

Troubleshooting

Contents

1.	Safety Caution	3
2.	General Troubleshooting	4
2.1	Error Display (Indoor Unit).....	4
2.2	Error Display (Outdoor Unit).....	6
3.	Outdoor Unit Point Check Function	8
4.	Error Diagnosis and Troubleshooting Without Error Code.....	14
4.1	Remote maintenance.....	14
4.2	Field maintenance	15
5.	Quick Maintenance by Error Code.....	20
6.	Troubleshooting by Error Code.....	23
6.1	EH 00/EH 0A /EC 51/E0 (EEPROM parameter error diagnosis and solution)...	23
6.2	EL 01 (Indoor and outdoor units communication error diagnosis and solution)	24
6.3	EH 03 / EC 07/E8 (Fan speed is operating outside of the normal range)/EC 71(Over Current Failure of Outdoor DC Fan Motor) Diagnosis and Solution	.27
6.4	EH 60/EH 61/EC 53/EC 52/EC 54/EC 56 /(ODU)E4/EC 50/F1/F2/F3/F4 (Open circuit or short circuit of temperature sensor diagnosis and solution).....	29
6.5	PC 08(Current overload protection)/PC 44(Outdoor unit zero speed protection)/PC 46(Compressor speed has been out of control)/PC 49(Compressor overcurrent failure) diagnosis and solution	30
6.6	PC 00/(ODU)P6(IPM malfunction diagnosis and solution)&(IDU)PC 04(Inverter compressor drive error diagnosis and solution)	32
6.7	PC 01/E5(Over voltage or too low voltage protection)/PC 10(Outdoor unit low AC voltage protection)/PC 11(Outdoor unit main control board DC bus high voltage protection)/PC 12(Outdoor unit main control board DC bus high voltage protection /341 MCE error) Diagnosis and Solution	34

Troubleshooting

Contents

6.8	PC40/E3(Communication malfunction between IPM board and outdoor main board diagnosis and solution)	36
6.9	(ODU)PC 0F/E6(PFC module protection diagnosis and solution).....	37
6.10	(ODU)PC 06/ P4(Temperature protection of compressor discharge diagnosis and solution) 38	
6.11	(ODU)PC 0A/ P5(High temperature protection of condenser diagnosis and solution)	39
6.12	EH 02 (Zero crossing detection error diagnosis and solution)	41
6.13	PC 45 (Outdoor unit IR chip drive failure diagnosis and solution).....	41
6.14	PC 02/(ODU)P0 (Top temperature protection of compressor diagnosis and solution)	42
6.15	(IDU)PC 03/(ODU)P1/PC 30 (High pressure protection diagnosis and solution)43	
6.16	(IDU)PC 03/(ODU)P2/PC 31 (Low pressure protection diagnosis and solution)45	
6.17	(ODU)Ed (Communication malfunction between adapter board and outdoor main control board diagnosis and solution).....	47
6.18	(ODU)CE (Automatic correction of wiring/piping error) diagnosis and solution) ...	47
6.19	EC 72 (Lack phase failure of outdoor DC fan motor diagnosis and solution).48	
6.20	PC 43 (Outdoor compressor lack phase protection diagnosis and solution)..49	
6.21	EH 0b (ndoor PCB / Display board communication error diagnosis and solution)..	50
7.	Check Procedures	51

1. Safety Caution

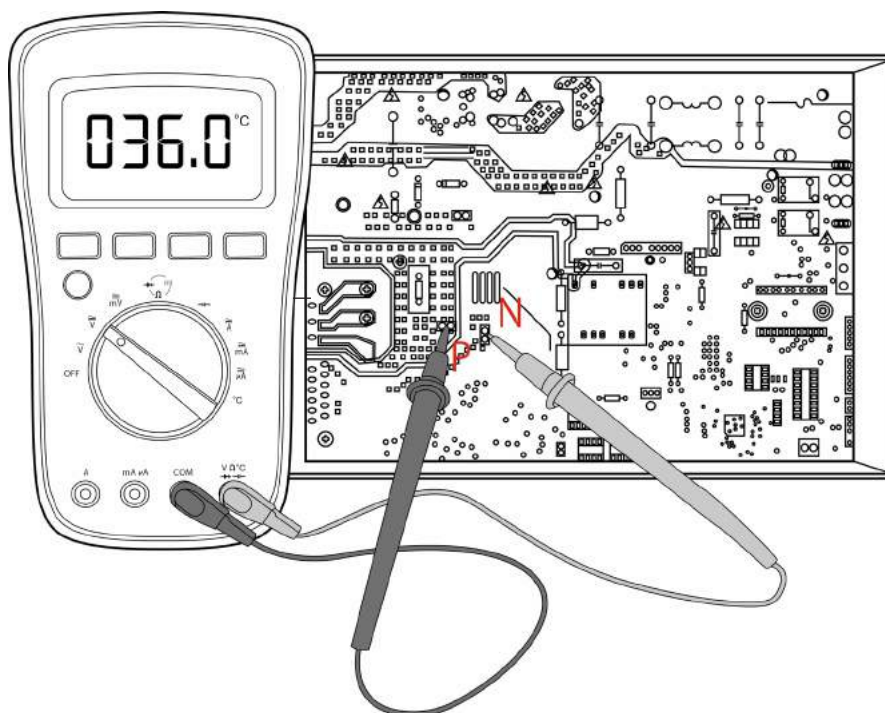
⚠ WARNING

Be sure to turn off all power supplies or disconnect all wires to avoid electric shock. While checking indoor/outdoor PCB, please equip oneself with antistatic gloves or wrist strap to avoid damage to the board.

⚠ WARNING

Electricity remains in capacitors even when the power supply is off. Ensure the capacitors are fully discharged before troubleshooting.

Test the voltage between P and N on back of the main PCB with multimeter. If the voltage is lower than 36V, the capacitors are fully discharged.



Note: This picture is for reference only. Actual appearance may vary.

2. General Troubleshooting

2.1 Error Display (Indoor Unit)

When the indoor unit encounters a recognized error on different models ,

1. the running LED with flash in a corresponding series, the timer LED may turn on or begin flashing;
2. an error code will be displayed;
3. both 1 and 2.

These error codes are described in the following tables:

Running Lamp	Timer Lamp	Display	Information	Solution
--	--	dF	Defrost	Normal Display, not error code
--	--	CL	Filter cleaning reminder(power on display for 15 seconds)	
--	--	CL	Active clean	
--	--	rF	Filter replacement reminder(power on display for 15 seconds)	
--	--	FP	Heating in room temperature under 8°C	
--	--	FC	Forced cooling	
--	--	RP	AP mode of WIFI connection	
--	--	CP	Remote switched off	
1 time	OFF	Eh00/Eh0A	Indoor unit EEPROM parameter error	TS23
2 times	OFF	EL01	Indoor/outdoor units communication error	TS24
3 times	OFF	Eh02	Zero-crossing signal detection error(for some models)	TS41
4 times	OFF	Eh03	The indoor fan speed is operating outside of the normal range	TS27
5 times	OFF	EC51	Outdoor unit EEPROM parameter error	TS23
5 times	OFF	EC52	Condenser coil temperature sensor T3 is in open circuit or has short circuited	TS29
5 times	OFF	EC53	Outdoor room temperature sensor T4 is in open circuit or has short circuited	TS29
5 times	OFF	EC54	Compressor discharge temperature sensor TP is in open circuit or has short circuited	TS29
5 times	OFF	EC56	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited(for free-match indoor units)	TS29
6 times	OFF	Eh60	Indoor room temperature sensor T1 is in open circuit or has short circuited	TS29
6 times	OFF	Eh61	Evaporator coil middle temperature sensor T2 is in open circuit or has short circuited	TS29
12 times	OFF	EC07	The outdoor fan speed is operating outside of the normal range	TS27
9 times	OFF	Eh0b	Indoor PCB/Display board communication error	TS50
7 times	FLASH	PC00	IPM malfunction or IGBT over-strong current protection	TS32
2 times	FLASH	PC01	Over voltage or over low voltage protection	TS34
3 times	FLASH	PC02	Top temperature protection of compressor or High temperature protection of IPM module or High pressure protection	TS42
5 times	FLASH	PC04	Inverter compressor drive error	TS32
1 time	FLASH	PC08	Current overload protection	TS30
6 times	FLASH	PC40	Communication error between outdoor main chip and compressor driven chip	TS36

7 times	FLASH	P03	High pressure protection or low pressure protection	TS43/TS45
1 times	ON	--	Indoor units mode conflict(match with multi outdoor unit)	--

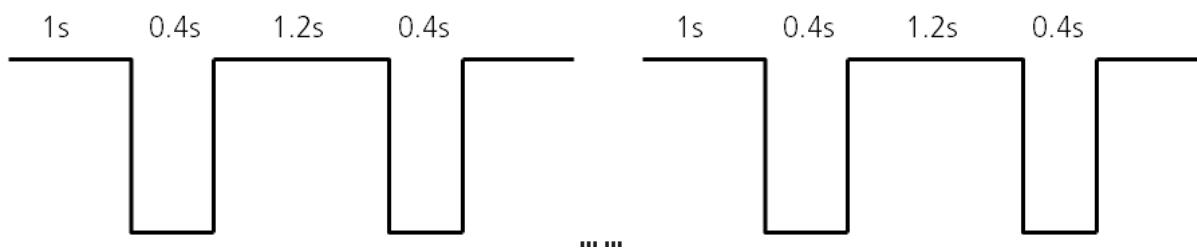
For other errors:

The display board may show a garbled code or a code undefined by the service manual. Ensure that this code is not a temperature reading.

Troubleshooting:

Test the unit using the remote control. If the unit does not respond to the remote, the indoor PCB requires replacement. If the unit responds, the display board requires replacement.

88 flash frequency:



2.2 Error Display (Outdoor unit)

For some models,

Display	Error Information	Solution
--	Standby	Normal Display, not error code
dF	Defrosting	
PH	Compressor pre-heating	
RO	Oil return	
LC	Low ambient cooling	
FC	Forced cooling	
CE	Automatic wiring/piping correction	TS47
E0	Outdoor EEPROM malfunction	TS23
E2	Indoor / outdoor units communication error	TS24
E3	Communication malfunction between IPM board and outdoor main board	TS36
E4	Open or short circuit of outdoor unit temperature sensor(T3,T4.Tp)	TS29
E5	Over voltage or over low voltage protection	TS34
E6	PFC module protection	TS37
E8	The outdoor fan speed is operating outside of the normal range	TS27
F1	No A Indoor unit coil outlet temperature sensor or connector of sensor is defective	TS29
F2	No B Indoor unit coil outlet temperature sensor or connector of sensor is defective	TS29
F3	No C Indoor unit coil outlet temperature sensor or connector of sensor is defective	TS29
F4	No D Indoor unit coil outlet temperature sensor or connector of sensor is defective	TS29
F5	No E Indoor unit coil outlet temperature sensor or connector of sensor is defective	TS29
F6	No F Indoor unit coil outlet temperature sensor or connector of sensor is defective	TS29
P0	Top temperature protection of compressor	TS42
P1	High pressure protection	TS43
P2	Low pressure protection	TS45
P3	Current protection of compressor	TS30
P4	Temperature protection of compressor discharge	TS38
P5	High temperature protection of condenser	TS39
P6	IPM module protection	TS32
LP	Low ambient temperature protection	--
Ed	Communication malfunction between adapter board and outdoor main control board	TS47

For some models,

Display	Malfunction or Protection	Solution
dF	Defrosting	Normal Display, not error code
FC	Forced cooling	
EE 51	Outdoor EEPROM malfunction	TS23
EU 01	Indoor / outdoor units communication error	TS24
PC 40	Communication malfunction between IPM board and outdoor main board	TS36
PC 08	Outdoor overcurrent protection	TS30
PC 10	Outdoor unit low AC voltage protection	TS34
PC 11	Outdoor unit main control board DC bus high voltage protection	TS34
PC 12	Outdoor unit main control board DC bus high voltage protection /341 MCE error	TS34
PC 00	IPM module protection	TS32
PC 0F	PFC module protection	TS37
EE 71	Over current failure of outdoor DC fan motor	TS27
EE 72	Lack phase failure of outdoor DC fan motor	TS48
EE 07	Outdoor fan speed has been out of control	TS27
PC 43	Outdoor compressor lack phase protection	TS49
PC 44	Outdoor unit zero speed protection	TS30
PC 45	Outdoor unit IR chip drive failure	TS41
PC 46	Compressor speed has been out of control	TS30
PC 49	Compressor overcurrent failure	TS30
PC 30	High pressure protection	TS43
PC 31	Low pressure protection	TS45
PC 0A	High temperature protection of condenser	TS40
PC 06	Temperature protection of compressor discharge	TS38
PC 02	Top temperature protection of compressor	TS42
EE 52	Condenser coil temperature sensor T3 is in open circuit or has short circuited	TS29
EE 53	Outdoor room temperature sensor T4 is in open circuit or has short circuited	TS29
EE 54	Compressor discharge temperature sensor TP is in open circuit or has short circuited	TS29
EE 56	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited	TS29
EE 50	Open or short circuit of outdoor unit temperature sensor(T3,T4.TP)	TS29
LC 06	IPM module frequency limit shutdown/IPM high temperature protection	--
PC 0L	Low ambient temperature protection	--

3. Outdoor Unit Point Check Function

- A check switch is included on the outdoor PCB.
- Push SW1 to check the unit's status while running. The digital display shows the following codes each time the SW1 is pushed.

For some models,

Number of Presses	Display	Remark
0	Normal display	Displays running frequency, running state, or malfunction code
1	Quantity of indoor units with working connection	Display Number of indoor unit 1 1 2 2 3 3 4 4
2	Outdoor unit running mode code	Standby: 0, Fan only: 1, Cooling: 2, Heating: 3, Forced cooling: 4, Forced defrosting: A
3	Indoor unit A capacity	The capacity unit is horse power. If the indoor unit is not connected, the digital display shows the following: "--" (9K:1HP,12K:1.2HP,18K:1.5HP)
4	Indoor unit B capacity	
5	Indoor unit C capacity	
6	Indoor unit D capacity	
7	Indoor unit E capacity	
8	Indoor unit A capacity demand code	Norm code*HP (9K: 1HP,12K: 1.2HP,18K: 1.5HP)
9	Indoor unit B capacity demand code	
10	Indoor unit C capacity demand code	
11	Indoor unit D capacity demand code	
12	Indoor unit E capacity demand code	
13	Outdoor unit amendatory capacity demand code	
14	The frequency corresponding to the total indoor units' amendatory capacity demand	
15	The frequency after the frequency limit	
16	The frequency sending to compressor control chip	

17	Indoor unit A evaporator outlet temperature (T2BA)	If the temperature is lower than -9°C, the digital display shows "-9." If the temperature is higher than 70°C, the digital display shows "70." If the indoor unit is not connected, the digital display shows: "--"
18	Indoor unit B evaporator outlet temperature (T2BB)	
19	Indoor unit C evaporator outlet temperature (T2BC)	
20	Indoor unit D evaporator outlet temperature (T2BD)	
21	Indoor unit E evaporator outlet temperature (T2BE)	
22	Indoor unit A room temperature (T1A)	If the temperature is lower than 0°C, the digital display shows "0." If the temperature is higher than 70°C, the digital display shows "70." If the indoor unit is not connected, the digital display shows: "--"
23	Indoor unit B room temperature (T1B)	
24	Indoor unit C room temperature (T1C)	
25	Indoor unit D room temperature (T1D)	
26	Indoor unit E room temperature (T1E)	
27	Indoor unit A evaporator temperature (T2A)	If the temperature is lower than -9°C, the digital display shows "-9." If the temperature is higher than 70°C, the digital display shows "70." If the indoor unit is not connected, the digital display shows: "--"
28	Indoor unit B evaporator temperature (T2B)	
29	Indoor unit C evaporator temperature (T2C)	
30	Indoor unit D evaporator temperature (T2D)	
31	Indoor unit E evaporator temperature (T2E)	
32	Condenser pipe temperature (T3)	
33	Outdoor ambient temperature (T4)	
34	Compressor discharge temperature (TP)	The display value is between 30–129°C. If the temperature is lower than 30°C, the digital display shows "30." If the temperature is higher than 99°C, the digital display shows single and double digits. For example, if the digital display shows "0.5", the compressor discharge temperature is 105°C.
35	AD value of current	The display value is a hex number.
36	AD value of voltage	For example, the digital display tube shows "Cd", it means AD value is 205.

37	EXV open angle for A indoor unit	Actual data/4. If the value is higher than 99, the digital display shows single and double digits. For example, if the digital display shows "2.0", the EXV open angle is 120×4=480p.		
38	EXV open angle for B indoor unit			
39	EXV open angle for C indoor unit			
40	EXV open angle for D indoor unit			
41	EXV open angle for E indoor unit			
42	Frequency limit symbol	Bit7	Frequency limit caused by IGBT radiator	The display value is a hexadecimal number. For example, the digital display show 2A, then Bit5=1, Bit3=1, and Bit1=1. This means that a frequency limit may be caused by T4, T3, or the current.
		Bit6	Frequency limit caused by PFC	
		Bit5	Frequency limit caused by T4.	
		Bit4	Frequency limit caused by T2.	
		Bit3	Frequency limit caused by T3.	
		Bit2	Frequency limit caused by T5.	
		Bit1	Frequency limit caused by current	
		Bit0	Frequency limit caused by voltage	
43	Average value of T2	(Sum T2 value of all indoor units)/(number of indoor units in good connection)		
44	Outdoor unit fan motor state	Off: 0, Turbo:1 High speed:2, Med speed: 3, Low speed: 4, Breeze:5, Super breeze: 6		
45	The last error or protection code	00 means no malfunction and protection		
46	F indoor unit capacity	Reserved		
47	F indoor unit capacity demand code			
48	F indoor unit evaporator outlet temperature (T2BF)			
49	F indoor unit room temperature (T1F)			
50	F indoor unit evaporator temperature (T2F)			
51	EXV open angle for F indoor unit			
52	Reason of stop			

For key board models,

Number of Presses	Display	Remark
0	Normal display	Displays running frequency, running state, or malfunction code
1	Quantity of indoor units with working connection	Display Number of indoor unit 1 1 2 2 3 3 4 4
2	Outdoor unit running mode code	Standby: 0, Fan only: 1, Cooling: 2, Heating: 3, Forced cooling: 4, Forced defrosting: A
3	Indoor unit A capacity	The capacity unit is horse power. If the indoor unit is not connected, the digital display shows the following: "--" (9K:1HP,12K:1.2HP,18K:1.5HP)
4	Indoor unit B capacity	
5	Indoor unit C capacity	
6	Indoor unit D capacity	
7	Indoor unit E capacity	
8	Indoor unit A capacity demand code	Norm code*HP (9K: 1HP,12K: 1.2HP,18K: 1.5HP)
9	Indoor unit B capacity demand code	
10	Indoor unit C capacity demand code	
11	Indoor unit D capacity demand code	
12	Indoor unit E capacity demand code	
13	Outdoor unit amendatory capacity demand code	
14	The frequency corresponding to the total indoor units' amendatory capacity demand	
15	The frequency after the frequency limit	
16	The frequency sending to compressor control chip	
17	Indoor unit A evaporator outlet temperature (T2BA)	If the temperature is lower than -9°C, the digital display shows "-9." If the temperature is higher than 70°C, the digital display shows "70." If the indoor unit is not connected, the digital display shows "--"
18	Indoor unit B evaporator outlet temperature (T2BB)	
19	Indoor unit C evaporator outlet temperature (T2BC)	
20	Indoor unit D evaporator outlet temperature (T2BD)	
21	Indoor unit E evaporator outlet temperature (T2BE)	

22	Indoor unit A room temperature (T1A)	If the temperature is lower than 0°C, the digital display shows "0." If the temperature is higher than 70°C, the digital display shows "70." If the indoor unit is not connected, the digital display shows: "--"
23	Indoor unit B room temperature (T1B)	
24	Indoor unit C room temperature (T1C)	
25	Indoor unit D room temperature (T1D)	
26	Indoor unit E room temperature (T1E)	
27	Indoor unit A evaporator temperature (T2A)	If the temperature is lower than -9°C, the digital display shows "-9." If the temperature is higher than 70°C, the digital display shows "70." If the indoor unit is not connected, the digital display shows: "--"
28	Indoor unit B evaporator temperature (T2B)	
29	Indoor unit C evaporator temperature (T2C)	
30	Indoor unit D evaporator temperature (T2D)	
31	Indoor unit E evaporator temperature (T2E)	
32	Condenser pipe temperature (T3)	
33	Outdoor ambient temperature (T4)	The display value is between 30–129°C. If the temperature is lower than 30°C, the digital display shows "30." If the temperature is higher than 99°C, the digital display shows single and double digits. For example, if the digital display shows "0.5", the compressor discharge temperature is 105°C.
34	Compressor discharge temperature (TP)	
35	AD value of current	
36	AD value of AC voltage	The display value is a hex number. For example, the digital display tube shows "Cd", it means AD value is 205.
37	AD value of DC voltage	
38	EXV open angle for A indoor unit	Actual data/4. If the value is higher than 99, the digital display shows single and double digits. For example, if the digital display shows "2.0", the EXV open angle is 120×4=480p.
39	EXV open angle for B indoor unit	
40	EXV open angle for C indoor unit	
41	EXV open angle for D indoor unit	
42	EXV open angle for E indoor unit	
43	MVI valve open angle	
44	EVI valve open angle	

45	Frequency limit symbol	Bit7	Frequency limit caused by IGBT radiator	The display value is a hexadecimal number. For example, the digital display show 2A, then Bit5=1, Bit3=1, and Bit1=1. This means that a frequency limit may be caused by current, IPM or T3.
		Bit6	Frequency limit caused by PFC	
		Bit5	Frequency limit caused by T4.	
		Bit4	Frequency limit caused by T2.	
		Bit3	Frequency limit caused by T3.	
		Bit2	Frequency limit caused by T5.	
		Bit1	Frequency limit caused by current	
		Bit0	Frequency limit caused by voltage	
46	T2B fault	00:No fault,01:T2B-A fault, ,02:T2B-B fault ,03:T2B-C fault,04:T2B-D fault, 05:T2B-E fault, 06:T2B-F fault(The display priority is A-B-C-D-E-F)		
47	Average value of T2	(Sum T2 value of all indoor units)/(number of indoor units in good connection)(The heating is the average value of T2, and the cooling is the average value of T2B)		
48	Outdoor unit fan motor state	Off: 0, Super ultra high speed:1, Super high speed:2, High speed:3, Med speed: 4, Low speed: 5, Breeze:6, Super breeze: 7		
49	Reason of stop			

4. Error Diagnosis and Troubleshooting Without Error Code



WARNING

Be sure to turn off unit before any maintenance to prevent damage or injury.

4.1 Remote maintenance

SUGGESTION: When troubles occur, please check the following points with customers before field maintenance.

No.	Problem	Solution
1	Unit will not start	Page 16~17
2	The power switch is on but fans will not start	Page 16~17
3	The temperature on the display board cannot be set	Page 16~17
4	Unit is on but the wind is not cold(hot)	Page 16~17
5	Unit runs, but shortly stops	Page 16~17
6	The unit starts up and stops frequently	Page 16~17
7	Unit runs continuously but insufficient cooling(heating)	Page 16~17
8	Cool can not change to heat	Page 16~17
9	Unit is noisy	Page 16~17

4.2 Field maintenance

	Problem	Solution
1	Unit will not start	Page 18~19
2	Compressor will not start but fans run	Page 18~19
3	Compressor and condenser (outdoor) fan will not start	Page 18~19
4	Evaporator (indoor) fan will not start	Page 18~19
5	Condenser (Outdoor) fan will not start	Page 18~19
6	Unit runs, but shortly stops	Page 18~19
7	Compressor short-cycles due to overload	Page 18~19
8	High discharge pressure	Page 18~19
9	Low discharge pressure	Page 18~19
10	High suction pressure	Page 18~19
11	Low suction pressure	Page 18~19
12	Unit runs continuously but insufficient cooling	Page 18~19
13	Too cool	Page 18~19
14	Compressor is noisy	Page 18~19
15	Horizontal louver can not revolve	Page 18~19

1.Remote Maintenance	Electrical Circuit				Refrigerant Circuit													
Possible causes of trouble	Power failure																	
	The main power tripped																	
	Loose connections																	
	Faulty transformer																	
	The voltage is too high or too low																	
	The remote control is powered off																	
	Broken remote control																	
	Dirty air filter																	
	Dirty condenser fins																	
	The setting temperature is higher/lower than the room's(cooling/heating)																	
	The ambient temperature is too high/low when the mode is cooling/heating																	
	Fan mode																	
	SILENCE function is activated(optional function)																	
Frosting and defrosting frequently																		
Unit will not start	☆	☆	☆	☆														
The power switch is on but fans will not start			☆	☆	☆													
The temperature on the display board cannot be set						☆	☆											
Unit is on but the wind is not cold(hot)										☆	☆	☆						
Unit runs, but shortly stops					☆					☆	☆							
The unit starts up and stops frequently					☆						☆					☆		
Unit runs continuously but insufficient cooling(heating)								☆	☆	☆	☆			☆				
Cool can not change to heat																		
Unit is noisy																		
Test method / remedy	Test voltage																	
	Close the power switch																	
	Inspect connections - tighten																	
	Change the transformer																	
	Test voltage																	
	Replace the battery of the remote control																	
	Replace the remote control																	
	Clean or replace																	
	Clean																	
	Adjust the setting temperature																	
	Turn the AC later																	
	Adjust to cool mode																	
	Turn off SILENCE function.																	
Turn the AC later																		

1.Remote Maintenance	Others					
Possible causes of trouble	Heavy load condition	Loosen hold down bolts and / or screws	Bad airproof	The air inlet or outlet of either unit is blocked	Interference from cell phone towers and remote boosters	Shipping plates remain attached
Unit will not start						
The power switch is on but fans will not start					☆	
The temperature on the display board cannot be set						
Unit is on but the wind is not cold(hot)						
Unit runs, but shortly stops						
The unit starts up and stops frequently				☆		
Unit runs continuously but insufficient cooling(heating)	☆		☆	☆		
Cool can not change to heat						
Unit is noisy		☆				☆
Test method / remedy	Check heat load	Tighten bolts or screws	Close all the windows and doors	Remove the obstacles	Reconnect the power or press ON/OFF button on remote control to restart operation	Remove them

2.Field Maintenance	Refrigerant Circuit														Others								
Possible causes of trouble	Compressor stuck	Shortage of refrigerant	Restricted liquid line	Dirty air filter	Dirty evaporator coil	Insufficient air through evaporator coil	Overcharge of refrigerant	Dirty or partially blocked condenser	Air or incompressible gas in refrigerant cycle	Short cycling of condensing air	High temperature condensing medium	Insufficient condensing medium	Broken compressor internal parts	Inefficient compressor	Expansion valve obstructed	Expansion valve or capillary tube closed completely	Leaking power element on expansion valve	Poor installation of feeler bulb	Heavy load condition	Loosen hold down bolts and / or screws	Shipping plates remain attached	Poor choices of capacity	Contact of piping with other piping or external plate
Unit will not start																							
Compressor will not start but fans run	☆																						
Compressor and condenser (outdoor) fan will not start																							
Evaporator (indoor) fan will not start																							
Condenser (Outdoor) fan will not start																							
Unit runs, but shortly stops		☆	☆				☆	☆								☆	☆						
Compressor short-cycles due to overload		☆					☆	☆															
High discharge pressure							☆	☆	☆	☆	☆												
Low discharge pressure		☆												☆									
High suction pressure							☆							☆				☆	☆				
Low suction pressure		☆	☆	☆	☆	☆								☆	☆	☆							
Unit runs continuously but insufficient cooling		☆	☆	☆	☆	☆		☆	☆	☆				☆					☆			☆	
Too cool																							
Compressor is noisy							☆						☆							☆	☆		☆
Horizontal louver can not revolve																							
Test method / remedy	Replace the compressor	Leak test	Replace restricted part	Clean or replace	Clean coil	Check fan	Change charged refrigerant volume	Clean condenser or remove obstacle	Purge, evacuate and recharge	Remove obstruction to air flow	Remove obstruction in air or water flow	Remove obstruction in air or water flow	Replace compressor	Test compressor efficiency	Replace valve	Replace valve	Replace valve	Fix feeler bulb	Check heat load	Tighten bolts or screws	Remove them	Choose AC of lager capacity or add the number of AC	Rectify piping so as not to contact each other or with external plate

2.Field Maintenance	Electrical Circuit														
Possible causes of trouble	Power failure	Blown fuse or varistor	Loose connections	Shorted or broken wires	Safety device opens	Faulty thermostat / room temperature sensor	Wrong setting place of temperature sensor	Faulty transformer	Shorted or open capacitor	Faulty magnetic contactor for compressor	Faulty magnetic contactor for fan	Low voltage	Faulty stepping motor	Shorted or grounded compressor	Shorted or grounded fan motor
Unit will not start	☆	☆	☆	☆	☆			☆							
Compressor will not start but fans run				☆		☆			☆	☆				☆	
Compressor and condenser (outdoor) fan will not start				☆		☆				☆					
Evaporator (indoor) fan will not start				☆					☆		☆				☆
Condenser (Outdoor) fan will not start				☆		☆			☆		☆				☆
Unit runs, but shortly stops										☆		☆			
Compressor short-cycles due to overload										☆		☆			
High discharge pressure															
Low discharge pressure															
High suction pressure															
Low suction pressure															
Unit runs continuously but insufficient cooling															
Too cool						☆	☆								
Compressor is noisy															
Horizontal louver can not revolve			☆	☆									☆		
Test method / remedy	Test voltage	Inspect fuse type & size	Inspect connections - tighten	Test circuits with tester	Test continuity of safety device	Test continuity of thermostat / sensor & wiring	Place the temperature sensor at the central of the air inlet grille	Check control circuit with tester	Check capacitor with tester	Test continuity of coil & contacts	Test continuity of coil & contacts	Test voltage	Replace the stepping motor	Check resistance with multimeter	Check resistance with multimeter

5. Quick Maintenance by Error Code

If you do not have the time to test which specific parts are faulty, you can directly change the required parts according the error code. You can find the parts to replace by error code in the following table.

Part requiring replacement	Error Code											
	EH 00/EH 0R	EL 01/E2	EH 03	EH 60	EH 61	(O)EC 50/E4	EH 02	PC 02/(O) P0	EC 53	EC 52	EC 54	EH 0b
Indoor PCB	✓	✓	✓	✓	✓	x	✓	x	x	x	x	✓
Display board	x	x	x	x	x	x	x	x	x	x	x	✓
Outdoor PCB	x	✓	x	x	x	✓	x	✓	✓	✓	✓	x
Indoor fan motor	x	x	✓	x	x	x	x	x	x	x	x	x
T1 sensor	x	x	x	✓	x	x	x	x	x	x	x	x
T2 Sensor	x	x	x	x	✓	x	x	x	x	x	x	x
T3 Sensor	x	x	x	x	x	✓	x	x	x	✓	x	x
T4 Sensor	x	x	x	x	x	✓	x	x	✓	x	x	x
TP Sensor	x	x	x	x	x	✓	x	x	x	x	✓	x
Reactor	x	✓	x	x	x	x	x	x	x	x	x	x
IPM module board	x	✓	x	x	x	x	x	x	x	x	x	x
Over load protector	x	x	x	x	x	x	x	✓	x	x	x	x

Part requiring replacement	Error Code							
	EC 51/ (O)Ed/ E0	EC 56/ (O)F1/ F2/F3/ F4/F5/ F6	EC 07/ (O)EC 71/E8	PC 08/(O)PC 44/ PC 46/ PC 49/ P3	PC 00/PC 04/(O) P6	PC 01/(O)PC 10/ PC 11/PC 12/E5	(O)E3	(O)PC 0F/E6
Outdoor PCB	✓	✓	✓	✓	✓	✓	✓	✓
Outdoor fan motor	x	x	✓	✓	✓	x	x	x
T3 Sensor	x	x	x	x	x	x	x	x
T4 Sensor	x	x	x	x	x	x	x	x
TP Sensor	x	x	x	x	x	x	x	x
T2B Sensor	x	✓	x	x	x	x	x	x
Reactor or inductance	x	x	x	✓	✓	✓	x	✓
Compressor	x	x	x	x	✓	x	x	x
IPM module board	x	x	x	✓	✓	✓	✓	x
Bridge rectifier	x	x	x	✓	✓	✓	x	x
PFC module	x	x	x	x	x	x	x	✓
Additional refrigerant	x	x	x	x	x	x	x	x
Electric control box	x	x	x	x	x	x	✓	x
High pressure switch	x	x	x	x	x	x	x	x
Low pressure switch	x	x	x	x	x	x	x	x

Note: For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole.

Part requiring replacement	Error Code							
	PC 40	EC 72	PC 43	PC 45	(O)PC 06/P4	(O)PC 0R/P5	(O)PC 30/P1	PC 03/(O) PC 31/P2
Outdoor PCB	✓	✓	✓	x	✓	✓	✓	✓
Outdoor fan motor	x	✓	x	x	x	✓	✓	✓
T3 Sensor	x	x	x	x	x	✓	x	x
T4 Sensor	x	x	x	x	x	x	x	x
TP Sensor	x	x	x	x	✓	x	x	x
T2B Sensor	x	x	x	x	x	x	x	x
Reactor or inductance	x	x	x	x	x	x	x	x
Compressor	x	x	✓	x	x	x	x	x
IPM module board	x	x	x	✓	x	x	x	x
Bridge rectifier	x	x	x	x	x	x	x	x
PFC module	x	x	x	x	x	x	x	x
Additional refrigerant	x	x	x	x	✓	✓	x	✓
Electric control box	✓	x	x	x	x	x	x	x
High pressure switch	x	x	x	x	x	x	✓	x
Low pressure switch	x	x	x	x	x	x	x	✓

Note: For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole.

6. Troubleshooting by Error Code

6.1 EH 00/EH 0A /EC 51/E0 (EEPROM parameter error diagnosis and solution)

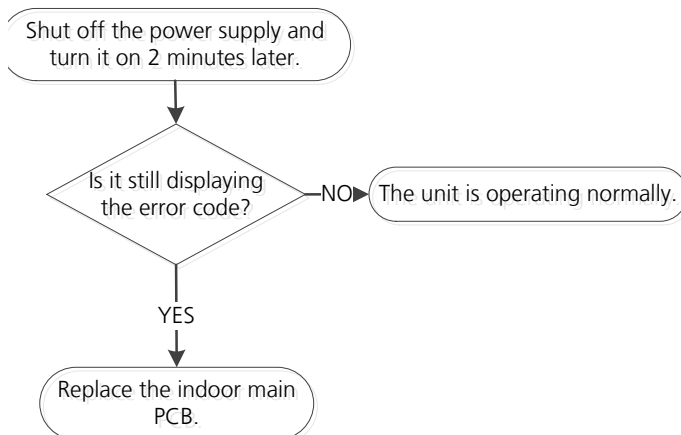
Description: Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.

Recommended parts to prepare:

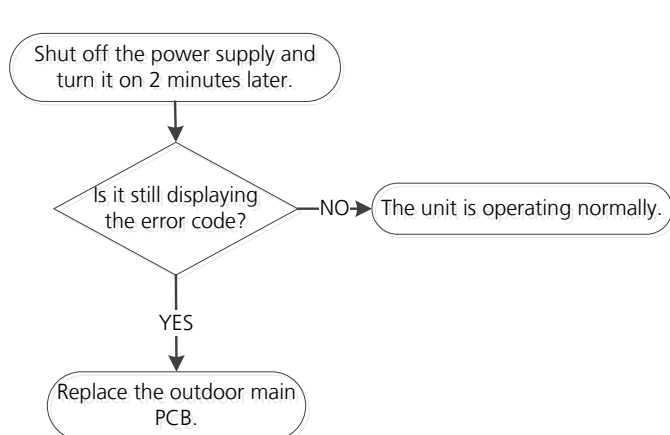
- Indoor PCB
- Outdoor PCB

Troubleshooting and repair:

EH 00/EH 0A



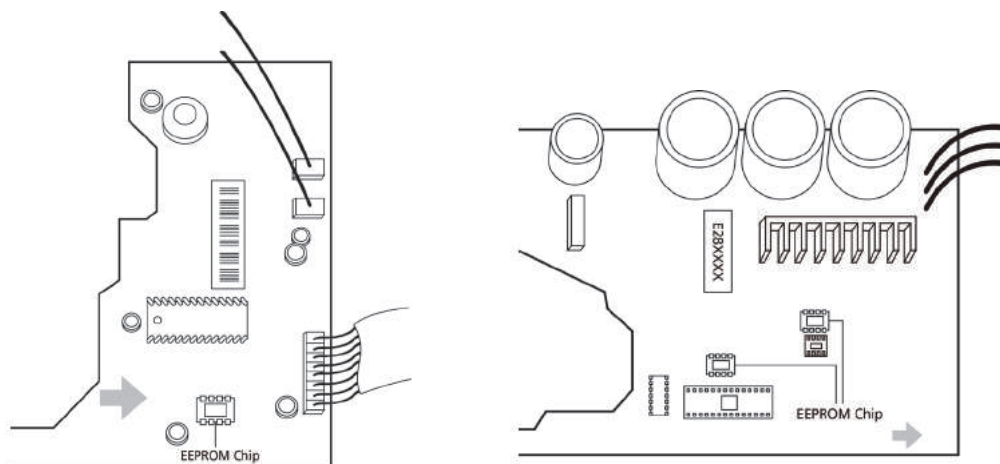
EC 51



Remarks:

EEPROM: A read-only memory whose contents can be erased and reprogrammed using a pulsed voltage.

The location of the EEPROM chip on the indoor and outdoor PCB is shown in the following two images:



Note: For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole. This pictures are only for reference, actual appearance may vary.

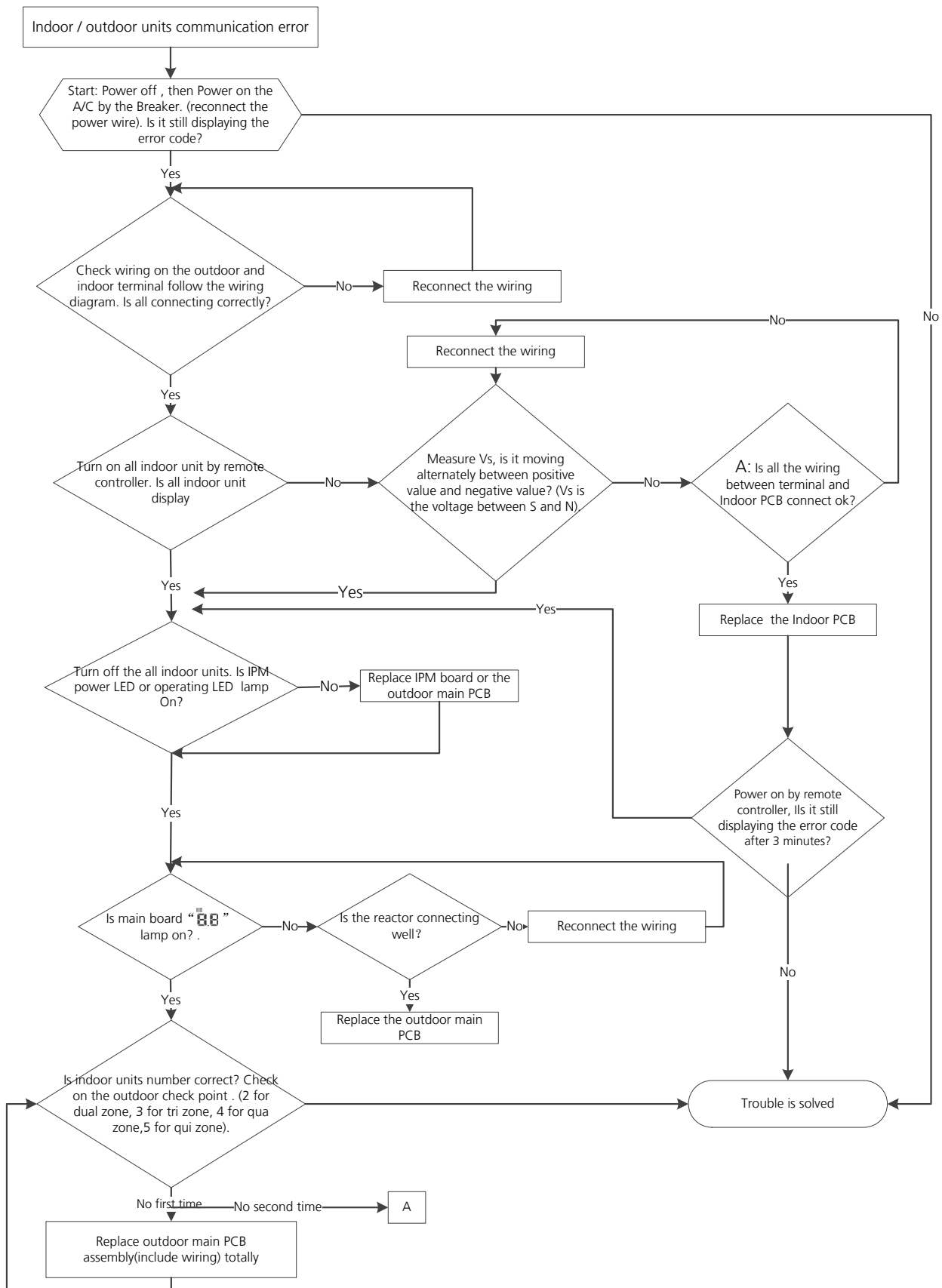
6.2 EL 01(Indoor and outdoor unit communication error diagnosis and solution)

Description: Indoor unit does not receive the feedback from outdoor unit during 110 seconds and this condition happens 4 times continuously.

Recommended parts to prepare:

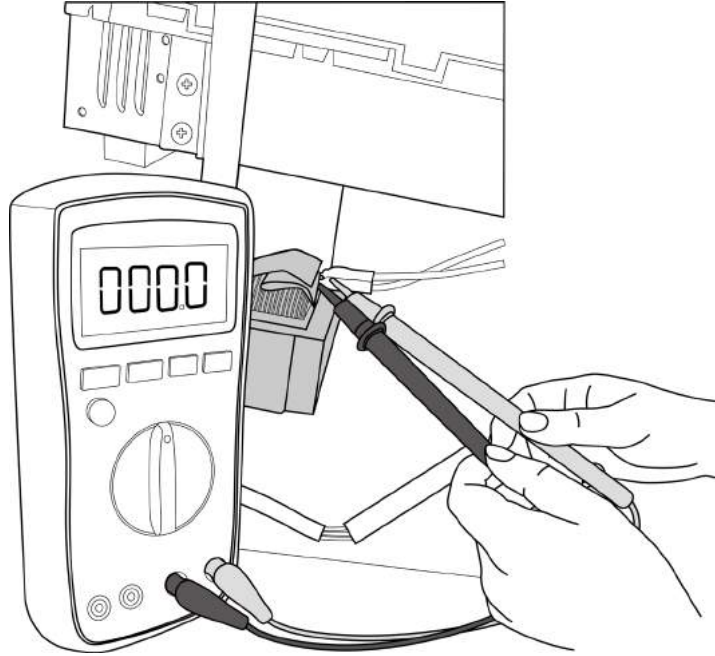
- Indoor PCB
- Outdoor PCB
- IPM module board
- Reactor

Troubleshooting and repair:



Remarks:

- Use a multimeter to test the resistance of the reactor which does not connect with capacitor.
- The normal value should be around zero ohm. Otherwise, the reactor must have malfunction.



Note: The picture and the value are only for reference, actual condition and specific value may vary.

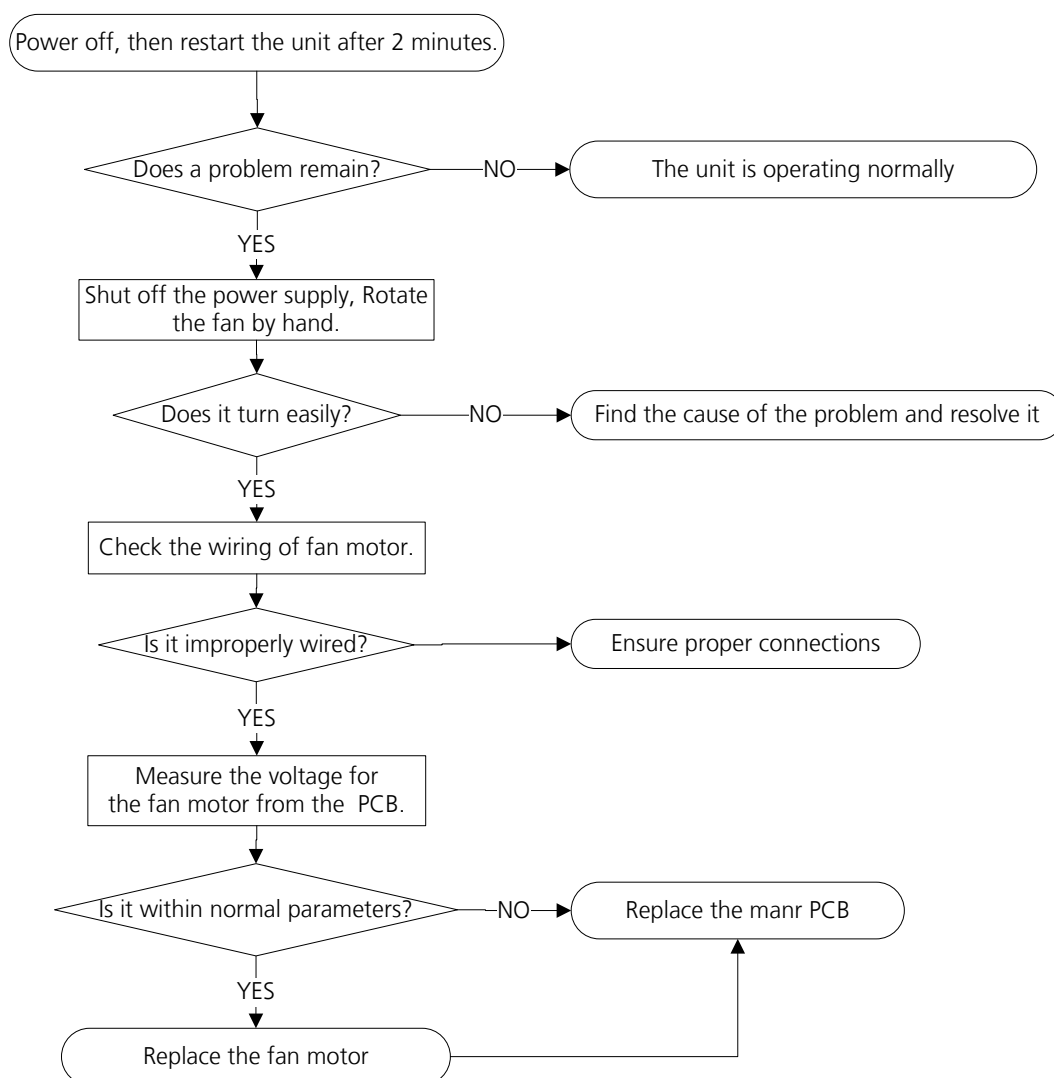
6.3 EH 03 / EC 07/E8 (Fan Speed Is Operating Outside of Normal Range)/EC 71(Over Current Failure of Outdoor DC Fan Motor) Diagnosis and Solution

Description: When indoor / outdoor fan speed keeps too low or too high for a certain time, the LED displays the failure code and the AC turns off.

Recommended parts to prepare:

- Connection wires
- Fan assembly
- Fan motor
- PCB

Troubleshooting and repair:



Note: For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole.

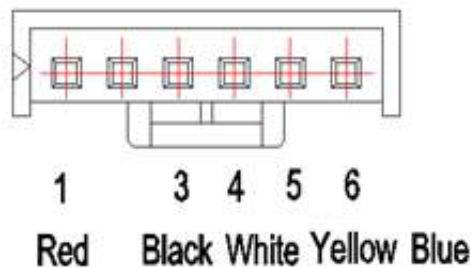
Index:

1. Indoor or Outdoor DC Fan Motor(control chip is in fan motor)

Power on and when the unit is in standby, measure the voltage of pin1-pin3, pin4-pin3 in fan motor connector. If the value of the voltage is not in the range showing in below table, the PCB must has problems and need to be replaced.

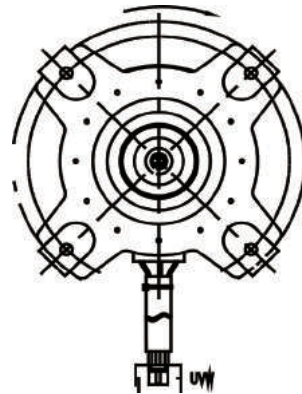
- DC motor voltage input and output (voltage: 220-240V~):

No.	Color	Signal	Voltage
1	Red	Vs/Vm	192V~380V
2	---	---	---
3	Black	GND	0V
4	White	Vcc	13.5-16.5V
5	Yellow	Vsp	0~6.5V
6	Blue	FG	13.5-16.5V



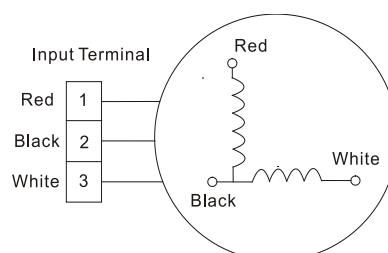
2. Outdoor DC Fan Motor (control chip is in outdoor PCB)

Release the UVW connector. Measure the resistance of U-V, U-W, V-W. If the resistance is not equal to each other, the fan motor must has problems and need to be replaced. otherwise the PCB must has problems and need to be replaced.



3. Indoor AC Fan Motor

Power on and set the unit running in fan mode at high fan speed. After running for 15 seconds, measure the voltage of pin1 and pin2. If the value of the voltage is less than 100V(208~240V power supply) or 50V (115V power supply), the PCB must has problems and need to be replaced.



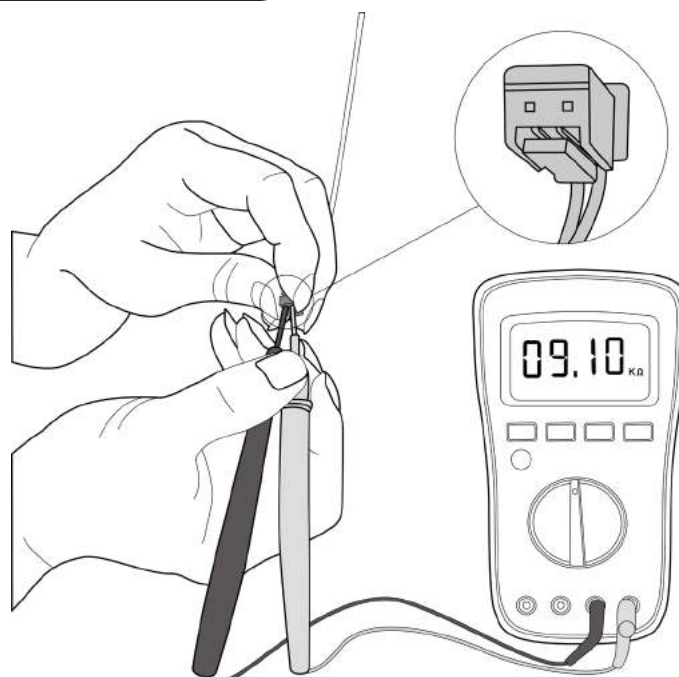
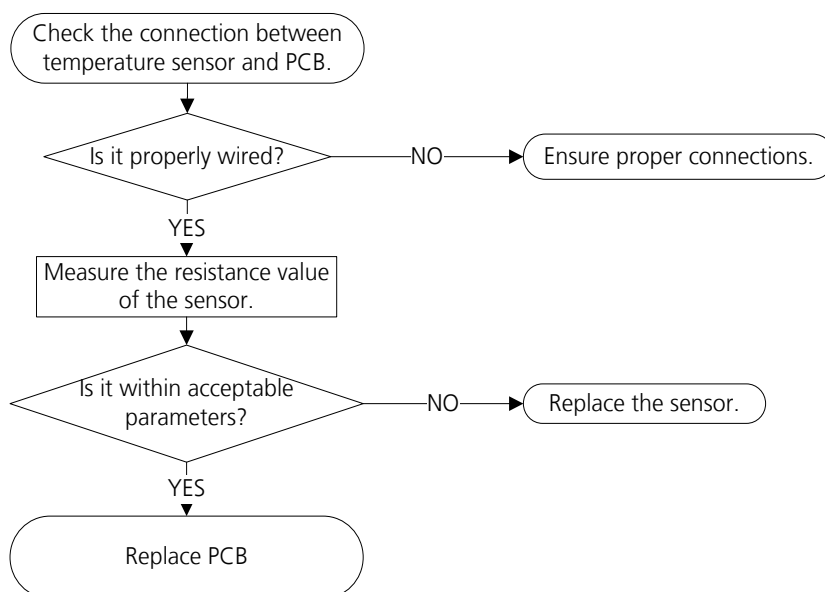
6.4 EH 60/EH 61/EC 53/EC 52/EC 54/EC 56 /(ODU)E4/EC 50/F1/F2/F3/F4 (Open circuit or short circuit of temperature sensor diagnosis and solution)

Description: If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED displays the failure code.

Recommended parts to prepare:

- Connection wires
- Sensors
- PCB

Troubleshooting and repair:



Note: For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole. This picture and the value are only for reference, actual appearance and value may vary

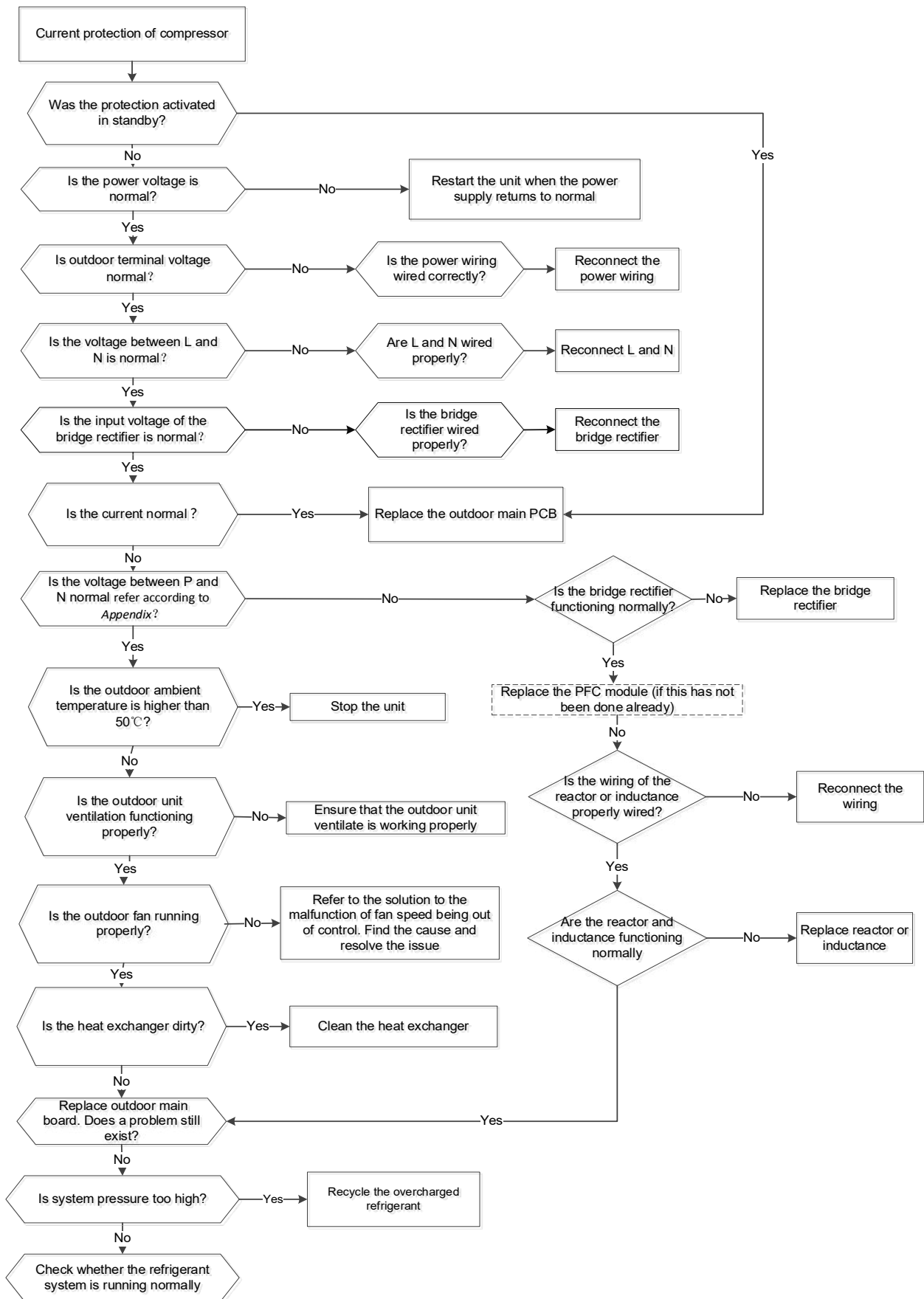
6.5 PC 08/P3(Current overload protection)/PC 44(Outdoor unit zero speed protection) /PC 46(Compressor speed has been out of control)/PC 49(Compressor overcurrent failure)

Description: An abnormal current rise is detected by checking the specified current detection circuit.

Recommended parts to prepare:

- Outdoor PCB
- Connection wires
- Bridge rectifier
- PFC circuit or reactor
- Refrigeration piping system
- Pressure switch
- Outdoor fan
- IPM module board

Troubleshooting and repair:



6.6 PC 00/(ODU)P6(IPM malfunction diagnosis and solution)&(IDU)PC 04(Inverter compressor drive error diagnosis and solution)

Description: PC 00/(ODU)P6:When the voltage signal the IPM sends to the compressor drive chip is abnormal, the LED displays the failure code and the AC turns off.

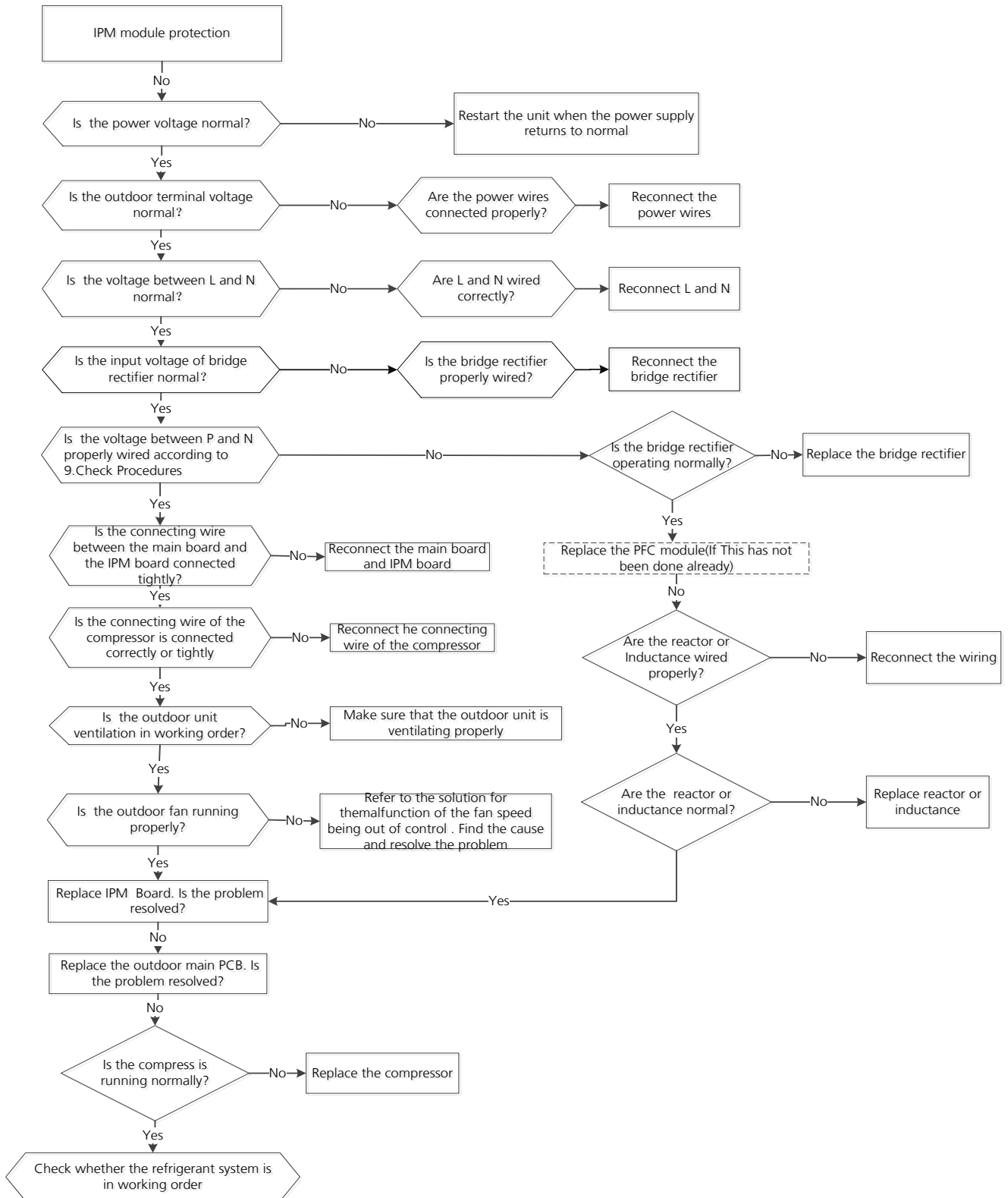
(IDU)PC 04:The driven chip cannot detect the right rotor position of compressor

Recommended parts to prepare:

- Connection wires
- IPM module board
- Outdoor fan assembly
- Compressor
- Outdoor PCB
- Reactor or inductance
- Bridge rectifier

Troubleshooting and repair:

At first test the resistance between every two ports of U, V, W of IPM and P, N. If any result of them is 0 or close to 0, the IPM is defective. Otherwise, please follow the procedure below:



Note: For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole.

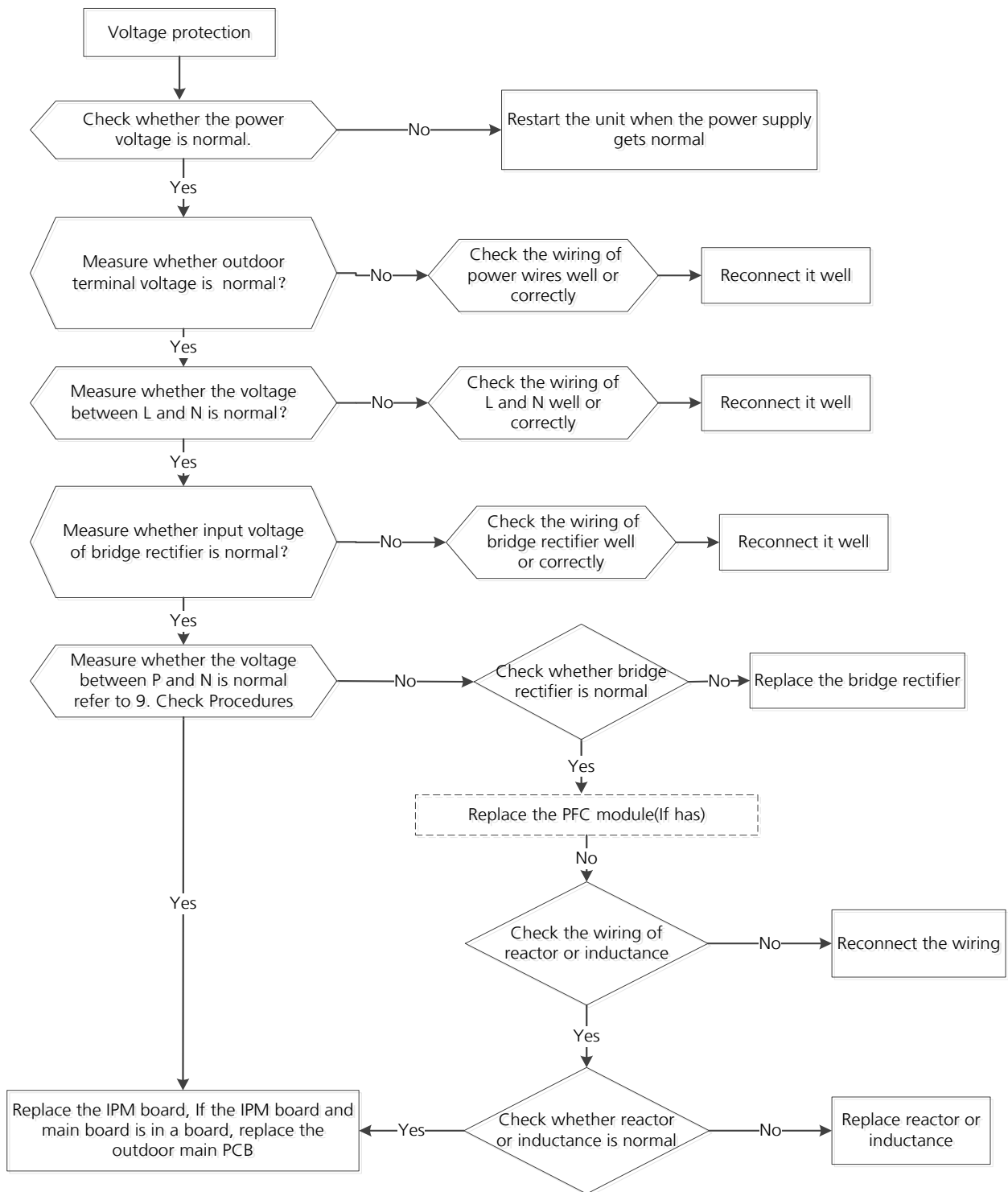
6.7 PC 01/E5(Over voltage or too low voltage protection)/PC 10(Outdoor unit low AC voltage protection)/PC 11(Outdoor unit main control board DC bus high voltage protection)/PC 12(Outdoor unit main control board DC bus high voltage protection /341 MCE error) Diagnosis and Solution

Description: Abnormal increases or decreases in voltage are detected by checking the specified voltage detection circuit.

Recommended parts to prepare:

- Power supply wires
- IPM module board
- Outdoor PCB
- Bridge rectifier
- PFC circuit or reactor

Troubleshooting and repair:



Note: For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole.

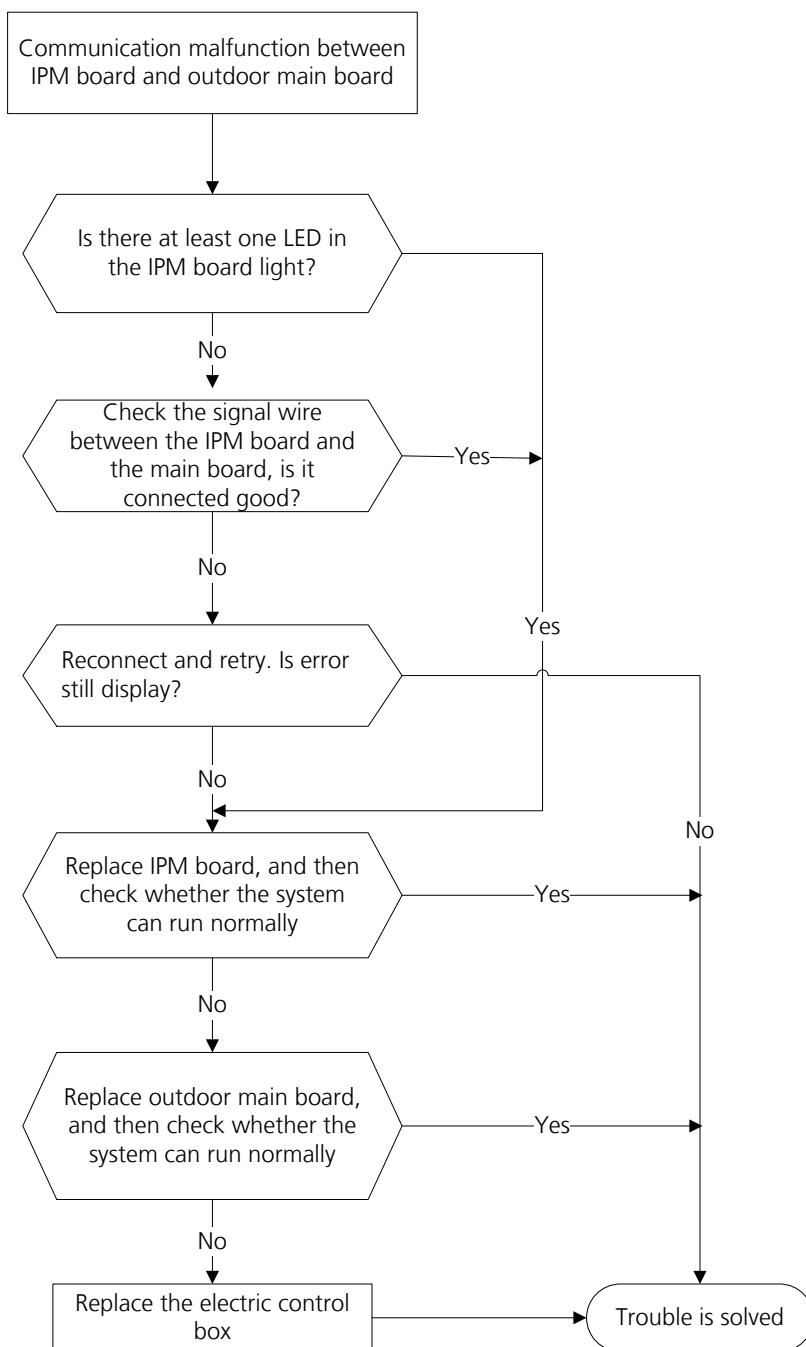
6.8 PC 40/E3(Communication malfunction between IPM board and outdoor main board diagnosis and solution)

Description: The main PCB cannot detect the IPM board.

Recommended parts to prepare:

- Connection wires
- Outdoor PCB
- IPM module board
- Electric control box

Troubleshooting and repair:



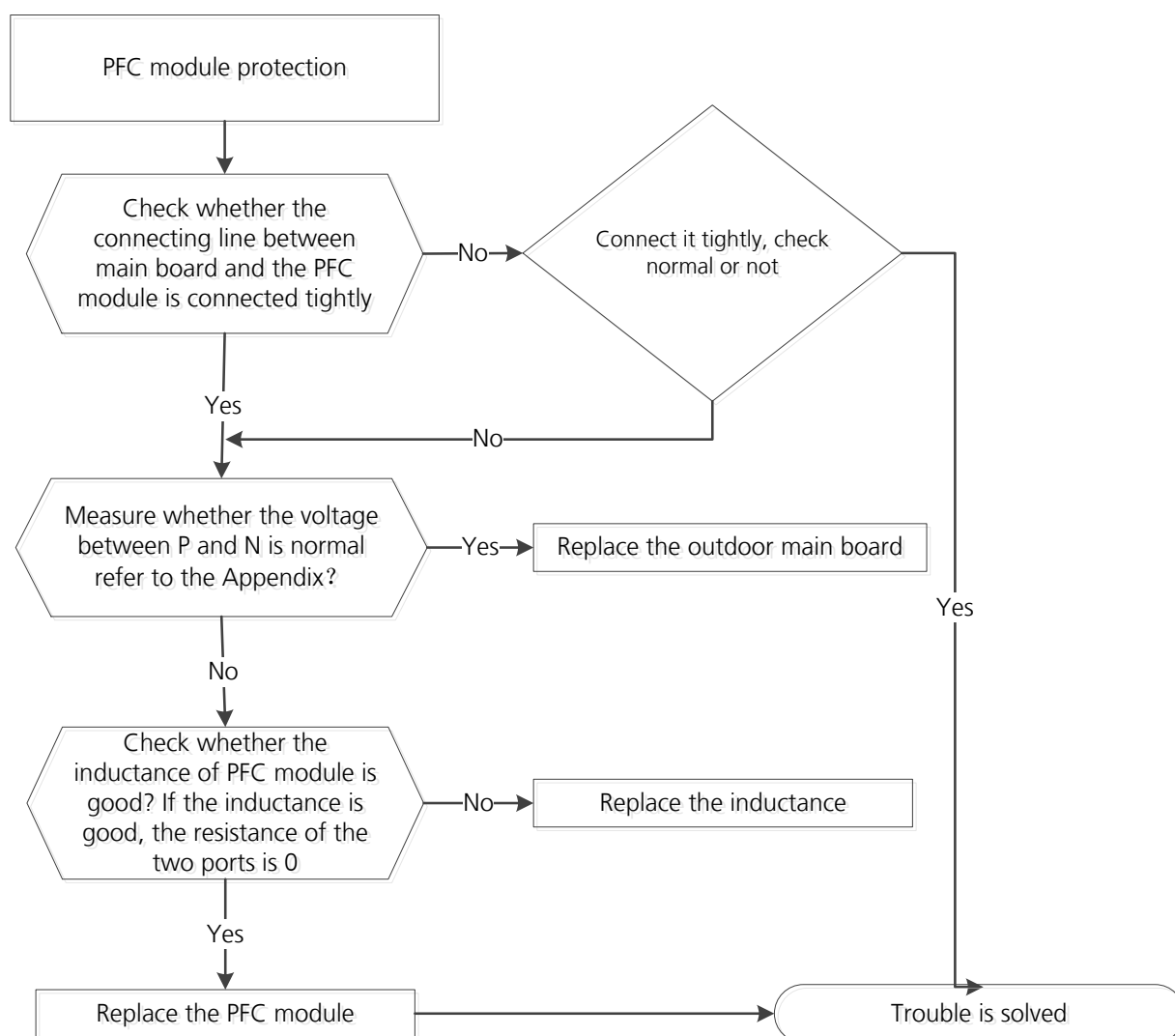
6.9 (ODU)PC 0F/E6(PFC module protection diagnosis and solution)

Description: Outdoor PCB detects PFC signal is low voltage or DC voltage is lower than 340V for 6s when quick check.

Recommended parts to prepare:

- Connection wires
- Outdoor PCB
- Inductance
- PFC circuit or IPM module board

Troubleshooting and repair:



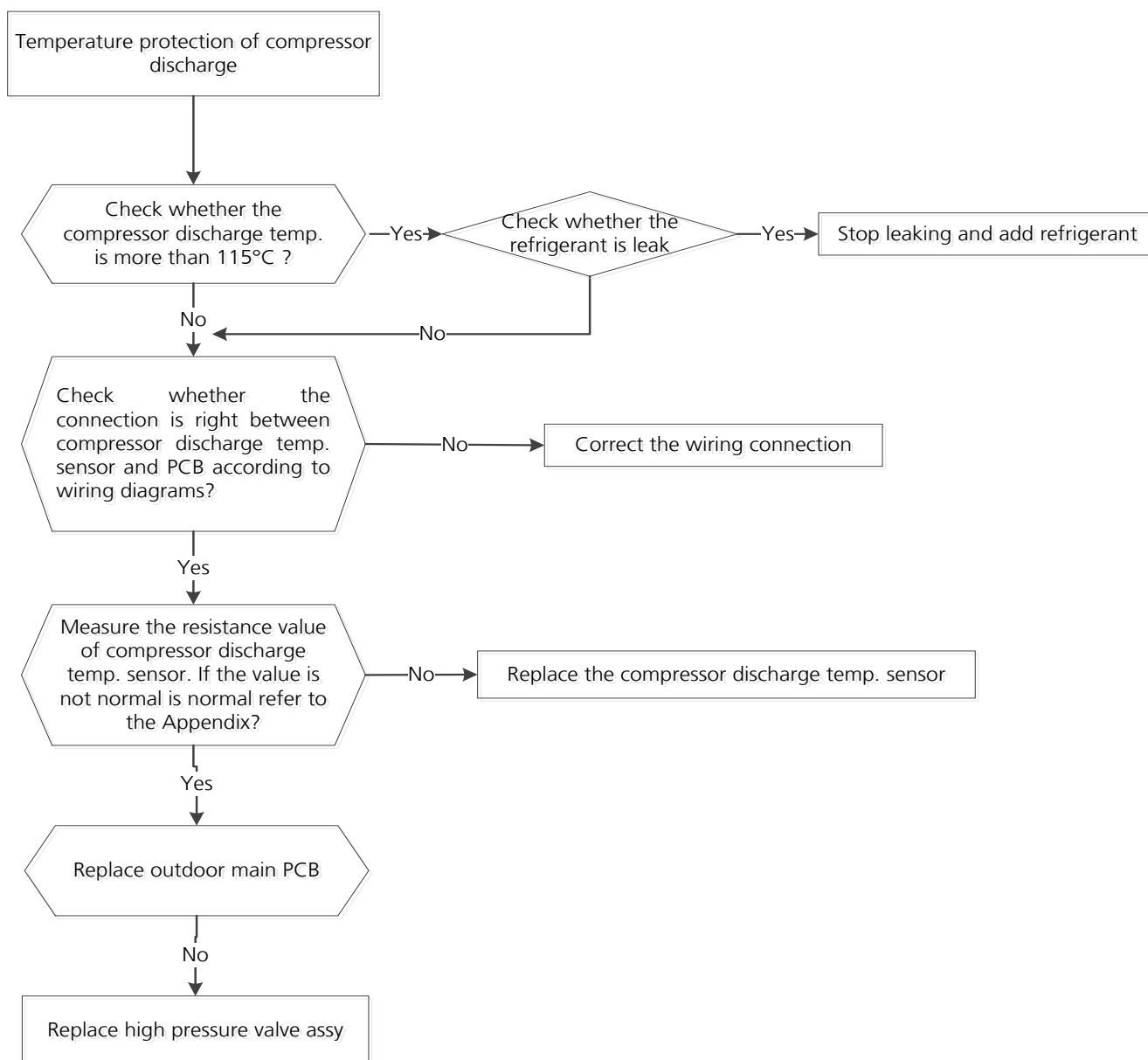
6.10 (ODU)PC 06/P4(Temperature protection of compressor discharge diagnosis and solution)

Description: When the compressor discharge temperature (T5) is more than 115°C for 10 seconds, the compressor ceases operation and does not restart until T5 is less than 90°C

Recommended parts to prepare:

- Connection wires
- Outdoor PCB
- Discharge temperature sensor
- Refrigerant

Troubleshooting and repair:



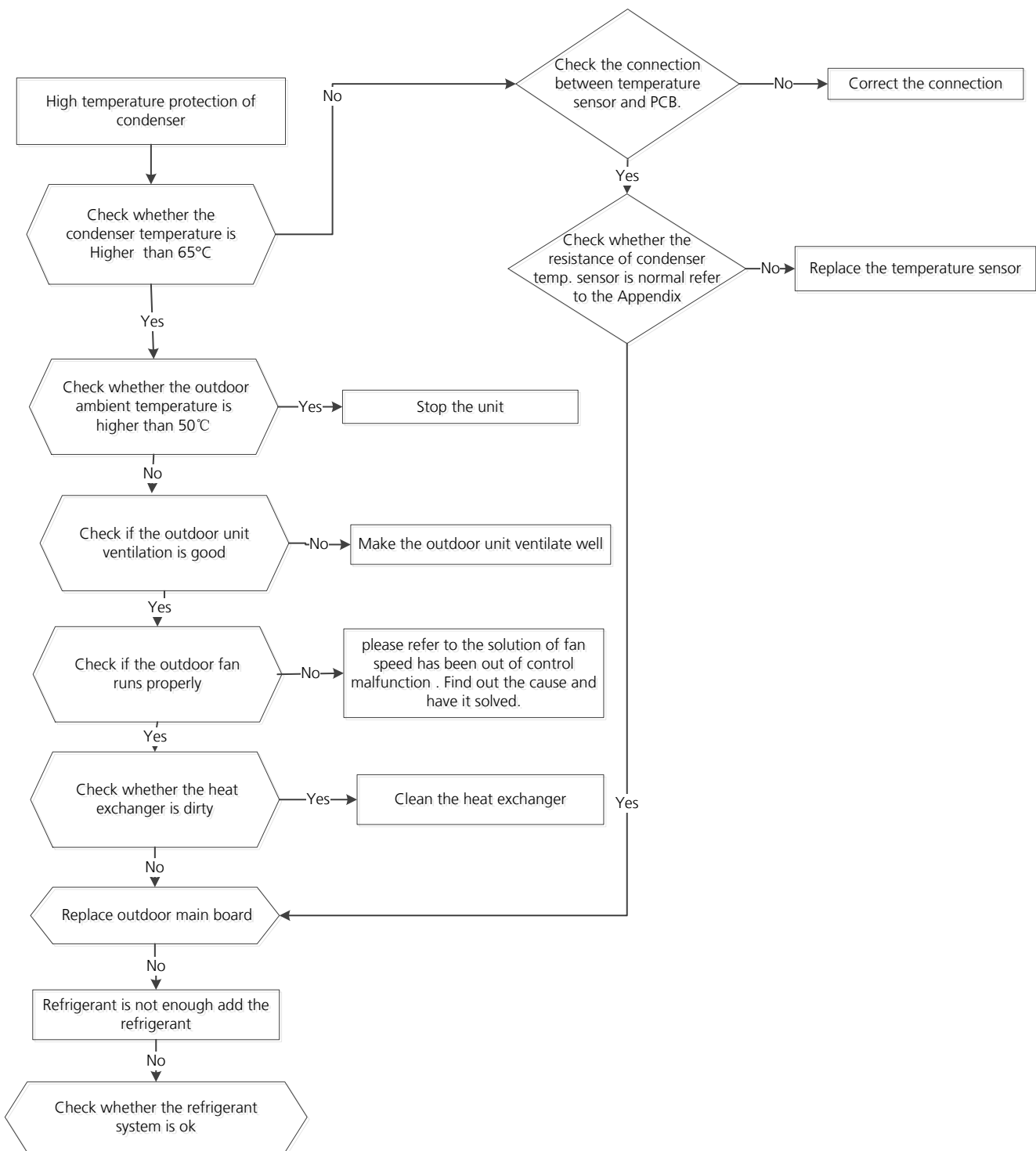
6.11 (ODU)PC 0A/P5(High temperature protection of condenser diagnosis and solution)

Description: The unit will stop when condenser temperature is higher than 65°C, and runs again when it is less than 52°C

Recommended parts to prepare:

- Connection wires
- Condenser temperature sensor
- Outdoor fan
- Outdoor main PCB
- Refrigerant

Troubleshooting and repair:



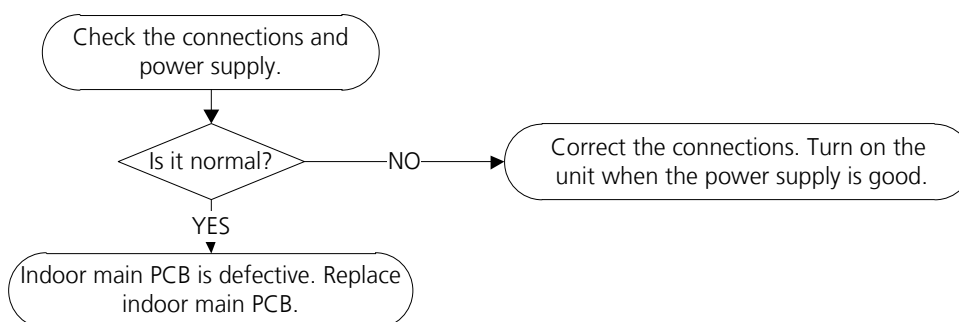
6.12 EH 02 (Zero crossing detection error diagnosis and solution)

Description: When PCB does not receive zero crossing signal feedback for 4 minutes or the zero crossing signal time interval is abnormal.

Recommended parts to prepare:

- Connection wires
- Indoor main PCB

Troubleshooting and repair:



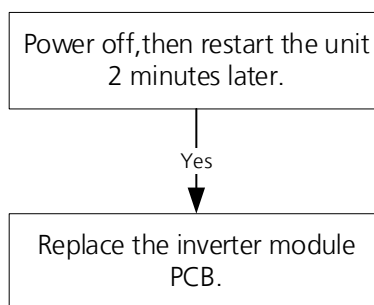
6.13 PC 45 (Outdoor unit IR chip drive failure diagnosis and solution)

Description: When the IR chip detects its own parameter error, the LED displays the failure code when power on.

Recommended parts to prepare:

- Inverter module PCB.

Troubleshooting and repair:



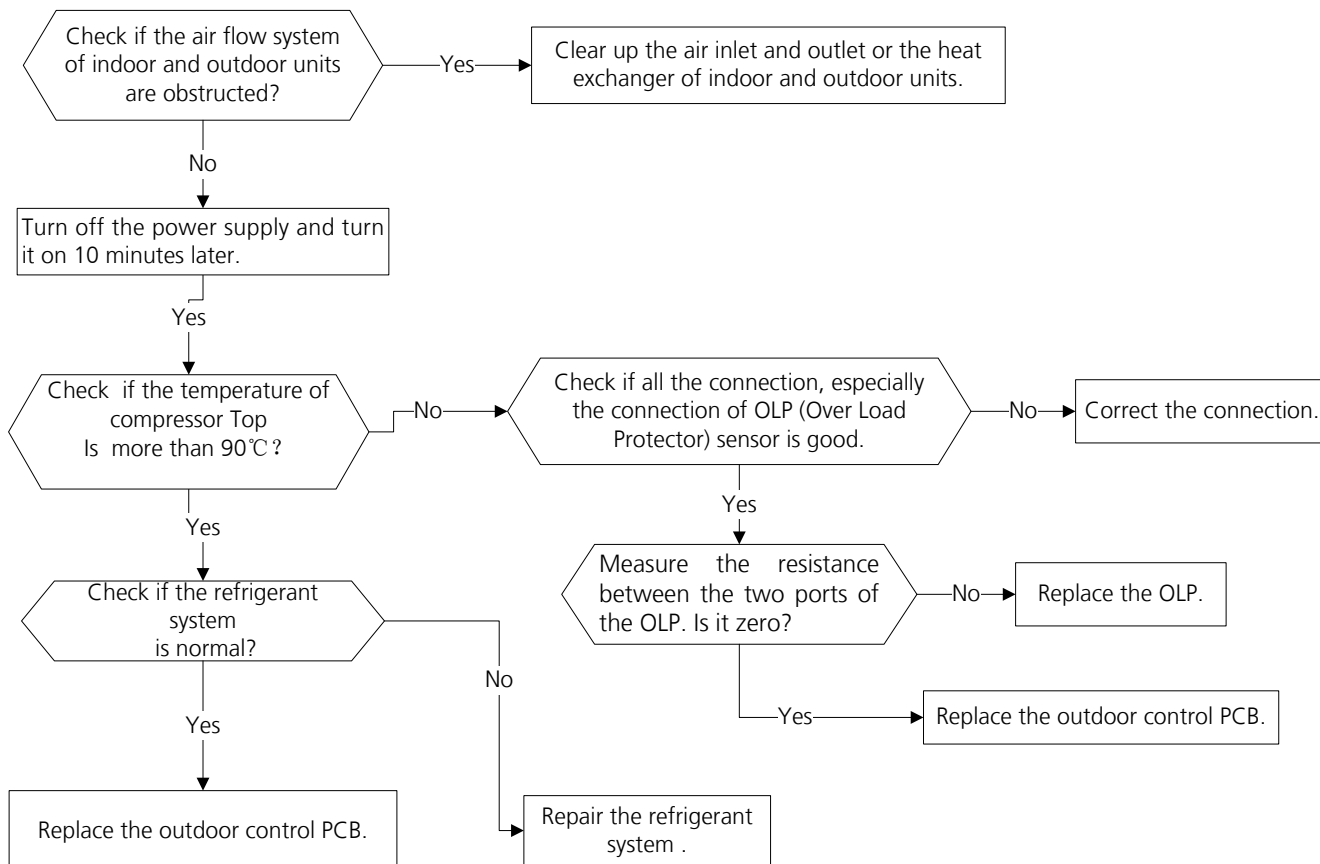
6.14 PC 02/(ODU)P0 (Top temperature protection of compressor diagnosis and solution)

Description: If the sampling voltage is not 5V, the LED will display the failure.

Recommended parts to prepare:

- Connection wires
- Overload protector
- Outdoor PCB

Troubleshooting and repair:



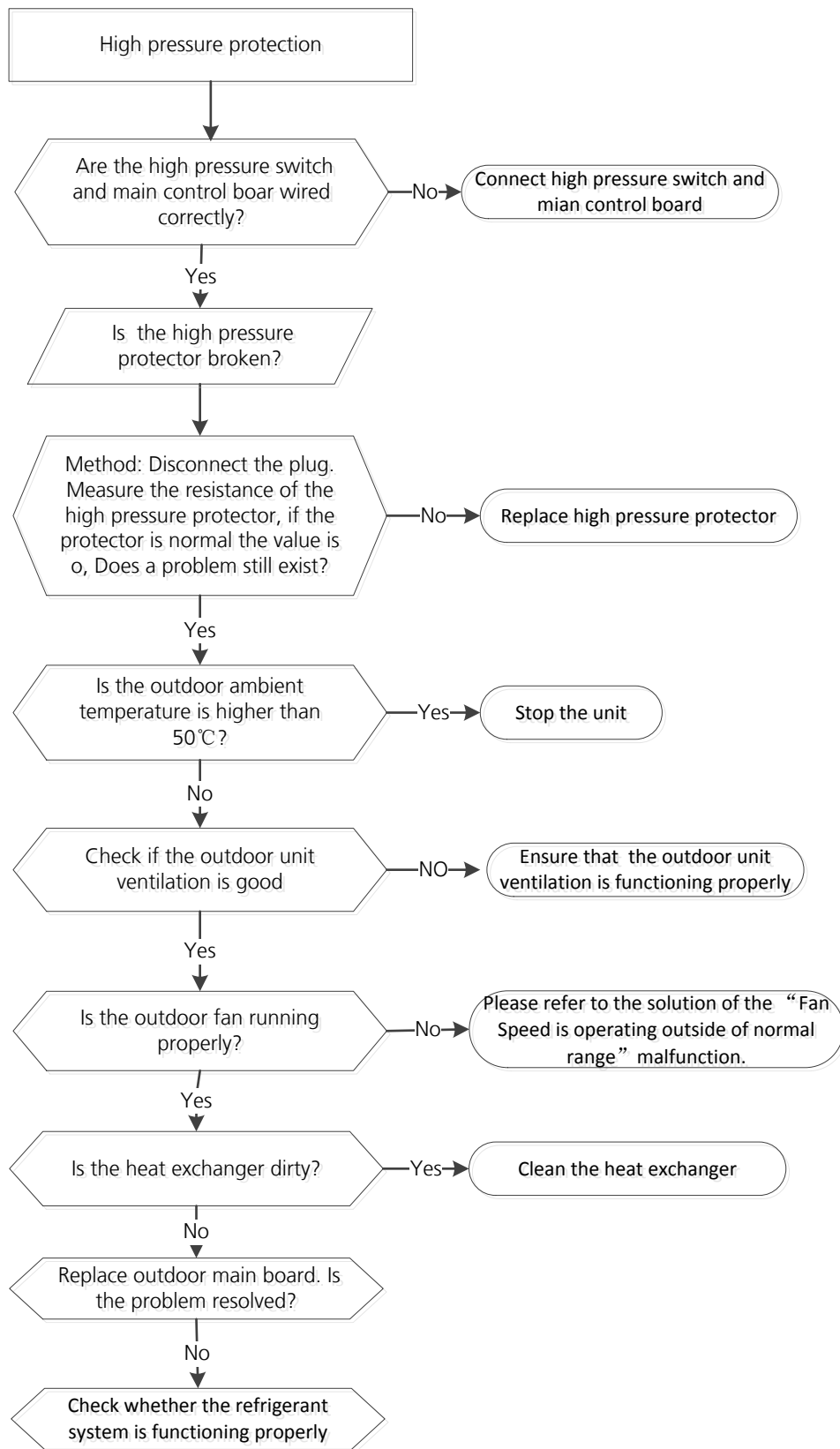
6.15 (IDU)PC 03/(ODU)P1/PC 30 (High pressure protection diagnosis and solution)

Description: Outdoor pressure switch cut off the system because high pressure is higher than 4.4 MPa

Recommended parts to prepare:

- Connection wires
- Pressure switch
- Outdoor fan
- Outdoor main PCB

Troubleshooting and repair:



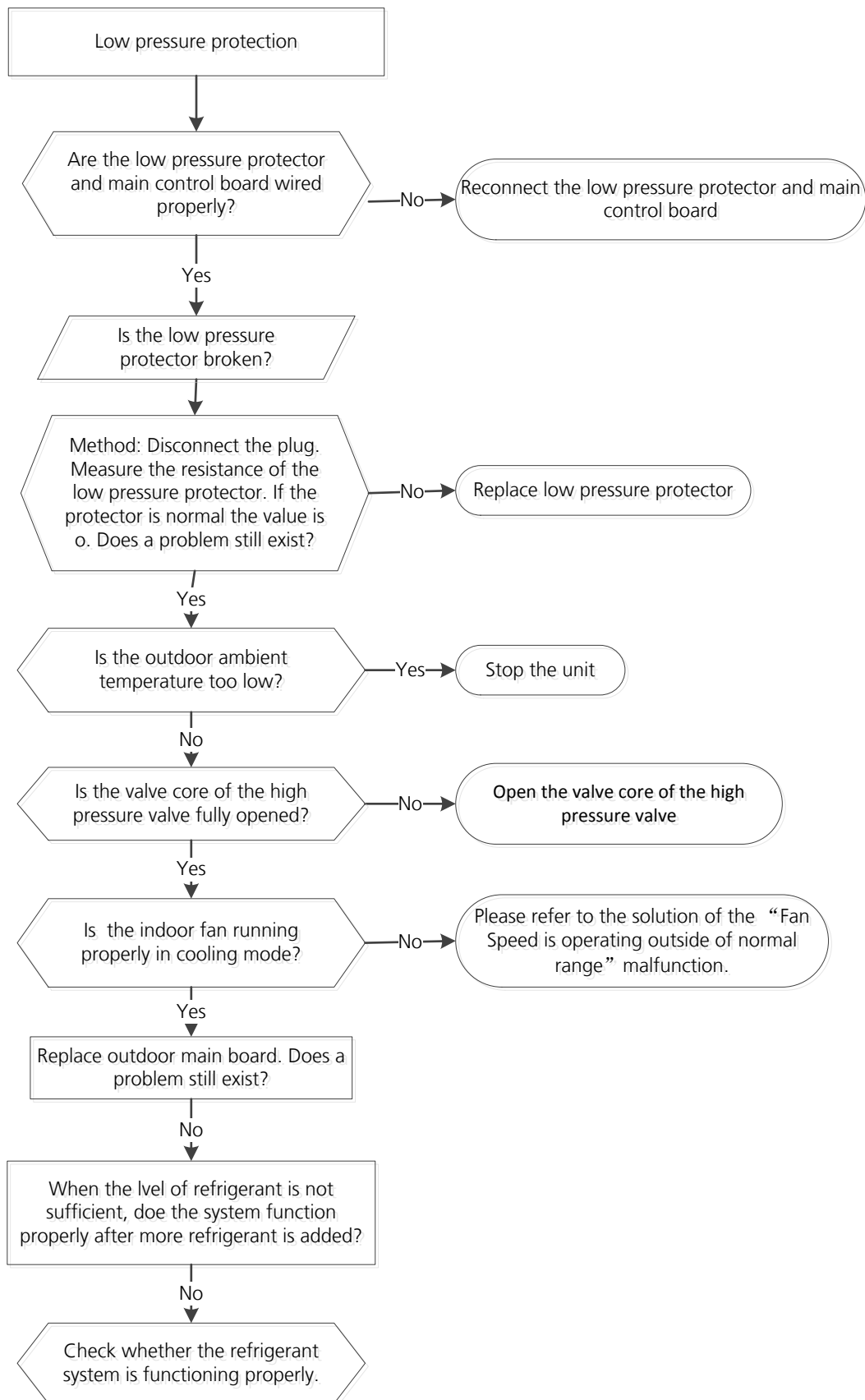
6.16 (IDU)PC 03/(ODU)P2/PC 31 (Low pressure protection diagnosis and solution)

Description: Outdoor pressure switch cut off the system because low pressure is lower than 0.13 MPa, the LED displays the failure code.

Recommended parts to prepare:

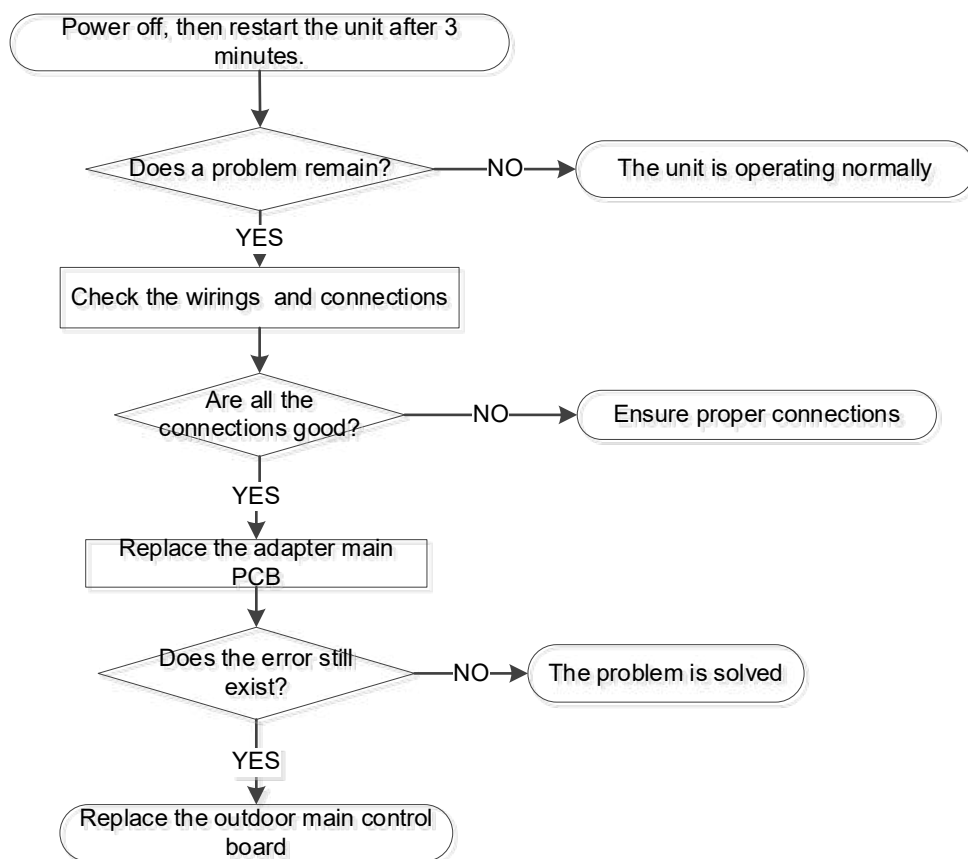
- Connection wires
- Outdoor PCB
- Low pressure protector
- Refrigerant

Troubleshooting and repair:



Note: For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole.

6.17 (ODU)Ed (Communication malfunction between adapter board and outdoor main control board diagnosis and solution)



6.18 (ODU)CE (Automatic correction of wiring/piping error)

Press the "check switch" on the outdoor unit PCB board 5 seconds until LED display "CE", which mean this function is working, Approximately 5-10 minutes after the switch is pressed, the "CE" disappear the wiring/piping error will be corrected, and wiring/piping is properly connected.

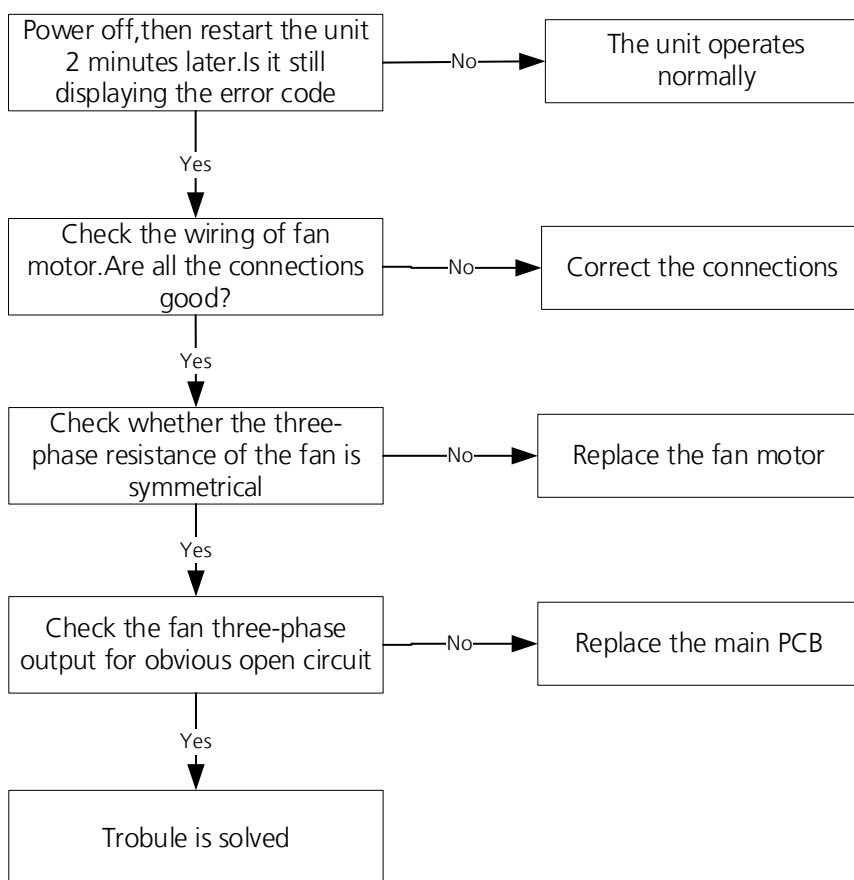
6.19 EC 72 (Lack phase failure of outdoor DC fan motor diagnosis and solution)

Description: When the three-phase sampling current of the DC motor is abnormal, especially when the current of one or more phases is always small and almost 0, the LED displays the failure code.

Recommended parts to prepare:

- Connection wire
- Fan motor
- Outdoor PCB

Troubleshooting and repair:



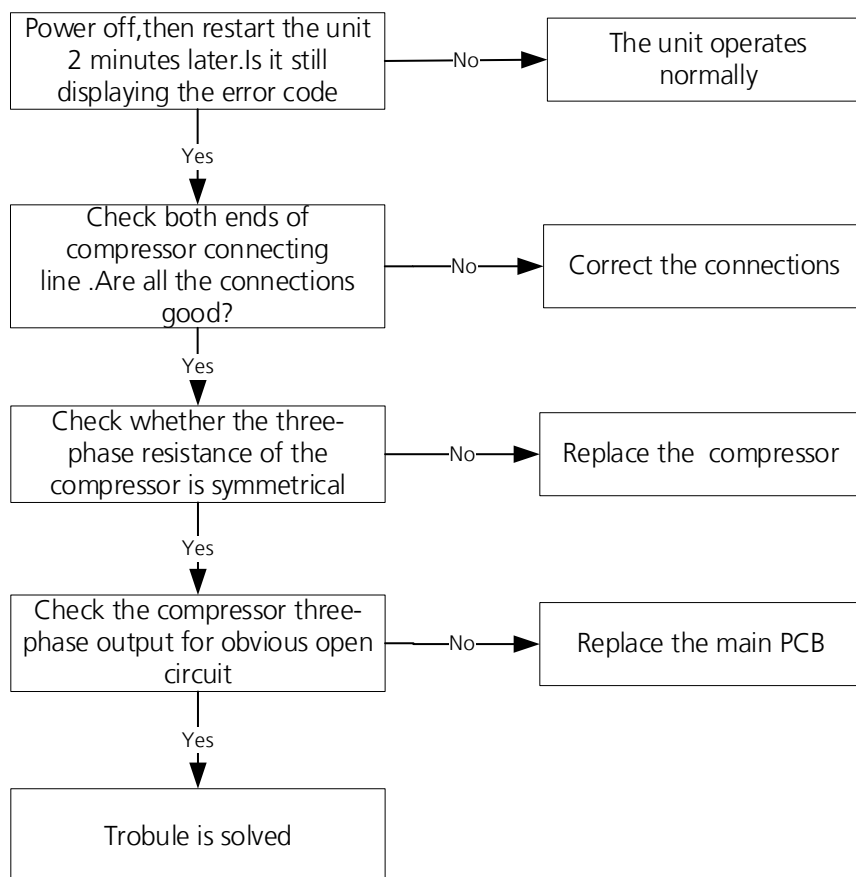
6.20 PC 43 (Outdoor compressor lack phase protection diagnosis and solution)

Description: When the three-phase sampling current of the compressor is abnormal, especially when the current of one or more phases is always small and almost 0, the LED displays the failure code

Recommended parts to prepare:

- Connection wire
- Compressor
- Outdoor PCB

Troubleshooting and repair:



6.21 EH 0b (Indoor PCB / Display board communication error diagnosis and solution)

Description: Indoor PCB does not receive feedback from the display board.

Recommended parts to prepare:

- Communication wire
- Indoor PCB
- Display board

Troubleshooting and repair:

