SAMSUNG

SYSTEM AIR CONDITIONER

OUTDOOR UNIT

AM036FXMDCH
AM048FXMDCH
AM053FXMDCH
AM060MXMDCH

SERVICE *Manual*

AIR CONDITIONER

CONTENTS

Refer to the service manual in the GSPN(see the rear cover) for the more information.

Contents

Contents

■ Precautions

1. Precautions for the Service

- **Use the correct parts when changing the electric parts.**
  – Please check the labels and notices for the model name, proper voltage, and proper current for the electric parts.
- **Fully repair the connection for the types of harness when repairing the product after breakdown.**
  – A faulty connection can cause irregular noise and problems.
- **When disassembling or assembling, make sure that the product is laid down on a work cloth.**
  – Doing so will prevent scratching to the exterior of the rear side of the product.
- **Completely remove dust or foreign substances on the housing, connection, and inspection parts when performing repairs.**
  – This can prevent fire hazards for tracking, short, etc.
- **Please tighten the service valve of the outdoor unit and the valve cap of the charging valve as securely as possible by using a monkey spanner.**
- **Check whether the parts are properly and securely assembled after performing repairs.**
  – These parts should be in the same condition as before the repair.

2. Precautions for the Static Electricity and PL

- **Please carefully handle the PCB power terminal during repair and measurement when it is turned on since it is vulnerable to static electricity.**
  – Please wear insulation gloves before performing PCB repair and measurement.
- **Check if the place of installation is at least 2m away from electronic appliances such as TV, video players, and stereos.**
  – This can cause irregular noise or degrade the picture quality.
- **Please make sure the customer does not directly repair the product.**
  – Arbitrary dismantling may result in electric shock or fire.

3. Precautions for the Safety

- **Do not pull or touch the power plug or the subsidiary power switch with wet hands.**
  – This may result in electric shock or fire.
- **If the power line or the power plug is damaged, then it must be changed since this is a hazard.**
- **Do not bend the wire too much or position it so that it can be damaged by a heavy object on top.**
  – This may result in electric shock or fire.
- **The use of multiple electric outlets should be prohibited.**
  – This may result in electric shock or fire.
- **Ground the connection if it is necessary.**
  – The connection must be grounded if there is any risk of electrical short due to water or moisture.
- **Unplug the power or turn off the subsidiary power switch when changing or repairing electrical parts.**
  – Doing so will prevent electric shock.
  – Although the power is off, Inverter PBA and Fan PBA are dangerous because they are charged with high DC voltage.
  – Changing, checking and touching PBA are dangerous because of high DC voltage. So, please turn off the power and wait for discharging DC voltage. (To discharging DC voltage naturally, wait for more than 15 minutes.)
- **Explain to workers that the battery for the remote control needs to be separated for storage purposes when the product will not be used for a long time.**
  – This can cause a problem for the remote control since battery fluid may trickle out.

4. Precautions for Handling Refrigerant for Air Conditioner

Environmental Cautions: Air pollution due to gas release

- **Safety Cautions**
  If liquid gas is released, then body parts that come into contact with it may experience frostbite/blister/numbness.
  If a large amount of gas is released, then suffocation may occur due to lack of oxygen. If the released gas is heated, then noxious gas may be produced by combustion.
- **Container Handling Cautions**
  Do not subject container to physical shock or overheating. (Flowage is possible while moving within the regulated pressure.)

5. Precautions for Welding the Air Conditioner Pipe

- **Dangerous or flammable objects around the pipe must be removed before the welding.**
- **If the refrigerant is kept inside the product or the pipe, then remove the refrigerant prior to welding.**
  If the welding is carried out while the refrigerant is kept inside, the welding cannot be properly performed. This will also produce noxious gas that is a health hazard. This leakage will also explode with the refrigerant and oil due to an increase in the refrigerant pressure, posing a danger to workers.
- **Please remove the oxide produced inside the pipe during the welding with nitrogen gas.**
  Using another gas may cause harm to the product or others.

6. Precautions for Additional Supplement of Air Conditioner Refrigerant

- **Precisely calculate the refrigerant by using a scale and S-net, and proceed with the test operation.**
  Excessive supplement can cause harm to the product since it can cause an inflow of the liquid refrigerant into the compressor.
- **Do not heat the refrigerant container for a forced injection.**
  This may cause harm to the product or others since the refrigerant container may burst.
- **Do not operate the product after removing the product safety pressure switch and sensor.**
  If the product is blocked inside, then this may cause harm to the product or others due to the excess pressure increase of the refrigerant gas.

7. Other Precautions

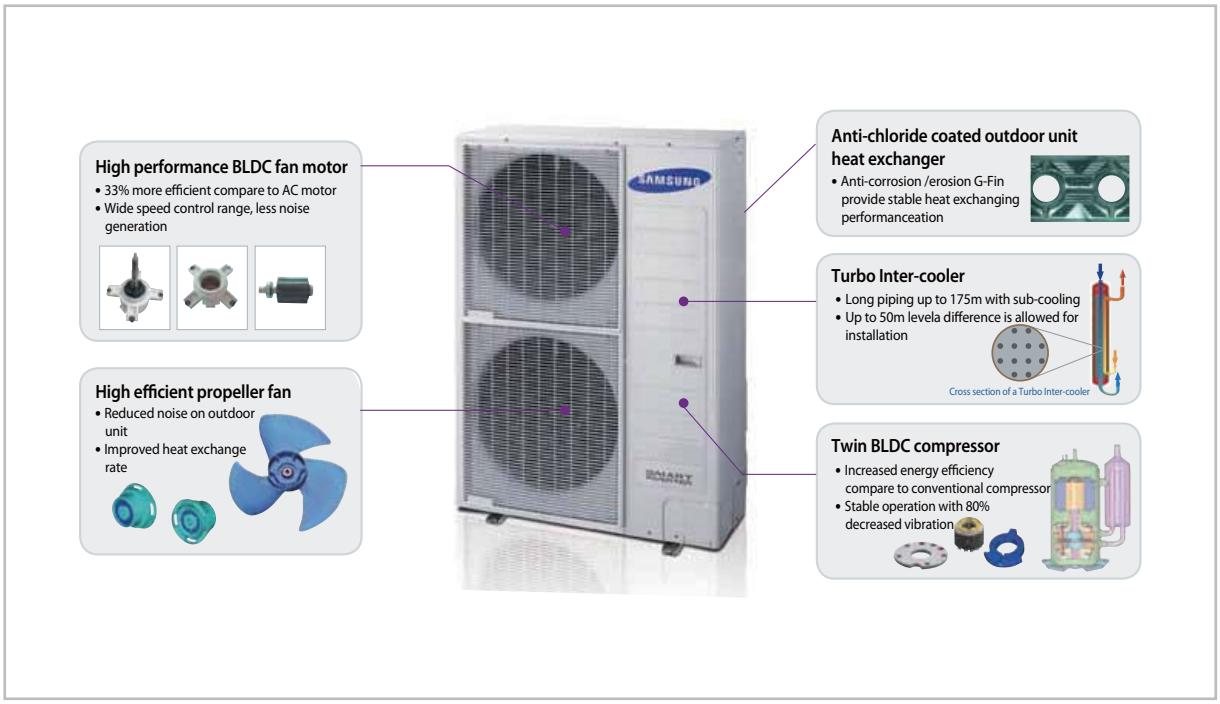
- **There should be no leakage of the pipes after installation. When withdrawing the refrigerant, the compressor should be stopped before removing the connecting pipe.**
  If the compressor is operating while the refrigerant pipe is not correctly connected and the service valve is opened, then air and other substances can enter the pipe. The interior of the refrigerant cycle may then build up excessive high pressure resulting in explosion and damage.

■ Product Specifications

1. The Feature of Product

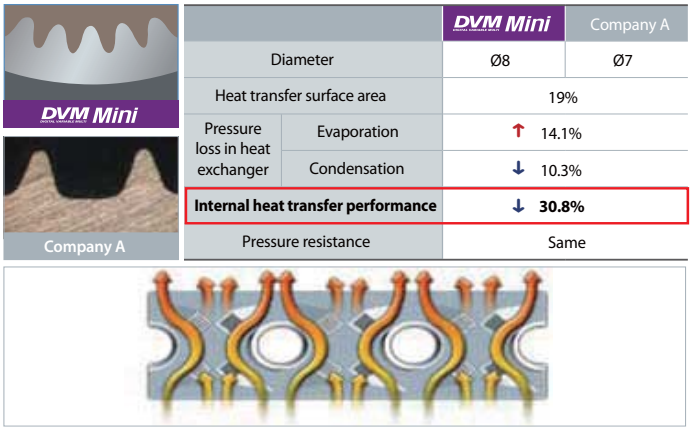
1-1. Feature

■ Structure of outdoor unit



■ High efficient heat exchanger

High efficient G-Fin & epoxy acrylic coating has increased heat transfer and hydrophilicity on heat exchanger.

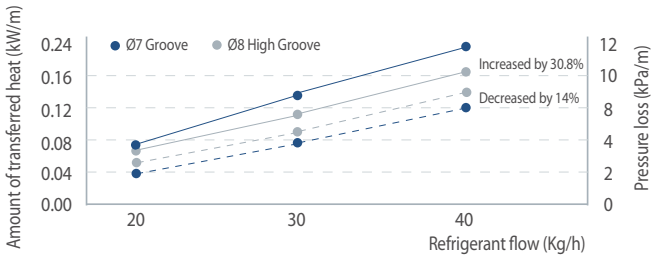


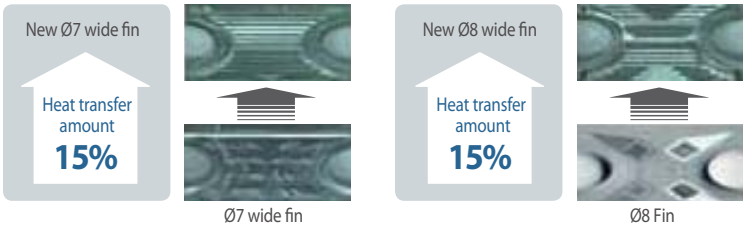
		DVM Mini	Company A
Diameter		Ø8	Ø7
Heat transfer surface area		19%	
Pressure loss in heat exchanger	Evaporation	↑ 14.1%	
	Condensation	↓ 10.3%	
Internal heat transfer performance		**↓ 30.8%**	
Pressure resistance		Same	

Feature (cont.)

■ Application of wide fin

High efficient heat exchanger has been applied, therefore it delays the onset of frost formation and increased heat transfer efficiency.





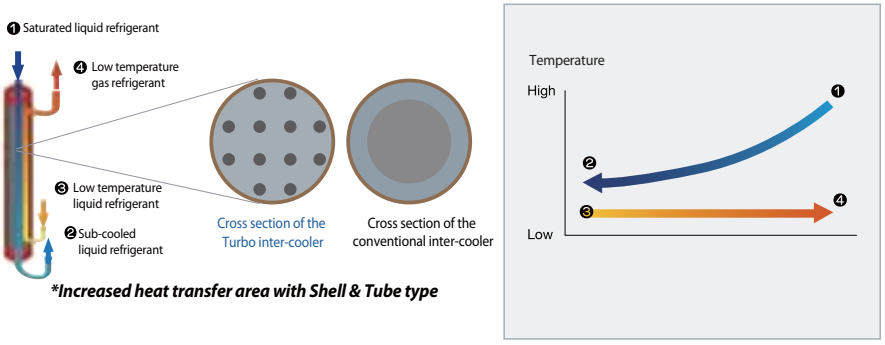
■ Optimized cooling/heating and increased system efficiency! Liquid EEV & Turbo Inter-cooler

- **Liquid EEV for increased efficiency of the system**

  Through Liquid EEV, controlling of valve opening has become more efficient and it achieved optimized system efficssiency and minimized noise from the refrigerant in the indoor unit.

- **Turbo Inter-cooler**

  High performing shell & tube type heat exchanger has been applied to secure cooling/heating efficiency. It has secured enough subcooling to acquire reliability on long piping and it also increased cooling/heating efficiency.

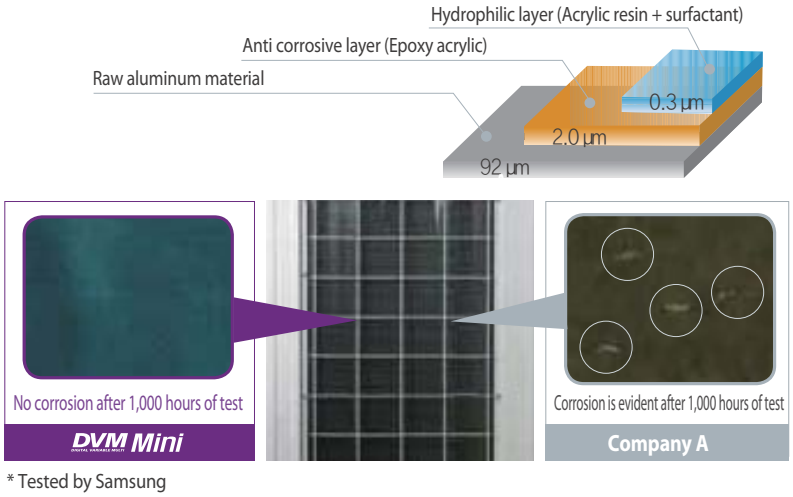


Turbo Inter-cooler

Feature (cont.)

■ Reinforced corrosion resistance on the heat exchanger

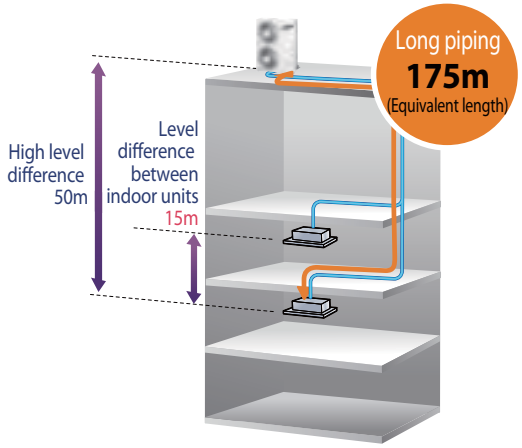
To prevent corrosion of the products which is installed in saline area, corrosion resistance has been reinforced.



* Tested by Samsung

■ Long piping/High level difference technology

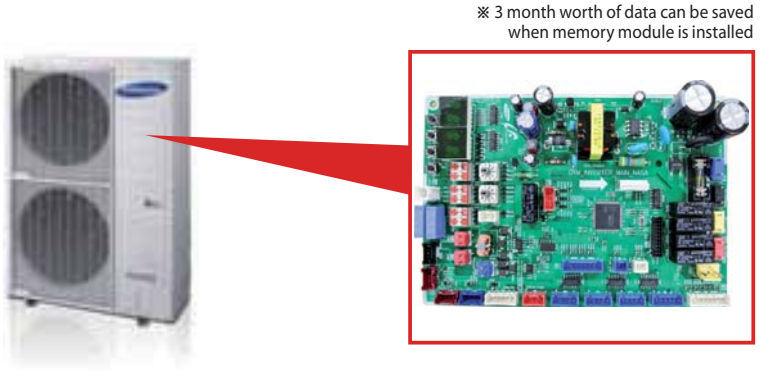
Longest piping length is allowed up to 175m (equivalent length) and Maximum 50m of level difference is allowed for more flexible installation.



Feature (cont.)

■ Memory module

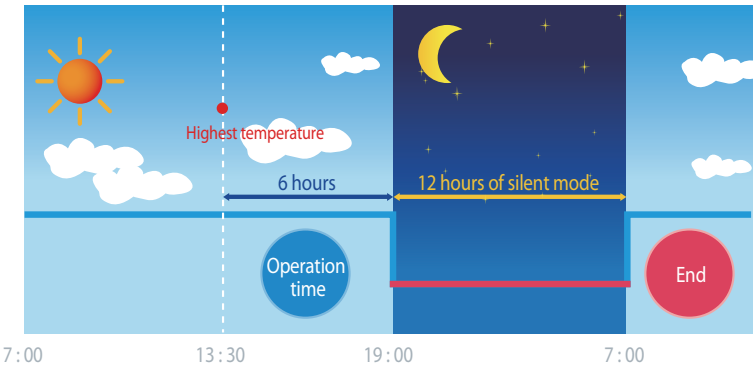
• **Achieves world-class efficiency with hyper compressor that applies double compression technology**
If outdoor unit malfunction occurs, diagnose and repair of the problem will be much quicker with the last 3 minutes worth of a data saved before the malfunction. (With the extra memory module, 3 months worth of a data can be saved.)



Black box function of the Main PCS

■ Silent operation at nighttime

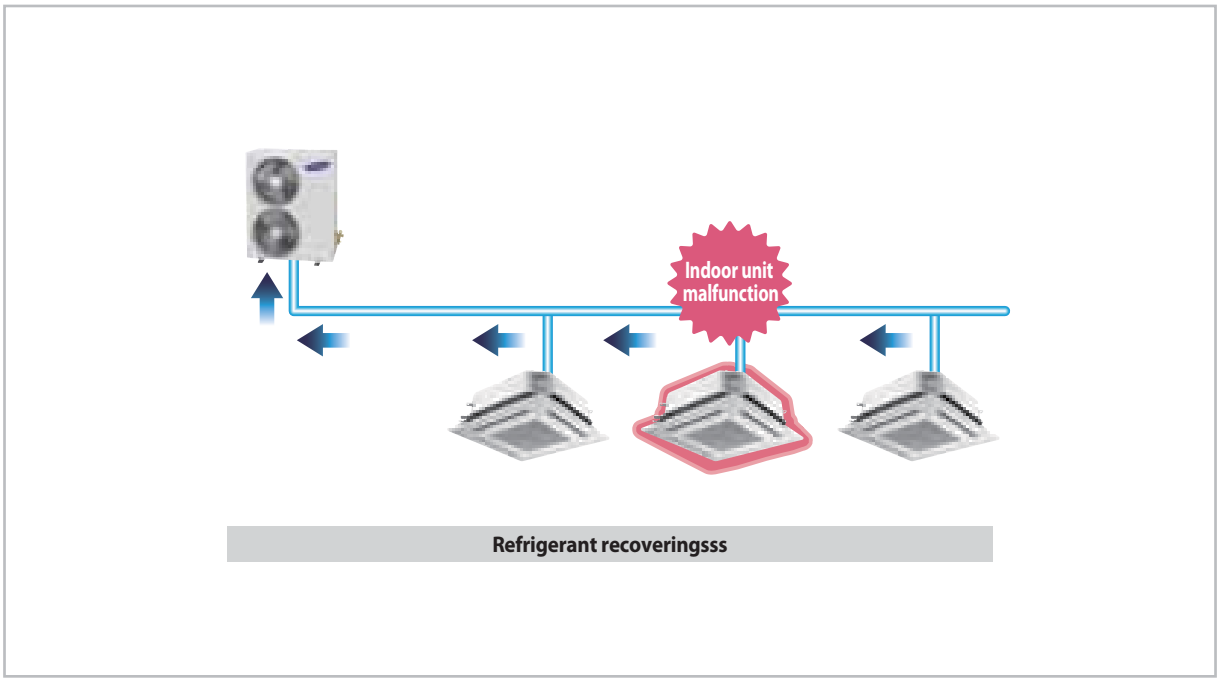
• When outdoor unit needs to operate more silently during nighttime, silent mode can be set from the outdoor unit option mode.
• Silent mode can be adjusted in 3 levels depending on the level of noise.



Feature (cont.)

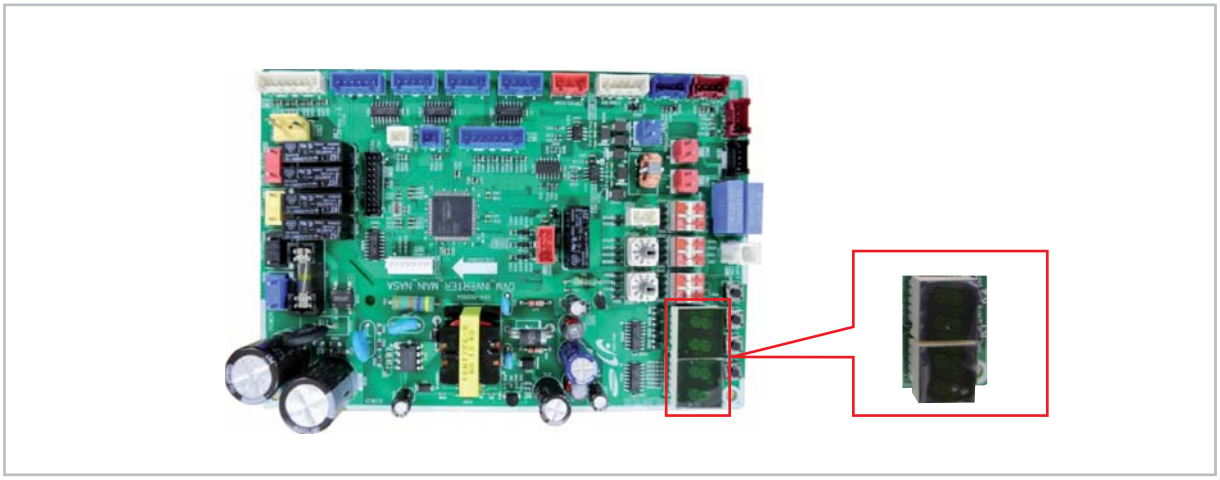
■ Refrigerant pump-down

If you need to move/replace the outdoor unit or when there are problems on indoor units or on the pipes, outdoor unit will recover refrigerant remaining on the pipes.



■ System check through View mode

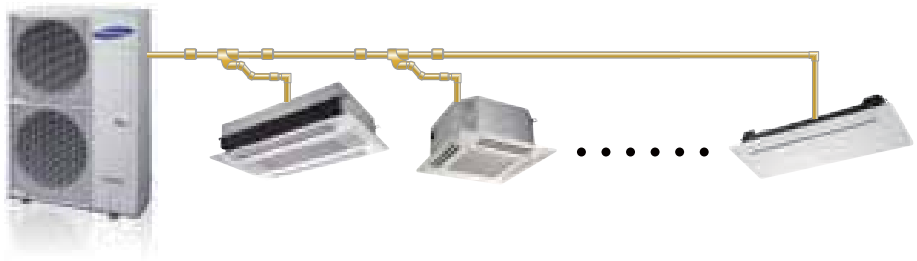
- Through the window on outdoor unit PCB display, you can check the main system data during operation.
- Shortened maintaining and inspection
- Displaying 15 main data including high pressure of system
  - Outdoor temperature
  - Discharge temperature of the compressor
  - Condensing temperature
- Using the DIP switch on the outdoor unit PCB, you can limit the running current of the system



Feature (cont.)

■ Maximum 9 indoor unit connection

You may connect up to 9 indoor units on a single outdoor unit. It will allow more powerful and flexible air conditioning system and you can select refrigerant pipe length, or number of indoor units depending on the needs for office, commercial and residential places.



Maximum 9 indoor unit connection

■ Convenient product installation

Service valve is not exposed to keep the neat appearance and pipe can be connected in 4 different directions which provide flexible installation and maintenance services.

* For models with 9kW or larger (Flare type connection)

2. Product Specifications

Type							
Performance			Btu/h	38,000	48,000	53,000	60,000
Model				AM036FXMDCH	AM048FXMDCH	AM053FXMDCH	AM060MXMDCH
Power Supply(Φ/V/Hz)				1, 208~230, 60	1, 208~230, 60	1, 208~230, 60	1, 208~230, 60
Mode				HP	HP	HP	HP
Performance	Cooling		Btu/h	38,000	48,000	53,000	60,000
	Heating		Btu/h	66,000	54,000	61,000	66,000
	-10°C Heating		Btu/h	26,500	35,000	38,000	43,000
Power	Running Current	Cooling	A	15.2	20.7	24.7	23.0
		Heating	A	18.1	23.2	26.6	25.0
	Input	Cooling	W	3,390	4,700	5,610	5,200
		Heating	W	4,100	5,270	6,060	5,300
	Power Breaker(MCCB/ELB)		A	23/40	29/50	34/50	32/50
Compressor	Type		-	Twin BLDC Inverter	Twin BLDC Inverter	Twin BLDC Inverter	Scroll Inverter
	Piston		cc/REV	43	43	43	52
	Output		W	-	-	-	-
	Lubricant	Type	-	POE	POE	POE	FVC68D
		Charging	cc	1,700	1,700	1,700	2,300
Refrigerant	Type		-	R410A	R410A	R410A	R410A
	Factory Charging		kg	3.2	3.2	3.2	3.7
FAN	Type		-	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan
	Motor Output		W	125x2	125x2	125x2	139x2
	Airflow rate		CMM	95(C) /100 (H)	95(C) /100 (H)	95(C) /100 (H)	135
Pipe	Piping connec-tions	Liquid	ø,mm	9.52	9.52	9.52	9.52
		Gas	ø,mm	15.88	15.88	19.05	19.05
	Installation Limitation	Max. Length	M	300	300	300	300
		Length	M	150	150	150	150
		Max. Height	M	50	50	50	50
Cable	Main Power (Below/about 20m)		mm²	CV 2.5/4.0	CV 2.5/4.0	CV 4.0/6.0	
	Communication		mm²	VCTF 0.75/1.5	VCTF 0.75/1.5	VCTF 0.75/1.5	
Set Size	Net weight		Kg	100	100	103	125
	Shipping Weight		Kg	105	105	108	135
	Net dimension (WxHxD)		mm	940x1210x330	940x1210x330	940x1210x330	940x1420x330
	Shipping dimension (WxHxD)		mm	995x1,338x426	995x1,338x426	995x1,338x426	995x1578x426
Operating Temp. Range	Cooling		℃	-5~48	-5~48	-5~48	-5~48
	Heating		℃	-20~24	-20~24	-20~24	-25~24
Maximum of connected indoor units			-	6	8	9	10

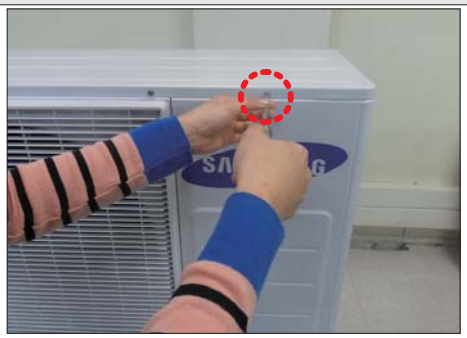
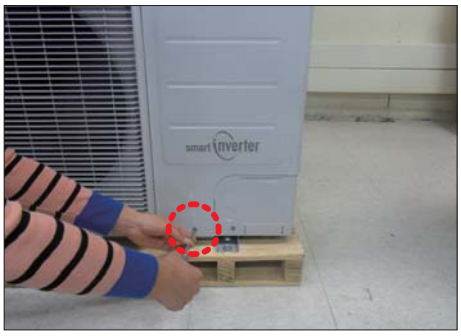
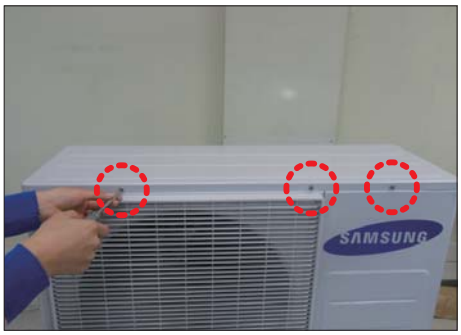
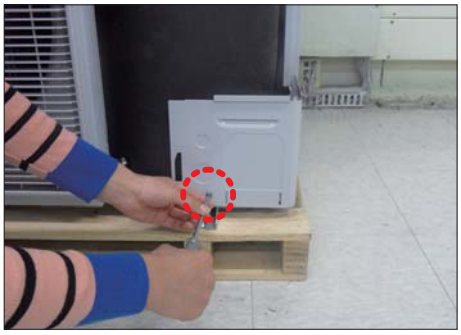
■ Disassembly and Reassembly

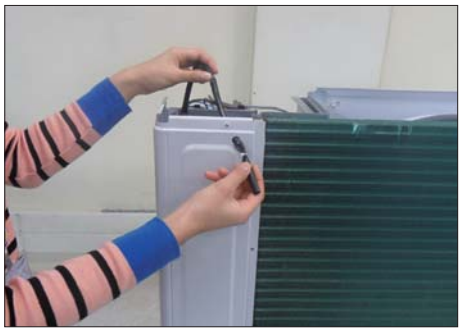
1. Necessary Tools

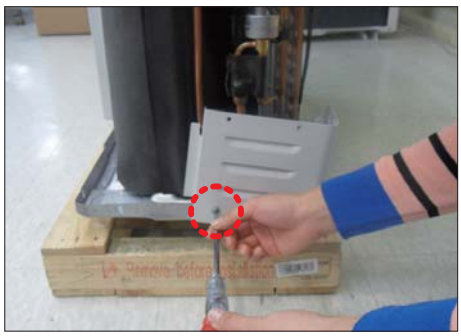
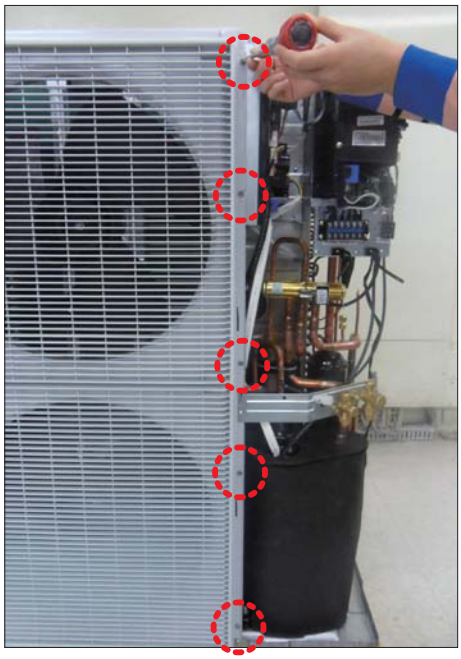
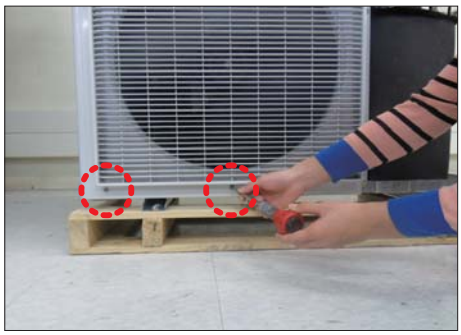
Item	Remark
+Screw Driver	
Monkey Spanner	
–Screw Driver	
Nipper	
Electric Motion Driver	
L-Wrench	

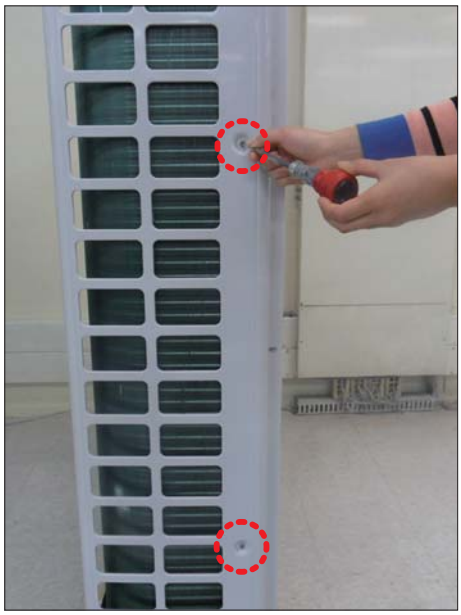
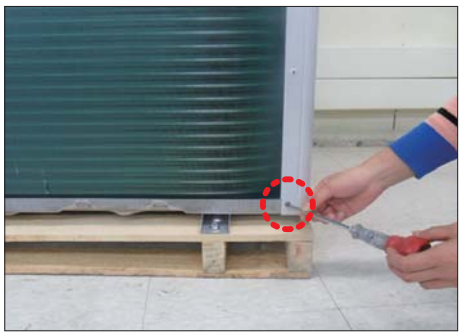
2. Disassembly and Reassembly

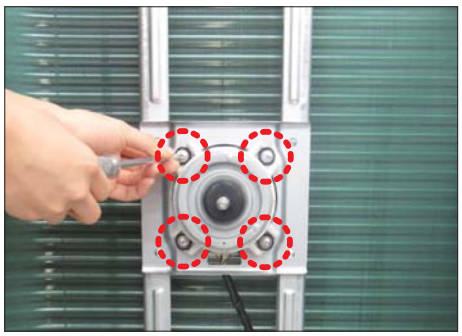
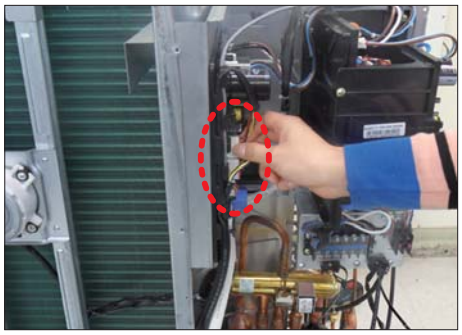
2-1. AM036/048/053FXMDCH

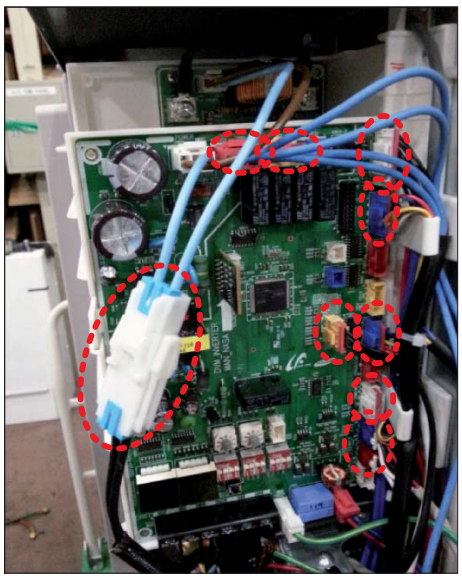
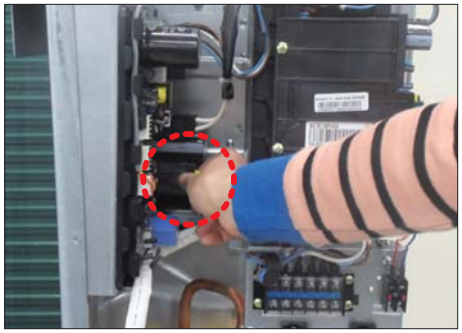
No	Parts	Procedure	Remark
1	Cabi Front RH	⚠ You must turn off the Power before disassembly. 1) Unscrew and remove 2 mounting screw in the Cabinet Front RH. (Use + Screw Driver)	 
2	Cabi Top	1) Unscrew and remove 9 screws on each side of the Cabinet-Top. (Use +Screw Driver)	
3	Cabi Install Front	1) Unscrew and remove 1 screw in the Cabinet-Install Front. (Use +Screw Driver)	

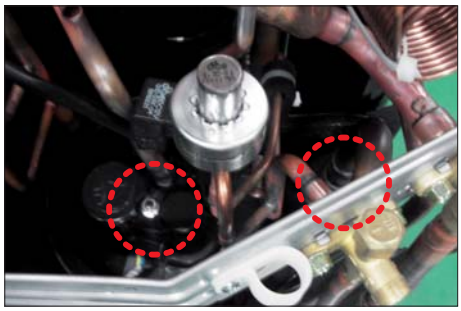
No	Parts	Procedure	Remark
4	Guard Cond	1) Pull the sensor from Guard Cond.	
		2) Unscrew and remove 4 screws in the Guard Cond. (Use + Screw Driver)	
5	Cabi Back RH	1) Pull the sensor from Cabi Back RH.	
		2) Unscrew and remove 4 screws on each side of the Cabinet Back RH. (Use + Screw Driver)	

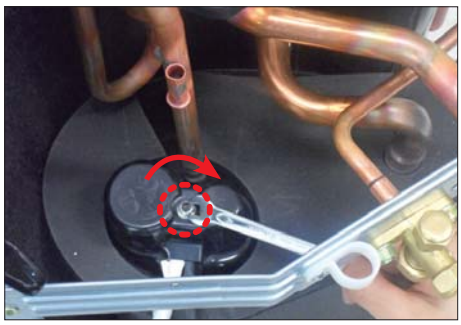
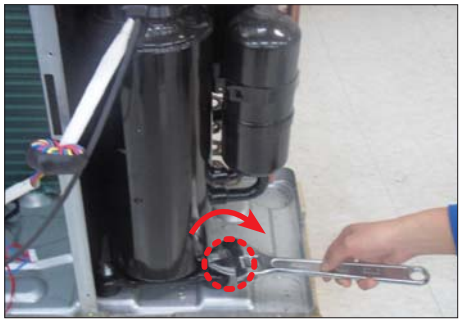
No	Parts	Procedure	Remark
6	Cabi Install Back	1) Unscrew and remove 1 screw in the Cabinet-Install Back. (Use +Screw Driver)	
7	Cabi Front LF	1) Unscrew and remove 10 screws in the Cabinet-Front LF. (Use +Screw Driver)	 

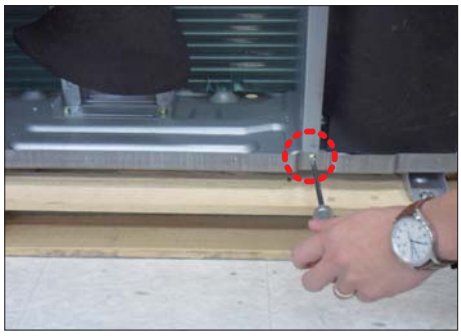
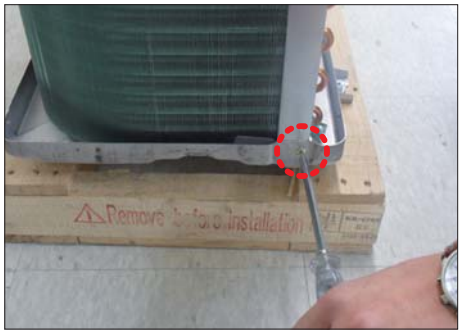
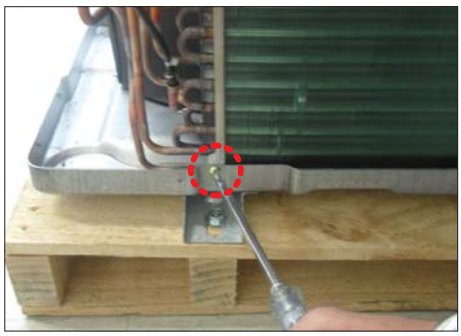
No	Parts	Procedure	Remark
7	Cabi Front LF		
8	Fan	1) Turn 2 mounting nuts as shown in the picture and remove it. (Use L Wrench or Monkey Spanner or Socket Wrench)	 

No	Parts	Procedure	Remark
9	Motor	1) Separate the Fan Propeller. 2) Unscrew and remove the 8 Motor mounting screws. (Use +Screw Driver)	
		3) Disconnect the Motor wire from Ass'y Control Out.	
10	Bracket Motor	1) Unscrew and remove 2 mounting screws in Bracket Motor. (Use + Screw Driver)	

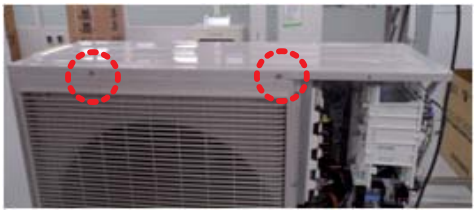
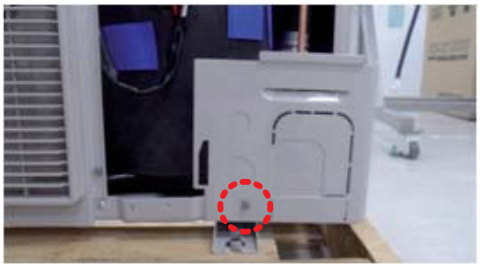
No	Parts	Procedure	Remark
11	Control Out	1) Disconnect 9 Connectors from Ass'y control Out.	
			
		2) Unscrew and remove 1 mounting screw in Control Out. (Use + Screw Driver.) 3) Separate Ass'y Control Out.	

No	Parts	Procedure	Remark
12	Ass'y Tube EEV	1) Purge the Coolant first. 2) Separate 2 parts of the pipe using a welder. ⚠ **When removing the compressor, Heat Exchanger and Pipe, purge the refrigerant inside the Compressor completely and remove the pipe with a welding flame.**	
13	Ass'y Tube Suction	1) Separate 2 parts of the pipe using a welder.	
14	Ass'y Tube 4Way	1) Unscrew and remove 2 mounting screws in Oil Separator. (Use + Screw Driver.) 2) Separate 2 parts of the pipe using a welder.	 

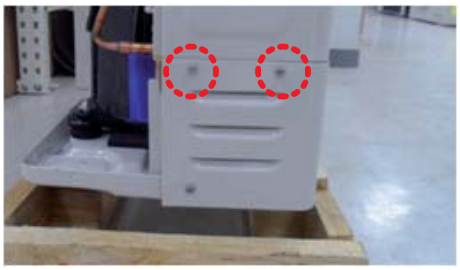
No	Parts	Procedure	Remark
13	Compressor	1) Unscrew and remove 1 mounting nut in bottom of the cover. (Use Adjustable Wrench)	
		2) Separate the Compressor Felt.	
			
		3) As shown in the picture, unscrew and remove 3 mounting screws from the bottom. (Use L-Wrench or Monkey Spanner or Socket Wrench)	
			

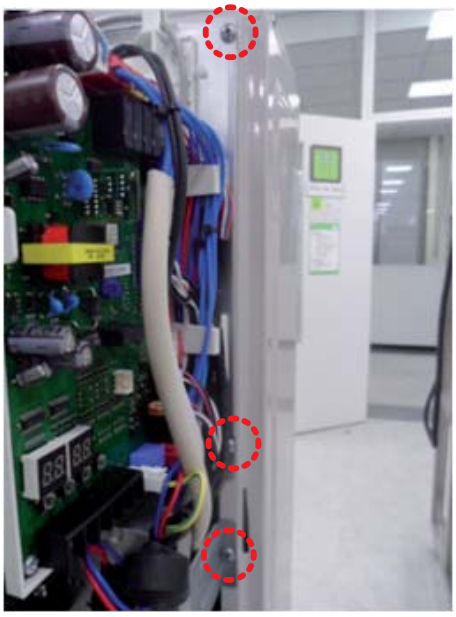
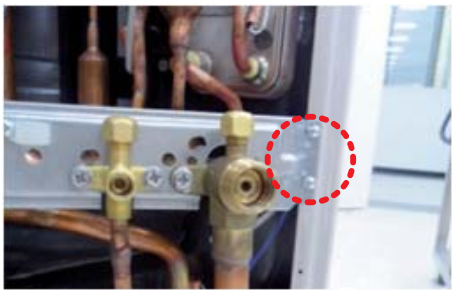
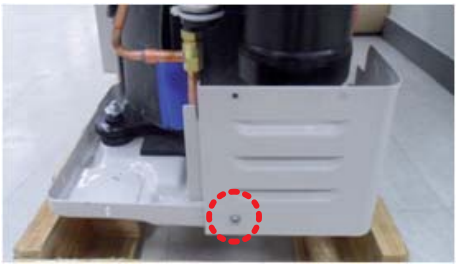
No	Parts	Procedure	Remark
16	Cond Out	1) Unscrew and remove 3 screws on each side of the Ass'y Cond Out. (Use + Screw Driver)	  

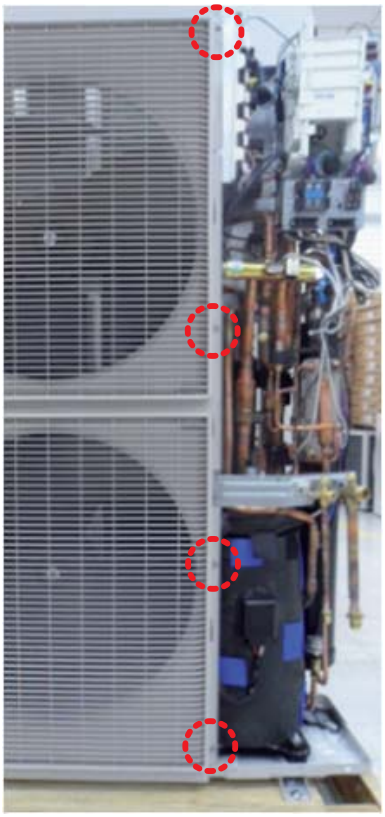
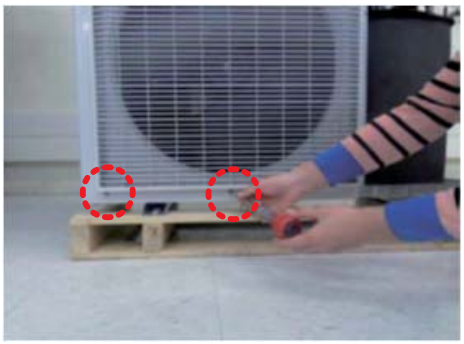
2-2. AM060MXMDCH

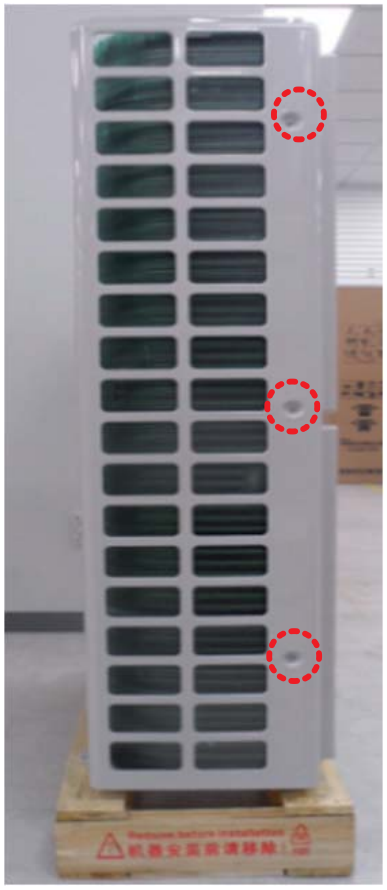
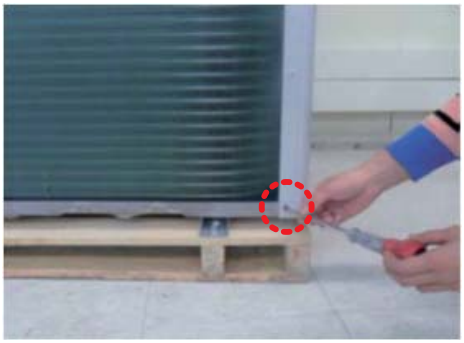
No	Parts	Procedure	Remark
1	Cabi Front RH	⚠ **You must turn off the Power before disassembly.** 1) Unscrew and remove 3 mounting screw in the Cabinet Front RH. (Use + Screw Driver)	 
2	Cabi Top	1) Unscrew and remove 8 screws on each side of the Cabinet-Top. (Use +Screw Driver)	
3	Cabi Install Front	1) Unscrew and remove 1 screw in the Cabinet Install Front. (Use +Screw Driver)	

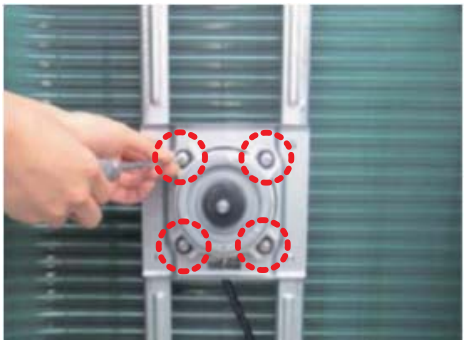
No	Parts	Procedure	Remark
4	Guard Cond	1) Pull the sensor from Guard Cond.	
		2) Unscrew and remove 4 screws in the Guard Cond. (Use + Screw Driver)	

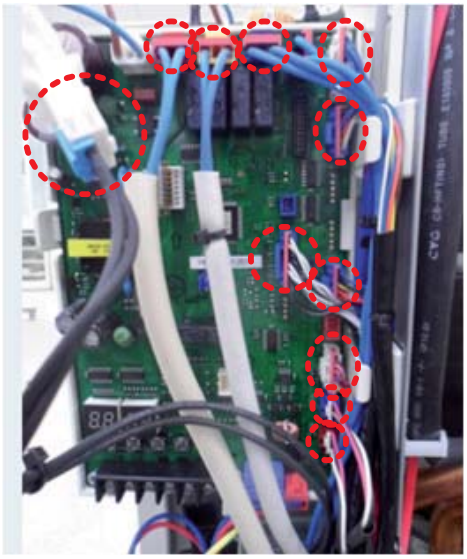
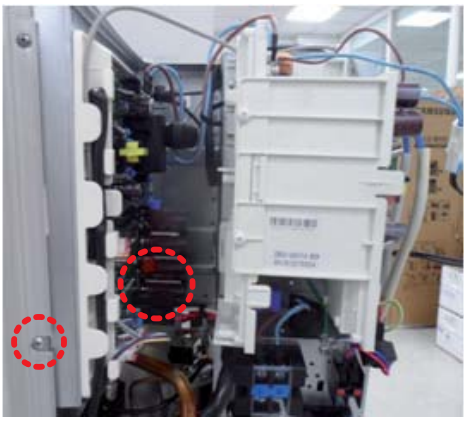
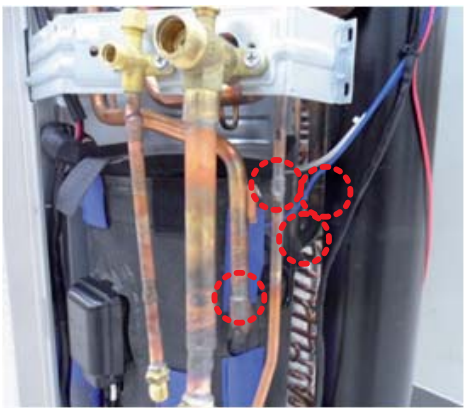
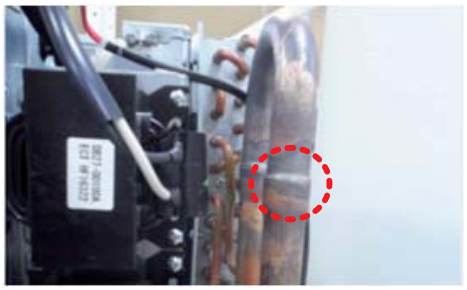
No	Parts	Procedure	Remark
5	Cabi Back RH	1) Pull the sensor from Cabi Back RH.	
		2) Unscrew and remove 4 screws on each side of the Cabinet Back RH. (Use + Screw Driver)	 

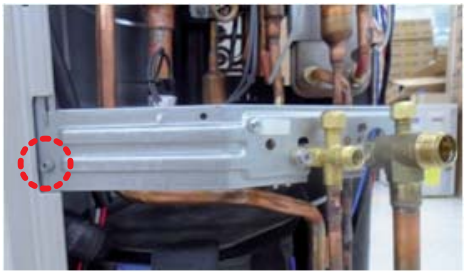
No	Parts	Procedure	Remark
5	Cabi Back RH	3) Unscrew and remove 5 screws on side of the Case Bracket valve. (Use + Screw Driver)	 
6	Cabi Install Back	1) Unscrew and remove 1 screw in the Cabinet Install Front. (Use +Screw Driver)	

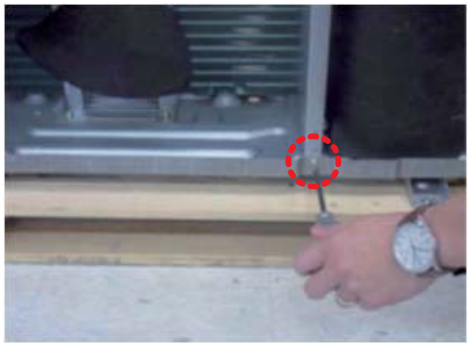
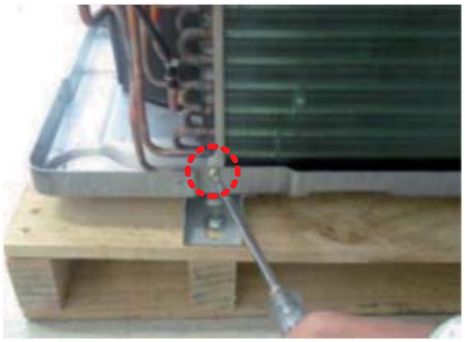
No	Parts	Procedure	Remark
7	Cabi Front LF	1) Unscrew and remove 10 screws in the Cabinet-Front LF. (Use +Screw Driver)	 

No	Parts	Procedure	Remark
7	Cabi Front LF		 
8	Fan	1) Turn 2 mounting nuts as shown in the picture and remove it. (Use L Wrench orMonkey Spanner or Socket Wrench)	

No	Parts	Procedure	Remark
9	Motor	1) Separate the Fan Propeller. 2) Unscrew and remove the 8 Motor mounting screws. (Use +Screw Driver)	
		3) Disconnect the Motor wire from Ass'y Control Out.	
10	Bracket Motor	1) Unscrew and remove 2 mounting screws in Bracket Motor. (Use + Screw Driver)	

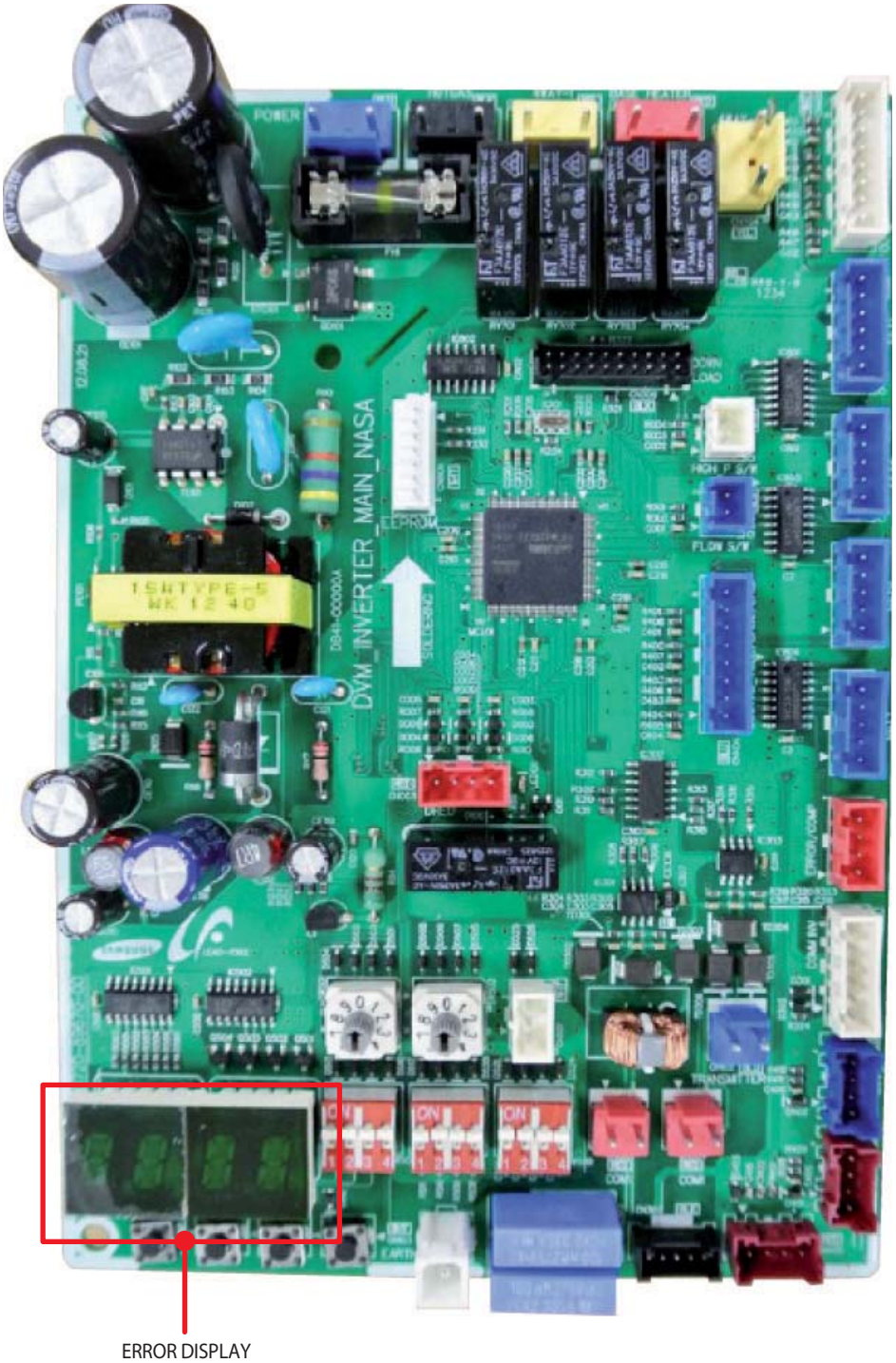
No	Parts	Procedure	Remark
11	Control Out	1) Disconnect 13 Connectors from Ass'y control Out.	
		2) Unscrew and remove 1 mounting screw in Control Out. (Use + Screw Driver.) 3) Separate Ass'y Control Out.	
12	Assy tube parts	1) Separate 5 parts of the pipe using a welder.	
		2) Unscrew and remove 1 mounting screws in Assy bracket valve. (Use + Screw Driver.)	

No	Parts	Procedure	Remark
10	Bracket Motor	2) Unscrew and remove 1 mounting screws in Assy bracket valve. (Use + Screw Driver.)	
		3) Unscrew and remove 2 mounting screws in Bracket accume. (Use + Screw Driver.) 4) Separate the Assy TUBE 4way-accumulator.	
13	Compressor	1) As shown in the picture, unscrew and remove 4 mounting screws from the bottom. (Use L-Wrench or Monkey Spanner or Socket Wrench)	 

No	Parts	Procedure	Remark
14	Cond Out	1) Unscrew and remove 3 screws on each side of the Ass'y Cond Out. (Use + Screw Driver)	  

■ Troubleshooting

1. Error Display



2. Error Code

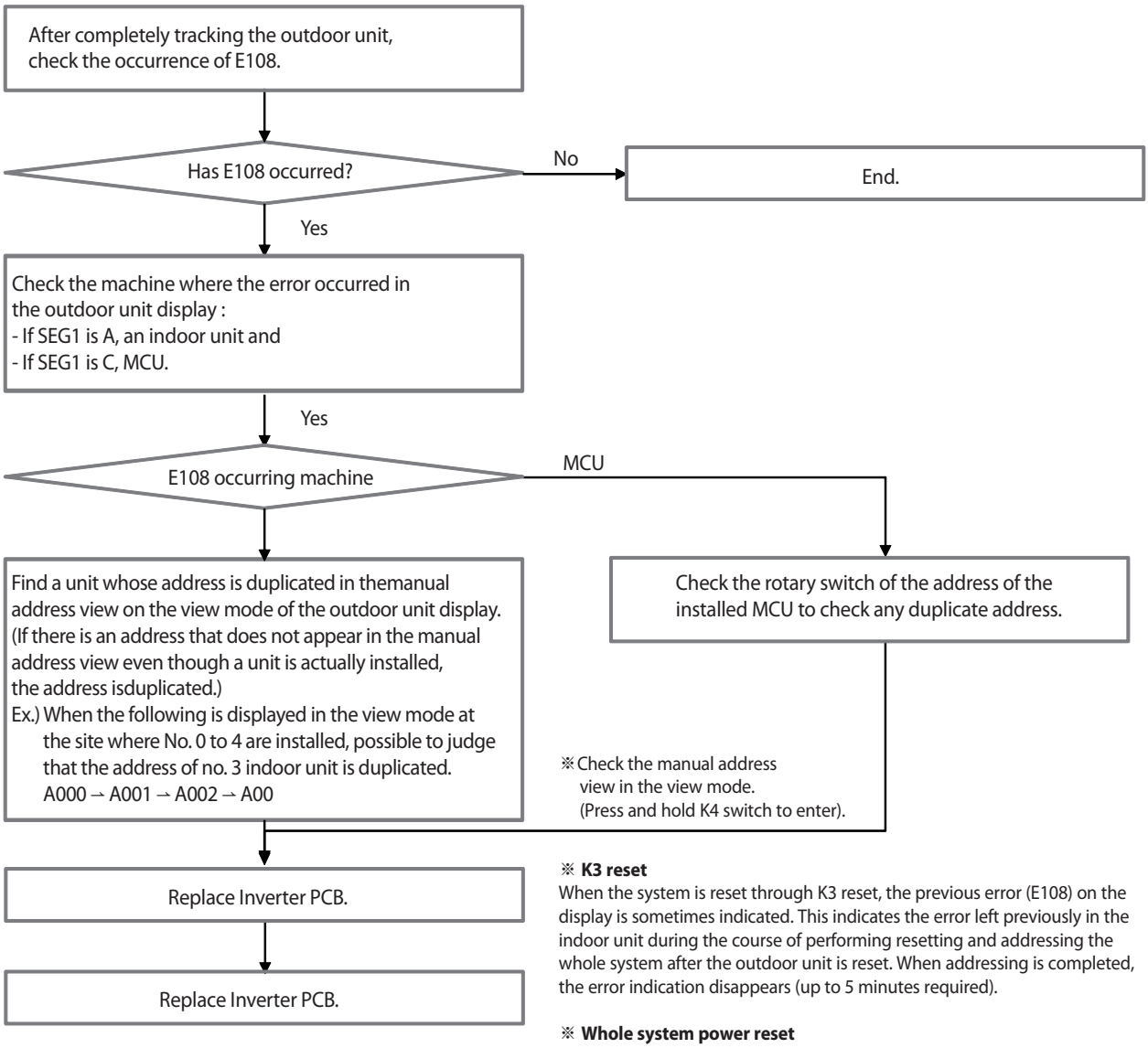
No.	Code	Explanation
1	E-108	Error due to repeated address setting(when 2 or more devices has same address within the network).
2	E-121	Error on indoor temperature sensor of indoor unit(Short or Open).
3	E-122	Error on EVA IN sensor of indoor unit(Short or Open).
4	E-123	Error on EVA OUT sensor of indoor unit(Short or Open).
5	E-128	EVA IN temperature sensor of indoor unit is detached from EVA IN pipe.
6	E-129	EVA OUT temperature sensor of indoor unit is detached from EVA OUT pipe.
7	E-149	Error due to AHU MASTER indoor unit sensor setting.
8	E-151	Error due to opened EEV of indoor unit(2nd detection).
9	E-152	Error due to closed EEV of indoor unit(2nd detection).
10	E-153	Error on oat switch of indoor unit(2nd detection).
11	E-154	RPM feedback error of indoor unit.
12	E-162	EEPROM error of MICOM(Physical problem of parts/circuit).
13	E-163	Indoor unit's remote controller option input is incorrect or missing, Outdoor unit EEPROM data error.
14	E-198	Error due to disconnected thermal fuse of indoor unit (Temperature increase of the terminal block).
15	E-201	Communication error between indoor and outdoor unit (Installation number setting error repeated indoor unit address, indoor unit communication cable error).
16	E-202	Communication error between indoor and outdoor unit(Communication error on all indoor unit, outdoor unit communication cable error).
17	E-203	Communication error between main and sub micom or communication error betten main and sub outdoor units.
17	E-205	Communication error on all PBA within the outdoor unit C-Box, communication cable error.
19	E-221	Error on outdoor temperature sensor of outdoor unit (Short or open).
20	E-231	Error on COND OUT temperature sensor of main outdoor unit (Short or open).
21	E-241	COND OUT sensor in detached.
22	E-251	Error on discharge temperature sensor of compressor 1 (Short or open).
23	E-262	Discharge temperature sensor of compressor 1 is detached from the sensor holder on the pipe.
24	E-266	Top sensor of compressor 1 is detached.
25	E-269	Suction temperature sensor is detached from the sensor holder on the pipe.
26	E-276	Error on Top sensor of compressor 1(Short or open).
27	E-291	Refrigerant leakage or error on high pressure sensor(Short or open).
28	E-296	Refrigerant leakage or error on low pressure sensor(Short or open).
29	E-308	Error on suction temperature sensor(Short or open).
30	E-311	Error on temperature sensor of double layer pipe/liquid pipe(sub heat exchanger)(Short or open).
31	E-321	Error on EVI(ESC) IN temperature sensor(Short or open).
32	E-322	Error on EVI(ESC) OUT temperature sensor(Short or open).
47	E-407	Compressor operation stop due to high pressure protection control.
48	E-410	Compressor operation stop due to low pressure protection control or refrigerant leakage.
49	E-416	Compressor operation stop due to discharge temperature protection control.
50	E-425	Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N),connection error on 3 phase input.
51	E-428	Compressor operation stop due to abnormal compression ratio.
52	E-438	EVI(ESC) EEV leakage or internal leakage of intercooler or incorrect connector insertion of EVI(ESC) EEV.
53	E-439	Error due to refrigerant leakage.
54	E-440	Heating mode restriction due to high air temperature.

No.	Code	Explanation
55	E-441	Cooling mode restriction due to low air temperature.
56	E-442	Refrigerant charging restriction in heating mode when air temperature is over 15°C.
57	E-443	Operation prohibited due to low pressure.
58	E-445	CCH is detached.
59	E-446	Error due to operation failure of Fan1.
60	E-447	Motor wire of Fan1 is not connected.
61	E-448	Lock error on Fan1 of outdoor unit.
62	E-452	Error due to ZCP detection circuit problem or power failure.
63	E-453	Error due to overheated motor of outdoor unit's Fan1.
64	E-454	Error due to fan1 PRM.
65	E-455	Error due to overheated IPM of Fan1.
66	E-458	Outdoor fan 1 error3
66	E-461	Error due to operation failure of inverter compressor 1.
67	E-462	Compressor stop due to full current control.
67	E-463	OLP temperature control, compressor stops.
68	E-464	Error due to over-current of inverter compressor 1.
69	E-465	V-limit error of inverter compressor 1.
70	E-466	Error due to over voltage / low voltage of inverter PBA 1.
71	E-467	Error due to unconnected wire of compressor 1.
72	E-468	Output current sensor error of inverter PBA 1.
73	E-469	DC voltage sensor error of inverter PBA 1.
75	E-474	Heat sink temperature sensor error of inverter PBA 1.
76	E-475	Error due to fan2 PRM.
78	E-483	Error due to special overcurrent of Fan1.
79	E-484	PFC overload
79	E-485	Error due to input current of inverter 1.
87	E-500	Error due to overheat caused by contact failure on IPM of inverter PBA 1.
88	E-503	Error due to alert the user to check if the service valve is closed
90	E-554	Gas leak error
91	E-560	Outdoor unit's option switch setting error(Using E2P option of other models or emergency operation for compressor malfunction option setting was enabled on all compressors of corresponding outdoor unit).
92	E-563	Error due to module installation of indoor unit with old version(Micom version needs to be checked).
94	E(P)-702	Error due to closed EEV of indoor unit(1st detection).
95	E(P)-703	Error due to opened EEV of indoor unit(1st detection).

3 Appropriate Measures for Different Symptom

3-1. Error due to repeated address setting (when 2 or more devices has same address within the network). (E-108)

Outdoor unit Display	**E-108**
Indoor unit Display	Operation: × / Defrost: × / Timer: ◑ / Fan: ◑ / Filter / EMI: × ※ ● : ON ◑: Flash ×: OFF
Judgement Method	• Refer the next page.
Cause of problem	• Indoor unit and MCU address duplication.



※ **K3 reset**

When the system is reset through K3 reset, the previous error (E108) on the display is sometimes indicated. This indicates the error left previously in the indoor unit during the course of performing resetting and addressing the whole system after the outdoor unit is reset. When addressing is completed, the error indication disappears (up to 5 minutes required).

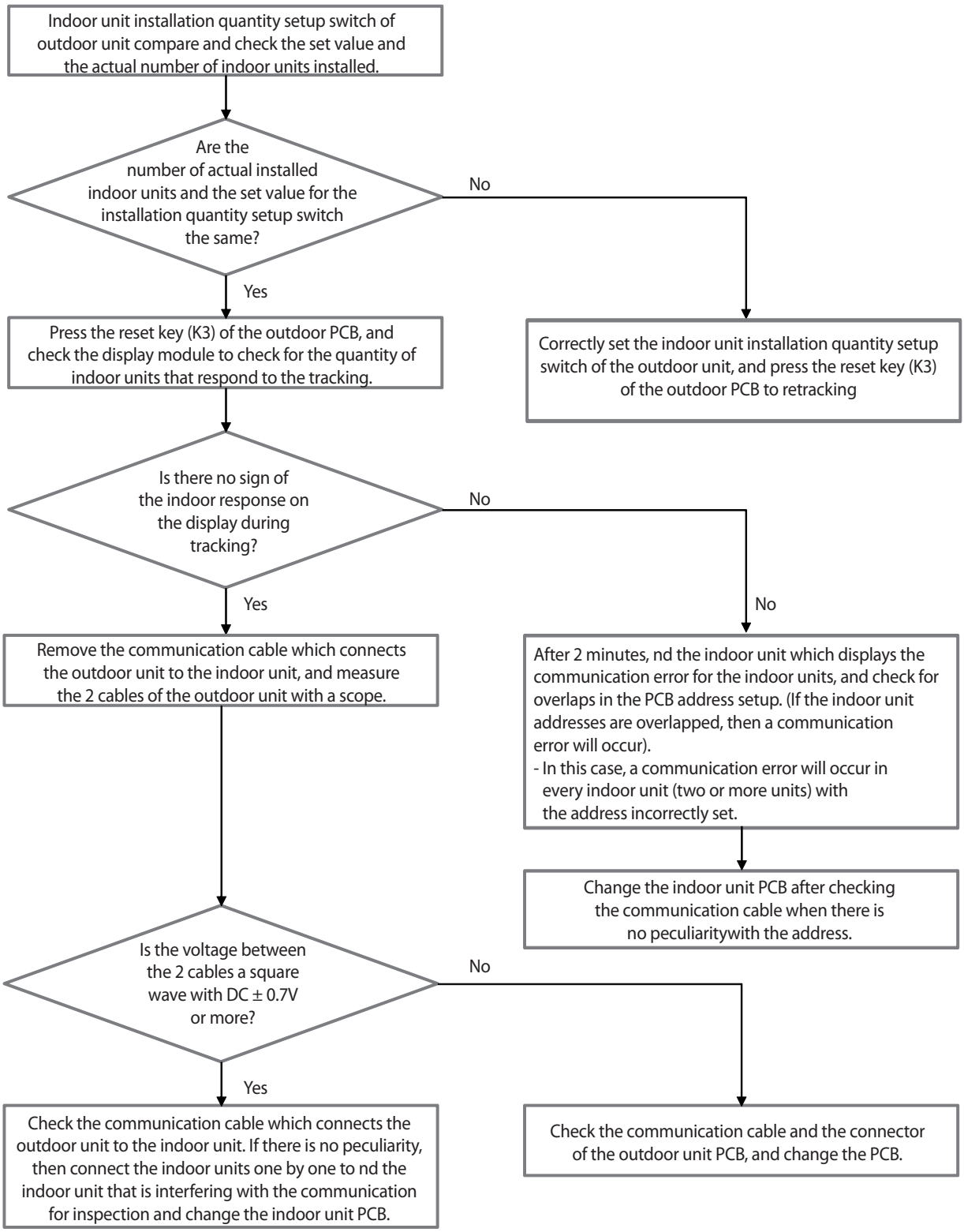
※ **Whole system power reset**

- To solve the problem through the power reset after the address is reset the power reset of individual units is meaningless and the power of the whole system must be reset.

3-2. Communication error between indoor and outdoor unit. (E-201) (Installation number setting error repeated indoor unit address, indoor unit communication cable error.)

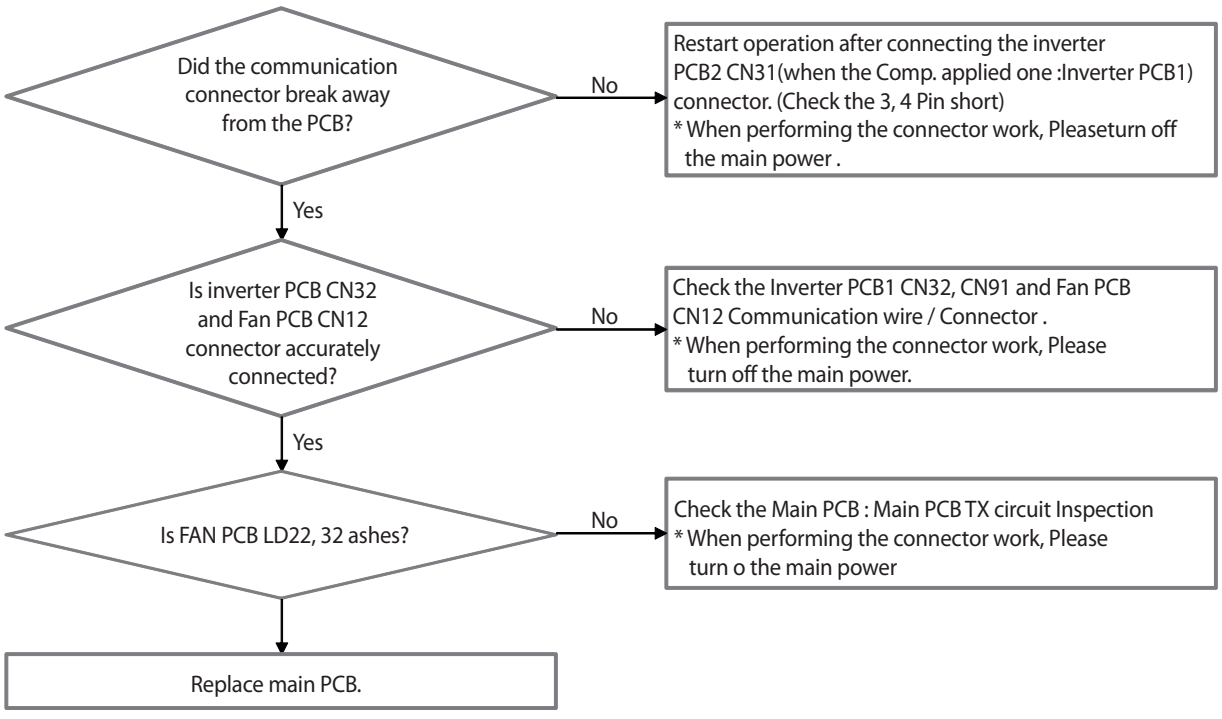
<table>
<tr><td>Outdoor unit Display</td><td>E-201</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Communication error between indoor and outdoor units.</td></tr>
<tr><td>Cause of problem</td><td>• Refer the next page.</td></tr>
</table>

3-2. Communication error between indoor and outdoor unit. (E-201)



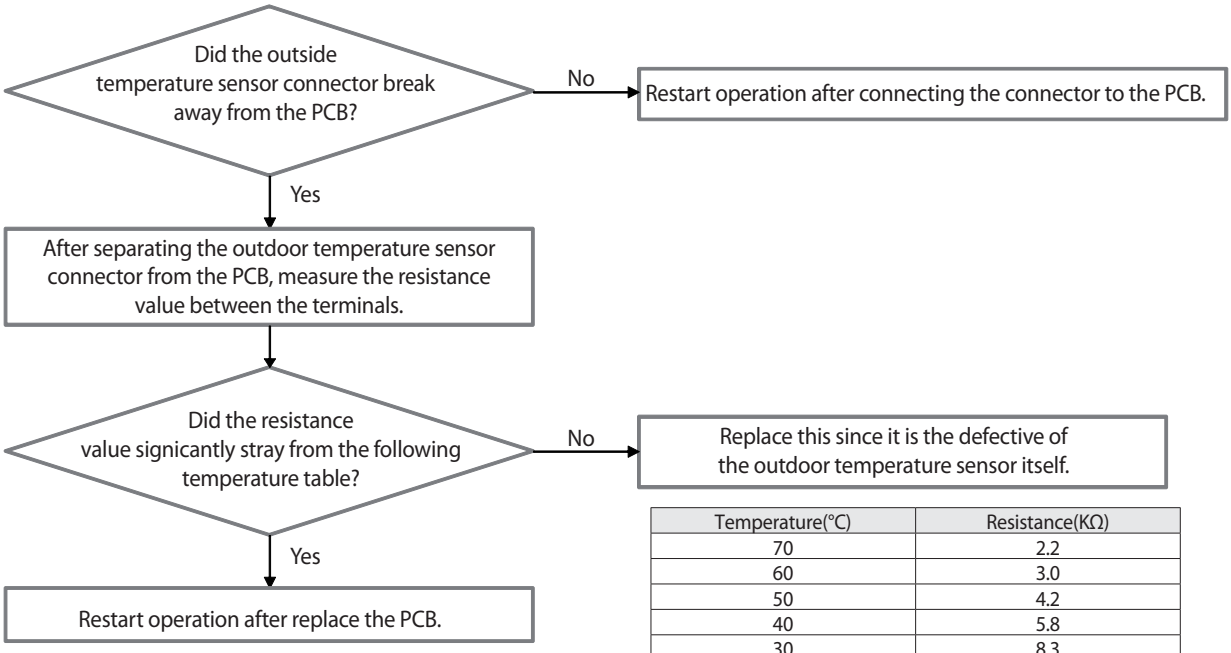
3-3. Communication error on all PBA within the outdoor unit C-Box, communication cable error. (E-205)

<table>
<tr><td>Outdoor unit Display</td><td>E-205</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Communication error between the C-Box PCB.</td></tr>
<tr><td>Cause of problem</td><td>• Communication wire inside the C-Box is unconnected.
• Main PCB defective.</td></tr>
</table>



3-4. Error on outdoor temperature sensor of outdoor unit (Short or open). (E-221)

<table>
<tr><td>Outdoor unit Display</td><td>E-221</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• Outdoor temperature sensor Short/Open is defective.</td></tr>
</table>



Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

3-5. Error on COND OUT temperature sensor of main outdoor unit. (Short or open) (E-231)

<table>
<tr><td>Outdoor unit Display</td><td>E-231</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Fan</th><th>Filter / MPI</th></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
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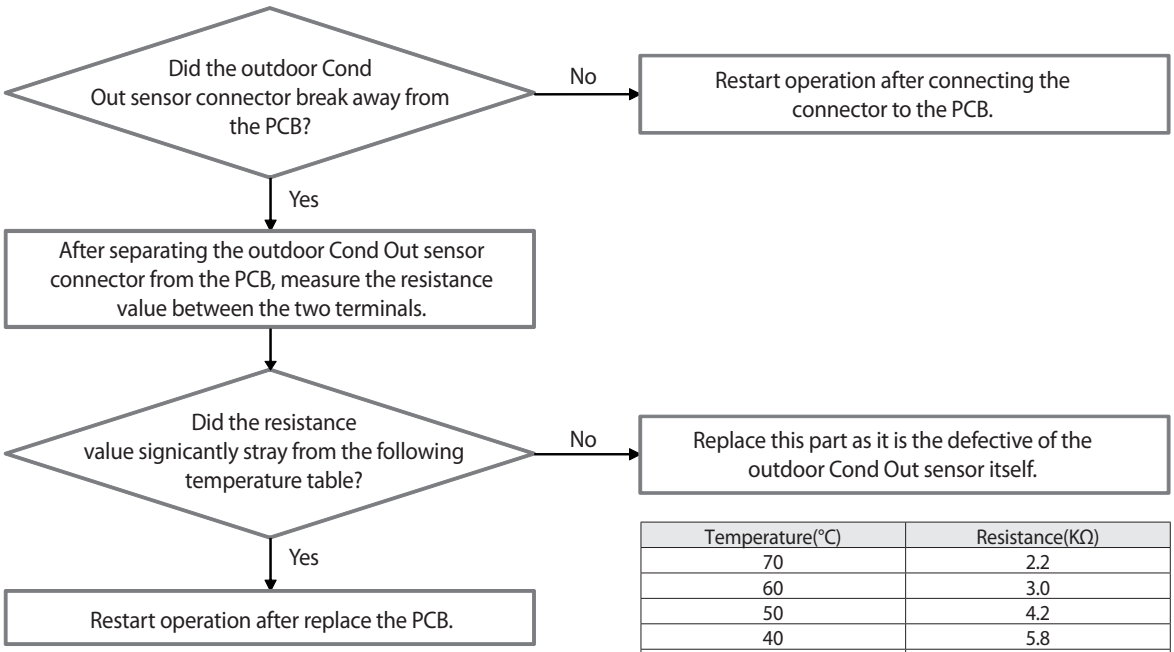
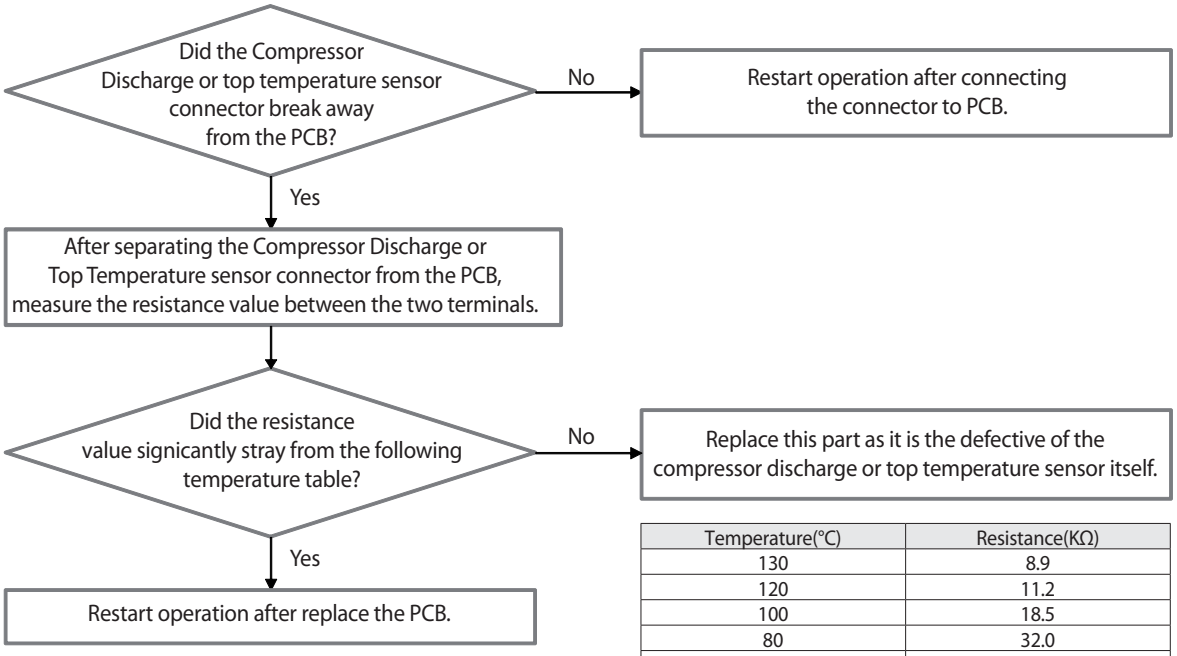
<table>
<tr><th colspan="4">Cassette (4Way / Mini 4Way)</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Filter</th></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Timer</th><th>Turbo</th><th>24℃</th><th>27℃</th></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

3-6. Error on discharge temperature sensor of compressor 1 (Short or open). (E-251)

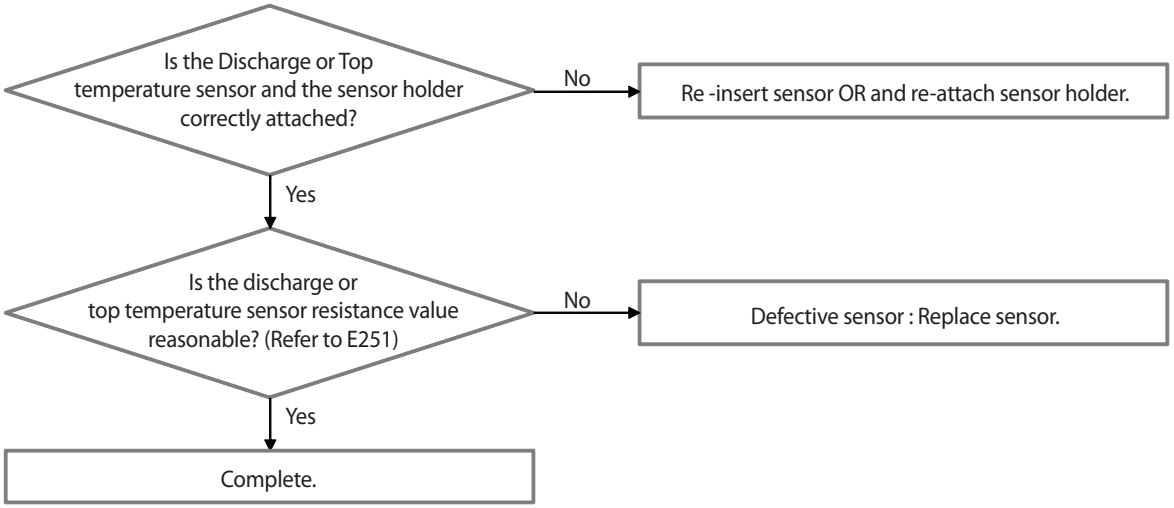
<table>
<tr><td>Outdoor unit Display</td><td>E-251</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• Compressor Discharge or Top Temperature sensor defective. (Open/Short)</td></tr>
</table>



Temperature(℃)	Resistance(KΩ)
130	8.9
120	11.2
100	18.5
80	32.0
60	59.0
25	200
20	242
10	362
0	553

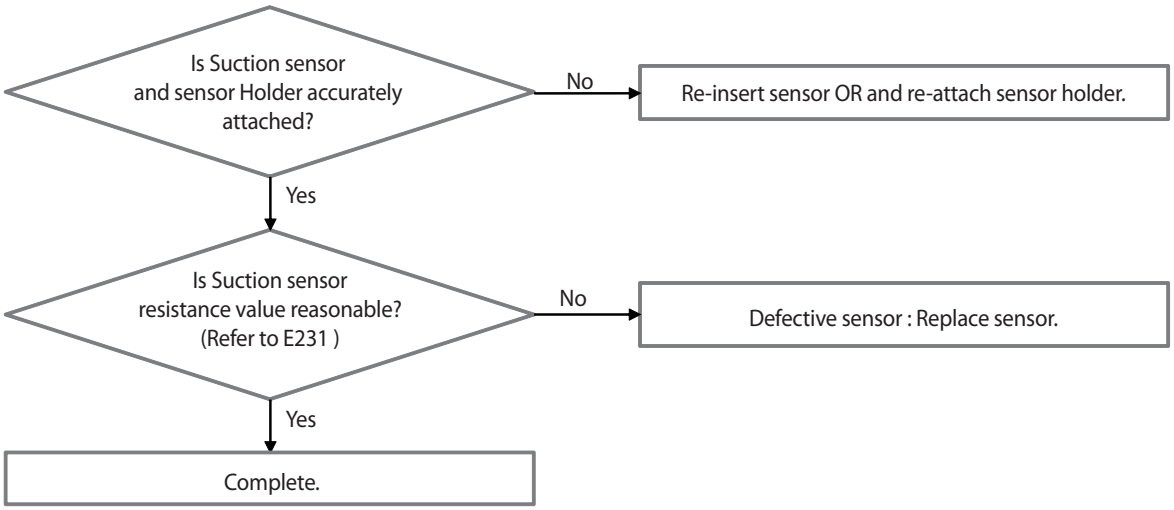
3-7. Discharge temperature sensor of compressor 1 is detached from the sensor holder on the pipe. (E-262) / Top sensor of compressor 1 is detached (E-266)

<table>
<tr><td>Outdoor unit Display</td><td>E-262 / E-266</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</th></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><th colspan="4">Cassette (4Way / Mini 4Way)</th></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</th></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>1) Relevant compressor frequency of 60Hz or higher.
2) Suction temperature > Low pressure saturation temperature +10℃
3) Relevant discharge or Top temperature < High pressure saturation temperature.
4) In case of keep 30 minutes in state that satisfy all above conditions (1, 2, 3).</td></tr>
<tr><td>Cause of problem</td><td>• Compressor discharge or Top temperature sensor breakaway and defective / Starting badness of compressor.</td></tr>
</table>



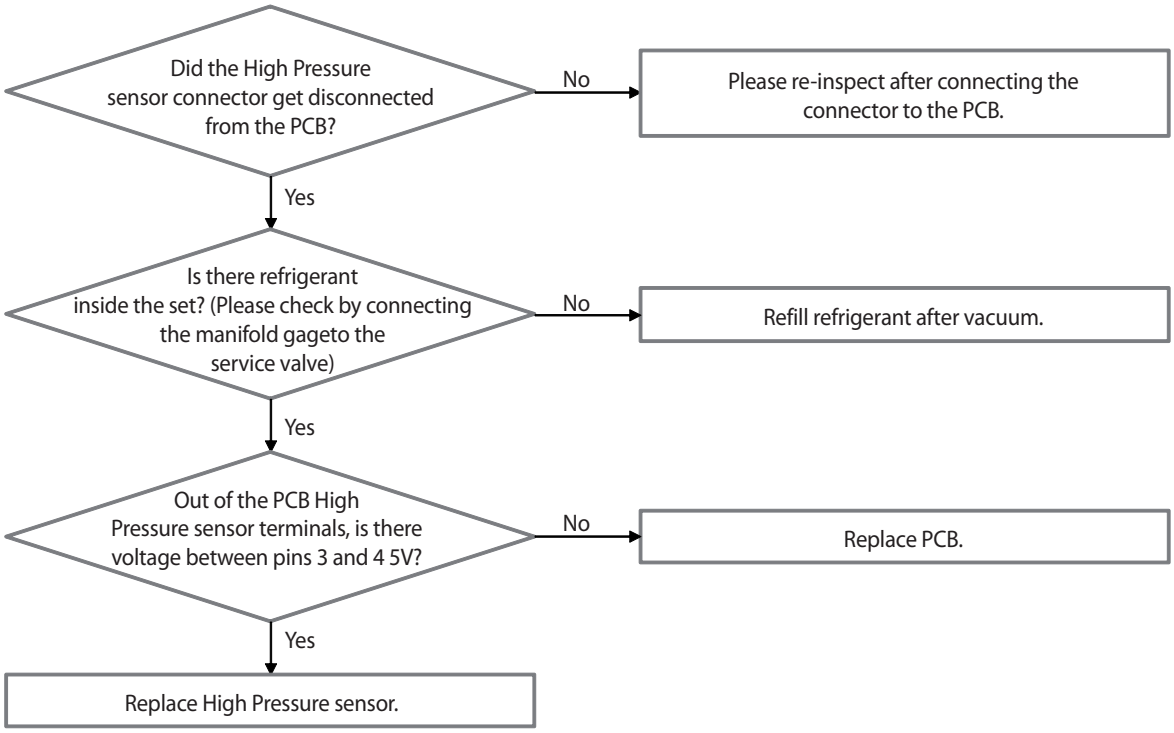
3-8. Suction temperature sensor is detached from the sensor holder on the pipe. (E-269)

<table>
<tr><td>Outdoor unit Display</td><td>E-269</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Judgment Method : Difference of suction temperature of compressor starting verge and suction temperature that is on present operation : If less than 2 ℃ for 30 minutes to keep.(Judgment at heating operation only)</td></tr>
<tr><td>Cause of problem</td><td>• Suction temperature sensor breakaway / defective.</td></tr>
</table>



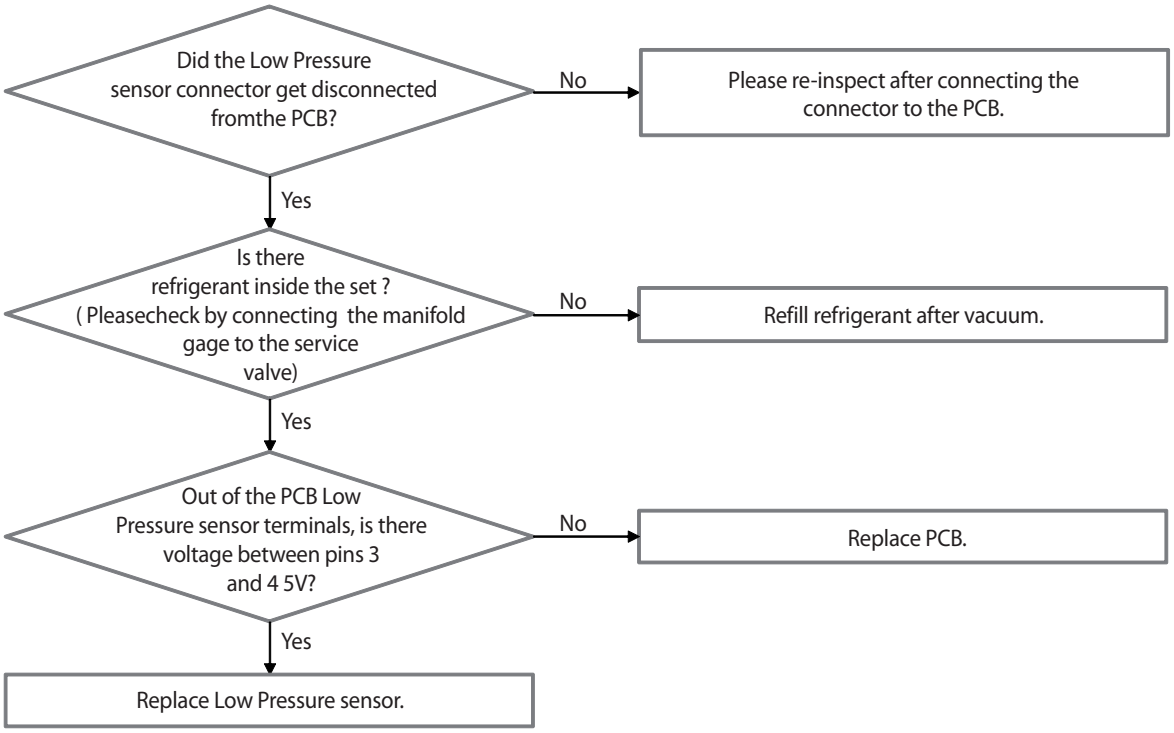
3-9. Refrigerant leakage or error on high pressure sensor. (Short or open) (E-291)

<table>
<tr><td>Outdoor unit Display</td><td>E-291</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



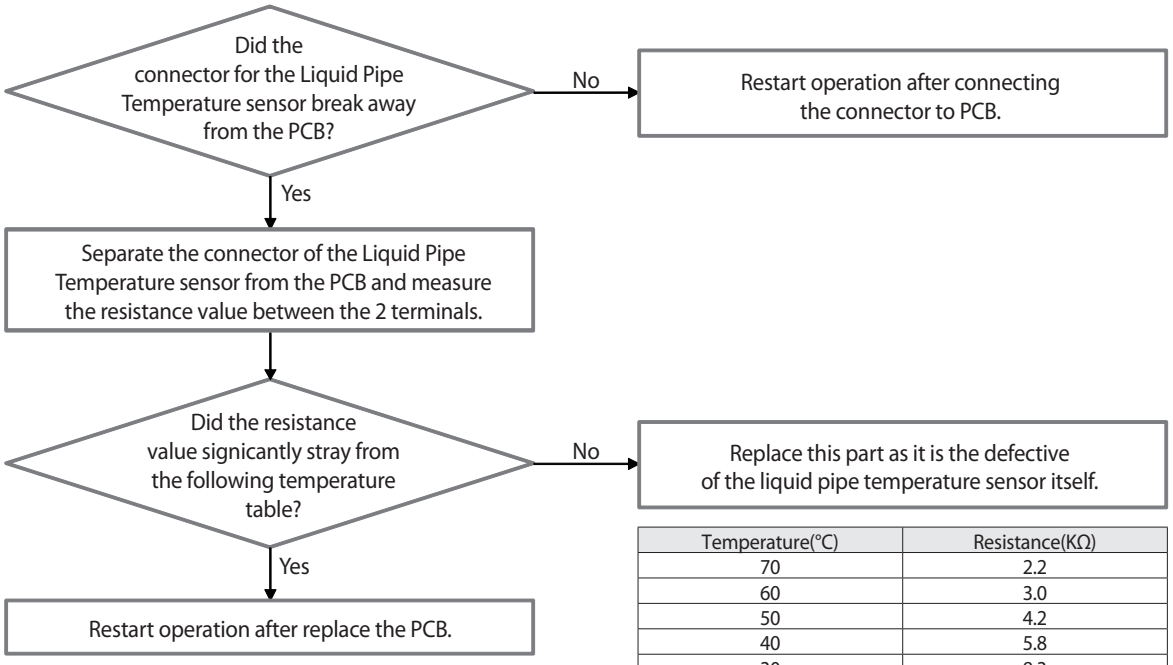
3-10. Refrigerant leakage or error on low pressure sensor (Short or open). (E-296)

<table>
<tr><td>Outdoor unit Display</td><td>E-296</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



3-11. Error on suction temperature sensor. (Short or open) (E-308)

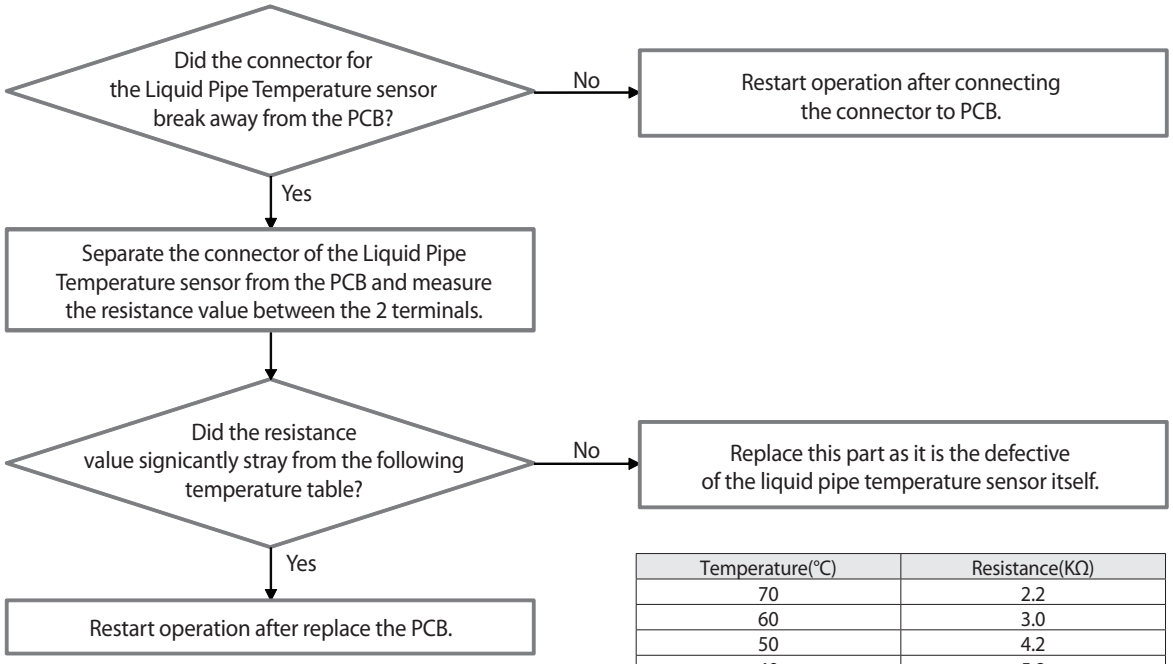
<table>
<tr><td>Outdoor unit Display</td><td>E-308</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Fan</th><th>Filter / MPI</th></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><th colspan="4">Cassette (4Way / Mini 4Way)</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Filter</th></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Timer</th><th>Turbo</th><th>24℃</th><th>27℃</th></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



Temperature(°C)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

3-12. Error on temperature sensor of double layer pipe. liquid pipe. (sub heat exchanger) (Short or open) (E-311)

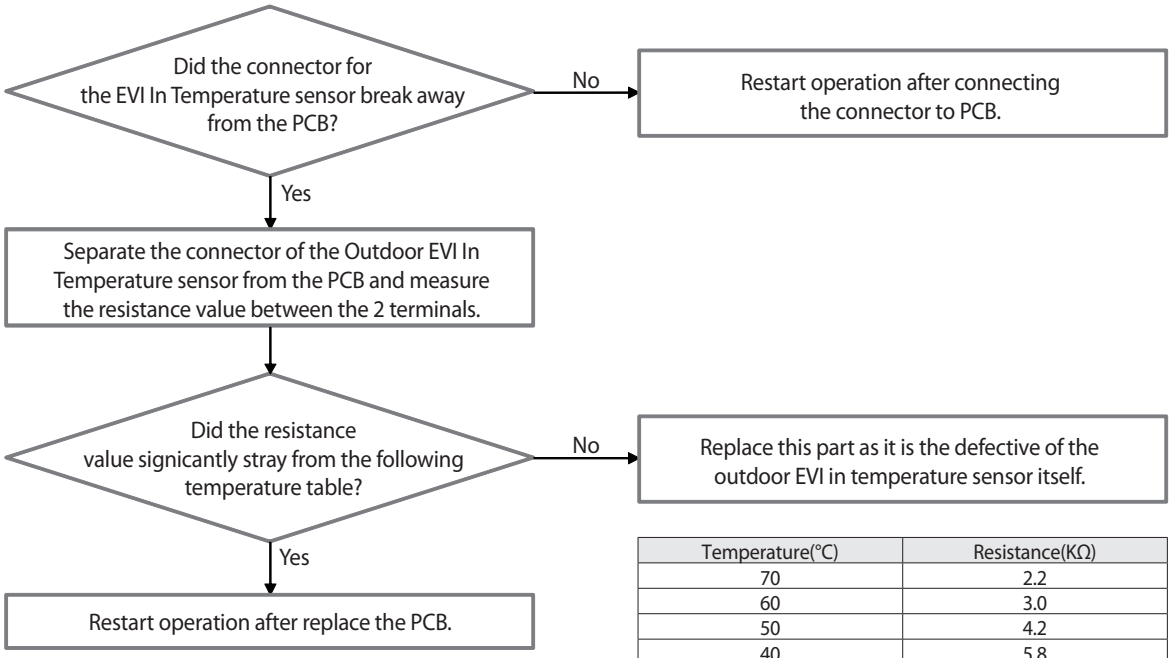
<table>
<tr><td>Outdoor unit Display</td><td>E-311</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Fan</th><th>Filter / MPI</th></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><th colspan="4">Cassette (4Way / Mini 4Way)</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Filter</th></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Timer</th><th>Turbo</th><th>24℃</th><th>27℃</th></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

3-13. Error on EVI (ESC) IN temperature sensor. (Short or open) (E-321)

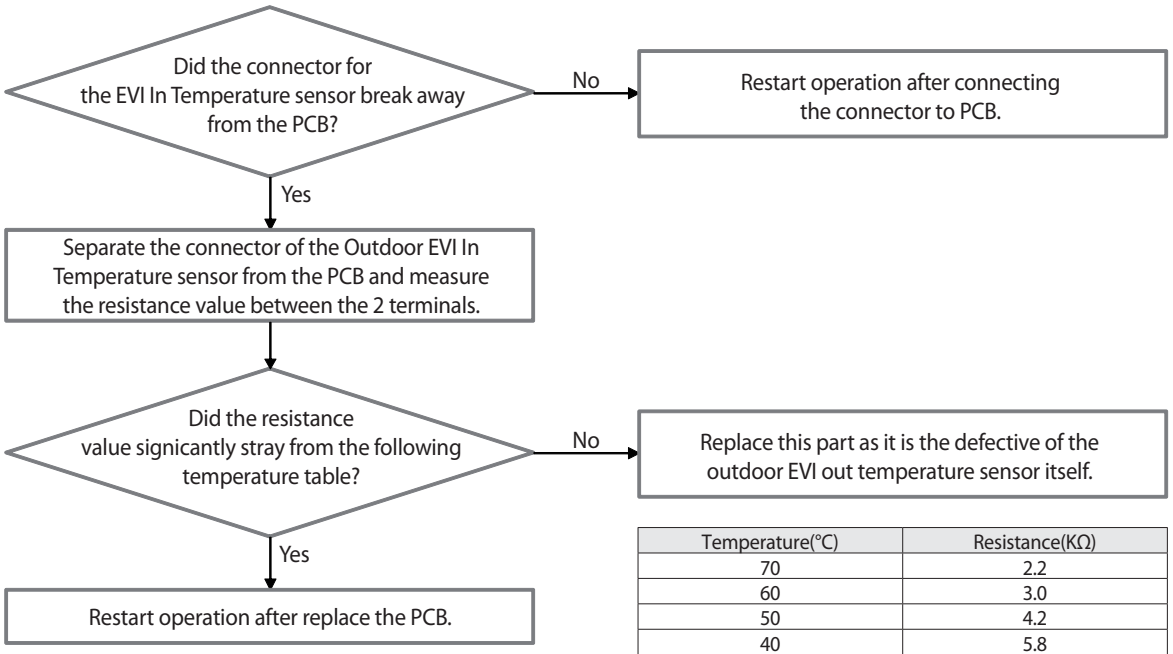
<table>
<tr><td>Outdoor unit Display</td><td>E-321</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



Temperature(°C)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

3-14. Error on EVI (ESC) OUT temperature sensor.(Short or open) (E-322)

<table>
<tr><td>Outdoor unit Display</td><td>E-322</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



Temperature(°C)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

3-15. Error due to operation failure of Fan1. (E-446)

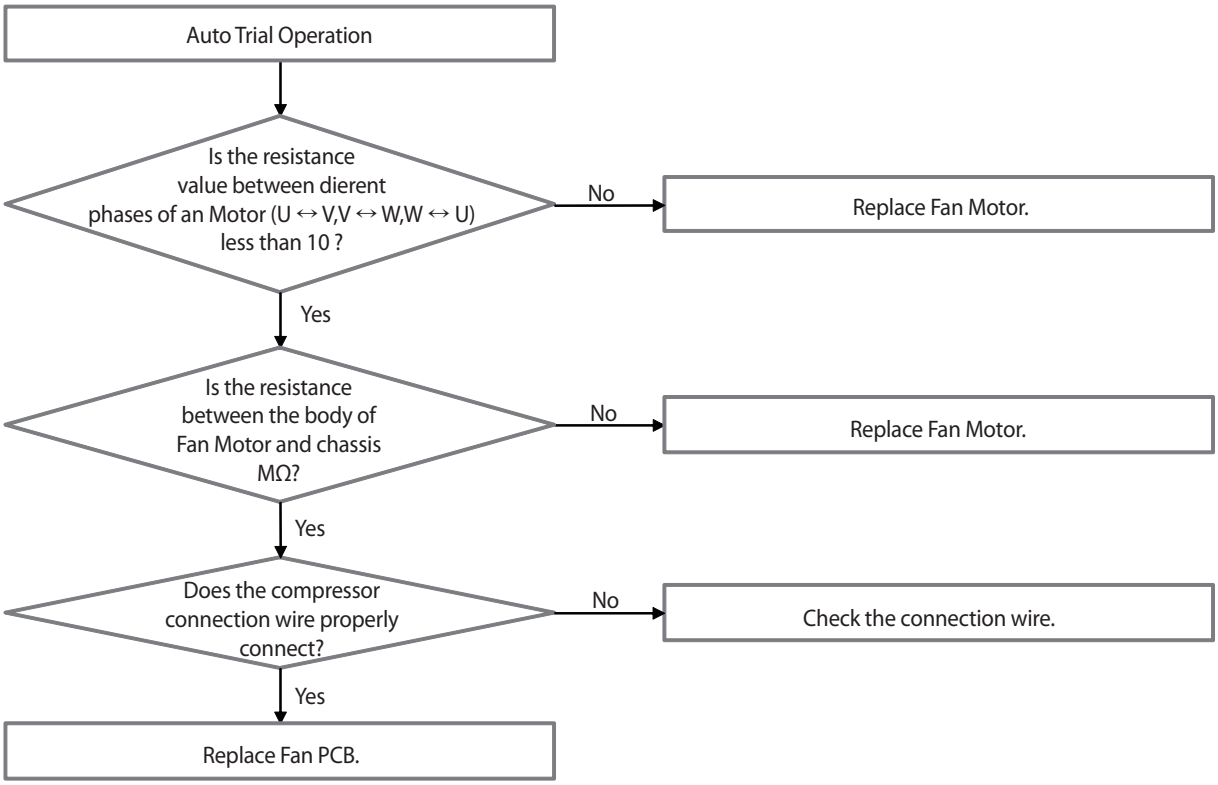
Outdoor unit Display	**E-446**
Judgement Method	• Startup, and then if the speed increase is not normally. • Detected by H/W or S/W.
Cause of problem	• Compressor connection error. • Defective Compressor. • Defective PCB.

1. Preparations before checking
   1) Power Off.
   2) IPM failure, discharge mode may not work properly. Therefore, wait more than 15 minutes after the Power Off.
   3) Remove all of the Fan PCB connectors. (Comp connector included)
   4) Prepare the digital multi tester.

2. Inspection Method
   1) Refer to Figure1 and Table1, respectively the resistance value and diode voltage value measure.
   2) According to the criterion in Table 1 to determine whether the failure of IPM.

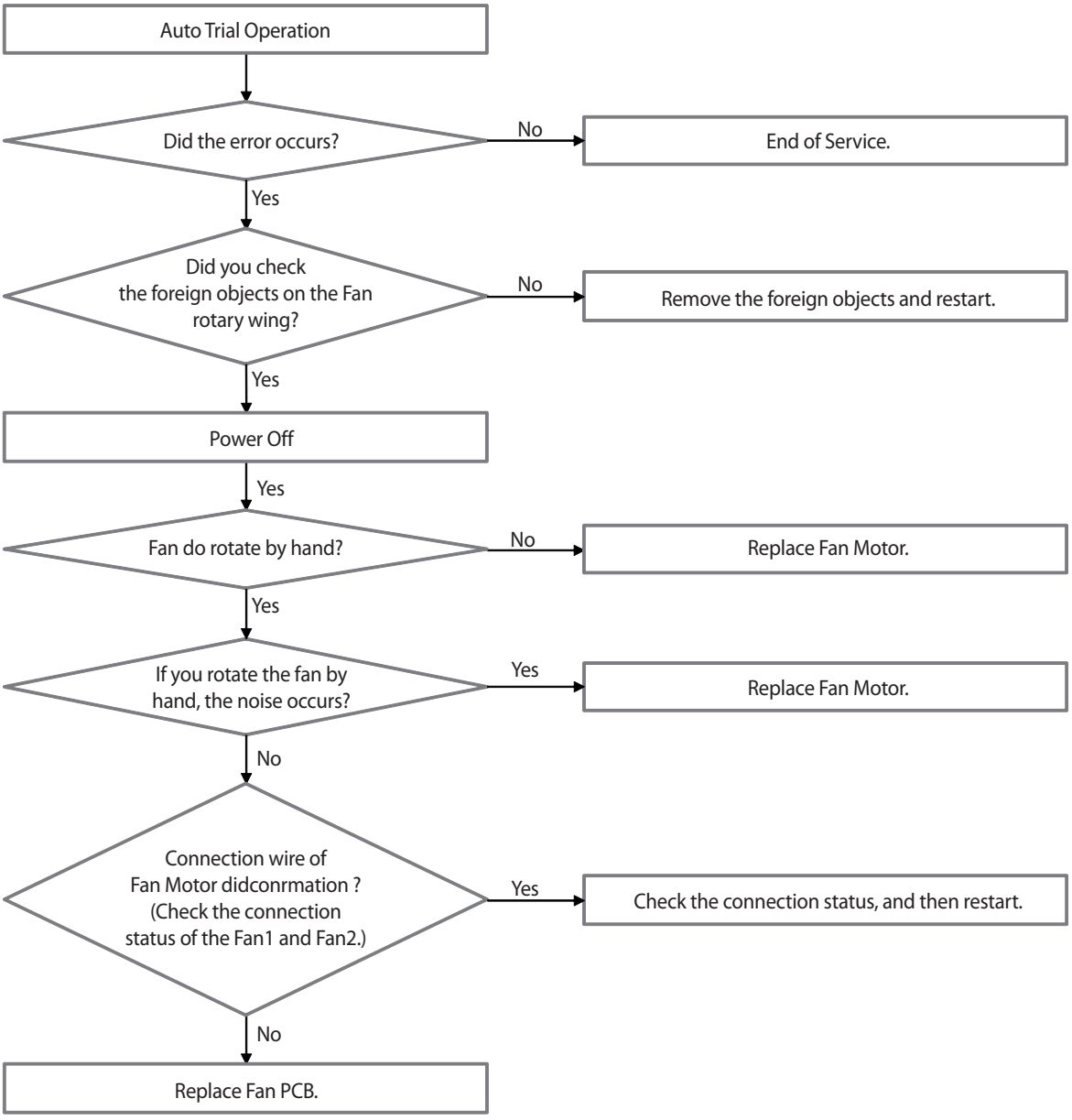
Division	Measured point		Criterion	Remark
	+	-		
Measure the resistance values	40	U	More than 3 MΩ	Measurement error can occur for reasons such as the initial measurement condenser discharge. Measured over at least three times.
	40	V		
	40	W		
	U	34		
	V	34		
	W	34		
Measure the diode voltage values	U	40	0.3 ~ 0.7V	
	V	40		
	W	40		
	34	U		
	34	V		
	34	W		

3-15. Error due to operation failure of Fan1. (E-446) (cont.)



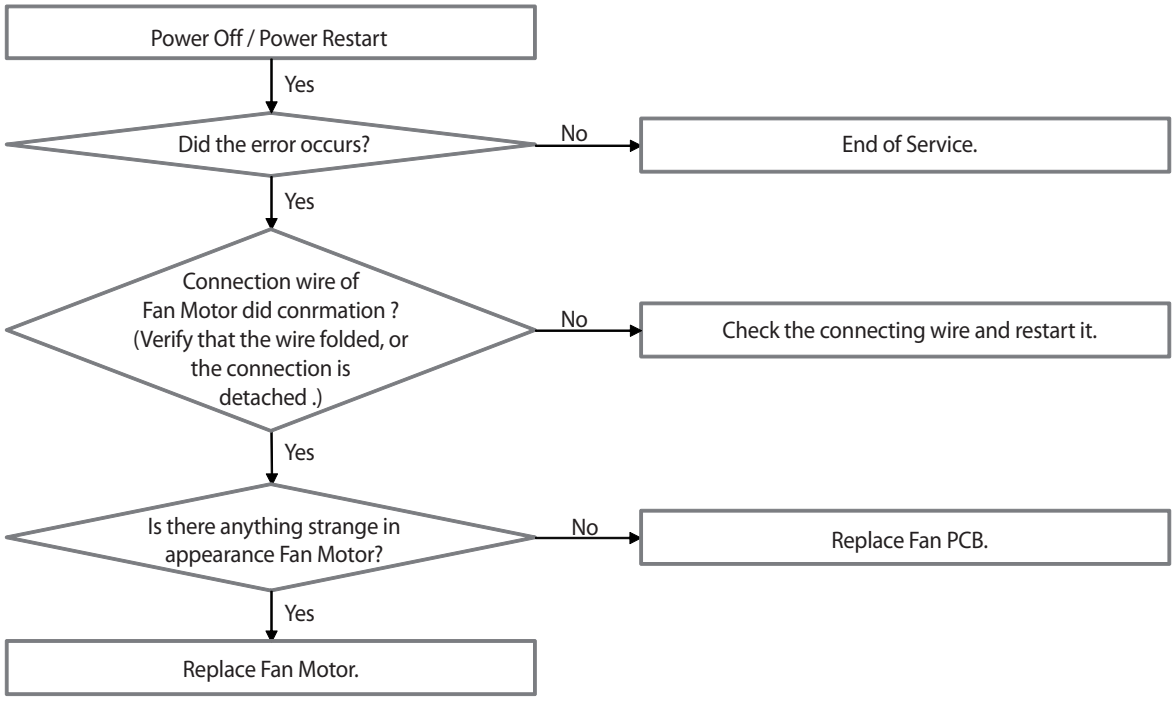
3-16. Lock error on Fan1 of outdoor unit. (E-448)

Outdoor unit Display	**E-448**
Judgement Method	• Is checked symptoms by phase current of Fan Motor.
Cause of problem	• Fan Motor connection error. • Defective Fan. • Defective PCB.



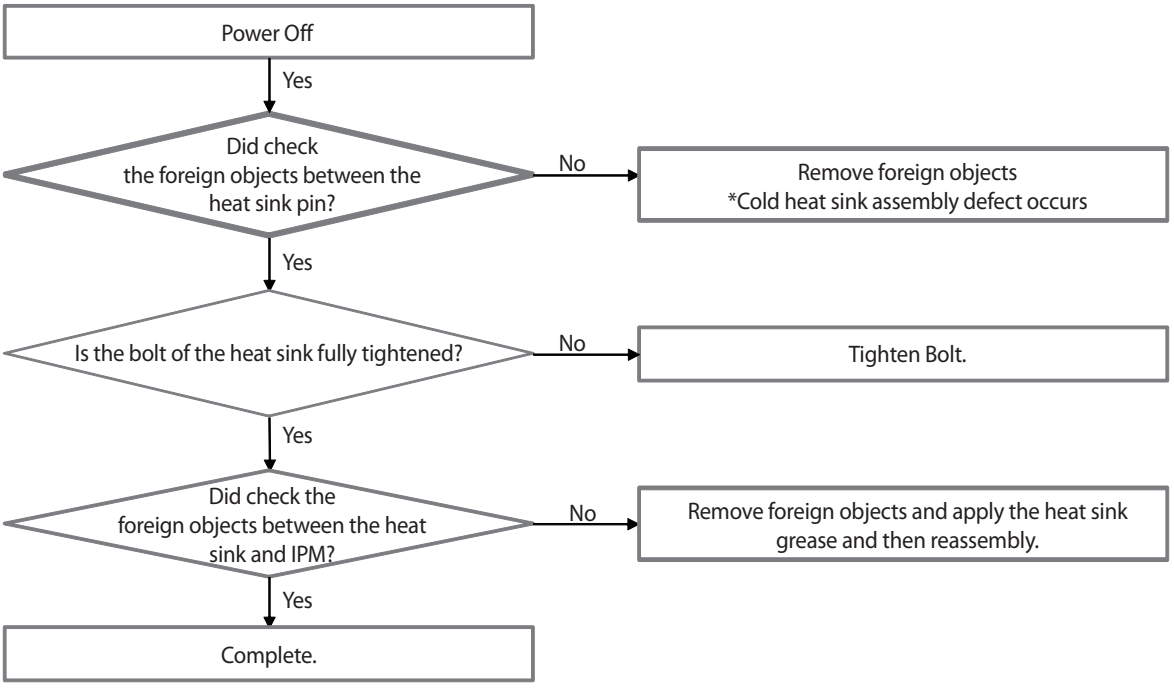
3-17. Error due to overheated motor of outdoor unit's Fan1. (E-453)

Outdoor unit Display	**E-453**
Judgement Method	• Overheating due to the internal sensor of the Fan Motor.
Cause of problem	• Defective connection wire. • Defective Fan Motor. • Defective PCB. • Defective installation conditions.



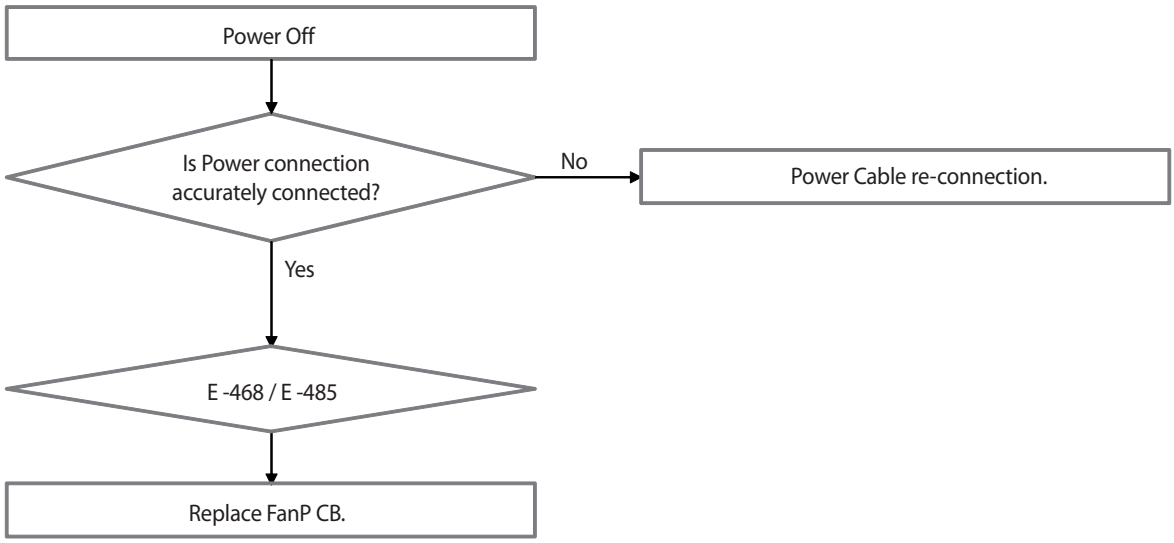
3-18. Error due to overheated IPM of Fan1. (E-455)

Outdoor unit Display	**E-455**
Judgement Method	• IPM internal temperature more than 85°C.
Cause of problem	• Heat sink and IPM assembly defective. • Defective heat sink cooling.



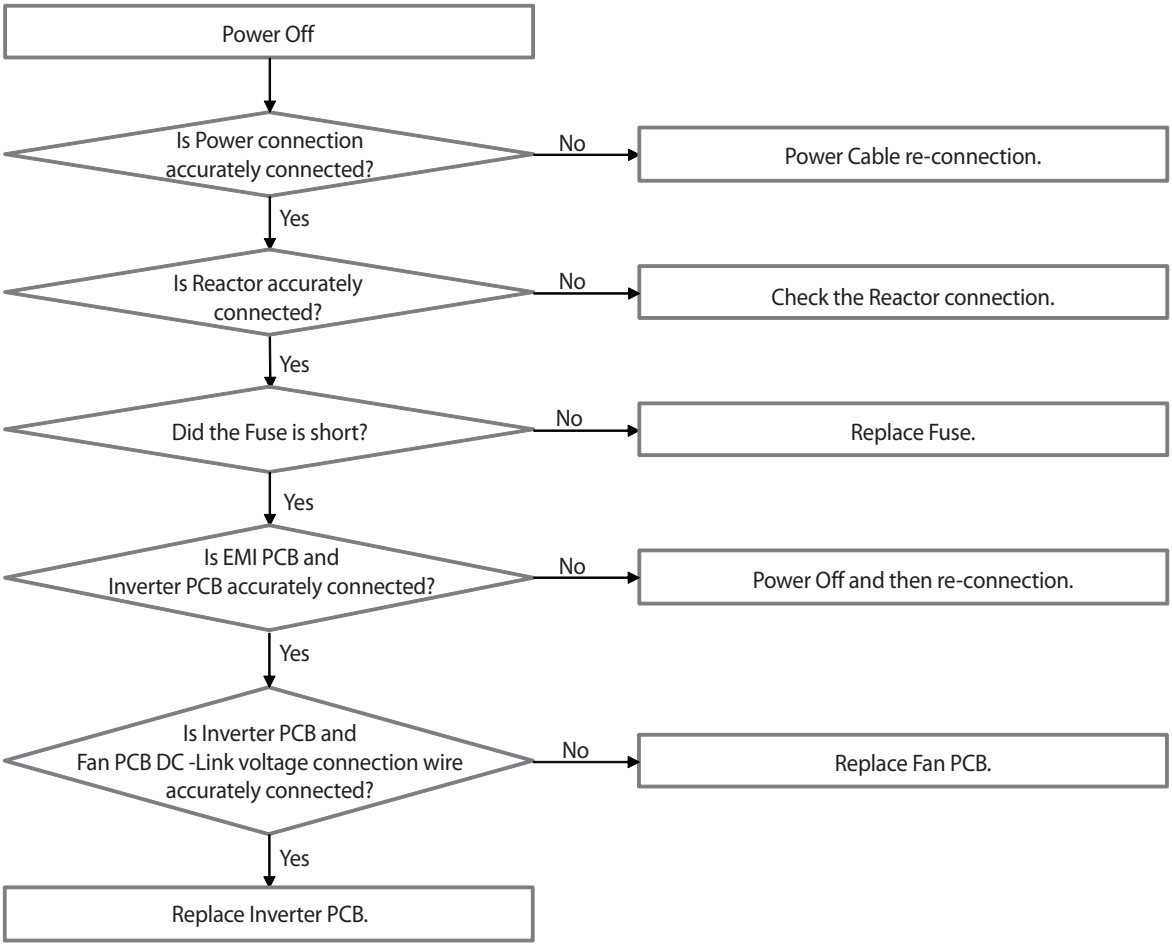
3-19. Output current sensor error of inverter PBA 1. (E-468)
Error due to input current of inverter 1. (E-485)

Outdoor unit Display	**E-468 / E-485**
Judgement Method	• Sensor Output detection : Judged as an error if the detected value is more than 2.8V or 0.2V less than.
Cause of problem	• Input voltage defective. • PCB voltage sensing circuit defective.



3-20. DC voltage sensor error of inverter PBA 1. (E-469)

Outdoor unit Display	**E-469**
Judgement Method	• DC voltage detection : Judged as an error if the detected value is more than 2.8V or 0.2V less than.
Cause of problem	• Input voltage defective. • AC Power wiring error. • Momentary Overvoltage / Low voltage occurs. • PCB voltage sensing circuit defective.



3-21. Compressor operation stop due to high pressure protection control. (E-407)

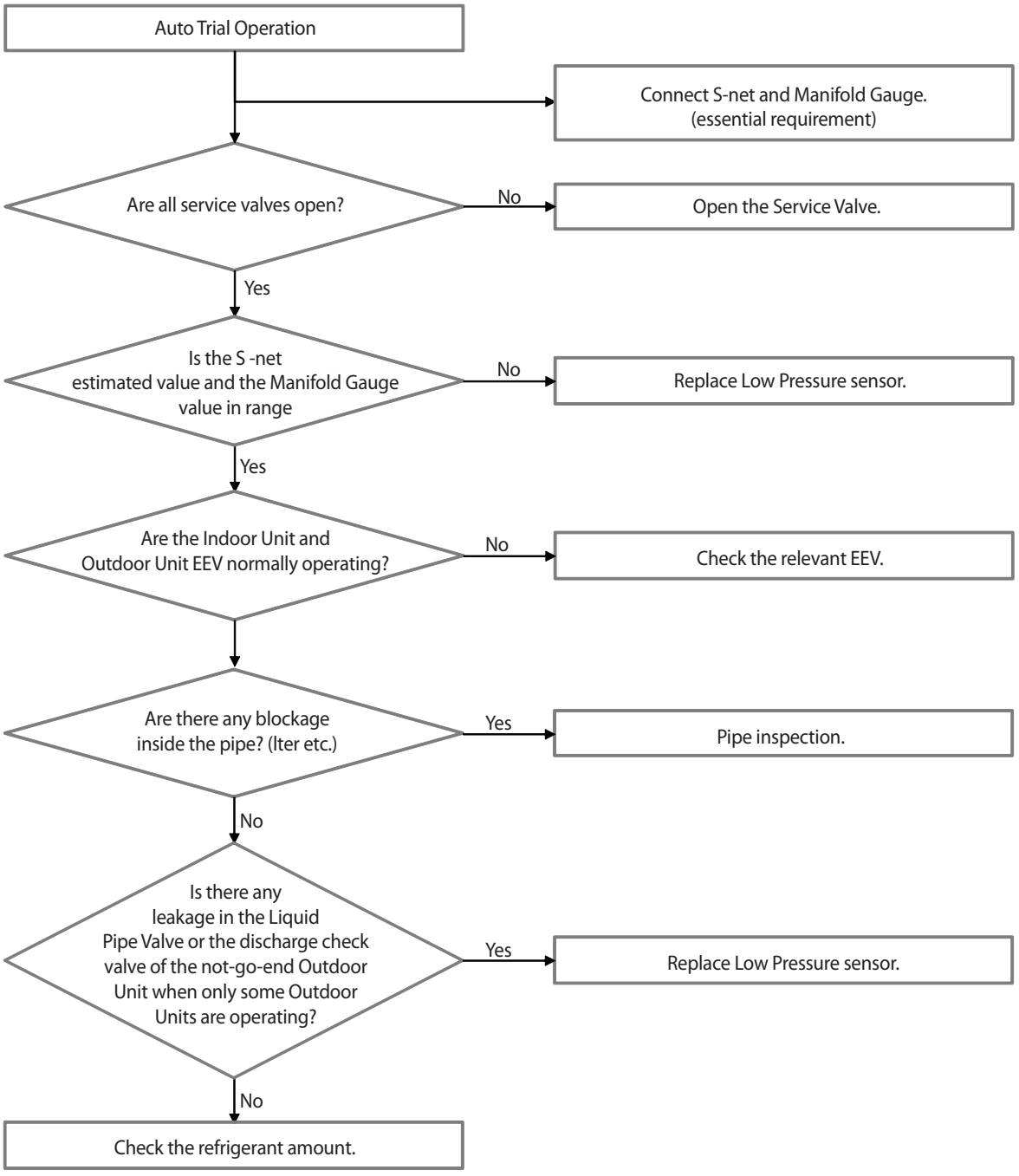
<table>
<tr><td>Outdoor unit Display</td><td>E-407</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Value of the high pressure sensor is detected at 40kg/cm^2 or more.</td></tr>
<tr><td>Cause of problem</td><td>Cooling Operation
• Outdoor unit fan motor problem. (constrained, defective)
• Motor driver defective or wire is cut.
• Outdoor heat exchanger is contaminated.
• Service valve locked/Fill refrigerant.

Heating Operation
• Outdoor unit fan motor problem. (constrained, defective)
• Motor driver defective or wire is cut.
• Service valve locked/Excessive refrigerant.</td></tr>
</table>

3-22. Compressor operation stop due to low pressure protection control or refrigerant leakage. (E-410)

<table>
<tr><td>Outdoor unit Display</td><td>E-410</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>×</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Judgment Method : Inspection when the value of low pressure sensor is 1.8kg / cm2, or less for air conditioning and 0.8kg /cm^2 for heating.</td></tr>
<tr><td>Cause of problem</td><td>• Refrigerant shortage.
• Electronic expansion valve blocked.
• Service valve blocked.
• Low pressure sensor defective.
• Leakage of compressor discharge check valve of not-go-end outdoor unit.
• Error may be found when used in temperature range outside the conditions of use. (Operating outside temperature at -20℃ or less for heating and operating outside temperature at -5℃ or less for Cooling)</td></tr>
</table>

3-22. Compressor operation stop due to low pressure protection control or refrigerant leakage. (E-410) (cont.)



3-23. Compressor operation stop due to discharge temperature protection control. (E-416)

<table>
<tr><td>Outdoor unit Display</td><td>E-416</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
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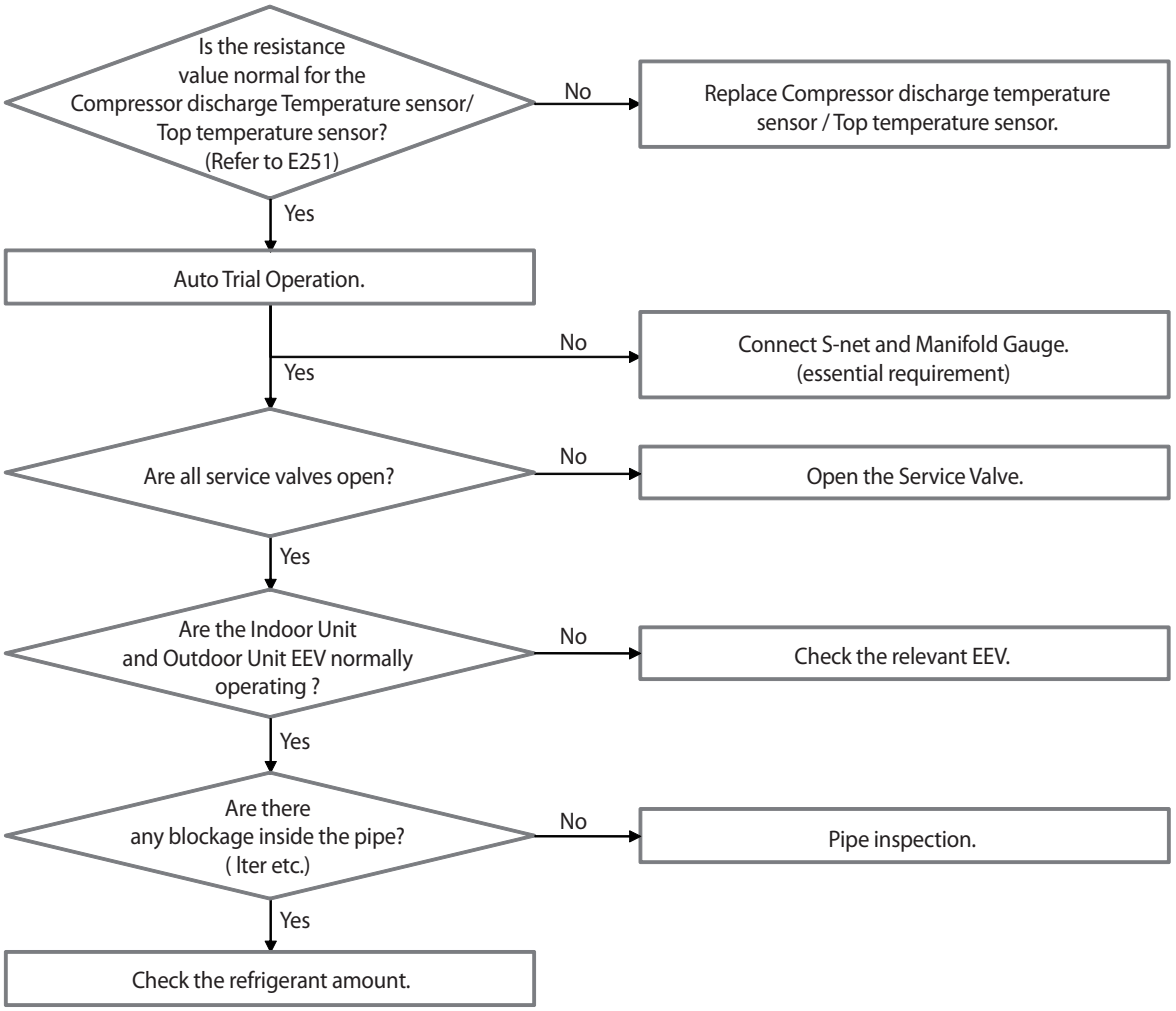
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Judgment Method : Inspection when the value of low pressure sensor is 1.8kg / cm2, or less for air conditioning and 0.8kg /cm^2 for heating.</td></tr>
<tr><td>Cause of problem</td><td>• Refrigerant shortage.
• Electronic expansion valve is blocked..
• Service valve blocked.
• Defective discharge temperature sensor.
• TOP temperature sensor defective.
• Blocked pipe and defective.
• Leakage of compressor discharge check valve of not-go-end outdoor unit.</td></tr>
</table>

3-23. Compressor operation stop due to discharge temperature protection control. (E-416) (cont.)



3-24. Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input. (E-425)

<table>
<tr><td>Outdoor unit Display</td><td>E-425</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
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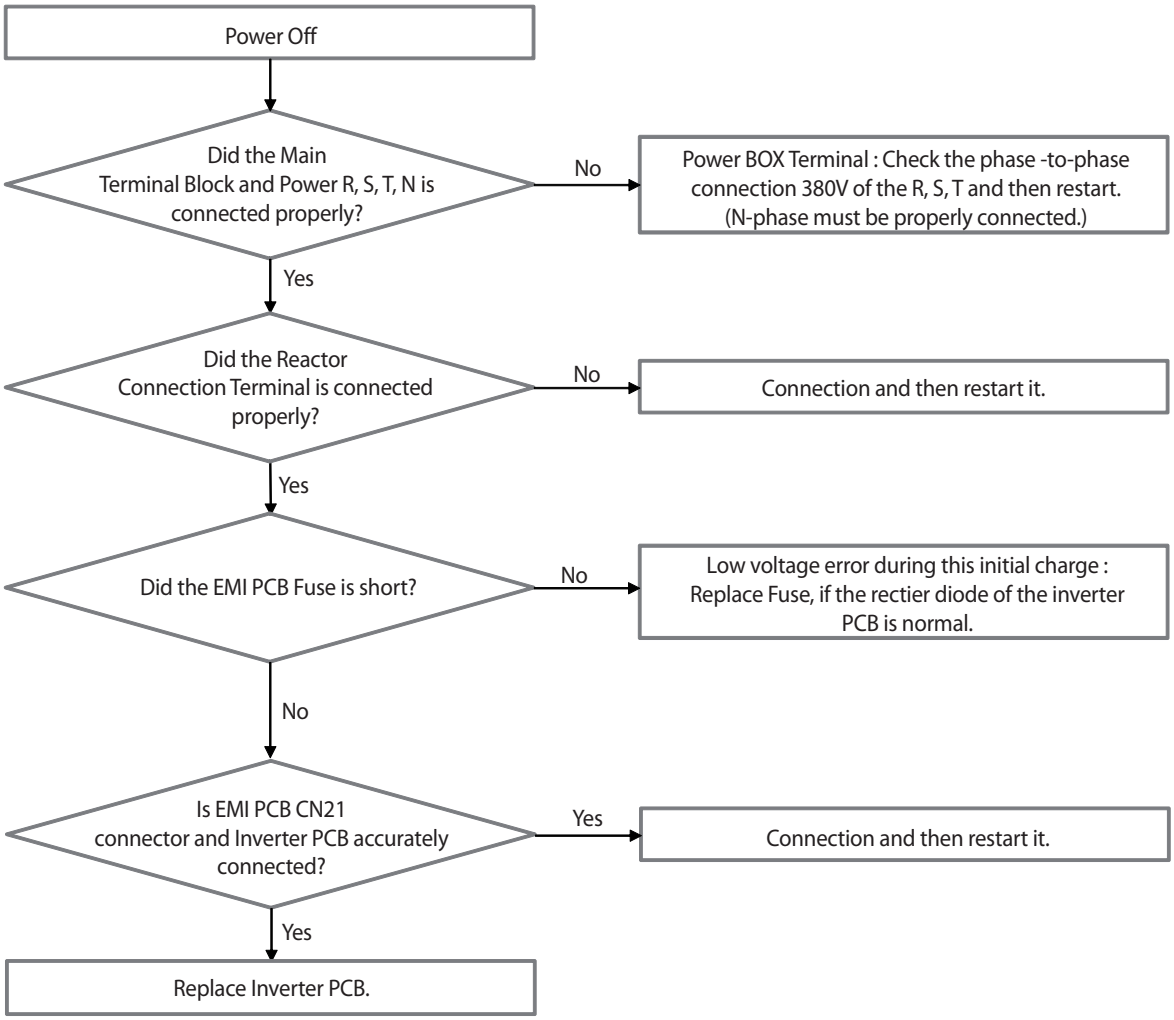
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• When turn on the power and check the status of the power from the inverter. If the phase does not connect the power(no phase) : E425 or E466 (E366) is displayed (Air conditioner to maintain the normal state.)
• However) N-phase must be properly connected.</td></tr>
<tr><td>Cause of problem</td><td>• Check the input wiring.
• EMI Fuse short.</td></tr>
</table>

3-24. Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input. (E-425) (cont.)



3-25. Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input. (E-428)

<table>
<tr><td>Outdoor unit Display</td><td>E-428</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
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<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
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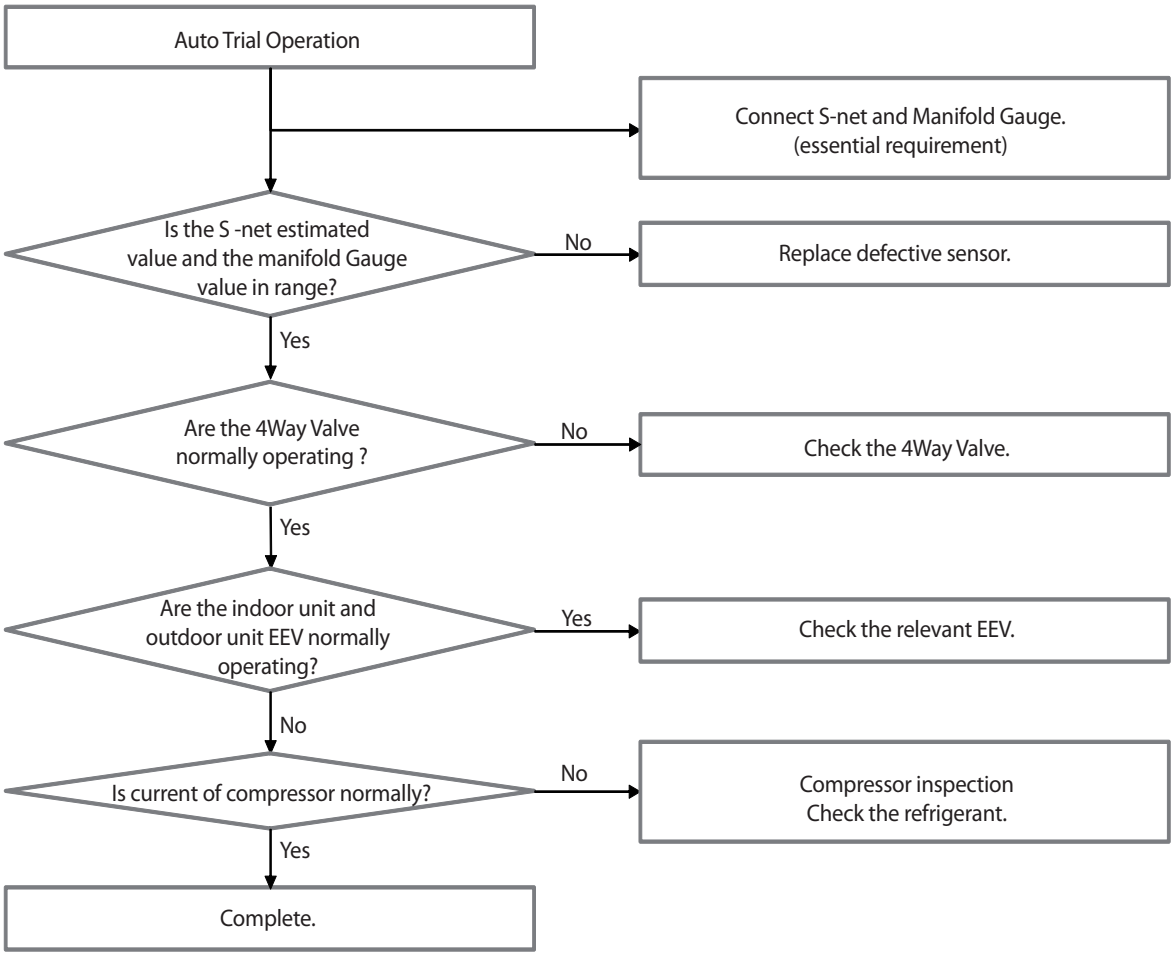
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Compression ratio [(High pressure+1.03)/(Low pressure+1.03)] less than 1.5 and lasts for 10 minutes or more.
• Differential pressure (high pressure - low pressure) less than 0.4 MPa.G and lasts for 10 minutes or more.</td></tr>
<tr><td>Cause of problem</td><td>• Indoor and Outdoor EEV breakdown.
• 4Way Valve breakdown.
• High and Low pressure sensor defective.
• Refrigerant shortage.</td></tr>
</table>

3-25. Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input. (E-428) (cont.)



3-26. EVI (ESC) EEV leakage or internal leakage of intercooler or incorrect connector insertion of EVI (ESC) EEV. (E-438)

<table>
<tr><td>Outdoor unit Display</td><td>E-438</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</th></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
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<table>
<tr><th colspan="4">Cassette (4Way / Mini 4Way)</th></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
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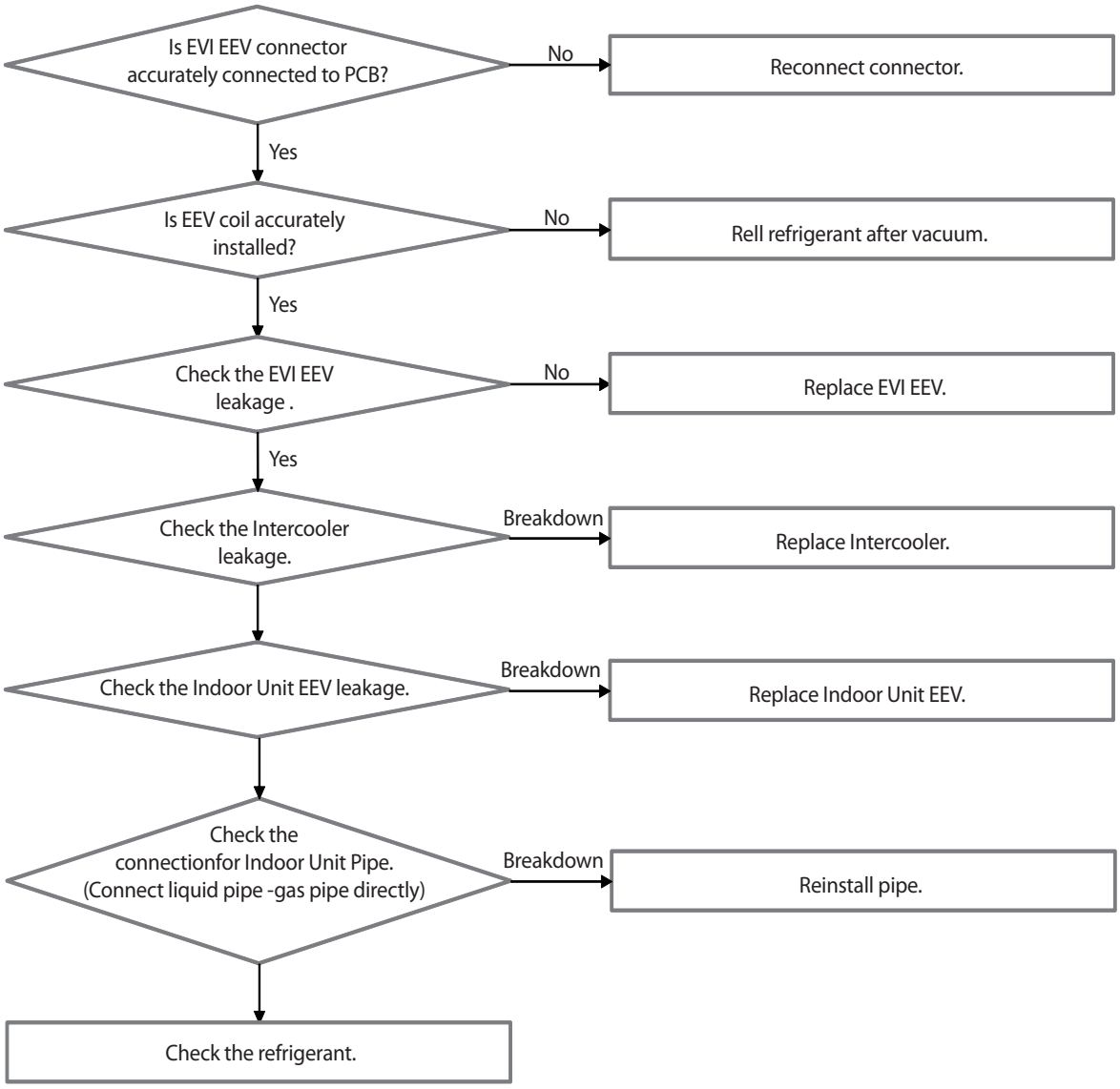
<tr><th colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</th></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• DSH <10 ℃, EVI Out-in <= 0℃ & frequency> 65Hz 40 minutes maintaining.</td></tr>
<tr><td>Cause of problem</td><td>• EVI EEV and Intercooler leakage, excessive refrigerant amount, Outdoor Check Valve inserted opposite.
• Indoor Unit EEV leakage, direct connection between Indoor Liquid Pipe and the Gas Pipe.</td></tr>
</table>

3-26. EVI (ESC) EEV leakage or internal leakage of intercooler or incorrect connector insertion of EVI (ESC) EEV. (E-438) (cont.)

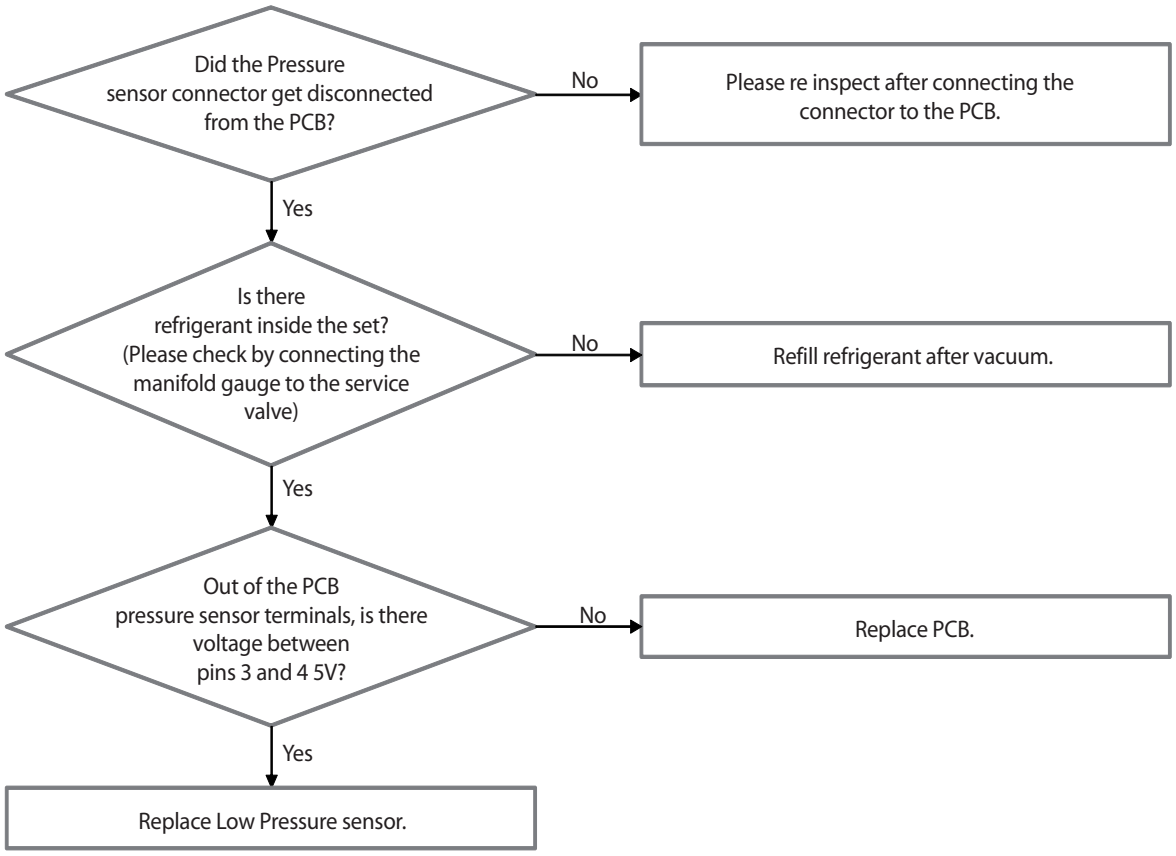


3-27. Error due to refrigerant leakage. (E-439) / Operation prohibited due to low pressure. (E-443)

Outdoor unit Display	**E-439 / E-443**
Judgement Method	• Before starting : Before compressor starting after system halt 2 minutes (High & low pressure sensor Open / Short error occurs and 1kg/cm2 or less) When start : When the high pressure sensor value(cooling 3.1kg/ cm2 , heating 2.2kg/ cm2) is detection continuously for 3 seconds.
Cause of problem	• Refrigerant leakage and shortage. • Disconnection or breakdown of high & low pressure sensor.

Pressure sensor Open/Short error determination method

1) Identifies from when power is supplied or 2 minutes after RESET, and only when set is stopped.
2) An Open/Short error will occur if the input voltage standard range of 0.5V ~ 4.95V is exceeded.



3-28. Heating mode restriction due to high air temperature. (E-440)
Operation prohibited due to low pressure. (E-441)

<table>
<tr><td>Outdoor unit Display</td><td>E-440 / E-441</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Fan</th><th>Filter / MPI</th></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><th colspan="4">Cassette (4Way / Mini 4Way)</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Filter</th></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Timer</th><th>Turbo</th><th>24℃</th><th>27℃</th></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Heating operation : When the outdoor temperature is more than 30 ℃.
• Cooling operation : When the outdoor temperature is less than -15 ℃.</td></tr>
<tr><td>Cause of problem</td><td>• System protection operation status. (Is not breakdown)</td></tr>
</table>

3-29. Refrigerant charging restriction in heating mode when air temperature is over 15°C. (E-442)

<table>
<tr><td>Outdoor unit Display</td><td>E-442</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24°C</td><td>27°C</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• When the heating refrigerant change : If the outdoor temperature is more than 15°C.</td></tr>
<tr><td>Cause of problem</td><td>• System protection operation status (Is not breakdown)</td></tr>
</table>

3-30. CCH is detached. (E-445)

<table>
<tr><td>Outdoor unit Display</td><td>E-445</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
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<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
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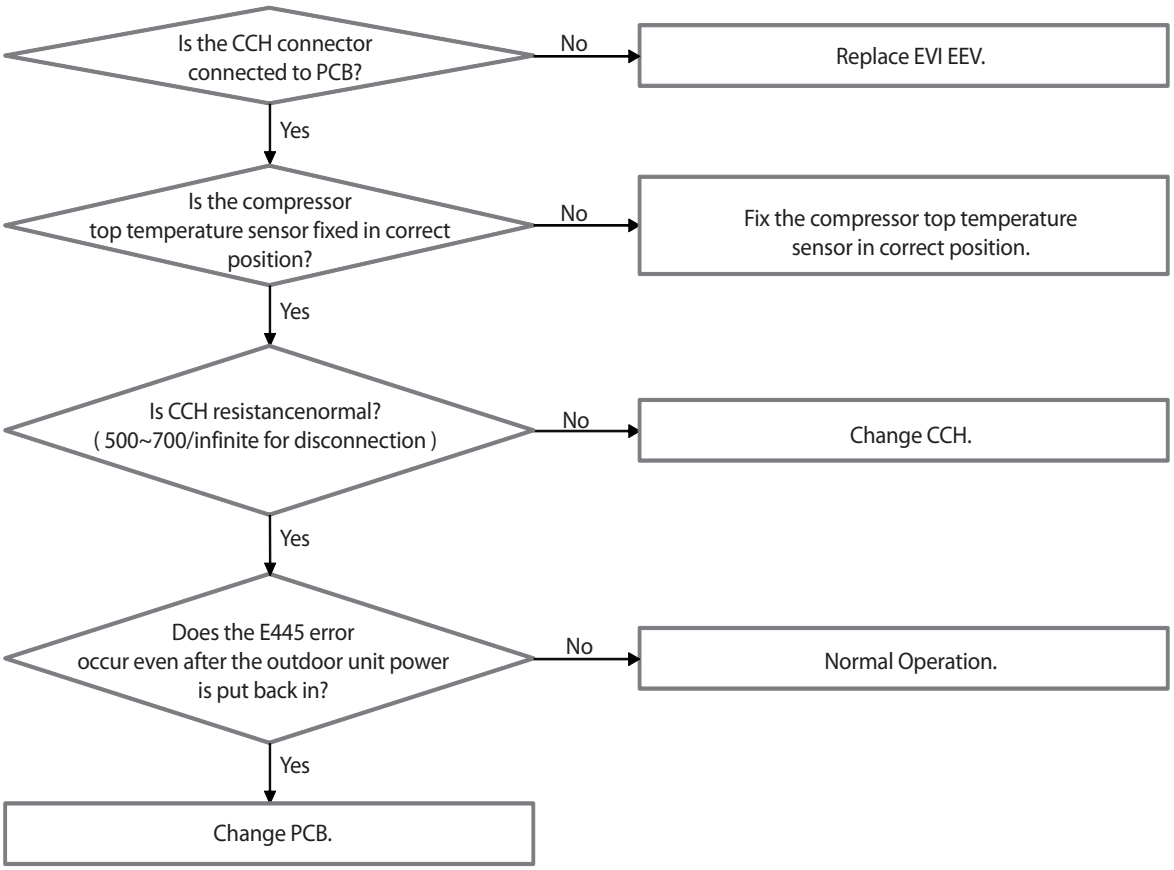
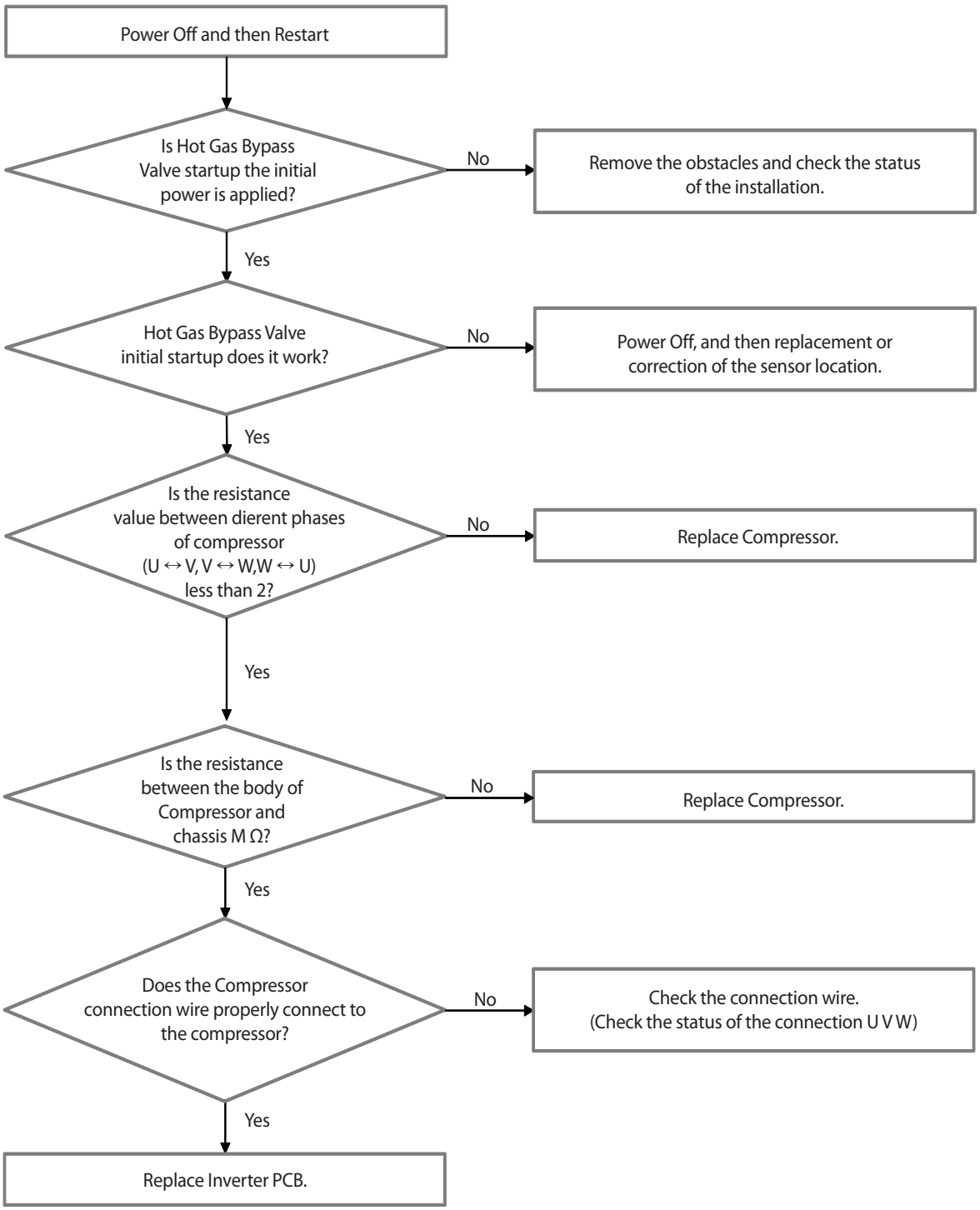
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• CCH Connector PCB is not connected / Compressor Top sensor breakaway / Own problem of CCH.</td></tr>
</table>



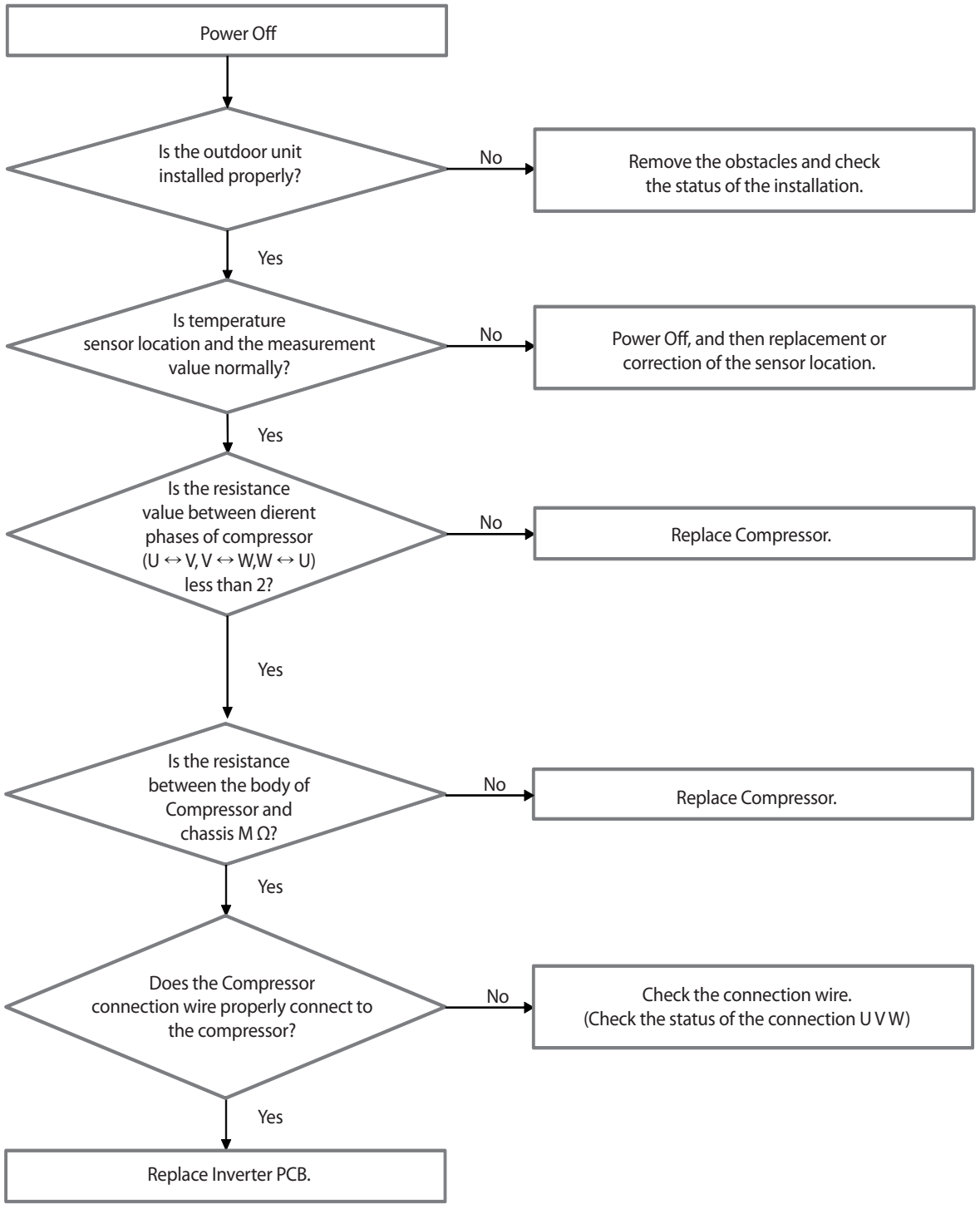
3-31. Error due to operation failure of inverter compressor 1. (E-461)

Outdoor unit Display	**E-461**
Judgement Method	• Startup, and then if the speed increase is not normally. • Detected by H/W or S/W.
Cause of problem	• Compressor connection error. • Defective Compressor. • Defective PCB.



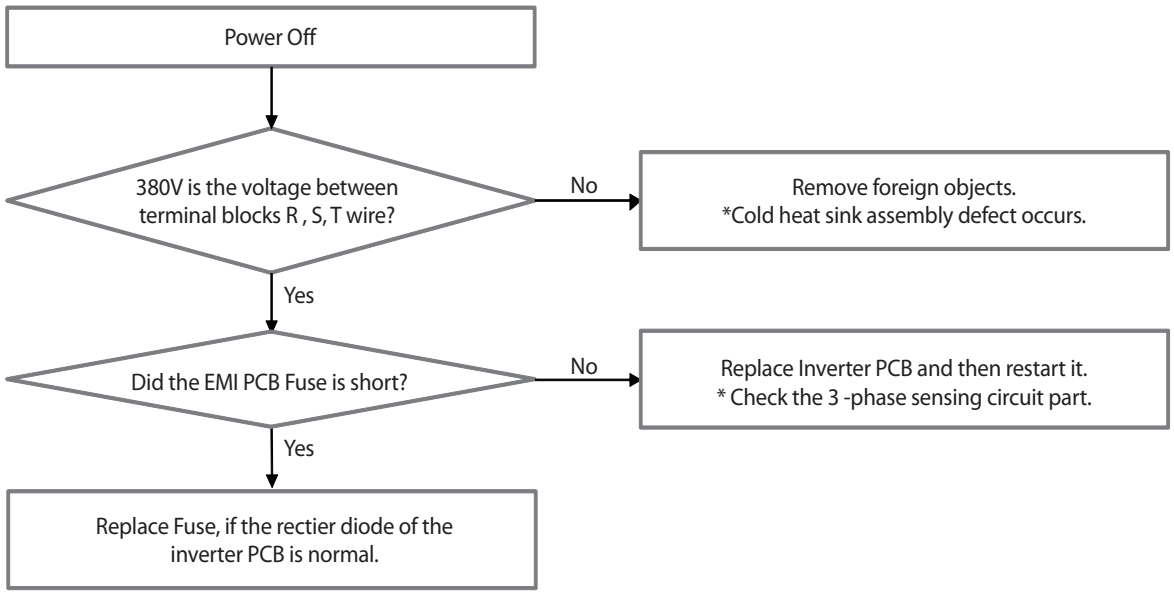
3-32. Error due to operation failure of inverter compressor 1. (E-464)

Outdoor unit Display	**E-464 / E-465**
Judgement Method	• Will occur if the overcurrent flowing in the IPM. • Detected by H/W or S/W.
Cause of problem	• Installation defective. • Connection wire error. • Comp. defective. • Motor defective. • PCB defective.



3-33. Error due to over voltage / low voltage of inverter PBA 1. (E-466)

Outdoor unit Display	**E-466**
Judgement Method	• N-phase wiring error and EMI Fuse short. • DC-Link Overvoltage / Low voltage occurs.
Cause of problem	• Check the input wiring. • EMI Fuse short.

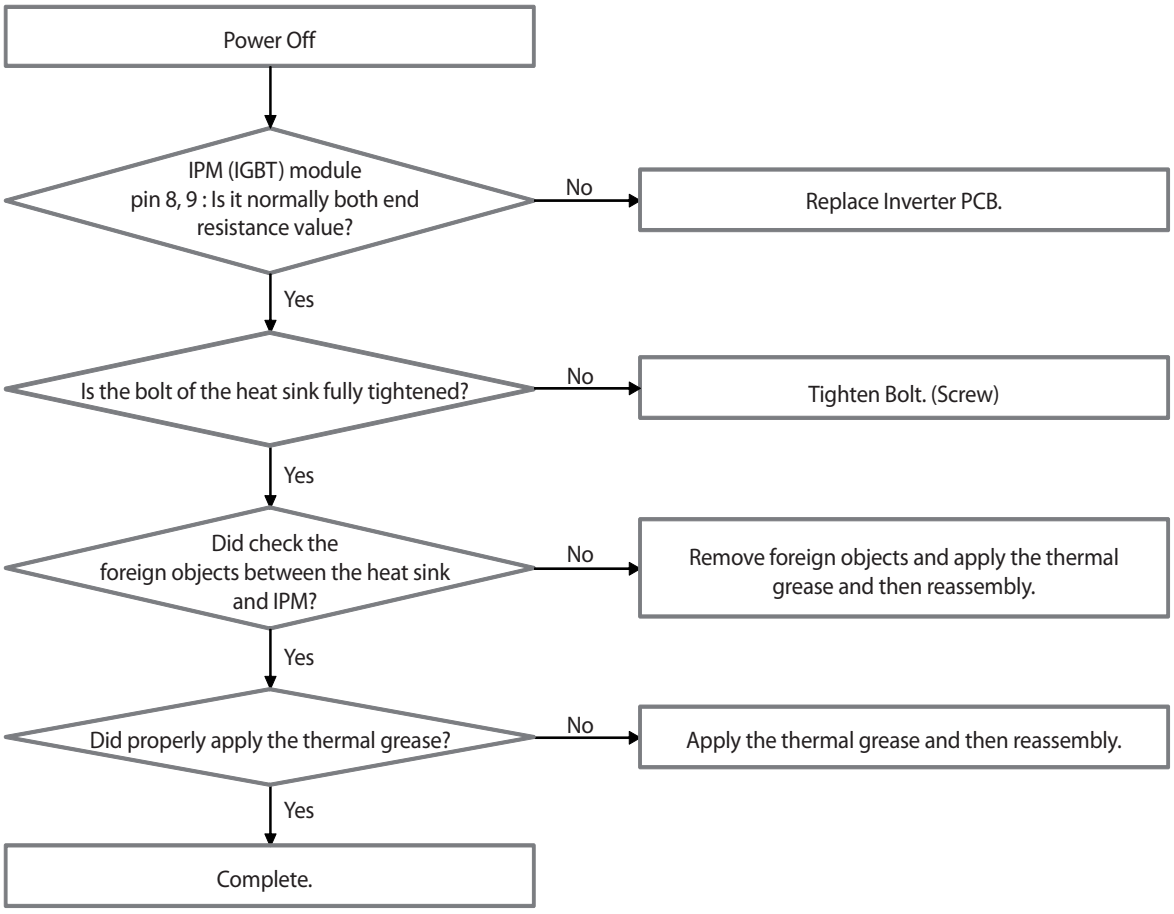


3-34. Error due to overheat caused by contact failure on IPM of inverter PBA 1. (E-500)

Outdoor unit Display	**E-500**
Judgement Method	• IGBT module internal temperature : 105°C more than
Cause of problem	• Cooling Pin and the IGBT junction part assembly defective. • Refrigerant cooling heat sink and refrigerant piping assembly defective. • Assembled bolt defective.

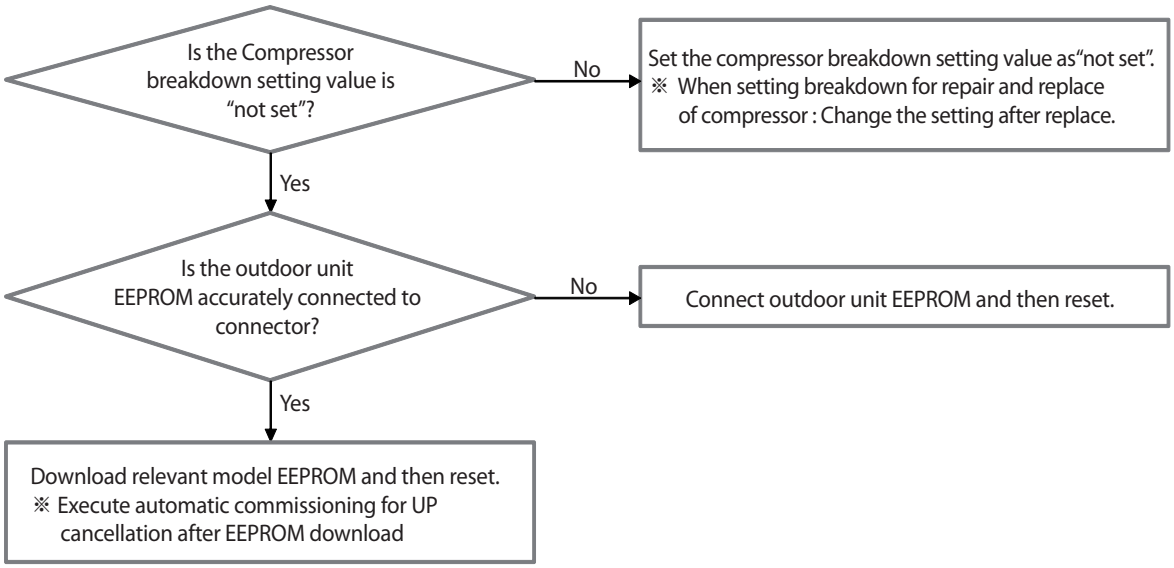
Both end resistance values of IGBT module pin(8, 9 pin)

Temperature(°C)	NTC [ohm]	AD [V]
10	9000	2.58
20	6000	2.33
30	4000	2.03
40	3000	1.80
50	2000	1.47
60	1600	1.29
70	1200	1.07
80	750	0.76
90	650	0.68
100	500	0.55
105	450	0.51
110	380	0.44
120	300	0.35
130	250	0.30
100	500	0.55



3-35. Outdoor unit's option switch setting error.
(Using E2P option of other models or emergency operation for compressor malfunction option setting was enabled on all compressors of corresponding outdoor unit) (E-560)

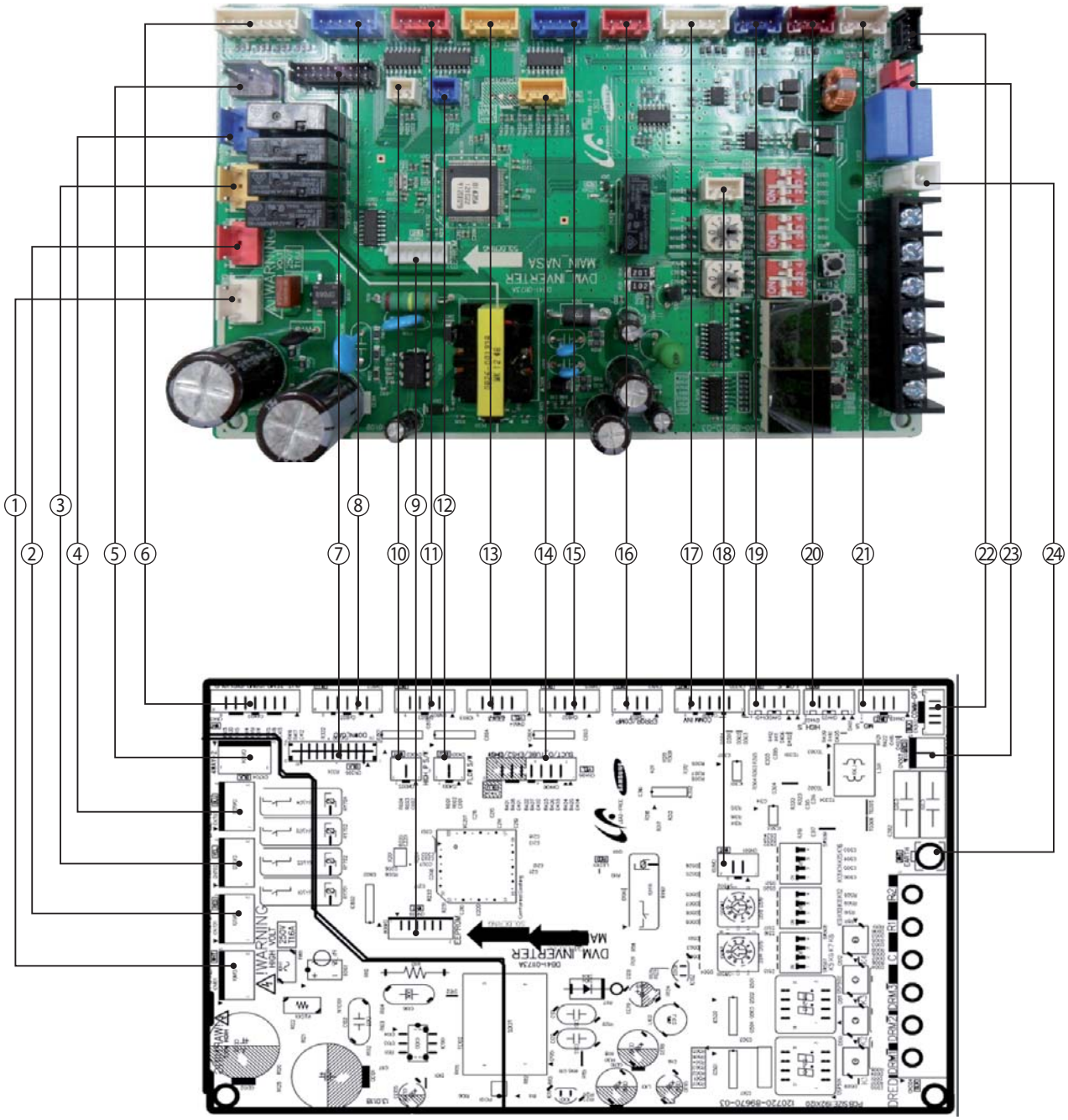
Outdoor unit Display	**E-560**
Judgement Method	• Refer the next page.
Cause of problem	• Option setting error of outdoor unit. (E2P option use of other model or set of the relevant outdoor unit, compressor breakdown)



■ PCB Diagram

1. Outdoor Unit PCB

- Main PCB: AM036/048/053FXMDCH

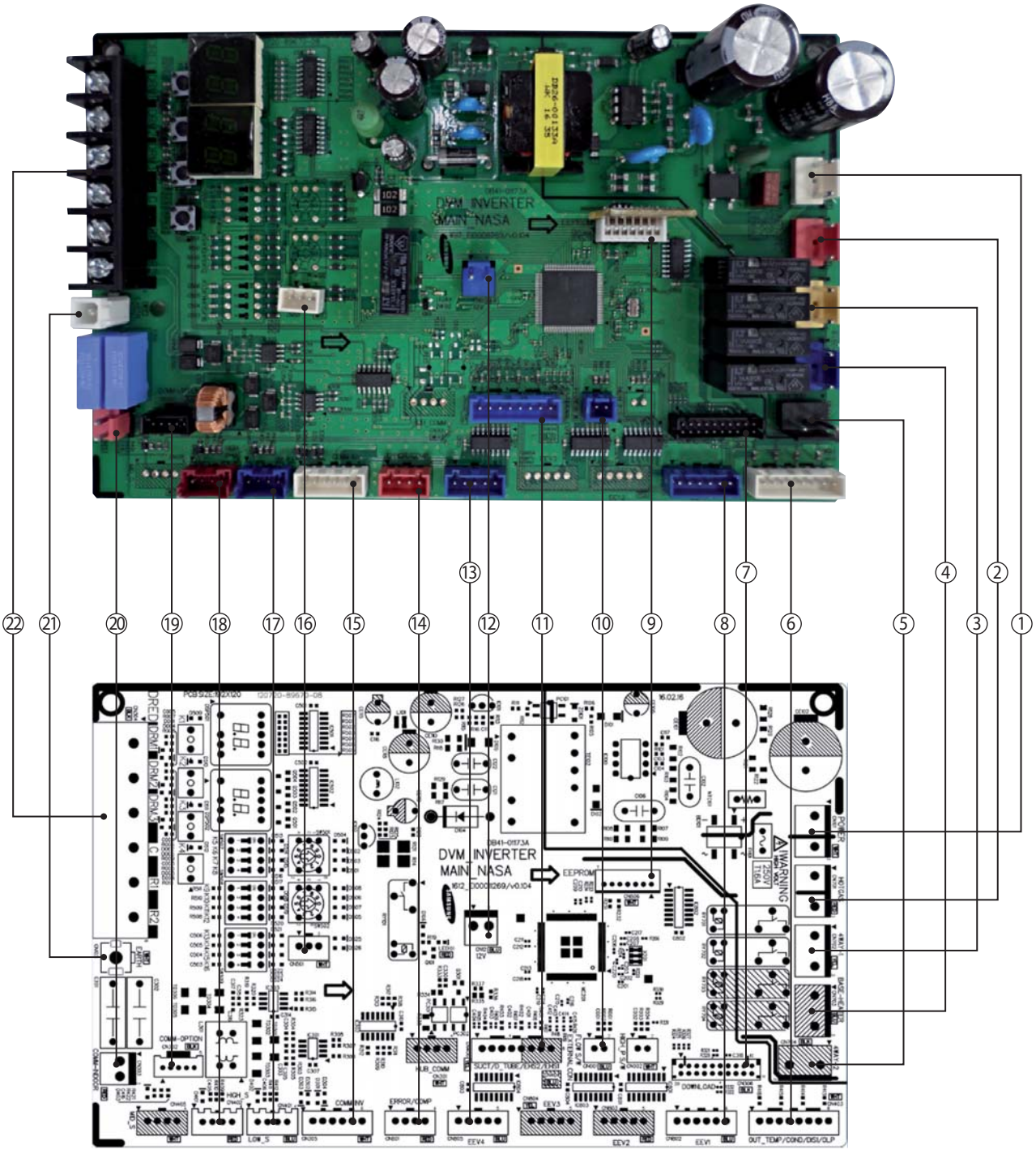


Main PCB: AM036/048/053FXMDCH (cont.)

① **CN101-AC INPUT** #1: L #3: N	② **CN701-HOT GAS** #1: L #3: N	③ **CN702-4WAY VALVE 1** #1: L #3: N	④ **CN703-BASE HEATER** #1: L #3: N
⑤ **CN704-4WAY VALVE 2** #1: L #3: N	⑥ **CN403- TEMP SENSOR** #1 : OUT TEMP #2,4,6,8: GND #3 : COND TEMP #5 : DISCHARGE TEMP #7 : OLP SENSOR	⑦ **CN306-** **MICOM DOWNLOAD**	⑧ **CN802-EEV 1** #1~4: EEV CONTROL #5,6: 12V
⑨ **CN806-E2P MODULE**	⑩ **CN002-HIGH P S/W** #1: INPUT #2: GND	⑪ **CN803-EEV 2** #1~4:EEV CONTORL #5: 12V	⑫ **CN001-Flow S/W** #1: INPUT #2: GND
⑬ **CN804-EEV 3** #1~4: EEV CONTROL #5: 12V	⑭ **CN406-**	⑮ **CN805-EEV 4** #1~4: EEV CONTROL #5: 12V	⑯ **CN801-** **EXTERNAL CONTROL OUT** #1,3: 12V #2: ERROR CHECK OUT #4: COM CHK OUT
⑰ **CN305-COMM INV PBA**	⑱ **CN501-** **SELECT COOLING ONLY**	⑲ **CN401-LOW P SENSOR** #2: INPUT #3: GND #4: VCC	⑳ **CN401-HIGH P SENSOR** #1: INPUT #3: GND #4: VCC
㉑ **CN401-MID P SENSOR** #1: INPUT #2: GND #4: VCC	㉒ **CN302-COMM SUB PBA**	㉓ **CN303-** **COM INDOOR UNIT**	㉔ **CN103-EARTH**

1. Outdoor Unit PCB (cont.)

- Main PBA: AM060MXMDCH

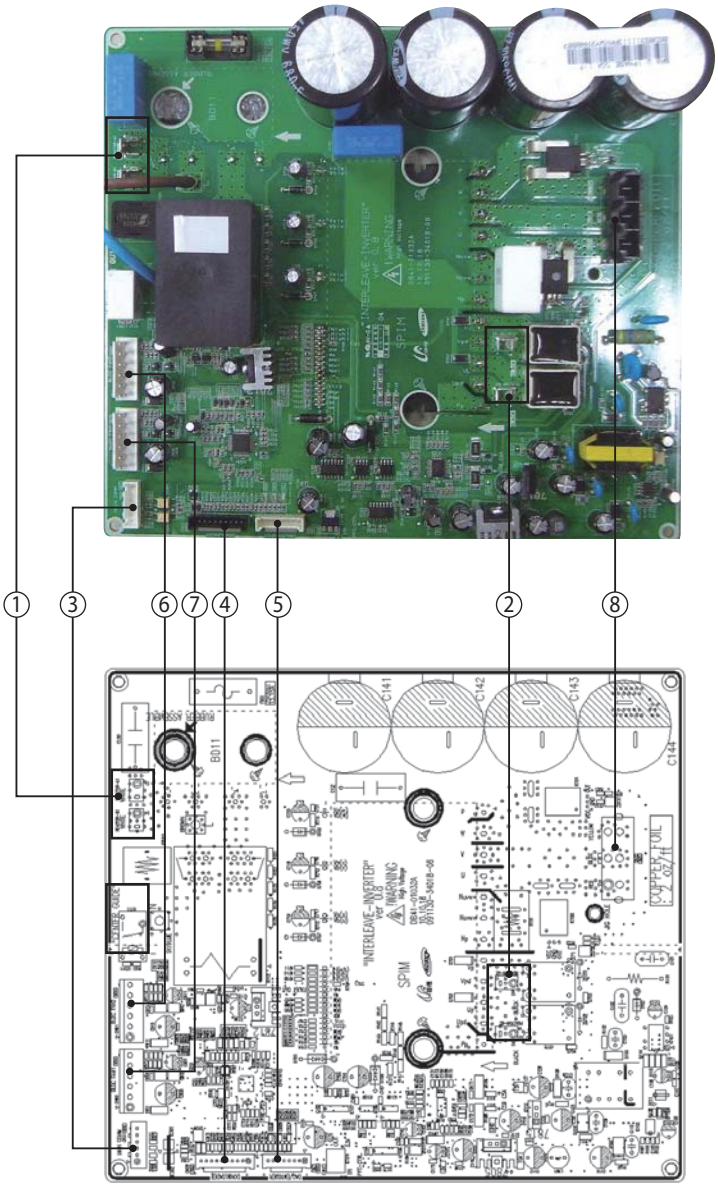


Main PBA: AM060MXMDCH (cont.)

① **CN101 - AC POWER** #1: L #3: N	② **CN701 - HOT GAS V/V** #1: L #3: HOT GAS V/V SIGNAL	③ **CN702 - 4WAY V/V** #1: L #3: 4WAY V/V SIGNAL
④ **CN704 - EVI V/V** #1: L #3: EVI V/V SIGNAL	⑤ **CN705 - EVI BYPASS V/V** #1: L #3: EVI BYPASS V/V SIGNAL	⑥ **CN403 - TEMPERATURE SENSOR** #1~8: DOWNLOAD SIGNAL #12~16: DOWNLOAD SIGNAL #18~20: DOWNLOAD SIGNAL #9: GND #10~11: DC 5V
⑦ **CN306 - DOWNLOAD** #1~8: DOWNLOAD SIGNAL #12~16: DOWNLOAD SIGNAL #18~20: DOWNLOAD SIGNAL #9: GND #10~11: DC 5V	⑧ **CN802 - EEV1** #1~4: EEV CONTROL #5,6: DC 12V	⑨ **CN001 - EEPROM** #1: GND #2: N.C. #3: DC 5V #4~7: EEPROM SIGNAL
⑩ **CN404 - EXTERNAL CTRL** #1: GND #2: EXTERNAL CTRL	⑪ **CN404 - TEMPERATURE SENSOR** #1: Suction temperature sensor #2: D_tube temperature sensor #5: EVI out temperature sensor #7: EVI in temperature sensor #2,4,6,8: GND	⑫ **CN12 - 12V OUTPUT** #1: DC 12V #3: GND
⑬ **CN805 - EEV4** #1~4: EEV SIGNAL #5: DC 12V	⑭ **CN801 - ERROR & COMP CHECK** #1,3: DC 12V #2: ERROR CHECK SIGNAL #4: COMP CHECK SIGNAL	⑮ **CN305 - MAIN↔INVERTER COMMUNICAITON** #1,2,6: COMMUNICATION SIGNAL #3: GND #4: DC 5V #2: DC 12V
⑯ **CN501 - MODE SELECTION** #1~3: MODE SELECTION SIGNAL	⑰ **CN401 - LOW PRESSURE SENSOR** #1: N.C. #2: LOW PRESSURE SENSOR SIGNAL #3: GND #4: DC 5V	⑱ **CN402 - HIGH PRESSURE SENSOR** #1: HIGH PRESSURE SENSOR SIGNAL #2: N.C. #3: GND #4: DC 5V
⑲ **CN302 - COMMUNICATION TEST** #1: DC 12V #2: GND #3: DC 5V #4: COMMUNICATION TEST SIGNAL	⑳ **CN303 - COM1** #1: F1 : INDOOR↔OUDDOR UNIT COMMUNICATION SIGNAL #2: F2 : INDOOR↔OUDDOR UNIT COMMUNICATION SIGNAL	㉑ **CN103 - EARTH** #1: EARTH
㉒ **CN304 - DRED & UPPER CONTROL** #1 : DRM1 #2 : DRM2 #3 : DRM3 #4 : C #5 : R1 : UPPER CTRL COMMUNICAITON SIGNAL #6 : R2 : UPPER CTRL COMMUNICAITON SIGNAL		

1. Outdoor Unit PCB (cont.)

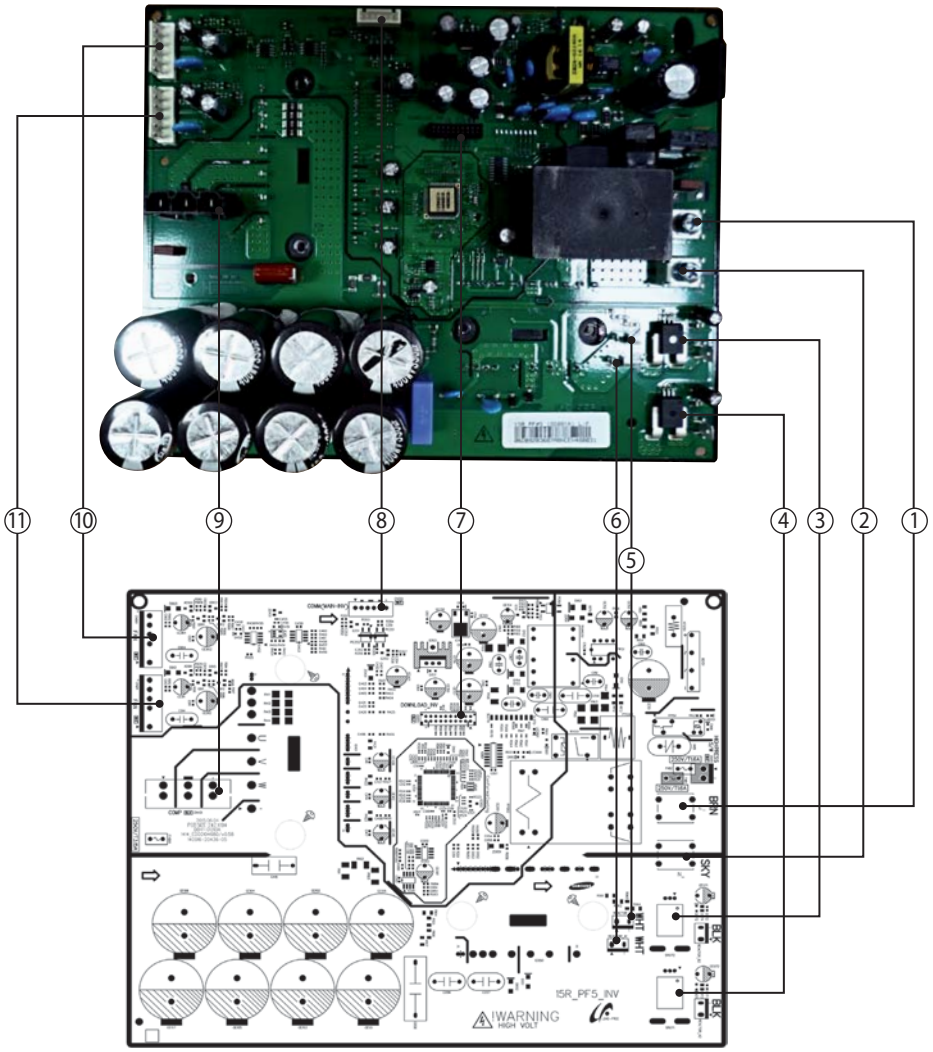
- Inverter PCB : 1Phase II: AM036/048/053FXMDCH



① REACTOR-A1/B1	② REACTOR-A2/B2	③ CN31-MAIN COMM	④ CN22-DOWNLOADER
#1: L #3: N	#Reactor-A2 : BLK #Reactor-B2 : BLK	#1 : RXD#2 : TXD #3 : GND, #4 : DC 5V #5 : DC 12V, #6 : INV. SMPS signal	#1 : RXD_ATARO, #2 : TXD_ATARO #3, #8 : N.C, #4~#7 : DATA signal #9 : GND, #10 : DC 5V
⑤ CN21-DAC/ENCODER	⑥ CN91-FAN2	⑦ CN90-FAN1	⑧ CN71-COMP.
For S/W engineer debugging	#1 : DC 360V #2 : N.C #3 : GND #4 : DC 15V #5 : FAN RPM #6 : FAN RPM feedback	#1 : DC 360V #2 : N.C #3 : GND #4 : DC 15V #5 : FAN RPM #6 : FAN RPM feedback	#1 : COMP. U-phase(RED) #2 : COMP. V-phase(BLU) #3 : COMP. U-phase(YEL)

1. Outdoor Unit PCB (cont.)

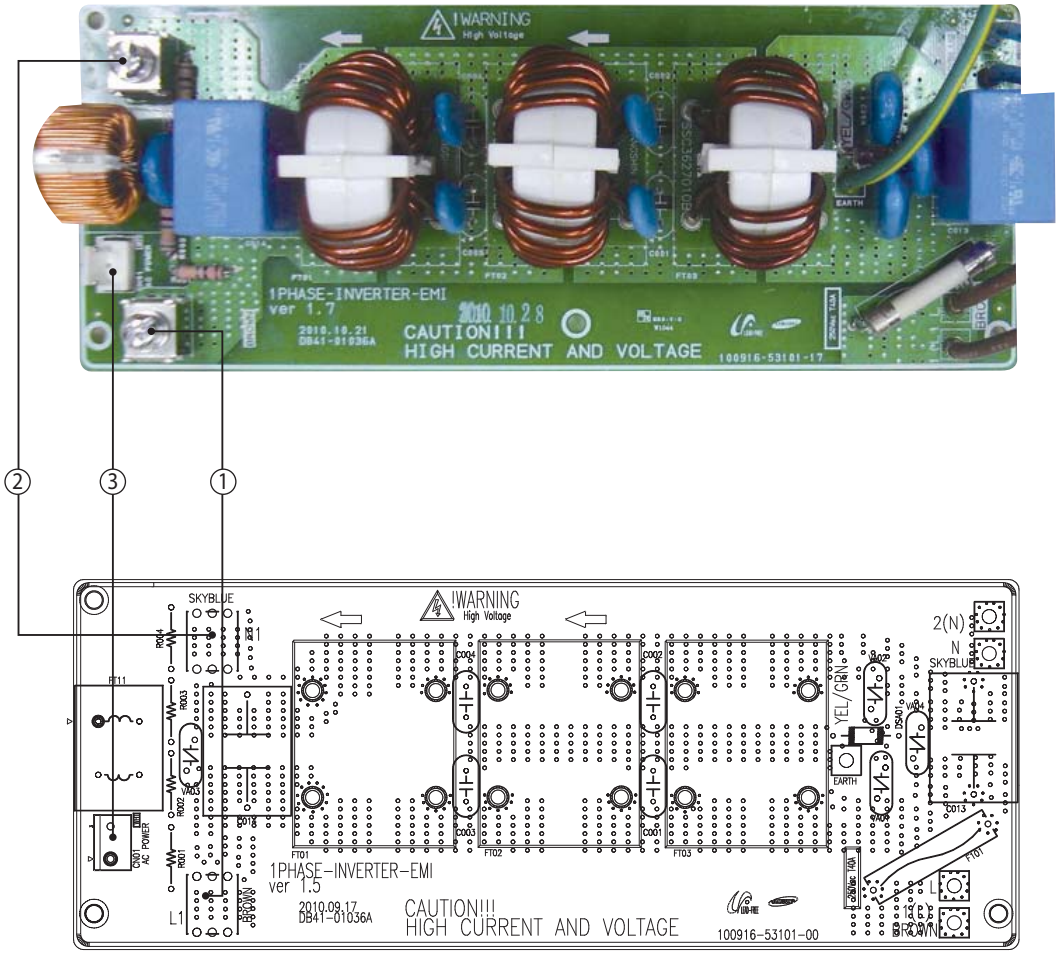
- Inverter PCB : 1Phase II: AM060MXMDCH



① **L - AC POWER** #1: L INPUT	② **N - AC POWER** #1: L INPUT	③ **REACTOR B2** #1 : REACTOR OUTPUT	④ **REACTOR A2** #1 : REACTOR INPUT
⑤ **REACTOR B1** #1: REACTOR INPUT	⑥ **REACTOR B2** #1: REACTOR INPUT	⑦ **CN306 - DOWNLOAD** #1~8 : DOWNLOAD SIGNAL #12~16 : DOWNLOAD SIGNAL #18~20 : DOWNLOAD SIGNAL #9 : GND #10,11 : DC 5V	⑧ **CN802 - EEV1** #1,2,6 : COMMUNICATION SIGNAL #2 : GND #3 : DC 5V #4 : DC 12V
⑨ **CN401 - COMP** #1: U OUTPUT #2: V OUTPUT #3: W OUTPUT	⑩ **CN901 - FAN1** #1: DC 310V #2: NC #3: GND #4~6: FAN CONTROL SIGNAL	⑪ **CN911 - FAN2** #1: DC 310V #2: NC #3: GND #4~6: FAN CONTROL SIGNAL	

1. Outdoor Unit PCB (cont.)

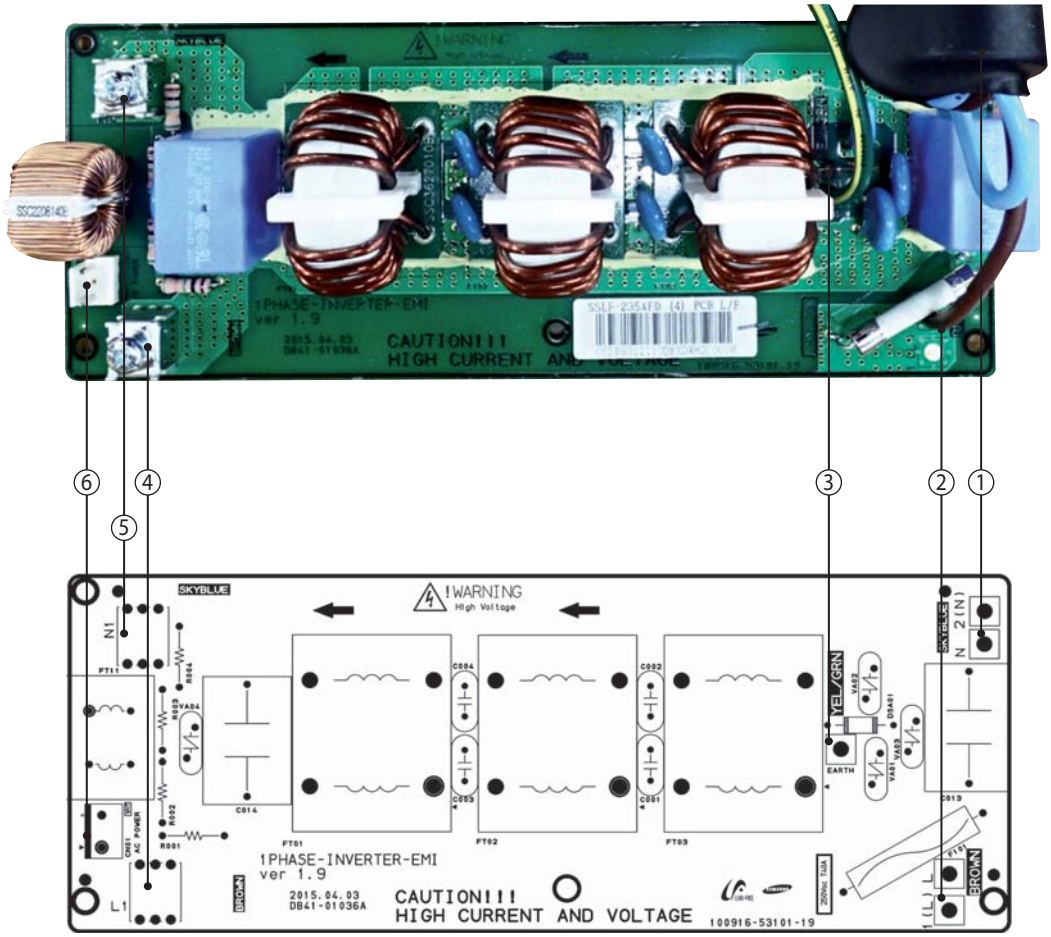
- EMI PCB : 1Phase: AM036/048/053FXMDCH



① L1-AC POWER L PHASE	② N1-AC POWER N PHASE	③ CN01-AC POWER
L1 : BRN	N1 : SKY-BLU	#1-#3 : AC 220~240V

1. Outdoor Unit PCB (cont.)

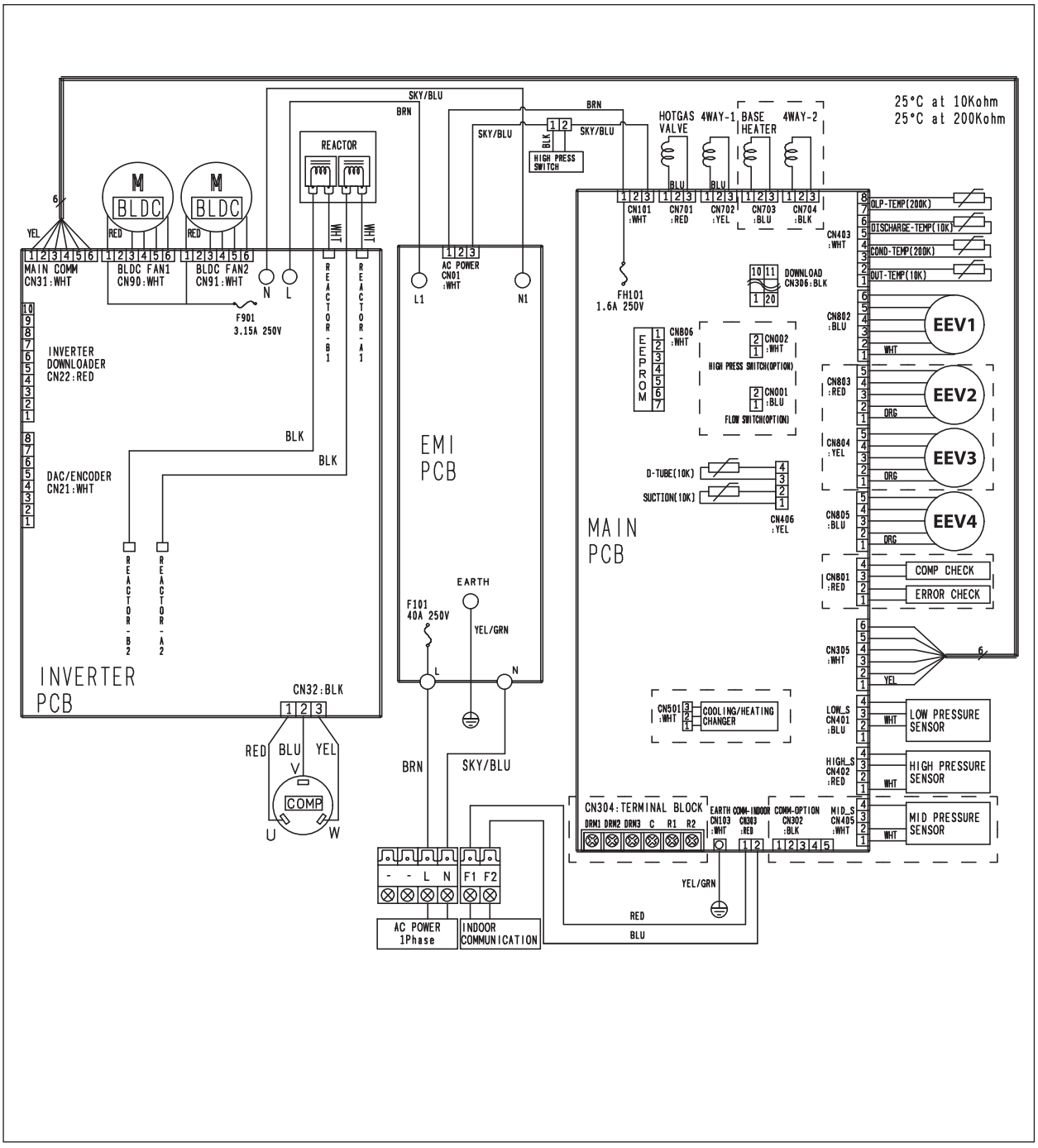
- EMI PCB : 1Phase: AM060MXMDCH



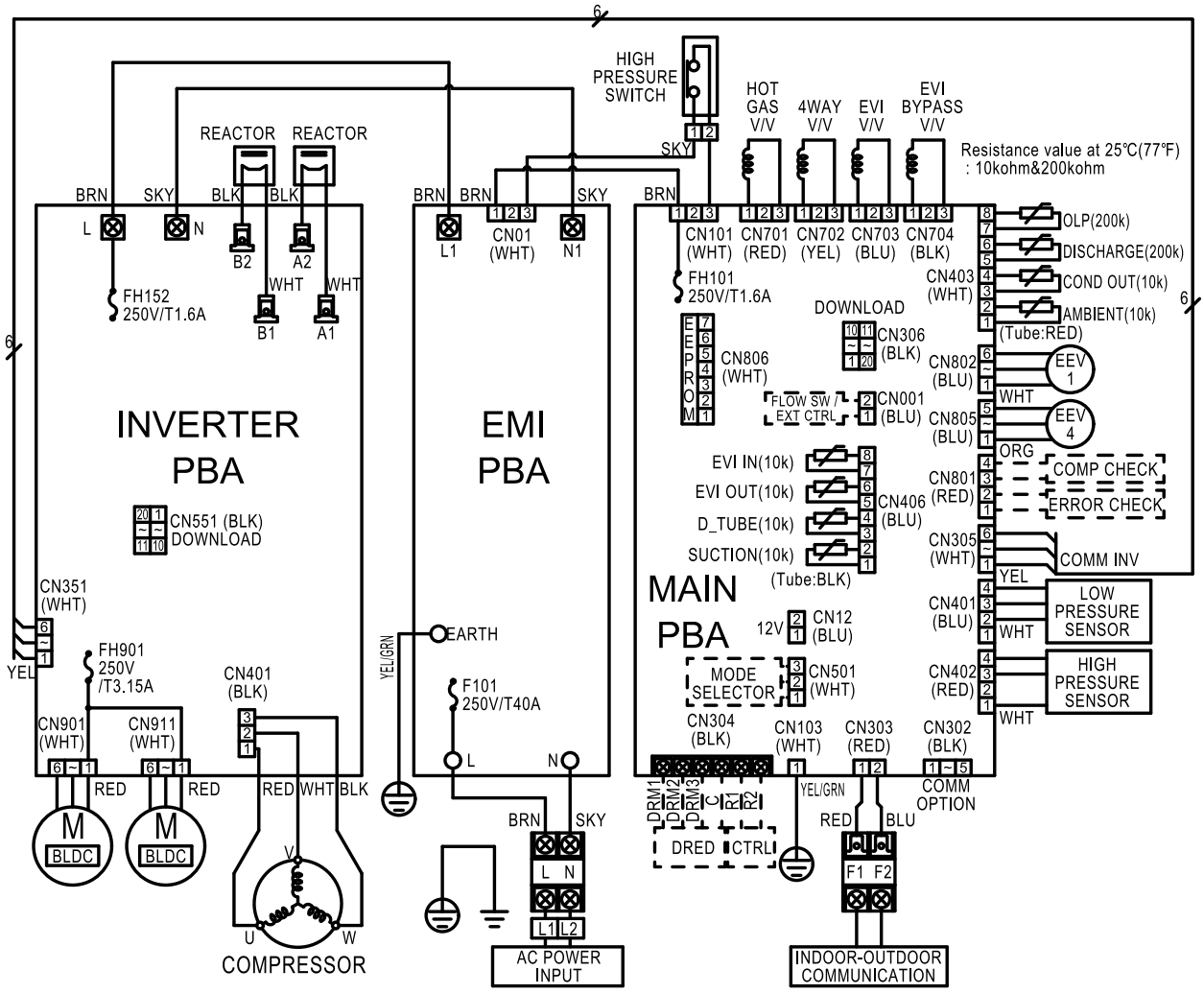
① **N - NEUTRAL** #1 : L INPUT	② **L - LIVE** #1 : L INPUT	③ **EARTH** #1 : EARTH
④ **L1** #1 : L OUTPUT	⑤ **N1** #1 : N OUTPUT	⑥ **CN403 - TEMPERATURE SENSOR** #1 : L OUTPUT #1 : N OUTPUT

■ Wiring Diagram

1. AM036/048/053FXMDCH



2. AM060MXMDCH



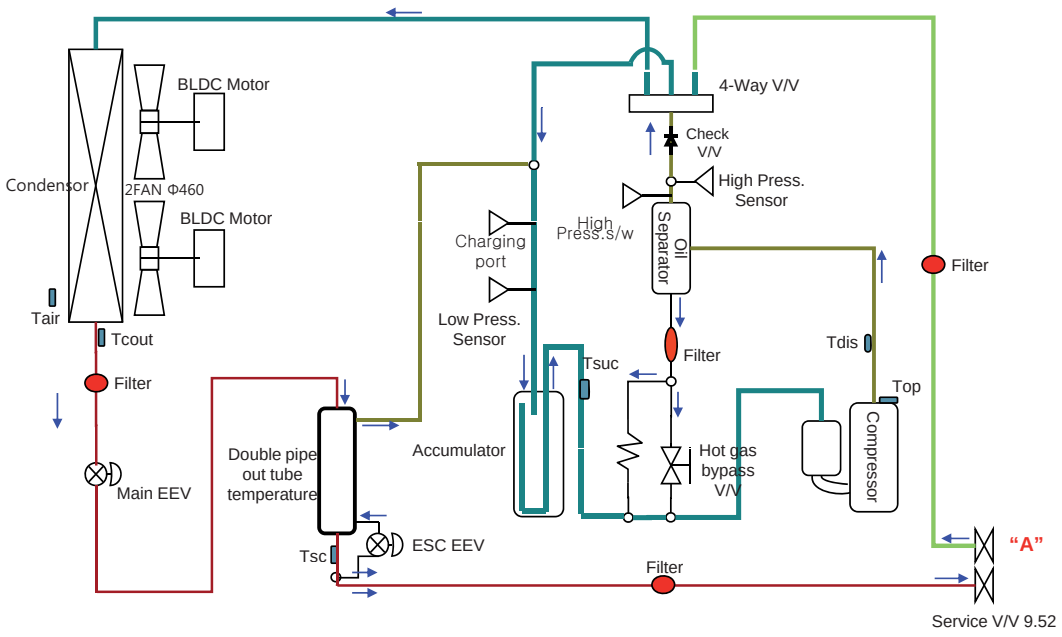
USE COPPER SUPPLY WIRES.
UTILISER DES FILS D'ALIMENTATION EN CUIVRE.

BAR CODE

■ Reference Sheet

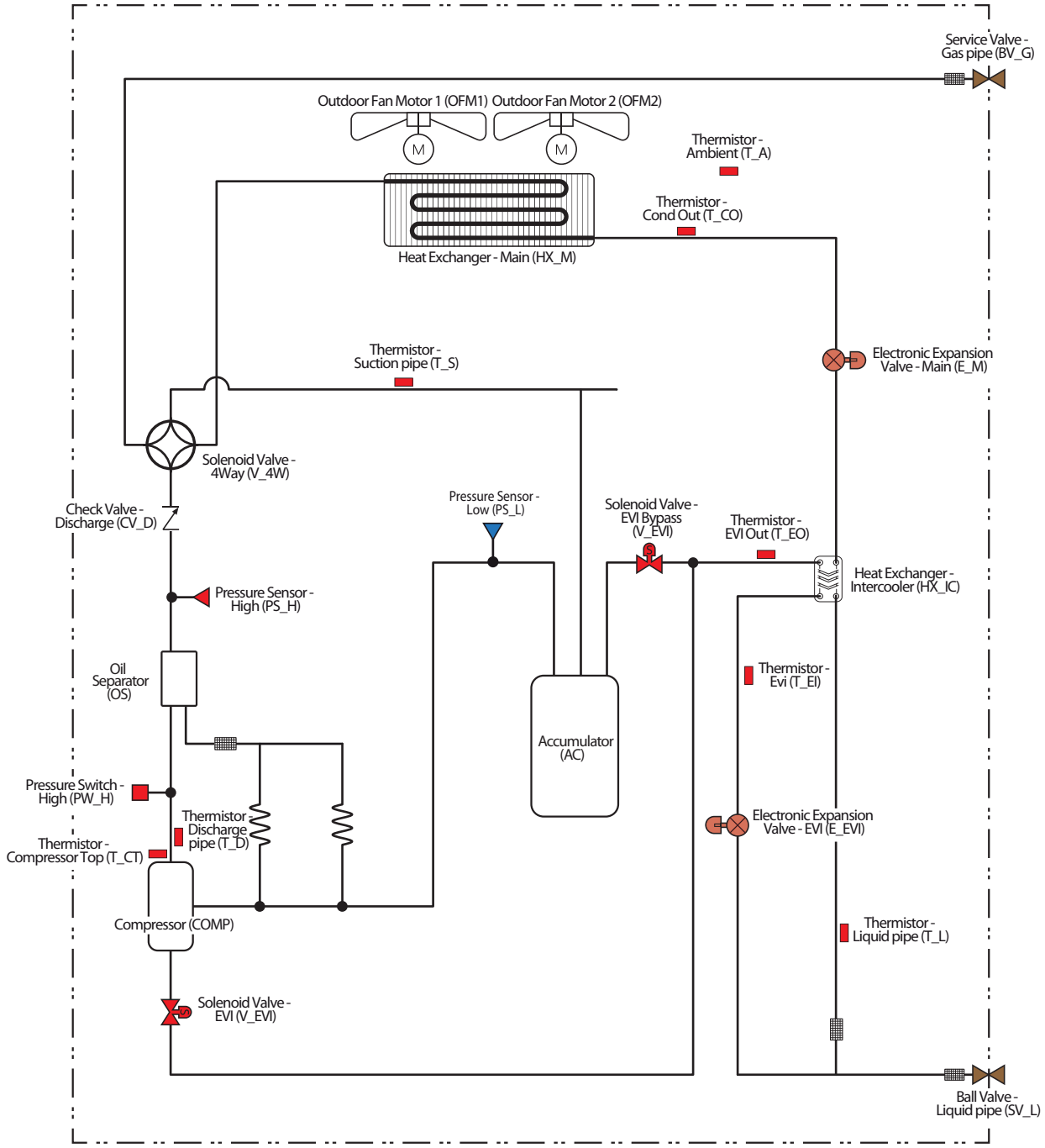
1. Refrigerant cycle diagram

1-1. AM036/048/053FXMDCH



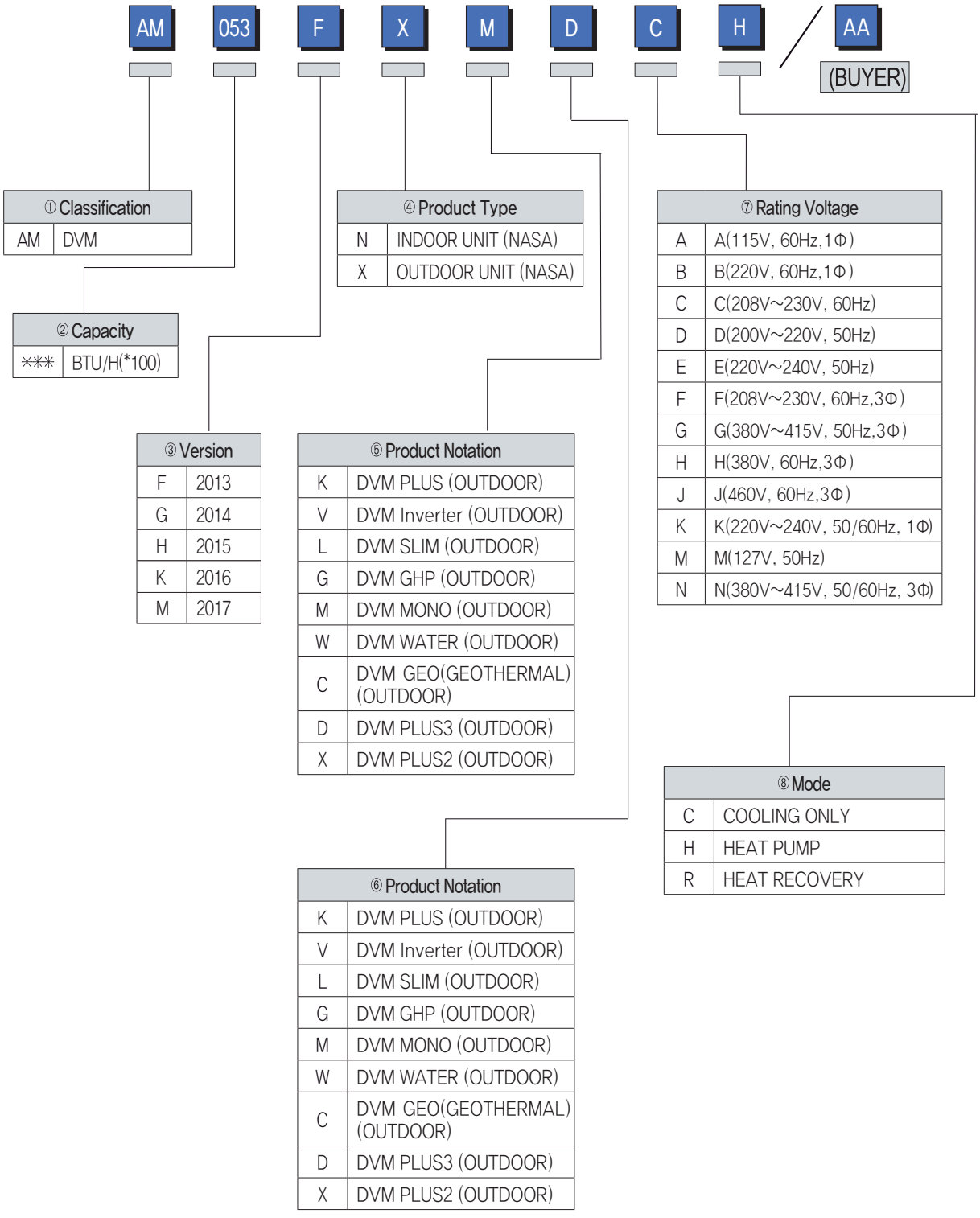
	Name	AM036FXMDCH AM048FXMDCH RD050MHXGA(EA)	AM053FXMDCH
"A"	Service V/V	15.88	19.05

1-2. AM060MXMDCH



2. Nomenclatures

■ OUTDOOR UNIT



① Classification	
AM	DVM

② Capacity	
***	BTU/H(*100)

③ Version	
F	2013
G	2014
H	2015
K	2016
M	2017

④ Product Type	
N	INDOOR UNIT (NASA)
X	OUTDOOR UNIT (NASA)

⑤ Product Notation	
K	DVM PLUS (OUTDOOR)
V	DVM Inverter (OUTDOOR)
L	DVM SLIM (OUTDOOR)
G	DVM GHP (OUTDOOR)
M	DVM MONO (OUTDOOR)
W	DVM WATER (OUTDOOR)
C	DVM GEO(GEOTHERMAL) (OUTDOOR)
D	DVM PLUS3 (OUTDOOR)
X	DVM PLUS2 (OUTDOOR)

⑥ Product Notation	
K	DVM PLUS (OUTDOOR)
V	DVM Inverter (OUTDOOR)
L	DVM SLIM (OUTDOOR)
G	DVM GHP (OUTDOOR)
M	DVM MONO (OUTDOOR)
W	DVM WATER (OUTDOOR)
C	DVM GEO(GEOTHERMAL) (OUTDOOR)
D	DVM PLUS3 (OUTDOOR)
X	DVM PLUS2 (OUTDOOR)

⑦ Rating Voltage	
A	A(115V, 60Hz,1Φ)
B	B(220V, 60Hz,1Φ)
C	C(208V~230V, 60Hz)
D	D(200V~220V, 50Hz)
E	E(220V~240V, 50Hz)
F	F(208V~230V, 60Hz,3Φ)
G	G(380V~415V, 50Hz,3Φ)
H	H(380V, 60Hz,3Φ)
J	J(460V, 60Hz,3Φ)
K	K(220V~240V, 50/60Hz, 1Φ)
M	M(127V, 50Hz)
N	N(380V~415V, 50/60Hz, 3Φ)

⑧ Mode	
C	COOLING ONLY
H	HEAT PUMP
R	HEAT RECOVERY

■ Check Operation & Amount of Refrigerant Automatically Checking

1. Check Operation

1-1 Check Operation

1) What is the Check Operation?
DVM MINI main components defective check and check the status of the installation, provide guidelines that can promptly and accurately resolve the problems that may occur in the field.
If does not end the Automatic Commissioning, normal operation is impossible to enter, it should protect the system from the abnormal state. ("UP")

2) Check operation Preliminary checking.
(1) Check the Power cable of Indoor / Outdoor Unit and communication wire.
(2) Turn on the power 3 hours before to start the Check operation. (Crankcase heater to be heated sufficiently.)
(3) Check before applying power voltage and phase using a phase tester and voltmeter.
phase-to-phase, 220V (R-N, S-N, T-N).
(4) Power on, perform the tracking. (Outdoor Unit inspects Indoor Unit and optional.)
(5) Card to verify the installation of the control box front : must be record the installation details.
※ Necessarily turn on the power 3 hours before to start the Check operation.

3) How to use the Check operation.
(1) Check operation, use the Key Mode. (Pressing the K1 Tact Switch for a long time)

- If does not complete the Check operation, Display the "UP"(Unprepared) on the LED after checking communication. (Compressor to operate general operation is prohibited.)

※ UP Mode will be turned off automatically at finished the Check operation.

- Check operation is carried out by the operating conditions. (From 30 minutes to maximum 50 minutes)
- During Check operation due to the valve check, the noise can be generated. (Sustained abnormal noise occurs, check it)

(2) When an error occurs during the Check operation, check the error code in the product and then service it.

(3) Shut down the Check operation, resulting report will be issued using the S-NET or S-CHECKER.

- The resulting report of the "Undetermined"item, troubleshoot the accordance with the service manual.
- Troubleshoot all the items of "Undetermined" and then restart the Check operation.

(4) Check the following as Check operation. (Heating / Cooling)

- Check the Cooling and Heating operation is progressing well.
- Individual Indoor Unit control : check the wind direction, wind speed.
- Check the Indoor and Outdoor abnormal noise.
- Check the drainage of the Indoor Unit cooling operation.
- More operation : Checking status by using the S-NET.

(5) Refer to manual and explain air conditioner usage to user.

(6) Deliver this installation guide so that customer retain.

※ If out of warranty coverage and bounds, installation, operation according to the conditions the some of items displayed as "Undetermined" and judgment is not.
Ex) system that module installed : If the outdoor unit is not operation by the load on the indoor and outdoor, corresponding Sub Outdoor Unit does not judge the inspection entries. (However, Indoor / Outdoor Temperature sensor and Pressure sensor judgment is available.)

4) Inspection item of the Check operation

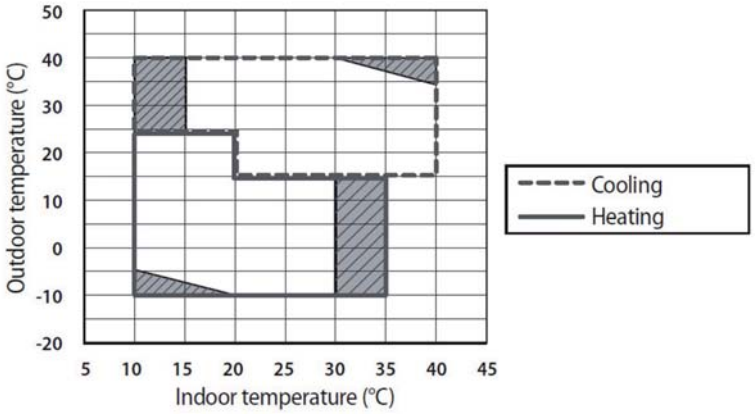
During the Check operation of the DVM MINI, defect check items are as follows.

- Indoor Unit Temperature sensor (Indoor temperature of each Indoor Unit, EVA In/Out Temperature sensor)
- Outdoor Unit Temperature sensor
  (Outdoor temperature of each Outdoor Unit, Cond_Out, Suction, Liquid Pipe Temperature sensor)
- Outdoor Unit High Pressure sensor & Low Pressure sensor
- Outdoor Unit Compressor : Judgment of the operation current
- Cycle state judgment of the Outdoor Unit
- Outdoor Unit 4Way Valve : Judgment of the operation
- Outdoor Unit MAIN EEV : Judgment of the operation

(※ The operation mode of the Automatic Commissioning : "Heating" only if the detection.)

5) Warranty Coverage of the Check operation

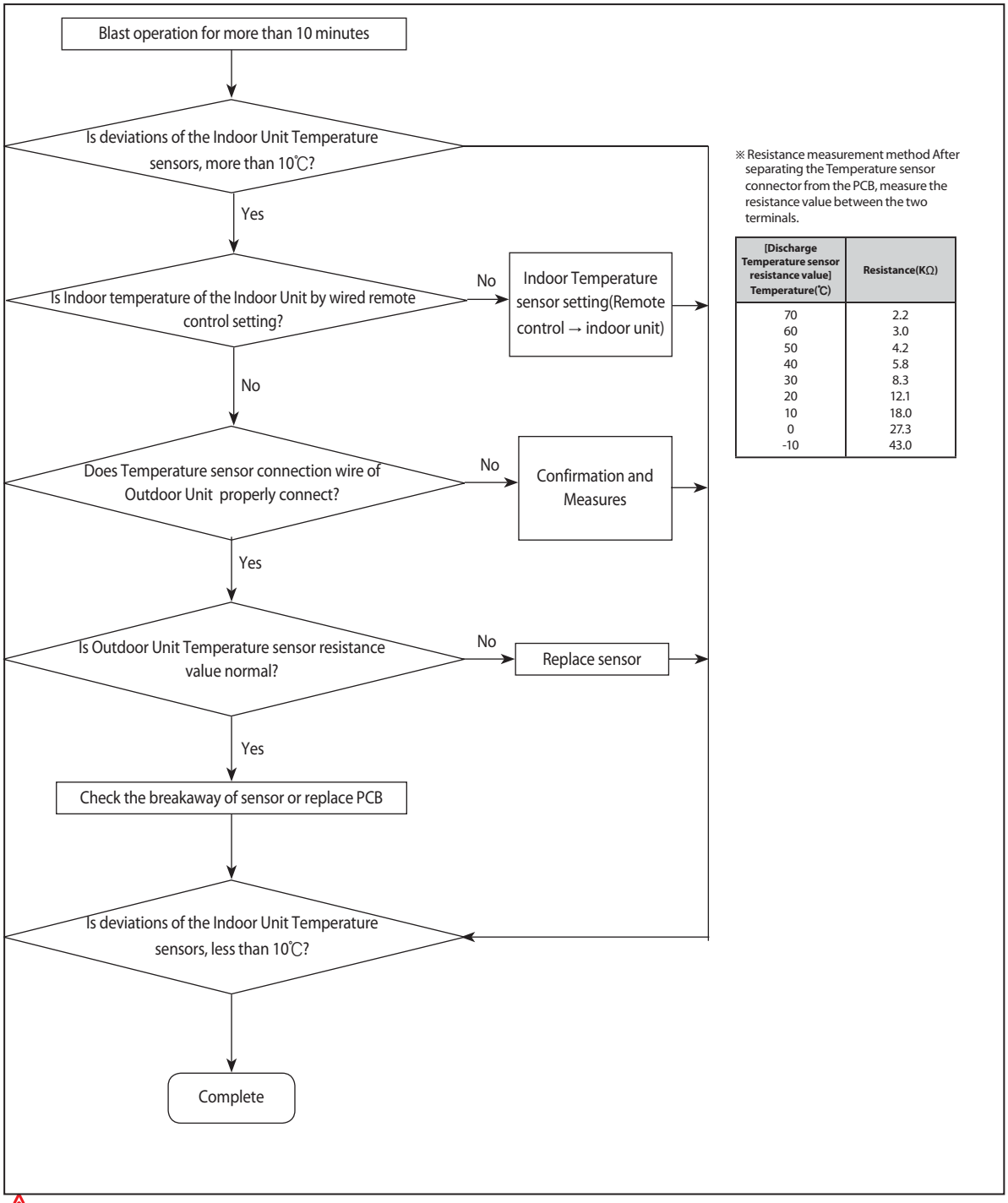
As follows, in order to accurately measure Indoor / Outdoor temperature conditions in the Check operation is carried out.



- Heating / Cooling mode is automatically selected of Check operation.
- Oblique line marked area in the during operation of the system can be protection control.
  (Check operation of normal judgment can be difficult by the protection control operation.)
- If out of warranty coverage and the boundary area : Check operation judgment accuracy may be reduced.

1-2 How to troubleshoot of the "Undetermined"

1) Indoor Unit Temperature sensor
   - ■ Inspection item : Indoor temperature of each Indoor Unit, EVA In / Out Temperature sensor
   - ■ Error code: None (The resulting report "Undetermined")
   - ■ Determine the status of the Temperature sensor of the Indoor Unit installed before the compressor start.
   - ■ Commissioning methods



※ Resistance measurement method After separating the Temperature sensor connector from the PCB, measure the resistance value between the two terminals.

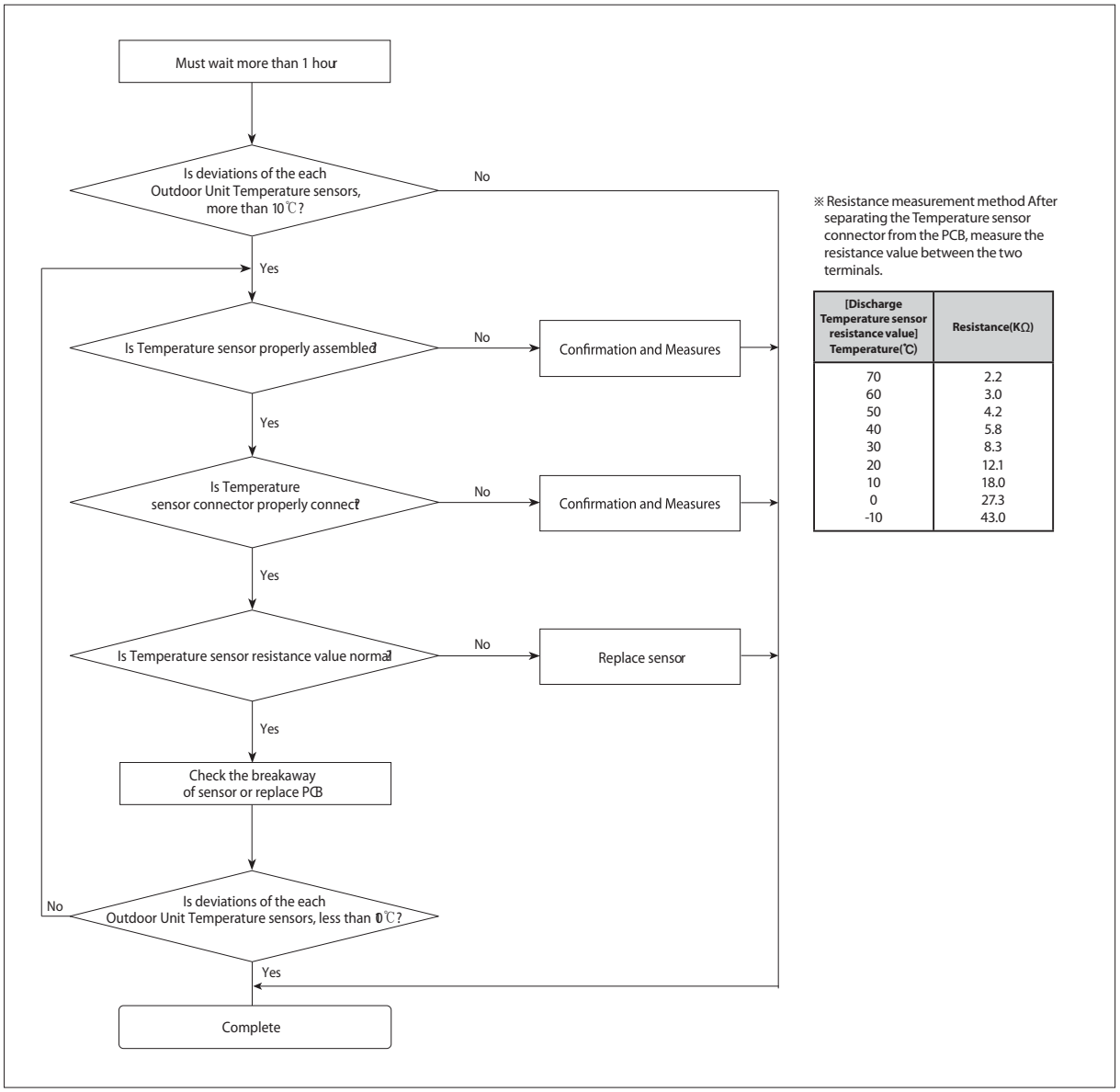
[Discharge Temperature sensor resistance value] Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

⚠ [Caution]

- If the Outdoor Unit with a history of operation (Automatic commissioning inclusion) : Must be carried out Automatic Commissioning after 1 hour from final operation stopped.

2) Outdoor Unit Temperature sensor

- Inspection item : Outdoor temperature of each Outdoor Unit, Cond_Out, Suction, Liquid pipe temperature sensor
- Error code: None (The resulting report "Undetermined")
- Determine the status of the Temperature sensor of the each Outdoor Unit installed before the compressor start.
- If the judgment of Outdoor Unit Temperature sensor is "Undetermined" : Checking in accordance with the following order.



※ Resistance measurement method After separating the Temperature sensor connector from the PCB, measure the resistance value between the two terminals.

[Discharge Temperature sensor resistance value] Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

⚠ [Caution]

- If the Outdoor Unit with a history of operation (Automatic commissioning inclusion) : Must be carried out Automatic Commissioning after 1 hour from final operation stopped.

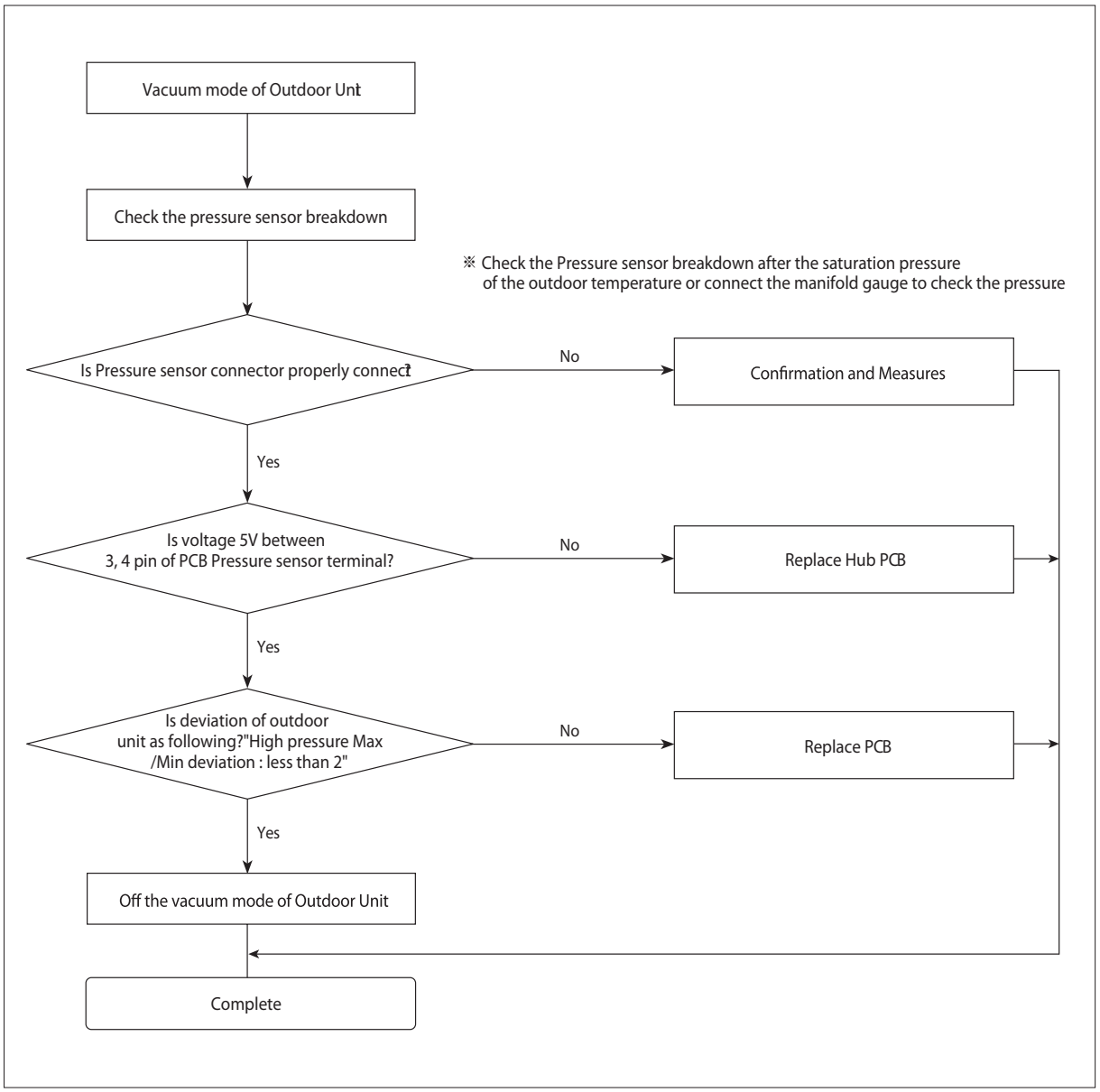
3) Pressure sensor

■ Inspection item : High/Low Pressure sensor of the independent installed Outdoor Unit.

■Error code: None (The resulting report "Undetermined")

■ Determine the status of the Pressure sensor of the independent installed Outdoor Unit before the compressor start.

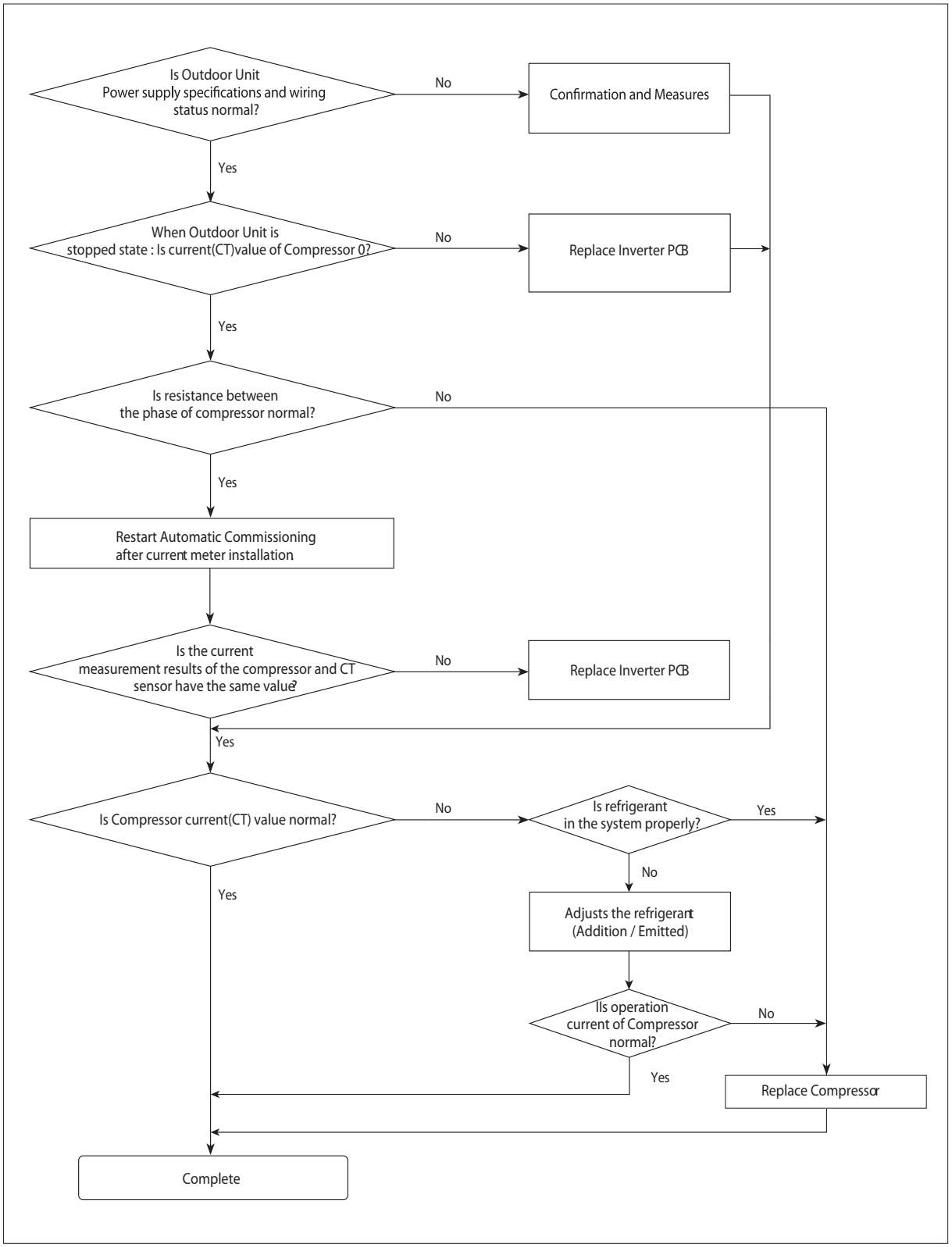
■ If the judgment of Outdoor Unit Pressure sensor is "Undetermined" : Checking in accordance with the following order.



[Caution]

- If the Outdoor Unit with a history of operation (Automatic commissioning inclusion) : Maintain the vacuum mode for more than 5 minutes.

4) Abnormal operation of the Compressor
- ■ Inspection item : Operation current of Outdoor Unit Compressor.
- ■ Error code: None (The resulting report "Undetermined")
- ■ Determine the status of the operating current of the each Outdoor Unit Compressor.
- ■ If the judgment of operation current of Outdoor Unit Compressor is "Undetermined" : Checking in accordance with the following order.



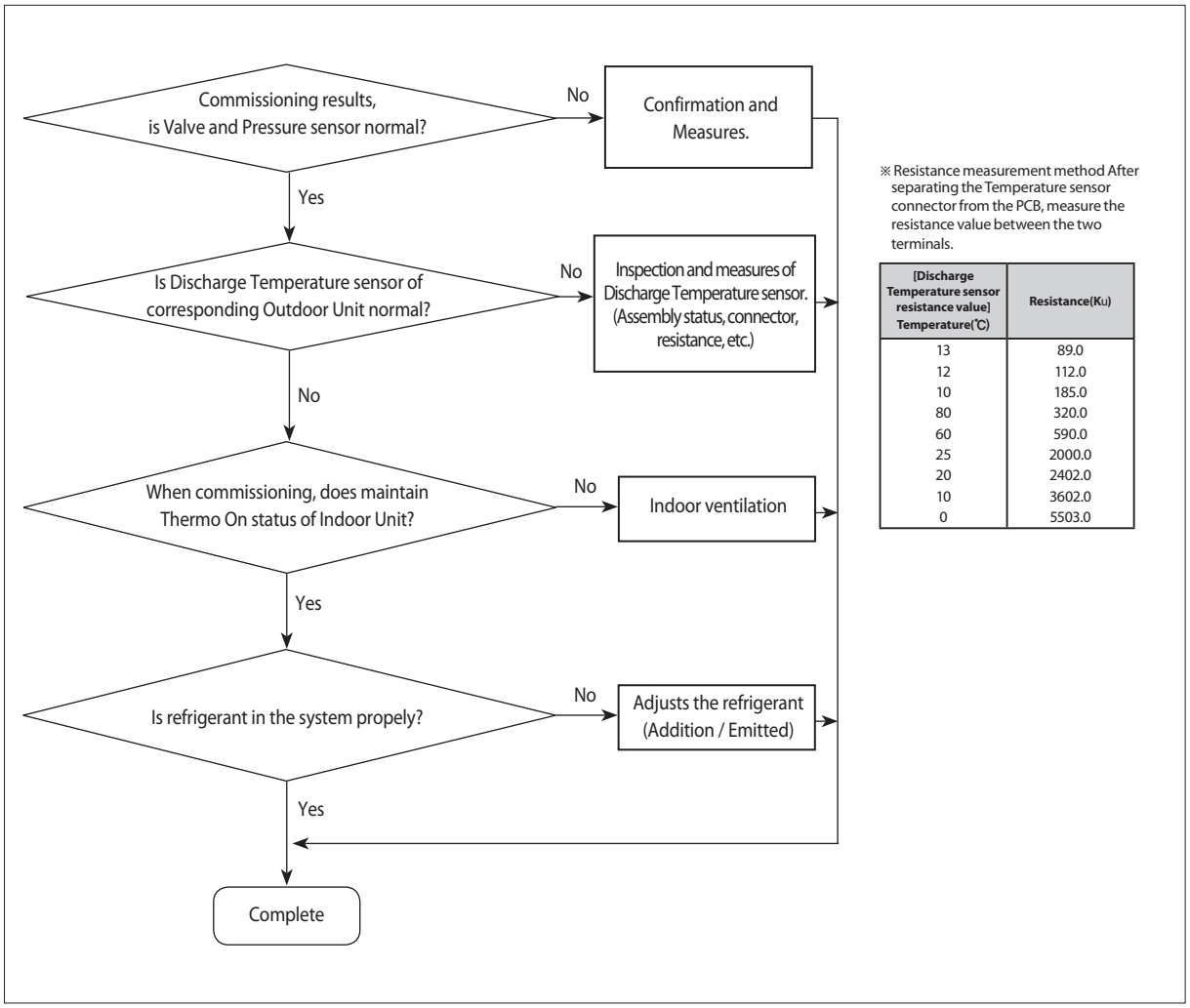
5) Cycle status

■ Inspection item : Cycle status of Outdoor Unit.

■ Error code: None (The resulting report "Undetermined")

■ Determine the Cycle status of the each Outdoor Unit.

■ If the judgment of Cycle status is "Undetermined" : Checking in accordance with the following order.

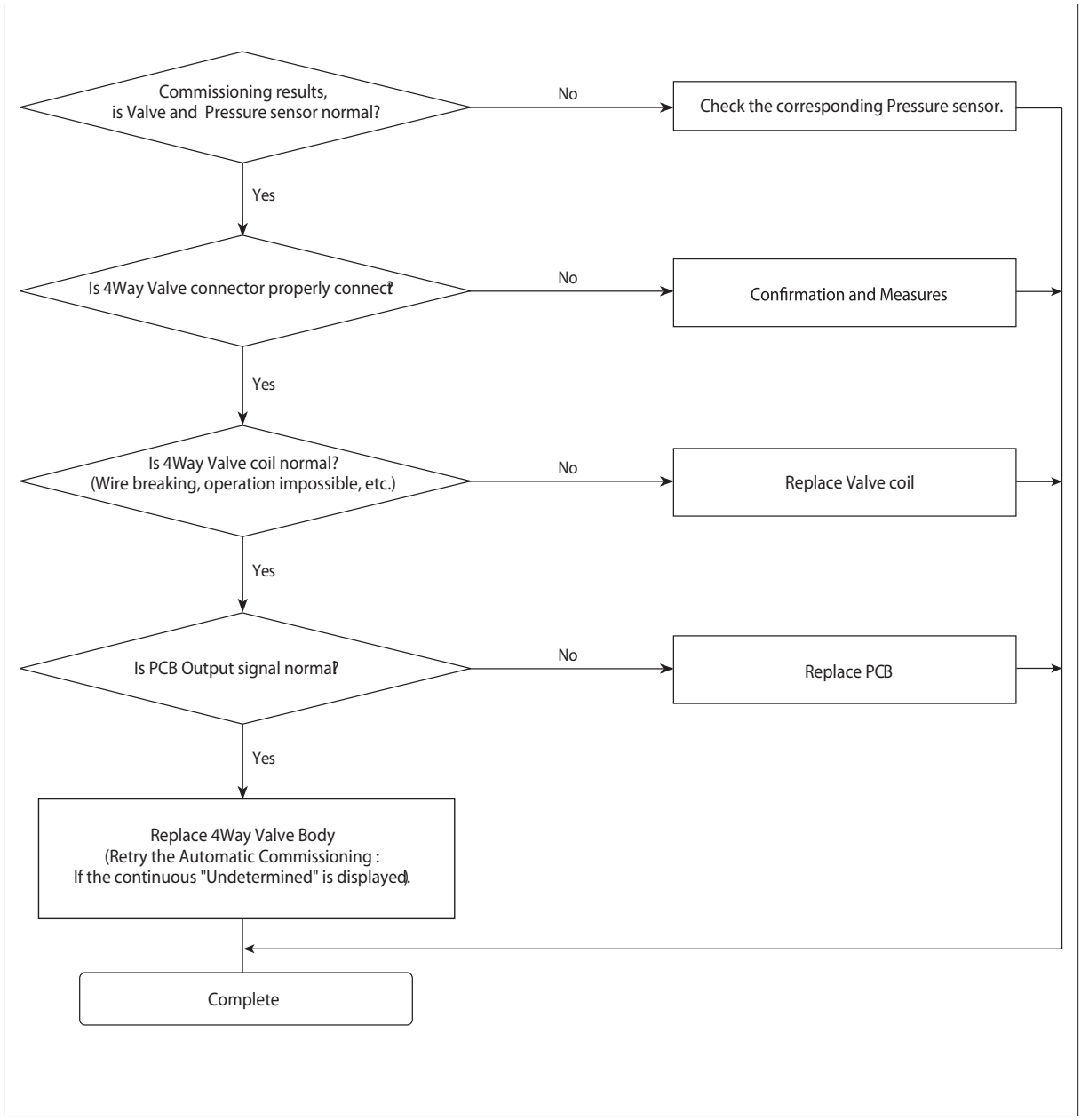


※ Resistance measurement method After separating the Temperature sensor connector from the PCB, measure the resistance value between the two terminals.

[Discharge Temperature sensor resistance value] Temperature(℃)	Resistance(KΩ)
13	89.0
12	112.0
10	185.0
80	320.0
60	590.0
25	2000.0
20	2402.0
10	3602.0
0	5503.0

6) 4Way Valve

■ Inspection item : 4Way Valve of Outdoor Unit.
■ Error code: None (The resulting report "Undetermined")
■ Determine the 4Way Valve operation status of the each Outdoor Unit.
■ If the judgment of 4Way Valve is "Undetermined" : Checking in accordance with the following order.



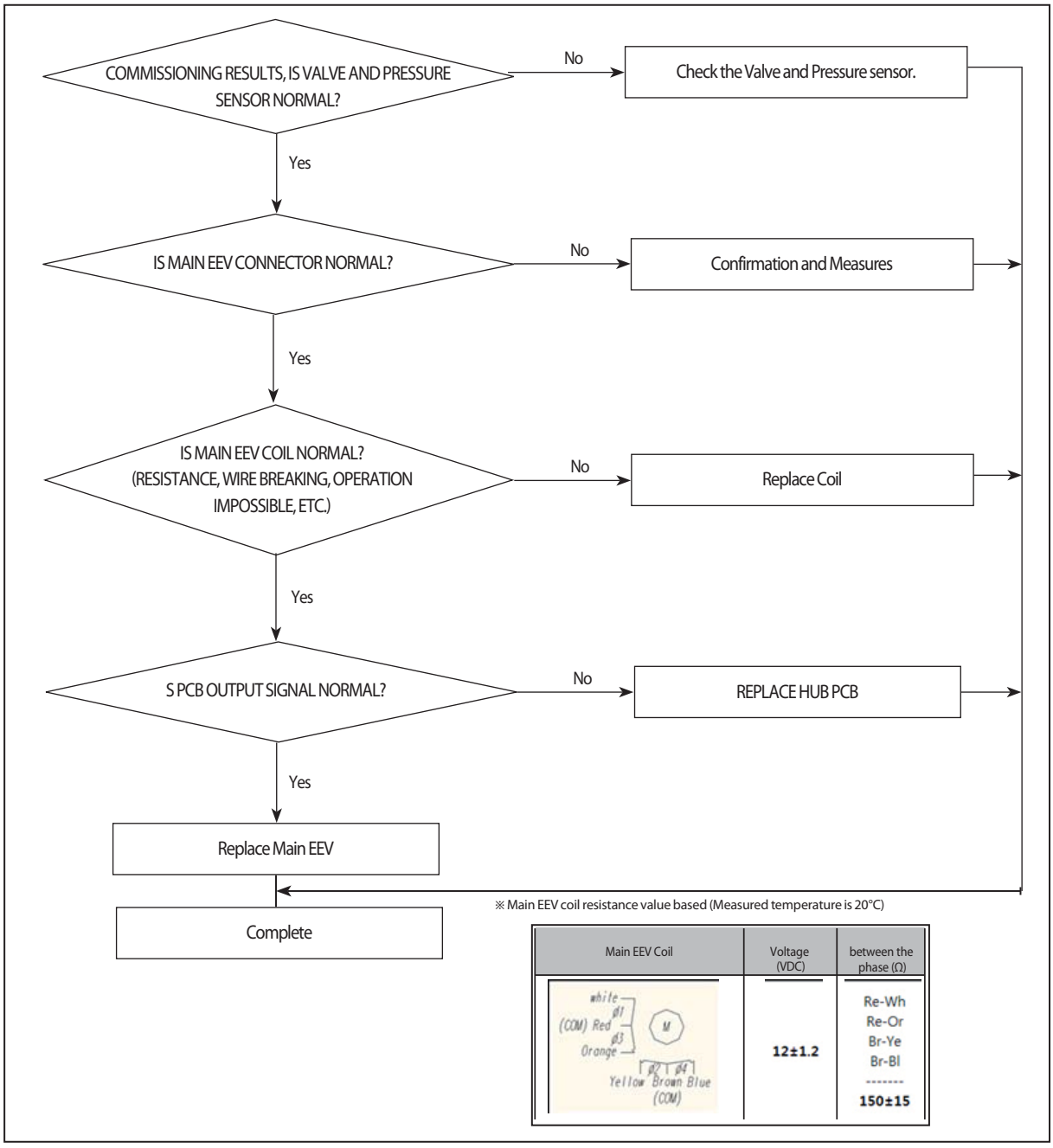
7) Main EEV

■ Inspection item : Main EEV of Outdoor Unit.(Automatic Commissioning : Heating only)

■ Error code: None (The resulting report "Undetermined")

■ Determine the Main EEV operation status of the each Outdoor Unit.

■ If the judgment of Main EEV is "Undetermined" : Checking in accordance with the following order.



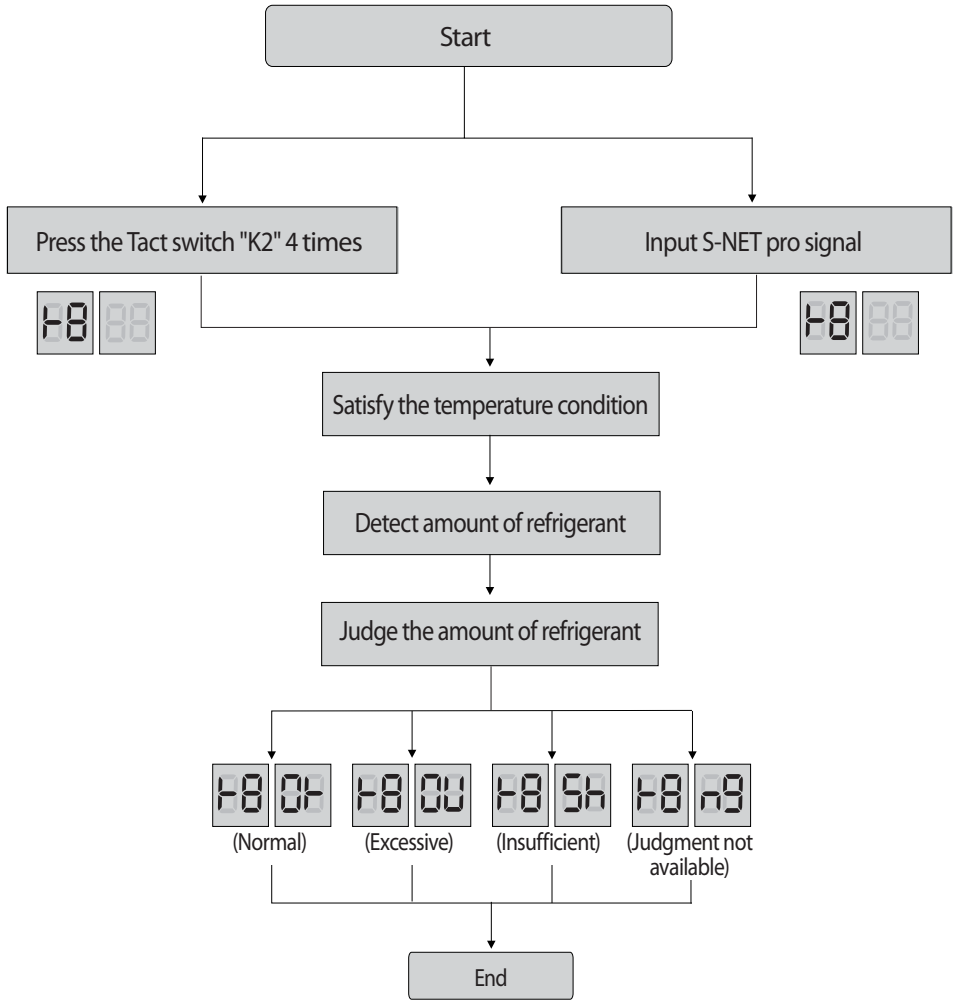
1-3 Automatic Commissioning Error Code

Division	Error Code	Description	Remark
Dedicated Error Code	E503	Service Valve is closed	Refer to "Service Valve"
	E505	High pressure sensor breakdown	Refer to "High/Low pressure sensor (Module installed)"
	E506	Low pressure sensor breakdown	

※ Other error codes : Refer to Service Manual.

2. Automatic refrigerant amount detection function (Checking th amount of refrigerant)

This function detects amount of refrigerant in the system through refrigerant amount detection operation.



[Caution]

- If the operation cycle is not stable, refrigerant amount detection operation may end.
- Accuracy of the result may decrease if the product was not operated for long period of time before the refrigerant amount detection operation. Use the refrigerant amount detection operation function after operating the product in cooling mode for at least 30 minutes.
- Product may trigger protection operation depending on the installation environment. In this case, result of refrigerant amount detection may not be accurate.
- If escape the warranty temperatures, can not get the accurate results.
  - Indoor: 20 ~ 30 °C
  - Outdoor: 5 ~ 43 °C

Actions to take after the detection result

- Exessive amount of refrigerant
  - Discharge 5% the detected amount of refrigerant and restart the refrigerant amount detection operation.
- Insufficient amount of refrigerant
  - Add 5% of the detected amount of refrigerant and restart the refrigerant amount detection operation.
- Judgment not available
  - Check if the refrigerant amount detection operation was executed within guaranteed temperature range. Execute trial operation to check if there's any other problems on the system.

SAMSUNG

GSPN (GLOBAL SERVICE PARTNER NETWORK)

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Europe, CIS, Mideast & Africa	gspn1.samsungcsportal.com
Asia	gspn2.samsungcsportal.com
North & Latin America	gspn3.samsungcsportal.com
China	china.samsungportal.com

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