


6. Troubleshooting

6-1 Items to be checked first


- The input voltage should be rating voltage $\pm 10\%$ range.
The airconditioner 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 5 cables.
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
Otherwise the airconditioner 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 airconditioner.

No	Operation of air conditioner	Explanation
1	The OPERATION indication LED(BLUE) blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	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. [In case of heat pump model] 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.
3	Fan speed setting is not allowed in DRY(☼) mode.	The speed of the indoor fan is set to LL in DRY mode. Fan speed is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in DRY(☼) mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	Timer LED(YELLOW) of the indoor unit lights up and the air conditioner does not operate.	Timer is being activated and the unit is in ready mode. The unit operates normally if the timer operation is cancelled.
6	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.
7	[In case of heat pump model] 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.
8	[In case of heat pump model] 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.
9	[In case of heat pump model] 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

4. Indoor unit observes operation condition of the air conditioner, and displays self diagnosis details on the display panel.

Error Mode	LAMP	7-segment Display
Indoor unit room temperature sensor error (open or short)		<i>E1</i>
Indoor unit heat exchanger temperature sensor error (open or short)		<i>E2</i>
Indoor fan motor malfunction		<i>E3</i>
EEPROM error		<i>E6</i>
Option error (option wasn't set up or option data error)		Display Flickering

5. Operation with abnormal motion

No	Abnormal condition	Inspection	Initial Diagnosis	
1	No response from the remote control operation signal.	<ul style="list-style-type: none"> Plug out and plug in 5 seconds later. 	Able to operate the remote control.	OK
			Unable to operate the remote control.	Press the  (ON/OFF) button in the indoor unit. <ul style="list-style-type: none"> If it operates, the remote control and indoor unit receiver are in trouble. If not, the indoor unit is in trouble.
2	Unable to operate the outdoor unit	<ul style="list-style-type: none"> Press the TURBO button with the remote control. In 3 minutes, check the voltage between the indoor unit terminal block N(1) and 1. 	AC198V ~ AC242V	Problem with the outdoor unit or PCB
			No power source displayed.	Problem with the relay (RY71) or PCB

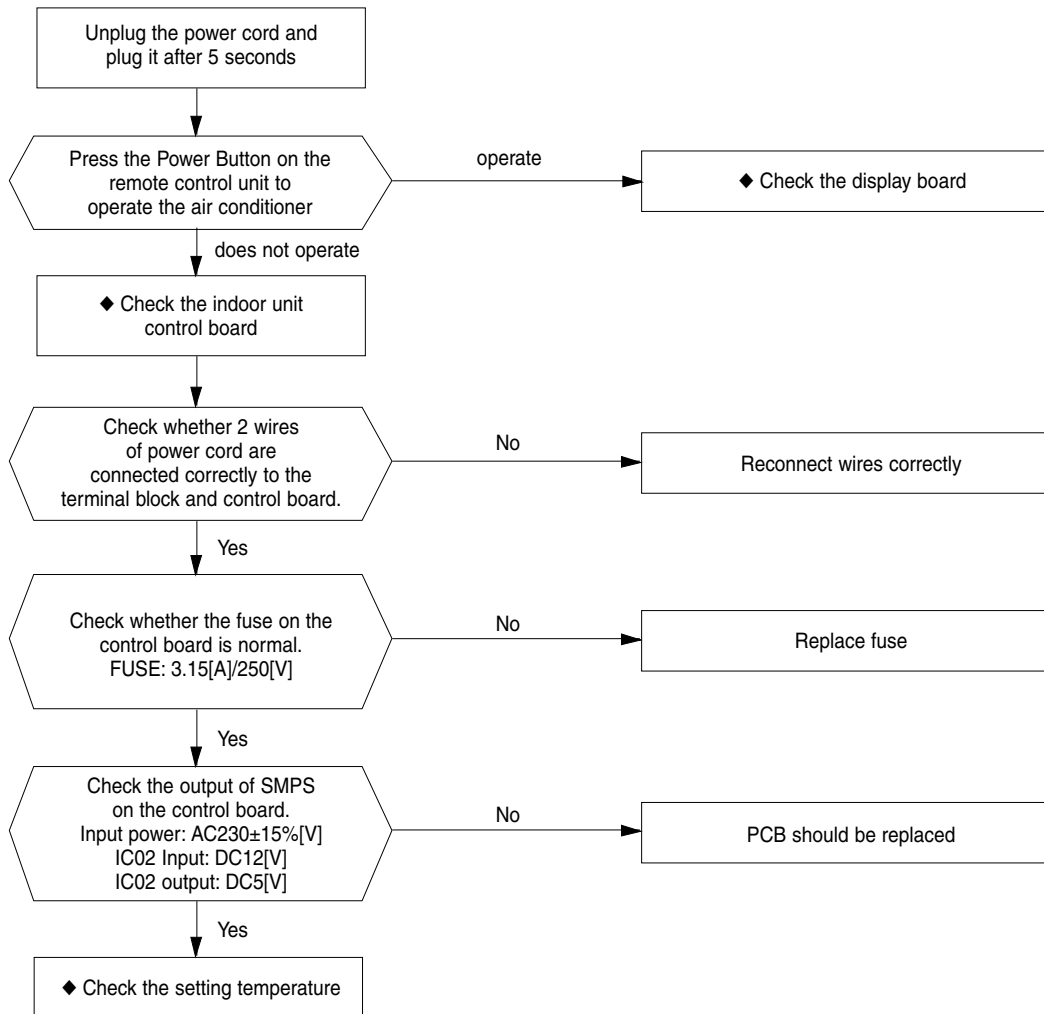
6-2 Fault Diagnosis by Symptom

6-2-1 No Power (completely dead)-Initial diagnosis


1. Checklist :

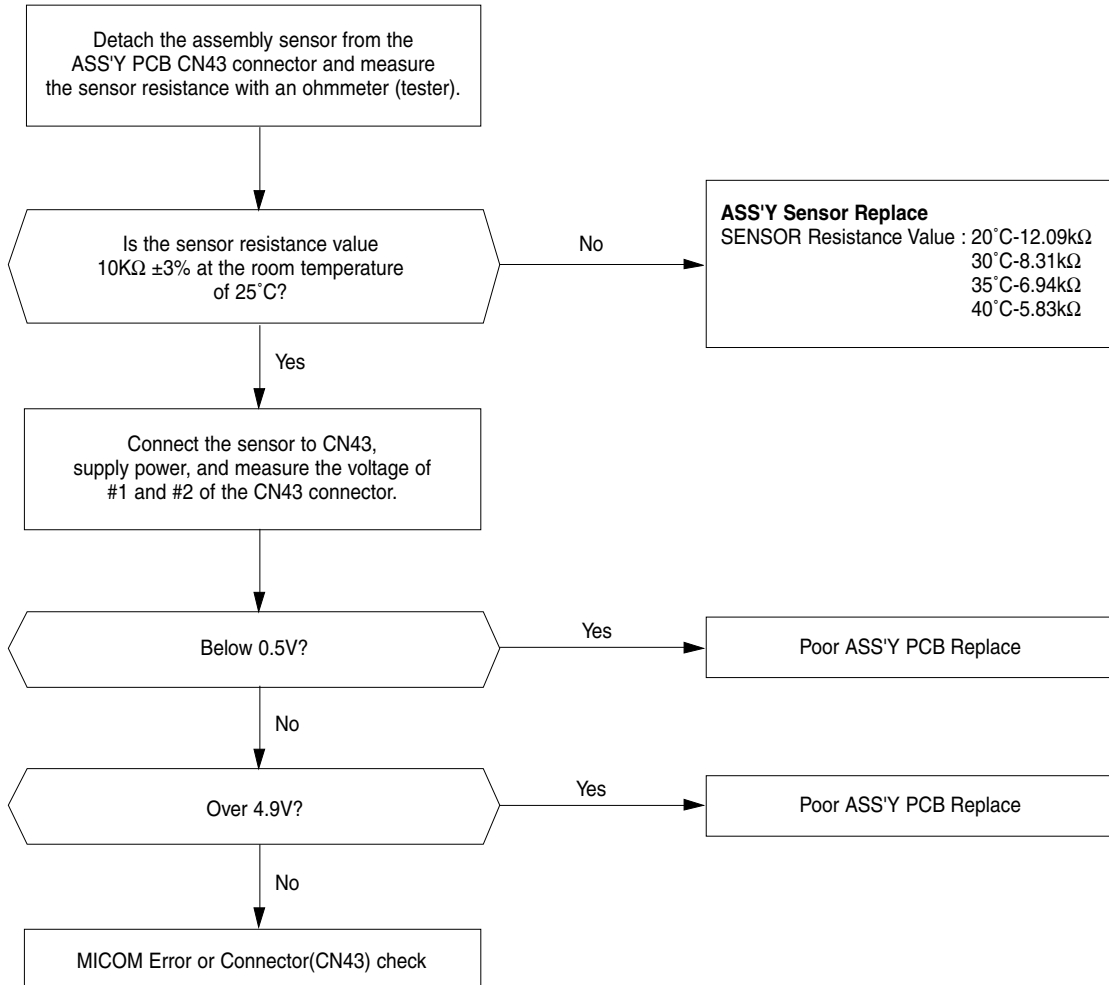
- 1) Is input voltage normal?
- 2) Is AC power linked correctly?
- 3) Is input voltage of DC regulator IC KA7805 (IC02) normal? (11VDC-12.5VDC)
- 4) Is output voltage of DC regulator IC KA7805 (IC02) normal? (4.5VDC-5.5VDC)

2. Troubleshooting procedure




6-2-2 Room temperature sensor failure

Error Mode	LAMP	7-segment Display
Indoor unit room temperature sensor error(open or short)		E 1



6-2-3 Room Pipe sensor failure

Error Mode	LAMP	7-segment Display
Indoor unit heat exchanger temperature sensor error(open or short)		E2

1. Check the assembly condition of the sensor connector(CN43) on the indoor unit Main PCB and if not assembled, reassemble the connector accurately.
2. Detach the room pipe sensor connector(CN43) and check the resistance between connector 3 and 4.

Temperature(°C)	Resistance Value(Kohm)	Temperature(°C)	Resistance Value(Kohm)	Others
15	14.68	30	8.31	The data tolerance is ±3%.
20	12.09	35	6.94	
25	10	40	5.83	

If the above data is not met, replace the room pipe sensor.

3. Assemble the room pipe sensor to PCB, plug in, and check the voltage of connector 3 and 4. If the resistance is below 0.5V or over 4.9V, replace the indoor Main PCB. (short or disconnected in the PCB board)

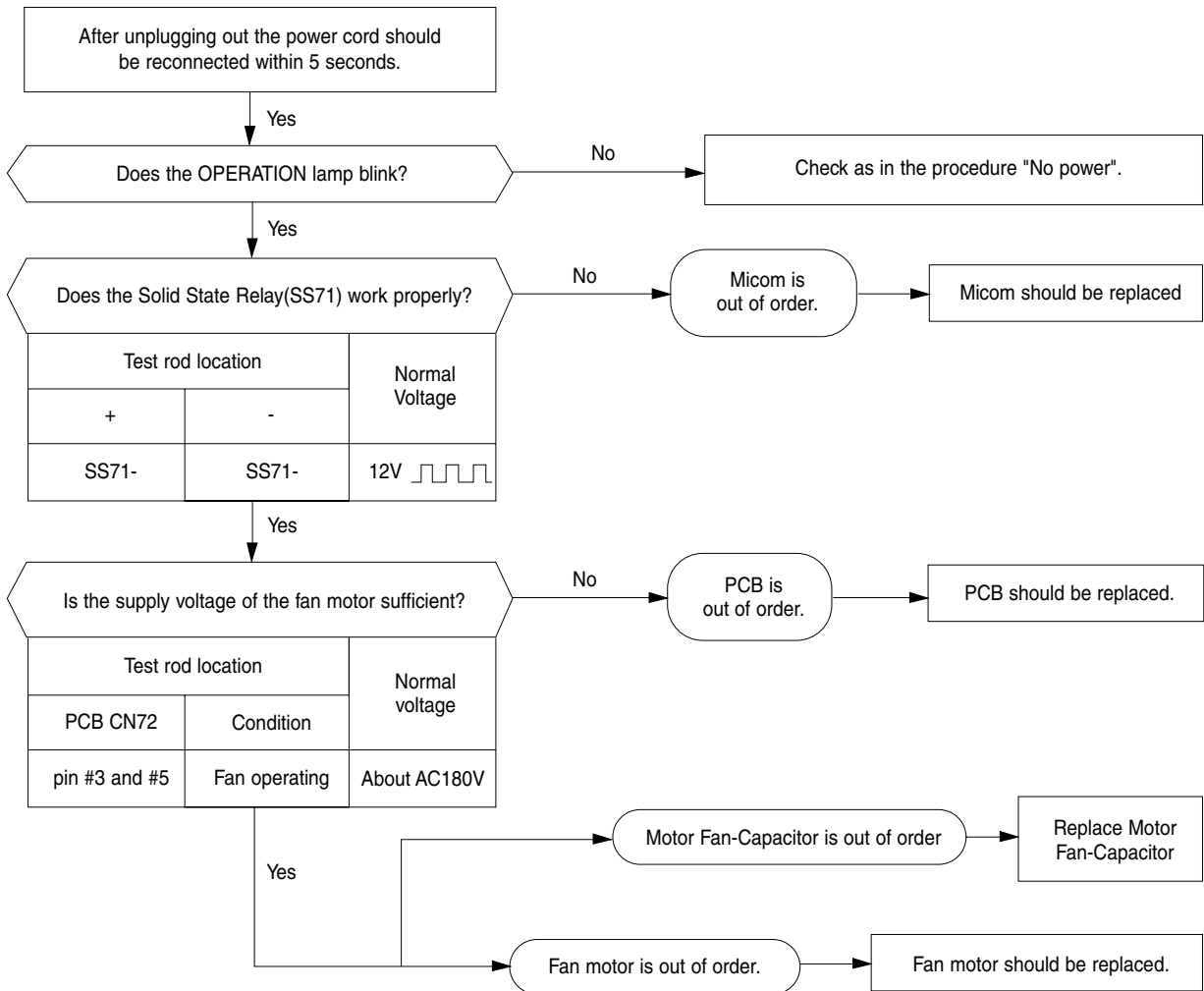
6-2-4 When the Indoor Unit Fan Does Not Operate. (Initial Diagnosis)

Error Mode	LAMP	7-segment Display
Indoor unit heat exchanger temperature sensor error(open or short)		E3

1. Checklist :

- 1) Is the indoor unit fan motor properly connected with the connector (CN72)?
- 2) Is the AC voltage correct?
- 3) Is HALL IC in indoor fan motor properly connected with the connector (CN44)?
- 4) Is the running capacitor (CR71) properly connected with PCB board?

2. Troubleshooting procedure

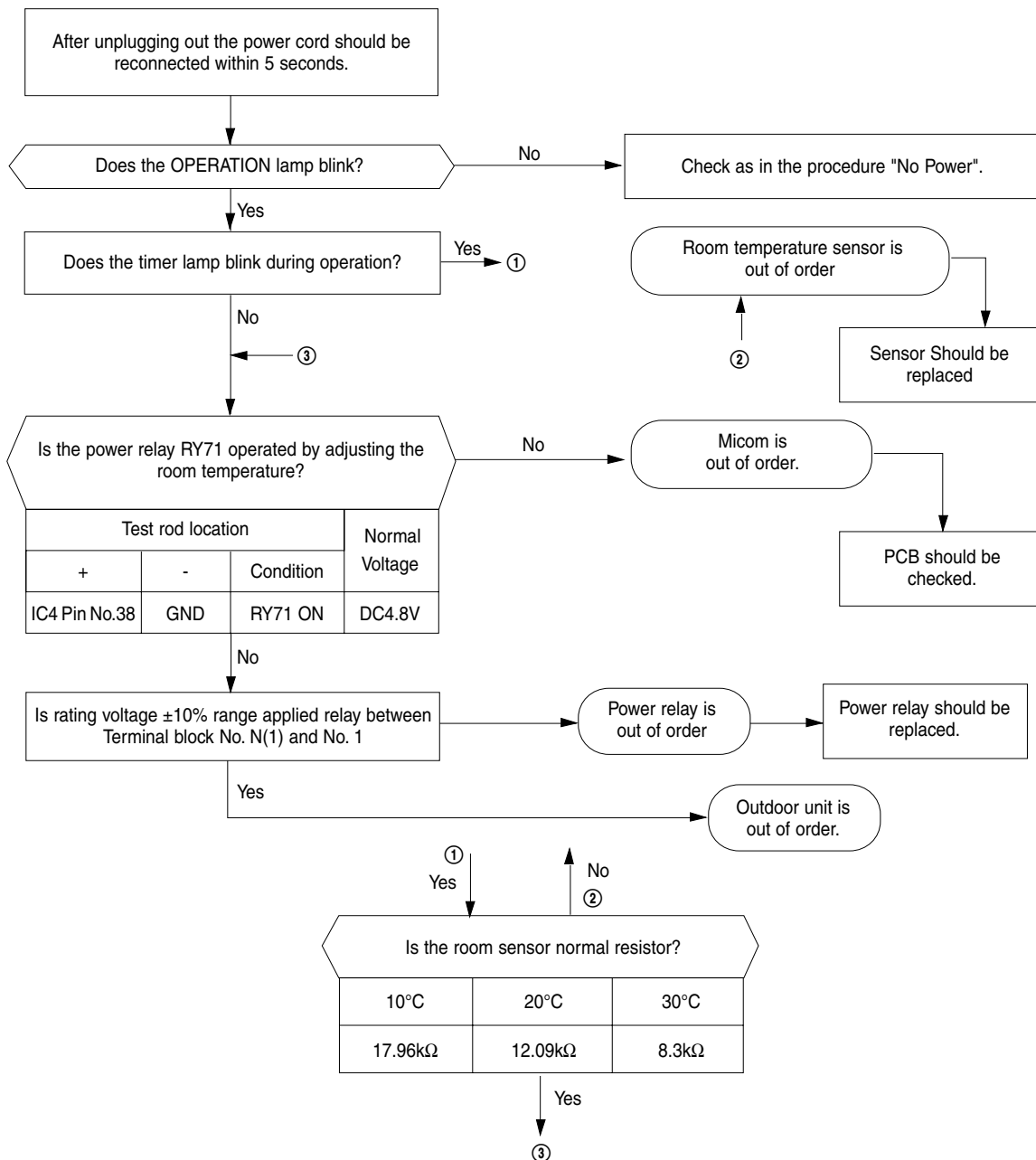


6-2-5 When the Outdoor Unit Does Not Operate. (Initial Diagnosis)

1. Checklist :

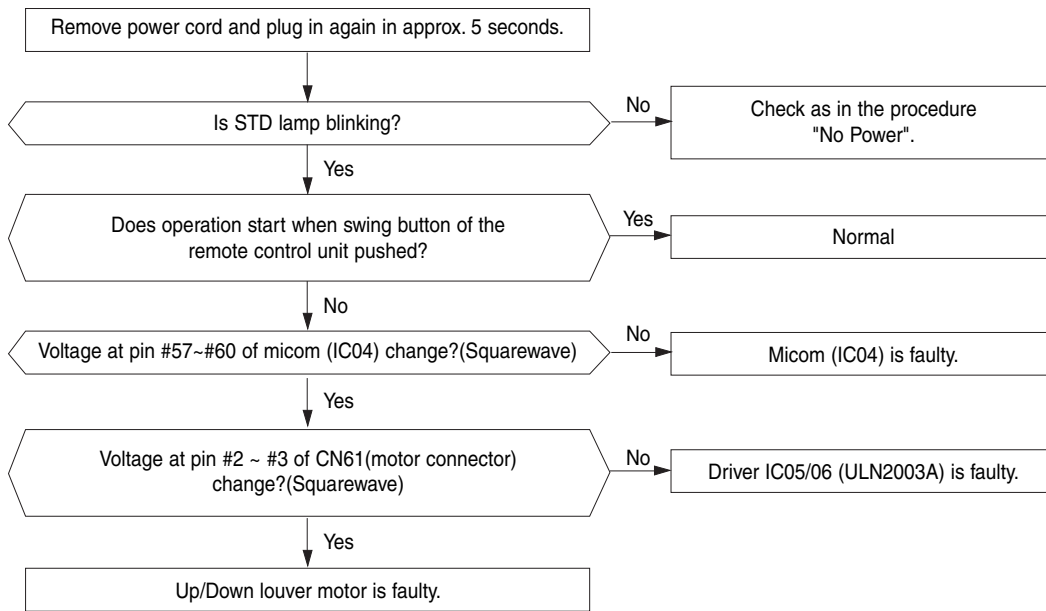
- 1) Is input voltage normal?
- 2) Is the set temperature of the remote control higher than room temperature in COOL mode?
- 3) Is the set temperature of the remote control lower than room temperature in HEAT mode?
- 4) Is the POWER IN connector (CN71) linked correctly?
- 5) Is the outdoor unit properly connected with the TERMINAL BLOCK connector(N(1), 1, 2, 3)?

2. Troubleshooting procedure



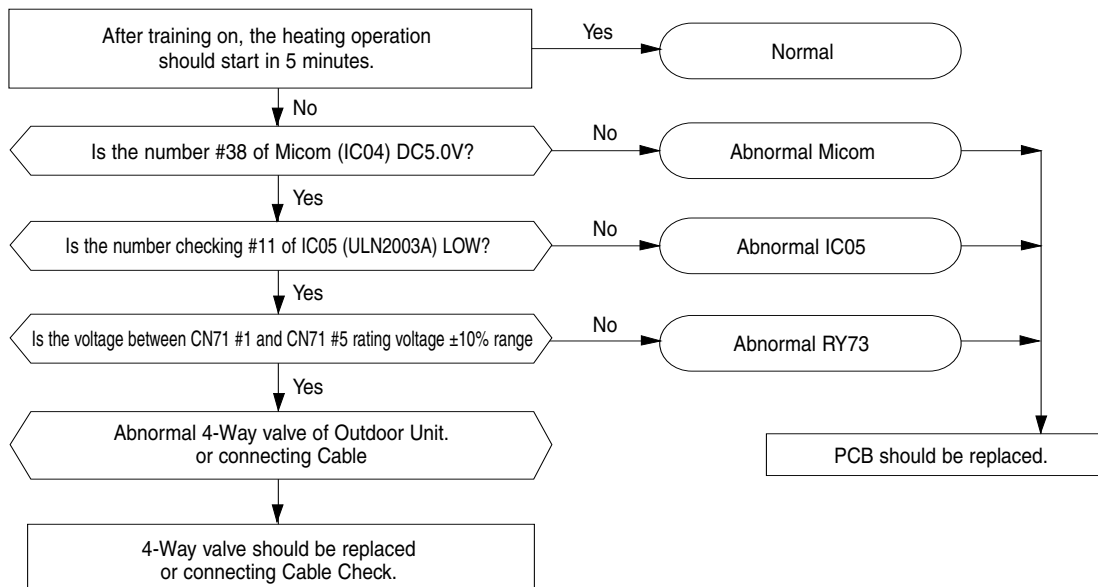
6-2-6 When the Up/Down Louver Motor Does Not Operate. (Initial Diagnosis)

1. Checklist :
 - 1) Is input voltage normal?
 - 2) Is the Up/Down louver motor properly connected with the connector (CN61)?
2. Troubleshooting procedure



6-2-7 In the HEAT mode, When there is no warm air current. Check this first;

1. Is the set temperature of Remote Control lower than room temperature in Heat mode?
2. Is the Indoor PCB properly connected with the CN71 connector?



6-2-8 When the remote control is not receiving

1. Check if the connector was normally assembled.
2. Put the set in operation and check the voltage of No. 15(+) and No. 16(-) of the main PCB CN91 while operating the remote control. When the voltage descends below 3V, the assembly module PCB is normal and the main PCB is poor. Then replace the main PCB.
3. Replace the assembly display PCB because the module PCB is poor if the voltage between No. 15~16 of CN91 maintains 5V after the remote control starts operation.

6-3 PCB Inspection Method

6-3-1 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.

6-3-2 Inspection Procedure

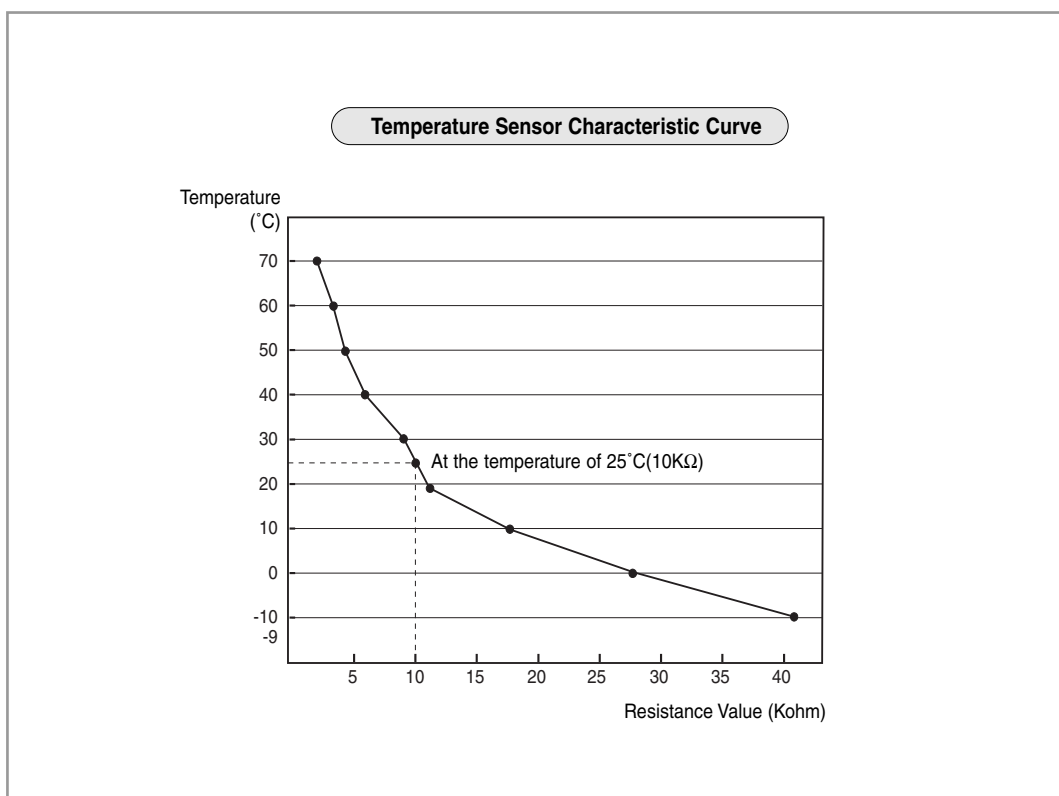
1. Check connector connection and peeling of PCB or bronze coating pattern when you think the PCB is broken.
2. The PCB is composed of the 3 parts.
 - **Main PCB Part** : MICOM and surrounding circuit, relay, room fan motor driving circuit and control circuit, sensor driving circuit, power circuit of DC12V and DC5V, and buzzer driving circuit.
 - **Display part** : LED lamp
 - **Switch part** : Switch

6-3-3 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? (F701)	<ul style="list-style-type: none"> • Overcurrent • Indoor Fan Motor Short • AC Part Pattern Short of the MAIN PCB
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"> • Power Cord is fault, Fuse open. Wrong Power Cable Wiring, AC Part is faulty.
		2) Is the voltage between both terminals of the C103 on the 2 nd side of the transformer DC12V $\pm 0.5V$?	<ul style="list-style-type: none"> • Switching Trans or Power Circuit is faulty
3	Press the ON/OFF button and operate TURBO mode. But, exclude the RESERVE operation.	Checking the power voltage.	
		1) Check the voltage of the relay(RY71) coil(IC05 PIN #11 and GND : 0V, PIN#6 and GND : 5V) during operation(3 minutes after TURBO operation).	<ul style="list-style-type: none"> • Relay(RY71) Coil Disconnection, IC05 is faulty
		2) Check the voltage of both terminals of terminal block 1 and N(1) after 3 minute operation.: AC220V	<ul style="list-style-type: none"> • Relay(RY71) Contact is faulty
4	Press the ON/OFF button. 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"> • Fan Motor of the indoor is faulty
		2) The fan motor of the indoor unit doesn't run.	<ul style="list-style-type: none"> • Fan Motor Connector(CN72) is faulty
		3) The power voltage between terminal #3 and #5 of the connector(CN72) is 0V.	<ul style="list-style-type: none"> • ASS'Y Main PCB is faulty • Connection is faulty

6-3-4 Temperature Sensor Feature Conversion Table(Room Temperature Sensor); 103AT

Temperature [°C]	Sensor Resistance [Kohm]	Temperature [°C]	Sensor Resistance [Kohm]	Temperature [°C]	Sensor Resistance [Kohm]	Temperature [°C]	Sensor Resistance [Kohm]
70	2.229						
69	2.296	49	4.300	29	8.622	9	18.700
68	2.365	48	4.444	28	8.944	8	19.480
67	2.437	47	4.594	27	9.281	7	20.290
66	2.512	46	4.749	26	9.632	6	21.150
65	2.589	45	4.912	25	10	5	22.050
64	2.669	44	5.080	24	10.380	4	22.990
63	2.752	43	5.256	23	10.780	3	23.900
62	2.838	42	5.439	22	11.200	2	25.030
61	2.928	41	5.630	21	11.630	1	26.130
60	3.021	40	5.828	20	12.090	0	27.280
59	3.116	39	6.033	19	12.560	-1	28.470
58	3.216	38	6.246	18	13.060	-2	29.720
57	3.319	37	6.468	17	13.570	-3	31.040
56	3.426	36	6.699	16	14.120	-4	32.430
55	3.537	35	6.941	15	14.680	-5	33.890
54	3.652	34	7.192	14	15.280	-6	35.430
53	3.772	33	7.455	13	15.900	-7	37.050
52	3.897	32	7.729	12	16.550	-8	38.760
51	4.026	31	8.015	11	17.240	-9	40.560
50	4.161	30	8.313	10	17.960		



6-4 Main Part Inspection Method

Part	Breakdown Inspection Method									
Room Temperature Sensor	Measure resistance with a tester									
	Normal	At the normal temperature $37k\Omega \sim 8.3k\Omega (-7^{\circ}\text{C} \sim +30^{\circ}\text{C})$ *Refer to Table 6-3-4.								
	Abnormal	$\infty, 0\Omega$ ··· Open or Short								
Room Fan Motor	Measure the resistance between terminals of the connector (CN72) with a tester.									
	Normal	At the normal temperature ($10^{\circ}\text{C} \sim 30^{\circ}\text{C}$)								
		<table border="1"> <thead> <tr> <th>Compare terminal</th> <th>Resistance</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>Yellow, Blue</td> <td>$404.4\Omega \pm 10\%$</td> <td>Main</td> </tr> <tr> <td>Yellow, Red</td> <td>$340\Omega \pm 10\%$</td> <td>Sub</td> </tr> </tbody> </table>	Compare terminal	Resistance	Remark	Yellow, Blue	$404.4\Omega \pm 10\%$	Main	Yellow, Red	$340\Omega \pm 10\%$
Compare terminal		Resistance	Remark							
Yellow, Blue	$404.4\Omega \pm 10\%$	Main								
Yellow, Red	$340\Omega \pm 10\%$	Sub								
Abnormal	$\infty, 0\Omega$ ··· Open or Short									
Outdoor Fan Motor	Measure the resistance between motor wires with a tester.									
	Normal	At the normal temperature ($10^{\circ}\text{C} \sim 30^{\circ}\text{C}$)								
		<table border="1"> <thead> <tr> <th>Compare terminal</th> <th>Resistance</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>Yellow, Red</td> <td>$360\Omega \pm 10\%$</td> <td>Main</td> </tr> <tr> <td>Black, Yellow</td> <td>$328\Omega \pm 10\%$</td> <td>Sub</td> </tr> </tbody> </table>	Compare terminal	Resistance	Remark	Yellow, Red	$360\Omega \pm 10\%$	Main	Black, Yellow	$328\Omega \pm 10\%$
Compare terminal		Resistance	Remark							
Yellow, Red	$360\Omega \pm 10\%$	Main								
Black, Yellow	$328\Omega \pm 10\%$	Sub								
Abnormal	$\infty, 0\Omega$ ··· Open or Short									
Stepping Motor	Measure the resistance between the red wire and each terminal wire with a tester.									
	Normal	About 300Ω at the normal temperature ($20^{\circ}\text{C} \sim 30^{\circ}\text{C}$)								
	Abnormal	$\infty, 0\Omega$ ··· Open or Short								

MEMO