

## 12. Troubleshooting

### 12-1 Items to be checked first

- The input voltage should be rating voltage  $\pm 10\%$  range.  
The air conditioner may not operate properly if the voltage is out of this range.
- Is the link cable linking the indoor unit and the outdoor unit linked properly?  
The indoor unit and the outdoor unit shall be linked by 4 cables.  
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.  
Otherwise the air conditioner may not operate properly.
- When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the air conditioner.

No	Operation of air conditioner	Explanation
1	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the INDOOR FAN should operate. <b>[In case of heat pump model]</b> In a HEAT operation mode, the compressor does not operate at a room temperature lower than the setting temperature that indoor fan should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew.
2	Compressor stops operation intermittently in DRY(🌀) mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
3	<b>[In case of heat pump model]</b> Compressor of the outdoor unit is operating although it is turned off in a HEAT mode.	When the unit is turned off while de-ice is activated, the compressor continues operation for up to 9 minutes(maximum) until the deice is completed.
4	<b>[In case of heat pump model]</b> The compressor and indoor fan stop intermittently in HEAT mode.	The compressor and indoor fan stop intermittently if room temperature exceeds a setting temperature in order to protect the compressor from overheated air in a HEAT mode.
5	<b>[In case of heat pump model]</b> Indoor fan and outdoor fan stop operation intermittently in a HEAT mode.	The compressor operates in a reverse cycle to remove exterior ice in a HEAT mode, and indoor fan and outdoor fan do not operate intermittently for within 20% of the total heater operation

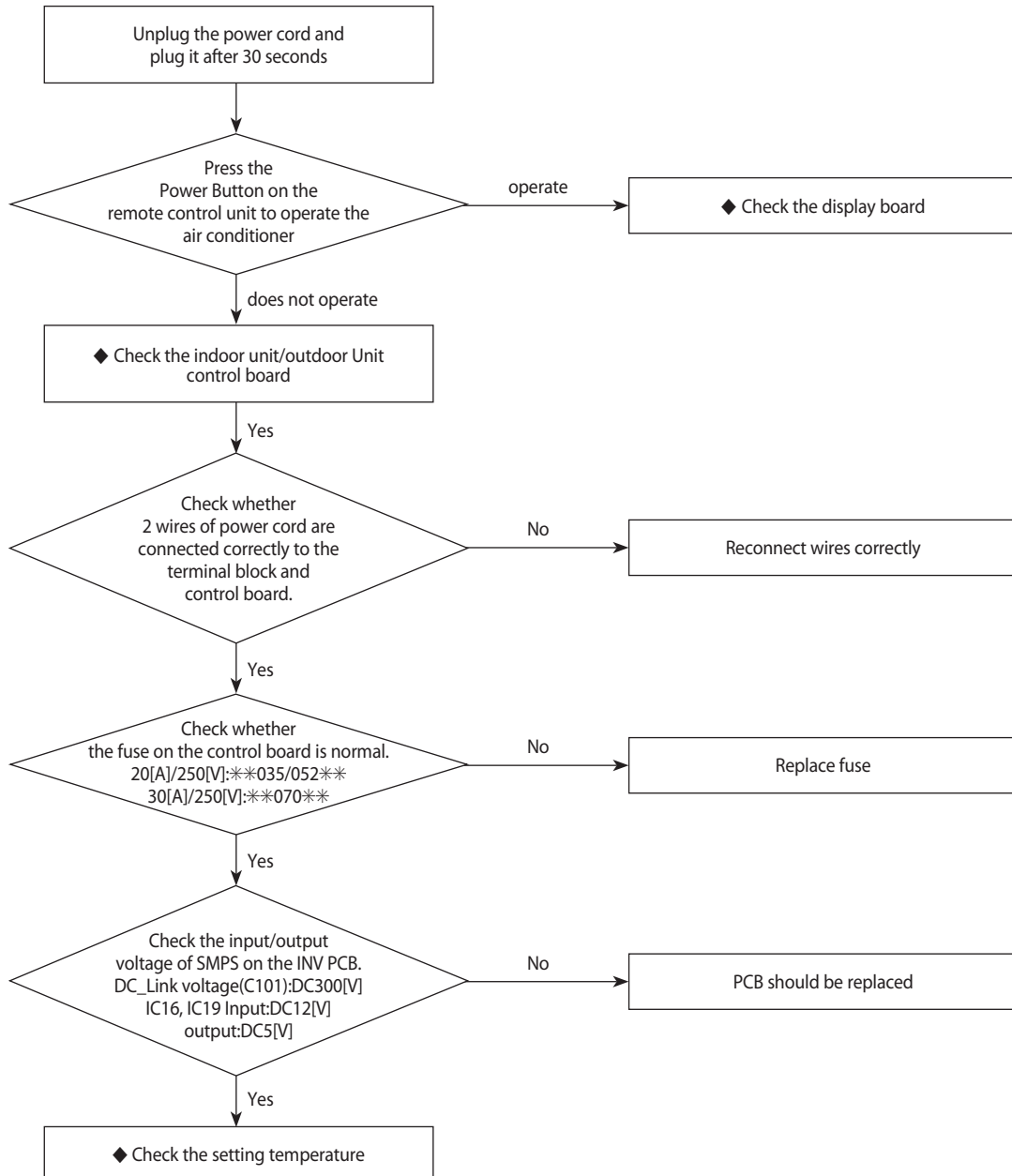
## 12-2 Fault Diagnosis by Symptom

### 12-2-1 No Power (completely dead)-Initial diagnosis

1. Checklist :

- 1) Is input voltage normal?
- 2) Is AC power linked correctly?
- 3) Is input voltage of DC regulator IC KA7805 (IC16, IC19) normal? (11VDC-12.5VDC) - Outdoor Controller
- 4) Is output voltage of DC regulator IC KA7805 (IC16, IC19) normal? (4.5VDC-5.5VDC) - Outdoor Controller

2. Troubleshooting procedure

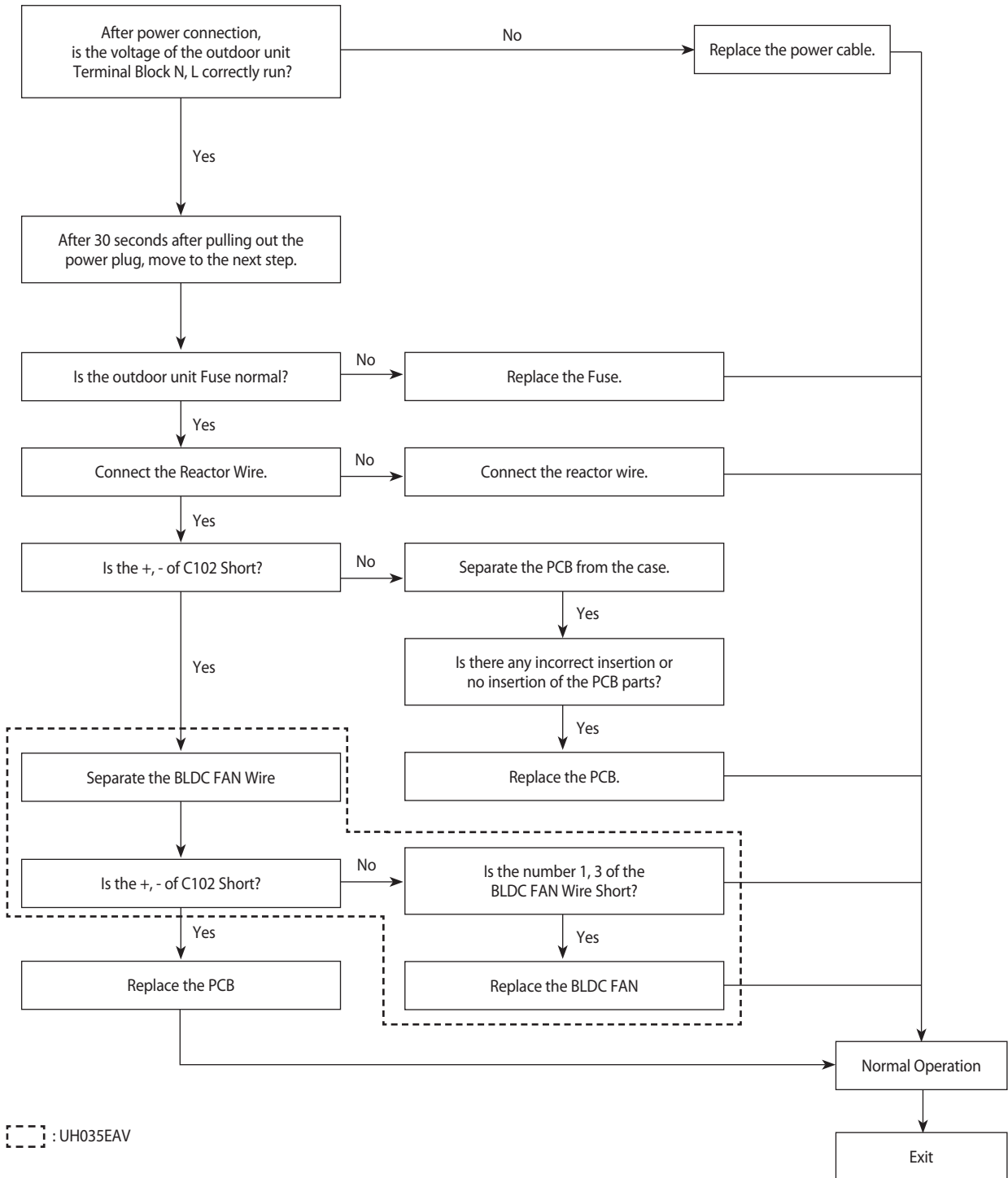


## 12-2-2 The Outdoor unit power supply error

1. Checklist :

- 1) Are the input power voltage and power connection correct?
- 2) Is there any Fuse Short of the indoor?outdoor unit?
- 3) Is the Reactor Wire of the outdoor unit correctly connected?

2. Troubleshooting procedure

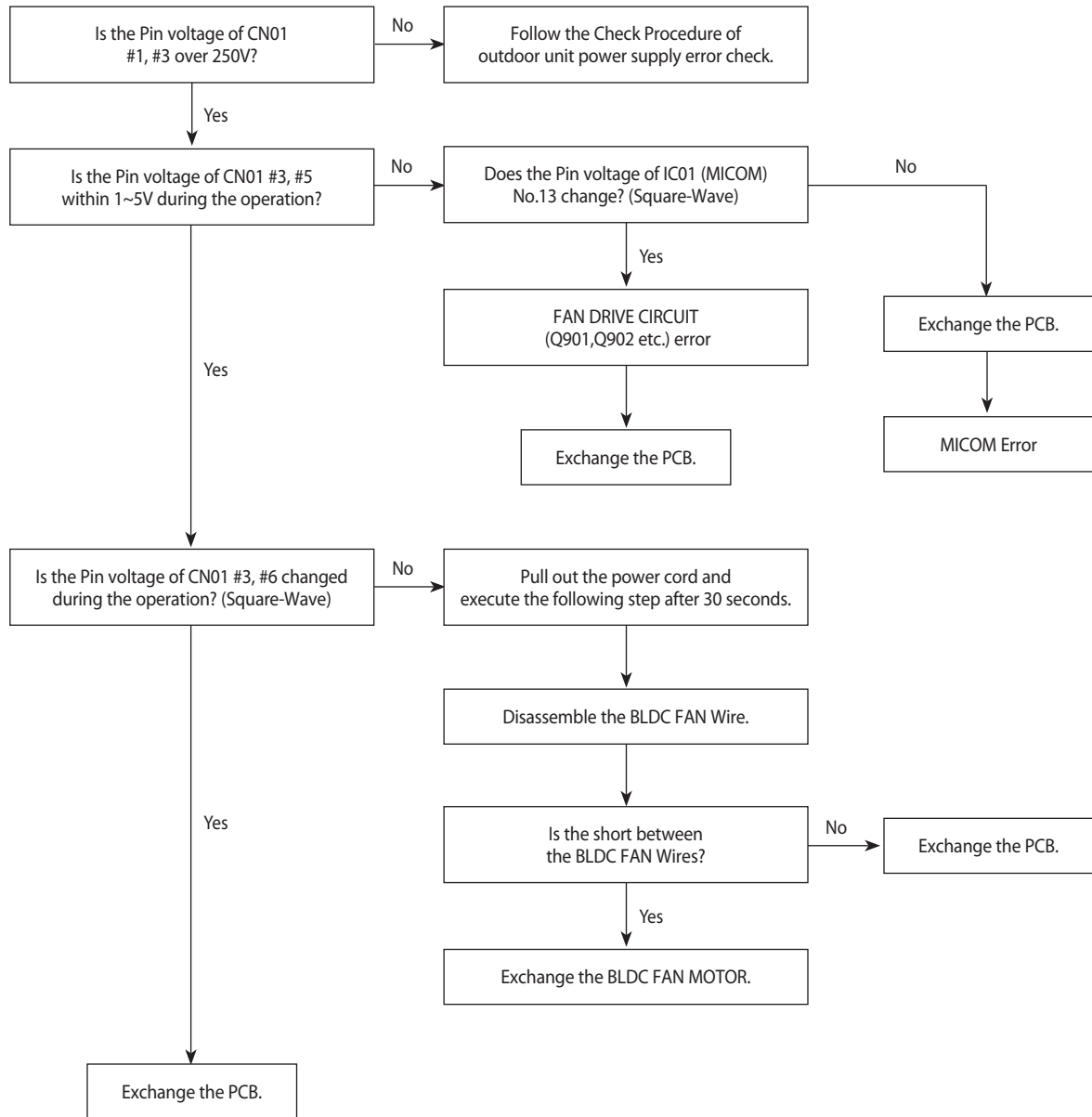


### 12-2-3 The Outdoor unit Fan error (only UH035EAV)

1. Checklist :

- 1) Are the input power voltage and the power connection correct?
- 2) Is the motor wire connected to the outdoor PCB correctly?
- 3) Is there no assembly error or none-assembly in the terminal of motor wire connector?
- 4) Is there no obstacle at the surrounding of motor and propeller?

2. Troubleshooting procedure

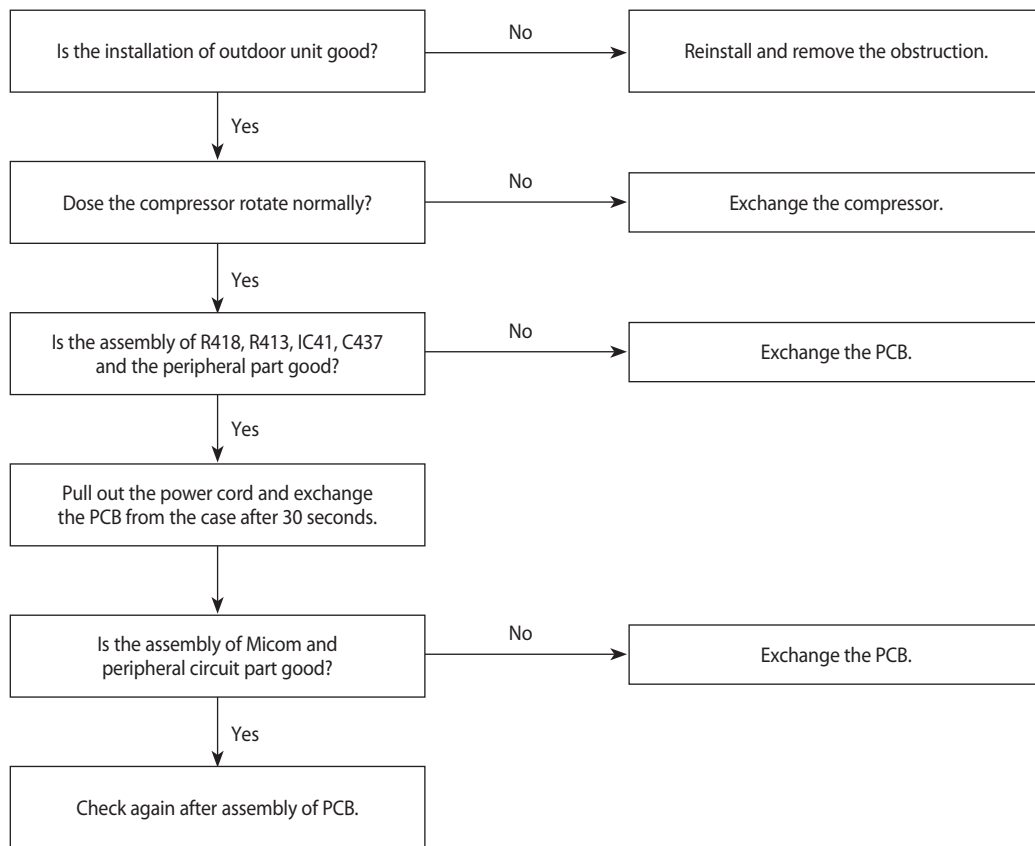


### 12-2-4 Total current Trip error

1. Checklist :

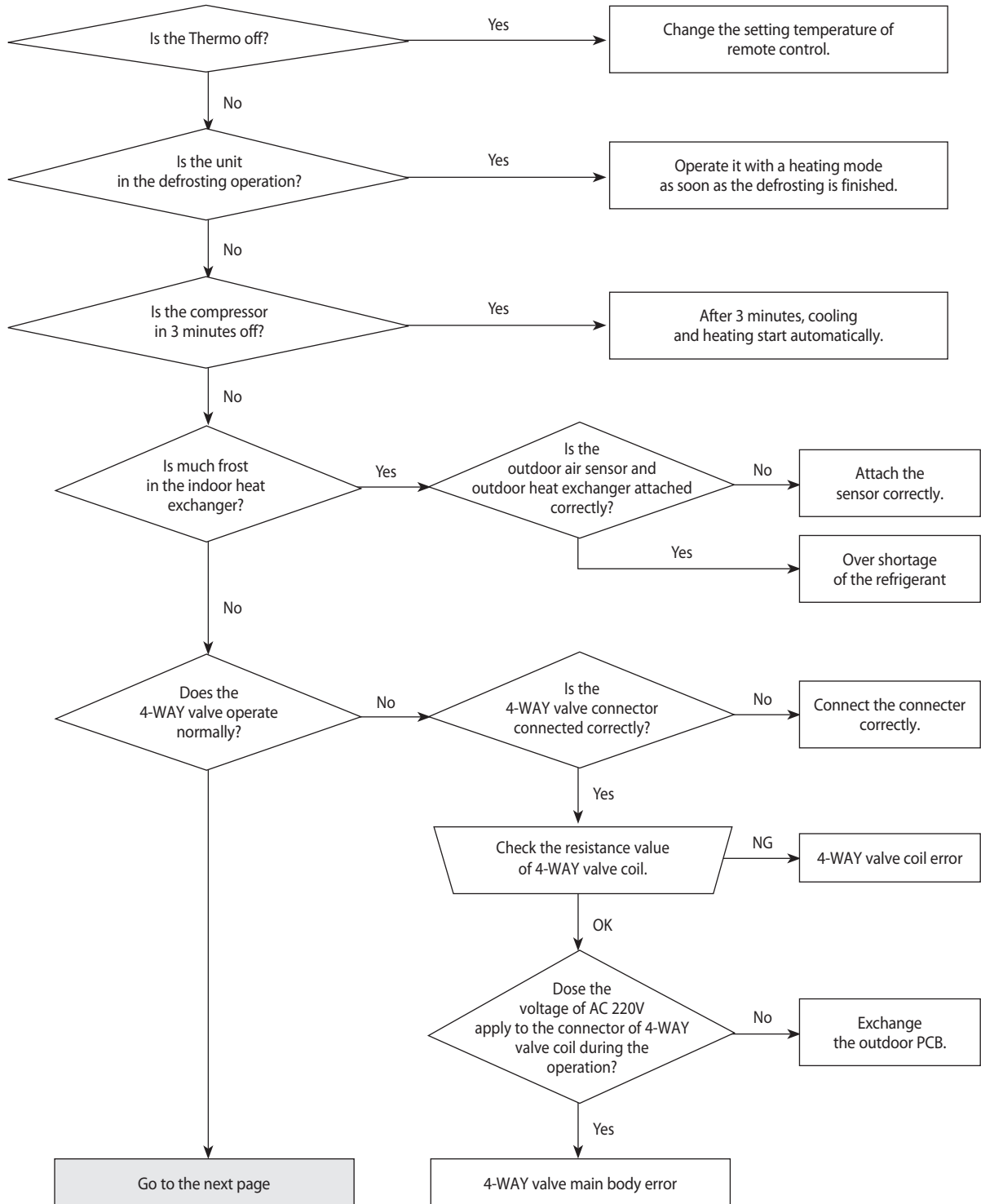
- 1) Is the input power voltage proper?
- 2) Is the refrigerant charged properly?
- 3) Does the compressor rotate normally? (Reverse rotation, Locking etc.)
- 4) Dose the outdoor fan operate normally? (Fan propeller loss, Motor error etc.)
- 5) Is the installation condition of outdoor unit good? (Piping, Space etc.)
- 6) Is there no ventilation obstruction at the surrounding of outdoor? (Outdoor unit cover, Fan front obstruction etc.)

2. Troubleshooting procedure

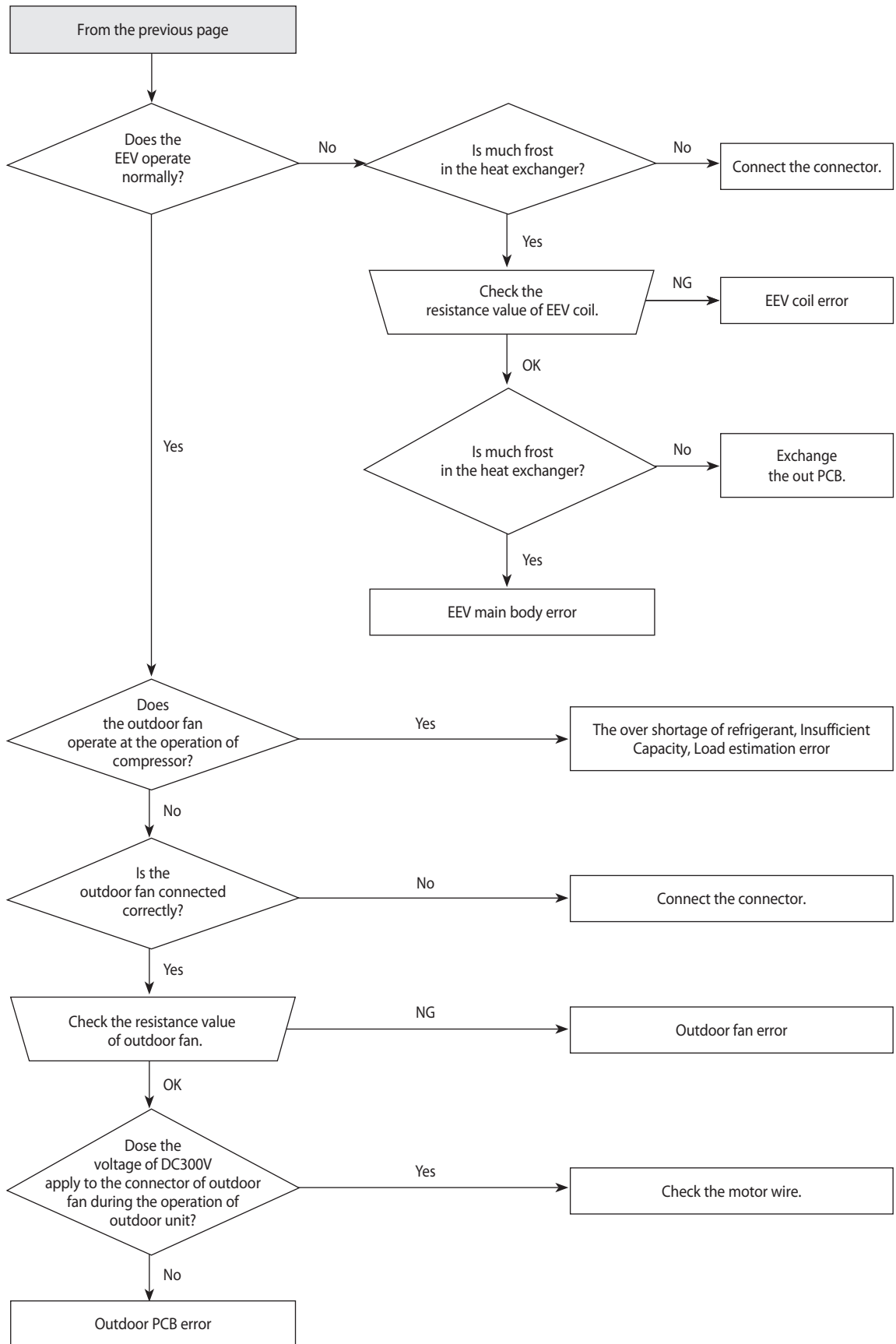


### 12-2-5 In case of heating at the cooling mode or cooling at the heating mode

1. Troubleshooting procedure



**In case of heating at the cooling mode or cooling at the heating mode(cont.)**

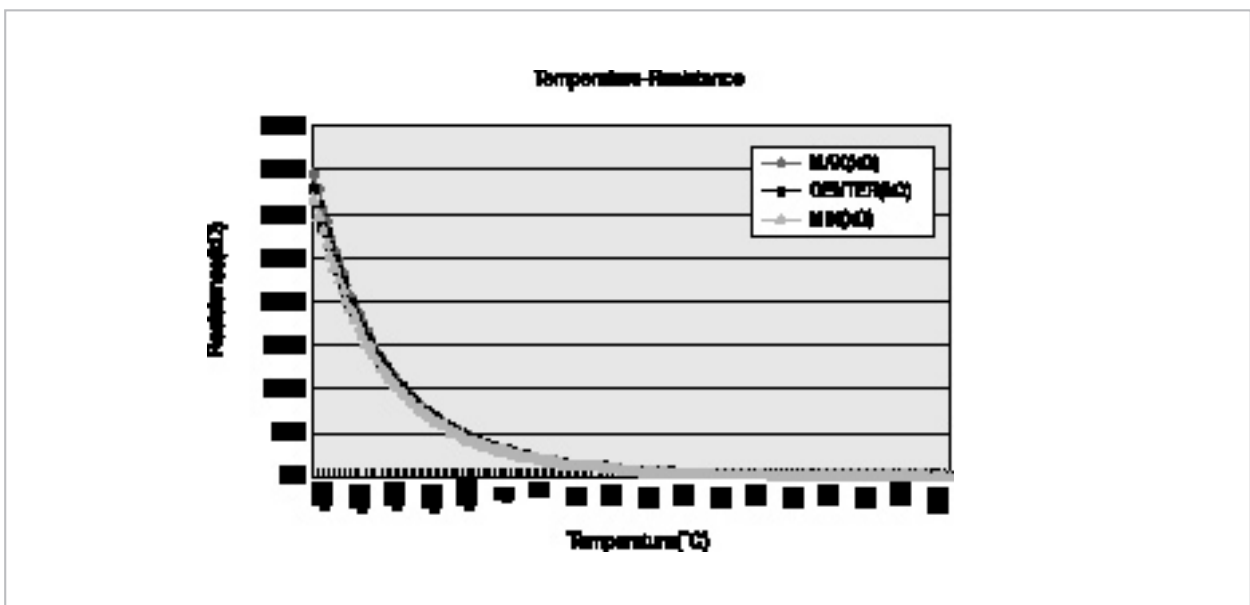
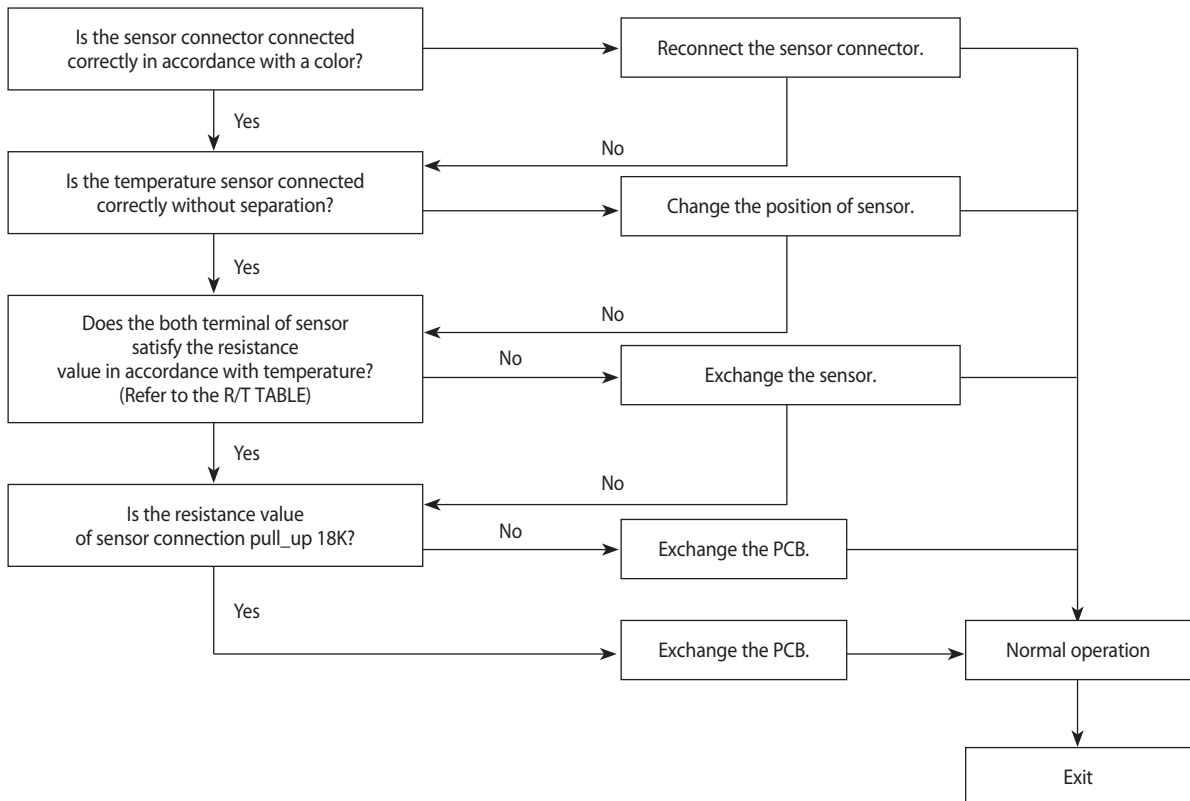


### 12-2-6 Outdoor temperature sensor error

1. Checklist :

- 1) Is the sensor connector connected correctly?
- 2) Is the sensor placed correctly?
- 3) Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- 4) Is the resistance value of sensor connection pull\_up correct?

2. Troubleshooting procedure



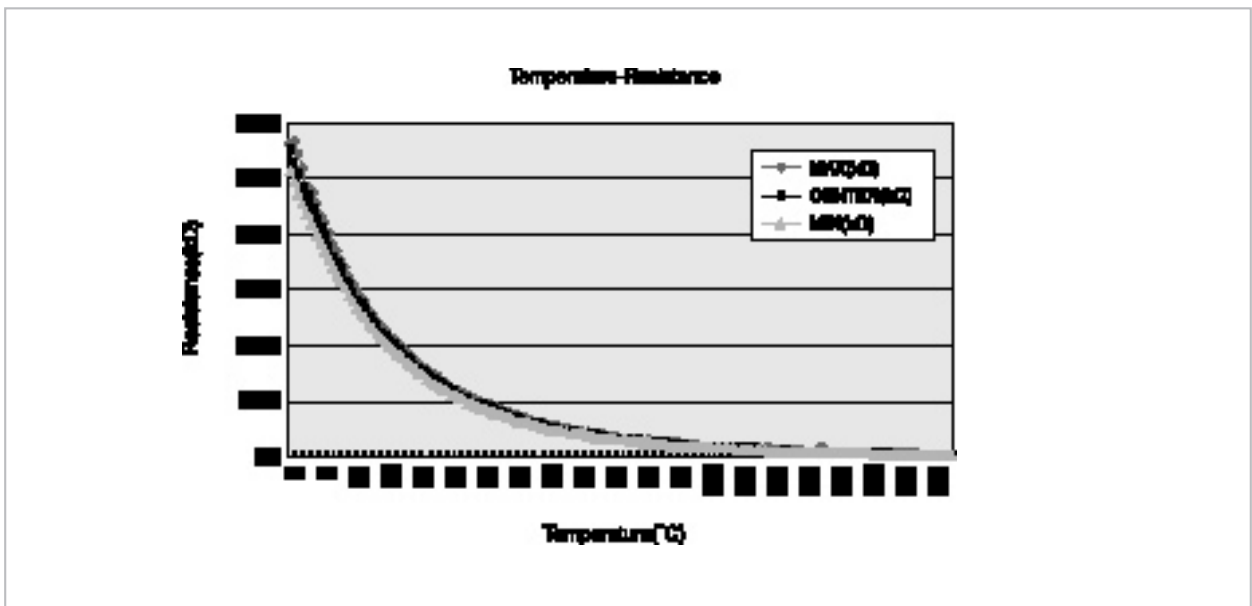
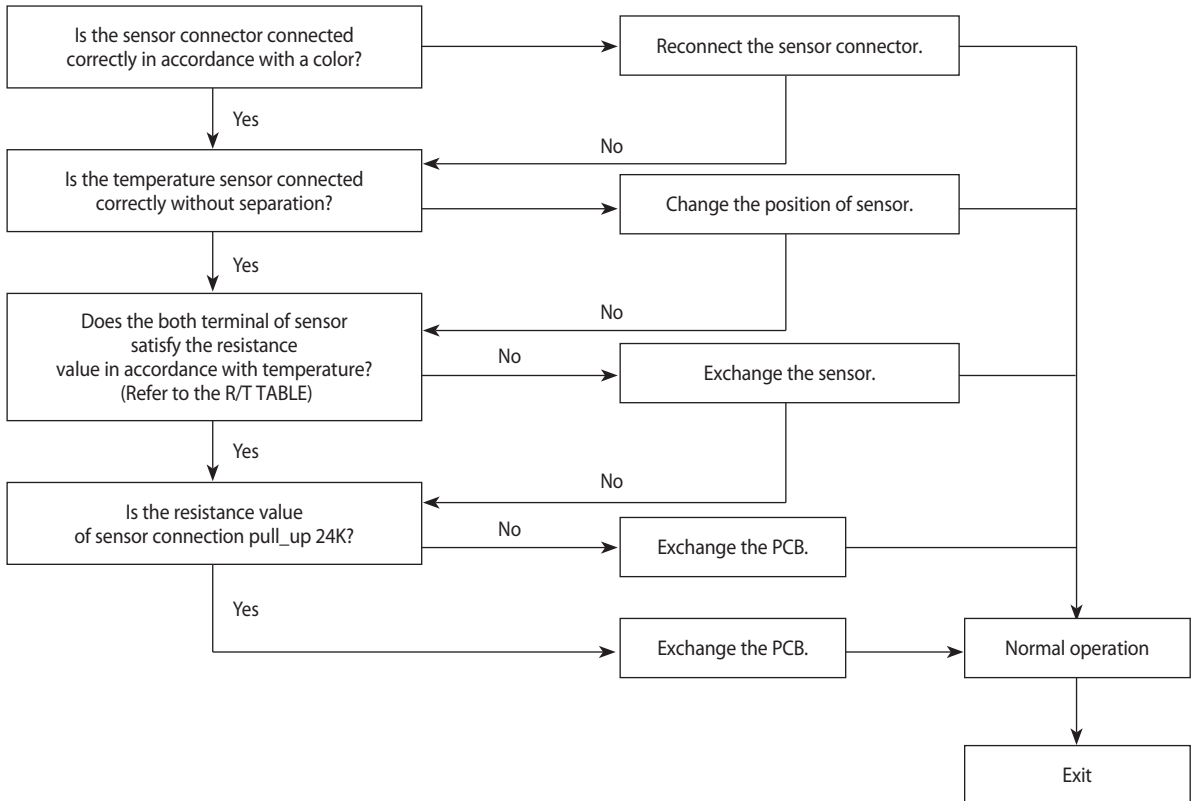


### 12-2-7 Discharge temperature sensor error

1. Checklist :

- 1) Is the sensor connector connected correctly?
- 2) Is the sensor placed correctly?
- 3) Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- 4) Is the resistance value of sensor connection pull\_up correct?

2. Troubleshooting procedure

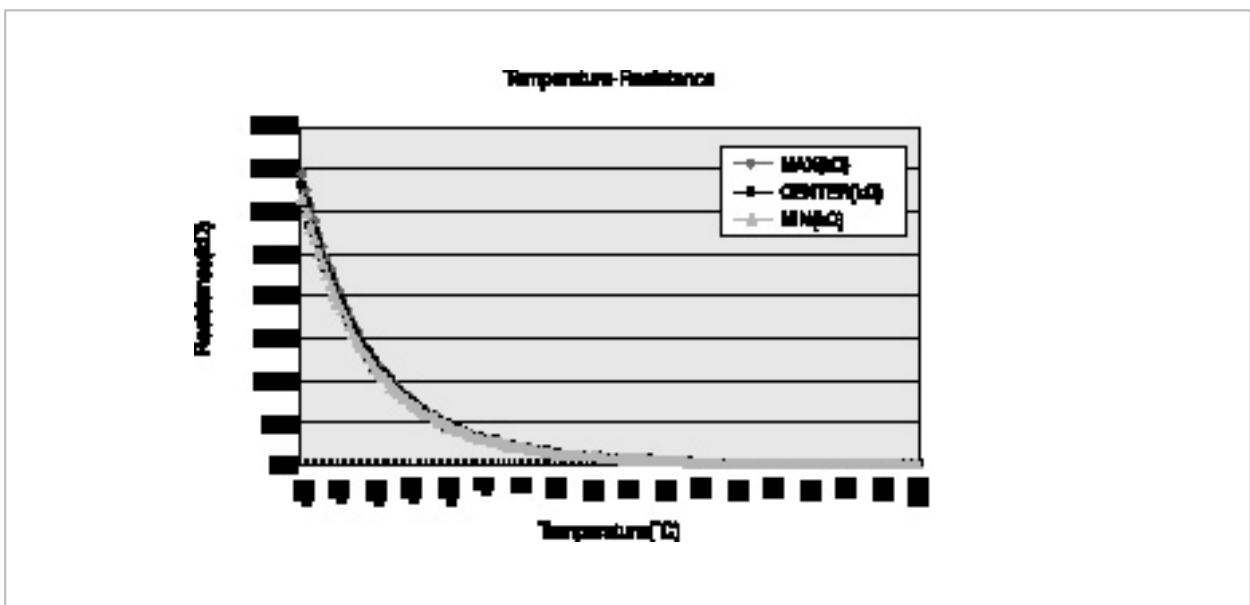
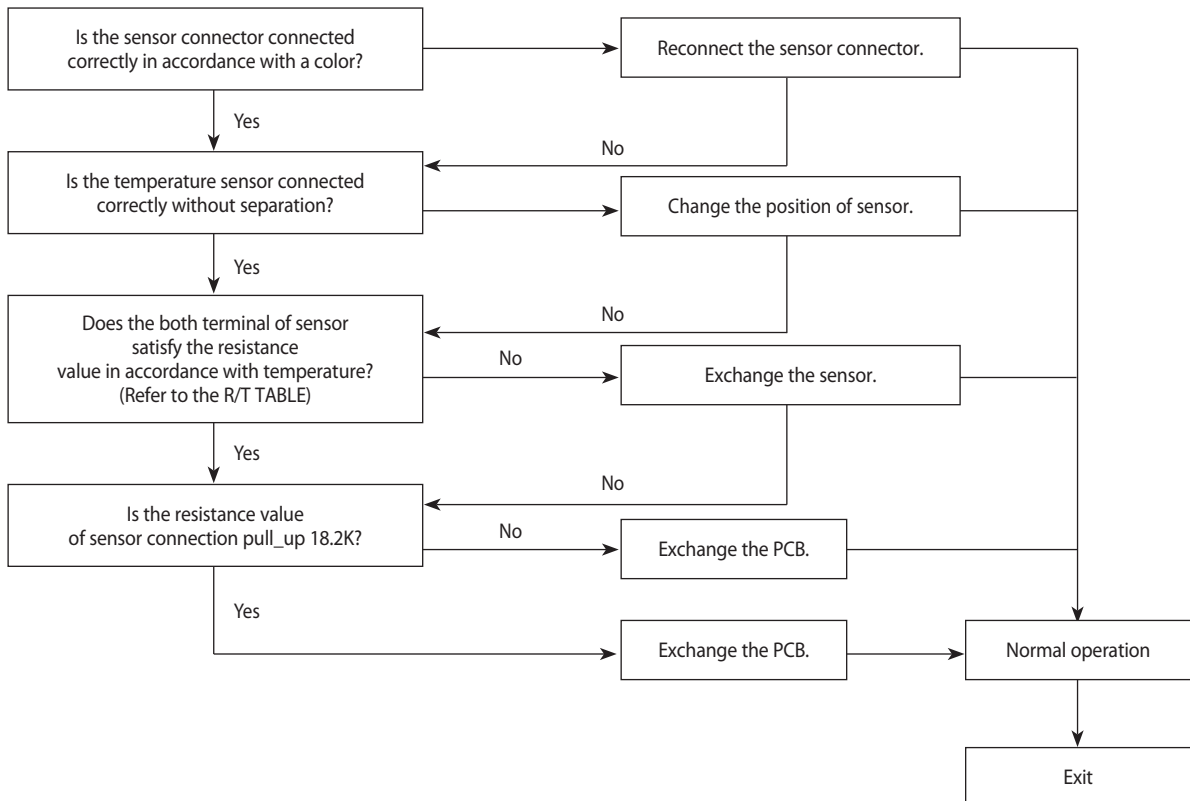


### 12-2-8 Coil temperature sensor error

1. Checklist :

- 1) Is the sensor connector connected correctly?
- 2) Is the sensor placed correctly?
- 3) Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- 4) Is the resistance value of sensor connection pull\_up correct?

2. Troubleshooting procedure

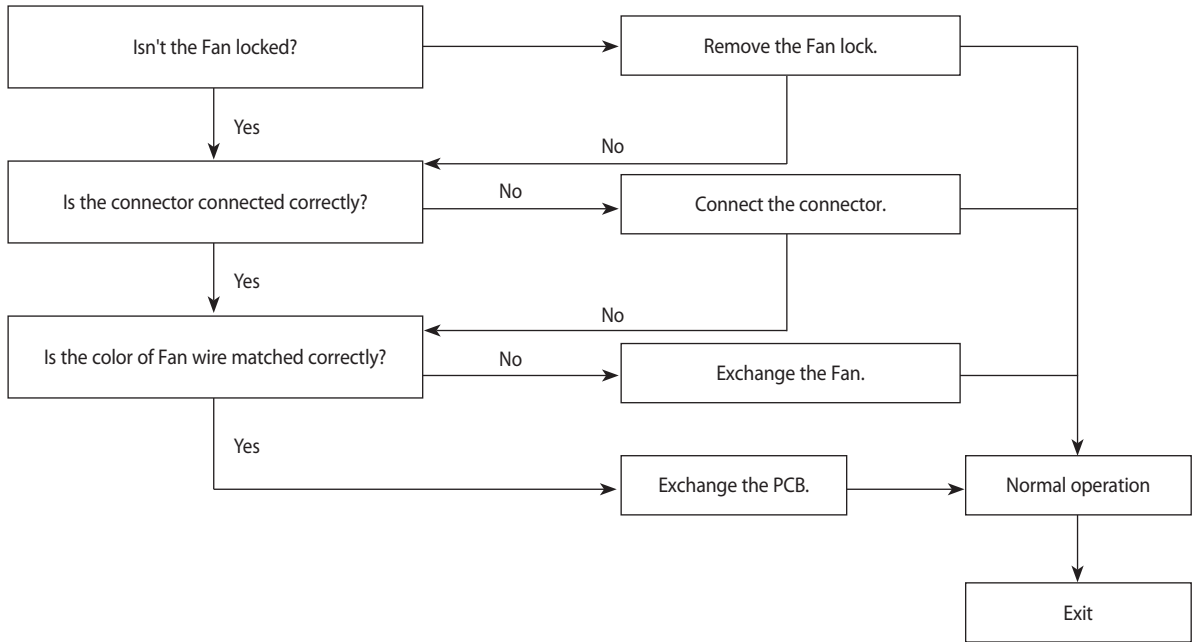


### 12-2-9 Fan error

1. Checklist :

- 1) Isn't the fan locked?
- 2) Is the sensor placed correctly?
- 3) Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- 4) Is the resistance value of sensor connection pull\_up correct?

2. Troubleshooting procedure

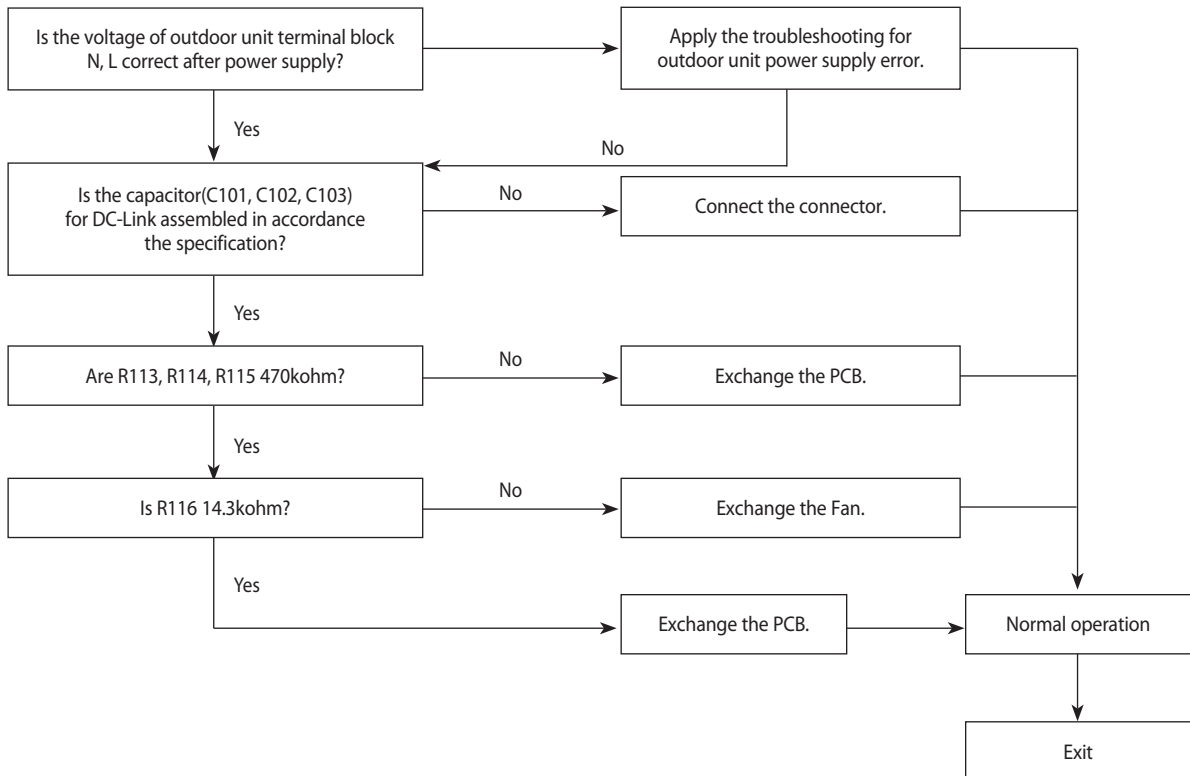


### 12-2-10 DC-Link voltage sensor error

1. Checklist :

- 1) Is the voltage of outdoor unit terminal block N, L correct after power supply?
- 2) Is the capacitor(C101, C102, C103) for DC-Link assembled in accordance the specification?
- 3) Are R113, R114, R115 470 Kohm?
- 4) Is R116 14.3Kohm?

2. Troubleshooting procedure

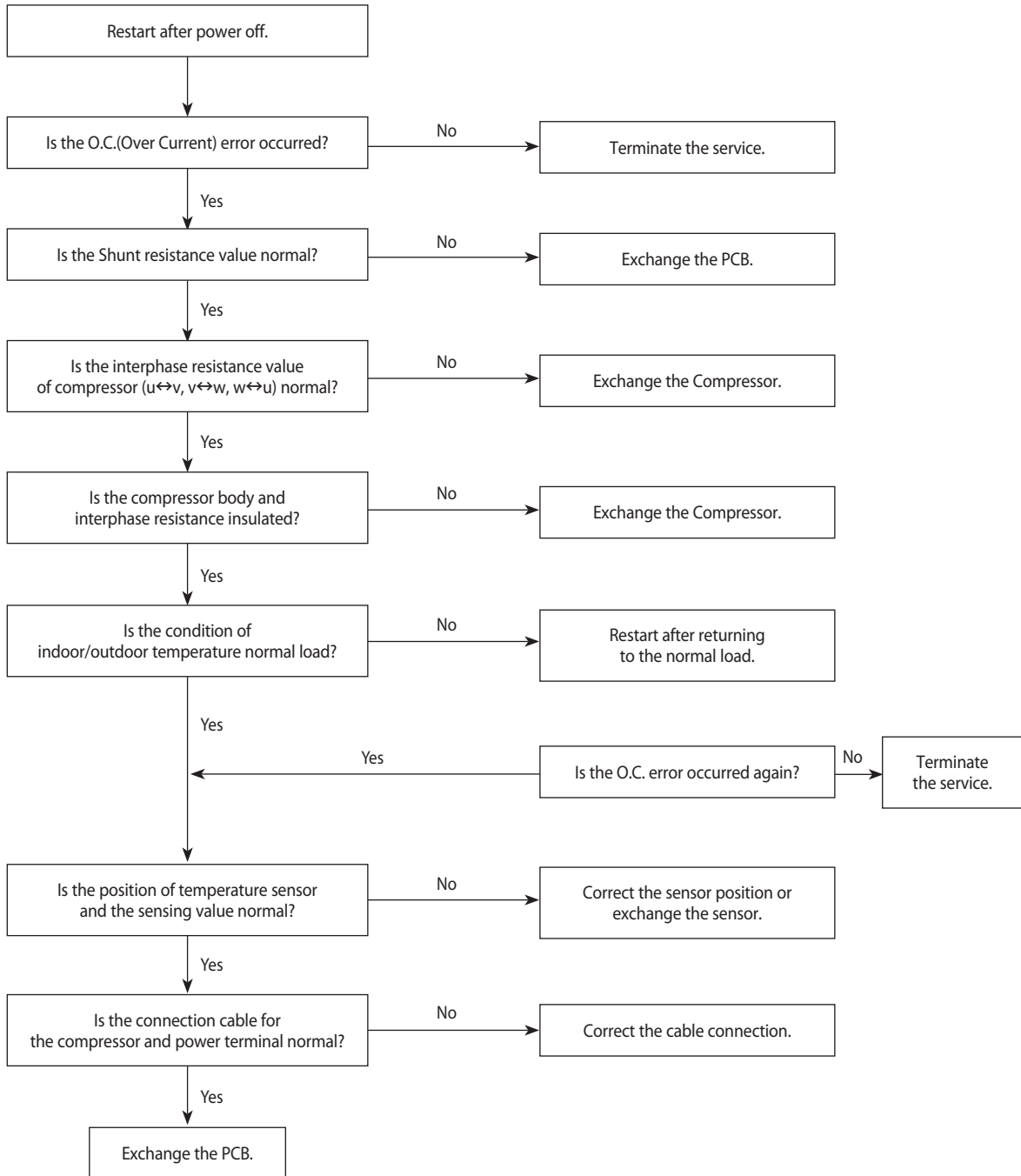


### 12-2-11 O.C.(Over Current) error

1. Checklist :

- 1) Is the Shunt resistance value correct?
- 2) Is the condition of surrounding temperature abnormal overload?
- 3) Is there any problem as like the temperature sensor separation or measurement value error?
- 4) Is the interphase resistance of compressor normal?

2. Troubleshooting procedure

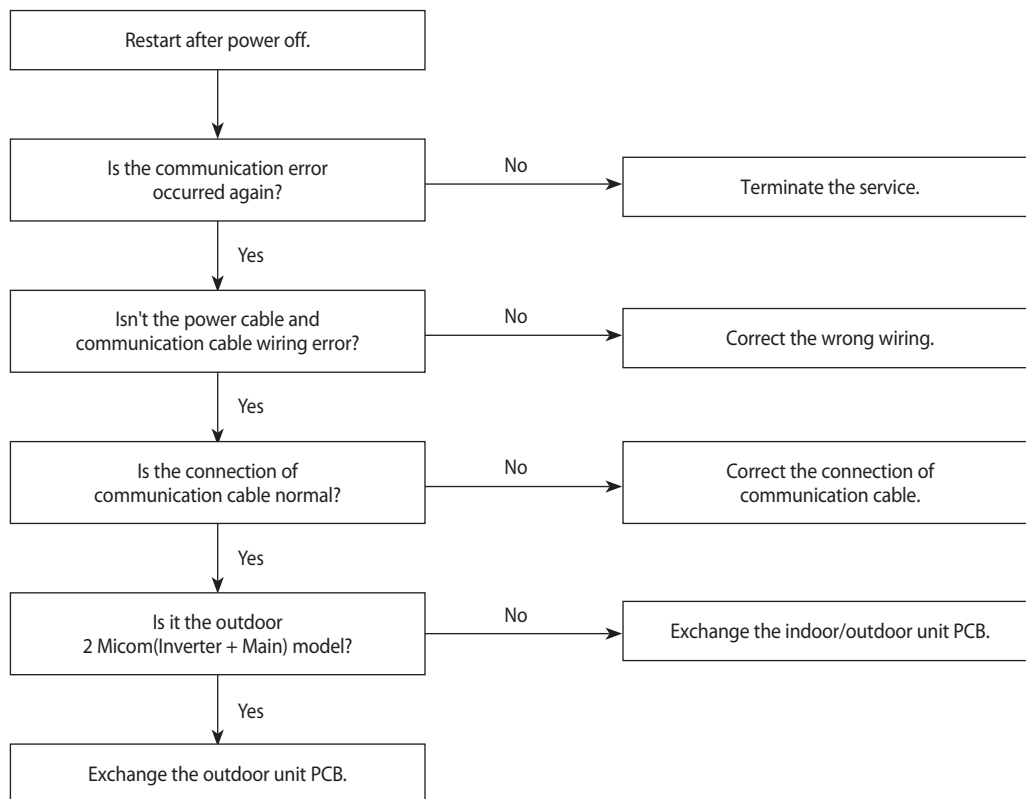


## 12-2-12 Communication error

1. Checklist :

- 1) Is the communication cable between the indoor unit and outdoor unit connected correctly?
- 2) Isn't the power cable and communication cable wiring error?

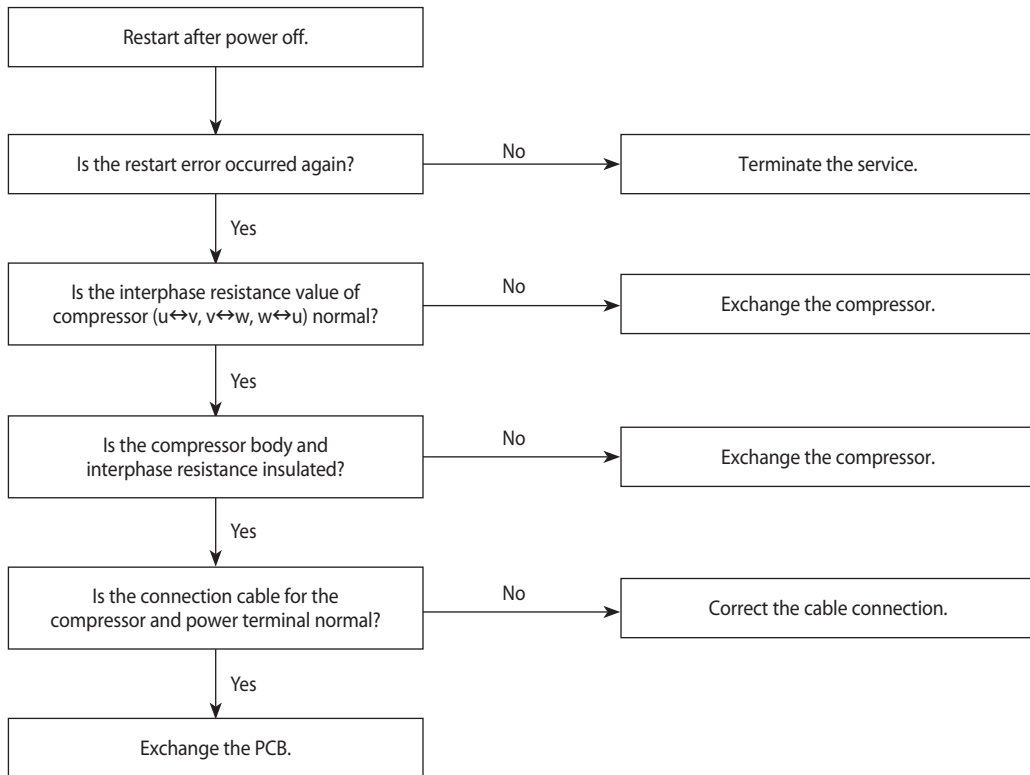
2. Troubleshooting procedure



### 12-2-13 Compressor start error

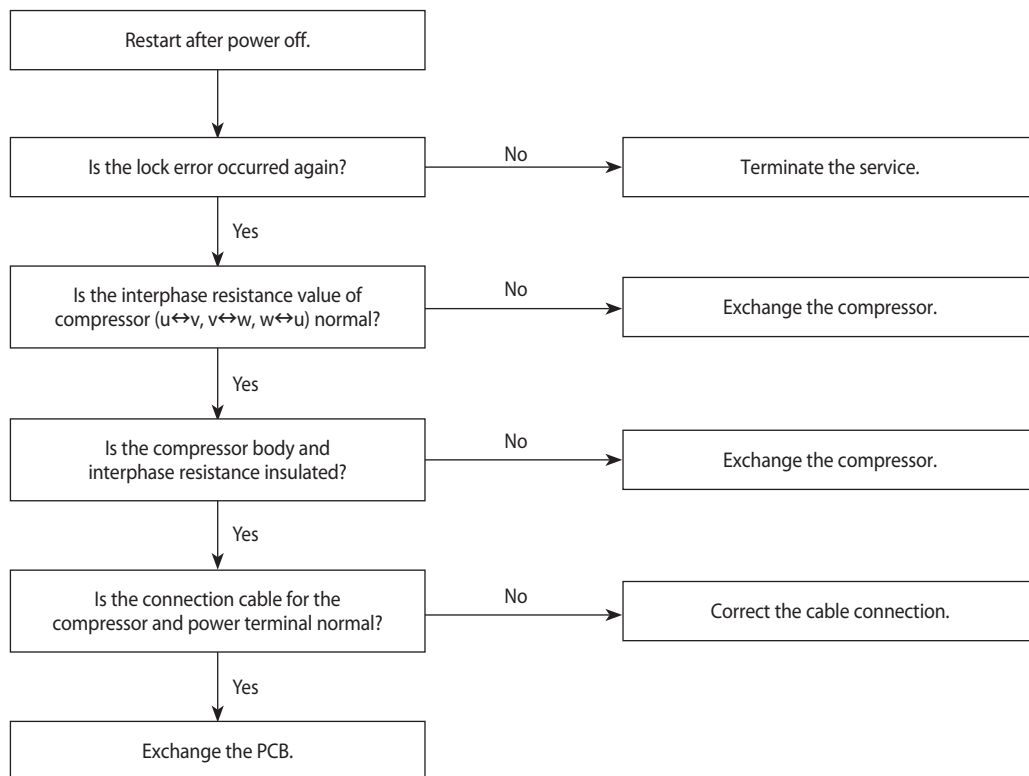
1. Checklist :
  - 1) Is the connection of cable for the compressor and power?
  - 2) Is the interphase resistance of compressor normal?

2. Troubleshooting procedure



## 12-2-14 Compressor lock error

1. Checklist :
  - 1) Is the connection of cable for the compressor and power?
  - 2) Is the interphase resistance of compressor normal?
2. Troubleshooting procedure



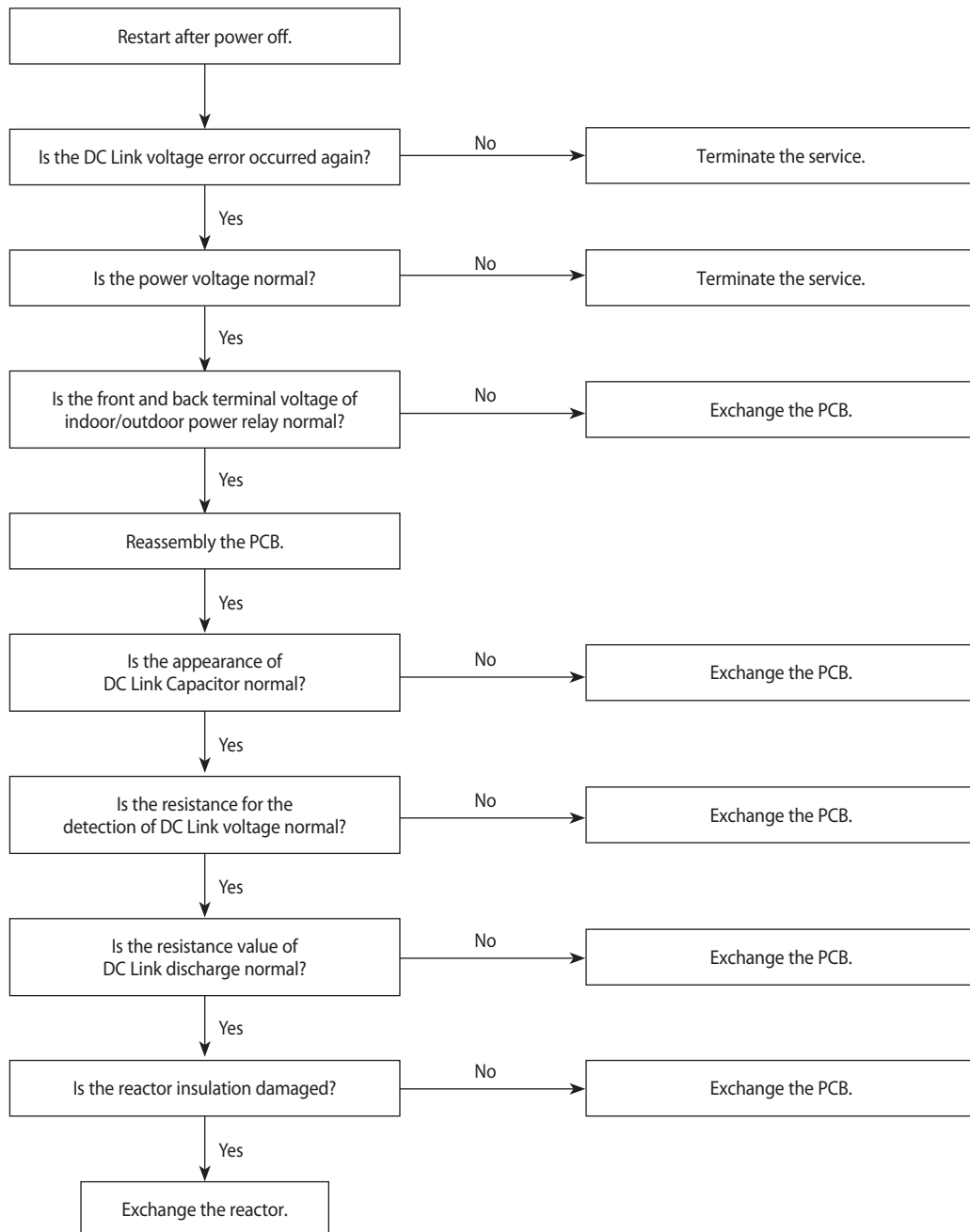


## 12-2-15 DC Link Over voltage/ Low voltage error

1. Checklist :

- 1) Is the power voltage normal?
- 2) Is the voltage of front and back terminal of indoor(outdoor) power relay normal?
- 3) Is the resistance value for DC Link voltage detection NORMAL?
- 4) Is the resistance value of DC Link discharge normal?
- 5) Is the appearance of DC Link Capacitor normal?

2. Troubleshooting procedure



## 12-2-16 The others

1. AC Line Zero Cross Signal OUT
  - Check the assembly condition of peripheral part of IC21, ZD201, ZD200(\*\*035\*\*) / ZD21, ZD22(\*\*052/070\*\*) and D201 on the PCB.
  
2. Capacity miss match
  - Check again the indoor unit option code.

## 12-3 PCB Inspection Method

### 12-3-1 Pre-inspection Notices

1. Check if you pulled out the AC power plug when you eliminate the PCB or front panel.
2. Don't hold the PCB side not impose excessive force on it to eliminate the PCB.
3. Don't pull the lead wire but hold the whole housing to connect or disconnect a connector to the PCB.
4. In case of outdoor PCB disassembly, check first the complete discharge of condenser C101(\*\*035\*\*), C103(\*\*052/070\*\*) after 30 seconds power off.

### 12-3-2 Inspection Procedure

1. Check connector connection and peeling of PCB or bronze coating pattern when you think the PCB is broken.
2. The PCB is composed of the 3 parts.
  - Indoor Main PCB Part : MICOM and surrounding circuit, relay, room fan motor driving circuit and control circuit, sensor driving circuit, power circuit of DC12V and DC5V, and buzzer driving circuit.
  - Display part : LED lamp, Switch, Remocon module
  - Outdoor Main PCB part : MICOM and surrounding circuit. IPM and PFC circuit and control circuit.
  - EMI PCB Part : Line filter and Noise Capacitor, Varistor

### 12-3-3 Indoor Detailed Inspection Procedure

No	Procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the electronic box. Check the PCB fuse.	1) Is the fuse disconnected?	<ul style="list-style-type: none"> <li>• Over current</li> <li>• Indoor Fan Motor Short</li> <li>• AC Part Pattern Short of the MAIN PCB</li> </ul>
2	Supply power. If the operating lamp twinkles at this time, the above 1)~3) have no relation.	Checking the power voltage.	
		1) Is the DB71 input voltage AC200V~AC240V?	<ul style="list-style-type: none"> <li>• Power Cord is fault, Fuse open. Wrong Power Cable Wiring, AC Part is faulty.</li> </ul>
		2) Is the voltage between both terminals of the C104 on the 2 <sup>nd</sup> side of the transformer DC12V $\pm 0.5V$ ?	<ul style="list-style-type: none"> <li>• Switching Trans or Power Circuit is faulty</li> </ul>
		3) Is the voltage between both terminals of OUT and GND of IC19(KA7805) DC5V $\pm 0.5V$ ?	<ul style="list-style-type: none"> <li>• Power Circuit is faulty, Load Short</li> </ul>
3	Press the ON/OFF button. (Only **035**) 1. FAN Speed [High] 2. Continuous Operation	1) Is the voltage over AC180V being imposed on terminal #3 and #5 of the fan motor connector(CN72)?	<ul style="list-style-type: none"> <li>• Fan Motor of the indoor is faulty</li> </ul>
		2) The fan motor of the indoor unit doesn't run.	<ul style="list-style-type: none"> <li>• Fan Motor Connector(CN72) is faulty</li> </ul>
		3) The power voltage between terminal #3 and #5 of the connector(CN72) is 0V.	<ul style="list-style-type: none"> <li>• ASS'Y Main PCB is faulty</li> <li>• Connection is faulty</li> </ul>

### 12-3-4 Outdoor Detailed Inspection Procedure

No	Procedure	Inspection Method	Cause
1	Wait 30 seconds over after disconnecting the power cable. Check the outdoor PCB.	1) Is C101(**035**), C103(**052/070**) discharged? 2) Is the resistance of both terminals of C101(**035**), C103(**052/070**) opened? 3) Is the fuse of EMI PCB normal? 4) Is the reactor wire connected?	<ul style="list-style-type: none"> <li>• Over Current</li> <li>• Inner short of PCB</li> <li>• BLDC FAN Motor Error(**035**)</li> </ul>
2	Check the outdoor unit PCB.	1) Is R001 200ohm? 2) Does RY503(**035**), RY01(**052/070**) operate normally? **035**-(IC55 & 8: 0V, 4: 5V) **052/070**-(IC72 & 8: 0V, 4: 5V) 3) Is the fuse normal?	<ul style="list-style-type: none"> <li>• Outdoor PCB Error</li> <li>• Relay(RY503-**035**, RY01-**052/070**) Error</li> <li>• IC55 Error(**035**)</li> <li>• IC72 Error(**052/070**)</li> </ul>
3	Check the LED lighting after power supply.	1) Normal: Red: Light On, Green: Flickering, Yellow: Light Off? 2) Is the voltage of C101(**035**), C103(**052/070**) 250V over? 3) Is the input of IC19 8V, and the output 5V? 4) Recheck after disassembling BLDC FAN Wire (**035**)	<ul style="list-style-type: none"> <li>• Inner short of outdoor PCB</li> <li>• Wrong assembly of outdoor PCB</li> <li>• BLDC FAN Error(**035**)</li> </ul>
4	Check the condition of indoor & outdoor connection cable.	1) Is the green LED light on once per second? 2) Is the indoor & outdoor connection cable connected in order? 3) Is the grounding wire connected to the both of indoor & outdoor unit?	<ul style="list-style-type: none"> <li>• Wrong connection of Indoor/Outdoor wiring</li> <li>• Wrong assembly of outdoor communication circuit</li> </ul>
5	Check the Comp Wire.	1) Is it connected red, blue, and yellow in order in counter clockwise. 2) Are the valve and its installation condition good? 3) Is the installation condition of outdoor unit?	<ul style="list-style-type: none"> <li>• Wrong assembly</li> <li>• Installation condition is bad.</li> </ul>
6	Check the BLDC Fan. (**035**)	1) Is CN01 1, 3 over 250V? 2) Is CN01 3, 5 within 1V~5V? 3) Is the voltage of CN01 6 changed? 4) Is the resistance of BLDC Motor 1, 3 opened after power off?	<ul style="list-style-type: none"> <li>• Outdoor PCB Error</li> <li>• BLDC Motor Error</li> </ul>

## 12-4 Main Part Inspection Method

Part	Breakdown Inspection Method										
<b>Room Temperature Sensor</b>	Measure resistance with a tester										
	Normal	At the normal temperature 37kΩ~ 8.3kΩ(-7°C~+30°C) *Refer to Table 12-3-4.									
	Abnormal	∞, 0Ω . . . Open or Short									
<b>Room Fan Motor</b>	Measure the resistance between terminals of the connector (CN73) with a tester.										
	Normal	At the normal temperature (10°C ~ 30°C)									
		<table border="1" data-bbox="671 566 1401 685"> <thead> <tr> <th data-bbox="671 566 863 607">Compare terminal</th> <th data-bbox="863 566 1265 607">Resistance</th> <th data-bbox="1265 566 1401 607">Remark</th> </tr> </thead> <tbody> <tr> <td data-bbox="671 607 863 647">Yellow, Red</td> <td data-bbox="863 607 1265 647">166Ω(**035**), 47Ω(**052/070**) ± 10%</td> <td data-bbox="1265 607 1401 647">Main</td> </tr> <tr> <td data-bbox="671 647 863 685">White, Red</td> <td data-bbox="863 647 1265 685">144Ω(**035**), 59Ω(**052/070**) ± 10%</td> <td data-bbox="1265 647 1401 685">Sub</td> </tr> </tbody> </table>	Compare terminal	Resistance	Remark	Yellow, Red	166Ω(**035**), 47Ω(**052/070**) ± 10%	Main	White, Red	144Ω(**035**), 59Ω(**052/070**) ± 10%	Sub
		Compare terminal	Resistance	Remark							
Yellow, Red	166Ω(**035**), 47Ω(**052/070**) ± 10%	Main									
White, Red	144Ω(**035**), 59Ω(**052/070**) ± 10%	Sub									
Abnormal	∞, 0Ω . . . Open or Short										
<b>Stepping Motor</b>	Measure the resistance between the red wire and each terminal wire with a tester.										
	Normal	About 300Ω at the normal temperature (20°C ~ 30°C)									
	Abnormal	∞, 0Ω . . . Open or Short									