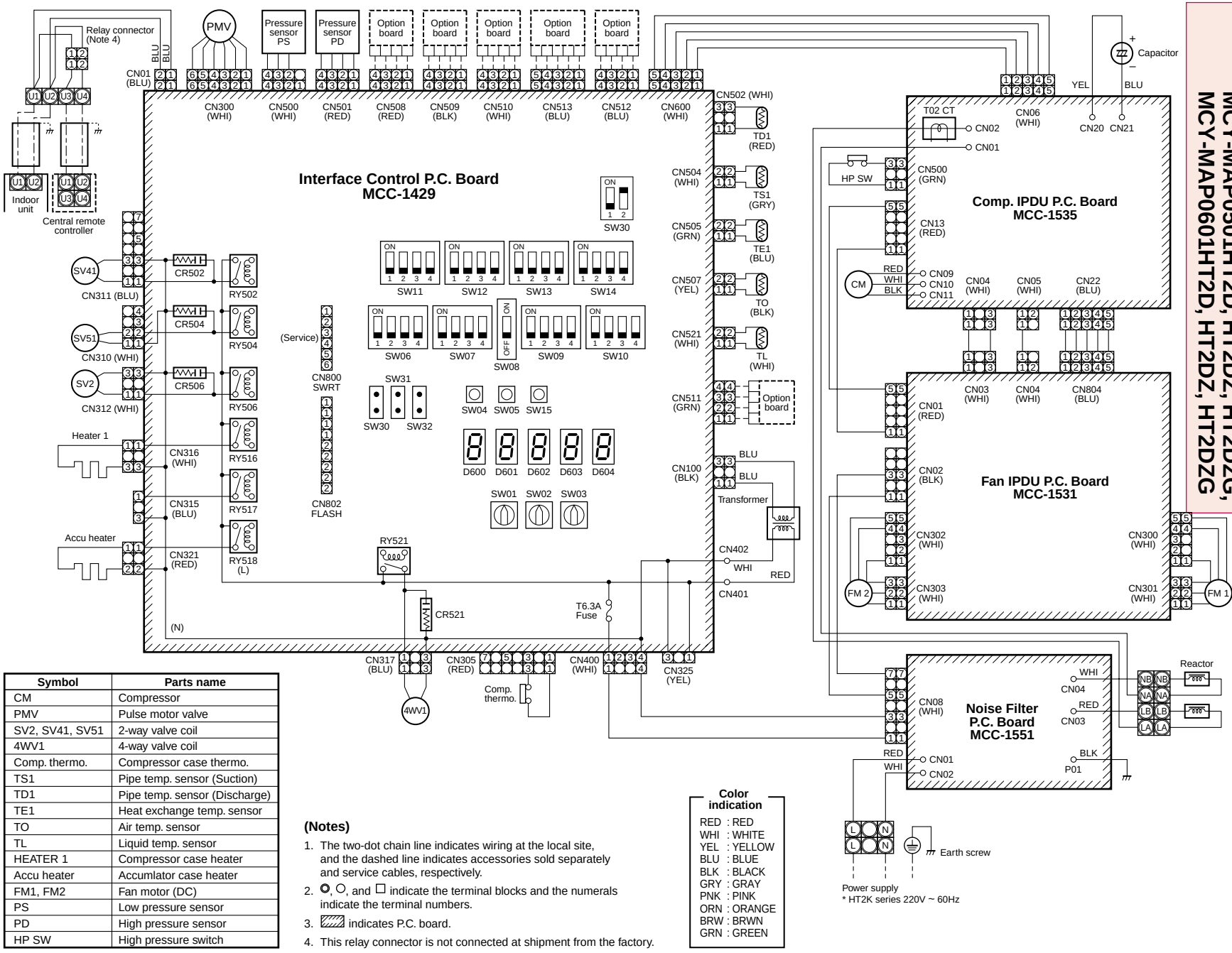
2-1-12. Slim Duct Type

Model: MMD-AP0071SPH, AP0091SPH, AP0121SPH, AP0151SPH, AP0181SPH



2-2. Outdoor Unit

Model: MCY-MAP0401HT, HTZ, HTZG,
MCY-MAP0501HT, HTZ, HTZG,
MCY-MAP0601HT, HTZ, HTZG,
MCY-MAP0401HT2D, HT2DZ, HT2DZG,
MCY-MAP0501HT2D, HT2DZ, HT2DZG,
MCY-MAP0601HT2D, HT2DZ, HT2DZG



Symbol	Parts name
CM	Compressor
PMV	Pulse motor valve
SV2, SV41, SV51	2-way valve coil
4WV1	4-way valve coil
Comp. thermo.	Compressor case thermo.
TS1	Pipe temp. sensor (Suction)
TD1	Pipe temp. sensor (Discharge)
TE1	Heat exchange temp. sensor
TO	Air temp. sensor
TL	Liquid temp. sensor
HEATER 1	Compressor case heater
Accu heater	Accumulator case heater
FM1, FM2	Fan motor (DC)
PS	Low pressure sensor
PD	High pressure sensor
HP SW	High pressure switch

(Notes)

1. The two-dot chain line indicates wiring at the local site, and the dashed line indicates accessories sold separately and service cables, respectively.
2. ◎, ○, and □ indicate the terminal blocks and the numerals indicate the terminal numbers.
3. ▨ indicates P.C. board.
4. This relay connector is not connected at shipment from the factory.

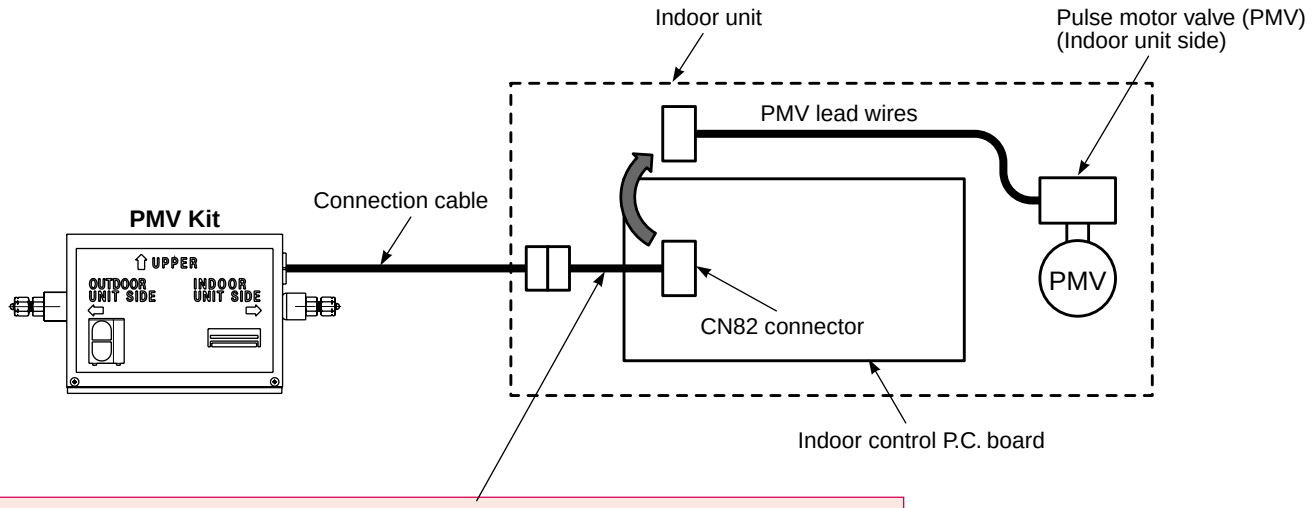
Color indication

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

2nd revised : Sep. 2006

2-3. Connection of PMV Kit

Model: RBM-PMV0361E, RBM-PMV0901E



Connector conversion cable *1

*1: MMK-AP✻✻✻2H (High Wall Type) does not use a this conversion cable.

3. PARTS RATING

3-1. Indoor Unit

4-way Air Discharge Cassette Type

Model MMU-AP	0091H	0121H	0151H	0181H	0241H	0271H	0301H
Fan motor	SWF-230-60-1						
Drain pump motor	ADP-1409						
Float switch	FS-0218-102						
TA sensor	Lead wire length : 155mm						
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)						
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)						
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)						
Pulse motor	EDM-MD12TF-3						
Pulse motor valve	EDM-B25YGTF		EDM-B40YGTF				
Louver motor (panel)	MP24GA						

Model MMU-AP	0361H	0481H
Fan motor	SWF-200-90-1	
Drain pump motor	ADP-1409	
Float switch	FS-0218-102	
TA sensor	Lead wire length : 155mm	
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)	
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)	
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)	
Pulse motor	EDM-MD12TF-3	
Pulse motor valve	EDM-B60YGTF-1	
Louver motor (panel)	MP24GA	

Compact 4-way Air Discharge Cassette Type

Model MMU-AP	0071MH	0091MH	0121MH	0151MH	0181MH
Fan motor	SWF-230-60-1				
Drain pump motor	ADP-1409				
Float switch	FS-0218-102				
TA sensor	Lead wire length : 155mm				
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)				
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)				
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)				
Pulse motor	EDM-MD12TF-3				
Pulse motor valve	EDM-B25YGTF	EDM-B40YGTF			
Louver motor (panel)	MP24GA				

2-way Air Discharge Cassette Type

Model MMU-AP	0071WH	0091WH	0121WH	0151WH	0181WH
Fan motor	AF-230-53-4G			AF-230-39-4B	
Running capacitor for fan motor	AC 400V, 1.0μF			AC 450V, 2.0μF	
Drain pump motor	PJD-05230TF-1				
Float switch	FS-0208-608				
Control P.C. board transformer	TT-13				
Pulse motor	EDM-MD12TF-3				
Pulse motor valve	EDM-B25YGTF			EDM-B40YGTF	
TA sensor	Lead wire length : 268mm				
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)				
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)				
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)				

Model MMU-AP	0241WH	0271WH	0301WH
Fan motor	AF-200-53-4F		
Running capacitor for fan motor	AC 450V, 2.5μF		AC 450V, 3.5μF
Drain pump motor	PJD-05230TF-1		
Float switch	FS-0208-608		
Control P.C. board transformer	TT-13		
Pulse motor	EDM-MD12TF-3		
Pulse motor valve	EDM-B40YGTF		
TA sensor	Lead wire length : 268mm		
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)		
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)		
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)		

1-way Air Discharge Cassette (Compact type) Type

Model MMU-AP	0071YH	0091YH	0121YH
Fan motor	AF-200-22-4N-1		
Running capacitor for fan motor	AC 400V, 1μF		
Drain pump motor	PJD-05230TF-1		
Float switch	FS-0208-602		
Control P.C. board transformer	TT-13		
Pulse motor	EDM-MD12TF-3		
Pulse motor valve	EDM-B25YGTF		
TA sensor	Lead wire length : 818mm		
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)		
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)		

Model MMU-AP	0152SH	0182SH	0242SH
Fan motor	SWF-280-60-1		
Running capacitor for fan motor	—		
Drain pump motor	ADP-1409		
Float switch	FS-0218-103		
Control P.C. board transformer	—		
Pulse motor	EDM-MD12TF-3		
Pulse motor valve	EDM-B40YGTF-3		
TA sensor	Lead wire length : 155mm Vinyl tube		
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)		
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)		
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)		

Concealed Duct Standard Type

Model MMD-AP	0071BH	0091BH	0121BH	0151BH	0181BH
Fan motor	ICF-280-120-2				
Drain pump motor	ADP-1409				
Float switch	FS-0218-102				
Pulse motor	EDM-MD12TF-3				
Pulse motor valve	EDM-B25YGTF			EDM-B40YGTF	
TA sensor	Lead wire length : 618mm				
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)				
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)				
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)				

Model MMD-AP	0241BH	0271BH	0301BH	0361BH	0481BH
Fan motor	ICF-280-120-1			ICF-280-120-2	
Drain pump motor	ADP-1409				
Float switch	FS-0218-102				
Pulse motor	EDM-MD12TF-3				
Pulse motor valve	EDM-B40YGTF			EDM-B60YGTF-1	
TA sensor	Lead wire length : 618mm				
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)				
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)				
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)				

Concealed Duct High Static Pressure Type

Model MMD-AP	0181H	0241H	0271H	0361H	0481H
Fan motor	STF-200-160-4B	STF-200-160-4A		STF-200-260-4C	STF-200-260-4B
Running capacitor for fan motor	AC 500V, 4µF	AC 400V, 8µF		AC 450V, 6µF	AC 400V, 8µF
Drain pump motor	ADP-1409				
Float switch	FS-0218-102-6				
Pulse motor	EDM-MD12TF-3				
Pulse motor valve	EDM-B40YGTF			EDM-B60YGTF-1	
TA sensor	Lead wire length : 1200mm				
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)				
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)				
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)				

Slim Duct Type

Model MMD-AP	0071SPH(SH)	0091SPH(SH)	0121SPH(SH)	0151SPH(SH)	0181SPH(SH)
Fan motor	SWF-280-60-1				
Pulse motor	EDM-MD12TF-3				
Pulse motor valve	EDM-B25YGTF			EDM-B40YGTF	
Drain pump motor *	ADP-1409				
Float switch *	FS-0218-102				
TA sensor	Lead wire length : 1558mm				
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)				
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)				
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)				

* "SPH" series only.

Under Ceiling Type

Model MMC-AP	0151H	0181H	0241H	0271H	0361H	0481H
Fan motor	SWF-280-60-1		SWF-280-60-2		SWF-280-120-2	
Louver motor	MP24GA1					
Pulse motor	EDM-MD12TF-3					
Pulse motor valve	EDM-B40YGTF			EDM-B60YGTF-1		
TA sensor	Lead wire length : 155mm Vinyl tube					
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)					
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)					
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)					

High Wall Type

Model MMK-AP	0071H	0091H	0121H	0151H	0181H	0241H	0072H	0092H	0122H
Fan motor	ICF-280-120-3						ICF-340-30 or MF-340-30		
Louver motor	MT8-3-6						MP24Z		
Pulse motor	EDM-MD12TF-3								
Pulse motor valve	EDM-B25YGTF			EDM-B40YGTF			EDM-B25YGTF-3		
TA sensor	Lead wire length : 818mm Vinyl tube						Lead wire length : 318mm Vinyl tube		
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)						Ø4 size lead wire length : 600mm Vinyl tube (Blue)		
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)						Ø6 size lead wire length : 800mm Vinyl tube (Black)		
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)						Ø6 size lead wire length : 800mm Vinyl tube (Red)		

Floor Standing Cabinet Type

Model MML-AP	0071H	0091H	0121H	0151H	0181H	0241H
Fan motor	AF-200-19-4F		AF-200-45-4F		AF200-70-4K	
Running capacitor for fan motor	AC450V, 1.2µF		AC400V, 1.8µF		AC450V, 2µF	
Transformer	TT13					
Pulse motor	EDM-MD12TF-3					
Pulse motor valve	EDM-B25YGTF		EDM-B40YGTF			
TA sensor	Lead wire length : 818mm Vinyl tube					
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)					
TC2 sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Black)					
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)					

Floor Standing Concealed Type

Model MML-AP	0071BH	0091BH	0121BH	0151BH	0181BH	0241BH
Fan motor	AF-200-19-4G			AF-200-70-4K		
Running capacitor for fan motor	AC450V, 1.5µF			AC450V, 1µF		AC450V, 2µF
Transformer	TT-13					
Pulse motor	EDM-MD12TF-3					
Pulse motor valve	EDM-B25YGTF			EDM-B40YGTF		
TA sensor	Lead wire length : 818mm Vinyl tube					
TC1 sensor	Ø4 size lead wire length : 2000mm Vinyl tube (Blue)					
TC2 sensor	Ø6 size lead wire length : 2000mm Vinyl tube (Black)					
TCJ sensor	Ø6 size lead wire length : 2000mm Vinyl tube (Red)					

Floor Standing Type

Model MMF-AP	0151H	0181H	0241H	0271H	0361H	0481H
Fan motor	AF-200-37R		AF-200-63T		AF-200-110M-1	AF-200-160H-1
Running capacitor for fan motor	AC500V, 3µF		AC500V, 3.5µF		AC500V, 4µF	
Transformer	TT-13					
Pulse motor	EDM-MD12TF-3					
Pulse motor valve	EDM-B40YGTF				EDM-B60YGTF-1	
Louver motor	MT8-3-9					
TA sensor	Lead wire length : 1200mm Vinyl tube					
TC1 sensor	Ø4 size lead wire length : 1200mm Vinyl tube (Blue)					
TC2 sensor	Ø6 size lead wire length : 2000mm Vinyl tube (Black)					
TCJ sensor	Ø6 size lead wire length : 1200mm Vinyl tube (Red)					

3-2. Outdoor Unit

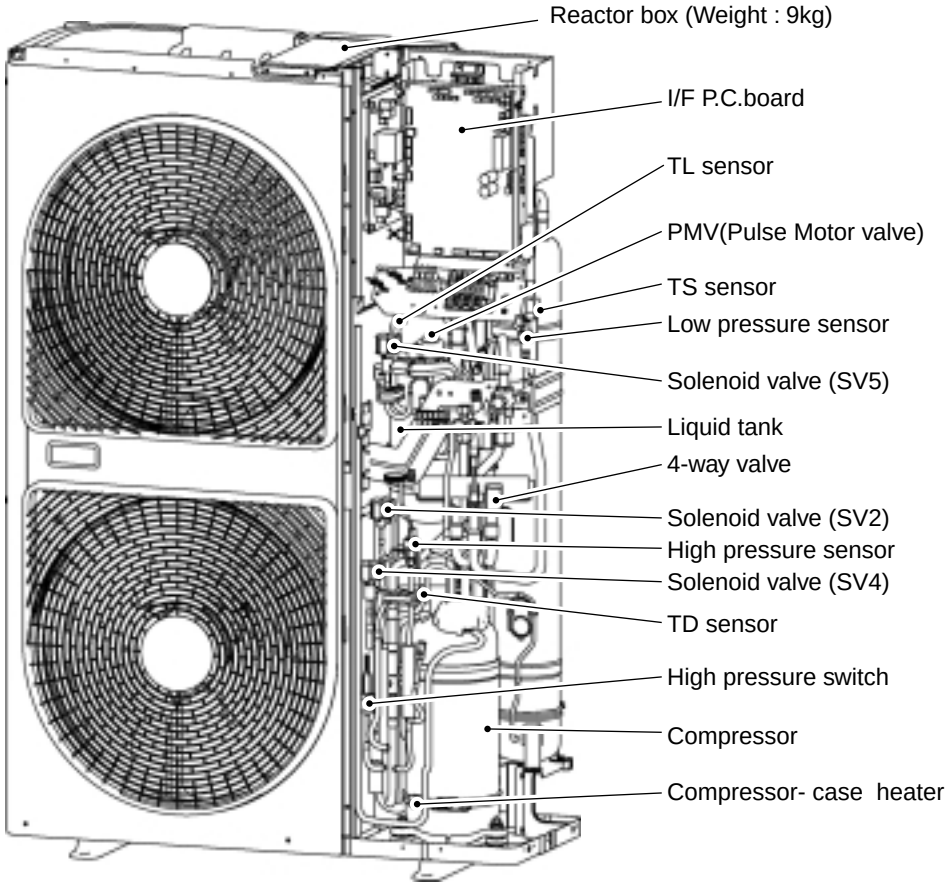
Model	MCY-MAP0401HT MCY-MAP0401HTZ MCY-MAP0401HTZG	MCY-MAP0501HT MCY-MAP0501HTZ MCY-MAP0501HTZG	MCY-MAP0601HT MCY-MAP0601HTZ MCY-MAP0601HTZG
Compressor	DA421A3F-20M2		
4-way valve coil	VHV type (AC220–240V, 50Hz)		
4-way valve	STF-0401G1		
Pulse motor valve coil	HAM-MD12TF-3 (DC12V)		
Pulse motor valve	HAM-BD24TF-1		
Solenoid valve coil	SV2, SV4, SV5 : VPV type (AC220-240V, 50Hz)		
Solenoid valve	SV2 : VPV122DQ1, SV4, SV5 : VPV303DQ1		
High-pressure SW	ACB-4UB32W (Open : 3.73MPa, Close : 2.9MPa)		
High-pressure sensor	NSK-BC038F-067 (0.5 to 4.3V / 0 to 3.73MPa)		
Low-pressure sensor	NSK-BC010F-067 (0.5 to 3.5V / 0 to 0.98MPa)		
Fan motor	ICF-140-63-2R (DC)		
Case heater	Compressor (AC240V, 29W), Accumulator (AC240V, 24W)		
Compressor case thermo.	US-622KXTMQO-SS (OFF : 125°C, ON : 90°C)		

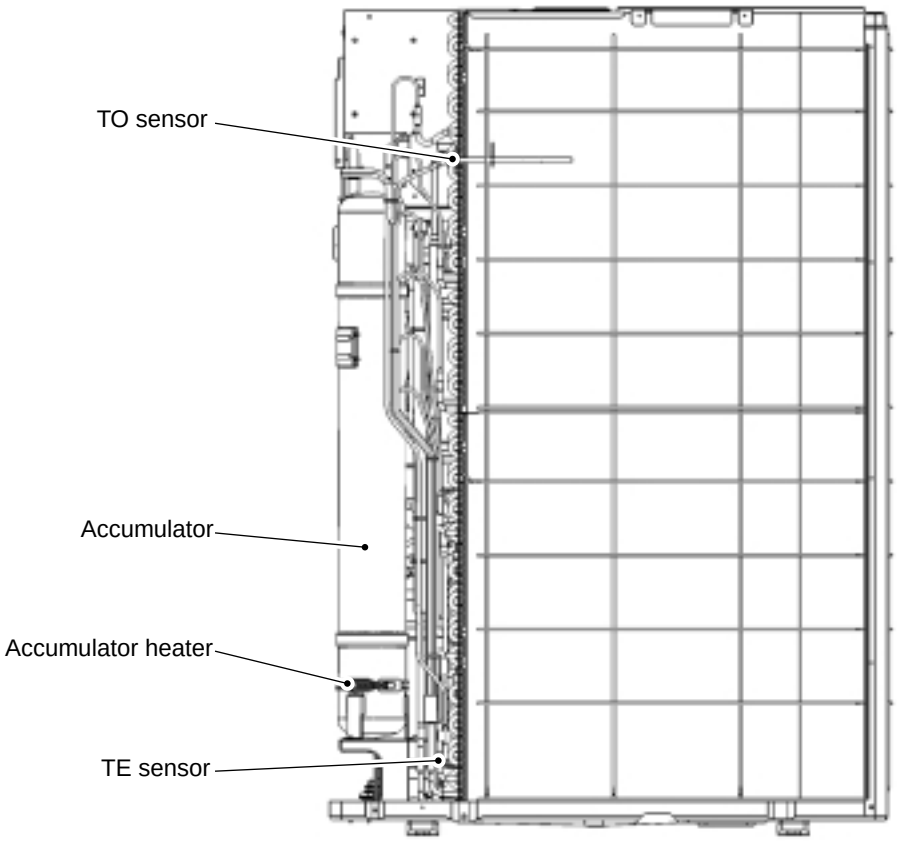
Model	MCY-MAP0401HT2D MCY-MAP0401HT2DZ MCY-MAP0401HT2DZG	MCY-MAP0501HT2D MCY-MAP0501HT2DZ MCY-MAP0501HT2DZG	MCY-MAP0601HT2D MCY-MAP0601HT2DZ MCY-MAP0601HT2DZG
Compressor	DA421A3F-20M2		
4-way valve coil	VHV type (AC220V, 60Hz)		
4-way valve	STF-0401G1		
Pulse motor valve coil	HAM-MD12TF-3 (DC12V)		
Pulse motor valve	HAM-BD24TF-1		
Solenoid valve coil	SV2, SV4, SV5 : VPV type (AC220V, 60Hz)		
Solenoid valve	SV2 : VPV122DQ1, SV4, SV5 : VPV303DQ1		
High-pressure SW	ACB-4UB32W (Open : 3.73MPa, Close : 2.9MPa)		
High-pressure sensor	NSK-BC038F-067 (0.5 to 4.3V / 0 to 3.73MPa)		
Low-pressure sensor	NSK-BC010F-067 (0.5 to 3.5V / 0 to 0.98MPa)		
Fan motor	ICF-140-63-2R (DC)		
Case heater	Compressor (AC240V, 29W), Accumulator (AC240V, 24W)		
Compressor case thermo.	US-622KXTMQO-SS (OFF : 125°C, ON : 90°C)		

3-3. PMV Kit

Model	RBM-PMV0361E	RBM-PMV0901E
Pulse motor valve coil	EDM-MD12TF-3 (DC12V)	

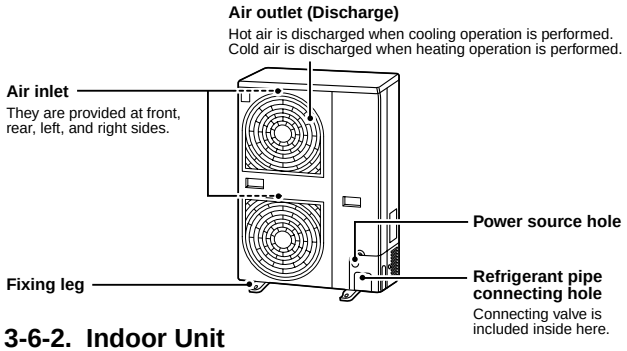
3-5. Parts Layout in Outdoor Unit





3-6. Name of Each Part

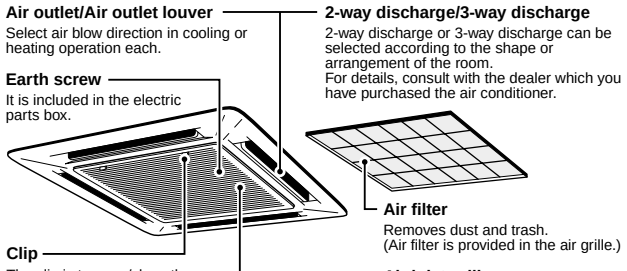
3-6-1. Outdoor Unit



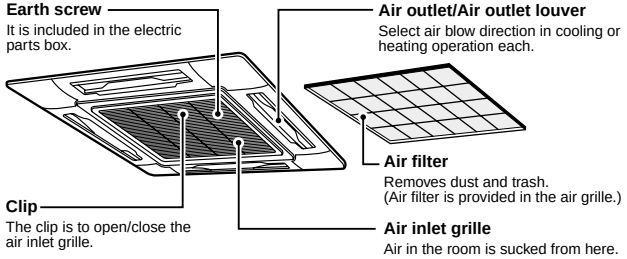
3-6-2. Indoor Unit

[4-way Air Discharge Cassette Type]

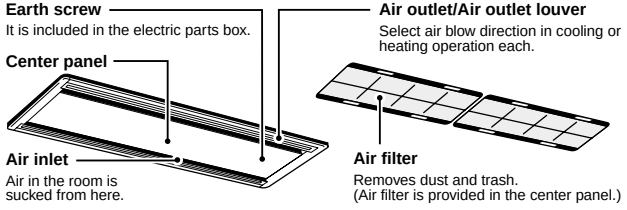
MMU-AP0091H, AP0121H, AP0151H, AP0181H, AP0241H, MMU-AP0271H, AP0301H, AP0361H, AP0481H, AP0561H



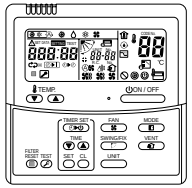
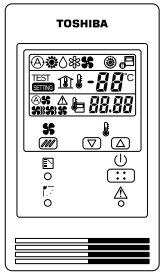
MMU-AP0071MH, AP0091MH, AP0121MH, AP0151MH, AP0181MH



[2-way Air Discharge Cassette Type]

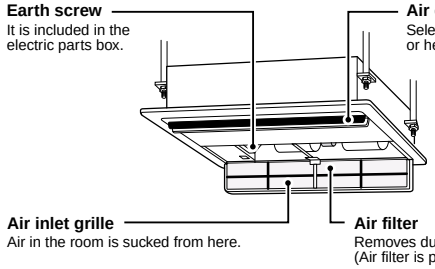


Sold Separately Parts

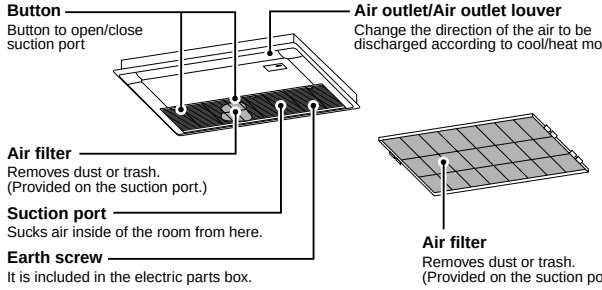
Wired remote controller	RBC-AMT31E	
Simple wired remote controller	RBC-AS21E2	
Wireless remote controller kit	RBC-AX21U(W)-E2 RBC-AX22CE2 TCB-AX21E2	

[1-way Air Discharge Cassette Type]

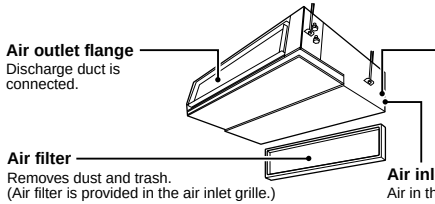
MMU-AP0071YH to AP0121YH



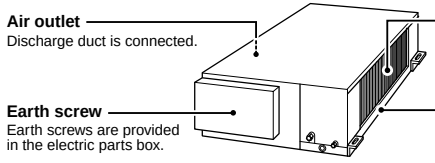
MMU-AP0152SH, AP0182SH, AP0242SH



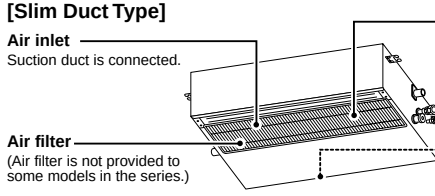
[Concealed Duct Standard Type]

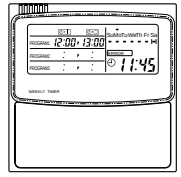
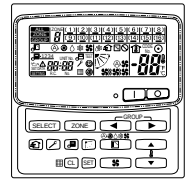


[Concealed Duct High Static Pressure Type]

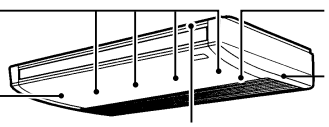


[Slim Duct Type]



Weekly timer	RBC-EXW21E2	
Central remote controller	TCB-SC642TLE2	

[Under Ceiling Type]



Button
Button to open/close the suction port

Air filter
Removes dust or trash.
(Provided on the suction port.)

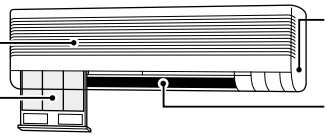
Air inlet port
The air in the room is sucked in from this port.

Earth screw
Earth screws are provided in the electric parts box.

Air outlet/Air outlet louver
Change the direction of the air to be discharged according to cool/heat mode.

[High Wall Type]

MMK-AP0071H to AP0241H



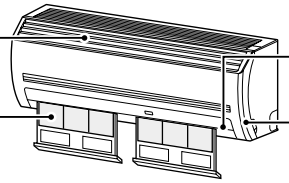
Air inlet grille
Air in the room is sucked from here.

Air filter
Removes dust and trash.
(Air filter is provided in the air inlet grille.)

Earth screw
Earth screws are provided in the electric parts box.

Air outlet/Air outlet louver
Change the direction of the air to be discharged according to cool/heat mode.

MMK-AP0072H to AP0122H



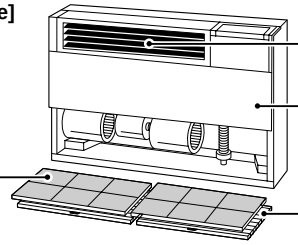
Air inlet grille
Air in the room is sucked from here.

Air filter
Removes dust and trash.
(Air filter is provided in the air inlet grille.)

Air outlet/Air outlet louver
Change the direction of the air to be discharged according to cool/heat mode.

Earth screw
Earth screws are provided in the electric parts box.

[Floor Standing Cabinet Type]



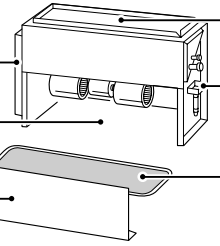
Air filter
Removes dirt or dust.
(It is included in the suction port.)

Air outlet/Air outlet louver
Exchanges the air direction according to cooling or heating time.

Earth screw
It is prepared in the electric parts box.

Air inlet port
Sucks air inside of the room from here.

[Floor Standing Concealed Type]



Earth screw
It is prepared in the electric parts box.

Air inlet port
Sucks air inside of the room from here.

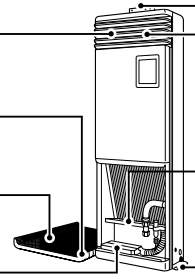
Front panel (Lower side)

Air outlet port

Drain pan (With drain filter)
This accessory is installed at the local site.

Air filter
Removes dirt or dust.
(It is included in the suction port.)

[Floor Standing Type]



Horizontal louver/Air outlet port
Exchanges the air direction according to cooling or heating time.

Air inlet port
Sucks air inside of the room from here.

Air filter
Removes dirt or dust.

Earth screw
It is prepared in the electric parts box.

Fixing metal holder

Vertical louver
The air can be automatically discharged rightward/leftward at stated periods.

Drain pan
Water accumulated in the drain pan is drained from here through the drain pipe.

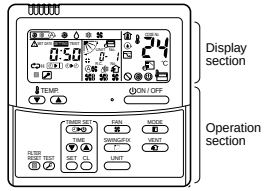
Fixing metal holder (Right and left)

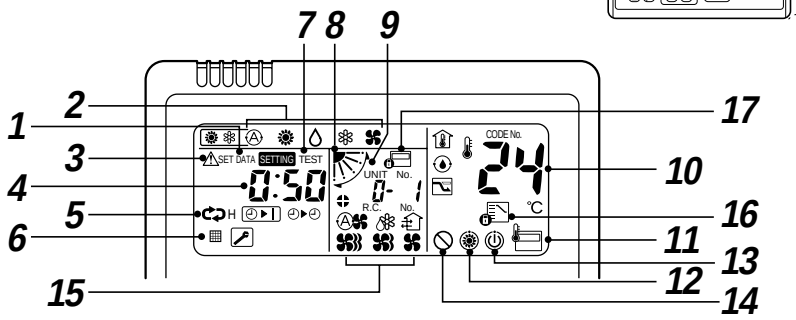
3-7. Parts Name of Remote Controller

Display section

In the display example, all indicators are displayed for the explanation.
In reality only, the selected contents are displayed.

- When turning on the leak breaker for the first time, **[SET DATA]** flashes on the display part of the remote controller. While this display is flashing, the model is being automatically confirmed. After the **[SET DATA]** display has disappeared, you may use the remote controller.





1 SET DATA display
Displayed during the setup of the timer.

2 Operation mode select display
The selected operation mode is displayed.

3 CHECK display
Displayed while the protective device works or a fault/error occurs.

4 Timer time display
Time on the timer is displayed.
(When a fault/error occurs, the check code is displayed.)

5 Timer setting setup display
When pushing the Timer setting button, the display on the timer is selected in order of
[OFF] ▶| → [OFF] repeat OFF timer → [ON] |◀ → No display.

6 Filter display
If "FILTER ▦ " is displayed, clean the air filter.

7 TEST run display
Displayed during a test run.

8 Flap position display (for 4-Way Air Discharge Cassette Type and Under Ceiling Type model only)
Displays louver position.

9 SWING display
Displayed during the up/down movement of the flap.

10 Set up temperature display
The selected set up temp. is displayed.

11 Remote controller sensor display
Displayed while the sensor on the remote controller is used.

12 PRE-HEAT display (for Heat-pump model only)
Displayed when the heating operation starts or a defrost operation is carried out.
While this indication is displayed, the indoor fan will stop or will go into LOW mode.

13 Operation ready display
Displayed when cooling or heating operation is impossible because the outdoor temperature goes out of the operable range.

14 No function display
Displayed if there is no function even when the button is pushed.

15 Air volume select display
The selected air volume mode is displayed.
(AUTO) (HIGH)
(MED.) (LOW)
In the Concealed Duct High Static Pressure type models, [HIGH] only is displayed for the air speed.

16 Mode select control display
Displayed when pushing the "Operation mode select " button while the operation mode is fixed in heating or cooling mode by the system manager of the air conditioner.

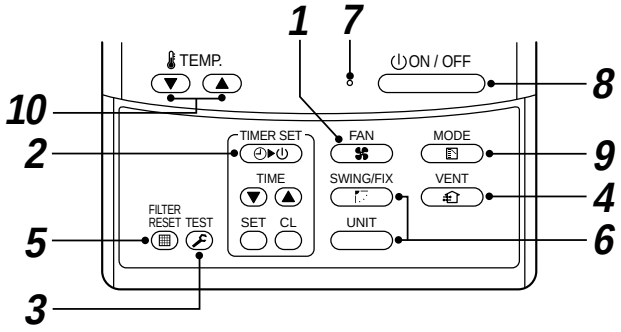
17 Central control display
Displayed when using the remote controller together with a central control remote controller.
If the Remote controller is prohibited at the central control side, flashes when operating the (ON / OFF), MODE, (▼) / (▲) buttons.
The change will not be accepted.
(The contents available to be set up on the remote controller differ according to the central control mode. For details, refer to Owner's Manual of the central control remote controller.)

Operation section

Push each button to select a desired operation.

This remote controller can operate a maximum of 8 indoor units.

- Before the unit can begin operation, it is firstly necessary to set the units operating parameters. After this has been completed the air conditioner can be used by pushing the (ON / OFF) button only.



1 Air volume select button

Selects the desired air volume mode.

F or the Concealed Duct High Static Pressure type models this function is unavailable.

2 Timer set button

The TIMER SET button is used when the timer is set up.

3 Check button

The CHECK button is used to check the units operation.
During normal operation, do not use this button.

4 Fan (VENT) button

The (VENT) button is used when a fan which is sold on the market is connected.

- If ⊘ is displayed on the remote controller when pushing the (VENT) button, a fan is not connected.

5 Filter reset button

Resets (Erases) the "F ILTER" display.

6 Air flow direction and Swing function

(UNIT) :

If there are multiple indoor units that are controlled by a single remote controller, simply select each unit in turn for which you wish to adjust the air flow direction.

(SWING/FIX) :

Set up the auto swing and the angle of the louver.

- This function is not provided on the Concealed Duct Standard Type, High Static Pressure Type, F loor standing Cabinet Type, F loor Standing Concealed Type, or Slim Duct Type.

7 Operation lamp

The light will be ON when the unit is in operation and OF F when the unit is not being used.

Note) The light will flash if a protective device has been operated or if the timer function has an error.

8 (ON / OFF) button

When the button is pushed, the operation starts. If the button is pressed again, the unit operation will stop.

When the unit operation has stopped, the operation lamp and all of the displays will disappear.

9 Operation select button

Selects the desired operation mode.

10 Set up temperature button

Adjusts the room temperature.

Set the desired set temperature by pushing the (▼) or (▲) buttons.

OPTION :

Remote controller sensor

In normal installations the temperature of the room is sensed by a temperature sensor on the indoor unit. However it is possible to have the sensor within your remote controller. F or further details please contact your local dealer.

- In cases where one remote controller controls the multiple indoor units, the setup operation is unavailable in group control.

3-8. Correct Usage

When you use the air conditioner for the first time or when you change the SET DATA value, follow the procedure shown below. F or consequent uses the display on the remote controller can be turned on by pushing the (ON / OFF) button only.

Preparation

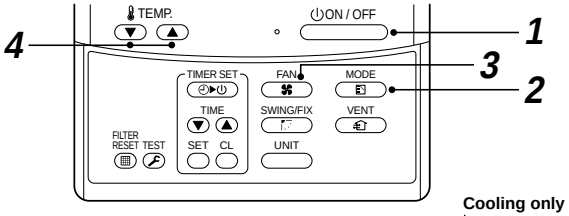
Turn on the main power supply and/or the leakage breaker.

- When the power supply is turned on, a partition line is shown on the display part of the remote controller.

Note) When the power supply is turned on, the remote controller will not accept any operational inputs until approximately 1 minute has passed. This is not a failure of the unit.

REQUIREMENT

- While using the air conditioner, only operate it with the (ON / OFF) button. Do not turn it off with the main power switch or the leakage breaker.
- Do not turn off the leakage breaker while the air conditioner is in use.
- Turn on the leakage breaker 12 hours or more before the air conditioner is to begin operation or if the system has not been in use for long periods of time.



1 Push the (ON / OFF) button.

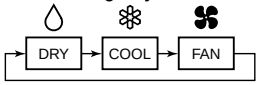
The operation lamp goes on, and the operation will start.

2 Select an operation mode with the (MODE) button.

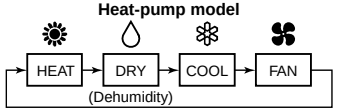
One push of the button, and the display changes in the order shown on the right.

- "DRY" mode" function is not provided on the Concealed Duct High Static Pressure Type.

Cooling only model

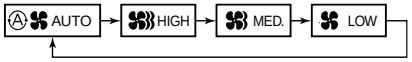


Heat-pump model



3 Select the air volume with the (FAN) button.

One push of the button, and the display changes in the order shown on the right.



- When the air volume is set to "AUTO", the air volume will differ according to the room temperature.
- In DRY mode, the "AUTO" symbol will be displayed and the air volume will be LOW.
- In heating operation, if the room temperature is not heated sufficiently with the air volume set at "LOW" operation, select the "MED." or "HIGH" operation.
- The temperature sensor for the indoor unit is located near to the air inlet opening and therefore will differ slightly from the actual room temperature. This difference may be increased/decreased depending on the type of room and its design. (Automatic air speed cannot be selected in F AN mode.)
- The Air V olume function is not provided on the "Concealed Duct High Static Pressure Type" instead the air speed "HIGH" symbol is displayed.

4 Determine the set up temperature by pushing the "TEMP. (▼)" or "TEMP. (▲)" button.

Stop

Push the (ON / OFF) button.

The operation lamp goes off and the unit will stop.

REQUIREMENT

[In Cooling operation]

- The operation will start after approximately 1 minute.

[In Heating operation (For Heat-pump model only)]

- In heating operation, the fan operation may continue for approximately 30 seconds after the air conditioner has stopped.
- The indoor fan will continue the preheat operation for 3 to 5 minutes under stop conditions. The indoor unit will then begin to blow out hot air.
  (☼ symbol on the remote controller display will come on.)
- When the temperature of the room has reached the setup temperature and the outdoor unit stops, the air speed reduces and so the air volume will decrease.
- In HEAT ☼ mode, if the room temperature reaches the set temperature, the outdoor unit will stop and the air flow / volume will decrease.
- In the defrost mode, the fan will stop so that cool air is not discharged and the PRE-DEF ☼ is displayed.

3-9. Adjustment of Wind Direction

To increase the cooling or heating effect, be sure to use the discharge louver in different directions when in cooling or heating operation.

The characteristics of air are such that cold air will accumulate in the lower half of the room, while hot air will accumulate in the upper half.

⚠ CAUTION

Set the louver horizontally in cooling operation.

If a cooling operation is performed with a downwards discharge, the surface of the discharge port or louver will become wet with dew, and water may drip down.

REQUIREMENT

- If a heating operation is performed with a horizontal discharge, unevenness the room temperature may not be equal i.e. there may be a large variance between one side of the room with the other.

4-way Air Discharge Cassette Type

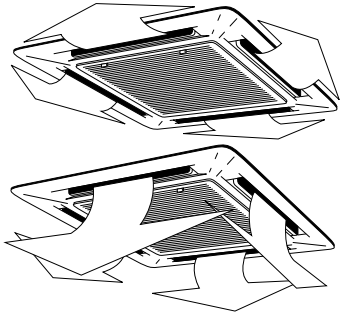
- **When the air conditioner is not in operation, the discharge louver will automatically directs downwards.**
- **When the air conditioner is in ready status for heating, the discharge louver will be directed upwards. The swinging operation will begin after heating ready status has been cleared. Please note the "SWING ⤴" symbol will still be displayed on the remote controller even when the unit status is ready to begin the heating operation.**

[In Cooling operation]

Use the discharge louver with a horizontal set point.

[In Heating operation (For Heat-pump model only)]

Use the discharge louver with a downwards set point.



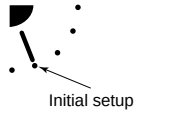
How to set up the air direction

Push SWING/FIX button.

1 **Every pushing the button, the air direction changes.**

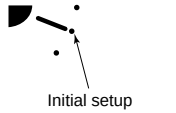
In Heating operation

Set the air outlet louver downward.
If directing it upward, the hot air may not come to the foot.



In Cooling / Dry operation

Set the air outlet louver Upwards.
If directing it downwards, the dew may form on the near side of the air discharge port and could drip.

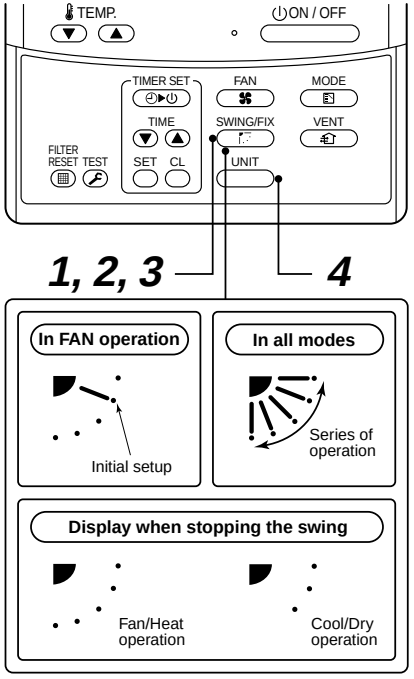


How to adjust the the air flow direction, using the swinging function

2 **Push the SWING/FIX button.**
Set the direction of the air outlet louver to the lowest position and then push the SWING/FIX button again.

- [SWING ⤴] is displayed and the air flow direction will automatically change either upwards/downwards.

  In the case where one remote controller controls multiple indoor units, each indoor unit can be selected and its air flow direction can be adjusted.



How to stop the louver from swinging

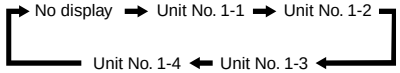
3 **Push the SWING/FIX button again while the horizontal louver is moving.**

- The horizontal louver can be stopped at any position desired. If you wish to return the louver to it original upwards position, press the SWING/FIX button again.

  * During the cooling/drying operation the horizontal louver will not stop at its most downwards facing position 9 (reduce the risk of water dripping), but will instead move to the 3rd position from the top (as shown in the figure).

4 UNIT

- To set up the air flow direction individually, push the UNIT button to display each indoor unit No. in a group control. You can then set the air flow direction for the displayed indoor unit.
- If there is no display, all the indoor units can be operated collectively.
- F or every push of the UNIT button, the display will alter between units as shown in the figure.

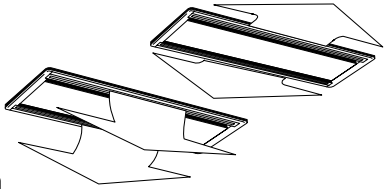


Based on the shape or arrangement of the room, the cold air and hot air can be discharged in two directions or three directions. F or details, please contact your local dealer.

INFORMATION

- If cooling operation is performed with a downwards discharge, dew may form on the surface of the cabinet or the horizontal louver resulting in dripping.
- If heating operation is performed with a horizontal discharge, the room temperature may not be equal i.e. there may be a large variance between one side of the room with the other.
- Do not move the horizontal louver directly with your hands; otherwise a fault maybe caused. Select the direction of the horizontal louver using the louver operation switch on the remote controller. The horizontal louver will not stop immediately, even if the switch is pushed.
  Note) Pushing the switch again when the required louver direction has been reached will stop the louver.

2-way Air Discharge Cassette Type



[In Cooling operation]

Use the air outlet louver with a horizontal set point.

[In Heating operation (For Heat-pump model only)]

Use the air outlet louver with a downwards set point.

Setup of air flow direction and swinging function

1 Push the SWING/FIX button during operation.

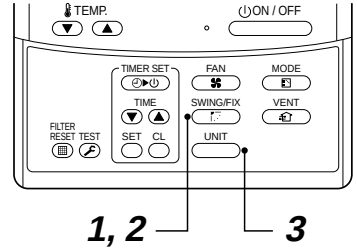
- [SWING] is displayed and the air flow direction will automatically change either upwards/downwards.
  In the case of one remote controller that controls multiple indoor units, each indoor unit can be selected and its air flow direction can be adjusted.

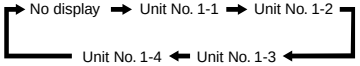
2 Push the SWING/FIX button again during the swinging of the air outlet louver.

- The air outlet louver will be stopped at the desired position.

3 UNIT

- To set up the air flow direction individually, push the UNIT button to display each indoor unit No. in a group control. You can then set the air flow direction for the displayed indoor unit.
- If there is no display, all the indoor units can be operated collectively.
- F or every push of the UNIT button, the display alters between units, as shown in the figure.





1-way Air Discharge Cassette Type

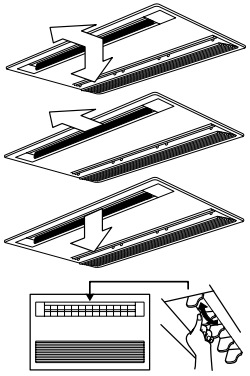
Adjustment of air flow direction upwards/downwards

[In Cooling operation]

In cooling operation, use the air outlet louver with a horizontal set point so that the cold air diffuses the whole room.

[In Heating operation (For Heat-pump model only)]

In heating operation, use the air outlet louver with a downwards set point so that the hot air is directed towards the floor.



Adjustment of air flow direction rightwards/ leftwards

To change the discharge direction to right or left side, set the vertical grille inside of the air outlet louver to the desired direction.

Setup the air flow direction and swinging function

Refer to the description of the “2-way Air Discharge Cassette Type”.

Under Ceiling Type

- **While the air conditioner is not in operation, the horizontal louver (Up/Down air direction adjustment plate) will automatically point upwards.**
- **When the air conditioner is in ready status for heating, the horizontal louver (Up/Down air direction adjustment plate) will points upwards. The swinging operation will begin after the heating ready status has been cleared. Please note the “SWING ” symbol will still be displayed on the remote controller even when the status is ready to heat.**

How to adjust the air flow direction

Push the SWING/FIX button during operation.

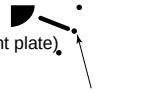
1 Every time you push the button the air flow direction will change.

In Heating operation

Set the horizontal louver (Up/Down air direction adjustment plate) downwards. If the air flow is directed upwards, the hot air may not reach the floor, creating an uneven temperature within the room.

In Cooling / Dry operation

Set the horizontal louver (Up/Down air direction adjustment plate) upwards. If directing the air flow downwards, condensation may form on the surface of the louver and may cause water to drip.



How to adjust the air flow direction, using the swinging function

2 Push the SWING/FIX button.
Set the direction of the horizontal louver (Up/Down air direction adjustment plate) to its lowest position and then push the SWING/FIX button again.

- [SWING] is displayed and the air direction will automatically upwards or downwards.
  In cases where one remote controller controls multiple indoor units, it is possible to set each indoor unit individually, so that the air flow direction can be altered.

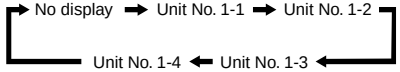
How to stop the louver from swinging

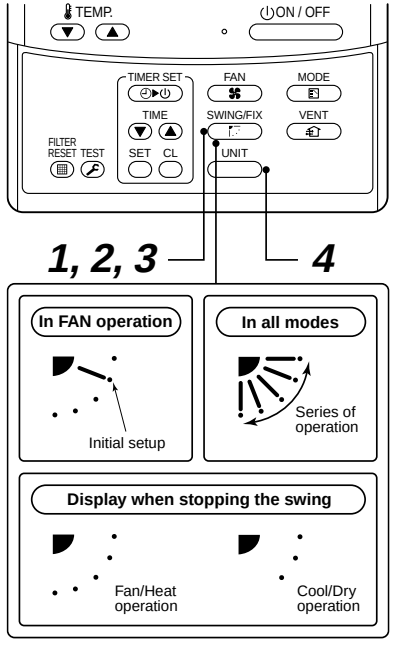
3 Push the SWING/FIX button again while the horizontal louver is moving

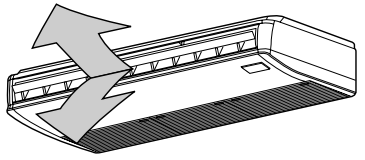
- The horizontal louver can be stopped at any position desired. If you wish to return the louvre to it original upwards position, press the SWING/FIX button again.
  * During the cooling/drying operation the horizontal louver will not stop at its most downwards facing position 9 (reduce the risk of water dripping), but will instead move to the 3rd position from the top (as shown in the figure).

4 UNIT

- To set up the air flow direction individually, push the UNIT button to display each indoor unit No. in a group control. You can then set the air flow direction for the displayed indoor unit.
- If there is no display, all the indoor units can be operated collectively.
- F or every push of the UNIT button, the display will alter between units as shown in the figure.

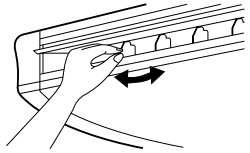






Right/Left air direction adjustment

To change the air outlet direction to the right or left side, set the vertical louver located behind the horizontal louverp to the desired direction.

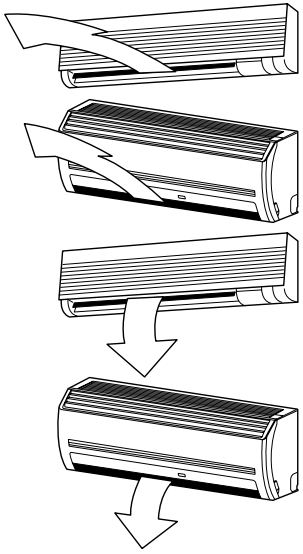


INFORMATION

- If cooling operation is performed with a downwards discharge, dew may form on surface of the cabinet or the horizontal louver resulting in possible dripping.
- If heating operation is performed with a horizontal discharge, the room temperature may not be equal i.e. there may be a large variance between one side of the room with the other.

High Wall Type

Adjustment of air flow direction upwards/downwards



[In Cooling operation]

In cooling operation, use the horizontal louver with a horizontal set point so that the cold air diffuses the whole room.

[In Heating operation (For Heat-pump model only)]

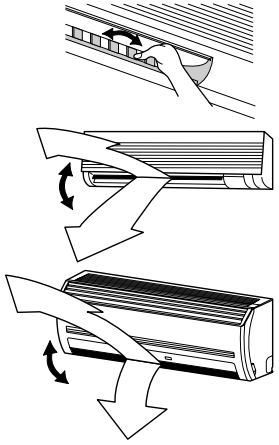
In heating operation, use the horizontal louver with a downwards set point so that the hot air blows towards the floor.

REQUIREMENT

- If cooling operation is performed with the louver set at a downwards position, dew may form on the surface of the cabinet or the horizontal louver resulting in possible dripping.
- If heating operation is performed with the louver set in a horizontal position, the room temperature may not be equal i.e. there may be a large variance between one side of the room with the other.
- Do not move the horizontal louver directly with your hands; otherwise a fault/error may be caused. Select the direction of the horizontal louver using the SWING/FIX button on the remote controller. The horizontal louver will not stop immediately even if the switch is pushed.
  Note) Pushing the switch again when the required louver direction has been reached will stop the louver.

Adjustment of air flow direction rightwards/leftwards

To change the air outlet direction to the right or left side, set the vertical louver located behind the horizontal louver to the desired direction.



Setup of air direction and swinging

1H series: Refer to the description of “2-way Air Discharge Cassette Type”.

2H series: Refer to the description of “Under Ceiling Type, 1-way Air Discharge Cassette Type (2SH Series)”.

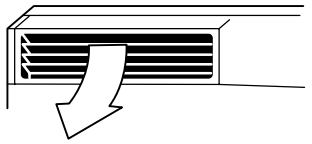
Floor Standing Cabinet Type

[In Cooling operation]

In cooling operation, set the air outlet louver with a horizontal set point so that the cold air diffuses the whole room.

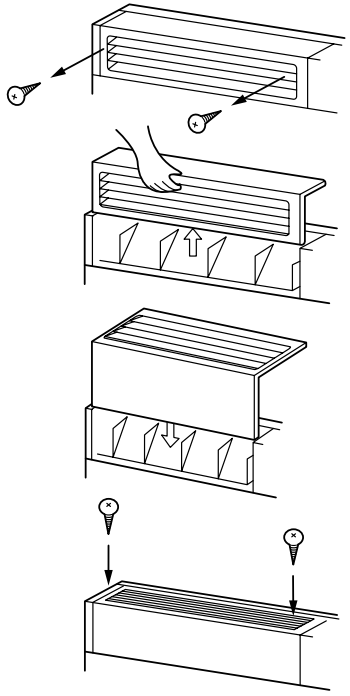
[In Heating operation (For Heat-pump model only)]

In heating operation, set the air outlet louver with a downwards set point so that the hot air blows towards the floor.



How to change the air outlet port

Change the air outlet port using the following procedure.



1 **Remove the two fixing screws on the air outlet port. (The fixing screws are reused.)**

2 **Remove the discharge port, by pushing up on the rear side, to a point where you can remove it from the rear clip.**

3 **Lift the air outlet port upwards and remove it.**

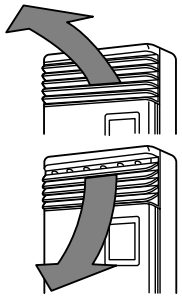
4 **Reverse the air outlet port and attach it to the main unit.**

Pay attention so that four claw hooks (two at rear and two at the lower sides) are hooked on the mounting position.

5 **Be sure to tighten the air outlet port with the removed fixing screws so that the air outlet port does not come off.**

Floor Standing Type

Adjustment of air flow direction upwards/downwards



[In Cooling operation]

In cooling operation, move the louver with your hands so that the horizontal air outlet points in a direction so that the cold air diffuses the entire room.

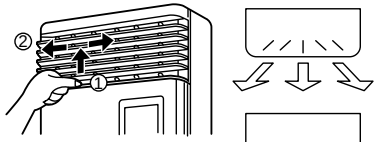
[In Heating operation (For Heat-pump model only)]

In heating operation, move the louver with your hands so that the horizontal air outlet points in a downward direction, towards the floor.

Adjustment of air flow direction rightwards/leftwards

[In case of using unsymmetrical air directions]

Lift up the vertical louver lightly and direct it towards the desired direction.
Once completed lower the louver back down.
In this case, do not use the Swing function.



In this case, do not use the swing function.

[In case of automatic swing]

1 **Push the SWING/FIX button during operation.**

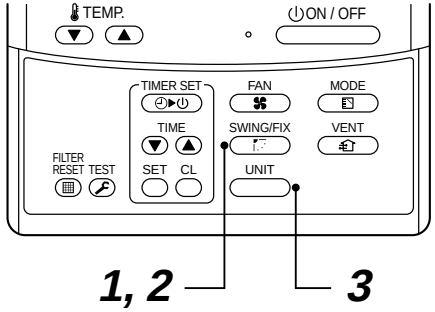
- [SWING] is displayed and the air direction will automatically change rightwards/leftwards.

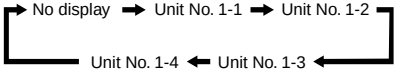
  In cases where one remote controller controls multiple indoor units, it is possible to set each indoor unit individually, so that the air flow direction can be altered.

2 **Push the SWING/FIX button again while the vertical louver is moving will allow you to stop the louver in the desired position.**

3 **Swing button UNIT**

- To set up the air flow direction individually, push the UNIT button to display each indoor unit No. in a group control. Then set up the air flow direction to the desired indoor unit.
- If there is no display, all the indoor units can be operated collectively.
- Every push of the UNIT button, will change the display as shown in the figure.





INFORMATION

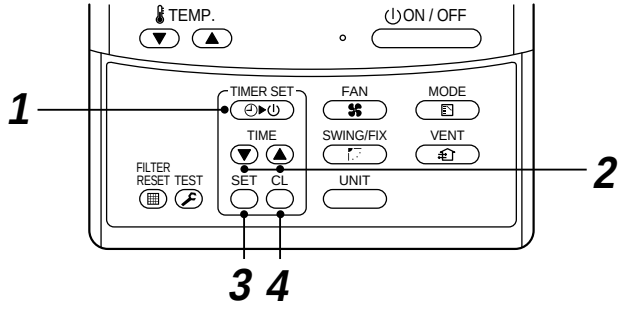
- If cooling operation is performed with downward air outlet, dew may form on the surface of the cabinet or the horizontal louver, resulting in possible dripping of water.
- If heating operation is performed with the horizontal air outlet actively moving, unevenness of the temperature may increase in the room.
- Do not move the louver directly with your hands during swing operation; otherwise a fault may be caused. The vertical louver does not stop immediately even if the SWING/FIX button is pushed. To adjust the stop position, push the SWING/FIX button.

3-10. Timer Operation

A type of timer operation can be selected from the following three types.

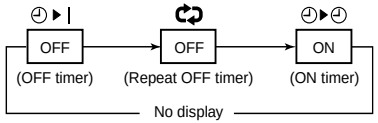
OF F timer : The operation stops when the time on the timer has reached the set time.
Repeat OF F timer : The unit will stop, every time the set time period has elapsed.
ON timer : The unit will start when the time on the timer has reached the set time.

Timer operation



1 **Push the TIMER SET button.**

- The timer display (type) changes for every push of the button.
- SET DATA and timer time displays flash.



2 **Push the TIME buttons to select the "SET TIME".**

F or every push of the ▲ button, the set time increases in the unit of 0.5 hr (30 minutes).
The maximum set time is 72.0 hr.
F or every push of the ▼ button, the set time decreases in the unit of 0.5 hr (30 minutes).
The minimum set time is 0.5 hr.

3 **Push the SET button.**

- SETTING display disappears and timer time display goes on.
  When the ON timer is activated, the chosen time period will be displayed. Once the time has been reached, all displays except the ON light will disappear.

Cancel of timer operation

4 **Push the CL button.**

- TIMER display will disappear.

NOTICE

- When the unit stops after the timer reached the preset time, the Repeat OF F timer will resume the operation. However by pushing the ON / OFF button the repeat function will stop once the time on the timer has again reached its set time.

3-11. Installation

Installation location

⚠ WARNING

- **Select a location for installation that will be able to safely support the weight of the unit.**
  If the installation location is not strong enough to support the unit and the unit falls, injury could result.

⚠ CAUTION

- **Do not install the unit in a location where combustible gases could conceivably leak.**
  Leaking gases that accumulate in the vicinity of the unit could be ignited by the unit.

REQUIREMENT

- A location that permits the level installation of the unit
- A location that provides enough space to service the unit safely
- A location where water draining from the unit will not pose a problem

Avoid the following types of locations :

- Locations where salt is present in large amounts (seaside areas), or where sulfuric gases are present in large amounts (hot springs areas)
  (If the unit is to be used in such areas, special maintenance is necessary.)
- Locations that generate oils (including machine oils), steam, oily smoke, or corrosive gases
- Locations where organic solvents are used
- Locations in the vicinity of equipment that generates high frequency signals
- Locations where the outdoor unit will blow in the direction of a neighbor's window
- Locations where the noise of the outdoor unit will pose a problem
- Locations with poor air circulation

Electric wiring

⚠ WARNING

Ensure that the unit is correctly earthed.

Grounding is necessary. If earthing is incomplete, an electric shock may be caused.

⚠ CAUTION

Check that the circuit breaker is fitted.

Attaching a earth leakage breaker is necessary. Otherwise, an electric shock may be caused.

Make sure that the correct capacity fuses are used.

Using wire or copper wire may cause a fire or unit fault.

Ensure that the power supply to the unit is exclusive and is the correct rated voltage.

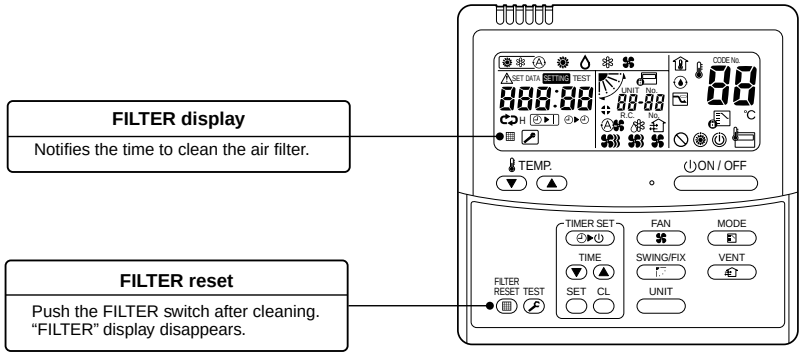
To disconnect the appliance from the main power supply.

This appliance must be connected to the main power supply by means a circuit breaker or a switch with a contact separation of at least 3mm.

3-12. Maintenance

Cleaning of air filter

- When [F ILTER] is displayed on the remote controller, it is time to check and if necessary clean the filter.
- Clogging of air filter decreases the cooling/heating effect.



WARNING

Be sure to turn off the main power supply prior to any maintenance.

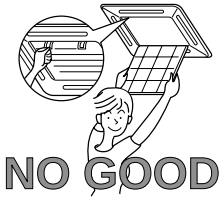
- **Please do not intend to do the daily maintenance and/or Air Filter cleaning by yourself.**
  Cleaning the air filter and other parts of the unit involves dangerous work in high places, so be sure to have a qualified service person do it. Do not attempt it by yourself.

Daily maintenance

- F or daily maintenance including Air F ilter cleaning, please use qualified service personnel, particularly for the following models -

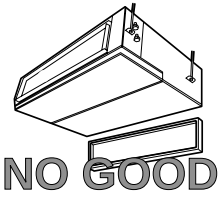
4-way Air Discharge Cassette Type
2-way Air Discharge Cassette Type
1-way Air Discharge Cassette Type
Concealed Duct Standard Type
Slim Duct Type
Concealed Duct High Static Pressure Type
Under Ceiling Type

2-way Air Discharge Cassette Type

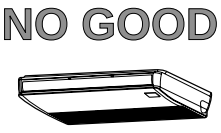


4-way Air Discharge Cassette Type

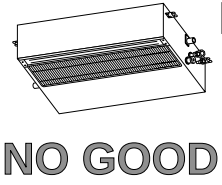
1-way Air Discharge Cassette Type



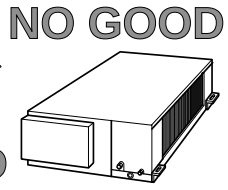
Concealed Duct Standard Type



Under Ceiling Type



Slim Duct Type

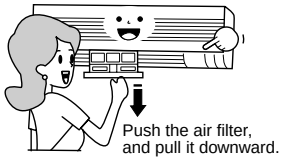


Concealed Duct High Static Pressure Type

High Wall Type

(Model : 1H series)

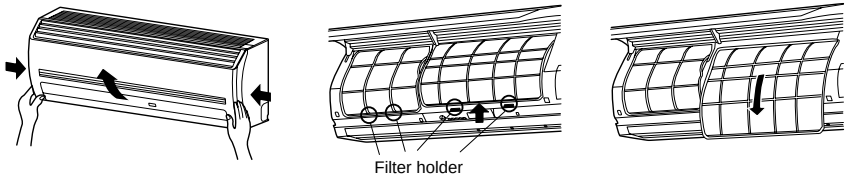
- Push the projection at the center of the air filter.
- Undo the clip on the air filter, pull the air filter downwards while pushing it towards the main unit side.



(Model : 2H series)

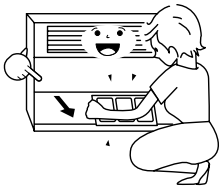
- Open the air inlet grille.

  Lift the air inlet grille up to the horizontal position.
- Take hold of the left and right handles of the air filter and lift it up slightly, then pull downwards to take it out from the filter holder.



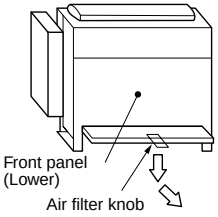
Floor Standing Cabinet Type

- Gently push down on the upper part of the suction port, and then pull towards you to remove it.
- Take out the air filter inside of the suction port.



Floor Standing Concealed Type

- Push down hook of the air filter on the front panel (Lower side).
- Pull the air filter towards you to remove it.



Floor Standing Type

Removal / Attachment of air filter

- Pull the air filter towards you.
- To attach the air filter, insert it into the main body and push it in.

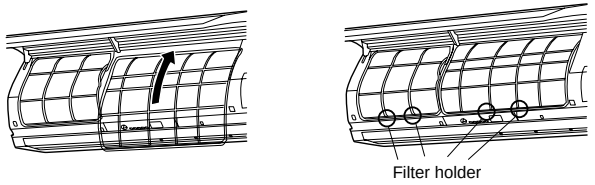
NOTE

- When cleaning the air filter, use a small brush or cleaning device. If the air filter is heavily stained, use a neutral detergent mixed with warm water.
- After washing the filter, rinse it out thoroughly and place in the shade to dry. Do not expose to direct sun light.
- Once the air filter has dried, place the air filter back into the unit.

Re-installing the air filter

- Insert the the air filter back into the unit, ensuring that both sides of the filter are positioned correctly inside of the plastic frame.
- Close the air inlet grille.

  If the F ILTER lamp on the indoor unit is displayed, press the F ILTER button on the remote controller or the TEMPORARY button on the indoor unit. This will turn the light off.

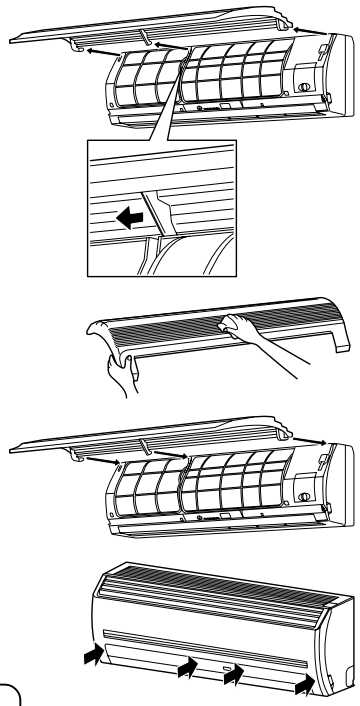


Cleaning the air inlet grille

1. Remove the air inlet grille.

   Hold the two sides of the air inlet grille and open upwards.

   Move the center arm to the left and remove the grille.
2. Wash the grille with water using a soft sponge or towel. (Do not use metallic scrubbing brush or other hard brushes.)
   - Use of such hard objects will cause scratches on the surface of the grille, and the metal coating to peel off.
   - If very dirty, clean the air inlet grille with a neutral detergent for kitchen use, and rinse off with water.
3. Dry the inlet grille, ensuring no water is left.
4. F it the left and right arms of the air inlet grille to the shafts on the two sides of the air conditioner and push in completely. Then push in the center arm.
5. Check that the center arm has been completely inserted and then close the air inlet grille.
   - Push the arrow locations (four) at the bottom of the air inlet grille to check whether the grill is completely closed.



Cleaning of the main unit / remote controller

CAUTION

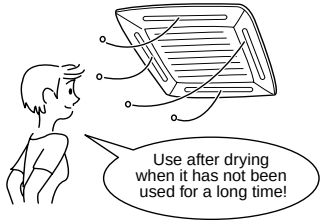
- Wipe them with a soft and dry cloth.
- A cloth dampened with cold water may be used on the indoor unit if it is very dirty.
- Never use a damp cloth on the main unit and the remote controller.
- Do not use or leave a chemically treated duster on the unit for long periods of time, as it may damage or alter the colour of the unit surface.
- Do not use benzine, thinner, polishing powder, or similar solvents for cleaning. These may cause the plastic surface to crack or deform.

If you do not plan to use the unit for more than 1 month

1. Operate the fan for 3 to 4 hours to dry the inside of the unit
   - Operate "F AN mode.
2. Stop the air conditioner and turn off the main power supply or the circuit breaker.

Checks before operation

1. Check that the air filters are installed.
2. Check that the air outlet or inlet is not blocked.
3. Turn on the main power switch or the circuit breaker for the main power supply to the air conditioner.



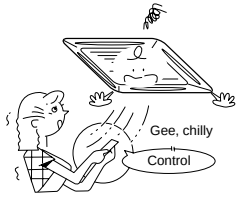
NOTE

F or Air conditioning system which is operated regularly, cleaning and maintenance of the indoor/outdoor units are strongly recommended.
As a general rule, if an indoor unit is operated for about 8 hours daily, the indoor/outdoor units will need to be cleaned at least once every 3 months. This cleaning and maintenance shall be carried out by a qualified person.
F ailure to clean the indoor/outdoor units regularly will result in poor performance, icing, water leakage and even compressor failure.

HINTS FOR ECONOMICAL OPERATION

Maintain room temperature at comfortable level
Clean air filters

The clogged air filter impairs the performance of the air conditioner.



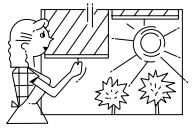
Never open doors and windows more than what is necessary

To keep the cool or warm air in the room, never open doors and windows more than what is necessary.

Window curtains

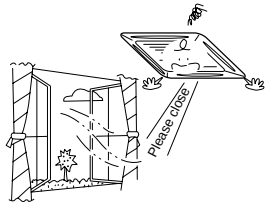
In cooling, close the curtains to avoid direct sunlight.

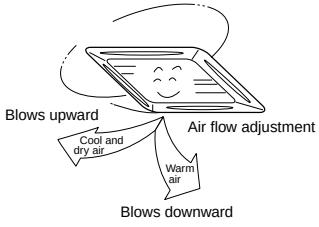
In heating, close the curtains to keep the heat in.



Ensure uniform circulation of room air

Adjust the air flow direction so that the air is evenly circulated throughout the room.





3-13. Air Conditioner Operations and Performance

Check before operation

- Check whether earth wire is disconnected or out of place.
- Check that air filter is installed to the indoor unit.

WARNING

Turn on the power supply 12 hours or more before starting the air conditioner.

Heating capacity (for Heat-pump model only)

- During heating operation the heat pump system operates by absorbing the heat from the outside air and discharging it into the room. Therefore if the outside temperature drops, the units heating capacity will decrease.
- When temperature of the outside air is low, it is recommended that you use other forms of heating in conjunction with the air conditioner.

Defrost operation during heating operation (for Heat-pump model only)

- If the outdoor unit has a build up of frost during the heating operation, the operation mode changes automatically to defrost mode to increase the heating effect (for approximately 2 to 10 minutes).
- During defrost operation, fans of the indoor and the outdoor units will stop.

Protection for 3 minutes

- The outdoor unit will not operate for approximately 3 minutes after the air conditioner has been immediately restarted after being stop, or the power supply has been turned on. This is to protect the system.

Main power failure

- If a power failure occurs during operation, all operations stop.
- When restarting the unit, push the ON/OF F button again.

Fan rotation of stopped unit

- When other indoor units within the same system are in operation, the fan on the indoor units that are on "stand-by" will rotate to protect the machine once approximately 1 hour for several minutes.

Protective device (High pressure switch)

The high pressure switch operates the unit automatically when excessive load is applied to the air conditioner.

If the protective device operates, the operation lamp will stay but the operation will stop.

When the protective device operates, check characters "⚠" on the remote controller display.
The protective device may operate in the following cases.

In Cooling operation

- When suction or discharge port of the outdoor unit is closed.
- When strong winds blow continuously against the discharge port of the outdoor unit.

In Heating operation (For Heat-pump model only)

- When excessive dirt or dust is adhered to the air filter of the indoor unit.
- When the discharge port of the indoor unit is blocked.

Cooling/heating operation of MiNi-SMMS air conditioner

In MiNi-SMMS air conditioner, each indoor unit can be individually controlled. However, cooling operation and heating operation cannot be performed concurrently for the indoor units, which are connected to the same outdoor unit.

When cooling operation and heating operation are performed concurrently, the indoor unit which is performing cooling operation stops, and the "⏻" on the unit display will be lit. The indoor unit that is in heating mode will continue operation.

If the manager has fixed the setting to COOL or HEAT, no other operation can be performed.

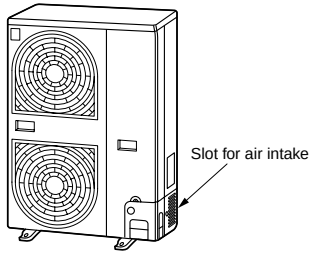
When another operation other than the set up one is performed, the "⏻" light is displayed on the display part of the indoor unit.

Characteristics of heating operation (For Heat-pump model only)

- Hot air will not be blown out immediately from the indoor unit. It will take between 3 to 5 minutes (depending on temperature conditions of the room and the outside) before the indoor heat exchanger warms up sufficiently, to allow hot air to be blown.
- During operation, the outdoor unit may stop if the outside temperature becomes to high.
- When other indoor units are in heating operation, the fan operation of the indoor unit on fan only operation may be stopped temporarily to prevent hot air from being blown out.

The slot provided at side surface of the outdoor unit is an air intake for cooling the electrical parts.

If the air intake would be clogged, a trouble is caused on the electrical parts.
Therefore never close the air intake or do not place any obstacle near the air intake.



Air conditioner operating conditions

F or the specified performance, operate the air conditioner under the following temperature conditions:

Cooling operation	Outdoor temperature : –5°C to 43°C (Dry-bulb temp.)
	Room temperature : 21°C to 32°C (Dry-bulb temp.), 15°C to 24°C (Wet-bulb temp.)
	CAUTION Room relative humidity – less than 80 %. If the air conditioner operates in excess of this figure, the surface of the air conditioner may cause dewing.
Heating operation	Outdoor temperature : –15°C to 15.5°C (Wet-bulb temp.)
	Room temperature : 15°C to 28°C (Dry-bulb temp.)

If air conditioner is used outside of the above conditions the units, safety protection devices may operate.

3-14. Re-Installation

DANGER

If the unit position is to be changed and re-located to a new position ask your local dealer or installation specialist. Do not attempt to move the air conditioner yourself, as incorrect installation may cause electric shock or fire.

Do not install the air conditioner in the following places

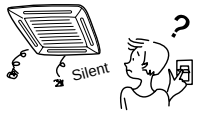
- Do not install the air conditioner in any place within 1 m from a TV , stereo, or radio set. If the unit is installed in such places, noise transmitted from the air conditioner may effect the operation of these appliances.
- Do not install the air conditioner near a high frequency appliance (sewing machine or massager for business use, etc.), as the air conditioner may malfunction.
- Do not install the air conditioner in a humid or oily place, or in a place where steam, soot, or corrosive gas may be generated.
- Do not install the air conditioner in a salty place such as a seaside area.
- Do not install the air conditioner in a place where a great deal of machine oil is used.
- Do not install the air conditioner in a place where it is usually exposed to strong winds such as in a seaside area or on the roof / upper floor of a building.
- Do not install the air conditioner in a place where sulfureous gas may be generated such as in a spa.
- Do not install the air conditioner in a vessel or mobile crane.

Be careful with noise or vibrations

- Do not install the air conditioner in a place where the noise or the hot air created by the outdoor unit will come into contact with your neighbours.
- Install the air conditioner on a solid and stable foundation as this will reduce the transmission of noise and vibration that is produced from the outdoor unit.
- If one indoor unit is operating, some sound may be audible from other indoor units that are connected within the same system (even when not in operation).

3-15. When The Following Symptoms Air Found

Check the points described below before contacting your local service repair center.

	Symptom		Cause
It is not a failure.	Outdoor unit	• White misty cold air or water is blown out.	• F an of the outdoor unit stops automatically and performs defrost operation.
		• Sometimes, the noise “Pushu !” is heard.	• Solenoid valve works when defrost operation starts or finishes.
	Indoor unit	• 'Swish” sound is sometimes heard.	• When the unit is in operation,a sound such as the movement of water from one area to another may be heard. This sound may become larger after a period of 2 to 3 minutes once the unit has begun operation. This is not a cause for concern, but is the movement of the refrigerant or the draining sound of the dehumidifier.
		• A stopping indoor unit in the same operating air conditioner system emitted sound, white vapor or cool air.	• When the air conditioner system is operating, the stopping indoor unit in the same system needs temporary flow of refrigerant to prevent the stay of oil or refrigerant. Therefore, refrigerant flow sound “shaa/cyu” may be heard, or white vapor may come out when other indoor unit heating, or cool air may come out when other indoor unit cooling.
		• Slight “Pishi!” sound is heard.	• This sound is generated when the heat exchanger, etc. expands and contracts slightly due to the change of temperature.
		• Discharge air smells.	• V arious odurs such as those from a carpet, clothes, cigarette, or cosmetics will adhere to the air conditioner.
		• “⏻” indication is lit.	• When cooling operation cannot be performed because another indoor unit performs heating operation.
			• When the manager of the air conditioner has fixed the operation to either COOL or HEAT, but a request or demand contrary to the setup operation is requested.
			• When the fan operation is stopped to prevent the discharge of hot air.
		• When power of the air conditioner is turned on, “Ticktock” sound is heard.	• Sound is generated when the expansion valve operates when the power supply has been turned on.
Check again.	Operates or stops automatically.		• Is the timer “ON” or “OF F”?
	Does not operate. 		• Is there a power failure to the unit? • Has the power supply been turned off? • Has the power fuse or breaker blown? • Has the protective device operated? (The operation lamp goes on.) • Is the timer “ON”? (The operation lamp goes on.) • Are COOL and HEAT selected simultaneously? (“⏻” indication is lit on the display column of the remote controller.)
	Air is not cooled or warmed sufficiently.		• Is the suction port or discharge port of the outdoor unit obstructed? • Are there any doors or windows open? • Is the air filter clogged with dust? • Is the discharge louver of the indoor unit set at appropriate position? • Is the air selection set to “LOW” or “MED” and is the operation mode set to “F AN”? • Is the setup temp. the appropriate temperature? • Are COOL and HEAT selected simultaneously? (“⏻” indication is lit on the display column of the remote controller.)

When the following symptoms are found, stop the operation immediately, turn off the power supply, and contact the dealer from where you have purchased the air conditioner.

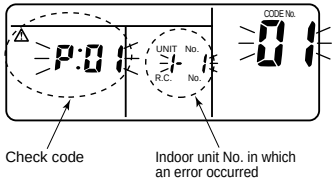
- Activation of the power supply causing the unit to operate in an unstable fashion (power on, power off , power on, power off etc).
- The main power fuse often blows out, or circuit breaker is often activated.
- F oreign matters or water have entered the unit by mistake.
- When the unit fails to operate after the protective device (circuit breaker) has been removed. Not recommended.
- Other unexplained symptoms or unit abnormalities, that cannot be explained.

Confirmation and check

When a error has occurred in the air conditioner, the check code and the indoor unit No. will appear on the display part of the remote controller.

The check code is only displayed during while the unit is operating.

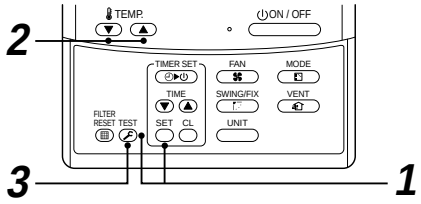
If the display disappears, operate the air conditioner according to the following “Confirmation of error history” for confirmation.

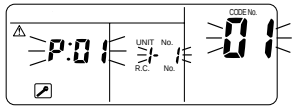


Confirmation of error history

When a error has occurred on the air conditioner, the error history can be confirmed with the following procedure. (up to 4 errors can be stored in the memory of the remote controller)

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



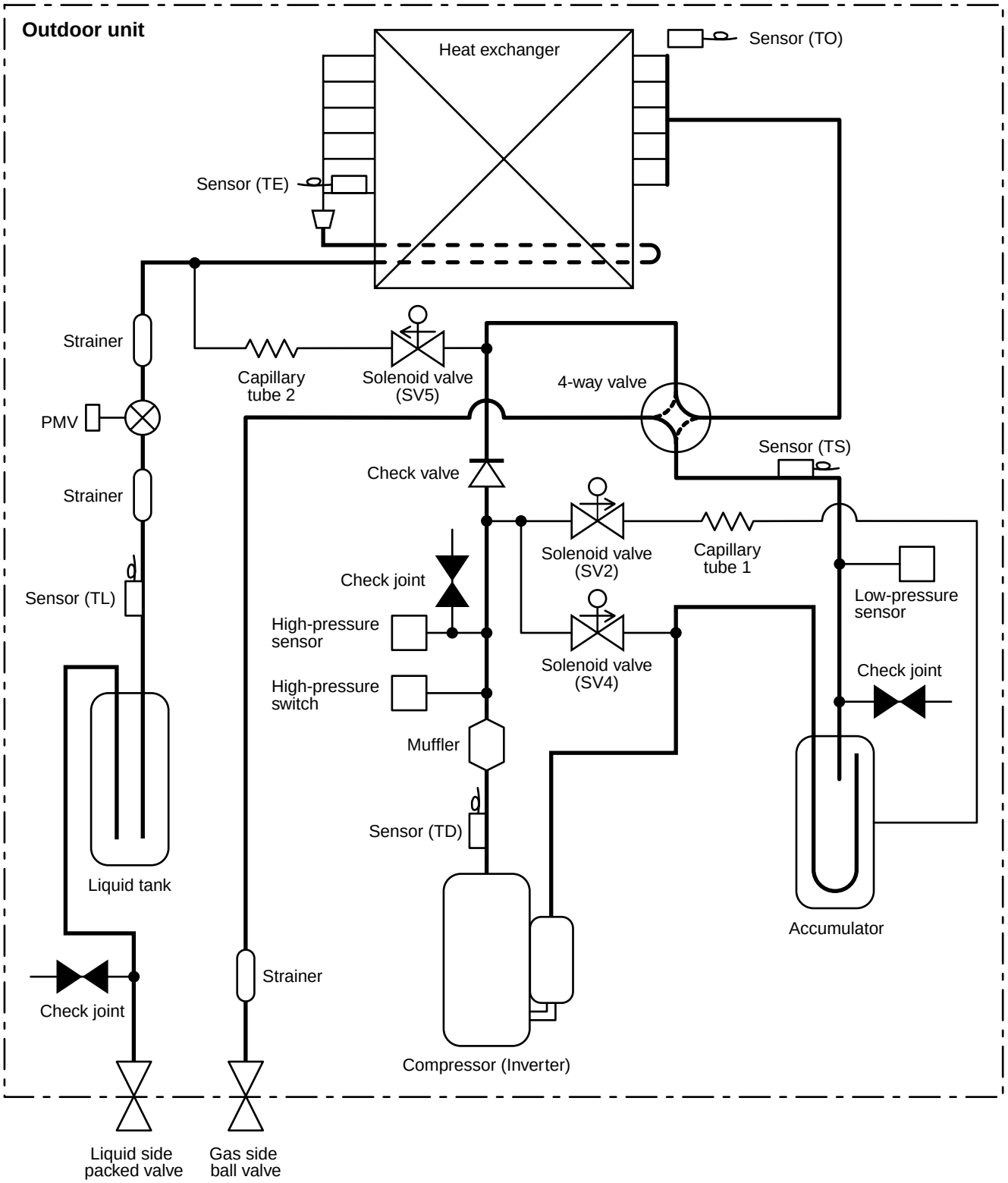
Procedure	Description	
1	When pushing the SET and TEST buttons at the same time for 4 seconds or more, the following display will appear. If [Service check] is displayed, the mode enters into the error history mode. • [01 : Order of error history] is displayed in CODE No. window. • [Check code] is displayed in CHECK window. • [Indoor unit address in which the error has occurred] is displayed in UNIT No.	
2	F or every push of the [▼ , ▲] button, the error history stored in memory is displayed in order. The numbers in CODE No. indicate CODE No. [01] (latest) → [04] (oldest). **CAUTION** Do not push the CL button because all the error history of the indoor unit will be deleted.	
3	After confirmation, push the TEST button to return to the normal display.	

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

4. REFRIGERANT PIPING SYSTEMATIC DRAWING

4-1. Refrigerant Cycle Diagram

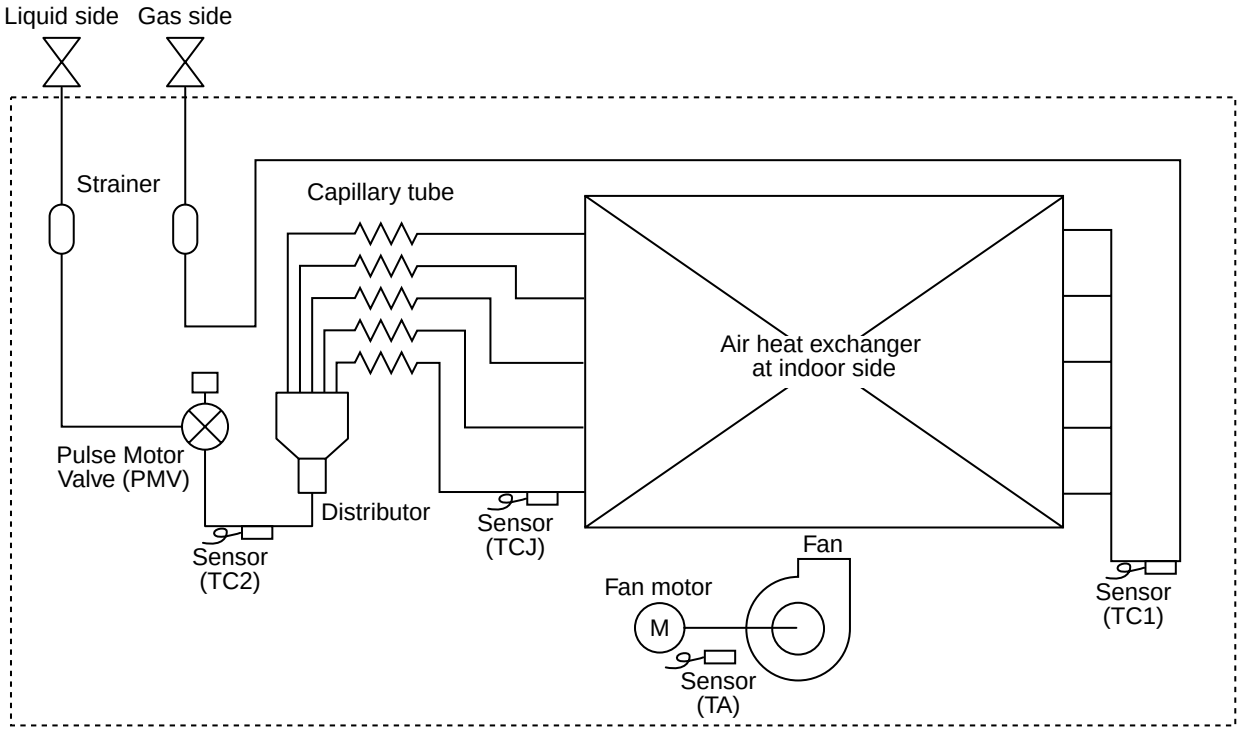
Model: MCY-MAP0401HT, HTZ, HTZG,
MCY-MAP0501HT, HTZ, HTZG,
MCY-MAP0601HT, HTZ, HTZG,
MCY-MAP0401HT2D, HT2DZ, HT2DZG,
MCY-MAP0501HT2D, HT2DZ, HT2DZG,
MCY-MAP0601HT2D, HT2DZ, HT2DZG



4-2. Explanation of Functional Parts

Functional part name		Functional outline	Connector
Solenoid valve	SV2	1) Low-pressure release function 2) High-pressure release function 3) Gas balance function during off time 4) Hot gas bypass into accumulator	CN312 (White)
	SV4	1) High-pressure release function 2) Low-pressure release function	CN311 (Blue)
	SV5	1) Preventive function for high-pressure rising in heating operation	CN310 (White)
Capillary tube	1	ID : Ø1.5, Length : 200 mm	
	2	ID : Ø2.2, Length : 100 mm	
4-way valve		1) Cooling/heating exchange 2) Reverse defrost	CN317 (Blue)
PMV (Pulse motor valve)		1) Super heat control function 2) Sub-cool adjustment function in cooling operation	CN300 (White)
Temp. sensor	TD	1) Protection of compressor discharge temp. Used for release	CN502 (White)
	TS	1) Controls super heat in heating operation	CN504 (White)
	TE	1) Controls defrost in heating operation 2) Controls outdoor fan in heating operation	CN505 (Green)
	TL	1) Detects under cool in cooling operation	CN521 (White)
	TO	1) Detects outside temperature	CN507 (Yellow)
High-pressure sensor		1) Detects high-pressure and controls compressor capacity 2) Detects high-pressure in cooling operation and controls the fan in low ambient cooling operation	CN501 (Red)
Low-pressure sensor		1) Detects low-pressure in cooling operation and controls compressor capacity 2) Detects low-pressure in heating operation and controls the super heat	CN500 (White)
Compressor case heater		1) Prevents liquid accumulation to compressor	CN316 (White)
Accumulator case heater		1) Prevents liquid accumulation to accumulator	CN321 (Red)

4-3. Indoor Unit



(NOTE) MMU-AP0071YH to AP0121YH type air conditioners have no TC2 sensor.

Functional part name		Functional outline
PMV (Pulse motor valve)		(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 2) [MMU-AP0071 to AP0121YH only] Controls PMV under cool in heating operation

5. SWITCH (SW08) SET UP OF THE OUTDOOR UNIT

When using the outdoor unit under the following conditions, it is necessary to set up DIP switch on the outdoor unit interface P.C. board.

CAUTION

When anyone of the following condition is applied, set up DIP switch.

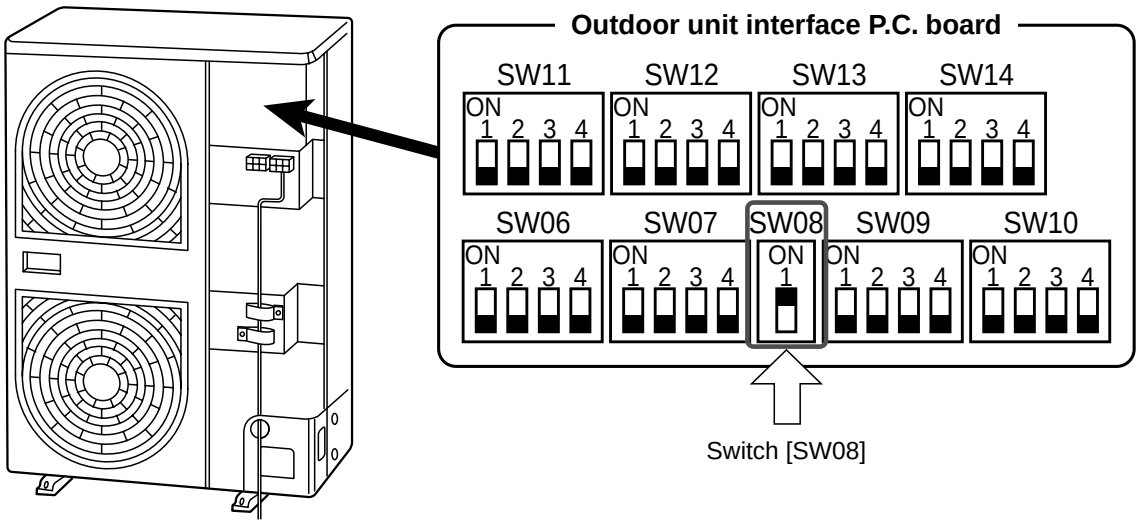
1. When using PMV Kit in the Mini-SMMS system
2. When using the indoor unit under high humidity condition

[Reference]

Indoor side: 27°C dry bulb temperature
24°C wet bulb temperature
Operation time 4 hours or more.

5-1. Setup Method

- Turn on DIP switch [SW08] on the interface P.C. board of the outdoor unit.

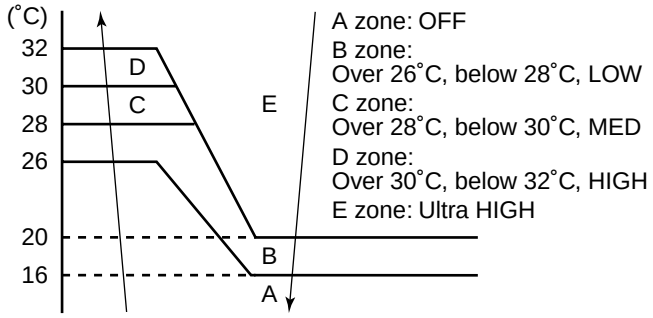
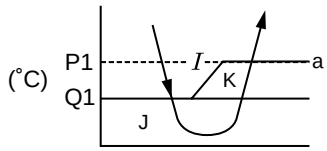


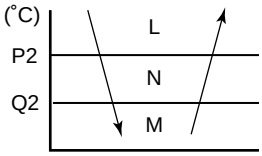
6. CONTROL OUTLINE

6-1. Indoor Unit

6-1-1. Control Specifications

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>1</td><td>Power supply is reset.</td><td>(1) Identification of outdoor unit
When the power supply is reset, the outdoor units are individually identified and communication is established.
(2) Check code clear
When the power supply is reset, the check code is also reset.
If an abnormal status is still present upon restart the check code will be displayed again on the remote controller.</td><td></td></tr>
<tr><td>2</td><td>Operation select</td><td>(1) Based upon the operation command received from the remote controller or central controller, the operation mode is selected.
<table>
<tr><th>Remote controller command</th><th>Control outline</th></tr>
<tr><td>STOP</td><td>Stops air conditioner.</td></tr>
<tr><td>FAN</td><td>Fan only operation</td></tr>
<tr><td>COOL</td><td>Cooling operation</td></tr>
<tr><td>DRY</td><td>Dry operation ∗</td></tr>
<tr><td>HEAT</td><td>Heating operation</td></tr>
</table></td><td>∗ Concealed Duct High Static Pressure type air conditioner cannot operate in drying mode.</td></tr>
<tr><td>3</td><td>Room temp. control</td><td>(1) Set point temperature adjustment range on remote controller (°C)
<table>
<tr><th></th><th>All cooling</th><th>All heating</th></tr>
<tr><td>Wired type</td><td>18 to 29°C</td><td>18 to 29°C</td></tr>
<tr><td>Wireless type</td><td>18 to 30°C</td><td>16 to 30°C</td></tr>
</table>
(2) The set point temperature in heating operation can be offset using item code (DN) 06.
<table>
<tr><td>Setup data</td><td>0</td><td>2</td><td>4</td><td>6</td></tr>
<tr><td>Setup temp. correction</td><td>+0°C</td><td>+2°C</td><td>+4°C</td><td>+6°C</td></tr>
</table>
Setup at shipment
<table>
<tr><td>Setup data</td><td>2</td></tr>
</table></td><td>Heating suction temperature shift</td></tr>
<tr><td>4</td><td>Automatic capacity control</td><td>(1) The difference between the temperature reading taken from the Ta (room) sensor and the Ts (set point) selected on the remote controller is used to determine the demand frequency to the outdoor unit.</td><td></td></tr>
<tr><td>5</td><td>Air volume control</td><td>(1) The remote controller is used to select the modes “HIGH (HH)”, “MED (M)”, “LOW (L)” or “AUTO”.
(2) The difference between the temperature reading taken from the Ta (room) sensor and the Ts (set point) selected is used to control the air volume setting when in “AUTO” mode.</td><td>HH > H+ > H > L+ > L > LL</td></tr>
</table>

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>6</td><td>Prevention of cold air discharge</td><td>(1) In all heating operation, the upper limit of the fan tap is set by one with higher temperature of TC2 sensor and TCJ sensor.
• When B zone has continued for 6 minutes, the operation shifts to C zone.
• In defrost time, the control point is set to +6°C.
 
</td><td>• In D and E zones, priority is given to remote controller air speed setup.
• In A and B zones, “❁” is displayed.</td></tr>
<tr><td>7</td><td>Freeze prevention control (Low temp. release)</td><td>(1) In all cooling operation, the air conditioner operates as described below based upon temp. detected by TC1, TC2 and TCJ sensors.
To prevent the heat exchanger from freezing, the operation stops.
• When “J” zone is detected for 5 minutes, the command frequency becomes “S0” to the outdoor unit.
• 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.
• When the command frequency became S0 with continuation of “J” zone, operation of the the indoor fan in LOW mode until it reaches the “I” zone.
It is reset when the following conditions are satisfied.
Reset conditions
1) TC1 ≥ 12°C and TC2 ≥ 12°C and TCJ ≥ 12°C
2) 30 minutes passed after stop.
 

<table>
<tr><th></th><th>TC1</th></tr>
<tr><td>P1</td><td>10°C (5°C)</td></tr>
<tr><td>Q1</td><td>0°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 45 minutes, the command frequency becomes “S0” to the outdoor unit.
• 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 ≥ 12°C and TC2 ≥ 12°C and TCJ ≥ 12°C
2) 30 minutes passed after stop.
 

<table>
<tr><th></th><th>TC2, TCJ</th></tr>
<tr><td>P2</td><td>5°C</td></tr>
<tr><td>Q2</td><td>–2.0°C</td></tr>
</table></td><td>∗ In a Model without TC2, TC2 is not judged.</td></tr>
</table>

No.	Item	Outline of specifications	Remarks
8	Recovery control for cooling refrigerant and oil	(1) The indoor unit which stops operation, thermostat is OFF, or operates in FAN mode opens PMV of the indoor unit by the specified opening degree when cooling refrigerant or oil recovery signal is received from the outdoor unit. (2) Drain pump of 4-way air discharge cassette type and concealed duct type operate during recovery control mode.	• Recovery operation is usually executed every 3 hours.
9	Recovery control for heating refrigerant and oil	The indoor unit which stops operation, thermostat is OFF, or operates in FAN mode performs the following controls when the heating refrigerant/Oil recovery signal is received from the outdoor unit. 1) Opens PMV of the indoor unit by the specified opening degree. 2) Stops the fan. 3) Only 4-way Air Discharge Cassette type air conditioner rotates the indoor fan with intermittent operation for approximately 1 minute after recovery control. 4) Only 4-way Air Discharge Cassette type air conditioner rotates the indoor fan with intermittent operation for approximately 1 minute after recovery control as the outdoor unit. 5) After recovery control, drain pump of 4-way air discharge cassette type and concealed duct type will operate.	• In the indoor unit which thermostat is OFF, or operates in FAN mode, "⏻" lamp goes on. • Recovery operation is usually executed every 1 hour.
10	Short intermittent operation compensation control	(1) For 5 minutes after the operation has started, the operation is continued even if entering thermostat-OFF condition. (2) However, if the thermostat has been turned off by changing the set up temp., the thermostat is OFF with even the above condition. The protective control has priority.	
11	Drain pump control	(1) During "COOL" operation (including DRY operation), the drain pump operates. (2) While the drain pump operates, if the float switch works, the drain pump continues operation and a check code is displayed. (3) While the drain pump stops, if the float switch works, turn off the capacity demand command, stop the operation, and operate the drain pump. If the float switch continues operating for approx. 5 minutes, the operation stops and the check code is displayed. (4) In heating operation, if humidifier "provided" is judged, compressor "ON", compressor "ON", fan "ON", and MAX (TC2, TCJ) > 33°C, the drain pump operates.	Check code [P10]
12	Elimination of remaining heat	(1) When the air conditioner stops in the "HEAT" mode, drive the indoor fan with "LOW" mode for approx. 30 seconds.	
13	Auto louver control	(1) When the louver signal has been received from the remote controller, the louver operates if the indoor fan is operating. (2) In 4-way Air Discharge Cassette type, the discharge louver automatically directs downward if the operation stops. (3) In 4-way Air Discharge Cassette type, the discharge louver directs upward if the heating operation is being prepared.	
14	Filter sign display (None in wireless type) ∗ Provided in the separately laid type TCB-AX21E.	(1) The operation time of the indoor fan is integrated and stored in memory, and the filter exchange signal is sent to the remote controller to display on the remote controller LCD after the specified time. (2) When the filter reset signal is received form the remote controller, time of the integrated timer is cleared. In this time, if the specified time has passed, the measured time is reset and LCD display disappears.	

No.	Item	Outline of specifications	Remarks
15	"⏻" and "❋" display (Operation and heating stand-by)	**<Operation standby> .....** Display on remote controller (1) • "P05" is one of displays of power wire missing. • "P05" of power cable is detected. • "COOL/DRY" operation cannot be performed because the other indoor unit is under "HEAT" operation. • "HEAT" operation cannot be performed because COOL priority is set (Outdoor I/F P.C. board SW11 1-bit is ON) and the other indoor unit is under "COOL/DRY" operation. • "FAN" operation cannot be performed because the system performs "Heat oil/Refrigerant recovery" operation. • There is a unit in which indoor overflow "P10" is detected. • There is a unit in which interlock alarm "P23" is detected. (2) The above indoor units unavailable to operate waits under condition of thermostat OFF. **<HEAT standby> .....** Display on remote controller (1) • HEAT thermostat is OFF. • During HEAT operation, the fan rotates with lower air speed than one specified in order to prevent discharge of cold draft or stops. (including case that defrost operation is being performed) • "HEAT" operation cannot be performed because COOL priority is set (Outdoor I/F P.C. board SW11 bit 1 is ON) and the other indoor unit is under "COOL/DRY" operation. (2) "HEAT standby" is displayed until the above conditions are released.	• "⏻" goes on. • "❋" goes on.
16	Selection of central control mode	(1) The contents which can be changed on the remote controller at indoor unit side can be selected by setup at the central controller side. (2) In case of operation from TCC-LINK central controller (TCB-SC642TLE, etc.) **[Central control mode 1]** : Cannot operate **[Central control mode 2]** : Cannot operate, stop, select mode, set up temp. **[Central control mode 3]** : Cannot select mode, set up temp. **[Central control mode 4]** : Cannot select mode (3) RBC-AMT21E (Wired remote controller) While mode is the central control mode, "CENTRAL" lights on the display part of the remote controller.	If operation is performed from the remote controller "CENTRAL CONTROL" mode, the status is notified with receiving sound.

6-2. Outdoor Unit

6-2-1. Operation Start/Operation End

The compressor, solenoid valve, pulse motor valve (PMV), outdoor fan, etc. are controlled by a command from the indoor controller. The follower outdoor unit starts/stops by a command from the header outdoor unit.

No.	Item	Operation explanation and applied data, etc.	Remarks
1	Pulse Motor Valve (PMV) control	(1) PMV control • PMV is controlled between 45 to 500 pulses during operation. • In cooling operation, PMV opening is dependent upon detected readings from the TL sensor and Pd pressure sensor (sub-cool control). • In heating operation, PMV opening is dependent upon detected readings from the TS and TD sensors and the Ps pressure sensor (super-heat control). • PMV will be fully closed when the system is in 'Standby' or 'No demand' modes and when a malfunction in the system has occurred.	
2	Outdoor fan control	(1) Fan control in all cooling operation 1) The outdoor fan speed/mode is determined by the detected Pd pressure value. 2) When cooling operation has started, the outdoor fan speed of the master unit is controlled using the detected Pd pressure value. (2) Fan control in all heating operation 1) The outdoor fan speed/mode is determined by the detected TE sensor value. 2) If a TE value > 25°C has been continuously detected for 5 minutes, the operation may stop. 3) After start up, this control is not available during the specified time after a defrost operation. 4) This operation may start and stop repeatedly when the system is undercharged. (3) Fan control for mainly cooling, part heating operation The outdoor fan speed (mode) is controlled according to the target of the Pd (Discharge pressure).	When TE temp. (ambient temperature) exceeds 25°C, Heating operation stops. • The maximum fan speed differs depending on the outdoor HP.
3	Capacity control	(1) The capacity request command received from the indoor controller determines the inverter frequency control of the outdoor unit.	• Min. frequency: 26Hz
4	Refrigerant/Oil recovery control	(1) During cooling operation, this function is executed to regularly to recover the refrigerant/oil from the indoor units and connecting pipe-work back to the outdoor unit. This function is also performed to prevent stagnated refrigerant accumulating in the outdoor heat exchanger during low ambient cooling. 1) Control conditions • Cooling oil recovery operation is executed approximately every 3 hours. 2) Contents of control • The recovery period lasts for approximately 2 or 3 minutes though this is dependant on the system capacity. (2) Refrigerant recovery control in heating room This function is executed regularly to recover the liquid refrigerant from the indoor unit. It is also used to recover oil present in the outdoor heat exchanger during the heating overload operation (except during defrost operation). 1) Heating operation oil, recovery control is executed approximately every hour. 2) The period of recovery lasts for approximately 2 to 10 minutes though this is dependent upon the load condition.	• Control for refrigerant/oil recovery is performed approximately every 3 hours. • Recovery lasts for approximately 2 or 3 minutes though this is dependent upon the system capacity.

No.	Item	Operation explanation and applied data, etc.	Remarks
5	Defrost control (Reverse cycle defrost method)	(1) Defrost start condition The defrost function is initiated when the measurement temperature taken from the TE sensor is lower than –1°C for a period of 25 minutes after compressor initial start up and 55 minutes after subsequent start ups. (2) Contents of control • If the outdoor units are combined, the minimum duration for the defrost operation is 2 minutes. (3) Defrost stop condition • The outdoor fan speed and compressor inverter frequency are determined by the measurement of Pd pressure during defrost operation.	• During the defrost operation, all solenoid 4-way valves are OFF and all compressors are operating.
6	Solenoid valve control	(1) SV2 gas balance control This control is executed to balance the gas when opening SV2 while the compressor is off, in order to decrease the activation load in the next compressor-ON time. This control is individually executed by the outdoor unit. (2) SV2 high-pressure release control This control is to control pressure rising in low-frequency operation of the inverter. (3) SV2 low-pressure release control This control is to prevent quick pressure dropping transient operation. This control is individually executed by the outdoor unit. This control is executed as necessary except during stop time and thermostat-OFF time. (4) SV4 low-pressure release control This control is to prevent low-pressure dropping and is individually executed by unit. This control executed during defrost operation, heating start pattern control operation and cooling operation. (5) SV5 high-pressure release control This control is to prevent high-pressure rising and executed unit only.	
7	Frequency release control	(1) High pressure release control This function is to correct the operation command of the compressor and suppress the rise of high pressure. 1) Control contents The operation frequency is decreased by 1 step when Pd pressure ≥ 3.4MPa. It is decreased by 1 step every 10 seconds until Pd pressure drops below 3.4MPa. 2) Release condition • When Pd pressure ≤ 3.2MPa • When refrigerant recovery control starts in all heating mode • During defrost operation, stop, thermo OFF.	
8	Compressor stop due to high pressure release	Each compressor is stopped should the Pd pressure sensor reach a value of 3.5 MPa. This control is performed by the outdoor units.	

No.	Item	Operation explanation and applied data, etc.	Remarks
9	Case heater control	Heating is provided for both the compressor case and accumulator. When the compressor in any outdoor unit is stopped, the heater is switched on to prevent accumulation of refrigerant. After installation of a system, it should be powered for the specified period of time prior to operating a test run to prevent damage to the system. If the system has not been powered for a prolonged period of time, it is important to apply power for the specified period of time before resuming operation. This function is often performed in conjunction with the compressor winding heating control. When this occurs, a noise may be heard which is not an indication of a malfunction. (1) Contents of control • The function is performed during when the compressor is off. • When the TO sensor temp measures 28°C or higher the heater turns off and turns on when it change:measures 25°C or lower • The heater remains 'ON' for 10 minutes after the compressor has changed mode from Off to On.	
10	IPDU control	The IPDU controls the inverter compressor by communicating a command frequency that controls the compressor speed, depending on any active releases. The main controls of the IPDU P.C. board are: (1) Current release control Feedback from the AC input current sensor (CT) is used to prevent the inverter input current exceeding its specified limit (2) Heat sink temperature detection control • Feedback from the thermistor (TH) on the compressor driving module is used to prevent the IGBT from overheating. The highest value is taken from IPDU TH sensors. (3) Over-current protective control • When an over-current condition is detected by the IPDU, the compressor is stopped. (4) Compressor case thermo control • The compressor stops when the compressor case thermostat is activated. • Whenever this condition occurs, a 1 count is added to the system error count. • After a period of 2 minutes and 30 seconds, the compressor is reactivated and the error count cleared if the operation continues without further error for a period of 10 minutes or more. • If the error count reaches 4, the check code [H04] is displayed.	• The case thermostat is normally closed and connected to interface P.C. board.
11	High pressure prevention control	(1) High pressure SW control • The high pressure switch is connected to the IPDU board and is in the normally closed condition. • When the high pressure switch is activated, the compressor is stopped. • Whenever this condition occurs, a 1 count is added to the system error count. • After a period of 2 minutes and 30 seconds, the drive to the compressor is reactivated and the error count is cleared if the operation continues with further error for a period of 10 minutes or more. • If the error count reaches 4, the check code [P04] is displayed.	

Other cautions

1. Cooling operation in low ambient temperatures

1) The indoor unit freeze prevention control system (TC sensor) may decrease the command frequency to the outdoor unit when low coil temperatures are detected.
2) The cooling capacity control may decrease the command frequency to the outdoor unit when low ambient temperature is detected.
3) When the discharge temperature sensor value reaches 60°C or below, the frequency may be increased above the required demand from the indoor unit.

2. PMV (Pulse Motor Valve) for outdoor unit

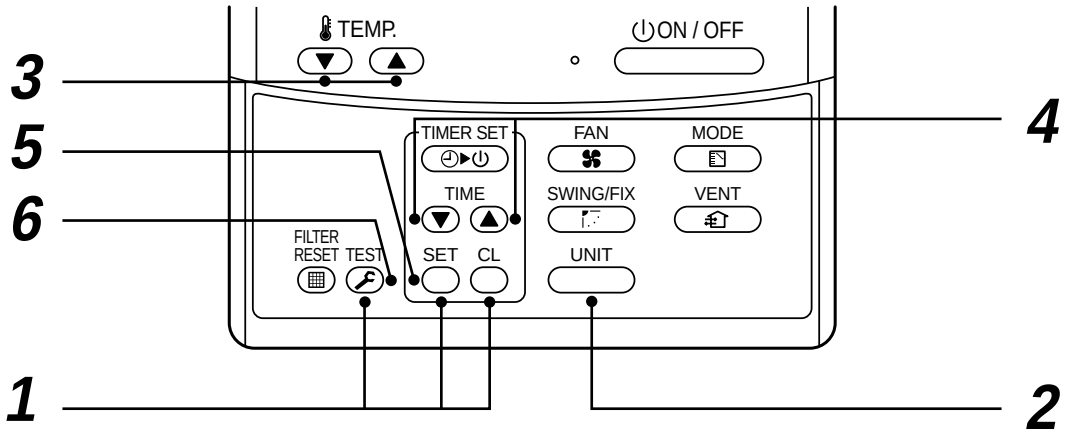
1) When the system power is turned on an audible “clicking” sound is omitted due to the PMV initializing, this is a normal condition. When the outdoor unit is situated near other sources of noise, this sound may not be noticeable.
2) Do not remove the driving part (head) of the PMV during operation as it may cause the PMV to malfunction.
3) When transporting or replacing the outdoor unit, never keep the driving part (head) removed from the PMV body as the valve will be closed and may result in damage or failure due to sealed liquid compression.
4) When refitting the driving part (head) to the body of the PMV, apply pressure until a “click” sound can be heard, complete the process by resetting the power to the system.

7. APPLIED CONTROL

7-1. Indoor Unit

7-1-1. Setup of Selecting Function in Indoor Unit (Be sure to Execute Setup by a Wired Remote Controller)

<Procedure> Execute the setup operation while the unit stops.



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

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

2 **Every pushing UNIT button, the indoor unit numbers in the group control are successively displayed. In this time, the fan of the selected indoor unit only is turned on.**

3 **Specify the item code (DN) using the setup temperature ▼ and ▲ buttons.**

4 **Select the setup data using the timer time ▼ and ▲ buttons.**

(When selecting the DN code to "33", change the temperature indication of the unit from "°C" to "°F" on the remote controller.)

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

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

6 **Pushing TEST button returns the status to normal stop status.**

Table: Function selecting item code (DN)
(Items necessary to perform the applied control at the local site are described.)

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 0002 : +2°C to 0010 : +10°C (Up to +6 recommended)	0002 : +2°C (Floor type 0000: 0°C)
0d	Existence of [AUTO] mode	0000 : Provided 0001 : Not provided (Automatic selection from connected outdoor unit)	0001 : Not provided
0E	Follows operation mode of the header unit	0000 : Does not follow 0001 : Follows	0000 : Not provided
0F	Cooling only	0000 : Heat pump 0001 : Cooling only (No display of [AUTO] [HEAT])	0000 : Heat pump
10	Type	0000 : (1-way air discharge cassette) 0001 : (4-way air discharge cassette) to 0037	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
19	Louver type (Adjustment of air direction)	0000 : Not provided 0001 : Swing only 0004 : [4-way Air Discharge Cassette type] and [Under Ceiling type]	According to type
1E	Temp difference of [AUTO] mode selection COOL → HEAT, HEAT →COOL	0000 : 0 deg to 0010 : 10 deg (For setup temperature, reversal of COOL/HEAT by ± (Data value)/2)	0003 : 3 deg (Ts±1.5)
28	Automatic restart of power failure	0000 : None 0001 : Restart	0000 : None
29	Operation condition of humidifier	0000 : Usual 0001 : Condition ignored (Detection control for heat exchanger temperature)	0000 : Usual
2A	Selection of option/ error input (CN70)	0000 : Filter input 0001 : Alarm input (Air washer, etc.) 0002 : None	0002 : None
2E	HA terminal (CN61) select	0000 : Usual 0001 : Leaving-ON prevention control	0000 : Usual (HA terminal)
30	Automatic elevating grille	0000 : Unavailable 0001 : Available	0000 : Unavailable
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 (at factory shipment) 0001 : °F	0000 : °C
40	Drain pump control	0000 : None 0001 : Pump ON 0002 : None 0003 : Pump OFF	0003 : Pump OFF
5d	High ceiling selection (Air volume selection)		0000 : Standard

Indoor unit type		Item	Set up data				
			0	1	2	3	6
4-way Air Discharge Cassette	MMU-AP✱✱✱1H	High ceiling	Standard	High ceiling (1)	—	High ceiling (3)	—
		Filter	Standard	Super long life filter	—	High efficiency filter	—
Compact 4-way Air Discharge Cassette	MMU-AP✱✱✱1MH	High ceiling	Standard	—	High ceiling (2)	High ceiling (3)	—
1-way Air Discharge Cassette	MMU-AP✱✱✱2SH	High ceiling	Standard	High ceiling (1)	—	High ceiling (3)	—
Concealed Duct Standard	MMU-AP✱✱✱1BH	External static pressure	40Pa	70Pa	—	100Pa	20Pa
Slim Duct	MMU-AP✱✱✱1SPH	External static pressure	10Pa	20Pa	—	35Pa	50Pa

60	Timer set (Wired remote controller)	0000 : Available (Operable) 0001 : Unavailable (Operation prohibited)	0000 : Available
62	Anti-ceiling smudging control	0000 : Clear	4- way Air Discharge Cassette type only

TYPE

Item code [10]

Setup data	Type	Abbreviated Model name
0000	1-way Air Discharge Cassette	MMU-AP ✻✻✻ SH
0001	4-way Air Discharge Cassette	MMU-AP ✻✻✻ H
0002	2-way Air Discharge Cassette	MMU-AP ✻✻✻ WH
0003	1-way Air Discharge Cassette (Compact type)	MMU-AP ✻✻✻ YH
0004	Concealed Duct Standard	MMD-AP ✻✻✻ BH
0005	Slim Duct	MMD-AP ✻✻✻ SPH, SH
0006	Concealed Duct High Static Pressure	MMD-AP ✻✻✻ H
0007	Under Ceiling	MMC-AP ✻✻✻ H
0008	High Wall	MMK-AP ✻✻✻ H
0010	Floor Standing Cabinet	MML-AP ✻✻✻ H
0011	Floor Standing Concealed	MML-AP ✻✻✻ BH
0013	Floor Standing	MMF-AP ✻✻✻ H
0014	Compact 4-way Air Discharge Cassette	MMU-AP ✻✻✻ MH
~	—	

Indoor unit capacity

Item code [11]

Setup data	Model
0001	007
0003	009
0005	012
0007	015
0009	018
0011	024
0012	027
0013	030
0015	036
0017	048
(0018)	(056)
(0021)	(072)
(0023)	(096)
~	—

7-1-2. Applied Control in Indoor Unit

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

[Wiring and setup]

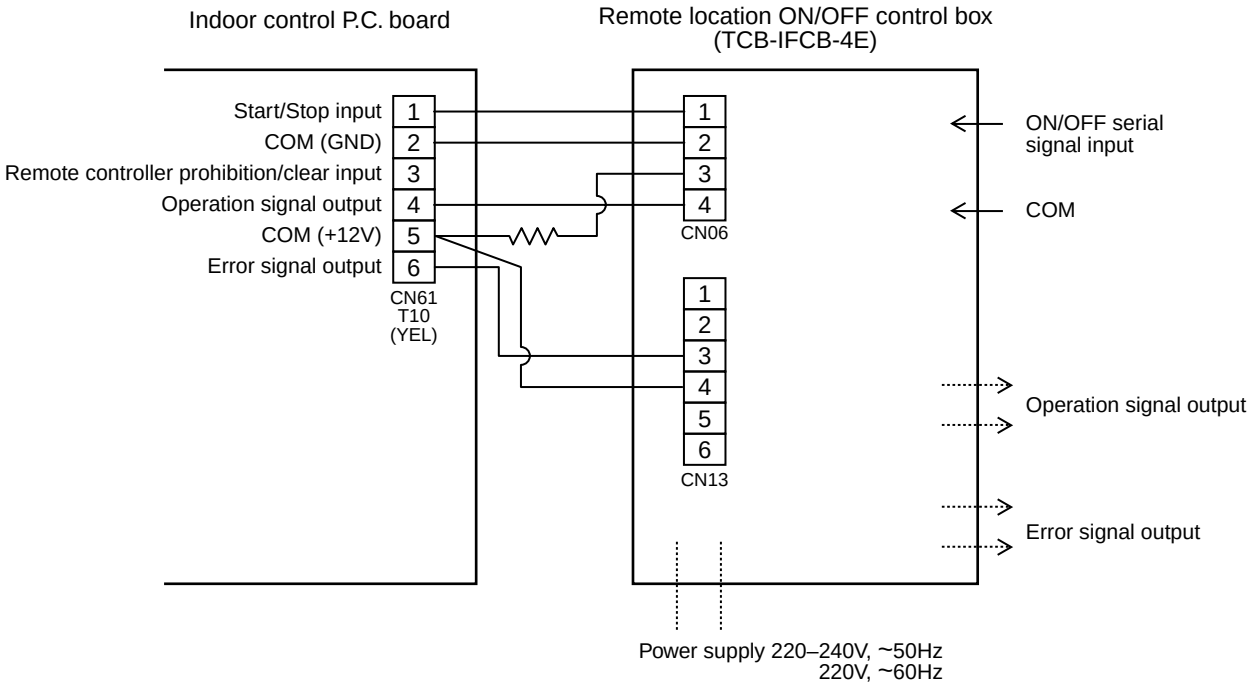
- Use the exclusive connector for connection with the indoor control P.C. board.
- In a group control, the system can operate when connecting with any indoor unit (Control P.C. board) in the group. However when taking out the operation/error signal from the other unit, it is necessary to take out from 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-4E)

Input IFCB-4E : 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 button, the indoor unit numbers in group control are displayed successively.

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

3 Using the setup temp ▼ or ▲ button, specify the item code *31*.

4 Using the timer time ▼ or ▲ button, select the setup data. (At shipment: *0000*)

The setup data are as follows:

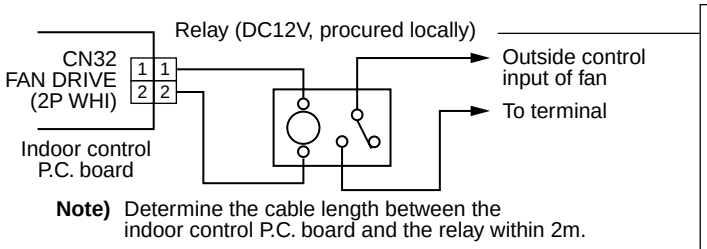
Setup data	Handling of operation of air to air heat exchanger or ventilating fan
0000	Unavailable (At shipment)
0001	Available

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.

4-way Air Discharge Cassette type
1-way Air Discharge Cassette type (2 series)
Concealed Duct Standard type
Slim Duct type
Under Ceiling type
High Wall type
} model :

Corresponds up to a relay in which rated current of the operation coil is approx. 75mA

Other type models:

Correspond up to a relay in which rated current of the operation coil is approx. 16mA (Does not correspond to a terminal block type relay on the market.)

■ Leaving-ON prevention control

[Function]

- This function controls the indoor units individually. It is connected with cable to the control P.C. board of the indoor unit.
- In a group control, it is connected with cable to the indoor unit (Control P.C. board), and the item code 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.

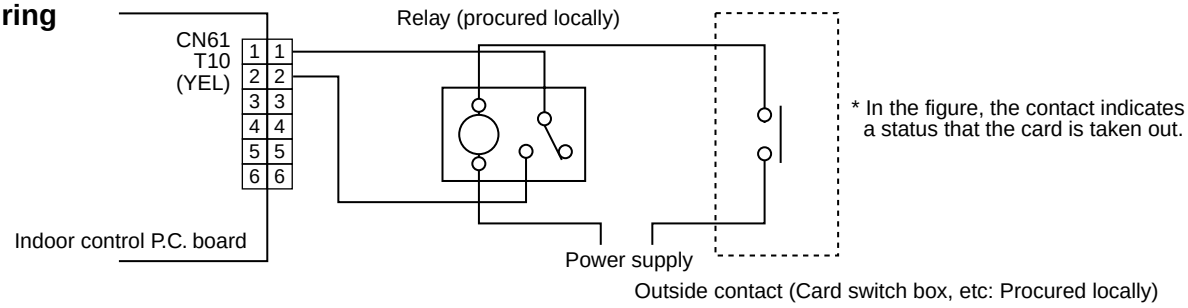
2 Using the setup temp ▼ or ▲ button, specify the item code 2E.

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

4 Push SET button.

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

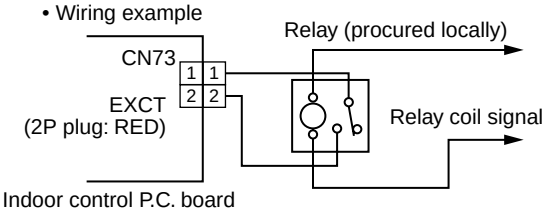
(3) Wiring



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

■ Demand control 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.

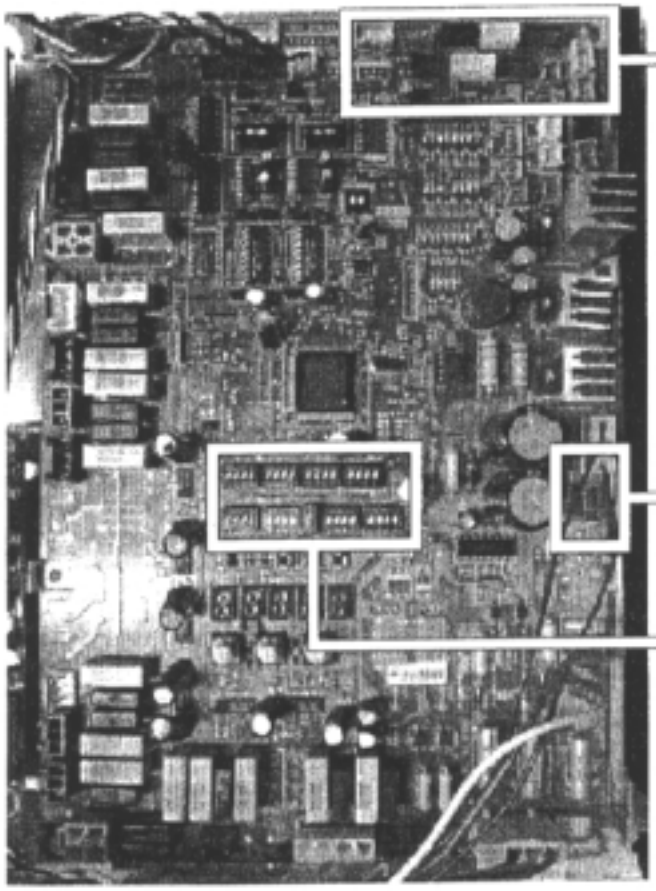
7-2. Outdoor Unit

7-2-1. Applied Control in Outdoor Unit

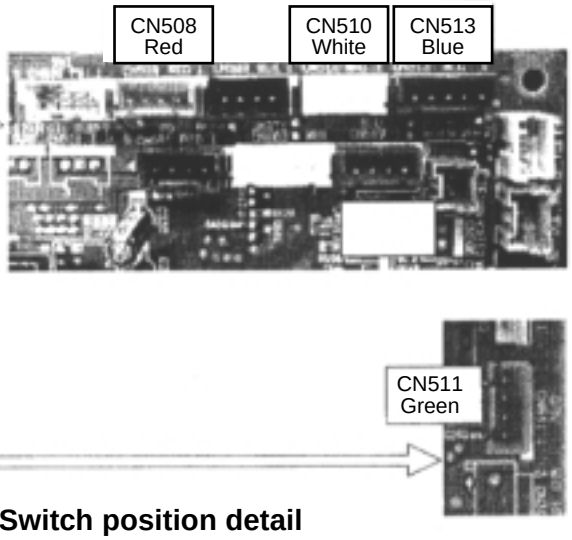
The following functions are available by using a separately supplied P.C. board.
Set up the switches on the outdoor unit (U1).

No.	Function	Switch No.	Bit	Connector No.	Used control P.C. board
1	Power peak-cut control (Standard)	SW07	1	CN513	TCB-PCDM2E
2	Power peak-cut control (Expansion)	SW07	1, 2	CN513	TCB-PCDM2E
3	External master ON/OFF control	—	—	CN512	TCB-PCMO2E
4	Night operation control	—	—	CN508	TCB-PCMO2E
5	Operation mode selection control	—	—	CN510	TCB-PCMO2E

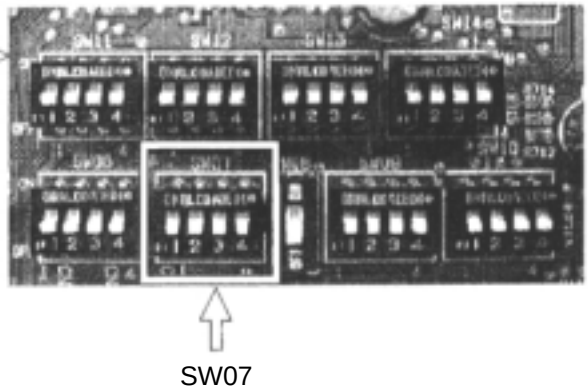
Outdoor unit interface P.C. board



Connector position detail



Switch position detail



SW07

Bit 1	For power peak-cut control selection
Bit 2	For power peak-cut control (expansion) selection

7-2-1-1. Cooling Priority, Heating Priority Control

■ Usage/Features

Cooling priority or heating priority can be selected.

There are the following four patterns in selecting setup of the priority mode. Select a priority mode based upon the demand of the destination to be installed.

■ Setup

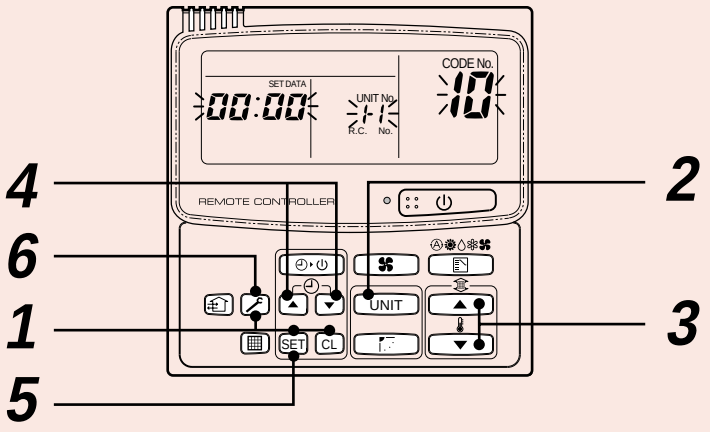
(Note) In “Specific indoor unit priority” mode only, it is necessary to set up an indoor unit only which you desire to give priority.

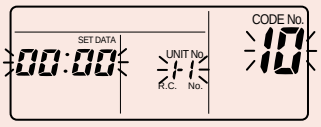
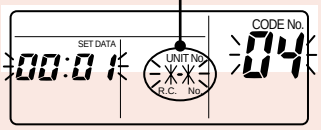
1. Outdoor unit (Header unit only) setup

SW11		Operation
Bit 1	Bit 2	
OFF	OFF	Heating priority (Setup at shipment)
ON	OFF	Cooling priority
OFF	ON	No. of operating units (Priority is given to operation mode with which much more units operate.)
ON	ON	Specific indoor unit priority (Priority is given to operation mode of the indoor unit to which the operation mode priority has been set up.)

2. Indoor unit setup in “Specific indoor unit priority” mode

The setup can be changed during stop of operation. (Be sure to stop the system.)



Procedure	Operation contents
1	When pushing [SET] + [CL] + [🔧] buttons at the same time for 4 seconds or more, as shown in the figure, the display section flashes after a while confirm the displayed item code is [10]. • When the item code is one other than [10], push [🔧] button to eliminate the display and then repeat the procedure from the first step. (The remote controller operation is not accepted approx. 1 minute after pushing [🔧] button.) (In a group control, the indoor unit with number displayed firstly is set to the header unit.) 
2	Every pushing [UNIT], the indoor unit numbers in the group control are successively displayed. Select the indoor unit of which setup is to be changed. In this time, as the fan and louver of the selected indoor unit operate, the position of the indoor unit of which setup is to be changed can be confirmed.
3	Using the setup temperature [▲] and [▼] buttons, specify the item code [04].
4	Using the timer time [▲] and [▼] buttons, select the setup data [0001]. Priority: 0001 , No priority: 0000 
5	Push [SET] button. In this time, the setup operation finishes when the display changes from flashing to lighting.
6	After setup operation has finished, push [🔧] button. (Setup is determined.) When pushing [🔧] button, the display disappears and the status returns to the usual stop status. (The remote controller operation is not accepted for approx. 1 minute.)

(NOTE)

Only one indoor unit can be set to “Priority”. If the multiple indoor units are accidentally set to “Priority”, an error code (L05 or L06: Duplicated indoor unit priority) is displayed.

To the unit displaying “L05”, [0001 (Priority)] is setup. Separate a unit which you will give priority from the other indoor units, and return the setup data of the other indoor units to [0000 (No priority)].

Error code	Error contents
L05	Indoor unit priority duplication ([0001] is set up.)
L06	Indoor unit priority duplication ([0000] is set up.)

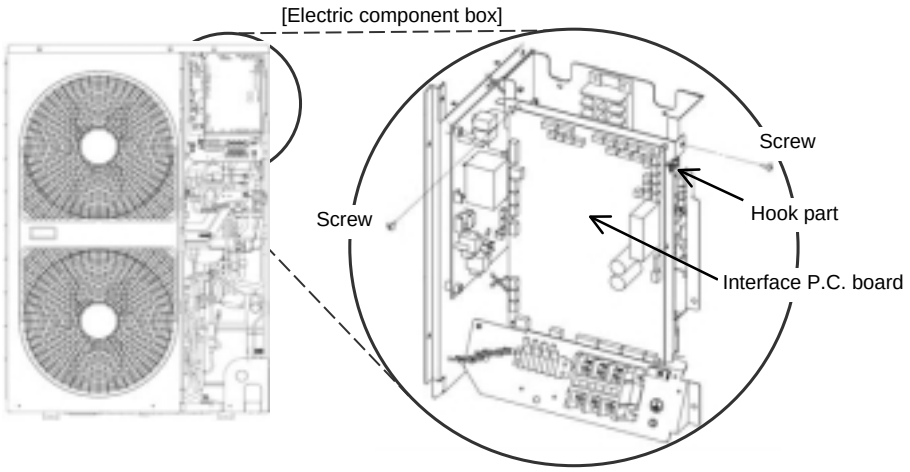
7-2-2. Placing position

Install this optional P.C. board to the back side of the Interface P.C. board on outdoor unit.

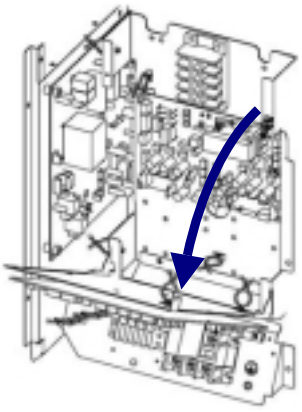
Be sure to turn off the power switch before installing.

1) If the screw of the position shown in Fig. 1 is removed and an upper right hook is slipped, an interface board will open.
2) Place this P.C. board by using the support of the electric component box.
   There are four installation holes to place the support of the electric component box.

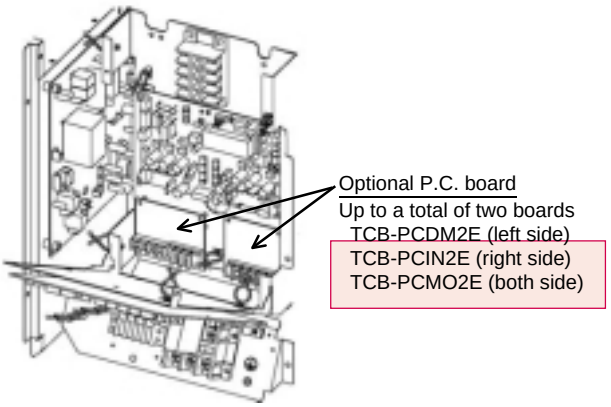
[Fig.1]



[Fig.2]



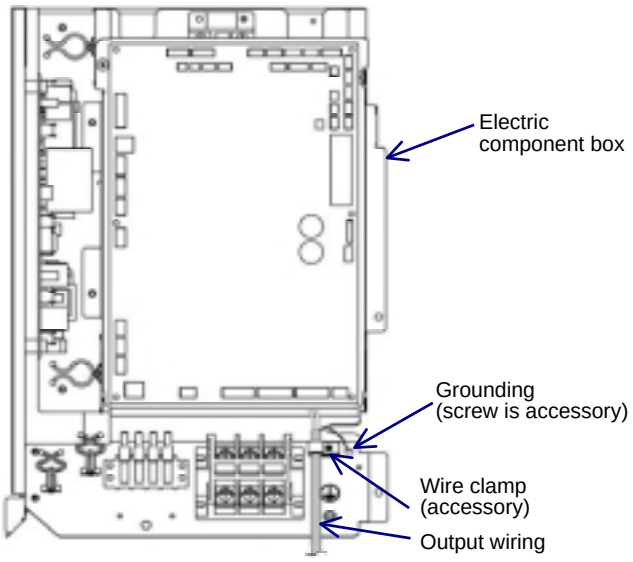
[Fig.3]



7-2-3. Wiring

1) Refer to the “Electric wiring diagram” when wiring.
2) Be sure to use the shield wire to prevent noise trouble, and perform the grounding at both sides of shield wires.
3) Fix the output wiring with the wire clamp.
   (Wire clamp is accessory of optional P.C. board.)

[Fig.4]



7-2-4. Power Peak-cut Control

■ Feature

The upper limit capacity and running current of the outdoor unit is restricted based on the demand request signal from outside.

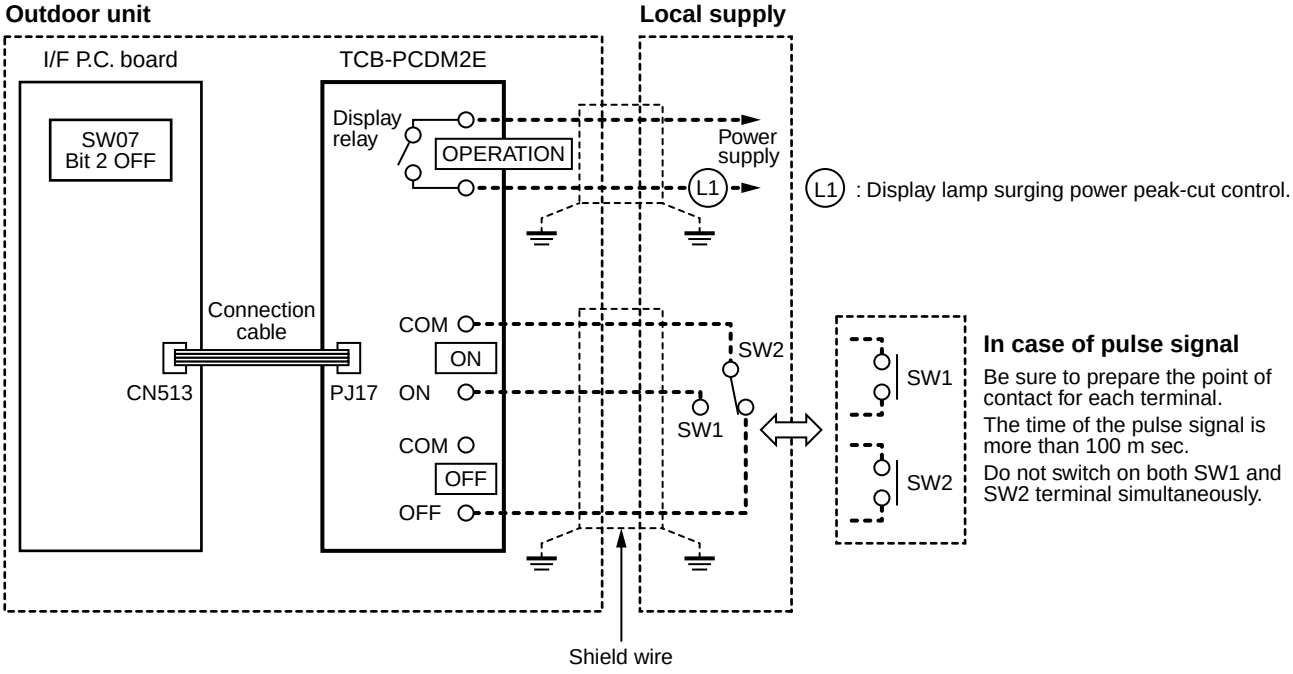
■ Normal current

Outdoor unit capacity type	MCY-0401 type	MCY-0501 type	MCY-0601 type
Normal current (Maxim running current)	25A	28A	31A

■ Function / Electric wiring diagram

Two type control can be selected by setting SW07 on the interface P.C. board of the outdoor unit.

[Standard function]



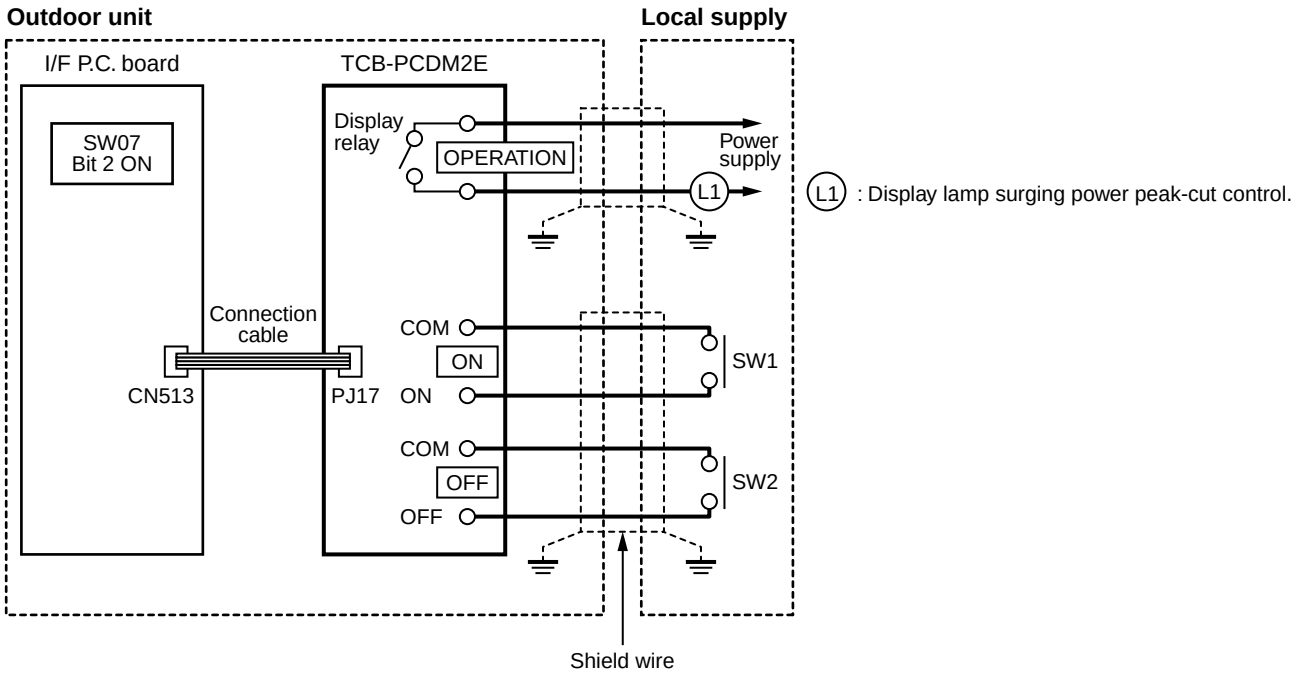
<SW07-Bit 2 OFF>

Input		SW07-Bit 1 OFF		SW07-Bit 1 ON		Display relay (L1)
SW 1	SW 2	Capacity	Current	Capacity	Current	
OFF	ON	100% (Normal)	100% (Normal)	100% (Normal)	100% (Normal)	OFF
ON	OFF	0% (Stop)	0% (Stop)	Up to 60%	Up to 80%	ON

⚠ CAUTION

- Be sure to prepare non voltage point for each terminal.
- Display relay capacity of “OPERATION”.
  Below AC240V 0.5A (COSf = 100%)
  When connecting load such as relay coil to “L1” load, insert the noise surge absorber.
  Below DC24V 1A (Non-inductive load)
  When connecting load such as relay coil to “L1” load, insert the bypass circuit.

[Expansion function]



<SW07-Bit 2 ON>

Input		SW07-Bit 1 OFF		SW07-Bit 1 ON		Display relay (L1)
SW 1	SW 2	Capacity	Current	Capacity	Current	
OFF	OFF	100% (Normal)	100% (Normal)	100% (Normal)	100% (Normal)	OFF
ON	OFF	Up to 80%	Up to 80%	Up to 85%	Up to 90%	ON
OFF	ON	Up to 60%	Up to 70%	Up to 75%	Up to 80%	ON
ON	ON	0% (Stop)	0% (Stop)	Up to 60%	Up to 70%	ON

⚠ CAUTION

- Be sure to prepare non voltage continuous point of contact for each terminal.
- Display relay capacity of “OPERATION”.

  Below AC240V 0.5A (COSf = 100%)
  When connecting load such as relay coil to “L1” load, insert the noise surge absorber.

  Below DC24V 1A (Non-inductive load)
  When connecting load such as relay coil to “L1” load, insert the bypass circuit.

7-2-5. External master ON/OFF control

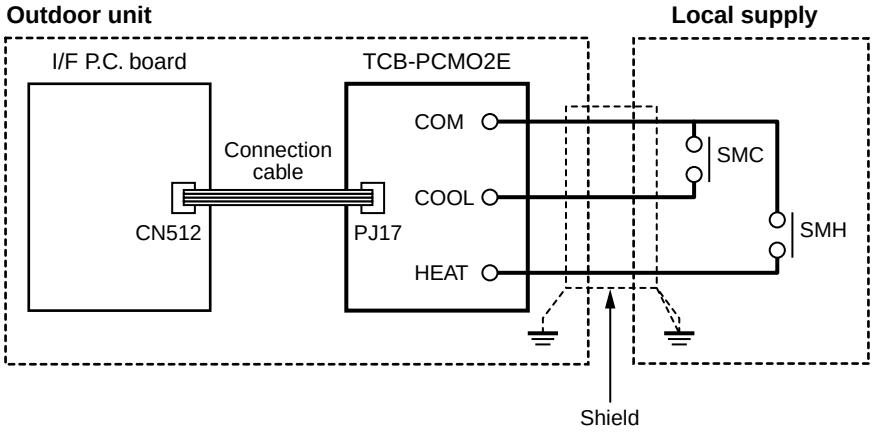
■ Feature

The outdoor unit starts or stops the system.

■ Wiring

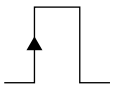
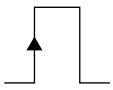
	Size	Length	Type
Input wiring	3-core, 0.75 mm²	Up to 500 m	Shield wire

■ Function / Electric wiring diagram



SMC : Input signal for start

SMH : Input signal for stop

Terminal	Input signal	Operation
COOL (SMC)	ON / OFF 	Starts all indoor units.
Heat (SMH)	ON / OFF 	Stops all indoor units.

⚠ CAUTION

- Be sure to prepare non voltage pulse point of contact for each terminal.
- This control is conducted when input signal stand up or fall down. (Standing and falling status should be held for 100 m sec. or more.)

7-2-6. Night Operation (Sound Reduction) Control

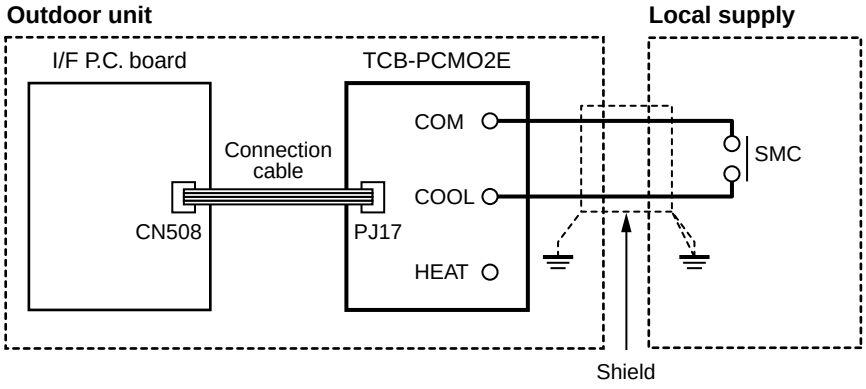
■ Feature

Sound level can be reduced with connecting outdoor interface P.C. board by restricting compressor and fan speed.

■ Wiring

	Size	Length	Type
Input wiring	2-core, 0.75 mm²	Up to 500 m	Shield wire

■ Function / Electric wiring diagram



SMC : Input signal for night operation

Terminal	Input signal	Operation
COOL (SMC)	ON / OFF	Night operation control
	ON / OFF	Normal operation

⚠ CAUTION

- Be sure to prepare non voltage continuation point of contact for each terminal.

[Reference]

Outdoor unit capacity type	0401 type	0501 type	0601 type
Sound reduction (dB (A)) (Cooling / Heating) ∗1	46 / 48	46 / 48	47 / 49
Approximation capacity (Cooling / Heating) ∗2	90% / 95%	85% / 75%	85% / 70%

∗1: This sound pressure level are measured in an anechoic chamber in accordance.
Location of microphone : The front of 1 m, a height of 1.5 m
Cooling : Outdoor temperature 25°C DB
Heating : Outdoor temperature 7°C DB, 6°C WB

∗2: Against Max. capacity
Cooling : Outdoor temperature 25°C DB
Heating : Outdoor temperature 7°C DB, 6°C WB

7-2-7. Operation Mode Selection Control

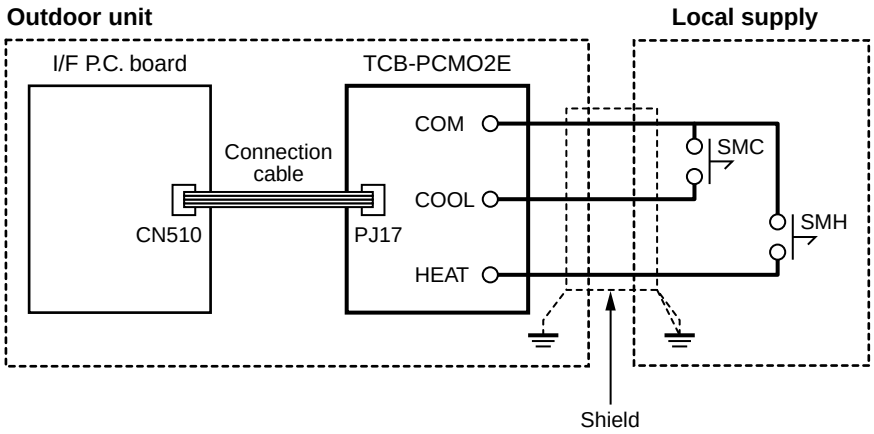
■ Feature

This control can be operated with the operation mode which is permitted by SMC or SMH.

■ Wiring

	Size	Length	Type
Input wiring	3-core, 0.75 mm²	Up to 500 m	Shield wire

■ Function / Electric wiring diagram



SMC : Cooling mode designated input switch

SMH : Heating mode designated input switch

Terminal		Selected operation mode	Note
COOL (SMC)	HEAT (SMH)		
ON	OFF	Only cooling mode permitted	∗1
OFF	ON	Only heating mode permitted	∗1
OFF	OFF	Normal operation	

∗1: " (mode select control)" mark is indicated on the remote controller display.

⚠ CAUTION

- Be sure to prepare non voltage continuous point of contact for each terminal.

7-2-8. Error Output Control

■ Feature

Operation and error monitoring is possible by using error output control board “TCB-PCIN2E”.

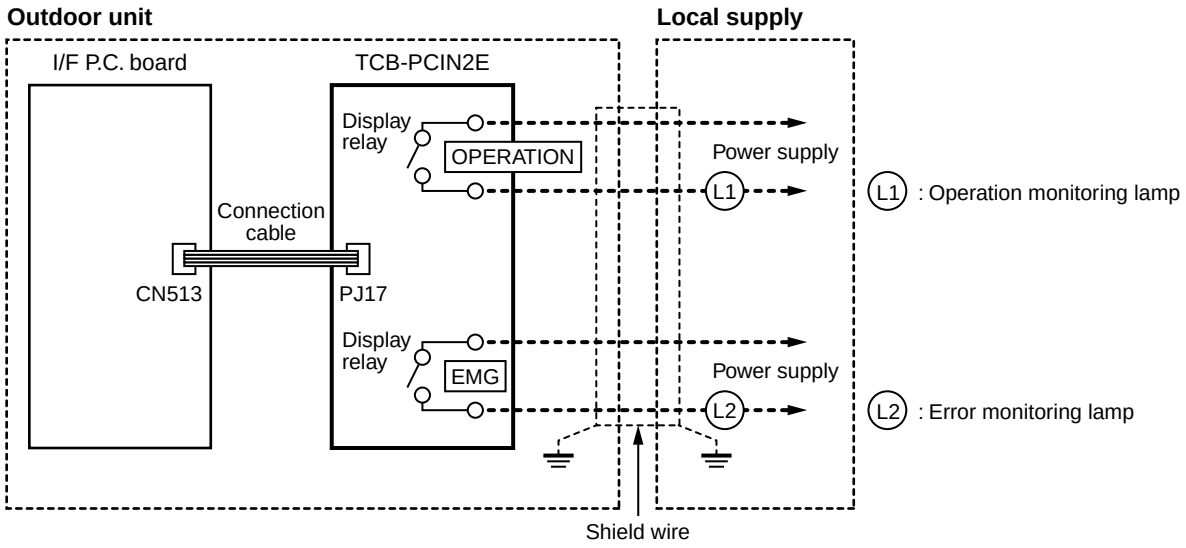
■ Wiring

	Size	Length	Type
Output wiring	4-core, 0.75 mm² *	Up to 200 m	Shield wire
	4-core, 1.5 mm² *	Up to 400 m	

* In conformity with design 60245 IEC 57.

■ Function / Electric wiring diagram

Operation monitoring : Display relay is ON with more than one indoor unit operation.
EMG monitoring : Display relay is ON when the system in error status.



⚠ CAUTION

- Be sure to prepare non voltage point for each terminal.
- Display relay capacity of “OPERATION” and “EMG”.

  Below AC240V 0.5A (COSf = 100%)
  When connecting load such as relay coil to “L1, L2” load, insert the noise surge absorber.

  Below DC24V 1A (Non-inductive load)
  When connecting load such as relay coil to “L1, L2” load, insert the bypass circuit.

8. PMV KIT OUT LINE

8-1. Purpose of Using

In the case of very quiet room, and also very nervous for indoor unit noise level, PMV Kit should be installed before indoor unit which should become lower noise level.

Multi-indoor units have Pulse Motor Valve (PMV) for control refrigerant flow.

Multi-air conditioner, on unstable condition, for example starting time, flowing noise of refrigerant can be heard conspicuously.

This refrigerant noise mainly comes from PMV. Especially very quiet room, for example bed room, somebody feels uncomfortable for this refrigerant noise from PMV.

Main purpose of PMV Kit restrains refrigerant noise which comes from PMV installed in indoor unit.

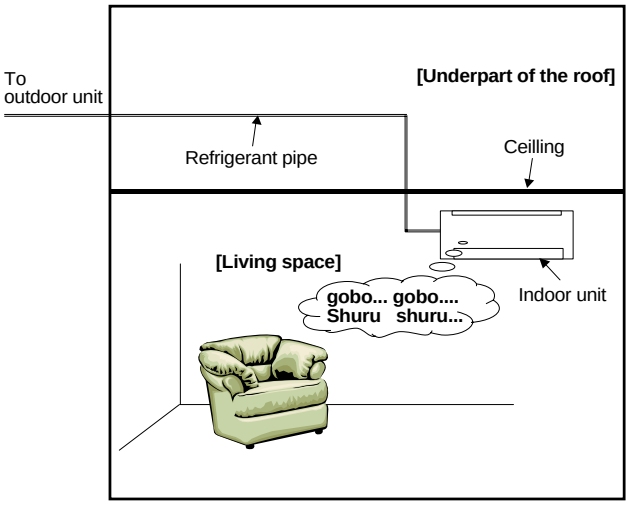
PMV Kit should be installed at out of residence area, for example back of ceiling board.

After installed PMV Kit, control function of refrigerant shifts to PMV of PMV Kit and PMV in indoor unit does not be used.

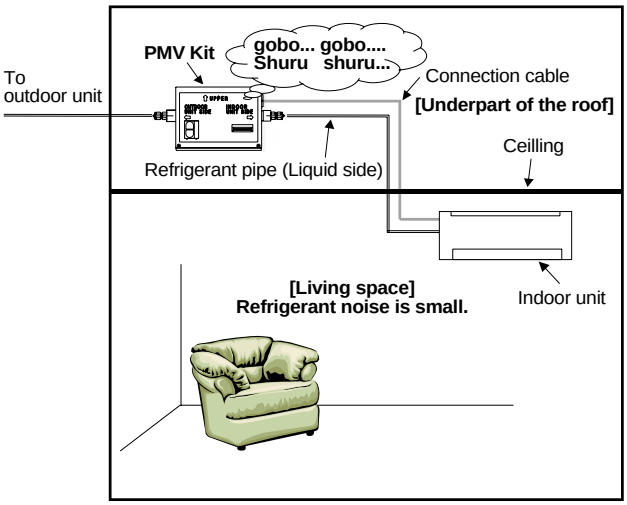
After that, refrigerant noise of PMV will be coming from back ceiling board, and refrigerant noise of indoor unit may be restrained.

[Image of installation]

Without PMV Kit



With PMV Kit

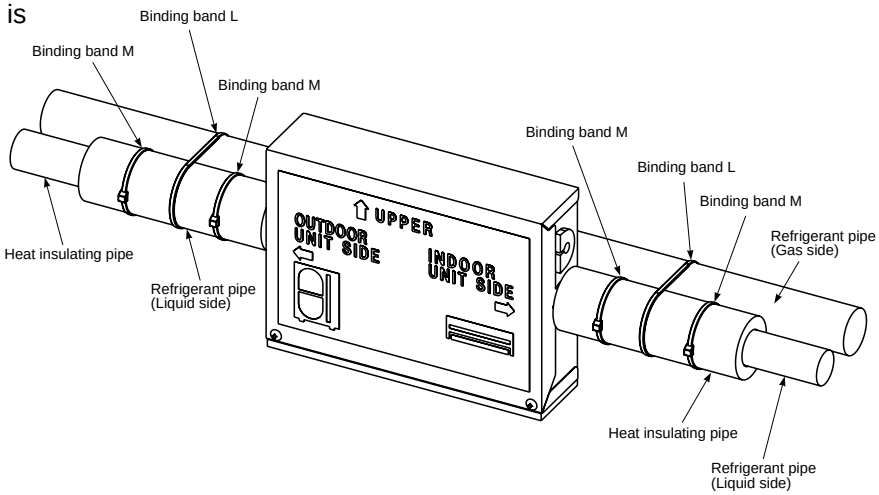


8-2. How to Use

Connect PMV Kit between refrigerant pipe of indoor unit.

Connect control cable of PMV Kit to control P.C. board of indoor unit, then PMV Kit is controlled by indoor unit side.

But, before connecting PMV Kit to P.C. board of indoor unit, PMV of indoor unit should be fully opened.



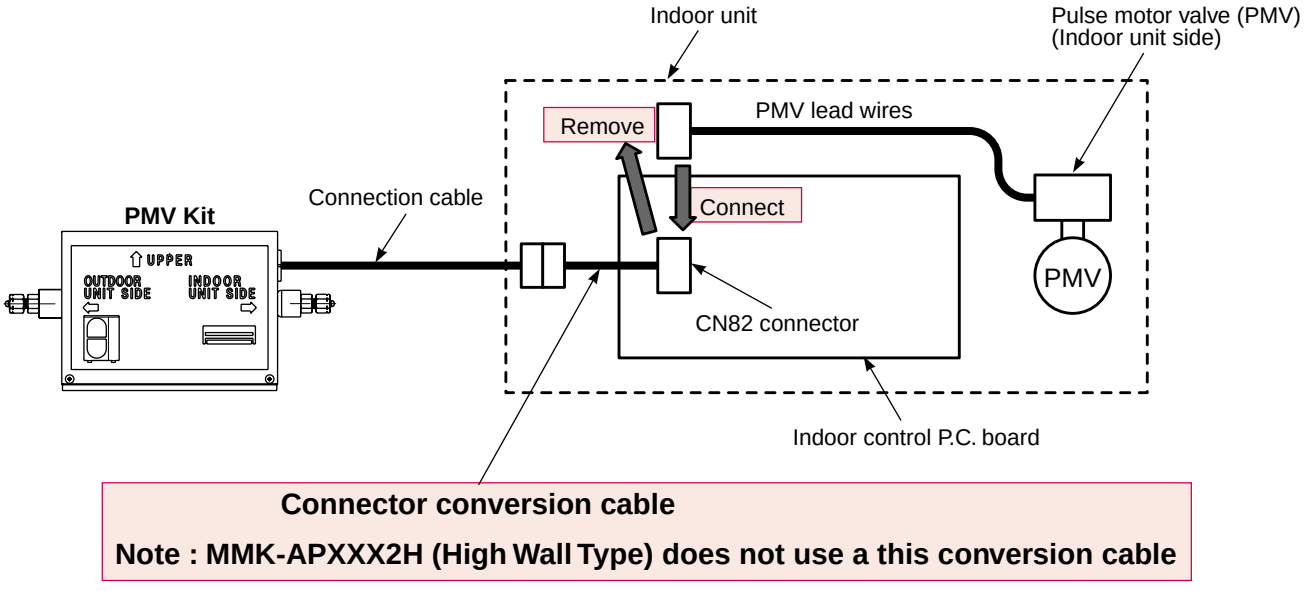
8-3. Effect of Connecting PMV Kit without Fully Opening of Indoor Unit PMV

Effect of miss-installation which PMV of indoor unit was not fully opened (1500 pulse) are as follows.
Following symptom occurred, PMV of indoor unit should be fully opened.

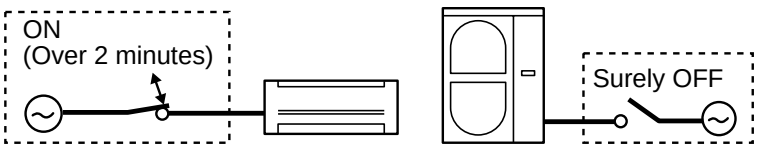
1. Cooling operation
   1) Even though command of PMV is fully open (1500 pulse), actual SH is larger than aim SH.
   2) Even though command of PMV is fully open (1500 pulse), cool air does not discharge.
   3) Ps is abnormally low, or outdoor unit stops by Ps protection.
2. Heating operation
   1) Even though command of PMV is fully open (1500 pulse), actual UC is larger than aim UC.
   2) Even though command of PMV is fully open (1500 pulse), hot air does not discharge.
   3) Pd is abnormally high, or outdoor unit stops by Pd protection.

8-4. How to Fully Open PMV of Indoor Unit

1. Stop indoor and outdoor units operation and turn off power supply to each units.
2. Remove connection cable of PMV Kit from P.C. board of indoor unit and connect PMV of indoor unit to P.C. board.



3. Turn on power supply of only indoor unit and fully open PMV of indoor unit.
   Note : While turn on power supply of indoor unit, outdoor unit also turns on power supply, PMV of indoor unit can not be fully opened.
4. After 2 minutes from turn on power supply of indoor unit, turn off power supply of indoor unit.
   * After this work, PMV of indoor unit is fully opened. While this work, do not order of operation from remote controller.

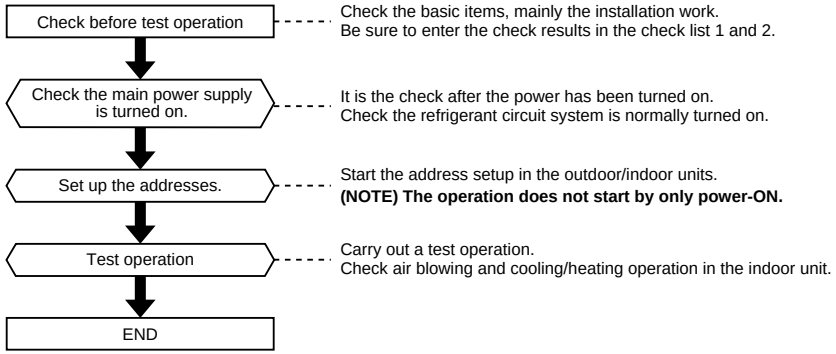


5. Remove PMV of indoor unit from P.C. board and connect connection cable of PMV Kit to P.C. board.
6. Treat wires and close electrical parts box of indoor unit.

9. TEST OPERATION

9-1. Procedure and Summary of Test Operation

A test operation is executed in the following procedure. When a trouble or an error occurs in each step, remove causes of a trouble or an error referring to the section "**9. Troubleshooting**".



9-2. Check Items before Test Operation

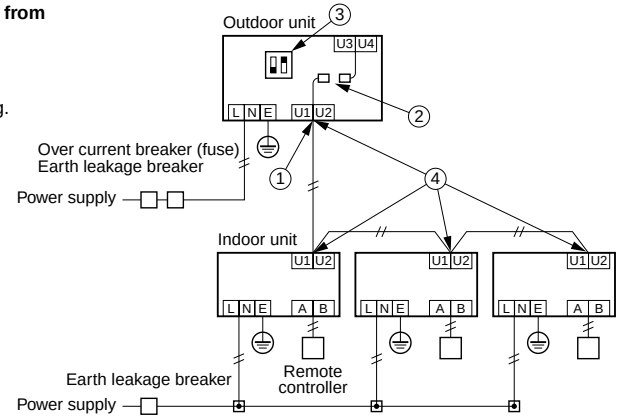
Prior to the test operation, check the following items so that there is no trouble in the installation work.

Main check items for electric wiring

The communication system differs from that of R22 or R407 refrigerant "Modular Multi system" air conditioner.

Check again cautious points on wiring.

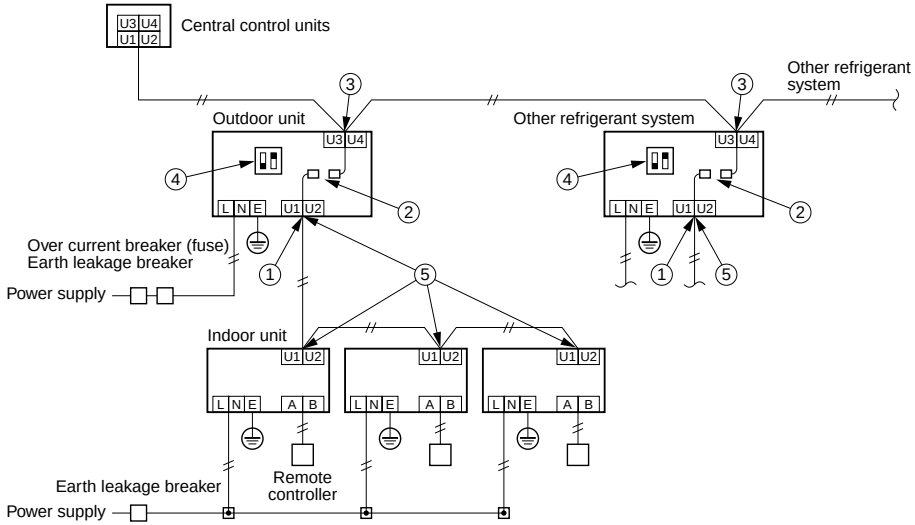
1. In case that a center control system is not connected:



No.	Main check items	Check
①	Are indoor and outdoor communication lines of the outdoor unit connected to U1/U2 terminals?	
②	Is the relay connector between U1/U2 terminal and U3/U4 terminal removed? (Set up at shipment from the factory)	
③	Is the terminator resistor (SW30-2) on the interface P.C. board of the outdoor unit turned on? (Set up at shipment from the factory)	
④	Is the end terminal of the shield cable grounded?	

Note) The above figure does not show all the electric cables.
For details, refer to the installation manuals for outdoor unit, indoor unit, remote controller, or optional devices.

2. In case that a central control system is connected (Before address setup)



No.	Main check items	Check
①	Are indoor and outdoor communication lines of the outdoor unit connected to U1/U2 terminals?	
②	Is the relay connector between U1/U2 terminal and U3/U4 terminal removed? (Set up at shipment from the factory) (Before address setup, remove the relay connector.)	
③	Is the communication line of the central control system connected to the outdoor unit U3/U4 terminals of each refrigerant line? (The communication line of the central control system may be connected to the communication lines of the indoor/outdoor communication lines.)	
④	Is the terminal resistance (SW30-2) on the interface P.C. board of the outdoor unit turned on? (Set up at shipment from the factory) (After address setup, turn off SW30-2 of the outdoor unit except the smallest unit after check of trial operation.)	
⑤	Is the end terminal of the shield cable grounded?	
⑥	When the refrigerant line and the central control system of the 1 : 1 air conditioner (DI, SDI) are connected: → Are "1 : 1 model" connection interface (TCB-PCINTLE2) adaptors correctly connected? → When the digital inverter air conditioner operates with group operation, twin, operation, are the adopters connected to the header unit of the indoor unit?	

Note) The above figure does not show all the electric cables.
For details, refer to the installation manuals for outdoor unit, indoor unit, remote controller, or optional devices.

Check list 1

• Using the “Check list 1”, check there is no trouble in the installation work.

Is capacity of the leak breaker appropriate?	Outdoor total capacity ☐ A	Indoor unit ☐ A
Is the diameter of the power cable correctly wired?	Outdoor unit (A) ☐ mm²	Indoor unit ☐ mm²
Is the control communication line correctly wired?	Indoor –outdoor connection terminals (U1, U2) ☐ Central control system connection terminals (U3, U4) ☐	
Is the power of the indoor units supplied collectively?		
Is the earth grounded		
Is the insulation good? (10MΩ or more)	☐ MΩ or more	
Is the main power voltage correct? (± 10%)	☐ V	
Is the diameter of the connecting pipe correct?		
Is the branch kit correct?		
Does the indoor unit condensate drain adequately?		
Is the thermal insulation of pipes good? (Connecting pipes, Branch kit)		
For both indoor and outdoor units, ensure air is not short-circuited from discharge to inlet ports.		
After pressure test, check that the pipework and indoor units have been vacuumed and the correct amount of additional gas has been charged.		
Are valves of all the outdoor units fully opened?	Gas side	Liquid side
outdoor unit (A)	☐	☐

• Check the additional amount of refrigerant.

Check list 2

Calculate the additional amount of refrigerant from the following:

Additional refrigerant charge amount at site R (kg) = **Real length of liquid pipe** × **Additional refrigerant charge amount per liquid pipe 1m (Table 1)** + **Compensation by outdoor HP (Table 2)**

Firstly enter the total length for each liquid pipe in the following table and then calculate the additional amount of refrigerant by pipe length.

(Table 1) Additional amount of refrigerant by pipe length

Pipe dia at liquid side	Standard amount of refrigerant kg/m	Total pipe length at each liquid side	Additional amount of refrigerant pipe dia at each liquid side kg
Ø6.4	0.025 ×	=	kg
Ø9.5	0.055 ×	=	kg
		Additional amount of refrigerant by pipe length (A)	kg

Next, refer to the following table for the corrective amount of refrigerant (B) by system capacity.

(Table 2) Compensation by outdoor HP

Outdoor unit capacity type	Compensation by outdoor HP kg
0401 type	–0.8
0501 type	–0.4
0601 type	0

Finally add the additional amount of refrigerant by pipe length (A) to the corrective amount of refrigerant by system capacity (B). This is the final additional amount of refrigerant.

If the result is indicated as a negative, do not add any refrigerant. Do not add the refrigerant (= 0kg).

Additional refrigerant charge amount at site (R)

Additional amount of refrigerant by pipe length	(Table 1)	kg
Compensation by outdoor HP	(Table 2)	kg
Additional amount of refrigerant	(R)	kg

9-3. Check at Main Power-ON

After turning on the main power of the indoor units and outdoor unit in the refrigerant line to be executed with a test operation, check the following items in outdoor and each indoor unit.

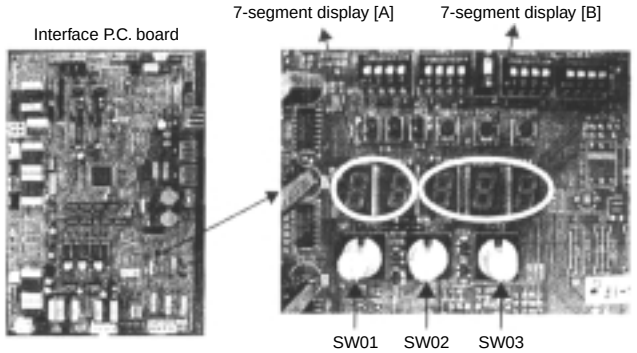
(After turning on the main power, be sure to check in order of indoor unit → outdoor unit.)

If the power supply of the outdoor unit has been firstly turned on, [E19] appears on the 7-segment display on the interface P.C. board until the power supply of the indoor unit is turned on. However it is not an error.

Check on outdoor unit

1. Check that all the rotary switches, SW01, SW02, and SW03 on the interface P.C. board of the outdoor unit are set up to "1".
2. If other error code is displayed on 7-segment [B], remove the cause of trouble referring to "**9. Troubleshooting**".
3. **Check that [L08] is displayed on 7-segment display [B]** on the interface P.C. board of the outdoor unit. (L08: Indoor address unset up)

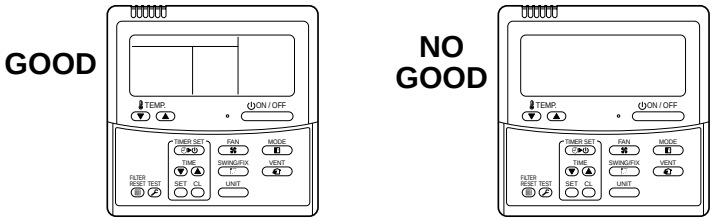
   (If the address setup operation has already finished in service time, etc, the above check code is not displayed, and only [U1] is displayed on 7-segment display [A].)



Check on indoor unit

1. Display check on remote controller (In case of wired remote controller)

   Check that a frame as shown in the following left figure is displayed on LC display section of the remote controller.



Normal status
(Power and operation stop)

Abnormal status
(Power is not normally turned on.)

If a frame is not displayed as shown in the above right figure, the power of the remote controller is not normally turned on. Therefore check the following items.

- Check power supply of indoor unit.
- Check wiring between indoor unit and remote controller.
- Check whether there is cutoff of cable around the indoor control P.C. board or not, and check connection failure of connectors.
- Check failure of transformer for the indoor microcomputer.
- Check indoor control P.C. board failure.

9-4. Address Setup

After power-ON, set up the indoor address from the interface P.C. board of the outdoor unit.

(The address setup operation cannot be performed by power-ON only.)

9-4-1. Cautions

1. It requires approx. 5 minutes usually for 1 line to automatically set up address. However in some cases, it may require maximum 10 minutes.
2. It is unnecessary to operate the air conditioner for address setup.
3. Manual address setup is also available besides automatic setup.

   Automatic address: Setup from SW15 on the interface P.C. board of the outdoor unit

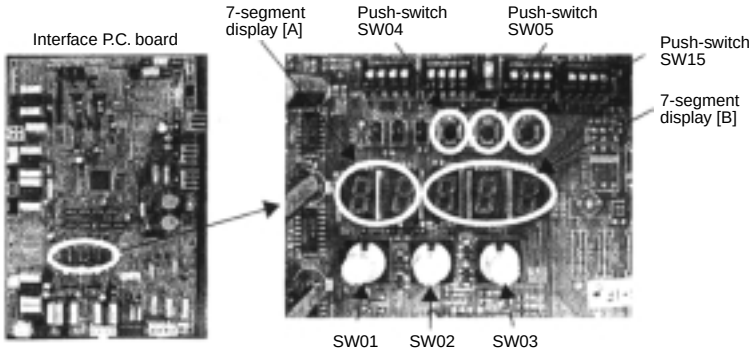
   Manual address: Setup from the wired remote controller.
   (For details, refer to section "**9-4-3. Address setup procedure**")

9-4-2. Address Setup and Check Procedure

Procedure	Item	Operation and check contents
1	Indoor unit power-ON	Turn on power of indoor unit in refrigerant line to which address is set up.
2	Outdoor unit power-ON	Turn on power of all the outdoor units in refrigerant line to which address is set up.
3	7-segment display check	Check that [L08] is displayed on 7-segment display [B] on the interface P.C. board of the outdoor unit in the system to which address is set up.
4	Address setup start	Confirm the corresponding items in "**8-4-3 Address setup procedure**", and then set up address according to the operation procedure. (Be sure that the setup operation may differ in group control or central control.) **Note)** Address cannot be set up if switches are not operated.
5	Display check after setup	• After address setup, [U1] [ ] are displayed in 7-segment display section. • If an error code is displayed in 7-segment display [B], remove the cause of trouble referring to **"9. Troubleshooting"**.
6	System information check after setup	Using 7-segment display function, check the system information of the scheduled system. (This check is executed on the interface P.C. board of the outdoor unit.)

	Rotary switch setup			7-segment display	
	SW01	SW02	SW03	[A]	[B]
System capacity	1	2	3	[No. of HP]	[HP]
No. of connected outdoor unit	1	3	3	[Connected No. of units]	[P]
No. of connected indoor units	1	4	3	[Connected No. of units]	

After the above checks, return rotary switches SW01, SW02, SW03 to 1/1/1.



Rotary switches

9-4-3. Address Setup Procedure

In this air conditioner, it is required to set up address to the indoor unit before starting operation. Set up the address according to the following setup procedure.

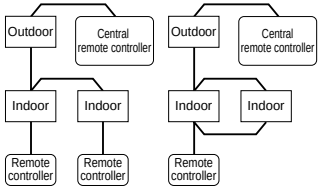
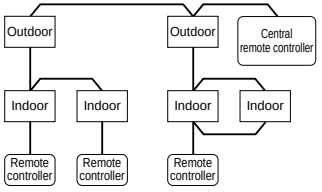
CAUTION

1. Set up address after wiring work.
2. It requires maximum 10 minutes (Usually, approx. 5 minutes) to set up automatically an address to 1 line.
3. To set up an address automatically, the setup at outdoor side is necessary. (Address setup cannot be performed by power-ON only.)
4. To set up an address, it is unnecessary to operate the air conditioner.
5. Manual address setup is also available besides automatic setup.
   Automatic address : Setup from SW15 on the interface P.C. board of the outdoor unit
   Manual address : Setup from the wired remote controller
   ∗ It is temporarily necessary to set the indoor unit and wired to 1 : 1. (In group operation and in time without remote controller)

Automatic Address Setup

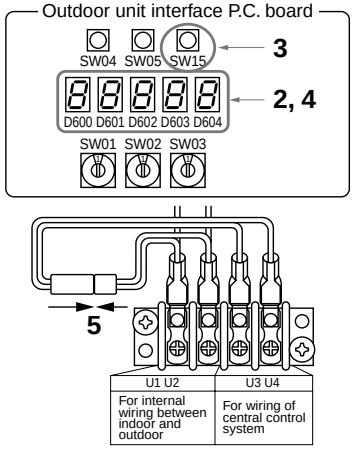
Without central control : To the address setup procedure 1
With central control : To the address setup procedure 2

(However, go to the procedure 1 when the central control is performed in a single refrigerant line.)

(Example)	In case of central control in a single refrigerant line	In case of central control over refrigerant lines
Address setup procedure	To procedure 1	To procedure 2
Cable systematic diagram		

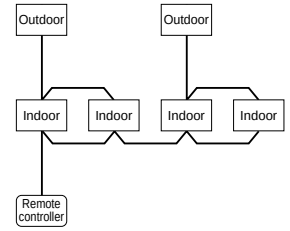
Address setup procedure 1

1. Turn on power of indoor/outdoor units. **(In order of indoor → Outdoor)**
2. After approx. 1 minute, check that U. 1. L08 (U. 1. flash) is displayed in 7-segment display section on the interface P.C. board of the outdoor unit.
3. Push SW15 to start the setup of the automatic addressing. (Max. 10 minutes for 1 line (Usually, approx. 5 minutes))
4. When the count Auto 1 → Auto 2 → Auto 3 is displayed in 7-segment display section, and it changes from U. 1. - - - (U. 1. flash) to U. 1. - - - (U. 1. light), the setup finished.
5. **When performing an automatic address setup on a single refrigerant line with central control, connect relay connected between [U1, U2] and [U3, U4] terminals.**



REQUIREMENT

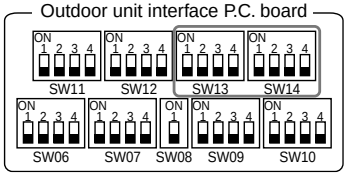
- When a group control is performed over the multiple refrigerant lines, be sure to turn on the power supplies of all the indoor units connected in a group at the time of address setup.
- If turning on the power for each refrigerant line to set up address, a header indoor unit is set for each line. Therefore, an alarm code "L03" (Duplicated header indoor units) is output in operation after address setup. In this case, change the group address from the wired remote controller for only one outdoor unit is set up.

(Example)	Group control over multiple refrigerant lines
Cabling systematic diagram	

Address setup procedure 2

1. Using SW13 and 14 on the interface P.C. board of the outdoor unit in each system, set up the address for each system. (At shipment from factory: Set to Address 1)

Note) Be careful not to duplicate addresses with the other refrigerant line.



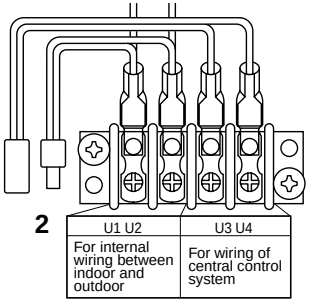
Line address switch on outdoor interface P.C. board (○: Switch ON, × : Switch OFF)

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

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

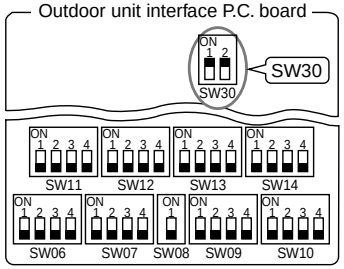
: Is not used for setup of system address. (Do not change setup.)

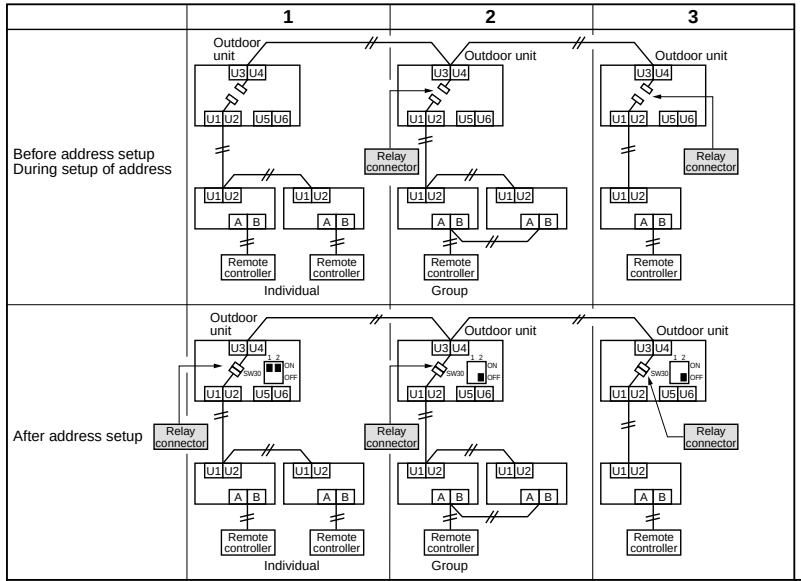
2. Check that the relay connectors between [U1, U2] and [U3, U4] terminals are not connected in all the outdoor units to which the central control is connected. (At shipment from factory: Connector not connected)
3. Turn on power of indoor/outdoor. **(In order of indoor → outdoor)**
4. After approx. 1 minute, check that 7-segment display is U.1.L08 (U.1. flash) on the interface P.C. board of the outdoor unit.
5. **Push SW15 to start the setup of automatic addressing.** (Max. 10 minutes for 1 line (Usually, approx. 5 minutes))
6. When the count Auto 1 → Auto 2 → Auto 3 is displayed in 7-segment display section, and it changes from U. 1. - - - (U. 1. flash) to U. 1. - - - (U. 1. light), the setup finished.
7. Procedure 4. to 6. are repeated in other refrigerant lines.



1st revised : Jun. 2006

8. When address setup has finished in all the sysem, turn off SW30-2 on the interfase P.C. boards of the lines connected to the identical central control except a line with least line address number.
   (Terminator resistors of the wires in the central control line of indoor/outdoor are unified.)
9. Connect the relay connector between [U1U2] and [U3U4] terminals of the outdoor unit for each refrigerant line.
10. Then set up the central control address.
    (For the central control address setup, refer to the Installation manual of the central control devices.)





Outdoor interface P.C. board	Outdoor unit	Outdoor unit	Outdoor unit	Setup at shipment from factory
SW13, 14 (Refrigerant line address)	1	**2**	**3**	1
SW30-2 Terminal-end resistance of indoor/outdoor communi cation line/central control communication line	ON	**OFF after address setup**	**OFF after address setup**	ON
Relay connector	**Connect short after address setup**	**Connect short after address setup**	**Connect short after address setup**	Open

Indoor side (Automatic setup)

Refrigerant line address	1	1	2	2	3
Indoor unit address	1	2	1	2	1
Group address	0	0	1	2	0

Note

Never connect a relay connector until address setup for all the refrigerant lines has been completed ; otherwise address cannot be correctly set up.

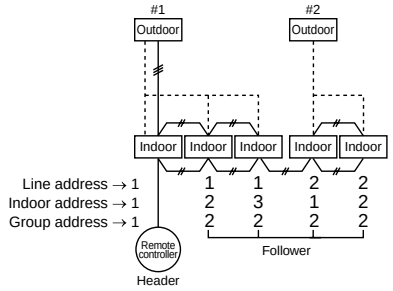
Manual address setup from remote controller

In case to decide an address of the indoor unit prior to finish of indoor wiring work and unpracticed outdoor wiring work (Manual setup from remote controller)

Arrange one indoor unit and one remote controller set to 1 by 1.

Turn on the power.

(Wiring example in 2 lines)



In the above example, under condition of no inter-unit wire of the remote controller, set the address after individual connecting of the wired remote controller.

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**

1 **Push simultaneously SET + CL + TEST buttons for 4 seconds or more.**
LCD changes to flashing.

(Line address)

2 **Using the setup temp. ▼ / ▲ buttons, set 12 to the item code.**

3 **Using the timer time ▼ / ▲ buttons, set up the line address.**
(Match it with the line address on the interface P.C. board of the outdoor unit in the identical refrigerant line.)

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

(Indoor address)

5 **Using the setup temp. ▼ / ▲ buttons, set 13 to the item code.**

6 **Using the timer time ▼ / ▲ buttons, set up the indoor address.**

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

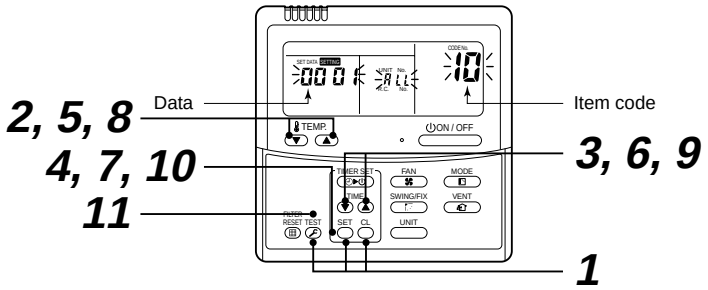
(Group address)

8 **Using the setup temp. ▼ / ▲ buttons, set 14 to the item code.**

9 **Using the timer time ▼ / ▲ buttons, set Individual = 0000, Header unit = 0001, Follower unit = 0002.**

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

11 **Push TEST button.**
Setup operation finished.
(Status returns to normal stop status.)



Note 1)

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

The address 29 and 30 cannot be set up in the outdoor unit. Therefore if they are incorrectly set up, a check code [E04] (Indoor/outdoor communication circuit error) is output.

Confirmation of indoor unit address and position by using the remote controller

[Confirmation of indoor unit address and the position]

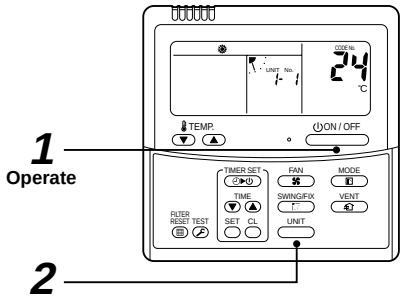
1. When you want to know the indoor address though position of the indoor unit itself can be recognized;

<Procedure> (Operation while the air conditioner operates)

1 **If it stops, push (ON / OFF) button.**

2 **Push (UNIT) button.**

The unit No. 1-1 is displayed on the LCD. (Disappears after several seconds) The displayed unit No indicates the line address and indoor address. (If there is other indoor unit connected to the same remote controller (Group control unit), other unit No. is displayed every pushing (UNIT) button.)



Operation procedure

1 → ***2***

2. When you want to know position of the indoor unit using the address

- To confirm the unit numbers in a group control;

<Procedure> (Operation while the air conditioner stops)

The indoor unit numbers in a group control are successively displayed, and the corresponding indoor fan is turned on. (Operation while the air conditioner stops)

1 **Push (VENT) + (TEST) buttons simultaneously for 4 seconds or more.**

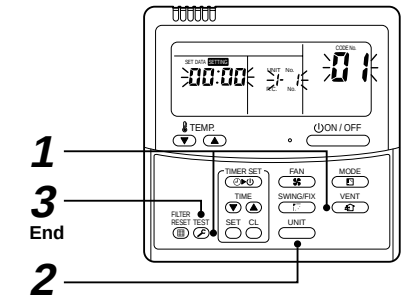
- Unit No. ALL is displayed.
- The fans of all the indoor units in a group control are turned on.

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

- The firstly displayed unit No. indicates the address of the header unit.
- Only fan of the selected indoor unit is turned on.

3 **Push (TEST) button to finish the procedure.**

All the indoor units in group control stop.



Operation procedure

1 → ***2*** → ***3*** **End**

- **To confirm all the unit numbers from an arbitrary wired remote controller;**

<Procedure> (Operation while the air conditioner stops)

The indoor unit No. and position in the same refrigerant line can be confirmed.
An outdoor unit is selected, the indoor unit numbers in the same refrigerant line are successively displayed, and then its indoor unit fan is turned on.

1 **Push the timer time (▼) + (TEST) buttons simultaneously for 4 seconds or more.**

Firstly, the line 1, **item code** AC (Address Change) is displayed. (Select outdoor unit.)

2 **Using (UNIT) + (SWING/FIX) buttons, select the line address.**

3 **Using (SET) button, determine the selected line address.**

- The indoor unit address, which is connected to the refrigerant pipe of the selected outdoor unit is displayed and the fan is turned on.

4 **Every pushing (UNIT) button, the indoor unit numbers in the identical pipe are successively displayed.**

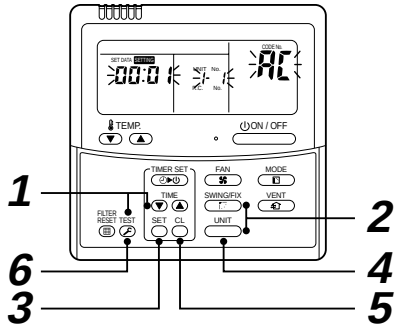
- Only fan of the selected indoor unit operates.

[To select another line address]

5 **Push (CL) button to return to procedure *2*).**

- The indoor address of another line can be successively confirmed.

6 **Push (TEST) button to finish the procedure.**



Operation procedure

1 → ***2*** → ***3*** →
4 → ***5*** → ***6*** **End**

Change of indoor address from remote controller

Change of indoor address from wired remote controller

- **To change the indoor address in individual operation (Wired remote controller : Indoor unit = 1 : 1) or group control** (When the setup operation with automatic address has finished, this change is available.)

<Procedure> (Operation while air conditioner stops)

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

(The firstly displayed unit No. indicates the header unit in group control.)

2 **In group control, select an indoor unit No. to be changed by (UNIT) button.**

(The fan of the selected indoor unit is turned on.)

3 **Using the setup temp. (▼) / (▲) buttons, set 13 to the item code.**

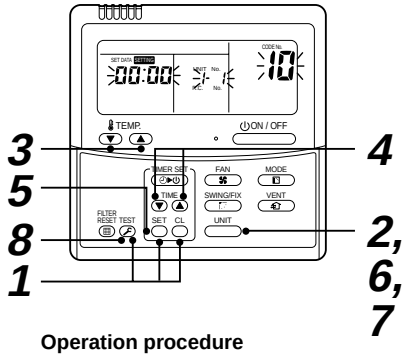
4 **Using the timer time (▼) / (▲) buttons, change the displayed setup data to a data which you want to change.**

5 **Push (SET) button.**

6 **Using the (UNIT) button, select the unit No. to be changed at the next time. Repeat the procedure *4* to *6* and change the indoor address so that it is not duplicated.**

7 **After the above change, push (UNIT) button to confirm the changed contents.**

8 **If it is acceptable, push (TEST) button to finish confirmation.**



Operation procedure

1 → ***2*** → ***3*** → ***4*** →
5 → ***6*** → ***7*** → ***8*** **End**

- **To change all the indoor addresses from an arbitrary wired remote controller;**
  (When the setup operation with automatic address has finished, this change is available.)

Contents : Using an arbitrary wired remote controller, the indoor unit address can be changed for each same refrigerant line

* **Change the address in the address check/change mode.**

<Procedure> (Operation while air conditioner stops)

1 **Push the timer time ▼ + TEST buttons simultaneously for 4 seconds or more.**
Firstly, the line 1, **item code** AC (Address Change) is displayed.

2 **Using UNIT + SWING/FIX buttons, select the line address.**

3 **Push SET button.**
- The indoor unit address, which is connected to the refrigerant pipe of the selected outdoor unit is displayed and the fan is turned on.
  First the current indoor address is displayed on the setup data. (Line address is not displayed.)

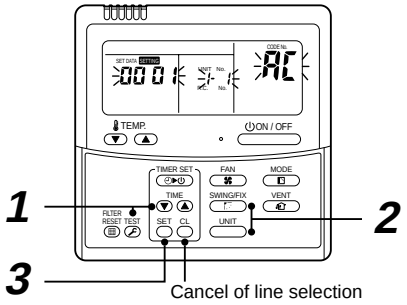
4 **The indoor address of the setup data moves up/down by the timer time ▼ / ▲ buttons.**
Change the setup data to a new address.

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

6 **Every pushing UNIT button, the indoor unit numbers in the identical pipe are successively displayed. Only fan of the selected indoor unit operates.**
Repeat the procedure ***4*** to ***6*** and change all the indoor addresses so that they are not duplicated.

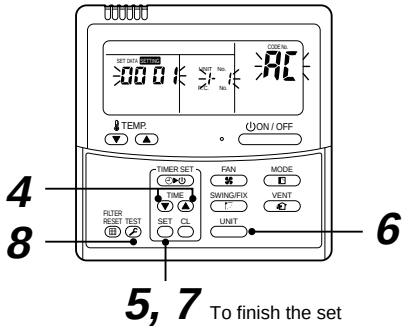
7 **Push SET button.**
(All the displays on LCD go on.)

8 **Push TEST button to finish the procedure.**



Here, if the unit No is not called up, the outdoor unit in this line does not exist.

Push CL button, and then select a line according to procedure ***2***.



Operation procedure

1 → ***2*** → ***3*** → ***4*** →
5 → ***6*** → ***7*** → ***8*** **End**

Clearance of address (Return to status (Address undecided) at shipment from factory)

Method 1

An address is individually cleared from a wired remote controller.

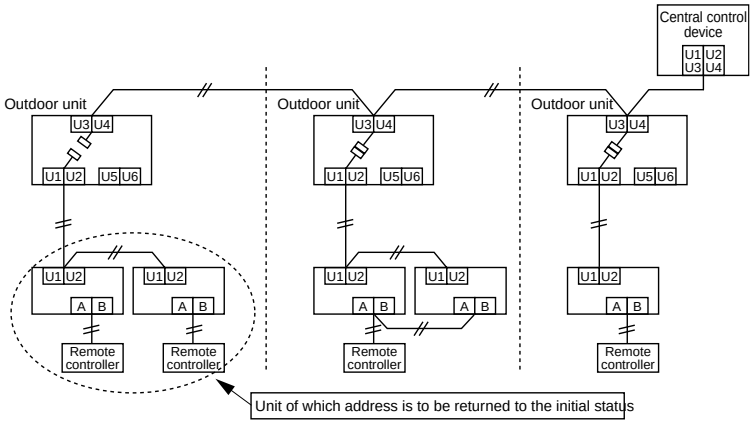
"0099" is set up to line address, indoor address, and group address data from the remote controller.

(For the setup procedure, refer to the abovementioned address setup from the remote controller.)

Method 2

Clear the indoor addresses in the same refrigerant line from the outdoor unit.

1. Turn off the power of the refrigerant line to be returned to the status at shipment, and change the outdoor unit to the following status.
   1) Remove the relay connector between [U1U2] and [U3U4].
      (If it has been already removed, leave it as it is.)
   2) Turn on SW30-2 on the interface P.C. board of the outdoor unit if it is OFF.
      (If it has been already ON, leave it as it is.)



2. Turn on the indoor/outdoor power of which address is to be cleared. After approx. 1 minute, check that "U.1. - - -" is displayed, and then execute the following operation on the interface P.C. board of the outdoor unit of which address is to be cleared in the refrigerant line.

SW01	SW02	SW03	SW04	Address which can be cleared
2	1	2	After checking that "A.d.buS" is displayed on 7-degment display, and then push SW04 for 5 seconds or more.	Line + Indoor + Group address
2	2	2	After checking that "A.d.nEt" is displayed on 7-degment display, and then push SW04 for 5 seconds or more.	Central address

3. After "A.d. c.L." has been displayed on 7-degment display, return SW01/SW02/SW03 to 1/1/1.
4. When the address clearing has correctly finished, "U.1.L08" is displayed on 7-degment display after a while. If "A.d. n.G." is displayed on 7-degment display, there is a possibility which is connected with the other refrigerant line. Check again the relay connector between [U1U2] and [U3U4] terminals.
   NOTE) Be careful that the other refrigerant line address may be also cleared if clearing operation is not correctly executed.
5. After clearing of the address, set up an address again.

In case of increase the address-undefined indoor units (Extension, etc.)

If set up the indoor address of which address is undefined accompanied with extension of indoor units, replacement of P.C. board, etc, follow to the methods below.

Method 1

Set up an address individually from a wired remote controller.

(Line address, Indoor address, Group address, Central address)

For the setup method, refer to the above “Manual address setup from remote controller”.

Method 2

Set up an address from the outdoor unit.

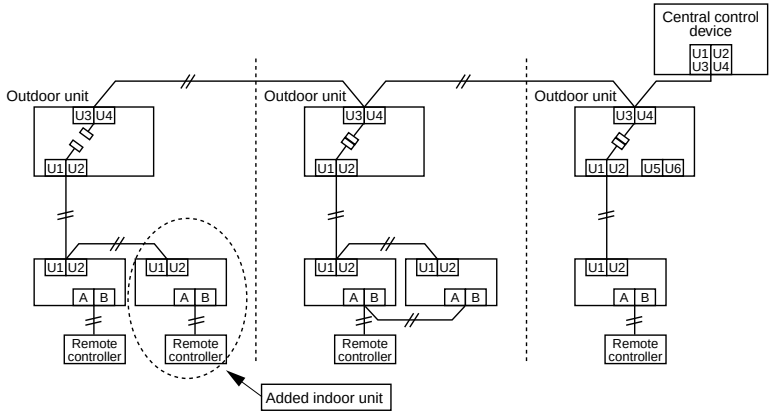
∗ Leave the address of the unit of which address has been already set up as it is.
Set up an address only to the unit of which address is undefined.

The addresses are allocated from the low number.

Setup procedure

Arrange the outdoor units in the refrigerant line to which indoor units are added. (Figure below)

1. Remove the relay connector between [U1U2] and [U3U4].
2. Turn on SW30-2 on the interface P.C. board at outdoor unit side if it is OFF.
   ∗ Turn off the power, and then execute the operation.



3. Turn on the indoor/outdoor power of which address is to be set up. After approx. 1 minute, check that “U.1. - - -” is displayed on 7-segment display.
4. Execute the following operation on the interface P.C. board of the outdoor unit.

SW01	SW02	SW03	SW04
2	14	2	After checking that “ InAt ” is displayed on 7-segment display, and then push SW04 for 5 seconds or more.

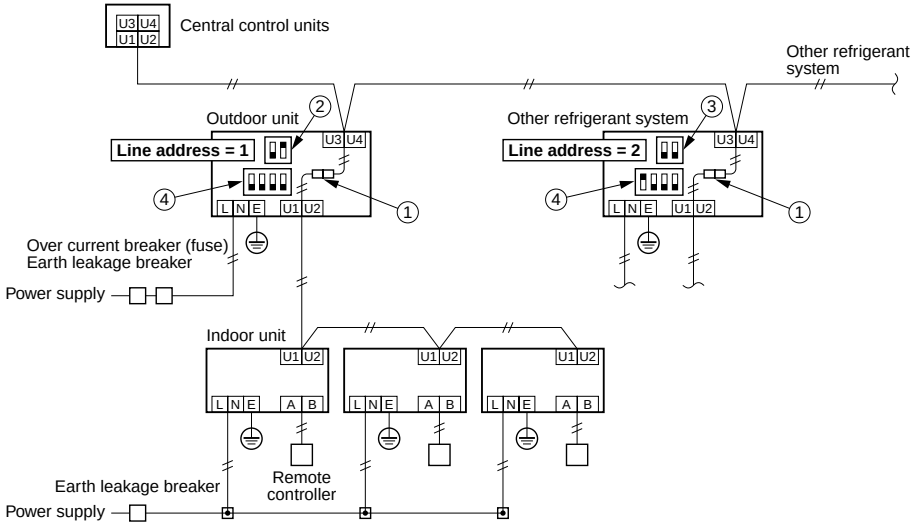
“AUTO1” → “AUTO2” → “AUTO3” → ⋯ → “AUTO9” … is counted and displayed on 7-degment display.

- Return the SW01, 02, 03 setup as before.

5. When “U.1. - - -” is displayed on 7-segment display, the setup operation finished.
   Turn off the indoor/outdoor power.
6. Return the following setup as before.
   - Relay connector
   - SW30-2

9-4-4. Check after Address Setup When Central Control System is Connected

When the central control system is connected, check the following setup has finished after address setup.



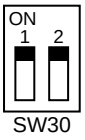
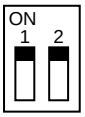
	No.	Main check items	Check
Relay connector	①	Is relay connector of the outdoor unit connected after address setup?	
Terminal resistance	②	Is the terminal resistor (SW30-2) of the outdoor unit with the least refrigerant line address number (in the central control line) turned on?	
	③	Are the terminal resistor (SW30-2) of the outdoor units except for the line of which central control refrigerant line address is the smallest, turned off?	
Line address	④	Are not addresses in the line address (SW13, SW14) duplicated in each refrigerant line?	

Note) The above table does not describe all the electric cablings. For details, refer to each installation manual for outdoor unit, indoor unit, remote controller, and optional devices.

9-5. Troubleshooting in Test Operation

If the phenomena appear, such as a check code is output or the remote controller is not accepted in power-ON after cabling work or in address setup operation, the following causes are considered.

9-5-1. A check Code is Displayed on the Remote Controller

Check code displayed on remote controller	Outdoor unit 7-segment display	Cause	Countermeasures
E04	E19-00	Outdoor power is formerly turned on.	Turn on the power again. (In order of Indoor → Outdoor)
		There is none of outdoor terminator resistor. (After address setup)	Check SW30 bit 2 of the outdoor unit. No connection between multiple refrigerant lines: SW30 bit 20N Connection between multiple refrigerant lines: SW30 bit 2 of the connected outdoor unit is turned on only in one line.
		After address was decided, all the indoor units do not correctly response after power-ON in outdoor unit.  SW30	Check and modifies disconnection of indoor/outdoor communication line. (Communication line the leading indoor unit) Check influence of communication noise.
	L08	Address setup error • Only line addresses of the connected indoor units are undefined. • The outdoor line address and the line addresses in all indoor units do not match. • The indoor addresses are duplicated. (Units except those displaying E04 are duplicated.) • A header unit is not set up in a group. (Except group displaying E04)	Set up address again.
	E08-XX	Duplication of indoor addresses. (Address No in which sub-code of the check code are duplicated)	Set up address again.
	E07	There is none of outdoor terminal resistance, or there are two or more resistances. (After address setup, when terminal resistance setup is changed after power-ON.)  SW30	Check SW30 bit 2 of the outdoor unit. No connection between multiple refrigerant lines: SW30 bit 20N Connection between multiple refrigerant lines: SW30 bit 2 of the connected outdoor unit is turned on only in one line.
		Transmission circuit error at interface side (P.C. board failure)	Replace the interface P.C. board.
	E06	After address setup, communication from all the indoor units interrupted under condition that a normal operation can be performed.	Check and correct disconnection of indoor/outdoor communication line.(Communication line between outdoor unit and the leading indoor unit) Check influence of communication noise.
E16	E16-XX	Exceeded No of connected indoor units or exceeded capacity.	Adjust No of connected indoor units or capacity.
E25	E25	Duplication of outdoor addresses. (Only when outdoor address was manually set up)	Do not use a manual setup for outdoor address.
L04	L04	Duplication of outdoor line addresses • Line address setup error, occurred after connection between U_1, U_2 and U_3, U_4 connectors	Modify line address setup of the outdoor unit between lines. (Set up SW 13 and 14 on the interface P.C. board.)
L05 (*)	L06	Duplicated of indoor units with priority	The Heat Recovery Multi is not set up on priority.
L06 (*)		There are two or more indoor units set up with priority.	
L08	L08	Address setup error • Only indoor addresses of all the connected indoor units are undefined.	Set up address again.

(*) [L05]: Displayed on the indoor unit set up with priority
[L06]: Displayed on the indoor unit except one set up with priority

9-5-2. Operation from remote controller is not accepted and a check code is displayed on 7-segment display of the interface P.C. board of the outdoor unit.

Remote controller status	7-segment display of outdoor unit	Cause	Countermeasures
No response	L08	Line addresses and indoor addresses of all the connected indoor units are unset.	Set up addresses.
		There is no outdoor unit of group control.	Set up group address.
	E19-00	Indoor unit power is not turned on.	Turn on the power again. (In order of indoor → outdoor)
		Indoor/outdoor communication line is not correctly connected to the outdoor unit. (Fig. 1) (Indoor/outdoor cannot communicate before address setup.)	Correct wiring.
		There is none of outdoor terminator resistor, or there are two or more resistances. (Before address setup) SW30	Check SW30 bit 2 of the outdoor unit. No connection between multiple refrigerant lines: SW30 bit 2 0N Connection between multiple refrigerant lines: SW30 bit 2 of the connected outdoor unit is turned on only in one line.
	E20-01	Address setup is performed with connecting indoor/outdoor communication line. (Fig. 3)	Correct wiring.
		Address setup is performed under condition of connecting between multiple refrigerant lines. (Fig. 3)	Correct wiring.

9-5-3. There is no display of a check code on 7-segment display on the interface P.C. board of the outdoor unit though there is indoor unit which does not accept the operation from the remote controller.

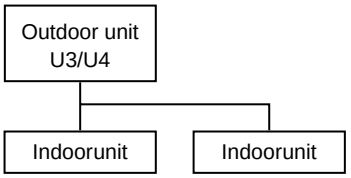
Remote controller status	7-segment display of outdoor unit	Cause	Countermeasures
No response	None	Communication line is not connected between indoor and outdoor.	Modify wiring.
		Line and indoor addresses are unset. (Unit which does not response to remote controller)	Set up address.
		The power of the header unit of the group is not turned on in indoor group control. (Unit which does not response to remote controller)	Turn on the power.
		Group address is set up to follower unit in the individual control. (Unit which does not response to remote controller)	Set [0] to group address in case of individual control.
No display on remote controller (No line is output.)	None	The power is not turned on. (Unit which is not displayed on remote controller)	Turn on the power.
		Remote controller is not connected with cable. (Unit which is not displayed on remote controller)	Correct wiring.
		Miscabling of remote controller (Unit which is not displayed on remote controller)	Correct wiring.
		Remote controller communication circuit error (Unit which is not displayed on remote controller) If 230V is incorrectly applied to the remote controller terminal, the remote controller communication circuit fails.	Remove FASTON terminal connected to remote controller terminals (A/B), and check the voltage. If voltage is not applied, replace P.C. board. (15 to 18V usually)

9-5-4. In check for No. of connected Indoor units after address setup, diminished No. of connected units displayed. (There are outdoor/indoor units which do not operate in a test operation.)

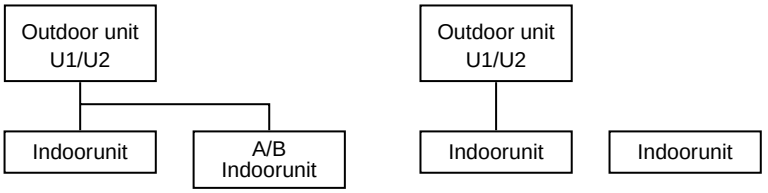
Status	Cause	Countermeasures
Number of connected is short.	Miswiring of communication line unconnected cable (Fig. 4) (Address setup operation has finished without recognition of miswired follower unit.)	After modification of wiring, set up address again and check No. of the connected outdoor units.
Number of connected indoor units is short.	Miswiring of communication line between indoor units or unconnected cable (Fig. 5) (Address setup operation has finished without recognition of miswired indoor unit.)	After modification of wiring, set up address again and check No. of the connected indoor units.
Number of outdoor units connected to group is short in group operation from remote controller.	Remote controller is not connected with wire. Miscabling of remote controller	Using the main remote controller connected to a group, start a test operation, specify the unit which does not operate (Unit unconnected to group), and then check wiring.
	Remote controller communication circuit error If 230V is incorrectly applied to the remote controller terminal, the remote controller communication circuit fails.	Using the main remote controller connected to a group, start a test operation, specify the unit which does not operate (Unit unconnected to group). Remove Fasten receptacle connected to remote controller terminals (A/B), and check the voltage. If voltage is not applied, replace P.C. board. (15 to18V in normal time)

Incorrect wiring example

(Fig. 1)

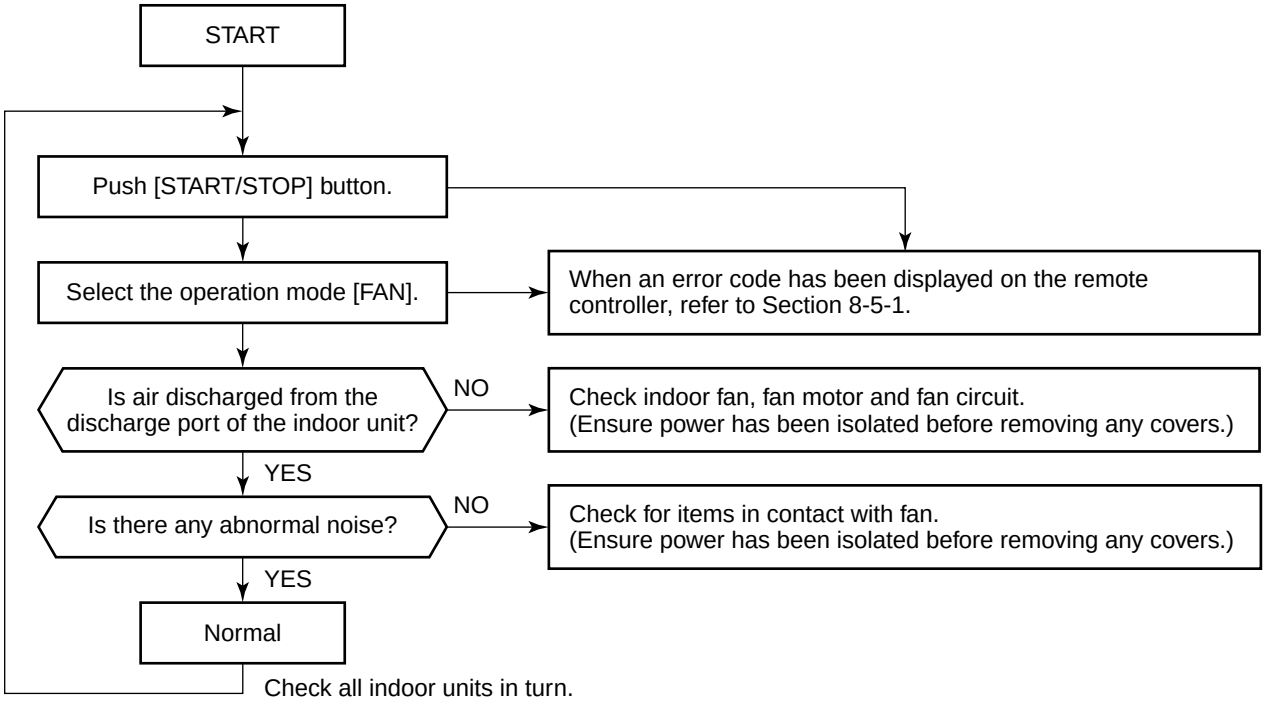
Remote controller status	Outdoor unit 7-segment display	Incorrect example
No response	E19-00	

(Fig. 2)

Status	Incorrect example
Number of connected outdoor units is short.	

9-6. Test Operation Check

9-6-1. Fan Operation Check



9-6-2. Cooling/Heating Test Operation Check

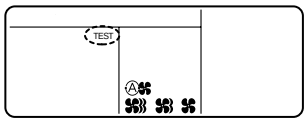
The cooling/heating test operation check can be performed on both remote controller and outdoor interface P.C. board.

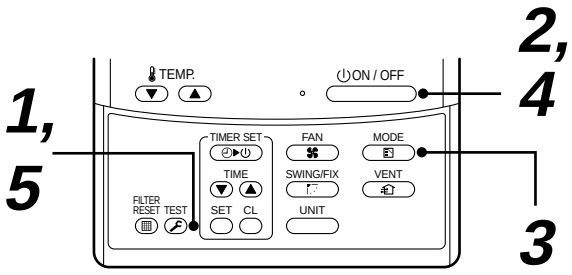
1. Test operation start/stop operation

Test operation from remote controller

Wired remote controller

1 **When pushing TEST button for 4 seconds or more, [TEST] is displayed in the display section and the mode enters the test operation mode.**

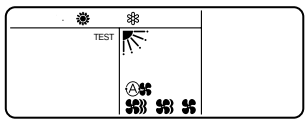




2 **Push ON / OFF button.**

3 **Using MODE button, select an operation mode either [COOL] or [HEAT].**

- Do not use any other operation modes, only [COOL] or [HEAT].
- Temperature adjustment is unavailable during test operation.
- Errors are detected as usual.

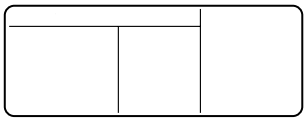


4 **When the test operation has finished, push ON / OFF button to stop the operation.**

The same display as that in procedure 1 appears.

5 **Push TEST button to clear the test operation mode.**

[TEST] display disappears and the status returns to the normal stop status.



Wireless remote controller
(Except 4-way Air Discharge Cassette type, Under Ceiling type and 1-way Air Discharge Cassette type (2 Series))

1 Remove the screw which fixes the name plate to the receiver part on the wireless remote controller.

Remove the nameplate of the receiver section by inserting a minus screwdriver, into the notch at the bottom of the plate, and set the Dip switch to [TEST RUN ON].

2 Execute a test operation with ON / OFF button on the wireless remote controller.

- ⏻, ◷, and ❄ LED flash during test operation.
- Under status of [TEST RUN ON], the temperature adjustment from the wireless remote controller is not available.

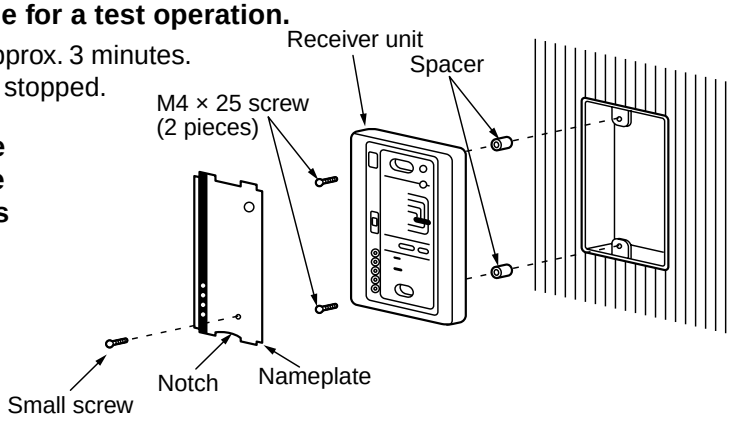
Ensure that this is not used for normal operation as equipment damage may occur.

3 Use either COOL or HEAT operation mode for a test operation.

Note) The outdoor unit does not operate for approx. 3 minutes. After power-ON and after operation has stopped.

4 After the test operation finished, stop the air conditioner using the wireless remote controller, and return the Dip switch to its original setting.

(A 60-minute timing function is designed into the sensor section in order to prevent a continuous test operation.)



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

1 Turn OFF the power to the air conditioner.

Remove the adjust corner cap and the attached with sensor section from the ceiling panel. For removal method, follow to the installation instructions attached to the ceiling panel.
(Be careful to handling the sensor section because cables are connected to the sensor.)

Remove the sensor cover from the adjust corner cap. (1 screw)

2 Change Bit [1: TEST] of the switch [S003] on the sensor P.C. board from OFF to ON.

Mount the sensor cover and attach the adjust corner cap with sensors to the ceiling panel.

Turn on power of the air conditioner.

3 Push ON / OFF button of the wireless remote controller, and select an operation mode [COOL] or [HEAT] with MODE button. (All the display lamps of the wireless remote controller sensor section flash during the test operation.)

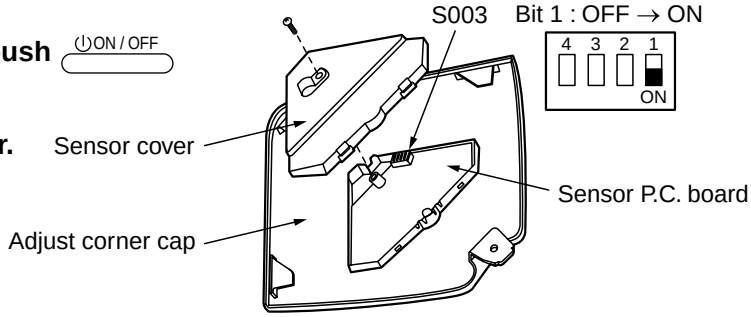
- Do not use operation mode other than [COOL] or [HEAT].
- Errors are detected as usual.

4 When the test operation has finished, push ON / OFF button to stop the operation.

5 Turn off the power to the air conditioner.

Change Bit [1] of the switch [S003] on the sensor P.C. board from ON to OFF.

Attach the adjust corner cap with sensors to the ceiling panel.



Test operation from outdoor unit

Refer to "**8-7-2. Function of Start/Stop the Indoor Unit from Outdoor Unit**" in "**8-7. Service Support Function**".

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

In case of wireless remote controller
(for Under Ceiling type and 1-way Air Discharge Cassette type (2 Series))

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.	
3	**Test cooling operation**	**Test heating operation**
	Set temperature to [18°C] using [**Temperature set**] button.	Set temperature to [30°C] using [**Temperature set**] button.
4	After checking the receiving sound “Pi”, immediately push [**Temperature set**] button to set to [19°C]	After checking the receiving sound “Pi”, immediately push [**Temperature set**] button to set to [29°C].
5	After checking the receiving sound “Pi”, immediately push [**Temperature set**] button to set to [18°C].	After checking the receiving sound “Pi”, immediately push [**Temperature set**] button to set to [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.	

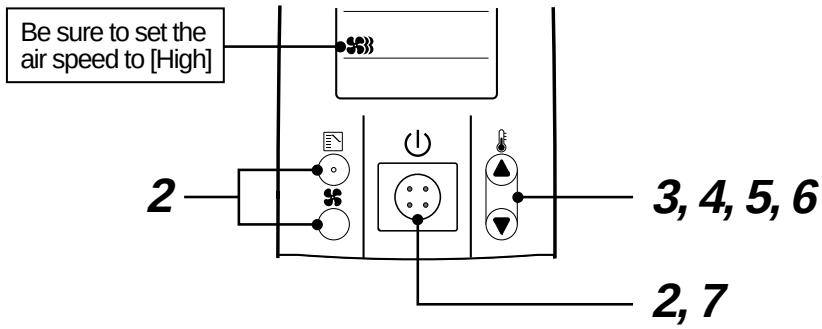
Outline of test operation from the wireless remote controller

Test cooling operation:

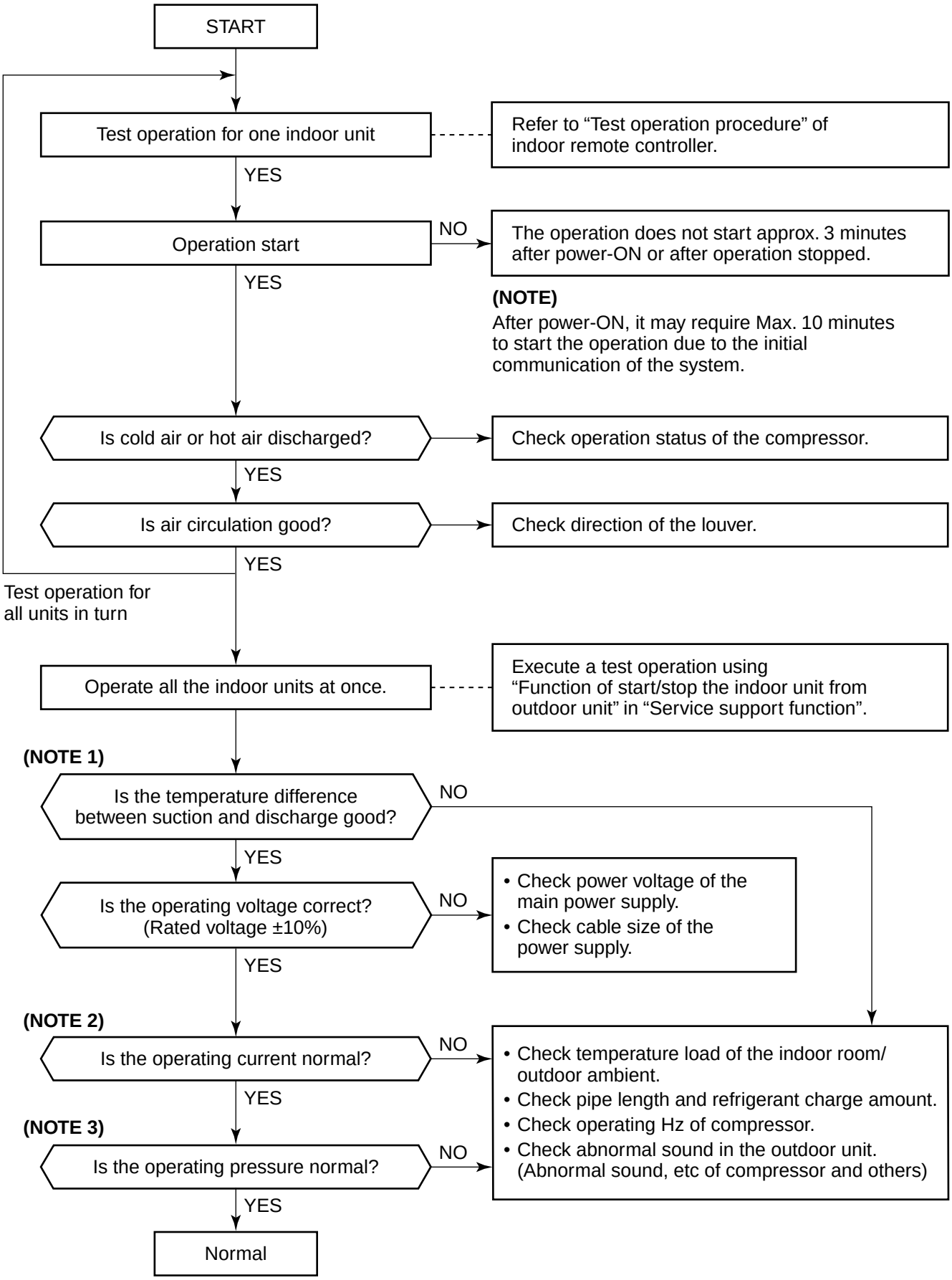
Start → 18°C → 19°C → 18°C → 19°C → 18°C → 19°C → 18°C → (Test operation) → Stop

Test heating operation:

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



2. Test operation



(NOTE 1) Criteria for judging difference between suction and discharge temperature

1. Cooling

   After operation for a minimum of 30 minutes in [COOL] mode, check the dry bulb temperature difference.
   Temperature difference: 8°C or more between suction and discharge air of the indoor unit.
   (In Max-Hz operation)

2. Heating

   After operation for a minimum of 30 minutes in [HEAT] mode, check the dry bulb temperature difference.
   Temperature difference: 15°C or more between suction and discharge air of the indoor unit.
   (In Max-Hz operation)

   ∗ The temperature difference may diminish in cases of systems in which the connected indoor capacity exceeds 100%, or with long pipe length, etc.

(NOTE 2) Criteria for operating current

For a test operation (with all the indoor units operating), normal operating current is shown in the following table.

Outdoor unit	0401 type	0501 type	0601 type
Current value	23	27	29

(Unit: A)

(NOTE 3) Criteria for cycle status

1. Refrigerating cycle under standard condition

   The refrigerating cycle under standard cooling and heating condition is as follows:

Model name			MCY-MAP0401 type		MCY-MAP0501 type		MCY-MAP0601 type	
Mode			Cooling	Heating	Cooling	Heating	Cooling	Heating
Pressure	High (Pd)	(MPa)	2.7	2.6	2.8	2.9	2.9	3.1
	Low (Ps)	(MPa)	0.9	0.7	0.9	0.7	0.8	0.6
Pipe surface temp	Discharge (TD)	(°C)	76	73	78	82	86	87
	Suction (TS)	(°C)	16	2	14	1	11	0
	Outdoor heat exchanger (TE)	(°C)	36	2	36	2	36	2
	Liquid temp (TL)	(°C)	37	27	37	17	38	30
	Indoor heat exchanger (TCJ)	(°C)	10	33	10	31	9	32
Number of compressor rotations		(rps)	47	47	54	61	67	71
Air temp condition DB/WB	Indoor	(°C)	27/19	20/–	27/19	20/–	27/19	20/–
	Outdoor	(°C)	35/–	7/6	35/–	7/6	35/–	7/6

∗ This compressor is driven with 4-pole motor. The value of the compressor frequency (Hz) measured by a clamp meter is two times the rotation count (rps) of the compressor.

∗ This data is the cycle data under condition of standard pipe length and two 4-way Air Discharge Cassette type air conditioners connected.
Data changes according to installed pipe length, combination of indoor units or connected indoor capacity.

∗ For a compressor, the left side is 1 and the right side is 2 viewed front the front of the unit.
Even if two compressors operate, the frequency difference may set as a measures against resonance.

∗ The temperature of indoor heat exchanger (TC) indicates TCJ sensor temperature in cooling time, and TC2 sensor temperature in heating time respectively.

2. Criteria for operating pressure

   General criteria is as follows:

All cooling operaton	High pressure : 2.0 to 3.2MPa	Indoor :18 to 32°C	When all the units operate in cooling mode
	Low pressure : 0.5 to 0.9MPa	Outdoor :25 to 35°C	
All heating operation	High pressure : 2.5 to 3.3MPa	Indoor :15 to 25°C	When all the units operate in heating mode
	Low pressure : 0.5 to 0.7MPa	Outdoor : 5 to 10°C	

Using the rotary switch on the outdoor unit I/F, the operating pressure, cycle temperature, and compressor rotation count can be checked on the 7-segment display.
Refer to “Outdoor refrigerant circuit system data display” and “Indoor cycle data display” in Section **9. Troubleshooting**.

9-7. Service Support Function

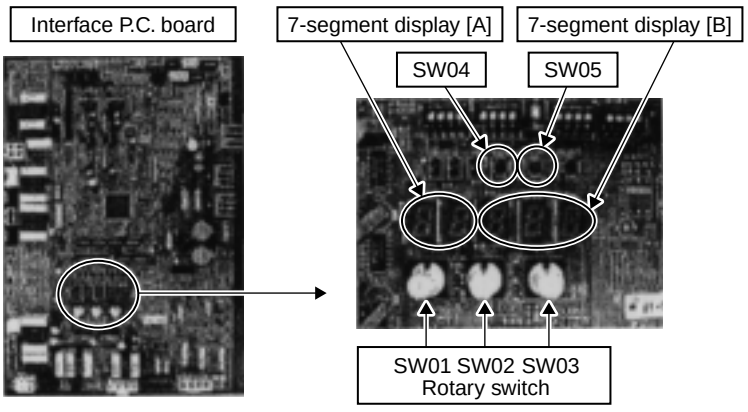
9-7-1. Function to Start/Stop (ON/OFF) Indoor Unit from Outdoor Unit

The following functions enables the start and stop of the indoor units using the switches on the interface P.C. board.

No.	Function	Outline	Setup/Release	7-segment display
1	Cooling test operation	Changes the mode of all the connected indoor units collectively to cooling test operation. Note) Control operation same as test operation for remote controller.	[Setup] Push SW04 for 2 seconds or more with SW01"2", SW02"5", SW03"1". [Release] Return SW01, SW02, SW03 to "1".	Section A [C] Section B [–C]
2	Heating test operation	Changes the mode of all the connected indoor units collectively to heating test operation. Note) Control operation same as test operation for remote controller.	[Setup] Push SW04 for 2 seconds or more with SW01"2", SW02"6", SW03"1". [Release] Return SW01, SW02, SW03 to "1".	Section A [H] Section B [–H]
3	Batch start	Starts all the connected indoor units collectively. Note) The contents follow the setup of remote controller.	[Setup] Push SW04 for 2 seconds or more with SW01"2", SW02"7", SW03"1". [Release] Return SW01, SW02, SW03 to "1".	Section A [CH] Section B [11] [11] is displayed on Section B for 5 seconds.
	Batch stop	Stops all the connected indoor units collectively.	[Setup] Push SW05 for 2 seconds or more with SW01"2", SW02"7", SW03"1". [Release] Return SW01, SW02, SW03 to "1".	Section A [CH] Section B [00] [00] is displayed on Section B for 5 seconds.
4	Individual start	Starts the specified indoor unit. Notes) • Control operation same as test. • The other indoor units keep existing status.	[Setup] Push SW04 for 2 seconds or more set SW01 "16" and set SW02 and SW03 to address No. (1 to 64) to be started. [Release] Return SW01, SW02, SW03 to "1".	Section A [ ] Section B [ ] Section A: Displays the corresponding indoor address. Section B: Displays [11] for 5 seconds from operation-ON.
	Individual stop	Stops the specified indoor unit. Note) The other indoor units keep existing status.	[Setup] Push SW05 for 2 seconds or more set SW01 "16" and set SW02 and SW03 to address No. (1 to 64) to be stopped. [Release] Return SW01, SW02, SW03 to "1".	Section A [ ] Section B [ ] Section A: Displays the corresponding indoor address. Section B: Displays [00] for 5 seconds from operation-OFF.
	Individual test operation	Operates the specified indoor unit. Note) The other indoor units keep existing status.	[Setup] Push SW04 for 10 seconds or more set SW01 "16" and set SW02 and SW03 to address No. (1 to 64) to be operated. [Release] Return SW01, SW02, SW03 to "1".	Section A [ ] Section B [ ] Section A: Displays the corresponding indoor address. Section B: Displays [FF] for 5 seconds from test operation-ON.

NOTE 1) This start/stop function only sends the command signals from the outdoor unit to the indoor unit, such as start, stop, operation mode, etc.
Once it does not resend the signals even if the indoor unit does not follow the sent signals.

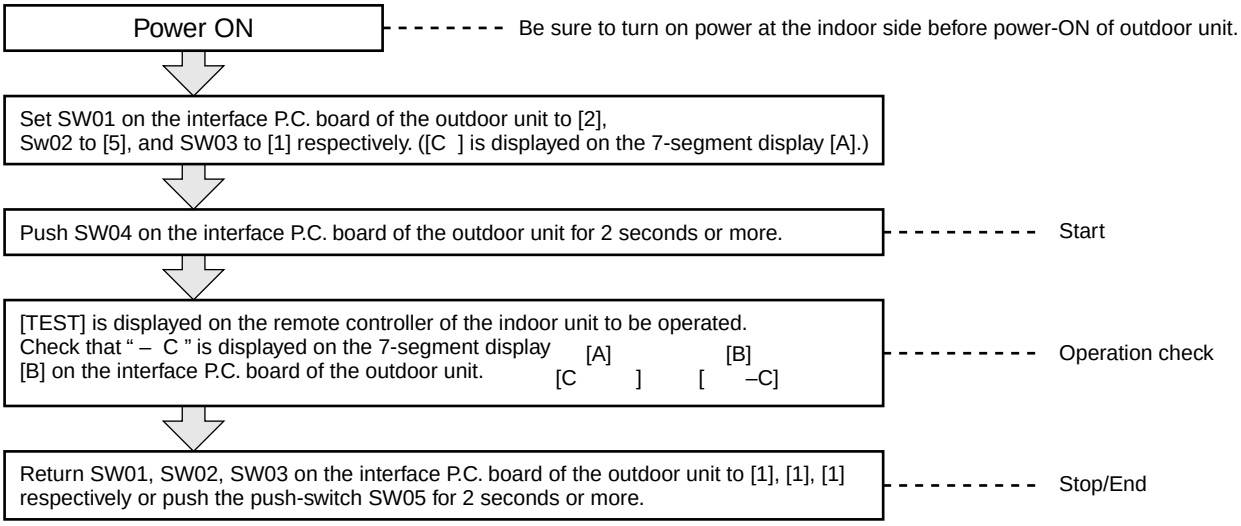
NOTE 2) The above controls are not available when an error has caused the system to stop.



1. Cooling test operation function

This function is provided to change collectively the mode of all the indoor units connected to the same system for cooling test operation mode, using switches on the interface P.C. board of the outdoor unit.

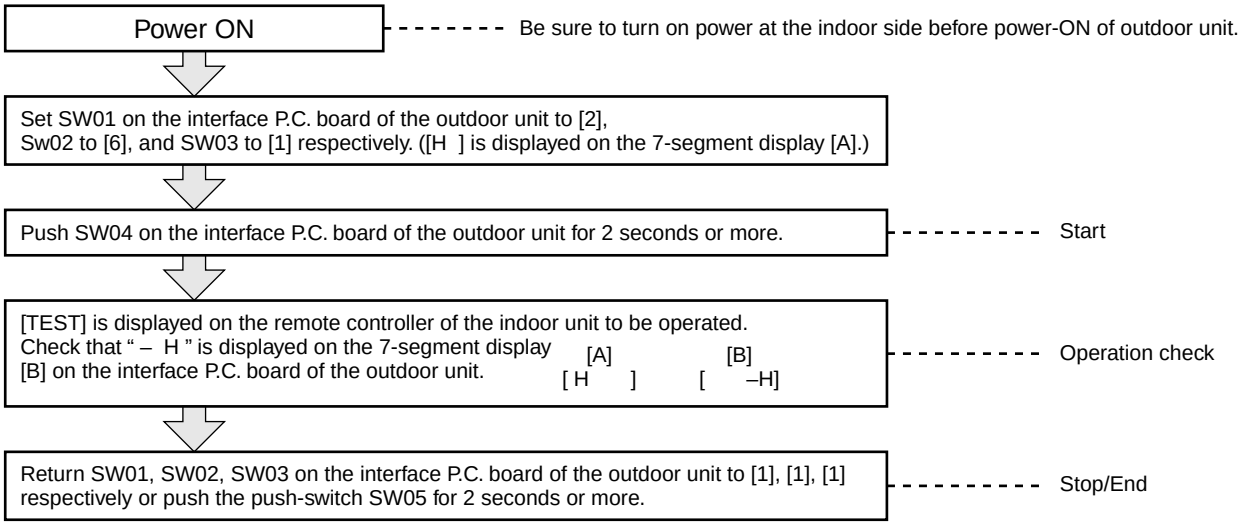
Operation procedure

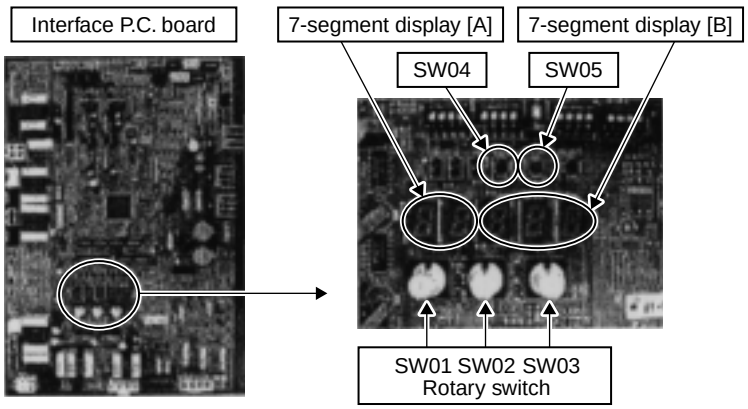


2. Heating test operation function

This function is provided to change collectively the mode of all the indoor units connected to the same system for heating test operation mode, using switches on the interface P.C. board of the outdoor unit.

Operation procedure



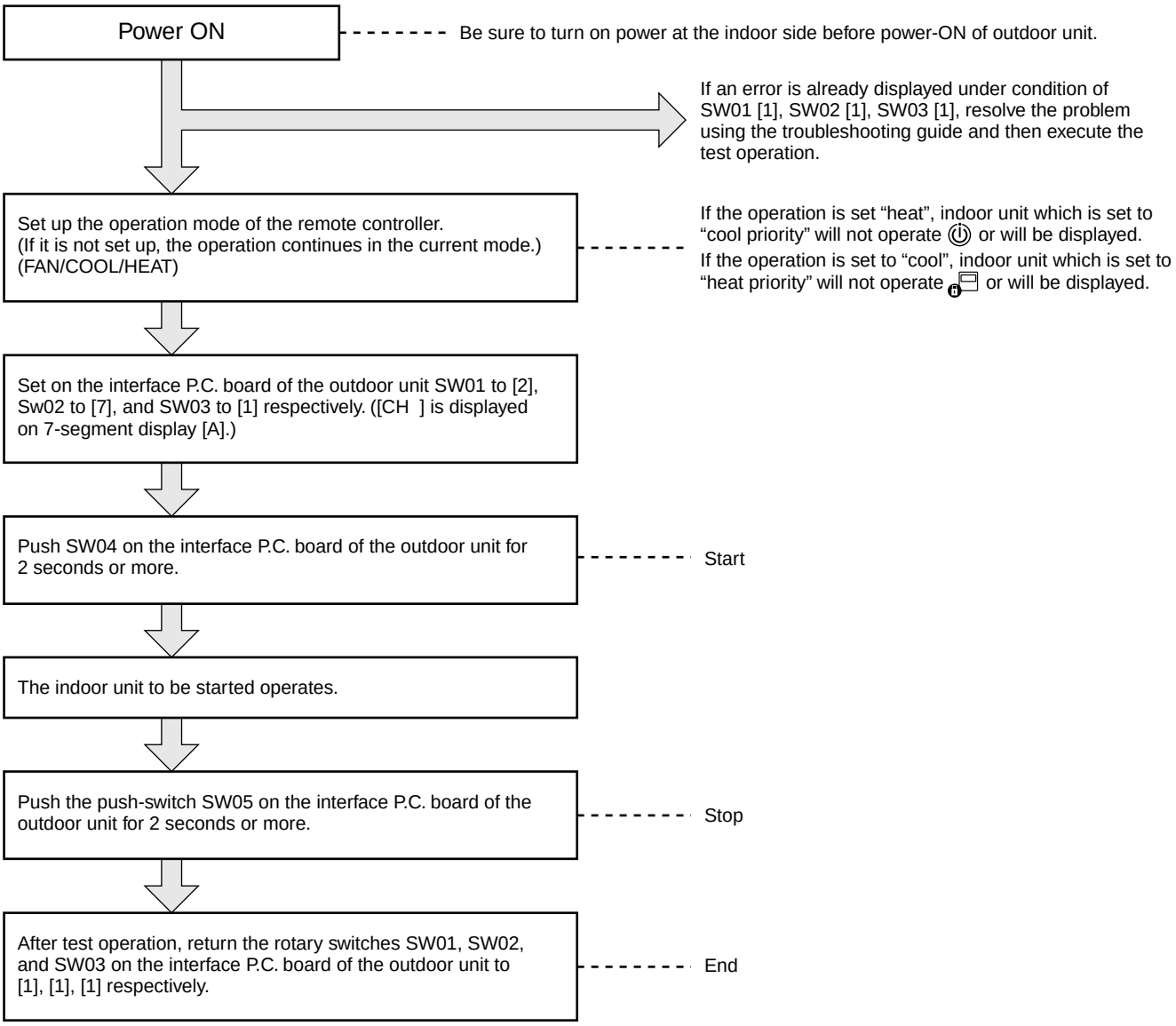


NOTE) The test operation returns to normal operation after 60 minutes.

3. Batch start/stop (ON/OFF) function

This function is provided to start/stop collectively all the indoor units connected to the same system by using switches on the interface P.C. board of the outdoor unit.

Operation procedure



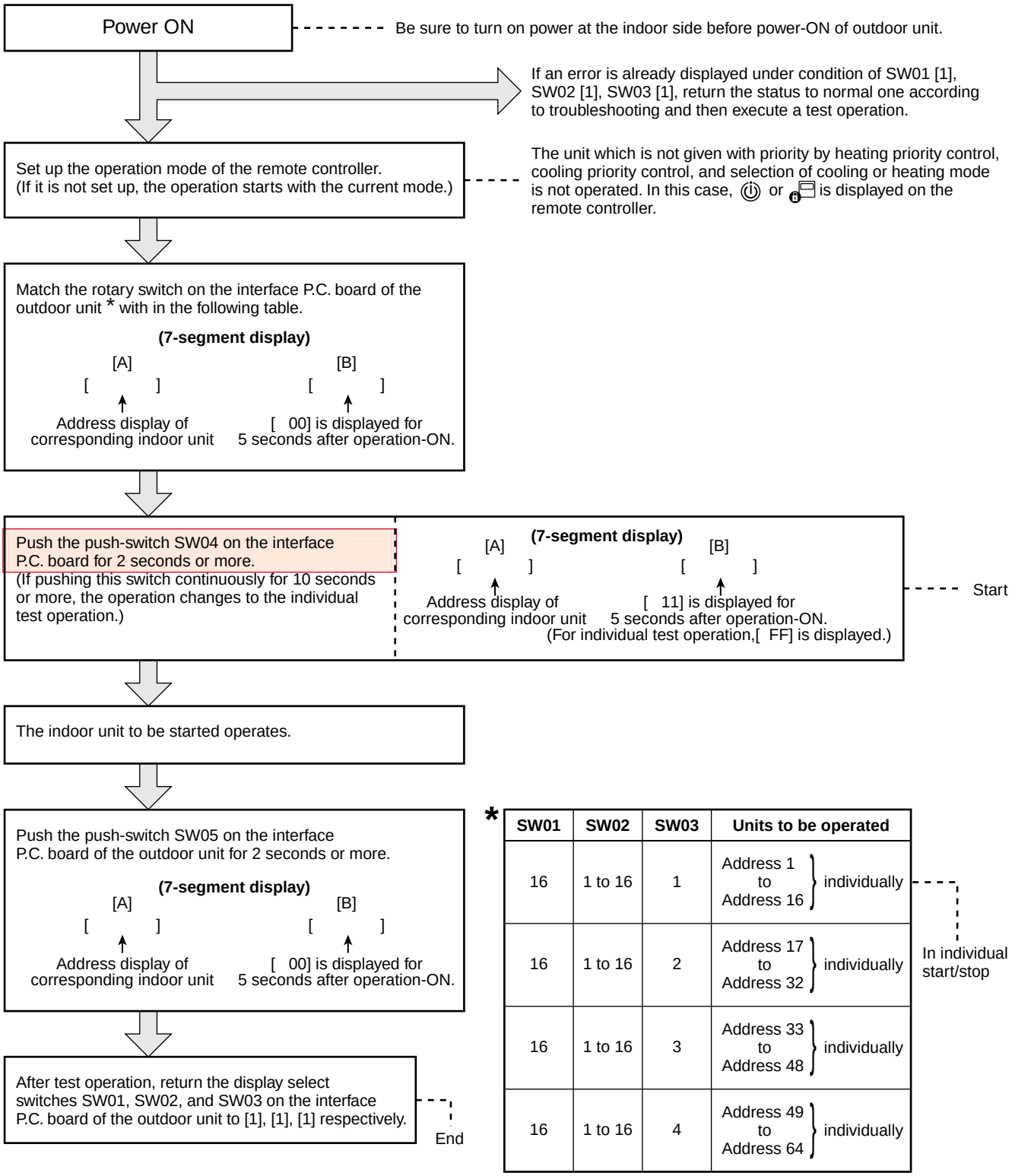
4. Individual start/stop (ON/OFF) individual test operation function

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

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

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

Operation procedure



∗

SW01	SW02	SW03	Units to be operated
16	1 to 16	1	Address 1 to Address 16 individually
16	1 to 16	2	Address 17 to Address 32 individually
16	1 to 16	3	Address 33 to Address 48 individually
16	1 to 16	4	Address 49 to Address 64 individually

In individual start/stop

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

9-7-2. Error Clearing Function

1. Clearing from the main remote controller

[Error clearing in outdoor unit]

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

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

<Method>

1 **Change the mode to service monitor mode by pushing CL + TEST buttons simultaneously for 4 seconds or more.**

2 **Using ▼ / ▲ buttons, set "FF" to item code.**

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

When the count arrives "0000", the error is cleared.

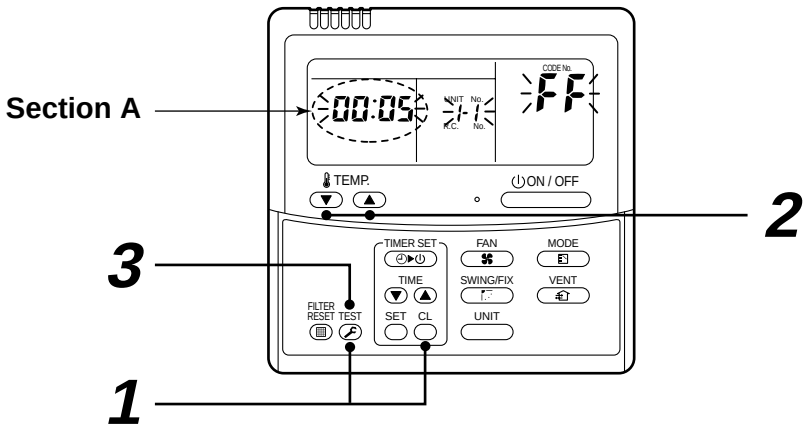
∗ However, counting from "0005" is repeated on the display.

3 **When TEST button is pushed, the status returns to the normal status.**

Operation procedure

1 → 2 → 3

The status returns to the normal status.



[Error clearing in indoor unit]

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

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

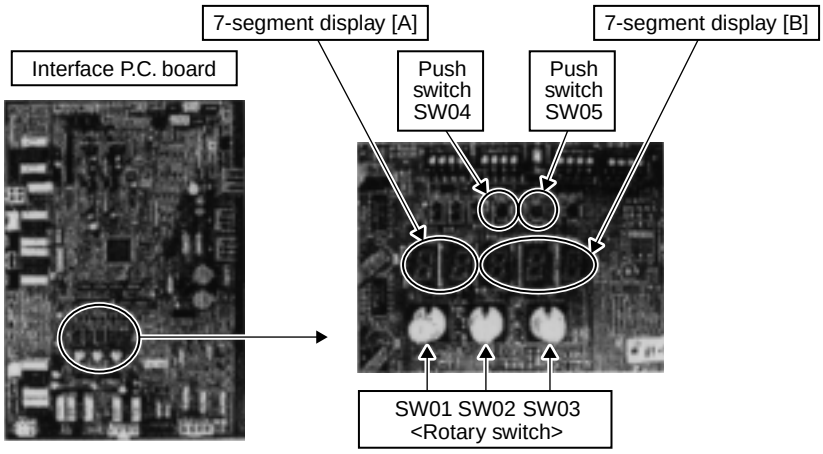
2. Clearing from the interface P.C. board

Using the switches on the interface P.C. board, this function is to clear the currently detected error for each refrigerant circuit system without resetting the power supply.

(→ Restart of error detection)

Errors in both outdoor and indoor units are once cleared.

Set the rotary switches on the interface P.C. board of the outdoor unit to the following setting. SW01=[2] SW02=[16] SW03=[1]	**(7-segment display)** [A] [B] [Er] [ ]
↓	
Push the push-switch SW04 on the interface P.C. board of the outdoor unit for 5 seconds or more.	
↓	
[CL] is displayed in 7-segment display [B] on the P.C. board (for 5 seconds), and the error is completely cleared.	**(7-segment display)** [A] [B] [Er] [CL]



3. Clearing of error check code by power reset

This function is provided to clear error in a refrigerant circuit system by resetting the power of all the outdoor and the indoor units.

(→ Restart of error detection)

As same as the clearing method on the interface P.C. board, errors of both the outdoor and the indoor units are once cleared.

Method

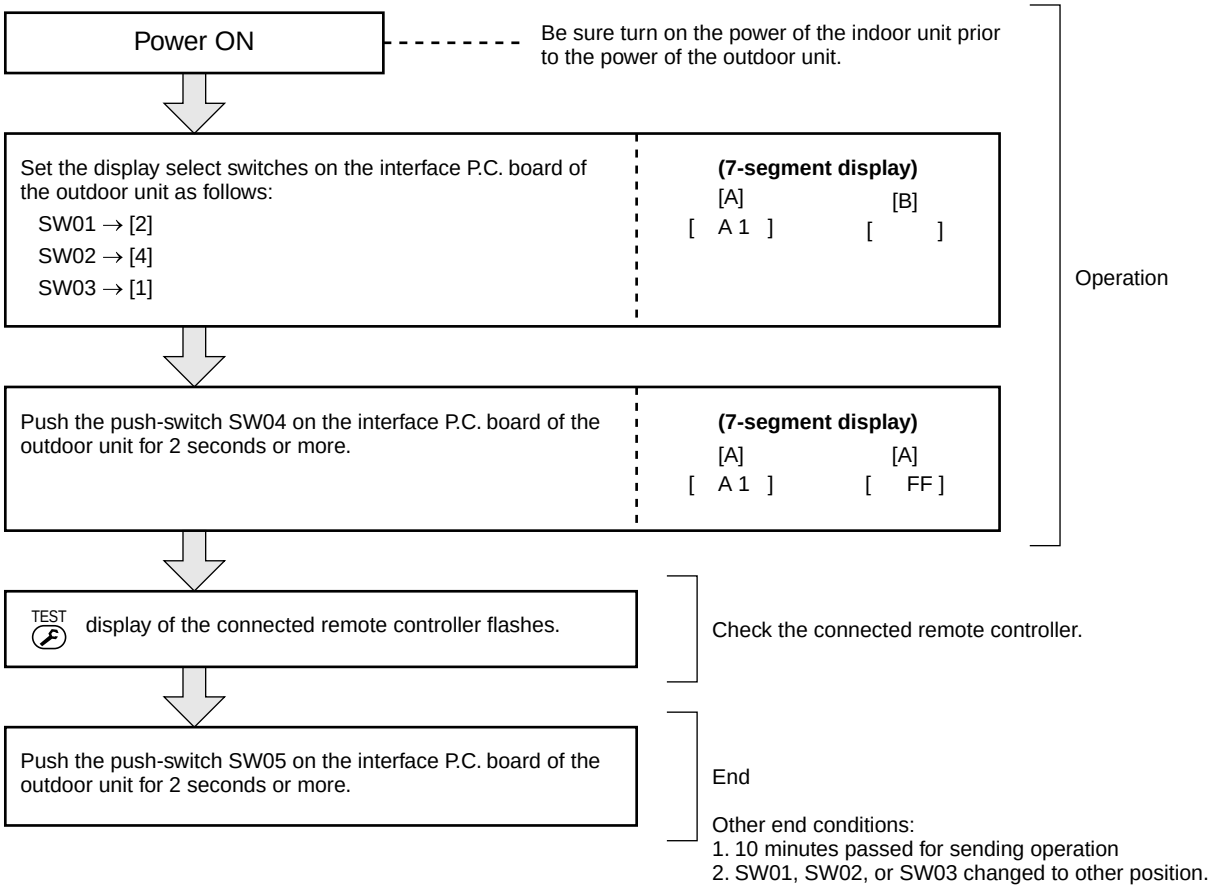
Be sure to reset power of both the outdoor and the indoor units.

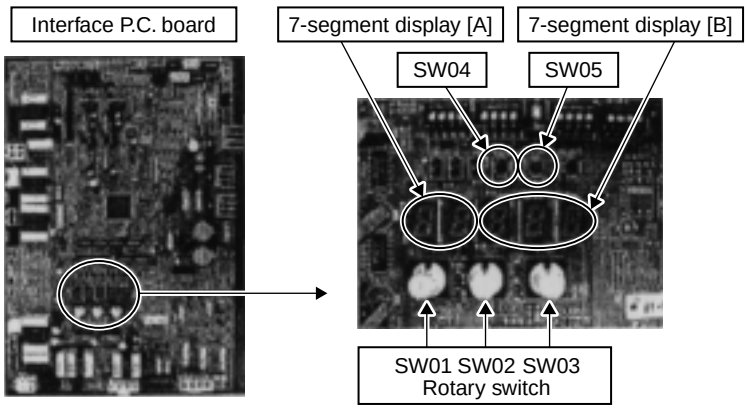
NOTE) After power reset, it requires usually 3 minutes to power-on due to the initial communication of the system. In same cases, it requires Max. 10 minutes.

9-7-3. Remote Controller Distinction Function

This function is provided to distinguish the remote controller connected from the outdoor unit to the indoor unit for a refrigerant circuit system using switches on the interface P.C. board of the outdoor unit.

Distinction procedure





9-7-4. Pulse Motor Valve (PMV) Forced Open/Close Function in Indoor Unit

This function is provided to fully open or close forcibly the PMV for 2 minutes in all indoor units, using the switch operation on the interface P.C. board of the outdoor unit.

This function is also used to open the PMV fully when turning off the power and executing an operation, for example, vacuuming.

Operation

[Open fully]

Set the switch SW01 on the interface P.C. board of the outdoor unit to [2], SW02 to [3], SW03 to [1] and push SW04 for 2 seconds or more.

(Display shown on 7-segment display for 2 minutes as follows.) [P] [FF]

[Close fully]

Set the switch on the interface P.C. board of the outdoor unit SW01 to [2], SW02 to [3], SW03 to [1] and push SW05 for 2 seconds or more.

(Display shown on 7-segment display for one minute as follows.) [P] [00]

[Clear]

After 2 minutes (1 minutes for “Close fully”) have passed when setup has finished, the PMV automatically returns to the normal operation.

9-7-5. Pulse Motor Valve (PMV) Forced Open Fully/Close fully Function in Outdoor Unit

This function is provided to fully open or close fully the PMV used in the outdoor unit for 2 minutes.

[Open fully]

Short-circuit CN30 on the interface P.C. board of the outdoor unit.

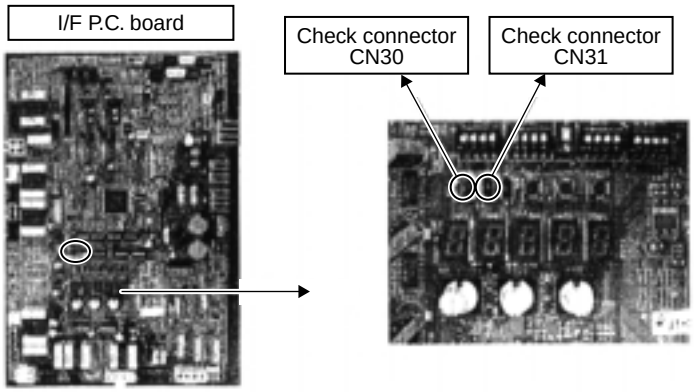
[Close fully]

Short-circuit CN31 on the interface P.C. board of the outdoor unit.

[Clear]

After 2 minutes, the opening returns to the normal operation.

Be sure to remove the short circuit after confirmation.



9-7-6. Solenoid Valve Forced Open/Close Function in Outdoor Unit

This function is provided to forcibly open/close each solenoid valve mounted in the outdoor unit by use of the switches provided on the outdoor unit interface P.C. board. This function confirms the operation of each solenoid valve.

[Operation]

1. On the interface P.C. board set SW01 to [2], SW02 to [1] and SW03 to [3].
2. Confirm [H,r] is displayed on the 7-segment display [B]. Push switch SW04 for 2 seconds or more.
3. Confirm [2] is displayed on the 7-segment display - this indicates that solenoid SV2 has been switched on.
4. Each solenoid can be operated by selecting the appropriate SW02 position as shown in the table below.
   (ON/OFF output pattern of each solenoid valve is as below.)

   NOTE 1) Be aware that there is a 5 second delay in the operation of the selected solenoid valve after SW02 has been set.

   NOTE 2) The mark [○] in the table indicates the selected solenoid valve is forced on.

   NOTE 3) The mark [—] in the table indicates the selected solenoid mode will depend on the specifications of the air conditioner.

   NOTE 4) The mark [×] in the table indicates the selected solenoid valve has been turned off.

   NOTE 5) The case heater relay output operates both compressor and accumulator heaters.

SW01	SW02	SW03	7-segment display [B]	Operation pattern of solenoid valve			Compressor and accumulator heater
				SV2	SV4	SV5	
2	1	3	[2]	○	—	—	○
	2		[4]	—	○	—	○
	3		[5]	—	—	○	○
	15		[OFF]	×	×	×	×
	16		[ALL]	○	○	○	○

[Clear]

Return settings on SW01, SW02, and SW03 to (1/1/1) on the Interface P.C. board.

NOTE) Ensure this function is cleared to return the air conditioner to normal operation.

9-7-7. Fan Operation Check in Outdoor Unit

This function is provided to check the fan operation on the interface P.C. board in the outdoor unit. The frequency of the fan speed can be controlled.

Therefore utilize this function to check the operation or abnormal sound in the fan system.

NOTE) Do not use this function during operation of the compressor. It may damage the compressor.

[Operation]

1. Set the switch on the interface P.C. board of the outdoor unit SW01 to [2], SW02 to [1], SW03 to [4].
2. When [F. d] is displayed in 7-segment display [A], keep pushing the switch SW04 for 2 seconds or more.
3. From when fan step [31] is displayed in 7-segment display [B], the fan starts operation. (Max. step operation)
4. After then, 7-segment display [B] and the fan step are changed by changing the setup number of the switches SW02 and SW03.

   (Output pattern of the fan is as follows.)

SW01	SW02	SW03	7-segment display [B]	Fan step
2	1	4	[31]	31
	2		[30]	30
	3		[29]	29
	4		[28]	28
	5		[27]	27
	6		[26]	26
	7		[25]	25
	8		[24]	24
	9		[23]	23
	10		[22]	22
	11		[21]	21
	12		[20]	20
	13		[19]	19
	14		[18]	18
	15		[17]	17
	16		[16]	16

SW01	SW02	SW03	7-segment display [B]	Fan step
2	1	5	[15]	15
	2		[14]	14
	3		[13]	13
	4		[12]	12
	5		[11]	11
	6		[10]	10
	7		[9]	9
	8		[8]	8
	9		[7]	7
	10		[6]	6
	11		[5]	5
	12		[4]	4
	13		[3]	3
	14		[2]	2
	15		[1]	1
	16		[0]	0

[Clear]

This function is cleared by one of the following operations.

1. When SW01 setting number was changed to other number.
2. Push-switch SW05 was pushed for 2 seconds or more.

9-7-8. Manual Adjustment Function of Outside Temp (TO) Sensor

This function is provided to fix TO sensor value manually by the switch operation on the interface P.C. board in the outdoor unit. When the unit stops abnormally due to TO sensor failure, etc, an emergent operation is available by set up the value manually to position near the current outside temperature.

[Operation]

1. Set the rotary switches on the interface P.C. board to numbers as follows.
   - SW01 [2] / SW02 [1] / SW03 [15]
   - 7-segment display: [t o]
2. Keep pushing the push-switch SW04 on the interface P.C. board for 1 second or more.
   The mode changes to the TO sensor value fix manual mode.
3. As shown in the following table, TO sensor value can be fixed by setting the rotary switch SW02 on the interface P.C. board.

SW01	SW02	SW03	7-segment display [B]	TO sensor value
2	1	15	[10]	10°C
	2		[15]	15°C
	3		[20]	20°C
	4		[25]	25°C
	5		[30]	30°C
	6		[35]	35°C
	7		[40]	40°C
	8		[43]	43°C

SW01	SW02	SW03	7-segment display [B]	TO sensor value
2	9	15	[45]	45°C
	10		[–15]	–15°C
	11		[–10]	–10°C
	12		[– 5]	–5°C
	13		[0]	0°C
	14		[2]	2°C
	15		[5]	5°C
	16		[7]	7°C

NOTE) Emergent operation should be restricted to one day or so on. If operating TO sensor fixed with this function, the system control operation of the air conditioner may not become one based upon the specification of the product. Therefore an emergent operation should be restricted to a day or so on.

[Clear]

Return numbers of SW01, SW02, and SW03 on the interface P.C. board in the outdoor unit to [1/1/1] each.

Service support function list

SW01	SW02	SW03	7-segment display [A]	Function contents
2	1	1	[J C]	Refrigerant circuit and control communication line check function (Cooling operation)
	2		[J H]	Refrigerant circuit and control communication line check function (Heating operation)
	3		[P]	Indoor PMV forced full open function
	4		[A 1]	Indoor remote controller discriminating function
	5		[C]	Cooling test operation function
	6		[H]	Heating test operation function
	7		[C H]	Indoor collective start/stop (ON/OFF) function
	16		[E r]	Error clear function

2	1 to 16	3	[H r]	Solenoid valve forced open/close function
		4 to 5	[F d]	Fan forced operation function
		15	[t o]	Outside temp sensor manual adjustment function

16	1 to 9	1	[0 1] to [1 6]	Indoor No. 1 to 9 unit	Indoor individual start/stop (ON/OFF) function

9-7-9. Indoor Fan Operation Check Function

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

However, if this function is used for a long time, a trouble of the air conditioner may be caused. Therefore using of this function should be restricted to several minutes.

[Operation]

1. Short-circuit CHK pin (CN71 on the indoor P.C. board).

   If short-circuiting DISP pin (CN72 on the indoor P.C. board) while short-circuiting CHK pin (CN71 on the indoor P.C. board), the indoor PMV only becomes the minimum opening (30 pulse). When opening DISP pin, it becomes the maximum opening again.

[Clear]

Open CHK pin. If the system is operating, it stops once but automatically restart after several minutes.

∗ For the details of CHK pin (CN71 on indoor P.C. board) and DISP pin (CN72 on indoor P.C. board), refer to **11. Control circuit configuration, Indoor unit 2, Indoor P.C. board MCC-1402 and MCC-1403**.

9-7-10. Indoor Fan Only Operating Mode

When operating an air conditioner with indoor units and remote controller only in fan operation etc., this function can be used. A group operation is also available.

[Operation]

1) Short circuit DISP pin (CN72 on the indoor P.C. board). However, if CHK pin (CN71 on the indoor P.C. board) has been previously short circuited, this function is unavailable.
2) In a group operation, set up a group as usual.
3) While DISP pin is short circuited, all the sensor error judgment operation and communication with the outdoor unit are not performed. PMV is fixed to the Max. opening.

[Clear]

Open DISP pin.

9-7-11. Monitor Function of Remote Controller Switch

When using a remote controller with the model name RBC-ATM21E, the following monitor functions can be used.

Calling of display screen

[Contents]

The temperature or the operation status of the remote controller, indoor unit, or each sensor of the outdoor unit can be known by calling up the service monitor mode from the remote controller.

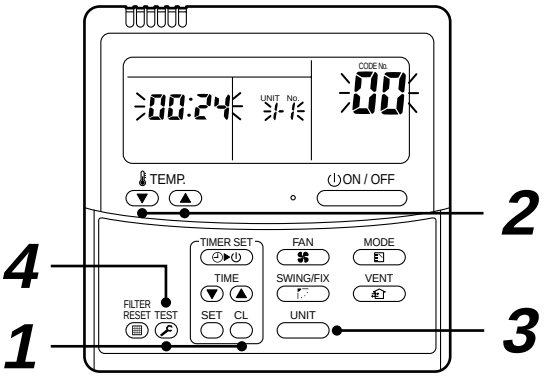
[Procedure]

1 **Push CL + TEST buttons simultaneously for 4 seconds or more to call up the service monitor mode. The service monitor goes on, and temperature of the item code *00* is firstly displayed.**

2 **Push the temperature setup ▼ / ▲ buttons to select the item number (Item code) to be monitored.**
For displayed codes, refer to the table below.

3 **Push UNIT button to change the item to one to be monitored. Then monitor the indoor unit and sensor temperature or operation status in the corresponding refrigerant line.**

4 **Pushing TEST button returns the display to the normal display.**



Operation procedure

1 → ***2*** → ***3*** → ***4***

Returns to the normal display

	Item code	Data name	Unit	Display format
Indoor unit data (NOTE 2)	00	Room temp (During control)	°C	
	01	Room temp (Remote controller)	°C	
	02	Indoor suction temp (TA)	°C	× 1
	03	Indoor coil temp (TCJ)	°C	× 1
	04	Indoor coil temp (TC2)	°C	× 1
	05	Indoor coil temp (TC1)	°C	× 1
	06	Indoor discharge temp (Tf) (NOTE 1)	°C	× 1
	08	Indoor PMV opening	pulse	× 1/10
System data	0A	No. of connected indoor units	unit	
	0b	Total HP of connected indoor units	HP	× 10
	0C	No. of connected indoor units	unit	
	0d	Total HP of outdoor units	HP	× 10

	Item code	Data name	Unit	Display format
Outdoor unit individual data (NOTE 4, 5)	10	Compressor 1 discharge temp (Td1)	°C	× 1
	(11)	Compressor 2 discharge temp (Td2)	°C	× 1
	12	High-pressure sensor detention pressure (Pd)	MPa	× 100
	13	Low-pressure sensor detention pressure (Ps)	MPa	× 100
	14	Suction temp (TS)	°C	× 1
	15	Outdoor heat exchanger temp (TE)	°C	× 1
	16	Temp at liquid side (TL)	°C	× 1
	17	Outside ambient temp (TO)	°C	× 1
	18	Low-pressure saturation temp (TU)	°C	× 1
	19	Compressor 1 current (I1)	A	× 10
	(1A)	Compressor 2 current (I2)	A	× 10
	1b	PMV1 + 2 opening	pulse	× 1/10
	1d	Compressor 1, 2 ON/OFF	—	(NOTE 3)
	1E	Outdoor fan mode	—	0 to 31
	1F	Outdoor unit HP	HP	× 1

(NOTE 1) Only a part of indoor unit types is installed with the discharge temperature sensor. This temperature is not displayed for other types.

(NOTE 2) When the units are connected to a group, data of the header indoor unit only can be displayed.

(NOTE 3) 01 : Compressor 1 only is ON. 10 : Compressor 2 only is ON. 11 : Both compressor 1 and 2 are ON.

(NOTE 4) The item codes are described as the example of the header unit.

(NOTE 5) The upper digit of an item code represents the outdoor unit number.

10. TROUBLESHOOTING

10-1. Troubleshooting Summary

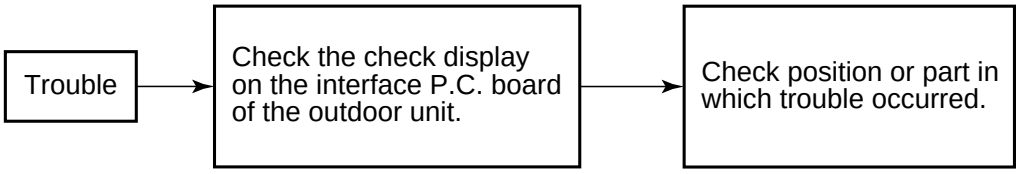
1. Before troubleshooting

1) Required tools / measuring devices
   - Screwdrivers (Philips, Flat), spanner, longnose pliers, nipper, push pin for reset switch, etc.
   - Digital multimeter, thermometer, pressure gauge, etc.
2) Confirmation before check (The following items are not troubles.)

No.	Operation	Check items
1	Compressor does not operate.	• Is it delayed for 3 minutes? (3 minutes after compressor-OFF) • Is thermostat OFF? • Is the fan operating or timer? • Is the system initially communicating? Heating operation cannot be performed under the condition that the outside temperature is 21°C or higher. Cooling operation cannot be performed under the condition that the outside temperature is –5°C or lower.
2	Indoor fan does not work.	• Is cold draft prevention control operating at heating mode?
3	Outdoor fan does not rotate, or fan speed changes.	• Is it in low ambient cooling control? • Is a defrost operation being performed?
4	Indoor fan does not stop.	• Is the fan operating to remove residual heat after heating operation?
5	Start/stop operation on remote controller is unavailable.	• Is an auxiliary unit or remote controller being operated?
6	None	• Are the wire connections on the indoor units and remote controllers correct?

2. Troubleshooting procedure

When a fault has occurred, follow the procedure detailed below.



NOTE) A malfunction of the microprocessor may be caused by power supply inconsistencies and external noise. If there are any noise sources, move remote controller and signal wires away from the noise sources or shield them.

10-2. Check Method

If an trouble occurs, the error code can be retrieved from the main remote controller/central remote controller (LCD display) interface P.C. board (7-segment display).
Using this self diagnostic function, the trouble can be identified using the table below.

NOTE) The AI-NET adapter cannot be mounted to both a slim duct (MMD-APXXXXSPH) type and a compact 4-way (MMU-APXXXXMH) type of the indoor unit.

Check code list

The following list shows all fault codes.

- If check code is from indoor remote controller: See “Main remote controller display” in the list.
- If check code is from outdoor unit: See “Outdoor 7-segment display” in the list.
- If check code is from AI-NET central control remote controller: See “AI-NET central control display” in the list.
- If check code is from indoor unit with wireless remote controller: See “Sensor display of receiving unit” in the list.

IPDU: Intelligent Power Drive Unit
○ : 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				Wireless remote controller				Check code name	Detecting device
Wired remote controller display	Outdoor 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Auxiliary code		Operation	Timer	Ready	Flash		
E01	—	—	—	¤	●	●		Communication error between indoor and remote controller (Detected at remote controller side)	Remote controller
E02	—	—	—	¤	●	●		Remote controller transmission error	Remote controller
E03	—	—	97	¤	●	●		Communication error between indoor and remote controller (Detected at indoor side)	Indoor
E04	—	—	04	●	●	¤		Communication circuit error between indoor/outdoor (Detected at indoor side)	Indoor
E06	E06	No. of indoor units in which sensor has been normally received	04	●	●	¤		Decrease of No. of indoor units	I/F
—	E07	—	—	●	●	¤		Communication circuit error between indoor/outdoor (Detected at outdoor side)	I/F
E08	E08	Duplicated indoor addresses	96	¤	●	●		Duplicated indoor addresses	Indoor / I/F
E09	—	—	99	¤	●	●		Duplicated main remote controllers	Remote controller
E10	—	—	CF	¤	●	●		Communication error between indoor MCU	Indoor
E12	E12	01: Indoor/Outdoor communication 02: Communication between outdoor units	42	¤	●	●		Automatic address start error	I/F
E15	E15	—	42	●	●	¤		Indoor is nothing during automatic addressing	I/F
E16	E16	00: Capacity over 01 ~: No. of connected units	89	●	●	¤		Capacity over / No. of connected indoor units	I/F
E18	—	—	97, 99	¤	●	●		Communication error between indoor units	Indoor
E19	E19	00: Header is nothing 02: Two or more header units	96	●	●	¤		Outdoor units quantity error	I/F
E20	E20	01: Outdoor of other line connected 02: Indoor of other line connected	42	●	●	¤		Other line connected during automatic address	I/F
E23	E23	—	15	●	●	¤		Sending error in communication	I/F
E25	E25	—	15	●	●	¤		Duplicated outdoor addresses	I/F
E31	E31	01: IPDU1 error 02: IPDU2 error 03: IPDU1, 2 error 04: Fan IPDU error 05: IPDU + Fan IPDU error 06: IPDU2 + Fan IPDU error 07: All IPDU error	CF	●	●	¤		IPDU communication error	I/F

Check code				Wireless remote controller				Check code name	Detecting device
Wired remote controller display	Outdoor 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Auxiliary code		Operation	Timer	Ready	Flash		
F01	—	—	0F	¤	¤	●	ALT	Indoor TCJ sensor error	Indoor
F02	—	—	0d	¤	¤	●	ALT	Indoor TC2 sensor error	Indoor
F03	—	—	93	¤	¤	●	ALT	Indoor TC1 sensor error	Indoor
F04	F04	—	19	¤	¤	○	ALT	TD1 sensor error	I/F
F06	F06	—	18	¤	¤	○	ALT	TE1 sensor error	I/F
F07	F07	—	18	¤	¤	○	ALT	TL sensor error	I/F
F08	F08	—	1b	¤	¤	○	ALT	TO sensor error	I/F
F10	—	—	OC	¤	¤	●	ALT	Indoor TA sensor error	Indoor
F12	F12	—	A2	¤	¤	○	ALT	TS1 sensor error	I/F
F13	F13	01: Comp. 1	43	¤	¤	○	ALT	TH sensor error	IPDU
F15	F15	—	18	¤	¤	○	ALT	Outdoor temp. sensor miscabling (TE, TL)	I/F
F16	F16	—	43	¤	¤	○	ALT	Outdoor pressure sensor miscabling (Pd, Ps)	I/F
F23	F23	—	43	¤	¤	○	ALT	Ps sensor error	I/F
F24	F24	—	43	¤	¤	○	ALT	Pd sensor error	I/F
F29	—	—	12	¤	¤	●	SIM	Indoor other error	Indoor
F31	F31	—	1C	¤	¤	○	SIM	Indoor EEPROM error	I/F
H01	H01	01: Comp. 1	IF	●	¤	●		Compressor break down	IPDU
H02	H02	01: Comp. 1	1d	●	¤	●		Magnet switch error Overcurrent relay operation Compressor trouble (lock)	MG-SW Overcurrent relay IPDU
H03	H03	01: Comp. 1	17	●	¤	●		Current detect circuit system error	IPDU
H04	H04	—	44	●	¤	●		Comp 1 case thermo operation	I/F
H06	H06	—	20	●	¤	●		Low pressure protective operation	I/F
L03	—	—	96	¤	●	¤	SIM	Indoor center unit duplicated	Indoor
L04	L04	—	96	¤	○	¤	SIM	Outdoor line address duplicated	I/F
L05	—	—	96	¤	●	¤	SIM	Duplicated indoor units with priority (Displayed in indoor unit with priority)	I/F
L06	L06	No. of indoor units with priority	96	¤	●	¤	SIM	Duplicated indoor units with priority (Displayed in unit other than indoor unit with priority)	I/F
L07	—	—	99	¤	●	¤	SIM	Group line in individual indoor unit	Indoor
L08	L08	—	99	¤	●	¤	SIM	Indoor group/Address unset	Indoor, I/F
L09	—	—	46	¤	●	¤	SIM	Indoor capacity unset	Indoor
L10	L10	—	88	¤	○	¤	SIM	Outdoor capacity unset	I/F
L20	L20	—	98	¤	○	¤	SIM	Duplicated central control addresses	AI-NET, Indoor
L28	L28	—	46	¤	○	¤	SIM	Over No. of connected outdoor units	I/F
L29	L29	01: Comp. IPDU error 02: Fan1 IPDU error 03: Comp. + Fan1 IPDU error 04: Fan2 IPDU error 05: Comp. + Fan2 IPDU error 06: Fan1 + Fan2 IPDU error 07: All IPDU error or disconnection of communication line between IPDU-I/F P.C. board or outdoor I/F P.C. board error	CF	¤	○	¤	SIM	No. of IPDU error	I/F
L30	L30	Detected indoor address	b6	¤	○	¤	SIM	Indoor outside interlock	Indoor
—	L31	—	—		—			Extended I/C error	I/F

* 07 : All IPDU error

Check code				Wireless remote controller				Check code name	Detecting device
Wired remote controller display	Outdoor 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Auxiliary code		Operation	Timer	Ready	Flash		
P01	—	—	11	●	¤	¤	ALT	Indoor fan motor error	Indoor
P03	P03	—	1E	¤	●	¤	ALT	Discharge temp. TD1 error	I/F
P04	P04	01: Comp. 1	21	¤	●	¤	ALT	High-pressure SW system operation	IPDU
P07	P07	01: Comp. 1	IC	¤	●	¤	ALT	Heat sink overheat error	IPDU, I/F
P10	P10	Detected indoor address	Ob	●	¤	¤	ALT	Indoor overflow error	Indoor
P12	—	—	11	●	¤	¤	ALT	Indoor fan motor error	Indoor
P13	P13	—	47	●	¤	¤	ALT	Outdoor liquid back detection error	I/F
P15	P15	01: TS condition 02: TD condition	AE	¤	●	¤	ALT	Gas leak detection	I/F
P19	P19	Detected outdoor unit number	O8	¤	●	¤	ALT	4-way valve inverse error	I/F
P20	P20	—	22	¤	●	¤	ALT	High-pressure protective operation	I/F
P22	P22	*A: Fan motor current error *d: Fan motor lock	1A	¤	●	¤	ALT	Outdoor fan IPDU error	Fan IPDU
P26	P26	01: Comp. 1 side 02: Comp. 2 side	14	¤	●	¤	ALT	G-TR short protection error	IPDU
P29	P29	01: Comp. 1 side 02: Comp. 2 side	16	¤	●	¤	ALT	Comp position detective circuit system error	IPDU
P31	—	—	47	¤	●	¤	ALT	Other indoor unit error (Group terminal unit error)	Indoor
—	—	—	b7	By alarm device			ALT	Error in indoor group	AI-NET
—	—	—	97	—				AI-NET communication system error	AI-NET
—	—	—	99	—				Duplicated network adapters	AI-NET

Error detected by TCC-LINK central control device

Check code				Wireless remote controller				Check code name	Detecting device
Central control device indication	Outdoor 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Auxiliary code		Operation	Timer	Ready	Flash		
C05	—	—	—	—				Sending error in TCC-LINK central control device	TCC-LINK
C06	—	—	—	—				Receiving error in TCC-LINK central control device	TCC-LINK
C12	—	—	—	—				Batch alarm of general-purpose equipment control interface	General-purpose equipment I/F
P30	Differs according to error contents of unit with occurrence of alarm							Group control branching unit error	TCC-LINK
	—	—	(L20 is displayed.)					Duplicated central control addresses	

New check code

1. Difference between the TCC LINK and AI-NET check code

The displaying method of the check code changes in this model and onwards.

	AI-NET check code	TCC Link
Used characters	Hexadecimal notation, 2 digits	Alphabet + Decimal notation, 2 digits
Characteristics of code classification	Few classification of communication/ incorrect setup system	Many classification of communication/incorrect setup system
Block display	Indoor P.C. board, Outdoor P.C. board, Cycle, Communication	Communication/Incorrect setup (4 ways), Indoor protection, Outdoor protection, Sensor, Compressor protection, etc.

Display	Classification
A	Unused
C	Central control system error
E	Communication system error
F	Each sensor error (Failure)
H	Compressor protective system error
J	Unused
L	Setup error, Other errors
P	Protective device operation

Display in wired remote controller

- [⚠] is displayed.
- [UNIT No.] + Check code + Operation lamp (Green) flash

Display on sensor part in wireless remote controller

- Block display of combination of [⏻] [◴] [❁]

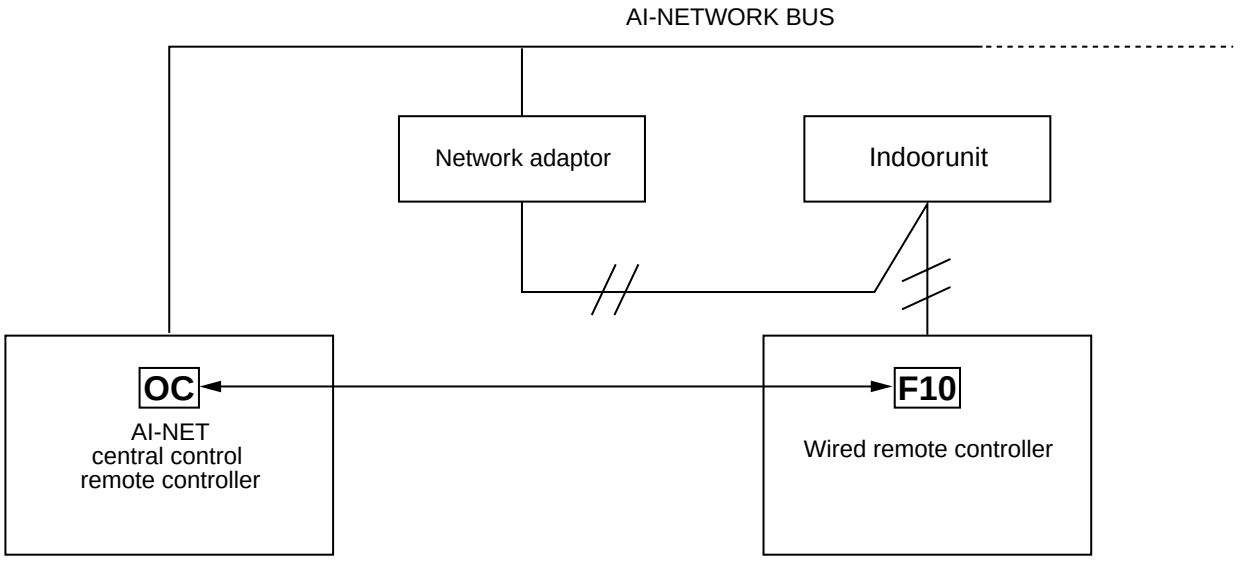
Display on 7-segment in outdoor unit

- Unit No. and check code are displayed.
- In a case of error with auxiliary code, the check code and the auxiliary code are displayed alternately.

2. Special mention

1) If this model is connected to AI-NET by network adaptor, the different check codes are displayed on the main remote controller and AI-NET central control remote controller.

Example) Indoor TA sensor error



2) The check code of the remote controller is displayed only while the air conditioner is operating (remote controller start button ON).

When the air conditioner has stopped and the error has been cleared, the check code display on the remote controller also disappears.

However, if the error continues after the unit has stopped, the check code is immediately displayed when the unit is restarted.

10-3. Troubleshooting by Check Display on Remote Controller

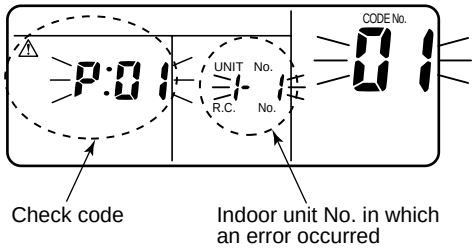
In case of wired remote controller (RBC-AMT31E)

1. Confirmation and check

When a trouble occurs in the air conditioner, the check code and the indoor unit No. are displayed on the of the remote controller.

The check code is displayed while the air conditioner operates.

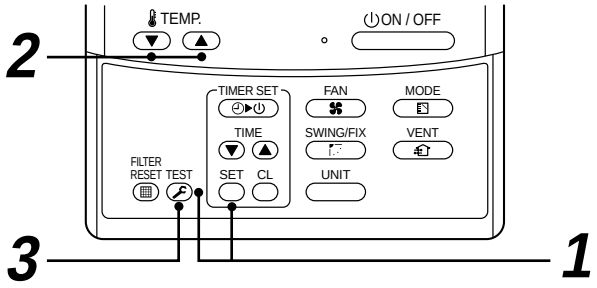
If the display has disappeared, operate the air conditioner and check the error based upon the following “Confirmation of error history”.

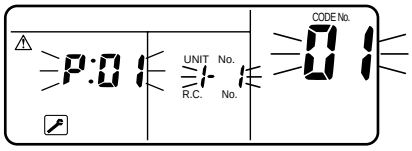


2. Confirmation of error history

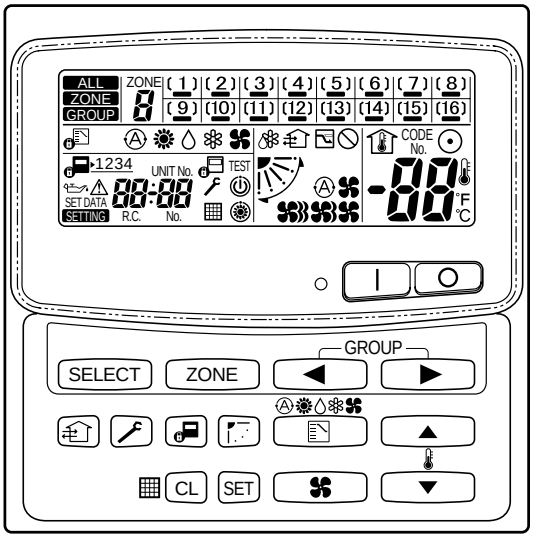
If a trouble occurs in the air conditioner, the error history can be found with the following procedure. (Up to 4 error histories are stored in the memory.)

This history can be confirmed from either operating status or stop status.



Procedure	Description
1	When pushing SET and TEST buttons simultaneously for 4 seconds or more, the below display appears. If [Service Check] is displayed, the mode enters the error history mode. • [01: Error history order] is displayed in code number window. • [Check Code] is displayed in code number window. • [Indoor unit address with error] is displayed in UNIT No. 
2	Each successive push of the temp. set ▼ / ▲ buttons, the error histories stored in the memory are displayed in order. The numbers in item code indicates item code [01] (most recent) to [04] (Oldest). **CAUTION** If [CL] button is pushed all of the error histories of the indoor unit will be deleted.
3	After confirmation, push TEST button to return to the usual display.

In case of central remote controller (TCB-SC642TLE)

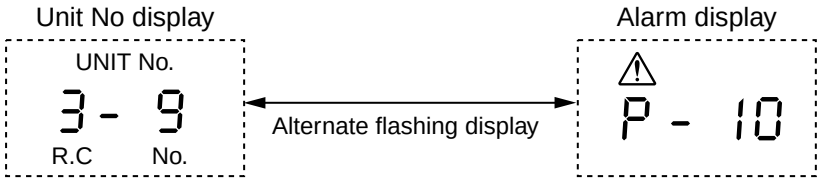


1. Confirmation and check

When a trouble occurred on the air conditioner, the check code and the indoor unit No. are displayed on the display section of the remote controller.

The check code is displayed while the air conditioner operates.

If the display disappeared, operate the air conditioner and check the error based upon the following “Confirmation of error history”.

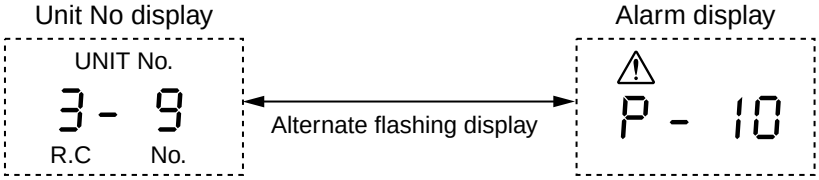


2. Confirmation of error history

When a trouble occurred on the air conditioner, the error history can be confirmed with the following procedure. (Up to 4 error histories are stored in memory.)

This history can be confirmed from either operating or stop.

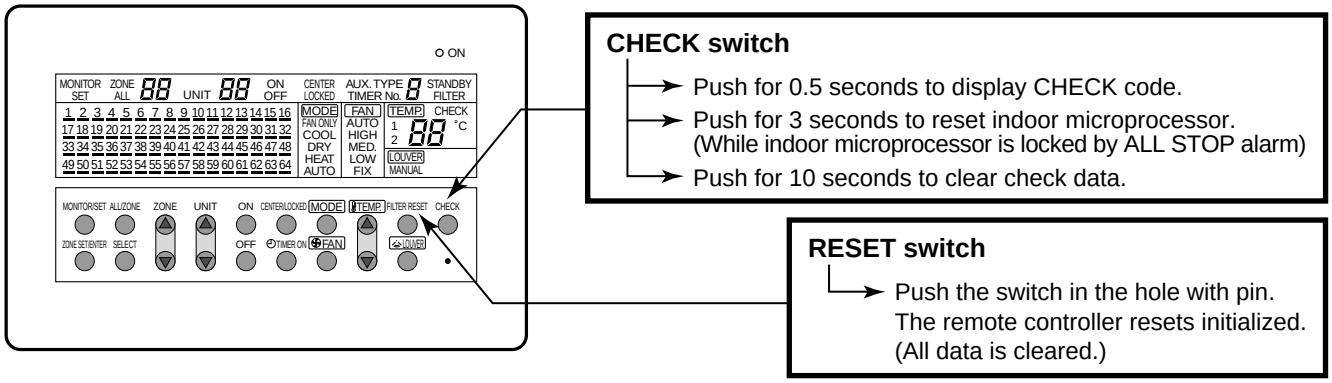
1) Push [🔧] and [SET] buttons in succession for 4 seconds or more.
2) SERVICE CHECK [🔧] goes on and Item code 01 goes on.
3) When selecting (flash) the group number if there is the alarm history, the UNIT number and the latest alarm history are displayed alternately.
   * In this time, the temperature cannot be set up.
4) To confirm the alarm history other than the latest one, push temp. set [▲] / [▼] to select Item code (01 to 04).
5) To confirm the alarm in the other group, push [ZONE] and [GROUP ◀] [GROUP ▶] to select the group number.
   Do not push [CL] button because all the alarm histories of the currently selected group are deleted.
6) To finish the service check, push [🔧] button.



In case of AI-NET central remote controller

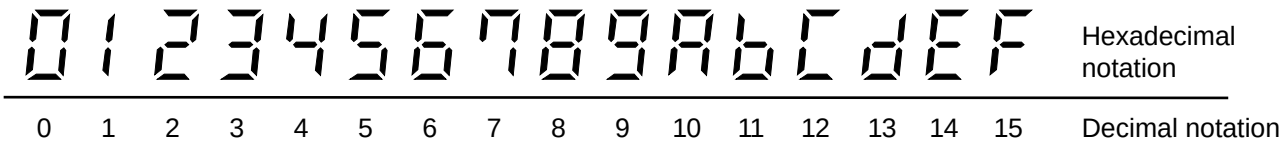
1. Operation for CHECK display

When pushing the CHECK switch, the indoor unit No. (Network address No.) including the check data is displayed in the UNIT No. display section, and the check code is displayed in the set up temp. display section.

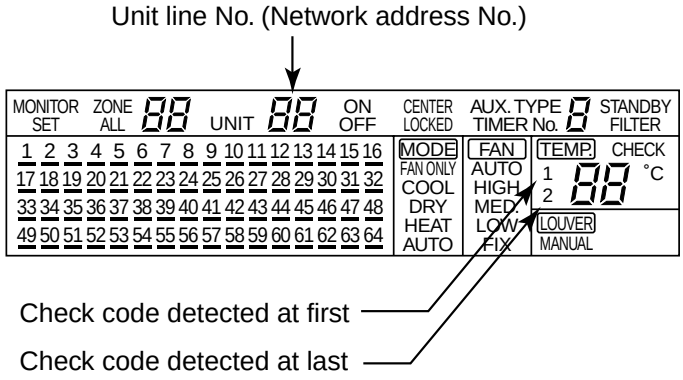


2. Reading of CHECK monitor display

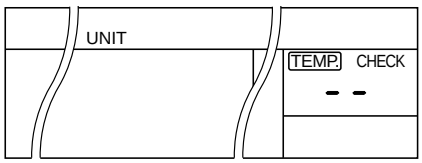
7 segment display



Display on CHECK monitor

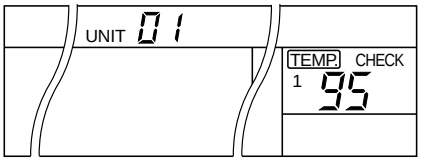


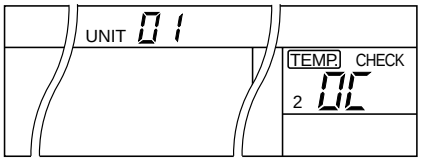
(Example)
There is no check data.

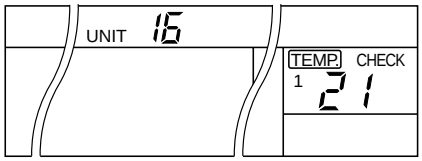


CHECK data

(Example)
In No.1 unit, first the interconnection wire (bus communication line) of indoor/outdoor has failed.
Next, the room temp. sensor is defective.
For No.16 unit, the high pressure switch at the inverter unit side operates.







10-4. Check Code and Check Position Displayed on the Remote Controller and Outdoor Unit (7-Segment Display of Interface)

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
E01	—	—	—	Remote controller	Communication error between indoor and remote controller (Detected at remote controller side)	Corresponding unit only stops.	Communication interrupted between indoor P.C. board and remote controller.	• Check remote controller inter-unit cable (A/B). • Check disconnection, connector contact error. • Check indoor power supply. • Check indoor P.C. board error. • Check remote controller address setup. (When two remote controllers operate) • Check remote controller P.C. board.
E02	—	—	—	Remote controller	Remote controller sending error	Corresponding unit only stops.	Signal could not be sent from remote controller to indoor unit.	• Check the communication wire of remote controller: Exchange remote controller.
E03	—	—	97	Indoor unit	Communication error between indoor and remote controller (Detected at indoor side)	Corresponding unit only stops.	No communication from remote controller (including wireless) and communication adapter.	• Check remote controller and communication adapter wiring.
E04	—	—	4	Indoor unit	Indoor/outdoor communication circuit error (Detected at indoor side)	Corresponding unit only stops.	Indoor unit does not receive communication from outdoor unit.	• Check power-ON order of indoor/outdoor. • Check indoor address setup. • Check inter-unit cabling between indoor and outdoor. • Check outdoor end terminal resistance setup (SW30-2).
E06	E06	No. of indoor units which received signal normally	4	I/F	Decreased number of indoor units	All stop	When signal is not sent for a certain period from the indoor unit which has been used to send signals, [E06] is normally displayed.	• Check the power supply of indoor unit. (Power-ON) • Check connection of communication line between indoor and outdoor. • Check connector connection for communication in indoor P.C. board. • Check connector connection for communication in outdoor P.C. board. • Check indoor P.C. board failure. • Check outdoor P.C. board (I/F) failure.
—	E07	—	—	I/F	Indoor/outdoor communication circuit error (Detected at outdoor side)	All stop	Transmission from outdoor to indoor cannot continue for 30 seconds.	• Check outdoor terminator resistor setup (SW30-2). • Check the communication connection between indoor and outdoor.
E08	E08	Duplicated indoor addresses	96	Indoor I/F	Duplicated indoor addresses	All stop	Multiple indoor unit address setup are duplicated.	• Check indoor address. • Check the change of remote controller connection (Group / individual) after setup of indoor address.
E09	—	—	99	Remote controller	Duplicated master remote controllers	Corresponding unit only stops.	In 2-remote controller control (including wireless), both are setup as master (Header indoor unit stops and other indoor unit is operating.)	• Check remote controller setup. • Check remote controller P.C. board.
E10	—	—	CF	Indoor unit	Communication error between indoor P.C. board assembly	Corresponding unit only stops.	There is any trouble in power line.	• Indoor P.C. board failure

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
E12	E12	01: Indoor/outdoor communication 02: Between outdoors communication	42	I/F	Automatic address start error	All stop	• When indoor automatic address started, other refrigerant circuit system was setting automatic address. • When outdoor automatic address started, indoor automatic address was executed.	• Setup the address again after disconnecting communication connection with other refrigerant circuit system.
E15	E15	—	42	I/F	No corresponding indoor unit during automatic address	All stop	Indoor unit is not found when indoor automatic address start was set up.	• Check the communication line connection between indoor and outdoor. • Check the electric power line error in indoor. • Check the noise of surrounding devices. • Power failure • Check indoor P.C. board error.
E16	E16	00: Capacity over 01 to: No. of connected units	89	I/F	No. of connected indoor units / Capacity over	All stop	• Total capacity of indoor units exceeded 135% of total outdoor capacity. • No. of connected indoor units are more than 48 units. **[Note]** If this code appears , set up “No. capacity-over detection”. **Setup method of “No. capacity-over detection”** Turn on SW09/Bit 2 on I/F P.C. board of outdoor unit.	• Check the connection capacity of indoor unit. • Check the HP capacity of indoor unit. • Check the indoor/outdoor capacity setup • Check the No. of connected indoor units. • Check the outdoor I/F P.C. board error
E18	—	—	97, 99	Indoor unit	Communication error between indoor header and follower units	Corresponding unit only stops.	Regular communication between indoor header and follower units	• Check cable of the remote controller. • Check power cabling of indoor. • Check P.C. board of indoor.
E19	E19	00: No header unit 02: Two or more header units	96	I/F	Outdoor unit quantity error	All stop	• There are multiple outdoor units in 1 line. • There is none of outdoor unit in 1 line.	The outdoor unit connected with communication cable between indoor and outdoor (U1.U2) is the outdoor unit. • Check connection of communication line between indoor and outdoor. • Check outdoor P.C. board(I/F) error.
E20	E20	01: Connection of outdoor of other line 02: Connection of indoor of other line	42	I/F	Other line unit connected during automatic address	All stop	Unit of other line was connected when indoor automatic address started.	Separate the cable between lines according to automatic address setup method in “Address setup”.
E23	E23	—	15	I/F	Communication sending error	All stop	Transmission of other outdoor unit was unavailable for 30 seconds or more.	In this model, only one outdoor unit is provided to one refrigerant line. Be sure to check there is no communication connection with outdoor unit in the other refrigerant line.
E25	E25	—	15	I/F	Duplicated outdoor follower address setup	All stop	Outdoor addresses manually set up are duplicated.	**Note)** Do not set up the outdoor address manually.
E31	E31	01: Comp IPDU error 02: Fan 1 IPDU error 03: Comp + Fan 1 IPDU error 04: Fan 2 IPDU error 05: Comp + Fan 2 IPDU error 06: Fan 1 + Fan 2 IPDU error 07: All IPDU error or communication error between IPDU and I/F P.C. board or outdoor I/F P.C. board error	CF	I/F	IPDU communication error	All stop	Communication of each IPDU (P.C. board) in inverter box interrupted.	• Check connection of communication connector and disconnection between IPDU and I/F P.C. board. • Check outdoor P.C. board (I/F, IPDU, Fan IPDU) error. • Check external noise.

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
F01	—	—	OF	Indoor unit	Indoor TCJ sensor error	Corresponding unit only stops	• Resistance value of sensor is infinite or zero. (Open/Short)	• Check connection/cabling of TCJ sensor connector. • Check characteristics of TCJ sensor resistance value. • Check indoor P.C. board error.
F02	—	—	Od	Indoor unit	Indoor TC2 sensor error	Corresponding unit only stops.	• Resistance value of sensor is infinite or zero (Open/Short).	• Check connection/cabling of TC2 sensor connector. • Check characteristics of TC2 sensor resistance value. • Check indoor P.C. board error.
F03	—	—	93	Indoor unit	Indoor TC1 sensor error	Corresponding unit only stops.	• Resistance value of sensor is infinite or zero (Open/Short).	• Check connection/cabling of TC1 sensor connector. • Check characteristics of TC1 sensor resistance value. • Check indoor P.C. board error.
F04	F04	—	19	I/F	TD1 sensor error	All stop	• Resistance value of sensor is infinite or zero (Open/Short)	• Check connection of TD1 sensor connector. • Check characteristics of TD1 sensor resistance value. • Check outdoor P.C. board (I/F) error.
F06	F06	—	18	I/F	TE1 sensor error	All stop	• Resistance value of sensor is infinite or zero (Open/Short).	• Check connection of TE1 sensor connector. • Check characteristics of TE1 sensor resistance value. • Check outdoor P.C. board (I/F) error.
F07	F07	—	18	I/F	TL sensor error	All stop	• Resistance value of sensor is infinite or zero (Open/Short).	• Check connection of TL sensor connector. • Check characteristics of TL sensor resistance value. • Check outdoor P.C. board (I/F) error.
F08	F08	—	1b	I/F	TO sensor error	All stop	• Resistance value of sensor is infinite or zero (Open/Short).	• Check connection of TO sensor connector. • Check characteristics of TO sensor resistance value. • Check outdoor P.C. board (I/F) error.
F10	—	—	OC	Indoor	Indoor TA sensor error	Corresponding unit only stops.	• Resistance value of sensor is infinite or zero (Open/Short).	• Check connection/cabling of TA sensor connector. • Check characteristics of TA sensor resistance value. • Check indoor P.C. board error.
F12	F12	01: TS1	A2	I/F	TS1 sensor error	All stop	• Resistance value of sensor is infinite or zero (Open/Short).	• Check connection of TS1 sensor connector. • Check characteristics of TS1 sensor resistance value. • Check outdoor P.C. board (I/F) error.
F13	F13	01: Compressor 1	43	IPDU	TH sensor error	All stop	• Resistance value of sensor is infinite or zero (Open/Short).	• IGBT built-in temp sensor error → Exchange IPDU P.C. board.
F15	F15	—	18	I/F	Outdoor temp sensor miscabling (TE1, TL)	All stop	During operation of compressor in HEAT mode, the TE1 detection temp was higher than that of TL by the specified value continued for 3 minutes or more.	• Check installation of TE1 sensor and TL sensor. • Check characteristics of TE1 and TL sensor resistance value. • Check outdoor P.C. board (I/F) error.
F16	F16	—	43	I/F	Outdoor pressure sensor miscabling (Pd, Ps)	All stop	High-pressure Pd sensor and low-pressure Ps sensor were exchanged, or output voltages of both sensors are zero.	• Check connection of high-pressure Pd sensor connector. • Check connection of low-pressure Ps sensor connector. • Check pressure sensors Pd and Ps error. • Check outdoor P.C. board (I/F) error. • Check compression error of compressor.

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
F23	F23	—	43	I/F	Ps sensor error	All stop	Output voltage of Ps sensor was zero.	• Misconnection of Ps sensor and Pd sensor connectors • Check connection of Ps sensor connector. • Check Ps sensor error. • Check compression error of compressor. • Check 4-way valve error. • Check outdoor P.C. board (I/F) error. • Check SV4 circuit error.
F24	F24	—	43	I/F	Pd sensor error	All stop	Output voltage of Pd sensor was zero. (Sensor Open) Pd > 4.15MPa during stop of compressor	• Check connection of Pd sensor connector. • Check Pd sensor error. • Check outdoor P.C. board (I/F) error.
F29	—	—	12	Indoor	Indoor other error	Corresponding unit only stops.	Indoor P.C. board did not operate normally.	• Check indoor P.C. board error (EEPROM error).
F31	F31	—	1C	I/F	Outdoor EEPROM error	All stop (*1)	Outdoor P.C. board (I/F) did not operate normally.	• Check power voltage. • Check power noise. • Check outdoor P.C. board (I/F) error.
H01	H01	01: Compressor 1	1F	IPDU	Compressor breakdown	All stop	Inverter current detection circuit detected over-current and stopped.	• Check power voltage. (AC220–240V ± 10%). • Check compressor error. • Check cause of abnormal overload operation. • Check outdoor P.C. board (IPDU) error.
H02	H02	01: Compressor 1	1d	IPDU	Compressor error (lock)	All stop	Over-current was detected several seconds after compressor had started.	• Check compressor error. • Check power voltage. (AC220–240V ± 10%). • Check cable of compressor and phase-missing. • Check connector/terminal connection on IPDU P.C. board. • Check conduction of case heater. (Check activation error due to liquid stagnation in compressor.) • Check outdoor P.C. board (IPDU) error.
H03	H03	01: Compressor 1	17	IPDU	Current detection circuit system error	All stop	While compressor stopped, current flowed more than the specified amount.	• Check cabling of current detection circuit system. • Check outdoor P.C. board (IPDU) error.
H04	H04	—	44	I/F	Compressor 1 case thermo operation	All stop	Compressor 1 case thermostat performed protective operation.	• Check compressor 1 case thermo circuit. (Connector, cable, P.C. board) • Check full opening of service valve. (Gas and liquid side) • Check outdoor PMV clogging. • Check SV4 circuit leakage. • Check miscabling/misinstallation of SV4. • Check valve open status of indoor PMV. • Check 4-way valve error. • Check refrigerant shortage. • Check SV5 leak.

(*1) All stop only in case of the header unit The follower unit continues operation.

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
H06	H06	—	20	I/F	Low-pressure protective operation	All stop	Low-pressure Ps detected operation lower than 0.02MPa.	• Check full opening of service valve. (Discharge gas and liquid side) • Check outdoor PMV clogging. • Check SV2 circuit and SV4 circuit error. • Check low-pressure Ps sensor error. • Check indoor air filter clogging. • Check valve open of indoor PMV. • Check refrigerant pipe clogging. • Check outdoor fan operation. (In heating mode) • Check refrigerant shortage. • Check 4-way valve error. (Reversed error.).
L03	—	—	96	Indoor	Duplicated indoor center units	Corresponding unit only stops.	There are multiple header units in a group.	• Check indoor address. • Check the change of remote controller connection (Group/individual) after indoor address setup.
L04	L04	—	96	I/F	Duplicated outdoor line address	All stop	Line address setup is duplicated against the outdoor unit in different refrigerant pipe system.	• Check line address.
L05	—	—	96	I/F	Duplicated indoor units with priority (Displayed on indoor unit with priority)	All stop	Indoor units with priority were duplicated.	• Check display of indoor unit with priority.
L06	L06	No. of indoor units with priority	96	I/F	Duplicated indoor units with priority (Displayed on the unit other than indoor unit with priority)	All stop	Indoor units with priority were duplicated.	• Check display of indoor unit with priority and outdoor unit.
L07	—	—	99	Indoor	Group line in individual indoor unit.	Corresponding unit only stops.	At least one indoor unit connected to a group existed in the individual indoor units.	• Check indoor address.
L08	L08	—	99	Indoor	Indoor group / address unset	Corresponding unit only stops.	Address was not yet set up.	• Check indoor address. **Note)** After installation, this code is displayed when the power is first turned on.
L09	—	—	46	Indoor	Indoor capacity unset	Corresponding unit only stops.	Indoor unit capacity was unset.	Set up indoor capacity. (DN=11)
L10	L10	—	88	I/F	Outdoor capacity unset	All stop	On the I/F P.C. board for service, jumper line was not cut according to the model.	Check model setup on outdoor I/F P.C. board A'ssy for service.
L20	—	—	98	AI-NET, Indoor	Duplicated central control addresses	All stop	Duplicated central control addresses	• Check central control address. • Check network adaptor P.C. board. (In case of AI-NET)
L28								

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
L29	L29	01: Comp IPDU error 02: Fan 1 IPDU error 03: Comp + Fan 1 IPDU error 04: Fan 2 IPDU error 05: Comp + Fan 2 IPDU error 06: Fan 1 + Fan 2 IPDU error 07: All IPDU error or communication error between IPDU and I/F P.C. board, or outdoor I/F P.C. board error	CF	I/F	IPDU quantity error	All stop	No. of IPDU units detected when power was turned on were less.	• Check model setup for outdoor I/F service P.C. board. • Check connection of UART communication connector. • Check IPDU, fan IPDU, and I/F P.C. board error. **Note)** UART: Universal Asynchronous Receiver Transmitter
L30	L30	Detected indoor address	b6	Indoor	Interlock in indoor unit from outside	Corresponding unit only stops.	• Outside error input terminal Detected signal to (CN80) for more than 1 minute	■ Outside device is connected to connector (CN80): 1) Check outside device error. 2) Check indoor P.C. board error. ■ Outside device is not connected to connector (CN80): 1) Check indoor P.C. board error.
—	L31	—	—	I/F	Extended IC (Integrated Circuit) error	Operation continues.	P.C. board (I/F) parts error	Check indoor (I/F) P.C. board.
P01	—	—	11	Indoor	Indoor fan motor error	Corresponding unit only stops.		• Check the lock of fan motor (AC fan). • Check cabling.
P03	P03	—	1E	I/F	Discharge temp TD1 error	All stop	Discharge temp (TD1) exceeded 115°C.	• Check full opening of outdoor service valves (Gas side, Liquid side). • Check clogging of outdoor PMV. • Check characteristics of TD1 sensor resistance value. • Check refrigerant shortage. • Check 4-way valve error. • Check leakage of SV4 circuit. • Check SV4 circuit. (Miswiring and misinstallation of SV4) • Check leakage of SV5 circuit.
P04	P04	01: Compressor 1	21	I/F	Actuation of high-pressure SW	All stop	High-pressure SW actuated.	• Check Pd pressure sensor error. • Check full opening of outdoor service valves (Gas side, Liquid side). • Check outdoor fan error. • Check outdoor fan motor error. • Check clogging of outdoor PMV. • Check clogging of indoor/outdoor heat exchangers. • Check short-circuiting of outdoor suction/discharge air. • Check clogging of SV2 circuit. • Check outdoor P.C. board (I/F) error. • Check indoor fan system error. (Cause of air volume decrease) • Check opening of indoor PMV. • Check miscabling of communication line between indoor and outdoor. • Check operation error of check valve of discharge pipe. • Check SV4 valve circuit. • Check SV5 valve circuit. • Check refrigerant overcharge.
P07	P07	01: Compressor 1	1C	IPDU I/F	Heat sink overheat error	All stop	IGBT built-in temp sensor (TH) was overheated.	• Check power voltage. • Check outdoor fan system error. • Check clogging of heat sink cooling duct. • Check fixation between IGBT and heat sink. (Check screwing and contact.) • Check IPDU error.(IGBT built-in temp sensor (TH) error).

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
P10	P10	Indoor address with trouble	Ob	Indoor	Indoor overflow error	All stop	• Float switch operated. • Float switch circuit disconnected or the connector came off.	• Check the float switch connector. • Check operation of drain pump unit. • Check the drain pump circuit. • Check clogging of drain pipe. • Check indoor P.C. board error.
P12	—	—	11	Indoor	Indoor fan motor error	Corresponding unit only stops.	• The value of motor speed deviated from target value was detected for certain time. • Over-current protection operated.	• Check connection of fan connector and wiring. • Check fan motor error. • Check indoor P.C. board error. • Check influence of outside air control. • Check indoor type code (DN=10) and the capacity code (DN=11).
The standard ducted unit air conditioner utilizes a direct current (DC) indoor fan motor that features current limiting protection. In the event power is not isolated prior to service, the protective control circuit will activate and stop the unit operating. The check code “P12”will be displayed on the remote controller-once service work has been completed, this code can be cleared by switching off then on the electrical isolation device of the indoor unit and pressing the operation stop button on the remote controller to reset the system								
P13	P13	—	47	I/F	Outdoor liquid back detection error	All stop	**In heating** While the system is operating in HEAT mode, outdoor PMV of which opening degree was 100 pulse or less for a certain time.	• Check full close operation of outdoor PMV • Check Pd and Ps sensor error. • Check clogging of SV2 circuit. • Check clogging of 4-way valve error circuit. • Check outdoor P.C. board (I/F) error. • Check capillary clogging of oil return circuit from oil separator. • Check TS sensor error.
P15	P15	01: TS condition	AE	I/F	Gas leak detection (TS1 condition)	All stop	Suction temp exceeded the judgment standard temp for 10 minutes or more. **TS error judgment standard temperature** In cooling operation: 60°C or higher In heating operation: 40°C or higher	• Check refrigerant shortage. • Check full open of outdoor service valves (gas side, liquid side). • Check outdoor PMV clogging. • Check characteristics of TS1 sensor resistance value. • Check 4-way valve error. • Check leakage of SV4 circuit. • Check leakage of SV5 circuit.
		02: TD condition	AE	I/F	Gas leak detection (TD condition)	All stop	Discharge temperature TD1 or TD2 was continuously 108°C or higher for 10 minutes.	• Check refrigerant shortage. • Check outdoor PMV clogging. • Check characteristics of TD1, TD2 sensor resistance value. • Check indoor air filter clogging. • Check pipe clogging. • Check SV circuit (Valve leakage, misinstallation) • Check mispiping of discharge gas/suction gas main pipe.
P17	P17	—	bb	I/F	Discharge temp TD2 error	All stop	Discharge temperature (TD2) exceeded 115°C.	• Check full opening of outdoor service valves (gas side, liquid side). • Check clogging of outdoor PMV. • Check characteristics of TD2 sensor resistance value. • Check 4-way valve error. • Check leakage of SV4 circuit. • Check SV4 circuit. • Check leakage of SV5 valve circuit. • Check mispiping of discharge gas/suction gas main pipe.

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
P19	P19	Detected outdoor unit No.	8	I/F	4-way valve operation error	All stop	When abnormal refrigerating cycle data was detected in heating	• Error of 4-way valve error • Check coil error and connector connection of 4-way valve. • Check characteristics of TS1/TE1 sensor resistance value. • Check characteristics of Pd, Ps pressure sensor output voltage. • Check misconnection of TE1 and TL sensors.
P20	P20	—	22	I/F	High-pressure protective operation	All stop	Pd sensor detected 3.6MPa or more.	• Check Pd pressure sensor error. • Check full opening of service valves (Gas side, Liquid side). • Check outdoor fan error. • Check outdoor fan motor error. • Check clogging of outdoor PMV. • Check clogging of indoor/outdoor heat exchangers. • Check air short-circuiting in outdoor unit. • Check clogging of SV2 circuit. • Check outdoor P.C. board (I/F) error. • Check indoor fan system error. (Cause of air volume decrease) • Check valve opening of indoor PMV. • Check miscabling of communication line between indoor and outdoor. • Check operation error of check valve of discharge pipe. • Check circuit of gas balance SV4 valve. • Check mispiping of discharge gas/suction gas main pipe. • Check operation error of check valve of discharge gas pipe. • Check clogging of circuit at auxiliary heat exchanger side. (Miswiring, Disconnection, Wiring missing) • Check circuit of SV5 valve. • Check refrigerant overcharge.
P22	P22	*A: Fan motor current error	1A	FAN-IPDU	Outdoor fan IPDU error	All stop	**(Auxiliary code: *A)** • Short-circuit current was detected when 2 seconds or more passed after start time. • Over-current was detected when 30 seconds or more passed after start time.	• Check power supply voltage. • Check fan IPDU error.
		*d: Fan motor lock			G-Tr short-circuit protection error	All stop	**(Auxiliary code: *d)** • Abnormal current was detected within 30 seconds after start time.	• Check fan motor. (Lock, phase missing) • Check cause of abnormal overload at start time. • Check connection of connector to fan motor.
P26	P26	01: Compressor 1	14	IPDU		All stop	Instantaneous over-current was detected when compressor started.	• Check connector connection and wiring on IPDU P.C. board. • Check compressor error and defect of compressor coil. • Check outdoor P.C. board (IPDU) error.
P29	P29	01: Compressor 1	16	IPDU	Compressor position detection circuit error	All stop	Position detected was not normal.	• Check connector connection and wiring. • Check compressor error and defect of compressor coil. • Check P.C. board (IPDU) error.
P31	—	—	47	Indoor	Other indoor error (Group follower unit error)	Corresponding unit only stops.	E07/L07/L03/L08 was detected when other indoor unit in the group was defective.	• Check indoor P.C. board.

Error detected by TCC-LINK central control device

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Display on central control device	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
C05	—		—	TCC-LINK	TCC-LINK central control device transmission error	Operation continued.	Signal is not transmit from central control device.	• Check central control device error. • Check communication line error of central control device. • Check setup of terminator resistor.
C06	—		—		TCC-LINK central control device receiving error	Operation continued.	Signal is not received from central control device.	• Check central control device error. • Check communication line error of central control device. • Check setup of terminator resistor. • Check the power of connecting destination connected device. • Check P.C. board error of the connected device.
C12	—		—	HA control interface	Interface batch alarm of HA control interface	Operation continued.	Error was input in HA control interface	• Check error input.
P30	Differs according to error contents of the with alarm			TCC-LINK	Follower unit error of group control	Operation continued.	An error occurred in follower unit of the group control. ([P30] is displayed only on the central remote controller.)	• Check the error code of the unit with alarm.
	(L20 is displayed.)				Duplicated central control address	Operation continued.	Central control addresses were duplicated.	• Check the address setup.

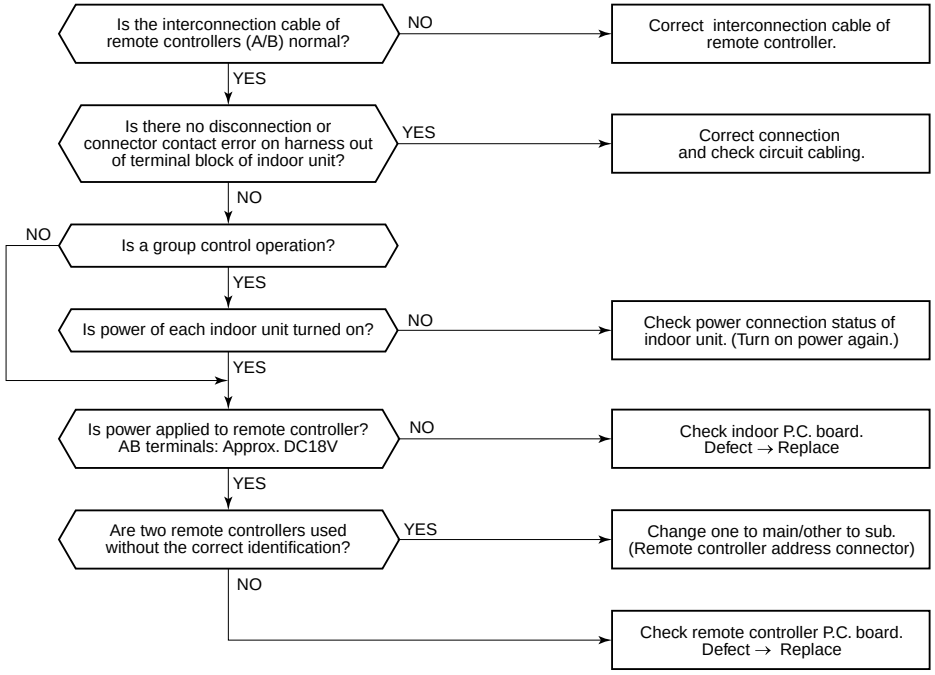
Error detected by AI-NET central control device

Check code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Main remote controller	Outdoor 7-segment display		AI-NET central control remote controller					
	Check code	Auxiliary code						
—	—	—	97	AI-NET	AI-NET communication system error	Operation continued.	E07/L07/L03/L08 was detected when other indoor unit in the group was defective.	• Check multiple network adapters. • Check wire and miscabling of remote controller: Only one network adapter can be connected to communication line of remote controller.
—	—	—	99	AI-NET	Duplicated network adapters	Operation continued.	Multiple network adapters were connected to communication line of remote controller. (Detected at central controller side)	• Check communication line, miscabling, and power of indoor unit. • Check communication. (X, Y terminals) • Check network adapter P.C. board. • Check the central controller (Central control remote controller, etc.)
—	—	—	b7	AI-NET	Error in indoor group	Operation continued.	Error of follower unit in the group	• Check follower unit in the group.

* These errors are concerned to communication of remote controllers (A, B) and central system [AI-NET X, Y], and the main remote controller displays [E01], [E02], [E03], [E09], or [E18] in some cases and displays none in other cases according to the error.

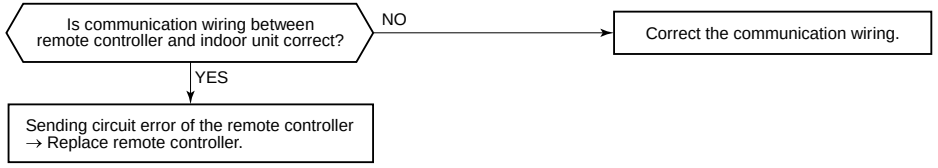
10-5. Diagnosis Procedure for Each Check Code

Check code	Check code name	Cause of operation
[E01] / [–] (TCC-L / AI-NET)	**Communication error between indoor and remote controller (Detected at remote controller side)**	1. Remote controller interconnecting cable error 2. Indoor power supply error 3. Indoor P.C. board error 4. Remote controller address setup error 5. Remote controller P.C. board error



Check code	Check code name	Cause of operation
[E02] / [–] (TCC-L / AI-NET)	**Remote controller sending error**	Signal could not be sent to indoor unit. Check the communication wire of the remote controller.

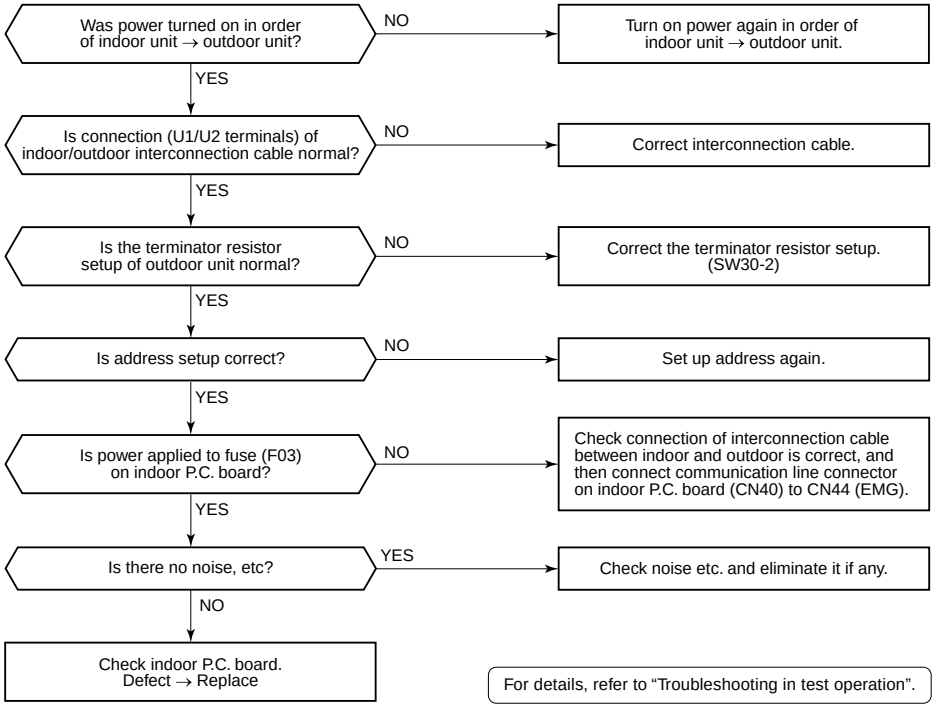
* It is not displayed on 7-segment display of the central control controller.



Check code	Check code name	Cause of operation
[E03] / [97] (TCC-L / AI-NET)	**Communication error between indoor and remote controller (Detected at indoor side)**	No communication from remote controller and communication adaptor

This error is detected when the indoor unit cannot receive a signal from the remote controller.
Check communication wiring of the remote controllers A and B.
As communication is impossible, this fault code [E03] is not displayed on the main remote controller.
It is displayed on TCC-LINK central controller.

Check code	Check code name	Cause of operation
[E04] / [04] (TCC-L / AI-NET)	**Indoor/Outdoor communication circuit error (Detected at indoor side)**	1. Power of outdoor unit was firstly turned on. 2. Connection error of communication line between indoor and outdoor 3. Terminal resistance setup error on outdoor unit. 4. Address setup error

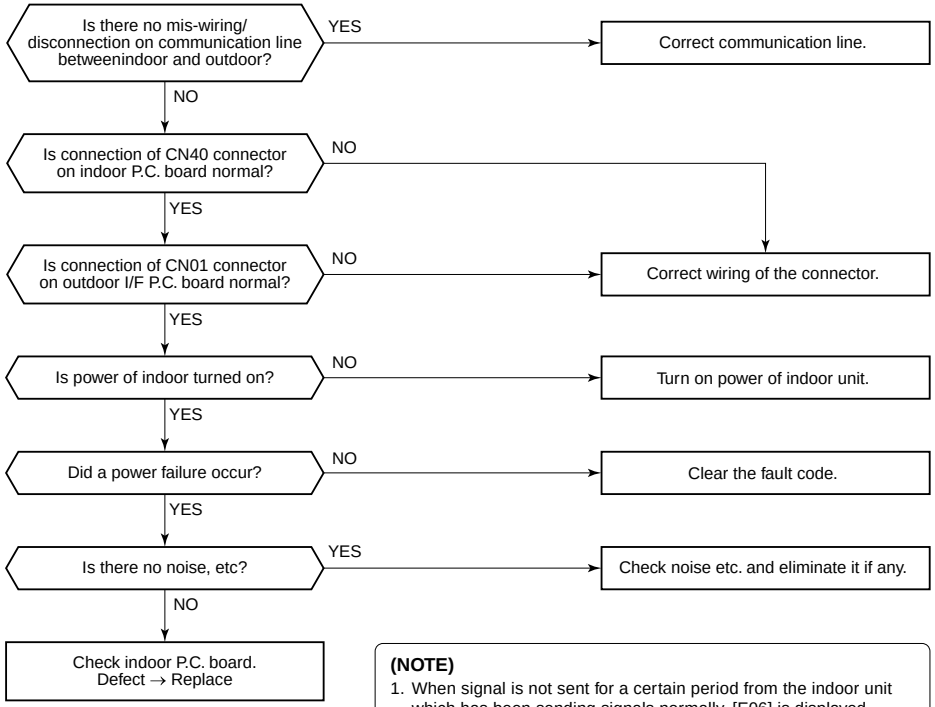


For details, refer to “Troubleshooting in test operation”.

1st revised : Jun. 2006

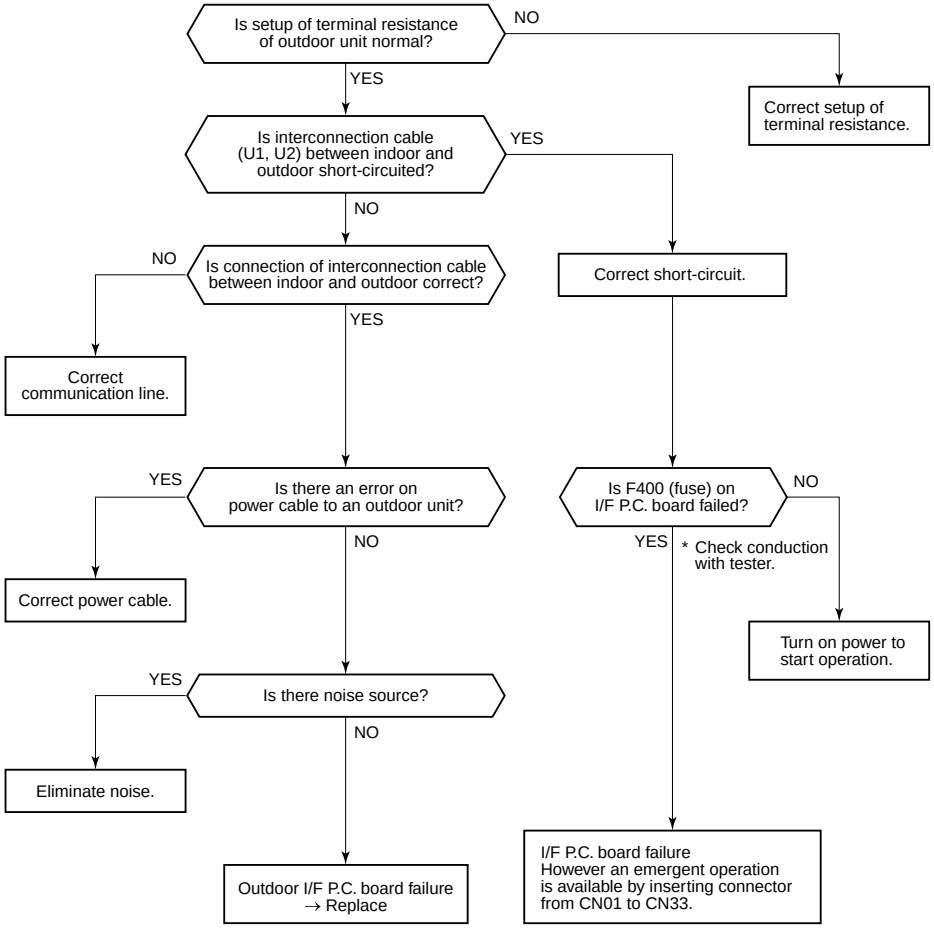
Check code	Check code name	Cause of operation
[E06] / [04] (TCC-L / AI-NET)	**Decreased number of indoor units**	1. Communication lines (U1, U2) connection error between indoor and outdoor 2. Connector connection error of communication for indoor P.C. board 3. Connector connection error of communication for outdoor I/F P.C. board 4. Power supply of indoor unit (Is power turned on?)

Auxiliary code: No. of indoor units which received signals normally



(NOTE)
1. When signal is not sent for a certain period from the indoor unit which has been sending signals normally, [E06] is displayed.

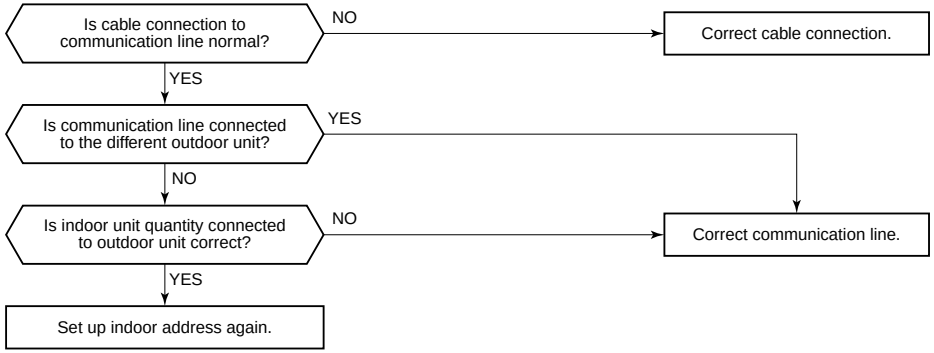
Check code	Check code name	Cause of operation
[E07] / [–] (TCC-L / AI-NET)	**Indoor/Outdoor communication circuit error (Detected at outdoor side)**	1. Outdoor communication terminal resistance setup error 2. Indoor/outdoor communication connection error



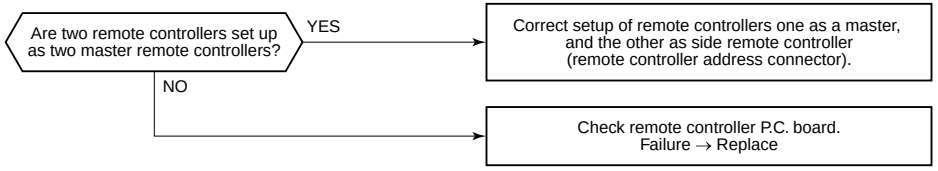
Check code	Check code name	Cause of operation
[E08] / [96] (TCC-L / AI-NET)	**Duplicated indoor addresses**	Indoor addresses are duplicated.

Auxiliary code: Duplicated indoor address

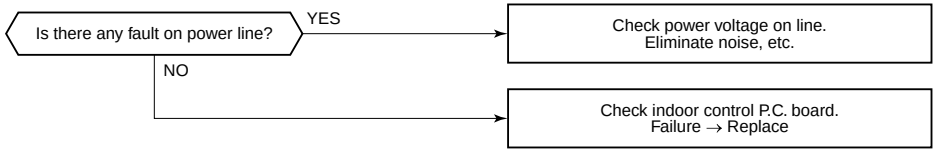
Using a main remote controller (RBC-AMT31E), check the setup item codes (DN code) 12, 13, and 14.
When there is no address duplication, check to the following flowchart.



Check code	Check code name	Cause of operation
[E09] / [99] (TCC-L / AI-NET)	**Duplicated master remote controller**	Setup of master remote controller is duplicated.

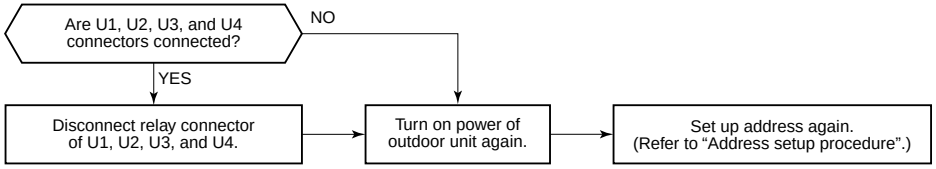


Check code	Check code name	Cause of operation
[E10] / [CF] (TCC-L / AI-NET)	**Communication error in indoor P.C. board assembly**	Indoor P.C. board error failure

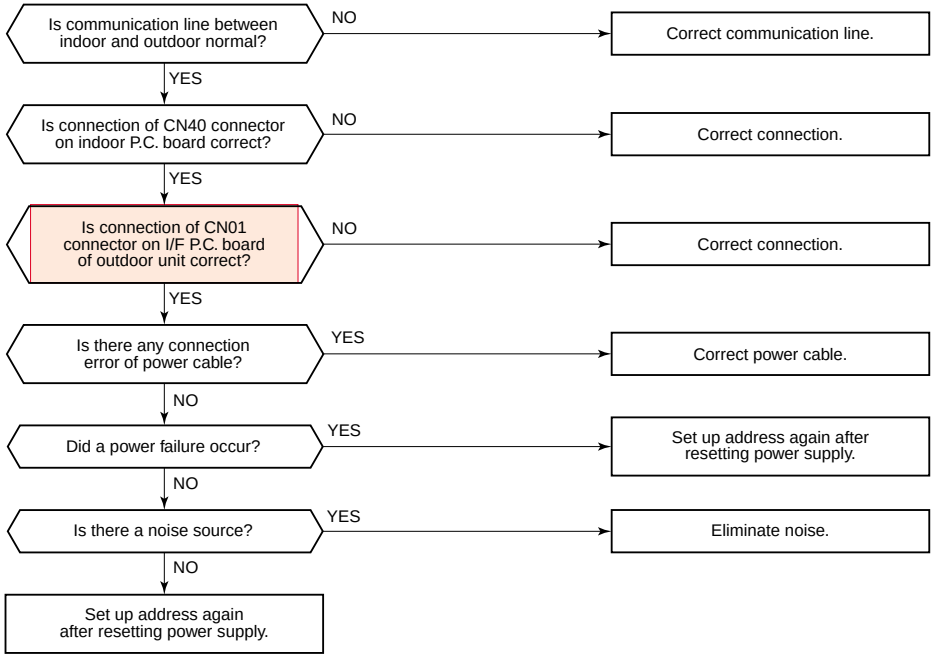


Check code	Check code name	Cause of operation
[E12] / [42] (TCC-L / AI-NET)	**Automatic address start error**	1. When indoor automatic address started, other refrigerant circuit system was setting automatic address. (Sub code : 01) 2. When outdoor automatic address started, the indoor automatic address was being set. (Sub-code: 02)

Auxiliary code: 01: Communication between indoor and outdoor 02: Communication between outdoor units

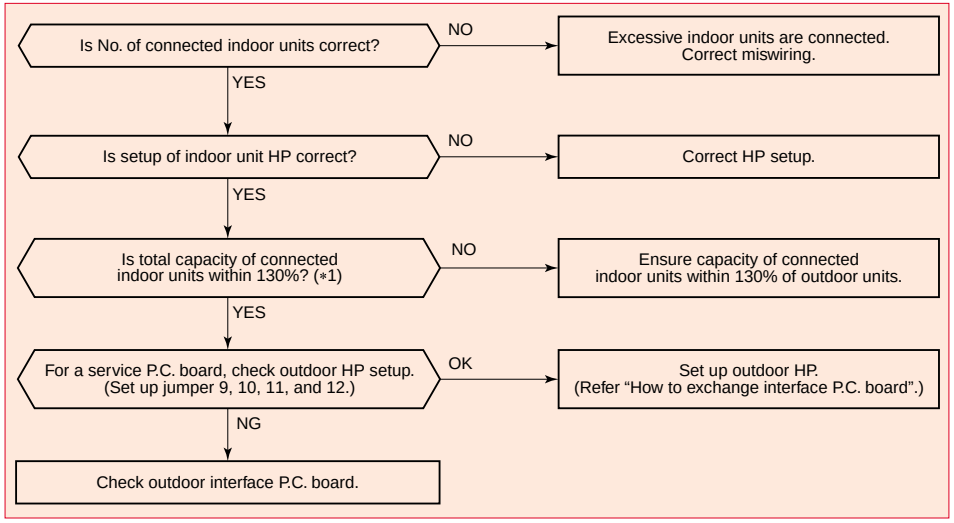


Check code	Check code name	Cause of operation
[E15] / [42] (TCC-L / AI-NET)	**No corresponding indoor unit during automatic address**	1. Communication line connection error between indoor and outdoor. 2. Indoor power system error 3. Noise from surrounding devices 4. Power failure 5. Indoor P.C. board error

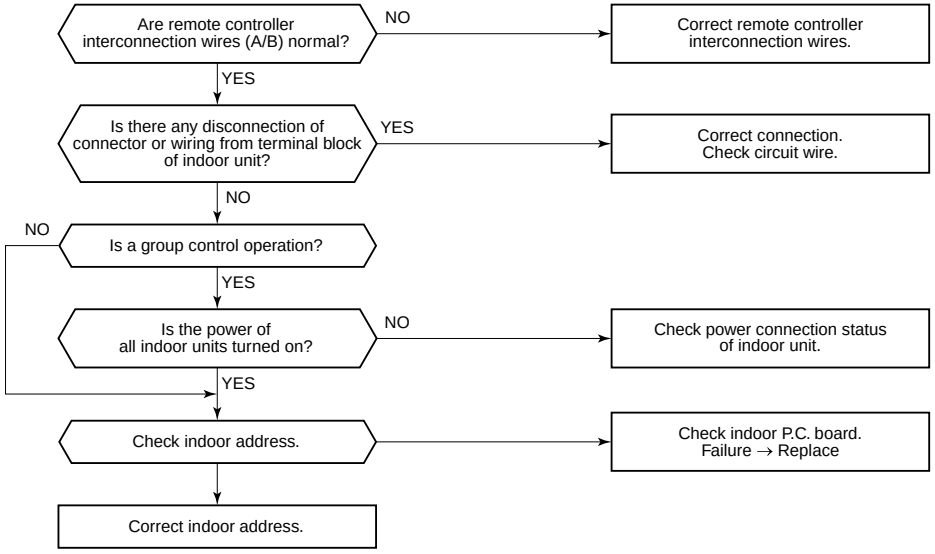


Check code	Check code name	Cause of operation
[E16] / [89] (TCC-L / AI-NET)	**Connected indoor units capacity over**	1. There are 48 or more connected indoor units. 2. Capacity over of total connected indoor units. 3. Incorrect setup of indoor/outdoor capacity

Auxiliary code: 00 : Capacity over 01 : ~ : Number of connected indoor units

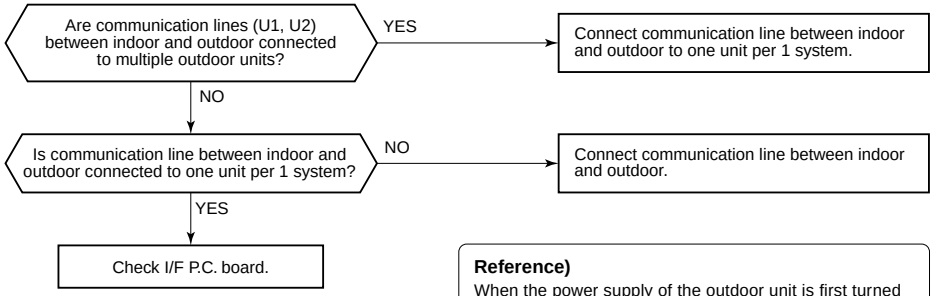


Check code	Check code name	Cause of operation
[E18] / [97/99] (TCC-L / AI-NET)	**Communication error between indoor header and follower**	Regular communication between indoor header and follower is unavailable.



Check code	Check code name	Cause of operation
[E19] / [96] (TCC-L / AI-NET)	**Outdoor units quantity error**	1. Misconnection of interconnection cable between indoor and outdoor 2. Outdoor I/F P.C. board error

Auxiliary code: 00: No outdoor unit 02: Two or more outdoor units



Reference)
When the power supply of the outdoor unit is first turned on, the check code [E19 00] is displayed until the power supply of the indoor units are turned on. However is not an error. When the power supply of the indoor units are this turned on, the check code is automatically reset.

Check code	Check code name	Cause of operation
[E20] / [42] (TCC-L / AI-NET)	**Unit connected to other line during automatic address**	When starting automatic indoor address, a device in another refrigerant system is connected.

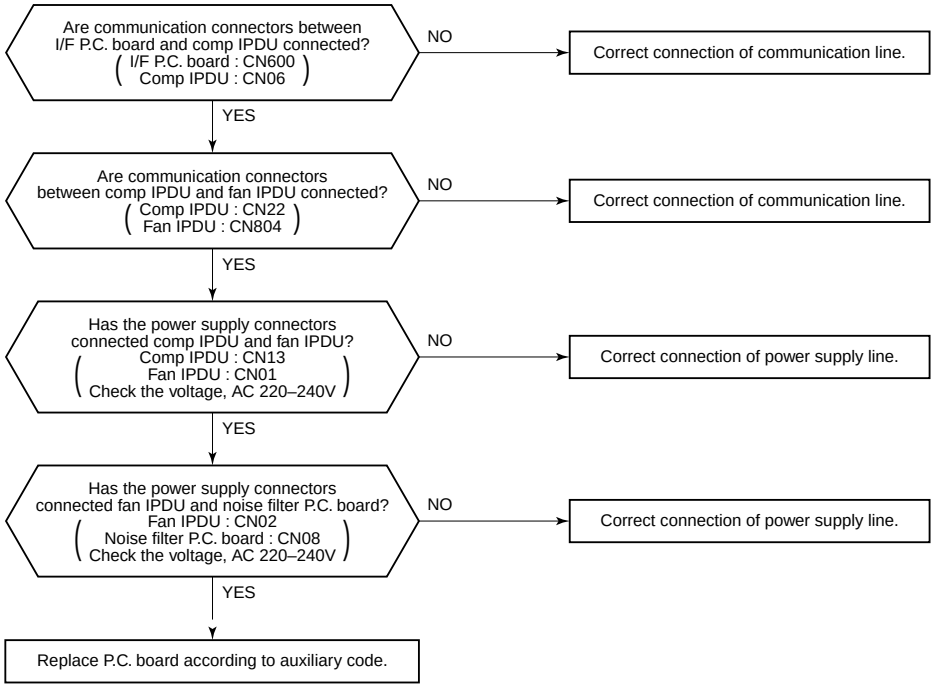
Auxiliary code: 01: Connection of outdoor of another system 02: Connection of indoor unit of another system

Separate the wire between systems according to address setup method.

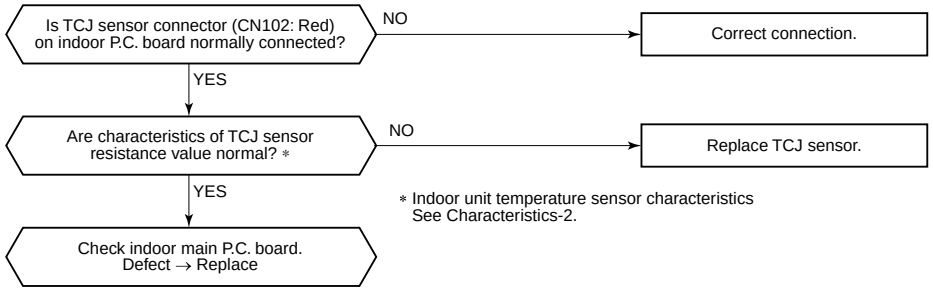
Check code	Check code name	Cause of operation
[E31] / [CF] (TCC-L / AI-NET)	**IPDU communication error**	1. Connection error of communication line between IPDU and I/F P.C. board 2. I/F P.C. board error 3. IPDU P.C. board error 4. External noise

Auxiliary code :

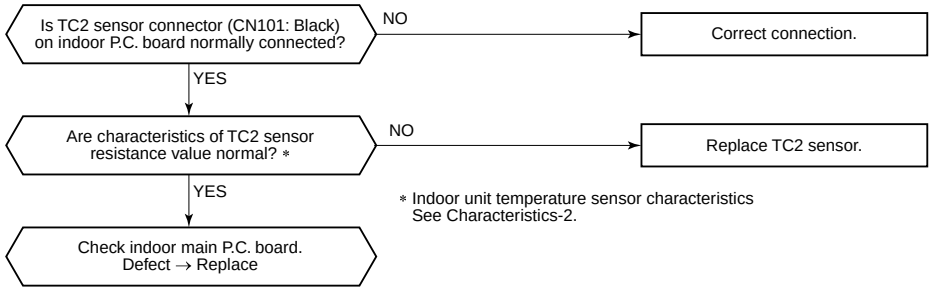
01: Comp IPDU error
02: Fan 1 IPDU error
03: Comp + Fan 1 IPDU error
04: Fan 2 IPDU error
05: Comp + Fan 2 IPDU error
06: Fan 1 + Fan 2 IPDU error
07: All IPDU error or disconnection of communication line between IPDU-I/F P.C. board or outdoor I/F P.C. board error



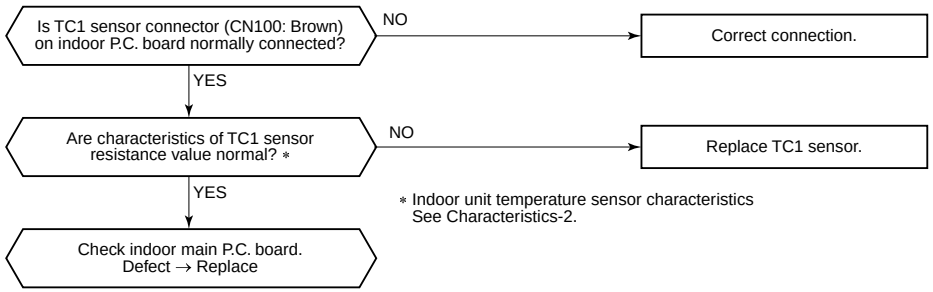
Check code	Check code name	Cause of operation
[F01] / [0F] (TCC-L / AI-NET)	**Indoor TCJ sensor error**	TCJ sensor Open/Short



Check code	Check code name	Cause of operation
[F02] / [0d] (TCC-L / AI-NET)	**Indoor TC2 sensor error**	TC2 sensor Open/Short



Check code	Check code name	Cause of operation
[F03] / [93] (TCC-L / AI-NET)	**Indoor TC1 sensor error**	TC1 sensor Open/Short



Check code	Check code name	Cause of operation
[F04] / [19] (TCC-L / AI-NET)	**TD1 sensor error**	TD1 sensor Open/Short

This check code means detection of Open/Short of TD1 sensor.
Check disconnection of connector (TD1 sensor: CN502, White) and characteristics of sensor resistance value. (Refer to Outdoor unit temperature sensor characteristics.)
If sensor is normal, replace outdoor I/F P.C. board.

Check code	Check code name	Cause of operation
[F06] / [18] (TCC-L / AI-NET)	**TE1 sensor error**	TE1 sensor Open/Short

This check code means detection of Open/Short of TE1 sensor.
Check disconnection of connector (TE1 sensor: CN505, Green) and characteristics of sensor resistance value. (Refer to Outdoor unit temperature sensor characteristics.)
If sensor is normal, replace outdoor I/F P.C. board.

Check code	Check code name	Cause of operation
[F07] / [18] (TCC-L / AI-NET)	**TL sensor error**	TL sensor Open/Short

This check code means detection of Open/Short of TL sensor.
Check disconnection of connector (TL sensor: CN521, White) and characteristics of sensor resistance value. (Refer to Outdoor unit temperature sensor characteristics.)
If sensor is normal, replace outdoor I/F P.C. board.

Check code	Check code name	Cause of operation
[F08] / [1b] (TCC-L / AI-NET)	**TO sensor error**	TO sensor Open/Short

This check code means detection of Open/Short of TO sensor.
Check disconnection of connector (TO sensor: CN507, Yellow) and characteristics of sensor resistance value. (Refer to Outdoor unit temperature sensor characteristics.)
If sensor is normal, replace outdoor I/F P.C. board.

Check code	Check code name	Cause of operation
[F10] / [0C] (TCC-L / AI-NET)	**Indoor TA sensor error**	TA sensor Open/Short

This check code means detection of Open/Short of TA sensor.
Check disconnection of connector (TA sensor: CN104, Yellow) and characteristics of sensor resistance value. (Refer to Outdoor unit temperature sensor characteristics.)
If sensor is normal, replace indoor P.C. board.

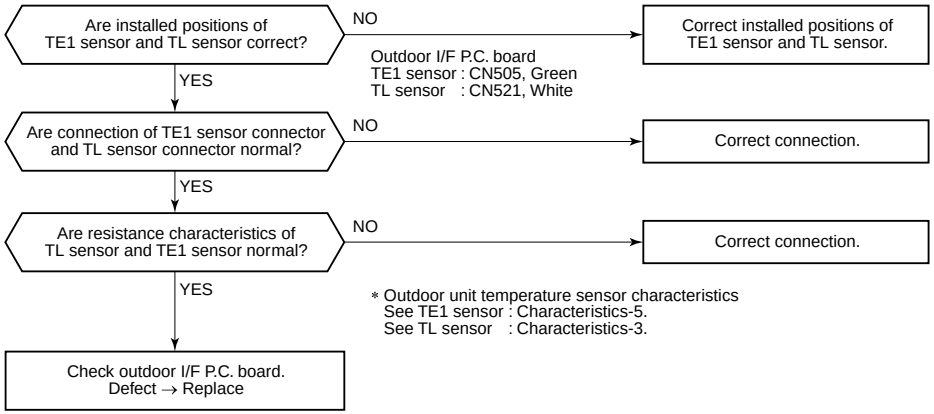
Check code	Check code name	Cause of operation
[F12] / [A2] (TCC-L / AI-NET)	**TS sensor error**	TS1, TS2 sensor Open/Short

This check code means detection of Open/Short of TS sensor.
Check disconnection of connector (TS1 sensor: CN504, White TS2 sensor: CN522, Black) and characteristics of sensor resistance value. (Refer to Outdoor unit temperature sensor characteristics.)
If sensor is normal, replace outdoor I/F P.C. board.

Check code	Check code name	Cause of operation
[F13] / [43] (TCC-L / AI-NET)	**TH sensor error**	IGBT built-in sensor error in A3-IPDU

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

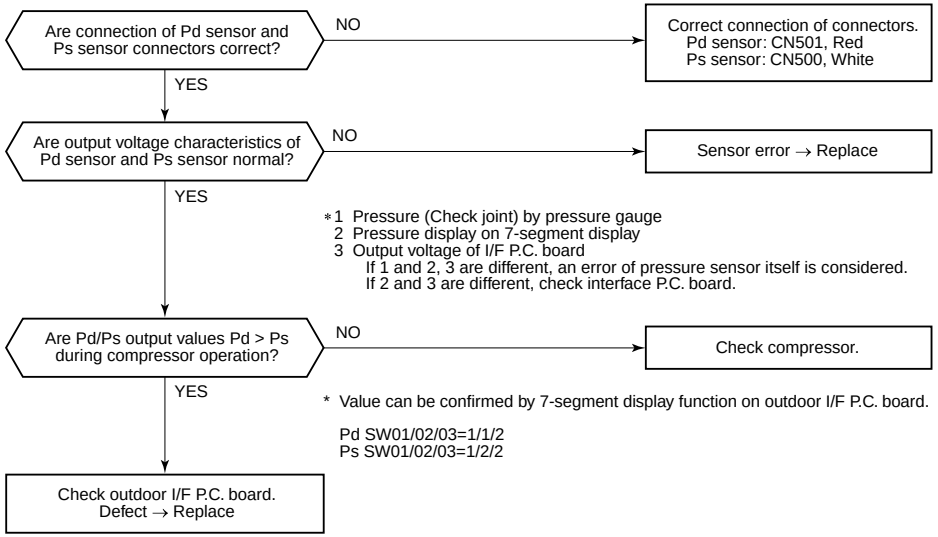
Check code	Check code name	Cause of operation
[F15] / [18] (TCC-L / AI-NET)	**Outdoor temp sensor miscabling (TE1, TL)**	1. Misinstallation and misconnection of TE1 sensor and TL sensor 2. Resistance characteristics error of TE1 sensor and TL sensor 3. Outdoor P.C. board (I/F) error



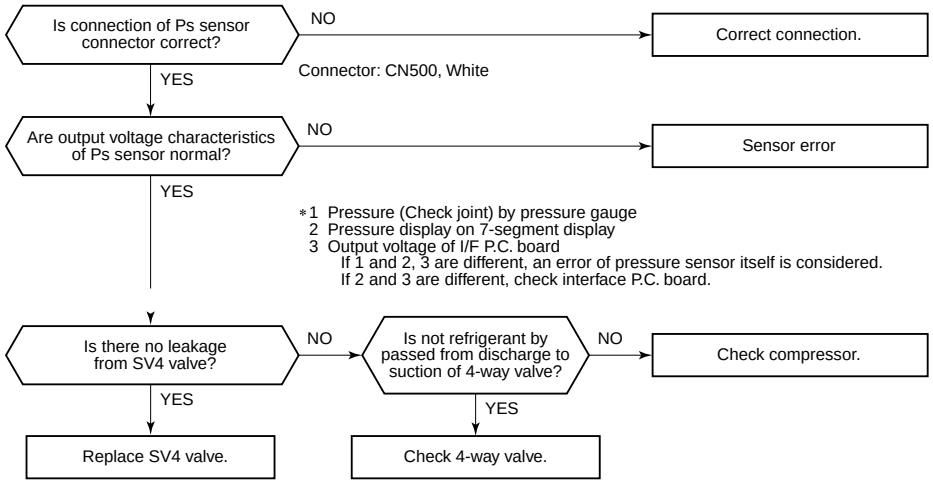
* Outdoor unit temperature sensor characteristics
  See TE1 sensor : Characteristics-5.
  See TL sensor : Characteristics-3.

* TE1 sensor : Outdoor heat exchanger temp sensor
  TL sensor : Temp sensor between liquid tanks of outdoor P.M.V. 1/2

Check code	Check code name	Cause of operation
[F16] / [43] (TCC-L / AI-NET)	**Outdoor pressure sensor miscabling (Pd, Ps)**	1. High-pressure Pd sensor and low-pressure sensor Ps are exchanged. 2. Output voltage of each sensor is zero.



Check code	Check code name	Cause of operation
[F23] / [43] (TCC-L / AI-NET)	**Ps sensor error**	Output voltage error of Ps sensor



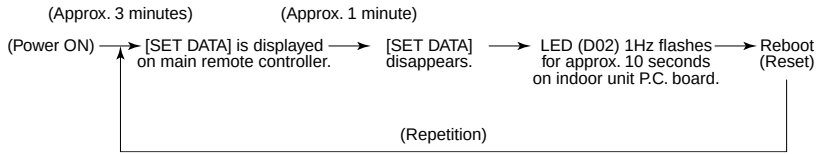
Check code	Check code name	Cause of operation
[F24] / [43] (TCC-L / AI-NET)	**Pd sensor error**	Output voltage error of Pd sensor

It is output voltage error of Pd sensor. Check disconnection of connection of connector (Pd sensor: CN501) circuit and output voltage of sensor.
If the sensor is normal, replace outdoor I/F P.C. board.

Check code	Check code name	Cause of operation
[F29] / [12] (TCC-L / AI-NET)	**Indoor other error**	Indoor P.C. board error EEROM error

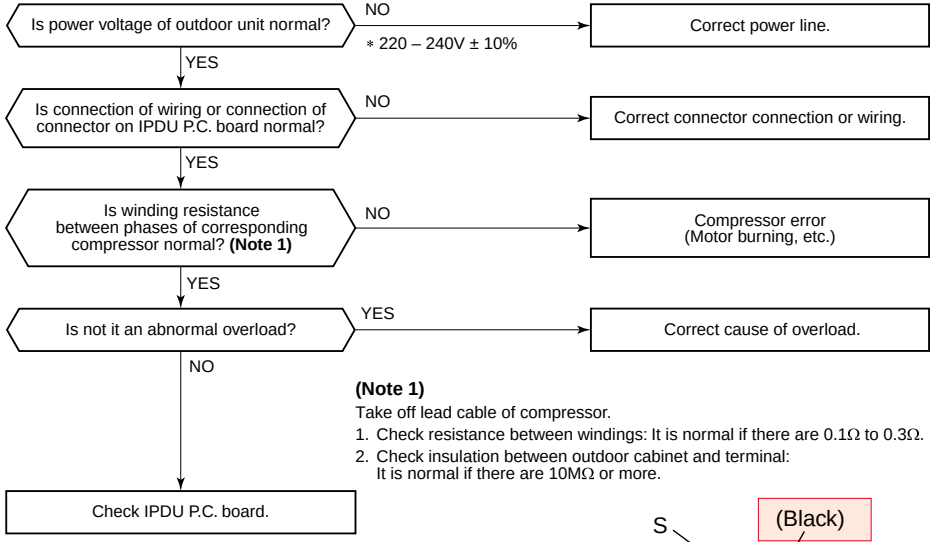
This error is detected during operation of air conditioner of IC10 non-volatile memory (EEPROM) on indoor unit P.C. board. Replace service P.C. board.

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



Check code	Check code name	Cause of operation
[F31] / [1C] (TCC-L / AI-NET)	**Outdoor EEPROM error**	1. Outdoor unit power error (Voltage, noise, etc.) 2. Outdoor I/F P.C. board error

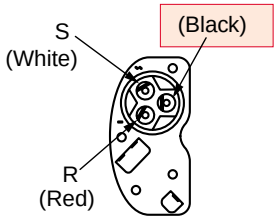
Check code	Check code name	Cause of operation
[H01] / [1F] (TCC-L / AI-NET)	**Compressor breakdown**	1. Outdoor unit power line error 2. Compressor circuit system error 3. Compressor error 4. Cause of abnormal overload operation 5. IPDU P.C. board error



(Note 1)

Take off lead cable of compressor.

1. Check resistance between windings: It is normal if there are 0.1Ω to 0.3Ω.
2. Check insulation between outdoor cabinet and terminal:
   It is normal if there are 10MΩ or more.

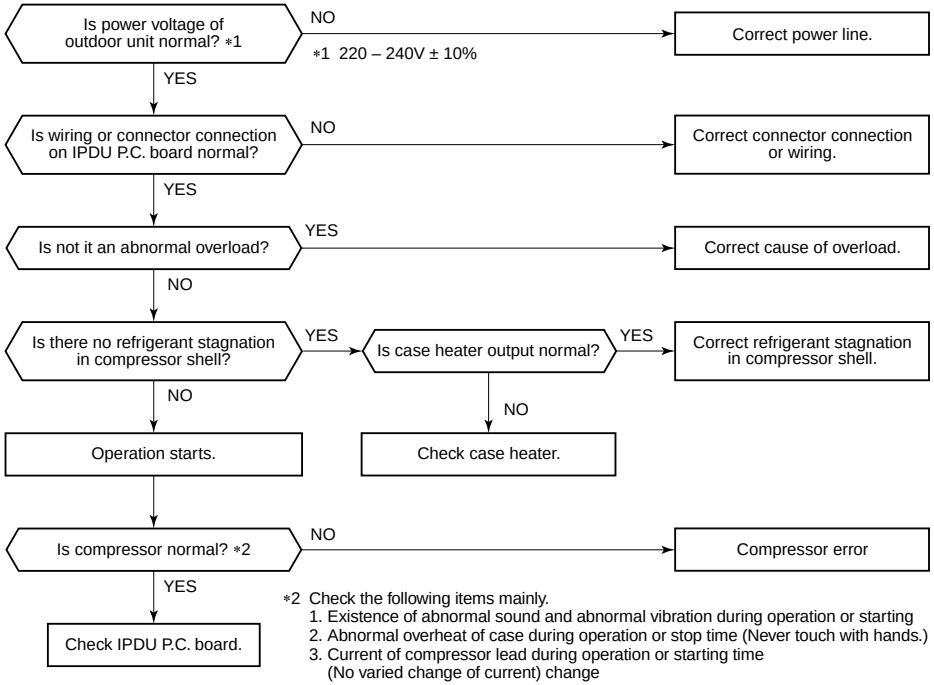


Details of compressor power connecting section

CAUTION

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

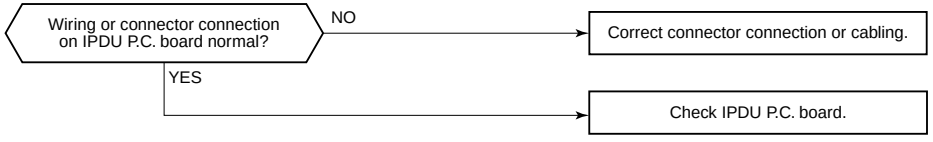
Check code	Check code name	Cause of operation
[H02] / [1d] (TCC-L / AI-NET)	**Compressor error (Lock)**	1. Outdoor unit power line error 2. Compressor circuit system error 3. Compressor error 4. Refrigerant stagnation in compressor shell 5. IPDU P.C. board error



∗2 Check the following items mainly.
1. Existence of abnormal sound and abnormal vibration during operation or starting
2. Abnormal overheat of case during operation or stop time (Never touch with hands.)
3. Current of compressor lead during operation or starting time
   (No varied change of current) change

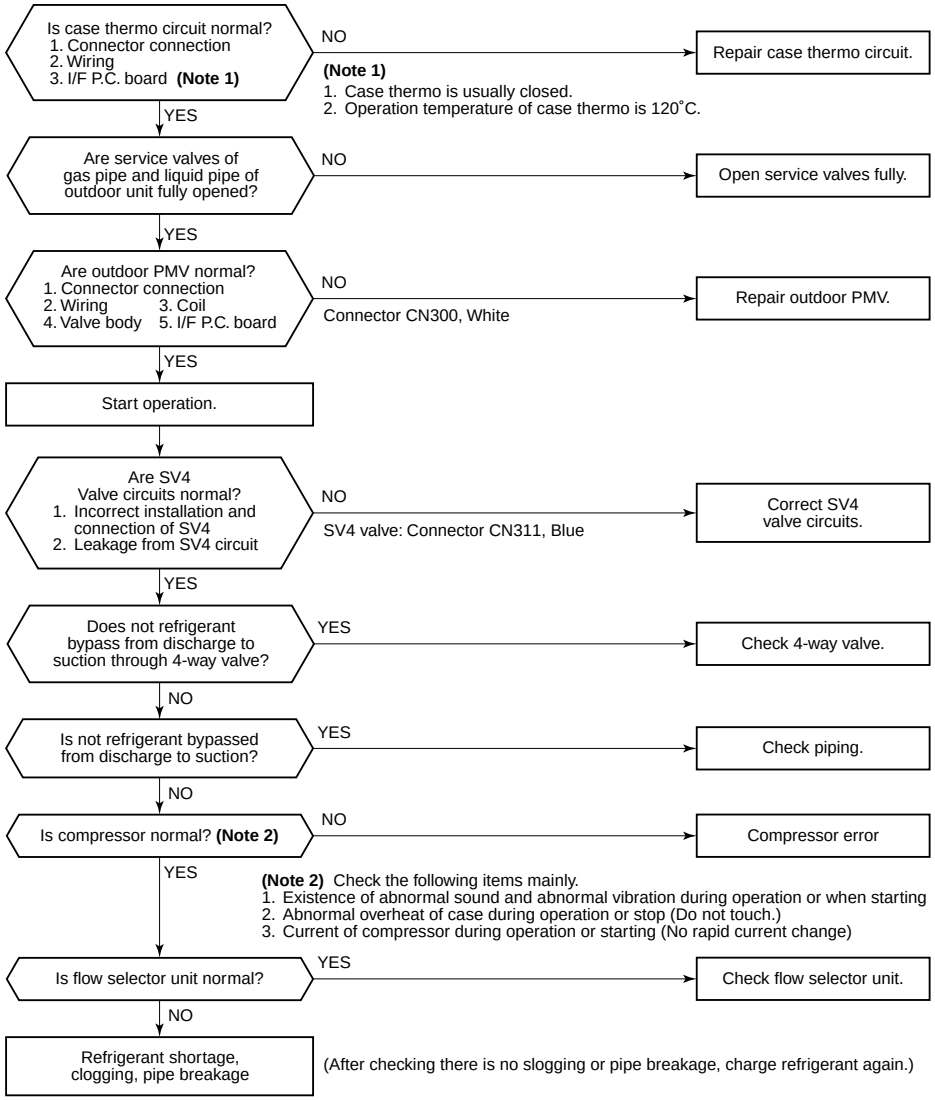
∗3 If OCR operates even after manual reset of OCR, check whether the wiring to the current sensor (T02) of Comp-IPDU is correct or not.

Check code	Check code name	Cause of operation
[H03] / [17] (TCC-L / AI-NET)	**Current detective circuit system error**	1. Cabling or connector connection error on IPDU P.C. board 2. IPDU P.C. board error

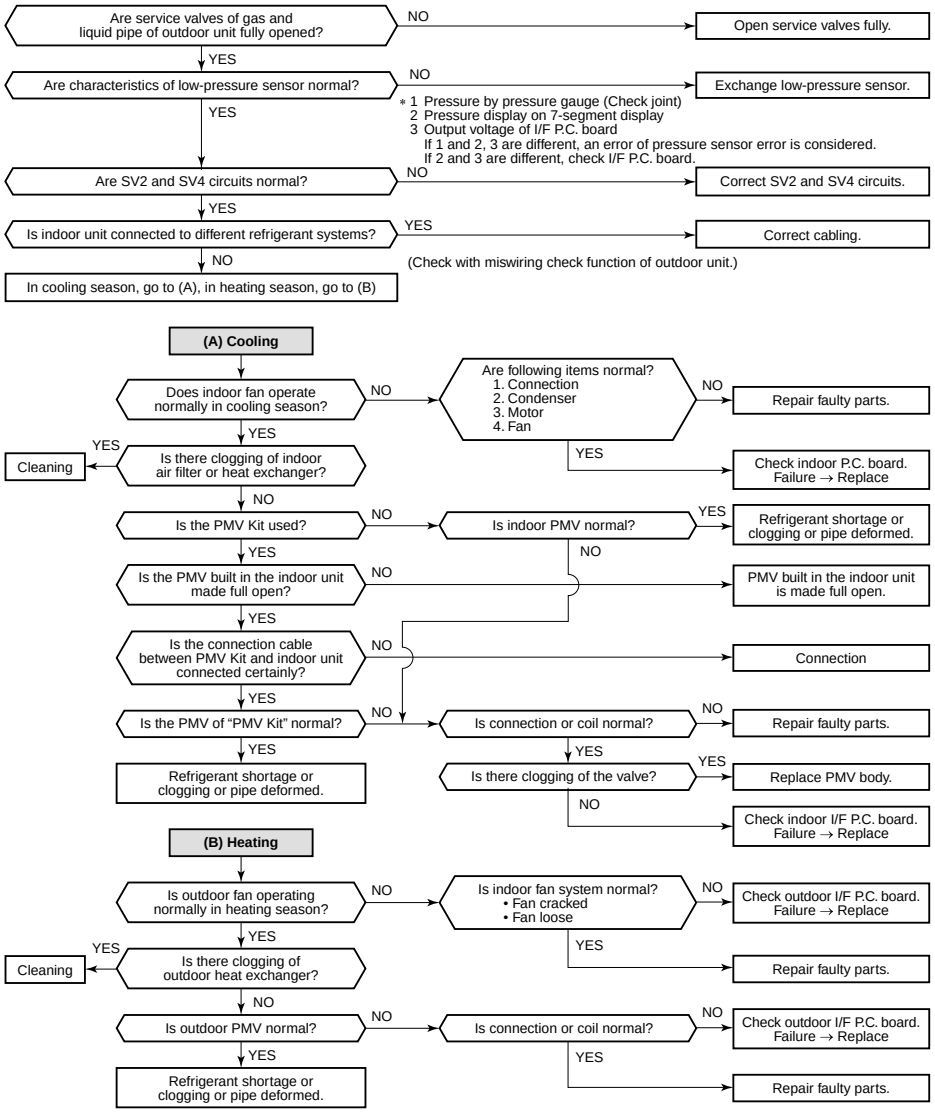


1st revised : Jun. 2006

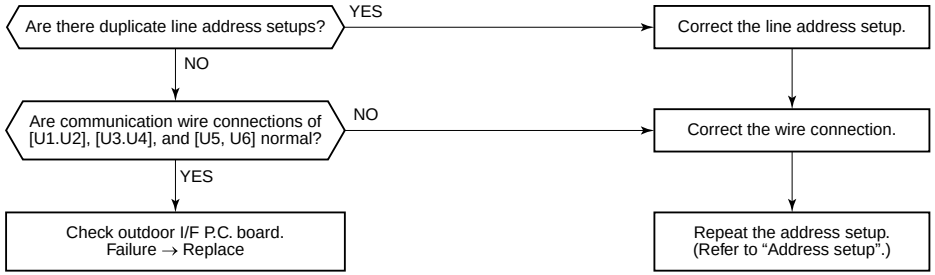
Check code	Check code name	Cause of operation
[H04] / [44] (TCC-L / AI-NET)	**Compressor 1 case thermo operation**	1. Case thermo circuit error 2. I/F P.C. board error 3. Service valve closed 4. Outdoor PMV clogging 5. SV4 valve leak, Coil misinstallation 6. 4-way valve error 7. Compressor error 8. Refrigerant shortage



Check code	Check code name	Cause of operation
[H06] / [20] (TCC-L / AI-NET)	**Low-pressure protective operation**	1. Service valve close 2. Ps sensor error 3. SV2, SV4 circuit error 4. Miscabling of communication between indoor and outdoor 5. Indoor/outdoor fan and condenser error 6. Indoor/outdoor PMV clogging 7. Indoor/outdoor heat exchanger clogging 8. Refrigerant shortage



Check code	Check code name	Cause of operation
[L04] / [96] (TCC-L / AI-NET)	**Duplicated setup of outdoor line address**	Outdoor line addresses are duplicated.



Check code	Check code name	Cause of operation
[L05] / [96] (TCC-L / AI-NET)	**Duplicated indoor units with priority (Displayed on indoor unit with priority)**	1. Two or more prior indoor units exist.

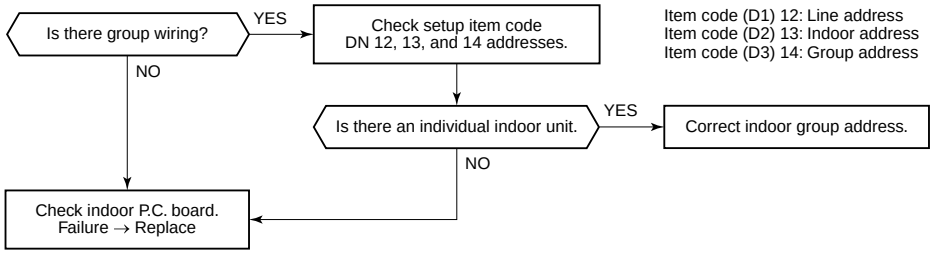
This check code is displayed on the set indoor unit when setup of indoor unit with priority is duplicated.
• Priority setup with two or more units is not available. Choose one prior unit in one refrigerant circuit system.

Check code	Check code name	Cause of operation
[L06] / [96] (TCC-L / AI-NET)	**Duplicated indoor units with priority (Displayed on the indoor unit other than one with priority and on the outdoor unit)**	Two or more indoor units with priority are duplicated.

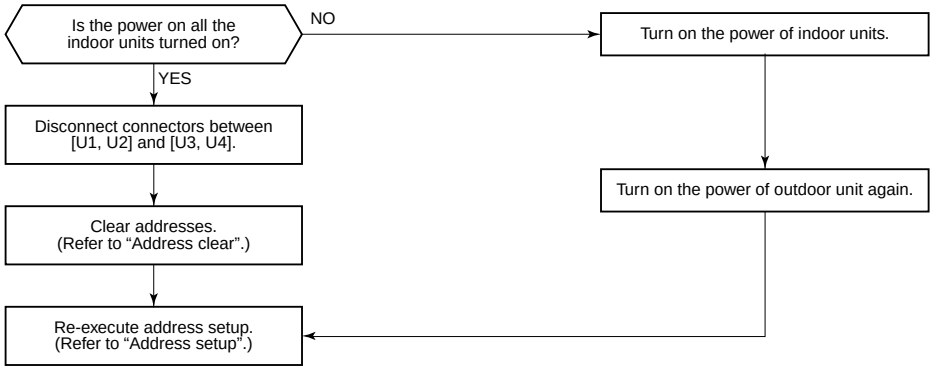
Auxiliary code: No. of indoor units with priority

When indoor unit with priority is duplicated, this fault code is displayed on the unit other than the setup indoor unit and outdoor unit.
• As only one indoor unit with priority is valid, change the setup.

Check code	Check code name	Cause of operation
[L07] / [99] (TCC-L / AI-NET)	**Group line in individual indoor unit**	The group line is connected in the individual indoor unit.

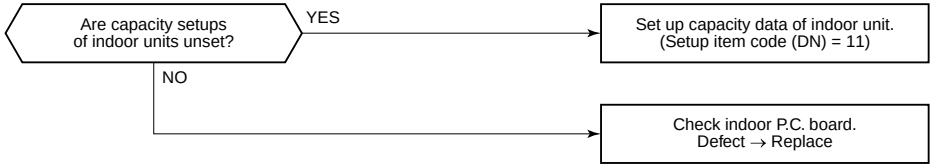


Check code	Check code name	Cause of operation
[L08] / [99]* (TCC-L / AI-NET)	**Indoor group / address unset**	Indoor address unset



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

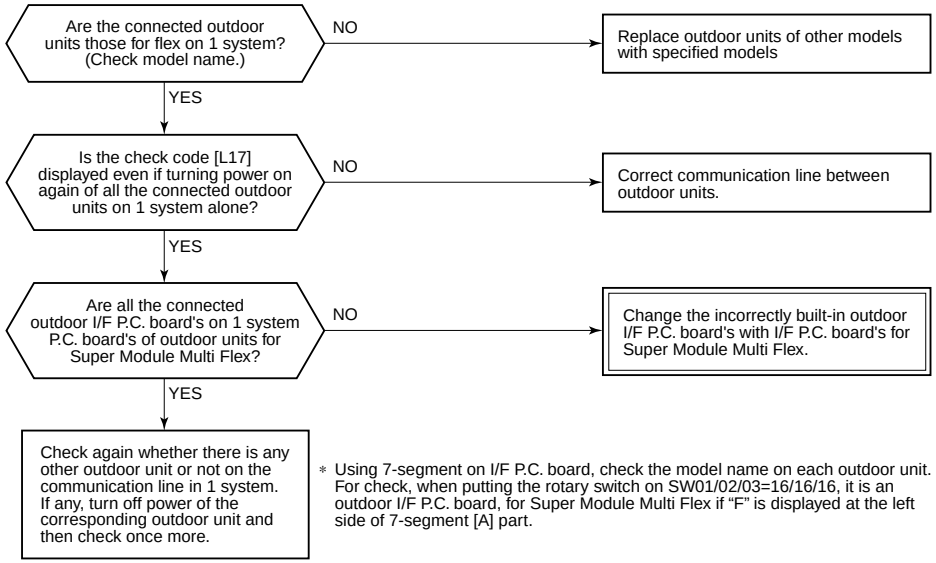
Check code	Check code name	Cause of operation
[L09] / [46] (TCC-L / AI-NET)	**Indoor capacity unset**	Indoor capacity unset



Check code	Check code name	Cause of operation
[L10] / [88] (TCC-L / AI-NET)	**Outdoor capacity unset**	The model selection jumper of the outdoor I/F P.C. board does not match the model.

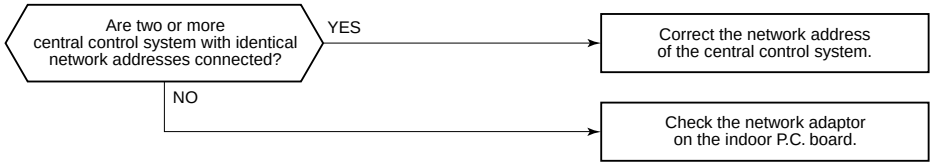
Service I/F P.C. board for the outdoor unit is common to all outdoor units.
The service I/F P.C. board will need to be set up for the correct model based upon the faulty I/F P.C. board, which it is replacing. Set up the model based upon the I/F P.C. board assembly change procedure.

Check code	Check code name	Cause of operation
[L17] / [46] (TCC-L / AI-NET)	**Inconsistent models of outdoor units**	There are outdoor units on the communication line other than Super Module Multi Flex type such as Super Module Multi or Super Module Multi ice regenerative type



* Using 7-segment on I/F P.C. board, check the model name on each outdoor unit. For check, when putting the rotary switch on SW01/02/03=16/16/16, it is an outdoor I/F P.C. board, for Super Module Multi Flex if “F” is displayed at the left side of 7-segment [A] part.

Check code	Check code name	Cause of operation
[L20] / [98] (TCC-L / AI-NET)	**Duplicated central control addresses**	Central control addresses are duplicated.

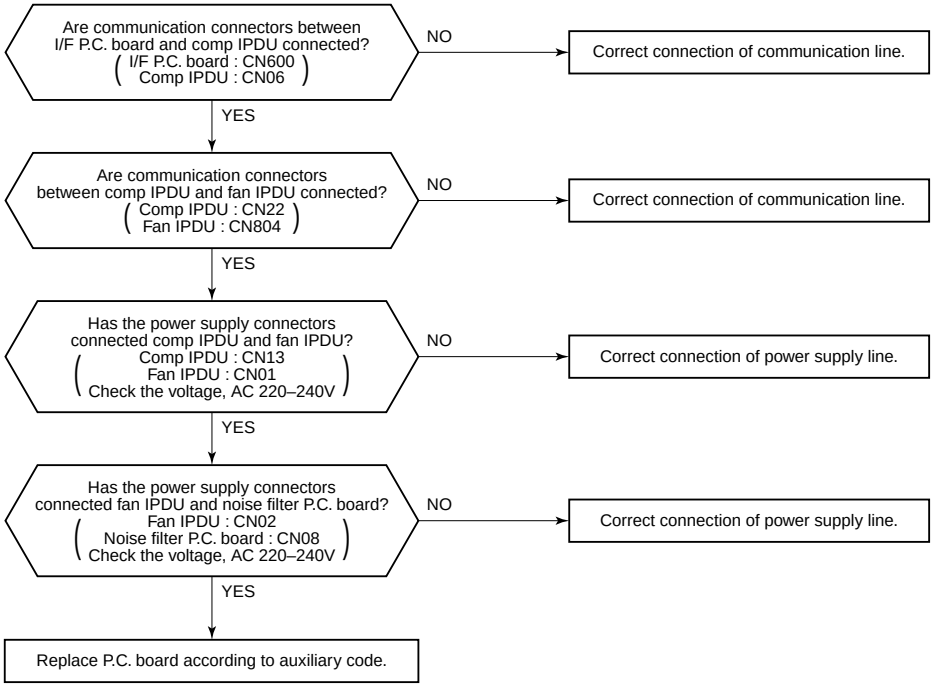


Check code	Check code name	Cause of operation
[L29] / [CF] (TCC-L / AI-NET)	**IPDU quantity error**	1. Incorrect model setup in service for I/F P.C. board 2. Communication error between IPDU, fan IPDU and I/F 3. IPDU, fan IPDU, I/F P.C. board error

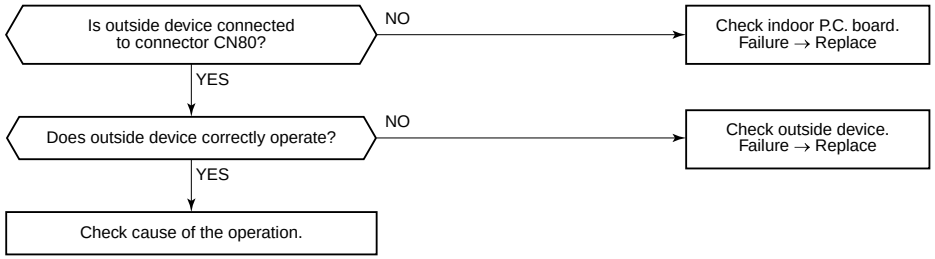
Auxiliary code :

01: Comp IPDU error	02: Fan 1 IPDU error
03: Comp + Fan 1 IPDU error	04: Fan 2 IPDU error
05: Comp + Fan 2 IPDU error	06: Fan 1 + Fan 2 IPDU error

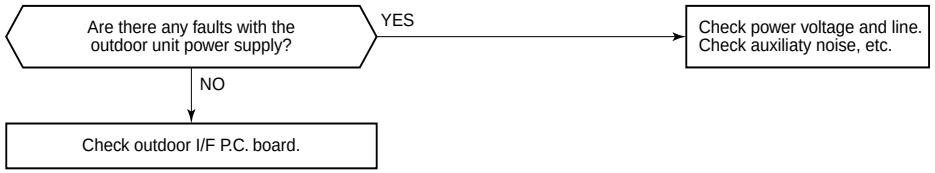
07: All IPDU error or disconnection of communication line between IPDU-I/F P.C. board or outdoor I/F P.C. board error



Check code	Check code name	Cause of operation
[L30] / [b6] (TCC-L / AI-NET)	**Interlock in indoor unit from outside**	Outside error was input.

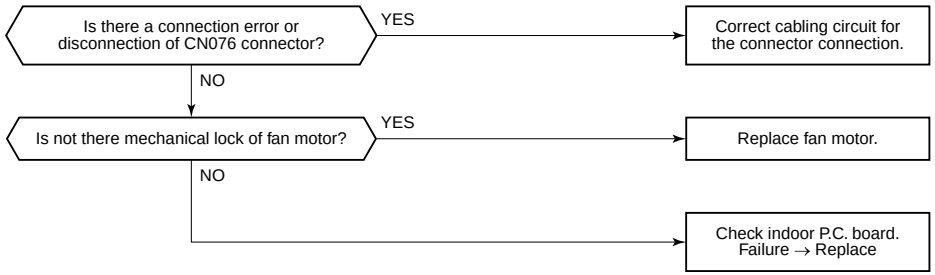


Check code	Check code name	Cause of operation
[L31] / [–] (TCC-L / AI-NET)	**Extended IC error**	1. Outdoor unit power error 2. Outdoor I/F P.C. board error

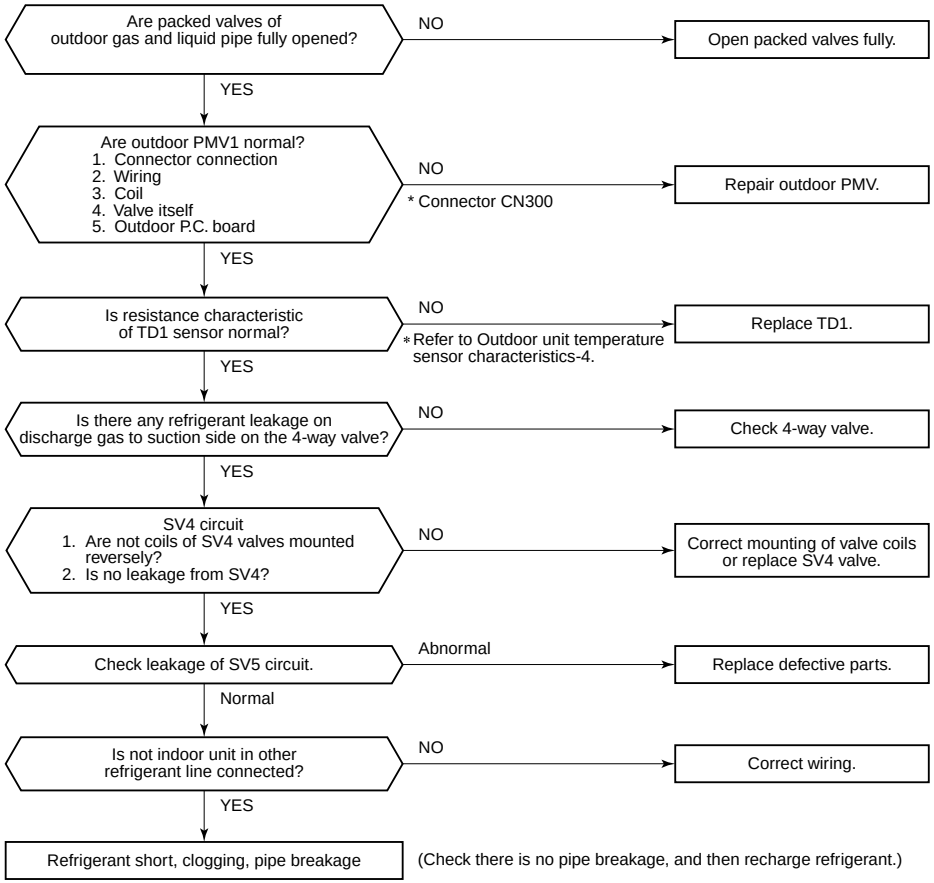


Check code	Check code name	Cause of operation
[P01] / [11] (TCC-L / AI-NET)	**Indoor fan motor error**	1. Cabling error 2. Check fan motor.

∗ For the models installed with AC fan motor only

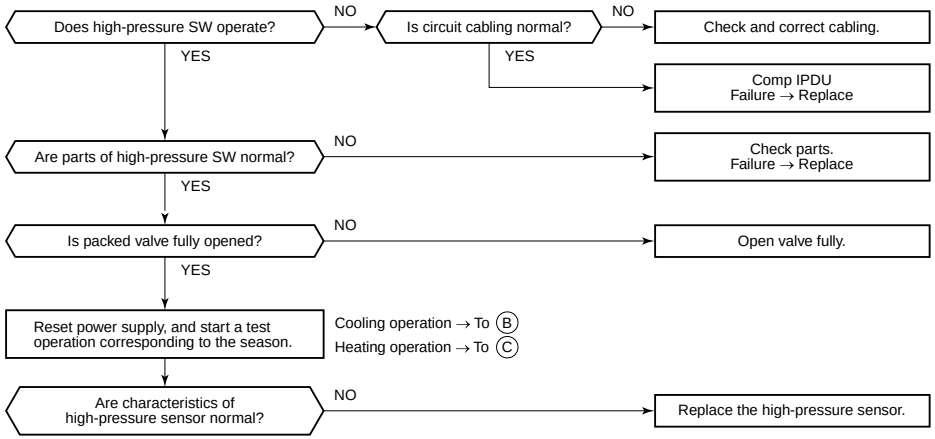


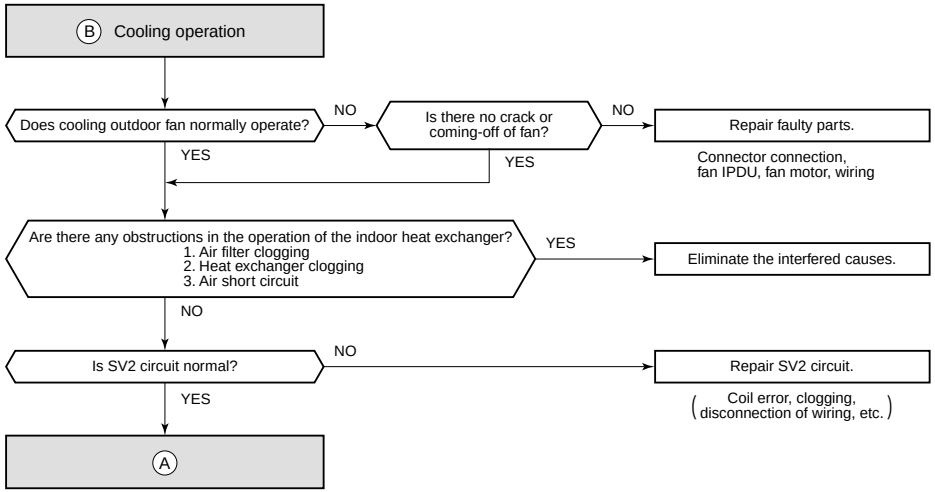
Check code	Check code name	Cause of operation
[P03] / [1E] (TCC-L / AI-NET)	**Discharge temp TD1 error**	1. Service valve of outdoor unit closed. 2. Outdoor PMV1 error 3. TD sensor error 4. Refrigerant short, clogging in pipe 5. 4-way valve error 6. SV4 circuit leakage, misinstallation 7. SV5 circuit leakage 8. SV6 circuit clogging 9. Discharge gas/Suction gas pipes mispiping 10. Flow selector unit error

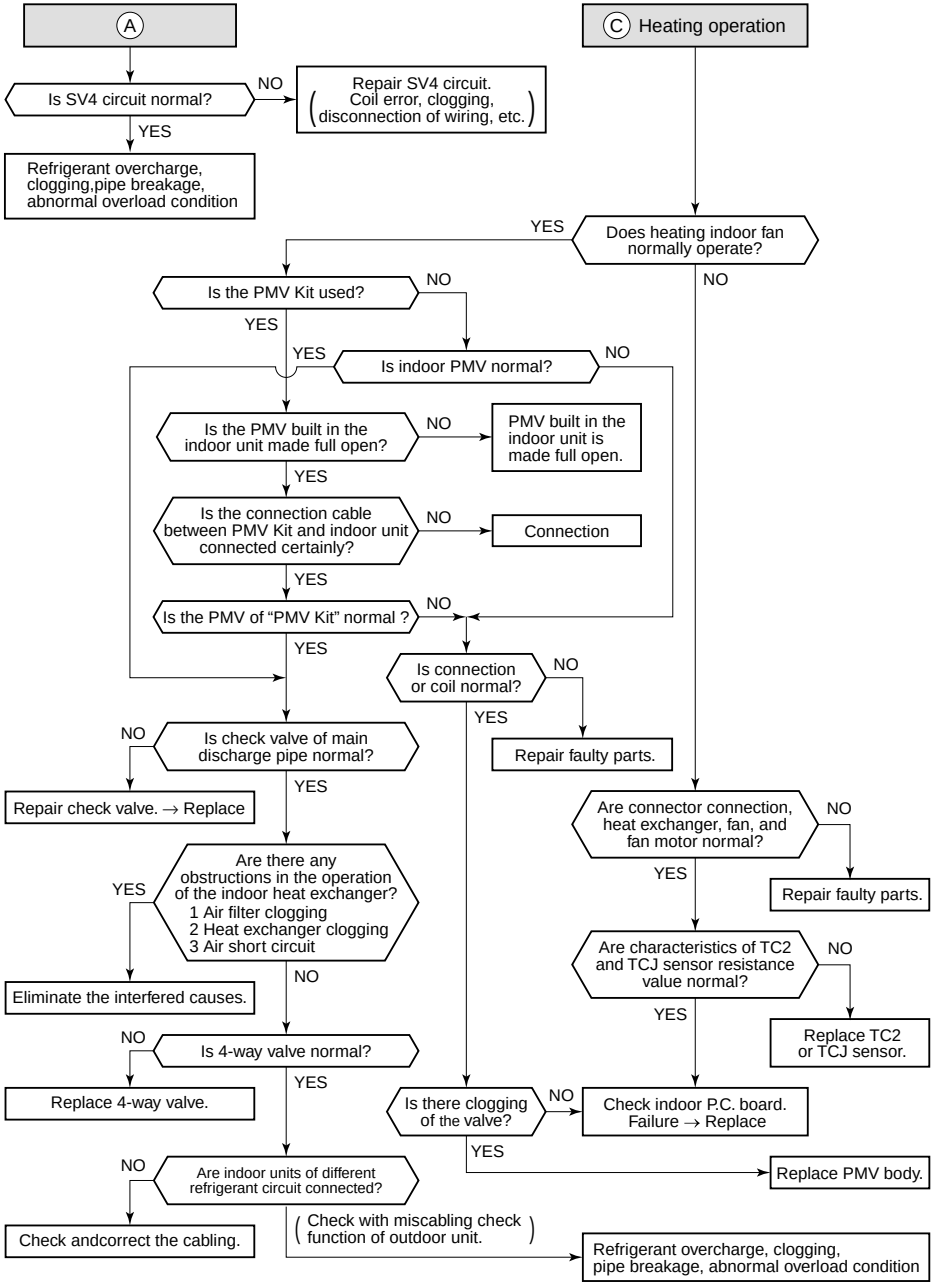


Check code	Check code name	Cause of operation
[P04] / [21] (TCC-L / AI-NET)	**Actuation of high-pressure SW**	1. High-pressure SW error 2. Service valve closed 3. Pd sensor error 4. Indoor/outdoor fan error 5. Indoor/outdoor PMV choke 6. Indoor/outdoor heat exchanger clogging, air short circuit 7. SV2 circuit error 8. SV4 circuit error 9. SV5 circuit error 10. Discharge line check valve malfunction 11. Refrigerant overcharge

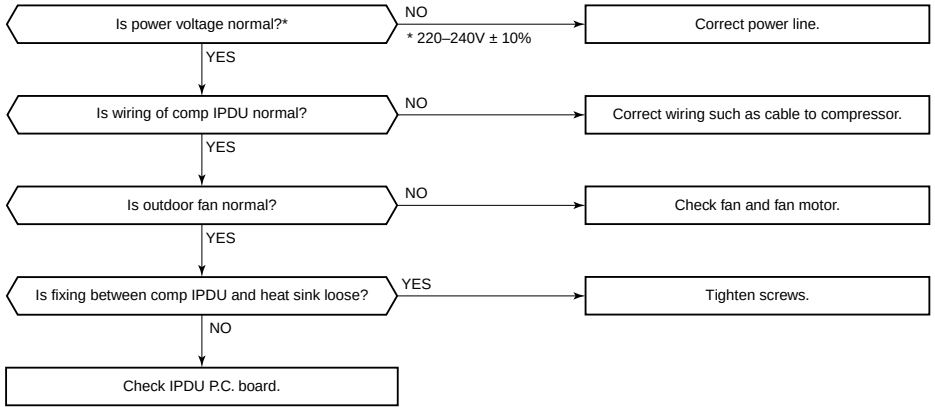
Note) High-pressure SW is normally closed. (B contact)





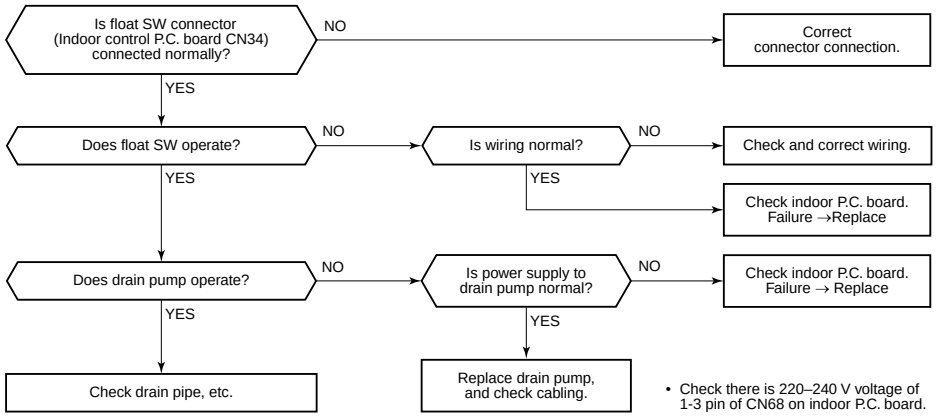


Check code	Check code name	Cause of operation
[P07] / [1C] (TCC-L / AI-NET)	**Heat sink overheat error**	1. Power voltage error 2. Outdoor fan system error 3. Heat sink installation error 4. Clogging of hear sink cooling duct 5. IPDU P.C. board error (TH sensor error)



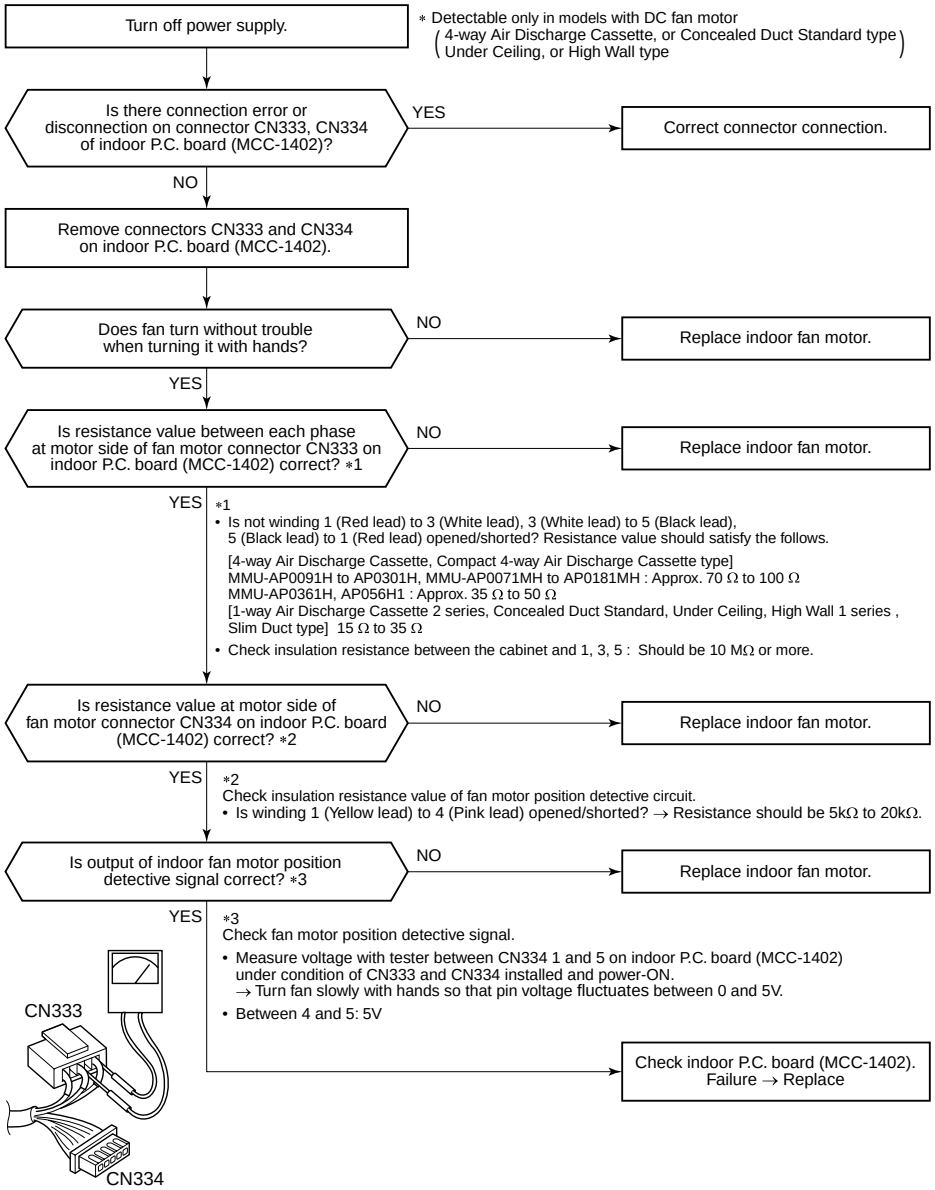
Check code	Check code name	Cause of operation
[P10] / [0b] (TCC-L / AI-NET)	**Indoor overflow error**	1. Float SW operation error 2. Drain pump operation error 3. Clogging of drain pipe 4. Indoor P.C. board error

Auxiliary code: Indoor units address with trouble

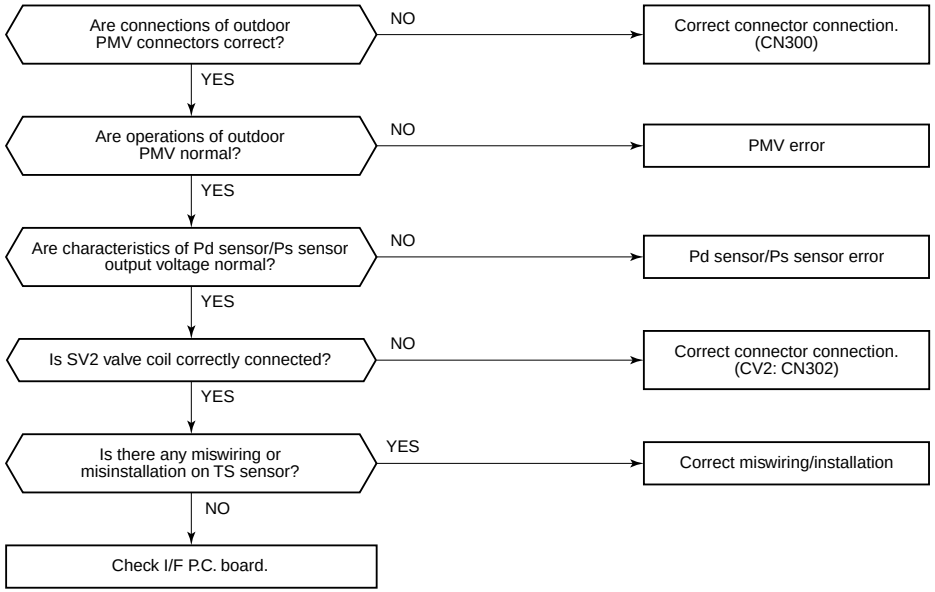


• Check there is 220–240 V voltage of 1-3 pin of CN68 on indoor P.C. board.

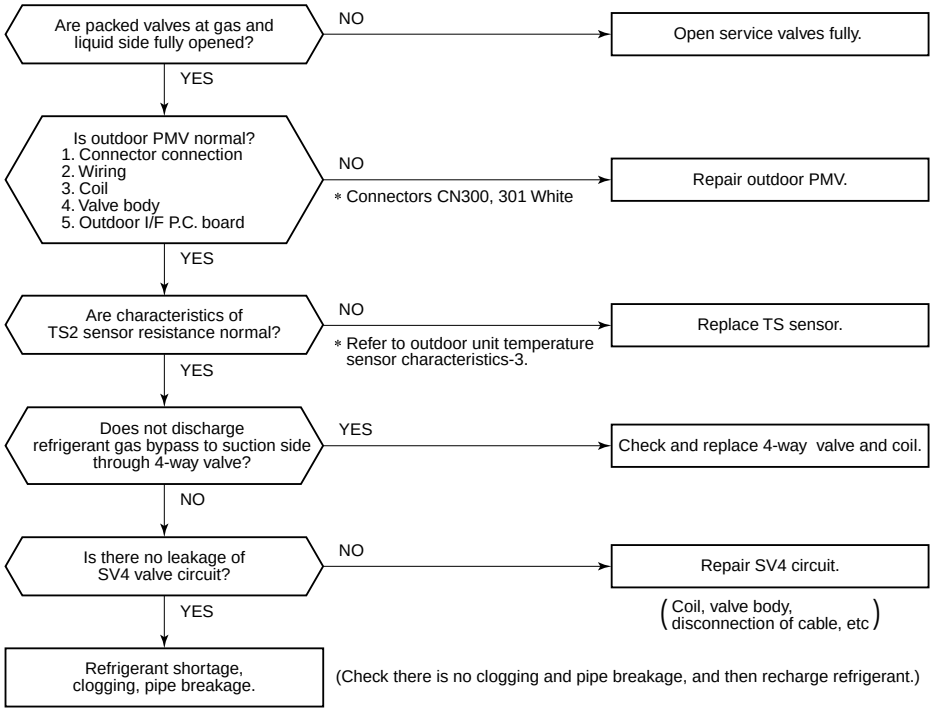
Check code	Check code name	Cause of operation
[P12] / [11] (TCC-L / AI-NET)	**Indoor fan motor error**	1. Cabling error of fan motor connector 2. Fan motor error 3. Indoor P.C. board error



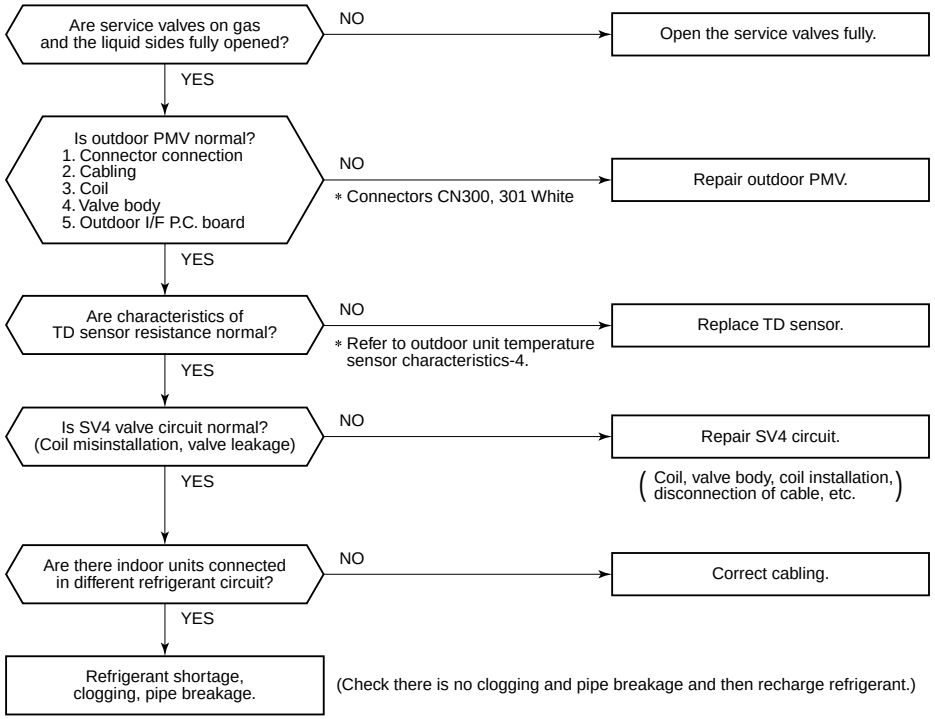
Check code	Check code name	Cause of operation
[P13] / [47] (TCC-L / AI-NET)	**Outdoor liquid back detection error**	1. PMV error 2. Pd sensor, Ps sensor error 3. Clogging of SV2 circuit 4. Leakage on main discharge pipe 5. Outdoor I/F P.C. board error



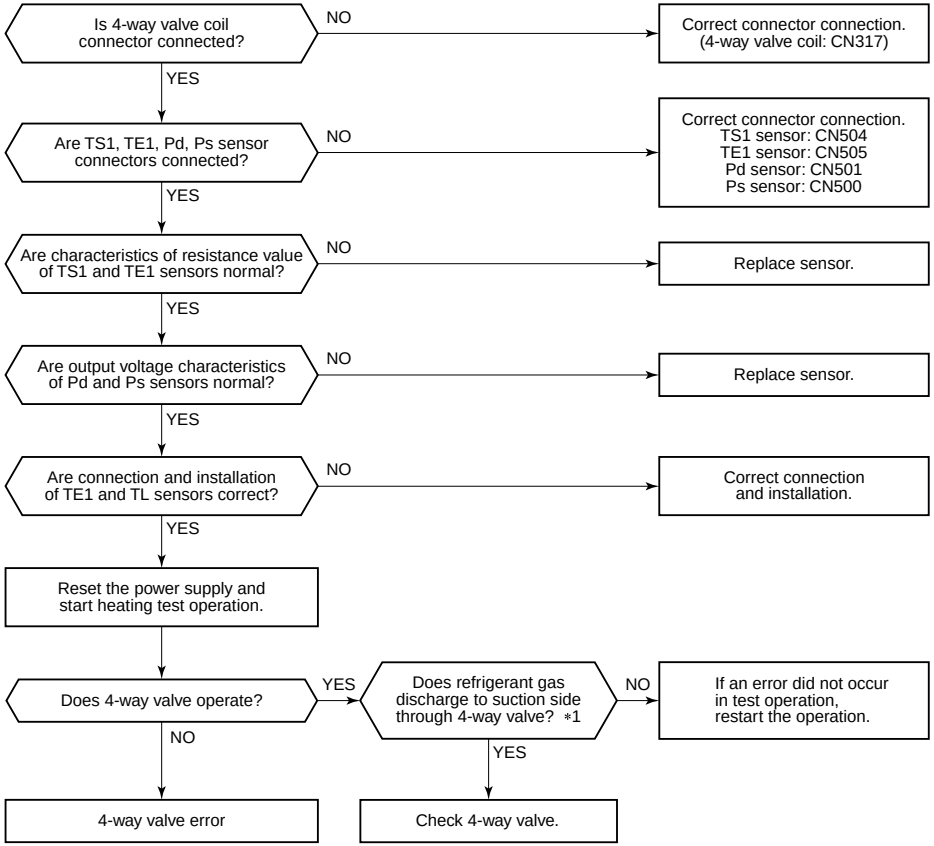
Check code	Check code name	Cause of operation
[P15] / [AE] (TCC-L / AI-NET)	**Gas leak detection** **TS condition (Auxiliary code: 01)**	1. Outdoor unit service valve closed 2. Outdoor PMV error 3. TS1 sensor error 4. Refrigerant shortage, clogging refrigerant circuit 5. 4-way valve error 6. SV4 circuit error



Check code	Check code name	Cause of operation
[P15] / [AE] (TCC-L / AI-NET)	**Gas leak detection** **TD condition (Sub-code: 02)**	1. Outdoor unit service valve closed 2. Outdoor PMV error 3. TD sensor error 4. SV4 circuit error 5. Refrigerant shortage, clogging refrigerant circuit



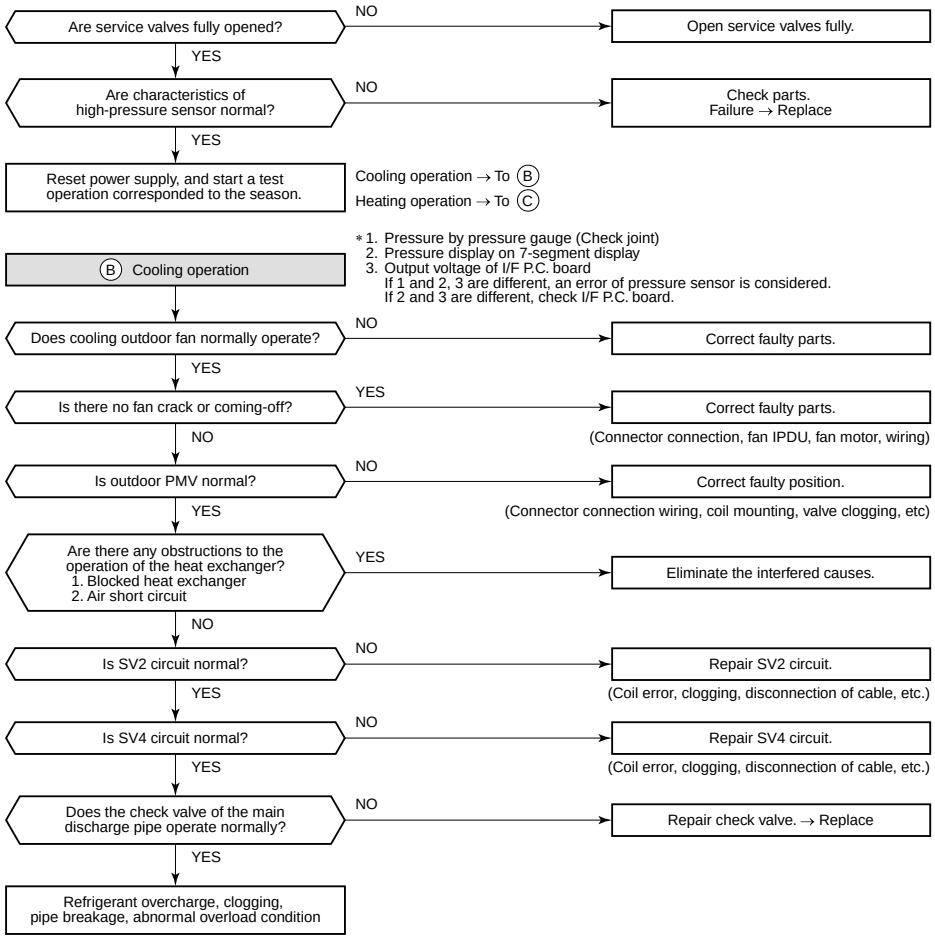
Check code	Check code name	Cause of operation
[P19] / [08] (TCC-L / AI-NET)	**4-way valve operation error**	1. 4-way valve error 2. TS1 sensor/TE1 sensor error 3. Pd sensor/Ps sensor error 4. TE sensor/TL sensor misconnection

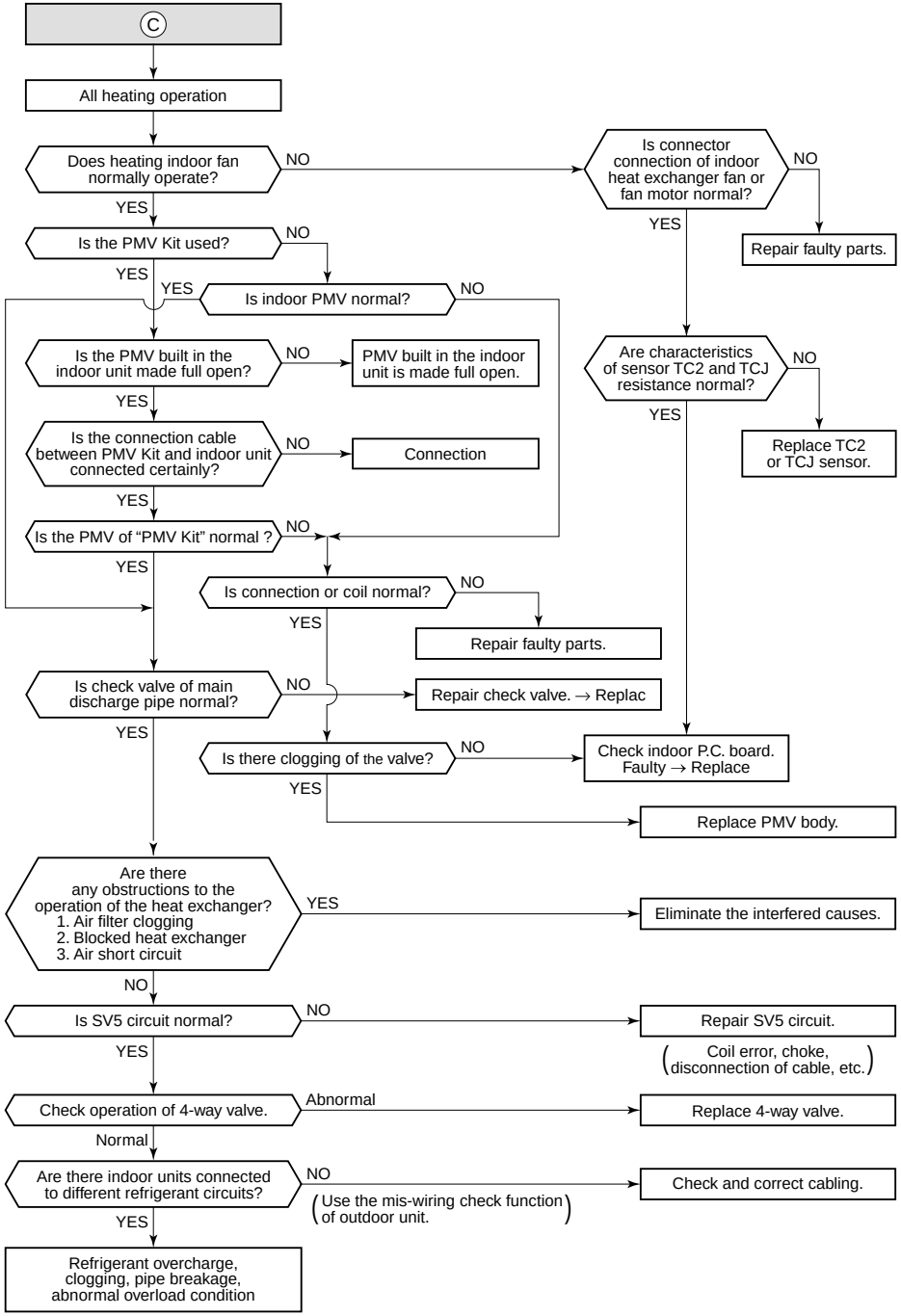


∗1 Check TS and TE temperature of the outdoor unit which compressors is operated.
(I/F) SW01=[1], SW02=[6], SW03=[2] → TS sensor temperature
SW01=[1], SW02=[7], SW03=[2] → TE sensor temperature

Judgment criteria
TE sensor: Normal if TE ≤ 20˚C except summer season (Outside temp 20˚C or lower)
TS sensor: Normal if TS ≤ 40˚C except summer season (Outside temp 20˚C or lower)

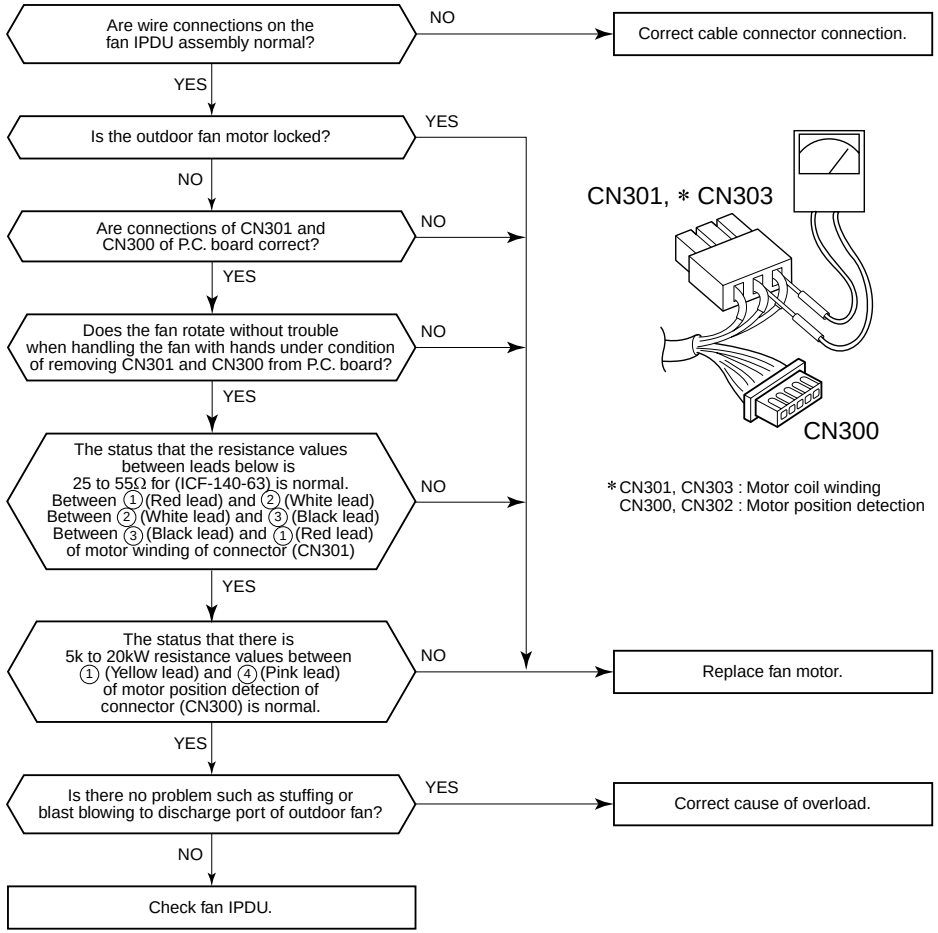
Check code	Check code name	Cause of operation
[P20] / [22] (TCC-L / AI-NET)	**High-pressure protective operation**	1. Pd sensor error 2. Service valve closed. 3. Indoor/outdoor fan error 4. Indoor/outdoor PMV clogging 5. Indoor/outdoor heat exchanger clogging 6. SV2 circuit error 7. SV4 circuit error 8. SV5 circuit error 9. Outdoor I/F P.C. board error 10. Operation error of check valve of main discharge pipe 11. Refrigerant overcharge





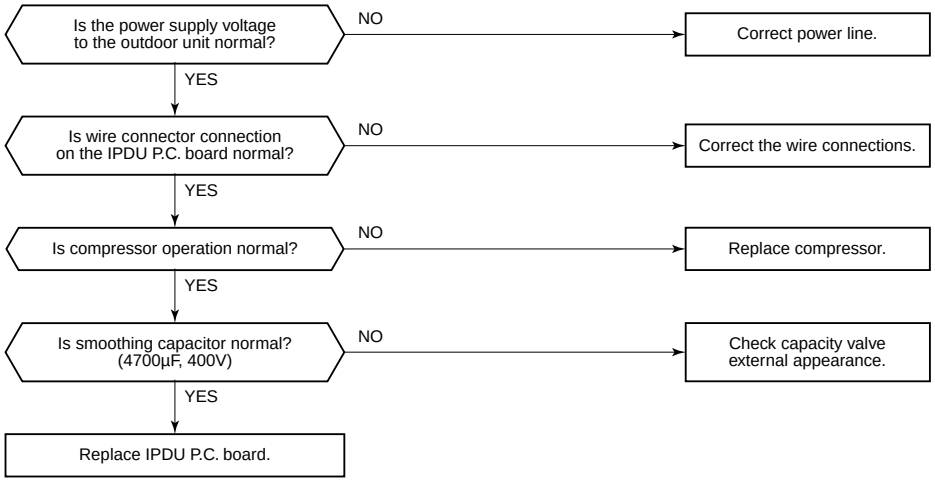
Check code	Check code name	Cause of operation
[P22] / [1A] (TCC-L / AI-NET)	**Outdoor fan IPDU error**	1. Fan lock 2. Fan IPDU P.C. board error 3. Overload 4. External cause such as power surge 5. Fan IPDU power P.C. board error

Auxiliary code :
*A: Fan motor current error *d: Fan motor lock

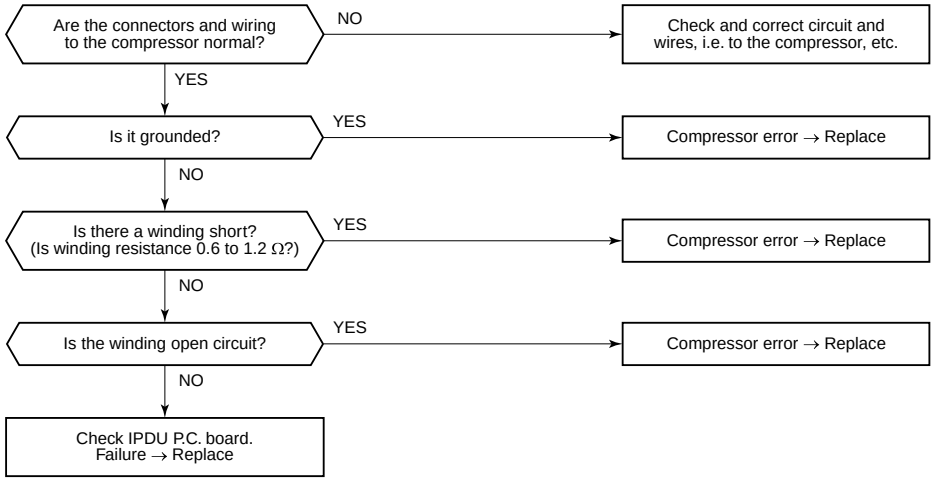


*CN301, CN303 : Motor coil winding
CN300, CN302 : Motor position detection

Check code	Check code name	Cause of operation
[P26] / [14] (TCC-L / AI-NET)	**G-Tr short-circuit protection error**	1. Outdoor unit power error 2. IPDU error/Cable connection error 3. Compressor error 4. IPDU P.C. board error



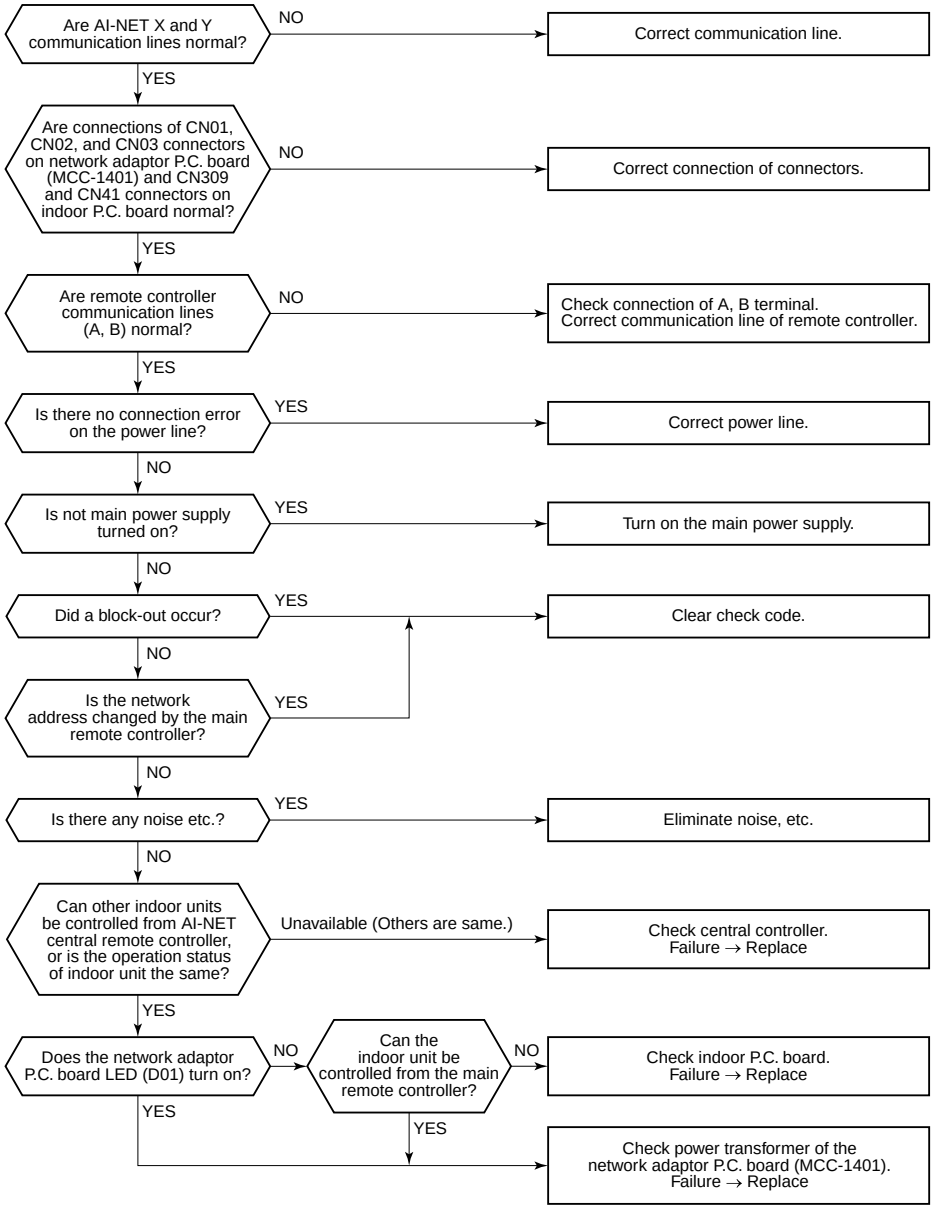
Check code	Check code name	Cause of operation
[P29] / [16] (TCC-L / AI-NET)	**Compressor position detective circuit error**	1. Wire connection error. 2. Compressor error 3. IPDU P.C. board error



Check code	Check code name	Cause of operation
[P31] / [47] (TCC-L / AI-NET)	**Other indoor error (Group follower unit error)**	Other indoor unit in the group has a error.

When the header unit of the group detects [E03, L03, L07, L08 error], the follower unit(s) in the group display [P31] error and stop. There are no check code displays or alarm record on the main remote controller.

Check code	Check code name	Cause of operation
[–] / [97] (TCC-L / AI-NET)	**AI-NET communication line error**	AI-NET communication line error

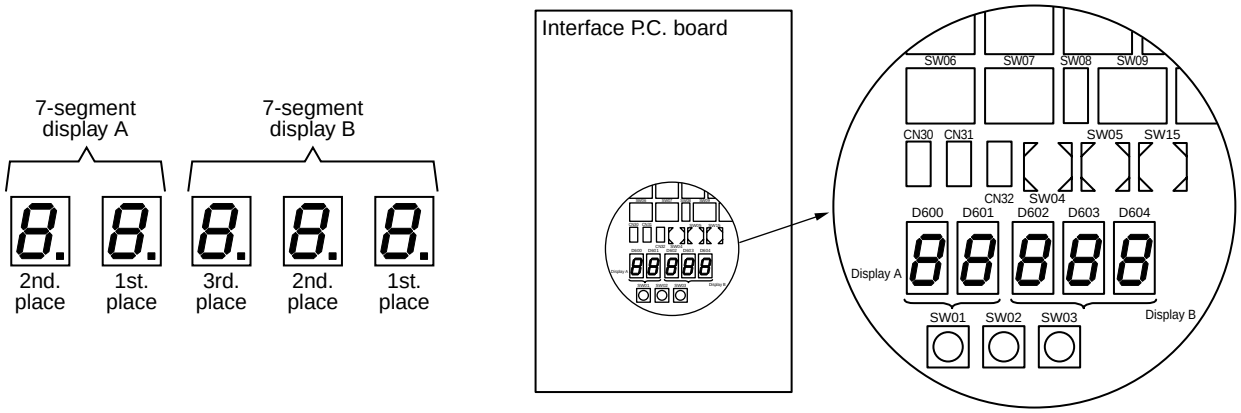


10-6. 7-Segment Display Function

■ 7-segment display on the outdoor unit (Interface P.C. board)

On the interface control P.C. board, a 7-segment LED is provided to check the operating status.

The displayed contents are changed by combining the setup numbers of the rotary switches (SW01, SW02 and SW03) on the I/F P.C. board.



◆ **Check procedure when the system has stopped due to an trouble**

When the system has stopped due to an trouble in the outdoor unit, execute the following check procedure.

1. Open the panels of the outdoor unit, and then check the 7-segment display.
   The check code is shown on the right side of 7-segment display B.
   [U1] [○○○] ([○○○]: Check code)
   ∗ Rotary switch setup for confirming the check code: SW01 [1], SW02 [1], SW03 [1].
   However the check code [OOO] is displayed for 3 seconds and the sub-code [OOO] for 1 second are alternately displayed if a sub-code is provided.
2. Confirm the check code, and then follow the check procedure detailed for the diagnosis of the fault.
3. Perform the check procedure based on each check code diagnosis.

How to read the check display

7-segment display

1. Data display of system information

SW01	SW02	SW03	Display contents				
1	1	3	Refrigerant name	Displays refrigerant name.		A	B
				Model with refrigerant R410A		r4	10A
				Model with refrigerant R407C		r4	07C
	2		System capacity	A	[4] to [6] : 4 to 6HP		
				B	[HP]		
	3		Total capacity of indoot units	A	[i. ∗ ∗. ∗ ∗]		
				B			
	4		No. of connected indoor units/ No. of units with cooling thermo ON	A	[0] to [10] : 0 to 10 units (No. of connected units)		
				B	[C0] to [C10] : 0 to 10 units (No. of units with cooling thermo ON)		
	5		No. of connected indoor units/ No. of units with heating thermo ON	A	[0] to [10] : 0 to 10 units (No. of connected units)		
				B	[H0] to [H10] : 0 to 10 units (No. of units with heating thermo ON)		
	6		Compressor command correction amount	A	Data is displayed with hexadecimal notation		
				B			
	7		Release control	A	Normal time : [r], During release control: [r1]		
				B	—		
	8		—	A	—		
				B	—		
	9		—	A	—		
				B			
	10		Refrigerant/oil recovery operation	A	During sending of cooling refrigerant oil recovery signal : [C1]. Normal time : [C]		
				B	During sending of heating refrigerant oil recovery signal : [H1]. Normal time : [H]		
	11		Automatic address	A	[Ad]		
				B	Automatic addressing : [FF], Normal time : [ ]		
	12		Demand operation	A	[dU]		
				B	Normal time : [ ]. In 50% to 90% : [50 to 90] When controlling by communication line input : [E50 to E90]		
	13		Optional control (P.C. board input)	Displays optioned control status		A	B
				Operation mode selection : In heating with priority (Normal)		–.∗	∗.∗.∗.
					Priority on cooling	c.∗	∗.∗.∗.
					Heating only	H.∗	∗.∗.∗.
					Cooling only	C.∗	∗.∗.∗.
					Priority on No. of operating indoor units	n.∗	∗.∗.∗.
					Priority on specific indoor unit	U.∗	∗.∗.∗.
				External master ON/OFF control		∗.⋯.	∗.∗.∗.
					Start input	∗.1.	∗.∗.∗.
					Stop input	∗.0.	∗.∗.∗.
				Night operation (Sound reduction) : Normal		∗.∗.	⋯.∗.∗.
					Operation input	∗.∗.	1.∗.∗.
				Snow fan operation : Normal		∗.∗.	∗.⋯.∗.
					Operation input	∗.∗.	∗.1.∗.
	14		Option control (BUS line input)	Same as above			
	15		Unused				
	16		—	A	—		
				B	—		

∗ mark: Indicates none on display

2. Data display of outdoor unit information

SW01	SW02	SW03	Display contents				
1	1	1	Error data	A	Displays outdoor unit number: [U1] to [U4]		
				B	Displays check code (Latest code only is displayed.) There is no check code: [– – –] There is sub-code: Check code [＊＊＊] for 3 seconds, sub-code [– ＊＊] for 1 second alternately		
			<SW04> push function : Fan of unit with error only drives. 7-segment A: [E1] <SW04 + SW05> push function : Fan of normal unit only drives. 7-segment A: [E0] <SW05> push function : Interruption of fan operation function				
	2		—	A	—		
				B	—		
	3		Operation mode	A	Stop: [ ] Normal cooling: [C], Normal heating: [H], Normal defrost: [J]		
				B	—		
	4		Outdoor unit HP	A	4HP: [4], 5HP: [5], 6HP: [6]		
				B	[HP]		
	5		Compressor operation command	A	Compressor operation command is displayed. Data display with Hexadecimal notation: [00 to FF]		
				B	[＊＊＊ ＊＊＊ ＊＊＊]		
			<SW04> push function : Inverter frequency is exchanged to decimal notation. 7-segment display (A/B) : [＊＊] [＊＊H] (Normal display by pushing <SW05>)				
	6		Outdoor fan step	A	[FP]		
				B	Step 0 to 31: [0 to 31]		
	7		—	A	—		
				B	—		
	8		—	A	—		
				B	—		
	9		Control valve output data	Displays control output status of solenoid valve		A	B
				4-way valve: ON		H. 1	··· ··· ···
				4-way valve: OFF		H. 0	··· ··· ···
	10			SV2: ON / SV5: OFF		2. 1	··· 5. 0
				SV2: OFF / SV5: ON		2. 0	··· 5. 1
	11			SV41: ON / SV42: OFF		4. 1	··· ··· ···
				SV41: OFF / SV42: ON		4. 0	··· ··· ···
	12			—		··· ···	··· ··· ···
	13			—		··· ···	··· ··· ···
	14		PMV opening	Displays opening data (Decimal) (Total opening)		＊＊	＊＊. P
	15		—	—			
	16		—	A	—		
				B	—		

3. Data display of outdoor cycle

SW01	SW02	SW03	Display contents				
1	1	2	Pd pressure data	Pd pressure (MPaG) is displayed with decimal data. (MPaG: Approx. 1/10 value of kg/cm^{2}G data)		A	B
						P d.	∗. ∗ ∗
	2		Ps pressure data	Ps pressure (MPaG) is displayed with decimal data.		P S.	∗. ∗ ∗
	3		PL pressure conversion data	Estimated pressure of liquid line (MPaG) is displayed with decimal data.		P L.	∗. ∗ ∗
	4		TD sensor data	Temperature sensor data (°C) is displayed with decimal notation. • Symbol display for 1 sec. and data display for 3 sec. are alternately displayed. • Data is displayed in [∗]. • Negative data is displayed as [– ∗ ∗ ∗ ∗].	Symbol	t d	
					Data	∗	∗ ∗. ∗
	5		TS sensor data		Symbol	t S	
					Data	∗	∗ ∗. ∗
	6		TE sensor data		Symbol	t E	
					Data	∗	∗ ∗. ∗
	7		TL sensor data		Symbol	tL	
					Data	∗	∗ ∗. ∗
	8		TO sensor data		Symbol	tO	—
					Data	—	—
	9		—		Symbol		
					Data	∗	∗ ∗. ∗
	10		—		Symbol		
					Data	∗	∗ ∗. ∗
	11		—		Symbol		
					Data	∗	∗ ∗. ∗
	12		—		Symbol		
					Data	∗	∗ ∗. ∗
	13		—		Symbol		
					Data	∗	∗ ∗. ∗
	14		—		Symbol		
					Data	∗	∗ ∗. ∗
	15		—	A	—		
				B	—		
	16		—	A	—		
				B			

4. Data display of indoor unit information

SW01	SW02	SW03	Display contents		
4	1 to 16	1 to 3	Receiving status of indoor BUS communication	B	Receiving time: [··· ··· 1], Not received: [··· ··· ···]
5			Indoor check code	B	No check code: [– – –]
6			Indoor capacity (HP) horse power	B	0. 2, 0. 5, 0. 8, ··· 1, 1. 2, 1. 7, ··· 2, 2. 5, ··· 3, 3. 2, ··· 4, ··· 5, ··· 6, ··· 8, 1 0, 1 6, 2 0
7			Indoor request command (S code)	B	Data is displayed with Hexadecimal notation [··· ··· 0 to ··· ··· F] : Heating
8			Indoor PMV opening data	B	Data is displayed with Decimal notation
9			Indoor TA sensor data	B	Data is displayed with Decimal notation
10			Indoor TF sensor data	B	Data is displayed with Decimal notation
11			Indoor TCJ sensor data	B	Data is displayed with Decimal notation
12			Indoor TC1 sensor data	B	Data is displayed with Decimal notation
13			Indoor TC2 sensor data	B	Data is displayed with Decimal notation

NOTE) Indoor address No. is chosen by changing SW02 and SW03.

SW03	SW02	Indoor address	7-segment display A
1	1 to 16	SW02 setup number	[01] to [16]
2	1 to 16	SW02 setup number + 16	[17] to [32]
3	1 to 16	SW02 setup number + 32	[33] to [48]

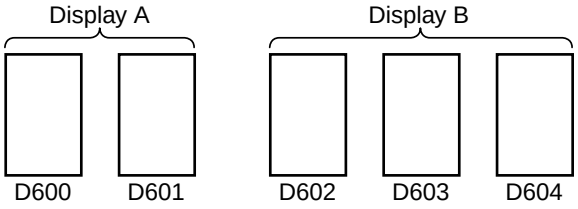
5. Outdoor EEPROM check code display

∗ The latest check code written in EEPROM on each outdoor unit is displayed.
(It is used when confirming the check code after power supply has been reset.)

Set SW01 to 03 as shown in the following table and the push SW04 for 5 seconds or more to display an check code.

W01	SW02	SW03	Display contents	7-segment display	
				A	B
1	1	16	The latest check code of the outdoor unit 1 (U1)	E. r	1. – –

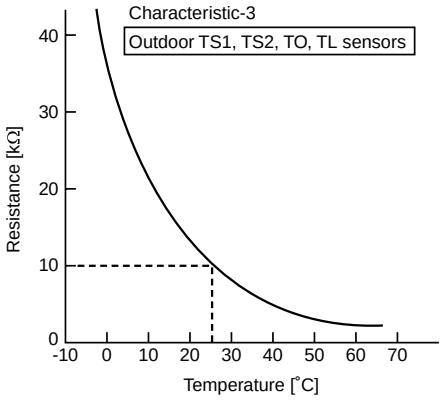
■ **7-segment display A, B**

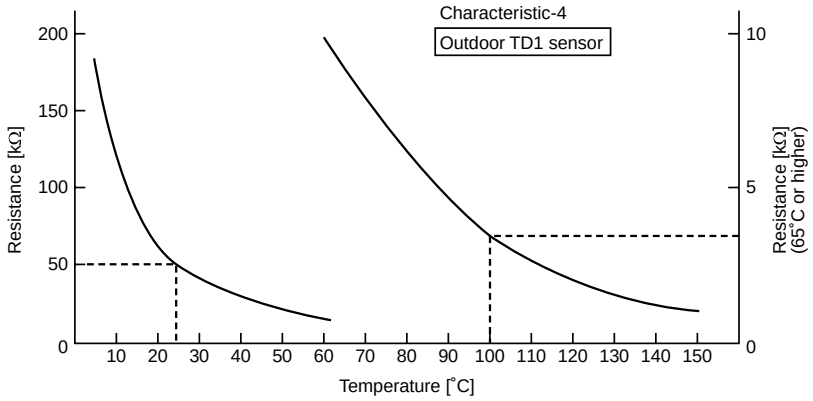


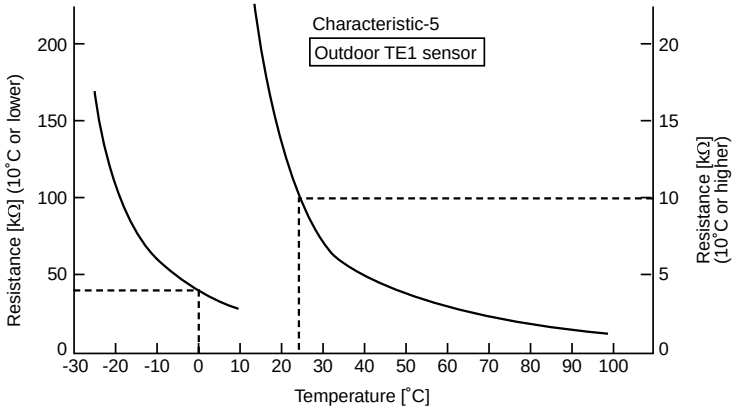
10-7. Sensor Characteristics

10-7-1. Outdoor Unit

■ **Temperature sensor characteristics**







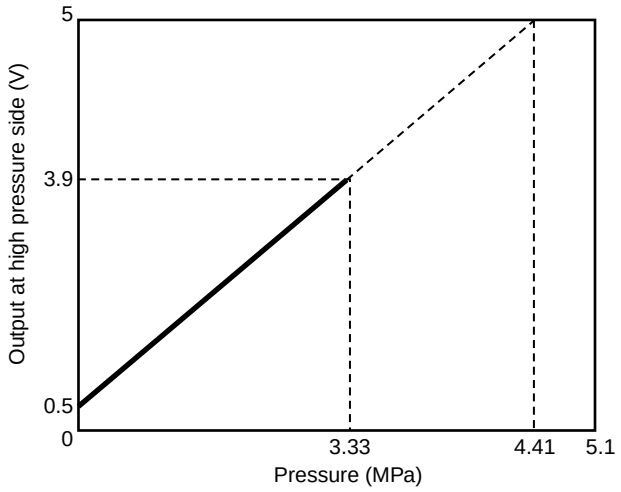
■ Pressure sensor characteristics

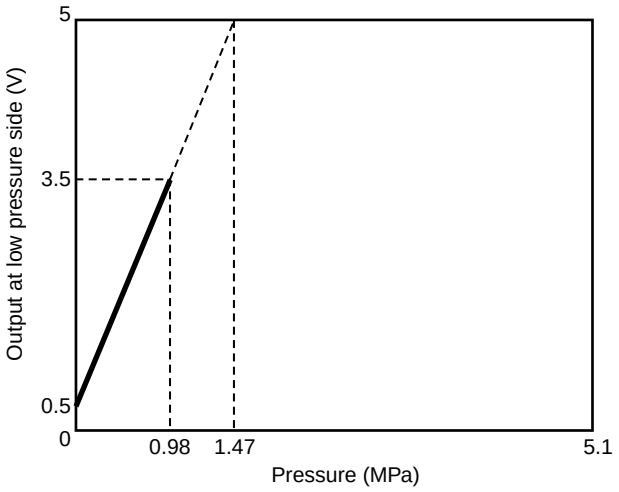
- **I/O cable connection table**

Pin No.	High pressure side (Pd)		Low pressure side (Ps)	
	Input/Output name	Lead wire color	Input/Output name	Lead wire color
1	OUTPUT	White	—	—
2	—	—	OUTPUT	White
3	GND	Black	GND	Black
4	+5V	Red	+5V	Red

- **Output voltage — Pressure**

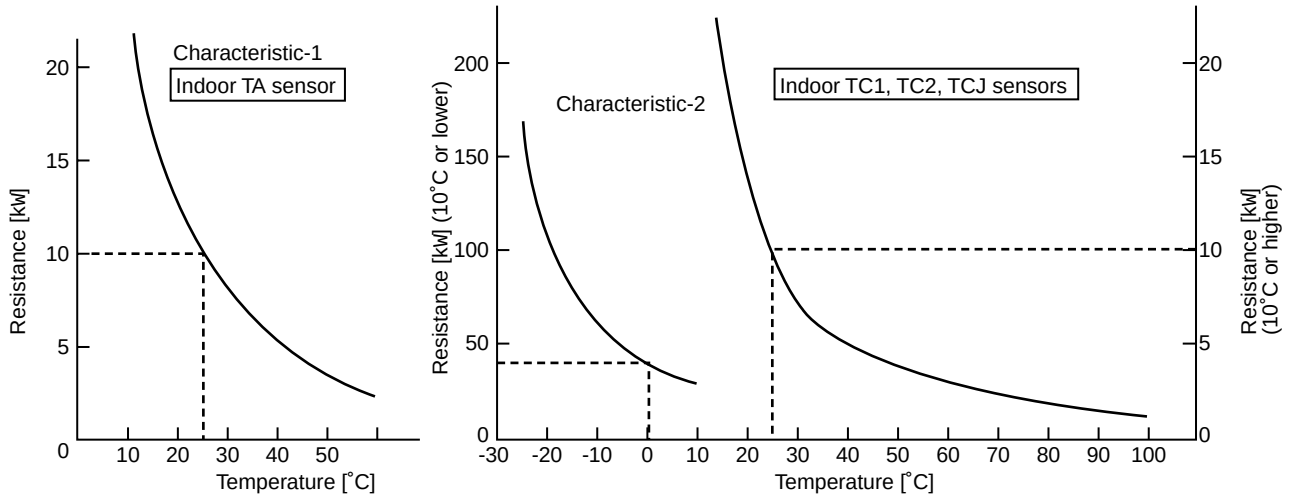
High pressure side (Pd)	Low pressure side (Ps)
0.5 to 3.9 V DC	0.5 to 3.5 V DC
0 to 3.33 MPa	0 to 0.98 MPa





10-7-2. Indoor Unit

■ Temperature sensor characteristics



10-7-3. Temp. Sensor Characteristic

Td sensor characteristic

Temp. deg.	–10	0	10	20	30
Resistance value KΩ	270	160	100	62	40

Ta and other sensor characteristic (Except for Td)

Temp. deg.	–10	0	10	20	30
Resistance value KΩ	58	34	20	13	8

10-8. Pressure Sensor Output Check

10-8-1. Outdoor Unit

■ Pd sensor characteristics

0 to 4.41MPa (0.5 to 5V output with 0 to 4.41MPa)

Voltage check between CN501 ② and ③ pins on the outdoor unit I/F P.C. board (Tester ⊖ rod at ③ pin side)

VOLT	Pd (MPa)	Pd (kg/cm²)	VOLT	Pd (MPa)	Pd (kg/cm²)	VOLT	Pd (MPa)	Pd (kg/cm²)	VOLT	Pd (MPa)	Pd (kg/cm²)	VOLT	Pd (MPa)	Pd (kg/cm²)
0.00	0.00	0.0	1.00	0.49	5.0	1.99	1.46	14.9	2.99	2.44	24.9	3.98	3.42	34.8
0.02	0.00	0.0	1.02	0.51	5.2	2.01	1.48	15.1	3.01	2.46	25.1	4.00	3.44	35.0
0.04	0.00	0.0	1.04	0.53	5.4	2.03	1.50	15.3	3.03	2.48	25.3	4.02	3.45	35.2
0.06	0.00	0.0	1.06	0.54	5.5	2.05	1.52	15.5	3.05	2.50	25.5	4.04	5.48	35.4
0.08	0.00	0.0	1.07	0.56	5.7	2.07	1.54	15.7	3.07	2.52	25.7	4.06	3.49	35.6
0.10	0.00	0.0	1.09	0.58	5.9	2.09	1.56	15.9	3.09	2.54	25.9	4.08	3.51	35.8
0.12	0.00	0.0	1.11	0.60	6.1	2.11	1.58	16.1	3.11	2.56	26.1	4.10	3.53	36.0
0.14	0.00	0.0	1.13	0.62	6.3	2.13	1.60	16.3	3.13	2.57	26.3	4.12	3.55	36.2
0.16	0.00	0.0	1.15	0.64	6.5	2.15	1.62	16.5	3.15	2.59	26.4	4.14	3.57	36.4
0.18	0.00	0.0	1.17	0.66	6.7	2.17	1.64	16.7	3.16	2.61	26.6	4.16	3.59	36.6
0.20	0.00	0.0	1.19	0.68	6.9	2.19	1.66	16.9	3.18	2.63	26.8	4.18	3.61	36.8
0.22	0.00	0.0	1.21	0.70	7.1	2.21	1.67	17.1	3.20	2.65	27.0	4.20	3.63	37.0
0.23	0.00	0.0	1.23	0.72	7.3	2.23	1.69	17.3	3.22	2.67	27.2	4.22	3.65	37.2
0.25	0.00	0.0	1.25	0.74	7.5	2.25	1.71	17.5	3.24	2.69	27.4	4.24	3.67	37.4
0.27	0.00	0.0	1.27	0.76	7.7	2.27	1.73	17.7	3.26	2.71	27.6	4.26	3.69	37.6
0.29	0.00	0.0	1.29	0.77	7.9	2.29	1.75	17.9	3.28	2.73	27.8	4.28	3.70	37.8
0.31	0.00	0.0	1.31	0.79	8.1	2.31	1.77	18.0	3.30	2.75	28.0	4.30	3.72	38.0
0.33	0.00	0.0	1.33	0.81	8.3	2.32	1.79	18.2	3.32	2.77	28.2	4.32	3.74	38.2
0.35	0.00	0.0	1.35	0.83	8.5	2.34	1.81	18.4	3.34	2.79	28.4	4.24	3.76	38.4
0.37	0.00	0.0	1.37	0.85	8.7	2.36	1.83	18.6	3.36	2.80	28.6	4.36	3.78	38.6
0.39	0.00	0.0	1.39	0.87	8.9	2.38	1.85	18.8	3.38	2.82	28.8	4.38	3.80	38.8
0.41	0.00	0.0	1.41	0.89	9.1	2.40	1.87	19.0	3.40	2.84	29.0	4.40	3.82	38.9
0.43	0.00	0.0	1.43	0.91	9.3	2.42	1.89	19.2	3.42	2.86	29.2	4.41	3.84	39.1
0.45	0.00	0.0	1.45	0.93	9.5	2.44	1.90	19.4	3.44	2.88	29.4	4.43	3.86	39.3
0.47	0.00	0.0	1.47	0.95	9.6	2.46	1.92	19.6	3.46	2.90	29.6	4.45	3.88	39.5
0.49	0.00	0.0	1.48	0.97	9.8	2.48	1.94	19.8	3.48	2.92	29.8	4.47	3.90	39.7
0.51	0.01	0.1	1.50	0.99	10.0	2.50	1.96	20.0	3.50	2.94	30.0	4.49	3.92	39.9
0.53	0.03	0.3	1.52	1.00	10.2	2.52	1.98	20.2	3.52	2.96	30.2	4.51	3.93	40.1
0.55	0.05	0.5	1.54	1.02	10.4	2.54	2.00	20.4	3.54	2.98	3.04	4.53	3.95	40.3
0.57	0.07	0.7	1.56	1.04	10.6	2.56	2.02	20.6	3.56	3.00	30.5	4.55	3.97	40.5
0.59	0.08	0.9	1.58	1.06	10.8	2.58	2.04	20.8	3.57	3.02	30.7	4.57	3.99	40.7
0.61	0.10	1.1	1.60	1.08	11.0	2.60	2.06	21.0	3.59	3.03	30.9	4.59	4.01	40.9
0.63	0.12	1.3	1.62	1.10	11.2	2.62	2.08	21.2	3.61	3.05	31.1	4.61	4.03	41.1
0.65	0.14	1.4	1.64	1.12	11.4	2.64	1.10	21.4	3.63	3.07	31.3	4.63	4.05	41.3
0.66	0.16	1.6	1.66	1.14	11.6	2.66	2.12	21.6	3.65	3.09	31.5	4.65	4.07	41.5
0.68	0.18	1.8	1.68	1.16	11.8	2.68	2.13	21.8	3.67	3.11	31.7	4.67	4.09	41.7
0.70	0.20	2.0	1.70	1.18	12.0	2.70	2.15	22.0	3.69	3.13	31.9	4.69	4.11	41.9
0.72	0.22	2.2	1.72	1.20	12.2	2.72	2.17	22.2	3.71	3.15	32.1	4.71	4.13	42.1
0.74	0.24	2.4	1.74	1.21	12.4	2.73	2.19	22.3	3.73	3.17	32.3	4.73	4.15	42.3
0.76	0.26	2.6	1.76	1.23	12.6	2.75	2.21	22.5	3.75	3.19	32.5	4.75	4.16	42.5
0.78	0.28	2.8	1.78	1.25	12.8	2.77	2.23	22.7	3.77	3.21	32.7	4.77	4.18	42.7
0.80	0.30	3.0	1.80	1.27	13.0	2.79	2.25	22.9	3.79	3.23	32.9	4.79	4.20	42.9
0.82	0.31	3.2	1.82	1.29	13.2	2.81	2.27	23.1	3.81	3.25	33.1	4.81	4.22	43.0
0.84	0.33	3.4	1.84	1.31	13.4	2.83	2.29	23.3	3.83	3.26	33.3	4.82	4.24	43.2
0.86	0.35	3.6	1.86	1.33	13.6	2.85	2.31	23.5	3.85	3.28	33.5	4.84	4.26	43.4
0.88	0.37	3.8	1.88	1.35	13.8	2.87	2.33	23.7	3.87	3.30	33.7	4.86	4.28	43.6
0.90	0.39	4.0	1.90	1.37	13.9	2.89	2.35	23.9	3.89	3.32	33.9	4.88	4.30	43.8
0.92	0.41	4.2	1.91	1.39	14.1	2.91	2.36	24.1	3.91	3.34	34.1	4.90	4.32	44.0
0.94	0.43	4.4	1.93	1.41	14.3	2.93	2.38	24.3	3.93	3.36	34.3	4.92	4.34	44.2
0.96	0.45	4.6	1.95	1.43	14.5	2.95	2.40	24.5	3.95	3.38	34.5	4.94	4.36	44.4
0.98	0.47	4.8	1.97	1.44	14.7	2.97	2.42	24.7	3.97	3.40	34.7	4.96	4.38	44.6
												4.98	4.39	44.8

■ Ps sensor characteristics

0 to 1.48MPa (0.5 to 5V output with 0 to 1.48MPa)

Voltage check between CN500 ② and ③ pins on the outdoor unit I/F P.C. board (Tester ⊖ rod at ③ pin side)

VOLT	Ps (MPa)	Ps (kg/cm²)
0.00	0.00	0.0
0.02	0.00	0.0
0.04	0.00	0.0
0.06	0.00	0.0
0.08	0.00	0.0
0.10	0.00	0.0
0.12	0.00	0.0
0.14	0.00	0.0
0.16	0.00	0.0
0.18	0.00	0.0
0.20	0.00	0.0
0.22	0.00	0.0
0.23	0.00	0.0
0.25	0.00	0.0
0.27	0.00	0.0
0.29	0.00	0.0
0.31	0.00	0.0
0.33	0.00	0.0
0.35	0.00	0.0
0.37	0.00	0.0
0.39	0.00	0.0
0.41	0.00	0.0
0.43	0.00	0.0
0.45	0.00	0.0
0.47	0.00	0.0
0.49	0.00	0.0
0.51	0.00	0.0
0.53	0.01	0.1
0.55	0.02	0.3
0.57	0.02	0.2
0.59	0.03	0.3
0.61	0.03	0.4
0.63	0.04	0.4
0.65	0.05	0.5
0.66	0.05	0.5
0.68	0.06	0.6
0.70	0.07	0.7
0.72	0.07	0.7
0.74	0.08	0.8
0.76	0.09	0.9
0.78	0.09	0.9
0.80	0.10	1.0
0.82	0.11	1.1
0.84	0.11	1.1
0.86	0.12	1.2
0.88	0.12	1.3
0.90	0.13	1.3
0.92	0.14	1.4
0.94	0.14	1.5
0.96	0.15	1.5
0.98	0.16	1.6
1.00	0.16	1.7
1.02	0.17	1.7
1.04	0.18	1.8
1.06	0.18	1.8
1.07	0.19	1.9
1.09	0.19	2.0
1.11	0.20	2.0
1.13	0.21	2.1
1.15	0.21	2.2
1.17	0.22	2.2
1.19	0.23	2.3
1.21	0.23	2.4
1.23	0.24	2.4
1.25	0.25	2.5
1.27	0.25	2.6
1.29	0.26	2.6
1.31	0.26	2.7
1.33	0.27	2.8
1.35	0.28	2.8
1.37	0.28	2.9
1.39	0.29	3.0
1.41	0.30	3.0
1.43	0.30	3.1
1.45	0.31	3.2
1.47	0.32	3.2
1.48	0.32	3.3
1.50	0.33	3.3
1.52	0.34	3.4
1.54	0.34	3.5
1.56	0.35	3.5
1.58	0.35	3.6
1.60	0.36	3.7
1.62	0.37	3.7
1.64	0.37	3.8
1.66	0.38	3.9
1.68	0.39	3.9
1.70	0.39	4.0
1.72	0.40	4.1
1.74	0.41	4.1
1.76	0.41	4.2
1.78	0.42	4.3
1.80	0.42	4.3
1.82	0.43	4.4
1.84	0.44	4.5
1.86	0.44	4.5
1.88	0.45	4.6
1.90	0.46	4.6
1.91	0.46	4.7
1.93	0.47	4.8
1.95	0.48	4.8
1.97	0.48	4.9
1.99	0.49	5.0
2.01	0.49	5.0
2.03	0.50	5.1
2.05	0.51	5.2
2.07	0.51	5.2
2.09	0.52	5.3
2.11	0.53	5.4
2.13	0.53	5.4
2.15	0.54	5.5
2.17	0.55	5.6
2.19	0.55	5.6
2.21	0.56	5.7
2.23	0.56	5.8
2.25	0.57	5.8
2.27	0.58	5.9
2.29	0.58	6.0
2.31	0.59	6.0
2.32	0.60	6.1
2.34	0.60	6.1
2.36	0.61	6.2
2.38	0.62	6.3
2.40	0.62	6.3
2.42	0.63	6.4
2.44	0.64	6.5
2.46	0.64	6.5
2.48	0.65	6.6
2.50	0.65	6.7
2.52	0.66	6.7
2.54	0.67	6.8
2.56	0.67	6.9
2.58	0.68	6.9
2.60	0.69	7.0
2.62	0.69	7.1
2.64	0.70	7.1
2.66	0.71	7.2
2.68	0.71	7.3
2.70	0.72	7.3
2.72	0.72	7.4
2.73	0.73	7.4
2.75	0.74	7.5
2.77	0.74	7.6
2.79	0.75	7.6
2.81	0.76	7.7
2.83	0.76	7.8
2.85	0.77	7.8
2.87	0.78	7.9
2.89	0.78	8.0
2.91	0.79	8.0
2.93	0.79	8.1
2.95	0.80	8.2
2.97	0.81	8.2
2.99	0.81	8.3
3.01	0.82	8.4
3.03	0.83	8.4
3.05	0.83	8.5
3.07	0.84	8.6
3.09	0.85	8.6
3.11	0.85	8.7
3.13	0.86	8.8
3.15	0.86	8.8
3.16	0.87	8.9
3.18	0.88	8.9
3.20	0.88	9.0
3.22	0.89	9.1
3.24	0.90	9.1
3.26	0.90	9.2
3.28	0.91	9.3
3.30	0.92	9.3
3.32	0.92	9.4
3.34	0.93	9.5
3.36	0.94	9.5
3.38	0.94	9.6
3.40	0.95	9.7
3.42	0.95	9.7
3.44	0.96	9.8
3.46	0.97	9.9
3.48	0.97	9.9
3.50	0.98	10.0
3.52	0.99	10.1
3.54	0.99	10.1
3.56	1.00	10.2
3.57	1.01	10.2
3.59	1.01	10.3
3.61	1.02	10.4
3.63	1.02	10.4
3.65	1.03	10.5
3.67	1.04	10.6
3.69	1.04	10.6
3.71	1.05	10.7
3.73	1.06	10.8
3.75	1.06	10.8
3.77	1.07	10.9
3.79	1.08	11.0
3.81	1.08	11.0
3.83	1.09	11.1
3.85	1.09	11.2
3.89	1.10	11.2
3.89	1.11	11.3
3.91	1.11	11.4
3.93	1.12	11.4
3.95	1.13	11.5
3.97	1.13	11.5
3.98	1.14	11.6
4.00	1.15	11.7
4.02	1.15	11.7
4.04	1.16	11.8
4.06	1.17	11.9
4.08	1.17	11.9
4.10	1.18	12.0
4.12	1.18	12.1
4.14	1.19	12.1
4.16	1.20	12.2
4.18	1.20	12.3
4.20	1.21	12.3
4.22	1.22	12.4
4.24	1.22	12.5
4.26	1.23	12.5
4.28	1.24	12.6
4.30	1.24	12.7
4.32	1.25	12.7
4.34	1.25	12.8
4.36	1.26	12.9
4.38	1.27	12.9
4.40	1.27	13.0
4.41	1.28	13.0
4.43	1.29	13.1
4.45	1.29	13.2
4.47	1.30	13.2
4.49	1.31	13.3
4.51	1.31	13.4
4.53	1.32	13.4
4.55	1.32	13.5
4.57	1.33	13.6
4.59	1.34	13.6
4.61	1.34	13.7
4.63	1.35	13.8
4.65	1.36	13.8
4.67	1.36	13.9
4.69	1.37	14.0
4.71	1.38	14.0
4.73	1.38	14.1
4.75	1.39	14.2
4.77	1.39	14.2
4.79	1.40	14.3
4.81	1.41	14.3
4.82	1.41	14.4
4.84	1.42	14.5
4.86	1.43	14.5
4.88	1.43	14.6
4.90	1.44	14.7
4.92	1.45	14.7
4.94	1.45	14.8
4.96	1.46	14.9
4.98	1.47	14.9

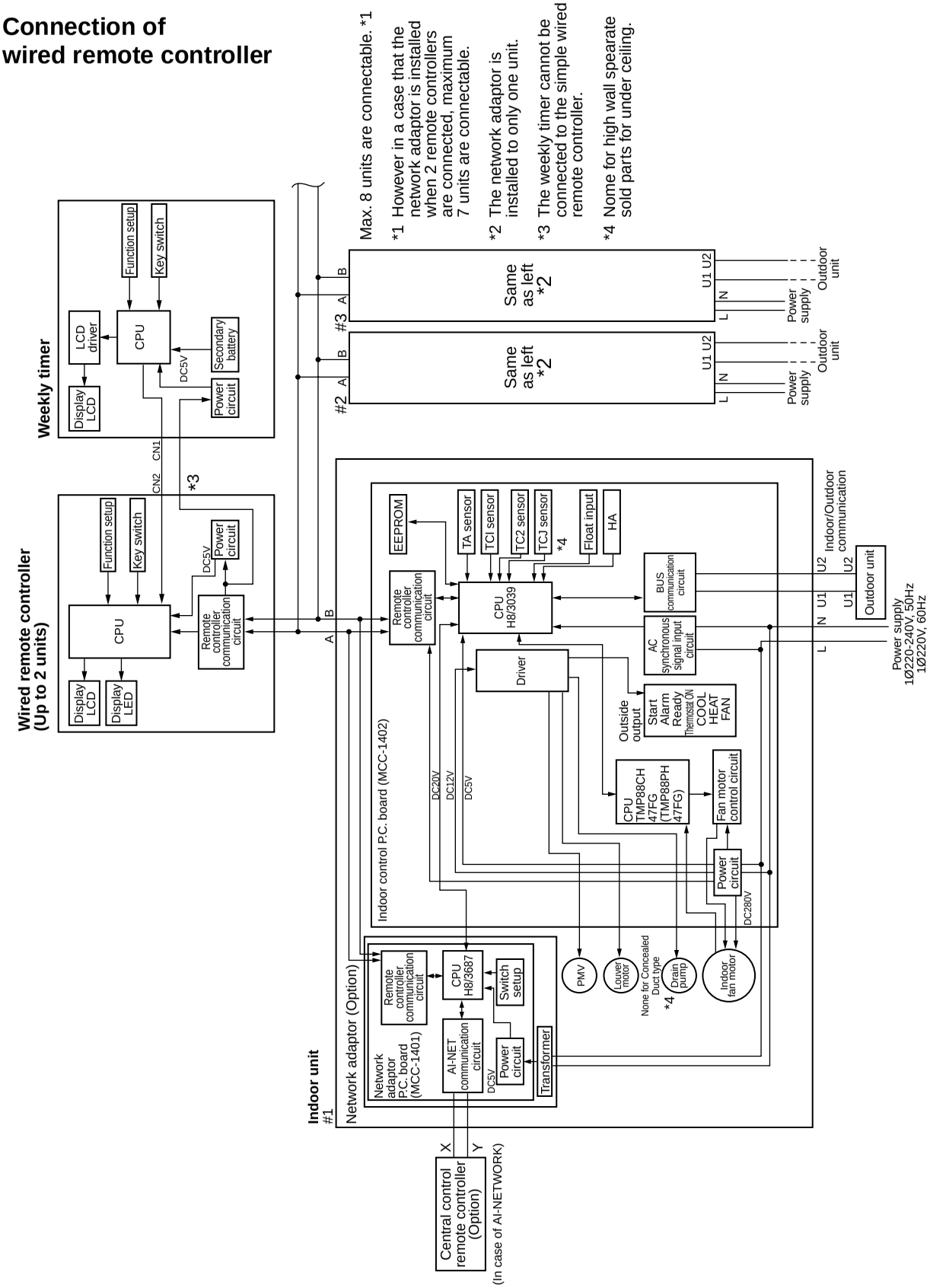
11. CONFIGURATION OF CONTROL CIRCUIT

11-1. Indoor Unit

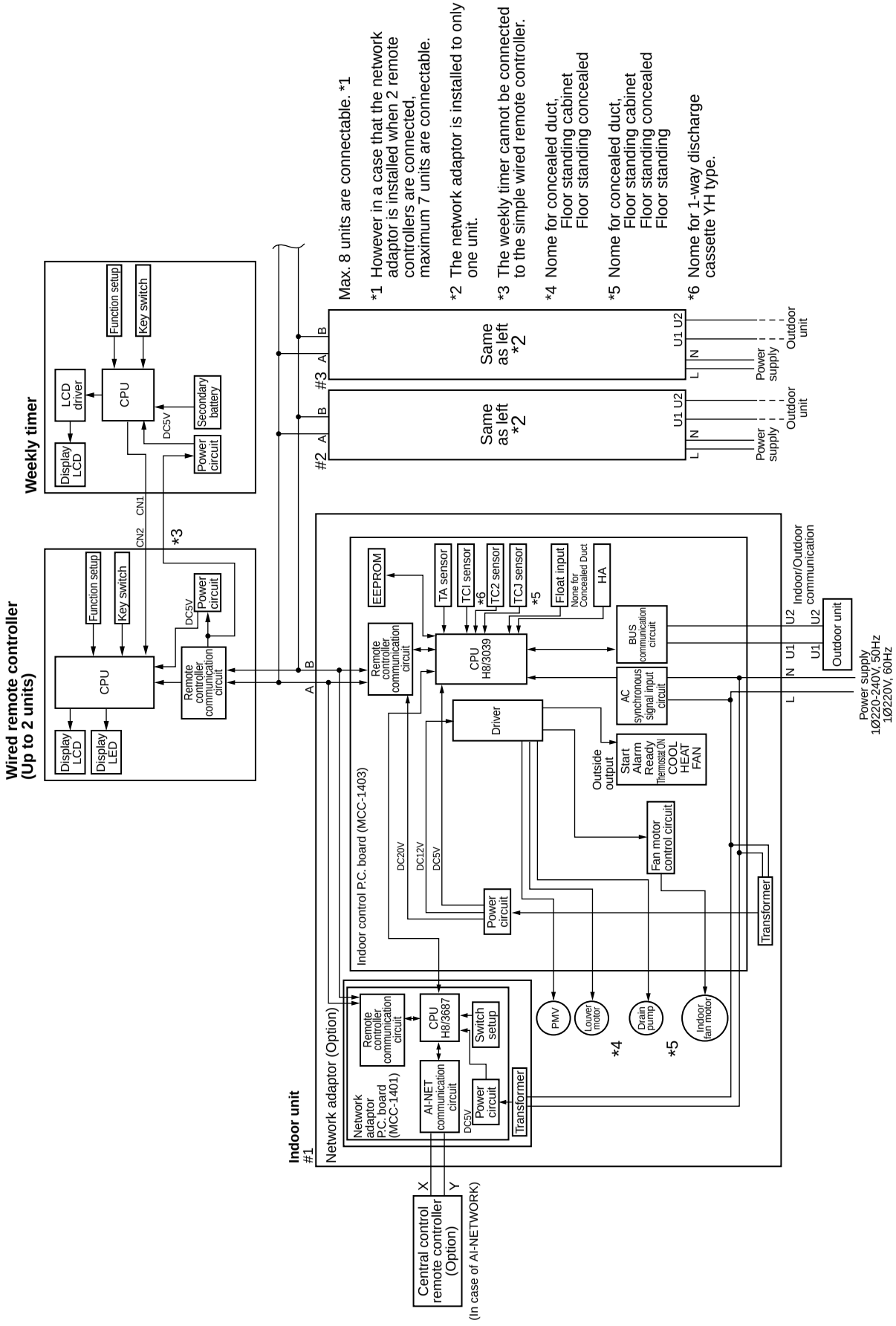
11-1-1. Indoor Controller Block Diagram

4-way Air Discharge Cassette Type, Compact 4-way Air Discharge Cassette Type, Concealed Duct Standard Type, Under Ceiling Type, High Wall Type (1 Series), 1-way Air Discharge Cassette Type (2 Series), Slim Duct Type

1. Connection of wired remote controller

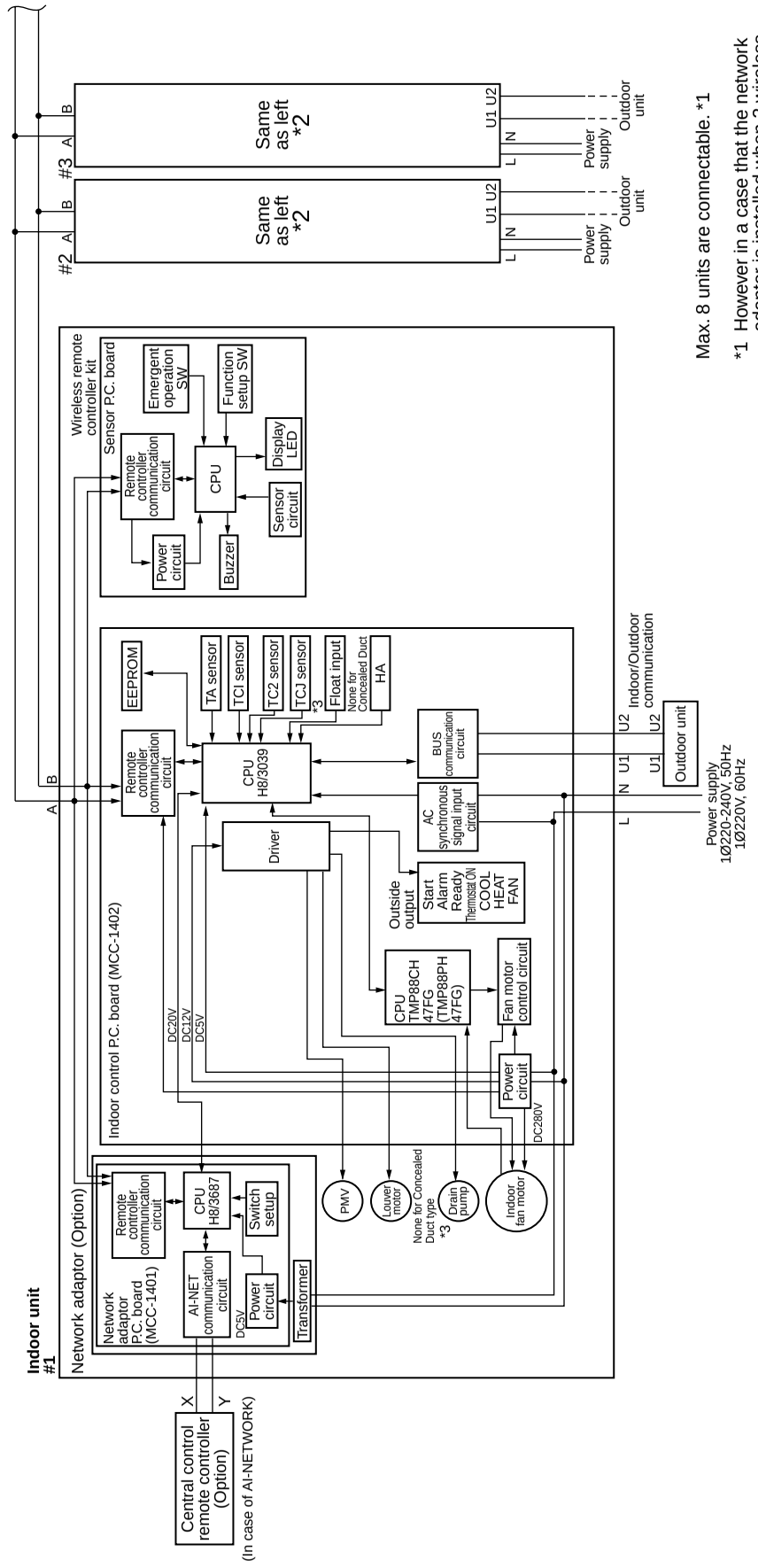


2-way Air Discharge Cassette Type, 1-way Air Discharge Cassette Type (1 Series), Concealed Duct High Static Pressure Type, Floor Standing Cabinet Type, Floor Standing Concealed Type, Floor Standing Type



2. Connection of wireless remote controller kit

4-way Air Discharge Cassette Type, Compact 4-way Air Discharge Cassette Type , Concealed Duct Standard Type, Under Ceiling Type, High Wall Type (1 Series), 1-way Air Discharge Cassette Type (2 Series), Slim Duct Type



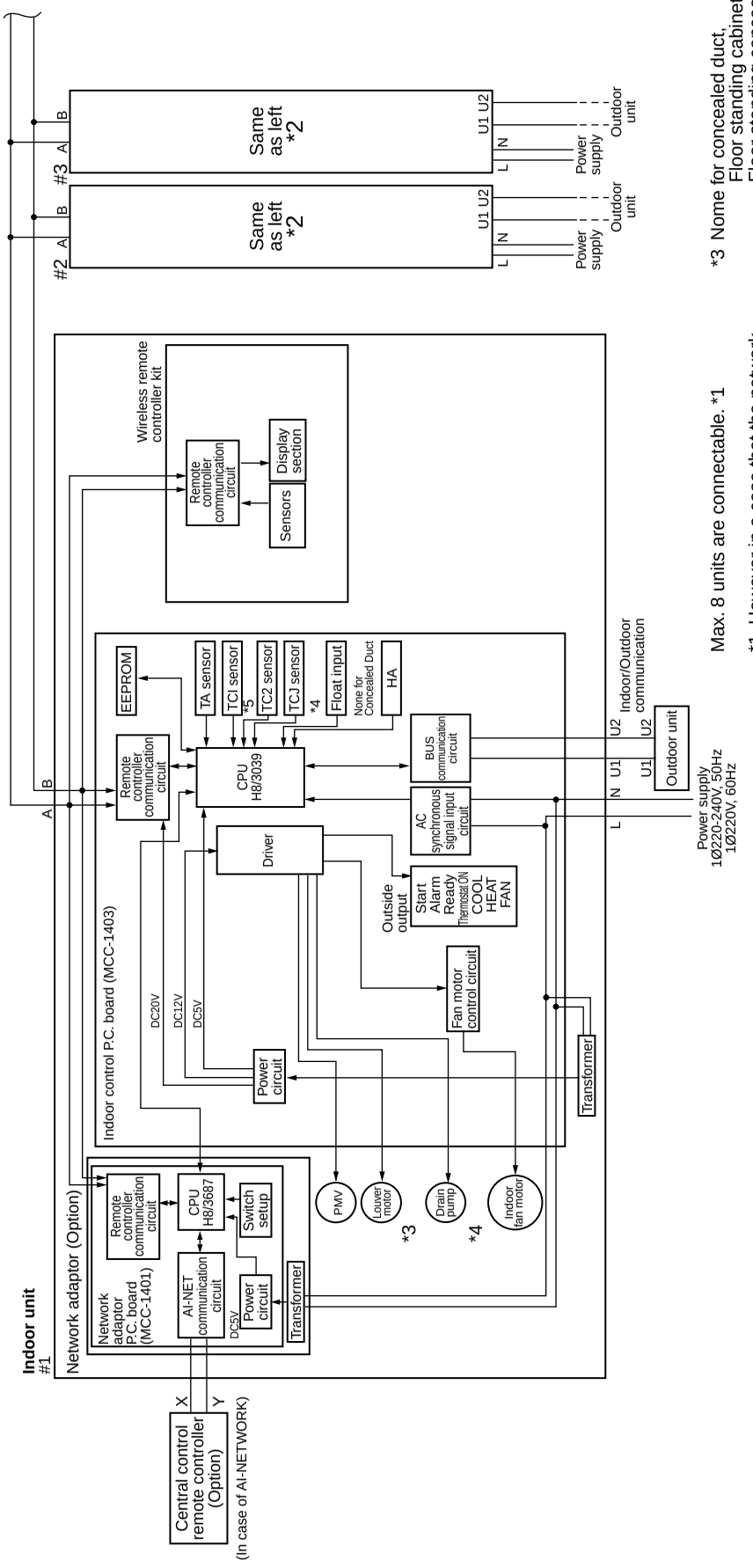
Max. 8 units are connectable. *1

*1 However in a case that the network adaptor is installed when 2 wireless remote controller kits are connected, maximum 7 units are connectable.

*2 The network adaptor is installed to only

*3 Nome for high wall spearate sold parts for under ceiling. one unit.

2-way Air Discharge Cassette Type, 1-way Air Discharge Cassette Type (1 Series), Concealed Duct High Static Pressure Type, Floor Standing Cabinet Type, Floor Standing Concealed Type, Floor Standing Type



Max. 8 units are connectable. *1

*1 However in a case that the network adaptor is installed when 2 wireless remote controller kits are connected, maximum 7 units are connectable.

*2 The network adaptor is installed to only one unit.

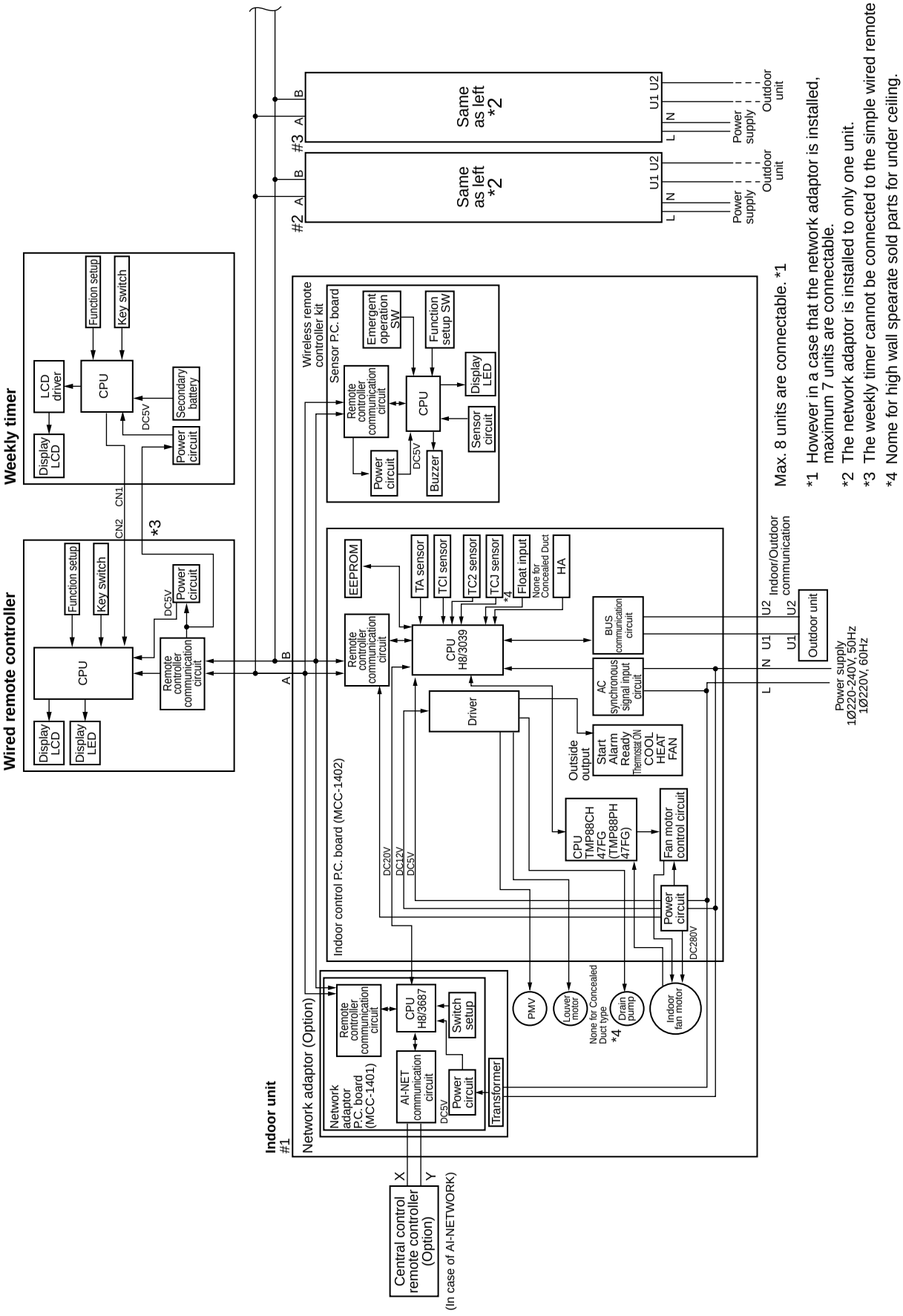
*3 Nome for concealed duct,
Floor standing cabinet
Floor standing concealed

*4 Nome for concealed duct,
Floor standing cabinet
Floor standing concealed
Floor standing

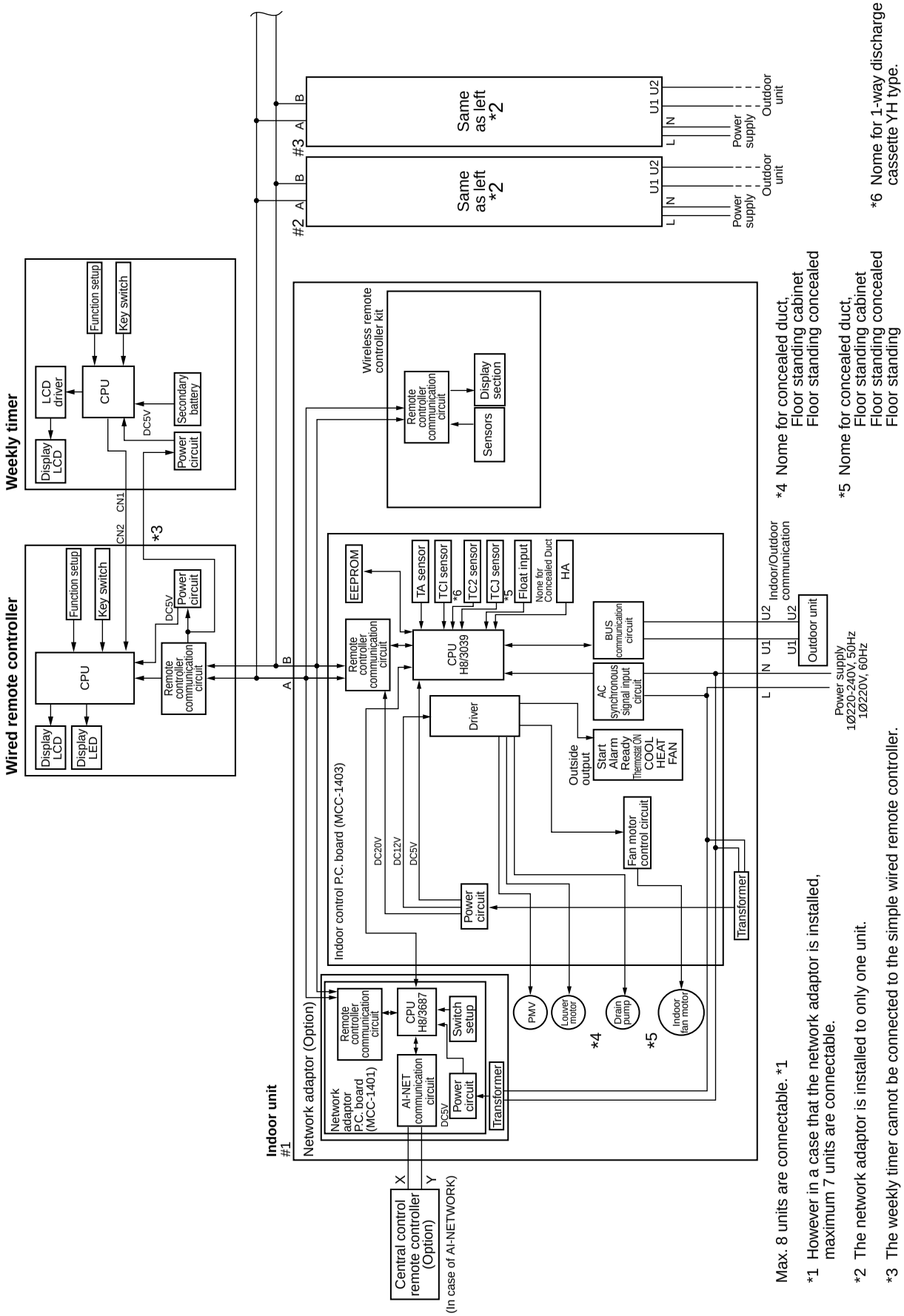
*5 Nome for 1-way discharge cassette YH type.

3. Connection of both remote controller and wireless remote controller kit

4-way Air Discharge Cassette Type, Compact 4-way Air Discharge Cassette Type, Concealed Duct Standard Type, Under Ceiling Type, High Wall Type (1 Series), 1-way Air Discharge Cassette Type (2 Series), Slim Duct Type



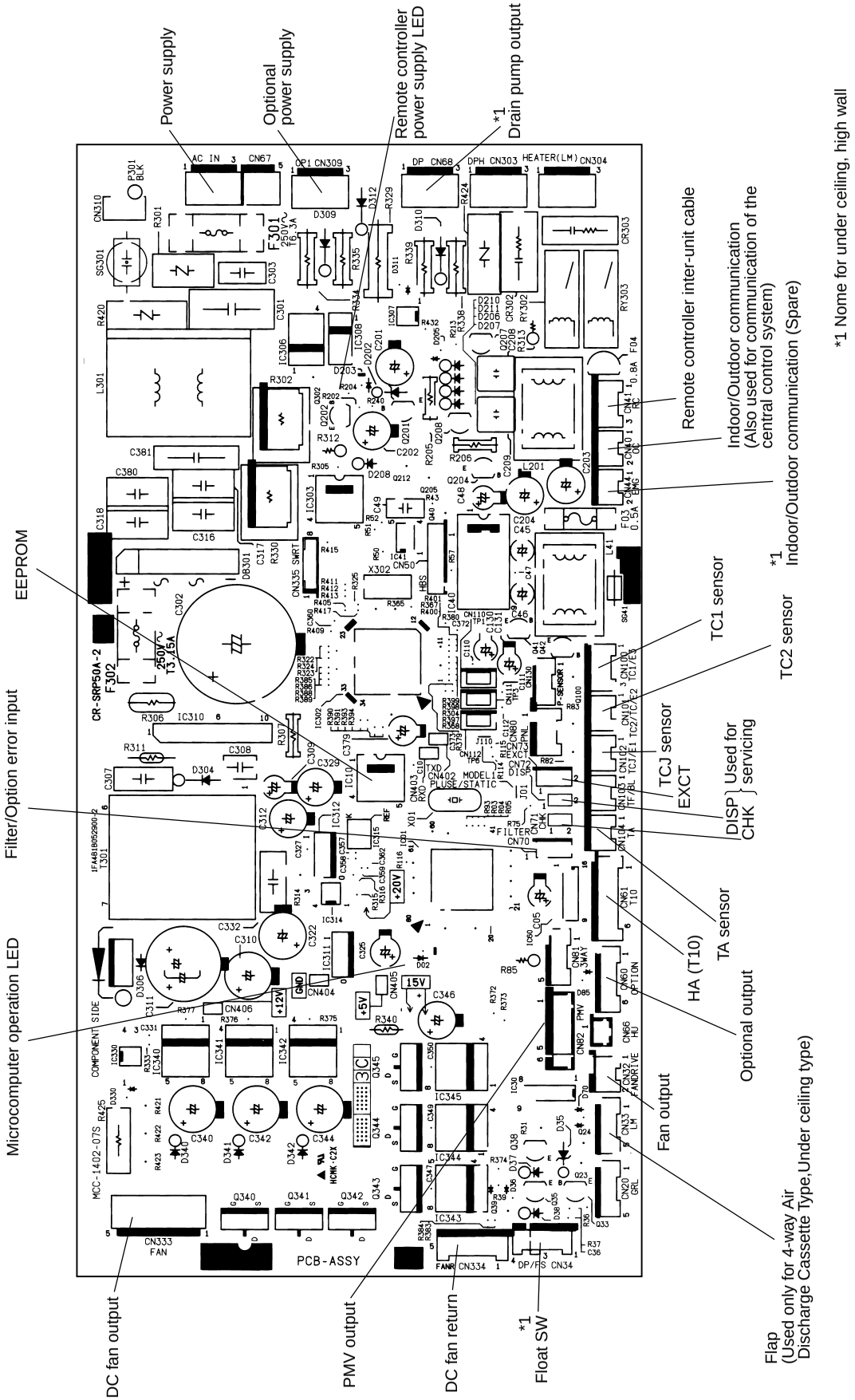
2-way Air Discharge Cassette Type, 1-way Air Discharge Cassette Type (1 Series), Concealed Duct High Static Pressure Type, Floor Standing Cabinet Type, Floor Standing Concealed Type, Floor Standing Type



11-1-2. Indoor P.C. Board

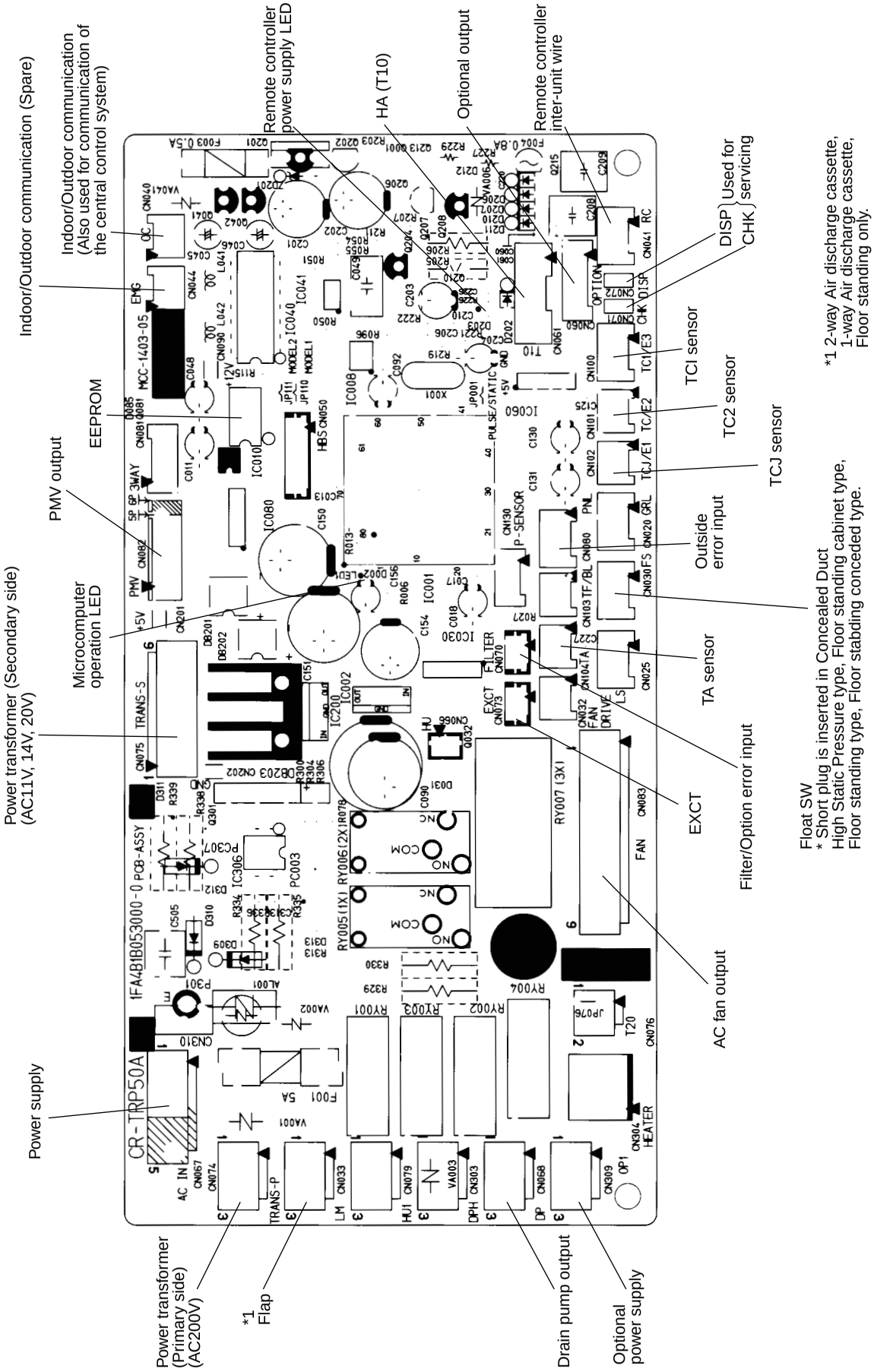
MCC-1402

4-way Air Discharge Cassette Type, Compact 4-way Air Discharge Cassette Type, Concealed Duct Standard Type, Under Ceiling Type, High Wall Type (1 Series), 1-way Air Discharge Cassette Type (2 Series), Slim Duct Type

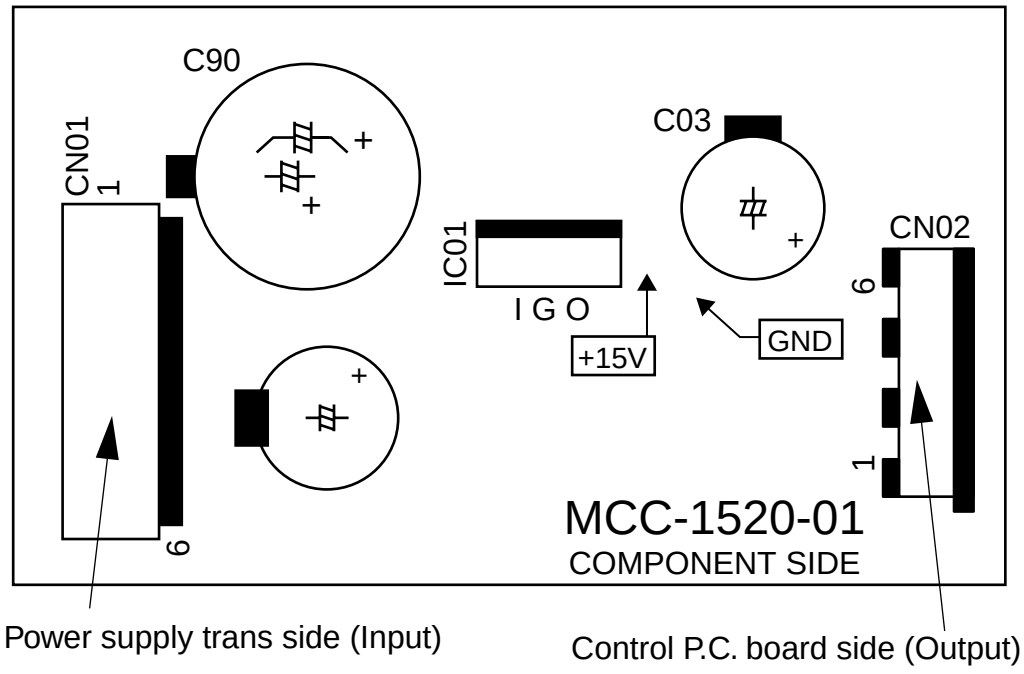


MCC-1403

2-way Air Discharge Cassette Type, 1-way Air Discharge Cassette Type (1 Series), Concealed Duct High Static Pressure Type, Floor Standing Cabinet Type, Floor Standing Concealed Type, Floor Standing Type



MCC-1520
2-way Air Discharge Cassette Type, 1-way Air Discharge Cassette Type (1 Series), Concealed Duct High Static Pressure Type, Floor Standing Cabinet Type, Floor Standing Concealed Type, Floor Standing Type

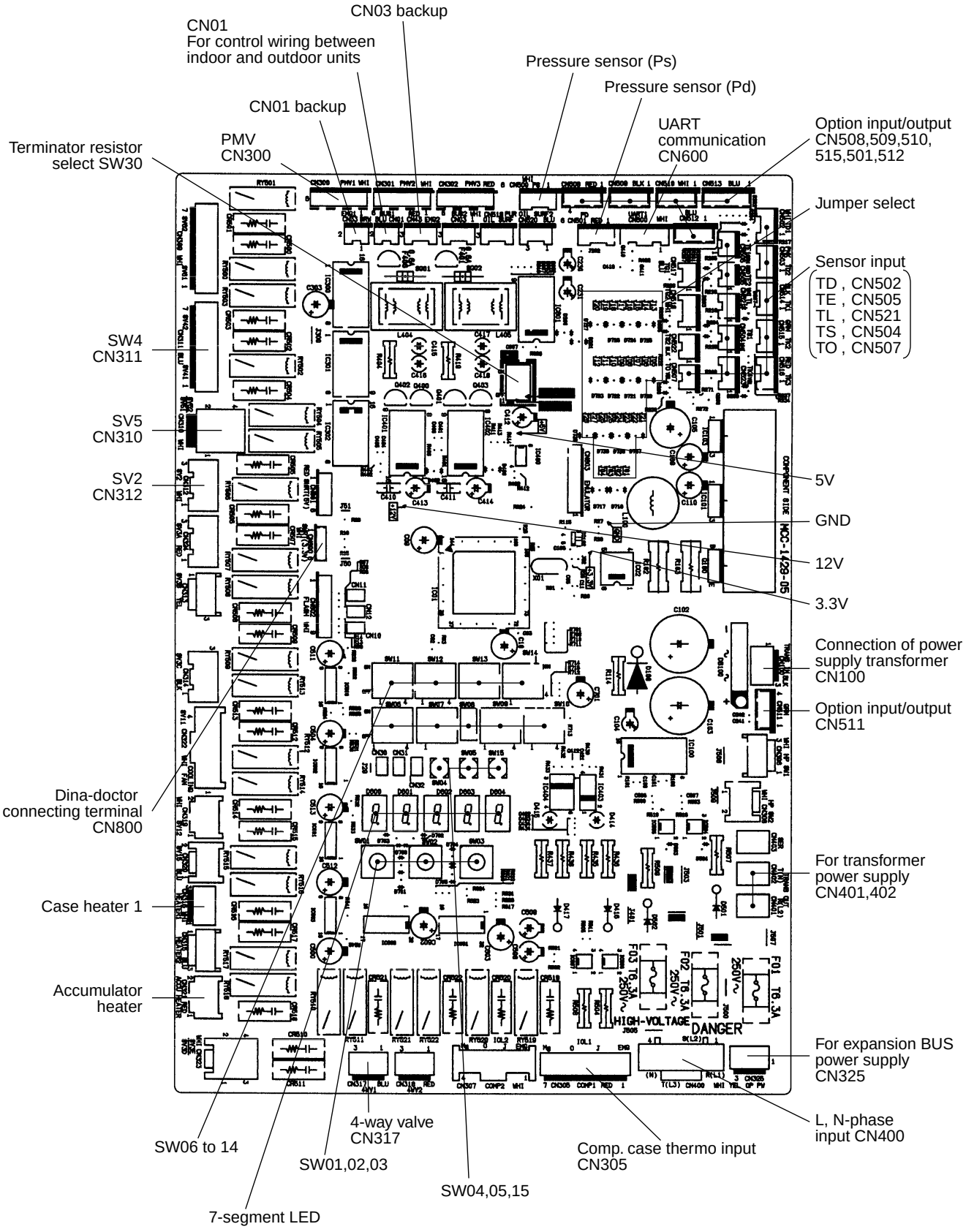


11-1-3. Optional Connector Specifications of Indoor P.C. Board

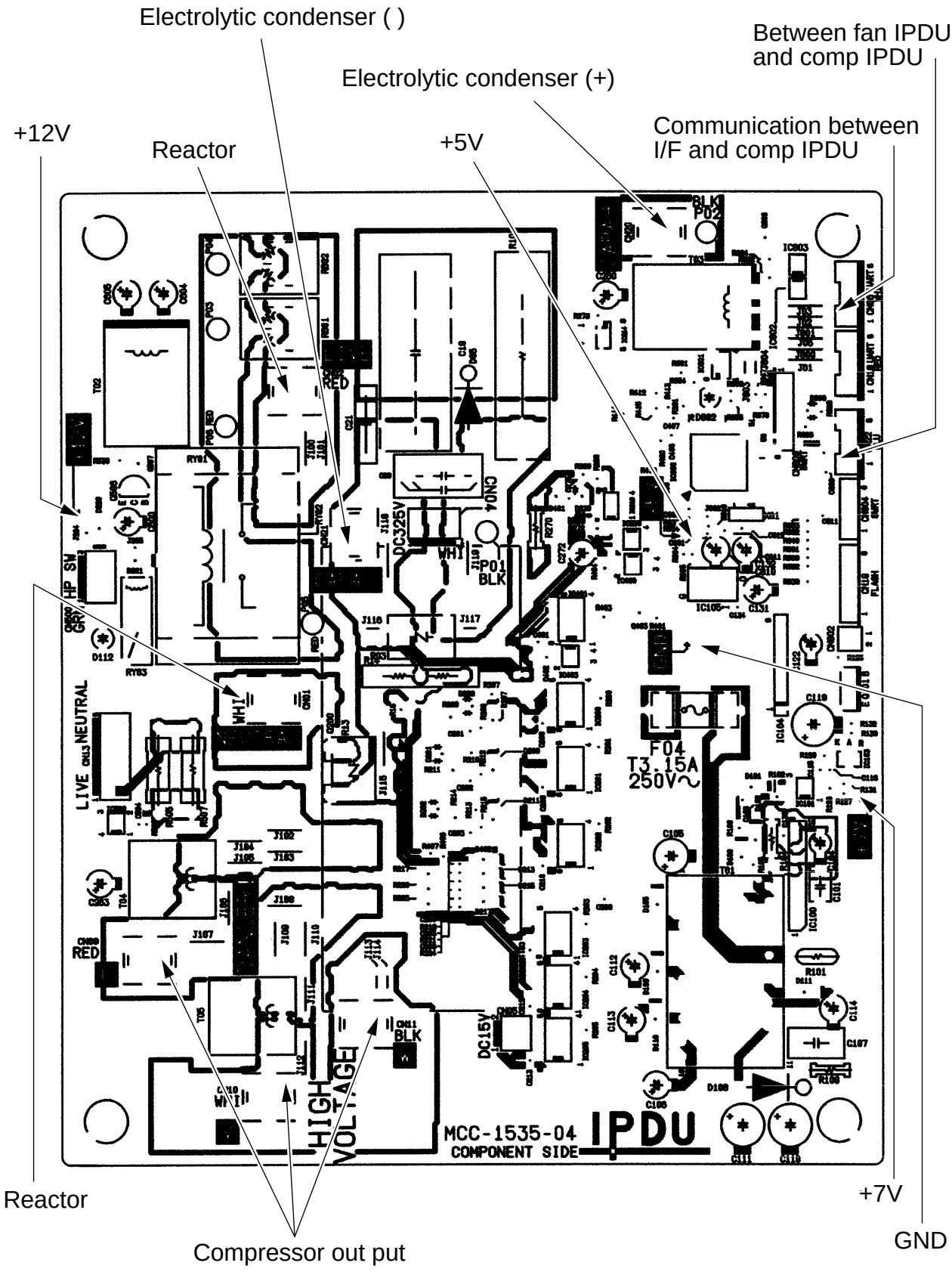
Function	Connector No.	Pin No.	Specifications	Remarks
Humidifier output	CN66	①	DC12V	In heating, thermo ON, Fan ON, Humidifier output ON * Humidifier provided, Drain pump ON is set up by CN70 short-circuit or from remote controller. (DN=40)
		②	Output	
Fan output	CN32	①	DC12V	Shipment setup: ON with indoor unit operation and OFF with stop are linked. * Single operation by FAN button on remote controller is set up from remote controller (DN=31)
		②	Output	
—	CN61	①	ON/OFF input	HA ON/OFF input (J01: YES/NO=Pulse (At shipment) / Static input select)
		②	0V (COM)	
		③	Main prohibition input	Operation stop of main remote controller is permitted / prohibited by input.
		④	Operation output	ON during operation (Answerback of HA)
		⑤	DC12V (COM)	
		⑥	Alarm output	ON during alarm output
Option output	CN60	①	DC12V (COM)	
		②	Defrost output	ON when outdoor unit is defrosted
		③	Thermo ON output	ON during Real thermostat ON (Compressor ON)
		④	COOL output	ON when operation mode is cooling system (COOL, DRY, Cool/Heat Auto cooling)
		⑤	HEAT output	ON when operation mode is heating system (HEAT, Cool/Heat Auto cooling)
		⑥	Fan output	ON when indoor fan is ON (During use of air cleaner/Interlock cabling)
Outside error input	CN80	①	DC12V (COM)	Generate check code “L30” (for 1 minute continuously) to stop forcedly the operation.
		②	DC12V (COM)	
		③	Outside error input	
—	CN20	—	—	—
—	CN70	—	—	—
CHK operation check	CN71	①	Check mode input	Used for indoor operation check. (Outdoor does not communicate with remote controller, and outputs specified operation such as indoor fan “H”, drain pump ON, etc.)
		②	0V	
DISP exhibition mode	CN72	①	Display mode input	Exhibition mode enables to communicate by indoor unit and remote controller only. (When power has been turned on.) Timer short (Usual)
		②	0V	
EXCT demand	CN73	①	Demand input	Indoor unit forced thermostat OFF operation
		②	0V	

11-2. Outdoor Unit

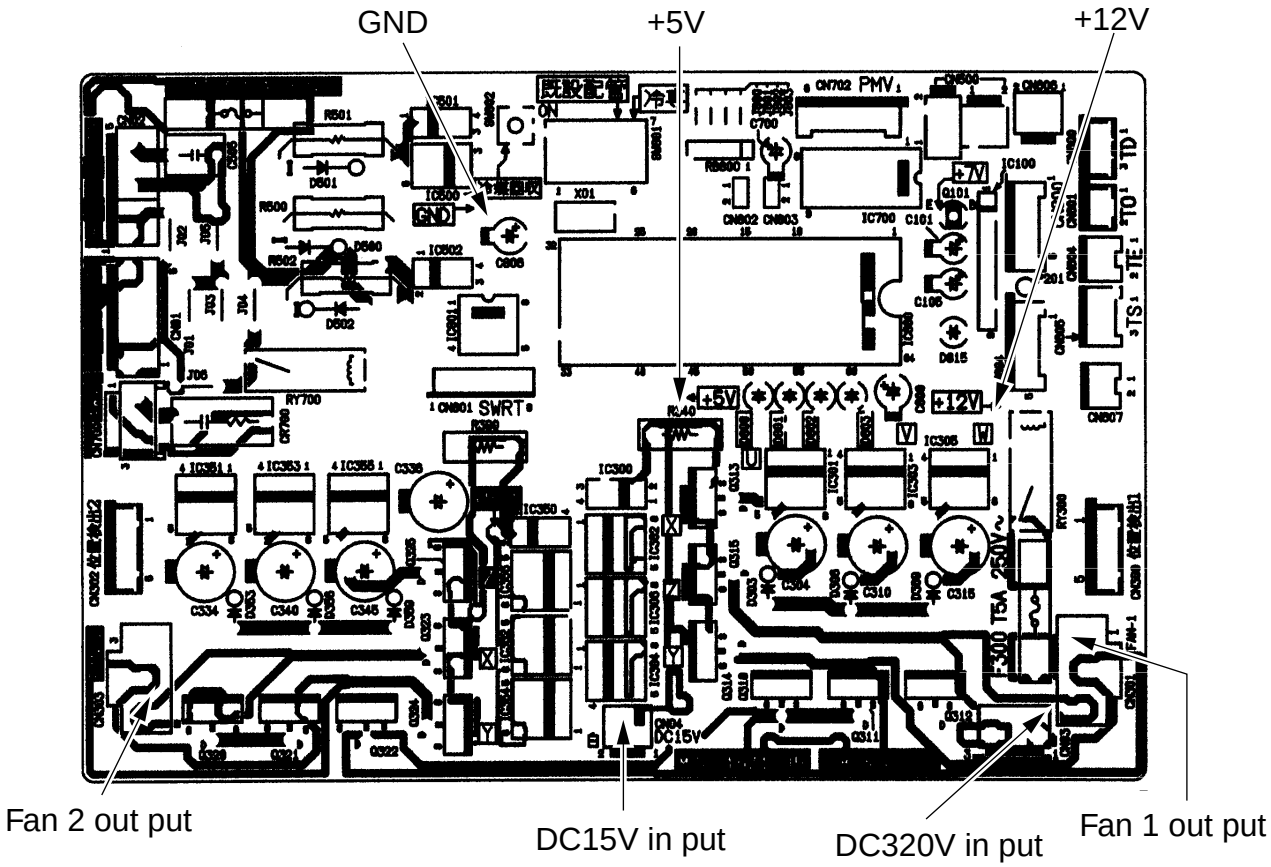
Positions to be checked on the interface P.C. board (MCC-1429)



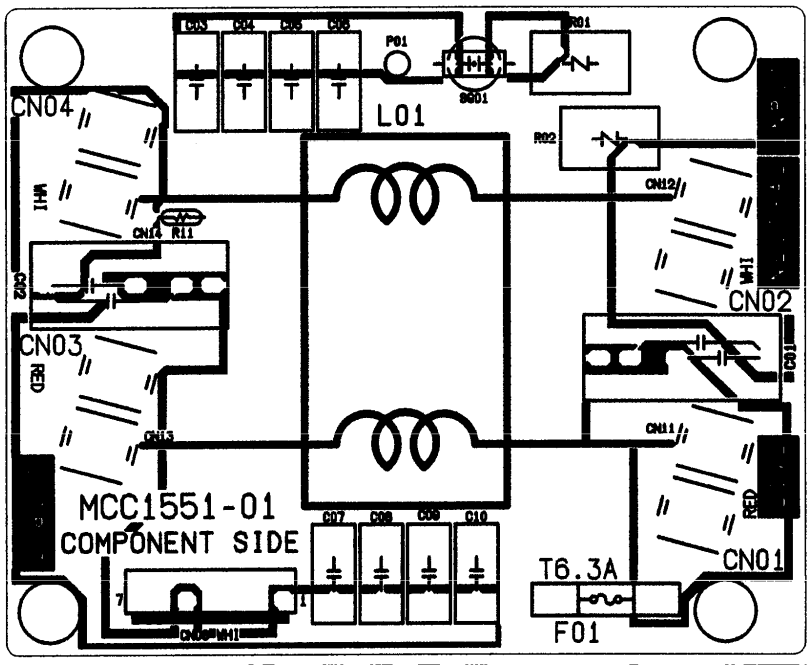
Inverter P.C. board (MCC-1535) [IPDU1]



Fan P.C. board (MCC-1531) (Fan IPDU)



Noise filter P.C. board (MCC-1551)



11-2-1. Outdoor Interface P.C. Board

Dip switch function exchange setup list

Part type		Exchange contents						Initial setup at shipment
SW01	Rotary SW 4bit 16 step	Display / Operation switch (1)				For 7-segment display / service operation		[1]
SW02	Rotary SW 4bit 16 step	Display / Operation switch (2)				For 7-segment display / service operation		[1]
SW03	Rotary SW 4bit 16 step	Display / Operation switch (3)				For 7-segment display / service operation		[1]
SW04	Push SW	For service [Operation/Start]				[Operation/Start] by pushing		—
SW05	Push SW	For service [Stop/End]				[Stop/End] by pushing		—
SW06	SW 4bit	Bit 1	Backup setup				(Based on the following setup)	OFF
		Bit 2		Bit 4	Bit 3	Bit 2	Bit 1	OFF
		Bit 3		OFF	OFF	OFF	OFF	Normal	OFF
		Bit 4		—	—	—	—		OFF
SW07	SW 4bit	Bit 1	Power peak-cut control exchange				OFF: 0 – 100%, ON: Middle – 100%		OFF
		Bit 2	Power peak-cut control exchange (Expansion)				(For 4-steps exchange)		OFF
		Bit 3	—				—		OFF
		Bit 4	—				—		OFF
SW08	SW 1bit	Bit 1	High humidity condition setting						OFF
SW09	SW 4bit	Bit 1	—				—		OFF
		Bit 2	Judge indoor capacity over				OFF: YES (Normal), ON: NO		OFF
		Bit 3	—				—		OFF
		Bit 4	Judge abnormal No. of connected indoor units				OFF: No error judgment, ON: Error		OFF
SW10	SW 4bit	Bit 1	—				—		OFF
		Bit 2	—				—		OFF
		Bit 3	Sound reduction control				OFF: Normal, ON : INV frequency upper limit restriction		OFF
		Bit 4					OFF: Normal, ON: Fan rpm upper limit restriction		OFF
SW11	SW 4bit	Bit 1							
		Bit 2	—				—		OFF
		Bit 3	—				—		OFF
		Bit 4	Operation when indoor overflow detected				OFF: System stop, ON : System operation continues		OFF
SW12	SW 4bit	Bit 1	PMV manual operation selected				OFF: PMV		OFF
		Bit 2	—				—		OFF
		Bit 3	—				—		OFF
		Bit 4	—				—		OFF
SW13	SW 4bit	Bit 1	—				—		OFF
		Bit 2	—				—		OFF
		Bit 3	—				—		OFF
		Bit 4	Line address setup						OFF
SW14	SW 4bit	Bit 1, 2, 3, 4		Line address setup			Refer to item “Address setup procedure”		OFF
SW30	SW 2bit	Bit 2	Terminator resistor between outdoor units				OFF: No Terminator resistor ON : Exists		ON
CN30	Check connector	Manual full opening setup of PMV					Opened: Normal, Short: Opened fully		Open
CN31	Check connector	Manual full closing setup of PMV					Opened: Normal, Short: Opened fully		Open
CN32	Check connector	Check for assembly line in factory.					Opened: Normal, Short: Check mode		Open

* The outdoor unit connected with indoor/outdoor communication line becomes automatically the master unit. No manual setting is necessary.

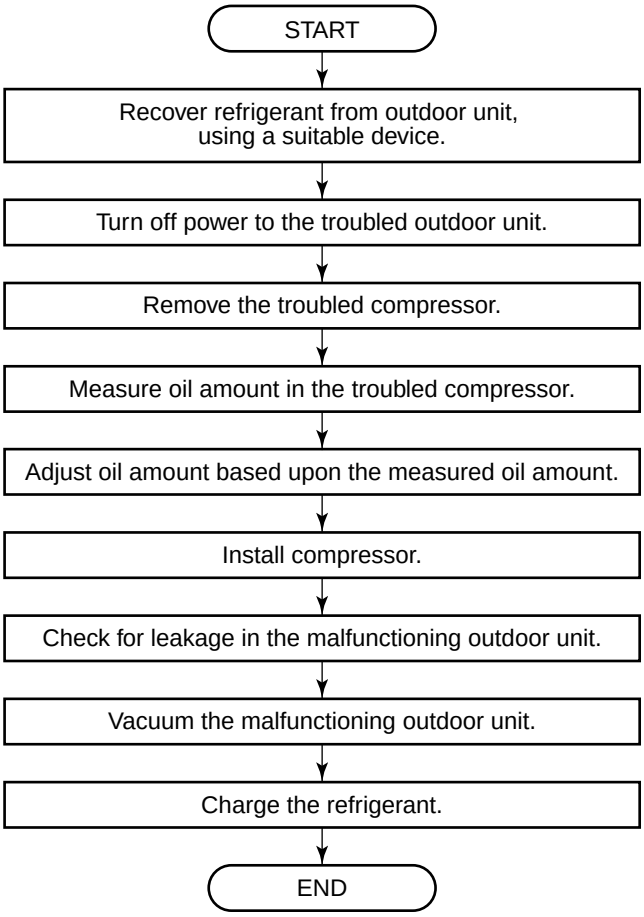
12. REPLACING COMPRESSOR

12-1. Compressor Replacing Procedure (Outline)

⚠ WARNING

Never recover the refrigerant into outdoor unit.

Be sure to use a refrigerant recovery device for refrigerant recovery for reinstallation or repair work. Recovery into the outdoor unit is unavailable; otherwise a serious accident such as rupture or ingury could occur.



NOTE) Full opening operation of PMV by CN30 short-circuiting rwill return to fully closed after 2 minutes have passed.
To continue full-opening status, turn off power to the outdoor unit within 2 minutes.

* This flowchart is the standard for replacing compressors.
Each case must be considered on individual circumstances.
Replace the compressors based on the following conditions of judgement.

1. Oil of 1900 cc is charged in a compressor for service.
2. The amount of oil is 1900 cc in an outdoor unit at shipment.
3. When a compressor is removed, it usually contains 800 to 1500 cc of oil.

12-2. Replacing Compressor

Vacuuming

In case of single outdoor system

- Connect vacuum pump to the valve charge ports on the liquid and gas then vacuum.
- Vacuum until the vacuum low-pressure gauge indicates 1 (mmHg).

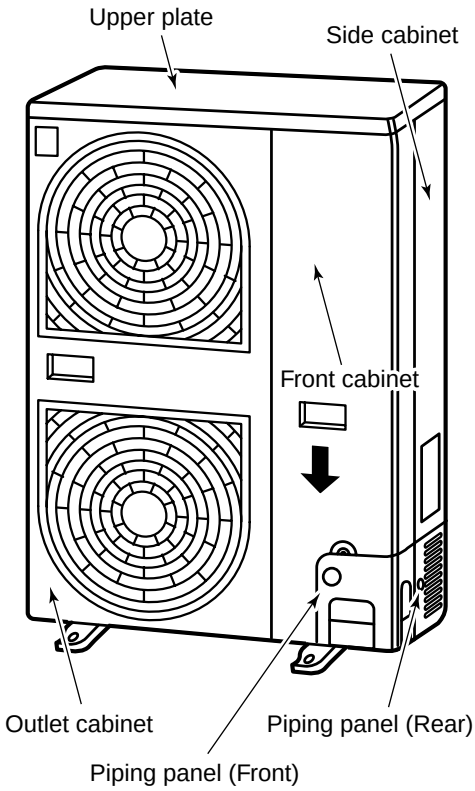
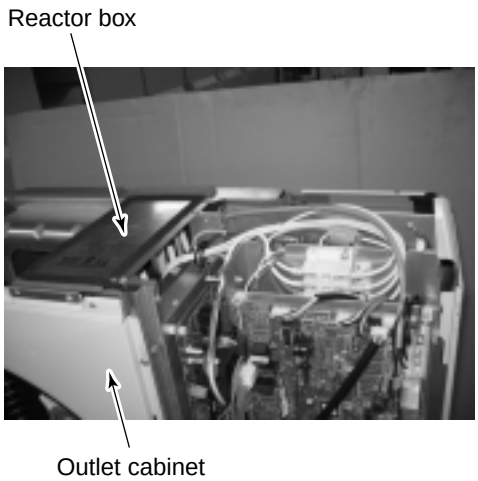
Note)

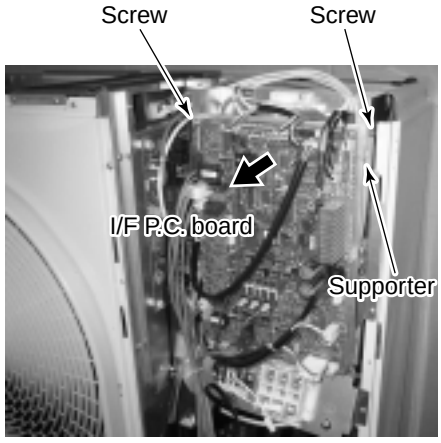
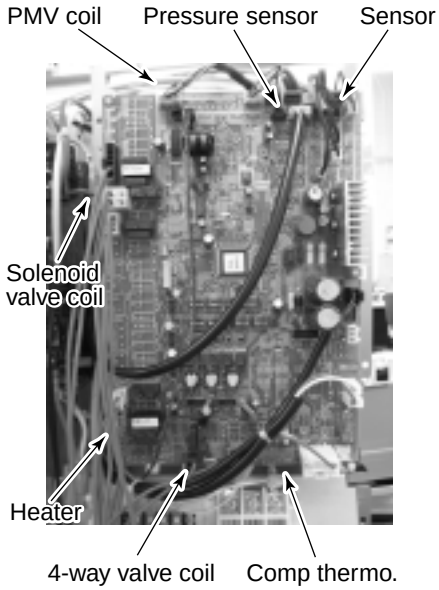
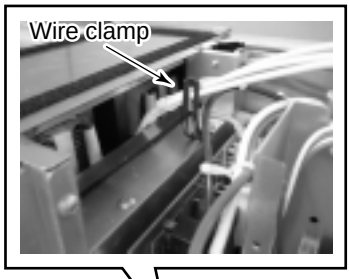
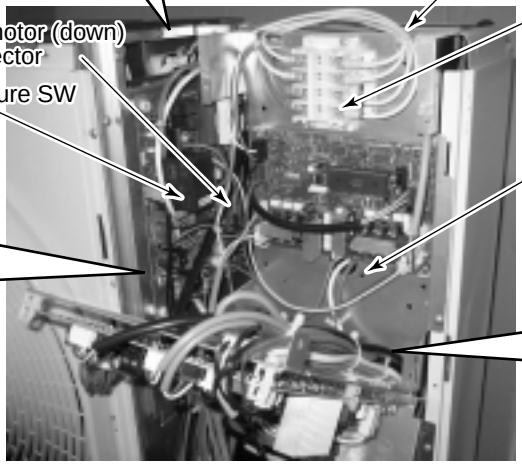
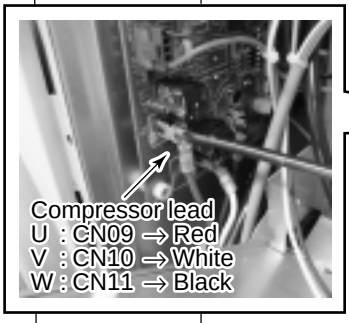
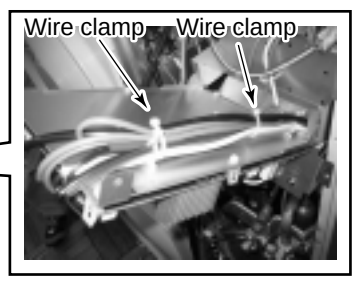
- Before vacuuming, open PMV fully. Vacuuming of the outdoor heat exchanger will not occur if PMV is closed.

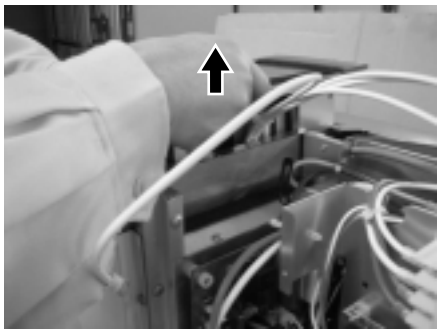
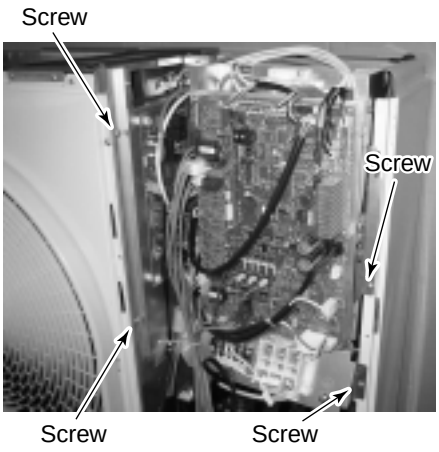
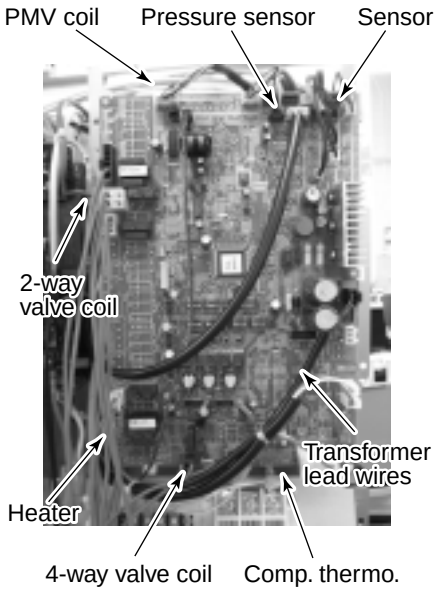
Full opening of PMV

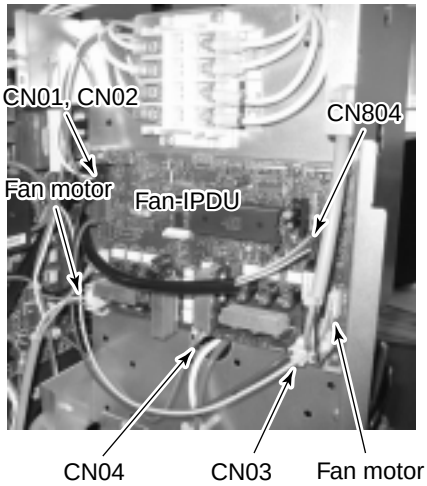
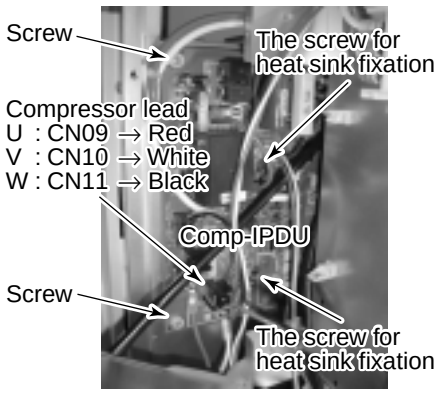
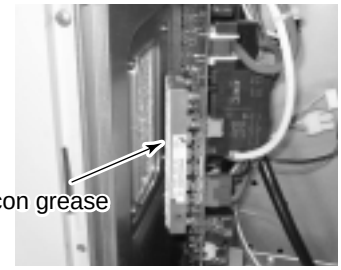
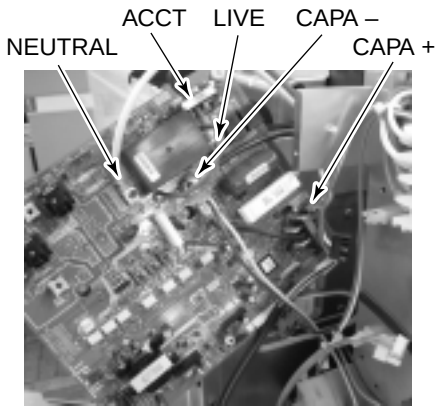
- Turn on the power to the outdoor unit.
- Confirm that Bit 1 on SW12 is OFF.
- Short CN30 on I/F P.C. board on the outdoor unit.
- Turn off the power to the outdoor unit within 2 minutes of short-circuiting.

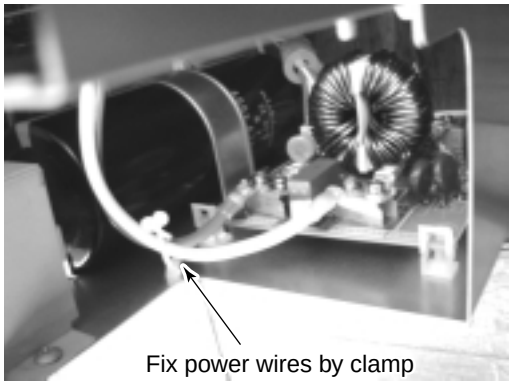
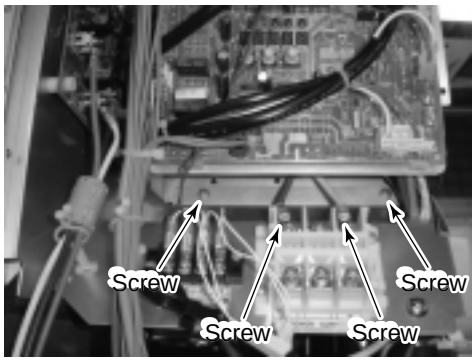
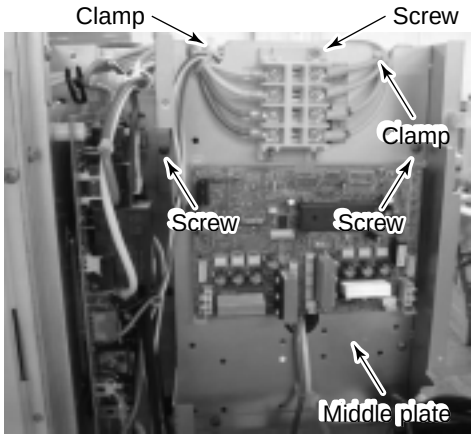
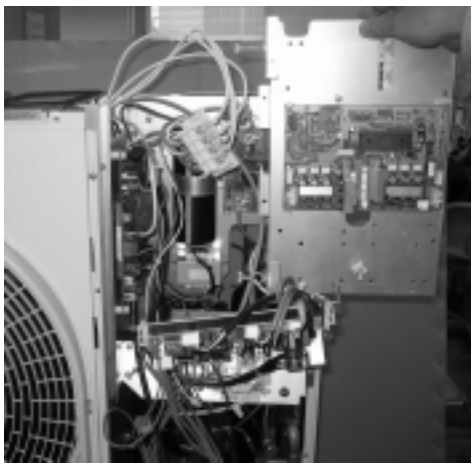
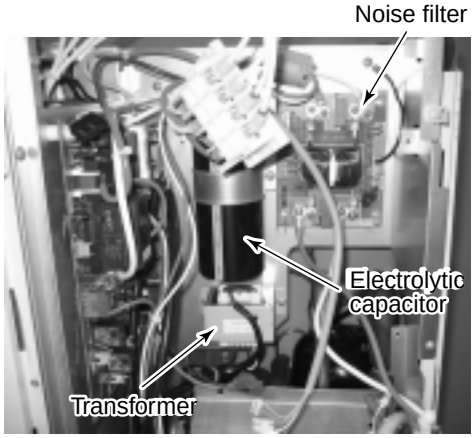
13. REPLACING PROCEDURE OF PARTS

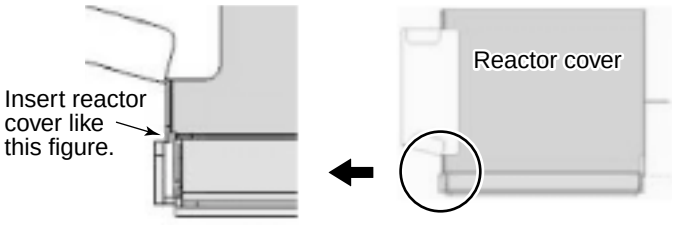
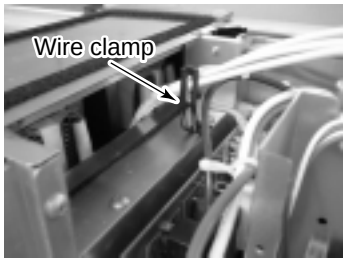
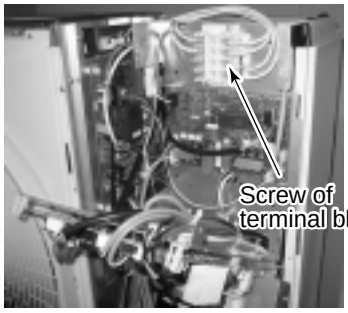
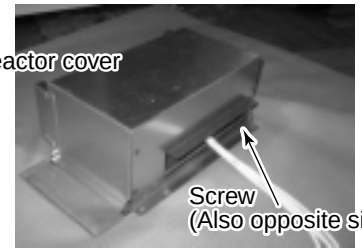
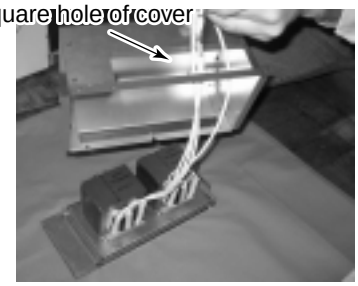
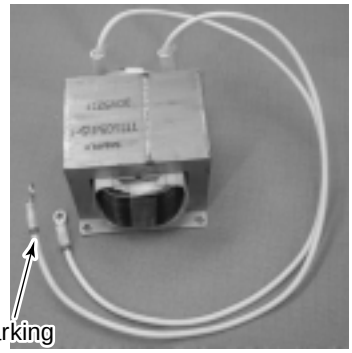
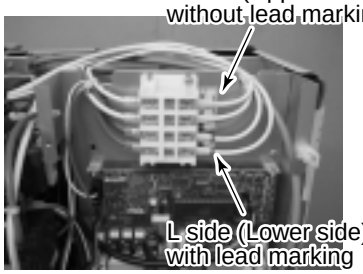
No.	Part name	Procedure	Remarks
1	Cabinets and others	**⚠ CAUTION** Wear protective clothing on your hands as other components may cause injury etc. **<Disassembling>** 1) Stop unit operation and turn off power supply to unit. 2) Remove Front cabinet. (Screw Ø4 × 10 3 pcs) **Note** : Slide to downward for unhook the hooking tab. 3) Remove Upper plate. (Screw Ø4 × 10 6 pcs) 4) Remove Piping panel (Front) and (Rear). (Screw Ø4 × 10 6pcs) 5) Remove Side cabinet. (Screw Ø4 × 10 8pcs) **Note** : Hooked to hooking tab of Inverter plate. 6) Remove Reactor box. **Note** : Refer to 2 – 4. Reactor 7) Remove Outlet cabinet.	
		<Assembling> Assembling by contrary procedure of above 7) → 1).	

No.	Part name	Procedure	Remarks
2	Inverter assembly	**⚠ CAUTION** Wear protective clothing on your hands as other components may cause injury etc. **<Disassembling>** 1) Stop the unit operation and turn off the power supply to the unit. **⚠ WARNING** Never open the cabinet while five minutes after turn off the power supply. 2) Remove front and upper cabinet. (Screw Ø4 × 10 9 pcs) 3) Remove power supply and remote controller wires. (Screw of terminal block) 4) Remove wires to I/F P.C. board. (Solenoid valve coil, 4-way valve coil, heater, comp thermo, PMV coil, sensor) 5) Open I/F P.C. board on the slant. (Screw Ø4 × 8 2 pcs and supporter) 6) Remove the reactor wires. (Screw of terminal block, wire clamp and bundle band) 7) Remove wires of sensors and PMV coil. (Wire clamp and bundle band) 8) Remove fan motors lead wires. (Two points) 9) Remove IPDU wires. (Compressor lead wires and high pressure SW wires)	     

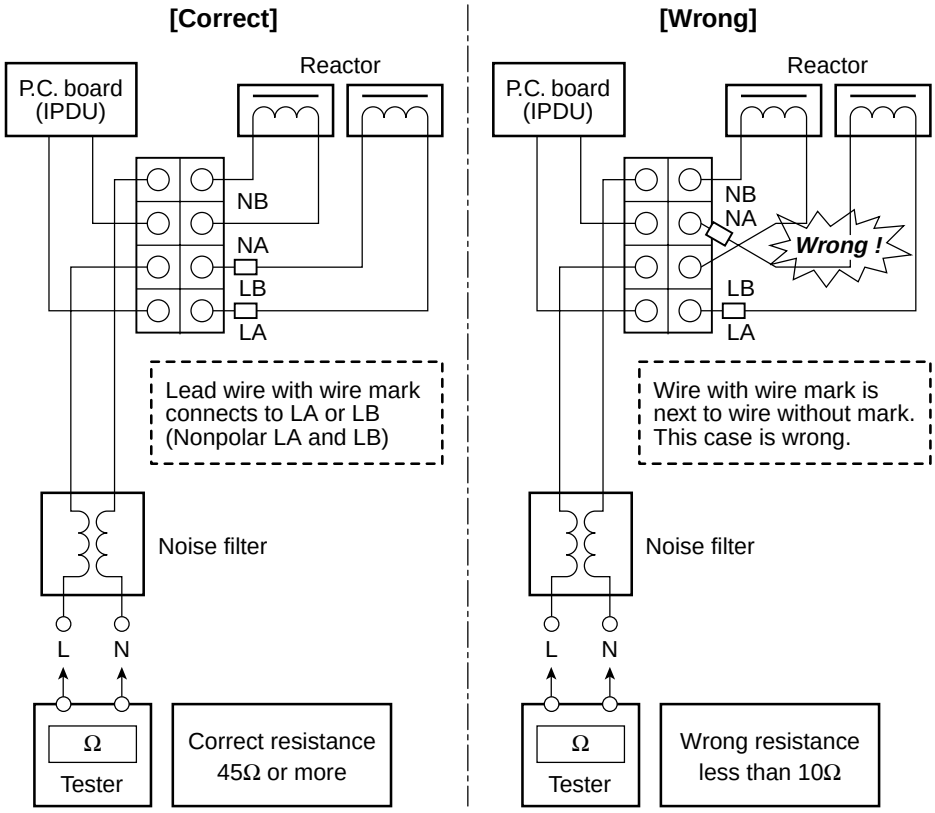
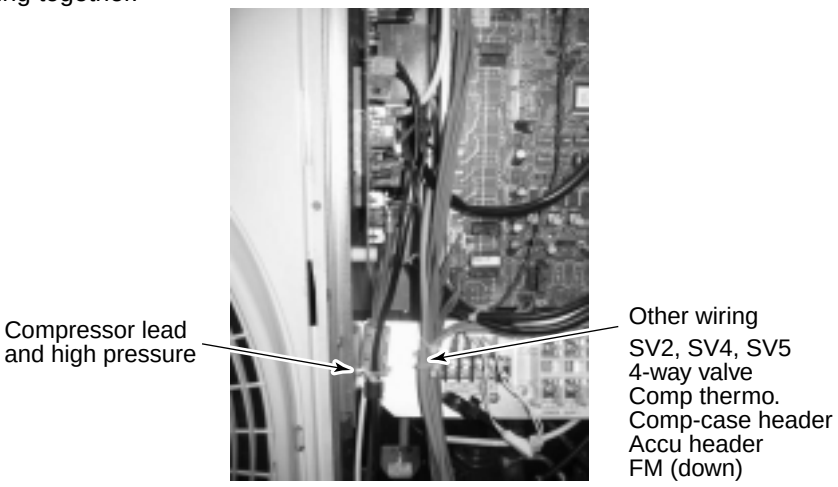
No.	Part name	Procedure	Remarks
2	Inverter assembly (Continued)	10) Remove reactor assembly. (Screw Ø4 × 10 5 pcs) **⚠ CAUTION** Take care ! Too much heavy (9 kg) 11) Close I/F P.C. board. (Supporter) 12) Remove the fix screw of box. (Screw Ø4 × 10 4 pcs) 13) Lift upper side and remove from partition board. (Hanged on partition board) **<Assembling>** Assembling by contrary procedure of above 13) → 1).	 
3	How to remove electric parts box 1. I/F P.C. board	**<Disassembling>** 1) Stop the unit operation and turn off the power supply to the unit. **⚠ WARNING** Never open the cabinet while five minutes after turn off the power supply. 2) Remove front cabinet. (Screw Ø4 × 10 3 pcs) 3) Remove wires to I/F P.C. board. (2-way valve coil, 4-way valve coil, heater, comp thermo., PMV coil, sensor, transformer lead wires, power supply wires to I/F) 4) Remove I/F P.C. board. (Supporter 6 points) **<Assembling>** Assembling by contrary procedure of above 4) → 1).	

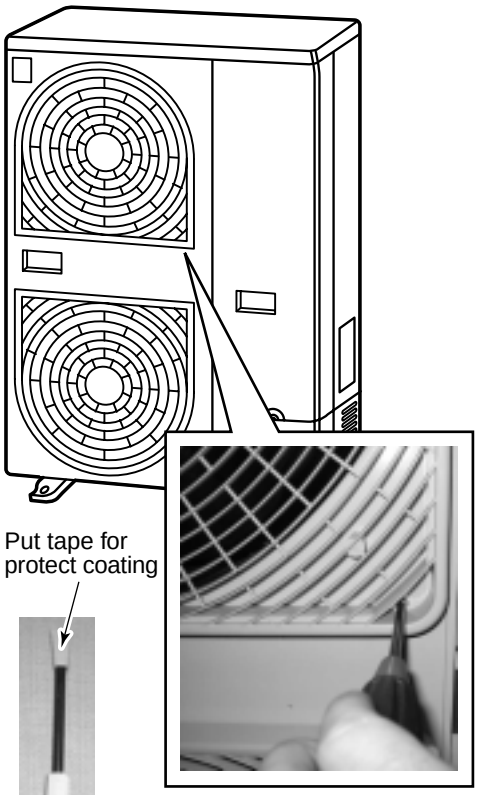
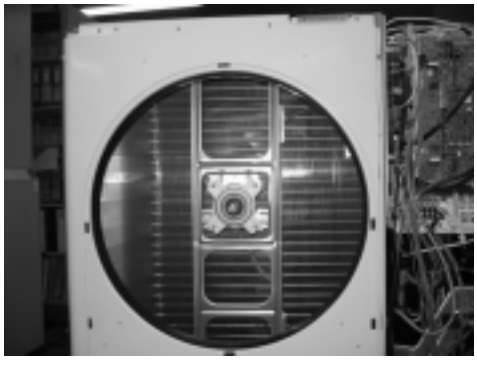
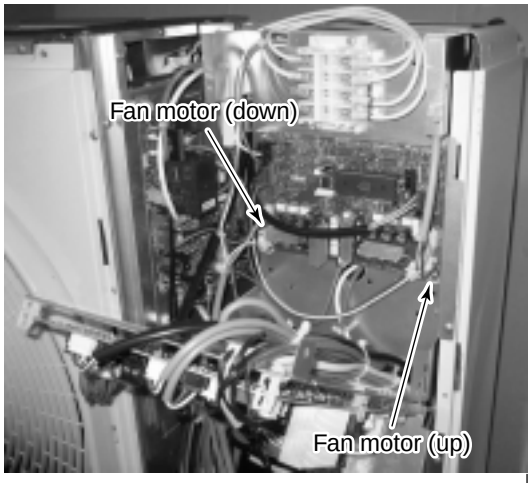
No.	Part name	Procedure	Remarks
3	How to remove electric parts box (Continued) 2. Fan-IPDU	**<Disassembling>** 1) Stop the unit operation and turn off the power supply to the unit. **⚠ WARNING** Never open the cabinet while five minutes after turn off the power supply. 2) Remove front cabinet. (Screw Ø4 × 10 3 pcs) 3) Open I/F P.C. board on the slant. (Screw Ø4 × 8 2 pcs and supporter) 4) Remove wires to fan-IPDU. (Fan motor, CN01, CN02, CN03, CN04, CN804) 5) Remove fan-IPDU. (Supporter 4 points) **<Assembling>** Assembling by contrary procedure of above 5) → 1).	
	3. Comp-IPDU	**<Disassembling>** 1) Stop the unit operation and turn off the power supply to the unit. **⚠ WARNING** Never open the cabinet while five minutes after turn off the power supply. 2) Remove fan-IPDU by procedure 3 – 2. 3) Remove front side wires of comp-IPDU. (Compressor lead wires and high pressure SW wires) 4) Remove fix screws of comp-IPDU. (For heat sink and for P.C. board fixing) 5) Slide out comp-IPDU to front side. **Note** : Slide little hard, for sealing cement of heat sink. 6) Remove wires from comp-IPDU to other parts. (LIVE, NEUTRAL, CAPA+, CAPA–) 7) Remove other wires. **<Assembling>** Assembling by contrary procedure of above 7) → 1). **⚠ CAUTION** • Fix it to IPDU after letting “LIVE” wiring pass to ACCT (current sensor). • After IPDU applies silicon grease to a contact surface with a heat sink uniformly, fix it to a heat sink firmly with a screw.	  

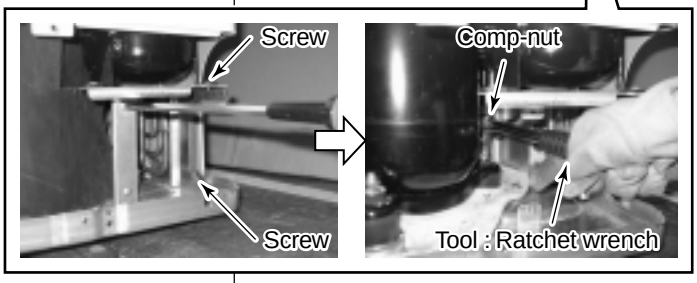
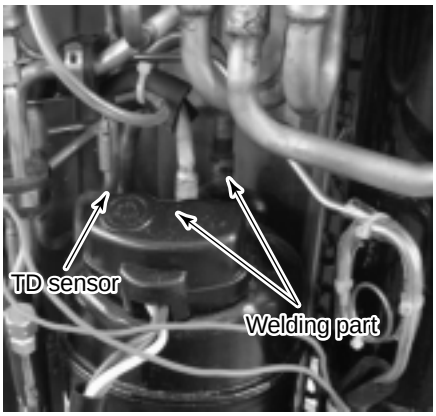
No.	Part name	Procedure	Remarks
3	How to remove electric parts box (Continued) 4. Noise filter electrolytic capacitor transformer	**<Disassembling>** 1) Stop the unit operation and turn off the power supply to the unit. **WARNING** Never open the cabinet while five minutes after turn off the power supply. 2) Remove screws of right side photo and screws of power terminal block (INV side). (Screw Ø4 × 6 2 pcs, terminal block screw) 3) Open I/F P.C. board on the slant. (Screw Ø4 × 8 2 pcs and supporter) 4) Open I/F P.C. board on the slant. (Screw Ø4 × 8 2 pcs and supporter) 5) Remove reactor terminal block. (Screw Ø4 × 16 2 pcs, bundle band) 6) Remove middle plate. (Screw Ø4 × 6 4 pcs) 7) Remove each parts. • Remove Noise filter. (Supporters and earth screw) • Remove electrolytic capacitor. (Screw for fixing band) • Remove transformer. (Screw Ø4 × 10 2 pcs, connector) <Assembling> Assembling by contrary procedure of above 7) → 1). **CAUTION** After changing Noise filter, fix power wires by clamp.  	   

No.	Part name	Procedure	Remarks
3	How to remove electric parts box (Continued) 5. Reactor	**<Disassembling>** 1) Stop the unit operation and turn off the power supply to the unit. **⚠ WARNING** Never open the cabinet while five minutes after turn off the power supply. 2) Remove front and upper cabinet. (Screw Ø4 × 10 9 pcs) 3) Open I/F P.C. board on the slant. (Screw Ø4 × 8 2 pcs and Supporter) 4) Remove the reactor wires. (Screw of terminal block, Wire clamp and Bundle band) 5) Remove reactor assembly. (Screw Ø4 × 10 5 pcs) **⚠ CAUTION** Take care! Too much heavy. 6) Remove reactor cover. (Screw Ø4 × 10 6 pcs) 7) Remove reactor and change. (Screw Ø4 × 10 4 pcs) **⚠ CAUTION** Lead wires of reactor are passing through square hole of cover, so when changing, take care to keep without damage to wires by sharp edge parts. **<Assembling>** Assembling by contrary procedure of above 7) → 1). **Requirement :** When changing, arrange as follows. **⚠ CAUTION** When connecting reactor lead wires, be forming like right side photo.  	     

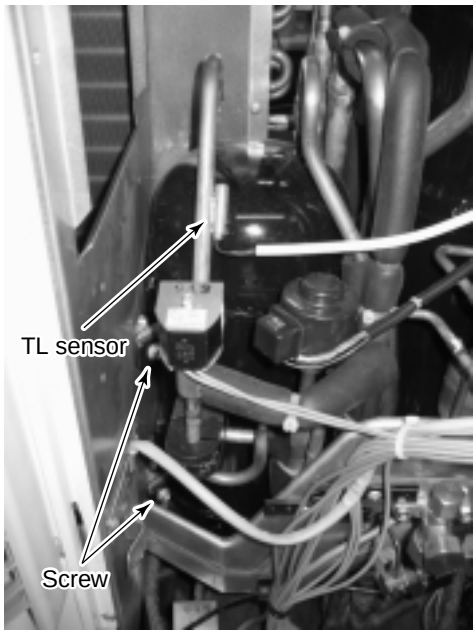
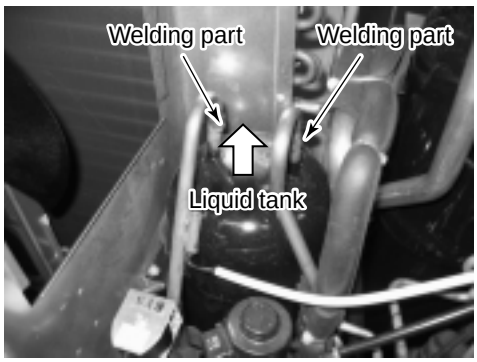
Service reactor	Lead wire marking	Arrange
L side reactor	Marking (Red)	Keeping
N side reactor	No marking	Removing

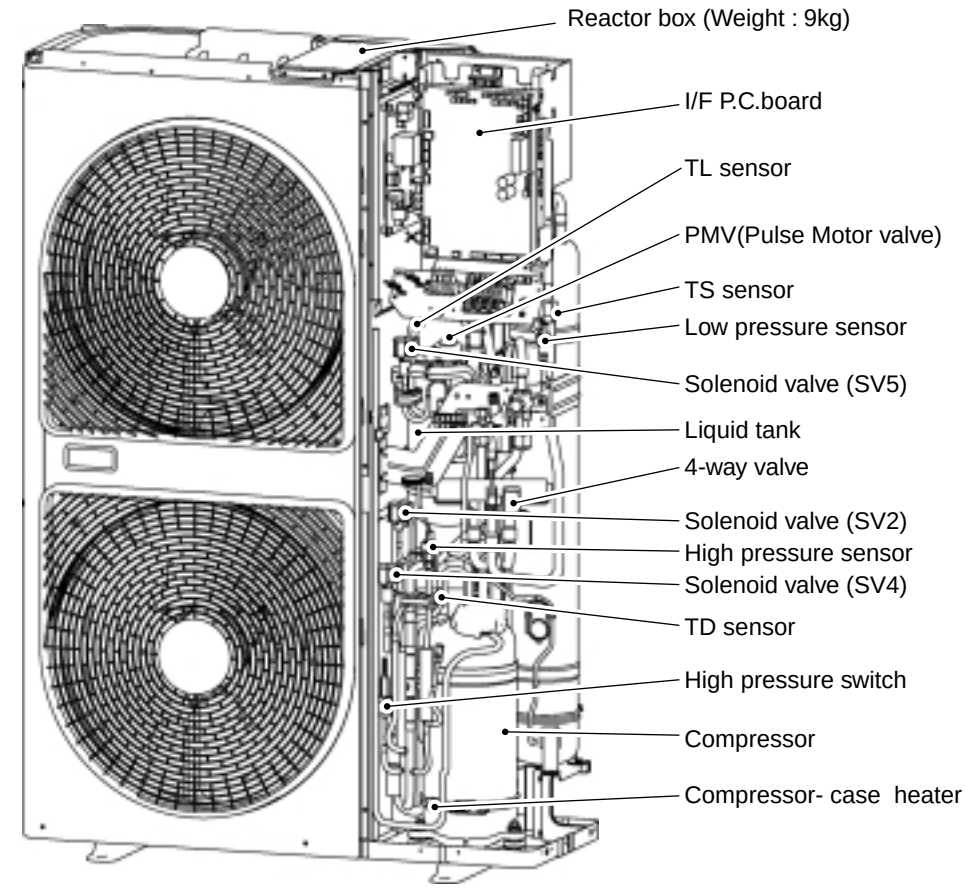
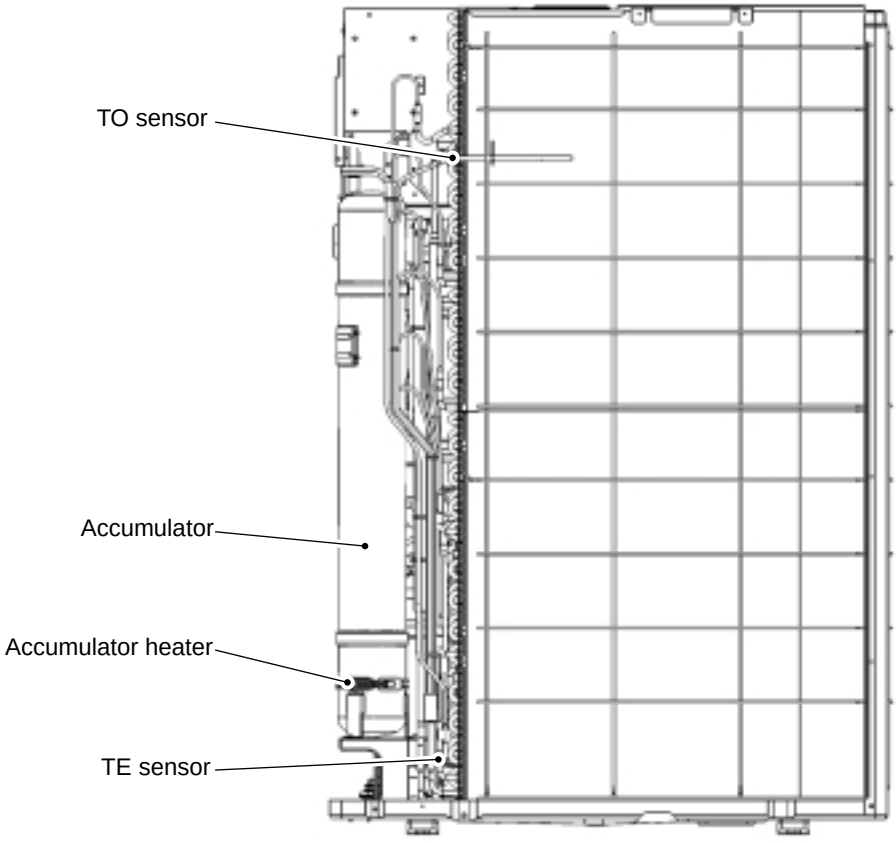
No.	Part name	Procedure	Remarks
3	How to remove electric parts box (Continued) 5. Reactor (Continued)	**⚠ CAUTION** Do not mistake wiring of a reactor. If wiring is mistaken, electric parts will break.  **<Assembling>** Assembling by contrary procedure of above 7) → 1). **Requirement :** When changing, arrange as follows.	
	6. Wiring proccessing	**⚠ CAUTION** Wiring of the compressor lead and high-pressure switch should not bundle other wiring together.  	

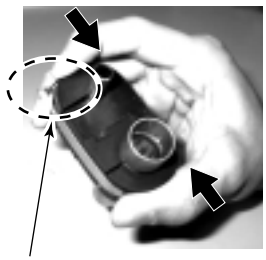
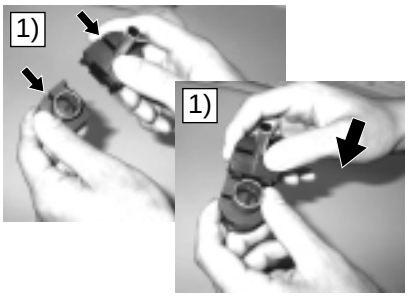
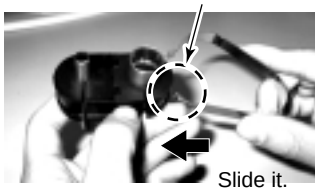
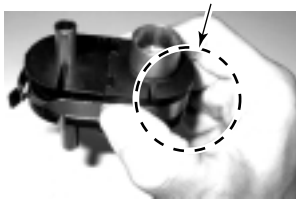
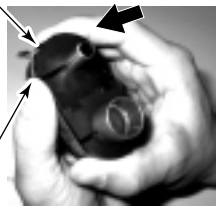
No.	Part name	Procedure	Remarks
4	Fan motor	**⚠ CAUTION** Wear protective clothing on your hands as other components may cause injury etc. **<Disassembling>** 1) Stop unit operation and turn off power supply to unit. 2) Remove front cabinet. (Screw Ø4 × 10 3 pcs) **Note** : Slide to downward for unhook the hooking tab. 3) Remove screws of fan guard. (Screw Ø4 × 10, each 2 pcs) 4) Put tape to end of flat blade driver for protect coating surface. 5) Unhook hooking tab of fan guard by using flat blade driver. (Hooking tab 5 points) 6) Remove screw of propeller fan. (Screw is reverse revolution.) 7) Remove propeller fan. **Note** : Pull out to front straightly. Do not pull out forcibly, became fasten. 8) Remove fan motor lead wires from connectors of fan IPDU P.C. board, and remove wires from inside. 9) Remove fixing screws of fan motor. (Screw Ø4 × 16, each 4 pcs) **Note** : Remove screws with keeping fan motor by hand for prevent dropping. **<Assembling>** Assembling by contrary procedure of above 9) → 1).	  

No.	Part name	Procedure	Remarks
5	Compressor	**⚠ CAUTION** Wear protective clothing on your hands as other components may cause injury etc. **<Disassembling>** 1) Stop unit operation and turn off power supply to unit. **⚠ WARNING** Never open the cabinet while five minutes after turn off the power supply. 2) Remove front cabinet, piping panel (Front) and (Rear). (Screw Ø4 × 10 9 pcs) 3) Recover refrigerant. 4) Remove pipings, power supply wires and wires to indoor unit. 5) Remove soundproof mat. (Total 4 pcs) 6) Remove terminal cover of compressor, and remove comp-lead wires and comp-thermo. 7) Remove comp-case heater and TD sensor at discharge pipe. 8) Remove comp-nuts (three points). **Note** : After remove small plate as right side figure, remove rear side comp-nut. A ratchet wrench is required in order to remove comp-nut. 9) Take off discharge pipe and suction pipe by re-welding. **⚠ CAUTION** Be aware that if oil is present when brazing a fire could occur. 10) Remove Compressor. 11) Measurement of the quantity of oil in the defective compressor. Place the defective compressor on a scale, and use the weight to calculate the oil quantity. Oil amount in the defective compressor: A [cc] = (Removed compressor mass (kg) – 22.2) × 1042 (Specific gravity of oil: 1042 cc/kg) **Note** : When compressor holds no oil, mass is 22.2 kg.	  

No.	Part name	Procedure	Remarks
5	Compressor (Continued)	12) Adjustment of oil amount in the service compressor • Adjust the oil amount in the service compressor based on the amount of oil found in the defective compressor by following instructions below. (1) If the amount of oil in the defective compressor is 0cc < "A" < 1000cc. • Adjust the amount of oil in the service compressor to 1000 cc. Extract the oil of 900 cc from the discharge pipe of the service compressor. **Note** : Do not extract more than 900 cc as a compressor fault may be caused. (2) If the amount of oil in the defective compressor is 1000cc < "A" < 1900cc. • Adjust the amount of oil in the service compressor to "A" cc. Extract (1900 – "A") cc of oil from the discharge pipe of the service compressor. **<Assembling>** Assembling by contrary procedure of above 10) → 1). **⚠ CAUTION** Faston terminals of comp-lead wires become loose at taking off works. So, tighten by pliers and reconnect, then confirm terminals without looseness. White: Comp-IPDU (CN10) S Red: Comp-IPDU (CN09) R Black : Comp-IPDU (CN11) **Details of compressor power connecting section** **⚠ CAUTION** Equip photograph reference with the up soundproof cover at a compressor so that dew condensation water does not wet a compressor terminal. The water which dewed to piping may trickle into a comp terminal. The up soundproof cover • After completion of the repair work, perform vacuuming of the outdoor unit using the following procedure. **(Procedure)** Short CN30 on the interface P.C. board on the outdoor unit for which the repair work has been completed, to open the PMV fully. (Confirm that Bit 1 of SW12 is OFF.) **Note** : The PMV opening by using short CN30 returns the PMV to fully closed after 2 minutes. To continue the fully open status, turn off the power supply of the outdoor unit within 2 minutes after using short CN30.	

No.	Part name	Procedure	Remarks
6	Liquid tank	**⚠ CAUTION** Wear protective clothing on your hands as other components may cause injury etc. **<Disassembling>** 1) Stop unit operation and turn off power supply to unit. **⚠ WARNING** Never open the cabinet while five minutes after turn off the power supply. 2) Remove Inverter assembly by procedure 2. 3) Recover refrigerant. 4) Remove TL sensor at one pipe of Liquid tank. 5) Take off pipes to Liquid tank by re-welding. 6) Remove Screws and carry up Liquid tank to upper side. (Screw M5 2 pcs) **Note** : Re-transform pipes of Liquid tank for carry out. Take care for crashing pipes.	 
		<Assembling> Assembling by contrary procedure of above 6) → 1). • After completion of the repair work, perform vacuuming of the outdoor unit using the following procedure. **(Procedure)** Short CN30 on the interface P.C. board on the outdoor unit for which the repair work has been completed, to open the PMV fully. (Confirm that Bit 1 of SW12 is OFF.) **Note** : The PMV opening by using short CN30 returns the PMV to fully closed after 2 minutes. To continue the fully open status, turn off the power supply of the outdoor unit within 2 minutes after using short CN30.	

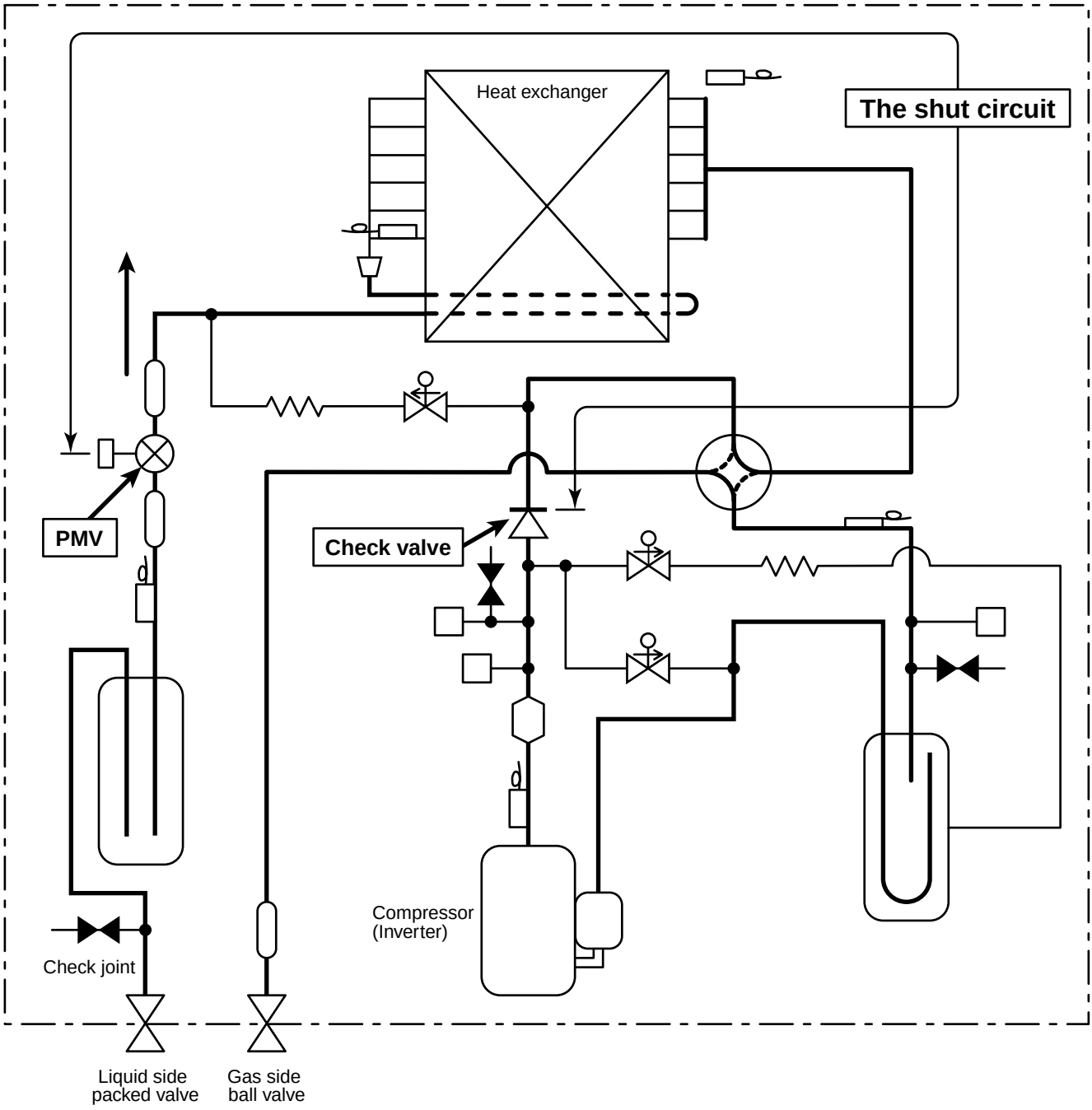
No.	Part name	Remarks
7	Parts positions	 

No.	Part name	Procedure	Remarks
8	Attachment/ detachment of pipe fixing rubber	**REQUIREMENT** Wear protective clothing on your hands as other components may cause injury etc. **<Disassembling>** 1) Squeeze the band either side of the clip to release. 2) Pushing in the tab side of SUS band the tab comes off from square hole.	1)  Compress the rubber to release the cup. 1) Push in the band towards the arrow mark.
		<Assembly> 1) Individually fit each rubber bracket to the relevant pipe. 2) For assembly align the tab side of the SUS band to the slit side of the rubber bracket. 3) Attach the rubber band so that there is no gap between the SUS band and the fixing rubber bracket. Pay special attention no to create a gap at the hair pin of the rubber band. 4) Squeeze the rubber bracket and band so that the hook part of the band clips into the square hole.	Align the direction of the slits and then attach to each pipe.  Matching the tabs, slide them. Align the tabs to the slit side of the rubber. 2)  Slide it. Push the band against the rubber to eliminate any gaps. 3)  Slide the square hole side towards the arrow mark. 4)  Push the tab side up against the rubber.

Refrigerant Recovery in Outdoor Unit

This outdoor unit has check valve and PMV (Pulse Motor Valve)at back and forth of heat exchanger.
So, in some case, heat exchanger will become blockage situation.
In case of changing compressor or cycle parts, refrigerant recovery works are difficult without fully opening of PMV.
After fully opening PMV as following process, recover refrigerant by using recovery device.

[REFERENCE : Outdoor unit refrigerant cycle]



[Work Process]

This function is provided to fully open the PMV used in the outdoor unit for 2 minutes.

1) Short-circuit CN30 on the interface P.C. board of the outdoor unit.
   * After 2 minutes, the opening returns to the normal operation.
2) While short-circuit CN30, after one minute before two minutes, turn off power supply of outdoor unit.
3) Be sure to remove the CN30 short circuit after power supply is turned off.

14. P.C. BOARD

14-1. Indoor Unit

14-1-1. Exchange of P.C. Board for Indoor Service

Part code	Model type	P.C. board model	Label display on P.C. board
431-6V-207	MMU-AP✻✻1WH series MMU-AP✻✻1YH series MMU-AP ✻✻1SH series MMD-AP✻✻1H series MML-AP✻✻1H series MMU-AP✻✻1BH series MMF-AP✻✻1H series	MCC-1403	03RD M01
431-6V-210	MMD-AP✻✻1BH series	MCC-1402	03DD M02
431-6V-289	MMU-AP✻✻1H series MMU-AP✻✻1MH series MMC-AP✻✻1H series MMK-AP✻✻1H series MMD-AP✻✻1SPH/SH series MMU-AP✻✻2SH series	MCC-1402	03DD M05

Requirement when exchanging the P.C. board assembly for indoor service

The fixed memory (herein EEPROM, IC10) stores the model type and capacity code, which are set upon shipment from the factory.

Data set upon installation (i.e. line/indoor/group addresses) are also stored in the EEPROM.

Proceed with the exchange of the P.C. board as shown in the procedure below.

After exchange, confirm the settings for master/sub, etc. are correct and carry out a test operation.

Exchange procedure

Method 1

Before exchange, it is possible to turn on the power of the indoor unit and read out the setup contents from the wired remote controller.

Readout of EEPROM data: **Procedure 1**

⇩

Exchange of P.C. board for service & power ON: **Procedure 2**

⇩

Programming the EEPROM data: **Procedure 3**

⇩

Power supply reset
(All the indoor units connected to the remote controller are reset in case of group operation control)

Method 2

Before exchange, it is impossible to read out the setup contents due to EEPROM error.

Exchange of P.C. board for service & power ON: **Procedure 2**

⇩

Writing-in of the setup data such as the model name, capacity code, indoor unit address high ceiling setup, connection setup of option,
etc to EEPROM based upon customer's information: **Procedure 3**

⇩

Power supply reset (All the indoor units connected to the remote controller in case of group operation control)

Procedure 1 : Readout setup contents from EEPROM

(Contents of EEPROM with setup changed at local site include setup at shipment from the factory are read out.)

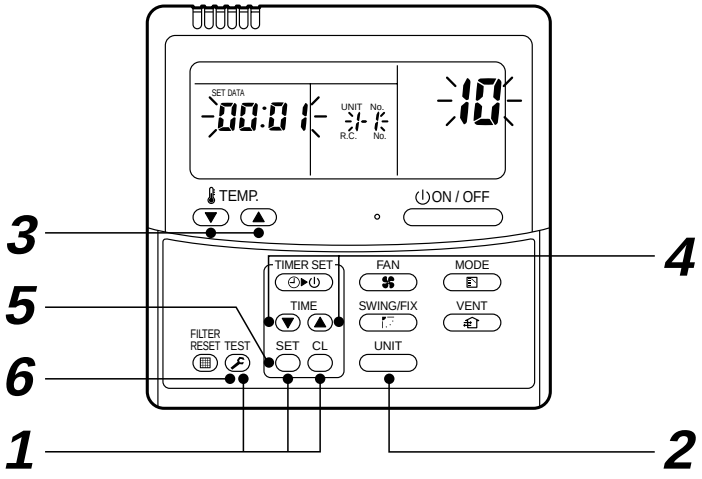
1. Push SET + CL + TEST buttons simultaneously for 4 seconds or more. ***1***
   (Corresponds to number of the operation diagram of the remote controller.)
   * In a group operation control, the firstly displayed unit No. indicates the header indoor unit No.
     In this case, 10 is displayed in the item code (DN). The fan of the selected indoor unit operates, and also starts swinging in a model with flap.
2. Every pushing UNIT , the indoor unit Nos. in the group control are displayed successively. ***2***
   (Corresponds to number of the operation diagram of the remote controller.)
   Specify the indoor unit No. to be exchanged.
   * The fan of the selected indoor unit operates, and also starts swinging in a model with flap.
3. Using temperature setup ▼ / ▲ buttons, the item code (DN) can be moved up/down one by one. ***3***
   (Corresponds to number of the operation diagram of the remote controller.)
4. First change the item code (DN) from 10 → 01. (Setup of filter sign lighting time)
   In this time, make a note of contents of the displayed setup data.
5. In the next time, change the item code (DN) using ▼ / ▲ buttons.
   Make a note of contents of the setup data as same as the above.
6. Then repeat item 5., and make a note of contents of the important setup data as indicated in the attached table (Example).
   * The item code (DN) is consisted with 01 to AA.
     DN No. may jump on the way.
7. When noting has finished, push TEST button to return to the normal stop status. ***6***
   (Corresponds to number of the operation diagram of the remote controller.)
   (It requires approx. 1 minute to operate the remote controller.)

Item code necessary at minimum

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

Type and capacity of the indoor unit are necessary to set up the revolution frequency of the fan.

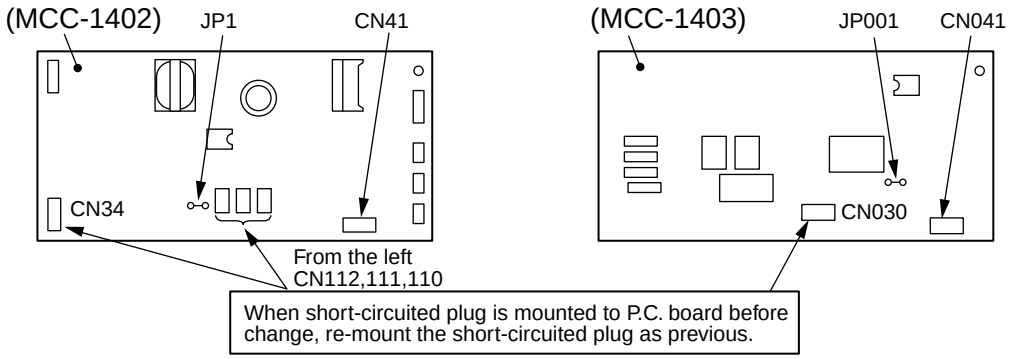
<Remote controller operation diagram>



Procedure 2 : Exchange of P.C. board for service

1. Exchange P.C. board with a P.C. board for service.

   In this time, the jumper line (cut) setup or the (short-circuit) connecting connector setup on the previous P.C. board should be reflected on P.C. board for service. (See the below figures.)



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

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

   1) Single (Individual) operation

      Turn on power of the indoor units and proceed to **Procedure 3**.

   2) Group operation

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

         Turn on power of the exchanged indoor unit only and proceed to **Procedure 3**.

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

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

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

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

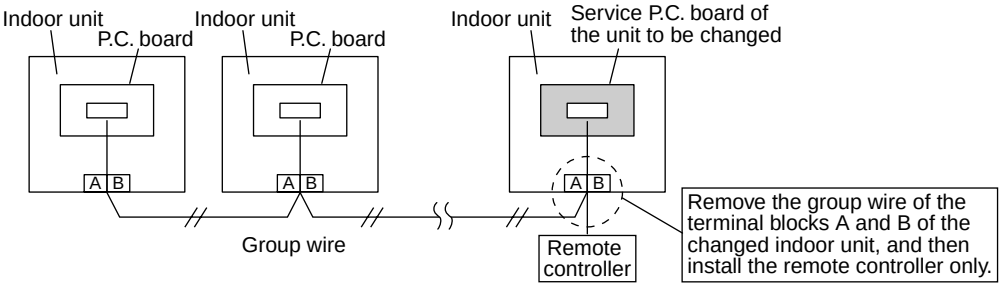
      C) In case that power of the indoor units cannot be turned on individually (***Case 2***)

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

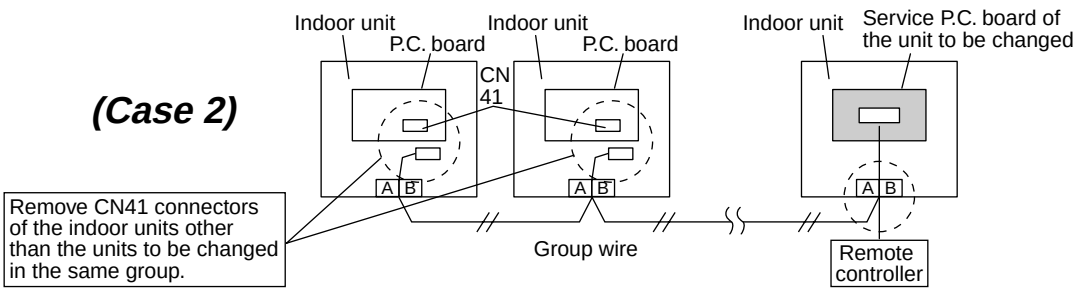
         b) Turn on power of the indoor units and proceed to **Procedure 3**.

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

(Case 1)



(Case 2)



Procedure 3 : Writing-in of setup contents to EEPROM

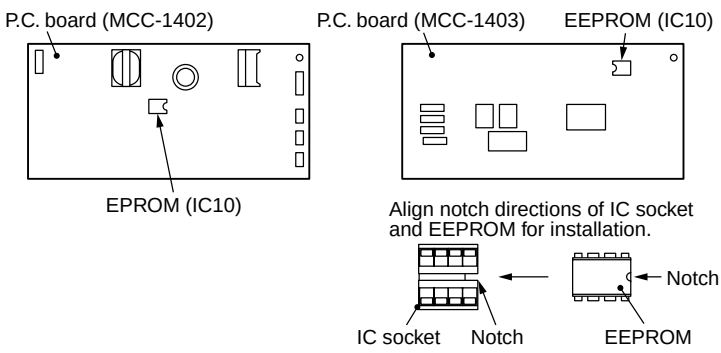
(The EEPROM contents which are installed on the service P.C. board have been set up at shipment from the factory.)

1. Push SET + CL + TEST buttons simultaneously for 4 seconds or more. ***1***
   (Corresponds to number of the operation diagram of the remote controller.)
   (ALL is displayed in the UNIT No box.)
   In this time, 10 is displayed in the item code (DN). The fan of the indoor unit operates, and also starts swinging in a model with flap.
2. Using temperature setup ▼ / ▲ buttons, the item code (DN) can be moved one step up 1 or down one by one. ***3*** (Corresponds to number of the operation diagram of the remote controller.)
3. First set up the type and capacity code of the indoor unit.
   (The data at shipment from the factory is written in EEPROM by changing the type and capacity code.)
   1) Set 10 to the item code (DN). (As before)
   2) Using the timer time ▼ / ▲ buttons, set up the type. ***4***
      (Corresponds to number of the operation diagram of the remote controller.)
      (For example, 0001 indicates 4-way Air Discharge Cassette type.): Refer to the attached table.
   3) Push SET button. (OK if display goes on.) ***5***
      (Corresponds to number of the operation diagram of the remote controller.)
   4) Using temperature setup ▼ / ▲ buttons, set 11 to the item code (DN).
   5) Using the timer time ▼ / ▲ buttons, set up the capacity code.
      (For example, 0012 indicates 027 type.): Refer to the attached table.
   6) Push SET button. (OK if display goes on.)
   7) Push TEST button to return to the normal stop status.
4. In the next, the contents such as address setup, which were set up at the local site after installation are written in EEPROM. Execute again the operation in the above item 1.).
5. Using temperature setup ▼ / ▲ buttons, set 01 to the item code (DN).
   (Lighting time setup for filter sign)
6. Compare the contents of the setup data which is displayed in this time with contents noted in a memo in **Procedure 1** and customer's information.
   1) If data is incorrect, change it using the timer time ▼ / ▲ buttons so that it matches with contents noted in a memo, and then push SET button. (OK if display goes on.)
   2) Do nothing if data is same as those in the memo.
7. Using temperature setup ▼ / ▲ buttons, change the item code (DN).
   Check also the contents of the setup data and then change them it to those in the memo.
8. Then repeat operations in items 6. and 7.
9. After setup operation, push TEST button to return to the normal stop status. ***6***
   (Corresponds to number of the operation diagram of the remote controller.)
   In a group operation, turn off the power supply once, return the group wires between indoor units and CN41 connectors as before, and then turn on power of all the indoor units.
   (It requires approx. 1 minute to operate the remote controller.)
   * The item code (DN) is consisted with 01 to AA. DN No. may jump on the way.
     Even if pushing SET button after changing the data incorrectly, the data can be returned to one before change by pushing CL button before changing the item code (DN).

EEPROM layout

EEPROM (IC10) is attached to IC socket.
To remove it, use a pair of tweezers, etc.
To attach EEPROM, arrange the direction as shown in the right figures.

* In exchanging time, pay attention not to bend the lead wire of IC.



Record the contents of the following before exchanging P.C. boards. (Item code list)

DN	Item	Memo	Setup at shipment from factory
01	Filter sign lighting time		According to type
02	Dirty condition of filter		0000: Standard
03	Central control address		0099: Undefined
06	Heating inlet temp. shift		0002: +2°C (Floor standing: 0)
0d	Cooling Auto mode existence		0001: No auto mode cooling/heating (* Automatic selection by connected outdoor unit)
0F	Cooling only/Heat pump select		0000: Heat pump
10	Type		According to model type
11	Indoor unit capacity		According to capacity code
12	Line address		0099: Undefined
13	Indoor unit address		0099: Undefined
14	Group address		0099: Undefined
19	Louver type (Air direction adjustment)		According to type
1E	Temp. width between cooling and heating automatic selective control points		0003: 3 deg (Ts ± 1.5)
28	Automatic restart from power failure		0000: None
2A			
2E	HA terminal (T10) selection		0000: Normal
30			
31			
32	Sensor select		0000: Body sensor
40			
5d	High ceiling selection		0000: Standard
60	Timer setup (Wired remote controller)		0000: Possible

Type
Item code [10]

Setup data	Type	Model abb. name
0000	1-way Air Discharge Cassette	MMU-AP✻✻✻SH
0001*	4-way Air Discharge Cassette	MMU-AP✻✻✻H
0002	2-way Air Discharge Cassette	MMU-AP✻✻✻WH
0003	1-way Air Discharge Cassette (Compact type)	MMU-AP✻✻✻YH
0004	Concealed Duct Standard	MMD-AP✻✻✻BH
0005	Slim Duct	MMD-AP✻✻✻SPH MMD-AP✻✻✻SH
0006	Concealed Duct High Static Pressure	MMD-AP✻✻✻H
0007	Under Ceiling	MMC-AP✻✻✻H
0008	High Wall	MMK-AP✻✻✻H
0009		
0010	Floor Standing Cabinet	MML-AP✻✻✻H
0011	Floor Standing Concealed	MML-AP✻✻✻BH
0012		
0013	Floor Standing (Below 6HP)	MMF-AP✻✻✻H
0014	4-way Air Discharge Cassette (Compact type)	MMU-AP✻✻✻MH

Indoor unit capacity
Item code [11]

Setup data	Model	Setup data	Model
0000*	Invalid	0016	—
0001	007 type	0017	048 type
0002	—	0018	056 type
0003	009 type	0019	—
0004	—	0020	—
0005	012 type	0021	072 type
0006	—	0022	—
0007	015 type	0023	096 type
0008	—	0024	—
0009	018 type	0025	—
0010	—	0026	—
0011	024 type	0027	—
0012	027 type	0028	—
0013	030 type	~	—
0014	—	0034	—
0015	036 type		

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

14-2. Outdoor Unit

14-2-1. Printed Circuit Board (P.C. Board) Replace Procedure Manual

This service P.C. board is made as a common part for various model.
In order to make proper operation, it is necessary to cut jumpers and to change Dip switches.

Some electrical parts charged to high valtage for a while after turn off AC mains.
Before servising, turn off the AC mains and wait for discharging electrical parts at least 5 minutes.

1. Please cut *jumper (S)* according to the table below.

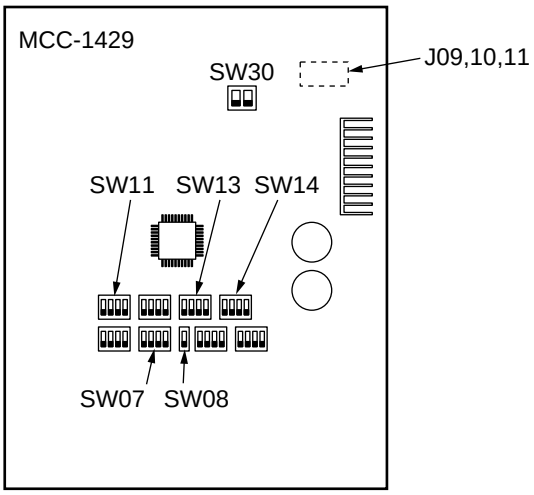
Model name	jumper		
	J09	J10	J11
Intial setting of this Service P.C. board	○	○	○
MCY-MAP0401HT, MCY-MAP0401HTZ, MCY-MAP0401HTZG MCY-MAP0401HT2D, MCY-MAP0401HT2DZ, MCY-MAP0401HT2DZG MCY-MAP0401HT2K	×	×	○
MCY-MAP0501HT, MCY-MAP0501HTZ, MCY-MAP0501HTZG MCY-MAP0501HT2D, MCY-MAP0501HT2DZ, MCY-MAP0501HT2DZG MCY-MAP0501HT2K	○	×	○
MCY-MAP0601HT, MCY-MAP0601HTZ, MCY-MAP0601HTZG MCY-MAP0601HT2D, MCY-MAP0601HT2DZ, MCY-MAP0601HT2DZG MCY-MAP0601HT2K	×	○	○

○ : Leave connecting, × : Cut connection

2. Please set *the Dip switches* Completely same as the P.C. board originally equipped.

[General function of Dip Switches]

Switch No.	General function
SW07	Demand (Power peak cut control) setting
SW08	High humidity setting
SW11	Cooling/Heating Priority setting, etc.
SW13	System address setting
SW14	
SW30	Terminator resistor setting

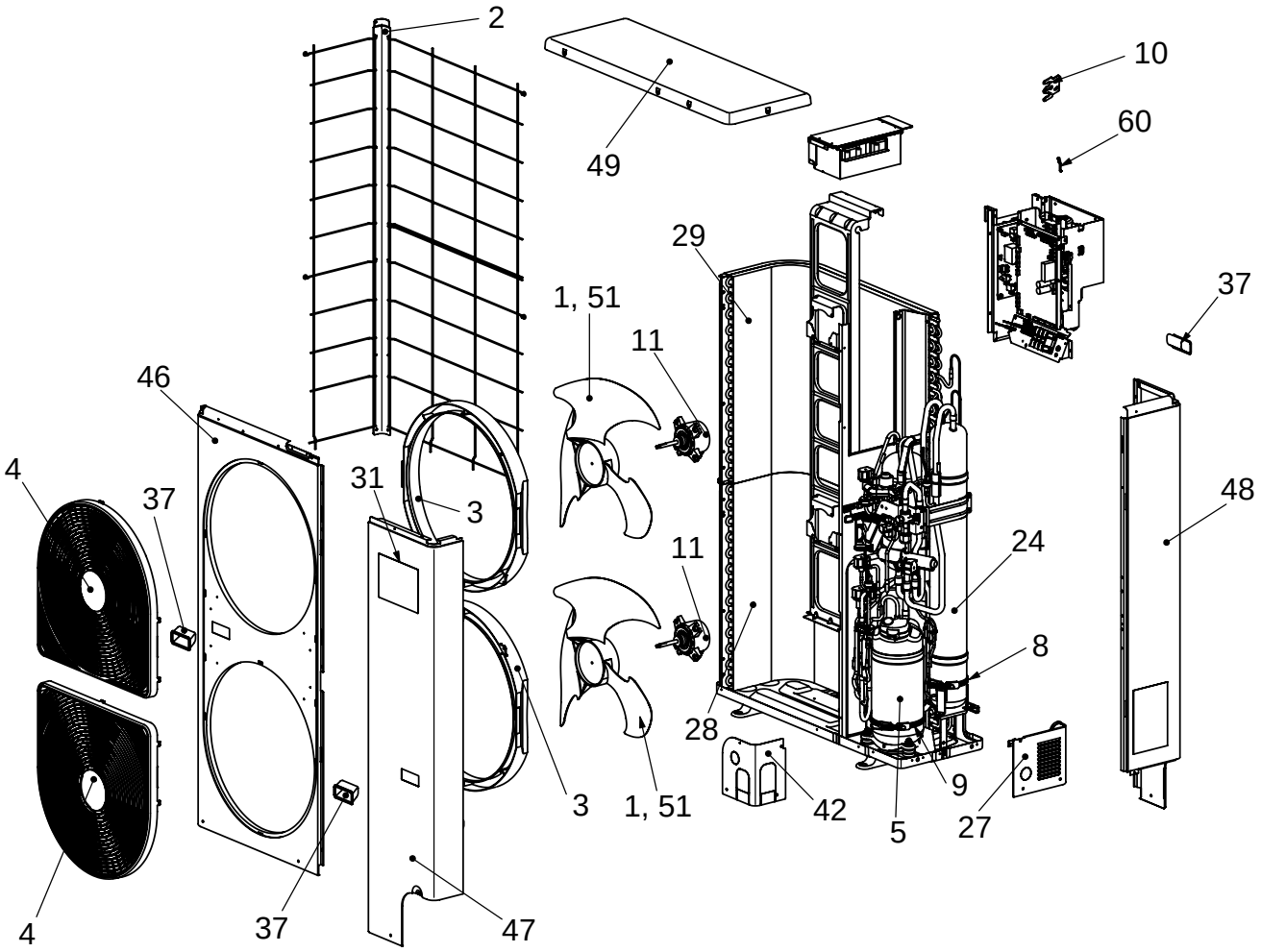


15. EXPLODED VIEWS AND PARTS LIST

15-1. Outdoor Unit

MCY-MAP0401HT, HTZ, HTZG, MCY-MAP0501HT, HTZ, HTZG, MCY-MAP0601HT, HTZ, HTZG
MCY-MAP0401HT2D, HT2DZ, HT2DZG, MCY-MAP0501HT2D, HT2DZ, HT2DZG,
MCY-MAP0601HT2D, HT2DZ, HT2DZG

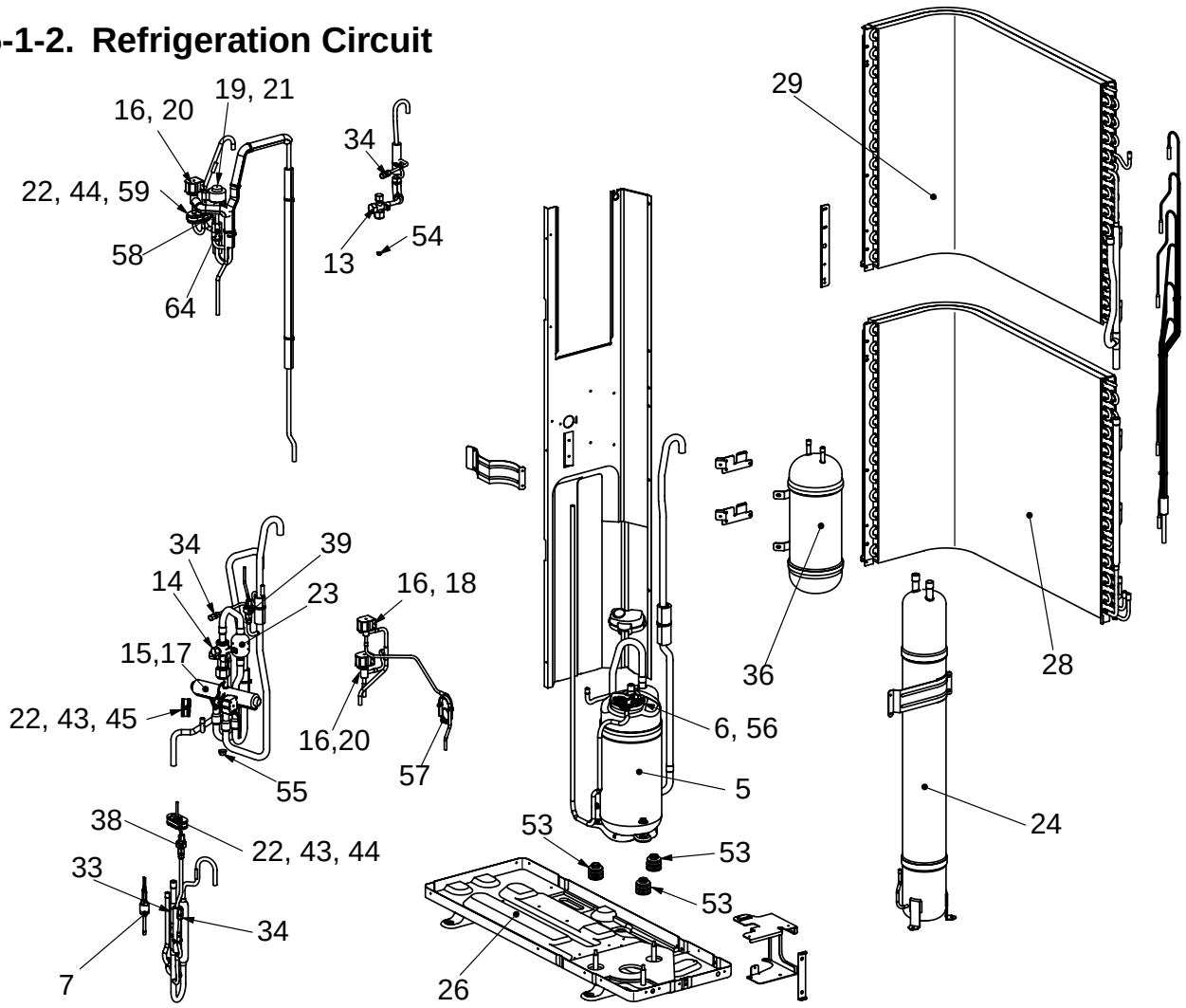
15-1-1. Mini-SMMS Unit



Location No.	Part No.	Description
1	43120224	Fan, Propeller, PE492
2	43191602	Guard, Fin
3	43122065	Bell Mouth, Plastic
4	43191651	Guard, Fan
5	43041788	Compressor, DA420A3F-20M2
8	43157287	Heater, Crank Case, AC240V, 24W
9	43172196	Heater, Case, 29W, 240V
10	43063332	Holder, Sensor
11	4302C069	Motor, Fan, ICF-140-63-2R
24	43148212	Accumulator, 7L
27	43100345	Panel, Back, Piping
28	4314G210	Condenser Ass'y, Down
29	4314G211	Condenser Ass'y, Up
30	4318T727	Owner's Manual

Location No.	Part No.	Description
31	4311M538	Mark, TOSHIBA
32	43149359	Socket, DIA 19.1–15.9 (MAP0601)
35	43194077	Socket, 1/8 IN
37	43119390	Hanger
40	43032441	Nipple, Drain
42	43100347	Panel, Front, Piping
46	43100352	Panel, Air Outlet
47	43100370	Panel, Front
48	43100371	Panel, Side
49	43100372	Panel, Roof
50	43097212	Nut
51	43047669	Nut, Flange
56	43063317	Holder, Thermostat
60	43019904	Holder, Sensor

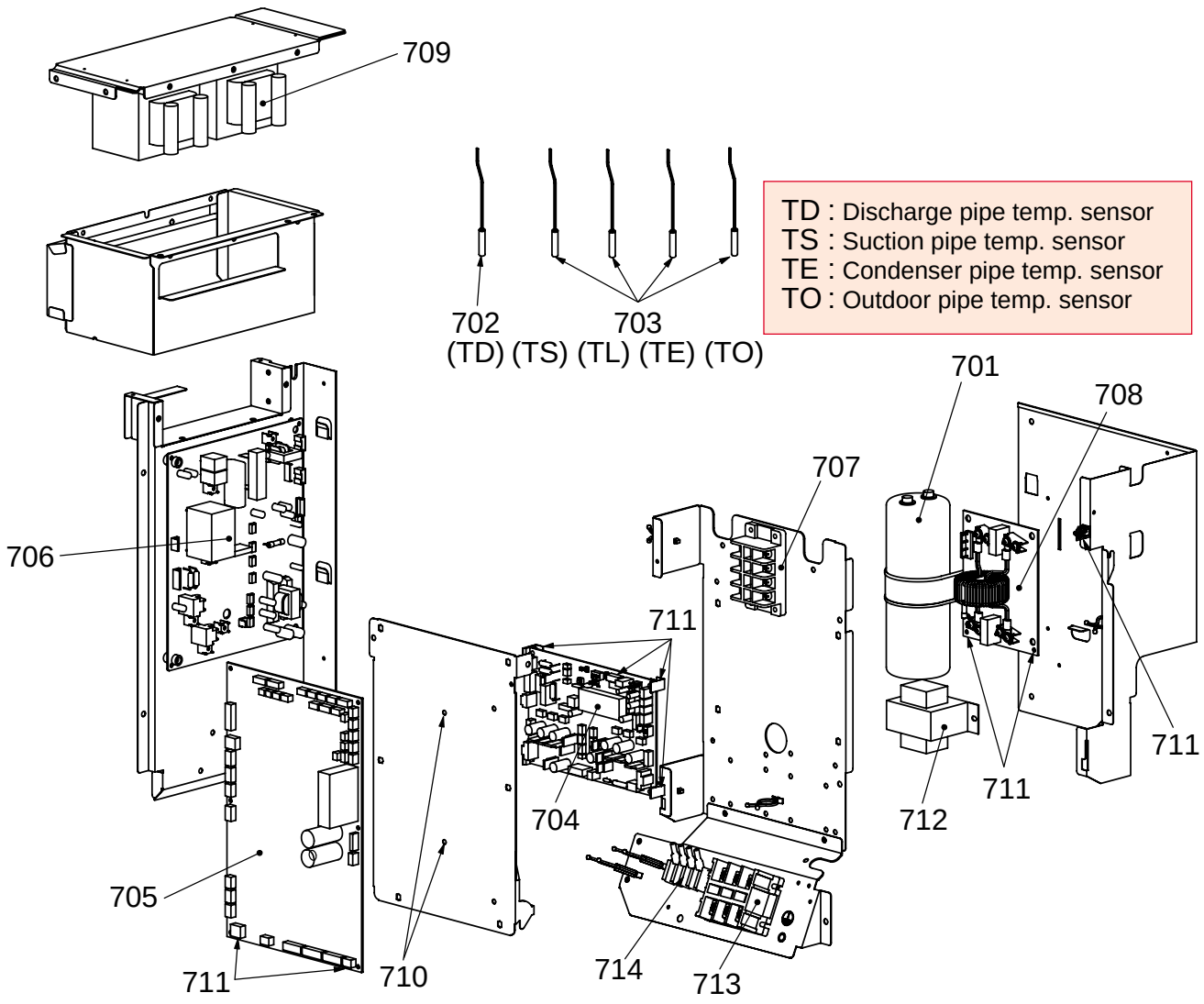
15-1-2. Refrigeration Circuit



Location No.	Part No.	Description
5	43041788	Compressor, DA420A3F-20M2
6	43050407	Thermostat, Bimetal
7	43151283	Switch, Pressure, ACB-4UB32W
12	4316V135	Bush
13	43046442	Valve, Packed, 9.52 DIA
14	43146699	Valve, Ball, B5/8F
15	43146683	Coil, Solenoid, VHV-01AJ502E1 (HT)
15	43146706	Coil, Solenoid, VHV-01AH553A1 (HT2D)
16	43146716	Coil, Solenoid, 2-Way, AC220, 60Hz (HT2D)
16	37546847	Coil, Solenoid, 2-Way, AC220–240, 50Hz (HT)
17	43146687	Valve, 4-Way, STF-0401G
18	43146711	Valve, 2-Way, VPV-122DQ1
19	43146708	Coil, PMV, HAM-MD12TF-3
20	43146712	Valve, 2-Way, VPV-303DQ1
21	43146709	Valve, PMV, HAM-BD24TF-1
22	43149325	Band, Fix
23	4314Q030	Strainer, DIA 15.9
24	43148212	Accumulator, 7L
26	43100343	Base, Ass'y

Location No.	Part No.	Description
28	4314G210	Condenser Ass'y, Down
29	4314G211	Condenser Ass'y, Up
33	43146715	Valve, Checked, BCV-804DY
34	43146676	Joint, Check
36	43148213	Tank. Liquid (HT)
36	43148216	Tank. Liquid (HT2D)
38	43151291	Sensor Ass'y, High Pressure, NSK-BC038F-067
39	43150321	Sensor Ass'y, Low Pressure, NSK-BC010F-067
43	43149339	Rubber, Supporter, Pipe, DIA 12.7
44	43149320	Rubber, Supporter, Pipe, DIA 8.0
45	43149321	Rubber, Supporter, Pipe, DIA 6.4
53	43149324	Rubber, Cushion
54	43047401	Bonnet, 3/8 IN, 9.52
55	43194029	Bonnet
57	43047491	Tube, Capillary, I.D 1.5
58	43146448	Tube, Capillary
59	43149358	Rubber, Supporter, Pipe, DIA 9.52
64	4314Q031	Strainer, DIA 9.52

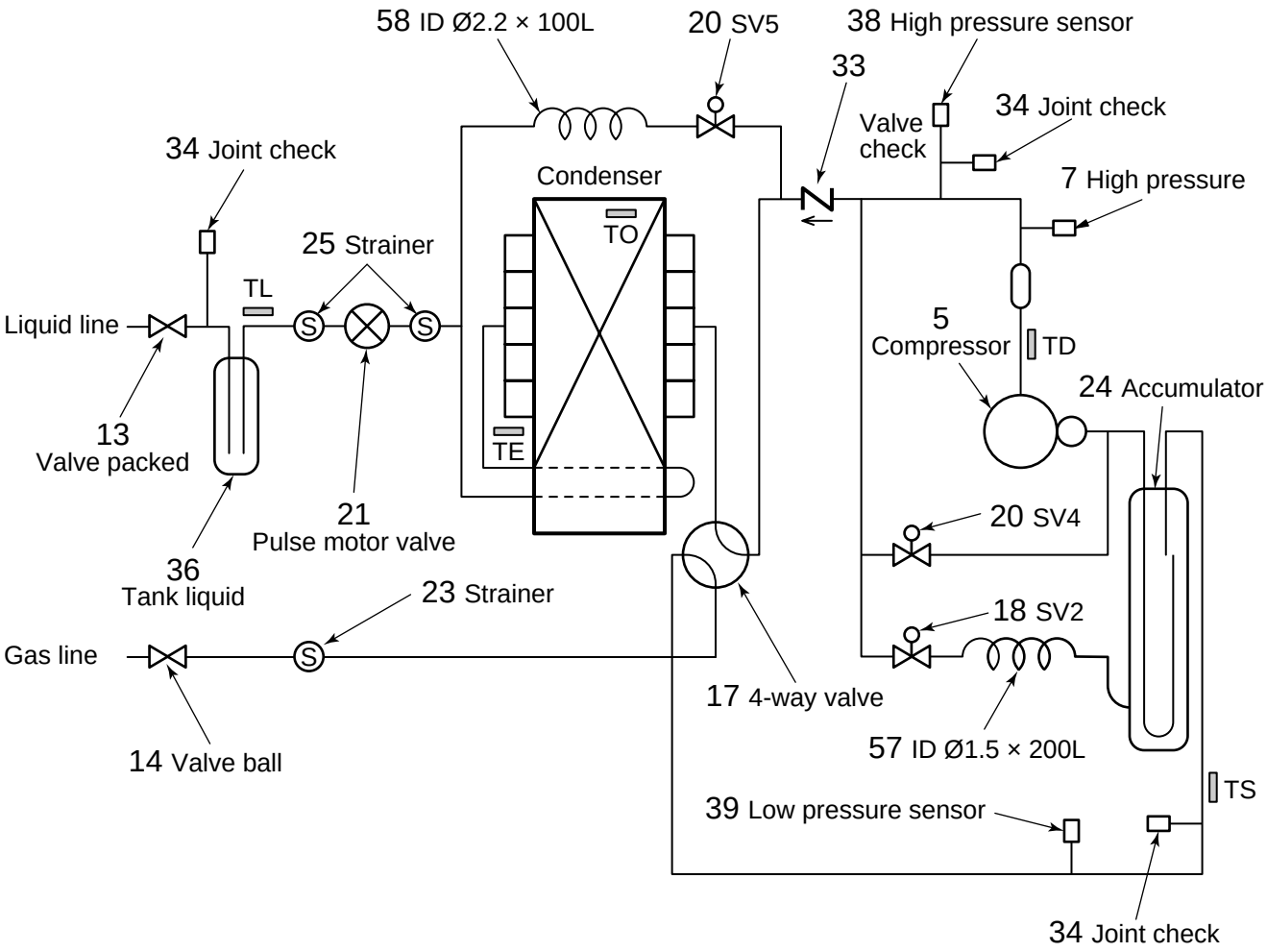
15-1-3. Controller for Air Conditioner



Location No.	Part No.	Description
41	43063325	Holder, Sensor
52	43169409	Holder, Cord
701	43155211	Capacitor
702	43150315	Sensor, TD (F6)
703	43050425	Sensor Ass'y, Service, TC (F6)
704	4316V306	P.C. Board Ass'y, Fan-IDPU, MCC-1531
705	4316V307	P.C. Board Ass'y, Interface, MCC-1429
706	4316V308	P.C. Board Ass'y, A3-IPDU, MCC-1535

Location No.	Part No.	Description
707	43160579	Terminal, 30A, 4P
708	4316V309	P.C. Board Ass'y, Noise-Filter, MCC-1551
709	43158197	Reactor, CH-65
710	43163017	Supporter
711	43063248	Supporter Ass'y
712	43158196	Ttansformer, TT-01
713	43160581	Terminal, 60A, 3P
714	43160574	Terminal, 4P, AC30V/DC42V, 1A

15-1-4. Refrigeration Circuit Diagram

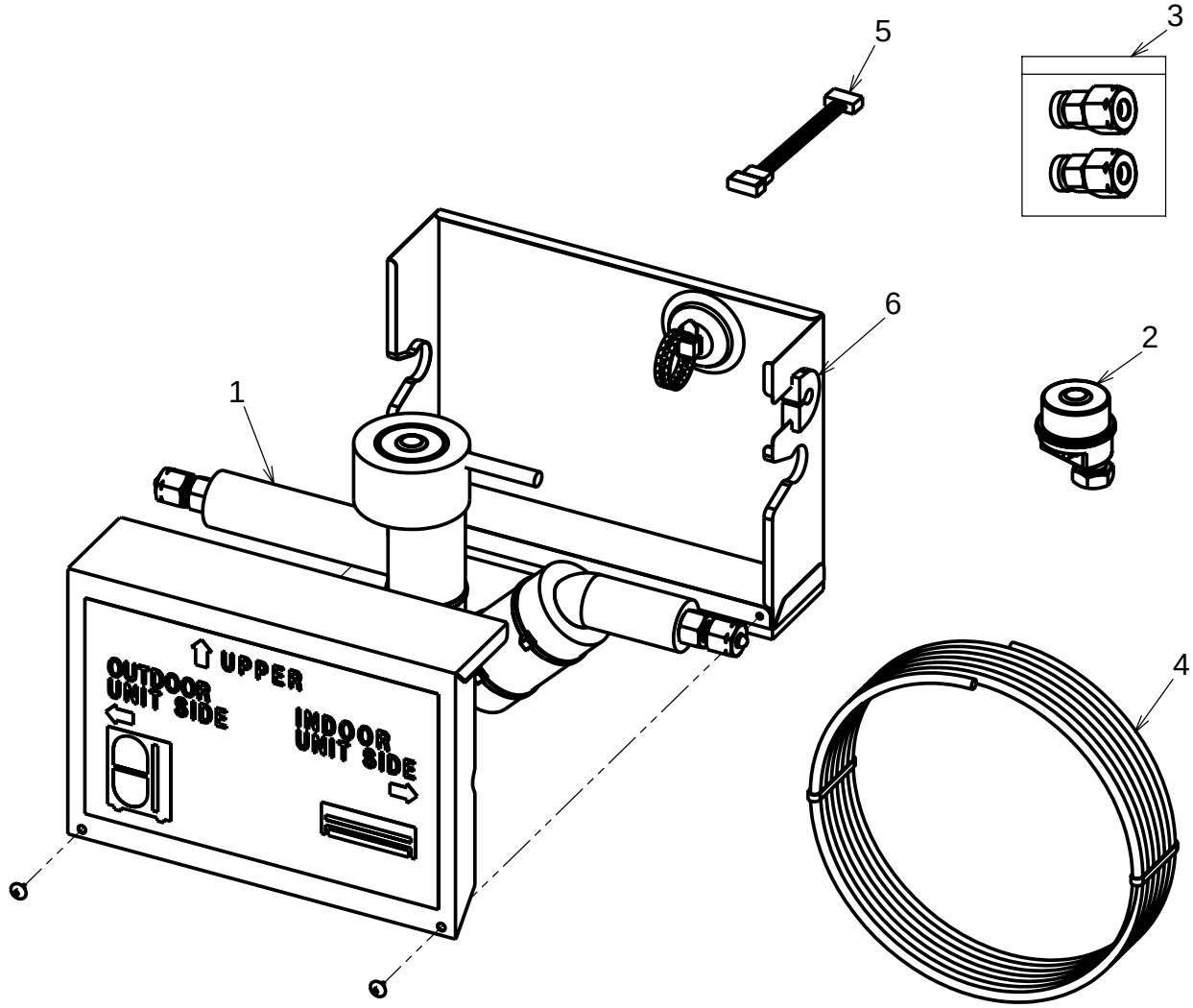


Location No.	Part No.	Description
5	43041788	Conpressor, DA420A3F-20M2
7	43151283	Swirch, Pressure, ACB-4UB32W
13	43046442	Valve, Packed, 9.52 DIA
14	43146699	Valve, Ball, B5/8F
17	43146687	Valve, 4-Way, STF-0401G
18	43146711	Valve, 2-Way, VPV-122DQ1
20	43146712	Valve, 2-Way, VPV-303DQ1
21	43146709	Valve, PMV, HAM-BD24TF-1
23	4314Q030	Strainer, DIA 15.9
24	43148212	Accumulator, 7L

Location No.	Part No.	Description
25	4314Q031	Strainer, DIA 9.52
33	43146715	Valve, Checked, BCV-804DY
34	43146676	Jointe, Check
36	43148213	Tank. Liquid (HT)
36	43148216	Tank. Liquid (HT2D)
38	43151291	Sensor Ass'y, High Pressure, NSK-BC038F-067
39	43150321	Sensor Ass'y, Low Pressure, NSK-BC010F-067
57	43047491	Tube, Capillary, I.D 1.5
58	43146448	Tube, Capillary

15-2. PMV Kit

RBM-PMV-0361E, RBM-PMV-0901E



Location No.	Part No.	Description
1	43149356	Pipe Ass'y, Service PMV (PBM-PMV0361E)
1	43149357	Pipe Ass'y, Service PMV (PBM-PMV0901E)
2	43146707	Motor, PMV, EDM-MD12TF-3

Location No.	Part No.	Description
3	43183025	Joint, 6.35–9.52 (PBM-PMV0901E)
4	43135015	Cable Ass'y, PMV
5	43135016	Cable Ass'y, Connector
6	43196113	Bushing

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